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BELL & HOWELL

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UNITED STATES PATENT and TRADEMARK OFFICE

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PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

Set VII of Addenda to the Classification Definitions

The definitions of the classes listed below were modified by addenda as part of Classification Orders 612 to 624 issued between January 1, 1978 and March 31, 1978. All of these addenda have been consolidated into Set VII of "Addenda to the Classification Definitions."

Class	Class	Class	Class
2	108	220	329
4	112	221	332
7	116	222	333
13	118	223	335
15	128	226	336
16	131	228	337
19	132	235	338
21	137	242	339
24	138	246	340
28	140	248	343
29	148	250	346
30	152	251	350
33	156	252	351
35	160	264	352
40	162	272	353
42	166	273	354
43	172	274	355
46	173	281	356
52	175	294	358
53	177	301	360
62	178	302	361
65	185	307	362
70	191	308	364
73	194	310	365
74	197	312	402
81	200	313	404
84	201	314	424
86	202	315	425
89	203	318	427
92	206	322	428
96	209	323	431
98	211	324	520
100	219	325	Classes (526)
106		328	

The following is a summary of the newly established classes issued between April 1976 and June 1978.

Class	Class	Class	Class
7	366	542	D14
28	400	544	D15
198	407	548	D24
361	429	560	D25
362	526	568	D28
363	528	D11	D29
364	536	D13	D36
365			

ALFRED C. MARMOR,
Administrator for Documentation,
August 10, 1978.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 27,447, Re. S.N. 893,110, Filed Apr. 3, 1978, Cl. 164/76, PROCESS OF USING A LOW-CARBON STEEL COMPOSITION IN A CONTINUOUS-CASTING PROCESS, John H. Richards, Owner of Record: *United States Steel Corporation, Pittsburgh, Pa.*, Attorney or Agent: Arthur J. Greif, Ex. Gp.: 322

3,914,461, Re. S.N. 843,647, Filed Oct. 19, 1977, Cl. 427/33, ELECTROSTATIC COATING METHOD, William C. Goodridge, Owner of Record: by mesne assigmts. to *Canada Wire and Cable Company, Limited, Toronto, Ontario, Canada,* Attorney or Agent: Ira S. Dorman, Ex. Gp.: 162

3,968,935, Re. S.N. 923,921, Filed Jul. 12, 1978, Cl. 239/289, CONTOURED SUPERSONIC NOZZLE, John S. Sohre, Owner of Record: *Inventor,* Attorney or Agent: David S. Fishman, et al., Ex. Gp.: 313

3,970,246, Re. S.N. 923,085, Filed Jul. 10, 1978, Cl. 236/44 C, AIR CONDITIONING CONTROL SYSTEM, Russell G. Attridge, Jr., et al., Owner of Record: *Ranco Inc., Columbus, Ohio,* Attorney or Agent: James T. Hoffmann, et al., Ex. Gp.: 344

3,985,230, Re. S.N. 898,327, Filed Apr. 20, 1978, Cl. 206/424, CARTON, Melvin H. Meyer, et al., Owner of Record: *Stone Container Corporation, Chicago, Ill.,* Attorney or Agent: Morris Relson, et al., Ex. Gp.: 240

3,989,197, Re. S.N. 923,924, Filed Jul. 11, 1978, Cl. 241/43, APPARATUS FOR PULPING AND GRADING WASTE PAPER, Walter Neitzel, Owner of Record: *Voith, J. M. G.m.b.H., Heidenheim, Germany,* Attorney or Agent: David S. Kane, et al., Ex. Gp.: 325

4,039,416, Re. S.N. 922,719, Filed Jul. 7, 1978, Cl. 204/192 N, GASLESS ION PLATING, Gerald W. White, Owner of Record: *Illinois Tool Works Inc., Chicago, Ill.,* Attorney or Agent: Robert W. Beart, et al., Ex. Gp.: 114

4,065,270, Re. S.N. 901,032, Filed Apr. 28, 1978, Cl. 23/299, PROCESS FOR PURIFYING SODIUM HYDROXIDE, Keiichi Nakaya, et al., Owner of Record: *Asahi Glass Co., Ltd., Tokyo, Japan,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 171

4,087,180, Re. S.N. 923,068, Filed Jul. 10, 1978, Cl. 355/17, PHOTOGRAPHIC PRINTING METHOD, Robert F. Di Natale, Owner of Record: *Inventor,* Attorney or Agent: Joseph S. Iandiorio, Ex. Gp.: 212

4,096,473, Re. S.N. 921,483, Filed Jul. 3, 1978, Cl. 340/237 S, HIGH OUTPUT SMOKE AND HEAT DETECTOR ALARM SYSTEM UTILIZING A PIEZOELECTRIC TRANSDUCER AND A VOLTAGE DOUBLING MEANS, Louis P. Sweany, et al., Owner of Record: *P. R. Mallory & Company Inc., Indianapolis, Ind.,* Attorney or Agent: Charles W. Hoffmann, et al., Ex. Gp.: 234

PATENT NOTICES

Certificates of Correction for the Week of Sept. 5, 1978

3,847,602	4,073,946	4,081,356	4,084,748
3,862,296	4,074,306	4,081,625	4,084,919
3,971,065	4,074,499	4,082,032	4,085,191
3,986,748	4,074,926	4,082,033	4,085,287
3,991,304	4,075,094	4,082,840	4,085,392
3,995,041	4,075,942	4,082,956	4,085,409
3,997,356	4,078,055	4,083,055	4,085,510
4,001,570	4,078,096	4,083,166	4,085,589
4,005,941	4,078,171	4,083,302	4,085,604
4,021,729	4,078,387	4,083,374	4,086,199
4,025,974	4,078,873	4,083,580	4,086,293
4,037,102	4,079,436	4,083,726	4,086,374
4,055,946	4,079,568	4,083,762	4,086,429
4,065,276	4,079,602	4,083,815	4,086,519
4,066,894	4,079,614	4,083,820	4,086,585
4,068,053	4,079,649	4,084,023	4,086,800
4,069,016	4,079,757	4,084,069	4,087,081
4,069,628	4,079,877	4,084,083	4,087,197
4,070,439	4,080,284	4,084,259	4,087,253
4,070,865	4,080,631	4,084,605	4,087,428
4,070,920	4,080,878	4,084,624	4,087,587
4,071,422	4,080,981	4,084,649	4,087,588

Dedication

3,991,280.—*Dennis Bryan James,* Rumson, *Chao Kai Liu,* Matawan, and *Robert McKee Smith,* Holmdel, N.J. MONOBUS VARIABLE RESISTANCE TRANSMISSION CIRCUIT. Patent dated Nov. 9, 1976. Dedication filed July 14, 1978, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,724,285.—*James M. Lapeyre,* New Orleans, La. CONVEYOR DRIVE. Patent dated Apr. 3, 1973. Disclaimer filed May 8, 1978, by the assignee, *The Laitram Corporation.*

Hereby enters this disclaimer to claims 18–22 of said patent.

3,903,610.—*John B. Heaviside,* Huntingdon, and *Franklin W. Smith, Jr.,* Hauppauge, N.Y. APPARATUS FOR MEASURING MAGNETIC FIELD DIRECTION. Patent dated Sept. 9, 1975. Disclaimer filed July 17, 1978, by the assignee, *Safe Flight Instrument Corporation.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,009,611.—*George Warren Koffer,* Los Altos, and *Doud Roger Branham,* Redwood City, Calif. HAND-HELD MICROPIPETTOR WITH IMPROVED PIPETTE TIP EJECTOR. Patent dated Mar. 1, 1977. Disclaimer filed July 3, 1978, by the assignee, *Oxford Laboratories Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,065,978.—*Henry Meresz,* Wheeling, and *Michael N. Tranquilla,* Elmhurst, Ill. SYNCHRONIZED DRIVE AND CABLE HANDLING SYSTEM FOR A ROTATIONAL MACHINE ELEMENT. Patent dated Jan. 3, 1978. Disclaimer filed June 19, 1978, by the assignee, *G. D. Searle & Co.*

Hereby enters this disclaimer to all claims of said patent.

Patents Available for Licensing or Sale

3,092,334. SHOWER ATTACHMENT. Dana Peterson, 464 B Ave., Coronado, Calif. 92118.

3,680,237. OUT-DOOR ILLUMINATED SIGN. John G. Finnerty, 251 DeGrand Ave., Teaneck, N.J. 07666.

3,874,945. METHOD OF FABRICATING PLASTIC PRINTING PLATES. Vaclav Misek, 8515 Colonial Drive, Stockton, Calif. 95209.

4,034,611. PARICULATE SAMPLING PROBE. James E. Harling, M. F. Laughton, APCD-EPS Environment Canada, Ottawa, K1A1C8, Canada.

4,037,581. SCREEN DEVICE FOR STOVE OVENS. Thomas Trifiletti, 2 Furlong Drive, Albany, N.Y. 12205.

4,044,476. EDUCATIONAL METHODS AND DEVICES. Jeanette B. Marsh, 1400 N. Lake Shore Drive, 14–M, Chicago, Ill. 60610.

4,056,897. PLANTER DESIGN AND CONSTRUCTION. Mary Ellen and John Scott Pearce. Correspondence to: E. Barron Batchelder, Sixbey, Friedman & Leedom, P. C., Suite 206,2001 Jefferson Davis Hwy., Arlington, Va. 22202.

4,064,880. SANITARY TUBULAR NAPKIN FOR MALES. Dexter J. Logan, P.O. Box 1012, West Covina, Calif. 91793.

4,065,878. AUTOMATIC DOOR OPENING AND SHUTTING DEVICE. Sachio Tsugane, Japan. Correspondence to: Michael J. Striker, 360 Lexington Ave., New York, N.Y. 10017.

4,076,201. ADJUSTABLE CHAIR SPINDLE ASSEMBLY. Walter E. Hudnall, 2157 W. 236th Place, Torrance, Calif. 90501.

The following two patents are offered by John O. Richards, 980 Mill Circle, Apt. #99, Alliance, Ohio 44601.

3,835,507. ROPE HOLDING DEVICE.

3,578,840. REVOLVING REFLECTOR.

The following nine patents are offered by Paul F. Taylor, P.O. Box 468, Crossville, Tenn. 38555.

3,811,871. PROCESS FOR CLASS IV B METALS ORE REDUCTION.

3,948,637. PROCESS FOR CLASS IV B METALS ORE REDUCTION.

3,784,593. PROCESS FOR CLASS IV B METALS ORE REDUCTION (IMPROVEMENT).

3,912,498. PROCESS FOR CLASS IV B METALS ORE REDUCTION.

3,980,471. PROCESS FOR CLASS III B METALS ORE REDUCTION.

3,791,815. PROCESS FOR LANTHANIDE AND ACTINIDE METALS ORE REDUCTION.

3,966,455. PROCESS FOR ILMENITE ORE REDUCTION.

3,833,353. PROCESS FOR CLASS VIII B METALS ORE REDUCTION.

3,958,978. PROCESS FOR COPPER METAL ORE REDUCTION.

The General Electric Company, a corporation of the State of New York, having a place of business at 1 River Road, Schenectady, N.Y., is the owner by assignment of the following 83 patents.

Applications for licenses may be addressed to: Walter C. Bernkopf, Division Patent Counsel Contractor Equipment Business Division, General Electric Company, 1285 Boston Ave., Building 21EW, Bridgeport, Conn. 06602.

3,076,882. ELECTRIC CIRCUIT BREAKER.

3,104,297. CIRCUIT BREAKER WITH AUXILIARY SWITCH.

3,105,132. GUIDE MEANS FOR SUPPORTING A CONTACT CROSS-ARM OF A CIRCUIT BREAKER.

3,134,877. PANELBOARD SWITCH UNIT.

3,135,895. PLUG-IN PANEL UNIT.

3,137,780. CIRCUIT BREAKER HANDLE ASSEMBLY.

3,141,947. FRONT-OPERATED SWITCH WITH BAIL TYPE HANDLE.

3,141,997. ELECTRIC PANEL ASSEMBLY.

3,143,627. MULTIPOLE CIRCUIT BREAKER WITH THREE PART INSULATING CASING.

3,155,786. ENCLOSURE WITH LOCKABLE HANDLE.

3,155,805. MULTIPOLE CIRCUIT BREAKER WITH NOVEL CONTACT ARM CONSTRUCTION.

3,158,716. ELECTRIC CIRCUIT BREAKER.
3,165,872. CABLE CONNECTOR ASSEMBLY.
3,171,708. ADAPTER FOR NEUTRAL TERMINAL BAR.
3,179,761. ELECTRICAL SWITCH AND FUSE HOUSING COMBINATION HAVING A PIVOTALLY MOUNTED ADAPTING MECHANISM OPERABLE INDEPENDENTLY OF ITS MOVABLE COVER.
3,179,769. CIRCUIT BREAKER WITH ADJUSTABLE TRIPPING MEANS.
3,179,850. PROTECTIVE RELAY.
3,181,041. CIRCUIT BREAKER WITH MAGNETIC TRIP ADJUSTING MEANS.
3,188,412. RACKING MECHANISM FOR METAL ENCLOSED ELECTRIC SWITCHGEAR.
3,188,413. EXPANDABLE SWITCHGEAR HOUSING FOR DRAWOUT ELECTRIC APPARATUS.
3,188,414. RELEASABLE STOP MEANS FOR A MOVABLE UNIT IN A STATIONARY ENCLOSURE.
3,188,415. SWITCHGEAR DISCONNECT MECHANISM.
3,193,633. RACKING MECHANISM INCLUDING A DIFFERENTIAL PULLEY SYSTEM.
3,194,934. SEGMENTED CONTACT ASSEMBLY HAVING PIVOTAL AND SIDEWISE-ROTATABLE CONTACT SEGMENTS.
3,198,518. SHEET MATERIAL HANDLING APPARATUS.
3,204,150. TERMINAL CONNECTIONS FOR CIRCUIT PROTECTIVE DEVICES.
3,205,325. CIRCUIT BREAKER TRIP DEVICE.
3,217,090. PANELBOARD.
3,259,718. FUSIBLE ELECTRIC SWITCH EQUIPPED WITH COMBINATION FUSE HOLDER AND ARCING CONTACT.
3,260,825. CIRCUIT BREAKER WITH AMBIENT COMPENSATING MEANS.
3,263,132. CIRCUIT BREAKER LOAD CENTER.
3,264,427. ELECTRIC CIRCUIT PROTECTIVE DEVICE WITH ENERGY DIVERTING MEANS.
3,274,356. DRAW-OUT FUSED SWITCH-GEAR APPARATUS.
3,288,956. DRAW-OUT SWITCH-GEAR INTERLOCK APPARATUS.
3,309,580. CIRCUIT BREAKER LOAD CENTER.
3,313,898. CIRCUIT BREAKER WITH THERMAL TRIP DEVICE OF HIGH SHORT-CIRCUIT WITHSTANDABILITY.
3,317,794. OVERCURRENT PROTECTIVE MEANS.
3,317,795. OVERCURRENT PROTECTIVE MEANS.
3,333,155. INVERSE OVERCURRENT-TIME DELAY CIRCUIT PROTECTIVE DEVICE UTILIZING NONLINEAR RESISTANCE.
3,333,157. PLUG-IN TYPE CONTROL DEVICE PANEL ASSEMBLY WITH ANGULARLY CONTRASTING CONTACT PORTIONS.
3,350,525. CIRCUIT BREAKER RESETTING MECHANISM.
3,360,690. CIRCUIT BREAKER PANELBOARD OR LOAD CENTER.
3,389,359. CHANGE OF STATE CURRENT LIMITER DEVICES WITH STACKED SEGMENT CONSTRUCTION.
3,389,360. CHANGE OF STATE CURRENT LIMITER HAVING FLAT PLATE CONSTRUCTION.
3,404,316. CIRCUIT BREAKER SEGREGATION SYSTEM.
3,423,598. PEAK DEMAND CURRENT LIMITING CONTROL SYSTEM.
3,436,597. ELECTRIC CIRCUIT BREAKER WITH ASSISTED ARC INTERRUPTION.
3,436,700. PARALLEL ASSISTED CIRCUIT INTERRUPTING DEVICE.
3,453,568. ELECTRIC CIRCUIT BREAKER WITH IMPROVED AUXILIARY DEVICE.
3,454,832. ELECTRIC CIRCUIT INTERRUPTER.
3,466,503. ASSISTED ARC A.C. CIRCUIT INTERRUPTER.
3,475,711. ELECTRIC CIRCUIT BREAKER OPERATING MECHANISM AND ASSEMBLY THEREOF.
3,489,870. CASCADED ELECTRIC CURRENT INTERRUPTING DEVICE WITH IONIZED GAS ASSISTING IN BREAKDOWN AND EVENTUAL ARC EXTINCTION.
3,489,871. ELECTRIC CURRENT INTERRUPTING DEVICE WITH IONIZED GAS ASSISTING IN BREAKDOWN AND EVENTUAL ARC EXTINCTION.
3,489,872. MODULAR TYPE MULTI-STAGE INTERRUPTER WITH IONIZED GAS ASSISTING IN BREAKDOWN AND EVENTUAL ARC EXTINCTION.
3,493,815. ELECTRIC PROTECTIVE CIRCUIT.
3,501,677. CURRENT LIMITING STATIC ALTERNATING CURRENT CIRCUIT BREAKER.
3,504,233. ELECTRIC CIRCUIT INTERRUPTING DEVICE WITH SOLID STATE SHUNTING MEANS.
3,515,940. PARALLEL-ASSISTED CIRCUIT INTERRUPTING DEVICE.
3,526,812. POWER SUPPLY FOR CIRCUIT BREAKER TRIPPING.
3,533,930. MODIFIED CROSSLINKED POLYOXYMETHYLENES AND THEIR PREPARATION.
3,560,676. EXTRACTING DEVICE FOR APPARATUSES.
3,562,733. ELECTRIC CIRCUIT BREAKER WITH IMPROVED TRIP ALARM.
3,605,051. AVOIDANCE OF SWITCHING DEVICE FALSE OFF HANDLE INDICATION.
3,636,410. AUTOMATIC MOLDED CASE CIRCUIT BREAKER WITH TIME-DELAY OVERCURRENT TRIPPING.
3,657,604. SHOCK PROTECTION DEVICE CIRCUIT.
3,735,309. VAPOR-STATE LIMITER WITH HIGH PRESSURE HOUSING.
3,769,549. ELECTRICAL FIRE AND SHOCK PROTECTIVE APPARATUS.
3,769,551. CIRCUIT BREAKER WITH HEAT PIPE COOLING MEANS.
3,795,841. SHOCK PROTECTING CIRCUIT BREAKER FOR TWO CIRCUITS WITH COMMON NEUTRAL.
3,806,855. VAPOR STATE CURRENT LIMITING DEVICE.
3,813,619. CURRENT-LIMITING CIRCUIT BREAKER.
3,849,752. CURRENT RESPONSIVE ACTUATOR.
3,864,005. RESILIENT ELECTRICAL TERMINAL CONNECTOR.
3,869,649. ELECTRICAL PROTECTIVE PANEL ASSEMBLY WITH SENSITIVE GROUND FAULT PROTECTING MEANS.
3,872,355. FIRE DETECTION AND PROTECTION CIRCUIT AND DEVICE.
3,873,791. CURRENT LIMITING CIRCUIT BREAKER.
3,873,887. ALTERNATING-CURRENT POWER DELIVERY SYSTEM.
3,888,560. ELECTRICAL TERMINAL CONFIGURATION.
3,902,002. GROUNDING ATTACHMENT FOR NONMETALLIC ENCLOSURES.
3,935,409. CURRENT-LIMITING CIRCUIT BREAKER.
3,950,071. MULTIPLE STAB ELECTRICAL CONNECTOR.
3,986,152. NEGATIVE IMPEDANCE NETWORK.

Incomplete Copies of U.S. Patent No. 4,085,105

In printing copies of U.S. Patent No. 4,085,105 granted April 18, 1978, the last page was inadvertently omitted. Copies of the missing page will be supplied upon request addressed to the Patent Trademark Office:

Commissioner of Patents and Trademarks
United State Patent and Trademark Office
Customer Services Division
Washington, D.C. 20231

Please furnish the mailing address to which copies of the missing page should be sent.

Errata

All reference to Patent No. 4,097,211 to Thomas W. Springs and William F. Wallis of Michigan for Noise Suppression Structure for Block Making Machinery appearing in the OFFICIAL GAZETTE of June 27, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,097,622 to Lewis I. Sitkin of Pennsylvania for Process for Surface Treating Cupreous Based Alloy Ingots appearing in the OFFICIAL GAZETTE of June 27, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,100,279 to Rolf Gericke, Werner Rogalski, Rolf Bergmann and Helmut Wahlig of Germany for 7(2(4-Oxo-Pyridyl) Acetamido)-3-Heterocyclic Thio-Cephalosporin Derivatives appearing in the OFFICIAL GAZETTE of July 11, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,104,001 to Morris R. Jeppson of California for Microwave Method and Apparatus for Reprocessing Pavements appearing in the OFFICIAL GAZETTE of August 1, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,105,497, to Charles Ronald Musick of Connecticut for System and Process for the Control of a Nuclear Power System appearing in the OFFICIAL GAZETTE of August 8, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,105,706 to Samuel A. Tabak and Roger A. Morrison of New Jersey for Vapor Phase Isomerization of Methyl-Substituted Aromatic Hydrocarbons Improved by Using Highly Diluted Zeolite Catalyst appearing in the OFFICIAL GAZETTE of August 8, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,105,870 to Herman P. Miller, III of California for Narrow Band Transmission System and Method appearing in the OFFICIAL GAZETTE of August 8, 1978 should be deleted since no patent was granted.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 773,363. System for Thermal Energy Storage Space, Heating and Cooling and Power Conversion. Filed Mar. 1, 1977.
Patent application 776,384. Scanning System. Filed Mar. 10, 1977.
Patent application 787,130. Cable Fed KrF Laser. Filed Apr. 13, 1977.
Patent application 787,417. Fast Helical Pin Laser. Filed Apr. 14, 1977.
Patent application 792,280. Method and Apparatus for Producing Laser Radiation Following Two-Photon Excitation of a Gaseous Medium. Filed Apr. 29, 1977.
Patent 4,043,192. Apparatus for Providing Directional Permeability Measurements in Subterranean Earth Formations. Filed June 8, 1976. Patented Aug. 23, 1977. Not available NTIS.
Patent 4,043,671. Laser System Preset Unit. Filed July 13, 1976. Patented Aug. 23, 1977. Not available NTIS.
Patent 4,043,890. Device for Measuring the Total Concentration of Oxygen in Gases. Filed June 14, 1976. Patented Aug. 23, 1977. Not available NTIS.
Patent 4,044,752. Solar Collector With Altitude Tracking. Filed Aug. 1, 1975. Patented Aug. 30, 1977. Not available NTIS.
Patent 4,044,819. Hydride Heat Pump. Filed Feb. 12, 1976. Patented Aug. 30, 1977. Not available NTIS.
Patent 4,045,724. Electromagnetic Wave Method for Mapping Subterranean Earth Formations. Filed Apr. 6, 1976. Patented Aug. 30, 1977. Not available NTIS.
Patent 4,046,666. Device for Providing High-Intensity Ion or Electron Beam. Filed May 7, 1976. Patented Sept. 6, 1977. Not available NTIS.
Patent 4,048,437. Superconducting Magnet Cooling System. Filed June 6, 1975. Patented Sept. 13, 1977. Not available NTIS.
Patent 4,049,515. Laser Isotope Separation by Multiple Photon Absorption. Filed Apr. 22, 1975. Patented Sept. 20, 1977. Not available NTIS.
Patent 4,051,202. Method for Separating Mono- and Di-Octylphenyl Phosphoric Acid Esters. Filed Nov. 17, 1975. Patented Sept. 27, 1977. Not available NTIS.
Patent 4,053,763. Method and Apparatus for Pulse Stacking. Filed May 25, 1976. Patented Oct. 11, 1977. Not available NTIS.
Patent 4,053,851. Near 16 Micron CO Sub 2 Laser System. Filed July 10, 1975. Patented Oct. 11, 1977. Not available NTIS.
Patent 4,053,852. Method and Apparatus for Generating Coherent Near 14 and Near 16 Micron Radiation. Filed July 10, 1975. Patented Oct. 11, 1977. Not available NTIS.
Patent 4,054,933. Saturating Time-Delay Transformer for Overcurrent Protection. Filed Dec. 18, 1975. Patented Oct. 18, 1977. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel, for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 664,091. Multispectral Imaging and Analysis System. Filed Mar. 5, 1976.
Patent application 774,384. Automatic Communication Signal Monitoring System. Filed Mar. 4, 1977.
Patent application 828,262. High-Torque Open-End Wrench. Filed Aug. 29, 1977.
Patent application 860,405. High Toughness-High Strength Iron Alloy. Filed Dec. 13, 1977.
Patent application 876,431. Module Failure Isolation Circuit for Paralleled Inverters. Filed Feb. 9, 1978.
Patent application 876,438. A Prosthesis Coupling. Filed Feb. 9, 1978.
Patent application 878,541. Improved Base Drive for Paralleled Inverter Systems. Filed Feb. 16, 1978.
Patent application 880,726. Wind Wheel Electric Power Generator. Filed Feb. 24, 1978.
Patent application 880,727. Biocontamination and Particulate Detection System. Filed Feb. 24, 1978.
Patent application 880,728. A Sodium Storage and Injection System. Filed Feb. 24, 1978.
Patent application 880,729. Velocity Servo for Continuous Scan Fourier Interference Spectrometer. Filed Feb. 24, 1978.
Patent application 883,090. Kine-Pak: A Self-Contained, Electrical Power Generator System. Filed Mar. 3, 1978.
Patent application 883,961. Catalysts for Imide Formation From Aromatic Isocyanates and Aromatic Diaphydrides. Filed Feb. 24, 1978.
Patent application 885,067. System for Automatically Switching Transformer Coupled Lines. Filed Mar. 9, 1978.
Patent application 889,671. Partial Interlaminar Separation System for Composites. Filed Mar. 24, 1978.
Patent application 891,243. Double-Sided Solar Cell Package. Filed Mar. 29, 1978.
Patent application 891,373, Liquid Reactant Feeder for Arc Assisted Metal Reduction Reactor. Filed Mar. 29, 1978.
Patent application 891,872. Synthesis of Multifunction Triaryltrifluoroethanes. Filed Mar. 30, 1978.
Patent application 891,875. Synthesis of Multifunction Triarylrifluoroethanes. Filed Mar. 30, 1978.
Patent application 893,382. Fluid Sample Collection and Distribution System. Filed Apr. 4, 1978. Not available NTIS.
Patent application 893,648. Water Quality Monitoring System. Filed Apr. 4, 1978.
Patent application 893,857. Method for Alleviating Thermal Stress Damage in Laminates. Filed Apr. 6, 1978.
Patent application 893,903. Redundent Operation of Counter Modules. Filed Apr. 4, 1978.
Patent application 897,828. Sweat Collection Capsule. Filed Apr. 19, 1978.
Patent application 879,840. Penetrator Nozzle. Filed Apr. 19, 1978.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent 3,693,440. Electromagnetic Flowmeter. Filed Mar. 21, 1969. Patented Sept. 26, 1972. Not available NTIS.
Patent 4,088,387. Optical Switch. Filed Feb. 22, 1977. Patented May 9, 1978.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch, General Services Div., Federal Bldg., Agricultural Research Service Hyattsville, Md. 20782

Patent application 787,177. Antibacterial Textile Finishes Utilizing Zirconyl Acetate Complexes of Inorganic Peroxides. Filed Apr. 15, 1977.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 12, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-12-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-17-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-17-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-6-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-28-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-11-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-23-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	11-24-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	5-24-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-8-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 5, 1978

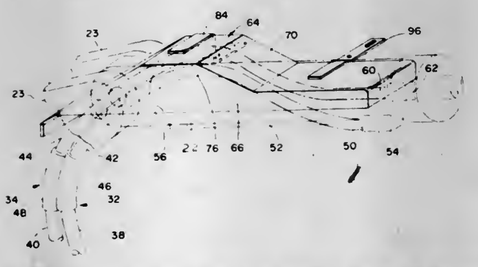
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T974,001
GUARD FOR TILT CYLINDER HOSES AND FITTINGS

James G. Neal, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 7, 1977, Ser. No. 813,727
Int. Cl.² E02F *3/70*
U.S. Cl. 214—140
3 Sheets Drawing. 7 Pages Specification



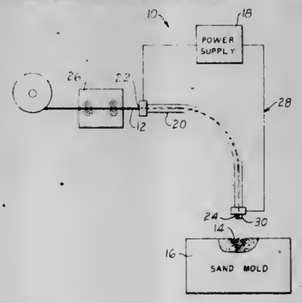
A loader vehicle having a frame including an ear, a tilt cylinder, having one end extending along one side of the ear, and pivotally connected thereto, for tilting a bucket, hydraulic hoses and fittings extending alongside the cylinder to supply hydraulic fluid thereto, and a guard for the hoses and fittings. The guard includes an inverted U-shaped cover extending over the hoses up to the ear, a plate cover segment narrower than and extending from the U-shaped cover along the other side of the ear to protect the fittings, and a plurality of brackets which connect the U-shaped cover to the tilt cylinder.

T974,002
APPARATUS AND METHOD FOR ELECTRICALLY HEATING A MOVING WIRE CONTAINING TREATING AGENTS

Bruce T. Blatzer, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 25, 1977, Ser. No. 855,036
Int. Cl.² C21D *9/62*
U.S. Cl. 219—155
1 Sheets Drawing. 7 Pages Specification

An apparatus electrically heats a wire containing treating agents to a preselected temperature while controllably passing the heated wire into molten metal of a mold. The apparatus includes an insulated guide tube which has inlet and outlet contact orifices and wire feed apparatus for urging the wire through the guide tube at a preselected rate. A power supply is connected to the inlet and outlet contact orifices and the wire is in contact with the inlet and outlet orifices and forms an electric circuit. The circuit delivers electric current to the wire of a magnitude sufficient for increasing the temperature of the wire to a preselected temperature at the outlet orifices prior to entry of the wire into the molten metal.



A method of heating the moving wire prior to entry of the wire into molten metal of a mold is provided by connecting the power supply to the wire and forming the electric circuit, urging the wire through the circuit and into the mold at a preselected rate, and heating the wire to a preselected temperature by passing electric current of a preselected magnitude through the circuit.

T974,003
CURE ACCELERATOR FOR POLYSULFIDE POLYMER BASED SEALANTS

Edward G. Millen, 246 Cold Soil Rd., Princeton, N.J. 08540

Filed Mar. 27, 1978, Ser. No. 890,432
Int. Cl.² C08F *28/00*
U.S. Cl. 528—374
No Drawing. 8 Pages Specification

Cure rate of liquid polysulfide polymer based sealants may be accelerated by incorporation of tetramethylene sulfone therein. This is particularly of importance in one part sealants cured by ZnO_2.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,750

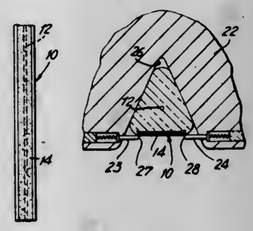
CLINICAL GLASS THERMOMETER HAVING A STEM AND A BULB INTEGRALLY FORMED THEREWITH

Seymour N. Blackman, c/o Fremo Pharmaceutical Laboratories, Inc., 111 Lenning St., S. Hackensack, N.J. 07606

Original No. 4,014,215, dated Mar. 29, 1977, Ser. No. 549,325, Feb. 12, 1975. Division of Ser. No. 453,324, Mar. 21, 1974, Pat. No. 3,884,666, which is a continuation-in-part of Ser. No. 219,308, Jan. 20, 1972, abandoned. Application for reissue Apr. 22, 1977, Ser. No. 789,794

Int. Cl.[2] G01K *5/02*

U.S. Cl. 73—371 2 Claims



1. A clinical glass thermometer having a stem of triangular cross-section, a capillary bore extending lengthwise within said stem, an opaque strip embedded within said stem and extending longitudinally thereof, and a bulb of circular cross-section, said bulb having side walls and a bottom wall formed integrally with said stem from a single piece of glass, a portion of said opaque strip extending into a side wall of said bulb, said portion of said strip in said side wall being a straight continuation of the balance of said strip in said stem, said side walls of said bulb having a thickness approximately equal to the thickness of said bottom wall, said side walls of said bulb joining said stem with no abrupt reduction of wall thickness.

Re. 29,751

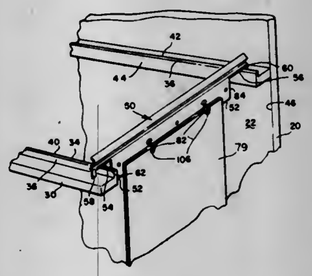
MEANS FOR FILING DOCUMENTS

Abram G. Elias, 3300 Skyline Blvd., No. 205, Reno, Nev. 89510, and Peter G. Elias, 6 Wedgewood Dr., Winnipeg, Manitoba, Canada (R3T 2J8)

Original No. 3,850,488, dated Nov. 26, 1974, Ser. No. 327,743, Jan. 29, 1973. Continuation-in-part of Ser. No. 238,040, Mar. 27, 1972, abandoned. Application for reissue Oct. 26, 1976, Ser. No. 735,100

Int. Cl.[2] A47B *63/00*

U.S. Cl. 312—184 13 Claims



1. Document filing apparatus, comprising:

a frame including rail support means and first and second elongated substantially horizontally-disposed rails each being of equal width and each having opposite inner and outer sides, said first and second rails being disposed in horizontal spaced-apart relationship with said inner sides of said rails facing each other; and

a plurality of elongated document-supporting bars each having a load carrying upper portion and a document carrying lower portion, each said upper portion extending the full length of said bar and being generally concavo-convex in cross section to provide supporting strength for said bar and to provide a relatively compact horizontal nesting relationship with other like bars positioned adjacent to each other, said lower portion being generally planar in configuration with an upper boundary thereof affixed to a lower boundary of said upper portion, *each of* said [lower portion] *bars* having first and second notches formed therein proximate the ends of said bar, said notches opening downwardly away from said upper portion for receiving respective ones of said rails when said bar is positioned thereupon, that part of said lower portion extending between said first and second notches including a plurality of fastening means each comprised of an integral flexible fastener and opening means for affixing documents to said supporting bar, [the end-most parts of said lower portion forming stops] *first and second downwardly extending stop portions on the respective ends of the bar, said stop portions being* of equal length extending in a direction longitudinal of said bar, said first and second notches each having a longitudinal length greater than the combined widths of said first and second rails and the length of one of said [stops] *stop portions* such that when said first end of said bar is raised, said bar may be moved in said longitudinal direction toward said second rail far enough that said one end may be lowered to clear said inner side of said first rail while said second notch is still engaged with said second rail, thus allowing said second notch to thereafter be disengaged from said second rail by longitudinal movement of said bar beneath said first rail and in a direction away from said second rail while said bar is tilted to an inclined position and said second end of said bar is raised slightly to clear said second rail wherein said flexible fastener and opening means includes an elongated strap having an enlarged head segment at one end *severed from said lower portion,* the other end of said strap remaining unsevered from said lower portion, the severed strap and head segment leaving a generally key-shaped opening in said lower portion whereby when said strap is used to form a loop for affixing documents to said supporting bar, said head segment may be locked within said opening by slipping said head segment through that part of the opening formerly occupied by the elongated portion of the strap.

Re. 29,752

GROUNDING CLIP FOR ELECTRICAL FIXTURES

Frank C. Jaconette, Jr., Trumbull, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

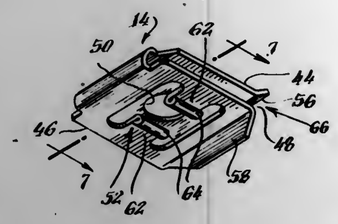
Original No. 3,810,069, dated May 7, 1974, Ser. No. 278,772, Aug. 8, 1972. Application for reissue May 5, 1976, Ser. No. 683,519

Int. Cl.[2] H01R *3/06*

U.S. Cl. 339—14 R 19 Claims

1. A grounding clip for use with an electrical fixture of the type having a grounded mounting yoke by which the fixture is secured to a mounting box with mounting screws extending through slots in the mounting yoke, said grounding clip [comprising:] *consisting of* a U-shaped spring having a first member and a second member, said members being substantially flat

planar members, said members being separated by a gap of lesser magnitude than the thickness of the mounting yoke, said first member including an aperture, said second member including screw-receiving means aligned with said aperture for engaging a mounting screw, said screw-receiving means including a pair of cantilever arms, said grounding clip being mountable on the mounting yoke of the electrical fixture with said members forcibly bearing against the mounting yoke to



establish electrical continuity therebetween and with said aperture and said screw-receiving means aligned with one of the mounting yoke slots to receive a mounting screw, said cantilever arms being deflectable *and having ends which, in plan, follow straight-line paths at least in the regions where they contact the threads of the mounting screw* to slide over and forcibly abut against the threads of the mounting screw in maintaining electrical continuity therebetween as the mounting screw is axially engaged into said screw-receiving means.

Re. 29,753

ASBESTOS-FREE JOINT COMPOUNDS

Terrance L. Williams, Crystal Lake, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Original No. 3,891,453, dated Jun. 24, 1975, Ser. No. 382,973, Jul. 26, 1973. Application for reissue Dec. 27, 1976, Ser. No. 754,309

Int. Cl.² C04B *11/16*

U.S. Cl. 106—85 **12 Claims**

1. A composition which when mixed with water forms a non-leveling joint compound having properties suitable for use in finishing joints between wallboards [even when], *said composition being* free of asbestos fibers[,] *and* comprising the following ingredients in amounts based on the total dry weight of the composition:

a filler selected from the group consisting of calcium carbonate and calcium sulfate in an amount of between about 37 and 92 percent;

a binder in an amount of between about 1 and 7 percent;

attapulgus clay in an amount of between about 0.5 and 6 percent; and

at least one ingredient selected from the group consisting of;

a water-holding agent in an amount of between about 0.1 and 2.0 percent; and

a slip-inducing colloid in an amount of between about 0.1 and 2.0 percent selected from the group consisting of modified montmorillonite clay gel and xanthan gum,

said joint compound being characterized by having desirable working properties including non-leveling and slip properties which heretofore were achieved through the addition of asbestos and which properties are provided herein by substituting attapulgus clay to provide the pseudoplasticity necessary for obtaining said desired properties while avoiding the health hazards associated with the use of asbestos.

Re. 29,754

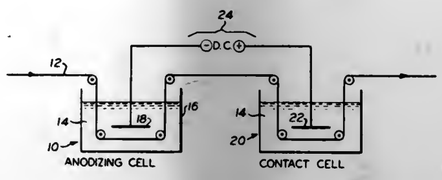
PROCESS AND APPARATUS FOR CONTINUOUSLY ANODIZING ALUMINUM

Howard A. Fromson, Rogues Ridge Rd., Weston, Conn. 06880

Original No. 3,865,700, dated Feb. 11, 1975, Ser. No. 361,720, May 18, 1973. Application for reissue Jan. 24, 1977, Ser. No. 762,085

Int. Cl.² C25D *7/06, 11/02, 11/04*

U.S. Cl. 204—28 **11 Claims**



2. In a process for continuously electrolytically anodizing aluminum, the improvement which comprises introducing anodizing direct current from two or more sources in a cathodic contact cell having therein anodes connected to said sources of direct current, the aluminum having an anodized oxide coating formed thereon before entering said cell through the action of the direct current introduced in the contact cell itself.

Re. 29,755

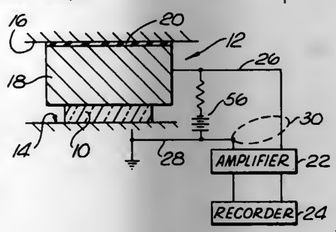
PIEZOELECTRIC TRANSDUCER HAVING A CRYSTAL ORIENTATION SELECTED FROM (XYL) + 31.7° (±1°) AND (XYL) + 76.7° (±1°) OR SYMMETRICAL EQUIVALENT

George D. Perkins, Los Angeles County, and John R. Colbert, San Diego County, both of Calif., assignors to Bell & Howell Company, Pasadena, Calif.

Original No. 3,735,161, dated May 22, 1973, Ser. No. 211,200, Dec. 23, 1971. Application for reissue Apr. 25, 1977, Ser. No. 790,513

Int. Cl.² H01L *41/18*

U.S. Cl. 310—329 **9 Claims**



1. In a piezoelectric device including at least one transducer element comprising a piezoelectric crystal, the improvement according to which said piezoelectric crystal is cut from a larger crystal of lithium niobate, said cut crystal having a crystal orientation selected from the following:

[(yxl) +38.6°(±1°), (zxtl) +60°(±1°)/+51.4°(±1°),] (xyl) +31.7°(±1°), (xyl) +76.7°(±1°), or a symmetrical equivalent thereof.

Re. 29,756

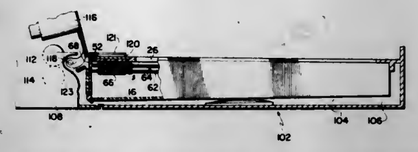
PHOTOGRAPHIC FILM ASSEMBLAGE AND APPARATUS

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original No. 3,748,984, dated Jul. 31, 1973, Ser. No. 213,989, Dec. 30, 1971. Application for reissue Jul. 2, 1976, Ser. No. 702,047

Int. Cl.² G03B *17/52*

U.S. Cl. 354—85 **34 Claims**



44. A photographic film assemblage for use with a photographic apparatus of the type including means defining a chamber into which said film assemblage is adapted to be inserted and means on the apparatus positioned adjacent a path of travel of a film assemblage being inserted into the chamber for opening an end cap associated with said film assemblage, said film assemblage comprising:

a film container having a withdrawal slot at one end thereof;

a plurality of film units within said container adapted to be extracted therefrom through said withdrawal slot;

end cap means coupled to said container for movement between a closed position, wherein said end cap means is in alignment with and in closing relation to said withdrawal slot, and an open position, wherein said end cap means is out of alignment with said withdrawal slot, said end cap means including a portion thereof configured to engage the end cap opening means on the apparatus for moving said end cap from said closed position to said open position in response to inserting said film assemblage into the chamber; and

a flexible opaque sheet positioned between said end cap means and said withdrawal slot for light sealing said withdrawal slot.

PLANT PATENTS

GRANTED SEPTEMBER 5, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,296

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Isselburg, Fed. Rep. of Germany

Filed Apr. 12, 1977, Ser. No. 786,854
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct African violet known by the cultivar name Indiana and particularly characterized as to uniqueness by the combined characteristics of large pink flowers on strong upright stems, the first flash of flowers being on 6–8 stems with 5–7 additional stems therebelow with flowers at the bud stage; up to 12 non-dropping flowers on each stem; medium green leaves, and by its vigorous growth, with full flowering appearing in 8–10 weeks.

4,297

ROSE PLANT

Samuel McGredy, IV, Auckland, New Zealand, assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Sep. 6, 1977, Ser. No. 830,478
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—28 1 Claim

1. The new and distinct variety of Floribunda bush rose plant substantially as herein illustrated and described, which is characterized most especially in its high resistance to mildew and in that the rich orange scarlet color of its blooms persists substantially without change from the opening of the bud until the petals fall, said blooms being double, with from about 35 to about 45 petals and from six to eight petaloids.

PATENTS

GRANTED SEP. 5, 1978

ERRATA

For CLASS	See PATENT NO.
036–002 R	4,110,845
137–435	4,110,849
405–131	4,110,988
405–248	4,110,989
405–014	4,110,990
405–157	4,110,991
405–147	4,110,992
405–228	4,110,993
405–158	4,110,994
060–469	4,111,003
060–276	4,111,010
029–243.51	4,111,080
353–078	4,111,149
237–001 A	4,111,259
400–208	4,111,293
137–557	4,111,342
366–338	4,111,402
219–497	4,111,443
350–189	4,111,558
085–009 R	4,111,580
408–110	4,111,588
422–026	4,111,654
422–124	4,111,655
422–048	4,111,659
423–008	4,111,660
422–117	4,111,661
422–231	4,111,662
422–191	4,111,663
422–017	4,111,830
422–012	4,111,831
521–030	4,111,856
528–226	4,111,857
521–025	4,111,858
521–033	4,111,859
521–084	4,111,860
521–123	4,111,861
521–055	4,111,862
521–063	4,111,863
521–117	4,111,864
521–137	4,111,865
521–053	4,111,866
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528–361	4,111,908
528–123	4,111,909
528–196	4,111,910

ERRATA—continued

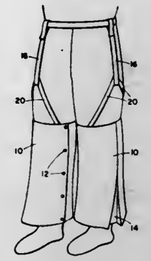
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528–264	4,111,919
526–006	4,111,920
528–338	4,111,921
526–292	4,111,922
544–224	4,111,935
544–259	4,111,936
562–401	4,111,980
562–444	4,111,981
562–419	4,111,982
562–535	4,111,983
562–538	4,111,984
562–546	4,111,985
562–549	4,111,986
562–401	4,111,987
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568–855	4,112,001
568–861	4,112,004
261–092	4,112,015
338–322	4,112,250
219–216	4,112,280
219–283	4,112,281
307–279	4,112,296
328–032	4,112,368
250–401	4,112,397
343–112 D	4,112,421
358–127	4,112,445

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GRANTED SEPTEMBER 5, 1978

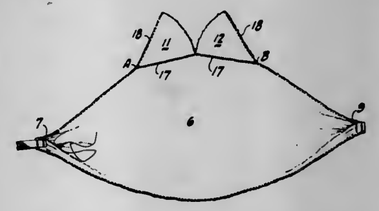
GENERAL AND MECHANICAL

4,110,845
RAIN CHAPES
Marge Chellis, 3388 Apache Ave., San Diego, Calif. 92117
Filed May 2, 1977, Ser. No. 792,763
Int. Cl.² A41D *17/00*
U.S. Cl. 36—2 R **1 Claim**



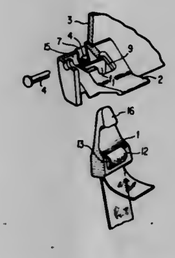
1. A rain chape being attachable to the leg in use and quickly removable and foldable into a mode occupying a minimum of space, said chape comprising:
(a) a rectangular flexible sheet member;
(b) said sheet member having a single vertical pleat therein traversing the height of the sheet and being stitched at the upper edge of the sheet and open at the bottom to permit the flaring of the lower edge of the sheet in use to cover the shoe, but also urging the pleat portion of the flexible sheet member into a flat-lying position for unbunched folding and storage;
(c) a pair of straps attached to the upper edge of said sheet member on opposite sides of said pleat, said straps being angulated together and meeting at the top and therebeing joined by another strap having means for retaining same to the waist of a user, all of said straps lying in the same plane as said sheet member;
(d) the vertical edges of said rectangular sheet member having mating fastening means to permit the fastening of the vertical edges together around the leg of a user to define a flared cylinder, whereby said chape can be engaged around the leg of a user and flare over the shoe to protect the leg and foot from rain, and between uses be folded into a minimum space due to the flat-lying nature and rectangular shape of the chape.

4,110,846
COMBINED SCARF AND HOOD
Robert Hernandez, 120 Andrews Ct., Turlock, Calif. 95380
Filed May 20, 1977, Ser. No. 799,115
Int. Cl.² A42B *1/04*
U.S. Cl. 2—203 **3 Claims**



1. A combined scarf and hood comprising a sheet of cloth originally of approximately triangular shape in plan providing three apices but truncated to sever one apex and provide a margin, a pair of hood panels of cloth, means for securing said hood panels to adjoin each other along a central seam, means for securing said adjoined hood panels to said sheet along said margin with said hood panels and said sheet forming a pocket for the user's head, a securing strap, means for securing one end of said strap to the second of said apices, a two-part fastening device, means for securing one part of said fastening device to the other end of said strap, and means for securing the other part of said fastening device to the third one of said apices.

4,110,847
QUICK FASTENING AND ADJUSTING SAFETY CLASP ESPECIALLY FOR SAFETY HELMETS
Alain Dera, Rueil-Malmaison, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Jun. 2, 1977, Ser. No. 802,380
Claims priority, application France, Jun. 2, 1976, 76 16605
Int. Cl.² A42B *7/00*
U.S. Cl. 2—421 **5 Claims**



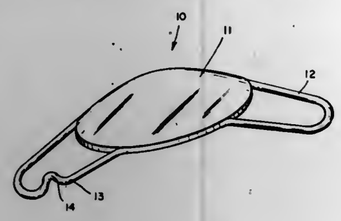
1. A rapidly attachable and adjustable safety buckle for a chin-strap of a protective helmet, comprising:
a catch molded from rigid plastic and attached at one end to the outer wall of a helmet shell by means of a horizontal axis member allowing limited rotational movement of said catch, an inner face of said catch having a trapezoidal cavity, the sides of which converge towards the horizontal axis, and the outer face of which is pierced at right angles to the said point of convergence by an opening passing through the entire thickness of said catch; and
a hook molded from rigid plastic, one end of which is attached to the chin-strap and the other end exhibiting a trapezoidal shape matching that of said cavity in said catch, the other end of the hook terminating in a protuberance fitting the opening which passes through said catch.

4,110,848
INTRAOCULAR LENS FOR IMPLANTATION INTO THE POSTERIOR CHAMBER OF A HUMAN EYE
Ronald P. Jensen, 4156 Dorset Pl., Pasadena, Calif. 91103, assignor to Ronald P. Jensen, Glendale, Calif.
Filed May 6, 1977, Ser. No. 794,467
Int. Cl.² A61F *1/16, 1/24*
U.S. Cl. 3—13 **4 Claims**

1. An intraocular lens for implantation in the posterior chamber of a human eye, said intraocular lens comprising:
a. a plano-convex lens, which is formed from an optical material that is suitable for an implantable lens, which is adapted to be inserted into the posterior chamber of the human eye within the capsular membrane thereof;
b. a first supporting loop, which is formed from a material that is suitable for implantation into the eye, mechanically coupled to the peripheral edge of said plano-convex lens and disposed at an angle in the range of 0° to 25° to the plane surface of said plano-convex lens so that its end

portion is below the plane surface of said plano-convex lens, said first supporting loop adapted to secure said plano-convex lens rigidly and permanently in the posterior chamber of the human eye; and

c. a second supporting loop, which is formed from a material that is suitable for implantation into the eye, mechanically coupled to the peripheral edge of said plano-convex lens and oppositely disposed to said first supporting loop, said second supporting loop being also disposed at an angle in



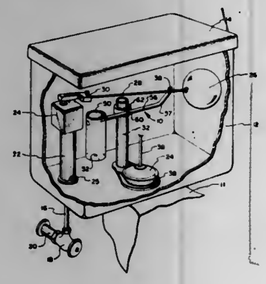
the range of 0° to 25° to the plane surface of said plano-convex lens so that its end portion is below the plane surface of said plano-convex lens and having a notch which is disposed between its end portion and the peripheral edge of said plano-convex lens so that a temporary securement to the iris of the human eye may be accomplished, said second supporting loop also adapted to secure said plano-convex lens rigidly and permanently in the posterior chamber of the human eye.

4,110,849

APPARATUS AND METHOD FOR CONSERVING WATER

Edward B. LaFaver, 3116 Maple Way, Granger, Utah 84119

Filed Mar. 7, 1977, Ser. No. 774,836
Int. Cl.[2] A47K *1/34, 5/02;* A61B *19/00*
U.S. Cl. 137—435 **8 Claims**



1. A water saver for a toilet tank having a water-supported toilet tank float mounted on a toilet tank float lever arm and operable therethrough to open a water inlet valve into the toilet tank upon lowering the toilet tank float from an elevated position by draining water from the toilet tank, the water saver comprising:

means for restraining the toilet tank float at an elevated position while water is draining from the toilet tank during flushing of the toilet comprising:

a water saver lever arm;

a water-fillable weight on one end of the water saver lever arm;

toilet tank float engagement means on the other end of the water saver lever arm;

pivot support means in the toilet tank for pivotally supporting the water saver lever arm at a position between the water-fillable weight on the one end of the water saver lever arm and the toilet tank float engagement means on the other end of the water saver lever arm; and

an aperture in the water-fillable weight to accommodate passage of water into and out of the water-fillable weight; and

means for releasing the toilet tank float after a major portion of the water has drained from the toilet tank.

7. A method for conserving water during a flushing cycle of a tank-type toilet by inhibiting inflow of water into the toilet tank during a substantial portion of the flushing cycle of the toilet comprising the steps of:

pivotally mounting a water saver lever arm inside the toilet tank, the toilet tank including a toilet tank float mounted on a toilet tank float lever arm and a water inlet valve operated through the toilet tank float lever arm by movement of the toilet tank float, the water saver lever arm having an engagement means on one end for engaging the toilet tank float and a water-fillable weight on the other end, the water-fillable weight having a small drain hole therein;

engaging the toilet tank float with the water saver lever arm engagement means;

filling the water-fillable weight with water;

conserving water by restricting inflow of water into the toilet tank from the water inlet valve while draining the toilet tank during flushing of the toilet by holding the toilet tank float above the diminishing water level in the toilet tank with the weight of the water in the water-fillable weight until a substantial portion of the water in the toilet tank has been drained therefrom; and

draining water from the water-fillable weight thereby decreasing the weight of the same to accommodate lowering of the toilet tank float and toilet tank float lever arm thereby opening the water inlet valve to allow the inflow of water into the toilet tank.

4,110,850

FLUSH VALVE ASSEMBLY

Thomas C. Tedei, 3015 Rose St., Franklin Park, Ill. 60131

Filed Jul. 21, 1977, Ser. No. 817,721
Int. Cl.[2] E03D *1/34, 5/02;* A61B *19/00*
U.S. Cl. 4—326 **8 Claims**

1. A flush valve assembly for a toilet tank having a drain valve positioned in the bottom wall thereof and an overflow pipe connected to the drain valve comprising:

an elongated valve body;

inlet means formed in said valve body;

valve means for controlling the opening and closing of said inlet means;

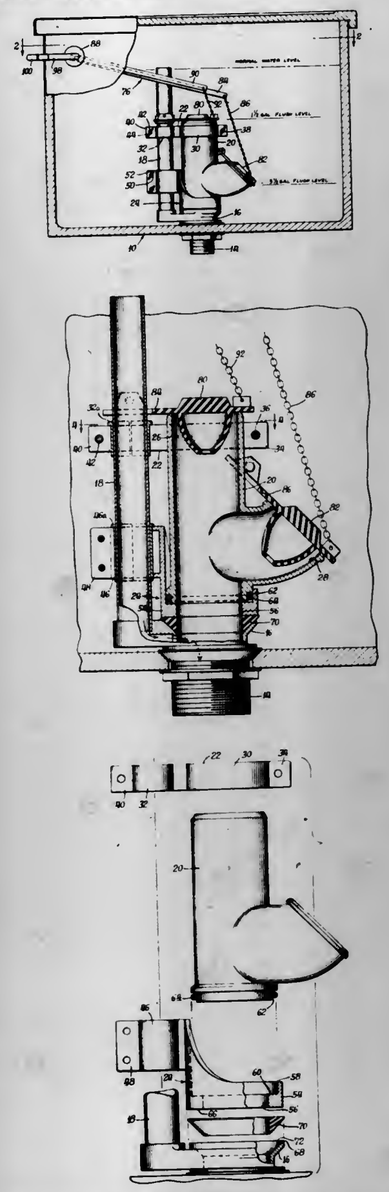
an upper bracket member associated with said valve body and including means for connecting said bracket member to the overflow pipe;

a second lower bracket member associated with said valve body;

said second bracket member having first and second portions, said first portion including means for attaching said bracket member to the overflow pipe and said second portion including means for attaching to and supporting said valve body;

means defining an opening through said second portion of said second bracket member for establishing flush communication between said valve body and the drain valve;

cooperating means on the upper side of said second bracket member and the lower end of said valve body for effecting a sealing engagement therebetween;



means defining a lower face portion on the underside of said second bracket member adapted to be positioned on the drain valve.

4,110,851

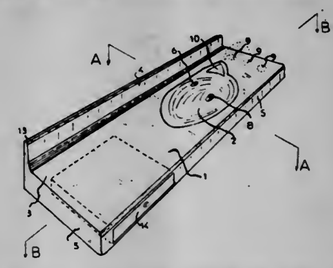
SANITARY APPLIANCE

Bernard Rapatel, 43 boulevard Ernest Renan, Firminy, Loire, France (42700)

Filed Dec. 15, 1976, Ser. No. 750,900
Int. Cl.[2] A47K *1/04;* E03C *1/18*
U.S. Cl. 4—166 **1 Claim**

1. A sanitary lavatory and vanity fixture combination of an integrally formed polyester reinforced with fiber glass construction comprising an elongated shelf top having a large vanity surface area, at least one ovoid basin integrally formed

in said shelf and flush with said shelf top, said basin having a depth to provide a maximum water level for a minimum water depth, a first drain means and a second drain means in said basin where said first drain means is vertically below and in line with said second drain means, an overflow duct affixed to said basin for connecting said first drain means to said second drain means, said overflow duct having an outlet drain means, a raised wall means formed along one edge of the shelf top and having a longitudinal groove formed along an upper edge, a pair of opposited end wall means formed on opposite ends of said shelf, a front wall means formed on said shelf top opposite said raised wall means, said pair of opposited end wall means and said front wall means having a height measured from said shelf top which is greater than the depth of said basin measured from said shelf top, whereby said pair of opposited end wall means and said front wall means comprise a stable base for said fixture, at least two rigid reinforcing plate means for reinforcing said shelf top, said rigid reinforcing plate means being imbedded in the underside of said shelf means in a region adjacent said raised wall means, at least two supporting brackets bonded to said reinforcing plate means to form an integral unit with said rigid reinforcing plate means, each of said brackets being adapted for attachment to a vertical support, said fixture including tap elements connected to said shelf top in the region of said basin and a soap holder means incorporated beside said basin, said soap holder means being in a plane which is lower than that of the shelf top.



4,110,852

POOL STRUCTURE

Dennis D. Kline, 2148 W. Wood Dr., Phoenix, Ariz. 85029

Filed Oct. 28, 1977, Ser. No. 846,413
Int. Cl.[2] E04H *3/16, 3/18*
U.S. Cl. 4—172 **8 Claims**

1. A pool structure comprising:

(a) an enclosure including a bottom wall and an integral upstanding endless wall configured to define an upwardly opening pool compartment for containing water, said upstanding endless wall being of spaced double panel construction to provide an equipment compartment therein which endlessly surrounds said pool compartment;

(b) a first hydro-jet water distribution manifold within said equipment compartment and having a plurality of nozzles extending therefrom into said pool compartment below the water line thereof;

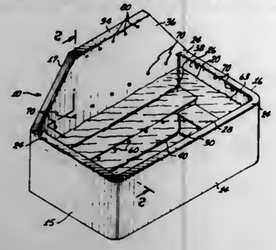
(c) a second hydro-jet water distribution manifold within said equipment compartment and having a plurality of nozzles extending therefrom into said pool compartment above the water line thereof;

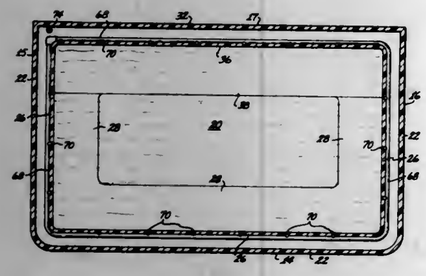
(d) a header mounted in said equipment compartment and coupled to said first and said second hydro-jet water distribution manifolds;

(e) means within said equipment compartment and coupled between said pool compartment and said header for drawing water from said pool compartment and supplying that water under pressure to said header; and

(f) means connected to said header and to said first and said

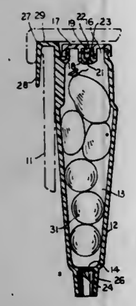
second hydro-jet water distribution manifolds for selectively supplying water under pressure from said header to





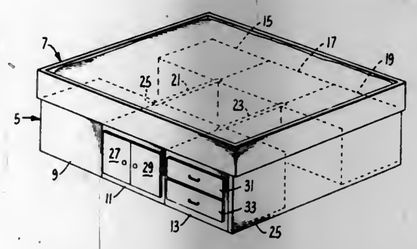
said first and said second hydro-jet water distribution manifolds.

4,110,853
DISPENSING DEVICE
Luis dela Cruz, 5325 Bonita Dr., San Diego, Calif. 92114
Filed Aug. 29, 1977, Ser. No. 828,308
Int. Cl.² E03D 9/03
U.S. Cl. 4—227 **3 Claims**



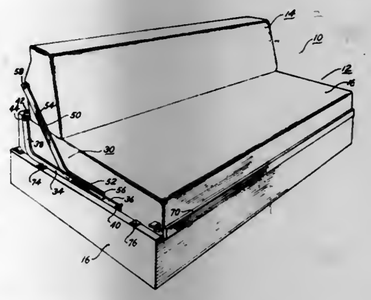
1. A device for dispensing in liquid form a normally solid purifying and disinfecting material, which device comprises:
- a container defining a storage chamber;
- a mounting means for detachably mounting the container within a toilet bowl tank;
- said container having a port in its base communicating with said chamber, said container, mounting means and port being relatively dimensioned and positioned such that said port is disposed slightly above the lowest flush water level within a toilet bowl tank when said container is mounted in its normal operating mode;
- a loading opening in the top of said container communicating with said chamber and including a cap detachably mounted in said opening;
- a check valve disposed in the upper portion of said container and communicating with said chamber and being disposed above the uppermost water level in said toilet bowl tank, said check valve comprising a ball located vertically above and blocking a passage that communicates the chamber with the upper ambient air of the tank and being actuated in response to a flush flow entering through said port which flow dissolves solid material in said chamber and releases a purifying and disinfecting liquid into the toilet bowl upon the emptying of the toilet tank; and wherein the port in the base of the container comprises a plurality of holes and including a depending conduit affixed to said container surrounding said port and extending downwardly to a position near the low water level in said toilet bowl tank.

4,110,854
MODULAR BASE FOR WATERBED OR THE LIKE
Robert H. Sjolie, 346 Charcot Ave., San Jose, Calif. 95131
Filed Oct. 3, 1977, Ser. No. 838,818
Int. Cl.² A47C 7/00; A47G 9/00
U.S. Cl. 5—2 R **5 Claims**



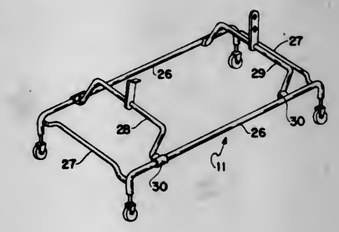
1. A modular support for a waterbed or the like comprising in combination:
- a. six modules of generally cubical construction arranged in two rows and having front faces defining the sides of the waterbed;
- b. an essentially hollow center space between the two rows of modules at the center of the bed;
- c. notches at all interior corners of abutting modules;
- d. two boards extending from the modules on one side of the waterbed to the modules on the opposite side of the waterbed and being engaged by said notches.

4,110,855
CONVERTIBLE SOFA-BED UNIT
Donald J. Acker, Elkhart, Ind., assignor to J.F. Enterprises, Inc., Wakarusa, Ind.
Filed Sep. 8, 1977, Ser. No. 831,606
Int. Cl.² A47C 17/00
U.S. Cl. 5—45 **10 Claims**



1. A convertible sofa-bed unit comprising an elongated, horizontal seat section having a supporting frame for a seat, a back section being substantially the same length as said seat section and positioned vertically upwardly from the rear of said seat section and being movable from said position to a horizontal position along the forward edge of said seat section, an operating mechanism at each end of said sections interconnecting said sections, each mechanism including a first arm having a member in a generally horizontal position pivotally connected to the end of said seat section toward the forward edge thereof and a member in a generally vertical position rigidly connected at one end to the rear end of said first member and pivotally connected at the other end to the lower portion of the respective end of said back section, a second arm connected at one end to the end of said seat section rearwardly from the connection between the seat section and said first arm and at the other end to the back section above the connection between said back section and said first arm, said arms pivoting forwardly with said back section to a position at which said arms are in a generally horizontal position, and a support means for said first arm connected to the frame of said seat section near the forward edge thereof for supporting said back section in a horizontal position along the forward edge of said seat section, with said first arm in contact with said support means and with said pivotal connection of said first arm and said back section being disposed forwardly of the pivotal connection of said second arm and said back section.

4,110,856
HOSPITAL BED
Roland A. Benoit, Danielson, and Edmond P. Guillot, Putnam, both of Conn., assignors to InterRoyal Corporation, New York, N.Y.
Filed Apr. 20, 1977, Ser. No. 789,043
Int. Cl.² A61G 7/10
U.S. Cl. 5—68 **17 Claims**



1. In a hospital bed described in upright orientation and operable with at least one IV-tube support rod, the bed including an upper frame for supporting a mattress, said upper frame having opposite head-end and foot-end sections and an intermediate thigh section, which sections are each tiltable relative to the others, said bed further including means for tilting each section, and a middle frame for pivotally supporting said upper frame sections, the improvement in combinations therewith wherein said middle frame comprises two longitudinal beams having head and foot ends corresponding to said upper frame ends, said head-end of the middle frame comprising a "U" shaped tubular member, with the bottom of the "U" extending transverse of and fixed to the head ends of said beams, and the arms of the "U" extending generally upward, each arm of the "U" including an opening for receiving and holding in the bore thereof said IV-tube support rod.

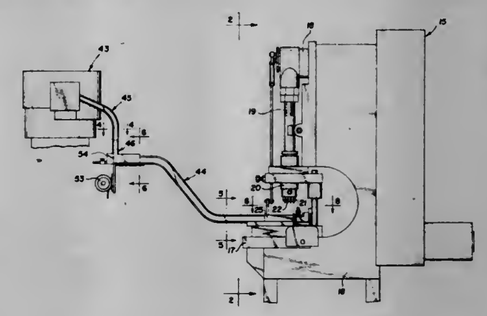
4,110,857
RESILIENT FOAM CUSHION STRUCTURE
Peter George Banister, Lake Elmo, Minn., assignor to Conwed Corporation, St. Paul, Minn.
Filed Jun. 21, 1976, Ser. No. 698,428
Int. Cl.² A47C 27/15; A47G 9/00; A61G 7/06
U.S. Cl. 5—337 **9 Claims**

1. A resilient foam cushion structure comprising at least two pairs of foam sheets, each said pair comprising first and second foam sheets of substantially uniform thickness, a first plurality of spaced protuberances of a predetermined height extending from one face of each said first sheet and aligned depressions in the other face thereof, said first plurality of protuberances having substantially flat regions in a plane parallel to said first foam sheet, said second foam sheet having a second plurality of spaced protuberances of substantially said predetermined height extending from one face thereof and aligned depressions in the other face thereof, said second plurality of protuberances having substantially flat regions in a plane parallel to said second foam sheet, said first plurality of protuberances facing



said second foam sheet and said second plurality of protuberances facing said first foam sheet, the arrangement of said protuberances permitting said second plurality of protuberances to fit between said first plurality of protuberances with their flat regions abutting said first foam sheet, and permitting said first plurality of protuberances to fit between said second plurality of protuberances with their flat region abutting said second foam sheet and the spacing between the nearest points of at least some of the sidewalls of adjacent protuberances from said first and second plurality of protuberances being less than said predetermined height.

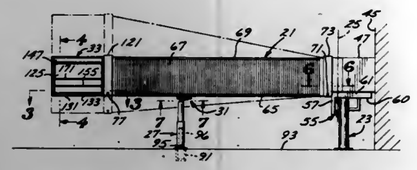
4,110,858
LOCK NUT FORMING APPARATUS
Jack R. Kerr, 2208 Irving Blvd., Dallas, Tex. 75207
Filed Aug. 15, 1977, Ser. No. 824,342
Int. Cl.² B21D 53/24; B21K 1/70
U.S. Cl. 10—72 R **12 Claims**



1. Apparatus for forming lock nuts comprising
- a reciprocating ram; a head on said ram carrying at least one punch; means for reciprocating said ram;
- an axial feed track for guiding axially aligned nuts in a single transverse row under said ram punch, whereby one side wall of a nut is engaged by said punch; said axial feed track being disposed for gravity feed of the nuts;
- an ejector-stop mounted for reciprocating movement, in the plane of said row of nuts, under said ram and transverse to said row; means for reciprocating said ejector-stop in synchronism with the reciprocation of said ram; said ejector-stop being effective as an ejector to displace at least one lead nut from said row, and being effective simultaneously as a nut stop to stop axial movement of the following nuts in said row;
- a lateral feed track disposed for gravity feed of a row of side-by-side nuts to said axial feed track;
- a feed transfer speed coupler connecting the outlet of said lateral feed track and the inlet of said axial feed track; said speed coupler converting the lateral gravity feed of nuts

to axial feed of nuts; a vibrator mounted for vibrating said speed coupler and said axial feed track; and air jet means associated with said speed coupler for directing jets of air against one face of a nut therein to urge initial axial feed of the nut into said axial feed track.

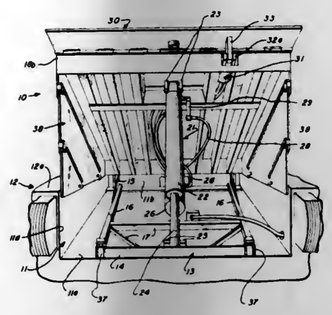
4,110,859
PASSENGER LOADING RAMP
Robert D. Lichti, 3318 Warwood Rd., Lakewood, Calif. 90712
Filed Nov. 7, 1977, Ser. No. 849,502
Int. Cl.² E01D *1/00*
U.S. Cl. 14—71.5 **13 Claims**



1. A passenger loading ramp for transferring passengers between a terminal and a craft at a parking station spaced a selected distance therefrom and comprising:
- a first support adjacent said terminal;
- a second support disposed intermediate said first support and said parking station;
- a rigid walkway projecting from said first support, over said second support and to said selected location;
- cover means covering said walkway;
- mounting means for mounting one end of said walkway from said first support and including vertical and horizontal pivot means for pivoting about respective vertical and horizontal axes;
- elevating means on said second support for pivoting said walkway about said horizontal axis for raising and lowering the free extremity of said walkway;
- swing means coupled with said walkway and including swing drive means for pivoting said walkway about said vertical axis;
- a cab carried in cantilever fashion from said free extremity of said walkway and including a doorway opening to one side thereof to mate with a craft parked at said parking station; and
- leveling means coupled between said first support and cab and responsive to rotation of said walkway about said horizontal pivot axis to maintain said cab level whereby said swing drive means may be actuated to rotate said walkway about said vertical axis and swing said free extremity and said cab to one side of said parking station, said craft driven into said station, said elevating means actuated to pivot said walkway about said horizontal axis to adjust said cab to the desired level for said craft and said swing drive actuated to swing the free extremity of said walkway toward said craft to mate therewith.

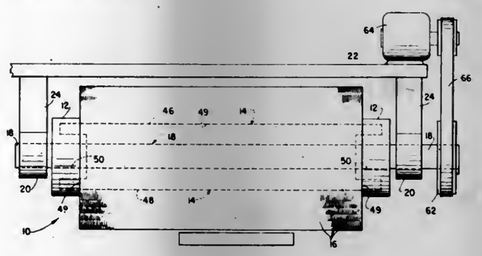
4,110,860
LEVELER ASSEMBLY FOR A LOADING DOCK
Robert O. Neff, Milwaukee; Lynn O. Grunwald, Cudahy; Roderick B. Potter, Milwaukee, and Norbert Hahn, Cudahy, all of Wis., assignors to Rite-Hite Corporation, Cudahy, Wis.
Filed Jul. 26, 1977, Ser. No. 819,046
Int. Cl.² B65G *69/24*
U.S. Cl. 14—71.7 **7 Claims**

1. A leveler assembly for use within a pit formed in the platform surface of a loading dock, the pit having a base recessed from the platform surface, a rear wall, an open top, and an open front side adjacent the front of the loading dock; said leveler assembly comprising a stationary frame adapted to be anchored within the pit, said frame having a front section positionable adjacent the pit open front side and recessed from the plane of the platform surface, and a rear section positionable adjacent the pit rear wall and having an elevated portion adapted to be disposed adjacent to but beneath the plane of the platform surface; a deck member hingedly mounted on the elevated portion of the frame rear section, the periphery of said deck member being adapted to conform substantially to the configuration of the pit open top, said deck member being adapted to normally assume a neutral position of hinged adjustment wherein the upper surface of said deck member is adapted to be substantially coplanar with the platform surface and a front edge of the upper surface is adjacent the pit open



front side; a hydraulic piston-cylinder unit having an exposed piston end hingedly connected to said frame front section and a closed cylinder end hingedly connected to the underside of said deck member at a location spaced rearwardly a substantial distance from the front edge of said dock member wherein the piston-cylinder unit extends angularly upwardly and rearwardly from said frame front section for all positions of hinged adjustment of said deck member; said control means for regulating the hydraulic fluid pressure within the cylinder adjacent the closed end thereof and the orientation of said dock member relative to the platform surface.

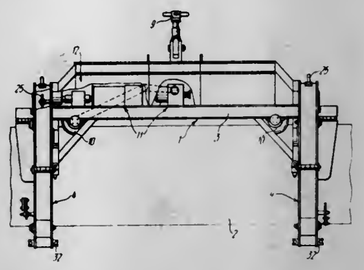
4,110,861
TIRE CLEANING APPARATUS
Daniel Pecora, 456 Kensington Ct., Palatine, Ill. 60067
Filed May 6, 1977, Ser. No. 794,563
Int. Cl.² B60S *3/06*
U.S. Cl. 15—53 B **5 Claims**



1. An improved tire cleaning apparatus for a car wash facility, said apparatus comprising:
- a shaft;
- a pair of split end adapters each of said pair of adapters being coupled to said shaft, said split end adapters comprising a pair of semi-circular sections coupled together into a circular configuration by a pair of threaded bolts, said split end adapters frictionally engaging the shaft;
- core receiving means positioned within each of said pair of adapters;
- a core formed of two semi-circular sections coupled to the core receiving means of the pair of split end adapters;

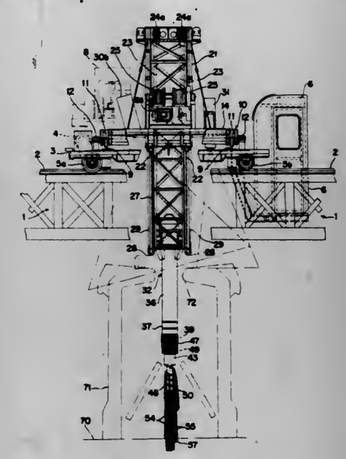
- a plurality of brush filament assemblies coupled to the core sections;
- a plurality of retaining screws coupled to each pair of split end adapters and positioned to retain the core within the core receiving means; and
- rotary motion means coupled to the shaft for imparting rotary motion thereto.

4,110,862
MACHINE FOR CLEANING OUTER SURFACE OF PIPES OF A MAINLINE
Vladimir Lukyanovich Buzhinsky, ulitsa Shafeeva 12/1, kv. 127; Konstantin Egorovich Raschepkin, ulitsa R. Zorge 37, kv. 67; Mikhail Grigorievich Dunjushkin, ulitsa R. Zorge 52/1, kv. 78; Gennady Tikhonovich Lysogorsky, prospekt Oktyabrya, 125, kv. 40; Rustem Ibragimovich Valeev, prospekt Oktyabrya 111/3, kv. 52; Yakov Arkadievich Nisenbaum, prospekt Oktyabrya 53, kv. 21, and Deviz Faizrakhmanovich Ikhsanov, ulitsa Tajurupy 110, kv. 77, all of Ufa, U.S.S.R.
Filed Feb. 18, 1977, Ser. No. 770,033
Claims priority, application U.S.S.R., Feb. 23, 1976, 2331701
Int. Cl.² B08B *9/02*
U.S. Cl. 15—88 **7 Claims**



1. Apparatus mountable on a pipeline for cleaning the outer surfaces of the pipeline comprising, a self-propelled carriage mountable on a pipeline having means for travelling axially on the pipeline for cleaning outer surfaces thereof, at least one hollow annular casing fixed to said carriage for travelling with said carriage axially of said pipeline, said casing comprising an upper half-ring connected to the carriage and a split, lower half-ring made of two parts each pivotally connected to the upper half-ring and having distal ends operable to a spaced apart position constituting an open position for accepting the pipeline therebetween when mounting the carriage on the pipeline and when dismounting the carriage and operable to a closed position enclosing the pipeline circumferentially, a rotor disposed in said casing for travelling therein circumferentially of the pipeline when the casing lower-ring is closed, said rotor including two half-rings, one of said rotor half-rings having distal ends operable to an open position with said casing lower half-ring and to a corresponding closed position, means for driving the rotor rotationally in said casing as said carriage travels axially of said pipeline, and said rotor having means for mounting cleaning tools angularly spaced thereon extending outwardly of said casing for engaging and cleaning the pipeline as said rotor travels circumferentially of said pipeline.

4,110,863
APPARATUS FOR CLEANING INNER SURFACES OF MOULDS
Shigeaki Fujimori, Hirakata; Shigekazu Hirata, Omihachiman, and Akira Kitamura, Osaka, all of Japan, assignors to Osaka Fuji Kogyo, Ltd., Amagasaki, Japan
Filed May 16, 1977, Ser. No. 797,378
Claims priority, application Japan, May 19, 1976, 51/58433
Int. Cl.² B08B *9/08*
U.S. Cl. 15—104.1 C **3 Claims**

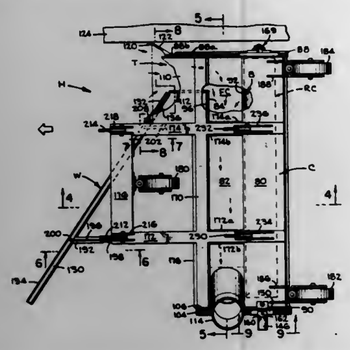


1. An apparatus for cleaning inner surfaces of moulds comprising a travelling deck for movement relative to moulds to be cleaned, a travelling club truck movably mounted on said deck for movement transverse to said movement of said travelling deck, a travelling truck movably mounted on said club truck for movement transverse to said movement of said club truck, a swivel ring rotatably mounted on said travelling truck for movement about a substantially vertical axis, means for swivelling said ring, guiding means mounted on said swivel ring, and an elongated cleaner assembly elevatably supported in said guiding means, said cleaner assembly comprising a driving means box having a downwardly extending cleaner body, a cleaner shaft having a plurality of cleaning members and being rotatably and oscillatably connected to the lower end of said cleaner body, means for rotating said cleaner shaft, and means for oscillating said cleaner shaft.

4,110,864
SWEEPER HOOD WITH TRANSVERSE AIR DUCT AND BROOM COMPARTMENTS
Arne Nils Gunnarsson, Upland, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Sep. 26, 1977, Ser. No. 836,647
Int. Cl.² E01H *1/08*
U.S. Cl. 15—340 **11 Claims**

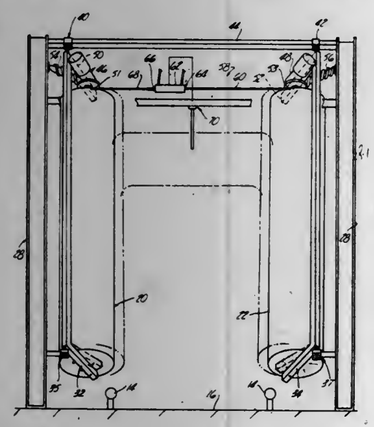
8. In a street sweeper or the like of the type having a mobile chassis, a debris hopper, a blower having its inlet connected to the hopper for exhausting air from the hopper, an elongate transverse hood, a driven rotatable cylindrical broom in said hood, an air and debris inlet port for the hood and a suction line connecting said hood to the hopper; the improvement in said hood wherein said hood comprises a main compartment having a top wall, depending front, rear and end walls that make sealing engagement with the swept surface, said hood having an intermediate transverse partition depending from said top wall to divide said main compartment into elongate, parallel front and rear transverse compartments, said front compartment comprising a transverse air stream duct that is substantially unobstructed along its length, said air and debris inlet port comprising a forwardly opening tunnel disposed at one

end of said duct, said suction line being connected to the other end of said duct for creating a uni-directional air stream along said duct, said broom being rotatably mounted in said rear compartment for dislodging debris from the swept surface and throwing it into said air stream, the lower edge of said partition stopping short of the swept surface for accommodating the generally horizontal passage of dislodged debris into the air stream, the top wall of said hood being imperforate along its



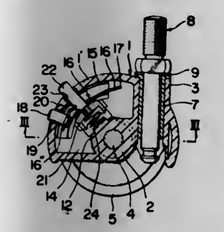
length up to said suction line, said tunnel having an outer side wall that is an extension of the end wall of said hood at said inlet port, a top wall, and an inner side wall that projects from the upstream edge of said air inlet port, an angled debris deflector projecting from the end of said outer tunnel side wall and an angled flexible inlet scoop projecting from the end of said inner tunnel side wall and laterally outwardly of the end wall of said hood at said inlet port for scooping up debris adjacent a curb or the like.

4,110,865
ADJUSTABLE WIDTH SIDE BRUSH ARRANGEMENT FOR LARGE VEHICLE WASHING MACHINES
David J. Bivens, Danville, Va., assignor to Bivens-Winchester Corporation, Ann Arbor, Mich.
Filed Mar. 7, 1977, Ser. No. 774,863
Int. Cl.² B60S *3/06*
U.S. Cl. 15—53 AB **10 Claims**



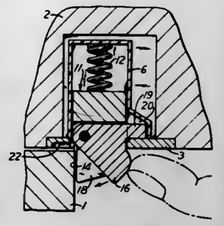
1. A vehicle washing machine comprising:
a machine frame defining an opening for receiving said vehicle;
a brushing system mounted to said machine frame and adapted to engage said vehicle upon passage of said vehicle therethrough, said brush system including a pair of said brushes disposed on either side of said opening;
brush support means supporting said side brushes so as to engage the vehicle sides as said vehicle passes through said opening said support means including a corresponding pair of swing frames mounting a respective brush in each of said swing frames for rotation about an axis thereon;
said support means further including means pivotally mounting each of said swing frames so as to swing into and out of said opening about a pivot axis parallel to said axis of rotation of said brushes
means drivingly connecting each of said swing frames to each other, said means being nonextensible under pressure exerted by said brushes, causing said swing frames to pivot together about each of said pivotal support means in a side-to-side movement to accommodate off-centering of said vehicle;
means for varying the length of said means drivingly connecting said swing frames, whereby said gap between said brushes may be adjusted and said vehicle washing machine is adapted to accommodate vehicles of varying widths while allowing centering side-to-side movment of said brushes.

4,110,866
CASTER EQUIPPED WITH A STOPPER
Hiroyuki Ishii, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan
Filed Nov. 30, 1977, Ser. No. 856,185
Int. Cl.² B60B *33/00*
U.S. Cl. 16—35 R **2 Claims**



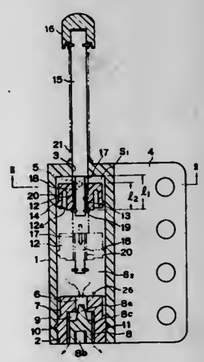
1. A caster equipped with a stopper, comprising:
a proper whose shell is formed into a substantially circular arc and which supports wheels through an axle,
a stopper piece which is provided at an inner end of said proper and which freely contacts with parts of said wheels so as to lock rotation of said wheels and to release the locking,
a lock pin which protrudes from a window provided in said proper,
a compression spring which is retained between said stopper piece and boss portions of said proper and whose elasticity urges said lock pin as an unlocking force,
a control piece which is provided with a lock hole for snugly and slidably inserting said lock pin therein, which is mounted at a desired inclination angle with respect to said lock pin and whose base end is fixed to said proper, and
a release pin which protrudes from a window provided in said proper and which, when pushed inwards, depresses a free end of said control piece.

4,110,867
RETRACTABLE DOOR STOP FOR BIDIRECTIONAL SWINGING DOOR
Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.
Filed Nov. 14, 1977, Ser. No. 851,468
Int. Cl.² E05F *5/02*
U.S. Cl. 16—82 **8 Claims**



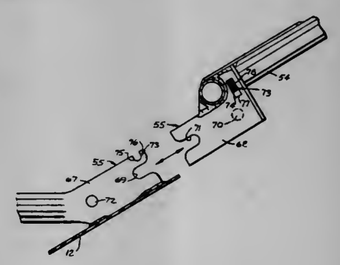
1. A retractable door stop for a bidirectional swinging door, comprising a faceplate for attachment to a door jamb and having inner and outer faces and an opening therethrough, a housing adapted to extend into a door jamb and having an open outer end engaging the inner face of the faceplate around said opening, a plunger slidably mounted in the housing and normally projecting from the outer face of the faceplate into door-stopping position, a spring in the housing behind the plunger normally holding the plunger in said position, the plunger having a laterally facing abutment for enagement by a door when closed in its normal closing direction, and a combination lever and latch pivotally connected to the plunger on a vertical axis and normally extending out of the faceplate opening for engagement by a finger to swing the lever toward the door side of the housing to simultaneously push the plunger rearwardly in said housing and move the latch into latching position, whereby to hold the plunger retracted until released by manually swinging the lever in the opposite direction.

4,110,868
AIR DAMPER
Yasutaka Imazaike, 8-22, Tanabeishino-cho, Higashisumiyoshi-ku, Osaka-shi, Osaka, Japan
Filed Feb. 18, 1977, Ser. No. 770,150
Claims priority, application Japan, Feb. 23, 1976, 51-20805 [U]; Feb. 23, 1976, 51-20806[U]
Int. Cl.² E05F *3/00, 5/10*
U.S. Cl. 16—84 **11 Claims**



1. An air damper comprising:
a cylinder;
a rod slidably mounted in one end of said cylinder and projecting outwardly thereof;
a piston carried on said rod for reciprocation within said cylinder in sealing relation with the inner wall surface thereof and subdividing said cylinder into a first chamber outwardly of said piston and a second chamber inwardly thereof, said piston having an axially extending through bore dimensioned to accommodate movement of said rod therethrough;
air ports in said cylinder opening respectively into said first and second chambers;
means for retaining said piston on said rod permitting relative axial movement therebetween;
spring means for biasing said rod outwardly of said cylinder;
and a shoulder on said rod defining a section of reduced diameter extending to the end of said rod adjacent said piston reatining means, the radial dimension of said reduced diameter section being less than the diameter of the piston bore to define therewith an axially extending passageway normally establishing communication between said first and second chambers and the length of said section of reduced diameter being greater than the axial extent of said piston bore;
said rod being slidable inwardly of said cylinder so as to close the air port in said first chamber by positioning of the portion of said rod outwardly of said shoulder over said air port, movement of said rod inwardly of said cylinder also serving to effect engagement of said piston by said shoulder to prevent communication between said first and second chambers by closure of said passageway therebetween.

4,110,869
HANDLEBAR LATCHING MECHANISM FOR LAWN AND YARD IMPLEMENT
Paul F. Hastings, N. 5509 Market St., Spokane, Wash. 99207
Division of Ser. No. 716,132, Aug. 8, 1976. This application Oct. 17, 1977, Ser. No. 842,408
Int. Cl.² B62B *3/02, 5/06*
U.S. Cl. 16—111 A **10 Claims**



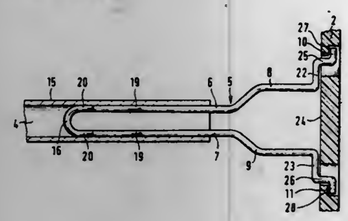
1. A handlebar latching mechanism for releasably attaching a handlebar to a lawn and yarn implement, comprising:
a first pair of slotted brackets adapted to be fixed to the implement;
a second pair of slotted brackets adpated to be fixed to the handlebar;
wherein the first and second slotted brackets mate in a releasable interlocking relationship;
wherein each bracket of one pair includes a pin projecting therefrom to be slidably received by a matching slot of a mating bracket of the opposed pair; and
selectively releasable detent means for locking the mating brackets together.

4,110,870

HANDLE MOUNTING FOR CLEANING IMPLEMENTS

Georg Weihrauch, Wald-Michelbach, Odenwald, Fed. Rep. of Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH, Fed. Rep. of Germany

Filed Mar. 8, 1977, Ser. No. 775,540
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609903
Int. Cl.² A47B 95/02
U.S. Cl. 16—114 R 6 Claims



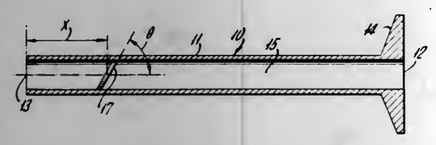
1. Handle mounting for cleaning implements, such as brooms, scrubbers, mops, and the like, comprising a fork-like connecting member having fork legs with free ends, the free ends of the fork legs being attachable to the body of the cleaning implement, and the fork-like connecting element additionally having a bridge connecting the fork legs and being inserted in the end of a tubular metallic handle and being fixed in position within the end of the handle, characterized in that the fork legs extend into the cylindrical part of the tube and are bent in an undulating shape at right angles away from the plane formed by the legs, wherein the apex of the bend of the fork legs on the one hand, and the bridge connecting the fork legs on the other hand, are supported on approximately opposite locations of the tube wall.

4,110,871

CORE EXCHANGING STUFFING HORN

Joseph G. Greenham, Willowdale, and Sanford A. B. Moore, Brampton, both of Canada, assignors to Devro, Inc., Somerville, N.J.

Filed Oct. 20, 1976, Ser. No. 734,226
Claims priority, application Canada, Oct. 20, 1975, 237988
Int. Cl.² A22C 11/00
U.S. Cl. 17—33 6 Claims



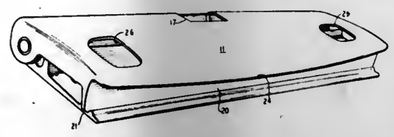
1. An improved sausage stuffing horn comprising an elongated body having an intake opening, a discharge opening and a confined channel for passage of flowing stuffing material connecting said openings; and a fixed deflecting member located in the confined channel but spaced inwardly from said discharge opening and lying at an angle between 5° and 85° as measured in the direction of flow of stuffing material, said deflecting member being capable of exchanging the inner portion of stuffing material with the outer portion of stuffing material as said stuffing material in the channel flows against said deflecting member.

4,110,872

MOULDED PLASTIC CLIP DEVICE

Peter Brian Gould, Normanhurst, Australia, assignor to Advance Industries Limited, New South Wales, Australia

Filed Jun. 2, 1977, Ser. No. 802,951
Int. Cl.² B42F 1/00
U.S. Cl. 24—67.11 2 Claims



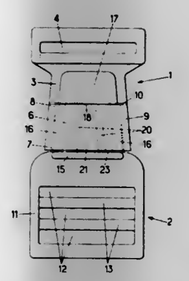
1. A clip device made up of two separable members, each member having on it a jaw portion, the members being pivotable relative to each other, one of the said members having on it a length of acetal or other suitable plastic material supported only by its ends and adapted to form a torsion bar, the other member being attached to the first in such a manner that the torsion bar portion is preloaded to bring the jaw portions into contact, one or both being provided with a portion to which finger pressure may be applied to separate the jaws against the torque of the torsion member.

4,110,873

COUPLING

Maurice Verchere, 1, rue de la Bretouze, 01103 Oyonnax, France

Filed Feb. 24, 1977, Ser. No. 771,584
Claims priority, application France, Mar. 31, 1976, 76 09401
Int. Cl.² A44B 17/00, 11/25
U.S. Cl. 24—230 R 5 Claims



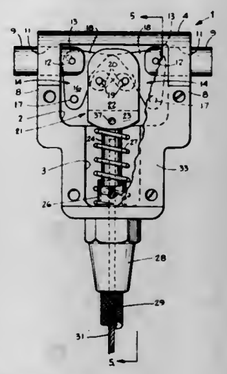
1. A coupling comprising a female component and a male component releasably connectable to the female component, the male component comprising a body part and a projection extending from said body part, and the female component having means defining a passage having an open end to receive said projections and inclined side walls, said projection comprising a hook formation remote from said body part and resilient connecting means connecting said hook formation with said body part, said resilient connecting means comprising two lateral uprights slightly inclined toward each other so that their outer surfaces can cooperate with the inner surfaces of said passage of the female component for guiding said hook formation during insertion and connected at their upper ends by said hook formation whereby any lateral pivoting of the male component is prevented with respect to the female component, said hook formation having an abutment surface facing towards said body part and said female component having an abutment surface facing away from said open end of said passage, the dimensions and configuration of the male and female parts being complementary whereby the projection of the male component can be inserted in the passage of the female component, as far as an inserted position in which said abutment surface of the hook formation faces said abutment surface of the female component to abut therewith for preventing withdrawal of the male component from said passage; said projection further comprising at least one rigid lug projecting from said body part and located between said two lateral uprights, the thickness of the lug in the direction perpendicular to the direction of insertion being substantially equal to the dimension of the said passage in the same direction, so that in the inserted position, the lug engaged in the passage prevents any pivoting of the male component with respect to the female component in a direction perpendicular to the direction of insertion, said resilient conneting means permitting resilient movement of said hook formation in said direction perpendicular to the direction of insertion, whereby, in the inserted position, said hook formation can be resiliently displaced out of register with the abutment surface on the famale component to allow withdrawal of the projection from said passage and whereby, during insertion, the hook formation can be resiliently displaced relative to said lug to allow the latter to enter said passage, before the hook formation springs into place behind said abutment on the female component.

4,110,874

RETRACTABLE PIN DISCONNECT

John A. Gaylord, San Diego, Calif., assignor to H. Koch & Sons, Inc., a division of Global Systems, a Gulf & Western Company, Anaheim, Calif.

Filed Oct. 19, 1977, Ser. No. 843,577
Int. Cl.² A44B 11/25
U.S. Cl. 24—230 AS 7 Claims



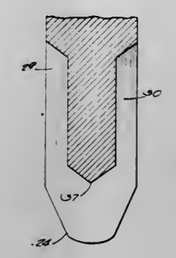
1. In a retractable pin disconnect
a hollow casing
one end of said hollow casing being adapted to accommodate a webbing thereover so as to confine the casing in folded portions of said webbing,
opposite retractable pins slidably extended through opposite side walls of said hollow casing,
a pair of bell cranks within said hollow casing,
means to connect each pin to the apex of the adjacent bell crank,
each bell crank being pivoted at its lower arm in the casing,
a lateral arm on each bell crank,
an actuating member,
means to connect the inner ends of the lateral arm of each bell crank to said actuating member,
resilient means to urge said actuating member toward said one end of said casing thereby to push said retractable pins out through said side walls into interlocking positions,
an element connected to said actuating member and extended through the other end of said casing and being manipulatable for pulling said actuating member against the action of said resilient means for retracting said pins from said interlocking positions.

4,110,875

SWAGED NEEDLE

Edson Perkins Foster, Cato, Wis., assignor to Foster Needle Company, Manitowoc, Wis.

Filed May 23, 1977, Ser. No. 799,484
Int. Cl.² D04H 18/00
U.S. Cl. 28—115 11 Claims



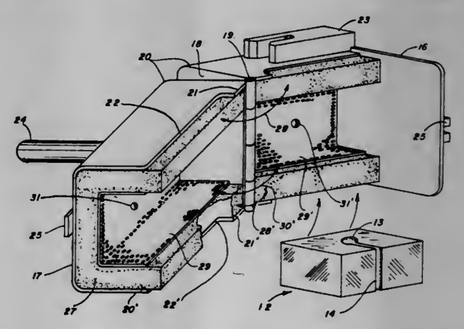
1. A felting needle having a blade portion preferably of circular cross section with a generally pointed forward end, the blade portion adjacent the forward end being generally "H" shaped in cross section and including two opposed faces, each face having a longitudinal groove therein, each groove disposed between a pair of spaced-apart, longitudinally-extending, radially outwardly-protruding ridges, a fiber receiving slot in the forward end of said blade, said slot being disposed in alignment with said opposed longitudinal grooves and defining a pair of points in the forward end.

4,110,876

JET MUFFLER

William Robert Weiss, Walnut Creek, Calif.; James Judson Cooksey, Colonial Heights, and Rob Roy Gordon, Jr., Suffolk, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 26, 1977, Ser. No. 828,053
Int. Cl.² D02G 1/16
U.S. Cl. 28—271 11 Claims



1. In combination with a yarn treating jet for use in the production of a running length of multifilament, synthetic yarn, a muffler comprising:
A. a mounting plate;
B. a boxlike metal housing, said mounting plate fucntioning as a first face of said housing to form in conjunction therewith an enclosure for said jet, said housing having a second face which is opposite to said mounting plate and which has hinge means thereacross, and two of the other faces of said housing which are parallel to each other and intersect the axis of said hinge means at about each of the ends of said hinge means each having a slit therethrough which runs from the end of said hinge means to said mounting plate, each of said two other faces being cut

away at said slit to form an opening which is large enough for the passage of yarn therethrough and in register with one another, so that said housing can be opened and closed;

C. means for removably attaching said housing to said mounting plate;

D. handle means, said handle means being attached to said housing;

E. first latching means, said first latching means holding said housing in a closed position;

F. second latching means, said second latching means holding said housing in an open position;

G. sound absorbing material, said sound absorbing material lining the interior of said housing along the faces adjacent and normal to said mounting plate and said second face, said sound absorbing material having two slits therethrough each of which corresponds to one or said openings in one of said two other faces of said housing, said sound absorbing material mating at said slits to substantially close said openings when said housing is in said closed position, said yarn passing to and from said jet through said slits, the portion of said sound absorbing material closing said openings partially abrading when coming into contact with said yarn when said jet is operational;

H. two U-shaped perforated metal sheet retainers, each of said perforated metal sheet retainers having an open area of from 35 to 95 percent and functioning to retain said sound absorbing material against said faces of said housing which said sound absorbing material is lining, said perforated metal sheet retainers terminating at a point approximately corresponding to said openings in said two other faces of said housing so that when said housing is in said closed position said perforated metal sheet retainers have gaps therebetween which are of a width substantially similar to said openings; and

I. means for detachably securing said perforated metal sheet retainers to said housing so that said sound absorbing material is retained thereby;

whereby the noise level of said jet is reduced by:

(1) the enclosure of said jet by said muffler when said mounting plate and said housing are moved into said closed position, said enclosure resulting from moving said housing on said hinge means via said handle means and triggering said latching means, and (2) permitting said yarn to create its own entrance and exit passages through said muffler to said jet, said entrance and exit passages being formed by said yarn abrading a small portion of said sound absorbing material at said slit when said jet is operational, and whereby the noise level of said jet is reduced by at least 11.5ΔdB(A) when said housing is in said closed position.

4,110,877

FLOATING TENSION TOOL AND STRAP LOCATING GUIDE APPARATUS AND METHOD

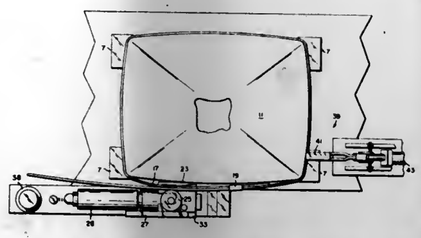
Donald L. Bracht, Seneca Falls, and Harry R. Swank, Waterloo, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jul. 1, 1977, Ser. No. 812,131
Int. Cl.² H01J *9/00*
U.S. Cl. 29—25.13 **19 Claims**

1. An implosion-resistant cathode ray tube fabricating apparatus for a cathode ray tube having an envelope with a funnel portion and a viewing portion with a non-viewing region surrounded by an over-lapping loop of metal strapping, said apparatus comprising:

a support means for upholding said envelope in a predetermined positional location; and

a tightening means slidably affixed to said support means and including fixed and rotatable members with said rotatable member coupled to means operable to effect rotation, said fixed and rotatable members having means to receive said overlapping loop of metal strapping therebetween and operation of said rotational member exerting a force on and effecting movement in a given direction of one overlapping portion of said metal strapping and causing exertion of a substantially equal and opposite force on and



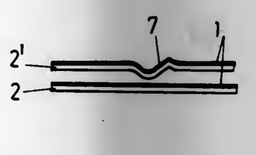
movement in a diametrically opposite direction of said tightening means and said other overlapping portion of said metal strapping whereby substantially equal tensional forces are exerted in opposite directions on said overlapping portions of said metal strapping.

4,110,878

METHOD FOR MANUFACTURING AN IMPREGNATED WOUND FOIL CAPACITOR

Kurt Wenzel, Larchenweg 6, A2751 Matzendorf, Austria

Filed Sep. 30, 1976, Ser. No. 728,028
Int. Cl.² H01G *4/22*
U.S. Cl. 29—25.42 **3 Claims**



1. A method for the manufacture of a wound type foil capacitor comprising the steps of: forming a wound capacitor from two electrodes and a dielectric, the dielectric including at least two synthetic plastic foils, at least one of which is prestretched;

heating the wound capacitor to a temperature corresponding to the shrinking temperature of said at least one stretched foil, said at least one stretched foil being adjacent to the other foil, said other foil being at least shrunk to a lesser extent than said one foil within a shrinking range including said lesser extent up to a completely extended state; maintaining said wound capacitor at said temperature corresponding to the shrinking temperature of said at least one stretched foil until folds develop in said other foil;

compressing said wound capacitor up to 97% compressibility:

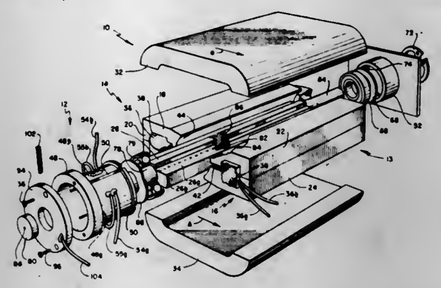
maintaining the compressed state of said wound capacitor during the shrinking process, and thereafter impregnating said wound capacitor with an impregnating fluid.

4,110,879

METHOD OF MAKING A LIMITED-ROTATION MOTOR WITH INTEGRAL DISPLACEMENT TRANSDUCER

Edward F. Burke, Jr., Reading, Mass., assignor to MFE Corporation, Salem, N.H.

Filed Apr. 8, 1977, Ser. No. 785,912
Int. Cl.² H01G *4/02, 4/40*
U.S. Cl. 29—25.42 **5 Claims**



1. The method of making a limited rotation motor of the type having a stator with stator pole pieces forming a generally cylindrical passage extending axially along the stator and an armature rotatively mounted in the passage and biased toward a reference position, said method comprising the steps of

A. forming an elongated bushing out of electrically conductive nonferromagnetic material, said bushing having a generally cylindrical inner surface whose radius is substantially the same as that of said passage,

B. forming lengthwise slots in the bushing so as to define at least one pair of arcuate tines extending from the bushing collar,

C. assembling the stator pole pieces and bushing so that the bushing is coaxial with the axis of said passage,

D. potting the pole pieces and bushing in a nonelectrically conductive material so as to maintain their spatial relationship and to define a single cylindrical passage extending through the bushing and pole pieces,

E. forming a circular cut in the bushing so as to separate the bushing tines from the bushing collar and from each other so as to electrically isolate them, and

F. honing the entire passage so that the separated bushing tines and pole pieces have the same radius all along said passage and are concentric with the passage axis over their entire areas so that when the armature is rotated, the differential capacitance between the plates and the armature accurately reflects the angular deviation of the armature from its reference position.

4,110,880

CABLE HARNESS ASSEMBLY AND ELECTRICAL TESTING MACHINE

Michael Seigman Peppler, Lancaster, and Johannes Cornelis Wilhelmus Bakermans, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1977, Ser. No. 772,204
Int. Cl.² H01R *43/04*
U.S. Cl. 29—33 K **10 Claims**

1. A cable harness assembly apparatus for terminating multiconductor flat flexible cable with at least two connectors, each connector having a plurality of contact terminals fixed therein, while simultaneously testing the continuity of each connection, said apparatus comprising:

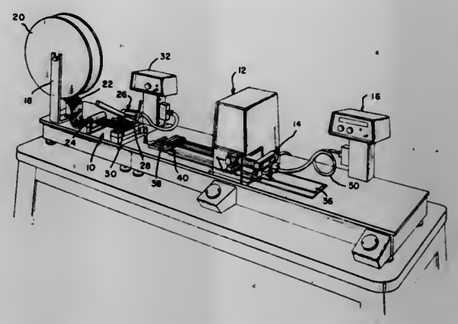
a connector crimp terminating station having cable guide means, connector guide means, and press means to effect crimp engagement of contact terminals of said connector with respective conductors of said cable; and

test indicating means having a test fixture engaged with the first terminated conductor and means to test electrical continuity of each connection as it is effected, said test indicating means comprising:

counter means;

multiplexer means and demultiplexer means connected in parallel to said counter means and said test fixture;

first comparator means connected to receive outputs of said counter means, said multiplexer means and said demultiplexer means;



display means connected to the output of said first comparator means;

second comparator means connected to the output of said counter means and input of said first comparator means; and

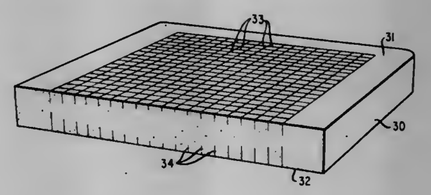
means to set the number of tests to be conducted to equal the number of conductors to be terminated.

4,110,881

RESILIENT ARTICLE AND METHOD OF MANUFACTURE

M. Stafford Thompson, P.O. Box 113, Enfield, Conn. 06082

Filed Dec. 10, 1976, Ser. No. 749,380
Int. Cl.² A47C *27/12*
U.S. Cl. 29—91.1 **4 Claims**



3. Process for fabrication of a sofe cushion designed to support a human body in which at least one massive surface of a body having desired dimensions of the final sofa cushion is altered, characterized in that the said body is produced from a larger body by a series of steps comprising slicing, in that the alteration takes the form of slotting the said surface with slots of varying depth or spacing, and covering the said support structure.

4,110,882

COATING ROLLER

Gerard Hodge, Brampton, and Robert J. Holsgrove, Georgetown, both of Canada, assignors to Kenhar Products Incorporated, Brampton, Canada

Filed Oct. 21, 1977, Ser. No. 844,227
Int. Cl.² B60B *7/00*
U.S. Cl. 29—118 **2 Claims**

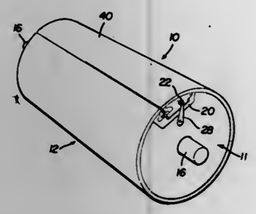
1. A coating roller cover for removable mounting upon an

elongated, cylindrically shaped roller drum to provide the coating applying surface, comprising:

an initially flat, thin, dimensionally stable substrate sheet, such as of thin gauge sheet material, of a size to completely surround the drum surface;

a thick layer of resilient foam plastic material bonded to and covering the substrate for forming the coating applying surface of the roller;

tongue-like connector means formed upon the opposite edges of the substrate sheet adapted for interconnecting with cooperating mounting means formed on the drum surface for releasably fastening the cover upon the drum;



whereby accurately dimensioned covers may be bent around and fastened upon the drum peripheral surface and replaced when worn by similar covers;

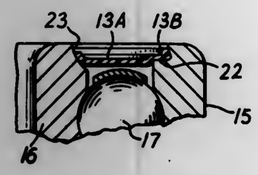
said tongue-like connector means each comprising U-shaped channels bent out of the free edges of the sheet on the uncoated surface of the substrate, and a generally L-shaped rigid strip arranged within the channel and having a leg extending out of the channel and spaced from the uncovered surface of the substrate, wherein said tongue-like connectors are adapted to fit into an inverted, i.e., — undercut, T-shaped groove formed in and extending axially of the surface of the drum, with each connector fitted within a half of the tongue-shaped groove.

4,110,883

METHOD AND APPARATUS FOR INSTALLING A BEARING SHIELD OR SEAL INTO THE ANNULAR SPACE OF A BEARING

William D. McAllister, Poughkeepsie, and Frank D. Rajczi, Hyde Park, both of N.Y., assignors to Schatz Federal Bearings Co., Inc., Poughkeepsie, N.Y.

Division of Ser. No. 664,964, Mar. 8, 1976, Pat. No. 4,054,334. This application Apr. 1, 1977, Ser. No. 783,555
Int. Cl.² F16J *15/16*
U.S. Cl. 29—148.4 S **7 Claims**



1. A method of mounting a plastic bearing seal having a durometer hardness of over 50 into an antifriction bearing comprising an inner annular race ring concentrically located within an outer annular race ring with an annular chamber therebetween containing a complement of rolling elements, one of said race rings having a peripheral seal-retaining groove with an extending shoulder on each side of said ring, the other of said race rings having a land opposite each of said peripheral seal-retaining grooves, said method comprising: providing a flat deformable substantially rigid plastic washer of said durometer hardness in which the width of the annulus thereof is less than the annular opening of said annular chamber but larger than the distance between the land of one of said bearing rings and the shoulder of said peripheral seal-retaining groove of the other,

said washer being produced from a calendered sheet of said plastic and having flow lines therein,

placing said deformable rigid plastic washer into the opening of said annular chamber so that it is supported by said shoulder of said peripheral groove and by said land,

said plastic washer in a selected cross section having said flow lines running along said cross section,

and then causing said washer to flow radially by pressure deformation into and secured within said peripheral groove and provide a seal with the free end thereof extending to the land of said other ring,

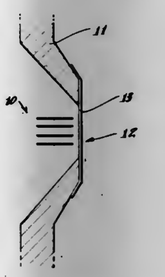
such that the flow lines at the annular neck of said seal are crowded together relative to the flow lines running along said cross section.

4,110,884

METHOD FOR MAKING DUST COVER FOR PRINTING NEEDLES

Sven Gunnar Valter Stenudd, Lidingo, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

Filed Apr. 22, 1977, Ser. No. 789,803
Claims priority, application Sweden, Apr. 23, 1976, 7604708
Int. Cl.² B23P *15/16*
U.S. Cl. 29—163.5 R **5 Claims**



1. A method of providing a dust proof cover for printing needles of a mosaic printing head having an opening comprising: placing a thin layer of a selected suitable material over the opening of the printing head for said printing needles, and repeatedly moving each of said printing needles into engagement with said thin layer of material to wear holes therein through which said printing needles can pass.

4,110,885

ENCAPSULATING BLOCK AND REMOVAL APPARATUS

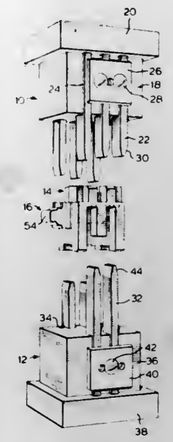
William Frederick Fisher, Peterborough, Canada, assignor to Fisher Gauge Limited, Peterborough, Calif.X

Filed May 26, 1977, Ser. No. 800,724
Int. Cl.² B23P *19/00*
U.S. Cl. 29—239 **5 Claims**

3. Apparatus for use with an encapsulating block encasing a workpiece, the block having parallel slots in opposed side walls thereof extending alternately from opposed edges of each side wall to terminate in a bearing face in the region of a plane passing through the workpiece and a frangible cross-sectional area of the block, comprising:

a pair of dies;

a plurality of parallel tines projecting in one direction from each die, the tines being meshable and arranged to be received in the slots of the block to bear against said faces;



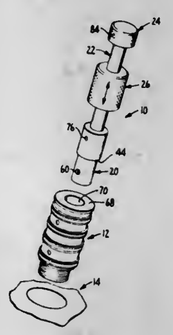
whereby on moving the dies towards one another the block will fracture in said cross-sectional area.

4,110,886

TOOL FOR REMOVING INJECTORS FROM DIESEL ENGINES

Gunter K. Wendler, 1031 Verdemar Dr., Alameda, Calif. 94501; Enrique Corpus, 17410 Langton Way, Hayward, Calif. 94541, and Michael J. Ohannesian, 450 Maple Ave., Cotati, Calif. 94928

Filed Dec. 23, 1976, Ser. No. 753,892
Int. Cl.² B23P *19/04*
U.S. Cl. 29—255 **5 Claims**



1. A tool for removing injectors from diesel engines, comprising:

a head having a cylindrical surface of such diameter as to closely fit within the outer end of the central passage of a diesel injector, said cylindrical surface extending essentially continuously between on end of said head and a shoulder located between said one end of said head and the opposite end of said head, said shoulder extending outwardly from said cylindrical surface;

a pin close-fittingly received in a transverse bore in said head, said transverse bore extending part way into said head from said cylindrical surface and being so located with respect to said shoulder that when said head is inserted into the outer end of the central passage of said diesel injector to the maximum extent permitted by said shoulder said transverse bore can be brought into alignment with a bore in said diesel injector by rotating said head about the axis of said cylindrical surface;

limiting means on said pin and in said bore formed for limiting the outward projection of said pin beyond said cylindrical surface; and

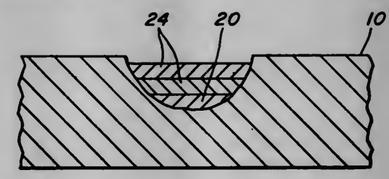
spring means in said bore and compressed between said pin and the internal end of said bore for resiliently urging said pin toward its position of maximum projection from said cylindrical surface.

4,110,887

METHOD OF REPAIRING SLAG AND CINDER POTS AND OTHER HEAVY STEEL ARTICLES

Robert H. Kachik, Washington Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1977, Ser. No. 790,516
Int. Cl.² B23K *23/00*; B22D *19/10*
U.S. Cl. 29—401 A **8 Claims**



1. A method of repairing an erosion cavity in slag and cinder pots, and other heavy steel articles comprising

(a) placing into said cavity an exothermic reaction mixture comprising a fuel powder and a metal oxide, the amount of said mixture having a volume insufficient to overflow said cavity,

(b) igniting said mixture to form a superheated melt comprising a metal phase and a slag phase, such that the melt is substantially contained entirely within said cavity,

(c) maintaining said melt in said cavity for a time sufficient to allow said melt to separate so that said metal phase settles to the bottom with the slag phase thereover,

(d) permitting said melt to solidify with the metal phase securely bonded in the bottom of said cavity,

(e) removing said slag phase to expose the metal phase and the remaining unfilled portion of the cavity, and

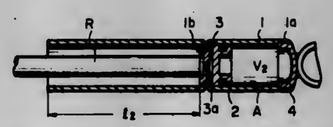
(f) repeating steps (a) through (e) at least one more time to provide a plurality of metal phase layers which fill at least a significant portion of the cavity.

4,110,888

GAS CHAMBER FORMING METHOD IN CLOSED CYLINDER OF GAS ENCLOSED TYPE

Toshiaki Mutou, Kamakura, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Jul. 13, 1977, Ser. No. 815,419
Claims priority, application Japan, Jul. 20, 1976, 51/86395
Int. Cl.² B23Q *17/00*
U.S. Cl. 29—404 **4 Claims**



1. A method for forming a gas chamber in a cylinder of gas enclosed type comprising the steps of inserting a free piston slidably into the cylinder, inserting a stopper having a through hole therein into the cylinder through an open end of the

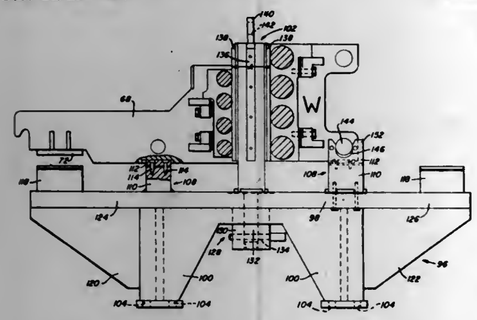
cylinder so as to abut with the free piston, pushing the stopper and the free piston further into the cylinder toward a closed end thereof, securing the stopper with respect to the inner wall of the cylinder when pressure of gas confined between the closed end of the cylinder and the free piston has been increased to a predetermined level, and thereafter, closing the open end of the cylinder.

4,110,889

METHOD OF ASSEMBLING CONTINUOUS CASTING DISCHARGE RACK

Alfred J. Capriotti, Falls Township, Bucks County; Louis G. Lazzaretti, Economy Borough, and Brian O'Donnell, Bristol Township, Bucks County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 645,597, Dec. 31, 1975, Pat. No. 4,074,439.
This application Jul. 25, 1977, Ser. No. 818,788
Int. Cl.² B23Q *17/00*
U.S. Cl. 29—407 **7 Claims**



1. A method of gapping and spacing at least one continuous casting discharge rack used in steel product casting, said steel product having a given width and depth, such discharge rack including width defining elements and depth defining elements for containing such steel product as it passes through such discharge rack and having a common benchmark thereon, said method comprising:

supporting the discharge rack in a given plane of support;

inserting a gapping and spacing extension between the width defining elements and between the depth defining elements of such discharge rack, such gapping and spacing extension having width and depth dimensions representative of the width and depth of such product to be passed through such discharge rack and a centerline passing through the center of such width and depth dimensions, such that the centerline of such gapping and spacing extension passes through such discharge rack in a direction substantially similar to the pass line of the product therethrough;

aligning the gapping and spacing instrument such that its centerline is oriented normal to the plane of support of such discharge rack;

positioning the discharge rack relative to the centerline of such gapping and spacing extension such that a given point on such discharge rack serving as the convenient benchmark is in a given spacial relationship to the centerline of such gapping and spacing extension; and

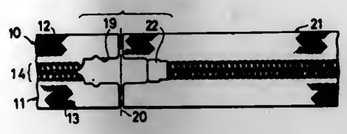
gapping and spacing the width and depth defining elements of such discharge rack to the desired product size about the centerline of such gapping and spacing extension which is transposed to such discharge rack thereby resulting in an alignment of the centerline of several discharge racks when such discharge racks are aligned relative to their benchmarks.

4,110,890

METHOD OF MANUFACTURING SLIDE FASTENERS

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Jul. 11, 1977, Ser. No. 814,150
Claims priority, application Japan, Jul. 12, 1976, 51/82667
Int. Cl.² B23P *11/00*
U.S. Cl. 29—408 **2 Claims**



1. A method of manufacturing individual slide fasteners from a pair of continuous slide fastener stringers having a pair of stringer tapes made of a fabric including thermoplastic synthetic fibers and a slide fastener chain including a pair of interengaged rows of fastener elements mounted on and along the confronting edges, respectively, of said stringer tapes, comprising the steps of:

(a) feeding said continuous slide fastener stringers intermittently for a distance corresponding to a desired fastener length;

(b) providing an element-free gap in said continuous slide fastener stringers with heat at a first station while said stringers are at rest between intermittent movements, said element-free gap being equal in width at least to said slide fastener chain;

(c) simultaneously with the gap providing step, cutting said continuous slide fastener stringers with heat at said first station along a line extending across said stringers and substantially centrally of said element-free gap, whereby an individual slide fastener length is severed off said continuous slide fastener stringers;

(d) simultaneously with the gap providing step, mounting a bottom end stop on the cut end portion of said individual slide fastener length at said first station;

(e) threading a slider through said slide fastener chain from the cut end portion of said continuous slide fastener stringers while the latter are being advanced from said first station; and

(f) mounting a top end stop on the cut end portion of said continuous slide fastener stringers while at rest at a second station located downstream of said first station.

4,110,891

METHOD OF ATTACHING A SEPARABLE BOTTOM END STOP TO A PAIR OF SLIDE FASTENER STRINGERS

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Jul. 25, 1977, Ser. No. 818,869
Claims priority, application Japan, Jul. 27, 1976, 51/89328
Int. Cl.² B23P *11/00*
U.S. Cl. 29—408 **2 Claims**



1. A method of attaching a separable bottom end stop having a pin member and a box member including pin part to a pair of slide fastener stringers including a pair of stringer tapes supporting on and along one sides of their confronting marginal edges a pair of rows of helically coiled elements having filler cords extending therethrough, comprising the steps of:

(a) removing a length of each of said rows of helically coiled elements from said stringer tapes to provide a pair of element-free tape portions with exposed portions of said filler cords left thereon;

(b) bending with heat and pressure said pair of element-free tape portions into pressed contact with said exposed portions of the filler cords, said exposed portions being held in substantial alignment with those portions of said filler cords which are disposed in said rows of helically coiled elements; and

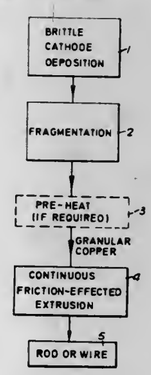
(c) mounting said pin member and said box member on said pair of element-free tape portions, respectively, said pin member and said pin part being substantially equal in thickness to and lying substantially flush with element-supporting portions of said slide fastener stringers.

4,110,892

FABRICATION OF COPPER

Alan John Bangay, New Malden; Peter Michael Raw, Harrow; Rees Jenkin Llewellyn, Twickenham, and Peter Gregory, Great Missenden, all of England, assignors to BICC Limited, London, England

Filed Jul. 27, 1977, Ser. No. 819,605
Claims priority, application United Kingdom, Jul. 30, 1976, 31763/76
Int. Cl.² B22F *3/24*
U.S. Cl. 29—420 **12 Claims**



1. A method of making an elongate body of copper of electric conductor grade comprising: electrodepositing copper in the form of brittle cathodes; breaking the cathodes into fragments with a mean specific surface area in the approximate range from 25 to 1000 mm^2/g; feeding these fragments as such and without any high temperature treatment for purification or grain growth to a continuously acting friction-effected extrusion machine and by means of that machine working the fragments under pressure sufficiently to consolidate and bond the fragments into a continuous elongate body.

4,110,893

FABRICATION OF Co-Cr-Al-Y FEED STOCK

Richard C. Elam, Manchester, and Nicholas E. Ulion, Marlborough, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

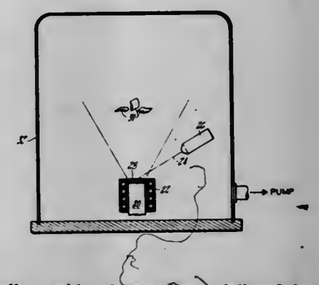
Filed May 24, 1977, Ser. No. 800,112
Int. Cl.² B22F *3/24*
U.S. Cl. 29—420.5 **8 Claims**

1. In the production of an ingot of a selected cross-sectional dimension for use in crucible vaporization for a coating process, the ingot being an alloy having a reactive element as one constituent, the alloy without the reactive element being workable and the reactive element being workable, the complete alloy with the reactive element therein however being much less workable, the completed ingot being fed axially through an opening in the crucible for vaporization to produce a coating vapor having the elements of the alloy in the desired proportions including the reactive element, the crucible having an opening to receive the ingot, the steps of:

forming an elongated billet having the ingredients of and in the proportions of the alloy and without the reactive element included therein;

making a hole from end to end of the ingot, this hole having an area related to the area of the billet substantially the same as the percentage of reactive element in the alloy;

positioning a rod of the reactive element within the billet, said rod having a cross-sectional area related to the area of the billet the same as the proportion of the reactive element in the alloy, said rod extending axially of the billet from end to end;



reducing the billet from its formed size to an ingot having a shape and dimension to fit the opening in the crucible so that it may be fed therethrough and the cross section of the ingot having all the ingredients of the alloy in proper proportion therein, the ratio of the cross-sectional area of the rod in the ingot to the cross-sectional area of the ingot being comparable to the desired percent of the reactive element in the remainder of the alloy; and

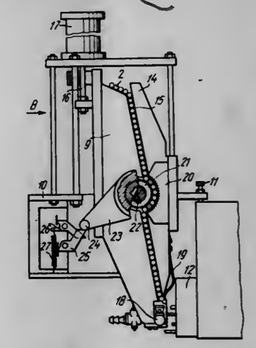
feeding the completed ingot through said opening in the crucible for vaporization into an alloy.

4,110,894

METHOD AND APPARATUS FOR PRODUCING A CONDUIT INTENDED FOR COMMUNICATION WITH A PLURALITY OF WORKING-MEDIUM SOURCES

Alexandr Borisovich Zuev, ulitsa Chervyakova, 6, kv. 121, and David Samuilovich Miller, ulitsa Budennogo, 30, kv. 30, both of Minsk, U.S.S.R.

Filed Mar. 28, 1977, Ser. No. 782,099
Int. Cl.² B22D *19/04*
U.S. Cl. 29—527.6 **8 Claims**



1. A method of producing a conduit intended for communication with a plurality of working medium sources, which conduit includes at least two connecting elements spaced apart along the length thereof and rigidly secured thereto, each of said connecting elements having a through passage intended to communicate with one working-medium source, the axis of

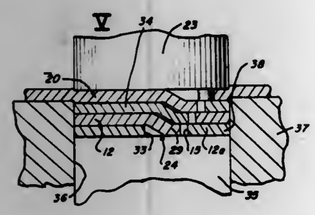
said through passage being perpendicular to a plane passing through the axis of the conduit and said through passage communicating with the passage of the conduit, which method comprises the steps of using a continuous-surface conduit; placing said conduit on a die-casting machine furnished with a device for feeding sequentially a plurality of conduits into a casting die having cavities of a shape which corresponds to the shape of said connecting elements; aligning said continuous-surface conduit in said casting die in such a way that the axis of a core shaping said through passage of each connecting element in said casting die is set off with respect to the axis of said conduit a distance sufficient for obtaining a strong and tight coupling of said connecting element with said conduit and making for access for a working tool adapted to make a duct communicating the through passage with the conduit from the side of the former; shaping said connecting elements, by casting same in said cavities of said casting die; obtaining the coupling of said conduit with said connecting elements by means of a pressing force arising on the external surface of said conduit during the period of crystallization of the material of said connecting elements during cooling; and forming ducts or passageways between said through passages in the connecting elements and said conduit.

4,110,895

APPARATUS FOR MANUFACTURING LAMINATED CORES

Yoshiaki Mitsui, Kitakyushu, Japan, assignor to Mitsui Mfg. Co., Ltd., Kitakyushu, Japan

Filed Jul. 27, 1977, Ser. No. 819,479
Int. Cl.² H02K *15/02*
U.S. Cl. 29—564.2 **10 Claims**



1. In an apparatus for forming from a metal sheet a laminated dynamoelectric structure having a plurality of stacked interlocked formed laminations, the improvement comprising:

means defining a punching station having a punch for punching a portion of the sheet to form therein a displaced projection, said portion of the sheet from which the projection is displaced defining an aperture;

means advancing the sheet to a blanking station;

means at the blanking station for blanking out said portion to define a formed lamination, said punching station means, advancing means, and blanking station means being operated seriatim to cause a series of such sheet portions to be formed with said projections and apertures at said punching station and advanced sequentially to said blanking station whereat the formed laminations are blanked out and stacked; and

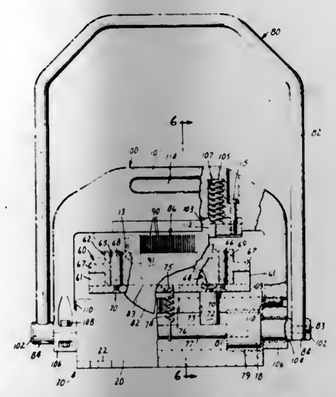
control means for selectively causing the punching station means to continue the punching operation of said punch sufficiently to blank out the projection of the first of the series of said sheet portions to form the first of the laminations of the stack.

4,110,896

CABLE CONNECTING STATION

Russell A. Roiko, Osseo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 735,172, Oct. 26, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,853
Int. Cl.² H01R *43/04*
U.S. Cl. 29—566.3 **7 Claims**



1. Apparatus for attachment of a connector to a multipair cable comprising:

a base having a longitudinal axis,

a connector receiving station on said base having a supply side and a product side comprising a receptacle for a connector, first comb means on said supply side of said station for positioning and indexing pairs of a multipair cable and second comb means on the product side of said station for positioning and holding members of said pairs transverse of said station,

arm means comprising anvil means, said arm means being rotatable about the said axis of said base from a horizontal position to position said anvil means immediately above said connector receiving station in position to contact a connector in said receptacle of said connector receiving station when said connector is covered and said connector receiving station is elevated with respect to said base, and

means in said base for elevating said connector receiving station with respect to said base when said anvil means is positioned over said connector receiving station thereby causing the cable pairs to be inserted into the connector.

4,110,897

APPARATUS FOR AUTOMATICALLY CHANGING TOOL HEADS

Donald D. Hipwell, Mount Clemens, and Klaus Rudolf Menzel, Orchard Lake, both of Mich., assignors to Bendix Machine Tool Corporation, Warren, Mich.

Filed Dec. 2, 1976, Ser. No. 746,774
Int. Cl.² B23Q *3/157*
U.S. Cl. 29—568 **19 Claims**

1. In an apparatus for machining a workpiece at a workpiece station with a changeable tool head sequentially carried by a tool carrier movable between the workpiece station and a loading station, apparatus for sequentially changing the tool head carried by the tool carrier comprising:

a frame;

a track carried by the frame, said track having along its length positions defining a feed station, a load station and a discharge station;

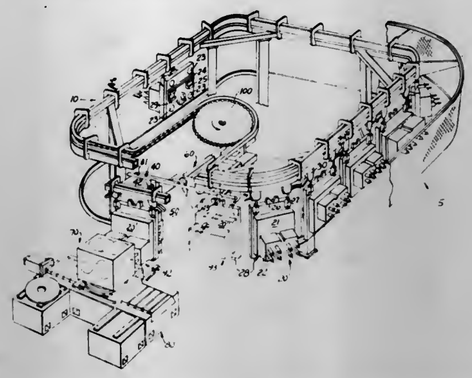
a chain supported by the frame and disposed near the track;

a motor coupled to the chain for driving the chain in a chosen direction;

a plurality of tool heads movably positioned on the track, each tool head carrying means for engaging the chain and

means for sensing proximity to another tool head in the chosen direction and coupled to the chain-engagement means for disengaging the tool head from the chain when proximity to another tool head in the chosen direction is sensed by the sensing means;

means for moving the tool carrier between the workpiece station and the loading station; and



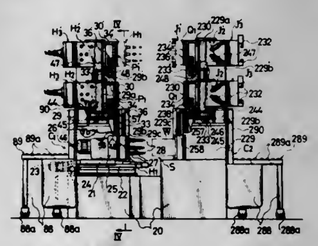
means responsive to the movement of the tool carrier to the loading station for engaging the tool head carried by the tool carrier at the loading station and a second tool head located at the feed station and for moving said heads simultaneously to the discharge station and to the loading station, respectively.

4,110,898

MACHINE TOOL

Kojiro Yamaoka, Nishinomiya; Toshihide Mihara, and Akira Tanaka, both of Amagasaki, all of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Mar. 1, 1977, Ser. No. 773,198
Claims priority, application Japan, Mar. 2, 1976, 51-2025[U]; Mar. 2 1976, 51-25026[U]; Mar. 9, 1976, 51-25749; Dec. 21, 1976, 51-154447; Dec. 28, 1976, 52-177136[U]; Dec. 28, 1976, 52-177137[U]
Int. Cl.² B23Q *3/157*
U.S. Cl. 29—568 **18 Claims**



7. A machine tool comprising:

(a) a bed having a working station;

(b) a slide table which is mounted at a side of the working station on said bed by guide means and which is slidable toward and away from the working station, and motor means for sliding the slide table;

(c) a drive unit having spindle driving motor mounted on said slide table and facing the working station so that the drive unit is moved toward and away from the working station together with said slide table;

(d) an upstanding support frame which is mounted on said bed so that the structure extends above said drive unit;

(e) at least one head storage magazine rotatably mounted on said support frame for rotation around a vertical axis, said magazine having a plurality of head storage rooms provided intermittently along the periphery thereof;

(f) magazine clamping means for selectively clamping said magazine to said support frame structure;

(g) selectively operable head clamping means which are provided to said head storage rooms;

(h) a plurality of spindle heads each having a plurality of spindles and tools connected to said spindles, the heads being stored at said head storage rooms of the magazine by clamping the heads by said head clamping means;

(i) drive means for rotating said magazine when the magazine is not clamped by said magazine clamping means;

(j) vertical conveyor means for lifting and lowering one of said spindle heads selectively between a position in front of said drive unit and a head storage room of said magazine, which room is located just above such position, said vertical conveyor means being arranged to support the underside of the spindle head during lifting and lowering thereof;

(k) second head clamping means for clamping the spindle head located in front of said drive unit selectively to the drive unit; and

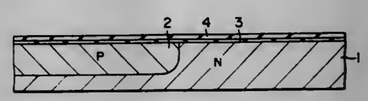
(l) connecting means for connecting the spindle head clamped by said second head clamping means to said drive unit so that the spindle is rotated by said drive unit.

4,110,899

METHOD FOR MANUFACTURING COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTORS

Kouichi Nagasawa, Kunitachi; Yasunobu Kosa, and Satoshi Meguro, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 4, 1977, Ser. No. 756,711
Claims priority, application Japan, Jan. 12, 1976, 51-2057
Int. Cl.² B01J *17/00*
U.S. Cl. 29—571 **8 Claims**



1. A method for manufacturing complementary insulated gate field effect transistors comprising the steps of:

(a) delimiting a portion of a surface of a semiconductor substrate of a first conductivity type and forming therein a well layer of a second conductivity type, forming a thin insulating layer over the entire surface thereof and then forming a silicon nitride layer over the entire surface thereof;

(b) etching away said silicon nitride layer at least those areas on which field oxide layers are to be formed;

(c) introducing impurity of the second conductivity type at that area in said well layer of the second conductivity type on which the field oxide layer is to be formed;

(d) heat treating the substrate to selectively thermally oxidize the areas on which the field oxide layers are to be formed, using said silicon nitride layer as a mask to form a thick field oxide layer; and

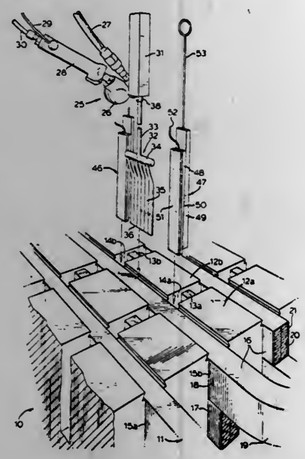
(e) removing the silicon nitride layer and the underlying thin insulating layer formed in said step (a), selectively forming gate insulation layers and silicon layers on the exposed substrate and well layer, forming source regions and drain regions of MIS devices in said semiconductor substrate of the first conductivity type and the well layer of the second conductivity type using said silicon layers and said thick field oxide layers as masks, and forming diffusion layers of desired impurity concentrations beneath said thick field oxide layers.

4,110,900

CORONA INHIBITION IN DYNAMOELECTRIC MACHINES

Palmer Lonseth; Hubert Gerald Panter, and Donald G. Moorby, all of Peterborough, Canada, assignors to Canadian General Electric Company, Toronto, Canada

Division of Ser. No. 656,791, Feb. 10, 1976. This application Oct. 17, 1977, Ser. No. 842,757
Claims priority, application Canada, Mar. 7, 1975, 221543
Int. Cl.² H02K *15/08, 15/12;* B29D *3/00*
U.S. Cl. 29—596 **5 Claims**



1. In the manufacture of a dynamoelectric machine, having an armature including a core member having a plurality of stacks of magnetic laminations spaced apart axially to define interstack spaces; axially directed slots in said core member; spacers disposed radially in said interstack spaces and dividing them into radially disposed ducts; and at least one coil side in one of said slots, said coil side being a loose enough fit in its slot to leave a narrow space between at least one radial surface of the side and the adjacent wall of the slot; the method of applying a semiconducting, elastomeric material in said space at a core stack comprising (a) blocking said space at both ends of said core stack by inserting blocking means into the adjoining ducts; (b) inserting a flat nozzle into said space by way of the slot opening in a region between said blocking means; (c) forcing a quantity of an uncured, semiconducting, elastomeric material through said nozzle into said space; (d) removing said nozzle from said space; (e) removing said blocking means after the material has initially set to a state where it will remain in place; and (f) curing said material, said cured material being a tough and rubbery compound having an electrical resistance low enough to conduct electric charge from the coil armor to the core stacks and yet high enough to not cause significant eddy current flow between core laminations.

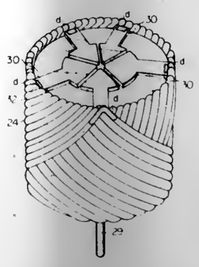
4,110,901

METHOD OF FABRICATING ROTOR COIL FOR CORELESS MOTORS

Yoshimitsu Nakamura, Settsu, and Hajime Kojima, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 29, 1977, Ser. No. 811,295
Claims priority, application Japan, Jun. 30, 1976, 51-78066
Int. Cl.² H02K *15/02*
U.S. Cl. 29—598 **7 Claims**

1. A method of fabricating a rotor coil for coreless motors comprising the steps of removing at least a portion of a coated insulation film of an insulation coated wire paid out of a bobbin at predetermined spaced positions, and winding said wire subjected to said removing step into a cylindrical coil by means of a coil winder so that said positions with the insulation film removed will be located at an axial end edge of said cylindrically wound coil for connection with respective commutator segments.

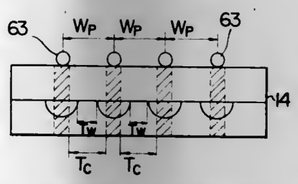


4,110,902

METHOD FOR MANUFACTURING A MAGNETIC HEAD FOR VIDEO SIGNAL

Teizou Tamura, and Katsuo Konishi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 20, 1976, Ser. No. 752,177
Claims priority, application Japan, Dec. 22, 1975, 50-151862; Jul. 14, 1976, 51-82996
Int. Cl.² G11B *5/42*
U.S. Cl. 29—603 **3 Claims**



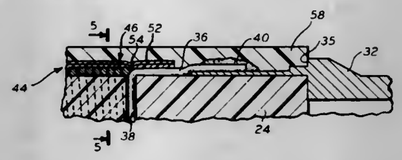
1. A method of manufacturing magnetic head chips suited for recording and reproducing a video signal, by joining two cores together with an interleaved non-magnetic material layer for defining a gap width, comprising the steps of:
preparing a magnetic body having one plane thereof polished,
forming a trapezoidal channel for defining a window for accommodating a coil in said polished plane of said magnetic core,
preparing a second magnetic body having one plane thereof polished,
abutting said two magnetic bodies to each other with the polished planes thereof facing to each other, and bonding said two magnetic bodies together with a non-magnetic material layer interleaved therebetween to establish the desired gap width, for forming a bonded block,
arranging a plurality of metal wires each having circular cross section parallel with each other at a given pitch,
grinding that surface of said bonded block which corresponds to a plane to be faced to a recording medium by sliding said metal wires longitudinally on said surface while dropping grinding liquid thereon to form a plurality of grooves each having an arcuate cross section extending in a direction which traverses said gap, and
slicing said block along center lines of said grooves to form a plurality of head chips,
said slicing step comprising the sub-steps of arranging metal wires, each having a smaller diameter than that of the wires used to form said grooves, at the same pitch as that of the wires used to form said grooves, arranging additional metal wires, one for each intermediate position of two adjacent wires, and sliding the metal wires thus arranged longitudinally thereof on said block while dropping grinding liquid thereon to slice said block along center lines of the respective arcuate grooves and along intermediate lines between two adjacent grooves.

4,110,903

METHOD OF MAKING INDUCTION COILS

Benjamin Kless, Teaneck, N.J., assignor to Vwnding Components, Inc., Hackensack, N.J.

Filed Nov. 5, 1976, Ser. No. 738,334
Int. Cl.² H01F *41/06*
U.S. Cl. 29—605 **11 Claims**



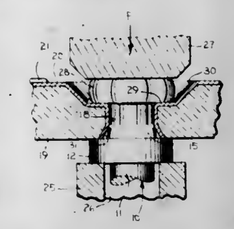
1. The method of making a loading coil for a citizen's band radio antenna, which comprises connecting metal terminals to opposite ends of a non-metallic core of smaller diameter than the metal terminals with confronting faces of the terminals forming flanges at opposite ends of the core that extend between them, winding a wire in a coil around a part of the length of the core with the ends of the coil spaced from both flanges, applying an adhesive tape around the outside of the coil to hold the convolutions of the coil firmly in their positions as wrapped on the core, inserting the core and the tape-wrapped coil in the cavity of a molding apparatus, injecting insulating material into the mold around the tape-wrapped coil and molding a jacket over the tape-wrapped coil throughout the full length of the distance between the flanges.

4,110,904

SUBSTRATE WITH TERMINAL CONNECTIONS AND METHOD OF MAKING THE SAME

Samuel B. Johnson, Wauwatosa, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed May 19, 1977, Ser. No. 798,729
Int. Cl.² H05K *1/10*
U.S. Cl. 29—628 **3 Claims**



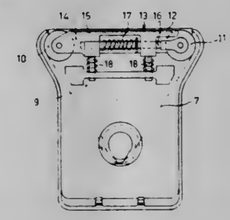
1. A method of attaching a lead to an electrical circuit component deposited on an apertured fired ceramic substrate by a swaging operation, wherein the aperture extends through the substrate and said circuit component, said method comprising the steps of:
providing a terminal lead having a first portion and a second portion;
forming said first portion of said lead to provide a plurality of integral, laterally extending, collapsible ridges;
inserting said first portion of said lead through said aperture so that the distal end of said portion extends beyond said substrate,
the collapsible ridges of said first portion being dimensioned to provide a temporary holding force between said lead and the surface of said aperture, whereby the longitudinal axis of said lead and the central axes of said aperture will be maintained in substantial alignment prior to and while said lead is subjected to a final upsetting operation;
said second portion being arranged for electrical connection to a source of electrical energy;
applying a force to said lead along the longitudinal axis thereof to upset the extended distal end portion and to bulge the said first portion to distend this portion radially towards lateral engagement with the surface of said aperture.

4,110,905

SHAVING APPARATUS WITH BAND CUTTER

Hendrik Willem Strijker, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 16, 1977, Ser. No. 807,021
Claims priority, application Netherlands, Jul. 12, 1976, 7607681
Int. Cl.² B26B *19/16*
U.S. Cl. 30—43.6 **4 Claims**



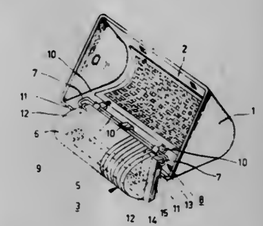
1. A shaving apparatus which comprises a driven endless band cutter, means to drive said endless band cutter continuously, a stationary upper cutter having hair entrance apertures and a stationary lower cutter formed with recesses corresponding respectively to the apertures in the stationary upper cutter, the endless band cutter being disposed between the stationary upper cutter and the stationary lower cutter.

4,110,906

SHAVING HEAD FOR A DRY-SHAVING APPARATUS

Melle Boer, and Albertus Pieter Rentema, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 13, 1977, Ser. No. 805,709
Claims priority, application Netherlands, Jul. 7, 1976, 7607476
Int. Cl.² B26B *19/04*
U.S. Cl. 30—43.92 **1 Claim**



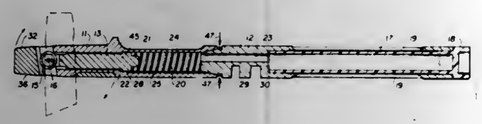
1. A detachable shaving head for a reciprocatory dry-shaving apparatus, which comprises a cap, a flexible shear plate mounted in the cap, a carrying frame hingeably connected to the cap by means of hinge arms, a cutting assembly mounted on the upper side of said carrying frame and provided with a plurality of shaving cutters for co-operation with the shear plate, each hinge arm being hingeably connected to one side of the carrying frame by one of its ends and to the inner wall of the cap at its other end, the underside of the carrying frame having at least one oblique surface whose height decreases inwardly from the edge of the carrying frame, and a stop cam

provided on such under side adjacent the inner end of the oblique surface for cooperation with an edge of the cap.

4,110,907
GLASS CUTTER

Ruediger Einhorn, Katonah; Lee Richard Chasen, Port Chester, and Joseph Walter Blake, III, South Salem, all of N.Y., assignors to Coats & Clark, Inc., Stamford, Conn.

Filed Mar. 11, 1977, Ser. No. 776,602
Int. Cl.[2] C03B *33/10*; B26B *25/00*
U.S. Cl. 30—164.95 23 Claims

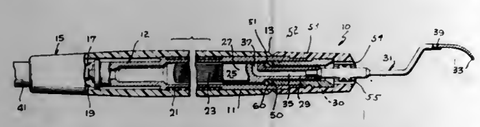


1. A glass cutter, comprising:
an elongated housing;
a longitudinally movable cutting wheel supporting member mounted within said housing adjacent one end thereof;
a cutting wheel rotatably mounted on said member;
a fluid reservoir disposed within said housing;
spring means for biasing said supporting member toward said one end of said housing;
valve means disposed within said housing between said reservoir and said wheel for causing fluid within said reservoir to flow to said wheel in response to longitudinal movement of said member toward the other end of said housing; and
a cutting wheel cover pivotally mounted to said housing adjacent said one end thereof, said cover having (i) an open position in which a surface of said cover is essentially perpendicular to the plane of said wheel, and (ii) a closed position in which a protective portion of said cover is longitudinally aligned with said housing to protect said wheel.

4,110,908
ULTRASONIC DENTAL SCALER

Dale O. Cranston, Lawrence, Kans., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Jun. 3, 1976, Ser. No. 692,291
Int. Cl.[2] A61C *15/00*
U.S. Cl. 32—50 16 Claims

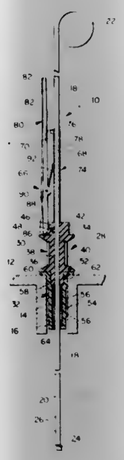


1. A handpiece for ultrasonic scaler comprising:
a shell forming an outer casing for the handpiece;
an electromechanical vibrator comprising an acoustical impedance transformer, an ultrasonic transducer and a dental work tool, said transducer being interconnected at at least one of its ends to said transformer and said work tool, said work tool extending out of one end of said shell; and
means for supporting said vibrator at the plane located at the balance point of said transformer.

4,110,909
DEVICE FOR CLEANING OIL DIPSTICKS

Ernst Mayr, Am Lappenspring 5, 3320 Salzgitter 51, and Heinz Langemeier, Harzstr. 24, 3394 Langelsheim, both of Fed. Rep. of Germany

Filed Jun. 6, 1977, Ser. No. 804,085
Int. Cl.[2] G01F *23/04*
U.S. Cl. 33—126.7 R 7 Claims

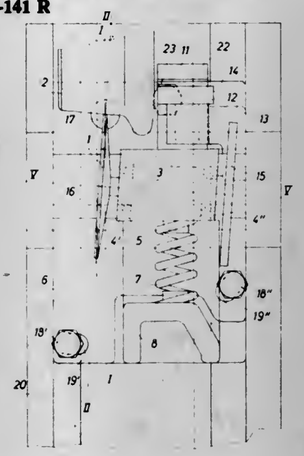


1. An oil dipstick for use in measuring oil level in an oil receiving chamber as formed in a casing, comprising an elongated rod on the outermost end of which a handle is formed, a wiping member removably received in a bore as formed in said casing, said rod slidably extending through said wiping member in frictional contact therewith and being movable outwardly of said casing relative to said wiping member, wherein oil is removed therefrom by contact with said wiping member, and a locking member secured to said rod and engageable with said wiping member for selectively locking said wiping member to said rod, so that the wiping member and rod are removable from said socket as a unit for a reading of the oil level on said rod, said locking member including a pivotally mounted lever on which a hook element is formed, said wiping member having a shoulder formed thereon for receiving said hook element in locking engagement for securing said wiping member to said rod, said lever being pivotally movable to release said rod from said wiping member for movement relative thereto, the portion of said wiping member that extends into said bore being sufficiently flexible to provide for a friction fit therein, a single recess portion formed in the uppermost end of said wiping member, said shoulder being located in said recess portion, the portion of the locking member on which the hook element is formed being dimensioned for extending into said recess portion, wherein said hook element is receivable on said shoulder for locking said wiping member to said rod, said locking member further including a bracket that is molded in fixed relation around said rod and including a longitudinally extending slot that projects entirely through said bracket, wherein said rod extends through said bracket for projection thereabove, said lever being received in said slots in parallel relation to said rod and being pivotally connected to said bracket, the handle as formed on said rod being located substantially above said lever.

4,110,910
APPARATUS FOR SIMULTANEOUSLY MEASURING THE OUTER DIAMETER OF SETS OF PROFILED WHEELS

Theodor Dombrowski, Erkelenz, Germany, assignor to Wilhelm Hegenscheidt GmbH, Erkelenz, Germany
Germany

Continuation of Ser. No. 525,374, Nov. 20, 1973, abandoned. This application Dec. 2, 1976, Ser. No. 746,867
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1974, 2358383
Int. Cl.[2] G01B *3/12, 5/10*
U.S. Cl. 33—141 R 2 Claims



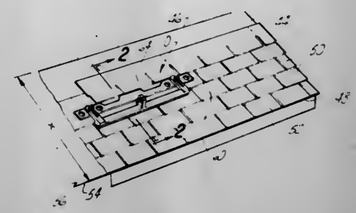
1. An apparatus for simultaneously measuring the outer diameter of a set of profiled wheels having conical tread surfaces, which are produced by a turning operation and therefore are formed at the tread surfaces with circumferentially extending grooves, said apparatus comprising a pair of generally cylindrical metering wheels having nominally identical diameter and width, the effective measuring width of each of said cylindrical metering wheels being substantially equal to the square root of the product 1.6 times the permissible tread diameter difference between the wheels of said set times the radius of a rounded cutting edge of a tool used for turning said surfaces, and the permissible diameter difference of said metering wheels being substantially equal to the product of the nominal diameter of said metering wheels times 20% of the permissible diameter difference of the tread diameters divided by the nominal tread diameter; and means mounting said metering wheels for turning movement about respective axes of rotation extending parallel to the generatrix of the respective conical tread surface.

4,110,911
SHINGLE GAGE

Robert J. Sucheck, 319 Colonial Dr., Monroe, Mich. 48161

Filed May 2, 1977, Ser. No. 792,938
Int. Cl.[2] G01B *5/16*
U.S. Cl. 33—188 2 Claims

1. A shingle gage for aligning a second row of shingles to a first row of shingles, said shingle gage comprising:
a first elongated member having a first alignment surface adapted to abut against one edge of the first row of shingles;
a pair of arms, said arms being secured to opposite longitudinal ends of the first member and generally perpendicular thereto, each arm having a longitudinal slot formed therethrough;
a second elongated member, said second member having a second alignment surface adapted to abut against one edge of the second row of shingles, said second member having a threaded stud extending upwardly from each end;
said arms of said first member being positioned over the second member so that the studs extend through the slots in the arms;
nut means for threadably engaging said studs and locking

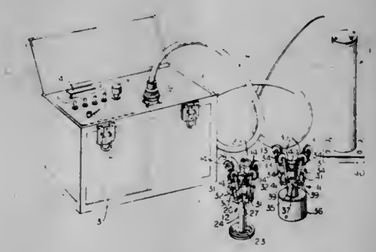


said members together so that said members are substantially parallel but spaced from each other and so that said alignment ourfaces are substantially parallel to each other; and
a layer of soft resilient material secured to the underside of said first member for frictionally engaging and retaining said gage to the roof surface.

4,110,912
TRIAXIAL DEFLECTION METER

John David Lytle, St. Louis, and James M. Combs, Wentzville, both of Mo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 29, 1977, Ser. No. 828,796
Int. Cl.[2] G01C *9/00*; G01B *5/30*
U.S. Cl. 33—312 10 Claims



1. A deflection meter for measuring deflection, tilt and rotation of a grooved casing, comprising:
a hollow body being open at its top end and at its bottom end;
a top end cap detachably secured to said hollow body for closing said top end of said hollow body;
a bottom end cap detachably secured to said hollow body for closing said bottom end of said hollow body;
a first servo-accelerometer secured inside said hollow body, said first servo-accelerometer having an output;
a second servo-accelerometer secured inside said hollow body, said second servo-accelerometer having an output;
a first amplifier secured inside said hollow body, said first amplifier having an input and an output;
a second amplifier secured inside said hollow body, said second amplifier having an input and an output;
a third amplifier secured inside said hollow body, said third amplifier having an input and an output;
means for coupling said output of said first servo-accelerometer to said input of said first amplifier;
means for coupling said output of said second servo-accelerometer to said input of said second amplifier;
a rotational variable differential transformer secured inside said hollow body, said variable differential transformer having an output;

means for coupling said output of said variable differential transformer to said input of said third amplifier;
a source of electrical power located remote from said hollow body;
means for coupling said source of electrical power to said first servo-accelerometer, said second servo-accelerometer, said first amplifier, said second amplifier, said third amplifier and said variable differential transformer;
a meter;
means for selectively coupling said output of said first amplifier, said output of said second amplifier and said output of said third amplifier, one at a time, to said meter, and
first and second guide means secured to said top and bottom end caps, respectively, said second guide means connecting said rotational variable differential transformer.

4,110,913

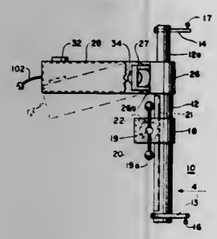
AUTOMOBILE FRONT END ALIGNMENT EQUIPMENT

Roy E. Dick, 3758 Blue Rock Rd., Cincinnati, Ohio 45239

Continuation-in-part of Ser. No. 205,260, Dec. 6, 1971, which is a division of Ser. No. 757,190, Aug. 5, 1968, Pat. No. 3,643,337, which is a continuation-in-part of Ser. No. 368,460, May 19, 1964, Pat. No. 3,457,653. This application Jun. 27, 1974, Ser. No. 483,705

Int. Cl.² G01B *13/195, 19/295, 5/255*

U.S. Cl. 33—336 **10 Claims**



1. A camber indicating device which comprises a carriage, a plurality of parallel spaced horizontal rollers rotatably mounted on the carriage and arranged to support a tire of a vehicle for rotating the tire and a wheel of the vehicle on which the tire is mounted, a support frame mounted on the carriage and extending upwardly therefrom to a position opposite a center of the wheel, a horizontal frame mounted on the support frame and alignable with a center of the wheel, a head member pivotally mounted on the horizontal frame, a wheel sensing frame rotatably mounted on the head, means on the wheel sensing frame for alignment transversely of the axis of the wheel, means for indicating the angle between the horizontal frame and the head member, and means for rotating one of the rollers to turn the tire and wheel, the indicating means indicating camber of the wheel.

4,110,914

HAND COMPASSES

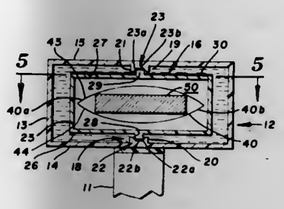
Nils Ruder, Fareham Hants, England, assignor to Normark Corporation, Minneapolis, Minn.

Continuation of Ser. No. 643,009, Dec. 22, 1975, abandoned. This application Mar. 7, 1977, Ser. No. 774,864

Int. Cl.² G01C *17/06, 17/08*

U.S. Cl. 33—355 D **4 Claims**

1. An improvement in the structure of hand held compases, including:
a. a first outer housing providing an upper and a lower surface and sides between said surfaces to provide an enclosed cavity;
b. bearing members provided in aligned relation respectively on each of said upper and lower surfaces of said outer housing and being inwardly directed;
c. a second, inner housing having an upper and a lower surface and sides between said surfaces to provide an enclosed cavity;
d. aligned pivot members extending outwardly from said upper and lower surfaces of said inner housing and engaging said bearing members of said outer housing to permit rotation of said inner housing in a first plane within said outer housing;
e. said side surfaces of said inner housing including a pair of diametrically opposed aligned bearing members directed inwardly into said cavity;
f. a magnet body having diametrically opposed pivot members arranged to engage said bearing members of said inner housing and arranged within said inner housing and moveable therein in a plane normal to the plane of rotation of said inner housing; and,
g. said magnet body including a generally circular body portion having diametrically opposed flat portions on the circumference thereof respectively adjacent the magnet body pivot members and a cross section defining a substantially oblate spheroid, said magnet member being generally rectangular and being positioned generally centrally of said body and arranged generally normal to the diametrically opposed pivot members.



4,110,915

MANUFACTURE OF CEMENT

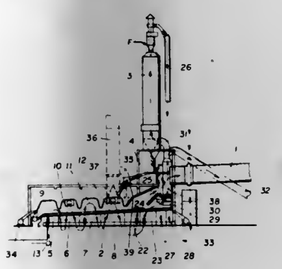
Gerard Ghestem, Lambersart, France, assignor to Fives-Cail Babcock, Paris, France

Filed Dec. 13, 1976, Ser. No. 750,230

Claims priority, application France, Dec. 12, 1975, 75 38049; Sep. 28, 1976, 76 29040

Int. Cl.² F26B *7/00*; F27B *7/02*

U.S. Cl. 34—20 **16 Claims**



1. A process of manufacturing cement, wherein raw material is converted to clinker in a rotary tubular kiln and the clinker is discharged from the kiln through a hood onto a grate in a cooler, the cooler including a housing connected to the hood, means for supplying fresh air into the cooler housing at one end thereof, and means for conducting different portions of the air from the cooler housing, comprising the steps of
(a) moving a layer of the clinker discharged from the kiln on the grate in the cooler housing from a hot zone to an increasingly cooler zone,
(b) supplying the fresh air in the cooler zone at the one end remote from another end of the cooler housing wherein the clinker is discharged,
(1) the layer of the clinker being moved on the grate from the other end of the one end of the cooler housing,
(c) passing the fresh air countercurrently through the layer of the clinker several times from the one end to the other end whereby a heat exchange takes place between the air and the clinker and the temperature of the air progressively increases,
(d) subsequently introducing the air from the cooler zone into two sections of the hot zone,
(e) conducting one of the portions of the air at a temperature in excess of 1000° C from a first one of the sections of the hot zone out of the cooler housing, and
(f) conducting another air portion at a lower temperature from the second hot zone section into the kiln for use as secondary heating air in the kiln.

4,110,916

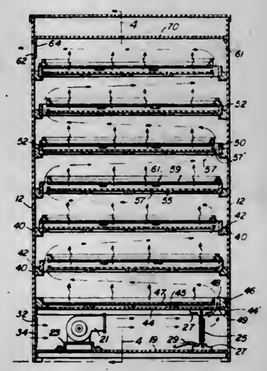
FORCED AIR FOOD DRIER

Harold E. Bemrose, 423 E. Alder, Walla Walla, Wash. 99362

Filed Aug. 30, 1976, Ser. No. 718,910

Int. Cl.² A23B *4/04*

U.S. Cl. 34—197 **9 Claims**



1. A forced air drier for food such as fruits and the like, said drier comprising a cabinet having a top, a bottom and side wall means extending between said top and bottom and defining an access opening in one side of said cabinet, a door removably closing said access opening, support means within said cabinet for removably supporting vertically spaced food supporting tray structures, a plurality of tray structures removably supported in relative vertically spaced relation from said support means within said cabinet, each of said tray structures including a pair of vertically spaced upper and lower food support and radiant heat sheets, respectively, said food support sheets being foraminous, alternating opposite sides of said vertically spaced tray structures including means defining upstanding air flow passages therethrough communicating the spaces between adjacent pairs of tray structures and into which the adjacent portions of the spaces between pairs of upper and lower sheets open, said spaces between adjacent tray structures, said spaces between upper and lower sheets, and said passages defining a tortuous air passage through said cabinet around said tray structures, and means operative to force heated air through said tortuous passage in said cabinet.

4,110,917

ELECTRONIC EXPERIMENTING KIT

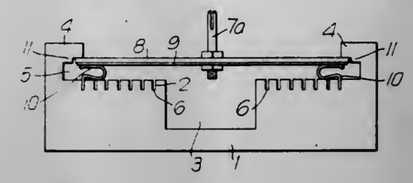
Guy Oscar Le Grelle, Borgerhout, Belgium, assignor to Xaverius College, Borgerhout, Belgium

Filed Feb. 24, 1977, Ser. No. 771,590

Claims priority, application France, Feb. 26, 1976, 76 05354

Int. Cl.² G09B *23/18*

U.S. Cl. 35—19 A **5 Claims**



1. In an electronic experimenting kit, of the kind comprising
a base;
a number of conductors mounted on said base, said conductors being electrically insulated relative to one another, extending substantially in parallel relationship with one another and being accessible from the one major face of the base;
a number of electronic components having connecting terminals;
a number of plates, each component being so mounted on a plate that the terminals thereof are electrically insulated from one another;
at least two conductors so mounted on each plate that they are electrically insulated from one another, each electronic component terminal on a plate being electrically connected to one of the conductors mounted on the plate;
means to removably fasten each plate on the base, and
means to provide a disconnectible contact between one base-mounted conductor and one plate-mounted conductor the improvement that the means for fastening the plates to the base comprise;
two rims mounted on the base on each side of the conductor set also mounted on said base and extending substantially in parallel relationship thereto, each such rim having a groove on the side thereof facing the opposite rim, each plate being receivable with both opposite ends thereof in the groove provided in both said opposite rims, the plate length being longer than the spacing between those rim portions which lie farther away from the base than the grooves, but equal at the most to sum of said spacing and the depth of a groove or of the deepest groove when the grooves have different depths, the plate-mounted conductors being so arranged that they cross the base-mounted conductors when said plates are engaged with the end thereof inside the grooves provided in the base rims;
spring-action conductor elements which are completely independent from the base and the plates, said elements being designed for wedging between the base and each plate to press said plates against the rims by moving the plates away from the base and for contacting a plate-mounted conductor and a base-mounted conductor, said elements thus forming said electrical contact between any one of the conductors mounted on a plate and any conductor of at least one conductor set mounted on the base.

4,110,918

MODULAR BIOFEEDBACK TRAINING SYSTEM

J. Michael James, Cambridge; James F. Fee, Needham, and Richard M. Horton, Duxbury, all of Mass., assignors to Cyborg Corporation, Brighton, Mass.

Filed Jul. 21, 1976, Ser. No. 707,295

Int. Cl.² G09B *19/00*

U.S. Cl. 35—22 R **15 Claims**

1. Apparatus for use in the biofeedback training of a subject

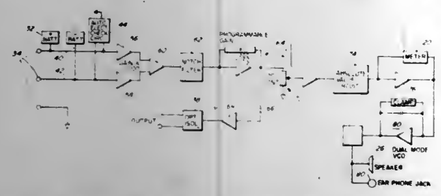
either as an independent apparatus or in operative conjunction with other complementary and separately housed apparatus, comprising:

(a) a relatively small, portable housing,

(b) first stage biofeedback circuit means in said housing for processing signals fed thereto to a first level of conditioning,

(c) power means connected to said circuit means for energization thereof,

(d) first connection means connectable to said subject and to said circuit means to provide input signals thereto,



(e) second connection means connectable to said circuit means and to said other apparatus whereby input signals processed by said circuit means to said first level of conditioning are transferred to said other apparatus as an input thereto for processing to a second level of conditioning,

(f) sensory signal generating means in said portable housing connected to and responsive to said first stage circuit means and adapted to produce sensory signals as a feedback to said subject,

(g) said circuit means including first stage electronic filtering means adapted to pass signals only within a predetermined bandpass, and

(h) control means in said housing for varying said bandpass.

4,110,919

SKI TRAIL FORMING AND CONDITIONING DRAG

Lucien Henrichon, 373 St. Paul St., St. Gabriel, Canada

Filed Apr. 5, 1977, Ser. No. 784,889

Claims priority, application Canada, Apr. 5, 1976, 249587

Int. Cl.² E01H *4/00*

U.S. Cl. 37—10 **2 Claims**



1. A ski trail forming and conditioning drag comprising a sled unit including a sled platform constituting an elongated plate having a smooth, continuous, flat underface and a front portion forming an upwardly curved leading end, and a pair of runners of common ski width secured against said underface longitudinally extending in the longitudinal direction of said plate, in operatively normal ski-apart lateral spacing relationship relative to each other, and said pair of runners each having a bottom face spaced a predetermined height from said underface of said plate, whereby the depth of ski trace imprints made by the runners does not exceed the predetermined height defined by the vertical distance between the bottom face of the runners and said underface of said plate, each runner having a pointed front end forming a tip and the bottom face of the corresponding runner extends flat and co-planar with the corresponding tip, said drag further comprising a front unit, a pivotal connection joining the sled unit to the front unit, said pivotal connection including a draw bar rigidly secured to the sled platform of the sled unit and projecting from the curved leading end of the sled platform and longitudinally of the latter, a sleeve bearing secured axially upright to the front end of the draw bar, an upright rod rigidly secured to the said front unit, said sleeve bearing being slidably and pivotally engaged over said rod for pivoting and upright sliding displacements of the sled unit relative to the front unit, and said front unit including a frame, a single runner unit, a height adjustment mechanism adjustably connecting said single runner unit to said frame for height adjustment of said frame relative to the single runner, and wherein said height adjustment mechanism includes a post extending upright through said frame and slidable endwise relative to the latter, said single runner unit is fixedly secured to the lower end of said post, a lever is pivoted to said post above said frame and is pivoted to the latter about a pair of transverse parallel axes respectively, and a locking device releasably connects said post to said frame for up-and-down adjustment and locking of said post and height adjustment of said frame relative to the single runner unit, whereby said single runner unit remains at the same angle relative to said frame in any height adjustment position.

4,110,920

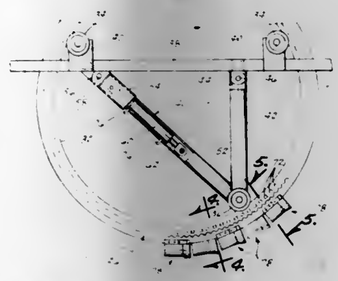
SLACK TAKEUP APPARATUS FOR AN ENDLESS EXCAVATING MEMBER

Stanley L. Brown, Lenox, Iowa, assignor to Roscoe Brown Corporation, Lenox, Iowa

Filed Feb. 28, 1977, Ser. No. 772,558

Int. Cl.² E02F *5/08*

U.S. Cl. 37—97 **5 Claims**



1. An excavating device comprising;

a support frame,

at least one generally rigid circular rim having a plurality of excavating members mounted thereon,

mounting means retentively movably mounting said circular rim to said frame for movement of said excavating members in a continuous circular path,

said mounting means comprising a maximum of three wheels including first and second wheels mounted to said frame for rotation about stationary axes and a third wheel movable relative to said first and second wheels, all three of said wheels being circumferentially spaced on said circular rim so as to engage said circular rim for rotatable retentive engagement therewith,

said first, second, and third wheels being comprised of substantially hard rigid material,

an elongated longitudinally extensible power member pivotally mounted at one of its ends to said frame and pivotally mounted at the other of its ends to said third wheel,

a second elongated member pivotally connected at one end to said frame and pivotally connected at the other end to said third wheel,

said third wheel movable radially outwardly of said circular rim in response to extension of said elongated power member, thereby to take up slack between said wheels and said circular rim.

4,110,921

BUCKET CUTTING EDGE

John M. Poker, Jr., Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 19, 1977, Ser. No. 834,742

Int. Cl.² E02F *3/00*

U.S. Cl. 37—141 R **14 Claims**



1. In a bucket assembly having a bucket portion defining a front edge adapted to have a cutting edge welded thereto, the improvement comprising:

a cutting edge assembly having a front, hardened portion, a rear portion having a hardness less than that of the front portion, said front portion being welded to said rear portion and subsequently straightened to define a prefabricated assembly effectively free of welding distortion; and

weld means securing said rear portion of the prefabricated straightened cutting edge assembly to said front edge of the bucket free of distortion of the bucket assembly as the result of the elimination of need for preheating of the cutting edge assembly in welding said prefabricated assembly to said cutting edge.

4,110,922

APPARATUS FOR THE DISPLAY OF INFORMATION

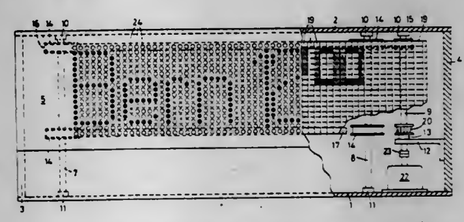
Ruth Leemann-Dittmann, Casa Martina, 7017 Flims-Dorf, Switzerland

Filed Feb. 25, 1977, Ser. No. 772,256

Claims priority, application Switzerland, Feb. 27, 1976, 2469/76

Int. Cl.² G09F *11/15, 11/26*

U.S. Cl. 40—447 **8 Claims**



1. Apparatus for the display of information comprising:

(a) at least one endless draw member guided around at least two reversing pulleys;

(b) a motor driving said endless draw member;

(c) a plurality of outwardly protruding holders carried by said draw member and extending transversely of the longitudinal direction thereof;

(d) a plurality of laminae carried by each of said holders with a free end thereof extending beyond the holder;

(e) the length of each lamina being greater than the distance between adjacent holders in the extended zone of the draw member whereby an overlap zone of adjacent laminae is maintained in said extended zone;

(f) the radius of one reversing pulley, the length of the laminae, and the distance between the draw member and the connection of the laminae to each holder being so related that said overlap is eliminated when said laminae pass round the said one reversing pulley;

(g) means for determining the position of the free ends of the laminae situated near the end of the reversal of the draw member by said one reversing pulley;

(h) said means selectively directing said lamina to a position either in front of or behind the overlap region of an adjacent lamina;

(i) each lamina having a forward region and a rearward region differentiated visually from one another whereby a desired display can be set up by selective exposure of said regions.

4,110,923

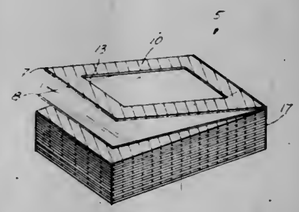
PRESENTATION-FRAME AND BACKING UNITS PAD

Frank Shore, 26 Lantern Rd., Hicksville, N.Y. 11801

Filed Apr. 19, 1973, Ser. No. 352,588

Int. Cl.² G09F *1/12*

U.S. Cl. 40—152 **3 Claims**



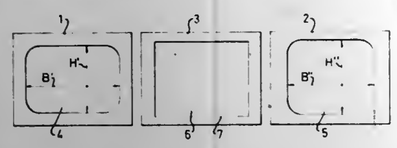
1. A picture frame and backing tablet device comprising in combination: stacked tablet detachable sheet structures including (a) a first plurality of first sheet-like substantially opaque elements each having first upper and lower planar surfaces with a first circumscribing periphery, and (b) a second plurality of second sheet-like substantially opaque elements each having second upper and lower substantially planar faces with a second circumscribing outer periphery, at least one of said second sheet-like elements being disposed between consecutive ones of said first sheet-like elements; a tablet edge-connecting strip means detachably interconnecting substantially aligned portions of stacked said sheet structures at one side edge of said first and second circumscribing peripheries such that there is formed a tablet pad having stacked detachable units edge-connected to one-another of the units serially arranged from a top to a bottom of the tablet pad, each detachable tablet unit including the inter-connected first and second peripheries; each first sheet element of said plurality having at least one through-passage being defined by passage-circumscribing walls of the first periphery of the first sheet-like element, the first through-passage being of sufficient cross-sectional area that the passage-circumscribing walls form a first-element picture frame for each unit, said second sheet-like element's upper face being of sufficient area for said second sheet-like element to serve as a backing element for a picture to be mounted on said upper face for viewing through said through-passage for each detachable unit; each said first upper face including an inner circumscribing edge of its through-passage, a severence slot through a partial thickness of the thickness of the first sheet-like element defining an edge-margin strip, each of the first sheet-like element's through-passage defined by a plurality of linear inner edges of said edge-margin strip with adjacent consecutive linear edges defining an acute angle, and extending from an apex of the acute angle there being a total severence through substantially the entire thickness of the first sheet-like element transversely across the respective edge-margin strip such that each edge-margin strip may be pivotably turned downwardly and optionally under the first sheet-like lower face and such that the edge-margin strip is easily totally separable by tearing if desired.

4,110,924

MOUNT FOR X-RAY FILMS

Bo Moderatho, Lidingo, Sweden, assignor to Bo Moderatho & Company AB, Lidingo, Sweden

Filed Dec. 7, 1976, Ser. No. 748,328
Int. Cl.² G09F *1/12*
U.S. Cl. 40—158 B **2 Claims**



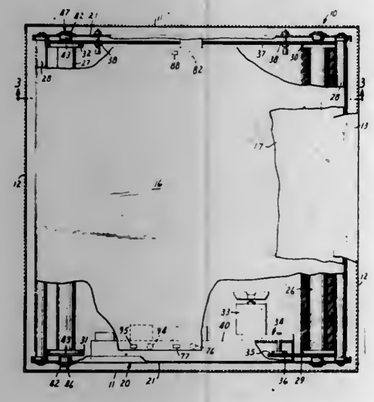
1. Mount for viewing X-ray films and the like including: two opaque rigid sheets and, secured between said opaque sheets, a spacer sheet having substantially the same thickness as the thickness of the films to be viewed, each of said opaque sheets having at least one substantially rectangular opening, and together providing a set of openings positioned opposite each other, the opening in one opaque sheet having a height dimension smaller than the height of the film to be viewed and a width dimension larger than the width of the film to be viewed and the opening of said set in the other opaque sheet having a height larger than the height of the film and a width smaller than the width of the film, providing said one opaque sheet with two opposite film supporting rim portions for one face of a film along two opposite side edge portions of said film and said other opaque sheet with two opposite film supporting rims for the other face of the film along the other two opposite edge portions of the film; said spacer sheet having weakening lines which enable parting and removal of a screening spacer sheet part having substantially the same length and width dimensions as that of the film whereby a removed screening part may be reinsertable in the mount so that the set of openings in said opaque sheets formed by the removal of a screening part may be covered.

4,110,925

AUTOMATIC SCROLL SIGN

Neal T. Strand, New Richmond, Wis., and Richard J. Esboldt, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 28, 1977, Ser. No. 782,027
Int. Cl.² G09F *11/00*
U.S. Cl. 40—466 **3 Claims**



1. In a sign structure having a display area, a scroll adapted for moving past the display area to display information thereon at the display area, and a rotatable motor actuated by line and common conductors for moving said scroll, the improvement comprising:

said scroll having at least one section containing information display regions in seriatim along the length of the scroll and being wound on and extending between two rolls;

said rotatable motor being reversible and having first and second input terminals, the direction of rotation thereof being controlled by applying a first conductor selected from the line conductor and the common conductor to one of the first or second input terminals, said motor being adapted for advancing the scroll past said display area in a first direction and in a second direction, opposite to said first direction;

a motor control circuit for applying the line conductor and the common conductor to said motor, comprising,

(1) switching means connected to the first conductor and actuated upon application of a signal thereto for switching the first conductor between said first and second input terminals to change the direction of motor rotation,

(2) circuit means for selectively applying the second of the line conductor and the common conductor to the motor, comprising,

(a) a normally-open first switch, adapted for closing upon a scroll display region being at the sign structure display area for connecting said circuit means to the second conductor,

(b) a first relay having a coil and first and second terminals, said first terminal connecting said second conductor to the motor for advancing the scroll when the coil is inactuated, said coil being actuable for disconnecting the first terminal from said second conductor and connecting the second terminal to the said second conductor,

(c) a second relay connecting the second conductor to said first relay coil upon closure of said normally open first switch for actuating said first relay to connect the second terminal thereof to said second conductor, and having a coil for actuating said second relay to disconnect said second relay from said second conductor, and

(d) time delay means actuated by the closing of the said normally-open first switch for applying a delayed signal to actuate the coil of said second relay to disconnect said second relay from said second conductor, thereby deactuating said first relay coil to connect said first terminal thereof to said second conductor,

(3) a normally-open second switch connected between said switching means and the second terminal of said first relay and closing concurrently with said first switch at the end of the scroll section for actuating said switching means,

(4) a normally-open third switch, said third switch closing concurrently with said normally-open second switch at the end of the image areas at either end of the scroll for bypassing the circuit means and connecting said normally-open second switch directly to said second conductor, thereby to actuate said switching means for reversing said motor and

(5) a manually operable, normally closed fourth switch connected to said second conductor between said first switch and said third switch for overriding said first switch and said circuit means.

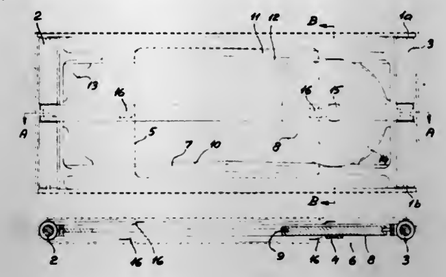
4,110,926

CHANGEABLE EXHIBITOR COMPRISING A VIDEO OR SCRIPT TAPE MOVABLE IN A CLOSED LOOP

Borge Andreas Ravn, Copenhagen, Denmark, assignor to Moviefig APS, Copenhagen, Denmark

Filed Nov. 3, 1976, Ser. No. 738,396
Int. Cl.² G09F *19/00*
U.S. Cl. 40—485 **2 Claims**

1. In a changeable exhibitor comprising a video or script tape movable on vertical guide rollers in a closed loop and being controlled by a means of a weighted roller in the interior space of said loop, wherein said weighted roller is freely movable on a substantially horizontal roller path, a member is provided on at least one side of said weighted roller, and projections are provided on the side of the tape facing the roller path, said member having direct unilateral cooperation with



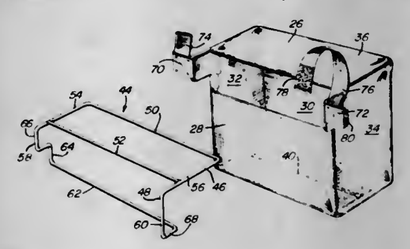
said projections for advancing the tape in response to movement of the weighted roller in one direction along the roller path.

4,110,927

SPENT LONG GUN SHELL CADDY

Jack LeRoy Morris, 1513 W. 151 St. Ter., Olathe, Kans. 66061

Filed Feb. 24, 1977, Ser. No. 771,794
Int. Cl.² F41C *27/00*
U.S. Cl. 42—1 T **7 Claims**



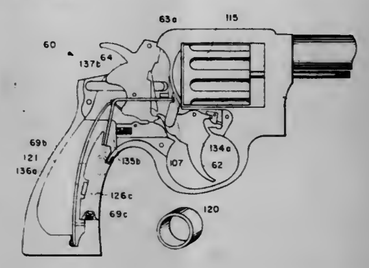
1. In combination with a long gun of the type including a barrel extending forwardly from a receiver in which rounds to be fired from said gun may be received and further including structure for ejecting spent shells laterally outwardly of one side of said receiver, a spent shell catcher removably supported from said gun and defining a receptacle spaced laterally outwardly from and opening toward said one side of said receiver for receiving and catching spent shells ejected from said receiver, said receptacle including a hollow container including upstanding and interconnected near and far sides adjacent and remote, respectively, from said receiver, the upper portion of said near side defining an entrance opening into the interior of said container, said container further including a top side interconnecting the upper marginal portions of said near and far sides, said receptacle further including a support frame including an elongated horizontal upper portion and a horizontally elongated upstanding portion extending along and depending downwardly from one longitudinal edge of said upper portion, said upper portion of said frame underlying and supporting the marginal portions of said top side, said upstanding portion including opposite end upright portions for abutting the adjacent side surfaces of said gun.

4,110,928

SAFETY DEVICE FOR PREVENTING UNAUTHORIZED ACTUATION OF A TOUCH-ACTUATED MECHANISM

Joseph E. Smith, 170 Locksumart Way #23, Sunnyvale, Calif. 94087

Continuation-in-part of Ser. No. 670,937, Mar. 26, 1976, Pat. No. 4,067,132, which is a continuation-in-part of Ser. No. 530,891, Dec. 9, 1974, Pat. No. 3,978,604. This application Mar. 24, 1977, Ser. No. 781,035
Int. Cl.² F41C *17/00*
U.S. Cl. 42—66 **4 Claims**



1. In a safety device for preventing the unauthorized firing of a weapon having a trigger, a cylinder for holding cartridges to be fired by said weapon, a cylinder rotation means operative in response to movement of said trigger, a hammer, and hammer actuation means, wherein the invention comprises:

a magnetic actuable member pivotally mounted with respect to said cylinder rotating means;

stop means for preventing said member from pivoting beyond a predetermined arc; and

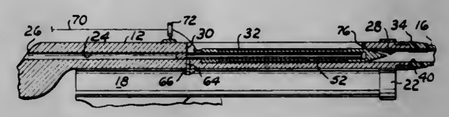
bias means for maintaining said member in a position of the arc for preventing movement of said cylinder rotation means to thereby prevent firing of said weapon.

4,110,929

FISHING ROD AND PROJECTILE FIRING GUN

Dwayne R. Weigand, 8504 S. Miller, Oklahoma City, Okla. 73159

Filed Dec. 7, 1977, Ser. No. 858,147
Int. Cl.² A01K *91/02*; F41F *1/04*
U.S. Cl. 43—19 **6 Claims**



1. In a gas operated pistol having a hand grip secured to a magazine capable of containing a charge of gas under pressure for propelling a projectile and having a trigger means for releasing the gas charge, the improvement comprising:

a barrel having a longitudinal through bore and having a forward end and a breech end longitudinally mounted on said magazine,

said barrel having a lateral port communicating with the gas charge and having a longitudinal opening in its forward end portion communicating with its bore;

an elongated projectile freely received by the barrel opening and longitudinally slidable within the barrel bore,

said projectile having a pointed forward end and having an elongated axial socket open at its other end;

an elongated flexible strand secured to said other end of said projectile;

a tubular bolt having a closed rearward end slidably received longitudinally by the bore and the projectile socket,

said bolt having a lateral port adjacent its closed end communicating with the lateral port of said barrel,

said lateral port communicating by a passage through said bolt with said elongated axial socket of said projectile; and,

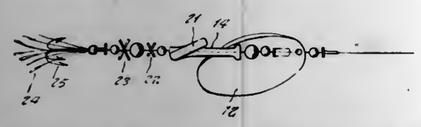
latch means normally preventing rearward movement of said bolt.

4,110,930

NON-TWISTING SPINNING LURE

Ronald Daniels, 115 Clover Ridge Ave., Fort Thomas, Ky. 41075

Filed Mar. 17, 1977, Ser. No. 778,669
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.14 **3 Claims**



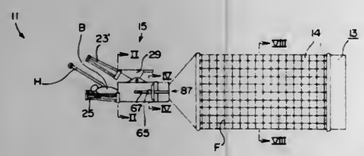
1. A non-twisting spinning lure comprising in combination, a single main blade rotatably mounted on a shaft attached to a connecting wire fixedly secured in a lead body, said single main blade being at a fixed acute angle to said shaft and connected thereto by a bracket arm and an opening in an end of said blade, said single main blade having a raised lip on a leading edge thereof, said lead body having a keel portion and a center of gravity on one side of the longitudinal axis of said connecting wire, said keel portion of said lead body having a twist therein whereby rotational forces created by said single main blade and said lead body are in opposite directions.

4,110,931

INSECT BAIT DISPENSING DEVICE

John F. Maness, Memphis, Tenn., assignor to Cricket Corporation, Ripley, Tenn.

Filed Nov. 5, 1976, Ser. No. 739,353
Int. Cl.² A01K *97/04*
U.S. Cl. 43—55 **10 Claims**



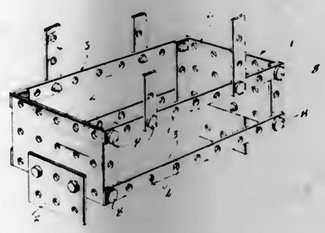
1. The combination with a bait container of the type carried by a fisherman for holding a limited supply of live insects which he uses as fish bait, of a bait dispensing head attached to said bait container for facilitating the act of empaling the insect with a fishhook and for subsequently facilitating a gentle unrestrained removal of the empaled insect therefrom, said bait dispensing head comprising a main body member and solitary cage-like entrapment means defining a distal end of said dispensing head for capturing a single insect and constraining the captured insect in an optimum position for facilitating thrusting the fishhook therethrough, said solitary cage-like entrapment means including a pair of jaw members with at least one of said jaw members being pivotally attached to said main body member for pivotal movement thereof between closed and open positions, said main body member including a passageway communicating the interior of said bait container with said pair of jaw members, lever means attached to said movable jaw member for facilitating manually moving said pair of jaw members to the open position for unrestraining the hooked insect thus enabling it to be gently removed from said solitary cage-like entrapment means, and gate means for varying the size of said solitary cage-like entrapment means to selectably constrain insects of various different sizes therein, said gate means including a carriage sleeve member slidably received within said passageway for slidable movement to and fro therein, a plurality of resilient tine members having their root portions fixedly attached to said carriage sleeve member with the free ends thereof being directed toward said distal end of said dispensing head, said carriage sleeve member being movable to infinite positions between a minimum opening position and a maximum opening position, and constrictor means fixedly attached to said main body member and being disposed adjacent the distal terminus of said passageway for engaging and yieldably urging the free ends of said resilient tine members inwardly toward the longitudinal center line of said passageway as said carriage sleeve member is slidably moved toward said minimum opening position thus decreasing the effective size of said solitary cage-like entrapment means and conversely increasing the effective size of said solitary cage-like entrapment means as said carriage sleeve member is moved toward said maximum opening position.

4,110,932

TOY CONSTRUCTION SYSTEM HAVING REUSABLE DISTENSIBLE JOINING MEMBERS

Robert L. Brass, Westport, Conn., assignor to General Mills Fun Group, Inc., Minneapolis, Minn.

Continuation of Ser. No. 660,320, Feb. 23, 1976, abandoned.
This application Jan. 3, 1977, Ser. No. 756,275
Int. Cl.² A63H *33/10*
U.S. Cl. 46—29 **15 Claims**



1. In a toy construction system of the type including structural elements having preformed alignable holes through which fasteners are fitted to join the structural elements together, the improved fastening system comprising:

reusable rivet elements formed of distendable material, each rivet element having an elongated body with a relaxed diameter greater than the diameter of the holes in the structural elements and a diameter, when distended longitudinally, less than the diameter of said holes, an enlarged base at one end for applying a longitudinal distending force to the rivet element, a shoulder next to the base for spacing the base from the structural elements, and an internal bore extending through the base, shoulder and body to the opposite end of the rivet element, said opposite end being closed for receiving a longitudinal distending force applied to the rivet element through said bore; and

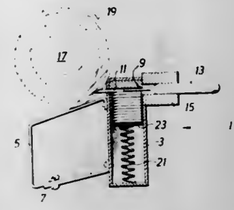
a device for inserting and withdrawing the rivet elements from the holes in the structural elements, said device comprising closable jaw means for engaging the base of said rivet element, an elongate wire positionable in a bore of said rivet element against its opposite closed end, and means for relatively moving the jaw means and wire apart to distend the rivet element to reduce the diameter of its body for insertion into or withdrawal from said holes, and for moving the jaw means and wire together to relax the rivet element when in said holes to increase its diameter for fastening the structural elements together.

4,110,933

PROCESS AND AN APPARATUS FOR KILLING TREES OR WOODY PLANTS

Per Häggblom, Uppsala, Sweden, assignor to Edsbyns Industri AB, Edsbyns, Sweden

Filed Jan. 17, 1977, Ser. No. 759,835
Claims priority, application Sweden, Jan. 27, 1976, 7600849
Int. Cl.² A01G *7/06*
U.S. Cl. 47—57.5 **5 Claims**



1. An apparatus for applying a biocide to trees and woody plants having bark comprising:

discrete injection means for carrying a quantity of biocide for insertion into a tree;

means for feeding a plurality of said injection means in sequence; and

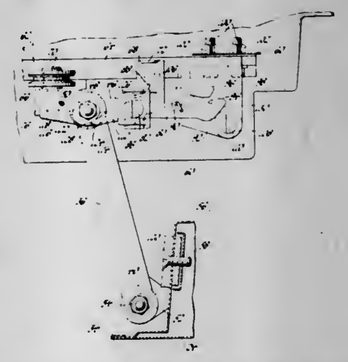
means for driving said injection means sequentially into the tree substantially into the area between the bark and the wood of the tree.

4,110,934

HINGE MECHANISM FOR A SLIDING DOOR

John F. Zens, Algonac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1977, Ser. No. 855,169
Int. Cl.² E05D *15/10*
U.S. Cl. 49—218 **2 Claims**



1. An improved hinge and latch mechanism for supporting one edge of a vehicle sliding door to initially move the one edge laterally from a vehicle body during an opening operation and subsequently to guide movement of the one edge in a longitudinal direction along the vehicle body comprising: a link member having spaced end portions, one end portion of which is attached to the one edge of the door in a manner permitting pivotal movement about a generally vertical axis therebetween, the other end portion of the link member being operably attached to the vehicle, a track supported by the vehicle and extending in a general horizontal direction longitudinally with respect to the vehicle, a carriage member movable along said track with means operably engaging the other end portion of said link member to permit a pivotal movement therebetween about a substantially vertical axis, whereby the spaced end portions of said link member are aligned in substantial longitudinal orientation with respect to the vehicle when the door is closed, but are movable with respect to one another by pivoting of the link member into a laterally outward transverse orientation with respect to the vehicle after the door begins its opening movement, a latch mechanism associated with said link member for locking said link member in its transverse orientation subsequent to initial door opening movement, thereby permitting the link member and carriage to thereafter follow the track to the door's fully open position, said latch mechanism including a striker supported at one end of said track adjacent the one end of said door when in a closed position, a latch lever pivotally attached at its midpoint to the carriage about an axis parallel to the axis of the end portion, one end of said lever engageable with said striker when the door is closed, latch lever actuating means attached to the other end portion of the link member for rotation therewith and for controlling pivotal movement of said latch lever between an engaged latch position with said striker and a released unengaged position, said actuating means having a shoulder-forming portion thereon, an opposite end of said latch lever engaging said actuating means to maintain said latch lever and its one end into engagement with the striker when the door is closed and to move the one end into a released position as the link member rotates, the shoulder-forming portion engaging the opposite end surface after a predetermined rotation of the link member to its transverse orientation, thereafter locking the link member 16 in its transverse orientation during sliding movement of the door with respect to the vehicle body as produced by movement of the carriage along the track, and guide means adjacent said striker positioned to engage the one end of said latch lever, thereby pivoting the latch lever so as to free the opposite end from the shoulder-forming portion as the door moves toward its closed position and thereafter permitting the link member to pivot from its transverse position to its longitudinally oriented position.

4,110,935

CABLE-ACTUATED, CAR-SIDE-WINDOW-LIFTING MECHANISM

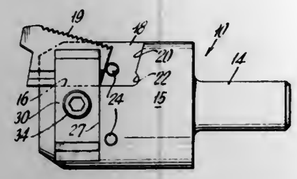
Terenzio Sessa, Via Albani 5, Varese, Italy

Filed Nov. 7, 1977, Ser. No. 848,880
Claims priority, application Italy, Nov. 10, 1976, 29190 A/76
Int. Cl.² E05F *11/48*
U.S. Cl. 49—352 **4 Claims**



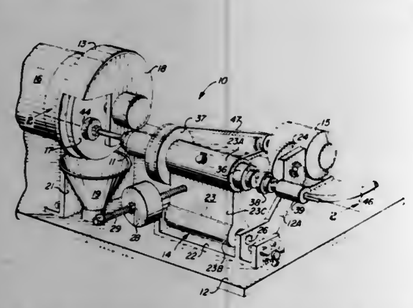
1. A cable-actuated car-side-window lifting mechanism in which the lifting or depressional motion of the window glass plate is carried out by the rotation of a pulley around which there are wound and unwound two portions of the cable fastened to the bottom edge of the plate glass, characterized in that, in combination with said pulley two idle rollers are provided which are confrontingly mounted and about which said two cable sections are partially wound, said two rollers being mounted by the agency of supporting members for being rotated about the axis of the pulley in unison freely and discretly against the bias of counteracting means.

4,110,936
GRINDING ARBOR
Bela Augusztin, 261 Fourth Ave., Stratford, Conn. 06497
Filed Apr. 7, 1977, Ser. No. 785,325
Int. Cl.² B23G *3/04*
U.S. Cl. 51—218 R **6 Claims**



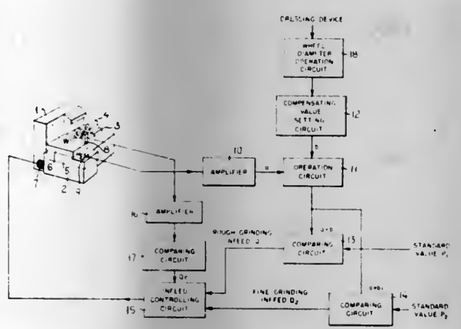
1. A grinding arbor for holding one or more chasers, comprising:
(a) a substantially cylindrical body,
(b) at least one longitudinally extending section defining a planar seat and a laterally disposed side wall substantially parallel with the longitudinal axis of said body thereby defining a mount for engaging a chaser along its bottom surface opposite the cutting face and along its side lateral to the bottom surface,
(c) adjustable means laterally disposed relative to said planar seat for engaging the marginal edge of the chaser lateral to the bottom surface engaged by said planar seat, and
(d) means for releasably securing a chaser in said mount.

4,110,937
HOLDING MEANS FOR GEM STONES
Kenneth E. Bein, 2518 Last Ave., Kingman, Ariz. 86410
Filed Jul. 25, 1977, Ser. No. 818,548
Int. Cl.² B24B *13/00, 7/00*
U.S. Cl. 51—229 **2 Claims**



1. A vacuum chucking means for securing a work piece therein comprising:
a hollow cylindrical member,
said member defining a cup shaped depression at open end,
the periphery of said depression forming a circular plane ring shaped surface,
a relatively thin double surfaced adhesive vinyl tape means formed from a water and oil insoluble material having one of its surfaces secured to said ring shaped surface,
the other of said surfaces of said adhesive vinyl tape means being provided for engaging and holding a work piece, and
means for partially evacuating the space within said cup shaped depression through said hollow cylindrical member,
whereby the combined effect of said adhesive means and said evacuating means firmly holds the work piece when moved against a work forming tool,
a first means for rotating said cylindrical member,
a second means for selectively moving the axis of said cylinder to a number of different parallel positions while in contact with a work forming tool and in conjunction with the operation of said evacuating means, and
cam means for bearing against said cylindrical member for selectively varying the different parallel positions of said cylindrical member against the work forming tool.

4,110,938
INFEEDING METHOD FOR INTERNAL GRINDERS
Shohei Ito, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan
Filed Oct. 21, 1976, Ser. No. 734,430
Claims priority, application Japan, Oct. 31, 1975, 50-131797
Int. Cl.² B24B *1/00*
U.S. Cl. 51—281 R **2 Claims**

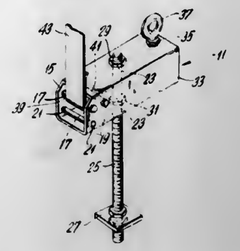


1. A method of operating an internal grinder having a grinding wheel, comprising:
rapidly infeeding the grinding wheel from a rest position to a grinding position;
operating the grinding wheel to effectuate grinding and simultaneously infeeding the grinding wheel at an infeeding speed slower than the speed of rapid infeeding;
returning the grinding wheel to the rest position after grinding is complete;
measuring a diameter of the grinding wheel;
rapidly infeeding the grinding wheel from the rest position to another grinding position before initiating a subsequent grinding operation; and
controlling the rapid infeeding to another grinding position to terminate the rapid infeeding to another grinding position earlier than the first-mentioned step of rapidly infeeding the grinding wheel when a decrease in grinding wheel diameter is measured in order to compensate for increased grinding ability of the smaller diameter grinding wheel.

4,110,939
CUPROUS OXIDE CONTAINING RESIN BONDED ABRASIVE ARTICLE AND PROCESS FOR MANUFACTURING SAME
John J. Bodolai, Niagara Falls, Canada, assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Jun. 13, 1977, Ser. No. 805,768
Int. Cl.² C09K *3/14*
U.S. Cl. 51—298 R **26 Claims**

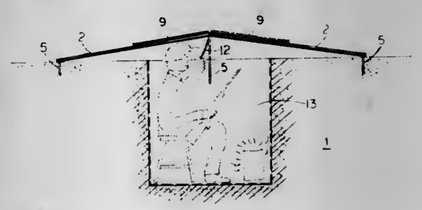
25. An abrasive article comprising an abrasive bonded with from about 5 to about 20 weight percent of a cured phenolic resin containing from about 0.2 to about 5 weight percent cuprous oxide.

4,110,940
ANCHORING SYSTEM
Donald Vanderlyn, Burger Rd., West Shokan, N.Y. 12481
Filed Oct. 17, 1977, Ser. No. 842,555
Int. Cl.² E04H *12/20*; E02D *5/80*; E06B *3/54*
U.S. Cl. 52—23 **10 Claims**



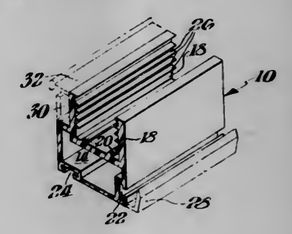
1. An anchoring system for securing a structure to the ground, comprising:
an elongated flexible belt, said belt being adapted to pass over said structure;
first and second anchor housing means for location on opposite sides of said structure, both said first and said second anchor housing means being elongated hollow members with an outer pair of horizontally-aligned openings and an inner pair of horizontally-aligned openings, said outer pair of horizontally-aligned openings and said inner pair of horizontally-aligned openings being adjacent one another and adjacent one end of said anchor housing means, said outer pair of horizontally-aligned openings being located nearer said one end of said anchor housing means than said inner pair of horizontally-aligned openings, each of said first and second anchor housing means having at least one pair of vertically-aligned openings located substantially midway between its two ends;
an outer pin located in said outer pair of horizontally-aligned openings and an inner pin located in said inner pair of aligned openings, said flexible belt engaging both said outer pin and said inner pin with at least three layers of said flexible belt engaging said outer pin;
fastening means, said fastening means being secured to each anchor housing means at the opposite end from said outer and inner pairs of horizontally-aligned openings;
means engaging said vertically aligned openings for securing each anchor housing means to the ground; and
tie bar means located at one end to said fastening means and at the other end to said structure.

4,110,941
INSTANT OPEN GOOSE AND DUCK PIT COVER
Robert K. Scott, P.O. Box 488, Caldwell, Id. 83605
Filed Mar. 14, 1977, Ser. No. 776,973
Int. Cl.² E04B *7/16*
U.S. Cl. 52—66 **5 Claims**



1. A hunting blind which is adapted to be placed over a pit or other enclosure to camouflage the presence of one or more hunters, said hunting blind comprising:
a. a mounting means adapted to be supported on the earth surface and made of light weight tubing,
b. a pair of cover panels made of light weight tubing and laced with smooth strand wire adapted to receive camouflage material as required, said panels being slidably disposed on said mounting means,
c. a tension spring means comprising at least two spring elements, each spring element secured between one of said cover panels and said mounting means and biasing the cover panels to slide away from each other on the mounting means, and
d. a release mechanism holding said panels together in the closed position, whereby upon activation of the release mechanism the pair of cover panels will slide away from each other automatically under the influence of said tension spring means.

4,110,942
WINDOW FRAME MANUFACTURE
Leon F. Slocomb, Jr., 2641 W. Robino Dr., Sherwood Park, Wilmington, Del. 19808
Filed May 6, 1977, Ser. No. 794,357
Int. Cl.² E04C *2/10*
U.S. Cl. 52—100 **6 Claims**



1. An article of manufacture for use as a section of a window frame or the like comprising a tubular body, said tubular body including a window pane receiving wall, a single pair of generally parallel legs extending away from said window pane receiving wall for receiving a window pane therebetween with the window pane supported by said window pane receiving wall, a locking rail appendage secured to said window pane receiving wall and extending away therefrom in generally the same direction as said parallel legs, a locking lip appendage secured to the wall of said tubular body remote from said window pane receiving wall at a location diametrically opposite said locking rail appendage, said locking lip appendage extending in generally the same direction as said parallel legs, said locking lip appendage being spaced from said tubular body a sufficient distance to comprise interlocking means with said locking rail appendage whereby a frame section having a locking rail appendage and another frame section having a locking lip appendage are interlocked when one of the frame sections is inverted with respect to the other frame section and the locking rail appendage thereon fits against the locking lip appendage, and said appendages thereby adapting said body to function as a different preselected frame section upon the selected removal of at least one of said appendages.

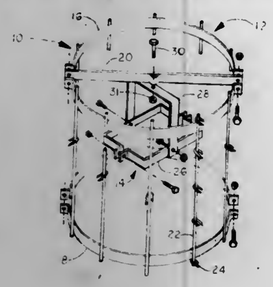
4,110,943
ANIMAL GUARD
Gaynor Carlson, 28 N. Second St., Atwood, Kans. 67730
Filed Jan. 14, 1977, Ser. No. 759,459
Int. Cl.² A01M *29/00*
U.S. Cl. 52—101 **15 Claims**

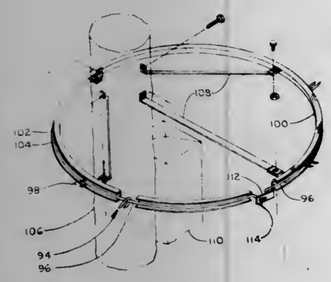
8. An animal guard assembly for protecting an object such as a post-like member or an electrical pedestal unmounted or

mounted on a post-like member against rubbing by an animal, comprising:

(a) a band having an outwardly facing peripheral groove;
(b) a ring mounted in said peripheral groove;
(c) circumferentially spaced barbs mounted on said ring having their pointed ends protruding outwardly, and
(d) attachment arms fixed at their bases to said band for attachment to said post-like member.

13. An animal guard assembly for protecting an object such as a post-like member or an electrical pedestal unmounted or mounted on a post-like member against rubbing by animals, comprising:

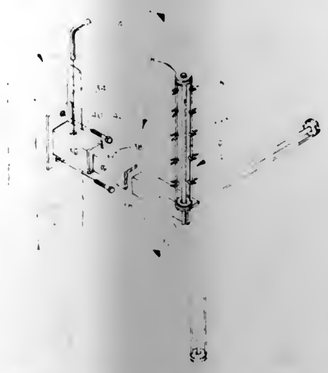




(a) at least one support element for supporting animal repelling elements;
(b) outwardly protruding animal repelling elements supported around the periphery of said support element; and
(c) attachment means for attaching said support element to said electrical pedestal or to said post-like member;
(d) said attachment means comprising an attachment bracket for attachment over said electrical pedestal or post-like member, a U-shaped bracket mounted on said attachment bracket, and means for rotatably and removably attaching said support element to said U-shaped bracket.

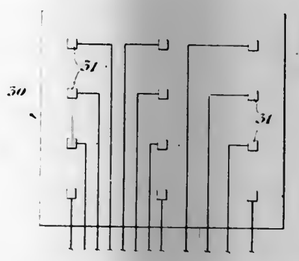
4,110,944
ANIMAL PROTECTIVE GUARD
Gaynor Carlson, 28 N. Second St., Atwood, Kans. 67730
Filed Jan. 14, 1977, Ser. No. 759,463
Int. Cl.² A01M *29/00*
U.S. Cl. 52—101 **9 Claims**

1. An animal guard assembly for protecting an electrical pedestal mounted on or adjacent a post-like member such as a stub shaft comprising:
(a) a base plate for attachment to said post-like member;
(b) a sleeve member secured to said base plate for holding a supoort arm in various angular positions;
(c) a support arm adjustably and removably secured by one end within said sleeve member for holding a guard assembly, said guard assembly comprising:
(1) a central support rod attached by one end to said support arm;
(2) a barb supporting element;
(3) a cap or stop member secured to the free end of said central support rod;
(4) a support plate secured to said central support rod at a point spaced from said cap;
(d) said barb supporting element being mounted on said



central support rod between said cap and said support plate, and comprising:
(1) a top plate having a central hole therein and a bottom plate having a central hole therein connected by at least one barb supporting rod-like member having barbs supported thereon.

4,110,945
ROOF INSTALLATION FOR LOCATING WATER LEAKAGE POINTS
James P. Sheahan, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sep. 7, 1976, Ser. No. 720,935
Int. Cl.² E04D *1/00, 13/00*
U.S. Cl. 52—173 R **4 Claims**



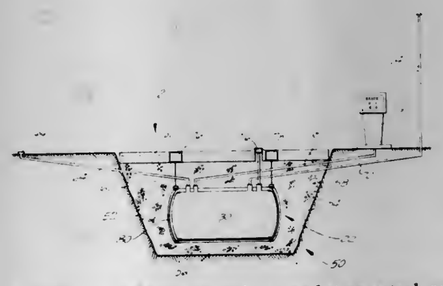
1. In a roof structure, the roof structure comprising a roof deck, a water-impermeable membrane disposed over the roof deck, a means to maintain the water-impermeable membrane in a desired position on the roof deck, the roof having an upper surface and a lower surface, a plurality of individual spaced apart water-sensing elements disposed beneath the water-impermeable membrane and adjacent the roof deck, individual connecting means leading from said water-sensing elements whereby an instrument in connection with said sensing elements can be employed to determine if the individual sensing elements are in contact with water.

4,110,946
SPLIT BACK FURNITURE ARTICLE AND METHOD OF ASSEMBLY
William P. Louther, Jr., Madison, Wis., assignor to AFP Corporation, Madison, Wis.
Filed Aug. 15, 1977, Ser. No. 824,291
Int. Cl.² A47B *47/00*; E04C *3/10*
U.S. Cl. 52—223 R **9 Claims**



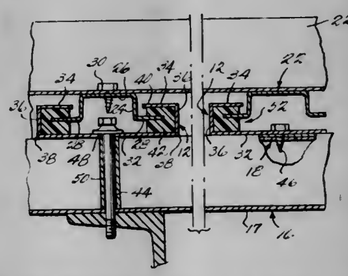
1. A furniture article comprising:
first and second frame members spaced apart from one another;
a first flat panel having opposite edges;
means for connecting one edge of said first panel to said first frame member with the other panel edge located between said first and second frame members;
a second flat panel having opposite edges; and
means for connecting one edge of said second panel to said second frame member with the other edge of said second panel butting against said other edge of the first panel,
the combined undeformed dimension of said first and second panels between the edges thereof being greater than the distance between said frame members, whereby when said other edges of said panels butt against one another the panels are held under compression in extension between said frame members.

4,110,947
STORAGE TANK INSTALLATION
James T. Murray, and Walter T. Gorman, both of Brooklyn, N.Y., assignors to Murgor Electric Company, Inc., Brooklyn, N.Y.
Filed Dec. 9, 1977, Ser. No. 859,013
Int. Cl.² B65D *25/00*
U.S. Cl. 52—249 **15 Claims**



1. A method of installing an underground storage tank comprising:
excavating to a predetermined depth sufficient for the placement of a storage tank of desired size therein below ground level with at least one pair of opposing side walls of the excavation being shaped to minimize the danger of collapse;
backfilling the excavation with a base layer of footing material;
placing a double shell storage tank into the excavation resting on the base layer;
installing double shell piping conduits and leak monitoring means between the shell and ground level;
backfilling the excavation with covering material over the tank, piping and monitoring means to a height adjacent ground level;
pouring a solid slab over the tank and backfill layers without closing access to the underground piping conduits and the monitoring means; and
enabling the excavating, backfilling, placing of the tank, installing of piping and monitoring means and pouring of the slab to be accomplished without the necessity of personnel entering the excavation.

4,110,948
THERMAL INSULATING CLIPS FOR METAL INSULATED WALLS AND ROOFS
Adolph J. Maier, Jr., 128 W. Livingston Pl., Metairie, La. 70005
Filed Mar. 11, 1977, Ser. No. 776,884
Int. Cl.² E04B *1/62*
U.S. Cl. 52—402 **9 Claims**

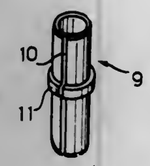


1. In a wall assembly: a plurality of elongated, parallel, metal support members mutually spaced apart in a direction transverse to their lengths; a plurality of elongated, parallel metal sub-girts mutually spaced apart in a direction transverse to their lengths, said sub-girts being spaced from said support members; thermally insulating clip assemblies spanning the space between at least some of said support members and at least some of said sub-girts and supporting said sub-girts from said support members; each of said clip assemblies including a clip portion extending transversely of the respective sub-girt and having opposite end portions folded toward the respective sub-girt and clamping each longitudinal edge portion of the respective sub-girt between clamping surfaces on said end portions and clamping surfaces on a central section of the clip portion, with a layer of non-metallic thermally insulating material disposed between each side of each sub-girt edge portion and each adjacent clamping surface, each of said clip assemblies further including means extending transversely of the central section of the respective clip assembly to space said respective central section from the respective support member, said means being connected to said central section and to the respective support member.

4,110,949
BUILDING BLOCK

Giulio Cambiuzzi, Imola (Bologna), and Michele Montanelli, Stabbia (Florence), both of Italy, assignors to Baupres AG, Eschen, Liechtenstein

Filed Jun. 28, 1977, Ser. No. 810,829
Claims priority, application Switzerland, Jul. 5, 1976, 8565/76; Feb. 24, 1977, 2295/77
Int. Cl.² E04B 2/48
U.S. Cl. 52—437 5 Claims



1. A wall structure including:

a plurality of substantially similary blocks arranged in horizontal courses; the end faces of the blocks of each course being in contact with one another and being positioned above an intermediate point of the blocks of the subjacent course; each block having:

an upper face and a lower face having identical shape, said two faces being substantially paralled, said faces comprising longitudinal spaced apart planar side portions, the planar portions of each block being in contact with the planar portions of blocks of the adjacent courses,

a central depression in each of said upper and lower faces extending longitudinally for the whole of the length of said block between two longitudinal planar side portions,

each said block having a single central aperture having in a cross-section a shape which is symmetrical about a median plane of the block parallel to the end faces thereof,

a recess in each of said end faces of said block having a shape, in a plan view, identical to that of one half the cross-sectional shape of said central aperture as divided by said median plane of symmetry, to define a chamber identical to said aperture when mated with a recess in an adjacent block,

each central depression of each said block having, in cross-section, two longitudinal channel parts separated by an elevated central region having a plane upper face which is recessed with respect to the surface of said two planar portions of the associated one of said upper and lower faces of said block,

holes in each said block opening into said central elevated region of said central depression of each of said upper and lower faces, and being symmetrically disposed with respect to said aperture in said block,

locating pins housed in at least some of the holes and extending into the holes of adjacent blocks of adjacent courses,

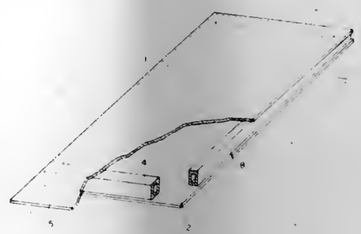
said depressions in each block defining between adjacent courses of blocks, horizontal channels which link said apertures and chambers, and

a body of cast concrete filling said chambers, recesses and horizontal channels to provide an interconnected horizontal and vertical network of reinforcing concrete to hold said blocks together in said wall.

4,110,950
INSULATING DOUBLE GLASS PANE

Franz Mainz, Dusseldorf, Germany, assignor to Gerresheimer Glas Aktiengesellschaft, Dusseldorf-Gerresheim, Germany

Filed Jul. 21, 1976, Ser. No. 707,213
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1975, 2532634
Int. Cl.² E04D 1/04
U.S. Cl. 52—518 1 Claim



1. A double glass pane for double glazing such as for the roof of a hothouse comprising a first flat four-sided pane, a second flat four-sided pane spaced from said first flat pane in face to face relation therewith, a closed rectangular arrangement of spacer pieces located between said first flat pane and said second flat pane adjacent the edges thereof with said first flat pane, said second flat pane and said spacer pieces defining a closed space between said panes, each of said first and second panes having a first pair and a second pair of oppositely disposed edges, the edges of each of said first pairs being aligned one opposite the other, one of the edges of each of said second pairs being aligned one opposite the other with the other one of the edges of each of said second pairs being displaced laterally out of opposite alignment with the other one of the second pair of edges of said first pane projecting laterally from the other one of the second pair of edges of said second pane, said first and second panes being in diverging relation from the oppositely aligned edges of said second pair of edges toward the other ones of said pair of edges with the spacing between said first and second panes increasing from the oppositely aligned second edges to the other second edge of said second pane by an amount substantially equal to the thickness of said first pane, said double glass panes being arranged so that in use for covering the inclined roof of a hothouse the projecting portion of the said first pane overlaps the edge of an adjacent said double glass pane formed by the oppositely aligned edges of the second pair of edges with the overlapping portion covering the joint between the adjacent said double glass panes for preventing the collection and seepage of rainwater at such joints.

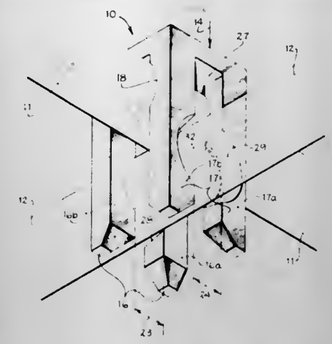
4,110,951
CONNECTING CLIP FOR JOINING CONCRETE REINFORCING BARS

John Padrun, 3154 Orange St., San Jose, Calif. 95127

Filed Jul. 21, 1977, Ser. No. 817,516
Int. Cl.² E04C 5/16
U.S. Cl. 52—686 3 Claims

1. A clip for use in joining a pair of substantially cylindrical reinforcing bars of a type used in reinforcing concrete comprising a substantially U-shaped molded unit having a flexible web portion forming a pressure transmitting panel, opposed flanges carried by said web portion to depend downwardly therefrom, said flanges being yieldingly separable to permit one of said bars to enter and lie in a plane therebetween, the confronting surfaces of said flanges including arcuately relieved portions for yieldingly receiving and gripping said one bar therein independently of the other bar, aligned openings formed through said flanges for receiving the other bar therein disposed crosswise of said one bar, said flanges including passages

leading into said aligned openings to permit the other bar to be disposed in said aligned openings and seated therein independently of said one bar, and portions of a frustoconically shaped

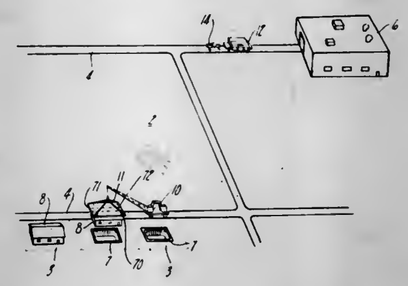


recess formed in said flanges in the region surrounding said aligned openings for readily receiving a reinforcing bar in said openings.

4,110,952
HOME BUILDING METHOD

Leon Blachura, Clarkston, Mich., assignor to North Oakland Development Corporation, Pontiac, Mich.

Filed Sep. 7, 1976, Ser. No. 720,690
Int. Cl.² E04H 1/12
U.S. Cl. 52—745 3 Claims

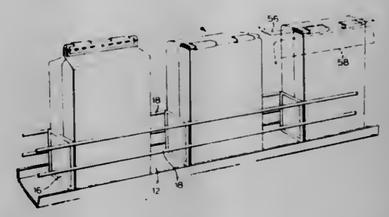


1. A method of building houses of framed construction in a factory and transporting the houses to points of use comprising fabricating each house on a plurality of jacks adjusted to provide a level support in the factory, each house when fabricated including a suitable number of laterally spaced lifting rods anchored at the bottom of the house walls and extending upwardly through the walls to a point above the roof of the house; providing a transporter with wheels; lowering the jacks to lower the house onto the transporter after completion of the house to provide a movable support for the house; moving the house to a point of use on the transporter; connecting the upper ends of the lifting rods to a lifting harness; lifting the house by a crane connected to the harness and lowering the house onto a foundation; and removing the lifting rods and harness from the house.

4,110,953
RECLOSABLE BAG CLOSURE SYSTEM

Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Division of Ser. No. 664,906, Mar. 8, 1976. This application Dec. 27, 1976, Ser. No. 754,115
Claims priority, application United Kingdom, Mar. 11, 1975, 10177/75
Int. Cl.² B65B 7/08, 7/04
U.S. Cl. 53—419 4 Claims



1. A method for the formation of a closed, operable and reclosable bag structure, which comprises:

providing a bag having a generally rectangular base, generally rectangular front and rear walls upstanding from the integral with said base, generally rectangular side walls upstanding from said base and integral with said front and rear walls and said base, each of said side walls having a longitudinal fold line formed therein, and an open top,

placing articles to be packaged by said bag therein,

folding said side walls inwardly about said fold lines adjacent said open top,

bringing the front and rear walls into abutting relationship adjacent the top edges thereof to close the open top of said bag while simultaneously abutting the folded side walls adjacent the top,

folding a portion of said abutted faces downwardly and into abutting relationship with said front face, said portion corresponding in depth to approximately half the lateral dimensions of the base,

forming elongate thin strips of polymeric material,

die cutting a castellated shape longitudinally of said strip to separate the strip into two mirror image shaped strips,

forming an orifice through said strips adjacent each alternate valley of the strip,

separating the strips from each other,

folding the peak of each castellation of each separate strip towards the remainder of the separate strip to form for each peak a recess between the folded-over portion and the remainder of the strip,

separating individual elongate closure strips by cutting the strips transverse thereof in the alternate valley which does not have the orifice formed therethrough,

positioning the recess of an individual closure strip in interference fit relationship with said folded portion of said bag with said remainder of the strip abutting said folded over portion on the front face thereof,

applying adhesive to the exposed face of said remainder of said strip,

folding said folded over portion to bring said remainder of said strip into engagement with an adjacent portion of said front face to provide a top closure wall parallel to said base constituted by the upper portion of said rear wall,

curing said adhesive to achieve adhesive connection between said remainder of said closure and said engaged portion of said front face, and

recovering the bag structure so formed.

4,110,954

HORIZONTAL PACKAGING APPARATUS

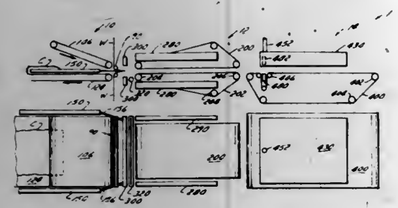
Jan Christer Holger Olsson, Braemhult, and Karl Gunnar Carlson, Vaestra Froelunda, both of Sweden, assignors to Tex Innovation AB, Goteborg, Sweden

Continuation-in-part of Ser. No. 735,551, Nov. 1, 1976, which is a continuation-in-part of Ser. No. 669,147, Mar. 22, 1976. This application Apr. 29, 1977, Ser. No. 792,348

Claims priority, application Canada, Mar. 30, 1977, 275130

Int. Cl.[2] B65B *31/02, 63/02, 9/02*

U.S. Cl. 53—433 **24 Claims**



17. A method of wrapping a commodity comprising the steps of supplying a commodity to be wrapped, supplying a pair of opposed lengths of wrapping material each having a pair of opposed free lateral edges, placing said opposed pair of lengths of wrapping material in registry, said lengths of wrapping material having a closed leading end, advancing said commodity along a fixed path into engagement with the wrapping material between the opposed sheets of wrapping material, sealing the free lateral edges of the sheets of wrapping material together to form an envelope having closed sides and a closed leading portion with said commodity therein, severing the opposed lengths of wrapping material across the width thereof to form a container length, and sealing the open trailing end to form a wrapped commodity enclosed in a wrapper.

4,110,955

INFUSION BAG AND METHOD OF PACKAGING INFUSION BAG

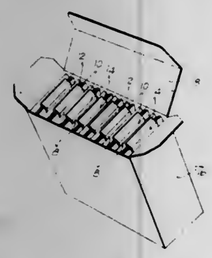
Adolf Rambold, Bachstrasse 8, Meerbusch 1, Fed. Rep. of Germany (4005)

Filed Jul. 1, 1976, Ser. No. 701,601

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1975, 2529429

Int. Cl.[2] B65B *5/06, 5/08, 7/26, 35/56*

U.S. Cl. 53—445 **3 Claims**



1. A method of packaging beverage infusion bags for tea and the like in horizontal, side-by-side relation comprising the steps of:

providing a plurality of infusion bags containing an infusion material, each bag having a top and a bottom, said top being reinforced by a flexible strip folded to form two wings attached to and encompassing the top of the bag, at least one of said wings extending the entire length of the bag from top to bottom and having a portion projecting beyond the bottom of the bag, the projecting portion having a free end;

providing a container for said infusion bags, said container having an opening on one side thereof and a container bottom on the side of said container opposite said opening;

allowing the infusion material to distribute toward the tops of the infusion bags by directing the tops of the bags downwardly; and

inserting said infusion bags into said container with the tops thereof confronting the bottom of said container, the bottoms of said infusion bags being adjacent said opening, and the free ends of the projecting portions being exposed and lying adjacent the bottoms of the infusion bags and the opening whereby the projecting portion of said one wing of each said infusion bags constitutes a pull strap adapted to be grasped to pull the infusion bag from said container such that said infusion bag inverts to a use position and the infusion material distributes over a greater area of the bag.

4,110,956

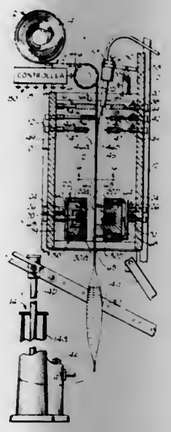
APPARATUS FOR FORMING, FILLING AND SEALING BAGS MADE FROM FLATTENED PLASTIC TUBULAR PLASTIC STOCK

Warren Weisberg, 2406 Grant, Evanston, Ill. 60201

Division of Ser. No. 747,199, Dec. 3, 1976, abandoned. This application Oct. 19, 1977, Ser. No. 843,477

Int. Cl.[2] B65B *9/10*

U.S. Cl. 53—558 **6 Claims**



1. In apparatus for forming, filling and sealing bags made from a roll of a flattened strip of extruded synthetic plastic tubular stock, said apparatus including upper bag slitting means for forming a spout-receiving slit in a first portion of the tubular stock fed thereto which portion is adjacent the upper margin of a sealed bag to be formed therefrom, lower bag slitting means for forming a slit completely across the tubular stock in a second portion of the tubular stock which will constitute the bottom margin of a sealed bag being formed at a given time, wall separating means for spacing apart the confronting walls of the flattened tubular stock at and below the slit formed by said upper bag slitting means, filling means movable into and out of said slit formed in the tubular stock for filling the same with material, and means for forming seals completely across portions of the tubular stock to be positioned adjacent the upper and lower margins of a bag to be formed therefrom, the improvement comprising tubular stock advancing means for intermittently advancing an unwound portion of said roll of tubular stock in a downward direction to bring successive portions thereof into position to be operated upon by said bag slitting, wall spearating, filling and sealing means, said tubular stock advancing means comprising an upper pair of clamping means movable into and out of clamping relationship with flattened portions of said tubular stock at points adjacent to what will become the upper margin of a bag, said upper pair of clamping means engaging the tubular stock at points above the point where said slit is formed, and means following the insertion of said filling means into said tubular stock through said slit for bodily moving said upper pair of clamping means downwardly so the clamping means pulls the tubular stock downwardly to unroll said roll to tubular stock and advance the same at least one bag length, said upper pair of clamping means relieving said tubular stock at a point above said upper pair of clamping members from the weight of the material filling the portion of said tubular stock above the point where a seal is formed by said sealing means.

4,110,957

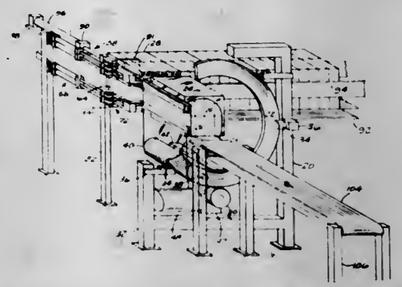
REVERSE WRAP

William G. Lancaster, 5101 Upper River Rd., Louisville, Ky. 40222, and Patrick R. Lancaster, 2906 N. Osage, Louisville, Ky. 41076

Continuation-in-part of Ser. No. 594,506, Jul. 9, 1975, abandoned. This application Oct. 7, 1976, Ser. No. 730,612

Int. Cl.[2] B65B *13/04*

U.S. Cl. 53—589 **23 Claims**



1. Apparatus for wrapping a plurality of loads and unitizing the loads into wrapped packages; comprising conveyor means adapted to receive a succession of loads; each said load comprising a plurality of members, wrapping apparatus positioned adjacent said conveyor means, said wrapping apparatus comprising a frame, a film material dispenser means rotatably mounted on said frame comprising a ring member, a film roll support mounted to said ring member and film tensioning means mounted to said ring member to place a continuous tension on said film causing it to be stretched as it is wrapped around the load a plurality of times, a guide wrapping rail means positioned adjacent said conveyor means adapted to receive said load from said conveyor means and support said load during wrapping, a film handling means positioned adjacent said guide wrapping rail means, said film handling means comprising clamp means adapted to hold film material from said film dispensing means in a fixed position while having the capability of severing said film material, said clamp means comprising two clamp assemblies, each clamp assembly comprising a lower bar member and an upper bar member configured to mate together and hold said film material therebetween with cutting means mounted to at least one of said members, said cutting means cutting said stretched material when said two members are mated together with said members holding one portion of said cut stretched material, mounted to said frame to activate and transport each of said bar members a predetermined distance into and out of the path of film dispensed by said dispenser means, said film dispenser means being adapted to hold film material and wrap said film material around said load, drive means engaging said ring member to drive said film member means in an alternating opposite direction after each wrap cycle so that in the first cycle stretched film material is wrapped around said load, supporting guide rail means and a first clamp assembly while being held by said first clamp assembly with trailing edge portion of said film being severed by a second clamp assembly forming a new leading edge portion which is held by said second clamp assembly, means to transport said wrapped load away from said wrapping apparatus after said first clamp assembly has been gapped, said film dispenser means in the subsequent wrapping cycle rotating in the opposite direction and wrapping a second load, said support guide rail means and said second clamp assembly with said first clamp assembly functioning in the identical manner as the second clamp assembly did in the previous wrap cycle.

4,110,958

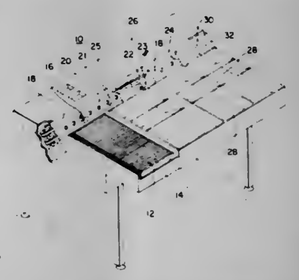
EXTRACTION OF CONTENTS FROM ENVELOPES

Albert F. Stevens, 303 Somers Ave., Moorestown, N.J. 08057

Filed Apr. 11, 1977, Ser. No. 786,229

Int. Cl.[2] B65B *43/30*

U.S. Cl. 53—386 **9 Claims**



1. In a machine for facilitating the extraction of contents from an envelope and employing suction means for engaging the opposite sides of the envelope and for displacing at least one side to spread the envelope open, thereby also imparting to each side a first predetermined curvature:

means for imparting to a portion of at least one of the sides a second curvature while the envelope is being spread open,

said second curvature being more pronounced and in the same direction as the first curvature imparted to that side.

4,110,959

MOWING DEVICE

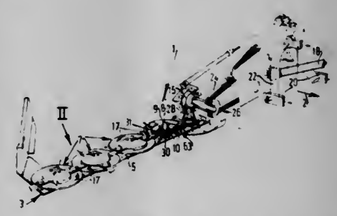
Pieter Adriaan Oosterling, and Hendricus Cornelis van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Multinorm, B.V., Nieuw-Vennep, Netherlands

Filed Nov. 2, 1976, Ser. No. 738,079

Claims priority, application Netherlands, Nov. 28, 1975, 7513926

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—295 **9 Claims**



1. A mowing device comprising a housing extending transversely of the direction of movement of said device, a plurality of shafts rotatably journalled in said housing and driving gear means arranged in said housing for driving the shafts each shaft projecting upwardly from said housing to present an exposed upper end, and a cutter member fixed to the upper end of each shaft, each cutting member comprising at least one lower ring

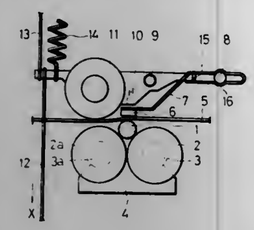
of substantially circular, uninterrupted circumference, skimming the top side of the housing, an upper ring covering the lower ring, means securing said upper and lower rings together as a unit and including at least one pin, and at least one cutter fastened at the circumference of the cutting member between the upper and lower rings by said pin and projecting radially beyond said lower ring, the cutters of neighbouring cutting members being relatively off-set in the circumferential direction, each upper ring being of irregular shape in plan view to expose at least that portion of the lower ring of each cutting member which is overlapped by the path of travel of each cutter of a neighbouring cutting member.

4,110,960

METHOD AND APPARATUS FOR PIECING-UP THE BROKEN YARN IN AN OPEN-END SPINNING SYSTEM

Kazuo Tsubata, Kyotoshi, Japan, assignor to Hironori Hirai, Nagaokakyoshi, Japan

Filed Oct. 7, 1974, Ser. No. 512,973
Claims priority, application Japan, Oct. 11, 1973, 48-115044
Int. Cl.² D01H *15/00, 1/12*
U.S. Cl. 57—34 R **4 Claims**



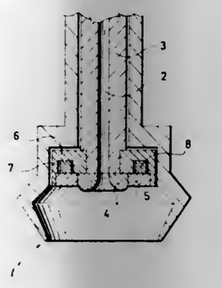
3. A method for piecing up the ends of yarn being spun by an open end spinning machine, which spinning machine includes a rotor, a yarn discharge tube, a winding drum and apparatus for piecing up the yarn ends, comprising an accelerator lever operably associated with the rotor for accelerating the rotor, a yarn gripping lever for holding the broken end of the yarn in a deviated state between the yarn discharge tube and the winding drum, a string operably associated with said accelerator lever and with said yarn gripping lever for controlling rotation of said rotor and release of said yarn by said gripping lever, and a positively revolved screw cylinder for holding the yarn in the deviated state for a predetermined time after the yarn is released from said gripping lever, which method for piecing up the ends of the yarn comprises the steps of driving the rotor of the open end spinning machine in an accelerating mode on actuation of the accelerator lever, holding a broken end of yarn in a deviated state between the yarn discharge tube and the winding drum of said open end spinning machine by means of the yarn gripping lever for a predetermined designated time after the start of acceleration of the rotor, which predetermined time is determined by the positively revolved screw cylinder, releasing the yarn end from the yarn gripping device after the predetermined time by means of the string and accelerator lever and introducing the yarn end into the discharge tube of the rotor after said predetermined time.

4,110,961

SPINNING UNIT OF AN OPEN-END SPINNING MACHINE

Josef Havel, Usti nad Orlici; Václav Vobornik, Letohrad; Josef Ripka, usti nad Orlici; František Jaros, Usti nad Orlici; František Hortlik, Usti nad Orlici; Agaton Plananský, Usti nad Orlici, and Božena Řehačková, Usti n/Orl., all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 12, 1977, Ser. No. 841,603
Claims priority, application Czechoslovakia, Oct. 19, 1976, 6729-76
Int. Cl.² D01H *1/12*
U.S. Cl. 57—58.89 **7 Claims**



1. An open-end spinning unit comprising a spinning rotor having a body with a take-off duct therein, fibers being introduced into the inlet end of the take-off duct and yarn being withdrawn from the outlet end of the take-off duct, an exchangeable funnel at the inlet end of the take-off duct, and detachable magnetic means coupling the funnel with the body of the rotor.

4,110,962

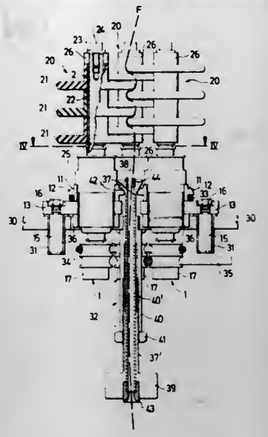
FALSE TWISTING DEVICE

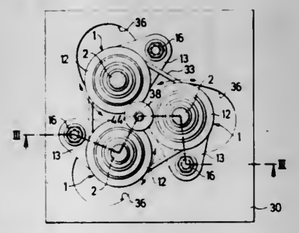
Friedrich Schuster; Max Thielemann, both of Hammelburg, and Otto Lang, Schweinfurt, all of Fed. Rep. of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Mar. 16, 1973, Ser. No. 342,085
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1972, 2213147
Int. Cl.² D02G *1/00*; D01H *7/92*
U.S. Cl. 57—77.4 **30 Claims**

1. In an apparatus adapted for crimping synthetic threads or the like having three rotatably mounted adjustable spindles each provided with at least one rotationally symmetrical friction element, said spindles lying at the corners of an equilateral triangle in plan view and means for passing a thread which is to be false twisted between the friction elements in a zig-zag path, means for simultaneously adjusting all of said spindles with respect to the path of the thread with the spindles remaining at the corners of an equilateral triangle in plan view in all positions of adjustment with the center of the triangle lying on

the path of the thread, comprising means co-axial with respect to the path of the thread, for simultaneous adjustment of the





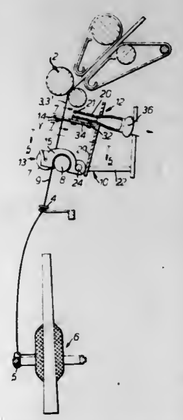
spindles, characterized in that means are provided for resiliently urging the spindles towards said co-axial means.

4,110,963

BREAK-OUT APPARATUS FOR FAULT PREVENTION IN THE PRODUCTION OF MULTI-STRAND YARNS

Dieter Erich Alexander Plate, Torquay, and John Desmond Feehan, Belmont, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed May 13, 1977, Ser. No. 796,790
Claims priority, application Australia, May 13, 1976, 5921/76
Int. Cl.² D01H *13/16*
U.S. Cl. 57—86 **19 Claims**



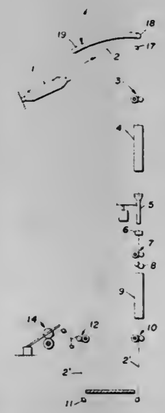
1. Apparatus for breaking out yarns having fewer strands than desired where two or more strands are combined into a yarn, said apparatus comprising a guide for constraining the combined strands laterally of their general direction of travel, the guide being mounted for lateral movement under pressure from a residual strand in the absence of the other to allow the residual strand to adopt a respective modified line of travel, and strand breaker means arranged to act on a strand adopting a said modified line of travel to effect breakout of that strand.

4,110,964

DRAW TEXTURIZING PROCESS

Albert H. Bruner, Pensacola, Fla., assignor to Monsanto Company, Decatur, Ala.

Continuation of Ser. No. 356,241, May 1, 1973, abandoned. This application Dec. 15, 1976, Ser. No. 750,744
Int. Cl.² D02G *1/02*
U.S. Cl. 57—157 TS **1 Claim**



1. In a draw-texturizing process for simultaneously drawing and texturizing thermoplastic synthetic yarn where the yarn is false-twisted and the false-twist is set in the yarn by means of heat, the improvement wherein the leading end of the yarn, while still undrawn, is pre-heated without substantial orientation drawing to a temperature just below its crystallization point before entering the draw-texturizing zone, said pre-heating being discontinued after a sufficient length of yarn has been pre-heated to effect string-up of the yarn.

4,110,965

SPUN-LIKE HAND YARN PROCESS

Bruce R. Bradley, Gulf Breeze; Larry D. Eckelman, and Donald G. Gilmer, both of Pensacola, all of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 20, 1976, Ser. No. 752,238
Int. Cl.² D02G *1/02, 3/04*
U.S. Cl. 57—157 TS **5 Claims**

1. A process for making a yarn with a spun-like hand, comprising:

a. providing a feed yarn comprising first filaments having a given elongation to break and second filaments having a lower elongation to break

b. simultaneously drawing and false-twist heat-setting said feed yarn at a draw ratio selected to break no substantial number of filaments prior to passage through the false-twist device, and

c. increasing the tension on said yarn upon passage through said false-twist device to a tension level sufficient to break substantially only said second filaments, whereby the broken ends of said second filaments project outwardly from said yarn and portions of said second filaments inter-

mediate said broken ends are intermingled with said first filaments.

4,110,966

ELECTRONIC TIMEPIECE WITH STOP WATCH

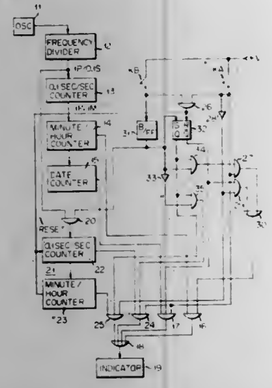
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,279

Claims priority, application Japan, Dec. 26, 1975, 51-158625; Dec. 26, 1975, 51-158638

Int. Cl.² G04F *3/06*

U.S. Cl. 58—4 A **8 Claims**



1. An electronic timepiece comprising a time data counting means for counting reference clock signals as time count data at all times; display means for displaying the time count data of said time data counting means; calendar data counting means for counting carry signals from said time data counting means; a display changeover switch operated to effect a switch from the time count data to a calendar data from the calendar data counting means so as to permit the latter to be coupled to the display means; time counting means provided independently of said time data counting means and said calendar data counting means and adapted to count reference clock signals; switch instruction means for giving a time count start instruction and time count stop instruction to said time count means; means for preferentially coupling the count value of said time counting means to said display means based on an instruction from said switch instruction means; detection means for detecting an in-operation state of said time counting means; and display control means for causing the counting value of said time count means to be switched to the time count data of said time data counting means for display on said display means when said display changeover switch is operated during the detection of the in-operation state by said detection means.

4,110,967

METHOD AND SYSTEM FOR DRIVING LIQUID CRYSTAL DISPLAY DEVICE

Hiro Fujita, No. 31-1-2-807, 1-chome, Sayamadai, Sayama-shi, Saitama-ken, Japan

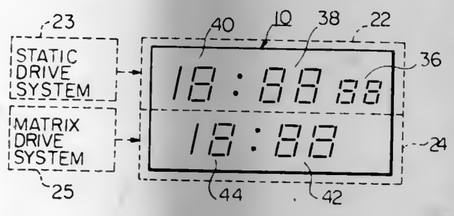
Filed Aug. 31, 1976, Ser. No. 719,110

Claims priority, application Japan, Feb. 19, 1976, 51-17197; Jun. 2, 1976, 51-63545; Sep. 2, 1975, 50-106175

Int. Cl.² G04B *19/30*

U.S. Cl. 58—23 R **4 Claims**

1. An electronic timepiece comprising, in combination:
- a frequency standard providing a relatively high frequency signal;
- a frequency converter responsive to said relatively high frequency signal to provide a low frequency signal;
- a first time counter responsive to said low frequency signal to provide a first time information signal; p1 a second time counter responsive to said first time information signal to provide a second time information signal;
- a first decoder responsive to said first time information signal to provide first decoded outputs;
- a second decoder responsive to said second time information signal to provide second decoded outputs;
- a liquid crystal display device including a first display section and a second display section integrally formed within a single cell having first and second transparent glass plates and a body of liquid crystal material sealed between said transparent glass plates, said first display section including a common electrode and a plurality of segment electrodes displaced from and disposed opposite the common electrode, said second display section including a matrix array of a plurality of digit electrodes and a plurality of segment electrodes, said common electrode and said digit electrodes being disposed on an inner surface of said first transparent glass plate and the segment electrodes of said first and second display sections being disposed on an inner surface of said second transparent glass plate;
- a static drive system coupled to said first decoder for driving said first display section in a static mode to display first time information in response to said first decoded outputs; and
- a matrix drive system coupled to said second decoder for driving said second display section to provide a display of second time information in response to said second decoded outputs;



said matrix drive system including a digit electrode driver having circuit means for applying to said digit electrodes an alternating voltage signal varying in potential at first, second and third voltage levels, and a segment electrode driver having circuit means for applying to selected one of the segment electrodes of said second display section a segment drive signal varying in potential between said first and third voltage levels, whereby the root mean square value of a voltage applied across the digit electrodes and the segment electrodes of said second display section has a predetermined value to display said second time information; and

said static drive system including means for applying to said common electrode an alternating voltage signal varying in potential between said first and third voltage levels, and a segment electrode driver for applying to each of said segment electrodes of said first display section a reversed polarity alternating voltage signal exclusively of said alternating voltage signal applied to said common electrode, said reversed polarity alternating voltage signal varying in potential between said first and third voltage levels, and said segment electrode driver of said static drive system including means for delaying said reversed polarity alternating signal in phase from said alternating voltage signal applied to said common electrode whereby the root mean square value of a voltage applied across said common electrode and the segment electrode of said first display section is reduced to a value substantially equal to said predetermined value to provide a uniform display contrast between said first and second display sections.

4,110,968

CONTROL FOR A STEP MOTOR FOR THE MEASUREMENT OF TIME

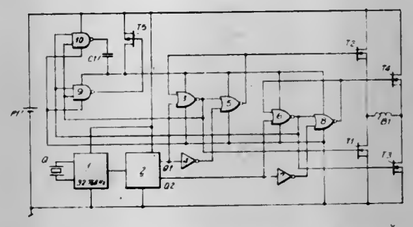
Jean Claude Berney, Chemin du Bois de Menton, Epalinges, Switzerland

Filed Nov. 16, 1976, Ser. No. 742,524

Claims priority, application Switzerland, Nov. 18, 1975, 14900/75

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 A **3 Claims**



1. In a control circuit for a step motor in a horological device wherein the motor is fed by a battery and the circuit is provided with a reference oscillator, a frequency divider, a power stage and a shaper for delivering pulses to control the power stage, an improvement wherein said circuit comprises MOS power transistors exclusively of N-MOS type connected in paired arrangement such that one N-MOS transistor has an emitter directly connected to one terminal of the battery, and a collector directly connected to one terminal of the motor coil and directly to the emitter of the second N-MOS transistor, said second N-MOS transistor having a collector directly connected to the other terminal of the battery, and a voltage booster coupled to said shaper for delivering to the power transistors control pulses of a voltage much higher than the voltage of the battery.

4,110,969

DIGITAL ELECTRONIC ALARM TIMEPIECE

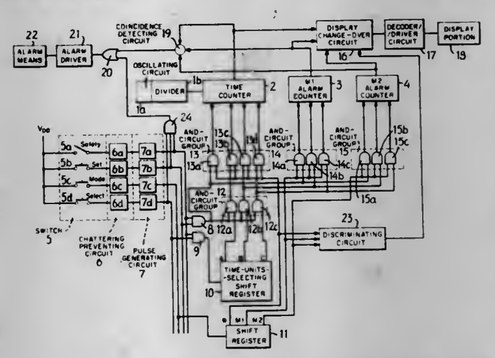
Takuro Fukuichi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Mar. 11, 1977, Ser. No. 776,892

Claims priority, application Japan, Mar. 11, 1976, 51/26286

Int. Cl.² G04B *23/12*

U.S. Cl. 58—57.5 **2 Claims**



1. A digital alarm timepiece comprising standard signal generating means, circuit means for frequency-dividing the signal generated by said standard signal generating means, time counting circuit means for counting output signals of said dividing circuit means to provide a time signal, alarm time memory counting circuit means for setting a selected alarm time, display means for selectively displaying the time signal of said time counting circuit means and the set time of said alarm time memory counting circuit means, alarm sound generating means, coincidence circuit means for activating said alarm sound generating means upon occurence of coincidence between the set time of said alarm memory counting circuit means and the time signal of said time counting circuit means, manually operable switching means comprising a plurality of switches operable in selected different combinations to amend the count of said alarm time memory counting circuit means to set an alarm time and to amend the count of said time counting circuit means to correct the time signal provided thereby, each of said alarm time memory counting circuit means and said time counting circuit means comprising a plurality of counters, a first shift register controlled by said switching means to select which of said counting circuit means is to be amended, and a second shift register controlled by said switching means to select which counter of the selected counting circuit means is to be amended.

4,110,970

WATER-PROOF WATCH CASE

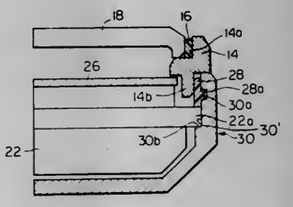
Masakazu Funazawa, Tokorozawa, and Osamu Matsumura, Chofu, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Nov. 3, 1976, Ser. No. 738,204

Claims priority, application Japan, Nov. 11, 1975, 50-152627[U]; Dec. 1, 1975, 50-162709[U]

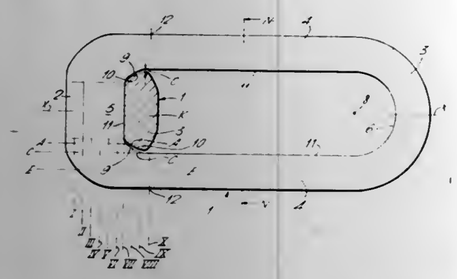
Int. Cl.² G04B *37/08*

U.S. Cl. 58—90 R **17 Claims**



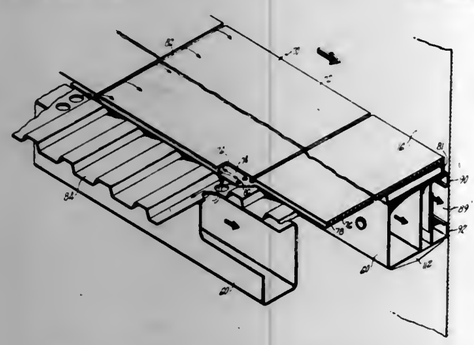
1. A water-proof watch case having a watch movement formed at its outer periphery with a flange, comprising:
- a case body including an axially extending annular wall formed with a radially extending annular shoulder adapted to support the flange of said watch movement, and an inwardly facing annular recess formed on said annular wall;
- a relatively hard, flexible sealing ring including an axially extending annular body held at its outer periphery in pressured contact with the annular wall of said case body, and an outwardly extending annular projection formed on the outer periphery of said annular body and engaging with the annular recess of said case body to prevent an axial displacement of said sealing ring relative to said case body, said annular body having a bottom end engaging with an upper surface of the flange of said watch movement to retain said flange in a fixed place on the annular shoulder of said case body; and
- a bezel for receiving a glass plate and including a lower end formed with a downwardly extending annular portion press-fitted to and compressing said sealing ring against the annular wall of said case body to provide a water-tight sealing effect therebetween.

4,110,971
LINK CHAIN
Peter Bruce, "Le Victoria", App. 5e - etage, Bloc D, 13 bd., Princesse Charlotte, M.C., Monaco
Filed Feb. 3, 1977, Ser. No. 765,523
Claims priority, application United Kingdom, Feb. 4, 1976, 4311/76
Int. Cl.² F16G 15/12
U.S. Cl. 59—84 9 Claims



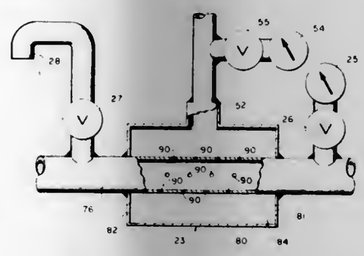
1. A link chain comprising a plurality of links joined together in sequence, each link including a closed member comprising a pair of facing U-shaped portions joined by substantially parallel leg portions, the base of the U at the link end of one of a pair of joined links having a portion of its inside surface as a part convex cylindrical surface while the associated link end of the other link has a portion of its inside surface as a part concave cylindrical surface, the two part cylindrical surfaces mating with each other when the chain is straight under tension, while permitting relative pivoting of the joined links about a first axis substantially transverse to the longitudinal mid plane of one link of the pair, the part-cylindrical convex surface of said one link end having arcuate shoulder portions blending into the parallel leg portions of the link and said part-cylindrical concave surface of said associated link end having arcuate side wall portions substantially complementary to the arcuate shoulder portions of said one link end to permit relative pivoting of the links about a second axis substantially transverse to the longitudinal mid-plane of the other link of the pair.

4,110,972
SEAL MEANS FOR A MOVABLE CENTERBODY IN A TWO DIMENSIONAL NOZZLE
John H. Young, South Windsor, Conn., and Gerald F. Goetz, Seattle, WA, assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 16, 1976, Ser. No. 751,428
Int. Cl.² F02K 1/12, 11/04
U.S. Cl. 60—230 10 Claims



1. For aircraft, in combination, a two-dimensional nozzle exhausting the products of combustion manifested by the aircraft's engine, a pivotable wedge centerbody having collapsible walls to vary its orientation in said nozzle and change the geometry thereof, a source of cooling air and means interconnecting the cavity of said centerbody with said source, sealing means for preventing the inclusion of products of combustion internally of said centerbody and the leakage of cooling air contained within said centerbody cavity, said sealing means including a pair of laterally spaced elongated members movably supported to the lateral edges of said centerbody adjacent the flat side wall of said two-dimensional nozzle defining therewith an open ended channel, means for communicating cooling air to pressurize said open ended channel so that one portion of said elongated member is urged against said flat wall of said two-dimensional nozzle and another portion of said elongated member is urged against said centerbody.

4,110,973
WATER INJECTION SYSTEM FOR INDUSTRIAL GAS TURBINE ENGINE
Jack Haeflich, and Peter C. Christman, both of West Hartford, Conn., assignors to Energy Services Inc., Farmington, Conn.
Filed Jan. 24, 1977, Ser. No. 761,628
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.05 4 Claims

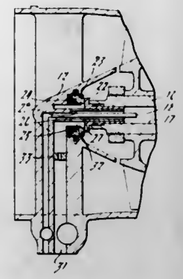


1. In a gas turbine engine water injection system having a water delivery pump for delivering water under pressure and a water injection device mounted in series with a liquid fuel delivery conduit of the engine and connected to the water delivery pump for injecting water into the liquid fuel as it is conducted to the engine, the improvement wherein the water injection device comprises a water injection conduit connected in series with the liquid fuel delivery conduit, a water jacket defining a water chamber surrounding the water injection conduit and having a water inlet conduit connected to the water delivery pump for transmitting water under pressure to the water jacket chamber, the water injection conduit having an arrangement of a plurality of axially and angularly spaced non-aligned water injection apertures of generally the same size for injecting jets of water under pressure from the water jacket into the injection conduit to mix homogeneously with the fuel conducted therethrough, the water injection apertures being arranged and dimensioned and the water delivery pump being operable for delivering water under pressure for injecting jets of water under pressure through the liquid fuel within the water injection conduit and into engagement with an opposed internal surface of the conduit to be splattered thereby into a homogeneous mixture with the liquid fuel conducted through the conduit.

4,110,974
GOVERNOR
Gerald J. Herman, Farmington Hills, Mich., assignor to Williams Research Corporation, Walled Lake, Mich.
Filed Dec. 22, 1976, Ser. No. 753,203
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.28 R 11 Claims

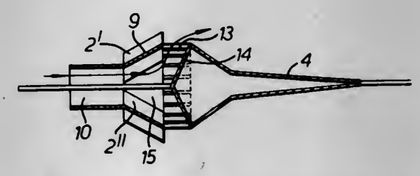
1. An engine fuel governor comprising
a stationary member having a fuel inlet,

means for pressurizing said fuel inlet,
a shaft having a bore,
means connecting said shaft to said engine so as to rotate at a speed proportional to engine speed,
at least one slot extending from the outer shaft surface to said bore,



passageway means leading from said fuel inlet to the outer end of said slot, whereby the centrifugal force of fuel in said slot will partially counteract the fuel inlet pressure,
and fuel passageway means leading from said shaft bore to said engine.

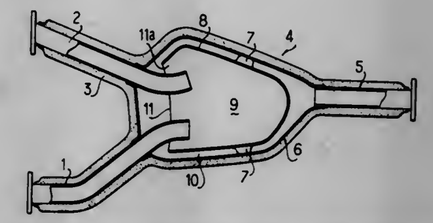
4,110,975
JET ENGINE HAVING COMBUSTION CHAMBER WITHIN COMPRESSOR
Magne Godtland, 2500 Tynset, Norway
Filed Jan. 25, 1977, Ser. No. 762,797
Claims priority, application Norway, Jan. 27, 1976, 760256
Int. Cl.² F02K 3/02
U.S. Cl. 60—262 5 Claims



1. Jet engine, comprising a long, tube-shaped casing, open at both ends, a shaft supported centrally in the casing, a compressor and gas turbine rigidly connected to said shaft, and a combustion chamber with fuel supply located between the compressor and turbine, characterized by two coaxial compressors with radial blades, the compressors being separated by a backwardly-diverging, conical partition, by a radial turbine disposed immediately back of the compressor in connection with the back end of the conical partition, and by a rear wall disposed in back of the turbine, the combustion chamber then being bound by said wall, said conical partition and the turbine blades.

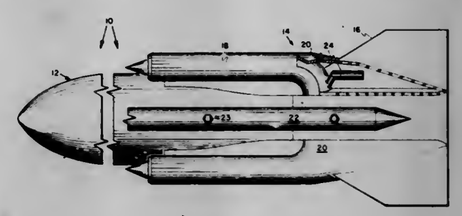
4,110,976
THERMAL REACTOR SYSTEM
Hiroo Oya, and Masakazu Tatejima, both of Ohta, Japan, assignors to Fuji Heavy Industries Limited, Tokyo, Japan
Filed Oct. 5, 1976, Ser. No. 729,684
Claims priority, application Japan, Oct. 7, 1975, 50-136781[U]
Int. Cl.² F01N 3/10, 7/10
U.S. Cl. 60—282 5 Claims

1. A thermal reactor system for an internal combustion engine comprising
a first exhaust pipe communicating with exhaust ports of the engine and having an opening,
a thermal reactor communicating with said first exhaust pipe,
a second exhaust pipe operatively communicating with said thermal reactor,
said thermal reactor comprising,
an outer shell covered by an insulating material,
an inner shell having substantially the same shape as but smaller than that of said outer shell and being disposed in said outer shell spaced therefrom defining an exhaust passage therebetween,
projections between said inner and outer shells supporting said inner shell spaced from said outer shell and defining said exhaust between said outer shell and said inner shell,
said inner shell defining a reaction chamber of substantially convex shape including an inlet-outlet section, and an intermediate section having a progressively narrowing substantially conical shape, and an innermost end section having a substantially convex shape, respectively,



said inlet-outlet section of said inner shell being formed with an outlet opening of said reaction chamber spaced opposite from said innermost end section and communicating with said exhaust passage,
said first exhaust pipe being inserted into said reaction chamber passing through said outlet opening defining an outlet thereof therearound,
said second exhaust pipe communicating with said exhaust passage at a position on the opposite side of said innermost end section from said inlet-outlet section, and
said first exhaust pipe having an end portion adjacent said opening thereof and being oriented substantially parallel to an adjacent portion of said inlet-outlet section of said inner shell of said reaction chamber, whereby for each portion of exhaust gas a single swirl of exhaust gases is produced in said reaction chamber starting from an opening of said first exhaust pipe and ending completely feeding into said outlet of said reaction chamber

4,110,977
PYROGEN IGNITER RAMJET IGNITION SYSTEM
Frank W. Jandl, Orange, Calif., and Gregory D. Colman, DeRidder, La., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 13, 1977, Ser. No. 806,210
Int. Cl.² F02K 7/10
U.S. Cl. 60—270 R 11 Claims



1. In a ramjet engine comprising,
a. a combustion chamber;
b. a plurality of ram air tubes each having an aft end commu-

nicating with said combustion chamber and a forward open end for air intake;

c. means for introducing fuel into each said ram air tube at a point intermediate said ends; and

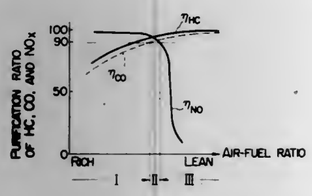
d. igniter means associated with at least one said ram air tube and being effective, when operated, to inject a flame into said one tube intermediate said point and said aft end sufficient to cause burning of the fuel air mixture passing from said ram air tube into said chamber.

4,110,978

APPARATUS FOR PURIFYING EXHAUST GAS

Torazo Nishimiya, Mito; Yoshishige Oyama, Katsuta, and Ryoichiro Oshima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 30, 1976, Ser. No. 745,999
Claims priority, application Japan, Dec. 5, 1975, 50-144006
Int. Cl.² F02D *75/10*; F07D *35/00*; F02M *7/00*
U.S. Cl. 60—276 **3 Claims**



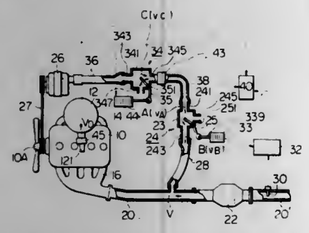
1. An apparatus for purifying exhaust gas by a single three-functional catalyst capable of oxidizing hydrocarbons and carbon monoxide and simultaneously reducing nitrogen oxides provided in an exhaust gas line, which comprises a fuel-controlling means for dividing driving conditions into an accelerating stage as zone I, a steady running stage as zone II, and a slowing-down and idling stage as zone III, and controlling an air-fuel mixture to be fed from a carburetor to a reducing state of the three-functional catalyst in zone I, a three-functional state thereof in zone II, and an oxidizing state thereof in zone III.

4,110,979

APPARATUS FOR INTRODUCING SECONDARY AIR INTO AN EXHAUST SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Hideo Miyagi; Kiyohiko Oishi; Yasuhiko Ishida, all of Susono, and Shunzo Yamaguchi, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippon Soken, Inc., Nishio, both of, Japan

Filed Dec. 2, 1976, Ser. No. 746,869
Claims priority, application Japan, Aug. 17, 1976, 51-97424
Int. Cl.² F01N *3/10*
U.S. Cl. 60—276 **8 Claims**



1. An apparatus for introducing secondary air into an exhaust system of an internal combustion engine provided with a three-way catalytic converter arranged in said exhaust system, said apparatus comprising:

pipe means connected to said exhaust system at a position located upstream of said three-way catalytic converter;

air introducing means provided on said pipe means for introducing air into said pipe means;

means for sensing an atmosphere of said exhaust gas arranged in said exhaust system in order to provide electrical signals indicating an excess air ratio of said exhaust gas in said exhaust system;

first air flow control valve means having a casing arranged on said pipe means and having a valve member disposed in said casing, said valve member being moved so as to control an amount of a secondary air passing through the casing;

actuating means of said first control valve means connected to said sensing means to move said valve member in accordance with said electrical signals indicating said excess air ratio λ of said exhaust gas to introduce a necessary amount of secondary air into said exhaust system so that the atmosphere of said exhaust gas is controlled to a stoichiometric atmosphere in which λ is kept near 1.0;

second air flow control valve means having a casing arranged in said pipe means at a position located upstream of said first air flow control valve means remote from said exhaust system, and having a valve member which is capable of being moved so as to control the amount of secondary air introduced into said first air flow control valve means, and;

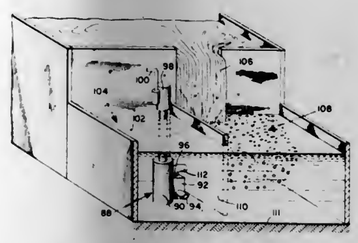
operating means of said valve member of said second air flow control valve means for moving said valve member for controlling the amount of secondary air introduced into said exhaust system in accordance with the amount of fluid passing through the engine passageways including the intake system and said exhaust system, so that the ratio of the amount of the air introduced into said first air flow control valve means to said necessary amount of air introduced into the engine exhaust system is kept approximately near to a predetermined value which is larger than 1.0, whereby a precise control of the atmosphere of the exhaust gas to said stoichiometric atmosphere by said first air flow control valve means is effectively attained.

4,110,980

APPARATUS FOR PRODUCING MECHANICAL KINETIC ENERGY FROM FALLING WATER

Willing B. Foulke, 109 Greenridge Rd., Wilmington, Del. 19805

Filed Oct. 13, 1977, Ser. No. 841,823
Int. Cl.² F16D *33/00*
U.S. Cl. 60—325 **12 Claims**



1. Apparatus for producing mechanical kinetic energy from falling water comprising:

a body of water having a surface;

means, comprising a stream of water falling downwardly into and agitating said surface, for inducing air bubbles in a portion of said body of water and carrying said bubbles through a substantial distance below the surface thereof; and

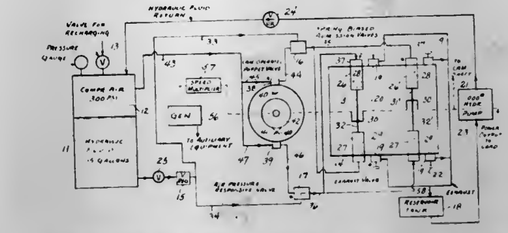
motor means communicating with said portion of said body of water and responsive to the potential energy of the air bubbles in said first portion of said body of water, to produce mechanical kinetic energy.

4,110,981

HYDRAULIC MOTOR WITH AIR DISTRIBUTOR-OPERATED VALVES

John R. Murphy, Hwy. 278 East, Amory, Miss. 38821

Filed Aug. 17, 1977, Ser. No. 825,462
Int. Cl.² F15B *11/20*
U.S. Cl. 60—371 **14 Claims**



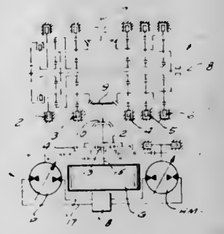
1. In a hydraulic fluid engine system, a sealed liquid storage tank having a first space containing hydraulic liquid and a second space containing compressed air pressurizing said liquid, an engine provided with opposed cylinders containing pistons and a crankshaft having crank elements connected to said pistons, liquid conduit means connecting said first space of the storage tank to said cylinders and including respective compressed air-operated pilot valves for admitting pressurized liquid to said cylinders, and distributing air conduit means alternately operatively connecting said compressed air second space to said pilot valves responsive to rotation of the crankshaft.

4,110,982

AUXILIARY DRIVE ASSEMBLY FOR ACCELERATING A VEHICLE

Karl-Nikolaus Regar, Munich, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 18, 1977, Ser. No. 825,797
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1976, 2637322
Int. Cl.² F15B *1/02*
U.S. Cl. 60—413 **3 Claims**



1. An auxiliary drive assembly for accelerating a vehicle having a drive shaft and a driven shaft, said auxiliary drive assembly comprising:

(a) a flywheel,

(b) first and second adjustable hydraulic motor/pump units and means for hydraulically coupling said units to each other,

(c) summation gearing having a first input connected to said flywheel and to said first motor/pump unit, a second input connected to said second motor/pump unit, and an output from which power can be released,

(d) means for connecting said summation gearing output to the drive shaft for driving the latter or charging said flywheel, and

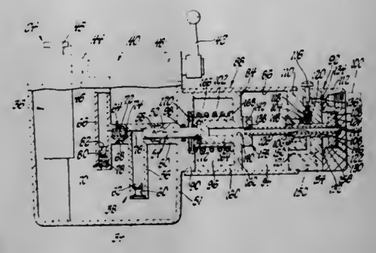
(e) a brake in said second motor/pump unit for effecting rapid charging of said flywheel by the drive shaft.

4,110,983

AIR OPERATED HYDRAULIC PUMP APPARATUS

Clarence A. Sherman, Birmingham, Mich., assignor to Terry McDermid, Southfield, Mich.

Filed Jun. 13, 1977, Ser. No. 805,680
Int. Cl.² F16D *31/02*; F15B *13/09*
U.S. Cl. 60—477 **10 Claims**



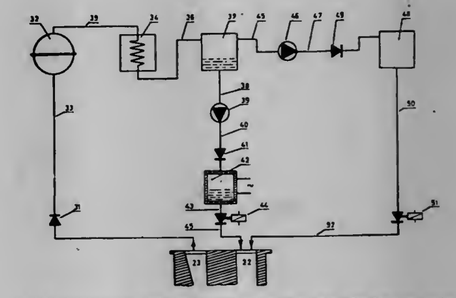
1. Hydraulic pump apparatus comprising: a housing defining a cylinder bore; a hydraulic pump actuating piston sealingly slidable within the bore to define first and second chambers whose sizes change during piston movement; spring means for biasing the piston in a direction toward the first chamber from the second chamber; a valve having a first position for feeding compressed gas to the first chamber to move the piston against the bias of the spring means; said valve being movable to a second position to terminate the supply of compressed gas to the first chamber and concomitantly communicate the first chamber to the environment to permit the bias of the spring means to move the piston; a first actuator for moving the valve from the first position to the second position upon a predetermined extent of piston movement against the spring means; and a second actuator for moving the valve from the second position back to the first position upon a predetermined extent of piston movement under the bias of the spring means, whereby the piston reciprocates within the bore as the valve is moved between the first and second positions in response to piston reciprocation.

4,110,984

ROTARY PISTON ENGINE USING ELECTRIC HEATING TO FLASH MOTIVE FLUID

Rolf Schneider, im Sellhof 560, 8215 Hallau, Switzerland

Filed Mar. 15, 1977, Ser. No. 777,854
Claims priority, application Switzerland, Jun. 22, 1976, 007984/76
Int. Cl.² F01C *21/12*; F01K *25/06, 25/12*
U.S. Cl. 60—509 **11 Claims**



1. A machine operable according to the gas discharge princi-

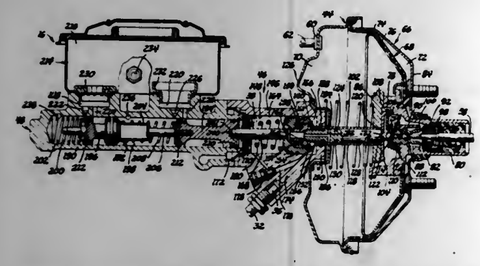
ple, comprising a fixed housing including a shaft, said housing having side walls and a casing surrounding peripherally said side walls, a rotary member secured for rotation on said shaft in said housing in an eccentric fashion, said rotary member comprising a plurality of projections, said projections during the rotation being in continuous sliding contact with the inner surface of said casing and sliding along said inner surface during rotation, said rotary member during rotation forming a plurality of operating chambers having each a variable volume, further including a guide means fixed on said rotary member and a mating guide means fixed on said shaft for guiding said rotary member, a plurality of electrically conducting means provided in said casing of said housing, an electrically conducting means provided in said rotary member, said electrically conducting means in said casing and said electrically conducting means in said rotary member being arranged lying opposite with respect to each other when said rotary member is mounted in said housing for rotation, said electrically conducting means in said casing and said rotary member having a predetermined distance with respect to each other in predetermined rotary positions of said rotary member, a source of voltage and means connecting each of said electrically conducting means of said casing and of said rotary member to said voltage source for creating an electrical field between respective electrically conducting means in said casing and in said rotary member at a predetermined sequence, and a closed circuit coupled to said housing for supplying thereto an operating medium in a predetermined quantity and at predetermined instant.

4,110,985

DUAL POWER BRAKE BOOSTER

Ralph A. Gordon, Centerville; Thomas P. Mathues, Miamisburg, and Donald L. Parker, Middletown, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1976, Ser. No. 675,497
Int. Cl.[2] B60T *13/12*
U.S. Cl. 60—548 3 Claims



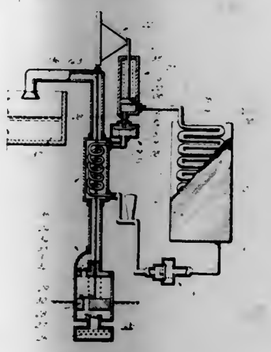
1. A brake booster and master cylinder assembly comprising:
first and second independently power operable booster sections and a master cylinder section in operative series relation;
manual force input means movable to control the separate actuation of said booster sections and including axially movable control valves for each of said booster sections, said control valves having first and second ranges of valve movement and being concurrently movable through first and second ranges of valve movement to condition said first booster section for power operation of said master cylinder section only during said first range of valve movement and to condition said second booster section for power operation of said master cylinder section only during said second range of valve movement;
and blocking means, responsive to full power operation of said first booster section, blocking movement of said control valves beyond said first range of valve movement, said blocking means also being responsive to lack of power operation of said first booster section in said first range of valve movement so that upon said lack of power operation said blocking means permits movement of said control valves through said second range of valve movement.

4,110,986

SYSTEMS FOR MAKING USE OF THE ENERGY CARRIED BY A FLUID AND SUPPLIED THERETO BY SOLAR ENERGY

Victorio Tacchi, Rioja 50, 1°Piso Dpto. 1, Cordoba, Argentina

Filed Jul. 23, 1976, Ser. No. 708,071
Claims priority, application Argentina, Jul. 24, 1975, 259738
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 13 Claims



1. An apparatus operable by solar energy for heating a fluid and causing it to flow, said apparatus comprising:
a solar energy receiving panel having a solar energy receiving surface for converting solar energy into heat;
conduit means having a fluid inlet and a fluid outlet operatively associated with said panel for conducting the fluid and for transferring heat generated at said surface to said fluid;
first valve means attached to said fluid inlet and being adapted to connect said fluid inlet to a source of fluid, said first valve means allowing unidirectional fluid ingress into said conduit means and being movable from a closed to an open position when the pressure within said conduit means is reduced to a level lower than the pressure level of the source of fluid;
second valve means attached to said fluid outlet, said second valve means allowing unidirectional fluid egress from said conduit means and being adapted to connect said fluid outlet to a receiving space for receiving fluid egressing from said conduit means, said second valve means being movable from a closed position to an open position when the pressure caused by the expansion of said fluid within said conduit means exceeds a predetermined level, said second valve means remaining in said open position while the pressure within said conduit means falls below said predetermined level, said second valve means being adapted to be moved from said open position to said closed position after the pressure within said conduit means falls below the pressure within the source of fluid, said second valve means being prevented from moving from said open to said closed position by the combined pressure and inertial force of fluid flowing along said conduit means and through said second valve means.

4,110,987

THERMAL ENERGY STORAGE BY MEANS OF REVERSIBLE HEAT PUMPING UTILIZING INDUSTRIAL WASTE HEAT

Robert P. Cahn, Millburn, and Edward W. Nicholson, Summit, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Mar. 2, 1977, Ser. No. 773,705
Int. Cl.[2] F01K *3/00*
U.S. Cl. 60—652 8 Claims

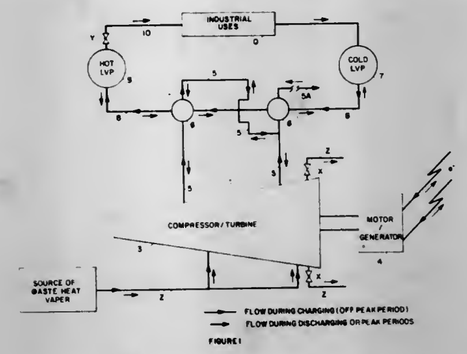


FIGURE I

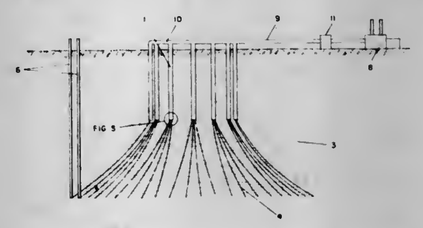
1. In a process for storing the off-peak electrical output of an electricity generating plant in the form of heat in a low vapor pressure (LVP) organic heat retention material and recalling said heat from said LVP organic heat retention material during period of peak power demand by reconversion into electrical power or utilization as high quality process heat comprising the steps of:
(a) using excess electrical power to run a compressor;
(b) compressing a low level heat containing vapor to raise the temperature of said heat containing vapor;
(c) contacting said high temperature heat containing vapor through heat exchanger means with an LVP material;
(d) storing said hot LVP material in isolation from the atmosphere at atmospheric pressure;
(e) during periods of peak power demand using said stored hot LVP material as fluid heat transfer medium in industrial applications;
the improvement comprising using as the low level heat containing vapor in step (b) the waste heat containing vapor generated by industrial and/or municipal installations.

4,110,988

METHOD FOR FORMING DOMES FROM SUBTERRANEAN DIAPIRIC MATERIAL

Charles L. Hyder, 1007 Acequia Trail, Albuquerque, N. Mex. 87107

Filed Oct. 25, 1977, Ser. No. 844,626
Int. Cl.[2] E02D *27/28*
U.S. Cl. 405—131 2 Claims



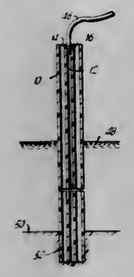
1. Method for forming synthetic domes from subterranean diapiric material, especially salt which comprises: drilling a series of continuous wellbores, each having a first section drilled vertically from the ground surface to a depth wherein underlying subterranean strata of diapiric material is penetrated; and one or more second sections connected to each first section, said second sections emanating radially from the area of the desired dome and said second section gradually curving downward and outward from the first section in the strata of diapiric material; and a vertical exhaust section connecting the distal end of each second section to the surface; inserting sealed well casing within said wellbores and circulating a heating fluid through the well casing transferring heat to the strata of diapiric material thereby reducing the viscosity of the diapiric material increasing the pressure in the diapiric material, thereby rendering the diapiric material mobile and causing it to flow to create a dome.

4,110,989

PILING FABRICATED FROM SYNTHETIC MATERIAL

Thomas Selkirk, 61 Dictum Ct., Brooklyn, N.Y. 11229

Filed May 16, 1977, Ser. No. 797,299
Int. Cl.[2] E02D *5/32*
U.S. Cl. 405—248 7 Claims



1. A piling comprising a cylindrical, one-piece, elongated body portion having a uniform cross section throughout its length; said body portion consisting of a non-corrosive, acid resistant, synthetic material; said body portion having a smooth and uniform exterior surface; a longitudinal bore extending through said body portion; said bore providing a column of air space walled by said synthetic material of said body portion; means for introducing a fluid under pressure through said bore to facilitate sinking a lower end of said body portion into a bed; a plurality of longitudinal passageways extending through said body portion; said passageways being positioned around said bore; said passageways providing additional columns of air space walled by said synthetic material of said body portion; and cover means sealing upper ends of said bore and passageways for trapping said columns of air space within said bore and passageways to retain said body portion in the bed, whereby any attempt to extract said piling from its position in the bed is met by a resistance to form a vacuum within said bore and passageways which are sealed by said cover means at one end and the bed at an opposite end thereof.

4,110,990

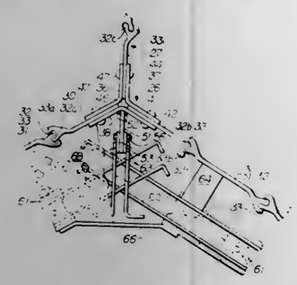
METHOD AND STRUCTURE FOR REHABILITATING SHEET PILE CELLULAR COFFER DAMS

Isadore Thompson, and Rudolph Fehr, both of 133 Kearney St., San Francisco, Calif. 94108

Filed Sep. 6, 1977, Ser. No. 830,409
Int. Cl.[2] E02D *5/60*
U.S. Cl. 405—14 14 Claims

1. A coffer dam repair structure comprising a first arch having a plurality of vertically disposed sheet piles formed edge to edge and extending into the soil, each said pile having cooperating means on each vertical edge to connect said vertical edge to the vertical edge of an adjacent pile, a second arch adjacent said first arch having a plurality of piles formed and connected similar to the piles of said first arch, a diaphragm

extending generally transverse to said first and second arches from the line of intersection of said arches, said diaphragm having a plurality of piles formed and connected similar to the piles of said first arch, a Y-shaped vertical joint joining together adjacent vertical edges of said first arch, second arch and diaphragm, a vertical plate secured to said vertical joint in alignment with said diaphragm and extending directly away from said diaphragm, a first repair arch generally similar in



area to the area of said first arch placed above the soil and spaced outwardly of said first arch, a second repair arch similar to said first repair arch spaced outwardly of said second arch, and attachment means connecting the continuous edges of said repair arches to each other and to said vertical plate, whereby the components of force on said repair arches are balanced laterally perpendicular to said diaphragm and are resisted in an outward direction parallel to said diaphragm by said diaphragm.

4,110,991

PREPARING TUBING OR PIPELINES FOR SUBMARINE INSTALLATION

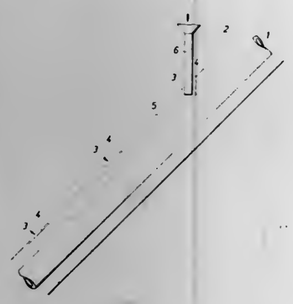
Joachim Torkuhl, Korschenbroich-Herrenshof, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 7, 1977, Ser. No. 757,560

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1976, 2600519

Int. Cl.² F16L *58/06*

U.S. Cl. 405—157 **5 Claims**



1. Method of preparing tube or pipelines for installation on the bottom of the sea, lakes, rivers, etc., comprising:

providing a flexible hose around the pipe or tube to be installed;

winding at least one wire or cable around the tube, the wire or cable being provided with spacers which are being placed onto the tube for holding the wire or cable in spaced-apart relation to the tube, the cable or wire being located inside of the hose;

filling fresh concrete in steps into a space as provided between the hose and the pipe or tube, prior to submarine installation; and

winding cable or ropes helically around the hose subsequently to the filling step for establishing concrete cushions, but also prior to submarine installation.

4,110,992

BRUSH-TYPE PACKING MEANS FOR SHIELD EXCAVATOR

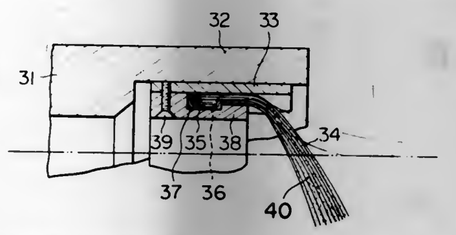
Shigeru Jyo, Urawa, Japan, assignor to Tekken Kensetu Co. Ltd., Tokyo, Japan

Filed May 25, 1976, Ser. No. 689,722

Claims priority, application Japan, May 30, 1975, 50-64166

Int. Cl.² E01G *5/16*

U.S. Cl. 405—147 **12 Claims**



1. A brush-type packing means for shield tunnel excavators comprising a substantially ring-shaped brush of bunched wires having a high resiliency and wear resistance, said ring-shaped brush being secured along the inner periphery of a substantially cylindrical excavator body adjacent the tail end thereof and projected inward at its free end, and means for securing said brush to a position for closing a gap between a tunneled ground surface and the peripheral surface of a tunnel wall element inserted in the excavated tunnel, clearances between said bunched wires being sealed with an impregnating agent deformable and impermeable to water, said impregnating agent being substantially filled in said brush wire clearance while being in a liquid state and thereafter set at the normal temperature providing a resiliency.

4,110,993

APPARATUS FOR DRIVING PILES

Pieter Schelte Heerema, Kapellen, Belgium, assignor to Panama Overseas Shipping Corporation Inc., Panama, Panama

Filed Jul. 5, 1977, Ser. No. 812,976

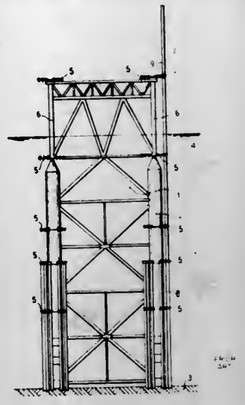
Claims priority, application Netherlands, May 9, 1977, 7705067

Int. Cl.² E02D *13/04*; E02B *17/00*

U.S. Cl. 405—228 **6 Claims**

1. An apparatus for driving piles into the sea-bottom for the support of a substructure resting on the sea-bottom of a working island to be installed, comprising a plurality of support constructions attached to a column, said constructions each defining guide passage openings for the piles and the followers, and a chain located on a ship or on the substructure itself, at least the uppermost support construction consisting of an arm which extends transversely of the column and has first and second ends, means securing the first end of the arm to the column to enable the arm to pivot about a vertical axis, a first semi-circular claw segment secured to the second end of the arm, a second semi-circular claw segment, and means securing the second claw segment to said second end of the arm to

permit pivotal movement thereof with respect to the first claw segment, whereby the claw segments can be brought into a



closed position in which they define a guide passage opening for the pile or follower.

4,110,994

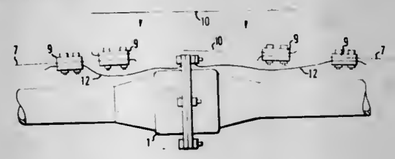
MARINE PIPELINE

Roy Walfrid Lundh, Glendora, Calif., assignor to Poseidon Marketing and Development Co., Arcadia, Calif.

Division of Ser. No. 652,281, Jun. 26, 1976, abandoned. This application Nov. 16, 1977, Ser. No. 853,010

Int. Cl.² F16L *1/00*

U.S. Cl. 405—158 **14 Claims**



1. A marine pipeline comprising

a plurality of flexible pipe sections coupled together,

cable means extending along the coupled pipe sections,

a plurality of snubber means spaced apart along the pipe sections and so fixed to the cable means and the pipe sections that when the cable means is in tension the pipe sections are slack,

buoyancy means tending to cause the pipe sections to float, and

a plurality of anchor means spaced apart along the pipe sections and the cable means to anchor the sections at a depth between the sea bed and its surface, the length of coupled pipeline sections being greater than that required for a direct course to enable portions of the pipeline to be on the surface without the pipeline being interrupted.

4,110,995

SYSTEM FOR STORING LIQUIFIED GAS

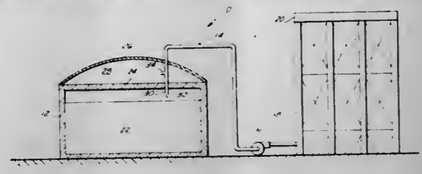
Tadeusz J. Marchaj, Port Washington, N.Y., assignor to Preload Technology, Inc., Garden City, N.Y.

Filed Apr. 6, 1977, Ser. No. 785,108

Int. Cl.² F17C *13/00*

U.S. Cl. 62—50 **14 Claims**

5. In a cryogenic storage system for storing a body of liquified gas having an insulated reservoir for the storage of liquified gas, a reservoir for gas vaporized from said body of liquified gas isolated from said insulated reservoir and a vaporized gas withdrawal line for selective removal of vaporized gas from the system, the improvement comprising means within said system providing communicative means between said gas withdrawal line and said reservoir for vaporized gas to exhaust



gas from said reservoir for vaporized gas directly into said gas withdrawal line without passing said vaporized gas into said insulated reservoir.

4,110,996

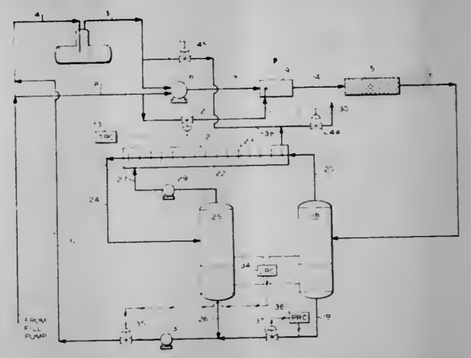
METHOD AND APPARATUS FOR RECOVERING VAPOR

Max W. Thompson, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1977, Ser. No. 792,736

Int. Cl.² F17C *13/00*

U.S. Cl. 62—54 **17 Claims**



1. A method of recovering vapor expelled from a container during filling with a vaporous liquid, said method comprising the steps of:

(a) conducting expelled vapor to a compressor means;

(b) compressing said expelled vapor;

(c) cooling the thus compressed vapor to a temperature sufficient for condensing a portion of the compressed vapor, forming a first vapor portion and a first liquid portion;

(d) separating the first vapor portion from the first liquid portion;

(e) cooling the thus separated first vapor portion by indirect contact with a coolant for condensing a portion of the first vapor portion to form a second vapor portion and a second liquid portion;

(f) separating the second vapor portion from the second liquid portion; and

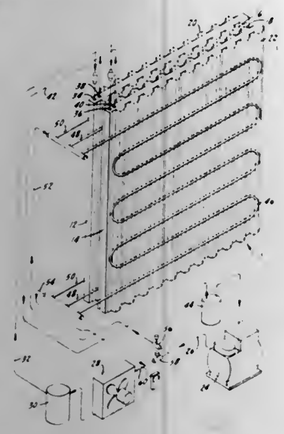
(g) expanding the thus separated second vapor portion and using the thus expanded second vapor portion as at least a portion of said coolant.

4,110,997

HOT GAS DEFROST SYSTEM

Michael C. Klotz, Chicago, and Viung C. Mei, Mount Prospect, both of Ill., assignors to Dole Refrigeration Company, Lewisburg, Tenn.

Division of Ser. No. 696,886, Jun. 17, 1976, Pat. No. 4,043,144.
This application Jun. 6, 1977, Ser. No. 803,521
Int. Cl.² F25B *41/00, 47/00;* F25D *11/04*
U.S. Cl. 62—81 **2 Claims**



1. A method of defrosting the heat transfer surfaces in an eutectic refrigeration plate system where a refrigerant conduit is within the plate and a defrost coil is exterior to said plate, simultaneously with the process of freezing the eutetic solution with the plate with a compressor and condenser connected in circuit with said refrigerant conduit, including the steps of:

diverting hot gas from the compressor outlet through the defrost coil,

returning the refrigerant from said defrost coil to said condensor for subsequent use in said refrigerant conduit,

continuing said diversion until the temperature of the refrigerant from said defrost coil reaches a predetermined level, thereafter passing hot gas from said compressor directly to said condenser, without diversion through said defrost coil.

4,110,998

APPARATUS FOR DETECTING AND REMOVING CONTAMINANTS FROM A REFRIGERATION SYSTEM

Charles Owen, 2120 Cannon Way, Marietta, Ga. 30064

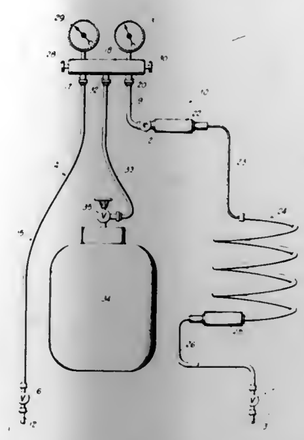
Filed May 27, 1977, Ser. No. 801,043
Int. Cl.² F25B *45/00*
U.S. Cl. 62—125 **8 Claims**

1. A device for adding on to a refrigeration system having a liquid refrigerant line, a suction line, and connecting lines therefore, said device comprising:

a. a conduit means for communicating the refrigerant line to said suction line; means for connecting opposite ends of the conduit means respectfully to the suction line and the liquid refrigerant line;

b. means in said conduit means for removing contaminents from said refrigerant;

c. means for selectively connecting a source of new refrigerant with said conduit means; and



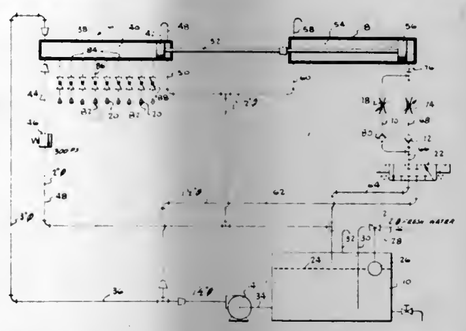
d. means in said conduit means adjacent said suction line for creating a pressure differential for said refrigerant from a liquid to a vapor.

4,110,999

SPRAY COOLING TEMPERATURE CONTROL SYSTEM

Miro Dvirka, 12 Hamilton Pl., Garden City, N.Y. 11530

Filed May 5, 1977, Ser. No. 794,092
Int. Cl.² F28D *3/00*
U.S. Cl. 62—171 **9 Claims**



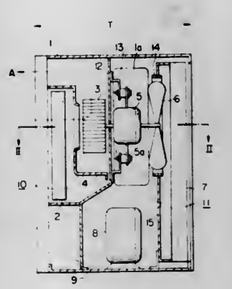
1. An evaporative spray cooling system for cooling an effluent fluid comprising a means for providing a constant pressure supply of coolant fluid, a manifold having an elongated bore therein, a piston movable within said manifold bore, spray nozzles communicating with ports spaced along said manifold bore and opening into said manifold bore, an actuator operatively connected to the manifold piston, said pressurized fluid supply communicating with a first end of said manifold bore to supply coolant fluid to the manifold bore, temperature control means for selectively activating said actuator to permit the force of the supply fluid on the manifold piston to move the manifold piston toward the second end of the manifold bore in response to an increase in effluent fluid temperature above a predetermined temperature thereby opening additional ports to supply coolant fluid to additional spray nozzles to decrease the temperature of the gas, and for selectively activating said actuator to move the manifold piston in the opposite direction as the temperature of the effluent gas decreases below the predetermined temperature to close additional ports and spray nozzles and permit the temperature of the effluent gas to rise thereby providing automatic spray cooling by supplying constant pressure coolant to a sufficient number of spray nozzles to achieve the necessary cooling of the effluent fluid.

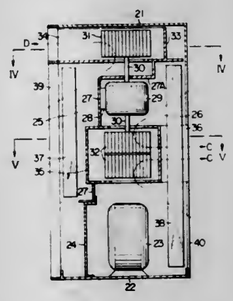
4,111,000

ROOM AIR CONDITIONER

Akio Sakazume; Hiroshi Iwata; Hiroo Nakamura, all of Yokohama; Hiroyuki Ogawa, Tochigi; Susumu Kashiwazaki, Utsunomiya, and Saneaki Nakao, Tochigi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 14, 1977, Ser. No. 759,413
Claims priority, application Japan, Jan. 19, 1976, 51-4008
Int. Cl.² F25D *23/12, 17/06*
U.S. Cl. 62—262 **7 Claims**





1. A room air conditioner comprising:

a cabinet formed in its front facing the inside of a room with a suction opening and an outlet port for indoor air and at its rear facing the outside of the room with a suction opening and an outlet port for outdoor air;

a partition plate dividing the interior of said cabinet into an indoor space and an outdoor space and including at least one surface which is not perpendicular to a bottom of said cabinet;

a first heat exchanger mounted in said indoor space of said cabinet and disposed in spaced juxtaposed relation to said suction opening for indoor air;

a second heat exchanger mounted in said outdoor space of said cabinet and disposed in spaced juxtaposed relation to said suction opening for outdoor air;

a fan motor arranged in said outdoor space of said cabinet and supported by said partition plate in such a manner that its output shaft is disposed perpendicular to the bottom of said cabinet, said output shaft having one end portion penetrating said non-perpendicular surface of said partition plate to extend into said indoor space and the other end portion located within said outdoor space;

a first centrifugal fan of the single suction type supported by said one end portion of said output shaft of said fan motor extending into said indoor space;

a second centrifugal fan of the double suction type supported by said the other end portion of said output shaft of said fan motor located within said outdoor space;

a compressor supported on the bottom of said cabinet in said outdoor space of said cabinet and located in a manner to face an end face of said second centrifugal fan;

a first spiral casing mounted in said indoor space of said cabinet in a manner to enclose an outer peripheral portion of said first centrifugal fan and communicate with said outlet port for indoor air, said first spiral casing being operative to lead indoor air tangentially of said first centrifugal fan to be exhausted through said outlet port in said cabinet into the inside of the room after said indoor air is sucked through said indoor air suction opening, cooled by said first heat exchanger, introduced into said indoor space, sucked by said first centrifugal fan discharged from said first centrifugal fan; and

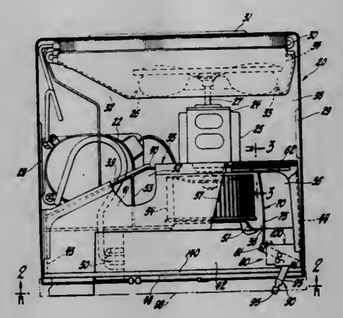
a second spiral casing mounted in said outdoor space of said cabinet in a manner to enclose an outer peripheral portion of said second centrifugal fan and communicate with said outlet port for outdoor air, said second spiral casing being operative to lead outdoor air tangentially of said second centrifugal fan to be exhausted through said outlet port in said cabinet to the outside of the room after said outdoor air is sucked through said outdoor air suction opening and said second heat exchanger to cool said second heat exchanger, introduced into said outdoor space to cool said compressor and said fan motor, sucked by said second centrifugal fan, and discharged from said second centrifugal fan.

4,111,001

ROOM AIR CONDITIONER DOOR OPERATING MECHANISM

John H. Loos, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 31, 1977, Ser. No. 801,862
Int. Cl.² F25D *17/06*
U.S. Cl. 62—427 **3 Claims**



1. In a room air conditioning unit having outer and inner compartments with a partition therebetween and an air flow opening in said partition with a door pivotally mounted adjacent the partition opening for movement between a closed and a fully open position, means in said inner compartment supporting a door control assembly for opening and closing said door so as to control the flow of air through the opening, said door control assembly comprising a bell-crank lever actuator and a pressure plate, said lever actuator including a cross arm portion and a manually operated stem arm normal to said cross arm portion accessible from the room side of said unit, pin means pivotally securing said lever actuator between said pressure plate and said inner compartment support means for pivotal movement of said lever actuator relative thereto, a resilient linear push-pull rod having one end thereof secured adjacent to one free end of said cross arm portion and its opposite end secured by double hook means to said door, indent means on said lever actuator contacting said support means for urging a dimple on said cross arm portion into frictional contact with said pressure plate, said cross arm portion

dimple being in slidable contact with said pressure plate along an arc, whereby said door is releasably retained in a plurality of intermediate open positions by rotation of said stem arm, said pressure plate having a door-closed dimple and a door-open dimple formed therein positioned in spaced relation at either end of said arc, said cross arm portion dimple being selectively cooperable with each of said pressure plate dimples for releasable capture thereby to positively retain said door in either its closed or fully open position, and said push-pull rod having a predetermined length with respect to said door and said door-closed dimple whereby upon said cross arm portion dimple being captured by said door-closed dimple said push-pull rod is resiliently bowed providing a biasing force on said door to retain said door in a substantially air sealed relation with the partition opening.

4,111,002

CYCLIC DESORPTION REFRIGERATOR AND HEAT PUMP, RESPECTIVELY

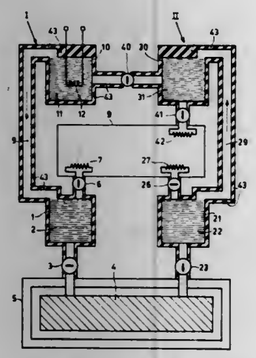
Harmannus Hinderikus Van Mal, and Eric Tapley Ferguson, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,526

Claims priority, application Netherlands, Feb. 25, 1976, 7601906

Int. Cl.² F25B *7/00, 19/00*

U.S. Cl. 62—467 R **4 Claims**



1. In a device for the transfer of thermal energy from a region of lower to a region of higher temperature by cyclic desorption, said device comprising at least two thermodynamic units each having a first chamber in which a sorbent for a working medium is present, a first heat transfer device interruptibly communicating the first chamber with a place to be cooled, a second heat transfer device interruptibly communicating the first chamber with a place to be heated, a second chamber communicating with the first chamber via a communication duct, said second chamber comprising a sorbent which, at equal working medium pressure, sorbs working medium at a higher temperature level than the sorbent in the first chamber, the second chamber furthermore comprising a heat source and a third heat transfer device communicating interruptibly the second chamber with a heat absorber for supplying and withdrawing, respectively, working medium to and from, respectively, the first chamber by cyclic heating and cooling the sorbent in the second chamber, the improvement wherein the first chambers of the thermodynamic units comprise the same sorbent but the second chambers of which comprise mutually different sorbents which, at equal working medium pressure, mutually sorb at different temperature levels, the second chambers being mutually arranged in an order of decreasing sorption temperature level, and wherein one of each pair of adjacent second chambers having the higher sorption temperature level, as a heat source for that one having the lower sorption temperature level, communicates interruptibly therewith via the third heat transfer device.

4,111,003

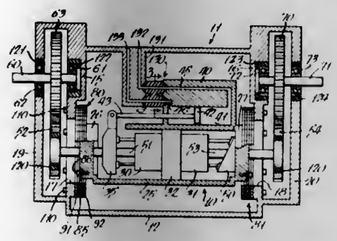
HYDRAULIC TRANSMISSION DRIVE ASSEMBLY WITH NOISE ATTENUATION MEANS

Jimmy W. Bolinger; Frederic W. Pollman, both of Ames, and David N. Polaski, Nevada, all of Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 17, 1977, Ser. No. 797,867

Int. Cl.² F15B *15/18;* F16H *39/46*

U.S. Cl. 60—469 **15 Claims**



1. A hydrostatic transmission drive assembly with reduced noise transmission including a primary housing, a housing assembly mounting a pair of hydraulic units with an interconnecting port plate, each of said units having a shaft and gear assembly associated therewith and at least one unit having displacement control means, and isolation mounting means operable in shear and compression for connecting said housing assembly to said primary housing, including a multi-layer unit with layers of resilient material operable in compression with respect to forces axially of said units and operable successively in shear for light torsional loads and in both shear and compression for heavier torsional loads.

4,111,004

GAS OPERATED REFRIGERATOR HAVING A SEALED COMBUSTION SYSTEM WITH SEPARATED FRESH AIR AND COMBUSTION GAS CONDUITS

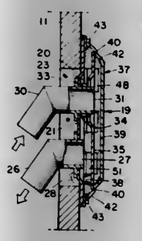
Peter Erik Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 30, 1975, Ser. No. 627,083

Claims priority, application Sweden, Nov. 1, 1974, 7413780

Int. Cl.² F25B *15/00*

U.S. Cl. 62—476 **2 Claims**



1. In a gas-operated refrigerator positioned in a room and provided with a gas burner of low capacity, a flue pipe, an atmospheric air conduit for said gas burner, a combustion gas conduit connected to said flue pipe; said burner, flue pipe and said conduits forming a sealed combustion system separated from said room but communicating with the atmospheric air outside of said room, the improvement comprising: a ventilator arrangement including two pipes passing through a wall or ceiling of said room and communicating with the atmosphere, said pipes being connected to said atmospheric air conduit and said combustion gas conduit respectively, the air intake and the combustion gas outlet in said ventilator are so constructed and arranged relative to each other that upon movement of air about them an air flow is induced from said air intake to said gas burner and thereafter to said combustion gas outlet, said ventilator being provided with a spaced disc and a spaced cover, said cover being provided with a peripheral ledge, and the peripheral edges of said disc engaging and resting against said ledge, said disc and the adjacent exterior surface of said wall defining an inner space while said disc and at least part of said cover forms an outer space which is generally parallel to said inner space, said air intake being substantially in the same plane as the exterior surface of said wall and positioned in said inner space, said combustion gas outlet passing through said inner space and said disc and into said outer space, and said cover being provided with a peripheral part having openings communicating the inner and outer spaces to the ambient, and said combustion gas outlet being located approximately 5–12 mm. beyond the exterior surface of said wall.

4,111,005

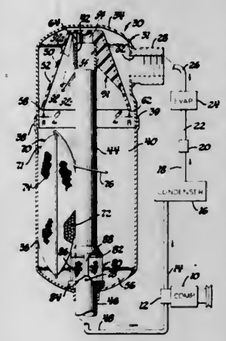
PRESS-ON PLASTIC BAFFLE FOR ACCUMULATOR-DEHYDRATOR

J. D. Livesay, Tipp City, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 7, 1977, Ser. No. 785,333

Int. Cl.² F25B *43/00*

U.S. Cl. 62—503 **2 Claims**



1. A suction accumulator for an automotive air conditioning system including an evaporator comprising, a hollow tubular casing, a suction outlet tube extending vertically within said casing on the principal axis thereof from a point adjacent the casing bottom and terminating in an upper open end located a predetermined distance from the casing top, an inlet connected to the output of the evaporator for injection of high pressure refrigerant fluid into said casing, said inlet located in the casing side wall below said tube upper open end, a plastic baffle member slidably mounted on said tube upper end in substantially concentric relation with said casing, said baffle member including an outer truncated conical baffle and inner central press-fit securing means, said baffle having an open lower end located below said casing inlet and a closed upper end located above said casing inlet, said baffle having an outer wall upwardly decreasing in cross sectional area with its maximum cross sectional area sufficiently less than said casing side wall to provide an annular flow gap therebetween, whereby refrigerant fluid from said inlet impacts against the outer wall of said baffle for gravity flow via said annular gap to the bottom of said casing, said securing means in the form of a plurality of equally spaced, vertically extending, substantially obtuse and triangular-shaped radial webs; each said web having a base portion integrally molded on the inner wall of said baffle and upper and lower leg portions, each of said lower leg portions providing an upwardly tapered lead-in edge so as to align said baffle for slidable reception on said tube upper end, an arcuate sectioned rib coextensive with each upper leg portion, each said rib subtending a predetermined angle, said ribs dimensioned to establish a telescopic press-fit with said tube, each said rib having a notched portion adjacent its upper end defining a stop shoulder operative to engage the tube upper open end, whereby said baffle closed upper end is spaced a predetermined distance above said tube open end to define with said arcuate ribs a plurality of vapor passages therebetween, such that vaporous refrigerant fluid moves upwardly from said casing bottom along said baffle inner wall for entrance into said tube open end via the vapor passages.

4,111,006

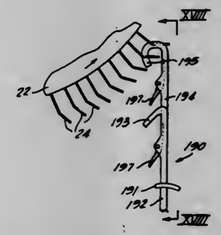
APPARATUS FOR PRODUCING PATTERNED DEEP PILE CIRCULAR KNITTED FABRICS

James D. Golladay, Wauwatosa, and Norman C. Abler, Menominee Falls, both of Wis., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 689,066, May 24, 1976, which is a division of Ser. No. 358,398, May 8, 1973, Pat. No. 3,973,414. This application Nov. 4, 1977, Ser. No. 848,646

Int. Cl.² D04B *9/14*

U.S. Cl. 66—9 B **3 Claims**



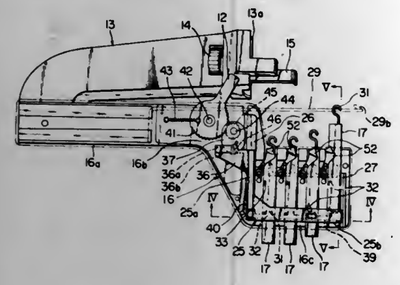
1. In a pile fabric circular knitting apparatus including a rotatable needle cylinder and reciprocatable knitting needles therein, supply means for delivering fibers to a plurality of feeding means providing zones spaced about the circumference of the cylinder wherein the fibers are picked up by certain of said knitting needles as they are selectively reciprocated into the respective zones, and yarn feed means for delivering backing yarn between certain of said zones to be picked up by the knittig needles actuated to receive said yarn, the combination which comprises: means for selectively reciprocating the individual knitting needles into said zones to cause the needles to remove fibers from the zones for transfer to knitted fabric; pattern means controlling said supply means to vary the amount of fibers supplied to the respective zones; controllable means separate from said supply means selectively regulating the cooperative relationship of the needles with the zones to modify the quantity of fibers that said knitting needles will transfer from a respective one of said zones to the knitted fabric; dynamic control means functioning with the apparatus in continuous and uninterrupted operation, for actuating said controllable means, whereby to control the density of pile in the knitted fabric; and means separate from said controllable means and said dynamic control means for reciprocating the needles to pick up yarn from said yarn feed means and integrate the fibers and the yarn into interlocking loops of the knitted fabric, said needles comprising companion relatively slidably operative needle elements one of which elements is adapted to transfer more fiber than the other of said elements, and said controllable means being operative to select said elements for picking up fiber in any of the respective zones.

4,111,007

YARN CHANGING DEVICE IN A FLAT-BED KNITTING MACHINE

Nobuaki Yokoyama, Kodaira, Japan, assignor to Silver Seiko Ltd., Kodaira, Japan

Filed Nov. 16, 1977, Ser. No. 851,972
Claims priority, application Japan, Nov. 26, 1976, 51-141102
Int. Cl.² D04B *3/06, 15/48, 27/10, 35/00*
U.S. Cl. 66—125 R **14 Claims**



11. In a yarn changing device for a flat-bed knitting machine having a carriage slidable on a needle bed of the machine, the yarn changing device having a housing supported at one end portion of the needle bed, three or more yarn guides mounted in the housing for movement from and to an operative position, and a spring for each yarn guide for urging the associated yarn guide from the operative position, the improvement comprising:

means operable for selecting and holding a predetermined yarn guide;

arresting means for releaseably arresting a yarn guide in the operative position; and

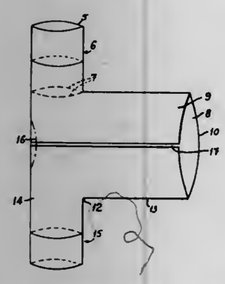
means for moving a selected yarn guide to the operative position and for releasing an arrested yarn guide from the operative position.

4,111,008

SWEATER BLANK AND METHOD OF KNITTING SAME

Frank Robinson, and Nigel Stephen Whatmough, both of Breaston, Great Britain, assignors to Courtaulds Limited, London, England

Filed Jul. 27, 1977, Ser. No. 819,472
Claims priority, application United Kingdom, Aug. 10, 1976, 33209/76
Int. Cl.² A41B *9/06*
U.S. Cl. 66—176 **9 Claims**



1. In a method of knitting a blank for a sleeved garment wherein the sleeves of the blank are formed integrally with the blank in the knitting process, the improvement comprising,

(a) knitting a tube on opposed needle beds to constitute a sleeve for the garment, each circular course of the tube being located partly on one needle bed and partly on the other,

(b) continuing knitting to make two fabrics integral with said sleeve tube, one on one of said needle beds to form the front of the garment and the other on the other needle bed to form the rear of the garment, wherein each of said two fabrics has courses extending in the direction from neck to waist of the garment and has wales which are a direct continuation of wales of said tube and extend in the direction from side to side of the finished garment, and

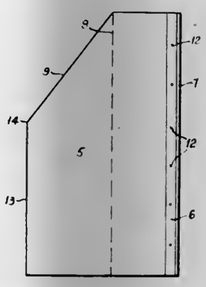
(c) further continuing knitting to make a further tube to constitute the other sleeve of the garment integral with said two fabrics, wherein each circular course of said further tube is located partly on one needle bed and partly on the other, and has wales which are a direct continuation of wales in said fabrics.

4,111,009

KNITTING METHOD AND ARTICLE FOR A BODY PANEL

Frank Robinson, Breaston; Keith Harry Girt, Menstone, near Ilkley, and Nigel Stephen Whatmough, Breaston, all of England, assignors to Courtaulds Limited, London, England

Filed Aug. 11, 1976, Ser. No. 713,425
Claims priority, application United Kingdom, Aug. 12, 1975, 33520/75
The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.
Int. Cl.² D04B *7/10, 7/22, 7/30*; A41D *1/04*
U.S. Cl. 66—189 **7 Claims**



1. A method of manufacturing a knitted garment to cover at least the upper body, on a knitting machine having needles, said method comprising the steps of

(a) knitting two front panels so that said panels together constitute the front of the garment and so that each panel starts from a non-run set-up along an edge thereof and has wales extending from said edge,

(b) shaping said panels on said knitting machine during knitting by changing the number of neeldes in action, and

(c) incorporating said panels in a garment so that each of said set-ups is located in the front of the garment and extends along an up-and-down line therein, said wales of each panel extending horizontally to an associated side of the garment front.

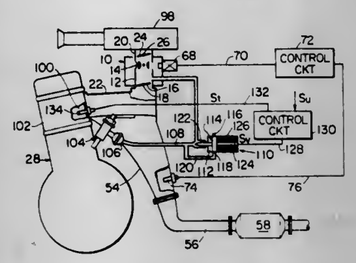
4,111,010

AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Hidehiro Minami, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Mar. 2, 1976, Ser. No. 663,059
Claims priority, application Japan, Mar. 7, 1975, 50-31753[U]; Mar. 24, 1975, 50-35070
Int. Cl.² F02B *75/10*
U.S. Cl. 60—276 **1 Claim**

1. An internal combustion engine comprising a mixture supply system for producing a mixture of air and fuel to be delivered into the engine cylinders, an exhaust system having therein a catalytic converter which is reactive to at least one type of air-contaminative compound in the exhaust gases passed through the exhaust system and which is capable of producing a maximum conversion efficiency against the exhaust gases resulting from a mixture having a predetermined air-to-fuel ratio, an exhaust sensor for detecting the concentration of at least one chemical component in the exhaust gases passed through the exhaust system and producing an output signal representative of the detected concentration of said chemical component, control means responsive to the output signal of said exhaust sensor for regulating the air-to-fuel ratio of the mixture to be produced in said mixture supply system toward said predetermined air-to-fuel ratio on the basis of said signal, detecting means for detecting engine temperature and producing an output signal representative of the detected engine temperature, a control circuit responsive to the output signal of said detecting means for producing an output signal when the signal from the detecting means is indicative of an engine temperature lower than said predetermined level, an ignition system including a vacuum spark advance mechanism to produce vacuum advance responsive to the vacuum developed in the engine intake manifold through a vacuum passageway, ignition timing retarding means including valve means electrically connected to said control circuit and operable to interrupt the communication between the vacuum advance mechanism and the intake manifold through said vacuum pas-



sageway and provide communication between the vacuum advance mechanism and the open air in response to the output signal delivered from said control circuit whereby said vacuum advance mechanism is disabled from producing the vacuum spark advance in the presence of the output signal from said control circuit, said valve means comprising a valve chamber formed with an air inlet port open to the atmosphere and an air outlet port in communication with said vacuum passageway, a valve element movable in said valve chamber between a first position to close said air inlet and outlet ports and a second position opening the air inlet and outlet ports concurrently for providing communication therebetween, said valve element being in the first and second positions thereof in the absence and presence, respectively, of the output signal from said control circuit, and a plunger with a conical free end movable together with said valve element between a position to provide vacuum communication through said vacuum passageway in response to the movement of said valve element into said first position thereof and a position to block said vacuum communication by the abutment of said conical free end onto a corresponding conical passage portion in said vacuum passageway and provide air communication between the vacuum advance mechanism and the atmosphere through said air inlet and outlet ports in response to the movement of said valve element into said second position thereof.

4,111,011

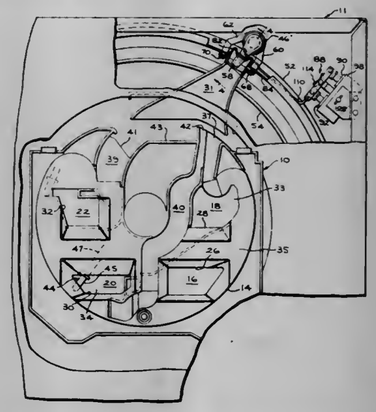
ADDITIVE DISPENSING SYSTEM

Richard A. Waugh, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 1, 1977, Ser. No. 829,687
Int. Cl.² D06F *39/02*
U.S. Cl. 68—17 R **5 Claims**

1. In an automatic washer having a basket, an outer tube and an additive dispensing system including a multi-compartmented dispenser, a liquid flow diversion arrangement having a liquid diverter mechanism for selectively diverting liquid into pre-selected dispenser compartments for flushing the additives into the tub at pre-determined times during a cylce of the washer, the improvement comprising:

a. a pivotal body with a liquid inlet opening at one end connected to a water inlet means and a nozzle at the other end with a liquid outlet opening in liquid flow communication with the dispenser, and



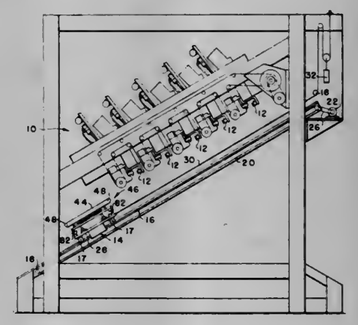
b. a three position nozzle control mechanism including two solenoids with plungers, a lever arm connecting the solenoid plungers, biasing means to center the lever arm when both solenoids are de-energized, and a rod connecting the lever arm and the nozzle whereby the nozzle is pivoted to a different position responsive to separate energization fo each solenoid and de-energization of both solenoids.

4,111,012

DYEING MACHINE

John H. O'Neill, Jr., Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 745,658, Nov. 29, 1976, Pat. No. 4,055,868.
This application Apr. 18, 1977, Ser. No. 788,137
Int. Cl.² D06B *1/02, 11/00*
U.S. Cl. 68—205 R **1 Claim**



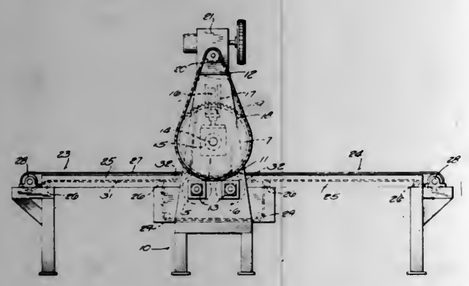
1. Apparatus to jet dye a textile product comprising: a frame having a pre-determined width, a dye jet gun bar mounted on said frame, said gun bar having a plurality of dye emitting jets along a portion of the length thereof, the width of said frame being substantially greater than the combined length of the dye jets in said gun bar, a textile product carrier, means to move said textile product carrier under said dye jets to lay down a pattern of dye on a textile product carried thereon and means

on the carrier to move the textile product in a direction parallel to said gun bar to allow the application of dye on the textile product to produce another pattern of dye on the textile product adjacent the first applied pattern of dye.

4,111,013
METHOD OF AND MACHINE FOR REMOVING OIL FROM ANIMAL HIDES

John E. Zimmerman, and Richard M. Reis, Sr., both of Janesville, Wis., assignors to Northern Conveyor & Manufacturing Corp., Janesville, Wis.

Filed Jul. 5, 1977, Ser. No. 812,521
Int. Cl.² C14B *1/08*
U.S. Cl. 69—21 **11 Claims**



1. A method of removing naturally present oil from an animal hide, which method comprises:

with the hide in the condition it is at the conclusion of the curing operation to which hides are conventionally subjected preparatory to further treatment, passing the hide with its hair side down successively between the underside of a large diameter power driven horizontally oriented cylinder having a resiliently deformable but non-absorbent, definitely not bibulous surface, and two small diameter solid surfaced rolls that are parallel to one another and to the cylinder and are located at the underside of the cylinder; and maintaining sufficient pressure between the cylinder and the rolls to cause said resiliently deformable but non-absorbent, definitely not bibulous surface of the cylinder to progressively conform to the curvature of the solid surfaced rolls as said surface comes into pressure-exerting coaction with the rolls, to thereby flex narrow band-like zones of the hide alternately upward and downward and, by such flexure, subject the hair side of the said band-like zones of the hide alternately to compression and tension forces that successively collapse and expand the pores of the hide and thereby express oil that collects in the pores.

5. A machine of the character described comprising the combination of:

A. a frame having upstanding side members;

B. a pair of solid-surfaced parallel closely spaced rolls extending horizontally between said side members of the frame and freely rotatably supported thereby;

C. a cylinder that is considerably larger in diameter than said rolls extending between said side members of the frame above the rolls and freely rotatably supported by said side members for rotation about an axis that is parallel to the axes of the rolls and lies in a vertical plane between the rolls, the cylinder having a surface layer that is resiliently deformable, non-absorbent and definitely not bibulous;

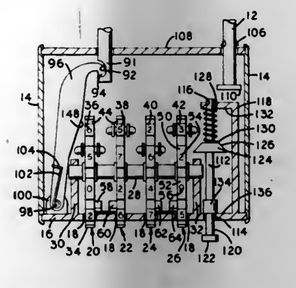
D. pressure means maintaining the cylinder and rolls engaged with sufficient force to deform the engaged portions of the resiliently deformable surface layer of the cylinder and conform the surface thereof to the curvature of the rolls; and

E. means operable to receive and feed sheet material through the machine with said material moving successively between the rolls and the cylinder.

4,111,014
COMBINATION LOCK

Norman Epstein, Rte. 301, Carmel, N.Y. 10512

Filed Jan. 14, 1977, Ser. No. 759,454
Int. Cl.² E05B *37/06*
U.S. Cl. 70—25 **10 Claims**



1. A combination lock comprising lock body,

a lock-operating member mounted for movement from a normal position toward a second position which it must occupy before the lock can be released,

a plurality of individual rotatable members mounted on a common axis in said lock body,

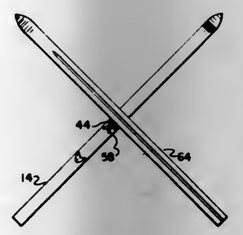
a lock-release element carried by each of said rotatable members and positioned thereon to be brought into operative alignment to form a train of said elements when said rotatable members are selectively turned to respective lock-opening positions, each of said lock-release elements being slidably mounted on its respective rotatable member for movement in a direction parallel to the axis of rotation of said rotatable member,

and means for engaging one end of the train of aligned lock-release elements and for transmitting a lock-opening force through said train of operatively-aligned lock-release elements to said lock-operating member, in a direction to move the latter to its second position.

4,111,015
SKI LOCK

Robert A. Look, 8404 W. Mercer Way, Mercer Island, Wash. 98040

Division of Ser. No. 322,906, Jan. 11, 1973, Pat. No. 3,967,476.
This application Nov. 12, 1974, Ser. No. 517,200
Int. Cl.² E05B *73/00*
U.S. Cl. 70—58 **5 Claims**



1. A combination of a pair of skiis and

a locking apparatus, said combination comprising:

a. said pair of skiis comprising a first ski and a second ski;

b. said locking apparatus comprising a first bracket integral with said first ski and a second bracket integral with said second ski;

c. said first bracket and said second bracket being capable of fitting together;

d. a locking means for releasably securing together said first bracket and said second bracket;

e. said first ski and said second ski, each having a metal beam plate and wherein said beam plate is an integral part of the ski and reinforces the ski;

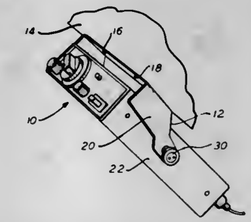
f. said first bracket being attached to the beam plate of said first ski by a fastening means; and,

g. said second bracket being attached to the beam plate of said second ski by a fastening means.

4,111,016
LOCKING FASTENER ASSEMBLY

Raymond B. Dawson, Berkeley Heights, N.J., assignor to Super Stud Products, Inc., Berkeley Heights, N.J.

Continuation-in-part of Ser. No. 744,629, Nov. 24, 1976. This application Feb. 11, 1977, Ser. No. 767,760
The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.
Int. Cl.² E05B *73/00*
U.S. Cl. 70—58 **8 Claims**



1. A locking fastener assembly for securing electronic equipment or the like to a mounting bracket or the like, comprising in combination:

a stud assembly comprising a threaded shank portion for passing through an opening in said mounting bracket and being threadingly receivable in an opening at said equipment, and an enlarged head portion at one end of said shank portion having a pair of openings for receiving engaging pins therein from a cooperating tool;

an annular collar surrounding said head portion and projecting in a direction opposite said threaded shank to at least cover the rim of said head portion, said collar being freely rotatable about and unlockable with respect to said head portion to prevent grasping of said head portion by a tool or interlocking of said head portion with said collar; and

a tool member having a face opposable to said collar and head portions, said face including a pair of engaging pins arranged in a pattern mirroring said pattern on said head portion, whereby by overlying said pattern on said tool member with said mirroring pattern on said head portion, said pair of pins may engage with corresponding openings in said head to permit application of torque to tighten and loosen said stud assembly.

4,111,017
MANUALLY OPERATED CODED SWITCH

Jon H. Barnette, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

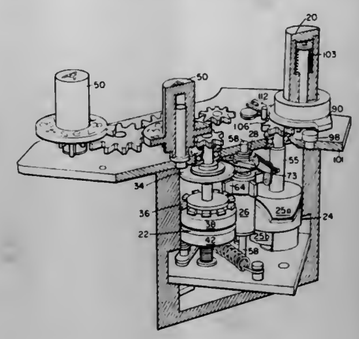
Filed Jun. 21, 1977, Ser. No. 808,487
Int. Cl.² H01H *27/10*
U.S. Cl. 70—293 **8 Claims**

1. A coded mechanism comprising:

a plurality of independently rotatable code wheel assemblies on a like plurality of generally parallel axes; means for rotatably supporting each of said assemblies on said axes, said code wheel assemblies being operably connected to a like plurality of independently rotatable code knobs for rotating said assemblies, each of said assemblies including a location at its periphery whose angular relationship is representative of a code bit;

a control cam comprising a function cam and a function detent operably connected to a function knob, said control cam and said function knob having neutral, try, recode and actuate positions; and

means controllable by said control cam for releasably engaging said code wheel assemblies, said assemblies being

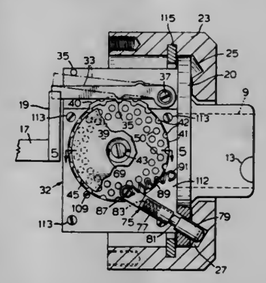


released for rotation at neutral, actuate and recode positions of said control cam, said try, recode and actuate positions being achievable only when said code wheel assemblies are rotated to positions where their angular relationships are representative of a correct code.

4,111,018
CARD OPERATED LOCK ASSEMBLY

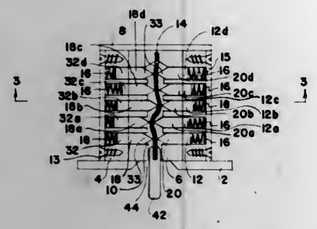
Aksel Pilvet, R.R. #2, Warsaw, Ontario, Canada

Continuation-in-part of Ser. No. 748,482, Dec. 8, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,811
Int. Cl.² E05B *21/00*
U.S. Cl. 70—352 **16 Claims**



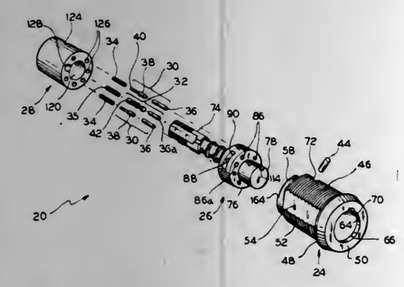
1. A lock and coded key for operating said lock, said lock comprising a housing having a key hole, a rotatable actuating member, a locking mechanism provided with a lockable portion moveable from a locking position to an unlocking position, first locking means, second locking means, a pusher member for pushing said key into contact with said first locking means, and a locking member, said lockable portion being normally held in said locking position by said first locking means, said second locking means normally being in a release position but being arranged so as to lock said lockable portion in said locking position when a key bearing an incorrect code is inserted in said lock, said key being coded to move said first locking means to a release position without disturbing said second locking means, said lockable portion being tensioned to move to said unlocking position when both said first and second locking means are in a release position, said actuating member being adapted to operate said locking member when said lockable portion is in said unlocking position and to return said lockable portion to said locking position.

4,111,019
PICKPROOF LOCK
Jacob Rabinow, Bethesda, Md., assignor to Hall & Myers, Washington, D.C.
Filed Feb. 22, 1977, Ser. No. 770,484
Int. Cl.² E05B *19/02, 19/06, 27/06*
U.S. Cl. 70—358 22 Claims



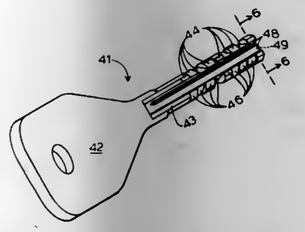
1. A lock, and a key for the lock, comprising:
a casing,
a rotatable cylinder in said casing, said cylinder having an axis,
said cylinder including means which is adapted to receive a complementary key and which will permit the complementary key to rotate said cylinder, and
tumbler means for preventing rotation of said cylinder without a complementary key,
a key for said lock,
said tumber means including a plurality of sets of tumblers, each set of tumblers including two front tumblers at least partially located in said cylinder and at least two rear tumblers, said front tumblers each having a rear end engaging a rear tumbler, the front tumblers of each set approaching different sides of said key,
characterized by:
said key being a strip having two faces, said strip having a thickness of much smaller dimension than its width, said strip having a curvature, in a plane perpendicular to the faces of the strip, that is characterized by a series of bends in opposite directions to displace different tumblers different distances away from the axis of said cylinder so that the rear ends of said front tumblers align with the inner wall of said cylinder to permit the lock to be opened, said key being so shaped that it contains no longitudinal portion that is a straight line for the entire length of the key.

4,111,020
PICK-RESISTANT AXIAL SPLIT-PIN TUMBLER-TYPE LOCK MECHANISM
Frank J. Scherbing, Chicago, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Aug. 15, 1977, Ser. No. 824,443
Int. Cl.² E05B *27/08*
U.S. Cl. 70—363 18 Claims



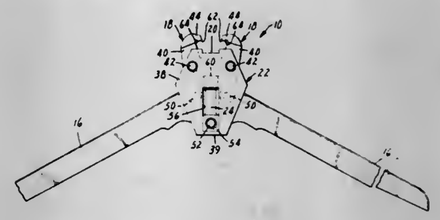
1. In an axial split-pin tumbler-type lock mechanism including a lock cylinder, a barrel assembly secured within said cylinder and having a longitudinal axis extending between front and rear ends thereof, said barrel assembly including a forwardly disposed operating part rotatable about said axis and a rearwardly disposed stationary part adjoining the operating part at a transverse interfacial plane, means forming longitudinal bores in said operating and stationary parts respectively, said bores in respective parts being movable into and out of alignment upon rotation of said operating part, tumblers each having a forwardly disposed driver element carried in one of said operating part bores and a separate rearwardly disposed follower element carried in one of said stationary part bores and the elements adjoining each other when in a pair of aligned bores, said tumblers each being reciprocally movable in the axial direction in a pair of aligned bores between positions wherein the joint between said elements thereof is disposed on opposite sides of said interfacial plane, said operating part being freed for rotation when said joints coincide with said interfacial plane, and spring means yieldingly urging said tumblers in aligned bores forwardly to positions wherein said interfacial plane is bridged by said follower elements to secure the operating and stationary parts against relative rotation, said driver elements having front ends engageable with a key which when moved rearwardly moves said tumblers in aligned bores into positions wherein said joints coincide with said interfacial plane, the improvement which comprises:
ledge means on said operating part and adjacent to and intermediate the ends of a bore in said stationary part, and
rib means on a follower element carried in the latter bore and adapted to overlappingly engage said ledge means when picking torque is applied to said operating part and while the joint of the tumbler which includes said follower element is displaced from said interfacial plane, for preventing longitudinal movement of the last-named follower element in the direction of said interfacial plane.

4,111,021
KEY CONSTRUCTION
Marvin E. Roberts, 2305 S. Arlington, Reno, Nev. 89509, assignor to Marvin E. Roberts, Reno, Nev.; James E. Ward, Atherton, Calif.; Reid A. Roberts, Reno, Nev. and Charlene R. Kinkor, Nevada City, Calif.
Continuation of Ser. No. 505,367, Sep. 12, 1974, abandoned. This application Mar. 26, 1976, Ser. No. 671,010
Int. Cl.² E05B *19/06*
U.S. Cl. 70—406 2 Claims



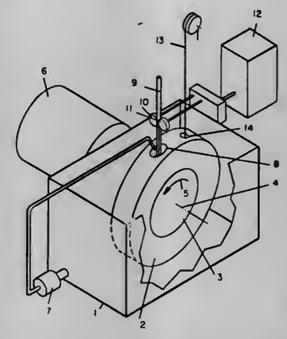
1. A key construction for use in cooperation with a lock incorporating rotary disc tumblers, said key having a generally circular cylindrical shank, said shank being formed with a vee-shaped groove into said shank longitudinally along said shank parallel to the axis thereof, said groove having a depth radially into said shank less than the radius of the arcuate portion of said shank, the area of any unbitted cross section taken transversely of said shank being less than the area of a circle whose radius is equal to the least radius of any arc of said unbitted cross section, said key being bitted with a plurality of chordal planes formed into said shank to the same radial depth one to the other and spaced longitudinally along said shank, each of said chordal planes cooperating with an associated one of said tumblers in said lock, said chordal planes being offset from but parallel to the axis of key rotation, said planes being formable one to the other at a plurality of angles transversely of said shank, the area of each cross section of said key taken transversely through any of said planes being identical one to the other, each of said planes serving as paired bittings for cooperation with said associated tumbler in said lock, each of said paired bittings rotating said associated tumbler to a coded gate opening position by selective rotation of said key in said lock.

4,111,022
MANUAL CRIMPING TOOL
William A. Kruschel, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 2, 1977, Ser. No. 793,084
Int. Cl.² B21D *7/06*
U.S. Cl. 72—410 4 Claims



1. A manually operated tool adapted to crimp a clasp around overlapped lengths of non-metallic strap, said tool comprising a frame; a pair of die members each including a body portion and a projecting ledge at one end of said body portion, said ledge and body portion being disposed to provide a generally L-shaped die member; means mounting said die members on said frame with said ledges in opposed relationship for pivotal movement between an open position with said ledges spaced apart to afford positioning said body portions on opposite sides of an uncrimped clasp around overlapping lengths of strap, and a closed position with the ledges closely adjacent; a pair of handles; means mounting said handles for pivotable movement relative to each other between first, second and third positions; means for pivotably coupling said handles to said die members to move said die members from their open position to their closed position upon movement of said handles from their first position to their second position and for maintaining said die members in their closed position upon movement of said handles between their second and third positions; a plunger; and means coupling said plunger to said handles to move said plunger between said opposed die members through positions spaced more than a predetermined distance from the ledges of said die members to afford positioning an open clasp therebetween when said levers are moved between their first and second positions and to move said plunger to an engaged position spaced less than said predetermined distance from said ledges as said handles are moved from their second position toward their third position, the surfaces of said ledges opposite said plunger providing die surfaces comprising planar central portions adapted to engage and bend a top portion of a said clasp over overlapped lengths of straps extending through the clasp and having recessed arcuate outer cam surfaces adapted to roll a locking lip of the clasp over its top portion as said plunger presses the clasp toward said ledges during movement of said plunger to its engaged position.

4,111,023
METHOD FOR CONTINUOUS EXTRUSION
Marc Moreau, Asnieres, France, assignor to Trefimetaux, Paris, France
Division of Ser. No. 676,908, Apr. 14, 1976, Pat. No. 4,041,745.
This application Nov. 10, 1976, Ser. No. 740,489
Claims priority, application France, May 14, 1975, 75 15733
Int. Cl.² B21C *23/32*
U.S. Cl. 72—60 2 Claims



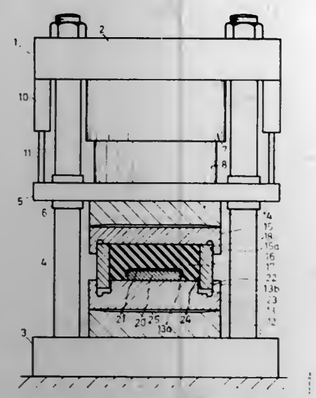
1. A method of extruding a first elongated object capable of plastic deformation and of undefined length into a second object also of indefinite length of the same type but of smaller section, comprising the steps of:
(a) forming two plane, substantially parallel surfaces on said first object the distances between the surfaces being kept constant along the length of the object,
(b) feeding said first object into a grooved passage which is deeper than it is wide formed between a rotor located coaxially with a stator, said stator carrying a die port therein and a stop adjacent said die port,
(c) feeding a viscous fluid into said passage concurrently with said first object so that it at all times surrounds said first object,
(d) the rotation of said rotor forming a fluid stream between the surfaces on the first object and the passage walls so as to fill the gap therein, said rotor movement developing tangential forces in the fluid stream which are transmitted to all surfaces of the object and create pressure which increases gradually in the direction of the die port, and stops where it is at its maximum, thereby forcing said object toward said die port and stop, and
(e) extruding said first object through said die port to obtain said second object, a portion of said viscous fluid passing through said die port.

4,111,024
PRESSING TOOL STRUCTURE FOR SHEET METAL FORMING
Goran Dahlman, Sundsvall, and Jan-Erik Carlsson, Helsingborg, both of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden
Filed Mar. 28, 1977, Ser. No. 782,161
Claims priority, application Sweden, Apr. 8, 1976, 7604117
Int. Cl.² B21D *22/10*
U.S. Cl. 72—60 8 Claims

1. In a pressing tool for forming work pieces around forming tools, the pressing tool including an upper tool part, a lower tool part and an elastomeric forming pad in the space between the upper tool part and the lower tool part, at least one of the upper tool part and the lower tool part being movable toward the other tool part, the improvement wherein:
the upper tool part comprises an upper plate with flanges at the peripheral edges thereof directed downwardly;

the lower tool part comprises a lower plate with flanges at the peripheral edges thereof directed upwardly; and

a number of separate wall elements positioned between the upper tool part and the lower tool part, said wall elements



being positioned in the space between said upper tool part and said lower tool part and supported at the ends thereof inwardly of said flanges on said upper plate and the flanges of said lower plate when the upper and lower tool parts approach each other during a pressing operation.

4,111,025

STRAIGHTENING MILL FOR SECTION STEEL

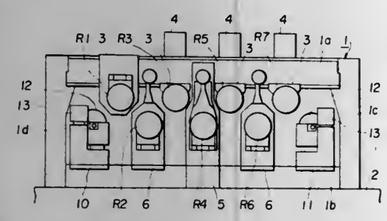
Koe Nakajima, and Hiromi Matumoto, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 718,585, Aug. 30, 1976, abandoned, which is a continuation of Ser. No. 589,397, Jun. 23, 1975, abandoned, which is a continuation of Ser. No. 455,894, Mar. 28, 1974, abandoned. This application Oct. 12, 1977, Ser. No. 841,485

Claims priority, application Japan, Apr. 4, 1973, 48/38358

Int. Cl.² B21D *1/02*

U.S. Cl. 72—164 **2 Claims**



1. In a roller straightening mill for effecting straightening of section steel passed therethrough, said section steel having a leading end and a trailing end and being passed through said mill with said leading end first, said mill operating to prevent end crook from occurring in said trailing end of said section steel during said straightening, said mill including a plurality of driving rollers each rotatable about an axis and a plurality of driven rollers each rotatable about an axis, with said axes of said driving and driven rollers being parallel to each other, said plurality of driving rollers being spaced from said plurality of driven rollers to define therebetween a pass line through which said section steel may be passed between said rollers in a predetermined direction, each of said plurality of driving rollers being located on one side of said pass line and each of said plurality of the driven rollers being located on the opposite side thereof, with the axes of said driving rollers being arranged in staggered relationship relative to the axes of said driven rollers, said plurality of driving rollers including a first driving roller located relative to said pass line to be engaged first by the leading end of section steel through said pass line in said predetermined direction, each of said driving rollers other than said first driving roller being mounted in a fixed position with regard to vertical movement of the axes thereof relative to said pass line, the improvement comprising adjustment means for adjustably moving said first driving roller in directions extending generally perpendicular to said pass line and for positioning said first driving roller relative to said pass line prior to passage of said section steel through said roller mill, said adjustment means being adapted to effect said moving and positioning to a degree in accordance with the amount of end crook to be removed from said trailing end of said section steel.

4,111,026

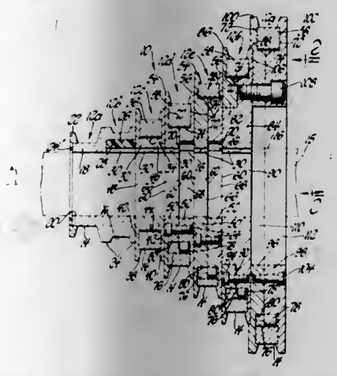
STEPPED CONE DRAW BLOCK

Wilson Ford, Wheatridge, and John Temple Gagnon, Arvada, both of Colo., assignors to Coors Porcelain Company, Golden, Colo.

Filed Oct. 6, 1977, Ser. No. 839,873

Int. Cl.² B21C *1/14*

U.S. Cl. 72—289 **10 Claims**



1. A stepped cone draw block for use in drawing wire, the draw block comprising: at least two sheaves each of which includes a pair of round plate-like sheave members having central aligned openings for receiving a shaft on which the sheave is to be mounted for rotation about a central axis of the shaft; said members of each sheave having axial side surfaces that face away from each other along the axis of shaft rotation and also having engaged axially facing surfaces located midway between the side surfaces; annular peripheral flanges on the sheave members spaced axially from each other; each sheave having a ceramic draw ring clamped between the peripheral flanges on the members thereof and the ring having an outer surface for receiving a wire during a wire drawing operation; and means for detachably securing the members of each of said sheaves to each other independently of the members of each other of said sheaves so as to provide clamping of the associated ceramic ring while allowing unclamping and replacement thereof without unclamping the ceramic ring of any other of said sheaves.

4,111,027

ELECTROMAGNETIC APPARATUS

Alan Stuart Bottomley, 69 Queen St., Sandy Bay, Tasmania, 7005, Australia

Filed Feb. 11, 1976, Ser. No. 657,243

Claims priority, application Australia, Feb. 12, 1975, PC0564; Oct. 20, 1975, PC3629

Int. Cl.² B21D *11/04*

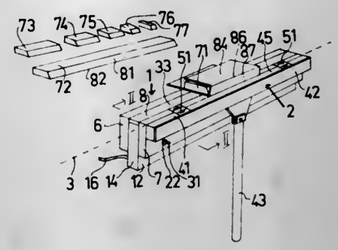
U.S. Cl. 72—320 **18 Claims**

1. A tool for bending workpieces comprising in combination:

an electromagnetic coil;

a pole adapted to be magnetized by the coil and functional in part as a supporting surface for the workpiece;

a ferromagnetic keeper having an edge or surface against which a workpiece may be formed, and adapted to be maintained in a working position, in direct opposition to bending or forming forces, entirely by magnetic force arising from a magnetic flux produced on energization of said coil,



and a work surface means pivotable with respect to the pole to place the plane of said work surface means at least substantially in the same plane as the supporting surface of the pole with substantially no part of said pole or said work surface means projecting on one side of said same plane, and operative in use to apply bending force to the workpiece.

4,111,028

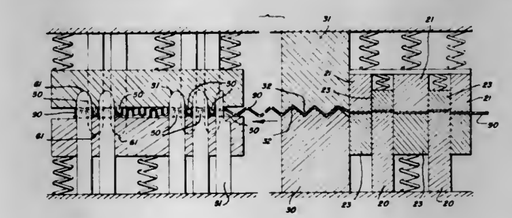
METHOD AND APPARATUS FOR FABRICATING RETICULAR SHEET MATERIAL

Frederick E. Kupsky, 1300 E. Algonquin, Apt. 2G, Schaumburg, Ill. 60195

Filed Aug. 4, 1977, Ser. No. 821,630

Int. Cl.² B21D *31/02*

U.S. Cl. 72—324 **11 Claims**



1. Apparatus for forming a reticulated grid structure comprising:

means for shearing into a workpiece a plurality of slits coaxially disposed in a plurality of parallel rows to form a plurality of interconnected strands;

means for bending said workpiece along the axis of each row of slits to form a ridged structure of corrugations having peaks and valleys at high and low points of said bent interconnected strands said corrugations being coaxial with the slits, having said slits disposed at the peaks and valleys thereof; and

means for insertion into said slits for displacing the portions of said strands adjacent to said slits to form openings therebetween.

4,111,029

MANUFACTURE OF PIPE STUBS IN WALLS OF VERY GREAT THICKNESS

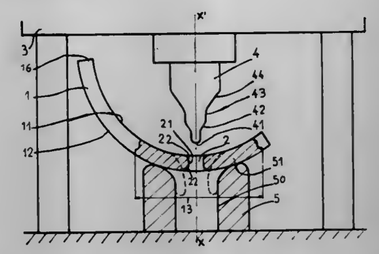
Pierre Dulaquais, Montcenis, France, assignor to Creusot-Loire, Paris, France

Filed Jun. 21, 1976, Ser. No. 698,206

Claims priority, application France, Jan. 9, 1976, 76 00471

Int. Cl.² B21D *51/38*

U.S. Cl. 72—342 **7 Claims**



1. A process of fabrication of a pipe stub from a wall of very great thickness constituting a portion of a chamber under pressure, said process comprising machining an aperture in the wall along an axis corresponding to the axis of the pipe stub to be obtained, the aperture having a diameter of the order of the thickness of the wall and being formed with rounded edges at the internal and external surfaces of the wall, placing the wall on a tubular anvil provided with a central conduit coaxial with the aperture and whose diameter corresponds substantially to the exterior diameter of the pipe stub to be obtained, the anvil being formed with an upper rounded surface whose diameter progressively increases up to a rounded bearing face whose shape corresponds to that of the wall at the juncture with said pipe stub, heating the wall at least in the region surrounding the aperture to a temperature greater than the transformation point A1 but less than the forging temperature, and deforming the wall by introducing a punch with force into the aperture, the punch having a first centering tip of diameter slightly less that of the aperture followed by a conical surface merging with said tip and widening in a direction away from the point and which is rounded in convex form and connects successively to a cylindrical portion whose diameter is substantially equal to the interior diameter of the pipe stub to be obtained, the introduction of the punch first centering the tip in the aperture and then progressively deforming the wall to form the pipe by progressive enlargement of the aperture by progressive penetration of the conical surface of the punch with concurrent diminution of the thickness of the sheet to form a deformed portion coming to be applied against the rounded surface of the anvil.

4,111,030

PRESS CUSHION

Lynn R. Shepard, Berea, and John B. Terrell, Solon, both of Ohio, assignors to Teledyne Industries, Inc., Cleveland, Ohio

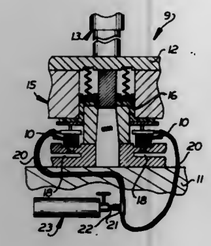
Filed Apr. 15, 1977, Ser. No. 787,990

Int. Cl.² B21D *22/22*

U.S. Cl. 72—351 **5 Claims**

1. A cylinder assembly to cushion the movement of a workpiece in a die in a press utilized in an environment which is contaminated by particles which are detrimental to the operation of the cylinder assembly, said cylinder assembly comprising a remote source of air at atmospheric pressure which is substantially free of contaminating particles which are detrimental to the operation of said cylinder assembly, a cylinder having opposite end portions, a piston disposed within said cylinder, said piston having a rod attached thereto and extending from a first one of said end portions of said cylinder, first sealing means between said cylinder and said piston, second sealing means between said first end portion of said cylinder

and said rod, first and second variable volume chambers disposed between said end portions of said cylinder and said piston, means for connecting said first chamber with a source of fluid at a relatively high pressure, and means for connecting said second chamber with said source of air which is at atmospheric pressure and is substantially free of particles which are



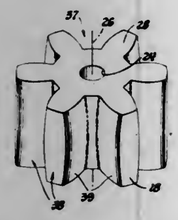
detrimental to the operation of said cylinder assembly, said means for connecting said second chamber with said source of air at atmospheric pressure including a port in said cylinder and flexible conduit means for connecting said port with said remote source of uncontaminated atmospheric air, said remote source of uncontaminated atmospheric air being spaced apart from said cylinder.

4,111,031

POWDER METAL CROWN GEAR FORMING PROCESS

Alfred C. Vennemeyer, Vandalia, and Richard A. Ernst, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1977, Ser. No. 831,938
Int. Cl.² B21D *22/00*
U.S. Cl. 72—359 **5 Claims**



1. A method of forming a spur gear having gear teeth with axially crowned working faces from a sintered powder metal compact comprising a cylindrical gear body and gear teeth extending radially from said body, said method comprising applying radially compressing force to the compact gear teeth tips without restricting the compact gear teeth working faces from deformation by pressing the compact into a die having a smooth circular cavity said compressing force thereby reducing the outer diameter of the gear, and

applying an axial compaction force to said compact while constrained in said die such that the axial width of the compact is reduced and said axially crowned gear teeth faces are formed.

4,111,032

PROCESS FOR PRODUCING A METAL SHEET TO BE DEEP DRAWN OR EXTRA-DEEP DRAWN FOR THE FABRICATION OF SHAPED METAL PARTS

Daniel Raymond Rault, Metz-Vallieres, France, assignor to Societe Lorraine de Laminage Continu, France

Division of Ser. No. 628,600, Nov. 4, 1975, Pat. No. 4,071,657. This application Jul. 11, 1977, Ser. No. 814,377
Claims priority, application France, Nov. 6, 1974, 74 36872; Oct. 9, 1975, 75 30984
Int. Cl.² B21B *27/02*
U.S. Cl. 72—366 **4 Claims**



1. A process for the production of a metal sheet which is intended to be subjected to a drawing operation for the fabrication of a shaped metal part, said sheet comprising on its surface a roughness in the form of plateau portions in relief defining between them recessed valley portions, the average ratio of the dimension of the valley portions to the dimension of the plateau portions in any direction on the surface of the sheet being from 1:1 to 3:1, the average dimension of the plateau portions being from 40 to 200 micrometers and the height of the plateau portions being more than 6 micrometers; said process comprising subjecting a metal sheet to pressure from at least one cold roller, the surface of which has been treated to provide the surface of the roller with a roughness in the form of plateau portions in relief defining between them recessed valley portions, the average ratio of the dimension of the plateau portions to the dimension of the valley portions in any direction being from 1:1 to 3:1, the average dimension of the valley portions being from 40 to 200 micrometers and the height of the plateau portions being greater than 7 micrometers.

4,111,033

ASSEMBLY FOR TESTING SHOCK ABSORBERS INCORPORATED IN VEHICLES

Alfred R. Bolliger, Im Sidefadeli 4, 8803 Rüschlikon, Switzerland

Filed Jul. 18, 1977, Ser. No. 816,665
Claims priority, application Switzerland, Jul. 19, 1976, 9191/76; Jul. 3, 1977, 8123/77
Int. Cl.² G01M *17/04*
U.S. Cl. 73—11 **12 Claims**

1. An assembly for testing a shock absorber associated with a wheel pair of a spring suspended vehicle having a vehicle body, said assembly comprising

a. a lifting device for producing a drop motion of at least one wheel so that the vehicle body will rise in oscillation under the influence of springs but damped by a shock absorber after dropping motion thereof, and

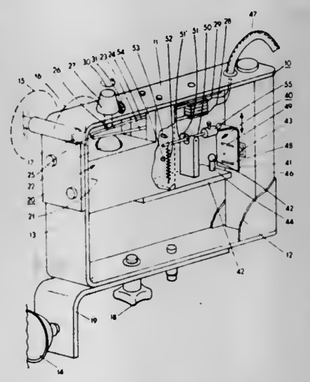
b. means for indicating the condition of a shock absorber of said wheel by simultaneously evaluating the acceleration inherent in the rise of the vehicle body during the first oscillation of the vehicle body and by evaluating the vibrations of the vehicle body after dropping motion thereof, so that both knocking and vibration behavior of said shock absorber are determined by a single drop of said wheel; said indicating means comprising

i. means for sensing the acceleration of the vehicle body during the rise thereof, said means including an inertia body member which is freely mounted for vertical movement in a vertical path,

ii. mounting means for mounting said sensing means to a body component of the vehicle body in the vicinity of a shock absorber to test it, said means including a sensing means housing,

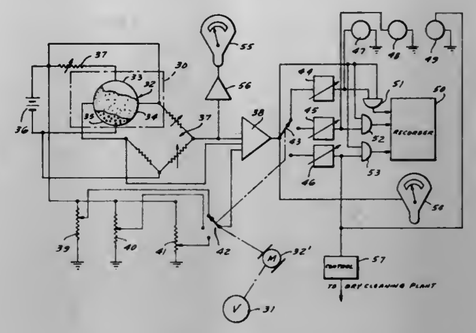
iii. means extending into the vertical path of movement of the inertia body member for generating a signal upon movement of the body member in the vertical path more than a predetermined amount.

iv. an indicating device responsive to the signal generated by said signal generating means for indicating movement more than said predetermined amount by said body member, and



v. light beam oscillating sensing means comprising a light emitter element, a light receiver element, and a shielding element located in the path of the beam between said light emitter element and light receiver element, at least one and not more than two of the emitter, the receiver and the shielding elements being rigidly mounted to said housing, the light receiver being electrically connected to the indicating device whereby during oscillation of the sensing means housing with the vehicle body the light receiver element intermittently receives light from the light emitter element and provides a resultant signal to the indicating device.

tor in accordance with the source supplying air to said chamber, said comparator having an output; and



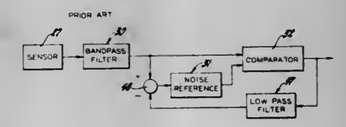
respective indicators sequentially supplied with said output by said commutator means.

4,111,035

ENGINE KNOCK SIGNAL GENERATING APPARATUS WITH NOISE CHANNEL INHIBITING FEEDBACK

Gene A. West, Kokomo, and Glen C. Hamren, Greentown, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1977, Ser. No. 848,865
Int. Cl.² G01N *33/22*; G01L *23/22*
U.S. Cl. 73—35 **2 Claims**



4,111,034

APPARATUS FOR MONITORING THE SOLVENT CONTENT OF AIR

Rolf H. Hübner, Pfarrer-Kneipp-Str. 9, Dortmund, Germany (4600)

Filed Apr. 7, 1977, Ser. No. 785,690
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1976, 2615188
Int. Cl.² G01N *27/04*
U.S. Cl. 73—23 **11 Claims**

1. An apparatus for monitoring of the solvent content of air in association with a dry cleaning plant, said apparatus comprising:

at least one metal oxide semiconductor responsive to the concentration of solvent in air to be monitored and disposed in a measuring chamber adapted to successively receive solvent-containing air from a plurality of sources;

circuit means connected to said semiconductor for indicating the concentration detected by said semiconductor;

means for electrically heating said semiconductor to a predetermined temperature;

a respective setpoint value generator assigned to each of said sources;

a comparator means for sequentially and periodically connecting each of setpoint value generators to said comparator in accordance with the source supplying air to said chamber, said comparator having an output; and

1. Apparatus for use with an internal combustion engine having ringing knock-induced vibrations at a characteristic frequency and other vibrations, the apparatus being effective to generate knock signals representing the knock level therein and comprising, in combination:

a vibration sensor mounted on said engine and responsive to both said ringing knock-induced vibrations and said other vibrations to generate a signal;

a bandpass filter having maximum transmission at said characteristic frequency and responsive to the signal from said sensor during a knock-induced ringing vibration to generate a filtered sensor signal having attenuated components at frequencies other than the characteristic frequency compared with those at the characteristic frequency;

average detector means responsive to said bandpass filter for generating from the filtered sensor signal a unidirectional noise reference signal generally proportional to the average unidirectional amplitude of the filtered sensor signal at a higher amplitude than all but the peaks of those components due to knock-induced engine vibrations;

a comparator effective to compare the filtered sensor signal to the unidirectional noise reference signal and to generate knock signals when the filtered sensor output signal exceeds the unidirectional DC noise reference;

low-pass filter means responsive to said knock signals to

generate a unidirectional noise reference inhibit signal therefrom;

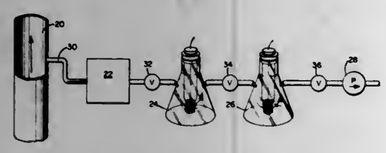
feedback means connected to apply said unidirectional noise reference inhibit signal to said unidirectional DC noise reference signal generating means in sense to limit the unidirectional noise reference signal when knock signals are generated, whereby the tendency of components due to knock-induced vibrations in the filtered sensor signal to falsely increase the unidirectional noise reference is reduced and the knock signals more accurately represent the level of knock in said engine.

4,111,036

PIEZOELECTRIC PROBE FOR DETECTION AND MEASUREMENT OF GASEOUS POLLUTANTS

Michael W. Frechette, Lowell, Mass., and James L. Fasching, Narragansett, R.I., assignors to The Board of Regents for Education of the State of Rhode Island, Providence, R.I.

Filed Jul. 29, 1974, Ser. No. 492,737
Int. Cl.² G01N *31/06*
U.S. Cl. 73—23 **9 Claims**



1. An apparatus for the static detection and measurement of a sulfur dioxide component of a mixed gas stream flowing in a conduit comprising in combination:

a. for each fluid component to be measured, a single vibratable piezoelectric material mounted on a readily-transportable support base for contacting said piezoelectric material with said gas; substrate means coated on said piezoelectric material capable of sorbing said fluid component of said gas stream to thereby change the weight of said coated piezoelectric material, said substrate means comprising a polyamine; and, electronic oscillator means operatively connected to said coated piezoelectric material for oscillating said material;

b. means for withdrawing a portion of said gas stream from said conduit and for bringing said portion into a test chamber;

c. valve means for sealing said test chamber so as to bring said withdrawn portion of the gas stream into contact with said coated piezoelectric material under substantially static conditions; and,

d. means for determining when the change in vibrational frequency of said coated piezoelectric material is substantially complete, said determining means comprising counter-timer means operatively connected to said coated piezoelectric material, and a digital converter and a recorder operatively connected to said counter-timer means.

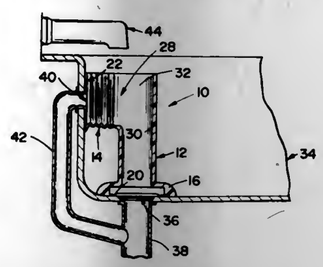
4,111,037

BATHTUB DRAIN AND OVERFLOW TESTING APPARATUS

John T. Fisher, 421 Diamond St., San Francisco, Calif. 94114

Filed Jan. 24, 1977, Ser. No. 761,642
Int. Cl.² G01M *3/02*
U.S. Cl. 73—40.5 R **7 Claims**

1. A portable testing apparatus comprising a body defining passage means therethrough, the passage means having an inlet port and an outlet port, the body being positionable so that the outlet port of the passage means communicates with a drain outlet of a tub, with the inlet port of the passage means being positionable to receive water from a tap of a tub, and also to



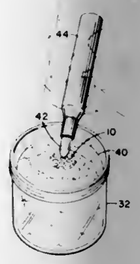
communicate with an overflow outlet of a tub, simultaneously, wherein the body is of flexible, resilient material.

4,111,038

METHOD AND APPARATUS FOR DETERMINING THE CENTER OF GRAVITY OF A GOLF BALL

Robert E. Olson, and James R. Braun, both of San Antonio, Tex., assignors to Ray Cook Golf Putters, Inc., San Antonio, Tex.

Filed Oct. 5, 1976, Ser. No. 729,728
Int. Cl.² G01M *1/14*
U.S. Cl. 73—65 **9 Claims**



1. A method of determining the axis of an unbalanced golf ball which axis includes its geometric center and its center of gravity comprising the steps of:

placing a golf ball in a solution consisting of a predetermined quantity of a liquid, a densifying agent and a wetting agent, the proportions of said liquid and said densifying agent being such that said solution will float said golf ball with only a minor portion of the ball being exposed above the surface of said solution, said wetting agent decreasing the surface tension of said solution to allow free rotation of said golf ball;

rotating said ball in said solution;

allowing said ball to come to rest in said solution, determining the uppermost point on said ball;

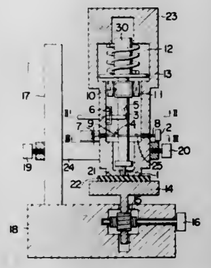
subsequently rotating said ball to determine if the previously determined uppermost point returns to the top following the subsequent rotation.

4,111,039

APPARATUS FOR MEASURING THE HARDNESS OF RUBBER

Takeshi Yamawaki, Hiratsuka; Tokitaro Hoshijima, Yokohama, and Kiichiro Aga, Machida, all of Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Dec. 16, 1976, Ser. No. 751,478
Claims priority, application Japan, Dec. 19, 1975, 50-151391
Int. Cl.² G01N *3/42, 3/48*
U.S. Cl. 73—81 **1 Claim**



1. Apparatus for measuring the hardness of rubber of the type wherein a needle is urged against the surface of a rubber sample and the degree of penetration of the needle is determined for measuring the hardness, said apparatus comprising driving means for urging said needle against the surface of said sample under a substantially constant speed and force, said driving means including spring means for driving said needle, a lever for causing said needle to store energy in said spring means, releasable latch means for latching said needle in a position in which the spring means is storing energy and for releasing said needle to cause said spring means to urge the needle against the surface of said sample, an electric transducer for detecting the degree of penetration of said needle into said sample thereby producing an electric signal corresponding to the displacement of said needle, an electric circuit for processing said electric signal, switch means which generates a signal when said needle is released, said signal being applied to said electric circuit for determining the starting point of the time necessary to measure said displacement, said electric circuit comprising a rectifier for rectifying the electric signal generated by said electric transducer, a peak value detector for detecting the peak value of the output of said rectifier, an analogue-digital converter for converting the output of said rectifier into a digital quantity, a pulse generator responsive to the signal generated by said switch means for producing a pulse signal which is applied to said analogue-digital converter, and digital display means connected to display said digital quantity.

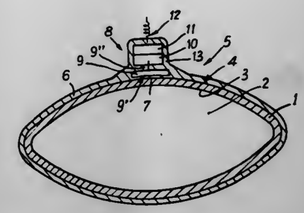
4,111,040

TESTING FOR CORROSION OF THE INTERNAL WALL OF A METAL CHAMBER

Jaime Gratacos, Morlaas; Christian Perrolet, Pau, and Roger Mousteou, Billere, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Jul. 26, 1977, Ser. No. 819,045
Claims priority, application France, Jul. 30, 1976, 76 23398
Int. Cl.² G01B *19/32*
U.S. Cl. 73—105 **10 Claims**

2. A system for detecting corrosion of the internal surface of a wall of a metal chamber containing a corrosion fluid comprising, a plurality of individual, sealed, rigid enclosures at spaced apart locations on the outside of said chamber wall, means in each of said chambers for detecting a physical quantity indication of the condition of the internal surface of the chamber wall, means connected to said detecting means for measuring and calculating the quantity, means connected to said measuring means for transmitting the measurement to a remote location, and means covering said enclosures and the exterior of



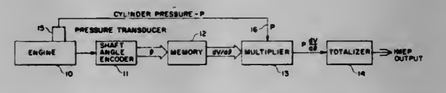
said chamber wall for isolating the wall and the chambers from the external environment.

4,111,041

INDICATED MEAN-EFFECTIVE PRESSURE INSTRUMENT

William J. Rice, Elyria, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 29, 1977, Ser. No. 837,796
Int. Cl.² G01M *15/00*
U.S. Cl. 73—115 **12 Claims**



1. Apparatus for measuring the indicated mean effective pressure IMEP of an engine of the type having at least one varying volume chamber and a crankshaft comprising:

shaft angle encoder means for generating a signal for each angle θ of crankshaft rotation;

memory means for storing a $dV/d\theta$ value for each specific θ and for providing an output $dV/d\theta$ for each θ measured by said shaft angle encoder means where V is the chamber volume;

transducer means for providing a signal representative of instantaneous pressure in said chamber;

multiplier means for multiplying the chamber pressure P by $dV/d\theta$ for each θ measured by said shaft angle encoder means; and

means for adding the products out of said mutltiplier means for each θ taking all increments of θ over one complete cycle of engine operation to yield IMEP.

4,111,042

COMBINED PRESSURE AND TEMPERATURE CORRECTION APPARATUS FOR GAS METERS

Lorton W. Bryant, Greenwood, Ind., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 584,318, Jun. 6, 1975, abandoned. This application Sep. 22, 1977, Ser. No. 835,568
Int. Cl.² G01F *3/02, 15/02*
U.S. Cl. 73—194 M **20 Claims**

11. Correction apparatus for a fluid meter comprising in combination:

(a) sensing means sensitive to one of fluid pressure or temperature conditions and adapted to be exposed to the metered fluid to produce a linear displacement motion correlated to a sensed condition change thereof in the fluid relative to a standard condition therefor;

(b) input means providing a constant position setting correlated to a predetermined value of fluid pressure or temperature conditions for the other of said one condition to which said sensing means is sensitive;

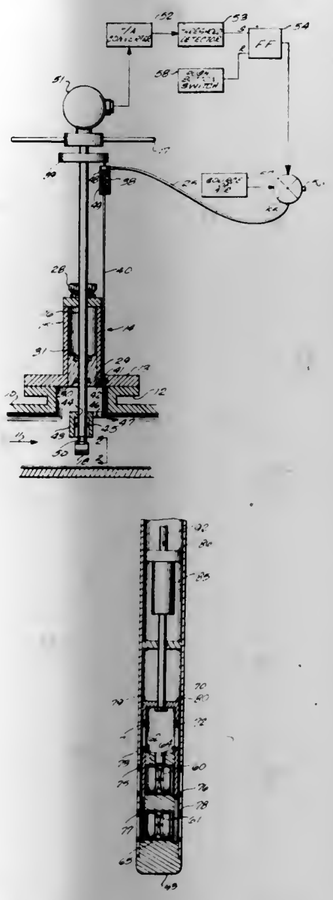
(c) multiplier means separately receiving both said sensing means displacement motion and the constant value of said input means to produce an integrated output displacement motion correlated to the multiplication product thereof;
(d) a corrected readout register;
(e) drive means operative by the meter at a rate proportional to the actual fluid volume being metered; and
(f) positionably resettable adjustment means operatively connecting said drive means to said register and resettable



by the output of said multiplier means to incur changes in position setting in correlation to changes in the output displacement motion of said multiplier means, said changes in position setting occurring at reset intervals proportional to the operational rate of said drive means whereby to effect a variable ratio drive advance of said register relative to the drive rate of said drive means as an integrated function of inputs provided to said multiplier means by said input means and said sensing means.

4,111,043
TURBINE FLOWMETER
James F. Guthrie, and Richard E. Zimmerman, both of Tempe, Ariz., assignors to Flow Technology, Inc., Phoenix, Ariz.
Filed May 25, 1977, Ser. No. 800,557
Int. Cl.² G01F *1/115, 7/00*
U.S. Cl. 73—197 **17 Claims**

11. A dual range turbine flowmeter comprising:
a first turbine wheel supported for rotation about its axis in a fluid line through which a fluid stream flows;
a second turbine wheel having different flow responsive rotational characteristics than the first turbine wheel supported for rotation about its axis in the fluid line;
means for sensing the rotation of at least one of the first and second turbine wheels; and
means responsive to the sensing means for alternately permitting the fluid stream to pass either the first turbine wheel or the second turbine wheel in alignment with its axis so such turbine wheel is operative, while the other

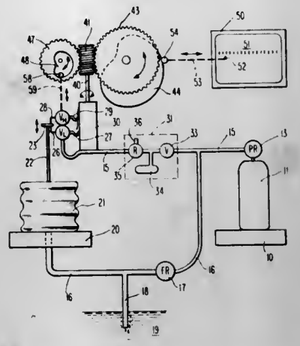


turbine wheel is inoperative without diverting the fluid flowing through the line.

4,111,044
FLOW MONITORING
Charles A. McClure, 5 Laurel Cir., Malvern, Pa. 19355
Filed Dec. 10, 1976, Ser. No. 749,276
Int. Cl.² G01F *1/20*
U.S. Cl. 73—215 **10 Claims**

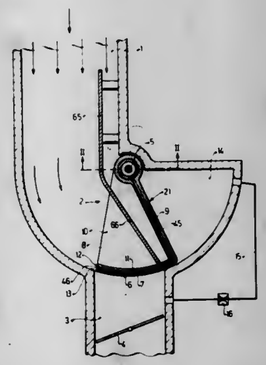
1. Flow monitoring apparatus for use in an open channel, comprising means adapted to be positioned adjacent the bed of the channel for pneumatically sensing pressure of overlying liquid as depth thereof, means for characterizing depth as flow of liquid, means for recording liquid flow, and pneumatically actuated means for transmitting changes in sensed depth from

the sensing means to the flow characterizing means and including means for accumulating gradually increasing pneumatic



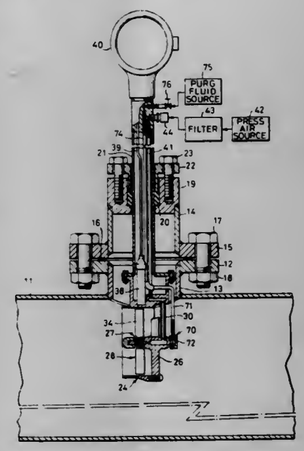
pressure and means for releasing such accumulated pressure intermittently to actuate the flow characterizing means.

4,111,045
AIR FLOW METER
Rudolf Sauer, Bernhausen, and Dieter Vogt, Korntal-Münchingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 11, 1977, Ser. No. 823,788
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637466
Int. Cl.² G01F *1/82*
U.S. Cl. 73—228 **5 Claims**



1. A flow meter for metering the air quantity aspirated by an internal combustion engine through an air flow tube, the flow tube defining an air stream which is directed as the aspirated air quantity into the engine comprising:
(a) a metering valve element constructed as a box-like cylindrical segment pivotably mounted in the flow tube in opposition to a restoring force and transversely relative to the direction of the air stream; and
(b) means connected to the valve element for providing the restoring force to the valve element, and wherein:
(i) the box-like cylindrical segment includes: a radial transverse wall oriented transversely relative to the direction of the air stream; side walls oriented parallel relative to the direction of the air stream; and a curved cylinder wall connected to the radial transverse wall and the side walls, said walls defining a recess which opens in a direction opposing the direction of the air stream; and
(ii) the deflection of the valve element against the restoring force represents a measure of the air quantity flowing through the flow tube.

4,111,046
TURBINE METERS
Hiroyuki Amemori, Kawasaki; Hideki Izumi, Tsuchiura, and Katsuyuki Tanaka, Tamatsukuri, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan
Filed Mar. 30, 1977, Ser. No. 783,019
Claims priority, application Japan, Apr. 2, 1976, 51-37483; Sep. 27, 1976, 51-115673
Int. Cl.² G01F *1/115*
U.S. Cl. 73—231 R **6 Claims**



1. A turbine meter comprising:
a casing of substantially hollow cylindrical shape installed within a conduit through which a fluid to be measured is flowing, said casing having an outer diameter less than the minimum cross sectional dimension of the conduit;
an axle member supported by a support member within the casing and having an annular recess therearound;
a longitudinal flow passage formed in the axle member;
a plurality of discharge holes formed in the axle member to connect communicatively the annular recess and the flow passage;
a first supply pipe inserted into said conduit through the wall thereof and functioning to supply a pressurized fluid from a pressurized fluid source disposed outside of the conduit to said flow passage in the axle member;
a vane wheel comprising a hub disposed around the axle member and within said annular recess with minute gaps therebetween and adapted to rotate in a substantially non-contacting state relative to the axle member and a plurality of vanes implantedly fixed at their root parts to the hub, said vane wheel being rotated by a portion of the fluid being measured and flowing through the casing;
means for detecting the rotation of the vane wheel;
a nozzle having at least one nozzle orifice disposed in the vicinity of the axle member and vane wheel; and
a second supply pipe installed to extend through the wall of said conduit and functioning to supply a purging fluid to said nozzle, said nozzle purging the purging fluid through the nozzle orifice supplied from the second supply pipe towards the axle member and the vane wheel.

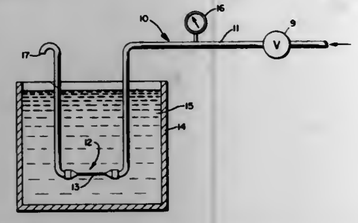
4,111,047
HYDROSTATIC HEAD PRESSURE MONITOR WITH REMOTE READOUT
John M. Bailey, Houston, Tex., assignor to Monitoring Systems Inc., Thibodaux, La.
Filed Jan. 12, 1977, Ser. No. 758,824
Int. Cl.² G01F *23/16*
U.S. Cl. 73—302 **9 Claims**

1. A fluid line pressure monitor with remote readout for use

in a fluid pressurized system having a pipe line through which a fluid flow passes to a connected vent line comprising:

(a) a flexible diaphragm of two rectangular flexible members having their edges fused together along their length and maintained in a normally collapsed state in absence of fluid flow,

(b) the ends of a break in the pipe line being inserted into opposite ends of said diaphragm, so that the fluid flow passes through the inside of and between said two flexible members,



(c) pressure indicating means in fluid circuit with the pipe line upstream of said flexible diaphragm,

(d) receptacle means containing a fluid the hydrostatic head of which is to be monitored, and

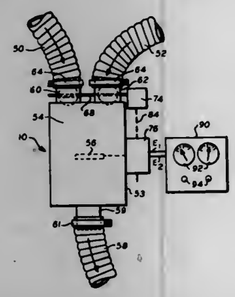
(e) means positioning said flexible diaphragm at a fixed level above the bottom of said receptacle to make the outside of said diaphragm responsive to a preselected hydrostatic head of the liquid in said receptacle.

4,111,048

FLUID PARAMETER SENSING APPARATUS

Robert E. Zuckerman, 36 Red Spring La., Glen Cove, 11542, and Michael J. Merendino, 1441 E. 64th St., Brooklyn, both of N.Y. 11234

Filed Mar. 21, 1977, Ser. No. 779,736
Int. Cl.² G01N *25/62*
U.S. Cl. 73—338 **11 Claims**



1. In a fluid parameter sensing apparatus for use in a fluid system having a plurality of fluid flow paths, said fluid parameter sensing apparatus being of the type including means for comparing one value of at least one fluid parameter as sensed at a first location in said fluid system with at leas one other value of said at least one fluid parameter as sensed at at least a second location in said fluid system, the improvement comprising:

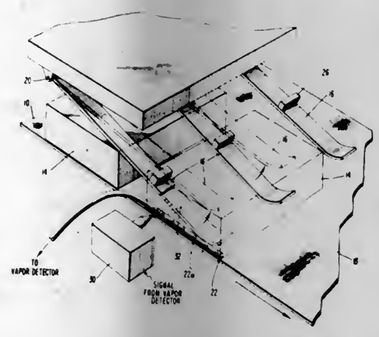
a housing defining a pneumatic chamber, first means for feeding a stream of said fluid from said first location to said housing; second means for feeding a stream of said fluid from said second location to said housing; means for alternately admitting fluid from said first and second fluid stream feeding means to said chamber; sensing means disposed in said chamber for providing an output signal proportional to said at least one fluid parameter; means connected to the output of said sensing means for comparing a first output signal provided by said sensing means with a second output signal provided by said sensing means, said second signal being spaced in time relative to said first signal; and motor means operatively connected to said fluid admitting means and said comparing means for controlling the operation of said comparing means in sychronization with the operation of said fluid admitting means, said controlled operation resulting in one of said first and second output signals being proportional to said one value of said at least one fluid parameter and the other of said first and second signals being proportional to said other value of said at least one fluid parameter.

4,111,049

APPARATUS FOR SECURING VAPOR SAMPLES

Melvin Lerner, Bethesda, Md., and Richard A. Ericson, Shelton, Wash., assignors to The United States of America as represented by the Commissioner, United States Customs Service, Washington, D.C.

Filed May 6, 1977, Ser. No. 794,572
Int. Cl.² G01N *1/22*
U.S. Cl. 73—421.5 R **13 Claims**



1. Apparatus for sampling vapor from articles carried by a conveyor comprising, at a station along said conveyor:

an arm arranged to press upon an article carried past said station by said conveyor to cause a vapor to be emitted by the article, and

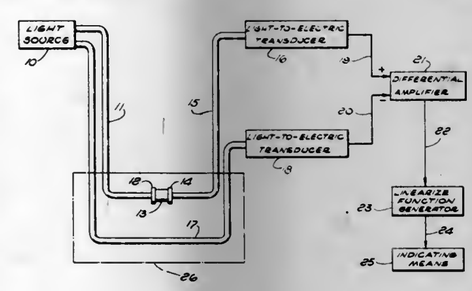
a sampling probe for sampling the vapor emitted by the article when the article is pressed by said arm.

4,111,050

THERMOMETER WITH BIREFRINGENT SENSING ELEMENT IN FIBER OPTIC COUPLING

Ray O. Waddoups, Valencia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 14, 1977, Ser. No. 815,689
Int. Cl.² G01K *11/14*
U.S. Cl. 73—362 R **12 Claims**



1. A temperature-measuring device comprising:

a light source;

first and second fiber optic light conductors, said first light conductor being arranged to receive light energy from said light source at a first end thereof;

a birefringent optical element having a refractive index which is variable to produce a correspondingly variable polarization plane rotation as a function of temperature with input and output polarizers arranged to receive light energy from the second end of said first light conductor through said input polarizer, said birefringent element being in thermal contact with the environment, the temperature of which is to be measured, said polarizers being oriented to provide a predetermined relatively low value of light transmission into said second fiber optic conductor corresponding to a predetermined temperature;

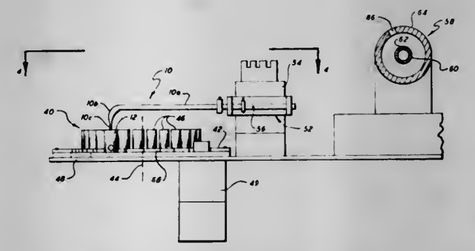
and a light-to-electric transducer arranged to receive light energy from the second end of said second fiber optic light conductor to provide a first electrical signal, the magnitude of which is a function of the temperature of said environment.

4,111,051

SAMPLING PROCEDURE AND DEVICE FOR FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

Rolf Günther Arnold Tamm, and Bernhard Werner Huber, both of Überlingen, Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Überlingen, Fed. Rep. of Germany

Continuation of Ser. No. 660,194, Feb. 20, 1976, abandoned.
This application May 21, 1976, Ser. No. 688,785
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1975, 2507260
Int. Cl.² G01N *1/14*
U.S. Cl. 73—423 A **13 Claims**



1. In combination with a flameless atomic absorption atomizer having a heated sample cell containing an aperture for the introduction of a liquid sample, an automatic sample, an automatic sample transfer apparatus comprising:

a. a sample probe having an elongate tubular portion terminating at one end in a tip extending at an angle to the elongate portion;

b. a probe displacement mechanism for sequentially and repetitively moving said probe from a first position, where the probe tip is immersed in a liquid sample or rinsing liquid to a second position in which the tip is aligned with said aperture; and

c. fluid pump and conduit means associated with said probe for discharging a quantity of rinse liquid through the probe tip, followed by aspiration of a batch of sample liquid into the probe, both at said first position, and discharging said batch of sample liquid into said aperture with the probe in said second position;

d. said rinse liquid being introduced into the probe by said pump and conduit means via the end of the probe's tubular portion remote from said tip; and

e. said pump and conduit means causing aspiration of a slug of air into the probe before aspiration of the sample liquid.

4,111,052

PRESSURE-SENSITIVE WRITING STYLUS

Albert Saiderman, W. Bloomfield, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 29, 1977, Ser. No. 828,314
Int. Cl.² G01D *9/02*
U.S. Cl. 73—432 R **10 Claims**



1. A pressure-sensitive stylus for use in a personal identification system of the type wherein handwriting pressure is used as the identification discriminant, the stylus comprising:

a stylus housing defined by a hollow elongate body having a longitudinal axis;

a stylus cartridge mounted within the stylus housing in aligned relation with the longitudinal axis thereof, the stylus cartridge having a writing tip at one end for contacting a record surface, and a bearing surface at the other end for transmitting the reactive force caused by contact of the writing tip with the record surface;

a hollow casing member disposed within the stylus housing in aligned relation with the longitudinal axis thereof, and being shaped and dimensioned to receive the stylus cartridge, the casing member being secured to the stylus housing at a position proximate the cartridge writing tip, and being closed at the other end to receive the reactive force transmitted by the bearing surface; and

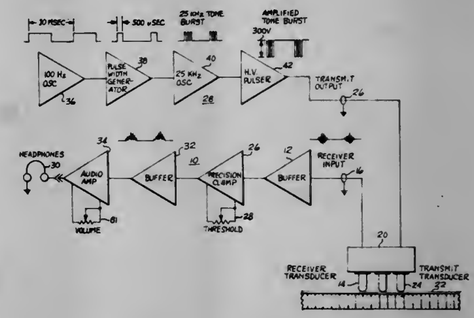
transducer means, associated with the hollow casing member and responsive to the force transmitted by the stylus cartridge thereto, for providing a signal representative of the transmitted force as an indication of the handwriting pressure.

4,111,053

AUDIBLE BOND TESTER

Glenn Allen Geithman, Renton, and Wayne Earl Woodmansee, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 24, 1977, Ser. No. 809,872
Int. Cl.² G01N *29/00*
U.S. Cl. 73—588 **3 Claims**



2. Apparatus for ultrasonic inspection of a work piece comprising:

receiving and transmitting piezoelectric transducer elements adapted to be positioned in accoustically coupled relationship to the work piece;

a fixed frequency tone modulated transmitting circuit for providing tone bursts at a predetermined ultrasonic frequency at a constant repetition rate having a frequency less than said predetermined ultrasonic frequency, said

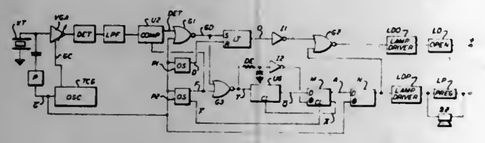
transmitting circuit connected to energize said transmitting piezoelectric transducer element and vibrate said work piece at said predetermined ultrasonic frequency; and, receiver circuit means connected to said receiving piezoelectric transducer element for providing an audio output signal at the tone burst repetition frequency having an amplitude level responsive to detection of a flaw condition in said work piece.

4,111,054

GRAVIDITY DETECTION METHOD AND APPARATUS

Hans G. Jorgensen, and B. Wendell Hautaniemi, both of Ithaca, N.Y., assignors to Ithaco, Incorporated, Ithaca, N.Y.

Filed Aug. 22, 1977, Ser. No. 826,556
Int. Cl.² G01N *29/00*
U.S. Cl. 73—611 **10 Claims**



1. Apparatus for detecting pregnancy within an animal, comprising, in combination: ultrasonic transmission and reception means for transmitting ultrasonic energy into said animal and receiving reflected energy in the form of electrical echo signal pulses occurring during a reception interval following transmission of said energy; first means for detecting the occurrence of an echo signal which occurs during said reception interval later than a first predetermined amount of time after said transmission and for providing a first logic signal upon detection of any such echo signal; second means for detecting the occurrence of each echo signal which occurs during said reception interval later than a second predetermined amount of time after said transmission, for providing a second logic signal if and when no echo signal has been detected for a third predetermined amount of time elapsed at any time during said reception interval after said second predetermined amount of time has elapsed, and for providing a third logic signal if an echo signal is detected after provision of said second logic signal; and indicating means responsive to said logic signals for providing a pregnancy indication upon occurrence of said third logic signal and for providing a non-pregnancy indication upon occurrence of said first logic signal and no occurrence of said third logic signal.

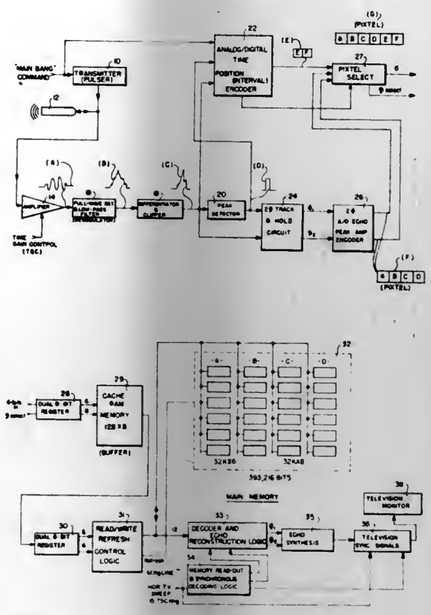
4,111,055

PULSE ECHO ULTRASONIC SYSTEM

William J. Skidmore, III, Mission Viejo, Calif., assignor to Del Mar Avionics, Irvine, Calif.

Filed Oct. 11, 1977, Ser. No. 840,733
Int. Cl.² G01N *29/00*
U.S. Cl. 73—620 **7 Claims**

1. In an ultrasonic echo system which includes a transmitter, an ultrasonic transducer connected to the transmitter, a receiver coupled to the transducer for receiving echo pulses therefrom, and a television monitor coupled to the receiver, said receiver including: an analog-digital time position encoder for producing a first digital signal representing the time position of the peak amplitude of each received echo pulse within a predetermined sample period; an analog-digital peak amplitude encoder for producing a second digital signal representing the peak amplitude of each of said received echo pulses; digital memory means storing multi-bit digital words representing different gray levels; means coupled to the time position encoder and to the peak amplitude encoder for introducing the first and second digital signals therefrom as multi-bit words to the digital memory means; and means for deriving a plurality of multi-bit words from the digital memory means representing



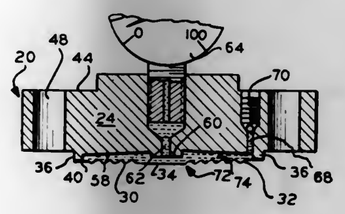
different gray levels in response to each such multi-bit word introduced to said digital memory means.

4,111,056

CONTROL DEVICES

Michael Mastromatteo, 53B Ridge Rd., Valley Cottage, N.Y. 10989

Continuation-in-part of Ser. No. 591,423, Jun. 30, 1975. This application Apr. 12, 1976, Ser. No. 676,335
Int. Cl.² G01L *7/08*
U.S. Cl. 73—706 **6 Claims**



1. A control mechanism of the type employing a liquid therein, comprising:

(a) a housing comprising upper and lower housing members of rigid material having a cavity; said cavity having a symmetrical configuration;

(b) a generally symmetrically shaped diaphragm secured between said upper and lower housings, thereby dividing said cavity into at least a first and second chamber; the first chamber being adapted to receive therein the liquid;

(c) a valve member formed in a central portion of said diaphragm;

(d) a boss extending from within said first housing and forming a valve seat; said housing having a first conduit port extending through said boss for admitting the liquid into said first chamber; said valve member being in registry with said valve seat; valve seat having a substantially planar end for abutting said valve member to form said valve; said valve seat being so spaced from said diaphragm such that, upon said valve closing, said diaphragm being within its spring rate; said diaphragm having a plurality of concentric convolutions about said valve member; said valve member being coated with Teflon for sealing shut said valve; said valve being disposed substantially at the symmetrical center of said cavity;

(e) said diaphragm, in combination with said housing wall, comprising means for entrapping within said first chamber and so disposed such that, upon a result of force being applied in a predetermined direction to said diaphragm and said valve closing, said entrapping means, as a result of the force, thereby entrapping at least a part of the liquid within said first chamber, so that the entrapped liquid prevents the diaphragm means from being damaged by the force, thereby entrapping at least a part of the liquid within said first chamber, so that the entrapped liquid provides a cushion and hydrostatic stop to prevent said diaphragm from being damaged by the force;

(f) said housing having a second chamber port for communicating a substance through said second chamber to thereby move said diaphragm to thereby operate said valve; and

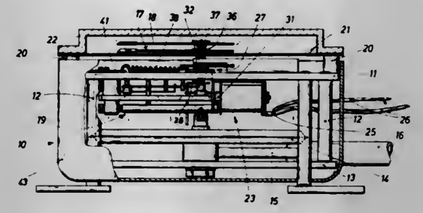
(g) said housing having a bleed port at the periphery of said cavity and extending through said upper housing for filling liquid therein or removing air from said chamber.

4,111,057

DUAL-INDICATOR MANOMETER FOR AN ELECTROMEDICAL DEVICE

Karl-Heinz Affeldt, and Gerhard Raupach, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 23, 1977, Ser. No. 836,234
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1976, 2650627
Int. Cl.² G01L *7/00*
U.S. Cl. 73—709 **4 Claims**



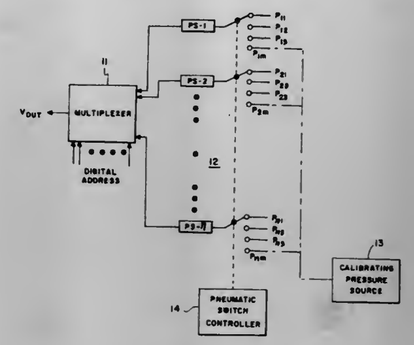
1. In a dual indicator manometer for an electromedical device for measuring and indicating the systolic and diastolic blood pressure values of a patient, which manometer includes two pressure indicators, each having a motion transmitting shaft, and two braking members each associated with a respective indicator and including an electromagnet for controlling movement of its respective indicator for selectively blocking or releasing the shaft of the respective indicator, the improvement wherein each said braking member constitutes an armature associated with its respective electromagnet and having the form of a two-armed lever which is pivotal about a fixed axis, with one free end of said lever facing its associated electromagnet and the other free end of said lever facing its associated shaft, each said lever being pivotally movable, in response to the actuation state of said electromagnet, between a blocking position in which said braking member is pressed directly against the surface of said shaft of its associated indicator and a release position in which said braking member is clear of that surface.

4,111,058

ELECTRICALLY SCANNED PRESSURE SENSOR MODULE WITH IN SITU CALIBRATION CAPABILITY

Chris Gross, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 22, 1977, Ser. No. 835,628
Int. Cl.² G01L *7/00, 9/06*
U.S. Cl. 73—714 **10 Claims**



1. A pressure sensor module comprising:

a pressure sensor substrate board including *n* pressure chips and a multiplexer thereon where *n* is a whole number greater than one;

said multiplexer connected to said pressure chips and including means such that when a digital code is applied to said multiplexer the analog outputs of said pressure chips sequentially appear at the output of said multiplexer;

a stator plate with *n* ports through it with each port on one side of the stator plate terminating onto a corresponding one of said pressure chips;

a pressure multiplexer plate in contact with the side other than said one side of the stator plate;

said pressure multiplexer plate having *n* groups of *m* ports through it where *m* is a whole number greater than one;

means for connecting *n* of said ports in said pressure multiplexer plate to a calibrating pressure source;

means for connecting the other $n(m-1)$ ports in said pressure multiplexer plate to the locations where pressures are to be measured; and

means for selectively moving said pressure multiplexer plate to *m* positions with a different set of *n* ports through it alined with the *n* ports through said stator plate in each of the said *m* positions and with the said set of *n* ports connected to a calibrating pressure source being one of said different sets.

4,111,059

DEVICE FOR TRANSMITTING MOVEMENT TO A SPEED INDICATOR INSTRUMENT AND/OR A DISTANCE COUNTER

Jacques Andre Huret, 12, rue C.B. Metman, Neuilly-sur-Seine, France (92200)

Filed Feb. 24, 1977, Ser. No. 771,563
Claims priority, application France, Mar. 19, 1976, 76 08071
Int. Cl.² F16H *37/00*; G01P *3/00*
U.S. Cl. 74—12 **5 Claims**

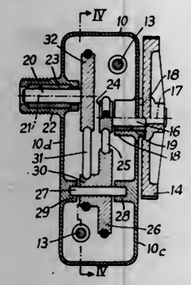
1. An apparatus for transmitting movement from a vehicle wheel to a speed indicating and/or distance counting apparatus for use with a wheeled vehicle such as bicycle, lightweight motorcycle, or the like, said apparatus comprising:

a transmission casing;

an input shaft extending through a first face of said casing;

an output shaft extending through a second face of said casing opposite said first face thereof;

said input and output shafts being disposed in substantially parallel relationship;
a mechanical transmission system disposed within said casing for operatively connecting said input shaft to said output shaft, said transmission system being of the wheel and belt type;
each wheel of said transmission system having an axis of rotation parallel to said input and output shafts;
said output shaft being adapted to be connected to a flexible cable for driving said speed indicating and/or distance counting apparatus; and



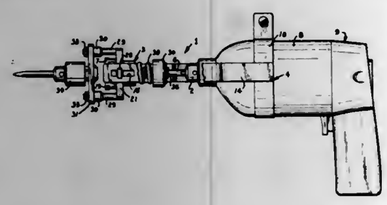
a driving wheel attached to said input shaft on a portion thereof extending outside said casing;
said input shaft being offset in relation to a median plane of said casing parallel to said input and output shafts, whereby said driving wheel projects beyond a portion of the casing on one side thereof but not on an opposite side thereof;
said driving wheel being adapted to be driven by contact with a portion of the surface of a front tire or wheel of the vehicle, on the side of said casing from which it projects.

4,111,060

DRILL ATTACHMENT FOR CONVERTING ROTARY MOTION TO RECIPROCATORY MOTION

Fulvio Nerini, R.R. 1, Box 72-A, Bevier, Mo. 63532

Filed Nov. 22, 1976, Ser. No. 744,444
Int. Cl.² F16H *25/12*; B27C *9/00*; B25D *17/02*
U.S. Cl. 74—56 **8 Claims**



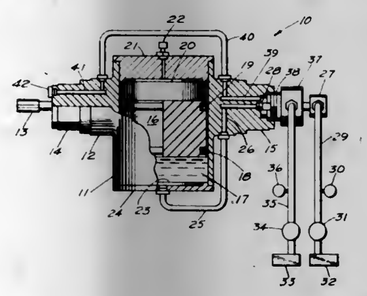
1. A drill attachment for converting rotary motion to reciprocatory motion and comprising:
(a) a guide bracket mounted on a drill housing and having a plurality of longitudinally extending arms;
(b) an elongated shaft having one end portion thereof adapted to be received in a drill chuck and an enlarged portion on the other end thereof;
(c) means on said shaft enlarged portion defining a plurality of circumferentially spaced cam surfaces surrounding the axis of said shaft;
(d) a tool support member movable longitudinally along and having a slideable connecting means slideably engaging without rotation said guide bracket arms and having one surface in facing relation with said enlarged portion of said shaft, said tool support member one surface having means thereon defining a plurality of circumferentially spaced cam surfaces engageable with said cam surfaces on said shaft enlarged portion, said tool support member one surface being resiliently urged into engagement with said shaft enlarged portion and the cam surfaces thereon;
(e) a chuck mounted on said tool support member for retaining therein a selected tool, said chuck being movable with said tool support member;
(f) said elongated shaft includes abutment means mounted thereon and positioned intermediate the ends thereof;
(g) said tool support member includes a body portion and means thereon defining a recess in facing relation with said abutment means on said elongated shaft; and
(h) an elongated resilient member is sleeved on said elongated shaft with one end portion in engagement with said abutment means and an other end portion received in the recess in said body portion of said tool support member.

4,111,061

VARIABLE ECCENTRIC VIBRATION GENERATING MECHANISM

Hubert E. Thomas, 838 W. Mitchell Apt. 469, Arlington, Tex. 76013

Continuation-in-part of Ser. No. 764,721, Feb. 2, 1977, abandoned. This application Jul. 15, 1977, Ser. No. 815,935
Int. Cl.² F16H *33/00*
U.S. Cl. 74—61 **17 Claims**



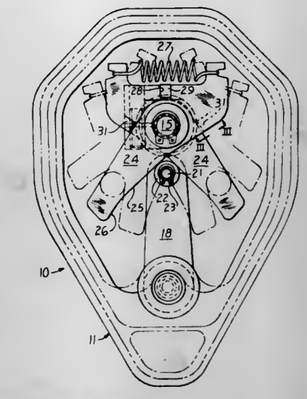
1. A rotatable variable eccentric vibration generating mechanism wherein the improvement comprises a movable eccentric weight that is variably positioned by a controlled flow of fluid;
said mechanism including shaft body means between opposed bearing journals;
said mechanism including drive means on one end;
said mechanism including a fluid passage through said bearing journal on the opposed end;
said mechanism including a rotary fluid coupling fastened in part to said opposed end of the rotatable mechanism and fluidly connected with said bearing journal passage;
said mechanism including cylinder means;
said cylinder means fluidly connected with said bearing journal passage;
said mechanism including a fluid supply line connected to said rotary coupling;
said mechanism including a pressure gauge connected fluidly to record pressure in said cylinder means, passages, rotary coupling, supply line, and common parts;
said pressure record being convertible by computation to generated centrifugal force;
said mechanism including valve means to regulate the flow of fluid in and out of said supply line, rotary coupling, passages, cylinder means and common parts;
said flow of fluid controlling the position of the movable eccentric weight;
said regulation of flow and positioning of the movable eccentric weight being used to adjusted pressures within the cylinder means as required;
said mechanism including means to supply pressurized fluid;
said fluid supply line being also connected with pressure gauge means, valve means and pressure source means.

4,111,062

CONTROL MECHANISM FOR HYDROSTATIC TRANSMISSIONS

William I. Callaghan, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Jun. 24, 1977, Ser. No. 809,725
Int. Cl.² F16H *21/44*; G05G *7/04*
U.S. Cl. 74—96 **9 Claims**



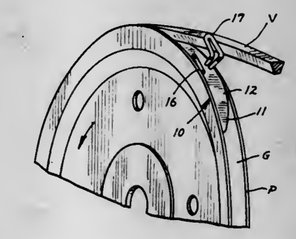
1. A control mechanism comprising:
rotatable output means,
rotatable input means,
a pair of lever means pivotally mounted for relative movement on said output means and disposed in scissored relationship relative to each other,
a camming surface defined on a first end of each of said lever means normally engaged with said input means for rotating on said output means in response to rotation of said input means,
biasing means connected between second ends of said lever means for normally urging them towards each other,
drive means connected to said output means and engageable between the second ends of said lever means, and
stop means secured on each of said lever means for engaging and pivoting the other one of said lever means in response to pivoting of said input means.

4,111,063

BELT ENRAILER AND DERAILER

John Journey, Haysville, Kans., assignor to Thexton Manufacturing Company, Minneapolis, Minn.

Filed Mar. 4, 1977, Ser. No. 774,248
Int. Cl.² F16H *7/08*
U.S. Cl. 74—242.6 **11 Claims**



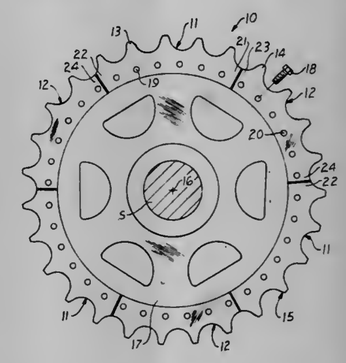
1. A V-belt enrailer and derailer for use with a grooved pulley, comprising
an elongate body to lie in the pulley groove and extend along a portion of the pulley periphery, the body having an outer side to lie adjacent the outer peripheral edge of the pulley when the body lies in the pulley groove;
a substantially rigid projection affixed to the body in substantially fixed relation, said projection extending transversely of the elongate body and outwardly from said outer side thereof for engaging and guiding a V-belt transversely of the pulley groove as the pulley is rotated, and
the elongate body being formed of stiff but flexible material so as to conform to the peripheral contour of the pulley and frictionally adhere against slipping to the pulley surfaces in response to minimal pressure applied from the belt toward the pulley.

4,111,064

SPROCKET SEGMENTS PROVIDING GREATER RETENTION CAPABILITIES

Robert J. Purcell, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1977, Ser. No. 788,863
Int. Cl.² F16H *55/12, 55/30*
U.S. Cl. 74—243 DR **15 Claims**



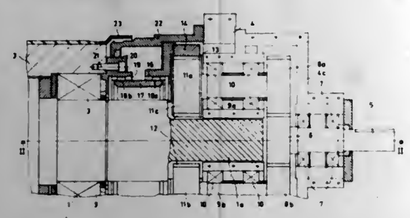
1. A chain drive sprocket comprising:
a hub;
a plurality of first sprocket segments each having a first plurality of sprocket teeth and a plurality of arcuately spaced mounting bolt holes; and
a plurality of second sprocket segments each having a second, different plurality of sprocket teeth and a plurality of arcuately spaced mounting bolt holes, said first and second sprocket segments being mounted seriatim alternately to said hub by a plurality of bolts to define a circular sprocket with said sprocket teeth thereof defining a continuous equiangularly spaced annular series and the bolt holes thereof defining a continuous equiangularly spaced annular series, the angular extent of said first segments being greater than the angular extent of said second segments, each segment defining opposite end surfaces spaced from the tip of the end teeth thereof an angular distance different from one-half the tip-to-tip angular spacing of said annular series of sprocket teeth whereby the radii of the sprockets centered between the confronting opposed end surfaces of each pair of segments are asymmetrically disposed relative to the radial centerline of the root between the end teeth of the segments at opposite sides of said confronting opposed end surfaces, each segment end surface being angularly spaced from said radial centerline less than the angular spacing thereof from the tip of the end tooth adjacent the end surface, the angular spacing of the end bolt holes from said segment end surfaces of said first sprocket segments being different from the angular spacing of the end bolt holes from the segment end surfaces of said second sprocket segments.

4,111,065

ROLL AND ROLL-DRIVING ASSEMBLY

Martti Mattikainen, Pori, and Matti Sivonen, Jyväskylä, both of Finland, assignors to Valmet Oy, Finland

Filed May 5, 1977, Ser. No. 794,075
Claims priority, application Finland, May 6, 1976, 761280
Int. Cl.² F16H 57/00
U.S. Cl. 74—410 **8 Claims**



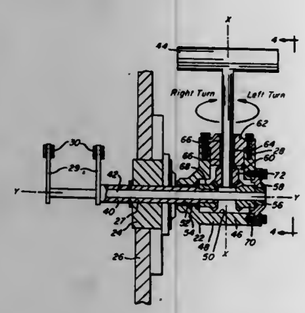
1. In a roll and roll-driving assembly, internal stationary shaft means, an outer shell surrounding said internal stationary shaft means and bearing means supporting said outer shell for rotation with respect to said internal stationary shaft means, rotary input shaft means coaxial with said stationary shaft means for receiving a rotary drive from an outside source, sun gear means fixed coaxially to said rotary input shaft means for rotation therewith, a plurality of planetary gear means respectively having axes parallel to the axis of said input shaft means and meshing with said sun gear means while being uniformly distributed about the axis of said input shaft means, an internal ring gear surrounding and meshing with said planetary gear means while being supported exclusively by said planetary gear means so that said internal ring gear is capable of automatically centering itself with respect to said plurality of planetary gear means with a load being uniformly distributed along a plurality of power-transmission paths extending from said sun gear means through said plurality of planetary gear means to said internal ring gear, and transmission means operatively connected to said internal ring gear and to said shell for transmitting a drive from said ring gear to said shell and for automatically compensating for inaccuracies and/or deformations.

4,111,066

CONTROL MEANS

Frank B. Kendrick, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Nov. 10, 1976, Ser. No. 740,579
Int. Cl.² G05G 9/00
U.S. Cl. 74—471 R **6 Claims**



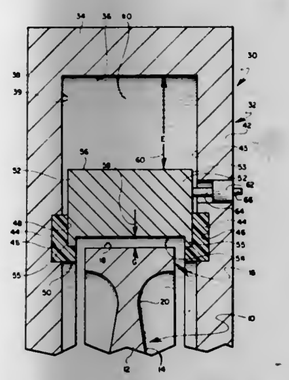
1. A manually operable control means adapted for selectively actuating at least a pair of actuatable means associated with a motive means, said control means comprising: an elongated control handle portion having a longitudinal axis; elongated rotary actuator means cooperable with such a pair of actuatable means and extending transversely with respect to said longitudinal axis of said handle portion; connecting means operatively connecting said handle portion to said actuator means and including means for locating said handle portion adjacent one longitudinal end of said actuator means and rotary connector means cooperable with said handle portion and said actuator means; said operative connection providing axial rotation of said actuator means in a first rotation mode responsive solely to rotation of said handle portion about said longitudinal axis for differential actuation of such pair of actuatable means and axial rotation of said actuator means in a second rotation mode responsive solely to movements of said handle portion other than rotation of said handle portion about said longitudinal axis for concomitant actuation of such pair of actuatable means.

4,111,067

RUPTURABLE FLYWHEEL ENERGY SYSTEM

Donald R. Hodson, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 10, 1977, Ser. No. 758,103
Int. Cl.² G05G 1/00; F16F 15/30
U.S. Cl. 74—572 **2 Claims**



1. In a flywheel system wherein rotary motion is utilized as a source of energy, the improvement which comprises:

a substantially metal flywheel having a disk portion and an integral rim portion, said disk portion being evenly stressed from its central portion radially outwardly towards a narrowed-down neck portion formed by said disk, said neck portion positioned between said disk and said integral rim portion is more highly stressed than said disk portion to facilitate separation of said rim portion from said disk portion in the event of flywheel overstress thereby maintaining the integrity of said disk portion,

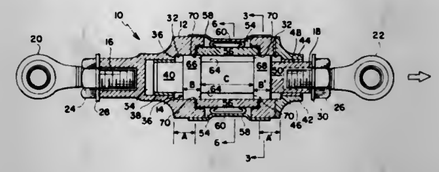
a substantially metal flywheel barrier housing concentrically positioned around said flywheel, said barrier housing being formed into a U-shaped trough, said trough having a first and second side perpendicular to the axis of said flywheel and a third end closure, said end being parallel with said axis, said first and second side partially overlapping at least the rim of said flywheel, said barrier further containing a substantially metal barrier ring surrounding said flywheel, said ring being slidable within said trough to absorb flywheel rim fragments in the event of rim separation from said flywheel, and

4,111,068

LOCKING REDUNDANT LINK

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Frank Henry Bonisch, Wethersfield, Conn.

Filed Mar. 7, 1977, Ser. No. 775,239
Int. Cl.² G05G 1/04; B65C 27/42
U.S. Cl. 74—586 **14 Claims**



1. An axially extensible strut, automatically lockable in both tension and compression, comprising:

a body means;

a piston means disposed within said body means and normally slidable therein, and

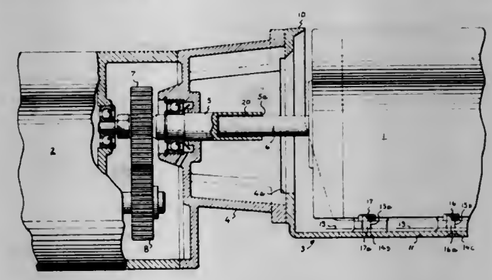
means for locking said piston means to said body means in both tension and compression in response to the piston being moved a predetermined distance in the tension direction and for locking said piston means to said body means in both tension and compression in response to the piston being moved a predetermined distance in the compression direction.

4,111,069

DRIVE MOTOR MOUNTING BASE FOR A GEAR MOTOR HAVING A C-FACED REDUCER

Ronald A. Blair, Pompton Plains; Gerhard A. Nickstadt, Oakland, and Gaetano O. Imbrogno, Hawthorne, all of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 20, 1977, Ser. No. 789,181
Int. Cl.² F16H 57/02, 1/12
U.S. Cl. 74—606 R **8 Claims**



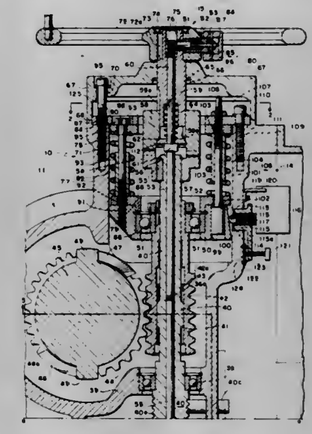
1. A mounting base for mounting a footed motor in driving relationship on a gear motor that has a C-faced reducer for supporting a motor in driving relationship thereon, said base having two walls positioned in orthogonal relationship, a first set of apertures formed at preselected locations through one of said walls and a second set of apertures formed at preselected locations through the other of said walls, the apertures of said first set being positioned to cooperate in generally aligned relationship with a third set of apertures formed in a motor abutting surface of a C-faced reducer, the apertures in said second set being positioned to cooperate in generally aligned relationship with a fourth set of mounting apertures each formed respectively through one of the feet of a footed drive motor, the surface of said one wall adapted to abut said C-faced reducer being machined to define a first plane, the surface of said other wall adapted for supporting the feet of a footed drive motor being machined to define a second plane that is substantially perpendicular to said first plane.

4,111,070

VALVE ACTUATOR AND SPRING BIASING CARTRIDGE

Andrew Stratienko, Philadelphia, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 4, 1977, Ser. No. 784,388
Int. Cl.² F16H 35/18
U.S. Cl. 74—625 **7 Claims**



1. An improvement for a valve actuator mounted in a housing and adapted for rotation of a valve stem wherein the valve actuator has a ring gear means engageable with a rotatable valve stem; a sliding worm gear means engaged with the ring gear means; a clutch means on each end of the worm gear means to selectively alternately connect said worm gear means with a motor means or a manual operator means; and a spring means mounted with said worm gear means to provide resilient resistance to movement thereof wherein the improvement comprises said spring means being a spring cartridge assembly including:

a base plate having bearing means for receiving in rotatable relationship said worm gear means;

cylindrical openings in said base plate around said bearing means and spaced radially outward therefrom;

a lower spring abutment plate arranged to abut said base plate and movable relative to said housing and having a plurality of passages therethrough;

an upper spring abutment plate spaced above said lower plate and having a plurality of openings therethrough;

a top plate arranged to abut said upper spring abutment plate having a plurality of passages therethrough, a plurality of bolt-head openings therethrough, and means for directly securing said top plate to said housing;

first connection means extending through said bolt-head openings, some of said upper spring plate openings, some of said lower spring plate openings, being secured in said base plate, and having abutment head means thereon for abutting said upper spring plate;

second connection means secured to said top plate, extending downward through some of said openings in said upper and lower spring plates and into said cylindrical openings, and further having abutment means thereon for engagement in said cylindrical openings and abutment with said spring lower plate;

compression spring located between said upper spring plate and said lower spring plate and in compression therebetween;

said compression spring being compressed by displacement of said worm gear means in one direction which displaces said lower spring abutment plate from said base plate toward said upper spring abutment plate, and said compression spring being also compressed by motion of said worm gear means in the opposite direction whereupon

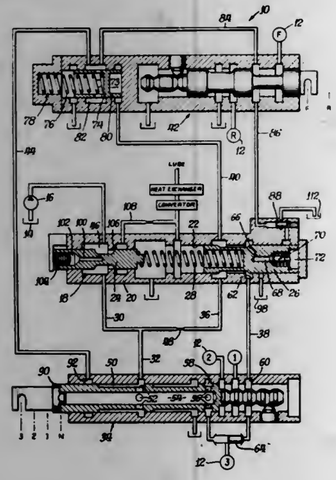
said upper spring abutment plate is displaced from said top plate toward said lower spring abutment plate.

4,111,071

MODULATING RELIEF VALVE WITH HYDRAULIC SAFETY

Shairyl I. Pearce, East Peoria, and Sidney J. Audiffred, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 6, 1974, Ser. No. 503,595
Int. Cl.[2] F16H 3/44; F16D 19/00
U.S. Cl. 74—753 4 Claims



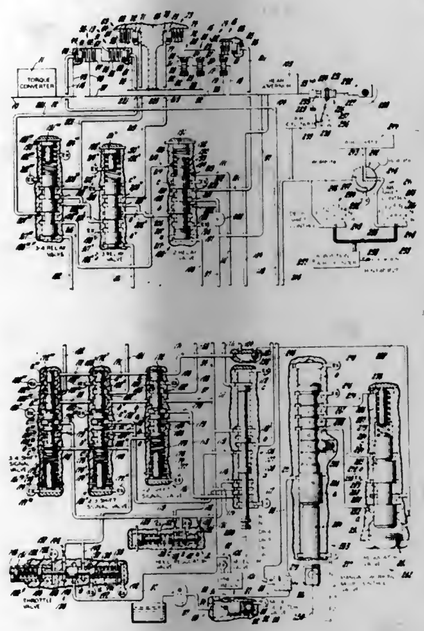
1. In combination with a transmission having a plurality of fluid pressure actuated drive conditioning devices, a fluid system comprising: a source of fluid pressure; safety valve means comprising a housing and a spool movable therein to first and second positions; means for biasing the safety valve spool into its first position; selector valve means having a plurality of drive conditioning positions, and a neutral position; means associated with the source of fluid pressure, selector valve means, and safety valve means so that upon initial selection of other than neutral position, the safety valve spool is in and remains in its first position so that fluid pressure is exhausted from the system to in turn prevent actuation of any of the drive conditioning devices, and upon movement of the selector valve means into said neutral position, fluid pressure is supplied to the safety valve spool to move it against said bias into its second position, to allow fluid pressure buildup in a selected drive conditioning device, determined by selection of a selector valve means drive conditioning position; modulating relief valve means associated with said fluid pressure source and comprising said housing and a modulating relief valve spool movable to a first position allowing fluid pressure to be supplied from said source to the safety valve means and selector valve means, and movable away from its first position to limit the level of fluid pressure supplied to said selector valve means; and means for biasing the *modulating relief* valve spool into its first position, wherein *the means for biasing the relief* valve spool is weaker than the means for biasing the working ratio drive to provide upshifts with exceeding maximum relief valve spool into its first

4,111,072

TRANSMISSION WITH AUTOMATIC AND MANUAL CONTROL MODES

Kenneth B. Harmon, Indianapolis; Richard J. Koenig, Carmel, and Carl A. Lentz, Mooresville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 9, 1977, Ser. No. 795,129
Int. Cl.[2] B60K 21/04
U.S. Cl. 74—864 7 Claims



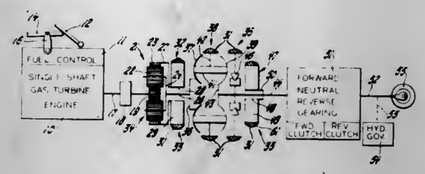
1. In a transmission: gear means having an input with a normal engine drive speed range and a higher engine maximum overrun speed and an output and providing a plurality of ratio drives between said input and said output having speed ratios continuously increasing in steps from a lowest ratio drive to a highest ratio drive; governor means connected to said gear means and providing a speed signal varying with the speed of said output; control means operatively connected to said gear means and said governor means, having manual selector means having a hold ratio position corresponding to each of said plurality of ratio drives except for said highest ratio drive and a plurality of working ratio positions corresponding to each of said plurality of ratio drives and operative in each of said selected hold ratio positions to provide automatic upshifting and downshifting in response to said speed signal between the corresponding selected hold ratio drive and any lower ratio drives of said plurality of ratio drives to provide optimum drive of said output with said input in said drive speed range, operative in each of the selected working ratio positions to provide the corresponding selected working ratio drive throughout said drive speed range to provide output speed in a constant ratio drive proportion to input speed and controllable by engine throttle control of input speed, and operative in each of said selected hold ratio drives and each of said selected working ratio drives to provide hold shifting between either the selected hold ratio drive or the selected working ratio drive and a higher ratio drive having an upshift at the maxi-

4,111,073

PROGRESSIVELY VARIABLE TRANSMISSION

Howard E. Chana, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1977, Ser. No. 759,800
Int. Cl.[2] B60K 41/18
U.S. Cl. 74—865 23 Claims



1. In a power transmission: an input providing increasing input torque with increasing input speed; an output; planetary gear means having an input member driven by said input, a reaction member, and an output member for providing a constant torque multiplication ratio and a reduction speed ratio progressively increasing from zero to the reciprocal of the torque ratio as the reaction member speed is progressively reduced from the free rotation speed to zero speed; progressively variable ratio drive means having an input element connected for drive by said output member, an output element drive connected to said output and drive connecting said input element to said output element to progressively vary the speed ratio from a low reduction speed ratio to a high speed ratio and a torque ratio from a high torque multiplication ratio to a low torque multiplication ratio; progressively variable ratio transmission means driven by said reaction member and driving one of said elements providing progressively variable speed and torque ratio drive and speed ratio control of said planetary gear means; and control system means including speed governor means providing an output speed signal proportional to the speed of said output and ratio control means operative in response to said output speed signal in a low output speed range from zero output speed to a transistion output speed to control said progressively variable ratio drive means and to control said progressively variable ratio transmission means to provide the overall progressively variable speed ratio and torque ratio to multiply increasing input torque to provide substantially constant high total torque to said output from zero output speed to said transition output speed and decreasing total torque to said output as output speed increases above said transition output speed.

4,111,074

HYDRAULIC CONTROL FOR HYDROMECHANICAL TRANSMISSION

Robert Powers Northup, Pittsfield, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

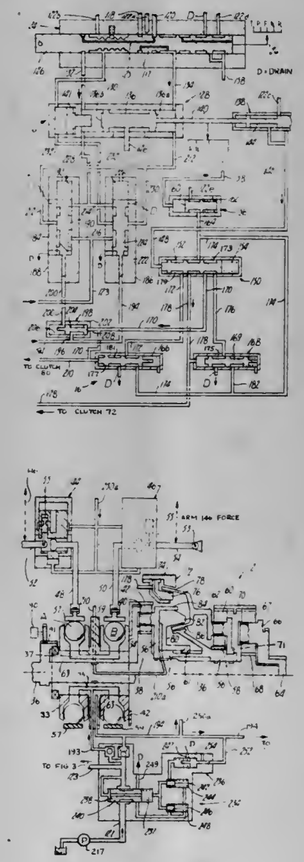
Filed Nov. 1, 1976, Ser. No. 737,378
Int. Cl.[2] B60K 21/00
U.S. Cl. 74—867 1 Claim

1. A hydromechanical transmission connectable between a prime mover and power-using device: said transmission comprising an input shaft (36); an output shaft (64); a hydrostatic pump-motor unit connected to the input shaft; control means (44, 46) associated with said pump-motor unit for varying the pump displacement and motor displacement; an epicycloidal gearing system connected to said shafts and to the pump-motor unit, said gearing system including two planet gear carriers (62 and 66)

high output speed ratio drive path through the gearing system;

an error signal means (88) for comparing prime mover speed and user demand speed; said signal means including a hydraulic input (32, 98) representing prime mover speed, a mechanical input (24, 94) representing user demand speed, and two separate hydraulic output signals (118 and 120) representing plus or minus differentials between user demand speed and prime mover speed;

a clutch selector valve (150) having an inlet (164) connected to a hydraulic pressure source, a first pressure outlet (178) connected to said first clutch for operating same, a second pressure outlet (170) connected to said second clutch for operating same, a third drain outlet (172) for the first



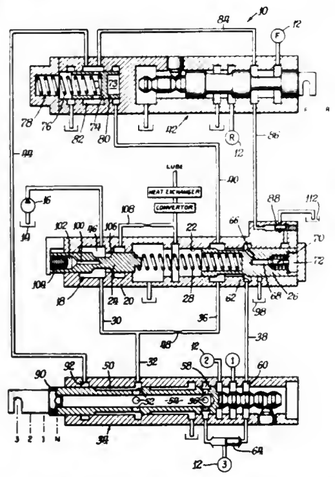
clutch, a fourth drain outlet (176) for the second clutch, and a flow diverter piston (152) movable in a reciprocatory fashion between (1) a first position wherein the inlet is connected to the first pressure outlet and the secnd pressure outlet is connected to the fourth drain outlet, and (2) a second position wherein the inlet is connected to the second pressure outlet and the first pressure outlet is connected to the third drain outlet;

said upper spring abutment plate is displaced from said top plate toward said lower spring abutment plate.

4,111,071
MODULATING RELIEF VALVE WITH HYDRAULIC SAFETY

Shairyl I. Pearce, East Peoria, and Sidney J. Audiffred, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 6, 1974, Ser. No. 503,595
Int. Cl.² F16H *3/44*; F16D *19/00*
U.S. Cl. 74—753 **4 Claims**

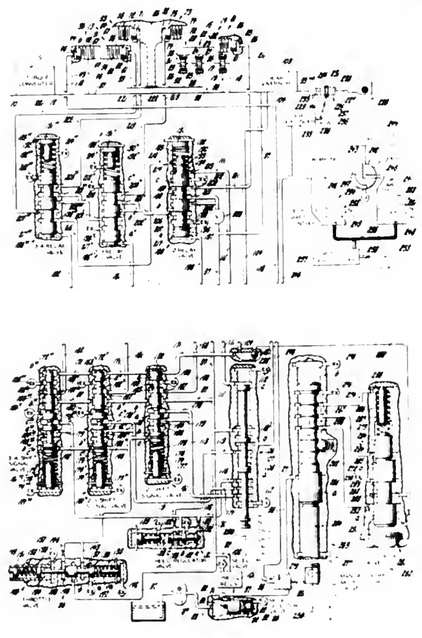


1. In combination with a transmission having a plurality of fluid pressure actuated drive conditioning devices, a fluid system comprising: a source of fluid pressure; safety valve means comprising a housing and a spool movable therein to first and second positions; means for biasing the safety valve spool into its first position; selector valve means having a plurality of drive conditioning positions, and a neutral position; means associated with the source of fluid pressure, selector valve means, and safety valve means so that upon initial selection of other than neutral position, the safety valve spool is in and remains in its first position so that fluid pressure is exhausted from the system to in turn prevent actuation of any of the drive conditioning devices, and upon movement of the selector valve means into said neutral position, fluid pressure is supplied to the safety valve spool to move it against said bias into its second position, to allow fluid pressure buildup in a selected drive conditioning device, determined by selection of a selector valve means drive conditioning position; modulating relief valve means associated with said fluid pressure source and comprising said housing and a modulating relief valve spool movable to a first position allowing fluid pressure to be supplied from said source to the safety valve means and selector valve means, and movable away from its first position to limit the level of fluid pressure supplied to said selector valve means; and means for biasing the modulating relief valve spool into its first position, wherein the means for biasing the safety valve spool into its first position, and the means for biasing the modulating relief valve spool into its first position, comprise a helical spring disposed between the safety valve spool and the modulating relief valve spool, whereby the safety valve spool acts as a load piston for the modulating relief valve spool.

4,111,072
TRANSMISSION WITH AUTOMATIC AND MANUAL CONTROL MODES

Kenneth B. Harmon, Indianapolis; Richard J. Koenig, Carmel, and Carl A. Lentz, Mooresville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 9, 1977, Ser. No. 795,129
Int. Cl.² B60K *21/04*
U.S. Cl. 74—864 **7 Claims**

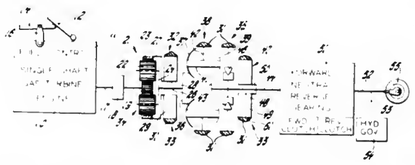


1. In a transmission: gear means having an input with a normal engine drive speed range and a higher engine maximum overrun speed and an output and providing a plurality of ratio drives between said input and said output having speed ratios continuously increasing in steps from a lowest ratio drive to a highest ratio drive; governor means connected to said gear means and providing a speed signal varying with the speed of said output; control means operatively connected to said gear means and said governor means, having manual selector means having a hold ratio position corresponding to each of said plurality of ratio drives except for said highest ratio drive and a plurality of working ratio positions corresponding to each of said plurality of ratio drives and operative in each of said selected hold ratio positions to provide automatic upshifting and downshifting in response to said speed signal between the corresponding selected hold ratio drive and any lower ratio drives of said plurality of ratio drives to provide optimum drive of said output with said input in said drive speed range, operative in each of the selected working ratio positions to provide the corresponding selected working ratio drive throughout said drive speed range to provide output speed in a constant ratio drive proportion to input speed and controllable by engine throttle control of input speed, and operative in each of said selected hold ratio drives and each of said selected working ratio drives to provide hold shifting between either the selected hold ratio drive or the selected working ratio drive and a higher ratio drive having an upshift at the maximum overrun output speed in the selected hold ratio drive and working ratio drive to prevent input speed exceeding maximum overrun speed and a downshift from the higher ratio drive at a lower output speed to provide input speed which is a hysteresis amount less than maximum overrun engine speed after said downshift.

4,111,073
PROGRESSIVELY VARIABLE TRANSMISSION

Howard E. Chana, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1977, Ser. No. 759,800
Int. Cl.² B60K *41/18*
U.S. Cl. 74—865 **23 Claims**

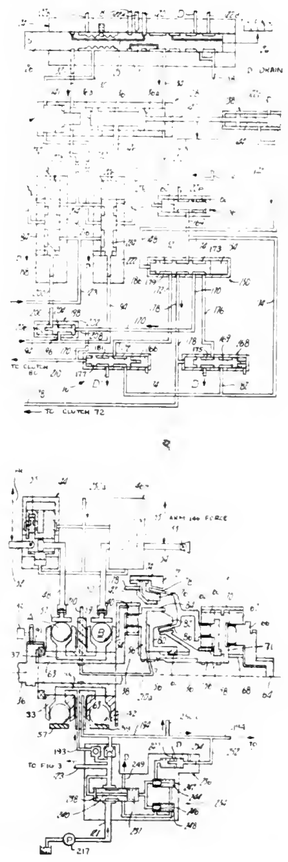


1. In a power transmission: an input providing increasing input torque with increasing input speed; an output; planetary gear means having an input member driven by said input, a reaction member, and an output member for providing a constant torque multiplication ratio and a reduction speed ratio progressively increasing from zero to the reciprocal of the torque ratio as the reaction member speed is progressively reduced from the free rotation speed to zero speed; progressively variable ratio drive means having an input element connected for drive by said output member, an output element drive connected to said output and drive connecting said input element to said output element to progressively vary the speed ratio from a low reduction speed ratio to a high speed ratio and a torque ratio from a high torque multiplication ratio to a low torque multiplication ratio; progressively variable ratio transmission means driven by said reaction member and driving one of said elements providing progressively variable speed and torque ratio drive and speed ratio control of said planetary gear means; and control system means including speed governor means providing an output speed signal proportional to the speed of said output and ratio control means operative in response to said output speed signal in a low output speed range from zero output speed to a transistion output speed to control said progressively variable ratio drive means and to control said progressively variable ratio transmission means to provide the overall progressively variable speed ratio and torque ratio to multiply increasing input torque to provide substantially constant high total torque to said output from zero output speed to said transition output speed and decreasing total torque to said output as output speed increases above said transition output speed.

4,111,074
HYDRAULIC CONTROL FOR HYDROMECHANICAL TRANSMISSION

Robert Powers Northup, Pittsfield, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1976, Ser. No. 737,378
Int. Cl.² B60K *21/00*
U.S. Cl. 74—867 **1 Claim**



1. A hydromechanical transmission connectable between a prime mover and power-using device: said transmission comprising an input shaft (**36**); an output shaft (**64**); a hydrostatic pump-motor unit connected to the input shaft; control means (**44, 46**) associated with said pump-motor unit for varying the pump displacement and motor displacement; an epicycloidal gearing system connected to said shafts and to the pump-motor unit, said gearing system including two planet gear carriers (**62** and **56**);

a first hydraulically-operated clutch (**72**) for exerting a locking action on one of the planet carriers to establish a low output speed ratio drive path through the gearing system;

a second hydraulically-operated clutch (**80**) for exerting a locking action on the other planet carrier to establish a high output speed ratio drive path through the gearing system;

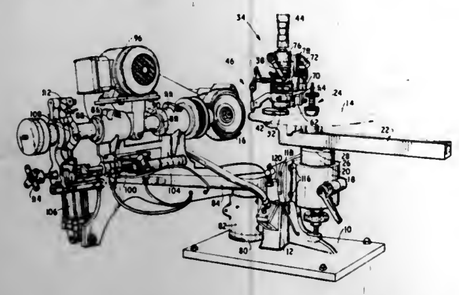
an error signal means (**88**) for comparing prime mover speed and user demand speed; said signal means including a hydraulic input (**32, 98**) representing prime mover speed, a mechanical input (**24, 94**) representing user demand speed, and two separate hydraulic output signals (**118** and **120**) representing plus or minus differentials between user demand speed and prime mover speed;

a clutch selector valve (**150**) having an inlet (**164**) connected to a hydraulic pressure source, a first pressure outlet (**178**) connected to said first clutch for operating same, a second pressure outlet (**170**) connected to said second clutch for operating same, a third drain outlet (**172**) for the first clutch, a fourth drain outlet (**176**) for the second clutch, and a flow diverter piston (**152**) movable in a reciprocatory fashion between (1) a first position wherein the inlet is connected to the first pressure outlet and the secnd pressure outlet is connected to the fourth drain outlet, and (2) a second position wherein the inlet is connected to the second pressure outlet and the first pressure outlet is connected to the third drain outlet;

means for operating the flow diverter piston comprising a spring means (**154**) and hydraulic means (**148**) controlled by a pilot valve (**138**) having a power piston (**136**); said power piston having opposed end faces (**136*a*** and **136*b***) located to receive the aforementioned hydraulic signals (**118** and **120**), whereby said pilot valve is closed when

user demand speed exceeds prime mover speed and open when prime mover speed exceeds user demand speed;
means (166) for depressurizing the first clutch, comprising a piston (177) that is operated by a pressurized condition of the aforementioned second outlet to form a drain path from the third drain outlet;
means (168) for depressurizing the second clutch, comprising a piston (169) that is operated by a pressurized condition of the aforementioned first outlet to form a drain path from the fourth drain outlet;
and means (146) responsive to motion of the aforementioned power piston (136) for operating the aforementioned pump-motor control means (44, 46).

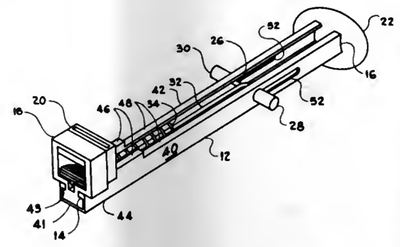
4,111,075
GRINDING MACHINE
Bernard Scott Varley, Sabden, Near Blackburn, England, assignor to Automatic Grinding Machine & Engineering Co. Ltd., England
Filed Jun. 4, 1976, Ser. No. 692,715
Claims priority, application United Kingdom, Oct. 25, 1975, 43523/75
Int. Cl.² B23D *63/14*
U.S. Cl. 76—41 9 Claims



1. A grinding machine comprising means for supporting a circular saw or the like for rotation about its own axis; cyclically controlled clamping means for successively clamping and releasing said saw mounted on the machine at least in a zone of the saw adjacent to a grinding position, said saw being freely rotatable when released; cyclically controlled indexing means for the saw or the like mounted on the machine; a grinding wheel; a cyclically controlled means mounting said grinding wheel and adapted to move said grinding wheel into and out of said grinding position; and control means arranged to, in sequence, release said clamping means, activate said indexing means to index said saw, engage said clamping means and activate said grinding wheel mounting means to move said grinding wheel through said grinding position.

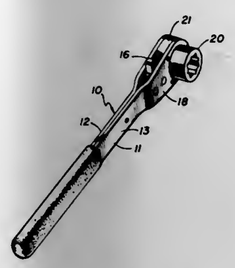
4,111,076
LIMITED ACCESS WIRE STRIPPER
James Rocha, 1108 Baywood, #152, Petaluma, Calif. 94952, and L. Dean Carter, 825 Gold Ridge Rd., Sebastopol, Calif. 95472
Filed Jul. 5, 1977, Ser. No. 813,154
Int. Cl.² H02G *1/12*
U.S. Cl. 81—9.5 A 8 Claims

1. Apparatus for removing insulation from an insulated wire, comprising:
an elongate frame member having opposed ends and an inclined surface intermediate the ends;
means on one end of the frame member for releasably clamping an end portion of the insulated wire;
means for cutting into and for separating the insulation on the end portion of the wire movable on the frame member from a first position adjacent the clamping means to a second position spaced from the clamping means, the clamping means being held out of clamping relationship with the end portion of the insulated wire when the cutting means is in said first position, the cutting means including a pair of relatively shiftable cutter blades and a magnet for attracting and releasably holding at least one of the cutter blades away from the other of the cutter blades when the cutter means is in the first position, the one of the blades being engageable with and movable along the inclined surface whereby movement of the



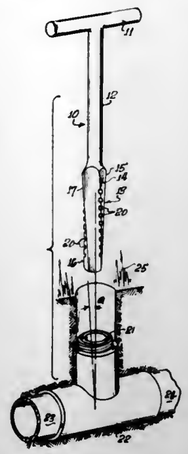
cutting means from the first position toward the second position causes the clamping means to engage and clamp the wire end portion and the cutter blades to be placed into insulation-cutting relationship;
means for biasing the cutting means toward said first position; and
means on the other end of the frame for moving the cutting means from the first position to the second position.

4,111,077
RATCHET WRENCH
Henry S. Cummings, and Richard P. Leone, both of Worcester, Mass., assignors to Lowell Corporation, Worcester, Mass.
Filed Feb. 2, 1977, Ser. No. 764,861
Int. Cl.² B25B *13/46*
U.S. Cl. 81—63 6 Claims



1. Ratchet apparatus, comprising:
(a) a main body consisting of two similar body elements formed of thin material, each element having an elongated flat panel portion connected to a centrally-apertured head portion which is offset laterally thereof, the handle portions of the two elements being fastened in face-to-face relationship with the head portion in spaced, parallel relationship,
(b) a generally annular sprocket formed with teeth on its outer periphery, rotatably carried in the apertures and held between the head portions,
(c) a generally semi-circular spacer element lying between the head portions at the outer parts thereof on the opposite sides of the apertures from the handle portions and surrounding a portion of the sprocket, said spacer element having an inwardly-directed protuberance at each end, the protuberances being adjacent the outer ends of the sprocket teeth, the spacer element being formed of a polymer and each protuberance being provided with a peg which engages an aperture in the head portion, the peg being in the form of a rod whose axis is perpendicular to the head portions,
(d) a one-piece pawl carried between the head portions in the part thereof adjacent the handle portions for rotation about an axis perpendicular to the head portions, the pawl having two spaced, parallel teeth extending toward the sprocket and alternately engaging the sprocket teeth in the extreme positions of rotation of the pawl, the pawl having two laterally-extending fingers, one finger emerging from between the head portions and each of the said extreme positions of the pawl, and
(e) an over-center spring element engaging a control portion of the pawl facing the handle portions.

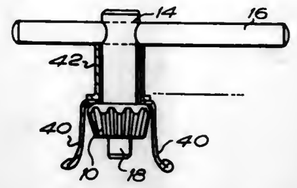
4,111,078
EXTRACTOR FOR PLASTIC RISERS
Paul Seamon, 6191 Anthony Ave., Garden Grove, Calif. 92645
Filed Apr. 4, 1977, Ser. No. 783,983
Int. Cl.² B25B *13/48*
U.S. Cl. 81—71 4 Claims



1. A device of the type for unscrewing plastic risers from threaded fittings such as a tee located in a sprinkler pipe, said device having a continuously tapered shank with four gripping edges, each gripping edge having a pointed ridge at its extremity, an extension rod affixed to said shank and handle means affixed to said extension rod, wherein the improvement comprises:
a plurality of serrations formed along the extremity of at least one of said gripping edges, said serrations having two sides in a plane perpendicular to the longitudinal axis of the device and one edge parallel to the longitudinal axis.

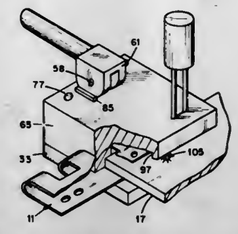
4,111,079
KEYS FOR DRILL CHUCKS
George Cecil Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Company, Limited, Sheffield, England
Filed May 18, 1977, Ser. No. 797,925
Claims priority, application United Kingdom, May 28, 1976, 22430/76
Int. Cl.² B25B *13/02*
U.S. Cl. 81—90 A 6 Claims

1. In a drill chuck key having a geared head part and a pilot part, an ejector means for disengaging the key from a drill chuck when axial pressure on the key is released, in which said ejector means is constituted by an element having a pair of resilient limbs arranged to bear against the plain portion of a drill chuck in which the pilot holes are formed, said limbs being splayed out as the key is engaged with the chuck and



acting to withdraw the complete key from engagement with the chuck when said key is released by the user.

4,111,080
STAPLE FASTENING TOOL
Winston C. Pray, Lombard, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.
Filed Feb. 4, 1977, Ser. No. 765,788
Int. Cl.² B23P *11/00*
U.S. Cl. 29—243.51 12 Claims



1. An applicator apparatus for securing hinge fasteners having alternating ribs to the end of a belt by staples, said applicator apparatus comprising an anvil means having an anvil surface for deflecting lower free ends of the staples to clinch the staples to the underside of the belt fasteners, a staple guide block means mounted over said anvil means with a portion thereof spaced from said anvil surface to admit a belt end therebetween, means mounting said staple guide block means for relative movement with respect to said anvil means between an open position admitting the belt end and a closed position for holding the belt for staple application, means for shifting said staple guide block means, means in said guide block defining vertically extending open shafts for receiving staples to be driven through said belt fasteners and the belt end, means for aligning the belt fasteners relative to said staple guide block means and to said anvil surfaces and including alternating slots to matingly receive alternating ribs in the hinge fastener, depending means on the outer edge of said guide block means for abutting the free ends of said belt fastener legs to hold said ribs of said fasteners in said slots during a stapling operation, and a resilient clamping means associated with said staple guide block means and said anvil means and engaging the belt end and applying a holding force thereto to resist shifting of the belt end during driving of the staples through the belt and the clinching of the staple ends.

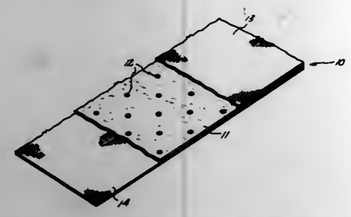
4,111,081
LOW NON-LINEARITY FACTOR SOUND ATTENUATING LAMINATE
Lonnie George Hilliard, Kent, and Juris Verzemnieks, Puyallup, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 2, 1976, Ser. No. 646,347
Int. Cl.² G10K *11/04*
U.S. Cl. 181—290 3 Claims

1. A low non-linearity sound absorbent material for attenuat-

ing sound energy propagating through a moving gaseous media, said sound absorbent material comprising:

a first and second web having a plurality of filaments interwoven with one another to form an open weave cloth-like material having openings defined between adjacent interwoven filaments thereof, said first and second webs being resin impregnated to encapsulate each of said interwoven filaments without filling said openings between said interwoven filaments; and,

a relatively thin filamentous mat of randomly oriented fibers



interposed between said first and second webs, said filamentous mat including a predetermined pattern of adhesive, said adhesive penetrating through said mat and into said openings between said interwoven filaments of said first and second webs in each region of said first and second webs that is immediately adjacent to said predetermined adhesive pattern of said filamentous mat without substantial penetration of regions of said first and second webs that are not immediately adjacent to said predetermined adhesive pattern, said resin being cured to permanently bond said mat to said first and second webs.

4,111,082

CENTER ASSEMBLY INCLUDING OIL RESERVOIR FOR MACHINE TOOLS

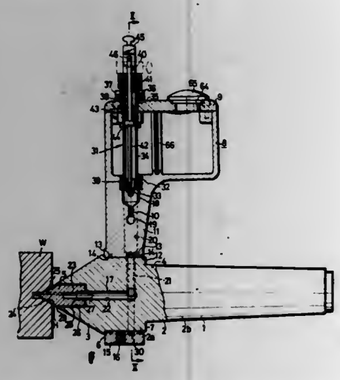
Kiyotaka Kohori, 40-4 3-chome, Aoyamadai, Suita, Osaka, Japan

Filed Jan. 21, 1977, Ser. No. 761,219

Claims priority, application Japan, Aug. 17, 1976, 51-98337; Aug. 23, 1976, 51-100826; Aug. 23, 1976, 51-113428[U]

Int. Cl.² B23B *23/02*; B23Q *11/12*

U.S. Cl. 82—33 R **3 Claims**



1. A center assembly for machine tools comprising in combination:

(a) a center (1) with a cylindrical body portion and a conical front end portion;

(b) an oil reservoir (8) with a cover and a bottom wall disposed above said center (1) having a leg (11) extending from its bottom wall and formed with a first bore (12) extending therethrough and with an oil passage (10) having a lower end opened to the bore (12) and an upper end opened in the inner surface of said bottom wall, said center (1) being rotatably coupled to said bore (12), a pump (52) to prevent clogging in said oil reservoir (8) including a vertical second bore (67) in said leg (11), a plunger (54) slidable in said vertical second bore (67) communicating with said oil passage (10), a spring (57) coupled to and upwardly biasing said plunger (54), and, a handle rod (53) integral with the plunger (54) extending outward through said reservoir cover;

(c) an oil channel (17) extending approximately along the geometric central line of said conical front end, said oil channel having one end opened to the outer peripheral surface of said cylindrical body portion in register with the lower end opening of said oil passage (10) and the outer end opened in said conical front end portion in the vicinity of its end; and,

(d) a downward biased needle valve coupled for opening and closing said oil passage upper end, said needle valve having:

a valve seat (32) fixedly fitted in the upper end opening of the oil passage (10), a guide tube (34) having a lower end bearing on the valve seat and an upper end projecting outward through said cover, an annular cap (41) secured to the upper end of the guide tube (34), a needle valve element (42) vertically slidably housed in the guide tube (34) and having an upper end extending outward from the guide tube through the annular cap, a spring (43) for downwardly biasing the needle valve element and a tiltable knob (45) pivoted to the upper end of the needle valve element to raise and lower the valve element.

4,111,083

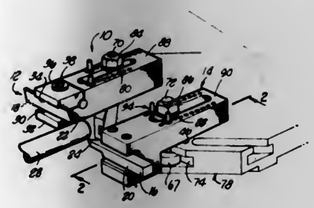
TOOL HOLDER

Walter L. Carter, 17156 Los Alimos, Granada Hills, Calif. 91344

Filed Aug. 8, 1977, Ser. No. 822,752

Int. Cl.² B23B *29/00*; B26D *1/12*

U.S. Cl. 82—36 A **13 Claims**



1. In a tool holder for a lathe, releasably mounted on a lathe turret for linear and pivotable motion about a vertical bolt received in the confines of a vertical bore of oblong cross-section traversing the tool holder, said bolt having one of its ends engageable in a groove formed in said lathe turret, said tool holder further comprising means for supporting a tool projecting outwardly therefrom to operate on a workpiece rotating about an axis, the improvement comprising

means for releasably positioning said tool holder with respect to said turret, said means including at least one pair of dowels, each dowel releasably inserted in, and depending from, one of a plurality of aligned, holes therefor vertically defined at predetermined locations through said tool holder, wherein the angular orientation of said holes marked by said inserted dowels, relative to the axis of rotation of said workpiece defines a predetermined alignment of said tool holder on said turret.

4,111,084

LUG END CUTTING APPARATUS FOR ROLL-LIKE PRODUCTS

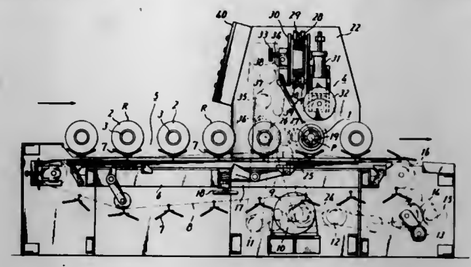
Yukimichi Matsumoto, and Minoru Ueyama, both of Hiraksta, Japan, assignors to Kabushiki Kaisha Fuji Tekkosho, Japan

Continuation-in-part of Ser. No. 643,142, Dec. 22, 1975. This application Mar. 11, 1977, Ser. No. 776,900

Claims priority, application Japan, Dec. 29, 1974, 50-921

Int. Cl.² B23B *7/14, 15/00*

U.S. Cl. 82—48 **12 Claims**



1. Apparatus for trimming both ends of a roll composed of sheet material wound on a hollow core, comprising conveying means for carrying a roll horizontally to a trimming position, supporting means for holding the roll horizontally and rotatably at said position including a pair of rotatable chucks disposed horizontally face-to-face and adapted to move toward and away from each other to engage or disengage with respective ends of the hollow core of the roll from both sides, means for moving said chucks toward one another to engage opposite ends of a roll and for moving said chucks away from one another to release a roll, and means for rotating at least one of said chucks to rotate said roll when the chucks are engaged with a roll, a pair of detecting means for detecting both ends of a roll held by said chucks, cutting means comprising a pair of disk cutters disposed coaxially with each other in parallel with the axis of said supporting means, each of said disk cutters having a flat face and a circumferentially acute-angled surface defining a cutting edge, said disk cutters being arranged with their flat faces facing each other and their circumferentially acute-angled edge surfaces facing outwardly, said disk cutters being capable of moving toward and away from each other and of lowering vertically so as to cut off from both ends of a roll held and rotated by said supporting means, means controlled by said detecting means for moving said disk cutters toward one another and means for lowering and raising said disk cutters, and control means including instruction circuits for controlling the sequence of operation of said apparatus to convey a roll to said trimming position by said conveying means, move said chucks toward one another to engage opposite ends of said roll, rotate at least one of said chucks while thus engaged to rotate said roll, operate said detecting means to detect both ends of said roll, move said disk cutters toward one another under control of said detecting means to position them with respect to the ends of said roll, lower said disk cutters to trim both ends of said roll as it is rotated by said chucks, raise said disk cutters, and move said chucks away from one another to release the trimmed roll for removal by said conveying means.

4,111,085

COMPOUND CURVATURE CUTTING MACHINE

George William Johnson, Smyrna, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed May 10, 1977, Ser. No. 781,694

Int. Cl.² B26D *3/10*; B23D *53/08*

U.S. Cl. 83—1 **6 Claims**

1. A multi-axis cutting machine for cutting compound curvature surface on a workpiece comprising:

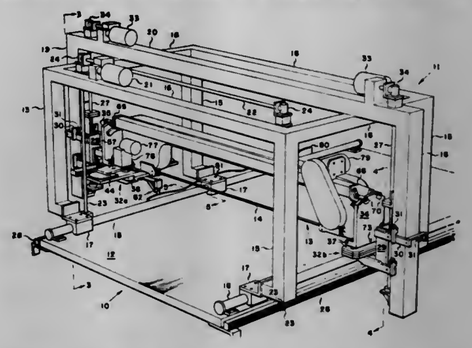
a machine bed means adapted to receive and retain a workpiece in secure fashion thereon and having a guiderail means extending along two opposite side edges thereof;

a gantry means movably mounted on said guiderail means whereby a relative longitudinal movement between the gantry means and the machine bed means may be accomplished to constitute movement in an X-axis;

a cutting means assembly including a straight-line workpiece cutting means member:

means mounting the cutting means assembly to the gantry means;

a first means included in said mounting means whereby a relative vertical movement between the cutting means assembly and the machine bed means may be accomplished to constitute movement in a Y-axis for the cutting means member relative to said machine bed means;



and a second means included in said mounting means whereby a relative horizontal movement between one end of the cutting means assembly and the machine bed means may be accomplished to constitute an Angle-*b* pivotal movement about the Y-axis, each said first and second means in said mounting means and said movable gantry means independently and variably operable relative to each of the others whereby the surface generated on the workpiece in a single traversement of the X-axis can consist of a compound curvature of any variable combination of straight lines relative to the X-, Y- and Angle-*b* axes.

4,111,086

ALIGNING AND STACKING ARRANGEMENT

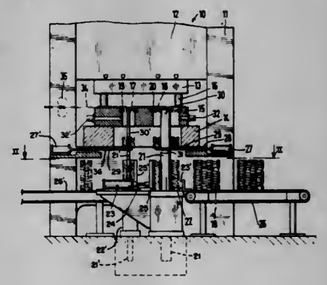
Karl Dangelmaier, Göppingen-Holzhiem, Fed. Rep. of Germany, assignor to L. Schuler GmbH, Fed. Rep. of Germany

Filed Mar. 30, 1977, Ser. No. 782,744

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630867

Int. Cl.² B21D *43/20*

U.S. Cl. 83—90 **28 Claims**



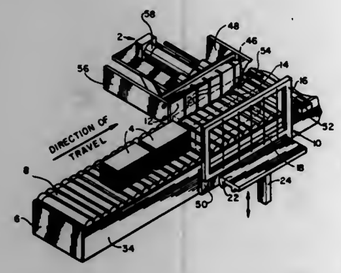
1. An alignment and stacking arrangement for stampings manufactured in a continuous stamping operation by a stamping machine having a punch and an associated punch matrix, the alignment and stacking arrangement comprising: at least

one stacking channel means arranged at the punch matrix for receiving stampings produced by the stamping machine during a continuous stamping operation, means for forming an intermediate stack of stampings upon a produced stack of stampings reaching a predetermined height, at least one mandrel means arranged within said at least one stacking channel means for receiving an intermediate stack of stampings during the formation of an intermediate stack of stampings, means arranged on the stamping machine at a position below and independent of the punch matrix for holding said mandrel means within said at least one stacking channel means during the formation of an intermediate stack of stampings, and means for conveying the stack of stampings having the predetermined height from the stamping machine during the formation of intermediate stack of stampings.

4,111,087
CHEESE PACKAGING APPARATUS

Richard R. Pankratz, and Larry R. Kegg, both of 1230 Wright's La., West Chester, Pa. 19380

Filed May 27, 1977, Ser. No. 801,316
Int. Cl.² B26D *5/20*
U.S. Cl. 83—210 **4 Claims**



1. A cheese packaging apparatus for handling loaves of cheese, while maintaining the structural integrity of the loaves which comprises:

conveyor means for transporting the cheese, having a plurality of rotatable driven rollers each having a longitudinal axis upon which loaves of cheese are placed, which are translationally stationary, and wherein said rollers include first means for permitting a loaf of cheese to be stopped from moving along said conveyor if it impacts a barrier while permitting a loaf of cheese not impacting a barrier to be transported;

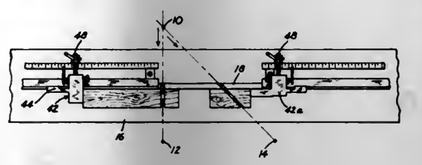
a cheese cutter adapted to receive loaves of cheese from said conveyor including, an intake position wherein said conveyor provides support for a loaf of cheese when it is located in said intake position, a vertical harp including spaced wires for cutting said loaf, and means for laterally moving said loaf from said rollers in a direction parallel to said longitudinal axis of said rollers through said harp thereby cutting the loaf wherein said laterally moving means includes a hydraulically actuated ram which is perpendicular to, and moves in a direction parallel to the longitudinal axis of said rollers, said ram having a scalloped lower portion so that when said ram is properly positioned the ram extends below the upper surface of said rollers and the bottom of the loaf, said ram being positioned so that a gap between said rollers and said scalloped portion of said ram is of a minimal magnitude, thereby providing maximum surface contact between the side of said loaf and said ram thus minimizing the likelyhood of impairment of the structural integrity of the loaf of cheese; and

second means for receiving the loaf of cheese after it has been cut.

4,111,088
CUT-OFF GAUGE FOR SAW TABLES

Lynn J. Ziegelmeyer, 113 Cottage, #2A, P.O. Box 1112, Medford, Oreg. 97501

Filed Jun. 10, 1974, Ser. No. 477,604
Int. Cl.² B27B *27/06*
U.S. Cl. 83—471.2 **2 Claims**



1. A directly readable length indicating, sawing structure comprising the combination with a work supporting saw table and a saw adapted for travel over the table, of

(a) a metallic fence member fixedly secured to said table in non-conflicting relation to said saw and having a fixed upstanding work aligning face,

(b) a work length indicating scale affixed to the table and extending in the same direction as the work aligning face of the fence member,

(c) a work-piece stop adjustable along said fence member and including a work-piece-end-engaging face disposed at right angles to the work aligning face of the fence member,

(d) means for fixing the stop in any desired position along the fence member,

(e) a pointer mounted directly on the work-piece stop and cooperative with the scale,

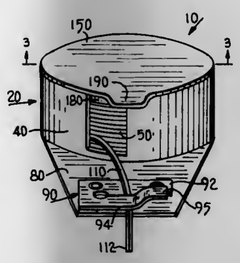
(f) means for finely adjusting the pointer relative to the work-piece-end-engaging face of the work-piece stop on which the pointer is mounted, the construction and arrangement being such that the fine precision of cutting length indicated on the fixed scale by the pointer can be established and maintained for varying lengths throughout an available range of adjustment of the work-piece stop, and the pointer carried thereby, and

(g) the fence consisting of a plurality of like sections mounted end to end, the sections having alignable hollow portions of identical cross-section in which a block of appropriate shape may be fitted, and correspondingly located perforated ears at their extremities through which the sections may be clamped to one another.

4,111,089
REFILLABLE CUTTING DISPENSER

Elio Montaruli, Via Salaria 1302, 00138 Rome, Italy

Filed Dec. 9, 1976, Ser. No. 750,286
Int. Cl.² B26D *5/10*
U.S. Cl. 83—542 **8 Claims**



1. A refillable dispenser comprising

a cup-shaped member including a base, a cylindrical side wall having an opening therein, and a closure cap,

an extension of said base extending beyond said cylindrical wall, generally in alignment with said opening in said cylindrical side wall,

a central vertical post secured to said base inside said cup-shaped member,

a spool carrying a length of wire, or the like, rotatably mounted on said post within said cup-shaped member, the leading end of said wire extending out of said cup-shaped member from said spool through said opening in said side wall,

said closure cap being removably seated on the upper rim of said side wall and forming a tight fit therewith, and

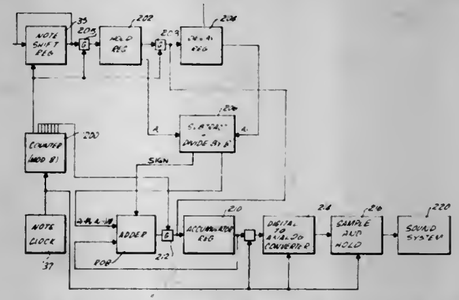
a cutting mechanism secured to the top surface of said extension of said base member and generally aligned with said opening in said side wall so that said wire can be fed directly thereto and a length can be cut therefrom, said cutter comprising a first plate and a second plate disposed on the top surface of said extension generally parallel to each other with a small space between them, said plates being disposed generally transverse to the path of said wire from said spool and out of said opening to said cutting mechanism,

said first plate being secured flat to the top surface of said extension and said second plate being generally rectangular and secured at one end to said top surface of said extension whereby said second plate can be moved up and down with respect to said first plate to cut said wire which is between them.

4,111,090
NOISE REDUCTION CIRCUIT FOR A DIGITAL TONE GENERATOR

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Oct. 18, 1976, Ser. No. 733,141
Int. Cl.² G10F *1/00*
U.S. Cl. 84—1.01 **4 Claims**



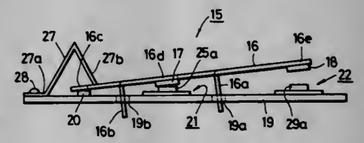
1. Apparatus for reducing audio noise in the musical output of a digital tone synthesizer wherein a musical tone is generated in response to a series of digital data words defining the amplitudes of a succession of equally spaced sample points on the audio signal of the tone being generated, by converting said data words to an analog voltage whose amplitude is controlled by said data and is changed in steps, comprising:

first and second register means for storing first and second ones of said data words, means transferring said series of data words successively from the first register means to the second register means at any predetermined rate, subtracting means coupled to the first and second register means including means for generating an output signal proportional to the difference in value of the digital words in the first and second register means, means for converting each data word in succession as transferred to the second register means to a voltage proportional in amplitude to the value of said data word, and integrating means responsive to the output signal from the subtracting means for changing said voltage between successive conversions of the data words at a rate determined by said signal from the subtracting means.

4,111,091
TOUCH RESPONSE SENSOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Yasuhiro Hinago, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 25, 1977, Ser. No. 762,559
Claims priority, application Japan, Jan. 30, 1976, 51-9356[U]; Apr. 19, 1976, 51-48948[U]; May 6, 1976, 51-56733[U]; May 6, 1976, 51-56734[U]
Int. Cl.² G10H *1/00*; G10C *3/12*
U.S. Cl. 84—1.01 **7 Claims**



1. A touch response sensor for an electronic musical instrument having a plurality of keys, comprising:

first and second switches located with a predetermined space therebetween on a base plate, each of said first and second switches including a resilient member made of elastomeric material with a movable contact on a lower surface thereof and at least one stationary contact located under said movable contact;

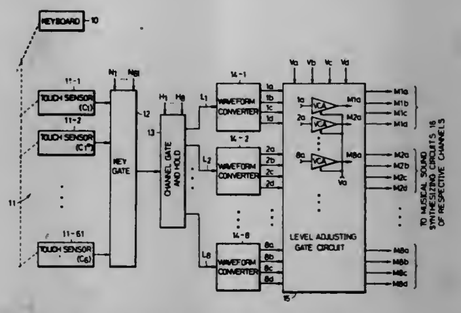
a common drive piece provided on said base plate to oppose an upper surface of said resilient member in each of said first and second switches and being rotatable on said base plate in accordance with depression of a key; and

a spring action on said drive piece to urge the drive piece to an initial position thereof where it is closer to said first switch than to said second switch, said first switch and said second switch being successively operated by said drive piece upon rotation of the drive piece against the force of said spring when the key is depressed.

4,111,092
ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Feb. 28, 1977, Ser. No. 772,693
Claims priority, application Japan, Mar. 4, 1976, 51-25556[U]
Int. Cl.² G10H *1/02*
U.S. Cl. 84—1.27 **9 Claims**



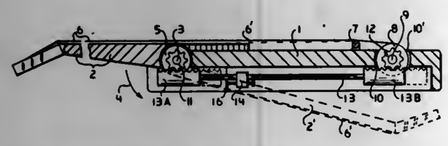
1. An electronic musical instrument comprising:

(a) a keyboard including a plurality of keys, each key corresponding to a respective musical tone;

(b) means for detecting a characteristic of the finger touch

applied to each key upon depression thereof and producing a first signal corresponding to the depressed key;
(c) waveform converting means having only a single control input in use, said waveform converting means being coupled at said single control input to said detecting means and being responsive to said first signal for producing a plurality of second signals having respectively different waveforms;
(d) level adjusting means connected to said waveform converting means for receiving said second signals and adjusting their respective amplitudes to produce respective level-adjusted second signals; and
(e) means responsive to said level-adjusted second signals for individually controlling at least two of a plurality of musical tone elements which determine the tone pitch, color and volume of a musical tone corresponding to the depressed key.

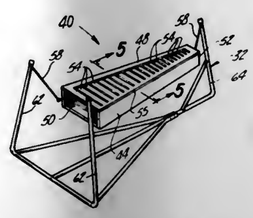
4,111,093
STRING INSTRUMENT, IN PARTICULAR A GUITAR WITH FOLDABLE NECK PORTION
Roger Field, Cincinnati-Str. 41/B1, Munich 90, and Thomas Steger, Kaiser-Str. 34, Munich 40, both of Fed. Rep. of Germany (8000)
Filed Apr. 28, 1977, Ser. No. 792,076
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 7613617[U]
Int. Cl.² G10D *3/00, 1/08*
U.S. Cl. 84—267 **23 Claims**



1. A string instrument, such as a guitar, comprising:
an instrument body;
a neck portion, pivotably coupled to said body by means of a joint, to permit pivotal movement of said neck portion between an operative and a folded position;
a string mount moveably mounted on said body, at least one string one end portion of which is secured to said string mount and the other end portion of which is secured to said neck portion; and
drive means for moving said string mount, which is coupled to said string mount, and said joint, said drive means moving said string mount in direct response to pivotal movement of said neck portion about said joint, so as to maintain the original length and tension of said at least one string, when said neck portion is moved between said operative and folded positions thereof.

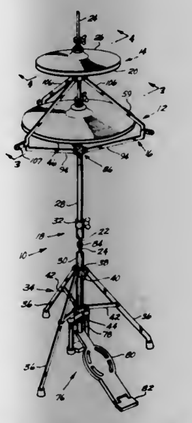
4,111,094
RHYTHM INSTRUMENT
Philip R. Broser, 6349 Emerald Lake Dr., Troy, Mich. 48084
Filed Apr. 29, 1977, Ser. No. 792,309
Int. Cl.² G10D *13/02, 13/08*
U.S. Cl. 84—402 **9 Claims**

1. A rhythm instrument comprising; a body member comprising an elongated structure having walls converging from one end to the other of said body member, said body member forming a large end portion and a small end portion, said large end portion being open to the interior of said body member, a



flat playing surface formed at the top of said body member and adapted to be struck to produce a sound.

4,111,095
PERCUSSION INSTRUMENT MOUNTING APPARATUS
Steven R. Simons, 223 Golden Cir., Newport Beach, Calif. 92660
Filed Nov. 2, 1977, Ser. No. 847,731
Int. Cl.² G10D *13/00, 13/06*
U.S. Cl. 84—422 R **11 Claims**



1. For use with a stand for supporting and actuating a first percussion instrument, which stand includes an upstanding tube assembly, a pull rod partially housed within and extending above such tube assembly, and means for reciprocating such pull rod lengthwise within such tube assembly; an apparatus for mounting a second percussion instrument on the stand and enabling such two percussion instruments to either be played simultaneously or individually, such second percussion instrument support apparatus comprising:
(a) an extension rod which is detachably connectable to the pull rod to extend the length of the pull rod, a portion of the second percussion instrument being attachable to said extended pull rod; and
(b) means connectable to the stand for supporting another portion of the second percussion instrument both stationary in respect to the stand and at an elevation above the first percussion instrument.

4,111,096
FASTENING DEVICE
Ulf Kenneth Folke Fasth, Harplinge, Sweden, assignor to AB Fast-Devel, Harplinge, Sweden
Filed Apr. 17, 1975, Ser. No. 569,083
Claims priority, application Sweden, Apr. 25, 1974, 74056003
Int. Cl.² F16B *15/00*
U.S. Cl. 85—11 **4 Claims**

1. A fastening device for fastening a layer of pierceable material, in particular an insulation material, on a support

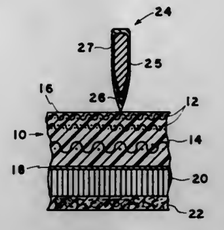
surface, comprising a single elongated and substantially thin strip of a relatively rigid but bendable material, said strip having a substantially constant width over its length and having at least one longitudinal reinforcement element extending over the length of the strip and imparting an increased rigidity against bending to the strip, a first relatively smaller portion of the strip adjacent one end thereof for being secured flush to said support surface, a first transverse bending line along which the strip has a reduced resistance to bending, said first transverse bending line being located between said first portion and the remaining portion of the strip, a second transverse bending line along which the strip has a reduced resistance to bending, said second transverse bending line being located along the strip between said first bending line and the opposite end of the strip spaced from said first bending line by a distance corresponding to the thickness of the layer to be fastened on the support surface, said first and second bending lines being comprised of interruptions in said longitudinal reinforcement element; a third transverse bending line along which the strip



has reduced resistance to bending and located between said second bending line and said opposite end of the strip and spaced from said second bending line, said third transverse bending line being comprised of additional interruptions in said reinforcement element, the end surfaces of said reinforcement element at said interruptions at said bending lines being inclined at an angle of substantially 45° to the plane of the strip so that the end surfaces of the element facing each other at opposite sides of the interruption in the element at a bending line bear against each other and prevent continued bending when the strip has been bent through substantially 90° at said bending line, self-locking retaining means at said first bending line for locking the strip in a light-angled position at said bending line, a portion of the strip adjacent said first bending line on the side thereof opposite to said first portion of the strip being slightly curved in the opposite direction to the direction of the intended bending of the strip at said first bending line, said opposite end of the strip being cut off at an angle to a sharp point.

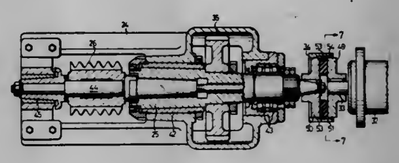
4,111,097
ARMOR
George Lasker, Claremont, Calif., assignor to General Dynamics Corporation, Pomona, Calif.
Filed Oct. 29, 1974, Ser. No. 518,688
Int. Cl.² F41H *5/04*
U.S. Cl. 89—36 A **5 Claims**

1. A laminated armor for protection against armor piercing projectiles comprising:
means including at least one steel wire mesh to separate the projectile core from the remainder of the projectile;
means including a tungsten wire mesh to fracture the projectile core; and



means to absorb the remaining energy of the fractured projectile core.

4,111,098
CARBIDE HOBBING MACHINE
Masato Ainoura, 1253 Eguchi, Kita-Shigeyasu-cho, Miyaki-gun, Saga-ken, Japan
Filed May 23, 1977, Ser. No. 799,679
Claims priority, application Japan, Mar. 8, 1977, 52-25133
Int. Cl.² B23F *5/22*
U.S. Cl. 90—4 **3 Claims**



1. A carbide hobbing machine comprising:
(a) a tool support member (24) operably mounted on a machine frame and including a hob support shaft (25) for supporting a carbide hob (26);
(b) a work piece support member (28) operably mounted on the machine frame to support a work piece (31);
(c) a hydraulic motor (32) mounted on the tool support member adjacent to the carbide hob and including a motor shaft (33) extending on the same axial line as that of the hob support shaft;
(d) a coupling (34) disposed between the motor shaft (33) and the hob support shaft (25) to directly drive the carbide hob (26) and to absorb shocks and vibrations imposed on the carbide hob during the operation of hobbing the work piece, said coupling including:
(e) a drive coupling disk (49) fixed to the motor shaft and having a plurality of drive projections (49*a*) on its side face;
(f) a driven coupling disk (50) fixed to the hob support shaft and having a plurality of driven projections (50*a*) on its side face so that the drive projections and driven projections are arranged alternately;
(g) a cylindrical coupling cover (51) disposed on the outside of the two coupling disks to form a plurality of substantially delta-shaped container chambers (52) in cooperation with the drive and driven projections;
(h) a delta-shaped resilient member contained in each of the container chambers in contact with the drive and driven projections at both side faces; and,
(i) a clearance (54) defined in said coupling (34) between the peripheral face of each resilient member (53) and the coupling cover (51) sized to permit the resilient members to be elastically deformed outwardly so as to allow torsion of the hob support shaft when a cutting edge of the hob bites at the work piece and for preventing the deformation of resilient members beyond a certain level so as to impede the torsion of the hob support shaft with advance of the hobbing operation, whereby the resilient member is

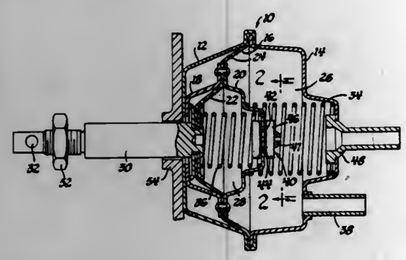
slowly restored to the original state while leaving a residual strain sufficient to gradually eliminate the torsion on the hob support shaft at the time of completion of the hobbing operation by the cutting edge of the hob.

4,111,099

TWO-STAGE VACUUM MOTOR

Earl R. Fischer, Rochester, and John A. Gural, Pittsford, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1977, Ser. No. 785,779
Int. Cl.² F15B *11/18*; F01B *7/20*
U.S. Cl. 91—173 **2 Claims**



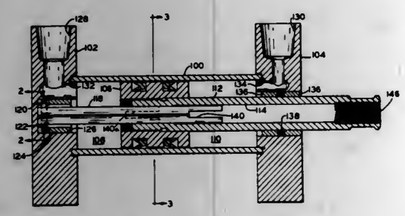
1. A two-stage vacuum motor comprising an outer housing, outer diaphragm means secured to said outer housing to form a primary chamber therebetween, an inner housing carried by said outer diaphragm means, inner diaphragm means secured to said inner housing to form a secondary chamber therebetween, a stem carried by said inner diaphragm means, primary and secondary springs respectively biasing said outer and inner diaphragm means away from said outer and inner housings, said inner housing having an opening from said secondary chamber to said primary chamber, and a valve biased to obstruct said opening and having an extension projecting toward said outer housing, said outer housing having a primary fitting for applying a vacuum signal to said primary chamber effective to retract said outer diaphragm means together with said inner housing and said stem against the bias of said primary spring, thereby engaging said valve extension with said outer housing to displace said valve from said opening, said outer housing having a secondary fitting which registers with said opening when said valve extension is engaged with said outer housing for applying a vacuum signal to said secondary chamber effective to further retract said inner diaphragm means and said stem against the bias of said secondary spring.

4,111,100

NON-ROTATABLE FLUID POWERED NOZZLE AND VALVE COMBINATION

Peter W. Boyer, Fort Wayne, Ind., assignor to PHD, Inc., Fort Wayne, Ind.

Filed Mar. 7, 1977, Ser. No. 774,774
Int. Cl.² F15B *15/22*; F01B *19/00*
U.S. Cl. 91—401 **5 Claims**



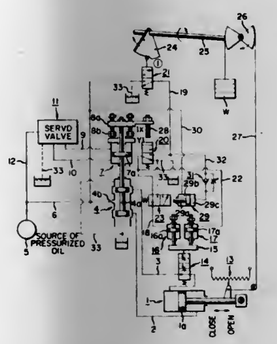
1. A non-rotatable fluid powered nozzle and valve combination comprising a cylinder having a piston reciprocally received therein for movement between two reciprocated positions and which define two separated fluid chambers therewith, a piston rod secured to said piston slidably received through one end of said cylinder, two ports in said cylinder communicating with said two chambers, respectively, said piston and piston rod conjointly having a longitudinally extending passage therethrough, a valve pin in one of said chambers slidably received in sealing relation by a portion of said passage, means mounting said valve pin in the other end of said cylinder for limited radial and tilting movement with respect to said cylinder, said mounting means including a retaining element secured to one end of said pin to project radially therefrom and disposed in a recess which is fixed relative to said cylinder, said recess having a clearance with respect to said element radially of said cylinder, whereby said valve pin is self-aligning with respect to the receiving portion of said passage, valve means including said valve pin interposed between said one chamber and said passage which for one reciprocated position of said piston in said cylinder severs communication between said one chamber and said passage and for a second reciprocated position opens communication therebetween, whereby pressure fluid admitted to said one chamber acts against said piston when the latter is in said first position and flows through said passage when said piston is in said second position, said valve pin and said passage portion in cross-section being complementary and other than circular whereby said piston and piston rod are held against rotation relative to said valve pin; said valve means including an opening in the end portion of said valve pin received by said passage, said opening providing communication between said one chamber and said passage when said piston is in its second position while said valve pin remains engaged with said passage portion, said opening being closed from said one chamber when said piston is in its first position.

4,111,101

APPARATUS FOR CLOSING GUIDE VANES OF A HYDRAULIC MACHINE

Yasuaki Obiya, Kawasaki, and Saburoo Ikeda, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 25, 1977, Ser. No. 781,427
Claims priority, application Japan, Mar. 29, 1976, 51-34997
Int. Cl.² F15B *15/22*
U.S. Cl. 91—405 **6 Claims**



1. Apparatus for closing guide vanes of a hydraulic machine comprising

a servo-motor for operating the guide vanes,

a distributing valve responsive to the variation in the speed of said hydraulic machine for supplying and discharging operating fluid to and from said servo-motor,

a throttle transfer valve for stepwisely varying the flow of the operating fluid discharged from said servo-motor thereby stepwisely varying the closing speed of said guide vanes successively through first, second and third closing speeds,

a first fluid actuator for operating said throttle transfer valve to a position for setting said second closing speed.

a second fluid actuator for operating said throttle transfer valve to a position for setting said third closing speed,

conduit means for supplying operating fluid to said first and second fluid actuators from a source of operating fluid,

a first transfer valve for selectively connecting said conduit means to said source,

means responsive to the closing operation of said servo-motor for switching said first transfer valve to an operating position for connecting said conduit means to said source when said servo-motor moves over a first closing stroke,

a second transfer valve connected in series with a conduit for supplying and discharging said operating fluid to and from said first fluid actuator, and

a time delay means connected to said second transfer valve for discharging the operating fluid from said first fluid actuator when said servo-motor completes a second closing stroke,

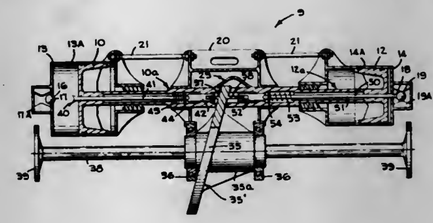
thereby stepwisely closing said guide vanes at different closing speeds.

4,111,102

STEAM ENGINE IN WHICH THE CYLINDER INLET VALVES ARE ACTUATED BY THE OPERATION OF THE POWER CONVERSION MEANS

Marion K. Harris, P.O. Box 1591, Atascadero, Calif. 93422

Filed Feb. 4, 1977, Ser. No. 765,676
Int. Cl.² F01B *3/10*
U.S. Cl. 91—480 **10 Claims**



1. A steam engine comprising:

(a) a source of steam under pressure;

(b) a first cylinder forming a first chamber and formed with an inlet port communicating with said first chamber and an exhaust port communicating with said first chamber;

(c) a first inlet valve communicating with said source of steam and said first chamber through said inlet port for controlling the flow of steam in said first chamber;

(d) a first piston disposed within said first chamber of said first cylinder, said first piston being reciprocated within said first chamber of said first cylinder by the flow of steam in said first chamber;

(e) power conversion means operatively responsive to the reciprocating movement of said first piston for converting the rectilinear movement of said first piston to a rotary motion, said power conversion means comprising a swash plate rotated by the reciprocating movement of said first piston; and

(f) first valve-actuating means operatively responsive to the movement of said power conversion means and arranged to engage said first inlet valve for controlling the opening and closing of said first inlet valve,

(g) said swash plate having a first cam mounted thereon, said first valve actuating means being arranged to engage said first cam to be actuated thereby for controlling the opening and closing of said first inlet valve,

(h) said first valve-actuating means comprising a first push rod slidably journalled for movement parallel to the path of travel of said first piston, said first push rod at one end portion thereof having a first cam follower for engaging said first cam and at another end portion thereof said first push rod being adapted to engage said first inlet valve for controlling the opening and closing of said first inlet valve in response to the rotation of said swash plate,

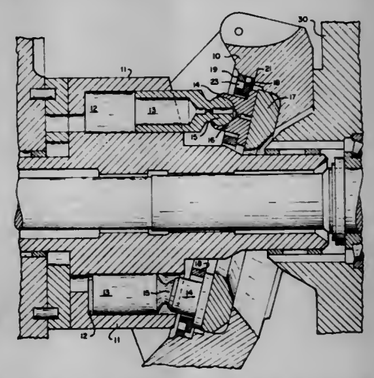
(i) said first piston being formed with a first tubular extension extending toward said swash plate and said first push rod being disposed in said first tubular extension of said first piston, whereby said first push rod moves with said first piston during a portion of its reciprocating movement and said first push rod moves relative to said first piston under the urgency of said first cam of said swash plate to actuate said first inlet valve.

4,111,103

THRUST RINGS FOR SWASH PLATE PUMPS AND MOTORS

David L. Mauch, Bordman, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Feb. 14, 1977, Ser. No. 768,393
Int. Cl.² F01B *13/04*
U.S. Cl. 92—57 **5 Claims**



1. In a swash plate pump or motor having a swash plate, a cylinder block and cylinders rotating relatively to said swash plate, pistons in said cylinders moving generally transversely to the swash plate, drive slippers operatively connected to said pistons and a slipper plate fixed to the swash plate against which the slippers bear, the improvement comprising a swivel plate having spaced openings for said slippers on the opposite side of said slippers from the slipper plate, a positive hold down ring connected to the swash plate and bearing on said swivel plate to maintain it at a fixed distance from the slipper plate whereby a fixed running clearance is maintained between the slipper and the slipper plate, said hold down ring having a series of successive controlled wedge angles on the face of the hold down ring adjacent the swivel plate and having oil feed means through the hold down ring and connected to each wedge angle whereby to create a hydrodynamic force holding the swivel plate and hold down ring apart.

4,111,104

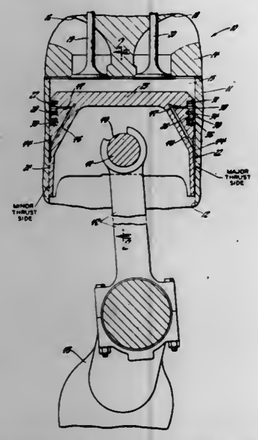
ENGINE WITH LOW FRICTION PISTON

Ellard D. Davison, Jr., Grosse Pointe Farms, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1977, Ser. No. 783,052
Int. Cl.² F01B *31/00*
U.S. Cl. 92—127 **8 Claims**

1. An engine having at least one cylinder closed at one end and having means for admitting working fluid to and discharging working fluid from the closed end, a piston having a side wall and a closed end with a pair of axially spaced peripheral ring grooves between the closed end and the side wall, said piston being reciprocably received in the cylinder with the

closed ends of the piston and cylinder opposing one another to define a variable volume working chamber in which a working fluid may be pressurized, said piston being connected with an output shaft through means converting a portion of the working gas pressures into side thrust forces, the piston side wall being in closely spaced relation to and slidingly engagable with the cylinder to transfer the side thrust forces thereto, a first compression piston ring in the ring groove closest the piston closed end and a second compression piston ring in the other ring groove, said rings engaging the cylinder to imperfectly seal the working chamber and limit leakage of the working fluid toward the piston skirt, said piston rings, piston and



cylinder together defining an annular clearance space between the rings which normally contains fluid at a pressure intermediate the pressures in the working chamber and at the piston skirt, at least one fluid bearing recess in the side wall and extending partially thereabout, said recess facing the cylinder at a portion of side thrust transfer thereto, and passage means in the piston passing inwardly of the second piston ring and exclusively communicating the annular clearance space with the bearing recess whereby pressurized fluid is conducted from the clearance space to the recess to provide a separating force tending to offset the thrust loads acting between the piston and cylinder, thus reducing sliding friction at the piston-cylinder interface.

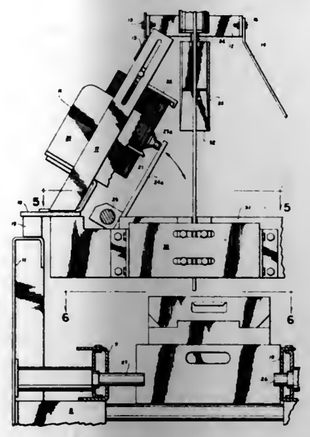
4,111,105

MACHINE AND METHOD FOR PLACING AN INSERT INTO AN ARTICLE CARRIER CELL

Will Lester Culpepper, Tucker, and Jack Seabron Cooley, Atlanta, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 28, 1977, Ser. No. 791,790
Int. Cl.² B31B *1/44*
U.S. Cl. 93—37 SP **11 Claims**

1. A machine for placing an insert into an article carrier cell, said insert being constructed of semirigid sheet material and comprising a main panel and a bottom panel foldably joined by a fold line to said main panel and being substantially coplanar when in blank form, said machine comprising a frame, a vertically reciprocable insertion blade mounted on said frame and engageable with said insert in general proximity to said fold line between said main panel and said bottom panel and operable in conjunction with a pair of fixed folding elements mounted in said frame to fold both said bottom panel and said main panel upwardly from said fold line and toward each other and simultaneously to lower said insert into said cell, and the lower edge of said insertion blade being approximately the same length as said fold line between said main panel and said



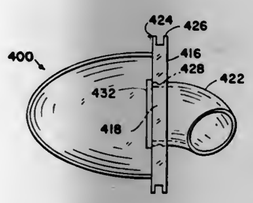
bottom panel and being substantially coincidental therewith during folding and lowering of said insert.

4,111,106

AUTOMOBILE VENTILATION SYSTEM

William M. Burns, 10306A Malcolm Cir., Cockeysville, Md. 21030

Filed Apr. 18, 1977, Ser. No. 788,354
Int. Cl.² B60J *1/20*
U.S. Cl. 98—2.13 **7 Claims**



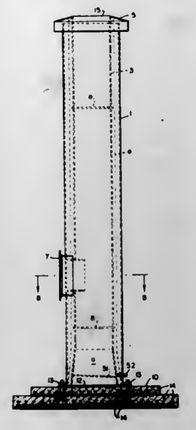
1. In an automobile ventilation system having a plate for installation and retention in the space above an automobile roll-up window and a seal thereabove, and venting means in said plate, the plate having upper and lower and front and rear edges and an outer face and an inner face relative to said an automobile when installed therein, the improvement comprising: the plate having an aperture centrally in the plate, an air scoop fixed in forward direction on the outer face at the aperture, a duct at the inner face having communication with the air scoop through the aperture for receiving air flow from the air scoop and expelling same in an automobile interior, duct orienting means on the plate and having intake in fixed alignment with the air scoop, for adjustably ducting the air in a selected direction in an automobile interior, means for sliding the plate in a forward and rearward direction including the plate having a length proportionally short relative to said a space above an automobile window for varying air flow expelled through the duct, means adapting the automobile ventiliation system for installation on either the left side or the right side of said an automobile, including: said forward and rearward edges of the plate being substantially upright, the lower edge of the plate and the upper edge of the plate being generally parallel and having each a double flange structure projecting therefrom, and the spacing between the flanges of each double flange structure being proportioned for receiving and retaining the edge of said an automobile roll-up window therebetween.

4,111,107

DOUBLE WALLED SMOKESTACK APPARATUS

Donald J. Engleke, 31 Hewlett Rd., Towaco, N.J. 07082

Filed Jan. 27, 1977, Ser. No. 762,993
Int. Cl.² F23L *17/02*
U.S. Cl. 98—60 **26 Claims**



1. In double-walled smokestack apparatus including inner shell means for receiving flue gases to be vented to the environment, outer shell means disposed about said inner shell means, said outer shell means having a cross-sectional extent which exceeds the cross-sectional extent of said inner shell to form a gap therebetween and insulating means disposed intermediate said inner shell and outer shell means, the improvement comprising:

means interconnecting said inner and outer shell means at a location of substantially zero moment of said inner shell means to base mounting structure;

breeching means for introducing flue gases through said outer shell means into said inner shell means for venting to said environment, said breeching means including first expansion joint means interconnecting said inner and outer shell means in such manner that substantially no load transference occurs therebetween; and

top cap means interconnecting said inner and outer shell means at the top of said smokestack apparatus, said top cap means including second expansion joint means permitting displacement between said inner and outer shell means with substantially no load transfer taking place therebetween, said inner and outer shell means each being independent load bearing members having substantially no load transfer taking place therebetween.

4,111,108

PERCOLATOR

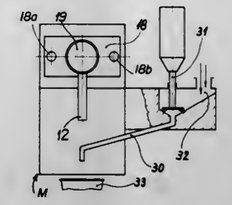
Louis Moser, 10, Le Sent, 2735 Malleray, Switzerland

Filed Apr. 11, 1977, Ser. No. 786,399
Claims priority, application Switzerland, Apr. 13, 1976, 4657/76; Mar. 17, 1977, 3322/77; Mar. 17, 1977, 3323/77
Int. Cl.² A47J *31/30*
U.S. Cl. 99—289 R **8 Claims**

1. A percolator, comprising;

a unitary cylinder, having, axially aligned and mutually spaced, a pair of coffee compressing pistons normally positioned in the cylinder to jointly define a chamber for coffee grounds, the pair comprising a filter piston which has and supports a coffee filter, and a grounds discharging piston for ultimately discharging the coffee grounds from the chamber;

hydraulic drive pistons disposed in the unitary cylinder, one for each coffee compressing piston, for driving those pistons separately to vary their spacing and position so as to first receive loose coffee grounds therebetween and thereafter to compress them; and



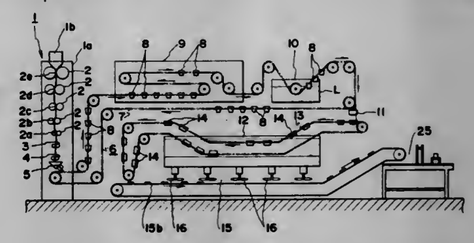
means defining an open end of the cylinder adjacent the filter piston and for entirely removing that piston and the compressed coffee grounds from the cylinder.

4,111,109

WHEAT FLOUR PRODUCT MANUFACTURING EQUIPMENT

Hatuo Sakurazawa, 15 banchi, Sinozuka, Fujioka-shi, Gumna-ken, Japan

Filed Aug. 19, 1976, Ser. No. 715,684
Claims priority, application Japan, Aug. 21, 1975, 50-115729[U]
Int. Cl.² A23L *3/00; A47J 37/12*
U.S. Cl. 99—353 **6 Claims**



1. A wheat flour product manufacturing equipment comprising, in combination:

(a) a vertical rolling apparatus comprising a plurality of sets of vertically arranged rolling rollers, each of the sets having a rolling clearance between the rollers thereof, the rolling rollers of any one set having the rolling clearance thereof offset in the horizontal direction from the rolling clearance of the set of rolling rollers immediately thereabove.

(b) a gelatinizing apparatus,

(c) a seasoning apparatus,

(d) a frying apparatus,

(e) a cooling apparatus,

(f) a first endless conveyor having a plurality of trunnion-mounted buckets disposed thereon, the first conveyor transported product received from the rolling apparatus to the gelatinizing apparatus and the seasoning apparatus,

(g) a second endless conveyor for transporting product from the seasoning apparatus to the frying apparatus, the second endless conveyor having buckets affixed thereonto in which product is received from the first conveyor, each bucket having a lid,

(h) means for opening each lid as it receives product from the buckets of the first conveyor, the means closing the lids as the buckets travel through the frying apparatus and means for re-opening the lids as the buckets approach the cooling apparatus, the means for opening and closing the lids being located adjacent the path of the second conveyor so as to be contacted by means carried on the lids,

(i) a third endless conveyor for receiving the product from the opened bucket for transporting product from the frying apparatus to the cooling apparatus, and

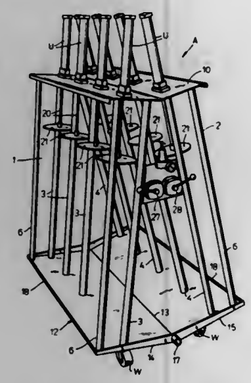
wherein the gelatinizing apparatus and seasoning apparatus are elevated above the frying apparatus and the cooling apparatus is disposed below the frying apparatus.

4,111,110

PORTABLE CHEESE PRESS FRAME ASSEMBLY

Gary R. Smith, Watertown, Wis., assignor to Kusel Equipment Company, Watertown, Wis.

Filed Jun. 6, 1977, Ser. No. 803,793
Int. Cl.² A01J 25/10, 25/15
U.S. Cl. 99—456 4 Claims



1. A portable cheese press frame assembly for removably supporting hoops stacked one upon another in a generally vertical position and for pressing the curd in said hoops to cause draining of the whey therefrom, said assembly comprising a generally A-shape frame including opposite sides which converge towards one another in an upward direction, said sides including support members for supporting stacks of hoops in a position inclined from the vertical, said members spaced apart from one another so as to securely receive said hoops in stacked relationship and for supporting them during a curd pressing operation, cylinder and piston units mounted on the top of said frame and including an extensible piston member extending downwardly for pressing the curds in said hoop, control means carried by said assembly for actuating said cylinder and piston units in extending and contracting directions, said assembly also including a pan-like floor at the bottom thereof and having a drain, said floor being inclined towards said drain so as to receive whey drained from said hoops, whereby as said cylinder and piston units are extended to press the curd located in said generally vertically stacked hoops, the whey from said hoops drains downwardly and onto said floor and out said drain.

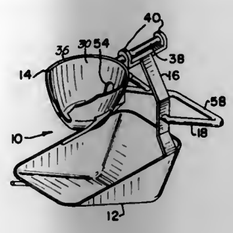
4,111,111

SEPARATING MECHANISM FOR EGG BREAKING MACHINE

Charles H. Willsey, Rte. 1, Maple Hill, Kans. 66507

Filed Aug. 4, 1975, Ser. No. 601,655
Int. Cl.² A23J 1/09
U.S. Cl. 99—499 4 Claims

1. In a machine for breaking shell eggs and separating the contents of each egg, a separating assembly adapted to the positioned to receive the contents of an egg which is discharged in flowable condition from a breaking and dumping mechanism, said separating assembly comprising an albumen collecting means in the form of a pan and a member for initially receiving the egg contents and for separating the albumen from the yolk which is disposed vertically above said collecting means and which is in the form of an upwardly opening, bowl-shaped container having an upper edge which is generally circular and of a diameter sufficient to receive the contents of an egg from a breaking mechanism disposed vertically above the same, said bowl shaped container having side wall portions depending from said upper edge and tapering inwardly to an imperforate bottom portion which is formed of a size and shape to support the natural configuration of the yolk sac, means at one side of said bowl shaped container supporting said container in upwardly opening, generally horizontal position for receiving the whole egg contents, said side wall portions having a slot formation which is peripherally spaced relative to said supporting means and which extends upwardly in a vertical direction from adjacent the top edge of said bottom portion, which slot formation comprises a realtively narrow bottom portion extending a short distance above said container bottom portion and a wider top portion which enables a relatively large mass of albumen to pass as a unit through said vertically extending slot into said albumen collecting means while said container remains in generally horizontal contents receiving position and while the yolk remains supported in said bottom portion thereby enabling the albumen to be separated from the yolk.

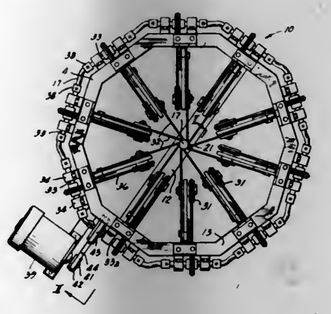


4,111,112

FRUIT SECTIONIZING MACHINE

James E. Altman, Box 334, Gray, Ga. 31032

Filed Apr. 22, 1976, Ser. No. 679,381
Int. Cl.² A23N 4/00
U.S. Cl. 99—538 18 Claims



1. Apparatus adapted for sectioning cored fruit comprising supporting frame means,

an upstanding stationary spindle associated in a base region thereof with said frame means having an axis and having a plurality of longitudinally extending, circumferentially spaced slot means defined therein, the maximum diameter of said spindle being less than the diameter of the core cavity in such cored fruit,

a plurality of rotatable circular blade means, each said blade means having an axis and including an associated axially located stub shaft means and journal means,

individual blade means of said plurality being positioned in circumferentially spaced relationship to one another by said frame means about said spindle axis, each said blade means axis having generally the same angular relationship to radii from said spindle axis, the peripheral edge of each said blade means being in spaced, proximate relationship to a different one of said slot means,

a power head,

a shaft system rotatably drivable by said powerhead, including journal means supporting same by said frame means, said shaft system operatively extending circumferentially about said peripheral blade means edges in radially spaced relationship thereto, and

a plurality of power transfer means, each said power transfer means being adapted to transfer rotational power in a direction generally radially relative to said shaft system from said drivable shaft system to each one of said blade means for rotatably driving said blade means,

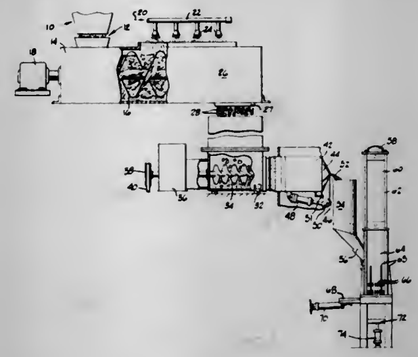
whereby such cored fruit in being sectioned passes along said spindle through said plurality of blades without radial expansion forces acting thereon due to the shape of said spindle.

4,111,113

PACKAGING ASBESTOS FIBERS

Gerard Lucien Lambert, Asbestos, Canada, assignor to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 438,969, Feb. 4, 1974. This application Sep. 17, 1976, Ser. No. 722,454
Int. Cl.² B30B 15/30
U.S. Cl. 100—74 5 Claims



1. Apparatus for producing an asbestos block having a density of at least 90 PCF, said apparatus comprising:

(a) mixing means for completely containing and mixing loose asbestos fibers and a small amount of liquid to produce a mixture in which the liquid is evenly distributed throughout the asbestos fiber and is present as no more than 8% by weight of fiber, said mixing means also preliminarily consolidating said mixture, and said mixing means also containing means for discharging the preliminarily consolidated mixture into consolidating means;

(b) consolidating means disposed to receive said mixture discharged from said mixing means, said consolidating means further consolidating said mixture into an intermediately compacted body, said consolidating means including an extrusion device and a restrictive orifice, said consolidating means also containing means for discharging said intermediately compacted body into a press; and

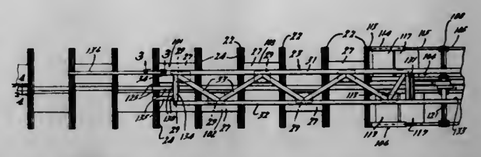
(c) a press disposed to receive said intermediately compacted body discharged from said consolidating means and including a mold chamber, said mold chamber having means for venting air from within said chamber during a compression stroke of said press, said press being capable of exerting sufficient compressive force on said intermediately compacted body to form said asbestos block of at least 90 PCF density.

4,111,114

MACHINE FOR APPLYING NAIL PLATES FOR TRUSS ASSEMBLY

Ronald R. Carr, Detroit, Mich., assignor to The Panel Clip Co., Farmington, Mich.

Filed Mar. 28, 1977, Ser. No. 782,070
Int. Cl.² B30B 7/00
U.S. Cl. 100—100 15 Claims



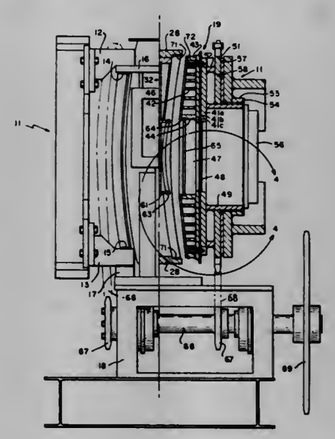
1. In a machine for fastening members of a truss in firm fixed relation with each other, a table having a central and opposite end portions on which the members of the truss are assembled with their ends in abutted relation, a carriage movable along the entire length of said table, means on said central table portion which is adjustable toward and away from the transverse center of the table along with the opposite end portions which move as units, and means on said carriage at opposite longitudinal edges of said table which are vertically movable toward and away from each other for forcing the nails of nail plates into the bottom and top of the abutted portions of the assembled truss members at one or both edges simultaneously.

4,111,115

CONTINUOUS FILTER PRESS

Charles E. Cory, Sebastopol, Calif., assignor to Bepex Corporation, Santa Rosa, Calif.

Filed May 23, 1977, Ser. No. 799,453
Int. Cl.² B30B 9/06, 3/04
U.S. Cl. 100—116 7 Claims



1. In a continuous press for extracting liquid from liquid containing feed materials, a main machine frame, a pair of rigid side structures, means serving pivotally to carry corresponding end portions of the structures on the frame, a pair of opposed wheels disposed between the side structures, each wheel having a central annular opening and including a conical shaped screen mounted on the inner face of the same and a main annular wheels structure, means for journalling each wheel to its corresponding side structure, means for yieldably urging the side structures and wheels toward each other, the axes of the wheels during operation being out of alignment whereby when the wheels are rotated portions of the screens are brought into proximity in a pinch zone and other portions of the screens are

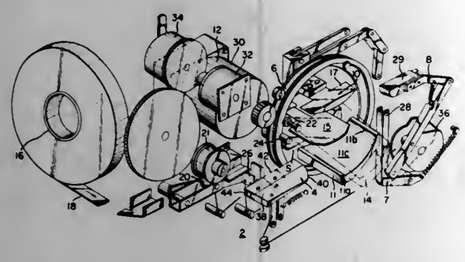
separated to form a feed receiving space, casing means carried by the frame and surrounding the space between the screens of the wheels, the casing means having an inlet opening for receiving feed material and a discharge opening spaced from the inlet opening for discharging material, a rigid plow having one outer end portion secured to the casing between said openings, the other inner and end portion of the plow being disposed in the central region of the casing and between the central regions of the wheels, the plow serving to divert material through the discharge opening, means for journalling each wheel to its corresponding side structure, said wheel journalling means comprising an annular sleeve fixed to the main wheel structure of each wheel and extending from the outer side of the same concentric with the axis of the wheel, the corresponding side structure having an opening to accommodate the sleeve and also having bearing means surrounding the sleeve for journalling the wheels, the inner end portion of the plow being formed to have annular interfitting relationship with the central openings of the wheels, said central openings being accessible through the sleeves.

4,111,116

APPARATUS FOR CLAMPING AND BINDING A STACK OF PAPER

Yukio Ito, Fujisawa, and Susumu Morishima, Kamakura, both of Japan, assignors to Hitachi Denshi Engineering Kabushiki Kaisha and Musashi Kabushiki Kaisha, Tokyo, both of Japan

Filed Apr. 20, 1977, Ser. No. 789,280
Claims priority, application Japan, Apr. 27, 1976, 51-47211
Int. Cl.² B30B *15/06*
U.S. Cl. 100—281 **5 Claims**



1. A compressing device for use in an apparatus for binding stacks of paper sheets with a binder tape, said compressing device comprising:

a first platform, at least a portion of the upper surface of said first platform being arcuately concaved;

a second platform longitudinally aligned with said first platform in the same plane and separated from said first platform by a gap, said second platform having at least a portion of the upper surface thereof arcuately concaved;

a resilient receiving plate means connected to said second platform and extending over said concave surface portions of both of said platforms and across said gap for receiving said paper sheets thereon; and

a pressure pad plate above said receiving plate means reciprocally movable toward and away from said receiving plate means, said pressure pad plate having a lower surface which is arcuately convexed.

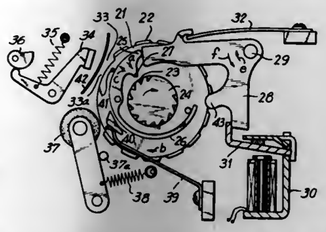
4,111,117

SELECTING MECHANISM FOR PRINTING TYPE RINGS

Chikao Tezuka, and Hitoshi Mikoshiba, both of 80, Oazahirookaharashinden, Shiojiri-shi, Nagano-ken, Japan

Filed Jul. 18, 1977, Ser. No. 816,770
Claims priority, application Japan, Jul. 16, 1976, 51-84766
Int. Cl.² B41J *1/48*
U.S. Cl. 101—93.28 **7 Claims**

1. A printing device, comprising a plurality of printing type rings having type face characters on the peripheries thereof, a rotatable printing type ring shaft having grooves on the periphery thereof, said printing type ring shaft supporting said printing type rings, a pawl member provided on each of said printing type rings, said pawl member being biased by biasing means to engage with said grooves of said printing type ring shaft, a plurality of selecting means for selectively bringing a corresponding pawl member into and out of engagement with



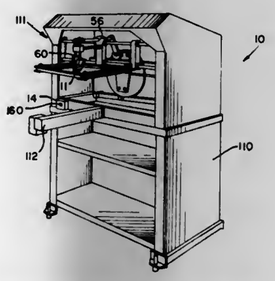
a selected groove of said printing type ring shaft and thereby causing a corresponding ring to rotate, and printing means for carrying out printing in cooperation with said printing type rings on a print-receiving member when placed therebetween, each of said printing-type rings rotating with said shaft only when the corresponding selecting means effects engagement of the pawl member with a selected groove of the rotating shaft.

4,111,118

MULTI-PURPOSE SCREEN PRINTING MACHINE

Melvin E. Green; Charles H. Derrickson, both of Chicago, Ill., and Louis A. Lala, Dayton, Ohio, assignors to American Screen Printing Equipment Co., Chicago, Ill.

Filed Sep. 7, 1976, Ser. No. 720,763
Int. Cl.² B41F *15/26, 15/30*
U.S. Cl. 101—123 **12 Claims**



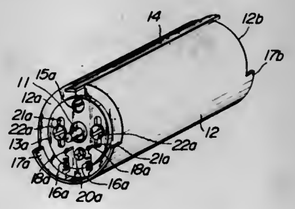
1. A screen printing machine comprising a pair of spaced end supports, a first shaft connecting said end supports for pivotal movement relative to said end supports, arms mounted on opposite ends of said first shaft, a second shaft attached to each of said arms for limited pivotal movement thereabout, a third shaft mounted in parallel relationship to said second shaft and connected to said second shaft by a vertical linkage, said vertical linkage being laterally movable on said second and third shafts, a guide path formed in each of said end supports, each of said guide paths comprising a substantially vertically disposed slot, opposite ends of said third shaft having an extension immovable outside the axis of said third shaft, said extension captivated for movement in said guide path, said guide path restricting the travel of said third shaft for substantially vertical movement of said vertical linkage, means for supporting a screen mounted on said vertical linkage for substantially vertical movement of said screen, means for supporting a squeegee mounted on said second and third shafts for lateral movement relative to said vertical linkage, drive means on said first shaft mounted for lateral movement along said first shaft, means on said drive means for selective alternative connection to one of said means for supporting said squeegee and said means for supporting a screen to permit printing of either curvilinear objects or flat objects, and a guide means for the stabilization of said screen and squeegee in a level position during the operation of said printing machine.

4,111,119

RECORD SHEET CLAMPING MECHANISM FOR DRUM TYPE FACSIMILE AND THE LIKE

Tatsuo Takizawa, Sagamihara, and Masachika Ikeda, Mitaka, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1977, Ser. No. 783,017
Claims priority, application Japan, Apr. 5, 1976, 51/40868[U]
Int. Cl.² B41F *27/06, 15/38;* B41L *29/14*
U.S. Cl. 101—127.1 **4 Claims**



1. An improved record sheet clamping mechanism for a drum type facsimile and the like, employing a hollow cylindrical drum secured to a rotary shaft for winding a record sheet therearound; a clamping bar extending along the outer peripheral surface of the cylindrical drum in an axial direction thereof and detachably holding one end of said record sheet on the outer peripheral surface of said cylindrical drum; the improvement comprising: a balancing member coextensive with and being disposed substantially symmetrical to said clamping bar with respect to said rotary shaft of said cylindrical drum, and being rigidly connected to slidable discs loosely connected to said clamping bar; tension spring means for urging said clamping bar through said slidable disc against an outer peripheral surface of said cylindrical drum, whereby the centrifugal force to which said clamping bar is subjected due to rotation of said cylindrical drum is substantially equal to the centrifugal force to which said balancing member is subjected thereby maintaining a substantially constant pressing force of said clamping bar for application to said record sheet irrespective of the number of rotations of said cylindrical drum.

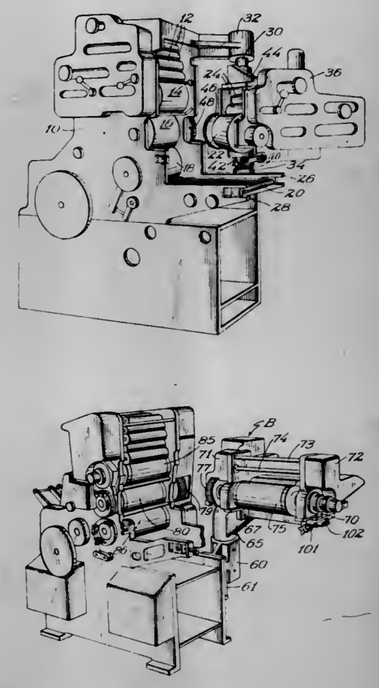
4,111,120

TWO COLOR SWING-AWAY PRESS

Harold E. Paulson, 5369 Vernon Lake Dr., Dunwoody, Ga. 30338

Continuation-in-part of Ser. No. 731,711, Oct. 12, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 808,058
Int. Cl.² B41F *5/02, 13/12, 13/44*
U.S. Cl. 101—175 **7 Claims**

1. A printing press for printing multiple color designs comprising in combination: a base; a fixed frame on said base adapted to carry an ink supply system, a plate cylinder support shaft with a plate cylinder thereon, a blanket cylinder support shaft with a blanket cylinder thereon, an impression cylinder, and a drive system therefor; a vertical pivot axis support on said base adapted to carry a moving frame in pivoting relation about said pivot support, said moving frame adapted to carry an ink supply roller system and a second plate cylinder support shaft with a second plate cylinder thereon with the rotational axes of the ink supply roller system and second plate cylinder perpendicular to said vertical pivot axis so that the second plate cylinder can be pivoted into contact with said blanket cylinder so as to permit multiple color printing; a first gear on the end of the blanket cylinder support shaft closest to the pivot support; a second gear on the end of the second plate cylinder support shaft closest to the pivot support in position to engage said first gear when the second plate cylinder is pivoted into contact with the blanket cylinder; and rotational gear tooth position indicating means connected to the ends of the plate cylinder support shafts at the ends furthest from the pivot support to allow prealignment of the teeth on the first and second gears before engagement said rotational position indicating means comprising an index mark on the cylinder support structure and at least one disc mounted on a plate cylinder support shaft, said disc having wrench holes therein to permit the disc and cylinder to be rotated and a series of graduated marks about the periphery of the disc corresponding to the position of the gear teeth.

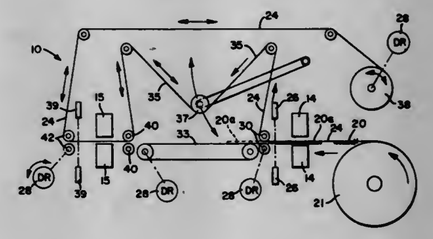


4,111,121

MULTI-IMPRESSION PRINTER FOR PRESSURE SENSITIVE LABELS

Charles Jerry Borum, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Jun. 7, 1976, Ser. No. 693,789
Int. Cl.² B41F *13/56*
U.S. Cl. 101—227 **27 Claims**



1. A printer for discrete or continuous label stock having a

pressure sensitive adhesive protected by a release web, comprising:

(a) means for detaching a label from the label stock and the release web,

(b) means forming an attaching station for receiving said label from said detaching means and temporarily attaching the adhesive side of said label to a release backing,

(c) means for supplying a release backing to said attaching station for repeated use thereat,

(d) printing means defining a printing station for printing a pattern on said label, and

(e) means for advancing said label and said release backing from said attaching station to said printing station.

4,111,122

METHOD OF AND APPARATUS FOR THREADING WEB MATERIAL PREFERABLY INTO WEB-FED ROTARY PRINTING PRESSES

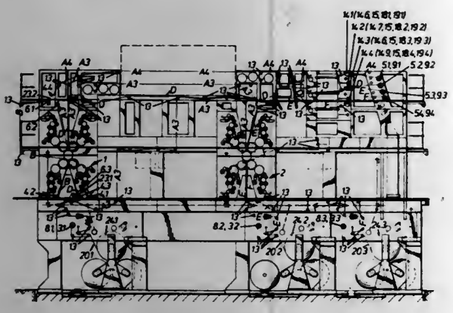
Willi Albert Peter Kutzner, and Georg Schneider, both of Würzburg, Germany, assignors to Koenig & Bauer Aktiengesellschaft, Würzburg, Germany

Filed Jul. 14, 1976, Ser. No. 705,192

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1975, 2532168

Int. Cl.² B41F *13/02*; G03B *1/56*

U.S. Cl. 101—228 **11 Claims**



1. Apparatus for threading web material along a selected one of a plurality of paths of web feed through a web-fed rotary printing press comprising:

a finite length, flexible conveyor means, said conveyor means including first and second conveyor sections and at least one intermediate conveyor, said intermediate conveyor being one of a plurality of intermediate conveyor sections, each of said intermediate conveyor sections extending through the press along one of said paths of web feed, each said intermediate conveyor section having means for fastening the web to be threaded, and each said conveyor section further having joints for selectively connecting conveyor sections to each other;

first and second storage means for said first and second conveyor sections, respectively, said first and second storage means being positioned at the start and end of the paths of web threading; and,

first and second drive means cooperating with said first and second storage means to move said conveyor means between said storage means whereby the web secured to said conveyor means is threaded through the press along the selected path of web feed defined by the intermediate conveyor section selected and joined to said first and second conveyor sections.

4,111,123

BENDING-RESISTANT GRIPPER CARRIAGE SUPPORT STRUCTURE, PARTICULARLY FOR OFFSET PRINTING MACHINES

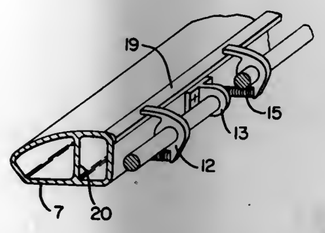
Eberhard Willeitner, Utting am Ammersee, Germany, assignor, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Germany

Filed Feb. 18, 1977, Ser. No. 770,019

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606345; Feb. 18, 1976, 2606346

Int. Cl.² B41F *21/04*

U.S. Cl. 101—407 A **14 Claims**



1. A bending-resistant gripper carriage arrangement for offset printing machines which, in order to increase the area moment of inertia and provide a high bending resistance, comprises at least one one-piece closed unperforated hollow profile member, a gripper shaft supported by said profile member, and gripping brackets carried by said gripper shaft for movement between a sheet gripping and a sheet releasing position, said profiled member being hollow throughout its length and having a continuous, smooth, curved, upper, outer sheet receiving surface extending for the entire length of the profiled member and wherein said gripping brackets grip a sheet between said brackets and said upper outer sheet receiving surface of the profile member in said sheet gripping position.

4,111,124

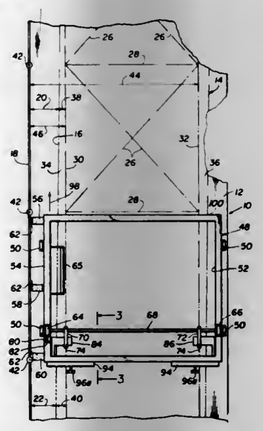
METHOD AND APPARATUS FOR PRODUCING FACTORY-TRIMMED WALL COVERING

Frank R. Pascale, 40 Park Way, Sea Cliff, N.Y. 11579, and Ralph I. Preuss, 19 Wellsley Rd., Rockville Centre, N.Y. 11570

Filed Mar. 18, 1977, Ser. No. 779,265

Int. Cl.² B41M *1/12*; B26D *5/08*

U.S. Cl. 101—426 **4 Claims**



1. A method of producing an elongated strip of printed wall covering without unprinted selvage areas along opposite edges thereof using an elongated wall covering support surface having a position-establishing reference edge oriented lengthwise of said support surface adjacent one edge thereof, said method comprising the steps of arranging a blank strip of wall covering in fixed position on said support surface in aligned relation to said reference edge, successively printing length segments of said wall covering strip with a design having design-delineating lines on opposite side edges thereof delineating the printed design located in a medial area on said wall covering from unprinted selvage areas located along the opposite peripheral side edges of said wall covering strip, said successive imprints of said wall covering design being positioned on said wall covering strip using said reference edge to correspondingly position each said opposite edge design-delineating line a prescribed uniform distance from said reference edge, and while said printed wall covering strip is in said fixed position on said support surface severing free said opposite unprinted selvage areas along said design-delineating lines thereof by using said reference edge to position a means effective to sever said wall covering in aligned cutting relation to said design-delineating lines, whereby the resulting printed wall covering is effectively trimmed preparatory to use.

4,111,125

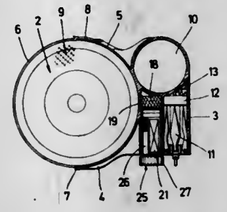
STAYED GROUND MINE, ESPECIALLY FOR RIVERS

Horst Reineke, Rosental 14, 53 Bonn, Germany

Filed Sep. 25, 1970, Ser. No. 75,032

Int. Cl.² F42B *22/04*

U.S. Cl. 102—18 R **10 Claims**



1. An anchored mine, comprising, a disc-shaped explosive body, a housing having a fuze device with a propagation charge for said explosive body consisting of a thin partition lying at the edge of said explosive body, said housing having attached thereto two arms for encompassing a portion of said disc-shaped explosive body, a banding device for encompassing and fastening said explosive body to said fuze device, said banding device consisting of a band, hinge means for connecting one end of said band to one of said arms, and clamp means for tensioning said band and locking the other end of said band to the other arm of said two arms, said fuze device being positioned next to said thin partition and adjacent to said explosive body.

4,111,126

WARHEAD FOR USE AGAINST ARMORED TARGETS

Franz Rudolf Thomanek, Sandizell b. Schrobenhausen, Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Ottobrunn, Germany

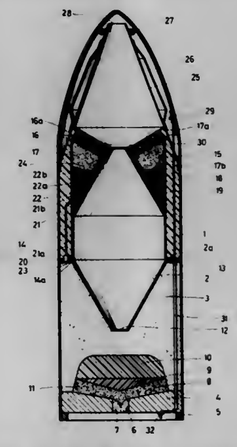
Filed Jun. 20, 1973, Ser. No. 372,404

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1969, 1901472

Int. Cl.² F42B *11/14*

U.S. Cl. 102—52 **13 Claims**

1. A warhead for use against armored targets, comprising an axially elongated warhead housing, a forward or nose end and a rearward end, a shaped first charge located within and at the rearward end of said housing and having a conically shaped liner, with the axis of said liner extending in the axial direction of said housing, and with the sides of the liner diverging in the direction of the forward end of said housing, an open-ended protective sleeve located within and spaced inwardly from said housing and extending toward the forward end of said housing from the end of said first charge closer to the forward end of said housing, said protective sleeve being concentric to the axis of said liner and comprising a cylindrically shaped portion extending axially from the end of said first charge closer to the forward end of said housing, and a truncated conical portion extending from said cylindrically shaped portion toward the forward end of said housing with the sides of said conical portion converging toward the forward end of said housing, the smaller end of said truncated conical portion being spaced from the forward end of said housing, an annular second charge concentrically positioned about said conical portion, an active liner disposed in contact with the surface of said second charge which faces toward the forward end of said housing,



filler means located within the space between said protective sleeve and said housing for rigidly positioning said second charge and active liner, and ignition means extending between said first charge and said second charge for igniting said second charge from said first charge with a predetermined time delay after the ignition of said first charge, said ignition means comprising a first cap containing an explosive in contact with the end surface of said first charge closer to the forward end of said housing, a second cap containing an explosive in contact with the end surface of said second charge directed toward the forward end of said housing, and detonation cord extending through said filler means between said first cap and said second cap.

4,111,127

CENTRIFUGAL ROLLING BALL LOCKING DEVICE

Albertus E. Schmidlin, Caldwell, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 19, 1977, Ser. No. 825,887

Int. Cl.² F42C *15/22*

U.S. Cl. 102—237 **6 Claims**

1. A centrifugal rolling-ball, fluidically damped, locking device for restraining loosely stacked elements contained within a spin stabilized projectile which comprises;

a cup shaped housing operatively disposed in said projectile so that a longitudinal axis of said housing is disposed parallel to the principal longitudinal axis of said projectile and offset therefrom by a distance "*d*", said housing having a closed end and an internally threaded open end;

stationary ramp means fixedly positioned in said closed end of said housing for providing a first caming surface at said closed end of said housing;

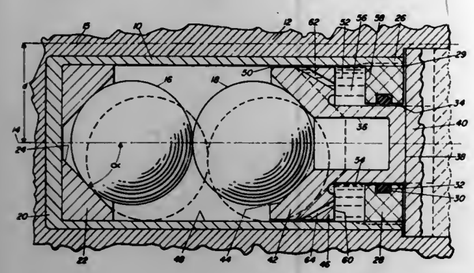
a first spherical member disposed within said housing and in contact with said stationary ramp means, said first spherical member being inertially responsive to the centrifugal force of spin of said projectile;

a second spherical member operatively positioned within

said housing and in rolling point contact with said first spherical member, said second spherical member being inertially responsive to the centrifugal force of spin of said projectile;

piston-cam-plunger means, slidably disposed in said housing in abutment with said second spherical member, for providing an axial force to restrain said loosely stacked elements of said projectile during projectile launch, said second spherical member being in rolling contact with said piston-cam-plunger means;

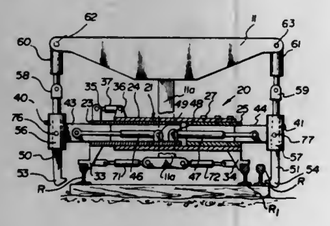
sealing member means screwedly attached to the internally threaded open end of said housing, said sealing member



means having a central plunger stem bore therein adapted for slidable passage of said piston-cam-plunger means therethrough, said sealing member means and said piston-cam-plunger means being separated by an annular reservoir volume; and

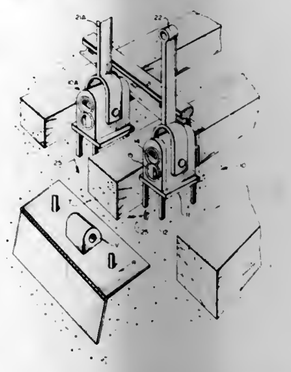
damping fluid means operatively disposed in said annular reservoir volume for limiting shock impact to said loosely stacked elements of said projectile during projectile launch and for lubricating said piston-cam-plunger means when said piston-cam-plunger means is linearly moved within said housing by said second spherical member in response to the centrifugal force of spin of said projectile.

4,111,128
SWITCH LIFTING FRAME
John Keyes, Hammond, Ind., assignor to Canron Railgroup, West Columbia, S.C.
Filed Feb. 20, 1976, Ser. No. 659,849
Int. Cl.[2] E01B *27/17*
U.S. Cl. 104—7 B **8 Claims**



1. A railroad track lifting and aligning apparatus mounted for track travel on a longitudinally extending main frame, comprising a rail engaging sub frame extending transversely of the main frame and having two members connected for relative adjustment transversely of the main frame; a rail contacting element on each member for abutting the inside of a rail of the track; means to adjust and maintain the relative position of the members transversely of the main frame whereby to adjust the track gauge spacing between the rail contacting elements; a pair of substantially vertically extending rail hook guide means, one for each rail of the track, means for moving the guide means transversely of the main frame on the sub frame; rail hook means for each guide means for externally engaging each rail of the track; a track lifting jack for each rail connected on the one hand to said main frame and on the other to a rail hook means for adjusting the rail hook means into and out of the rail engaging position; and track aligning jack means operatively connected between said main frame and said sub frame.

4,111,129
METHOD AND APPARATUS FOR THE VIBRATORY TAMPING OF RAILWAY TRACKS
Helmuth von Beckmann, Columbia, S.C., assignor to Canron Railgroup, West Columbia, S.C.
Filed Mar. 31, 1976, Ser. No. 672,498
Int. Cl.[2] E01B *27/16*
U.S. Cl. 104—12 **3 Claims**

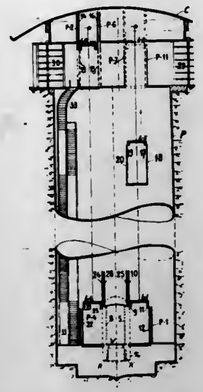


1. A method of tamping the ballast of a railroad track comprising applying a succession of tamping steps at a series of points along the track, each step comprising vibrating a vibration imparting means at a first frequency; inserting said means into said ballast; increasing the frequency of vibration of said means to a second frequency so as to impart an excitation frequency to the ballast; shaping the ballast whilst it is so excited; reducing the frequency of vibration of said means to a third frequency; and withdrawing said means from said ballast.

4,111,130
METHOD OF TRANSFERRING PASSENGERS FROM VEHICLES TO A STATION
Frédéric B. Rodot, 6A ave. de l'Ouche, Dijon, France (21000)
Filed Nov. 16, 1976, Ser. No. 742,277
Claims priority, application France, Nov. 25, 1975, 75 36896
Int. Cl.[2] B61B *1/02*
U.S. Cl. 104—28 **1 Claim**

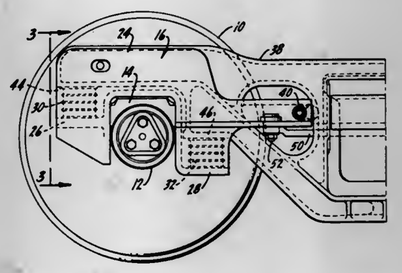
1. The method of operating in synchronism, vehicles moving in succession at predetermined time intervals on and along a roadway at a transit level, with four lifts L1, L2, L3 and L4 translatable vertically between the transit level and an entry level spaced vertically from the transit level, there being two lifts in side-by-side relation on each respective side of the track, lifts L1 and L4 being directly opposite and lifts L2 and L3 being directly opposite, said method comprising: emplacing lifts L4 and L1 at the transit level on arrival of a first vehicle at the transit level, for entrance to and exit from the first vehicle, respectively, translating lift L4 to the entry level on departure of the first vehicle, while leaving lift L1 at the transit level pending arrival of the second vehicle, emplacing lift L2 at the transit level on arrival of the second vehicle at the transit level for entrance to and exit from lifts L1 and L2 respectively, translating lift L1 to the entry level on departure of the second vehicle while leaving lift L2 at the transit level pending arrival of the third succeeding vehicle, emplacing lift L3 at the transit level on arrival of the third vehicle for entrance to and exit from lifts L2 and L3, respectively, translating lift L2 to the

entry level on departure of the third vehicle, while leaving lift L3 at the transit level pending arrival of the fourth succeeding vehicle, emplacing lift L4 at the transit level on arrival of the fourth succeeding vehicle for entrance to and exit from lifts L3



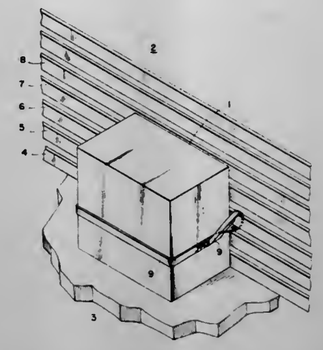
and L4, respectively, leaving lift L4 at the transit level pending arrival of the fifth succeeding vehicle, and repeating the timed arrival and departure of vehicles and translation of lifts, as aforesaid.

4,111,131
RESILIENT RAILROAD CAR TRUCK
Robert L. Bullock, Lombard, Ill., assignor to Standard Car Truck Company, Chicago, Ill.
Filed Jan. 19, 1976, Ser. No. 650,522
Int. Cl.[2] B61F *3/08, 5/30, 5/38, 5/50*
U.S. Cl. 105—224.1 **11 Claims**



1. In a railroad car truck having a pair of wheelsets and means for providing relative restraint between wheelsets, a pair of side frames, means for supporting said side frames on said wheelsets including resilient means supported on said wheelsets and supporting said side frames, said resilient means providing greater shear resistance in a lateral horizontal direction than in a longitudinal horizontal direction and including a pair of spaced pad elements supported on opposite sides of each wheelset axis, each pad element including alternate resilient and generally rigid layers, with at least one of the generally rigid layers on opposite sides of at least one resilient layer being shaped to restrict the volume of material distortable in the lateral direction whereby there is less volume of distortable material in the lateral direction than in the longitudinal direction.

4,111,132
APPLIANCE TRANSPORT ACCESSORY
Louis Plut, 471 Wilde Ave., San Francisco, Calif. 94134
Filed Jun. 23, 1977, Ser. No. 809,376
Int. Cl.[2] B60P *7/08*
U.S. Cl. 105—469 **1 Claim**

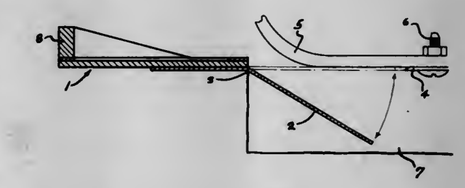


1. An appliance transport accessory for securing an appliance to an inside wall of a delivery truck having a plurality of spaced parallel substantially horizontally extending cross pieces affixed to an inside surface of an inside wall thereof in spaced relation therewith, said appliance transport accessory comprising

strap means for releasably securing an appliance to the cross pieces of the inside wall of the truck with sufficient tension to prevent jarring or movement of the appliance, said strap means having spaced opposite first and second ends, a hook device affixed to the first end thereof for releasably securing said first end to a cross piece when said strap means passes around said appliance, a projecting device affixed to the second end thereof and extending therefrom and a strip of elastic material interposed in the strap means between the first and second ends thereof for providing elasticity in the strap means; and

slot means affixed to the strap means in the area of the second end thereof but spaced from said second end for releasably accommodating the projecting device in a manner whereby the length of the strap means between the slot means and the projecting device is passable around a cross piece and said projecting device is releasably secured in said slot means to releasably secure the appliance to said cross piece.

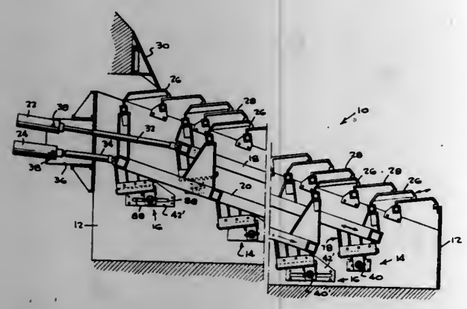
4,111,133
APPARATUS FOR CONCEALING AUXILIARY EQUIPMENT AND METHODS OF CONSTRUCTING AND UTILIZING SAME
C. Richard Bailey, 31885 Nottingwood Dr., Farmington, Mich. 48018
Filed Mar. 21, 1977, Ser. No. 779,603
Int. Cl.[2] A47B *23/00*
U.S. Cl. 108—45 **6 Claims**



1. An apparatus for minimizing theft of and for concealing radio equipment in a vehicle, comprising:

a shelf member including a forward end and a rearward end;
a bendable tongue protruding from said rearward end of said shelf member for removably securing said apparatus over said auxiliary radio equipment when said auxiliary radio equipment is in an installed position;
said bendable tongue being adapted to be bent to vary the relative angular relationship between said tongue and said shelf member to permit said shelf member to be disposed in an accessible and substantially horizontal position to conceal said auxiliary radio equipment when said apparatus is removably secured over said auxiliary radio equipment;
said bendable tongue being further adapted to be received within a conventional radio bracket member secured to a lower surface of a dashboard of said vehicle for mounting said auxiliary radio equipment in said installed position; and
said bendable tongue being further adapted to be slidably received within said bracket member between said auxiliary radio equipment and said lower surface of said dashboard, to permit said apparatus to be selectively mounted and completely removed without the use of tools.

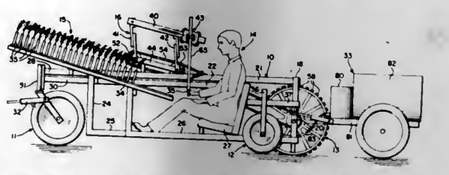
4,111,134
BEARING ASSEMBLY FOR A STOKER CARRIAGE
Christian M. Mainka, New York, N.Y., assignor to Morse Boulger, Inc., New York, N.Y.
Filed Oct. 22, 1976, Ser. No. 734,760
Int. Cl.² F23B *1/20, 1/22*
U.S. Cl. 110—328 **14 Claims**



8. A reciprocating stoker assembly for operation in an incinerator or the like, said assembly including a stoker grate housing, a plurality of stationary grates mounted on the housing, a stoker grate carriage, a plurality of movable grates mounted on said stoker grate carriage and extending between said stationary grates, a drive mechanism for reciprocating said grate carriage, a plurality of shafts mounted on said stoker housing with the axis of the shaft generally perpendicular to the desired line of movement of said grate carriage, a bearing means journaled on each of said shafts, means for permitting limited angular and axial movement of the bearing means with respect to the shaft, a downwardly opening guideway mounted on said grate carriage, wear surface means mounted on said bearing means and engageable with said guideway for permitting reciprocation of said guideway with respect to said wear surface means.

4,111,135
PLANTING MACHINE
Leonard Charles Braun, Bartlett, and Edward Leonard Benno, Graylake, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Jun. 28, 1976, Ser. No. 700,270
Int. Cl.² A01C *11/00, 5/02*
U.S. Cl. 111—2 **1 Claim**

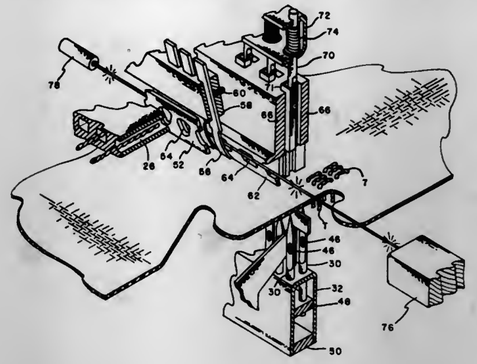
1. In a planting machine, means for moving said machine along the ground, a mechanism for inserting an elongated container with a plant growing therein in a vertical direction a substantial depth into the ground and substantially absent any horizontal movement of the container and plant relative to the ground while said container and plant are held by said mechanism for inserting and the machine is moving along the ground, said mechanism comprising an elongated tubular plant holder formed to encircle and frictionally engage said elongated container to be inserted in the ground, rotatable members mounted in said machine for rotation about an axis substantially perpendicular to the direction of movement of the machine, movable means carrying said elongated tubular plant holder in a substantially vertical orientation on said rotatable members, said rotatable members inserting said container frictionally held therein into the ground in a substantially vertical direction and to a substantial depth responsive to the rotation of said rotatable members while the machine is moving along the ground, a ground drive wheel rotating responsive to movement of said

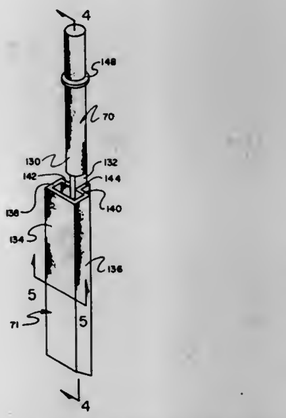


machine along the ground, driving means connected between said ground drive wheel and said rotatable members for rotating said rotatable members responsive to rotation of said ground drive wheel, and said movable means normally carrying said plant holder on and with said rotatable members but permitting movement of said plant holder on and relative to said rotatable members in both directions along a line longitudinally of said machine and in the direction said machine moves along the ground when said plant holder engages the ground, said movable means being a resiliently biased roller carriage, said movable means preventing said rotatable means from moving said movable means relative to the ground along a line longitudinally of said machine while said rotatable members are inserting said tubular plant holder with said container and plant therein into the ground in a substantially vertical direction and to a substantial depth and while retracting said tubular plant holder out of the ground.

4,111,136
YARN CLAMPING APPARATUS
Abram N. Spanel, Princeton, N.J.; P. Frank Eiland, Stamford, and David R. Jacobs, New Canaan, both of Conn., assignors to Abram N. Spanel, Princeton, N.J.
Filed Jun. 30, 1977, Ser. No. 811,970
Int. Cl.² D05C *15/16*
U.S. Cl. 112—79 R **21 Claims**

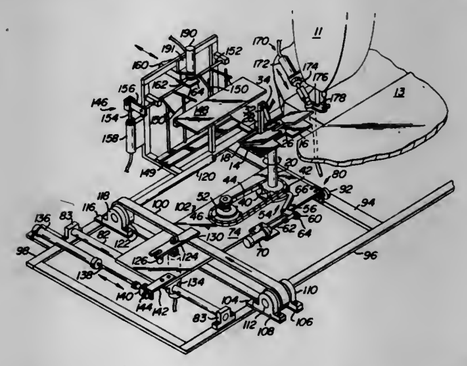
1. Tufting apparatus or the like including:
bit-applying means including tufting needles for applying tufts to a backing layer wherein the improvement comprises clamping means associated with said bit-applying means to clamp yarn once loaded in said bit-applying





means, said clamping means including shield means to shield said yarn from being impaled by said needles.

4,111,137
CUFF MAKING MACHINE
Robert Willis Kirby, Kinston, N.C., assignor to Hampton Industries, Inc., Kinston, N.C.
Filed Oct. 1, 1976, Ser. No. 728,700
Int. Cl.² D05B *21/00, 33/00*
U.S. Cl. 112—121.15 **24 Claims**

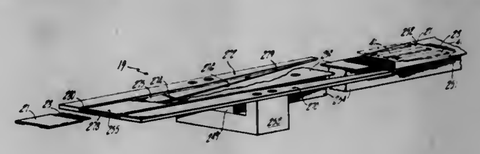


1. Apparatus for sewing seams on a workpiece comprising:
a rotatable workpiece clamp for holding a workpiece;
said clamp being secured to a shaft for rotation therewith;
means for reciprocating said clamp between a forward and a rearward position;
means for stitching a seam to an edge of a workpiece while said means for reciprocating said clamp is moving said clamp from one of said forward and rearward directions;
drive means for rotating said shaft and said clamp in 90° increments after a seam has been stitched to an edge of a workpiece;
said drive means including a motor means drivingly coupled to said shaft, an indexing cam secured to said shaft, said indexing cam having a plurality of stop members, a pawl means for engaging said stop members and for allowing said indexing cam to rotate in 90° increments.

15. An apparatus for sewing a pair of parallel spaced seams on a workpiece comprising:
a sewing machine;
a workpiece clamp for holding a workpiece;
means for moving said clamp in a linear direction from an initial position past said sewing machine to stitch a seam along a first edge of said workpiece;
means for rotating said clamp 180° after said first edge is stitched;
means for returning said clamp along said linear direction to said initial position after a seam has been stitched along said first edge; and
means for moving said clamp along said linear direction from said initial position past said sewing machine to stitch a seam along a second edge of said workpiece, said second edge being generally parallel to and spaced from said first edge.

19. A workpiece clamp for holding workpieces while said workpieces are being sewn comprising:
a top plate,
a bottom plate;
a hinge communicating said top plate to said bottom plate;
said plates being pivotable with respect to one another;
a movable piston rod for pivoting said plates with respect to one another, said rod having a free end attached to one of said plates;
a cylinder carrying said piston rod for movement with respect to said cylinder;
a hollow rotatable shaft;
the other plate being fixedly attached to said shaft;
means for rotating said shaft;
a source of pressurized air;
said pressurized air communicating with said cylinder by way of said hollow shaft for moving said piston rod.

4,111,138
SEWING MACHINE MATERIAL PREASSEMBLY SYSTEM
John L. Rockerath, and Harold J. Schreck, both of Utica, N.Y., assignors to Cluett, Peabody & Co. Inc., Troy, N.Y.
Division of Ser. No. 619,968, Oct. 6, 1975, Pat. No. 4,009,672.
This application Nov. 3, 1976, Ser. No. 738,746
Int. Cl.² D05B *35/02, 27/00*
U.S. Cl. 112—141 **6 Claims**



1. A sewing machine system having material conveyance means for forwardly conveying first material blanks, each having a longitudinally extending outer lateral edge, individually in succession along a first longitudinally extending horizontal path and through a sewing station, and for forwardly conveying second longitudinally extending narrow material blanks individually in succession along a second longitudinally

extending path, overlying said first horizontal path and converging therewith, and into overlying superimposed association with the first material blanks respectively at the convergence of the paths as the first material blanks are longitudinally forwardly conveyed individually along the first path to form material preassemblies thereof prior to the sewing station, a second material blank folding device mounted along the second overlying path for prefolding both lateral edges of the second narrow material blank as it is conveyed longitudinally forwardly along the second path to the convergence of the material paths to form said material preassemblies with the second material blanks prefolded, the second material blank folding device comprising a central longitudinally extending base plate for supporting the narrow material blank and having longitudinally forwardly extending and laterally tapering lateral edges for providing increasing depending lateral edge portions of the narrow material blank as it is conveyed longitudinally forwardly along the base plate, and a longitudinally extending edge guide along and under each lateral edge of the base plate and spaced therefrom for laterally folding the respective depending edge portions inwardly to underlie the base plate as the second material blank is conveyed longitudinally forwardly therealong, the material conveyance means being operable for longitudinally forwardly conveying the material preassemblies individually along the first horizontal path through the sewing station, and sewing apparatus at the sewing station for sewing the material preassemblies as they are longitudinally forwardly conveyed through the sewing station by the conveyance means.

3. An edge folding device for use in a sewing machine installation having a belt conveyor with conveyor belts for conveying elongated narrow material blanks through the folding device, for automatically prefolding both lateral edges of an elongated narrow material blank and supporting the material blank and conveyor belts as the material blank is conveyed longitudinally forwardly through the edge folding device with the belt conveyors, comprising a central longitudinally extending flat base plate with an upper flat face for supporting the narrow material blank and having longitudinally forwardly extending and laterally tapering lateral edges for providing increasing depending lateral edge portions of the narrow material blank as it is conveyed longitudinally forwardly along the base plate, and longitudinally extending edge guide plates along and under the lateral edges of the base plate and spaced therefrom for laterally folding the respective depending edge portions inwardly to underlie the base plate as the material blank is conveyed longitudinally forwardly therealong by the conveyor belts, each guide plate comprising a laterally outer plate portion with an upper flat face generally coplanar with the upper flat face of the flat base plate and a laterally inner flat plate portion extending longitudinally under the respective lateral edge of the base plate and spaced therefrom for laterally folding the respective depending edge portion of the material blank to underlie the base plate as the material blank is conveyed longitudinally forwardly through the folding device by the conveyor belts.

4,111,139

MULTINEEDLE GUARD CONSTRUCTION

Kurt Klundt, Hirschhorn, Germany, assignor to Pfaff Industriemaschinen GmbH, Germany

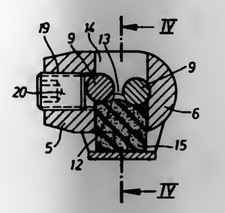
Filed Feb. 2, 1977, Ser. No. 764,813

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 76.06004[U]

Int. Cl.² D05B *55/02*

U.S. Cl. 112—226 **5 Claims**

1. A needle clamp, comprising a needle clamp body having a plurality of spaced parallel needles receiving bores defined therein, a needle having a shank portion positioned in each of said bores, said clamp body having a web portion which is laterally displaced and which is defined between adjacent needle receiving bores, a pressing screw threaded into said needle clamp body and bearing against the side of one of said needles which is positioned in the respective bores on a side thereof opposite to said web portion and substantially perpendicular to the axis of the needle receiving bores so as to urge said needle in a direction against said web portion and next adjacent needle a pressing member bore extending inwardly from a side of said needle clamp body at right angles to the threaded securing screw bore and into a portion of each of the needle receiving bores to the end of said web portion between



said needle receiving bores, a resilient member disposed in said connecting bore bearing against the needles therein, a plate member disposed on the exterior of said needle clamp body closing the resilient member receiving bore and holding the resilient member in a position to bear against the needles to hold them in position until they are secured by said securing screw.

4,111,140

THREAD TENSIONING DEVICE FOR A SEWING MACHINE

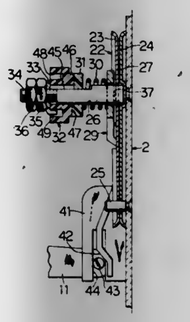
Tohru Gonnai, and Chikao Yamashita, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 8, 1976, Ser. No. 703,380

Claims priority, application Japan, Jul. 8, 1975, 50-83673

Int. Cl.² D05B *47/04, 47/02*

U.S. Cl. 112—254 **10 Claims**



1. A thread tensioning device for a sewing machine having a frame, a stitch-forming instrumentality mounted on said frame, and thread guide means for providing a path of the thread from a supply source of the thread to said stitch-forming instrumentality, said thread tensioning device being mounted within said frame, and comprising:

a pair of elongated rigid plate members mounted on said frame and extending along the thread path;

biasing means for concentratedly applying pressure at a fixed point on one of said plate members and along the thread path, to bias said one plate member toward the other; and

gap-forming means for forming a substantially wedge-shaped and extremely narrow gap, extending along the thread path, between said elongated plate members against said biasing means; and

wherein said plate members contact one another at the ends thereof;

wherein said gap-forming means include projection means for forming a fulcrum for said one plate member at a point sufficiently away from the contacting ends of said plate members and on said thread path between said plate members, and for forming a fixed clearance, substantially at least equal to the size of standard thread, at said point on said thread path; and

wherein said fixed point, at which said biasing means concentratedly applies pressure, lies in proximity to said fulcrum provided by said projection means;

whereby when the thread passes through said wedgeshaped gap during sewing operation, a suitable resistance force against movement of the thread is automatically established in response to the size of the thread by the tensioning device.

4,111,141

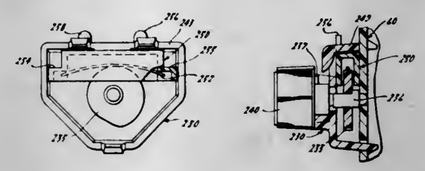
THREAD TENSIONER

James E. Thomson, Pleasant Lake, Mich., assignor to Western Stamping Corporation, Jackson, Mich.

Division of Ser. No. 589,552, Jun. 23, 1975, abandoned. This application Dec. 23, 1976, Ser. No. 754,013

Int. Cl.² D05B *47/02*

U.S. Cl. 112—254 **19 Claims**



1. A thread tensioner for a sewing machine comprising a box-like housing having a front wall and a top wall and having a transversely extending opening extending forwardly in the top wall from a position spaced rearwardly from the front wall, said opening continuing uninterruptedly part way down the front wall, a guide finger integral with the housing and having a top portion having a smooth bottom surface and extending forwardly from a mid portion of the rear margin of the opening in the top wall substantially parallel to the top wall and having a depending portion extending downwardly and forwardly part way in the opening in the front wall to a position outspaced from the front wall, the sides of said finger being spaced from both lateral ends of the opening, a friction block in the housing having a smooth top whereby the mid portion of a thread can be hooked under the finger and moved upwardly and rearwardly over the block to a position interposed between the top of the block and the bottom surface of such top portion of the finger, and means for yieldably urging the block upwardly against a thread in such interposed position.

4,111,142

APPARATUS FOR HEATING SEAMS OF CANS

Kiyoshi Kawamata, Ohmiya, Japan, assignor to Nihon Seikan Kabushiki Kaisha, Ohmiya, Japan

Filed Jan. 6, 1976, Ser. No. 646,938

Claims priority, application Japan, Jan. 6, 1975, 50-4344; Feb. 24, 1975, 50-25191

Int. Cl.² F16B *11/00*

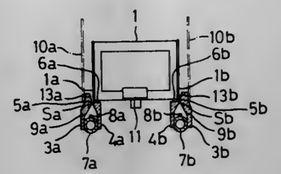
U.S. Cl. 113—1 E **9 Claims**

1. An apparatus for heating the adhesive-coated seams of cans while said cans are on a continuous conveyor, said seams including an end seam produced by curling the margin of the end plate of said can with the margin of the body of said can and a longitudinal side seam along the body of said can, said apparatus comprising:

at least one heat supply means for heating and blowing a flow of air;

at least one heated air guide means adjacent to said conveyor and at least partially surrounding said heat supply means and having an opening in one side thereof for concentrating the flow of blowing heated air from said heat supply means through said opening against said seams, said heated air guide means comprised of:

first and second guiding members spaced opposite and spaced from each other with a narrow slit therebetween,



whereby said heated air from said heat supply means is blown against said seam through said slit; and

heat holding means at least partially surrounding said conveyor for preventing the flow of heated air blowing through said slit between said guiding members from passing directly into the atmosphere surrounding said apparatus.

4,111,143

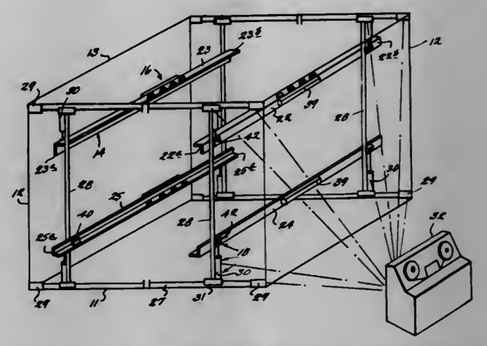
ASSEMBLY OF STRAIGHT DUCT AND TRANSITIONS

James Henry Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Apr. 18, 1977, Ser. No. 788,641

Int. Cl.² B21D *19/00*

U.S. Cl. 113—1 N **23 Claims**



1. Apparatus for effecting deformation of edge configurations of ductwork pieces to form a completed duct comprising:

a stationary frame member,

means for guiding the movement of ductwork pieces to be formed into duct with respect to said frame member,

said guiding means comprising a plurality of elongated guide rails, said guide rails being elongated in the direction of movement of ductwork pieces with respect to said stationary frame, and extending substantially the entire length of said stationary frame member, said guide rails all being movable with respect to said frame member,

means for moving said guide rails with respect to each other for adjusting the height and width of duct to be formed thereby,

roller means mounted on at least one of said guide rails for effecting deformation of edge portions of ductwork pieces by bending over an upstanding edge portion of an edge configuration of ductwork pieces to form duct seams, and

means for mounting said guide rails to said frame member.

4,111,144

SHIP'S DOCKING PLANT

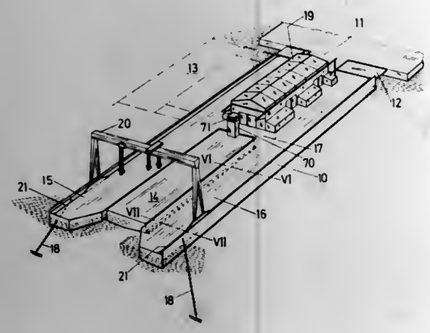
Sigurdur Ingvason, Gärdesvägen 31, Hovås, Sweden (43080)

Filed Dec. 22, 1976, Ser. No. 753,209

Claims priority, application Sweden, Jan. 12, 1976, 7600193; Nov. 10, 1976, 7612484

Int. Cl.² B63C *1/02*

U.S. Cl. 114—48 **7 Claims**



1. A ship's docking plant comprising

(A) a floating platform including at least one pair of parallel branches, defining between themselves a substantially rectangular opening and having a plane deck to provide a working area surrounding said opening along three of its sides,

(B) a docking member receivable in said opening and having a plane deck and being defined by two longitudinal and one inward, transverse side and one outward, transverse side,

(C) a number of tanks in said docking member and means to admit and to expel, respectively, water from said tanks to lower and to raise said docking member,

(D) a service tunnel running centrally in the longitudinal direction of said docking member, and

(E) a tower structure at the inward, transverse side of said docking member, communicating with said service tunnel, and having sufficient height to reach above water level, also when the docking member rests in its lowermost position.

4,111,145

ROLL ON/OFF - LIFT ON/OFF CARGO VESSEL

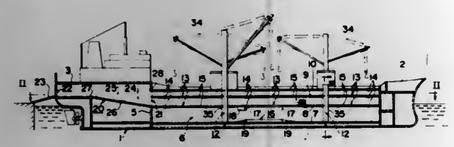
Teruhiro Ohsaka, Muroran, Japan, assignor to Narasaki Shipbuilding Company Limited, Muroran, Japan

Filed May 24, 1977, Ser. No. 800,059

Claims priority, application Japan, Aug. 17, 1976, 51/97942

Int. Cl.² B63B *27/00*

U.S. Cl. 114—72 **7 Claims**



1. A roll on/off-lift on/off cargo vessel comprising a hull, an upper exposed deck associated with said hull and having a plurality of hatch openings, means defining a plurality of superposed load surfaces within said hull beneath said exposed deck, said means defining said load surfaces comprising an inner bottom plating and at least one intermediate deck between said plating and said exposed deck, said plating and said exposed deck defining a cargo hold therebetween said at least one intermediate deck having a plurality of hatch openings, a plurality of open frame structures transversely disposed in said cargo hold in a spaced relationship to each other; each of said structures being dimensioned substantially to conform to the cross section of the hold, said open structures being readily closed by attachable partition plates and said structures each comprising side portions and a plurality of horizontal beams, said beams having upper surfaces substantially aligned with respective ones of said load surfaces to permit free movement of roll on/off traffic along said surfaces means providing roll on/off access to said load surfaces for traffic from outside the vessel and at least one liftable loading plate disposed to operate in one of said hatch openings of said at least one intermediate deck for transporting cargoes between the inner bottom plating and said at least one intermediate deck.

4,111,146

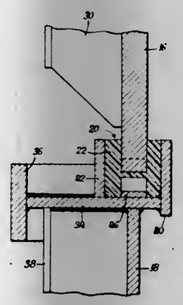
TANK SUPPORT JOINT

Robert A. Babcock, Duxbury; Rolf D. Glasfeld, and Luther E. Holt, both of Cohasset, all of Mass., assignors to General Dynamics Corporation, St. Louis, Mo.

Filed Jun. 22, 1977, Ser. No. 809,110

Int. Cl.² B63B *25/12*

U.S. Cl. 114—74 A **10 Claims**



1. In a marine vessel for transporting liquefied gas, a cargo tank for holding the liquefied gas, a support structure for supporting the tank in the hull of the vessel, which support structure includes a two-piece metallic skirt having a first portion connected to the tank and a second portion connected to the hull, annular trough means carried by one of said skirt portions and encircling said tank, the edge of said other skirt portion extending into said annular trough means but being spaced from contact with the walls of said trough means, and hardened material filling said trough means to a level beyond said edge of said other skirt portion to thereby rigidly structurally interconnect said skirt portions and prevent radial movement of one of said skirt portions relative to said other skirt portion.

4,111,147

COLLAPSIBLE BOAT ANCHOR

Gilles Morissette, 7950 Jacques Rousseau Ave., Apt. 403, Riviere-des-Prairies, Quebec, Canada (H1E 1J6)

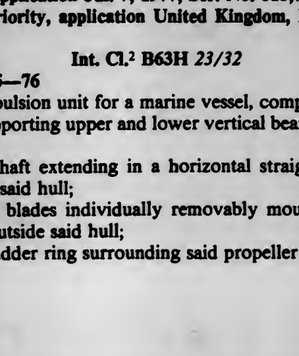
Filed Apr. 26, 1977, Ser. No. 791,037

Claims priority, application United Kingdom, Apr. 28, 1976, 17225/76

Int. Cl.² B63B *21/24*

U.S. Cl. 114—298 **3 Claims**

1. A collapsible boat anchor comprising an elongated tubular shank member open at both ends, a line attachment means at one end, pairs of parallel fins secured to the other end of said shank member and laterally extending therefrom, anchor flukes each having an inner end inserted between one of said pairs of fins and pivotally connected thereto about respective pivot pins for movement of said anchor flukes between three positions, namely: a storage position in which the anchor flukes extend alongside the shank towards said one end, an operative position extending generally laterally away from the shank, and an anchor-releasing position in which the anchor flukes extend longitudinally of, and away from, said one end, said fins protruding from an edge of the respective anchor flukes in the operative position of the latter and provided with a pair of registering holes adapted to receive a shear pin, a shear pin inserted in said registering holes, the shear pins of the associated anchor flukes being in the path of the latter to prevent said anchor flukes from pivoting from said operative to said anchor-releasing position, whereby said last-named pivoting movement is accomplished only upon braking of said shear



pins by said flukes, a plunger mounted within said tubular shank and protruding from the other open end of said shank, a removable cap for closing said one end of said tubular shank, means to removably secure said cap to said one end, a spring disposed within said tubular shank and abutting against said cap at one end and against said plunger at the other end, said spring compressible by movement of said plunger towards said one end, said anchor flukes having flats at their pivoted end which are engaged by said plunger in the operative and storage positions, respectively, of said anchor flukes, whereby said anchor flukes can be pivoted between said operative and said storage position by displacing said plunger against the bias of said spring, and further including a bolt screwed within said cap extending through said spring and adapted to abut against said plunger, said bolt in an adjusted position thereof relative to said cap, preventing longitudinal movement of said plunger and maintaining the same against said flats in the operative position of said anchor flukes.

4,111,148

APPARATUS FACILITATING REMOVAL OF A KORT RUDDER RING ON A MARINE VESSEL

Colin Wray Herbert, 44 High Street, Stokesley, Tees-side, North Yorkshire, England

Continuation of Ser. No. 682,903, May 4, 1976, abandoned. This application Jul. 7, 1977, Ser. No. 813,766

Claims priority, application United Kingdom, May 5, 1975, 18671/75

Int. Cl.² B63H *23/32*

U.S. Cl. 115—76 **5 Claims**

1. A propulsion unit for a marine vessel, comprising

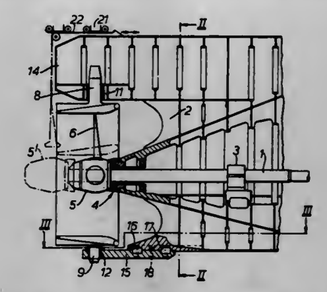
a hull supporting upper and lower vertical bearings at its aft end;

a drive shaft extending in a horizontal straight line from within said hull;

propeller blades individually removably mounted on said shaft outside said hull;

a Kort rudder ring surrounding said propeller and carrying upper and lower vertical journals mounted for rotation in said upper and lower bearings, respectively, and

a housing containing said lower bearing, said housing connected to said hull by removable means enabling said housing and said lower bearing to be lowered directly from said hull and said lower journal, said housing extending forwardly beyond the forward end of said Kort rudder ring so that in response to removal of said housing and at least some of said blades, said upper journal is downwardly slidable from said upper bearing so as to permit downward removal of said Kort rudder ring from said hull for inspection of said upper and lower journals.



4,111,149

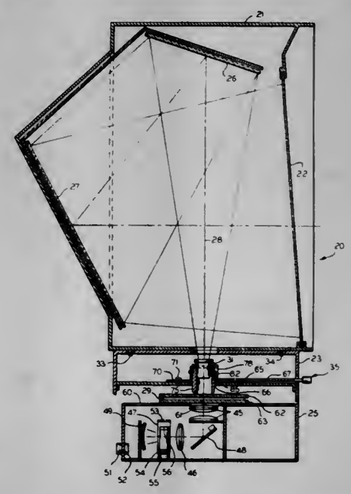
OPTICAL STRUCTURE FOR MICROFICHE READER

Thomas R. Wells, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 532,802, Dec. 16, 1974, abandoned. This application Aug. 23, 1976, Ser. No. 716,740

Int. Cl.² G03B *21/22*

U.S. Cl. 353—78 **7 Claims**



1. A modular system forming a microfiche image reader having:

a housing with a modular hood means superimposed thereon, said housing comprising modular parts which may be replaced or interchanged;

optical projection means in said housing including a first module means including a source of light having at least a condenser lens, and a bulb which should not be touched by a human hand, said first module means being replaced as a unit, magnification means for projecting said light in a path from said housing, and means for supporting a microfiche in said path;

said modular hood means is removably seated on said housing in any of at least two different orientations;

corresponding aperture means in abutting top and bottom walls of said housing and said modular hood means respectively said modular hood means being located in said light path whereby an image of a microfiche in said support means in said light path is projected into said modular hood means through said aperture means regardless of the orientation of the modular hood means on said housing;

a plurality of reflecting means in said modular hood means for projecting said light along a selected folded path, in one of several different directions depending upon the selected orientation of the hood means; and

releasable connecting means extending between said modular hood means and said housing for enabling said modular hood means to be removed from said housing and either be moved from a first orientation through 180° to a new orientation or be replaced by a second modular hood means,

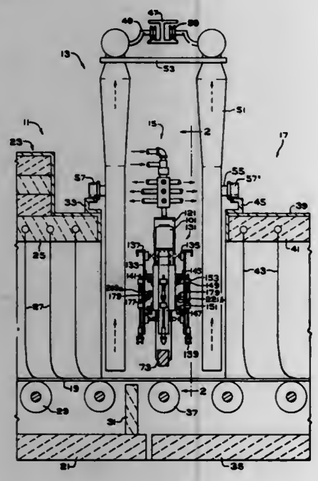
said releasable connecting means comprising a pair of spaced apertures in said top wall of said housing and a mating pair of pins in said bottom wall of said hood means, said apertures and said pins being on either side of and equidistant from the center of said corresponding aperture means whereby said modular hood means may be removed and rotated through 180° or replaced by another modular hood means.

4,111,150

APPARATUS FOR COATING AN ADVANCING SUBSTRATE

Harold E. Donley, Oakmont, and William P. Cathers, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 28, 1977, Ser. No. 782,132
Int. Cl.² B05B 3/00; B05C 5/00
U.S. Cl. 118—7 **6 Claims**



1. In an apparatus for dispensing a coating composition onto a surface of a substrate comprising a substrate conveying means having a plane of conveyance, an endless chain in a plane substantially parallel to the plane of the conveying means, a plurality of coating dispensers mounted on the chain, each oriented for dispensing a coating composition toward the plane of the conveyer, a rotatable coating composition distributing means for distributing coating composition to each dispenser and means for driving the chain and the rotatable distributing means to cause the dispensing means to twice traverse the conveying means during a cycle of rotation along paths extending across the conveying means transverse to an intended path of substrate conveyance, the improvement which comprises

means for selectively operating a first set of the plurality of dispensers to cause them to dispense a first coating composition during a first traverse of the conveying means, and

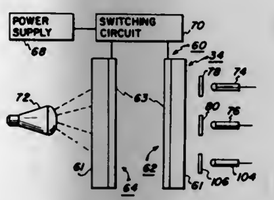
means for selectively operating a second set of the plurality of dispensers to cause them to dispense a second coating composition during a second traverse of the conveyer means.

4,111,151

MULTI-PARTICLE DEVELOPABILITY REGULATING SYSTEM

Frederick R. Ruckdeschel, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1977, Ser. No. 798,533
Int. Cl.² B05C 11/00
U.S. Cl. 118—7 **20 Claims**



1. An apparatus for regulating the developability of a development system comprising a mixture of particles having at least two different colors, including:

transparent electrode means electrically biased to attract a mixture of particles thereto;

means for illuminating said electrode means and the mixture of particles adhering thereto with light rays; and

means for sensing the intensity of the light rays transmitted through the mixture of particles adhering to said electrode means, said sensing means having peak transmittances at the wavelength of the peak transmittance of the resultant color formed by the mixture of different colored particles, at the wavelength of the minimum transmittance ratio of the differently colored particles forming the mixture and at the wavelength of the maximum transmittance ratio of the differently colored particles forming the mixture, said sensing means generating electrical signals indicative of the mass of each of the differently colored particles in the mixture.

4,111,152

ELECTROSTATOGRAPHIC APPARATUS COMPRISING IMPROVED DEVELOPMENT BIAS MEANS

Koji Sakamoto, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

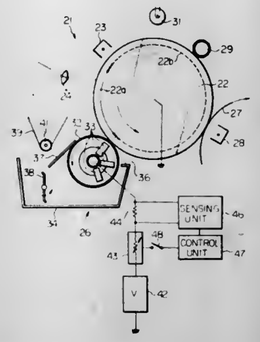
Filed May 12, 1977, Ser. No. 796,108
Claims priority, application Japan, May 17, 1976, 51-56386
Int. Cl.² G03G 15/044, 15/14; B05C 11/00
U.S. Cl. 118—7 **6 Claims**

1. In an electrostatographic apparatus having a photoconductive member and a developing means for applying a toner substance to the photoconductive member for development, the combination comprising:

a variable bias voltage means for applying a bias voltage across the developing means and the photoconductive member, the bias voltage means comprising a fixed voltage source and a variable resistance means connected between the voltage source and the developing means;

sensing means for measuring the electrical resistance of the toner substance, the bias voltage means being responsive to the sensing means in such a manner that the bias voltage is set for development in accordance with said resistance of the toner substance; and

a reference surface means provided on the photoconductive member, the sensing means being responsive to the electrical current through the voltage source, variable resistance means, toner substance and reference surface means, the bias voltage means being constructed to automatically adjust the electrical resistance of the variable resistance means to a value such that the sensing means senses a predetermined electrical current and maintains said resistance of the variable resistance means constant at said value for development.

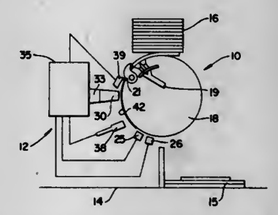


4,111,153

ADHESIVE DISPENSING APPARATUS FOR CARD TIPPER

Peter H. Rohrbach, Bethlehem, Pa., assignor to Harris Corporation, Cleveland, Ohio

Filed Oct. 14, 1977, Ser. No. 842,000
Int. Cl.² B05C 11/00
U.S. Cl. 118—7 **12 Claims**



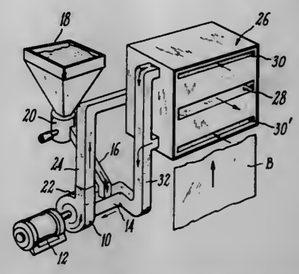
1. Apparatus for applying adhesive to a card or other insert to be adhered to a signature comprising adhesive dispensing means, means for moving said card in a path past said adhesive dispensing means, first card detector means positioned adjacent said dispensing means, second card detector means spaced from said first detector means, means for providing a signal to actuate said dispensing means when said card is detected by both said detector means, means for determining the speed of travel of said card in said path, and means responsive to a speed of travel of said card below a predetermined speed for periodically interrupting the actuation of said dispensing means during the passage of said card, whereby said card receives dots of adhesive from said dispensing means.

4,111,154

APPARATUS FOR THE SURFACE TREATMENT OF GALVANIZED SHEET-IRON

Roland Kissel, Le Vesinet, and Robert Wang, Wissous, both of France, assignors to Heurtey Metallurgie, Paris, France

Filed Apr. 11, 1977, Ser. No. 786,672
Int. Cl.² B05C 19/00
U.S. Cl. 118—10 **7 Claims**



1. An apparatus for surface treating a sheet-iron strip which continuously emerges in a substantially vertical direction from a galvanizing bath with a liquid galvanizing metallic coating thereon, by spraying finely divided material particles onto the liquid metallic coating before the coating crystallizes, said apparatus comprising:

a housing formed by two identical casings disposed in spaced relation to each other to define therebetween a substantially vertically extending passage through which a coated strip is adapted to continuously pass;

each said casing having therein an enclosed interior divided by partitions into separate upper and lower recovery passages and a central spraying passage positioned between said upper and lower recovery passages, said recovery and spraying passages extending in substantially horizontal directions across the width of the respective said casing;

each said casing having therein a first substantially horizontally extending slot-shaped opening communicating the respective said spraying passage with said vertically extending passage between said casings, each said first slot-shaped opening forming a spraying nozzle disposed at substantially a right angle to and across the entire width of a strip adapted to pass through said vertically extending passage;

each said casing having therein second and third substantially horizontally extending slot-shaped openings communicating the respective said upper and lower recovery passages with said vertically extending passage between said casings, said second and third slot-shaped openings forming respective upper and lower recovery slots at upper and lower portions of the respective said casing, said recovery slots being disposed at substantially right angles to and extending across the entire width of a strip adapted to pass through said vertically extending passage;

means for distributing a supply of finely divided material particles;

a single blower having a suction side and a delivery side;

means connecting said suction side of said single blower to said distributor means such that said blower receives particles therefrom;

first conduit means connecting said delivery side of said single blower to said spraying passages of both said casings, such that said blower blows an air stream suspending particles therein into said spraying passages and sprays said air stream and suspended particles outwardly therefrom through the respective said spraying nozzles against opposite sides of a strip adapted to pass through said vertically extending passage;

the air throughput capacity of said blower being regulated

with respect to the vertical dimension of said casings such that a liquid metallic coating on a strip adapted to pass through said vertically extending passage sets before the strip passes completely through said vertically extending passage;

second conduit means connecting said suction side of said single blower to said upper and lower recovery passages of both said casings, such that said blower recovers said air stream and any particles remaining suspended therein by withdrawing said air stream into said upper and lower recovery passages through said respective upper and lower recovery slots;

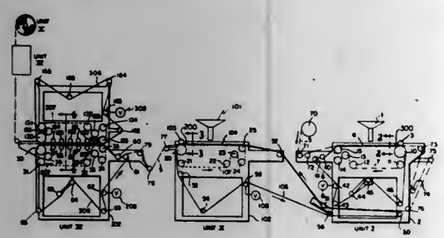
hood means, positioned above said housing, for collecting any portion of said air stream and any particles remaining suspended therein which escapes above said upper recovery slots, said hood means comprising a pair of hood casings, one each of said hood casings being positioned above a respective one of said casings of said housing, said hood casings being spaced from each other by said vertically extending passage, each said hood casing having therein a horizontally extending slot opening into said vertically extending passage; and

third conduit means for connecting both of said hood casings to a discharge fan for withdrawing any escaped portion of said air stream through said hood casings and to a particle separator for separating particles from such escaped portion of said air stream.

4,111,155
CATHODE COATING APPARATUS

Gerhart Paul Klein, Manchester, Mass.; John N. Oliver, Danville, N.H., and Arthur Emil Fitchman, Yonkers, N.Y., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Sep. 12, 1977, Ser. No. 832,257
Int. Cl.² B05C 9/04, 9/14
U.S. Cl. 118—642 6 Claims

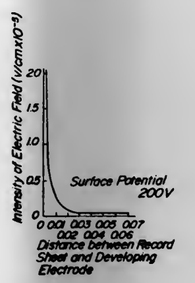


1. A machine for the continuous fabrication of electrochemical cell cathodes comprised of coated expanded material comprising means for dispensing a pasty coating material onto one side of a moving expanded substrate material, means for uniformly spreading said coating material onto said substrate, means for compressing said coating material onto said substrate, means for simultaneously therewith absorbing liquids expressed from said pasty material, wherein said absorbent means comprises a moving endless absorbent belt in contact with said substrate, and means for removing absorbed liquid from said belt, means for obverting said substrate onto a second moving endless absorbent belt, means for dispensing additional of said coating material onto the reverse side of said substrate, means for uniformly spreading said additional coating material, means for compressing said coating material onto said reverse side of said substrate, means for simultaneously therewith absorbing liquids expressed from said pasty material wherein said absorbent means comprises said second moving endless absorbent belt in contact with said coated substrate, and means for removing a substantial amount of said absorbed liquid from said second belt, means for calendering said dually coated substrate, means for absorbing liquids expressed from said dually coated substrate simultaneously therewith wherein said means comprises third and fourth moving endless absorbent belts in contact with said coated expanded material, individual means for removing absorbed liquid from said third and fourth belts, means for drying said calendered dually coated expanded material, and means for taking up the resulting dried dually coated expanded material.

4,111,156
DEVICES FOR DEVELOPING AN ELECTROSTATIC CHARGE IMAGE ON A RECORD SHEET BY A DEVELOPER SOLUTION

Masaji Nishikawa, Hachioji; Yoshiro Suzuki, Tama, and Tadahiro Yasuda, Fuchu, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 637,768, Dec. 4, 1975, abandoned. This application Jun. 22, 1977, Ser. No. 809,045
Claims priority, application Japan, Dec. 9, 1974, 49-140532
Int. Cl.² G03G 15/10, 15/06
U.S. Cl. 118—662 3 Claims



1. A device for developing an electrostatic charge image on a record sheet by a developer solution, comprising: a tank containing a developer solution with charged particles dispersed therein, said record sheet being fed from one end of said tank into said developer solution and leaving said tank from another end thereof, and at least one pair of opposed rollers immersed in that part of said developer solution which is located at an intermediate region of said tank, said opposed rollers being resiliently urged against said record sheet under pressure and rotated so as to feed said record sheet through said developer solution, said opposed rollers immersed in said developer solution being formed of electric conductive material and one of said opposed rollers is connected through a resistor to one terminal of a D.C. supply source and the other roller is connected to the other terminal of said D.C. supply source, thereby preventing said electroconductive rollers from being shortcircuited in the absence of said record sheet.

4,111,157
ANIMAL LITTER CONTAINER

Donald Haugen, 709 W. Huron St., Ann Arbor, Mich. 48103

Filed Jan. 24, 1977, Ser. No. 761,990
Int. Cl.² A01K 29/00; A47K 11/02
U.S. Cl. 119—1 15 Claims

1. An animal litter container comprising:

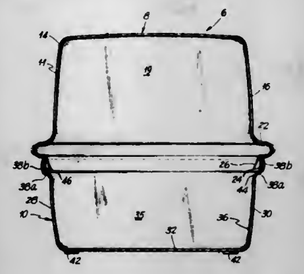
a. a first enclosure portion;

b. a second enclosure portion, one of said enclosure portions being disposed vertically above the other, said enclosure portions each being defined by a wall, such wall including generally upright wall portions and other wall portions joining said generally upright wall portions;

c. means in one of said side walls of one of said enclosure portions to provide access for an animal to said enclosed space, said first and second enclosure portions otherwise defining a completely enclosed space when joined together;

d. means on said first enclosure portion for coupling said first and second enclosure portions together in a substantially horizontal joining plane, at least part of said coupling means restrainingly engaging said second enclosure portion;

e. means on said first enclosure portion for effecting movement of said coupling means out of restraining engagement with said second enclosure portion of said container, said moving means including a compressible resilient section of said wall of said first enclosure portion, said compressible resilient section having an outwardly convex bowed configuration, said compressible resilient section including first means for gripping said section in a first, substantially horizontal gripping plane and second means for gripping said section in a second, substantially

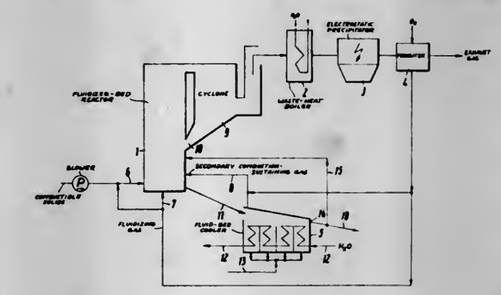


horizontal gripping plane, said gripping means being relatively movable by a manual squeezing action from a relaxed position wherein said first and second gripping means are vertically spaced from each other a given distance to a compressed position wherein said first and second gripping means are closer together and spaced from each other another distance which is less than said given distance, the movement of said first and second gripping means from said relaxed to said compressed positions effecting said movement of said coupling means out of restraining engagement, whereby said enclosure portions may be separated.

4,111,158
METHOD OF AND APPARATUS FOR CARRYING OUT AN EXOTHERMIC PROCESS

Lothar Reh; Martin Hirsch, both of Frankfurt am Main, and Ludolf Plass, Kronberg, all of Germany, assignors to Metallgesellschaft Aktiengelsellschaft, Frankfurt am Main, Germany

Filed May 26, 1977, Ser. No. 801,007
Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624302
Int. Cl.² F22B 1/02; F23D 19/00
U.S. Cl. 122—4 D 15 Claims



1. A method of carrying out an exothermic process in which a combustible substance is burned in a bed of fluidized solids in a fluidized-bed reactor, solids entrained with gas from the bed are separated from the gas in a solid/gas separator, and separated solids are returned to the fluidized-bed reactor through a recycling conduit, the reactor, separator and recycling conduit forming a circulating system for the solids, said method comprising the steps of:

(a) feeding an oxygen-containing gas into said reactor on different levels in two partial streams whereby at least one of said streams is constituted as secondary gas and is introduced at least at one location above the level of introduction of fluidizing gas into the reactor;

(b) maintaining the volume ratio of fluidizing gas fed to said reactor and secondary gas between 1:20 and 2:1;

(c) introducing said gases into said fluidized-bed reactor so that said fluidized bed has a continuous solids density gradient from the bottom of the fluidized bed to the top of said fluidized-bed reactor and said bed has a mean density of the suspension above the secondary gas inlet of 10 to 40 kg/m³

(d) feeding solids and a combustible component into a space in said fluidized-bed reactor below said secondary gas inlet and substantially free from internal fixtures;

(e) withdrawing hot solids from said circulating system;

(f) cooling the solids withdrawn in step (e) by direct and indirect heat exchange in a fluidized-bed cooler;

(g) recycling at least part of the cooled solids from step (f) to said reactor to maintain a predetermined constant reaction temperature therein; and

(h) feeding hot gas from said fluidized-bed cooler as said secondary gas to the fluidized-bed reactor.

14. A plant for the combustion of a combustible material which comprises:

(a) an upright fluidized-bed reactor comprising:

a fluidizing gas inlet at the bottom of said reactor, a secondary gas inlet opening into said reactor at a distance of at least one meter above said bottom of said reactor, the space within said reactor between said bottom and said secondary gas inlet being free from internal fixtures, and

an outlet at the top of said reactor for exhaust gas entraining solids therewith;

(b) a cyclone connected to said outlet for separating solids from said exhaust gas;

(c) a recycling conduit connecting said cyclone with the interior of said reactor for returning said solids to said reactor;

(d) means for withdrawing hot solids from the circulating system consisting of said reactor, said separator and said recycling conduit;

(e) a fluidized-bed cooler receiving withdrawn solids from the last-mentioned means, said fluidized-bed cooler comprising:

a plurality of compartments traversed by the solids to be cooled in succession,

means for fluidizing the solids in each of said compartments,

respective cooling registers in contact with the solids in each of said compartments,

means for passing a coolant through said registers in succession and in a direction opposing the direction of movement of solids from compartment to compartment in said fluidized-bed cooler, and

means for feeding fluidizing gas, heated in said cooler, to said secondary gas inlet; and

(f) control means for feeding a proportion of cooled solids from said cooler to said reactor to maintain the temperature therein substantially constant.

4,111,159
RECOVERY OF HEAT FROM MOLTEN SLAG FROM METALLURGICAL PROCESSES

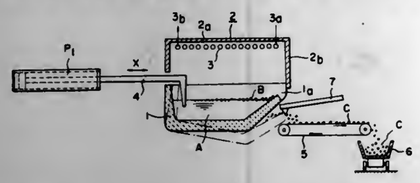
Ryuzo Okuno, Kobe; Hiroo Fujii, Kakogawa, and Keio Toyoda, Osaka, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Mar. 21, 1977, Ser. No. 779,600
Claims priority, application Japan, Mar. 24, 1976, 51-32980
Int. Cl.² F22B 1/02
U.S. Cl. 122—27 9 Claims

1. A method of recovering heat from slag from a metallurgi-

cal process, comprising the steps of placing a molten slag below radiant heat absorbing tubes, passing a fluid medium through the heat absorbing tubes, causing heat radiated by the molten slag and by subsequently solidified slag at high temperature to undergo transfer to the fluid medium and thereby to be recovered, and exposing the molten and solidified slags on the slag surface thereby to promote said transfer of heat.

8. Apparatus for recovering heat from slag from a metallurgical process, comprising: a plurality of vessels with open tops adapted to contain portions of the slag and disposed end-to-end in a circle; a plurality of trucks coupled end-to-end in said circle and each supporting a respective one of the vessels; rail



means laid out in said circle and supporting said trucks thereon; an annular cover structure for covering the tops of the vessels from above with a space formed therebetween; radiant heat absorbing means disposed in said space and communicating with piping outside the cover structure, a fluid medium being passed through the radiant heat absorbing means thereby to absorb heat radiated by the slag and transfer the heat to the heat absorbing means for utilization; and means for agitating the slag in each vessel thereby to remove any cooled slag layer from the upper surface of the slag and to stir the slag in molten state as well as in subsequently solidified condition at high temperature.

4,111,160

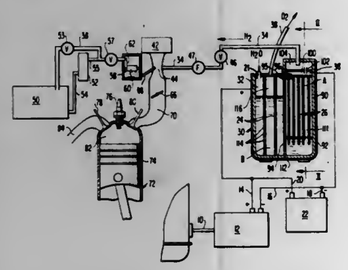
METHOD AND APPARATUS FOR OPERATING COMBUSTION ENGINES

Pier F. Talenti, 2100 Massachusetts Ave. NW., Washington, D.C. 20008

Continuation-in-part of Ser. No. 677,119, Apr. 16, 1976, abandoned, and a continuation-in-part of Ser. No. 734,475, Oct. 29, 1976, abandoned. This application Apr. 14, 1977, Ser. No. 787,651

Int. Cl.² F02B *43/08*

U.S. Cl. 123—1 A 7 Claims



1. In an internal combustion engine having a carburetor, a gas generator cell adapted to receive an electrolytic solution and manifold means between said carburetor and said gas generator, the improvement comprising:

a separator dividing said cell into first and second compartments and having an opening therethrough providing communication between said compartments,

at least one cathode plate supported in said first compartment and shaped so that the incremental amount of active surface area exposed to the electrolyte by each successive incremental rise in the electrolyte in said first compartment is larger than the incremental amount of active surface area exposed to the electrolyte by the previous incremental rise in the electrolyte in said first compartment,

at least one anode plate disposed in said second compartment,

first means for applying an electric current to the circuit comprised of said anode plate, said cathode plate, and the electrolytic solution, to thereby produce hydrogen in said first compartment, and

second means to carry said hydrogen to said manifold means,

whereby when a back pressure is built in said manifold means and first compartment due to a production of hydrogen, the level of electrolyte in said first compartment is lowered and the surface area of said cathode plates exposed to said electrolyte is reduced to thereby reduce the production of hydrogen.

4,111,161

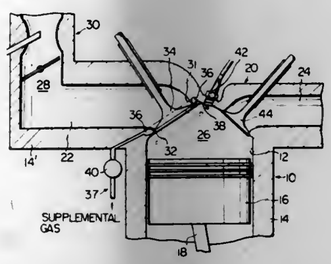
ENGINE OPERATED ON HYDROGEN-SUPPLEMENTED FUEL

Zene Ueno, Fuchu; Akira Morita, Tokyo; Shigeo Iwaki, Akishima; Tadahiko Nagaoka, Tokorozawa, and Tokuich Inagaki, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Oct. 22, 1975, Ser. No. 624,921

Int. Cl.² F02B *43/08*

U.S. Cl. 123—3 4 Claims



1. An internal combustion engine having a combustion chamber defined between a surface of a cylinder head and a piston, comprising:

lean air-fuel mixture supply means for supplying air-fuel mixture leaner than stoichiometric into the combustion chamber through an intake port formed in the cylinder head;

means for defining an annular hydrogen gas supply passage in the cylinder head, said hydrogen gas supply passage being formed annularly around an intake valve seat secured to the cylinder head and communicable with the intake port through the surface of the intake valve seat;

a hydrogen gas source operatively connected to said annular hydrogen gas supply passage; and

a spark plug disposed through the cylinder head and in the combustion chamber, said spark plug being located adjacent the wall surface of the cylinder head defining the combustion chamber.

4,111,162

METHOD AND SYSTEM FOR CONTROLLING THE MIXTURE AIR-TO-FUEL RATIO

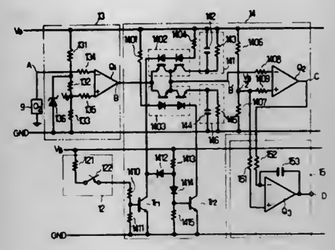
Hideaki Norimatsu; Akio Kobayashi; Akira Masuda, and Sigenori Kitajima, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 27, 1976, Ser. No. 690,628

Claims priority, application Japan, Jun. 10, 1975, 50-70296; Jun. 17, 1975, 50-73969

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EE 2 Claims



1. An air-to-fuel ratio control system for an internal combustion engine comprising:

mixture supply means, provided in an intake passage of an engine, for supplying an air-fuel mixture thereto;

oxygen responsive means, provided in an exhaust passage of said engine, for producing a detection signal which changes the signal level thereof to indicate the absence and the presence of oxygen in said exhaust passage;

integration means, connected between said oxygen responsive means and said mixture supply means, for producing an integration signal changing in increasing and decreasing directions in response to the level of said detection signal to thereby correct the mixture air-to-fuel ratio, said integration means being adapted to change the signal level of said integration signal at a constant speed;

throttle condition detection means, coupled to the throttle valve of said engine, for producing a condition signal when said throttle valve is opened from the fully closed angle; and

integration control means, connected between said oxygen responsive means and said integration means and responsive to said throttle condition detection means, for controlling said detection signal prior to the integration thereof in response to said condition signal such that the changing rate of said integration signal with respect to the duration of said detection signal is made different between said increasing and decreasing directions, whereby the mixture air-to-fuel ratio is changed from a first ratio to a second ratio when said throttle valve is opened from the fully closed angle, said integration control means including a first delay circuit for delaying one of the signal levels of said detection signal by a predetermined time while said condition signal is generated such that the integration in one direction between said increasing and decreasing directions is kept further during said predetermined time, and a second delay circuit for delaying the other of the signal levels of said detection signal by another predetermined time while said condition signal is not generated such that the integration in the other direction between said increasing and decreasing directions is kept further during said another predetermined time.

4,111,163

AIR INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

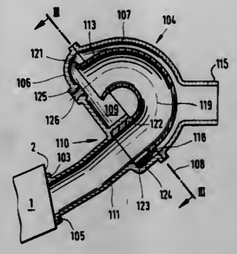
Georg Ederer, Munich; Adolf Fischer, Haar am Jagdfeld; Paul Rosche; Helmar Troll, both of Munich; Wolfgang Wurst, Dachau; Helmut Hengl, and Jiří Seidl, both of Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Munich, Fed. Rep. of Germany

Filed Jul. 22, 1975, Ser. No. 598,086

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1975, 2501305

Int. Cl.² F02B *75/18*

U.S. Cl. 123—52 M 9 Claims



1. In combination, an internal combustion engine and an air induction system therefor, said air induction system having an air inlet opening, a distributor housing, and a plurality of induction passages, said induction passages having their respective inlets disposed in the distributor housing and respective outlets for connection to respective inlet ports of the engine, each induction passage consisting of a first portion and a second portion in series between the inlet and the outlet thereof, the first portion defining said inlet and the second portion defining said outlet, the distributor housing comprising a first pressure die cast part which defines said second portions of the induction passages, and a second part in which said air inlet is formed and which is joined to said first part to form said distributor housing therewith, and said indirection system further including a plurality of further parts defining the first portions of said induction passages respectively, and each of said further parts being curved and consisting of a separate member mounted on said first pressure die cast part.

4,111,164

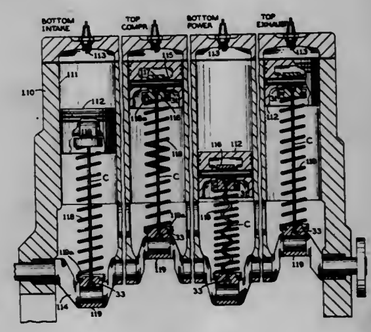
VARIABLE DISPLACEMENT ARRANGEMENT IN FOUR CYCLE, RECIPROCATING INTERNAL COMBUSTION ENGINE

Robert P. Wuerfel, 4620 NW. 45 Ct., Ft. Lauderdale, Fla. 33319

Filed Sep. 27, 1977, Ser. No. 837,030

Int. Cl.² F02B *75/04*

U.S. Cl. 123—78 E 7 Claims



1. In a four cycle, reciprocating, internal combustion engine

having a cylinder, a piston reciprocable in said cylinder, means for introducing a fuel mixture into the cylinder, means for igniting the fuel mixture, means for exhausting the burned gases from the cylinder, an engine crankshaft, and compression spring means acting between said piston and said crankshaft to cause crankshaft rotation in response to piston reciprocation, the improvement which comprises:

means limiting the expansion of said spring means to compress the latter with a force at least substantially equal to the piston force required to compress the fuel mixture in the cylinder for proper combustion when the engine is under substantially no load, whereby said spring means provides a substantially stiff coupling between the piston and the crankshaft when the engine is under substantially no load and provides a resiliently compressible coupling when the engine is under substantial load;

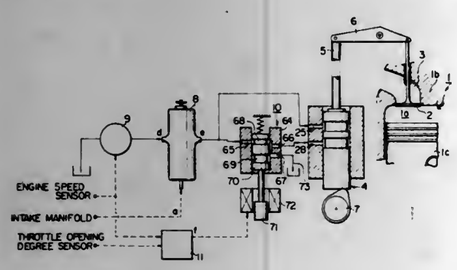
said spring means being compressible between said piston and said crankshaft substantially in proportion to said substantial load on the engine.

4,111,165

VALVE OPERATING MECHANISM OF INTERNAL COMBUSTION ENGINE

Syuniti Aoyama; Yoshimasa Hayashi, both of Yokohama, and Yasuo Nakajima, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jul. 2, 1976, Ser. No. 702,073
Claims priority, application Japan, Jul. 5, 1975, 50-82897
Int. Cl.² F01L *1/34*
U.S. Cl. 123—90.15 **20 Claims**



1. A valve operating mechanism of an internal combustion engine having engine operating valve, comprising:

pressure regulator means for regulating the pressure of oil delivered from an oil source under pressure in response to engine load, said pressure regulator means including a cylindrical body having adjacent its one end an axially extending first cylindrical chamber, and adjacent its other end an axially extending second cylindrical chamber, an axially extending bore through which said first and second cylindrical chambers communicate, the diameter of said bore being smaller than that of said first and second chambers, said bore communicating out of said body, an oil inlet communicating with said bore and connected to a pressurized oil source, an oil outlet communicating with said bore, said first chamber and said oil outlet communicating through a first pressure balancing hole, said first chamber and said oil inlet communicating through a second pressure balancing hole, and an oil vent opening connecting the inside of said oil outlet to the atmosphere, a cylinder cap closing the one end of said cylindrical body and defining said first chamber, a regulator piston slidably disposed within said first chamber, said regulator piston having an axially extending hollow sleeve which is slidably disposed within said bore and has holes formed through the wall of said sleeve, the inside of said sleeve communicating with a portion of the first chamber defined by said cylinder cap and said regulator piston within said bore and communicating with said oil inlet and said oil outlet through said holes of said sleeve, a first spring disposed between said cylinder cap and said regulator piston, an axially extending cylindrical switch piston slidably disposed within said sleeve, said switch piston having an axially extending central opening communicating the inside of said sleeve with said bore and a ring groove which is alignable with said holes of said sleeve, and means for moving said switch piston in response to the engine load; and

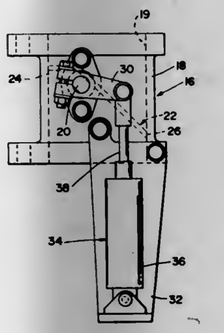
valve lifter means for operating the engine operating valve and capable of changing the valve lift and the valve timing of the engine operating valve in response to the pressure of the oil introduced therein from said pressure regulator means.

4,111,166

ENGINE MOUNTED EXHAUST BRAKE

Charles E. Alstrin, Peoria; Carl L. McClung, Metamora, and James C. Smith, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 7, 1977, Ser. No. 766,314
Int. Cl.² F02D *9/06*
U.S. Cl. 123—97 B **4 Claims**



1. Exhaust brake apparatus for an internal combustion engine including an exhaust line, wherein exhaust back pressure is to be limited to a certain level, comprising a damper movably mounted within said exhaust line, means operable by air pressure for moving said damper to its closed position, the damper having a first planar portion and a smaller second planar portion bent at an obtuse angle from said first planar portion in the direction of flow in the exhaust line, the damper further including a shaft portioned adjacent said second planar portion such that said shaft is offset from the centerline of the exhaust line, so that with a generally operable level of air pressure applied to the means operated by air pressure, the damper opens under a certain level of exhaust back pressure.

4,111,167

CARBURETOR BY-PASS

Earl Conley, Salmon Arm, Canada, assignor to Cyril Cecil Kane, Salmon Arm, Canada, a part interest

Filed Oct. 14, 1976, Ser. No. 732,326
Claims priority, application Canada, Sep. 3, 1976, 260459
Int. Cl.² F02D *11/10*
U.S. Cl. 123—102 **8 Claims**

1. An air by-pass device for internal combustion engines comprising:

a first valve assembly adapted to be sealingly mounted between a carburetor assembly and the engine intake manifold, said valve assembly including a housing having a passageway extending therethrough providing fluid communication between said carburetor and said manifold, and a valve member operable to move between open and and substantially closed positions in said passageway,

means for conveying ambient air to said intake manifold through said first valve assembly,

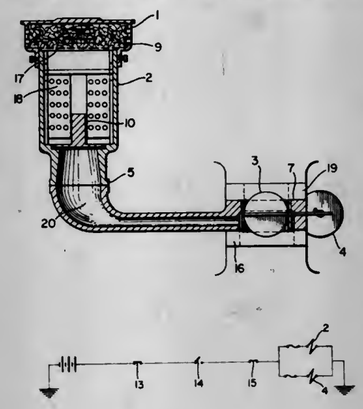
a second valve assembly operatively connected with said air conveying means for controlling the flow of air therein,

first and second solenoids for operating respectively said first and second valve assemblies simultaneously,

an electric line for connecting said first and second solenoids with a source of electric current,

a normally closed manual switch in said electric line capable of interrupting the electric current,

a switch member in said electric line and interconnected with the accelerator such that said switch is open when



the accelerator pedal is depressed and closed when the accelerator pedal is released to idle position,

a sail switch in said electric line and positioned in the flow of air from the engine cooling fan and adjusted so as to be closed when the air flow from the fan exceeds the normal flow at idle and open when the air flow equals the normal flow at idle,

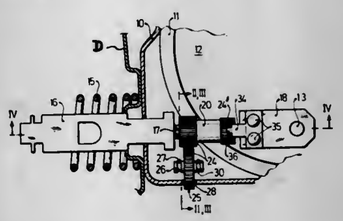
whereby when said accelerator pedal is released at a time when the air flow from the engine cooling fan exceeds normal flow at idle, said first and second solenoids will be energized for closing said first valve assembly and cutting off fuel flow to the engine and opening said second valve assembly for admitting ambient air to the engine.

4,111,168

IGNITION DISTRIBUTOR-CIRCUIT BREAKER ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

Karl Ehrmann; Richard Gerber, both of Stuttgart, and Klaus Doderer, Neuenburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 24, 1976, Ser. No. 669,836
Claims priority, application Fed. Rep. of Germany, May 28, 1975, 2523638
Int. Cl.² F02P *5/00*
U.S. Cl. 123—117 A **8 Claims**



1. Ignition distributor and circuit breaker assembly for internal combustion engines having a housing (10);

a slit (28) formed in the housing;

a breaker support plate (12) mounted in the housing for limited rotation therein to support a breaker assembly;

and means (15) controlling the position of the support plate (12) in the housing including a link means (16, 17, 18, 19, 20) the length of which is adjustable, connecting said position control means (15) to the plate (12), wherein

said link means comprises a first end element (16, 17) having a left-hand thread, and a second end element (18, 19) having a right-hand thread, and a rotatable coupling sleeve (20, 20') having left hand threads and right-hand threads at opposite end portions in threaded engagement with the respective end elements and formed, externally, with cylindrical shape and a serrated or gear-shaped outer surface

a rotation-transmitting disk-shaped element (25) penetrating in part through said slit (28) in the housing and accessible externally from said housing said disk being formed with a serrated, gear-shaped circumference and located for coupling engagement with respect to said rotatable sleeve (20) to permit rotation of said sleeve and thereby adjust the effective length of said link means and hence the position of said plate (12) in the housing with respect to said position control means (15);

a central shaft (26) extending from both sides of said disk-shaped element;

a pair of spring clips located in said housing, shaped to engage at least in part around said central shaft (26), the spring clips securing said disk shaped element member in axially fixed, but laterally movable position within said housing;

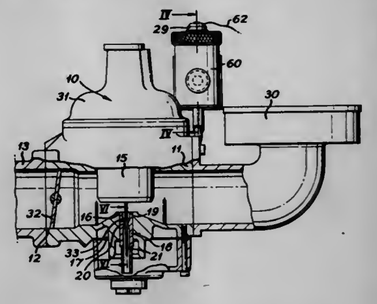
said slit being of lesser size than the diameter of the disk-shaped element, the spring clips locating said rotation transmitting member in position out of engagement with the sleeve and closing off said slit (28) but permitting inward movement of said disk shaped element and engagement with the serrated or gear-shaped circumference of said sleeve.

4,111,169

SPARK IGNITION INTERNAL COMBUSTION ENGINES

Geoffrey Lloyd Lawrence, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Stanmore, England

Filed Dec. 30, 1975, Ser. No. 645,394
Claims priority, application United Kingdom, Dec. 31, 1974, 56185/74
Int. Cl.² F02H *7/00*
U.S. Cl. 123—119 EC **12 Claims**



1. A spark ignition internal combustion engine installation which comprises a carburetor of the air valve type and an exhaust system; the carburetor having a body in which an induction passage is formed, the induction passage providing a flow path for air which is drawn into the engine by operation of the engine, a driver operable throttle valve for controlling the mass flow of air through the induction passage, an air valve upstream of the driver operable throttle valve, the air valve cooperating with a wall portion of the induction passage to

form a throat of restricted dimensions and being controlled by the depression that is established in that part of the induction passage between the throttle valve and the air valve in order to vary the area of the throat and maintain that depression substantially constant, and only one fuel supply system for supplying metered quantities of fuel to that part of the induction passage between the throttle valve and the air valve, said fuel supply system comprising a fuel metering section, a fuel discharge nozzle and a source of liquid fuel and being arranged so that metered quantities of liquid fuel are drawn from said source through the fuel metering section and the fuel discharge nozzle into the induction passage by air flow through said throat whereby fuel drawn through the discharge nozzle is atomized and dispersed within that part of the induction passage between the throat and the throttle valve so as to mix with air that flows through said throat and to form an air/fuel mixture which flows to the engine; the engine installation also including sensing means which are operable to monitor the ratio between the quantity of one of the constituents of gas flow at a location downstream of the throttle valve and the remainder of that gas flow and to emit a signal when that ratio differs from a predetermined optimum ratio by a predetermined amount, that signal being indicative of the sense of the difference between the ratio that is sensed at any one instant and the predetermined optimum ratio, an air flow passage which is connected to the fuel supply system between the fuel metering section and the fuel discharge nozzle, variable air flow metering means for metering air flow through the air flow passage so that metered quantities of air are drawn into the fuel supply system upstream of the fuel discharge nozzle and are mixed therein with fuel that is drawn through the fuel metering section so that a mixture of metered quantities of fuel and air is drawn through the fuel discharge nozzle into the induction passage by air flow through the throat, the quantity of air drawn from the air flow passage into the fuel supply system upstream of the fuel discharge nozzle being metered by the variable air flow metering means, varying means which are operable to vary the performance of the air flow metering means, and signal transmitting means connected to the varying means and the sensing means so as to transmit to the varying means the signal that is emitted by the sensing means, the varying means being operable in response to a signal received from the sensing means to vary the performance of the air flow metering means so that the pressure drop across the fuel metering section is varied by the consequent change in the air flow through said air flow passage with the result that the quantity of fuel drawn from the source through the fuel metering section and the fuel discharge nozzle into the induction passage by a given air flow through the throat is changed, the variation in the pressure drop across the fuel metering section being the form of variation that will lead to a reduction in the difference between the said ratio and the predetermined optimum ratio.

4,111,170

AIR-FUEL RATIO CONTROL SYSTEM

Masao Nakajima, Atsugi; Kenji Masaki, and Mitsumasa Inoue, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 26, 1977, Ser. No. 762,720
Claims priority, application Japan, Jan. 30, 1976, 51-9031
Int. Cl.² F02B *33/00*
U.S. Cl. 123—119 EC **17 Claims**

1. An air-fuel ratio control system for an internal combustion engine, comprising

means for sensing the concentration of a component contained in exhaust gas of said engine which concentration is representative of a function of the air-fuel ratio of an air-fuel mixture burned in said engine, said sensing means having

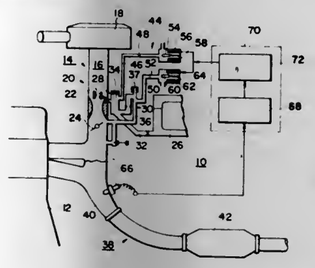
means for generating an output signal representative of the sensed concentration of said component;

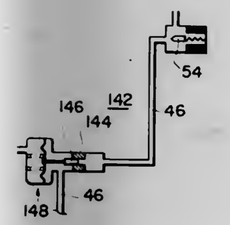
means defining a first passage communicating with the atmosphere and causing atmospheric air to be drawn into a main fuel passage of a main system of a carburetor of said engine;

a first flow control valve for controlling the flow of atmospheric air drawn into said main fuel passage through said first passage;

means defining a second passage communicating with the atmosphere and causing atmospheric air to be drawn into a slow fuel passage of a slow system of said carburetor;

a second flow control valve for controlling the flow of atmospheric air drawn into said slow fuel passage through said second passage;





first control means causing, in accordance with said output signal of said sensing means, said first and second flow control valves to vary the flow of air drawn into said main and slow fuel passages through said first and second passages to adjust the flow of fuel drawn from said main and slow fuel passages into said intake passageway to adjust the air-fuel ratios of air-fuel mixtures formed by said main and slow systems to a desired air-fuel ratio, respectively; and

air flow control means cooperating with said first passage and for preventing the flow of air drawn into said main fuel passage through said first passage from being undesirably increased with increases in the load of said engine.

4,111,171

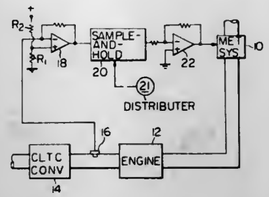
CLOSED-LOOP MIXTURE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE USING SAMPLE-AND-HOLD CIRCUITS

Shigeo Aono, Tokyo, and Masaharu Asano, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed May 6, 1976, Ser. No. 683,670
Claims priority, application Japan, May 12, 1975, 50-54613
Int. Cl.² F02M *7/00*
U.S. Cl. 123—119 EC **12 Claims**

1. A closed-loop mixture control system for an internal combustion engine, comprising means for generating a first signal representing the concentration of a composition of exhaust gases from the engine, means for generating a second signal representing the deviation of the first signal from a reference value indicative of a desired air-fuel ratio, means for sampling the second signal at intervals, means for holding the sampled signal until the next sampling occurs, means for storing the signal from said holding means along a row of storage

elements from one element to another in step with the occurrence of said sampling, a weighting network for respectively multiplying the stored signals by constant values of different magnitude, means for providing summation of the weighted



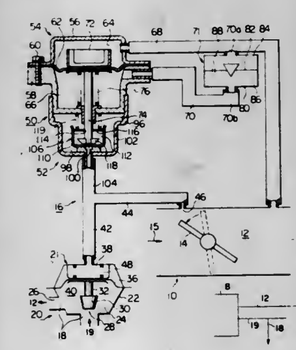
signals, and a proportional controller for amplifying the signal from the summation means, and means for supplying the mixture to the engine in response to the signal from said proportional controller.

4,111,172

SYSTEM TO FEED EXHAUST GAS INTO THE INDUCTION PASSAGE OF AN INTERNAL COMBUSTION ENGINE

Mamoru Nishizawa, and Takashi Hisatomi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Nov. 26, 1975, Ser. No. 635,700
Claims priority, application Japan, Nov. 30, 1974, 49-143810[U]
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **11 Claims**



1. An exhaust gas recirculation control system in combination with an internal combustion engine including

an induction passageway providing communication between the atmosphere and the engine for conducting air thereinto,

a throttle valve rotatably mounted in the induction passageway, and

an exhaust gas passageway providing communication between the engine and the atmosphere for conducting thereto exhaust gases emitted from the engine, said exhaust gas recirculation (EGR) control system comprising

an EGR passageway providing communication between the exhaust gas passageway and the induction passageway for recirculating exhaust gases of the engine thereinto,

an EGR control valve disposed in said EGR passageway for controlling the flow rate of engine exhaust gases recirculated into the induction passageway,

a housing having therein

first and second chambers,

a flexible diaphragm separating said first and second chambers from each others,

first passage means communicating at one end with the induction passageway downstream of the throttle valve and at the other end with said first chamber,

second passage means communicating at one end with said first passage means and at the other end with said second chamber,

a pressure insensitive partition located in said second passage means to divide same into first and second sections which communicate respectively with said first passage means and said second chamber, said partition being unmovable by a pressure differential between said first and second sections, said partition being formed therethrough with an orifice and an aperture each of which provides communication between said first and second sections,

a check valve for closing said aperture in response to a vacuum in said first section which is below the vacuum in said second section for reducing the vacuum in said second chamber with a time lag when the vacuum in said first chamber is reduced and for opening said aperture in response to a vacuum in said first section which is above the vacuum in said second section for increasing the vacuum in said second chamber without a time lag when the vacuum in said first chamber is increased, and

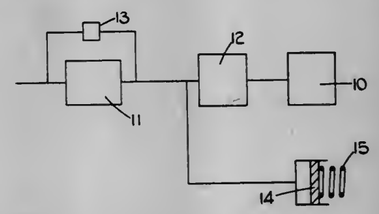
operating means for causing said EGR control valve to open said EGR passageway and to control the flow rate of recirculated engine exhaust gases in response to the vacuum in said second chamber which is reduced with said time lag and for causing said EGR control valve to close said EGR passageway to prevent the recirculation of engine exhaust gases into the induction passageway in response to the vacuum in said second chamber which is increased without said time lag.

4,111,173

FUEL PUMPING APPARATUS

Robert Thomas John Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 3, 1977, Ser. No. 774,123
Claims priority, application United Kingdom, Mar. 10, 1976, 9446/76
Int. Cl.² F02M *63/00*
U.S. Cl. 123—139 AQ **6 Claims**



1. A fuel pumping apparatus comprising an injection pump which in use is driven in timed relationship with an associated engine, means including a fuel feed pump for supplying fuel under pressure to the injection pump, a relief valve for controlling the output pressure of the feed pump, said relief valve being located in a line operatively connected with said feed pump, and means including a fuel pressure operable piston for adjusting the timing of delivery of fuel by the injection pump to the associated engine, said piston being responsive to the output pressure of the feed pump, said relief valve comprising a first resiliently loaded valve element which is subjected to the output pressure of the feed pump; an orifice and a spill port located downstream of said first valve element, said first valve element when the pressure rises to a predetermined value opens to allow fuel flow through said orifice, a second resiliently loaded valve element subjected to the intermediate pressure of fuel between the first valve element and the orifice, said second valve element when subjected to said intermediate pressure acting to reduce the resilient loading on the first valve

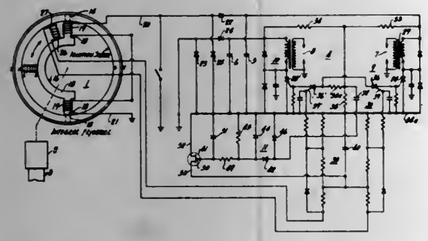
element, said second valve element acting to control the size of said spill port which is in parallel with said orifice and which starts to open when the second valve element has been moved a predetermined extent by the intermediate pressure, said second valve element having a greater area exposed to said intermediate pressure than the area of the first valve element which is exposed to the output pressure of the feed pump.

4,111,174

IGNITION SYSTEM WITH IDLE SPEED GOVERNOR APPARATUS

Arthur O. Fitzner, and Richard L. Sieder, both of Fond du Lac, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jan. 4, 1977, Ser. No. 756,649
Int. Cl.² F02P 1/00, 5/04
U.S. Cl. 123—148 CC 18 Claims



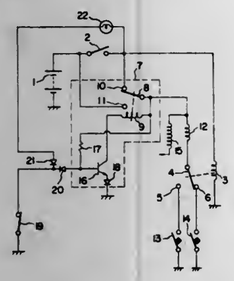
1. An ignition system for an internal combustion engine, comprising a solid state ignition circuit having a firing pulse source and output means adapted to be connected to the firing means of an internal combustion engine, said ignition circuit having a speed sensitive timing characteristic including retarded timing below a selected operating speed, said output means includes a gated switch means connected to said pulse source and to the firing means, a trigger pulse source means connected to the gated switch means for periodically actuating said switch means, and a speed sensing means connected to said solid state ignition circuit and including control means connected to said gated switch means and said trigger pulse source means and responsive to speed below said selected operating speed to electronically advance said timing characteristic to an advanced timing and thereby establish a smooth low speed operation.

4,111,175

APPARATUS FOR PREVENTING AFTERBURNING IN AN INTERNAL COMBUSTION ENGINE

Norihiko Nakamura, Mishima, and Takahide Kawamura, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 7, 1976, Ser. No. 693,626
Claims priority, application Japan, Oct. 29, 1975, 50-129365; Feb. 4, 1976, 51-010261
Int. Cl.² F02B 77/00
U.S. Cl. 123—198 DC 10 Claims



1. Apparatus for substantially preventing afterburning of unburnt combustion products in an internal combustion engine having a source of electrical energy and an ignition circuit for generating high voltage pulses coupled to said electrical energy source, said apparatus comprising:

an ignition switch interposed between said source and said ignition circuit and movable between closed and open positions;

means coupled with said ignition switch and said ignition circuit for selecting a first ignition timing sequence when said ignition switch is closed and a second ignition timing sequence when said ignition switch is opened, wherein said second ignition timing sequence is delayed a predetermined amount with respect to said first ignition timing sequence;

means for detecting an engine operating parameter directly related to the rotational speed of said engine; and

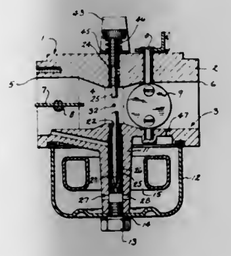
means coupled with said detecting means, said ignition circuit and said energy source for maintaining a closed circuit between said ignition circuit and said energy source during said second timing sequence until said engine operating parameter reaches a predetermined value, and thereafter opening said closed circuit to prevent further ignition pulses from being generated by said ignition circuit.

4,111,176

ENGINE SHUTDOWN CONTROL

Alvin P. Fenton, Oostburg; Roger T. Gault, Sheboygan Falls, and Lawrence J. Bernauer, Kohler, all of Wis., assignors to Kohler Co., Kohler, Wis.

Filed May 11, 1977, Ser. No. 795,784
Int. Cl.² F02B 77/08
U.S. Cl. 123—198 DB 4 Claims



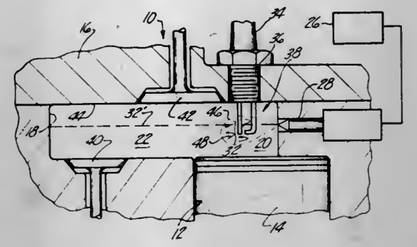
1. In a carburetor for an engine having an ignition which carburetor includes an air passage adapted for connection to an engine intake manifold, a venturi constriction in said air passage, a float bowl and a discharge nozzle leading from the float bowl and adapted to deliver fuel into the venturi constriction, the improvement which comprises means for preventing dieseling which can occur when fuel continues to flow from the discharge nozzle when the ignition is turned off, which means includes a bowl vent passage communicating between the float bowl and a position at atmospheric pressure, valve means for opening and closing the bowl vent passage, said valve means being open when the ignition is on so that the float bowl is exposed to atmospheric pressure which causes fuel to flow from the float bowl through the nozzle of the venturi and closed when the ignition is off so the float bowl is not exposed to atmospheric pressure and pressure equalizing means which connects the venturi constriction to the float bowl, said pressure equalizing means including a duct which is small enough in diameter so as to not interfere with the normal functioning of the bowl vent passage when the valve means is open but large enough to equalize the pressure between the venturi constriction and the float bowl when the valve means is closed so that fuel will not flow through the nozzle to the venturi constriction to support dieseling.

4,111,177

INTERNAL COMBUSTION ENGINE

Jose F. Regueiro, Muskegon, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 30, 1976, Ser. No. 728,068
Int. Cl.² F02B 3/00
U.S. Cl. 123—32 ST 8 Claims



1. In a internal combustion engine having a cylinder, a piston reciprocally disposed in said cylinder, and a head secured over said cylinder, the improvement which comprises:

a wall portion in said head, said wall portion forming a chamber above said cylinder and an air pocket adjacent said chamber and radially beyond the projected boundaries of said cylinder said wall portion providing an unrestricted communication between said combustion chamber and said air pocket at every position of said piston,

fuel injection means having a nozzle for directing a stream of fuel through said chamber and into said air pocket in a direction substantially perpendicular to the movement of said piston,

fuel ignition means for igniting said fuel, said fuel ignition means extending into said chamber substantially in the trajectory of said stream of fuel, and

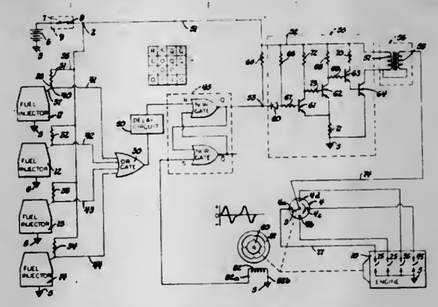
an exhaust valve and an air inlet valve in communication with said wall portion.

4,111,178

IGNITION SYSTEM FOR USE WITH FUEL INJECTED-SPARK IGNITED INTERNAL COMBUSTION ENGINES

Gary L. Casey, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 8, 1976, Ser. No. 739,563
Int. Cl.² F02B 3/00; F02P 5/04
U.S. Cl. 123—32 SA 4 Claims



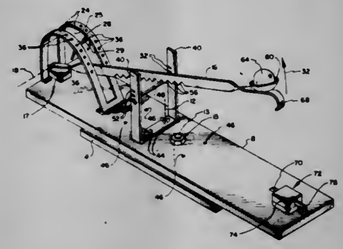
1. An ignition system for use with direct fuel injected spark ignited internal combustion engines of the type having a spark igniting device for each cylinder thereof, comprising: a fuel injector having a valve seat and a cooperating movable valve member corresponding to each cylinder of an associated internal combustion engine for injecting fuel into the combustion chamber of the said cylinder to which it corresponds when said movable member is actuated, said valve seat and cooperating movable valve member providing a pair of normally closed electrical contacts which are operated to the electrical circuit open condition upon the initiation of actuation of said movable valve member to inject fuel; means including said pair of normally closed contacts for producing an electrical signal corresponding to each said fuel injector upon the operation of said pair of normally closed electrical contacts thereof to the electrical circuit open condition; circuit means including delay circuit means responsive to each of said electrical signals for producing an ignition spark creating voltage; and means for directing said ignition spark creating voltage to the said spark igniting device of the said cylinder of said engine into which fuel is being injected.

4,111,179

CATAPULT TOY

Hideo Hashimoto, 2618 Desert St., P.O. Box 1182, Rosamond, Calif. 93560

Filed Apr. 7, 1977, Ser. No. 785,686
Int. Cl.² F41B 3/02, 7/00
U.S. Cl. 124—7 6 Claims



1. A catapult toy comprising

a mounting platform,

a pair of arch members positioned in a contiguous relationship on said mounting platform at one end thereof to define an arching slot therebetween,

a pivot arm pivotally mounted at one end thereof on said mounting platform between said arch members, said pivot arm being movable generally in a vertical plane in said arching slot between a latched position and a stop position, and including a plurality of notches located on the underneath side of the arm,

cup means disposed on the other end of said pivot arm for carrying a projectile therein,

stop means disposed on said arch members to extend therebetween across said arching slot above said pivot arm for stopping upward movement of the arm, said stop mens being positionable at different locations along the arching slot to thereby stop the upward movement of the arm at different elevations of the arm,

a pair of upright standards mounted on said mounting platform on each side of the vertical plane in which said pivot arm moves,

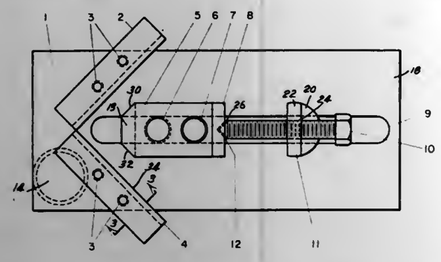
an elastic band extending between said standards underneath said pivot arm to contact and urge the arm upwardly when the band is stretched by downward movement of the arm against the band, said band being positionable in various ones of the notches of said pivot arm to thereby vary the force applied by the band to the arm, and

latch means for releasably latching the pivot arm in a latched position in which the band is stretched downwardly by the arm, said pivot arm being propelled upwardly by said band when released by the latch means.

4,111,180
ROCK HOLDING DEVICE

Edward Verle Goodrich, 4735 W. 35th Ave., Denver, Colo. 80212

Filed Sep. 23, 1977, Ser. No. 836,083
Int. Cl.² B25B 5/14
U.S. Cl. 125—35 8 Claims

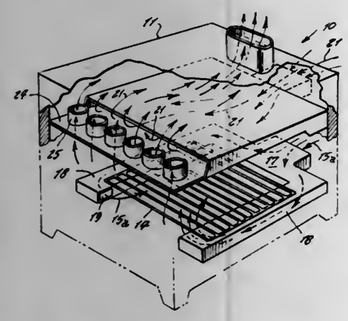


1. A rock-holding device comprising:
a mounting plate having a longitudinal axis and having a flat surface portion for contacting a rock;
a pair of bars mounted on said mounting plate, said bars being mounted at one angle to each other;
a fixably mountable finger slidably adjustable in a line approximately parallel to said longitudinal axis;
a pair of planar surfaces, one on each of said bars, said surfaces extending from said flat surface portion of the mounting plate at an inclined angle towards said finger, for contacting and holding said rock against said finger and said flat working surface; and
a bevelled surface on said finger, said bevelled surface extending from said flat surface portion of the mounting plate at an upward angle inclined towards said pair of bars, for contacting and holding said rock against said pair of bars and said flat working surface.

4,111,181
COMBUSTION AIR SYSTEM

John J. Canney, 82 Falcon St., Needham, Mass. 02192

Filed Mar. 16, 1977, Ser. No. 778,165
Int. Cl.² F24C 1/14
U.S. Cl. 126—77 3 Claims

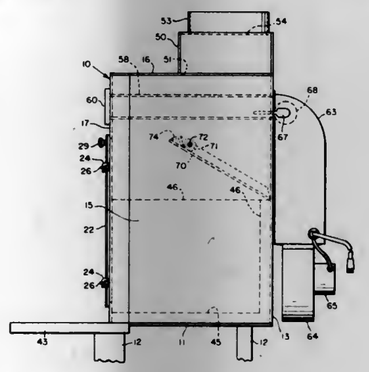


1. A combustion air system, comprising in combination, a furnace or the like having an air-tight combustion chamber, a grate above a combustion chamber floor, said grate supporting wood for being burned, a plurality of air tubes below said grate supplying primary air therethrough and into said air-tight combustion chamber by pre-heating said primary air, air outlets along said tubes directing said primary air to an underside of said grate and to said wood; an air conducting tube in a crown sheet of said combustion chamber being located above said burning wood, said air conducting tube in said crown sheet introducing secondary air at an outlet of said tube and adjacent a plurality of nozzles or pipes communicating through said crown sheet and with said combustion chamber containing said wood, whereby volatile gases from said chamber through said nozzles mixes with said secondary air and is ignited, creating additional heat above a smoke shelf prior to passing out a smoke outlet.

4,111,182
FRANKLIN STOVE ATTACHMENTS

Herbert E. Roberts, R.F.D. #3, and Donald D. Wharff, R.F.D. #2, both of Dover-Foxcroft, Me. 04426

Filed Jul. 30, 1975, Ser. No. 600,222
Int. Cl.² F24H 3/08
U.S. Cl. 126—110 B 3 Claims

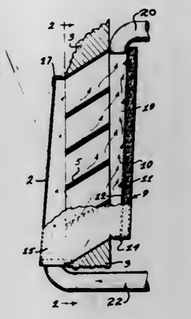


1. A stove, comprising
a frame having therein a combustion chamber,
at least one door movably mounted on the front wall of said frame over an access opening which communicates with said chamber selectively for inserting fuel into, and for withdrawing ashes from said chamber,
a plenum mounted on top of said frame for connection to a flue, and communicating with said chamber through an exhaust opening formed in the top of said frame adjacent the rear wall thereof,
a plurality of spaced, tubular heat exchangers extending through said combustion chamber adjacent the upper end thereof, and opening at their forward ends on a further opening formed in said front wall of said frame above said access opening, and opening at their rear ends in registering openings formed in the rear wall of said frame,
a baffle mounted in said chamber beneath said heat exchangers and registering vertically with said exhaust opening in said top of the frame to slow the discharge of heat from said chamber to said plenum,
a vertical duct mounted on the outside of said frame and having its upper end connected to the rear ends of said exchangers,
an electrically-operated blower connected to the lower end of said duct with its air inlet positioned adjacent the bottom of said frame, and operable to draw cool air from adjacent the floor upon which said frame is mounted, and to blow this cool air upwardly through said duct and axially through said exchangers to be heated thereby, when the stove is in use,
a first layer of refractory material covering the bottom of said frame in said chamber, and
a further layer of refractory material covering the inside of said chamber between said first layer and baffle, said further layer having an opening therein registering with said access opening in said front wall of the frame,
said baffle comprising a plate removably mounted in said chamber and having its rear edge positioned adjacent the rear wall of said frame above said further layer of refractory metal, and extending diagonally forwardly and upwardly part way toward said front wall and the undersides of said heat exchangers, and
the opening formed between said front wall and the forward edge of said plate being offset horizontally from said exhaust opening in the top of said frame.

4,111,183
SOLAR HEATING UNIT

Wilbert L. Haberthier, 660 G Ave., Limon, Colo. 80828

Filed Jul. 1, 1976, Ser. No. 701,535
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 2 Claims

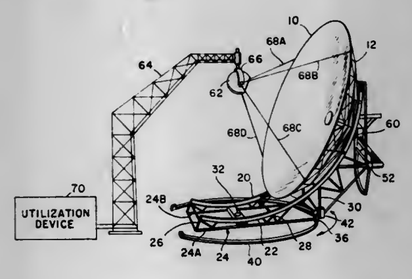


1. A solar heating unit comprising:
a plurality of vertically stacked tubes, each having rectangular cross section and having sides defining a parallelogram in which one corner angle is less than 90° and having a heat reflective inside bottom surface, and wherein one end of each tube is disposed at a lower level than the other end;
an entry air chamber enclosing the said lower ends of the said tubes having transparent wall means and;
a heated air plenum enclosing the elevated ends of the tubes and comprising a heat absorbing non-reflective wall.

4,111,184
SUN TRACKING SOLAR ENERGY COLLECTOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Gerald S. Perkins, Altadena, Calif.

Filed Apr. 6, 1977, Ser. No. 785,257
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 8 Claims

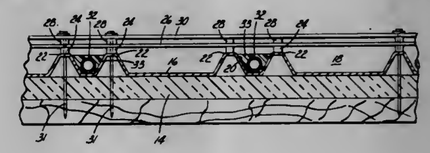


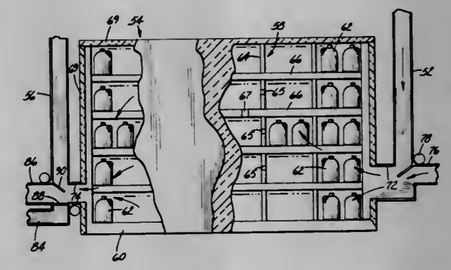
1. A sun tracking solar energy collector comprising:
azimuth framework means,
means supporting said azimuth framework means for horizontal rotation about a vertical axis,
a pair of arcuate rails, means supporting said arcuate rails at one end extending vertically from said azimuth framework means,
a parabolic reflector,
wheel means supporting said parabolic reflector on said arcuate pair of rails,
counter balance means for counter balancing the weight of said parabolic reflector,
first motor means coupled to said counter balance means for causing said parabolic reflector to assume different desired elevations, and
second motor means coupled to said means supporting said azimuth framework means for causing said azimuth framework means and therewith said parabolic reflector to assume predetermined azimuthal positions.

4,111,185
SOLAR HEATING SYSTEM

Frederick R. Swann, 5913 N. Bend Rd., Ashtabula, Ohio 44004

Filed Mar. 29, 1976, Ser. No. 671,282
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 7 Claims





1. An improved solar heating panel assembly comprising solid panel means for collecting heat from the sun, air duct means formed in heat transfer relationship with said panel means, said panel means forming a part of said air duct means, means to permit air flow through said air duct means,
liquid conduit means in conductive heat transfer relationship with said panel means and surrounded at least in part by said air duct means, and means to flow liquid through said conduit means, and closed loop heat transfer means connected to said liquid conduit means,
whereby either the air heat transfer system or the liquid heat transfer system can be utilized separately or concomitantly.
3. The invention as defined in claim 2 wherein said rack and shelf structure includes aperature means to promote air flow.

4,111,186
FLAT PLATE SOLAR COLLECTOR

Donald K. Ross, No. 9 Crosswinds, St. Louis County, Mo. 63132, and Wallace A. Wright, Jr., 189 Tolley Square, Salt Lake City, Utah 84102

Filed Jan. 24, 1977, Ser. No. 761,808
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 16 Claims

1. A solar energy collector of non-rigid character for facile rolling upon itself when in disuse comprising a lower plate and a top plate in planar parallel relationship, means joining said lower and top plates in their side portions for defining an

interior chamber, said top plate being fabricated of relatively thin, durable, flexible transparent sheet material being transmissible to solar heat waves and substantially non-heat absorptive, said lower plate being of flexible, relatively thin sheet material and being heat-absorptive and impervious to water, said top plate having the property of substantially inhibiting the re-radiation therethrough of relatively long heat waves generated by said lower plate, means provided at one end of said chamber for water inlet, means provided at the opposite end of said chamber for heated water discharge, flexible, water-impervious means defining a plurality of insulator compart-



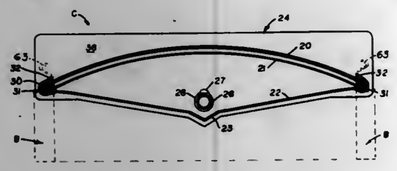
ments arranged within said chamber and extending from said top plate to said lower plate, each of said insulator compartments being closed throughout their extent and having upper and lower ends respectively immediate adjacent said top and lower plates, said insulator compartments through their arrangement defining intervening water flow paths connecting said inlet and said discharge means, each of said compartments being of decreasing cross-section progressing downwardly from said top plate to said lower plate whereby the upper portions of said compartments overlie portions of said flow paths thereby tending to insulate the water in said flow paths for minimizing development of air convection currents.

4,111,187

MODULAR SOLAR RADIATION COLLECTOR

James B. Wiegand, Longmont, Colo., assignor to Solar Energy Research Corp., Longmont, Colo.

Filed Jan. 17, 1977, Ser. No. 759,762
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **17 Claims**



1. In a modular collector unit for collecting radiant solar energy to heat fluid, such as water, adapted to be mounted at an inclination to better receive radiant solar rays and to permit gravity drainage of fluid from the bottom end of the unit when so inclined, comprising:

(a) an upper, outer radiation transmission surface;

(b) an intermediate radiation absorption surface which is spaced below the upper radiation transmission surface to define an upper cavity therebetween;

(c) a lower surface including a drainage pan which is spaced below the radiation absorption surface to define a lower cavity therebetween;

(d) a side connection means interconnecting the longitudinal inclined side edges of the upper, intermediate and lower surfaces;

(e) top and bottom end cap means interconnecting the transverse top and bottom ends of the upper, intermediate and lower inclined surfaces whereby the side connection means and top and bottom end cap means enclose the upper and lower cavities between the respective surfaces;

(f) a spray means longitudinally extended into the lower cavity to spray fluid against the underside of the radiation absorption surface; and

(g) a drainage outlet means at the bottom of the lower cavity, and wherein:

(1) the intermediate radiation absorption surface is transversely convexed and the drainage pan is transversely concaved, with the inclined side edges of the radiation absorption surface and the drainage pan coming together to form a longitudinal lens-shaped lower cavity with the space between the radiation absorption surface and the drainage pan being sufficient to permit the spray means in the lower cavity to spray fluid against substantially the entire undersurface of the radiation absorption surface; and

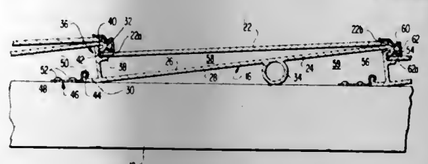
(2) said spray means comprises an elongated, fluid-feed tube extending from the top end cap means and longitudinally through the lower cavity to a point near the bottom end cap means with nozzles spaced along the tube directed against the underside of said radiation absorption surface.

4,111,188

EXTRUDED METAL SOLAR COLLECTOR ROOFING SHINGLE

John A. Murphy, Jr., 7273 N. Central Ave., Phoenix, Ariz. 85020

Continuation-in-part of Ser. No. 712,291, Apr. 6, 1976, abandoned. This application Aug. 24, 1977, Ser. No. 827,417
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **16 Claims**



1. An extruded metal solar collector roofing shingle for mounting in multiple shingle, edge overlapping, parallel array fashion across laterally spaced inclined roof rafters of a building structure or the like, said shingle comprising:

an elongated planar sheet portion, having upper and lower surfaces and laterally opposed upper and lower edges, said upper surface facing away from the building,

integrally extruded fluid conduit means within said sheet portion and protruding from said lower surface, and

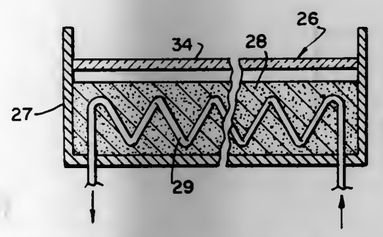
integrally extruded interlocking means along opposed lateral edges of said sheet portion for forming a mechanical interlocking connection between overlapping edges of respective sheet portions of adjacent shingles.

4,111,189

COMBINED SOLAR RADIATION COLLECTOR AND THERMAL ENERGY STORAGE DEVICE

Edwin S. Dizon, Willingboro, N.J., assignor to Cities Service Company, Tulsa, Okla.

Filed Jan. 3, 1977, Ser. No. 756,230
Int. Cl.² F24H 7/00
U.S. Cl. 126—400 **30 Claims**



1. A solar radiation collection and thermal energy storage device comprising a housing reservoir; a phase change matrix disposed in said housing reservoir, said phase change matrix

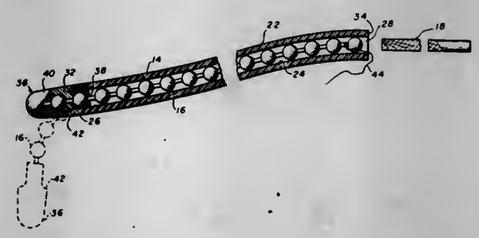
comprising a polymeric material and a particulate phase change material, said phase change material being immiscible in said polymeric material, and being discretely dispersed in said polymeric material, said polymeric material being selected from a group consisting of polymeric polysulfide, polymeric silicone rubber, and polymeric butyl rubber, said phase change material is selected from a group consisting of polyethylene glycol, said polyethylene glycol having a molecular weight of from about 4500 to about 20,000, pentacasone, trituacontane, camphene, myristic acid, methyl oxalate, stearic acid, and tristearin, and said matrix includes a curing agent comprising from about 1 wt% to about 10 wt% of said matrix, and a heat exchange means being disposed in said matrix for moving a heat absorbing medium therethrough, said heat exchange means being in communication with the outside of said reservoir.

4,111,190

MEDICAL APPLICATOR ASSEMBLY FOR CHAIN CYSTOURETHROGRAPHIC PROCEDURE

Jane Plumridge, 17 Stoney Brook Dr., Glastonbury, Conn. 06033

Filed Nov. 11, 1976, Ser. No. 741,151
Int. Cl.² A61B 6/00
U.S. Cl. 128—2 A **7 Claims**



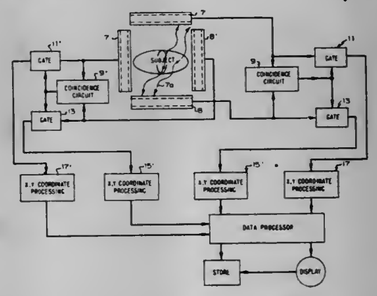
1. In a medical applicator assembly for use in a cystourethro examination comprising a tubing having a hollow longitudinal passage, a metallic bead chain loosely and slideably positioned within said passage and means for slideably displacing said chain from said passage, the combination wherein said tubing is a flexible elongated plastic tube having a smooth uninterrupted outer surface and a passage extending axially along the entire length thereof with coaxial proximal and distal openings at opposite ends of said passage, said chain being of substantially the same length as the tubing and having proximal and distal ends with a soft sterile tip secured to the proximal end of said chain, said tip comprising a stem portion snugly received within said passage, an integral head portion larger than said passage and an intermediate shoulder connecting said stem and head portions and abutting the end of said tubing at said proximal opening, said chain being firmly embedded in said tip, said head portion extending beyond the proximal end of said tubing axially of said passage and having a tapered surface with a maximum diameter substantially equal to the diameter of the outer surface of said tubing, said shoulder extending radially from said stem portion to said tapered surface, said chain including means for holding said tip in alignment with said tubing and said shoulder in engagement with said tubing to facilitate insertion of said tip and the proximal end of said tubing through the urinary canal and into the bladder of a patient, said displacing means being an independent member movable into engagement with the distal end of said chain for slideably displacing the chain relative to the tubing and dislodging said stem portion from said passage.

4,111,191

APPARATUS AND METHOD FOR EXAMINING BLOOD VESSELS OF INTEREST BY TRACKING POSITION WITH RESPECT TO TIME OF PARTICLES INTRODUCED THEREIN

Robert F. Shaw, 50 St. Germain Ave., San Francisco, Calif. 94114

Continuation of Ser. No. 249,161, May 1, 1972, abandoned. This application Jul. 10, 1974, Ser. No. 487,425
Int. Cl.² A61B 5/02
U.S. Cl. 128—2.05 F **51 Claims**



1. Apparatus for interacting with a number of particles which can be introduced into the blood of a subject and which can provide signals from within a vessel of interest that can be detected outside the body, the apparatus comprising:

detector means positionable near the body of the subject for detecting the signals from the number of particles at successive locations of each of the number of particles at successive times during the travel of each particle through a vessel of interest;

circuit means coupled to said detector means for providing output manifestations from successive positions of each of the number of particles at successive times during the travel thereof through the vessel of interest; and

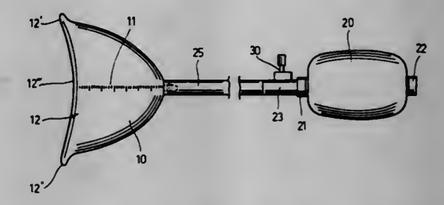
output means responsive to the output manifestations from said circuit means for providing an indication of the relative internal cross-sectional areas of the vessel of interest at successive positions along the cource of the vessel of interest.

4,111,192

BIOLOGICAL TISSUE EXERCISING DEVICE

An-Chuan Wu, No. 217, Chien Kuo S. Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 588,168, Jun. 18, 1975, Pat. No. 4,029,088. This application Feb. 7, 1977, Ser. No. 765,891
Int. Cl.² A61H 1/00
U.S. Cl. 128—38 **9 Claims**



1. A device for exercising biological tissue, particularly tissue of the female human breast, comprising a shape-retaining cup constituted by transparent material and adapted to be placed over a human breast with clearance so as to define an interior space therewith, said cup comprising indicating means thereon for indicating the distance through which the breast has been drawn; a housing having an inlet in communication

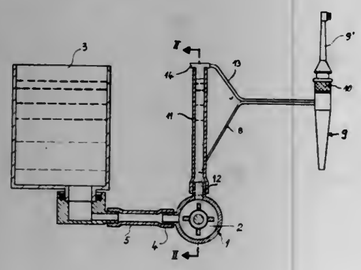
with air in said interior space, and an outlet in communication with air at the exterior of said cup; and electrically-operated means in said housing for exhausting air from said interior space through said inlet to be expelled via said outlet to the exterior of said cup so as to draw the breast from an intial position in direction further into said cup, said electrically-operated means also being operative for admitting air from the exterior of said cup through said outlet to be admitted via said inlet into said interior space so as to permit the breast to return towards the initial position.

4,111,193

PULSED LIQUID HYGIENE APPARATUS

Pierre J. Jousson, Geneva, Switzerland, assignor to Les Produits Associes LPA S.A., Switzerland

Filed Mar. 21, 1977, Ser. No. 779,532
Claims priority, application Switzerland, Apr. 8, 1976, 4414/76
Int. Cl.² A61H 9/00
U.S. Cl. 128—66 **7 Claims**



1. In an apparatus for body care, in particular for the massage of gums and cleaning teeth, comprising a piston pump; a liquid reservoir; a hydraulic motor disposed in a hand-held casing to drive a treatment instrument; said pump comprising an intake chamber connected to an inlet conduit leading from the reservoir, a piston reciprocated by a motor, a working chamber connected to an outlet conduit which is connected to said hydraulic motor and an inlet valve disposed in a passage between the intake and working chambers to close said passage during the operative stroke of the piston and open said passage in the suction stroke; a vertical relief flue leaving the working chamber end open at its upper end which is higher than the maximum liquid level of the reservoir; and a return pipe for returning a liquid from the hand-held casing to the hydraulic motor, the improvement wherein said return pipe is connected to said intake chamber via a coupling element fixed in the upper end of the relief flue, said coupling having an axial opening placing the relief flue in communication with the ambient air and means for slowing of the fall of liquid from the return pipe into the relief flue.

4,111,194

POSTERIOR KNEE IMMOBILIZING BRACE

Rollin Webb Cox, 340 Bimini Dr., Merritt Island, Fla. 32952, and Randy Charles Watson, 2201 South St., South Lake Tahoe, Calif. 95731

Filed Dec. 27, 1976, Ser. No. 754,004
Int. Cl.² A61F 3/00
U.S. Cl. 128—80 C **9 Claims**

1. A knee brace comprising:
an elongated shell of generally semi-circular cross section having an elongated front opening of a width sufficient to enable a knee and adjacent leg portions to be positioned within said shell, said shell comprising a plurality of longitudinally spaced pairs of opposed flexible strap sections extending laterally into said front opening, said strap sections being movable between an open position wherein a leg may be positioned in or removed from said shell through said front opening and a closed position wherein the strap sections of each pair are disposed in closely spaced relation across said front opening and serve to retain a leg in said shell,
air permeable padding means disposed on the inner surface of said shell and extending longitudinally along the rear portion thereof and from the rear portion thereof along the inner surface of said strap sections, said padding means comprising an inwardly extending wedge member having



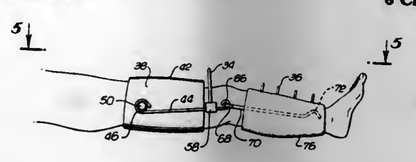
the apex thereof located such that it will be adjacent to the popliteal region behind the knee joint of a leg positioned in said shell, and
means for releasably retaining said strap sections in said closed position,
said shell being provided with outwardly relieved portions on both sides thereof adjacent to the apex of said wedge member to insure against contact between the shell and the knee joint of a leg positioned therein at said portions.

4,111,195

ORTHOPEDIC UPPER AND LOWER LEG SUPPORT

Alonzo J. Neufeld, 1650 Parway Dr., Glendale, Calif. 91206

Filed Sep. 13, 1976, Ser. No. 722,869
Int. Cl.² A61F 5/04
U.S. Cl. 128—83 **8 Claims**



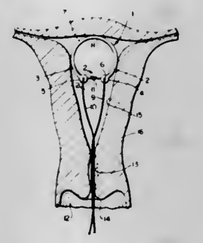
1. In an orthopedic upper and lower leg supporting apparatus,
an upper leg supporting device,
a lower leg supporting device,
hinge means connecting the devices,
the improvement comprising:
said hinge means being articulated so as to be positionable laterally toward and away from the leg and so as to be at all times easily movable with the leg according to the bending of the knee,
said hinge means including hook and eye connections.

4,111,196

INTRAUTERINE CONTRACEPTIVE DEVICE OF C OR OMEGA FORM WITH TUBULAR INSERTER AND METHOD OF PLACEMENT

Lionel C. R. Emmett, 7C Denmark Rd., Kingston-upon Thames, Surrey, England, assignor to Lionel C. R. Emmett, Kingston-upon Thames, England

Division of Ser. No. 489,982, Jul. 19, 1974, Pat. No. 3,973,560.
This application Feb. 23, 1976, Ser. No. 660,678
Int. Cl.² A61F 5/46
Claims priority, application United Kingdom, Jul. 27, 1973, 35816/73
U.S. Cl. 128—130 **51 Claims**



1. A combination intrauterine contraceptive device and tubular inserter for the insertion of the device into the fundal region of the uterine cavity including a linear type of intrauterine contraceptive device made of flexible material comprising an elongate member which, in situ, assumes a linear arch-shape wherein the two terminal portions of the linear form are connected by a non-interrupted continuous arch form, and the terminal portions curve inwardly toward each other providing incurved, oppositely directed linear portions in opposed relationship at each end of the arch form disposed in substantially linear alignment, in situ; said member being of material with sufficient flexibility to assume a substantially straight linear form when placed inside the inserter to accommodate insertion, and after expulsion from the inserter to assume the arched, in situ, configuration, which has dimensions substantially encompassing an area enabling the device to be contained within a normal uterus; and said inserter comprising a hollow tube, of sufficient internal diameter to accommodate said device when said device is substantially straightened out, and a plunger which can slide interiorly of the tube with a substantially free close fit; said device further including a metallic contraceptive agent comprising a wire wound around at least part of said member, said member having a plurality of surface serrations and wherein said wire is wound around the member whereby the coils of wire fit between and within serrations with a fit which enables looseness of the coils on the member and retains the coil in the associated serrations in spaced apart disposition on the member.

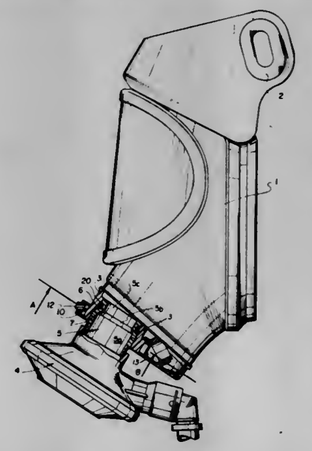
4,111,197

RESPIRATORY DEVICE COUPLING CONSTRUCTION

Ernst Warncke, and Manfred Gdulla, both of Lübeck, Germany, assignors to Drägerwerk Aktiengesellschaft, Germany

Filed Feb. 22, 1977, Ser. No. 770,371
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609034
Int. Cl.² A62B 7/00
U.S. Cl. 128—142.4 **3 Claims**

1. A quick connecting construction for a respiratory device, comprising a respiratory device having a tubular breathing connection with a cylindrical receiving recess for accessory apparatus, an accessory apparatus having a tubular portion slidably inserted into the cylindrical receiving recess and having an exterior surface with an annular locking groove, said respiratory device having a tubular cover member overlying said tubular portion of said accessory apparatus and having an exterior side wall with an actuator receiving slot therein, a U-shaped locking spring having a web portion with an actuating part engaged in the actuator receiving slot of said tubular cover member, said locking spring having first and second opposite leg portion connected to respective sides of said web portion, said tubular breathing connection of said respirator device having a locking slot defined in respective opposite sides thereof and with an edge defining an end of the slot opposite to the spring web portion and also opposite to the actuator receiving slot which forms a cam surface, said spring leg portions being engaged into respective tubular portion slots and into the locking groove to hold said tubular portion of said connecting device to said respirator device, the respective ends of said springs being engaged on said cam edges of the respective slots whereby upon movement of said actuator part in a downward direction toward said cam edges move the ends of said springs along said cam edges to force them out of said



groove and release said tubular portion of said connecting device wherein said respirator device comprises a breathing mask, said tubular breathing connection of said breathing mask having an inner diameter part and an outer diameter part of a greater diameter than said inner diameter part and with an intermediate part between said outer and inner diameter part bevelled inwardly from the outer diameter part to the inner diameter part, said accessory apparatus comprising a lungs control device having said tubular portion of an exterior configuration corresponding to the interior configuration of said cylindrical receiving recess and having an intermediate diamteer portion which abuts against the intermediate diameter portion of said cylindrical receiving recess when it is fully inserted so as to align said annular locking groove with said spring leg portions.

4,111,198

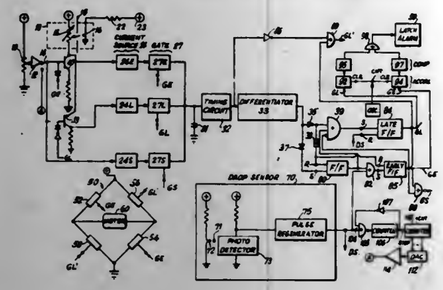
AUTOMATED INTRAVENOUS FLUID REGULATING AND ADMINISTERING APPARATUS

Alvin J. Marx, 315 College Rd., Bronx, N.Y. 10471, and Abraham Edelman, New York, N.Y., assignors to Alvin J. Marx

Filed Jun. 2, 1977, Ser. No. 802,891
Int. Cl.² A61M 5/16
U.S. Cl. 128—214 E **11 Claims**

1. In combination in intravenous fluid regulator apparatus, timing circuit means including a timing capacitor, plural current sources, plural controlled gate means each selectively connecting an associated current source with said timing capacitor, fluid drop sensing means, and logic means having

plural inputs connected to said fluid drop sensing means and to said timing means and plural outputs each connected to a



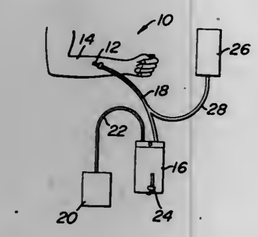
different one of said controlled gate means for selectively enabling said gate means.

4,111,199

METHOD OF COLLECTING TRANSFUSABLE GRANULOCYTES BY GRAVITY LEUKOPHERESIS

Isaac Djerassi, 2034 Delancey Pl., Philadelphia, Pa. 19103

Filed Mar. 31, 1977, Ser. No. 783,380
Int. Cl.[2] A61M 5/00
U.S. Cl. 128—214 R **17 Claims**



1. A leukopheresis process comprising withdrawing a portion of blood from a human, separating the red and white cells from the plasma and platelets in the blood, mixing the packed red and white cells with a solution comprising a red blood cell sedimenting agent and an isotonic balanced salt solution, said red blood cell sedimenting agent being present in a range of 1½ to 6% by weight of said isotonic balanced salt solution, permitting the mixture of red blood cells, white blood cells, sedimenting agent and isotonic balanced salt solution to stand to allow the red blood cells to sediment spontaneously to the bottom of the container in which the mixture is placed, separating the red blood cells, separating the white cells from the solution for transfusion to a patient, and reinjecting the red cells into the human donor of white cells.

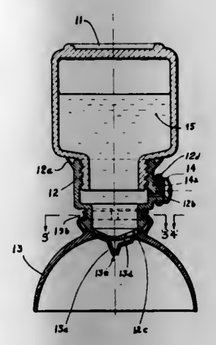
4,111,200

EYE DROP DISPENSER

Frank Sbarra, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Dec. 10, 1975, Ser. No. 639,412
Int. Cl.[2] A61M 1/00
U.S. Cl. 128—233 **2 Claims**

1. A device for accurately dispensing measured drops of liquid into a users eye, comprising a container having an open end and a hollow dispenser removably mounted axially exteriorally on said open end of the container in combination with a cup rotatably mounted axially on an opposite end of said dispenser having a portion adapted to fit around the users eye, said cup and dispenser having transverse relatively movable sealing surfaces including an axial orifice through said cup and an aperture in said dispenser sealing surface whereby said orifice registers with said aperture in one position to provide communication from the container into the cup, including a hollow member mounted on the external surface of said dispenser, longitudinally between the container and said cup, with a channel provided through the side wall of the dispenser



providing communication from the interior of said member of said dispenser adjacent said container end, said member being flexible whereby manual pressure on said member will eject a measured drop from the container through the dispenser, the orifice and to the users eye, when the said aperture and orifice are orifice are in registry.

4,111,201

OSMOTIC SYSTEM FOR DELIVERING SELECTED BENEFICIAL AGENTS HAVING VARYING DEGREES OF SOLUBILITY

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Nov. 22, 1976, Ser. No. 743,760
The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.
Int. Cl.[2] A61M 31/00
U.S. Cl. 128—260 **21 Claims**

1. An osmotic system for the controlled delivery of a beneficial agent to an environment of use, said system comprising:

a. a wall formed of a material permeable to the passage of an external fluid in the environment of use and substantially impermeable to the passage of agent; said wall surrounding and forming;

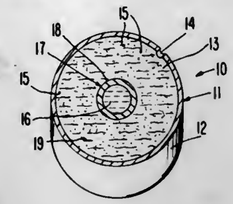
b. a compartment containing a beneficial agent and a suspending agent;

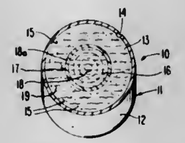
c. a delivery member in the compartment comprising a film formed of an expandable semipermeable material surrounding an osmotically effective compound which compound exhibits an osmotic pressure against gradient across the film against fluid in the compartment;

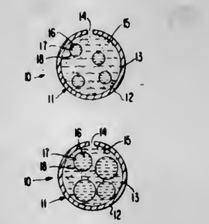
d. a passageway in the wall communicating with the compartment and the exterior of the system for delivering beneficial agent from the system; and

e. wherein in operation, when the system is in the environment of use, fluid from the environment is imbibed through the wall into the compartment in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall, forming a suspension containing beneficial agent and activating the delivery member to imbibe fluid from within the compartment and increase in volume through sequential changes to an state, whereby through

the cooperation of the suspending agent and the delivery member beneficial agent is delivered through the passage-







way from the system at a controlled rate over a prolonged period of time to the environment.

4,111,202

OSMOTIC SYSTEM FOR THE CONTROLLED AND DELIVERY OF AGENT OVER TIME

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Nov. 22, 1976, Ser. No. 743,975
Int. Cl.[2] A61M 31/00
U.S. Cl. 128—260 **26 Claims**

1. An osmotic therapeutic system for the controlled delivery of a beneficial drug to a biological environment, comprising:

a. a wall formed of a semipermeable material permeable to the passage of external fluid present in the environment and substantially impermeable to the passage of drugs and compounds; the semipermeable wall surrounding and forming;

b. a first and second compartment, said first compartment containing a drug that is in direct communication with the semipermeable wall, said second compartment containing an osmotically effective compound that exhibits an osmotic pressure gradient across the semipermeable wall against the fluid, with the compartments separated by a flexible membrane, which membrane is substantially impermeable to the passage of drug, compound and fluid;

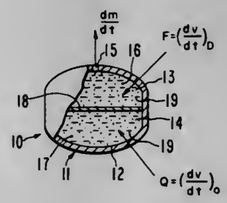
c. a passageway in the wall communicating with the compartment containing the drug for delivering drug from the system; and,

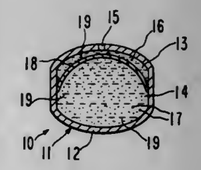
d. wherein in operation when the system is in the environment of use, fluid from the environment is imbibed through the wall into (1) the first compartment containing drug in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall thereby forming a formulation containing drug, and into (2) the second compartment containing osmotic compound in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall thereby continuously filling the second compartment and expanding the membrane into the first compartment, whereby, through the combined actions of the first and second compartments, drug is delivered through the passageway from the system at a controlled rate over a prolonged period of time.

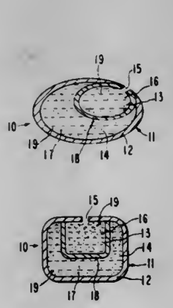
9. An osmotic system for the controlled and continuous delivery of a beneficial agent to the environment of use comprising:

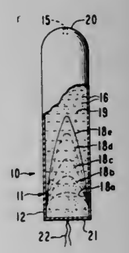
a. a shaped wall formed of a semipermeable material permeable to the passage of an external fluid in the environment of use and substantially impermeable to the passage of beneficial agent and compound, the shaped semipermeable wall surrounding and forming;

b. a first and second compartment, said compartments separated by an expandable membrane permeable to fluid and substantially impermeable to beneficial agent and compound, and wherein the first compartment contains a beneficial agent in communication with the semipermeable wall and the second compartment contains an osmotically effective compound that exhibits an osmotic pressure









gradient directly across the semipermeable wall against the fluid;

c. a passageway in the semipermeable wall communicating with the beneficial agent compartment and the exterior of the system for delivering the beneficial agent from the system; and,

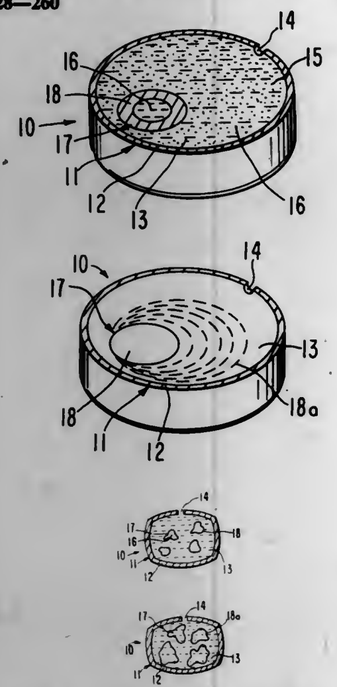
d. wherein in operation, when the system is in the environment of use, fluid from the environment is imbibed through the semipermeable wall into (1) the first compartment containing the beneficial agent in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall, and into (2) the second comparment containing osmotically effective compound through the membrane at a rate determined by the permeability of the membrane and the osmotic pressure gradient across the membrane, said imbibitions increasing the volume of the second compartment and expanding the membrane into the compartment containing beneficial agent is delivered through the passageway from the system at a controlled rate over a prolonged period of time.

4,111,203

OSMOTIC SYSTEM WITH MEANS FOR IMPROVING DELIVERY KINETICS OF SYSTEM

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Nov. 22, 1976, Ser. No. 744,089
The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.
Int. Cl.[2] A61M *31/00*
U.S. Cl. 128—260 13 Claims



1. An osmotic system for the controlled dispensing of a beneficial agent to an environment of use, said system comprising:

(a) a wall formed of a material that is permeable to the passage of an external fluid in the environment of use and substantially impermeable to the passage of agent, the wall surrounding and forming;

(b) a compartment containing a beneficial agent;

(c) means in the compartment comprising a film permeable to the passage of fluid, substantially impermeable to the passage of agents and surrounding an osmotically effective agent that exhibits an osmotic pressure gradient across the film against fluid in the compartment, said means changeable from a rested to a dispensing state on imbibition of fluid for increasing the amount of beneficial agent dispensed from the compartment;

(d) a passageway in the wall communicating with the compartment and the exterior of the system for dispensing beneficial agent from the compartment; and

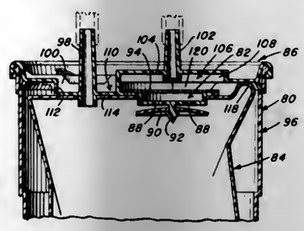
(e) wherein in operation, when the system is in the environment of use, fluid from the environment is imbibed through the wall into the compartment in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall thereby forming a liquid formulation containing beneficial agent, and causing the means to imbibe fluid from within the compartment and change to a dispensing state, whereby beneficial agent is dispensed from the system at a volume flow rate dv/dt, wherein dv is the volume of formulation transported through the passageway per unit time dt, over a prolonged period of time.

4,111,204

SUCTION COLLECTION SYSTEM

Stephen Roy Hessel, Somerville, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 7, 1976, Ser. No. 730,404
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—276 23 Claims



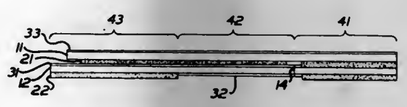
1. For use in a collection system comprising a rigid reusable canister, a drainage receiving assembly, said drainage receiving assembly including a lid receivable over and releasably sealable to the canister, a drainage fixture fixed to and extending through said lid, a flexible receiving bag sealed to the lid about the drainage fixture and depending from said lid for reception within the canister, a suction fixture fixed to and extending through said lid in space relation to said drainage fixture, said suction fixture communicating with the exterior of said bag, an opening defined through said bag remote from said drainage fixture and communicating with the exterior of the bag and the suction fixture, and a patch of air pervious-liquid impervious material positioned directly over said bag opening between the bag and the suction fixture, and in the path of communication from the bag to the exterior of the bag inward of the canister and inward of the suction fixture.

4,111,205

REFASTENABLE DIAPER TAB CLOSURE

Suzette B. Nemeth, Painesville, Ohio, assignor to Avery International Corporation, San Marino, Calif.

Filed Feb. 22, 1977, Ser. No. 770,646
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—284 4 Claims



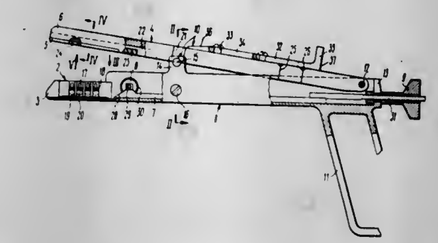
1. A diaper having a linerless refastenable two-substrate diaper tab formed of diaper tab stock comprising a two-substrate web construction made up of initially flat but flexible layers suitable to be formed in long passes along the machine direction of a coating and laminating line and to be rolled up for storage and shipment, and unrolled for use by diaper manufactures, and fabricatable completely by web coating, slitting and web-to-web laminating operations and without the necessity for folding operations, and suitable for high speed dispensing on automatic equipment, said tab including a first substrate extending, transversely to machine direction, along first, second and third length portions and bearing first substrate adhesive on its underside, a second substrate extending along said first, second and third length portions and bearing second substrate adhesive on its underside, said second substrate adhesive extending at least partially along at least said first and third length portions, said second substrate being slit or divided along the machine direction in the region of adjacency of said first and second length portions, said second substrate carrying first substrate release means on its upper side at least co-extensively with any first substrate adhesive at the second and third length portions and carrying second substrate release means on its underside along said second length portion whereby said third and second length portions of said second substrate can be folded together as by a diaper manufacturer, to protect the second substrate adhesive on said third length portion and can then be unfolded to freshly expose said adhesive, as upon fastening of the diaper, and subsequently, as upon unfastening of the diaper, said first substrate can be peeled back from said second substrate at said second and third length portions to freshly expose part of said first substrate adhesive for subsequent refastening of the diaper.

4,111,206

SURGICAL INSTRUMENT FOR APPLYING METAL STAPLES TO ORGANS AND TISSUES AND FOR SIMULTANEOUS DIVISION THEREOF

Alexandr Alexandrovich Vishnevsky, Novokuznetskaya ulitsa, 13/15, kv. 269; Ivan Alexandrovich Korolkov, Polyarnaya ulitsa, 52, korpus 2, kv. 174; Boris Andreevich Smirnov, ulitsa Borisa Galushkina, 17, kv. 26; Tatyana Lukyanovna Ivanova, Polyarnaya ulitsa, 52, korpus 3, kv. 408; Arnold Aramovich Adamian, ulitsa Kakhovka, 10/12, korpus 1, kv. 3, and Galina Vladimirovna Mitkova, Novokuznetskaya ulitsa, 13/15, kv. 269, all of Moscow, U.S.S.R.

Filed Apr. 29, 1976, Ser. No. 681,689
Claims priority, application U.S.S.R., May 4, 1975, 2130062
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—305 7 Claims



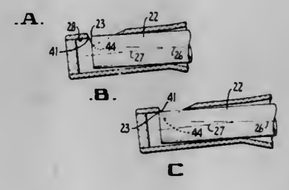
1. In a surgical instrument for suturing and dividing tissue, a pair of means one of which is an elongated staple-inserting means and the other of which is an elongated clinching means, connecting means operatively connected with said pair of means for interconnecting them for movement one with respect to the other to and from an operative position where the staple-inserting means and clinching means clamp between themselves tissue which is to be operated on, said staple-inserting means carrying two rows of staple-driving members for driving staples toward said clinching means while the latter carries in alignment with said rows of staple-driving members a pair of anvil members for engaging the tips of the driven staples after they penetrate through the tissue and for bending said tips, said rows of staple-driving members defining between themselves a space having a given length and said clinching means carrying between said anvil members an elongated elastic member aligned with and being at least as long as said space while having a surface directed toward said space when said pair of means are in said operative position thereof, elongated actuating means supported by said staple-inserting means for movement in a given direction therealong to displace said staple-driving members toward said clinching means, and a rotary knife disk supported by said elongated acutating means for rotation about an axis extending centrally through and being perpendicular to said disk while also extending transversely with respect to said given direction, with said disk being situated at a location where said disk will move with said actuating means along said space between said rows of staple-driving members while said disk has a diameter great enough for penetrating at an outer peripheral cutting edge of said disk into said elastic member which is situated between said anvil members, said disk having only a relatively small portion of said peripheral cutting edge penetrating into said elastic member at any given instant and said disk rotating in response to frictional engagement with said elastic member while travelling along and penetrating into the latter for progressively cutting with a slicing action cleanly through tissue clamped between said pair of means.

4,111,207

NOTCHED TUBULAR CUTTING INSTRUMENT

William Seiler, Jr., Van Nuys, Calif., assignor to David Kopf Instruments, Tujunga, Calif.

Filed Oct. 28, 1976, Ser. No. 736,313
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—305 4 Claims



1. In a cutting instrument having an elongated tubular housing having a tip formed with a cutting orifice, a blade comprising a resilient inner tubular member slidably mounted coaxially within said tubular housing, driving means for reciprocating said blade across said cutting orifice, and a bend in said tubular housing displacing said tip and said cutting orifice in a direction toward said blade, the improvement comprising:

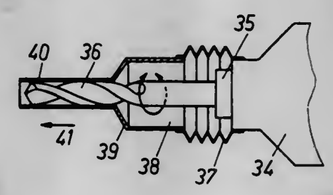
said cutting orifice being formed in the tip of said housing as a notched opening defined by a pair of side edges and a cutting edge which come together to form the base of said notched opening, said cutting edge extending from said base distally to one end of said opening, said pair of side edges extending from said base proximally to the opposite end of said opening, said base being located longitudinally intermediate the ends of said opening, said cutting edge having a rake angle greater than 10° and less than 45°, whereby said cutting edge and side edges continuously guide said blade across said notched opening and provide a shearing action between said blade and cutting edge.

4,111,208

PROCESS FOR DRILLING HOLES IN HARD MATERIALS, IN SURGICAL PROCEDURES, AND APPARATUS FOR CARRYING OUT THE PROCESS

Roland Leuenberger, 15 chemin du Bois de la Chapelle, 1215 Onex, Geneva, Switzerland

Filed Jun. 28, 1977, Ser. No. 810,763
Claims priority, application Switzerland, Dec. 22, 1976, 16177/76
Int. Cl.[2] A61B *17/32, 17/16;* B23B *35/00, 39/10*
U.S. Cl. 128—305.1 15 Claims



1. A process for drilling holes in hard materials in surgical procedures comprising driving a drilling tool with a movement

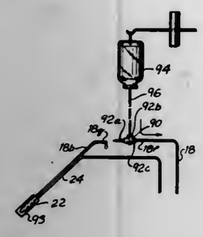
of alternating rotation with an amplitude of less than one revolution.

4,111,209

TOPICAL HYPOTHERMIA APPARATUS AND METHOD FOR TREATING THE HUMAN BODY AND THE LIKE

Sidney Wolvek, Brooklyn, N.Y.; Bruce L. Hanson, Wayne, N.J., and David Bregman, New York, N.Y., assignors to Datascope Corporation, Paramus, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,228
Int. Cl.² A61F *7/00*
U.S. Cl. 128—400 **5 Claims**



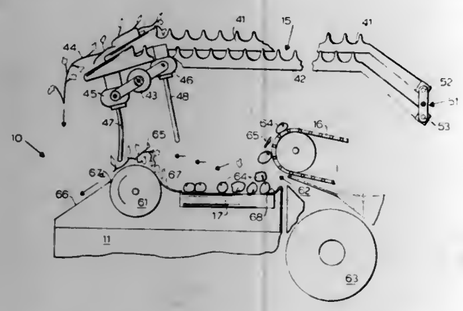
1. A method of cooling a region of the human body comprising the steps of:
providing a coolant circuit assembly including a length of flexible tubing and a flexible, inflatable bag fluidly coupled to said tubing by a lumen having at least two parallel passages formed therethrough;
while maintaining the bag in a deflated condition, introducing coolant fluid into the entire coolant circuit except for the bag;
introducing said deflated flexible bag into the region to be treated;
introducing additional coolant fluid into the coolant circuit thereby inflating the bag, the additional coolant fluid being introduced in an amount based upon the volume of the region of the body to be coated;
cooling said coolant liquid; and
circulating said coolant fluid through said coolant circuit.

4,111,210

TRASH-FREEING REAR CROSS-CONVEYOR FOR TOMATO HARVESTER

Daniel L. Freeman, Rio Vista; Darryl G. Bettencourt, Lodi, and George E. Marshall, Jr., Sacramento, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 27, 1976, Ser. No. 754,128
Int. Cl.² A01D *45/00*
U.S. Cl. 130—30 R **11 Claims**



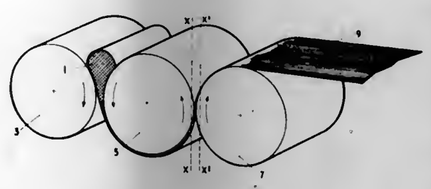
1. In a tomato harvester having a wheel-mounted frame supporting a centrally located fruit collecting conveyor for delivering fruit rearwardly to a rear cross-conveyor assembly having at least one transversely moving conveyor and a blower for directing a strong rearward airstream from adjacently below the rear end of the collecting conveyor across said conveyor for separation and disposal of vegetative and mineral trash, an improvement in said rear cross-conveyor assembly comprising the combination of:
a rearwardly rotating roller having an axis of rotation generally parallel to the direction of travel of said transverse conveyor and rotationally mounted on said frame adjacent to but behind said conveyor,
a series of moving resilient fingers depending downwardly from above the roller for engaging and agitating said trash otherwise accumulating on said roller and for facilitating movement of said trash upon said roller and away from said rear cross-conveyor assembly, and
slide means mounted adjacent to but behind said roller for removing said trash therefrom and directing it to the ground.

4,111,211

SMOKING MIXTURES

Henry Russell Hincklieff, and Richard Hugh Banwell, both of Blackley, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 563,448, Mar. 31, 1975, abandoned. This application May 16, 1977, Ser. No. 797,017
Claims priority, application United Kingdom, May 2, 1974, 19245/74
Int. Cl.² A24D *1/18*; A24B *3/14*
U.S. Cl. 131—2 **20 Claims**



1. A process for the production of a smoking mixture film comprising forming a pasty mass containing combustible binder, inorganic filler and water, said pasty mass having a low phase angle and feeding said pasty mass to a roll-mill wherein successive rollers operate at successively higher peripheral speeds, such speeds and the clearances between the rolls being adjusted to produce a film having one surface closely configured with parallel ridges.

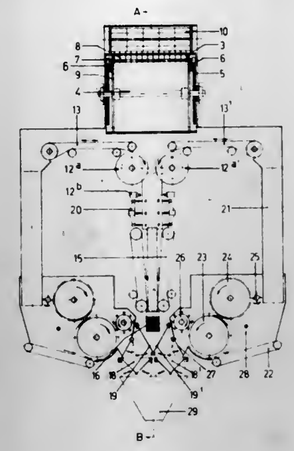
4,111,212

DOSING AND WEIGHING OF CUT TOBACCO

Jouke Bakker, Joure, Netherlands, assignor to Douwe Egberts Tabaksmaatschappij B.V., Joure, Netherlands

Filed Aug. 2, 1973, Ser. No. 384,814
Claims priority, application United Kingdom, Aug. 9, 1972, 37114/72; Oct. 25, 1972, 49199/72
Int. Cl.² A24C *1/02*
U.S. Cl. 131—21 A **16 Claims**

1. A method of dosing long fibre tobacco comprising the steps of providing an approximate quantity of tangled long fibres, said approximate quantity being less than the quantity required, plucking tufts from the tangled mass of long fibres with the aid of needles gradually emerging from holes in a tangentially moving surface, which needles are brought into contact with the mass as it is fed therepast after which the needles are retracted to set the tufts free, subsequently providing a sufficient quantity of disentangled long fibres and adding a predetermined quantity of short fibres to the dosed portions of long fibres to make up said approximate quantity to the required quantity.

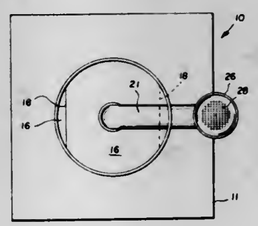


4,111,213

SMOKING PIPE

Albert J. Shanto, 114 State St., Brockport, N.Y. 14420, and Bruce V. Bevins, 5708 Wautoma Beach Rd. W., Hilton, N.Y. 14468

Filed Nov. 22, 1976, Ser. No. 743,637
Int. Cl.² A24F *1/14, 1/30*
U.S. Cl. 131—173 **4 Claims**



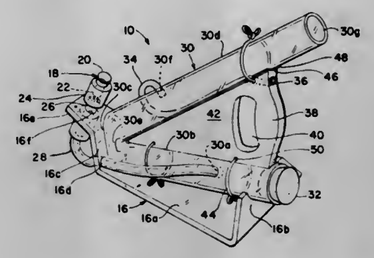
1. A smoking pipe having a base, a normally upright standpipe having a generally cylindrical wall secured to said base of extend upward from said base for containing liquid up to an intermediate level in said standpipe, said standpipe wall having an inlet hole above said intermediate level, a bowl support pipe removably extending snugly through said inlet hole, means for mounting a bowl on an outer end of said bowl support pipe outside said standpipe, and said standpipe wall having a vent hole above said intermediate level, said pipe comprising:
a. a straight smoke inlet pipe having a diameter and length both substantially less than said standpipe, said smoke inlet pipe being arranged generally concentrically with said standpipe within said standpipe to extend from a bottom region of said standpipe near said base up to a region above said intermediate level;
b. a plurality of baffle plates disposed to fit around and encircle said inlet pipe at successive levels below said intermediate level, said baffle plates being generally parallel with each other and extending radially from said inlet pipe outward to said wall of said standpipe, and said baffle plates being arranged for supporting said inlet pipe concentrically within said standpipe and for forming a labyrinthine passage for smoke; and
c. an upper end of said inlet pipe and an inner end of said bowl support pipe being configured relative to each other to provide a manually releasible fit between said upper end of said inlet pipe and said inner end of said bowl support pipe to allow for manually removing said bowl support pipe from said inlet pipe and said standpipe.

4,111,214

WATER PIPE

Robert W. Flesher, 11007 Drumm Ave., Kensington, Md. 20795

Filed Dec. 6, 1976, Ser. No. 747,608
Int. Cl.² A24F *1/14, 1/30*
U.S. Cl. 131—173 **11 Claims**



1. In a water pipe having means connecting together a bowl, a water container, a mouthpiece, purging means and a stand, the improvement comprising: the mouthpiece and water container comprising a tubular configuration in "V" shape with first and second legs and having a throat at the apex thereof, means for holding the "V" shape in predetermined attitude with the apex of the "V" shape down, means for closing an end of the first leg; said means for connecting including a connecting means tube from the bowl to an intermediate portion of the first leg, said purging means including a purging means tube having communication at a first end thereof with an intermediate portion of the second leg, a handle having attachment to the tubular configuration for manually holding the tubular configuration, and said purging means tube having a second end disposed proximate the handle in position adjacent the upper end of said second leg in position permitting manual closing and opening of the purging means from above said purging means tube connection with the intermediate portion of the second leg.

4,111,215

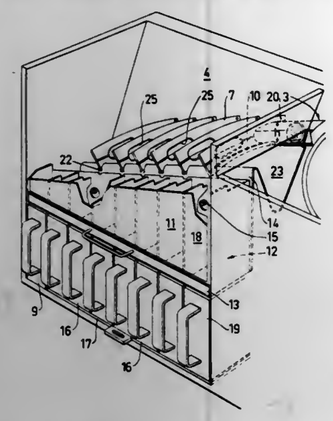
COIN SORTING MECHANISM

Gösta Wicklander, 1 Skonertvagen, Alnö, Sweden (s-860 24)

Filed Dec. 8, 1976, Ser. No. 749,394
Claims priority, application Sweden, Dec. 15, 1975, 7514135
Int. Cl.² G07D *3/04*
U.S. Cl. 133—3 C **9 Claims**

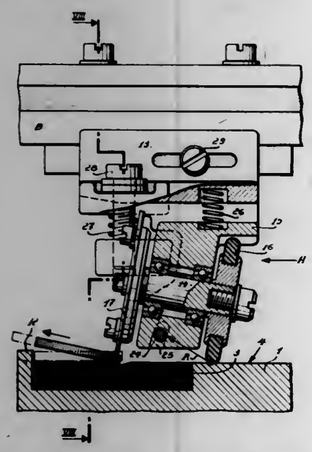
1. A coin sorting mechanism comprising a coin passage for travel of coins to be separated according to diameter and means coupled to said passage for sorting the coins according to diameter, the latter said means comprising a succession of deflection bars having respective graduated sorting holes for deflecting from the coin passage, coins, disks and the like with a diameter greater than the sorting hole in the respective deflection bar, means on each said bar for gravitationally conveying the deflected coins along the bar for discharge therefrom, a receiving station having compartments for receiving the sorted coins, each said bar being provided with a further sorting hole located along the path of travel of the deflected coins in proceeding for discharge from the bar to the receiving station, said further sorting hole having an extent in one direction which is less than the diameter of the coin which the respective deflection bar is to divert, said further sorting hole being positioned with respect to the coin conveying means of the respective deflection bar for discharge of undersize coins

before they have reached the location of discharge from the bar to the receiving station and channel means positioned



beneath the further sorting holes for receiving undersized coins from said deflection bars.

4,111,216
CENTRIFUGAL COIN SORTER
Marcel Brisebarre, Thoiry, France, assignor to Systems and Technics S.A., Gland, Switzerland
Filed Feb. 23, 1977, Ser. No. 771,371
Claims priority, application Switzerland, Apr. 1, 1976, 4042/76
Int. Cl.² G07D *3/06*
U.S. Cl. 133—3 A **17 Claims**



1. In a coin sorting machine comprising a frame on which is pivoted a rotary plate and means for rotating said plate; a funnel for receiving the coins in loose form located in the central part of said plate; positioning means for the coins permitting the discharge from said funnel of only those coins which are placed flat on the surface of the rotary plate; a peripheral shoulder preventing the coins from leaving the rotary plate as well as at least one station for the selection and extraction of one denomination of coins from among the others; the improvement in which each selection station has on the one hand means carried by the rotary plate permitting a movement of at least a radially inner part of a coin below the upper surface of the plate and on the other hand coin-contacting means carried by the frame and entering into contact with said radially inner part of a coin to be selected and which is lying flat on the rotary plate to push said radially inner part of the coin below the upper surface of the plate and to raise the radially outer part of the coin higher than said shoulder to eject the coin by centrifugal force over said shoulder.

4,111,217
ARCTIC TENT POLE
William E. Victor, Hazeldean, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Filed Jun. 17, 1977, Ser. No. 807,569
Claims priority, application Canada, Jul. 9, 1976, 256715
Int. Cl.² A45F *1/16*
U.S. Cl. 135—15 PQ **5 Claims**



1. A collapsible, adjustable variable length support comprising:

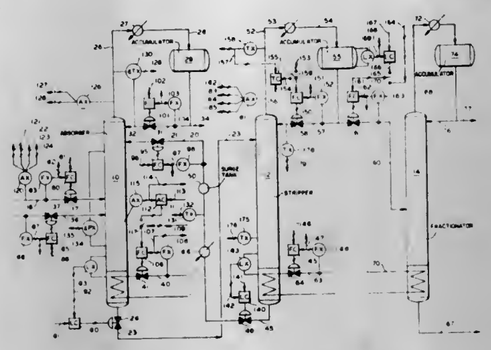
(a) a pair of pole sections, one of said pole sections comprising an externally threaded, elongate member telescopically projecting into a tubular member;

(b) hinge means interconnecting said pole sections for pivotal movement about an axis fixed in position relative to each of the pole sections;

(c) releasable locking means associated with said hinge and comprising interengageable cooperating portions on respective ones of the pole sections preventing pivotal movement of the hinge when adjacent ends of the pole section are in line in an end-to-end position; and

(d) a hand operable, quick release coupling associated with the threaded elongate member and tubular member selectively to convert from one to the other of fine and coarse adjustment to the length of the support at any position throughout the length of the externally threaded elongate member; said quick release coupling comprising a threaded nut secured to the tubular member and circumscribing said threaded elongate member, said threaded nut being variable in size and selectively movable into and out of threaded engagement with said threaded elongate member whereby disengagement of the threads permits free telescopic movement of the members allowing a fast coarse adjustment to the length of the support and engagement of the threads permits a fine infinite adjustment to the length of the support by rotating one of said members relative to the other and releasable lock means associated with the variable sized nut for selectively retaining the latter in threaded engagement with the externally threaded elongate member.

4,111,218
ABSORPTION PROCESS METHOD AND APPARATUS
James W. Hobbs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 474,405, May 30, 1974, Pat. No. 3,967,937.
This application May 28, 1976, Ser. No. 691,121
Int. Cl.² F17D *3/01*
U.S. Cl. 137—2 **6 Claims**



1. A method comprising:

introducing an at least partially liquid input stream into a liquid accumulation zone;

withdrawing a liquid output stream from said accumulation zone;

establishing a liquid level signal representative of the liquid level within said liquid accumulation zone;

generating from said liquid level signal a correction factor signal;

utilizing said correction factor signal to modify the response of a proportional-integral-derivative means;

providing said liquid level signal and a liquid level set point signal as inputs to said proportional-integral-derivative means to produce a first signal as the output of said proportional-integral-derivative means;

establishing a second signal representative of the predicted flow rate of the liquid portion of said input stream into said accumulation zone, the flow rate of said input stream being independent of the liquid level in said accumulation zone;

adding said first signal and said second signal to produce a third signal representative of the optimum flow rate of said output stream; and

controlling the flow rate of said output stream in response to said third signal.

4,111,219
INDUSTRIAL FUEL BLENDER AND FUEL BLENDING METHOD
John Emil Hallberg, Peachtree City, and Otis Max Taylor, East Point, both of Ga., assignors to TMC, Inc., Atlanta, Ga.
Filed May 11, 1977, Ser. No. 795,782
Int. Cl.² F16K *19/00*
U.S. Cl. 137—3 **12 Claims**

12. A method of blending a base fuel with a fuel additive comprising the steps of:

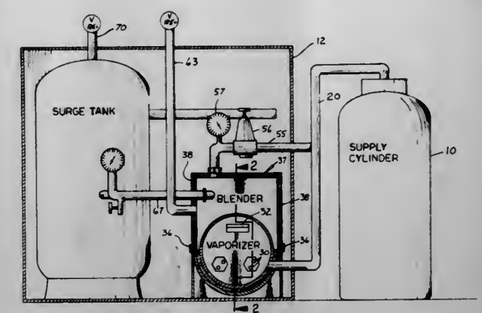
a. providing a supply of base hydrocarbon fuel in a gaseous state under pressure within a supply container;

b. providing a supply of hydrocarbon fuel additive in a liquid state in an additive container;

c. heating the fuel additive thereby causing fuel additive to be vaporized in the additive container;

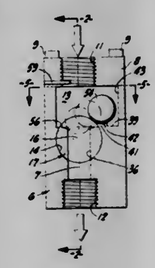
d. releasing pressurized base fuel from the supply container and forming it into a flow stream; and

e. releasing vaporized fuel additive from the additive container and drawing it by venturi action into the base fuel flow stream by drawing fuel additive into the base fuel flow stream at a venturi junction being heated by heat conducted from the additive container thereby inhibiting



condensation of fuel additive as it is drawn from the additive container and into the base fuel flow stream.

4,111,220
SHAKE RESPONSIVE VALVE
Harry K. Winters, San Rafael, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed May 20, 1977, Ser. No. 798,825
Int. Cl.² F16K *17/36*
U.S. Cl. 137—39 **8 Claims**



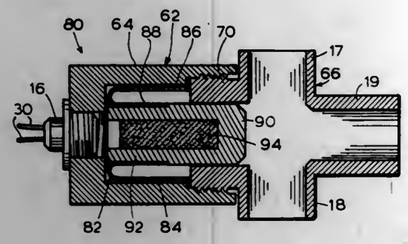
1. A shake responsive valve comprising a valve body approximately symmetrical about a longitudinal axis, means defining a plug bore through said body, said plug bore having a bore axis normal to said longitudinal axis, a plug in said plug bore and rotatable about said bore axis, means defining a plug passage in said plug, said plug passage having a passage axis in one rotated position of said plug being coincident with said longitudinal axis and in another rotated position of said plug extending across said longitudinal axis with said plug passage blanked by said valve body, means in said plut defining a valve seat extending substantially normally to said passage axis and in one rotated position of said plug being disposed in a predetermined plane normal to said longitudinal axis, means defining a flat on said plug substantially in said predetermined plane and merging with a portion of said valve seat, means defining a chamber in said valve body partially bounded by a table substantially in said predetermined plane and in one rotated position of said plug substantially merging with said flat, a pedestal on said valve body in said chamber and upstanding from said table, means defining a chamber wall upstanding from said table and disposed at a distance from said pedestal increasing toward said plug, means defining a plug wall upstanding from said flat extending around at least part of said seat and in one rotary position of said plug merging with said chamber wall, and a ball in said chamber adapted in one position to rest on said pedestal and in another position to occupy said valve seat.

4,111,221

LOW RESTRICTION, NORMALLY OPEN VALVE CONSTRUCTION HAVING A DEFORMABLE BLADDER

Charles R. Olsen, 307 Connestoga Way, Suite 37, Eagleville, Pa. 19408

Filed Jan. 28, 1976, Ser. No. 653,274
Int. Cl.² F16K 7/02, 7/10; F16L 55/12
U.S. Cl. 137—67 13 Claims



1. A normally open valve for a fluid system comprising:
a valve housing defining first and second fluid ports and a fluid passageway extending through the housing between the ports;
an expandible body including a pressure confining metallic tube closed at a first axial end and open and mounted to the housing at the opposite, second axial end, the body in the non-expanded condition having one tube portion folded co-axially within an adjacent tube portion to form an inversion in the tube wall between the axial tube ends, the first and second axial ends being movable axially of the tube relative to one another with an accompanying rolling of the fold between said tube portions to expand the body, the body in the expanded condition of the tube being extended across the fluid passageway of the housing in flow-obstructing relationship and in the non-expanded condition being removed from flow-obstructing relationship with the passageway, the inversion in the tube wall being located in the wall at a station farther from the fluid passageway than the second axial end mounted to the housing whereby the fold forming the inversion rolls toward and moves closer to the second axial end as the body expands and extends across the fluid passageway; and
means connected with the housing for pressurizing the tube between the tube ends to move the first and second ends axially of the tube relative to one another while confining the pressure within the tube walls to axially extend the tube into the expanded body condition obstructing flow in the fluid passageway of the housing.

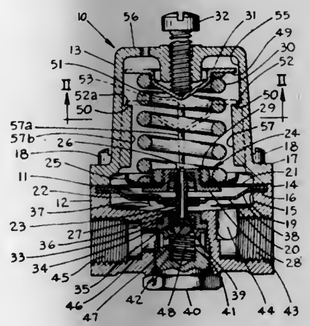
4,111,222

ADJUSTMENT LIMITER IN A COMPRESSED GAS PRESSURE REGULATOR

David Allen Hassell, Coon Rapids, Minn., assignor to The Cornelius Company, St. Louis Park, Minn.

Filed Jul. 26, 1976, Ser. No. 708,433
Int. Cl.² F16K 13/04
U.S. Cl. 137—69 3 Claims

1. In a compressed gas pressure regulator having a regulator body, a diaphragm of flexible material carried thereby, a mounting carried by the diaphragm, a spring operatively positioned between the regulator body and the mounting, means mounted in the body and adjustably operative upon the spring for partially compressing the spring into operative engagement against the mounting for movably biasing the mounting and the diaphragm in one direction, a pressure chamber in the body and adjacent to the diaphragm, a valve chamber in the body, an inlet to the valve chamber and an outlet from the pressure chamber, a passageway connecting the pressure and valve chambers, a valve seat in the valve chamber spaced from the mounting and surrounding the passageway, a valve head in the valve chamber and adapted to sealingly seat against the valve seat and close the passageway, and means between the mounting and the valve head for unseating the valve head upon movement of the mounting and diaphragm in the direction as biased by the spring for opening the passageway, the improvement, comprising in combination therewith:
a. a spring seat mounted between the spring and the adjustment means, the spring seat being displaceable by the adjustment means through a path and range of travel for partially compressing the spring against the mounting;
b. an outer margin on the spring seat, the margin extending radially outward beyond the spring;



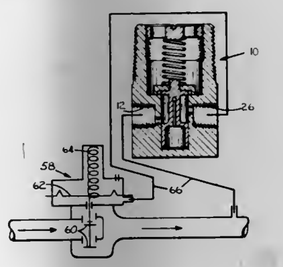
c. a limit stop mounted in the body and in the path of displaceable travel of the spring seat, the margin and limit stop being abuttable against each other prior to complete compression of the spring for terminating displacement of the spring seat and limiting compression of the spring; and
d. a rupturable center section in the spring seat and in engagement with the adjusting means, the center section being rupturable upon operation of the adjustment means in a direction toward the mounting when the margin and limit stop are abutted against each other.

4,111,223

CONTROL LINE RELIEF VALVE

Leland E. Gelnett, Du Bois, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 27, 1976, Ser. No. 726,904
Int. Cl.² F16K 31/12
U.S. Cl. 137—115 9 Claims



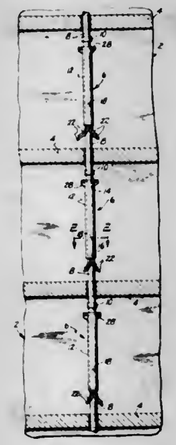
1. A relief valve comprising a body having a stepped blind bore longitudinally therein and inlet and outlet transverse passages intersecting the smaller diameter bore of said stepped bore, a valve member movable in said bore having a cylinder open on the bottom, a stem portion projecting coaxially from the closed end of said cylinder toward the open end of said stepped bore and carrying a flange engageable with the shoulder of said stepped bore when said valve member is in a first position, a cap closing said bore open end, a spring between said cap and said valve member biasing said valve member towards said first position, said valve member movable to a second position against said spring bias in which said flange is unseated from said shoulder, allowing communication between said smaller diameter and the larger diameter of said stepped bore, said inlet passage opening into said smaller diameter bore adjacent said closed end of said cylinder when said valve member is in said first position, said outlet passage opening into said smaller diameter bore intermediate said inlet passage opening and said shoulder of said stepped bore, bore means communicating the interior of said cylinder with the portion of said stepped bore between said cylinder and said flange, and vent means connecting said larger diameter bore with the atmosphere.

4,111,224

WATER DISTRIBUTION SYSTEM

Wayne Sandstrom, Box 2414, Fairbanks, Ak. 99707

Filed Apr. 29, 1976, Ser. No. 681,619
Int. Cl.² F16L 55/04
U.S. Cl. 137—207 4 Claims



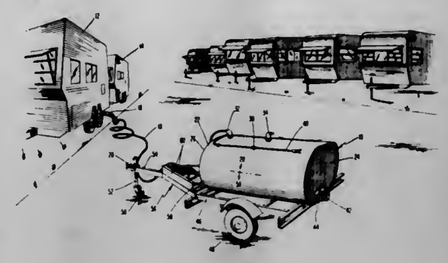
1. A water distribution system for a multi-storied building, comprising:
a continuous water supply conduit extending upwardly through said building;
means defining an upstanding closed chamber at each of said stories;
means for directing water from said supply conduit into each of said chambers at a level substantially below the top thereof whereby a body of air is trapped in the upper part of said chamber;
a plurality of water distribution conduits extending from one end of each of said chambers for supplying water therefrom to each of a plurality of locations at each of said stories, each of said distribution conduits communicating with said chamber below said level; and
said means defining each of said chambers comprising a jacket member surrounding a portion of said continuous supply conduit and sealed thereto at upper and lower ends, the annular space between said supply conduit and jacket defining said chamber, said means for directing water into said chamber comprising at least one opening in the side of said supply conduit at said level in said chamber.

4,111,225

SEWAGE DISPOSAL METHOD AND SYSTEM

Charles W. Phelps, 235 Valley Ave., Williamsport, Pa. 17701

Filed Aug. 10, 1976, Ser. No. 713,206
Int. Cl.² B08B 9/08
U.S. Cl. 137—240 10 Claims



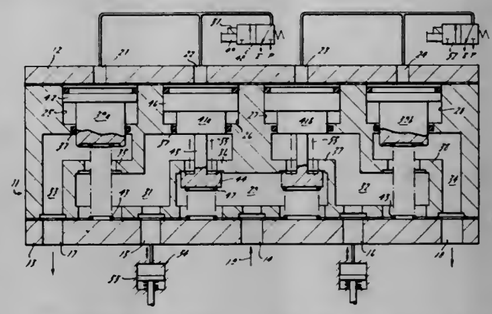
1. A collection tank for sewage, comprising:
a tank body having an inlet for receiving sewage and an outlet for drainage;
nozzle means located within said tank adjacent an inner wall surface thereof, and directed so as to impinge a cleaning fluid on said inner wall surface, said nozzle means including a plurality of nozzles distributed along an upper portion of said tank body, each of said nozzles including a stem portion extending through the tank body and having discharge orifices adjacent said inner surface, said nozzle means further including a conduit disposed along an outer surface of said tank body interconnecting said nozzles; and
means for supplying the cleaning fluid to said nozzle means from a source of the fluid located outside said tank body.

4,111,226

MULTIPLE FUNCTION FOUR POPPET VALVE SYSTEM

Russell J. Cameron, Rochester, Mich., assignor to Ross Operating Valve Co., Detroit, Mich.

Filed Aug. 1, 1977, Ser. No. 820,617
Int. Cl.² F15B 13/00; F16K 11/20
U.S. Cl. 137—269 7 Claims



1. In combination, a valve body having an inlet port, a pair of working ports, and a pair of exhaust ports, an inlet chamber in said body connected to said inlet port, a pair of working chambers connected to said working ports respectively, and a pair of exhaust ports connected to said exhaust ports respectively, four main valve piston chambers formed in said body, four valve ports formed in said body and aligned with said piston chambers, two of said ports being disposed between said inlet chamber and said working chambers respectively and two ports between said working chambers and said exhaust chambers respectively, each port having valve seats on its opposite sides, a plurality of poppet valves of two types, one type being normally closed and the other normally open, each of said normally open valves comprising a piston and a valve portion

engageable with the downstream seat of a valve port, each of said normally closed valves comprising a piston and a valve portion engageable with the upstream seat of a valve port, seals carried by said body adjacent said piston chambers, said valves having portions engageable with said seals, said seal engaging portions and said piston portions on both the normally closed and normally open valves having a common diameter whereby the normally closed or normally open valves may be interchangeably mounted in any of the piston chambers to engage the corresponding valve port seats, springs in said body engageable with said valves to urge them toward deactivated positions, separate pilot valve ports connected with said four piston chambers, and at least one pilot valve controlling said pilot valve ports.

4,111,227

PRESSURE RELIEF VALVE FOR HYDRAULIC MINE SUPPORTING ELEMENTS

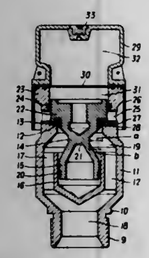
Siegfried Sigott; Heinrich Suesseabeck; Alfred Zitz, all of Zeltweg, and Gottfried Siebenhofer, Vienna, all of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Sep. 1, 1976, Ser. No. 719,653

Claims priority, application Austria, Sep. 9, 1975, 6947/75; Feb. 12, 1976, 1007/76

Int. Cl.² F16K *31/363*

U.S. Cl. 137—469 **11 Claims**



1. A pressure relief valve for hydraulic mine supporting elements, particularly mine props, comprising a valve housing having exit openings; a valve member having a valve seat; said valve member being loaded in closing direction by a spring means; a first piston connected to the valve member, said first piston being sealingly slidable within a first cylinder in the valve housing and being acted upon in closing direction by the pressure prevailing within a space upstream of said valve seat of the valve member, the valve member having a neck portion of reduced diameter between the valve seat and the piston, the annular cross section, being acted upon in closing direction, between the neck portion and the circumference of the piston being smaller than the annular cross section, being acted upon in opening direction, between the neck portion and the valve seat; and a second piston downstream of said valve seat and connected to said valve member, said second piston being of greater diameter than said valve seat and cooperating with said exit openings to clear these openings only after a predetermined valve stroke in the opening direction, said second piston defining with said valve housing a space which in the closed position of said valve member exists between said valve seat and said exit openings, said valve housing having at least one bore which places said space in communication with the atmosphere thereby preventing oscillations of the valve member.

4,111,228

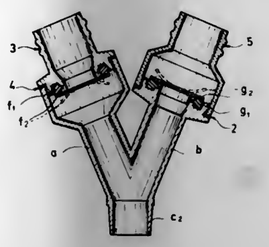
RESPIRATORY VALVE, ESPECIALLY FOR ANAESTHETIC CIRCUITS

Radu Simionescu, Bucharest, Rumania, assignor to Institutul Oncologic Bucuresti, Bucharest, Romania

Continuation-in-part of Ser. No. 598,360, Jul. 23, 1975, abandoned. This application Dec. 28, 1976, Ser. No. 754,992

Int. Cl.² F16K *15/14*

U.S. Cl. 137—512 **4 Claims**



1. A respiratory valve for use in the circuits of anaesthetic gas devices, comprising:

first and second tubular arms joined in a union with a tubular mouthpiece, said first and second arms forming a bifurcated breathing chamber;

a first internally threaded enlarged portion formed at the free end of said first arm;

a first externally threaded flange formed at the free end of said second arm, said flange having an annular recess formed in the end face thereof concentric with an annular extension having a continuous groove in the periphery thereof opening into said recess;

a first tubular fitting having a second flange identical to said first flange and formed at an end thereof, said second flange being threadedly engaged in said first enlarged portion with sealing means therebetween;

a first shutter having a resilient toroidal ring formed with an inwardly projecting rib, said ring being removably mounted in said annular recess in said second flange with said rib engaged in said groove and a resilient circular membrane overlying said ring and mounted thereon at two diametrically opposite points defining two deflectable circular segments, said first shutter being housed in said first enlarged portion in an inhalation mode;

a second tubular fitting having a second enlarged portion formed at an end thereof and identical to said first enlarged portion, said second enlarged portion being threadedly engaged on said first flange with sealing means therebetween

a second shutter identical to said first shutter, mounted in said annular recess of said first flange in an identical manner to the mounting of said first shutter, said second shutter being housed in said second enlarged portion in an exhalation mode; and

circular lugs formed on the outer periphery of said first and second fittings for engagement with said circuit.

4,111,229

CONTROLLING THE FLUID IN A BALL VALVE

Timothy T. Christian, 24243 Ocean Ave., Torrance, Calif. 90505

Filed Apr. 1, 1977, Ser. No. 783,551

Int. Cl.² F16K *5/10*

U.S. Cl. 137—614.17 **3 Claims**

1. An improvement for controlling the flow of fluid in a conduit to be used in combination with a ball valve which includes:

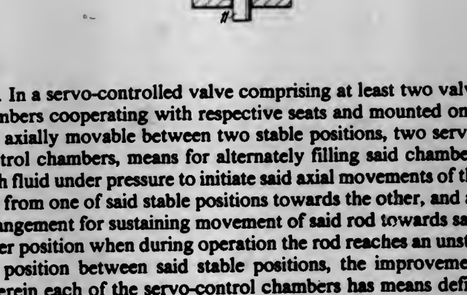
a. a valve body having a bore extending therethrough, said valve body having an inlet and an outlet which are axially aligned and adapted to be mechanically coupled to the conduit and said valve body also having an aperture therein;

b. a spherical valve member having a port, the axis of which is alignable with the axis of the bore of said valve body;

c. a stem having an inner end mechanically coupled to said spherical valve member and an axially outer end which extends through the aperture of said valve body; and

d. sealing means for forming a seal between the aperture of said valve body and said stem, said improvement comprising:

a. a pair of disc carriers disposed within the port of said valve member;



b. a pair of discs, each of said discs being carried by one of said disc carriers with the respective discs being disposed in a contiguous relation, said discs having orifices therethrough which are movable in and out of alignment; and

c. rotating means for rotating one of said disc carriers relative to the other of said disc carriers, said rotating means mechanically coupled to said stem in such a manner that said discs are moved in and out of alignment in order to control the flow of fluid from the inlet to the outlet of said valve body.

4,111,230

SERVO-CONTROLLED VALVE

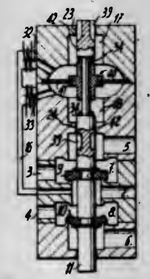
Harald Stampfli, Petit-Saconnex-Geneva, Switzerland, assignor to Lucifer S.A., Carouge-Geneva, Switzerland

Filed Mar. 15, 1977, Ser. No. 777,671

Claims priority, application Switzerland, Mar. 23, 1976, 3596/76

Int. Cl.² F15B *13/043*

U.S. Cl. 137—625.5 **4 Claims**



1. In a servo-controlled valve comprising at least two valve members cooperating with respective seats and mounted on a rod axially movable between two stable positions, two servo-control chambers, means for alternately filling said chambers with fluid under pressure to initiate said axial movements of the rod from one of said stable positions towards the other, and an arrangement for sustaining movement of said rod towards said other position when during operation the rod reaches an unstable position between said stable positions, the improvement wherein each of the servo-control chambers has means defining an emptying orifice and an obturator cooperating with said orifice, said obturator being operatively connected to the rod to open the orifice and produce emptying of the chamber filled with fluid under pressure as soon as the rod passes said intermediate unstable position during its movement from one stable position towards the other.

4,111,231

SHOCK ABSORBER VALVE

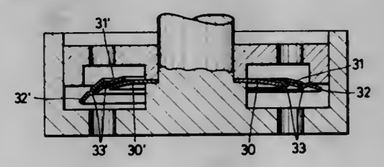
Erhard Leppich, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 6, 1976, Ser. No. 747,523

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1976, 2600820

Int. Cl.² F16F *9/34*; F16K *15/14*

U.S. Cl. 137—852 **5 Claims**



1. In a valve, usable in a shock absorber for controlling flow of a fluid through a valve support member having a fluid passage, said valve comprising a valve seat and a plurality of disk springs cooperating therewith, the improvement wherein a first disk spring is clamped in the region of a first radial edge and extends in the radial direction toward said valve seat, its second radial edge terminating before reaching said valve seat and being free to flex in either axial direction, and wherein a second disk spring is held in the region of a first radial edge against the pressure of the fluid medium only at the region of said second radial edge of said first disk spring, the second disk spring extending in the radial direction toward the valve seat such that its other second radial edge extends over said valve seat and lies in contact therewith when the valve is closed.

4,111,232

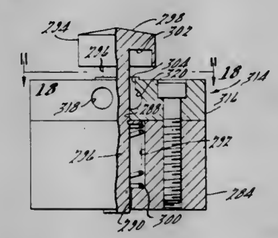
SAFETY MECHANISM FOR PRESSES, MACHINES AND FIXTURES

Robert W. Williamson, 77 Cedar Acres, Brunswick, Ga. 31520

Continuation of Ser. No. 577,290, May 14, 1975, abandoned, which is a division of Ser. No. 435,900, Jan. 23, 1974, Pat. No. 3,884,336. This application Jan. 18, 1977, Ser. No. 760,414

Int. Cl.² F16K *1/00, 13/02*

U.S. Cl. 137—882 **10 Claims**



1. A failsafe valve means for use in a safety apparatus or the like for determining when two components of the apparatus are in a predetermined relationship and providing a control signal in response to such predetermined relationship, comprising a valve body fixed relative to a first of said components, a first passage formed in said valve body and terminating at one end in a first port normally communicating with the atmosphere, the other end of said first passage being in communication with a source of pneumatic pressure, a second passage formed in said valve body and terminating at one end in a

second port normally communicating with the atmosphere, the other end of said second passage being in communication with a device adapted to receive pneumatic pressure when the two components are in the predetermined relationship and a valving member supported for movement relative to said valve body between a closed position and an opened position, the movement of said valving member between the positions being controlled by the other of said components, said valving member being adapted, when in its closed position, to terminate the communication of said ports with the atmosphere and to provide a flow path between said ports for establishing a pneumatic circuit between said first passage and said second passage and permitting the transmission of said control signal from said first passage to said second passage.

4,111,233

WATER SUPPLY SUSPENDING IMPLEMENT WITH STOPPING PIECE

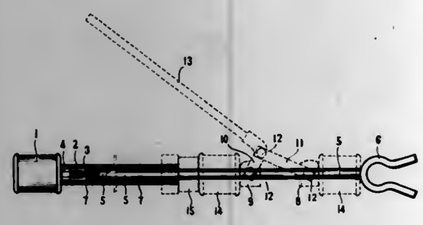
Kurioka Takashi, 15-15, 1-chome, Higashinakamoto, Higashinariku, Osaka, Japan

Filed Apr. 12, 1977, Ser. No. 786,843

Claims priority, application Japan, Apr. 13, 1976, 51/46507[U]

Int. Cl.² F16L *55/10*

U.S. Cl. 138—89 **1 Claim**



1. A device for stopping the flow of water through an open pipe, comprising: an expandable plug formed of elastic material; a screw having a normal screw thread extending axially from said plug; a second screw of smaller diameter than said first screw and extending axially from the end of said first screw, said second screw having a reverse screw thread; a nut screw-fitted on said normal screw thread and adapted to contact the end of the plug; an elongated rod axially screwed to the end of said reverse screw thread, said elongated rod extending outwardly in an axial direction from said plug and having a turning handle at the end thereof; an outer tube loosely inserted over the forward part of said elongated rod and extending over said normal screw thread and said reverse screw thread and fitting over said nut at the tip end thereof; a pair of forced-contact opening and closing elements slidably extending over said elongated rod and axially spaced from the end of said outer tube; front and rear movable links hingedly attached one to each of said pair of forced-contact elements, with the other ends of said links hinged together; a guide arm fixed to one side of said links; elastic buffer tubes slidably provided on said elongated rod, one located between the rearmost of said forced-contacting opening and closing elements and said turning handle, and the other between the frontmost of said forced-contacting opening and closing elements and the end of said outer tube; and means for adjusting the degree of expansion of said plug, said means comprising at least one adjusting ring slidably placed on said elongated rod between the end of said outer tube and said elastic buffer tube.

4,111,234

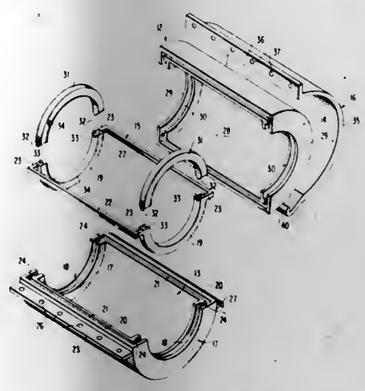
REPAIR DEVICE FOR PIPES

James W. Wells, Rte. 1, Box 771, Elmore, Ala. 36025, and Loyd A. Watts, Rte. 2, Box 303, Wartrace, Tenn. 37183

Filed Nov. 11, 1976, Ser. No. 740,942

Int. Cl.² F16L *55/16, 55/18*

U.S. Cl. 138—99 **10 Claims**



1. A repair clamp for pipes and pipe couplings comprising a pair of rigid mating separately formed approximately semi-cylindrical clamp sections having arcuate end walls at opposite ends with interior faces defining openings of a diameter substantially less than the diameter of the semi-cylindrical clamp sections and engageable around a leaking pipe or pipe coupling to enclose and seal the pipe permanently in the region of the leak, said pair of semi-cylindrical clamp sections being of the same diameter as the arcuate end walls throughout the lengths thereof thereby adapted to form an enclosed cavity around a pipe, gasketing disposed at the interfaces of said clamp sections and at the interfaces of the interior faces of the end walls with the pipe to seal such interfaces, a radial flange on the exterior of one clamp section positioned at one longitudinal edge thereof and an interlocking engagement means on the opposite longitudinal edge thereof, an arcuate connector member separate from said clamp sections having an opposing radial flange on the exterior thereof on one longitudinal edge and a rigid interlocking engagement means substantially diametrically spaced therefrom adapted to interlock with said first mentioned interlocking engagement means on said one clamp section, said arcuate connector member extending substantially around the opposing clamp section circumferentially and engaging the circumferential face thereof substantially throughout its circumferential length in force transferring relationship, said opposing clamp section being free of radial flanges on both exterior longitudinal edges thereof, and adjustable connecting means between said radial flange on said one clamp half section and said opposing radial flange on said arcuate connector member, whereby said clamp is adapted to be clamped on a pipe by lateral swinging movement of said arcuate connector member about said interlocking engagement means and actuation of said adjustable connecting means.

4,111,235

PIPE CAP

Charles Alexander Gray, Cypress, Calif., assignor to BJ-HUGHES Inc., Long Beach, Calif.

Filed Jul. 6, 1976, Ser. No. 702,557

Int. Cl.² F16L *21/02*

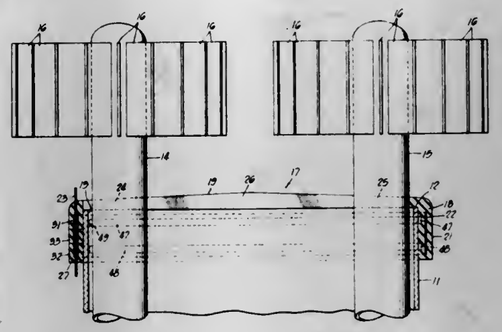
U.S. Cl. 138—109 **10 Claims**

1. The combination with the open end of a cylindrical tubular member that has a pipe of smaller diameter projecting through its open and of a sealing cap installed over the open end of said cylindrical tubular member and surrounding said pipe for sealing said pipe to said member, said cap comprising:

an elastomeric discoid portion covering the open end of said tubular member and having wall means defining an aperture and closely encircling said pipe of smaller diameter;

a cylindrical, elastomeric apron extending from said discoid portion and closely encircling said tubular member adjacent to its open end;

said apron and said discoid portion having mutually abutting walls defining a split extending from the free edge of said apron, through said apron and through a part of said discoid portion to intersect said wall means defining said aperture;



a flexible, cylindrical band embedded in said apron and defining a split substantially aligned with the section of said split that extends through said apron; and

securing means disposed at one side of said aperture, operative between the ends of said band adjacent to its said split, and drawing the ends of said band relatively together thereby compressing said apron into tight engagement with said tubular member, and pressing said walls of said split together and said wall means defining said aperture into tight engagement with said pipe of smaller diameter.

4,111,236

TRANSMISSION LINE CARRIER

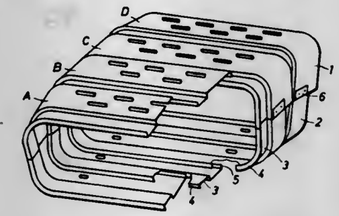
Werner Moritz, Siegen, Fed. Rep. of Germany, assignor to Kabelschlepp Gesellschaft mit beschränkter Haftung, Siegen, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,171

Claims priority, application Fed. Rep. of Germany, May 18, 1976, 2622005

Int. Cl.² F16L *11/18*

U.S. Cl. 138—120 **9 Claims**



1. A self-supporting transmission line carrier between a moveable consumer and a stationary connection comprising

a row of tubular members of any selected cross-sectional shape operatively pivotally connected relative to one another and engaging in one another, said tubular members bending relative to one another from an extended position thereof only in one direction,

each of said tubular members being formed on one end with an inwardly directed rimming, circulatory channel having an outwardly directed angled-off edge forming an inner abutment,

each of said tubular members being shorter at the other end on one half thereof by the width of said channel and having a circulatory inwardly directed angled-off edge forming an outer abutment, the bending of the tubular members being limited relative to one another by means of said abutments,

each two adjacent of said tubular members engaging behind one another with said inner and outer abutments, the latter moveably disposed relative to one another, and the bending being limited thereby to a maximum by the width of said channel.

4,111,237

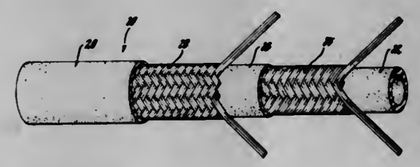
BRAID REINFORCED FLEXIBLE BRAKE HOSE

John E. Mutzner, Covington, and Gary P. Ford, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 12, 1976, Ser. No. 704,663

Int. Cl.² F16L *11/04, 11/08*

U.S. Cl. 138—125 **3 Claims**



1. A hydraulic brake hose comprising

an elastomeric core tube,

a reinforcing braid of twisted glass fiber yarn wound around said tube braided at an angle of about 52° to 56° to the axis of the tube,

an elastomeric cushion layer covering said glass braid,

reinforcing braid of untwisted nylon fibers over said cushion layer, and

an elastomeric cover layer.

4,111,238

APPARATUS FOR CONTROLLING SHED FORMATION IN A TRAVELLING-WAVE LOOM

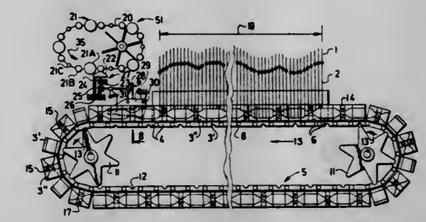
Ladislav Bezstarosti; Antonin Lindental; Jiri Lanta, and Jaroslav Cizek, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavinarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 4, 1976, Ser. No. 729,202

Claims priority, application Czechoslovakia, Oct. 3, 1975, 6700/75

Int. Cl.² D03D *47/26*

U.S. Cl. 139—436 **8 Claims**



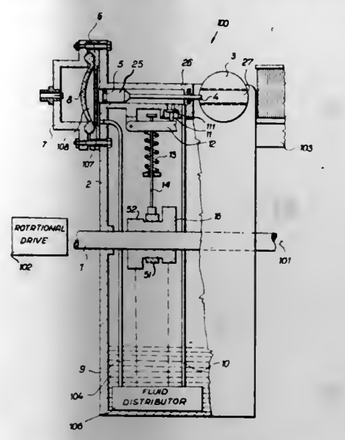
1. In a travelling wave shedding loom, an apparatus for forming a travelling wave shed from warp threads threaded in heddles, the shed waves travelling one after the other across the loom, in the regions of maximum amplitude of said shed waves one part of the warp threads being in lower dead center position and the other part being in an upper dead center position, the apparatus comprising, in combination,

at least two heddle rows arranged one after the other in the weaving region of the loom, the heddles in each row being arranged side-by-side;

heddle holders in each heddle row, said holders being movable independently of one another into lower and upper dead center position to form the shed wave;
an array of guiding members associated with each heddle row;
means for moving the guiding members in sequence across the loom;
a pair of superposed upper and lower guiding track sections provided in each guiding member, the respective upper and lower guiding track sections of all guiding members in each array forming together upper and lower tracks for controlling the strokes of the heddle holders to form a wave shed, the lower guiding track being adapted to guide the heddle holders into the lower dead center position and the upper guiding track being adapted to guide them into the upper dead center position;
in each array of guiding members there being first guiding members provided with vertically spaced horizontal guiding track sections and second guiding members provided with two guiding cam track sections, said guiding cam track sections converging from both sides towards the middle of each of said second guiding members, crossing at said middle, and thereafter diverging,
the first and second guiding members alternating in each array;
butts provided on the heddle holders to engage the respective one of the guiding tracks;
vertically reciprocable sliders slidably mounted in the middle of said second guiding members, said sliders having three superposed systems of connecting tracks for three alternative modes of interconnecting the guiding cam track sections at both sides of the slider in the three operative positions of the slider;
means for selectively adjusting the slider according to a program into said three operative positions, in the first central operative position of which the upper guiding cam track sections as well as the lower guiding cam track sections at either side of the slider being interconnected, in the second operative position of the slider the upper guiding cam track section upstream of the slider being interconnected with the lower guiding cam track section downstream of the slider, and in the third operative position of the slider the lower guiding cam track section upstream of the slider being interconnected with the upper guiding cam track section downstream of the slider.

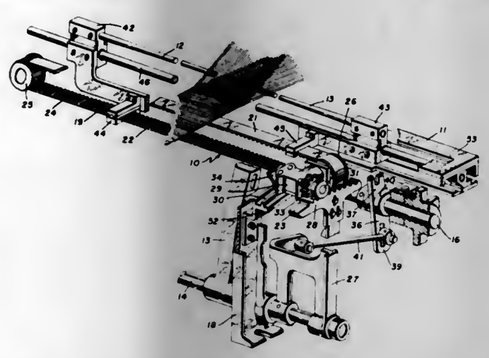
4,111,239
APPARATUS FOR RELEASABLY SECURING A FLUID-OPERATED GRIPPER SHUTTLE IN A LAUNCH POSITION
Vladimir Svatý, Liberec, Czechoslovakia, assignor to Elitex, Koncern textilniho strojirenstvi, Liberec, Czechoslovakia
Filed Oct. 12, 1976, Ser. No. 731,830
Claims priority, application Czechoslovakia, Oct. 10, 1975, 6855-75
Int. Cl.² D03D *49/24*
U.S. Cl. 139—438 **6 Claims**

1. In a fluid-actuated weft insertion apparatus for a weaving loom that includes a reciprocable shuttle, the apparatus comprising, in combination, a housing, a cylinder disposed and extending forwardly in the housing, a working chamber disposed in the housing, and having a front end communicating with a rear end of the cylinder, a piston rod supported for reciprocation in the cylinder and coupled to the shuttle for launching the shuttle when the piston rod is moved forwardly in the cylinder from a rear-most position thereof, a piston secured to the rear portion of the piston rod, a collar secured to and extending rearwardly from the piston, releasable locking means supported in the working chamber ad engageable with the collar for movement between a first rear position for immobilizing the then-engaged collar and a second front position for releasing the collar so that the piston rod may thereafter be propelled in a forward direction when a fluid pressure differential is established between the working chamber and in the cylinder forwardly of the front end of the piston, first mechanical means disposed in the housing for cyclically operating the locking means from its first to its second position



while the collar remains immobilized, and second means operable in timed relation to the first operating means for establishing said fluid pressure differential to initiate a launch of the shuttle.

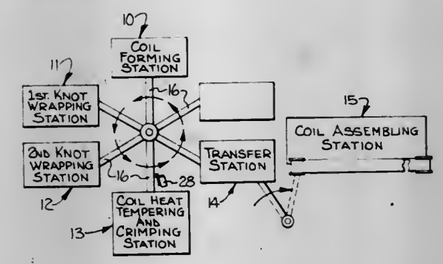
4,111,240
LOOM DRIVE MECHANISM
Robert G. Mallard, Hopedale, Mass., assignor to Bob Mallard Enterprises, Inc., Hopedale, Mass.
Filed Jan. 3, 1977, Ser. No. 756,020
Int. Cl.² D03D *47/00*
U.S. Cl. 139—449 **8 Claims**



1. Rapier drive mechanism for a textile loom having a pair of transversely-slidable rapiers capable of movement for transferring the weft yarn from side to side of the loom, comprising:
(a) an endless belt mounted in the loom and having upper and lower runs which extend horizontally across and under the lay, the upper run being connected to one rapier and the lower run being connected to the other rapier to produce the weft-transferring movement, the belt being formed with teeth on its inner surface and passing over an idler sprocket located at one side of the loom and over a drive sprocket at the other side of the loom,
(b) operating means bringing about alternate movement of the belt in one direction to bring the rapiers toward one another and in the other direction to move the rapiers apart, the said means bringing about a dwell in the belt and rapier movement when the rapiers have moved to the position at which they are farthest apart, the said means is being connected to the drive sprocket to rotate the same,

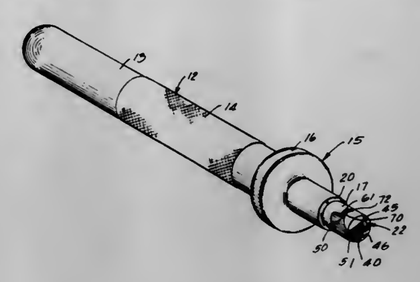
the said means rotating the drive sprocket through a cycle that includes rotation in one direction, a dwell, and rotation in the other direction, the cycle taking place in the same period of time as a cycle of the lay, the means including a rocker arm that is mounted at one end on the lay sword rocker shaft for swinging movement and has a gear segment mounted at the other end,
(c) a right-angle transmission mounted on the loom lay with an input shaft whose axis extends transversely of the loom and with the axis of the drive sprocket and which is drivingly connected thereto, the input shaft having a pinion gear that engages and is driven by the gear segment, the transmission including a geneva device that causes the output shaft to dwell, and
(d) a connection joining the lay sword to the said rocker arm to cause opposite movement of the sword and arm, the connection consisting of a bell crank having a bearing rotatably carried on the rotating bottom shaft, the crank having one portion whose end is connected by a rod to the lay sword and another portion whose end is connected by a rod to the rocker arm.

4,111,241
SPRING FORMING MEANS IN AUTOMATIC COIL SPRING ASSEMBLING MACHINE
Barry S. Crown, Chicago, Ill., assignor to Burton-Dixie Corporation, Chicago, Ill.
Filed Jun. 29, 1977, Ser. No. 811,056
Int. Cl.² B21F *27/16*
U.S. Cl. 140—92.7 **8 Claims**



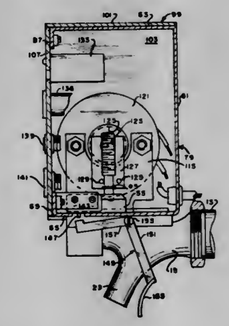
1. In an automatic machine for the production of assemblies of coil springs wherein wire is fed to a coiling station whereat individual coil springs are successively formed and severed from the wire, transport arm means are provided for delivering the coil springs one at a time to an assembling station, and means are provided in the assembling station for tying the individual coil springs into complete assemblies, the improvement comprising means for automatically forming an indentation in the opposite end convolutions of each coil spring, said indentation means being located in the path of movement of said transport arm between said coiling station and assembling station, said indentation means including dies positioned on opposite sides of said path of movement for receipt of each coil spring carried by said transport arm, means for temporarily stopping said transport arm movement when a coil spring held thereby is received by said dies, said dies including reciprocally movable forming members for engaging said end convolutions to form said indentations, and means for restarting said transport arm movement after formation of said indentations for movement to said assembling station whereby each coil in said complete assemblies includes said indentations.

4,111,242
WIRE WRAPPING AND CUT-OFF TOOL
Ronald H. Jacobson, 1055 Valley Lake Dr., Inverness (Palatine), Ill. 60067, and Brian J. Miller, 4519 N. Moody, Chicago, Ill. 60630
Filed May 24, 1977, Ser. No. 799,941
Int. Cl.² B21F *3/00, 15/00*
U.S. Cl. 140—124 **3 Claims**



1. In a wire wrapping tool having an axial end face with a bore therein for receiving a terminal pin around which a wire is to be wrapped and an end face configuration adapted to cause a wire to wrap around the pin upon rotation of the tool, the improvement of a blind slot extending partially through a body of the tool less than the full width of the body having one slot end open to the axial end face adjacent the bore and another slot end open to a periphery of the body spaced from the axial end face with a throat opening to the slot at the periphery of the axial end face, the body being elongated and the slot extending into the body transversely of the longitudinal extent thereof terminating interiorly of the body, the slot having a wire positioning means such that when a wire is received in the slot with wire ends exiting the slot at both the axial end face and at the periphery, the slot wire positioning means will prevent wire movement towards the throat when the wire is positioned at a certain point in the slot and when the wire projecting from the periphery undergoes movement towards the axial end face.

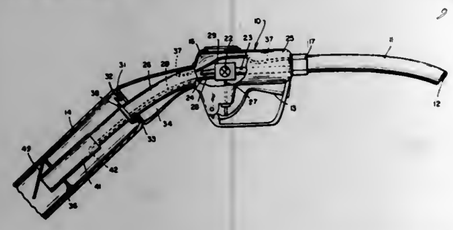
4,111,243
BEVERAGE DISPENSING DEVICE
Charles P. Fetterman, Kirkwood, Mo., assignor to Consumers Digital Systems Corp., St. Louis, Mo.
Filed Jun. 25, 1976, Ser. No. 699,893
Int. Cl.² B65B *3/36;* B67D *5/08*
U.S. Cl. 141—102 **12 Claims**



1. An easily disassembled and cleaned dispensing device for automatically dispensing a pressurized beverage, said device comprising:
(a) a faucet body having a passageway therethrough, said passageway including a generally horizontal bore having an inlet, an inlet, an outlet spout communicating with said

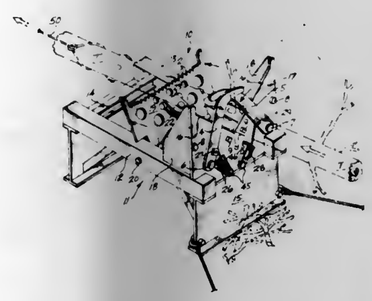
inlet and a valve seat in said horizontal bore between said inlet and said outlet spout;
(b) a valve assembly slidably mounted in said horizontal bore, said valve assembly including means cooperative with said valve seat for closing said passageway when said valve assembly is in a forward position;
(c) a generally vertical bore in said body communicating with said generally horizontal bore, said generally vertical bore including means forming a valve stem seat;
(d) a valve stem in said generally vertical bore, said valve stem including
(i) a lower part cooperative with said valve assembly to move said valve assembly from said forward position to a rearward position in which said passageway is open;
(ii) a central part pivotably mounted in said valve stem seat; and
(iii) an upper part extending above said faucet body;
(e) cap nut means mounted on said faucet body for holding and valve stem in said in said generally vertical bore;
(f) electrically operable means cooperative with said upper part of said valve stem for opening said passageway in said faucet body;
(g) housing means for carrying said electrically operable means, said housing means comprising a lower wall having slots therein; and
(h) coupling means on said faucet body for releasably mounting said housing means on said faucet body with said electrically operable means positioned to cooperate with said upper part of said valve stem, said coupling means being so proportioned and constructed as to permit removal of said cap nut means and removal of said valve stem from said generally vertical bore in said faucet body when said housing means are released and removed from said mounting means, said coupling means comprising a plurality of ears, each ear comprising a vertical riser part and a horizontal flap part, said ears extending through said slots in said lower wall of said housing means with said flap parts overlying said lower wall when said housing means are mounted on said faucet body, said ears and said slots forming a quick-disconnect coupling releasable by lateral movement of said housing means with respect to said faucet body.

4,111,244
EXTENDABLE FUEL DISPENSING NOZZLE
Eugene W. Vest, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed May 19, 1976, Ser. No. 687,855
Int. Cl.² B65D *29/02*
U.S. Cl. 141—348 **4 Claims**



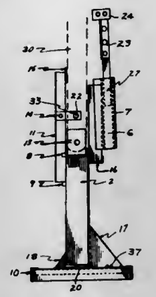
1. A fuel dispensing nozzle having a discharge tube adapted to sealably engage the filler pipe of a tank to be filled, said discharge tube including a liquid level sensing means positioned therein and having an elongated sensing conduit (28) with a sensing end thereof disposed adjacent to the discharge tube open end, said sensing conduit being communicated with a pressure sensitive element in said nozzle capable of automatically discontinuing fuel flow through the nozzle when fuel in the filler pipe rises a sufficient distance to cover said sensing conduit end, said filler pipe including a baffle plate disposed transversely thereof, and means forming an aperture in said baffle plate sufficiently large to register the remote end of a discharge tube therethrough, the improvement in said nozzle to allow introduction of fuel into said filler pipe at a point downstream of said baffle plate which comprises;
a discharge tube extension sleeve longitudinally slidably carried on the external surface of said discharge tube and having guide means on the inner surface thereof, and being adapted to be adjusted on said discharge tube between extended and retracted positions,
whereby in the extended position said extension sleeve will register within said baffle plate aperture to permit the introduction of a flow of fuel into said tank without said fuel accumulating upstream of the baffle plate prior to the tank becoming filled, said end of said sensing tube traversing a wall of said discharge tube, and having sliding engagement with said extension sleeve guide means to guidably regulate movement of the sleeve between the extended and retracted positions thereof.

4,111,245
TREE DELIMBER
Carl M. McCrary, Kalama, and Robert D. Larsen, Kelso, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash., by said Carl M. McCrary
Filed Dec. 23, 1976, Ser. No. 754,058
Int. Cl.² B27L *1/00*
U.S. Cl. 144—2 Z **5 Claims**



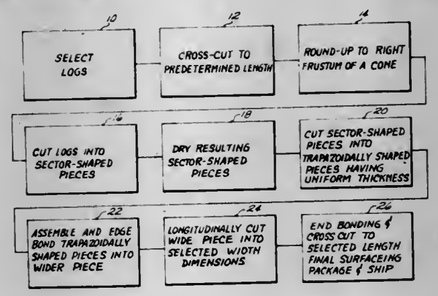
1. A tree delimber for delimbing trees pulled substantially horizontally through the delimber, comprising:
a base;
a lower impact shear blade, comprising a notched plate such that a tree resting in the notch is substantially bounded about its lower half circumference by the notch, said plate fixed to the base substantially vertically and transverse to the travel of the tree through the delimber;
upper impact shear blades, comprising a pair of arcuate arms pivotally mounted upon said base, arranged wherein a tree resting in the lower shear blade is substantially bounded about its upper half circumference by the pair of arms pivoted into contact with said tree;
an activating plate pivotally fixed to the base, axially displaced from said upper and lower blades, said activating plate arranged such that the travel of the tree through the delimber contacts said plate causing it to pivot in response to said tree; and
a means for interconnecting the activating plate with said upper impact shear blades, wherein a tree contacting said lower blade and activating plate causes the upper blade arcuate arms to pivot into bounding contact with the upper half circumference of the tree.

4,111,246
LOG-SPLITTING ACCESSORY FOR BACK HOE POWER EQUIPMENT
Roland La Pointe, Rte. 2, Winthrop, Me. 04364
Filed Jan. 5, 1977, Ser. No. 756,951
Int. Cl.² B27L *7/00*
U.S. Cl. 144—193 A **3 Claims**



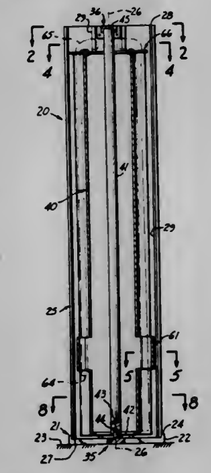
1. A log-splitting apparatus that is an accessory to back hoe equipped power equipment of the type having a boom member, a stick member pivotally attached to said boom member and a piston member mounted parallel to said stick member, said apparatus comprising:
a base;
an upright member affixed to said base;
connecting means for affixing said upright member to the stick member of said back hoe;
a wedge member;
means to affix said wedge member to said piston member;
rail means affixed to said upright member for guiding said wedge member; and
an elongated stabilizing bar affixed to said back hoe's stick member adapted to contact said upright member in overlapping relation with said connecting means of said upright member and stick.

4,111,247
LOG CUTTING AND REJOINING PROCESS FOR LUMBER MANUFACTURE
Earl Dean Hasenwinkle, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Jan. 13, 1977, Ser. No. 759,166
Int. Cl.² B27K *1/08*
U.S. Cl. 144—316 **23 Claims**



1. A process for making a composite lumber product having substantially flat grained parallel top and bottom surfaces, comprising:
cutting from at least one log at least one elongated sector-shaped piece,
cutting from said sector-shaped piece at least one elongated member having at least three sides with two of said sides being edges and portions of the radial faces and the other sides being substantially parallel to an elongated plane through the chord of said sector-shaped piece, said member having a thickness dimension extending perpendicular from one of said other sides to a location on a plane parallel to said other sides and which passes through the ends of the two side edges and being substantially equal to the thickness dimension of said composite wood product, and
accumulating a plurality of said elongated members, with at least one of said members being trapezoidally shaped in cross-section, and bonding them together one to another, such that a side edge of each member is in juxtaposition with another side edge to form substantially a parallelogram in cross-section.

4,111,248
GOLF CLUB CARRIER
Harold A. Leichhardt, 178 Desert Lakes Dr., Palm Springs, Calif. 92262
Filed Jun. 20; 1977, Ser. No. 808,199
Int. Cl.² A63B *55/00*
U.S. Cl. 150—1.5 R **12 Claims**



1. A golf club carrier comprising:
a support; and
a club holder having an axis of rotation, said club holder being axially elongated and mounted to said support for rotation around a central axis, said club holder including a plurality of retention means to receive and hold a golf club handle which retention means are laterally spaced from said axis whereby to move circularly around said axis when the club holder is rotated, said support being so constructed and arranged as to give access to a club held by each retention means in at least one respective position to which the club holder can be turned, each said retention means comprising a socket member into which the handle of a club can be placed, and head holding means to hold the head to the club holder, said club holder including a peripheral wall having an axial groove to receive a club handle, a portion of said wall being formed outwardly of the remainder of the groove to form said socket.

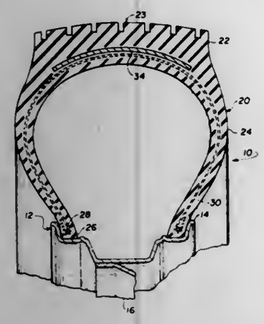
4,111,249
BAND REINFORCED RADIAL TIRE
Edward G. Markow, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Nov. 8, 1976, Ser. No. 739,559
Int. Cl.² B60C *17/00*
U.S. Cl. 152—330 RF **5 Claims**

4. In a pneumatic tire:
a casing having a crown, sidewalls, and annular bead portions, said sidewalls extending from said crown on either

side thereof to said annular bead portions, said bead portions being adapted to mount said tire on the rim of a wheel;

a solid resilient annular element fixed in said tire in the crown region thereof, said annular element extending substantially from sidewall to sidewall;

means to stabilize said annular element, said means comprising a multiplicity of substantially radial spoke-like reinforcing elements having freedom in shear with respect to



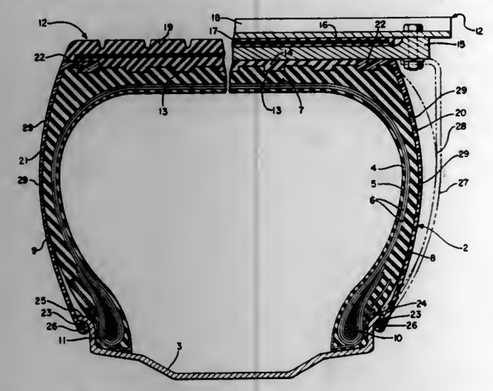
one another in said sidewalls, said radial elements being in close proximity in the crown of said tire to said annular element and operatively connected thereto at least in part through said casing, whereby when said tire is operated underinflated said annular element functions as a structural flexible-arch compression member wherein said arch configuration allows coacting tension loads in the sidewalls to act over a substantial portion of the circumference of the sidewalls.

4,111,250

SIDEWALL PROTECTOR

John R. Bauer, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 24, 1976, Ser. No. 726,324
Int. Cl.² B60C *5/18*
U.S. Cl. 152—187 **6 Claims**



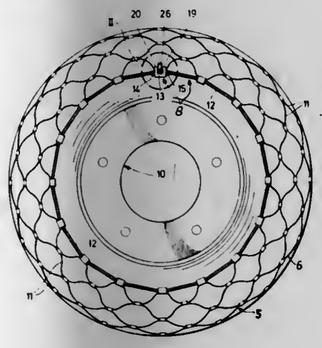
1. In an assembly of a wheel rim with upstanding rim flanges and a tire comprising: a tire carcass, including at least one layer of reinforcement cords; a traction element and a pair of sidewalls which at least partially surround the carcass and terminate at at least one pair of inextensible beads; the improvement comprising a non-rigid annular shield for protecting at least one of the sidewalls of the tire against punctures, the shield being separate from the sidewall and not adhered thereto such that stresses experienced by the sidewall during flexing of the tire will not be imparted to the shield, the shield being dimensioned to completely cover the sidewall between the traction element and adjacent rim flange, the shield having concentric, radially spaced inner and outer circular marginal edges, means at the radially outer marginal edge of the shield for securing the shield to the tire adjacent the traction element, and a substantially inextensible reinforcement embedded in the radially inner edge of the shield, said inner circular marginal edge being positioned adjacent the outer edge of the upstanding rim flange for mating interlocking engagement with said adjacent upstanding rim flange and mounting of the shield without stretching of said inner edge over said rim flange.

4,111,251

NET- OR CHAIN-LIKE VEHICLE TRACTION DEVICE FOR VEHICULAR WHEELS

Karl Bula, Seuzach, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Feb. 22, 1977, Ser. No. 771,171
Claims priority, application Switzerland, Feb. 24, 1976, 2246/76
Int. Cl.² B60C *27/10*
U.S. Cl. 152—219 **7 Claims**



1. A vehicle traction device for installation on a ground-engaging rotatable wheel of a vehicle, comprising:

(A) traction means for placement on said wheel for increasing traction between the outer peripheral surface of the wheel and the ground upon rotation of the wheel about its axis of rotation;

(B) a tightening mechanism effective at least at one side of the wheel in the peripheral direction thereof for tightening said traction means;

(C) said tightening mechanism comprising:

(a) a tensioning element extending in said peripheral direction and constructed to be elastic at least over a part of its extent;

(b) a tightening wire extending in said peripehral direction and having two ends;

(c) tightening lock means

(D) said tightening lock means comprising:

(a) a body member;

(b) at least one blocking element movable between an inclined position and a substantially upright position arranged in said body member;

(c) one end of said tightening wire being attached to said tightening lock means;

(d) said blocking element having receiving means through which there is guided the other end of said tightening wire;

(e) an unlocking element cooperating with said blocking element for moving said blocking element from said inclined position into said upright position;

(f) said blocking element permitting relative displacement of the tightening lock means and the tightening wire in one direction only in the sense of decreasing the effective length of the tightening wire when the vehicle traction device is installed at the wheel and with said blocking element in said inclined position;

(g) said unlocking element being movable from a locking position where said blocking element is in said inclined position into an unlocking position where the blocking element is in said upright position for releasing the tightening wire such that there is possible relative displacement of the tightening lock means and said tightening wire in a direction which is opposite to said one direction;

(h) said unlocking element, when mounting the tensioning element and the tightening wire in the peripheral direction of the wheel, constituting a member separate from said blocking element; and

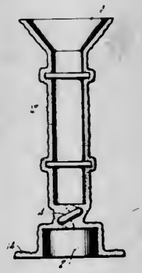
(i) said separate member constituting said unlocking element being pivotable about the tightening wire and having a substantially wedge-shaped projection for unlocking the blocking element by shifting said blocking element into said upright position.

4,111,252

METHOD FOR MAKING MOLDS AND MOLD COMPONENTS FOR CASTING SINGLE CRYSTAL METALLIC ARTICLES

Edward G. Day, Rocky Hill, and Edmund Dziobek, Terryville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 1, 1977, Ser. No. 820,659
Int. Cl.² B22C *9/04, 7/00;* B22D *15/02*
U.S. Cl. 164—23 **9 Claims**



1. In making ceramic mold means for casting single crystal metallic articles, the improvement comprising:

(a) providing a preformed and reusable replica of a mold growth cavity and crystal selector passage, said replica including a cylinder of predetermined size to form said growth cavity and a helical strand of preselected configuration to form said crystal selector passage, the strand having a small cross-section compared to that of the cylinder and having one end attached to one end of the cylinder such that the longitudinal axis of the helix is substantially coincident with that of the cylinder;

(b) coating the replica with a thin layer of removable material and then forming at least a portion of the ceramic mold means around the coated replica, leaving the other end of the cylinder opposite the helical strand exposed;

(c) removing the embedded replica from the formed mold means to provide the growth cavity and crystal selector passage therein, removal being effected by first removing the thin layer of removable material to provide a clearance space between the replica and mold means and then rotating the exposed end of the cylinder to unscrew the helical strand from the mold means in the same manner that a threaded member is removed from a threaded hole, the replica thereafter being available for reuse in making additional mold means.

4,111,253

FOUNDRY PROCESSES AND COMPOSITIONS

David Epstein, and John Bugg, both of London, England, assignors to The White Sea & Baltic Company Limited, London, England

Continuation-in-part of Ser. No. 282,633, Aug. 21, 1972, abandoned. This application Jan. 24, 1977, Ser. No. 761,756
Int. Cl.² B22C *1/22*
U.S. Cl. 164—43 **9 Claims**

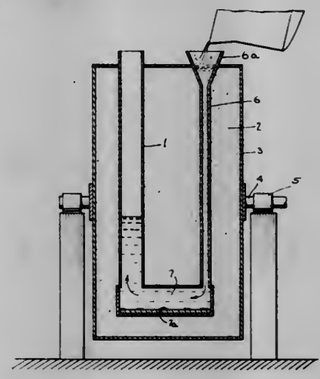
1. A method of making a foundry mold or core comprising forming a fluid mixture comprising foundry sand and a foamed aqueous phase comprising resin condensate, said resin condensate being an oligomeric form of formaldehyde with one or more of furfuryl alcohol phenol and urea, surfactant foaming agent, acidic curing agent and a silane, said silane having the general formula $R'Si(OR)_3$ in which R' is a C_2 -C_6 alkylene group bonded to an amino, epoxy, mercapto, hydroxy, hydroxy-C_1 -C_6 alkylamino, amino-C_1 -C_6 alkylamino, C_2 -C_6 alkenyl or C_2-C_6 alkenyl-carboxy group and the groups R may be the same or different and are selected from C_1-C_6 alkyl and C_1-C_6 alkoxy-substituted-C_1-C_6 alkyl, pouring the composition while fluid into a mould or core box which is immobile, and allowing the fluid composition to set without vibration of the mould or core box or ramming of the fluid mixture or other consolidation techniques, in which process the amount of silane is from 0.05 to 0.5% by weight based on the weight of silane and resin condensate, and the total amount of water in the mixture is less than 2% by weight of the mixture but is more than the minimum necessary to cause foaming of the aqueous phase to render the mixture fluid and in which the foamed aqueous phase retains its foamed structure until setting starts.

4,111,254

METAL CASTING METHOD

John Helge Haglund, Danbury, Conn., assignor to The Kanthal Corporation, Bethel, Conn.

Filed Aug. 3, 1976, Ser. No. 711,320
Int. Cl.² B22D *3/00*
U.S. Cl. 164—138 **5 Claims**



1. A method for casting molten metal to form ingots, comprising substantially vertically positioning in a container a plurality of sheet metal pipes with their bottoms interconnected by a runner and with the pipes in horizontally interspaced relation so as to form spaces therebetween, said container forming a space surrounding all of the pipes and said runner, filling all of said spaces solely with refractory particles so that said pipes and runner are embedded therein, covering the tops of said pipes and said container, bottom-pouring molten metal via said runner into said pipes so as to substantially fill said pipes and runner, inverting said containers while said metal remains molten, and allowing said metal to solidify while said container remains inverted.

4,111,255

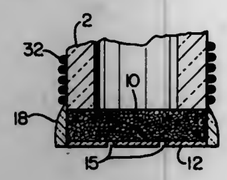
FORMATION OF METAL PARTS

Theodore H. Krueger, Jr., Concord; Robert Eller, Boston; John O'Brien, Winchester, and William L. Robbins, Newton, all of Mass., assignors to Seal Incorporated, Naugatuck, Conn.

Continuation of Ser. No. 588,283, Jun. 19, 1975, abandoned. This application Mar. 21, 1977, Ser. No. 779,494

Int. Cl.[2] B22D *27/16*

U.S. Cl. 164—255 **3 Claims**



1. Apparatus for forming and casting a selected metal or alloy in a predetermined geometric pattern comprising a hollow non-porous support in the form of a tubular member which is made of a ceramic material not wettable by said selected metal or alloy, a porous ceramic disk attached to one end of said tubular member so as to form a wall of said hollow support, said ceramic disk being stiff and non-frangible and having pores with sizes in the range of from about 40A to about 50 microns, a non-porous ceramic coating covering only selected portions of said porous disk, said porous ceramic disk and said ceramic coating being non-wettable by said metal or alloy and coacting to form at least one groove arranged in accordance with at least part of said predetermined pattern, and means for coupling the interior space of said hollow support to evacuating means, said coupling means and said disk being at opposite ends of said tubular member.

4,111,256

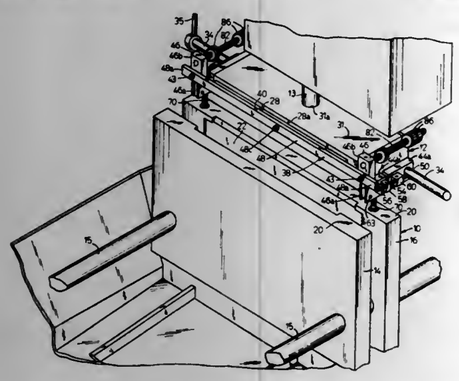
LADLE GATE

Paul Edward Bantz, Waukesha, and Robert William Mayer, Milwaukee, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Apr. 4, 1977, Ser. No. 784,253

Int. Cl.[2] B22D *41/00*

U.S. Cl. 164—335 **5 Claims**



1. A ladle gate for use with casting apparatus and for preventing formation of drippage during casting, the casting apparatus including a mold and a ladle for holding molten metal, the ladle being shiftable between a first position wherein molten metal is poured into said mold and a second position wherein molten metal can be contained in said ladle, said ladle having a front wall including at least one pouring spout therein, the ladle gate comprising:

a bar supported adjacent said front wall and moveable with respect to said spouts between a first ladle gate position to flow preventing position wherein said bar is positioned against said front wall and covers at least a portion of said spout when said ladle shifts from said first position to said second position; and

means for supporting said bar against said front wall for movement between said first ladle gate position and said flow preventing position, said means for supporting the bar including a pair of spaced apart vertical arms supporting the bar therebetween, said vertical arms each having opposite ends and being pivotable about a horizontal axis extending through the lower of said ends, and the other of said opposite ends being moveable toward and away from said ladle, and means for biasing said bar against said front wall.

4,111,257

SEAL FOR ROTATING HEAT EXCHANGER

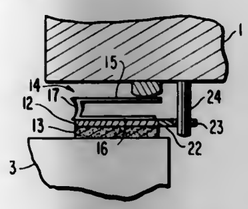
Klaus Wiegard, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1975, Ser. No. 551,857

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1974, 2408819

Int. Cl.[2] F28D *19/00*

U.S. Cl. 165—9 **32 Claims**



1. A sealing system for a rotating heat-exchanger which includes a turbine housing, the sealing system comprising a sealing strip means including base plate means and an elastic intermediate means, the sealing strip means being pressed against the rotating heat-exchanger by the elastic intermediate means, characterized in that the elastic intermediate means includes a diaphragm leaf spring means matched approximately to the shape of the sealing strip means and having two leg portions, a free end of one of the two leg portions of the diaphragm leaf spring means being fixedly connected at the base plate means of the sealing strip means, and a free end of the other of the two leg portions of the diaphragm leaf spring means freely elastically abutting a curved abutment surface of the housing.

4,111,258

SPLIT AIR CONVECTION PILE

Hans O. Jahns; Joseph W. Galate, and John A. Wheeler, Jr., all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed May 10, 1976, Ser. No. 684,828

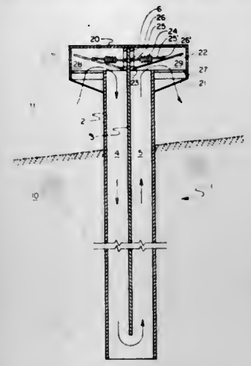
Int. Cl.[2] F28D *7/12;* F28C *3/00;* F28F *13/08*

U.S. Cl. 165—40 **13 Claims**

1. An air convection pile for transferring heat by natural convection to the ambient air from a hotter medium, comprising:

a. a pipe having an upper end and a lower end, said pipe having a length sufficient to extend from a surface which is exposed to the ambient air to a location within said hotter medium said lower end being disposed within said hotter medium and said upper end being disposed above said surface, said upper end being openable to the ambient air; and

b. a flow dividing partition disposed longitudinally within said pipe, having two longitudinal edges contacting the inner wall of said pipe to divide the interior volume of said pipe into at least two flow channels, said flow dividing partition being adapted to substantially prevent the flow



of air between said flow channels at said upper end of said pipe and along a substantial portion of the length of said pipe and being adapted to permit the flow of air between said flow channels near said lower end of said pipe.

4,111,259

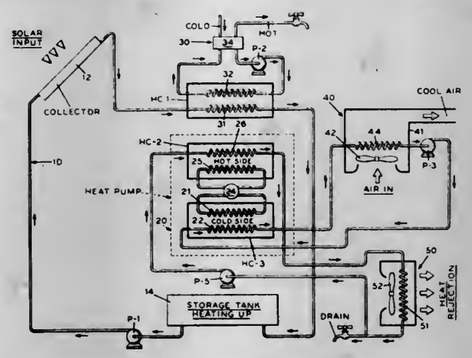
ENERGY CONSERVATION SYSTEM

John Lawrence Lebduska, New City, N.Y., assignor to Ecosol, Ltd., New York, N.Y.

Filed Mar. 12, 1976, Ser. No. 666,346

Int. Cl.[2] F24D *3/02*

U.S. Cl. 237—1 A **16 Claims**



1. A system for temperature conditioning room air and domestic hot water comprising a liquid circulation loop including solar collector means to transfer solar energy to the liquid, means to exchange heat between the liquid and room air, means to store the liquid, means to circulate the liquid through the loop, and means to exchange heat with a domestic hot water supply comprising a heat exchanger having a first coil in said liquid circulation loop and a second coil in heat exchange relationship with said first coil, said second coil being in a domestic hot water circulation loop which also includes domestic hot water storage means and means to circulate domestic hot water through the loop.

4,111,260

METHOD OF HEAT ACCUMULATION AND A THERMAL ACCUMULATOR FOR THE APPLICATION OF SAID METHOD

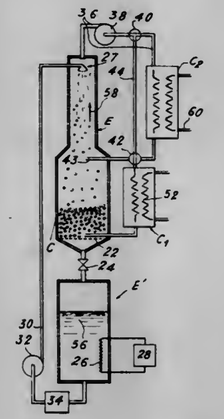
Alain Bricard, Grenoble; Maurice de Cachard, La Tronche, both of France; Pierre Goffinet, Brussels, Belgium; Gerard Kurka, Meylan, and Robert Moracchioli, Seyssinet, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 21, 1975, Ser. No. 551,828

Claims priority, application France, Mar. 1, 1974, 74 07079; May 31, 1974, 74 19072

Int. Cl.[2] F28D *21/00*

U.S. Cl. 165—104 S **4 Claims**



1. A thermal accumulator wherein a heat transporting fluid F is passed in direct contact over a material C having a high latent heat of fusion comprising:

a closed vessel E containing the material C and the fluid F, in a divided form, said vessel having a top and a bottom,

means for heating or cooling the fluid F by means of external sources,

means for circulating the fluid F within the vessel E,

means for withdrawing the material C from the lower end of the vessel E at the point at which said material is in a molten liquid state, and for storing the molten liquid material C in a vessel E' when the means for heating or cooling the fluid F is in a heating phase, and,

means for spraying the molten liquid material C, stored in the vessel E' when in the form of droplets into direct contact with the fluid F, at the top of the vessel E, the means for heating or cooling the fluid F is in a cooling phase.

4,111,261

WELLHEAD ISOLATION TOOL

Owen Norman Oliver, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 14, 1977, Ser. No. 777,379

Int. Cl.[2] E21B *33/03, 43/04, 43/118*

U.S. Cl. 166—86 **8 Claims**

1. In an apparatus for providing fluid communication between the interior of the upper end portion of an oil well production string and a source of high pressure fluid at the surface while isolating the fluid control equipment in the wellhead from high pressure fluids supplied through the apparatus from the source of high pressure fluid, the apparatus being of the type which includes:

elongated tubular housing means for connection in fluid communication with the interior of the wellhead and defining an inner bore therethrough; elongated tubular inner mandrel means, having upper and lower end portions and a longitudinal passage communicating between

the upper and lower end portions, concentrically positioned within said elongated tubular housing means in movable fluid sealing engagement therewith with the lower end portion of the inner mandrel means being adapted to extend below said elongated tubular housing means; means for communicating the source of high pressure fluid to the longitudinal passage at the upper end portion of the inner mandrel means; annular seal means carried by said inner mandrel means for providing sealing engagement between said inner mandrel means and the interior of the upper end portion of the oil well production string; and means for moving said inner mandrel means within said elongated tubular housing means to extend said inner mandrel means downwardly through said elongated tubular housing means, and alternately, to extend said inner mandrel means upwardly through said elongated tubular housing means, the improvement comprising:

tubular guide nose means disposed beneath the lower end portion of the inner mandrel means and having an upper end portion, a lower end portion, and a medial portion



extending between the upper and lower end portions, the inner diameter of the upper end portion of said tubular guide nose means defining a cross-sectional area substantially equal to the cross-sectional area of the longitudinal passage of the inner mandrel means, the inner diameter of the lower end portion of said tubular guide nose means being substantially equal to the diameter of the interior of the upper end portion of the oil well production string, and the medial portion of said tubular guide nose means defining a frusto-conically shaped inner surface diverging from the axis thereof at an angle of substantially 2 degrees mutually communicating and registering with and extending downwardly from the inner diameter of the upper end portion to communicate and register with the inner diameter of the lower end portion; and

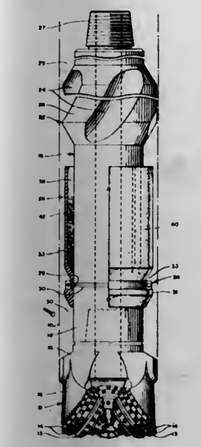
means for connecting said tubular guide nose means to the lower end portion of the inner mandrel means with the inner diameter of the upper end portion of said tubular guide nose means coaxially communicating with the longitudinal passage of the inner mandrel means.

4,111,262

JUNK BOOT

Grant Duncan, Edmonton, Canada, assignor to Smith International, Inc., Newport Beach, Calif.

Filed Sep. 1, 1977, Ser. No. 829,603
Int. Cl.[2] E21B *31/08*
U.S. Cl. 166—99 4 Claims



3. A drilling assembly comprising:

a tubular drill string component including upper and lower portions having means formed thereon for connection to other drill string components, and an intermediate portion having a diameter larger than said lower portion;

an alongated tubular boot mounted on said component lower portion with the lower end of the boot being formed to engage said lower portion, the outer diameter of said boot being less than the outer diameter of said component so that drilling fluid can flow upwardly between the boot and the surrounding drill bore, said boot having an interior cylindrical wall above said lower portion spaced from said component and open at its upper end to define a spacer for collecting debris in drilling fluid which is pumped upwardly past the boot, said debris settling into the open upper end of the boot when the pumping is interrupted, and clamping means surrounding said boot lower end to hold the boot lower end against said component and to prevent vertical movement of the boot; and

said boot having means on said lower end forming an inwardly extending annular rib which fits within a groove formed by the lower portion of said component, said boot further having means on the exterior of said lower end defining an outwardly facing annular groove surrounding said rib for receiving said clamping means.

4,111,263

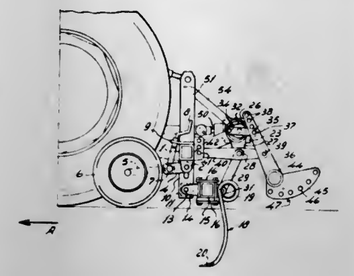
SOIL TILLING MACHINES

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Oct. 6, 1976, Ser. No. 730,282
Claims priority, application Netherlands, Oct. 8, 1975, 7511788
Int. Cl.[2] A01B *27/00*
U.S. Cl. 172—54 13 Claims

1. A soil tilling machine having a frame movable over the ground and soil working means supported by said frame, said soil working means comprising a forward row of tine means and an elongated soil tilling member positioned to the rear of said tine means, said row extending transverse to the direction of travel, said tilling member being pivoted to said frame and comprising a support having elongate elements that extend substantially horizontal and transverse to the direction of travel, said elements being spaced apart one behind the other

with respect to the direction of machine travel, said tine means comprising a plurality of movable tines mounted on an elongated common frame portion that extends generally parallel to said tilling member, driving means connected to move said tines in the soil and said driving means linked to rock said tilling member about a substantially horizontal pivot axis dur-



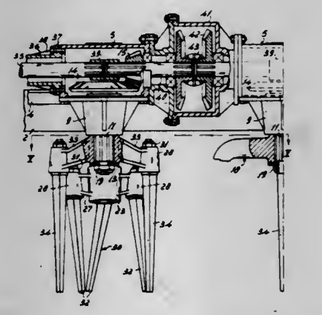
ing operation, said driving means comprising at least one eccentric that orbits about a substantially horizontal axis and arm means interconnecting the eccentric to said tilling member, said support together with the elements being pivoted upwardly and downwardly to contact, crumble and level the soil worked by said tine means.

4,111,264

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Aug. 23, 1976, Ser. No. 717,004
Claims priority, application Netherlands, Aug. 25, 1975, 7509995
Int. Cl.[2] A01B *33/06*
U.S. Cl. 172—59 7 Claims



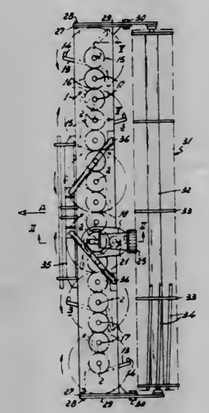
1. A soil cultivating implement comprising a frame and a plurality of soil working members supported on said frame in a row that extends transverse to the direction of travel, said members being rotatably mounted on corresponding upwardly extending shafts and a driving mechanism engaging each of said shafts to rotate same during operation, said mechanism including a rotary input shaft that extends in the direction of travel of the implement and has a gear in driving engagement with two separate, substantially horizontally extending driving shafts, said driving shafts comprising pinion gear means in driving engagement with said input gear within a gear box, said driving shafts being substantially co-axial and extending transverse to the direction of travel at opposite sides of said gear box, the upwardly extending shafts of said soil working members being drivingly connected to said driving shafts within respective transmission boxes, an upper part of each transmission box comprising a housing for corresponding co-operating gear means that establishes drive from one of the driving shafts to the respective upwardly extending shaft, a lower part of that box forming a bearing housing for a rotatable support for said upwardly extending shaft, lower parts of neighboring transmission boxes being spaced apart from one another by connecting members that house segments of the driving shafts and said transmission boxes being rigidly secured to said connecting members.

4,111,265

SOIL CULTIVATING MACHINES

Ary van der Lely, Maasland, Netherlands, assignor to C. van der Lely N.V., Maasland, Netherlands

Filed Sep. 20, 1976, Ser. No. 724,627
Claims priority, application Netherlands, Sep. 26, 1975, 7511330
Int. Cl.[2] A01B *33/14*
U.S. Cl. 172—59 7 Claims



1. A soil cultivating machine comprising a frame and a plurality of tined soil working members mounted on corresponding upwardly extending shafts, said shafts being supported on an elongated portion of said frame and extending in a row transverse to the direction of machine travel, said members being rotated about axes defined by said shafts and driving means connected to rotate said members, each member having downwardly extending tines with soil working portions laterally spaced from a corresponding shaft, the shafts of neighboring soil working members being drivenly engaged by meshed pinion gears and the tines of neighboring members being positioned to work overlapping and/or adjoining paths, shafts that define their axes of rotation and said respective shafts being located in said row, the tines of said member comprising at least three tines and each tine having a corresponding support portion, an inner part of said support portion being curved inwardly to at least partly surround the respective shaft of said soil working member, the inner parts of the tines being secured in connections adjacent the corresponding shaft and the remainder of said tines being deflectable with respect to said connections.

4,111,266

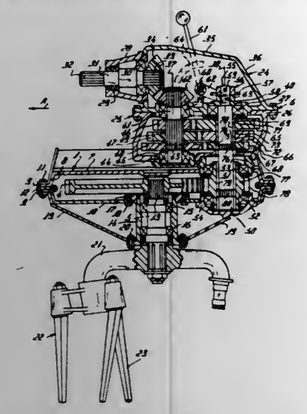
AGRICULTURAL IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Sep. 8, 1976, Ser. No. 721,566
Claims priority, application Netherlands, Sep. 8, 1975, 7510538
Int. Cl.[2] A01B *33/06, 33/08*
U.S. Cl. 172—59 20 Claims

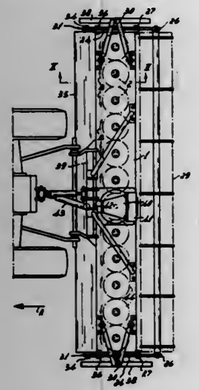
1. An agricultural implement comprising a frame and at least one tool being rotatably mounted on said frame, driving means connected to rotate said tool, including a change speed gear assembly, said assembly comprising two sets of different sized gears and the gears of one set being mounted on a driving shaft and engaging the gears of a second set, said second set of gears being mounted on a driven shaft, means connected to displace

one of the shafts relative to its respective gear set and selectively establish any one of a plurality of different transmission gear ratios in the drive to said tool, at least one displaceable shaft being externally splined and the splines of that shaft extending substantially axially parallel to the longitudinal axis



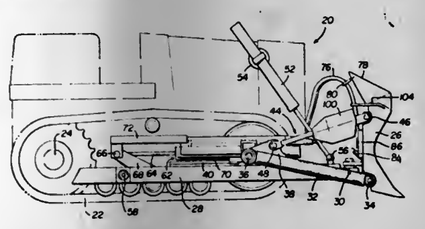
of that shaft and along only a portion of the length thereof, said gears on said displaceable shaft having matching internal spline portions that can be selectively engaged with the external splines of said one shaft, the gears of said second set having different axial thicknesses, those gears of smaller thickness having smaller pitch circles than the gears of greater thickness.

4,111,267
ROTARY HARROWS
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Division of Ser. No. 553,693, Feb. 27, 1975, Pat. No. 4,018,288. This application Jan. 17, 1977, Ser. No. 759,668
Claims priority, application Netherlands, Mar. 1, 1974, 7402788
Int. Cl.² A01B *33/06*
U.S. Cl. 172—59 **4 Claims**



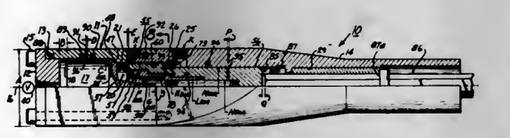
1. A rotary harrow comprising a frame and coupling means on said frame for attachment to a prime mover, a plurlaity of soil working members rotatably mounted on shafts journalled on said frame and driving means connected to rotate said soil working members, said shafts and soil working members extending in a row transverse to the normal direction of travel of the harrow, said soil working members each comprising a support rotatable on a generally vertical shaft and at least one tine that has a lower soil working portion depending downwardly from said support to contact the ground, screening means mounted on said cultivator and said screening means having an inclined surface that extends across the working width of said row immediately adjacent and in front of said supports, said inclined surface facing said soil working member supports and at least the lower portion of the inclined surface extending downwardly away from a plane that passes through the vertical shafts that define the axes of rotation of said row of soil working members, said screening means comprising a hollow member which can be fixed in operative position and said member having a longitudinal axis that extends transverse to the direction of travel, said hollow member connected to the frame with releaseable fastening means, said hollow member being turnable about its longitudinal axis to any one of a plurality of positions and fixable in that position by said fastening means.

4,111,268
SCRAPER BLADE CONTROL
Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.
Continuation-in-part of Ser. No. 680,817, Apr. 28, 1976, Pat. No. 4,074,769. This application Jun. 13, 1977, Ser. No. 806,246
Int. Cl.² E02F *3/76*
U.S. Cl. 172—805 **8 Claims**



1. A blade control for a vehicle having a transverse blade supported on the forward end of said vehicle for movement of the blade relative to the vehicle, said control including a plurality of hydraulic piston-cylinders interconnected between said vehicle and said blade for adjusting the relative position of said blade, a plurality of flexible hydraulic fluid lines extending from the lower forward end of said vehicle in an upwardly extending arch to the rear of said blade in a downwardly extending arch, said lines then extending across the rear of said blade to said piston-cylinders and a flexible guard-support means protecting, supporting and separating said lines, comprising a flexible sheet operably connected adjacent its lower end to said vehicle beneath said upwardly extending arch of said flexible hydraulic fluid lines, said sheet extending upwardly beneath said lines, supporting and protecting said arch and a clamp adjacent the free upper end of said sheet including a clamp on opposed sides of said lines and retainers located between said lines interconnecting said clamps, said retainers separating said lines and preventing tangling during operation of said blade.

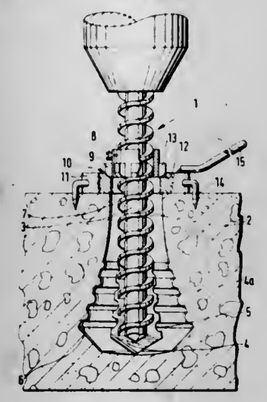
4,111,269
HYDRAULICALLY-POWERED IMPACT TOOL
Jack B. Ottestad, 1442 Muirlands Dr., La Jolla, Calif. 92037
Filed Oct. 8, 1975, Ser. No. 620,877
Int. Cl.² B25D *9/14*
U.S. Cl. 173—134 **34 Claims**



1. In a hydraulically-powered impact tool exerting a driving force in only one direction, said tool having an axis, and

wherein an axially movable piston makes a fluid-sealing, sliding fit between a variable volume closed gas chamber and a storage chamber, the gas chamber being adapted to receive and contain a compressible charge of gas under pressure, and in which a driving member including a piston head and a piston rod makes a fluid-sealing, sliding fit between said storage chamber and a loading chamber with a driving face facing into said storage chamber and a loading face facing into said loading chamber, the loading chamber being provided with an inlet port to receive hydraulic fluid under pressure, the impact tool being loaded by fluid forced into said loading chamber to move the driving member toward the storage chamber, and thereby causing reduction of volume of the gas chamber and an increased pressure therein, and caused to exert a blow by release of said fluid from the loading chamber to enable the energy of the compressed gas in the gas chamber to drive the driving member through fluid in the storage chamber, the improvement comprising: an orifice extending between the said driving face and loading face, and a poppet carried by the driving member to close said orifice to separate said loading chamber and storage chamber from one another while the impact tool is being loaded, and movable to open said orifice to permit flow of fluid through the orifice from the loading chamber to the storage chamber while the piston head moves toward the loading chamber under force derived from the gas chamber.

4,111,270
DRILLING ASSEMBLY
Artur Fischer, Weinhalde 34, D-7244 Tumlingen, Waldachtal 3, Fed. Rep. of Germany, and Klaus Fischer, Tumlingen, Waldachtal, Fed. Rep. of Germany, assignors to Artur Fischer, Tumlingen, Waldachtal, Fed. Rep. of Germany
Filed Aug. 31, 1976, Ser. No. 719,146
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1975, 2539521; Oct. 4, 1975, 2544468; Oct. 23, 1975, 2547412; Nov. 3, 1975, 2549057
Int. Cl.² E21B *17/10*
U.S. Cl. 175—220 **18 Claims**



1. In a drilling tool assembly for forming undercut holes in support structures, a combination comprising an elongated tool element rotatable about an axis of rotation and having a leading end, a trailing end, and cutting edges at least on said leading end; and means for supporting said tool element on a surface of a support structure to be formed with an undercut hole for pivoting relative thereto, including a collar connected to said tool element intermediate said ends thereof and having a convex surface facing towards the surface of the support structure, and an abutment member surrounding said tool element and having a first surface facing towards and abutting the surface of the support structure around an open end of the hole during the undercutting operation and a second surface axially spaced from said first surface and facing towards said collar, said second surface of said abutment member being concave and contacting said convex surface of said collar so that said concave and convex surfaces slide over one another during said pivoting of said tool element, said abutment member being plate-like and said concave and convex surfaces together forming a pivot with a cup-shaped concavo-convex contact surface so that low frictional resistance is offered to said pivoting of said tool element and said pivot is located closely adjacent to the surface of the support structure, said abutment member including a body and a tubular centering projection extending beyond said first abutting surface and receivable in the open end of the hole in the support structure.

4,111,271
HYDRAULIC JARRING DEVICE
Lee E. Perkins, Houma, La., assignor to Kajan Specialty Company, Inc., Houma, La.
Continuation of Ser. No. 605,057, Aug. 15, 1975, abandoned. This application May 31, 1977, Ser. No. 802,047
Int. Cl.² E21B *1/10*
U.S. Cl. 175—297 **29 Claims**

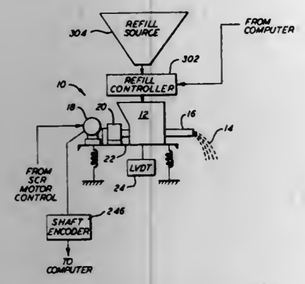


1. A hydraulic jarring device for dislodging an object lodged in a well, the device operating by means of a high pressure chamber and, an exhaust chamber and comprising:
- an elongated, generally hollow barrel;
- an elongated mandrel coaxially mounted with said barrel and adapted to move relative thereto in an axial direction under tension to generate pressure in the high pressure chamber;
- anvil means mounted on one of said barrel or said mandrel;
- hammer means mounted on the other of said barrel or said mandrel, axially aligned with said anvil means and adapted to impact thereagainst in response to abrupt venting of the high pressure chamber to the exhaust chamber;
- impact control means for selectively isolating said high pressure chamber from said exhaust chamber for preventing impact between said hammer means and said anvil means;
- a collapsible chamber pressurized with hydraulic fluid independently of the high pressure chamber for controlling the operation of said impact control means;
- release means for abruptly releasing the hydraulic fluid from said collapsible chamber after a predetermined contraction thereof to effect said abrupt venting of said high pressure chamber resulting in said hammer means impacting against said anvil means; and
- metering valve means connected to said collapsible chamber for controlling the rate at which the hydraulic fluid is released from the collapsible chamber up to said predetermined collapse.

4,111,272
WEIGH FEEDING APPARATUS

Ronald J. Ricciardi, Garfield; Angelo Ferrara, Fairfield; Joseph L. Hartmann, West Caldwell, and Gary R. Lauterbach, Livingston, all of N.J., assignors to Acrison, Incorporated, Moonachie, N.J., a part interest

Filed Dec. 7, 1976, Ser. No. 748,397
Int. Cl.² G01G *19/52, 13/04;* B67D *5/16*
U.S. Cl. 177—50 21 Claims

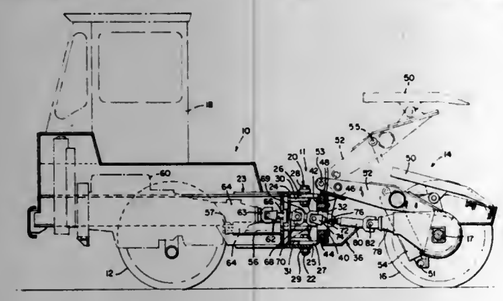


1. A weight feeding apparatus comprising:
a container for prefilling with a substance;
means for discharging said substance from said container at a controllable rate;
means for weighing said substance being discharged;
means coupled to said weighing means for producing first electrical signals proportional in amplitude to the weight determined by said weighing means;
voltage to frequency converter means connected to receive said first electrical signals;
digital computer means;
means coupled to an output of said voltage to frequency converter means for inputting data signals to said digital computer means;
said digital computer means being adapted to compute a corrective signal based on the input data signals received; and
means coupled between said computer means and said means for discharging said substance from said container for controlling the rate of discharge responsive to said corrective signal.

4,111,273
TERMINAL TRACTOR

Keith Blackburn, Enumclaw, and Douglas Ross, Bellevue, both of Wash., assignors to Dock Truck, Inc., Bellevue, Wash.

Filed Oct. 4, 1976, Ser. No. 729,836
Int. Cl.² B62D *15/00*
U.S. Cl. 180—14 R 10 Claims

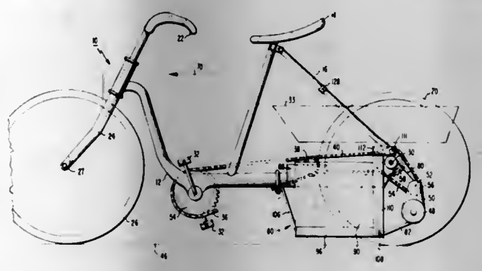


1. A tractor for use with a trailer having a fifth wheel component comprising:
front and rear chassis sections having front and rear axles, respectively, and pivotally connected at an articulation joint for steering the tractor by articulation of said chassis sections relative to one another at an articulation axis, there being front and rear wheels at the ends of the front and rear axles, respectively,
engine means on the front chassis section,
drive means connecting the engine means to one of said axles,
a forwardly facing driver's station located on the front chassis section in forwardly spaced relation from said articulation joint,
steering means for controlling said articulation;
fifth wheel means on said rear chassis section for detachably receiving the fifth wheel component of the trailer at a coupling location in the fifth wheel means and permitting turning of the trailer with little longitudinal movement thereof responsive to articulation of the tractor, and
lift means on the rear chassis section supporting the fifth wheel means in laterally centered relation and against lateral movement or horizontal swinging movement relative to the rear chassis section during articulation of said chassis sections and supporting the fifth wheel means for movement in a travel path between a lowered position whereat said coupling location is above and adjacent the level of the top extremity of the rear wheels and a raised position, said travel path being located such that said coupling location remains within the confines of laterally extending vertical planes passing through the front and rear extremities of the rear wheels as the fifth wheel means moves between said lowered and raised positions,
said tractor having a continuous horizontally unobstructed zone overlying the entire rear chassis section, lift means and articulation joint, and overlying a rear portion of the front chassis section behind the driver's station for the entire width of the front chassis section for receiving the forward portion of a trailer coupled to the tractor.

4,111,274
ELECTRICALLY-POWERED TRICYCLE

M. Dale King, 69 W. Center Ave., Maple Shade, N.J. 08052, and Kerry Binder, Philadelphia, Pa., assignors to M. Dale King, Maple Shade, N.J.

Filed Aug. 11, 1975, Ser. No. 603,758
Int. Cl.² B62D *61/06;* B60L *7/10*
U.S. Cl. 180—25 R 8 Claims

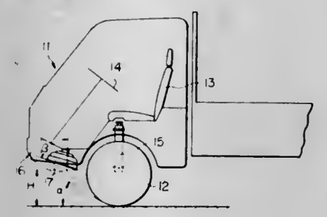


1. An electric-powered cycle for carrying an operator comprising
a steerable wheel;
an electric motor drive for a wheel of said cycle;
battery means including a plurality of batteries for energizing said motor; and
a circuit including
(a) manually-operated speed switch means for selectively connecting said batteries in parallel and series circuits for energization of the motor to provide respectively for low and high speeds and for supplying current from said battery means to said motor to drive said wheel.
(b) one electronic unidirectional circuit means for blocking current generated by the motor when the back EMF exceeds the voltage of said battery means in the low speed condition whereby free coasting of the cycle above said low speed is permitted in the absence of regenerative braking action;
(c) manually-operated regenerative-braking switch means operable concurrently with said speed switch means for bypassing said one unidirectional circuit means concurrently with said batteries being connected in parallel circuits for low speed to enable regenerative braking action, and including another unidirectional means for conducting only when the back EMF exceeds the voltage of said battery circuit connected in parallel so that the regenerative braking action, enabled by said regenerative-braking switch means, is effective only at speeds above said low speed whereby the operator can selectively choose to maintain the cycle at the low speed established by said parallel battery circuit by concurrent operation of both said regenerative switch means and said speed switch means in the low speed condition; and
(d) said speed switch means includes means for bypassing said one unidirectional circuit means when the batteries are connected in series whereby regenerative braking is automatically provided under high-speed energization.

4,111,275
COMPACT CAB-OVER EQUIPPED WITH A COOLER CONDENSER

Joji Masuda, Yokohama, and Makoto Moriya, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 15, 1976, Ser. No. 750,621
Claims priority, application Japan, Dec. 15, 1975, 50/169187[U]
Int. Cl.² B60K *11/04*
U.S. Cl. 180—68 R 2 Claims

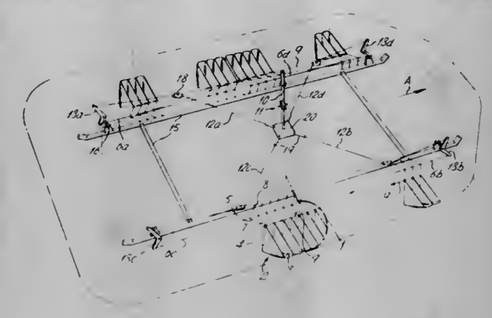


1. In an automotive vehicle with a cab at the front, a radiator for an engine for propelling the vehicle mounted within an engine compartment disposed under and separated from said cab by a cab floor;
a condenser for a refrigeration device mounted within the engine compartment at an area disposed forward from said radiator with respect to the longitudinal direction of the vehicle and slanted from a perpendicular plane transverse to the longitudinal direction of the vehicle by a predetermined angle, said condenser having an electric fan and a shroud means for securing a sufficient amount of air passing therethrough;
said condenser being disposed laterally of the radiator and on an opposite side of the engine compartment to a side over which a steering wheel of the vehicle is disposed;
said condenser being arranged and slanted so that when in operation of the vehicle a sufficient amount of ambient atmosphere required by said radiator will flow toward said radiator without passing through said condenser.

4,111,276
SKIRTS FOR GAS CUSHION VEHICLES

John Edward Rapson, Southampton, and Dean Alders, Lyndhurst, both of England, assignors to Hovercraft Development Limited, London, England

Filed Mar. 22, 1977, Ser. No. 780,104
Claims priority, application United Kingdom, Mar. 26, 1976, 12257/76
Int. Cl.² B60V *1/00*
U.S. Cl. 180—117 8 Claims



1. In a gas cushion vehicle having a skirt comprising upper and lower parts of flexible sheet material, the upper part being connected to the vehicle body so as to be deflectable relative thereto, at least the lower part comprising a contiguous succession of independently deflectable flexible wall members each having an outer portion which faces the gas cushion and a pair of inwardly extending side portions, the side portions being connected to the vehicle body by tie means, the provision of a skirt control mechanism comprising adjusting tie means extending substantially at right angles to the said tie means and operatively connected to substantially the midpoint thereof, means including a lever system operative to effect linear movement of the adjusting tie means and means to at least restrict movement of the wall members in a direction parallel to the adjusting tie means upon adjusting movement thereof, whereby upon linear movement of the adjusting tie means the said tie means connected to the side portions of the wall members are caused to be angled and thereby result in the outer portions of the wall members being moved in a direction towards or away from the vehicle body, the lever system being mechanically equivalent to the lever system effectively constituted by the said tie means and the said adjusting tie means and arranged to act such that as the mechanical advantage of one lever system alters an equal and opposite alteration occurs in the other lever system so that for a given cushion pressure the force required to operate the adjusting tie means is maintained substantially constant at least over a predetermined range of movement.

4,111,277
GAS CUSHION VEHICLE

Michel Francois Peissel, Calle del Puig, Cadaques (Gerona), Spain, and Robert Longley Trillo, Broadlands, Brockenhurst, Hampshire, England

Continuation of Ser. No. 579,175, May 20, 1975, abandoned.
This application Feb. 24, 1977, Ser. No. 771,510
Claims priority, application United Kingdom, May 20, 1974, 22426/74
Int. Cl.² B60V *1/06*
U.S. Cl. 180—122 6 Claims

1. In an air cushion vehicle comprising
(a) a deck;
(b) a downwardly depending skirt about said deck defining a first plenum chamber, said skirt containing a second inflatable annular chamber; and
(c) a fan unit housing containing a fan the axis of rotation of which is horizontal and having an air intake and an air exit

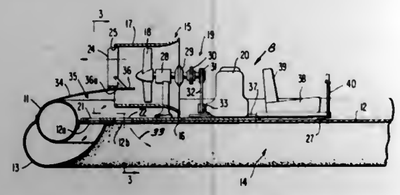
end, said fan unit housing being mounted at the stern of the vehicle;

the improvement comprising:

(d) a third chamber located about said deck;

(e) means communicating said air exit end of said fan unit housing to said third chamber for pressurizing the same;

(f) a first aperture through said deck communicating said third chamber to said first chamber, said first aperture being located forward of said air exit end of said fan unit



housing, whereby air exiting from said fan unit housing has to reverse directions and is aimed towards the bow of the vehicle as it passes through said first aperture; and

(g) a second aperture through said deck communicating said third chamber to said second chamber, said second aperture being located rearward of said air exit end of said fan unit housing, whereby air exiting from said housing does not have to reverse directions in order to enter said second chamber.

4,111,278

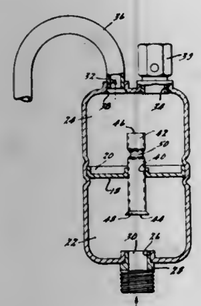
DISCHARGE MUFFLER

Ernest R. Bergman, Rossburg, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Feb. 9, 1977, Ser. No. 767,162

Int. Cl.² F01N *1/00*

U.S. Cl. 181—249 **17 Claims**



1. A discharge muffler for a gas compressor comprising:

a casing having a hollow interior;

a partition in said casing dividing said hollow interior into first and second chambers of substantially equal volume and dimensions;

a relatively straight restrictor tube extending through said partition, said restriction tube being of a length approximating the length of one of said chambers in the direction of gas flow therethrough and having

open ends with a central passageway extending therethrough,

a flared entrance to said passageway at one said open end, and

an annular restriction in said passageway between said open ends, said restriction being spaced from the opposite open end a distance sufficient to permit a significant recovery in the pressure drop caused by said restriction at design operating conditions;

an inlet passage communicating with said first chamber; and

an outlet passage communicating with said second chamber.

4,111,279

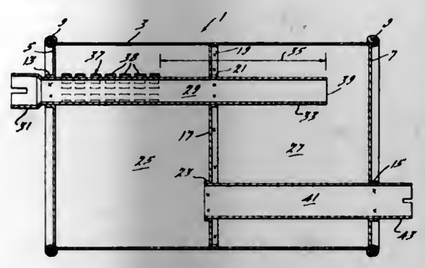
LOUVER FLOW MUFFLER

Dale E. Sterrett, Grass Lake, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed Jul. 26, 1976, Ser. No. 708,513

Int. Cl.² F01N *1/00*

U.S. Cl. 181—264 **9 Claims**



1. In a muffler for reducing the noise level of combustion engine exhaust gases and for attenuating a preselected low frequency sound, the combination of a housing having port means forming an inlet and port means forming an outlet for gas flowing through the muffler, substantially imperforate partition means forming a resonator chamber in the housing, said housing having a gas flow space outside said resonator chamber, a single gas flow tube member with a wall and open at both ends and having one end portion connected to a port means and the other end portion extending into and opening into said resonator chamber and supported on said partition means. said gas flow tube member having an intermediate portion between said end portions and located outside of said chamber and said intermediate portion being in the path of gas flowing between the inlet and the outlet and said intermediate portion including a gas flow through section in said space containing a multiplicity of small area sound attenuating perforations in said wall having a total open area substantially equal to the cross sectional area of that section of the tube member and providing passage for substantially all the gas flowing through the muffler to flow between the inside and the outside of the tube member through said wall at said section, the length of the tube member between the end thereof in said resonator chamber and the adjacent end of said perforated section as well as the inside diameter of said tube member throughout said length and the volume of said resonator chamber all being interrelated and interdependent in accordance with the Helmholtz formula whereby they serve to form a Helmholtz system to attenuate said preselected low frequency, and a gas flow conduit open at both ends and supported on said partition means and extending through said resonator chamber and having one end portion connected to the other of said port means and the other end portion opening into said gas flow space whereby gas may flow between it and said perforations.

4,111,280

SUPPORTING GUIDE RAIL FOR LADDER SAFETY DEVICE

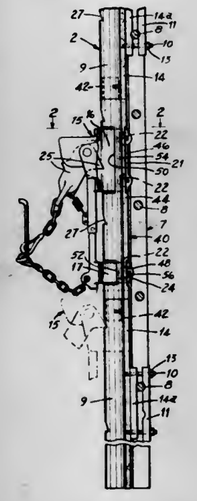
Donald R. Devine, La Habra, and William L. Gardiner, Anaheim, both of Calif., assignors to Norton Company, Worcester, Mass.

Filed Jan. 31, 1977, Ser. No. 763,979

Int. Cl.² E06C *7/18*; A62B *1/16*

U.S. Cl. 182—8 **7 Claims**

1. A continuous supporting guide rail for a ladder climbing safety device of the type securable to the ladder comprising a clamping sleeve assembly movable axially along the supporting guide rail including at least one tubular bearing part having a wall extending circumferentially around beyond the diameter of an engaging circular portion of the supporting guide rail to opposite sides of a guide strip receiving channel of predetermined width in the wall whereby the sleeve is held and prevented against rotation by a guide strip on the supporting guide rail, a locking pawl pivotally connected to the bearing part for locking engagement with the supporting guide rail, means for connecting the locking pawl and sleeve to a safety belt of a person ascending or descending the ladder whereby the sleeve assembly is normally moved along the supporting guide rail by the person but which immediately forces the locking pawl into



locking engagement with the supporting guide rail in the event the person falls from the ladder wherein the improvement comprises:

notched means situated on and between opposite ends of the continuous supporting guide rail for allowing the sleeve assembly to be selectively displaced radially into and out of guiding engagement with the guide strip, rotated into and out of alignment with the guide strip and displaced laterally by the notched means for connecting and disconnecting the sleeve assembly to and from the supporting guide rail in a predetermined relatively safe manner.

4,111,281

BUILDING FRONT ROPE LIFT

Max Jacobs, #179, Wittkullerstrasse, Solingen-Wald, Fed. Rep. of Germany

Filed Jun. 27, 1977, Ser. No. 810,454

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628041

Int. Cl.² B61B *7/04*

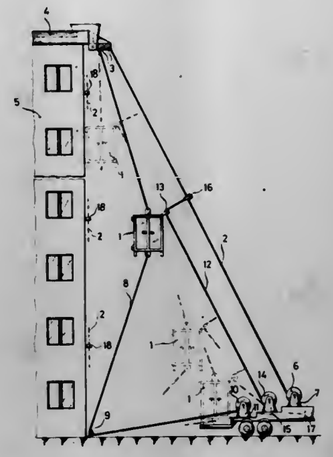
U.S. Cl. 182—10 **5 Claims**

1. A building front rope lift for rescuing persons in particular subject to fire hazards in tall buildings, comprising

(a) a lift cage suspended from one end of at least one load rope led around at least one guide roller secured to a tall building, said load rope extending from said guide roller downwardly inclined to a winch drum to which its other end is connected;

(b) a first roller secured to the lift cage, and

(c) a traction rope led around the first roller and carrying at one end a second roller arranged to roll on the load rope, said traction rope being diverted by the first roller into the



direction of the downwardly inclined load rope and connected by its other end to a further winch drum.

4,111,282

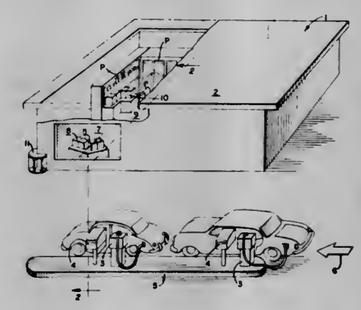
SINGLE-STOP SHOPPING FACILITY AND METHOD

Michael Mark Vayda, Jr., 1600 S. Joyce St., Suite B1610, Arlington, Va. 22202

Filed Aug. 23, 1976, Ser. No. 716,374

Int. Cl.² E04H *3/04*

U.S. Cl. 186—1 C **5 Claims**



1. A drive-in, single-stop shopping facility for vending retail products and fuel to customers respectively seated in first and second automobiles, the facility comprising:

(a) means for warehousing the retail products and personnel for the facility;

(b) first and second dispensing means operable by a ramp attendant for respectively delivering fuel to said first and second automobiles;

(c) first and second purchase selection means operable by said customers respectively seated in said first and second automobiles, each of said purchase selection means including means for informing the customer of the selection of fuel and retail products for sale at the facility, means for communicating the customer's fuel purchase selection to said ramp attendant, and means for communicating the customer's retail product selections to a cashier and order clerk within said warehousing means;

(d) first and second payment means operable by said customers respectively seated in said first and second automobiles and said cashier who is located at a control location within said warehousing means, each of said payment means

including means for the customer to pay for the total cost of the customer's retail product and fuel order;

(e) means for directing the automobile traffic pattern to the facility so that said first and second automobiles respectively arrive adjacent to said first and second dispensing means with the driver's side of said first and second automobiles respectively adjacent to said first and second purchase selection means;

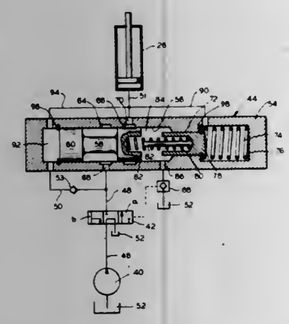
(f) means operable by said order clerk for passing the customer's respective retail product orders from within the warehousing means to the outside thereof for delivery to the customers' automobiles; means (a) through (f) being operatively associated so that both customer's respective retail product and fuel purchases are accomplished independently of each other and during the same time frame, whereby customers respectively seated in said first and second automobiles can be served retail products and fuel at the facility at the same time.

4,111,283

REGULATOR VALVE

Russell Hastings, Jr., Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 20, 1976, Ser. No. 752,365
Int. Cl.[2] B66B *9/20*; F15B *13/042*
U.S. Cl. 187—9 R **18 Claims**



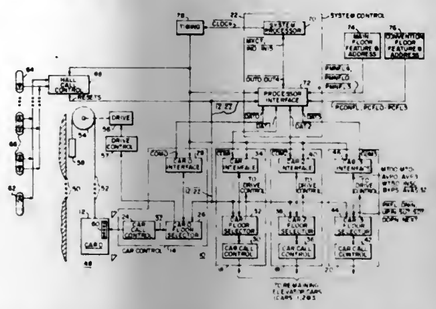
1. In combination with a load lifting upright having a load supporting carriage mounted for vertical movement on the upright, an extensible hydraulic lift motor, flexible means operated by the lift motor and secured at one end to the carriage for raising and lowering the carriage in the upright during extension and retraction of the lift motor, a fluid pressure supply, a reservoir, conduit means connecting said pressure supply to the lift motor and to the reservoir and a control in the conduit means adjustable to effect raising and lowering of said lift motor and carriage, regulator means in the conduit means for preventing a slack condition of the flexible means comprising a valve regulating the fluid flow exhausted from the lift motor during lowering thereof, said valve being responsive at one side thereof to the fluid pressure in the lift motor and at the opposite side thereof simultaneously to the forces of a first spring means and of the combined force of a second spring means and a lift motor fluid pressure responsive means during movement of the valve to regulate the fluid flow exhausted from the lift motor, the force of said second spring means being effective on said valve subsequent to the force of said first spring means, said fluid flow exhaust being regulated by said valve inversely as a function of fluid pressure in the lift motor, movement of the valve to a closed position being effected by said first spring means when the fluid pressure in the lift motor decreases to a predetermined low pressure whereby to prevent fluid exhaust from the lift motor.

4,111,284

ELEVATOR SYSTEM

Charles L. Winkler, Worthington, and Kenneth M. Eichler, McKeesport, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 503,212, Sep. 4, 1974, abandoned. This application May 5, 1975, Ser. No. 574,664
Int. Cl.[2] B66B *1/18*
U.S. Cl. 187—29 R **10 Claims**



1. An elevator system for a structure having a plurality of landings, comprising:

a plurality of elevator cars,

means mounting said plurality of elevator cars for movement relative to the landings,

call registering means for registering calls for elevator service from at least certain of the landings,

car control means for each of said plurality of elevator cars, each of said car control means being independently operable, in the absence of overriding synchronized control signals, to move its associated elevator car in response to calls for elevator service,

system control means responsive to said call registering means for preparing data words according to a predetermined call answering strategy, said data words having a predetermined format,

interface means connected between each of said car control means and said system control means,

said system control means intermittently providing one of said data words for each of said interface means,

each of said interface means including means keyed by the predetermined format of the data word for storing the data word received from said system control means, and means for repetitively and serially reading out the stored data word to its associated car control means, to provide the overriding synchronized control signals required by the car control means to place the elevator cars under control of the system control means.

4,111,285

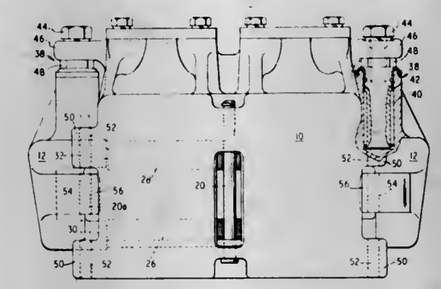
SLIDABLE CALIPER AND PIVOTAL MOUNTING MEANS THEREFOR

Hermann Hans Hönick, Immendorf, Fed. Rep. of Germany, assignor to Girling Limited, Birmingham, England

Continuation of Ser. No. 455,747, Mar. 28, 1974, abandoned. This application Nov. 24, 1976, Ser. No. 744,818
Claims priority, application United Kingdom, Apr. 5, 1973, 16264/73
Int. Cl.[2] F16D *65/02*
U.S. Cl. 188—73.6 **13 Claims**

1. In a sliding caliper disc brake of the type comprising a torque plate member adapted for fixing to a vehicle frame or like portion, a unitary caliper assembly, means moveably mounting said caliper assembly on the torque plate member, said caliper assembly carrying spot-type friction pads adapted for movement into engagement with opposed faces of a rotatable disc, said caliper assembly being constructed that the pads cannot be removed or replaced with the caliper assembly in its normal operative position relative to the disc, said mounting

means comprising a first releasable connection between the unitary caliper assembly and the torque plate member, said first connection comprising two sets of sliding surfaces disposed one set on each circumferential side of the caliper assembly, said two sets of sliding surfaces being constructed and arranged to permit movement of the caliper assembly relative to the torque plate member only in the direction of the axis of disc rotation and also being arranged that said caliper assembly cannot be moved to a position relative to the torque plate member in which the pads may be removed from the caliper assembly without complete release of said two sets of sliding surfaces the improvement comprising means on said torque plate member and said caliper assembly independent of said



two sets of sliding surfaces for providing a second connection between said caliper assembly and said torque plate member which enables said caliper assembly to be moved to a position relative to said torque plate member which permits removal of the pads from the caliper assembly, said second connection comprising an opening on one of said torque plate member and said unitary caliper assembly, and a pivot pin extending between said caliper assembly and said torque plate member and cooperating with said opening to pivotally support said unitary caliper assembly on said torque plate member in a location which enables the former to be pivoted relative to the latter to a position permitting removal or replacement of said pads following complete release of said two sets of sliding surfaces.

4,111,286

Patent Not Issued For This Number

4,111,287

SHIFT MODULATING CONTROL ACCUMULATOR

Jerry Lee Daniels, Mossville, and Albert Lloyd Woody, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 28, 1977, Ser. No. 763,738
Int. Cl.[2] F16D *39/00*
U.S. Cl. 192—3.27 **7 Claims**

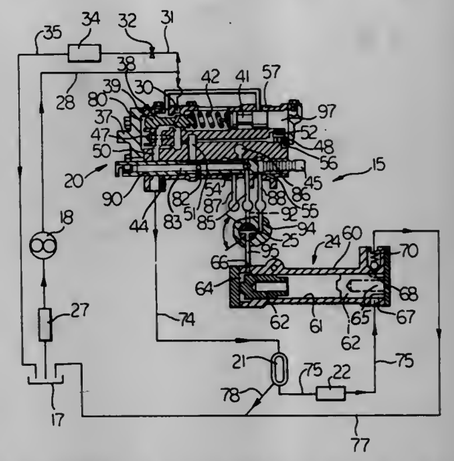
1. A hydraulic transmission control circuit for a loader for selectively actuating a hydraulically-operated clutch comprising:

a source of fluid under pressure;

a fluid reservoir;

transmission control valve means communicating with the source of fluid and having an adjustable element for selectively directing fluid under pressure to outlet passages for delivery to hydraulically-operated clutches including a forward speed clutch and a reverse speed clutch;

a hydraullically-operated torque converter having an intake port communicating with another outlet passage of said transmission control valve means and a discharge port, said transmission control valve means controlling fluid flow to said torque converter during speed changes; and



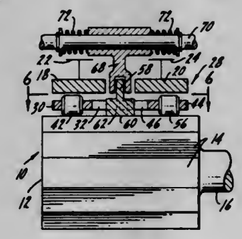
an accumulator with a hydraulically-charged, free-sliding piston and having a port at one end communicating with the intake of the reverse speed clutch and a port at the opposite end communicating with the fluid reservoir so that fluid at the opposite end is vented to the fluid reservoir whenever said piston is moved toward said opposite end, said one end of said accumulator filling with fluid when said transmission control valve means is operated to direct fluid to the reverse speed clutch so that operation of the reverse speed clutch is delayed until said one end is filled thereby modulating engagement of the reverse speed clutch.

4,111,288

GEAR CHANGING MECHANISM

Mark John Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 30, 1976, Ser. No. 755,698
Int. Cl.[2] F16D *41/08, 47/00*
U.S. Cl. 192—38 **11 Claims**



1. In a torque transfer mechanism, the combination comprising first means including first and second races, second means including a third race, first and second bi-directional clutches

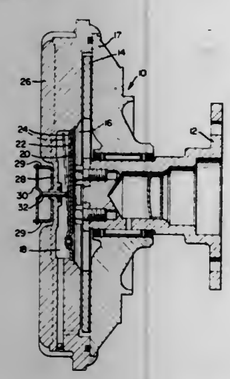
between said first and second races, respectively, and said third race, and shifting means engageable with said first clutch for positioning said first clutch in a freewheeling mode and rendering said second clutch positionable selectively in driving and coasting modes in response to the transfer of torque through the mechanism, said shifting means being engageable with said first and second clutches for rendering one of said clutches positionable selectively in freewheeling and coasting modes and the other of said clutches positionable selectively in driving and freewheeling modes in response to a torque reversal, said shifting means being engageable with said second clutch for positioning said second clutch in a freewheeling mode and rendering said first clutch positionable selectively in driving and coasting modes in response to the transfer of torque through the mechanism.

4,111,289

DIMPLED BIMETAL TEMPERATURE RESPONSIVE FAN DRIVE COUPLING

Earl Ray Brummett, Indianapolis, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Apr. 6, 1977, Ser. No. 785,038
Int. Cl.[2] F16D *35/00, 43/25*
U.S. Cl. 192—58 B **2 Claims**



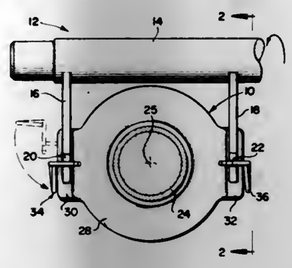
1. A temperature controlled fluid coupling adapted to couple a radiator cooling fan of an internal combustion engine to the engine to thereby rotate the fan, the fluid coupling being of the type including a housing having a drive chamber into which a rotor extends and is positioned, a shear liquid reservoir chamber in the housing, the reservoir chamber communicating with the drive chamber through a temperature controlled valve, the amount of valve opening determining the degree of fluid coupling between the engine and the fan, the valve in one position establishing maximum rotary coupling, a bi-metal laminate mounted on the housing and actuating the valve by an elongated rod, bowing of the bi-metal laminate in one direction due to changes in its ambient temperature causing the valve to open and bowing of the laminate in the opposite manner causing the valve to close, the improvement comprising, the bi-metal laminate having a dimple to thereby define a convex zone on one surface and a concave zone on its other surface, the said elongated rod normally engaging one of said zones in a predetermined orientation of the bi-metal laminate relative to the valve, whereby mounting of the bi-metal laminate in an other orientation relative to the valve causes the valve to be fully open at all temperatures.

4,111,290

THRUST BEARING WITH SPRING CLIP MOUNTING

Richard A. Carlstedt, Chicago, Ill., assignor to Aetna Bearing Company, Chicago, Ill.

Filed Apr. 14, 1977, Ser. No. 787,566
Int. Cl.[2] F16D *23/00*
U.S. Cl. 192—98 **17 Claims**



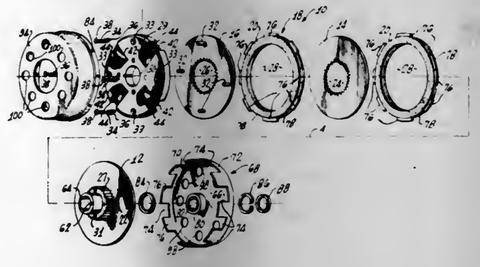
1. A clutch release bearing assembly comprising in combination: a thrust bearing unit, a bearing unit carrier member having flange means extending transversely of the axis of said bearing unit, and means for attaching said thrust bearing assembly to a clutch release fork, said means comprising at least one spring clip pivotally attached to one of said flanges of said carrier member for pivotal movement substantially perpendicular to the axis through said bearing unit, said spring clip comprising, a connector portion for attaching said clip to said carrier, a traverse portion for engaging said clutch release fork, and a tensioning portion formed intermediate said connector portion and said transverse portion, such that said clip may be pivoted away from said bearing unit axis to permit said clutch release fork to be moved into position in overlying engagement with said bearing assembly, and said clip then pivoted toward said axis to engage said transverse portion over said clutch release fork with said clip and the force provided by said tensioning portion effecting interconnection of said bearing assembly and said clutch release fork.

4,111,291

CENTRIFUGAL FRICTION MECHANISM

Gilbert F. Horstman, Arcadia, Calif., assignor to Horstman Manufacturing Co., Inc., Monrovia, Calif.

Filed Jun. 15, 1977, Ser. No. 806,764
Int. Cl.[2] F16D *43/06*
U.S. Cl. 192—105 C **16 Claims**



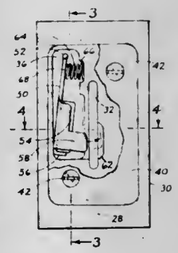
1. A centrifugal friction clutch comprising:
a plurality of concentric clutch plates;
a plurality of clutch disks interleaved between said plates, said disks being concentric with said plates;
a hub extending axially through said plates and disks connecting said plates for joint rotation;
a generally cylindrical drum surrounding said plates and disks and concentric therewith, said drum interlocking the peripheral edges of said disks, whereby said disks and said drum are interconnected for joint rotation;
a weight support member concentric with said plates and disks having a plurality of apertures therein;
a plurality of threaded stems projecting axially from one of said plates through said apertures in said weight support member, whereby said weight support member is connected to said plates for rotation therewith;
means for causing said plates to frictionally engage said disks comprising a symmetrical array of weights, each pivotably mounted on said weight support member about a pivot axis substantially perpendicular to the rotational axis of said weight support member, each of said weights having a drive portion disposed radially inwardly from its pivot axis and a cam portion extending radially outwardly from its pivot axis, said drive portion being heavier than said cam portion and having its center of gravity disposed further from said plates than from said pivot axis, whereby said cam portion is urged toward said plates by centrifugal force upon rotation of said weight support member;
a plurality of threaded members engaged by said stems;
a plurality of coil springs, each of which encircles one of said threaded members, said springs being compressed between said threaded members and said support member, thereby restraining pivotal movement of said weights to prevent frictional engagement of said plates with said disks below a predetermined speed of rotation of said plates, said predetermined speed being adjustable by turning said threaded member;
input connector means for supplying rotational power to said plates; and
output connector means for supplying rotational power from said disks.

4,111,292

COIN MACHINE SLUG REJECTOR

Eugene H. Dixon, 16022 SE. River Rd., Milwaukee, Wis. 97222

Continuation of Ser. No. 534,631, Dec. 19, 1974, abandoned. This application Feb. 24, 1977, Ser. No. 771,655
Int. Cl.[2] G07F *3/02*
U.S. Cl. 194—101 **6 Claims**



1. A rejector of magnetic coins and other magnetic slugs for a coin-operated machine, comprising:
a. a housing having a coin slot therethrough,
b. a slug rejector finger in the housing movable between a normal position retracted from said coin slot and an extended position intercepting said coin slot,
c. a magnet mounted slidably in a bore in the housing and engaging said rejector finger at one end and arranged to be influenced by a magnetic coin or slug inserted in the coin slot to move the finger to said extended position, and
d. magnetic abutment means in the housing disposed adjacent the end of the magnet opposite the finger for normally urging the finger to said normally retracted position.

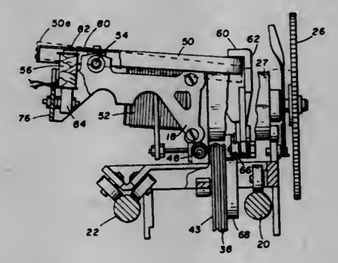
6. A rejector of magnetic coins and other magnetic slugs for a coin-operated machine having a coin insert slot through its outer surface, the rejector comprising:
a. a housing having opposed front and back surfaces, a coin slot extending through said front and back surfaces, and a chamber in the housing separated from the coin slot by an internal wall,
b. a slug rejector finger member confined within the periphery of the housing and movable between a normal position retracted from said coin slot and an extended position intercepting said coin slot, the slug rejector finger member comprising a lever pivoted at one end within the chamber on a pivot axis disposed parallel to the longitudinal direction of the coin slot and hence parallel to the direction of coin movement through the coin slot, the lever having a finger projecting from the opposite end of the lever and terminating inwardly of the back surface of the housing and registering with a transverse opening in said internal wall communicating the coin slot with the chamber for movement of the projecting finger between said normal and extended positions,
c. retraction means in the housing for urging the finger member to said normal retracted position,
d. a magnet mounted on the lever within the chamber and arranged to be influenced by a magnetic coin or slug inserted in the coin slot of the rejector housing to move said finger to said extended position to prevent the magnetic coin or slug passing through the coin slot of the rejector housing, and
e. means on the housing for attaching the latter to the outer surface of a coin-operated machine with the back surface of the housing facing the coin-operated machine and with the coin slot of the rejector housing aligned with the coin insert slot of the coin-operated machine.

4,111,293

RIBBON TRANSPORTING AND SHIFTING MECHANISM

Barry C. Kockler, Lewisville, Tex., and Ronald L. Beaty, Moses Lake, Wash., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1977, Ser. No. 758,380
Int. Cl.[2] B41J *33/58*
U.S. Cl. 400—208 **8 Claims**



1. A ribbon transporting and shifting mechanism for a typewriter having a print head and ribbon carrier positionable along a line of printing by a drive motor, and a ribbon cartridge assembly pivotally mounted on the carrier, comprising:
a cam mounted on the head and ribbon carrier and actuated by the drive motor,
a cam follower mounted on the head and ribbon carrier and including an upstop, said cam follower driven by said cam to oscillate the position of the upstop with reference to the head and ribbon carrier, and
cartridge lift means coupled to the cartridge assembly for positioning thereof against the upstop of said cam follower, said lift means includes a solenoid attached to said carrier and a spring fastened to the cartridge assembly and held in contact with said solenoid when energized to resiliently bias the cartridge assembly against the upstop.

4,111,294

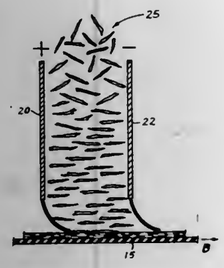
ALIGNMENT PLATE CONSTRUCTION FOR ELECTROSTATIC PARTICLE ORIENTATION

C. Thomas Carpenter, and Norman W. Stunkard, both of Lake Oswego, Oreg., assignors to Voltage Systems, Inc., Lake Oswego, Oreg.

Continuation-in-part of Ser. No. 674,974, Apr. 8, 1976, abandoned. This application Apr. 22, 1977, Ser. No. 790,007

Int. Cl.[2] B65G *47/24*

U.S. Cl. 198—381 **17 Claims**



1. Apparatus adapted for mounting above a conveyor and for unidirectionally aligning elongate particles generally in the direction of conveyance in the forming of a mat of particle-board comprising

a plurality of substantially flat, spaced-apart plates of conductive material disposed substantially upright and parallel to one another and positioned generally transversely to the direction of conveyance, said plates adapted to be electrostatically charged to provide a potential difference between said plates so that the particles will experience electric field aligning forces generally parallel to the direction of conveyance as the particles pass between the plates;

each of said plates including flexible, resistive material secured thereto which extends below a bottom edge of the plate to a region adjacent the mat being formed on the conveyor so that electric field lines between adjacent plates are maintained substantially horizontally over the plate and material height.

4,111,295

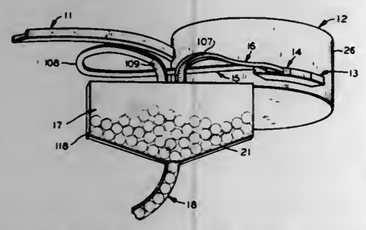
HIGH SPEED METHOD OF AND APPARATUS FOR SIMILARLY ORIENTING ARTICLES

Arthur J. Rutherford, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 30, 1976, Ser. No. 755,553

Int. Cl.[2] B65G *47/24*

U.S. Cl. 198—399 **5 Claims**



1. Apparatus for separating a first group of open-mouthed articles having a top plane portion, a skirt portion connected to the outer periphery of the top panel portion and an open mouth opposite said top panel portion, and having a first orientation from a second group of open-mouthed articles identical to the first group of open-mouthed articles but having a second orientation, inverting said second group of open-mouthed articles from said second orientation to said first orientation and recombining said second group of open-mouthed articles having said first orientation, said apparatus comprising, in combination, means for receiving said open-mouthed articles of said first and second orientations in serial alignment on a reference surface and for maintaining the orientation of said articles relative to said reference surface, first finger means adjacent to said reference surface and adapted to engage said first group of open-mouthed articles having a first orientation and to deflect said first group of open-mouthed articles along a first deflected path, a second finger means overlying said first finger means and said reference surface and adapted to engage said second group of open-mouthed articles having a second orientation and deflect said second group of open-mouthed articles along a second deflected path, means within said second deflected path to invert said second group of open-mouthed articles from said first orientation to said second orientation, means for moving said first and second groups of open-mouthed articles along said first and second deflected paths, and an accumulator means for receiving said first and second groups of open-mouthed articles from said first and second deflected paths to re-combine said first and second groups of open-mouthed articles, all of the re-combined open-mouthed articles having said first orientation.

4,111,296

ROCK CONVEYORS

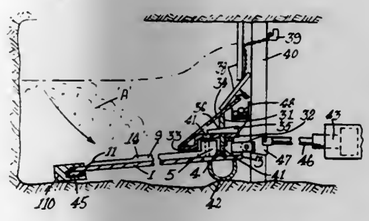
Mark B. Glossop, 11 Westview Dr., Bryanston Ext. 5, Randburg; Adrian C. Buckmaster, 29 Clonmore Rd., Bryanston 7; Neville G. W. Cook, 118 Mattie Ave., Parkmore, Sandton; Justin P. M. Hojem, 52 Buffalo Rd., Emmarentia, Johannesburg; Noel C. Joughin, 14 Kerry Rd., Parkview, Johannesburg; Richard F. Taylor, Meadowvale, Plot 179, Tnohyvale, Dist. Krugersdorp; Robert W. Cramp, 3 Sable Rd., Verwoerd Park, Alberton, and John L. Hatcher, 153 Monterey, 27 Lily Ave., Berea, Johannesburg, all of South Africa

Continuation of Ser. No. 589,759, Jun. 24, 1975. This application Jul. 5, 1977, Ser. No. 812,651

Claims priority, application South Africa, Jun. 25, 1974, 74/4077; Mar. 20, 1975, 75/1750; Mar. 20, 1975, 75/1751

Int. Cl.[2] B65G *25/10*

U.S. Cl. 198—519 **19 Claims**



1. A conveyor for use in underground mining operations comprising a conveyor bed of flat plates carrying articular members joined together in an articulated manner in a plane parallel to said plates to allow limited universal relative movement between said plates, an articular member defined by a rigid projection extending from each plate adjacent a transverse edge of each plate near a longitudinal edge of the bed, the projections providing between them co-operating hook and socket formations adapted to constrain adjacent transverse edges of the plates, the bed having a longitudinal free edge thereof to rest on the ground, a track mounted on the bed adjacent the opposite longitudinal edge thereof which accomodates and constrains therein a reciprocable chain of rigid links of substantially uniform cross-section hinged together to provide a substantially continuous face in a side of the track which is open and facing the free edge of the bed, a seried of spaced flights hingedly attached directly to chain links between hinge points and arranged to extend across the bed, stops on each flight being provided to limit rotational movement of the flights in both directions over the surface of the bed, means connected to the chain near each end for reciprocating the chain under tension along the track and means for advancing the conveyor in use transverse of its length with the free edge forward to self load by insertion of said edge under a pile of material to be conveyed extending along a substantial part of the length of the conveyor.

4,111,297

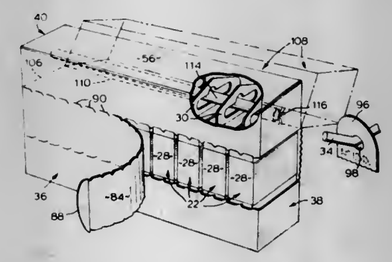
CARTRIDGE FOR HARDWARE PACKAGES

Arthur Paulin, 7 High Point Rd., Don Mills, Canada (M2B 2A3)

Filed Jul. 22, 1977, Ser. No. 817,933

Int. Cl.[2] B65D *23/12*

U.S. Cl. 206—44.12 **7 Claims**



1. A cartridge comprising:

a carton;

a plurality of similar packages of hardware and like articles disposed in said carton, each said package comprising a container having a hanging tab which is formed with an opening and by which the container can be suspended from a suspension element of a display rack in use;

the carton including front and rear walls, opposite end walls, and top and bottom walls which together define an enclosure, said packages being arranged in a row in said enclosure with the openings in their hanging tabs aligned with one another and with said end walls of the carton, said front wall of the carton being formed with upper and lower rows of perforations which extend from end to end of said front wall and which define a removable tear-strip, and each said end wall of the carton being perforated to allow an upper portion of the carton to be folded back about a line extending transversely of said back wall after removal of said tear-strip, thereby exposing the hanging tabs of the packages in the carton and permitting the packages to be loaded seriatim as a batch onto a suspension element of a display rack;

and an elongate member disposed in said carton and passing through the openings in the package hanging tabs, the member being in the form of a thin walled tube dimensioned to permit an end thereof to be engaged over an end of a display rack suspension element prior to loading of packages onto said element, so that the tubular member acts as a guide along which the packages can slide onto the suspension element;

one of said end walls of the carton being formed with a star-shaped perforation aligned with said openings in the package hanging tabs and through which said tubular member can be inserted into the carton after loading of the packages during assembly of the cartridge, whereby the portions of the carton defining said star-shaped perforation tend to return to their original positions after insertion of the member, and prevent the member leaving the carton.

4,111,298

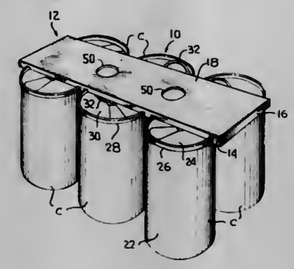
REUSABLE CAN CARRIER STRIP

Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Aug. 16, 1977, Ser. No. 825,242

Int. Cl.[2] B65D *71/00, 85/62*

U.S. Cl. 206—151 **16 Claims**



1. A new article of manufacture comprising a reusable can carrier, said can carrier being in the form of an elongated strip having formed on one surface thereof a series of can retaining means, each can retaining means being in the form of two concentrically arranged arcuate flange segments projecting from said surface of said strip, said two flanges being spaced apart a distance to define a socket of a size to have tightly received therein a cylindrical end portion of a can including the customary seam securing an end unit of the can to a body thereof, said strip having reinforcing flanges depending therefrom along sides thereof and each of said sockets opening through one of said sides at two spaced locations.

4,111,299

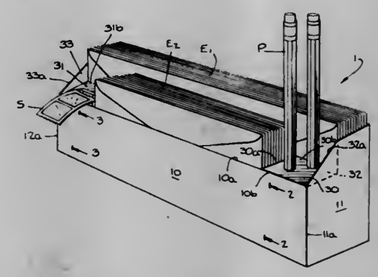
DEFORMABLE CONTAINER

David Tanb, 1387 E. 46th St., New York, N.Y. 11234

Filed Nov. 15, 1976, Ser. No. 741,682

Int. Cl.[2] B65D *85/54*

U.S. Cl. 206—215 **13 Claims**



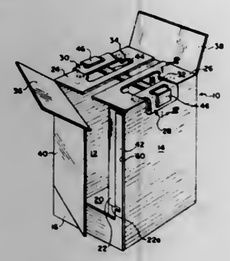
1. A generally rectangular container for holding articles of different dimension, said container having an elongated front wall, an elongated back wall and parallel sidewalls connected in tubular relation, and a container bottom panel;

a generally rectangular tab extending from and hingedly connected along one of its edges to one of said walls and having a pair of free edges;

support means hingedly connecting said tab to another of said walls adjacent to said one wall for supporting said tab for movement between a first position in which said tab is coplanar with said one wall and a second position in which said tab is located in the interior of said container in a plane which is parallel to said bottom panel, whereby when said tab is in said second position thereof said free edges thereof form in the interior of said container a longitudinal and a transverse abutment, respectively, for posi-

tioning in said container articles having different dimensions.

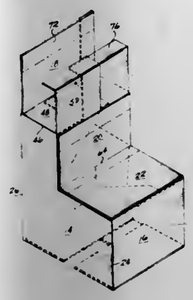
4,111,300
PAPERBOARD WARDROBE CONTAINER
James H. Partain, Norcross, Ga., assignor to Stone Container Corporation, Chicago, Ill.
Filed Jun. 17, 1977, Ser. No. 807,383
Int. Cl.² B65D *85/18*
U.S. Cl. 206—280 **16 Claims**



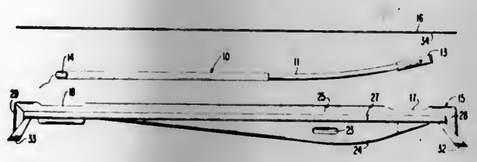
1. In a wardrobe container formed from a one-piece blank having at least two side walls, two end walls and a bottom wall connected together, and including a hanger bar having opposed end portions each defined by inside and outside legs, the inprovement comprising; a pair of top flaps each hingedly connected along a top free edge of one of said two side walls, each of said top flaps including hanger bar support means formed from said flaps, said support means being hingedly connected to said side wall and being of a length less than the length of said top flap and a width less than the width of said top flap and foldable separately from said top flap along multiple parallel lines of fold substantially parallel to said hinged connection with the side wall into a multiple panel folded assemblage engaged against the side wall, each of said multiple panel folded assemblages including a hole in the center portion of the most interior panel of said assemblage, one end portion of said hanger bar being received over each folded assemblage with the outside leg positioned against the outer surface of the folded assemblage and with the inside leg received within the hole in the most interior panel to prevent lateral shifting thereof; and a first one of said end walls including a hingedly mounted access panel allowing access into said container interior.

4,111,301
ONE-PIECE CHAIR SHIPPING CONTAINER
Austin L. English, Conyers, Ga., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Dec. 17, 1976, Ser. No. 751,503
Int. Cl.² B65D *85/00*
U.S. Cl. 206—326 **8 Claims**

1. A one-piece pre-cut shipping container comprising
an L-shaped body formed by front, back, top, bottom, vertical neck, shelf and two L-shaped side panels,
said side, back and front panels being interconnected along parallel spaced corner fold lines,
bottom flaps connected to each side, back and front panels forming said bottom of the container,
said top panel being connected to the back panel,
said shelf and neck panels being perpendicular to each other and connected to the front panel,
neck and shelf; neck and shelf flap means separately connected to the side panels in underlying relation to the top, neck and shelf panels to provide vertical strength to said neck panel and added strength to said shelf panel,
said neck and shelf flap means being triangular and connected to the side panel along perpendicular fold lines respectively, and underlying rectangular top closure portions connected to respective neck flaps along a top fold line running adjacent the top edge of said neck panel.



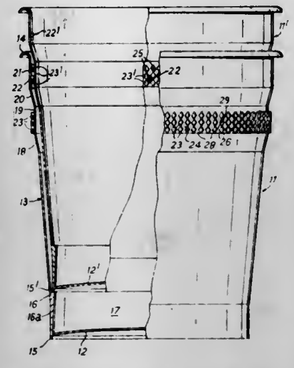
4,111,302
CARTONED MEDICAL INSTRUMENT PACKAGE
Nathan Roth, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Division of Ser. No. 597,020, Jul. 18, 1975, Pat. No. 4,019,633.
This application Nov. 22, 1976, Ser. No. 743,617
Int. Cl.² B65D *83/10*
U.S. Cl. 206—363 **8 Claims**



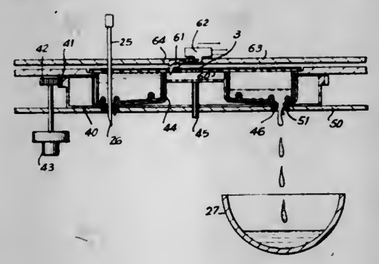
1. Medical instrument package comprising:
(a) a thermoplastic tray having a cavity for holding the instrument, at least a portion of the cavity being deeper than it is wide, and a convexly curved marginal ledge about said cavity extending outwardly from the opening of the cavity and defining the top surface of the tray;
(b) a cover for said cavity that has the same curvature as said marginal ledge; and
(c) means interposed between the cover and ledge for adhesively securing the cover to the ledge about the complete perimeter of the cavity such that the cover may be peeled away from said ledge to expose the cavity.

4,111,303
PLASTICS CONTAINERS
Peter Arnold Compton, King's Lynn, England, assignor to Mars Limited, London, England
Filed Jul. 29, 1976, Ser. No. 709,853
Claims priority, application United Kingdom, Aug. 1, 1975, 32345/75; Mar. 17, 1976, 10799/76
Int. Cl.² B65D *21/02, 85/72*
U.S. Cl. 206—520 **27 Claims**

1. A nestable container of resilient plastic material comprising:
a bottom wall;
a side wall, said side wall diverging generally from said bottom wall to the top of said wall;
at least one projection on one surface of said side wall;
at least one pair of circumferentially spaced mutually opposed shoulders with a spacing between them on the other surface of said side wall, said projection and said shoulders being so positioned that when such identical containers are nested to form a stack the projection of one container cooperates with the shoulders of another container to hold the containers together in the stack, the width of the spacing between said shoulders being less than the width of said projection, said shoulders being resiliently yieldable so that when the containers are brought together the shoulders of the other container are displaced circumferentially to allow said projection of said one container to pass between the shoulders of the other container and engage behind them holding the containers together in the stack.

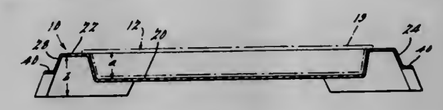


4,111,304
CARTRIDGE HAVING INDIVIDUAL ISOLATED CELLS
Bernard Lucas, Ronen, France, assignor to Padeg A.G., Moehlin, Switzerland
Continuation of Ser. No. 620,498, Oct. 7, 1975, Pat. No. 4,053,054. This application Jul. 25, 1977, Ser. No. 818,730
Int. Cl.² B65D *25/08*
U.S. Cl. 206—534 **9 Claims**



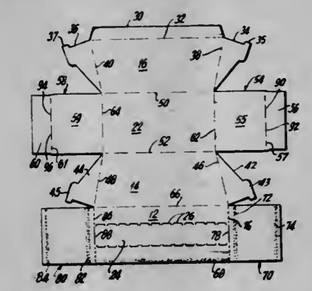
1. A cartridge adapted for containing a dispensible liquid comprising a one-piece body of material defining a plurality of cells secured to one another and constituting an integral assembly, the cells being arranged in a circular array around a common center and adapted for containing a liquid, each said cell having a bottom wall, side walls and an open face, and a sheet sealably closing said open face of the cell after introduction of the liquid thereto, a support for said body including index means thereon forming a program for controlling operation of an automatic control mechanism of a machine which can carry out various operations as a function of said program whereby the operation of said machine will be subordinated to said program, said array of cells being arranged around a central region, said support being in said central region, said sheet closing all of the cells, said material of said body and said sheet being made of pierceable material and being arranged with said sheet juxtaposed on said body and located in spaced relation above said bottom wall of said cell, a sealed chamber enclosed by a perforable sheath disposed in at least one of said cells, said sealed chamber occupying less than the full volume of said one cell to leave a compartment in said cell containing said liquid, a second liquid being contained in said sealed chamber, means for positioning said sealed chamber within the cell in a stable supported position therein such that a perforator can penetrate in sequence through the sheet, said sealed chamber and the bottom of the cell to cause the liquids from the sealed chamber and the cell to flow from the bottom of the cell.

4,111,305
PACKAGED DINNER SERVING TRAY
Claude E. Thomas, 7066 Stone Brook, West Bloomfield, Mich. 48010
Filed Sep. 21, 1977, Ser. No. 835,055
Int. Cl.² B65D *1/34*
U.S. Cl. 206—563 **5 Claims**



1. A serving tray for holding a packaged dinner tray with the packaged dinner tray having a predetermined shape and an outwardly extending peripheral flange, said serving tray being generally rectangular in shape and having a central cavity formed therein, said central cavity being a preselected shape similar to the predetermined shape of the dinner tray whereby the dinner tray can be received in said cavity, said cavity having a flat lower wall to support the bottom of said packaged dinner tray against buckling and puncture during use, said lower wall terminating in upwardly formed side walls to define said cavity side walls terminating in a planar upper surface surrounding said cavity, said planar upper surface being generally parallel to said lower wall and forming an upper support surface for said dinner tray peripheral flange, four outer side walls depending downwardly from said upper surface, said four outer side walls terminating in a transversely extending lower peripheral flange, support surfaces defined by said lower peripheral flange at the juncture of adjacent ones of said outer side walls said lower wall being spaced upwardly from said support surfaces such that when said serving tray is placed on a table said lower wall is out of contact from the table top to avoid condensation or other damage to said table top, and an elongated notch formed in each of at least two opposed of said side walls to provide the dual functions of (a) permitting gripping of said tray by the user thereof and (b) to permit air to circulate freely from outside of said tray to the underside of said flat lower wall to remove condensation thereform.

4,111,306
SELF-CONTAINED BAKING TRAY CARTON
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed May 18, 1977, Ser. No. 798,025
Int. Cl.² B65D *25/14, 5/22*
U.S. Cl. 206—611 **5 Claims**



1. A self contained baking tray having expandable sidewalls comprising: a tubular container having a hingedly connected

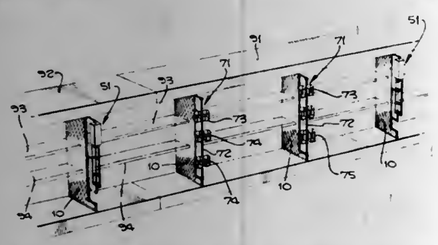
bottom panel, top panel, opposed sidewalls and opposed end walls, said top panel having a perforated tear out portion extending along the longitudinal axis of the container, intermediate the longitudinal edges of said top panel, said top panel further including two pairs of perforations, one perforation of each pair extending from said tear out portion to an opposite longitudinal edge of said top panel; each of said end walls being of a multilayered construction including an inner panel hingedly connected to said bottom panel, a flap member hingedly connected to the top portion of said inner panel and outwardly folded thereover to form a sliding space intermediate said inner panel and said flap member, and an outer panel hingedly connected to said top panel and overlapping its respective flap member and inner panel, said inner panel further including a pair of spaced slots along the top portion thereof; each of said end walls further including a pair of locking flanges, each locking flange being hingedly connected to one of said sidewalls, each of said locking flanges being disposed in the sliding space intermediate its respective inner panel and flap member, each of said locking flanges including a locking tip aligned with one of the spaced slots of its respective inner panel, whereby after the tear out portion of the top panel is removed, each of said side panels may be pivoted outwardly with said locking flanges sliding in their respective sliding spaces until their respective locking tips contact the end of their respective slots thereby providing an enlarged baking tray container.

4,111,307

DISPLAY SUPPORTING MERCHANDISE SECTION DIVIDER

Albert L. Peggs, San Dimas, Calif., assignor to The Peggs Company Inc., Azusa, Calif.

Filed Jun. 3, 1977, Ser. No. 803,043
Int. Cl.² A47F 3/08, 5/02
U.S. Cl. 211—1.5 **8 Claims**



1. A merchandise section divider for supporting one of a plurality of display units and comprising a divider frame, a divider panel within the frame, said panel and frame defining a divider of substantially flat, planar configuration, a display unit, a pair of static mounts on the frame extending within the plane defined by the divider for releasably attaching a static display unit to the frame, a pair of pivot mounts on the frame extending within the plane defined by the divider for releasably attaching a pivotal display unit, and attachment means on each display unit adapted to join a pair of said mounts for releasably alternatively attaching a display unit to the divider.

4,111,308

CASSETTE TAPE CARTRIDGE HOLDER

James L. Brown, 1227 West Cabrini Apt. 901, Chicago, Ill. 60607

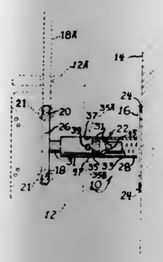
Filed Jan. 14, 1977, Ser. No. 745,266
Int. Cl.² B65D 85/672; A47F 7/00
U.S. Cl. 211—59.1 **8 Claims**

1. A holder for cassette tape cartridges having a pair of oppositely-disposed spaced-apart openings comprising:

a base;

a pair of spaced-apart fingers for receiving the pair of spaced-apart openings in the cassette tape cartridges to support them; and

connecting means attaching the rear end portions of said fingers to said base and spacing said rear end portions of said fingers apart by a distance substantially equal to the



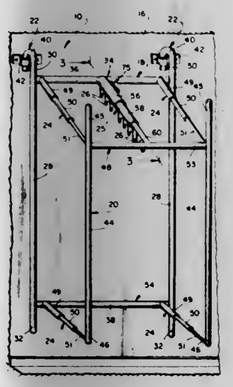
distance between the spaced-apart openings in the cartridges for enabling said fingers to extend forwardly from their said rear end portions toward one another convergingly in a common plane to provide spring tension between them when the cartridges are disposed thereon.

4,111,309

ADJUSTABLE GARMENT ASSEMBLY

Edgar Henry, 54-15 108th St., Corona, N.Y. 11368

Filed Apr. 26, 1977, Ser. No. 791,028
Int. Cl.² A47F 7/24
U.S. Cl. 211—104 **32 Claims**



1. An adjustable garment assembly comprising in combination:

a. an inner frame,

b. mounting means for removably securing said inner frame to a door or the like,

c. an outer frame,

d. coupling means extending between said inner frame and said outer frame,

e. said coupling means comprising expandable sections connected at one end thereof to said inner frame and at the opposite end thereof to said outer frame so as to obtain adjusted positions of said outer frame relative to said inner frame,

f. supporting means extending between said inner frame and said outer frame and having a plurality of hooks extending downwardly therefrom for receiving hangers thereon,

g. said supporting means being longitudinally movable to different positions in conjunction with said coupling means,

h. said inner frame includes a pair of spaced apart vertically extending inner frame members having upper and lower ends,

i. inner connecting means extending between said inner frame members for rigidly securing said inner frame members together,

j. said inner connecting means includes an upper extending element and a lower extending element, said elements connected at their respective ends to said inner frame members such that a rigid structure is formed, and

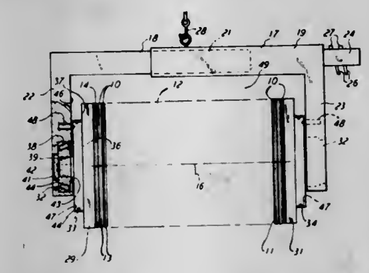
k. said mounting means includes a hook extending from each said upper end of said inner frame members.

4,111,310

SIGNATURE BUNDLE HOIST CLAMP WITH PIVOT

Walter John Stobb, R.D. 1, Box 60, Pittstown, N.J. 08867

Filed Apr. 25, 1977, Ser. No. 790,314
Int. Cl.² B65G 7/00
U.S. Cl. 214—1 QD **5 Claims**



1. A signature bundle hoist clamp with pivot, comprising a bundle of signatures stacked in side-by-side arrangement and having signature folds and unfolded edges along opposite sides of the bundle, an end support on each opposite end of the bundle, a C-clamp extending along the bundle and having two legs disposed at respective opposite ends of the bundle and respectively spaced from said supports, a bearing plate disposed in each space between each said leg and each said support and each said plate having a planar surface faced toward the respective said support and in contact therewith, a combined thrust and axial bearing attached with each said bearing plate and interposed between each said leg and each said bearing plate for rotatable support of said bearing plates on said legs and for pressing said supports toward each other and thereby compressing the signatures in the bundle and with said bearings being axially aligned for rotational support of the bundle about its longitudinal axis to thereby provide for turning of the bundle to selectively position the folds of the signatures, interengaging self-releasing alignment means operatively associated with each of said legs and each of said bearing plates for releasably rotationally securing said bearing plates relative to said legs and thereby have said said signatures oriented with the folds and unfolded edges disposed to position the bundle with selectively either the folds or the unfolded edges.

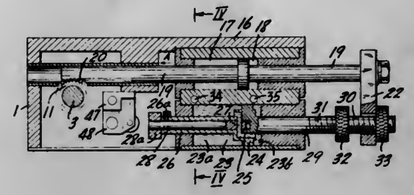
4,111,311

MATERIAL HANDLING UNIT

Hideo Hirama, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Sep. 17, 1976, Ser. No. 724,313
Claims priority, application Japan, Sep. 17, 1975, 50-127771
Int. Cl.² B25J 9/00
U.S. Cl. 214—1 BC **4 Claims**

1. A material handling unit comprising a movable manipulator for gripping the material and moving it from one position to another, a driving cylinder and a piston reciprocable in said cylinder for driving said manipulator and having a piston rod extending from said cylinder, abutment means for setting the limits of movement of said manipulator, single dashpot means for applying a damping force to said manipulator to decelerate said manipulator before it reaches the limits of its movement, said dashpot means comprising a dashpot cylinder disposed parallel to said working cylinder and having cylinder heads at opposite ends thereof, hydraulic fluid filling said dashpot cylinder and sealed therein, a piston reciprocable in said dashpot cylinder, first and second piston rods of like diameter extending in opposite directions from said piston and through said cylinder heads respectively, spaced abutments adjustably fixed on said first piston rod outside said dashpot cylinder, a connecting member on said piston rod of said driving cylinder



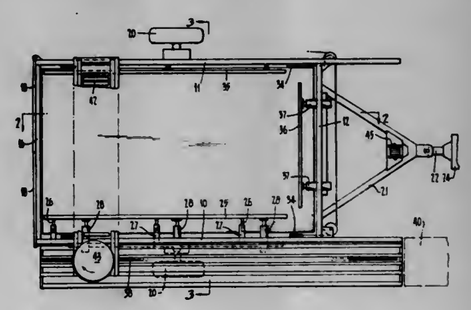
engageable with said spaced abutments for adjusting the operating range of said dashpot means to determine the range of movement of said manipulator in which said damping force is applied, said piston of said dashpot cylinder having a passage extending from one side to the other side thereof, valve means in said passage for adjustably restricting said passage and means extending through said second piston rod for controlling said valve means to adjust the damping force applied to said manipulator by said dashpot means.

4,111,312

TRANSPORT VEHICLES

Leslie Henry Wilson, 28 Gould St., Frankston, Australia

Filed Jan. 25, 1977, Ser. No. 762,303
Claims priority, application Australia, Jan. 27, 1976, 4626/76
Int. Cl.² B65G 57/32
U.S. Cl. 214—6 B **5 Claims**



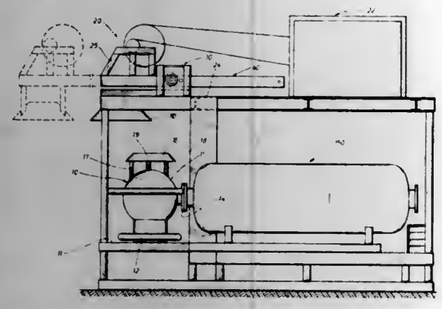
1. A transport vehicle of the kind having a body supported on transport wheels, a vertically movable floor, and raising and lowering means therefor, said body being open at the back and comprising spaced side walls and a front wall, and including a horizontally disposed barrier member arranged inwardly of and adjacent and parallel to, each of the side walls, thereby to define the respective sides of an interior space within which bales or other articles may be stacked on and over the floor to form a layer upon said floor, said barrier members being arranged within the upper part of the body so as to be movable inwardly and outwardly above the floor when the latter is in its uppermost operative position, and power actuated means operable to move at least one of said barrier members inwardly, thereby to push said bales or other articles closer together after formation of each layer.

4,111,313

DIVING BELL HANDLING SYSTEM AND METHOD

Max A. W. Reiher, Mandeville, and Richard C. Faust, New Orleans, both of La., assignors to J. Ray McDermott & Co., New Orleans, La.

Filed May 6, 1977, Ser. No. 794,583
Int. Cl.[2] B63B *35/40*
U.S. Cl. 214—15 R 16 Claims



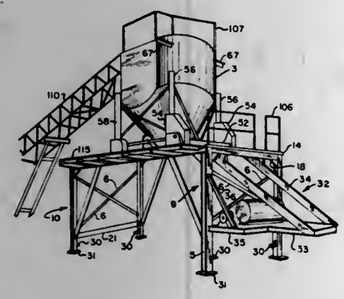
7. A system for handling submarine vehicles comprising:
- a frame mounted on a marine station for horizontal movement between a first stabilized extended position over the water and a second retracted position over a deck of the station;
- a frusto-conical superstructure mounted on the submarine vehicle;
- a cone member secured to said frame and having a downwardly opening frusto-conical inner surface having an angular pitch corresponding to the angular pitch of said superstructure;
- means on said frame for directing a hoist cable into communication with the submarine vehicle for lifting the vehicle along a vertical path wherein said superstructure substantially aligns with said cone member inner surface;
- locking means for securing said superstructure to said member when they are fully engaged with the inner surface of said cone member lying in a close relation to the outer surface of said superstructure.

4,111,314

TRANSPORTABLE SILO

Richard L. Nelson, Princeton, Ill., assignor to Walnut Sand & Gravel Co., Princeton, Ill.

Filed May 18, 1977, Ser. No. 797,993
Int. Cl.[2] B65G *65/40*
U.S. Cl. 214—17 A 5 Claims



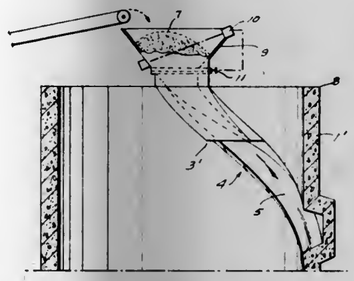
1. A transportable storage and dispensing silo assembly comprising a self-supporting structure including spaced supporting posts and a platform connected to and supported by said posts, said platform having laterally spaced side members and longitudinally spaced end members connecting said side members and defining an opening in said platform; bearing means mounted on and extending above said side memebers; trunions, journaled in said bearing means; a silo, mounted on said trunions for pivotal movement between an erected position wholly above said platform and a lowered, transport position at least partly within the said platform opening, means mounted on said structure for moving said silo between erected and lowered positions, and means for selectively mounting said structure on and demounting said structure from wheels whereby said structure can be transported.

4,111,315

BULK-STORAGE RECEPTACLE WITH HELICAL CHUTE

Paul Hungerbach, Essen-Bredeney, Germany, assignor to Thyssen Schachtbau GmbH, Mühlheim, Ruhr, Germany

Filed Mar. 7, 1977, Ser. No. 775,403
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 7607102[U]; Mar. 9, 1976, 7607103[U]; Mar. 10, 1976, 2609797
Int. Cl.[2] B65G *11/06*
U.S. Cl. 214—17 C 26 Claims



1. A bulk-storage receptacle comprising:
- a structure formed with an upright wall defining a storage chamber for flowable bulk material;
- means forming a helical chute opening toward said chamber and spiraling downwardly along said wall, said helical chute having a ramp receiving said material and extending generally transversely to said wall while being formed with a first tangential inclination and a first radial inclination;
- a peripherally closed inlet chute disposed above said helical chute for feeding bulk material to said helical chute; and
- a transition region between said inlet chute and said helical chute provided with a ramp delivering said bulk material to said inlet chute, the ramp of said transition region having a tangential angle varying continuously from a second tangential inclination adjacent said inlet chute to said first tangential inclination at said helical chute; said ramp of said transition region merging into said ramp of said helical chute and having over the entire length of said transition region a slope greater than the critical friction angle for said material.

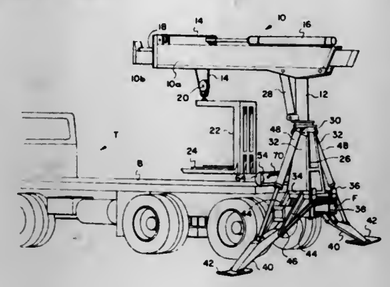
5. The bulk-storage receptacle defined in claim 1, further comprising a storage hopper on an upper end of said inlet chute, control means between said hopper and said inlet chute for metering said material into said inlet chute, and level-responsive means in said hopper for monitoring the level of material therein to operate said control means.

4,111,316

TRUCK MOUNTED HOIST

Joachim Harold Richard Wappler, 317 Kenollie Rd., Mississauga, Canada

Filed Apr. 11, 1977, Ser. No. 786,281
Claims priority, application Canada, Apr. 13, 1976, 250198
Int. Cl.[2] B60P *1/54*
U.S. Cl. 214—75 H 3 Claims



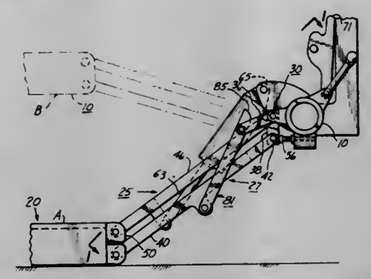
1. Hoist apparatus of the type adapted to be mounted on a truck adjacent the truck bed, leaving the truck bed clear, for use in unloading or loading the truck or the like, and comprising;
- boom means;
- hoist means on said boom means;
- a vertical support column, said boom means being swingably mounted on the upper end of said column, and said support column being rotatably mounted for rotating said boom means and said column in unison;
- drive gear means located adjacent the lower end of a said support column for rotating the same;
- rack means meshing with said drive gear means and moveable to and fro along a linear path relative to said drive gear;
- a non-rotatable vertically oriented housing means supporting and enclosing a portion of said vertical column and said gear means adapted for mounting in fixed position on a portion of said truck, and supporting said vertical column along a substantial portion of its length;
- power operated means connected with said rack means, and mounted on said housing, for driving said rack means to and fro thereby rotating said support column and said boom means in unison on either side of said truck bed further said power operated means includes a cylinder means; a protective shield member covering a portion of said power operated means, said shield member being in the shape of a shell having a semi-circular cross section and covered at each end by a plate having the shape of a half circle such that the plane of the open portion of said shield member bisects said cylinder means along its longitudinal axis, said rack means comprises an elongated linear rack member having tooth means on one side, adapted to engage said drive gear means, the other side of said rack member being flat and smooth, said rack member being located within said cylinder means and moving along a predetermined linear reciprocal path to and fro therewithin, and including a pressure pad located within said cylinder means and engaging said flat, smooth side of said rack member for holding the same with said tooth means in engagement with said drive gear means, said pad having a substantially rectangular contact surface with said flat, smooth side of said rack member, and adjustment means including two adjustable threaded means for adjustment of the pressure applied by said pressure pad on said rack member, further said protective shield member having an opening to permit access to said adjustment means;
- supporting frame members forming part of said housing means for supporting vertical column, and extending from a lower portion of said housing means at an angle downwardly on opposite sides thereof;
- ground engaging strut means swingably attached to the lower outer ends of said frame members, and,
- power cylinder means extending between the upper end of said housing means above said frame means and respective said strut means, operation of said power cylinder means swinging said strut means between upwardly angled disengaged positions and downwardly angled ground engaging positions, said power cylinder means thereby directly supporting and stabilizing the upper end of said vertical housing and said column enclosed therein against heavy loads applied at the end of said boom means, when said boom means are swung outwardly on one or other side of said truck.

4,111,317

PLATFORM LIFT

Morris D. Robinson, 179 Via Los Mira Dores, Redondo Beach, Calif. 90277

Filed Aug. 29, 1977, Ser. No. 828,814
Int. Cl.[2] B60P *1/48*
U.S. Cl. 214—77 P 14 Claims



1. A platform lift for operation relative to support structure comprising: a platform adapted to assume a first substantially horizontal lower position, a second substantially horizontal upper position, and an upper erect position; hinge means attachable to the attachment member and to the platform for moving a platform selectively between the said positions, said hinge comprising a parallelogram linkage including a base link pivotally mounted to a principal pivot, said pivot being adapted to be attached to the support structure, a first parallelogram link pivotally connected to said base link at a point spaced from the principal pivot, a second parallelogram link pivotally connected to the principal pivot, the pivots of the first and second parallelogram link being substantially equally spaced apart, and a platform link mounted to the platform and pivotally connected to both of two parallelogram links at a space substantially equal to that of the spacing of pivots on the base link, whereby to form said parallelogram linkage; motor means connected to said support structure; limit means adapted to be connected to said support structure for determining the angular position of the base link in one mode of operation; and restraint means for determining the parallelogram configuration in another mode of operation, said restraint means comprising a member having a contact surface adapted to be connected to said support structure, and a scissor linkage having a first and second scissor link respectively pivotally connected to the first parallelogram link and adapted to be pivotally connected to the support structure, said scissor links being pivotally joined by last named hinge means, said hinge means being adapted to contact said contact surface in one position of the restraint means, said restraint means bing removable from said position.

4,111,318

LOADING AND UNLOADING APPARATUS FOR VEHICLES

David Edward Lutz, 300 Washington La., Carlisle, Pa. 17103

Continuation of Ser. No. 543,608, Jan. 23, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,406
Int. Cl.[2] B60P *1/36*
U.S. Cl. 214—83.22 23 Claims



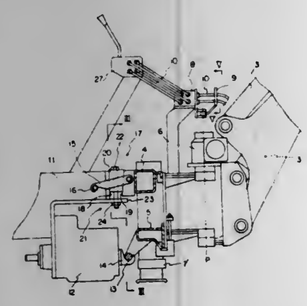
1. A loading and unloading apparatus for a vehicle having a framework, a load carrying floor mounted on said framework, said floor having front and rear ends and a top surface, a set of load supporting flexible strands on said floor extending from first ends longitudinally of said floor over said rear end and in the reverse direction terminating in second ends beneath said floor, a second set of cables extending from first ends on said floor over said front end of said vehicle and in the reverse direction terminating in second ends, interconnecting means connecting the first ends of said sets of strands, first and second drive means positioned beneath said floor, and means connecting said second ends of said first and second sets of strands to said first and second drive means, means for selectively actuating said drive means whereby said load supporting strands are caused to move longitudinally over said floor to move loads supported thereby over said floor, and means for insuring even takeup of said set of load supporting strands.

4,111,319

APPARATUS FOR LOADING AND UNLOADING A WORKING MACHINE TO AND FROM MAIN EQUIPMENT

Hideaki Matsuyoshi; Kazushige Mori, and Yukio Shimono, all of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jun. 21, 1977, Ser. No. 808,522
Int. Cl.[2] E02F *3/72*
U.S. Cl. 214—131 A 4 Claims



1. An improved apparatus for loading and unloading a working machine to and from main equipment, comprising:

main equipment (1) provided with a pair of upper and lower supporting members (11) and (12);

a hydraulically operated working machine (2) provided wth a pair of upper and lower fixtures (4) and (5) in a position corresponding to said upper and lower supporting members (11) and (12);

engagement projections (16) disposed at said upper supporting member (11);

engagement hooks (14) disposed at said lower supporting member (12);

latch arms (15) disposed at said upper fixture (4) and adapted to engage said engagement projections (16);

fitting pins (13) disposed at said lower fixture (5) and adapted to engage said engagement hooks (14);

said improvement comprising:

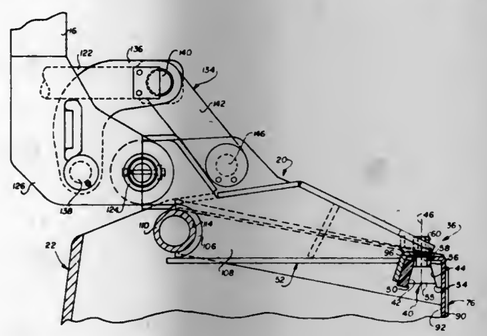
a wedge assembly means employing a slidably disposed member formed to move within a pre-defined spaced formed between a support member having a vertically oriented end surface and an upper fixture having an inclined end surface; a support plate disposed below said support member and upper fixture extending beneath said pre-defined space for defining the extent of downward travel of said slidably disposed member; fastening means in working relationship with said slidably disposed member, for defining the extent of vertical travel within said predefined space, said fastening means being formed to co-act with said support member; latch means pivotally affixed to said upper fixture; projection means projecting from said support member adapted to engage a working end of said latch means, whereby downward movement of said slidably disposed member urges said latch means to be placed into tension in response to the respective movement of said support member and said upper fixture.

4,111,320

MATERIAL HANDLING APPARATUS HAVING MEANS FOR CONNECTING MATERIAL HANDLING TOOL WITH A BOOM

Robert D. Breeding, New Philadelphia, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Mar. 23, 1977, Ser. No. 780,316
Int. Cl.[2] E02F *3/96*
U.S. Cl. 214—145 A 9 Claims



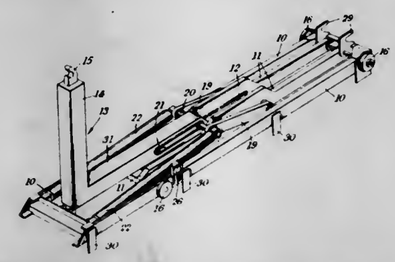
5. A material handling apparatus comprising a boom, adapter means connected with an end portion of said boom for engaging a material handling tool, said adapter means having a bottom surface area, a material handling tool having a top surface area adapted to engage said bottom surface area of said adapter means, and connector means for releasably interconnecting said adapter means and said material handling tool with said top surface area of said material handling tool in abutting engagement with said bottom surface area of said adapter means, said connector means including a wedge member having first and second opposite side surfaces extending at an acute angle relative to each other, a first wedge surface area fixedly connected with said material handling tool and extending transversely to said top surface area of said material handling tool, a second wedge surface area connected with said adapter means and extending transversely to said bottom surface area of said adapter means, said first and second wedge surface areas extending at the same acute angle relative to each other as do the first and second side surfaces of said wedge member, and fastener means for moving said wedge member relative to said first and second wedge surface areas to move said side surfaces on said wedge member into tight abutting engagement with said first and second wedge surface areas, for pressing said top surface area of said material handling tool into tight abutting engagement with said bottom surface area of said adapter means, and for preventing relative movement between said first and second wedge surface areas and said wedge member upon application of operating loads to said material handling tool, said fastener means including a member connected with said wedge member at a location between said first and second wedge surface areas and extending through openings formed in said top and bottom surface areas of said material handling tool and adapter means.

4,111,321

MECHANISMS FOR LOADING AND UNLOADING CONTAINERS ONTO AND FROM A VEHICLE

Raymond George Webster, Bolton, England, assignor to Edbro Limited, Lancashire, England

Filed Dec. 30, 1976, Ser. No. 755,469
Claims priority, application United Kingdom, Jan. 9, 1976, 872/76
Int. Cl.[2] B60P *1/14*
U.S. Cl. 214—501 22 Claims



1. A mechanism for loading and unloading a container onto and from a vehicle, the mechanism comprising:

a member having one end thereof adapted for releasable connection to the container;

pivot means mounted at an end of the member opposite to said one end;

an elongated guide means adapted to be connected to the vehicle and in which the pivot means is movable;

link means which towards one end thereof is pivotally mounted on the guide means;

second pivot means carried by the link means towards an end thereof opposite said one end of said link means;

a second guide means on the member in which the second pivot means are movable;

a first actuator means acting on the first mentioned pivot means to move the member and the first mentioned pivot means between a loaded position and an unloading position in which the first mentioned pivot means are held against further movement along the guide means with the engagement between the first mentioned pivot means and the first mentioned guide means and the second pivot means and the second guide means constraining the member to a fixed path between the loaded and unloading positions;

a second actuator means which acts on the member and which with the member in the unloading position, is operable to pivot the member about the first mentioned pivot means and the link means about the second pivot means; and

whereby the member in moving from the loaded position to the unloading position moves the container from a position in which the container is mounted on the vehicle for transport thereby, to a position in which, as the member in the unloading position is pivoted by the second actuator means, the member lifts and unloads the container from the vehicle, the operation of the first and second actuator means being reversible to load the container onto the vehicle.

4,111,322

SYNTHETIC PLASTIC CAP FOR BOTTLES

Albert Obrist, Therwilerstrasse 12, 4153 Reinach, Switzerland, and Dietmar Aichinger, Arlesheim, Switzerland, assignors to Albert Obrist AG, Reinach, Switzerland

Continuation-in-part of Ser. No. 689,920, May 25, 1976, abandoned. This application Jan. 7, 1977, Ser. No. 757,691
Int. Cl.[2] B65D *41/00*
U.S. Cl. 215—230 8 Claims



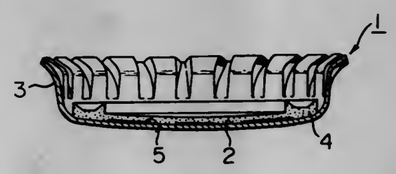
1. Synthetic plastic closure cap for bottles, consisting of a cylindrical part and a top plate integral therewith, the upper side of which bears printed material, characterised by an elevated portion provided on the upper side and extending approximately concentrically with said cylindrical part in the marginal region of the upper side of said top plate and surrounding said printed material so as to provide protection of the printed material against mechanical damage, the elevated portion rising gradually at such a shallow angle that even the elevated portion is readily printable at least in a partial zone thereof.

4,111,323

CROWN CLOSURE

Isao Ichinose; Mitsuhiro Sakemoto, both of Hiratsuka, and Noboru Suzuki, Chigasaki, all of Japan, assignors to Japan Crown Cork Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1977, Ser. No. 774,651
Claims priority, application Japan, Mar. 17, 1976, 51-28121; Apr. 23, 1976, 51-45436
Int. Cl.[2] B65D *41/12*
U.S. Cl. 215—230 10 Claims



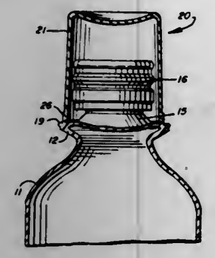
1. A crown closure having a removable polyolefin liner, said crown closure comprising a crown shell having a primer layer on its inner surface and the polyolefin liner applied to the inside of said crown shell, characterized in that said primer layer is a two-component priming consisting of an under coat layer containing a polyethylene oxide and a top coat layer containing a polyethylene oxide and at least one other compatible resin, with the provision of a printing layer of indicia at the interface between said under coat and top coat layers or atop said top coat layer.

4,111,324

HERMETICALLY SEALED TAMPERPROOF PORT PROTECTOR

David A. Winchell, Twin Lakes, Wis., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 14, 1977, Ser. No. 777,748
Int. Cl.² B65D *41/00*
U.S. Cl. 215—232 7 Claims



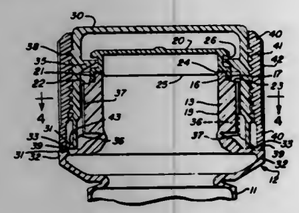
1. A container having a neck portion surrounding an outlet, the improvement comprising a cup-shaped protective closure covering said outlet, said protective closure having a body portion bonded to the neck portion and defining a frangible section adjacent to the bond, said protective closure forming a sterile hermetically sealed environment over the outlet capable of withstanding normal pressure differential stresses, said protective closure having a length to diameter ratio providing good mechanical advantage leverage to rupture the frangible section when the protective closure is pushed sideways.

4,111,325

SEALED CLOSURE FOR PLASTIC CONTAINER WITH INTERLOCKING PROTECTIVE OUTER CLOSURE

David Bellamy, Kenilworth, Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 777,749, Mar. 14, 1977, abandoned. This application Jan. 23, 1978, Ser. No. 871,320
Int. Cl.² B65D *41/32*
U.S. Cl. 215—232 11 Claims



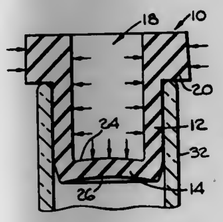
1. An improvement in a container having a hermetically sealed primary cap and overcap for storing and dispensing sterile liquids, which includes a thermoplastic bottle with a dispensing outlet, said bottle and overcap forming a unit that has a transverse abutment means surrounding the outlet, said improvement comprising, in combination: a bottle neck with a pouring lip surrounding the dispensing outlet; a primary cap including a top wall and an area hermetically fused to said bottle neck closing the dispensing outlet and having a thin frangible section at said fused area; an overcap covering said primary cap and bottle neck and having an area hermetically fused to said container proximate said abutment means and provided with a thin frangible section at said fused area; an outer ring over said overcap and overlying said transverse abutment means; interlocking means interconnecting said primary cap and said overcap limiting relative axial movement thereof, whereby upward axial movement of said overcap will jack said primary cap off said bottle neck; interlocking means interconnecting said overcap and said bottle neck limiting relative rotational movement thereof; and jacking means interconnecting said outer ring and said overcap, whereby rotation of said outer ring against said transverse abutment means moves said overcap axially upwardly to sever said frangible sections.

4,111,326

CLOSURE FOR AIR EVACUATED CONTAINER

Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Continuation-in-part of Ser. No. 663,921, Mar. 4, 1976, abandoned. This application Oct. 5, 1976, Ser. No. 729,643
Int. Cl.² B65D *47/36*
U.S. Cl. 215—247 7 Claims



1. A cannula-pierceable, self-sealing, gas-proof closure for sealing an open end of an air evacuated blood collection tube, which comprises;

(a) a tubular elastomeric body having
  (i) flexible, elastic sidewalls;
  (ii) an open first end; and
  (iii) a closed second end formed by a cannula pierceable, flexible, elastic end wall integral with said sidewalls; and

(b) a flange disposed radially about the periphery of said sidewalls adjacent to said first end; said end wall having a convex inner surface and a concave outer surface when pressure on inner and on outer surfaces is equal, said tubular body having a diameter which bears a ratio to the height of the body of about 0.8:1 and to the thickness of the second end of from 5.4:1 to 12.1:1; whereby when the closure is emplaced in and sealing an open end of an air-evacuated tube, the higher pressure on the convex inner surface of the end wall as compared to the lower pressure (vacuum) exerting itself on the concave outer surface creates a pressure differential on the end wall, flexing and flattening the concavo-convex configuration and creating a radial force directed toward the periphery of the end wall, said force affecting a restraining and sealing force between the closed second end of the elastomeric body and the air-evacuated tube.

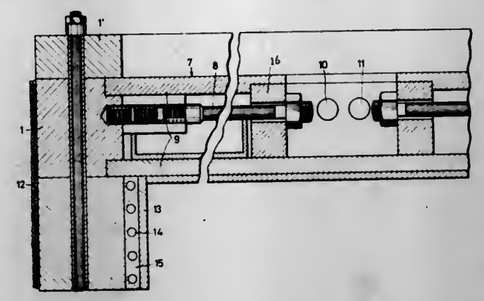
4,111,327

PRESSURE VESSEL

Nikolai Janakiev, Frankenring 44, 4150 Krefeld, Fed. Rep. of Germany

Filed Jan. 27, 1976, Ser. No. 652,853
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1975, 2503511
Int. Cl.² B65D *45/02, 45/32*
U.S. Cl. 220—3 5 Claims

1. A pressure vessel comprising: a cylindrical wall formed of courses of a plurality of flat circularly arcuate segmental plates each plate being axially traversed by a plurality of openings disposed in a symmetrical pattern or array at least some of the holes in adjacent courses being in alignment, and wherein the ends of the plates in each course overlap the ends of the plates in an adjacent course, and wherein locating sleeves are inserted in said aligned openings, and through each of the said locating sleeves prestressing means selected from a tensioning cable and a tie rod is extended and is secured at the top and the bottom of said wall; a double-walled floor extending across said cylindrical wall inserted in a said course adjacent the bottom, said



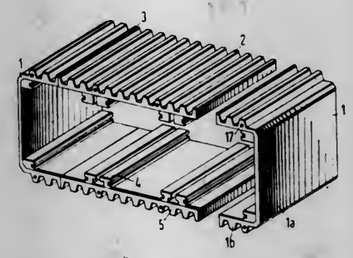
double-walled floor containing a prestressing element radially extending from a said wall plate to securing means in said floor and adjustable tensioning means for adjusting the tension in said prestressing element; and a double-walled cover extending across said cylindrical wall adjacent said top.

4,111,328

PREFABRICATED HOUSING FOR ELECTRICAL COMPONENTS

Hans Joachim Eggert, Karlsfeld; Otto Oberberger, Gilching; Heinrich Zenkert, and Rudi Kühne, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 7, 1976, Ser. No. 684,080
Claims priority, application Fed. Rep. of Germany, May 26, 1975, 2523292
Int. Cl.² B65D *7/00;* H02G *3/08;* B65D *7/42*
U.S. Cl. 220—4 R 1 Claim



1. A housing construction for electrical components comprising

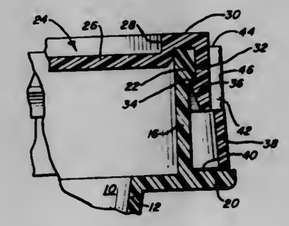
(A) two spaced, opposed, flattened side wall members;
(B) two spaced, opposed, flattened end wall members;
(C) each one of said side wall and end wall members being an extruded profile comprised of an aluminum alloy;
(D) each one of said side wall members being further characterized by having integrally defined therein a plurality of spaced, parallel channel members which extend through and thereacross, and also a plurality of spaced, parallel T-grooves which extend thereacross, said T-grooves being in spaced, parallel alternating relationship with said rib members and being defined in a common face thereof;
(E) each one of said end wall members being further characterized by having transversely extending across each one of a pair of opposed edge portions thereof, a surface portion which terminates along a common face thereof and which is also defined to make a mating and abuting engagement with one of a pair of opposed end edge portions of each one of said side wall members;
(F) wall joining means mounting said side wall members in such engagement with said end wall members and which screens the resulting joints against electromagnetic fields and also seals said resulting joints against penetration of water and water vapor;
(G) said T-grooves being adapted to receive therein slidably nut means of bolt and nut assembly means; and
(H) said channel members being adapted to stiffen said housing construction and to dissipate heat generated therewithin.

4,111,329

CONTAINER WITH TAMPERPROOF AND STACKABLE LID

John Edward Lampman, 117 W. Walnut Ave., Moorestown, N.J. 08057

Filed Sep. 19, 1977, Ser. No. 834,113
Int. Cl.² B65D *41/32*
U.S. Cl. 220—266 12 Claims



1. A container and cap assembly, including a container having an opening defined by an annular rim; a cap having a closed top portion and an annular skirt depending therefrom, said skirt having an internal dimension cooperative with the external dimension of said annular rim so as to overlie said annular rim snugly, the improvement comprising, in combination: a peripheral flange carried by said rim and extending radially outwardly therefrom, said peripheral flange being positioned to underlie said annular skirt and be adjacent thereto so as to prevent lifting of said cap off said rim when said cap is in a closed position on said rim and overlying said peripheral flange; said skirt comprising an upper portion and a lower portion with the lower portion being adapted to be torn away from the upper portion by an operator to enable access to the skirt, permitting the cap to be removed from the container; a plurality of frangible ribs connecting the upper portion of the skirt to the lower portion thereof, said frangible ribs extending radially outwardly from the upper portion; and means for enabling access to the lower portion, said enabling means being dimensioned so as not to protrude from the lower portion.

4,111,330

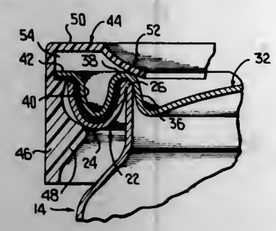
RECLOSABLE VACUUM CONTAINER

Thomas F. Jordan, Oak Park, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,108
Int. Cl.² B65D *41/16*
U.S. Cl. 220—306 18 Claims

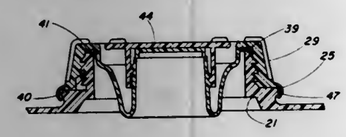
1. A reclosable container comprising a container body having an open end defined by a peripheral finish, said finish extending outwardly of an adjacent portion of said container body and defining a shoulder, said finish defining a continuous sealing cavity facing away from said shoulder, a closure member, said closure member having a peripheral depending rib seated in said sealing cavity, and a retaining ring releasably securing said closure member to said container body, said

retaining ring having a flange overlying said closure member and a depending skirt surrounding said peripheral finish, said



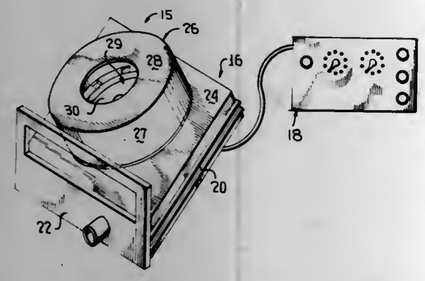
skirt including an inwardly directed projection underlying said shoulder.

4,111,331
TAMPER-PROOF CLOSURE DEVICE
Kenneth L. Summers, Angola, Ind., assignor to Riehe Corporation, Auburn, Ind.
Filed Aug. 4, 1977, Ser. No. 821,802
Int. Cl.² B65D *45/32*
U.S. Cl. 220—319 **22 Claims**



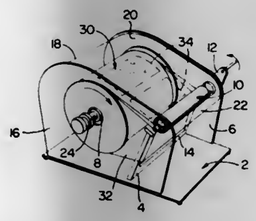
1. A tamper-proof closure device for use with containers which comprises:
an internally threaded and closed cap member having a flared annular skirt portion around its base;
a crimping ring shaped into a retained position around said cap member and overlapping said flared annular skirt portion; and
said crimping ring being deformable to press said flared annular skirt portion into secured sealing engagement with a raised outlet in a suitable container such that said container is sealed closed.

4,111,332
ARTICLE COUNTING DEVICE
Kerney J. Hurst, Rte. 1, Box 172-L, and Walter G. Pearson, 104 Hilltop Dr., both of Pineville, La. 71360
Continuation of Ser. No. 288,737, Sep. 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 187,771, Oct. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 25,709, Apr. 6, 1970, abandoned. This application Dec. 16, 1974, Ser. No. 533,255
Int. Cl.² B65B *57/20*
U.S. Cl. 221—7 **37 Claims**



9. An article of commerce to be employed to dispense individually discrete objects comprising a circular flat disk having a top surface and a bottom surface, said bottom surface having a plurality of slots extending inwardly from adjacent the periphery of said disk and equally spaced from one another along said bottom surface, each said slot having a first and a second slot section, said first slot section lying closer to the center of said disk than said second slot section and having a length greater than half the length of the objects to be dispensed, said first slot section having a central axis lying at an acute angle with respect to a radius of said disk intersecting said axis, said slot extending outwardly in the direction in which said disk is to be rotated in use, said second slot section extending outwardly from said first slot section at a larger angle relative to said radius than said first slot section.

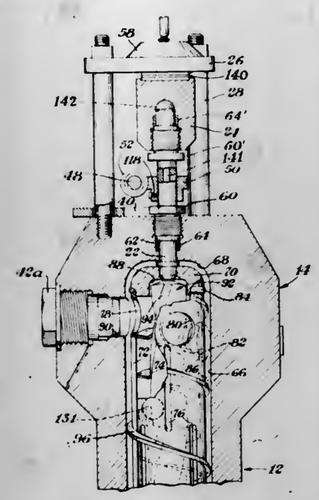
4,111,333
SLICE DISPENSER UNIT
Erik Bach Nörgaard, Auning, Denmark, assignor to Borden Ost A/S, Denmark
Filed Oct. 6, 1976, Ser. No. 729,985
Claims priority, application Denmark, Oct. 8, 1975, 4518/75
Int. Cl.² B65H *5/28*
U.S. Cl. 221—73 **20 Claims**



20. A dispenser unit for dispensing material from a supply roll which includes a rolled up length of a carrier sheet on which the material to be dispensed is placed, said dispenser unit comprising:
means for rotatably supporting said supply roll; and
means for guiding said carrier sheet from said supply roll and, after the material to be dispensed is removed from said carrier sheet, for guiding the carrier sheet back to and at least partially about said supply roll so that said carrier sheet covers and contacts the outside of at least a portion of said supply roll.

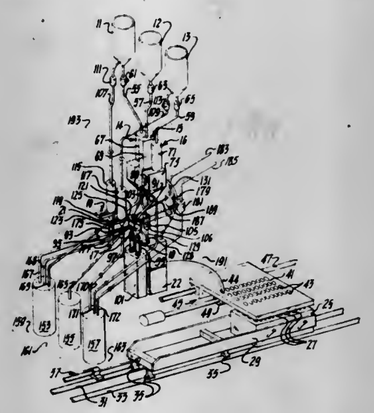
4,111,334
BALL INJECTOR
Fred M. Winn, Jr., Tulsa, Okla., and Monty E. Harris, Agua Dulce, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 8, 1976, Ser. No. 739,917
Int. Cl.² B65G *29/00*
U.S. Cl. 221—75 **8 Claims**

1. Apparatus for dispensing ball-like objects which comprises:
(a) a housing including an axially aligned tubular bore;
(b) a cylindrical rotatable tubular sleeve having an inwardly extending spiral element extending from one end of said sleeve to the other;
(c) a non-rotatable shaft having at least one helical rib, an upper end and a base end, said shaft being coaxially mounted within said sleeve to form a plurality of separate object receiving compartments;
(d) means including an array of sealable bores disposed around the circumference of said housing, said sealable bores extending through said housing and into said tubular bore and communicating with an alignable array of bores disposed in the upper end part of said rotatable tubular sleeve when said rotatable sleeve is in a predetermined position for introducing ball like objects into said compartments, and removable plug elements for sealing said bores;
(e) means for discharging said ball like objects from said compartments, and;



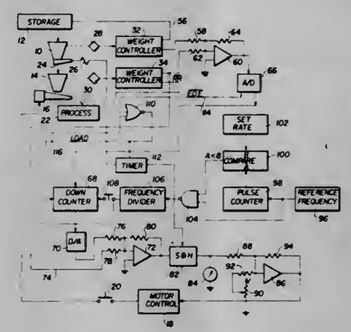
(f) means for rotating said sleeve whereby said compartments are successively aligned with said means for discharging said ball like objects from said compartments.

4,111,335
METERING SYSTEM
Satya Prakash Arya; Albert Stevens Ballard, and Stephen James Foster, all of San Diego, Calif., assignors to General Atomic Company, San Diego, Calif.
Filed Mar. 15, 1976, Ser. No. 667,026
Int. Cl.² B67D *5/08*; G01G *13/00, 17/04*
U.S. Cl. 222—57 **6 Claims**



1. A particle metering system comprising, first, second and third particle reservoirs, coarse feeder means for dispensing a predetermined volume of first, second and third types of particles from each of said reservoirs, respectively, means for weighing the volumetrically dispensed particles from said first and second reservoirs, first and second fine feeder means for dispensing an additional amount of first and second particles sufficient to equal a predetermined weight for each of the first and second particles, a volumetric chamber for receiving the first, second and third types of particles from said coarse feeder means and said first and second fine feeder means, means for volumetrically dispensing the third type of particles to said volumetric chamber in a quantity sufficient to establish a predetermined total volume of particles therein, and a particle drainage system and retrieval means for transporting the first and second particles to said drainage system when the weight of the volumetrically dispensed particles thereof is outside a predetermined range.

4,111,336
WEIGHT LOSS CONTROL SYSTEM
William H. Ward, Oak Ridge; Henry F. Henderson, Jr., West Paterson, and Kenneth H. Kardux, Wayne, all of N.J., assignors to H. F. Henderson Industries, West Caldwell, N.J.
Filed Apr. 14, 1977, Ser. No. 787,688
Int. Cl.² B65G *27/24*
U.S. Cl. 222—58 **14 Claims**



1. In a material feeding apparatus having a first storage means for storing a preselected weight of material, a transfer means at the outlet of said first storage means, a second storage at the outlet of said transfer means for storing material, a continuous feed means at the outlet of said second storage means and control means for operating said transfer means and said continuous feed means the improvement being said control means which comprises:
first measuring means for measuring the weight of material in said first storage means;
second measuring means for continuously measuring the weight of material in said second storage means;
logic means for providing a control signal for said continuous feed means as a function of the weight measurement of said second measuring means relative to the sum of weight measurements of said first and second measuring means prior to opening of said transfer means.

4,111,337
COFFEE BREWER WITH MEANS FOR DISPENSING CONTROLLED QUANTITIES OF HOT WATER
Edward Lerner, 3 Marshall St., Irvington, N.J. 07111, and John A. Ventura, 32 Jefferson St., Nutley, N.J. 07110
Filed Dec. 13, 1974, Ser. No. 532,366
Int. Cl.² B67D *5/62*
U.S. Cl. 222—146 HE **3 Claims**

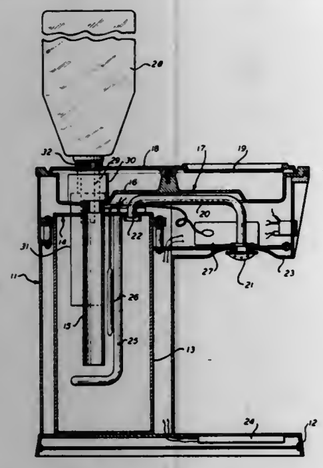
1. A coffee brewer with means for dispensing controlled quantities of hot water comprising:
(a) a first water tank,
(b) means for heating water in the tank,
(c) water inlet means connected to the tank,
(d) a water discharge conduit connected at one end to the tank, the opposite end of the conduit being at a level beneath the first said end thereof,
(e) a second water tank,
(f) a supply conduit separate from said water inlet means, said supply conduit connecting the first and second said water tanks, the end of the supply conduit in the first

water tank being at a level beneath the level of the end of the conduit in the said first water tank,

(g) The second water tank being closed except for said supply conduit and being positioned for gravity discharge into the said first water tank,

(h) a discharge conduit connected at one end to the first tank beneath the level of the end of the conduit therein,

(i) valve means operatively connected to the discharge conduit,



(j) a second supply conduit, the first said supply conduit extending therethrough, the second supply conduit extending downwardly into the first said tank to a level beneath the end of the first said supply conduit, and

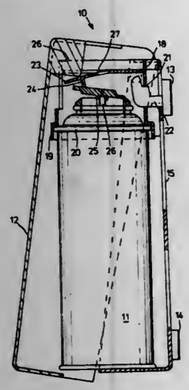
(k) air vent means in the second supply conduit above the level of the end of the first supply conduit in the first water tank.

4,111,338

WALL MOUNTED ACTUATOR FOR AEROSOL CAN

Robin Cheng, and Kenneth MacLean Cross, both of Penshurst, Australia, assignors to 3C Chemical Laboratories Pty. Limited, Penshurst, Australia

Filed Nov. 3, 1976, Ser. No. 738,211
Claims priority, application Australia, Mar. 16, 1976, PC5234
Int. Cl.² B05B *17/00*
U.S. Cl. 222—180 **4 Claims**



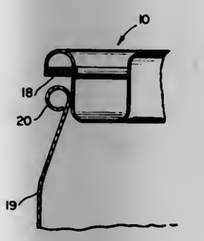
1. A combination to be mounted on a wall comprising a cap dimensioned to be fitted to and securely engage the top of a pressurized can with a dispensing nozzle, said cap having a flexible tongue to operate said nozzle; a holder dimensioned to surround and support within it the pressurized can with its dispensing nozzle, said holder having an outer casing of two parts, a pivot connecting the two parts thereby allowing limited pivotal movement between the two parts, one of the parts being adapted to engage said cap so as to support said can within said holder, and wherein the other of the two parts is provided with means to engage said tongue so that upon relative pivotal movement between said two parts beyond a predetermined position said means causes movement of said tongue to operate said nozzle to thereby release at least part of the contents from within said can via said nozzle.

4,111,339

MOUNTING CUP FOR AEROSOL VALVES

Ingo Schmidt, Grosshausen, Germany, assignor to Thomas GmbH, Langenselbold, Germany

Continuation of Ser. No. 139,403, May 3, 1971, abandoned. This application Jun. 7, 1974, Ser. No. 477,330
Claims priority, application Fed. Rep. of Germany, May 3, 1970, 2021643
Int. Cl.² B65D *83/14*
U.S. Cl. 222—394 **5 Claims**



1. A valve lid for spray nozzles comprising a cupola member having an annular base extending radially outwardly from the lowermost peripheral edge of the cupola, said cupola being provided with means for receiving a spray nozzle, an upstanding cylindrical wall integral at its bottom edge with the base of said cupola member concentric with the side of said cupola member so as to form an upwardly opening annular space between said cupola member and said upstanding cylindrical wall, a ring collar integral with the top edge of said upstanding cylindrical wall, the peripheral edge of said collar being downwardly curved to define a downwardly opening annular channel, a groove at the circumference of said upstanding cylindrical wall formed by an inwardly arched portion of said wall said inwardly arched portion being radial to the axis of said cupola, said groove being positioned substantially opposite said downwardly curved portion of said ring collar and spaced downwardly from the apex of said curved collar, a flat ring packing fitting in said groove under its own tension and extending radially outwardly from the external surface of said groove to the internal surface of said downwardly curved portion near the tip thereof for axial displacement out of said groove and against the apex section of said curved collar when placing the valve lid onto a container to be closed by the lid whereby said ring packing will be deflected according to the cross-sectional form of said ring collar.

4,111,340

POURING SPOUT FOR THREADED NECK CONTAINERS

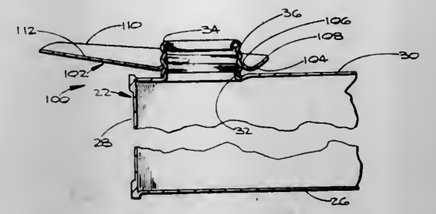
Geoffrey Greenhow, 1019 Scenic Dr., Hamilton, Ontario, Canada (L9C1H8), and Peter N. Greenhow, 305 W. Jackson St., Bourbon, Ind. 46504

Filed Apr. 1, 1975, Ser. No. 564,030
Int. Cl.² B65D *25/48*
U.S. Cl. 222—527 **7 Claims**

5. A pouring spout for containers of the type having a tubular filler neck, which comprises:

said pouring spout comprises a filler-neck engaging collar portion of resilient material that circumscribes a filler-neck opening, that extends radially outward from said filler-neck opening, and that includes an outer periphery; an open trough portion that is integral with said collar portion, that extends radially outward from a part of said outer periphery, and that includes a trough extending radially outward from said collar portion; and

thinned annular portion means of said collar portion, that extends radially outward from said filler-neck opening, for increasing the resiliency of said collar portion.

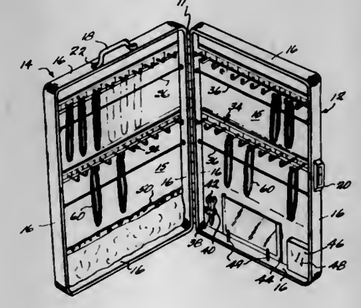


4,111,341

NEEDLEPOINT, EMBROIDERY AND CREWEL CARRYING CASE

Camelita R. Carrozo, 11990 S. Boulder Rd., Lafayette, Colo. 80026

Filed Apr. 27, 1977, Ser. No. 791,421
Int. Cl.² A41H *31/00*
U.S. Cl. 223—106 **9 Claims**



1. A needlepoint, embroidery and crewel carrying case for conveniently carrying equipment and materials necessary for such work comprising

a pair of recessed case members each having marginal sidewalls and an outer wall, said case members being hinged together so as to be closable so as to bring the marginal sidewalls, respectively, into engagement thereby forming a closed case;

said case further including on the interior thereof a plurality of hook assemblies each including a plurality of spaced apart, interiorly extending hooks for holding skeins of yarn in a separated condition each of said hook assemblies including a supporting bracket mounted to the interior of said case members, and holding means to which said hooks are attached for detachably holding said hooks on said supporting bracket, and said supporting bracket comprising an elongated, generally C-shaped bracket extending substantially across the width of said case member;

means defining a recess provided adjacent each of said hooks for receiving therein tabs for identifying the skeins of yarn, said recess means being formed from transparent material so that the identification tabs retained therein are visible therethrough, and said recess means further comprising an elongated rib secured to the exterior of and extending vertically away from said supporting bracket and spaced from the interior wall of said case member so as to define a space therebetween, the side of said rib directed toward the interior wall of said case member being provided with a plurality of spaced apart projections so as to define a plurality of separated recesses therebetween into which the identification tabs can be retained said projections preventing the lateral movement of such tabs; and

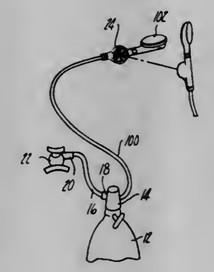
said carrying case further including at least one pocket means for holding equipment necessarily involved in needlepoint, embroidery and crewel type of work.

4,111,342

BREATHING APPARATUS

Gary R. Kirby, 38300 Mallast, Mt. Clemens, Mich. 48043

Filed Aug. 19, 1976, Ser. No. 715,992
Int. Cl.² F16K *37/00*; F16L *29/00*
U.S. Cl. 137—557 **5 Claims**



1. A breathing apparatus of the type having a tank adapted to be pressurized with a breathable gas, pressure reducing means fluidly coupled to the outlet of said tank and a pressure gauge line having a pressure gauge at one end and fluidly coupled to the pressure reducing means at its other end wherein said gauge provides an indication of the fluid pressure in said tank, the improvement comprising:

a normally closed fluid connector connected to said pressure gauge line and adapted for fluid connection to a like fluid connector on a second pressure gauge line whereby upon connection of two fluid connectors fluid communication between the pressure gauge lines is established wherein said fluid connector comprises a housing, a normally closed disc-shaped valve member rotatably carried by the housing between a first and second rotational position wherein said valve member is closed in the first rotational position;

said fluid connector having a first fluid port in communication with said pressure gauge line and a second fluid port on said valve member, first passage means extending substantially coaxially through said housing and said valve member between said fluid ports;

second passage means extending through said housing at a position radially spaced from said first passage means and open at one end to the first port;

third passage means extending through said valve member at a position radially spaced from said first passage means, said third passage means having one end open to said second fluid port, wherein the other ends of said second and third passage means are in registry when said valve member is in its second position;

a valve responsive to the differential pressure between said first and second passage means whereby said valve closes said first passage means when the pressure in said second passage means equals or exceeds the pressure in said first passage means; and

means for detachably connecting said fluid connector with a

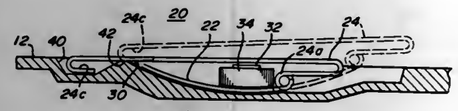
like fluid connector whereby said valve member opens upon said connection to permit fluid communication between the fluid ports.

4,111,343

RETRACTABLE MOUNTING CLIP ARRANGEMENT FOR MINIATURE PORTABLE APPARATUS OR THE LIKE

George Joseph Selinko, Lighthouse Point, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 25, 1977, Ser. No. 790,712
Int. Cl.² A45C *11/00*
U.S. Cl. 224—5 H 5 Claims



1. A retractable mounting clip arrangement especially suited for use with portable, hand-held apparatus intended to be worn on a person, including in combination:

a housing

a recess provided in a surface of said housing and including an arcuate bottom surface area;

a curved base plate for positioning within said recess and slidable along said arcuate bottom surface of said recess between first and second fixed positions;

an elongated mounting clip pivotably secured to said base plate; and

means for slidably securing said curved base plate within said housing recess,

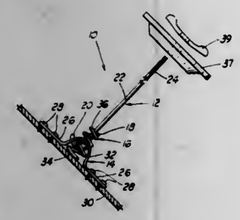
said mounting clip being substantially flush with the surface of said housing when said base plate and attached mounting clip is in said first and slidable position, and wherein said mounting clip is at a level above the surface of said housing when said base plate and attached mounting clip is in said second slidable position.

4,111,344

SPARE TIRE AND WHEEL SECURING DEVICE

Archie T. MacDonald, P.O. Box 483, McPherson, Kans. 67460

Filed Jan. 17, 1977, Ser. No. 760,036
Int. Cl.² B62D *43/10*
U.S. Cl. 224—42.24 5 Claims



1. A spare tire and wheel securing device for mounting on the floor of a vehicle, the device extending through an aperture in the center of the wheel and threadably attached to a nut for securing the tire and wheel therebetween, the device comprising:

a looped mounting bracket having end portions secured to the floor of the vechile and an outwardly extending looped center portion;

an elongated bolt having a curved lower end portion, an elongated center portion, and a threaded upper end portion, the curved lower end portion received through the looped center portion of said bracket, the threaded upper end portion receiving the nut; and

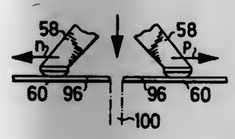
biasing means for biasing said bolt outwardly from said bracket and holding said bolt at substantially right angles from the floor of the vehicle, said biasing means engaging the looped center portion of said bracket and the curved lower end portion of said bolt and securing aid bolt thereto, whereby when said bolt is moved back and forth or side to side on said bracket when contacted by the wheel it is returned to substantially a right angle from the floor of the vehicle of said biasing means when said bolt is received through the aperture in the center of the wheel.

4,111,345

METHOD OF SEVERING USEFUL LENGTHS INTERCONNECTED THROUGH SMALL FILLETS

Franz Vossen, Op dem Felde 26, 4055 Niederkrüchten, Fed. Rep. of Germany

Division of Ser. No. 545,181, Jan. 29, 1975, Pat. No. 3,999,694.
This application Oct. 26, 1976, Ser. No. 735,613
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1974, 2404840
Int. Cl.² B26F *3/02*
U.S. Cl. 225—1 4 Claims



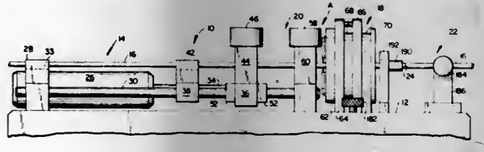
1. A method for severing adjacent lengths of sheet material connected together by fillets comprising the steps of disposing a first surface of said adjacent lengths of sheet material on a substantially stationary support, providing a pair of pressure fingers having contact surfaces adapted to engage a second surface of said adjacent lengths of sheet material, said contact surfaces having a first coefficient of friction and said support having a second coefficient of friction such that friction created between said contact surfaces and said second surface of said lengths of sheet material is greater than the friction created between said first surface of said lengths of sheet material and said support, and then laterally displacing said pressure fingers from a first position away from each other to a second position when said contact surfaces are engaged with said second surface of said lengths of material whereby said adjacent lengths of material will be severed along said fillets.

4,111,346

TUBE CUTTING MACHINE WITH BREAK-OFF MEANS

Reed Bertolette, Woodbury, Conn., assignor to Bertolette Machines, Inc., Torrington, Conn.

Filed Jan. 11, 1977, Ser. No. 758,417
Int. Cl.² B26F *3/00*; B26D *3/08, 3/16*; B23B *5/14*
U.S. Cl. 225—96.5 18 Claims



1. In a tube cutting machine having a cutting station, the combination of power feed means for axially advancing an elongated section of tubing whereby successively to present at said cutting station trailing end portions of leading end tube sections to be severed, intermittently operable clamping means successively engageable with said section of tubing rearwardly

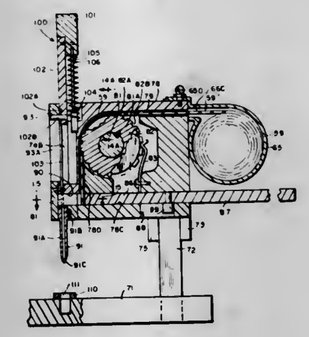
of said trailing end portions to secure the same for cutting, a centrally apertured rotary cutting head at said cutting station adapted successively to receive said leading end tube sections, said head having at least one small rotary cutter adjacent said central aperture mounted for generally radial inward and outward movement respectively to engage and cut said leading end tube sections at their trailing end portions and to withdraw from engagement therewith, power operated means for rotating said cutter head and for intermittently moving said rotary cutter inwardly and outwardly for successive cutting operations, said means including a precise and positive mechanism which is mechanical throughout and which is operable to effect radial inward cutter movement while the cutter head is rotating, and said means also including separate positive drive means respectively for rotating said cutter head and for causing said mechanical mechanism to effect said radial inward cutter movement, adjustable means operable on the positive drive means for the positive mechanical mechanism effecting cutter movement and imposing a positive limit on said mechanism to precisely limit inward cutter movement in accordance with tube diameter and wall thickness whereby to provide a circumferentially uniform partial cut of controlled depth at each said trailing end portion, and intermittently operable means for successively applying sharp generally radially directed forces to leading end sections forwardly of their trailing edge portions whereby successively to break off said sections subsequent to said partial cutting operations.

4,111,347

FASTENER ATTACHMENT APPARATUS

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 720,705, Sep. 7, 1976, abandoned, which is a continuation of Ser. No. 512,676, Oct. 4, 1974, abandoned, which is a division of Ser. No. 347,679, Apr. 4, 1973, Pat. No. 3,875,648. This application Jun. 22, 1977, Ser. No. 808,843
Int. Cl.² B25C *1/00*
U.S. Cl. 227—68 6 Claims



1. Apparatus for dispensing fasteners comprising means for feeding a set of connected fasteners, each comprising two end members and a filament connected therebetween, along a first path;

means for severing the two end members to form an individual fastener comprising a filament coupled between the two end members;

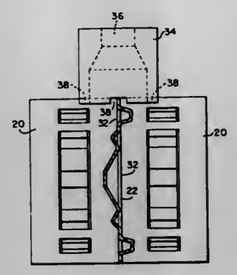
and means for feeding one of said end members along a second path through a slotted hollow needle, while permitting the other of said end members to move without confinement said second path being a continuation of said first path that is laterally displaced therefrom.

4,111,348

GRID BRAZE APPLICATION MOLD

Willy S. Laird, West Columbia, and Ben O. Kendall, Orangeburg, both of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 9, 1977, Ser. No. 775,807
Int. Cl.² B23K *31/02, 37/04, 3/06*
U.S. Cl. 228—181 10 Claims



1. A method of brazing together grid straps of a grid of a nuclear fuel assembly comprising:

assembling said grid whereby a multiplicity of said straps intersect defining lines of intersection;

placing a mold having a cavity thereon on said straps near their intersection and in vertical alignment with said line of intersection;

placing a predetermined amount of braze material in said cavity of said mold;

placing said mold and said grid in a furnace;

heating said grid and said mold until said braze material melts and flows downward by gravity along said lines of intersection thereby contacting the adjoining straps and filling spaces between said straps; and

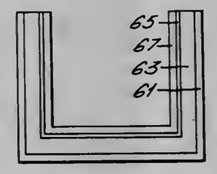
cooling said grid and said mold thus solidifying said braze material and thereby establishing a permanent brazed joint along said line of intersection and permanently joining said straps.

4,111,349

CUPS, PLATES, TRAYS OR CONTAINERS FORMED FROM LAMINATES CONTAINING FILLED POLYSTYRENE

Ernest Jack Buckler, and Michael Hugh Richmond, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

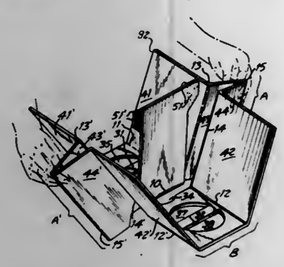
Filed Sep. 14, 1976, Ser. No. 723,283
Claims priority, application Canada, Oct. 22, 1975, 238303
Int. Cl.² B65D *1/00, 5/20*
U.S. Cl. 229—3.5 R 9 Claims



1. A thermoplastic polymeric laminate comprising at least one layer of filled styrene polymer composition containing from about 5 to about 50 parts by weight of filler and at least one layer of a dissimilar polymer selected from a polyolefin and a nitrile group containing polymer, said filled styrene polymer composition being the product of mixing a styrene polymer masterbatch with polystyrene, said styrene polymer masterbatch comprising 100 parts by weight of impact polystyrene, from 1 to 40 parts by weight of rubber, from 10 to 200

parts by weight of filler and from 1 to 40 parts by weight of mineral oil.

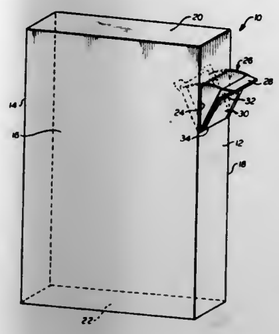
4,111,350
SIX-CELL CONTAINER DIVIDER
Thomas P. Hambleton, Kansas City, Mo., assignor to International Paper Company, New York, N.Y.
Filed Sep. 19, 1977, Ser. No. 834,082
Int. Cl.² B65D *5/48, 3/24*
U.S. Cl. 229—15 **14 Claims**



1. A substantially rectangular blank for a six-celled divider, said blank comprising, in combination:
(a) a central tongue having integrally attached and laterally extending protruding tabs at the top of said tongue to form a T-shaped tongue;
(b) said central tongue being foldably connected only to a first floor panel along a horizontal score line;
(c) a pair of first wall panels flanking and foldably connected to said first floor panel;
(d) a third wall panel foldably connected to each of said first wall panels;
(e) a fourth wall panel foldably connected to each of said third wall panels;
(f) a second wall panel foldably connected to each of said fourth wall panels;
(g) a second floor panel foldably connecting said second wall panels;
(h) said third and fourth wall panels lying in an abutting relation to said central tongue, said central tongue being slit from said third and fourth wall panels whereby the tongue can swing about said horizontal score line to an upstanding position upon assembly; and
(i) the width of each of said third and fourth wall panels being substantially equal to the length of said central tongue.

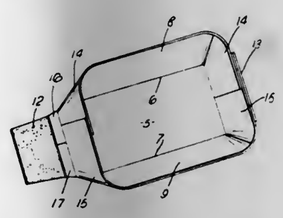
4,111,351
PAPERBOARD CARTON
Stuart W. Mackiernan, Canton, Mass., assignor to BesPak Corporation, Greenwich, Conn.
Filed Apr. 25, 1977, Ser. No. 790,454
Int. Cl.² B65D *5/76*
U.S. Cl. 229—17 M **8 Claims**

1. A carton for housing materials such as laundry soap, detergents, powdered milk and the like comprising a plurality of side panels and top and bottom panels for forming an enclosed carton, one of said panels having an opening therein, spout means received in said opening, said spout means comprising a front, a rear and two side walls adapted to form a spout container for holding said material, means for rotatably securing said spout means to said carton thereby to permit said spout means to move into and out of said carton upon the application of an external force, said front wall of said spout being adapted to seal said opening when said spout means is moved to a position fully within said carton and said rear wall being adapted to seal said opening when said spout means is moved to a position fully external to said carton, and wiper means operatively connected to said carton internally thereof and engaging said side walls of said spout means when said spout means moves from within said carton, thereby to form a seal at the side walls of said spout means effective to prevent leakage of material at said side walls, wherein said wiper means



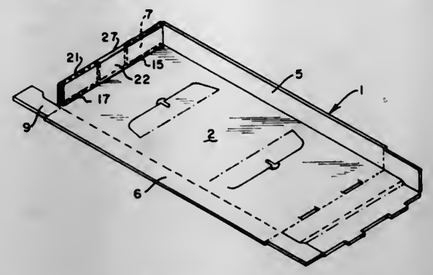
comprise two segments of said carton, each segment extending along an edge of said opening in said carton, said segments being folded along their length away from said opening inwardly of said carton.

4,111,352
TROUGH-SHAPED FOLDED CARDBOARD CONTAINER
Arne Jørgensen; Poul Berthelsen, and Jørgen Bassoe, all of Korsør, Denmark, assignors to Lever Brothers Company, New York, N.Y.
Filed Apr. 29, 1977, Ser. No. 792,381
Int. Cl.² B65D *5/24*
U.S. Cl. 229—31 R **3 Claims**



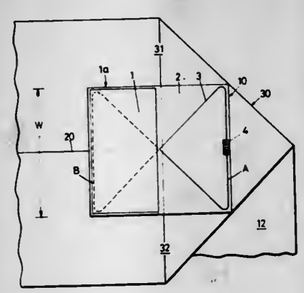
1. A trough-shaped folded cardboard container which comprises a rectangular bottom, two side panels extending from and hinged to the bottom on two opposite sides, extensions of the side panels being bent in to form the end walls, two end flaps extending from and hinged to the bottom at its two other opposite edges, gluing flaps hingedly connected to the lower edges of the extensions of the side panels by fold lines parallel to the lower edges of said extensions and, by means of fold lines starting from the corners of the bottom, also hingedly connected to the end flaps, said gluing flaps being folded and glued to the unfolded end flaps and said gluing flaps each having such a length that they abut edge-to-edge, and the end flaps with the gluing flaps on them being folded against the bent-in extensions of the side panels and joined to said extensions covering the vertical edges of said extensions as well as the gluing flaps, the end flaps extending over the full height of the container.

4,111,353
PARTITIONED TRAY AND MULTIPLE TRAY CONTAINER
Steven Collins, Lauderhill, and A. Wayne Fausett, Miami, both of Fla., assignors to Alton Box Board Company, Alton, Ill.
Filed Jun. 13, 1977, Ser. No. 805,720
Int. Cl.² B65D *5/26, 5/22, 5/48*
U.S. Cl. 229—34 R **15 Claims**



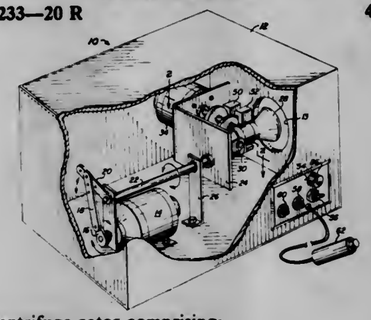
1. A plurality of partitioned trays each for use in holding a variety of packaged items and being stackable for insertion and retention within an enclosing container, each tray having perpendicularly arranged fixed side walls, end walls, and a bottom wall, and having an opened top, each end wall being formed as a double panel, said double panel being hinged together at their formed upper ends, one panel of each said double panel foldably connecting to the end edges of the bottom wall, the other panel of each double panel having at least one extension for cooperating with means formed of the bottom wall for accommodating the said panel extension therein for facilitating the double panel erection, each side wall foldably connecting to a side edge of the bottom wall, a tab provided integrally extending from the ends of each said wide wall, said tabs provided for extension into and retention between their approximate double panel end wall for fixing the said walls into a tray configuration, each tab further including an extension on one side, with said extension provided for cooperating with the means formed in the bottom wall for retaining said side walls and their tabs into their folded position, a series of partitions disposed within each tray and extending upwardly for defining spaced areas for accommodating the positioning of said packaged items, and a container being of a size to snugly accommodate a plurality of said item laden stacked trays.

4,111,354
VALVE BAG
Dieter Brünker, Bremen, Fed. Rep. of Germany, assignor to Anker-Schiffarts-Gesellschaft mbH & Co. KG, Bremen, Fed. Rep. of Germany
Filed Nov. 17, 1976, Ser. No. 742,536
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1975, 2552438
Int. Cl.² B65D *31/14, 33/30*
U.S. Cl. 229—62.5 **15 Claims**



1. A valve bag for bulk material, comprising a tubular body with opposite ends, closure sections closing said opposite ends of the body, a filler valve secured to one of said closure sections, the filler valve including tube means extending through said one closure section and having inner and outer end parts, a fold line separating the inner and outer end parts and said outer end part being fastened to the one closure section, and spring means attached to said inner end part of said tube means and acting against said one closure section for folding over said inner part of the tube means about said fold line, thereby to pinch off the tube means and close the filler valve automatically.

4,111,355
MULTI-COMPARTMENT CENTRIFUGE ROTOR LINER
Kenzo Ishimaru, San Jose, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jun. 15, 1977, Ser. No. 806,807
Int. Cl.² B04B *1/00*
U.S. Cl. 233—20 R **4 Claims**

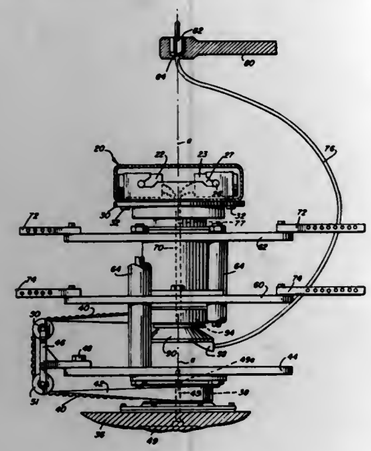


1. A centrifuge rotor comprising:
a lower portion of said rotor;
a liner member located within said lower portion of said rotor, said liner member having at least two compartments;
a thin membrane cover overlying said compartments;
a rigid disc member positioned over said membrane cover to cause said membrane cover to seal one of said compartments from the other of said compartments;
a rotor lid to secure said disc over said membrane cover and said liner member; and
means located within said rigid disc member and directly responsive to centrifugal forces for releasing said membrane from its sealing engagement with said one of said compartment to allow fluid communication between said compartments during centrifugation.

4,111,356
CENTRIFUGAL APPARATUS WITH FLEXIBLE SHEATH
Daniel R. Boggs, Vernon Hills, and Richard I. Brown, Northbrook, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jul. 13, 1977, Ser. No. 815,095
Int. Cl.² B04B *9/08*
U.S. Cl. 233—26 **7 Claims**

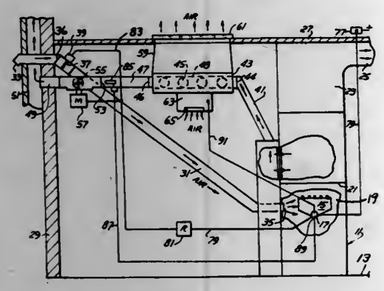
1. Centrifugal processing apparatus, which comprises:
a stationary base;
a processng chamber rotatably mounted with respect to said base for rotation about a predetermined axis;
a flexible umbilical cable segment for establishing fluid communication with said processing chamber, one end of said cable segment being fixed with respect to said base substantially along said axis at one side of said processing chamber, the other end of said cable segment being attached substantially on said axis in rotationally locked engagement to said processing chamber;
a guide member located along said cable segment, said guide member comprising a downwardly and outwardly tapering tubular support having an inner wall which defines an internal opening for receiving said cable segment;

a sheath surrounding said cable segment, said sheath having an outer surface contour conforming to the inner wall surface of the tubular support so that said outer surface and inner wall surface are substantially matched;
the radius of said sheath being variable along the length of



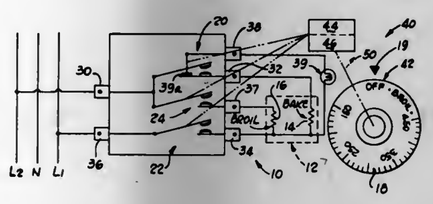
said sheath so that the linear velocity of the sheath surface substantially matches the linear velocity of the inner wall surface; and
means for rotating said fluid processing chamber and said cable segment in the same direction with a speed ratio of 2:1, respectively.

4,111,357
HIGH ENERGY SAVING HEAT EXCHANGER FOR FURNACES
Walter L. Mieczkowski, 33611 Curcio, Sterling Heights, Mich. 48077
Filed Aug. 8, 1977, Ser. No. 822,553
Int. Cl.² F28F *1/10*
U.S. Cl. 236—11 **11 Claims**



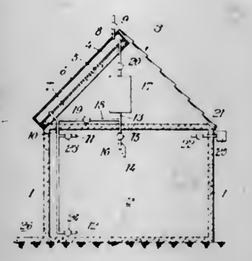
1. In a furnace for a building having a floor and an outside wall, said furnace having a combustion chamber, a burner with electric controls, a furnace heat exchanger and a hot exhaust pipe adapted for connection with a stack;
a high energy saving heat exchanger comprising a housing having an air chamber, an exhaust inlet connected to said furnace exhaust pipe and an exhaust outlet;
an exhaust conduit interconnecting said exhaust outlet and stack;
a continuous circuitous exhaust tubing nested within the air chamber of said housing, at one end connected to said exhaust inlet and at its other end connected to said exhaust outlet;
an exhaust fan section in said exhaust conduit mounted adjacent to said stack;
a motor operated exhaust fan in said fan section for drawing exhaust gases through said heat exchanger tubing and delivering said exhaust gases under pressure through said conduit into said stack;
a hot air duct interposed between said housing and said floor defining an area to the heated, and including a hot air register;
said hot air duct communicating with said air chamber;
a motor operated blower on said housing having a room air intake communicating with said air chamber, for forcing room air through said housing to said register;
and an outside fresh air conduit having an air intake extending through said outside wall and an outlet extending into said combustion chamber;
a damper section interposed in said fresh air pipe;
a normally closed damper in said damper section;
and a motor on said damper section connected to said damper, adapted for opening said damper when energized.

4,111,358
OVEN CONTROL
Alexander M. Semple, Oakville, Canada, assignor to Ranco Incorporated, Columbus, Ohio
Filed Mar. 23, 1977, Ser. No. 780,270
Int. Cl.² F23N *1/00*
U.S. Cl. 236—15 A **7 Claims**



1. A control device for a cooking oven having bake and broil burners, the control comprising:
(a) a support base,
(b) three switches supported by said base and electrically connected in control circuits for the oven burners;
(c) manually operable selector means for selecting desired oven functions and oven temperature levels, said selector means comprising an operating member supported for rotation relative to said base;
(d) a thermostatic actuator supported by said base and cooperable with first and second of said switches and said selector means to govern burner operation in response to sensed oven temperature levels; and
(e) an oven function control actuator supported by said base and cooperable with a plurality of said switches and said operating member for enabling desired oven burner operation, said function control actuator comprising:
(i) a cam member supported for rotation by said operating member about an axis;
(ii) a cam blade supported adjacent said cam member in confronting relationship therewith and having a portion by which rotation is imparted to said cam blade from said cam member to drive said cam blade through a predetermined angular displacement about said axis and a second portion by which tilting motion is imparted to said cam blade from said cam member;
(iii) said cam blade effective to change the operational condition of one of said switches during rotation thereof by said cam member about said axis and effective to change the operational condition of another of said switches in response to tilting motion thereof.

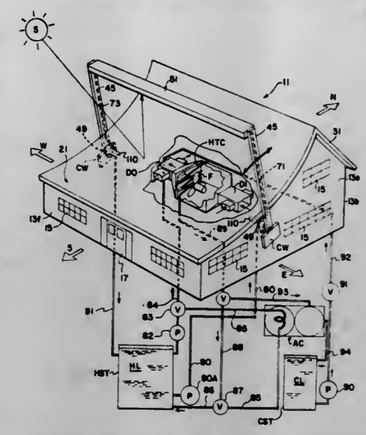
4,111,359
DWELLINGS EQUIPPED WITH NATURAL AIRCONDITIONING INSTALLATIONS
Félix Trombe, Paris, and Jacques Michel, Neuilly-sur-Seine, both of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Neuilly-sur-Seine, France
Filed Oct. 22, 1976, Ser. No. 735,037
Claims priority, application France, Oct. 28, 1975, 75 32921; Jun. 30, 1976, 76 19960
Int. Cl.² F24J *3/02*
U.S. Cl. 237—1 A **12 Claims**



1. Dwelling equipped with an airconditioning installation comprising at least one inclined thermal enclosure forming at least a part of the roofing of the dwelling, an inner roof element bounding said thermal enclosure internally and essentially constituted by a collector material of very low thermal mass absorbing radiation of the solar radiation type of wavelength comprised between 0.25 and 4 microns, and an outer covering element bounding said thermal enclosure externally also of very low thermal mass, essentially constituted by a material behaving as an opaque body for infra-red radiation of wavelength comprised between 4 and 30 microns and hence capable of emitting said infra-red radiation, said outer covering element having sealing properties to water and to air, an upper duct forming a chimney directed upwards and provided with a closure member, connected to the upper part of the thermal enclosure and a lower duct directed downwards and opening into the dwelling through at least one orifice, connected to the lower part of said thermal enclosure, and a circulation duct opening into the dwelling and provided with a closure member in the vicinity of its opening, connected to the upper part of the thermal enclosure.

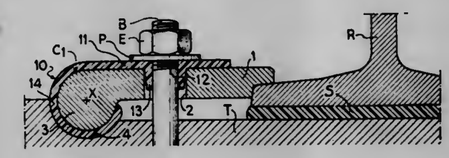
4,111,360
SOLAR ENERGY CONCENTRATING AND COLLECTING ARRANGEMENT AND METHOD
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Division of Ser. No. 499,066, Aug. 20, 1974, Pat. No. 3,994,435.
This application Nov. 30, 1976, Ser. No. 746,268
Int. Cl.² F24J *3/02*
U.S. Cl. 237—1 A **18 Claims**

1. The method comprising
reflecting and concentrating a portion of solar energy in light form from a concave concentrating light-transmitting reflector surface area onto a collector spaced thereabove,
and passing a further portion of said solar energy in light form through the same said light-transmitting reflector surface area for aid in illuminating the zone beneath said concentrating reflector surface area,
reflecting and concentrating said solar energy from a concave reflector surface onto a longitudinal collector mov-



able in a direction across the width of said concave reflector surface.

4,111,361
DEVICE FOR INSULATING AND FASTENING RAILWAY RAILS
Roger Paul Sonneville, Saint-Cloud, France, assignor to Suprotec S.A., Fribourg, France
Filed Mar. 24, 1977, Ser. No. 780,999
Claims priority, application France, Apr. 8, 1976, 76 10233
Int. Cl.² E01B *9/28*
U.S. Cl. 238—338 **8 Claims**



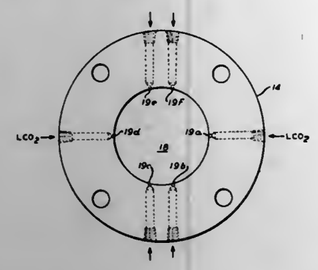
1. A device for fastening a rail provided with a flange to a support, said device comprising a metal fastener for bearing against the flange of the rail and against the support, fixing means for fixing the fastener to the support, at least one aperture formed in the fastener for the passage of the fixing means, and means for electrically insulating the fastener from the support and for electrically insulating the fastener from the fixing means, said insulating means comprising an insulating element which is constructed in one piece and which comprises a substantially planar branch which defines an aperture for the passage of the fixing means and a loop portion which is so shaped as to ensure the elastic mounting of the insulating element on the fastener and to insulate the fastener from the support, said loop portion having a generally cylindrical shape and having the shape, in a section in a plane perpendicular to the generatrices of the loop portion, of an arc of a circle which subtends an angle at the center exceeding 180°, said fastener having a partially cylindrical portion, and said arc of a circle having a radius slightly less than the radius of said partially cylindrical portion of the fastener, thereby providing a tight fit between said loop portion of said insulating element and said partially cylindrical portion of said fastener.

4,111,362

SYSTEM FOR MAKING CARBON DIOXIDE SNOW

Thomas A. Carter, Jr., deceased, late of Whittier, Calif., by Donna B. Carter, sole heir, assignor to Airco, Inc., Montvale, N.J.

Filed May 27, 1977, Ser. No. 801,118
Int. Cl.² A62C *31/14*
U.S. Cl. 239—1 **12 Claims**



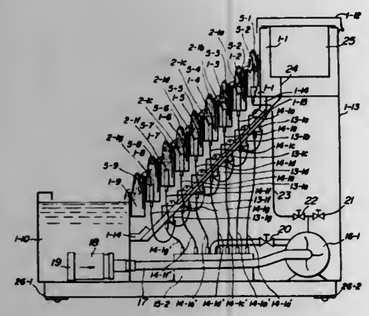
7. In a system for making CO_2 snow including a source of liquid CO_2 and a snow chamber adapted to receive expanding jets of liquid CO_2 for producing snow, the chamber being open at its lower end for free-fall snow exhaust: the method which comprises directing at least two jets of liquid CO_2 into the chamber from opposite sides thereof, and orienting the resulting snow-vapor jet mixtures so as to intersect and substantially dissipate the kinetic energy of the respective jets.

4,111,363

PORTABLE WATER FOUNTAIN DISPLAY APPARATUS

Koichi Kawamura, and Yoshiko Kawamura, both of No. 66 Jomyoji, Kamakura, Japan

Filed Feb. 23, 1977, Ser. No. 771,379
Claims priority, application Japan, Feb. 28, 1976, 51-20616
Int. Cl.² B05B *17/08*
U.S. Cl. 239—20 **7 Claims**



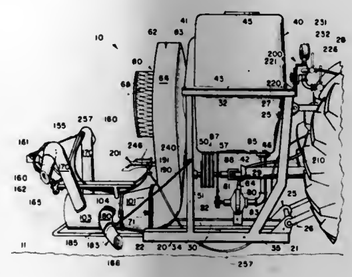
1. A unit type portable water fountain display apparatus comprising in combination:
a base pond,
stepwise ponds stacked over the base pond stepwisely to form a generally slanting display plane,
display nozzles arranged in desired location within the stepwise ponds and submerged below the water level of the respective pond when water is filled in the ponds to form desired display patterns,
electromagnetic valves coupled to the respective display nozzles and to a pressured water tank to eject water jet through respective nozzle when controlled to operate, and
an electric control means to control the electromagnetic valves to form desired display patterns to indicate information such as time, characters and the like, wherein the electric control means is provided with a function to fill up the water in the stepwise ponds prior to the operation of the electromagnetic valves to provide display through the nozzles.

4,111,364

HERBICIDE APPLYING MACHINE

Merrill W. Schroeder, Fresno, Calif., assignor to Gerrit Vander Pol, Modesto, Calif.

Filed Dec. 27, 1976, Ser. No. 754,268
Int. Cl.² A01N *17/02*
U.S. Cl. 239—77 **4 Claims**



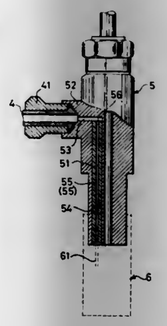
1. A herbicide applying machine comprising:
(A) a mobile frame having predetermined forward and rearward end portions;
(B) a source of air under pressure;
(C) cleaning means borne by the frame connected to said source adapted to discharge air from the source along the ground to displace debris from the ground adjacent to the frame;
(D) spraying means borne by the frame connected to said source adapted to discharge herbicide in an air stream from said source onto the soil in following relation to the cleaning means; and
(E) a proportioning valve in said cleaning means and said spraying means for equally and oppositely regulating the air discharged through said means.

4,111,365

FUEL INJECTION SYSTEM AND ITS NOZZLE HOLDER

Motoyasu Kimbara, Yokohama, Japan, assignor to Isuzu Motors Limited, Japan

Continuation of Ser. No. 663,805, Mar. 4, 1976, abandoned, which is a continuation of Ser. No. 534,890, Dec. 20, 1974, abandoned. This application Jun. 17, 1977, Ser. No. 807,665
Claims priority, application Japan, Dec. 26, 1973, 49-3750; Dec. 28, 1973, 49-467
Int. Cl.² B05B *1/30*
U.S. Cl. 239—93 **2 Claims**



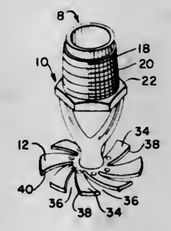
1. In a fuel injection system of the type including a nozzle, having a fuel discharge orifice and a fuel-receiving passage communicating with the orifice, and a nozzle holder coupled at one end to the nozzle and having a fuel flow passage communicating with the fuel-receiving passage of the nozzle, a needle valve controlling the nozzle orifice, and an adapter having an adapter passage communicating with the fuel flow passage, and further including a fuel injection pipe coupled to the adapter and communicating with the adapter passage, a cam-operated injection pump, and a delivery valve connecting the pump to the injection pipe to inject fuel into the fuel flow passage in the nozzle holder for delivery to the fuel receiving passage of the nozzle, the improvement comprising said fuel flow passage extending only in said nozzle holder and being a greatly elongated, small diameter passage communicating at one end with said adapter passage and terminating at the end of said nozzle holder coupled to said nozzle; said fuel flow passage in said nozzle holder being reduced in diameter, with the ratio F_3/F_1, when F_3 is the flow cross-sectional area of said injection pipe, ranging from about 0.5 to 0.15, over the length of said fuel flow passage which length, in said nozzle holder, is 90 to 30 times the inside diameter D_1 of said injection pipe, so that the fluctuation of fuel pressure in said injection pipe is converted to kinetic energy in said fuel flow passage, thereby to control abnormalities of fuel injection.

4,111,366

SPINNER NOZZLE FOR USE IN COOLING TOWER

Richard Donald DeWitte, Healdsburg, Calif., assignor to Dee-Mac Construction Co., Inc., Healdsburg, Calif.

Filed Mar. 4, 1976, Ser. No. 664,025
Int. Cl.² B05B *3/04*
U.S. Cl. 239—222.17 **25 Claims**



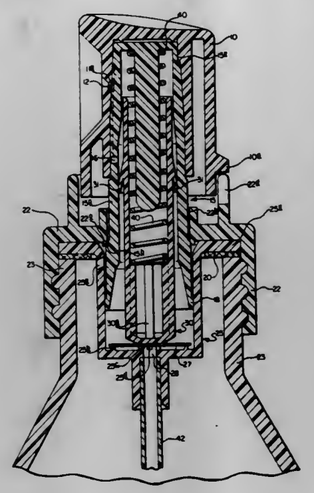
1. A nozzle comprising a connecting member and a spinner rotatably mounted on said connecting member, said connecting member defining an orifice for passage of fluid therethrough, and mounting means for mounting said spinner so that fluid passing out of said orifice engages and rotates said spinner, said spinner defining a central section and a plurality of arms projecting from said central section, each arm being spaced from adjacent arms by slots extending through said spinner, said slots respectively defined by the trailing edge of one arm and the leading edge of an adjacent arm, the trailing edge of at least some of said arms being inclined at an angle of 10° to 25° with respect to the travel direction of fluid passing out of said orifice, the leading edges of said at least some arms being parallel with respect to the travel direction of fluid passing out of said orifice, wherein the upper surfaces of at least some arms are flat surfaces which lie in the same plane, and wherein said upper surfaces are arranged transverse to the travel direction of fluid passing out of said orifice such that said upper surfaces have a greater dimension perpendicular to the travel direction of fluid passing out of said orifice than parallel thereto.

4,111,367

FINGER OPERATED SPRAY PUMP

Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 18, 1977, Ser. No. 769,934
Int. Cl.² B05B *11/00*
U.S. Cl. 239—333 **12 Claims**



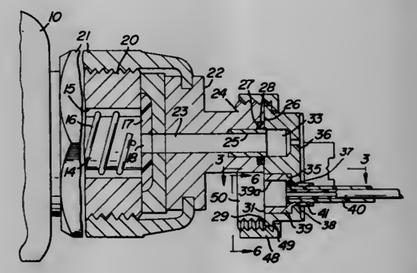
1. A finger-operated spray pump assembly comprising:
a. tank means having a bottom end and a top end;
b. primary piston means slidably fitted for upward and downward movement in said tank means, said primary piston means having liquid passageway means;
c. secondary piston means slidably fitted for upward and downward movement inside said primary piston means and said tank means; and
d. resilient means fitted inside said primary piston and said secondary piston means for biasing said primary piston means away from said secondary piston means.

4,111,368

DISPENSING APPARATUS

William L. Brehm, Plumsteadville, Pa., assignor to B & G Equipment Company, Plumsteadville, Pa.

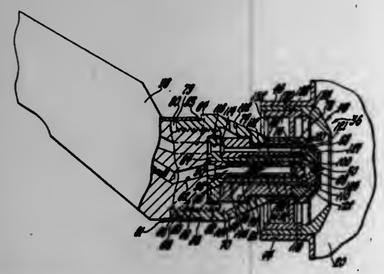
Continuation-in-part of Ser. No. 734,181, Oct. 20, 1976, abandoned, which is a continuation of Ser. No. 603,737, Aug. 11, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,822
Int. Cl.² B05B *1/16*
U.S. Cl. 239—394 **5 Claims**



1. Dispensing apparatus for attachment to a hand operated control valve for selective delivery of liquid or spray which comprises

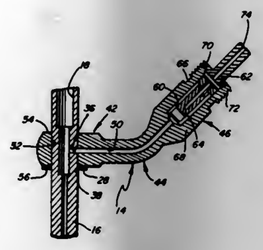
a connector plate member carried by said valve and having a fluid passageway,
a dispensing member mounted for selective positioning with respect to said fluid passageway,
a clamping member in detachable engagement with said dispensing member and retaining said dispensing member at a selected position,
said dispensing member having a plurality of openings for selective alignment with said fluid passageway,
said dispensing member having one of said openings provided with an atomizing orifice for spray delivery under the control of said valve member,
said dispensing member having in another of said openings a detachable tube holder with an opening for alignment with said fluid passageway for liquid delivery,
an elongated flexible tube carried by said tube holder for liquid delivery under the control of said valve member, and
said connector plate member having a portion for removal of said tube holder and tube.

4,111,369
FUEL NOZZLE
Cecil H. Sharpe, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jul. 5, 1977, Ser. No. 813,168
Int. Cl.[2] B05B *7/10*
U.S. Cl. 239—400 **3 Claims**



1. A fuel spray nozzle for disbursing liquid fuel into a combustion apparatus and wherein the nozzle is exposed to high temperature combustion within the combustion apparatus comprising: a nozzle strut end of solid metal having main and pilot fuel supply passages therethrough, an outboard recess in said strut end, a pilot nozzle having a base thereon removably supported within said recess, said pilot nozzle including an elongated tubular extension thereon with a pilot nozzle orifice at its end, a pilot fuel distributor tube slidably supported within said tubular extension, coacting means on said tubular extension and said pilot fuel distributor tube to define an air space and thermal barrier against heat transfer to fuel within said pilot fuel distributor tube during a heat soak mode of spray nozzle operation thereby to prevent build-up of fuel varnish within said pilot fuel distributor tube with resultant blockage of pilot fuel passages within the spray nozzle, a main fuel distributor having a segment telescoped on and removably supported by said elongated tubular extension, said segment including a fuel passage means in communication with said strut main fuel supply passage, an integral extension formed on said segment and having axial fuel passages communicated with said fuel passage means, said axial fuel passages having opposite aligned open ends for straight line flow of fuel and straight line removal of fuel varnish build up therein, a main fuel distributing ring with axial inlet passages and inclined outlet ports therein, said integral extension having a stepped ring support thereon to removably receive said fuel distributing ring and to locate it in spaced, overlying relationship to said pilot nozzle, air distributor means for supplying air to said pilot nozzle including a bushing in surrounding relationship to said main fuel distributor, said bushing including a locater shoulder thereon coacting with said main fuel distributor to hold it against said pilot nozzle base which is in turn held thereby against said nozzle strut end, means for removably connecting said bushing to said strut end for take apart assembly of said pilot nozzle, pilot fuel distributor tube and said main fuel distributor.

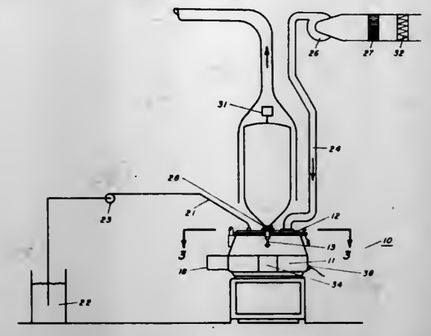
4,111,370
FUEL INLET FITTING FOR A FUEL INJECTION NOZZLE
Walter C. Chelgren, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 8, 1977, Ser. No. 785,795
Int. Cl.[2] F02M *55/02*
U.S. Cl. 239—533.3 **5 Claims**



1. In combination with a fuel injection nozzle including a nozzle barrel having an axial bore communicating with a nozzle tip, a cylindrical external surface and a fuel port formed in the side wall thereof extending radially from the axial bore to a point at the cylindrical external surface permitting delivery of pressurized fuel thereto, an elongate integrally-formed unitary fuel inlet fitting having a fuel passage therethrough comprising a mounting portion at one end having a cylindrical bore intersecting said fuel passage defined by a cylindrical internal surface thereof, a coupling portion at the opposite end having a separable connecting means for joining said fuel inlet fitting to a fuel supply line with said fuel passage communicating with said fuel supply line, and a constricted connecting portion between said mounting portion and said coupling portion having sufficient ductility to permit deformation thereof as desired, the cylindrical external surface of the nozzle barrel and the internal surface of the mounting portion having substantially the same diameter to make a tight fit when said nozzle barrel is inserted through said mounting portion and said fuel passage is aligned with said fuel port to communicate therewith, and means for sealing the two annular joints defined between the cylindrical external surface of the nozzle barrel and the cylindrical internal surface of the mounting portion at the upper and lower surfaces of the mounting portion, whereby there are no other joints along the fitting except at the end thereof where the inlet fitting is connected to the fuel supply line.

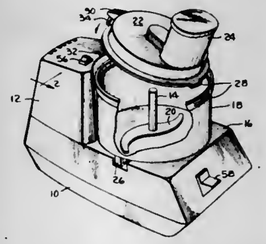
4,111,371
GRANULATION PROCESS
Guido W. Melliger, Dover, N.J., assignor to Firma Dierks & Sohne Maschinenfabrik, Osnabrueck, Fed. Rep. of Germany
Division of Ser. No. 508,422, Sep. 23, 1974, Pat. No. 4,037,794. This application May 9, 1977, Ser. No. 795,154
Int. Cl.[2] B02C *23/30*
U.S. Cl. 241—18 **6 Claims**

1. A one step batch process for the preparation of dry medicament granulations, which comprises the steps of:
(a) Blending the medicament formulation and granulating liquids in a mixing chamber;
(b) Introducing air into the mixing chamber;
(c) Maintaining the blend of medicament formulation and granulating liquids in an agitated state in the chamber, while continuing air flow through the blend to dry it;
(d) Removing the air from the chamber;



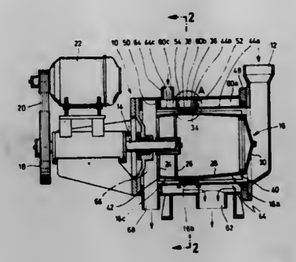
(e) Collecting fine-dry particles of the blend which exits from the chamber with the air in a collecting means and returning them to the chamber; and
(f) Removing the final dry blend from the mixing chamber for further processing.

4,111,372
FOOD PROCESSOR INTERLOCK
William R. Hicks, Spencerport, and Richard S. Woodard, Kent, both of N.Y., assignors to General Electric Company, Bridgeport, Conn.
Filed Apr. 25, 1977, Ser. No. 790,271
Int. Cl.[2] B02C *18/12*
U.S. Cl. 241—37.5 **5 Claims**



1. In a food processor having a power base with a bowl-supporting portion and driven shaft extending vertically therefrom, an adjacent upstanding motor-containing housing, a bowl on said portion containing a cutter on said shaft, and an internal switch-controlled motor energizing circuit, an improved interlock comprising,
a bowl lid,
means operatively securing said lid to the bowl opposite the motor housing on lid rotation axially of the shaft toward the housing,
a top housing opening at lid height opposite the securing means,
an arm on the lid movable from without into the opening on lid rotation,
releasable arm locking/switch activating means internally of said opening
whereby the circuit is deenergized by opening the internal switch and the processor rendered inoperative on lid removal.

4,111,373
APPARATUS FOR DEFIBERING CONGLOMERATES OF FIBER IN FIBROUS SUSPENSIONS, ESPECIALLY IN THE PROCESSING OF MIXED WASTE PAPER
Emil Holz, Eningen u.A., Fed. Rep. of Germany, assignor to Hermann Finckh Maschinenfabrik, Fed. Rep. of Germany
Filed Mar. 11, 1977, Ser. No. 776,520
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611886
Int. Cl.[2] B02C *23/36*
U.S. Cl. 241—46.11 **21 Claims**



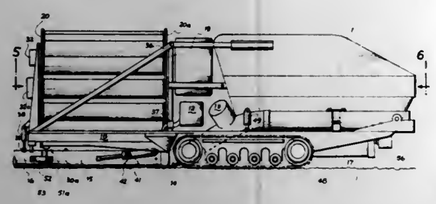
1. An apparatus for reducing conglomerates of fibers in fibrous suspensions, particularly useful with fibrous suspension of low stock density, comprising:
a housing, said housing having a first inlet for the fibrous suspension to be processed, a second inlet for dilution water, at least a first outlet for the processed fibrous suspension and a second outlet for the rejected part of the suspension;
a rotor mounted for rotation within said housing, said rotor having at least three regions along the direction of the rotor axis;
a first hollow cylinder surrounding the first of said rotor regions, at least the lower portion of said first cylinder being provided with perforations in the form of a screen, the outer surface of said first cylinder being in flow communication with said first outlet, the inner surface of said first cylinder and said first rotor region forming a first annular space into which the fibrous suspension entering through said first housing inlet flows and is set into rotation to centrifugally remove excess water and part of the fibers therefrom through said screen;
a second hollow cylinder surrounding the second of said rotor regions, the inner surface of said second hollow cylinder and said second rotor region forming a second annular space into which the remainder of said fibrous suspension with said fiber conglomerates therein flows, said second rotor region having means to effect the defibering of fiber conglomerates;
a stationary cylindrical screen surrounding the third of said rotor regions, the outer surface of said stationary screen being in flow communication with said first outlet for the processed suspension, the inner surface of said stationary cylindrical screen and said third rotor region forming a third annular space, said third annular space being in flow communication with said second annular space, said second inlet for dilution water and said second outlet, said dilution water serving to dilute the fibrous suspension in said third annular space to facilitate the passage of said fibrous suspension through said stationary cylindrical screen and into said first outlet and also serving to wash dirt particles from said fibrous suspension and into said second outlet.

4,111,374

COMMODITY CONVEYING MEANS

James B. Mackaness, 28 The Crescent, Cheltenham, N.S.W., Australia (2119)

Continuation-in-part of Ser. No. 655,441, Feb. 5, 1976, abandoned. This application May 31, 1977, Ser. No. 802,270
Claims priority, application Australia, Feb. 5, 1975, 0477/75
Int. Cl.² B02C 23/36
U.S. Cl. 241—101.7 9 Claims



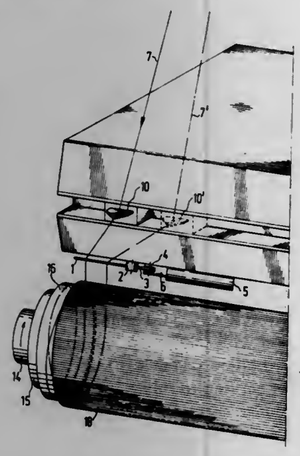
1. A mobile machine to store lengths of pipe to be added to and then removed from a generally horizontal pipeline connected to a mining machine, said mobile machine comprising a frame to straddle a generally horizontal pipeline, wheel means on the frame to permit the machine to move along the length of the pipeline, a magazine mounted on the frame and adapted to hold the lengths of pipe, pipe location means associated with the magazine and adapted to position any one of the lengths of pipe in a pipe transfer position in said magazine, pipe transfer means mounted on the machine and adapted to alternatively transfer a length of pipe from said pipe transfer position to a pipe handling position exterior of said magazine and return a length of pipe from the pipe handling position to the pipe transfer position, and pipe handling means to axially move the length of pipe in the pipe handling position relative to the machine to engage or disengage an end of the length of pipe with the end of the previously laid pipeline.

4,111,375

PROCESS AND EQUIPMENT FOR THE PRODUCTION OF A YARN TAIL

Meinolf Dolle, Berlin, Fed. Rep. of Germany, assignor to Spinnstoffabrik Zehlendorf Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,606
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614252
Int. Cl.² B65H 54/02, 54/34
U.S. Cl. 242—18 PW 14 Claims



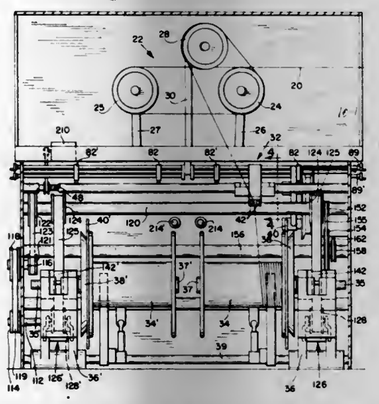
1. A process for producing a yarn tail on yarn package tubes upon which yarn is wound in a pattern including a traverse zone by the yarn traverse guide and a yarn tail zone disposed beyond the traverse zone by an auxiliary yarn guide comprising the steps of initially forming a yarn pre-build on a tube with the yarn engaged by the yarn traverse guide, engaging the yarn by the auxiliary yarn guide before the yarn traverse guide has reached the end of its traverse zone with the auxiliary yarn guide following the yarn traverse guide in the direction in which the yarn is being run in the pre-build on the tube, independently moving the auxiliary yarn guide beyond the end of the traverse zone of the yarn traverse guide while the yarn still remains engaged in the yarn traverse guide whereby a yarn tail is wound outside the traverse zone in the yarn tail zone with both the auxiliary and traverse guides engaged with the yarn, and thereafter releasing the auxiliary yarn guide from the yarn for forming the final package build under the guidance of the yarn traverse guide.

4,111,376

CONTINUOUS STRAND WINDING APPARATUS

David C. Hoddinott, N. Stonington, and Albert P. Brown, Gales Ferry, both of Conn., assignors to Crompton & Knowles Corporation, New York, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,751
Int. Cl.² B65H 54/02, 67/04
U.S. Cl. 242—25 A 10 Claims



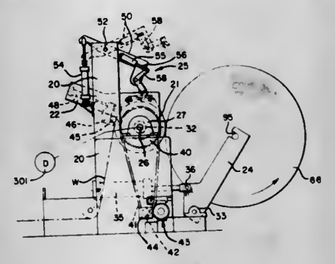
1. Winding apparatus for the continuous winding of an advancing strand comprising:
(a) a pair of co-axially mounted, spaced, independently driven, and removable reels;
(b) a pair of machine reels mounted for rotation with said reels about a common axis, one of said machine reels is mounted adjacent the remote end of one of said reels and the other is mounted adjacent the remote end of the other of said reels;
(c) snagger means disposed between the remote end of each of said reels and its associated machine reel and mounted for rotation with said machine reel;
(d) means for traversing strand onto one of said reels until a predetermined length of strand has been wound thereon;
(e) restraining means for temporarily restraining the strand and maintaining it in a winding relationship with the filled reel;
(f) means for rapidly moving the traverse means across the other reel into a position to direct said strand onto the machine reel associated with said other reel;
(g) means for withdrawing the restraining means thereby permitting the restrained strand to change its path to a path which intersects the path of the snagger means;
(h) means for severing the strand between the snagger and the filled reel after at least one revolution of strand has been wound onto the machine reel; and
(i) means for moving the traverse means into normal traversing relation with the other reel after a predetermined number of revolutions of strand has been wound onto said machine reel.

4,111,377

METHOD AND APPARATUS FOR CONTINUOUSLY WINDING A ROLL OF WEB MATERIAL

Richard S. Tetro, and Paul E. Harmon, both of Fulton, N.Y., assignors to The Black Clawson Company, Fulton, N.Y.

Filed May 23, 1977, Ser. No. 799,153
Int. Cl.² B65H 19/20
U.S. Cl. 242—56 R 6 Claims



1. In a continuous winder for web material including a frame, a driven drum supported in the frame for driving a roll of web material being wound, primary support means for supporting a core upon which a roll of web material is to be wound while the web is initially wrapped on the core, and secondary support means for accepting the core and winding roll from said primary support means and for supporting said core and roll during completion of the winding of the roll with the surface of the roll in driven engagement with the surface of the drum, the combination of:
(a) means mounting said primary support means for rotation on said frame in one direction through 360° about an axis concentric with the axis of rotation of the drum from an initial position wherein a core is mounted on said primary support means out of contact with the surface of the drum, through an intermediate position wherein said core is in contact with the web against the drum to a second position wherein said core is transferred to said secondary support means, and continuing rotation in the same direction to said initial position for acceptance of a new core,
(b) cutting means supported by the frame and operable with said primary support arms in said intermediate position to cut the web from a full roll for transfer to a core supported by said primary support means,
(c) guide means carried by said primary support means and effective in said intermediate position of said primary support means to support a length of the web out of engagement with the drum for cutting by said cutting means without contact with the drum, and
(d) means for causing movement of said cutting means along a predetermined path into engagement with said supported length of the web.

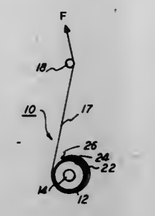
4,111,378

MEANS AND METHOD FOR PROVIDING INDICATING OF END PORTION OF WEB MATERIAL

Morris L. Barwick, Deer Park, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1977, Ser. No. 802,765
Int. Cl.² B65H 25/14, 25/32
U.S. Cl. 242—57 8 Claims

1. Apparatus for sensing the end portion of the web material in a web transfer apparatus including web take-up means, the combination comprising:
a rotatably supported supply spool,
web material having an end portion coupled to the supply spool, said web having a first predetermined amount including the end portion positioned around the supply spool in a first direction and having a second predetermined and remaining amount positioned around the supply spool in a second and opposite direction whereby the supply spool rotates in a first direction during the removal



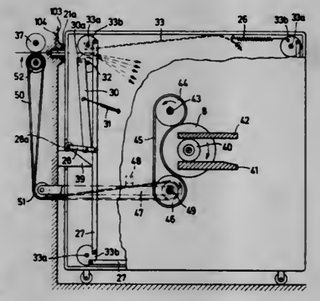
of the second predetermined amount of web material and rotates in a second and opposite direction during the removal of the first predetermined amount of web material, and
means to sense the change in direction of the rotation of the supply spool.

4,111,379

CASSETTE FOR STRIP MATERIAL

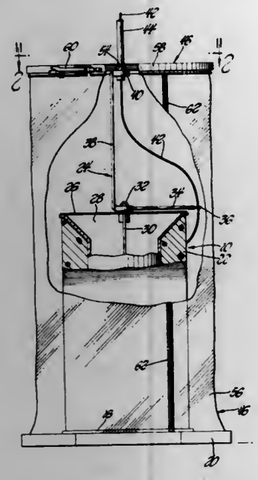
René Lüscher, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Apr. 5, 1977, Ser. No. 784,856
Claims priority, application Switzerland, Apr. 13, 1976, 4675/76
Int. Cl.² G03B 1/04; B65H 75/18
U.S. Cl. 242—71.1 15 Claims



1. A cassette for strip material comprising:
(a) a light tight casing defining an opening through which strip material is admitted to or drawn from the casing,
(b) a door in the casing and within the casing,
(1) a hub for receiving a spool for strip material,
(2) means rotatably mounting said hub in said casing,
(3) means for coupling said mounting means to a drive external to the casing,
(4) a brake acting on said hub, said brake including a brake disc coupled to said hub and rotatable therewith and a brake band mounted on said casing and engageable with said brake disc, said means rotatably mounting said hub being adapted to move within said casing thereby disengaging said brake disc from said brake band; and
(5) a brake release mechanism adapted to be actuated from outside the casing.

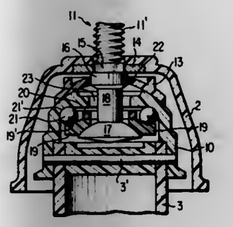
4,111,380
WELDING WIRE SPOOL SHROUD
Carl C. Heuckroth, 101 Hemlock Dr., Lodi, Ohio 44254
Filed Jun. 14, 1977, Ser. No. 806,412
Int. Cl.[2] B65H *49/00*
U.S. Cl. 242—128 **3 Claims**



1. An enclosed welding wire storage and feed system comprising a spool having an upright hollow cylindrical section, a pair of axially spaced, radially outwardly extending, circular flange members disposed at the respective ends of said cylindrical section, a multi-layered coil of welding wire wrapped about the cylindrical spool section and contained between said flange members, said wire wrapped spool being supported upon one of said flange members such that the other flange is disposed vertically above said one flange, a wire pay-off device supported in the upper end of said spool proximate said other flange, said device including a rotatable orbit arm, said orbit arm having a first end extending radially beyond said other flange and terminating in a first wire guide element, a leg element projecting upwardly from the other end of said orbit arm and terminating at its upper end in a second wire guide element generally coaxially aligned with the axis of said cylindrical spool portion and spaced vertically above the upper end of said spool, a free end of wire from said coil extending through said first and second wire guides, and a non-porous protective shroud enclosing said wire pay-off device and said spool, said protective shroud being supported upon the second wire guide element of the wire pay-off device in vertically and horizontally spaced relation to said spool and said shroud including means permitting access to said spool.

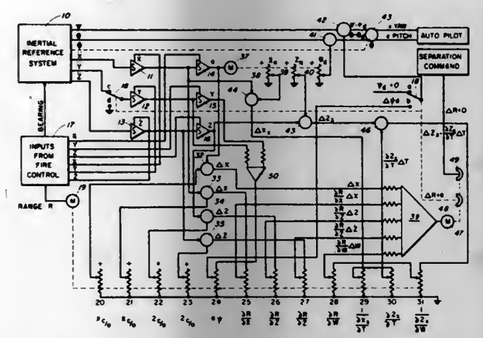
4,111,381
SUSPENSION SYSTEM OF BOBBIN HANGER
Shinzo Kitamura, No. 1-1-18, Deguchi, Hirakata, Japan
Filed Nov. 11, 1976, Ser. No. 741,051
Claims priority, application Japan, Nov. 11, 1975, 50-136111; Nov. 11, 1975, 50-154028[U]; Nov. 29, 1975, 50-161953[U]
Int. Cl.[2] B65H *49/02*; D03J *5/08*
U.S. Cl. 242—130.2 **7 Claims**

1. A suspension system for rotatably supporting a bobbin holder, comprising:
- a shank forming a spherical bearing-race-receiving face at the lower end thereof with a neck part and a round trunk part being successively formed vertically therefrom;
- a bearing race coaxial with said shank and having a lower concave spherical surface, said bearing race being supported on said spherical bearing-race receiving face of said shank;
- a bobbin securing member having a convex spherical top face, said bobbin securing member being provided with a through-hole for receiving said shank, said through-hole being formed through the top part of said bobbin securing member and receiving said neck part of said shank and providing a broad clearance therebetween;
- ball bearing means disposed between said bobbin securing member and said bearing race, for rotatably supporting said bobbin securing member from said shank through the intermediary of said bearing race; and
- a cap plate being formed with a concave spherical surface substantially coinciding with the convex spherical top



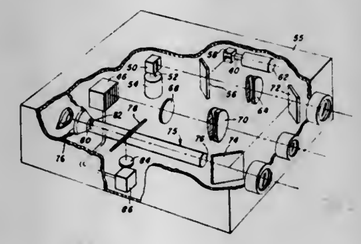
face of said bobbin securing member and formed concentrically parallel with said spherical bearing-race-receiving face of the lower end of said shank and having a central opening for receiving said trunk part of said shank, said central opening providing only a narrow clearance between said trunk part of said shank and said cap plate, whereby said cap plate prevents the intrusion of dust from above into the ball bearing section of said suspension system while permitting smooth rotation of said bobbin securing member through said ball bearing.

4,111,382
APPARATUS FOR COMPENSATING A BALLISTIC MISSILE FOR ATMOSPHERIC PERTURBATIONS
Charles W. Kissinger, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 297,468, Jul. 24, 1963, abandoned. This application Oct. 10, 1966, Ser. No. 586,010
Int. Cl.[2] F42B *15/12*
U.S. Cl. 244—3.1 **4 Claims**



1. In an inertial guidance system for a ballistic missile, an analogue computer comprising
- register means having preset voltages representing nominal azimuth and altitude position and velocity values of a programmed thrust termination point,
- means producing voltages representing instantaneous values of azimuth and altitude positions and azimuth and altitude velocities of said missiles,
- means subtracting the instantaneous position and velocity voltages from the nominal position and velocity voltages respectively providing difference voltage output signals therefrom,
- means multiplying each of said difference voltage signals by their respective derivates of range providing altitude and azimuth deviation voltage output signals,
- means computing a deviation voltage output signal representing head and tail wind perturbations on range, and
- summing means adding said deviation voltages providing bearing correction and thrust cut off output control signals.

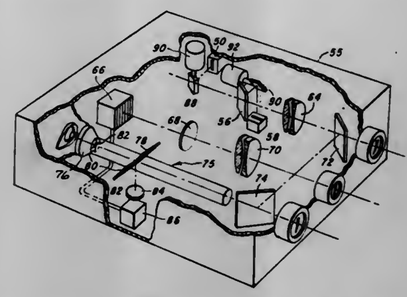
4,111,383
LASER BEAM TRANSMITTER SYSTEM FOR LASER BEAM RIDER GUIDANCE SYSTEMS
John B. Allen, Richardson, and Cecil R. Coale, Jr., McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 16, 1976, Ser. No. 677,636
Int. Cl.[2] F41G *7/00, 7/14*; F42B *15/02*
U.S. Cl. 244—3.13 **9 Claims**



1. A laser beam rider guidance system comprising:
(a) a launcher based electro-optical subsystem having a laser beam transmitter assembly operatively connected to an electro-optical sighting system for guiding an object to a point in space along a boresight axis, said laser beam transmitter assembly being operative for producing *x* and *y* scan beams and a synchronization beam in a preselected sequence along a common line of sight, said electro-optical sighting system comprising means for reflecting a portion of the *x* and *y* scanning beams, a sighting means for receiving the reflected portion of the *x* and *y* scanning beams, said sighting means including a means for determining line of sight, and an electrical signal producing means for producing electrical signals in response to the portions of the *x* and *y* scanning beams crossing the means for determining line of sight, said electrical signal producing means connected to the laser beam transmitting assembly for triggering the synchronization beam; and
(b) a laser beam receiver subsystem for mounting on a carrier, said laser beam receiver subsystem including means operative in response to *x-y* scanning beams and synchronization beams for producing *x-y* guidance signals in response to the time difference between the receipt of *x-y* scanning beams and corresponding synchronization beams and rate of scan for guiding the carrier to a destination corresponding to a point in space along the boresight axis.

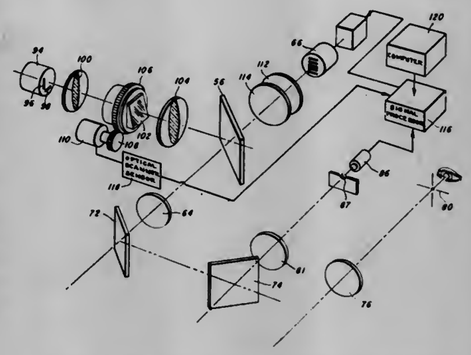
4,111,384
SCANNER SYSTEM FOR LASER BEAM RIDER GUIDANCE SYSTEMS
Erwin E. Cooper, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 16, 1976, Ser. No. 677,637
Int. Cl.[2] F41G *7/00, 7/14*; F42B *15/02*
U.S. Cl. 244—3.13 **7 Claims**

1. A laser beam rider guidance system comprising:
(a) a launcher based electro-optical subsystem having a laser beam transmitter assembly and a sighting assembly, said laser beam transmitter assembly including a stationary *x* and *y* coordinate laser beam producing means and a rotating scanning means in the light path of the *x* and *y* coordinate laser beam producing means for producing with each revolution at regular intervals a plurality of non-contiguous *x* and *y* laser scan beams in a field of view responsively to the beams of the *x* and *y* coordinate laser beam producing means, and a synchronization laser beam producing laser means, said sighting assembly including a light reflector means for reflecting portions of the *x l and y* laser



scan beams to the sighting means, indicator means for indicating when the *x* and *y* laser scanning beams cross the line of sight indicator of the sight means, detector means for producing signals responsively to the indicator means output for losing the synchronization laser beam producing laser means; and
(b) an on-board carrier laser beam receiver subsystem for producing carrier guidance signals responsively to receipt of the *x* and *y* laser scan beams and corresponding laser synchronization beams.

4,111,385
LASER BEAM RIDER GUIDANCE SYSTEM
John B. Allen, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 16, 1976, Ser. No. 677,638
Int. Cl.[2] F42B *13/30*; F41G *7/12, 7/14, 9/00*
U.S. Cl. 244—3.13 **13 Claims**



1. A laser beam rider guidance system comprising:
(a) a launcher based electro-optical subsystem having a laser beam transmitter assembly and an electro-optical sighting assembly, said laser beam transmitter assembly including an *x* and *y* laser scan beam producing means and a synchronization laser beam producing means, said *x* and *y* laser scan beam producing means comprising first and second elongated solid state laser diode junctions for emitting long, narrow beams of light, respectively, in the *x* and *y* directions, said electro-optical sighting assembly including a sighting means for establishing a line of sight

to target, and means responsive to the *x* and *y* laser scan beams crossing the line of sight to target for actuating the synchronization beam; and

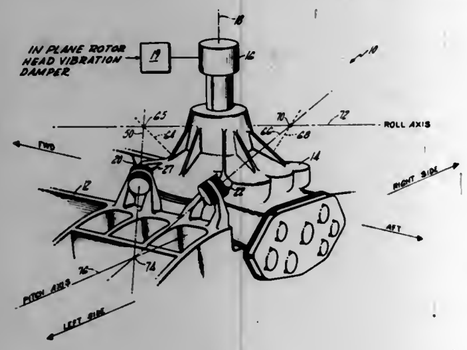
(b) a laser beam receiver subsystem for mounting onboard a carrier for producing guidance signals to guide the carrier to the target in response to receipt of the *x*–*y* scan beams and synchronization beams.

4,111,386

HELICOPTER ROTOR AND TRANSMISSION MOUNTING AND VIBRATION ISOLATION SYSTEM

Irwin Jeffrey Kenigsberg, Trumbull, and Larry Bruce Eastman, Monroe, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1976, Ser. No. 749,131
Int. Cl.² B64C *27/00*
U.S. Cl. 244—17.27 **10 Claims**



1. A helicopter having:

(A) a main lift rotor,

(B) a transmission supporting and driving the rotor for rotation about an axis of rotation,

(C) a fuselage, and

(D) a rotor and transmission support and vibration isolation system supporting the transmission from the fuselage and including:

(1) a plurality of elastomeric mount members each of selected compression stiffness and each having a selectively oriented axis and being connected to the fuselage and supporting the transmission therefrom and comprising:

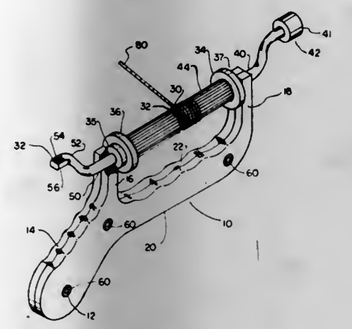
(a) alternate layers of elastomer and metal laminates stacked in compression between the fuselage and the transmission with an elastomer layer in contact with the fuselage and the transmission to thereby reduce the transmission of acoustic vibration therebetween to reduce internal noise in the helicopter and with the laminates positioned concentrically about the mount member axis so that said laminates are oriented normal to said axis, and with each mount member defining a focal line coincident with its axis so that the roll and pitch shear lines for each elastomer laminate are normal to the mount focal line and with each mount member focal line intersecting a corresponding focal line of other mount members so as to define a mount system roll axis extending longitudinally of the fuselage and displaced vertically on one side of said mount members and a mount system pitch axis extending transversely of the fuselage and displaced vertically on the other side of said mount members from said roll axis, and so that said axes are off-set from said mount members a selected distance to establish vibration isolation through said mount members between said fuselage and said transmission about both said pitch and said roll axes and so that with said system pitch and roll axes so positioned said mount members along provide substantial system yaw restraint which is accomplished by compression loading of the elastomer laminates of the mount members in response to transmission yaw motion.

4,111,387

KITE-CONTROLLER

John Joseph Leary, 7 High St., Natick, Mass. 01760

Filed Nov. 8, 1976, Ser. No. 739,615
Int. Cl.² A63H *27/08*
U.S. Cl. 244—155 A **3 Claims**



1. A kite-controller comprising:

(a) a handle means having a substantially eccentric U-shaped extension ending in a pair of outwardly extending legs;

(b) a spool means mounted between said legs and rotatable forwardly and reversibly;

(c) crank means fixedly mounted to said spool means at the outermost end of said substantially eccentric U-shaped extension of said handle means, to rotate said spool means;

(d) braking means having a substantially cylindrical member fixedly mounted to said spool means at one end and extending substantially perpendicular to said spool means for a portion thereof and then extending substantially parallel to said spool means to the end thereof, displacable from a first position distant said handle means to a second position adjacent said handle means and back thereto to brake said spool means, and having an elliptical end portion thereon defining a series of gripping grooves on the top surface thereof.

4,111,388

VERTICAL PIPE HOLDING TOOL

J. M. Presley, Rte. 4, Box 78, Enterprise, Ala. 36330

Filed May 18, 1977, Ser. No. 798,013
Int. Cl.² E21B *19/14*
U.S. Cl. 248—49 **16 Claims**

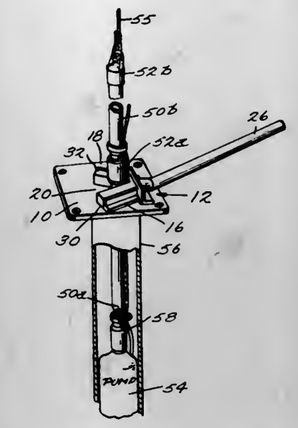
1. Apparatus for holding a vertically disposed pipe of a first predetermined diameter, said pipe having a portion having a second predetermined diameter greater than said first predetermined diameter, comprising in combination:

a base member including a slot extending inwardly a predetermined distance from one edge of said base member, said slot being wider than said second predetermined diameter;

first and second projecting members affixed to said base member, each having an interior surface transverse to said base member, said projecting member interior surfaces being disposed on opposite sides of said slot, and relatively disposed at an angle opening away from said one base member edge; and

a fork member, including a handle and first and second engaging members, said engaging members being affixed at one end to said handle member and extending outwardly therefrom, said engaging members having exterior transverse surfaces relatively disposed at an angle for

removably engaging said projecting member interior transverse surfaces, said fork member, when engaged, forming an opening with dimensions at least as great as said first predetermined diameter, but less than said second predetermined diameter said opening including a portion associated with said fork member interior angle apex of lesser width but extending beyond said second predetermined diameter.

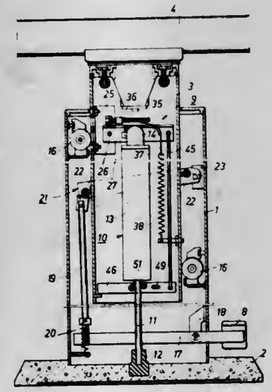


4,111,389

COLUMN DRAWING TABLE

Arnold Gundlach, and Hans Eder, both of Wilhelmshaven, Germany, assignors to Franz Kuhlmann KG., Germany

Filed Aug. 31, 1977, Ser. No. 829,342
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646486
Int. Cl.² F16M *11/00*
U.S. Cl. 248—162 **11 Claims**



1. A column drawing table comprising:

a pedestal foot;

a pedestal mounted on said pedestal foot;

a column mounted in said pedestal for longitudinal displacement therein;

a gas spring, one end of which is elastically supported in said pedestal foot, the other end supporting said column, said gas spring acting to equalize the weight of said drawing table, said gas spring generally comprising a piston and a cylinder, one of which is stationary with respect to said pedestal foot;

a fixing brake coupled between said pedestal and said column to secure said column in arbitrary longitudinal positions; and

a fall safety device to prevent unintentional downward motion of said column when the equilibrium of said column is disturbed, said fall safety device being completely independent of said fixing brake and comprising:

a lever pivotably connected at one end to said column;

a tension spring;

adjustment means coupling the other end of said lever to one end of said tension spring, the other end of said spring being connected to said column to thereby bias said other end of said lever downwardly, said lever being engaged by said gas spring intermediate its ends; and

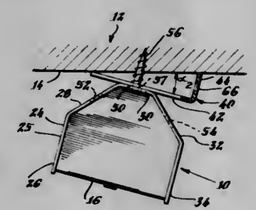
clamping means coupled between said lever and said one end of said gas spring to prevent unintentional downward movement of said column with respect to said pedestal.

4,111,390

APPARATUS ORIENTATING ARRANGEMENT

Herbert N. St. Jean, New Milford, Conn., assignor to Arrowhead Enterprises, Inc., New Milford, Conn.

Filed Mar. 2, 1977, Ser. No. 773,707
Int. Cl.² E06B *9/17*
U.S. Cl. 248—274 **12 Claims**



1. In an apparatus adapted to transmit, receive or relay electromagnetic or acoustical energy along a fixed direction relative to said apparatus, an improved means for orientating the apparatus to selectively vary said fixed direction with respect to another apparatus, an object or a space comprising:

A. a housing for the apparatus;

B. said housing having an elongated surface adapted to be positioned adjacent a support body surface, said housing surface having a peripheral configuration defining a plurality of contiguous non-perpendicular planar segments independently mountable on said support body surface for providing a first plurality of alternative orientations of said fixed direction with respect to another apparatus or object or space;

C. housing positioning means adapted to be located between and in contact with a selected one of said housing segments and said support body surface to provide a second plurality of alternative orientations of said fixed direction; and

D. means for mounting said housing and said housing positioning means to said support body.

4,111,391

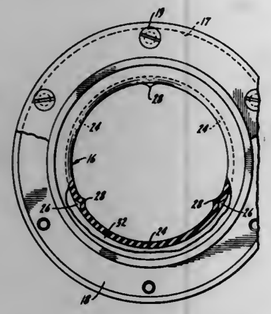
PINCH VALVE

Joseph J. Pilolla, Elmhurst, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Nov. 22, 1976, Ser. No. 743,701
Int. Cl.² F16K *7/07*
U.S. Cl. 251—5 **2 Claims**

1. A pinch valve including a housing, a generally cylindrical valve member formed of a flexible distortable rubber-like material attached to and positioned in said housing, said valve member having a plurality of equally spaced, axially extending grooves on the interior surface thereof, said valve member

having a plurality of equally spaced axially extending projections on the interior surface thereof, a plurality of equally spaced, axially extending grooves on the exterior of said valve member in peripheral register with said projections, the exterior of said valve member in peripheral register with said interior surface grooves being continuous and unchanged relative to adjacent portions thereof, said projections on the interior surface extending for a portion of the length of said flexible valve member, said grooves on the interior surface extending for a longer portion of the length of said flexible valve member than said interior projections, the application of



fluid pressure between said housing and valve member causing the inward collapse of said valve member, with the projections meeting in the center to form a generally complete closure of said valve member, and with the valve member folding upon said interior grooves, said housing having a plurality of outwardly extending lobes smoothly blending with the interior housing surface, there being the same number of lobes as there are interior grooves, the collapse of said valve member causing the outer peripheral fold surfaces to extend into said housing lobes, with the outer peripheral fold surfaces, when so collapsed, circumscribing a circle having a radius greater than that of said valve member in the uncollapsed condition.

4,111,392

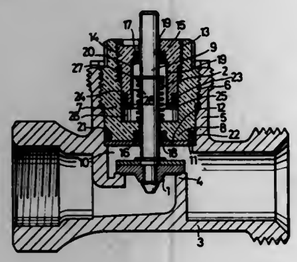
VALVE, ESPECIALLY A RADIATOR VALVE

Günther Edelmann, Elztal-Auerbach, Fed. Rep. of Germany, assignor to Braukmann Armaturen AG, Rothrist, Switzerland

Filed Jul. 6, 1976, Ser. No. 702,771

Int. Cl.² F16K *31/44*

U.S. Cl. 251—214 **3 Claims**



1. A valve structure having a housing, an inlet and outlet to said housing, a valve seat in said housing between said inlet and said outlet, a cup-shaped member within said housing, a valve stem extending from said housing, said valve stem having a valve plate engageable with said valve seat, fixed seal means between said valve stem and said cup-shaped member to prevent fluid escaping from said housing, a spring on said valve stem removed from said valve seat with respect to said fixed seal means, said spring lifting said valve plate from said valve seat, a threaded member in said cup-shaped member above said fixed seal means, surrounding said spring, with the upper end of said spring engageable with said valve stem, said threaded member being adjustable by the turning to control the lift of said spring, movable seal means carried by said threaded member to prevent fluid escaping from said housing on failure of said fixed seal means and means containing said movable seal means on said threaded member in fixed relation thereto whilst movable in relation to said valve stem on said adjustment of said threaded member.

4,111,393

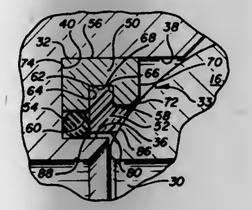
BALL VALVE SEAT ASSEMBLY HAVING A REMOVABLY MOUNTED FACE SEAL INSERT

William E. McClurg, Stafford, and Charles C. Partridge, Houston, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jul. 20, 1977, Ser. No. 817,391

Int. Cl.² F16K *25/00*

U.S. Cl. 251—174 **8 Claims**



1. A ball valve comprising:

(a) a valve body having inlet and outlet flow passageways connected by a valve chamber, a ball valve member mounted in said valve chamber for rotation between open and closed positions relative to said passageway;

(b) a seat pocket in said valve body around each of said passageways defined by substantially parallel inner and outer sides which are joined by an end wall that generally faces said ball valve member;

(c) a seat ring in said pocket having an outer periphery adjacent the outer side of the pocket and an inner periphery defined by first and second generally parallel inner peripheral surfaces facing the inner side of said pocket, said first and second peripheral surfaces being spaced from each other longitudinally relative to the flow passageway and defining therebetween an annular groove which opens toward the longitudinal axis of the passageways, said groove being defined by generally parallel opposed sides joining said first and second peripheral sufaces and extending generally transverse to the longitudinal axis of the passageways;

(d) a resilient seat ring insert mounted inside the seat ring extending over said second inner peripheral surface and including a face portion in sealing contact with said ball valve member and an outer peripheral retaining flange received within said groove, said insert being sufficiently deformable during assembly of the ball valve to permit a radially inward deformation thereof to displace said flange through the interior of said seat ring in order to engage said flange in said groove; and

(e) means within said seat pocket to bias said seat ring toward said ball valve member.

4,111,394

ADJUSTING DEVICE FOR THE GLAND PACKING OF A FLAT SLIDE-VALVE

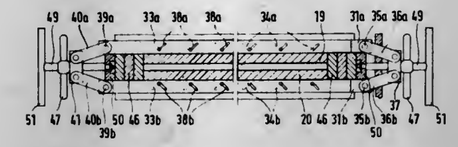
Andreas Jaudt, Schongauerstrasse 10 c, D-8900 Augsburg, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,736

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1977, 2707036

Int. Cl.² F16K *31/44*

U.S. Cl. 251—214 **10 Claims**



1. In a valve of the type comprising a valve housing having means defining an aperture to be controlled, a flat slide valve within said housing mounted for movement toward and away from said aperture to selectively open and close said aperture, a gland packing within said housing, said packing being of elongated flat-surfaced substantially rectangular configuration and having one of its elongated flat surfaces in engagement with one side of said flat slide valve, and adjustment means for controlling the engagement pressure between said packing and said slide valve, the improvement wherein said adjustment means comprises at least one elongated flat-sided lamination mounted with a flat side thereof disposed adjacent and substantially parallel to a second flat surface of said packing opposite to said one flat surface and remote from said slide valve, said elongated lamination including a plurality of slots therein extending parallel to one another and at an inclination to the direction of elongation of said lamination, a plurality of fixed axles extending through said plurality of slots respectively in direction transverse to the direction of elongation of said lamination, and control means operable from the exterior of said valve housing for moving said elongated lamination in the direction of its elongation whereby the coaction between said slots and said axles simultaneously causes said elongated lamination to move within said housing in a direction transverse to its direction of elongation toward said gland packing.

4,111,395

BUTTERFLY VALVE

William L. Sheppard, Romulus, Mich., assignor to AVM Corporation, Jamestown, N.Y.

Continuation of Ser. No. 490,232, Jul. 22, 1974, abandoned. This application Feb. 25, 1976, Ser. No. 661,132

Int. Cl.² F16K *1/22*

U.S. Cl. 251—306 **14 Claims**

1. A fluid valve comprising:

a body having a longitudinally extending passageway, said body being formed of first and second body members each having a passage aligned with the passage of the other to form said passageway;

an elastomeric member sealingly disposed between said body members and defining an opening through which passes all the fluid flowing through said passageway;

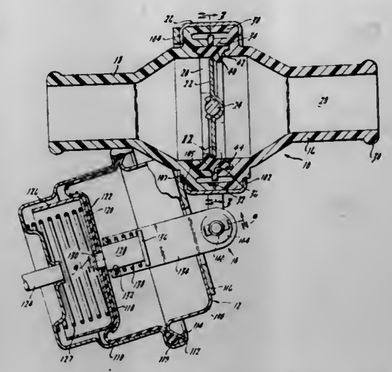
a valve element disposed in said passageway for movement to and from a closed position in which said valve element sealingly engages said elastomeric member to block the flow of fluid through said opening;

actuating means for moving said valve element to and from said closed position; means defining inner and outer annular flange means on each of said first and second body members;

said outer flange means of said first body member engaging said outer flange means on said second body member to locate said body members with respect to one another,

said respective inner flange means of said first and second body members being spaced from one another a substantially uniform distance when said body members are assembled with said outer flange means in engagement; and

flange means integral within said elastomeric member being disposed between said respective inner flange means.



4,111,396

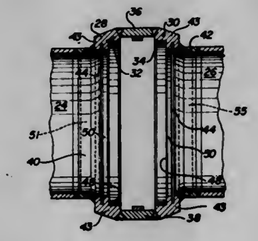
FABRICATED GATE VALVE STRUCTURE

Willard E. Kemp, and Bert L. Morrison, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation of Ser. No. 623,236, Oct. 17, 1975, abandoned. This application Apr. 8, 1977, Ser. No. 785,802

Int. Cl.² F16K *3/02*

U.S. Cl. 251—328 **5 Claims**



1. A fabricated gate valve structure, comprising:

(a) a hollow valve body having a bonnet;

(b) an inlet conduit and an outlet conduit mounted in opposed relation on said valve body and extending into a mid-portion thereof;

(c) a seat support means mouned with said inlet conduit and said outlet conduit having a pair of adjacent and spaced apart support members, each seat support member having an annular seat pocket on the gate side thereof to receive and mount a gate valve seat therin;

(d) said seat support members each having an annular groove in a spaced relation to an inner end portion of the associated seat pocket to define on one side of the groove an inner annular seat supporting lip which is capable of flexing and to define on the other side of the groove an outer conduit supporting cantilever beam which is capable of flexing and has an associated conduit welded thereto on the side thereof opposite the annular seat pocket whereby flexing of the outer cantilever beam may occur relative to the seat supporting lip to minimize any flexing of the seat supporting lip, said groove opening to the flow passageway of said gate valve structure and the

associated seat supporting lip being behind the inner end of the associated valve seat to contact said valve seat inner end and support said valve seat; and

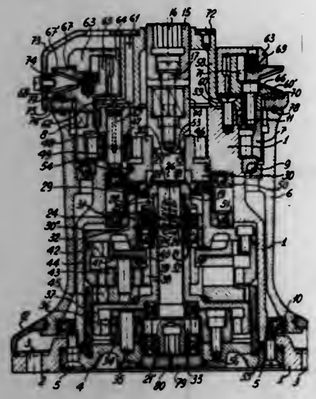
(e) a gate mounted between the seat support members for movement between open and closed position.

4,111,397

THREE-SPEED WINCH PARTICULARLY FOR NAUTICAL USE

Luciano Bonassi, Saronno, Italy, assignor to Costruzioni Barbarossa, Milan, Italy

Filed Dec. 15, 1976, Ser. No. 750,802
Claims priority, application Italy, Dec. 19, 1975, 30528 A/75
Int. Cl.² B66D *1/30*
U.S. Cl. 254—150 R **7 Claims**



1. A three-speed winch provided with a pulley the groove of which is adjustable in width so as to receive ropes of different diameters, said winch having a drum around which a sheet or rope can be wound and which is rotatable by means of the operation of a hand-crank having a pin portion which is inserted axially in the winch, comprising a fixed recessed casing encircled by said drum, one end of said casing being provided with fixing means projected from the bottom of said casing and the other end of said casing being provided with a rotatable annular member mounted thereon, said annular member meshing with the drum through a free wheel gear and said annular member being arranged to be driven in the same direction of rotation by differently combinable gears contained in said casing whatever the direction of rotation of the operating hand-crank, said pulley comprising a fixed support connected to the casing and having a cylindrical body portion coaxial with a driving shaft of the winch, a rotatable ring nut surrounding the cylindrical body portion carrying a movable flange of the pulley and engaged with a fixed flange of the pulley, said fixed flange of the pulley being connected with said annular member of the winch and provided with a hub internally screw-threaded and receiving in screw-threaded relation said ring nut carrying said movable flange, and resilient means for urging the movable flange away from the fixed flange.

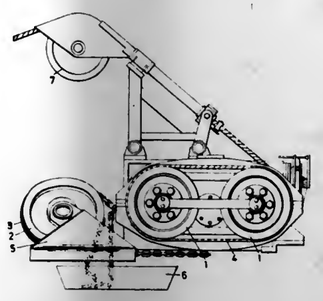
4,111,398

HAULAGE WINCHES

William Alexander, Elstree, and John T. H. Webb, Sunningdale, both of England, assignors to Wharton Engineers (Elstree) Limited, United Kingdom

Continuation of Ser. No. 569,394, Apr. 18, 1975, abandoned. This application Jan. 11, 1977, Ser. No. 758,410
Int. Cl.² B66D *1/76*
U.S. Cl. 254—175.5 **9 Claims**

1. A multi-capstan winch for hauling in under load a cable, comprising at least first, second, and third rotatably driven capstans, the second and third capstans being of reduced diameters, the first capstan being of an enlarged diameter and driven for delivering the cable under load to the second and third capstans, the second and third capstans of a configuration to



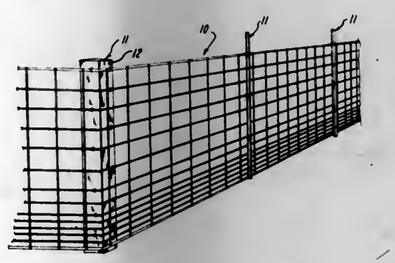
receive a plurality of wraps of the hauling cable, and the first capstan positioned with respect to the second and third capstan to receive more than a one-half wrap of the hauling cable.

4,111,399

PANEL FENCE

George G. Hutchison, III, Englewood, Colo., assignor to Hutchison-Western, Adams City, Colo.

Filed Apr. 13, 1977, Ser. No. 787,046
Int. Cl.² B21F *27/00*
U.S. Cl. 256—32 **6 Claims**



1. In a wire fence section having a plurality of horizontal strands and a plurality of vertical strands, said fence adapted for being coiled in a vertical cylinder, the improvement comprising in combination:

vertical strands of a selected gauge;

first and second horizontal strands welded to opposite ends of said vertical strands, said first and second horizontal strands having a common gauge heavier than said vertical strands;

a plurality of intermediate horizontal strands between said first and second horizontal strands reduced in gauge to have a common gauge lighter than said vertical strands, said intermediate horizontal strands and said vertical strands welded at respective points of intersection;

a rectangular array of openings defined by said first and second horizontal strands, said intermediate horizontal strands and said vertical strands wherein the vertical spacing between horizontal strands increases in the direction of reduction in the gauge of said horizontal strands from the lowest horizontal strand toward said intermediate horizontal strands; and

gauges of the horizontal strands being such as to allow the coilng of a 30 meter section of said fence about a tightly wound core of less than 50 cm diameter, said section when uncoiled not retaining substantial memory factor, and the gauge of said vertical strands being such that said vertical strands are substantially rigid for providing resistance against downwardly or upwardly directed collaps-

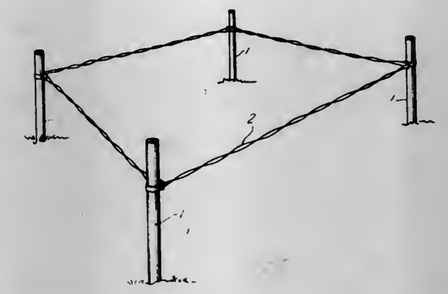
ing forces on said first and said horizontal strands and said intermediate horizontal strands.

4,111,400

ELECTRIFIED FENCE

Bertil Petrus Enoksson, Gyttorp, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Continuation-in-part of Ser. No. 680,790, Apr. 27, 1976, abandoned. This application Mar. 22, 1977, Ser. No. 780,000
Claims priority, application Sweden, Apr. 30, 1975, 7505043
Int. Cl.² A01K *3/00*
U.S. Cl. 256—47 **5 Claims**



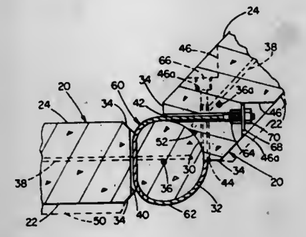
1. An electrified fence comprising: a plurality of carriers; at least one multi-layered ribbon; and fastening means for releasably fastening said ribbon to each of said carriers wherein said fastening means comprise an open loop of ribbon encompassing one of the carriers, and a ring made of elastically stretchable material slippable upon the two loop ends of the ribbon whereby upon tensioning said loop ends the resulting stretching of the ring anchors the loop in the ribbon to the respective carrier.

4,111,401

CONSTRUCTION ASSEMBLIES

William Hayden Pickett, 44 Lake Rd., Framingham, Mass. 01701

Filed Jul. 14, 1976, Ser. No. 705,350
Int. Cl.² E04H *17/14*
U.S. Cl. 256—13.1 **16 Claims**



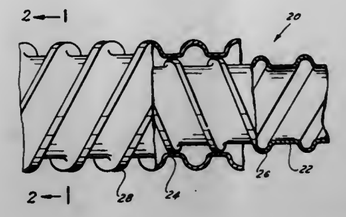
1. A structure comprising a series of preformed panels joined together at mating elongated male and female joint portions, the joint portions secured together by a series of discrete spaced apart flexible tension members looped about portions of each panel, wherein each tension member has two discrete terminations, the tension member passing from one of said terminations at a cooperating abutment face at a first side of a first panel, through a thickness of the panel, thence about the opposite side of the second panel, back through the thickness of the second panel, about its adjacent side, thence back through a thickness of the first panel to the second termination at a second abutment face at the first panel.

4,111,402

MOTIONLESS MIXER

Richard J. Barbini, Central Islip, N.Y., assignor to Chemineer, Inc., Dayton, Ohio

Filed Oct. 5, 1976, Ser. No. 729,725
Int. Cl.² B01J *13/10*
U.S. Cl. 366—338 **10 Claims**



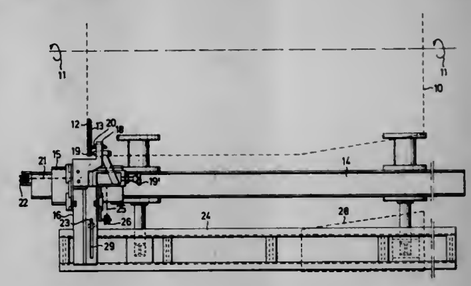
1. A motionless mixer for combining different substances put into communication therewith comprising; at least two tubular members, each tubular member having at least one spiral corrugated surface thereon, the members being arranged so that the longitudinal axes of adjacent tubular members either coincide or are parallel and the corrugated surfaces are stationary so that different substances brought into and out of communication therewith will be mixed together as the substances progress along the mixer in the direction of flow, adjacent said members touching each other at a predetermined number of points, and the spiral corrugated surfaces forming continuous contours to facilitate mixing of the substances.

4,111,403

APPARATUS FOR THE TREATMENT OF THE OUTER CONTOUR OF A WORM CONVEYOR

Peter Biegel, and Anton Dumont, both of Cologne, Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Aug. 30, 1976, Ser. No. 718,823
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1975, 2538734
Int. Cl.² B23K *7/10*
U.S. Cl. 266—58 **15 Claims**



1. Apparatus for cutting a desired edge contour of a worm which is to be used as a worm conveyor, comprising:

first means for rotating the worm about its longitudinal axis;

second means mounted for movement parallel to said longitudinal axis including a member for engaging the helix thrust surface of the rotating worm and be pushed along thereby to automatically move said second means along said worm;

a cutting torch movably mounted on said second means and directed toward said worm parallel to said longitudinal axis; and

third means for moving said cutting torch in the direction of said longitudinal axis, as said second means moves, in

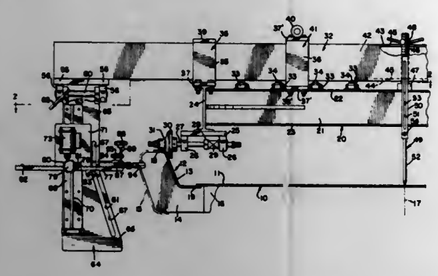
accordance with the desired edge contour to be formed on said worm.

4,111,404

FLAME CUTTING MACHINE FOR MODIFICATION OF RAILWAY CAR SIDE SILLS

John M. Benko, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 11, 1977, Ser. No. 786,753
Int. Cl.[2] B23K 7/10
U.S. Cl. 266—58 9 Claims



1. A flame cutting machine for trimming a plurality of longitudinally spaced laterally extending plate members in end-to-end alignment projecting outwardly from the sides of a railway car body comprising;
- a support beam extending transversely of said car body;
- guide means supported on said body and connected to said support beam for providing longitudinal movement of said beam relative to said body;
- a second beam supported on said first beam for lateral movement with respect thereto;
- means releasably locking said second beam to said first beam;
- means for cutting said plate members;
- means for supporting said cutting means on said second beam;
- and means associated with the second beam for maintaining said second beam and cutting means centered with respect to said car body.

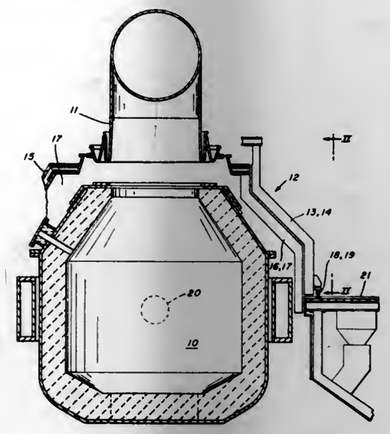
4,111,405

SEAL BETWEEN WALL MEMBERS OF A METALLURGICAL VESSEL ENCLOSURE

Peter S. Krelis, Mt. Lebanon Township, Allegheny County, and Larry M. Prox, Pittsburgh, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 13, 1977, Ser. No. 806,218
Int. Cl.[2] C21C 5/38
U.S. Cl. 266—158 3 Claims

1. In a metallurgical vessel enclosure having two horizontally slidable wall members each, abutting the other along a generally vertical adjoining edge at one end, and abutting another wall member along a second generally vertical edge at an opposite end, the improvement which comprises:
- a first elongated sealing member mounted along the exterior face of the edge of the first of the slidable wall members which adjoins the second slidable wall member, said first sealing member having a heat resistant compressible material with an exposed planar surface facing the second of said slidable wall members,
- the compressible material of said first elongated sealing member being located so that its exposed planar surface is in a slightly retracted position from the edge of the first slidable wall member so as to be protected from heat and molten materials splashing from the vessel,
- a second elongated sealing member mounted along the edge of the second slidable wall member adjoining the first, said second sealing member having a blade with a leading edge formed of a heat resistant material, said second elongated sealing member being located so that the leading edge of the blade substantially protrudes beyond the plane of the adjoining edge of the second slidable wall member toward the first elongated sealing member so as to make contact therewith before the adjoining edges of said first and second slidable wall members are brought into abutting contact, and



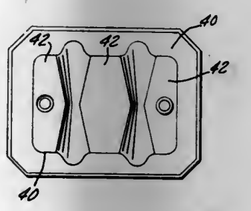
means for allowing the first of said elongated sealing members to move so that after the elongated sealing members are in contact, the two slidable wall members may be moved to an abutting position simultaneously displacing said first elongated sealing member further from the adjoining edges of the slidable wall members thus minimizing penetration of heat and splashing molten metal or slag to said sealing members.

4,111,406

CUSHIONING DEVICE

Andrey L. Zanow, Cleveland, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 12, 1976, Ser. No. 741,388
Int. Cl.[2] F16F 1/36
U.S. Cl. 267—153 1 Claim



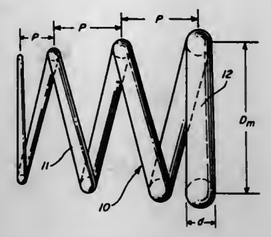
1. A compression-type cushioning pad comprising a plate member having an elastomeric cushion bonded to a side of said member, said cushion having alernate ridges and valleys extending across the pad, each of said ridges being of maximum cross-sectional area at its midpoint and the opposing sides of said ridges diverging from their midpoint to the outer ends of the ridges, the opposing sides of said ridges being so contoured that upon the application of a predetermined compressive load to said pad, the opposing side of said ridges flow towards each other in such a manner that filling of said valleys occurs at the bottom thereof at point midway between the longitudinal ends thereof and said filling continuing until the opposing sides of said ridges come into contact at the midpoint thereof and under increasing compressive load engagement between said opposing sides progresses toward the ends of said ridges.

4,111,407

CONICAL COMPRESSION SPRING

Francis W. Stager, Stafford Springs, Conn., assignor to Litton Industrial Products, Inc., East Hartford, Conn.

Filed Sep. 30, 1976, Ser. No. 728,273
Int. Cl.[2] F16F 1/08
U.S. Cl. 267—166 3 Claims



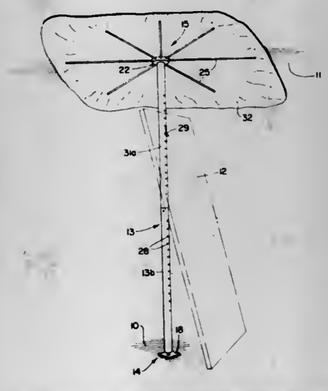
1. A spring exhibiting uniform stress and constant spring rate comprising:
- a wire helically wound into a conical form to comprise a plurality of spring coils, said wire having a diameter *d* which diminishes from one end to the other, and each said coil having a mean diameter Dm which diminishes from one end of the form to the other,
- the largest wire cross-sectional area comprising the base end of the spring, and
- the pitch of the spring coils diminishing from one end of said form to the other, whereby the ratio Dm/*d* is the same from coil to coil throughout the form thereby to provide a spring wherein each coil has the same stress limit.

4,111,408

KNOCK-DOWN WORKPIECE-SUPPORTING STANDARD AND OVERSPRAY SHIELD

Francis Lee Love, 7010 Reynoldsburg-New Albany Rd., New Albany, Ohio 43054

Filed Aug. 26, 1977, Ser. No. 828,040
Int. Cl.[2] B25J 3/00
U.S. Cl. 269—289 R 1 Claim



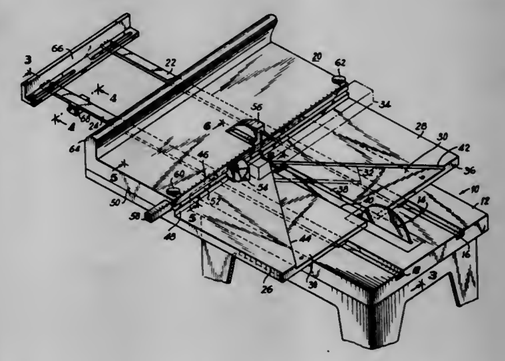
1. A knock-down workpiece-supporting standard and overspray shield for paint-spraying operations, comprising:
- (a) an elongated, generally vertically arranged post including a plurality of readily separable, longitudinally adjoining tubular sections formed at longitudinally spaced intervals with sets of peg-receiving openings;
- (b) a workpiece-engaging standoff peg selectively positioned in a set of the peg-receiving openings of said post and operable to support a workpiece in relatively outwardly spaced relation to said post;
- (c) a longitudinally extensible, floor-engaging foot adjustably carried at the lower end of said post; and
- (d) a generally horizontally disposed, ceiling-engaging frame detachably carried at the upper end of said post and including a central, generally circular hub formed with a plurality of circumferentially spaced apart, radially disposed sockets and a plurality of elongated rods frictionally and detachably carried in the sockets of said hub and extending radially outwardly therefrom, the hub and rods of said frame being operable to support a flexible, overspray-collecting sheet in protective, overlying relation to the ceiling of a room in which said post and workpiece are positioned.

4,111,409

UNIVERSAL JIG FOR TABLE ROTARY CUTTING TOOLS

Willis A. Smith, Pleasantville, N.Y., assignor to Russell W. Wasylchak, Red Hook, N.Y., a part interest

Filed May 6, 1977, Ser. No. 794,533
Int. Cl.[2] B23Q 1/04
U.S. Cl. 269—304 22 Claims



1. A jig for holding and feeding work to a table rotary cutting tool of the type having parallel guide slots in the table spaced on opposite sides of the cutter comprising
- a base plate slidably positionable upon the tool table and having an upper flat surface for supporting a work piece which is to be cut,
- two parallel guide bars attached to the underside of said base plate and arranged to slide within the guide slots of the tool table to maintain an accurate alignment of said base plate during sliding movement upon the tool table,
- said base plate including a substantially vertical work advancing abutment extending upwardly from said work supporting surface,
- and said base plate including a through-slot extending into said base plate from the edge thereof opposite to said work advancing abutment and having a center line parallel to said guide bars for providing clearance for the cutting tool as work is advanced into the cutting tool by sliding movement of said base plate.

4,111,410

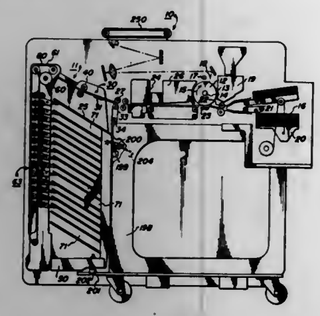
SORTING APPARATUS AND REPRODUCING MACHINE

Donald W. Tates, Fairport, and Stanley G. Clarkson, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1977, Ser. No. 783,358
Int. Cl.[2] B65H 39/10
U.S. Cl. 271—173 16 Claims

1. In a sorting apparatus for collating the output of a reproducing machine, said apparatus comprising:

a plurality of sheet receiving bins arranged in a row;
means for transporting sheets past each of said bins; and
means for sequentially distributing said sheets into said bins, said sequential distributing means including; a plurality of deflection gate means each arranged adjacent one of said bins at an entrance opening thereof for deflecting a sheet from said transport means into said bin adjacent thereto, and means for sequentially actuating said deflection gate means for distributing said sheets in said bins; the improvement wherein:
said actuating means for said deflection gate means associated with a first and said bins in said row comprises a solenoid; and wherein,

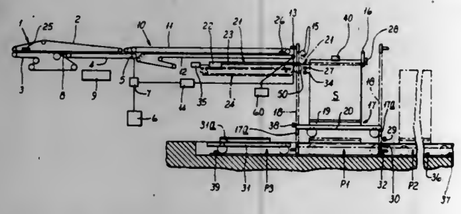


said actuating means for said deflection gate means of other of said bins in said row comprise a plurality of cams and a plurality of follower members associated with the deflection gate means adjacent said other of said bins and means for driving said cam in coordination so that said cams are advanced to sequentially actuate said deflection gate means of said other of said bins to distribute the sheets into said other of said bins;
whereby said deflection gate of said first bin in said row can be recycled to intercept a sheet for distribution into said first bin independently of said actuation means for said other of said bins.

4,111,411
SHEET STACKING APPARATUS

Bernard Albert Graves, and John Edward Mockett, both of Deptford, England, assignors to Masson Scott Thrissell Engineering Ltd., London, England

Filed Jun. 21, 1977, Ser. No. 808,945
Claims priority, application United Kingdom, Jun. 29, 1976, 27101/76
Int. Cl.² B65H *29/14, 29/60, 29/68, 31/32*
U.S. Cl. 271—199 **5 Claims**

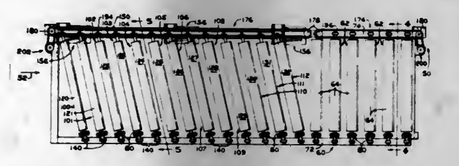


1. Sheet stacking apparatus comprising a stop member, a first conveyor arranged to carry a succession of sheets spaced apart in their direction of travel, a second conveyor arranged to receive sheets from said first conveyor and carry them to a delivery position horizontally spaced from said stop member by more than a sheet length and with sufficient velocity to travel into engagement with said stop member, means for driving said first and second conveyors so that said second conveyor travels at a slower speed than that of said first conveyor, and said sheets on transfer to said second conveyor are brought into overlapping relationship, a movable platform below the space between said second conveyor and said stop member and on to which sheets are fed in succession to form a stack containing a selected number of sheets, hoisting means for raising and lowering said platform, and further drive means adapted to be connected to and disconnected from said second conveyor, wherein said drive means is operable to decelerate said first and second conveyors in unison, said further drive means is arranged to be connected for a predetermined period of time to said second conveyor after such deceleration to cause the latter to accelerate relative to said first conveyor, and to be disconnected from said second conveyor, after said predetermined period of time has elapsed, to cause said second conveyor to decelerate relative to said first conveyor.

4,111,412
CONVEYOR FOR SEPARATING AND ALIGNING GLASS SHEETS

William P. Cathers, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 4, 1977, Ser. No. 784,485
Int. Cl.² B26F *3/00*
U.S. Cl. 271—251 **3 Claims**



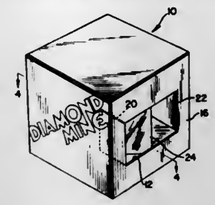
1. A conveying system for separating and aligning sheets as they move along a sheet movement path, comprising:
a superstructure;
a plurality of cylindrical conveying members having successive increasing diameter in the direction of sheet advance to insure increasing spaced distance between edges of adjacent sheets as the sheets advance along the sheet movement path;
means for rotatably mounting said conveying members in spaced relation to one another on said superstructure with their axial centers parallel to one another and at an oblique angle to the sheet movement path, said rotatably mounting means including means for changing the oblique angle;
means for rotating said plurality of conveying members at the same axial rotational speed;
endless belt;
means for mounting said endless belt adjacent a side of said superstructure with major surface of said belt normal and parallel to the sheet movement path; and
means for rotating said endless belt.

4,111,413
GAME IN THE FORM OF A MINIATURE MINE CONTAINING A PRECIOUS GEM

Emanuel J. Marcus, 8120 SW. 151st St., Miami, Fla. 33158

Filed Mar. 18, 1977, Ser. No. 778,962
Int. Cl.² A63F *9/06*
U.S. Cl. 272—1 R **6 Claims**

1. A game in the form of a quantity of granular material within which is concealed an item of value comprising: a hexagonal display container with side walls having means defining an aperture in at least one side wall thereof whereby interior contents may be viewed; a pair of opposed pillows blocks in said container at the top and bottom thereof, respectively, each of said pillow blocks having external lateral dimensions approximating the interior lateral dimensions of said container; a hexagonal box having side walls disposed between said pillow blocks, said box being configured similarly to said container but having smaller dimensions; at least one of said box side walls being transparent to permit viewing of the interior thereof; and a quantity of granular material within said box, within which there is said single item of value, said single item of value being of a size and shape sufficiently similar to at

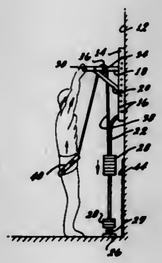


least a portion of said granular material so as to require careful examination and comparison of size and shape by a user of said game to distinguish said item of value from said portion of said granular material.

4,111,414
EXERCISING DEVICE FOR ASSISTING A PERSON TO PERFORM PULLUPS

Edward A. Roberts, 2205 Bahia Dr., La Jolla, Calif. 92037

Filed Oct. 12, 1976, Ser. No. 726,881
Int. Cl.² A63B *1/00*
U.S. Cl. 272—62 **6 Claims**



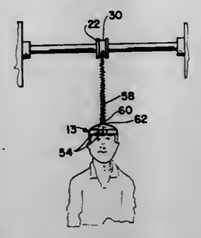
1. A pullup assist device for a person performing pullups comprising:
a support structure for supporting the weight of said device and said person;
a bar means carried by said support structure, adapted for use by a for said person to grasp and pull up against to perform said pullups while being assisted by the gravitational attraction of a counter weight, said bar means being selectively positioned vertically above the head of a person at a height dependent upon the height and reach of a person using the device;
a flexible means for aiding in lifting during a pullup exercise person; and
means attached to and cooperating with said flexible means for aiding in lifting a person cancelling a selected portion of the weight of said person when performing a pullups.

4,111,415
EXERCISING APPARATUS TO AID IN THE PRACTICE OF KARATE

Andrew Reitano, 2152 Ellis Ave., Bronx, N.Y. 10462

Filed Jan. 5, 1977, Ser. No. 756,873
Int. Cl.² A63B *21/12, 21/14, 21/16, 69/22*
U.S. Cl. 272—94 **1 Claim**

1. An exercising apparatus to aid in the practice of the martial arts which comprises an overhead horizontal support bar, said support bar being mounted between a pair of parallel opposing vertical support members, a wheel in turn rotatably mounted to said support bar between the opposing ends thereof, a first exercising component, a second exercising component, and a third exercising component, and means for removably connecting said first, second, and third exercising components with said wheel on said support bar, and wherein said first exercising component comprises a pair of straps whose upper ends each have a hook joined thereto, a pair of hooks in spaced circumferential relation being joined to the rim of said wheel, said hooks on said upper ends and on said rim

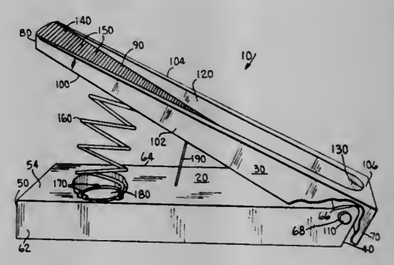


being in removably connectible association, each of said pair of straps having a lower end, one lower end being provided with a tensionable hand grip, the other lower end being provided with an adjustable foot grip, the spaced circumferential relation allowing for a pulley action when said straps are alternately raised and lowered by means of said hand and foot grips, respectively.

4,111,416
EXERCISER

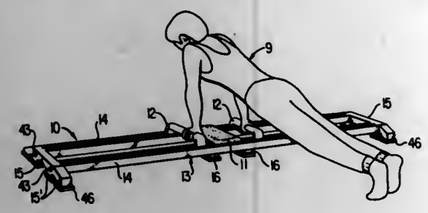
Walter J. Jinotti, 10 Scott St., New Brunswick, N.J. 08902

Filed Jun. 6, 1977, Ser. No. 803,878
Int. Cl.² A63B *23/04*
U.S. Cl. 272—96 **14 Claims**



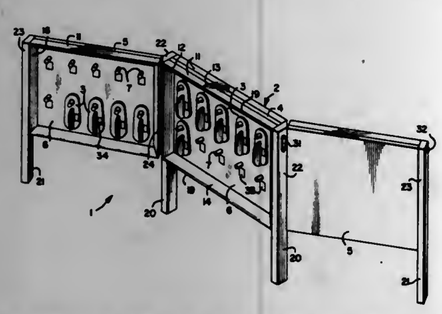
1. An exerciser comprising
a first base member and a second upper member pivotally connected together, and
a spring disposed between said members and normally holding them apart,
said upper member being adapted to receive the foot of the user whereby the upper member can be pumped up and down to perform an exercise,
said base member including means for coupling a mounting bracket thereto, said means comprising a plurality of parallel tubular members disposed parallel to each other and adapted to receive an operating portion of a mounting bracket, and
a mounting bracket comprising a generally U-shaped member having side walls including means for engaging one of said tubular members for coupling the bracket thereto, and a rotatable arm for engaging others of said tubular members for disposing the bracket at an angle with respect to said base member, said bracket including locking means for clamping it to a support surface.

4,111,417
TORSO EXERCISER
James A. Gardner, 9200 H. N. Arch Village, Richmond, Va. 23235
Filed Feb. 14, 1977, Ser. No. 768,361
Int. Cl.[2] A63B *21/04*
U.S. Cl. 272—136 9 Claims



1. A torso exerciser for use by a person in the common push-up exercising position in the development of the upper torso comprising an elongated frame including a pair of transversely spaced parallel longitudinal members having opposite ends and support means for rigidly connecting said pair of longitudinal members and for supporting said longitudinal members above and parallel to a horizontal support surface, a pair of elongated handles, means for slidably mounting said handles to slide on said longitudinal members in parallel relationship to each other and with each handle transversely spaced above said longitudinal members, first resilient bias means supported by said longitudinal members between said handles for resiliently opposing sliding motion of said handles from a neutral spaced apart position toward each other, and additional resilient bias means supported by said longitudinal members on the opposite side of each of said handles from said first resilient bias means to resiliently oppose sliding motion of said handles from said neutral spaced apart position away from each other, a chest pad mounted in the mid section of said frame between said handles.

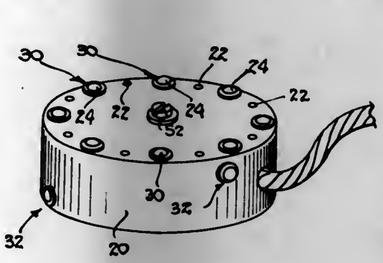
4,111,418
PEG BOARD GAME APPARATUS AND METHOD OF PLAYING GAMES THEREWITH
Hill D. DeMent, Jr., 742 Horton, Fort Scott, Kans. 66701
Filed Feb. 4, 1977, Ser. No. 765,828
Int. Cl.[2] A63F *3/00*; A63B *23/04*
U.S. Cl. 273—1 R 9 Claims



1. A method of playing a game by at least two players using a peg board having at least one peg projecting therefrom and at least one game piece having a peg receiving aperture and a gripping portion capable of being grasped between human toes, said method comprising the steps of:
(a) one player grasping said game piece by said gripping portion between the toes of one foot and moving said game piece from a first position off said peg;
(b) said player transferring said game piece to the toes of another player; and
(c) said other player moving said game piece to a second position with said peg projecting through said aperture.

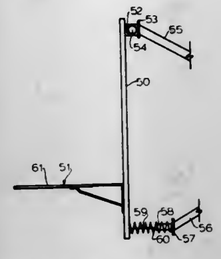
5. A game apparatus comprising:
(a) a game piece having a base with a side, an aperture extending through said side, and a toe gripping portion projecting from said base;
(b) a peg board including a pair of panels, each panel having opposite surfaces and side edges;
(c) hinge means joining one side edge of each of said panels together for pivoting said panels between a fully open position and a closed position with one panel in covering relation to the other panel; and
(d) a plurality of pegs on each of the surfaces of said panels which are facing when said panels are in said closed position, each of said pegs being receivable through said game piece aperture; and
(e) said pegs being of such length and relative position whereby the pegs on one panel abut corresponding pegs on the other panel when said panels are in said closed position.

4,111,419
PRACTICE HOCKEY PUCK
Peter P. Pellegrino, 2935 Border Links Rd., Visalia, Calif. 93277
Filed Jul. 26, 1976, Ser. No. 708,533
Int. Cl.[2] A63B *69/00, 59/14*
U.S. Cl. 273—1 B 8 Claims



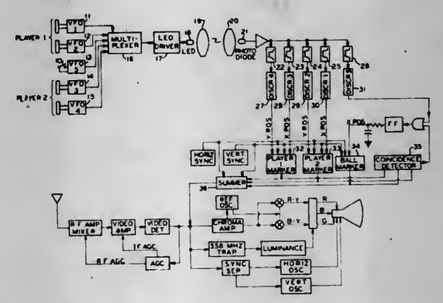
5. A practice hockey puck comprising:
a body member having generally flat top and bottom surfaces joined by a cylindrical side surface generally in the form of a hockey puck, said member having a plurality of holes in said top and bottom surfaces adjacent the periphery thereof and in said cylindrical side surface for receiving and retaining a plurality of metal members, and further having holes centrally disposed through said top and bottom surfaces for receiving additional members;
a plurality of washers;
a plurality of metal members having a shank portion for fitting within a respective one of said holes in said top and bottom surface and said cylindrical surface, and a head portion of larger diameter than said shank portion, said shank portion of each of said metal members passing through at least one of said washers and into a respective one of said holes whereby said head portion of each of the respective metal members may engage a respective one of said washers to limit penetration of each of said metal members into said body member; and
top and bottom members of metal having a head portion and a shank portion, each of said top and bottom members of metal having its respective shank portion disposed in one of said centrally disposed holes in said top and bottom surfaces so that the head portion of said top and bottom members extend further away from said top and bottom surfaces of said body member, respectively, than said head portions of said plurality of metal members.

4,111,420
ENERGY ABSORBING BASKETBALL GOAL/BACKBOARD UNIT
Frederick Carlson Tyner, 2124 Hillock Dr., Raleigh, N.C. 27612
Filed Jul. 19, 1976, Ser. No. 706,836
Int. Cl.[2] A63B *63/04*
U.S. Cl. 273—1.5 R 2 Claims



1. In a basketball goal/backboard unit of the type comprising a normally vertically positioned backboard having a flat frontal surface and a basketball goal structure mounted on said backboard frontal surface, said goal structure including a normally horizontally positioned annular ring and a mounting plate secured to and supporting said ring; the improvement comprising auxiliary means structurally associated with said backboard and goal structure and adapted to normally retain said ring horizontally positioned and enabling said ring to move out of said normal horizontal position under the influence of a predetermined abnormally-directed force applied thereto and to be automatically returned to said normal horizontal position once said force is removed therefrom, said auxiliary means including:
(a) upper pivotal support means mounted on the back surface of said backboard adjacent the top edge thereof and adapted to allow said backboard and said basketball goal structure to pivot as an integral structure when said force is applied to said goal; and
(b) lower resiliently loaded support means mounted adjacent the bottom edge of said backboard back surface, said lower support means providing energy absorbing means for receiving said force during movement of said ring from said normal position and for returning said backboard and basketball goal structure to their normal position once said force is removed.

4,111,421
OPTICAL LINKED REMOTE CONTROL VIDEO GAME APPARATUS
Eugene P. Mierzwinski, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Filed Dec. 9, 1976, Ser. No. 749,147
Int. Cl.[2] A63F *7/06*; F41J *5/08*; G08B *5/22*
U.S. Cl. 273—85 G 6 Claims



3. A remote controlled video game for generating a plurality of player positionable game markers on a CRT comprising means for selecting the positions of a plurality of game markers, means for generating a signal representing the selected positions of said game markers, a source of infrared light, means for modulating said source of infrared light with said signal, means for demodulating said modulated infrared light into a plurality of d.c. voltages, and a plurality of game marker generators for causing game markers to be displayed on a CRT display, said game markers' position being controlled by said plurality of d.c. voltages.

4,111,422
LAWN GAME DEVICE WITH SWUNG LAUNCHING STICK
Michael J. Burcenski, 318 E. 12th St., Lockport, Ill. 60441
Filed Dec. 9, 1976, Ser. No. 748,818
Int. Cl.[2] A63B *63/02, 67/00*
U.S. Cl. 273—101 3 Claims



1. In a lawn game device, a missile comprising an elongated member having a nose at the forward end thereof and stabilizing vane means at the rear thereof, and a laterally and rearwardly inclined projection on said elongated member adjacent the nose adapted to be engaged by a launching device, a launching stick comprising an elongated handle for manual gripping and swinging, a downwardly opening arch at the lower end of said handle with the arch including parallel, spaced legs, and a resilient band interconnecting the terminal ends of the legs and engaging under the projection during arcuate swinging movement of the launching stick in a path to bring the resilient band into engagement with the projection for projecting the missile in a desired trajectory, and a cradle tee supporting the forward end of the missile above a supporting surface, said tee including a ground stake and a generally U-shaped cradle at the upper end for engagement with said elongated member rearwardly of the projection, a target for the missile comprising an annular member, a ground stake connected to said annular member for insertion into the ground to support the annular member in generally upright position, said annular member being frustoconical in configuration and oriented in inclined relation to a vertical plane so that the opening defining the center of the annular member has its periphery generally perpendicular to the path of trajectory of the missile as it approaches the target.

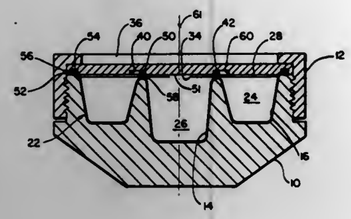
3. In a lawn game device, a launching stick for launching an inclined, stationary, ground supported projectile having an upwardly extending hook forming element thereon, said launching stick comprising an elongated handle for manual gripping and swinging in an arcuate path in a manner similar to a golf club or hockey stick, said handle having a downwardly opening laterally offset arch at the lower end of said handle, said arch having an open lower end adapted to straddle the projectile as the arch moves toward the hook forming element thereon, said arch including parallel, spaced legs, and having a resilient band interconnecting the terminal ends of said legs and engaging the hook forming element on the projectile for causing the projectile to be launched in an arcuate trajectory.

4,111,423

TRAP SHOOT SIMULATOR AND METHOD

Herbert F. DeWeese, 7650 E. Juanita Ave., Mesa, Ariz. 85208

Filed May 16, 1977, Ser. No. 797,529
Int. Cl.[2] F41J 9/00, 9/16
U.S. Cl. 273—101.1 17 Claims



1. A method of simulating the flight of objects in trap shooting, comprising the steps of:
pivoting a de-energized light source back and forth through a range of azimuthal angles;
randomly stopping said pivoting motion to set the light source at a random one of the azimuthal angles, and substantially simultaneously therewith energizing the light source and starting generally upward vertical movement of the light source from a preselected minimum vertical position along the random azimuthal angle;
de-energizing the light source as the latter reaches a preselected maximum vertical position;
restarting said pivoting back and forth motion;
driving the light source vertically downwardly to said preselected minimum vertical position; and
stopping vertical motion upon reaching said minimum vertical position.

6. A projector for simulating trap shooting, comprising:
a light source for projecting a beam of light simulating the flight of objects in trap shooting;
first drive means for moving said light source generally vertically up and down between preselected maximum and minimum vertical positions;
second drive means for moving said light source back and forth through a range of azimuthal angles; and
control means for controlling actuation of said first and second drive means and energization of the light source to randomly stop back and forth movement of said second drive means and to substantially simultaneously therewith start said first drive means for initiate upward vertical movement of said light source from said minimum vertical position along a random one of the azimuthal angles and energize said light source whereby said light source projects an upwardly moving beam of light along said random azimuthal angle, said control means also being for selectively stopping vertical movement when said light source returns to said minimum vertical position.

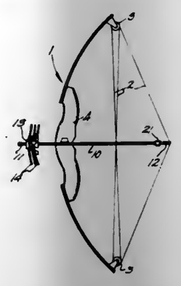
4,111,424

ARROW AND ARROW ATTACHMENT

Ronald E. Schreiber, 1195 Buff Way, Eugene, Oreg. 97401, and La Mon D. Christensen, 5511 Barger Dr., Eugene, Oreg. 97402

Filed May 9, 1977, Ser. No. 795,391
Int. Cl.[2] F41B 5/02
U.S. Cl. 273—106.5 C 1 Claim

1. An arrow for short range use, said arrow comprising,
a shaft having fletching secured thereto adjacent the shaft rearward end,
a stop in place on said shaft forward of said fletching,
an attachment including a base slidably disposed on said shaft and positionable thereon from a front to a rear position against said stop during initial travel of the arrow, and



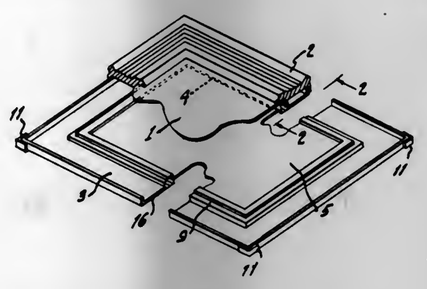
said attachment having outwardly projecting aerodynamic means acted upon by the slipstream to impart drag to the arrow to inhibit arrow flight.

4,111,425

JIGSAW PUZZLE HOLDER AND DISPLAY APPARATUS

George Edward Lathrop, Bricktown, N.J., assignor to The Lathrop Corporation of America, Clinton, N.J.

Filed Dec. 29, 1976, Ser. No. 755,130
Int. Cl.[2] A63F 9/00
U.S. Cl. 273—157 R 8 Claims



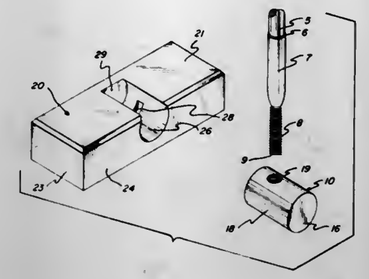
1. Jigsaw puzzle apparatus comprising:
a work area for the assembly of component puzzle pieces, said work area being configured and arranged so as to hold a completed puzzle substantially in place; and
a cover overlying said work area in a manner to impart a compressive force upon said puzzle pieces in further holding said completed puzzle in substantially aligned relationship;
wherein said work area includes a construction platform, a raised border surrounding said construction platform, and a resilient pad atop said platform to receive said puzzle pieces and to permit said puzzle pieces to be compressed inwardly thereof when said cover is placed in overlying relationship therewith;
wherein said resilient pad is selected of sufficient roughness to provide a sideways frictional force to hold said puzzle pieces in place during the construction of said jigsaw puzzle;
and wherein said construction platform and said surrounding raised border are dimensioned for the particular accommodation of the given puzzle to be held;
and wherein there is also included a tray fixedly circumscribing said surrounding raised border and construction platform for the containment, assortment and organization of individual puzzle pieces during the construction of said jigsaw puzzle.

4,111,426

GOLF CLUB SWING TRAINING DEVICE

Elwood Goodwin, 1245 Brittany Cir., Colorado Springs, Colo. 80907

Filed Apr. 11, 1977, Ser. No. 786,599
Int. Cl.[2] A63B 69/36
U.S. Cl. 273—186 C 1 Claim



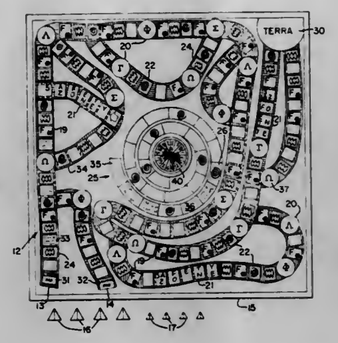
1. In a putter training device providing the combination of a channel-shaped guide member and putter arranged to move in a putter stroke in the guide member, the improvement of:
(a) the channel-shaped guide member having a flat bottom plate with flat top surface and flat bottom surface with parallel ends and parallel side edges, a fixed side rail depending normally to the top flat surface of the bottom plate at one edge of the member with its outer surface coinciding with said one edge and having an inner planar surface normal to the flat top surface and having a notch extending along the inner surface at its lower inside corner facing the top surface of the bottom plate and a movable side rail depending from the flat top surface of the bottom plate on the opposite edge of the bottom plate and movable toward and away from the fixed side rail, said movable side rail having an inner planar surface normal to said bottom plate and having a notch extending along its lower inside corner facing the top surface of said bottom plate; and a pair of spaced bores through said movable side rail from its top through its bottom, and a pair of slots in said bottom plate in mating communication with said pair of bores through the movable side rail, said slots extending longitudinally toward and away from said fixed side rail and being countersunk on the bottom surface of said bottom plate to support a screw head therein out of the plane of the bottom surface of the bottom plate; and a pair of screws extending through said slots and said movable side rail and beyond the top of said movable side rail with a wing nut mounted on each screw permitting adjustment of the movable side wall from its top surface; and an artificial surface, simulating grass secured to the top surface of said bottom plate, extending into both said notches in the side rail, whereby at maximum width adjustment said artificial surface extends into said notch in said movable side rail;
(b) a putter element with a parallelepiped head and a shaft, said head having parallel ends and parallel top and bottom surfaces arranged to move between said side rails of said guide member with said ends adjacent said rails, a truncated cylindrical bore in the top durface having an opening in the top surface of the head of a width less than the diameter of the cylindrical bore, a relatively deep slot in the wall of the cylindrical bore opposite the top opening accommodating the end of the threaded portion of said shaft, a cylinder with a slightly smaller diameter than said cylindrical bore freely rotatably mounted in said bore, therebeing a threaded bore passing through said cylinder, said putter shaft having a threaded lower end having a portion extending through said threaded bore in said cylinder with said extending end disposed in said slot, whereby said shaft is angularly adjustable to said head by turning to loosen the cylinder and permit pivoting of the shaft and to tighten the shaft to the head by reverse turning the shaft to frictionally wedge said cylinder in said head while the user of the putter is in putting stance with the putter head in the guide member.

4,111,427

SPACE TRAVEL GAME

Nelson Patterson, 1385 Ashland Ave., Des Plaines, Ill. 60016

Filed May 31, 1977, Ser. No. 801,762
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—250 4 Claims



1. A space travel game wherein the winner is determined by a player arriving at an end point with the greatest number of game pieces, said game comprising a game board having a main path, a first playing portion, said main path being on said first playing portion, a plurality of auxiliary paths selectively connected to spaced points on said main path, said main path and auxiliary paths comprising a plurality of serially positioned blocks, each of said blocks having indicia thereon as instructions to a player, said blocks being grouped into alternating series, a first series being of a first color and a second series being of a second color, a spinner assembly having pie-shaped wedges radially disposed about the center of said spinner assembly, said wedges alternating between said first color and said second color whereby movement along said path is controlled by said spinner assembly, numbers associated with each of said wedges, said spinner assembly including a pointer, said pointer disposed for random movement to a position within one of said wedges, thereby indicating the number associated with that wedge as the number of spaces to be moved by the game pieces of each player during his turn, the color of said wedge indicating the direction of travel of said playing piece when said playing piece approaches one of said spaced points on said main path, a second playing portion, said second playing portion being reached by a player's game piece when said game piece falls on certain of said blocks, said game piece returning to said first playing portion when falling on one of said blocks in said second playing portion, whereby a player may gain or lose game pieces when landing on a particular block and following said instructions given thereon.

4,111,428

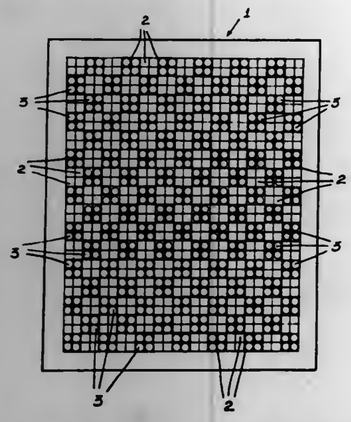
GAME OF NAVAL STRATEGY AND CHANCE

Ely Rubens Barbosa, Av. Itacira, No. 2106, Sao Paulo, Brazil

Filed Jul. 20, 1976, Ser. No. 707,030
Claims priority, application Brazil, Jan. 13, 1976, 00180
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—262 2 Claims

1. In a game of strategy and chance, a board having a major surface for playing thereon and divided into squares each subdivided into four smaller squares, a plurality of playing pieces of seven different configurations, said pieces including several of each configuration, other playing pieces representative of fixed targets comprising capitals of opponent players,

and petroleum bases of opponents positionable on said board playing surface in a given zone, the playing pieces of each configuration being representative of a movable weapons system that are targets for an opponent player able to cause removal of another target when within a firing range of said another target on said board, a plurality of monetary elements representative of different monetary values for buying said weapons systems and for payment of extent of movement of corresponding ones of said moveable weapons systems, a die for throwing thereof to ascertain the distance the weapons



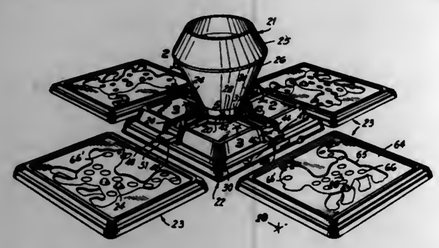
systems fire upon the throwing of the die, the result of each die throw denoting the range of the firing of said weapons systems, each weapons system having an effective range of firing and that range being a predetermined distance, and when the result on the die thrown corresponds with or is proportional to the number of smaller squares between a weapons system and a target being fired upon said target thereby being removable from said board and a plurality of cards having instructions thereon corresponding to acts to be carried out, punishments and chances.

4,111,429

GAME APPARATUS

Jane Waski, New York, N.Y., assignor to Janys Designs Limited, New York, N.Y.

Filed Jan. 17, 1977, Ser. No. 759,689
Int. Cl.² A63F *3/00*
U.S. Cl. 273—271 **9 Claims**



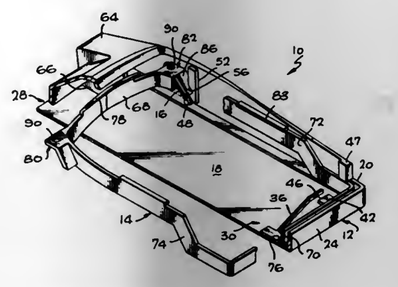
1. Game apparatus comprising a hopper, said hopper including a base defining a trough, a plurality of game pieces positioned within said hopper, said gamepieces being divided into at least two groups of separately identifiable gamepieces at least two distinct means associated with said hopper for removing said gamepieces therefrom upon actuation thereof, said gamepiece removal means including means for delivering said gamepieces to said trough after removal from said hopper and at least two distinct game boards having means for receiving said gamepieces placed thereon, each said gameboard including means for correlating said gameboard with one of said separately identifiable groups of gamepieces.

4,111,430

HAND HELD RECORD PLAYER WITH RECORD HOLDING ATTACHMENT

Reynold B. Johnson, Palo Alto, Calif., assignor to Microsonics Corporation, Los Angeles, Calif.

Filed Dec. 10, 1976, Ser. No. 749,432
Int. Cl.² G11B *3/40, 25/04*
U.S. Cl. 274—9 B **16 Claims**



1. A record holding apparatus comprising:

a card holding assembly, comprising a frame adapted for mounting to a hand-held record player, said record player having at least one indexing pin;

said frame having means at one end for receiving a record holding member having a record with means for centering said record in cooperation with the indexing pin of said record player;

said frame further having means for guiding said record holding member whereby said record holding member is movable relative said frame in substantially one direction in a plane perpendicular to the longitudinal axis of said indexing pin; and

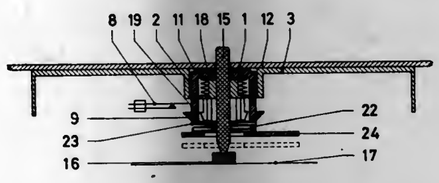
record holding member biasing means for biasing said record holding member in a direction parallel to the plane of said record holding member to a position wherein said indexing pin is centered on said record centering means said biasing means acting upon said record holding member during operation of the record player to maintain said record centering means centered.

4,111,431

RECORD PLAYER WITH RECORD DETERMINING MEANS

Poul Flemming Dalkov, Nivaa, Denmark, assignor to Skandinavisk Radio & Television Akts., Hasselager, Denmark

Filed Mar. 23, 1977, Ser. No. 780,455
Claims priority, application Denmark, Apr. 1, 1976, 1586/76
Int. Cl.² G11B *25/04*
U.S. Cl. 274—9 A **10 Claims**



1. In a record player having a turntable for individually supporting and rotating records of at least two different predetermined sizes, the combination comprising:

a vertically displaceable sensor centrally located with respect to the turntable;

sensor biasing means for maintaining said sensor in an upper position when no record is on the turntable, said sensor biasing means being of sufficiently low tension to allow said sensor means to be in a lower position when a record is on the turntable;

selectively actuable biasing means for being selectively actuated to provide an upward bias against said sensor, said selectively actuable biasing means exerting a biasing force on the sensor which is sufficient to upwardly displace said sensor only when a record of the smaller predetermined size is on the turntable and is not sufficient to upwardly displace said sensor when a record of the larger predetermined size is on the turntable and;

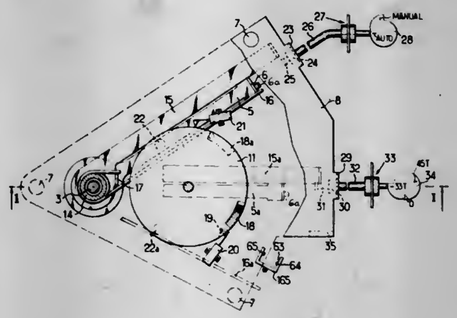
switching means responsive to the vertical displacement of said sensor.

4,111,432

AUTOMATIC DEVICE FOR POSITIONING THE TONE ARM OF A RECORD PLAYER

Jean Mazoyer, Nogent-sur-Marne, France, assignor to Beaulieu, Romorantin, France

Filed May 7, 1976, Ser. No. 684,372
Claims priority, application France, May 12, 1975, 75 14704
Int. Cl.² G11B *17/06*
U.S. Cl. 274—15 R **3 Claims**



1. In a device for positioning the tone arm of a record player having a turntable and a motor connected to drive said turntable,

said device comprising a second motor independent of the one driving said turntable, a tone arm, a rotatable shaft on which said tone arm is mounted, a vertically movable rod for lifting said tone arm, a first elongated member freely rotatable about said shaft, record diameter selecting means, retractable stop means controlled by said selecting means and adapted to stop said first elongated member in a selected position corresponding to the diameter of a particular record to be played, fixed stop means adapted to stop said first elongated member in a position corresponding to the diameter of the smallest record the player is adapted to accommodate, a second elongated member fixed to said tone arm shaft, spring means urging both elongated members together, and a photoelectric stopping device,

the improvement which comprises a cam wheel driven by said second motor and two switches in the supply line to said motor for stopping said motor with said cam wheel in either of two stopping positions, the first of which corresponds to the rest position of the tone arm, said cam wheel comprising:

a ramp on its upper part positioned to actuate said lifting rod to regulate the height of said tone arm,

a notch on its lateral surface cooperating with said two switches and,

a projection on its bottom positioned to drive said spring means and said first elongated member as said cam moves between said cam wheel stopping positions until said first elongated member encounters a selected one of said stop means, whereupon further rotation of said spring means relieves the pressure by said spring means urging said elongated members together,

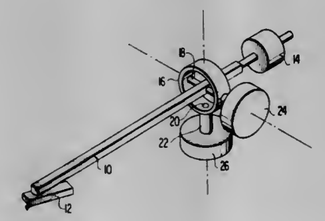
said photoelectric stopping device being positioned to be energized by said second elongated member when said record has been played and cause said cam wheel to drive said spring until both elongated members are again urged together, whereupon said projection drives said first elongated member until the cam wheel reaches its first stop position.

4,111,433

TONE ARM CONTROL SYSTEM

Herbert P. Raabe, 10121 Lloyd Rd., Potomac, Md. 20854

Filed Dec. 10, 1976, Ser. No. 749,566
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **13 Claims**



1. A tone arm control system comprising a tone arm, pick-up cartridge means mounted at one end of said tone arm, counterweight means mounted adjacent the opposite end of said tone arm, gimbal means supporting said tone arm intermediate said cartridge means and said counterweight means for rotation about horizontal and vertical axes and servo means for imparting rotation to said tone arm about each of said axes, said pick-up cartridge means having sensing means for sensing undesirable unidirectional and oscillatory forces in the vertical and horizontal directions and transducer means responsive to said forces for providing signals to circuit means for providing feedback control signals to said servo means feedback control signals to circuit means for controlling said servo means thereby to compensate for said undesirable unidirectional forces and oscillatory forces in the vertical and horizontal directions.

4,111,434

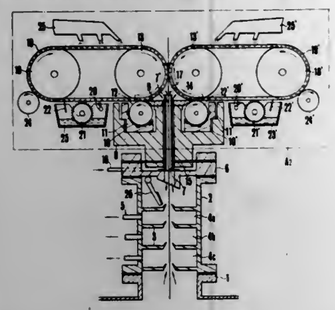
METHOD OF PRESSURE SEAL SIMULTANEOUSLY EMPLOYING AIR-BALANCE OF A HIGH PRESSURE STEAMER AND AN APPARATUS THEREFOR

Yoshikazu Sando; Hiroshi Ishidoshiro, and Matsuo Minakata, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Japan

Division of Ser. No. 583,836, Jun. 4, 1975, Pat. No. 4,017,258.
This application Feb. 27, 1976, Ser. No. 662,233
Claims priority, application Japan, Jun. 10, 1974, 49-65819; Jun. 10, 1974, 49-65820
Int. Cl.² F16J *15/40*
U.S. Cl. 277—3 **4 Claims**

1. A pressure seal apparatus employing air balance for a high pressure steamer comprising a roll seal mechanism forming one a fiber products take out and feed in opening, means forming an elongated air seal chamber opening at one end to said roll seal mechanism and arranged at the other end for connection to a high pressure steamer, the interior of said air seal chamber forming a duct-like passage for conveying the fiber products between the steamer and said roll seal mechanism, said means including dividing walls extending transversely of said duct-

like passage and spaced apart in the elongated direction of the passage for forming a plurality of serially arranged gas chambers with adjoining gas chambers being open to one another so that the fiber products can pass serially through the chambers in passing between the steamer and said roll seal mechanism, means for supplying a pressurized sealing gas into the end of said duct-like passage adjacent to said roll seal mechanism so



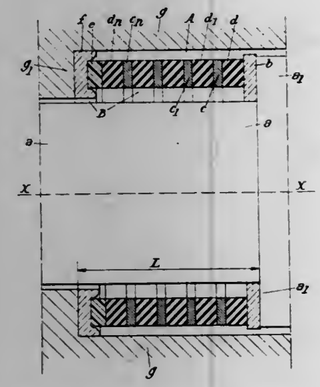
that the sealing gas and the steam from within the steamer intermix in the range of said gas chambers, said gas chambers comprising at least three said chambers, one adjacent said roll seal mechanism end of said passage, one adjacent the steamer end of said passage and third said chamber located between the other two, an exhaust tube connected to the third one of said gas chambers for removing mixed sealing gas and steam therefrom to a point exteriorly of said duct-like passage.

4,111,435

FLUID-TIGHT SEALING DEVICES

Robert Vilain, Maisons Alfort, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques EMH, France

Continuation of Ser. No. 522,287, Nov. 8, 1974, abandoned. This application May 18, 1976, Ser. No. 687,646
Claims priority, application France, Nov. 14, 1973, 73 40456
Int. Cl.² F16J *15/02*
U.S. Cl. 277—9 **7 Claims**



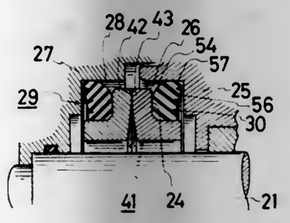
1. In a flexible sealing coupling arrangement for joining substantially axially aligned pipe sections comprising opposed end flanges provided at the adjacent ends of the pipe sections and a sealing assembly located between the end flanges, the sealing assembly comprising a stack of axially aligned and alternately disposed rigid and resilient rings, the improvement wherein said sealing assembly is resiliently compressible to an axial dimension which is slightly less than the distance by which said end flanges are spaced from one another in the operative positions thereof and wherein first and second end rings are disposed at the opposite ends of said stack and attached to said flanges of said pipe sections, said end rings having a substantially greater diameter than that of said stack, said resilient rings of said stack being mounted for compression between the rigid rings adjacent thereto and said end rings, respectively, means being provided subjecting said stack to a prestressing compression so as to impart to the assembly a said axial dimension slightly less than said distance between said end flanges and for releasing said prestressing compression when said assembly is disposed between said end flanges of the pipe sections so that, in use, said assembly is expanded against the end flanges of the pipe sections.

4,111,436

MECHANICAL SEAL

Hiroyuki Yazawa, Kawagoe, Japan, assignor to Nippon Oil Seal Industry Company, Ltd., Japan

Filed Jun. 29, 1976, Ser. No. 700,897
Claims priority, application Japan, Aug. 30, 1975, 50-105479
Int. Cl.² F16J *15/34*
U.S. Cl. 277—92 **11 Claims**



1. In a mechanical seal assembly for installation on a shaft including an annular floating seat having annular axial and annular radial sections intersecting to define therebetween a generally L-shaped seat for receiving a force-loaded packing therein, and an annular packing formed of a rubbery elastic material non-rotationally with respect to said seat positioned in the opening of said L-shaped seat, the improvement comprising said annular packing including:

(a) a cylindrical inner circumferential surface;

(b) a front surface extending generally radially outwardly from one end of said inner circumferential surface and generally aslant toward the other end of said inner circumferential surface;

(c) a back surface extending generally radially outwardly from said other end of said inner circumferential surface and generally aslant in generally the same direction as said front surface, said back surface including at least one annular groove slit therein; and

(d) a cylindrical outer circumferential surface connecting said back surface with said front surface; said packing disposed in said L-shaped seat with said inner circumferential surface in contact with the surface of said axial section within said L-shaped seat.

4,111,437

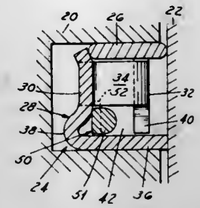
OIL CONTROL RING SPACER-EXPANDER WITH IMPROVED SLIP LATCH

Lee H. Saylor, Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed Sep. 8, 1976, Ser. No. 720,275
Int. Cl.² F16J *9/06, 9/18*
U.S. Cl. 277—139 **5 Claims**

1. In combination with a circular spacer-expander for use in a piston oil control ring having a free-state radius of curvature and parted expander ends, and including a plurality of alternating concentric circumferentially spaced inner and outer crowns integrally interconnected by a plurality of generally diverging legs and oil drain openings formed one in each of said plurality of legs, an improved slip latch comprising a curved rod having a radius of curvature equal to or less than

said radius of curvature of said spacer-expander, said rod having one end extending through at least one leg opening adjacent one end of said spacer-expander and having means formed in said one end between adjacent spacer-expander legs to limit sliding of said latch in said spacer-expander, said rod further having a second end extending through a plurality of leg open-



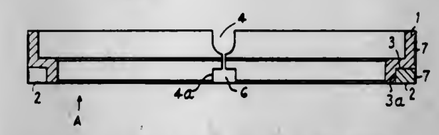
ings in the opposing spacer-expander end and being free to slide through said plurality of leg openings, said second rod end terminating in an inwardly directed beveled face to permit said second end to ride over opposing edges of said plurality of leg openings said rod having an inside radial edge which is substantially flat in radial cross section of said rod.

4,111,438

SEALING RING ASSEMBLIES FOR PISTONS

Gerald Longfoot, Lymington, England, assignor to Wellworthy Limited, England

Filed Aug. 1, 1977, Ser. No. 820,937
Claims priority, application United Kingdom, Sep. 2, 1976, 36492/76
Int. Cl.² F02F *5/00;* F16J *9/00*
U.S. Cl. 277—148 **6 Claims**



1. A sealing ring assembly for a piston comprising:

an outwardly springing carrier ring having a gap,

a recess disposed in the outer peripheral surface of the carrier ring,

an inwardly springing sealing ring having a gap,

the outwardly springing character of the carrier ring being stronger than the inwardly springing character of the sealing ring,

said inwardly springing sealing ring being located in the outer peripheral recess in said outwardly springing carrier ring and said gaps in the two rings being displaced one from the other.

4,111,439

ROTARY SEAL

John Kenneth Schmidt, Victorville, Calif., assignor to Amcord, Inc., Riverside, Calif.

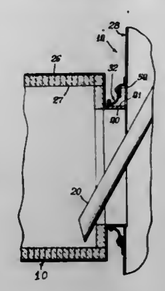
Filed Jun. 6, 1977, Ser. No. 804,151
Int. Cl.² F16J *15/32;* F27B *7/24*
U.S. Cl. 277—153 **10 Claims**

1. A rotary seal for sealing a large, high temperature rotary drum from the inflow of ambient air where the drum is mounted for rotation in respect to at least one stationary hood, said drum having a substantially circularly cylindrical surface at one open end thereof substantially coaxial with the axis of rotation of said drum, and said hood having an opening through which said cylindrical surface extends, and said hood being open to the interior of said drum through said open end, said seal comprising

a strip of flexible material for encircling said cylindrical surface and having an inner edge and an outer edge, said flexible material being formed of cloth and substantially air impermeable and resistant to heat and oxidation at temperatures at least up to 250° F.,

means for sealing said outer edge to said hood around said opening,

a wear liner affixed to the underside of said inner edge for



spacing said strip from said cylindrical surface, said wear liner having an undersurface on a side opposite said strip for mating with said cylindrical surface, said wear liner being resistant to wear, heat and oxidation at temperatures resulting from the frictional engagement of said undersurface and said cylindrical surface, and

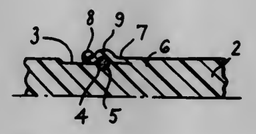
biasing means for biasing said undersurface against said cylindrical surface.

4,111,440

SEALING MEMBERS

James Young, London, England, assignor to J. Young (Scientific Glassware) Ltd., England

Filed Jul. 11, 1977, Ser. No. 814,154
Claims priority, application United Kingdom, Jul. 23, 1976, 30903/76
Int. Cl.² F16J *9/06*
U.S. Cl. 277—165 **15 Claims**



1. A sealing member for association with a bore in a barrel member, said sealing member comprising:

(a) a support of circular cross-section made of a substantially chemically inert, tough, compressible material, and support defining an annular groove therein,

(b) a sealing ring made of an elastomeric material mounted in said annular groove in said support,

(c) a sheath which covers the ring and is sufficiently thin for the sealing ring to form a resilient annular bulge in the sheath,

(d) said sheath being integral with the support on one side of the sealing ring, and

(e) said sheath having a compressed rolled portion on the other side of the sealing ring, whereby the sealing ring is sealed on both its sides by the sheath.

4,111,441

SELF-ARRESTING SEALING RING

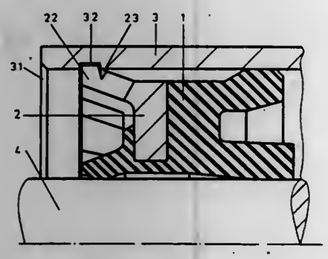
Hans-Hermann Sick, Weinheim an der Bergstrasse, and Erich Habel, Fürth, both of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Germany

Filed Mar. 7, 1977, Ser. No. 775,352

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1976, 2610584

Int. Cl.² F16J *15/18*

U.S. Cl. 277—183 **8 Claims**



1. A self-arresting seal ring for machine parts moving relatively to one another, comprising an elastomeric part and a support part fixedly connected thereto, the sealing ring having an x-shaped cross-section, two limbs of of the elastomeric part lying on the same circumference and being constructed as dynamically acting sealing lips, a third limb of the elastomeric part being constructed as a statically acting sealing lip, and the fourth limb being formed from the support part and having a supporting edge projecting radially beyond the third limb and being resilient in such radial direction so as to be able to flex and lock into a suitable recess in one of the machine parts and means defining a predetermined breaking line on the support part adjacent to the supporting edge.

4,111,442

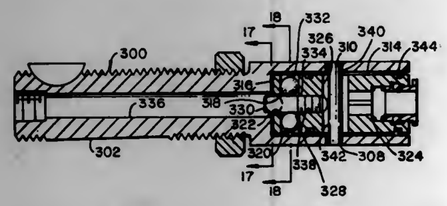
FLOATING TOOL HOLDER

Walter W. Wawrzyniak, 39230 Gary, Mt. Clemens, Mich. 48043

Filed Jul. 19, 1976, Ser. No. 706,933

Int. Cl.² B23B *31/16, 5/22, 5/34*

U.S. Cl. 279—16 **21 Claims**



1. A floating tool holder comprising a shank including means on one end for securing the shank to a spindle or the like in an axially fixed position for rotation with the spindle, a recess in the other end of the shank, floating structure positioned within the recess in the other end of the shank having dimensions so as to be in spaced relation with the inside walls of the recess including a torque washer in the bottom of the recess and a tool receiver in the outer end of the recess, means for rotating the tool receiver on rotation of the shank including a first transversely extending slot in the bottom of the recess in the shank, a second slot in one side of the torque washer extending parallel to the first slot, a third slot in the other side of the torque washer extending substantially perpendicularly to the second slot and a fourth slot in the inner end of the tool receiver extending parallel to the third slot, each of said slots having a circular segment cross section and circular bearings positioned within the slots between the shank and torque washer and between the torque washer and tool receiver, means for securing the torque washer and tool receiver in predetermined axial positions within the recess in the shank comprising transverse openings extending through the shank across the recess therein, an opening extending through and transversely of the tool receiver and a first pin having a diameter less than the diameter of the opening through the tool receiver extending through the opening in the tool receiver and fixed at its ends in the openings in the shank, an opening extending through the shank axially thereof, an opening extending through the torque washer centrally thereof and an axial opening extending into the inner end of the tool receiver in communication with the transverse opening therethrough, and a second pin threadedly engaged with the tool receiver in the axial opening in the inner end thereof into engagement with the first pin and extending through the opening in the washer and into the axial opening in the shank, resilient O-ring structure positioned partially within the periphery of the tool receiver and extending between the tool receiver and the inner diameter of the recess for centering the floating structure and permitting relative translation and pivotal movement between the floating structure and tool holder shank and means for positively rotating the shank of the tool holder.

4,111,443

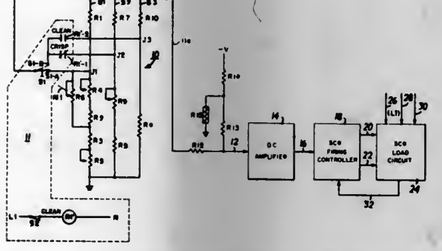
CONTROL SYSTEM FOR ENERGIZING ELECTRICAL RESISTANCE HEATERS IN COOKING FLUIDS

Neal Sullivan, Nashville, and George E. Cook, Franklin, both of Tenn., assignors to KFC Corporation, Louisville, Ky.

Continuation of Ser. No. 600,135, Jul. 30, 1975, abandoned. This application May 3, 1977, Ser. No. 793,401

Int. Cl.² H05B *1/02*

U.S. Cl. 219—497 **6 Claims**



1. A system for controlling excitation of an electrical resistance heater by a multiphase supply of electrical voltage to conform the temperature of a cooking fluid to first or second predetermined temperature-time characteristics, comprising:

(a) a signal generator means for generating first and second output signals having amplitude-time characteristics respectively indicative of temperature constant with passage of time and temperature decreasing with the passage of time;

(b) switch means for receiving said output signals and having a terminal, said switch means being settable to apply any selected one of said output signals to said terminal;

(c) temperature-sensitive means contained in said fluid for generating a control signal indicative of the temperature of said fluid; and

(d) circuit means connected to said switch means terminal and said temperature-sensitive means and responsive to both said selected output signal and said control signal for interconnecting said heater with said voltage supply during time extents proportionally related to the amplitudes of both said selected output signal and said control signal.

4,111,444

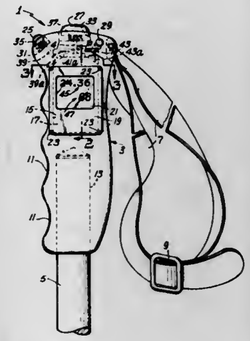
SKI POLE WITH TIMING DEVICE

Joseph A. Clements, Jr., 1217 Littlefield Ave., Northfield, N.J. 08225, assignor to Joseph A. Clements, Sr., Northfield, N.J.

Filed Sep. 29, 1977, Ser. No. 837,721

Int. Cl.² A63C *11/22*

U.S. Cl. 280—11.37 E **12 Claims**



1. A ski pole comprising:

a. an elongate handle having

1. a first free end, and

2. a second end for attachment to a shaft;

b. a recess disposed inwardly of the first free end of the handle;

c. a timing means disposed within the recess and including a display face that is viewable along an axis perpendicular to the longitudinal axis of the handle; and

d. means carried adjacent the first free end of the handle for actuating the timing means.

4,111,445

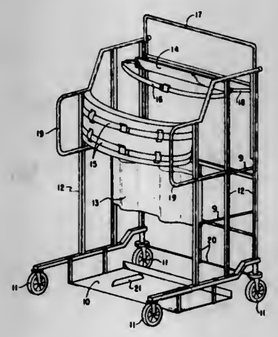
DEVICE FOR SUPPORTING A PARAPLEGIC IN AN UPRIGHT POSITION

Kenneth Haibeck, 1413 E. Oak St., Sioux Falls, S. Dak. 57105

Filed Jun. 9, 1977, Ser. No. 805,135

Int. Cl.² B62D *53/06*

U.S. Cl. 280—79.3 **3 Claims**



1. A device of the class described comprising platform means mounted for easy movement from one place to another, frame means erected from at least part of said platform, a pad mounted on said framework in position to engage the knees of a patient standing on said platform, strap means fastened to said framework and adapted to engage the back of said patient, a crossbar means on said frame means at a level above said strap means whereby the chest of the patient is supported, and grab bar means adjustably mounted at the front of said frame above said crossbar means whereby the patient by grasping and pulling on said grab bar means may assist in pulling himself erect.

4,111,446

TRICYCLE FOR CHILDREN

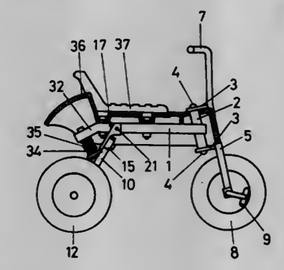
Kenzou Kassai, Higashishimizu, Japan, assignor to Kassai Kabushiki Kaisha, Higashishimizu, Japan

Filed May 2, 1977, Ser. No. 792,987

Claims priority, application Japan, Jun. 25, 1976, 51-75846

Int. Cl.² B62K *9/02*; B62J *1/02*

U.S. Cl. 280—275 **1 Claim**



1. A tricycle for children comprising:

a main frame comprising

a main rod,

handle rods attached to the front end of said main rod,

a front wheel attached between the lower ends of said handle rods,

a pair of rear legs pivotally connected to the back portion of said main rod, said rear legs comprising one continuous long bent rod,

a pair of rear wheels connected to the back end of said main rod,

a spring connected to the back end of said main rod;

a projection attached to the central bend of said long bent rod;

a fan-shaped plate fixed to the central bend of said long rod;

an attachment comprising

a main rod attaching portion having a bottom plate and sides plates between which said main rod is inserted,

an engaging plate attached to said main rod attaching portion which engages said projection,

a rear attaching portion which is attached to said main rod attaching portion and inclined thereto, and is fixedly connected to said fan-shaped plate,

a bolt and a nut which fixedly connect said fan-shaped plate and said rear leg attaching portion of said attachment, and

a spring attaching portion which is provided at the back of the said rear leg attaching portion so that said spring may be attached between the back end of said main rod and said spring attaching portion.

4,111,447

FOLDING BICYCLE

Hajime Ishida, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

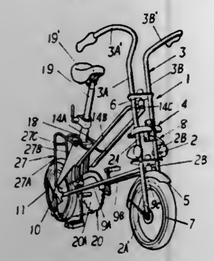
Filed Mar. 29, 1977, Ser. No. 782,366

Int. Cl.² B62K *15/00*

U.S. Cl. 280—278 **12 Claims**

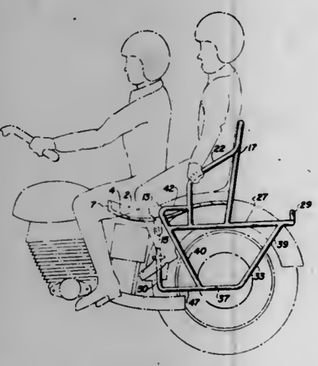
1. A folding bicycle comprising a rearwardly foldable front support assembly comprising pivotally interconnected upper and lower assembly sections, said upper assembly section having handlebars, said lower assembly section having fork blades to support a front wheel therebetween, a lower frame member pivotally attached at its front end to said lower assembly section and supported at its rear ends on a freewheel hub axle of a rear wheel, an upper frame member pivotally attached at its

front end to said upper assembly section and at its rear ends to the rear ends of said lower frame member or to said free-wheel hub axle for angular movement relative to said lower frame



member, and a seat stay pivotally attached at a lower portion thereof to said lower frame member and slidably attached at an upper portion thereof to said upper frame member.

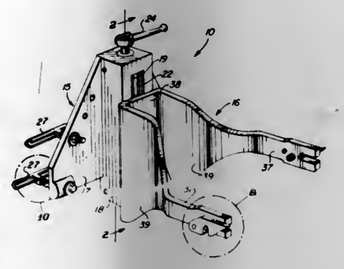
4,111,448
MOTORCYCLE PASSENGER SUPPORT
Paul George Sklodowsky, 108 Hillcrest Rd., Warren, N.J. 07060
Filed Oct. 18, 1976, Ser. No. 733,255
Int. Cl.[2] B62J *1/28*
U.S. Cl. 280—289 E **10 Claims**



1. A passenger support and protective device for use in connection with a motorcycle having a seat, said device comprising anchoring means for attachment to the frame of said motorcycle, an upper support structure attached to said anchoring means, said upper support structure including a backrest adapted to support a passenger seated in said seat, and a pair of protective upper side rails attached to said backrest for protecting at least the lower torso of said passenger, and a lower support structure for stabilizing said device, said lower support structure including a substantially U-shaped rigidifying member disposed substantially in the plane of said seat, and a pair of depending protective lower support rails attached to said rigidifying member for protecting the legs of said passenger.

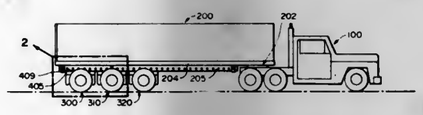
4,111,449
BUMPER HITCH FOR TOWING MOTORCYCLES
Charles Lee Hancock, 2545 E. Linda Cir., Phoenix, Ark. 85024
Filed Sep. 29, 1977, Ser. No. 837,698
Int. Cl.[2] B62D *53/04*
U.S. Cl. 280—402 **5 Claims**

1. A motorcycle bumper-mounted towing hitch comprising:
a hitch support portion for detachably mounting on the rear bumper of a towing vehicle,
a rearwardly extending tow-bar portion comprising a pair of tow-bars detachably securable in straddling relationship to the depending sides of a motorcycle steering fork,
said hitch support portion comprises an integral center post angularly positioned relative to the ground,
a first means for attaching said tow-bar portion to said center post for reciprocal movement longitudinally thereof,
said tow-bar portion further comprising a channel member adapted to detachably receive and hold a portion of a front wheel of a motorcycle,
detachably engaging clamping means one mounted at substantially the end of each tow-bar for engaging mounting pins projecting from the depending sides of the motorcycle steering fork,



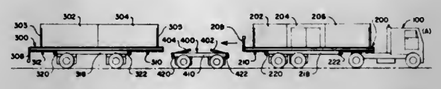
said clamping means comprising a pair of spring-actuated cam members pivotally mounted one adjacent the free end of each of said tow-bars,
each of said clamping means being provided with an open-ended slot for receiving the mounting pins,
said cam members being rotated by their springs about said pins after said pins enter said slots to hold the pins therein, and
a second means mounted on said center post for selectively actuating said tow-bar portion along said center post to raise and lower the front wheel of a motorcycle.

4,111,450
MULTIPLE HOOK-UP, MOVABLE AXLE TRAILER WITH REMOVABLE TRACK EXTENSIONS, SLIDABLE KINGPIN, AND PIVOTAL AXLE ASSEMBLIES
Robert R. Pinto, 2800 Federal St., Camden, N.J. 08105
Continuation-in-part of Ser. No. 788,182, Apr. 18, 1977. This application Jul. 22, 1977, Ser. No. 818,194
Int. Cl.[2] B60D *1/16*
U.S. Cl. 280—405 A **9 Claims**



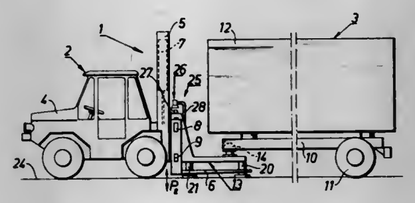
1. A cargo trailer comprising:
(a) a substantially elongate cargo bed;
(b) a plurality of coupling means disposed at generally opposite ends of said cargo bed for alternatively coupling to the fifth wheel of a vehicle;
(c) at least one axle means for supporting said bed;
(d) fixed track means associated with said bed spanning continuously between said coupling means on said bed; said axle means slidably engaging said track means for selective positioning therealong; and
(e) track extension means for removable attachment to said bed to extend said fixed track means across at least a portion of said coupling means and for slidably receiving said axle means, therefrom to thereby increase the maximum bridging distance between said axle means and said vehicle.

4,111,451
MULTI-TRAILER, DOLLY-CONNECTED, MOVABLE-AXLE, CONTAINERIZED CARGO TRAILER SYSTEM
Robert R. Pinto, 2900 Federal St., Camden, N.J. 08105
Continuation-in-part of Ser. No. 788,182, Apr. 18, 1977. This application Jul. 15, 1977, Ser. No. 816,047
Int. Cl.[2] B62D *53/06*
U.S. Cl. 280—408 **8 Claims**



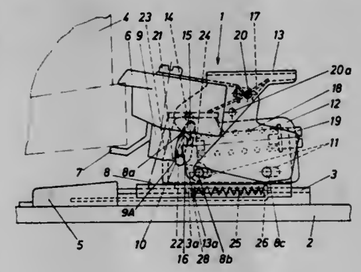
1. An apparatus for transporting a plurality of cargo containers, said apparatus being selectively coupleable to the fifth wheel of a tractor, comprising:
(a) a first elongate trailer comprising at least two coupling means, at least one disposed at each end thereof, for selective pivotal coupling with a tractor's fifth wheel;
(b) a second elongate trailer comprising at least one coupling means for selective pivotal coupling with said tractor's fifth wheel; and
(c) a dolly means comprising at least two fifth wheels positioned for coupling with said coupling means of said first and said second trailers to tandem link said trailers, said dolly means further comprising a substantially elongate frame having at least two fifth wheels mounted at opposing ends thereof, and further comprising a plurality of axle means for supporting said elongate frame, said axle means being slidable along substantially the entire length of said frame for positioning at any of a plurality of preselected positions along said frame, and being slidable relative to each other as well as to said frame, said dolly frame further comprising at least two parallel tracking members engaging each of said axle means.

4,111,452
AUTOMATIC COUPLING UNIT FOR BRAKING AND ELECTRICAL FUNCTIONS BETWEEN PARTS IN A VEHICLE COMBINATION
Hans Åke Ulf Carlsson, Torsgatan 93, 341 00 Ljungby, Sweden
Filed Jun. 30, 1976, Ser. No. 701,161
Claims priority, application Sweden, Jul. 2, 1975, 7507595
Int. Cl.[2] B60D *7/02*
U.S. Cl. 280—421 **6 Claims**



1. A coupling unit for releasably coupling a tractor vehicle and a trailer towed by said tractor vehicle comprising; a lift structure connectable to a tractor vehicle for movement upwardly and downwardly; said lift structure having support means for connection to a trailer for towing by the tractor vehicle and movable upwardly and downwardly relative to said lift structure; a connector system for automatically connecting braking and electrical systems of the tractor vehicle and the trailer; said connector system comprising, a female receptacle on said support means having therein separate first connector elements connected to the braking system and to the electrical system respectively of said trailer and a male unit on said lift structure having therein separate second connector elements connected to the braking and electrical systems respectively of said tractor vehicle, said first connector elements and said second connector elements each comprising means for automatically effecting connection to a corresponding one of the connector elements of a respective system when the male unit is inserted into the female receptacle a given extent as said lift structure is lifted relative to the female receptacle with the male unit coaxial with the female receptacle and for automatically effecting disconnection as the support means of the lift structure is lowered.

4,111,453
RELEASE BINDING
Erwin Krob, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland
Filed Dec. 14, 1976, Ser. No. 750,410
Claims priority, application Austria, Dec. 19, 1975, 9720/75
Int. Cl. A63c *9/08*
U.S. Cl. 280—626 **9 Claims**



1. A releasable heel holder for holding a ski boot on a ski, comprising:
a base plate secured to said ski and having track means thereon extending in a direction parallel to the longitudinal axis of said ski;
a bearing block mounted on said base plate and including means cooperable with said track means for guiding said bearing block longitudinally thereof;
first resilient means for biasing said bearing block toward the tip of said ski;
slide means mounted on said bearing block and being reciprocal with respect thereto;
housing means having ski boot engaging means thereon pivotally mounted on said bearing block for movement about a pivot axis fixed to said bearing block between a position of use and a boot release position and in overlapping relationship to said bearing block and said slide means;
pin guide means in said slide means;
pin means received in said pin guide means and extending transversely of said ski and laterally beyond said housing means;
a lever movably secured to said housing means for movement between a release position and a position of use, said lever having a notch for receiving said pin means therein, a pivoting of said housing means effecting a movement of said lever therewith and a movement of said pin means in and relative to said pin guide means; and
releasable locking means mounted on said slide means and movable therewith, said locking means including means defining a threshold point and second resilient means yieldingly resisting movement of said pin means in said pin guide means past said threshold point.

4,111,454

FOLDING BABY CARRIAGE

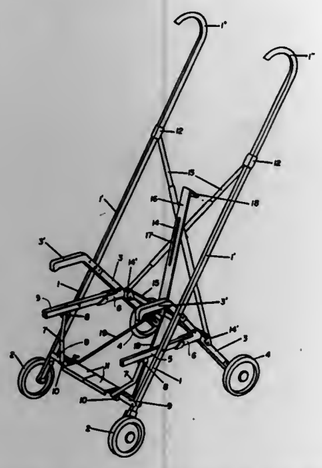
Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Continuation-in-part of Ser. No. 720,445, Sep. 3, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 839,118

Claims priority, application Japan, Jul. 15, 1976, 51-84593; Jul. 23, 1976, 51-99045[U]

Int. Cl.² B62B *11/00*

U.S. Cl. 280—649 **4 Claims**



1. A folding baby carriage comprising, in combination:
front legs;
rear legs rotatably crossed and mounted to said front legs;
first connecting rods pivotally coupled to said front legs;
second connecting rods, having a U-shaped section, pivotally coupled to said first connecting rods at the front end, and pivotally coupled to said rear legs at the back end;
bent rods pivotally coupled to said first connecting rods at one end; and
front supporting rods pivotally coupled to said front legs at one end, and pivotally and foldably coupled to an opposite front supporting rod at the other end; and
wherein the other end of said bent rods is pivotally coupled to said front supporting rods, and
wherein said first connecting rods and said second connecting rods are straightened for the baby carriage to be locked in an opened state by weight of a baby exerted on front portions of said first connecting rods.

4,111,455

METHOD AND APPARATUS FOR MOUNTING A VEHICLE WHEEL ON A VEHICLE FRAME

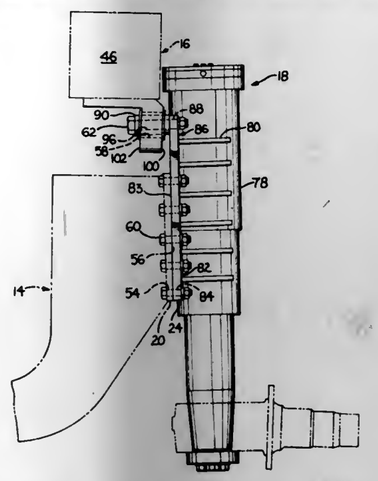
Donald A. Hickman, and Samuel L. Kershaw, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 23, 1977, Ser. No. 809,343

Int. Cl.² B62D *65/00*

U.S. Cl. 280—690 **2 Claims**

1. A method for connecting a vehicle wheel to spaced apart mainframe and subframe portions of a vehicle frame using an alignment sleeve and a template representing a vehicle wheel strut plate comprising the steps of:
mounting a first portion of the template on the mainframe so that an array of bolt holes in the mainframe is aligned with a corresponding array of bolt holes in the template and so that a second portion of the template is adjacent the subframe;
placing the alignment sleeve through an enlarged bore in the subframe;
temporarily connecting the sleeve with the second portion of the template in a desired alignment;
securing the sleeve in the bore at said desired alignment;
removing the template from the mainframe and the sleeve;
connecting a first portion of the strut plate to the mainframe so that the array of bolt holes in the mainframe is aligned



with a corresponding array of bolt holes in the strut plate; and
connecting a second portion of the strut plate to the subframe so that a bolt hole in the second portion is aligned with the alignment sleeve.

4,111,456

INDEPENDENT STRUT TYPE SUSPENSION ASSEMBLIES FOR VEHICLES

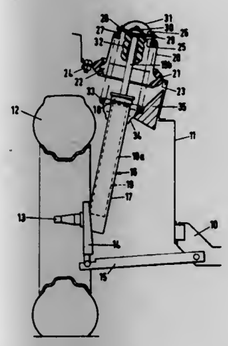
Willi Arnold, Nauheim; Rolf Pflughaupt, Rüsselsheim, and Bertold Felzer, Mainz, all of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 9, 1977, Ser. No. 805,113

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626392

Int. Cl.² B62D *17/00*

U.S. Cl. 280—692 **7 Claims**



1. An independent strut type suspension assembly for a vehicle having a body with an aperture formed therein, said assembly comprising a telescopic damper including a housing having a piston rod telescopically mounted therein and projecting through said aperture, a wheel carrier secured to the lower end of said housing and having a wheel rotatably mounted thereon, a lower transverse pivotal guide member for said wheel carrier, and connector means connected between the upper end portion of said piston rod and said vehicle body, said connector means including a bell-shaped member secured to said upper end portion of said piston rod, and an annular rubber member retained between the open end portion of the bell-shaped member and the edge region of said aperture in said vehicle body, releasable connection means for at least a part of said bell-shaped member, providing on release of said connection means an opening permitting removal of parts of said damper therethrough for disassembly of said damper, and a helical wheel-suspension spring surrounding said damper with one end of said spring seated on said housing and the other end of said spring seated externally of such parts as have to be removed for disassembly of said damper.

4,111,457

INFLATABLE RESTRAINING DEVICE FOR MOTOR VEHICLES

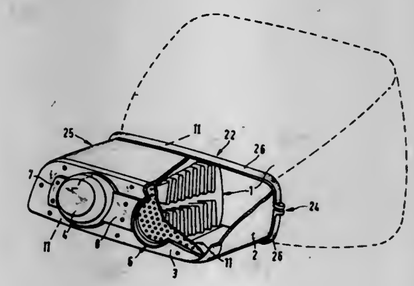
Adolf Kob, Erding, and Eduard Blatner, Augsburg, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Dec. 7, 1976, Ser. No. 748,156

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 7540488[U]

Int. Cl.² B60R *21/08*

U.S. Cl. 280—728 **11 Claims**



1. A restraining device for the occupants of a vehicle comprising an inflatable bag with a thickened edge at its opening, means for inflating the bag, a housing containing the bag in a folded condition, said housing having a flange for holding the bag, clamping means for connecting the thickened edge of the bag and the flange and an elastic profiled strip containing the thickened edge of the bag and arranged between the flange and the clamping means, the profiled strip having a channel with a configuration for receiving the thickened edge.

4,111,458

SAFETY AIR CUSHION BAG IN AUTOMOTIVE VEHICLES

Motohiro Okada; Katsumi Oka, both of Asaka; Kiyoshi Honda, Wako, and Kazuo Matsuura, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

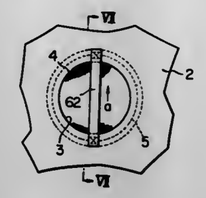
Filed Nov. 11, 1976, Ser. No. 741,149

Claims priority, application Japan, Nov. 20, 1975, 50/15701[U]; Nov. 20, 1975, 50/157502[U]

Int. Cl.² B60R *21/08*

U.S. Cl. 280—739 **3 Claims**

1. A safety air cusion bag for use in automotive vehicles, which comprises in combination:
(a) a foldable main body of said air cushion bag made of cloth impermeable to gas;
(b) at least one air outlet port formed in one part of said main body of the air cushion bag;
(c) a gas-permeable stretchable cover cloth which stretches with more difficulty in one direction than another, and is disposed on said air outlet port to close the same; and
(d) at least a single strip of foldable reinforcing band made of cloth impermeable to gas which is extended diametrically across said air outlet port, and between the opposing peripheral edges thereof, in parallel with the direction of



the greatest stretch difficulty of said gas-permeable cover cloth.

4,111,459

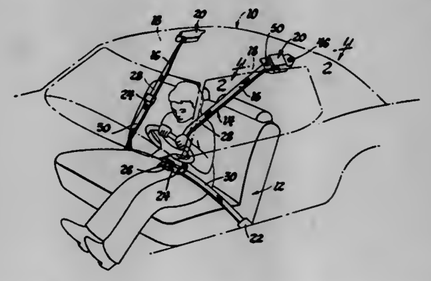
SEAT BELT UTILIZATION RECORDER

Joseph J. Magyar, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1977, Ser. No. 831,957

Int. Cl. B60r *21/10*

U.S. Cl. 280—744 **3 Claims**



1. An anchorage device for attaching a seat belt on a vehicle body structural member and for providing a record of imposition of a predetermined occupant restraint load on the seat belt, said anchorage device comprising: a seat belt mounting member having the seat belt attached thereto, said mounting member having an elongated slot extending generally in the direction of imposition of occupant restraint load and having a load bearing wall at one end of the slot, a fastener extending through the slot and attaching the mounting member on the structural member, means located in the slot in interposition between the fastener and the load bearing wall to space the load bearing wall from the fastener, said means having a predetermined limited load sustaining capability and being permanently altered upon imposition of an occupant restraint seat belt load greater than the predetermined load sustaining capability to provide a permanent record of load imposition and permit limited bodily shifting movement of the mounting member whereby the fastener traverses the slot to engage the load bearing wall and thereby anchor the seat belt for restraint of the occupant.

4,111,460

BOOK WITH COVER AND METHOD AND APPARATUS FOR MAKING THE COVER

Alvin V. Roberts, 68 Popham Rd., Scarsdale, N.Y. 10583

Continuation-in-part of Ser. No. 578,339, May 16, 1975, abandoned, which is a division of Ser. No. 343,017, Mar. 21, 1973, Pat. No. 3,884,742. This application Nov. 24, 1976, Ser. No. 744,787

Int. Cl.² B42D *3/02*

U.S. Cl. 281—29 **9 Claims**

1. A book including a filler and a cover connected to the filler, said cover having front and rear cover panels connected

to one another by a back panel and with hinge lines of less thickness than the front and rear cover panels adjacent to the junction of the back panel with the front and rear panels, all of the panels being made from a plastic laminate that has an inner layer and an outer layer secured together in an integral structure, one of the layers being a material that is softened to a flowable condition by electromagnetic radiation of a given frequency, and the other layer being made of plastic material less affected by said radiation and that remains in a substantially non-flowable condition when subjected to the same radiation that softens the first layer.



4,111,461

BARRIER COAT FOR GROUNDWOOD CARBONLESS COATED PAPER

George W. Levensalor, Millinocket, Me., assignor to Great Northern Nekoosa Corporation, Stamford, Conn.

Filed Dec. 16, 1976, Ser. No. 751,205
Int. Cl.[2] B41L *1/36*
U.S. Cl. 282—27.5 10 Claims

1. In a method of providing a carbonless non-yellowing pressure sensitive copying sheet wherein a color forming agent encapsulated in a synthetic resin shell is applied as a coating to a base sheet containing amounts of groundwood sufficient to cause yellowing after being contacted with said coating, the improvement which comprises interposing a barrier layer between said base sheet and said coating, said barrier layer comprising clay and an alkali metal sulfite.

6. A coated substantially non-yellowing copying sheet including a base sheet containing sufficient amounts of groundwood to cause yellowing when contacted with a color forming coating containing a color forming agent encapsulated in a polyamide resin containing excess amine, a barrier layer coated directly on said base sheet, said barrier layer containing clay and an amount of an alkali metal sulfite sufficient to inhibit such yellowing, and a color forming layer over said barrier layer, said color forming layer including said color forming agent encapsulated in said polyamide resin.

4,111,462

LATENT, SENSITIZING INK

Heinz E. Lange, Saint Paul, and Dean A. Ostlie, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 15, 1975, Ser. No. 596,180
Int. Cl.[2] B41L *1/20;* C09D *11/00*
U.S. Cl. 282—27.5 11 Claims

1. A latent printing ink for providing latent, sensitized areas on substrates, which ink can be applied to a paper substrate by a printing press and subsequently developed with a pressure-releasable, encapsulated, color-activating compound carried on a substrate, said ink comprising, based on the weight of the total ink composition, about 5 to 55% by weight of a vehicle component which is a non-polymeric, oleophilic, organic, proton donor acid anion having a cationic counter-ion, up to about 70% by weight oil-receptive, particulate filler and up to about 30% by weight thinner and wherein said ink includes at least 5% by weight of at least one color-generating component, the ratio of said filler to said vehicle component being from about 0.5:1 to 6:1.

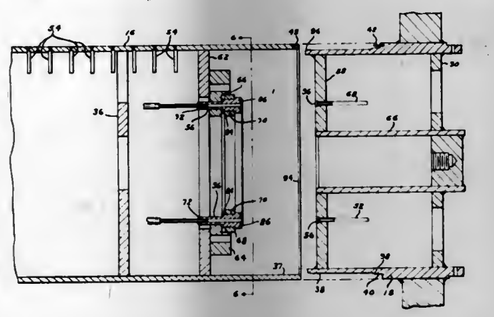
11. A multi-sheet form comprising a first sheet having on the reverse surface a color-activating component and, underlying said first sheet, a second sheet having at least a portion of the obverse surface sensitized with the latent, sensitizing ink of claim 1.

4,111,463

SEPARABLE COUPLING FOR PLURAL PRESSURE LINES

Buryl L. McFadden, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 7, 1977, Ser. No. 804,488
Int. Cl.[2] F16L *35/00*
U.S. Cl. 285—25 5 Claims



1. An apparatus for interconnecting a first set of channels and a second set of channels, comprising: an interface plate member; a plurality of apertures in said plate member; means for connecting the first set of channels to said apertures; a plurality of tubular stud members; means for supporting said studs in alignment with said apertures; an O-ring surrounding each of said apertures and being positioned between each tubular stud and said plate member; means for holding each O-ring in sealing engagement with the plate member and one of said tubular studs; said means for supporting said stud member in alignment with said apertures including a mounting plate member; a guide member slidably supported on said mounting plate member; said guide member being slidable with respect to said mounting plate member; a plurality of holes in said guide member; one of said stud members being positioned in each of said holes in the guide member; each of said stud members having a first shoulder for engaging said guide member on the side remote from said mounting plate member; a plurality of holes in said mounting plate member, in alignment with the holes in the guide member, for receiving said stud members; means for retaining each of said stud members within said guide member and said mounting plate member.

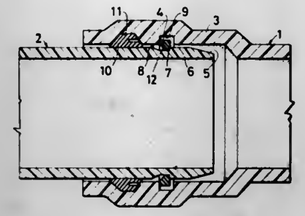
4,111,464

PIPE JOINT LOCKING RING AND GROOVE ARRANGEMENT

Teryoshi Asano, Kawagoe; Sadao Fukuoka, Hatoyama, and Takashi Sawada, Tokorozawa, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 17, 1977, Ser. No. 759,700
Claims priority, application Japan, Jan. 19, 1976, 51-4711[U]; Apr. 19, 1976, 51-49328[U]; Apr. 20, 1976, 51-49494[U]
Int. Cl.[2] F16L *25/00*
U.S. Cl. 285—111 9 Claims

1. In a snap-insertion pipe joint including a first synthetic resin pipe (1) having an enlarged, female receiving end (3) with a first circular groove (11) and a second circular groove (9) having side walls perpendicular to the pipe axis in its inner periphery, the first groove being closer to the end of the pipe than the second groove, a second synthetic resin pipe (2) having a male insertion and (6) with a tapered outer edge (5) and a third circular groove (7) in its outer periphery, the third groove having a side wall nearest the outer edge perpendicular to the pipe axis and a tapered opposite side wall (8), a packing ring (10) disposed in the first groove, and a locking ring (4) disposed in an annular space defined by the second and third grooves when the first and second pipes are assembled together, the improvements characterized by:



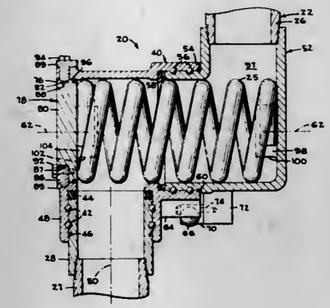
(a) the locking ring being an endless or continuous ring of substantially rectangular cross-section and formed of a relatively rigid synthetic resin material, and
(b) the normal or unassembled inner diameter of the locking ring being smaller than the outer diameter of the insertion end of the second pipe but at least 9/10 the diameter thereof.

4,111,465

TORSIONALLY CONTROLLED SWIVEL JOINT

Houston W. Knight, Whittier, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 26, 1976, Ser. No. 745,133
Int. Cl.[2] F16L *27/00*
U.S. Cl. 285—114 28 Claims



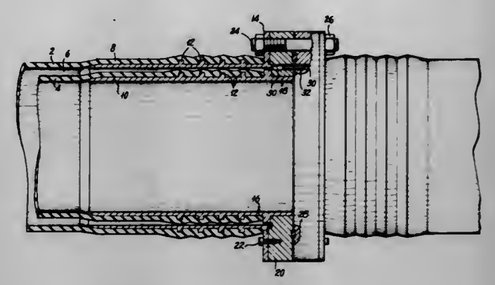
1. A torsionally controlled pipe swivel joint comprising a first swivel joint section, a second swivel joint section connected in fluid tight engagement with said first section for rotation about a predetermined axis, said first and second sections defining a fluid flow passage therethrough, a torque element diposed within said flow passage, anchoring means secured to each section for anchoring opposite ends of said torque element to associated ones of said swivel joint sections for torsionally resisting rotation of one section relative to the other, and means for adjusting and locking the position of said torque element with respect to one of said first and second sections to selectively vary the torsional force exerted on said sections by said torque element without preventing free relative rotation of said sections.

4,111,466

COLLAPSIBLE TANKER HOSE COUPLING

Alfio D. A. Deregibus, Via Livorno, 5 Padora, Italy

Filed Feb. 4, 1977, Ser. No. 765,768
Claims priority, application Italy, Feb. 2, 1976, 41512 A/76
Int. Cl.[2] F16L *47/00*
U.S. Cl. 285—133 R 3 Claims



1. A flexible hose structure for loading and unloading petroleum products from tankers, comprising:
an inner elastomeric and flexible tubular hose;
an outer elastomeric and flexible tubular hose concentrically surrounding said inner hose and spaced outwardly therefrom to provide a space therebetween;
a connector ring sealingly secured at an end of both said hoses and having means for securing said ring to a similar ring on adjacent concentric hoses;
a separate tubular metallic fitting secured to said end of each hose, said fittings being secured to said connector ring in concentric but radially spaced relation, said connector ring being provided with at least one axially extending passage therethrough between said tubular metallic fittings and communicating with said space between said hoses.

4,111,467

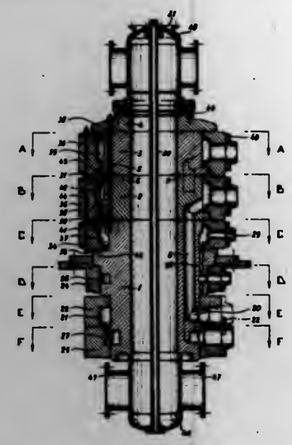
ROTATABLE COUPLING FOR A PLURALITY OF CONDUITS, PARTICULARLY FOR A BUOY

Frank P. de Fremery, Schiedam, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Apr. 13, 1977, Ser. No. 786,995
Claims priority, application Netherlands, Apr. 13, 1976, 7603915
Int. Cl.[2] F16L *39/00;* B65G *67/58*
U.S. Cl. 285—136 6 Claims

1. Rotatable coupling for a plurality of conduits for different media, particularly for a buoy or similar loading and unloading device, said coupling comprising a stationary core member, said core member being provided with a number of axial passageways connecting to conduits coupled to the core member and said passageways at various levels connecting to circular spaces via crossbores, said spaces being constituted between a number of rotatable ring members disposed in axial arrangement on top of each other and the core and being sealed with respect to the core and each one of said passageways connecting to a conduit via a radial bore, characterized in that core member, at least at the level of the rotatable ring members, comprises a pack of stacked bodies connected to each other by tension bolts or the like, each body possessing a radially pro-

jecting flange and the rotatable ring members surrounding said stacked bodies and being axially enclosed with ample play in



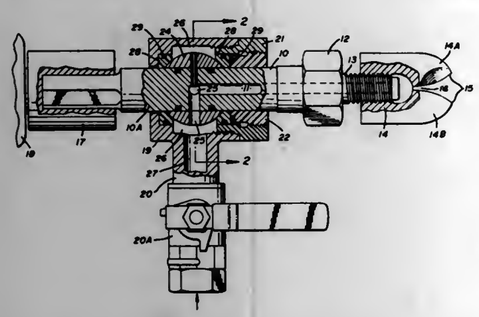
radial direction between said flanges and being sealed in axial direction with respect to said flanges.

4,111,468

HYDRAULIC BORING DEVICE

Michael Schneider, 1120 S. Union Ave., Alliance, Ohio 44601

Continuation-in-part of Ser. No. 636,593, Dec. 1, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,459
The portion of the term of this patent subsequent to Jun. 4, 1991, has been disclaimed.
Int. Cl.² F16L *27/00*
U.S. Cl. 285—190 **4 Claims**



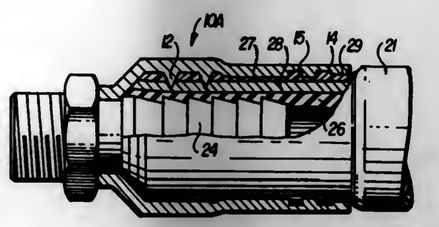
1. A rotary fluid coupling comprising a cylindrical housing, a cap in one end of said housing, a hollow shaft disposed in said housing, said shaft extending outwardly of at least one end of said housing, a port in one side of said housing, an annular channel in said housing communicating with said port, a sphere positioned on said shaft in the area of said annular channel, passageways in said shaft and sphere establishing communication between said hollow shaft and said annular channel in said housing and annular sealing members formed of slippery plastic material positioned in said housing and engaged on opposite sides of said sphere adjacent said shaft and on portions of said shaft adjacent said sphere, a substantially large sealing sleeve formed of slippery plastic material engaged on a substantially large area of said shaft and abutting one of said annular sealing members and adjustably engaged in said cap, said sealing members engaging said housing and said cap respectively, said sealing members and sealing sleeve rotatably supporting, positioning and sealing said hollow shaft and sphere relative to said housing and cap.

4,111,469

HYDRAULIC HOSE AND COUPLING ASSEMBLY

Edward M. Kavick, Chardon, Ohio, assignor to Samuel Moore and Company, Aurora, Ohio

Filed Dec. 23, 1976, Ser. No. 753,896
Int. Cl.² F16L *33/20*
U.S. Cl. 285—256 **10 Claims**



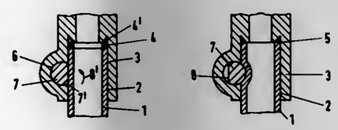
1. A hydraulic hose comprising a core tube, a layer of reinforcing material disposed about the core tube and a protective sheath about the reinforcing material and on at least one end thereof a permanently attached coupling member comprising a body portion having means for connecting the coupling member to a source of fluid at one end thereof and a nipple extending from an opposite end thereof inserted in the core tube, an external annular member disposed between the connecting means end and the nipple, an external annular groove disposed adjacent the annular member on the side thereof facing the nipple, a shell disposed substantially concentrically about the nipple having an inner wall thereof disposed about the sheath of the hose and having one end thereof embedded in said external annular groove to permanently secure the shell to the body portion, said shell having a plurality of circumferentially spaced three-dimensional barbs on its inner wall with a minimum dimension at the base thereof greater than the thickness of the shell wall at the barb location, said barbs piercing the sheath and embedded in the reinforcing material and said shell comprising the sole external means of attaching the coupling member to the hose.

4,111,470

RELEASABLE COUPLING AND METHOD FOR MAKING SUCH COUPLING

Friedrich Welcker, Im Sonnenwinkel 28, 5850 Hohenlimburg (B.R.D.), Fed. Rep. of Germany

Filed Feb. 16, 1977, Ser. No. 769,330
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607700
Int. Cl.² F16L *39/00*
U.S. Cl. 285—320 **15 Claims**



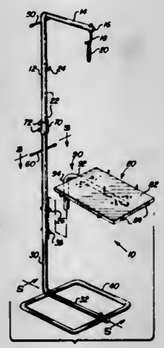
1. A releasable coupling for securing a deformable tubular member having a first longitudinal axis, to a further member comprising an aperture with a second longitudinal axis extending coaxially with said first longitudinal axis to receive said deformable tubular member in said aperture of said further member, a hole in said further member located adjacent to said aperture in such a position relative to said aperture that the volume of the hole partially overlaps the volume of the aperture for said deformable, tubular member, locking pin means in said hole, said locking pin means comprising actuating means at one end thereof and a flattened side region intermediate its ends and located at the level of said overlapping volume when said locking pin means is inserted in said hole, whereby the locking pin means may be initially inserted into said hole so that said flattened side region of said locking pin faces said deformable tubular member without initially deforming the deformable tubular member inserted in said aperture, and wherein rotation of said locking pin means in said hole in a direction against withdrawal of said deformable tubular member deforms said deformable tubular member first by a denting action followed by a wedging action to lock the latter in said aperture against withdrawal.

4,111,471

MACRAME RACK APPARATUS

Don N. Hanley, 100 Hilltop Dr. #14, Redding, Calif. 96001

Filed Jan. 27, 1977, Ser. No. 763,006
Int. Cl.² B65H *69/04*
U.S. Cl. 289—18 **5 Claims**



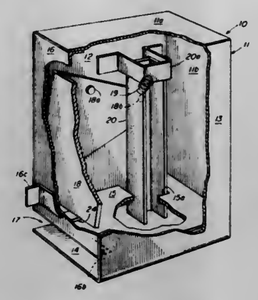
1. Macrame rack apparatus, comprising, in combination, a base;
tubing means secured to and supported by the base, and including
a first pair of apertures extending diametrically through the tubing means,
a first pin extending through the first pair of apertures and movable in the apertures and defining side to side movement relative to the base and the tubing means,
a second pair of apertures extending diametrically through the tubing means spaced apart from the first pair of apertures,
a second pin extending through the second pair of apertures substantially parallel to the first pin and movable in the apertures defining side to side movement relative to the base and the tubing means,
a plurality of holes in the tubing means spaced apart from each other substantially perpendicular to the first and second pairs of apertures, and
a hook for holding macrame cord and insertable into and removable from any of the plurality of holes;
an arm secured to the tubing means remote from the base and substantially perpendicular to the first and second pins;
holding means secured to the arm for holding macrame cord; and
table means secured to the tubing means for holding a macrame project and disposed between the base and the plurality of holes.

4,111,472

TAMPER-PROOF EMERGENCY EXIT WINDOW GRATE

Loring E. Smith, 37 Hadley Rd., Sudbury, Mass. 01776, and Mario J. Aloisi, 843 Chandler St., Tewksbury, Mass. 01876

Filed May 9, 1977, Ser. No. 794,715
Int. Cl.² E05C *15/02, 1/06*
U.S. Cl. 292—92 **7 Claims**



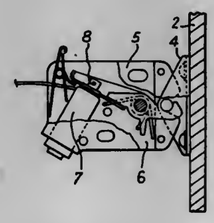
1. A tamper-proof, hinged, emergency exit panel adapted to be mounted in an opening of a building and comprising:
(a) a locking enclosure mounted adjacent the edge of the panel and characterized in that all of its walls which do not face the building are solid, that it has an inner facing slot opening into its interior and that it has an access door covering its inner face;
(b) a vertical blocking member spaced within said enclosure;
(c) means spaced within said enclosure for elevating said blocking member and comprising a hand-actuable plate pivotally connected to a side wall of the enclosure and to said vertical blocking member;
(d) a locking member adapted to extend from the building through said slot and being lockable in said enclosure by said vertical locking member;
said panel being so characterized that pressure on said plate below the pivot point elevates said blocking member to permit said panel to be readily swung open over said locking member by virtue of said slot.

4,111,473

BOX OPENING DEVICE

Georges Bourrie, Neuilly-sur-Seine, and Robert Lensel, Bourg la Reine, both of France, assignors to R. Alkan & Cie, Valenton, France

Filed May 17, 1977, Ser. No. 797,714
Claims priority, application France, Jul. 23, 1976, 76 22636; Mar. 11, 1977, 77 07334
Int. Cl.² E05C *3/30*
U.S. Cl. 292—126 **6 Claims**



1. An electro-mechanical locking device, for keeping in a closed position the door of a box such as a box for safety equipment on an aircraft and permitting the automatic and manual opening of said door, said device comprising:-
(i) a lock staple secured at an inner face of the door and provided with a cross pin,

(ii) a compound hook disposed within said box and comprising a U-shaped tail element having an intermediate wall to an outer face of which is secured a metal plate, said tail element being pivotable about a pivot pin, and

(iii) a nose element disposed within said tail element and pivotable with respect thereto about said pivot pin, said nose element having a first end portion abutting against an inner face of said intermediate wall to be positively moved thereby when said tail element rotates about the pivot pin in a direction for opening of the compound hook, said nose element having a second curved end portion adapted to engage said cross pin of the lock staple,

(iv) a magnet disposed within the box and adapted to co-act with said plate provided on the tail element of the hook to maintain said hook in the closed position,

(v) a spring coiled around said pivot pin and having a first arm engaging said tail element to urge said hook toward an open position and a second arm engaging said nose element to urge said first end thereof against said intermediate wall of the tail element,

whereby the force exerted by said first arm of the spring, when the force exerted by the magnet on the metal plate becomes lower than a predetermined value, ensures a rotation as a unit of the compound hook to open the box door, whereas with the door open and the hook being returned to its closure position in which the action of the magnet retains the compound hook, the closure of the box door is permitted by rotation of the nose element against the action of said second arm of the spring.

4,111,474

ELECTRICALLY OPERATED DOOR LOCK

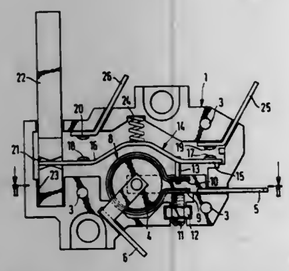
Konard Heydner, Altdorf, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf, Germany

Filed Jun. 16, 1977, Ser. No. 807,323

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628597

Int. Cl.² E05B *51/00*

U.S. Cl. 292—144 **11 Claims**



1. In an electrically operated door lock including a bolt having locking and unlocking positions; a bimetal strip coupled to the bolt for moving the bolt into the one or the other bolt position dependent upon the direction of temperature-effected deformation of the bimetal strip; and a resistor for heating the bimetal strip for effecting deformation thereof; the improvement wherein said resistor is a PTC resistor having a generally cylindrical body, and wherein said bimetal strip is formed of a generally circular open collar and two spaced legs; said collar circumferentially surrounding said resistor and continuing in said legs; said legs extending in a direction away from said resistor; one of said legs constituting a bolt-actuating terminus; said bolt being arranged on that side of said resistor that is oriented away from said bolt-actuating terminus; the improvement further comprising a bimetal connecting bar coupling said bolt-actuating terminus with said bolt, said bimetal connecting bar extending adjacent and along a face of said collar oriented away from said resistor.

4,111,475

SELF-LATCHING YOKE GATE LATCH

Donald Hugh McCormick, 1408 Pioneer Way, and William Weldon Perkins, 12044 Royal Rd., #20, both of El Cajon, Calif. 92020

Filed May 19, 1977, Ser. No. 798,340

Int. Cl.² E05C *3/24*

U.S. Cl. 292—216 **6 Claims**

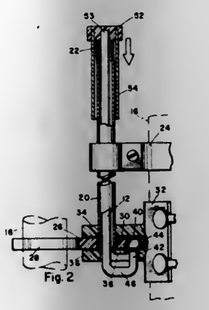


Fig. 2

1. An improved self-latching yoke gate latch including a latch body mounted on a first vertical support, a latch yoke pivotally supported on a bearing axis in said latch body for pivotal movement between gate open and gate latched positions, a latch pin receivable in a latch bore in said latch yoke spaced from said bearing axis, said latch pin having a vertical latching segment, and a vertical operator segment, and a latch operator connected to said vertical operator segment for selectively withdrawing said latch pin from said latch bore, the invention comprising:

a latch pin recess in said latch body for accommodating a horizontal segment of said latch pin,

said recess generally conforming to the length and width of said horizontal segment to limit entry of pry tools into said recess,

said latch pin vertical latching segment terminating in a blunt end having a substantial area of contact with the undersurface of said latch yoke,

a tapered bushing received in said latch bore,

said tapered bushing being comprised of a material having a greater hardness than the hardness of said latch yoke,

said bushing having an opening that tapers from a diameter substantially greater than said latch pin to a diameter substantially equal to that of said latch pin.

4,111,476

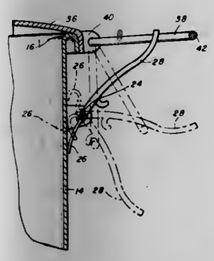
LATCH HANDLE AND CONTAINER LOCK

Stanley A. Jacobs, 45 Kohary Dr., New Haven, Conn. 06515

Filed Jun. 15, 1977, Ser. No. 806,602

Int. Cl.² B65D *45/16*; E05C *19/10*

U.S. Cl. 292—246 **9 Claims**



1. A latch arrangement for a container and associated lid comprising:

a latch arm having inner and outer ends;

means mounting the said latch arm between its ends, to the exterior of the sidewall of said container below the rim thereof and for pivotal movement between a first and second position about a substantially transverse axis, said axis being spaced outwardly from the sidewall of said container;

said inner end of said latch arm being of resilient, deformable and flexible construction, the distance between said pivotal axis and the closest region of said container sidewall being less than the distance from said pivotal axis to the extremity of said inner end of said latch arm, whereby said latch arm inner end is resiliently deformed when said latch arm is pivoted from one of its positions to the other, a region of said container sidewall being cooperative with the inner end of the latch arm when the latch arm is in either of its positions to retain the latch arm in that position;

a member connected to and extending downwardly from the periphery of the container lid, said member having a transverse portion thereof which, when the lid is on the container, may extend downwardly and be engaged by a portion of said latch arm;

said portion of said latch arm including means for engaging said transverse portion of said member to retain said member and draw said lid member downwardly in response to pivotal movement of said latch arm from one position thereof to the other.

4,111,477

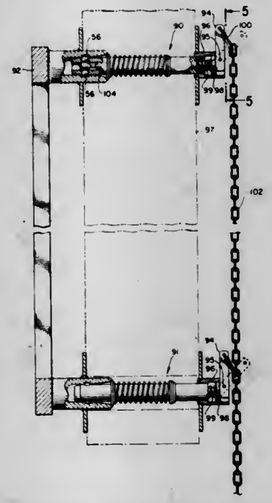
WINDOW GUARD RELEASE

Paul D. Rigali, 711 N. Bush, Anaheim, Calif. 92805

Filed Jun. 13, 1977, Ser. No. 806,023

Int. Cl.² E05C *13/04*

U.S. Cl. 292—252 **5 Claims**



1. A window guard system for securing a window guard to an adjacent wall while simultaneously providing for quick release from said wall comprising:

a window guard movably mounted on said wall between a closed position covering a window in said wall and an open position not covering the window;

a keeper attached to said window guard, said keeper having a bore therein opening towards said wall, and said keeper extending into said wall;

a flat plate-like shield firmly attached to and surrounding said keeper and engaging said wall, when said guard is in said closed position, to prevent access to the interior of the wall;

a pin fixed to said adjacent wall and extending at least partially through said wall and into the bore in said keeper;

means for releasably locking said pin within the bore of said keeper; and

means connected to said pin and located on the interior of said wall for releasing said keeper from locking engagement with said locking pin.

4,111,478

SYSTEM FOR CONTROLLING THE DEFORMATION OF SIDE ELEMENTS OF VEHICLE BUMPERS

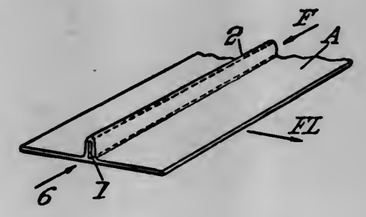
Michel Pompei, Paris, and Christian Robert Casse, St. Cloud, both of France, assignors to Paulstra, Levallois Perret, France

Filed Feb. 4, 1977, Ser. No. 765,603

Claims priority, application France, Feb. 5, 1976, 76 03194

Int. Cl.² B60R *19/02*

U.S. Cl. 293—63 **7 Claims**



1. In a side element for motor vehicle bumpers formed of synthetic deformable material and having at least one generally planar surface, the improvement comprising armature means, formed of strong and rigid material relative to said synthetic deformable material, to ensure that upon deformation of said side element said generally planar surface will buckle substantially in a direction transverse to said armature means, said armature means comprising a generally planar plate, said plate being at least partially embedded in said generally planar surface of said side element, and extending generally perpendicular to the plane of the synthetic deformable material in which it is at least partially embedded, whereby the plane of said deformable material and the plane of said armature are disposed at approximately right angles.

4,111,479

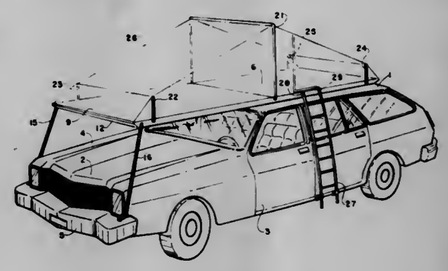
VEHICLE TOP CAMPER

John D. Rizzotto, Sr., Abington, Mass., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jun. 15, 1977, Ser. No. 806,950

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 MC **2 Claims**



1. A vehicle top camper mounted on the roof of a motor vehicle having a roof, sides and a front bumper, said vehicle top camper comprising

a first platform affixed to the roof of the vehicle;

a second platform hingedly affixed to the first platform and extending from the roof to an area over the front bumper in extended position and in juxtaposition with the first

platform in storage position, each of the first and second platforms having a front edge and a rear edge;

brace means for removably supporting the front edge of the second platform at a predetermined distance above the front bumper to maintain said second platform substantially horizontal;

center truss means foldably affixed to the sides of the first platform at the front edge thereof and extending substantially perpendicularly therefrom in extended position;

first end truss means foldably affixed to the sides of the second platform at the front edge thereof and extending substantially perpendicularly therefrom in extended position;

second end truss means foldably affixed to the sides of the first platform at the rear edge thereof and extending substantially perpendicularly therefrom in extended position; and

tent material releasably affixed to the center and end truss means to provide a collapsible tent structure.

4,111,480

HOLLOW BEARER OF A PASSENGER MOTOR VEHICLE

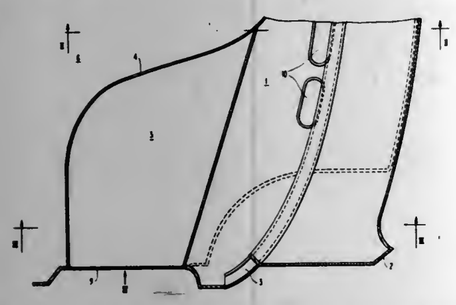
Werner Breitschwerdt, Stuttgart; Sigmund Kania, Sindelfingen; Theodor Ukena, Schonaich, and Otto Schwämmle, Simmozheim, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 10, 1977, Ser. No. 776,248

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1976, 2610732

Int. Cl.² B60R *21/04*; B62D *25/00*

U.S. Cl. 296—28 R **10 Claims**



1. A hollow bearer of a passenger motor vehicle which extends essentially in the vehicle transverse direction below a rear windowpane, said hollow bearer serving as channel means for the exhaust air guidance, said hollow bearer including three profiled sheet-metal members which, except for the offset connecting areas on the side of rear columns, are non-detachably connected with each other, a first, rear upper one of said sheet-metal members being provided with a support flange for the rear window, a second one of said sheet-metal members, which is equipped with inlet openings for the exhaust air, adjoining said first sheet-metal member within the area of the support flange in the direction of a hat storage shelf, and said first and second sheet-metal members being completed into an air guide channel by a third closure sheet-metal member disposed therebelow, characterized in that the closure sheet-metal member forms the rear termination of a sheet-metal bearer member for the hat storage shelf.

4,111,481

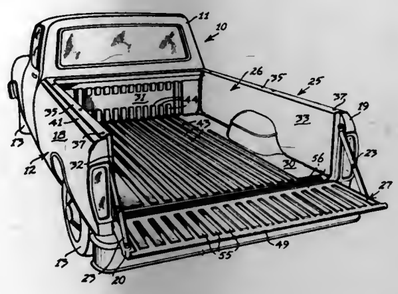
TRUCK BED LINER

Edwin Lee Nix, 733 Tahlena Ave., and Bobby E. Davenport, 317 Beckley Dr., both of Madison, Tenn. 37115

Filed Feb. 17, 1977, Ser. No. 769,580

Int. Cl.² B62D *33/00*

U.S. Cl. 296—39 R **8 Claims**



1. A protective liner for a truck bed having a bottom wall, a front wall, opposed side walls and a substantially rectangular tailgate having an interior surface, an exterior surface, an elongated top edge surface and an elongated bottom edge surface, comprising:

(a) a substantially rectangular, independently formed, tailgate liner,

(b) said tailgate liner comprising a panel portion having a front face, a rear face, an elongated top portion and an elongated bottom portion, said rear face being adapted to fit against the interior surface of said tailgate,

(c) said tailgate liner comprising an elongated top hook-shaped flange integrally formed with the elongated top portion of said panel portion, projecting rearward from said panel portion and adapted to conform to and receive the top edge surface of said tailgate,

(d) said tailgate liner further comprising an elongated bottom hook-shaped flange integrally formed with the elongated bottom portion of said panel portion, projecting rearward from said panel portion, and adapted to conform to and receive the bottom edge surface of said tailgate,

(e) at least one of said top and bottom hook-shaped flanges being substantially semi-rigid and elastic for snap-fastening over its corresponding top or bottom edge surface, when the other of said top and bottom hook-shaped flanges receives its corresponding edge surface, to hold said tailgate liner against the interior surface of the tailgate without any independent fastener member, in operative position.

4,111,482

FOLDING TABLE AND SEAT ASSEMBLY

William C. Jones, Midland, Mich., assignor to Franklyn M. Markus, Cote St. Luc, Canada

Filed Oct. 17, 1977, Ser. No. 842,573

Int. Cl.² A47B *39/00*

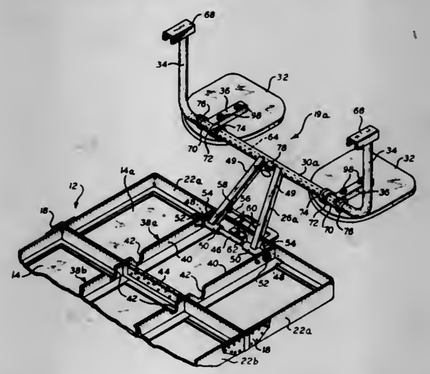
U.S. Cl. 297—159 **24 Claims**

1. In a folding table and seat assembly of the type wherein said seat and table are relatively pivotally movable between an opened position wherein said table and seat are substantially parallel to one another and said seat is disposed adjacent and below one end of said table, and a closed position wherein said seat is in confronting, substantially parallel relation with said table, an improved assembly for supporting said table and seat in said opened position and for permitting said pivotal movement, said assembly comprising:

a table support member connected at one end thereof to the underside of one end of said table for pivotal movement with respect to said table between first and second positions corresponding, respectively, to said opened and folded positions;

an elongated seat support member fixedly joined to the other end of said table support member, said seat support member comprising an elongated cylindrical tubular member having a circular axial bore extending therethrough, the axis of said tubular member being substantially parallel to the pivotal axis of said table support member;

a seat base connected to said seat and including a boss having a circular aperture thereon, said seat support member pivotally extending through said circular boss aperture, cooperating stop means on said circular boss and on said seat support member for limiting the pivotal movement of said seat base relative to said seat support member between two extreme positions corresponding to said open and closed positions; and



a pair of elongated legs and means for mounting said legs to said seat support member for pivotal movement relative to said seat support member, said legs being shaped to move to a closed position in which they confront and are in substantially a parallel relationship with said table when said table and seat assembly are in said closed position, said leg mounting means including a circular shaft operatively coaxially extending through said axial bore in said seat support member for pivotal movement therein, each of said legs being connected to respective ends of said shaft for pivotal movement therewith between an open position in which said legs extend vertically when said table is in an elevated horizontal position and said closed position, and means for releasably holding said legs in said open position.

4,111,483

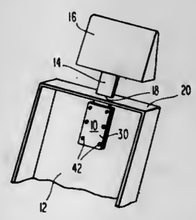
DENTAL CHAIR HEADREST LOCKING DEVICE

Robert Charles Jaeger, Howell, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 24, 1977, Ser. No. 809,579

Int. Cl.² A47C *1/10*

U.S. Cl. 297—410 **7 Claims**



1. A dental chair adjustable headrest and locking mechanism therefor, said headrest comprising a head support member and said locking mechanism being affixed interiorly an upper central portion of a backrest of said chair, said backrest including an uppermost portion having a centrally disposed longitudinal slot therein,

a substantially rectangular bar member having at least a pair of opposed flat surfaces,

said bar member being disposed within said slot for axial movement therethrough and having one end permanently affixed to a lower central portion of said head support member and its other end cooperating with said locking mechanism,

said locking mechanism comprising a pair of rigidly supported parallel pads of high friction material, said pair of rigidly supported parallel pads of high friction material consisting of a lower pad and an upper pad, said contact between said pads and said bar member resulting from force of gravity, said contact occurring at an upper portion of said lower pad and a lower portion of said upper pad,

low friction spacer guide means disposed between said upper pad and said lower pad, said spacer guide means providing a space between said upper pad and said lower pad just barely greater than thickness of said bar member such that said bar member may move longitudinally of said locking mechanism without substantial contact with said upper pad and said lower pad, said low friction spacer guide means being so arranged as to exert drag control on said bar member to prevent gravitational downward movement of said head support member,

said contact of said bar member with said upper portion of said lower pad and said lower portion of said upper pad being overcome when said head support member is pushed to a more vertical position whereby said headrest in adjustable within said locking mechanism.

4,111,484

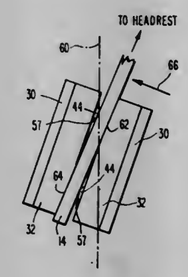
DENTAL CHAIR HEADREST LOCKING DEVICE

Robert Charles Jaeger, Howell, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 25, 1977, Ser. No. 818,638

Int. Cl.² A47C *1/10*

U.S. Cl. 297—410 **10 Claims**



1. A dental chair including an adjustable headrest and a locking mechanism therefore, said chair comprising a backrest having an upper member provided with a centrally disposed longitudinal slot, said headrest comprising a head support member and an elongated bar member having one end affixed to a lower central portion thereof and adapted to be received in said slot for movement therethrough, said locking mechanism being affixed interiorly to an upper central portion of said backrest, said locking mechanism engaging the other end of said bar member, said bar member being substantially rectangular in cross section and having at least a pair of opposed flat surfaces, said locking mechanism comprising:

a. a pair of rigidly supported pads in parallel relationship, said pads being made of high friction material, said pads providing a space for slidably receiving said bar member to provide high friction contact between opposed faces of said pads and said opposed flat surfaces of said bar mem-

ber when said bar member contacts said pads in a non-vertical position,

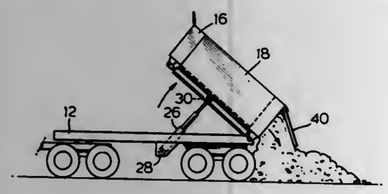
b. a low friction material, spring-loaded block extending through each of said pads and into said space provided by said pads, each of said blocks contacting an opposed flat surface of said bar in staggered coupling relationship when said bar is in a vertical position and non-vertical position, said blocks being substantially simultaneously compressed upon application of a force to said head support member in a direction which reduces contact between said pads and said flat surfaces of said bar member.

4,111,485

DUMP TRUCK WITH TELESCOPING CONTAINER BODY

John C. Martin, and Paul H. Martin, both of Toronto, Canada, assignors to Diesel Equipment Limited, Toronto, Canada

Filed Jan. 17, 1977, Ser. No. 759,877
Claims priority, application Canada, Apr. 26, 1976, 250998
Int. Cl.² B60P *1/28*
U.S. Cl. 298—1 B **14 Claims**



1. In a dump truck having a longitudinally extending support frame, the improvement of;

(a) a container body having an overall length which is variable and consisting of;

(i) a front section and a back section telescoped one within the other such that the overall length of the container body is the combined length of the front and back sections, said front and back sections having a container compartment formed inwardly thereof;

(ii) said front section being mounted for longitudinal movement relative to said frame and back section whereby said front section may extend forwardly from said back section to a first position in which the overall length of the container body is at a maximum and a second position in which said front section is telescoped with respect to said back section to reduce the overall length of the container body to a stable tippable length,

(iii) said back section being pivotally mounted on said frame so as to be movable between a lowered position for transporting a load and an elevated position for dumping a load, and

(b) first drive means associated with said front section for driving said front section longitudinally of said frame between said first and second positions thereby to effect a partial discharge of a load contained within said container compartment rearwardly from said back section in response to movement towards said second position in use,

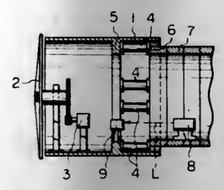
(c) second drive means associated with said back section for moving said back section from said lowered position to said elevated position to complete the discharge of a load from said common container compartment.

4,111,486

METHOD AND SYSTEM FOR PERFORMING ATTITUDE CONTROL OF TUNNEL EXCAVATING SHIELD

Yoshihiro Kumaki, Urawa; Junpei Kawade, Ichikawa; Toshiaki Takano, Tokyo, and Mitsuo Inoue, Chiba, all of Japan, assignors to Tekken Construction Co. Ltd., Tokyo, Japan

Filed Apr. 27, 1977, Ser. No. 791,245
Int. Cl.² E21D *9/08*
U.S. Cl. 299—1 **13 Claims**



1. A method of controlling the attitude of a tunneling machine, said machine being of the type including a movable shield and a plurality of power members for moving said shield, said method comprising the steps of:

irradiating a light beam from a stationary position in a direction substantially parallel to the intended direction of tunneling;

detecting said light beam at a location on said machine to detect deviations of the direction of shield travel relative to said light beam and generating signals corresponding to the deviation detected;

visibly indicating the deviation position in response to said generated signals;

providing a control member connected to actuating means for said power members and which actuates a portion of said power members in accordance with the orientation of a preselected non-uniform pattern of energy transmitting means carried by said control member;

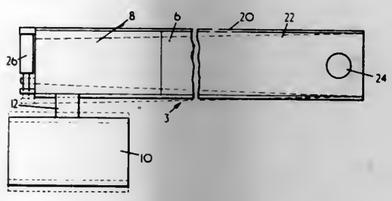
moving said control member to align a referencing index thereon with said visibly indicated deviation position and thereby reorient said non-uniform pattern of energy transmitting means to determine which of said power members are actuated.

4,111,487

UNDERGROUND MINING MACHINE WITH LONGWALL GUIDANCE SYSTEM

Rex Mullins, Burton upon Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 677,225, Apr. 15, 1976. This application Oct. 5, 1977, Ser. No. 839,528
Claims priority, application United Kingdom, May 2, 1975, 18451/75; Jan. 15, 1976, 1573/76
Int. Cl.² E21C *35/12*
U.S. Cl. 299—1 **8 Claims**



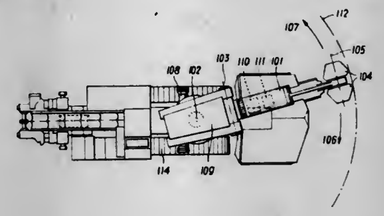
1. Underground mining equipment for traversing to and fro along a horizontal defined path extending along a generally vertical rock face, comprising a first part adapted to be guided along the defined path, a second part at least a portion of which is relatively movable with respect to the first part in a direction transverse to the rock face, a cutter carrying unit fixedly attached to the second part and a rotary cutter drum rotatably mounted on the second part and means mounted on the second part and connected to the drum for rotating the drum, mechanism connected to the first and second parts for relatively moving the two parts horizontally in either direction for moving the cutter unit and second part along a preselected desired path while the first part moves along the defined path, and sensing means deriving a signal indicative of disparity between the defined and desired paths.

4,111,488

METHOD FOR CUTTING MINERALS AND CUTTING MACHINE

Siegfried Sigott; Alfred Zitz, and Herwig Wrulich, all of Zeltweg, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Sep. 1, 1976, Ser. No. 719,654
Claims priority, application Austria, Sep. 3, 1975, 6796/75
Int. Cl.² E21C *27/24*
U.S. Cl. 299—10 **11 Claims**



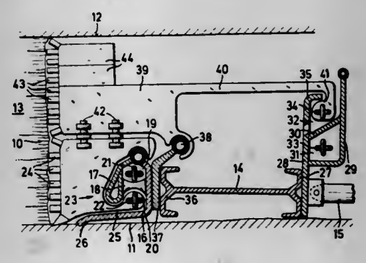
1. A method for cutting minerals from a winning face utilizing a circular cutting tool means provided with cutting teeth positioned in radial planes, said tool means rotating about an axis approximately parallel to the winning face and being moved at a feeding rate essentially in axial direction, said method characterized in that several grooves spaced-apart from each other are carved one after another in engaging sequence and that in dependence on the mineral properties the feeding rate is increased with respect to the rotary velocity when a brittle mineral is to be cut and is diminished with respect to the rotary velocity when a tough mineral is to be cut.

4,111,489

STACKED MINERAL MINING PLOWS INDEPENDENTLY DRIVEN OR COUPLED

Klaus Beckmann, and Horst Linke, both of Lünen, Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Apr. 21, 1977, Ser. No. 789,407
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621678
Int. Cl.² E21C *27/34*
U.S. Cl. 299—34 **8 Claims**



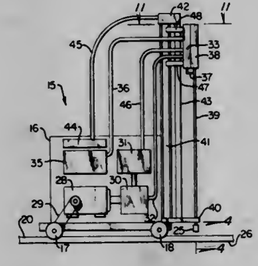
1. A mineral mining installation comprising a scraper-chain conveyor arranged alongside a mineral face, ramp-like guide means arranged at one side of the conveyor adjacent the mineral face, a main floor plough guided by said guide means for movement along the conveyor, chain drive means for driving the main plough, further guide means at the mineral face side of the conveyor and disposed nearer the center of the conveyor than the ramp-like guide means, a plough structure mounted on the main plough and separately guided with the further guide means and detachable coupling means for connecting the plough structure to the main plough.

4,111,490

METHOD AND APPARATUS FOR CHANNEL CUTTING OF HARD MATERIALS USING HIGH VELOCITY FLUID JETS

Daniel J. Liesveld, 6016 Newcombe St., Arvada, Colo. 80004

Filed Sep. 5, 1975, Ser. No. 610,577
Int. Cl.² E21C *25/60*
U.S. Cl. 299—17 **16 Claims**



1. Apparatus for channel cutting through a workpiece comprising:

fluid supply means for producing a fluid medium under high pressure,

a plurality of nozzles each capable of concentrating fluid introduced to an entry port thereof into a fluid column emanating from an exit orifice wherein said exit orifice is of a substantially smaller opening size than the opening size of said entry port,

means coupling the high pressure fluid medium to said entry ports of said nozzles for generating fluid flow columns from said exit orifices,

frame means for mounting said nozzles so that the flow columns thereof impinge at spaced locations on the surface of the material to be cut, the pressure of the fluid medium from said producing means being of a magnitude for erosively removing material from the workpiece in response to impingement thereon of the fluid flow column from said exit orifices including means for propelling said frame means along an intended line of cutting on the workpiece, and

reciprocating means for cyclically moving said frame means along a line perpendicular to the surface of the workpiece including means for controlling said reciprocating means to reciprocate along said perpendicular line for a distance approximately equal to the intended depth of channel cut.

4,111,491

METHOD AND APPARATUS FOR FEEDING BRISTLES IN BRUSH MAKING MACHINES

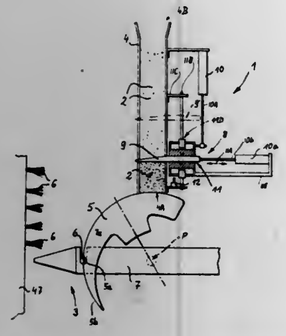
Walter Steinebrunner, Todtnau-Sonnhalde; Arthur Zahoransky, Freiburt i. Br., and Heinz Zahoransky, Todtnau, all of Fed. Rep. of Germany, assignors to Anton Zahoransky, Todtnau, Fed. Rep. of Germany

Filed May 23, 1977, Ser. No. 799,707

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632328

Int. Cl.[2] A46D *1/04*

U.S. Cl. 300—21 38 Claims



1. In a brush making machine, the combination of a magazine arranged to store a supply of substantially parallel bristles and having an inlet and an outlet; a source of bristles including a succession of bundles each having a batch of parallel bristles and an envelope for the respective batch, and carrier means supporting said bundles; means for advancing successive bundles into said magazine by way of said inlet; means for opening the envelopes of successive bundles so that the respective batches are unconfined; means for applying pressure to unconfined batches of bristles in said magazine in a direction toward said outlet; and means for transferring tufts of compacted bristles from said magazine by way of said outlet.

4,111,492

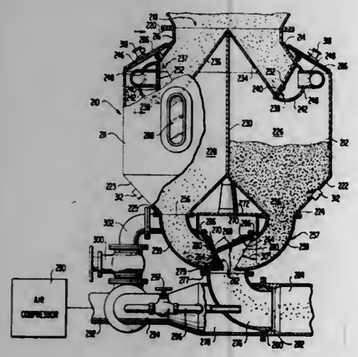
PNEUMATIC CONVEYING APPARATUS AND METHOD

Joseph Mraz, 501 E. Lee St., Plant City, Fla. 33566

Continuation-in-part of Ser. No. 654,796, Feb. 3, 1976, Pat. No. 4,009,912, which is a continuation-in-part of Ser. No. 520,943, Nov. 4, 1974 abandoned. This application Jan. 25, 1977, Ser. No. 762,304

Int. Cl.[2] B65G *53/36*

U.S. Cl. 302—39 14 Claims



1. Apparatus for feeding product into a pneumatic conveying system including a pipeline comprising:

a pair of storage tanks each having an opening at their upper portions for receiving product from a common supply;

each of said openings having doors;

means for alternately opening and closing said doors so that while one door is opened the other door is closed;

each of said tanks having an opening in its lower end;

a housing having two inlet openings and a single outlet opening communicating with the pipeline, means mounting said housing to the lower end of said tanks with the inlet openings of the housing in alignment with the respective openings in the lower tank ends;

said housing having first and second product channels extending from the two inlet openings to the outlet opening;

each of said product channels containing a check valve member opening into a common chamber including the outlet opening;

each of said check valve members comprising a plate-like member mounted for swinging movement about a substantially horizontal axis, said axes being substantially parallel and spaced and arranged so that the lower free end of each valve member opens to a normal position near the outer surface of the other valve member when closed;

means for introducing a pressure greater than atmospheric into the tank having its door closed, the other tank being exposed to essentially atmospheric pressure when its door is open; and

means connected to the housing outlet opening for feeding product into the pipeline at a region having a normal operating pressure less than the pressure introduced into the tank having its door closed.

4,111,493

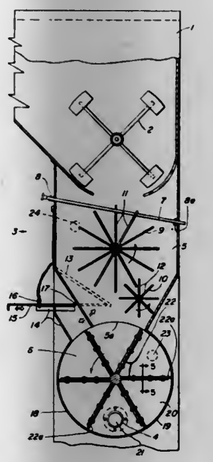
FEEDING APPARATUS FOR A PNEUMATIC CONVEYING SYSTEM

Henry Sperber, 8 Red Fox La., Englewood, Colo. 80110

Filed Mar. 16, 1977, Ser. No. 778,131

Int. Cl.[2] B65G *53/40*

U.S. Cl. 302—42 9 Claims



1. In a pneumatic conveying system for supplying fibrous, light-weight insulating material to a desired location wherein said conveying system includes a rotary pocket feeder having a plurality of spaced vanes, a source of pneumatic pressure connected to one end of the feeder, a conveying conduit connected to the other end of the feeder for conveying insulating material from the feeder to the desired location by means of air flowing through the feeder and conduit from the pneumatic pressure source, a hopper located above the feeder for holding a supply of insulating material, and a chute interconnecting the hopper and the feeder and forming a restricted opening along the length of the top of the feeder through which the insulating material is fed into the feeder, the improvement comprising:

first tine means rotatably mounted within the chute and having fingers of sufficient length to extend partially into the lower portion of the hopper;

a plurality of rod members spaced across the bottom of the hopper and offset from the first tine member fingers so that said fingers can extend into the lower portion of the hopper and engage insulating material therein;

second tine means rotatably mounted within the chute adjacent the restricted opening and between said first tine means and the pocket feeder, said second tine means having fingers which are offset from said first tine means fingers and are of sufficient length to intermesh therewith; and

means connected to said first and second tine means to rotate them in the same direction so that said fingers of said first tine means pull insulating material from the hopper through said rod members down into the chute in the vicinity of said second tine means whereupon the fingers of said second tine means pull the insulating material off of the fingers of the first tine means within the chute and down through the restricted opening into the pocket feeder.

4,111,494

VEHICLE BRAKING SYSTEM INCLUDING VALVES FOR BRAKING MODULATION DURING CORNERING

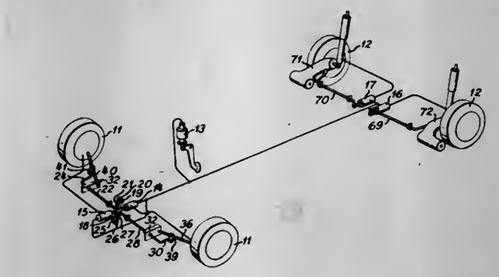
Alastair John Young, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Continuation of Ser. No. 544,490, Jan. 27, 1975, abandoned. This application Jul. 28, 1976, Ser. No. 709,607

Claims priority, application United Kingdom, Jan. 28, 1974, 3935/74

Int. Cl.[2] B60T *8/18, 8/24, 8/26*

U.S. Cl. 303—6 C 20 Claims



1. A fluid pressure braking system for a vehicle including a driver-controlled source of liquid pressure, a first liquid pressure control device for controlling the pressure that is exerted to apply a brake to a first front wheel of the vehicle which is on one side of the vehicle, a second liquid pressure control device for controlling the pressure that is exerted to apply a brake to a second front wheel of the vehicle which is on the other side of the vehicle, each liquid pressure control device comprising a valve member and a valve seat with which said valve member co-operates, and control means for each liquid pressure control device, the control means being operable to exert a biassing load which acts to separate each valve member and the respective valve seat so as to allow the transmission of liquid pressure from said source through the space between the valve member and the valve seat of each liquid pressure control device, the valve member and the associated valve seat of each liquid pressure control device being so arranged that the action of the biassing load exerted by the respective control means is opposed by the action of liquid pressure which is exerted to apply the brake to the respective wheel so that the respective valve member seats upon its associated valve seat when that liquid pressure reaches a level which is dependent upon the respective applied biassing load, the control means being operable to change either biassing load in response to conditions which indicate that the load supported by the respective wheel is reduced so that any pressure which is exerted to apply the brake to the other of said first and second wheels is higher than any pressure which is exerted to apply the brake to the said respective wheel, wherein the biassing load which acts to separate each valve member and the respective valve seat is sufficient to hold the valve member and the valve seat of each of said liquid pressure control devices separated if the control means sense conditions which indicate that the two front wheels support substantially identical loads so that the pressure exerted to apply the brakes to both said front wheels is not varied from the pressure that is transmitted by the driver-controlled source of liquid pressure.

4,111,495

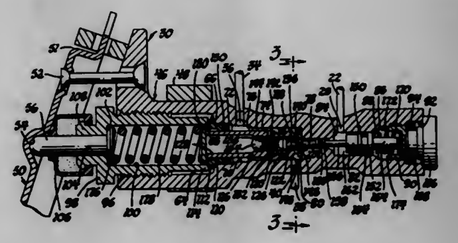
LOAD SENSING PROPORTIONER WITH PROPORTIONER DELAY

Denny L. Peeples, New Carlisle, Ohio

Filed Jun. 29, 1977, Ser. No. 810,972

Int. Cl.[2] B60T *8/00, 8/18*

U.S. Cl. 303—6 C 1 Claim



1. In a brake pressure circuit proportioner having

a housing having first and second pressure receiving ports respectively capable of receiving pressure from first and second brake pressure circuits for actuating first and second brakes, a pressure outlet port for delivering brake actuating pressure to the first brake, a proportioning piston and a proportioning valve positioned fluidly intermediate said first pressure receiving port and said outlet port, said valve being normally open to allow substantially uninhibited pressure therethrough from said first port to said outlet port, said piston acting upon a pressure increase to a first predetermined first port pressure to move relative to said valve to close said valve and thereafter proportion pressure at a predetermined ratio from said first port to said outlet port as pressure further increases at said first port, the improvement comprising:

a movable seat engaged by said proportioning piston and said valve when said valve is normally open, and disengaged from said proportioning piston when pressure is being proportioned; a spring-biased proportioning delay piston normally biased to an inactive position by pressure in said second port but moved under the spring-bias force upon loss of pressure in said second port and operatively engaging said valve and said proportioning piston through said seat to move said valve concurrently with said proportioning piston when and as said proportioning piston moves, keeping said valve normally open and continuing to allow substantially uninhibited pressure therethrough from said first port to said outlet port until pressure at said outlet port acting on said proportioning delay piston reaches a second predetermined first port pressure and overcomes the spring-bias force acting on said proportioning delay piston and moves it operatively away from said valve and said proportioning piston and said seat, permitting said valve to move said seat relative to said proportioning piston to close said valve and institute proportioning action, said second predetermined first port pressure being sufficiently greater than said first predetermined first port pressure to assure a substantially higher level of

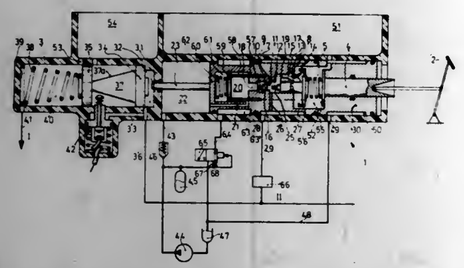
first brake actuating pressure before proportioning begins when there is no second brake actuating pressure.

4,111,496

HYDRAULIC BRAKE BOOSTER

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 25, 1977, Ser. No. 772,208
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609904
Int. Cl.² B60T *17/18, 13/14*
U.S. Cl. 303—92 **3 Claims**



1. In a master brake cylinder for two-circuit braking systems including a housing, a control piston sliding within an booster piston, a brake control valve, actuated by said control piston, for establishing fluid communication between said master cylinder and the first and second of said two brake circuits, said control piston having means for engaging and carrying along said booster piston after a predetermined amount of axial travel, and including a second main cylinder and piston for said second braking circuit,

the improvement wherein said control piston includes an annular chamber which is in communication with a line leading to a 3/2-way valve, said 3/2-way valve being constructed to control flow between said annular chamber, a storage source and a pressure reservoir, whereby pressure on said control piston can be interrupted upon pressure failure.

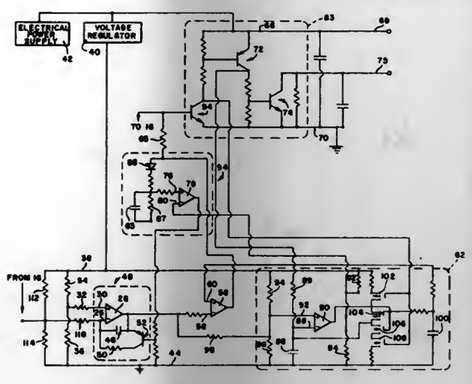
4,111,497

PRESSURE COMMAND GENERATOR WITH INITIAL CONDITION LOGIC FOR ADAPTIVE BRAKING SYSTEM

Ralph W. Carp; Leoncio T. Ang, both of Newport News, Va., and Guy T. Rini, North Ridgeville, Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 16, 1977, Ser. No. 807,284
Int. Cl.² B60T *8/00*
U.S. Cl. 303—110 **10 Claims**

1. In a vehicle having a wheel, a brake controlling said wheel, and fluid pressure responsive means for actuating said brake, an adaptive braking system controlling communication to said fluid pressure responsive means comprising speed sensing means for generating a speed signal as a function of the rotational velocity of said vehicle wheel, modulator means for controlling the fluid pressure level communicated to the fluid pressure responsive means, and logic means responsive to said speed signal for generating a signal controlling said modulator means, said logic means including pressure command generating means for generating a pressure command signal representing the desired fluid pressure level in said pressure responsive means, and means for setting the initial value of said pressure command signal including an initial condition control signal generating means including a comparator for comparing said fixed reference signal with said signal controlling the modulator to generate said initial condition control signal when the fixed reference signal and the signal controlling the modulator are in a predetermined relationship with one another, and means associated with the pressure command generating means responsive to the initial condition control signal to cause



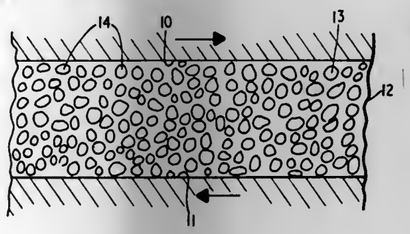
the pressure command generating means to generate the pressure command signal.

4,111,498

BEARINGS

Robert Eric Miller, 2 Ian Street, Rose Bay, New South Wales 2029, Australia

Filed Mar. 26, 1976, Ser. No. 670,783
Claims priority, application Australia, Apr. 2, 1975, 1080/75
Int. Cl.² F16C *33/12*
U.S. Cl. 308—5 R **7 Claims**



1. A bearing having at least two bearing surfaces which are movable with respect to each other, said surfaces having a fluid mixture therebetween, said fluid mixture comprising at least a suspension of particles of a first fluid in a second fluid, said first and said second fluids being immiscible, said first fluid being a lubricant and said second fluid being highly viscous.

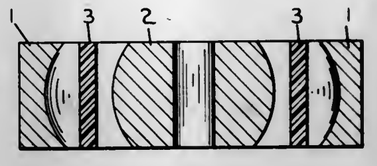
4,111,499

BEARING ASSEMBLY AND LINER

Albert R. McCloskey, Fairfield, Conn., assignor to The Heim Universal Corporation, Fairfield, Conn.

Continuation of Ser. No. 563,569, Mar. 31, 1975, abandoned. This application Dec. 2, 1976, Ser. No. 746,752
Int. Cl.² F16C *23/00*
U.S. Cl. 308—72 **10 Claims**

1. A bearing liner adapted for extreme temperature applications comprising a resin matrix selected from the group consisting of a polyimide resin matrix and a polybutadiene resin matrix having included therein a random dispersion of polytetrafluorethylene particles, said resin matrix adhered to a backing



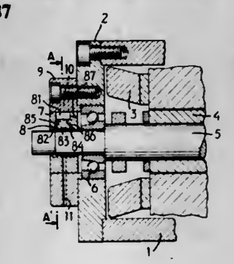
material, thereby providing a bearing liner having an extensive operating temperature range.

4,111,500

SEALING STRUCTURE FOR A BEARING

Shigenori Ando, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Mar. 30, 1977, Ser. No. 782,966
Claims priority, application Japan, Mar. 31, 1976, 51-35580
Int. Cl.² F16C *33/74*
U.S. Cl. 308—187 **4 Claims**



1. A sealing structure for protecting a bearing for a journal of a spindle, comprising a bearing cover having an opening that receives and closely surrounds said journal adjacent said bearing, a plurality of annular recesses in said opening, said recesses surrounding said journal and opening inwardly to said journal, an annular channel in said bearing cover radially outwardly of said opening, means for supplying pressurized lubricating fluid to said channel, first passage means from said channel to said bearing to supply said pressurized lubricating fluid to said bearing, second passage means connecting said channel to at least one of said recesses, and an exhaust opening for exhausting said pressurized lubricating fluid from at least one other of said recesses to thereby carry off any impurities entering between said journal and said opening.

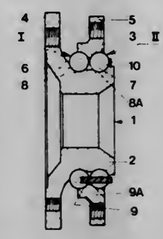
4,111,501

BEARING CAGE

Gordon Boyd Johnston, Beesd, Netherlands, and Hasse Eivind Strandberg, Floda, Sweden, assignors to SKF Industrial Trading & Development Co., B.V., Nieuwegein, Netherlands

Division of Ser. No. 759,036, Jan. 13, 1977, abandoned, which is a continuation of Ser. No. 545,893, Jan. 31, 1975, Pat. No. 4,004,840. This application Nov. 21, 1977, Ser. No. 853,506
Claims priority, application Netherlands, Feb. 6, 1974, 7401604
Int. Cl.² F16C *33/46*
U.S. Cl. 308—201 **3 Claims**

1. In a bearing having an inner race ring and an outer race ring about a common central axis, two circular rows of rolling elements positioned to roll between said rings in raceways in said rings, said two rows defining first and second planes axially spaced along said axis, and a bearing cage insertable axially from one side of said bearing, said cage including holding means for positioning each rolling element of one row adjacent one rolling element of the second row as an axially aligned pair, and for positioning said pairs circumferentially around said raceways, the improvement in combination therewith, wherein said bearing cage comprises an annular, unitary member of a flexible and elastic material having circumferentially spaced U-shaped pockets, each with an axially extending recess which is closed at one end and open at the other end, and a partition between and connecting each two adjacent pockets, and extending from the open end of each pocket a pair of snap-fingers extending generally axially and partially converging, each pocket and associated snap-fingers forming one of said holding means for one of said pairs of rolling elements, each pocket holding a first rolling element of each pair axially



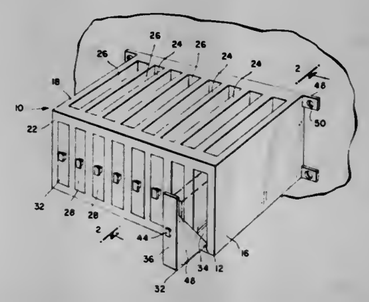
fixed in the closet end of the U-shape thereof, with the second rolling element of said pair axially movable in said recess relative to said first rolling element, and said snap-fingers of said pocket defining a limit of axial movement of said second rolling element only in the direction away from the first rolling element, each of said partitions comprising axially spaced first and second parts generally near said first and second planes with an aperture defined between said parts and adjacent pockets, whereby said cage is elastically deformable in the radial direction and said rolling elements in each of said pairs, as well as rolling elements in adjacent rows, may move relative to each other.

4,111,502

AUTOMOBILE TAPE STORAGE CASE

Harvey Kessler, 72 Cedar Rd., Westbury, N.Y. 11590

Filed Aug. 24, 1976, Ser. No. 717,226
Int. Cl.² A47B *81/06;* B65D *39/00*
U.S. Cl. 312—10 **5 Claims**



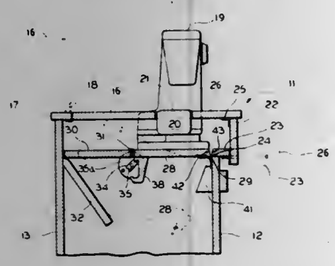
1. An automobile tape storage case adapted to receive a plurality of tape cartridges or cassettes therein and to be mounted onto the automobile, which comprises:

(a) a housing having a base, a pair of upwardly extending end walls, an upwardly extending rear wall, an open top, and an upwardly extending front wall having a plurality of openings therethrough;

(b) a plurality of spaced intermediate walls disposed within said housing and aligned parallel to said end walls for forming a plurality of chambers with said housing, each said chamber communicating with one of said opening in said front wall;

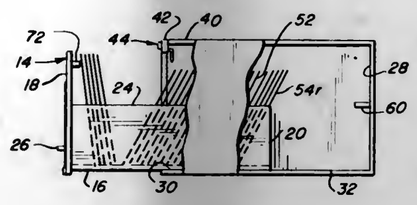
(c) a plurality of drawer members, each said drawer member slidably disposed in one of said chambers;
(d) means for mounting said housing to said automobile;
(e) means for retaining each said drawer within each said opening, each said drawer adapted to receive one tape cartridge or cassette therein and wherein each said drawer comprises:
(f) an elongated base having a pair of ends;
(g) a front wall extending perpendicularly upwardly from said forward end of said elongated base; and
(h) an L-shaped rear wall having a longer and a shorter leg, said shorter leg being slidably disposed on an upper surface of said base, said rear end of said elongated base being perpendicularly affixed to an intermediate portion of said longer leg.

4,111,503
SEWING MACHINE CABINET
Tadao Kohara, Osaka, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Moriguchi, Japan
Filed Jun. 20, 1977, Ser. No. 807,966
Claims priority, application Japan, Jul. 2, 1976, 51-88638; Aug. 12, 1976, 51-108725
Int. Cl.² D05B 75/00
U.S. Cl. 312—27 **6 Claims**



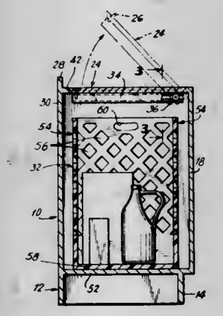
1. In a sewing machine cabinet a frame including front and rear walls and a pair of opposite side walls, a sewing machine support panel hinged to said front wall and adapted to pivot about the hinge axis from a substantially vertically inclined stored position within the cabinet to a substantially horizontally inclined operative position, mechanism for supporting and locking the support panel in the operative position and for releasing the same for pivoting into stored position, said mechanism comprising a pair of brackets secured in depending relation to said support panel, each bracket being located adjacent a respective side wall, each bracket having opposed upper and lower projections arranged in spaced confronting relation to each other, a roatable dog mounted on each side wall in planar registration with a respective bracket, each dog being substantially rectangular in shape and having a notch in each end edge, said upper projection when the support panel is in secured operative position being engaged in an upwardly disposed notch with a side of said notch being disposed in over center position and bearing against an outer edge of said upper projection, said lower projection when said support panel is rocked upwardly from the operative position engaging a lower edge portion of said dog to rock said dog to a position whereby upon the downward movement of said support panel the upper projection will rock the dog so that it assumes a position out of the path of movement of the upper projection thereby freeing the support panel for movement to a stored position within the cabinet.

4,111,504
STORAGE FILE AND RETRIEVAL SYSTEM
Esteban Montiel, 744 Yates, Romeoville, Ill. 60441
Filed Jun. 6, 1977, Ser. No. 803,635
Int. Cl.² A47B 63/00
U.S. Cl. 312—183 **1 Claim**



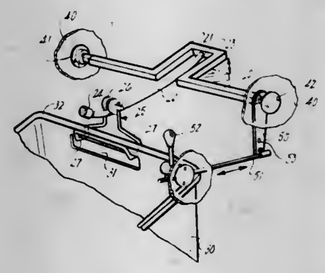
1. A storage file and retrieval system, comprising:
a drawer having a bottom, end walls extending upwardly from said bottom including a front wall and a back wall, a pair of elongated side walls extending between said end walls and a handle attached to said front wall for permitting said drawer to be pulled from a closed position to a partially opened engagement position, to a fully opened position and be moved back to said closed position;
a cabinet defining a compartment into which a drawer slides and having an undercarriage with at least one elongated rail for slidably supporting and guiding the bottom of said drawer, a pair of upright side walls defining the sides of the compartment, a rear wall extending between said upright side walls and defining the back of the compartment, said rear wall extending upwardly to a height above the back wall of said drawer, and a front face plate extending between said upright side walls and positioned adjacent the front wall of said drawer when said drawer is in a closed position and defining an elongated lateral slot;
index folder means including a plurality of file folders disposed generally vertically in side-by-side relationship laterally across said drawer between said elongated side walls for storing and separating papers and tab means extending upwardly from each of said file folders, said tab means each having a striker face disposed generally in a different striker location;
said front face plate having indicia thereon adjacent said slot and corresponding to said striker faces of said tab means and the locations of said file folders;
reset means connected to said cabinet for engaging said index folder means and causing said file folders to tilt toward the front wall of the drawer when said drawer is closed, said reset means including an elongated bar cantilevered from the rear wall of the cabinet and extending longitudinally into the interior of said cabinet above and forwardly of the back wall of the drawer when said drawer is in said closed position; and
movable selector means including a pin for sliding along said slot, handle means for grasping said pin and for permitting said selector means to be selectively moved, said handle means defining indicator means for indicating the particular indicia on said front face plate and a striker arm extending downwardly from said pin means within the interior of the cabinet to a level in general horizontal alignment with said striker faces of said tab means, said selector means being movable to a plurality of positions with each position corresponding to one of said indicia to indicate when said striker arm is aligned in registration with a striker face of said tab means so that when said drawer is moved to said partially opened engagement position and subsequently moved to said fully opened position said striker arm will abuttingly engage and push against said corresponding striker face of one of said file folders and cause said one file folder and the other file folders disposed between said one file folder and said back wall of said drawer to tilt toward the back wall of the drawer and be separated and angularly displaced from the remaining folders between said one folder and the front wall of said drawer.

4,111,505
CHILD-PROOF CABINET
George A. Vice, 105C E. Crooked Hill Rd., Pearl River, N.Y. 10965
Continuation-in-part of Ser. No. 661,369, Feb. 25, 1976, Pat. No. 4,008,934. This application Feb. 14, 1977, Ser. No. 768,339
Int. Cl.² A47B 81/00, 95/02
U.S. Cl. 312—209 **28 Claims**



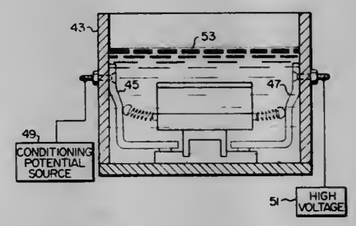
1. A cabinet comprising an enclosure defining an interior cavity, said enclosure comprising
a rearmost vertical wall,
a substantially horizontal surface having an opening defined therein for access to said cavity,
a substantially integrally formed frontmost wall adjacent to said surface,
a container having an open mouth at one end thereof, said container being removably disposed within said cavity,
a cover for said opening and means for movably fastening said cover to said surface for effectively covering and uncovering said opening, said last mentioned means including means for exposing said opening by the movement of said cover in the general direction of said frontmost wall and into coextensively disposed parallel planar position adjacent thereto and said opening being covered by the movement of said cover in the general direction away from said frontmost wall and toward said rearmost vertical wall.

4,111,506
TILTING HANGER APPARATUS
Mitchell F. Gorkiewicz, 619 E. 6th St., Royal Oak, Mich. 48067
Filed Jul. 1, 1977, Ser. No. 812,175
Int. Cl.² A47B 81/00
U.S. Cl. 312—211 **5 Claims**



1. Apparatus for extending a container from a housing for use and for retracting a container into a housing for storage, comprising,
a rail having an outer end and an inner end;
a trolley rollable on said rail for carrying a container; and
means mountable on a housing tiltably supporting said rail between a first position inclining downwardly-outwardly to roll said trolley to said outer end of said rail to carry a container to a use position outwardly of a housing and a second position inclining downwardly-inwardly to roll said trolley to said inner end of said rail to carry a container to a storage position inwardly of a housing, said means comprising a shaft, means pivotally mounting said shaft, a crank-arm on said shaft, and stop means for limiting crank-arm angular motion between two points.

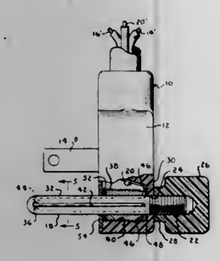
4,111,507
APPARATUS FOR HIGH VOLTAGE CONDITIONING CATHODE RAY TUBES
Ralph E. Neuber, and Charles H. Rehkopf, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed May 13, 1977, Ser. No. 796,744
Int. Cl.² H01J 9/44
U.S. Cl. 316—27 **10 Claims**



1. Apparatus for high voltage conditioning cathode ray tubes having spaced internal electrodes each connected to an external base pin and having a resistance to arcing between electrodes greater than the resistance to arcing between the external base pins, said apparatus comprising:
high voltage and pulsed conditioning potential sources;
a container;
a pair of electrical contact members affixed to and passing through said container, one of said pair of electrical contact members being connected to each one of said high voltage and pulsed conditioning potential sources;
means within said container coupled to said pair of electrical contact members for connecting said electrical contact members to said external base pins of said cathode ray tube; and
a liquid having a dielectric strength greater than the dielectric strength of air disposed within said container and surrounding said means for connecting said electrical contact members to said external base pins of said cathode ray tube.

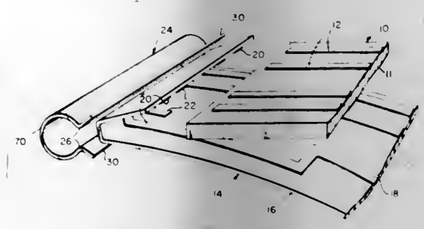
4,111,508
Patent Not Issued For This Number

4,111,509
ELECTRIC PLUG LOCK MEANS
John Novak, 1533 W. 52nd Pl., Merrillville, Ind. 46410
Filed Sep. 29, 1977, Ser. No. 837,696
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 P **5 Claims**



1. In an electrical plug wherein said plug comprises a body having electric contact blade members extending therefrom, a ground post extending from said body, said ground post and said electrical contact blades adapted for insertion in an electric receptacle, and said plug body having electric conducting wires so that the ends of said wires connect to said electric contact blades and said ground post, the improvement comprising: said plug body having a hole therethrough, a portion thereof being enlarged; said ground post extending through said hole, said ground post being formed with a longitudinal groove; a filament member in said groove, said filament member having one end upended to radially extend out of the groove and the other end angled to seat in the groove at the distal end of said post; a bushing member seated in the enlarged portion of said hole in said plug body circumferentially supporting said post in said hole; means between said bushing member and said plug body for contacting the upended end of said filament member and the ground wire, said bushing member abutting the upended end of said filament member against said means connecting said ground wires; and a knob member connected to the end of said ground post extending through said plug body for longitudinally shifting said ground post to radially flex said filament member out of said groove.

4,111,510
FLEXIBLE CIRCUIT/FLAT CABLE TO CIRCUIT BOARD EDGE CONNECTOR FOR ELECTRONIC WRIST WATCHES, CALCULATORS AND THE LIKE
Rudolf F. Zurcher, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 653,320, Jan. 29, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 814,370
Int. Cl.[2] H05K *1/12*
U.S. Cl. 339—17 F **11 Claims**

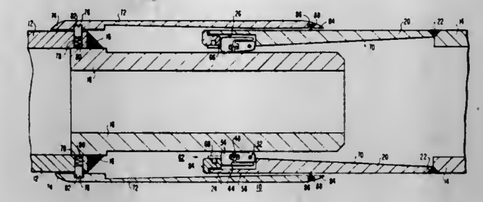


1. An electrical coupling mechanism for use in electronic devices including watches, calculators, combinations thereof, and the like, adapted for wear on a wearer's person comprising a stiff electrical termination, flexible electric circuitry adapted to be coupled thereto, and including elastomeric dielectric insulation, each said termination and said circuitry having bared conductive material thereon, a substantially rigid elongated clip of resilient material having a generally C-shaped cross-sectional configuration and including means for guiding said flexible circuitry around the termination, for bringing the respective bared conductive materials of the flexible circuitry and the termination into electrical contact, for exerting substantially straight-line pressure on said electric circuitry and thereby for mechanically clamping the flexible circuitry and the termination together, said elastomeric dielectric insulation serving as a local equalizer of any thickness variations between said electric circuitry and said termination, and bevelled sides on said clip for acting at least as said guiding means and for enabling said clip to be engaged with said circuitry and said stiff termination in an edgewise sliding manner.

4,111,511
HIGH CURRENT CONTACT ASSEMBLY
Philip C. Bolin, Westborough, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 23, 1977, Ser. No. 836,171
Int. Cl.[2] H01R *13/62*
U.S. Cl. 339—64 R **7 Claims**

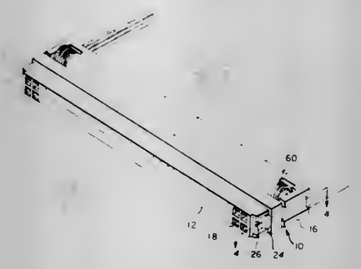
1. A contact assembly for electrically connecting first and second electrical conductors comprising:
- a cylindrical plug member fixedly secured to said first conductor and having an outer diameter;
- a cylindrical, hollow socket member fixedly secured to said second conductor and having an inner diameter greater than said plug member outer diameter, said socket member receiving said plug member therein, said socket member having an annular recess therein;

- a plurality of contact fingers disposed within said recess and seated against a radial surface of said socket member;
- an annular holder disposed within said recess axially spaced from said contact fingers, said holder having an annular axial projection therefrom extending axially adjacent said contact fingers radially outwardly therefrom, said holder projection being radially spaced apart from said socket member, said holder projection and said socket member forming an annular space therebetween;
- resilient biasing means disposed intermediate said contact



fingers and said holder and acting upon each of said contact fingers; and
- means connected to said socket member and physically contacting said holder for loading said biasing means so as to produce a force upon said contact fingers, said force having a component in the radial direction and a larger component in the axial direction, said radial component producing contact pressure between each of said fingers and said plug member and said axial component producing contact pressure between said fingers and said socket member surface.

4,111,512
STRAIN RELIEF COVER FOR FLAT FLEXIBLE CABLE CONNECTOR
Kenneth Ronald Parmer, and David Murray Little, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jun. 13, 1977, Ser. No. 805,958
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—105 **5 Claims**



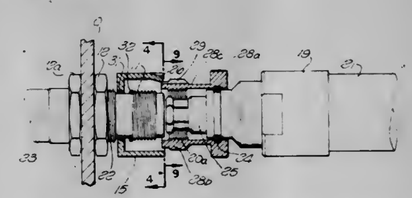
1. An electrical connector for terminating multiple conductor flat flexible cable, said connector comprising:
- a contact housing having a mating face, a cable engaging face, a plurality of contact passages extending between said faces, and latching means;
- a like plurality of electrical contacts each mounted in a respective one of said contact passages with a matable portion adjacent said mating face and an insulation displacing conductor engaging portion extending from said cable engaging face, said insulation displacing conductor engaging portion comprising a pair of parallel spaced tines defining a slot therebetween and outwardly directed latching shoulders on the free end of each tine;
- a cover and strain relief member having a cable supporting face with a like plurality of profiled contact receiving passages extending therein each defining a latching shoulder parallel to and spaced inwardly from said cable supporting face, cable passage parallel to and spaced from said face, and latching means cooperating with the latching means of said contact housing, whereby a cable follows a tortuous path through the passage and around to the supporting face where it is terminated and thus a strain relief function is provided.

4,111,513
CABLE-CONNECTOR BACKSHELL ADAPTER DEVICE
Bruce E. Thurston, Parlin; Albert H. Owens, Sparta, and Powell J. Pocsi, Warren, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sep. 22, 1977, Ser. No. 835,548
Int. Cl.[2] H01R *3/06, 13/46*
U.S. Cl. 339—143 R **5 Claims**



1. A cable-connector backshell adapter device which comprises:
- a base backshell adapter member having a circularly shaped internally threaded open bottom end which has a pin bore transversely positioned therethrough, a base top open end having a peripheral integral flange adjacent to said top open end, said base top open end further including a plurality of radially disposed lead shield solder grooves passing therethrough, and a semicircular tubularly shaped base cable bottom support section extending in a direction normal to a longitudinal axis of said base open bottom end; and
- cover means operatively disposed on top of said base backshell adapter member, for providing mechanical support for a shielded braided cable assembly and providing a solder area for said shielded braided cable.

4,111,514
POLARIZING KEYING DEVICE FOR ELECTRICAL CONNECTORS
Alexander R. Brishka, Irvine, and David W. DeChamp, Westminster, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jun. 23, 1977, Ser. No. 809,412
Int. Cl.[2] H01R *13/64*
U.S. Cl. 339—186 R **2 Claims**



1. A device for discretely keying first and second matable connectors to prevent unintended mismating where a plurality of such connectors are located in the same vicinity, said first matable connector including a first body shell with first exter-

nal surface engagement means and said second matable connector including a rotatable captive second body shell extending axially over said first body shell during mating of said connectors, said second body shell including second engagement means on the inside surface thereof for securing said first and second connectors in the mated position, comprising:

first means comprising a plurality of axial grooves within the external surface of said second body shell, said grooves having a discrete predetermined circumferential spacing;

an annular channel within the external surface of said second body shell behind said grooves;

second means comprising a key member surrounding and rotatable relative to said first body shell, said key member having an inside diameter greater than the outside diameter of said second body shell and a plurality of radially inwardly directed keys at the front of said key member spaced to correspond to said axial grooves in said second body shell and to engage said grooves when said connectors are mated and to prevent axial mating of said connectors if said grooves and keys do not correspond for at least one rotational relationship between said second body shell and said key member;

means for restricting rotation of said key member relative to said first body shell; and

said keys being positioned in said channel during mating of said first and second connectors to allow rotation of said second body shell relative to said first body shell.

4,111,515

LAMP HOLDER FOR TWIN-SOCKET TYPE HALOGEN LAMPS

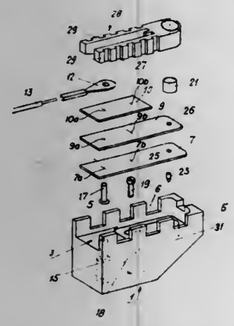
Jurg Nigg, Beckenhofstrasse 30, 8006 Zurich, Switzerland

Filed Sep. 3, 1976, Ser. No. 720,322

Claims priority, application Switzerland, Sep. 12, 1975, 11861/75

Int. Cl.² H01R *13/00*

U.S. Cl. 339—112 R **13 Claims**



1. A lamp holder, comprising socket means for receiving and holding a part of a lamp and contact means for electrically contacting the lamp;

said contact means comprising a contacting knob engageable with a lamp conductor held in said socket means; said knob consisting of a material consisting mainly of silver and the remainder of a minor portion of nickel; terminal means electrically connected to said contacting knob;

said socket means being comprised of ceramic material; said socket means supporting said contacting knob and a lamp conductor.

4,111,516

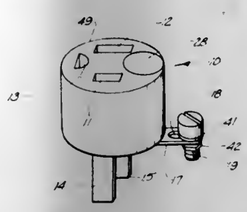
GROUND AND POLARITY MONITORING APPARATUS INCLUDING MEANS TO CORRECT IMPROPER POLARITY

Wallace H. Wireman, 13 Park Ave., Walton, Ky. 41094

Continuation-in-part of Ser. No. 592,725, Jul. 3, 1975, abandoned. This application Mar. 22, 1976, Ser. No. 669,187

Int. Cl.² H01R *3/00*

U.S. Cl. 339—113 R **10 Claims**



1. A ground fault indicating and polarity correcting adapter for use with a polarized electrical service receptacle of the type having normally hot and normally neutral service terminals and at least one normally grounded connection, said adapter comprising:

(a) a housing having first, second and third apertures spatially arranged and configured to receive respectively, the hot, neutral and ground prongs of a polarized three prong electrical plug;

(b) two male contacts extending from said housing and reversibly insertable in said hot and neutral service terminals, said male contacts communicating with said first and second apertures for conductively engaging said hot and neutral prongs upon insertion of said plug into said housing;

(c) a supplemental contact member adjustably extending from said housing for engaging said ground connection and communicating with said third aperture for conductively engaging said ground prong upon insertion of said plug into said housing;

(d) electrical indicating means for indicating both ground and polarity integrity of said service receptacle, said indicating means extending between said supplemental contact member and said male contact communicating with said first aperture; and

(e) means rendering said electrical indicating means operable only upon insertion of said ground prong into said third aperture.

4,111,517

JUNCTION BLOCK WITH TWO FIXING ORIENTATIONS

Jean Debaigt, Maisons Laffitte, France, assignor to Cgee Alsthom, Levallois-Perret, France

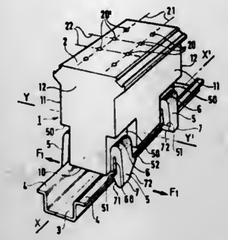
Filed Sep. 29, 1977, Ser. No. 837,979

Claims priority, application France, Oct. 15, 1976, 76 31142

Int. Cl.² H01R *9/22*

U.S. Cl. 339—198 GA **8 Claims**

1. A junction block having two orthogonal fixing orientations in relation to a support having parallel strip edges, each block comprising; a molding of plastics material including four resilient fixing legs integrally molded with the block and disposed symmetrically in pairs about both of the fixing orientations of the block, each leg being so configured and having two lock notches which face, respectively, the adjacent fixing legs, each one of said two lock notches on each leg facing a different one of the adjacent legs for movement of either one of said two lock notches on each leg under one of the edges of the support after resilient flexure away from said edge during pressure application of the block to the support to thereby retain said block on said support in a selected one of said orthogonal orientations.



4,111,518

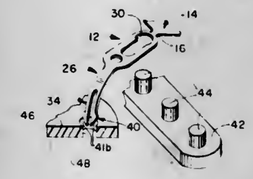
QUICK CONNECT AND NON-DESTRUCTIVE DISCONNECT ELECTRICAL WIRING-CONNECTOR DEVICE

Rudolf F. Zurcher, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 608,434, Aug. 28, 1975, abandoned. This application Mar. 25, 1977, Ser. No. 781,083

Int. Cl.² H01R *13/06*

U.S. Cl. 339—252 R **1 Claim**



1. A method for electrically connecting means for defining a hole lined with electrically conductive material with a lead, comprising the steps of:

providing a tab secured by a necked-down portion to an electrically conductive element having a tail and means therein for defining a key-hole opening;

manipulating the tab for inserting the tail into the lined hole and thereby for establishing an electrical coupling therebetween;

manipulating the tab for placing the key-hole means over the lead; and

pulling the tab for engaging the keyhole means by interference fit with the lead and thereafter for separating the tab from the electrically conductive element.

4,111,519

RECORDING AND READING SYNTHETIC HOLOGRAMS

Alva Knox Gillis, Melbourne; Thomas Harvey Otten, and Andrew Miklos Bardos, both of Indian Harbour Beach, all of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Mar. 10, 1976, Ser. No. 665,720

Int. Cl.² G02B *27/00*

U.S. Cl. 350—3.66 **18 Claims**

1. Apparatus for recording a Fourier transform hologram of a multibit byte of binary data comprising:

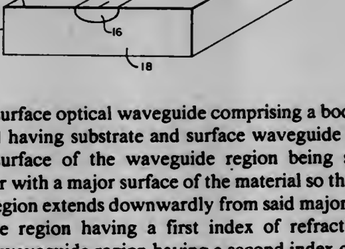
means for providing a time varying analog electrical signal representative of a Fourier transform of a multibit byte of binary data,

photosensitive recording means capable of recording an intensity modulated pattern of coherent light and having a nonlinear transmittance versus exposure characteristic;

means for providing a beam of coherent light;

means for scanning said beam transversely of its direction of propagation across said recording means;

means responsive to said analog electrical signal for intensity modulating said beam as it is scanned across said recording means so as to thereby record a Fourier transform hologram of said byte of data;



said analog electrical signal providing means including compensating means for causing nonlinear variations in the magnitude of said analog electrical signal affecting the intensity modulation of said coherent light to compensate for nonlinear response characteristics of said modulating means to said analog electrical signal and for said nonlinear characteristic of said recording means whereby the transmittance of said recording means linearly corresponds to the value of said analog electrical signal.

4,111,520

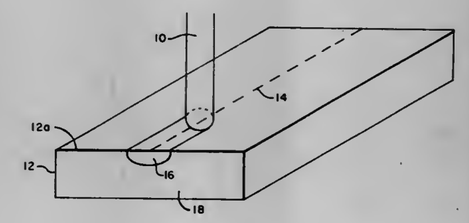
FABRICATION OF OPTICAL WAVEGUIDES

Enrique Bernal G., Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 13, 1975, Ser. No. 540,920

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.12 **3 Claims**



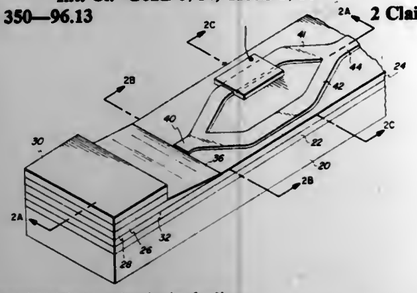
1. A surface optical waveguide comprising a body of optical material having substrate and surface waveguide regions, the upper surface of the waveguide region being substantially coplanar with a major surface of the material so that the waveguide region extends downwardly from said major surface, the substrate region having a first index of refraction and the surface waveguide region having a second index of refraction, the second index of refraction being greater than the first index of refraction as a result of residual stress within the waveguide region created by laser beam heating of the surface waveguide region, said heating being sufficient to cause plastic deformation within the surface waveguide region, but not sufficient to cause evaportion of the material.

4,111,521

SEMICONDUCTOR LIGHT REFLECTOR/LIGHT TRANSMITTER

William Streifer, Palo Alto; Donald R. Scifres, and Robert D. Burnham, both of Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 21, 1977, Ser. No. 761,105
Int. Cl.² G02B 5/14; H01S 3/10
U.S. Cl. 350—96.13 **2 Claims**



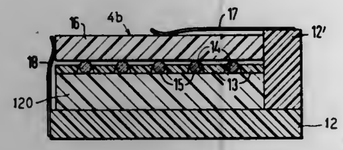
1. A semiconductor body including:
a solid state laser cavity defined by an active region boarded by a rectifying junction and a pair of light feedback means,
one of said light feedback means including a first elongated light guiding region and a second elongated light guiding region, said first and second elongated light guiding regions originating from a first common region and terminating at a second common region,
first means for forward biasing said rectifying junction to produce light output from said active region,
second means for guiding the light output of said active region into said first common region whereby portions of said light output are guided between said first and second common regions via said first and second elongated regions, and
third means for regulating the relative phase of the light traveling in said first and second elongated regions to provide, depending on said relative phase, total or partial light reflection at said second common region.

4,111,522

DEVICE FOR COUPLING TWO LIGHT CONDUCTING FIBER CABLES

Franz Auracher; Karl-Heinz Zeitler, and Walter Rauscher, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 21, 1976, Ser. No. 688,716
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522740
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.21 **12 Claims**



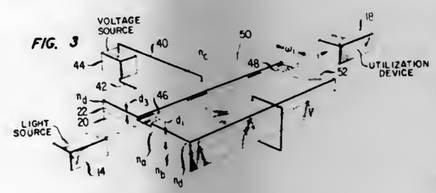
1. A device for coupling an incoming light conducting fiber cable to an outgoing light conducting fiber cable, said device comprising at least one housing, and means secured in the housing for holding the end faces of the light conducting fibers of each cable in a centered relationship to each other and for optically interconnecting the end faces of the light conducting fibers of the incoming cable to the end faces of the light conducting fibers of the outgoing cable, said means including at least one holder having a guide body with a pair of spaced edges with a first surface extending therebetween, said guide body having a plurality of parallel guide channels for the light conducting fibers extending inward from said first surface of the body and between said spaced edges, each of said guide channels having a cross section with an undercut profile so that the width of the channel increases as the distance that the channel extends inward from the first surface increases, and a cover member disposed on the first surface of the guide body to close off the guide channels so that the light guiding fibers disposed in the channels are held therein.

4,111,523

THIN FILM OPTICAL WAVEGUIDE

Ivan Paul Kaminow, Tinton Falls, and Herwig Werner Kogelnik, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 381,985, Jul. 23, 1973, Pat. No. 3,990,775. This application Aug. 3, 1976, Ser. No. 711,319
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.14 **6 Claims**



1. In combination, a substrate, a planar dielectric thin-film waveguiding layer disposed on said substrate, said waveguiding layer having an index of refraction that is greater than the index of refraction of said substrate, and passive means for defining in said layer in the absence of an applied electric field a region having an effective index of refraction that is higher than that in the other regions of said layer, said passive means comprising only two spaced-apart longitudinal elements disposed in contact with one surface of said layer for defining in the portion of said layer between said elements a portion to which optical waveguiding is limited, said elements each having a complex index of refraction n_d where

$$n_d^2 = A + iB,$$

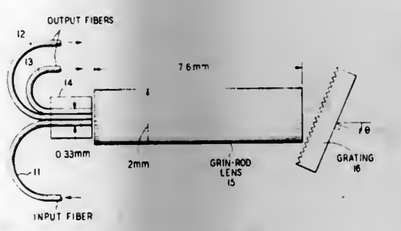
A being a negative real number, $i = \sqrt{-1}$ and B being a real number.

4,111,524

WAVELENGTH DIVISION MULTIPLEXER

Walter John Tomlinson, III, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hall, N.J.

Filed Apr. 14, 1977, Ser. No. 787,329
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.19 **4 Claims**



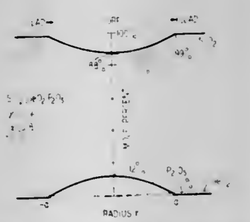
1. A wavelength division multiplexer comprising:
an output optical fiber,
a graded refractive index rod optical focusing device having a first face and a second face,
a plurality of optical sources, each transmitting input light in a different frequency range into said first face, in such a manner that said input light is collimated by said graded refractive index rod optical focusing device, so that a plurality of beams of collimated light emerge from said second face, and
a blazed plane reflection diffraction grating for reflecting said beams of collimated input light back into said second face at angles such that said graded refractive index rod optical focusing device focuses said collimated beams of input light into said output optical fiber.

4,111,525

SILICA BASED OPTICAL FIBER WAVEGUIDE USING PHOSPHORUS PENTOXIDE AND GERMANIUM DIOXIDE

Ivan Paul Kaminow, Tinton Falls, and Herman Melvin Presby, Highland Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1976, Ser. No. 731,786
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.31 **5 Claims**



1. An optical fiber waveguide comprising a silica based fiber core surrounded by a cladding having an index of refraction lower in value than that of said core, and first and second dopants radially graded in concentration within said core, characterized in that said first dopant is an index-increasing dopant radially graded such that it appears with maximum molar concentration on the axis of said core and minimum molar concentration at the core-cladding interface, and said second dopant is an index-increasing dopant radially graded such that it appears with maximum molar concentration at the core-cladding interface and with minimum molar concentration on the axis of said fiber core.

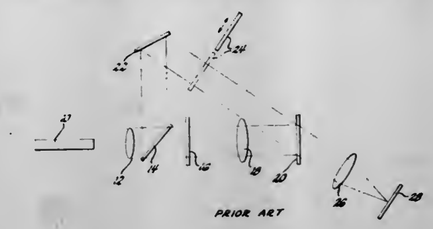
4,111,526

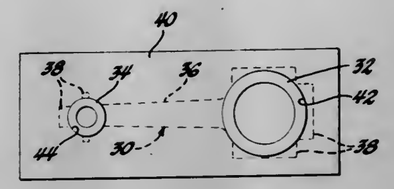
ROTATIONALLY INDEPENDENT OPTICAL CORRELATION FOR POSITION DETERMINATION

Bernard W. Joseph, Berkley, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1977, Ser. No. 796,124
Int. Cl.² G01B 11/26; G03H 1/16; G06G 9/00
U.S. Cl. 350—162 SF **3 Claims**

1. The coherent optical correlation method of determining the angular and positional orientation of an object irrespective of the angular orientation of the object, the object being comprised of circular features and noncircular features, comprising the steps of
forming a coherent light image of the object,
optically forming a Fourier transform of the object image in a transform plane,
synthesizing a spatial filter representing a hologram of the Fourier transform of at least two of the circular features of the object, with the object at a specific reference position and angle,
filtering the object transform by positioning the spatial filter in the said transform plane thereby producing a resultant light pattern from the interaction of the object transform and the spatial filter,
and focusing the said resultant pattern to produce a single correlation spot in an output plane when the object is oriented at the reference angle, the position of the correlation spot in the output plane being related to the position of the object, and to produce at least two spaced correlation spots in the output plane when the object is angularly





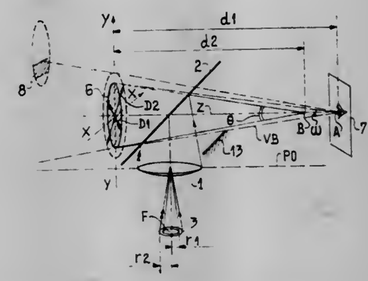
displaced from the reference angle, the spacing and relative angular relationship of the correlation spots being indicative of the angular orientation of the object.

4,111,527

DISPLAY INSTRUMENT USING OPTICAL COLLIMATION

Yves Cojan, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 17, 1977, Ser. No. 807,686
Claims priority, application France, Jun. 22, 1976, 76 18926
Int. Cl.² G02B 27/14
U.S. Cl. 350—174 **5 Claims**

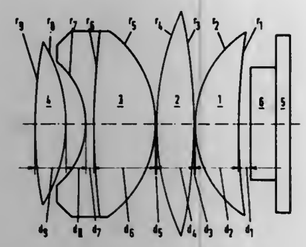


1. A display instrument using optical collimation for projecting images of luminous objects into the observer's normal line of sight, said instrument comprising: a transparent combining glass positioned in said line of sight and having a surface for reflecting said projected images into said line of sight; an optical objective for projecting said images of luminous objects focused at infinity onto said surface; light emitting means for providing said luminous objects; and means for enlarging the original optical pupil defined by the outline of the image of the optical objective projected by single reflection from the combining glass into said line of sight, the said enlarging means comprising a plane reflective optical element arranged parallel to the plane of the combining glass and located between the said combining glass and the plane in which lies said optical objective to form by double reflection from said combining glass an additional optical pupil in conjunction with said original pupil.

4,111,528
MAGNIFIER

Frits Johan Versteeg, Rotterdam, Netherlands, assignor to N.V. Optische Industrie "de Oude Delft", Delft, Netherlands

Filed Feb. 23, 1977, Ser. No. 771,184
Claims priority, application Netherlands, Mar. 3, 1976, 7602197
Int. Cl.² G02B 9/34
U.S. Cl. 350—175 E 2 Claims



1. A magnifier having a relative aperture exceeding *f*/1, an angle of view wider than 2° × 25°, and as viewed in the direction of the observer, successively consisting of:
(a) a first component consisting of a positive lens;
(b) a second component consisting of a lens of positive power;
(c) a third component consisting of a meniscus-shaped lens having its concave side facing the observer, and comprising two components cemented together; and
(d) a fourth component consisting of a lens of positive power; the power of the refractive surface of the third component facing the observer having a value between 0.63/*f* and 1.03/*f*, and the sum of the powers of the two refractive surfaces of the fourth component being less than 0.65/*f*, the improvement which comprises that the sum of the powers of the two refractive surfaces of the second component has a value of between 0.15/*f* and 0.55/*f*, and the sum of the powers of the two refractive surfaces of the fourth component exceeds 0.45/*f*, said magnifier being characterized by the following dimensions, given in random units:

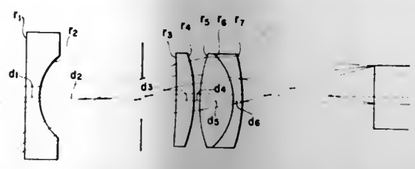
f = 1.0 and pupil distance = 1.33		N_e/ν_e
$r_1 = -8.1981$	$d_1 = 0.1273$	
$r_2 = -1.3296$	$d_2 = 0.5451$	1.737/51.4
$r_3 = +5.8038$	$d_3 = 0.0080$	
$r_4 = -3.1894$	$d_4 = 0.4786$	1.716/53.6
$r_5 = +1.3923$	$d_5 = 0.0080$	
$r_6 = -8.5846$	$d_6 = 0.7711$	1.716/53.6
$r_7 = +0.9632$	$d_7 = 0.1064$	1.792/25.6
$r_8 = +1.8353$	$d_8 = 0.2393$	
$r_9 = -5.0548$	$d_9 = 0.3856$	1.748/44

4,111,529
OPTICAL SYSTEM FOR AN ENDOSCOPE

Nobuo Yamashita, Tama, Japan, assignor to Olympus Optical Co., Ltd., Japan

Continuation of Ser. No. 602,312, Aug. 6, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,442
Claims priority, application Japan, Aug. 14, 1974, 74/92308
Int. Cl.² A61B 1/06; G02B 9/12
U.S. Cl. 350—225 1 Claim

1. An optical system for an endoscope comprising an image fiber for transmitting an image of an object to be observed and an objective arranged adjacent to one end face of said image fiber in order to form an image of the object on said end face of said image fiber, said objective comprising a first, second and third lens component, said first lens component being a negative singlet lens, said second lens component being a positive singlet meniscus lens, and said third lens component being a cemented positive doublet lens, the stop of said optical system for an endoscope being arranged between said first lens component and said second lens component, the optical axis of



said objective being parallely shifted from the center line of said image fiber, in which said objective has numerical values as given below:

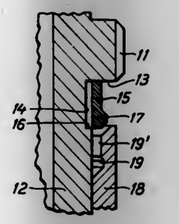
$r_1 = \infty$		
$d_1 = 0.6$	$n_1 = 1.51633$	$\nu_1 = 64.1$
$r_2 = 2.175$		
$d_2 = 6.49$		
$r_3 = -49.125$		
$d_3 = 1.0$	$n_2 = 1.69680$	$\nu_2 = 55.7$
$r_4 = -6.007$		
$d_4 = 0.2$		
$r_5 = 7.42$		
$d_5 = 1.6$	$n_3 = 1.62041$	$\nu_3 = 60.3$
$r_6 = -3.187$		
$d_6 = 0.5$	$n_4 = 1.84666$	$\nu_5 = 23.9$
$r_7 = -6.888$		
f = 2.5	F 1 : 3	

wherein reference symbols r_1 through r_7 respectively represent radii of curvature of respective surfaces of respective lenses, reference symbols d_1 through d_6 respectively represent thicknesses of respective lenses and airspaces between respective lenses, reference symbols n_1 through n_4 respectively represent refractive indices of respective lenses, and reference symbols ν_1 through ν_4 respectively represent Abbe's numbers of repective lenses.

4,111,530
MICROSCOPE OBJECTIVE MOUNT

Werner Fuehrer; Richard Huttel, both of Ehringshausen; Robert Lisfeld, Ulm, all of Fed. Rep. of Germany, and Karl Leonhardt, deceased, late of Greifenthal, Fed. Rep. of Germany, by Herta Leonhardt, administratrix, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Dec. 3, 1976, Ser. No. 747,176
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554749
Int. Cl.² G02B 7/02; F16L 27/08, 21/04
U.S. Cl. 350—252 10 Claims

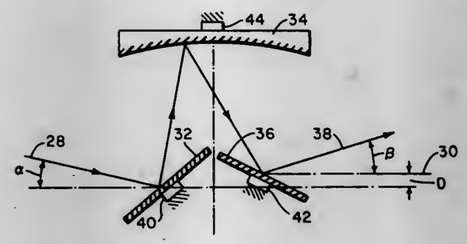


1. In a microscope objective mount including an elongated and generally cylindrical objective mounting element, means at one end of said mounting element for screwably attaching the element to a microscope, a sleeve surrounding said mounting element, and means for rotatably securing said sleeve to said mounting element, said securing means including a first annular groove in the outside surface of said mounting element and a second annular groove in the inside surface of said sleeve and an elastically deformable ring member interengaging with both of said grooves at least in part in spring-locking relationship, wherein the improvement comprises said second annular groove having a shoulder positioned near the axially forward end thereof said shoulder extending toward but being recessed from the mounting element and said shoulder, upon securing of said sleeve and said mounting element in spring-locking relationship, being positioned opposite said first annular groove, whereby said shoulder presses said ring member into said first annular groove and whereby said first annular groove may be made shallow in view of said recessed relationship; axially opposed first and second abutment surfaces on said mounting element for engaging said ring member therebetween, said first abutment surface comprising a shoulder of said first annular groove, and said second abutment surface comprising a collar disposed on said mounting element axially opposite the shoulder of said first annular groove, said collar extending radially from said mounting element; and said ring member having a radially extending protrusion thereon adapted for interengagement with said second annular groove upon securing of said sleeve and said mounting element, said ring member being formed so that it is elastically pressed into said first annular groove by the shoulder of said second annular groove, at least in the region of spring-locking relationship, in axial abutment with the shoulder of said first annular groove and with said collar.

4,111,531
MULTI-DIMENSIONAL CORRECTIVE SYSTEM FOR LONG RADIATION BEAMS

Joseph E. Lavelle, Wellesley, and James L. Munroe, Nonantum, both of Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.SHINGTON

Filed Jun. 16, 1976, Ser. No. 696,693
Int. Cl.² G02B 5/10
U.S. Cl. 350—293 5 Claims

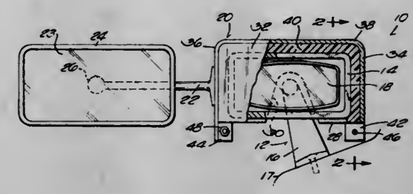


1. A reflective relay system for realigning long beams of radiation comprising:
a propagating beam of radiation;
a first long channel through which said propagating beam travels along an axis, said beam exiting said first channel with a divergence characteristic and centered about a first axis at a predetermined orientation;
a first plane reflecting surface positioned to receive said propagating radiation beam from said first channel along said axis and redirect it;
a concave reflecting surface positioned to receive radiation from said first plane reflective surface;
the curvature of said concave reflecting surface being related to the divergence of said propagating beam of radiation to produce cnvergence of the radiation redirected thereby;
a second channel having an axis with a predetermined displacement and angular orientation with respect to the axis of said first channel;
a second plane reflecting surface positioned to receive the radiation redirected from said concave reflecting surface and redirect it along the axis of said second channel.

4,111,532
TEMPORARY SIDE VIEW MIRROR FOR COVERING A VEHICULAR MIRROR

Joseph D. Budish, 1635 Madison Ave., South Milwaukee, Wis. 53172

Continuation-in-part of Ser. No. 805,450, Jun. 10, 1977, abandoned. This application Jul. 5, 1977, Ser. No. 812,917
Int. Cl.² G02B 5/08; A47G 1/24
U.S. Cl. 350—307 10 Claims

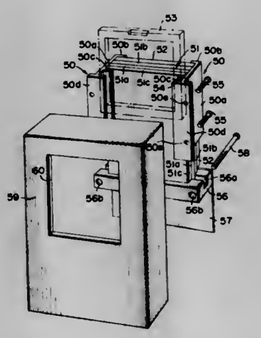


1. A temporary side view mirror adapted for mounting on an existing vehicular side view mirror of the type having a mirror pivotally mounted inside a stationary housing supported on the exterior of the vehicle comprising:
a casing arranged to fit over and at least partially enclose the housing of the existing side view mirror, said casing having opposed inner and outer side walls and a rear wall for covering the mirror portion of the existing side view mirror;
an arm extending laterally outwardly from said casing outer side wall and having an outer end portion spaced outwardly from the existing side view mirror;
a mirror having a rear reflective surface and pivotally mounted on the outer end portion of said arm for affording a selectively adjustable field of view alongside and behind a load being towed by the vehicle; and
means for securing said casing onto the housing of the existing side view mirror.

4,111,533
LIQUID CRYSTAL DISPLAY DEVICE

Kenji Nakamura, Kamakura, and Iwao Seno, Toyonaka, both of Japan, assignors to L C Chemical Company Limited, Tokyo, Japan

Continuation of Ser. No. 586,898, Jun. 16, 1975, abandoned. This application Feb. 24, 1977, Ser. No. 771,554
Claims priority, application Japan, Nov. 15, 1974, 49-138555[U]
Int. Cl.² G02F 1/13
U.S. Cl. 350—337 14 Claims



1. A liquid crystal display device comprising in combination:
a twisted nematic liquid crystal cell including a pair of transparent substrates carrying on the inner surface thereof electrode means and a liquid crystal material having posi-

tive dielectric anisotropy sandwiched between said substrates,

a connector means including an electric circuit electrically connected with said electrode means for applying an electric field across said liquid crystal cell,

a pair of linear polarizers disposed adjacent said transparent substrates to sandwich said liquid crystal cell therebetween,

at least one of said pair of linear polarizers being supported in a cassette, said cassette comprising a pair of rigid support plates having flat inner surfaces with said linear polarizer mounted therebetween and supported by said plates, said support plates including an opening to expose the central part of the polarizer, and

a cassette holding means separate from said cassette for demountably fixing said cassette to said liquid crystal cell, said cassette and said one polarizer displaying an outer peripheral shape which cooperates with said cassette holding means such that said cassette is positionable in two alternate fixed positions, 90° from one another in a common plane, relative to said cell, without moving said holding means relative to said cell.

4,111,534

OPTICAL DISPLAY DEVICE

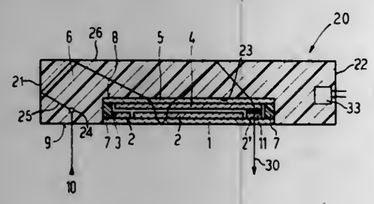
Werner Cirkler, Ismaning, and Hans Krüeger, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 27, 1977, Ser. No. 791,514

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619352

Int. Cl.² G02F *1/13*

U.S. Cl. 350—345 **10 Claims**



1. An optical display device having a high contrast in the light intensity of the image being displayed relative to the background light, said display device comprising a liquid crystal cell having a layer of liquid crystal material interposed between spaced front and rear transparent carrier plates, said carrier plates on their inner surfaces facing the layer of liquid crystal material being provided with transparent conductive coatings to form transparent electrodes with at least one of said coatings being interrupted to provide a plurality of separately excitable electrodes; and a fluorescent plate of material with an index of refraction greater than 1, said material having fluorescent centers creating fluorescent light from an ambient light, said fluorescent plate being disposed behind the liquid crystal cell in the direction of viewing with a surface of the fluorescent plate being in direct contact with an outer surface of the rear carrier plate so that an application of a voltage to selected electrodes of the cell causes a change in the optical properties in a selected area of the liquid crystal layer to decouple light from the display with an intensity substantially greater than the intensity of the background of the display.

4,111,535

GAS-PERMEABLE LENS

Samuel Loshaek, and Chah M. Shen, both of Chicago, Ill., assignors to Wesley-Jessen Inc., Chicago, Ill.

Filed Oct. 12, 1976, Ser. No. 731,675

Int. Cl.² G02C *7/04*

U.S. Cl. 351—160 **10 Claims**

1. A transparent optically clear gas-permeable contact lens consisting essentially of a plasticized cellulose resin selected from a partially esterified or partially etherified cellulose polymer plasticized with a compatible plasticizer in an amount sufficient to increase the oxygen permeability of the cellulose resin at least about 13% higher than that of the unplasticized cellulose resin but below that at which the optical and physical properties of the lens are substantially adversely affected.

4,111,536

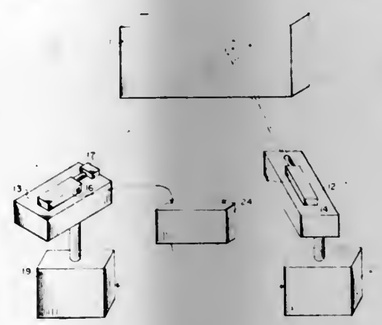
AUTOMATIC REGISTRATION OF PROJECTOR IMAGES

Charles L. Taylor, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Jun. 30, 1976, Ser. No. 701,208

Int. Cl.² G03B *29/00*

U.S. Cl. 352—132 **16 Claims**



1. A system for registering overlapping projector produced images, said system comprising:

a. a viewing surface;

b. at least a first projector that projects different images on said viewing surface;

c. at least a second projector that projects at different times at least two different types of images on said viewing surface that overlap the image produced by said first projector, said second projector being under the control of an operator who determines and controls the type of image that will be projected by said second projector in a given instant of time;

d. a laser pointed in the direction of said viewing surface and at any location of the image produced by said first projector, said laser attached to said first projector so that said laser will emit a reference point on said viewing surface;

e. means for sensing the location of said reference point on said viewing surface attached to said second projector, said sensing means having a known geographic detection point and being pointed in the direction of said viewing surface at a location of the image produced by said second projector;

f. a first means for moving connected to said first projector, permitting said first projector with said laser attached thereto to be moved relative to said viewing surface so that the image produced by said first projector and the reference point emitted by said laser may be moved across said viewing surface with said reference point always pointing to the same relative location of the image produced by said first projector;

g. a second means for moving connected to said second projector, permitting said second projector with said sensing means attached thereto to be moved relative to said viewing surface so that said sensing means may track said reference point; and

h. computation and control means coupled to said laser, said sensing means, and said first and second moving means for calculating the location of said reference point relative to said image produced by said first projector; the type of image that is produced by said second projector under the direction and control of said operator using the information supplied by said sensing means and said laser so that said computation means may compute the difference in azimuth and elevation between said reference point and said geographic point and produce a voltage that is proportional to the error in azimuth and elevation between said reference point and said geographic point causing said control means to signal and cause said first or second moving means to move, whereby said sensing means will always be locked on said reference point and the images produced by said first and second projectors will always be registered on said viewing surface and produce a believable composite picture.

4,111,537

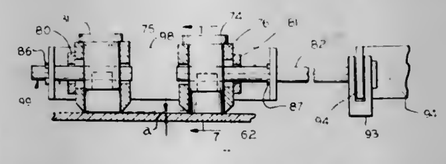
OPTICAL STRUCTURE FOR MICROFICHE READER

Thomas R. Wells, Des Plaines, Ill., and Theodore E. Dahlen, West Bend, Wis., assignors to Bell & Howell Company, Chicago, Ill.

Filed Oct. 14, 1975, Ser. No. 621,905

Int. Cl.² G03B *3/00*

U.S. Cl. 353—101 **10 Claims**



1. A microfiche image reader having a housing; optical projection means in said housing including a source of light and magnification means for projecting said light in a path from said housing; said magnification means comprising side-by-side image forming lenses and lens mounts for slidably receiving each of said lenses; moveable plate means mounting said lens mounts for alternative selective movements into and out of said light path; and a single focusing control means means for concurrently focusing said lenses, said single focusing control comprising separate lens adjusting means individually engaged with each of said image-forming lenses, bearing means mounted on each of said lens mounts for loosely receiving said separate lens adjusting means for allowing vertical play adjusting means, linkage means interconnecting said separate lens for concurrent movement, said play between the separate lens adjusting means and said bearing means enabling said lens mounts and lens carried thereby to align themselves within the play allowed by said bearing means in order to isolate the effect of any physical misalignment between the relative positions of said lenses while maintaining said lenses perpendicular to said light path.

4,111,538

PROJECTION SYSTEM OF HIGH EFFICIENCY

Nicholas K. Sheridon, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1976, Ser. No. 661,225

Int. Cl.² G03B *21/00*

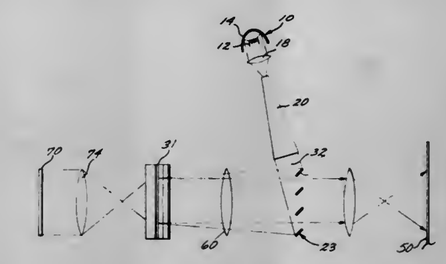
U.S. Cl. 353—122 **8 Claims**

1. An image projecting means including:

(1) light beam generation means to produce a non-uniform light beam and for projecting said light beam along a projection axis;

(2) light beam transmission means receiving said non-uniform light beam from said light beam generation means and comprising light pipe means, said light pipe means having internal walls with a high degree of internal reflection and tapered at an angle in the range from 1° to 60° along the projection axis of said light beam, the extent of said light beam transmission means in the direction of said projection axis completely surrounding the projection axis coextensive therewith;

(3) light beam bifrucation means to divide said light beam



into at least two subidvided light beams and including a plurality of optical stops formed thereon, said light beam bifrucation means comprising a plurality of light pipes;

(4) an imaging member to receive said subdivided light beams and to cause imagewise phase modulation of a portion of said received subdivided light beams, said imaging member being reflective; and

(5) objective lens means to receive said subdivided light beams and to focus the portion of said non-modulated sub-divided light beams onto said plurality of optical stops and to focus the modulated portion of said subdivided light beams onto a display surface, said optical steps comprising exit apertures of said light pipes.

4,111,539

ELECTROSTATIC PRINTING MASTER APPARATUS

Motoharu Fujii, Tokyo; Takao Muramatsu, Yokohoma; Noboru Koumura, Tokyo; Susumu Sugiura, Yamato; Nobuhiro Takekawa, Tokyo, and Syusei Tsukada, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1977, Ser. No. 760,854

Claims priority, application Japan, Jan. 26, 1976, 51-7752

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 R **3 Claims**

1. An electrostatic printing apparatus comprising:

electrical resistance image formation means for making an electrostatic printing master having thereon an electrical resistance pattern corresponding to an optical image by applying image light upon an image formation member and heating said image formation member;

a rotatable member for carrying thereon said electrostatic printing master;

means for holding said electrostatic printing master on said rotatable member;

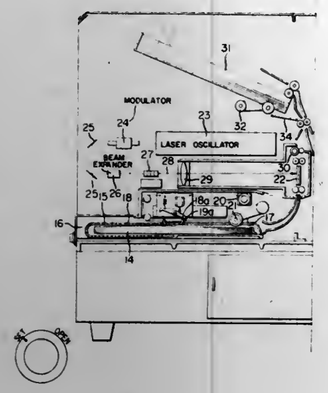
means for electrostatically charging said master to form a charge image thereon;

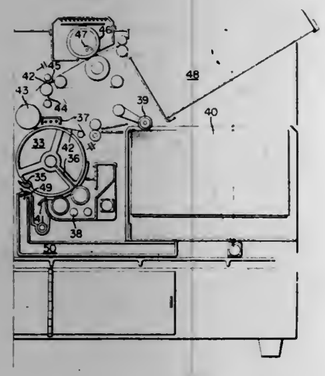
means for applying developer to said master having the charge image formed thereon;

means for transferring the developed image on said master onto a transfer member;

means for cleaning the surface of said master after transferring the developed image onto the transfer material; and

means for removing and discharging said master after use, wherein said means for electrostatically charging said master serves also as the means for transferring the developed image onto the transfer member.



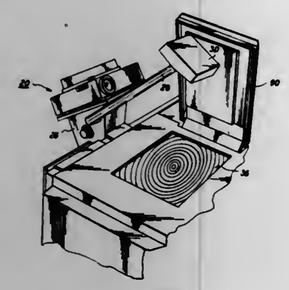


4,111,540

FIELD LENS FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

James E. Bollman, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 17, 1976, Ser. No. 687,562
Int. Cl.² G03G *15/01*
U.S. Cl. 355—4 **16 Claims**



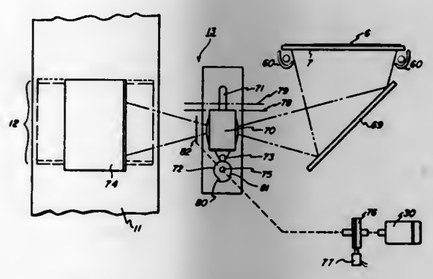
2. An apparatus for transmitting a transparency light image or for holding an original document, including:
a substantially rigid frame member having an aperture therein;
a field lens mounted in the aperture of said frame member, said field lens being arranged to support the original document thereon when the transparency light image is not being transmitted therethrough and being arranged to transmit the transparency light image therethrough when the original document is not disposed thereon; and
a cover member mounted movably on said frame member, said cover member being mounted movably from an opened position permitting the original document to be disposed on said field lens or the transparency to be copied and to a closed position securing releasably thereon the original document.

4,111,541

EXPOSURE SYSTEM FOR ELECTROSTATIC REPRODUCTION MACHINES

Robert H. Townsend, Richardson, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 8, 1976, Ser. No. 748,803
Int. Cl.² G03G *15/28; G03B 27/76*
U.S. Cl. 355—8 **1 Claim**



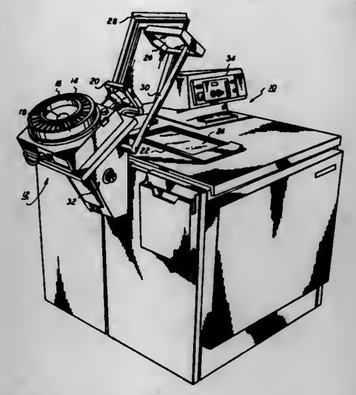
1. In a reproduction machine for producing selectively one or more copies of an original, the reproduction machine including a movable photosensitive member; means to charge the photosensitive member in preparation for imaging; an exposure station whereat said charged photosensitive member is adapted to be exposed to a light image of the original; a platen for supporting the original; an image projecting means forming an optical path for transmitting a full frame light image of the original on the platen to the exposure station and the photosensitive member to form a latent electrostatic image of the original on said member; the combination of:
(a) illumination means to continuously illuminate the platen and the original thereon
(b) optical path displacing means including a lens driving cam to displace the optical path and the full frame image formed by said image projecting means in uniform movement and in synchronism with said photosensitive member and in substantial parallelism with said photosensitive member at said exposure station, and
(c) shutter means operatively connected to said cam to expose said photosensitive member to said light image during the uniform synchronous displacement of said optical path with said photosensitive member, and to prevent exposure of said photosensitive member to said light image during return of the optical path.

4,111,542

COLLATING SYSTEM FOR OPAQUE DOCUMENTS AND SLIDE REPRODUCTIONS

Louis D. Mailloux, Webster, and James E. Bollman, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 27, 1977, Ser. No. 791,261
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 **12 Claims**



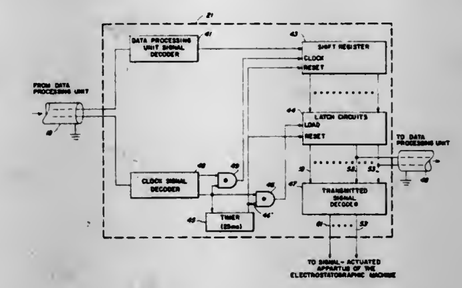
1. An electrostatographic printing machine, including:
means for storing a plurality of transparencies;
means for supporting at least one opaque original document;
means for reproducing transparencies and opaque original documents to form copies thereof;
means for advancing each transparency into operative communication with said reproducing means in a preselected sequence; and
means for switching said reproducing means from the transparency copying mode to the opaque original document copying mode in response to a pre-determined number of transparencies being copied so as to form a set of ordered copies having copies of the transparencies and opaque original documents.

4,111,543

APPARATUS AND METHOD FOR NOISE IMMUNITY IN DISTRIBUTING CONTROL SIGNALS IN ELECTROSTATOGRAPHIC PROCESSING MACHINES

Edward L. Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1976, Ser. No. 677,108
Int. Cl.² G03G *21/00*
U.S. Cl. 355—14 **5 Claims**



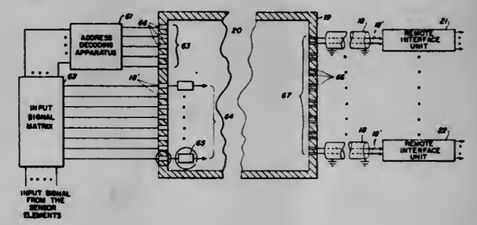
4. A system for controlling processing stations of an electrostatographic machine comprising:
at least one remote interface unit, said interface unit applying control signals from instruction signals to processing stations associated with said remote interface unit and including signal storing means for storing a preset block of said instruction signals for application as said control signals; and
a data processing unit, said data processing unit in at least partial response to an operational status of said electrostatographic machine periodically transmitting said preset block of instruction signals to said remote interface unit, said remote interface unit including apparatus for deriving said control signals from said instruction signals stored in said remote interface unit.

4,111,544

APPARATUS AND METHOD FOR NOISE IMMUNITY FOR CONTROL SIGNALS IN ELECTROSTATOGRAPHIC PROCESSING MACHINES

Edward L. Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1976, Ser. No. 677,110
Int. Cl.² G03G *21/00*
U.S. Cl. 355—14 **3 Claims**



1. In an electrostatographic reproduction machine, a system for controlling processing stations comprising:
a data processing unit
at least one remote interface unit, said interface unit being adapted to receive and store instruction signals, plural machine sensors for generating input signals, plural electrical couplings coupling said data processing unit with said remote interface unit and with said machine sensors, said data processing unit periodically transmitting said instruction signals through said electrical couplings to said remote interface unit, said remote interface unit providing control signals to associated ones of said processor stations in response to said instruction signals, and
means to minimize the effects of electro-magnetic radiation on signals transmitted to and from said data processing unit including shielding means for shielding said data processing unit against electro-magnetic radiation, said shielding means including shielding material means covering said data processing unit, electro-optic coupling means between said electrical couplings and said data processing unit for transmitting input signals and instruction signals through said shielding material to and from said data processing unit, and means for determining a probable logic state of said input signals transmitted to said data processing unit through said electro-optic coupling means.

4,111,545

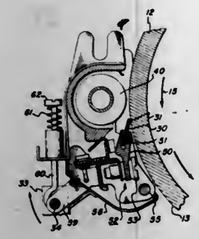
VIBRATING BLADE CLEANER

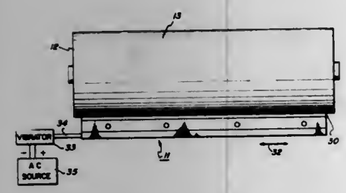
David W. Meltzer, Miami, Fla., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 6, 1975, Ser. No. 547,522
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **28 Claims**

27. A cleaning apparatus for removing particulate material from the surface of a movable electrostatic imaging member, said apparatus comprising:
means for removing said particles from said surface compris-

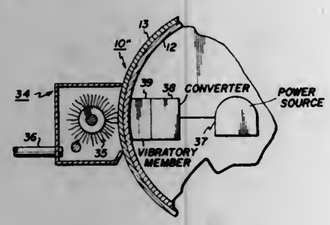
ing at least one blade member extending across said surface and having an edge engaging said surface;
means for providing relative movement between said blade member and said imaging surface; and





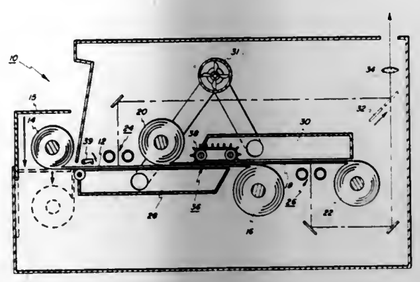
means for rapidly vibrating said blade member in a direction substantially parallel to said surface and transverse to the direction in which said imaging surface is moved, said vibrating means providing a vibrational velocity at said blade edge which is greater than the surface velocity of said imaging surface.

4,111,546
ULTRASONIC CLEANING APPARATUS FOR AN ELECTROSTATOGRAPHIC REPRODUCING MACHINE
Arthur R. Maret, Roselle, Ill., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 26, 1976, Ser. No. 718,651
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **5 Claims**



1. In an electrostatographic reproducing apparatus including an imaging surface arranged for movement past a plurality of processing means; said processing means including: means for forming an electrostatic image on said surface, means for developing said image to render it visible, means for transferring said developed image to a sheet of final support material, and cleaning means for removing residual material remaining on said surface following transfer of said developed image; the improvement wherein said apparatus includes:
means for vibrating said imaging surface as it is acted upon by said cleaning means, said vibrating means being arranged behind said imaging surface at a position in opposition to said cleaning means.

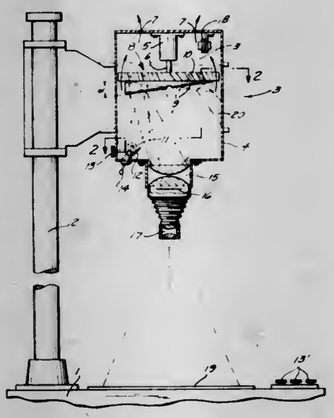
4,111,547
DUPLEX DOCUMENT COPYING
Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 14, 1977, Ser. No. 806,565
Int. Cl.² G03B *27/32, 27/52*
U.S. Cl. 355—24 **8 Claims**



1. In an automatic document handling system for making pre-collated copy sheet sets by repeated collated recirculation and imaging of a set of original documents, the improvement comprising:
first and second elongated windable document holding webs,
said first and second webs each having a document supporting side adapted to support documents thereon for movement with said webs and for imaging of said documents thereon,
said first and second webs being wound into spaced apart scrolls of said web,
said first and second webs each having minor unwound intermediate unwound segments extending between said web scrolls;
first and second imaging stations for imaging documents on said unwound intermediate segments of said web for said copying of said documents;
said document supporting side of said first web being unobstructedly exposed at said first imaging station and said document supporting side of said second web being unobstructedly exposed at said second imaging station;
drive means for recirculating said first web through only said first imaging station, and said second web through only said second imaging station between said scrolls, to provide repeated recirculating unobstructed copying of documents thereon; and
transfer means for transferring documents from said first web to said second web so that one side of the documents is exposed in said first imagaing station and the other side of the documents is exposed in said second imaging station,
said transfer means being spaced from both said first and second imaging stations and including a transfer area in which said unwound intermediate segments of said two webs overlap one another to retain documents therebetween;
wherein said first and second webs are maintained at the same speed in said transfer area to prevent relative movement between said first and second webs and documents therebetween.

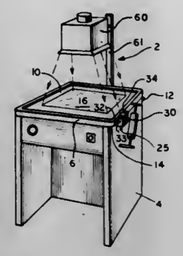
7. In an automatic document handling method for making pre-collated copy sheet sets by repeated collated recirculation and imaging of a set of original documents, the improvement comprising;
winding first and second elongated windable document holding webs between spaced apart scrolls of said web,
moving minor unwound intermediate unwound segments of said first and second webs through respective first and second imaging stations for imaging documents on said unwound intermediate segments of said web for said copying of said documents with a document supporting side of said first web being unobstructed exposed at said first imaging station and a document supporting side of said second web being unobstructedly exposed at said second imaging station;
transferring documents from said first web to said second web in a transfer area in which said unwound intermediate segments of said two webs are overlapped to retain documents therebetween so that one side of the documents is exposed in said first imaging station and the other side of the documents is exposed in said second imaging station; and
preventing relative movement between said first and second webs and documents therebetween in said transfer area.

4,111,548
APPARATUS FOR ADDITIVE LIGHT MIXING
Miloslav Ivanov Pechev, and Varban Petrov Shentov, both of Sofia, Bulgaria, assignors to Directzia "Uchebno-Technicheski Sredstva", Sofia, Bulgaria
Filed Jan. 31, 1977, Ser. No. 764,468
Claims priority, application Bulgaria, Jan. 30, 1976, 32237
Int. Cl.² G03B *27/52, 27/54, 27/76*
U.S. Cl. 355—30 **5 Claims**



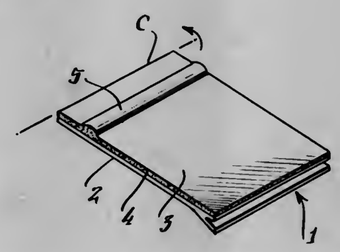
1. Apparatus for mixing light from a plurality of sources each of which provides a different color light, said apparatus comprising reflection means for reflecting light from said sources along an optical axis, means for rotating said reflection means about said axis, said reflection means being adapted to provide a maximum reflection from said sources in sequence during each rotation thereof, a converging lens arrangement, a negative receiver positioned along said optical path, said reflection means having a reflecting surface mounted obliquely with respect to said axis for directing a bulk of reflected light therefrom to said lens arrangement, said reflecting internal surface being adapted to redirect the remainder of the light from said reflection means to said lens arrangement, said reflection means being affixed to a support having cooling vanes about its periphery and mounted on a shaft of a motor which shaft is aligned with said axis, and/a housing containing the above-recited apparatus, said housing having a reflecting internal surface.

4,111,549
PLATEMAKER AND CONTACT FRAME EXPOSURE INDICATOR
Thomas R. Cazel, 516 Rose St., Addison, Ill. 60101, and Gerald C. Cazel, 811 Park, Springfield, Ill. 62704
Filed Jun. 6, 1977, Ser. No. 803,733
Int. Cl.² G03B *27/74;* G01J *1/42*
U.S. Cl. 355—68 **10 Claims**



1. In a plate maker of the type having a printing plate support means for mounting an unexposed printing plate assembly thereon, a holder therefor, means movably mounting the holder between holding and release positions with attendant change of the holder in angular disposition to the horizontal; a light source supported in position to impinge a light of predetermined lumens to a plate assembly carried on the support means; and light-actuable exposure indicator means carried by the movable holder having means providing an indicia signaling exposure of said means to said light; means for maintaining said indicia in said signaling condition; and means for deactivating said indicator means attendant to moving said indicator means with said holder from holding to release positions.

4,111,550
PLATEN COVER FOR PREVENTION OF DISPLACEMENT OF AN ORIGINAL
Yoshikatsu Ohishi, Tokyo, Japan, assignor to Rank Xerox, Ltd., London, England
Filed Sep. 13, 1976, Ser. No. 723,103
Claims priority, application Japan, Oct. 30, 1975, 50-146999[U]
Int. Cl.² G03B *27/62*
U.S. Cl. 355—75 **1 Claim**

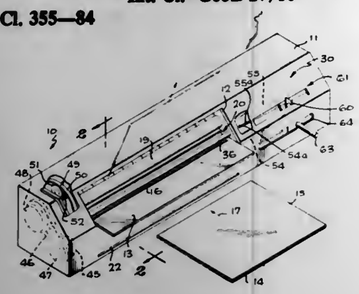


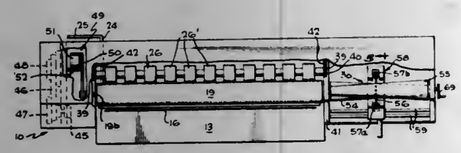
1. A copier platen cover, adapted to prevent displacement of an original document as the platen cover is closed, comprising, on the side of the cover which contacts the original, an elastic layer having a white surface and at least one raised portion integral with said layer, said raised portion being deformed with the cover in the closed position so that the unraised portion of said layer contacts the original document to secure the original document in intimate contact with the platen minimizing shade at exposure, said raised portion being positioned so that the platen cover rotates through a small angle with the force pressing the original document against the platen increasing as the cover closes.

4,111,551
PHOTOGRAPHIC DISTORTION APPARATUS

Paul A. Klann, 301 4th St., Waynesboro, Va. 22980

Filed May 14, 1976, Ser. No. 686,478
Int. Cl.² G03B 27/10
U.S. Cl. 355—84 8 Claims





1. A photographic distortion apparatus for producing on a photographic film sheet a contact copy of a photographic transparency that is modified in dimemsion along one axis only, comprising:

a pair of drive rollers facing each other in spaced parallel relationship,

pressure means for holding said transparency against one of said drive rollers during rotation thereof and for holding said film sheet against the other of said drive rollers during rotation thereof, said pressure means selected from the group consisting of:

(a) a pair of pressure rollers each associated with a respective drive roller, each pressure roller having a rigid shaft mounted in spaced parallel relationship to said respective drive roller and biased theretoward, and a plurality of annular roller sections mounted on said shaft, each roller section including an annular bearing portion surrounded by an annular resilient layer, and

(b) one or more elongated leaf springs pressing against each of said drive rollers,

illuminated slit means situated adjacent said drive rollers, for providing an elongated strip of light to expose said film sheet through said transparency, and

differential speed drive means for revolving said drive rollers at different speeds, so that said film sheet is moved past said illuminated slit means at a rate different from said transparency, said differential speed drive means comprising;

first and second complementarily tapered shafts facing each other with spaced parallel axes and situated adjacent one end of said drive rollers, the small end of one tapered shaft and the large end of the other tapered shaft being directly attached to a respective one end of said pair of drive rollers,

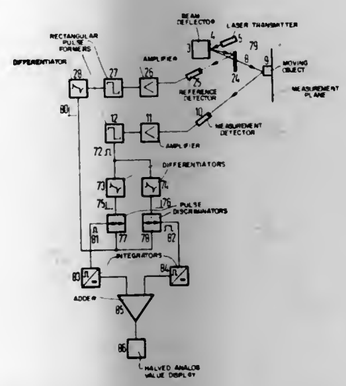
motor means for rotationally driving a first of said drive rollers and the associated tapered shaft, and

rotational transmission means interconnecting said complementarily tapered shafts at a selectable position axial thereof, rotation of said associated tapered shaft being transmitted to the other tapered shaft and thence to the second drive roller via said transmission means, the axial location of said transmission means determining the relative rotational speeds of said two drive rollers and hence the extent of dimensional modification along said one axis of said copy.

4,111,552
APPARATUS AND METHOD FOR MEASURING DISTANCE FROM AND SPEED COMPONENTS OF AN OBJECT TRAVELING VERTICAL TO A REFERENCE LINE

Viktor Bodlaj, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 13, 1976, Ser. No. 731,650
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1975, 2546714
Int. Cl.² G01C 3/00, 3/08; G01P 3/36
U.S. Cl. 356—4 12 Claims



1. A method for the rapid measurement of the distance of an object from a reference point comprising the steps of:

a. periodically sending a laser beam from a transmitter through a space in which the object is situated by use of a beam deflector;

b. providing a detector means near the transmitter for picking up light from a given direction only;

c. diffusely reflecting the laser beam from the object and registering reflected light on the detector means to create a measurement pulse having start and finish times associated with a respective rise and fall of the measurement pulse;

d. providing a reference reflector means in the path of the transmitted laser beam so as to create a reference pulse when said laser beam is transmitted;

e. receiving the reference pulse with a reference detector to create a reference pulse at a reference time;

f. determining an exact middle of the measurement pulse by circuitry means utilizing the start and finish times of the measurement pulse and including measuring separately the time differences from the reference time to the respective start and finish times; and

g. calculating the distance from an average of the time differences.

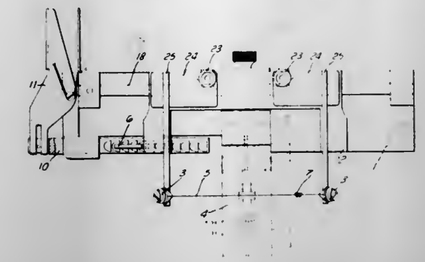
4,111,553
MULTI-SAMPLE TRANSPORTING AND HEATING APPARATUS FOR USE IN ATOMIC ABSORPTION SPECTROMETRY

Vytenis Peter Garnys, Bondi, Australia, assignor to Unisearch Limited, Australia

Filed Mar. 7, 1977, Ser. No. 775,289
Claims priority, application Australia, Mar. 30, 1976, PC5415
Int. Cl.² G01N 1/00
U.S. Cl. 356—36 6 Claims

1. Sequential multi-sample analysis transporting and heating

apparatus for use with an atomic absorption spectrometer using an electrothermally heated furnace for sample atomization, comprising a filament arranged to be passed longitudinally through the furnace and to be heated by the passage of an electric current therethrough, the filament being adapted to

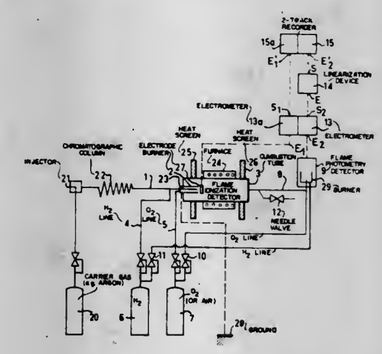


receive a plurality of liquid samples deposited at regular intervals along its length, heating means for passing an electric current through said filament to simultaneously dry and ash the samples, and advancing means for advancing said filament, sample by sample, through the furnace to enable rapid sequential analysis of the samples to be carried out therein.

4,111,554
PROCESS FOR THE SPECIFIC QUANTITATIVE DETECTION OF SULFUR COMPOUNDS AND APPARATUS FOR CARRYING OUT THIS PROCESS

Jean-Michel Colin, and Dominique Herouard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Feb. 17, 1976, Ser. No. 658,506
Claims priority, application France, Feb. 18, 1975, 75 05048
Int. Cl.² G01N 1/00, 21/58
U.S. Cl. 356—36 15 Claims



1. In a process for the detection of sulfur compounds in a sample, which may contain hydrocarbon compounds, by gas chromatography using a flame photometric detector, the improvement for specific quantitative analysis of a plurality of different sulfur compounds comprising:

— chromatographic elution of said compounds contained in the sample, thereby separating at least said sulfur compounds;

— combustion of said eluted compounds to convert completely all of the sulfur in said compounds into sulfur oxides;

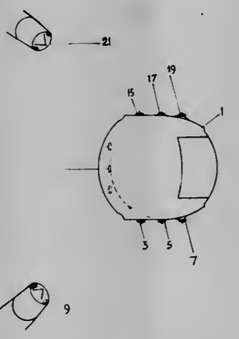
— detecting seriatim the sulfur oxide combustion derivatives of the eluted sulfur compounds with said flame photometric detector and deriving therefrom an output signal which is proportional to the mass of the sulfur in each detected compound raised to a power n, a constant which is characteristic of said sulfur oxides;

— converting said photometric detector output signal to yield a quantitative linearized signal which is directly proportional to the number of molecules of sulfur detected.

4,111,555
APPARATUS FOR MEASURING THE ANGULAR DISPLACEMENT OF A BODY

Stafford Malcolm Ellis, Bearstead, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed Feb. 9, 1977, Ser. No. 766,895
Claims priority, application United Kingdom, Feb. 24, 1976, 7229/76
Int. Cl.² G01B 11/26
U.S. Cl. 356—141 7 Claims



1. A system for defining the line of sight of an observer relative to a vehicle in which said observer is traveling by measuring the angular displacement of headgear worn by said observer with respect to a coordinate reference frame, said system comprising:

A. means for emitting radiation from

i. two sets of points

ii. of at least three non-colinear points per set,

B. said two sets of points being fixed with respect to said headgear; and

C. means for sensing, independently at each of two viewing positions, the angular positions of a set of points respectively associated with each viewing position and with respect to said reference frame over a range of angular displacement of said headgear,

i. said viewing positions being fixed with respect to said coordinate reference frame, and

ii. the fields of view from said two viewing positions being different and partially overlapping,

D. thereby to obtain a measurement of said angular position and so to define the line of sight over a wide range of angular movement of said headgear.

4,111,556
CONTROL SYSTEM FOR ALLOY TESTER

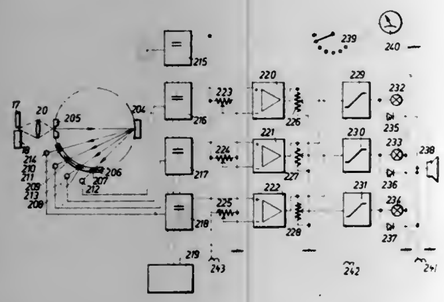
Ulrich Grisar, and Wilhelm Berstermann, both of Georgsmarienhutte, Fed. Rep. of Germany, assignors to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Mar. 10, 1976, Ser. No. 665,773
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1975, 2513267
Int. Cl.² G01J 3/30
U.S. Cl. 356—86 12 Claims

1. A system for testing an alloy workpiece formed of a basis metal and a plurality of alloying elements, said system comprising:

power-supply means including

a contact electrode adapted to engage said workpiece,
a counter electrode adapted to be spaced by a gap from said workpiece, and
an arc switch operable for passing a unipolar electrical pulse across said gap to form a spark;
a tester including
means for diffracting the light of said spark into a spectrum having lines corresponding to said basis metal and to said alloying elements and for converting said lines into respective electrical signals having respective levels corresponding to the intensities of the respective lines,
means including an integrate switch operable for integrating said electrical signals, and
means including an evaluate switch operable for reading the integrated signals and for generating an error signal when any of said integrated signals varies from a predetermined range; and



a control circuit including
first timer means connected to said arc switch for operating same for a predetermind first period and thereby passing said pulse across said gap during said first period,
second time means connected to said arc and integrate switches for operating same for a predetermined second period commencing at the end of said first period to continue passing said pulse and to integrate said electrical signals during said second period, and
third timer means unconnected to said arc switch but connected to said evaluate switch for operating said evaluate switch for a predetermined third period commencing at the end of said second period for terminating passage of said pulse across said gap and reading said integrated signals during said third period.

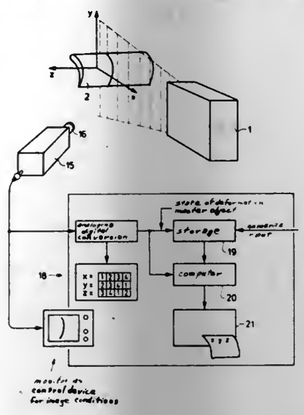
4,111,557

METHOD FOR THE OPTICAL DETERMINATION AND COMPARISON OF SHAPES AND POSITIONS OF OBJECTS, AND ARRANGEMENT FOR PRACTICING SAID METHOD

Hans Rottenkolber, Amerang, and Hans Steinbichler, Riedering, both of Fed. Rep. of Germany, assignors to OPTO Produkte AG, Zurich, Switzerland

Filed Mar. 25, 1976, Ser. No. 670,104
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1975, 2514930
Int. Cl.² G01B *11/24*
U.S. Cl. 356—168 **21 Claims**

1. In a method for optical determination of departures in shape, changes in shape and changes in position, the improvement therewith which comprises in combination the steps of generating a light pattern upon an object with a beam of coherent light sided by image-forming optical elements, reproducing this pattern by means of an objective upon an opto-electronic receiver device, converting this pattern into electrical impulses, storing these impulses in an electronic computer after analog-digital conversion thereof, allotting digitally the converted inpulses into space coordinates and finally comparing the resulting values of space coordinates with correspondingly obtained values of the same object prior to change of position



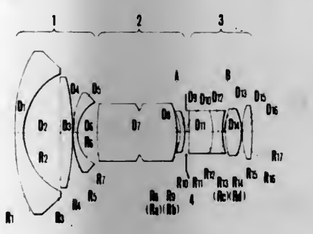
of at least one of the surface points thereof, there being providing of lines and point arrangements as the pattern generated upon the object.

4,111,558

RETROFOCUS TYPE WIDE ANGLE OBJECTIVE LENS

Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1976, Ser. No. 715,491
Claims priority, application Japan, Aug. 22, 1975, 50-101863
Int. Cl.² G02B *13/04, 11/34*
U.S. Cl. 350—189 **17 Claims**



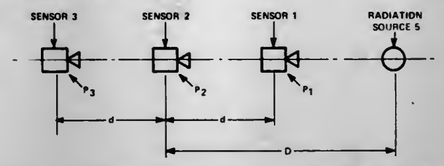
1. A retrofocus type wide angle lens comprising,
from front to rear in the direction in which light enters said lens from the object, a first lens component of negative refractive power, a second lens component of positive refractive power, a diaphragm, and a third lens component of positive refractive power,
said first lens component having at least one nonspherical surface;
said second lens component including a front positive lens group and a rear negative lens group, said front positive lens group including a rearmost double convex lens, said rear negative lens group including a frontmost negative meniscus lens convex to the image, and said rearmost double convex lens and said frontmost negative meniscus lens defining therebetween an air space functioning as a negative air lens; and
said third lens component including a front negative lens group and a rear positive lens group, said front group including a rearmost negative lens, said rear group including a frontmost positive lens, and said rearmost negative and said frontmost positive lenses defining therebetween an air space functioning as a negative air lens.

4,111,559

APPARATUS FOR DETERMINING THE TRANSMISSIVITY OF AN OPTICAL MEDIUM

Chester L. Smith, Lake Hopatcong, and David N. Everswick, Succasunna, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 17, 1977, Ser. No. 769,601
Int. Cl.² G01N *21/22, 21/26*
U.S. Cl. 356—201 **2 Claims**



1. An apparatus for determining the transmissivity T of a gas medium on the basis of the following equation

$$\left[T = \sqrt{\frac{E_3}{E_2}} + \sqrt{\frac{E_3}{E_2} - \sqrt{\frac{E_3}{E_1}}}\right]^{2/d}$$

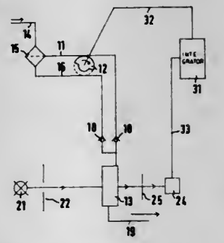
comprising the combination of
a source of radiation in a gas medium, and
three radiation sensors S_1, S_2 and S_3 for measuring the amounts of radiation E_1, E_2 and E_3 respectively received thereby from said radiation source in a gas medium, wherein
(a) said sensors are aligned with each other and said radiation source will equal spacing *d* between sensors S_1 and S_2 and sensors S_2 and S_3, the middle sensor S_2 being at an unknown distance D greater than d from said radiation source, and
(b) said sensors are located at distances $D-d$ and $D+d$ respectively from said source, where d is smaller than D.

4,111,560

METHOD AND APPARATUS FOR DETERMINING A PROPERTY OF A GIVEN SUBSTANCE

Jorma Jolanki, Helsinki; Ilpo Saxelin, Perttula, and Hannu Pönni, Suulisniemi, all of Finland, assignors to Insinooritoimisto Innotec Oy, Finland

Filed Oct. 29, 1976, Ser. No. 736,736
Claims priority, application Finland, Oct. 30, 1975, 75 3039
Int. Cl.² G01N *21/02*
U.S. Cl. 356—205 **9 Claims**



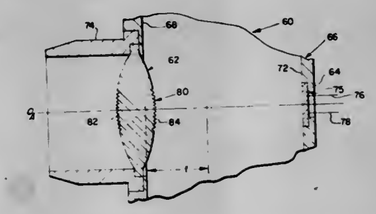
1. In an instrument for measuring a property of a given substance by comparing the latter with a reference substance, a single receiving means for receiving both the given substance and the reference substance, said receiving means being permeable to predetermined radiation capable of travelling through said receiving means and the substance therein to be absorbed to different degrees by the given substance and the reference substance, means for directing said predetermined radiation through said receiving means and a substance therein to be absorbed by the latter substance and to travel beyond said receiving means, feed means for feeding the given substance and the reference substance alternately through said receiving means while maintaining the reference substance and given substance in the receiving means for given time increments during which said predetermined radiation travels through and beyond said receiving means, and radiation-responsive mpans situated in part in the path of travel of said radiation beyond said receiving means for responding to said radiation to provide alternate measurements of the radiation resulting from said given substance and the radiation resulting from said reference substance and for providing from the difference between a number of said alternate measurements which follow each other sequentially through a plurality of cycles a determination of said property of said given substance, said feed means being operatively connected with said radiation-responsive means for automatically controlling the latter to change between a pair of different measuring conditions in one of which said radiation-responsive means measures radiation resulting from said reference substance and in the other of which said radiation-responsive means measures radiation resulting from said given substance.

4,111,561

DEFOCUSED UNICELL PHOTOMETER WITH DIFFUSION ZONE

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 31, 1977, Ser. No. 763,931
Int. Cl.² G01J *1/42*; H01J *3/14*
U.S. Cl. 356—225 **6 Claims**

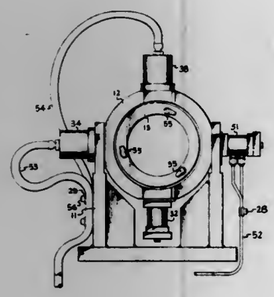


1. A defocused unicell photometer for use in photographic apparatus comprising:
a photosensitive transducer having a photosensitive surface thereon of predetermined dimension, said transducer operating to provide an output response which varies in correspondence to the intensity of actinic radiation incident to said photosensitive surface;
a positive lens element of predetermined focal length concentrically disposed about an optical axis which axis ultimately intersects said photosensitive surface, said lens element being spaced apart from said photosensitive surface by a distance different from said lens focal length and cooperating with said photosensitive surface to define a field of view for said photometer such that said lens element operates to direct actinic radiation incident thereon from said field of view towards said photosensitive surface, said lens element additionally having at least one light diffusing zone disposed on only a portion of the surface of said lens element for scattering that portion of actinic radiation, which directly impinges on said zone from said field of view at angles which would otherwise be refracted into a path directed toward the center of said photosensitive surface, to reduce the intensity of said portion of actinic radiation which ultimately impinges on said photosensitive surface from said zone thereby effecting a corresponding suppression in that portion of said output response from said transducer which is directly attributable to said portion of actinic radiation, and
means for stationing said transducer and lens element in substantially lighttight, spaced apart relation with respect to each other.

4,111,562
HYDRAULIC GIMBAL SYSTEM FOR BEAM PROJECTION LAMPS

Antonin J. Dvorak, Richmond Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 17, 1975, Ser. No. 587,603
Int. Cl.[2] G01N *21/16*; G01J *1/00*
U.S. Cl. 356—244 10 Claims

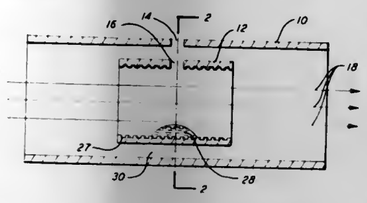


1. A gimbal mount for beam projection lamps comprising:
a U-shaped support member;
a pair of concentric rings;
a pair of hydraulic drive motors, each having a rotor shaft and a stator;
a pair of shaft position encoders, each having an input rotor and a stator;
first and second coupling means for rotatably attaching the outer ring to said support member across a diameter of said ring;
said first coupling means comprising bearing means having an inner race to which said outer ring and the rotor of one of said hydraulic motors are directly connected and an outer race attached to said support member, the stator of said one hydraulic motor being coupled to said support member;
said second coupling means comprising bearing means having an inner race directly connected to said outer ring and an outer race directly connected to said support member, the input rotor of one of said encoders being coupled to said inner race and the stator of said encoder being directly connected to said support member;
third and fourth coupling means for rotatably attaching the inner ring to said outer ring across a diameter of said inner ring;
said third coupling means comprising bearing means having an inner race to which said inner ring and the rotor of the second of said hydraulic motors are directly connected to an outer race attached to said outer ring, the stator of said second hydraulic motor being coupled to said outer ring; and
said fourth coupling means comprising bearing means having an inner race directly connected to said inner ring and an outer race directly connected to said outer ring, the input rotor of the second of said encoders being coupled to said inner race and the stator of said encoder being directly connected to said outer ring.

4,111,563
GRAPHITE TUBE ASSEMBLY HAVING A SAMPLE SUPPORTING INNER BODY

Rolf Tamm, Salem, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Dec. 2, 1976, Ser. No. 746,970
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2554950
Int. Cl.[2] G01N *21/16*; G01J *3/30*
U.S. Cl. 356—244 15 Claims

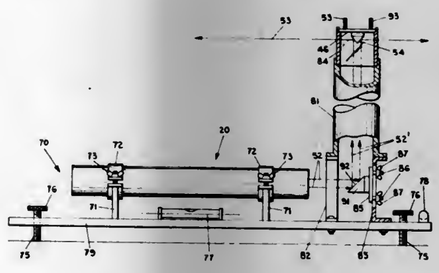


1. A graphite tube assembly for use in an atomic absorption spectrometer for measuring the flameless absorption of samples when passing a beam of light rays therethrough comprising, in combination:
a graphite tube, and
a sample supporting inner body, means mounting said inner body in the interior of the graphite tube to form an integral structure with the inner body spaced from the inside wall of said tube, but externally of the beam of light rays when passing through said graphite tube, said inner body extending only over a portion of the length of the graphite tube.

4,111,564
REFERENCE PLANE PRODUCTION

James R. Trice, Jr., 824 S. Glebe Rd., Arlington, Va. 22204

Filed Feb. 8, 1973, Ser. No. 330,599
Int. Cl.[2] G01C *5/00*; G01B *11/26*
U.S. Cl. 356—247 40 Claims

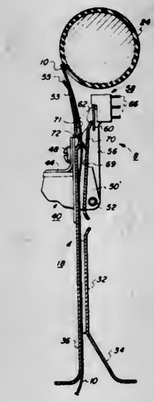


1. An apparatus for simultaneously converting a narrow highly collimated beam of electromagnetic radiation into a thin reference plane of electromagnetic radiation for measurements perpendicular to the plane, for aligning equipment and for guiding construction equipment, said apparatus comprising:
means for generating a narrow highly collimated beam of electromagnetic radiation and for directing said collimated beam in a particular orientation;
external surface reflector means for dispersing said collimated beam simultaneously into a thin plane of a substantially uniform, multitudinous array of radially diverging radiation forming a thin reference plane at a distance from said reflector means; and
means for mounting said reflector means in a position operably aligned with said collimated beam so that said collimated beam is simultaneously reflected into a substantially uniform reference plane of electromagnetic radiation, said reference plane being of a thickness and character to permit detection and measurement from equal datum positions in the plane in a direction perpendicular to said plane.

4,111,565
APPARATUS FOR SENSING WHEN PAPER UTILIZED IN A PRINTER HAS BEEN DEPLETED

Brian E. Jagger, Union City, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 28, 1977, Ser. No. 781,906
Int. Cl.[2] B41J *29/44*
U.S. Cl. 400—708 3 Claims



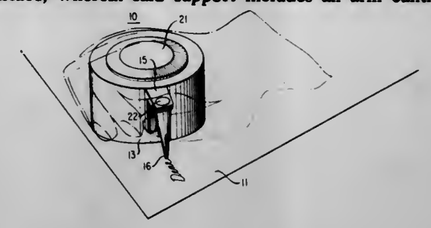
1. Apparatus for sensing whether record material is being supplied to the platen of a printer, said apparatus comprising:
a fixed guide member including a first inner wall having a first set of rounded protrusions thereon extending in a row substantially coextensive with and along the length of said platen;
a movable guide member mounted adjacent said fixed guide member for movement toward and away from said fixed guide member, said movable guide member being normally biased into a predetermined position relative to said fixed guide member when no record material is being supplied between said guide members to said platen, and being movable away from said predetermined position when record material is being so supplied, said movable guide member including a second inner wall facing said first inner wall, said second inner wall having a second set of rounded protrusions thereon extending in a row substantially coextensive with and along the length of said platen, said first and second sets of rounded protrusions being mutually offset from one another such that the protrusions of the two sets will intermesh with each other in the absence of paper; and
sensing means mounted to said fixed guide member and responsive to the position of said movable guide member relative to said fixed guide member for providing an indication as to whether or not said movable guide member is at said predetermined position.

4,111,566
TRAVELLING HAND SUPPORT

Edward A. Kenwell, 21 Meadowbrook Dr., Somerville, N.J. 08876

Filed May 24, 1976, Ser. No. 689,539
Int. Cl.[2] A46B *5/02*
U.S. Cl. 401—6 3 Claims

1. A hand support adapted to be cupped by the hand and having a bottom surface, said bottom surface including a beveled portion and being adapted to provide first and second flat bearing surfaces when said support resides in first and second positions respectively for movement with respect to a writing surface, wherein said support includes an arm cantilevered

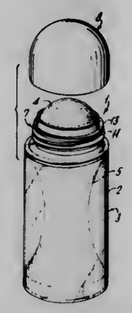


from said support and adapted to support a writing utensil, said utensil being in a position and of a length such that the tip thereof is in alignment with the plane of said first surface and thus in contact with said writing surface when said support is in said first position.

4,111,567
LIQUID APPLICATOR

Walter G. Berghahn, Scotch Plains, and Jack Weinstein, Old Bridge, both of N.J., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 657,345, Feb. 11, 1976, Pat. No. 4,050,826. This application Jan. 13, 1977, Ser. No. 758,984
The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.
Int. Cl.[2] B43K *5/00*
U.S. Cl. 401—202 10 Claims



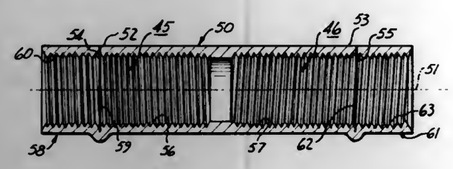
1. A liquid applicator suitable for use in the application of liquids to a surface of the human body comprising a container having a container body adapted for storing a quantity of said liquid, said container having an opening at one end thereof which is provided with an upper margin, step means spaced below said upper margin of said opening and extending inwardly from the walls of said opening, said step means being adapted to support a shaped applicator means; shaped applicator means being secured and positioned in said opening and resting on said step means; said shaped applicator means comprising a non-flexible, non-deformable, sintered, porous synthetic plastic resin structure having a controlled porosity and having omni-directional interconnecting pores, said applicator including venting means for venting the interior of said container to the atmosphere and barrier means for restricting the flow of liquid from within the interior of said container body to said shaped applicator, said venting means comprising a continuous and unobstructed path extending from the atmosphere to the interior of said container.

4,111,568

UNITARY LOCKABLE TURNBUCKLE

George S. Wing, Palos Verdes Estates, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed Jul. 18, 1977, Ser. No. 816,802
Int. Cl.² F16D 9/00
U.S. Cl. 403—2 23 Claims



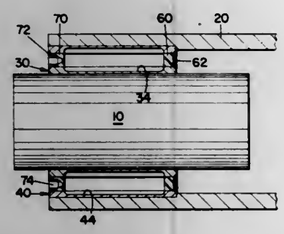
1. A unitary lockable turnbuckle comprising:
a barrel having a central axis, a first and a second end, a first face on the first end, a second face on the second end, a first axial bore entering the first end through the first end face, and a second axial bore entering the second end through the second end face, said faces extending laterally relative to the central axis and surrounding the end of their respective bores;
a first nut having a central axis, a first bearing face; and a passage entering the first nut through said first bearing face;
a second nut having a central axis, a second bearing face, and a passage entering the second nut through said second bearing face;
a first and a second shear section integral with and interconnecting the barrel with the first and the second nut, respectively;
a first and a second thread, said first thread being in phase in the passage of the first nut and in the first axial bore, said second thread being in phase in the passage of the second nut and the second axial bore, said first and second threads being of opposite hand from one another, said first faces facing one another, and said axes all being coaxial.

4,111,569

SHELL AND SHAFT SUBASSEMBLY

William Rudolph Mengel, Easthampton, Mass., assignor to Magnat Corp., Easthampton, Mass.

Filed Jun. 14, 1977, Ser. No. 806,444
Int. Cl.² F16C 13/00
U.S. Cl. 403—5 3 Claims



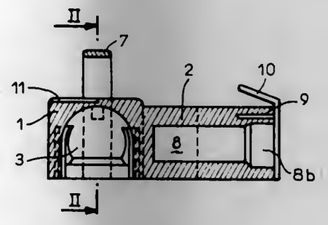
1. The combination with a shell or roller and shafting therefor, of securing means for securing the shell or roller in non-rotative relation on the shafting with the shell or roller periphery being concentric with the shafting axis, the securing means comprising:
a pair of concentrically-arranged annular inner and outer sleeves,
a pair of end rings secured to and spacing the inner and outer sleeves at their opposite ends,
the inner and outer sleeves and end rings cooperatively defining a closed annular chamber,
an endless sinuous groove in a wall of each sleeve,
the groove in the inner sleeve being disposed exteriorly of the sleeve,
the groove in the outer sleeve being disposed interiorly of the sleeve,
and means for introducing a pressurized medium to the annular chamber for expanding the walls of the two sleeves radially outwardly in opposite directions in the sinuously extending thin walled areas,
the inner sleeve expanding inwardly toward the shaft periphery and the outer sleeve expanding outwardly toward the shell inner wall,
with the expansion creating a frictional gripping engagement of each sleeve with its respective adjacent component.

4,111,570

BALL AND SOCKET JOINT CAGE

Henri Morel, Maule, France, assignor to ITW de France, S.A., Beauchamp, France

Filed Mar. 25, 1977, Ser. No. 781,223
Claims priority, application France, Mar. 25, 1976, 76 08757
Int. Cl.² F16C 11/10
U.S. Cl. 403—18 8 Claims



1. In a plastic ball-and-socket joint or ball cage formed by a body comprising a cage for housing a spherical ball and at least two tongue-shaped elastic blade cantilever locking elements adapted to restrain the ball in its housing, said blades each having a projection thereon substantially opposite at least a portion of another projection on a second blade integral with the cage, a slot in said body formed behind each of said blades for permitting free radial movement thereof toward and away from said ball and latching means interconnected by a common operator, said latching means adapted to be accepted in said slot behind each blade whereby said latching means can be moved linearly to co-act simultaneously and directly with each of said blades to simultaneously urge them in locked opposed relation against the ball after said ball is inserted into said cage.

4,111,571

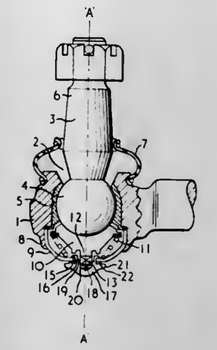
BALL AND SOCKET JOINTS

David John Rowland Farrant, Leamington Spa, England, assignor to Automotive Products Limited, Warwickshire, England

Filed Sep. 12, 1977, Ser. No. 832,206
Claims priority, application United Kingdom, Sep. 21, 1976, 39177/76
Int. Cl.² F16C 11/06
U.S. Cl. 403—27 9 Claims

1. A ball and socket joint suitable for use on automobiles which includes:
a pin with a ball thereon;
a housing receiving said ball and defining a first aperture through which said pin projects;
mating bearing surfaces on said ball and said socket such that the pin can move angularly with respect to the socket;
a first member within the housing that lies adjacent the rotatable surface of the ball;
a resilient means which biasses the first member towards the rotatable surface of the ball pin such that any wear in the ball and socket joint results in a relaxation of the resilient

means in conjunction with displacement of the first member;
and a second member having a portion slidably engaged and partially rotatably interlocked along one axis with the first member and being axially fixed relative to the housing along the one axis but rotatable relative to the housing about the one axis and the second member is readily accessible from without the housing so as to effect such rotation;



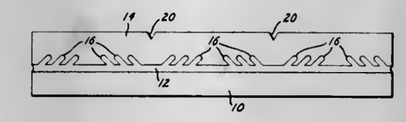
wherein; the said displacement along the one axis of the first member relative to the second member is such that when the first member is in a first position along the one axis the second member is locked against rotation about the one axis, and when the first member is in a second positon along the one axis the second member is free to rotate about the one axis, and where the said displacement is from either one to the other of said first and second positions.

4,111,572

CERAMIC-METAL ASSEMBLY

Michael J. Noone, Wayne, and Arno Gatti, Norristown, both of Pa., assignors to General Electric Company, Fairfield, Conn.

Filed Mar. 10, 1977, Ser. No. 776,281
Int. Cl.² F16B 11/00
U.S. Cl. 403—28 3 Claims



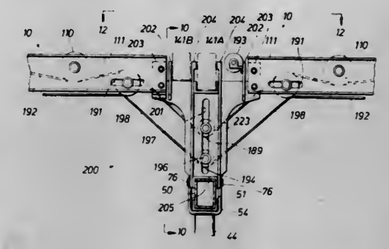
1. In a structure comprising a metallized ceramic piece brazed to a metal backing by a braze alloy, the improvement comprising:
oppositely directed slots in the brazed face of the ceramic piece which are filled with the said braze alloy and the orientation of said slots are such that upon cooling of the ceramic piece the contraction of the braze alloy and backing pulls the ceramic in a direction which tends to force the braze alloy into the slots, thereby producing a mechanical bond in addition to the bond produced by the brazed joint.

4,111,573

TRIPLE LEG COUPLER

Roy R. Pryor, and Harold A. Pryor, both of P.O. Box 26, Woodville, Tex. 75979

Filed Dec. 6, 1976, Ser. No. 747,554
Int. Cl.² F16B 1/00
U.S. Cl. 403—42 27 Claims



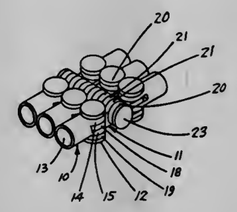
1. A support and coupling member and the like, comprising:
first and second spaced-apart upright leg bracket members,
a saddle element connected to the lower end of said bracket members,
a first pair of support arms connected to the upper end of each said leg bracket members,
a second pair of support arms connected to the upper end of each said leg bracket members, and
a third pair of support arms connected to the upper end of each said leg bracket members.

4,111,574

HINGE JOINT ASSEMBLY

John F. Runyon, 91 Kent St., St. Paul, Minn. 55102

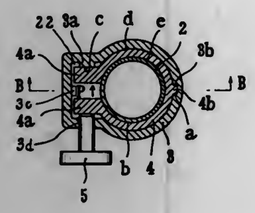
Continuation-in-part of Ser. No. 397,765, Sep. 17, 1973, Pat. No. 4,074,477. This application Nov. 26, 1976, Ser. No. 744,984
Int. Cl.² E04B 1/32; F16D 3/00
U.S. Cl. 403—54 15 Claims



1. A hinge joint assembly composed of non-resilient material for flexibly connecting a plurality of at least three structural building components in the construction of modular buildings, said hinge joint assembly comprising:
(A) at least one hinge pin, and
(B) a plurality of similar flexibly interacting fastening units mounted for rotation about said hinge pin and each including:
(1) at least three rotatable connecting members each having means for loosely and rotatably engaging a longitudinally extending rigid structural component for rotation about the longitudinal axis of the component, said longitudinal axis extending perpendicular to the axis of rotation of the connecting member, and
(2) a corresponding number of intermediate means mounted on said hinge pin and engaging said connecting member for securing said connecting member to said hinge pin, said connecting member being in fixed engagement with said intermediate means for pivotal movement of said connecting member about said hinge

pin, and in rotatable engagement with said intermediate means for rotational movement relative thereto about an axis perpendicular to the axes of said pin and structural component and skew relative to the axis of the pin.

4,111,575
TUBE COUPLING
Masao Hoshino, 32-6107 Mitsuike, Shiroyama-cho, Owariasahi-shi, Aichi, Japan
Filed Jan. 10, 1977, Ser. No. 758,164
Claims priority, application Japan, Jun. 11, 1976, 51-076506[U]
Int. Cl.² F16B 7/10
U.S. Cl. 403—104 7 Claims



1. A coupling for coupling two telescopable tubes, wherein an inner tube is telescopable into an outer tube and the outer tube has a terminal end out of which the inner tube projects, said coupling comprising:

a receiving member emplaceable over the terminal end of the outer tube and over the section of the inner tube near the terminal end of the outer tube; said receiving member having a first sleeve portion with a first interior surface; said first sleeve portion first interior surface being generally circular in cross-section; said first interior surface extending over and being engageable with the exterior of the outer tube at and away from the terminal end of the outer tube;

said receiving member having a second sleeve portion with a second interior surface; said second sleeve portion second interior surface being generally circular in cross-section; said second interior surface extending over the section of the inner tube that extends away from the terminal end portion of the outer tube;

a tightening ring of generally circular cross-section emplaced inside said second sleeve portion and engageable with the exterior of the inner tube; said tightening ring being a split ring and terminating at end portions at both sides of the split in said split ring; said ring end portions each comprising a tab projecting away from said ring in generally the same direction and said tabs having side faces and said side faces thereof being opposed and spaced apart;

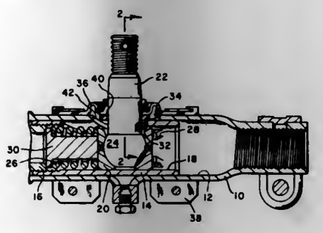
ring tightening means in said receiving member and extending into engagement with at least one said ring end portion tab for biasing said ring end portions toward each other;

respective engagement formations on said ring and also on said second interior surface at a location on said ring remote from said end portions thereof; said engagement formations being in engagement such that said ring is held stationary by means of the engagement of said engagement formations against movement around said receiving member and around the inner tube in said receiving member as said tightening means tightens said ring end portions toward each other;

an abutment in said receiving member second sleeve portion for being engaged by and for blocking said other ring end portion from moving away from said one ring end portion as said tightening means moves said one ring end portion toward said other ring end portion; said tightening means being engageable with said one ring end portion to urge it toward said other ring end portion thereby to urge said ring end portions toward each other;

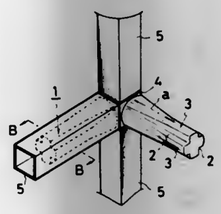
said second sleeve portion having a chamber therein shaped to receive both said ring end portion tabs and said tabs being in said chamber; said abutment for engaging said other ring end portion being in said chamber.

4,111,576
STEERING LINKAGE HAVING RESILIENT RING
David D. Jordan, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed Aug. 22, 1977, Ser. No. 826,607
Int. Cl.² F16C 11/00
U.S. Cl. 403—134 5 Claims



1. In a steering linkage having a housing which defines a bore, a sleeve member movable and rotatable within the housing bore and supporting a socket, a stud extending through an opening on the housing and into the socket such that the sleeve member is movable and rotatable within the housing bore to impart movement and rotation to the stud and a flexible boot sealingly engaging the stud and the housing to keep contaminants out of the housing bore, the improvement in which a ring is carried by said stud between said sleeve member and said flexible boot, said ring cooperating with said stud to prevent said flexible boot from coming in contact with said sleeve member.

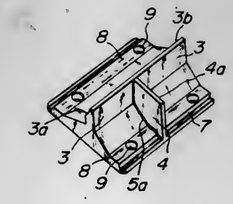
4,111,577
TUBE JOINT
Kesaomi Kiyosawa, Tokyo, Japan, assignor to Nihon Space Union Co., Ltd., Tokyo, Japan
Filed Apr. 18, 1977, Ser. No. 788,344
Int. Cl.² F16B 7/00
U.S. Cl. 403—172 4 Claims



1. A joint made of metal and adapted to be connected to a plurality of square pipes comprising:

a plurality of protruding joint rods interconnected at their root ends, each joint rod including plural radially protruding, longitudinally extending knurling tools, each with a shaped radial surface having a wide root end close to the root end of the joint rod and a narrow pointed end, the shaped radial surfaces being positioned at central parts of top and bottom and right and left sides of the joint rod, adjacent shaped radial surfaces being separated by fixed grooves extending from the pointed end to the root end of the knurling tool, each of said shaped radial surfaces having an arcuate-shaped protruding portion extending from a central part thereof intermediate the ends of said knurling tool so that the diameter of each joint rod increases from a first value to a second value in a direction from the pointed end to the root end of the knurling tool, the first value being slightly less than the inner diameter of a square pipe to be held by the joint rod and the second value being at least equal to the inner diameter of the square pipe.

4,111,578
FITTINGS FOR CONNECTING COLUMNS AND BEAMS OF STEEL FRAME CONSTRUCTION
Kuniaki Sato, Hiratsuka; Yoshihiro Nakamura, Kamakura, and Hideaki Ninomiya, Tokyo, all of Japan, assignors to Kajima Corporation and Hitachi Metals, Ltd., both of Tokyo Japan
Filed Feb. 7, 1975, Ser. No. 547,775
The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.
Int. Cl.² F16B 7/00
U.S. Cl. 403—189 3 Claims



1. Fittings for connecting columns and beams of a steel frame construction comprising a rectangular base plate to be connected to said column, said base plate having:

(a) a first face for mating with a column, said first face designed to conform to the contours of said column in the area of said mating;

(b) a second face directed towards a beam including a raised portion tapering outwardly, downwardly from an essentially horizontally central apex and a flat edge portion parallel thereto;

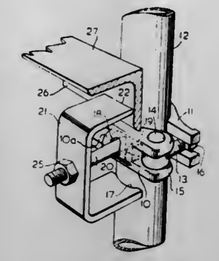
(c) a horizontal protrusion in opposition to a flange of said beam and projecting from said raised portion;

(d) a vertical protrusion in opposition to a web of said beam and projecting from said base plate to form a T-shaped protrusion with said horizontal protrusion; and

(e) seats formed on said base plates having holes for receiving bolts and formed with their longitudinal axes in the direction parallel to the horizontal protrusion.

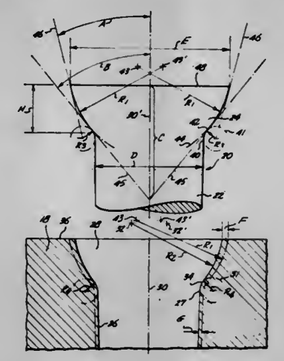
4,111,579
SCAFFOLDING
Stephen Vincent Knight, Maghull, England, assignor to North Western Scaffolding Company Limited, Liverpool, England
Filed Mar. 29, 1977, Ser. No. 782,371
Claims priority, application United Kingdom, Apr. 2, 1976, 13408/76
Int. Cl.² E04G 7/00
U.S. Cl. 403—387 8 Claims

1. A scaffold fitting for clamping a scaffold tube to a flanged member or the like to vice versa comprising a body, means for detachably securing said body to a scaffold tube, a lever, and means aligned with said means for securing the body to the scaffold tube for tightening the lever onto the body to enable a portion of the lever to clamp the flanged member or the like directly against the scaffold tube without applying to the



means for securing the body to the scaffold tube a load any greater than the load on the means for tightening the lever.

4,111,580
CONTINUOUSLY CURVED FASTENER HEAD AND COUNTERSINK HAVE INTERFERENCE FIT
Joseph G. Falcioni, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 30, 1976, Ser. No. 755,834
Int. Cl.² F16B 19/04
U.S. Cl. 85—9 R 13 Claims



1. A fastening system for joining workpieces with a fastener comprising:

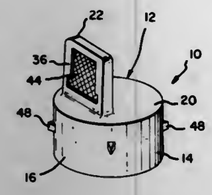
a workpiece formed prior to joining having an aperture therethrough, said aperture having a countersink adjacent one surface of said workpiece, said countersink comprising a continuously curved surface from the bore of said aperture to said one surface, the portion of said continuously curved surface adjacent said bore diverging from said bore and providing resistance to pull through of said fastener, and the portion of said continuously curved surface adjacent said one surface having decreasing divergency with said bore and providing a surface adapted to an interference fit with said fastener;

a fastener formed prior to joining having a head shaped to be substantially congruent to said countersink and aperture, but exceeding the dimensions thereof slightly, whereby forcible insertion of said fastener in said aperture provides a structural fluid tight joint.

4,111,581
HIGHWAY MARKER
Robert S. Auriemma, Rte. #1 Box 104, Bethel, Pa. 19507
Filed Jan. 3, 1978, Ser. No. 866,261
Int. Cl.² E01F 9/00
U.S. Cl. 404—10 6 Claims

1. A highway marker comprising an integral resilient flexible

body having a base adapted to be mounted on a support and a tab extending upwardly from the upper surface of the base; a reflective member-receiving recess on one sid of the tab and a retaining lip extending around the recess away from the bottom side, the ends of the lip being spaced from the bottom side, the space between the ends of the lip on both sides of the recess



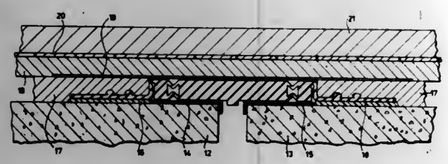
and the bottom side of the recess defining an insertion slot; and a reflective member conforming to the shape of the recess and located within the recess sandwiched between the lip and the bottom of the recess, whereby the member may be inserted into or removed from the recess by flexing the tab down against the base with the one side thereof away from the base to open the slot for movement of the member through the slot.

4,111,582

EXPANSION JOINT

Samuel Tippett, 11 St. Michael's Ct., Monkton Combe, Bath, Somerset, England

Continuation of Ser. No. 668,526, Mar. 19, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,813
Int. Cl.² E01C *11/02*
U.S. Cl. 404—47 **5 Claims**



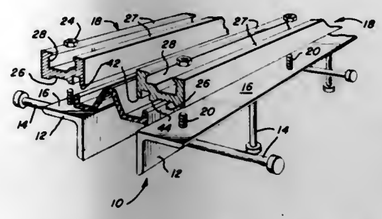
1. An expansion joint buried in a roadway and bridging a gap between adjacent deck parts of a civil engineering structure the roadway consisting essentially of a plurality of strata and the expansion joint being buried in at least one of said strata and at least one of said strata being continuous over the said expansion joint, the expansion joint including an elongate elastomeric joint member disposed transversely across the roadway, said joint member consisting essentially of elastomeric material and having a body and flange parts, the body having a lower surface which is supported at respective sides of a median plane on respective deck parts whereby a central portion of the body spans the gap between the deck parts, a debonding layer between said lower surface and said deck parts, said flange parts being secured in watertight manner to the respective deck parts at each lateral side of the body whereby to form with the body a continuous waterproof roof over the gap, the body and the flange parts being formed in an integral one-piece whole of the elastomeric material, and edge portions of the body being separated from the central portion thereof by regions of the body of greater lateral compressibility than that of the edge portions and the central portion.

4,111,583

ROADWAY JOINT SEAL AND SEALING ASSEMBLY

John F. Brady, Wood Dale, and Donald J. McDowell, Riverside, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed May 23, 1977, Ser. No. 799,594
Int. Cl.² E01C *11/04*
U.S. Cl. 404—69 **11 Claims**



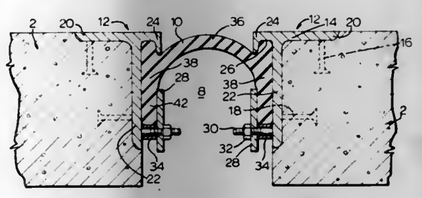
9. A sealing system for roadway expansion joint gaps and the like comprising: roadway slabs defining an elongated gap, a first sealing face at each side of said gap, a retainer overlying each said sealing face and defining a roadway surface, said roadway surface defining at least one elongated channel for collecting debris and for enhancing vehicular traction, continuous elastomeric seal means extending along the length of the gap and secured at each side of the gap between a said sealing face and a said retainer, and means for securing said retainer to said first sealing face, said continuous seal means comprising an elongated central arched segment, a pair of longitudinally extending legs, one extending from each side of said arched segment, and a protrusion extending upwardly from each of said legs, said seal means embedding at least one fabric reinforcement layer, said fabric layer generally extending from protrusion to stiffen, rigidify and strengthen said seal means and said protrusions, each said retainer defining an elongated recess sealingly receiving, engaging and compressing a said protrusion, defining limiter means for confronting said sealing face for limiting the compression of said protrusions, and defining a retainer lip confronting a leg of said seal means for visually indicating that sealing of said protrusion has been effected, and wherein the depth of the recess is at least 15 percent less than the uncompressed height of said protrusion and the width of the recess is greater than the compressed width of said protrusion.

4,111,584

EXPANSION JOINTS SEAL ASSEMBLY

Edward Fyfe, Burlington, Canada, assignor to Elastometal Limited, Burlington, Canada

Filed Nov. 25, 1974, Ser. No. 526,682
Int. Cl.² E01C *11/02*
U.S. Cl. 404—69 **12 Claims**



1. A seal assembly for expansion joints in which the sides of a gap are defined by the edges of two confronting sections of a structure such as a roadway slab or the like, comprising in combination:

at least one abutment adapted to be mounted on said confronting sections along respective sides of said gap and having a substantially vertical flange facing across said gap;

a clamping plate adapted to extend along said seal assembly parallel to said flange;

means releasably attaching said plate to said flange in parallel adjustably spaced relationship thereto;

a flexible sealing member of elastic material having a web portion spanning between side wall portions disposed substantially normal thereto, and substantially parallel to said flange;

said side wall portions being receivable in said space between said flange face and said plate, and said plate being adjustable by said attaching means to squeeze said side wall portion against said flange face in sealing relation therewith;

said attaching means comprising bolt means extending between said plate and said flange substantially normal thereto;

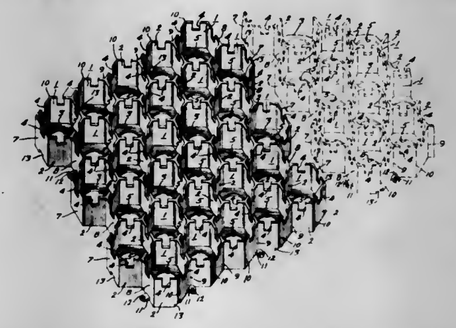
said adjustable attaching means including a yieldable resilient element adapted to urge said plate to press against said side wall.

4,111,585

MODULE AND MODULAR SUPPORT FOR TURFGRASS AND LIKE AREAS

Thomas C. Mascaro, 2210 NE. 125th St., North Miami, Fla. 33186

Filed Apr. 27, 1977, Ser. No. 791,379
Int. Cl.² E01C *5/20*
U.S. Cl. 404—70 **8 Claims**



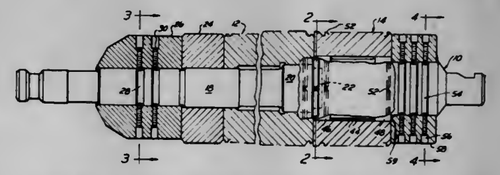
1. A module for complementary interfitting interlocked engagement with adjacent like modules adapted to be embedded in the surface of a turfgrass area to form a modular supporting structure for traffic over said area, comprising an integral non-metallic one-piece unit of honeycomb-like cellular construction having a plane bottom wall adapted to rest upon and be supported by the subjacent turfgrass soil and a plurality of vertical wall portions of uniform height and thickness extending upwardly from said bottom wall and defining a plurality of rows of cells each containing a plurality of cells of uniform cross sectional area, each of said vertical wall portions being common to an adjacent pair of cells whereby each cell in each row is contiguous to the adjacent cell in said row and to adjacent cells in the next row thereof, all of said cells being open at the upper ends thereof in the top surface of the unit and partially closed at the lower ends thereof by the bottom wall of said unit, said bottom wall having a plurality of apertures therein each of less area than the cell cross-sectional area and arranged so that at least one aperture is located in the bottom wall of each cell for drainage and extension of turfgrass roots into the subjacent soil, each of said vertical wall portions having a recessed opening in the upper edge portion thereof providing cross-communication between each adjacent pair of cells for the lateral extension from cell to cell of turfgrass roots, stolens and rhizomes, the cells in each row being laterally offset with respect to the cells in the adjacent row and providing in the respectively opposite peripheral sides of the unit alternately disposed projecting portions and recesses arranged for complementary interfitting engagement with corresponding recesses and projecting portions of an adjacent unit, a plurality of selectively positioned interlock tabs projecting from each side of the unit, and means defining tab receiving openings selectively positioned in each side of said unit, said tabs and tab receiving openings being constructed and disposed for interlocking engagement with corresponding tab receiving openings and tabs of an adjacent unit.

4,111,586

BROACH

Eugene J. Bistrick, Warren; Stewart F. Miller, Mt. Clemens; Axel B. Abrahamsson, Warren, and Richard A. Schlaf, Sterling Heights, all of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Jun. 29, 1977, Ser. No. 810,993
Int. Cl.² B26D *1/00*
U.S. Cl. 407—16 **8 Claims**



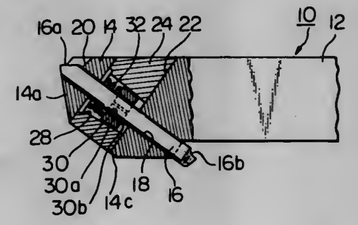
1. A tension broach comprising an elongated drawbar having a first cylindrical locating surface adjacent its forward end and a flat forwardly facing annular abutment surface at the trailing end of said first locating surface, a tubular roughing shell on said drawbar having a multiplicity of series of longitudinally aligned rough cutting teeth, said roughing shell having a cylindrical internal surface fitting said first locating surface and a flat, rear, annular abutment surface engaging the abutment surface on said drawbar, said drawbar having a second enlarged cylindrical locating surface extending rearwardly from the abutment surface on said drawbar, a tubular finishing shell on the second enlarged cylindrical locating surface of said drawbar having an internal cylindrical surface fitting said second locating surface on said drawbar and having a multiplicity of finish cutting teeth in longitudinal alignment with said rough cutting teeth, and abutment means on said drawbar having a forwardly facing flat annular abutment surface, said finishing shell at its rear end having a flat annular abutment surface engaging the abutment surface of said abutment means.

4,111,587

TOOL HOLDER

Takefumi Hatanaka, Matsudo, Japan, assignor to International Patent Transactions Company Limited, Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,418
Claims priority, application Japan, Jun. 10, 1977, 52-67861
Int. Cl.² B26D *1/00*
U.S. Cl. 407—91 **5 Claims**



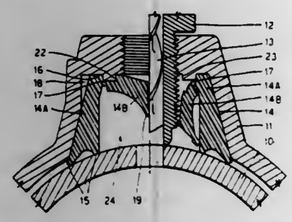
1. A tool holder comprising:

a holder body having a retaining bore for slidably accommodating a bar-type tip;

a tapered bore in concentric relationship with said retaining

bore; and wedge means inserted within said tapered bore and movable in the axial direction thereof; whereby said wedge means is adapted to be brought into clamping engagement with the outer periphery of said bar-type tip.

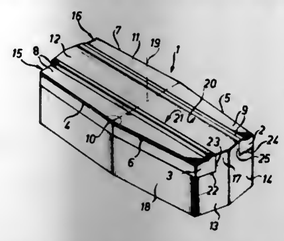
4,111,588
DRILLING HOLES IN PRESSURIZED PIPES
Keith Roderick Herron, Moorooka, Australia, assignor to James Kemp & Co. Pty. Ltd., Currumbin, Australia
Filed Jan. 3, 1977, Ser. No. 756,544
Int. Cl.² B23B *41/08, 35/00*
U.S. Cl. 408—110 **1 Claim**



1. Apparatus for drilling a hole in a pressurized container comprising:
attachment means for attaching a drill supporting device to a surface of said container including a chamber, said device having an interior wall portion, said interior wall portion being entirely lined;
peripheral sealing means between said device and said surface surrounding an aperture for a drill in said device, said peripheral sealing means comprising an annular resilient lining in said chamber, sealed to said surface;
a seal across said aperture closed by outward pressure, but able to be opened inwards to pass said drill; said seal and said peripheral sealing means being non-rotatably mounted with respect to said attachment means;
said seal including resilient sectoral leaves angled inwards towards said surface, which in closed position are abutted tightly against one another to close said aperture; said sectoral leaves having edge flanges abutting with each other in closed position;
each of said leaves having a flange abutting against a flange on said attachment means in closed position, to restrain flexing of said leaf away from said surface;
said sectoral leaves being integral with said annular lining and connected thereto by narrow flexible portions, the top portion of said seal being recessed, said seal being adapted to varying dimensions and curvatures of said container.

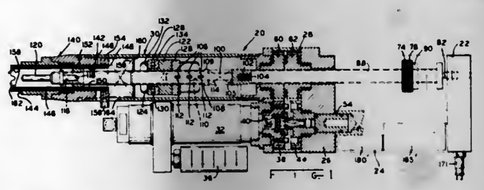
4,111,589
MULTIPLE CUTTING PLATE FOR PEELING MACHINES
Alfons, Goeke, Soligen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany
Continuation of Ser. No. 561,538, Mar. 24, 1975, abandoned.
This application Jun. 10, 1976, Ser. No. 694,545
Claims priority, application Spain, Mar. 28, 1974, 424.739
Int. Cl.² B26D *1/00*
U.S. Cl. 407—114 **8 Claims**

1. A multiple cutting plate for metal peeling machines, comprising:
a metal block formed of relatively soft steel having an octagonal cross section, providing a bottom surface, vertically extending and transversely spaced sidewalls, and a top surface providing in conjunction with said sidewalls two generally parallel extending transversely spaced recesses;
two cutting blades secured to said block formed of comparatively hard material, with one cutting blade secured in one recess and the other blade in the second recess with said block forming a continuous support between the blades, each blade providing a main and secondary cutting edge which extend linearly contiguous, said edges of each blade define with respect to each other an obtuse angle, with the



cutting edges of each blade having an approximately equal axial length.

4,111,590
POSITIVE FEED DRILL
Robert C. Burkart, Fort Wayne, Ind., and Gilbert J. Newbould, North Littleton, Nr Evesham, England, assignors to Robert E. Eash, Fort Wayne, Ind., a part interest
Filed Oct. 7, 1976, Ser. No. 730,424
Int. Cl.² B23B *47/18*
U.S. Cl. 408—14 **3 Claims**

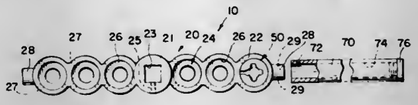


1. Drill apparatus comprising a supporting frame which carries an elongated spindle for rotary and longitudinally reversible movement; drive means for selectively imparting protractile and tractile movement of said spindle and for rotating said spindle; a rotary drilling tool; coupling means for coupling said drilling tool to said spindle to impart said rotary and longitudinal movements thereto; limit means for controlling said drive means to limit the protractile movement of said tool; said coupling means including a lost-motion connecting means for providing limited relative longitudinal movement between said tool and spindle when the protractile movement of said tool is limited; said drive means comprising retraction means for retracting said spindle upon said tool reaching its protracted limit; said coupling means including a drive rod connected to said drilling tool and an adaptor carried by said spindle, one of said drive rod and adaptor having an axially extending socket therein, the other of said drive rod and adaptor telescopically fitting into said socket for relative axial movement therein, axially extending slots through the wall of the socket, radial pins slidably received by said slots and carried by the drive rod and adaptor which is telescoped in said socket, whereby said drive rod and adaptor have limited axial movement relative to each other; said lost-motion means maintaining said tool in its protracted limit position during the period required to change from protractile to retractile movement of said tool.

4,111,591
COMBINATION TAP AND DIE WRENCH
Edward M. Rolnick, North Dartmouth, Mass., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Aug. 22, 1977, Ser. No. 826,439
Int. Cl.² B23G *5/08, 5/10, 5/14*
U.S. Cl. 408—117 **5 Claims**

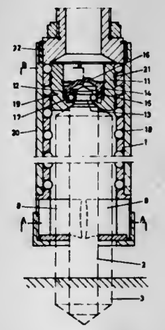
1. A combination tap and die stock wrench having a center portion and a pair of oppositely and outwardly extending arm portions from said center portion, said center portion including

an aperture extending through the thickness thereof for receiving and positively retaining tapping apparatus and said arm portions each including a plurality of individual die receptacles each adapted to receive and positively retain therein a tapping



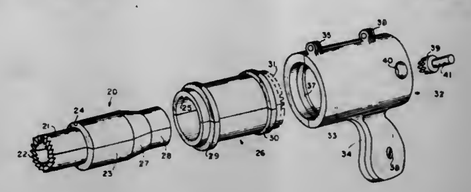
die, wherein each of said arm portions includes at its outwardly extending end a substantially hollow extension handle for receiving and storing tapping apparatus adapted to be introduced therein through a sealable opening at its outwardly extending end.

4,111,592
MULTI-ZONE DRILLING SYSTEM WITH SPIRAL DRILLS AND QUICK ADJUSTMENT FOR FLAT AND DEEP DRILLINGS AT A MINIMUM JUTTING-OUT LENGTH OF THE DRILL ATTACHMENT
Hanns Schnitzler, Eichenweg 5, Hattingen, Ruhr, Fed. Rep. of Germany (4320)
Filed Mar. 29, 1977, Ser. No. 782,408
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614532
Int. Cl.² B23B *31/44, 5/22*
U.S. Cl. 408—197 **9 Claims**



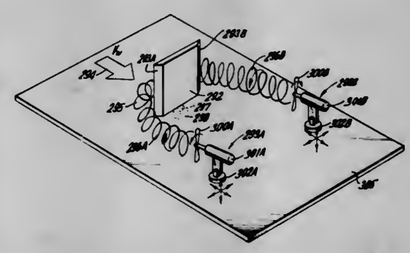
1. In an attachment for twist drills, to adjustably limit the drilling depth thereof, a tubular chuck casing having a longitudinal axis of symmetry, to receive a twist drill therein for extension therealong, a tubular bushing smoothly fitting over and about said casing for limited rotation relatively thereto, about said axis, between first and second positions, a cylindrical pressure element smoothly fitting within said casing for adjustment relatively thereto along said axis, first clutch means carried by said element and operable to connect and disconnect said element to and from the top end of a drill in said casing, second clutch means operable to connect and disconnect said casing and said element, by and in response to rotation of said casing with respect to said bushing, between said first and second positions, respectively, and first means carried by and at the lower end of said casing, to engage and rotate a twist drill in said casing and as a unit therewith, for all positions of longitudinal adjustment of a drill in and with respect to said casing, the lower end of said casing forming a workpiece-contacting abutment.

4,111,593
WIPED CUTTER
Rolando Carrillo, Jr., 3656½ Beethoven St., Los Angeles, Calif. 90066
Filed May 27, 1972, Ser. No. 779,688
Int. Cl.² B27B *5/12*
U.S. Cl. 408—204 **3 Claims**



1. A portable tool, for cutting wiped-lead fillets from ends of a sleeve over a cable sheath or conduit comprising a split, hollow and internally smooth cylindrical member having a cutting section with an internal diameter substantially equal to the outside diameter of said cable sheath or conduit, said cutting section having sharp cutting teeth extending longitudinally at one end thereof and a main section integral with the end of said cutting section opposite said one end, wherein said main section has a keyway along the outside thereof in a position parallel to the axis thereof, said tool further including: a split hollow cylindrical drive barrel having a key inside to fit said keyway when said barrel is fitted over said main section, said barrel having at least one annular rib and gear teeth at one end; a split housing of a length greater than said drive barrel for a substantial part of said housing to extend over the gear teeth at the one end of the drive barrel, said housing being shaped to fit over said barrel with a groove to receive said annular rib on said drive barrel, said housing having a split gripping member, each part of said split gripping member being integral with a different part of said split housing to permit an operator to hold said housing together; a gear fitted through said housing in engagement with said gear teeth at the one end of said drive barrel; and a drive shaft connected to said gear.

4,111,594
FLUID FLOW ENERGY CONVERSION SYSTEMS
Pasquale M. Sforza, 42 Mechanic St., Huntington, N.Y. 11743
Division of Ser. No. 564,681, Apr. 3, 1975, Pat. No. 4,047,832.
This application Jan. 28, 1977, Ser. No. 763,590
Int. Cl.² F03D *1/04*
U.S. Cl. 415—1 **5 Claims**



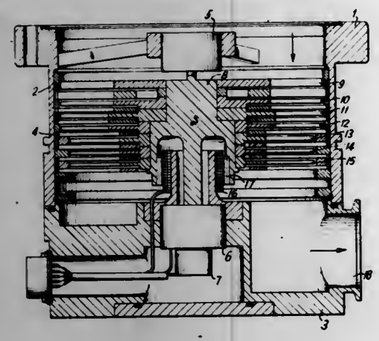
1. An energy conversion system converting the energy of natural fluid flow as in winds or waterways, to useful output power comprising bluff body vortex generating means adapted to intercept said natural fluid flow and to generate an edge separation vortex having a substantial axial velocity component, and turbine means positioned in the developed region of said vortex for extracting energy from said vortex.

4,111,595

TURBOMOLECULAR PUMP WITH MAGNETIC MOUNTING

Willi Becker, Braunfels, and Wilfried Nesseldreher, Heuchelheim, both of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslahr, Germany

Filed Dec. 3, 1976, Ser. No. 747,298
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2554995
Int. Cl.² F01D *1/26*
U.S. Cl. 415—90 **5 Claims**



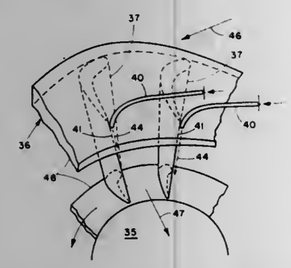
1. A turbo-molecular pump, comprising a casing having a suction side and a discharge side, a suction port at said suction side and a discharge port at said discharge side, a stator arranged in said casing, and a rotor journaled therein in magnetic bearings, said rotor having rotor discs arranged axially along the longitudinal axis of said rotor, each rotor disc having vanes, said rotor having discs positioned adjacent said suction side, adjacent said discharge side and positioned in the vicinity of the center of gravity which have relative axial thicknesses and diameters to produce a moment of inertia of the rotor about its axis of rotation which exceeds its moment of inertia about a transverse axis through its center of gravity.

4,111,596

TURBINE BLADE COOLING SYSTEM

Okon M. Amana, Watertown, and Jean F. Louis, Brookline, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1977, Ser. No. 758,105
Int. Cl.² F01D *5/00*
U.S. Cl. 415—115 **10 Claims**



1. A system for cooling turbine blades in a turbine having a rotor, stator and rotor blades, and respective end walls comprising:

introducing coolant longitudinally in a stream along the trailing edge of a rotor blade in the recirculation region opposite said trailing edge,

said coolant emanating from a site exterior to the blade so that blade strength is unaffected by said system,

said coolant cooling the trailing edge by lowering the average temperature of the fluid in the recirculation region aft thereof,

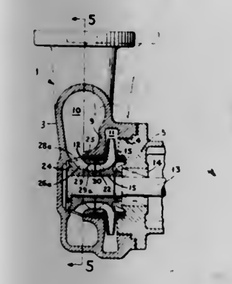
said coolant introduced in the form of a stream of cooling air injected through said stator blade end wall for cooling stator blades and through the rotor for cooling rotor blades.

4,111,597

CENTRIFUGAL PUMP WITH CENTRIPETAL INDUCER

Carlo Grossi, Milan, and Aldo C. Taffelli, Seregno, both of Italy, assignors to Worthington Pump, Inc., Mountainside, N.J.

Filed Apr. 21, 1977, Ser. No. 789,357
Claims priority, application Italy, Jan. 10, 1976, 27915-A/76
Int. Cl.² F04D *1/02, 17/14, 29/44*
U.S. Cl. 415—143 **7 Claims**



1. A centrifugal pump comprising:

a. a casing defining therein, a pumping chamber, and an inlet flow passage means disposed adjacent to and in communication with the pump chamber,

b. said casing having a side inlet in communication with the inlet flow passage means,

c. said casing having an outlet in communication with the pumping chamber,

d. a driven shaft rotatably mounted in said casing and disposed to extend into the pumping chamber and into the inlet flow passage means,

e. means for rotating said driven shaft,

f. an impeller in the pumping chamber having at least one suction inlet connected to and rotatable with the driven shaft,

g. inducer means in the inlet flow passage means connected to and rotatable with the driven shaft in one given direction, said inducer having an inlet end and an outlet end so mounted in the inlet flow passage means that the outlet end is adjacent to said at least one suction inlet for the impeller,

h. said inlet flow passage means having a shape to impart pre-rotational motion to the fluid flowing therethrough and to direct the fluid into the inlet side of the inducer in a generally radial inward direction counter to the direction of rotation of the inducer,

i. a plurality of vane means in said inducer defining inducer vane passage means therebetween,

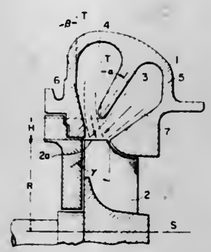
j. said vane means forming curved inducer vane passages means so sized and shaped as to turn the fluid from the radially inward flow direction at the inlet of the inducer to an essentially axial flow direction at the outlet of the inducer.

4,111,598

TURBINE CASING FOR SUPERCHARGERS

Tamotsu Kasuya, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation-in-part of Ser. No. 536,195, Dec. 24, 1974, abandoned. This application Aug. 25, 1976, Ser. No. 717,616
Claims priority, application Japan, Apr. 30, 1974, 49-47552
Int. Cl.² F01D *25/24;* F02B *37/02*
U.S. Cl. 415—202 **3 Claims**



1. In a turbine casing for superchargers including a turbine inlet casing, a baffle wall formed within the turbine inlet casing and a turbine impeller, said turbine impeller having an axis of rotation, the improvement comprising two flow paths within said inlet casing for an exhaust pressure wave, each flow path being uniform in cross section throughout its entire voluted length, said flow paths being formed by the inner wall surfaces of said casing and said baffle wall positioned therebetween, said baffle wall being inclined relative to the perpendicular to the axis of rotation of said turbine impeller, wherein one of said flow paths includes a portion of one of said inner wall surfaces opposite said baffle wall which is inclined relative to said perpendicular in a direction opposite to the inclination of said baffle wall and the other of said flow paths includes a portion of a second one of said inner wall surfaces opposite said baffle wall which is inclined relative to said perpendicular in the same direction as said baffle wall, said two flow paths joining together within said casing at a point substantially separated from said turbine impeller, that is, at a distance of at least 10% of the length of the impeller radius, and forming a common area between said flow paths and said impeller, the narrowest point in said common area being where the common area stops, that is, immediately adjacent to said impeller, wherein the baffle wall has a distal end and the impeller has an inlet part, wherein H/R is from 0.1 to 0.3 where H is a space between the distal end of the baffle wall and the inlet part of the impeller and R is a space from the inlet part of the impeller to the center of the axis of rotation thereof, said baffle wall being inclined at approximately 30° to 35° relative to said perpendicular, said inclined surface of said one of said flow paths being inclined at approximately 10° to 15° relative to said perpendicular, and said inclined surface of said other flow path being inclined at approximately 55° to 60° relative to said perpendicular.

4,111,599

CENTRIFUGAL PUMP FOR VISCOUS MEDIA

Martin Stähle, Postfach 12, 8213 Neunkirch, Switzerland

Filed Dec. 6, 1976, Ser. No. 747,497
Int. Cl.² F01D *5/00*
U.S. Cl. 415—215 **2 Claims**

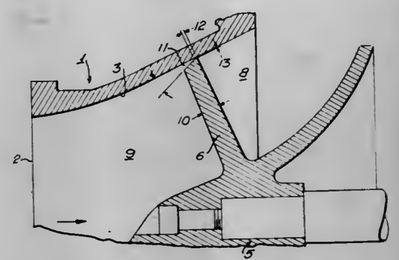
1. A centrifugal pump for a viscous conveyance medium containing solid particles comprising:

a. a housing defining a pump chamber having an internal wall defining an intake end and a discharge end;

b. a rotor journalled in the pump chamber and including at least one helical vane having a peripheral surface in confronting relation to the wall of the pump chamber dividing the pump chamber to form at one side of the vane, an intake suction chamber and, at the opposite side of the vane, a discharge pressure chamber;

c. the major portion of the peripheral surface of the vane diverging from the wall of the housing toward the intake suction chamber at an angle of divergence no greater than 40°; and

d. the remaining minor portion of the peripheral surface of the vane adjacent the side thereof exposed to the discharge pressure chamber, being in close proximity to the



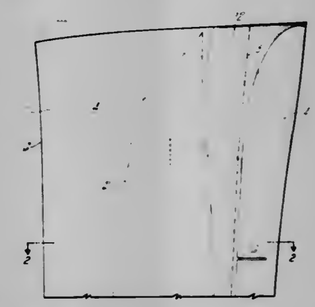
wall of the housing, and the area of said minor portion being such as to minimize the quantity of solid particles capable of being received between said minor portion and the confronting wall, the solid particles on passing said minor portion being transported away from the vane by the conveyance medium entering between said major portion and confronting wall.

4,111,600

BREAKAWAY FAN BLADE

Edward A. Rothman, South Glastonbury, and Charles E. K. Carlson, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1976, Ser. No. 749,133
Int. Cl.² F01D *5/28*
U.S. Cl. 416—2 **7 Claims**



1. A fan blade having;

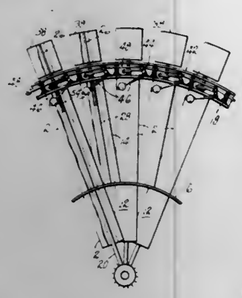
a main blade element having leading and trailing edges and shaped to form airfoil sections, and

a primary leading edge section secured to the leading edge of the main element and extending forwardly therefrom, said leading edge section including a protective sheath covering at least a portion of said leading edge portion at its leading edge,

said primary leading edge section being shaped to form, with the trailing edge of the main element, primary airfoil sections for the blade,

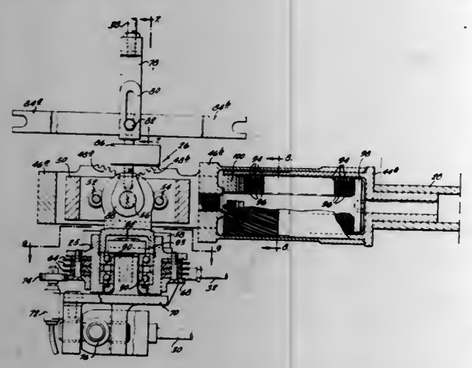
said primary leading edge section being at least in part of a material substantially more frangible than the main element so that said leading edge section may break away in part or in whole and having lines of weakness therein spaced lengthwise of the blade to provide for controlled breakage of the primary leading edge section.

4,111,601
ADJUSTABLE WINDMILL
Joseph G. Richard, 357 South St., Hyannis, Mass. 02601
Filed Feb. 2, 1977, Ser. No. 764,754
Int. Cl.² F03D 7/04
U.S. Cl. 416—41 5 Claims



1. A wind wheel adapted to being driven by the wind, comprising means defining an axis about which the wheel is adapted to rotate, a pair of radially spaced apart segmented rims, a set of generally equally spaced, radially mounted blades equal in number to the segments of each of the rims mounted inside the inner rim and having a front wind engaging surface oriented with respect to the axis to cause the wheel to rotate when subjected to wind directed generally along the axis, a plurality of interconnected movable vanes, one corresponding to each blade and each segment of each rim, mounted on the wheel outside the blades and a governor mechanism including a number of weights equal to the number of blades and connected to the vanes for sensing the speed of the wheel and adjusting the orientation of the vanes with respect to the axis to change the efficiency of the wheel in inverse proportion to its speed.

4,111,602
DEPLOYABLE ROTOR
Justin J. Barzda, Windsor, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 664,714, Mar. 8, 1976, Pat. No. 4,017,043.
This application Jan. 31, 1977, Ser. No. 764,124
Int. Cl.² B64C 27/72
U.S. Cl. 416—89 4 Claims



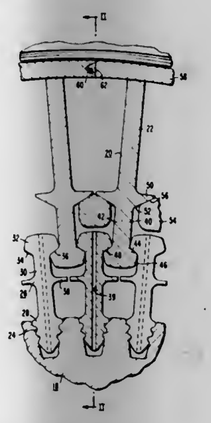
1. A speed control device for a rotatable blade mounted on a rotor hub, comprising in combination:

a pair of concentrically engaged cylinders, respective ones of said cylinders formed to be connected to the rotor hub and the blade for rotation therewith, one cylinder sliding over the other within a splined helix formed therebetween, said helix guiding the rotating blade to an increased pitch angle upon the application of centrifugal force thereto; a governing spring coaxially mounted throughout the entire length thereof within said cylinders for applying a predetermined amount of force therebetween and for uniformly compressing upon the application of centrifugal force thereto, said spring being formed of a series of alternating rubber rings and rigid plates to selectively vary the amount of pitch imparted to the blade; and

retaining means formed between each of said engaged cylinders and connected to said spring for retaining said cylinders in engagement and for compressing said spring therebetween;

whereby the varying pitch angle of the blade controls the rotational speed thereof.

4,111,603
CERAMIC ROTOR BLADE ASSEMBLY FOR A GAS TURBINE ENGINE
William F. Stahl, Middletown Township, Delaware County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 17, 1976, Ser. No. 686,860
Int. Cl.² F01D 5/18
U.S. Cl. 416—95 5 Claims

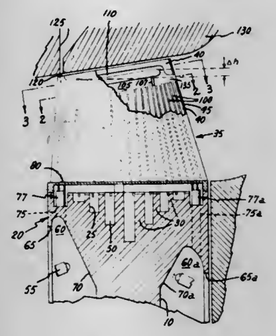


1. A gas turbine rotor and blade assembly for use in a relatively high temperature motive gas stream, said assembly comprising: a ferritic metal disc; an annular array of ceramic blades with each blade having an airfoil portion generally exposed to said high temperature motive gas and a root portion separated therefrom by a blade platform, said platforms in said array providing a generally continuous annular surface to shield said root portion from the hot motive gas; and means interposed between said disc and said blades for mounting said blades to said rotor disc in a radially spaced relationship to minimize exposure of said disc to the high temperature of said blades, said mounting means comprising:

a plurality of intermediate radially extending members attached to said disc, said members comprising a high temperature metal alloy and having a root portion for engagement within a complimentary notch in said disc and an opposite end defining means for engaging and retaining the root portion of said ceramic blades, each member further defining structure disposed in the space separating, and out of contact with, said blade root and said disc to substantially isolate said blade root from said disc and also having radially extending passages providing fluid flow communication between said root of said member and the root portion of said blades for permitting a cooling fluid delivered to said disc to flow through said passages to said blade roots for cooling the respective parts of said assembly and maintaining an acceptable temperature gradient thereacross;

whereby the ferritic metal disc is in a spaced relationship and shielded from structure of said assembly having an elevated temperature and the highest temperature experienced by said disc is less than the lowest temperature on said blade.

4,111,604
BUCKET TIP CONSTRUCTION FOR OPEN CIRCUIT LIQUID COOLED TURBINES
Paul H. Kydd, Lawrenceville, N.J., assignor to General Electric Company, Schenectady, N.Y.
Filed Jul. 12, 1976, Ser. No. 704,349
Int. Cl.² F01D 5/18
U.S. Cl. 416—97 R 8 Claims



1. In a gas turbine wherein a turbine disc is mounted on a shaft rotatably supported in a casing, said turbine disc extending substantially perpendicular to the axis of said shaft and having turbine buckets affixed to the outer rim thereof with platform means disposed therebetween, said buckets receiving a driving force from a hot motive fluid moving in a direction generally parallel to said axis of said shaft and the driving force being transmitted to said shaft via rotation of said turbine disc, means located radially inward of said platform for introducing liquid coolant within said turbine in a radially outward direction into an open circuit coolant distribution system comprising cooling channels extending beneath the airfoil surfaces of each of said buckets and a manifold located in the tip region of each of said buckets in flow communication with the radially outer ends of cooling channels of the given bucket whereby coolant enters into, proceeds through and exits from cooling channels into said manifold, the improvement comprising:

(a) a liquid trap disposed in the tip region of said bucket radially outward from and in communication with said manifold;

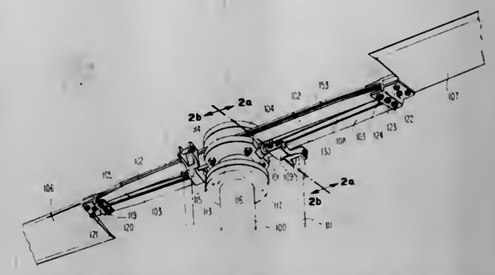
(b) an orifice disposed at the tip of said bucket in communication with said liquid trap for the discharge of liquid coolant from said manifold in a radially outward direction; and

(c) conduit means disposed in communication with said manifold to accommodate vapor coolant flow therefrom.

4,111,605
COMPOSITE HINGELESS ROTOR HUB FOR ROTARY WING AIRCRAFT
Stephan Roman, Downingtown, and Richard J. Spitko, Aston, both of Pa., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 16, 1976, Ser. No. 751,121
Int. Cl.² B64C 27/38
U.S. Cl. 416—141 20 Claims

1. In a rotary wing aircraft assembly including a rotor blade and a generally centrally located hub, apparatus for mounting the rotor blade to the hub comprising:

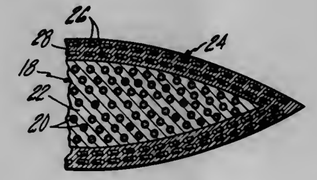
a pair of spaced-apart strap members, each being respectively connected to said rotor blade and said hub, and being substantially parallel to each other therebetween, with each of said strap members comprising an open beam of thin walled construction that in transverse cross-section terminates in at least two free edges, said edges being longitudinally extensive throughout substantially the length of the strap members and being located on diametrically opposed portions of the beams such that the strap



members have longitudinal openings facing away from each other, with said strap members of said pair having specific predetermined bending and torsional flexure capabilities and being in unconnected relation to each other between the hub and the blade; and

means for changing the pitch of the rotary blade and thereby torsionally flexing said strap members.

4,111,606
COMPOSITE ROTOR BLADE
Karl Michael Prewo, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 27, 1976, Ser. No. 754,668
Int. Cl.² F01D 5/14
U.S. Cl. 416—224 11 Claims

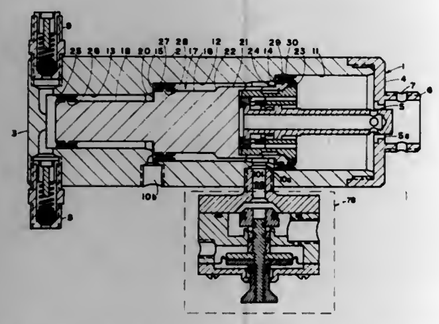


1. A rotor blade structure comprising a root section, and an elongated airfoil section formed of a core of high strength, high modulus fibers embedded in a first matrix material and a sheath of high strength, high modulus fibers embedded in a second matrix material, said first matrix material having a lower yield strength than said second matrix material.

4,111,607
LINEAR HYDRAULIC MOTOR
Chanany Tavor, Carmiel, Israel, assignor to Amiad Systems Ltd., Kibbutz Amiad, Israel
Continuation-in-part of Ser. No. 659,813, Feb. 20, 1976, abandoned, which is a continuation of Ser. No. 437,102, Jan. 28, 1974, Pat. No. 3,939,755. This application Nov. 2, 1976, Ser. No. 738,058
Int. Cl.² F04B 49/00, 49/08
U.S. Cl. 417—46 8 Claims

1. A hydraulic motor comprising a cylinder, a stepped piston reciprocatable in said cylinder and having relatively proportioned leading and trailing surfaces, said surfaces together with axially directed surfaces defining, with the cylinder walls, first, second and intermediate cylinder zones, which intermediate cylinder zone is sealed with respect the first zone, valve controlled inlet and outlet ports in said cylinder in communication with said first zone, a water inlet of said cylinder in communication with said intermediate zone, piston wall portions defin-

ing a cylindrical recess opening out into said second zone and passages serving to effect communication between said recess and said second and intermediate zones, a tubular spool valve rod having an aperture adjacent one end thereof and formed adjacent an opposite end thereof with a pair of axially spaced apart flanges fitting slidingly into said cylindrical recess, said rod having formed thereon an outwardly directed abutment located intermediate said flanges and said one end of said rod, said rod having relatively proportioned leading and trailing surfaces and being reciprocatable with respect to said piston between a first position wherein said second and intermediate zones communicate with each other and wherein there is defined between said opposite end of said rod and a wall of said recess, a region in communication with the interior of the spool valve rod and to which an end surface of said rod is exposed,



and a second position wherein said second and intermediate zones are sealed with respect to each other; said rod extending sealing and slidably through a cylinder wall and being displaceable with respect to said cylinder between a first location wherein the rod aperture communicates with said second zone for causing fluid pressure in the second zone to act on said opposite end of said rod to move the rod from its first position relative to the piston to its second position, and a second location wherein said abutment abuts said cylinder wall for causing movement of the piston relative to the rod to relocate the rod from its second position relative to the piston to its first position, said aperture communicating with the outside of the cylinder when said rod is in said second location and in locations intermediate said first and second locations for venting fluid in the second zone.

4,111,608

GAS LIFT SYSTEM

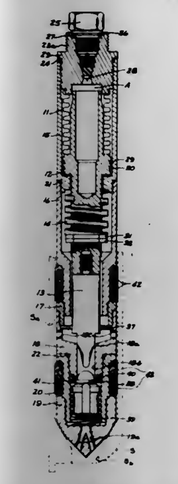
J. Kelly Elliott, Baytown, and Douglas W. Crawford, Houston, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 565,349, Apr. 7, 1975, abandoned, which is a continuation of Ser. No. 195,935, Nov. 5, 1971, abandoned, which is a division of Ser. No. 25,985, Apr. 6, 1970, Pat. No. 3,646,953. This application Feb. 23, 1976, Ser. No. 660,088

Int. Cl.² F04F *1/20*

U.S. Cl. 417—112 **3 Claims**

1. A continuous flow gas lift system for use in a well having tubing through which well fluids are elevated and casing into which injection gas is supplied, comprising: fluid operated unloading valve means on said tubing for conveying fluids from said casing to said tubing during initiation of flow from the well, said unloading valve means opening in response to a predetermined level of pressure in said tubing and closing when said pressure declines to another predetermined level; and casing pressure controlled operating valve means on said tubing below said unloading valve means enabling injection of gas supplied to said casing into a column of fluids contained in said tubing, said operating valve means including a valve body having a flow path extending between inlet means in communication with said casing and outlet means in communication with said tubing, and closure means including seat means and movable valve stem means arranged whereby said flow path is closed by moving said valve stem means into sealing contact with said seat means, said valve stem means having a coun-



toured surface thereon cooperating with said seat means whereby movement of said valve stem means alters the effective size of said flow path in a linear relationship with the pressure of gas at said inlet means for regulating the rate of gas flow through said flow path.

4,111,609

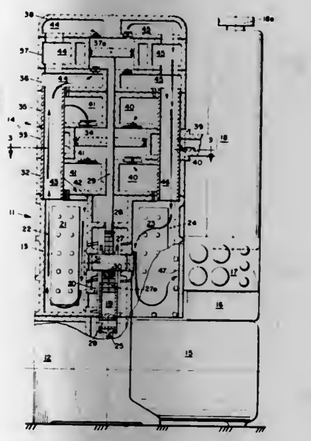
MULTISTAGE GAS COMPRESSOR

Anton Braun, 6421 Warren Ave., Edina, Minn. 55435

Continuation of Ser. No. 624,846, Oct. 28, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 812,687

Int. Cl.² F04B *23/06*

U.S. Cl. 417—243 **5 Claims**



1. A compact multistage gas compressor comprising a substantially box-shaped housing, a plurality of stacked housing sections of substantially equal cross-sectional areas and with axially aligned first and second compressor cylinders therein, pistons in said cylinders for compressing gas in said cylinders, power-driven actuating means in said housing axially spaced from and for operating said pistons, driving means between said actuating means and said pistons, first and second high-

pressure gas receiving chambers alongside of and on opposite sides of said driving means, each of said chambers having a single and strong partition wall between it and said driving means, a gas inlet in said housing leading to said first cylinder, a relatively large first gas passageway in said housing extending between said first cylinder and said first chamber, a relatively large second gas passageway extending through axially aligned openings in said housing sections between said first chamber and said second cylinder, a relatively large third gas passageway extending from said second cylinder through axially aligned openings in said housing sections to said second chamber, an outlet from said second chamber, and liquid-type cooling units mounted in each of said chambers.

4,111,610

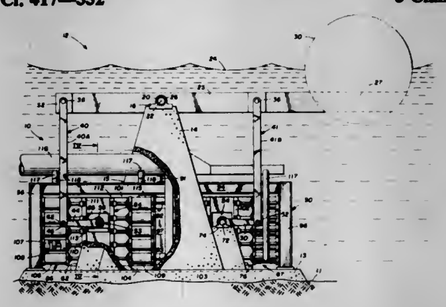
WAVE-POWERED, PIVOTED FLOAT PUMPING SYSTEM WITH INCREASING OPPOSITION TO EXTREME MOVEMENT OF LEVER ARM

Henry C. Brown, 410 Crusader Dr., Dallas, Tex. 75221

Continuation-in-part of Ser. No. 475,453, Jun. 3, 1974, abandoned. This application Aug. 19, 1977, Ser. No. 826,074

Int. Cl.² F04B *17/00, 35/00*

U.S. Cl. 417—332 **3 Claims**



1. A wave powered pumping system adapted for use within a body of water subject to wave motion and adapted to be secured to a foundation fixedly mounted beneath the water surface, the system comprising:

a support structure affixed to the foundation and extending upwardly therefrom toward the water surface;

a beam pivotally connected to the upwardly extending support structure adjacent its upper end for pivotal movement, about a horizontal pivot axis, between first and second extremes of pivotal movement;

a float structure connected to the beam at a location thereon spaced from the pivot axis and adapted to float upon the body of water for causing pivotal movement of the beam as the float structure rises and falls upon the water surface during normal wave motion, the beam having horizontal extension from the pivot axis;

fluid pumping means, having an outlet and having an inlet having communication with the body of water, immovably located relative to the foundation at a location continuously below the surface of the body of water, the fluid pumping means comprising at least one cylinder having a piston reciprocally mounted therein;

power transmitting means, comprising at least one walking beam structure rotatably connected to the beam at a location spaced from the pivot axis and extending downwardly from the beam, below the water surface and operatively connected to the at least one piston of the pumping means, for reciprocally driving the piston; and

non-resilient means, including the power transmitting means, for opposing movement of the beam toward its first and, alternatively, toward its second extreme of pivotal movement with a force which increases as the beam approaches its first, and alternatively, its second extreme of pivotal movement, the increase in force being sufficient to prevent movement of the beam to a respective one of its positional extremes, the means opposing movement of the beam comprising means providing relatively little resistance to reciprocal movement of the float through a mid-range which corresponds to movement of the float upon waves naturally occurring during moderate weather conditions, the means opposing movement of the beam to its positional extremes comprising a rotatable crank assembly having a pinion gear, a driving plate means being provided in connection with the at least one reciprocal piston and mounted for slideable movement with the piston, a linear rack being provided mounted horizontally upon a portion of the driving plate means and drivingly engaged with the pinion gear, the walking beam structure being drivingly connected to the crank assembly.

4,111,611

SUBMERSIBLE PUMP LOCKING SYSTEM

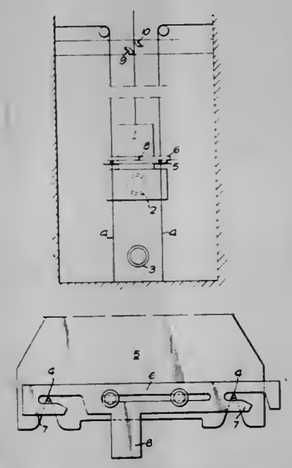
Karl-Gunnar Andersson, Sodertalje, and Karl Evert Sjostrand, Taby, both of Sweden, assignors to ITT Industries, Incorporated, New York, N.Y.

Filed Jul. 29, 1977, Ser. No. 820,199

Claims priority, application Sweden, Oct. 8, 1976, 7611187

Int. Cl.² F04B *17/00*

U.S. Cl. 417- -360 **5 Claims**



1. A device for automatically connecting a submersible pump to a guide disposed in a pumping station, comprising:

at least one guiding means mounted to said pump for engaging the guide;

movable locking means associated with said guiding means for cooperating therewith to lock the guide in the guiding means when in a locked position and to allow for disconnection of the pump from the guide in an unlocked position; and

operating cams mounted in said pumping station at a level somewhat below the upper end of the guide for engaging the locking means to automatically move the locking means to a locked and unlocked position respectively when the pump unit is lowered and raised.

4,111,612

HERMETIC COMPRESSOR LUBRICATION SYSTEM

Andrew Waclaw Paczuski, Bristol, Tenn., assignor to Sundstrand Corporation, Rockford, Ill.

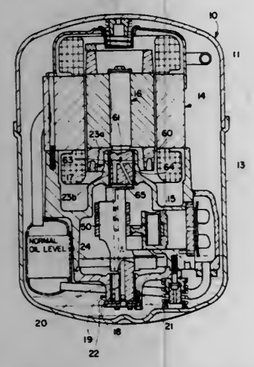
Filed Apr. 7, 1977, Ser. No. 785,713

Int. Cl.² F04B *17/00, 39/02*

U.S. Cl. 417—372 **6 Claims**

1. In a hermetic refrigerant compressor including, a hermetically sealed housing, an electric motor mounted within said housing, a crankshaft connected to and depending from said

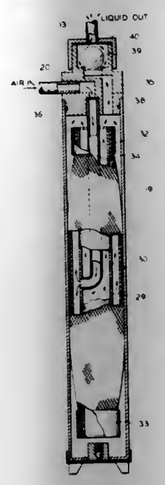
motor to extend into a sump of lubricant within the housing, a bearing support in said housing and including a space defining a lubricant-receiving chamber for adjacent bearing surfaces within said support, means supported within said housing and drivingly connected with said crankshaft for compressing refrigerant gases from within said housing, the improvement in said compressor comprising a lubrication system for supplying lubricant to said chamber including, a cross-bore formed diametrically through said shaft and having first and second segments extending in generally opposite directions and communicating directly with said lubricant-receiving chamber, said first segment having a radial length shorter than the radial



length of said second segment and an outlet opening into said lubricant-receiving chamber, said second segment having an inlet opening from said chamber, supply means within said shaft intersecting with said cross-bore between said first and second segments for supplying lubricant to said cross-bore, and a venting duct within said shaft communicating between the interior of said housing and said second segment intermediate the ends thereof so that, as said shaft is rotated, lubricant flows through said first segment and into said chamber whereby refrigerant gases in said chamber are driven by said lubricant away from the outlet of said first segment, into the inlet of said second segment and through said second segment to said venting duct for discharge into the interior of said housing.

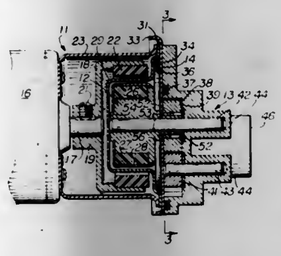
4,111,613
BLADDER ACTUATED PUMPING SYSTEM
Charles Richard Sperry, Wilton, Conn., assignor to Sealed Air Corporation, Saddle Brook, N.J.
Filed Feb. 22, 1977, Ser. No. 770,527
Int. Cl.² F04B *43/10, 45/06*
U.S. Cl. 417—394 **9 Claims**

1. A pump comprising a tubular casing, fluid inlet means at one end of said casing, fluid outlet means at the other end of said casing, a tubular support member positioned in said casing in substantial axial alignment therewith, an elastic pumping member disposed about the outer surface of said tubular support member, pump means for expanding and contracting said elastic pumping member so that it alternately expands and seals against the inner surface of said tubular casing and contracts back to said tubular support member, and a fluid flow path through said tubular support member which connects said inlet means to said outlet means, said fluid flow path being fluidly connected to a volumetric area which is partially defined by at least a portion of the exterior of said elastic pumping member disposed closest to said one end of said casing and which



volumetric area fluidly communicates with said fluid inlet means.

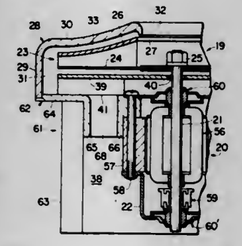
4,111,614
MAGNETICALLY COUPLED GEAR PUMP CONSTRUCTION
Thomas B. Martin, Pleasant Hill, and Ferdinandus A. Pieters, Walnut Creek, both of Calif., assignors to Micropump Corporation, Concord, Calif.
Filed Jan. 24, 1977, Ser. No. 761,867
Int. Cl.² F04B *35/04, 9/00*
U.S. Cl. 417—420 **6 Claims**



1. A magnetically coupled gear pump comprising an annular drive magnet, a prime mover for rotating said drive magnet, an annular driven magnet, driven magnet mounting means holding said driven magnet in proximity to said drive magnet, a non-magnetic separator cup interposed between said magnets, said cup having a peripheral flange, a pump body formed with a face with a gear cavity recessed into said face, drive and driven gears in said cavity, said body formed with inlet and outlet ports leading from the exterior of said pump body to said cavity on opposite sides of said gears, first and second shafts supported parallel to each other by said body and extending into said cavity and supporting said drive and driven gears for rotation on said shafts, respectively, said first shaft extending beyond said body and also rotatably supporting said driven magnet mounting means, a plate formed with an aperture and supported across said face of said body, said plate being sealed to said body and to said peripheral flange of said separator cup, said plate substantially closing off said cavity and also closing off said separator, said first shaft extending through said aperture and cooperating means on said driven magnet mounting

means and said drive gear whereby, as said drive magnet causes rotation of said driven magnet, said driven magnet rotates said drive gear.

4,111,615
FLUID EXHAUSTING DEVICE
Iwao Watanabe, Kadoma, Japan, assignor to Matsushita Electric Industrial Company, Limited, Japan
Filed Jun. 17, 1976, Ser. No. 697,123
Claims priority, application Japan, Jun. 18, 1975, 50-74854; Sep. 30, 1975, 50-134510[U]; Sep. 30, 1975, 50-134516[U]; Sep. 30, 1975, 50-134520[U]
Int. Cl.² F04B *17/00*
U.S. Cl. 417—423 A **24 Claims**

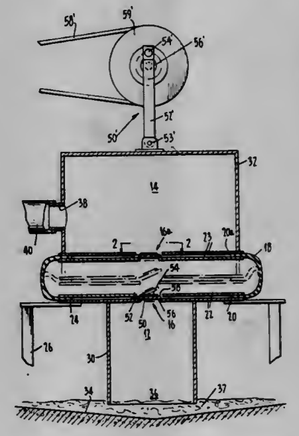


1. A fluid exhausting device comprising, in combination, a centrifugal fan unit including a rotor having an axis of rotation and formed with a central opening having a center axis substantially coincident with said axis of rotation and a plurality of rotor blades extending radially outwardly from said central opening and a rotor housing enclosing the rotor and having a generally cylindrical side wall portion defining an annular passageway substantially coaxially surrounding the rotor, said rotor housing having a fluid inlet opening adjacent the central opening in the rotor, a driving unit positioned opposite to said fluid inlet opening across said rotor and drivingly connected to the rotor, a housing structure fixedly secured to the rotor housing and enclosing the driving unit for providing a fluid outlet passageway surrounding at least part of the driving unit, the housing structure being in constant communication with said annular passageway in the rotor housing, and formed with at least one opening through which said outlet passageway is vented to the atmosphere, a plurality of stationary guide vanes located between said annular passageway and said outlet passageway and elongated generally radially away from an extension of said axis of rotation of said rotor, said annular passageway having a portion which is in substantially coaxially surrounding relationship to said first guide vanes, and a plurality of second guide vanes located in said outlet passageway immediately downstream of said first guide vanes and extending generally radially about said extension of the axis of rotation of said rotor.

4,111,616
FLEXIBLE WALL PUMP
Andrew Francis Rankin, Pannoo Rd., Lockington, Victoria, Australia
Filed Nov. 16, 1976, Ser. No. 742,525
Int. Cl.² F04B *45/00, 11/00*
U.S. Cl. 417—472 **2 Claims**

1. A sludge pump having a casing defining a variable volume enclosed work chamber having a pair of spaced apart plates forming a separation therebetween, each of said plates being one of two closely spaced circular plate segments; and an endless flexible wall portion being formed broader than said separation formed by said plates and joining the respective edges of said plates said flexible wall portion being clamped between said plate segments; said plates as joined defining a U-shaped cross-section between closest points on the peripheral edges of said respective plates; pressure sensitive one-way inlet and outlet ports disposed in said respective plates, which ports are opposite to one another being urged into position by flexible flaps seated between the respective sets of said plate segments; said ports providing fluid-flow communication between said work chamber and respective inlet and outlet chambers disposed exteriorly of the work chamber;

means acting on said casing for periodically varying the volume of the work chamber; said pump being further defined by: said inlet and outlet chambers being bounded by respective first and second wall structures secured to associated structures of said plates, said first wall structure extending directly to an opening opposite said respective plate and said inlet port therein, whereby said opening and



said inlet and outlet ports are substantially in line, and the outlet chamber being wholly enclosed except for an outlet opening therefrom, being so disposed relative to the respective plate to which the second wall structure is secured, to form an air dome outwardly of said outlet opening; and

wherein said means acting on said casing being coupled to the center of the said second wall structure is in line with said one-way inlet and outlet ports for rocking back and forth said second wall structure, said air dome and said plate to which said second wall structure is attached, about a horizontal axis while periodically varying the volume of said work chamber.

4,111,617
ROTARY PISTON MECHANISM
Richard A. Gale, Main St., Vineyard Haven, Mass. 02568, and Donald L. Kahl, 62 Pleasant Hill Dr., Scituate, Mass. 02066
Filed Sep. 25, 1975, Ser. No. 616,672
Int. Cl.² F02B *53/00*
U.S. Cl. 418—61 B **30 Claims**

1. A rotary piston mechanism for internal combustion engines, fluid motors, pumps and the like comprising,

an outer body having means forming a chamber therein,

a rotor confined in said chamber, said chamber having a chamber axis circumscribed by curved side walls,

said rotor being generally elongated, and having a rotor axis centrally located therein and parallel to said chamber axis,

a rotor carrier rotatably supported by the outer body for rotation on the chamber axis,

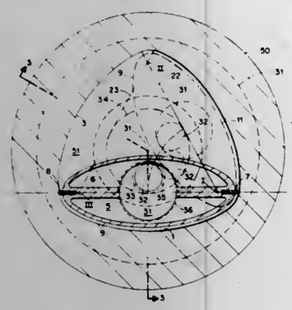
a first axle rotatably carried by the rotor carrier eccentric of the chamber axis and parallel thereto,

first gear means acting between the first axle and the outer body for rotating said axle when the rotor carrier rotates,

a second axle attached to and eccentric with respect to the first axle,

the rotor being rotatably carried on the second axle concentric with the rotor axis and

second gear means acting between the rotor and the rotor carrier for rotating the rotor on the second axle,



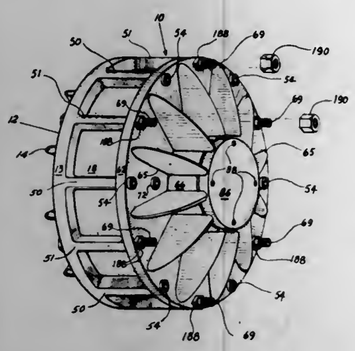
whereby the rotor rotates continuously in one direction, closing successively with said walls a multitude of times with each revolution of the rotor carriers.

4,111,618

HYDRAULIC WHEEL II

Olida Thibault, 390 De la Briquade, Blainville, Terr. P.Q., Canada (J7C 2C8)

Filed Apr. 23, 1976, Ser. No. 679,652
Int. Cl.² F03C *3/00*; B60K *7/00*
U.S. Cl. 418—152 **18 Claims**



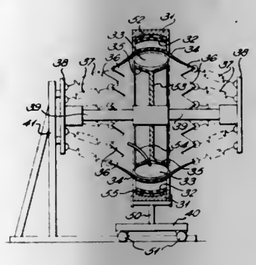
1. A light weight fluid motor having reversed position vanes revolving with and inside a cylindrical plastic rotor means around an inclosed plastic stator; said rotor means being supported on a basic stationary metal spindle by frictionless bearing means; said spindle affixing interiorly said stator releasably; said spindle being adapted to cycle powering fluid in and out of said stator; said stator having at least two shallow arcuated fluid power chambers molded on its circumference; both sloping ends of said chambers communicating respectively with a pressure feeding first major manifold and a drooping pressure exhausting second major manifold; said slopes having fluid pressure control means; said major manifolds being in communications, through said spindle, with an exterior fluid power generating source; said rotor means comprising a cylindrical plastic housing box enclosing an annular plastic power ring in floating positive engagement with by releasable driving means; the bottom of said box having inserted reinforcing tubes, both ends of which communicating with the interior of said housing box; said power ring encircling the camming contour of said stator body with minimal operable clearance; the inside periphery of said power ring being copulated by a plurality of radially slidable plastic vanes in cooperative slots; said vanes being biased inwardly in liquid sealing contact with said camming contour by resilient means; a plurality of powering vanes, descending successively in the power chambers, being repulsed in sliding trajectory by incoming pressurized powering fluid; said powering vanes relaxing when approaching the ascending slopes to expel out drooping pressure fluid in said exhausting manifold; the other vanes, sliding idlingly on the major camming arcs, serving as liquid sealing barriers between the adjacent power chambers; said power ring having collecting chambers for the leak-off fluid between the vanes and their slots; two annular plastic seal plates serving as, constant lubricated contact, side walls for said power chambers; said seal plates being positioned as pistons in cooperative pressure chambers molded in both end plates of said housing box; said seal plates overlapping partially both faces of said power ring and stator body with clasping force supplied by resilient and fluid pressure means inside said pressure chambers; said seal plates being in loose positive engagement with both housing end plates by releasable driving means; said seal plates rotating with the housing and the power ring; said seal plates sliding on a portion of both faces of said stator body; said pressure means inside the pressure chambers communicating with said power chambers through feeding minor manifolds embedded in the plastic mass of said stator body; said minor manifolds communicating with said major manifolds; said minor manifolds feeding also said friction relaxing means between the rubbed faces of said seal plates and stator body; uni-directional valves being interposed between the minor and the major manifolds to control flow directions to said friction relaxing means; said wheel motor having equal efficiency in both directions of rotation and capable of dynamic braking; a scavenging system means for exiting interior leak-off fluid out of said motor; said leak-off lubricating the interior moving parts; sealing means between said spindle and motor housing preventing exterior spoilage of said leak-off, being recuperable by recycling means.

4,111,619

APPARATUS FOR PREPARING TREAD BANDS FOR USE IN TIRE RETREADING

Jan Herbert Farquharson Kent, St. Martin, Jersey, Channel Islands, assignor to Beverly Limited, England

Filed Apr. 21, 1977, Ser. No. 789,621
Claims priority, application United Kingdom, Apr. 23, 1976, 789621/76
Int. Cl.² B29H *5/02*
U.S. Cl. 425—43 **12 Claims**



1. A sinker unit for preparing an annular unvulcanised tread band from a strip of unvulcanised tread material, comprising

(a) an annular mould for supporting the strip of tread material on the inner surface of the mould

(b) an expandable annular sinker member located inwardly of the mould for forcing the strip of tread material against the inner surface of the mould, the sinker member comprising a ring of resilient material which is capable of uniform circumferential expansion and contraction over its whole length, the ring including an annular central zone for contacting the strip of tread material and a side wall extending outwardly from each side of the central zone with each side wall being resiliently biassed outwardly, and

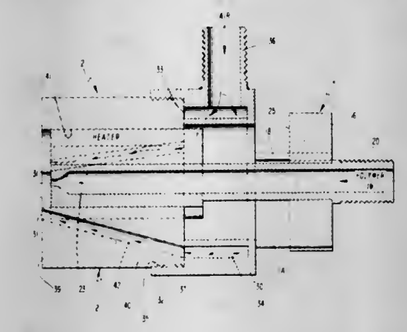
(c) means located radially inwardly of the sinker member for forcing the sinker member against the strip of tread material, the sinker member being maintained in a tensioned condition, by means of the resilient bias, during its movement against the strip.

4,111,620

HEATED SPRAY SPINNING NOZZLE AND ATTENUATION SYSTEM

Victor J. Lin, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jun. 1, 1977, Ser. No. 802,384
Int. Cl.² D01D *5/12*
U.S. Cl. 425—66 **8 Claims**



1. A spray spinning nozzle for producing a substantially continuous filament from molten synthetic resinous material comprising:

nozzle means for advancing the material to be shaped into a filament, having an axis, a first end, a second end and a peripheral surface and including

an extrusion orifice for shaping the filament, positioned at the first end coaxially with respect to the axis,

mounting means at the second end for connecting the nozzle means in fluid communication with a source of the material, and

a plurality of circumferentially spaced recesses in the peripheral surface, each being generally parallel to the axis;

attenuating means for supplying at least three gaseous jets spaced about the axis, each jet being oriented to converge on the axis at the same point, the attenuating means being coaxial with the axis and including an annular manifold defining a plenum, and a jet housing extending forwardly from the manifold and including

an inner peripheral wall conforming to the peripheral surface and having a plurality of complimentary longitudinal recesses correspondingly positioned with the plurality of circumferentially spaced recesses and cooperating therewith to define a plurality of pockets, and

a plurality of spaced jet passages communicating with the plenum and aligned to converge on the axis downstream of the extrusion orifice; and

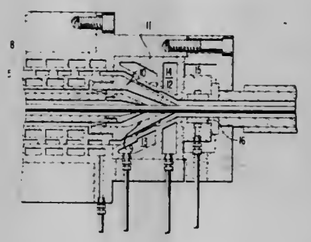
heating means positioned in the plurality of pockets for supplying heat to the nozzle means.

4,111,621

APPARATUS FOR MANUFACTURING ELECTRIC WIRE HAVING A COATED LAYER OF CROSS LINKED SYNTHETIC RESINOUS MATERIAL

Kanji Otani, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 16, 1976, Ser. No. 697,095
Claims priority, application Japan, Jun. 17, 1975, 50-73921
Int. Cl.² B29F *3/10*; B29C *1/04*
U.S. Cl. 425—97 **6 Claims**



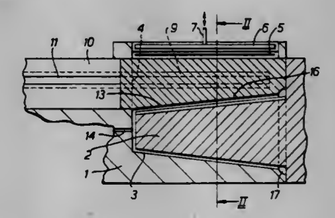
1. Apparatus for forming a cross linked synthetic resin coating on a conducting wire, comprising, an extruding means for extruding a synthetic resin having a crosslinking agent therein onto a conducting wire passing therethrough, a screw head and a forming head block positioned at the end of said extruder to form a conical passage for said resin extruded by said extruder, a forming die having a cylindrical passage positioned to receive said wire and said resin which passes through said conical passage to shape the resin around said wire, at least one of said screw head and said forming head block having a projection which extends into said conical passage to form an orifice wherein the temperature of said resin is raised to assist the cross linking reaction, and a cross linking reaction pipe positioned downstream of said forming die for receiving said wire and resin coating.

4,111,622

PRODUCTION OF CONTAINERS

Brian Leo Chudleigh Sutch, Thames Ditton, England, assignor to Airfix Industries Limited, London, England

Filed Dec. 10, 1976, Ser. No. 749,340
Int. Cl.² B29D *3/00*
U.S. Cl. 425—112 **10 Claims**



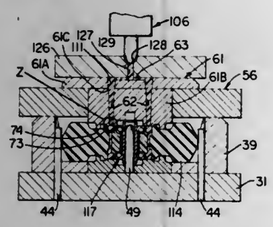
1. Apparatus for making a receptacle having a peripheral wall extending axially of the receptacle between a closed end portion and an open end thereof, the apparatus comprising a cavity tool having a peripheral wall, the internal surface of said cavity tool peripheral wall forming a blank cavity corresponding to the external surface of a receptacle to be formed therein from a blank, and a core tool receivable by the cavity tool to form a mould cavity, the tools being movable between an open position and a closed position such that when the tools are in the closed position, a blank placed in the cavity tool is so formed that two juxtaposed edges extending axially of the cavity tool will be seamed upon injection of material into the mould cavity, the cavity tool including a passage in the peripheral wall of the cavity tool, said passage extending axially

relative to the cavity tool peripheral wall internal surface a length at least as great as the axial extent of a blank formed therein and being provided with an entrance remote from the internal surface of the cavity tool peripheral wall and an exit at the internal surface of the cavity tool peripheral wall, an obturator operatively associated with the cavity tool passage and movable between an open and closed position such that the obturator forms a part of the internal surface of the cavity when in the closed position, means operatively associated with the cavity tool passage entrance for positioning a blank to be driven into the blank cavity of the cavity tool, blank drive means operatively associated with the cavity tool and movable into the cavity tool passage for driving a positioned blank into the cavity of the cavity tool, the blank drive means being operable to drive a blank into the blank cavity where it remains confined against its inherent resilience by the internal surface of the cavity tool, and an injection passage associated with the mold cavity, whereafter, when the core tool and cavity tool are in a closed position forming the mold cavity and the obturator is in the closed position, injection of material through the injection passage and into the mold cavity will seam the juxtaposed edges of the blank and seam a member forming the closed end of the receptacle to the blank.

4,111,623
APPARATUS FOR ASSEMBLING BEARING UNIT IN A WHEEL

John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.

Filed Sep. 16, 1976, Ser. No. 723,926
Int. Cl.[2] B29F *1/10*
U.S. Cl. 425—129 R 10 Claims



1. In an apparatus for use in assemblying a bearing assembly in a wheel having a hole in the center thereof of a diameter greater than the outer diameter of said bearing assembly, said bearing assembly including an axle, a sleeve spaced radially outwardly from said axle and having at least a small amount of resiliency and bearing means positioned between said axle and said sleeve to facilitate a relative rotation between said axle and said sleeve, the improvement comprising:

mold means having a bottom part with means defining a cavity therein and a cover part movable between opened and closed position relative to said cavity;

first alignment means defining a central axis in said cavity, said first alignment means supporting said bearing assembly in said cavity and in a position wherein the central axis of said bearing assembly is coaxial with said central axis of said first alignment means;

second alignment means in said cavity supporting said wheel to effect a placement of the center of the outer diameter of said wheel in coaxial relationship with said central axis of said first alignment means;

nozzle means on said mold means aligned with the spacing between said sleeve of said bearing assembly and the internal wall surface of said hole in said wheel when said cover means is in said closed position;

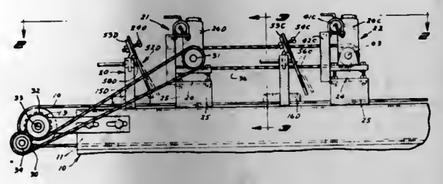
means on said bottom part and said cover part of said mold means effecting an axial compression of said resilient sleeve of said bearing assembly in response to a closing of said cover part to form an annular seal between said sleeve and said mold means at both axial ends thereof; and

supply means supplying a moldable, synthetic resin material to said nozzle means and the spacing to effect, upon a congealing of said moldable, synthetic resin material, a securement of said bearing assembly in said hole in said wheel, said seal preventing a flow of said resin material therepast thereby maintaining said bearing means free of contamination by said resin material.

4,111,624
DOUGH PIECE IMPRINTER AND CONTROLS THEREFORE

Douglas R. Hanson, 1720-9th Ave. So., Anoka, Minn. 55303

Filed Oct. 28, 1976, Ser. No. 736,382
Int. Cl.[2] A21C *11/02*
U.S. Cl. 425—135 10 Claims



1. A dough imprinting device for use in combination with a conveyor means for imprinting characters onto dough pieces being transported by said conveyor means, said dough pieces being arranged in lines of a plurality of dough pieces substantially parallel to the direction of movement of said conveyor means and said dough pieces being spaced apart in direction along said lines, said device including separate sensor means for each line of dough pieces on the conveyor means sensing the position of each of the dough pieces in each of the lines and providing a signal indicating a known position of each dough piece in each line, and a separate imprinter device for each line of dough pieces, each imprinter device comprising a rotating block member carrying individual indicia to be imprinted at a plurality of annularly spaced locations at the outer edge thereof, each block member clearing said dough pieces except at the location of said indicia thereon, means to rotationally mount and frictionally drive each block member about a central axis, separate means to restrain rotational movement of each block member at a plurality of rotational positions each of which is a position with the block member clearing dough pieces on the conveyor means, said separate means to restrain being movable to a position to permit rotational movement of its associated block member, and control means responsive to receipt of said signal from the respective corresponding sensor means to move each means to restrain to position to permit its associated block member to rotate only sufficiently far for one of said indicia to imprint a dough piece sensed by the sensor means for that block member subsequent to receiving a signal from the respective sensor means and to release said means to restrain to return it to position restraining said block member prior to the time second indicia on the associated block member moves to an imprinting position.

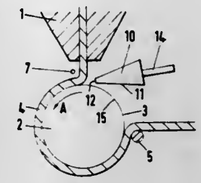
4,111,625
POLYMERIC FILM PRODUCTION

Timothy Alan Remmington, Hertford, England, and William Robinson, Dumfries, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 599,349, Jul. 28, 1975, Pat. No. 4,038,354.
This application Dec. 8, 1976, Ser. No. 748,404
Claims priority, application United Kingdom, Aug. 7, 1974, 34781/74
Int. Cl.[2] B29D *7/22*
U.S. Cl. 425—174.8 E 11 Claims

1. An apparatus for extruding and quenching a polymeric film, which comprises an electrically earthed movable casting surface arranged to receive extruded molten polymeric film, said casting surface moving at a linear speed greater than the

speed at which bubbles can be prevented from being entrapped between the molten film and the casting surface when electrostatic pinning is employed alone, an electrostatic pinning electrode supported in spaced relation to the path of the molten film in the proximity of or prior to the region of first contact of

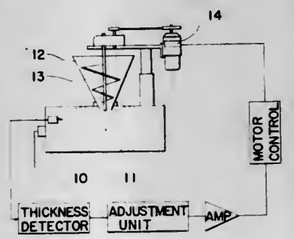


the film with the casting surface, and means adjacent said casting surface for applying suction to the space bounded by the path of the molten film prior to its first contact with the casting surface and that part of the casting surface prior to the region of first contact with the molten film.

4,111,626
POWDER COMPACTING MACHINE

Yoshiro Funakoshi, Kyoto; Tatsuo Asogawa, Osaka; Eiichi Satake, Suita; Shimesu Motoyama, Asaka; Shuri Yamada, Tokyo, and Morio Kakukawa, Tokyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 29, 1976, Ser. No. 653,627
Claims priority, application Japan, Feb. 27, 1975, 50-24816; Apr. 21, 1975, 50-48892; Jun. 27, 1975, 50-80341
Int. Cl.[2] B29C *15/00*
U.S. Cl. 425—203 5 Claims



1. A powder compacting machine for manufacturing a compressed product fom powdery material which comprises:

first and second compressing rolls, one of said first and second compressing rolls being supported in position for movement of the periphery thereof toward and away from the periphery of the other of said first and second compressing rolls, one of said first and second compressing rolls having an outer peripheral surface having a complementary shape to that of the other of said first and second compressing rolls such that a mass of the powdery material passing through the gap defined between said first and second compressing rolls will receive a substantially uniform compressive force necesssary to compress said powdery material, the outer peripheral surface of one of said first and second compressing rolls has a radially inwardly extending annular recess intermediate the width of said one of said first and second compressing rolls having a depth of from 0.5 to 10mm, said recess being defined by a pair of opposed side walls each being inclined at a predetermined obtuse angle of from 95° to 160° to the bottom of said recess, the other of said first and second compressing rolls having a radially outwardly extending rim on the outer peripheral surface thereof having a shape complementary to the shape of said annular recess, the surfaces defining said annular recess and the outer surfaces of said rim cooperating with each other to define said gap, and the material of the rolls at least at said outer peripheral surfaces of said rolls being incompressible under the forces generated on the powder material being compacted;

means coupled to said first and second compressing rolls for driving said first and second compressing rolls in opposite directions to each other so that the mass of the powdery material falling downwardly will be fed further downwardly through the gap between said first and second compressing rolls;

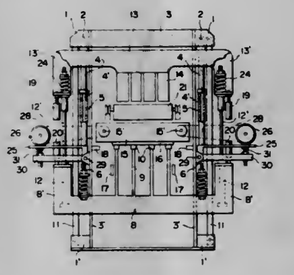
a hopper assembly above said rolls and having a built-in scew feeder for accommodating said powdery material and for positively feeding the mass of the powdery material in a downward direction towards the gap between siad first and second compressing rolls;

means between said hopper assembly and said rolls for substantially uniformly dispensing the mass of powdery material falling from said hopper assembly towards said gap between said first and second compressing rolls over the width of said gap.

4,111,627
APPARATUS FOR MOLDING CONCRETE-BLOCKS

Yutaka Kitahara, Takahashi, Japan, assignor to Kabushiki Kaisha Tiger Machine Seisakusho, Takahashi, Japan

Filed Mar. 29, 1977, Ser. No. 782,382
Int. Cl.[2] B28B *3/04*
U.S. Cl. 425—421 18 Claims



1. An apparatus for molding concrete-blocks comprising:

a plurality of guide rods secured to an upper support member and a lower support member, said support members being fixedly mounted on a pair of side plates of said apparatus;

a plurality of upper cylinders, each of which includes a piston rod, and which are positioned adjacent to said guide rods and suspended vertically, each of said plurality of upper cylinders including an upper end member being pivotally mounted on said upper support member;

a plurality of suspension members corresponding in number to said piston rods of said upper cylinders and being mounted on a table frame through spring means, wherein a lower end of each of said piston rods of said upper cylinders is connected with each of said suspension members, thereby suspending said table frame;

a plurality of lower cylinders, each of which includes a piston rod, and which are mounted on said table frame through support members thereon;

said plurality of lower cylinders being positioned in parallel with said guide rods, and being disposed on each side of a press frame with said piston rods of said lower cylinders being connected to said press frame through spring means;

a molding box between said table frame and said press frame;

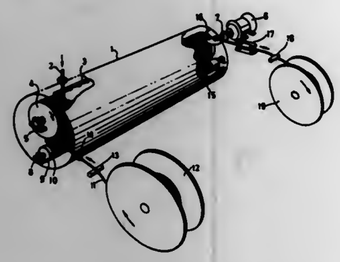
at least one operation limiting member fixed on each side of said table frame which corresponds in number and position to and faces said operation limiting member fixed on each side of said press frame.

4,111,628

APPARATUS FOR VULCANIZING CONTINUOUS LENGTHS OF FLEXIBLE MATERIAL

Challen E. Taylor, Portadown, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 664,606, Mar. 8, 1976, Pat. No. 4,053,550, which is a continuation-in-part of Ser. No. 506,386, Sep. 16, 1974, abandoned. This application Jul. 5, 1977, Ser. No. 817,090
Claims priority, application United Kingdom, Oct. 29, 1973, 506386/73
Int. Cl.² B29H *5/01;* B29C *25/00;* B29H *5/28*
U.S. Cl. 425—445 4 Claims



1. Apparatus for vulcanizing a continuous length of unvulcanized elastomeric or plastomeric material comprising:

a closed chamber having an input port for receiving unvulcanized material and an exit port for discharging vulcanized material while maintaining vulcanization pressure and temperature within the chamber;

a pair of rolls mounted on parallel spaced-apart horizontal axes within the chamber, at least one of the rolls having a larger diameter than the other and the distance between the roll axes is such that a substantial portion of the material passing into the chamber and carried by the rolls is self-supporting and free of any contact with either roll surface, and at least one of the rolls comprises a substantially contoured surface such as to position convolutions of the material thereon and cause the material to move in a substantially helical path from the entry port to the exit port while it is being vulcanized within the chamber; and

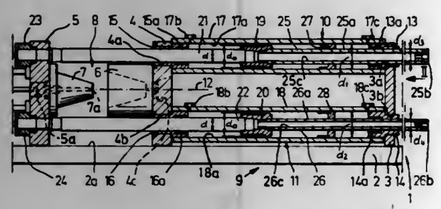
a drive motor connected to one of said rolls to effect rotation of the roll and movement of the hose through the chamber.

4,111,629

CLOSURE DEVICE FOR AN INJECTION MOLDING MACHINE OR INJECTION PRESS

Thomas Nussbaumer, Zug, Switzerland, assignor to Patent & Inventions Ltd., Zug, Switzerland

Filed Apr. 11, 1977, Ser. No. 786,685
Claims priority, application Switzerland, Apr. 9, 1976, 4506/76
Int. Cl.² B29F *1/06;* B30B *1/00*
U.S. Cl. 425—451.2 6 Claims



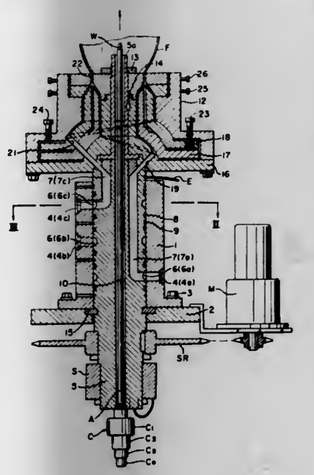
1. In a closing unit for an injection moulding machine or transfer moulding press with a frame (1), a first tool carrier (4) fixedly connected therewith, a second displaceable tool carrier (5) and hydraulic displacing devices (10, 11), which are eccentrically arranged with respect to the tool carriers (4, 5) and of which each displacing device (10, 11) possesses a hollow cylinder (17, 18) fastened to the frame (1) and a piston (19, 20), which is displaceably guided in the hollow cylinder (17, 18), each piston (19, 20) being provided on one side with a first shaft (21, 22) and on the other side with a second shaft (25, 26), wherein the first shafts (21, 22) are arranged in such a manner that they are drawn into the hollow cylinders (17, 18) when the tool carriers (4, 5) are brought nearer to each other, and wherein one each of the two shafts (21, 22, 25, 26) of the pistons (19, 20) is fixedly connected with the second tool carrier (5), the improvement which comprises: that at least two first pistons (19) are provided in respective hollow cylinders (17), the first shaft (21) of each first piston (19) having a smaller diameter than its associated second shaft (25), that at least two second pistons (20) are, provided in respective hollow cylinders (18), the first shaft (22) of each second piston (20) having a greater diameter than its associated second shaft (26), all said first shafts (21, 22) being connected with the second tool carrier (5), each hollow cylinder (17, 18) having an inside diameter (17*a*, 18*a*) greater than the outside diameter of the respective first and second piston (19, 20) associated therewith, the difference between each cylinder diameter and its associated piston diameter defining an annular gap therebetween and a valve closing ring (27, 28) arranged in each hollow cylinder (17, 18) between the inside diameter (17*a*, 18*a*) of such cylinder and the outside diameter of the second shaft (25, 26) of the piston associated with such cylinder, means forming a seal between each valve closing ring (27, 28) and the inside diameter (17*a*, 18*a*) of the cylinder (17, 18) associated therewith and between each valve closing ring (27, 28) and the second shaft (25, 26) of the piston associated with such cylinder, each valve closing ring (27, 28) having valve seat means (27*d*, 28*d*) for sealingly engaging the piston (19, 20) associated therewith.

4,111,630

MULTI-CORE ROTARY CIRCULAR DIE

Kozen Shiomi, and Ryoichi Shimizu, both of Yokohama, Japan, assignors to Toyo Soda Manufacturing Co., Ltd. and The Japan Steel Works Limited, Tokyo, both of Japan

Filed Jun. 11, 1976, Ser. No. 695,048
Claims priority, application Japan, Jun. 13, 1975, 50-70946
Int. Cl.² B29D *23/04*
U.S. Cl. 425—462 13 Claims



1. In a multi-core rotary circular die for preparing multilayer tubular film comprising an elongate inner core which is rotatably fitted in an elongate hollow cylindrical body and a plurality of middle cores having at least semi-spherical surfaces affixed to one end of the inner core which are fitted in a circular die, the improvement comprising:

said hollow cylindrical body having molten resin inlets formed radially therein and formed at vertically separated positions;

said inner core having annular resin storage channels therein and communicating with said inlets of said hollow cylindrical body;

said inner core further having longitudinally extending resin passages which correspond to each of the annular storage channels to form corresponding layers of the multi-layer tubular film;

said at least semi-spherical surfaces of said middle cores being connected to a die lip of said die;

said middle cores being adjustably fitted on said one end of said inner core and in the circular die with at least part of the at least semi-spherical surfaces being in contacting relation; and

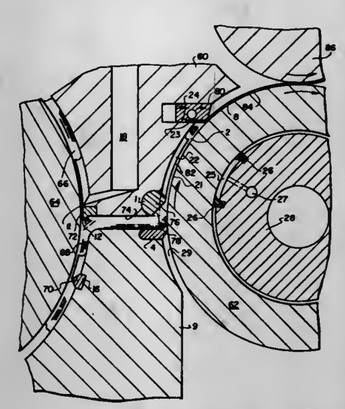
a slant tapered groove formed on one of the at least semi-spherical surfaces of each of said middle cores, the inner core and the circular die wherein the slant tapered groove is disposed in a plane forming an angle with respect to the longitudinal axis of said inner core.

4,111,631

EXTRUSION DEVICE HAVING INTERMEDIATE EXTRUDER

Ernesto Gabbrielli, P.za Giovanni XXIII, Montale (PT), Italy

Division of Ser. No. 722,525, Sep. 13, 1976, abandoned. This application Apr. 14, 1977, Ser. No. 787,500
Claims priority, application Italy, Sep. 17, 1975, 455143 A/75
Int. Cl.² B29D *7/14*
U.S. Cl. 425—215 5 Claims



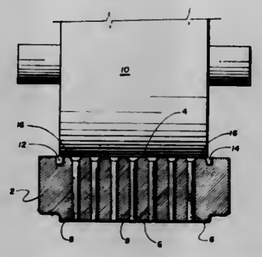
1. An extrusion device for extruding pasty and thermoplastic materials, comprising a housing having a wall, a first rotor rotatably mounted in said housing and having a peripheral surface spaced from said wall and defining with said wall a first material infeed passage portion and an extrusion passage portion, a second material infeed passage defined in said wall communicating centrally with and between said first material infeed passage portion and said extrusion passage portion, a first adjustable extrusion device extending into said extrusion passage portion by an amount to extrude material flowing from said first material infeed passage to said extrusion passage portion to cause it to form into a layer spaced from said wall and to move over said first rotor, a second adjustable extrusion device projecting into said extrusion passage downstream of said first adjustable extrusion device, said second adjustable extrusion device and said first adjustable extrusion device being adjusted so that said extrusion passage does not remain full and is thus without pressure, said second adjustable extrusion device being set to effect a build-up of material therebehind and to form a laminate of the buildup material with the layer on said first rotor to effect a boundary layer breaking up of the extruded layers as they pass by said second adjustable extrusion device, and including bypass means associated with said second extrusion device for bypassing a portion of the material accumulated in said extrusion passage behind said second extrusion device.

4,111,632

PELLET MILL DIE

Richard Hazen Leaver, Muncy, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 20, 1977, Ser. No. 808,192
Int. Cl.² B29F *3/04*
U.S. Cl. 425—382 R 1 Claim



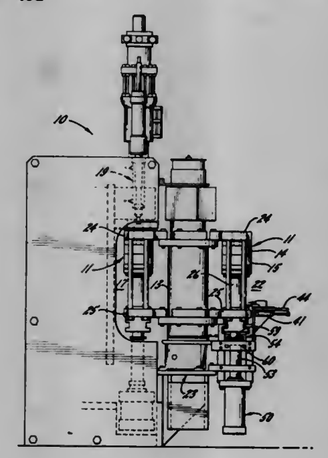
1. An improved pellet mill apparatus comprising a die having a compression side operatively associated with an extrusion roll means, said die also having a discharge side, a plurality of die holes extending through the die from the compression side to the discharge side, the die holes being arranged in rows, a pair of tapered grooves in the compression side of the die, the grooves being located along the outer row of die holes so that the ends of the extrusion roll means are positioned over the grooves.

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MECHANISM FOR OPENING THE MOLDING DIES OF AN INJECTION MOLDING MACHINE

Kenneth F. Gabrys, Streamwood, Ill., assignor to The Pentaject Corporation, Algonquin, Ill.

Filed Aug. 8, 1977, Ser. No. 822,732
Int. Cl.² B30B *9/28, 11/08;* B29G *3/08*
U.S. Cl. 425—451 5 Claims



1. A molding machine comprising a fixed support, a turret mounted on said support and adapted to be indexed step-by-step about an upright axis, a series of molding units carried on and spaced angularly around said turret and each adapted to be rotated into and to dwell momentarily in an opening station during indexing of said turret, each of said molding units com-

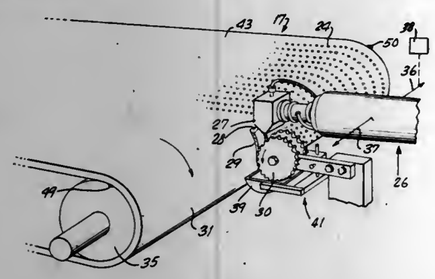
prising upper and lower molds, the lower mold of each unit being disposed in a closed position relative to the upper mold when the unit is first rotated into said opening station and being moved downwardly to an open position relative to said upper mold when the unit dwells in said opening station, an operating member connected to and depending from the lower mold of each unit, a vertically reciprocable puller located on said support in said opening station, said puller being operable to interfit automatically with the operating member of each unit when the unit is rotated into said opening station and the puller is in a first position and being operable to engage said operating member and move said lower mold to said open position when the unit dwells and the puller is shifted downwardly to a second position, means for biasing said puller away from said first position as each unit is rotated into said opening station, a stop engageable with said puller when the latter is in said first position and operable to hold said puller precisely in said first position against the force exerted by said biasing means so as to keep said puller in position to interfit with the operating member of the unit being rotated into said opening station, and means for shifting said stop out of holding engagement with said puller when said unit dwells thereby to enable said puller to move out of said first position.

4,111,634

APPARATUS FOR PRODUCING PAPERMAKER'S FELT

Paul Limbach, Downington, Pa., and Paul Socha, Whitesboro, N.Y., assignors to H. Waterbury & Sons Company, Oriskany, N.Y.

Filed Sep. 16, 1976, Ser. No. 724,103
Int. Cl.² B29D *3/02*
U.S. Cl. 425—505 **10 Claims**



1. Apparatus for the attaching of bead to a paper-making felt comprising in combination:

(a) means for supporting papermaking felt having a working surface;

(b) means for affixing to such a working surface of such a felt a plurality of beads made of a material different from the material of the felt, such beads extending away from said working surface and having top portions which are spaced to form channels for liquid flow;

(1) means operatively associated with said supporting means for affixing comprising means for applying a band of plastic to such a felt;

(2) means operatively associated with said means for applying for inserting at least a portion of such a band into such a felt; and

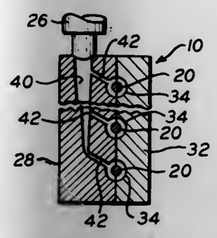
(3) means operatively associated with said applying means for forming at least a portion of such a band into such beads.

4,111,635

MANIFOLD IN SUBSTANTIAL ALIGNMENT WITH PLASTICIZER

Dewey Rainville, Westfield, N.J., assignor to Rainville Company, Inc., Middlesex, N.J.

Filed Apr. 1, 1977, Ser. No. 783,741
Int. Cl.² B29P *23/02*; B29F *1/06*; B29B *1/14*
U.S. Cl. 425—533 **8 Claims**



1. Injection blow-molding apparatus, for use with heat-sensitive molding material, including a multi-cavity mold having a front face and a back face extending lengthwise of the mold between side faces that are at opposite sides of the mold, the mold having two sections, one of which is a relatively fixed section, and the other of which is movable toward and from the fixed section to close and open the mold, recesses in confronting surfaces of the mold sections and in position to form a plurality of mold cavities when the mold is closed, other recesses in the confronting surfaces in position to form passages through the front face of the mold and leading into the respective cavities when the mold is closed, said passages having surfaces that grip core rods that extend into the respective cavities for receiving plastic parisons, a manifold in the fixed section of the mold and below the mold cavities with discharge outlets comprising branch passages leading upward to the respective cavities of the mold, the manifold extending lengthwise of the mold and under the mold cavities and having an inlet that opens through one of the side faces of the mold for receiving plastic material from a discharge outlet of a plasticizer and through which the material flows from the plasticizer and through the manifold to said outlets leading to the respective cavities, the manifold extending substantially at right angles to the side face at which plastic material flows into the manifold from the plasticizer said manifold having a cross-section with continuous curvature of the inside surface of the manifold at right angles to the length thereof and with the manifold tapering to progressively smaller cross-sections as it extends away from its inlet end and to the discharge outlets leading to the respective cavities of the mold.

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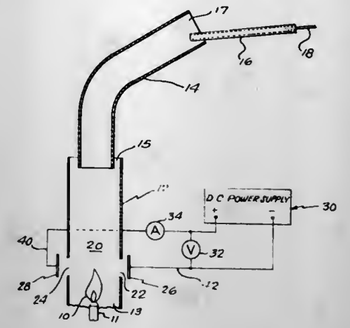
METHOD AND APPARATUS FOR REDUCING POLLUTANT EMISSIONS WHILE INCREASING EFFICIENCY OF COMBUSTION

Leon Goldberg, Potomac, Md., assignor to Lawrence P. Weinberger, Silver Spring, Md., a part interest

Filed Dec. 3, 1976, Ser. No. 747,190
Int. Cl.² F23B *7/00*
U.S. Cl. 431—2 **38 Claims**

1. A method of reducing pollutant emissions from the gaseous products of combustion which comprises separating said pollutant emissions from said gaseous products of combustion

at the combustion zone by applying a unidirectional electric field at the combustion zone to extract matter which has been



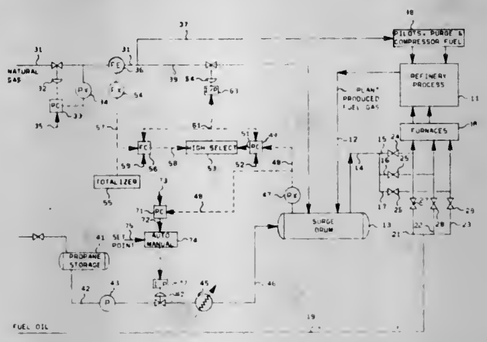
naturally ionized within the flame from said gaseous products of combustion.

4,111,637

CONTROL SYSTEM FOR PLURALITY OF GAS SUPPLIES

William S. Hillman, II, Bountiful, Utah, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 10, 1977, Ser. No. 776,347
Int. Cl.² F23N *1/00*
U.S. Cl. 431—12 **20 Claims**



1. Apparatus for meeting the demands for gas utilizing at least two separate sources of gas, comprising:

gas surge vessel means,

means for withdrawing gas from said gas surge vessel means in response to the demand therefor,

first supply means for supplying a first stream of gas,

first conduit means for withdrawing said first stream of gas from said first supply means and for passing at least a portion of said first stream of gas to said gas surge vessel means,

second supply means for supplying a second stream of gas,

second conduit means for passing said second stream of gas from said second supply means to said gas surge vessel means,

means for measuring the gas pressure in said gas surge vessel means and establishing a first measurement signal representative thereof,

means for establishing a first pressure setpoint signal,

first controller means for establishing a first control signal responsive to the difference between said first measurement signal and said first pressure setpoint signal,

means for measuring the flow rate of said first stream of gas through said first conduit means and establishing a second measurement signal representative thereof,

means for establishing a flow rate setpoint signal,

second controller means for establishing a second control signal responsive to the difference between said second measurement signal and said flow rate setpoint signal,

a first valve means operatively positioned in said first conduit means for regulating the flow rate of the portion of said first stream of gas passing to said gas surge vessel means,

signal selection means having said first and second control signals applied to first and second signal inputs thereof, respectively, and adapted to produce an output signal representative of the value of the one of said first and second control signals which would cause said first valve means to open to a greater degree,

means for manipulating said first valve means responsive to said output signal,

means for establishing a second pressure setpoint signal representative of a higher pressure than said first pressure setpoint signal,

third controller means for establishing a third control signal responsive to the difference between said second pressure setpoint signal and a signal representative of the pressure in said gas surge vessel means,

a second valve means operatively positioned so as to control the flow rate of said second stream of gas through said second conduit means,

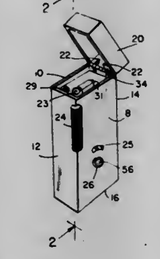
and means for manipulating said second valve means responsive to said third control signal.

4,111,638

CIGARETTE LIGHTER

Henry D. Ostberg, 278 Fountain Rd., Englewood, N.J. 07631

Filed Aug. 17, 1976, Ser. No. 715,119
Int. Cl.² F23Q *2/08*
U.S. Cl. 431—13 **2 Claims**



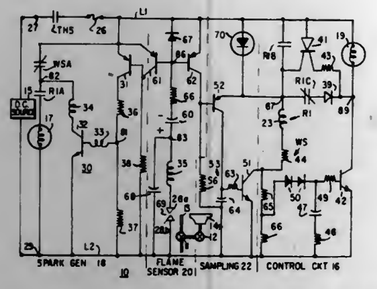
1. A cigarette lighter, comprising, in combination, a lighter casing having a pair of side walls, a pair of end walls, a closed bottom, an open top, a hinged cover for said open top, lighting means for cigarettes in said casing, and means in said casing for presetting the total number of flames desired to be lighted during a predetermined period, said lighting means comprising a ridged cylinder mounted for rotation in said casing and projecting partly through one of said walls, a friction wheel mounted on one end of said cylinder, a spring loaded flint engageable with said friction wheel, mounted in said casing said means for presetting the total number of flames comprising a bearing mounted in a side wall adjacent said one end wall, a hollow shaft received in said bearing, a ratchet gear secured to said shaft and having indicating numerals thereon and provided with an integral stop pin extending from said gear's periphery, said gear being engageable with said ridged cylinder, said hollow shaft having a pair of radially inwardly directed opposed teeth engageably with a setting key having notches engageable with said teeth and a spring member for biasing the ratchet gear against said side wall.

4,111,639

PROVEN PILOT FUEL IGNITION SYSTEM WITH SAMPLING FLAME SENSOR

Russell Byron Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Feb. 25, 1977, Ser. No. 772,079
Int. Cl.² F23N *5/12*
U.S. Cl. 431—25 **18 Claims**



1. In a fuel ignition system including valve means operable when energized to supply fuel to a burner apparatus, an ignition control for controlling the operation of said valve means and for ignition fuel discharged by said burner apparatus, said ignition control comprising activate means for generating an activate signal, spark generating means responsive to said activate signal to generate sparks in the proximity of said burner apparatus, energizing means including control means and timeout means, said control means being responsive to said activate signal to control said valve means to supply fuel to said burner apparatus for ignition by said sparks to establish a flame, and to enable said timeout means to be operable to cause said valve means to interrupt the supply of fuel to said burner apparatus whenever a flame fails to be established within a predetermined interval of time, and flame sensing means including first and second inhibit means and timing means operable when a flame is established within said time interval to control said first and second inhibit means to cause said fuel ignition system to be operable in a sampling mode in which said first inhibit means responds to said timing means to disable said spark generating means during a first period of time and to enable said spark generating means to generate sparks during a second period of time, and said second inhibit means responds to said timing means to prevent said timeout means from operating and in which said second inhibit means responds to said timing means to enable said timeout means to cause said valve means to interrupt the supply of fuel to said burner apparatus in the event that said spark generating means fails to provide sparks during said second period of time.

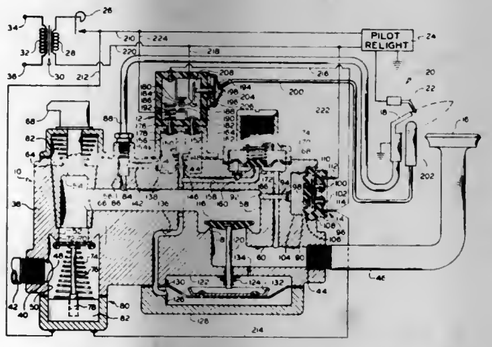
4,111,640

CYCLING PILOT BURNER CONTROL SYSTEM WITH PRESSURE SWITCH

Walter W. Scott, deceased, late of Willowick, Ohio by Jayne E. Scott, executrix, assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 6, 1977, Ser. No. 794,555
Int. Cl.² F23Q *9/08*
U.S. Cl. 431—46 **6 Claims**

1. In a gas burner control system,
an electrical power source;
a main burner;
a pilot burner for igniting said main burner;
a space thermostat;
electrically operated ignition means controlled by said thermostat for igniting said pilot burner;
a gas valve device including first and second valves connected fluidically in series;
a thermostatically actuated switch responsive to pilot burner flame and having a cold position in the absence of said pilot burner flame and a hot position when said pilot burner flame exists;
said first valve controlling gas flow to said pilot burner and main burner and including an electrical winding;
first circuit means including said thermostatically actuated switch in said cold position connecting said winding across said power source through said thermostat for opening said first valve;
a bypass passage connected fluidically between said first and second valves and operatively to said second valve;
a third valve located in said bypass passage and having an electrical winding;
said second valve controlling gas flow to said main burner and operative to an open position in response to energizing of said electrical winding of said third valve;



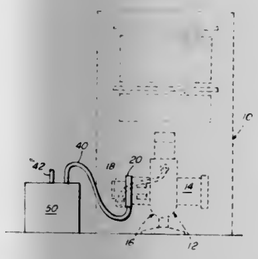
second circuit means including said thermostatically actuated switch in said hot position connecting said electrical winding of said third valve across said power source through said thermostat;
a pressure actuated switch responsive to gas pressure at a point between said first and second valves and having a closed contact position whenever gas flow of sufficient pressure exists and an open contact position in the absence of said gas flow of sufficient pressure; and
third circuit means including said pressure actuated switch in said closed contact position connecting said winding of said first valve across said power source through said thermostat for maintaining said first valve open when said thermostatically actuated switch is in said hot position.

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INJECTION SYSTEM FOR FUEL COMBUSTION

Charles F. Morrison, 25 Pearl St., Malden, Mass. 02148

Continuation-in-part of Ser. No. 664,967, Mar. 8, 1976, Pat. No. 4,009,984. This application Feb. 24, 1977, Ser. No. 771,718
Int. Cl.² F23J *7/00*
U.S. Cl. 431—4 **15 Claims**



1. An apparatus for adding water vapor to a fossil fuel combustion system, which system has an air intake assembly for introducing a flow of air into the combustion area of the combustion system, which comprises:

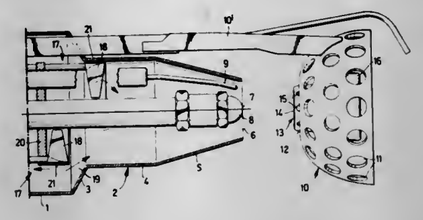
(a) a housing having a reservoir of water disposed therein;
(b) a platform disposed in the housing and in floating engagement with the reservoir;
(c) a tube-like member secured in a vacuum-tight manner to the platform and extending into the reservoir and having a lower air permeable end and an air impermeable upper end, the inner surface of the member, the closed end and the upper surface of the reservoir defining a vacuum chamber, the dimensions of which remain constant regardless of the level of water in the reservoir, the air permeable lower end being entirely immersed in the water of the reservoir, the tube-like member further comprising an inner sleeve and an outer sleeve, the outer sleeve being air impermeable and the lower end of the inner sleeve being air permeable, the inner and outer sleeves defining a flow passage therebetween, whereby air may flow through the flow passage, the air permeable portion of the inner sleeve through the water and into the vacuum chamber;
(d) valve means to seal the vacuum chamber from the ambient environment, said valve means adapted to open when there is a pressure differential between the vacuum chamber and the ambient environment;
(e) means to draw an air stream through the water and into the vacuum chamber to form a saturated air stream;
(f) a conduit secured to the valve means and the fossil fuel combustion system; and,
(g) means to create a pressure differential between the ambient about the housing and the vacuum chamber to draw air through the water and into the vacuum chamber forming the saturated air stream which air stream flows through the valve and into the air intake assembly.

4,111,642

BURNER FOR LIQUID FUELS

Hermann Kopp, Schwendi, Wuerttemberg, Germany, assignor to Max Weishaupt GmbH, Germany

Filed Nov. 30, 1976, Ser. No. 746,155
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1975, 2553953
Int. Cl.² F23D *13/12*
U.S. Cl. 431—347 **39 Claims**



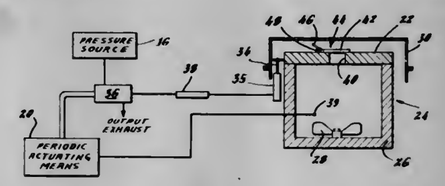
1. A burner for liquid fuels, of the type which is driven with an approximately stoichiometric quantity of air, having an air feed pipe, a fuel feed pipe with a spray nozzle disposed concentrically in the air feed pipe, and a mixture-distributor body arranged at a distance from the spray nozzle, wherein the improvement comprises switchover means associated with the air feed pipe for causing, in one position thereof, the combustion air to be in turbulence in the region of the spray nozzle during start-up, during which there is a yellow flame, and, for allowing, in another position thereof, the combustion air to flow without turbulence during continuous operation after the mixture-distributor body has been heated, during which there is a blue flame.

4,111,643

VENT CONTROL FOR A THERMAL SYSTEM

John M. Welland, Westport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 25, 1977, Ser. No. 772,160
Int. Cl.² 432 *36*; F27D *19/00*; F26B *21/06*
U.S. Cl. 432—48 **9 Claims**



1. Apparatus for controlling a cooling vent in a thermal system wherein heat is otherwise supplied to control the temperature thereof at a set point, said apparatus comprising:
pressure actuated means for operating the cooling vent;
a source of pressure;
means for controlling output from said pressure source; and
means for periodically actuating said pressure control means to pressurize and depressurize said vent operating means in attaining the minimum average vent opening necessary to maintain temperature control of the thermal system at the set point;
and wherein the thermal system is the oven of a gas chromatograph and the cooling vent is the top of the oven which is positionable to admit room ambient air, said operating means being a pneumatic cylinder having a piston that is connected to the oven top and said pressure control means being a solenoid valve that is electrically driven from said periodic actuating means; and
a fan disposed within the oven and the oven top including an opening therethrough aligned with the low pressure region of said fan; and a plate disposed to cover said opening, a means for displacing said plate from over said opening in operable sequence with said pneumatic cylinder, said pneumatic cylinder lifting the oven top to a predetermined position during this operation with air being exchanged between the oven and room ambient through a common opening, after which said plate displacement means becomes operable together with said pneumatic cylinder and air then being taken in through the opening in the oven top and exhausted through the opening between the oven and the oven top.

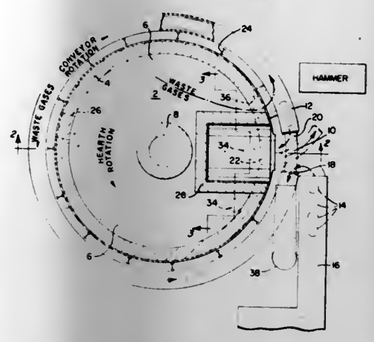
4,111,644

ROTARY HEARTH FURNACE WITH PREHEAT CONVEYOR

Robert E. Buckholdt, Abington, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Apr. 19, 1977, Ser. No. 788,832
Int. Cl.[2] F27B *9/16*
U.S. Cl. 432—179 11 Claims

1. A rotary hearth furnace for heating work pieces comprising:
(a) means forming a rotatable hearth having a roof thereon;
(b) combustion means within said furnace and emitting hot gases therein;
(c) a substantially enclosed preheat conveyor disposed about the outside periphery of said hearth and provided with means to move said work pieces about said periphery;
(d) passage means providing gas communication from said furnace to said preheat conveyor;
(e) means forming a loading and unloading station for the preheat conveyor and for the furnace; and
(f) flow diverting means within said furnace for diverting the flow of combustion gases from said heating means through said passage means (d) and into said preheat conveyor, said passage means being located to provide a combustion gas current that is counter to the hearth travel



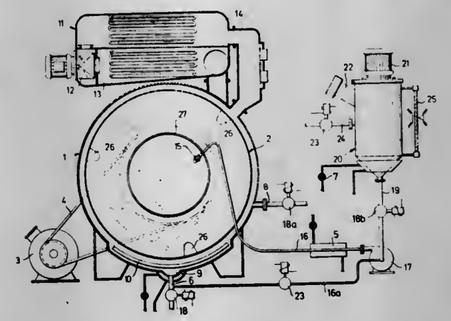
direction and also counter to the travel direction of said work pieces on said preheat conveyor.

4,111,645

FINE PARTICLE APPLICATION OF DYES OR OPTICAL BRIGHTENER TO LEATHERS OR FABRICS IN A TUMBLING DRUM AT LOW VOLUMES IN A HYDROPHOBIC SOLVENT

Jacques Zurbuchen, Pratteln; Willi Leutenegger, Bottmingen, both of Switzerland, and Luigi Calcaterra, Milan, Italy, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 325,437, Jan. 22, 1973, abandoned. This application Nov. 24, 1975, Ser. No. 634,740
Claims priority, application Switzerland, Jan. 21, 1972, 000912/72
Int. Cl.[2] D06P *1/90;* D06L *3/12*
U.S. Cl. 8—1 W 20 Claims



1. A process for dyeing an organic material selected from the group consisting of textile articles, films, natural leather and synthetic leather, from a hydrophobic organic solvent boiling above 80° C, with application of a short goods-to-liquor ratio, which comprises
(a) applying a concentrated liquor of at least one organic dye selected from the group consisting of water-soluble anionic dyestuffs, water-soluble cationic dyestuffs, water-dispersible dyestuffs and water-dispersible optical brighteners heated to at least 80° C with a goods-to-liquor ratio of 1:1.5 to 1:4 in atomized form to the organic material which is being tumbled in an essentially closed chamber, the organic dye being dissolved or finely dispersed in the organic solvent and having affinity to the organic material to be dyed,
(b) heating the thus treated organic material after application of the whole amount of the dye liquor to a temperature of 100° to 150° C,
(c) finishing the dyeing by maintaining the thus heated organic material at said temperature in a vapor atmosphere of the organic solvent until complete fixation of the dyestuff is obtained, and
(d) drying the thus dyed organic material, the entire process being carried out in a batch-wise manner.

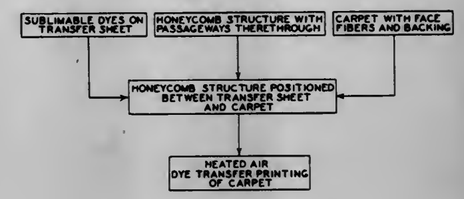
4,111,646

METHOD OF NO-CONTACT PRINTING OF CARPET WITH A TRANSFER SHEET

Mervin R. Buckwalter; Walter T. Bulson, both of Lancaster; Larry W. Leininger, Akron; Thomas Posipanko, and Leonard N. Ray, Jr., both of Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 24, 1977, Ser. No. 761,604
Int. Cl.[2] D06P *5/20*
U.S. Cl. 8—2.5 A 10 Claims

1. A method of dye-transfer printing carpet using sublimable dyes comprising the steps of:
(a) printing an ink containing sublimable dyes onto a porous carrier;
(b) preparing a carpet having fibers and a backing;
(c) arranging said carrier and said carpet in a spaced apart relationship with the inked surface of said carrier facing said carpet;
(d) positioning fluid flow means comprising a plurality of juxtaposed adjoining elongated cylindrical passageways of polygonal cross section for producing and maintaining laminar flow between said carrier and said carpet wherein the equivalent diameter of said passageways is in the range of from about 1/32 inch to about ¾ inch;



(e) applying a heated gaseous medium to said carrier by passing said medium through said carrier to sublime the dyes in the ink and to transfer the sublimed dyes from the carrier, through said fluid flow means, to the carpet so that the fibers of the carpet are dyed; and
(f) separating the printed carpet from said carrier and said fluid flow means.

4,111,647

METHOD FOR MAKING FIRE RETARDANT ZIPPER

Robert Schleifstein, Freehold Township, Monmouth County, N.J., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed Aug. 1, 1977, Ser. No. 820,564
Int. Cl.[2] C09K *3/28;* D06P *5/00*
U.S. Cl. 8—4 13 Claims

1. A method of making a fire retardant coil zipper comprising the steps of:
(A) preparing a bath of an aqueous dispersion or emulsion consisting essentially of a sufficient amount of a fire retardant material and a dye carrier to substantially completely impregnate said coil zipper while said bath becomes substantially completely exhausted of said material;
(B) immersing said coil zipper in said bath in a closed vessel;
(C) adjusting the pH of said bath to from about 5.0 to about 5.5;
(D) heating said bath to a temperature of about 220° to about 300° F;
(E) circulating said bath through said coil zipper while maintaining the temperature of said bath at said temperature for at least about 15 minutes whereby said fire retardant material substantially completely impregnates said coil zipper while said bath becomes substantially completely exhausted of said material;
(F) cooling said bath to below about 212° F; and
(G) removing said coil zipper.

13. A method as claimed in claim 1, wherein said bath further includes a dye, water repellant, mildewcide, softener, lubricant, or mixtures thereof.

4,111,648

REACTIVE DYEING SYSTEMS USING DYES WITH CARBOXYLIC ACID GROUPS

Bobby Lee McConnell, Greensboro, N.C.; Raymond Thornton, Lake Placid, N.Y., and Louis Atkins Graham, Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 588,840, Jun. 20, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,738
Int. Cl.² C09B *65/00;* D06P *1/36*
U.S. Cl. 8—30 17 Claims

1. A method of forming a reactively dyed polymeric substrate, said method comprising

(a) contacting a polymeric cellulosic substrate containing non-phenolic alcoholic active hydrogen atoms at a pH of about 1.5 to about 11 with

(i) a cyanamide compound selected from the group consisting of cyanamide, alkyl-substituted cyanamide, dicyandiamide and alkyl-substituted dicyandiamide, wherein said alkyl groups each contain from 1 to 6 carbon atoms, and with

(ii) a coloring amount of an aromatic dye of the formula Dye-COOH, wherein Dye is an aromatic chromophore wherein the ratio of equivalents of said cyanamide compound to each carboxylic acid function of said aromatic dye is at least about 2:1, and

(b) heating the contacted substrate to a temperature of at least 200° F. for a time sufficient to fix said chromophore to said substrate by condensation reaction between said active hydrogen and the —COOH group of said dye so as to join the chromophore to the substrate through the C atom of said —COOH group.

4,111,649

DYESTUFF PREPARATIONS AND PROCESSES FOR THEIR PRODUCTION

Frank Ward, deceased, late of Gorton, England by Robina Rutherford Flucker Ward, legal representative; John David Hildreth, Henbury Nr. Macclesfield, and Herbert Alexander Potts, Stockport, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 23, 1975, Ser. No. 643,956
Claims priority, application United Kingdom, Dec. 23, 1974, 55530/74
Int. Cl.² C09B *27/00*
U.S. Cl. 8—41 R 10 Claims

1. A process for the manufacture of stable, concentrated solutions of water-soluble tertiary ammonium salts of diazo dyestuffs, which comprises:

(1) diazotising a mixture selected from the group

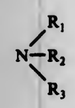
(a) 1 mole each of 2-naphthylamine-6-sulphonic acid and 1-amino-2-methoxy-benzene-5-sulphonic acid;

(b) 1 mole each of 1-amino-2-methyl-benzene-5-sulphonic acid and aniline; and

(c) 1 mole each of naphthionic acid and 1-amino-2-methoxy-benzene-5-sulphonic acid

in the presence of sulfuric acid and reacting the diazo mixture in the same vessel with 1 mole of 5,5'-dihydroxy-7,7'-disulpho-2,2'-dinaphthyl urea, or

(2) diazotising 1 mole each of 1-amino-2-methyl-benzene-5-sulphonic acid and aniline in the presence of sulfuric acid and reacting the diazo mixture in the same vessel with 1 mole of 5,5'-dihydroxy-2,2'-dinaphthyl-amine-7,7'-disulphonic acid in the presence of at least 2 moles of a tertiary amine of the formula



wherein each of R_1, R_2 and R_3 independently represents methyl, ethyl, methoxyethyl or hydroxyethyl, or wherein R_2 and R_3 together with the nitrogen atom form a pyrrolidine, piperidine, morpholine or thiomorpholine ring.

4,111,650

STABLE CONCENTRATED LIQUID PREPARATION OF A PAPER DYE OF THE COPPER PHTHALOCYANINE CLASS

Roger Lacroix, Huningue, France, and Roland Haberli, Wurenlingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 30, 1976, Ser. No. 701,450
Claims priority, application Switzerland, Jul. 3, 1975, 8674/75
Int. Cl.² D06P *1/384, 1/14;* C09B *47/04;* D21H *3/80*
U.S. Cl. 8—85 R 4 Claims

1. A stable concentrated liquid preparation of a paper dye of the copper phthalocyanine class, which preparation contains 15 to 50 percent by weight of the dye of the formula

$$CuPc\ [SO_2NH(CH_2)_3N(CH_3)_2]_{2\ to\ 3}\ [SO_3H]_{1\ to\ 2}$$

wherein

CuPc represents copper phthalocyanine, or the alkali salt thereof, dissolved in 30 to 65 percent by weight of water, 5 to 15 percent by weight of N-methylpyrrolidone, 1 to 7 percent by weight of benzyl alcohol, and 1 to 5 percent by weight of a lower aliphatic carboxylic acid.

4,111,651

SULFONIC ANHYDRIDES IN PEROXYGEN BLEACHING

John H. Blumbergs, Highland Park; Joseph H. Finley, Metuchen, and Burton M. Baum, Princeton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1977, Ser. No. 838,851
Int. Cl.² D06I *3/02, 3/04*
U.S. Cl. 8—111 7 Claims

1. A process for the low temperature bleaching of stained and/or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of a sulfonic anhydride having the formula:

$$R_1SO_2OSO_2R_2$$

wherein each of R_1 and R_2 is selected from the class consisting of an alkyl radical of 1 to 18 carbon atoms; a cycloalkyl radical of 3 to 7 carbon atoms; a phenyl radical; a naphthyl radical and a heterocyclic radical having 1 ring or 2 fused rings, said ring or rings containing 5 to 6 members of which 1 to 2 are heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur, it being understood that R_1 and R_2 can be identical or different except where they are phenyl or naphthyl in which case R_1 and R_2 are always different.

4,111,652

SYNERGISTIC FLAME RETARDANT MIXTURES AND PRODUCTS

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 29, 1977, Ser. No. 782,430
Int. Cl.² D06M *1/22, 13/20, 13/26;* C09K *3/28*
U.S. Cl. 8—116 P 8 Claims

1. Synergistic mixtures of the reactive flame retardants methyl phosphonic diamide and chloromethyl phosphonic diamide.

3. A process for rendering a cellulose-containing textile substrate flame retardant, said process comprising contacting a liquid comprising a mixture of claim 1 with said substrate, subsequently drying the treated substrate, and subsequently curing the dried substrate, thereby bonding flame retardant moieties to said substrate.

4,111,653

ALKALI STANNITE DEPILATORIES

Martin K. O. Lindemann, Freehold, N.J., and Harvey A. Lazar, Silver Springs, Md., assignors to The Gillette Company, Boston, Mass.

Filed Feb. 16, 1977, Ser. No. 769,386
Int. Cl.² A61K *7/155*
U.S. Cl. 8—161 8 Claims

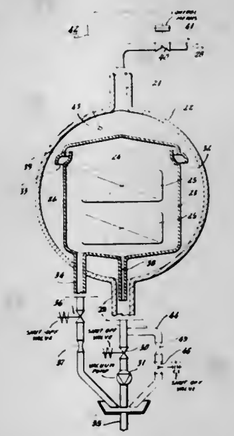
1. An aqueous soluble stannite personal care depilatory composition comprising from 0.2 to 0.8 M Sn^{2+} complexed with a member of the group consisting of polyhydroxymonocarboxylate anions of five to seven carbon atoms and of four to six hydroxyl groups, the molar ratio in said composition of Sn^{2+} to said member being from 2:1 to 1:2 and the pH of said composition being from 12.8 to 13.3.

4,111,654

AUTOCLAVE APPARATUS AND METHOD FOR STERILIZATION OF ARTICLES

Hans Anders Fahlvik, Slöinge, and Nils Arne Fahlvik, Getinge, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 17, 1977, Ser. No. 778,385
Claims priority, application Sweden, Mar. 19, 1976, 7603436
Int. Cl.² A61L *3/00, 3/02*
U.S. Cl. 422—26 7 Claims



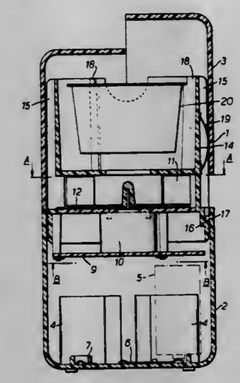
1. A method of sterilizing articles in an autoclave operating with steam and having a pressure vessel type outer wall and a non-pressure type inner wall, said inner wall defining a chamber for receiving the articles to be sterilized, an outer space between said outer wall and said inner wall, a steam supply conduit to said outer space and an open connection between said outer space and said chamber, said connection consisting of a series of holes provided in said inner wall, said method comprising: passing steam through said connection at approximately the thermodynamic optimum velocity, maintaining a constant pressure difference of 0.01–0.02 atmospheres between said outer space and said chamber when steam is supplied to said autoclave by means of the arrangement and construction of said connection between said outer space and chamber, and discharging a given quantity of steam from said chamber through a conduit provided with a throttle therein.

4,111,655

ELECTRICALLY OPERATED AIR FRESHENERS

Edwin Albert Quincey, Seaford, England, assignor to Plessey Handel und Investments AG., Zug, Switzerland

Filed Feb. 25, 1977, Ser. No. 772,133
Claims priority, application United Kingdom, Feb. 28, 1976, 7973/76
Int. Cl.² A61L *9/01, 9/04*
U.S. Cl. 422—124 6 Claims



1. An air freshener device comprising a housing having first and second cooperating housing portions movable relative to each other between a first position, wherein said housing portons define a closed chamber, and a second position, wherein at least one flow path is defined from the interior of said housing to the exterior of said housing, an electric motor mounted within said housing, a fan mouned within said housing and connected to said electric motor and operated thereby, an open container for volatile deodorant material mounted within said housing, said container adapted to remain open independent of the relative position of said first and second cooperating housing portions, timing means mounted within said housing for cyclic operation of said electric motor, and switch means mounted within said housing and interconnected with said timing means for providing cyclic operation of said fan when said first and second housing portions are in said second position, and for preventing cyclic operation of said fan when said first and second housing portions are in said first position.

4,111,656

RADIOIMMUNOASSAY METHODS FOR THE DETERMINATION OF L-TRIIODOTHYRONINE AND THYROXINE

Salvatore S. Margherita, Manchester, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 590,671, Jun. 26, 1975, which is a continuation-in-part of Ser. No. 464,345, Apr. 26, 1974, abandoned. This application May 21, 1976, Ser. No. 688,634
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230.6 5 Claims

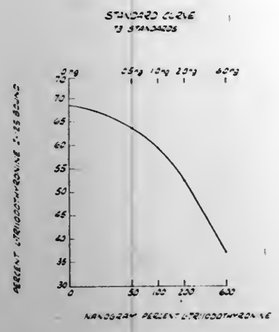
1. A radioimmunoassay method for the in vitro determination of thyroxine in unextracted blood serum which comprises the steps of

mixing a sample of blood serum whose thyroxine content is to be determined with a reagent consisting essentially of a buffered solution containing radioactive thyroxine and an inhibitor for inhibiting binding of thyroxine to thyroxine-binding globulin;

adding to the mixture an antiserum containing antibody capable of immunoreactivity with thyroxine and prepared from an immunogen comprising a conjugate of the N-acetyl derivative of thyroxine coupled to bovine serum albumin with 1-ethyl-3-(3-dimethylaminopropyl)-carbodiimide;

incubating the resultant mixture at a temperature and for a

sufficient period of time to produce substantial equilibration of the antibody bound thyroxine and unbound thyroxine;



separating the unbound thyroxine from the antibody bound thyroxine; and

determining the relative amounts of antibody bound radioactive thyroxine and unbound radioactive thyroxine.

4,111,657

CREATININE ASSAY AND REAGENT SYSTEM

Jerry W. Deaney, Carmel, Ind., and Robert L. Long, Spartanburg, S.C., assignors to American Monitor Corporation, Indianapolis, Ind.

Filed Jan. 21, 1977, Ser. No. 761,239
Int. Cl.[2] C09K *3/00*; G01N *21/02, 33/16*
U.S. Cl. 23—230 B **6 Claims**

1. In a colorimetric or spectrophotometric assay for the quantitation of creatinine in biological fluids,

in which a sample of the biological fluid, containing creatinine, is added to an alkaline picrate solution, the change in or the rate of change in optical density of the mixture being measured at a wavelength of between about 480 and 530 nm, and the creatinine content being then calculated by a comparison to the observed change or rate of change in optical density of a solution with a known concentration of creatinine;

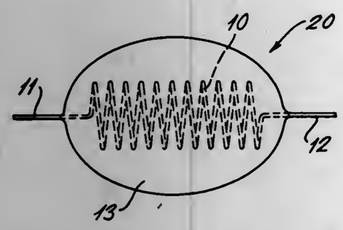
the improvement of adding dimethylsulfoxide to the alkaline picrate reagent, for the suppression of interference due to proteins in the biological fluid being assayed.

4,111,658

CATALYTIC GAS DETECTORS

Jack Graham Firth, St. Albans; Stephen John Gentry, and Alan Jones, both of Sheffield, all of England, assignors to National Research Development Corporation, London, England

Filed Dec. 7, 1977, Ser. No. 858,403
Claims priority, application United Kingdom, Dec. 13, 1976, 51935/76
Int. Cl.[2] G01N *27/16*
U.S. Cl. 23—232 E **10 Claims**



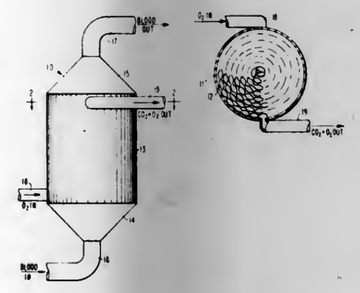
10. A method of detecting a combustible gas having an exothermic oxidation reaction comprising exposing to an atmosphere to be tested a catalytic element in the form of a body of material a major proportion of which consists of an aluminosilicate zeolite having a ratio of silicon to aluminium of greater than 2 and a three dimensional pore structure, there being a catalyst metal within the zeolite pores; maintaining the catalyst at a temperature at which it causes combustion of said combustible gas in an oxygen-containing atmosphere; and sensing any thermal effect on the catalyst caused by the occurrence thereon of the combustion reaction.

4,111,659

MASS AND HEAT TRANSFER EXCHANGE APPARATUS

Wallace W. Bowley, Stafford Springs, Conn., assignor to Graeme L. Hammond, Hamden, Conn.

Continuation-in-part of Ser. No. 509,082, Sep. 25, 1974, abandoned. This application Dec. 27, 1976, Ser. No. 755,089
Int. Cl.[2] A61M *1/03*
U.S. Cl. 422—48 **9 Claims**



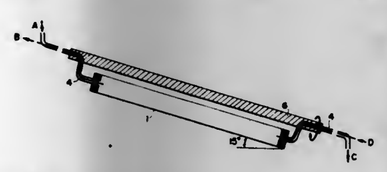
1. A blood oxygenator comprising a housing having a cylindrically shaped interior and having ends with a blood inlet means and a blood outlet means connected to said ends, a spirally wound membrane means within said housing, said membrane means including an oxygen-containing gas inlet means for said membrane means, a gas outlet means for said membrane means, both said gas inlet and gas outlet means being located external to said housing and a spirally wound membrane structure for mass transfer between an oxygen-containing gas within the first membrane structure and blood within said housing and being formed from at least two membrane sheets wherein at least one of said sheets comprises an embossed semipermeable film having a plurality of spaced-apart projections connected with passageways, said embossed film being permeable to carbon dioxide and oxygen and being sealed to a second membrane to define a fluid path from said membrane inlet means to said outlet means through said projections and passageways.

4,111,660

LIQUID-LIQUID EXTRACTION METHOD AND APPARATUS

Yozo Kabasawa, 1-2-13, Minami-cho, Kokubunji-shi, and Takenori Tanimura, 1-8-11, Matsunoki, Suginami-ku, Tokyo, both of Japan

Filed Jul. 16, 1976, Ser. No. 705,877
Int. Cl.[2] B01D *11/00, 3/00*
U.S. Cl. 423—8 **6 Claims**



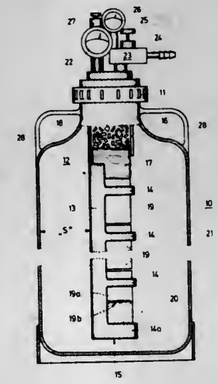
1. A liquid-liquid extraction apparatus comprising an elongated extraction column arranged at an angle to the horizontal, said column being divided by partitions into a plurality of intercommunicating compartments, an inlet and outlet at each end of said column, means for introducing a less dense liquid into the lower inlet of said column for discharge through said upper outlet and means for introducing a more dense liquid into said upper inlet for discharge through said lower outlet, said liquids being immiscible with one of them having dissolved therein the solute to be extracted by the other, and means for imparting bodily rotation to said column about an axis parallel and eccentric to said inclined column axis, said inlet and outlet at the same column end being arranged concentrically and including extensions which are eccentric to said column end and coaxial with said axis of rotation.

4,111,661

OXYGEN GENERATOR WITH CARTRIDGE HOLDER FOR OXYGEN-YIELDING CARTRIDGES

Günther Rothenberger, Bad Homburg von der Hohe, Fed. Rep. of Germany, assignor to Rothenberger GmbH Werkzeuge und Maschinen KG, Frankfurter, Fed. Rep. of Germany

Continuation of Ser. No. 643,582, Dec. 22, 1975, abandoned. This application Dec. 16, 1976, Ser. No. 751,612
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1974, 2461681
Int. Cl.[2] B01J *7/00*; C01B *13/00*
U.S. Cl. 422—117 **5 Claims**



1. Oxygen generator for heating, welding, cutting and brazing work comprising a gas-tight container and removable cartridge-holder means for the insertion of combustible cartridges yielding oxygen in the burning state, said gas tight container being constructed as a pressure tank and enveloping the cartridge-holder means to leave a storage volume in said tank sufficient to store the collection of oxygen liberated by one or more of said cartridges inserted in the cartridge-holder means, said oxygen generator having a pressure type fastening means connected to the neck of the upper end of said container, the upper end of said cartridge-holder means consisting of a cylindrical tube inserted through and joined to said neck via said pressure type fastening means in a gas tight manner.

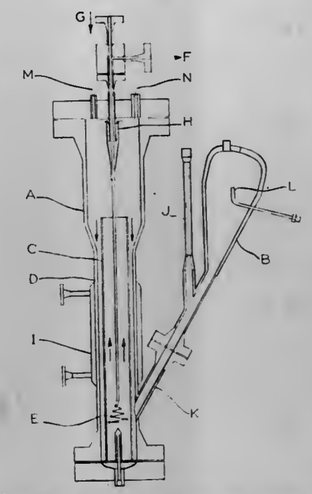
4,111,662

ARRANGEMENT FOR PREPARING ALKYLALUMINUMS

Robert Masotti, Lyon; Georges Biola, Venissieux, and Henri Guerpillon, Saint-Cyr Au Mont d'Or, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 24, 1976, Ser. No. 699,338
Claims priority, application France, Jun. 27, 1975, 75 20254
Int. Cl.[2] C07F *5/06*; B01J *8/22*
U.S. Cl. 422—231 **7 Claims**

1. Apparatus for preparing alkylaluminums comprising a single stage reactor formed of an outer tubular member and an inner tubular member concentrically arranged within the outer tubular member with an annular space in between, the outer tubular member having a portion of increasing diameter in the area above the inner tubular member, a gas diffuser in communication with the bottom portion of the inner tubular member and means for introducing a gas through the diffuser into the interior of the inner tubular member whereby liquid filling the inner tubular member is put into circulation by the gas-lift methods, inlets for feeding hydrogen, aluminum particles and



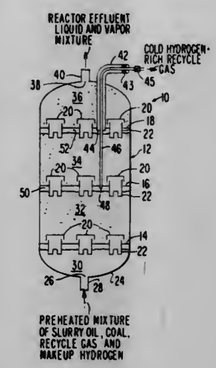
olefins having 2 to 30 carbon atoms into the upper portion of the reactor, an outlet in communication with the upper portion of the reactor for the removal of gases, a decanter having a quiescent zone for decanting solid particles, a passage extending at an angle greater than 45° with the horizontal communicating the decanter with the annular space in the bottom portion of the reactor for the flow of liquid therebetween, and an overflow in the decanter, at a level above the upper end of the inner tubular member which operates to control the level of liquid in the decanter and reactor.

4,111,663

REACTOR FOR SOLVENT REFINED COAL

Ronald H. Wolk, and Norman C. Stewart, both of San Jose, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 3, 1977, Ser. No. 803,097
Int. Cl.[2] B01F *3/04*; B01J *1/00*; C10G *1/04*
U.S. Cl. 422—191 **6 Claims**



1. A reactor for solvent refining of coal comprising: a reactor housing having a sidewall, a top and a bottom, said bottom

having an inlet port for allowing a mixture of a solvent, coal, recycle gas and makeup hydrogen to be directed into the housing; at least a pair of vertically spaced, generally horizontal perforated plates disposed within the housing to divide the interior of the housing into respective compartments, each plate having a bubble cap in each perforation thereof, respectively, the bubble caps of each plate having means causing the formation of a vapor zone beneath the plate and permitting upflow of a mixture of liquid and gas from each compartment and its vapor zone to the next compartment thereabove; and means coupled with the housing for directing a coolant into the vapor zones below at least certain of the plates to cool the vapor therein.

4,111,664

METHOD OF AND AN ARRANGEMENT FOR MAKING STABLE MASSIVE COMPACTED COAL CHARGE BODIES FOR USE IN A COKING OVEN

Kurt Leibrock, Fürstenhausen, Fed. Rep. of Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrucken, Fed. Rep. of Germany

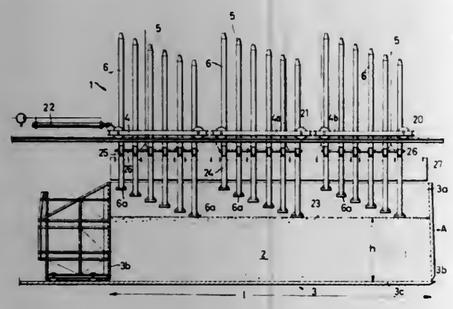
Filed Jun. 28, 1977, Ser. No. 810,798

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 2629122

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.² C10L *5/00*; B30B *11/00, 15/14*

U.S. Cl. 44—10 G **42 Claims**



1. A method of making stable massive compacted coal charge bodies to be charged into a coking oven, comprising the steps of supplying coal particles into a confining space to form therein a particulate bed having an upper surface; and subjecting the particulate bed to compacting forces requisite for converting the particulate bed into a respective charge body of a substantially parallelepiped configuration the height of which amounts to at least 11 times its width and having a specific density of at least 1.1 metric tons/m^3, including contacting a plurality of rams with the upper surface of the particulate bed in such a time sequence that at least one of the rams is out of contact with the upper surface of the particulate bed at any instant.

17. An arrangement for making stable massive compacted coal charge bodies to be charged into a coking oven, comprising a mold bounding a confining space; means for introducing coal particles into said confining space to form therein a particulate bed having an upper surface; and means for subjecting the particulate bed to compacting forces requisite for converting the particulate bed into the respective charge body of a substantially parallepiped configuration the height of which amounts to at least 11 times its width and having a specific density of at least 1.1 metric tons, including a plurality of rams each of which is movable into and out of contact with the upper surface of the particulate bed, and means for so moving said rams in a time sequence that at least one of said rams is out of contact with the upper surface of the particulate bed at any instant.

4,111,665

APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL, ESPECIALLY OF FINE COAL IN A GENERATOR

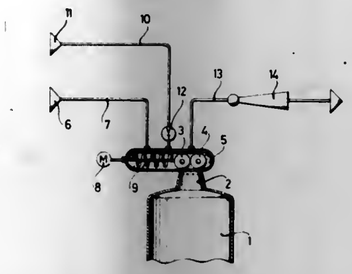
Rudolf Pasternak, Gladbeck, and Jochen Bauer, Essen, both of Fed. Rep. of Germany, assignors to Steag A.G., Essen, Fed. Rep. of Germany

Filed Sep. 7, 1976, Ser. No. 720,985

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1975, 2540166

Int. Cl.² C10J *3/50*

U.S. Cl. 48—77 **2 Claims**



1. An apparatus for the gasification of fine bituminous coal under pressure comprising

a. a container provided with an inlet opening for receiving briquetted coal to be gasified,

b. a closed casing fixed directly on said inlet opening,

c. feeding means for feeding the fine feed coal into said closed casing,

d. a briquette forming device within said closed casing immediately adjacent said inlet opening for forming briquettes from the fine feed coal and discharging the briquettes directly into said container,

e. a pressure conveyor device within said closed casing for forcing the fine feed coal continuously to said briquette forming device, and

f. a suction device leading from a portion of said casing remote from said inlet opening for removing any gas which may leak past the feeding means and the briquette forming device into said casing.

4,111,666

METHOD OF MAKING CLEANING, SCOURING AND/OR POLISHING PADS AND THE IMPROVED PAD PRODUCED THEREBY

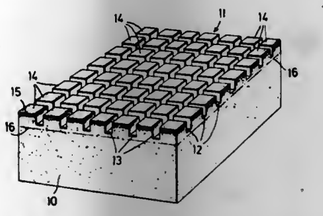
Heinz Kalbow, Konigswinter-Stieldorf, Fed. Rep. of Germany, assignor to Collo GmbH, Bornheim-Hersel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 662,349, Mar. 1, 1976, Pat. No. 4,055,029. This application Jul. 6, 1976, Ser. No. 702,391

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1975, 7507155[U]; Feb. 12, 1976, 2605444

Int. Cl.² B24D *3/32, 15/04*

U.S. Cl. 51—295 **8 Claims**



1. A method of increasing the tear resistance of a foam plastic scouring, cleaning or polishing pad in the vicinity of a plurality of separate, closely adjacent foam plastic protuberances formed integrally with the body of the pad and defined by grooves in said pad, said pad being formed from a pliable, flexible open celled foamed plastic material with a low tear strength and said protuberances together forming an upper scrubbing surface and having a lower root portion terminating at a main portion of said body, said method comprising the steps of:

(a) providing a polyurethane liquid adhesive impregnating agent which will cure into a substantially elastic flexible mass and increase the tear strength of said foamed plastic material;

(b) impregnating said foam plastic protuberances, and part of said main body portion beyond said root portions, with amounts of said impregnating agent, so that said protuberances and said part of said main body portion will still be absorptive; and

(c) causing said agent to cure whereby said protuberances and said part of said main body portion still are absorptive and are substantially more resistant to tearing than said initial foam plastic material.

4,111,667

WOVEN POLYESTER BACKED FLEXIBLE COATED ABRASIVE HAVING MICROBALLOONS IN BACKSIZE

David G. Adams, Ballston Spa, N.Y., assignor to Norton Company, Worcester, Mass.

Filed Apr. 15, 1977, Ser. No. 787,909

Int. Cl.² B24D *3/34, 11/02*

U.S. Cl. 51—295 **4 Claims**

1. A coated abrasive product comprising a fabric backing member for a flexible coated abrasive product of woven polyester yarns and having a backsize coating of phenolic resin composition including hollow micro-spheres of synthetic resins or glass in the amount of from 10 to 50% by volume of the coating and having a particle size in the range of from 5 to 125 microns whereby the coated fabric is stiffer than such fabric without inclusion of the hollow spheres and having abrasive grits bonded to the front surface thereof.

4,111,668

FUSED ALUMINUM OXIDE ABRASIVE GRAIN CONTAINING REDUCED TITANIUM OXIDE

Thomas Bruce Walker, Lewiston; Robert J. Selder, Ransomville, and Paul Cichy, Buffalo, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jun. 1, 1976, Ser. No. 691,817

Int. Cl.² C09K *3/14*

U.S. Cl. 51—309 A **17 Claims**

1. A process for producing a fused abrasive grain which is bluish black in color and consists essentially of:

(1) titanium oxide containing from about 0.42 to about 0.84% titanium, by weight of the abrasive grain, said titanium being present as a reduced titanium oxide having an average oxidation state lower than in Ti_2O_3;

(2) from about 0.05 to about 0.3% by weight carbon;

(3) from about 0.02 to about 0.1% by weight Na_2O;

(4) from 0 to about 0.1% by weight total of calcium and silicon oxides; and

(5) alumina;

said abrasive having a gain on ignition in air before roasting at 1300° C, when of a size of about 147 microns and finer, of from about 0.4 to about 0.7% by weight; comprising the steps of:

(a) charging to an electric furnace a mixture of:

(i) from about 0.7 to about 1.7 parts by weight high purity TiO_2;

(ii) from about 98.6 to about 99.3 parts by weight alumina containing Na_2O as the only oxide impurity present in an amount in excess of 0.1% by weight; and

(iii) carbon, in an amount of from 1 to 10 times the theoretical amount necessary, based on the amount of TiO_2 and Na_2O added, to reduce the TiO_2 and Na_2O according to the following formulas:

(A) $2TiO_2 + C = Ti_2O_3 + CO$, and

(B) $Na_2O + C = 2Na + CO$ and

(b) subjecting the mixture of titania, alumina and carbon to the heat of an electric arc, said electric arc being a reducing arc passed from carbon electrodes to the mixture of titania, alumina and carbon, for a time sufficient to melt the mixture;

(c) solidifying the melted mixture;

(d) crushing the solidified mixture to obtain abrasive grain; and

(e) roasting the abrasive grain by subjecting the crushed grain to an oxidizing atmosphere for from about 5 minutes to about 64 hours at a temperature of from about 1250° to about 1450° C.

4,111,669

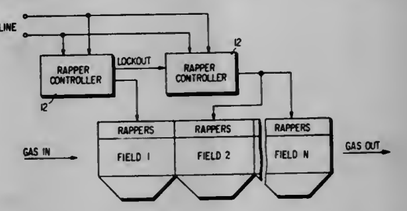
MAGNETIC IMPULSE RAPPER CONTROL SYSTEM

John S. League, IV, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 544,768, Jan. 28, 1975, abandoned. This application Apr. 21, 1977, Ser. No. 789,493

Int. Cl.² B03C *3/00*

U.S. Cl. 55—112 **23 Claims**



12. A controller for selectively energizing actuating coils of rappers of an electrostatic precipitator assembly to impart motion to a portion of the precipitator assembly and remove accumulated material therefrom, the controller comprising:

a rapper supply bus common to a plurality of the actuating coils of the rappers of the electrostatic precipitator assembly;

means for intermittently supplying a d.c. potential to the rapper supply bus for the time periods each of a predetermined duration; and

means responsive to the d.c. potential of said supplying means for selectively connecting at least one actuating coil of said plurality of actuating coils to said rapper supply bus during each of said time periods to energize such actuating coil with said d.c. potential.

4,111,670

TRUCK MOUNTED SEPARATOR APPARATUS

Thomas M. DeMarco, Chicago, Ill., assignor to NFE International, Ltd., Palatine, Ill.

Filed Mar. 16, 1977, Ser. No. 778,071

Int. Cl.² B01D *50/00*

U.S. Cl. 55—315 **16 Claims**

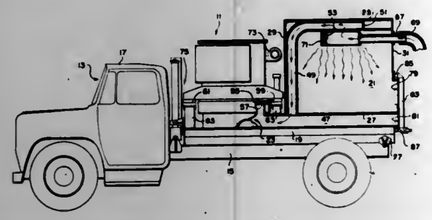
1. Mobile apparatus for separating materials including heavy particulate matter from an input airstream and for collecting said materials for delivery to a discharge point, said apparatus comprising:

a vehicle having a frame;

a platform supportably positioned on said vehicle frame and having one end pivotably coupled to said frame;

a first enclosed collection chamber mounted on said platform, said first chamber having an inlet through which said input airstream enters said first chamber and a first

discharge opening adjacent the pivoted end of said platform;
a second collection chamber mounted on said platform forwardly on said first collection chamber;
vacuum collector means communicating with said second collection chamber in substantial airtight relation therewith;
means including a duct coupling said first collection chamber directly to said vacuum collector means;
said vacuum collector means including means for creating a vacuum to draw said input airstream into said first chamber and through said duct to said vacuum collector means;
means in said first collection chamber for separating said materials comprising generally said heavy particulate matter from said airstream, said heavy particulate matter being collected in said first collection chamber and the remainder of said materials being carried by said airstream through said duct to said vacuum collector means;
said vacuum collector means separating the remainder of said materials from said airstream and emptying said separated materials into said second collection chamber;
means comprising a passageway communicating with and extending rearwardly from said second collection chamber beneath said first collection chamber, said passageway having a corresponding second discharge opening immediately adjacent to said first discharge opening of said first collection chamber at said pivoted end of said platform;
a movable door;
means mounting said door on said first collection chamber to cover said first and second discharge openings; and



means for tilting said platform to move said door away from said first and second discharge openings to permit said materials collected in said first collection chamber to empty therefrom through said first discharge opening and said materials collected in said second collection chamber to move through said passageway and empty therefrom through said second discharge opening.

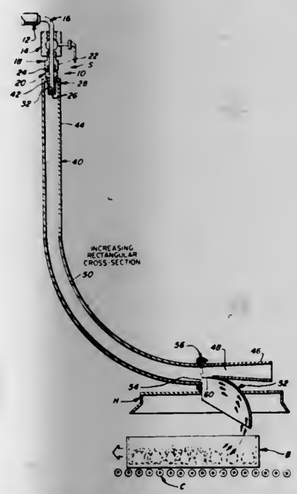
10. Mobile apparatus for separating materials including heavy particulate matter from an input airstream and for collecting said materials for delivery to a discharge point, said apparatus comprising:
a vehicle having a frame,
a platform supportably positioned on said vehicle frame and having one end pivotably coupled to said frame;
a first enclosed collection chamber mounted on said platform, said first chamber having an inlet through which said input airstream enters said first chamber and a first discharge opening adjacent the pivoted end of said platform;
a second collection chamber mounted on said platform forwardly of said first collection chamber;
a passageway communicating with and extending rearwardly from said second collection chamber beneath said first collection chamber, said passageway having a corresponding second discharge opening immediately adjacent to said first discharge opening of said first collection chamber at said pivoted end of said platform;
vacuum collector means communicating with said second collection chamber in substantial airtight relation therewith;
a duct coupling said first collection chamber to said passageway;
said vacuum collector means including means for creating a vacuum to draw said input airsteam into said first chamber and through said duct, said passageway and said second chamber to said vacuum collector means;
means in said first collection chamber for separating said material comprising generally said heavy particulate matter from said airstream, said heavy particulate matter being collected in said first collection chamber and the remainder of said materials being carried by said airstream to said vacuum collector means;
said vacuum collector means separating the remainder of said materials from said airstream and emptying said separated materials into said second collection chamber;
a movable door;
means mounting said door on said first collection chamber to cover said first and second discharge openings; and
means for tilting said platform to move said door away from said first and second discharge openings to permit said materials collected in said first collection chamber to empty therefrom through said first discharge opening and said materials collected in said second collection chamber to move through said passageway and empty therefrom through said second discharge opening.

4,111,671

METHOD AND APPARATUS FOR CARBON DIOXIDE SNOW SEPARATION

Hilding Victor Williamson, Hanover, Pa., assignor to Chemetron Corporation, Chicago, Ill.

Continuation of Ser. No. 588,550, Jun. 19, 1975, abandoned.
This application Feb. 22, 1977, Ser. No. 770,465
Int. Cl.² F25J *1/00*
U.S. Cl. 62—10 **8 Claims**



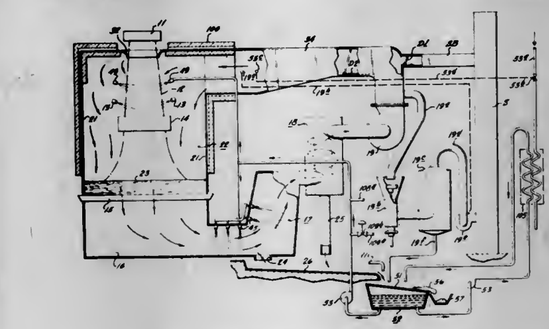
1. A method of separating carbon dioxide snow from a mixture of carbon dioxide snow and vapor comprising the steps of:
expanding a stream of liquid carbon dioxide to a pressure below the thermodynamic triple point into an inlet end of a continuously increasing rectangular cross-section conduit to form a flowing mixture of carbon dioxide snow and vapor;
conducting said mixture at sub-atmospheric pressure in a curvilinear path defined by said conduit to subject said flowing mixture to a uniform field of centrifugal forces, whereby said snow is concentrated in a stream in the region having the largest centrifugal force; and
separating said concentrated stream of snow from said vapor by a physical barrier to discharge said concentrated stream of snow from said conduit.

4,111,672

METHOD AND APPARATUS FOR SUPPRESSION OF POLLUTION IN MINERAL FIBER MANUFACTURE

Jean A. Battigelli, Rantigny, and Marie-Pierre Barthe, Clermont, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 655,503, Feb. 5, 1976, abandoned, which is a continuation of Ser. No. 511,500, Oct. 2, 1974, abandoned. This application Dec. 3, 1976, Ser. No. 747,432
Claims priority, application France, Oct. 22, 1976, 76 31860; Oct. 10, 1973, 73 36169
Int. Cl.² C03B *37/04*
U.S. Cl. 65—3 C **25 Claims**



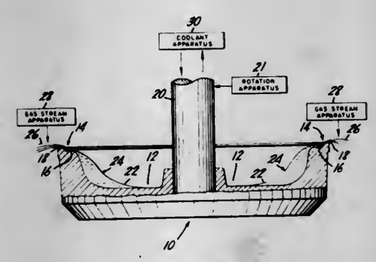
1. A process for manufacture of fibers comprising forming fibers by gas blast attenuation of thermoplastic material, establishing a current of the attenuating gas and the attenuated fibers in a forming section having a foraminous fiber collecting device at a boundry of the forming section through which the gas of said current passes and on which the fibers collect to form a blanket, recirculatng gas through a recirculation path extended from the downstream side of the collection device to the forming section, spraying water on the current of attenuating gas and attenuated fibers in the forming section, separating water and entrained solids from the gases in said recirculation path, bringing the separated water into heat exchange relation with a heat transfer medium, separating entrained solids from the separated water, recirculating the solids freed water to the water spraying of the current in the forming section, characterized by regulating the temperature of the gas in said current in the forming section by regulating the heat transfer between the separated water and said heat transfer medium.

4,111,673

MINERAL FIBERIZING WHEEL

Cletus L. Van Natta, Red Wing, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 696,424, Jun. 15, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 844,117
Int. Cl.² C03D *37/04*
U.S. Cl. 65—6 **3 Claims**



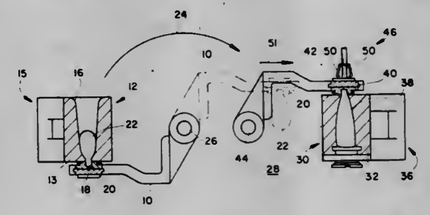
1. In a metal wheel for use in mineral fiberizing processes of the type in which molten mineral is introduced onto the operative surface of the wheel and thereafter tangentially discharged therefrom the improvement comprising said operative surface being nitrided.

4,111,674

GLASSWARE FORMING STRAIGHT LINE METHOD

Anthony T. Zappia, Carmel, Ind., assignor to Ball Packaging Products, Inc., Muncie, Ind.

Division of Ser. No. 718,404, Aug. 30, 1976, Pat. No. 4,058,388. This application Aug. 1, 1977, Ser. No. 820,792
Int. Cl.² C03B *9/14*
U.S. Cl. 65—77 **8 Claims**



1. A method of forming glassware from molten glass comprising the steps of shifting a first neck ring along a straight line into engagement with a parison mold, depositing a gob of molten glass in the parison mold so that the glass flows to form a first blank supported by the first neck ring, inverting the first neck ring to support the first blank at a reheat position, shifting a second neck ring along a straight line from a waiting position to a position in engagement with the parison mold, depositing a gob of molten glass in the parison mold so that the glass flows to form a second blank supported by the second neck ring, shifting the first neck ring along a straight line from the reheat position to a position to present the first blank for engagement by a blow mold, blowing a first bottle in the blow mold, reverting the first neck ring to the waiting position, inverting the second neck ring to the reheat position, shifting the first neck ring along a straight line into a position in engagement with the parison mold and shifting the second neck ring along a straight line from the reheat position to a position to present the second blank for engagement by the blow mold.

4,111,675

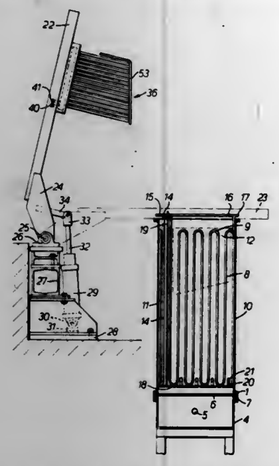
THERMAL TREATMENT OF GLASS IN A FLUIDIZED BED

Geoffrey Martin Ballard, St. Helens, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Jun. 1, 1977, Ser. No. 802,450
Claims priority, application United Kingdom, Jun. 10, 1976, 24125/76
Int. Cl.² C03B *27/00*
U.S. Cl. 65—114 **15 Claims**

3. A method of thermally treating a glass article, comprising immersing the article in a part of a gas-fluidised bed of particulate material which is maintained in a quiescent uniformly expanded state of particulate fluidisation, regulating the temperature of the fluidised bed by heat exchange with the particulate material in a localised region of the fluidised bed away from the part in which the articles are immersed, and, between

immersion of successive articles in the bed, agitating said localised region of the fluidised bed to enhance said heat exchange



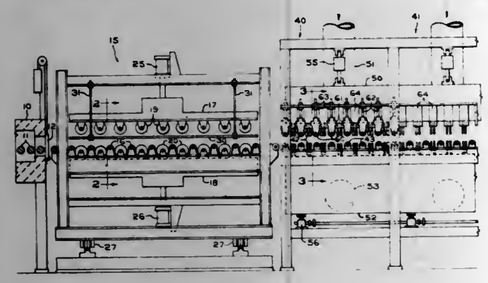
while maintaning said quiescent state of fluidisation of the part of the bed in which the articles are immersed.

4,111,676

ADAPTATION OF GLASS SHAPING MEANS FOR TEMPERING FLAT GLASS

Charles H. Mechling, Galion; James B. Niedermier, Tiro, and Norman J. Steber, Galion, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 27, 1977, Ser. No. 810,331
Int. Cl.² C03B *27/00*
U.S. Cl. 65—114 **7 Claims**



1. A method of tempering flat glass sheets wherein each flat glass sheet is conveyed into a heating chamber where the glass sheet is heated to a temperature suitable for tempering; the heated glass sheet is then removed from the heating chamber and conveyed through an elongated zone of essentially still, ambient air on a roller conveyor extending between the heating chamber and a quenching zone, whereby exposure to the ambient air while passing along the roller conveyor causes cooling of the upper surface of the glass sheet greater than the cooling of the bottom surface of the glass sheet such that a sufficient top-to-bottom temperature difference is produced to lead to subsequent warpage of the glass sheet; and then passing the glass sheet into the quenching zone where it is tempered by directing blasts of gaseous quenching medium onto the top and bottom surfaces;

wherein the improvement comprises retarding heat loss from the upper surface of the glass sheet while on said roller conveyor by means of a heat shield suspended above and closely adjacent to the upper surface of each glass sheet during a major portion of its travel along said roller conveyor, and controlling the relative rates at which the tempering medium is directed onto the top and bottom surfaces of each glass sheet in the quenching zone so as to produce a more rapid rate of cooling at the bottom surface than at the top surface, whereby tempered glass sheets substantially free from warpage are produced.

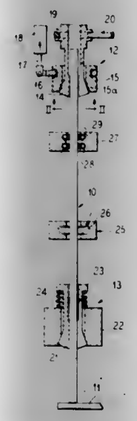
7. An apparatus for tempering flat glass sheets comprising: a glass sheet heating furnace including means for heating a glass sheet to a temperature suitable for tempering, a glass sheet quenching station including means for directing blasts of gaseous tempering medium onto opposite sides of a glass sheet received therein so as to temper the glass sheet, said furnace and said quenching station being spaced apart by an intermediate zone of sufficient length to receive a glass sheet bending apparatus, said intermediate zone being open to relatively still ambient air and including a roller conveyor adapted to convey heated glass sheets from said furnace to said quenching station, a planar heat shield suspended over said roller conveyor closely adjacent to and overlying a major portion of the path taken by the glass sheet through said intermediate zone, a plurality of straight hold-down rolls extending transversely across the path of glass travel in the initial portion of the quenching station and spaced above bottom glass support means in the quenching apparatus a distance greater than the thickness of the glass sheet, and drive means for rotating said hold-down rolls in the direction of glass travel.

4,111,677

APPARATUS FOR DRAWING GLASS TUBING

James D. Andrews, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 24, 1975, Ser. No. 543,754
Int. Cl.² C03B *23/00, 21/00, 23/04*
U.S. Cl. 65—271 **6 Claims**



1. An apparatus for forming uniform diameter nozzles on glass tubes which comprises support means for releasably supporting a tube above its vertical center, weighting means below said support means and substantially coaxial therewith for releasably applying a dead weight to said tube below its vertical center, first furnace means located centrally of said tube between said support means and said weighting means and arranged to heat said tube to a drawing temperature and second furnace means located between said first furnace means and said support means for heating a portion of said tube to a temperature at which said tube becomes slightly plastic but substantially below said drawing temperature.

4,111,678

FOLIAR FEEDING ORGANOMETALLIC COMPOSITION

John D. Downer, Trinidad, Trinidad and Tobago, assignor to Texaco Trinidad Inc., Pointe-a-Pierre, Trinidad and Tobago

Filed Mar. 10, 1977, Ser. No. 776,344
Int. Cl.² C05F *11/00*
U.S. Cl. 71—27 **5 Claims**

1. A foliar feeding spray composition for supplying trace metals to plants comprising a non-phytotoxic hydrocarbon mineral oil carrier having a minimum gravity API of 27, a viscosity at 100° F of between 55 and 100 Saybolt Universal Seconds, a boiling range between 600° F and 755° F and a minimum unsulphonated residue content of 85%; and an oil soluble organometallic compound made by thermal rearrangement of a chelate having the general formula $[R_1C(O)CHR_2C(O)OR_3]_2M$, where R_1 and R_3 are radicals containing up to about 10 carbon atoms each and are selected from the group consisting of alkyl, cycloalkyl, aralkyl, aryl and alkaryl radicals, R_2 is selected from the group consisting of hydrogen and alkyl radicals containing up to 10 carbon atoms and M is zinc, copper, iron, manganese or molybedenum; said organometallic compound being present in said oil at a concentration of between about 0.05 and 12.0 percent basis volume of said oil.

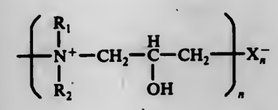
4,111,679

POLYQUATERNARY COMPOUNDS FOR THE CONTROL OF MICROBIOLOGICAL GROWTH

Salem A. Shair, Lake Zurich, Ill.; Stewart N. Paul, Mississauga, and James E. Cairns, Islington, both of Canada, assignors to Chemed Corporation, Cincinnati, Ohio

Filed Aug. 17, 1977, Ser. No. 825,272
Int. Cl.² A01N *9/20*
U.S. Cl. 71—67 **3 Claims**

1. The method for controlling microorganisms in industrial cooling water systems which comprises adding to the system a microbiocidal amount of a polyquaternary amine of the formula



where R_1 and R_2 are methyl or ethyl, X is Cl, Br, or I, and n is 3 to 10,000.

4,111,680

HERBICIDAL COMPOSITIONS CONTAINING 3-ISOXAZOLYLUREA DERIVATIVES

Hisajiro Yukinaga, Kusatsu; Shinzaburo Sumimoto, Osaka; Ichiro Ishizuka, Higashinose, and Jitsuo Sugita, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 667,033, Mar. 15, 1976, Pat. No. 4,062,861, which is a continuation of Ser. No. 491,491, Jul. 23, 1974, abandoned. This application Sep. 23, 1977, Ser. No. 836,238
Claims priority, application Japan, Jul. 27, 1973, 48-85339
Int. Cl.² A01N *9/22*
U.S. Cl. 71—88 **13 Claims**

1. A herbicidal composition comprising a herbicidal amount of a compound selected from the group consisting of 1-methyl-3-(5-i-propyl-3-isoxazolyl)urea, 1-methyl-3-(5-t-butyl-3-isoxazolyl)urea, 1,1-dimethyl-3-(5-t-butyl-3-isoxazolyl)urea, 1,3-dimethyl-3-(5-t-butyl-3-isoxazolyl)urea, 1,1,3-trimethyl-3-(5-t-butyl-3-isoxazolyl)urea, 1-methyl-1-butyl-3-(5-t-butyl-3-isoxazolyl)urea, 1-allyl-1-methyl-3-(5-t-butyl-3-isoxazolyl)urea, 1,1-dimethyl-3-(5-i-propyl-3-isoxazolyl)urea, 1-methoxy-1-methyl-3-(5-t-butyl-3-isoxazolyl)urea, 1-butylthio-1-methyl-3-(5-t-butyl-3-isoxazolyl)urea, 1-methyl-1-butyl-3-(5-i-propyl-3-isoxazolyl)urea and 1,3-dimethyl-3-(5-i-propyl-3-isoxazolyl-)urea, in combination with a carrier therefor.

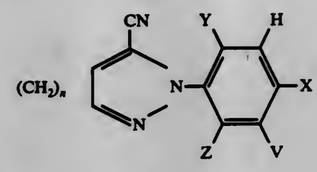
4,111,681

CYCLOALKANAPYRAZOLE-3-CARBONITRILE HERBICIDES

Steven Jerome Goddard, West Grove, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 9, 1976, Ser. No. 720,801
Int. Cl.² A01N *9/22*
U.S. Cl. 71—92 **30 Claims**

1. A compound of the formula



where

n is 3 or 4;

X is fluorine, chlorine, bromine, cyano or methoxy;

Y is hydrogen or fluorine;

Z is hydrogen and

V is hydrogen.

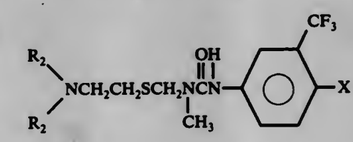
4,111,682

N-(AMINOALKYLENE THIOMETHYL)-N'-(ARYL) UREA HERBICIDES

Arnold David Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

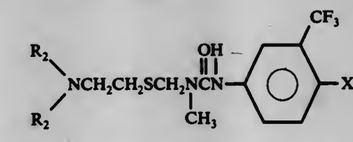
Continuation of Ser. No. 540,374, Jan. 13, 1975, abandoned. This application May 31, 1977, Ser. No. 801,889
Int. Cl.² C07C *127/15, 127/19;* A01N *9/12*
U.S. Cl. 71—98 **4 Claims**

1. A compound having the formula



wherein R_2 is alkyl containing 1 through 4 carbon atoms and X is selected from the group consisting of hydrogen and chlorine.

3. The method of controlling weed species by applying to the habitat of said weed species to be controlled an effective amount of a compound having the formula



wherein R_2 is alkyl containing 1 through 4 carbon atoms and X is selected from the group consisting of hydrogen and chlorine.

4,111,683

N-ALKYL OR ALKOXY-N'-SUBSTITUTED HYDROCARBYL UREA

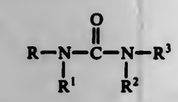
Malcolm Scott Singer, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 591,058, Jun. 27, 1975, abandoned, which is a continuation of Ser. No. 385,521, Aug. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 124,422, Mar. 16, 1971, abandoned, and Ser. No. 124,423, Mar. 16, 1971, abandoned. This application Nov. 12, 1976, Ser. No. 741,422

Int. Cl.² A01N *9/18;* C07C *161/04*

U.S. Cl. 71—104 9 Claims

1. A compound of the formula



wherein R^3 is $-CH(X)CZ_3$; X is $-N{=}C{=}U'$; U' is sulfur, Z is halogen of atomic number of 9 to 35; R^2 is alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; R^1 is hydrogen or alkyl of 1 to 4 carbon atoms; R is alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 2 halogens of atomic number 9 to 35, alkyl of 1 to 2 carbon atoms, alkoxy of 1 to 2 carbon atoms or one trifluoromethyl.

4,111,684

HERBICIDE-FILLED CELLULOSE ESTER PARTICLES HAVING CONTROLLED RELEASE PROPERTIES

Norman W. Thomas, Warren; Frank S. Model, Basking Ridge, and Charles L. Smart, Millington, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 28, 1977, Ser. No. 791,823

Int. Cl.² A01N *9/24, 9/20*

U.S. Cl. 71—115 13 Claims

1. A controlled-release herbicidal composition comprising discrete particles of a water-leachable benzoic acid herbicide selected from the group consisting of mono-, di- and tri- substituted benzoic acids in which the substituents are halo, amino, nitro and lower alkoxy occupying the voids, or channels, of a particulate, substantially water-impermeable, porous cellulose ester carrier, said voids, or channels, communicating with the exterior surface of the carrier particles.

4,111,685

DISPERSION-STRENGTHENED COBALT-BEARING METAL

Sanford Baranow, Saugquoit, N.Y., assignor to Special Metals Corporation, New Hartford, N.Y.

Filed Nov. 4, 1976, Ser. No. 738,770

Int. Cl.² C22C *19/00*

U.S. Cl. 75—951 9 Claims

1. Coarse grained oxide dispersion-strengthened metal consisting essentially of, by weight, from 18 to 35% chromium, 3 to 7% aluminum, 0.2 to 3.0% of at least one oxide dispersoid, 10 to 45% nickel, up to 10% iron, up to 0.1% boron, up to 2.0% titanium, up to 1.5% hafnium, up to 3.0% vanadium, up to 4.0% of elements from the group consisting of molybdenum, tungsten and rhenium, up to 4.0% tantalum, up to 1.0% yttrium, up to 1.0% lanthanum, up to 1.0% cerium, up to 0.1% carbon, balance essentially cobalt; said oxide dispersoid having a negative free energy of formation at 1000° C. of at least as great as that of aluminum oxide; said metal having at least 30% cobalt; said metal being characterized by a desirable combination of high temperature strength and oxidation resistance, and hot corrosion resistance.

4,111,686

PRODUCTION OF METALS AND METAL ALLOYS OF HIGH PURITY

René Antoine Pâris, 152, Cours Gambetta, Lyon 7°, Rhone; Paul Alexis Amblard, 3, rue Julien Baudran, Bron, Rhone, and Abel Claude Rousset, 37 bis, rue Jean Moulin, Caluire, Rhone, all of France

Continuation of Ser. No. 250,080, May 3, 1972, Pat. No. 3,909,247. This application Sep. 29, 1975, Ser. No. 617,846

Claims priority, application France, May 6, 1971, 71.17059; Nov. 3, 1971, 71.40191

The portion of the term of this patent subsequent to Sep. 30, 1992, has been disclaimed.

Int. Cl.² C22C *1/04, 43/00;* B22F *9/00*

U.S. Cl. 75—0.5 A 10 Claims

1. A process for producing a metal or a metal alloy consisting essentially of the steps of forming a cyanide complex selected from the group which consists of:

$Ti[Ti(CN)_8]$;
$Zr[Zr(CN)_8]$;
$Th[Th(CN)_8]$;
$Y[Y(CN)_6]$;
$Cr[Cr(CN)_6]$;
$H_2Sm[Co(III)(CN)_6]_5$;
$H_7Nd[Ni(CN)_4]_5$
$Y[Cr(CN)_6]$;
$La[Y(CN)_6]$;
$SmBa_{0.1}H_{11.8}[Co(CN)_6]_5$; and
$Sm_{0.5}Nd_{0.25}Pr_{0.25}H_{12}[Co(CN)_6]_5$;

the complex by crystallizing it from an aqueous solution of ions of its components, and drying the crystals thus formed under vacuum or in a stream of hydrogen at a temperature of 150° to 250° C.; and reducing said cyanide complex with dry gaseous hydrogen at a temperature 700° to 1300° C.

4,111,687

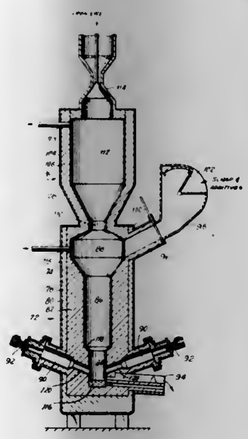
PROCESS FOR THE PRODUCTION OF INTERMEDIATE HOT METAL

Andrew J. Syska, Marblehead, Mass., assignor to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Filed Nov. 1, 1976, Ser. No. 737,699

Int. Cl.² C21C *5/52*

U.S. Cl. 75—13 21 Claims



1. A process for the production of intermediate hot metal for use in steelmaking comprising introducing a charge of ore containing oxides of iron and gangue as lumps, briquettes, pellets or other agglomerates into a reducing furnace, heating said charge in said reducing furnace by means of a reducing atmosphere comprising a mixture of top gas recycled from said reducing furnace and off-gas containing hydrogen and carbon monoxide produced in a melting unit to reduce said oxides of iron substantially to iron, carburizing a portion of said iron to iron carbide within said reducing furnace by reacting said iron with a portion of the carbon monoxide contained in said top gas and said off-gas from said melting unit, introducing said reduced and carburized iron and said gangue together with slag forming additives and fluxes into the upper region of a melting unit, and melting said reduced and carburized iron, said gangue and said slag forming additives and fluxes under a reducing atmosphere produced by the combustion of a rich fuel/oxidant mixture to produce a molten slag and molten metal comprising essentially iron and carbon.

4,111,688

METHOD FOR SEPARATING GOLD FROM ACID AQUEOUS SOLUTION

Michio Ichijo, Kawaguchi, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Aug. 25, 1977, Ser. No. 827,463

Claims priority, application Japan, Aug. 25, 1976, 51-101416

Int. Cl.² C22B *11/10*

U.S. Cl. 75—118 R 12 Claims

1. A method for separating gold from an acidic aqueous solution containing gold comprising the steps of:

(a) selectively precipitating metallic gold from the solution by adding a silver amalgam with 30% by weight or more of silver content to said solution and reacting gold ions with the silver amalgam at a reaction temperature of 70° C. or higher in the presence of an excessive alkali metal chloride;
(b) separating metallic gold from the solution;
(c) forming a silver amalgam with 30% by weight or more of silver content by adding a silver amargam with less than 30% by weight of silver content to the solution from the step (b), and reacting silver ions present in the solution with the silver amalgam at a reaction temperature of 70° C. or higher in the presence of an excessive alkali metal chloride;
(d) separating the silver amalgam from the aqueous solution;
(e) circulating the silver amalgam separated in the step (d) to the step (a);
(f) forming silver amalgam with less than 30% by weight of silver content by adding amalgams of a base metal having a greater ionizing tendency than mercury to the solution from the step (d) and reacting the amalgam with the silver ions and mercury ions remaining in the solution at a reaction temperature of 70° C. or higher in the presence of an excessive alkali metal chloride;
(g) separating the silver amalgam from the solution; and
(h) circulating the silver amalgam separated in the step (g) to the step (c).

4,111,689

METHOD OF STORING HYDROGEN

James Liu, Denver, Colo., assignor to Franklin Baumgartner, Denver, Colo.

Filed Feb. 9, 1976, Ser. No. 656,402

Int. Cl.² C22C *30/00, 22/00, 38/12, 38/14*

U.S. Cl. 75—122 5 Claims

1. An alloy for reversibly storing hydrogen which enters into an exothermic reaction with hydrogen to form a complex therewith consisting essentially of about 31–46 weight percent titanium, 5–33 weight percent vanadium and 36–53 weight percent of a metal selected from the group consisting of iron and manganese and mixtures thereof.

4,111,690

ELECTRICAL CONTACTS WITH GOLD ALLOY

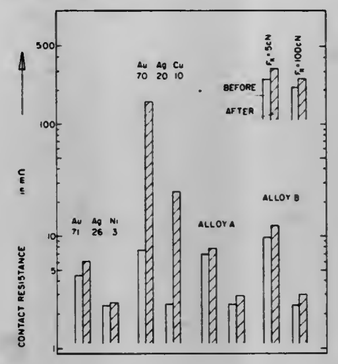
Nils Harmsen, Bruchköbel, Fed. Rep. of Germany, assignor to W. C. Heraeus GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Jul. 26, 1977, Ser. No. 819,060

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637807

Int. Cl.² C22C *5/00*

U.S. Cl. 75—165 12 Claims



1. A gold, silver and nickel containing alloy particularly useful for electrical contacts consisting essentially of between 10 and 40% by weight silver, 2 and 25% palladium, 1 and 5% nickel, 0.1 and 10% indium, 0.1 and 3% tin, and the balance substantially gold.

4,111,691

CRUSHABLE LOW REACTIVITY NICKEL-BASE MAGNESIUM ADDITIVE

Floyd Gotthard Larson, Jr., Ringwood, N.J., and John Joseph deBarbadillo, II, Warwick, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 612,367, Sep. 11, 1975, Pat. No. 4,052,203. This application Mar. 8, 1977, Ser. No. 775,453

Int. Cl.² C22C *19/00*

U.S. Cl. 75—170 6 Claims

1. An addition alloy consisting essentially of, by weight, from about 3% to about 6% magnesium, iron above 20% to about 40% iron, from about 2% to about 12% silicon, up to about 2% carbon, and the balance, apart from incidental elements and impurities, essentially nickel, said nickel content of the alloy being at least about 50%, and said alloy being characterized in that it is crushable without the formation of excessive fines.

4,111,692

ELECTROSTATIC PRINTING PLATE

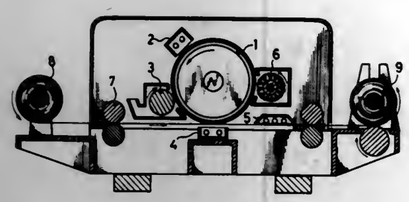
Kuniomi Etoh; Shinichi Tanaka; Yoshio Kato, and Watanabe Kazuo, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

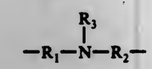
Filed Jun. 4, 1976, Ser. No. 693,127

Int. Cl.² G03G *5/04;* G03F *7/02*

U.S. Cl. 96—1 R 36 Claims

1. An electrostatic printing plate having a permanent electroconductive pattern on the exposed surface thereof, said pattern being formed by irradiation of light so as to expose a light image on a photosensitive material comprising a photosensitive composition containing an aliphatic nitrogen compound and a halogen compound capable of generating a free radical upon irradiation by light, said aliphatic nitrogen compound has one or more base units represented by the formula:





wherein R_1 and R_2 are independently a methylene and a substituted or unsubstituted alkylidene group with 1-13 carbon atoms, and R_3 is selected from at least one member of the group consisting of hydrogen, and substituted or unsubstituted alkyl or aralkyl group with 1-13 carbon atoms.

4,111,693

MULTILAYER AGGREGATE PHOTOCONDUCTIVE ELEMENTS

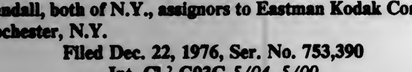
Hal Eldon Wright, Rochester, and Martin Alfred Berwick, Kendall, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,390
Int. Cl.[2] G03G *5/04, 5/09*
U.S. Cl. 96—1.6 **6 Claims**

1. A photoconductive insulating element having at least two layers comprising an aggregate photoconductive layer in electrical contact with a photoconductor containing layer, wherein:

(a) said photoconductor containing layer comprises an organic photoconductive material

(b) said aggregate photoconductive layer comprises (i) a continuous, electrically insulating polymer phase and (ii) a discontinuous phase dispersed in said continuous electrically insulating polymer phase comprising a finely-divided, particulate cocrystalline complex of at least one polymer having an alkylidene diarylene group in a recurring unit and at least one pyrylium-type dye salt, and (iii) at least one compound having the structure:



in which

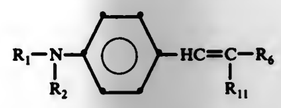
R_1 and R_2, may be the same or different, represent a substituted or unsubstituted alkyl group having from 1 to 18 carbon atoms or a substituted or unsubstituted aryl group; and

R_5 represents an electron withdrawing group, phenyl or substituted phenyl.

2. A photoconductive insulating element having at least two layers comprising an aggregate photoconductive layer in electrical contact with a photoconductor containing layer, wherein:

(a) said photoconductor containing layer comprises an organic photoconductive material

(b) said aggregate photoconductive layer comprises (i) a continuous, electrically insulating polymer phase and (ii) a discontinuous phase dispersed in said continuous electrically insulating polymer phase comprising a finely-divided, particulate cocrystalline complex of at least one polymer having an alkylidene diarylene group in a recurring unit and at least one pyrylium-type dye salt, and (iii) at least one compound having the structure:



in which

R_1 and R_2, may be the same or different, represent a substituted or unsubstituted alkyl group having from 1 to 18 carbon atoms or a substituted or unsubstituted aryl group;

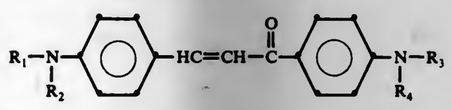
R_6 represents an electron withdrawing group, phenyl or substituted phenyl; and

R_{11} is an electron withdrawing group.

3. A photoconductive insulating element having at least two layers comprising an aggregate photoconductive layer in electrical contact with a photoconductor containing layer, wherein:

(a) said photoconductor containing layer comprises an organic photoconductive material

(b) said aggregate photoconductive layer comprises (i) a continuous, electrically insulating polymer phase and (ii) a discontinuous phase dispersed in said continuous electrically insulating polymer phase comprising a finely-divided, particulate cocrystalline complex of at least one polymer having an alkylidene diarylene group in a recurring unit and at least one pyrylium-type dye salt, and (iii) at least one compound having the structure:



in which

R_1, R_2, R_3 and R_4, may be the same or different, represent a substituted or unsubstituted alkyl group having from 1 to 18 carbon atoms or a substituted or unsubstituted aryl group.

4,111,694

METHOD FOR MANUFACTURING THE PICTURE DISPLAY SCREEN OF A COLOR TELEVISION TUBE USING A CYLINDER LENS

Jan Hendrik Duistermaat, and Johannes Cornelis Adrianus van Nes, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 352,873, Apr. 20, 1973, abandoned.
This application Jun. 28, 1974, Ser. No. 484,079
Claims priority, application Netherlands, May 9, 1972, 7206241
Int. Cl.[2] G03C *5/00*
U.S. Cl. 96—36.1 **1 Claim**

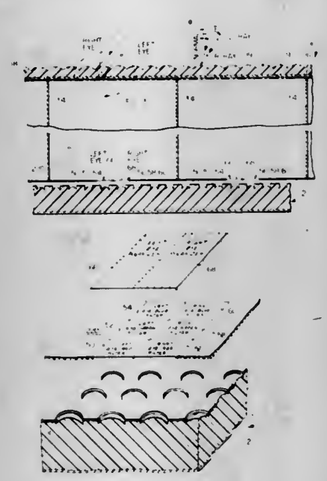
1. A method of manufacturing a color television display tube comprising a window portion and an apertured selection mask, said tube being used in conjunction with a deflection coil system having deflection coils for deflecting an electron beam in plural main directions such that said beam scans said mask, comprising the steps of: (a) providing a radiation sensitive layer on said window portion, (b) placing said mask adjacent to the radiation sensitive layer, (c) providing a light source so that the light rays emitted by it pass through the apertures in the mask at substantially the same angle as the electron beam in the manufactured tube, (d) arranging a system of lenses between the light source and the mask, said lens system having a lens power value which varies in the radial direction from its optical axis such that the virtual image of the light source formed by the associated annular zone of the system of lenses is displaced in a direction parallel to the optical axis a distance substantially equal to the displacement of the center of deflection of the electron beam in a direction parallel to the axis of the tube in accordance with the instantaneous deflection angle of the electron beam, (e) arranging a cylinder lens between the light source and the mask to compensate for differences in the displacement of said center of deflection for a given angular deflection of the electron beam in different ones of said main directions due to differences in the characteristics of the deflection coils, and (f) optically projecting by means of said light source a pattern of systematically arranged apertures in said color selection mask onto said radiation sensitive layer.

4,111,695

NO GLASSES 3-D VIEWER

George Johannus Yevick, Leonia, N.J., assignor to Izon Corporation, Stamford, Conn.

Division of Ser. No. 582,170, May 30, 1975, Pat. No. 4,012,116.
This application Sep. 22, 1976, Ser. No. 725,895
Int. Cl.[2] G03C *5/04, 9/00*
U.S. Cl. 96—40 **2 Claims**



1. A method of making a three-dimensional viewing apparatus including the steps of,

(a) providing the flat surface of a lenticular lensplate with a viewing screen having the property of transmitting and diffusing light incident thereon, the lenticular lensplate having lenses on one surface thereof and having a photographic emulsion on its other surface,

(b) placing a source of illumination on the side of said lenticular lensplate which carries the lenses, the source being at a distance therefrom corresponding to the normal viewing distance of an individual,

(c) energizing said source of illumination to thereby define a first area of activated photographic emulsion beneath and corresponding to each lens of the lensplate,

moving said source of illumination laterally so that it occupies a position corresponding to the corresponding normal right eye viewing position of an individual,

(e) activating said source of illumination to thereby define a second area of photographic emulsion activation beneath and corresponding to each convex lens, said first and second areas of photographic emulsion being spaced from each other,

(f) processing the photographic emulsion so that the said first and second activated emulsion areas become transparent and the remaining, non-activated emulsion area becomes opaque, whereby the first and second emulsion areas beneath and corresponding to each lens of the lensplate define an aperture pair beneath and corresponding to each lens of the lensplate.

4,111,696

COMPOSITE IMAGE DESIGN METHOD

Jerome Sirlin, Ithaca, N.Y.

Filed Jan. 29, 1976, Ser. No. 653,308
Int. Cl.[2] G03C *5/04, 5/06*
U.S. Cl. 96—42 **5 Claims**

1. A method of making a photograph representing a composite scene including elements of a plurality of pre-recorded scenes, said method comprising:

making a first, relatively large, plurality of selected pictorial representations of diverse scenes;

positioning a viewing screen at a selected location, said viewing screen having a rear projection surface and a front viewing surface;

positioning a plurality of projectors behind said viewing screen;

selecting a second plurality of pictorial representations of diverse scenes;

projecting individual ones of said first and second plurality of images from individual ones of said plurality of projectors onto said viewing screen rear projection surface;

superposing selected ones of said projected images;

selecting a third plurality of images from said first and second plurality of images;

projecting each of said third plurality of images from individual ones of said plurality of projectors onto said rear projection surface to be viewed on said viewing surface;

superposing said selected images from said third plurality of images on said viewing screen;

visually adjusting the size, position and illumination of each of said superposed, selected images relative to the others to produce a desired relationship of said images to be combined in said composite scene;

registering a single sheet of transparent material on said viewing screen over said superposed selected images;

drawing an outline of each of said selected superposed images on said single sheet of transparent material;

registering a single sheet of opaque medium beneath said transparent sheet so that the outlines of said selected superposed images are superposed on said sheet of opaque medium;

cutting out each outlined image from said single sheet of opaque medium by cutting through said transparent material;

retaining said cut-out images in place in said single sheet of opaque medium while leaving said superposed selected images on said viewing screen beneath said opaque medium so that the images corresponding to said cut-out images are visible through said opaque medium; sequentially removing individual ones of said cut-out images from said opaque medium,

photographically recording said selected cut-out images individually on the same frame of film by repeated exposing said same frame of film as said cut-out images are sequentially removed from said opaque medium; and

processing said same frame of film to produce a photograph representing a composite scene composed of said selected superposed images.

4,111,697

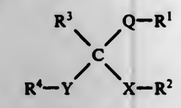
NOVEL ANTIFOGGING AND/OR STABILIZING COMPOUNDS FOR SILVER HALIDE PHOTOGRAPHY

Robert Joseph Pollet, Vremde; Antoon Leon Vandenberghe, Hove; Valére Frans Danckaert, Boechout; Jozef Frans Willems, Wilrijk, and George Frans Van Veelen, Mortsel, all of Belgium, assignors to Agfa-Gevaert, N. V., Mortsel, Belgium

Filed Mar. 10, 1977, Ser. No. 776,432
Claims priority, application United Kingdom, Mar. 29, 1976, 12596/76
Int. Cl.[2] G03C *5/30, 1/34*
U.S. Cl. 96—66.5 **5 Claims**

1. A photographic material comprising a support and at least one light-sensitive silver halide emulsion layer wherein the

emulsion layer and/or a hydrophilic colloid layer in water-permeable relationship with the emulsion layer includes a compound in a stabilizing or fog-inhibiting amount corresponding to the following general formula:



wherein:

Q is sulphur or selenium

X is sulphur, selenium or oxygen

Y is sulphur, selenium, oxygen or a single bond,

R^1 stands for an alkyl group having no nitrogen containing substituents or an aryl group,

R^2 represents the same groups as indicated for R^1, provided that only when X represents sulphur or selenium nitrogen containing substituents of alkyl are excluded,

R^3 stands for hydrogen, carboxy in acid or salt form, an alkyl group or an aryl group, and

R^4 stands for hydrogen provided Y represents a single bond, an alkyl group having no nitrogen containing substituents when Y represents sulphur or selenium and having no hydroxy substituents when Y represents a single bond and X as well as Q represent sulphur or selenium, or an aryl group,

R^3 and R^4 may also form together on alkylene group provided Y is a single bond.

4,111,698

SPIN-COATED PHOTOSENSITIVE SILVER HALIDE PHOTOMASK

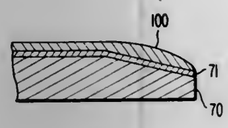
Masamichi Sato, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed Jul. 30, 1976, Ser. No. 710,049

Claims priority, application Japan, Jul. 30, 1975, 50-92841

Int. Cl.[2] G03C *1/72*

U.S. Cl. 96—79 **9 Claims**



1. A light-sensitive photomask material comprising a silver halide emulsion layer having central and peripheral portions spin coated on a mask layer formed on the surface of a support suitable for spin coating, said support being transparent to near ulraviolet and visible light and formed of a member selected from the group consisting of glass, silica, sapphire and quartz, said surface being flat except at the periphery where said surface is removed in an amount of at least the excess thickness at the periphery of the spin coated silver halide emulsion layer, such that the surface of said spin coated silver halide emulsion layer at the periphery is not raised in comparison to the surface of said spin coated silver halide emulsion layer at the center.

4,111,699

O-NITRO-O-AZAARYLIDENE PHOTOBLEACHABLE DYES AND PHOTOGRAPHIC ELEMENTS UTILIZING THEM

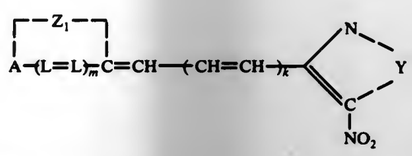
Spencer Milton Krueger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,825

Int. Cl.[2] G03C *1/78, 1/84, 1/36*

U.S. Cl. 96—87 R **17 Claims**

1. A photographic element comprising a support, a light sensitive layer and, incorporated in the support, in the light sensitive layer or in an otherwise non-light sensitive layer adjacent the support, a photobleachable o-nitro-o-azaarylidene dye having the structure:



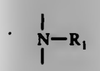
wherein:

(a) *k* represents 0 or 1;

(b) *m* represents 0 or 1;

(c) each L represents a methine group;

(d) A represents an electron donating moiety selected from oxygen, sulfur or

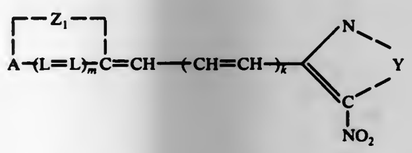


wherein R_1 represents an alkyl group, an alkenyl group or an aryl group;

(e) Z_1 represents the nonmetallic atoms necessary to complete a basic heterocyclic nucleus of the type used in cyanine dyes; and

(f) Y represents the atoms necessary to complete a pyridine nucleus, a pyridazine nucleus, a pyrimidine nucleus, a pyrazine nucleus, a quinoline nucleus, a quinaldine nucleus or a quinoxaline nucleus.

15. A photographic element comprising a support, a light sensitive silver halide layer and incorporated in the support or in a layer adjacent to the support a photobleachable antihalation dye having the structure



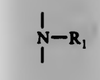
wherein:

(a) *k* represents 0 or 1;

(b) *m* represents 0 or 1;

(c) each L represents a methine group;

(d) A represents



where R_1 is alkyl;

(e) Z_1 represents the nonmetallic atoms necessary to complete a quinoxaline, an imidazo[4,5-b]quinoxaline or a quinoline nucleus; and

(f) Y represents the atoms necessary to complete a pyridine or pyrimidine nucleus.

4,111,700

POLYFLUORINATED AMINE OIL-REPELLENT, STAIN-RELEASE FABRIC TREATMENT

William J. Connick, Jr., and Samuel E. Ellzey, Jr., both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 272,813, Jul. 18, 1972, Pat. No. 3,976,818. This application Jun. 9, 1976, Ser. No. 694,515

Int. Cl.[2] C09K *3/18*

U.S. Cl. 106—2 **4 Claims**

1. A treating composition for imparting oil repellency and anti-stain properties to a textile fabric, said composition consisting of an aqueous emulsion containing about 1-5 wt. % of a product prepared by mixing equimolar amounts of 1,1-dihydroperfluorooctylamine and tetrakis(hydroxymethyl)phosphonium chloride in water in the presence of an emulsifier selected from the group consisting of an octylphenoxyethanol and a trimethylnonyloxyethanol, and to which emulsion has been added a basic substance selected from the group consisting of sodium acetate, sodium hydroxide, and triethanolamine to raise the pH to between about 4.8 and 7.1.

4,111,701

FLAME RETARDANT REGENERATED CELLULOSE FILAMENTS CONTAINING CROSS-LINKED POLYMERIC PHOSPHAZENES

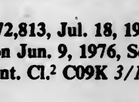
Borivoj Richard Franko-Filipasic, Morrisville; Edward F. Orwoll, Langhorne, both of Pa., and Vitha. C. Patel, Glen Burnie, Md., assignors to Avtex Fibers Inc., Valley Forge, Pa.

Division of Ser. No. 458,102, Apr. 5, 1974, Pat. No. 3,994,996, which is a division of Ser. No. 225,621, Feb. 11, 1972, Pat. No. 3,845,167. This application Oct. 1, 1976, Ser. No. 728,584

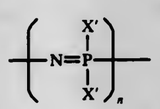
Int. Cl.[2] C08L *1/08, 1/24*

U.S. Cl. 106—15 FP **16 Claims**

1. Regenerated cellulose filaments and filamentary articles, said filaments having dispersed therein a flame-retardant amount of a substantially water-insoluble, liquid polymeric phosphazene made by reacting a phosphonitriliate having the general formula:



representing both cyclic and linear oligomers, in which *n* is at least 3 for cyclic oligomers and wherein X and Y represent the same or different —OR groups wherein R is an alkyl or alkenyl radical having 2 to 6 carbon atoms, said radical being halo-substituted or unsubstituted, with an acid halide of a phosphorus acid selected from the group consisting of phosphonitrilic halide oligomers having the structure:



representing both cyclic and linear oligomers, in which *n* is at least 3 for cyclic oligomers and X' is chlorine or bromine, POX_3', PX_3' and PSX_3' in which X' is chlorine or bromine at a temperature of 50° to 200° C. at a pressure of 5 to 760 mm of mercury for a reaction period of 1 to 36 hours.

4,111,702

HIDDEN ENTRY OR LATENT IMAGE METHODS AND SYSTEMS

Robert D. Fraik, Lincoln Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 23,036, Mar. 26, 1970, Pat. No. 3,725,104, which is a continuation-in-part of Ser. No. 822,287, May 6, 1969, abandoned. This application Jan. 11, 1973, Ser. No. 322,620

Int. Cl.[2] C09D *11/00, 13/00*

U.S. Cl. 106—19 **3 Claims**

1. A crayon means for dispensing an image-forming co-reactant metal salt capable of forming a colored complex with a reactant material selected from the group consisting of dithiooxamide, N,N'-disubstituted derivatives of dithiooxamide, and an iron-complexing compound capable of forming a colored complex when reacted with the ions of an iron salt, said iron-complexing compound having a benzene ring and at least two hydroxyl groups substituted in adjacent positions on said ring, said means comprising a solid wax matrix having the shape of a wax crayon, said matrix containing said coreactant material and further containing an image-forming reaction accelerator compound selected from the group consisting of trialkyl phosphates and triaryl phosphates.

4,111,703

HEAT-SENSITIVE COATING COMPOSITION WITH 4-AROMATIC AND HYDROXY SUBSTITUTED PIPERIDINE DERIVATIVE AND CYCLIC POLYKETO COMPOUND

William R. Lawton, Orchard Park, N.Y., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 772,084, Feb. 25, 1977. This application Mar. 3, 1977, Ser. No. 774,210

Int. Cl.[2] C09D *11/00*

U.S. Cl. 106—21 **5 Claims**

1. A heat-sensitive coating composition adapted to acquire in a region thereof a stable color constrasting visibly with a background color of said coating composition upon heating said region to an elevated temperature, containing

polymeric binder means for binding said coating composition to a substrate,

a 4-hydroxy substituted piperidine derivative selected from the group consisting of 4-benzyl-4-hydroxypiperidine, 4-hydroxy-4-phenylpiperidine and 4-(p-chlorophenyl)-4-hydroxypiperidine, and

a cyclic polyketo compound reactive with said piperidine derivative at an elevated temperature to form a color contrasting visibly with a background color of said coating composition, said cyclic polyketo compound being selected from the group consisting of ninhydrin, hydrindantin, isatin and alloxan.

4,111,704

PRINTING PASTE

Friedhelm Steinberg, Finnentrop, and Günter Voss, Neuenrade, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 30, 1977, Ser. No. 782,799

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614232

Int. Cl.[2] C09D *11/14*

U.S. Cl. 106—25 **1 Claim**

1. A printing paste for marking non-weldable areas in the manufacture of ducted plates in which at least two metal plates are joined by sealed assembly rolling, comprising approximately equal parts by weight of

(A) a dispersion comprising

about 5 to 60% of titanium dioxide based on the weight of dispersion (A), about 0.10 to 4% of magnesium montmorillonite based on the weight of dispersion (A), up to

about 10% of silica based on the weight of dispersion (A), and the balance of water, and

(B) a dispersion comprising

about 25 to 35 parts by weight of alginate, about 50 to 70 parts by weight of silica having a submicroscopic particle size, about 2 to 4 parts by weight of highly concentrated ammonia solution, and about 1000 parts by weight of water.

4,111,705

SELF-HARDENING MOULDING MIXTURE FOR MAKING FOUNDRY MOULDS AND CORES

July Moiseevich Junovich, Veshnyakovskaya ulitsa, 11, korpus 1, kv. 201; Sergei Semenovich Zhukovsky, Profsojuznaya ulitsa, 17, korpus 1, kv. 15, both of Moscow; Lev Girshovich Sadakas, ulitsa Shelgunova, 15, kv. 6; Ljudmila Ivanovna Turkina, Tallinskoe shosse, 62, kv. 46, both of Leningrad; Anatoly Ilich Smirnov, ulitsa Novinki, 23, korpus 2, kv. 61, Moscow; Abram Moiseevich Lyass, Sharikopodshipnikovskaya ulitsa, 2, kv. 42, Moscow, and Sergei Dmitrievich Teplyakov, Seleznevskaya ulitsa, 13, kv. 3, Moscow, all of U.S.S.R.

Continuation of Ser. No. 472,914, May 23, 1974, abandoned. This application Apr. 9, 1976, Ser. No. 675,458

Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.35 **8 Claims**

1. A self-hardening moulding mixture for making foundry mould and cores, comprising moulding sand, from 4–12% by weight of said moulding sand orthophosphoric acid, from 2–6% by weight of said moulding sand of a ferrous oxide-containing material, of from 0.05–5.0% by weight of sand moulding sand of a water-soluble salt of an alkali metal or an ammonium ion with a carboxylic acid with a dissociation constant not exceeding 10^{-4}.

4,111,706

SEALING AND FILLING MATERIAL FOR METALLURGICAL APPLICATIONS

Micheal Donald La Bate, 115 Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 689,142, May 24, 1976, abandoned. This application Oct. 5, 1977, Ser. No. 839,627

Int. Cl.² C04B *35/04, 35/10, 35/56*

U.S. Cl. 106—44 **4 Claims**

1. A sealing and filling material for metallurgical applications comprising a compound formed of 8% to 10% of consumable wood fiber, 45% to 50% of a non-consumable material from the group consisting of finely ground fired clay, silicon carbide, magnesite, burned dolomite, alumina, ground limestone and fine sand particles and 40% 47% of a wetting solution to bind said materials into a yieldable, shapable compound, said wetting solution consisting of an aqueous solution substantially 60% to 65% water, 5% to 15% calcium chloride and 2% to 20% phosphoric acid.

4,111,707

OPTICAL GLASS

Fujio Komorita, Hachioji; Nobuhiro Nozawa, Sagamihara, and Satoshi Inoue, Tsukui, all of Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Sagamihara, Japan

Filed Dec. 14, 1977, Ser. No. 860,428

Int. Cl.² C03C *3/08, 3/14*

U.S. Cl. 106—47 Q **2 Claims**

1. An optical glass substantially consisting of a composition in weight percent of 26 to 38% B_2O_3, 0.5 to 7% SiO_2, 31 to 38% La_2O_3, 17 to 30% Gd_2O_3, 1 to 7% Y_2O_3, the total of said La_2O_3, Gd_2O_3 and Y_2O_3 being 58 to 64%, 0 to 8% ZrO_2, 0 to 2% SnO_2, 0 to 2% GeO_2, an oxide or oxides selected from the group consisting of Li_2O, Na_2O and K_2O, the total of said Li_2O, Na_2O and K_2O being 0 to 0.5%, and an oxide or oxides selected from the group consisting of MgO, CaO, SrO, BaO, ZnO and Al_2O_3, the total of said MgO, CaO, SrO, BaO, ZnO and Al_2O_3 being 0 to less than 2%.

4,111,708

MACHINABLE GLASSES

James E. Flannery, and Dale R. Wexeli, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 6, 1978, Ser. No. 867,222

Int. Cl.² C03C *3/10, 3/8, 3/22*

U.S. Cl. 106—53 **3 Claims**

1. A phase separated, machinable glass having a composition which, as calculated in weight percent on the oxide basis from the glass batch, consists essentially of 0.3–2.5% Li_2O, 1–10% ZnO, 5–28% PbO, 4–12% B_2O_3, 45–72% SiO_2, 0–5% TiO_2 and 0–7% Al_2O_3.

4,111,709

LUTE

David Watkin Price, Cheltenham; Newton John Hodges, Charlton Kings, and Robert Furley, Gloucester, all of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 690,032, May 25, 1976, abandoned. This application Feb. 1, 1978, Ser. No. 874,290

Claims priority, application United Kingdom, Jul. 1, 1975, 27711/75

Int. Cl.² C04B *33/00*

U.S. Cl. 106—67 **5 Claims**

1. A foamable lute of clay-like consistency in admixture with a blowing agent which yields gas formation at least within the temperature range 160° to 290° C., said lute comprising an admixture of clay or pressed colliery tailings, water and at least one element selected from the group consisting of shale, coke breeze or reclaimed lute.

4,111,710

METHOD OF INCORPORATING CARBON FIBERS INTO CEMENT TO PRODUCE REINFORCED STRUCTURES HAVING IMPROVED FLEXURAL STRENGTHS

Reginald David Pairaudeau; David Turnbull, and Leonard Graham Bevan, all of Bristol, United Kingdom, assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 23, 1976, Ser. No. 753,820

Int. Cl.² C04B *7/02, 7/35*

U.S. Cl. 106—90 **20 Claims**

1. In a process for incorporating strands of carbon fibers into an aqueous hardenable hydraulic cementitious matrix to produce a formable composition which can be set to produce a carbon fiber-reinforced cementitious structure, which process employs a polyethylene oxide having a molecular weight of from 500,000 to 5,000,000 to facilitate incorporation of the fibers into the matrix, the improvement which comprises employing at least 0.14 part by weight of the polyethylene oxide in the mix per 100 parts by weight of the dry components of the hydraulic cementitious matrix to deflocculate the fiber strands present and produce a composition from which structures having improved flexural strengths can be produced.

4,111,711

CEMENTS AND CONCRETES WHICH CONTAIN THEM

Jean-Pierre Kiehl, Lyon; Victor Jost, and Bernard Alain Clavaud, both of Bron, all of France, assignors to Societe Europeenne des Produits Refractaires, France

Filed Jul. 18, 1977, Ser. No. 816,753

Claims priority, application France, Jul. 22, 1976, 76 22344; May 13, 1977, 77 14717

Int. Cl.² C04B *7/02*

U.S. Cl. 106—97 **7 Claims**

1. A cement consisting essentially of a mixture of 10 to 30% by weight of a first ingredient, 14 to 56% by weight of a second ingredient, and 14 to 56% by weight of a third ingredient wherein said second and third ingredients represent from 70 to 90% of the weight of the cement, and wherein

said first ingredient is at least one alkaline-earth mineral substance selected from the group consisting of calcium monoaluminate steelworks slag, calcium dialuminate steelworks slag, calcium silico-aluminate steelworks slag, calcium monoaluminate cement, calcium dialuminate cement, silicoaluminous cement, calcium silicate, barium silicate and an alkaline-earth oxide which has been calcined at very high temperature and has been selected from the sub-group consisting of magnesia, dolomite, calcium oxide and baryta; said second ingredient is at least one substance having a particle size lying between 100 A and 0.1 micron selected from the group consisting of silica, chromium oxide, titanium dioxide, zirconia and alumina; and said third ingredient is an inert filler having a particle size lying between 1 and 100 microns.

4,111,712

HIGH DENSITY ASBESTOS-FREE TOBERMORITE THERMAL INSULATION CONTAINING WOLLASTONITE

Walter George Pusch, Westford, Mass., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jan. 30, 1978, Ser. No. 873,199

Int. Cl.² C04B *43/02*

U.S. Cl. 106—120 **6 Claims**

1. A high density asbestos-free tobermorite thermal insulation body formed by slurrying a mixture consisting essentially of, in parts by weight: 15 to 35 parts lime, 15 to 35 parts by weight of a siliceous component, 40 to 70 parts by weight wollastonite, and 1 to 10 parts of organic fiber, and where the wollastonite content is at least 40 percent by weight of the total weight of solids, said mixture containing no asbestos fiber, in at least one part by weight water per part by weight of dry solids in said mixture; molding the slurry to a shape-retaining body having a density of a least 20 pcf; and thereafter curing said molded body in an atmosphere of steam at elevated pressure for a sufficient time to cause the lime, siliceous component, and water to form a tobermorite calcium silicate hydrate matrix reinforced by said wollastonite.

4,111,713

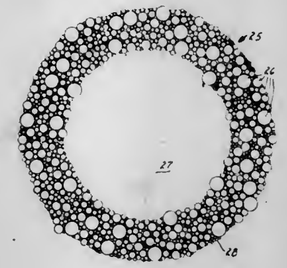
HOLLOW SPHERES

Warren R. Beck, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 29, 1975, Ser. No. 544,965

Int. Cl.² C03B *19/10*

U.S. Cl. 106—288 B **32 Claims**



1. A free-flowing mass of hollow spheres where individually are about 2 centimeters or less in diameter and comprise a solidified seamless spherical exterior wall that defines and encloses a central interior space, the exterior wall of the individual spheres being a composite structure that comprises a single thickness of binder material and a plurality of solid particles held by the binder material; at least a major portion of said thickness of binder material being filled by the particles, with a portion of the particles being totally embedded in the binder material, and with the outermost particles being only partially embedded in the binder material and partially exposed whereby they form the exterior surface of the sphere that contacts adjacent spheres in the mass.

4,111,714

PROCESS FOR OBTAINING AMINO ACIDS FROM THE RAW JUICES OF SUGAR MANUFACTURE

Hermann Hippchen, Saarbrucken; Hans-Georg Schneider, and Renate Schwingeler, both of Euskirchen, all of Germany, assignors to Pfeifer & Langen, Cologne, Germany

Filed Apr. 8, 1976, Ser. No. 675,014

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1975, 2515591; Apr. 10, 1975, 2515621

Int. Cl.² C13D *3/14;* C07C *99/12, 59/12, 59/16*

U.S. Cl. 127—46 A **13 Claims**

1. A process for the separation of amino acids from raw sugar juice containing impurities and amino acids, comprising coagulating the impurities in said juice, separating the juice from the coagulated impurities, passing the juice successively through an acidic cation exchanger and a basic anion exchanger thereby to adsorb the dissolved amino acids, eluting the ion exchangers with an ionic solution thereby to release the adsorbed amino acids, and collecting an amino acid-rich eluate.

4,111,715

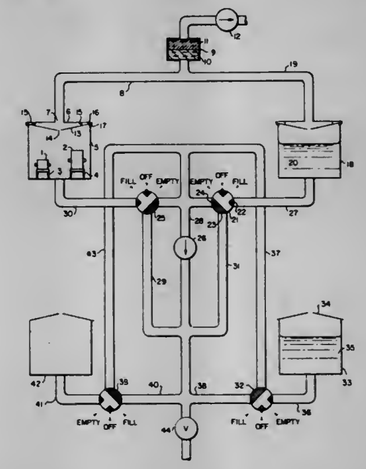
APPARATUS AND METHOD FOR CHEMICALLY REMOVING PLASTICS

Gerhard R. Sprengling, Derry Township, Westmoreland County, and Leonard E. Edelman, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 15, 1976, Ser. No. 666,808

Int. Cl.² B08B *7/04;* C23G *1/36*

U.S. Cl. 134—10 **15 Claims**



1. A method of stripping plastic from an article and of thereafter washing and cooling the stripped article, comprising:

(1) placing said article in a first heated tank having a lid with a gas exit, said lid being comparable in size to the cross-sectional area of said tank;

(2) closing said lid;

(3) admitting a stripping fluid to said tank from a second similarly-equipped tank;

(4) after said article has been stripped of said plastic by said stripping fluid, transferring said stripping fluid back to said second tank;

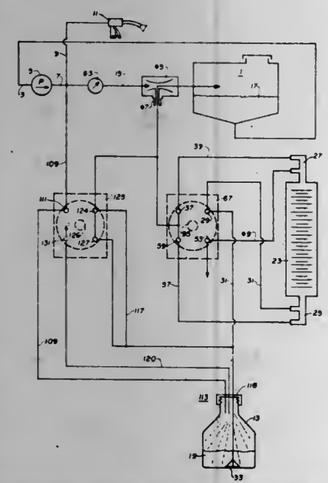
(5) admitting a washing fluid from a third tank to said first tank;
(6) transferring said washing fluid back to said third tank; and
(7) opening the lid of said first tank and removing said stripped article therefrom.

2. Apparatus comprising
(1) two heated tanks each having a removable lid with a gas exit, each lid being comparable in size to the cross-sectional area of its tank to that said cross-sectional area is substantially exposed when said lid is opened;
(2) a third tank;
(3) a one-way pump having an inlet and an outlet, conduits from each tank leading to said inlet and to said outlet, and three-way valves interconnecting said three tanks with said conduits for moving a fluid directly between any two of said three tanks without first passing through the third tank, said means including one and only one opening into each of said three tanks through which said fluid enters and leaves said tanks via said means.

4,111,716
METHOD AND APPARATUS FOR PREPARING EMPTY CHEMICAL CONTAINERS FOR DISPOSAL

James Santon Stevenson, Oakland, Calif., assignor to Terminator Products, Inc., Oakland, Calif.

Division of Ser. No. 588,417, Jun. 19, 1975. This application Oct. 22, 1976, Ser. No. 735,762
Int. Cl.² B08B *3/10*
U.S. Cl. 134—10 **5 Claims**



1. The method of preparing an empty hazardous chemical container for disposal, comprising first rinsing said container with a rinse liquid, sealing said container to atmosphere, and then exposing the interior of said container to a subatmospheric pressure such as to create a differential pressure between the outside and inside of said container, sufficient to collapse said container.

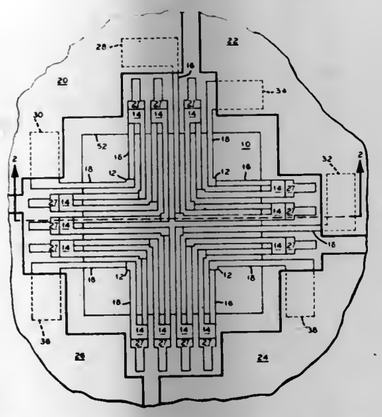
4,111,717
SMALL-SIZE HIGH-PERFORMANCE RADIATION THERMOPILE

Ronald Dale Baxter, Furlong, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Jun. 29, 1977, Ser. No. 811,373
Int. Cl.² H01L *35/32*
U.S. Cl. 136—225 **9 Claims**

1. The method of fabricating a high performance solid-backed thin film thermopile using the steps of
depositing on one surface of a crystalline wafer having a (1-0-0) crystal orientation a thin film of insulating material,
depositing on said insulating material a plurality of serially connected thermocouples formed of dissimilar conducting materials with a series of junctions located in a central portion of said wafer and intermediate junctions spaced from and circumferentially distributed outside said central portion and
anisotropically etching said water material from said insulating material in said central portion to remove said wafer material in said central portion to cause said series of junctions in said central portion to be supported solely by said thin film of insulating material.

6. An improved high-performance solid-backed thermopile for use in a radiation responsive temperature measuring device comprising
a substrate formed of a thin film of insulating material,



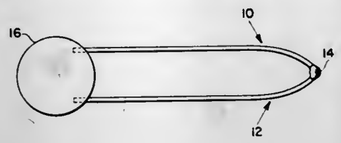
a support frame for said substrate having a substantially rectangular central aperature therethrough,
a plurality of first thermocouple junctions deposited on the surface of said substrate in a target area within the area corresponding with the central aperature of said support frame,
a plurality of second thermocouple junctions deposited on the surface of said substrate in the area supported by said support frame, and
a plurality of thermocouple leads connecting said hot and said cold junctions alternately in series circuit relation, said leads at said hot junctions lying in a plane corresponding with the surface of said insulating film and being substantially perpendicular to each other
whereby said hot junctions are distributed through said target area and the number of hot junctions that may be located in said target area is maximized for any preselected thermocouple lead spacing and target area.

4,111,718
THERMOCOUPLES OF MOLYBDENUM AND IRIDIUM ALLOYS FOR MORE STABLE VACUUM-HIGH TEMPERATURE PERFORMANCE

James F. Morris, Fairview Park, Ohio, assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 667,929, Mar. 18, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,679
Int. Cl.² H01L *35/20*
U.S. Cl. 136—236 R **2 Claims**

1. In a thermocouple for measuring temperature in high temperature and vacuum systems, the improvement comprising
a bare bimetallic thermocouple sensor of dissimilar molybdenum, iridium alloys wherein each of said bimetallic thermocouple sensor metals consists of iridium with about 0 to about 22 atomic percent molybdenum dissolved therein,

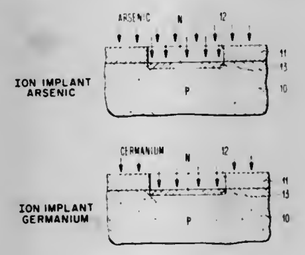


said thermocouple sensor having a melting point in the range of about 2300° C. to about 2450° C.

4,111,719
MINIMIZATION OF MISFIT DISLOCATIONS IN SILICON BY DOUBLE IMPLANTATION OF ARSENIC AND GERMANIUM

Siegfried R. Mader, Croton-on-Hudson; Burton J. Masters, Poughkeepsie, and H. Bernhard Pogge, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1976, Ser. No. 748,035
Int. Cl.² H01L *21/265, 9/10*
U.S. Cl. 148—1.5 **3 Claims**

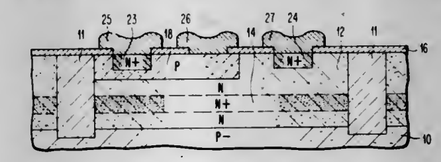


1. A method for forming N conductivity-type regions in a silicon substrate comprising
ion implanting arsenic to form a region in said substrate having an arsenic atom concentration of at least 1×10^{-2} As atoms/total atoms in substrate, and
ion implanting germanium into said substrate region.

4,111,720
METHOD FOR FORMING A NON-EPITAXIAL BIPOLAR INTEGRATED CIRCUIT

Alwin E. Michel, Ossining; Robert O. Schwenker, Hopewell Junction, and James F. Ziegler, Putnam Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,245
Int. Cl.² H01L *21/265, 21/26*
U.S. Cl. 148—1.5 **13 Claims**



1. A method for forming an integrated circuit comprising;
forming in a silicon substrate of one-type conductivity, recessed silicon dioxide regions extending into said substrate and laterally enclosing at least one silicon substrate region of said one-type conductivity,
directing a beam of ions of opposite-type conductivity impurities at said enclosed silicon region at energy and dosage levels sufficient to form a first region of said opposite-type conductivity defined and fully enclosed laterally by said recessed silicon dioxide regions,
said opposite-type conductivity impurity having a concentration peak at a point below the surface of said first region
forming a second region of said one-type conductivity extending from said surface into said opposite-type conductivity region to a point between said concentration peak and said surface, and
forming a second region of said opposite-type conductivity extending from said surface part way into said second region of one-type conductivity.

4,111,721
STRIP CAST ALUMINUM HEAT TREATMENT

Edward Willard Hitchler, Elgin, and Albert Joseph Klein, Arlington Heights, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jun. 14, 1976, Ser. No. 695,425
Int. Cl.² C22F *1/04*
U.S. Cl. 148—2 **9 Claims**

1. A process for rendering suitable for drawing and ironing manganese rich aluminum alloy material containing at least about 0.4% manganese which has been formed from the melt into a continuously cast strip, comprising the steps of: heat soaking said material of said cast strip at a temperature in a range from about 900° F to about the melting point of the alloy for a time period of between about 24 to 4 hours to form secondary constituents in the material of such increased grain size as to render it resistant to galling when subjected to drawing and ironing in suitable sheet form; and, following said heat soaking, subjecting said cast strip to at least one cold thickness reduction working to form a relatively thin sheet product of finished gage, of hard temper, and of the recited increased grain size suitable for subjection to drawing and ironing.

4,111,722
TANNIN TREATMENT OF ALUMINUM WITH A FLUORIDE CLEANER

Gary A. Reghi, Sterling Heights, and Samuel T. Farina, Mount Clemens, both of Mich., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Feb. 9, 1976, Ser. No. 656,215
Int. Cl.² C23F *7/00, 7/14*
U.S. Cl. 148—6.15 R **14 Claims**

1. A process for treating an aluminum surface to improve the corrosion resistance and organic finish receptivity thereof, comprising:
(a) contacting the surface with an aqueous cleaning composition exhibiting a pH not in excess of 2.0 and consisting

essentially of fluoride ion in an effective fluoride concentration of at least 0.1 g/l; and thereafter

(b) contacting the cleaned surface with an aqueous composition exhibiting a pH of from 3 to 9 and consisting essentially of a vegetable tannin material in a concentration of at least 0.000025 wt. %.

4,111,723

DIRECTIONALLY SOLIDIFIED EUTECTIC SUPERALLOY ARTICLES

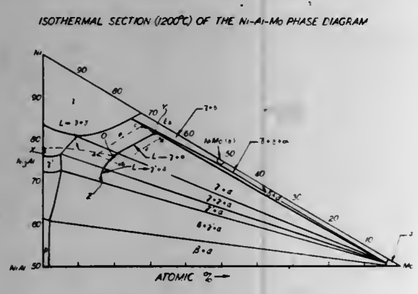
Franklin David Lemkey, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 19, 1976, Ser. No. 650,474

The portion of the term of this patent subsequent to Mar. 15, 1994, has been disclaimed.

Int. Cl.² C22C *19/03*

U.S. Cl. 148—32 **7 Claims**



1. A directionally solidified article suited for use at elevated temperatures, having a structure consisting of a ductile matrix which contains the gamma phase (nickel solid solution) in continuous form, and an aligned fibrous alpha (molybdenum solid solution) ductile reinforcing phase, said region being defined by the points *a—b—c—d* shown in FIG. 1.

4,111,724

METHOD OF MANUFACTURING OXIDE ISOLATED SEMICONDUCTOR DEVICE UTILIZING SELECTIVE ETCHING TECHNIQUE

Katumi Ogiue; Hiroyaki Kondo, both of Tokyo; Takashi Ishikawa, Kodaira; Takaaki Mori, Ome, and Takahisa Nitta, Fuchu, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 14, 1976, Ser. No. 750,387

Claims priority, application Japan, Dec. 22, 1975, 50-151828

Int. Cl.² H01L *21/76, 21/306*

U.S. Cl. 148—175 **5 Claims**

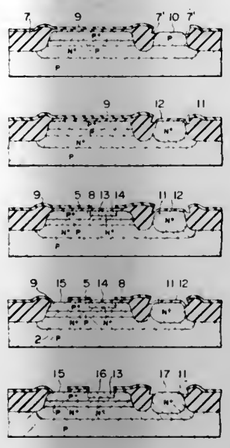
1. A method of manufacturing a semiconductor device comprising the steps of:

(a) selectively forming a first semiconductor oxide layer in a semiconductor region of a first conductivity type;

(b) forming a first heavily doped region of a second conductivity type in and extending to the surface of said first conductivity type region surrounded by said first semiconductor oxide layer and forming simultaneously a second semiconductor oxide layer at least on the surface of said first heavily doped region;

(c) forming a second region of said second conductivity type in a surface portion of said first conductivity type region, except the first heavily doped region of the second conductivity type, surrounded by said first semiconductor oxide layer, and forming simultaneously a third semiconductor oxide layer at least on the surface of said second region of the second conductivity type;

(d) simultaneously removing said second and third semiconductor oxide layers away from the surface of said first conductivity type region; and



(e) forming conducting layers on the surface of said first and second regions of the second conductivity type.

4,111,725

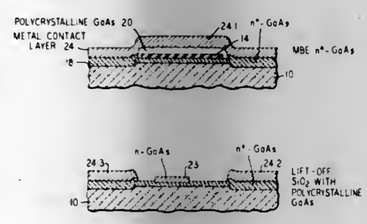
SELECTIVE LIFT-OFF TECHNIQUE FOR FABRICATING GAAS FETS

Alfred Yi Cho, Summit; James Vincent DiLorenzo, Piscataway, and Gerard Edward Mahoney, Branchburg, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 6, 1977, Ser. No. 794,336

Int. Cl.² H01L *21/20, 21/306*

U.S. Cl. 148—175 **2 Claims**



1. A process for fabricating a field effect transistor comprising steps of:

(a) growing a first GaAs epitaxial layer on a major surface of a semi-insulating GaAs wafer,

(b) forming on said first epitaxial layer an amorphous layer selected from group consisting of SiO_2 and Si_3N_4,

(c) opening windows in said amorphous layer to expose as source and drain regions underlying portions of said first epitaxial layer,

(d) forming mesas under said amorphous layer by subjecting the exposed portions of said first epitaxial layer to an etchant or anodization, said mesas extending to a depth greater than the thickness of said first epitaxial layer and undercutting the edges of said amorphous layer,

(e) reducing the size of said amorphous layer so as to eliminate the portions which overhang said mesas,

(f) placing said wafer in an ultra high vacuum chamber and heating said wafer to a temperature suitable for molecular beam deposition,

(g) directing molecular beams of Ga, As and a dopant at said wafer to grow GaAs epitaxial second layers in said windows and a polycrystalline GaAs layer on said amorphous layer,

(h) subjecting said amorphous layer to an etchant effective to dissolve said amorphous layer and lift off said polycrystalline layer, thereby exposing said mesas but leaving unaffected said second epitaxial layers which laterally bound said mesas and form source and drain regions, said mesa forming a gate region, and

(i) forming electrodes on said source, drain, and gate regions.

4,111,726

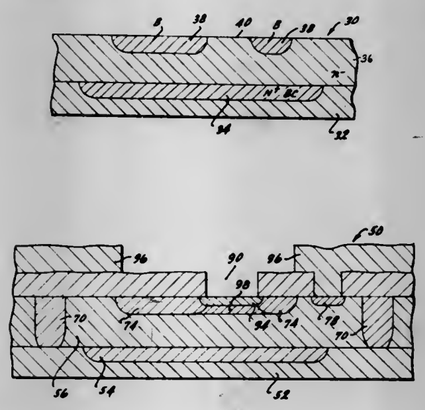
BIPOLAR INTEGRATED CIRCUIT PROCESS BY SEPARATELY FORMING ACTIVE AND INACTIVE BASE REGIONS

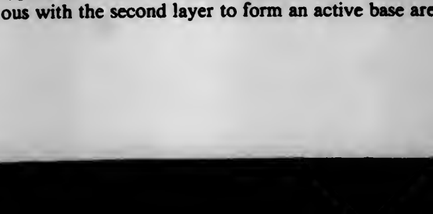
Chau-Shiong Chen, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 1, 1977, Ser. No. 783,562

Int. Cl.² H01L *21/265*

U.S. Cl. 148—175 **5 Claims**





1. In a method for fabricating a transistor in a semiconductor integrated circuit device having a substrate of a semiconductor material of a first conductivity type, a first layer of a second conductivity type and an epitaxial layer of the second conductivity type over the entire surface of the substrate burying said first layer;

the improvement comprising the steps of:

providing a silicon dioxide layer on the surface of the epitaxial layer,

depositing a layer of nitride on the oxide layer,

depositing a mask material over the nitride layer,

heat treating the device to densify the masking material,

forming openings in the mask material leaving the nitride and silicon dioxide layers intact, the center area of one of the openings remaining covered with the mask material thus selecting the emitter area and the isolation areas;

forming isolation areas through the nitride layer within the epitaxial area of the first conductivity type while said one of said areas and said center area are covered with a photoresist material,

forming a second layer of the first conductivity type to a predetermined depth through the nitride layer within the epitaxial layer while having said masked center area to prevent said second layer being formed in said area to form an inactive base surrounding the emitter area;

removing the mask material from the central area and forming a third layer of a second conductivity type to a predetermined depth within the laterial dimensions of the second layer to form an emitter;

and forming beneath the third layer by implantation through said third layer, a fourth layer of the first conductivity type lateral coextensive with the third layer and contiguous with the second layer to form an active base area.

4,111,727

WATER-IN-OIL BLASTING COMPOSITION

Robert B. Clay, 728 West 3800 South St., Bountiful, Utah 84010

Filed Sep. 19, 1977, Ser. No. 834,772

Int. Cl.² C06B *45/00*

U.S. Cl. 149—2 **21 Claims**

1. A blasting composition consisting essentially of 10 to 40% by weight of a greasy water-in-oil emulsion and 60 to 90% of a substantially undissolved particulate solid oxidizer salt constituent, wherein the emulsion comprises about 3 to 15% by weight of water, 70 to 90% of powerful oxidizer salt comprising ammonium nitrate which may include other powerful oxidizer salts, wherein the solid constituent comprises ammonium nitrate and in which sufficient aeration is entrapped to enhance sensitivity to a substantial degree, and wherein the emulsion component is emulsified by inclusion of 0.1 to 5% by weight, based on the total composition, of an oil-in-water emulsifier to hold the aqueous content in the disperse or internal phase.

4,111,728

GAS GENERATOR PROPELLANTS

Jawaharlal Ramnarace, 117 E Escalones Ave., San Clemente, Calif. 92672

Filed Feb. 11, 1977, Ser. No. 767,877

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.5 **6 Claims**

1. A castable gas generator composition comprising:

between 25 and 40 weight percent of a binder of polyether or polyester;

between 45 and 60 weight percent ammonium nitrate coated with a compound selected from the group consisting of magnesium oxide and magnesium nitrate; and an effective amount of burn rate modifier.

4,111,729

INHIBITED SOLID PROPELLANT COMPOSITION CONTAINING BERYLLIUM HYDRIDE

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Wallace W. Thompson, Los Angeles, Calif.

Filed Aug. 5, 1969, Ser. No. 849,274

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.9 **5 Claims**

1. A solid composition of matter comprising:

carboxy terminated polybutadiene,

beryllium hydride,

and an amount of lecithin sufficient to inhibit any reaction between said beryllium hydride and said carboxy terminated polybutadiene during storage of the composition prior to ignition thereof.

4,111,730

PRODUCING RECYCLE COMPOSITION PAPER FLAKE BOARD

John J. Balatinecz, 41 Bloomington Crescent, Downsview, Ontario, Canada

Continuation-in-part of Ser. No. 236,741, Mar. 21, 1972, abandoned. This application Sep. 13, 1976, Ser. No. 722,468

Int. Cl.² B31D *3/00*; B29J *5/06*

U.S. Cl. 156—62.2 **8 Claims**

1. A method of manufacturing a rigid composition paper flake board comprising the steps: fragmenting paper into flakes, adjusting the moisture content of the flakes to not more than 12% by weight of the dry paper, blending the flakes with a thermosetting synthetic resin adhesive selected from the group consisting of urea-formaldehyde and phenol-formaldehyde present in an amount of from about 2% to about 15% by weight of the dry paper, forming said paper flakes into a mat, depositing a blended mixture of wood flour or finely fragmented cellulosic matter and urea-, melamine- or phenol-formaldehyde resin in a ratio of from 1:1 to 4:1 as a layer on

surfaces of the said paper flake mat and compressing said mat at a pressure in the range of about 150 to 1000 p.s.i. at a temperature in the range of from about 200 to about 450° F for a time sufficient to cure said resin.

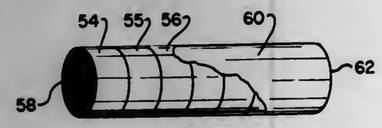


4,111,731

METHOD OF MAKING A LIGHT EQUALIZER

Henry H. Blau, Jr., Wayland, and Paul L. Kebabian, Somerville, both of Mass., assignors to Environmental Research & Technology, Inc., Concord, Mass.

Division of Ser. No. 458,124, Apr. 5, 1974, Pat. No. 3,887,262.
This application Dec. 9, 1974, Ser. No. 530,673
Int. Cl.² B29C *27/00;* B32B *31/04*
U.S. Cl. 156—86 2 Claims



1. Method of making a light equalizer comprising the steps of selecting powdered crystalline material capable of being compressed to form a body transparent to selected wavelengths of light,

compressing said material and arresting compression at a point short of complete transparency at said wavelengths so as to provide a plurality of light scattering centers at said wavelengths throughout the bulk of said body;

forming a stack in which a plurality of said bodies are disposed along a common axis; and

covering with an internally reflective coating the exterior surfaces of said stack except for the two axial ends thereof

said step of covering including the steps of wrapping said stack in a metallized sheet, positioning the wrapped stack within a heat-shrinkable tube, and heating said heat-shrinkable tube so as to shrink said tube sufficiently to press said metallized sheet around the periphery of said stack and to form a mechanical bond which holds said plurality of bodies of said stack along said common axis.

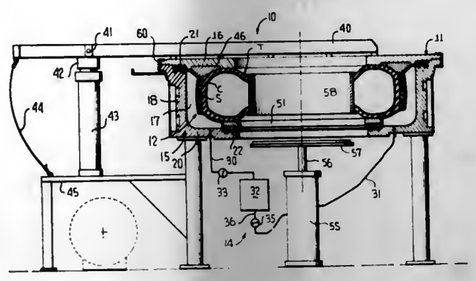
4,111,732

PROCESS OF AND MOLDS FOR APPLYING PRECURED RUBBER TIRES AND OTHER OBJECTS

Kenneth T. MacMillan, 4992 Wesleyan Woods Dr., Macon, Ga. 31204

Filed Mar. 22, 1974, Ser. No. 454,003
Int. Cl.² B29H *17/36*
U.S. Cl. 156—96 10 Claims

10. A method of retreading tires in an annular matrix defined by a pair of relatively movable annular matrix portions wherein one of the matrix portions includes a peripheral surface and an annular surface adjacent thereto which in transverse cross-section define a generally L-shaped configuration comprising the steps of applying base rubber to at least the crown of a tire, positioning the tire at least partially within the matrix with the applied base rubber in opposed relationship to the bladder, pressurizing an annular chamber in part defined by the bladder thereby urging the bladder against the base rubber, while thus under pressure applying heat to adhere the base rubber to the tire crown, depressurizing the annular chamber, removing the tire from the matrix, applying tread lugs to the base rubber, repositioning the tire at least partially within the annular matrix with the applied tread lugs in opposed relationship to the bladder, pressurizing the annular chamber to urge the bladder against the tread lugs, while thus under pressure applying heat to adhere the tread lugs to the base rubber, depressurizing the chamber, and removing the tire from the matrix.

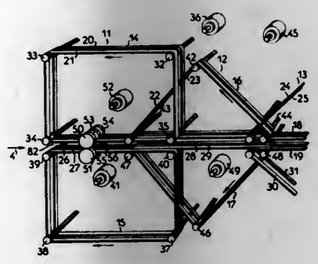


4,111,733

METHOD AND APPARATUS FOR CONTINUOUS MANUFACTURE OF UNDULATING OR CORRUGATED MATERIAL

Gilbert Periers, Courtrai, Belgium, assignor to S.p.r.L. Limatex, Belgium

Continuation of Ser. No. 598,404, Jul. 23, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 823,018
Int. Cl.² B65H *45/10, 45/20;* D06J *1/02*
U.S. Cl. 156—204 2 Claims



1. A method of manufacturing folded strip material, comprising the steps of:

establishing a continuous passage receptive of a flexible strip to be folded and having a height greater than a thickness of the strip, by providing a plurality of mutually successive sets of endless belts, each set having two belts which have belt portions vertically spaced from one another to define the passage between them for folding the strip between them, each belt comprising a plurality of transversely spaced longitudinal belt straps, the straps of adjacent sets of belts being disposed in staggered array and interpenetrating one another to ensure continuity of the passage;

moving the flexible strip to be folded, at a predetermined speed, in a direction longitudinal of the strip, into and through the continuous passage;

displacing belt strap portions along the continuous passage, in said direction, at a lesser speed than said predetermined speed, to bend the flexible strip to be folded into transverse strip folds during passage of said strip between the belts, by belt strap displacing means comprising rolls which have circumferential grooves receptive of the belt straps in said staggered array; and

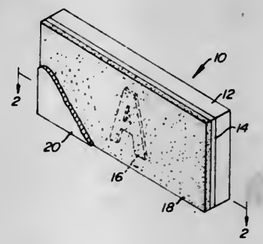
decreasing said lesser speed of displacing the belt strap portions through each said successive set of belts, in said direction, to pack the strip folds in the continuous passage and thereby to produce densely folded strip material.

4,111,734

DRY TRANSFER PRODUCT AND PROCESS FOR USING SAME

Jerome E. Rosenfeld, 1349 Lexington Ave., New York, N.Y. 10028

Continuation-in-part of Ser. No. 695,790, Jun. 14, 1976, Pat. No. 4,028,165. This application May 16, 1977, Ser. No. 797,078
The portion of the term of this patent subsequent to Jun. 14, 1994, has been disclaimed.
Int. Cl.² B44C *1/16*
U.S. Cl. 156—234 9 Claims



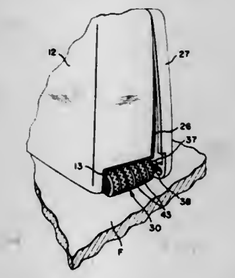
1. A dry transfer material comprising a non-extensible carrier sheet constructed of a light-transmitting polymer film of low extensibility under the stresses of light rubbing or burnishing, said sheet having a polymeric surface layer which is substantially non-extensible, ink-printed indicia on said polymeric surface layer, said indicia being capable of being transferred to a receptor surface without the application of heat, and a pressure-sensitive adhesive coating overlying said indicia, said material being self-adherent to a receptor surface to which it is applied, said carrier sheet having a thickness of about 0.001 to 0.0025 inch.

4,111,735

HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Mar. 16, 1977, Ser. No. 778,303
Int. Cl.² B32B *31/00*
U.S. Cl. 156—384 12 Claims



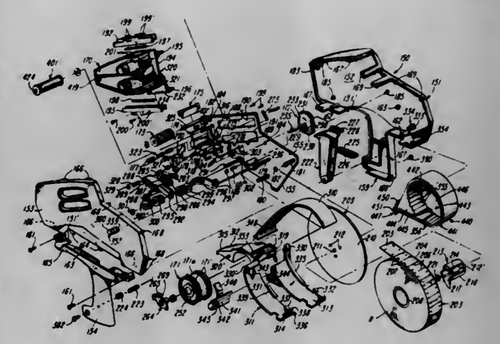
1. Hand-held apparatus for printing and applying pressure sensitive labels carried on a web of supporting material, comprising: a housing having a handle, a platen and a cooperable print head mounted by the housing, means mounted by the housing for delaminating printed labels from the web, an applicator roll extending beyond the outer surface of the housing for applying printed labels, means for advancing the web about the delaminating means to dispense a label into label applying relationship with respect to the applicator roll, an actuator disposed at the handle for moving the print head into cooperation with the platen and for moving the web advancing means, the housing having an access opening through which a roll of labels can be loaded into the apparatus, a removable panel covering the access opening, a deflectable roll-mounting member mounted at a first end portion to the housing, the panel having a recess, the mounting member having a second end portion nested in the recess, the roll being rotatable on and relative to the mounting member, so that in the event the second end portion of the roll-mounting member slips out of the recess in response to excessive force applied to the applicator roll the second end portion can be readily reinserted into the recess, all without damage to the apparatus.

4,111,736

APPARATUS FOR PRINTING AND APPLYING PRESSURE SENSITIVE LABELS

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 658,431, Feb. 17, 1976, Pat. No. 4,075,052, which is a division of Ser. No. 476,744, Jun. 5, 1974, Pat. No. 3,957,562, which is a continuation-in-part of Ser. No. 380,445, Jul. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 312,454, Dec. 6, 1972, Pat. No. 3,968,745, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application Jul. 22, 1977, Ser. No. 818,023
The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.
Int. Cl.² B32B *31/00*
U.S. Cl. 156—384 12 Claims



1. Apparatus for printing and applying pressure sensitive labels carried on a web of supporting material, comprising: a frame, a platen, a print head movably mounted by the frame into and out of printing cooperation with the platen, a delaminator for delaminating printed labels from the supporting material web, an applicator for applying printed labels, a feed wheel having teeth for advancing the web and effecting label delamination at the delaminator, and means for moving the print head into printing cooperation with the platen and for thereafter moving the feed wheel for advancing the web, the moving means including ratchet teeth coupled to the feed wheel and a pawl for engaging the ratchet teeth, the moving means further including a first lever, a first pivot for pivotally mounting the lever to the frame, a second lever for effecting movement of the print head, a second pivot for pivotally mounting the second lever, a link, a third pivot for pivotally connecting the first lever and the link, a fourth pivot for pivotally connecting the link and the second lever so that pivotal rotation of the first lever in one direction causes pivotal rotation of the second lever in the opposite direction to effect movement of the print head into cooperation with the platen, and return spring means for returning the first and second

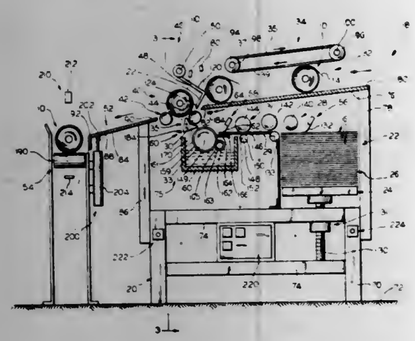
levers, the link and the print head to their initial positions and for causing the pawl to drive the ratchet tooth and advance the feed wheel.

4,111,737

APPARATUS FOR LABELING SHEETING ROLLS

John G. Wesley, Berwyn, Ill., assignor to Labelette Company, Forest Park, Ill.

Filed May 20, 1976, Ser. No. 688,368
Int. Cl.[2] B65H *81/00*
U.S. Cl. 156—458 2 Claims



1. Apparatus for labeling a series of convoluted sheet rolls of substantially the same diameter, and of which the outer end edge of the sheet of each roll to be labeled is free of securement against the roll, said apparatus comprising:

a runway having entrance and exit ends and comprising:

a planar support plate extending between said runway ends and forming a roller way along which the rolls are to be consecutively rolled toward said exit end, with the rolls oriented to extend transversely of said runway with the outer end edge of the sheet thereof in trailing relation with respect to the direction of rotational movement of the individual rolls along the runway, as the rolls roll in a forward direction of linear movement along the runway,

said plate being downwardly inclined in the direction of said runway exit end,

an endless conveyor extending longitudinally of said runway and above said plate and comprising one or more endless conveyor members including means for training said members to define upper and lower conveyor runs, with the lower conveyor runs being disposed above and parallel to said plate,

said conveyor lower runs being spaced above said plate for frictionally engaging the upper surfaces of such rolls, as such rolls are applied to said runway with said orientation,

and means for driving said conveyor to move said conveyor members such that said lower runs thereof move toward said runway exit end to roll the rolls applied to said runway in said direction of rotational movement along the runway toward said exit end thereof in the forward direction of linear movement,

a labeling station adjacent the exit end of said runway through which the individual rolls pass from the runway one by one,

said labeling station comprising:

a pair of spaced apart, horizontally disposed, rollers extending transversely of said direction of linear movement,

said rollers being spaced apart longitudinally of the runway direction of linear movement to receive and support the individual rolls thereon and therebetween in a labeling position for labeling in sequence one by one as the rolls enter the labeling station,

said rollers being coplanar with a horizontal plane disposed at a level adjacent to but below the level of said runway exit end,

means for rotating one of said rollers to rotate the individual rolls at a predetermined surface speed when supported by and between said rollers, and in the said direction of rotational movement,

a label supply station,

means for feeding individual labels one by one from said supply station to said labeing station at said surface speed and into adhering encircling relation to the individual rolls when rotated by said rotating means at said labeling station,

an exit ramp adjacent to and downstream of said labeling station,

and means for ejecting the labeled rolls one by one from said labeing station onto said ramp,

said ejecting means comprising:

a plurality of kicker members mounted for swinging movement about a common horizontal axis disposed above said labeling position and extending normally of said direction of linear movement,

said kicker members being spaced apart longitudinally of said axis,

said kicker members each comprising a foot element, which elements are positioned relative to said horizontal axis to simultaneously engage a labeled roll adjacent either end thereof when in said labeling position, and said kicker members are swung toward such roll,

and means for simultaneously swinging said kicker members 360 degrees about said horizontal axis in a rotational direction opposite the direction of rotational movement of said rolls in being rolled along said runway by said conveyor, for bringing said foot elements from a retracted position into engagement with the respective rolls when at said labeling position, after having been labeled, for ejecting same from said labeling station, and for returning said foot elements to said retracted position while moving same in the same direction of rotational movement,

said foot elements projecting in the direction of movement of said kicker members under the action of said swinging means, and being disposed relative to said horizontal axis to have a path of movement thereabout that is adjacent to but spaced above said labeling station rollers, whereby said kicker members on actuation of said swinging means engage a labeled roll when in said labeling position on the rearward underside thereof, with respect to the direction of movement of said rolls along said runway, to effect a lifting of such roll off the roller of said labeling station that is closest said runway exit and roll such roll over the other of said labeling station rollers onto said exit ramp,

said horizontal axis being centered between said labeling station rollers,

means for actuating said label feeding means when a roll to be labeled has moved from said runway exit end into said labeling position,

and means for actuating said ejecting means swing means to eject the labeled roll from said labeling station when the next succeeding roll to be labeled is at a predetermined position adjacent said runway exit end.

4,111,738

APPARATUS FOR PRODUCING SHRUNKEN PILFER-PROOF NECK LABELS FOR CONTAINERS

Stephen W. Amberg, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 526,124, Nov. 22, 1974, Pat. No. 4,013,496, and a continuation-in-part of Ser. No. 514,370, Oct. 15, 1974, Pat. No. 3,951,292. This application May 25, 1976, Ser. No. 689,768
Int. Cl.[2] B65C *3/24, 3/20, 9/04, 9/22*
U.S. Cl. 156—458 7 Claims

1. Apparatus for labelling containers comprising

means for feeding a succession of rectilinear labels of a flexible sheet-like material in an on-edge attitude in a feed path defined by a vertical feed surface,

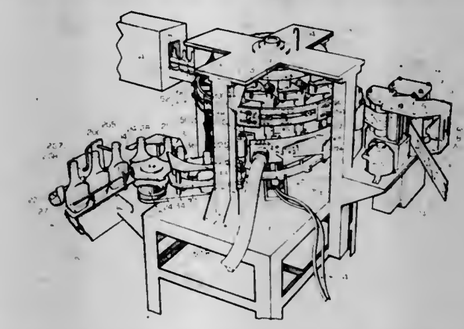
a turret rotatably supported on a vertical shaft,

plural mandrel means in circular array on said turret, each mandrel means having an annular mandrel surface rotatable about a vertical axis,

drive means connected to rotate said turret and thereby move the mandrels in an orbit tangent with the feed path whereat the mandrel surface is engageable with the leading portion of the label, said mandrel means including a vacuum means for holding said engaged leading portion on the mandrel surface, the peripheral dimension of said mandrel surface being less than the length of the label,

means connected to said rotatable mandrels surface and operable for winding said label thereon,

elongated heater means on the turret individual to each mandrel and disposed axially with respect to said mandrel, a source of heated gaseous media, means for connecting said source to said individual heater means during orbital movement of the mandrels in response to wrapping the label on the mandrel surface for heating the interface of the leading and trailing end portions of the blank just prior



to overlapping said portions on the mandrel, the said heated end portions overlapping one another on the mandrel in seam fashion, thereby forming the label into a side-seamed, hollow sleeve,

pocket wheel means connected to the turret underlying the mandrels and rotatable about said vertical shaft, said wheel means having plural container receiving pockets corresponding with the mandrels, each pocket being in underlying registry with a mandrel,

container inlet means conveying a single line of upright containers,

guide means for engaging successive containers of said single line and loading them in said pockets of the wheel means in upright position in vertical registry with an overhead mandrel, said guide means extending through a partial orbit span of movement of the mandrels defining a label transfer station, and

stripper means individual to each mandrel and operable in response to orbital movement of the mandrel through said label transfer station for axially stripping the formed sleeve downwardly from the mandrel and onto an underlying container.

4,111,739

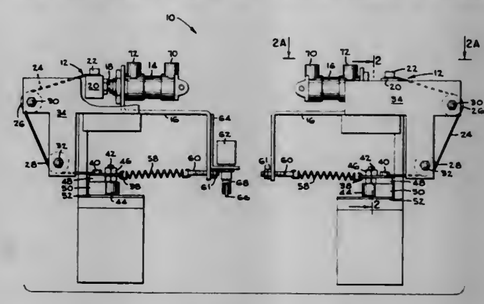
CORNER TUCKING DEVICE FOR LAMINATED SHEETS

René Francois De Bin, and William Van der Gucht, both of Aalst, Belgium, assignors to FMC Corporation, San Jose, Calif.

Continuation of Ser. No. 626,160, Oct. 28, 1975, abandoned. This application May 19, 1977, Ser. No. 798,528
Claims priority, application Belgium, Nov. 12, 1974, 822089
Int. Cl.[2] B32B *3/04*
U.S. Cl. 156—486 3 Claims

1. In a wrapping apparatus for adhesively combining and laminating a thin sheet to one face, the opposed edges and partially to the opposed face of a generally rectangular relatively thick sheet, the thin sheet having its corners cut along a line defining an angle of 45° with the adjacent edges so that on folding the thin sheet to the edges and the opposed face of the thick sheet the corner of the thick sheet is covered, laminating the thin sheet to the edges and the opposed face of the thick board occurring while the sheets are being transported through the wrapper:

the improvement in adhering the thin sheet to the trailing corners and partially to the trailing edge of the thick sheet comprising laterally spaced supports each having coplanar plates along which the combined sheets are trans-



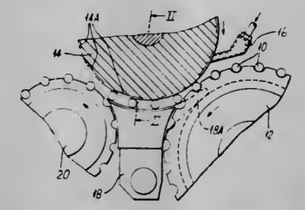
ported; a freely rotatable roller carried by each support; and means, responsive to the presence of combined sheets between said spaced supports, for moving said rollers laterally inwardly in pressure engagement with the edges of the combined sheets which are parallel to the direction of movement; said rollers being located above said plates a distance at least equal to the thickness of the thin sheet so that distortion or wrinkling thereof is prevented; said rollers being operative to maintain pressure rolling engagement with the trailing corners and the trailing edge of the thick sheet so as to adhere the thin sheet to such surfaces of the thick sheet.

4,111,740

APPARATUS FOR JOINING AXIALLY ABUTTING RODS OF THE CIGARETTE INDUSTRY

Desmond Walter Molins, London, and Tom Rowlands, Keston, both of England, assignors to Molins Limited, England

Filed Feb. 28, 1977, Ser. No. 772,678
Claims priority, application United Kingdom, Feb. 28, 1976, 7927/76
Int. Cl.[2] B65H *69/02*
U.S. Cl. 156—498 15 Claims



1. Apparatus for joining at least two axially abutting rods of the cigarette industry, comprising a rolling drum, means for delivering a rod assembly including at least two abutting rods in axial alignment to the rolling drum, means including a rolling device mounted adjacent to the drum to roll the rod assembly with respect to the drum, said rolling drum and said rolling device being arranged so that the rods are maintained in axial alignment as they are rolled, and means for applying a hot-melt adhesive to the rod assembly to produce a bonding film which overlaps the adjacent ends of the abutting rods and extends at

least around a major part of the circumference of the abutting rods.

4,111,741

ARRANGEMENT FOR SHUTTING OFF THE DRIVE FOR A SUPPLY ROLL

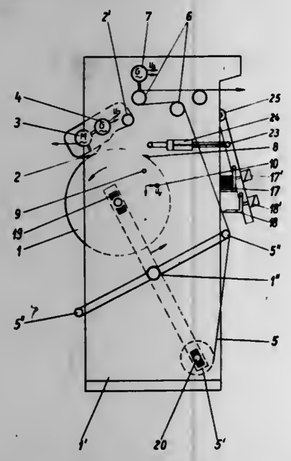
Wolfgang Paul, Leipzig, German Democratic Rep., assignor to VEB Polygraph Leipzig, Kombinat fuer Polygraphische Maschinen und Austruestungen, Leipzig, German Democratic Rep.

Filed Dec. 22, 1976, Ser. No. 753,473

Claims priority, application German Democratic Rep., Dec. 30, 1975, 190634

Int. Cl.² B65H *19/08, 19/18*

U.S. Cl. 156—504 **7 Claims**



1. In an autopaster of the type comprising

web transport means for pulling web off a supply roll so that the supply roll eventually nears exhaustion,

holding means holding a fresh supply roll comprised of a web whose accessible end is to be glued to the web of the supply roll which is nearing exhaustion,

severing and gluing means operative when activated for severing the web being pulled off the exhausted supply roll and gluing to the latter the accessible end of the web on the fresh supply roll so that web transport can continue,

accelerator means operative when a severing and gluing operation is to be performed for first accelerating the fresh supply roll up to a predetermined peripheral speed at least approximately equal to the transport speed of the web being pulled off the expiring supply roll,

the accelerator means including at least one accelerator roller mounted to bear upon the peripheral surface of the fresh supply roll, and a motor driving the accelerator roller to cause the latter to rotate and thereby accelerate the fresh supply roll,

speed-measuring means operative for measuring the speed of the fresh supply roll indirectly by measuring the speed of operation of the accelerating means and for generating a corresponding speed signal whereby, if contact is lost between the accelerator roller and the fresh supply roll due to lack of roundness of the fresh supply roll surface, the accelerator means will temporarily operate at a speed higher than that corresponding to the speed of the fresh supply roll and the speed signal will falsely indicate a fresh-supply-roll speed higher than the true speed of the fresh supply roll,

in combination therewith, a control system operative for causing the fresh supply roll to be brought to the predetermined speed,

the control system comprising

control means receiving the speed signal and in dependence thereon operative for causing the accelerator means to accelerate the fresh supply roll to a speed in excess of the predetermined speed, then operative for deactivating the accelerator means so that acceleration of the fresh supply roll is discontinued and the fresh supply roll begins to decelerate, then operative during such deceleration for determining when the speed of the fresh supply roll has dropped down to the predetermined speed, and in response to that determination operative for generating an enablement signal enabling activation of the severing and gluing means.

4,111,742

PROCESS FOR PRODUCING CRUCIBLE-DRAWN SILICON RODS CONTAINING VOLATILE DOPING AGENTS

Heinz-Jürg Rath; Dietrich Schmidt, both of Burghausen, and Werner Zulehner, Emmerting, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Jun. 29, 1977, Ser. No. 811,047

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1976, 2639563

Int. Cl.² B01J *17/18*

U.S. Cl. 156—617 SP **6 Claims**

1. A process for making crucible drawn silicon rods containing volatile doping agents, said rods having narrow resistance tolerances, which comprises melting a pre-doped polycrystalline silicon batch in a crucible under argon, immersing a seed crystal into the melt and drawing a monocrystalline rod from the melt while introducing during the drawing process a current of inert gas at the bottom of the crucible, and passing it through the melt at least for a part of the drawing operation.

4,111,743

METHOD OF RECOVERING HEAT AS WELL AS FRACTIONS CONTAINING VOLATILE ALCOHOLS AND SULPHUR COMPOUNDS FROM BLACK LIQUOR IN CONNECTION WITH PULPING

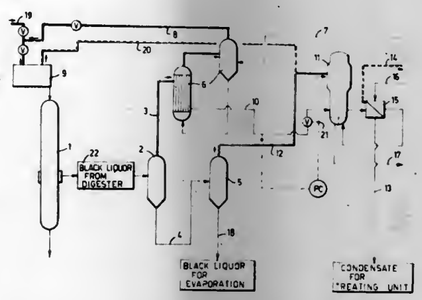
Arvi Rönnholm, Uusitie 9, 28760 Pori 76, Finland

Filed Apr. 4, 1977, Ser. No. 784,315

Claims priority, application Finland, Apr. 12, 1976, 760990

Int. Cl.² D21C *11/06*

U.S. Cl. 162—16 **5 Claims**



1. A method of recovering heat and fractions containing alcohols and sulphur compounds from black liquor obtained from pulping cellulosic materials which comprises

expanding black liquor removed from a digester into a low pressure vapor mixture,

passing said low pressure vapor mixture to a vapor generator where said vapor mixture is brought into indirect heat exchange contact with water,

passing the condensate formed in the vapor generator to a surface condenser while controlling the pressure to obtain a temperature difference between said vapor mixture and said water sufficient to vaporize said water to steam, said surface condenser being at a pressure lower than the pressure of the black liquor from the digester and said steam being used for presteaming chips before introducing the chips into the digester,

cooling the condensate fraction formed in the surface condenser and the uncondensed gas fraction by indirect cooling, and

recovering the volatile alcohols and sulphur compounds from said fractions.

4,111,744

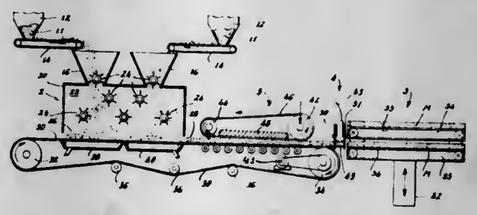
PROCESS FOR PRODUCING FUSED CELLULOSE PRODUCTS

Haigh M. Reiniger, Contentment Island, Darien, Conn. 06820

Continuation of Ser. No. 451,366, Mar. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 293,559, Sep. 30, 1972, abandoned, which is a division of Ser. No. 76,759, Sep. 30, 1970, abandoned. This application May 19, 1976, Ser. No. 687,874

Int. Cl.² H05B *1/00*

U.S. Cl. 162—100 **14 Claims**



1. The process of producing a board product from cellulose-containing fiber material by fusion bonding together of the cellulose constituents of the fibers themselves, comprising the steps of:

(a) forming a mat from cellulose-containing fiber material in which the fibers have an interlaced fiber formation,

(b) heating opposed press platens to a temperature in the range from 450° F. to 800° F., said temperature being above the normal temperature at which said fiber material carbonizes when exposed to the air,

(c) introducing said mat into the region between said opposed press platens while the cellulose-containing fiber material in said mat has a equilibrium moisture content in the range from 2% to 50%,

(d) providing a perforated heat-conducting sheet having multiple perforations and positioned intermediate one side of said mat and at least one of said heated press platens, the perforations extending completely through said sheet and being less than three thirty-seconds of an inch in diameter and the sum total area of the perforations preferably being at least 20% of the area of the side of the sheet which is adjacent to said mat,

(e) moving said heated press platens toward each other for heating said mat by conduction of heat from said heated platens and for pressing said mat,

(f) allowing the release of heat-generated steam and gases from said mat through said perforated sheet thereby avoiding destructive pressure build-up within the mat thereby preserving the integrity of said interlaced fiber formation in said mat, allowing air from the interstices of said mat to escape through said perforated sheet together with said steam and gases,

(g) shielding said press platens for excluding the direct access of air to said mat while said mat is being heated and pressed intermediate said heated press platens,

(h) applying R.F. energy to said mat for less than 120 seconds for dielectric heating of said mat in addition to the heat conducted from said heated press platens for raising the temperature throughout said mat to a temperature above the normal carbonizing temperature of said cellulose-containing fiber material and in the range from 450° F. to 800° F. for fusion bonding together the cellulose-containing fibers themselves in the mat under heat and pressure,

(i) relieving pressure from the heated and pressed mat by opening the press platens and removing said mat therefrom,

(j) thereafter cooling the heated and pressed mat down to a temperature below 400° F. while enclosing it for excluding the direct access of air thereto for producing a durable board product which is held together by said fusion bonding together of the cellulose-containing fibers themselves, and

(k) cooling the durable board product to ambient temperature.

4,111,745

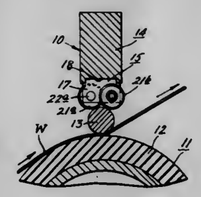
ADJUSTABLE BEARING ASSEMBLY FOR WEB DECURLING APPARATUS

John L. Manfredi, West Chester, Pa., assignor to The Moore & White Company, Philadelphia, Pa.

Filed Aug. 8, 1977, Ser. No. 822,531

Int. Cl.² D21F *7/00*

U.S. Cl. 162—271 **9 Claims**



1. In web decurling apparatus including a roller having a resilient peripheral surface, a decurling rod extending parallel to the roller, and means for urging the decurling rod into pressure engagement with the roller for decurling a web advancing therebetween, incluing a back-up beam extending along the roller in spaced relation therewith and a series of bearing assemblies mounted to said back-up beam and engaging the decurling rod at spaced axial locations, the improvement wherein each bearing assembly comprises:

a mounting block fastened to said back-up beam,

a spindle journalled in said block to rotate about an axis parallel to said decurling rod,

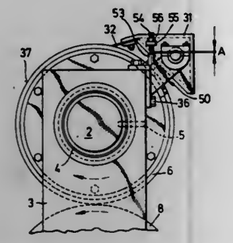
an anti-friction bearing mounted on one end of said spindle,

eccentric means on said one end of said spindle mounting the bearing for rotation about an axis offset from the rotational axis of the spindle in the mountng block,

means to afford turning said spindle on its axis, and

means carried by said mounting block for releasably engaging said spindle to lock the spindle in selected adjusted position, whereby the bearing may be accurately positioned so that its surface engages the surface of the decurling rod to provide back-up support at spaced axial locations.

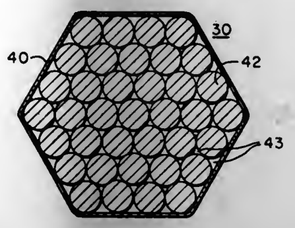
4,111,746
ROLLING DEVICE HAVING A CONTROLLED-DEFLECTION ROLL
Mario Biondetti, Schio, Italy, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed Aug. 29, 1977, Ser. No. 828,978
Claims priority, application Switzerland, Sep. 22, 1976, 11990/76
Int. Cl.² D21F 3/08; D21G 3/00
U.S. Cl. 162—272 4 Claims



2. A roller mill equipped with a controlled-deflection roll comprising:
frame means;
a stationary roll support mounted in said frame means;
a substantially tubular roll shell;
means mounting said substantially tubular roll shell to be rotatable around said roll support;
at least one bearing element for supporting the tubular roll shell upon the roll support;
said roll shell having opposed ends;
guide members rotatably mounted at the opposed ends within the roll shell and guided on the roll support in the direction of a pressing or disengaging movement, respectively, of the roll shell;
a scraper device provided for said controlled-deflection roll;
said roll shell having an outer surface; said scraper device possessing a scraper blade which, during operation, is in contact with the outer surface of the roll shell;
means rotatably mounting the scraper device on the frame means;
said scraper device further including a blade support having at least one abutment part;
at least one of the guide members having a lift-off member which, when the roll shell carries out a lift-off movement from the operative position, abuts said abutment part of the blade support and raises the scraper blade off the outer surface of the roll shell;
when said roll shell is in its operative position there is present a gap between the lift-off member and said abutment part of the blade support which cooperates with the lift-off member; and
adjustment means for adjusting the gap between the lift-off member and said abutment part of the blade support which cooperates with said lift-off member.

4,111,747
PACKED ROD NEUTRON SHIELD FOR FAST NUCLEAR REACTORS
John E. Eck, Hempfield Township, Westmoreland County, and Alvin H. Kasberg, Murrysville, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jun. 8, 1976, Ser. No. 693,990
Int. Cl.² G21C 1/02
U.S. Cl. 176—40 13 Claims

1. A fast neutron nuclear reactor including a core and means for circulating a liquid coolant through said core, said core having a plurality of vertically oriented fuel assemblies bearing fissionable nuclear material, a plurality of vertically oriented blanket assemblies bearing fertile nuclear material, and a plurality of removable radial neutron shield assemblies disposed radially about said blanket assemblies, at least some of said shield assemblies each comprising:
(a) a metallic polygonal thin-walled enclosure duct having an internal cross-section, and
(b) a bundle of vertically disposed parallel solid cylindrical rods of a neutron shielding material closely packed within



and substantially filling said duct cross-section such that said rods are held in position solely by said close-packed arrangement, said rods are contiguous with each other and are self-supporting within said duct,
whereby a portion of said circulating coolant flows through interstices formed within each said shield assembly among said rods and said duct.

4,111,748
NUCLEAR FUEL ROD WITH STRESS RELIEVING DEVICE
Kiyozumi Hayashi, Chiba, and Kenji Sato, Zushi, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan
Filed May 26, 1976, Ser. No. 689,987
Claims priority, application Japan, Jun. 18, 1975, 50-74145; Jun. 18, 1975, 50-83360[U]
Int. Cl.² G21C 3/02
U.S. Cl. 176—68 10 Claims



1. A nuclear fuel rod for use in a nuclear reactor comprising:
a cladding tube,
a stack of pellets of nuclear fuel material encased in said cladding tube,
end plugs secured in both ends of said cladding tube,
at least one metallic supporting structure interposed between at least one of said end plugs and said pellet stack, said supporting structure having a configuration for retaining its original shape while withstanding an axial elongation of said pellet stack caused by thermal expansion under normal reactor conditions, and having substantially rigid end portions and at least one weakened portion around the entire circumference thereof and intermediate the end portions for collapsing in the direction of the axis of said cladding tube when an abnormal stress due to thermal expansion under abnormal reactor conditions is applied to said supporting structure to reduce its original supporting length, thereby dispersing a part or whole of any excess stress which might develop in said cladding tube or at the end plug joints.

4,111,749
METHOD OF CONVERTING RACEMIC HYDANTOINS INTO OPTICALLY ACTIVE AMINOACIDS
Ludwig Degen, Rome; Aurelio Viglia, Monterotondo (Rome); Eugenio Fascetti, and Elena Perricone, both of Rome, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy
Filed Jul. 9, 1976, Ser. No. 703,966
Claims priority, application Italy, Jul. 10, 1975, 25252/75
Int. Cl.² C12D 13/06
U.S. Cl. 195—2 4 Claims

1. The method of preparing the "D" form of an optically active aminoacid derivative from a racemic hydantoin which comprises, subjecting said racemic hydantoin to hydrolysis in the presence of an enzymatic complex derived from the strain of microorganisms of the genus Pseudomona which is designated sp. 942 (CBS 145.75) or sp. 945 (CBS 146.75), said hydrolysis being effected at a temperature in the range of from 10° to 60° C., and at an alkaline pH in the range of from pH 7 to pH 10.

4,111,750
PROCESS FOR CONVERTING LIQUEFIED STARCH TO A MIXTURE OF GLUCOSE AND FRUCTOSE UTILIZING A MULTI-COMPONENT IMMOBILIZED ENZYME SYSTEM
William Colilla, and Norman E. Lloyd, both of Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.
Filed Sep. 14, 1976, Ser. No. 723,121
Int. Cl.² C12D 13/02
U.S. Cl. 195—31 F 10 Claims

1. A method for producing a solution containing glucose and fructose comprising treating liquefied starch having a DE of greater than 25 with an enzyme system comprising immobilized glucoamylase, immobilized glucose isomerase and immobilized debranching enzyme said debranching enzyme being selected from the group consisting of immobilized pullulamase immobilized isoamylase and mixtures thereof at a pH and temperature whereby substantially all the starch is converted to glucose and fructose.

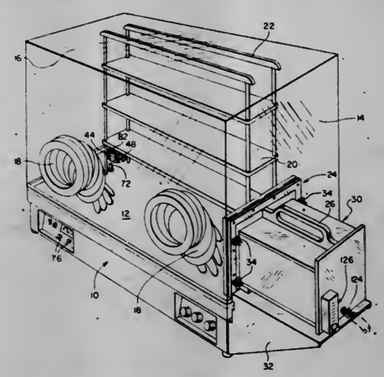
4,111,751
METHOD OF PURIFYING ALCOHOL DEHYDROGENASE
Louis G. Lange, III, and Bert L. Vallee, both of Brookline, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.
Continuation-in-part of Ser. No. 640,629, Dec. 15, 1975, abandoned. This application Nov. 2, 1977, Ser. No. 847,706
Int. Cl.² C07G 7/026
U.S. Cl. 195—66 R 11 Claims

1. The process of purifying and fractionating crude alcohol dehydrogenase extract which comprises mixing said dehydrogenase extract with an aqueous solution containing NAD at a concentration of at least $10^{-4.5}$ molar and at a pH up to 8.0, to form a binary complex of said dehydrogenase with said NAD, bringing said mixture into contact with an affinity resin comprising pyrazole immobilized on an insoluble solid support, said pyrazole being covalently bonded at the 4-position to said support by a connecting arm having a length of at least 12 Angstrom units, to bind a pyrazole-binding fraction of said dehydrogenase and said NAD to said support, and separating said mixture containing the remaining pyrazole-insensitive fraction of said dehydrogenase from said resin.

4,111,752
COMPARATIVE TEST FOR NEISSERIA
Howard H. Weetall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Sep. 28, 1977, Ser. No. 837,365
Int. Cl.² C12K 1/04
U.S. Cl. 195—103.5 M 10 Claims

1. A method of detecting the presence of bacteria of the genus Neisseria in a sample, the method comprising the steps of:
(a) preparing two parts identical in composition of a lysate of the sample, a first part and a second part;
(b) incubating the first part with a solution of 1,2-propanediol and nicotinamide-adenine-dinucleotide;
(c) incubating the second part with a solution of nicotinamide-adenine-dinucleotide; and
(d) comparing the incubation products of the reactions of steps (b) and (c) to determine any differences based on the presence or absence of the 1,2-propanediol, which comparison is accomplished by monitoring the concentration of reduced nicotinamide-adenine-dinucleotide.

4,111,753
CONTROLLED ATMOSPHERE APPARATUS AND METHOD OF TRANSFERRING SPECIMENS TO SAME
Max H. Folsom, Portland, Oreg., and Michael D. Dickman, Philadelphia, Pa., assignors to National Appliance Company, Portland, Oreg.
Filed Jun. 7, 1976, Ser. No. 693,624
Int. Cl.² C12K 1/10
U.S. Cl. 195—126 19 Claims



1. A controlled atmosphere system comprising:
an apparatus having a base, a flexible hood joined to said base so that said hood and said base define an airtight chamber and a sealable chamber door means communicating with the atmosphere surrounding said chamber;
a transport unit adapted to dock with said apparatus such that specimens may be transferred between the interior of said unit and said chamber without admitting gas from the surrounding atmosphere into said chamber, said transport unit including a sealable transport door means communicating with the atmosphere surrounding said transport unit, both said door means comprising swinging doors which are in opposition when both of said doors are closed and said transport unit is docked with said apparatus; and
support means to maintain said transport unit at the level of said chamber door means when said transport unit is docked.

18. A method of transferring an atmosphere-sensitive article from a remote location to a controlled atmosphere apparatus having an airtight chamber filled with a special gaseous medium comprising:

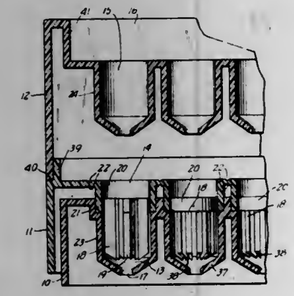
enclosing an atmosphere-sensitive article in an interior zone of an airtight transport unit;
circulating a special gaseous medium through said zone to displace any residual air located therein;
transporting the transport unit, containing said article and a volume of said special gaseous medium, to a controlled atmosphere apparatus;
docking said transport unit with said apparatus to form an airlock compartment therebetween;
circulating a special gaseous medium into said zone, from said zone into said compartment and from said compartment into the surrounding atmosphere to displace any residual air trapped in said compartment as a result of said docking; and
transferring said articles from said zone through said compartment and into said apparatus.

4,111,754

IMMUNOLOGICAL TESTING DEVICES AND METHODS

Hydow Park, 2 Red Hill Rd., Warren, N.J. 07060

Filed Nov. 29, 1976, Ser. No. 745,541
Int. Cl.² C12K *1/10*; G01N *31/14*
U.S. Cl. 195—127 **11 Claims**



1. An immunological testing device comprising: a plastic structure having upper and lower open ends, having a through-passage of predetermined small cross-sectional area sufficiently small to retain liquid by capillary action within space thereof at at-least substantially an intermediate portion of a length thereof, and the plastic structure being elongated along a longitudinal axis of the through-passage, the ratio of the wall surface area of said through-passage being larger than the cross-sectional area of said intermediate portion, and in which said plastic structure has formed therein an enlarged funnel structure in continuous flow-relationship with the upper end of the intermediate portion of the through-passage of said predetermined small cross-sectional area.

4,111,755

METHOD OF PRODUCING PELLETIZED FIXED SULFUR FUEL

Thomas E. Ban, South Euclid, and Ashok D. Rao, Euclid, both of Ohio, assignors to McDowell-Wellman Engineering Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 627,240, Oct. 30, 1975, abandoned. This application Jan. 27, 1977, Ser. No. 763,226
Int. Cl.² C10B *53/08, 57/06, 57/10*
U.S. Cl. 201—6 **13 Claims**

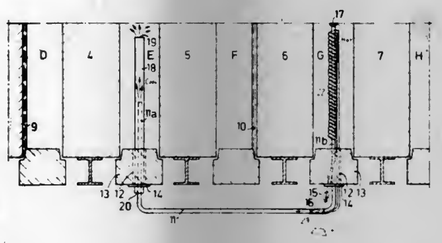
1. A method of producing pelletized, fixed sulfur oxidation fuel and for producing ash having sulfur fixed therein consisting essentially of the steps of preparing an intimate mixture, said mixture consisting essentially of a particulate coal containing sulfur and hydrocarbonaceous volatile matter and a basic material, forming the mixture into pellets, heating said pellets to a temperature exceeding about 800° F. to cause substantial depletion of the hydrocarbonaceous volatile matter, calcination of the basic material, and fixation of at least some of the sulfur as a sulfide of the basic material, and converting the sulfide to a sulfate by burning said pellets as a fuel under oxidizing conditions thereby producing ash having sulfur fixed therein.

4,111,756

METHOD OF AND APPARATUS FOR HEATING UP A CHAMBER OF A COKING BATTERY

Günther Lagemann, and Wilhelm Heisterkamp, both of Essen, Germany, assignors to Krupp-Koppers GmbH, Essen, Germany

Filed Nov. 12, 1976, Ser. No. 741,186
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1976, 2551197
Int. Cl.² C10B *23/00, 27/00*
U.S. Cl. 201—41 **7 Claims**



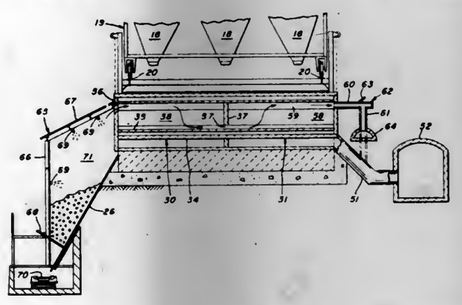
1. A method of heating cold walls of a renewed coking chamber in a working multi-chamber coking battery in which at least one operative coking chamber is maintained, said method comprising the steps of maintaining at least one coking chamber at a reduced non-coking temperature, withdrawing hot gas from said reduced-temperature chamber and injecting said withdrawn hot gas into said renewed chamber to heat the walls of the same.

4,111,757

SMOKELESS AND NON-RECOVERY TYPE COKE OVEN BATTERY

Joseph P. Clarimboli, Greensburg, Pa., assignor to Pennsylvania Coke Technology, Inc., Greensburg, Pa.

Filed May 25, 1977, Ser. No. 797,141
Int. Cl.² C10B *9/00, 39/18*
U.S. Cl. 202—93 **11 Claims**



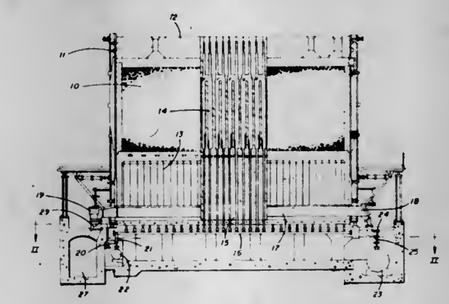
1. In a smokeless and non-recovery type coke oven wherein partially-burned distillation products are conducted from the space above a coal charge in an oven chamber into sole heating flues for combustion therein to heat the floor of the oven chamber and thence the partially-burned distillation products are fed from the sole heating flues into checker-filled ignition chambers coupled to an air supply to incinerate the unburned distillation products for discharge by means into the atmosphere, the coke being discharged from the oven chamber through a removable door at the coke side of the coke ovens, the improvement comprising the combination therewith of:
a downwardly-inclined ramp at the coke side of the oven chamber to support coke discharged therefrom,
means to discharge a coolant medium for cooling the coke while supported by said ramp,
a smoke hood including a roof joined with side walls to form an enclosure overlying said ramp to receive smoke and effluent liberated and rising from the coke on the ramp during cooling of the coke, and
means defining a closable passageway to conduct said smoke and effluent from beneath said smoke hood into said checker-filled ignition chambers for incineration of the effluent, the closable passageway including a closure member to interrupt communication with the ignition chambers after cooling of coke on said ramp, the arrangement of parts being such that the smoke from the smoke hood undergoes conversion within the ignition chambers to clean hot air.

4,111,758

APPARATUS FOR THE UNIFORM DISTRIBUTION OF COMBUSTION MEDIA IN A BATTERY OF COKE OVENS

Folkard Wackerbarth, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Feb. 7, 1977, Ser. No. 765,889
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1976, 2604871
Int. Cl.² C10B *5/12, 21/06*
U.S. Cl. 202—138 **5 Claims**



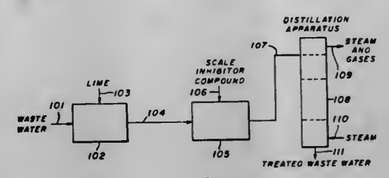
1. Apparatus to insure uniform distribution of combustion media into and from rows of individual heating flues in a battery of coke ovens which include regenerators for heat exchange between uncombined combustion media and burnt gases, the rows of heating flues including burners, some of which are supplied with rich-gas through rich-gas distribution branch lines communicating with a rich-gas supply header extending along the battery of coke ovens, the remaining burners are supplied with lean-gas through lean-gas distribution branch ducts communicating with a lean-gas supply header extending along the battery of coke ovens, valve means to control the supply of lean-gas by said lean-gas supply header, valve means to control the supply of rich-gas by said rich-gas supply header, the rows of heating flues being connected by said regenerators through individual smoke-gas valves in smoke-gas ducts communicating with a smoke-gas collecting duct extending along the battery of coke ovens, said apparatus comprising the combination therewith of substantially identical rich-gas flow resistance elements in each of said rich-gas distribution branch lines, substantially identical lean-gas flow resistance elements in each of said lean-gas distribution branch ducts and substantially identical smoke-gas flow resistance elements in each of said smoke-gas ducts to insure uniform, adequate distribution of combustion media into and from the individual rows of heating flues.

4,111,759

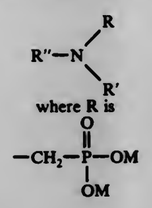
PROCESS FOR SEPARATING AMMONIA AND ACID GASES FROM WASTE WATERS CONTAINING FIXED AMMONIA SALTS

William J. Didycz, Whitehall Borough; Donald Glassman, Mount Lebanon Borough; Edward E. Maier, Plum Borough, and George T. Saniga, Penn Hills Township, Allegheny County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 8, 1976, Ser. No. 703,408
Int. Cl.² B01D *3/38*
U.S. Cl. 203—7 **45 Claims**

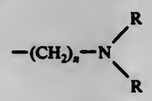


1. A process for separating acid gases and ammonia from a dilute aqueous solution thereof, said solution being derived from a coal conversion process and also containing free and fixed ammonia salts but containing sulfate ion in a concentration of less than about 1500 ppm, said process comprising:
(a) subjecting said solution to a first counter-current multistage continuous distillation, said distillation being conducted by having a gradient of ammonia concentration decreasing towards the region of bottom liquid withdrawal which results in said bottom liquid having a pH of less than 8,
(i) withdrawing an overhead vapor stream containing a major proportion of stripping vapor, a major proportion of said acid gases in said solution, and a major proportion of the ammonia from said free ammonia salts,
(ii) withdrawing an aqueous bottom stream which contains a major proportion of water and substantially all of said fixed ammonia salts;
(b) adding lime to said withdrawn bottom stream, said lime being added in an amount sufficient to form an insoluble precipitate and evolve ammonia contained in the fixed ammonia salts during a second distillation of said mixture;
(c) adding a threshold amount of at least one scale inhibitor compound of the general formula



where R is

R' is selected from the group consisting of R and $—CH_2CH_2OH$, and R'' is selected from the group consisting of R, $—CH_2CH_2OH$, and



where each M is independently selected from the group consisting of H, NH_4, and alkali metal, "*n*" is a whole number from 1 to 3, to said dilute aqueous solutions to thereby inhibit the deposition of scale on the trays of the distillation towers; and

(d) subjecting said withdrawn bottom stream to a second countercurrent multi-stage continuous distillation,

(i) withdrawing an overhead vapor stream, said vapor stream containing a major proportion of stripping vapor and a portion of the ammonia from the fixed ammonia salts, and

(ii) withdrawing an aqueous bottom stream, said stream having a substantially reduced concentration of acid gases and ammonia are compared to said aqueous solution.

4,111,760

METHOD AND ELECTROLYTE FOR THE ELECTRODEPOSITION OF COBALT AND COBALT-BASE ALLOYS IN THE PRESENCE OF AN INSOLUBLE ANODE

Edward S. Chen; John C. Sadak, both of Clifton Park, and G. Raman Lakshminarayanan, Latham, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 736,901, Oct. 29, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,766

Int. Cl.² C25D *3/12, 3/56, 5/02, 7/04*

U.S. Cl. 204—26 **8 Claims**

1. A method for electroplating cobalt on the interior surfaces of a metallic tubular cathode having a bore diameter of less than 20mm, comprising the steps of,

preparing an electrolyte consisting of from 250–450 grams/-liter of cobalt sulfate in aqueous solution, sufficient sulfuric acid to provide a pH ranging from 1.0–2.0 in value, and about 30–40 grams/ liter of boric acid for stabilizing the pH,

adding to the electrolyte a sufficient quantity of the salt or oxide of the metal selected from the group consisting of vanadium, titanium, and molybdenum to provide a concentration of 1.3–2.4 grams/liter of corresponding metallic ions, and

electrolyzing the resulting solution by the passage of from 2–10 amperes per square decimeter at a temperature from about 20° C. to 60° C. in the presence of an insoluble anode to produce a cobalt deposit of uniform thickness.

7. An electrolyte for electroplating cobalt on the interior bore surfaces of steel tubes, consisting essentially of,

from 250–450 grams/liter of cobalt sulfate in aqueous solution,

sufficient sulfuric acid to provide a pH ranging from 1.0–2.0 in value at a temperature from about 40° C. to 60° C.,

from 30–40 grams/liter of boric acid for stabilizing the pH, and

from 2.3–4.3 grams/liter of an additive metallic salt or oxide selected from the group consisting of vanadium, titanium, and molybdenum salts and oxides to provide from 1.3–2.4 grams/liter of corresponding metallic ions.

4,111,761

METHOD AND APPARATUS FOR FLOW-THROUGH PLATING INCLUDING PNEUMATIC ELECTROLYTE SHUTTLING SYSTEM

Mitchell A. LaBoda, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1977, Ser. No. 848,926

Int. Cl.² C25D *5/08, 17/00, 21/10*

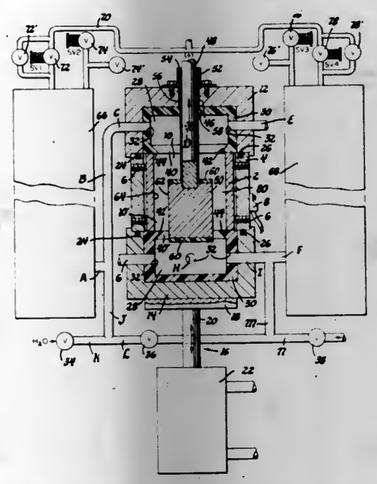
U.S. Cl. 204—26 **5 Claims**

1. In electroplating apparatus for the rapid deposition of metal on the surface of a workpiece including, an open ended electroplating cell adapted to permit electrolyte flow therethrough, means for positioning a workpiece in said cell, means for positioning an anode in said cell in spaced relation to said workpiece such as to provide a gap therebetween through which electrolyte can flow during plating, and inlet and outlet means for continuously supplying and withdrawing electrolyte to and from said cell, the improvement comprising:

a pneumatic system for shuttling electrolyte between said inlet and outlet means and through said gap during plating, said system comprising, first and second pneumatically pressurizeable and ventable reservoirs for alternately and oppositely delivering and receiving said electrolyte, conduits connecting said inlet and outlet means with said reservoirs;

a source of pneumatic pressure; and means for alternately and oppositely pressurizing and venting said reservoirs to effect said shuttling.

5. In a method of operating a flow-through electroplating cell including a cathodically polarized workpiece, a reciprocating anode spaced from said workpiece by a gap through which electrolyte flows during plating and cell inlet and outlet means for continuously providing and withdrawing electrolyte to and from said cell, the improvement comprising during plating repeatedly:



pneumatically expelling said electrolyte from a first pressurized and ventable reservoir through said gap in one direction and into a second pressurizeable and vented reservoir;

accumulating said electrolyte in said second reservoir;

thereafter reversing the direction of electrolyte flow by venting said first reservoir and pneumatically pressurizing said second reservoir to expel said electrolyte from said second reservoir through said gap in the opposite direction and return it to said first reservoir; and automatically coordinating said flow reversal with the direction reversals of said anode such that said electrolyte always flows through the gap in the opposite direction to the direction of the anode;

whereby said workpiece is incrementally plated as said electrolyte is pneumatically shuttled back and forth through said gap and between said reservoirs providing fresh flowing electrolyte in the gap and minimizing polarization effects within the cell.

4,111,762

OPTICALLY BLACK COATING AND PROCESS FOR FORMING IT

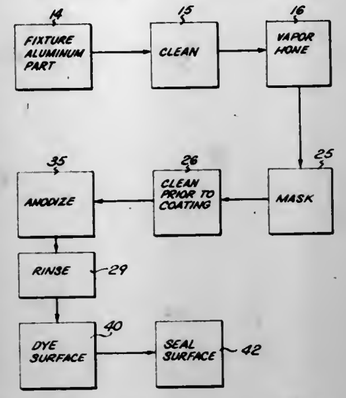
Jackie F. Wade, Littleton; John E. Peyton, Arvada; Bruce R. Klitzky, and Roy E. Groff, both of Denver, all of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Continuation of Ser. No. 545,920, Jan. 31, 1975, abandoned, which is a continuation-in-part of Ser. No. 309,880, Nov. 27, 1972, abandoned. This application Jan. 13, 1977, Ser. No. 758,951

Int. Cl.² C25D *11/08, 11/18, 11/24*

U.S. Cl. 204—33 **22 Claims**

1. In a method of improving the absorbency of electro-magnetic radiation of an oxide layer produced on the surface of an anodizable metal selected from aluminum and aluminum alloys by sulfuric acid anodization at from about 80° F. to 100° F. and a voltage between about 12 to 25 volts for from 1.5 to 2.5 hours in a sulfuric acid solution having a specific gravity of from 1.10 to 1.13 measured at 70° F. the improvement which



comprises heating said layer under a pressure no greater than about 1 mm Hg. at a temperature of at least 105° C. to remove moisture therefrom, and contacting said surface with hydrogen fluoride gas in an amount sufficient to raise the pressure to at least about 50 mm. Hg. for a period of time sufficient to render said layer resistant to re-absorption of moisture.

4,111,763

PROCESS FOR IMPROVING CORROSION RESISTANT CHARACTERISTICS OF CHROME PLATED ALUMINUM AND ALUMINUM ALLOYS

Michael J. Pryor, Woodbridge, Conn., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 18, 1977, Ser. No. 816,315

Int. Cl.² C25D *5/44, 5/30;* **B32B** *15/20*

U.S. Cl. 204—38 A **8 Claims**

1. A process for preparing aluminum and aluminum alloy objects for chrome plating by standard plating techniques and enhancing the corrosion resistance thereof, said process comprising anodizing said object in an acid bath to form an anodic coating, impregnating said anodic coating with a pyrolyzable metal salt, and pyrolyzing said impregnated anodic coating to form an electronically conductive oxide thereby allowing plating of said object by standard plating techniques.

4,111,764

METHOD FOR FEEDING A SUBLIMING MATERIAL INTO A LIQUID

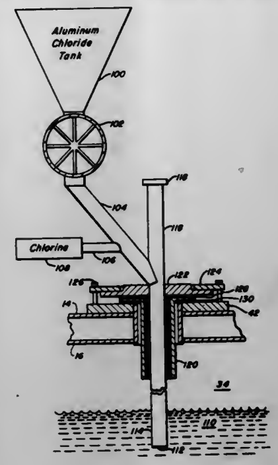
Robert A. Stoehr, Pittsburgh; Robert J. Ormesher, Leechburg, and Stanley C. Jacobs, Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 17, 1977, Ser. No. 797,779

Int. Cl.² C25C *3/00*

U.S. Cl. 204—64 R **5 Claims**

1. A method of feeding a subliming, particulate material into a liquid in a container, the liquid being above sublimation temperature, wherein the improvement comprises submerging a terminal orifice of a pipe in the liquid; the container being sufficiently large that liquid surrounds the terminal orifice; and transporting the subliming, particulate material through the pipe and into the liquid in accompaniment with a flow of gas, at a gas flow rate for preventing the formation of deposits of



the subliming material by countercurrent gaseous diffusion of the subliming material.

4,111,765

SILICON CARBIDE-VALVE METAL BORIDES-CARBON ELECTRODES

Vittorio De Nora, Nassau, The Bahamas; Antonio Nidola, and Placido Maria Spaziante, both of Lugano, Switzerland, assignors to Diamond Shamrock Technologies S.A., Geneva, Switzerland

Continuation-in-part of Ser. No. 754,025, Dec. 23, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,834

Int. Cl.² C25B *1/34, 11/00, 3/06, 7/02*

U.S. Cl. 204—67 **5 Claims**

1. A sintered anode consisting essentially of 40 to 90% by weight of at least one boride of a metal selected from the group consisting of titanium, tantalum, zirconium, aluminum, hafnium, niobium, tungsten, yttrium, molybdenum and vanadium, 5 to 40% by weight of silicon carbide and 5 to 40% by weight of carbon.

3. In a process for direct current electrolysis of a liquid electrolyte between an anode and a cathode, the improvement wherein the anode is an electrode of claim 1.

4,111,766

PROCESS FOR THE RECOVERY OF SILVER FROM FIXING SOLUTIONS

Yoshio Idota, and Haruo Shibaoka, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 25, 1976, Ser. No. 717,797

Claims priority, application Japan, Aug. 25, 1975, 50-102756

Int. Cl.² C25C *1/20*

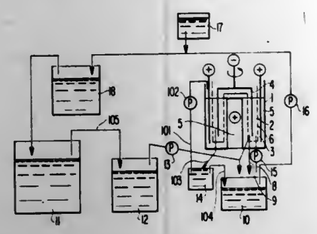
U.S. Cl. 204—109 **30 Claims**

1. A process for the recovery of silver from a fixing solution used in processing a silver halide photographic light-sensitive material comprising subjecting the used fixing solution to electrolysis at a current density of about 0.05 to about 1 A/dm^2 in an electrolytic cell, wherein the electrolytic cell comprises a cathodic cell and an anodic cell separated by a porous polymer film having a pore size of about 0.1 to about 0.7 microns, the silver is recovered from the used fixing solution in the cathodic cell, and the anodic cell is filled with

i. a fixing solution which as been used in photographic processing;

ii. a fixing solution which has not been used in photographic processing; or

iii. a fixing solution which has already been subjected to the electrolysis



wherein said solution (i), (ii) or (iii) in the anodic cell contains ammonium ion.

4,111,767

ELECTROLYTIC STRIPPING BATH FOR REMOVING METAL COATINGS FROM STAINLESS STEEL BASE MATERIALS

Shigemitsu Kawagishi, Kadoma, and Yasunori Arisato, Daito, both of Japan, assignors to Okuno Chemical Industry Co., Ltd., Osaka, Japan

Filed Dec. 14, 1977, Ser. No. 860,454
Claims priority, application Japan, Dec. 7, 1977, 52-147673
Int. Cl.² C25F *5/00*
U.S. Cl. 204—146 **4 Claims**

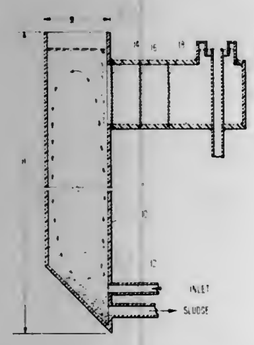
1. An electrolytic stripping bath for removing metal coatings from stainless steel base materials comprising about 50 to about 500g/*l* of a water/soluble nitrate, about 1 to about 200 g/*l* of a chlorine ion donor about 0.5 to about 200 g/*l* of at least one of amine compounds and organic acids having a buffering action, and about 1 to about 100 g/*l* of at least one reducing compound selected from the group consisting of dimethylformamide, formaldehyde, thiosulfates, sulfites, hydrazine, hydroxylamine and dimethylaminoboron, the stripping bath having a pH of 6.0 to 9.5.

4,111,768

METHOD OF SEPARATING SOLIDS FROM A FLUID SYSTEM

Ferenc J. Schmidt, Ardmore, Pa., assignor to Ametek, Inc., Paoli, Pa.

Continuation-in-part of Ser. No. 601,253, Aug. 4, 1975, Pat. No. 4,053,386, and Ser. No. 515,915, Oct. 18, 1974, Pat. No. 4,014,767. This application Feb. 16, 1977, Ser. No. 769,031
Int. Cl.² B03C *5/00*
U.S. Cl. 204—151 **21 Claims**



1. Method of concentrating and separating from electrolytic aqueous solution colloidally suspended, finely divided, difficultly separable material, said method comprising passing said solution in combination with said colloidal suspension sequentially through a first porous sheet electrically conductive filter member and thereafter through a gas bubble-impervious, electrically non-conductive separator material and then a second porous sheet electrically conductive member while imposing an electrical potential between said members and establishing an electrolytic current therebetween with the first of said members having a negative charge and acting as a cathode and the second of said members having a positive charge and acting as an anode.

4,111,769

RADIATION CURABLE PRESSURE SENSITIVE ADHESIVE COMPOSITION

Kenneth Charles Stueben, Bridgewater, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,630
Int. Cl.² C08F *8/00*
U.S. Cl. 204—159.15 **7 Claims**

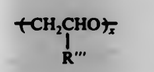
1. A radiation curable pressure sensitive adhesive composition comprising:

(A) from 35 to 80 weight percent of a liquid carbamyloxy alkyl acrylate of the formula:



wherein R and R'' are each, individually, hydrogen or alkyl from 1 to 3 carbon atoms, R' is alkylene of 1 to 3 carbon atoms;

(B) from 20 to 65 weight percent of a polyoxyalkylene homopolymer or copolymer which is characterized by the repeating units:



wherein each R''' is hydrogen or methyl and a sufficient number of the R''' substituents are hydrogen that from 40 to 100 percent by weight of the oxyalkylene units in the polymer are oxyethylene units and from 60 to 0 percent by weight are oxypropylene units; and *x* is a number such that the molecular weight of the polyoxyalkylene homopolymer or copolymer is from 1,700 to 90,000; and

(C) from 0.1 to 10 weight percent of a photoinitiator.

4,111,770

RADIATION CURABLE EPOXY RESIN

Daniel J. Najvar, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 9, 1975, Ser. No. 575,881
Int. Cl.² C08F *8/00*
U.S. Cl. 204—159.15 **10 Claims**

1. A radiation curable resin prepared by (a) polymerizing to substantial completion a mixture of vinyl monomers, in the presence of a polyepoxide having more than one 1,2-oxirane groups per molecule, wherein the mixture comprises about 2 to 20 weight percent of a vinyl acid and the balance to make 100 percent of one or more copolymerizable monovinyl monomers, (b) deactivating any residual addition polymerization catalyst and (c) reacting with the product of step (a) an unsaturated monocarboxylic acid; wherein the total acid equivalents per oxirane equivalent vary from about 0.8 to 1.2 and wherein the vinyl acid of step (a) comprises about 1 to 10 percent of the total acid equivalents.

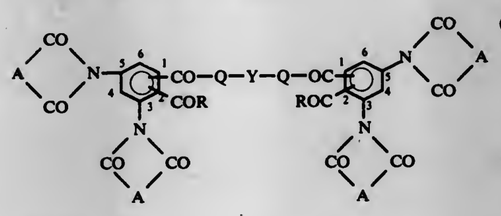
4,111,771

CROSSLINKABLE TETRA-IMIDYL DERIVATIVES AND CROSSLINKED POLYMERS THEREFROM

Roland Darms, Therwil; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 6, 1976, Ser. No. 747,757
Claims priority, application Switzerland, Dec. 19, 1975, 16513/75
Int. Cl.² C08G *73/12*
U.S. Cl. 204—159.22 **12 Claims**

1. A crosslinkable compound of the formula I, as well as the corresponding cyclized derivative,

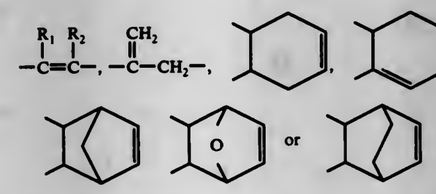


(I)

wherein

a carbonyl of the —COQYQOC— moiety and a —COR group are attached in pairs to adjacent carbon atoms at the 1- and 2-positions of the benzene rings, whereby on each benzene ring one of said carbonyl and —COR groups can be in the 1-position and the other in the 2-position,

the Rs independently of one another represent a hydroxyl group, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; alkoxy of 1 to 18 carbon atoms or an $—O^-M^+$ group, the A's independently of one another represent a radical of the formula



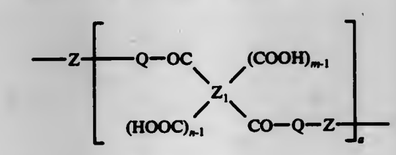
or

R_1 and R_2 independently of one another represent hydrogen, chlorine, bromine or methyl,

M^+ represents an alkali metal cation, a trialkylammonium cation having 3–24 carbon atoms, or a quaternary ammonium cation,

Q represents —NH—, and

Y represents an aliphatic radical having at least two carbon atoms, a cycloaliphatic, a carbocyclic - aromatic or a heterocyclic - aromatic radical, or



(II)

wherein

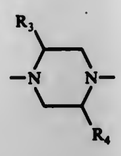
a represents a number from 1–100, and the individual symbols *m*, *n*, Q, Z and Z_1 independently of one another have the following meanings:

m and *n* represent the number 1 or 2,

Q represents —NH— and

Z represents an aliphatic radical having at least two carbon atoms, a cycloaliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, or

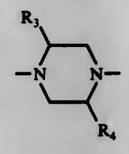
Q and Z together with the adjacent Q in the formula I represent the grouping



wherein

R_3 and R_4 independently of one another represent hydrogen, methyl or phenyl,

Z_1 represents an aliphatic radical having at least 2 carbon atoms, or a cycloaliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, in which the carbonamide groups and carboxyl groups are bound to different carbon atoms, and the carboxyl groups, if Z_1 represents a cyclic radical and at least one of *m* and *n* represents the number 2, are each in the ortho-position with respect to a carbonamide group, or —Q—Y—Q— represents the grouping



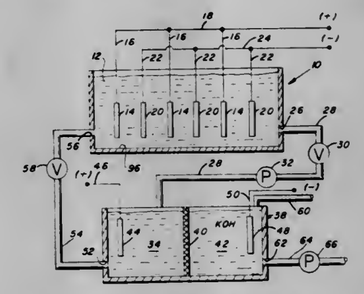
wherein R_3 and R_4 independently of one another represent hydrogen, methyl or phenyl.

4,111,772

PROCESS FOR ELECTRODIALYTICALLY CONTROLLING THE ALKALI METAL IONS IN A METAL PLATING PROCESS

Richard E. Horn, Pittsburgh, Pa., assignor to Pitt Metals and Chemicals, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 579,947, May 22, 1975. This application Aug. 20, 1976, Ser. No. 716,225
Int. Cl.² B01D *13/02*; C25D *3/30*
U.S. Cl. 204—180 P **22 Claims**



1. A process for controlling the alkali metal ions in an electrochemical tin-plating process comprising,

withdrawing a solution from said tin-plating process, said solution containing an excess of alkali metal ions and a tin compound,

introducing said solution into a compartment of an electrodialytic cell,

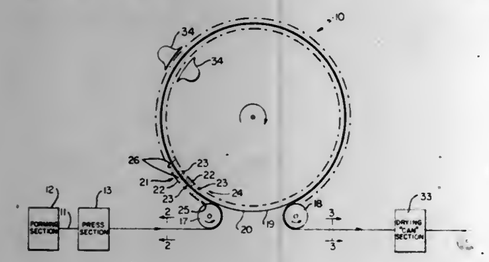
removing from said solution by electrodialysis without changing the composition of the tin compound a portion of the alkali metal ions that is in excess of the alkali metal ions necessary to maintain the tin compound in solution, and

returning said solution with said portion of said alkali metal ions removed therefrom to said tin-plating process.

4,111,773
ELECTROSTATIC METHOD AND APPARATUS FOR TREATING MATERIAL

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned, Ser. No. 548,666, Feb. 10, 1975, Pat. No. 3,965,581, which is a continuation-in-part of Ser. No. 469,820, May 14, 1974, Pat. No. 3,931,682, and a continuation-in-part of Ser. No. 405,023, Oct. 10, 1973, Pat. No. 4,060,449, and Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898. This application Dec. 23, 1977, Ser. No. 863,910
The portion of the term of this patent subsequent to Jun. 29, 1993, has been disclaimed.
Int. Cl.² B01D *13/02*
U.S. Cl. 204—180 R 10 Claims



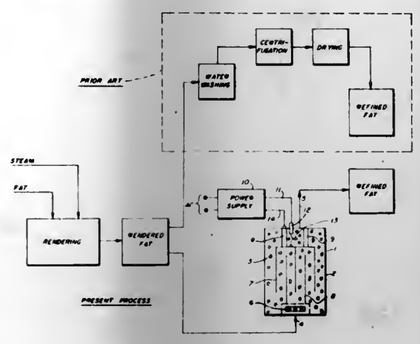
1. In a method of treating retained liquid in liquid bearing material of the liquid absorbing type, the improvement comprising the steps of creating a non-uniform electrostatic field arrangement that has a plurality of non-uniform electrostatic fields with each field having the higher intensity portion thereof substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field, disposing said material in said field arrangement so that angled field lines of force of said non-uniform fields pass through said material from one side thereof to the other side thereof, and vibrating said material while disposed in said field arrangement so that at least some of the particles of said retained liquid will oscillate through at least some of said angled field lines of force of said non-uniform fields and thereby cause heating of at least some of said particles of said retained liquid.

4,111,774
ELECTROFILTRATION OF ANIMAL FATS

Joel Victor Landis, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 11, 1977, Ser. No. 768,002
Int. Cl.² B03C *5/00*
U.S. Cl. 204—186 8 Claims

1. The process of treating rendered animal fat to remove finely divided solids and nonglyceride extractives with essentially no hydrolysis of the fat, comprising passing said rendered animal fat in liquid form through a bed of dielectric particulate solids interposed within a d.c. electric field, whereby a refined

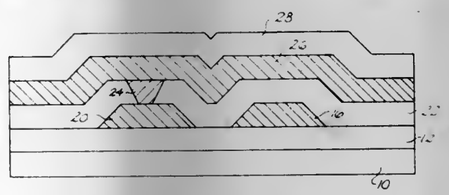


fat having an improved color and essentially the same fatty acid content as the starting fat is obtained.

4,111,775
MULTILEVEL METALLIZATION METHOD FOR FABRICATING A METAL OXIDE SEMICONDUCTOR DEVICE

Ben R. Hollis, Jr.; William R. Feltner, both of Huntsville, Ala.; David L. Bouldin, Morrison, Tenn., and Donald E. Routh, Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 8, 1977, Ser. No. 814,005
Int. Cl.² C23C *15/00*
U.S. Cl. 204—192 C 9 Claims

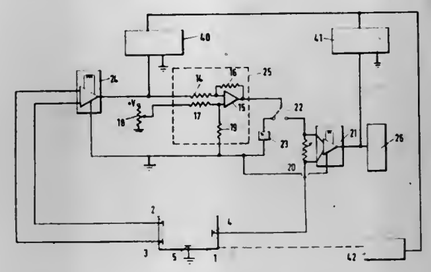


1. A method of fabricating a metal oxide semiconductor device having a plurality of metal layers comprising the steps of:
(a) providing a silicon substrate body and forming a thermal layer of silicon dioxide on said substrate;
(b) depositing a conductive layer of metal on the said thermal silicon dioxide layer by D.C. magnetron sputtering at a low power setting of less than 1.5 kilowatts to produce a substrate temperature of below 70° C. during deposition;
(c) depositing an insulation layer of dielectric material over said metal layer;
(d) depositing a layer of metal on said layer of dielectric material by repeating step (b);
(e) repeating steps (c) and (d) until a desired number of metal layers is formed; and
(f) forming a layer of insulating oxide over the last of said metal layers.

4,111,776
ANALYTICAL APPARATUS AND PROCESSES

John Rickard Mansfield, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jun. 15, 1976, Ser. No. 696,413
Claims priority, application United Kingdom, Jun. 23, 1975, 26559/75
Int. Cl.² G01N *27/44*
U.S. Cl. 204—195 T 5 Claims



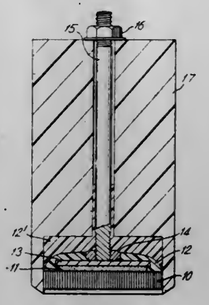
1. Apparatus for the coulometric determination of a material present in successive samples which are introduced into the same batch of an electrolyte which is held in a coulometric cell, which cell comprises a generator electrode, which generator electrode generates a species which consumes the material and is located in the electrolyte, and a second electrode from which species generated do not reach the generator electrode, which apparatus comprises means to sense the presence of the material as a sensing signal and means to pass a sufficient quantity of electricity between the generator electrode and said second electrode to maintain or restore the sensing signal at or to its value when none of the material to be determined is present, said means to sense including a sensor electrode and a reference electrode, means to change the electrolyte in the coulometric cell in response to values of the sensing signal falling outside a predetermined limit, and control means for controlling said means to change including:
(a) a differential to potential signal convertor having a high input impedance;
(b) means for feeding (a) with a sensing signal which varies as the potential difference between the sensor and reference electrodes;
(c) a differential potential input amplifier fed by (a) and by means for setting the output current of (c) to zero at a desired value of the sensing signal by feeding a suitable off-set potential to (c), the whole apparatus excluding the coulometric cell having a phase shift of less than 90° with the input signals received;
(d) a comparator for comparing a potential signal produced by (a) with a pre-set potential; and
(e) means in response to a signal from (d) indicating a potential signal from (a) in excess of that pre-set to operate means for changing the electrolyte in the coulometric cell.

4,111,777
ION-SENSITIVE ELECTRODES

John Vincent Dobson, Hartlepool, and Thomas Dickinson, Newcastle-upon-Tyne, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 605,881, Aug. 19, 1975, abandoned.
This application Nov. 12, 1976, Ser. No. 741,494
Claims priority, application United Kingdom, Sep. 4, 1974, 38748/74
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 M 7 Claims

1. An ion-sensitive electrode for determining the concentration of selected monovalent cations in an electrolyte, comprising a first member, which includes a β-alumina, for contacting an electrolyte, a second member in contact with the first member and comprising a tungsten bronze, means for making electrical contact with the tungsten bronze, and insulating means distinct from the first member constructed to form a container shielding the second member and the contact means from an electrolyte when the electrode is in operation, both the β-



alumina and the said tungsten bronze containing cations selected from the group consisting of Na, K, Rb, Li, Tl, Ag, Cu, NO, Cs and NH_4 allowing the electrode to be used for determining the concentration of said cations in an electrolyte.

4,111,778
PROTECTION ASSEMBLY AND GROUND FOR GAS CONSTITUENT SENSOR

Donald Colen Davis, Fostoria; Alan H. Bilger, Tiffin, and Kent Christ Madson, Jr., Kansas, all of Ohio, assignors to Bendix Autolite Corporation, Fostoria, Ohio

Filed Dec. 5, 1977, Ser. No. 857,333
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 S 16 Claims



1. An electrochemical gas constituent sensor assembly comprising a solid electrolyte sensing element, said sensing element being generally cup-shaped having a closed end and an open end, said sensing element including an interior surface and an exterior surface, said exterior surface being adapted to be exposed to a gas to be sensed and said interior surface being adapted to be exposed to a reference gas, sleeve means forming a cavity in fluid communication with said open end and said interior surface, said sleeve means including aperture means in the wall thereof for communicating the reference gas outside said cavity to the inside of said cavity, and mask means wholly positioned intermediate the ends of said sleeve means for at least partially masking said aperture for substantially precluding the entry of contaminants into said cavity through said aperture.

12. An electrochemical gas constituent sensor assembly comprising a solid electrolyte sensing element, having an interior surface and an exterior surface, said exterior surface being adapted to be exposed to a gas to be sensed and said interior surface being adapted to be exposed to a reference gas, sleeve means forming a cavity in fluid communication with said open end and said interior surface, said sleeve means including aper-

ture means in the wall thereof for communicating the reference gas outside said cavity to the inside of said cavity, and metallic ground means including a clip positioned on said sleeve means intermediate the ends thereof and in electrical contact therewith, said ground means including a conductor mechanically and electrically connected to said clip.

4,111,779

BIPOLAR SYSTEM ELECTROLYTIC CELL

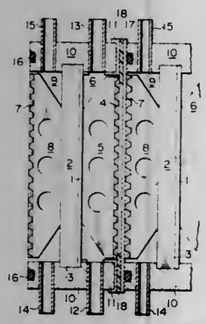
Maomi Seko, Tokyo; Shinsaku Ogawa, Nobeoka; Nobuo Ajiki, Nobeoka, and Muneo Yoshida, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 619,505, Oct. 3, 1975, abandoned. This application Apr. 26, 1977, Ser. No. 790,924

Claims priority, application Japan, Oct. 9, 1974, 49-116695

Int. Cl.² C25B *9/00*

U.S. Cl. 204—255 **8 Claims**



1. An electrolyzer comprising a plurality of bipolar system unit cells disposed alternately with cation exchange membranes therebetween, each unit cell comprising a partition wall consisting of an explosion-bonded titanium plate and iron plate which partitions said cell into an anode chamber and a cathode chamber, an anode which is a titanium substrate coated with platinum group metal oxides, the said anode being electrically connected to the titanium of said partition wall and an iron cathode electrically connected to the iron of said partition wall; there being an interval of at least 10 mm between the cathode and the partition wall.

4,111,780

APPARATUS AND PROCESS FOR THE ELECTROLYTIC TREATMENT OF ALKALI METAL HALIDE SOLUTION WITH ION EXCHANGE MEMBRANES

Naohiro Murayama; Makoto Fukuda; Teruo Sakagami; Shirou Suzuki; Yoshikazu Kokubu, and Toshio Enoki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1976, Ser. No. 743,294

Claims priority, application Japan, Nov. 19, 1975, 50-139074

Int. Cl.² C25B *1/16, 1/26, 9/00*

U.S. Cl. 204—266 **15 Claims**

1. An apparatus for the electrolytic treatment of an aqueous alkali metal halide solution comprising:

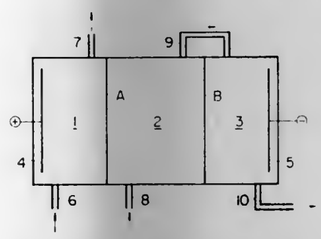
(a) an electrolytic bath assembly consisting of an anodic chamber, an intermediate chamber, and a cathodic chamber arranged in series;

(b) said anodic chamber being provided with an anode, inlet means for introducing concentrated aqueous alkali metal halide solution into said anodic chamber, and outlet means for discharging dilute aqueous alkali metal halide solution from said anodic chamber;

(c) said intermediate chamber being provided with inlet means for introducing water or dilute aqueous alkali metal hydroxide solution, wherein the alkali metal is the same as the alkali metal of the halide specified in part (b) above, into said intermediate chamber;

(d) said cathodic chamber being provided with a cathode and outlet means for discharging concentrated aqueous alkali metal hydroxide solution from said cathodic chamber;

(e) means for adjusting and maintaining the concentration of formed dilute aqueous alkali metal hydroxide in said intermediate chamber to a desired level comprising a hollow pipe positioned externally of said intermediate and cathodic chambers and having one of its ends communicating with the intermediate chamber and its other end communicating with the cathodic chamber, said hollow pipe serving as a passageway for the flow of dilute aqueous alkali metal hydroxide solution from the intermediate chamber to the cathodic chamber thus increasing the concentration of alkali metal hydroxide in the cathodic



chamber any excess of which may be removed through the outlet means in said cathodic chamber to adjust and maintain the concentration of the alkali metal hydroxide in said cathodic chamber to a desired level;

(f) a first anodic ion exchange membrane separating the anodic chamber from the intermediate chamber, said first membrane being durable to aqueous alkali metal hydroxide solution and gaseous chlorine and having a current efficiency exceeding about 80%; and

(g) a second anodic ion exchange membrane separating the intermediate chamber from the cathodic chamber, said second membrane being durable to aqueous alkali metal hydroxide solution, having a low electrical resistance in aqueous alkali metal hydroxide solution, having high selective penetration performance to alkali metal ions, and having moderate water and hydroxyl ion penetration performance.

4,111,781

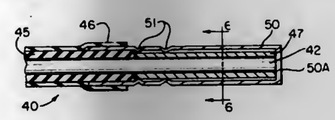
DANGLER ASSEMBLY FOR ELECTRO-CHEMICAL APPARATUS

Noel Edward Smith, and Christopher Joseph Smith, both of 1099 Tillinghast Rd., East Greenwich, R.I. 02818

Filed Nov. 14, 1977, Ser. No. 851,117

Int. Cl.² C25D *17/20, 17/10, 17/12*

U.S. Cl. 204—280 **3 Claims**



1. A dangler assembly for an electro-chemical apparatus comprising:

(a) a cathode core,

(b) insulation encasing said cathode core,

(c) insulation covering encasing said insulation,

(d) said cathode core extending beyond said insulation to provide an exposed end,

(e) a tube of electrical conductive material,

(f) means fastening said tube to said cathode core,

(g) a contactor comprising a casing having one open end, and a wall closing one end,

(h) said contactor located over said tube with said open end located between said insulation and said insulation covering,

(i) and means removably fastening said contactor with said tube in electrically conductive relationship.

4,111,782

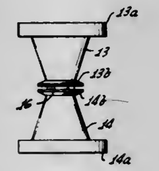
SPUTTERING APPARATUS

Alan S. Penfold, Playa del Rey, and John A. Thornton, Los Angeles, both of Calif., assignors to Telic Corporation, Santa Monica, Calif.

Division of Ser. No. 535,429, Dec. 23, 1974, Pat. No. 4,041,353, which is a continuation of Ser. No. 254,504, May 18, 1972, abandoned, and a continuation-in-part of Ser. No. 178,240, Sep. 7, 1971, Pat. No. 3,884,793. This application May 31, 1977, Ser. No. 801,766

Int. Cl.² C23C *15/00*

U.S. Cl. 204—298 **11 Claims**



1. Sputtering apparatus, comprising:

a pair of electrodes separated by an insulator, said electrodes being positioned end to end in a coaxial post-type configuration having outwardly extending wings at remote opposite distal ends and at the inner proximal ends of said electrodes, said wings at said inner ends being of smaller diameter than said wings at said outer ends;

mounting means for supporting said electrodes in close, spaced apart relationship in a low pressure working gas environment;

power supply means for supplying an electrical voltage across said pair of electrodes; and

magnetic field means for forming a magnetic field which defines with said electrodes at least one completely closed trap for containing substantially all electrons emitted from said electrodes and having sufficient energy to further ionize said working gas.

4,111,783

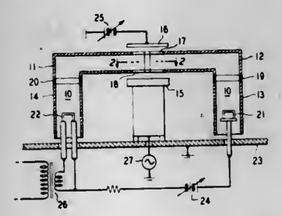
TRIODE SPUTTERING SYSTEM

Jeffrey Bruce Bindell, Allentown; Lowell Henry Holschwandner, Fountain Hill; Edward Franklin Labuda, Allentown, and William Dennis Ryden, Whitehall, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1977, Ser. No. 849,600

Int. Cl.² C23C *15/00*

U.S. Cl. 204—298 **3 Claims**



1. A triode sputtering apparatus for reducing contamination from unwanted sputtering of the apparatus comprising a confining tube including an anode support portion, a cathode support portion and a plasma support portion,

characterized in that said confining tube comprises at least two electrically isolated portions.

4,111,784

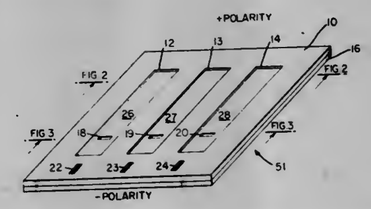
APPARATUS FOR ELECTROPHORESIS

Harald Dahms, 22 Lakeview Rd., Ossining, N.Y. 10562

Continuation of Ser. No. 658,372, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 566,245, Apr. 19, 1975, abandoned, which is a continuation of Ser. No. 392,652, Aug. 29, 1973, abandoned, which is a continuation of Ser. No. 122,310, Mar. 9, 1971, abandoned. This application May 18, 1977, Ser. No. 797,903

Int. Cl.² G01N *27/26, 27/28*

U.S. Cl. 204—299 EC **25 Claims**



1. A plate for performing electrophoretic separations, said plate comprising:

a thin flexible membrane that is substantially transparent to ultraviolet radiation, said membrane being at least partially coated with an electrophoretic medium, and

a support member supporting said membrane, there being at least one opening in said support member sufficiently large to allow electrophoretic separations and scanning by ultraviolet radiation of said electrophoretic medium to go unimpeded by said support member.

4,111,785

APPARATUS FOR PREPARATIVE ELECTROPHORESIS

Willem Gerrit Roskam, 55 Rue Lacordaire, 75015 Paris, France

Filed May 16, 1977, Ser. No. 797,286

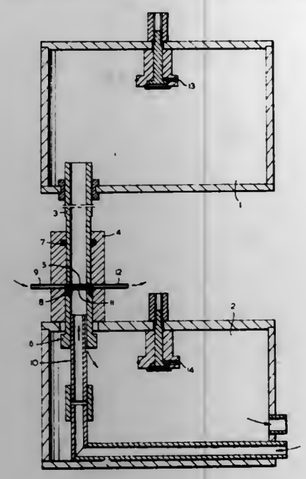
Claims priority, application Netherlands, May 18, 1976, 7605315

Int. Cl.² G01N *27/26, 27/28*

U.S. Cl. 204—299 R **23 Claims**

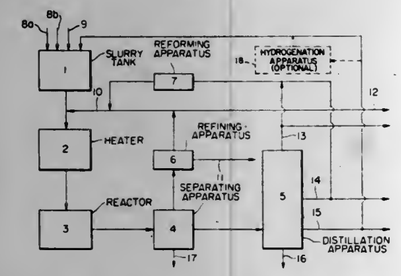
1. Electrophoresis apparatus, comprising a tubular member having first and second ends for receiving a column of gel, means defining an elution chamber at the first end of the tubular member, primary inlet duct means for passing buffer solution into the elution chamber, and outlet duct means for discharging buffer solution from the elution chamber and so disposed with respect to the primary inlet duct means that buffer solution passes from the primary inlet duct means to the outlet duct means substantially perpendicular to the central axis of the tubular member, the chamber-defining means comprising a plate-form body of solid but porous material having two main surfaces extending substantially perpendicular to the central axis of said tubular member, and the apparatus also comprising auxiliary inlet duct means for passing an auxiliary flow of buffer solution into the elution chamber through that main surface of the plate-form body which is further from the second end of the tubular member, and a layer of porous mate-

rial between the elution chamber and the auxiliary inlet duct means, the porous material of said layer having a higher flow



resistance to buffer solution than the porous material of the plate-form body.

4,111,786
PROCESS FOR LIQUEFYING COAL
Hidehiko Sugimura; Hisashi Murakami, both of Tokyo; Toshikatsu Ohtsubo, and Kenji Fukuda, both of Omuta, all of Japan, assignors to Mitsui Coke Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1976, Ser. No. 671,022
Claims priority, application Japan, Apr. 16, 1975, 45-332
Int. Cl.² C10G *1/04;* C10B *55/00*
U.S. Cl. 208—8 12 Claims



1. In a process for manufacturing reformed coal which comprises the steps of (a) forming a slurry of coal in an oil; (b) subjecting the coal and oil slurry to hydrogenation conditions sufficient to depolymerize the coal; (c) separating a substantially liquified coal solution from the product of said hydrogenation; and (d) distilling said liquified coal solution at distillation conditions sufficient for distilling a heavy oil distillate therefrom and for recovering a reformed coal as a distillation bottoms product the improvement which comprises said slurry forming step (a) which includes the step of forming a mixed oil by adding an amount of 1 to 10 parts by weight of a coal oil having a boiling point higher than about 150° C to one part by weight of a petroleum oil which is a heavy fuel oil.

4,111,787
STAGED HYDROCONVERSION OF AN OIL-COAL MIXTURE
Clyde L. Aldridge, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.
Continuation-in-part of Ser. No. 702,271, Jul. 2, 1976. This application Dec. 8, 1977, Ser. No. 858,546
Int. Cl.² C10G *1/08*
U.S. Cl. 208—10 17 Claims

1. A staged process for hydroconverting a non-hydrogen donor heavy hydrocarbon oil and coal, which comprises:
(a) adding to said heavy oil an oil soluble metal compound of a metal selected from the group consisting of Groups IVB, VB, VIB, VIIB and VIII of the Periodic Table of Elements and mixtures thereof;
(b) converting said oil soluble metal compound to a catalyst within said oil in the presence of a hydrogen-containing gas by heating said oil to an elevated temperature;
(c) reacting the oil containing said catalyst with hydrogen under oil hydroconversion conditions in a first hydroconversion zone;
(d) passing at least a portion of said first hydroconversion zone effluent to at least one additional hydroconversion zone maintained at coal hydroconversion conditions;
(e) introducing coal into said additional hydroconversion zone, and
(f) recovering a hydroconverted normally liquid hydrocarbon product.

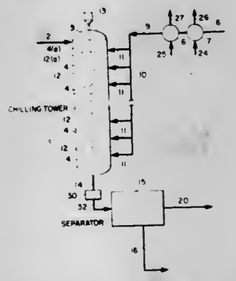
4,111,788
STAGED HYDROGENATION OF LOW RANK COAL
Michael C. Chervenak, Pennington, and Edwin S. Johanson, Princeton, both of N.J., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.
Filed Sep. 23, 1976, Ser. No. 725,854
Int. Cl.² C10G *1/08*
U.S. Cl. 208—10 21 Claims

1. A two-stage process for the hydrogenation of low rank coal to produce hydrocarbon liquids and gaseous products, which comprises:
blending particulate low rank coal with a slurrying oil to form a pumpable coal-oil slurry,
partially hydrogenating said coal by contacting said coil-oil slurry with hydrogen in a first stage reaction zone containing no catalyst,
passing the entire effluent from said first zone to a second ebullated bed reaction zone, said effluent comprising the hydrogenation products formed and the coal which was only partially converted in said first zone,
hydrogenating said effluent in said second zone in the presence of particulate hydrogenation catalyst, the temperature in said second zone being at least 25° F. less than the temperature in said second zone, and
withdrawing a gaseous effluent stream and a liquid effluent stream from said second stage reaction zone.

4,111,789
RECOVERY OF HYDROCARBON FROM DILUTION CENTRIFUGING TAILINGS
Kenneth Porteous; Leigh Falkenberg, both of Edmonton, and Stephen Lane, Sherwood Park, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Ottawa; Her Majesty the Queen in right of the Province of Alberta, Department of, Education Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; Ontario Energy Corporation; Imperial Oil Limited, both of Toronto; Canada-Cities Service, Ltd., Calgary and Gulf Oil Canada Limited, Toronto, all of Canada
Filed Feb. 14, 1977, Ser. No. 768,545
Int. Cl.² C10G *1/04*
U.S. Cl. 208—11 LE 6 Claims

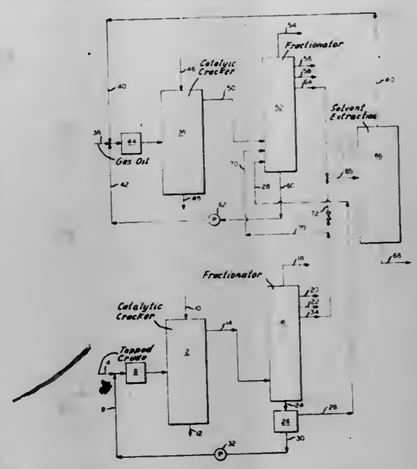
1. A method for treating tailings from the dilution centrifuging circuit of a hot water extraction operation for the recovery of bitumen from oil sands, said tailings containing bitumen, hydrocarbon diluent, solids and water, comprising:
introducing the tailings into a flotation cell and retaining it therein for a sufficient period of time, while subjecting it to agitation and flotation using gas introduced into the base of the body of tailings, to recover a significant portion of the contained bitumen and diluent as froth and reject a portion of the solids and water as under flow; and removing the froth for further threatment.

4,111,790
DILUTION CHILLING DEWAXING SOLVENT
Theodore H. West, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Linden, N.J.
Filed Oct. 28, 1976, Ser. No. 736,514
Int. Cl.² C10G *43/08*
U.S. Cl. 208—33 9 Claims



1. In a process for dewaxing a waxy petroleum oil stock comprising introducing said waxy oil stock into an elongated chilling zone divided into a plurality of stages and passing said waxy oil from stage to stage of said zone while injecting cold dewaxing solvent into at least a portion of said stages and maintaining a high degree of agitation in a plurality of solvent-containing stages so as to achieve substantially instantaneous mixing of said waxy oil and said solvent-waxy oil mixture as it progresses from stage to stage through said chilling zone, thereby precipitating at least a portion of said wax from said oil under conditions of said high degree of agitation separating the precipitated wax from the solvent-oil mixture and recovering an oil stock of reduced wax content from said mixture, the improvement which comprises using as said cold dewaxing solvent, a solvent selected from the group consisting of mixtures of (a) methylene chloride and (b) acetone, MEK, methanol and mixtures thereof and wherein the amount of methylene chloride in said dewaxing solvent is at least about 20 LV %.

4,111,791
PRODUCTION OF HIGHLY AROMATIC EXTRACT OIL
Edgar D. Davis, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 24, 1977, Ser. No. 771,712
Int. Cl.² C10G *37/02*
U.S. Cl. 208—78 9 Claims

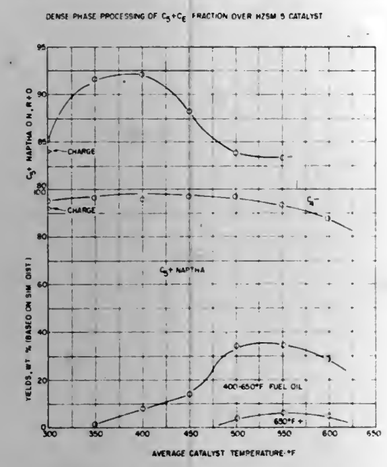


1. A process comprising
(a) passing a topped crude stream to a first catalytic cracking zone wherein said stream is subjected to catalytic cracking to produce an effluent of cracked products;
(b) passing the effluent obtained in step (a) to a first fractionation zone wherein the cracked products from the first catalytic cracking zone are separated into separate distillate fractions comprising light hydrocarbons, gasoline, light cycle oil, heavy cycle oil and a catalyst-containing bottoms product;
(c) passing a substantial portion of said heavy cycle oil obtained in step (b) to a second fractionation zone;
(d) passing a gas oil stream to a second catalytic cracking zone wherein said gas oil stream is subjected to catalytic cracking to produce an effluent of cracked products;
(e) passing the effluent obtained in step (d) to said second fractionation zone wherein the cracked products from the second catalytic cracking zone and the heavy cycle oil from step (b) are separated into separate distillate fractions comprising light hydrocarbons, gasoline, light cycle oil, heavy cycle oil and a catalyst-containing bottoms product; and
(f) passing said heavy cycle oil obtained in step (e) to a solvent extraction zone wherein the oil is separated into an aromatics-containing extract phase and into a paraffin-containing raffinate phase.

4,111,792
COMBINATION PROCESS FOR UPGRADING SYNTHOL NAPHTHA FRACTIONS
Philip D. Caesar, Princeton; William E. Garwood, Haddonfield; William F. Krudewig, Riverton, all of N.J., and John J. Wise, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 732,235, Oct. 14, 1976. This application Feb. 11, 1977, Ser. No. 767,876
Int. Cl.² C07C *15/02;* C10G *37/02*
U.S. Cl. 208—79 10 Claims

1. A method for upgrading the C_5+ liquid product of a Fischer-Tropsch synthesis having an end-point from about 340° to 400° F which comprises:
(a) fractionating said liquid product to separate a $C_5 + C_6$ fraction and a C_7+ fraction;

(b) reforming the C_7+ fraction to produce a C_5+ reformate;
(c) containing the $C_5 + C_6$ fraction in the absence of added hydrogen with a crystalline aluminosilicate characterized by a pore dimension greater than about 5 Angstroms, a silica to alumina ratio of at least 12, a constraint index within the range of 1 to 12 at dense phase process conditions of a temperature of about 325° to 500° F, a pressure



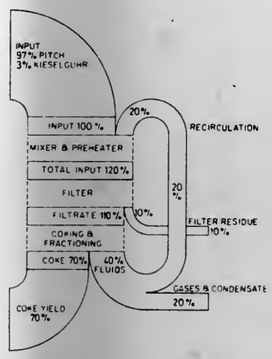
of about 200 to 1000 psig, and a LHSV of about 0.1 to 5.0; and
(d) recovering a C_5 gasoline product boiling up to about 400° F having an enhanced octane value from the dense phase processed $C_5 + C_6$ fraction; and
(e) blending said C_5+ reformate with said C_5 gasoline product.

4,111,793
OLEFINS PRODUCTION
Alexander John Kolombos, Sutton; Donald McNeice, Reigate, and Dennis Charles Wood, Sunbury, all of England, assignors to The British Petroleum Company Limited, London, England
Filed Sep. 13, 1976, Ser. No. 722,552
Claims priority, application United Kingdom, Sep. 25, 1975, 39284/75
Int. Cl.² C07C *3/20*; C10G *11/04*
U.S. Cl. 208—121 **10 Claims**

1. A process of producing olefins by cracking at elevated temperature in the presence of steam a hydrocarbon feedstock consisting essentially of wax distillate and boiling between 300° and 550° C over a catalyst composition consisting essentially of a manganese oxide and zirconia or titania.

4,111,794
METHOD OF PRODUCING PITCH COKE
Gerhard Pietzka, Vockenhausen, and Harald Tillmanns, Kelkheim, both of Germany, assignors to Sigri Elektrographit GmbH, Meitingen bei Augsburg, Germany
Filed Mar. 31, 1977, Ser. No. 783,029
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614448
Int. Cl.² G10G *9/14*
U.S. Cl. 208—131 **5 Claims**

1. Method for the manufacture of pitch coke with needle-like structure which comprises:
(a) mixing pyrolysis oil condensate formed in the coking of coal-tar pitch with a coal-tar pitch having a softening point between 70° and 150° C. in the proportion of 70 to 95% by weight coal-tar pitch and 5 to 30% by weight pyrolysis oil condensate,
(b) filtering said mixture of condensate and pitch at a temperature 100° C. to 200° above the softening point of the pitch,
(c) passing the filtrate in a restricted stream through a heating zone and heating the filtrate therein to a temperature between about 450° and 525° C.,
(d) discharging the thus heated filtrate to a coking chamber wherein the heated filtrate forms a non-volatile carbonaceous residue as coke and volatile vapor and gas,



(e) releasing the volatile vapor and gas from the coking chamber and passing the vapor and gas to a fractionating zone with an overhead temperature of between about 150° and 200° C. at pressures of about 0.5 to 2.0 bar and a bottom temperature of about 300° C., in which the vapor is condensed to form pyrolysis oil condensate,
(f) withdrawing said condensate from the fractioning zone, and returning at least a part of said condensate for mixing with additional incoming coal-tar pitch prior to said filtering.

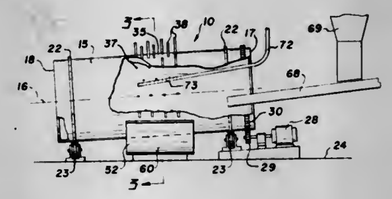
4,111,795
HYDRODESULFURIZATION OF HYDROCARBON WITH COBALT-MOLYBDENUM-ALUMINA CATALYST OF HIGH METAL CONTENT AND HIGH SURFACE AREA
Howard D. Simpson, Irvine, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Division of Ser. No. 751,383, Dec. 17, 1976. This application Nov. 10, 1977, Ser. No. 850,409
Int. Cl.² C10G *23/02*
U.S. Cl. 208—216 **7 Claims**

1. A process for the hydrodesulfurization of a hydrocarbon feedstock which comprises contacting said feedstock in admixture with hydrogen and under hydrodesulfurization conditions with a catalyst comprising a sulfided composite of about 18–30 weight-percent of MoO_3 and about 4–12 weight-percent CoO supported on an alumina base, said catalyst having been prepared by the steps of:
(1) comulling boehmite alumina with sufficient of an aqueous ammonium molybdate solution to provide the desired MoO_3 content in the finished catalyst;
(2) drying the composite from step (1) at temperatures below about 500° F. to a water content of between about 20 and 40 weight-percent;
(3) intimately admixing the dried composite from step (2) with a water-soluble cobalt salt and sufficient water to provide an extrudable paste;
(4) extruding the paste into extrudates having a diameter between about 1/20 and ¼ inch; and
(5) calcining the extrudates at a temperature which is (a) between about 900° and 1250° F. and (b) correlated with the MoO_3 content of said catalyst so as to give a final surface area of at least $M/0.14$ m^2/g, where M is the weight-percent of MoO_3 in said catalyst.

4,111,796
METHOD FOR PRESULFIDING HYDRODESULFURIZATION CATALYSTS
Stephen J. Yanik, Valencia; Angelo A. Montagna, Monroeville, and James A. Frayer, Pittsburgh, all of Pa., assignors to Gulf Research & Development Co., Pittsburgh, Pa.
Filed Apr. 2, 1976, Ser. No. 673,075
Int. Cl.² C10G *23/02*; B01J *27/02*
U.S. Cl. 208—216 **6 Claims**

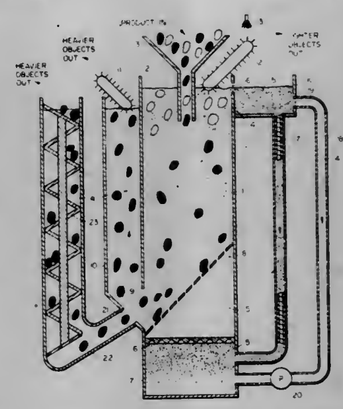
1. A process which comprises contacting a catalyst consisting essentially of Group VI-B and Group VIII hydrogenation components on a refractory oxide support with a sulfiding agent selected from the group consisting of $C_1 - C_{20}$ mercaptans, dimethyl sulfide, carbon disulfide and other organic sulfides containing from 1 to 20 carbon atoms per molecule dispersed in a petroleum oil stock which is a liquid under the hereafter described presulfiding conditions, said contacting being conducted in a nitrogen atmosphere substantially free of oxygen and hydrogen and at a presulfiding temperature in the range of 200° to 450° F. and at a presulfiding pressure in the range of atmospheric to 400 psig, maintaining the contact between said sulfiding agent and said catalyst until the total amount of the sulfur in said sulfiding agent brought into contact with said catalyst is in the range of 10 to 55 weight percent of the amount of sulfur required to completely sulfide the metals on the catalyst at the contact temperature and pressure, and thereafter contacting said catalyst with a sulfur-containing hydrocarbon feed under hydrodesulfurization conditions.

4,111,797
METHOD AND APPARATUS FOR SEPARATING PARTICULATE MATERIALS OF DIFFERENT SPECIFIC GRAVITIES
Marvin J. Richter, Box 8, R.R. #2 West Coast Rd., Sooke, B.C., Canada (VOS INO)
Filed Dec. 15, 1976, Ser. No. 750,707
Int. Cl.² B03B *5/48*; C22B *11/12*
U.S. Cl. 209—14 **15 Claims**



1. Apparatus for separating particulate materials of different specific gravities, comprising
an inclined drum mounted for rotation around a longitudinal axis and having an intake end and a discharge end,
means for directing said particulate materials and water into the drum through the intake end thereof,
an annular wall section in the drum having a plurality of perforations therein and spaced from each other, relatively small particles of said materials passing through the perforations during rotation of the drum,
hollow spigots connected to the drum and registering with said perforations and radiating therefrom, each spigot having an open side facing in the direction opposite to the direction in which the drum rotates,
an open concentrate bin beneath said wall section of the drum to receive the particles from the spigots in a bed of materials, the material particles tending to separate during movement through the spigots,
said spigots being long enough to reach into the bed of particles to discharge the particles moving through the spigots into the bed and agitating said bed during movement therethrough, and said water traveling through the spigots and overflowing from the bin and removing therewith lighter particles while heavier particles concentrate towards the bottom of the bin.

4,111,798
SEPARATION OF SOLIDS BY VARYING THE BULK DENSITY OF A FLUID SEPARATING MEDIUM
Palmer L. Peterson, Richland, Wash.; James B. Duffy, Brea, Calif., and Richard D. Tokarz, Richland, Wash., assignors to Battelle Development Corporation, Columbus, Ohio
Filed Nov. 30, 1976, Ser. No. 746,109
Int. Cl.² B03B *5/44*
U.S. Cl. 209—172.5 **18 Claims**

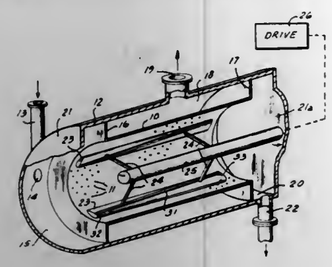


1. A method for separating objects having a density greater than a selected density value from objects having a density less than said selected density value, comprising:
(a) providing a separation vessel having an upper and lower portion, said vessel containing a liquid having a density exceeding said selected density value;
(b) reducing the apparent density of the liquid to said selected density value by introducing solid, bubble-like bodies having a density less than that of the liquid into the lower portion of the vessel and permitting them to rise therethrough;
(c) introducing the objects to be separated into the separation vessel and permitting the objects having a density greater than the apparent density of the liquid to sink to the lower portion of the vessel, while the objects having a density less than said selected density value float in the upper portion of the vessel; and
(d) separately removing the higher density objects in the lower portion and the lower density objects in the upper portion from the separation vessel.

4,111,799
STOCK SCREEN FOIL
Vincent W. Cancilla, Pittsfield, Mass., assignor to Beloit Corporation, Beloit, Wis.
Filed Jul. 7, 1977, Ser. No. 813,700
Int. Cl.² B03B *5/56*
U.S. Cl. 209—273 **9 Claims**

3. A mechanism for screening a stock slurry for a paper making machine comprising in combination:
a perforate screen to which stock is supplied to a surface of the screen with a portion of the stock passing through the screen and a portion not passing the screen and flowing in a discharge direction;
a foil movable along said surface of the screen having an outer surface facing the screen for creating a pressure pulsation in the screen to aid in the passage of stock therethrough and having an inwardly facing surface away from the screen;
and a vane means on the foil extending in a direction for

generating movement of the stock along said surface in a discharge direction and being soley on said inwardly



facing surface so that the action of the outer surface of the foil on the screen is not disturbed.

4,111,800

PROCESS FOR TREATING MUNICIPAL SOLID WASTE AND RAW SEWAGE SLUDGE

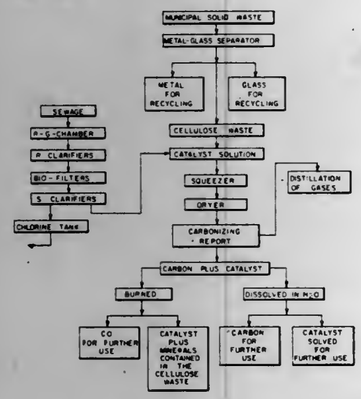
Alfred J. Harendza-Harinxma, 50 Merion Pl., Lawrenceville, N.J. 08648

Filed Oct. 6, 1976, Ser. No. 729,890

The portion of the term of this patent subsequent to Jun. 1, 1993, has been disclaimed.

Int. Cl.² C02C *3/00*; C01B *31/00*

U.S. Cl. 210—10 **14 Claims**



1. A method of carbonizing cellulose-containing waste material and sewage sludge, which comprises:

combining sewage sludge containing from 4% to 7% solids with an alkali metal meta aluminate of a concentration ranging from 1% to 20% by weight based on said sewage sludge;

combining the cellulose-containing waste material with the sludge-aluminate mixture; and then

heating said carbonizing mixture to carbonize at least the cellulose-containing waste material in a closed system at a temperature ranging from 175° C. to 700° C.

10. A process for treating both cellulose-containing municipal solid waste and municipal/industrial sewage, which comprises:

a. chopping-up the solids in said sewage in a screening chamber to reduce the size of the solids;

b. removing any sand, grit or abrasive present in the chopped-up sewage in a Parshall flume and grit chamber;

c. flowing the sewage from the Parshall and grit chamber in a primary clarifier to remove solids and greases in the sewage by settling;

d. flowing the effluent from the primary clarifier into bio-filter and later into a secondary clarifier to remove by settling substantially all remaining solids;

e. filtering the effluent from the secondary clarifier in a carbon filter;

f. killing any bacteria in the effluent by contacting the same with liquid chlorine, or the like;

g. adding a water soluble alkali metal meta aluminate to said remaining solids to obtain a concentration ranging from 1% to 20% by weight based on said sewage sludge;

h. placing the cellulose-containing municipal solid waste in a screened basket;

i. dipping said basket into the sewage-aluminate mixture to intimately contact and soak the waste with the aluminate-sewage mixture;

j. removing the excess sewage-aluminate mixture from said basket;

k. heating the dry or partially dry mixture to carbonize the solid waste and intermixed sewage in a closed system at a temperature ranging from 175° C. to 700° C.

4,111,801

FILTRATION SYSTEM

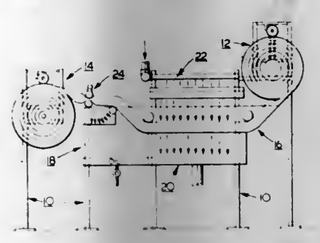
John Jay, Halifax; Gary D. Bonner, Lower Sackville, and Osmundo J. Betancourt, Halifax, all of Canada, assignors to Canplan Filtration Limited, Halifax, Canada

Continuation of Ser. No. 673,888, Apr. 5, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,468

Claims priority, application United Kingdom, Apr. 16, 1975, 15716/75

Int. Cl.² B01D *33/14*

U.S. Cl. 210—40 **16 Claims**



8. A method of filtering oil contaminated water, comprising:

(a) providing an elongated ribbon of flexible open cell plastics foam of a type capable of attracting and retaining oil thereon while allowing water to pass therethrough, said foam being subject to collapse in the event of a build-up of a head of liquid thereon with a consequent reduction in the rate of flow of water therethrough;

(b) supporting a section of the ribbon in a generally horizontal manner on an open grid-like support to permit free drainage therefrom, over substantially the entire area of said section of ribbon, of water passing through the plastics foam;

(c) distributing the oil contaminated water substantially uniformly and in a finely divided manner over substantially the entire area of said section of the ribbon with means to distribute contaminated liquid, comprising spray means and at least one perforate plate means positioned under and spaced from said spray means; the perforations of said perforate plate means spaced and sized to provide a gentle rain of said contaminated liquid over substantially the entire area of said section, said rain being of sufficient flow rate and distribution to eliminate collapse of the plastic foam of said section,

(d) advancing said ribbon over said support after the foam ribbon has collected a certain quantity of oil whereby to position a further section of the foam ribbon over said support; and distributing the oil contaminated water over said further section of the ribbon;

(e) applying forces to said first mentioned section of the ribbon to squeeze therefrom oil collected therein, and collecting said oil;

(f) and repeating steps (d) and (e) until the desired quantity of contaminated water has been filtered.

12. Apparatus for filtering oil contaminated liquids, particularly water, said apparatus comprising:

a. an elongated ribbon of flexible open cell plastics foam filtering material capable of attracting and retaining oily substances thereon, said flexible foam being subject to collapse in the event of a build-up of a head of liquid thereon with a consequent reduction in the rate of flow of the liquid therethrough,

b. spaced apart supply means and take-up means each adapted to store a length of said ribbon thereon with a length of said ribbon extending therebetween, said supply means and said take-up means being arranged to allow the ribbon to be advanced from the supply means to the take-up means,

c. a filter tray located intermediate the supply means and the take-up means and supporting a section of the length of ribbon of foam material in a generally horizontal position, the filter tray including a grid-like bottom to permit free drainage of liquid away from the foam ribbon over substantially the entire area of said section of the ribbon, and tray having upright side walls which inhibit by-pass of contaminated liquid around the section of the foam ribbon and sloping end walls to assist in free movement of the foam ribbon when the latter is advanced across the filter tray,

d. means to distribute contaminated liquid, comprising spray means and at least one perforate plate means positioned under and spaced from said spray means; the perforations of said perforate plate means being spaced and sized to provide a gentle rain of said contaminated liquid over substantially the entire area of said section, said rain being of sufficient flow rate and distribution to eliminate collapse of the plastic foam of said section.

4,111,802

WATER TREATMENT APPARATUS AND METHOD

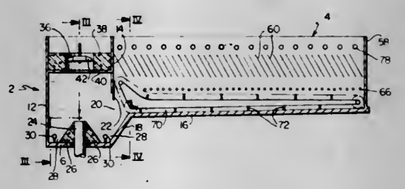
Robert Louboutin, Crespieres, France, assignor to Societe Degremont, Rueil-Malmaison, France

Filed Mar. 2, 1977, Ser. No. 773,555

Claims priority, application France, Mar. 24, 1976, 76 08442

Int. Cl.² B01D *21/16*; C02B *1/22*

U.S. Cl. 210—46 **44 Claims**



1. A liquid treatment apparatus comprising:

a single enclosure containing therein at least one reaction zone having therein sludge and at least one decanting zone, said reaction zone having a lower portion and an upper portion separated from said lower portion;

means for introducing liquid to be treated into said lower portion of said reaction zone;

means for turbulently mixing said liquid and sludge within a turbulent area of said lower portion of said reaction zone and withdrawing at a controlled rate the thus formed mixture of liquid and sludge from said turbulent area of said lower portion to said upper portion;

means for recycling a first portion of the thus withdrawn mixture from said upper portion back into said turbulent area of said lower portion;

means, separate from said recycling means, for distributing a second portion of said thus withdrawn mixture from said upper portion in a uniform manner throughout the entire area of the lower portion of said decanting zone, whereby purified liquid rises upwardly to the top of said decanting zone and sludge settles toward the bottom of said decanting zone; and

means for collecting said purified liquid.

17. A method for treating liquid in an apparatus of the type including a single enclosure containing therein at least one reaction zone having therein sludge and at least one decanting zone, said reaction zone having a lower portion and an upper portion separated from said lower portion, said method comprising:

introducing liquid to be treated into said lower portion of said reaction zone;

turbulently mixing said liuqid with said sludge in a turbulent area of said lower portion of said reaction zone and withdrawing at a controlled rate the thus formed mixture of liquid and sludge from said turbulent area of said lower portion to said upper portion;

recycling a first portion of the thus withdrawn mixture from said upper portion back into said turbulent area of said lower portion;

distributing, through means separate from the means of said step of recycling, a second portion of said thus withdrawn mixture from said upper portion in a uniform manner throughout the entire area of the lower portion of said decanting zone, whereby purified liquid rises upwardly to the top of said decanting zone and sludge settles toward the bottom of said decanting zone;

collecting said purified liquid.

4,111,803

PROCESS FOR RECOVERING PROTEINACEOUS MATTER FROM ACID WHEY AND TANNERY UNHAIRING EFFLUENTS

Robert E. Townend, Elkins Park, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 3, 1977, Ser. No. 803,191

Int. Cl.² C02B *1/20*; C02C *5/02*

U.S. Cl. 210—51 **1 Claim**

1. A process for removing and recovering proteinaceous matter from acid whey and tannery unhairing waste and reducing the biological oxygen demand of said acid whey and unhairing waste, comprising mixing aqueous acid whey and aqueous tannery unhairing waste in proportions such that the mixture contains from 20 to 25% tannery waste by volume adjusting the pH of the mixture to from 8 to 10, heating the mixture to about 70° C., allowing said proteinaceous matter to precipitate, and separating the precipitate from the supernatant liquid.

4,111,804

NOVEL COMPOSITIONS OF MATTER FOR USE IN THE TREATMENT OF AQUEOUS SYSTEMS

Peter Miles, Stockport; Norman Richardson, Middleton, and Michael Anthony Finan, Macclesfield, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

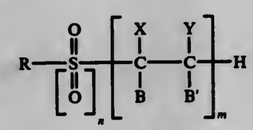
Filed Jul. 20, 1976, Ser. No. 707,126

Claims priority, application United Kingdom, Jul. 23, 1975, 30718/75

Int. Cl.² C02B *5/06*

U.S. Cl. 210—58 **12 Claims**

1. A method of inhibiting scale formation by salts of calcium, magnesium, barium and strontium from aqueous solutions which comprises adding to the aqueous solution an amount within the range of from 0.2 part to 500 parts per million, based on the water to be treated, of a product comprising a telomer of formula I



or a salt thereof, wherein X is COOH when Y is H, or Y is

COOH when X is H; B and B' are each hydrogen, or B is CH_3 when B' is H, or B' is CH_3 when B is H; *m* is an integer from 2 to 100; *n* is 0 or 1; and R is alkyl having from 1 to 22 carbon atoms substituted by one or more carboxyl groups.

4,111,805

SEPARATION OF SOLVENT FROM LIQUID SULFUR

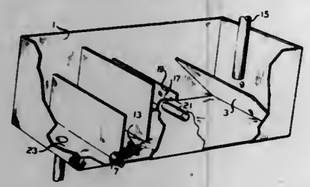
Joe Van Pool, and R. Neil Jackson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 16, 1976, Ser. No. 714,930
Int. Cl.² B01D *36/18;* C02B *1/02*
U.S. Cl. 210—71 **5 Claims**

1. A method for separating liquid sulfur from a liquid solvent of lower specific gravity comprising:

(a) charging an emulsion of liquid sulfur which contains an immiscible solvent of specific gravity lower than said sulfur into a first section of a heated vessel, said first section comprising an outwardly sloped baffle said baffle angled upward from the vessel floor providing egress only over the top of said baffle, to carry the flow up and away from the zone of entry thereby providing quieting of the turbulence and encouraging release of the lighter material from the heavier liquid of said emulsion, said charging at a rate of flow that allows said emulsion to break;

(b) flowing liquid sulfur and solvent out of said first zone into a second zone contained by a second baffle, within said second zone flowing said solvent over a trapout weir



into a collecting chamber and removing said solvent from said chamber;

(c) flowing said liquid sulfur under said baffle into a third zone contained by a restraining weir of sufficient height to maintain operating levels in said first and second zones; and

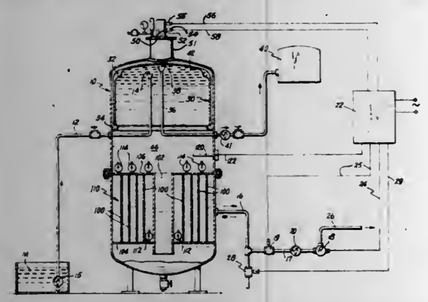
(d) flowing liquid sulfur over said restraining weir for collection and removal from said vessel.

4,111,806

GRAVITATIONAL SEPARATOR FOR MIXTURES OF IMMISCIBLE LIQUIDS OF DIFFERENT DENSITIES

David A. Wright, and Chester H. Walters, both of St. Louis, Mo., assignors to National Marine Service, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 608,905, Aug. 29, 1975, Pat. No. 4,032,444. This application Jan. 19, 1977, Ser. No. 760,661
Int. Cl.² B01D *12/00*
U.S. Cl. 210—115 **19 Claims**



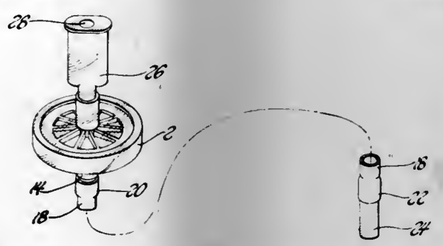
1. In a gravitational oil and water separator utilizing at least one coalescer screen within the lower area of the separator for trapping oil particles entrained in a clean water discharge flow from the separator, the water discharge from the separator occurring normally by suction of water from the separator and the screen normally being backflushed by a reverse flow of water through the screen under pressure, the separator including a water discharge outlet and backflush inlet means at the lower portion of the separator, the improvement comprising a chamber within the separator for containing the coalescer screen, the chamber being isolated from the interior of said separator except through pressure responsive one-way valve elements, at least one inlet pressure responsive one-way valve for permitting flow of water into the chamber only, and at least one pressure responsive one-way outlet valve for permitting flow of water out of the chamber only, the water discharge outlet and backflush inlet of the separator communicating with the interior of the chamber, the inlet one-way valve being located towards the lower end of the chamber and the outlet one-way valve being located at an upper end of the chamber; at least one coalescer screen in the chamber disposed entirely across the chamber with the water discharge outlet and backflush inlet means being located towards one side of the screen and said inlet and outlet valves being located towards the opposite side of the screen, whereby flow of water into the chamber during normal separator operation enters at the lower space of the chamber through the pressure responsive one-way inlet valve and backflush flow out of the chamber occurs at the upper extremity of the chamber during the backflush operation of the separator through the pressure responsive one-way outlet valve to thereby ensure the discharge of backflushed oil out of the upper area of the chamber.

4,111,807

MOUTH FILTER FOR USE WITH PIPETTES

Mary Boomus, Chelsea; Bernard Sobin, and Monty E. Vincent, both of Ann Arbor, all of Mich., assignors to Gelman Instrument Company, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 768,450, Feb. 14, 1977, abandoned. This application Oct. 11, 1977, Ser. No. 840,685
Int. Cl.² B01D *25/16, 29/04, 31/00*
U.S. Cl. 210—152 **3 Claims**



1. A mouth filter device for use with pipettes where suction is applied by the mouth to draw liquid into the pipette, said device comprising a flat, cylindrical, organic resin housing, a round filter membrane in and extending transverse to the axis of said housing and in sealed relationship with said housing so as to divide said housing into an inlet chamber on one side of said filter membrane and an exit chamber on the other side of said filter membrane, said filter membrane being hydrophobic thereby to allow the passage of gas therethrough while preventing the passage of liquid therethrough and said filter membrane having a submicron pore size sufficiently small to prevent the passage of bacteria therethrough, a tubular extension on and integral with one axial end of said housing extending axially from and communicating with said inlet chamber, a tubular extension on and integral with the other axial end of said housing extending axially from and communicating with said exit chamber, an elastomeric tube having one end thereof connected and communicating with said first mentioned extension, the other end of said tube being adapted to be fitted in sealed relationship to the pipette, and an organic resin mouthpiece connected to said second mentioned tubular extension and having an opening therethrough communicating with said exit chamber whereby mouth-applied suction to said mouthpiece creates suction through the filter membrane and said tube to draw liquid into the pipette to which the tube is fitted thereby to draw liquid thereinto, said filter membrane assuring against any of the liquid or any bacteria therein reaching the mouth.

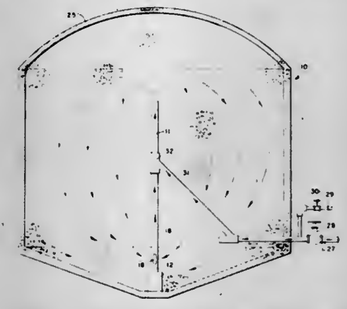
4,111,808

APPARATUS FOR SLUDGE DIGESTION

John H. Fair, 1511 Newcastle St., Colorado Springs, Colo. 80907

Continuation of Ser. No. 639,756, Dec. 11, 1975, abandoned. This application Mar. 17, 1977, Ser. No. 778,793
Int. Cl.² C02C *3/00*
U.S. Cl. 210—197 **5 Claims**

1. A digester tank for digesting sludge therein, said tank including a roof, side walls and a bottom wall, said digester tank having an unobstructed open end updraft tube mounted therein, said updraft tube having openings at the lower end thereof for the flow of partially digested sludge through said updraft tube, a first conduit extending to a position closely adjacent to and terminating at the outside of said tank walls for the feed therethrough of a primary sludge, a second conduit connected to said first conduit outside of said tank side walls, said second conduit extending through the tank side walls and into the said digester tank, a third conduit connected to said



second conduit, outside of the said tank side walls, said third conduit connected to said second conduit for the feed thereinto a compressed gaseous medium, said compressed gaseous medium fed into said second conduit forcing said primary sludge through said second conduit and into an upwardly inclined conduit connected to said second conduit interiorly of said tank, said upwardly inclined conduit also connected to said updraft tube at the upper portion thereof, the flow of the compressed gaseous medium and sludge through the aforesaid conduits effecting a circulation of the materials within the digester tank.

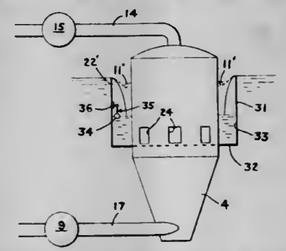
4,111,809

DEVICE FOR THE REMOVAL OF A LIQUID LAYER ON WATER

Jacques Pichon, Eybens, France, assignor to Societe Generale de Constructions Electriques et Mecaniques Alsthom, Paris, France

Continuation-in-part of Ser. No. 527,707, Nov. 27, 1974, abandoned. This application Nov. 19, 1975, Ser. No. 633,372
Claims priority, application France, Dec. 11, 1973, 73 44189
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 R **6 Claims**

1. In floating apparatus capable of removing liquid pollutant floating on the surface of a still body of water while in a stationary condition relative to the latter, a cyclone composed of a casing defining a cyclone chamber and having an enlarged end and a reduced end, the portion of said casing defining the enlarged end of the chamber having an inlet orifice for entry of a water-pollutant mixture into said chamber, a guide wall connected to said casing at said inlet orifice for directing said mixture tangentially into said chamber, a dam mounted on said cyclone casing having a water-pollutant overflow sill spaced from said casing, said dam forming with said cyclone casing a substantially closed water compartment for providing a cavity in said body of water and containing said inlet orifice, said dam in the use of the apparatus being normally submerged with its sill situated below but close to the free surface of the body of water to create with the cavity provided by said compartment a hydraulic drop with flow of water and pollutant to discharge a continuous flow of water and pollutant into said compartment to form in said compartment before the inlet orifice a level of the mixture independent of and lower than that of the free surface of the body of water being purified, the dam having a height enabling the level of the mixture in said compartment to be constantly higher than said cyclone inlet orifice whereby a continuous mixture of water and pollutant may be fed through such inlet orifice, first suction means connected to said reduced end of said cyclone casing for filling said cyclone chamber up to its ceiling with the liquid mixture from said compartment and for producing in such mixture a cyclonic rotation capable of separating the water and pollutant by centrifugation and for concentrating the pollutant in an axial central zone of the cyclone, second suction means connected to said enlarged end of said cyclone casing for removing the concentrated pollutant through the ceiling of said cyclone chamber, said first suction means removing the water freed of pollutant through said reduced end of said cyclone casing.



4,111,810

DESALINATION REVERSE OSMOTIC MEMBRANES AND THEIR PREPARATION

Shigeru Arai, Yachiyo, and Fumio Akiya, Urawa, both of Japan, assignors to Shin-Etsu Chemical Company, Tokyo, Japan

Continuation-in-part of Ser. No. 685,632, May 12, 1976, abandoned, which is a continuation of Ser. No. 448,212, Mar. 5, 1974, abandoned. This application Mar. 16, 1977, Ser. No. 778,269
Claims priority, application Japan, Mar. 8, 1973, 48/27267
Int. Cl.² B01D *13/00*
U.S. Cl. 210—23 H **4 Claims**

1. In a method for desalinating water wherein the water is treated with a reverse osmotic membrane, the improvement which comprises using a reverse osmotic membrane prepared by forming a film with an aqueous acid solution of chitosan salt, neutralizing the acid groups contained therein, and then acetylating the free amino groups therein to achieve a degree of acetylation of 0.3 to 0.8, said acetylation reaction being carried out at a temperature within the range of about 10° to 50° C for a time period from about 40 to 150 hours.

4,111,811

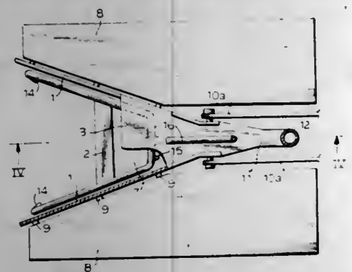
APPARATUS FOR COLLECTING EFFLUENT OIL

Shozo Fukuda; Yajuro Seike, both of Nagasaki; Masafumi Iizuka, Koganei; Hironao Kasai, and Mamoru Enami, both of Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1977, Ser. No. 780,351
Claims priority, application Japan, Apr. 1, 1976, 51-37647
Int. Cl.² B01D *37/00;* E02B *15/04*
U.S. Cl. 210—242 S **2 Claims**

1. An apparatus for collecting effluent oil from the surface of a body of water, said apparatus comprising;

a pair of side plates connected to each other with an open spaced arrangement at the forward end thereof;
a weir conected to the inside surfaces of said side plates beneath the water level of said body of water, said weir being inclined in a rear-downward direction;
a slant plate secured to the rear inner wall surfaces of said side plates above said weir, the rear portion of said slant plate being positioned above the rear of said weir;
an oil leakage preventing plate secured to the inner surfaces of said side plates midway between the rear portion of said weir and the rear portion of said slant plate, whereby a water discharge port is formed between said weir and said oil leakage preventing plate and an oily water intake port is formed between said rear portion of said slant plate and said oil leakage preventing plate;
an oily water intake pipe connected to said oily water intake port;
float means connected to said side plates for floating said side plates in said body of water; and
wave buffering means above and in front of said oily water intake port and between said side plates in communication with said water between said side plates for receiving said water which surges toward said oily water intake port due to wave action of said body of water and subsequently returning said water between said side plates, whereby the kinetic energy of said wave action is absorbed by said buffering means, said wave buffering means comprised of:



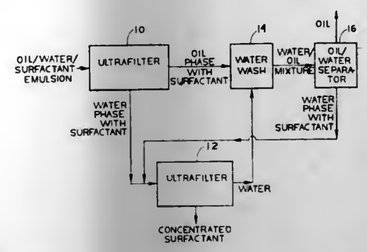
at least one pair of vertical cylindrical wave buffer chambers above said slant plate and said oily water intake port, each chamber having a vertical cutaway opening thereinto in the side portion thereof, said openings substantially opposing each other,
a substantially v-shaped breakwater plate integrally formed with said chambers at the rearward edges of said opposed openings and projecting forward therefrom, whereby said chambers are joined together,
side wall plates on the forward edges of said openings extending backwardly and downwardly between said side plates, and
a single top plate covering both of said chambers, said top plate being curved downwardly at the forward edge thereof in front of said openings.

4,111,812
RECOVERING SURFACTANT

Raymond F. Baddour, Belmont, Mass., assignor to Energy Resources Co. Inc., Cambridge, Mass.

Filed Feb. 28, 1977, Ser. No. 772,670
Int. Cl.² B01D *13/00, 31/00*
U.S. Cl. 210—257 M **2 Claims**

1. Apparatus for recovering surfactant from an undefined oil/water/surfactant emulsion obtained from an oilfield after chemical flooding thereof, which apparatus comprises:
a first ultrafilter for breaking said emulsion into a water phase and an oil phase, each of said phases containing surfactant,
means for washing with water the oil phase produced by said first ultrafilter to extract surfactant from said oil phase, said washing means being connected to an outlet from said first ultrafilter,
means for separating said oil phase from said water used for washing and extracted surfactant, said separating means being connected to an outlet from said washing means, and

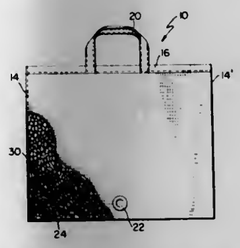


a second ultrafilter connected to an outlet from said first ultrafilter so as to receive the water phase produced by said ultrafilter and connected to an outlet from said separating means so as to receive wash water and surfactant therefrom, said second ultrafilter recovering surfactant from said water phase and wash water,
said second ultrafilter having an outlet connected to an inlet of said washing means to provide water for said washing means.

4,111,813
HYDROCARBON CONTAINMENT AND CONTROL SYSTEMS

Paul Preus, 21 Smith Rd., Toms River, N.J. 08753

Continuation-in-part of Ser. No. 729,713, Oct. 5, 1976, Pat. No. 4,065,923. This application Oct. 18, 1977, Ser. No. 843,460
Int. Cl.² B01D *27/02; C02B 9/02*
U.S. Cl. 210—282 **1 Claim**



1. Apparatus for controlling and containing oil and the like hydrocarbons comprising a porous woven container, at least one hand grip along one edge seam thereof, at least one opening through a pair of opposed side walls but closed to the interior of the container and a closable open seam along at least one edge thereof, wherein the at least one opening through a pair of opposed side walls of the container is: centrally positioned on the container; along an edge opposite to the edge having the at least one hand grip; or the container has spaced pairs of said at least one opening through a pair of opposed side walls and said pair of openings are positioned along side edges of the container; and further wherein the porous woven container is filled with a loose mass of an oleophilic-hydrophobic-lighter than water hydrocarbon absorbent consisting of expanded pearlite mixed with clays and a fibrous filler.

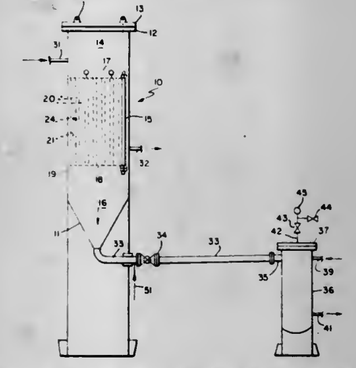
4,111,814
OIL FILTER

Heinz Friedrich Knigge, The Hague, Netherlands, assignor to The Lummus Company, Bloomfield, N.J.

Filed Jan. 21, 1977, Ser. No. 761,111
Int. Cl.² B01D *29/24*
U.S. Cl. 210—323 T **7 Claims**

1. A filtering apparatus for separating solid coke particles from an oil, comprising:

a vessel;
a pair of axially spaced plates, including a plurality of orifices dividing the vessel into a first chamber, a second chamber between the plates and a third chamber;
a plurality of hollow filter cartridges having open tops and bottoms supported between the pair of axially spaced plates with the open tops and bottoms in alignment with the orifices in the plates, said filter cartridges being comprised of an annular wire mesh filter screen having hole sizes to provide for effective removal of coke particles from an oil, and a perforated annular rigid support plate surrounding the wire mesh filter screen having hole sizes larger than the hole sizes of the wire mesh filter screen, said wire mesh filter screen being the inner wall of the cartridge defining a hollow interior of the cartridge in communication with the first and third chambers through the orifices in the plates whereby fluid introduced into the hollow interior of the cartridge initially flows through the wire mesh filter screen;
an inlet pipe for introducing an oil containing solid coke particles into the first chamber;
a first outlet pipe for withdrawing filtered oil from the second chamber; and
a second outlet pipe for withdrawing solid coke particles from the third chamber whereby oil containing solid coke particles introduced into the first chamber flows into the hollow interior of the filter cartridge and is filtered by passage through the wire mesh filter screens into the second chamber, said oil flow dislodging solid coke particles from the wire mesh filter screen which pass through the open cartridge into the third chamber.
5. A quench oil system, comprising:

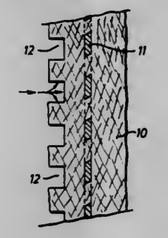


a fractionator, a quench oil cooler and a quench oil filter, said quench oil filter comprising a filter vessel, a filter package in said vessel, said filter package comprising a pair of axially spaced plates including a plurality of aligned orifices and a plurality of hollow filter cartridges having open tops and bottoms secured to the top and bottom plates with the open tops and bottoms in alignment with the orifices in the plates, said filter cartridges being comprised of an annular wire mesh filter screen having hole sizes to provide for effective removal of coke particles from an oil, and a perforated annular rigid support plate surrounding the wire mesh filter screens having hole sizes larger than the hole sizes of the wire mesh filter screens, said wire mesh filter screens being the inner wall of the cartridge defining a hollow interior of the cartridge in alignment with the orifices in the plates, said filter unit being removably secured to the vessel and dividing the vessel into a first chamber, a second chamber between the plates and a third chamber;
an inlet pipe for introducing quench oil containing solid particles from the fractionator into the first chamber;
a first outlet pipe for withdrawing filtered oil from the second chamber for passage to the quench cooler;
a second outlet pipe for withdrawing solid coke particles from the third chamber whereby oil containing solid particles introduced into the first chamber flows into the hollow interior of the filter cartridges for initial flow through the wire mesh filter screens into the second chamber, said oil flow dislodging solid particles from the wire mesh filter screens which pass through the open cartridges into the third chamber.

4,111,815
FILTER ELEMENTS FOR GAS OR LIQUID AND METHODS OF MAKING SUCH ELEMENTS

Brian Walker, Washington; George Sherwood Hunter, and Susanne Phyllis Hunter, both of Houghton-le-Spring, all of England, assignors to Process Scientific Innovations Limited, Durham, England

Filed Mar. 18, 1977, Ser. No. 779,417
Claims priority, application United Kingdom, Mar. 26, 1976, 12228/76
Int. Cl.² B01D *39/16, 39/20*
U.S. Cl. 210—487 **10 Claims**



1. A filter element comprising a sheet of comparatively rigid material formed with apertures distributed substantially uniformly over its entire area and forming a total of open areas that is at least 30% of the total area of said sheet, a unitary mass of amorphously arranged fibres, said sheet being embedded within said mass with portions of said mass of fibres passing through said apertures from one side of said sheet to the other side of said sheet, said fibres including coatings of a synthetic resin bonding material applied to the entire mass to bond said fibres to one another, including those fibres which are located within said apertures, and also to bond said apertured sheet to the fibres of said mass adjacent to said sheet, said mass being formed with opposed outer surfaces substantially parallel to said sheet, the quantity of said synthetic resin bonding material applied to said fibres being sufficient to effect said bonding while leaving said mass pervious to fluid passing therethrough between said faces.

4,111,816
PHOSPHORUS-CONTAINING POLYESTER AND SIZE COMPOSITIONS

Robert Bernard Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 727,991, Sep. 30, 1976. This application Jun. 27, 1977, Ser. No. 810,233
Int. Cl.² D06M *13/26*
U.S. Cl. 252—8.6 **14 Claims**

1. A sized fibrous article consisting of a wrap textile fiber yarn and a sizing composition comprising a branched chain polyester which is the reaction product of:
(a) a dicarboxylic reactant consisting of a dicarboxylic acid or corresponding acid anhydride or ester,
(b) a diol selected from the group consisting of ethylene glycol, propylene glycol, and mixtures thereof; a polyoxyalkylene glycol selected from the group consisting of diethylene glycol, triethylene glycol and mixtures thereof, and
(c) a phosphorus acid reactant present in sufficient amount to render said polyester dispersible in water upon neutralization selected from the group consisting of phosphorus pentoxide, phosphoric acid and mixtures thereof.

4,111,817
HETEROCYCLIC NITROGEN COMPOUNDS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Horst Jäger, Bettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

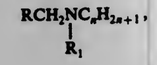
Division of Ser. No. 639,311, Dec. 10, 1975, abandoned. This application Jan. 25, 1977, Ser. No. 762,552

Claims priority, application Switzerland, Dec. 20, 1974, 17037/74

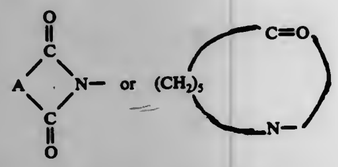
Int. Cl.² D06M *13/46*

U.S. Cl. 252—8.8 **9 Claims**

1. A method of finishing synthetic organic fibrous material, in particular of providing it with an antistatic finish and optionally simultaneously improving the dirt repellency, which comprises applying at least one compound of formula



wherein R is



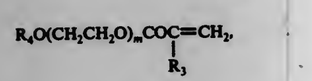
in which A is —CH_2CH_2—, —CH=CH— or



R_1 is hydrogen or C_nH_{2n+1} and n is an integer from 1 to 24, optionally in admixture with at least one homopolymer derived from the monomers of formulae







wherein R_2 is straight-chain or branched alkyl of 1 to 8 carbon atoms, R_3 is hydrogen or methyl, R_4 is alkyl of 1 to 6 carbon atoms and m is an integer from 6 to 15, from aqueous or organic solutions or from emulsions to said material and subsequently drying it at elevated temperature.

4,111,818
PROCESSABILITY OF MELT SPUN YARNS

William Postman; James B. Louch, and Hermann Buchert, all of Anderson, S.C., assignors to Dow Badische Company, Williamsburg, Va.

Continuation-in-part of Ser. No. 680,945, Apr. 28, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,470

Int. Cl.² D06M *13/18*

U.S. Cl. 252—8.9 **8 Claims**

1. A process for improving the processability of melt spun yarns of a polymer selected from the group consisting of polyamides and polyesters, which process comprises treating the filaments with an aqeous solution of dispersion containing as the sole essential organic component thereof about 10 to 30 percent by weight of a compound selected from the group consisting of: (a) a water soluble or dispersible condensation product of one mole of a compound having the general formula R—X—H, wherein R is a saturated or unsaturated aliphatic group having from 6 to 18 carbons, and X is oxygen or sulfur; with 7 to 12 moles of ethylene oxide; and (b) a water soluble or dispersible condensation product of one mole of a compound having the general formula R—X—H, wherein R is a saturated or unsaturated aliphatic group having from 6 to 18 carbons, and X is oxygen or sulfur; with from 5 to 20 moles of ethylene oxide and from 2 to 20 moles of propylene oxide.

4,111,819
TEXTILE FIBER LUBRICANT

Herman M. Muijs, Amsterdam, Netherlands, assignor to Sheli Oil Company, Houston, Tex.

Filed Nov. 14, 1977, Ser. No. 850,877

Int. Cl.² D06M *13/18*

U.S. Cl. 252—8.9 **11 Claims**

1. A lubricant composition comprising a major proportion of an ether of formula:



wherein

R is a C_1 to C_{10} alkyl group,

m is an integer of from 2 to 4, and

x is an integer of from 2 to 20;

and a minor proportion of a polymer of an ethylenically unsaturated carboxylic acid.

4,111,820
COATING AND METHODS FOR PULLING CABLE AND DRAWING WIRE

Allen C. Conti, 4522 Turney, Cleveland, Ohio 44105

Filed Oct. 3, 1977, Ser. No. 839,077

Int. Cl.² C10M *1/06, 3/04, 5/04, 7/08*

U.S. Cl. 252—49.5 **8 Claims**

1. A lubricant and/or protective coating for an article, said coating consisting essentially of about 0.5% to 50% by volume polyethylene oxide and about 6% to 30% by volume a dispersion agent selected from the group consisting of propylene glycol, glycerol, ethylene glycol, polypropylene glycol, diethylene glycol, triethylene glycol and hexylene glycol,

the ratio of the volume of polyethylene oxide to the volume of said dispersion agent being no greater than 2:1,

and the remainder being water.

3. The coating according to claim 1 further consisting essentially of up to about 15% by volume lime.

6. A method for drawing wire using a ferrous, copper or brass workpiece, said method including the steps of:

controlling oxidation of the workpiece surface while inhibiting the formation of scale thereon by coating the workpiece with a solution consisting essentially of about 0.5% to 50% by volume polyethylene oxide and about 6% to 30% by volume a dispersion agent selected from the group consisting of propylene glycol, glycerol, ethylene glycol, polypropylene glycol, diethylene glycol, triethylene glycol and hexylene glycol, the ratio of the volume of polyethylene oxide to the volume of said dispersion agent being about 1:3 and the remainder being water, and

using said coating as a lubricant while drawing the coated workpiece through a die.

4,111,821
LUBRICANTS FOR RECIPROCATING COMPRESSORS FOR OXYGEN-FREE GASES

Allan K. Lazarus, Lawrenceville, and Malcolm H. Knapp, Bridgewater, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 224,223, Feb. 7, 1972, abandoned. This application Jul. 8, 1975, Ser. No. 594,179

Int. Cl.² C10M *1/10*

U.S. Cl. 252—49.9 **7 Claims**

1. A lubricant composition for use in the cylinder and drive train lubrication of reciprocating compressors for oxygen-free gases that comprises

(a) 97% to 99% of a bis(alkyl) phthalate wherein each alkyl group has 10 to 15 carbon atoms and

(b) 1% to 3% of an additive system that comprises

(i) 0.2% to 0.8% of a copolymer of an alkyl methacrylate and N-vinylpyrrolidone;

(ii) 0.8% to 2.0% of an antioxidant component that contains

((a)) 0.8% to 1.2% of a hindered phenol antioxidant wherein the hindering groups are alkyl groups having 1 to 4 carbon atoms and

((b)) 0 to 0.8% of at least one hydrocarbyl secondary or tertiary amine antioxidant;

(iii) 0 to 0.1% of a fatty acid monocarboxylate of 1-salicylalaminoguanidine; and

(iv) 0 to 0.5% of an ammonium salt of a phosphate ester, all percentages being percentages by weight based on the weight of the lubricant composition.

6. The method of lubricating a reciprocating compressor for oxygen-free gases that comprises feeding to the cylinder and drive train of said compressor from at least one reservoir a lubricant composition that comprises

(a) 97% to 99% of a bis(alkyl)phthalate wherein each alkyl group has 10 to 15 carbon atoms and

(b) 1% to 3% of an additive system that comprises

(i) 0.2% to 0.8% of a copolymer of an alkyl methacrylate and N-vinylpyrrolidone;

(ii) 0.8% to 2.0% of an antioxidant component that contains

((a)) 0.8% to 1.2% of a hindered phenol antioxidant in which the hindering groups are alkyl groups having 1 to 4 carbon atoms and

((b)) 0 to 0.8% of at least one hydrocarbyl secondary or tertiary amine antioxidant;

(iii) 0 to 0.1% of a fatty acid monocarboxylate of 1-salicylalaminoguanidine; and

(iv) 0 to 0.5% of an ammonium salt of a phosphate ester, all percentages being percentages by weight based on the weight of the lubricant composition.

4,111,822
GREASE COMPOSITIONS

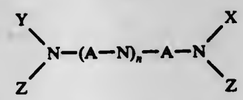
Gerard P. Caruso, New Orleans, La., assignor to Sheli Oil Company, Houston, Tex.

Continuation of Ser. No. 751,765, Dec. 16, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 839,153

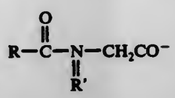
Int. Cl.² C10M *1/32, 3/26, 5/20, 7/30*

U.S. Cl. 252—51.5 A **2 Claims**

1. A grease composition comprising of a major amount of a lubricating oil base vehicle, a polyurea gellant in an amount sufficient to thicken the base vehicle to a grease consistency, and a minor amount of an acylated alkylene polyamine or mixture of acylated alkylene polyamines, the acylated alkylene polyamine or acylated alkylene polyamines having the formula



wherein A is alkylene of 2 to 4 carbon atoms and n is an integer of from 0 to 3, X is H or Z, Y is selected from H, alkyl containing 12 through 22 carbon atoms, and Z, and Z is an acyl group having the formula



wherein R is alkyl containing 2 through 22 carbon atoms, and R′ is hydrogen or alkyl containing 1 through 3 carbon atoms.

4,111,823
DRY DEVELOPING POWDER INCLUDING TONER POWDERS OF DIFFERENT PARTICLE SIZE

Kazuo Kobayashi; Akira Suzuki; Motoharu Tanaka; Norihiko Inaba, and Hisao Yuyama, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 20, 1977, Ser. No. 798,995

Claims priority, application Japan, May 28, 1976, 51-61965

Int. Cl.² G03G *9/14, 9/08*

U.S. Cl. 252—62.1 P **12 Claims**

1. A dry developing powder composition consisting essentially of a blend from 70 to 98 wt. % of Toner A particles and from 2 to 30 wt. % of Toner B particles, said Toner A particles having a mean grain size of from 10 to 30 microns and consisting essentially of a blend of (1) 20 to 80 parts by weight of wax or thermoplastic resin having a melting point of about 35° to 160° C., and (2) from 80 to 20 parts by weight of a pulverized magnetic substance having a mean grain size of from 0.1 to 2.5 microns, said Toner B particles having a mean grain size of from 5 to 20 microns and smaller than the mean grain size of said Toner A particles, said Toner B particles consisting essentially of (3) thermoplastic resin having a melting point of about 35° to 160° C., said Toner B being free of pulverized magnetic substance.

7. A dry developing powder composition consisting essentially of a blend of from 70 to 98 wt. % of Toner A particles and from 2 to 30 wt. % of Toner B particles, said Toner A particles having a mean grain size of from 10 to 30 microns and consisting essentially of a blend of (1) 20 to 80 parts by weight of wax or thermoplastic resin having a melting point of about 35° to 160° C., and (2) from 80 to 20 parts by weight of a pulverized magnetic substance having a mean grain size of from 0.1 to 2.5 microns, said Toner B particles having a mean grain size of from 5 to 20 microns and smaller than the mean grain size of said Toner A particles, said Toner B particles consisting essentially of a blend of (3) from 60 to 90 parts by weight of thermoplastic resin having a melting point of about 35° to 160° C. and (4) from 40 to 10 parts by weight of pulverized magnetic substance having a mean grain size of from 0.1 to 2.5 microns, the amount of said pulverized magnetic substance (4) in Toner B being less than the amount of pulverized magnetic substance (2) in Toner A.

4,111,824
LIQUID DIELECTRIC COMPOSITION BASED ON A FRACTION DERIVED FROM THE ALKYLATION PRODUCT OF BENZENE WITH ETHYLENE

Johann G. D. Schulz, Pittsburgh; Charles M. Selwitz, and Anatoli Onopchenko, both of Monroeville, all of Pa., assignors to Gulf Research & Development Co., Pittsburgh, Pa.

Filed Jul. 21, 1977, Ser. No. 817,693

The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.² C10M *3/10;* H01B *3/22*

U.S. Cl. 252—63 **6 Claims**

1. A liquid dielectric composition obtained as a result of a process which comprises reacting benzene with ethylene in the presence of an alkylation catalyst to obtain an alkylation product containing largely unreacted benzene, ethylbenzene, po-

lyethylbenzenes, 1,1-diphenylethane and heavier products, separating benzene, ethylbenzene and polyethylbenzenes from said alkylation product and thereafter recovering from said heavier products the entire fraction whose boiling point is in the temperature range of about 255° to about 420° C. as said liquid dielectric composition.

4,111,825

LIQUID DIELECTRIC COMPOSITION BASED ON A FRACTION DERIVED FROM THE ALKYLATION PRODUCT OF BENZENE WITH ETHYLENE

Johann G. D. Schulz, Pittsburgh; Charles M. Selwitz, and Anatoli Onopchenko, both of Monroeville, all of Pa., assignors to Gulf Research & Development Co., Pittsburgh, Pa.

Filed Jul. 21, 1977, Ser. No. 817,695

The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.² C10M *3/10;* H01B *3/02*

U.S. Cl. 252—63 5 Claims

1. A liquid dielectric composition obtained as a result of a process which comprises reacting benzene with ethylene in the presence of an alkylation catalyst to obtain an alkylation product containing largely unreacted benzene, ethylbenzene, polyethylbenzenes, 1,1-diphenylethane and heavier products, separating benzene, ethylbenzene, polyethylbenzenes and 1,1-diphenylethane from said alkylation product and thereafter recovering from said heavier products a fraction having a boiling point in the temperature range of about 275° to about 420° C. as said liquid dielectric composition.

4,111,826

BLEACHING ASSISTANTS

Arthur George Leigh, and Robin John Green, both of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 2, 1976, Ser. No. 737,980

Claims priority, application United Kingdom, Nov. 3, 1975, 45661/75

Int. Cl.² C11D *7/22, 10/02*

U.S. Cl. 252—89 R 5 Claims

1. A bleaching assistant in the form of co-granulated particles having a diameter of from 0.2 mm to 3.0 mm for use in or with washing and bleaching compositions, consisting essentially of:

(a) 50 to 85% by weight of at least one bleaching activator for percompounds, having a titre in a peracid formation test of at least 1.5 ml 0.1N sodium thiosulphate, selected from the group consisting of:
- (i) N-diacylated and N,N'-tetraacylated amines;
- (ii) N-alkyl-N-sulphonyl carbonamides;
- (iii) N-acylated cyclic hydrazides;
- (iv) O,N,N-trisubstituted hydroxylamines;
- (v) N,N'-diacyl-sulfphurylamides;
- (vi) Triacyl cyanurates;
- (vii) Carboxylic acid anhydrides;
- (viii) Sugar esters;
- (ix) 1,3-Diacyl-4,5-diacyloxy-imidazolidine;
- (x) Tetraacetyl glycoluryl and tetrapropionylglycoluril;
- (xi) Diacylated 2,5-diketopiperazines;
- (xii) Acylation products of propylene diurea; and
- (xiii) Carbonic acid esters;

(b) 2 to 25% by weight of at least one stabilizing agent for percompounds selected from the group consisting of:
- (i) ethane-1-hydroxy-1,1-diphosphonic acid, and its alkalimetal salts;
- (ii) aminotri-(methylene phosphonic acid) and its alkalimetal salts;
- (iii) ethylene diamine-tetra-(methylene phosphonic acid) or its alkalimetal salts; and
- (iv) ethylene diamine-tetraacetic acid or its alkalimetal salts; and

(c) 7 to 30% by weight of a nonionic surface-active compound selected from the group consisting of water-soluble polyalkylene oxide adducts of natural or synthetic, primary or secondary alcohols; polyalkylene oxide adducts of fatty acids, polyalkylene oxide adducts of fatty amides; polyalkylene oxide adducts of alkylphenols, each having 5–25 ethylene oxide groups in the molecule and 8–22 carbon atoms in the hydrophobic moiety; and polyethylene oxide adducts of polypropylene glycol containing 20 to 300 ethylene glycol ether groups and 10 to 100 propyleneglycolether groups; said nonionic compound having a melting point of at least 35° C.

4,111,827

AEROSOL FOAMS

John Thompson, Maidenhead, and Adrian Pitfield, High Wycombe, both of England, assignors to Wilkinson Sword Limited, England

Filed Feb. 27, 1976, Ser. No. 662,265

Claims priority, application United Kingdom, Feb. 27, 1975, 8249/75

Int. Cl.² C11D *17/00*

U.S. Cl. 252—90 5 Claims

1. An aerosol shaving foam dispenser containing an aqueous soap-free surfactant concentrate, and emulsified or readily emulsifiable therewith, a gaseous aerosol propellant in liquid phase, said concentrate consisting essentially of water and;

(i) from 1–15% by weight of the concentrate of a nitrogen-containing surfactant selected from the group consisting of:



I

where

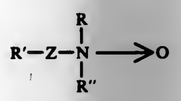
R is a straight chain C_{12}–C_{18} alkyl group;

Y is H or $(CH_2CH_2O)_mH$, where m is an integer of from 1–30;

n is an integer of from 1–30; and

the total of $n + m$ is from 1–40;

and with the proviso that, when Y is H, then n is greater than 10;



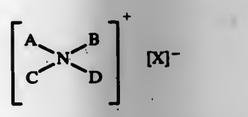
II

where

R′ is a straight chain C_{11}–C_{17} alkyl group;

R″ is C_1–C_3 alkyl; and

Z is CH_2 or $CH_2CONH(CH_2)_x$—, where x is an integer of from 2–5; and



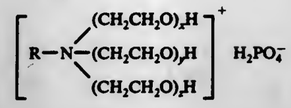
where A is a straight chain C_{12}–C_{18} alkyl group, X is an anion and B, C, and D represent one of the following combinations:

(i) B, C and D are each separate C_1–C_3 alkyl groups;

(ii) B and C are each $(CH_2CH_2O)_y$, where y is an integer with B and C together providing a total of 2–12 ethoxy units and D is C_1–C_3 alkyl; and

(iii) B, C and D together with the nitrogen atom to which they are attached jointly represent a pyridine nucleus; or a water-dispersible lauric polyamide (2:1), having a melting point in the range 53°–57° C., an acid number not greater than 10 and an alkali number in the range 136–156; or

a tris-(polyoxyethylene) alkyl ammonium phosphate of the formula



IV

where R is a straight chain C_{12}–C_{18} alkyl group and x, y and z are integers of from 1–20;

(ii) from 0.5–6% by weight based on the concentrate, of a long chain fatty alcohol containing from 12–18 carbon atoms; and

(iii) from 1–15% by weight based on the concentrate of (a) a water-soluble or insoluble synthetic nonionic surfactant having an HLB value of from 3–40 and containing, as its hydrophobic part a straight chain alkyl group of from 12–18 carbon atoms or alkyl-substituted benzene or napphthalene group containing a straight chain alkyl substituent of from 5–12 carbon atoms, (b) a long chain alkyl sulphosuccinate containing from 12–18 carbon atoms in the alkyl group or a benzene or napththalene sulphosuccinate containing a straight chain alkyl substituent of from 5–12 carbon atoms on the aromatic nucleus, or (c) an N-coconut-acyl-N-methyl taurate, the weight ratio of components (i) and (iii) together to component (ii) being from 0.5:1 to 12:1 and the three components of the concentrate being such that the HLB value is from 8–18.

4,111,828

STORAGE STABLE POLYOL MIXTURE

Donald S. T. Wang, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 3, 1977, Ser. No. 756,314

Int. Cl.² C08G *18/18;* C08K *5/52;* C08G *18/32*

U.S. Cl. 252—182 13 Claims

1. In a B-side mixture used to prepare a flame retarded urethane polymer foam, said mixture comprising a sucrose-based polyol prepared by reacting sucrose with alkylene oxide, a β-halophosphonate and a catalyst, the improvement which comprises using as said catalyst a hydroxylamine selected from dimethylamino-2-propanol, methyl-di-ethanolamine, triethanolamine and a mixture of o- and p-dimethylaminomethyl phenols.

4,111,829

DEVICE FOR DESTROYING FOAM

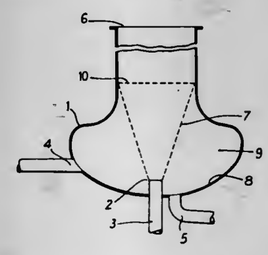
Jean-Pierre Bimond, and Flavien Lazarre, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Continuation-in-part of Ser. No. 688,838, May 21, 1976, abandoned. This application Jan. 3, 1977, Ser. No. 756,189

Claims priority, application France, Jul. 31, 1975, 75 23891

Int. Cl.² B01D *19/00*

U.S. Cl. 252—361 2 Claims



1. A device for the destruction of foam due to the emulsion of gas in liquid which comprises, a container equipped with, means for injecting a gas under pressure into said container, at least one inlet for the admission of foam, at least one outlet for separated liquid, and at least one outlet for separated gas, and in which both said injecting means directs said gas into a divergent conical jet having conical sides, and said foam inlet opens into a space between the outside of the sides of said jet and an internal surface of the container, and wherein said means for injecting a gas comprises an injector tube having a straight injector section, said at least one inlet for admitting foam comprises a duct projecting into the container, coaxially with and outside the injector tube, said duct opening into the container and having a straight section which projects beyond the end of the injector tube by a distance of the order of three times the diameter of the coaxial duct.

4,111,830

METHOD OF INHIBITING CORROSION

Ramon A. Bannister, P.O. Box 593, Sullivan's Island, S.C. 29482

Filed Sep. 29, 1976, Ser. No. 727,416

Int. Cl.² C09K *3/00*

U.S. Cl. 422—17 7 Claims

1. A method of inhibiting corrosion of metals which contact aqueous containing fluids which comprises, adding to the fluid a synergistic mixture of water soluble cations in a corrosion inhibiting amount, said synergistic mixture consisting essentially of a mercuric cation and a metal cation selected from the group consisting of Group IB metals, Group IIB metals, and lead; and contacting the metal with the corrosion inhibiting fluid.

4,111,831

INHIBITING CORROSION OF STAINLESS STEEL BY RUTHENIUM-CONTAINING NITRIC ACID SOLUTION

Roy F. Maness, Richland, Wash., assignor to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Jun. 3, 1976, Ser. No. 692,590

Int. Cl.² C09K *3/00*

U.S. Cl. 422—12 15 Claims

1. A method of inhibiting the corrosive effect of a nitric acid solution towards stainless steel, said solution containing dissolved ruthenium values present in an oxidation state of at least +4 which comprises treating said solution with a reducing agent consisting essentially of nitrogen dioxide in an amount sufficient to reduce substantially all of the dissolved ruthenium values having an oxidation state of at least +4 to an oxidation state of less than +4.

4,111,832

PROCESS FOR REGENERATING SPENT VANADIUM OXIDE CONTAINING OXIDATION CATALYSTS

Klaus Rohbock, Krefeld; Rudolf Wiemers, Meerbusch; Peter Woditsch, and Reinhard Thiel, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 22, 1976, Ser. No. 743,725

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1975, 2552456

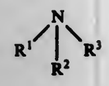
Int. Cl.² B01J *23/94, 23/92, 27/28*

U.S. Cl. 252—412 10 Claims

1. A process for regenerating a deactivated V_2O_5: P_2O_5: CuO hydrocarbon oxidation catalyst which comprises contacting the deactivated oxidation catalyst with a solution consisting essentially of an aqueous solution of ammonia and/or an amine at a temperature of from 100° to 250° C., whereby to dissolve at least partially the catalytically effective constituents of of the catalyst, drying the resultant solution or suspension and calcining the same at temperatures between 300° and 650° C. in the presence of air, grinding the resultant solid and thereafter molding the same into a final catalyst form.

4. A process according to claim 1 wherein the temperature is from 130° to 180° C.

7. A process according to claim 1 wherein an amine is used which amine has the formula



wherein

R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen, aliphatic, cycloaliphatic, araliphatic and aromatic radicals.

10. A process according to claim 1 wherein an aqueous solution of dimethylamine is employed.

4,111,833

ACTIVATED CARBON MATERIAL

A. Gary Evans, North Augusta, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 5, 1974, Ser. No. 503,547
Int. Cl.[2] B01J *27/06, 27/08*
U.S. Cl. 252—429 R **15 Claims**

1. A carbon material having improved iodine retention properties consisting essentially of activated carbon materials impregnated with iodine, KI or mixtures thereof with basic potassium compounds wherein the ratio of I to K in said impregnated carbon material is less than about 1.0 and the pH of an aqueous extract of said carbon material is greater than about 8.0.

6. The carbon material of claim 1 wherein said activated carbon material also contains the compound triethylenediamine in amounts between about 0.5% and 5% by weight.

4,111,834

PROCESS FOR PREPARING A TRANSITION METAL COMPOUND AND IT'S USE AS A COMPONENT IN AN OLEFIN POLYMERIZATION CATALYST

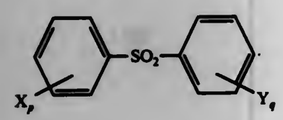
Anthony David Caunt, Welwyn Garden City, and Ian Gabriel Williams, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

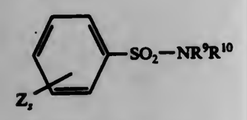
Filed May 21, 1976, Ser. No. 688,545
Claims priority, application United Kingdom, May 28, 1975, 23336/75; May 28, 1975, 23335/75
Int. Cl.[2] B01J *31/02*
U.S. Cl. 252—429 B **13 Claims**

1. A process for the treatment of a transition metal compound which comprises grinding a solid compound of a transition metal of Groups IVA to VIA of the Periodic Table in the presence of at least two Lewis Acid compounds which are aluminium chloride and titanium tetrachloride and which are different from the solid compound of the transition metal, and at least one organo-Lewis Base compound selected from the group consisting of compounds of one of the formulae:

$R^1R^2R^3P(O)_m$

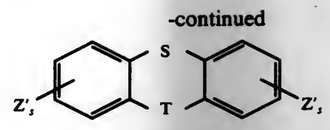
$R^5R^6NC_nH_{2n}NR^5R^6$





$R^{11}R^{12}P(Q)_zED$ or

-continued



where

R^1, R^2 and R^3 are each, independently, an alkyl or aryl group, or a group $—NR_2^4$ or $—OR^4$;

R^4 is an alkyl group of 1 to 4 carbon atoms;

R^5 and R^6 are hydrocarbyl groups;

X, or each X, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^8R^9$, or two groups X can together form a saturated or unsaturated hydrocarbon ring;

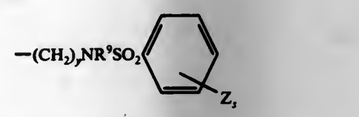
Y, or each Y, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^8R^9$, or two groups Y can together form a saturated or unsaturated hydrocarbon ring, or a group X and a group Y may be replaced by a link between the two phenyl groups attached to the $—SO_2—$ group, the linkage being either direct or through a group —O—, $—CH_2—$, $—NR^8—$, —S— or —CO—;

R^8 is a hydrogen atom or a hydrocarbyl group;

R^9 is a hydrocarbyl group;

Z, or each Z is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^8R^9$, or two groups Z can together form a saturated or unsaturated hydrocarbon ring;

R^{10} is a hydrocarbyl group or a group



R^{11} is a halogen atom, a hydrocarbyl group, a group $—NR_2^9$ or $—OR^9$, a heterocyclic group or a group (E-L-G);

R^{12} is a halogen atom, a hydrocarbyl group, a group $—NR_2^9$ or $—OR^9$, a heterocyclic group, a group (E-L-G) or ED;

each E is —O—, —S—, or $—NR^9—$, and may be the same or different;

G is $—OR^9$, $—SR^9$, $—NR^9_2$, $—PR^9_2$ or a heterocyclic ring system whereof the heteroatom is O, S, N, or P;

D is a group —LG or $—P(Q)_zR^{11}R^{12}$, or, when R^{12} is ED, both the D groups may together form a group —L—;

L is a bivalent hydrocarbyl radical such that E and G or E and E are separated by not more than 3 carbon atoms;

Q is an oxygen or sulphur atom;

T is —S—, —O—, $—NR^9—$; or —CO—;

Z', or each Z', is independently a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio or arylthio group, or a group $—NR^8R^9$;

m is 0 or 1;

n is 1, 2 or 3;

p and *q* are each, independently, an integer from 0 up to 5;

s is an integer from 0 up to 5;

y is a positive integer; and

z is 0 or 1,

wherein the grinding is effected in the presence of a total amount of aluminium chloride in the range from 0.34 up to 1.83 mole for each gramme atom of the transition metal which is present in the solid compound of the transition metal; the number of moles of the organo-Lewis Base compound does not exceed the number of gramme atoms of the transition metal which is present in the solid compound of the transition metal, and the grinding being effected at a temperature of from −10° C. up to 100° C. for a time of at least 5 hours.

9. The process of claim 1 wherein grinding is effected by ball milling at a temperature from −10° C. up to 100° C. for a time of from 5 hours up to 100 hours.

4,111,835

CATALYSTS FOR POLYMERIZING OLEFINS TO SPHEROIDAL-FORM POLYMERS

Giorgio Foschini; Nicolino Fiscelli, and Paolo Galli, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Sep. 17, 1976, Ser. No. 724,362
Claims priority, application Italy, Sep. 18, 1975, 27385 A/75
Int. Cl.[2] C08F *4/02, 4/10*
U.S. Cl. 252—429 C **7 Claims**

1. Components of magnesium halide-supported catalysts for polymerizing olefins to spheroidally shaped polymers highly resistant to crumbling, which components comprise the product of reaction between (A) a hydrated Mg halide in the form of spheroidal particles having a particle size of from 10 to 70 microns, and containing from 10% to 45% by weight of crystallization water, and (B) a halogenated titanium compound selected from the group consisting of halides, haloalcoholates and the Ti salts of halogenated oganic acids, said components having a particle size of from 10 and 70 microns and being further characterized in showing a resistance to supersonic vibrations of 50 to 90 Watt. h/l., a specific area of from 10 to 70 $m^2/g.$, and a mean radius of the pores of from 30 to 150 A.

4,111,836

PROCESS FOR FORMING HIGH PERFORMANCE TITANIUM TRICHLORIDE OLEFIN POLYMERIZATION CATALYST COMPONENTS

Nicholas M. Karayannis, and Harold Grams, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 3, 1976, Ser. No. 738,390
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B **9 Claims**

1. In a process for preparing a brown solid comprising beta titanium trichloride and some, up to ten mol percent, of at least one first organic electron pair donor compound selected from the group consisting of hydrocarbyl ethers, said brown solid having a surface area above about eighty square meters per gram and a pore volume above about one-tenth cubic centimeter per gram and made by process comprising

(a) reducing titanium tetrachloride with a reductant comprising a lower alkyl dialkylaluminum compound,

(b) contacting the solid product of (a) with said first donor compound and heating from about ambient to about 80° C.

(c) thereafter treating the solid product of (b) with titanium tetrachloride, the improvement which consists essentially of contacting in a separate step an additional organic electron pair donor compound selected from the group consisting of hydrocarbyl esters, amines, organic borates, or coordinating cyclic hydrocarbons containing at least one double bond at about 10° C. to about 45° C. with the product of (b) or (c) above prior to use of said solid in polymerization.

4,111,837

HOMOLOGATION OF ALKANOLS

Paul D. Taylor, Clinton, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 718,695, Aug. 30, 1976. This application Jul. 12, 1977, Ser. No. 814,977
Int. Cl.[2] B01J *31/28*
U.S. Cl. 252—430 **3 Claims**

1. A heterogeneous co-catalyst adapted for homologation of alkanol with hydrogen and carbon monoxide which consists essentially of an alkanol solution of cobalt carbonyl in contact with surface-active rhenium metal, wherein the cobalt carbonyl is present in a quantity between about 0.001 and 20 weight percent, based on the weight of cobalt and alkanol, and the cobalt and rhenium are provided in an atomic ratio in the range between about 0.1 and 50 to 1 of cobalt to rhenium.

4,111,838

COMPOSITION FOR CHROMATOGRAPHY

James Robert Schaeffer, Rochester; Roy Eugene Snoke, Webster, and Harry Wayne Harris, Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 9, 1977, Ser. No. 832,035
Int. Cl.[2] B01D *15/08*
U.S. Cl. 252—430 **20 Claims**

1. A composition comprising an inorganic support having a high surface density of hydroxyl groups and, covalently attached thereto, particles of polysaccharide to form an inorganic support-polysaccharide particle matrix.

4,111,839

NICKEL BIS-ORGANO-ORTHOSPHOSPHATE COMBINATION CATALYST

Jeffrey G. Meyer, Adrian, Mich., assignor to Anderson Development Company, Adrian, Mich.

Continuation-in-part of Ser. No. 416,390, Nov. 16, 1973, abandoned. This application Nov. 10, 1975, Ser. No. 630,323
Int. Cl.[2] B01J *31/12*
U.S. Cl. 252—431 P **4 Claims**

1. A combination catayst for controlled olefin oligomerization consisting essentially of the reaction product of (A) a nickel bis-diorgano-orthophosphate of the formula $NI[OP(O)(OR)_2]_2$, in which each R is a member of the group consisting of alkyl having 1 to 8 carbon atoms, alkoxyalkyl having 3 to 6 carbon atoms, and cycloalkyl, and the chlorinated and brominated derivatives thereof, and (B) an alkyl aluminum halide of the formula R'_cAlX_d in which each R' is alkyl having 1 to 6 carbon atoms, each X is chlorine or bromine, each of *c* or *d* is 1 or 2 and the total of *c* and *d* is 3, the mol ratio of (A) to (B) ranging from 1:1 to 1:20.

2. A combination catalyst for olefin polymerization consisting essentially of the reaction product of (A) a nickel bis-diorgano-orthophosphate of the formula $Ni[OP(O)(OR)_2]_2$, in which each R is a member of the group consisting of alkyl having 1 to 8 carbon atoms, alkoxyalkyl having 3 to 6 carbon atoms, and cycloalkyl, and the chlorinated and brominated derivatives thereof, (B) an alkyl aluminum halide of the formula R'_cAlX_d in which each R' is alkyl having 1 to 6 carbon atoms, each X is chlorine or bromine, each of *c* and *d* is 1 or 2 and the total of *c* and *d* is 3, the mol ratio of (A) to (B) ranging from 1:1 to 1:20, and (C) a vanadium bis-diorgano-orthophosphate of the formula $V(O)[OP(O)OR)_2]_2$ in which each R is as defined above, the mol ratio of (C) to (B) ranging from 1:4 to 1:10.

4,111,840

NICKEL-RHENIUM HYDROGENATION CATALYST AND METHODS OF PREPARING SAME AND USING SAME

Donald Charles Best, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 647,065, Jan. 7, 1976. This application Oct. 6, 1976, Ser. No. 730,291
Int. Cl.[2] B01J *21/02, 29/06*
U.S. Cl. 252—432 **16 Claims**

1. A catalytic composition having high activity and selectivity in the amination of lower aliphatic alkane derivatives to the corresponding alkylamine, said catalyst comprising rhenium, nickel and boron impregnated on a support material selected from the group consisting of α-aluminas, silicas, silica-aluminas, kieselguhrs, diatomaceous earth and silica-Titanias wherein the ratio of nickel to boron to rhenium is in the range of from about 2:2:1 to about 30:30:1 and the total nickel, boron and rhenium present is in the range of about 3 to about 30 percent by weight of the support material, wherein said catalyst is activated by reduction in the presence of hydrogen at elevated temperature.

4,111,841

CATALYSTS FOR THE HYDROTREATMENT OF HYDROCARBONS AND A PROCESS FOR PREPARATION AND APPLICATION OF SAID CATALYSTS

Joseph-Edouard Weisang, and Philippe Engelhard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, France

Filed Feb. 13, 1975, Ser. No. 549,845
Claims priority, application France, Feb. 13, 1974, 74 04895
Int. Cl.² B01J *27/04, 27/08, 27/10*
U.S. Cl. 252—439 25 Claims

1. An improved platinum-containing catalyst for the hydrotreatment of hydrocarbons consisting essentially of the following:
a refractory mineral oxide carrier;
from about 0.4 to about 2% of halogen, present in combined form with other catalyst components;
from about 0.02 to about 2% of at least one platinum-group metal ingredient;
from about 0.02 to about 2% of at least one additional manganese ingredient; and
from about 0.02 to about 2% of a tin ingredient; said weight percentages being calculated with respect to the elemental form and based on the total catalyst weight.

2. A catalyst according to claim in sulfurized form and containing from about 0.05 to about 0.5% of sulfur based on the total catalyst weight.

4,111,842

PROCESS FOR THE PREPARATION OF SUPPORTED CATALYSTS

Abraham van Montfoort, Geleen, and Joseph J. F. Scholten, Sittard, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jun. 1, 1977, Ser. No. 802,533
Int. Cl.² B01J *21/18*
U.S. Cl. 252—447 5 Claims

1. A process for preparing an activated carbon-supported catalyst, which consists essentially in
mixing an activated carbon having acidic surface groups thereon with an aqueous solution containing at least one catalytically active metal cation or metal complex cation selected from the class consisting of metals of Group IB and VIII of the Periodic System of Elements and zinc, whereby said catalytically active cation is transferred to the surface of said activated carbon by ion exchange,
separating said thus treated activated carbon from said aqueous solution, and thereafter
reducing said transferred surface cations on said activated carbon in a reaction medium to be catalyzed using the catalyst produced, and which is inert to said reduction,
so that a free metal coated activated carbon-supported catalyst composition is obtained.

4,111,843

SILICA-ALUMINA AND SILICA CATALYST SUPPORT BODIES

Gerald R. Feistel, Hinsdale, and George N. Pessimisis, Berwyn, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 6, 1977, Ser. No. 794,689
Int. Cl.² B01J *21/08, 29/00;* C01B *33/12*
U.S. Cl. 252—451 2 Claims

1. In a process where porous microspherical, microporous silica particles useful in catalysts are prepared by adding a mineral acid to a body of aqueous sodium silicate starting material to precipitate silica in hydrous form, after which the product is filtered, purified and dried: the improvement characterized by said body of aqueous sodium silicate starting material, before acid is added, being treated with Na_2O so that the alkali expressed as Na_2O in the starting material is substantially in excess of that required to form water glass and in an amount sufficient to produce micro pores of an appreciably larger diameter compared to pore size distribution when the body of sodium silicate is in water glass proportion without excess alkali.

4,111,844

SYNERGISTIC MICROBICIDAL COMPOSITION

Rudolf Polony; Adolf Räuchle, and Fritz Heizler, all of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 6, 1976, Ser. No. 747,565
Claims priority, application Switzerland, Dec. 15, 1975, 16278/75; Oct. 14, 1976, 13008/76
Int. Cl.² C11D *1/12, 3/48*
U.S. Cl. 252—106 12 Claims

1. A synergistic microbicidal composition consisting of
(A) from about 20 to 50000 ppm, based on the weight of said composition, of 2, 4,4'-trichloro-2'-hydroxy diphenyl ether,
(B) an anionic surfactant selected from the group consisting of alkylsulphonates, alkylsulphates, alkylnaphthalenesulphonates and dialkylsulphosuccinates and
(C) water
said component B being present in the composition at a ratio of A to B ranging from 1:2 to 1:30.

4,111,845

CRACKING CATALYST MODIFIED BY ANTIMONY THIOPHOSPHATE

Dwight L. McKay, Bartlesville, Okla.

Filed Feb. 11, 1977, Ser. No. 768,001
Int. Cl.² B01J *23/18, 8/24;* C10G *11/06*
U.S. Cl. 252—455 Z 5 Claims

1. A cracking catalyst composition consisting essentially of an unused catalytic cracking component useful for cracking of hydrocarbons in the absence of added hydrogen, said component having less than about 40 wt. % zeolite content and antimony in a concentration of about 0.005 to about 5 weight percent calculated as the elemental antimony and based on said unused catalytic cracking component and wherein said antimony is derived from antimony tris(O,O-dihydrocarbyldithiophosphate).

4,111,846

HYDROSOL AND CATALYST PREPARATION

Curtis Homer Elliott, Jr., Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 796,644, May 6, 1977, abandoned, which is a continuation of Ser. No. 596,922, Jul. 17, 1975, Pat. No. 4,022,714. This application Aug. 17, 1977, Ser. No. 825,327
Int. Cl.² B01J *29/06, 13/00*
U.S. Cl. 252—455 Z 15 Claims

1. A titania-alumina-silica hydrosol which comprises the following amounts by weight TiO_2, Al_2O_3, SiO_2 and H_2O:
(a) 0.01 to 0.12 parts TiO_2 per part SiO_2,
(b) 0.01 to 0.15 parts Al_2O_3 per part SiO_2, and
(c) 6 to 25 parts H_2O per part SiO_2,
said hydrosol having a pH of from about 2.5 to 3.5.

6. A process for preparing hydrocarbon conversion catalysts which comprises:
(a) preparing an aqueous slurry of a crystalline aluminosilicate zeolite and a titania-alumina-silica hydrosol binder, said hydrosol binder comprising the following amounts by weight TiO_2, Al_2O_3, SiO_2 and H_2O:
(1) 0.01 to 0.12 parts TiO_2 per part SiO_2,
(2) 0.01 to 0.15 parts Al_2O_3 per part SiO_2, and
(3) 6 to 25 parts H_2O per part SiO_2
said hydrosol having a pH of from about 2.8 to 3.2; and
(b) spray drying said slurry to form discrete catalyst particles.

4,111,847

METHANOL SYNTHESIS CATALYST

Alvin B. Stiles, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 245,902, Apr. 20, 1972, abandoned. This application Nov. 8, 1973, Ser. No. 413,829
Int. Cl.² B01J *21/04, 21/10, 23/06, 23/72*
U.S. Cl. 252—463 4 Claims

1. A copper oxide-zinc oxide catalyst useful for the production of methanol prepared by (a) coprecipitating zinc and copper carbonates from an aqueous solution of the metal nitrates containing very low amounts of sodium and sulfate ions using ammonium carbonate, bicarbonate or mixtures thereof as the sole precipitant by controlling the pH at about 6.8 at a solution temperature in the range of 30° to 80° C. and (b) drying and calcining the resultant coprecipitate at a temperature in the range of 375° to 425° C. to form the oxides of the metals, the sodium and sulfur contents of the calcined catalyst each being less than 100 ppm and the atomic ratio of copper to zinc being from 1:1 to 8:1, said catalyst having incorporated in it 5 to 65% by weight of the total ingredients of a stabilizer selected from alumina, zirconia, titania, calcia or magnesia.

4,111,848

CATALYST FOR OXIDATION OF CARBON MONOXIDE AND HYDROCARBONS IN COMBUSTION ENGINE EXHAUST GAS

Shinkity Torii, Kanagawa; Sakae Kawagoshi, Yokohama; Tetsuhiko Yoneshige, Yokohama, and Hidehumi Ito, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 16, 1977, Ser. No. 807,191
Claims priority, application Japan, Jun. 17, 1976, 51-70352
Int. Cl.² B01J *21/04, 23/56*
U.S. Cl. 252—466 PT 10 Claims

1. A catalyst for conversion of carbon monoxide and hydrocarbons in the exhaust gas of a combustion engine, the catalyst consisting essentially of a carrier of active alumina and at least one catalytic metal which is selected from the group consisting of Pt, Pd, Rh and Ir and is distributed upon said carrier, the total amount of said at least one catalytic metal being in the range from 0.03 to 0.3 Wt% of the catalyst, both the amount of Rh and the amount of Ir being 0–0.03 Wt%, the catalyst being produced by a method comprising the steps of impregnating said carrier with an aqueous solution of at least one thermally decomposable compound of a catalytic metal selected from said group, and baking the impregnated carrier in a stream of substantially 100% steam at a temperature between 300° and 600° C.

4,111,849

LOW COPPER NO_x REDUCTION CATALYST

Robert J. Fedor, Westlake, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 249,884, May 3, 1972, abandoned. This application Nov. 13, 1972, Ser. No. 305,738
Int. Cl.² B01J *23/72, 23/76*
U.S. Cl. 252—474 9 Claims

1. A durable catalytic structure capable of catalyzing the reduction of NO_x gases found in the exhaust stream emanating from an internal combustion engine without the generation of undesirable amounts of ammonia comprising a heat resistant metallic substrate having a catalytic alloy of essentially pure nickel base material and copper adherently deposited on at least a part of the surface thereof wherein the weight ratio of the nickel in the nickel base material to copper is about 49 to 1.

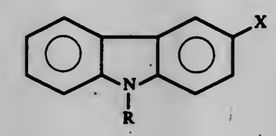
4,111,850

ORGANIC PHOTOCONDUCTORS AND METHODS

William David Kwalwasser, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1977, Ser. No. 769,259
Int. Cl.² H01C *31/00*
U.S. Cl. 252—501 19 Claims

1. A photoconductive, charge-transfer material comprising a complex of an electron acceptor molecule selected from the group consisting of 2,4,7-trinitro-9-fluorenone and 2,4,5,7-tetranitro-9-fluorenone, with a carbazole compound of the following formula:



wherein R is ethyl and X is nitro.

4,111,851

ELECTRICALLY CONDUCTIVE THERMAL CONTROL COATINGS

Michael Charles Shai, Gambrills, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 21, 1977, Ser. No. 844,344
Int. Cl.² H01B *1/08;* C09D *1/02*
U.S. Cl. 252—518 14 Claims

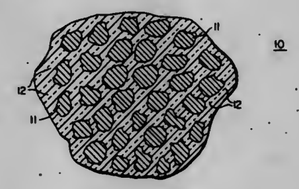
1. A coating characterized by low thermal absorption, high thermal emittance, and high electrical conductivity which comprises:
(a) 70–80 weight percent of an oxide pigment comprising a minor amount of Al_2O_3 and a major amount of ZnO, said pigment being fired at substantially 1175° C. in air for producing a reproducible highly electrically conductive pigment,
(b) 20–30 weight percent of a vehicle-binder comprising an alkali metal silicate, and
(c) sufficient water to provide a mixture suitable for application to a substrate.

4,111,852

PRE-GLASSING METHOD OF PRODUCING HOMOGENEOUS SINTERED ZNO NON-LINEAR RESISTORS

Shih M. Ho, Wilkinsburg, and Tapan K. Gupta, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1976, Ser. No. 755,774
Int. Cl.² H01B *1/08*
U.S. Cl. 252—518 6 Claims



1. A method of making a homogeneous, sintered, resistor body, having a substantially uniform density, which can exhibit non-linear V-I characteristics, comprising the steps of:
(A) mixing metallic oxide powders comprising about 10 mole % to about 60 mole % of Bi_2O_3, about 5 mole % to

about 15 mole % of ZnO, about 2 mole % to about 15 mole % of MnO_2, about 2 mole % to about 10 mole % of Co_3O_4, about 5 mole % to about 40 mole % of SiO_2, about 1 to about 15 mole % of B_2O_3 and 0 to about 30 mole % of Sb_2O_3, and melting the mixture at a temperature of between about 1,100° and 1,600° C for a time effective to form a single phase, chemically homogeneous glass melt, and then

(B) quenching the glass melt to form a single phase, chemically homogeneous porous glass, and then

(C) grinding the glass to form fine glass particles, and then

(D) mixing:

(1) 2.5 weight % to 40 weight % of the single phase, chemically homogeneous glass particles with

(2) 60 weight % to 97.5 weight % of ZnO particles, by a spray drying technique to form a two component mixture, and then

(E) pressing the glass and ZnO mixture at pressures of between about 500 psi. to about 40,000 psi. to form a consolidated body having a substantially uniform density, and then

(F) sintering the pressed body, at a temperature of between about 900° and 1,400° C, at a temperature rate increase of between about 75° C/hr. to about 150° C/hr., for 1 to 4 hours, to form a ceramic body consisting of ZnO particles, and a single phase, chemically homogeneous coating formed from the glass and binding the ZnO particles together, wherein the density throughout the mass will vary no more than about 10%, said sintered body exhibiting non-linear V-I characteristics.

4,111,853

PARTICULATE COMPOSITION OF SODIUM ALPHA OLEFIN SULFONATE AND SODIUM SILICATE

Andrew Shultz, Deerfield, and F. Quinn Stepan, Winnetka, both of Ill., assignors to Stepan Chemical Company, Northfield, Ill.

Continuation-in-part of Ser. No. 664,753, Mar. 8, 1976, abandoned. This application Nov. 4, 1977, Ser. No. 848,644

Int. Cl.² C11D *1/14, 3/08*

U.S. Cl. 252—536 **4 Claims**

1. A particulate surfactant composition adapted for use as an intermediate in the preparation of synthetic detergent formulations, said composition consists on a 100 weight percent basis of a homogeneous mixture of

(A) from about 25 to 65 weight percent of a sodium silicate having an SiO_2 to Na_2O weight ratio of from about 1:1 to 2.8:1,

(B) from about 25 to 65 weight percent of a sodium alpha olefin sulfonate derived from at least one alpha olefin containing from 14 to 18 carbon atoms per molecule,

(C) from about 0.2 to 2 weight percent of a salt selected from the group consisting of sodium chloride and sodium sulfate, and

(D) from about 4 to 15 weight percent water,

said composition being further characterized by

(a) being in the physical form of a homogeneous, storage-stable, free-flowing group of beads,

(b) having a hygroscopicity not greater than about 5 percent free water after standing in an atmosphere of normal humidity,

(c) having a particle size such that at least about 90 weight percent of such group particles have at least about two dimensions in the size range from about 0.001 to 1 millimeter, and

(d) having a bulk density ranging from about 0.25 to 0.50 gram per milliliter tamped.

said composition having been prepared by spray drying at a temperature ranging from about 220° to 450° F. an aqueous suspension comprised initially on a 100 weight percent total suspension basis of from about 35 to 65 weight percent total solids, and, correspondingly, from about 35 to 65 weight percent water, said solids comprising a composition as above detailed on a 100 weight percent basis.

4,111,854

GENERAL PURPOSE HOUSEHOLD CLEANER

Gianfranco Luigi Spadini, Strambeek-Bever, Belgium, and Emiel Mathilde Anna Alfons Demessemaekers, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 17, 1975, Ser. No. 559,185

Claims priority, application France, Mar. 15, 1974, 74 08994

Int. Cl.² C11D *1/02, 1/12, 3/33*

U.S. Cl. 252—541 **7 Claims**

1. A general purpose household cleaning composition comprising in percentage by weight, calculated on the finished product:

(A) from about 3% to about 30% of a water-soluble, organic, anionic, surface-active, detersive sulfuric acid reaction product, selected from the group consisting of paraffin sulfonic acid having from 12 to 22 carbon atoms; alkyl benzene sulfonic acid having from 8 to 18 carbon atoms in the alkyl radical; alkyl sulfuric acid ester, having from 10 to 22 carbon atoms in the alkyl group and having as a cation an alkali-metal, ammonium and substituted ammonium; and mixtures thereof;

(B) from about 2% to about 20% of a lower polypeptide having a molecular weight below 600, and an isoelectric point of at least 5.5, or mixtures thereof, or a protein hydrolysate containing at least 50% by weight, calculated on the hydrolysate, of lower polypeptides having a molecular weight below 600, and an isoelectric point of at least 5.5, containing at most 15% by weight of amino acids and at most 25% by weight of penta- and higher polypeptides; and

(C) the balance a neutral carrier; whereby the weight ratio of (A)/(B) is between about 6/1 to about 1/1.

4,111,855

LIQUID ENZYME CONTAINING DETERGENT COMPOSITION

Christian Roland Barrat, Meise; José Luis Arnau, Wermel, and Jean Wevers, Brussels, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 7, 1977, Ser. No. 775,213

Claims priority, application United Kingdom, Mar. 8, 1976, 9258/76; Dec. 9, 1976, 51465/76

Int. Cl.² C11D *1/831, 3/36*

U.S. Cl. 252—545 **6 Claims**

1. An unbuilt enzymatic liquid detergent composition comprising:

(a) from about 35% to about 75% by weight of the composition of a surfactant mixture which is

(i) an ethoxylated nonionic surfactant selected from the group consisting of ethoxylated aliphatic alcohols and ethoxylated alkyl phenols and mixtures thereof, and

(ii) a synthetic anionic surfactant selected from the group consisting of compounds of the formula R_3SO_3M, wherein R_3 represents a hydrocarbyl group selected from the group consisting of straight or branched chain alkyl radicals having from 12 to 24 carbon atoms; and alkyl phenyl radicals having from 9 to 15 carbon atoms in the alkyl group and wherein M is a salt forming cation selection from the group consisting of sodium, potassium, ammonium, and mono-, di-, and trialkanol amines having 2 to 3 carbon atoms in the alkanol group, wherein the weight ratio of said ethoxylated nonionic surfactant to said synthetic anionic surfactant is from about 1:1 to about 5:1;

(b) from about 0.05% to about 1.5% by weight of a polyacid selected from the group consisting of: ethylenediamine tetramethylene phosphonic acid; hexamethylene diamine-tetramethylene phosphonic acid, diethylene triaminepentamethylene phosphonic acid, and aminotrimethylene phosphonic acid;

(c) from 0.5 millimole to 15 millimoles/liter of composition of free calcium ions;

(d) from 0.001% to about 2% by weight of an alkaline proteolytic enzyme having an iso-electric point of greater than about 8; and

(e) the balance of the composition comprising a liquid which is water and a liquid organic solvent which is a lower aliphatic alcohol having from 2 to 6 carbon atoms and 1 to 3 hydrocarbyl groups and mixtures thereof wherein the liquid organic solvent is from about 2% to about 15% by weight of the total composition and wherein the pH of the composition is from about 6.0 to about 7.5.

4,111,856

INSOLUBLE RESIN-METAL COMPOUND COMPLEX PREPARED BY CONTACTING WEAK BASE ION EXCHANGE RESIN WITH SOLUTION OF METAL-LIGAND

Werner O. Haag, Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 306,782, Nov. 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 860,807, Sep. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 672,010, Oct. 2, 1967, abandoned. This application Aug. 29, 1974, Ser. No. 501,429

Int. Cl.² C07C *29/02, 15/00*

U.S. Cl. 521—30 **7 Claims**

1. A method of making an insoluble resin-metal coordinative complex compound comprising an insoluble weak base anion exchange resin having amine, phosphine, arsine, stibine, thiol or sulfide Lewis base substituents, coordinatively, nonionically bonded through said substituents to metal selected from the group consisting of platinum, palladium, rhodium, ruthenium, osmium, iridium, gold, cadmium, titanium, zirconium, hafnium, vanadium, chromium, molybdenum, tungsten, manganese, rhenium, iron, cobalt, nickel, copper, zinc, silver and mercury which comprises contacting said resin containing said substituents with a solution of a compound of said metal having at least two ligands coordinatively connected to said metal at a PH at which said substituents possess essentially no ion exchange properties and at a temperature below the decomposition temperature of said resin and said metal compound for a time sufficient for at least one of said ligands to be coordinatively exchanged for said Lewis base.

4,111,857

HIGHLY CONDUCTING ORGANOMETALLIC POLYMERS

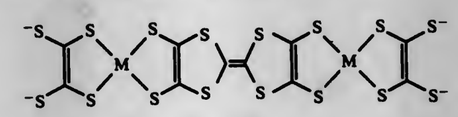
Edward Martin Engler, Wappingers Falls; Kenneth Herbert Nichols, Peekskill; Vishnubhai Vitthalbhai Patel, Ossining; Nilda Martinez Rivera, Peekskill, all of N.Y., and Robert Rhees Schumaker, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,379

Int. Cl.² C08G *75/00, 79/00*

U.S. Cl. 528—226 **8 Claims**

1. A poly metal tetrathiafulvalene tetrathiolate composition having the following general recurring unit



where M is at least one multivalent metal.

4,111,858

PROCESS FOR THE PREPARATION OF POLYHYDROXY METHYLENE ETHERS AND ION EXCHANGERS COMPOSED THEREOF

Michael Kostrzewa, and Karl-Friedrich Mück, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 721,986, Sep. 10, 1976, abandoned. This application Apr. 19, 1977, Ser. No. 788,848

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1975, 2540688

Int. Cl.² C08F *16/12, 8/40, 8/30*

U.S. Cl. 521—25 **1 Claim**

1. An ion exchanger composed of etherified polyhydroxy methylene in which the alkoxy groups carry at least one ionic or ionizable carboxyl group, phospho group, quaternary ammonium group, or substituted amino group.

4,111,859

METHOD OF PREPARATION OF ION EXCHANGERS BY ALKYLATION AND HYDROXYALKYLATION OF POLYMERIC HYDROPHILIC ANION EXCHANGERS

Petr Štěrp; Jiří Coupek, and Otakar Mikeš, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Feb. 7, 1975, Ser. No. 548,096

Claims priority, application Czechoslovakia, Feb. 13, 1974, 1029-74

Int. Cl.² B01D *15/04;* C08J *5/20;* B01D *15/08*

U.S. Cl. 521—33 **4 Claims**

1. In the method for forming polymeric anion exchangers from hydrophilic gels formed from acrylate and methacrylate based copolymers having amino groups, the improvement comprising modifying said gels by subjecting said gels to alkylation agents selected from the group consisting of alkyl halides, alkyl p-toluenesulfonates and epoxides.

4,111,860

PROCESS FOR THE PRODUCTIONS OF MULTI-CELLULAR STRETCHED ARTICLES

James Jack, Mistley, England, assignor to Bakelite Xylonite Limited, London, England

Filed Oct. 29, 1974, Ser. No. 518,902

Claims priority, application United Kingdom, Oct. 31, 1973, 50654/73

Int. Cl.² B29D *27/00;* C08J *9/00*

U.S. Cl. 521—84 **16 Claims**

1. A process for the production of a multi-cellular stretched article, which process comprises the steps of forming a composition comprising mixing a melted blend of a stretchable thermoplastic organic polymer matrix and an additive which reduces the density of the resulting article and is non-molten or non-softened in the normal orientation temperature range of the matrix polymer, at a temperature at which the matrix polymer and additive are molten,

forming an article from said composition, and

then stretching the article at a temperature which is within the normal orientation temperature range for the matrix polymer so that micro-voids are formed in the matrix polymer,

said additive constituting from about 2 to 50% by weight of the total weight of the blend, being at least partially incompatible with the matrix polymer in the concentration employed when and at the temperature at which said article is subsequently stretched, being selected from the group consisting of organic polymeric, organic acids, and those metal salts of organic acids other than metal resinates and rosin esters, except when the matrix polymer is a crystallizable polymer other than an olefin, in which case said additive is selected from the group consisting of organic acids and their metal salts other than metal resinates and rosin esters,

the temperature at which said article is stretched being below the glass-transition temperature of said additive when said additive is a polymer, and below the melting or softening point of the additive when said additive is an organic acid, organic derivative or a modified or unmodified natural product.

15. The multicellular stretched article produced by a process as of claim 1.

4,111,861

METHOD OF MOLDING POLYURETHANES HAVING MOLD RELEASE PROPERTIES

Robert Everett Godlewski, Mahopac, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,215
Int. Cl.[2] C08G *18/34;* C08K *3/26, 5/09*
U.S. Cl. 521—123 5 Claims

1. A method for producing a polyurethane elastomer which comprises forming in a mold cavity having metal walls and curing a reaction mixture containing:

(a) a polyol,

(b) an organic polyisocyanate in an amount that provides from 0.8 to 1.3 isocyanato groups per active-hydrogen in the reaction mixture,

(c) a catalytic amount of catalyst for curing of the reaction mixture to produce the elastomer, and

(d) as a mold release additive, mixtures of a fatty acid wherein the number of carbon atoms ranges from about 8 to about 35 and a compound selected from the group consisting of sodium carbonate, sodium oleate and potassium laurate.

4. A method as claimed in claim 1 for producing a microcellular polyurethane elastomer wherein there is also employed:

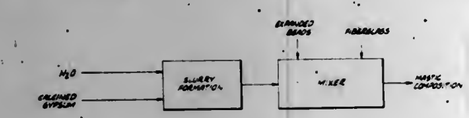
(a) a blowing agent in an amount sufficient to produce a microcellular structure in the elastomer.

4,111,862

MASTIC COMPOSITION AND COMPOSITE STRUCTURAL PANELS FORMED THEREFROM

Robert C. Geschwender, Lincoln, Nebr., assignor to Bell Fibre Products Corporation, Marion, Ind.

Continuation of Ser. No. 491,676, Jul. 25, 1974, abandoned. This application Mar. 8, 1976, Ser. No. 665,066
Int. Cl.[2] C08J *9/22*
U.S. Cl. 521—55 11 Claims



1. A mastic composition comprising a substantially imporous homogeneous mixture of a predetermined volume of low density expanded closed cell synthetic resin beads and a slurry formed from between about 55% to 65% by weight of calcined gypsum and between 45% to 35% water, the volume of expanded beads having an interstitial volume not substantially more than the volume of the slurry, the volume of the slurry being not more than about 25% in excess of the interstitial volume and being not substantially less than the interstitial volume of the beads, the substantially homogeneous mixture being self-adhering as a thick layer on an inverted smooth surface and yet being separable therefrom as an integral layer, said mastic composition being free of surface active or wetting agents and setting to a hard, strong, dimensionally stable, heat and sound retardant material with the beads being unbonded one to another and to the crystallized gypsum and water.

4,111,863

METHOD OF PREPARING POLYMERS ANALOGOUS TO ENZYMES

Günter Wulff, Bonn, and Ali Sarhan, Ollheim, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 390,824, Aug. 23, 1973, abandoned. This application Apr. 16, 1975, Ser. No. 568,639
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1972, 2242796
U.S. Cl. 521—63 65 Claims

1. A non-swellable, three-dimensional polymer having a component which is a residue of an optically active or achiral compound which residue is chemically removable from said polymer to leave behind in the physical structure of said polymer a void corresponding to the size and shape of said residue of optically active or achiral compound, said polymer having recurring units of the formula



wherein

A is a residue, bonded to B, of a compound which residue is polymerizable or polycondensable or polyadditionable

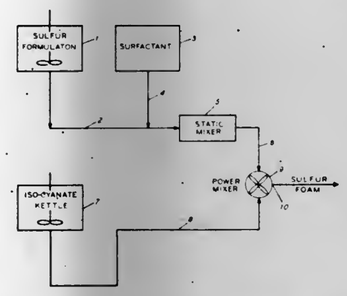
B is a residue of an optically active or achiral compound.

4,111,864

SULFUR FOAM

Gar Lok Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 516,229, Oct. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 438,508, Jan. 31, 1974, Pat. No. 3,887,504, and Ser. No. 344,694, Mar. 26, 1973, Pat. No. 3,892,686, which is a continuation-in-part of Ser. No. 253,144, May 15, 1972, abandoned. This application Jul. 26, 1976, Ser. No. 708,469
The portion of the term of this patent subsequent to Jun. 3, 1992, has been disclaimed.
Int. Cl.[2] C08G *53/08;* C08J *1/22*
U.S. Cl. 521—117 23 Claims



1. A process for producing sulfur foam containing at least 50 weight percent sulfur, which comprises:

(a) reacting molten sulfur with an organic protonic acid which is reactive with molten sulfur so as to incorporate the organic acid with sulfur to form a sulfur-organic acid adduct containing protonic acid groups;

(b) mixing an organic surfactant agent with the adduct to obtain a mixture of adduct and surfactant agent; and then, substantially immediately after mixing the surfactant with the adduct,

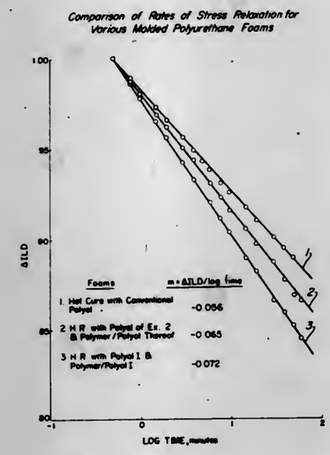
(c) reacting the mixture with a polyisocyanate to obtain sulfur foam.

4,111,865

POLYMER/POLYOLS AND POLYURETHANE FORMS AND ELASTOMERS THEREFROM

Carl G. Seefried, Jr.; Robert D. Whitman, and Russell Van Cleve, all of Charleston, assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 523,474, Nov. 13, 1974, abandoned. This application Sep. 27, 1976, Ser. No. 727,221
Int. Cl.[2] C08G *18/14, 18/63;* C09K *3/00;* C08K *5/06*
U.S. Cl. 521—137 13 Claims



1. A polymer/polyol composition consisting essentially of:

A. A major amount of a normally liquid polyoxyalkylene-polyoxyethylene polyol consisting essentially of: (1) polyoxyalkylene blocks that consist of oxyalkylene groups containing at least 3 carbon atoms, (2) polyoxyethylene blocks that consist of oxyethylene groups, that end-block at least 35 mole percent of such polyoxyalkylene blocks and that are terminated with primary hydroxyl groups and (3) the residue of at least one starter, said polyol having: (a) from 90 to 97 weight percent of such polyoxyalkylene blocks and from 10 to 3 weight percent of such polyoxyethylene blocks based on the total weight of such blocks in the polyol, (b) an average of at least 3.2 hydroxyl groups per molecule, (c) a hydroxyl number no greater than 45 and (d) at least 35 mole percent primary hydroxyl groups based on the total moles of hydroxyl groups in the polyol; and

B. A minor amount of a polymer formed by polymerizing at least one ethylenically unsaturated monomer in said polyol by free radical polymerization, said polymer being in the form of particles that are stably dispersed in the polyol.

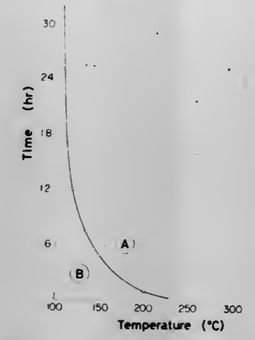
4,111,866

METHOD OF MAKING A CHEMICAL-RESISTANT DIAPHRAGM THEREOF

Eiichi Torikai, Yao; Youji Kawami, Kawachi-nagano; Shinichiro Kai, Ibaragi; Mutsusuke Namba, and Shuhei Simasaki, both of Settsu, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo and Daikin Kogyo Co., Ltd., Osaka, both of, Japan

Filed Apr. 20, 1977, Ser. No. 789,440
Claims priority, application Japan, Apr. 20, 1976, 51-45931
Int. Cl.[2] C08J *9/26*
U.S. Cl. 521—53 8 Claims

1. A method for the manufacture of a diaphragm excellent in water-permeating property and resistance to chemicals, which method comprises preparing a porous film of a mixture consisting of a fluorine-containing polymer is one member selected from the group consisting of a homopolymer of tetrafluoroethylene copolymers of tetrafluoroethylene and hexafluoropropylene, copolymers of tetrafluoroethylene and perfluorovinyl ether, and copolymers of tetrafluoroethylene and ethylene and at least one member selected from the group consisting of



titanium oxide and titanic acid, immersing said film in an aqueous potassium hydroxide solution of 0.5N - 10N and subsequently heating said film at 100 to 350° for thereby giving birth to potassium titanate within the film.

4,111,867

RUBBER COMPOSITION FOR TIRE TREADS

Keiji Komuro, Yokohama; Tetsu Ohishi, Tokyo; Tetsuo Waku; Nagatoshi Sugi, both of Yokohama; Souichi Suzaki, Tokuyama, and Akio Ueda, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1977, Ser. No. 782,323
Claims priority, application Japan, Apr. 5, 1976, 51-37206; Apr. 14, 1976, 51-42063
Int. Cl.[2] C08L *7/00*
U.S. Cl. 260—5 10 Claims

1. A rubber composition for tire treads, said composition consisting essentially of

(Ia) an oil-extended rubber having a Mooney viscosity (ML_{1+4}, 100° C.) of 20 to 70 and prepared by adding 20 to 80 parts of a hydrocarbon oil to 100 parts by weight of a rubbery terpolymer which is composed of 2 to 13% by weight of combined styrene, 15 to 70% by weight combined of 1,3-butadiene and 17 to 83% by weight of combined 1,3-pentadiene with the dienes having a total 1,4-bond content of at least 65 mole%, has a glass transition temperature of −70° to −20° C., and is produced by emulsion-polymerization at 0° to 30° C.,

(II) vulcanization additives, and

(III) 30 to 110 parts by weight, per 100 parts by weight of the oil-extended rubber (Ia), of a carbon black for rubber having an average particle diameter of not more than 60 mμ.

4,111,868

FIBERED SYNTHETIC CLAY COMPOSITION FOR USE IN AESTHETIC ARTS

Kent L. Ficken, Munjor Rte. Hays, Kans. 67601

Filed Apr. 15, 1977, Ser. No. 787,946
Int. Cl.[2] C08L *3/02*
U.S. Cl. 260—17.4 ST 6 Claims

1. A clay composition mixed in a dry form with water for forming a cohesive and plastic like material for use in construction, sculpturing, arts and crafts and the like, the composition comprising:

powdered gypsum;

marble dust;

nylon fiber present in the amount of .1%-1% of the dry weight of the total composition;

wheat paste present in the amount of 0%–2% of the dry weight of the total composition; and
latex present in the amount of 2%–6% of the dry weight of the total composition.

4,111,869

METHOD FOR THE POLYMERIZATION OF LACTAMS

Rudolf Puffr, and Jan Sebenda, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 551,515, Feb. 21, 1975, abandoned. This application Mar. 16, 1977, Ser. No. 778,003
Claims priority, application Czechoslovakia, Feb. 28, 1974, 1749/74
Int. Cl.² C08G 69/20
U.S. Cl. 260—18 N 7 Claims

1. A process for the cationic polymerization of lactams which comprises: heating in a substantially anhydrous system a mixture consisting essentially of at least one lactam containing from 6 to 16 carbon atoms in the lactam ring, and a catalyst consisting essentially of from about 0.05 to 10 mole percent with respect to the lactam of at least one anhydrous salt of a metal selected from the group consisting of copper, zinc, boron, aluminum, titanium, silicon, vanadium, antimony, bismuth, chromium, molybdenum, tungsten, manganese, iron, cobalt, and nickel and an anion selected from the group consisting of phosphate, pyrophosphate, phosphite, sulfate, halide, carboxylate and sulfonate, and from about 0.05 to 5 mole percent with respect to the lactam of an acid selected from the group consisting of pyrophosphoric, phosphorous, hydrohalic, carboxylic, sulfonic and mixtures thereof, to form a polyamide.

4. The process of claim 1 wherein said salt is selected from the group consisting of tungsten hexachloride, antimony pentachloride, titanium tetrachloride, silicon tetrachloride, aluminum trichloride, aluminum tribromide, boron trifluoride, chromium sulfate, aluminum stearate and mixtures thereof.

4,111,870

PRIMER COMPOSITION OF AN ACRYLIC EPOXY ESTER GRAFT COPOLYMER, A HIGH MOLECULAR WEIGHT EPOXY RESIN AND A HEAT REACTIVE CONDENSATE

Herman Charles Den Hartog, Pontiac, and Aloysius Norbert Walus, Troy, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

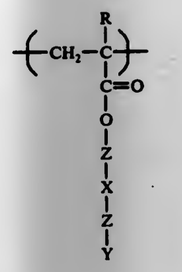
Filed May 24, 1977, Ser. No. 800,066
Int. Cl.² C09D 3/52, 3/58
U.S. Cl. 260—21 15 Claims

1. A coating composition comprising a solution of 5–60% by weight of film-forming constituents in an organic solvent; wherein the film-forming constituents consist essentially of

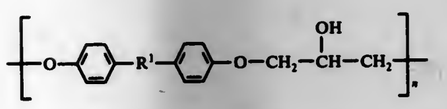
(1) 20–85% by weight of an acrylic epoxy ester graft copolymer having a relative viscosity of about 1.040–1.100 measured at 0.5% polymer solids in dichloroethylene solvent at 25° C. and consisting essentially of 10–75% by weight of a polymeric backbone segment and 90–25% by weight of polymer side chain segments; wherein

(a) the polymeric backbone segment of the graft copolymer consists essentially of polymerized monomers selected from the group consisting of methyl methacrylate, styrene and mixtures thereof; and about 0.5–5% by weight, based on the weight of the copolymer, of polymerized methacrylic acid or acrylic acid monomers; and about 0.5–10% by weight, based on the weight of the copolymer, of polymerized adhesion promoting acrylic monomers selected from the group consisting of hydroxyaminopropyl methacrylate, diethylaminoethyl methacrylate, dimethylaminoethyl methacrylate, 2-aminopropyl methacrylate, 2-aminoethyl methacrylate, t-butyl aminoethyl methacrylate, 2-(1-aziridinyl)-ethyl methacrylate, N-2-hydroxypropyl methacrylamide, N-2-hydroxyethyl methacrylamide and 3-(2-methacryloxyethyl)-2,2-spirocyclohexyloxazolidine;

(b) the polymeric side chain segments are grafted into the backbone segment and consist essentially of the following formula which is shown as being grafted into the backbone segment

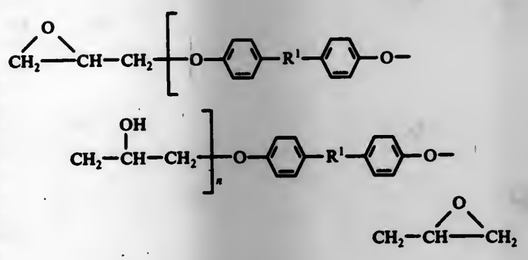


wherein
R is H or CH_3;
Z is the residual of an epoxy hydroxy polyether resin that has the following recurring structural unit



where *n* is a positive integer sufficiently large to provide a weight average molecular weight of 500–4,000 and R^1 is an alkylene group;
X is the residual of a dimer dicarboxylic fatty acid in which the carboxyl groups of the fatty acid are reacted with terminal epoxy groups of th expoxy hydroxy polyether resin; and
Y is the residual of an aromatic, cycloaliphatic or aliphatic monocarboxylic acid in which the carboxyl group is reacted with a terminal epoxy group of the epoxy hydroxy polyether resin;

(2) 5–70% by weight of an epoxy hydroxy polyether resin of the formula



where R^1 is an alkylene group and *n* is an integer sufficiently large to provide a weight average molecular weight of about 30,000–200,000; and

(3) 10–35% by weight of a heat reactive condensate selected from the group consisting of an alkylated melamine formaldehyde, an alkylated urea formaldehyde, an alkylated benzoguanamine formaldehyde or mixtures thereof wherein the alkyl groups have 1–4 carbon atoms.

4,111,871

OIL-MODIFIED ALKYD RESIN COMPOSITION

Mitsutoshi Aritomi, Ibaraki, Japan, assignor to Mitsubishi Petrochemical Company Limited, Japan

Filed Apr. 15, 1977, Ser. No. 787,962
Claims priority, application Japan, Apr. 19, 1976, 51-44317; Dec. 2, 1976, 51-143961
Int. Cl.² C09D 3/64, 3/66
U.S. Cl. 260—22 CB 15 Claims

1. An oil-modified alkyd resin composition substantially free of solvent comprising:

(A) 50 to 80% by weight of an oil-modified alkyd resin which has been modified with a fatty acid containing at least 65% by weight of linoleic acid and/or linolenic acid and has an oil length of 40 to 70%; and

(B) 50 to 20% by weight of an acrylate and/or methyacrylate which is a monester of an alcohol having from 2 to 20 carbon atoms and having at least two hydroxyl groups and acrylic acid or methacrylic acid, wherein the component B has a boiling point of at least 200° C.

4,111,872

PROCESS FOR PRODUCING WATER-SOLUBLE BINDERS FOR ELECTRODEPOSITION

Gert Dworak, Dr.-Robert-Grafstrasse 25/9/59/60, 8010 Graz, Austria

Filed Mar. 25, 1975, Ser. No. 561,798
Claims priority, application Austria, Apr. 3, 1974, 2789/74
Int. Cl.² C08L 91/00
U.S. Cl. 260—23.7 A 19 Claims

1. Aqueous binders comprising from about 80 - 98 percent by weight of the reaction product which contains carboxyl groups or latent carboxyl groups of

(A) from about 70 to 90 percent by weight of a diene polymer having a molecular weight of from about 500 to 5,000, and

(B) from about 10 to 30 percent by weight of an alpha,beta-ethylenically unsaturated carboxylic acid or derivative thereof, and

wherein from about 5 to 70 percent of the carboxyl groups or latent carboxyl groups of (A) and (B) are esterified with a monoalcohol; and from about 2 – 20 percent by weight of a resinous polycarboxylic acid having an acid number of from about 150 to 350 mg KOH/g, jointly neutralized to the water-soluble form with a base material.

11. Process for producing aqueous binders comprising polydiene adducts wherein

(A) from about 70 - 90 percent by weight of a diene polymer having a molecular weight of from about 500 to 5,000, and

(B) from about 10 - 30 percent by weight of an alpha,beta-ethylenically unsaturated carboxylic acid or derivative thereof,

are reacted completely at 150° – 250° C. to form an adduct containing carboxyl or latent carboxyl groups, and from about 5 – 70 percent by weight of the carboxyl groups or latent carboxyl groups thereof are esterified with a monoalcohol to form a partially esterified adduct, and thereafter from about 80 – 98 percent by weight of said partially esterified adduct, and from about 2 – 20 percent by weight of a resinous polycarboxylic acid having an acid number of from about 150 to 350 mg KOH/g are jointly neutralized with a base to provide water solubility.

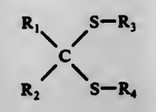
4,111,873

HEAT STABILIZED HALOGEN-CONTAINING POLYMERS

William Frederick Cordes, III, East Brunswick, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1976, Ser. No. 693,468
Int. Cl.² C08K 5/37, 5/36
U.S. Cl. 260—23 XA 26 Claims

1. A thermally stable composition comprising a halogen-containing polymer selected from the group consisting of homopolymers and copolymers of vinyl chloride, vinylidene chloride or chlorinated polyolefins and an effective stabilizing amount of a combination of (a) a compound of the formula:



wherein R_1 and R_2 are independently selected from hydrogen, alkyl, aryl, alkyl- or alkoxy-substituted aryl, aralkyl, alkyl- or alkoxy-substituted aralkyl, or taken together form an alkylene radical of 3 to 9 carbon atoms; R_3 and R_4 are independently selected from alkyl of at least 4 carbon atoms; carbalkoxyalkyl, aryl, alkyl- or alkoxy-substituted aryl, aralkyl, alkyl- or alkoxy-substituted aralkyl, or taken together form thiodimethylene, an ortho-arylene radical, an alkyl- or alkoxy-substituted ortho-arylene radical, or an alkylene radical of 2 to 4 carbon atoms, and (b) a divalent metal salt selected from magnesium, calcium, barium or zinc stearate, laurate, oleate or benzoate, or mixtures thereof.

4,111,874

TRANSPARENT PRESSURE-SENSITIVE COATINGS

Frederick W. Meadus; Bryan D. Sparks, and Ira E. Puddington, all of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Oct. 4, 1976, Ser. No. 729,292
Int. Cl.² C08L 29/04, 31/04, 91/00
U.S. Cl. 260—23 R 12 Claims

1. An aqueous composition which on drying on a substrate forms a pressure-sensitive transparent coating, the composition comprising

(a) a fatty acid soap, the fatty acid being saturated and having from 16 to 18 carbon atoms, and having a cation selected from the group consisting of sodium, potassium and ammonium, the soap being in the form of fine transparent particles,

(b) water, in an amount sufficient to dissolve said fatty acid soap, and

(c) a non-waxy binder selected from the group consisting of vinyl acetate polymers, acrylic polymers, and mixtures thereof.

4,111,875

COMPOSITION OF HEEL BASE FOR SHOES

Pasquale A. Uva, 248 South St., Holbrook, Mass. 02343

Filed Feb. 20, 1976, Ser. No. 659,683
Int. Cl.² C08K 5/10
U.S. Cl. 260—23 R 11 Claims

1. A heel base having a pair of opposed faces and a plurality of edges,

(a) said heel base being of a composition consisting essentially of the following ingredients:

	% by Total Weight
ethylene vinyl acetate copolymer	8 to 85
ethylene homopolymer	5 to 25
processing lubricant	0 to 2
filler	10 to 60
internal lubricant	1 to 5
dessicant	1 to 25

(b) said ethylene vinyl acetate copolymer and said ethylene homopolymer, based on their own weight, including from 15 to 30% ethylene vinyl acetate copolymer and from 85 to 70% ethylene homopolymer;

(c) said dessicant weighing at least three times the available free moisture of said composition;

(d) one of said pair of opposed faces being adapted for affixation to a portion associated with a shoe upper; and

(e) the other of said pair of opposed faces being mechanically rough and chemically active for enhanced bonding by an adhesive to a heel.

4,111,876

IMPACT MODIFIERS FOR POLYVINYL CHLORIDE

Frederick Eugene Bailey, and Joseph Victor Koleske, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 30, 1976, Ser. No. 671,973
Int. Cl.² C08L 25/12, 27/06, 25/14, 35/06
U.S. Cl. 260—29.6 RB 6 Claims

1. A poly(vinyl chloride) resin composition comprised of an admixture of poly(vinyl chloride) resin and a clear or translucent polymeric material comprised of a non-uniform copolymer of acrylonitrile, styrene, and acrylate, said mixture containing from 3 to 15 percent by weight based on said admixture, of said clear or translucent polymeric material having a weight ratio of an acrylonitrile-styrene hard matrix to an acrylonitrile-styrene-acrylate elastomer segment which is between about 40 to 60 and about 60 to 40, and said nonuniform polymer having been prepared by the process which comprises: introducing at least one primary polymerizable feed composition, selected from the group of monomers consisting of styrene, acrylonitrile, acrylate and a mixture of two or more such monomers, from at least one primary feed source to a polymerization zone, said primary polymerizable feed composition continually varying in compositional content of the polymerizable reactants therein during said continuous introduction; simultaneously adding to said primary feed source at least one different secondary polymerizable feed composition, selected from the group of monomers consisting of styrene, acrylonitrile, acrylate and a mixture of two or more of such monomers, from at least one secondary feed source so as to continually change the compositional content of the polymerizable reactants of said primary polymerizable feed composition in said primary feed source; and continuously polymerizing the primary polymerizable feed composition introduced to the polymerization zone until the desired polymerization has been achieved, said primary polymerizable feed composition being different from said secondary polymerizable feed composition.

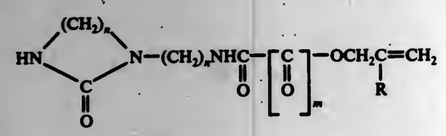
4,111,877

ALLYL ESTERS OF N-ALKYL-OMEGA-(ALKYLENEUREIDO) AMIC ACIDS AND THEIR SYNTHESIS AND USE IN AQUEOUS EMULSION POLYMER SYSTEMS

Dale D. Dixon, Kutztown, and Frederick L. Herman, Allentown, both of Pa., assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Jul. 29, 1976, Ser. No. 709,677
Int. Cl.² C08L 39/04
U.S. Cl. 260—29.6 R 20 Claims

1. Compounds corresponding to the structural formula



wherein *m* is zero or one, *n* is two or three, and R is H or CH_3.

4,111,878

WATER BASED INK COMPOSITION FOR VINYL FLOORING

Truman J. Ruhf, Emmaus, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 5, 1976, Ser. No. 712,086
Int. Cl.² C09D 3/80
U.S. Cl. 260—29.6 ME 6 Claims

1. A water-based printing ink composition comprising:
(a) a blend of acrylic latex selected from the group consisting of polymers and copolymers of acrylic acid, methacrylic acid, methyl methacrylate, methyl acrylate, ethyl acrylate, ethyl methacrylate and vinyl latex selected from the group consisting of polymers and copolymers of vinyl acetate and vinyl chloride, such latex blend containing between about 20% and about 40% acrylic latex based on such blend;
(b) At least about 5 wt % based upon said latex blend of coalescing agent selected from the group consisting of ethylene glycol monobutylether, propylene glycol, glycerine, hexylene glycol, diethylene glycol monoethyl ether, ethylene glycol and ethylene glycol monobutyl ether acetate;
(c) between about 30 and about 80 wt % water based on total ink composition;
(d) between about 1 and about 5 wt % surfactant based on total ink composition; and
(e) between about 10 and about 50 wt % pigment based on solids in the ink composition.

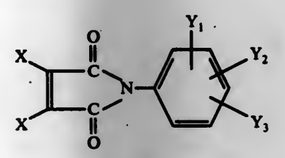
4,111,879

COMPOSITION FOR INHIBITING ADHESION OF SHELLFISH AND ALGAE

Kogoro Mori, Shimizu; Taro Izawa; Yoshifumi Mizuno, both of Shizuoka, and Sadayoshi Matsui, Shimizu, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1976, Ser. No. 736,339
Claims priority, application Japan, Jul. 10, 1976, 51-81476
Int. Cl.² C09D 5/14, 5/16
U.S. Cl. 260—29.6 N 2 Claims

1. A method of inhibiting adhesion of shellfish and algae on a fish net or a ship bottom or an apparatus in water which comprises coating thereon a composition comprising a resin, a medium and from 5-80 wt.% thereof of a N-aryl-maleimide having the formula:



wherein X represents hydrogen or halogen atom; Y_1 represents hydrogen or halogen atom or alkyl, lower alkoxy, nitro, hydroxyl, alkoxycarbonyl, carboxyl, phenyl, phenylamino, alkenyl, thiocyano, sulfone, acetylamino or sulfamoyl group; Y_2 represents hydrogen or halogen atom or alkyl, lower alkoxy, nitro or hydroxyl group and Y_3 represents hydrogen or halogen atom or dialkylamino group.

4,111,880

AQUEOUS ADHESION ASSISTANT DISPERSION FOR PRODUCING COMPOSITE BODIES BY VULCANIZATION

Henning Abendroth, Dusseldorf; Joachim Galinke, Langenfeld, and Norbert Wiemers, Monheim-Baumberg, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 28, 1977, Ser. No. 855,175
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654352
Int. Cl.² C09J 3/12
U.S. Cl. 260—29.6 MP 16 Claims

1. An aqueous adhesion assistant or binder dispersion for use in the production of composite bodies by vulcanizing a vulcanizable rubber composition on a substrate which is stable under vulcanization conditions comprising water and at least one dispersing agent and a solids content of from 20% to 50% by weight of a solids composition of per
(a) 100 parts by weight of an organic oligomeric to polymeric film-former,
(b) from 5 to 100 parts by weight of an aromatic poly-C-nitroso compound,
(c) from 5 to 100 parts by weight of a phosphorus-containing compound selected from the group consisting of an organic phosphonic acid, a compound producing an organic phosphonic acid under vulcanization conditions, a phosphoric acid partial ester, and a compound producing a phosphoric acid partial ester under vulcanization conditions, and
(d) from 0 to 200 parts by weight of customary fillers and pigments having an improving effect on the vulcanized bond.

4,111,881

POLYOXYHYDROCARBYLENE DIHYDROCARBYL ETHERS AS COALESCING AGENTS FOR SYNTHETIC POLYMER LATEXES

George A. Paul, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 1, 1977, Ser. No. 829,688
Int. Cl.² C09D 3/74, 3/80
U.S. Cl. 260—29.6 E 15 Claims

1. An aqueous coating composition comprising a latex of a normally solid thermoplastic organic addition polymer and a coalescing amount of a polyoxyhydrocarbylene dihydrocarbyl ether represented by the formula:

$$R_1—O—R_2O—_nR_1$$

wherein each R_1 is independently a hydrocarbyl group having between about 1 and about 8 carbon atoms, each R_2 is individually an aliphatic hydrocarbylene having between about 2 and about 4 carbon atoms and *n* is a whole number from 1 to about 4.

4,111,882

FLAME RETARDANT PLASTICIZER FORMULATION FOR POLYVINYL CHLORIDE CONTAINING DIMETHYL METHYLPHOSPHONATE FOR HAZE REDUCTION

John H. Deatcher, Lake Peekskill, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 17, 1976, Ser. No. 724,424
Int. Cl.² C08K 5/49; C09K 3/28
U.S. Cl. 260—30.6 R 16 Claims

1. An improved flame retardant, plasticizer formulation comprising a polyvinyl chloride compatible plasticizer and a haloalkyl phosphate flame retardant, said formulation being adapted to be added to polyvinyl chloride polymers, wherein the improvement comprises an effective amount of dimethyl methylphosphonate for reduction of haze when the formulation is added to said polyvinyl chloride polymers.

4,111,883

PLASTICIZED POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., and Phillip Steven Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 16, 1976, Ser. No. 751,459
Int. Cl.² C08K 5/49
U.S. Cl. 260—30.6 R 11 Claims

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a cyclic phosphazene of the following formula:



I.

R and R_1 are independently selected from the group consisting of C_1 to C_{30} alkyl; C_1 to C_{30} alkoxy; aryl of 6 to 14 carbon atoms; substituted aryl wherein the substituents are selected from one or more halogen, C_1 to C_{30} alkyl or C_1 to C_{30} alkoxy; aryloxy of 6 to 14 carbon atoms; substituted aryloxy wherein the substituents are selected from one or more halogen, C_1-C_{30} alkyl, and C_1-C_{30} alkoxy; alkylthio of 1 to 30 carbon atoms; arylthio of 6 to 14 carbon atoms; substituted arylthio wherein the substituents are selected from one or more halogen, C_1 to C_{30} alkyl, and C_1 to C_{30} alkoxy; —NR_2R_3 wherein R_2 and R_3 are independently selected from hydrogen; C_1 to C_{30} alkyl; aryl of 6 to 14 carbon atoms; substituted aryl wherein the substituents are selected from one or more halogen, C_1 to C_{30} alkyl, C_1 to C_{30} alkoxy, with the proviso that at least one of R_2 or R_3 is other than hydrogen; halogen; with the proviso that at least one of R or R_1 is other than halogen.

7. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a linear polymeric phosphazene of the formula:



wherein R and R_1 are independently selected from the group consisting of C_1 to C_{30} alkyl; C_1 to C_{30} alkoxy; aryl of 6 to 14 carbon atoms; substituted aryl wherein the substituents are selected from one or more halogen, C_1 to C_{30} alkyl or C_1 to C_{30} alkoxy; aryloxy of 6 to 14 carbon atoms; substituted aryloxy wherein the substituents are selected from one or more halogen, C_1-C_{30} alkyl, and C_1-C_{30} alkoxy; alkylthio of 1 to 30 carbon atoms; arylthio of 6 to 14 carbon atoms; substituted arylthio wherein the substituents are selected from one or more halogen, C_1 to C_{30} alkyl, and C_1 to C_{30} alkoxy; —NR_2R_3 wherein R_2 and R_3 are independently selected from hydrogen; C_1 to C_{30} alkyl; aryl of 6 to 14 carbon atoms; substituted aryl wherein the substituents are selected from one or more halogen, C_1 to C_{30} alkyl, C_1 to C_{30} alkoxy, with the proviso that at least one of R_2 or R_3 is other than hydrogen; with the proviso that at least one of R_1 is other than halogen; *n* is an integer of from 3 to about 50,000.

4,111,884

ANTICORROSION PRIMER COATING COMPOSITION

Katsuji Takase; Toshimoto Tsuji; Jun-ichi Fukuda, all of Yokohama, and Yasuchika Hiyamori, Kamakura, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Kamakura, Japan

Filed Apr. 6, 1977, Ser. No. 785,216

Claims priority, application Japan, Apr. 19, 1976, 51-45909; Nov. 11, 1976, 51-134634; Feb. 15, 1977, 52-15233; Feb. 16, 1977, 52-15729

Int. Cl.² C08K 3/10, 3/32

U.S. Cl. 260—30.6 R 12 Claims

1. An anticorrosion primer coating composition comprising (1) 100 parts by weight of a polyvinyl butyral resin (2), 20 to 350 parts by weight of a mixture of a borate compound and molybdate or polyphosphate compound wherein the mixing weight ratio is in the range of from 1.9 to 9.1 and (3), 5 to 50 parts by weight of phosphoric acid.

4,111,885

SYNERGISTIC FIRE RETARDANT ADDITIVES FOR PLASTICIZED POLYVINYL CHLORIDE CONSISTING ESSENTIAL OF BORIC ACID AND ZINC OXIDE OR ZINC PHOSPHATE

Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1977, Ser. No. 818,439

Int. Cl.² C08J 3/18; C08K 3/22, 5/09

U.S. Cl. 260—31.8 R 3 Claims

1. A fire retardant plasticized polyvinyl chloride composition comprising polyvinyl chloride resin, an aliphatic dicarboxylic acid ester plasticizer, and a fire retarding additive mixed therewith, said additive consisting essentially of boric acid and a component selected from the group consisting of zinc oxide and zinc phosphate, said boric acid and said component being added in such relative amounts that the fire retarding effect provided to the composition thereby is greater as measured by the limiting oxygen index determined by ASTM D2863 than the sum of the fire retarding effects provided by each component alone to a like composition of said polyvinyl chloride resin and said plasticizer.

4,111,886

PLASTICS COMPOSITIONS WITH HIGHER ALCOHOL ESTERS AS LUBRICANTS AND RELEASE AGENTS

Robert Arthur Lindner, Newburgh, N.Y., and Robert James Limon, Bayonne, N.J., assignors to Henkel Inc., Teaneck, N.J.

Filed Feb. 27, 1978, Ser. No. 881,648

Int. Cl.² C08K 5/11, 5/12

U.S. Cl. 260—31.8 T 16 Claims

1. A plastic composition with an improved external lubricant comprising (a) a polymer selected from the group consisting of phenoplasts and chlorine-containing thermoplastic polymers and (b) a calcium salt of a monoalkyl ester of a dicarboxylic acid where said monoalkyl contains more than 18 but less than 72 carbon atoms and said dicarboxylic acid is selected from the group consisting of succinic acid, glutaric acid, phthalic acid, terephthalic acid and isophthalic acid, where the proportion by weight of said calcium salt to said polymer is from 0.05 to 10.0:100.

4,111,887

REINFORCED POLYOXYMETHYLENE MOLDING COMPOSITION CAPABLE OF FORMING COMPOSITE ARTICLES EXHIBITING IMPROVED PHYSICAL PROPERTIES

Jay R. Shaner, Plainfield, N.J., and Robert Edelman, Staten Island, N.Y., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 751,850, Dec. 17, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,663

Int. Cl.² C08L 71/02

U.S. Cl. 260—37 AL 20 Claims

1. An improved fiber reinforced polyoxymethylene molding composition capable of forming composite articles exhibiting improved physical properties comprising an admixture of (1) a polyoxymethylene polymer, (2) about 2 to 60 percent by weight based on the total weight of the composition of a fibrous reinforcement, and (3) about 0.5 to 5 percent by weight based on the total weight of the composition of a polycarbodiimide which is (a) derived from an aromatic isocyanate which is unsubstituted or substituted with up to one methyl group per aromatic ring and (b) contains at least three carbodiimide units per polycarbodiimide molecule.

4,111,888

PLASTICIZED POLYMERS OF VINYL ACETATE

Frank Lamb, Oldham; Malcolm Combey, Mellor, and Hugh Melvin Cooper, Cheadle, all of England, assignors to Ciba Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 406,175, Oct. 12, 1973, abandoned, and a continuation-in-part of Ser. No. 192,625, Oct. 26, 1971, abandoned. This application Aug. 7, 1975, Ser. No. 602,888

The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.

Int. Cl.² C08K 5/12; C08F 118/08

U.S. Cl. 260—31.6 6 Claims

1. A composition consisting essentially of a vinyl acetate polymer selected from the group consisting of homopolymers of vinyl acetate and copolymers of vinyl acetate with one or more ethylenically unsaturated non-halogenated comonomers wherein the proportion of vinyl acetate in the copolymer is 55–100%, and from 10 to 100% by weight based on the weight of the polymer of a polyester having a molecular weight of 350 to 1500 derived from the reaction of a phthalic acid or anhydride or a mixture thereof with a polyethylene glycol having a molecular weight of 175 to 225, and an aliphatic alcohol containing from 3 to 6 carbon atoms; the phthalic acid or anhydride or mixture thereof being reacted with theoretical amounts of alcohol and glycol needed to effect the reaction with the proviso that the alcohol may be reacted in amounts ranging from 0–50% below the amounts necessary to effect the reaction up to 20 mol% in excess of the amount needed to produce the final product and the glycol may be reacted with the phthalic acid or phthalic acid anhydride or mixture thereof in amounts ranging from 0–10 mol % below the theoretical amount necessary to effect the reaction up to 20 mol % in excess of the theoretical amount.

4,111,889

PLASTICIZED HALOGEN CONTAINING RIGID RESIN COMPOSITION

Akira Kaneko; Ichiroh Ishibashi, and Eisyo Nakano, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1976, Ser. No. 687,766

Claims priority, application Japan, May 20, 1975, 50-59209

Int. Cl.² C08K 5/12, 5/13

U.S. Cl. 260—31.8 M 5 Claims

1. A halogen containing rigid resin composition containing 100 parts by weight of a halogen containing resin, an effective amount of heat stabilizer and 0.1 to 2.0 parts by weight of a

dibasic acid-higher alcohol ester represented by a general formula:

ROOC(X)COOR'

where

X denotes a divalent saturated hydrocarbon group of C_2 to C_8, R denotes a monovalent saturated hydrocarbon group of C_{12} to C_{32} R' denotes a monovalent saturated hydrocarbon group of C_{12} to C_{32}.

4,111,890

CURABLE ORGANOPOLYSILOXANE COMPOSITIONS CONTAINING TITANIUM ESTERS

John C. Getson, and Wendell L. Johnson, both of Adrian, Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

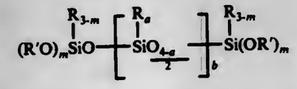
Filed Dec. 19, 1977, Ser. No. 861,769

Int. Cl.² C08L 83/06

U.S. Cl. 260—37 SB 20 Claims

1. An organopolysiloxane composition which is stable under anhydrous conditions but when exposed to atmospheric moisture cures to an elastomeric solid at room temperature comprising

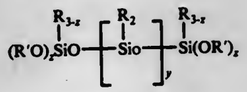
(1) an organopolysiloxane of the formula



(2) an organosilicon compound selected from the group consisting of silanes of the formula

$R''_nSi(OR')_{4-n}$

and siloxanes of the formula



and (3) a titanium compound of the formula

$Ti(OR')_4$

and hydrolyzates thereof in which R is selected from the group consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals, R' is an aliphatic hydrocarbon radical having up to 10 carbon atoms, R'' is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, *a* has an average value of from 1.9 to 2.0, *b* has a value greater than 10, *m* has a value of at least 1, *n* has a value of 0, 1 or 2, *y* has a value of from 0 to 10 and *z* has a value of 1, 2 or 3, with the proviso that the R' radicals in the siloxane, the organosilicon compound and the titanium compound must be identical.

17. The composition of claim 1, which includes a hydrophobic filler.

4,111,891

FRICTION MATERIAL FOR RAILROAD DISC BRAKES

Harold John Reynolds, Jr., Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Nov. 12, 1976, Ser. No. 741,263

Int. Cl.² C08K 3/04, 3/34, 7/12

U.S. Cl. 260—38 16 Claims

1. A friction material useful as a brake shoe for railroad disc brakes which comprises, in parts by weight:

phenolic resin binder: 25–35 parts

carbonaceous component: 2–12 parts

asbestos fiber: 35–50 parts

silicon carbide: 0.4–3 parts

4,111,892

REINFORCED FIRE RETARDANT RESIN COMPOSITION IMPROVED IN ELECTRICAL CHARACTERISTICS

Kazumasa Kamada, and Masafumi Hongo, both of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed May 18, 1977, Ser. No. 797,819

Claims priority, application Japan, May 24, 1976, 51-59792; Sep. 14, 1976, 51-110206

Int. Cl.² C08K 3/20, 3/36, 5/02

U.S. Cl. 260—40 R 10 Claims

1. A reinforced fire retardant resin composition of improved electrical characteristics, which comprises:

a base resin of polytetramethylene terephthalate alone or in admixture with at least one other polymer, a fire retardant combination of a halogen containing compound and an antimony compound, hydrated silica and a reinforcing filler, wherein said halogen containing compound is present in an amount of 3–50 parts by weight per 100 parts by weight of said base resin, said antimony compound is present in an amount such that the weight ratio of the halogen containing compound to the antimony compound ranges from 0.25 to 6 and the content of said hydrated silica ranges from 0.5 – 10 wt. % of the total resin composition.

4,111,893

POLYBUTYLENE TEREPHTHALATE MOLDING RESIN

Robert C. Gasman, W. Milford, and John J. Charles, Bloomingdale, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed May 20, 1977, Ser. No. 798,808

Int. Cl.² C08K 9/06

U.S. Cl. 260—40 R 16 Claims

1. A molding resin composition comprising an intimate blend of polybutylene terephthalate having an intrinsic viscosity between about 0.5 and about 1.5 deciliters per gram with mineral filler, individual particles of said mineral filler being coated with sulfonyl azido alkyl trimethoxy silane.

4,111,894

MULTICOMPONENT HALOGENATED THERMOPLASTIC-BLOCK COPOLYMER-POLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 794,210, May 5, 1977, Pat. No. 4,080,357, which is a continuation-in-part of Ser. No. 693,463, Jun. 7, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 864,406

Int. Cl.² C08L 67/00

U.S. Cl. 260—40 R 18 Claims

1. A composition comprising the admixture obtained by intimately mixing about 4 to about 40 parts by weight of a block copolymer, about 5 to about 48 parts by weight of at least one dissimilar engineering thermoplastic, and a fluorinated thermoplastic polymer in a weight ratio of fluorinated polymer to dissimilar engineering thermoplastic of greater than 1:1, so as to form a polyblend wherein at least two of the polymers have at least partial continuous interlocked networks with each other and wherein:

(a) said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, said block copolymer having an 8 to 55 percent by weight monoalkenyl arene polymer block content, each polymer block A having an average molecular weight of between about 5,000 and about 125,000, and each polymer block B having an average molecular weight of between about 10,000 and about 300,000;

(b) said fluorinated thermoplastic polymer has a generally

crystalline structure and a melting point over about 120° C; and

(c) said dissimilar engineering thermoplastic resin is capable of forming a continuous structure and is selected from the group consisting of polyamides, polyolefins, thermoplastic polyesters, polycarbonates, thermoplastic polyurethanes, and nitrile barrier resins.

4,111,895

MULTICOMPONENT POLYCARBONATE-BLOCK COPOLYMER-POLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 693,463, Jun. 7, 1976, abandoned. This application May 5, 1977, Ser. No. 794,198

Int. Cl.² C08K 7/14; C08L 51/00, 53/00

U.S. Cl. 260—42.18 **19 Claims**

1. A composition comprising the admixture obtained by intimately mixing about 4 to about 40 parts by weight of a block copolymer, about 5 to about 48 parts by weight of at least one dissimilar engineering thermoplastic, and a polycarbonate in a weight ratio of polycarbonate to dissimilar engineering thermoplastic of greater than 1:1, so as to form a polyblend wherein at least two of the polymers have at least partial continuous interlocked networks with each other and wherein:

(a) said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, said block copolymer having an 8 to 55 percent by weight monoalkenyl arene polymer block content, each polymer block A having an average molecular weight of between about 5,000 and about 125,000 and each polymer block B having an average molecular weight of between about 10,000 and about 300,000;

(b) said polycarbonate has a melting point over about 120° C; and

(c) said dissimilar engineering thermoplastic resin is capable of forming a continuous structure and is selected from the group consisting of polyamides, polyolefins, thermoplastic polyesters, poly(aryl ethers), poly(aryl sulfones), acetal resins, thermoplastic polyurethanes, halogenated thermoplastics, and nitrile barrier resins.

4,111,896

MULTICOMPONENT NITRILE RESIN-BLOCK COPOLYMER-POLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 693,463, Jun. 7, 1976, abandoned. This application May 5, 1977, Ser. No. 794,202

Int. Cl.² C08K 7/14; C08L 51/00, 53/00

U.S. Cl. 260—42.18 **14 Claims**

1. A composition comprising the admixture obtained by intimately mixing about 4 to about 40 parts by weight of a block copolymer, about 5 to about 48 parts by weight of at least one dissimilar engineering thermoplastic, and a nitrile barrier resin in a weight ratio of nitrile barrier resin to dissimilar engineering thermoplastic of greater than 1:1, so as to form a polyblend wherein at least two of the polymers have at least partial continuous interlocked networks with each other and wherein:

(a) said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, said block copolymer having an 8 to 55 percent by weight monoalkenyl arene polymer block content, each polymer block A having an average molecular weight of between about 5,000 and about 125,000, and each polymer block B having an average molecular weight of between about 10,000 and about 300,000;

(b) said nitrile barrier resin has an alpha, beta-olefinically unsaturated mononitrile content of greater than 50%, a generally crystalline structure, and a melting point over about 120° C.; and

said dissimilar engineering thermoplastic resin is capable of forming a continuous structure and is selected from the group consisting of poly(aryl ethers), poly(aryl sulfones), polycarbonates and acetat resins.

4,111,897

EPDM COMPOSITION

Arthur Leroy Black, Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 31, 1977, Ser. No. 846,864

Int. Cl.² C08K 3/04, 5/37

U.S. Cl. 260—42.33 **16 Claims**

1. A composition comprising (a) an elastomeric copolymer of ethylene, a higher α-olefin, and a polyene, (b) at least 25 parts by weight of carbon black, and (c) at least 0.1 part by weight of at least one compound selected from the group consisting of pentachlorothiophenol and the metal salts of pentachlorothiophenol wherein (b) and (c) are each based on 100 parts by weight of said copolymer.

4,111,898

PROCESS FOR PRODUCTION OF RESIN COMPOSITIONS WITH EXCELLENT PLATING PROPERTIES

Akio Inayoshi; Toshimichi Ito, both of Sodegaura; Kikuo Nagatoshi, Kisarazu; Toshihide Nara, Sodegaura; Shinsuke Sagata, Sodegaura; Hitomi Tomari, Sodegaura; Noriki Fujimoto, Sodegaura, and Hidehiko Kaji, Sodegaura, all of Japan, assignors to Idemitsu Kosan Company, Ltd., Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,537

Claims priority, application Japan, Oct. 30, 1976, 51-130039; Oct. 30, 1976, 51-130040

Int. Cl.² C08J 3/20; C08F 255/00, 279/02

U.S. Cl. 260—42.53 **5 Claims**

1. A process for producing a resin composition having excellent plating properties which comprises mixing a charge consisting essentially of 100 parts by weight of a polyolefin resin, from 5 to 150 parts by weight of an inorganic filler, from 1 to less than 20 parts by weight of a liquid rubber, from 0.1 to 10 parts by weight of an unsaturated carboxylic acid and from 0.001 to 10 parts by weight of a radical generator with heating at a temperature of from 110° C. to 280° C. in the absence of solvents.

4,111,899

HEAT STABILIZED THERMOPLASTIC RESINS CONTAINING COMPOUNDS WITH PHOSPHORUS TO PHOSPHORUS BONDS

Joseph M. Baggett, Freeport, and George E. Ham, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 20, 1977, Ser. No. 817,326

Int. Cl.² C08K 5/50, 5/52, 5/53

U.S. Cl. 260—45.8 R **10 Claims**

1. A composition which comprises a thermoplastic polymer and a stabilizing amount of a compound having one of the formulas

$$(R_1)(R_2)P(=X)_1-P(=X)_a(R_1)(R_2) \quad \text{I}$$

$$(P-R_1)_a \quad \text{II}$$

$$(R_1)(R_2)P(=X)_a-P(R_3)-P(=X)_a(R_1)(R_2) \quad \text{III}$$

wherein a is independently 0 or 1, n is 3 to 6, X is oxygen or sulfur, R_1, R_2, and R_3 are independently dialkylamino, alkoxy, aryloxy, alkyl, aryl, alkaryl, aralkyl, or R_1 and R_2 taken with the P atom represent a cyclic structure having only carbon, phosphorus and oxygen atoms in the cyclic structure.

4,111,900

BROMINE-CONTAINING PHOSPHINIC ACID ESTERS AND FLAME-RESISTANT PLASTIC MOLDING COMPOSITIONS

Siegfried Noetzel, Kelkheim, Taunus; Horst Jastrow, Niederhöchstadt, Taunus, and Rudolf Uebe, Hofheim, Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

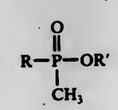
Filed Sep. 17, 1976, Ser. No. 724,252

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1975, 2542009

Int. Cl.² C07F 9/32

U.S. Cl. 260—45.7 P **6 Claims**

1. Bromine-containing phosphinic acid esters of the formula

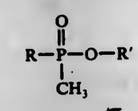


wherein

R represents 1,2-dibromoethyl and

R' represents 2,4,6-tribromophenyl or 2,4,6-trichlorophenyl.

2. A flame-resistant plastic molding composition containing as a flame-proofing agent from 0.3 to 10% by weight, based on the weight of the plastic composition, of a bromine-containing organic phosphinic acid ester of the formula



in which R is selected from linear and branched, bromine-containing aliphatic hydrocarbon radicals of 2 to 12 carbon atoms which may contain a double bond, and bromine-containing cycloaliphatic hydrocarbon radicals of 4 to 10 carbon atoms which may be alkyl-substituted and may contain a double bond, and R' is selected from bromine-substituted, linear and branched alkyl groups of 2 to 12 carbon atoms and halogen-substituted cycloaliphatic and aromatic hydrocarbon radicals of 6 to 12 carbon atoms which may be alkyl-substituted.

4,111,901

HINDERED FIVE-MEMBERED NITROGEN RINGS AS POLYOLEFIN STABILIZERS

Ingenuin Hechenbleikner, West Cornwall, Conn., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 6, 1977, Ser. No. 803,719

Int. Cl.² C08K 5/34

U.S. Cl. 260—45.8 N **11 Claims**

1. A polymer composition stabilized against deterioration due to ultraviolet light and heat comprising a polyolefin and a minor proportion, sufficient to provide such stabilization, of a five-membered nitrogen ring compound having the structure AOCOR, ACOOR or ACONHR' where A is a 2,2,5,5-tetraalkyl pyrrolidine or pyrroline wherein the alkyl groups are lower alkyl, R is alkyl, alkOCOA or alkCOOA where alk is an alkylene residue of a dicarboxylic or dihydroxy compound, and R' is alkyl or alkNHCOA; or a salt thereof.

4,111,902

HEPTABROMODIBENZOFURAN, HIGHLY BROMINATED DIBENZOFURANS AND THE PREPARATION AND USE THEREOF AS FLAME RETARDANTS

Hermann Richtzenhain, Much-Schwellenbach, and Klaus Schrage, Königswinter-Uthweiler, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

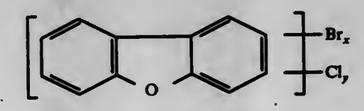
Filed Jul. 29, 1976, Ser. No. 709,692

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1975, 2534381

Int. Cl.² C08K 5/15; C07D 307/79

U.S. Cl. 260—45.8 A **14 Claims**

1. Brominated dibenzofuran of the formula



wherein $x + y = 6.0$ to 7.0 and $y = 0$ to 0.3.

4,111,903

ORGANOTIN COMPOUNDS AND VINYL HALIDE RESIN COMPOSITIONS STABILIZED THEREWITH

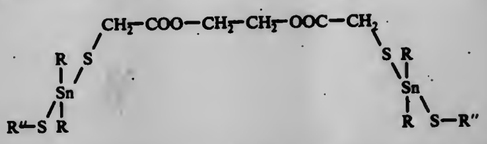
Samuel Hoch, Brooklyn, N.Y., and Emery Szabo, Freehold, N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed May 3, 1976, Ser. No. 682,430

Int. Cl.² C08J 3/20

U.S. Cl. 260—45.75 S **6 Claims**

1. A heat and light stable resinous composition comprising a vinyl halide resin and 0.2 percent to 5 percent by weight, based on the weight of the vinyl halide resin, of an organotin compound having the structural formula



wherein each R represents an alkyl group having 1 to 8 carbon atoms and each R'' represents an alkyl group having 8 to 18 carbon atoms.

4,111,904

STABILIZATION OF POLYPYRROLIDONE

Edmond H. J. P. Bour, Limbricht, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

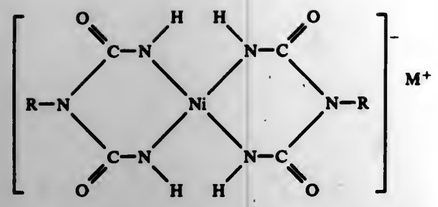
Filed Nov. 30, 1977, Ser. No. 855,979

Claims priority, application Netherlands, Dec. 2, 1976, 7613408

Int. Cl.² C08K 5/21

U.S. Cl. 260—45.75 N **6 Claims**

1. A process for stabilizing polypyrrolidone polymer against thermal degradation which consists essentially blending with said polymer material an amount of between about 50 to about 5000 ppm by weight of a stabilizer compound of the formula



where R represents a hydrogen atom, or an alkyl radical of from 1 to 6 carbon atoms or an aryl radical of from 6 to 10 carbon atoms and wherein M^+ denotes a monovalent alkali metal cation.

4,111,905

FLAME RETARDING AGENTS AND POLYMER COMPOSITIONS CONTAINING SAME

William A. Larkin, Morristown, and Irving Touval, Edison, both of N.J., assignors to M&T Chemicals Inc., Stamford, Conn.

Filed Jan. 28, 1977, Ser. No. 763,350
Int. Cl.² C08K *3/10*
U.S. Cl. 260—45.75 B **20 Claims**

1. A flame retardant halogen-containing polymer composition comprising (1) a polymer selected from the group consisting of (a) polymers wherein at least a portion of the repeating units are derived from a halogen-containing monomer selected from the group consisting of ethylenically unsaturated compounds, (b) halogen-containing polyesters derived from the reaction of at least one dicarboxylic acid containing from 4 to 20 carbon atoms with at least one diol containing from 2 to 20 carbon atoms, (c) non-halogen-containing polymers wherein the repeating units are derived from at least one ethylenically unsaturated compound and (d) non-halogen-containing condensation polymers selected from the group consisting of polyesters, polyamides, polycarbonates, epoxide polymers and non-cellular polyurethanes, wherein any non-halogen-containing polymer is present in combination with an organic halogen-containing compound, the halogen content of any polymer composition is from 7 to 40% chlorine or 3 to 20% bromine, based on the weight of said polymer and said halogen is chlorine or bromine, (2) from 0.3 to 50%, based on the weight of said polymer, of zinc sulfide, and (3) a basic compound selected from the group consisting of magnesium hydroxide, calcium hydroxide, barium sulfate and hydrated alumina.

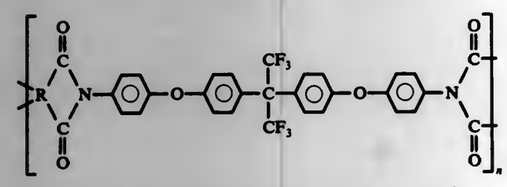
4,111,906

POLYIMIDES PREPARED FROM PERFLUOROISOPROPYLIDENE DIAMINE

Robert J. Jones, Hermosa Beach; Michael K. O'Rell, Manhattan Beach, and Jim M. Hom, Sepulveda, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jul. 19, 1976, Ser. No. 706,880
Int. Cl.² C08G *73/10*
U.S. Cl. 528—229 **3 Claims**

1. A polyimide consisting essentially of recurring units:



where *n* is an integer sufficient to provide a structure having an average molecular weight of at least 5000 wherein R is an organic radical of 5 to 22 atoms selected from the group consisting of tetravalent aliphatic radicals and tetravalent aromatic radicals.

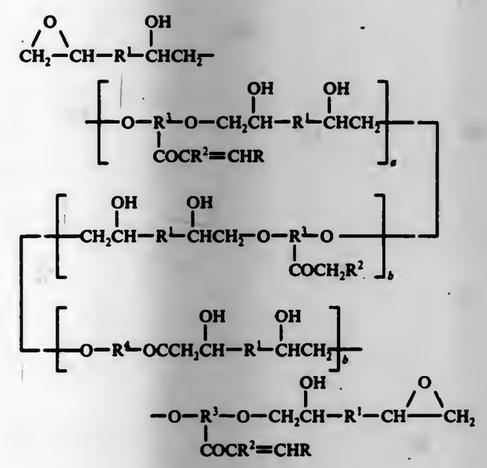
4,111,907

PHOTOPOLYMERIZABLE KETONES

George Edward Green, Cherry Hinton; Bernard Peter Stark, Stapleford, and John Sidney Waterhouse, Cherry Hinton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,636
Claims priority, application United Kingdom, Nov. 4, 1975, 45735/75
Int. Cl.² C08G *59/06, 59/14*
U.S. Cl. 260—830 R **19 Claims**

1. An unsaturated ketone of the formula



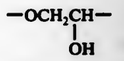
where

R represents a monovalent alkenyl, aralkenyl, cycloalkenyl, cycloalkylalkenyl, cycloalkenylalkenyl, heterocyclic or heterocyclic-alkenyl group of up to 20 carbon atoms having ethylenic unsaturation or heterocyclic aromaticity in conjugation with the indicated ethylenic double bond,

R^1 represents a carbon-carbon bond or a divalent, optionally substituted or interrupted, hydrocarbyl residue,

R^2 represents a hydrogen, chlorine, or bromine atom, a cyano group, or an aliphatic, aromatic, cycloaliphatic, araliphatic, cycloaliphatic-aliphatic, heterocyclic or heterocyclic-aliphatic group of 1 to 10 carbon atoms,

R^3 represents a trivalent aromatic or heterocyclic group bound directly through three carbon atoms thereof to the two indicated



and the indicated —$COCR^2$═CHR groups,

R^4 represents the residue, free of any substituent of formula —$COCH_2R^2$ or —$COCR^2$═CHR, of a dihydric phenol after removal of both phenolic hydroxyl groups, and

a, *b*, and *c* each represent zero or an integer such that the average molecular weight of the unsaturated ketone of formula I is from 500 to 50,000.

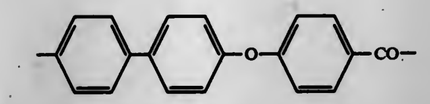
4,111,908

POLYKETONES AND METHODS THEREFOR

Klaus J. Dahl, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 366,326, Jun. 4, 1973, Pat. No. 3,914,218, which is a division of Ser. No. 218,446, Feb. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 115,824, Feb. 16, 1971, abandoned. This application Jul. 21, 1975, Ser. No. 597,496
Int. Cl.² C08G *67/00*
U.S. Cl. 528—361 **25 Claims**

1. A homopolymer whose repeating units are of structure



and whose mean inherent viscosity is within the range from about 0.5 to about 1.7 determined from a solution of 0.1 g polymer in 100 ml. concentrated sulfuric acid at 25° C.

4,111,909

CONTROLLED REACTIVITY EPOXY RESIN COMPOSITIONS

James Brandon Simons, Louisville, Ky., assignor to Celanese Polymer Specialties Company, Louisville, Ky.

Filed Apr. 11, 1977, Ser. No. 786,178
Int. Cl.² C08G *59/56*
U.S. Cl. 528—123 **11 Claims**

1. In a heat curable composition comprising a glycidyl polyether of a polyhydric phenol or polyhydric alcohol, dicyandiamide and a tertiary amine, the improvement which comprises the addition of a phosphorus compound in the amount of about 0.1 to about 2 weight percent based on the weight of the glycidyl polyether, wherein the phosphorus compound is represented by the formulas

R_3PO_4 and R_3PO_3

wherein each R, separately or combined, is hydrogen, or an alkyl, aryl, or haloalkyl radical, and wherein the alkyl group contains 1 to 20 carbon atoms, and the aryl group contains 6 to 18 carbon atoms.

4,111,910

POLYCARBONATES HAVING CARBAMATE TERMINAL GROUPS

Joseph M. Baggett, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 704,203, Jul. 12, 1976, abandoned. This application Nov. 2, 1977, Ser. No. 847,889
Int. Cl.² C08G *63/62*
U.S. Cl. 528196 **7 Claims**

1. A high molecular weight aromatic polycarbonate having carbamate terminal groups of the formula —O—C(O)—N(R)(R') wherein R and R' are independently selected from hydrogen, cycloalkyl, alkyl, and aralkyl groups of 1–18 carbons, and wherein the weight average molecular weight range is from about 10,000 to about 60,000.

4,111,911

METHOD OF HARDENING LIQUID RESOLS

Franz Weissenfels, Siegburg, and Hans Jünger, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of Ser. No. 386,675, Aug. 8, 1973, abandoned, which is a continuation of Ser. No. 201,244, Nov. 22, 1971, abandoned, which is a division of Ser. No. 830,865, Jun. 5, 1969, abandoned. This application Sep. 25, 1975, Ser. No. 616,539
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1968, 1769535
Int. Cl.² C08G *8/10*; C08K *3/04, 3/24, 3/30, 3/36, 3/38*
U.S. Cl. 260—38 **8 Claims**

1. In a process for producing a molded article from a liquid resol wherein into a mold there is introduced a liquid-form resol consisting essentially of the product formed by condensing 1 mol of a phenol with 1–3 mols of an aldehyde in an alkaline medium followed by water removal until the resin has a solid content between 60 and 80% and the mixture contains a hardener and in said mold the mixture is hardened to form a molded article, the improvement which comprises introducing said hardener into the liquid-form resol as a hardener mixture consisting essentially of said hardener and a diluent, said diluent being selected from the group consisting of silica, activated charcoal, bentonite, boric acid and boron trioxide, the hardener being a solid aromatic sulfonic acid selected from the group consisting of p-toluene sulfonic acid, a non-dyeing solid phenol sulfonic acid, o, m or p cresol sulfonic acid, chloro benzene 3,5-disulfonic acid, bromo benzene-4-sulfonic acid, aniline 2,5-disulfonic acid, naphthalene sulfonic acid and naphthylamine sulfonic acid and the diluent having a particle size between 10 and 50 millimicrons, the combined amount of sulfonic acid hardener and diluent which is added to the resol resin being such that the acid hardener is present in an amount of 2 to 20% by weight based upon the weight of said resol.

4,111,912

PROCESS FOR THE MANUFACTURE OF COARSE-GRANULAR OXYMETHYLENE POLYMERS

Günter Sextro; Karlheinz Burg, both of Wiesbaden; Helmut Schlaf, Kelkheim; Hans-Dieter Sabel, Schwalbach, Taunus, and Alwin Heller, Erzhausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 4, 1977, Ser. No. 793,859
Claims priority, application Fed. Rep. of Germany, May 6, 1976, 2620017
Int. Cl.² C08G *2/28*
U.S. Cl. 528—45 **4 Claims**

1. A process for making a granular oxymethylene polymer (POM) containing, in addition to oxymethylene units, from 0.1 to 20 per cent by weight of oxyalkylene units having from 2 to 8 adjacent carbon atoms in the main chain thereof, comprising the steps of cooling a solution or fine dispersion of the POM in a methanol/water mixture, the temperature of which is 5° to 65° C above the sintering temperature of the POM (T_s), in a first stage to a temperature of 0° C. to 10° C above T_s and then cooling the mixture in a second stage to a temperature of 1° C to 10° C. below T_s to form a suspension of POM particles having particle diameters both above and below 100 microns, recovering from said suspension and isolating from smaller particles, the solid POM-particles having a particle diameter exceeding 100 μm and drying them.

4,111,913

POLYURETHANE ELASTIC MOLDING MATERIAL

Gunter Schuhmacher, Weinheim an der Bergstr., and Horst Muhlfeld, Wahlen, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Bergstrasse, Fed. Rep. of Germany

Filed Jun. 26, 1975, Ser. No. 590,649

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1974, 2432090

Int. Cl.² C08G *18/28*

U.S. Cl. 528—273 11 Claims

1. A cured polyurethane composition comprising a polyol having a molecular weight in excess of about 500, a diisocyanate and a chain lengthener, the diisocyanate being present in about 0.4 to 1.4 times the weight of the polyol and in about 3.5 to 12.5 times the molar amount of the polyol, the chain lengthener having active hydrogen atoms and being present in about 3 to 12 times the molar amount of the polyol, the chain lengthener having a molecular weight of up to about 300, more than about 50 mole % of each of the polyol and diisocyanate units and less than about 50 mole % of the chain lengthener units comprising linear aliphatic C_6 units.

4,111,914

INITIATORS FOR ISOCYANATE REACTIONS

Jiri Kresta, Detroit, Mich., and Chen S. Shen, Strongsville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 14, 1976, Ser. No. 695,897

Int. Cl.² C08G *18/02, 18/06, 18/16*

U.S. Cl. 528—48 21 Claims

1. A process for reacting an organic isocyanate with itself or another organic isocyanate which comprises contacting the reactants with an ar-sulfonium areneoxide present in an amount and under conditions sufficient to initiate the reaction of said reactants.

4,111,915

LITHIUM ALKENOXIDES IN PREPARATION OF FUNCTIONAL LIQUID CONJUGATED DIENE POLYMERS

Charles M. Selman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 625,744, Oct. 24, 1975, abandoned. This application Feb. 1, 1977, Ser. No. 764,630

Int. Cl.² C08F *8/08, 8/42, 4/08*

U.S. Cl. 528—58 76 Claims

1. A process which comprises the steps of:

(a) copolymerizing (A) at least one polymerizable hydrocarbon conjugated diene, or at least one polymerizable hydrocarbon conjugated diene with at least one polymerizable hydrocarbon monovinyl-substituted aromatic compound monomer, with (B) at least one polymerizable lithium alkenoxide comonomer, under solution polymerization conditions including polymerization temperatures and pressures employing a hydrocarbon lithium initiator, wherein said lithium alkenoxide comonomer is employed in the range of about 0.1 to 6 parts by weight per 100 parts by weight of total monomers, and wherein said hydrocarbon lithium initiator is employed in a range of about 20 to 150 milliequivalents of lithium per 100 parts by weight of total monomers, thereby preparing a normally liquid copolymer,

(b) treating said normally liquid copolymer from said step (a) with an effective amount of an alkylene oxide,

(c) treating said liquid alkylene oxide treated copolymer with an effective amount of one or more of water, acid, or lower alcohol, thereby preparing a hydroxy functional liquid copolmer,

(d) partially curing said hydroxy functional liquid polymer with a polyisocyanate/polyol curing system, and

(e) molding said polyisocyanate/polyol cured polymer at effective temperatures and pressures, thereby producing a molded product.

4,111,916

PRINTING INK RESINS

Douglas S. DeBlasi, Clifton, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed May 4, 1977, Ser. No. 793,747

Int. Cl.² C08G *18/62*

U.S. Cl. 528—75 4 Claims

1. A printing ink resin prepared by (1) reacting a polyol having a functionality of at least 3 with acrylonitrile or an alkyl acrylate at a temperature of about 25° to 75° C., (2) acidifying the adduct product of step (1), and (3) reacting the remaining hydroxyl groups of the adduct with a polyisocyanate and at least one monofunctional reactive hydrogen-containing compound, glycol, or mixture thereof at a temperature of about 60° to 120° C. to form a polymer.

4,111,917

USE OF LATENT AMINES TO CURE EPOXY RESINS

Donald Wayne Larsen, Marriottsville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 11, 1976, Ser. No. 685,481

Int. Cl.² C08G *18/58*

U.S. Cl. 528—45 10 Claims

1. A process of curing a polyepoxide resin which comprises forming, at a temperature of from 25 to 90 degress C, an epoxy resin containing latent amine groups therein which is the reaction product of

(a) a member of the group consisting of tertiary alcohols and secondary alcohols with substituents in the alpha or beta position that activate dehydration; said member being a tertiary or secondary alcohol containing epoxy resin having the general formula:

$$(HO)_m—B—(CH—CH_2)_n$$
$$\qquad\qquad\quad \backslash\,/$$
$$\qquad\qquad\quad O$$

wherein B is an organic polyvalent moiety, n is at least about 2 and m is 0.5 or greater; and

(b) an amount at least sufficient to produce substantially stoichiometric equivalents of latent amine to epoxy groups of an isocyanate of the formula:

$$R\text{-}(NCO)_n$$

wherein R is a mono- or polyvalent organic moiety and *n* is an integer of from 1 to 3; and

thereafter, heating the formed latent amine-containing epoxy resin to a temperature of from 100° to 200° C.

4,111,918

POLYPARABANIC ACID DERIVATIVES

Henning Giesecke, Cologne, Jürgen Hocker, Bergisch-Gladbach, and Rudolf Merten, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

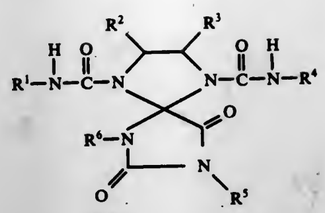
Filed Jun. 8, 1977, Ser. No. 804,608

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625721

Int. Cl.² C08G *18/00*

U.S. Cl. 528—73 7 Claims

1. Polyparabanic acid derivatives which contain the following repeating structural unit from 2 to 100 times:



(I)

wherein

R^1, R^4, R^5 and R^6, which may be the same or different, each represents an optionally substituted aliphatic, aromatic or aliphatic-aromatic mono- or poly-functional radical; and

R^2 and R^3, which may be the same or different, each represents a hydrogen atom or an optionally substituted aliphatic, aromatic or aliphatic-aromatic radical, or may together form a ring.

4,111,919

THERMOSETTING COMPOSITION FROM A BIS-MALEIMIDE AND N-VINYL PYRROLIDONE

Max Gruffaz, La Mulatiere, and Jean-Louis Locatelli, Vienne, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 31, 1976, Ser. No. 719,282

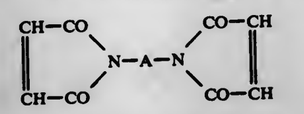
Claims priority, application France, Sep. 19, 1975 7529460

Int. Cl.² C08G *69/26*

U.S. Cl. 526—264 2 Claims

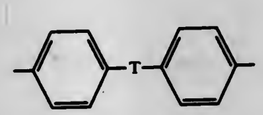
1. A thermosetting composition, characterized in that it consists essentially of, by weight,

from 60 to 90% of a bis-maleimide of the formula:



(I)

in which A represents a divalent radical chosen from the group consisting of phenylene radicals and radicals of the formula:



where T represents $—CH_2—$, $—C(CH_3)_2—$, —O— or $—SO_2—$; and

from 10 to 40% of N-vinylpyrrolid-2-one.

4,111,920

POLYETHER URETHANES AS ANTISTATIC ADDITIVES IN POLYAMIDE COMPOSITIONS

Hans Egon Künzel, Dormagen, and Francis Bentz, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

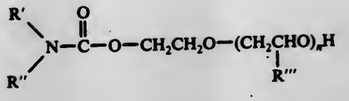
Filed Apr. 27, 1976, Ser. No. 680,668

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519259; Apr. 30, 1975, 2519260

Int. Cl.² C08L *77/00, 77/02, 77/04*

U.S. Cl. 526—6 5 Claims

1. Antistatic composition consisting essentially of an aliphatic polycarbonamide and, as an antistatic additive, from 0.5 to 15% by weight of the whole composition of a polyalkylene glycol ether with secondary urethane groups corresponding to the general formula:



in which

R′ and R″ independently of one another represent a member selected from the group consisting of a straight chain, cyclic or branched, saturated or unsaturated aliphatic hydrocarbon radical, an aralkyl radical and an alkyl-substituted aromatic radical, at least one of the two radicals R′ and R″ is an alkyl radical with from 10 to 30 carbon atoms,

R‴ represents a member selected from the group consisting of hydrogen atom, an alkyl group with from 1 to 5 carbon atoms, a cycloalkyl, an arylalkyl and an aralkyl group, and

n is a number of 3 to 45.

4,111,921

TRANSPARENT POLYAMIDES

Gerhard Bier, Troisdorf; Franz Blaschke, Witten, Ruhr; Helmut aus der Fünten, Niederkassel-Mondorf, and Gerhard Schade, Witten-Bommern, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 21, 1976, Ser. No. 725,304

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2542938

Int. Cl.² C08G *69/26*

U.S. Cl. 528—338 9 Claims

1. A film forming polyamide composition consisting essentially of the polymeric condensation product of (1) terephthalic acid, (2) 2-methylpentamethylenediamine and at least one of (3) 2-ethyltetramethylenediamine or (4) isophthalic acid or (5) a mixture of 2-ethyltetramethylenediamine and isophthalic acid, the concentration of said (3) 2-ethyltetramethylenediamine or (4) isophthalic acid or (5) mixture totalling 15 to 30 mole percent, with respect to the sum of all diamine or dicarboxylic acid.

4,111,922

HYDROPHILIC RANDOM INTERPOLYMER FROM QUATERNARY AMMONIUM MONOMERS AND METHOD FOR MAKING SAME

Charles H. Beede, East Brunswick, N.J.; Harold L. Waldman, Sunbury, Pa., and Theodore Blumig, East Brunswick, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 509,207, Sep. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 270,118, Jul. 10, 1972, abandoned. This application Apr. 7, 1976, Ser. No. 674,471

Int. Cl.² C08F *220/34, 220/35*

U.S. Cl. 526—292 16 Claims

1. In a random interpolymer derived from the polymerization of a mixture of monomers comprising: (A) (1) from about 10 to about 90% by weight of said mixture of a first monomer which is an ester of an α,β-olefinically unsaturated carboxylic acid and a monohydric or polyhydric alcohol having a terminal quaternary ammonium group and (2), correspondingly, from about 90 to about 10% by weight of said mixture of at least one α,β-olefinically unsaturated comonomer capable of being dispersed in aqueous media, in the presence of (B) at least 0.02% by weight, based on the weight of said mixture, of a cross-linking agent comprising a difunctional monomer which is capable of being dispersed or dissolved in aqueous media and is an ester or amide of an α,β-olefinically unsaturated carboxylic acid; the improvement wherein said comonomer (2) comprises (a) at least 10% by weight of said mixture of monomers of an acid comonomer, or (b) at least 20% by weight of said mixture of monomers of an amide comonomer, or (c) at least 10% by weight of said mixture of monomers of a combination of acid and amide comonomers, said combination containing at

least 5% by weight of said mixture of an acid monomer, said interpolymer having been prepared by free-radical polymerization in an aqueous medium whereby said interpolymer has a water adsorbing capacity of at least about 10 times its own weight after having been dried at a temperature of about 100° C. for about 3 hours.

4,111,923

OCTAPEPTIDES AND METHODS FOR THEIR PRODUCTION

Eugene Leroy Wittle; Mildred Catherine Rebstock; Ernest D. Nicolaides, and Alfred Campbell, all of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 626,909, Oct. 29, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,468
Int. Cl.[2] C07C *103/52;* A61K *37/02*
U.S. Cl. 260—112.5 R 22 Claims

1. A compound having the name N$^{\alpha}$-benzyloxycarbonyl-L-glutaminyl-L-tryptophyl-L-seryl-L-tyrosyl-D-alanyl-L-leucyl-L-arginyl-L-proline N-ethylamide and salts thereof.

4,111,924

METHOD FOR REMOVAL OF THIOL-PROTECTING GROUPS

Masahiko Fujino, Takarazuka; Osamu Nishimura, Toyonaka, and Chieko Kitada, Sakai, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 13, 1977, Ser. No. 805,900
Claims priority, application Japan, Jun. 28, 1976, 51-76676
Int. Cl.[2] C07C *103/52;* C07G *7/00*
U.S. Cl. 260—112.5 R 3 Claims

1. A method for removing the S-protecting group from an amino acid or peptide having a thiol group protected with a p-mertoxybenzyl, 1-adamantyl or t-butyl group, comprising reacting the protected amino acid or peptide with the mercuric salt of acetic acid in a member selected from the group consisting of trifluoroacetic acid and the mercuric salt of trichloro- or trifluoroacetic acid in acetic acid to thereby substitute the protective group with mercury and remove the mercury from the amino acid or peptide.

4,111,925

HYDROLYSIS OF ESTERS OF α-L-ASPARTYL-L-PHENYLALANINE

Gerald L. Bachman, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 14, 1977, Ser. No. 842,421
Int. Cl.[2] C07C *103/52*
U.S. Cl. 260—112.5 R 13 Claims

1. A process which comprises contacting, at a reaction pH greater than 7, an alkyl ester of α-L-aspartyl-L-phenylalanine with an aqueous solution containing barium ions to form α-L-aspartyl-L-phenylalanine.

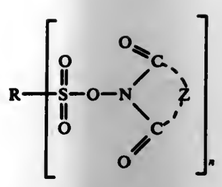
4,111,926

HARDENING AGENT FOR GELATIN AND METHOD FOR HARDENING GELATIN

Hidefumi Sera; Hisashi Shiraishi, and Tsumoru Ishii, Minami-ashigara, Japan, assignors to Fuji Photo Co., Ltd., Kanagawa, Japan

Filed Feb. 1, 1977, Ser. No. 764,506
Claims priority, application Japan, Feb. 2, 1976, 51-10542
Int. Cl.[2] C09H *7/00*
U.S. Cl. 260—117 13 Claims

1. A method of hardening gelatin which comprises treating gelatin with a compound represented by the formula (I):



(I)

wherein R represents an *n*-valent organic group; Z represents an atomic group necessary to complete a 5- or 6-membered ring; and *n* represents 1, 2 or 3.

4,111,927

EXTRACTION OF PROTEIN FROM *PHASEOLUS AUREUS, PHASEOLUS VULGARIS* AND *PHASEOLUS LUNATUS* BEANS USING SODIUM CHLORIDE

Lowell D. Satterlee, Lincoln, Nebr., assignor to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 593,460, Jul. 7, 1975, abandoned. This application May 12, 1977, Ser. No. 796,182
Int. Cl.[2] A23J *1/14*
U.S. Cl. 260—123.5 9 Claims

1. A method for producing a non-toxic, edible plant protein which comprises the steps of finely dividing one or more varieties of natural dried beans selected from the group consisting of *Phaseolus vulgaris, Phaseolus aureus* and *Phaseolus lunatus,* mixing the finely divided bean particles with an aqueous sodium chloride solution of concentration of not over about 0.6% w/v sodium chloride which extracts protein from the bean particles and separating the extracted protein from said mixture including the step of precipitating the protein with acid.

4,111,928

METHOD OF SEPARATING LIGNIN AND MAKING EPOXIDE-LIGNIN

Dale B. Holsopple, 23381 Aurora Rd., Bedford Heights; Wasyl W. Kurple, 110 W. Grace, Bedford, both of Ohio 44146; William M. Kurple, 8429 N. 27th Ave., Phoenix, Ariz. 85021, and Kenneth R. Kurple, 60691 New Haven Rd., New Haven, Mich. 48048

Continuation-in-part of Ser. No. 608,640, Aug. 28, 1975, abandoned, which is a division of Ser. No. 453,672, Mar. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 354,356, Apr. 25, 1973, abandoned. This application Nov. 18, 1976, Ser. No. 742,773
Int. Cl.[2] C07G *1/00*
U.S. Cl. 260—124 R 19 Claims

1. The method of separating lignin from aqueous waste black liquor, comprising the steps of contacting the waste black liquor with an organic chemical solvent in which the lignin is at least partially soluble and adding acid to the mixture to lower the pH to thereby separate a layer which layer contains lignin in said organic chemical solvent separate from an aqueous layer.

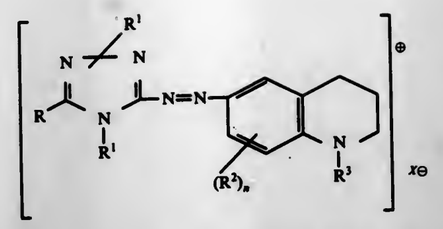
4,111,929

TETRAHYDROQUINOLINE AZO TRIAZOLE DYESTUFFS

David Melville Fawkes, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 6, 1976, Ser. No. 702,733
Claims priority, application United Kingdom, Jul. 11, 1975, 29226/75
Int. Cl.[2] C09B *29/36;* D06P *1/08, 1/10, 3/76*
U.S. Cl. 260—146 R 3 Claims

1. An azo dyestuff of the formula:



wherein R is hydrogen, methyl or phenyl, R^1 is methyl, ethyl or benzyl, R^2 is methyl, ethyl, methoxy or chloro, *n* is 0 or 1 and when *n* is 1, R^2 is in the 7- position of the tetrahydroquinoline ring and R^3 is straight chain butyl, pentyl or hexyl and X is an anion.

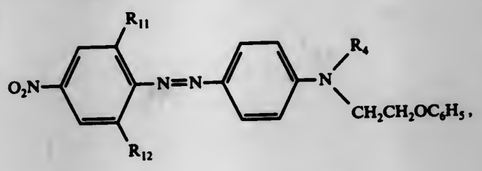
4,111,930

MONOAZO DYES HAVING AN ARYLOXYALKYL GROUP ON THE NITROGEN ATOM IN THE PARA POSITION OF A 1,4-PHENYLENE COUPLING COMPONENT RADICAL

Jacques Meybeck, Boulogne, France, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 286,437, Sep. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 49,580, Jun. 24, 1970, abandoned. This application Mar. 22, 1976, Ser. No. 669,165
Claims priority, application Switzerland, Jul. 17, 1969, 10935/69
Int. Cl.[2] C09B *29/00, 29/08, 29/26;* D06P *1/18*
U.S. Cl. 260—207.5 10 Claims

1. A compound of the formula



wherein
R_4 is hydrogen, methyl, ethyl or cyclohexyl,
R_{11} is hydrogen, chloro or bromo, and
R_{12} is hydrogen or chloro.

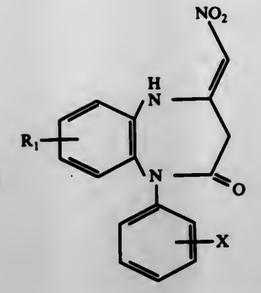
4,111,931

1,2,3,5-TETRAHYDRO-4H-1,5-BENZODIAZEPINE-4-ONES

Armin Walser, West Caldwell, and Rodney Ian Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 775,347, Mar. 7, 1977, Pat. No. 4,080,323. This application Feb. 1, 1978, Ser. No. 874,074
Int. Cl.[2] C07D *243/12*
U.S. Cl. 260—239.3 B 5 Claims

1. A compound of the formula



wherein X is hydrogen or halogen and R_1 is hydrogen, halogen or trifluoromethyl.

4,111,932

AMINO ACID DERIVATIVES OF 6-(2-AMINO-2-ARYLACETAMIDO)PENICILLANIC ACIDS

Yoshiharu Morita; Kenzo Omata, both of Yokohama; Junichi Ohya, Zama; Kazuo Wagatsuma, Yokohama, and Tadashi Shirasaka, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Aug. 12, 1976, Ser. No. 713,808
Claims priority, application Japan, Sep. 8, 1975, 50-108708; Sep. 8, 1975, 50-108709; Feb. 6, 1976, 51-12119; Feb. 6, 1976, 51-12121; Feb. 14, 1976, 51-15335; Feb. 16, 1976, 51-15563
Int. Cl.[2] C07D *499/68*
U.S. Cl. 260—239.1 1 Claim

1. 6-[D-2-prolyamino-2-(4-hydroxyphenyl)acetamido]-penicillanic acid and non-toxic pharmaceutically acceptable salts thereof.

4,111,933

PROTECTION OF FUNCTIONAL GROUPS DURING REACTION AND THEIR SUBSEQUENT RESTORATION

Heiner Eckert; Ivar Ugi, both of Munich, and Hans-Joachim Kabbe, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 28, 1977, Ser. No. 792,080
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619247
Int. Cl.[2] C07D *499/04*
U.S. Cl. 260—239.1 20 Claims

1. In the process for preparing an organic compound of the formula

A′ — X

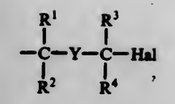
in which
X is an amino group, a hydroxyl group or a carboxyl group, and
A′ is the remainder of the molecule, from an organic compound of the formula

A — X

in which
A is the remainder of the molecule which can undergo reaction to form A′, by converting A — X into a compound of the formula

A — Z — COOR

in which
Z is —NH—, —O— or a direct C—C bond, and
R is a radical of the formula



in which

Y is a direct C-C single bond, the —CH=CH— group or an arylene group,

R^1 to R^4 each independently is hydrogen, halogen or an alkyl, aryl, aralkyl, alkoxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl or cycloalkylaminocarbonyl radical, or

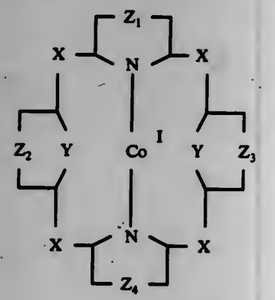
$R^1 + R^2$ and $R^3 + R^4$ each independently completes a 5- or 6-membered carbocyclic ring, or R^1 and R^3 conjointly with the grouping —C—Y—C— forms a carbocyclic ring with 5 or 6 carbon atoms, and

Hal is halogen,

thereby to protect X, then converting A — Z — COOR into a compound of the formula

A' — Z — COOR

and then treating the compound A' —Z — COOR to restore the group X, the improvement which comprises effecting the treatment of the compound A' — Z — COOR with an alkali metal compound of a complex of monovalent cobalt in which the complex of monovalent cobalt has the formula



in which Y is nitrogen, oxygen or sulfur, Z_1, Z_2, Z_3 and Z_4 each independently is the grouping CH—CH, N—N, or CH—N, and together with Y or N forms a five-membered ring which is optionally substituted and optionally fused to an optionally substituted and optionally fused to an optionally substituted benzene nucleus, and X is a nitrogen atom or the grouping $—CH_2$, wherein R_8 denotes hydrogen, alkyl or aryl.

4,111,934

1,5-BENZODIAZEPIN-4-ONES

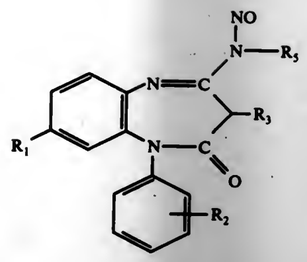
Rodney Ian Fryer, North Caldwell; Leo Henryk Sternbach, Upper Montclair, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 371,442, Jun. 19, 1973, abandoned. This application Dec. 15, 1977, Ser. No. 861,084

Int. Cl.² C07D *243/12, 487/04*

U.S. Cl. 260—239.3 B **1 Claim**

1. A compound of the formula



wherein R_1 is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl, nitro and amino; R_2 signifies hydrogen, halogen, or lower alkoxy; R_3 signifies hydrogen or lower alkyl and R_5 signifies lower alkyl.

4,111,935

3-CHLORO-6-PHENYLPYRIDAZINE COMPOUNDS

William John Coates, Welwyn Garden City; Anthony Maitland Roe, Hatfield; Robert Antony Slater, Letchworth, and Edwin Michael Taylor, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

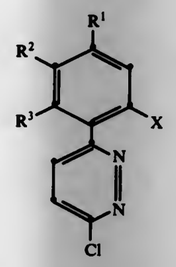
Continuation-in-part of Ser. No. 583,379, Jun. 3, 1975, Pat. No. 4,053,601. This application Jul. 19, 1977, Ser. No. 816,993

Claims priority, application United Kingdom, Jan. 2, 1975, 20/75

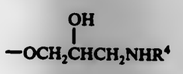
Int. Cl.² C07D *237/12*

U.S. Cl. 544—224 **11 Claims**

1. A compound of the formula:



wherein two of the groups R^1, R^2 and R^3 are hydrogen and the third group is hydrogen, fluoro, chloro, bromo, hydroxy, lower alkoxy, lower alkenyloxy or lower alkoxycarbonyl; and X is



where R^4 is isopropyl, tertiary butyl or 2-phenylethyl, or when R^1, R^2 and R^3 are other than hydroxy, X may also be hydroxy.

4,111,936

PYRIDAZINETHIONES

William John Coates, Welwyn Garden City; Anthony Maitland Roe, Hatfield; Robert Antony Slater, Letchworth, and Edwin Michael Taylor, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

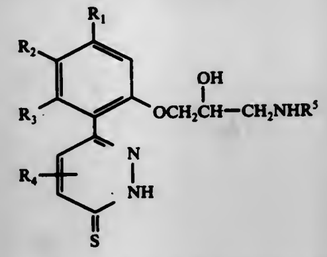
Continuation-in-part of Ser. No. 583,379, Jun. 3, 1975, Pat. No. 4,053,601. This application Jul. 19, 1977, Ser. No. 816,986

Claims priority, application United Kingdom, Jun. 18, 1974, 26864/74; Jan. 2, 1975, 20/75

Int. Cl.² C07D *237/18;* A01N *31/50*

U.S. Cl. 544—239 **13 Claims**

1. A compound of the formula:



wherein two of the groups R_1, R_2 and R_3 are hydrogen and the third group is hydrogen, lower alkyl, fluoro, chloro, bromo, trifluoromethyl, hydroxy, lower alkoxy, lower alkenyloxy, lower alkoxycarbonyl, cyano, —$CONH_2$, —CH_2CONH_2, nitro, amino, lower alkanoylamino, lower alkylamino or di(lower alkyl)amino; R_4 is hydrogen or methyl; and R^5 is isopropyl, tertiary butyl or 2-phenylethyl.

4,111,937

IODINATED ANILIC ACIDS

James H. Ackerman, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

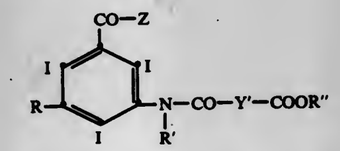
Division of Ser. No. 478,052, Jun. 10, 1974, Pat. No. 4,031,088, which is a division of Ser. No. 323,710, Jan. 15, 1973, abandoned, which is a division of Ser. No. 109,631, Jan. 25, 1971, Pat. No. 3,770,820, which is a division of Ser. No. 25,262, Apr. 2, 1970, Pat. No. 3,666,760, which is a continuation-in-part of Ser. No. 808,653, Mar. 19, 1969, Pat. No. 3,609,147, which is a continuation-in-part of Ser. No. 715,558, Mar. 25, 1968, abandoned, which is a continuation-in-part of Ser. No. 550,614, May 17, 1966, abandoned, said Ser. No. 808,653, is a continuation-in-part of Ser. No. 715,583, Mar. 25, 1968, abandoned. This application Oct. 18, 1976, Ser. No. 733,298

Claims priority, application United Kingdom, May 11, 1967, 21897/67

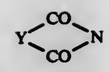
Int. Cl.² C07D *211/88, 207/40, 207/44, 279/12*

U.S. Cl. 260—281 GN **3 Claims**

1. A compound of the formula



wherein Y' is a single bond, vinylene, or an alkylene bridge having from one to eight carbon atoms or such a group interrupted by from one to three members selected from O, S, SO and SO_2, said members, when more than one, being separated by at least two carbon atoms; Z is OH, O-lower-alkyl, lower-alkyl, phenyl, NH(lower-alkyl), N(lower-alkyl)$_2$; R is



wherein Y is a lower-alkylene group wherein 2 or 3 carbon atoms separate the carbonyl groups, vinylene, or a 1,3-propylene group wherein the 2-carbon atom is replaced by O, S, SO or SO_2; R' is hydrogen, lower-alkyl, hydroxy-lower-alkyl, lower-alkoxy-lower-alkyl, or lower-alkoxy-lower-alkoxy-lower-alkyl; and R'' is hydrogen or lower-alkyl.

4,111,938

PREPARATION OF 2,3,5-TRICHLOROPYRIDINE

Carl T. Redemann, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 14, 1977, Ser. No. 833,126

Int. Cl.² C07D *213/02*

U.S. Cl. 260—290 HL **3 Claims**

1. A method for preparing 2,3,5-trichloropyridine which comprises reacting at a pH of 11 or above and at a temperature of from about 20° to about 100° C., a pyridine reactant selected from the group consisting of 2,3,5,6-tetrachloropyridine and pentachloropyridine with from 1 to 3 gram atoms of zinc per gram atom of chlorine to be removed, in the presence of an alkaline reagent and a water-immiscible reaction medium.

4,111,939

FURYL PYRAZOLE THIOAMIDES

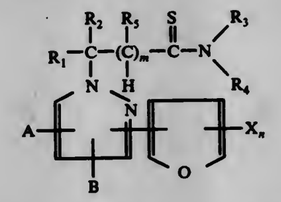
Malcolm W. Moon, and Gabriel Kornis, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 686,548, May 14, 1976, Pat. No. 4,072,498, which is a continuation-in-part of Ser. No. 524,231, Nov. 15, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,180

Int. Cl.² C07D *405/04, 405/14*

U.S. Cl. 260—293.6 **1 Claim**

1. A compound of the formula:



IV

where R_1 is hydrogen, alkyl of 1 to 7 carbon atoms, inclusive, haloalkyl of 1 to 7 carbon atoms, inclusive, phenyl, benzyl or cycloalkyl of 3 to 6 carbon atoms, inclusive, with the proviso that when R_1 is benzyl or cycloalkyl $m = 0$; R_2 and R_5 are the same or different and are hydrogen, halogen, alkyl of 1 to 6 carbon atoms, inclusive, haloalkyl of 1 to 6 carbon atoms, inclusive, or phenyl; R_1 and R_2 together with the attached carbon atom can be cycloalkyl of 3 to 6 carbon atoms, inclusive, when $m = 0$; m is 0 or 1 provided that when $m = 0$, R_1 is not hydrogen and when $m = 1$ at least one of R_2 or R_5 is hydrogen; R_3 is hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, phenyl or benzyl; R_4 is hydrogen or alkyl of from 1 to 6 carbon atoms, inclusive, and R_3 and R_4 can be joined together to form a heterocyclic ring selected from the group consisting of pyrrolidine, or piperidine; A and B are the same or different and are hydrogen, alkyl of from 1 to 6 carbon atoms, inclusive, phenyl, halogen, cyano, haloalkyl of 1 to 6 carbon atoms, inclusive, alkoxy or alkylthio in which the alkyl group is from 1 to 3 carbon atoms, inclusive, or trifluoromethyl and when adjacent can be joined to form a ring of from 5 to 7 carbon atoms, inclusive; where X is halogen, nitro, cyano, acetyl, dimethylcarbamoyl, alkyl, haloalkyl, alkoxy or carboalkoxy in which the alkyl groups is from 1 to 3 carbon

atoms, inclusive, phenyl, benzyl, 2-phenylethyl and *n* is 0, 1, or 2 or an acid addition salt thereof.

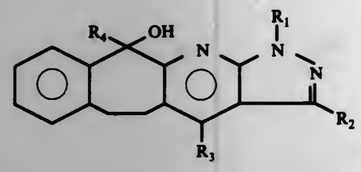
4,111,940

1,5,6,11-TETRAHYDRO[5,6]CYCLOHEPTA-[1,2,-b]PYRAZOLO[4,3-e]PYRIDINE DERIVATIVES

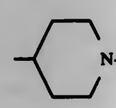
Hans Hoehn, Tegernheim, Fed. Rep. of Germany; Jack Bernstein, New Brunswick, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 7, 1977, Ser. No. 785,398
Int. Cl.² C07D *471/04*
U.S. Cl. 260—293.6 **7 Claims**

1. A compound of the formula:



wherein R_1 is lower alkyl, phenyl, or phenyl-lower alkyl; R_2 is hydrogen, lower alkyl, or phenyl; R_3 is hydrogen, halogen, or lower alkoxy; R_4 is



and a pharmaceutically acceptable salt thereof.

4,111,941

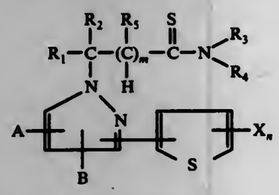
THIENYL PYRAZOLE THIOAMIDES

Malcolm W. Moon, and Gabriel Kornis, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 686,548, May 14, 1976, Pat. No. 4,072,498, which is a continuation-in-part of Ser. No. 524,231, Nov. 15, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,179
Int. Cl.² C07D *409/04, 409/14*
U.S. Cl. 260—293.6 **1 Claim**

1. A compound of the formula:

III



where R_1 is hydrogen, alkyl of 1 to 7 carbon atoms, inclusive, haloalkyl of 1 to 7 carbon atoms, inclusive, phenyl, benzyl or cycloalkyl of 3 to 6 carbon atoms, inclusive, with the proviso that when R_1 is benzyl or cycloalkyl $m = 0$; R_2 and R_5 are the same or different and are hydrogen, halogen, alkyl of 1 to 6 carbon atoms, inclusive, haloalkyl of 1 to 6 carbon atoms, inclusive, or phenyl; R_1 and R_2 together with the attached carbon atom can be cycloalkyl of 3 to 6 carbon atoms, inclusive, when $m = 0$; m is 0 or 1 provided that when $m = 0$, R_1 is not hydrogen and when $m = 1$ at least one of R_2 or R_5 is hydrogen; R_3 is hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, phenyl or benzyl; R_4 is hydrogen or alkyl of from 1 to 6 carbon atoms, inclusive, and R_3 and R_4 can be joined together to form a heterocyclic ring selected from the group consisting of pyrrolidine, or piperidine; A and B are the same or different and are hydrogen, alkyl of from 1 to 6 carbon atoms, inclusive, phenyl, halogen, cyano, haloalkyl of 1 to 6 carbon atoms, inclusive, alkoxy or alkylthio in which the alkyl group is from 1 to 3 carbon atoms, inclusive, or trifluoromethyl and when adjacent can be joined to form a ring of from 5 to 7 carbon atoms, inclusive; where X is halogen, nitro, cyano, acetyl, dimethylcarbamoyl, alkyl, haloalkyl, alkoxy or carboalkoxy in which the alkyl group is from 1 to 3 carbon atoms, inclusive, phenyl, benzyl, 2-phenylethyl and *n* is 0, 1, or 2 or an acid addition salt thereof.

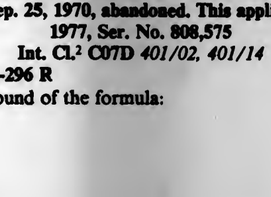
4,111,942

10-AMINO-5H-[1]BENZOPYRANO[4,3-c]PYRIDINES

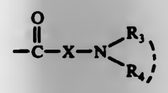
Cheuk Man Lee, Libertyville, and Harold Elmer Zaugg, Lake Forest, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 28, 1977, Ser. No. 781,903
Int. Cl.² C07D *405/14*
U.S. Cl. 260—293.58 **9 Claims**

1. A compound represented by the formula



where R_1 is C_3–C_{20} alkyl or halophenylloweralkyl; R_2 is hydrogen, loweralkanoyl, loweralkylsulfonyl, loweralkoxycarbonyl, carbamoyl or



wherein X is an alkylene group having from 2 to 4 carbon atoms; and R_3 and R_4 are the same or different members of the group consisting of hydrogen or loweralkyl; or R_3 and R_4 taken together form a 5-, 6-, or 7-member heterocyclic ring; and the pharmaceutically acceptable acid addition salts thereof.

4,111,943

3-(THIENYLOXY)PYRIDINES AND METHODS FOR THEIR PRODUCTION

Donald Eugene Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 20, 1977, Ser. No. 789,031
Int. Cl.² C07D *417/02*
U.S. Cl. 260—294.8 D **4 Claims**

1. A compound selected from the group consisting of 3-(2-thienyloxy)pyridine, 3-(3-thienyloxy)pyridine and pharmaceutically acceptable acid-addition salts thereof.

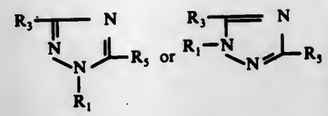
4,111,944

ANTI-HYPERURICEMIA COMPOSITION

Frederick C. Novello, Berwyn, and John J. Baldwin, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 742,945, Nov. 18, 1976, abandoned, which is a continuation of Ser. No. 547,848, Feb. 6, 1975, abandoned, which is a continuation of Ser. No. 361,915, May 21, 1973, Pat. No. 3,892,762, which is a continuation-in-part of Ser. No. 75,784, Sep. 25, 1970, abandoned. This application Jun. 21, 1977, Ser. No. 808,575
Int. Cl.² C07D *401/02, 401/14*
U.S. Cl. 260—296 R **3 Claims**

1. A compound of the formula:



wherein R_1 is lower alkyl;

R_3 is phenyl, lower alkylphenyl, tri-lower alkylphenyl, 4-pyridyl, mono-lower alkyl-4-pyridyl or di-lower alkyl-4-pyridyl; and R_5 is 4-pyridyl, mono-lower alkyl-4-pyridyl or di-lower alkyl-4-pyridyl, including the mono-N-oxides of those products wherein R_3 and R_5 are both a pyridyl.

4,111,945

PROCESS FOR THE PREPARATION OF 3,4,5-TRIMETHOXY-PHENYL-(1,4-DIMETHYL-1,2,3,6-TETRAHYDRO-2-PYRIDYL)-CARBINOL

Ricardo Granados Jarque; Juan Bosch Cartés; Jorge Canals Cabiró, all of Barcelona; Cristóbal Martínez Roldán, and Fernando Rabadán Peinado, both of Madrid, all of Spain, assignors to Laboratorios Made, S.A., Madrid, Spain

Filed Jan. 6, 1977, Ser. No. 757,175
Claims priority, application Spain, Jan. 22, 1976, 444.539
Int. Cl.² C07D *211/70*
U.S. Cl. 260—297 R **1 Claim**

1. A compound selected from the group consisting of 3,4,5-trimethoxyphenyl-(1,4-dimethyl-1,2,3,6-tetrahydro-2-pyridyl)-carbinol and its pharmaceutically acceptable acid addition salts.

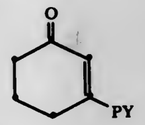
4,111,946

PREPARATION OF 3-(PYRIDINYL)-2-CYCLOHEXEN-1-ONES

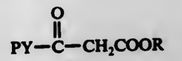
Karl O. Gelotte, Nassau; Andrew W. Zalay, Albany, and Malcolm R. Bell, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 737,392, Nov. 1, 1976, Pat. No. 4,075,217, which is a division of Ser. No. 668,451, Mar. 19, 1976, Pat. No. 4,026,900. This application Jul. 29, 1977, Ser. No. 820,402
Int. Cl.² C07D *213/46*
U.S. Cl. 260—297 R **3 Claims**

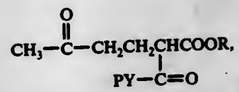
1. The process for preparaing a 3-(pyridinyl)-2-cyclohexen-1-one having the formula



where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, which comprises reacting methyl vinyl ketone with lower-alkyl 3-(pyridinyl)-3-oxopropanoate of the formula



where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents and R is lower-alkyl, in the presence of a basic condensing agent to produce lower-alkyl 5-oxo-2-(pyridinylcarbonyl)hexanoate of the formula



heating said hexanoate under aqueous acidic conditions thereby hydrolyzing and decarboxylating it to produce 1-PY-hexan-1,5-dione and reacting said hexan-1,5-dione with a basic condensing agent to produce said 3-PY-2-cylohexen-1-one or first reacting said lower-alkyl 5-oxo-2-(pyridinylcarbonyl)hexanoate with a basic condensing agent to produce lower-alkyl 3-(pyridinyl)-2-cyclohexen-1-one-4-carboxylate and then heating under aqueous acidic conditions to hydrolyze and decarboxylate said 4-carboxylate to produce said 3-(pyridinyl)-2-cyclohexen-1-one.

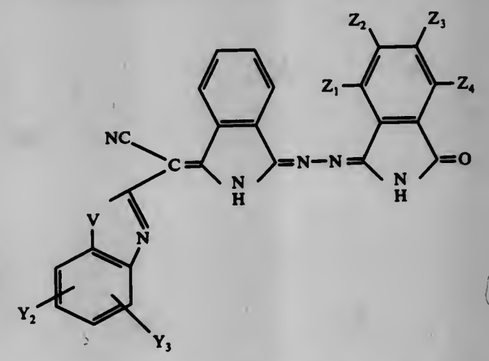
4,111,947

NOVEL METAL COMPLEXES OF AZOMETHINES AND PROCESS FOR THEIR MANUFACTURE

François L'Eplattenier, Therwil; André Pugin, and Jost von der Crone, both of Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 545,457, Jan. 30, 1975, Pat. No. 4,022,770. This application Mar. 1, 1977, Ser. No. 773,251
Claims priority, application Switzerland, Feb. 6, 1974, 1625/74
Int. Cl.² C07D *403/14*; D06P *1/642*; C07D *401/06, 405/06*
U.S. Cl. 260—299 **2 Claims**

1. A 1:1-metal-complex of a compound of the formula



wherein Z_1 and Z_3 represent hydrogen, halogen, alkoxy of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms, phenoxy, phenalkoxy; Z_2 and Z_4 represent hydrogen, halogen, and one of the substituents Z_1 to Z_4 can also be nitro; Y_2 and Y_3 are hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or nitro; V is oxygen, sulfur or imino; and wherein said metal is Ni, Cu, Co, or Zn.

4,111,948

PROCESS FOR THE PREPARATION OF 4-METHYLTHIAZOLE

Henry S. Kao, Mountainside; William A. Sklarz, Edison, and Leonard M. Weinstock, Belle Mead, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 590,893, Jun. 27, 1975, abandoned, which is a continuation of Ser. No. 383,925, Jul. 30, 1973, abandoned. This application Nov. 26, 1976, Ser. No. 745,517
Int. Cl.² C07D *277/02*
U.S. Cl. 260—302 R **5 Claims**

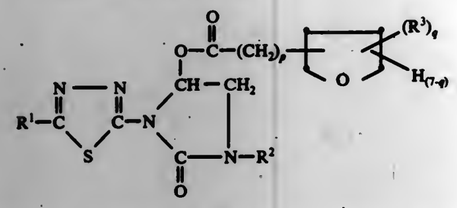
1. A process for preparing 4-methylthiazole from 2-mercapto-4-methylthiazole comprising reacting 2-mercapto-4-methylthiazole in an aqueous alkali metal hydroxide solution with an oxidant consisting of oxygen or a mixture of oxygen and an inert gas at a pressure of from about 0.1 to about 100 atmospheres based on a partial pressure of oxygen of from about 0.1 to about 150 atmospheres, wherein there is dispersed in the aqueous solution cobalt phthalocyanine disulfonate to form a thiazole sulfinate salt and hydrolizing the thiazole sulfinate salt with acid or heating at a temperature of 40°–110° C.

4,111,949
THIADIAZOLYLIMIDAZOLIDINONE ESTERS OF TETRAHYDROFURYL SUBSTITUTED ACIDS

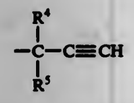
John Kreuzer, Oak Park, Ill., assignor to Velsicol Chemical Company, Chicago, Ill.

Filed Mar. 25, 1976, Ser. No. 670,493
Int. Cl.² C07D *417/14*
U.S. Cl. 260—306.8 D 8 Claims

1. A compound of the formula



wherein R^1 is selected from the group consisting of lower alkyl, cycloalkyl of from 3 to 7 carbon atoms, lower alkenyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfinyl; R^2 is selected from the group consisting of lower alkyl, lower alkenyl, lower haloalkyl and



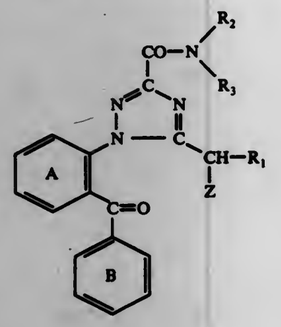
wherein R^4 and R^5 are each selected from the group consisting of hydrogen and alkyl of up to 3 carbon atoms; p is an integer from 0 to 3; R^3 is selected from the group consisting of lower alkyl, chlorine, bromine and fluorine; and q is an integer from 0 to 2.

4,111,950
TRIAZOLYL BENZOPHENONES

André Gagneux, Basel; Roland Heckendorn, Arlesheim, and René Meier, Buus, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 535,480, Dec. 23, 1974, Pat. No. 4,027,029, which is a division of Ser. No. 328,815, Jan. 31, 1973, Pat. No. 3,870,714. This application Feb. 4, 1977, Ser. No. 765,573
Claims priority, application Switzerland, Feb. 7, 1972, 1738/72; Aug. 31, 1972, 12843/72; Nov. 3, 1972, 16045/72
Int. Cl.² C07D *401/06, 403/06, 413/06, 487/04*
U.S. Cl. 260—308 R 7 Claims

1. A compound of the formula IV



(IV)

wherein
Z is hydroxy, chloro or iodo,
R_1 represents hydrogen, or an alkyl group having 1 to 3 carbon atoms, and
R_2 and R_3 independently of each other, represent hydrogen, alkyl groups having 1 to 6 carbon atoms, or hydroxyalkyl groups having in all 4 to 7 carbon atoms, or aralkyl groups having 7 to 9 carbon atoms, or together with the adjacent nitrogen atom, the 1-pyrrolidinyl-, piperidino-, 4-methyl-1-piperazinyl, or morpholino group;
wherein each of the rings A and B independently of the other, is unsubstituted or substituted by one member of the group consisting of halogen up to atomic number 35, trifluoromethyl or nitro groups, and its salts.

4,111,951
PROCESS FOR L-3,4-DEHYDROPROLINE

Urs Oskar Hengartner, Roseland, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 17, 1977, Ser. No. 759,702
Int. Cl.² C07D *207/22*
U.S. Cl. 260—326.2 3 Claims

1. An improved process for preparing L-3,4-dehydroproline from D,L-3,4-dehydroproline which process comprises the following steps in combination:
(A) reacting D,L-3,4-dehydroproline with (+) tartaric acid in water to form the diastereomeric salts D-3,4-dehydroproline.(+) tartaric acid salt and L-3,4-dehydroproline.(+) tartaric acid salt;
(B) selectively crystallizing the L-3,4-dehydroproline.(+) tartaric acid salt;
(C) thermally racemizing the mother liquors from step (B) at a temperature in the range between about 50°–150° C so as to produce additional L-3,4-dehydroproline.(+) tartaric acid salt which is selectively crystallized; and
(D) decomposing the L-3,4-dehydroproline.(+) tartaric acid produced in steps (B) and (C) so as to yield the desired L-3,4-dehydroproline.

4,111,952
PROCESS FOR PREPARING LOWER LACTAMS FROM ALLYLIC AMINE SUBSTRATES

John F. Knifton, Austin, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 26, 1976, Ser. No. 745,018
Int. Cl.² C07D *201/02, 207/26*
U.S. Cl. 260—326.5 FN 10 Claims

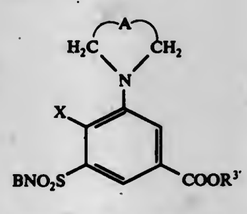
1. The process of preparing γ-butyrolactam or an alkyl-substituted-γbutyrolactam by the carbonylation of allylic amines having three to ten carbon atoms according to the procedure of:
(a) Admixing said allylic amines to be carbonylated to γ-butyrolactam or an alkyl-substituted-γ-butyrolactam with at least a catalytic amount of rhodium catalyst complexes selected from the group consisting of:
chlorobis(ethylene)rhodium(I) dimer
Chlorotris(triphenylphosphine)rhodium(I)
Chlorocarbonylbis(triphenylphosphine)rhodium(I)
Rhodium tris(acetylacetonate)
Rhodium chloride plus triphenylphosphine and
Rhodium chloride to form a reaction mixture.
(b) Pressurizing said reaction mixture with at least sufficient carbon monoxide to satisfy the stoichiometry of the carbonylation to the γ-butyrolactam or an alkyl-substituted-γ-butyrolactam.
(c) Heating said pressurized reaction mixture between 20° C. and 150° C. until substantial carbonylation of the allylic amine to said γ-butyrolactam or an alkyl-subtituted-γ-butyrolactam has taken place, and isolating said γ-butyrolactam or an alkyl-substituted-γ-butyrolactam prepared therein.

4,111,953
DERIVATIVES OF 5-AMINOBENZOIC ACID HAVING A HETEROCYCLIC SUBSTITUENT IN THE 3-POSITION

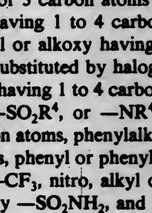
Dieter Bormann, Kelkheim, Taunus; Wulf Merkel, Neuenhain, Taunus, and Dieter Mania, Kelkheim, Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 570,649, Apr. 23, 1975, Pat. No. 4,010,273.
This application Dec. 6, 1976, Ser. No. 747,489
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1974, 2419970
Int. Cl.² C07D *207/06*
U.S. Cl. 260—326.41 2 Claims

1. A compound of the formula



wherein $R^{3'}$ is hydrogen or alkyl having 1 to 4 carbon atoms; A is —CH=CH—, alkylene having 2 or 3 carbon atoms, or alkylene having 2 or 3 carbon atoms which is substituted by halogen or alkyl having 1 to 4 carbon atoms; X is halogen, $-CF_3$, $—CCl_3$, alkyl or alkoxy having up to 6 carbon atoms, benzyl, or benzyl substituted by halogen, hydroxy, amino, or by alkyl or alkoxy having 1 to 4 carbon atoms, or X is $—OR^4$, $—SR^4$, $—SOR^4$, $—SO_2R^4$, or $—NR^4R^5$ wherein R^4 is alkyl having 1 to 4 carbon atoms, phenylalkyl wherein the alkyl has 1 to 4 carbon atoms, phenyl or phenyl substituted by halogen, hydroxy, amino, $—CF_3$, nitro, alkyl or alkoxy having 1 to 4 carbon atoms, or by $—SO_2NH_2$, and R^5 is hydrogen or alkyl having 1 to 4 carbon atoms; and B is



wherein R^8, R^9, and R^{10} are the same or different lower alkyl having 1 to 4 carbon atoms and R^8 may also be hydrogen, and wherein two of R^8, R^9, and R^{10} may be bound to each other to form a 5-membered or 6-membered ring.

4,111,954
PREPARATION OF 1-METHYLPYRROLE-2-ACETONITRILE

John Robert Carson, Norristown; Richard J. Carmosin, Philadelphia, and Anthony T. Stefanski, Fort Washington, all of Pa., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Filed Apr. 20, 1977, Ser. No. 789,309
Int. Cl.² C07D *207/34*
U.S. Cl. 260—326.62 6 Claims

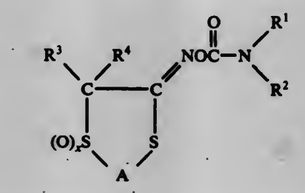
1. A process of preparing 1-loweralkyl- pyrrole-2-acetonitrile which comprises the step of reducing α-imino-1-loweralkylpyrrole-2-acetonitrile by the action of hydrogen sulfide as the reducing agent in an inert organic solvent at a temperature from about −20° to about 50° C and a pressure from atmospheric pressure to about 60 p.s.i. pressure.

4,111,955
N-TRIHALOMETHANESULFENYL CARBAMOYLOXIMINO DI-SULFUR HETEROCYCLIC COMPOUNDS

John Apling Durden, and Themistocles Damasceno Joaquim D'Silva, both of, S. Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 364,138, May 25, 1923, Pat. No. 3,992,549.
This application May 20, 1976, Ser. No. 688,222
Int. Cl.² C07D *339/00, 339/06, 339/08*
U.S. Cl. 260—327 M 14 Claims

1. A compound of the formula:



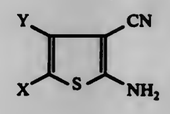
wherein:
R^1 is lower alkyl having from 1 to 4 carbon atoms, phenyl, or phenyl substituted with one or more halogen, acylamido, methylthio, methoxy, or alkyl substituents having from 1 to 4 carbon atoms or a methylenedioxy group attached to adjacent carbon atoms of said phenyl;
R^2 is trihalomethanesulfenyl;
R^3 and R^4 may be the same or different and are hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkenyl having from 2 to 6 carbon atoms, halogen substituted alkyl having from 1 to 6 carbon atoms, alkoxyalkyl having a total of from 2 to 6 carbon atoms, alkylthioalkyl, alkylsulfinylalkyl, or alkylsulfonylalkyl, having a total of from 2 to 6 carbon atoms, phenyl or phenyl substituted with one or more halogen, methoxy or lower alkyl substituents having from 1 to 4 carbon atoms;
A is methylene, ethylene, propylene, ethenylene, propenylene or methylene, ethylene, propylene, ethenylene or propenylene substituted with one or more alkyl groups having from 1 to 3 carbon atoms; and
x is 0, 1 or 2.

4,111,956
PROCESS FOR THE MANUFACTURE OF HETEROCYCLIC COMPOUNDS

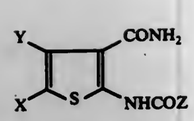
David Boyd Baird; James Stanley Campbell; Brian Ribbons Fishwick, and Robert David McClelland, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 630,897, Nov. 11, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,457
Int. Cl.² C07D *333/36*
U.S. Cl. 260—329 AM 3 Claims

1. Process for the manufacture of the thiophene compounds of the formula:

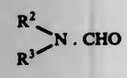


wherein
Y is selected from the class consisting of hydrogen, lower alkyl and phenyl; and
X is selected from the class consisting of nitro, cyano and phenyl, which comprises reacting a compound of the formula:



Formula I

wherein Y and X have the meanings stated and Z is selected from the class consisting of hydrogen, lower alkyl and phenyl, with from 1 to 3 moles per mol of the compound of the formula I of an acid halide selected from the class consisting of phosphorus oxychloride and thionyl chloride in the presence of from 5 to 35 moles per mol of the compound of formula I of a compound of the formula:



wherein R^2 and R^3 are each lower alkyl or R^2 and R^3 together form with the nitrogen atoms a 5- or 6-membered nitrogen-containing hetercyclic ring, said reaction being carried out at a temperature from 40° to 80° C., and subjecting the resulting compound to hydrolysis by heating it in a medium comprising water, at least one alcohol selected from the class consisting of ethanol, β-methoxyethanol, β-ethoxyethanol and n-propanol and an acid selected from the class consisting of hydrochloric acid and sulphuric acid.

4,111,957

SUBSTITUTED 1-THIENYL AND FURYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE COMPOUNDS

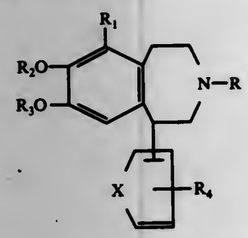
Kenneth George Holden, Haddonfield, N.J., and Nelson Chi-Fai Yim, Philadelphia, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Feb. 2, 1977, Ser. No. 764,672

Int. Cl.² C07D *333/24, 333/16;* A01N *9/00*

U.S. Cl. 260—332.2 C **8 Claims**

1. A compound of the formula:



in which:

R is hydrogen, benzyl, phenethyl, lower alkanoyl of 1–5 carbons, lower alkyl of 1–5 carbons, hydroxyethyl or lower alkenyl of 3–5 carbons;

R_1 is hydrogen, halo, trifluoromethyl, methylthio, trifluoromethylthio, methyl or methoxy;

R_2 and R_3 are each hydrogen, lower alkyl of 1–5 carbons, lower alkanoyl of 2–5 carbons or, when taken together, methylene or ethylene;

R_4 is hydrogen, halo, cyanomethyl, methyl or carbomethoxy; and

X is —S—;

and the pharmaceutically acceptable nontoxic salts thereof.

4,111,958

ASCORBIC ACID SYNTHESIS

Thomas C. Crawford, Norwich, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jun. 3, 1977, Ser. No. 803,020

Int. Cl.² C07D *307/32, 319/04*

U.S. Cl. 260—340.7 **26 Claims**

1. A process for the preparation of ascorbic acid which comprises

(a) contacting a 1,4-lactone selected from gulonolactone, galactonolactone, idonolactone and talonolactone with about three equivalents of a hydroxyl-protecting reagent per mole of 1,4-lactone;

(b) contacting the resulting intermediate having a free hydroxyl group at the 2- or 3- position with an oxidizing agent effective to convert said hydroxyl group to a keto group; and (c) hydrolyzing the compound formed in step (b) until conversion to ascorbic acid is substantially complete.

17. A process for the preparation of ascorbic acid which comprises

(a) contacting a 1,4-lactone selected from gulonolactone and idonolactone in the presence of an acid catalyst having a pk_a of less than about 2.5 with at least about two equivalents of a hydroxyl-protecting reagent per mole of 1,4-lactone, said reagent being selected from an alkyl aldehyde of 2 to 8 carbon atoms; an aryl aldehyde, an arylalkyl aldehyde and an arylalkenyl aldehyde, wherein said aryl is phenyl, mono-substituted or di-substituted phenyl, wherein said substituents are alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo or nitro, and said alkyl and alkenyl are each of 2 to 4 carbon atoms;

(b) contacting the resulting intermediate having a free hydroxyl group at the 2-position with an oxidizing agent effective to convert said hydroxyl group to a keto group; and (c) hydrolyzing the compound formed in step (b) until conversion to ascorbic acid is substantially complete.

26. A compound of the formula



and the hydrated form thereof, wherein R_3 is a hydroxyl-protecting group derived from an alkyl aldehyde of 2 to 8 carbon atoms; an aryl aldehyde, an arylalkyl aldehyde or an arylalkenyl aldehyde, wherein said aryl is phenyl, mono-substituted or di-substituted phenyl, wherein said substituents are alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo or nitro, and said alkyl and alkenyl are each of 2 to 4 carbon atoms.

4,111,959

15,16-DIOXY PROSTENOIC ACIDS AND ESTERS AND INTERMEDIATES IN THEIR PREPARATION

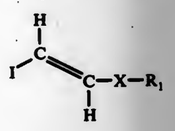
Martin Joseph Weiss, Oradell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 663,603, Mar. 3, 1976, abandoned. This application Feb. 11, 1977, Ser. No. 767,864

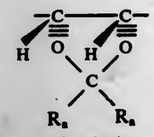
Int. Cl.² C07D *317/10*

U.S. Cl. 260—340.9 R **7 Claims**

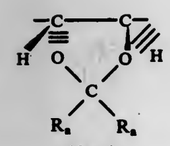
1. A racemic compound of the formula:



wherein R_1 is selected from the group consisting of propyl, butyl, pentyl, hexyl, trans-1-butenyl, trans-1-pentenyl, and trans-1-propenyl; and X is selected from the group consisting of:



(erythro)



(threo)

wherein R_a is selected from the group consisting of C_1-C_3 alkyl.

4,111,960

SUBSTITUTED DIOXOLANES AND PHOTOSENSITIVE AND DEGRADABLE POLYMERS USEFUL IN IMAGING

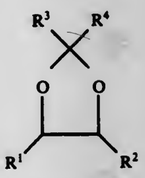
Donnie Joe Sam, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 545,603, Jan. 30, 1975, Pat. No. 3,991,033. This application Jun. 29, 1976, Ser. No. 700,968

Int. Cl.² C07D *317/10*

U.S. Cl. 260—340.9 R **4 Claims**

1. A compound having the formula:



wherein R^1 and R^2 are H or a phenyl group substituted with up to 5 substituents of lower alkyl or nitro, with the proviso that at least one of R^1 and R^2 is a phenyl group having an orthonitro substituent; and R^3 and R^4 are each H or lower alkyl.

4,111,961

SILICON ESTER OF CARBOXYLIC ACID

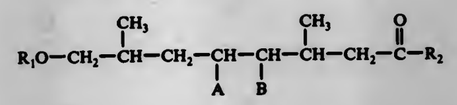
Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 638,722, Dec. 8, 1975, Pat. No. 4,041,058, which is a continuation-in-part of Ser. No. 544,154, Jan. 27, 1975, abandoned. This application May 16, 1977, Ser. No. 796,930

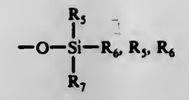
Int. Cl.² C07D *309/22*

U.S. Cl. 260—345.8 R **1 Claim**

1. A compound of the formula:



wherein A and B are individually hydrogen or taken together form a carbon to carbon bond; R_2



and R_7 are lower alkyl; R_1 taken together with its attached oxygen moiety forms an ether protecting group removable by acid catalyzed cleavage or hydrogenolysis; with the proviso that when R_1 is an ether protecting group removable by hydrogenanalysis, A and B form a carbon to carbon bond.

4,111,962

CERTAIN SUBSTITUTED 2-PHENYLNAPHTHO[1,2-b]FURANE AND -[2,1-b]FURANE

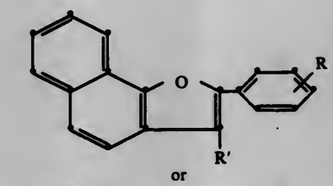
Nathan N. Crounse, Cincinnati, Ohio, and Kantilal B. Desai, Highland Heights, Ky., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 118,076, Feb. 23, 1971, Pat. No. 3,781,279. This application Sep. 19, 1973, Ser. No. 398,673

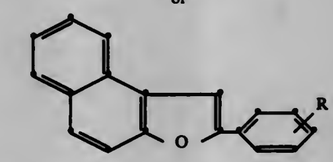
Int. Cl.² C07D *307/92*

U.S. Cl. 260—346.71 **7 Claims**

1. A compound of the formula



or



wherein R is halo and R′ is hydrogen, bromo or nitro.

4,111,963

METHOD FOR PREPARING MALEIC ANHYDRIDE

Ramon A. Mount, and Harold Raffelson, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 471,117, May 17, 1975, abandoned, which is a division of Ser. No. 330,354, Feb. 7, 1973. This application Dec. 12, 1975, Ser. No. 640,121

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.75 **3 Claims**

1. A method for the preparation of maleic anhydride which comprises passing saturated hydrocarbons containing 4 to 10 carbon atoms, having at least 4 carbon atoms in a straight chain, at temperatures of from about 350° C. to about 600° C. through a phosphorus-vanadium-oxygen catalyst having a phosphorus to vanadium atom ratio in the range of about 1:2 to 2:1, the catalyst having a porosity of at least about 35% as measured by the apparent density of said catalyst (in gm/cc) as determined by mercury displacement at standard atmospheric pressure, multiplied by the pore volume of said catalyst (in cc/gm) determined by volume of mercury forced into pores of said catalyst under a pressure of 15,000 pounds per square inch, prepared by the steps which comprise:

(A) contacting vanadium and phosphorus compounds under conditions which will provide a catalyst precursor wherein greater than 50 atom percent of the vanadium is tetravalent vanadium;

(B) recovering the catalyst precursor;

(C) forming the catalyst precursor into structures; and

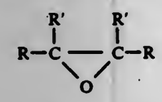
(D) calcining the catalyst precursors.

4,111,964
3-[5-(4-NITROPHENYL)FURFURYLAMINO)]-1,2-PROPANEDIOL HYDROCHLORIDE
Stanford S. Peloni, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Sep. 27, 1977, Ser. No. 837,029
Int. Cl.² C07D *307/70*
U.S. Cl. 260—347.7 **1 Claim**

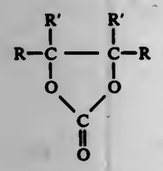
1. The compound 3-[5-(4-nitrophenyl)furfurylamino]-1,2-propanediol hydrochloride.

4,111,965
PREPARATION OF VICINAL EPOXIDES
Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 459,628, Apr. 10, 1974, Pat. No. 4,069,234. This application Oct. 25, 1977, Ser. No. 845,183
Int. Cl.² C07D *301/02*
U.S. Cl. 260—348.16 **8 Claims**

1. A process for the preparation of a vicinal epoxide having 2 to 30 carbon atoms per molecule of the general formula

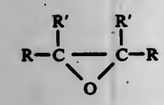


wherein each R and each R′ are individually selected from the group consisting of hydrogen and hydrocarbyl radical groups having 1 to 10 carbon atoms and wherein both R′ radicals in said epoxide can represent a divalent aliphatic hydrocarbon radical which together with the oxirane group in said epoxide can form a cycloaliphatic nucleus, which comprises heating the corresponding carbonate ester having the general formula

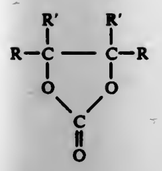


wherein R and R′ are as defined above, in the presence of a catalytic amount of a sulfonium halide catalyst having the formula R''_3SX wherein R″ is selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, alkenyl, cycloalkenyl and combinations thereof having 1 to 10 carbon atoms and *X* is selected from the group consisting of chlorine, bromine and iodine.

5. A process for the preparation of a vicinal epoxide having 2 to 30 carbon atoms per molecule of the general formula



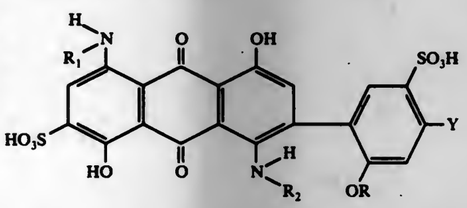
wherein each R and each R′ are individually selected from the group consisting of hydrogen and hydrocarbyl radical groups having 1 to 10 carbon atoms and wherein both R′ radicals in said epoxide can represent a divalent aliphatic hydrocarbon radical which together with the oxirane group in said epoxide can form a cycloaliphatic nucleus, which comprises heating the corresponding carbonate ester having the general formula



wherein R and R′ are as defined above, in the presence of a catalytic amount of a sulfoxonium halide catalyst having the formula $(R''_3S{\rightarrow}O)+X-$ wherein R″ is selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, alkenyl, cycloalkenyl and combinations thereof having 1 to 10 carbon atoms and *X* is selected from the group consisting of chlorine, bromine and iodine.

4,111,966
1,5-DIHYDROXY-4,8-DIAMINO-ANTHRAQUINONE COMPOUNDS ARYLATED IN 3-POSITION
Peter Hindermann, Bottmingen, Switzerland; Jean-Marie Adam, Saint-Louis, France, and Urs Karlen, Magden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Dec. 9, 1976, Ser. No. 749,201
Claims priority, application Switzerland, Dec. 23, 1975, 16695/75
Int. Cl.² C07C *49/68*; C09B *1/12*
U.S. Cl. 260—373 **6 Claims**

1. Anthraquinone compounds of the formula IV



(IV)

wherein
Y represents a linear or branched alkyl group of 1 to 5 carbon atoms,
R represents a hydrogen atom, an unsubstituted or substituted alkyl group of 1 to 5 carbon atoms or the cyclohexyl group, and each of
R_1 and R_2 independently represents a hydrogen atom, the methyl, ethyl or iso-propyl group.

4,111,967
SILICON CONTAINING CATALYSTS
Manfred Martin, Cologne; Walter Schmidt, and Gerhard Scharfe, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 624,499, Oct. 21, 1975, abandoned. This application Jan. 13, 1977, Ser. No. 759,222
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1974, 2453232
Int. Cl.² C07C *49/66*
U.S. Cl. 260—396 R **10 Claims**

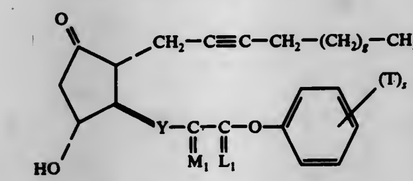
1. Process for the catalytic oxidation of naphthalene to naphthoquinone comprising contacting naphthalene with molecular oxygen at an oxidizing reaction temperature in the presence of a fixed bed catalyst containing silicon, vanadium, sulfur, oxygen and at least one alkali metal element, said catalyst prepared from a silicic acid which has a water content between 0 and 20% by weight, has an average particle size of less than 50 microns and an alkali metal content of less than 2% by weight, calculated as Na_2O and expressed relative to anhydrous silicic acid.

4,111,968
PROCESS
Edward J. Hessler, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 692,947, Jun. 4, 1976, Pat. No. 4,046,800, which is a division of Ser. No. 546,074, Jan. 31, 1975, Pat. No. 3,978,042. This application Jul. 29, 1977, Ser. No. 820,220
Int. Cl.² C07C *120/00, 121/34*
U.S. Cl. 260—465.6 **3 Claims**

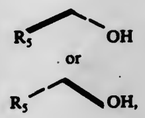
1. A process for selectively preparing a salt which comprises contacting isoxazole with a base of a strength equal to or greater than sodium methoxide in an inert organic solvent at a temperature less than or equal to about −40° C., the anion of said salt being the anion of cis-1-cyano-2-hydroxyethylene and the cation of said salt being the positive portion of said base.

4,111,969
5,6-DIDEHYDRO-ω-PHENOXY-PGE$_2$ ANALOGS
Chiu-Hong Lin, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 619,077, Oct. 2, 1975, Pat. No. 4,013,695. This application Nov. 4, 1976, Ser. No. 738,716
Int. Cl.² C07C *65/22, 177/00*
U.S. Cl. 260—410.9 R **24 Claims**

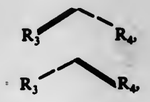
1. A prostaglandin analog of the formula



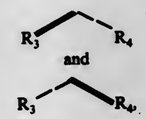
wherein *g* is one, 2, or 3;
wherein Y is trans-CH=CH-;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and *s* is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein L_1 is



or a mixture of



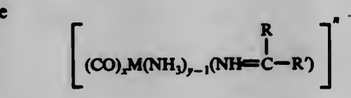
wherein R_3 and R_4 are hydrogen or methyl being the same or different; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,111,970
METHOD OF PRODUCING CHROMIUM (III)-N-ACYL-ANTHRANILATES
Dirk Jan Zwaneburg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 13, 1977, Ser. No. 805,788
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1976, 2627615
Int. Cl.² C01F *11/00*
U.S. Cl. 260—438.5 R **2 Claims**

1. A method of producing chromium (III)-N-acyl anthranilate dispersions for electrophotographically applying solid particles to surfaces, comprising reacting a N-acyl-anthranilic acid in a methanol solution in the presence of sodium methanolate with a chromium (III)-salt, dissolving the resulting precipitate in toluene, distilling off about 10% of the toluene in vacuum and adding sufficient fresh toluene to the remaining solution, after filtering, to provide the concentration of chromium (III)-N-acylanthranilate required for the dispersion.

4,111,971
PROCESS FOR THE MANUFACTURE OF METAL-AZOMETHINE COMPLEX COMPOUNDS
Dieter Sellmann, Paderborn, and Ernst Thallmair, Baierbrunn, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfort am Main, Fed. Rep. of Germany
Filed Oct. 27, 1976, Ser. No. 736,080
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1975, 2548330
Int. Cl.² C07F *11/00, 9/00, 13/00, 15/00*
U.S. Cl. 260—438.5 R **13 Claims**

1. A process for the manufacture of azomethine metal complex compounds having the formula



in which
n is an integer of from −3 to +3
M is an element of subgroups V to VIII of the periodic table
y is the integer 1
x is an integer of from 0 to +5 and 4 is less than or equal to $(x+y)$ which is less than or equal to 6
R is an aromatic radical or an alkyl radical having from 1 to 15 carbon atoms
R′ is an aromatic radical or an alkyl radical having from 1 to 15 carbon atoms or hydrogen, which comprises condensing a metal ammonia complex of the formula

$[(CO)_xM(NH_3)_y]^n$

with a carbonyl compound of the formula R—CO—R′ where R and R′ are as defined above or where the group R—CO—R′ is an aliphatic cyclic ketone having 5 to 7 carbon atoms.

4,111,972

ORGANOPHOSPHORUS NICKEL COMPLEXES AND USE THEREOF

Darryl R. Fahey, and John E. Mahan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 684,350, May 7, 1976. This application Dec. 8, 1977, Ser. No. 858,600
Int. Cl.[2] C07F *15/04*
U.S. Cl. 260—439 R 4 Claims

1. A process of preparing bis(μ-diphenylphosphido)tris(triethylphosphine)dinickel comprising reacting a mixture of suitable amounts of tetrakis(triethylphosphine)nickel(O) and pentafluorophenyldiphenylphosphine in a suitable diluent at a suitable temperature under an inert atmosphere and a pressure which maintains the reaction mixture essentially in the liquid phase.

4,111,973

PROCESS FOR PRODUCING A CYCLOTRISILOXANE IN A CRACKING REACTION

Ben A. Bluestein, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 1, 1977, Ser. No. 856,425
Int. Cl.[2] C07F *7/08*
U.S. Cl. 260—448.2 E 16 Claims

1. A process for improving the yield and purity of a cyclotrisiloxane of the formula,

$$(R\ R'\ Si\ O)_3$$

where R is selected from the class consisting of an alkyl radical of 1 to 8 carbon atoms cycloalkyl radicals of up to 8 carbon atoms and alkenyl radicals of 2 to 8 carbon atoms and R′ is a fluoroalkyl radical of 3 to 8 carbon atoms comprising adding to a diorganodihalosilane hydrolyzate or a mixture of cyclopolysiloxanes, an effective amount of an alkali metal hydroxide, and an effective amount of a promoting additive selected from the class consisting of aliphatic alcohols, salts of aliphatic alcohols and aliphatic alcohols containing aliphatic unsaturation wherein such additives have from fourteen to thirty carbon atoms, where the organo groups are the same as R and R′; and heating the resulting mixture at a temperature above 100° C.

4,111,974

PROCESS FOR THE PRODUCTION OF ALKOXY-β-HALOGENOETHYLSILANES

Zdenek Mazour, Frenkendorf, and Francis Louis Dayer, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

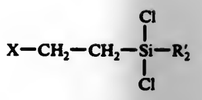
Filed Jan. 28, 1977, Ser. No. 763,458
Int. Cl.[2] C07F *7/18*
U.S. Cl. 260—448.8 R 12 Claims

1. Process for the production of alkoxy-β-halogenoethylsilanes of the formula I



(I)

wherein
X represents chlorine or bromine,
R_1 represents a straight-chain or branched-chain alkyl group having 1 to 18 carbon atoms, an alkoxyalkyl group having 3 to 14 carbon atoms, the benzyl group or a benzyl group mono- or disubstituted by an alkoxy group having 1–4 carbon atoms, and
R_2 represents methyl or R_1O—,
by reaction of a β-halogenoethylchlorosilane of the formula II



(II)

wherein R'_2 represents methyl or chlorine and X has the meaning given under formula I, with an alcohol of the formula III

$$R_1OH \qquad \text{(III)}$$

wherein R_1 has the meaning given under formula I, which process comprises carrying out the reaction of a β-halogenoethylchlorosilane of the formula II with an alcohol of the formula III in the presence of ammonia.

4,111,975

CATALYTIC PROCESS FOR PRODUCING POLYHYDRIC ALCOHOLS AND DERIVATIVES

James Norman Cawse, and Jose Luis Vidal, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 30, 1977, Ser. No. 782,986
Int. Cl.[2] C07C *27/06*
U.S. Cl. 260—449 L 11 Claims

1. A process for producing alkane polyols in a homogeneous liquid phase mixture which comprises reacting at a temperature of from about 100° C to about 375° C and a pressure of from about 500 psia to about 50,000 psia, a mixture comprising oxides of carbon and hydrogen in the presence of a rhodium carbonyl complex and as promoters an alkali metal cation and a cryptand.

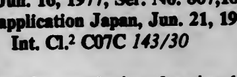
4,111,976

PROCESS FOR THE PREPARATION OF METHYLIMINOISOBUTYRATE HYDROCHLORIDE

David E. Balke, and Donald E. Perez, both of Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1977, Ser. No. 865,099
Int. Cl.[2] C07C *119/18*
U.S. Cl. 260—453 RW 9 Claims

1. In the process for preparing methyliminoisobutyrate hydrochloride of the formula



by reacting isobutyronitrile, hydrogen chloride and methanol in the presence of excess hydrogen chloride, the improvement which comprises adding the isobutyronitrile and hydrogen chloride at a temperature of from about 5° to 25° C. to a methanolic solution containing excess hydrogen chloride and maintaining during the reaction a methanolic reaction medium saturated with hydrogen chloride.

4,111,977

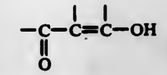
FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 642,994, Dec. 22, 1975, Pat. No. 4,069,201, which is a continuation-in-part of Ser. No. 429,164, Dec. 28, 1973, abandoned. This application Jun. 17, 1977, Ser. No. 807,448
Int. Cl.[2] C08K *5/04*
U.S. Cl. 260—45.95 R 13 Claims

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of an additive selected from the group consisting of the metal salt of unsubstituted and halogenated

oxocarbon acids, and mixtures thereof, wherein said metal salts thereof are selected from the group consisting of alkali metals and alkaline earth metals, and mixtures thereof, and said halogen is selected from fluorine, chlorine and bromine, and said oxocarbon acids are characterized by having the moiety



forming a cyclic non-aromatic ring in their structure.

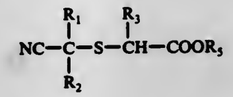
4,111,978

CYANOMETHYLTHIOACETYLCEPHALOSPORIN INTERMEDIATES

Hermann Breuer, and Uwe Treuner, both of Regensburg, Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 513,674, Oct. 10, 1974, abandoned, which is a division of Ser. No. 278,168, Aug. 4, 1972, Pat. No. 3,855,212. This application Sep. 1, 1977, Ser. No. 829,707
Int. Cl.[2] C07C *121/16, 121/66*
U.S. Cl. 260—465 D 8 Claims

1. A compound of the formula



wherein R_1 and R_2 each is hydrogen, phenyl, hydroxyphenyl, chlorophenyl, benzyl or phenethyl; R_3 is hydrogen, phenyl, hydroxyphenyl, aminophenyl, chlorophenyl or benzyl; with the proviso that at least one of R_1, R_2 and R_3 is other than hydrogen; and R_5 is hydrogen or lower alkyl.

4,111,979

PROCESS FOR PRODUCING 8-AMINO-1-NAPHTHOL-3,6-DISULFONIC ACID

Norio Kotera, Amagasaki; Hiromichi Okabe, Hirakata, and Hiroshi Korenaga, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 16, 1977, Ser. No. 807,187
Claims priority, application Japan, Jun. 21, 1976, 51-73723
Int. Cl.[2] C07C *143/30*
U.S. Cl. 260—509 9 Claims

1. In the process for producing 8-amino-1-naphthol-3,6-disulfonic acid from naphthalene by trisulfonation, nitration, reduction, alkali fusion and acidification precipitation, the improvement comprising acidifying the alkali fusion mixture with the nitration reaction mixture to precipitate the partial alkali metal salt of 8-amino-1-naphthol-3,6-disulfonic acid which is separated by filtration, and using the resulting filtrate containing 1-nitronaphthalene-3,6,8-trisulfonic acid and/or salt as the starting material for the reduction reaction.

4,111,980

PROCESS FOR PREPARING OPTICALLY ACTIVE PHENYL GLYCINE

Wilhelmus H. J. Boesten, Sittard, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 9, 1977, Ser. No. 775,942
Claims priority, application Netherlands, Mar. 11, 1976, 7602544
Int. Cl.[2] C07C *99/00*
U.S. Cl. 562—401 3 Claims

1. In a process for preparing optically active phenyl glycine, in which racemic phenyl glycine is prepared and then optically resolved by treatment with an optically active camphor sulphonic acid, the improvement consisting essentially in treating a racemic phenyl glycine amide solution with an optically active camphor sulphonic acid solution, thereby simultaneously hydrolizing said racemic phenyl glycine amide and forming the diastereo-isomeric salts of phenyl glycine and said optically active camphor sulphonic acid, thereafter separating an enantiomer of the phenyl glycine-camphor sulphonic acid salt, and recovering the optically active phenylglycine enantiomorph therefrom by neutralization.

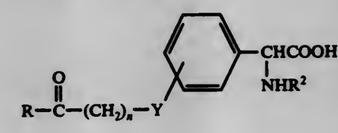
4,111,981

INTERMEDIATES FOR PREPARING SUBSTITUTED PHENYLGLYCYLCEPHALOSPORINS

John Gerald Gleason, Cornwells Heights, Pa., assignor to Smith-Kline Corporation, Philadelphia, Pa.

Division of Ser. No. 641,064, Dec. 15, 1975, Pat. No. 4,044,047, which is a division of Ser. No. 384,771, Aug. 1, 1973, Pat. No. 3,953,439. This application Apr. 28, 1977, Ser. No. 791,808
Int. Cl.[2] C07C *101/04, 101/20, 101/24*
U.S. Cl. 562—444 6 Claims

1. A compound of the formula:



in which:
Y is O or NH;
n is one to five;
R is NH_2 or OH; and
R^2 is hydrogen.

4,111,982

COPRODUCTION OF ACETIC AND PROPIONIC ACIDS

Lloyd S. Eubanks, and Jerry L. Price, both of Texas City, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 26, 1976, Ser. No. 708,670
Int. Cl.[2] C07C *51/12, 51/14*
U.S. Cl. 562—519 7 Claims

1. In a process whereby acetic and propionic acids are continuously and simultaneously produced by continuously contacting in a single reactor methanol, ethylene, water and carbon monoxide with a liquid reaction medium and a catalyst system consisting essentially of a rhodium compound and a halogen component which is iodine or an iodide compound at a temperature from about 50° to about 300° C and a partial pressure of carbon monoxide in the range from 1 to 1056 kg/cm^2, the improvement which comprises proportions molar proportins of methanol, ethylene and water from 1:5:5 to 100:1:1 and controlling the rate of introduction of methanol at or below

$$5 \times 10^{10} e^{-7830/T}[R][I]$$

gram-moles/liter-hour, *T* being reaction temperature in ° Kelvin and [*R*] and [*I*] being the molarity of rhodium and iodine, respectively, in the reactor.

4,111,983

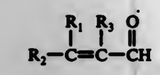
OXIDATION OF UNSATURATED ALDEHYDES TO UNSATURATED ACIDS

Abraham N. Kurtz, Charleston; Robert W. Cunningham, Saint Albans, both of W. Va., and Alfred W. Naumann, Monsey, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,577
Int. Cl.[2] C07C *51/32*
U.S. Cl. 562—535 10 Claims

1. A process for the production of unsaturated aliphatic carboxylic acid by vapor phase catalytic oxidation of the cor-

responding unsaturated aliphatic aldehyde with molecular oxygen in the presence of steam in a ratio of about 0.2 to 5 moles of oxygen and about 1 to 25 moles of steam per mole of aldehyde in the reaction mixture, said aldehyde having the structure



wherein R_1 is H or a C_1 to C_6 alkyl radical, and R_2 and R_3 are the same or different and are H or CH_3,

which comprises contacting the reaction mixture, at a temperature of from about 275° to 375° C. and at a pressure of from about 1 to 10 atmospheres, with an oxidation catalyst which has been thermally activated at a temperature of about 350° C. to 450° C. for about 2–24 hours in an atmosphere containing ammonia and which comprises a calcined composition containing the elements Mo, V, W, Cr and Cu in the ratio

$$Mo_aV_bW_cCr_dCu_e$$

wherein

a is 12,
b is 1 to 6,
c is 1 to 6,
d is 0 to 2, and
e is 1 to 4.

4,111,984

PROCESS FOR PRODUCING UNSATURATED ALDEHYDES, AND UNSATURATED FATTY ACIDS

Hiromichi Ishii; Hideo Matsuzawa; Masao Kobayashi, all of Ohtake, and Kantaro Yamada, Yokohama, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 474,218, May 29, 1974, Pat. No. 3,972,920. This application Mar. 16, 1976, Ser. No. 667,371

Claims priority, application Japan, Jun. 11, 1973, 48-65563; Aug. 28, 1973, 48-96345; Dec. 18, 1973, 48-142118; Dec. 26, 1973, 49-144000

The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.

Int. Cl.[2] C07C *51/24, 51/32*

U.S. Cl. 562—538 **6 Claims**

1. In a process for the gas phase catalytic oxidation of t-butyl alcohol in the presence of molecular oxygen at 200° C to 450° C to produce mixtures of the corresponding aldehyde and acid, the improvement comprising: oxidizing said compound over a calcined catalyst consisting essentially of $Mo_aSb_bBi_cFe_dNi_eSn_gX_hY_iO_j$ wherein X is at least one alkali metal selected from the group consisting of potassium, rubidium and cesium, Y is at least one metal selected from the group consisting of cobalt, uranium, germanium, tungsten and titanium, and *a* to *h* are atomic ratios wherein $a = 12$, $b = 0.2$ to 20, $c = 0.2$ to 12, $d = 0.2$ to 12, $e = 0.2$ to 12, $f = 0$ to 20, $g = 0.01$ to 4 and $h = 0$ to 6, and *i* is determined according to the oxidation states of the metal atoms in the catalyst.

4,111,985

PROCESS FOR PRODUCING UNSATURATED ALDEHYDES AND UNSATURATED CARBOXYLIC ACIDS

Kazuya Okada; Hideo Matsuzawa; Hiromichi Ishii, and Masao Kobayashi, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 663,365, Mar. 3, 1976, Pat. No. 4,035,418. This application Nov. 12, 1976, Ser. No. 741,508

Claims priority, application Japan, Mar. 12, 1975, 50-30313; Mar. 31, 1975, 50-39452; Jul. 4, 1975, 50-82982

Int. Cl.[2] C07C *5/00, 11/16, 45/04, 51/32*

U.S. Cl. 562—546 **6 Claims**

1. In a process for catalytically oxidizing at least one compound selected from the group consisting of unsaturated hydrocarbons with four carbon atoms in the gas phase with molecular oxygen at a temperature of 200° to 450° C to the corresponding aldehyde and acid, the improvement comprising:

oxidizing said compound over a calcined catalyst consisting essentially of

$$Mo_aSb_bBi_cFe_dNi_eCo_fSn_gX_hY_iO_j$$

wherein X is at least one metal selected from the group consisting of potassium, rubidium, cesium and thallium, and Y is at least one metal selected from the group consisting of selenium, tellurium, gallium, vanadium and ruthenium; wherein the subscripts *a* to *j* are the atomic ratios of each component and *a* is 12, $b = 0.2$ to 20, $c = 0.2$ to 12, $d = 0.2$ to 12, $e = 0.2$ to 12, $f = 0$ to 20, $g = 0$ to 20, $h = 0.01$ to 4, $i = 0.01$ to 4 and *j* is a value determined by the valencies of the elements in the catalyst.

4,111,986

BUTANE OXIDATION TO ACETIC ACID

Wilford J. Zimmerschied, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 19, 1977, Ser. No. 788,984

Int. Cl.[2] C07C *51/20*

U.S. Cl. 562—549 **7 Claims**

1. The process of oxidizing butane to acetic acid which comprises contacting a sufficient concentration of an oxygen-containing gas with normal liquid butane in the presence of a dissolved catalyst consisting essentially of bromine and cobalt in a solvent medium comprising acetic acid to initiate a self-sustaining exothermic reaction, wherein each 100 grams of butane is contacted with oxygen at a rate of at least 5 liters of oxygen per hour.

4,111,987

LITHIUM PANTOATE AND OPTICALLY ACTIVE ISOMERS THEREOF AND PROCESS OF MAKING THE SAME

Joachim Schmidt; Christian Weigelt; Wolfgang Bamberg, and Wolfgang Schneider, all of Jena, Germany, assignors to V E B Jenapharm, Jena, Germany

Continuation of Ser. No. 407,254, Oct. 17, 1973, abandoned. This application Mar. 16, 1976, Ser. No. 667,411

Int. Cl.[2] C07C *59/04*

U.S. Cl. 562—401 **2 Claims**

1. The process of making DL-lithium pantoate comprising reacting D,L-calcium pantoate and lithium oxalate in a solvent for the reactants and in amounts of the two salts to permit effecting a metathesis of the two salts, the reaction being carried out at the boiling point of the solvent, then separating the calcium oxalate from the DL-lithium pantoate and recovering the latter compound in the form of its monohydrate.

4,111,988

4-(2,2-DICHLORO-1,1-DIFLUOROETHOXYBENZENE) SULFONYL CHLORIDE AND ITS PREPARATION

George A. Burk, Bay City; Christian T. Goralski, and Craig E. Mixan, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 10, 1977, Ser. No. 758,283

Int. Cl.[2] C07C *143/70*

U.S. Cl. 260—543 R **2 Claims**

1. 4-(2,2-Dichloro-1,1-difluoroethoxybenzene)sulfonyl chloride.

2. The method of making 4-(2,2-dichloro-1,1-difluoroethoxybenzene)sulfonyl chloride by mixing together at about 10° C., an excess of phenol as such or as its alkali metal phenate with dichlorodifluoroethylene in the presence of a solvent, recovering the resulting 2,2-dichloro-1,1-difluoroethoxybenzene from the reaction medium and mixing it with excess chlorosulfonic acid at a reaction temperature between about 0° C. and about room temperature and recovering 4-(2,2-dichloro-1,1-difluoroethoxybenzene)sulfonyl chloride from the reaction medium.

4,111,989

N-SUBSTITUTED ALKANESULFENYL-N-ALKYL AND N-SUBSTITUTED ALKANETHIO-SULFENYL-N-ALKYL CARBAMOYL HALIDE COMPOUNDS

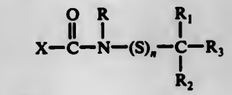
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 701,166, Jun. 30, 1976, Pat. No. 4,058,549. This application Jul. 27, 1977, Ser. No. 819,553

Int. Cl.[2] C07C *125/03, 51/58*

U.S. Cl. 260—544 C **8 Claims**

1. A compound of the formula:



wherein:

n is 1;
X is chlorine or fluorine;
R is alkyl;
R_1 and R_2 are individually alkyl or haloalkyl or R_1 and R_2 together may form an alkylene chain completing either a substituted or unsubstituted cyclopentyl, cyclohexyl or either a 6, 7 or 8 membered bicycloalkyl ring wherein the permissible substituents are one or more chloro, fluoro, bromo, alkyl or haloalkyl substituents;
R_3 is haloalkyl;

with the proviso that R, R_1, R_2 and R_3 substituents individually may not include more than eight aliphatic carbon atoms.

4,111,990

1-ACETYLAMINOTRICYCLO [4.3.1.1[2,5]] UNDECANE AND PROCESS FOR THE PREPARATION THEREOF

Yoshiaki Inamoto; Koji Aigami; Motoyoshi Ohsugi; Yoshiaki Fujikura, and Hiroshi Ikeda, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1977, Ser. No. 839,976

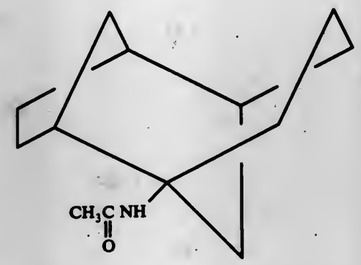
Claims priority, application Japan, Oct. 12, 1976, 51-122440

Int. Cl.[2] C07D *102/08, 103/12*

U.S. Cl. 260—561 R **4 Claims**

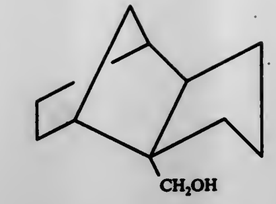
1. 1-Acetylaminotricyclo [4.3.1.1[2,5]] undecane having the formula (I):

(I)



2. A process for preparing 1-acetylaminotricyclo [4.3.1.1[2,5]] undecane which comprises reacting endo-2-hydroxymethyl-exo-2,3-trimethylenenorbornane of formula (III) with acetonitrile in the presence of sulfuric acid:

(III)



4,111,991

PROCESS FOR MAKING HALOGEN SALTS

James A. Garrison, Huntington Beach, Calif., assignor to Deepwater Chemical Co., Costa Mesa, Calif.

Filed May 16, 1977, Ser. No. 797,419

Int. Cl.[2] C07C *87/22*

U.S. Cl. 260—583 P **12 Claims**

1. A process for making an amine halide comprising:

reacting substantially stoichiometric amounts of elemental halogen selected from the group consisting of CL, Br and I;

a second compound selected from the group consisting of hydrazine, hydrazine hydrate, and compounds which generate hydrazine under the reaction conditions; and,

a third compound selected from the group consisting of amines and salts thereof which generate the amine under the reaction conditions;

in a reaction medium selected from the group consisting of water, alcohols, ethers and mixtures thereof.

4,111,992

PREPARATION OF FOOD COLORING AGENTS

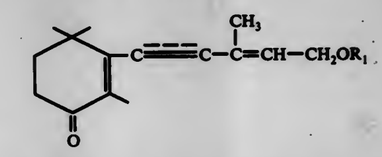
Michael Rosenberger, Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 723,416, Sep. 15, 1976, Pat. No. 4,025,564, which is a division of Ser. No. 585,224, Jun. 9, 1975, Pat. No. 4,000,198. This application Feb. 4, 1977, Ser. No. 765,570

Int. Cl.[2] C07C *49/48, 49/56, 49/60*

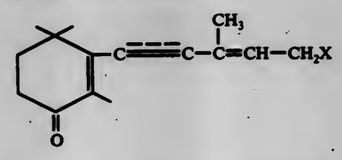
U.S. Cl. 260—586 R **5 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or taken together with its attached oxygen atom forms an ether protecting group removable by hydrolysis, and the dotted bond can be optionally hydrogenated.

4. A compound of the formula



wherein X is halogen and the dotted bond can be optionally hydrogenated.

4,111,993

PROCESS FOR RACEMIZATION OF ALLETHROLONE

Charles Pavan, Nogent-sur-Marne, and Jacques Bulidon, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed May 9, 1977, Ser. No. 795,021
Claims priority, application France, May 14, 1976, 76 14617
Int. Cl.[2] C07C *45/00, 45/24, 49/46;* C07B *20/00*
U.S. Cl. 260—586 R 9 Claims

1. A process for the preparation of racemic (R,S) allethrolone comprising heating optically active allethrolone of the (R) configuration or of the (S) configuration or a mixture of the (R) and (S) configurations in non-equimolecular proportions with formic acid to form the formate of racemic allethrolone of (R,S) configuration and hydrolyzing the latter in the presence of an strong acid or strong base to obtain racemic (R,S) allethrolone.

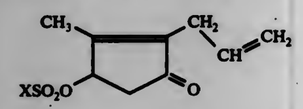
4,111,994

PREPARATION OF OPTICALLY ACTIVE ALLETHROLONE

Jacques Martel, Bondy, and Jean Tessier, Vincennes, both of France, assignors to Roussel Uclaf, Paris, France

Filed Jul. 29, 1977, Ser. No. 820,096
Claims priority, application France, Aug. 26, 1976, 76 25799
Int. Cl.[2] C07C *45/24*
U.S. Cl. 260—586 R 5 Claims

1. A process for the preparation of optically active (S) or (R) allethrolone comprising reacting in at least one organic solvent selected from the group consisting of dimethylformamide, dimethylsulfoxide, dimethoxyethane, acetonitrile, aliphatic ketones, hexamethylphosphortriamide, alkanols and monocyclic aromatic hydrocarbons a sulfonate of optically active allethrolone of (R) or (S) configuration of the formula



wherein X is selected from the group consisting of alkyl of 1 to 3 carbon atoms and phenyl optionally substituted in the p-position with a member of the group consisting of methyl, chlorine, bromine and fluorine with a salt selected from the group consisting of alkali metal, alkaline earth metal, ammonium and a tertiary base of an organic carboxylic acid selected from the group consisting of aliphatic carboxylic acids of 1 to 6 carbon atoms optionally substituted with one or more halogens and a monocyclic aromatic carboxylic acid to form the ester of the carboxylic acid and (S) or (R) allethrolone antipodal to that of the starting sulfonate of allethrolone and subjecting the latter to acid hydrolysis to form (S) or (R) allethrolone antipodal to the starting sulfonate.

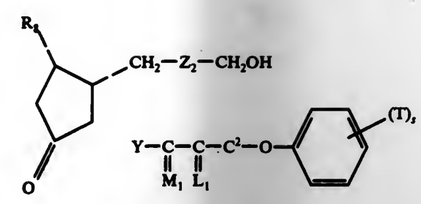
4,111,995

2-DECARBOXY-2-HYDROXYMETHYL-ω-PHENOXY-PGD ANALOGS

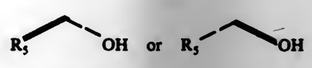
Norman A. Nelson, Galesburgh, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,357, Jan. 8, 1976, Pat. No. 4,055,602.
This application Aug. 5, 1977, Ser. No. 822,299
Int. Cl.[2] C07C *49/84*
U.S. Cl. 260—590 C 83 Claims

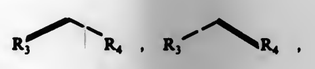
1. A prostaglandin analog of the formula



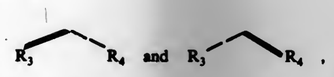
wherein R_8 is hydrogen or hydroxy;
wherein Y is trans-CH=CH—;
wherein M_1 is



wherein R_5 is hydrogen or hydroxy;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein Z_2 is
cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—;
cis-CH_2—CH=CH—$(CH_2)_g$—CH_2—; or
—$(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein *g* is one, 2, or 3; and
wherein *s* is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl.

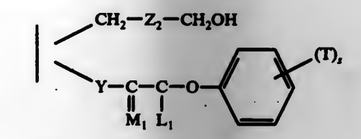
4,111,996

2-DECARBOXY-2-HYDROXY-METHYL-ω-PHENOXY-PGA OR 9-DEOXY-9,10-DIDEHYDRO-PGD ANALOGS

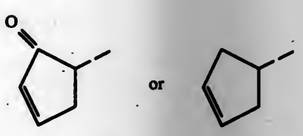
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,357, Jan. 8, 1976, Pat. No. 4,055,602.
This application Aug. 5, 1977, Ser. No. 822,303
Int. Cl.[2] C07C *49/84*
U.S. Cl. 260—590 D 83 Claims

1. A prostaglandin analog of the formula

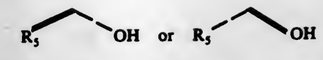


wherein | is



wherein Y is trans—CH=CH—;

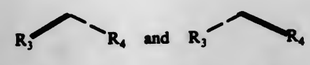
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein Z_2 is
cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—;
cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—; or —$(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein g is one, 2, or 3; and
wherein s is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl.

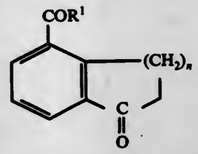
4,111,997

BENZALICYCLIC CARBOXYLIC ACID DERIVATIVE

Shunsaku Noguchi, Osaka; Tetsuya Aono, Kyoto; Yoshiaki Araki, Osaka, and Kiyohisa Kawai, Kyoto, all of Japan, assignors to Takeda Chemical Company, Ltd., Japan

Division of Ser. No. 647,810, Jan. 9, 1976, which is a division of Ser. No. 496,855, Aug. 12, 1974, Pat. No. 3,953,500. This application Nov. 15, 1976, Ser. No. 742,111
Claims priority, application Japan, Aug. 11, 1973, 48-90274; Sep. 1, 1973, 48-98371; Sep. 13, 1973, 48-103602; Sep. 13, 1973, 48-103604; Sep. 13, 1973, 48-103605; Sep. 13, 1973, 48-103606; Oct. 31, 1973, 48-122490; May 7, 1974, 49-51034; May 24, 1974, 49-59017; May 31, 1974, 49-62300
Int. Cl.[2] C07C *49/76*
U.S. Cl. 260—591 5 Claims

1. A compound of the general formula:



wherein R^1 is phenyl unsubstituted or substituted by a lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or halogen, and *n* is 1 or 2.

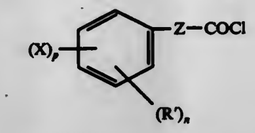
4,111,998

PROCESS FOR THE PREPARATION OF AROMATIC ALDEHYDES

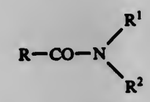
Jean-Pierre Decor, Villeurbanne, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Jul. 18, 1974, Ser. No. 489,715
Claims priority, application France, Jul. 20, 1973, 73 26713
Int. Cl.[2] C07C *47/48*
U.S. Cl. 260—599 11 Claims

1. In a process for the preparation of a juxtanuclear or extranuclear aromatic aldehyde in the liquid phase which comprises effecting the catalytic reduction with hydrogen in the presence of a palladium catalyst of an acid chloride of formula:



in which *n* and *p* each independently is 0, 1 or 2, R' is a straight or branched alkyl group with at most 4 carbon atoms, or if *n* is 2 and the two radicals R' are adjacent, they can, taken together, form an unsaturated divalent group which has 4 carbon atoms and which, together with the two carbon atoms of the benzene ring, forms another benzene ring, X is an alkoxy or cycloalkoxy group with up to 6 carbon atoms or a phenoxy group and Z is a valency bond or a saturated or unsaturated divalent hydrocarbon radical with at most 6 carbon atoms, the improvement wherein the reduction is carried out in the presence of a tertiary amide of the formula



in which R^1 and R^2 each independently represents a straight or branched saturated aliphatic group with at most 6 carbon atoms, a cycloaliphatic group with 5 or 6 carbon atoms in the ring, a phenyl group or a phenylalkyl or alkylphenyl group in which the alkyl portion contains at most 4 carbon atoms, or R^1 and R^2 together form a saturated or unsaturated divalent radical such that the ring which they form together with the nitrogen atom to which they are attached contains 4 or 5 carbon atoms, and R represents a hydrogen atom, a straight or branched saturated aliphatic group with at most 6 carbon atoms, a cycloaliphatic group with 5 or 6 carbon atoms in the ring, a phenyl group or a phenylalkyl or alkylphenyl group in which the alkyl portion contains at most 4 carbon atoms, or R, together with one of the radicals R^1 or R^2 forms a divalent radical such that the ring which they form together with the —CO—N grouping contains 4 to 5 carbon atoms, the tertiary amide being present in an amount from 10^{-5} to 10^{-1} moles per mole of acid chloride.

4,111,999

CLEAVAGE OF SILYLATED CARBORANES AND METHOD FOR PREPARING META-CARBORANE EMPLOYING SAME

Charles D. Beard, Yorktown Heights, and Robert B. Moffitt, III, Ossining, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,893
Int. Cl.[2] C07F *5/02*
U.S. Cl. 260—606.5 B 21 Claims

1. A highly selective method for cleaving a carboranyl carbon-silicon bond in a substrate having at least one of such bonds, without cleaving the carborane ring structure, which comprises contacting said substrate with a catalytic amount of a nucleophilic cleavage agent capable of cleaving said bond.

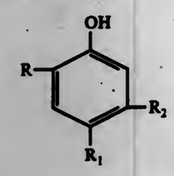
4,112,000

TERPENOPHENOLS

Jean Mardiguian, Paris, France, assignor to MAR-PHA, Societe d'Etude et d'Exploitation de Marques, France

Division of Ser. No. 566,364, Apr. 9, 1975, Pat. No. 4,067,899.
This application Jun. 6, 1977, Ser. No. 803,511
Claims priority, application United Kingdom, Apr. 11, 1974, 16142/74
Int. Cl.² C07C *39/27*; A61K *31/055*
U.S. Cl. 568—734 4 Claims

1. A terpenophenol of formula



in which R is 2-exonorbornyl, R_2 is H or methyl and R_1 is chlorine or bromine.

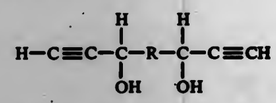
4,112,001

DIACETYLENIC ALCOHOL CORROSION INHIBITORS

Daniel S. Sullivan, 3rd, Houston, Tex.; Charles E. Strubelt, Tamare, Venezuela, and Kenneth W. Becker, Houston, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 637,302, Dec. 3, 1975, Pat. No. 4,039,336.
This application Mar. 25, 1977, Ser. No. 781,343
Int. Cl.² C07C *33/04*
U.S. Cl. 568—855 3 Claims

1. As a composition of matter an α, Ω-diacetylenic diol having the structural formula:



where R is an aliphatic or an alicyclic residue containing from 1 to 12 carbon atoms.

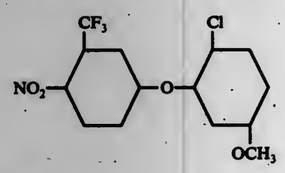
4,112,002

MONONITROTRIFLUOROMETHYL DIPHENYLETHERS

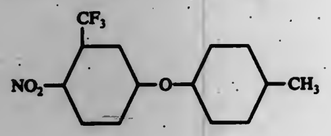
Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jan. 21, 1977, Ser. No. 760,952
Int. Cl.² C07C *43/28*
U.S. Cl. 260—612 R 2 Claims

1. A compound having the formula:



2. A compound having the formula:



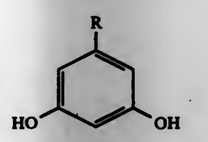
4,112,003

PROCESS FOR PREPARING POLYPHENOLS

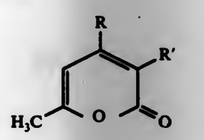
Ulrich Huber, Zurich, Switzerland, assignor to Givandan Corporation, Clifton, N.J.

Filed Feb. 3, 1977, Ser. No. 765,495
Claims priority, application Switzerland, Feb. 12, 1976, 1709/76; Dec. 21, 1976, 16091/76
Int. Cl.² C07C *41/00*
U.S. Cl. 260—613 D 12 Claims

1. A process for the manufacture of compounds of the general formula

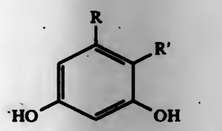


wherein R is lower alkoxy, cyclohexyloxy, benzyloxy, trityloxy, (lower alkoxy)-(lower alkoxy), 2 tetrahydropyranyloxy or propargyloxy,
which comprises heating to 80° C. to 200° C. a compound of the general formula



(II)

wherein R has the significance given earlier in this claim and R' represents a hydrogen atom or a lower alkoxycarbonyl group,
with an alkali metal alcoholate, whereby the ratio of the compound of formula II to alkali metal alcoholate is 2:5 to 1:5, and cleaving off any lower alkoxycarbonyl group R', if still present, by heating the product



(I)

wherein R is as noted previously and R_1 is a lower alkoxycarbonyl to 100° C. in an alkaline medium.

4,112,004

PROCESS FOR PRODUCING ALCOHOL

Shunsuke Mabuchi, and Kenji Tsuzuki, both of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Aug. 4, 1976, Ser. No. 711,497
Claims priority, application Japan, Aug. 11, 1975, 50-96634
Int. Cl.² C07C *29/00*
U.S. Cl. 568—861 7 Claims

1. In a process for producing a monohydric or polyhydric alcohol by the continuous hydrogenation of an organic peroxide in the presence of a nickel catalyst at a temperature of 30° to 200° C and a hydrogen pressure of 10 to 300 kg/cm², the improvement which comprises:

continuously feeding a solution of said organic peroxide and a suspended nickel catalyst into a first reactor at a ratio of the organic peroxide to the nickel catalyst of 10 : 1 to 0.1 : 1, and continuously discharging the reaction mixture and the nickel catalyst to a subsequent reactor whereby the hydrogenation is repeated, such rate of discharge being such that a constant weight and composition of the contents within each reactor are maintained.

4,112,005

PROCESS FOR THE PREPARATION OF MONONITRO-AROMATIC COMPOUNDS

Karl-Werner Thiem, Cologne; Adolf Hamers, and Josef Heinen, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 9, 1977, Ser. No. 795,249
Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622313
Int. Cl.² C07C *79/10, 79/12*
U.S. Cl. 260—645 16 Claims

1. Process for the preparation of mononitro-aromatic compounds which comprises (1) reacting a reactive aromatic compound with 40 to 68% strength by weight nitric acid in the absence of sulphuric acid, until mononitration is essentially complete (2) separating mechanically said nitration reaction mixture into an organic phase and an inorganic phase, (3) washing of the organic phase first of all with water and then with dilute alkali solution and subsequent separation of the unconverted starting material and of the adhering water by means of rectification (4) feeding said inorganic phase and, if necessary, the wash water of the first water wash of the organic phase, to a rectification column in which (a) water is withdrawn over the top and (b) a fraction which has a higher nitric acid content than the feed is taken off from the sump, (5) recycling said material withdrawn from the sump to the nitration reaction vessel with the addition of fresh concentrated nitric acid and (6) withdrawing from the system an amount of the top product from said column which corresponds to the water of reaction and that which enters with the nitric acid that is added.

4,112,006

PROCESS FOR NITRATING TOLUENE

Hans Schubert, Kelkheim, and Friedrich Wunder, Flörsheim, Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 15, 1977, Ser. No. 816,213
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632234
Int. Cl.² C07C *79/10*
U.S. Cl. 260—645 5 Claims

1. A process for the production of p-nitrotoluene which comprises reacting toluene with nitric acid in the gaseous phase under reduced pressure and at a temperature of about 80° to 180° C. in the presence of an inorganic catalyst which consists essentially of a carrier substance based on SiO_2 and/or Al_2O_3 impregnated with a high boiling inorganic acid and optionally with metal salts of such an acid.

4,112,007

SELECTIVE HYDROGENATION IN GASEOUS PHASE OF CYCLOPENTADIENE OR A MIXTURE OF ETHYLENE AND ACETYLENE USING A PALLADIUM ZINC CATALYST DEACTIVATED WITH AMMONIA, AMMONIUM CHLORIDE, STEAM, OR THEIR MIXTURES

Domenico Sanfilippo, Milan, and Morello Morelli, San Donato Milanese (Milan), both of Italy, assignors to ANIC S.p.A., Palermo, Italy

Filed May 21, 1976, Ser. No. 688,836
Claims priority, application Italy, May 23, 1975, 23666 A/75
Int. Cl.² C07C *5/06, 5/08*
U.S. Cl. 260—666 A 8 Claims

1. A process for the selective hydrogenation of a polyunsaturated hydrocarbon which comprises contacting a hydrocarbon selected from the group consisting of cyclopentadiene and a mixture of ethylene and acetylene with hydrogen in the gaseous state in the presence of a catalyst consisting essentially of palladium and a zinc salt and a further deactivating substance selected from the group consisting of ammonia, ammonium chloride and steam and mixtures thereof, said process being carried out at a temperature of between 20° C. and 300° C. and an absolute pressure of between 1 and 20 atmospheres.

4,112,008

PROCESS FOR ALKYLATION-TRANSALKYLATION OF AROMATIC HYDROCARBONS BY MEANS OF METHANOL

Christian Marcilly, Montesson, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 30, 1977, Ser. No. 782,880
Claims priority, application France, Mar. 30, 1976, 76 09568
Int. Cl.² C07C *3/52, 3/62*
U.S. Cl. 260—671 M 18 Claims

1. In a process for catalytically alkylating a charge containing from 30 to 95% by mole of toluene and 5 to 70% by mole of methanol in the presence of hydrogen, at a temperature from 100° to 600° C., under a pressure from 1 to 150 bars, with a feed space velocity, expressed in volume of charge per volume of catalyst and per hour, from 0.05 to 10, with a molar ratio H_2/charge from 0.1 to 20, wherein the improvement comprises conducting said alkylating in the presence of a catalyst having a zeolite base of the faujasite type selected from Y sieves containing less than 2% by weight of sodium and in which the molar ratio SiO_2/Al_2O_3 is from about 2 to 6, said catalyst containing at least 0.5% by weight of at least one metal selected from nickel, silver and cadmium, said catalyst having been calcined in the presence of air at 250°–650° C. and then reduced in the presence of hydrogen at 250°–550° C., said alkylating being performed in the presence of sulfur, said sulfur being introduced into the initial charge in such an amount that the latter contains from 0.001 to 5% by weight of a sulfur compound, and/or preintroduced into the catalyst in such an amount that the catalyst contains from 0.1 to 15% by weight of sulfur.

10. In a process for catalytically alkylating-transalkylating a charge containing from 20 to 95% by mole of toluene, 2 to 60% by mole of tetramethylbenzene and 2 to 20% by mole of methanol in the presence of hydrogen, at a temperature from 100° to 600° C., under a pressure from 1 to 150 bars, with a feed space velocity, expressed in volume of charge per volume of catalyst and per hour, from 0.05 to 10, with a molar ratio H_2/charge from 0.1 to 20, wherein the improvement comprises conducting said alkylating-transalkylating in the presence of a catalyst having a zeolite base of the faujasite type selected from Y sieves containing less than 2% by weight of sodium and in which the molar ratio SiO_2/Al_2O_3 is from about 2 to 6, said catalyst containing at least 0.5% by weight of at least one metal selected from nickel, silver and cadmium, said catalyst having been calcined in the presence of air at 250°–650° C. and then reduced in the presence of hydrogen at 250°–550° C., said alkylating-transalkylating being performed in the presence of sulfur, said sulfur being introduced into the initial charge in such an amount that the latter contains from 0.001 to 5% by weight of a sulfur compound, and/or preintroduced into the catalyst in such an amount that the catalyst contains from 0.1 to 15% by weight of sulfur.

4,112,009

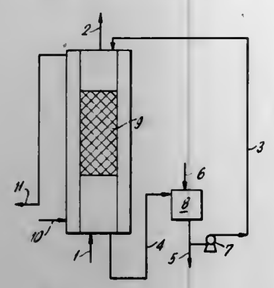
METHOD FOR REMOVING ACETYLENIC COMPOUNDS FROM SATURATED, OLEFINIC AND DIENIC HYDROCARBONS OR MIXTURES THEREOF

Carlo Rescalli, and Antonio Pacifico, both of San Donato Milanese, Italy, assignors to Snamprogetti, S.p.A., Liman, Italy

Continuation of Ser. No. 577,691, May 21, 1975, Pat. No. 4,031,157. This application Jan. 26, 1977, Ser. No. 762,769
Claims priority, application Italy, May 21, 1974, 23011 A/74; Mar. 21, 1975, 215117 A/75
Int. Cl.² C07C *7/04*
U.S. Cl. 260—677 A 9 Claims

1. Method for removing acetylenic compounds from saturated, olefinic or dienic hydrocarbons or mixtures thereof which comprises reacting said acetylenic compounds con-

tained in the saturated, olefinic or dienic hydrocarbons or in mixtures thereof with compounds of the formula R—OH



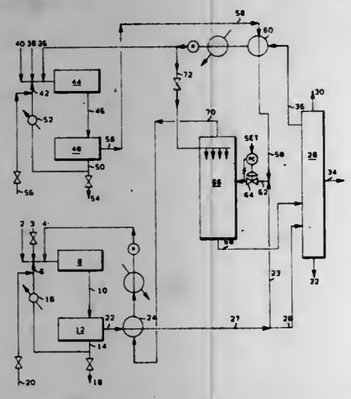
wherein R is acetyl in the presence of an acid ion - exchange resin containing mercuric ions and thereafter removing the reaction products.

4,112,010

PARALLEL ALKYLATION ZONES WITH ALKYLATE PRODUCT AND PROPANE REMOVAL FROM A FLASH ZONE AND A FRACTIONATION ZONE

Rolland E. Dixon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 25, 1977, Ser. No. 800,388
Int. Cl.² C07C 3/54
U.S. Cl. 260—683.48 **8 Claims**



1. A process for simultaneously and separately alkylating a first stream consisting essentially of an isoparaffin and propylene and a second stream consisting essentially of an isoparaffin and at least one olefin having from 4 to 7 carbon atoms which comprises

passing said first stream in admixture with a first portion of an acid alkylation catalyst through a first alkylation zone under alkylation conditions to form a first reaction mixture,

simultaneously passing said second stream in admixture with a second portion of said catalyst through a second alkylation zone under alkylation conditions to form a second reaction mixture,

passing said first reaction mixture to a first settling zone wherein said first reaction mixture separates into a first hydrocarbon phase and a first catalyst phase,

passing said second mixture is a second settling zone wherein said second mixture separates into a second hydrocarbon phase and a second catalyst phase,

withdrawing said first catalyst phase from said first settling zone,

withdrawing said second catalyst phase from said second settling zone,

withdrawing said first hydrocarbon phase from said first settling zone,

withdrawing said second hydrocarbon phase from said second settling zone,

dividing said first hydrocarbon phase into a first portion in an amount based on the propane to be removed from the process and a second portion,

passing said first portion of said first hydrocarbon phase to a fractionation zone,

removing said propane from said fractionation zone,

removing isoparaffin from said fractionation zone,

passing at least a major portion of said isoparaffin as recycle to said second alkylation zone,

combining said second hydrocarbon phase with said second portion of said first hydrocarbon phase,

passing the resulting combined hydrocarbon stream to a flash zone for separation therein of said combined stream into an isoparaffin-rich overhead stream and an alkylate-rich bottoms stream,

withdrawing said alkylate-rich bottoms stream from said flash zone,

passing said alkylate-rich bottoms stream to said fractionation zone,

withdrawing said isoparaffin-rich overhead stream from said flash zone,

passing said isoparaffin-rich overhead stream to said first alkylation zone, and

withdrawing an alkylate product stream from said fractionation zone.

4,112,011

OLIGOMERIZATION PROCESS

Alexander John Kolombos, Thames Ditton, England, assignor to The British Petroleum Company Limited, London, England

Filed Jun. 8, 1977, Ser. No. 804,628
Claims priority, application United Kingdom, Jun. 22, 1976, 25884/76
Int. Cl.² C07C 3/20
U.S. Cl. 260—683.15 R **7 Claims**

1. A process for producing unsaturated hydrocarbons which comprises subjecting a C_3 to C_8 mono-olefinic hydrocarbon to a temperature of from about 20° to 500° C. at a pressure of from about 50 to 1500 psig in the presence of a catalyst prepared by admixing a water-soluble gallium compound with an aluminia, silica, or silica-aluminia containing surface hydroxyl groups so that at least part of the surface hydroxyl groups have been exchanged with gallium ions.

4,112,012

PULVERULENT COATING AGENTS

Eckhard de Cleur, Duisburg; Rolf Dhein, Krefeld-Bockum; Hans Rudolph, Krefeld-Bockum, and Hans Joachim Kreuder, Krefeld-Bockum, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 544,123, Jan. 27, 1975, abandoned, which is a continuation of Ser. No. 373,470, Jun. 25, 1973, abandoned. This application May 27, 1977, Ser. No. 801,074
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1972, 2232084
Int. Cl.² C08L 63/00
U.S. Cl. 260—835 **11 Claims**

1. A curable pulverulent coating composition comprising (a) a polyester containing free carboxyl groups having a softening point of from 40° to 140° C. and an acid number of from 20 to 150 and being derived from at least one polyalcohol and one polycarboxylic acid which is predominantly aromatic and, as the sole crosslinking agent, (b) at least one polyglycidyl ester having an average molecular weight of from 200 to 1000 which is derived from an aromatic polycarboxylic acid, a cycloaliphatic polycarboxylic acid, an alphatic polycarboxylic acid or a mixture of at least two such acids, said (a) and (b) being present in an amount such that 0.7–1.4 equivalents of epoxide groups are present per equivalent of carboxyl groups.

4,112,013

ADHESIVE COMPOSITION

Paul Clayton Briggs, Jr., Wilmington, and Lawrence Carl Muschiatti, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 551,964, Feb. 21, 1975, abandoned, which is a division of Ser. No. 357,387, May 4, 1974, Pat. No. 3,890,407, which is a continuation-in-part of Ser. No. 273,353, Jul. 20, 1972, abandoned. This application Feb. 18, 1977, Ser. No. 770,058
Int. Cl.² C08L 23/00
U.S. Cl. 260—878 R **3 Claims**

1. A polymer-in-monomer solution suitable for use as an adhesive when combined with polymerization catalyst, which when so combined gives bonds that can be characterized by at least one of the following: the setting time is less than about 10 minutes, the T-peel strength is greater than about 5 pli, the lap shear strength on prepared surfaces is greater than about 2500 psi, and the bond strength on oily surfaces is not significantly adversely affected by the presence of the oil, said solution consisting essentially of (a) chlorosulfonated polyethylene made from branched polyethylene having a melt index of about 100, said chlorosulfonated polyethylene containing about 43% by weight chlorine and about 34 mmoles of sulfonyl chloride per 100 grams of polymer and (b) a mixture of the following acrylic monomers: methyl methacrylate, glacial methacrylic acid and ethylene glycol dimethacrylate, said solution having a Brookfield viscosity of up to about 1 million.

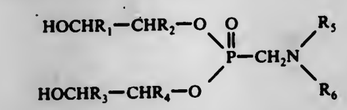
4,112,014

O,O'-BIS(HYDROXYALKYL) N,N-DI(LOWER-ALKYL)AMINOMETHANE PHOSPHONATES

Curtis P. Smith, Cheshire, and Henri Ulrich, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 634,136, Nov. 21, 1975, abandoned. This application Apr. 11, 1977, Ser. No. 786,690
Int. Cl.² C07F 9/40; C08J 9/00
U.S. Cl. 260—945 **4 Claims**

1. An O,O'-bis(hydroxyalkyl) N,N-di(lower-alkyl)aminomethanephosphonate having the formula:



wherein R_1, R_2, R_3, and R_4 are each independently selected from the class consisting of hydrogen and lower-alkyl, and R_5 and R_6 each independently represents lower-alkyl.

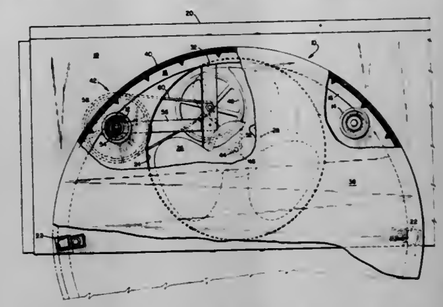
4,112,015

HUMIDIFIER DRIVE SYSTEM

Theodore E. Tinsler, Sidney, Ohio, assignor to White-Westinghouse Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 597,527, Jul. 21, 1975, abandoned. This application Apr. 22, 1977, Ser. No. 790,012
Int. Cl.² B01F 3/04
U.S. Cl. 261—92 **15 Claims**

1. In a humidifier of the type embodying a rotatable media wheel rotating on a horizontal axis so a lower sector passes through a water reservoir and in which humidifier an airflow path is provided from exterior of the humidifier to and through the water soaked portion of the rotating media wheel above the reservoir to a humidified air exhaust path from the humidifier, the improvement comprising: a humidifier interior structure having an upright division panel including a central opening providing an air flow passage to the media wheel; means, including drive roller means on the outer side of said panel, for rotatably supporting and driving said media wheel, and a drive roller driving shaft coaxially secured to said drive roller means; a rotary electric motor, said motor having a rotary motor shaft each end of which projects from respective ends of the motor; a fan mounted on and rigidly secured on one end of the motor shaft disposed concentric with and adjacent said panel opening to force air through the opening; a plural belt and pulley high



speed reduction drive system, with input and output pulleys, located on the opposite side of said panel from said media wheel with its input pulley directly secured on the other end of the motor shaft and its output pulley secured on said roller driving shaft; and means on said panel mounting said motor, said drive roller shaft and said high speed reduction drive system on said opposite side of said panel.

4,112,016

POLYAMIDE FIBER

Gordon Mars Moulds, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 349,485, Apr. 9, 1973, abandoned. This application Apr. 3, 1975, Ser. No. 564,903
Int. Cl.² C08K 5/31, 5/34; C08L 77/10, 61/26
U.S. Cl. 260—849 **3 Claims**

1. A polyamide fiber selected from the group of poly(p-phenylene terephthalamide), poly(chloro-p-phenylene terephthalamide), poly(p-phenylene chloroterephthalamide), and poly(p-benzamide), said fiber containing the reaction product of 2 to 5 parts of a tetrakis(hydroxymethyl)phosphonium compound and one part of a member of the group of

(A) melamine-formaldehyde condensate;

(B) melamine-formaldehyde condensate and magnesium ammonium phosphate hexahydrate;

(C) guanidine magnesium phosphate; and

(D) guanidine phosphate;

in such an amount as to provide between 0.4 and 3.0% by weight of phosphorus.

4,112,017

RADIATION CURABLE COATING COMPOSITIONS

Dennis D. Howard, Girard, Pa., assignor to Lord Corporation, Erie, Pa.

Continuation-in-part of Ser. No. 708,155, Jul. 23, 1976. This application Aug. 2, 1976, Ser. No. 710,776
Int. Cl.² C08L 75/00
U.S. Cl. 260—859 R **35 Claims**

1. Unsaturated addition-polymerizable urethane resins characterized by the presence of at least one ethylenically unsaturated terminal group having the structure $CH_2 = C<$, said unsaturated urethane resins comprising the reaction product of

(i) at least one organic isocyanate compound having at least two isocyanate groups;

(ii) at least one polyester polyol having at least two hydroxy groups, said polyester polyol comprising the reaction product of

(a) at least one glycol selected from the group consisting of 1,3-butylene glycol and neopentyl glycol;

(b) adipic acid;
(c) isophthalic acid; and
(d) zero to 50 mol percent of at least one aliphatic polyol having at least three hydroxyl groups, said mol percent being based on total moles of glycol and aliphatic polyol;
the amount of isophthalic acid being in the range from about 5 to about 25 mol percent, based on total mols of adipic acid and isophthalic acid; and
(iii) at least one unsaturated addition-polymerizable monomeric compound having a single isocyanate-reactive active hydrogen group;
there being present an excess of isocyanate compound with respect to the hydroxyl groups of said polyester polyol,
said unsaturated addition-polymerizable monomeric compound having a single isocyanate-reactive active hydrogen group being present in an amount sufficient to provide at least one molar equivalent of active hydrogen group with respect to isocyanate reactivity.

4,112,018

UNSATURATED POLYESTER RESINS SUITABLE FOR THE PRODUCTION OF CROSS-LINKED POLYESTERS WHICH ARE DIFFICULT TO SAPONIFY

Hans-Joachim Traenckner, Krefeld-Fischeln; Hans Jurgen Rosenkranz, Krefeld; Hans-Michael Fischler, Krefeld, and Erich Eimers, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 581,805, May 29, 1975, abandoned. This application Aug. 30, 1976, Ser. No. 718,531
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1974, 2427275
Int. Cl.² C08G *63/52, 63/56;* C08L *67/06*
U.S. Cl. 260—861 **2 Claims**

1. Unsaturated polyester resins suitable for the production of cross-linked polyesters which are difficult to saponify containing

I. from 40 to 90% by weight of an unsaturated polyester which in turn consists of
(a) from 30 to 80% by weight of radicals of α,β-ethylenically unsaturated dicarboxylic acids, of which up to 70 mol % may be replaced by radicals of saturated dicarboxylic acids and up to 10 mol % by monofunctional or trifunctional carboxylic acids,
(b) from 20 to 70% by weight of radicals of 2-ethyl-1,3-propane diol, and
(c) from 0 to 50% by weight of radicals of other diol components, of which up to 10 mol % may be replaced by monohydric or trihydric alcohols, and
II. from 10 to 60% by weight of copolymerisable compounds.

4,112,019

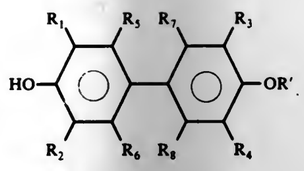
STABILIZED POLYMERIZABLE POLYESTER COMPOSITIONS

Alfred Joseph Restaino, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 595,412, Jul. 14, 1975, Pat. No. 4,049,731. This application May 13, 1977, Ser. No. 796,685
Int. Cl.² C08K *5/04;* C08L *67/06*
U.S. Cl. 260—866 **4 Claims**

1. A polymerizable composition stabilized against premature polymerization comprising

(a) at least about 30 percent by weight based on the total weight of the composition of a vinyl or vinylidene monomer capable of free radical polymerization, and
(b) a polymerization inhibitor having the following general formula



wherein
R′ is hydrogen or an alkyl group containing from 1 to 4 carbon atoms,
R_1, R_2, R_3 and R_4 are alkyl groups containing from 1 to 5 carbon atoms, and
R_5, R_6, R_7 and R_8 are hydrogen or alkyl groups containing from 1 to 5 carbon atoms provided that only two of these may be a secondary or a tertiary alkyl group, and
(c) an unsaturated polyester resin.

4,112,020

HOT MELT BUTYL SEALANT INTERMEDIATE

John E. Callan, Broken Arrow, Okla., assignor to Cities Service Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 689,023, May 24, 1976, abandoned. This application Aug. 10, 1977, Ser. No. 823,241
Int. Cl.² C08L *67/06*
U.S. Cl. 260—873 **12 Claims**

1. A hot melt sealant intermediate composition comprising a partially grafted mixture of (A) a butyl rubber having a Mooney viscosity (ML 1+3 at 260° F.) of about 30–80, (B) about 25–150 phr of (1) a different elastomer selected from the group consisting of diene rubbers, polyisobutylene, styrene-olefin copolymer rubbers, epichlorohydrin rubber, ethylene-propylene-polyene terpolymers, and mixtures thereof and/or (2) a crystalline polymeric resin, and (C) about 25–150 phr of an elastomeric resin, at least about 1% by weight of the mixture consisting of graft copolymers of the butyl rubber on the other components.

4,112,021

PROCESS FOR PRODUCING THERMOPLASTIC RESIN

Takesaburo Shima, Saijo; Hiroshi Kozima; Tomio Yoshida, both of Niihama, and Joji Nakamura, Nishinomiya, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

Filed Dec. 15, 1976, Ser. No. 750,766
Claims priority, application Japan, Dec. 26, 1975, 51-156731
Int. Cl.² C08F *279/04*
U.S. Cl. 260—880 R **8 Claims**

1. A process for producing a thermoplastic resin which comprises polymerizing an aromatic monovinyl monomer and a vinyl cyanide monomer in the presence of an aqueous elastomeric latex, and then mixing with agitation the resulting copolymer latex with an aromatic monovinyl monomer, and a vinyl cyanide monomer, together with a polyalkylene oxide and a coagulant to obtain a stable suspension phase, and further polymerizing the mixture.

4,112,022

NITRILE RESINS STABILIZED AGAINST DISCOLORATION AND METHOD FOR PRODUCING THE SAME

Bruce Arthur Marien, and Paul Richard Kaufman, both of Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 31, 1977, Ser. No. 783,112
Int. Cl.² C08K *5/20, 5/10*
U.S. Cl. 260—881 **7 Claims**

1. A nitrile resin composition stable toward thermal discoloration comprising:

A. a polymer selected from the group consisting of polymers of an α, β-unsaturated nitrile with at least one other vinyl monomer copolymerizable therewith; graft polymers of an α, β-unsaturated nitrile, at least one additional vinyl monomer copolymerizable therewith and a diene rubber; and blends thereof, said polymer having been coagulated from a latex emulsion by use of an inorganic salt of a Group IIA metal ion, and
B. as a stabilizer, an effective amount of an acrylic acid compound selected from the group consisting of the acrylate esters of C_2 to C_6 alkylene glycols, N-(substituted alkyl) acrylamides, alkylene bisacrylamides, and mixtures thereof.

4,112,023

MOULDING COMPOSITIONS

Christopher Robert Gore, Buntingford, and Geoffrey George Arm, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 20, 1975, Ser. No. 588,948
Claims priority, application United Kingdom, Jul. 11, 1974, 30724/74
Int. Cl.² C08L *33/08, 33/10*
U.S. Cl. 260—901 **10 Claims**

1. A moulding composition comprising a blend of from 90–60% by weight of a high molecular weight polymer powder of methyl methacrylate, optionally containing up to 5% by weight of a copolymerisable monomer, having a reduced viscosity of greater than 6 and having at least 80% by weight of its particles below 125 microns and at least 50% by weight above 45 microns, together with from 10–40% by weight of a copolymer powder of methyl methacrylate with more than 7% but less than 15% by weight of 2-ethyl hexyl acrylate having a reduced viscosity of between 1.5 and 9 and having less than 15% by weight of its particles greater than 125 microns.

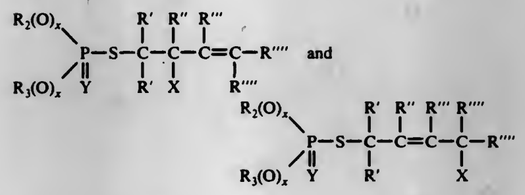
4,112,024

PHOSPHORYL SULFENYL CHLORIDE OLEFIN ADDUCTS

Wolfgang H. Mueller, Neuallschwil, Switzerland; Alexis A. Oswald, Mountainside, N.J., and Daniel N. Hall, Shaker Heights, Ohio, assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 594,593, Jul. 10, 1975, Pat. No. 4,003,939, which is a continuation of Ser. No. 836,128, Jun. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 595,559, Oct. 28, 1966, abandoned. This application Jan. 13, 1977, Ser. No. 759,060
Int. Cl.² C07F *9/165*
U.S. Cl. 260—956 **11 Claims**

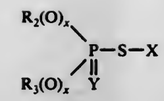
1. Markownikov oriented adduct materials having the formula:



and

wherein x is 1, Y is O, R_2 and R_3 are methyl and or ethyl, X is Cl, R′, R″, R‴ and R⁗ are selected from the group of H, methyl and chlorine.

5. A method for obtaining major amounts of anti-Markownikov addition products which comprises adding a sulfenyl halide having the general formula:



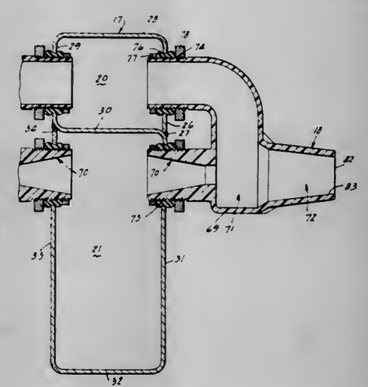
wherein x is 0 or 1, R_2 and R_3 are monovalent radicals selected from the group consisting of C_1–C_{30} alkyl radicals, C_6–C_{16} aryl radicals, C_7–C_{30} alkylaryl radicals, C_7–C_{30} aralkyl radicals and the halo, alkylthio, alkoxy and acyl and carboalkoxy derivatives thereof, Y is a sulfur or oxygen atom and X is a halogen atom to an unsaturated hydrocarbon selected from the group consisting of C_3–C_{50} acrylic unsymmetrical monoolefins, C_4–C_{14} acyclic aliphatic nonconjugated multiolefins, C_3–C_{12} unsymmetrical alicyclic aliphatic monoolefins, C_5–C_{12} alicyclic aliphatic nonconjugated diolefins, C_9–C_{16} alkenyl substituted aromatic compounds, said alkenyl substituent having from 3 to 10 carbon atoms, and halogen substituted derivatives thereof, for a time sufficient to recover the addition product containing major amounts of the anti-Markownikov adduct.

4,112,025

METHOD OF AND APPARATUS FOR JET AERATION

George E. Wilson, Sterling, and Milo E. Friesen, Rock Falls, both of Ill., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Continuation of Ser. No. 302,355, Oct. 30, 1972, abandoned, which is a continuation of Ser. No. 29,565, Apr. 17, 1970, abandoned. This application Jul. 26, 1973, Ser. No. 382,650
Int. Cl.² B01F *3/04*
U.S. Cl. 261—29 **4 Claims**



1. The method of treating a body of liquid by increasing the oxygen content thereof comprising the steps of

producing a pressurized liquid stream,
directing said liquid stream into a first enclosed axial flow path the cross sectional area of a portion of which decreases in the direction of the flow of the liquid stream to increase the velocity thereof,
discharging the high velocity liquid stream from said first axial flow path through an outlet formed at the downstream end thereof and substantially horizontally into an enclosed mixing chamber,
introducing a stream of pressurized air into said mixing chamber, entraining air from said air stream in said liquid stream in said mixing chamber,
directing the liquid and entrained air from said mixing chamber into a second enclosed frusto conical axial flow path of constantly decreasing cross section disposed in axial alignment with said first axial flow path, and discharging the liquid and entrained air from said second axial flow path substantially horizontally through an outlet formed at the downstream end thereof,
the outlet of said second axial flow path being located

within the body of liquid below the surface thereof and being in axial alignment with and having an open area greater than the outlet of said first axial flow path.

4,112,026

BUBBLE GENERATING APPARATUS

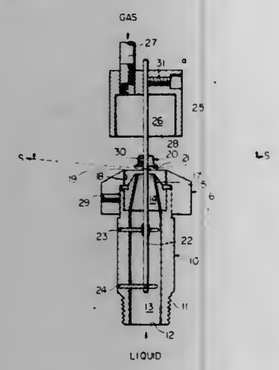
Toshiharu Kumazawa, Fujisawa, Japan, assignor to Mitsubishi Precision Co., Ltd., Japan

Filed Sep. 27, 1976, Ser. No. 727,275

Claims priority, application Japan, Nov. 4, 1975, 50-131405; May 27, 1976, 51-060559

Int. Cl.² C02D *1/04*

U.S. Cl. 261—29 **9 Claims**



2. An apparatus for generating bubbles in a liquid, comprising, in combination:

a nozzle element having a liquid inlet for introducing therein a pressurized liquid, a conical convergent flowing zone for accelerating and concentrating said pressurized liquid, and a circular outlet spaced apart from the liquid inlet at the extreme end of said flowing zone for spouting said accelerated and concentrated pressurized liquid;

an impact disperser means having a flat liquid impinging surface spaced apart from said circular outlet for causing a collision of said spouted pressurized liquid with said impinging surface and for forcedly generating a violently turbulent dispersing flow of said spouted pressurized liquid directed into the liquid, thereby forming a low pressure region in said liquid around said dispersing flow of said spouted pressurized liquid, and;

a gas supply means for supplying and guiding a gas to a region surrounding the impact disperser means, thereby causing said gas to be dragged into the low pressure region in said liquid and to be atomized and mixed into said dispersing flow effectively and uniformly.

4,112,027

METHOD FOR INDIRECT EVAPORATIVE COOLING OF UPFLOWING FLUID BY CONTACT WITH DOWNFLOWING WATER FROM OVERLYING EVAPORATIVE COOLING SECTION

Robert E. Cates, Leawood, Kans., assignor to The Marley Company, Mission, Kans.

Filed Jan. 30, 1976, Ser. No. 653,667

Int. Cl.² B01F *3/04*

U.S. Cl. 261—151 **3 Claims**

1. A method of cooling quantities of initially hot fluid comprising the steps of:

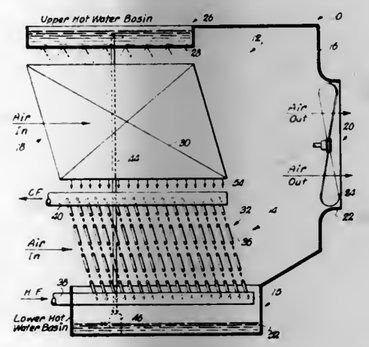
providing a fluid cooling section having a plurality of elongated, enclosed, fluid-conveying conduits which extend generally from the lower end of said section to the upper end thereof;

successively directing quantities of initially hot fluid in one direction along a first path for entry into successive lower ends of said conduits;

passing the fluid generally upwardly through said conduits;

removing the fluid from successive upper ends of said conduits and directing the same along a second path generally parallel to said first path and in a direction opposite to said one direction;

cooling the fluid during travel thereof through said conduits by causing cooling water to gravitate from the upper end of said fluid cooling section downwardly through the latter in primarily counterflow relationship to the generally upward flow of said fluid, with the cooling water impinging upon the external surfaces of said conduits for indirect sensible heat exchange between the cooling water and fluid through the walls of said conduits, whereby the coldest water entering the upper end of said fluid cooling sections comes into indirect thermal interchange relationship with the coldest portions of said fluid adjacent the upper end of said fluid cooling section;



directing ambient-derived air currents through said fluid cooling section during said gravitation of cooling water therethrough in a direction generally parallel to and the same as said one direction to cause the greatest fluid residence time to occur in the conduits adjacent the area where said ambient-derived air currents first enter the fluid cooling section and the coldest water impinges thereon; and

cooling said cooling water prior to the gravitation thereof through said fluid cooling section by allowing the water to gravitate through a water cooling section situated above said fluid cooling section which includes evaporative fill structure serving to disperse the water, and simultaneously passing currents of air through said water cooling section for evaporative cooling of the cooling water.

4,112,028

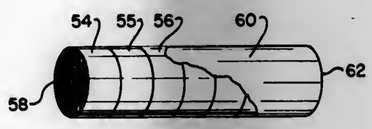
LIGHT EQUALIZER AND METHOD OF MAKING SAME

Henry H. Blau, Jr., Wayland, and Paul L. Kebabian, Somerville, both of Mass., assignors to Environmental Research & Technology, Inc., Concord, Mass.

Division of Ser. No. 458,124, Apr. 5, 1974, Pat. No. 3,887,262. This application Dec. 9, 1974, Ser. No. 530,957

Int. Cl.² B29D *11/00*

U.S. Cl. 264—1 **2 Claims**



1. Method of making a light equalizer comprising the steps of:

mixing at least two different powdered crystalline materials,

each capable of being compressed to form a body transparent to selected wavelengths of light and having different indices of refraction with respect to one another at said selected wavelengths;

pressing the mixed materials under pressure to form an integral body containing a plurality of centers at the interfaces between said at least two different powdered crystalline materials so as to scatter light at the said selected wavelengths; and

covering with a reflective coating the exterior surfaces of said integral body except for two opposite ends thereof.

4,112,029

MANUFACTURE OF FIBRIDS OF POLYOLEFINS

Bruno Sander, Ludwigshafen; Eckhard Bonitz, Frankenthal, and Kurt Scherling, Hemsbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Dec. 13, 1974, Ser. No. 532,589

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1973, 2363671

Int. Cl.² B01J *2/06*

U.S. Cl. 264—11 **5 Claims**

1. A process for the manufacture of discrete, non-agglomerated fibrids of an olefin polymer having at 25° C. an X-ray crystallinity of more than 5% w/w, said fibrids having a high degree of fibrillation and a high specific surface area, not agglomerating on evaporation of solvent therefrom, having substantially no shrink when left in air, and capable of being isolated in the absence of auxiliaries, which process comprises

(a) forming a solution in a pressure vessel by dissolving 0.5 to 30% w/w of said olefin polymer in a solvent which is pentane or a solvent mixture containing at least sufficient pentane to cause the polyolefin to separate in the form of discrete fibrids when said solution is relaxed, said mixture containing up to 98% pentane, under pressure at a temperature of 100° to 180° C.,

(b) passing a stream of said solution at a pressure thereof of 4 to 60 atmospheres gauge and at a temperature of 100° to 180° C. through an orifice of up to 20 mm diameter into a chamber which is at atmospheric pressure and has a temperature of 50 to 80° C., said chamber containing a body of the same liquid solvent but which is non-solvent for said olefin polymer at 50°–80° C., and said stream is passed into said body of liquid beneath the surface of said liquid,

(c) passing a liquid coaxially with said stream into said chamber to produce a field of shear forces in said chamber,

(d) flashing off in said chamber essentially all of said solvent from said stream and thereby solidifying said olefin polymer, and simultaneously forming in said field of shear forces discrete fibrids of said olefin polymer having lengths of 1 to 40 mm and thicknesses between 2 and 30 μm, and

(e) removing from said chamber a mass of said discrete, non-agglomerated fibrids.

4,112,030

METHOD AND SYSTEM FOR THE PRODUCTION OF SHEET OR PLATTER SHAPED INFORMATION CARRIERS

Martin Kremzow, Hanover, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 3, 1976, Ser. No. 682,451

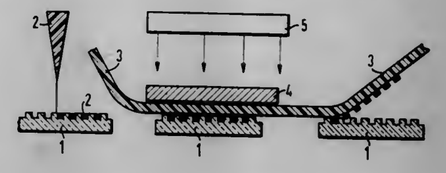
Claims priority, application Fed. Rep. of Germany, May 2, 1975, 2519476

Int. Cl.² B29D *17/00*

U.S. Cl. 264—25 **13 Claims**

1. A method for the production of sheet or platter shaped information carriers directly from an original carrier without use of an intermediate carrier, said information carriers having a surface structure corresponding to recorded information including video-signal memories of high storage density and the surface structure of which has the information stored in digital form as relief-like surface structure having two signal planes, comprising the steps of: providing an originally recorded rigid carrier having an original of said surface structure; providing the rigid original carrier with a layer of liquid which can be hardened under the effect of an energy radiation and which will level the surface structure; pressing together the layer side of the original carrier against an unprofiled surface of a flexible carrier material; subsequently hardening the layer liquid; and lifting the flexible carrier material off from the original carrier, together with the layer material adhering thereto forming said surface structure to create said information carriers.

11. A method for the production of duplicate high density information carrying records from a master information carry-



ing record without use of an intermediate carrying record, comprising the steps of:

a. providing a master information carrying record having a surface structure for high density video information formed of information stored in digital form as a relief-like surface structure having two signal planes;

b. applying a layer of hardenable liquid over an information carrying surface structure of the master record to cover said structure;

c. pressing an exposed surface of said layer against an unmarked surface portion of the duplicate record to be produced;

d. hardening said layer by exposure to an energy radiation, said hardening causing the layer to adhere to said unmarked surface portion; and

e. lifting the duplicate record off from the master record.

4,112,031

PROCESS AND APPARATUS FOR PRODUCING RUBBER HOSE WITH TEXTILE THREAD REINFORCING

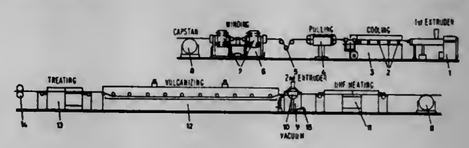
Hans-Joachim Gohlisch, Hannover-Waldhausen, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Fed. Rep. of Germany

Filed Jul. 20, 1976, Ser. No. 707,044

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1975, 2532864

Int. Cl.² B29D *23/05*

U.S. Cl. 264—26 **6 Claims**



1. A process of making continuous reinforced rubber hose which comprises the steps of:

extruding a tubular inner layer of rubber material at elevated temperature,

cooling the extruded tubular inner layer,

applying textile thread reinforcing around the cooled tubular inner layer,

subjecting the tubular inner layer with the textile thread thereon to a UHF field to preheat said inner layer to a

selected elevated temperature below vulcanizing temperature,
while said tubular inner layer with said thread thereon is still hot, extruding an outer layer of rubber material thereon at elevated temperature while applying a vacuum to the exterior thereof in the zone of extrusion,
whereby said tubular inner layer with said thread thereon is internally supported by air pressure inside the tubular inner layer and said outer layer is applied under said vacuum,
the temperature to which said tubular inner layer with said textile thread thereon is preheated being at least approximately as high as the temperature at which said outer layer is extruded, and
whereupon vulcanizing the hose comprising said tubular inner layer, textile thread and outer layer, said vulcanization being initiated while said tubular inner layer is still at an elevated temperature by virtue of said preheating.

4,112,032

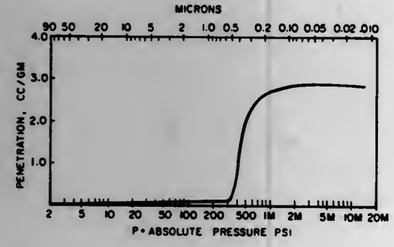
SILICA-CONTAINING POROUS BODIES OF CONTROLLED PORE SIZE

Paul E. Blaszyk, Horseheads; Robert D. Shoup, and William J. Wein, both of Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 678,928, Apr. 21, 1976, abandoned, which is a continuation of Ser. No. 440,693, Feb. 8, 1974, abandoned. This application Dec. 12, 1977, Ser. No. 859,326

Int. Cl.² C04B *35/14*

U.S. Cl. 264—42 **8 Claims**



1. A method for making porous silica-containing articles exhibiting compressive strengths in the pristine state greater than about 50 psi, having pore diameters ranging between about 100Å–1 micron, wherein at least 80% of the pores therein fall within ±30% of the average pore diameter value, which consists of
(a) preparing solutions having a pH between 10–15 and containing about 1–12 moles SiO_2/liter in solution from silicate solutions selected from the group consisting of lithium polysilicate, sodium silicate, potassium silicate, quaternary ammonium silicate, and colloidal silica;
(b) combining those solutions in one of the indicated proper proportions equivalent to:
(A) a weight ratio of 19:1 to 1:4 potassium silicate solution to colloidal silica solution wherein said potassium silicate solution consists essentially of 8.3% K_2O, 20.8% SiO_2, balance H_2O and said colloidal silica solution consists essentially of 40% SiO_2, balance H_2O;
(B) a weight ratio of 1:9 to 1:3 sodium silicate solution to colloidal silica solution wherein said sodium silicate solution consists essentially of 6.8% Na_2O, 25.3% SiO_2, balance H_2O and the colloidal silica solution is that defined in (A);
(C) a weight ratio of 9:1 to 1:4 potassium silicate solution and/or sodium silicate solution to quaternary ammonium silicate solution wherein said potassium silicate solution is that defined in (A), said sodium silicate solution is that defined in (B), and said quaternary ammonium silicate solution consists essentially of 9.9% quaternary ammonium ions, 45% SiO_2, balance H_2O;
(D) a weight ratio of 19:1 to 1:4 potassium silicate solution and/or sodium silicate solution to lithium polysilicate solution wherein said potassium silicate solution is that defined in (A), said sodium silicate solution is that defined in (B), and said lithium polysilicate solution consists essentially of 2.1% Li_2O, 20% SiO_2, balance H_2O;
(c) reacting an organic compound therewith selected from the group consisting of formaldehyde, paraformaldehyde, formamide, glyoxal, methyl formate, ethyl formate, methyl acetate, ethyl acetate, and mixtures thereof at a temperature between the freezing point and the boiling point of the solution for a sufficient period of time to polymerize the silica into a coherent, porous gelled body; and
(d) leaching said gelled body with a weak acid solution to remove excess alkali metal oxide.

4,112,033

METHOD OF USING SLUDGE FOR MAKING CERAMIC ARTICLES

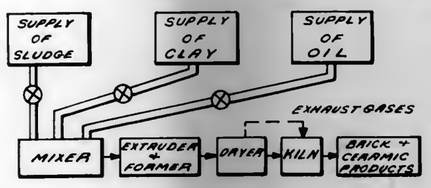
Hans Lingl, Neu-Ulm, Ludwigsfeld, Fed. Rep. of Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed Jun. 10, 1974, Ser. No. 478,038

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1973, 2326267

Int. Cl.² C04B *33/32, 35/64*

U.S. Cl. 264—44 **7 Claims**



3. A method of producing bricks or other ceramic articles from sludge having environmentally harmful and/or toxic substances therein, comprising the steps of automatically:
(a) mixing sludge with clay in a mixer having an exhaust system,
(b) extruding the mixture so formed in an extruder having an exhaust system, and forming articles from said mixture,
(c) drying said articles so formed in a dryer having an exhaust system,
(d) venting the exhaust gases from said mixer, extruder and dryer exhaust systems to a kiln, and
(e) firing said articles in said kiln.

4,112,034

BIAXIAL FILM PROCESS AND ROTARY APPARATUS THEREFOR

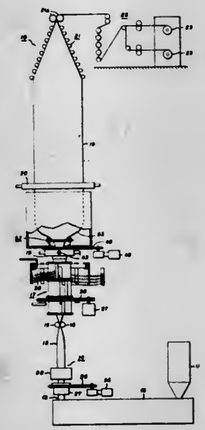
James L. Nash; Stanley J. Polich, both of Glen Falls, and Philip H. Carrico, Saratoga, all of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Filed May 5, 1977, Ser. No. 794,042

Int. Cl.² B29D *23/04*

U.S. Cl. 264—95 **19 Claims**

1. In a bubble apparatus for producing biaxially oriented synthetic resin film comprising an extruder to extrude molten resin in stalk form, means insufflate said stalk, and means to slit the insufflated stalk, the improvement comprising:
(a) an annular die for extruding molten resin in stalk form
(b) mounting means mounting said die for rotation about its vertical axis independent of said extruder whereby resin from said extruder is extruded from said annular die in a non rotating stalk form
(c) a cylindrical cooling mandrel mounted coaxially with said annular die for rotation therewith whereby said non rotating stalk slides axially and circumferentially over said rotating mandrel
(d) drive means for rotating said die and mandrel
(e) control means to control said drive means to rotate said die and mandrel
(f) a reheat oven coaxially positioned in said apparatus with respect to said stalk to receive the said stalk from said die
(g) heating means to raise the temperature in said oven
(h) mounting means adapting said oven for rotation about the vertical axis of said die



(i) drive means rotate said oven
(j) advancing means to advance said stalk through said rotating oven and
(k) control means to control said drive means and rotate said oven.

9. In a bubble process for producing biaxially oriented synthetic resin film wherein the resin emanates from an extruder, passes over a cooling mandrel, enters a coaxial reheat oven, passes coaxially through a hot air ring, is insufflated and thereafter slit into film the improvement comprising rotating said reheat oven slowly with respect to said stalk.

4,112,036

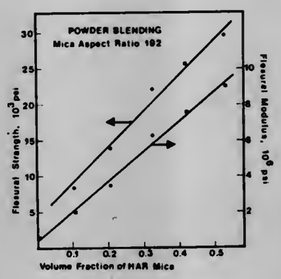
PREPARING MICA-REINFORCED COMPOSITES

Raymond T. Woodhams, Toronto, and Marinos Xanthos, Montreal, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 486,972, Jul. 10, 1974, abandoned. This application Jun. 1, 1976, Ser. No. 691,632

Int. Cl.² B05B *3/00*

U.S. Cl. 264—28 **11 Claims**



1. A method of preparing molding compounds for molding mica-reinforced thermosetting polyester resin composites, comprising:
a. mixing a solid curable unsaturated polyester, in the presence of a chain-extending agent for the polyester with a solid vinylic monomer, said mixing taking place in liquid form to provide an intimate blend thereof, said chainextending agent being selected to control the viscosity of the molding compounds at molding temperatures,
b. solidifying said liquid blend,
c. subdividing said solidified blend as a dry powder of selected particle size within the range of 300 to 1 microns diameter,
d. mixing the resulting dry blend particles with reinforcing mica platelets as a dry powder, at least about 50 wt. % of the blend particles having diameters less than about one fifth of the average diameter of the mica platelets, said mixing being sufficient to effect intimate dispersion and to coat the mica platelets with the blend particles,
e. heating the blend particle-coated mica platelets to soften and partially coalesce the blend particles and to densify the mixture, without initiating cross-linking of said polyester,
f. shaping said partially-coalesced blendcoated mica platelets into a desired form, and
g. cooling said shaped coated platelets to form said molding compounds wherein said mica platelets are uniformly distributed with substantial retention of initial mica platelet aspect ratio.

4,112,035

PRODUCTION OF CALCINABLE MATERIAL

Leslie John Lawrence, Middlesbrough, and Denis Ansbro, Stockton-on Tees, both of England, assignors to Tioxide Group Limited, Billingham, England

Filed May 11, 1977, Ser. No. 796,003

Claims priority, application United Kingdom, Jun. 11, 1976, 24203/76

Int. Cl.² B01J *2/10*

U.S. Cl. 264—113 **8 Claims**

1. A process for the production of calcinable gypsum which comprises agitating a mixture of damp gypsum containing from 15 to 25 weight percent of water with a carbonaceous reducing agent to form pellets, and when moisture is observed at the surface of the forming pellets, adding thereto a substantially dry mixture of a powder compound of calcium and a carbonaceous reducing agent until the forming pellets are coated with the powdered mixture and are free flowing.

4,112,037

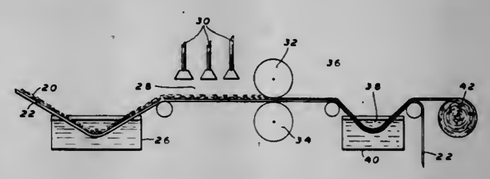
PROCESS OF MAKING AIR FILTER FABRIC

Roy B. Parker, Monmouth, and Richard R. Saindon, Hebron, both of Me., assignors to Albany International Corp., Albany, N.Y.

Filed Jan. 31, 1977, Ser. No. 763,898

Int. Cl.² D04H *1/46, 1/54*

U.S. Cl. 264—126 **3 Claims**



1. A process for making an air filter fabric which comprises;

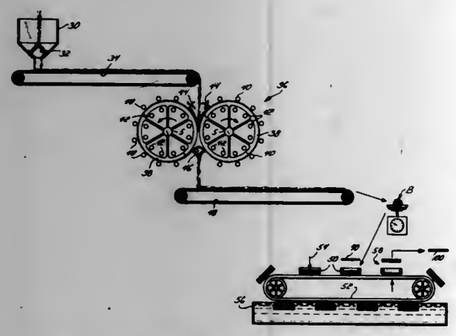
providing a non-woven web of thermoplastic, fusable, synthetic polymeric resin, staple fibers;
coating the fibers with a film of a compatible fiber stabilizing agent;
pressing the coated fibers together so as to rupture said film at fiber cross-over points; and
fusing the fibers together at said cross-over points while the coating remains intact at unruptured points, whereby the fundamental shape, geometry or configuration of the staple fibers is not altered to any significant degree and there is no significant reduction in pore size or air permeability of the filter fabric.

4,112,038

METHOD FOR PRODUCING MOLDED ARTICLES

Lynn Thomas Garner, Wilmington, N.C., assignor to Lowe Paper Company, Ridgefield, N.J. and Bolivia Lumber Company, Wilmington, N.C.

Filed Sep. 2, 1976, Ser. No. 719,756
Int. Cl.² B29C *3/02*
U.S. Cl. 264—138 **1 Claim**



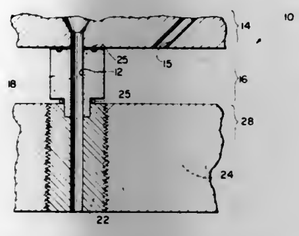
1. Method of producing a molded article of desired shape from a by-product of a process producing a paper product having a thermoplastic material coating said by-product comprising a thermoplastic material impregnated with a fibrous material, comprising:
a. separating a portion of the fibrous material from said by-product;
b. returning said portion of separated fibrous material to said paper product process;
c. delivering the remaining portion of said thermoplastic material and fibrous material to the exit side of a nip defined between a pair of contra-rotating heated drums to heat and render said remaining materials plastic, and to cause said remaining materials to adhere to the surfaces of said drums, and to be carried thereon from said exit side of said nip towards the entrance side of said nip;
d. removing said adhered plastic remaining materials from the surfaces of said rotating drums at a location adjacent the entrance side of said nip;
e. delivering said plastic remaining materials to a molding means; and
f. molding said plastic materials to a desired article shape.

4,112,039

PELLETIZING PROCESS

David W. Cuff, Chepachet, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 549,375, Feb. 12, 1975, Pat. No. 3,981,959, which is a continuation-in-part of Ser. No. 414,699, Feb. 10, 1974, abandoned, which is a division of Ser. No. 287,276, Sep. 8, 1972, Pat. No. 3,792,950. This application Sep. 27, 1976, Ser. No. 727,155
Int. Cl.² B28B *11/16*
U.S. Cl. 264—142 **8 Claims**



1. A method wherein molten thermoplastic material is formed into at least partially solidified strands as it is extruded into a gaseous medium such as air, comprising heating said material to make it fluid, conveying said material into the initial zone of an extrusion die having at least one extrusion orifice including said initial, as well as intermediate and final extrusion zones, forcing said thermoplastic material through said orifice and outward from said die in rod or strand-like forming having at least a solidified outer wall structure surrounding an inner core of said thermoplastic material, directing a liquid coolant under pressure into said intermediate zone of said extrusion orifice downstream from said initial zone to contact the outer surface of said thermoplastic material passing therethrough while at least partially vaporizing said coolant to simultaneously form said solidified outer wall structure and to provide a lubricating film between the inner eall of said orifice and said thermoplastic material to facilitate passage of said material therethrough, providing a heat reservoir in that portion of said die surrounding said final zone downstream of said intermediate zone at a significantly higher temperature than the softening temperature range of said thermoplastic material being extruded therethrough, maintaining the flow of said coolant between said solidified outer wall and the inner wall of said orifice in said final zone so as to thermally insulate said thermoplastic material from said heat reservoir while said thermoplastic material is being extruded through said orifice and interrupting the flow of said coolant in said final zone upon thermoplastic material freeze-off in said final zone of said orifice so that heat from said reservoir then passes from said reservoir to said final zone of said orifice so as to melt the thermoplastic material forming said freeze-off therein.

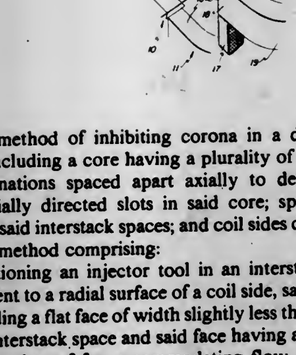
4,112,040

METHOD OF MAKING FIBERS CONTAINING HAIR PARTICLES

Norman Orentreich, 140 E. 72nd St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 720,831, Sep. 7, 1976, abandoned. This application Apr. 21, 1977, Ser. No. 789,577
Int. Cl.² B29F *3/00*; B29B *1/00, 1/12*
U.S. Cl. 264—176 F **11 Claims**

1. A method for fabricating natural-like hair bristles for use in a hair brush or the like, said process comprising the steps of comminuting a quantity of natural hair fibers into a plurality of minute particles said comminuting including the steps of freezing said hair fibers to a temperature less than −190° C, and thereafter grinding said frozen hair fibers, mixing said minute particles with a binder to form a thick slurry, and thereafter molding said slurry into bristles of a predetermined size.

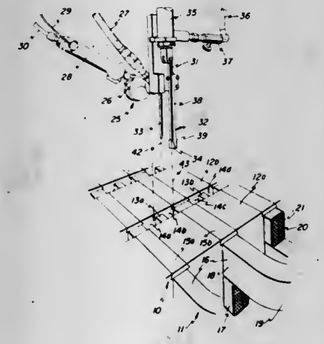


4,112,041

METHOD FOR REDUCING CORONA IN DYNAMOELECTRIC MACHINES

Palmer Lonseth; Hubert Gerald Panter, and Donald G. Moorby, all of Peterborough, Canada, assignors to Canadian General Electric Company, Toronto, Canada

Division of Ser. No. 656,865, Feb. 10, 1976, Pat. No. 4,068,691. This application Apr. 28, 1977, Ser. No. 791,663
Claims priority, application Canada, Feb. 17, 1975, 220400
Int. Cl.² B29D *3/00*; H02K *15/02*
U.S. Cl. 264—263 **3 Claims**



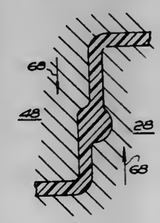
1. The method of inhibiting corona in a dynamoelectric machine including a core having a plurality of stacks of magnetic laminations spaced apart axially to define interstack spaces; axially directed slots in said core; spacers disposed radially in said interstack spaces; and coil sides disposed in said slots; said method comprising:
(a) positioning an injector tool in an interstack space and adjacent to a radial surface of a coil side, said injector tool including a flat face of width slightly less than the width of said interstack space and said face having an orifice in the middle thereof for accommodating flow of an uncured, semiconducting, elastomeric material from a source connected to said injector tool;
(b) securing the tool in said interstack space with the flat face pressed against said radial surface of said coil side;
(c) releasing said uncured material from said source for flow through said orifice, along said face, and between the radial surface of said coil side and the slot walls adjacent to said tool;
(d) releasing said tool;
(e) repeating steps (a), (b), (c), and (d) for other coil sides in this and other interstack spaces; and
(f) curing said material to form a tough, rubbery compound having an electrical resistance low enough to conduct electric charge and yet high enough to not cause significant eddy-current flow between core laminations.

4,112,042

MOULDING OF SYNTHETIC PLASTICS SHEET MATERIAL

Jack Brocklehurst, Woodlesford, Nr. Leeds, England, assignor to Plastona (John Waddington) Ltd., England

Continuation of Ser. No. 514,093, Oct. 11, 1974, abandoned. This application Dec. 10, 1976, Ser. No. 749,280
Claims priority, application United Kingdom, Oct. 12, 1973, 47848/73
Int. Cl.² B29C *17/00, 17/04*
U.S. Cl. 264—322 **2 Claims**



1. A method employing male and female dies for molding thermoformable synthetic plastics sheet material into a circular lid having a downturned rim with a bead on its inner face whereby the lid can fit over the top edge of a container with the bead in sealing engagement with the container, the male die having an outer annular wall providing a cavity for forming a bead on the inner face of the downturned rim of the lid and the female die having an inner annular wall for forming the outer surface of the downturned rim, the method comprising the steps of
a. softening the sheet material by the application to it of heat whereby the material is in a moldable state,
b. disposing the softened sheet material between the dies,
c. moving the dies together to cause the softened sheet material to be folded over the male die until the spacing between the inner and outer annular walls is less than the starting thickness of the sheet material whereby the sheet material between the outer and inner annular walls is caused to form the down-turned rim and is subjected to simultaneous compressive and shear forces which cause some of the material of the downturned rim to be forced into the bead cavity of the male die and form the bead on the inner face of the downturned rim of the lid.

4,112,043

ELECTRICAL CONDUCTOR FOR A BUSHING AND METHOD OF MAKING AN ELECTRICAL BUSHING

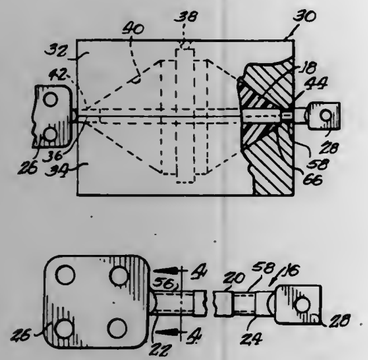
Charles F. Williams, Edinboro, Pa., assignor to Teledyne Penn-Union, Edinboro, Pa.

Filed Oct. 21, 1976, Ser. No. 734,451
Int. Cl.² H01B *19/00, 5/02, 17/26*; B22D *19/00*
U.S. Cl. 264—250 **3 Claims**

2. An electrical conductor element for bushing assembly of the type described comprising an elongated cast metal conductor member including a portion around which a body of insulating material is to be molded, a free end portion for connection to complementary electrical means, and a connecting portion joining said first-mentioned portion and said free end portion and a preformed annular metal insert surrounding and secured to said joining portion and having an accurately di-

mensioned exterior surface cooperable with a mold during molding of a body of insulating material around said first-mentioned portion for providing a mold shutoff.

3. A method of producing an electrical bushing assembly having an electrical conductor element with a body of insulating material molded around one portion of the element and another portion of the element projecting outwardly of said body, said method comprising providing a preformed tubular metal insert having a relatively accurately dimensioned peripheral surface, placing said insert in a mold having a cavity for forming said conductor element, introducing molten metal into



said mold cavity for filling the cavity and said tubular insert and thereby forming the cast electrical conductor with said insert fixed with respect thereto, thereafter placing said electrical conductor in a second mold having a cavity for forming the body of insulating material and a passageway from the cavity for accommodating the portion of the electrical conductor which projects from the insulating material body, said accurately dimensioned insert surface tightly engaging surface means of said second mold for sealing said passageway and thereby providing a mold shutoff, and thereafter pressure feeding insulating material to fill said second mold cavity.

4,112,044

CHROMATOGRAPHIC SEPARATION OF URANIUM ISOTOPES

Tetsuya Miyake; Maomi Seko, both of Tokyo; Kohji Inada, Yokohama; Kazushi Ochi, Yokohama, and Tomio Sakamoto, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1976, Ser. No. 687,840

Claims priority, application Japan, Sep. 6, 1975, 50-108348

Int. Cl.² C01G *56/00*

U.S. Cl. 423—7 **21 Claims**

1. In a process for separating uranium isotopes by forming a uranium adsorption zone on an anion exchange material in contact with the front boundary between an oxidizing agent zone and said uranium adsorption zone or the rear boundary between a reducing agent zone and said uranium adsorption zone or both boundaries, the said boundaries being moved by a continuous feed of an uranium solution or a reducing agent solution as an eluant solution thereby concentrating uranium-238 in the vicinity of the front boundary, uranium-235 in the vicinity of the rear boundary or both thereof, the improvement which comprises adding one or more electron exchange catalysts in at least one of the uranium and the reducing agent solutions to raise the electron exchange reaction rate constant k in the uranium adsorption zone to at least 1 liter/mol min while the selectivity coefficient $K_{U(V)}^{U(VI)}$ is 2 or more.

4,112,045

SEPARATION OF URANIUM ISOTOPES USING ANION EXCHANGERS

Maomi Seko, and Tetsuya Miyaki, both of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 403,294, Oct. 3, 1973, abandoned. This application Jul. 1, 1976, Ser. No. 701,912

Claims priority, application Japan, Oct. 5, 1972, 47-99407

Int. Cl.² B01D *59/30*

U.S. Cl. 423—7 **30 Claims**

1. A process for concentrating uranium-235 using a solution of uranium isotopes which comprises:

passing a solution containing uranium isotopes in the form of uranium (VI) complex ions through a bed of an anion exchange material to absorb the uranium (VI) complex ions on the anion exchange material in the form of uranium (VI) complex anions, and then

passing on aqueous solution of a reducing agent through said bed of an anion exchange material to elute said uranium (VI) complex anions adsorbed on said anion exchange material while simultaneously reducing said uranium (VI) complex anions to uranium (IV) complex ions thereby forming, in the downstream direction, a distinct boundary between a zone of reducing agent where the uranium (VI) complex anions have been eluted and a zone of adsorbed uranium (VI) complex anions,

thereby concentrating uranium-235 isotope in the portion of adsorbed uranium (VI) complex anions adjacent to said boundary which moves through the anion exchange material while feeding the solution of the reducing agent to the anion-exchange material.

4,112,046

DISINTEGRATION OF SILICA-RICH CHROMITE

Hans Niederprüm, Monheim; Johann-Nikolaus Meussdoerffer, Blecher; Hans-George Nieder-Vahrenholz, Cologne, and Wolfgang Bockelmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 3, 1976, Ser. No. 747,261

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557403

Int. Cl.² C01G *37/14*; C01B *33/26*

U.S. Cl. 423—53 **7 Claims**

1. In the disintegration of at least one chromium source selected from the group consisting of a SiO_2— containing chromite and a chromium-containing residue with an alkali compound at a temperature above about 800° C. in the presence of atmospheric oxygen and a lime-free diluent, followed by leaching of the mixture with at least one of water and a chromium (VI)- containing aqueous solution to form a chromate liquor, the improvement which comprises including in the mixture to be disintegrated an aluminum compound and at least sufficient alkali to form alkali chromate and to convert the SiO_2 into an insoluble alkali-aluminum silicate corresponding to the formula $nMe_2O \cdot mSiO_2 \cdot Al_2O_3$, wherein Me is at least one of sodium and potassium, $0.8 \leqq n \leqq 1.2$ and $1.3 \leqq m \leqq 4.3$, whereby disintegration is effected with minimal formation of liquid or doughy phases and the chromium is thereafter leached from the mixture in high yield without significant quantities of alumina entering the chromate liquor.

4,112,047

PRETREATMENT SYSTEM FOR GOETHITIC BAUXITES

Donald J. Donaldson, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

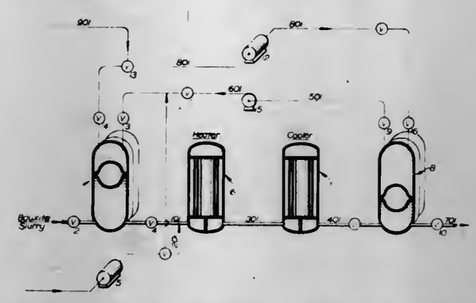
Filed Jun. 8, 1977, Ser. No. 804,841

Int. Cl.² C01F *7/06*

U.S. Cl. 423—123 **7 Claims**

1. A stage-wise pretreatment process for goethite-containing bauxite slurries for the conversion of the goethite-content to hematite and/or magnetite at temperatures in excess of about

260° C and at elevated pressures prior to the conventional Bayer process digestion of the bauxite for the extraction of its alumina content which comprises introducing a thick slurry into a bauxite slurry charging stage consisting of at least one float-type liquid displacement pump, the pump being capable of imparting to the slurry a pressure at least about equivalent to the vapor pressure of steam at about 260° C; transferring the pressurized slurry to a slurry heating stage which is connected to the pump for receiving the pressurized slurry and for heating the pressurized slurry to the goethite to hematite and/or



magnetite conversion temperature; pumping the heated and pressurized slurry to a cooling stage to reduce the temperature of the slurry without flashing off steam to about the temperature conventionally utilized for the digestion of bauxites; introducing the cooled and pressurized slurry to a slurry discharge stage which is connected to the cooling stage, the slurry discharge stage consisting of at least one float-type, liquid displacement pump from which the cooled slurry is charged without flashing off steam into the conventional Bayer process digestion vessels by displacing it with a liquid.

4,112,048

AIR-REGENERATION FILTER

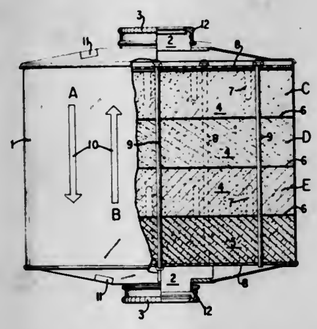
Werner Mascher, Bismarckstr. 6, 1000 Berlin 41, Fed. Rep. of Germany

Continuation of Ser. No. 523,805, Nov. 14, 1974, abandoned. This application Oct. 26, 1976, Ser. No. 735,503

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1973, 2357512

Int. Cl.² B01D *53/34*

U.S. Cl. 423—210 **8 Claims**



1. A reversible air-regeneration filter for producing a relatively constant quantity of oxygen by selectively varying the moisture content of air, which includes carbon dioxide, passed therethrough, said filter comprising:

a container;

alkali peroxide for reacting with moisture and carbon dioxide present in said air to produce oxygen;

alumina gel for removing moisture from said air;

said container having first and second openings, said alkali peroxide being positioned within said container adjacent to said first opening and said alumina gel being positioned within said container adjacent to said second opening,

means for controlling the direction of flow of said air through said filter such that said air selectively communicates directly with said alkali peroxide or such that said air first communicates with said alumina gel before communicating with said alkali peroxide,

whereby said reversible filter produces a relatively constant amount of oxygen which is uneffected by variations in the moisture content of said air to be regenerated.

4,112,049

ABSORPTION OF SULFUR COMPOUNDS FROM GAS STREAMS

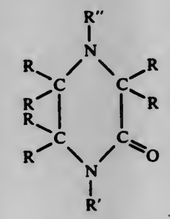
John W. Bozzelli; George D. Shier, both of Midland, Mich.; Roscoe L. Pearce, and Charles W. Martin, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 18, 1977, Ser. No. 778,904

Int. Cl.² B01D *53/34*

U.S. Cl. 423—226 **6 Claims**

1. A process for removing sulfur compounds of the group H_2S and lower alkyl mercaptans from a gaseous stream which comprises contacting said stream with a liquid piperazinone compound of the formula



wherein each R, R', and R'' is independently a hydrogen atom or a lower alkyl group, thereby forming a mixture of said piperazinone rich in H_2S and alkyl mercaptans.

4,112,050

PROCESS FOR REMOVING CARBON DIOXIDE CONTAINING ACIDIC GASES FROM GASEOUS MIXTURES USING A BASIC SALT ACTIVATED WITH A HINDERED AMINE

Guido Sartori, Linden, N.J., and Frederic Leder, Corona Del Mar, Calif., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 590,427, Jun. 26, 1975, abandoned. This application Dec. 19, 1977, Ser. No. 862,196

Int. Cl.² B01D *53/34*

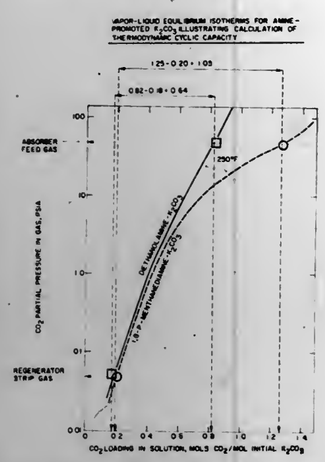
U.S. Cl. 423—223 **38 Claims**

1. In a process for removing CO_2 from gaseous feeds containing CO_2, which comprises:

(1) contacting said gaseous feeds with an aqueous scrubbing solution comprising: (a) an alkaline material comprising a basic alkali metal salt or alkali metal hydroxide, (b) an activator for said basic alkali metal salt or alkali metal hydroxide comprising at least one amine activator for said alkaline material, and (c) water, and

(2) regenerating said aqueous scrubbing solution at conditions whereby CO_2 is desorbed from said aqueous scrubbing solution, the improvement which comprises providing at least one sterically hindered amine as at least one of the amine activators, and operating said process at conditions whereby the difference between the moles of carbon dioxide absorbed at the end of step (1) (absorption step) and the moles of carbon dioxide absorbed at the end of step (2) (desorption step) would be greater at the thermodynamic equilibrium (as determined from the vapor-liquid equilibrium isotherm of the reaction mixture) than in an

aqueous scrubbing process wherein diethanolamine is the only amine activator utilized under similar conditions of



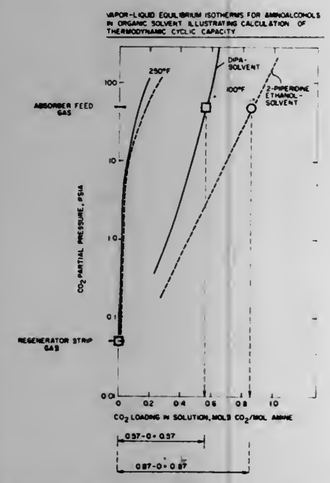
gaseous feed composition, scrubbing solution composition, temperatures and pressures.

4,112,051

PROCESS AND AMINE-SOLVENT ABSORBENT FOR REMOVING ACIDIC GASES FROM GASEOUS MIXTURES

Guido Sartori, Linden, N.J., and Frederic Leder, Corona Del Mar, Calif., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 590,427, Jun. 26, 1975, abandoned. This application Dec. 19, 1977, Ser. No. 862,195
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—223 **34 Claims**



1. In a process for the removal of CO_2 from a normally gaseous feed containing CO_2 which comprises.

(1) contacting said normally gaseous feed with an amine-solvent liquid absorbent comprising:

(a) an amine, and

(b) a solvent which solubilizes said amine and is a physical absorbent for said CO_2, and

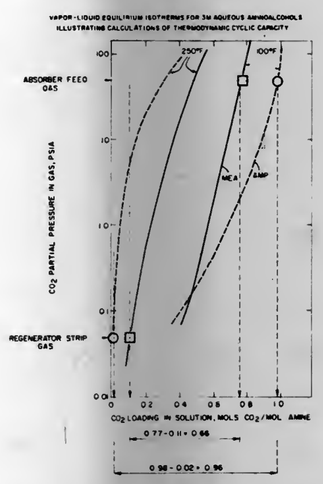
(2) regenerating said absorbent at conditions whereby CO_2 is desorbed from said absorbent, the improvement which comprises providing at least one sterically-hindered amine in said scrubbing solution as said amine and operating said process at conditions whereby the difference between the moles of CO_2 absorbed at the end of step (1) (absorption step) and the moles of CO_2 absorbed at the end of step (2) (desorption step) would be greater at the thermodynamic equilibrium of the vapor-liquid system (as determined from the vapor-liquid equilibrium isotherm of the reaction mixture) than in a CO_2 gas scrubbing process utilizing a nonaqueous organic solvent and an amine wherein diisopropanolamine is the only amine utilized under similar conditions of gaseous feed composition, scrubbing solution composition, temperatures and pressures.

4,112,052

PROCESS FOR REMOVING CARBON DIOXIDE CONTAINING ACIDIC GASES FROM GASEOUS MIXTURES USING AQUEOUS AMINE SCRUBBING SOLUTIONS

Guido Sartori, Linden, N.J., and Frederic Leder, Corona Del Mar, Calif., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 590,427, Jun. 26, 1975, abandoned. This application Dec. 19, 1977, Ser. No. 862,197
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—228 **19 Claims**



1. In a process for removing CO_2 from gaseous feeds which comprises, in sequential steps:

(1) contacting said feed with an aqueous scrubbing solution consisting essentially of an amine and water, at conditions whereby said CO_2 is absorbed in said scrubbing solution, and

(2) regenerating said scrubbing solution at conditions whereby said CO_2 is desorbed from said scrubbing solution, the improvement which comprises:

providing a sterically hindered amine in said scrubbing solution as at least one of the said amines, and operating said process at conditions whereby the difference between the moles of CO_2 absorbed at the end of step (1) (absorption step) and the moles of CO_2 absorbed at the end of step (2) (desorption step) would be greater at thermodynamic equilibrium of the vapor-liquid system (as determined from the vapor-liquid equilibrium isotherm of the reaction mixture) than in an aqueous amine CO_2 scrubbing process wherein monoethanolamine or diethanolamine is the only amine utilized under similar conditions of gaseous feed composition, scrubbing composition, temperatures and pressures.

4,112,053

DRY METHOD FOR THE DENITRIFICATION OF EXHAUST GAS CONTAINING NITROGEN OXIDES

Hisao Sanada; Ritaro Saito; Masayuki Funabashi, all of Iwaki; Kazuyoshi Inada, and Koji Seguchi, both of Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1977, Ser. No. 756,628
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—239 **3 Claims**

1. In a method for removing nitrogen oxides from an exhaust gas by contacting the exhaust gas with ammonia, the improvement comprising:

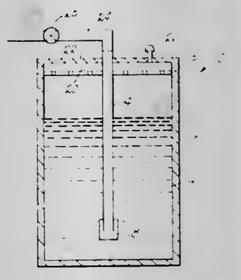
contacting said exhaust gas with ammonia in the presence of a catalyst obtained by baking laterite in admixture with 0.1 to 20 percent by weight of at least one oxide or hydroxide of a metal selected from the group consisting of manganese, cobalt and aluminum, at a temperature of from 200° C to 500° C.

4,112,054

PROCESS AND APPARATUS FOR REMOVING ETHYLENE OXIDE FROM GAS COMPOSITIONS

Michael Feingold, Randolph, and John Sparks, Boston, both of Mass., assignors to New England Industrial Chemical Co., Mass.

Filed May 25, 1977, Ser. No. 800,160
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—245 **8 Claims**



1. The process for removing at least about 97% of the ethylene oxide from a predetermined volume of a gas composition containing ethylene oxide which comprises passing said predetermined volume of said gas composition through an aqueous acidic solution to dissolve said ethylene oxide in solution and to convert said dissolved ethylene oxide to products including ethylene glycol, said solution having a pH less than about 4 and an initial temperature less than about 50° C, the volume of said solution being at least about 440 ml/mole ethylene oxide, said pH, temperature, volume of solution per mole of ethylene oxide and the mole ratio of acid to ethylene oxide being controlled to permit said dissolution and conversion of ethylene oxide while preventing evolution of dissolved ethylene oxide from solution prior to said conversion.

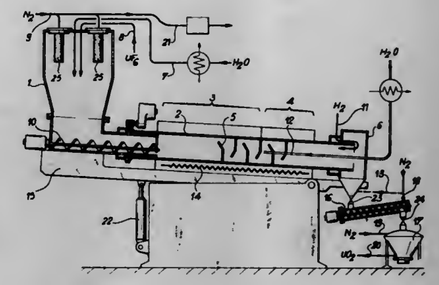
4,112,055

METHOD OF FABRICATION OF URANIUM OXIDE UO_2 BY THE DRY PROCESSING ROUTE AND A DEVICE FOR THE PRACTICAL APPLICATION OF THE METHOD

Robert Artaud, Aix-en-Provence, France, assignor to Commissariat a l'Energie Atomique, France

Filed May 3, 1976, Ser. No. 682,747
Claims priority, application France, May 9, 1975, 75 14490
Int. Cl.[2] C01G *43/02, 43/06*
U.S. Cl. 423—261 **6 Claims**

1. A method of fabrication of uranium oxide UO_2 by the dry processing route which consists of a first step in which uranium hexafluoride gas is reacted with steam within a first region of a vessel and of a second step in which the oxyfluoride UO_2F_2 obtained during the first step is subjected to a reduction within a second region of said vessel so as to obtain the uranium oxide UO_2, wherein the second step consists of a first stage in which the oxyfluoride UO_2F_2 obtained during the first step is contacted with a mixture of hydrogen gas and steam in a first zone of the second region of said vessel and of a second stage in which the oxide having an intermediate composition between U_3O_8 and UO_2 thus obtained is contacted with hydrogen gas in the absence of steam within a second zone of the



second region of said vessel, the temperature of said second zone being higher than the temperature of said first zone and wherein hydrogen is introduced into said second zone and the reaction gases which pass out of the second zone in order to penetrate into the first zone of the second region of said vessel follow a non-rectilinear path, steam is introduced into said first zone and the hydrogen and steam flow countercurrent to the oxyfluoride and the intermediate composition in the first and second zones.

4,112,056

PREPARATION OF ZEOLITES

Nai Yuen Chen, Titusville; Joseph Nicolas Miale, Lawrenceville, both of N.J., and William Joseph Reagan, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1977, Ser. No. 792,741
Int. Cl.[2] C01B *33/28;* C07F *5/06*
U.S. Cl. 423—329 **15 Claims**

1. A method for preparing crystalline aluminosilicate zeolites having a silica/alumina mole ratio of greater than 10 from an amorphous mixture of reaction components which comprises

forming an amorphous mixture containing sources of an alkali metal oxide, an organic nitrogen-containing oxide, an oxide of silicon and water and having a composition in terms of mole ratios of oxides, as follows:

OH^-/SiO_2	=	0.01 - 0.5
Al_2O_3/SiO_2	=	0 - 0.01
H_2O/OH^-	=	50 - 500
M_2O/SiO_2	=	0.01 - 1.0
R_2O/SiO_2	=	0.01 - 0.5

wherein R is an organic nitrogen-containing cation and M is an alkali metal ion, and while maintaining the mixture at a temperature of from about 180° F to about 400° F until crystals of the aluminosilicate zeolite are formed,

adding to said mixture a source of aluminum ions at a rate of addition whereby the concentration of aluminum ions in the amorphous mixture is maintained at steady state during crystallization of aluminosilicate zeolite therefrom, thereby maintaining any excess of aluminum ions in said mixture at a minimum by replenishing same at about the same rate as the rate of their consumption during crystallization.

4,112,057

PROCESS FOR PURIFYING HALOGENOSILANES

Winfried Lang; Dietrich Schmidt, both of Burghausen; Johann Hofer, Kirchdorf; Rudolf Pachnek, Raitenhaslach, and Heinz-Jorg Rath, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Oct. 14, 1976, Ser. No. 732,269

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1975, 2546957

Int. Cl.[2] C01B *33/08*

U.S. Cl. 423—342 4 Claims

1. A process for the purification of halogenosilanes or halogenogermanes contaminated by a boron-containing impurity, comprising the steps of:

(a) passing the impure halogeno compounds, in the liquid state, through an adsorption column containing an effective amount to remove said impurity of a hydrated metal oxide or a hydrated silicate selected from the group consisting of alumina gel, titanium dioxide gel, iron oxide gel, magnesium hydroxide, diatomaceous earths and silicic acid gel, said oxide or silicate containing, in addition to that water bound in the form of a complex, from about 3 to about 8% by weight free water;

(b) distilling the treated halogeno compound exiting said adsorption column, at atmospheric pressure and at a temperature about 3° to about 15° C. above the boiling temperature thereof; and

(c) recovering the purified halogeno compound.

4,112,058

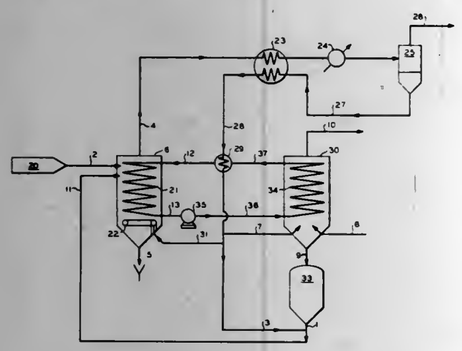
PRODUCTION OF CARBON MONOXIDE FROM CARBONACEOUS MATERIAL AND ZINC OXIDE

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 23, 1976, Ser. No. 716,402

Int. Cl.[2] C01B *31/18*

U.S. Cl. 423—415 A 8 Claims



1. A process for the production of carbon monoxide which comprises

a. introducing a solid carbon source and zinc oxide into a reactor equipped with first indirect heat exchange means,

b. reacting said solid carbon source and said zinc oxide at a temperature of 1665° to 2800° F in said reactor to form a gas comprising carbon monoxide and zinc,

c. withdrawing said gas from said reactor,

d. separating zinc from said gas and recovering a carbon monoxide-comprising gas,

e. contacting said zinc with an oxidizing agent to form a zinc oxidation mixture in a zinc oxidizer equipped with second indirect heat exchange means,

f. reacting said zinc oxidation mixture to form zinc oxide, and

g. circulating a heat exchange fluid selected from the group consisting of zinc, sodium, potassium and mixtures of sodium and potassium indirect heat exchange with the contacting of material in the zinc oxidizer to indirect heat exchange with the reacting of materials in said reactor to transfer a portion of the reaction heat developed in said zinc oxidizer into said reactor.

4,112,059

PROCESS FOR THE PRODUCTION OF CARBON FILAMENTS UTILIZING AN ACRYLIC PRECURSOR

Andrew H. DiEdwardo, Parsippany, and Robert Dix, Wayne, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 14, 1974, Ser. No. 523,764

Int. Cl.[2] D01F *9/12, 9/22*

U.S. Cl. 423—447.6 10 Claims

1. An improved process for the production of a multifilament carbonaceous fibrous material which is suitable for use as a fibrous reinforcement in a resinous matrix consisting essentially of:

(a) contacting a multifilament acrylic fibrous material selected from the group consisting of an acrylonitrile homopolymer and acrylonitrile copolymers containing at least about 85 mol percent acrylonitrile units and up to about 15 mol percent of one or more monovinyl units copolymerized therewith with a liquid medium comprising a dispersion of colloidal silica having a number average particle size of about 5 to 50 millimicrons in a C_1 to C_3 alkanol in a concentration of about 0.002 to 1.0 percent by weight based upon the weight of said alkanol,

(b) drying said resulting fibrous material under conditions wherein said C_1 to C_3 alkanol is substantially evolved from said fibrous material and said colloidal silica is deposited upon the surface of said fibrous material in a concentration of about 0.005 to 0.4 percent by weight based upon the weight of said fibrous material,

(c) thermally stabilizing said fibrous material bearing said colloidal silica upon its surface by heating in a gaseous atmosphere consisting of air at a temperature of about 230° to 300° C. in the absence of filament coalescence to form a flexible fibrous material which retains its original configuration substantially intact, is non-burning when subjected to an ordinary match flame, and is capable of undergoing carbonization,

(d) substantially removing said colloidal silica from said fibrous material, and

(e) heating said resulting thermally stabilized fibrous material in a non-oxidizing gaseous atmosphere selected from the group consisting of nitrogen, argon, and helium at a temperature of at least 1000° C. until a carbonized fibrous material containing at least 90 percent carbon by weight is formed.

4,112,060

METHOD FOR THE PRODUCTION OF CARBON BLACK FROM LIQUID OR GASEOUS HYDROCARBONS

Arthur E. Fross, Basel, Switzerland, assignor to Etablissement Gelan, Vaduz, Liechtenstein

Continuation of Ser. No. 412,599, Nov. 5, 1973, abandoned. This application May 14, 1976, Ser. No. 686,324

Claims priority, application Switzerland, Nov. 10, 1972, 16415/72; Aug. 31, 1973, 12537/73

Int. Cl.[2] C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 18 Claims

1. Method for production of carbon black from lqiuid hydrocarbon material in the presence of a free-oxygen-containing air-like gas by thermal decomposition of the hydrocarbon material through partial combustion thereof in a hot reaction chamber having an entry end and an exit end at opposite ends of a straight axis through the chamber, the hot condition of which chamber is maintained mainly by said partial combustion, comprising the steps of:

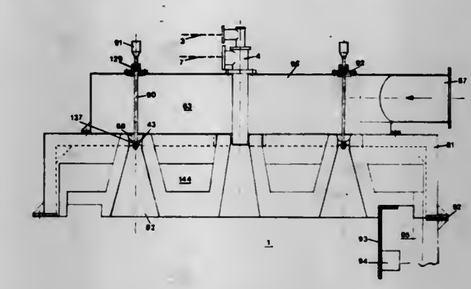
pressurizing said liquid hydrocarbon material and preheating it;

preheating said free-oxygen-containing gas;

distributing and injecting said pressurized and preheated liquid hydrocarbon material in a finely divided state into, and passing it in an axial direction through, a plurality of ante-chambers open to said reaction chamber at the entry end of the latter and having their axes substantially parallel to said axis of said reaction chamber, and vaporizing said hydrocarbon material during its passage through said ante-chambers, said ante-chambers being substantially evenly distributed over said entry end of said reaction chamber;

distributing said preheated free-oxygen-containing gas to all said ante-chambers and passing said gas axially through said ante-chambers while mixing said gas with said hydrocarbon material therein to form a reagent mixture in said ante-chambers;

heating the said reagent mixture without ignition thereof in said ante-chambers directly by heat produced in said



reaction chamber so that the temperature of said ante-chambers is above 600° C.;

passing essentially only said reagent mixture into said reaction chamber and decomposing said hydrocarbon material downstream from said ante-chambers in said reaction chamber to form carbon black, by a reaction which reaction includes partially burning said hydrocarbon material there at a temperature between 950° and 1200° C.;

passing the reaction products out of the reaction chamber at its exit end and then immediately cooling the reaction products by indirect heat exchange in successive first and second steps, said second cooling step serving to preheat at least a portion of said oxygen-containing gas and said first cooling step utilizing a cooling medium of which the flow is regulated so as to provide a temperature of said reaction products such as to quench the carbon black forming reaction after the performance of the first of said cooling steps but still sufficiently high to preheat the oxygen-containing gas in the second cooling step, and

separating carbon black from the gaseous reaction products.

4,112,061

PRODUCTION OF SODIUM SULFITE UTILIZING MOTHER LIQUOR FROM THE SODIUM METABISULFITE PROCESS

Robert Joel Hoffmann, Liverpool; Samuel Louis Bean, Jamesville; Philip Seeling, N. Syracuse, and James William Swaine, Jr., Manlius, all of N.Y., assignors to Allied Chemical Corporation, Morris Township; Morris County, N.J.

Continuation-in-part of Ser. No. 653,876, Jan. 30, 1976, Pat. No. 4,003,985. This application Aug. 3, 1976, Ser. No. 711,326

The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.

Int. Cl.[2] C01D *5/14*

U.S. Cl. 423—512 A 14 Claims

1. The process for making anhydrous sodium sulfite comprising:

(a) forming a saturated aqueous solution of sodium sulfite containing less than about 3 ppm of dissolved iron, basis the solution, and adjusting the pH of said solution to within the range of from about 6.5 to about 7.6;

(b) introducing into said solution substantially anhydrous sodium carbonate concurrently with mother liquor from which sodium metabisulfite crystals have been obtained by crystallization and a sulfur dioxide-containing gas stream, so proportioned with respect to each other as to maintain the pH of said solution within the range of from about 6.5 to about 7.6, while maintaining the temperature of said solution above about 35° C. to form a slurry of anhydrous sodium sulfite crystals; and

(c) separating anhydrous sodium sulfite crystals from said slurry.

4,112,062

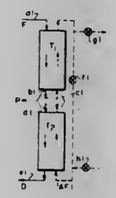
EVAPORATION CONDENSATION SYSTEMS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, White Plains, N.Y.

Continuation of Ser. No. 492,186, Jul. 26, 1974, abandoned, which is a division of Ser. No. 126,692, Mar. 22, 1971, Pat. No. 3,860,648. This application Jun. 29, 1976, Ser. No. 701,040

Int. Cl.[2] B01D *5/02*

U.S. Cl. 423—580 H 22 Claims



1. A heat recovering evaporation-condensation process that produces, from a liquid containing a relatively non-volatile substance dissolved therein, a more concentrated solution of said substance and condensate of said liquid, which process comprises in combination:

(a) heating a flow of gas chemically different from said liquid and vaporizing thereinto said liquid to be carried thereby,

(b) thereafter subjecting said flow to treatment comprising further heating said flow and adding a further quantity of vapor of said liquid thereto, and

(c) subsequently cooling said flow and condensing said liquid therefrom

which combination further comprises

(d) effecting said heating and vaporizing step (a) in a first zone,

(e) effecting said cooling and condensing step (c) in a third zone and removing from said third zone said gas flow and liquid condensate.

(f) effecting said treatment step in a second zone,

(g) passing said flow in sequence through said first, second and third zones,

(h) bringing an amount of said liquid containing a concentration of said dissolved substance in solution therein into physical contact with said flow of gas in said first zone, said amount comprising a first quantity of said liquid that is vaporized into said gas in said first zone and a second quantity of said liquid which is not so vaporized, whereby said dissolved substance forms in said second quantity of liquid a more concentrated solution in said first zone.

(i) obtaining heat for effecting the heating and vaporizing in said first zone from the cooling and condensation in said third zone and transferring such heat to the flow in said first zone from the flow in said third zone by way of a countercurrent indirect contact heat exchange while maintaining said flows out of contact with each other,

(j) withdrawing said second quantity of more concentrated solution from said first zone, and

(k) recycling a portion of said withdrawn second quantity of more concentrated solution to comprise a part of said amount of liquid brought into said physical contact in step (h).

4,112,063

CONTINUOUS PRODUCTION OF IRON OXIDE HYDROXIDE

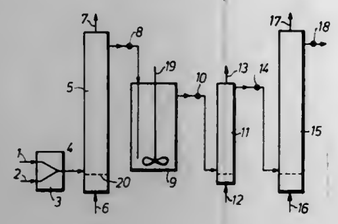
Gunter Buxbaum, and Franz Hund, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 3, 1976, Ser. No. 747,265

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1975, 2556406

Int. Cl.² C01G *49/02*

U.S. Cl. 423—633 **6 Claims**



1. In the production of an FeOOH seed suspension, comprising contacting an iron (II) salt solution with a basic precipitant to form a basic iron (II) salt or hydroxide suspension, oxidizing the salt or hydroxide, the precipitation and oxidation steps being carried out locally separate from one another, and recovering a suspension of FeOOH, the improvement which comprises continuously

(a) effecting the precipitation by mixing an about 1 to 20% by weight iron (II) salt solution with sufficient basic precipitant to precipitate about 25 to 95 atom % of the iron (II),

(b) at another location oxidizing the suspension obtained in (a) over a period of from about 0.5 to 5 hours at a temperature in the range from about 20° C. to 65° C. and until 10 to 50% of the precipitated iron (II) is oxidized,

(c) at another location oxidizing the suspension obtained in (b) with intensive mixing over a period of from about 0.01 to 1 hour to oxidize at least about 10% more of the iron (II) beyond step (b) until up to at most about 60% of the iron (II) precipitated in stage (a) is oxidized, and

(d) at another location substantially completely oxidizing the precipitated iron (II) still present over a period of from about 1 to 10 hours.

4,112,064

STABILIZED ANGIOTENSIN I SOLUTIONS

Bruce Charles Farrenkopf, Clifton, and Magdalena Usategui Gomez, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 22, 1977, Ser. No. 770,335

Int. Cl.² A61K *43/00*; G01N *33/16*

U.S. Cl. 424—1 **10 Claims**

1. A method for increasing the stability of an Angiotensin I or radioiodinated Angiotensin I solution containing buffer and stabilizer systems which method comprises adding to said solution a minor effective stabilizing amount of phenylmethylsulfonyl fluoride.

4,112,065

COMPOSITIONS OF BIS(ORTHO-SUBSTITUTED PHENYL)CARBODIIMIDES AND QUATERNARY AMMONIUM SALTS AND THEIR USE THEREOF IN COMBATTING ECTOPARASITIC TICK INFESTATIONS OF ANIMALS

Edgar Enders, Cologne; Wilhelm Stendel, Wuppertal, and Herbert Voege, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft

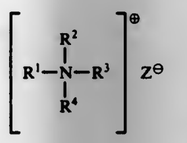
Filed Nov. 12, 1976, Ser. No. 741,214

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1975, 2553259

Int. Cl.² A01N *9/06, 9/20, 9/24*; A61K *9/04*

U.S. Cl. 424—45 **20 Claims**

1. A composition for combatting ectoparasitic ticks of domesticated animals comprising a tickicidally effective amount of a mixture of (a) a bis-(2-X-phenyl)carbodiimide in which X is alkyl of 1 to 6 carbon atoms or cycloalkyl of 3 to 6 carbon atoms which carbodiimide is further unsubstituted or further substituted on each phenyl group with from one to three like or different substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms and cycloalkyl of 3 to 6 carbon atoms and (b) from 0.05 to 3 parts by weight of said carbodiimide of a quaternary ammonium salt having a total of from 10 to 50 carbon atoms in its cation, said salt being of the formula:



wherein each of R^1, R^2, R^3 and R^4 are like or different unsubstituted or substituted hydrocarbon units selected from the group consisting of alkyl, cycloalkyl, aralkyl and aryl and $Z^\bullet$ is a monovalent anionic radical.

4,112,066

BREATH FRESHENER COMPOSITION AND METHOD

Ma'moun M. Hussein, Rye, N.Y., assignor to Life Savers, Inc., New York, N.Y.

Filed Jun. 21, 1976, Ser. No. 697,887

Int. Cl.² A61K *9/68, 7/16*

U.S. Cl. 424—48 **13 Claims**

1. A breath freshener composition consisting essentially of calcium hydroxide dispersed in a non-toxic carrier.

4,112,067

METHOD FOR TREATING POISON IVY DERMATITIS USING CERTAIN POLYAMINES AND POLYTERTIARYAMIDES

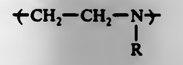
Donald A. Tomalia; Yancey J. Dickert, and Leslie P. McCarty, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 17, 1977, Ser. No. 769,479

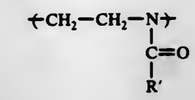
Int. Cl.² A61K *31/74*

U.S. Cl. 424—78 **8 Claims**

1. A method of treating and controlling dermatitis in humans caused by the exposure of the skin to a plant of the genus Rhus which comprises the topical application of an effective dermatitis alleviating amount of a polymer having a molecular weight of at least 5000 wherein said polymer is a polyamine of recurring units represented by the formula



wherein R represents hydrogen, a lower alkyl of from 1 to about 3 carbon atoms, or a substituted hydroxyl lower alkyl having from 1 to about 3 carbon atoms; a polytertiaryamide of recurring units represented by the formula



wherein R′ represents hydrogen or a lower alkyl of from 1 to about 3 carbon atoms; or a partially hydrolyzed polytertiaryamide prepared from a polytertiaryamide of the formula given above.

4,112,068

CANINE LUNG CELL STRAIN CULTURE SYSTEMS AND PROCESSES FOR THE CULTIVATION OF VIRUSES AND VACCINES THEREFROM

Victor J. Cabasso, Moraga, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 713,547, Aug. 11, 1976, abandoned, which is a continuation of Ser. No. 576,527, May 12, 1975, abandoned. This application Aug. 29, 1977, Ser. No. 828,369

Int. Cl.² A61K *39/12, 39/28*; C12K *9/00*

U.S. Cl. 424—89 **10 Claims**

1. A process for the preparation of a vaccine which comprises:

(a) maintaining a culture of diploid fibroblast-like cells of a finite cell strain derived from fetal canine lung tissue in a nutrient culture medium, said cells being free of reverse transcriptase and C-type particles, being free of adventitious viruses, being non-oncogenic, and remaining diploid throughout their passage range;

(b) inoculating said medium with a virus selected from the group consisting of rabies virus, infectious bovine rhinotracheitis virus, canine distemper virus, type 3 parainfluenza virus and bluetongue virus;

(c) cultivating said virus in said medium; and,

(d) recovering a harvest of said virus therefrom.

4,112,069

TREATMENT OF RUMINANTS

Thomas L. Huber, Watkinsville, Ga., assignor to Research Corporation, New York, N.Y.

Filed Sep. 4, 1975, Ser. No. 610,337

Int. Cl.² A61K *37/00*; C12B *1/00*; A01K *45/00, 67/00*

U.S. Cl. 424—93 **19 Claims**

1. A method of treating a ruminant animal which had previously subsisted on a substantially hay diet or by range foraging to avoid or overcome lactic acidosis when said ruminant animal is fed for fattening a high energy ration or diet which comprises administering to said ruminant animal a culture of the microorganism *Peptococcus asaccharolyticus* to establish a growth of said microorganism in the rumen of said ruminant animal to avoid or overcome lactic acidosis.

4,112,070

BLOOD PRESERVATION SYSTEM

Denise M. Harmening, Ellicott City, Md., assignor to Research Corporation, New York, N.Y.

Filed Jun. 8, 1977, Ser. No. 804,603

Int. Cl.² A61K *35/14, 35/18*; C12B *3/00*

U.S. Cl. 424—101 **24 Claims**

1. In a composition of matter comprising metabolizing erythrocytes in an in vitro environment capable of supporting erythrocyte metabolism, the improvement which comprises a water-insoluble polymer containing releaseable phosphate ions for supplying a physiologically acceptable, continuous, sustained release source of metabolizable phosphate to said erythrocytes in an amount sufficient to maintain both 2,3DPG and ATP levels at least equal to those of freshly drawn blood for a storage period equivalent to 28 days of storage at 4° C.

4,112,071

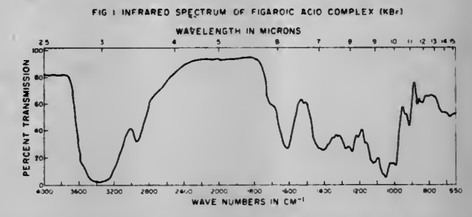
ANTIBIOTIC COMPLEX

William T. Bradner, Manlius; James A. Bush, Fayetteville, and Donald E. Nettleton, Jr., Jordan, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 758,248, Jan. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 590,994, Jun. 27, 1975, abandoned. This application Sep. 9, 1977, Ser. No. 832,034

Int. Cl.² A61K *35/00*

U.S. Cl. 424—118 **6 Claims**



6. The anthracycline anitbiotic complex, figaroic acid complex, or a pharmaceutically acceptable salt thereof, which antibiotic complex has the following characteristics:

(a) it is an orange-red amorphous solid in the free acid state and an amorphous deep purple solid when recovered under alkaline conditions;

(b) it is soluble in dimethylformamide and dimethylacetamide, mostly soluble in lower alcohols, acetone, tetrahydrofuran and dioxane and insoluble in diethyl ether, benzene and aliphatic hydrocarbons;

(c) it is capable of forming salts with bases;

(d) it is soluble in aqueous $NaHCO_3$ and $Ba(OH)_2$ giving, respectively, red-violet and blue solutions;

(e) it gives a deep red solution having red fluorescence with alocoholic magnesium acetate and a black solution with alcoholic ferric chloride;

(f) it gives a positive Tollens test;

(g) it gives no color change with acidic zinc dust, acidic sodium bisulfite or acidic hydrogen peroxide;

(h) it shows a slight fading of color with alkaline zinc dust from violet to red, a rapid change in color from violet to red with alkaline sodium bisulfite and no color change with alkaline hydrogen peroxide except in large excess whereupon the color fades from violet to pink;

(i) it has an infrared spectrum when pelleted in potassium bromide substantially as shown in FIG. 1;

(j) it has ultraviolet absorption spectra when dissolved in 0.1 HCl in methanol and 0.1N NaOH in methanol, respectively, at a concentration of 50 μg/ml. substantially as shown in FIG. 2;

(k) it is effective in inhibiting the growth of various Gram-positive bacteria, protozoa and yeasts;

(l) it is effective in inhibiting the growth of Sarcoma 180, L-1210 lymphatic leukemia, Walker 256 carcinosarcoma, P-388 lymphatic leukemia and B-16 melanoma tumor systems in rodents;

(m) it exhibits phage inducing properties;

(n) it contains the elements carbon, hydrogen, oxygen and nitrogen in substantially the following percentages by weight: carbon 53.82%, hydrogen 5.85%, nitrogen 1.63% and oxygen (by difference) 38.70%; an

(o) it exhibits the following R_f values as determined by silica gel thin layer chromatography:

1. in the solvent system chloroform: methanol (19:1) — R_f's of 0.0, 0.39, 0.214, 0.243, 0.349, 0.470, 0.612, 0.651 and 0.694.

2. in the solvent system chloroform: methanol: formic acid

(90:10:1) — R_f's of 0.0, 0.043, 0.73, 0.149, 0.169, 0.212, 0.272, 0.308, 0.368, 0.467, 0.523, 0.722, 0.795 and 0.825; and

3. in the solvent system chloroform: methanol: formic acid (80:20:1) — R_f's of 0.0, 0.200, 0.233, 0.279, 0.311, 0.446, 0.472, 0.508, 0.622, 0.741, 0.839, 0.892 and 0.928.

4,112,072
RESUSPENDABLE DRIED ANTACIDS

Andrew M. Rubino, New Providence, and Jack J. Margres, Old Bridge, both of N.J., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 252,816, May 12, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,226

Int. Cl.² A61K *33/12, 33/10, 33/08*

U.S. Cl. 424—155 **18 Claims**

1. An antacid composition prepared by drying a wet compressed aluminum hydroxide gel to solid form, which is capable of being readily resuspended to yield an opaque aqueous suspension which reflects the properties of the original compressed gel, comprising the codried combination of a hydrous gelatinous aluminum hydroxide material selected from the group consisting of (1) basic aluminum bicarbonate-carbonate, (2) basic aluminum bicarbonate-carbonate in combination with magnesium basic carbonate, magnesium hydroxide, or magnesium trisilicate, or mixtures thereof, and a water soluble food-grade di- or trihydroxy alcohol suitable for oral ingestion, wherein analysis of the dried product yields a figure in the range of from 30–60 percent by weight for the sum of aluminum hydroxide and magnesium hydroxide calculatd as Al_2O_3 and MgO and shows that there is also present at least 0.3 mol of carbonate calculated as CO_2 for each mol of Al_2O_3.

4,112,073
MEDICINAL COMPOSITION COMPRISING ADRENAL CORTICAL HORMONE AND THYROID STIMULATING HORMONE RELEASING HORMONE

Hiroomi Ono, Chofu, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 8, 1976, Ser. No. 721,547

Claims priority, application Japan, Sep. 9, 1975, 50-109777; Mar. 15, 1976, 51-28290

Int. Cl.² A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **14 Claims**

1. A medicinal composition for increasing the therapeutic effect of an adrenal cortical hormone which comprises an effective amount of an adrenal cortical hormone selected from the group consisting of 9α-fluorocortisone, 9α-fluorocortisol, prednisone, prednisolone, triamcinolone, medrol, dexamethasone, betamethasone, paramethasone, flumethasone and physiologically acceptable esters and salts thereof, and a thyroid stimulating hormone-releasing hormone selected from the group consisting of L-pyroglutamyl-L-histidyl-L-prolinamide, L-2-oxooxazolidine-4-carbonyl-L-hystidyl-L-prolinamide, L-trans-5-methyl-2-oxooxazolidine-4-carbonyl-L-histidyl-L-prolinamide, L-2-oxothiazolidine-4-carbonyl-L-histidyl-L-prolinamide and physiologically acceptable salts thereof, the ratio of the adrenal cortical hormone to the thyroid stimulating hormone-releasing hormone being about 1 (dexamethasone equivalent): 0.05 to 5 and a acceptable carrier.

4,112,074
COMPOSITIONS COMPRISING OVOMUCOID FRACTION OF WHITE OF QUAIL'S EGG

Jean-Claude Truffier, 67 rue Thiers, 17300 Rochefort; Gérard Lucotte, 69 avenue F. Mollet, 92160 Antony, and Raymond Cordonnier, Le Vergeroux, 17300 Rochefort, all of France

Filed Jun. 27, 1977, Ser. No. 810,638

Claims priority, application France, Jun. 29, 1976, 76 19751

Int. Cl.² A61K *37/02, 35/54*

U.S. Cl. 424—177 **4 Claims**

1. An ovomucoid fraction of the white of quails eggs, which exhibits an anti-cattle-trypsin-activity of the order of 100 units per mg and consists essentially of a postovalbumin and of a protein corresponding to protein Y, according to the proteinogram obtained by electrophoresis on starch gel.

2. As a medicament, useful in the treatment of allergies comprising an effective amount of the active fraction of claim 1 in a carrier for adminstration.

3. A process for the preparation of the ovomucoid fraction of the white of quails eggs as claimed in claim 1, characterized in that it comprises the following stages:

after adding to the white of egg one volume of a solution of trichloroacetic acid in acetone, containing 1 volume of 0.5 M trichloroacetic acid per 2 volumes of acetone, the mixture is allowed to settle at 4° C. and after 48 hours the clear supernatant liquid is separated off,

the anti-protease fraction is precipitated by adding from 2 to 3 volumes of acetone to the supernatant liquid and the precipitate is filtered off; and

the precipitate is dissolved in water and dialyzed to remove the excess trichloroacetic acid, after which it is reprecipitated with acetone, washed with acetone and ether and dried at ambient temperature.

4,112,075
FURANOSE-O-PYRIDYLCARBOXYLIC ACID ESTERS

Gerhard Baschang, Bettingen; Alex Sele, Muttenz; Jaroslav Stanek, Birsfelden, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

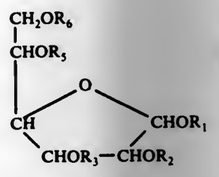
Filed Sep. 9, 1976, Ser. No. 721,738

Claims priority, application Switzerland, Sep. 12, 1975, 11893/75

Int. Cl.² A61K *31/70;* **C07H** *15/04*

U.S. Cl. 424—180 **10 Claims**

1. A furanose-O-pyridylcarboxylic acid ester of the formula I



(I)

in which at least one of R_1, R_2, R_3, R_5 and R_6 is pyridylcarbonyl and the remainder of R_1, R_2, R_3, R_5 and R_6 are lower alkyl, lower alkenyl, phenyl-lower alkyl, halogenophenyl-lower alkyl, trifluoromethylphenyl-lower alkyl, lower alkylphenyl-lower alkyl, lower alkoxyphenyl-lower alkyl or hydrogen, or in which OR_1 is hydrogen.

10. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 together with a pharmaceutically usable excipient.

4,112,076
EPI-DAUNOMYCIN AND EPI-ADRIAMYCIN COMPOUNDS AND METHOD OF USE

Federico Arcamone, Nerviano, Milan; Alberto Bargiotti, Milan; Aurelio di Marco, Milan, and Sergio Penco, Milan, all of Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

Filed Apr. 9, 1976, Ser. No. 675,696

Claims priority, application United Kingdom, Apr. 30, 1975, 18098/75

Int. Cl.² A61K *31/70;* **C07H** *15/24*

U.S. Cl. 424—180 **8 Claims**

8. A method of inhibiting the growth of a tumor selected from the group consisting of Moloney Sarcoma Virus, Ascites lymphocitic P. 388 leukemia, L1210 leukemia, Ascites Sarcoma 180 and Solid Sarcoma 180 which comprises intraperitoneally administering to a host afflicted with said tumor an amount of a compound selected from the group consisting of 3'-4'-epi-6'-hydroxy-daunomycin; 3'-4'-epi-6'-hydroxy-adriamycin; 3'-4'-epi-duanomycin; 3'-4'-epi-adriamycin; 4-demethoxy-4'-epi-daunomycin and 4-demethoxy-4'-epi-adriamycin sufficient to inhibit the growth of said tumor.

4,112,077
DIAZABORINES AND DRUG COMPOSITIONS

Hubert Maria Agnes van Wersch, Ruysdaelstraat 33, Kerkrade, Netherlands; Siegfried Herrling, Dohlenweg 33 (BRD), Stolberg, and Heinrich Muckter, Am Chorusberg 51 (BRD), Aachen, both of Germany

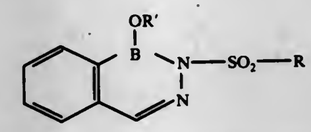
Filed Jul. 26, 1976, Ser. No. 708,361

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1975, 2533918; May 11, 1976, 2620776; May 11, 1976, 2620777

Int. Cl.² A61K *31/69*

U.S. Cl. 424—185 **30 Claims**

1. New derivatives of 1-hydroxy-benzo-2,3,1-diazaborine of the formula



(I)

herein R is an acyclic alkyl or alkenyl radical having 2 to 5 carbon atoms, or R is a mono-, di- or tri-halogen methyl radical and wherein R' is a hydrogen or a cation which together with and in formula (I), is pharmaceutically acceptable and effective to control gram-negative bacteria.

21. A pharmaceutical composition which comprises an effective amount for controlling gram-negative bacteria of a compound of claim 1, or a pharmaceutically acceptable salt thereof, in combination with a pharmaceutically acceptable carrier.

4,112,078
ISOLATION OF UTEROEVACUANT SUBSTANCES FROM PLANT EXTRACTS

Robert H. K. Chen, Belle Mead, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Aug. 8, 1977, Ser. No. 822,478

Int. Cl.² A61K *35/78, 31/335;* **C07D** *301/00;* **C07G** *17/00*

U.S. Cl. 424—195 **21 Claims**

1. The method of purifying residues containing biologically-active materials obtained by extraction of the zoapatle plant which comprises the steps of:

treating the residue with an acylating agent selected from the group consisting of aliphatic acyl halides and aliphatic acid anhydrides having 1–10 carbon atoms in the acyl group in the presence of a base selected from the group consisting of trialkylamines, pyridine, N,N-dimethylanaline and N,N-diethylanaline, reacting the resultant mixture first with a reducing agent selected from the group consisting of sodium borohydride and lithium tritertiarybutoxy aluminum hydride and then with manganese dioxide and separating the components of the mixture to yield a first compound having two acyl groups and a keto group and a second compound having two acyl groups and a hydroxyl group.

4,112,079
ISOLATION OF UTEROEVACUANT SUBSTANCES FROM PLANT EXTRACTS

Robert H. K. Chen, Belle Mead, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Aug. 8, 1977, Ser. No. 822,479

Int. Cl.² A61K *35/78, 31/335;* **C07G** *17/00;* **C07D** *301/00*

U.S. Cl. 424—195 **19 Claims**

1. The method of purifying residues containing biologically-active materials obtained by extraction of the zoapatle plant which comprises the steps of:

treating the residue with an acylating agent selected from the group consisting of aliphatic acyl halides and aliphatic acid anhydrides having 1-10 carbon atoms in the acyl group in the presence of a base selected from the group consisting of trialkylamines, pyridine, N,N-dimethylanaline and N,N-diethylanaline, reacting the resultant mixture with a hydrocyanating agent selected from the group consisting of an alkali metal cyanide and a strong mineral acid, and acetone cyanohydrin and an alkali metal carbonate, and separating the components of the mixture to yield a first compound having two acyl groups and a keto group and a second compound having two acyl groups and a cyanohydrin group.

4,112,080
O-ALKYL-S-[1,6-DIHYDRO-6-OXO-PYRIDAZIN(1)YL-METHYL]-(THIONO)-(DI)-THIOLPHOSPHORIC(PHOSPHONIC) ACID ESTERS

Wolfgang Hofer; Fritz Maurer; Hans-Jochem Riebel; Lothar Rohe, all of Wuppertal; Ingeborg Hammen, Cologne, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

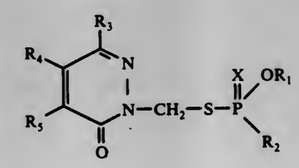
Continuation of Ser. No. 451,321, Mar. 13, 1974, abandoned. This application Jan. 2, 1976, Ser. No. 645,984

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1974, 2316821

Int. Cl.² A01N *9/36;* **C07F** *9/65*

U.S. Cl. 424—200 **10 Claims**

1. An S-[1,6-dihydro-6-oxo-pyridazin(1)ylmethyl]-(thiono)-(di)-thiol-phosphoric(phosphonic) acid ester of the formula



in which

R_1 is alkyl or alkoxyalky having 1 to 6 carbon atoms per alkyl chain,

R_2 is alkyl, alkylmercapto, alkylamino or alkenylamino having up to 6 carbon atoms per aliphatic chain, amino or phenyl,

R_3 is alkoxy, cyanoalkoxy, carbalkoxy-alkoxy, alkenyloxy, alkynyloxy, alkanoyloxy, dialkylcarbamoyloxy or alkylsulfonyloxy having up to 5 carbon atoms in each aliphatic chain, halogen, hydroxyl, or a (thiono) (thiol)-phosphoric(phosphonic) acid ester or esteramide radical,

R_4 and R_5 each independently is hydrogen, alkyl having 1 to 3 carbon atoms or halogen, or R_4 and R_5 conjointly form a fused benzene ring, and

X is oxygen or sulfur.

9. A method of combating insects, acarids or nematodes which comprises applying to *Phaedon larvae, Myzus, Tetranychus urticae, Phorbia brassicae, Tenebrio m. larvae, Meloidogyne incognita, Rhopalosiphum, Drosophila melanogaster, Plutella* or *Euscelis bilobatus,* or to a habitat thereof, an insecticidally, acaricidally or nematocidally effective amount of a compoun according to claim 1.

4,112,081

O,O-DI-ALKYL-O-(1-6-PYRIDAZINON-3-YL)-(THIONO)-PHOSPHORIC ACID ESTERS AND THEIR PESTICIDAL USE

Wolfgang Hofer; Fritz Maurer; Hans-Jochem Riebel, all of Wuppertal; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath-Steinenbrueck, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 9, 1976, Ser. No. 694,417

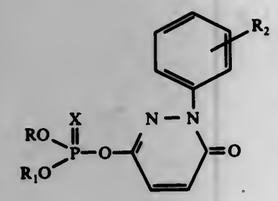
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1975, 2528692

Int. Cl.² A01N *9/36*

U.S. Cl. 424—200 **8 Claims**

1. An O,O-dialkyl-O-(1-phenyl-6-pyridazinon-3-yl)-(thiono)-phosphoric acid ester of the formula

(I)



in which

R is methyl or ethyl,

R_1 is alkyl with 3 or 4 carbon atoms, methoxymethyl or ethoxyethyl, and

R_2 is hydrogen, nitro, chlorine, methyl or ethyl.

8. The method of combating insect or acarid pests which comprises applying to the pests or a habitat thereof an insecticidally or acaricidally effective amount of

O-methyl-O-n-propyl-O-(1-phenyl-6-pyridazinon-3-yl)-thiono-phosphoric acid ester,

O-ethyl-O-iso-propyl-O-(1-phenyl-6-pyridazinon-3-yl)-thiono-phosphoric acid ester,

O-methyl-O-n-propyl-O-[1-(3-nitrophenyl)-6-pyridazinon-3-yl]-thiono-phosphoric acid ester,

O-ethyl-O-n-propyl-O-[1-(3-nitrophenyl)-6-pyridazinon-3-yl]-thiono-phosphoric acid ester, or

O-ethyl-O-n-propyl-O-[1-(3-chlorophenyl)-6-pyridazinon-3-yl]-thiono-phosphoric acid ester.

4,112,082

PHARMACEUTICAL COMPOSITION FOR TREATING GLAUCOMA AND COMPOUND 1,3,2-DIOXAPHOSPHERINGNES

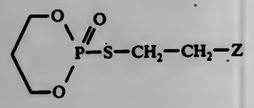
Yacov Ashani, Rishon Lezion; Gavriel Amitai, Tel-Aviv; Yona Grunfeld, Rehovot; Asher Kalir, and Sasson Cohen, both of Tel-Aviv, all of Israel, assignors to The State of Israel, Prime Minister's Office, The Israel Institute for Biological Research, Ness-Ziona, Israel

Filed Oct. 30, 1975, Ser. No. 627,387

Int. Cl.² A01N *9/36*; C07F *9/21*

U.S. Cl. 424—209 **9 Claims**

1. A compound of the formula



wherein Z designated a group -NRR' or $-N^+RR'R''.X^-$, where R designates hydrogen or lower alkyl of up to, and including, 4 carbon atoms R' designates lower alkyl of up to, and including, 4 carbon atoms, and R'' designates hydrogen, methyl or ethyl, and where X^- is a physiologically acceptable anion.

2. A pharmaceutical composition for treating glaucoma, comprising a compound in accordance with claim 1 and a pharmaceutically acceptable carrier, said compound being present in an amount effective for the treatment of glaucoma.

3. A method of using the composition of claim 2 comprising administering said composition to the eye of mammals having glaucoma in an amount sufficient to treat the glaucoma, wherein said pharmaceutically acceptable carrier is an ophthalmological carrier.

4,112,083

PESTICIDAL O,S-DIALKYL O-SULFONYLOXYPHENYL PHOSPHOROTHIOLATES AND PHOSPHORODITHIOATES

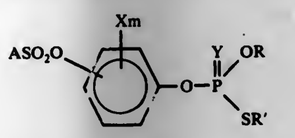
William S. Hurt, Collegeville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 680,626, Apr. 26, 1976, Pat. No. 4,053,499, which is a division of Ser. No. 576,838, May 12, 1975, Pat. No. 3,975,420, which is a continuation-in-part of Ser. No. 519,448, Oct. 31, 1974, abandoned. This application Jul. 26, 1977, Ser. No. 819,079

Int. Cl.² A01N *9/36*

U.S. Cl. 424—215 **6 Claims**

1. A pesticidal composition wherein the pests are acarids, insects, nematodes, or phytopathogenic fungi, comprising an effective amount of a compound of the formula



wherein

R is a $(C_1–C_4)$alkyl group;

R' is a $(C_3–C_6)$alkyl group;

Y is an oxygen atom or a sulfur atom;

X is a halogen atom, a $(C_1–C_5)$alkyl group, or a $(C_1–C_5)$alkoxy group;

m is an integer from 0 to 3;

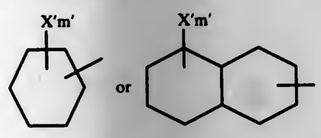
A is

a. a $(C_1–C_5)$alkyl group substituted with up to three halogen atoms;

b. a $(C_5–C_6)$cycloalkyl group;

c. a $(C_7–C_{10})$aralkyl group, the aryl portion of which is optionally substituted with up to three nitro groups, halogen atoms; $(C_1–C_5)$alkyl groups, or $(C_1–C_5)$alkoxy groups; or

d. an aryl group of the formula



wherein

X' is a nitro group, a halogen atom, a $(C_1–C_5)$alkyl group, or a $(C_1–C_5)$alkoxy group; and

m' is an integer from 0 to 3; and an agronomically acceptable carrier.

4,112,084

BACTERICIDAL AND FUNGICIDAL TIN COMPOUNDS

Hans Plum, Hamm-Heessen, and Ulrich Schroeer, Kamen-Methler, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

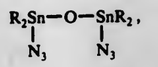
Filed Nov. 22, 1977, Ser. No. 853,854

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659288

Int. Cl.² A01N *9/20*; C07C *117/00*

U.S. Cl. 424—226 **6 Claims**

1. A bis-(azido-di-alkyl-tin)-oxide of the formula



wherein R is alkyl having 3–5 carbon atoms.

6. A bactericidal or fungicidal composition comprising a bactericidally- or fungicidally-effective amount of a compound as in claim 1 and a carrier therefor.

4,112,085

METALLIC COMPOSITIONS

Jean V. Morelle, and Eliane M. T. Lauzanne-Morelle, both of 170 Avenue Parmentier, 75010 Paris, France

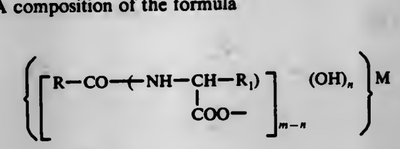
Division of Ser. No. 621,954, Oct. 14, 1975. This application Nov. 25, 1977, Ser. No. 855,050

Claims priority, application France, Oct. 28, 1974, 74 35929

Int. Cl.² A61K *31/555, 31/28, 31/16*

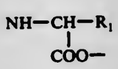
U.S. Cl. 424—245 **2 Claims**

1. A composition of the formula



wherein:

(a) R-CO is the acyl moiety of a straight fatty acid RCOOH comprising from 6 to 20 carbon atoms;



(b)

represents the ensemble of skeletons of all the aminoacids obtained by complete hydrolysis of the natural proteins, said compositions containing the alpha aminoacids in proportions similar to those ones existing in the proteins treated;

(c) M is a metal selected from the group consisting of magnesium, calcium, iron, cobalt, manganese, copper, zinc, molybdenum and aluminium;

(d) *m* is the valency of the selected M; and

(e) *n* is an integer inferior to *m*.

4,112,086

7β-ACYLAMINO-3-(PHOSPHONOALKYL AND ESTERIFIED PHOSPHONOALKYL SUBSTITUTED TETRAZOLYLTHIOMETHYL)CEPHALOSPORINS

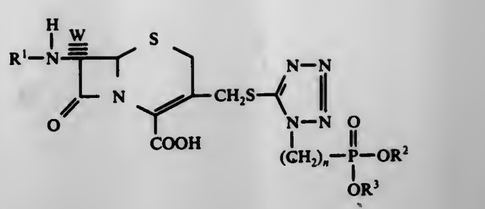
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Nov. 2, 1976, Ser. No. 737,971

Int. Cl.² C07D *501/60*; A61K *31/545*

U.S. Cl. 424—246 **57 Claims**

1. An antibacterial compound of the formula:



in which:

W is hydrogen or methoxy;

R^1 is a pharmaceutically acceptable acyl group known as a 7-substituent in the cephalosporin art;

R^2 and R^3 are each hydrogen or alkyl of from one to four carbon atoms; and

n is 1 to 5,

or a non-toxic pharmaceutically acceptable salt or hydrate thereof.

47. A pharmaceutical composition having anti-bacterial activity comprising a compound as claimed in claim 1 and a pharmaceutically acceptable carrier therefor.

4,112,087

CEPHALOSPORIN TYPE ANTIBACTERIALS HAVING A SUBSTITUTED PROPENYL GROUP IN THE 3-POSITION

Philip J. Beeby, Melbourne, Australia, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

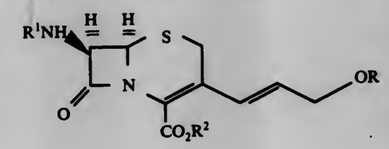
Filed Nov. 4, 1976, Ser. No. 738,776

Int. Cl.² C07D *501/24*; A61K *31/38*

U.S. Cl. 424—246 **34 Claims**

1. A compound having the formula:

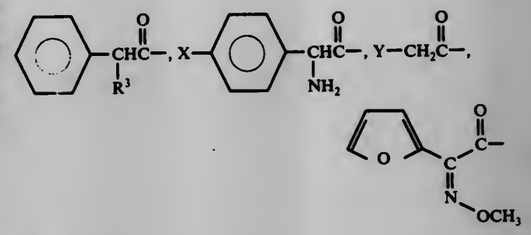
I



wherein:

R is alkyl having 1 to 4 carbon atoms, β-haloethyl, cyclopentyl or benzyl;

R^1 is a group having the formula



wherein

R^3 is hydrogen, hydroxy or carboxy; X is hydrogen or hydroxy; Y is thiophen-2-yl, (1H)-tetrazol-1-yl, 4-pyridylthio, phenoxy, trifluoromethylthio, 4-nitrophenyl or 3-chlorophenyl;

R^2 is hydrogen or a protecting group selected from the group benzhydryl, benzyl, o-nitrobenzyl, p-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, tert-butyl, pivaloyloxymethyl, phenacyl, and polyhaloalkyl having 2 to 6 carbon atoms; and pharmaceutically acceptable salts thereof.

4,112,088

7-ACYL-3-(SULFOALKYL SUBSTITUTED OXADIAZOLYLTHIOMETHYL) CEPHALOSPORINS

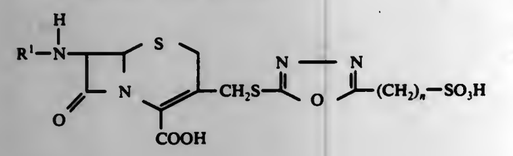
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 666,095, Mar. 11, 1976, Pat. No. 4,041,162. This application Apr. 25, 1977, Ser. No. 790,738

Int. Cl.[2] C07D *501/56, 501/52, 501/50;* A61K *31/395*

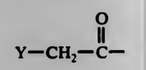
U.S. Cl. 424—246 10 Claims

1. A compound of the formula:



in which:

R^1 is an acyl group of the formula:



where:

Y is cyano, aminomethylphenyl, sydnone, pyridone, thienyl or tetrazolyl; and

n is 1 to 5,

or a non-toxic pharmaceutically acceptable salt thereof.

4. A method of treating bacterial infections comprising administering internally by injection to an infected or susceptible warm-blooded animal a composition containing an antibacterially effective but nontoxic dose of a compound as claimed in claim 1.

4,112,089

4-SUBSTITUTED-1,3-DITHIOLAN-2-YLIDENE MALONATES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

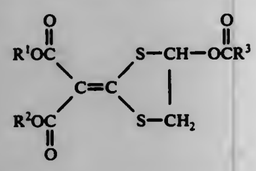
Kuniaki Taninaka, Ibaragi; Hitoshi Kurono, Amagasaki, and Tsutomu Kasai, Sakai, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Division of Ser. No. 584,410, Jun. 6, 1975, Pat. No. 4,034,102. This application Feb. 8, 1977, Ser. No. 766,818

Int. Cl.[2] C07D *339/06, 413/02;* A61K *31/40, 31/535*

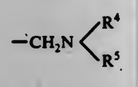
U.S. Cl. 424—248.55 24 Claims

1. A compound represented by the general formula (I),



(I)

wherein R^1 and R^2, which may be same or different, represent individually a C_1–C_4 alkyl group; and R^3 represents a group of the formula



(where R^4 and R^5 form, in combination, a lower alkylene group which is sometimes intercepted by an oxygen atom).

6. A pharmaceutical composition for preventing liver necrosis, fatty liver or hepatitis of animals including humans, which comprises an effective amount sufficient for said purpose of a compound having the general formula (I) defined in claim 1, and a pharmaceutically acceptable diluent.

4,112,090

NOVEL PENICILLINS AND CEPHALOSPORINS AND PROCESS FOR PRODUCING THE SAME

Isamu Saikawa; Shuntaro Takano, both of Toyama; Chosaku Yoshida, Takaoka; Okuta Takashima, Toyama; Kaishu Momonoi, Shinminato; Seietsu Kuroda, Toyama; Miwako Komatsu, Toyama; Takashi Yasuda, Toyama, and Yutaka Kodama, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

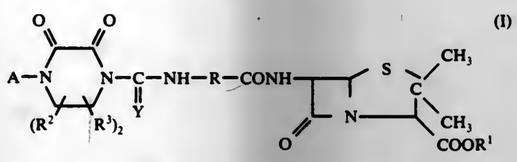
Continuation-in-part of Ser. No. 571,479, Apr. 24, 1975, Pat. No. 4,087,424. This application Jan. 30, 1976, Ser. No. 654,060

Claims priority, application Japan, May 9, 1974, 49-50663; May 13, 1974, 49-52254; May 31, 1974, 49-60787; Aug. 13, 1974, 49-91996; Sep. 26, 1974, 49-109954; Dec. 13, 1974, 49-142499

Int. Cl.[2] A61K *31/43;* C07D *499/70, 499/66, 499/68*

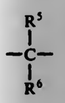
U.S. Cl. 424—251 40 Claims

1. An antibacterial compound of the formula (I),



(I)

wherein R is a group represented by the formula



wherein R^5 represents a conventional penicillin substituent selected from alkyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, aralkyl, aryloxy, alkylthioalkyl, furyl, thienyl, oxazolyl, thiazolyl, isoxazolyl, isothiazolyl, imidazolyl, pyrazolyl, pyridyl, pyrazyl, pyrimidyl, pyridazyl, quinolyl, isoquinolyl, quinazolyl, indolyl, indazolyl, 1,3,4-oxadiazolyl, 1,2,4-oxadiazolyl, 1,3,4-thiadiazolyl or 1,2,4-thiadiazolyl, each of which may be substituted by halogen, hydroxy, nitro, alkyl, alkoxy, alkylthio, acyl or alkylsulfonylamino; R^6 represents a hydrogen atom; and R^5 and R^6 together with a common carbon atom may form a conventional penicillin substituent selected from cycloalkyl, cycloalkenyl or cycloalkadienyl ring;

R^1 represents a hydrogen atom, a conventional penicillin blocking group of a conventional penicillin or a conventional salt-forming cation of a conventional penicillin;

each pair of R^2 and R^3 are linked to the same carbon atom, and each R^2 and R^3 in each pair of R^2 and R^3, which may be the same or different, represent individually a conventional penicillin substituent selected from the group consisting of hydrogen, halogen, carboxyl, or alkyl, cycloalkyl, aryl, acyl, aralkyl, alkoxycarbonylalkyl, acyloxyalkyl, alkoxy, alkoxycarbonyl, cycloalkyloxycarbonyl, aralkoxycarbonyl, aryloxycarbonyl, amino or carbamoyl; any of which may be substituted by halogen, alkyl, alkoxy, alkylthio, acyl or nitro; and any pair of R^2 and R^3 together with a common carbon atom may form a conventional penicillin substituent which is a cycloalkyl ring;

A represents a conventional penicillin substituent selected from hydrogen, hydroxy, nitro or cyano, or alkyl, alkenyl, alkynyl, alkadienyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, acyl aralkyl, acyloxyalkyl, alkoxy, cycloalkyloxy, alkoxycarbonyl, aryloxy, cycloalkyloxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, carbamoyl, thiocarbamoyl, acylcarbamoyl, acylthiocarbamoyl, alkylsulfonylcarbamoyl, arylsulfonylcarbamoyl, alkylsulfonylthiocarbamoyl, arylsulfonlthiocarbamoyl, sulfamoyl, alkoxycarbonylthioalkyl, alkoxythiocarbonylthioalkyl, amino, thiazolyl, pyridyl, pyridazyl, pyrazyl, thiadiazolyl, triazolyl, tetrazolyl or quinolyl, each of which may be substituted by a conventional penicillin substituent selected from the group consisting of halogen, hydroxyl, alkyl, alkoxy, alkylthio, nitro, cyano, amino, carboxyl or acyl; and

Y represents an oxygen or sulfur atom.

4,112,091

POLYHALO ALKYL OR ALKENYL ALCOHOL ESTERS OF PIPERAZINO ACIDS

Hans Nesvadba, Vienna, Austria, and Hellmuth Reinshagen, Rheinweiler, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

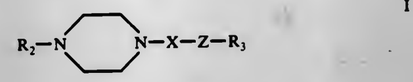
Filed Apr. 4, 1977, Ser. No. 783,989

Claims priority, application Switzerland, Apr. 9, 1976, 4529/76; Apr. 9, 1976, 4530/76

Int. Cl.[2] C07D *295/18;* A61K *31/495*

U.S. Cl. 424—250 11 Claims

1. A compound of formula I



I

in which

R_2 is hydrogen, lower alkyl, lower hydroxyalkyl, phenyl, mono lower alkyl phenyl or monohydroxy lower alkyl phenyl,

X is a group of formula $>C=O$ or $>C=S$,

Z is oxygen or sulphur, and

R_3 is a straight- or branched-chain alkyl of 1 to 12 carbon atoms or an alkenyl group of 2 to 6 carbon atoms, which is substituted at one methyl group by two or three halogen atoms.

10. An animal feed containing a compound of claim 1, in free base form or in physiologically acceptable acid addition salt form, in an amount effective to improve food utilisation.

4,112,092

1-NAPHTHYLMETHYL-4-(THIAZOLYL-2)-PIPERAZINES

Gilbert Regnier, Chatenay-Malabry; Roger Canevari, Elancourt, and Jean-Claude Poignant, Bures, Yvette, all of France, assignors to Science Union et Cie, France

Filed Apr. 8, 1977, Ser. No. 785,855

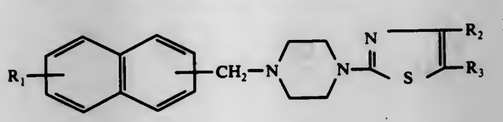
Claims priority, application United Kingdom, Apr. 12, 1976, 14811/76

Int. Cl.[2] C07D *417/04;* A61K *31/495*

U.S. Cl. 424—250 6 Claims

1. A compound selected from the group consisting of:

(A) naphthyl compounds of the formula I:



I

wherein:

R_1 is selected from the group consisting of hydrogen, halogen, i.e. chlorine, fluorine, or bromine, lower-alkyl and lower-alkoxy, each having 1 to 5 carbon atoms inclusive,

R_2 and R_3, which are the same or different, are selected from the group consisting of hydrogen, lower-alkyl having 1 to 5 carbon atoms inclusive and phenyl and

R_2 and R_3 joined together are $-CH=CH-CH=CH-$ in order to form with the thiazolyl radical to which they are bonded a benzothiazolyl radical; and

(B) physiologically tolerable acid addition salts thereof.

5. A pharmaceutical composition useful for treating CNS disorders containing as active ingredient a compound of claim 1 in an amount of 15 to 150 mg, together with a suitable pharmaceutical carrier.

4,112,093

STIMULATING DOPAMINERGINIC ACTIVITY

Claude Dumont, Nogent-sur-Marne, and Claude Oberlander, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed Jun. 16, 1977, Ser. No. 807,068

Claims priority, application France, Jun. 23, 1976, 76 19088

Int. Cl.[2] A61K *31/495*

U.S. Cl. 424—250 3 Claims

1. A method of stimulating dopaminergic activity in the treatment of neurological syndromes of extrapyramidal origin in warm-blooded animals comprising administering to warm-blooded animals an dopaminergically effective amount of a member of the group consisting of N-(3,4-methylenedioxybenzyl)-N'-(2-pyridyl)-piperazine and a non-toxic, pharmaceutically acceptable acid additional salt thereof and an inert pharmaceutical carrier.

4,112,094

N-(2-PYRAZINYL) 1H- (OR 2H) TETRAZOLE-5-CARBOXAMIDE DERIVATIVES FOR THE PREVENTION OF IMMEDIATE TYPE HYPERSENSITIVITY REACTIONS

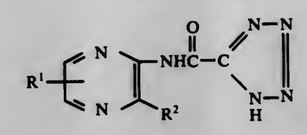
John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia, both of Pa., and Albert J. Begany, Tuscon, Ariz., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 669,562, Mar. 23, 1976, Pat. No. 4,044,144, which is a continuation-in-part of Ser. No. 542,465, Jan. 20, 1976, Pat. No. 3,966,965, which is a continuation-in-part of Ser. No. 344,466, Mar. 23, 1973, abandoned. This application Jul. 15, 1977, Ser. No. 815,972

Int. Cl.[2] A61K *31/495;* C07D *403/02*

U.S. Cl. 424—250 6 Claims

1. A process for preventing the release of pharmacological mediators from an immediate hypersensitivity reaction between reaginic type antibodies and an antigen, thereby preventing the symptoms manifest in bronchial asthma, seasonal pollinosis, allergic rhinitis, urticaria, allergic conjunctivitis, food allergy and anaphylactoid reactions of a sensitized animal, which comprises prophylactically administering to said animal an effective amount of a compound of the formula:



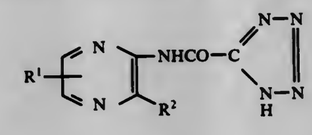
in which

R^1 is hydrogen, lower alkylamino, di(lower)alkylamino, cyano, halo, lower alkyl or halo; and

R^2 is hydrogen or cyano;

or a pharmaceutically acceptable salt thereof.

3. A compound of the formula:



in which

R^1 is hydrogen, lower alkylamino, di(lower)alkylamino, cyano, halo, lower alkyl or halo; and

R^2 is hydrogen or cyano;

or a pharmaceutically acceptable salt thereof.

4,112,095

6-PHENYL-1,2,4-TRIAZOLO[4,3-b]PYRIDAZINE HYPOTENSIVE AGENTS

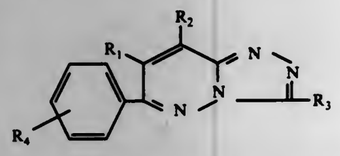
George Rodger Allen, Jr., Old Tappan, N.J.; John William Hanifin, Jr.; Daniel Bryan Moran, both of Suffern, and Jay Donald Albright, Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 730,395, Oct. 7, 1976, abandoned. This application Jul. 29, 1977, Ser. No. 820,275

Int. Cl.[2] C07D *487/04;* A61K *31/50*

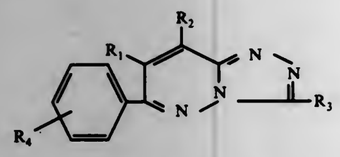
U.S. Cl. 424—250 **17 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1, R_2, and R_3 are each individually selected from the group consisting of hydrogen and alkyl having up to 3 carbon atoms and R_4 is fluoro, chloro, bromo, cyano, trifluoromethyl, nitro, amino, acetamido, carbamoyl, thiocarbamoyl or alkyl having up to 4 carbon atoms with the proviso that at least one of R_1 and R_2 is hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

14. The method of lowering elevated blood pressure in a mammal which comprises administering internally to said mammal an effective amount of a compound selected from the group consisting of those of the formula:



wherein R_1, R_2, and R_3 are each individually selected from the group consisting of hydrogen and alkyl having up to 3 carbon atoms and R_4 is fluoro, chloro, bromo, cyano, trifluoromethyl, nitro, amino, acetamido, carbamoyl, thiocarbamoyl or alkyl having up to 4 carbon atoms with the proviso that at least one of R_1 and R_2 is hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

4,112,096

PYRAZOLO(1,5-c)QUINAZOLINE DERIVATIVES AND RELATED COMPOUNDS

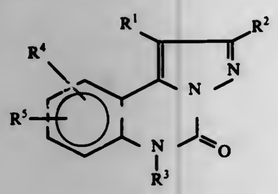
B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 702,364, Jul. 2, 1976, Pat. No. 4,076,818. This application Mar. 17, 1977, Ser. No. 778,397

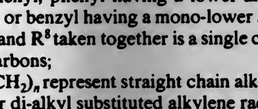
Int. Cl.[2] C07D *487/04;* A61K *31/415, 31/505*

U.S. Cl. 424—251 **9 Claims**

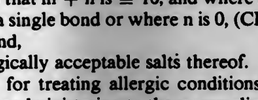
1. A compound of the structure



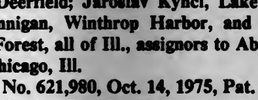
wherein R^1 and R^2 are the same or different, and R^1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, phenyl having a single substituent selected from the group consisting of halogen, lower alkyl, lower alkoxy, and trifluoromethyl, or



R^2 is selected from the group consisting of



hydrogen, lower alkyl, phenyl or phenyl having a single substituent selected from the group consisting of halogen, lower alkyl, lower alkoxy and trifluoromethyl, with the proviso that at least one of R^1 and R^2 is



R^6 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, mono-halophenyl, mono-lower alkoxyphenyl, phenylalkyl having 1 to 8 carbons in the alkyl group, phenyl, or phenyl having a mono-lower alkoxy substituent;

R^3 is selected from the group consisting of hydrogen, lower alkyl, benzyl, phenyl, phenyl having a single substituent selected from the group consisting of lower alkoxy, trifluoromethyl, benzyl, or benzyl having a single substituent selected from the group consisting of lower alkoxy, halogen or trifluoromethyl;

R^4 and R^5 are the same or different and are selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, lower alkanoyloxy of 1 to 4 carbons, nitro, benzyloxy, benzyloxy having a mono-lower alkoxy substituent, halogen, hydroxy, and trifluoromethyl;

R^7 and R^8 may be the same or different and are selected from the group consisting of hydrogen, alkyl having 1 to 3 carbons, phenyl, phenyl having a lower alkoxy substituent, benzyl, or benzyl having a mono-lower alkoxy substituent, or R^7 and R^8 taken together is a single cycloalkyl ring of 3 to 7 carbons;

$(CH_2)_m$ and $(CH_2)_n$ represent straight chain alkylene radicals, or mono- or di-alkyl substituted alkylene radicals wherein the alkyl group has 1 to 2 carbons, m and n are integers which may be the same or different and are 0 to 10, with the proviso that m + n is $\leqq$ 10, and where m is 0, $(CH_2)_m$ represents a single bond or where n is 0, $(CH_2)_n$ represents a single bond,

and physiologically acceptable salts thereof.

9. A method for treating allergic conditions in mammals, which comprises administering to the mammalian host a therapeutic amount of a compound as defined in claim 1.

4,112,097

ANTIHYPERTENSIVE AGENTS

Martin Winn, Deerfield; Jaroslav Kyncl, Lake Bluff; Daniel Ambrose Dunnigan, Winthrop Harbor, and Peter Hadley Jones, Lake Forest, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 621,980, Oct. 14, 1975, Pat. No. 4,026,894. This application Jan. 21, 1977, Ser. No. 760,895

Int. Cl.[2] A61K *31/505*

U.S. Cl. 424—251 **7 Claims**

1. A pharmaceutical composition useful as an antihypertensive comprising an active amount of a compound selected from the class consisting of 2-[4-(tetrahydro-2-furoyl)-piperazino]-4-amino-6,7-dimethoxyquinazoline and 2-[4(tetrahydropyran-2-carbonyl)piperazinyl]-4-amino-6,7-dimethoxyquinazoline and pharmaceutically acceptable acid addition salts thereof and a pharmaceutically acceptacle carrier.

4,112,098

PYRAZOLO[1,5-C]QUINAZOLINE DERIVATIVES AND RELATED COMPOUNDS

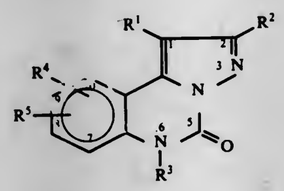
B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 17, 1977, Ser. No. 842,718

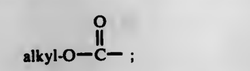
Int. Cl.[2] A61K *31/415, 31/505;* C07D *487/04*

U.S. Cl. 424—251 **19 Claims**

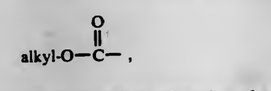
1. Compounds of the structure



wherein R^1 is hydrogen, alkyl of 1 to 3 carbons, 1-(hydroxyimino)alkyl, alkanoylamino, amino, or

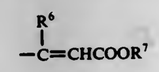


R^2 is 1-(hydroxyimino)alkyl, alkanoylamino, amino,



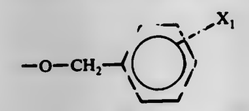
hydrogen, lower alkyl, phenyl or phenyl substituted by a single R^4, the alkyl moiety present in the above R^1 and R^2 groups having 1 to 8 carbons;

R^3 is hydrogen, lower alkyl having 1 to 8 carbons, benzyl, phenyl, phenyl substituted by a single R^4 radical, dialkylaminoalkyl having 1 to 8 carbons in each of the alkyl groups, mono-hydroxyalkyl,



(wherein R^6 is hydrogen or alkyl, and R^7 is alkyl of 1 to 4 carbons), with the proviso that R^1 or R^2 is 1-(hydroxyimino)alkyl, alkanoylamino, or amino, when R^3 is hydrogen, lower alkyl having 1 to 8 carbons, benzyl or phenyl;

R^4 and R^5 may be the same or different and are hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, hydroxy, alkanoyloxy of 2 to 5 carbons,



(wherein X_1 is hydrogen, lower alkoxy of 1 to 4 carbons), hydroxy, Cl, F, Br, CF_3 or NO_2,

and physiologically acceptable salts thereof.

19. A method for treating allergic conditions in mammals, which comprises administering to the mammalian host a therapeutic amount of a compound as defined in claim 1.

4,112,099

CYCLO ALIPHATIC-PHENYLENE-CARBONYL-PYRIDINES

Georges Haas, and Alberto Rossi, both of Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

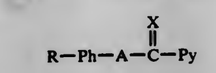
Division of Ser. No. 443,289, Feb. 19, 1974, Pat. No. 3,980,657. This application Apr. 28, 1976, Ser. No. 680,947

Claims priority, application Switzerland, Feb. 19, 1973, 2381/73; Oct. 23, 1973, 14936/73

Int. Cl.[2] A61K *31/44;* C07D *213/50*

U.S. Cl. 424—263 **9 Claims**

1. Pyridine compounds of the general formula I



(I)

wherein R denotes a cycloalkenyl or cycloalkyl radical with 5 to 10 ring members which is unsubstituted or substituted by C_1–C_4-alkyl, C_2–C_4-alkenyl, C_1–C_4-alkoxy, hydroxy or oxo, 2- or 3-bicyclo[4,4,0]-decyl or -dec-2-enyl, 2-bicyclo[2,2,2]-octyl or -oct-2-enyl, 2-bornyl, 2-norbornyl, 2-bornenyl, 2-norbornenyl, 1-homoadamantyl, octahydro-1,2,4-methenopentalenyl which is unsubstituted or substituted by C_1–C_4-allyl or C_1–C_4-alkoxy, or 1- or 2-adamantyl, Ph denotes p-phenylene optionally substituted by nitro, trifluoromethyl, C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine, fluorine or bromine, A denotes a direct bond, X denotes an oxo group, and Py denotes a pyridyl radical which is unsubstituted or C-substituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, or a therapeutically acceptable acid addition salt thereof.

9. An antiinflammatory pharmaceutical preparation comprising an antiinflammatory effective amount of a compound claimed in claim 1 together with a conventional pharmaceutical excipient.

4,112,100

METHODS OF USE OF PYRIDYLALKYL PHENYLTHIOUREAS

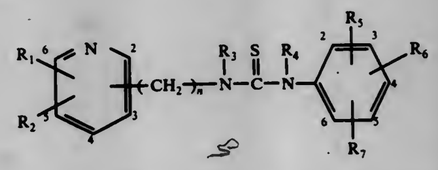
William A. Callahan, Richland Township, Kalamazoo County; Eldridge Myles Glenn, Kalamazoo, and Douglas L. Rector, Parchment, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 428,373, Dec. 26, 1973, abandoned. This application Jun. 25, 1975, Ser. No. 590,273

Int. Cl.[2] A61K *31/44*

U.S. Cl. 424—263 **25 Claims**

1. A method for increasing the production of endogenous prostaglandins by a mammal which comprises administering to said mammal an effective amount of a compound of the formula:



a pyridyl N-oxide thereof and a pharmaceutically acceptable acid addtion salt thereof wherein R_1 and R_2 are each hydrogen, halogen, alkyl of one to six carbon atoms, inclusive, alkenyl of two to six carbon atoms, inclusive, cycloalkyl of three to six carbon atoms, inclusive, phenyl, alkoxy of one to 12 carbon atoms, inclusive, alkylthio of one to 12 carbon atoms, inclusive, nitro, amino, alkylamino with alkyl of one to 12 carbon atoms, inclusive, dialkylamino with each alkyl of one to 12 carbon atoms, inclusive, alkanoylamine with alkyl of one to 12 carbon atoms, inclusive, or trihalomethyl;

R_3 and R_4 are each hydrogen, alkyl of one to four carbon atoms, inclusive, cycloalkyl of three to eight carbon atoms, inclusive, aryl of six to 12 carbon atoms, inclusive,

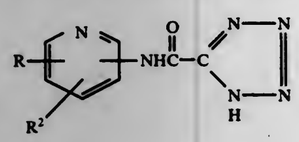
aralkyl of seven to 12 carbon atoms, inclusive, and aryl of six to 12 carbon atoms, inclusive, said aryl substituted with halogen, alkoxy of one to four carbon atoms, inclusive, halogen substituted alkyl of one to four carbon atoms, inclusive, and halogen substituted alkoxy of one to four carbon atoms, inclusive; R_5 is hydrogen, halogen, alkyl of one to 12 carbon atoms, inclusive, alkenyl of two to 12 carbon atoms, inclusive, cycloalkyl of three to eight carbon atoms, inclusive, aryl of six to 12 carbon atoms, inclusive, aralkyl of seven to 12 carbon atoms, inclusive, alkoxy of one to 12 carbon atoms, inclusive, and halogen substituted alkyl of one to 12 carbon atoms, inclusive, halogen substituted alkenyl of two to 12 carbon atoms, inclusive, halogen substituted cycloalkyl of three to eight carbon atoms, inclusive, halogen substituted aryl of six to 12 carbon atoms, inclusive, and halogen substituted aralkyl of seven to 12 carbon atoms, inclusive; R_6 and R_7 are each nitro, amino, alkanoylamino with alkyl of one to 12 carbon atoms, inclusive, alkylamino with alkyl of one to 12 carbon atoms, inclusive, dialkylamino with each alkyl of one to 12 carbon atoms, inclusive, alkylthio with alkyl of one to 12 carbon atoms, inclusive, arylthio of six to 12 carbon atoms, inclusive, aryloxy of six to 12 carbon atoms, inclusive, and a group R_5 as previously defined; and *n* is an integer of from one to two, inclusive.

4,112,101
N-(PYRIDYL)-1H-(OR 2H) TETRAZOLE-5-CARBOXAMIDE DERIVATIVES FOR THE PREVENTION OF IMMEDIATE TYPE HYPERSENSITIVITY REACTIONS

John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia, both of Pa., and Albert J. Begany, Tucson, Ariz., assignors to American Home Products Corporation, New York, N.Y.

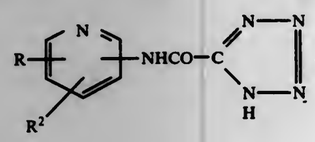
Continuation-in-part of Ser. No. 669,562, Mar. 23, 1976, Pat. No. 4,044,144, which is a continuation-in-part of Ser. No. 542,465, Jan. 20, 1975, Pat. No. 3,966,965, which is a continuation-in-part of Ser. No. 344,466, Mar. 23, 1973, abandoned. This application Jul. 15, 1977, Ser. No. 815,970
Int. Cl.[2] A61K *31/44*; C07D *401/02*
U.S. Cl. 424—263 **17 Claims**

1. A process for preventing the release of pharmacological mediators from an immediate hypersensitivity reaction between reaginic type antibodies and an antigen, thereby preventing the symptoms manifest in bronchial asthma, seasonal pollinosis, allergic rhinitis, urticaria, allergic conjunctivities, food allergy and anaphylactoid reactions of a sensitized animal, which comprises prophylactically administering to said animal an effective amount of a compound of the formula:



in which
R is —H or lower alkyl;
R^2 is —H, lower alkoxy, —CN, di(lower) alkylamino, halo or polyhalo(lower) alkyl;
or a pharmaceutically acceptable salt thereof.

3. A compound of the formula:



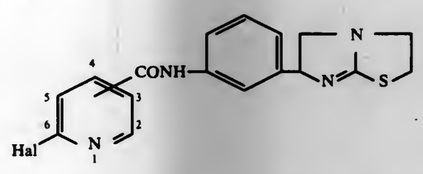
in which
R is —H or lower alkyl;
R^2 is —H, lower alkoxy, —CN, di(lower) alkylamino, halo or polyhalo(lower) alkyl;
or a pharmaceutically acceptable salt thereof.

4,112,102
HALOPYRIDYL DERIVATIVES OF M-AMINOTETRAMISOLE AS ANTHELMINTICS

John E. Thorpe, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,142
Claims priority, application United Kingdom, May 1, 1976, 17883/76
Int. Cl.[2] A61K *31/44*; C07D *513/04*
U.S. Cl. 424—266 **8 Claims**

1. The dl- and l-forms of the compounds of the formula:



and the pharamceutically acceptable acid addition salts thereof,
wherein Hal is F, Cl, Br or I and the —CONH group is attached to the 3- or 4-position of the pyridine ring.

5. An anthelmintic composition useful for the treatment of helminth infections comprising an anthelmintic effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable diluent or carrier.

4,112,103
ANTIARRHYTHMIC (+,−)-CIS-α-[3-(2,6-DIMETHYL-1-PIPERIDINYL)-PROPYL]-α-PHENYL-2-PYRIDINEMETHANOLS

Robert Willerton Fleming, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 676,964, Apr. 15, 1976, abandoned. This application Feb. 25, 1977, Ser. No. 772,203
Int. Cl.[2] C07D *213/38*
U.S. Cl. 424—267 **7 Claims**

1. (+,−)-cis-α-[3-(2,6-Dimethyl-1-piperidinyl)-propyl]-α-phenyl-2-pyridinemethanol and acid-addition salts thereof.

5. A method for controlling cardiac arrhythmia which comprises administering a compound of claim 1 wherein said acid-addition salts are pharmaceutically acceptable acid-addition salts to a mammal in a dose of from about 0.1 to about 10 mg. per kg. of body weight per day.

4,112,104
PHARMACOLOGICALLY ACTIVE COMPOUNDS

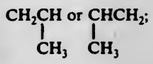
Graham John Durant, and Charon Robin Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 640,525, Dec. 15, 1975, Pat. No. 4,025,527, which is a continuation-in-part of Ser. No. 481,716, Jun. 21, 1974, abandoned. This application Feb. 22, 1977, Ser. No. 770,340
Claims priority, application United Kingdom, Jul. 13, 1973, 33428/73; Nov. 12, 1975, 46732/75
Int. Cl.[2] A61K *31/425*, *31/42*
U.S. Cl. 424—270 **4 Claims**

1. A pharmaceutical composition to inhibit H-2 histamine receptors comprising a pharmaceutically acceptable oral or parenteral carrier and in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein Het_1 and Het_2, which may be the same or different, are thiazole or oxazole, which is optionally monosubstituted by lower alkyl having 1 to 4 carbon atoms, hydroxyl, halogen or amino; Z_1 and Z_2 are sulphur or a methylene group; B_1 is $(CH_2)_{n_1}$ and B_2 is $(CH_2)_{n_2}$ and when Z_1 is sulphur and m_1 is 1, B_1 may also be CH_2CHR, $CHRCH_2$, $CHRCH_2CH_2$, CH_2CHRCH_2 or CH_2CH_2CHR wherein R is methyl or ethyl or when Z_1 and Z_2 are sulphur and m_1 and m_2 are 1, both B_1 and B_2 may also be



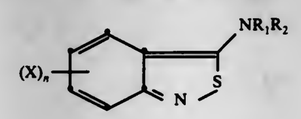
m_1 and m_2 are 0, 1 or 2 and n_1 and n_2 are 2 or 3, provided that the sum of m_1 and n_1 and the sum of m_2 and n_2 are from 2 to 4; and X is sulphur, oxygen or NY wherein Y is hydrogen, cyano, $CONH_2$ or SO_2R_1 wherein R_1 is lower alkyl or phenyl, provided that when X is NH, at least one of Z_1 or Z_2 is sulphur, or a pharmaceutically acceptable acid addition salt thereof.

4,112,105
ANTI-INFLAMMATORY 3-(SUBSTITUTED-AMINO)-2,1-BENZISOTHIAZOLES

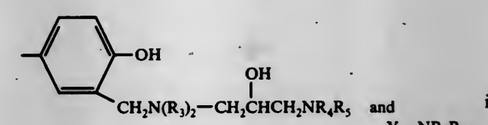
John Alan Carlson, Nassau, and Malcolm Rice Bell, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed May 4, 1977, Ser. No. 793,629
Int. Cl.[2] A61K *31/425*; C07D *275/04*
U.S. Cl. 424—270 **28 Claims**

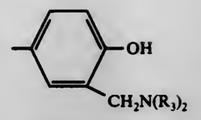
1. A compound having the formula



wherein:
R_1 is hydrogen, methyl or ethyl;
R_2 is selected from the group consisting of



and
—Y—NR_4R_5;
or
R_1 and R_2 taken together with the nitrogen atom are piperazinyl, N-lower alkylpiperazinyl or N-phenylpiperazinyl;
R_3 is methyl or ethyl;
R_4 and R_5 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, hydroxy-lower alkyl, or when taken together with the nitrogen atom, are pyrrolidino, piperidino, hexamethyleneimino, piperazinyl, N-lower alkylpiperazinyl or N-phenylpiperazinyl;
Y is an alkylene group containing from 2 to 8 carbon atoms and separating the two nitrogen atoms by at least 2 carbon atoms;
X occupies any of positions 4,5,6 or 7 and is selected from the group consisting of methoxy and halo; and
n is 1 or 2; or 0,1 or 2 when R_2 is



or an acid-addition salt thereof.

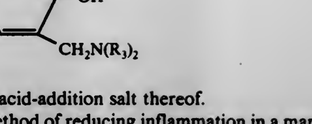
26. A method of reducing inflammation in a mammal in need of such treatment which comprises administering to said mammal an effective anti-inflammatory amount of a compound according to claim 1.

4,112,106
N-(2-THIAZOLYL)-TETRAZOLE-5-CARBOXAMIDE DERIVATIVES FOR THE PREVENTION OF IMMEDIATE TYPE HYPERSENSITIVITY REACTIONS

John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia, both of Pa., and Albert J. Begany, Tucson, Ariz., assignors to American Home Products Corporation, New York, N.Y.

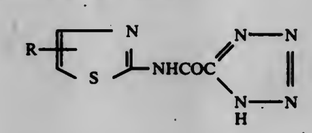
Continuation-in-part of Ser. No. 669,562, Mar. 23, 1976, Pat. No. 4,044,144, which is a continuation-in-part of Ser. No. 542,465, Jan. 20, 1975, Pat. No. 3,966,965, which is a continuation-in-part of Ser. No. 344,466, Mar. 23, 1973, abandoned. This application Jul. 15, 1977, Ser. No. 815,974
Int. Cl.[2] A61K *31/425*; C07D *417/02*
U.S. Cl. 424—270 **6 Claims**

1. A process for preventing the release of pharmacological mediators from an immediate hypersensitivity reaction between reaginic type antibodies and an antigen, thereby preventing the symptoms manifest in bronchial asthma, seasonal pollinosis, allergic rhinitis, urticaria, allergic conjunctivitis, food allergy and anaphylactoid reactions of a sensitized animal, which comprises prophylactically administering to said animal an effective amount of a compound of the formula:



in which
R is hydrogen, lower alkyl, lower alkoxy, —CN, (lower) alkyl amino, di(lower) alkylamino, polyhalo(lower) alkyl, halo and carbamoyl;
or a pharmaceutically acceptable salt thereof.

2. A compound of the formula:



in which
R is hydrogen, lower alkyl, lower alkoxy, —CN, (lower) alkyl amino, di(lower) alkylamino, polyhalo(lower) alkyl, halo and carbamoyl;
or a pharmaceutically acceptable salt thereof.

4,112,107
5-NITROTHIAZOLE CONTAINING PESTICIDE COMPOSITION

Ludwig Nüsslein, and Ernst Albrecht Pieroh, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

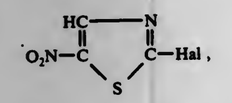
Filed Oct. 6, 1977, Ser. No. 840,006

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2646044

Int. Cl.² A01N *9/12, 9/20*

U.S. Cl. 424—270 **6 Claims**

1. A method of protecting plants against phytopathogenic earth fungi, nematodes, insects and acarides, the said method comprising applying to the plants or to the ground in which the plants are growing a composition comprising from 1 to 80% by weight of at least one compound of the formula



wherein Hal is halogen and 99 to 20% by weight of a liquid or solid carrier material.

4,112,108
ISOXAZOLYL BENZAMIDES

Jeffrey Nadelson, Denville, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

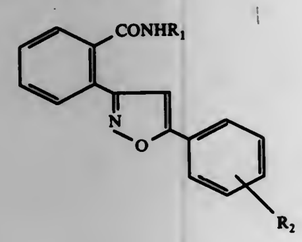
Filed Dec. 6, 1976, Ser. No. 747,772

The portion of the term of this patent subsequent to Oct. 19, 1993, has been disclaimed.

Int. Cl.² C07D *261/08;* A61K *31/42*

U.S. Cl. 424—272 **7 Claims**

1. A compound of the formula



where

R_1 is straight chain lower alkyl, and

R_2 is hydrogen, fluoro or chloro, lower alkoxy or trifluoromethyl.

7. A pharmaceutical composition for use in the treatment of insomnia or anxiety which comprises a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier therefor.

4,112,109
4-SUBSTITUTED PYRAZOLES

Eike Möller, Wuppertal, Fed. Rep. of Germany; Karl Meng, deceased, late of Wuppertal, Fed. Rep. of Germany, by Ilse Heide Frieda Meng, legal representative; Egbert Wehinger, Neviges, Fed. Rep. of Germany; Hajald Horstmann, Wuppertal, Fed. Rep. of Germany, and Friedel Seuter, Neviges, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

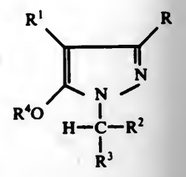
Division of Ser. No. 693,970, Jun. 8, 1976. This application Feb. 7, 1977, Ser. No. 766,187

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1975, 2526467

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 P **22 Claims**

1. A pharmaceutical composition useful for effecting diuresis and saluresis in humans and animals and for treating hypertension and thromboses in humans and animals which comprises a diuretically effective amount, a saluretically effective amount, an anti-hypertensively effective amount or an antithrombotically effective amount of a compound of the formula



wherein

R is hydrogen or lower alkyl;

R^1 is haloalkylthio of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms;

R^2 is lower alkyl;

R^3 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, mono- or di-alkylamino of 1 to 4 carbon atoms in each alkyl moiety, nitro, cyano, carboxamido, sulphonamido and SO_n-alkyl of 1 to 4 carbon atoms in the alkyl moiety and wherein *n* is 0 to 2; or phenyl having fused thereto a 5- to 7-membered isocyclic ring; and

R^4 is R^5CO wherein R^5 is lower alkyl, cycloalkyl of 5 to 7 carbon atoms, halo (lower alkyl), lower alkoxy, lower alkythio, halo(lower alkoxy), halo(lower alkythio), lower alkoxy(lower alkyl), mono- or di(lower alkylamino), phenyl substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro, cyano, carboxamido, sulphonamido, SO_n-(lower alkyl) wherein *n* is 0 to 2, and SO_n-CF_3 wherein *n* is 0 to 2 or phenyl having fused thereto a 5- to 7-membered isocyclic ring, in combination with a pharmaceutically acceptable carrier.

4,112,110
OXYGENATED AZATETRACYCLIC COMPOUNDS

Hans Blattner, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 549,628, Feb. 13, 1975, abandoned. This application Nov. 3, 1976, Ser. No. 738,498

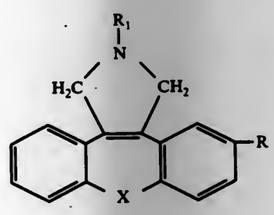
Claims priority, application Switzerland, Feb. 22, 1974, 2545/74

Int. Cl.² C07D *491/06;* H61K *31/40*

U.S. Cl. 424—274 **18 Claims**

1. 5-Oxygenated asatetracyclic compounds substituted in the 1-position which correspond to the formula

(I)



wherein X represents oxygen or sulphur, R represents a hydroxy group, and R_1 stands for lower alkyl, or acid addition salts thereof.

17. A pharmaceutical preparation for the treatment of tension and agitation which comprises a therapeutically effective amount of a compound of formula I according to claim 1 or a pharmaceutically applicable acid addition salt thereof, together with a pharmaceuticaly usable carrier material.

4,112,111
INDOLINYLGUANIDINES

Gerhard Bormann, Munchenstein, and Richard Berthold, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 737,443, Nov. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 659,778, Feb. 20, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,243

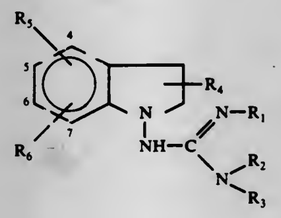
Claims priority, application Switzerland, Feb. 26, 1975, 2440/75; Aug. 27, 1976, 10883/76

Int. Cl.² A61K *31/40;* C07D *209/08, 209/30, 209/04*

U.S. Cl. 424—274 **29 Claims**

1. A compound of formula I,

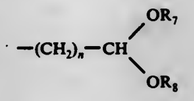
I



wherein

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, phenylalkyl of 7 to 9 carbon atoms, the phenyl ring being unsubstituted or mono- or di-substituted independently by halogen of atomic number of from 9 to 35, or alkyl or alkoxy of 1 to 4 carbon atoms,

R_2 is (i) hydrogen; (ii) alkyl of 1 to 4 carbon atoms; (iii) phenylalkyl of 7 to 9 carbon atoms, the phenyl ring being unsubstituted or mono- or di-substituted independently by halogen of atomic number of from 9 to 35, or alkyl or alkoxy of 1 to 4 carbon atoms; (iv) alkenyl or alkynyl of 3 to 5 carbon atoms, wherein the multiple bond is other than in the α,β position with respect to the nitrogen to which R_2 is attached; (v) hydroxy; (vi) cycloalkyl of 3 to 7 carbon atoms; (vii) alkyl of 1 to 4 carbon atoms monosubstituted by cycloalkyl of 3 to 7 carbon atoms; (viii) phenoxyalkyl of 8 to 11 carbon atoms in the aggregate thereof, the oxygen atom thereof being separated by at least two carbon atoms from the nitrogen atom to which R_2 is attached, the phenyl ring being unsubstituted or mono- or di-substituted independently by halogen of atomic number of from 9 to 35, or alkyl or alkoxy of 1 to 4 carbon atoms; (ix) aminoalkyl of 2 to 5 carbon atoms, the nitrogen thereof being separated by at least two carbon atoms from the nitrogen atom to which R_2 is attached, wherein the amino group is disubstituted by alkyl groups independently of 1 to 4 carbon atoms, or (x) an acetal group



wherein

n is a whole number from 1 to 5;

R_7 and R_8 are independently alkyl of 1 to 4 carbon atoms or together are an alkylene chain of 2 or 3 carbon atoms,

R_3 and R_4 independently are hydrogen, or alkyl of 1 to 4 carbon atoms, and

R_5 and R_6 independently are hydrogen, halogen of atomic number of from 9 to 35 or alkyl, alkoxy or alkylthio of 1 to 4 carbon atoms,

in free base form or in pharmaceutically acceptable acid addition salt form.

8. A composition for treating edema, hypertension, orthostatic disorders, or vascular headaches in animals comprising a compound of claim 1 in an amount effective for treatment of the above named conditions in association with a pharmaceutical carrier or diluent.

4,112,112
PYRROLO[2,1-b] [3]BENZAZEPINES USEFUL FOR PRODUCING A SKELETAL MUSCLE RELAXING OR TRANQUILIZING EFFECT

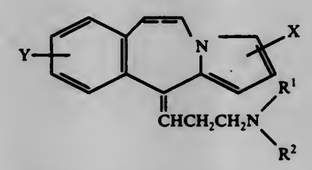
Clarence Stanley Rooney, Worcester, Pa.; Joshua Rokach, Laval, and Joseph George Atkinson, Montreal, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 701,001, Jun. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 592,436, Jul. 2, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 803,481

Int. Cl.² C07D *487/04;* A61K *31/40*

U.S. Cl. 424—274 **16 Claims**

1. A compound of structural formula:



or pharmaceutically acceptable salt thereof, wherein the dotted line represents saturation or unsaturation; X and Y are independently selected from

(1) hydrogen

(2) halo,

(3) formyl,

(4) C_{2-6}-alkanoyl,

(5) C_{1-5}-alkyl,

(6) (C_{1-5}-alkoxy)carbonyl,

(7) hydroxy-C_{1-3}-alkyl,

(8) trifluoromethyl

(9) C_{1-3}-alkoxy

(10) cyano,

(11) trifluoromethylthio,

(12) C_{1-3}-alkylthio,

(13) C_{1-3}-alkylsulfonyl,

(14) trifluoromethylsulfonyl,

(15) C_{1-3}-alkylsulfinyl,

(16) trifluoromethylsulfinyl,

(17) amino,

(18) C_{2-6}-alkanoylamino,

(19) C_{1-3}-alkylamino,

(20) di(C_{1-3} alkyl)amino,

(21) hydroxy,

(22) N-C_{1-3}-alkylcarbamoyl,

(23) N,N-di(C_{1-3} alkyl)carbamoyl,

(24) nitro,

(25) di(C_{1-3} alkyl)sulfamoyl,

(26) C_{1-3} alkoxycarbonylamino, and

(27) N-C_{1-3} alkylcarbamoyloxy; and R^1 and R^2 are independently selected from

(1) hydrogen,

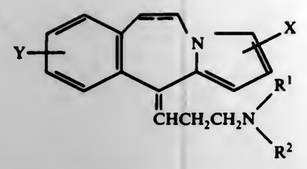
(2) C_{1-3}-alkyl,

(3) C_{2-5} alkenyl, and

(4) C_{3-6}-cycloalkyl, or

R^1 and R^2 joined together form with the nitrogen to which they are attached 1-piperidyl, 1-pyrrolidyl, or 4-morpholinyl.

9. A pharmaceutical composition for producing a skeletal muscle relaxing or tranquilizing effect comprising a pharmaceutical carrier and an effective amount of a compound of formula:



or pharmaceutically acceptable salt thereof wherein the dotted line represents saturation or unsaturation; X and Y are independently selected from

(1) hydrogen
(2) halo,
(3) formyl,
(4) C_{2-6}-alkanoyl,
(5) C_{1-5}-alkyl,
(6) (C_{1-5}-alkoxy)carbonyl,
(7) hydroxy-C_{1-3}alkyl,
(8) trifluoromethyl
(9) C_{1-3}-alkoxy,
(10) cyano,
(11) trifluoromethylthio,
(12) C_{1-3}-alkylthio,
(13) C_{1-3}-alkylsulfonyl,
(14) trifluoromethylsulfonyl,
(15) C_{1-3}-alkylsulfinyl,
(16) trifluoromethylsulfinyl,
(17) amino,
(18) C_{2-6}-alkanoylamino,
(19) C_{1-3}-alkylamino,
(20) di(C_{1-3}-alkyl)amino,
(21) hydroxy,
(22) N-C_{1-3}-alkylcarbamoyl,
(23) N,N-di(C_{1-3}-alkyl)carbamoyl,
(24) nitro,
(25) di(C_{1-3}-alkyl)sulfamoyl,
(26) C_{1-3}-alkoxycarbonylamino, and
(27) N-C_{1-3}-alkylcarbamoyloxy; and

R^1 and R^2 are independently selected from

(1) hydrogen,
(2) C_{1-3}-alkyl,
(3) C_{2-5}-alkenyl, and
(4) C_{3-6}-cycloalkyl, or

R^1 and R^2 joined together form with the nitrogen to which they are attached 1-piperidyl, 1-pyrrolidyl, or 4-morpholinyl.

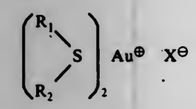
4,112,113

BIS(SULFIDE)GOLD(1+) SALTS

David T. Hill, North Wales, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Feb. 25, 1977, Ser. No. 772,034
Int. Cl.² A01N *9/00*; C07D *327/00, 333/00*
U.S. Cl. 424—275 **4 Claims**

1. A compound of the formula:



in which R_1 and R_2 taken together with the sulfur atom to which they are attached form a tetrahydrothienyl or tetrahydrothiapyranyl ring and X is a weakly nucleophilic anion selected from perchlorate, iodate, tetrafluoroborate or hexafluorophosphate.

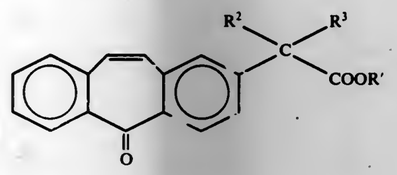
4,112,114

ESTERS OF 2-SUBSTITUTED-5-OXO-5H-DIBENZO[A,D]CYCLOHEPTENES HAVING PHARMACEUTICAL ACTIVITY, AND METHODS AND COMPOSITIONS FOR THE USE THEREOF

Peter H. Nelson, and Karl G. Untch, both of Los Altos, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

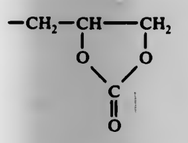
Division of Ser. No. 724,042, Sep. 16, 1976, abandoned, which is a division of Ser. No. 619,158, Oct. 3, 1975, abandoned. This application Sep. 2, 1977, Ser. No. 830,264
Int. Cl.² C07D *317/36*
U.S. Cl. 424—285 **4 Claims**

1. A compound selected from the group of compounds represented by the formula:



(I)

where R′ is



one of R^2 and R^3 is hydrogen and the other is methyl.

4,112,115

THERAPY OF LEG MUSCLE CRAMPS

Charles C. Coghlan, 3358-0 Monte Hermosa, Laguna Hills, Calif. 92653

Filed Nov. 8, 1976, Ser. No. 740,118
Int. Cl.² A61K *31/27*
U.S. Cl. 424—300 **10 Claims**

1. A method of alleviating spasms in flexor and extensor muscles comprising the step of topically administering to the surface of the skin adjacent said muscle a spasms alleviating amount of a solution of a nitrite vasodilator agent in a pharmacologically acceptable carrier.

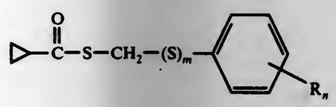
4,112,116

CERTAIN CYCLOPROPANE THIOLCARBOXYLATES AND USE THEREOF AS MITICIDES

Ferenc M. Pallos, Walnut Creek, CA, assignor to Stauffer Chemical Company, Westport, Conn.

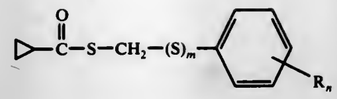
Filed Nov. 18, 1976, Ser. No. 742,803
Int. Cl.² A01N *9/12*; C07C *153/09*
U.S. Cl. 424—301 **26 Claims**

1. A compound having the general structural formula



wherein R is selected from the group consisting of halogen and lower alkyl having 1–4 carbon atoms; *m* is 0 or 1; and *n* is 0, 1, 2, or 3.

19. A method for controlling mites which comprises applying to the locus where control is desired a miticidally effective amount of a compound having the general structural formula



wherein R is selected from the group consisting of halogen and lower alkyl having 1–4 carbon atoms; *m* is 0 or 1; and *n* is 0, 1, 2, or 3.

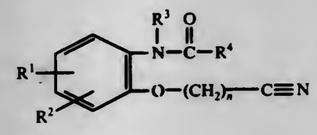
4,112,117

ALPHA-CYANO-O-ANISIDINO DERIVATIVES

Paul L. Anderson, Dover, and Thomas F. Oglia, Parsippany, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Oct. 26, 1976, Ser. No. 735,376
Int. Cl.² A61K *31/275*; C07C *121/78*
U.S. Cl. 424—304 **14 Claims**

1. A compound of the formula

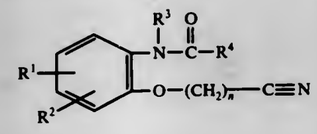


wherein

R^1 is a hydrogen atom, halogen having an atomic weight of from about 18 to 36, CF_3, NO_2, alkyl having from 1 to 4 carbon atoms, or alkoxy having from 1 to 4 carbon atoms;
R^2 is a hydrogen atom, halogen having an atomic weight of from about 18 to 36, alkyl having from 1 to 4 carbon atoms or alkoxy having from 1 to 4 carbon atoms;
R^3 is a hydrogen atom or alkyl having from 1 to 3 carbon atoms;
R^4 is alkyl having from 1 to 6 carbon atoms; and
n is 1;

provided that when R^1 is any of CF_3, NO_2 or a branched alkyl or branched alkoxy, and R^2 is located on a carbon atom adjacent thereto, then R^2 is not a branched alkyl or branched alkoxy.

11. A method of reducing the blood level of lipid materials in a mammal, comprising administering to said mammal an amount of a compound of the formula



wherein

R^1 is a hydrogen atom, halogen having an atomic weight of from about 18 to 36, CF_3, NO_2, alkyl having from 1 to 4 carbon atoms, or alkoxy having from 1 to 4 carbon atoms;
R^2 is a hydrogen atom, halogen having an atomic weight of from about 18 to 36, alkyl having from 1 to 4 carbon atoms or alkoxy having from 1 to 4 carbon atoms;
R^3 is a hydrogen atom or alkyl having from 1 to 3 carbon atoms;
R^4 is alkyl having from 1 to 6 carbon atoms; and
n is 1 or 2;

provided that when R^1 is any of CF_3, NO_2 or a branched alkyl or branched alkoxy, and R^2 is located on a carbon atom adjacent thereto, then R^2 is not a branched alkyl or branched alkoxy; effective in reducing the blood level of lipid materials of said mammal.

4,112,118

PROCESS FOR PREPARING PHOSPHATE SALTS

Frank Michael Cussons, Cumbria; Douglas Edward Mather, Whitehaven, and Thomas Alan Williams, Beckermet, all of England, assignors to Albright & Wilson Ltd., West Midlands, England

Filed Jul. 29, 1976, Ser. No. 709,632
Claims priority, application United Kingdom, Aug. 5, 1975, 32642/75
Int. Cl.² C01B *15/16, 25/26*
U.S. Cl. 423—313 **20 Claims**

1. A process which comprises contacting a one phase solution of phosphoric acid and water in an organic water immiscible solvent with a base, which is ammonia or a basic compound of ammonia, sodium or potassium, the base being anhydrous or with water in an amount of up to 10 moles, to give a liquid phase mixture comprising an organic solvent phase substantially free of phosphoric acid and an aqueous phase comprising phosphoric acid and the dihydrogen phosphate salt of the base, the aqueous phase containing an atom ratio (M:P) in the range 0.1:1 to 0.5:1, wherein M is ammonia, sodium or potassium, and then separating the organic phase from said aqueous phase, the amount of base being the value which under the reaction conditions is at least sufficient to release substantially all the acid from the organic solvent solution and at most, x times that value, where x is governed by the relationship

$$x = \frac{b + 2c + d - 1}{b + 1.9c + d - 0.9}$$

in which *b* is the number of moles of water associated with each mole of base added, *d* is the number of moles of water produced by the neutralization of one mole of phosphoric acid by an equivalent of base and *c* is the minimum number of moles of water per mole of phosphoric acid in an aqueous phosphoric acid solution in equilibrium with substantially acid free solvent at the aqueous reaction temperature.

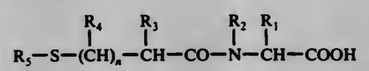
4,112,119

METHOD FOR ALLEVIATING ANGIOTENSIN RELATED HYPERTENSION

Miguel Angel Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

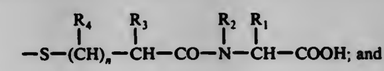
Division of Ser. No. 684,606, May 10, 1976, Pat. No. 4,053,651. This application Mar. 3, 1977, Ser. No. 773,865
Int. Cl.² A61K *31/195*
U.S. Cl. 424—317 **7 Claims**

1. A method for alleviating angiotensin related hypertension in hypertensive mammals which comprises administering to said mammals an effective dose of an angiotensin converting enzyme inhibitor having the formula



or salt thereof, wherein

R_1 is amino-lower alkylene, mercapto-lower alkylene, lower alkylmercapto-lower alkylene or carboxy-lower alkylene;
R_2, R_3 and R_4 each is hydrogen, lower alkyl or phenyl-lower alkylene; R_5 is hydrogen, lower alkanoyl, benzoyl or



; and

n is 0, 1 or 2.

4,112,120

METHODS AND COMPOSITIONS FOR USE IN ANIMAL HUSBANDRY

Michael James Smithers, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

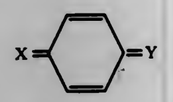
Filed Mar. 16, 1976, Ser. No. 667,440

Claims priority, application United Kingdom, Apr. 17, 1975, 15854/75

Int. Cl.[2] A61K *31/175, 31/17, 31/155, 31/415*

U.S. Cl. 424—323 3 Claims

1. In the practice of the husbandry of meat-producing, domestic animals, the method for improving the rate of growth of animals or for improving the efficiency of the utilisation of animal foodstuffs which comprises orally administering to said animals a composition containing from 0.0001 to 0.025% w/w of a material selected from quinone derivatives of the formula:



I

wherein X is guanidinoimino, unsubstituted or bearing one substituent on nitrogen selected from C_{1-3}alkyl, and phenyl, unsubstituted or substituted by halogen; or 2-imidazolin-2-ylhydrazono; and Y is guanidinoimino, unsubstituted or substituted as defined above; 3-nitroguanidinoimino; semi-carbazono or thiosemicarbazono unsubstituted or substituted on N-4 by carbamoyl, benzyl, C_{1-3}alkyl or alkenyl, or phenyl; 3-[4-(guanidinoimino)cyclohexa-2,5-dienylideneimino]-guanidinoimino; 3-(4-semicarbazonocyclohexa-2,5-dienylideneimino)guanidinoimino; dihydro derivatives thereof; salts thereof; and salts of dihydro derivatives thereof, together with a liquid or solid, edible, non-toxic diluent or carrier.

4,112,121

METHOD AND COMPOSITION FOR THE TREATMENT OF SEBORRHEIC KERATOSIS

Louis T. Tenta, 6007 N. Sheridan Rd., Chicago, Ill. 60660

Continuation of Ser. No. 704,448, Jul. 12, 1976, abandoned. This application Aug. 3, 1977, Ser. No. 821,392

The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.

Int. Cl.[2] A61K *31/05*

U.S. Cl. 424—346 10 Claims

1. A chemexfoliation composition for the treatment of seborrheic keratosis consisting essentially of an alkali metal or ammonium phenate in an amount sufficient to provide a concentration of 4 to 20 weight % calculated as free phenol, a monohydric alcohol in an amount of from 25 to 85 weight %, a polyhydric alcohol humectant in an amount of from 5 to 35 weight %, and a pharmacologically acceptable, non-toxic gelling agent in an amount of from 5 to 15 weight %, said gelling agent providing a means for adhering the composition to the skin surface.

4,112,122

PRESERVATION PROCESS

Dennis James George Long, Brighton, England, assignor to BP Chemicals Limited, London, England

Filed May 4, 1977, Ser. No. 793,745

Claims priority, application United Kingdom, May 19, 1976, 20639/76; Nov. 29, 1976, 49608/76

Int. Cl.[2] A21D *2/14*

U.S. Cl. 426—19 7 Claims

1. A method of inhibiting the growth of micro-organisms in foodstuffs susceptible thereto comprising incorporating therein an acid salt of propionic acid and at least one cation selected from the group consisting of ammonium, sodium, potassium, calcium and magnesium such that the ratio of the acid to the cation in the salt is in the range of 2:1 to 4:1 on a chemical equivalent basis in an amount of between 0.01 and 1.0% by the dry weight of the said foodstuff.

4,112,123

NUTRITIONALLY BALANCED SINGLE FOOD COMPOSITION AND METHOD OF PRODUCTION

Willard Lewis Roberts, Mequom, Wis., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jul. 21, 1976, Ser. No. 707,247

Int. Cl.[2] A23C *21/00*

U.S. Cl. 426—72 25 Claims

1. A single food nutritionally balanced composition for oral ingestion and producing low residues and diminished stooling for use with patients having abnormal catabolis states consisting essentially of:

(a) from 8% to 27% by weight of water soluble, undenatured ultra-filtration whey protein;

(b) from 5% to 20% by weight of medium chain triglycerides of predominantly 6 to 10 carbon atoms in the fatty acid chain;

(c) from 50% to 70% by weight of carbohydrates selected from the group consisting of corn syrup solids, trisaccharides, tetrasaccharides, pentasaccharides, hexasaccharides, dextrose, fructose, sucrose, maltose, oligosaccharides and higher saccharides;

(d) from 0.1% to 5% by weight of a food grade emulsifier; and wherein the composition provides from 1 up to about 3 calories per cubic centimeter of composition.

4,112,124

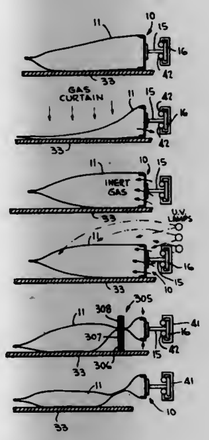
FOOD PACKAGING SYSTEM AND METHOD

Alexander S. Jarvis, Montreal, Canada, assignor to Drisan Packaging Ltd., Toronto, Canada

Filed Apr. 26, 1971, Ser. No. 137,553

Int. Cl.[2] B65B *55/16, 55/18*

U.S. Cl. 426—234 14 Claims



1. A method of packaging a food product in a substantially sterile condition comprising the steps of placing the substantially sterile product in a container which is sufficiently flexible as to be deformed by a current of gas, and which is opaque to visible light radiation, displacing any atmospheric air that is on the surface of the product with a dry, sterile, inert gas, sealing the container while said gas is substantially the only agent contacting the product and filling the container, and after the atmospheric air has been displaced irradiating the product with sterilizing ultraviolet lamp radiation while the gas is substantially the only agent contacting the surface of the product, the dosage of said ultraviolet radiation being sufficient to kill or render inert substantially all bacteria on the surface of the product, and maintaining only said gas in contact with the product surface from the time the gas initially displaces the air until the container is sealed, wherein the product is contacted with the inert gas by placing the container, while open, in an atmosphere of said gas, performing said irradiating and sealing steps in said atmosphere, and supplying a current of gas to the exterior of the container as the container enters said atmosphere, said current of gas compressing the container to force some of the atmospheric air from the interior of the container.

4,112,125

SEMI-MOIST SHELF STABLE PARTICLE FOR CARRYING A FOOD COLOR AND FLAVOR

Jon C. Chesnut, Chicago, and Edward Epstein, Arlington Heights, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Feb. 15, 1977, Ser. No. 768,725

Int. Cl.[2] A23L *1/226, 1/275;* A21D *10/00*

U.S. Cl. 426—250 25 Claims

1. A semi-moist, semi-soft, shelf-stable and non-bleeding composition in the form of a particle for carrying a food flavor and color, comprising:

(1) 5 to 30% of vegetable or dairy protein;

(2) 0 to 50% of dextrose;

(3) 0 to 50% of sucrose;

(4) 5 to 70% of gelatinized starch;

(5) 5 to 40% of vegetable fat having an average melt temperature of 100° F. or less; and

(6) an effective amount of a color and flavor

but where at least one of the sucrose and dextrose is at least 5 % and the moisture content is between 5 and 30% and the water activity is 0.85 or less.

4,112,126

PROCESS FOR COUNTER-COLORING OF DECHARACTERIZED MEAT PRODUCTS

Ramon W. Nielsen, Simi Valley, Calif., and Craig C. Widmar, Amherst, Mass., assignors to Carnation Company, Los Angeles, Calif.

Filed Feb. 28, 1977, Ser. No. 772,466

Int. Cl.[2] A22C *17/10;* A23K *1/10*

U.S. Cl. 426—250 11 Claims

1. A process for treating inedible meat for use in animal foods which comprises

contacting said inedible meat with an amount of an approved FD&C denaturing color sufficient to decharacterize the meat, and

contacting the decharacterized meat with an amount of a counter-coloring agent sufficient to provide the meat with a substantially natural meat-like color, said counter-coloring agent comprising the complementary color of the FD&C denaturing color.

4,112,127

METHOD FOR PROCESSING AND FILLING A DOUGH PRODUCT

Samuel J. Popeil, Chicago, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.

Filed Jul. 9, 1976, Ser. No. 703,918

Int. Cl.[2] A21D *8/02*

U.S. Cl. 426—283 2 Claims

1. A method of processing dough comprising the steps of:

mixing the dough in a preselected quantity and kneading the same until a uniform consistency is achieved,

preforming the dough by providing an open ended blank cutter and filling it to overflow with dough,

thereafter passing the dough fill and blank cutter between a pair of opposed rollers to form a preformed blank having a compressed predetermined quantity and predetermined uniform configuration of dough,

removing the dough from the blank cutter,

feeding the preformed dough between the pair of opposed rollers which are in fixed rigid spaced relationship to each other thereby compressing the same,

reprocessing the dough by again passing the dough through the pair of opposed rollers until flat and dimensionally stable in the thickness dimension,

repositioning the rollers to a closer spacing,

reprocessing the dough again repeatedly between the rollers until flat and dimensionally stable in the thickness dimension,

positioning the flattened dough body on an open faced mold having upstanding cutting edges designed

to form the final food product,

repositioning the rollers to accommodate passing the open faced mold in cutting edge relationship,

passing the mold containing the dough through the repositioned rollers thereby severing the dough,

removing the thus formed dough product

whereby one set of rollers through repositioning the same are utilized to reprocess the dough until the desired thickness is obtained, and the same rollers pass the dough in cutting relationship when placed on an open faced mold, and dough products having various configurations with substantially flat surfaces are readily formed and can be further processed by baking, or drying.

4,112,128

PROCESS OF COLD STABILIZING WINE

Julius H. Fessler, 5455 Golden Gate Ave., Oakland, Calif. 94618

Filed Feb. 22, 1977, Ser. No. 770,852

Int. Cl.[2] C12G *1/00;* C12H *1/02, 1/10*

U.S. Cl. 426—330.4 5 Claims

1. A method for chemically treating wine to cold stabilize the wine at ambient temperature in less than 1 day's time, said wine to be chemically treated having a total acidity of tartaric acid and malic acid of less than about 1% of the wine, said method comprising the steps of;

(a) mixing a source of calcium ion and tartaric acid in an aqueous liquid to form a treating composition comprising a slurry including seed microcrystals of calcium tartrate, said calcium ion source being selected from the group consisting of calcium carbonate and calcium hydroxide, the ratio of calcium ion to tartaric acid in said treating composition being that formed from about 70 – 95 parts by weight calcium carbonate or an equivalent amount of calcium hydroxide; and about 5 – 30 parts by weight tartaric acid,

(b) mixing said treating composition with the wine to be treated under sufficient agitation to cause rolling of the wine,

(c) holding the wine at ambient temperature with periodic agitation to cause further rolling for a sufficient time to cold stabilize the wine by precipitating an amount of calcium tartrate approximately equivalent to that precipitated in the form of potassium acid tartrate during conventional low temperature cold stabilization, and

(d) removing precipitate from the wine, the major portion of said precipitate being calcium tartrate.

4,112,129

COOKING OIL TREATING SYSTEM AND COMPOSITION THEREFOR

Willard John Duensing, Lakewood, and Christian John Miga, Littleton, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Sep. 14, 1977, Ser. No. 833,215

Int. Cl.[2] A23D *5/02;* C09F *5/10*

U.S. Cl. 426—417 8 Claims

1. A composition useful for the control of free fatty acids and color in cooking oils, which consists essentially of, in parts by weight:

diatomite: 47 to 59 parts

synthetic calcium silicate hydrate: 28 to 36 parts

synthetic magnesium silicate hydrate: 12 to 24 parts

wherein;

(a) said diatomite is a flux-calcined diatomite having a particle size distribution of approximately 20% to 30% less than 20 μm and 40% to 60% less than 30 μm with a dry bulk density of 10 to 14 lb/ft^3;

(b) said synthetic calcium silicate hydrate is formed by the hydrothermal reaction of calcium oxide and silica, having a $CaO:SiO_2$ weight ratio in the range of approximately 1:1.5 to 1:2.5, a dry bulk density of 6 to 10 lb/ft^3, a particle size distribution of at least about 95% −35 mesh and 8% +325 mesh and a permeability in the range of about 0.35 to 0.70 darcies; and

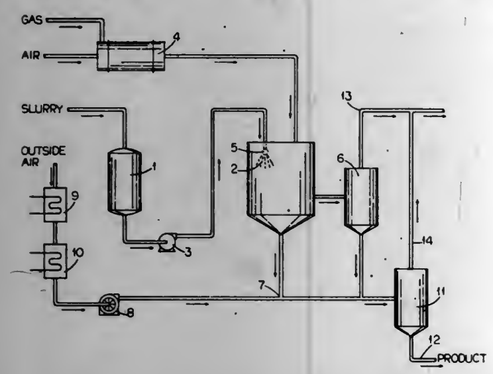
(c) said synthetic magnesium silicate hydrate is formed by the hydrothermal reaction of magnesium oxide and silica, with an $MgO:SiO_2$ weight ratio on the order of 1:3.5 to 1:5.5; a dry bulk density of about 12 to 15 lb/ft^3, particle size distribution of at least 95% −325 mesh, and a surface area of about 150 to 200 m^2/g.

4,112,130

SPRAY DRYING OF ORANGE JUICE

Ashis S. Gupta, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Oct. 14, 1975, Ser. No. 621,716
Int. Cl.^{2} A23L *2/10*
U.S. Cl. 426—471 37 Claims



1. A method for producing a free-flowing orange juice powder having an improved flavor comprising:

(a) providing an aqueous slurry including from about 51% to about 65% solids, not less than 51% and not more than about 85% of the solids being orange juice solids with the balance consisting essentially of a food grade, water-dispersible or water-soluble drying aid and

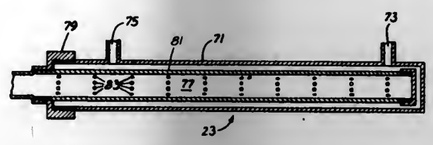
(b) concurrently spray drying said slurry to a powder having a moisture content of less than about 4% in a spray drying apparatus having a drying chamber by passing said slurry through at least one high pressure spray nozzle, said spray drying being carried out at an inlet air temperature of about 220°–300° F, an outlet air temperature of about 145°–205° F and a nozzle pressure of from about 3,000 to about 5,000 psig, the interior walls of the drying chamber being maintained at a temperature of less than the sticky point temperature of the powder, the angle of spray drying and size of the drying chamber being selected in conjunction with the nozzle pressure to minimize any build up of undried orange juice powder on the walls of the drying chamber.

4,112,131

METHOD FOR MANUFACTURE OF PROCESS CHEESE

George Bosy, Park Ridge; Edwin N. Edwards, Glenview; Willis M. Hoffbeck, Palatine; Paul A. Silvio, Mount Prospect, all of Ill., and Leonard A. Warwick, Woburn, Mass., assignors to Kraft, Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 609,520, Sep. 2, 1975, abandoned. This application Feb. 9, 1977, Ser. No. 766,853
Int. Cl.^{2} A23C *19/00, 19/02*
U.S. Cl. 426—582 3 Claims



1. A method for continuous in-line manufacture of process cheese comprising the steps of blending process cheese materials at ambient temperature to provide a mix, conveying said mix under pressure first through a heating zone and then through a mixing zone to provide a homogeneous molten cheese mass having a moisture of from about 42 to about 75 percent under pressure of from about 5 to about 60 psig in said mixing zone at a temperature of from about 165° F. to about 300° F. and thereafter transferring said molten cheese mass from said mixing zone into a chamber maintained at a pressure lower than the pressure of said molten cheese mass in said mixing zone so as to cool said molten cheese mass to a temperature of from about 150° F. to about 210° F., said pressure in said chamber being from about 3 to about 15 psia with the proviso that the reduced pressure is at least 4 psi less than the pressure in said mixing zone, said heating zone comprising a steam injection conduit located within a housing to define an annular passage for flow of said mix, said mix passing between said conduit and said housing, said conduit having a plurality of steam injection holes spaced along its length for injection of steam into said mix during said flow to heat said mix to said temperature of from about 165° F. to about 300° F., while said mix flows through said annular passage, said holes having a diameter of from about 0.02 to about 0.07 inches, the thermodynamic balance between said mixing zone and said reduced pressure chamber being such that the moisture of said molten mass in said mixing zone is reduced by from about 2 to about 25 percent by weight based on the weight of the moisture present in said molten mass to provide a cooled cheese product having a moisture content of from about 40 to about 70 percent by weight.

4,112,132

BUTTER-LIKE FOOD PRODUCT

Ernest Badertscher, Orbe, and George Anthony Easton, Chardonne, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., La Tour de Peilz, Switzerland

Filed Jul. 30, 1976, Ser. No. 710,223
Claims priority, application Switzerland, Jul. 31, 1975, 9984/75
Int. Cl.^{2} A23D *3/02*
U.S. Cl. 426—603 14 Claims

1. A process for the production of an edible product of the butter or margarine type, which comprises thoroughly mixing, at a temperature in the range from about 20° C. to 35° C., a medium comprising fats, and an aqueous medium having a viscosity of from 2,000 to 20,000 centipoises, as measured at a temperature between 20° C. and 30° C., said mixing temperature being such that the fats exist in neither a partially crystallized state nor in a partially molten state, resulting directly in the formation of an emulsion of the water-in-oil type having a fat content of 35% to 90% which represents the edible product of the butter or margarine type.

4,112,133

LIQUID SMOKE COMPOSITION AND METHOD OF MAKING SAME

Ganta V. Rao; Floyd K. Shoup, both of Hutchinson, Kans., and Gerald R. Popenhagen, Sandusky, Ohio, assignors to Far-Mar-Co, Inc., Hutchinson, Kans.

Filed Sep. 29, 1976, Ser. No. 727,651
Int. Cl.^{2} A23L *1/221*
U.S. Cl. 426—650 32 Claims

1. A method for making an improved liquid smoke composition comprising admixing:

(a) a natural liquid smoke solution, said solution including constituent acids, phenols and carbonyls therein;

(b) a food-grade acidulating agent in addition to the constituent acids in said natural liquid smoke solution; and

(c) a food-grade solubilizing agent selected from the group consisting of sorbitan fatty compounds, polyoxyethylene sorbitan fatty compounds, polyoxyethylene fatty compounds, polyoxyethylene glycols having molecular weights of at least 400, and mixtures thereof, said fatty compounds being selected from saturated and unsaturated mono-acids, saturated and unsaturated mono-alcohols, and mono-esters derived from any of the foregoing fatty compounds;

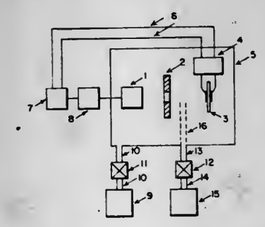
said acidulating agent comprising at least 2% by weight of said liquid smoke composition for a phenol concentration in said natural liquid smoke solution in the base range from 1500 to less than 2000 mg/l, plus 0.5% by weight for each 500 mg/l increment of phenol concentration above said phenol base range or minus 0.5% by weight for each 500 mg/l increment of phenol concentration below said phenol base range, said solubilizing agent comprising at least 4% by weight of said liquid smoke composition for a carbonyl concentration in said natural liquid smoke solution in the base range from 3000 to less than 3500 mg/l, plus 0.5% by weight for each 500 mg/l increment of carbonyl concentration above said carbonyl base range or minus 0.5% by weight for each 500 mg/l increment of carbonyl concentration below said carbonyl base range.

4,112,134

VACUUM DEPOSITION METHOD FOR FREQUENCY ADJUSTMENT OF PIEZOELECTRIC RESONATORS

Gabriel Ralph Buynak, Cleveland, and Franz Ludwig Sauerland, Shaker Heights, both of Ohio, assignors to Transat Corp., Shaker Heights, Ohio

Filed Mar. 22, 1976, Ser. No. 669,328
Int. Cl.^{2} B05D *5/12;* C23C *13/04*
U.S. Cl. 427—10 2 Claims



1. Method for adjusting the resonant frequency FR of a piezo-electric resonator to a target frequency FT comprising:

(a) vapor depositing a material in a vacuum chamber for changing said resonant frequency of said resonator;

(b) monitoring said resonant frequency during the deposition process;

(c) continuing the deposition until $|FR - FT|$ equals a predetermined value and then injecting an inert gas into the vacuum chamber to terminate the deposition.

4,112,135

METHOD FOR DIP-COATING CERAMIC WITH MOLTEN SILICON

Joseph D. Heaps, Shakopee, and Obert N. Tufte, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 625,443, Oct. 24, 1975, abandoned. This application Dec. 9, 1976, Ser. No. 748,982
Int. Cl.^{2} B05D *1/36, 5/12, 1/00, 7/24*
U.S. Cl. 427—11 26 Claims

1. A method for coating ceramic materials which are not wet by molten silicon with a uniform layer of silicon comprising the steps of:

providing a substrate of ceramic of a type which is not wet by molten silicon and having a thermal expansion coefficient similar to that of silicon;

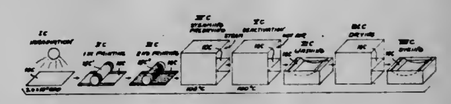
carbonizing the surface of the ceramic substrate; and contacting the carbonized ceramic substrate with molten silicon, to form a silicon coating on the carbonized ceramic surface.

4,112,136

METHOD OF MAKING A PATTERN-DYED, PATTERN-TEXTURES, OR LACE LIKE TEXTILE OR FOIL

Adolf Heger, Dresden; Gerrit Möckel, Zwickau; Helmar Pässler, Dresden; Jochen Pohlink, Falkenstein, and Werner Wünsch, Rodewisch, all of Germany, assignors to VEB Plauener Gardine, Plauen, Germany

Filed Dec. 23, 1975, Ser. No. 539,185
Claims priority, application German Democratic Rep., Jan. 7, 1974, 175859
Int. Cl.^{2} B05D *3/06*
U.S. Cl. 427—36 7 Claims



1. A method of making a uniformly dyed, texture patterned textile web having a lace effect comprising the steps of:

uniformly irradiating the entire surface of said web with energy-carrying radiation corresponding to at least 3×10^6 rad electron beam energy for activating said web;

applying to said web in a predetermined lace-effect pattern and over less than all of the surface of said web an associatively-reactable compound;

forming a high-molecular association between said compound and the irradiated web to contour-pattern the surface thereof with a lace effect;

deactivating said web by exposure of the web having said contour pattern to steam, hot air or infrared heat at a temperature of 150° C; and

thereafter dyeing the deactivated contour pattern web.

4,112,137

PROCESS FOR COATING INSULATING SUBSTRATES BY REACTIVE ION PLATING

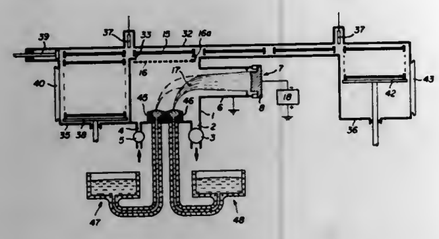
Bogdan Zega, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge-Geneva, Switzerland

Filed Nov. 15, 1976, Ser. No. 741,783
Claims priority, application Switzerland, Nov. 19, 1975, 15019/75
Int. Cl.^{2} B05D *3/06*
U.S. Cl. 427—38 14 Claims

1. A process for coating an insulating substrate with an oxide of at least one metal by reactive-ion plating, comprising the steps of:

disposing a source of a vaporizable metallic mass in a sealed enclosure;

maintaining in said enclosure a rarefied oxygen atmosphere at a pressure capable of sustaining a glow dishcarge;
training at least one electron beam upon said source to vaporize said metallic mass;
disposing a substrate to be coated in said enclosure at a location spaced from the origin of said electron beam and remote from said source;
interposing a conductive grid within said enclosure between



said location and said source in proximity to said substrate; and
negatively biasing said grid with reference to said source with a voltage sufficient to develop a glow discharge therebetween for ionizing, jointly with said beam, part of the metal vapors emitted by said source and part of the oxygen of said atmosphere with acceleration of the interacting metal-vapor and oxygen ions toward said substrate to deposit thereon a resulting oxide.

4,112,138

MANIFOLD CARBONLESS FORM AND PROCESS FOR THE PRODUCTION THEREOF

Gerald Titus Davis, and Dale Richard Shackle, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed May 7, 1976, Ser. No. 684,461
Int. Cl.² B05D *3/08*
U.S. Cl. 427—54 **22 Claims**

1. A process for the production of a manifold carbonless form having two or more surfaces coated with chromogenic material comprising:
(a) providing a continuous web said continuous web having a first and second surface;
(b) marking said second surface of said continuous web with a pattern;
(c) applying a first non-aqueous, solvent-free coating of a first chromogenic material to at least a portion of said first surface of said continuous web said first non-aqueous, solvent-free coating comprising said first chromogenic material dispersed in a hot melt suspending medium, said coating being heated to a temperature above the melting point of said hot melt suspending medium to permit fluid application of said first coating composition to said first surface;
(d) setting said first coating by means of temperature decrease to form a marked, coated continuous web;
(e) combining said printed, coated continuous web with at least one additional continuous web to form a plurality of continuous webs,
(i) each of said additional continuous webs having a first and second surface,
(ii) each of said additional continuous webs being characterized by having at least a portion of the second surface thereof coated with a second chromogenic material, said second chromogenic material being coreactive with said first chromogenic material to form a color,
(iii) all except one of said additional continuous webs being further characterized by at least a portion of the first surface thereof being coated with at least one non-aqueous, solvent-free coating of said first chromogenic material, said non-aqueous, solvent-free coating on said first surface of all except one of said additional continuous webs comprising said first chromogenic material dispersed in a hot melt suspending medium,
(iv) said coating on said first surface of all except one of said additional continuous webs being heated to a temperature above the melting point of said hot melt suspending medium to permit fluid application thereof,
(f) setting said coating on said first surface on all except one of said additional continuous webs by means of temperature decrease;
(g) collating said plurality of printed, coated continuous webs such that coreactive chromogenic materials are in facing relationship; and
(h) placing said collated continuous webs in contiguous relationship to one another to create a manifold carbonless form.

10. (amended). A process for the production of a manifold carbonless form having two or more surfaces coated with chromogenic material comprising:
(a) providing a continuous web said continuous web having a first and second surface;
(b) marking said second surface of said continuous web with a pattern;
(c) applying a first non-aqueous, solvent-free coating of a first chromogenic material to at least a portion of said first surface of said continuous web said first non-aqueous, solvent-free coating comprising said first chromogenic material dispersed in a radiation curable material said first coating being applied to said first surface in fluid form;
(d) setting said first coating by means of exposure to radiation to form a marked, coated continuous web;
(e) combining said printed, coated continuous web with at least one additional continuous web to form a plurality of continuous webs,
(i) each of said additional continuous webs having a first and second surface,
(ii) each of said additional continuous webs being characterized by having at least a portion of the second surface thereof coated with a second chromogenic material, said second chromogenic material being coreactive with said first chromogenic material to form a color
(iii) all except one of said additional continuous webs being further characterized by at least a portion of the first surface thereof being coated with at least one non-aqueous, solvent-free coating of said first chromogenic material, said non-aqueous, solvent-free coating on said first surface of all except one of said additional continuous webs comprising said first chromogenic material dispersed in a radiation curable material,
(iv) said coating on said first surface of all except one of said additional continuous webs being applied in fluid form,
(f) setting said coating on said first surface on all except one of said additional continuous webs by means of exposure to radiation;
(g) collating said plurality of printed, coated continuous webs such that coreactive chromogenic materials are in facing relationship; and
(h) placing said collated continuous webs in contiguous relationship to one another to create a manifold carbonless form.

19. A process for the production of a manifold carbonless form having two or more surfaces coated with chromogenic material comprising:
(a) providing a continuous paper substrate, said continuous paper substrate having a front and back surface;
(b) applying a printing ink to said front surface of said continuous paper substrate, said printing ink being applied in a pattern corresponding to a printed image;
(c) applying a first non-aqueous, solvent-free coating of a capsular first chromogenic material onto said back surface of said continuous paper substrate said first non-aqueous, solvent-free coating comprising said encapsulated first chromogenic material dispersed in a hot melt suspending medium, said first coating being heated to a temperature above the melting point of said hot melt suspending medium to permit fluid application of said first coating composition to said back surface;
(d) setting said first coating by means of temperature decrease to form a printed, coated continuous paper substrate;
(e) combining said printed, coated continuous paper substrate with from about 1 to about 5 additional continuous paper substrates to form a plurality of paper substrates having a front and a back surface, a second non-aqueous, solvent-free coating of a second chromogenic material being applied to said front surface of at least one of said additional continuous paper substrates, said second non-aqueous, solvent-free coating comprising said second chromogenic material dispersed in a radiation curable material, said second coating being applied in fluid form to said front surface, said second chromogenic material being reactive with said first chromogenic material to form a color;
(f) setting said second non-aqueous, solvent-free coating by means of exposure to radiation;
(g) collating said plurality of continuous paper substrates such that said first and second chromogenic materials are in facing relationship to a coreactive chromogenic material;
(h) placing said collated paper substrates in contiguous relationship to one another to create a manifold form; and
(i) finishing said manifold form.

4,112,139

PROCESS FOR RENDERING KAPTON OR OTHER POLYIMIDE FILM PHOTO SENSITIVE TO CATALYST FOR THE DEPOSITION OF VARIOUS METALS IN PATTERN THEREON

Albert Shirk, Palmyra, and John Peter Redmond, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 485,410, Jul. 3, 1974, abandoned. This application Sep. 20, 1976, Ser. No. 724,809
Int. Cl.² C23C *3/02*
U.S. Cl. 427—54 **12 Claims**

1. A method for forming patterns on a polyimide film substrate comprising the steps of: immersing said polyimide in a hydrazine-alkali metal hydroxide solution; exposing selected areas of the thus treated polyimide substrate to a desensitizing means in the form of ultraviolet light of 2537 A; immersing said substrate in a solution of a catalytic material of palladium salts and hydrochloric acid; and depositing unreduced catalyst material on nondesensitized areas of said substrate.

4,112,140

ELECTRODE COATING PROCESS

Henrik R. Heikel, and James J. Leddy, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 14, 1977, Ser. No. 787,418
Int. Cl.² B05D *5/12*
U.S. Cl. 427—126 **29 Claims**

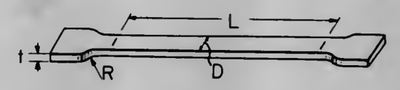
1. A method to produce an electrode comprising sequentially:
(a) contacting at least a portion of a valve metal substrate with a first solution containing, as a solute, ruthenium in an amount of from about 1 to about 50 milligrams per milliliter of the first solution and a valve metal in an amount of from about 1 to about 50 milligrams per milliliter of the first solution, the weight ratio of the valve metal to ruthenium being about 1:4 to about 2:1, at least one solvent suitable to dissolve the ruthenium and valve metal values; and a sufficient amount of an acid to maintain the solute in solution;
(b) heating at least a portion of the contacted surface sufficiently to form a coating containing oxides of ruthenium and the valve metal on the substrate;
(c) contacting at least a portion of the oxide coated surface with a second solution containing, as a solute, ruthenium in an amount of from about 1 to about 25 milligrams per milliliter of the second solution and a valve metal in an amount of from about 4 to about 100 milligrams per milliliter of the second solution, the weight ratio of the valve metal to ruthenium being from about 20:1 to about 2:1 and greater than the valve metal to ruthenium ratio of the first solution; at least one solvent suitable to dissolve the ruthenium and valve metal values; and a sufficient amount of an acid to maintain the solute in solution;
(d) heating at least a portion of the contacted surface sufficiently to form a coating containing the oxides of ruthenium and the valve metal on the substrate.

4,112,141

METHOD OF USING FILLING SOLDER FOR AUTOMOBILE BODY

Eiichi Yoshida, Utsunomiya; Hideo Nakao, Shimo-tsuga; Norimasa Goto, Utsunomiya; Toul Sugiyama, Kaminokawa, and Sadao Kashiwaya, Mibu, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 22, 1977, Ser. No. 789,861
Claims priority, application Japan, May 6, 1976, 51-51477
Int. Cl.² C22C *11/00*
U.S. Cl. 427—142 **1 Claim**



1. In a method of smoothing a body of an automobile by filling in dents in the body and spaces between parts of the body with a lead-base filling solder as a preparatory step to coating of the body surface with enamel paint or varnish which is hardened by baking, the improvement comprising the use of a solder alloy which is a binary alloy and consists essentially of 2.0–7.0 Wt.% antimony, and the balance of lead as said filling solder.

4,112,142

METHOD FOR THE PRODUCTION OF LIGHT-REFLECTING LAYERS ON A SURFACE OF A TRANSPARENT GLASS ARTICLE

Hubert Schroder, Wiesbaden, and Werner Klein, Geisenheim, both of Germany, assignors to Glaswerk Schott & Gen., Germany

Continuation-in-part of Ser. No. 77,964, Oct. 5, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,568
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1969, 1950854
Int. Cl.² B05D *1/38, 5/06, 1/02, 1/18*
U.S. Cl. 427—166 **7 Claims**

1. A method of making a reflecting plate having a non-reflecting surface comprising the the steps of simultaneously coating both surfaces of light permeable glass plate by sequentially
(A) immersing said glass plate in an organic mixed solution containing decomposible Ti and Si compounds in an amount of equal parts by weight per unit of volume calculated as TiO_2 and SiO_2, withdrawing said plate from said solution and drying said plate,
(B) immersing the resulting glass plate in a solution of an organic titanium compound decomposible into TiO_2, withdrawing said resulting plate from said solution and drying said resulting plate,
(C) immersing the so-coated plate in a solution of organic silicon compound decomposible into SiO_2, withdrawing the resulting plate from said solution, and drying it

(D) heating the product plate to a temperature ranging from 400° to 480° to produce a hardened, anti-reflection coating which shows a reflectance curve in the visible spectral range having at least two minima,

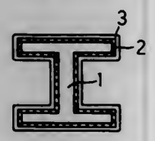
(E) and coating only the surface whose degree of reflection is to be increased with a reflection increasing coating.

4,112,143

METHOD OF MANUFACTURING AN OBJECT OF SILICON NITRIDE

Jan Adlerborn, and Hans Larker, both of Robertsfors, Sweden, assignors to ASEA Aktiebolag, Sweden

Filed Jan. 18, 1977, Ser. No. 760,463
Int. Cl.² C04B 33/34
U.S. Cl. 427—191 **8 Claims**



1. Method of manufacturing an object of silicon nitride by isostatic pressing of a preformed body of silicon nitride powder with a pressure medium at a temperature required for sintering the silicon nitride, the preformed body then being subjected to a degassing before the isostatic pressing, characterised in that on the preformed powder body there are applied an inner porous layer of a first material and outside this an outer porous layer of a second material, the inner porous layer being transformable into a layer, impermeable for the pressure medium, at a temperature below the sintering temperature for the silicon nitride and the outer porous layer being transformable into a layer, impermeable for the pressure medium, at a temperature which is lower than that for the inner porous layer, whereafter the preformed body is first subjected to a degassing and to a heating to a temperature which is required for the formation of a layer, impermeable for the pressure medium, of the outer porous layer but which maintains the inner porous layer porous, and then to a heating to a temperature which is required for the formation of a layer, impermeable for the pressure medium, of the inner porous layer while maintaining a pressure outside said layers which is greater than the gas pressure inside these layers, the isostatic pressing of the preformed product then being carried out.

4,112,144

SURFACE TREATMENT OF FIBROUS SUBSTANCES

Michael W. Ellis, 1208 W. Mountain, Ft. Collins, Colo. 80521

Filed Jul. 6, 1976, Ser. No. 702,510
Int. Cl.² B05D 3/08
U.S. Cl. 427—223 **12 Claims**

1. For use in the treatment of a significantly rough surface of porous wood to effect a weathered appearance of said surface, a compound having the composition, by volume, of:

between approximately one-half and one part of an oil-type carrier;

between approximately one-half and one part of rotten stone;

and approximately one part of wax.

8. A method of treating a significantly rough surface of a porous wood to effect a weathered appearance of said surface, comprising the steps of:

subjecting said surface to a blackening procedure;

applying to said subjected surface a compound having the composition, by volume, of between approximately one-half and one part of an oil-type carrier, between approximately one-half and one part of rotten stone, and approximately one part of wax;

drying said compound applied to said surface;

and thereafter buffing said surface sufficiently to develop highlights therein.

4,112,145

METHOD OF MANUFACTURING A LINING LAYER

Leandro Cisterni, Forli, Italy, assignor to S.U.B. Societa Utilizzazione Brevetti S.r.l., Forli, Italy

Filed Sep. 2, 1975, Ser. No. 609,720
Claims priority, application Italy, Sep. 9, 1974, 12026 A/74; Sep. 9, 1974, 12027 A/74; Sep. 23, 1974, 12030 A/74
Int. Cl.² B44C 1/20, 1/24
U.S. Cl. 427—274 **17 Claims**

1. A method for producing a dried, layered material for a lining or coating comprising forming a paste mixture consisting essentially of from between about 20% to 30%, by weight, acetone; from between about 10% to 15% by weight, toluene, from between about 3% to 5% by weight, lubricating oil; from between about 10% to 15% by weight, vinyl glue; from between about 25% to 30% by weight, powder wood; and from between about 10% to 20%, by weight of an inert filler; converting said mixture to a layer having a thickness of from between about 2/10 of a millimeter to a few millimeters; and drying the said layer by evaporating said acetone and toluene.

4,112,146

POLYESTER RESIN COMPOSITIONS WHICH ARE PHOTOCURABLE IN THE PRESENCE OF OXYGEN AND AN ORGANIC HYDRAZONE POLYMERIZATION INITIATOR

Nelson R. Lazear, Piscataway, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 641,067, Dec. 15, 1975, abandoned. This application May 25, 1977, Ser. No. 800,477
Int. Cl.² C08F 8/00, 8/18, 8/34
U.S. Cl. 427—54 **26 Claims**

1. An air-uninhibited polyester resin composition which is room temperature curable as a substantially 100 percent solids system without the incorporation of additional ingredients by exposure of the polyester resin composition to the action of oxygen and light, wherein said polyester resin composition comprises a prepolymer component (A) which contains between 2 and about 10 maleate and/or fumarate groups, and between 1 and about 5 allyl ether groups, and has a molecular weight between about 500 and 3000; a solvent component (B) which is a polymerizable acrylic or methacrylic acid ester derivative which is a liquid at 25° C and has a molecular weight of at least about 100; and an organic hydrazone polymerization initiator component (C) which is photosensitive in the presence of oxygen, corresponding to the formula:

$$R-C(=R^1)-N=NH-R^2$$

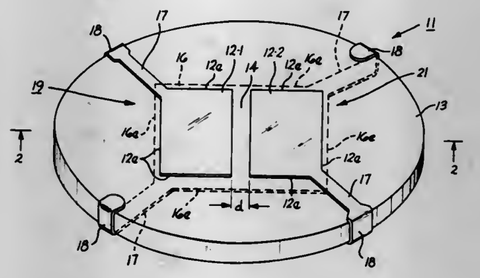
where R is selected from the group consisting of hydrogen and aliphatic, alicyclic and aromatic hydrocarbon radicals containing between 1 and about 12 carbon atoms; R^1 is selected from aliphatic, alicyclic and aromatic hydrocarbon radicals containing between 1 and about 12 carbon atoms; R^2 is selected from aliphatic and alicyclic hydrocarbon radicals containing between 1 and about 6 carbon atoms; and R and R^1 taken together can be an alicyclic hydrocarbon radical.

4,112,147

METHOD OF MANUFACTURING A MONOLITHIC CRYSTAL FILTER

Edwin C. Thompson, West Epping, N.H., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 13, 1977, Ser. No. 796,625
Int. Cl.² H03H 3/02, 3/04
U.S. Cl. 427—100 **10 Claims**



1. The method of manufacturing a monolithic crystal filter, which comprises the sequential steps of:

plating electrode material onto opposite sides of a crystal wafer to form a pair of split electrodes on one side of the wafer and a solid electrode on the other side of the wafer in superimposed relationship, to produce a device having an initial resonator coupling greater than a desired resonator coupling and having an initial midband frequency above a desired midband frequency;

plating additional electrode material onto the pair of split electrodes to narrow the initial resonator coupling of the device to a desired resonator coupling and to decrease the frequency of the device from the initial midband frequency to an intermediate midband frequency which is below the initial midband frequency and above the desired midband frequency; and

plating additional electrode material onto the solid electrode to decrease the midband frequency of the device from the intermediate midband frequency to the desired midband frequency.

4,112,148

METHOD OF CO-DEPOSIT COATING ALUMINUM OXIDE AND TITANIUM OXIDE

Frank Fonzi, Cedar Hill, Tex., assignor to Materials Technology Corporation, Dallas, Tex.

Division of Ser. No. 712,481, Aug. 9, 1976, Pat. No. 4,052,530. This application May 26, 1977, Ser. No. 800,630
Int. Cl.² C23C 11/08
U.S. Cl. 427—248 C **5 Claims**

1. The method of forming an adherent co-deposit of hexagonal alpha titanium oxide Ti_2O_3 and alpha alumina Al_2O_3 on a wear surface comprising the steps of

(a) maintaining said surface at a temperature between about 900° and 1250° C, and

(b) contacting said surface with a gaseous reactant stream containing an aluminum halide, water vapor and a titanium halide.

4,112,149

CONVERTING A DIAPHRAGM ELECTROLYTIC CELL TO A MEMBRANE ELECTROLYTIC CELL

Andrew D. Babinsky, Chagrin Falls, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 688,842, May 21, 1976, Pat. No. 4,036,728. This application Apr. 25, 1977, Ser. No. 790,756
Int. Cl.² C25B 11/03, 13/08
U.S. Cl. 427—34 **5 Claims**

1. A method for forming a membrane over a standard diaphragm cell foraminous electrode comprising the steps of: suspending a matting material in a fluid medium; inserting a foraminous electrode into the suspension; vacuum forming a layer of the suspended matting material over the surface of the foraminous electrode so as to substantially reduce the porosity of the foraminous electrode material; applying to the surface of the foraminous electrode with the matting material thereon, a layer of thermoplastic material including material containing carboxyl ion exchange groups and baking the foraminous electrode with the layers in place until the thermoplastic material is fused into a thin and uniform film on the surface of the matting material which is substantially impermeable to hydraulic flow.

4,112,150

WATERPROOF SLIDE FASTENER

Michael A. Brown; 2909 Edgemoor La., Moraine, Ohio 45439, and Steven F. Shade, 1000 Lookout Ter., Apt. C, West Carrollton, Ohio 45449

Division of Ser. No. 425,888, Dec. 18, 1973, Pat. No. 3,914,827. This application Oct. 16, 1975, Ser. No. 623,040
Int. Cl.² B05D 5/00
U.S. Cl. 427—284 **9 Claims**



1. A process for making a waterproof slide fastener device which includes a tape portion one edge of which mounts connector means formed to achieve an interdigiting connected relation to related connector means on a similar tape portion comprising the steps of providing a tape portion at one edge thereof with connector means in the form of projected segments having a loop-like configuration, moving a flow of liquid sealing material past said loop-like segments and to envelope said loop-like segments to web the said loop-like segments where said segments are connected to the tape, providing thereby that on interdigiting connector means of a pair of tape portions so provided, in a side by side arrangement, said sealing material will produce a complete seal across said tape portions in the area of said loop-like segments by means of the webs thereof.

4,112,151

IMPREGNATING POROUS ARTICLES

Theodore M. Cooke, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 9, 1976, Ser. No. 647,836
Int. Cl.² B05D 3/00, 3/12
U.S. Cl. 427—322 **11 Claims**

1. A method of forming a resilient microporous article, having a pressure expressible compositon contained in the micropores thereof, which comprises

(a) contacting a resilient microporous article, containing interconnecting micropores, said article having a matrix comprising a solvent swelling agent swellable resilient organic polymeric material with a mixture comprising:

(1) a pressure expressible composition and

(2) a volatile solvent swelling agent, which swells the organic polymeric material forming the matrix; which has a greater volatility than any component of said pressure expressible composition, and which does not form an azeotrope with any component of said pressure expressible composition

for a time sufficient to swell the polymeric matrix, enlarge the micropores, and allow said mixture to penetrate into the microporous article and

(b) removing the volatile solvent swelling agent to provide a resilient microporous article having said pressure expressible composition contained in its micropores, said composition being expressible upon the application of pressure.

11. A method, as in claim 1, of forming a resilient microporous article having a pressure expressible composition contained in the micropores thereof, which comprises

(a) forming an article comprising a resilient solvent swelling agent swellable organic polymeric matrix having dispersed therein about 70% to about 95% of the filler article, of a leachable filler, said leachable filler having particle sizes between about 20 mesh and about 500 mesh,

(b) removing the leachable filler to provide a microporous article,

(c) contacting said microporous article with a mixture comprising:

(1) a pressure expressible composition, and

(2) about 10% to about 80% weight of the pressure expressible composition of a volatile solvent swelling agent, which swells the organic polymeric material forming the organic polymeric matrix, which has a greater volatility than any component of said pressure expressible composition, and which does not form an azeotrope with any component of said pressure expressible composition

for a time sufficient to swell the micropores at least about 25% and allow said mixture to penetrate into the microporous article and

(d) removing the volatile solvent swelling agent, causing said micropores to return substantially to their original size, said micropores containing said pressure expressible composition.

4,112,152

METHOD FOR MANUFACTURING POLYURETHANE FILMS AND SURFACE COATINGS FROM TALL OIL PITCH

Matti Dolk, Metsäpurontie 17 E 69, Helsinki; Väinö Erä, Suvantopolku 5 E, Myyrmäki, and Jarl Johan Lindberg, Ukonkivenpolku 1 G, Helsinki, all of Finland

Filed Apr. 2, 1976, Ser. No. 673,341

Int. Cl.² B05D *3/02;* B32B *15/08*

U.S. Cl. 427—385 R **6 Claims**

1. A method for manufacturing polyurethane films and surface coatings from tall oil pitch having an acid number of about 30–60 and an hydroxyl number of about 60–90, comprising:

(a) esterifying the tall oil pitch by adding to the tall oil pitch about 5–15 weight fractions of an aliphatic alcohol comprising at least three OH-groups, and about 0.1–0.5 weight fractions p-toluene sulfonic acid per 100 weight fractions tall oil pitch, and by heat treating at less than atmospheric pressure until the acid number of the mixture is about 5–35 and the hydroxyl number is about 200–350,

(b) adding an aliphatic tri-isocyanate preferably dissolved in an inert organic solvent, to the tall oil pitch ester thus attained in the amount such that the amount of isocyanate groups is 10–35 weight fractions per 100 weight fractions tall oil pitch ester,

(c) diluting the resultant mixture to a suitable consistency for the manufacture of films,

(d) spreading the resultant diluted mixture on a suitable base material, and

(e) polymerizing the resultant diluted mixture on the base material.

4,112,153

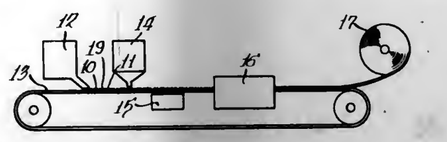
METHOD OF CONTROLLING WATER REPELLENCY IN NON-WOVEN FABRIC

George A. M. Butterworth, Western Springs, and Frank Fillwalk, Oak Lawn, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 4, 1977, Ser. No. 783,928

Int. Cl.² A61F *13/16;* D21H *1/34*

U.S. Cl. 427—390 E **21 Claims**



13. A method of preparing a bonded, non-woven fabric having a controlled degree of wettability comprising;

forming a web of randomly laid dry fibers,

impregnating the web with a liquid binder composition which includes a heat-unstable surfactant which is a member of the group consisting of a non-ionic surfactant, an anionic surfactant, and mixtures thereof,

drying the web to form a water-wettable, bonded, non-woven fabric,

heating a selected region of the fabric to an elevated temperature at which the surfactant is unstable, and

maintaining the fabric at the elevated temperature for a time period sufficient to denature the surfactant without damaging the fabric, thereby increasing the water repellency of the selected fabric region.

4,112,154

METHOD FOR OBTAINING UNIFORM POROSITY IN PRINTED INHERENTLY POROUS CIGARETTE TIPPING PAPERS

Stuart Wayne McCarty, Brevard, and Clarence Morris O'Shields, Hendersonville, both of N.C., assignors to Olin Corporation, Pisgah Forest, N.C.

Filed Sep. 2, 1977, Ser. No. 830,183

Int. Cl.² B32B *7/14;* B44D *5/00, 5/12*

U.S. Cl. 427—401 **6 Claims**

1. A method for obtaining uniform porosity in inherently porous cigarette tipping papers from base papers of differing relative porosities, comprising measuring the porosity of the base paper, coating the base paper with a liquid solution whose viscosity is adjusted according to the porosity of the base paper, said liquid solution selected from the group consisting of printing inks, coating suspensions, paper sizes, cellulose ethers and carboxymethylcellulose, said viscosity adjusted relatively higher for low porosity paper and relatively lower for high porosity paper, whereby the porosity is controlled to achieve a predetermined final uniform porosity in the area in which the coating is applied to the tipping paper.

4,112,155

PROCESS FOR SIZING SUBSTRATE AND PRODUCTS OBTAINED THEREBY

Philippe Robert Raymond Carel, Paris; René Paul Auguste Decamp, Villers Saint Paul, and Jean Perronin, Chantilly, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Division of Ser. No. 557,426, Mar. 11, 1975, Pat. No. 4,070,319.

This application Oct. 27, 1977, Ser. No. 846,096

Claims priority, application France, Mar. 11, 1974, 74 08114

Int. Cl.² D06P *5/00*

U.S. Cl. 427—439 **27 Claims**

1. Process for the surface sizing of a nonwoven, cellulose-based substrate which comprises impregnating the substrate in a sizing bath having a pH of 2 to 12, said bath containing as sizing agent at least one anionic latex of at least one copolymer having a glass transition temperature of −40° C to +120° C and a K value of 55 to 130, said copolymer containing in interpolymerized form:

(a) 35% to 80% by weight of at least one ester of acrylic and/or methacrylic acid with an alcohol containing 1 to 18 carbon atoms and/or at least one vinyl ester of a carboxylic acid containing 1 to 18 carbon atoms;

(b) 20% to 50% by weight of acrylic, methacrylic, crotonic or itaconic acid, or a mixture thereof;

(c) 0% to 20% by weight of at least one monomer having an ethylene linkage and at least one polar group or containing several ethylene linkages;

(d) 0% to 30% by weight of at least one halogenated or non-halogenated hydrocarbon containing at least one double bond and 2 to 18 carbon atoms,

the latex containing 20% to 50% by weight of dry material, having a pH of 2 to 7, and having the property of thickening by treatment with alkali.

4,112,156

MAGNETIC TONER RECOVERY METHOD USING ALTERNATING MAGNETIC FIELD POLARITIES

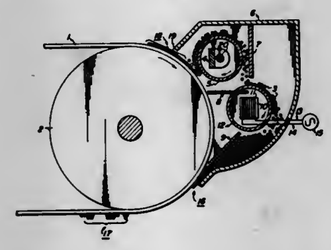
Stanley B. Swackhamer, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 690,211, May 26, 1976, Pat. No. 4,043,298.

This application Feb. 14, 1977, Ser. No. 768,240

Int. Cl.² B05D *3/00*

U.S. Cl. 427—444 **2 Claims**



1. A method for recovering airborne toner from the vicinity of a magnetizable recording medium, comprising: magnetically attracting airborne magnetic toner with a magnetic field which does not alternate in magnetic polarity thereby magnetically polarizing said magnetic toner; and passing said polarized magnetic toner through a magnetic field which alternates in magnetic polarity thereby decreasing the magnetic polarization of said magnetic toner.

4,112,157

METHOD OF PRODUCING A FILM WHICH PROMOTES HOMEOTROPIC ORIENTATION OF LIQUID CRYSTALS AND A LIQUID CRYSTAL UTILIZING THE FILM

Hans Krueger; Hans F. Mahlein, and Walter Rauscher, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 479,847, Jun. 17, 1974, abandoned.

This application May 17, 1976, Ser. No. 686,934

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1973, 2330909

Int. Cl.² C09K *3/34*

U.S. Cl. 428—1 **9 Claims**

1. In a liquid crystal cell having a thin layer of liquid crystal material interposed between a pair of spaced, parallel carrier plates with at least one of said plates being transparent, the improvement comprising a thin film of metal inorganic salt deposited on at least a portion of a surface of one of said plates and being in contact with the liquid crystal material, said thin film having a column-like structure extending at an angle to the surface of the plates so that the molecules of the liquid crystal material contacting the film assume a homeotropic orientation to the surface of the plate.

3. A method of producing a film of metal inorganic salt on a surface of a carrier plate having an electrical conducting material to form electrodes on the surface, said film having a column-like structure extending substantially normal to the surface, said carrier plate being used in a liquid crystal cell comprising a layer of liquid crystal material interposed between a pair of parallel spaced carrier plates with the molecules of the layer of liquid crystal material which contacts the film having a homeotropic orientation relative to the surface of the carrier plate, said method comprising the steps of providing a source of the metal inorganic salt; positioning a carrier plate with the electrodes on the surface at a distance from the source of the salts which distance is substantially larger than the area of said surface to be provided with the film and with said surface facing the source and being oriented substantially normal to a line extending from said surface to the source; then vaporizing the metal inorganic salts; and depositing the vaporized salts on said surface as the film having a column-like structure extending substantially normal to the surface of the plate, so that the direction of movement of the vaporized salts being deposited on the surface is substantially parallel to said line and normal to said surface.

4,112,158

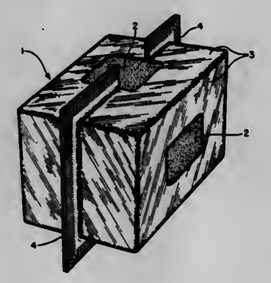
PACKAGING FILMS AND PACKAGED ARTICLES THEREWITH

Mark D. Creekmore, Akron, and William A. Watts, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 617,930, Sep. 29, 1975, abandoned. This application Sep. 28, 1977, Ser. No. 837,483

Int. Cl.² B32B *7/02;* B65D *71/00;* C08L *51/00*

U.S. Cl. 428—35 **28 Claims**



1. A packaging film composite having a thickness in the range of about 0.5 to about 10 mils comprised of an admixture of (1) 100 parts by weight of an unvulcanized elastomeric block copolymer having the general configuration A-B-A wherein each A is an independently selected nonelastomeric monovinyl aromatic hydrocarbon polymer block selected from styrene, α-methylstyrene and vinyl toluene having an average molecular weight of about 7,000 to about 25,000 and a glass transition temperature above about 25° C., the total block A content being from about 20 to about 40 percent by weight of the copolymer, and B is an elastomeric conjugated diene polymer block selected from 1,3-butadiene and isoprene having an average molecular weight from about 30,000 to about 100,000 and a glass transition temperature below about 10° C., said block copolymer being further characterized by having a melt viscosity in the range of about 0.1 to about 10 grams/10 minutes according to ASTM No. D-1238, (2) about 0.5 to about 9 total parts by weight of antiblock agent composed of about 0.1 to about 3 parts by weight individually of stearyl erucamide, oleyl palmitamide and behenamide in combinations of (A) stearyl erucamide and behenamide, (B) oleyl palmitamide and behenamide and (C) stearyl erucamide, oleyl palmitamide and behenamide, and (3) about 25 to about 120 parts by weight of

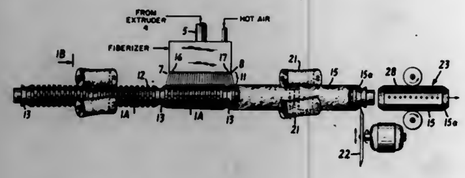
a thermoplastic resin selected from at least one polymer of styrene, α-methyl styrene, styrene/α-methylstyrene, vinyl toluene, vinyl toluene/α-methylstyrene, indene resins, alkyl phenolic resins and petroleum and coal tar resins, said resins characterized by being soluble in styrene and by having an intrinsic viscosity of about 0.02 to about 0.50 as determined in toluene at 30° C.

4,112,159

CONTINUOUS PRODUCTION OF TUBULAR MODULAR FILTER ELEMENTS USING NONWOVEN WEBS FROM THERMOPLASTIC FIBERS AND PRODUCTS

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 393,688, Aug. 31, 1973, Pat. No. 3,933,557. This application Jan. 14, 1976, Ser. No. 649,001
The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.
Int. Cl.² B01D *29/10*
U.S. Cl. 428—36 **8 Claims**



1. A seamless tubular filter element comprising a tubular foraminous core having superimposed and supported thereon in the form of a cylinder a flexible wound layer of randomly-oriented heterogeneously intertwined spun fibers less than 10 μin diameter and having an open area of at least 60%, laid down on the core and having end caps at each end of the cylinder, the end caps having a circumferential relatively narrow slot about the periphery of their inside face whose width at the inside face is less than the thickness of the end of the core plus the folded-over thickness of the layer; the layer having at each end a flexible selvage extending beyond the end of the core and folded over the end and extending into the interior of the core, with the folded-over portion sealingly compressed in the slot between the core end and the side walls of the slot, and thereby attached to the end caps in a leak-tight seal.

4,112,160

SOLID ADHEREND SUBSTRATES BONDED WITH RUBBER CEMENT COMPOSITIONS

Yuji Kako, Shizuoka; Toyoji Kikuga, and Akira Toko, both of Fujieda, all of Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Division of Ser. No. 519,314, Oct. 30, 1974, Pat. No. 4,007,233, which is a continuation-in-part of Ser. No. 322,265, Jan. 9, 1973, abandoned. This application Dec. 15, 1976, Ser. No. 750,942
Claims priority, application Japan, Jan. 11, 1972, 47-4950
Int. Cl.² B32B *15/06, 15/18, 15/08, 15/10*
U.S. Cl. 428—460 **21 Claims**

1. In a bonded article comprising at least two solid adherend substrates bonded with a rubber cement composition comprising nitrile rubber and a phenolic resin derived from a monohydroxyphenol, the improvement wherein the phenolic resin consists essentially of phenolic resin produced by (a) condensing a bifunctional phenol and an aldehyde in a molar ratio of about 0.5 to 3 moles of aldehyde per mole of bifunctional phenol under alkaline conditions, and (b) reacting the resulting condensation product with a polyfunctional phenol having at least 3 reactive positions on the phenyl nucleus in a molar ratio of about 0.05 to 2.5 moles of polyfunctional phenol per mole of bifunctional phenol in said condensation product in the presence of a sufficient amount of acid to provide acid catalysis of the condensation of the aldehyde and the phenol, to produce a phenolic resin having a number average molecular weight of about 700 to 1,900 and a melting point of about 80° to 160° centigrade.

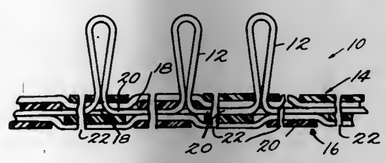
17. In a bonded article comprising an adherend substrate of flexible polyvinyl chloride bonded to at least one other adherend substrate with a rubber cement composition comprising nitrile rubber and a phenolic resin derived from a monohydroxyphenol, the improvement wherein the phenolic resin consists essentially of phenolic resin produced by (a) condensing a bifunctional phenol and an aldehyde in a molar ratio of about 0.5 to 3 moles of aldehyde per mole of bifunctional phenol under alkaline conditions, and (b) reacting the resulting condensation product with a polyfunctional phenol having at least 3 reactive positions on the phenyl nucleus in a molar ratio of about 0.05 to 2.5 moles of polyfunctional phenol per mole of bifunctional phenol in said condensation product in the presence of a sufficient amount of acid to provide acid catalysis of the condensation of the aldehyde and the phenol, to produce a phenolic resin having a mumber average molecular weight of about 700 to 1,900 and a melting point of about 80° to 160° centigrade.

4,112,161

TUFTED PILE FABRIC AND METHOD OF MAKING AND INSTALLING THE SAME

Samuel Ray Sorrells, Buena Vista, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 25, 1977, Ser. No. 790,610
Int. Cl.² B32B *3/02*
U.S. Cl. 428—95 **19 Claims**



1. A tufted pile fabric having a dimensional stability, a soft hand and being capable of breathability so it can be permanently secured to a floor structure by a water based adhesive comprising:

a synthetic plastic primary backing of substantially uniform thickness;

a series of synthetic plastic pile projections extending through said primary backing and outwardly from one face thereof;

a synthetic plastic secondary backing of substantially uniform thickness;

means adhesively securing said secondary backing to the other face of said primary backing and anchoring said series of pile projections to said primary backing, said last mentioned means including a hot melt adhesive provided between said primary backing and said secondary backing and defining a substantially impervious and relatively inflexible sheet anchoring the pile projections, primary backing and secondary backing together to provide dimensional stability to the pile fabric; and

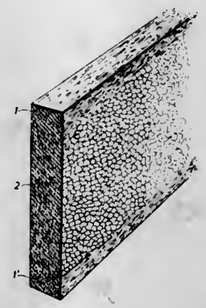
a plurality of perforations through said pile fabric over its entire surface, each of said perforations extending completely through the secondary backing, impervious relatively inflexible sheet of hot melt adhesive, and the primary backing, said perforations having a size and spacing sufficient to increase flexibility of and cause the impervious sheet to become pervious so as to provide a soft hand for the pile fabric and to provide breathability to the pile fabric while maintaining dimensional stability of the same.

4,112,162

STRUCTURAL CHIPBOARD WOOD BEAM

Sven Gustav Casselbrant, Lidingö, Sweden, assignor to Svenska Utvecklingaktiebolatget, Stockholm, Sweden

Filed Mar. 27, 1974, Ser. No. 455,146
Int. Cl.² B32B *5/12*
U.S. Cl. 428—106 **7 Claims**



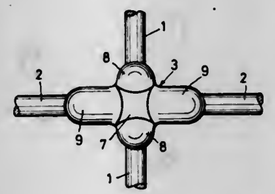
1. A structural beam of compressed glued wood chips comprising three layers (1, 1', 2) of said chips, each of said layers extending over the entire length of the beam, said layers being stacked in the direction of the wider and normally vertical cross-sectional dimension of the beam, the outer and normally upper and lower layers (1, 1') consisting predominantly of chips having a shape elongated in the principal direction of orientation of their respective fibers, said chips of said outer layers (1, 1') being oriented in said layers with their long dimension substantially in the longitudinal direction of the beam and the middle layer (2) consisting predominantly of flat chips having their fibers oriented substantially in normally vertical planes, which planes are parallel to the longitudinal direction of the beam and within which planes the fibers of the chips are randomly oriented.

4,112,163

NET FOR FORMING AN ELASTIC SUPPORT IN FURNITURE

Manfred Brokmann, Silcherstr. 5; Kurt Sanders, Friedrichstr. 29; Dieter Sanders, Haneschweg 2, and Hermann Westhoff, Augustenburgerstr. 85a, all of, 4500 Osnabrueck, Fed. Rep. of Germany

Filed Jul. 13, 1976, Ser. No. 704,769
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1975, 2532613
Int. Cl.² B32B *5/12*
U.S. Cl. 428—107 **3 Claims**



1. A net for supporting upholstery in furniture, comprising, in combination:

(a) a plurality of longitudinal cords and a plurality of transverse cords extending prependicularly relative to said plurality of longitudinal cords, preselected longitudinal cords contacting preselected transverse cords so as to form a plurality of cross-over points therewith,

(b) a molded synthetic connecting member at each cross-over point completely enclosing said longitudinal and transverse cord at said cross-over points,

(c) said connecting member having a first pair of shank portions extending in opposite directions along said transverse cord and completely enclosing said transverse cord in the region of the cross-over point,

(d) a second pair of shank portions extending in opposite directions along said longitudinal cord and completely enclosing said longitudinal cord in the region of said cross-over point,

(e) said shanks of said first pair being longer than said shanks of said second pair,

(f) said longitudinal and transverse cords being prestressed prior to molding the connecting members onto the transverse and longitudinal cords at the cross-over points,

(g) said transverse and longitudinal cords having uneven surfaces, said enclosing connecting member contacting completely said uneven surfaces in the region of said cross-over points,

(h) and wherein said connecting member is made of polyethylene.

4,112,164

ACOUSTICAL LAMINATE

Muriel L. Koss, Arlington, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Division of Ser. No. 672,353, Mar. 31, 1976, Pat. No. 4,091,160.
This application Dec. 1, 1977, Ser. No. 856,519
Int. Cl.² B32B *3/12*
U.S. Cl. 428—116 **3 Claims**

1. An acoustic panel comprising:

an acoustic laminate face sheet comprising at least two plies of an open weave glass fiber fabric impregnated with from about 13 to 32 weight percent epoxy resin, based on the weight of said glass fabric, said laminate having an airflow resistance of from about 2 to 60 rayls at an airflow velocity of about 17 cm/sec;

a core comprising an open honeycomb having a thickness of from about 0.20 to 2.0 inches bonded to said acoustic laminate face sheet; and

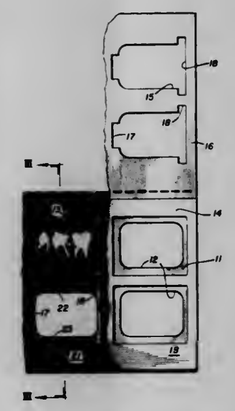
a continuous air-impervious backing sheet bonded to the surface of said core opposite to said face sheet.

4,112,165

X-RAY FILM MOUNT

Malcolm Clifford Russell, Leicester, Mass., assignor to Russell Manufacturing Company, Leicester, Mass.

Filed May 21, 1976, Ser. No. 688,848
Int. Cl.² G09F *1/10*
U.S. Cl. 428—134 **2 Claims**



1. A mount for X-ray film element, comprising:

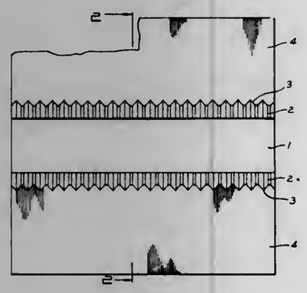
(a) a first panel having primary apertures, each of which is smaller than a film element,
(b) a second panel having secondary apertures similar to the primary apertures,
(c) notches extending from opposite ends of each of the secondary apertures comprising, a first notch which is rectangular and whose length is less than the width of the aperture, and a second notch which is elongated and whose length is greater than the width of a film element,
(d) a coating of visually-evident nature provided on the inner surface of the first panel to be exposed by the said notches in the second panel, the outer surface of the second panel having a dark color and the said coating on the inner surface of the first panel being of a relatively light contrasting color, and
(e) an adhesive connecting the first and second panels in a face-to-face relationship with the primary and secondary apertures in substantial registry with the exception that a strip of adhesive-free inner surface is provided around the primary aperture to allow the insertion of the film element.

4,112,166

METHOD OF EXTRUDING THERMOPLASTIC SHEETS

Hyun S. Chyu, Chicopee, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 537,975, Jan. 2, 1975, Pat. No. 3,994,654.
This application Jul. 9, 1976, Ser. No. 703,732
Int. Cl.[2] B28B *21/54*
U.S. Cl. 428—141 **12 Claims**



1. In the method for forming thermoplastic sheet material having controlled surface roughness said method comprising extruding the thermoplastic sheet material through an extrusion apparatus comprising an extruder and a die member wherein at least one of the lips of the die member is grooved in the direction of extrusion, the improvement which comprises having a beveled surface on the grooved die lip wherein the beveled surface tapers away from the die orifice.

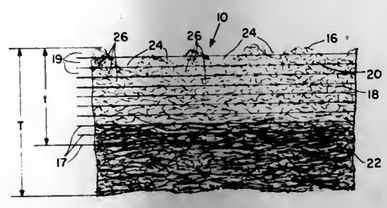
4,112,167

SKIN CLEANSING PRODUCT HAVING LOW DENSITY WIPING ZONE TREATED WITH A LIPOPHILIC CLEANSING EMOLLIENT

Timothy William Dake; James Spence Clunie, and Allen Dale Early, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 7, 1977, Ser. No. 757,712
Int. Cl.[2] B32B *3/00, 21/04*
U.S. Cl. 428—154 **15 Claims**

1. A soft, pliant, skin cleansing product comprising a web having a wiping surface and a low density wiping zone; said wiping surface being one boundary of said wiping zone; said wiping zone being soil permeable and having surface depressions which contribute to the contours of said wiping surface and having subsurface voids below said wiping surface, said wiping zone having an average void index as determined under a pressure of 1 pound per square inch of at least 68 and a minimum void index of at least 10; said wiping zone being



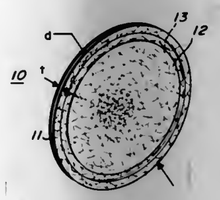
treated with from about 10 percent to about 150 percent by weight of said web of a lipophilic cleansing emollient.

4,112,168

HIGH STIFFNESS SPEAKER CONE

Hugo Willy Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 23, 1977, Ser. No. 780,619
Int. Cl.[2] B32B *7/14*
U.S. Cl. 428—198 **14 Claims**



1. An improved lightweight, stiff member comprising:
a porous layer of high stiffness fibers, said fibers being randomly oriented, spaced-apart, and crossing over at given points to form a porous layer having a predetermined thickness profile, said layer of fibers having a first major surface;
means for gastight sealing the layer of fibers along the first surface of the layer; and
means for bonding together the fibers at the given crossover points and for bonding the gastight sealing means to the first major surface of the layer of fibers.

4,112,169

ELASTOMER MODIFIED MELAMINE RESIN CONTAINING LAMINATES

Kenneth Robert Huffman, Stamford; Donald James Casey, Ridgefield, and Walter Moreland Thomas, Darien, all of Conn., assignors to Formica Corporation, Cincinnati, Ohio

Filed Feb. 11, 1977, Ser. No. 767,718
Int. Cl.[2] B32B *27/42, 3/10, 5/16*
U.S. Cl. 428—206 **10 Claims**

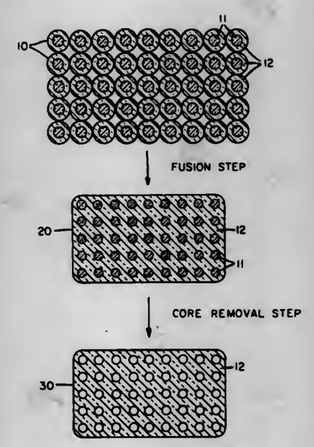
1. A heat and pressure consolidated article comprising
(A) a self-supporting substrate and
(B) a decorative, cellulosic paper sheet having a basis weight of at least about 40 pounds per 3,000 square foot ream, containing at least about 60% α-cellulose and being impregnated with a composition of matter comprising a mixture of
(1) an aqueous melamine/formaldehyde resin solution wherein the melamine to formaldehyde ratio thereof ranges from about 1:1.6 to about 1:2.5 and
(2) from about 2.5 to about 30.0%, by weight, based on the weight of the resin solids of (1), of an elastomer comprising
(a) an ethylene/vinyl chloride copolymer containing a comonomer supplying from about 0.5 to about 7.0%, by weight, based on the total weight of (a), of amide groups or
(b) a polyurethane resin containing from about 3.0 to about 10.0%, by weight, based on the total weight of (b), of carboxyl groups,
said elastomer having a particle size of up to about 20,000 Angstroms.

4,112,170

COMPOSITE GLASS ARTICLES FOR CHANNEL PLATE FABRICATION

Herbert E. Rauscher, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 13, 1976, Ser. No. 749,677
Int. Cl.[2] B32B *7/02, 17/06*
U.S. Cl. 428—212 **4 Claims**



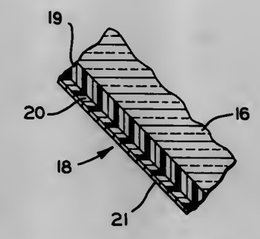
1. A composite glass article suitable for the manufacture of a glass body comprising an array of channels which consists of:
(a) an interconnected glass matrix composed of a non-leachable lead silicate matrix glass having an average linear coefficient of thermal expansion over the temperature range 0°–300° C. of not less than about 70×10^{-7}/° C., a softening point not exceeding about 650° C., and a dissolution rate in 1N HNO_3 not exceeding about 5×10^{-5} milligrams per square centimeter of exposed surface area per minute at 25° C., and
(b) an array of leachable core glass elements encased in said glass matrix, each of said core glass elements being composed of a glass consisting essentially, in weight percent on the oxide basis, of about 38–64% BaO, 0–17% CaO, 0–3% MgO, 49–67% total of BaO + CaO + MgO, 8–45% B_2O_3, 6–34% SiO_2, 32–51% total of B_2O_3 + SiO_2, at least 88% total of BaO + CaO + MgO + B_2O_3 + SiO_2, 0–12% Al_2O_3, 0–10% TiO_2, 0–7% ZrO_2, 0–3.5% Na_2O and 0–4% ZnO, said glass having an average linear coefficient of thermal expansion over the temperature range 0–300° C. not exceeding about 105×10^{-7}/° C., a softening point of at least about 645° C., a dissolution rate in 1N HNO_3 of at least about 0.4 milligrams per square centimeter of exposed surface area per minute at 25° C., and being essentially free of La_2O_3 and ThO_2.

4,112,171

AUTOMOTIVE GLAZING STRUCTURE AND METHOD OF PRODUCING THE SAME

Theodore J. Motter, Genoa; Paul T. Mattimoe, and Stephen P. Bartus, Jr., both of Toledo, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation-in-part of Ser. No. 608,830, Aug. 29, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,331
Int. Cl.[2] B32B *7/02*
U.S. Cl. 428—213 **8 Claims**



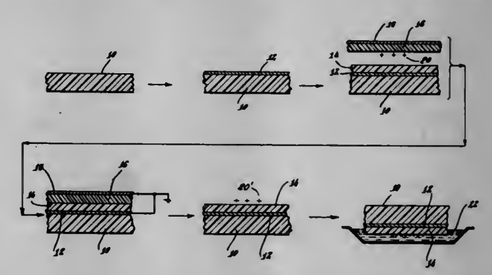
1. A transparent, temperature stable, glazing structure, comprising the combination: with a surface of glass; of a layer of a relatively soft and extensible, penetration resistant, plastic having one surface bonded to said glass; a thinner layer of a more durable plastic having one surface bonded to said relatively soft layer and its opposite surface treated to promote adhesion; an abrasion resistant coating of a cured organopolysiloxane compound on said treated surface; and an exposed surface on said coating that has been silane catalyzed before curing to impart the highest degree of cure at said exposed surface and to render said coating progressively harder outwardly through its thickness toward said exposed surface.

4,112,172

DIELECTRIC IMAGING MEMBER

Herman Burwasser, Boonton, and John R. Wyhof, Wanaque, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 669,675, Mar. 23, 1976, abandoned. This application Aug. 27, 1976, Ser. No. 718,361
Int. Cl.[2] G03G *7/00*
U.S. Cl. 428—215 **5 Claims**



1. An improved dielectric imaging member for receiving electrostatic latent images in the absence of an externally applied voltage so as to provide sharp density images consisting essentially of a transparent resin film substrate, a conductive layer on said substrate, and a dielectric resin film in which said dielectric film has a thickness in the range of about 1.4–10 micrometers on said conductive layer for receiving said latent images.

4,112,173
CONCRETE MODULE UNIT

Allen T. Roudebush, Hamilton, Ohio, and Kenneth P. Thompson, Canton, N.C., assignors to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 547,003, Feb. 4, 1975, abandoned. This application Feb. 15, 1977, Ser. No. 768,770
Int. Cl.[2] B32B *13/12, 27/10, 7/06*
U.S. Cl. 428—215 13 Claims

8. A concrete module unit comprising a concrete layer having a thin, flexible casting sheet means having a low release resistance when separated from said concrete layer after hardening thereof superimposed adjacent at least one surface of said concrete layer, said casting sheet means comprising a thin, flexible base sheet, said base sheet being generally planar, at least one side of said base sheet having a thin coating of polyethylene having a density of 0.930 to 0.965 gm./cc., said polyethylene coating being in contact with said surface of said concrete layer.

4,112,174
FIBROUS MAT ESPECIALLY SUITABLE FOR ROOFING PRODUCTS

George John Hannes, Maumee; Theodore Richard Rohweder; Hans Wendell Dreikorn, both of Toledo, all of Ohio, and Philip Bickford Shepherd, Sedalia, Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 650,108, Jan. 19, 1976, abandoned, which is a continuation of Ser. No. 518,332, Oct. 29, 1974, abandoned, which is a continuation of Ser. No. 301,578, Oct. 27, 1972, abandoned. This application Jul. 21, 1976, Ser. No. 707,165
Int. Cl.[2] D06N *5/00*
U.S. Cl. 428—220 5 Claims

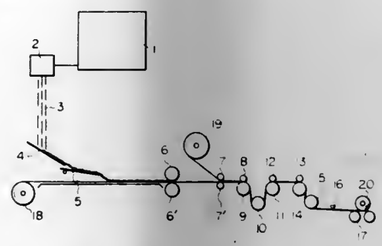


1. In a fibrous glass mat of the type which is relatively thin, for example approximately 0.035 inch thick, which includes both monofilament glass fibers and glass fiber bundles and a binder substance to cooperate in holding the monofilament fibers and fiber bundles together to form said mat, and which is made by a process of preparing a dilute water slurry including said monofilament fibers and fiber bundles, vacuum filtering said slurry through a moving wire screen to form a web which together with said binder forms said mat, the improvement comprising the utilization of:
(a) a plurality of individual monofilament glass fibers between approximately 22 mm and 35 mm in length and between approximately 12 microns and 19 microns in diameter, said fibers comprising between approximately 70% and 95% of the total fibrous material in said web,
(b) a plurality of glass fiber bundles having ends, each of said bundles consisting essentially of a plurality of monofilaments held together in said bundle by a water insoluble binder substance, said glass fiber bundles being between approximately 65 mm and 75 mm in length, and comprising between approximately 5% and 30% of the total fibrous material in said web; and
(c) a relatively small amount of binder substance to cooperate in holding said web of monofilament fibers and fiber bundles together to form said mat;
(d) said mat consisting essentially of said monofilament fibers, said fiber bundles and said binder and said monofilament fibers and fiber bundles cooperating with one another in a random fashion to form said web such that
(i) said monofilament fibers and fiber bundles are substantially randomly oriented and uniformly dispersed throughout said web and,
(ii) a majority of the ends of said bundles are within the confines of said web.

4,112,175
SOUND INSULATING SHEET CONTAINING LEAD FIBERS

Yoshikazu Kikuchi; Hirotsugu Suzuki, and Kenji Yabe, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 481,401, Jun. 20, 1974, abandoned. This application Dec. 1, 1976, Ser. No. 746,319
Int. Cl.[2] B32B *5/02*
U.S. Cl. 428—236 5 Claims



1. A nonporous flexible sound insulating sheet composed of 50 to 90% by weight of a nonwoven lead fiber fabric and 10 to 50% by weight of a vinyl chloride polymer reinforcing material, said reinforcing material filling the spaces between individual lead fibers of the nonwoven fabric to secure the individual lead fibers in their place; said lead fibers being substantially uniformly distributed in the nonwoven fabric and being disposed such that the axes of the lead fibers extend, as a whole, substantially at random in all directions, and such that the lead fibers are not exposed on the surface of the sound insulating sheet, said sound insulating sheet having a thickness of 0.3 to 2.0 mm and a specific gravity of 2.0 to 6.5.

4,112,176
GROUND RUBBER ELASTOMERIC COMPOSITE USEFUL IN SURFACINGS AND THE LIKE, AND METHODS

Allen R. Bailey, Vicksburg, Miss., assignor to U.S. Rubber Reclaiming Co., Inc., Miss.

Continuation-in-part of Ser. No. 486,328, Jul. 8, 1974, abandoned. This application Feb. 20, 1976, Ser. No. 659,751
Int. Cl.[2] B32B *3/26, 5/16;* C09J *3/18*
U.S. Cl. 428—304 15 Claims



1. A flexible resilient elastomeric composite composed of vulcanized rubber particles substantially coated and bonded with a cross-linked non-foamed binder consisting essentially of a solvent-free polymeric isocyanate prepolymer cross-linked by urea and biuret linkages and having an excess NCO content of 3–10% and a number average molecular weight between 800 and 4000, said cross-linking of the isocyanate prepolymer being accomplished by the controlled reaction fo prepolymer components in an equivalent ratio NCO/OH of 0.14/1 to 0.83/1; the film thickness of the prepolymer binder on the rubber particles being from about 3 microns to about 10 microns and the void content of the composition being between 25 and 60 percent.

13. A method of forming a flexible resilient and elastomeric composite which comprises substantially coating vulcanized rubber particles to a thickness of about 3 microns to about 10 microns; with a non-foaming cross-linked binder consisting essentially of a solvent-free polymeric isocyanate prepolymer having a number average molecular weight between 800 and 4000, cross-linking said prepolymer by a controlled reaction with water at an equivalent ratio of NCO/OH of 0.14/1 to 0.83/1 to form urea and biuret cross-linkages; said cross-linked coating having a void content of about 25 percent to 60 percent; and consolidating and bonding said coated particles.

4,112,177
POROUS ADHESIVE TAPE

Ferdinand Salditt, Vallendar, Fed. Rep. of Germany, and William L. Hansen, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 23, 1978, Ser. No. 871,377
Int. Cl.[2] B32B *3/26*
U.S. Cl. 428—304 5 Claims

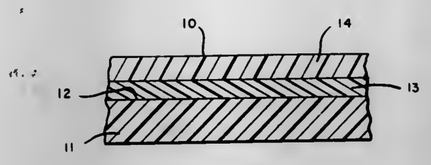


2. A microporous pressure-sensitive adhesive coated sheet material comprising a thin substantially uniformly porous substrate having firmly anchored to one major surface thereof a thin adhesive mass composed of a plurality of normally tacky and pressure-sensitive adhesive layers, said adhesive mass being microporous throughout and the layer of said adhesive mass farthest from said substrate comprising a soft rubbery acrylate copolymer.

4,112,178
AQUEOUS POLYURETHANE UNDERCOATS

Albert E. Brown, Glen Cove, N.Y., assignor to Columbia Ribbon & Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Jul. 14, 1977, Ser. No. 815,633
Int. Cl.[2] B32B *3/26*
U.S. Cl. 428—306 10 Claims



1. Pressure-sensitive transfer element comprising a smooth, non-tacky base layer of water-applied polyurethane resin having bonded to the smooth surface thereof, a volatile-solvent-applied pressure-sensitive ink-releasing microporous resinous layer containing within the pores thereof pressure-exudable ink comprising oleaginous material and coloring matter, said base layer being impermeable and insoluble with respect to the volatile vehicle used to apply the ink layer and being inert to the penetration of the oily ink vehicle of the ink layer present thereon.

4,112,179
METHOD OF COATING WITH ABLATIVE HEAT SHIELD MATERIALS

Joseph W. Maccalous, 7210 S. Sheridan Ct., Littleton, Colo. 80123, and Donald A. Thomas, 3005 W. Tufts Ave., Englewood, Colo. 80110

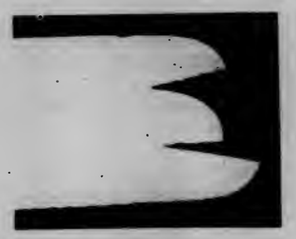
Filed Dec. 10, 1975, Ser. No. 639,503
Int. Cl.[2] B32B *5/16;* B05D *1/02*
U.S. Cl. 428—325 11 Claims

1. A method for producing an ablative coating on a surface consisting essentially of:
preparing a sprayable coating composition by mixing components consisting essentially of the following ingredients
(a) a silicone resin;
(b) a solvent system comprising 85–100% n-heptane and 15–0% of a higher boiling inert solvent;
(c) silicaceous fibers; and
(d) hollow microspheres of silicaceous material, and
subsequently and in a separate step spraying the sprayable coating composition on said surface, followed by curing the thus-formed coating to form an ablative coating having a density of about 10 to 15 lbs/ft^3.

4,112,180
REFRACTORY METAL CARBIDE ARTICLES AND LAMINATING METHOD FOR PRODUCING SAME

James Q. Steigelman, Athens, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 2, 1974, Ser. No. 511,441
Int. Cl.[2] B32B *3/10;* B22F *3/00*
U.S. Cl. 428—332 3 Claims



1. A self supporting flexible laminate of at least 3 self supporting flexible tape cast sheets having a composition consisting essentially of from about 70 to about 97 percent by weight of an inorganic portion consisting essentially of discrete particles of (a) from about 75 to 97 weight percent of a refractory metal carbide, and (b) from about 3 to 25 weight percent of a lower melting binder metal, suspended in from about 3 to about 30 weight percent of a solid organic portion, said laminate characterized by having a thickness greater than about 0.080 inches defined by at least two uneroded formed surfaces, and further characterized by having a cross section through said surfaces of substantially uniform appearance across said thickness.

4,112,181

METHOD FOR PREPARING A FILM OF VINYLIDENE CHLORIDE POLYMER

William G. Baird, Jr., Spartanburg; Stanley E. Holbrook, Greenville, both of S.C., and Jeremy A. Platt, deceased, late of Cambridge, Mass., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 460,855, Apr. 5, 1974, Pat. No. 4,048,428, which is a continuation of Ser. No. 114,692, Feb. 11, 1971, Pat. No. 3,821,182, which is a division of Ser. No. 590,107, Jun. 2, 1966, abandoned, which is a division of Ser. No. 157,194, Dec. 5, 1961, abandoned. This application Mar. 1, 1976, Ser. No. 662,660

The portion of the term of this patent subsequent to Jun. 28, 1991, has been disclaimed.

Int. Cl.² B32B *27/32*

U.S. Cl. 428—336 **8 Claims**



1. A film combination comprising two outer plies of thermoplastic polymer and disposed therebetween a thin biaxially oriented crystalline copolymer film made of a thermoplastic copolymer of vinylidene chloride and at least one copolymerizable monomer, wherein the vinylidene chloride is at least 50% of the material in the copolymer, said film combination having been made by extruding said copolymer as a melt between melts of outer plies of thermoplastic polymer through a die, cooling and stretching to orient so as to produce a copolymer film between the outer plies, said copolymer film being substantially devoid of pinholes and scratches and having low oxygen permeability.

4,112,182

PLASTIC MOLDINGS AND SHEETING

Gordon C. Newland, and James G. Pacifici, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1977, Ser. No. 784,395

Int. Cl.² B32B *27/30, 27/16*

U.S. Cl. 428—336 **6 Claims**

1. A formed cellulose ester article having surface portions coated with a radiation-curable composition comprising ethylenically unsaturated cellulose ester wherein the average degree of saturation and unsaturation per anhydrogluclose unit is from 0.1 to less than 3.0 of each of the saturated and unsaturated moieties, in admixture with at least one α,β-unsaturated carboxylate comonomer, the ratio in parts by weight of unsaturated cellulose ester to unsaturated comonomer being from 1/20 to 20/1.

4,112,183

FLEXIBLE RESIN RICH EPOXIDE-MICA WINDING TAPE INSULATION CONTAINING ORGANO-TIN CATALYSTS

James D.B. Smith, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

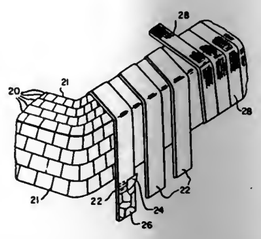
Filed Mar. 30, 1977, Ser. No. 782,696

Int. Cl.² H02K *1/04, 3/30*; B32B *27/38, 19/00*

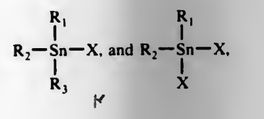
U.S. Cl. 428—363 **17 Claims**

1. A method of making a highly flexible, mica insulation winding tape sheet material comprising the steps of:

(a) mixing epoxide resin selected from the group consisting of semi-solid epoxide, a mixture of solid epoxide and liquid epoxide and a mixture of semi-solid epoxide and liquid epoxide, with solvent for the epoxide resin, where the weight ratio of total epoxide:total solvent is from about 85:15 to 30:70; and then



(b) mixing the epoxide resin-solvent mixture, with from 0.01 to 5.0 parts per 100 parts epoxide resin of an organo-tin compound, having a structural formula selected from the group consisting of:



where R_1, R_2 and R_3 are organic groups and each X is selected from the group consisting of halide, hydroxide, acetate, butyrate, propionate, and dimethyl phosphate, to form a homogeneous admixture; and then

(c) applying the homogeneous epoxide resin-solvent-organo-tin admixture to a flexible sheet material comprising mica, so that organo-tin compound contacts mica causing the organo-tin compound to act as a latent catalyst; and then

(d) removing at least 95 weight percent of the solvent from the epoxide resin-solvent-organo-tin catalyst admixture in the sheet material without any substantial curing of the epoxide resin or reaction of the organo-tin compound, forming a flexible sheet with substantially unreacted epoxide resin and causing an increased amount of substantially unreacted organo-tin compound to contact mica in the sheet material; wherein the amount of organo-tin compound added is effective to advance the epoxide resin in the sheet material from the substantially unreacted state to a cured thermoset state upon heating over a resin-catalyst temperature of 120° C.

4,112,184

MAGNETIC RECORDING MEDIUM AND METHOD OF PREPARING

Shinji Umeki; Tatsuo Uebori, and Minoru Motegi, all of Tokyo, Japan, assignors to TDK Electronic Company, Tokyo, Japan

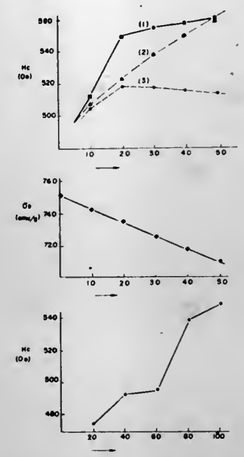
Continuation of Ser. No. 609,663, Sep. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 444,651, Feb. 21, 1974, abandoned. This application Oct. 7, 1976, Ser. No. 730,581

Int. Cl. H01f *10/02*

U.S. Cl. 428—403 **6 Claims**

1. A method of preparing a magnetic recording medium, which comprises:

depositing magnetic particles of ferromagnetic, acicular iron oxide upon whose surface is absorbed from 0.5 to 10 wt.



% cobalt hydroxide in a non-ferrite form based on said iron oxide, on a supporting substrate.

4,112,185

MODIFIED MINERAL SUPPORTS

François Meiller, Palaiseau, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Aug. 25, 1975, Ser. No. 607,094

Claims priority, application France, Aug. 30, 1974, 74 29702

Int. Cl.² B32B *5/16, 9/00*

U.S. Cl. 428—403 **7 Claims**

1. Porous mineral support materials comprising modified mineral carriers having a grain size range of from 5 μ to 5 mm, a specific surface area of from 2 to 1000 sq.m/g, a pore diameter of from 50 to 10,000 A, and a pore volume of 0.5 to 1.3 ml/g said carrier being in the form of particles coated with a cross-linked polymer formed of the reaction of at least one polyamine on at least one epoxidic compound and present in an amount within the range of 1–60% by weight of the carrier.

4,112,186

ULTRAVIOLET ABSORBING COATINGS

Roger W. Lange, and Harold G. Sowman, both of Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 534,371, Dec. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 455,212, Mar. 27, 1974, abandoned. This application Jan. 28, 1977, Ser. No. 763,603

Int. Cl.² B32B *9/04*

U.S. Cl. 428—411 **2 Claims**

1. A visually transparent composite of ultraviolet degradable polymeric sheet material and on at least one surface ultraviolet light absorptive insoluble complex of titanate ester and soluble stannous non-organic salt.

4,112,187

MAGNETIC RECORDING MEDIUM SUPPORTED ON AROMATIC POLYAMIDE

Toshiyuki Asakura; Masaaki Itoga, both of Otsu; Takeshi Hayakawa, Kyoto, and Masamitsu Tanimura, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

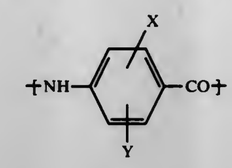
Continuation-in-part of Ser. No. 536,256, Dec. 24, 1974, Pat. No. 3,966,686. This application Apr. 19, 1976, Ser. No. 678,365

Claims priority, application Japan, Dec. 28, 1973, 49-1682

Int. Cl.² H01F *10/04*; G11B *5/78*

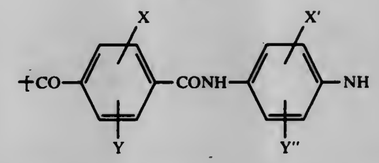
U.S. Cl. 428—474 **19 Claims**

1. Magnetic recording medium comprising a layer of magnetizable material and a flexible support material prepared from a high molecular weight p-oriented polycarbonamide consisting of at least about 70 mole % of recurring units of a formula selected from the group consisting of:



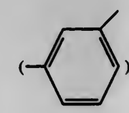
(I)

and



(II)

and mixtures thereof, wherein: X, Y, X' and Y' are monovalent radicals attached to a nuclear carbon and are selected from the group consisting of hydrogen, halogen, nitro and alkyl and alkoxy having from 1 to 3 carbon atoms, 0–30 mole % of other copolymeric units whenever present constituting such recurring units as m-phenylene



urethane (—NHCOO—), urea (—NHCONH—), ester (—COO—), hydrazide (—CONHNH—), ether (—O—), and aliphatic hydrocarbon groups (C_1–C_3),

said flexible material having a tensile modulus in excess of 800 kg/mm² and up to 20,000 kg/mm² at least in one direction, a water adsorption of less than 2.0 wt. % at 25° C and 75% relative humidity and a hydroscopic linear expansion coefficient of less than 1.0×10^{-5} mm/mm/% at least in one direction.

4,112,188

RESOLE RESIN BINDER COMPOSITION

Ronald H. Dahms, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 634,572, Nov. 24, 1975, Pat. No. 4,045,398. This application Feb. 14, 1977, Ser. No. 768,304

Int. Cl.² B32B *17/04, 27/42*

U.S. Cl. 428—436 **10 Claims**

1. A laminate comprising, a substrate sheet structure of fibers selected from the group consisting of cellulosic, asbestos, glass, synthetic and cellulosic modified with a synthetic, said substrate being impregnated and bonded with about 15 to 65 weight percent of a cured resole resin solids containing about 1 to 30 parts by weight of a boron compound accelerator based on 100 parts of said resole resin solids, the remainder, up to 100% by weight of said laminate being substrate, said boron compound being selected from the group consisting of boric acid, diammonium tetraborate, diammonium octaborate, diammonium pentaborate and mixtures thereof.

4,112,189

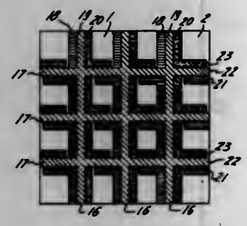
PROCESS FOR MULTI-COLOR VALLEY PRINTING AND EMBOSSING OF FLOORING MATERIAL AND THE LIKE AND FLOORING MATERIAL MADE BY SAID PROCESS

Bruce J. Terwilliger, Newburgh, N.Y., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 513,574, Oct. 10, 1974, abandoned. This application Feb. 17, 1976, Ser. No. 658,230

Int. Cl.² D06C *23/04*

U.S. Cl. 428—443 **12 Claims**



1. A multicolor valley printed and embossed flooring material made according to the process comprising the steps of:

applying a first color ink to the surface of a first rotatable pattern roll;

transferring said first color ink from the first pattern roll to discrete surface areas of a single rotatable embossing and printing roll having a raised surface contour representing a pattern to be embossed and valley printed;

applying a second color ink to the surface of a second rotatable pattern roll;

transferring said second color ink from the second pattern roll to discrete surface areas of the embossing and printing roll not containing the first color ink and as well as other discrete surface areas thereof containing the first color ink;

advancing a single sheet of flooring material once through a nip defined by the embossing and printing roll and a rotatable backing roll; and

embossing the flooring material in the nip under the pressure of the embossing and printing roll, and simultaneously valley printing said flooring material with a first color in the areas thereof contacted by the surface of the embossing and printing roll containing the first color ink, with a second color in the areas thereof contacted by the surface of the embossing, and printing roll containing the second color ink, and with a third color derived from blending the first and second color inks under the pressure of the embossing and printing roll in the areas of the flooring material contacted by the surface of the embossing and printing roll containing the overlapping layers of first and second color inks.

4,112,190

METALLIZED PLASTIC MOLDING

Mitsuo Sato; Norio Miyagawa, both of Nagoya, and Juichi Kobayashi, Aichi, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1977, Ser. No. 807,149

Claims priority, application Japan, Jun. 21, 1976, 51-73628

Int. Cl.² B32B *15/08, 27/00*

U.S. Cl. 428—457 **5 Claims**

1. A metallized plastic molding, which comprises: (a) a plastic substrate, (b) a primer layer having a gel percentage of at least 80% and a swelling degree of not more than 20%, which is formed by curing a deposited primer forming material which comprises a mixture of a compound (A) having a molecular weight of at least 150 and less than 450 and containing at least two polymerizable unsaturated groups in one molecule and a compound (B) having a molecular weight of 450–2000 and containing at least two polymerizable unsaturated groups in one molecule in a weight ratio (A)/(B) of 1/9-9/1, on a surface of said substrate and (C) a metallic film on said primer layer.

4,112,191

DETOXIFICATION OF LEAD PAINT

William S. Anderson, Sunnyvale, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 31, 1977, Ser. No. 802,110

Int. Cl.² C07C *155/06;* B05D *3/10;* B32B *9/00*

U.S. Cl. 428—497 **8 Claims**

3. A composition of matter consisting of a film forming binder having dispersed therein a material selected from the group consisting of the alkali metal and alkaline earth metal salts of dithiocarbamates of multifunctional amines, said binder being non-toxic and capable of releasing said material in a mammalian stomach after ingestion and said material being:

(a) non-toxic;

(b) stable under the ambient conditions of temperature, humidity and light; and

(c) capable of forming a lead precipitate which is non-toxic, substantially insoluble in body fluids and capable of passing through the stomach and intestinal tract of a mammalian subject without measurable absorption in the bloodstream.

7. Tetrasodium pentaerythrityl tetrakis (dithiocarbamate).

8. Dizinc pentaerythrityl tetrakis (dithiocarbamate).

4,112,192

METHOD OF FINISHING COATED PAPER

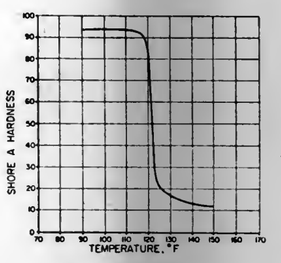
Jay H. Vreeland, Yarmouth, Me., assignor to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 476,467, Jun. 5, 1974, abandoned, which is a division of Ser. No. 331,815, Feb. 12, 1973, Pat. No. 3,873,345. This application Sep. 11, 1975, Ser. No. 612,440

The portion of the term of this patent subsequent to Mar. 25, 1992, has been disclaimed.

Int. Cl.² D21H *1/28;* C08F *33/08*

U.S. Cl. 428—511 **6 Claims**



1. A dried, coated paper web for finishing by calender means to produce high-gloss coated paper which comprises a paper web coated on at least one side with a paper coating pigment and sufficient binder to bind the pigment when the binder has been coalesced, said binder consisting essentially of a hard thermoplastic polymer which is substantially uncoalesced and thereby the pigment unbonded and moldable.

4,112,193

ELECTRICAL INSULATORS

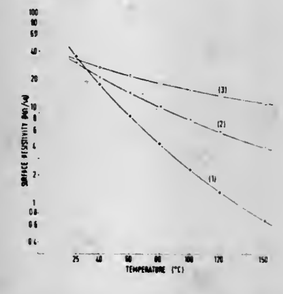
Noboru Higuchi, Nagoya; Takayuki Ogasawara, Konan, and Shoji Seike, Nagoya, all of Japan, assignors to Nippon Gaishi Kabushiki Kaishi, Nagoya, Japan

Filed Aug. 3, 1976, Ser. No. 711,165

Claims priority, application United Kingdom, Nov. 11, 1975, 46558/75

Int. Cl.² H01B *3/10, 3/12*

U.S. Cl. 428—539 **3 Claims**



1. An electrical insulator coated on its entire surface with a semi-conducting tin oxide system glaze comprising a tin oxide-antimony oxide mixture, wherein the glaze layer contains 0.05 to 10 percent by weight of at least one metal oxide selected from the group consisting of niobium oxide, tantalum oxide, titanium oxide, zirconium oxide, yttrium oxide and tungsten oxide.

4,112,194

HEXAGONAL HAFNIUM, ZIRCONIUM PHOSPHATE LUMINESCENT MATERIAL, METHOD OF PREPARATION, AND X-RAY INTENSIFYING SCREEN CONTAINING THE SAME

Charles Frederic Chenot, Towanda; James Evan Mathers, Ulster, and Francis Nathan Shaffer, Towanda, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 8, 1976, Ser. No. 739,577

Int. Cl.² C09K *11/42*

U.S. Cl. 428—539 **8 Claims**

1. A luminescent material with hexagonal crystal structure consisting essentially of large single crystalline particles of $(Hf_{1-x}Zr_x)_{3-y}A_{4y}(PO_4)_4$; where x is within the range of about 0.005 to 0.5, A is at least one alkali metal selected from the group consisting of lithium, sodium and potassium and y is within the range of 0.4 to 2.0.

4,112,195

LAMINABLE CONVERTIBLE MOLDING FOR HAND RAILS AND THE LIKE

Ronald W. Pott, 730 Crescent Lane, Lakewood, Colo. 80215, and William G. Grimm, 29974 Paintbrush Dr., Evergreen, Colo. 80439

Filed Aug. 30, 1976, Ser. No. 718,963

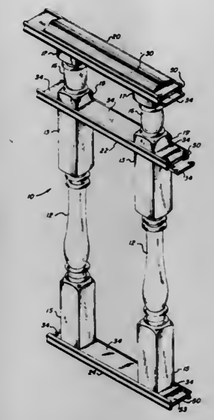
Int. Cl.² B32B *3/00, 9/04*

U.S. Cl. 428—542 **12 Claims**

1. In a composite molding,

a plurality of interchangeable elongated body members of selected geometric shapes and scale dimensions laminated together, each member including a distinctive ornamental lateral edge, and interfitting means on both its upper and lower surfaces for mating engagement between adjacent body members defined by complementary laterally spaced pairs of ribs disposed in mutually confronting relation to one another with channels between respective pairs of said ribs, wherein said ribs on one body member are received within the channel in an adjacent body member to inhibit lateral movement of one body member in relation to the other,

an elongated cap member retained within and partially concealed by said interfitting means of one of said body members; and



fastening means for securing said elongated body members and elongated cap in laminar relation to one another whereby to form an assembly having the external appearance and characteristics of an ornamental and functional unitary molding.

4,112,196

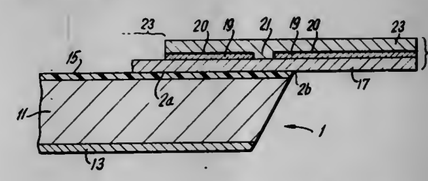
BEAM LEAD ARRANGEMENT FOR MICROELECTRONIC DEVICES

Thomas R. Selig, Kingston; Tugrul Yasar, Woodstock, and Derek A. Coulton, Poughkeepsie, all of N.Y., assignors to National Micronetics, Inc., Hurley, N.Y.

Filed Jan. 24, 1977, Ser. No. 762,005

Int. Cl.² H01C *17/28;* H01L *23/48, 23/50, 23/54*

U.S. Cl. 428—594 **5 Claims**



1. In combination in a microelectronic device, a chip and at least one beam lead affixed to said chip, said beam lead being characterized by an axial direction and a transverse direction substantially orthogonal to said axial direction, said beam lead comprising a laminate including an adhesive layer affixed to said chip, an intermediate barrier layer, and a beam layer disposed on the side of said barrier layer opposite to said adhesive layer, said beam lead having an axial extent in its said axial direction partly overlapping said chip and partly extending beyond the periphery of said chip, wherein said barrier layer includes an intermediate discontinuity therein extending in said transverse direction, said barrier layer including first and second portions spaced in said axial direction by said intermediate discontinuity, whereby said transverse discontinuity increases the peel resistance of said beam lead by permitting beam lead bending about said discontinuity rather than lead-chip separation.

4. In combination with a microelectronic device, a chip and at least one beam lead affixed to said chip, said beam lead comprising a laminate including an adhesive layer affixed to said chip, an intermediate barrier layer, and a beam layer dis-

posed on a side of said barrier layer opposite to said adhesive layer, said beam lead having an axial extent partly overlapping said chip and partly extending beyond the periphery of said chip, wherein said adhesive layer includes an intermediate discontinuity therein extending in a direction transverse to the axial extent of said beam lead, wherein said adhesive layer includes first and second portions spaced in said axial direction by an intermediate discontinuity disposed in said transverse direction, whereby said transverse discontinuity increases the peel resistance of said beam lead by permitting beam lead bending about said discontinuity rather than lead-chip separation.

4,112,197

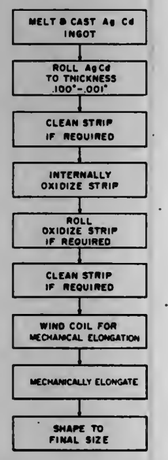
MANUFACTURE OF IMPROVED ELECTRICAL CONTACT MATERIALS

W. Peter Metz, 1309 Summit La., Mountainside, N.J. 07092

Continuation-in-part of Ser. No. 695,971, Jun. 14, 1976, abandoned. This application Feb. 7, 1977, Ser. No. 766,077

Int. Cl.² B21C *23/30*

U.S. Cl. 428—629 **37 Claims**



1. A method for manufacturing electrical contact materials comprising, providing a metallic alloy strip composed of at least a first metal having good electrical conductive properties and a second metal more readily oxidizable than said first metal, internally oxidizing said strip to obtain a strip composed of said first metal and the oxide of said second metal, the center of said strip being at least partially depleted of said second metal during internal oxidation and being substantially devoid of metal oxide to provide a depletion zone composed substantially of said first material and adjacent zones of metal oxide, said depletion zone being more readily deformable than the adjacent zones of metal oxide, winding said strip to form a wrapped billet, and mechanically elongating said wrapped billet to provide a ductile metal-metal oxide product having depletion zones alternating with zones of metal oxide, which depletion zones are disposed symmetrically about the longitudinal axis of said wrapped billet so that said product will deform symmetrically about said axis when headed in the direction normal to said axis.

20. An improved electrical contact material comprising a mechanically elongated billet composed of at least a first metal comprising silver and the oxide of a second metal, said billet including a plurality of alternating first and second zones, said zones extending the entire length of said billet and being substantially symmetrical and coaxial about the longitudinal axis of said billet, said first zones being substantially devoid of metal oxide and said second zones being substantially composed of metal-metal oxide, and said first zones are more readily deformable than said second zones so that said billet will deform symmetrically about its longitudinal axis when headed in the direction normal to said axis.

4,112,198

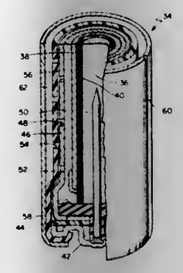
METAL-AIR DEPOLARIZED CELL WITH RESTRICTED WATER VAPOR ACCESS

Franciszek J. Przybyla, and Michael J. Smith, both of Mississauga, Canada, assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Sep. 28, 1977, Ser. No. 837,478

Int. Cl.² H01M *8/00*

U.S. Cl. 429—27 **9 Claims**



1. In a gas-depolarizable galvanic cell having an anode, a gas-depolarizable cathode, an electrolyte carrying separator therebetween, and a container for said cell having negative and positive terminals electrically insulated from each other and electrically associated with said anode and cathode, respectively, and wherein there is at least one opening in said container for gas communication from the exterior of the cell to said gas-depolarizable cathode, the improvement comprising a gas and moisture impermeable barrier interposed in the path of said gas communication to said cathode, said barrier having at least one opening therein and being interposed in said gas communication path in such a manner that the gas communication past said barrier is at a lower gas flow rate than the otherwise unrestricted gas flow rate permissible through said at least one opening in said container.

4,112,199

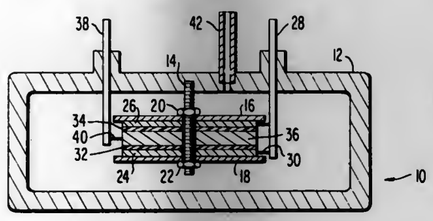
LANTHANUM NICKEL HYDRIDE-HYDROGEN/METAL OXIDE CELL

James D. Dunlop, Gaithersburg, and Joseph Stockel, Rockville, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Continuation of Ser. No. 645,504, Dec. 30, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 782,158

Int. Cl.² H01M *4/00*

U.S. Cl. 429—29 **8 Claims**



1. In a rechargeable metal oxide power cell of the type comprising a sealed container, said container including therein positive electrode means having a reoxidizable oxidizing agent therein, an electrolyte, and negative electrode means having catalyst capable of dissociating molecular hydrogen to monatomic hydrogen and a binder disposed thereon wherein the improvement comprises:

said catalyst of said negative electrode means comprising an unalloyed composition of $LaNi_5$ capable of absorbing or desorbing hydrogen within the negative electrode structure in response to changes in pressure in said cell, and said positive electrode means and said negative electrode means are plates stacked in said sealed container and separated from each other by insulating means.

4,112,200

GALVANIC CELL HAVING A PRIMARY RADIAL SEAL, AND A SECONDARY RESEALABLE VENT CLOSURE

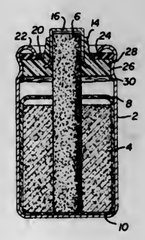
Henry Heinz, Jr., Berea, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,592

The portion of the term of this patent subsequent to Apr. 26, 1994, has been disclaimed.

Int. Cl.² H01M *2/12*

U.S. Cl. 429—54 **15 Claims**



1. In a galvanic cell comprising a container having an open end and an inner disposed anode, a cathode within said container, a separator disposed between said anode and said cathode, an electrolyte disposed within said container, a cover for said container, and wherein an annular segment of the upper wall of the container and the cover is radially sealed with the rim of the container which extends beyond the radial seal turned over the top surface of the cover; the improvement wherein a resiliently compressible elastomeric sponge gasket is compressed between the top surface of the cover and the rim of the container which is turned over the cover.

4,112,201

POWER SOURCE UNIT

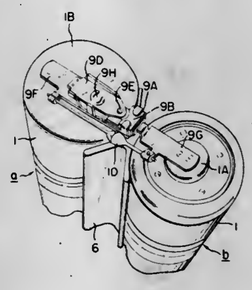
Kenichi Mabuchi, and Kogiro Komatsu, both of Tokyo, Japan, assignors to Mabuchi Motor Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1977, Ser. No. 787,088

Claims priority, application Japan, Apr. 19, 1976, 51-44227

Int. Cl.² H01M *10/50*

U.S. Cl. 429—62 **9 Claims**



1. A power source unit comprising battery rows consisting of a plurality of rapidly chargeable and dischargeable batteries having low internal resistance connected in series, disposed in parallel rows with separators in between, and packed into a unit, characterized in that the power source unit incorporates a thermal responsive device for stopping an electric current flowing in the batteries by means of changes in the state of the thermal responsive device when temperature in the batteries in the power source unit is increased during charging of the batteries, and for restricting the current to a predetermined low level of current by means of changes in the state of the thermal responsive device when temperature in the batteries in the power source unit is increased during discharging of the batteries.

4,112,202

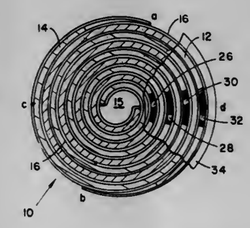
SPIRALLY WOUND ELECTROCHEMICAL CELL AND METHOD AND APPARATUS FOR ITS PRODUCTION

Leonard F. Hug, Wheatridge; Donald H. McClelland, Littleton, and Toshio Uba, Denver, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 733,674, Oct. 18, 1976, Pat. No. 4,064,725. This application Jun. 27, 1977, Ser. No. 810,336

Int. Cl.² H01M *6/10*

U.S. Cl. 429—94 **9 Claims**



1. A spirally wound element of nominal design outside diameter for use in an electrochemical cell comprising:

positive and negative flexible electrode plates interleaved with compressible separator layers, having a combined uncompressed nominal design thickness, the unwound and uncompressed thickness of the plates and separators combined being greater than one but less than about three percent away from the predetermined nominal design thickness;

the outside diameter of the spirally wound element, in which the separator layers are compressed to a reduced thickness, characterized by having a predetermined dimension within plus or minus one percent of the nominal design outside diameter.

4,112,203

ALKALI METAL/SULFUR BATTERY

Joginder N. Anand, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

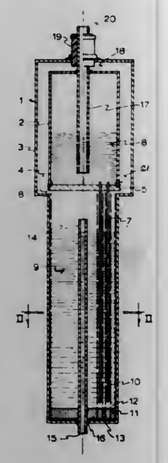
Continuation-in-part of Ser. No. 702,649, Jul. 6, 1976, abandoned. This application Apr. 21, 1977, Ser. No. 789,610

Int. Cl.² H01M *10/39*

U.S. Cl. 429—104 **11 Claims**

1. An alkali metal/sulfur battery cell in which the electrolyte/separator is in the form of a plurality of hollow fibers of such character as to be damaged if a catholyte consisting essentially of an alkali metal M and sulfur in an M/S atomic ratio within the range of from about 1/100 to about ½ is allowed to solidify in the locus occupied by the catholyte during operation of said cell, said cell comprising means for emptying said locus of said molten catholyte and transferring it to a

different location wherein solidification of said catholyte will not damage the fibers, said cell being adapted to alternately be



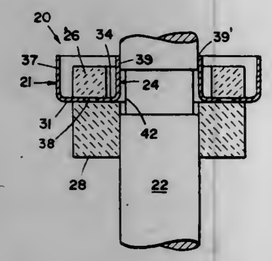
charged and discharged without utilization of said transfer means during such operation.

4,112,204

BATTERY TERMINAL SEAL STRUCTURE

Russell C. McRae, Los Altos, Calif., assignor to ILC Technology, Inc., Sunnyvale, Calif.

Filed Feb. 22, 1977, Ser. No. 770,300
Int. Cl.² H01M 2/30
U.S. Cl. 429—181 **8 Claims**



1. In a high electrical energy low voltage battery comprising a sealed metallic can containing positive and negative electrodes and an electrical terminal hermetically sealed through said can and electrically connected to one of said electrodes the improvement wherein said electrical terminal comprises:

(a) a first metallic sealing member having a first portion defining an annulus of given internal diameter, given external diameter and opposite substantially parallel surfaces and a second portion defining a right circular cylinder at the external periphery of said annulus defined by said first portion of said first metallic sealing member;

(b) a second metallic sealing member having a first portion defining an annulus with opposite parallel surfaces having a given internal diameter and a given external diameter smaller than said given internal diameter of said annulus defined by said first portion of said first metallic sealing member and a second portion defining a right circular cylinder at the internal periphery thereof;

(c) a first annular ceramic member having an internal diameter smaller than said given external diameter and larger than said given internal diameter of said annulus defined by said first portion of said second metallic sealing member and an external diameter larger than said given internal diameter of said annulus defined by said first portion of said first metallic sealing member;

(d) a second annular ceramic member having an internal diameter smaller than said given internal and external diameters of said annulus defined by said first portion of said second metallic sealing member and an external diameter larger than said given internal diameter of said annulus defined by said first portion of said first metallic sealing member;

(e) ceramic of metal seals bonding each of said opposite parallel surfaces of said annulus defined by said first portion of said first metallic sealing member to a different one of said first and second annular ceramic members;

(f) ceramic to metal seals bonding each of said opposite parallel surfaces of said annulus defined by said first portion of said second metallic sealing member to a different one of said first and second annular ceramic members with said first annular ceramic member surrounding said right circular cylinder defined at the internal periphery of said second metallic sealing member in radially spaced relation thereto and with said annulus defined by said first portion of said second metallic sealing member in coaxial relation to said annulus defined by said first portion of said first metallic sealing member whereby said external and internal diameters respectively thereof are spaced from each other between said first and second annular ceramic members; and

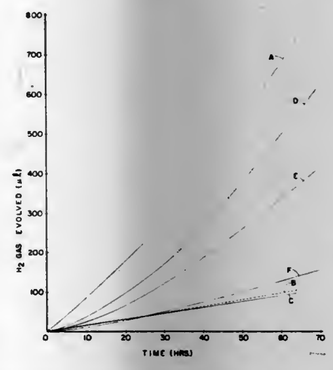
(g) a solid metallic rod received with said right circular cylinder defined by said second portion of said second metallic sealing member and hermetically bonded thereto, said internal diameter of said second annular ceramic member being dimensioned to receive said solid metallic rod with a small tolerance.

4,112,205

BATTERY ELECTROLYTE CORROSION INHIBITOR

John C. Charkoudian, Cambridge, and Arnold Hoffman, Brookline, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1974, Ser. No. 536,432
Int. Cl.² H01M 6/04
U.S. Cl. 429—199 **11 Claims**



1. A galvanic cell comprising a zinc anode, a cathode and an electrolyte, wherein the electrolyte contains as a corrosion inhibitor a double salt of the formula:

$$M\ Hg_x Cl_y$$

wherein M is a quaternary cation, x is 1, 2 or 3, and y is 3 to 8.

4,112,206

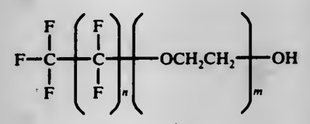
POLYVINYL CHLORIDE HAVING IMPROVED ANTISTATIC PROPERTIES

James A. Wingrave, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jul. 5, 1977, Ser. No. 812,555
Int. Cl.² C08F 6/00
U.S. Cl. 526—3 **5 Claims**

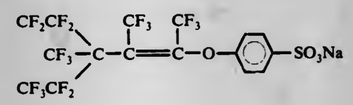
1. An improvement in the method of providing antistatic properties in polyvinyl chloride by chemical treatment the improvement comprising adding to the polyvinyl chloride an effective amount, in the range of about 0.0002 to about 0.02 weight percent based on said polyvinyl chloride, of a fluorocarbon surfactant selected from the group consisting of:

(a) fluorinated alkyl polyoxyethylene ethanols represented by the formula



wherein n is in the range of 8 to 18 and m is in the range of 1 to 5, and

(b) a compound represented by the formula



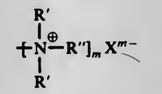
4,112,207

RADIATION-CURABLE POLYMERS BEARING QUATERNARY NITROGEN GROUPS

Giffin D. Jones, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 29, 1976, Ser. No. 737,240
Int. Cl.² C08F 8/32, 8/30
U.S. Cl. 526—17 **16 Claims**

1. A radiation-curable polymer which is soluble in water or in dilute aqueous alcohol solutions and which comprises a base polymer (a) which base polymer has a weight average molecular weight of from about 5,000 to about 50,000 and comprises an olefin monomer addition polymerized with an active halogen monomer wherein the active halogen monomer is an addition polymerizable ethylenically unsaturated monomer which, after polymerization, provides a pendant halomethyl group capable of being aminated by a tertiary amine and (b) which base polymer has pendantly bonded thereto at least about 1.0 milliequivalent of a polymerizable or non-polymerizable quaternary nitrogen moiety per gram of said radiation-curable polymer, with the proviso that said base polymer has pendantly bonded thereto, per gram of said radiation-curable polymer, from about 0.4 to about 3 milliequivalents of a polymerizable quaternary nitrogen in the form of a moiety of the formula


(III)

wherein each R′ is individually a lower alkyl radical or a lower hydroxyalkyl radical or two R′ radicals collectively are a divalent radical that is joined with the nitrogen atom to form a 5 or 6 membered heterocyclic ring which may contain an atom of oxygen non-adjacent to the nitrogen atom; each R″ is individually a lower alkyl radical, a lower hydroxyalkyl radical or an unsaturated organic radical of the formula



wherein R is hydrogen or methyl and Q is a divalent aliphatic radical; X is a neutralizing inorganic anion, a neutralizing saturated organic anion, or a neutralizing organic anion containing acryloyl unsaturation; and m is 1 or 2; with the proviso that either R″ is said unsaturated organic radical or X is said neutralizing organic anion containing acryloyl unsaturation.

4,112,208

PEROXIDE TREATED SUBSTANTIALLY AMORPHOUS POLYOLEFINS USEFUL AS PRESSURE-SENSITIVE ADHESIVES

Richard L. McConnell, Kingsport, and Doyle A. Weemes, Greeneville, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1977, Ser. No. 813,375
Int. Cl.² C08F 8/06
U.S. Cl. 526—57 **12 Claims**

1. A process for preparing tacky modified amorphous polyolefin compositions useful as pressure sensitive adhesives which comprises reacting substantially amorphous polyolefin selected from the group consisting of substantially amorphous homopolymers of 1-olefins containing 3 to 5 carbon atoms, substantially amorphous copolymers prepared from either ethylene and 1-olefins containing 3 to 5 carbon atoms or propylene and 1-butene, and substantially amorphous propylene or 1-butene/higher 1-olefin copolymers containing less than 40 mole percent of at least one higher 1-olefin of the group consisting essentially of 1-hexene, 1-heptene, 1-octene, 1-nonene, and 1-decene having a melt viscosity of about 100 to 200,000 at 190° C. with about 2 to 25 weight percent of at least one peroxide selected from the group consisting of ditertiarybutyl peroxide, 2,5-dimethyl-2,5-di(tertiarybutylperoxy)hexane, dicumyl peroxide, and cumene hydroperoxide at a temperature of 150° to 250° C. to provide a low viscosity, permanently tacky hot-melt pressure sensitive adhesive.

4,112,209

PROCESS FOR MAKING POLYSTYRENE

Jeffrey A. Gunsher, Midland; Joseph L. Garner, Sanford, both of Mich., and Conrad O. M. Miller, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 715,585, Aug. 18, 1976, abandoned. This application Jun. 30, 1977, Ser. No. 811,511
Int. Cl.² C08F 4/14
U.S. Cl. 526—65 **12 Claims**

1. A continuous process for making a polystyrene having a $\overline{M}_w$ between about 200 and about 1,000 and a $\overline{M}_w/\overline{M}_n$ ratio of less than about 8 comprising contacting, in 2 or more stages, a solution of styrene monomer in a first inert organic diluent with a cation generator, under substantially isothermal conditions in each stage, at a temperature between about 90° C and about 180° C in a manner such that said styrene monomer, prior to the final stage, is always present in greater than a stoichiometric amount with respect to said cation generator.

4,112,210

POLYMERIZATION PROCESS

Yves deZarauz, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 659,905, Feb. 20, 1976, abandoned. This application Apr. 15, 1977, Ser. No. 788,031
Claims priority, application France, Feb. 27, 1975, 75 06239
Int. Cl.² C08F 4/46, 4/56
U.S. Cl. 526—187 **10 Claims**

1. A process of producing homopolymers of conjugated dienes or copolymers of conjugated dienes with other conju-

gated dienes or with vinyl aromatic compounds to form elastomeric products which comprises reacting the monomers at a temperature between 50° C. and 120° C. in the presence of a catalytic system formed of the reaction product of

(a) an organometallic compound of a metal of Group IIIA of the Mendeleev periodic table of elements having the following formula: $Me^2(Me^3R^1R^2R^3R^4)_2$ in which Me^2 represents an alkaline earth metal, Me^3 represents aluminum or boron, R^1, R^2, and R^3 represent an alkyl or aralkyl radical and R^4 represents an alkyl or aralkyl radical or a radical XB in which X represents an oxygen, sulfur or nitrogen atom and B represents an alkyl or aralkyl radical; with

(b) at least one electron-donor compound containing at least one hetero-atom and formed of the reaction product of a protic polar compound with an alkali metal or with an alkaline earth metal.

4,112,211

PROCESS FOR THE MANUFACTURE OF HOMO- AND COPOLYMERS OF TETRAFLUOROETHYLENE EMPLOYING AS THE REDUCING AGENT IN THE REDOX CATALYST AN AYODICARBOXYLIC ACID, SALT OF AYOCARBOXYLIC ACID, AZODICARBONAMIDE, OR MIXTURES THEREOF

Jürgen Kuhls, Burghausen, Salzach; Alfred Steininger, and Herbert Fitz, both of Burgkirchen, Alz, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 20, 1976, Ser. No. 688,429

Claims priority, application Fed. Rep. of Germany, May 28, 1975, 2523570

Int. Cl.² C08F *4/04, 4/40, 14/18, 114/18*

U.S. Cl. 526—219 **4 Claims**

1. In the process for homopolymerizing tetrafluoroethylene or copolymerizing tetrafluoroethylene with other fluoroolefins by the suspension or emulsion process at the usual pressures and temperatures, in the presence of a redox catalyst system consisting of a known peroxidic oxidizing component and a reducing component, the improvement which comprises using as reducing component of the redox system a member selected from the group consisting of azodicarboxylic acid, a salt of azodicarboxylic acid, azodicarbonamide, and mixtures thereof.

4,112,212

ULTRA-HIGH MOLECULAR WEIGHT POLYMETHACRYLOYLOXYBENZOIC ACID AND METHOD OF PREPARATION

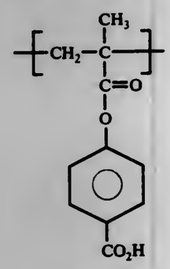
Eui Won Choe, Randolph, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 23, 1978, Ser. No. 871,282

Int. Cl.² C08F *20/06*

U.S. Cl. 526—234 **10 Claims**

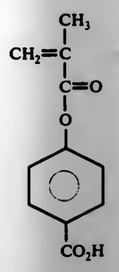
1. A high molecular weight polymer capable of forming an anisotropic melt having the recurring unit:



said polymer having an inherent viscosity of at least about 1.0 dl/g when measured as a 0.2% by weight solution in 2N NaOH at 25° C.

3. An improved process for preparing a high molecular weight polymer capable of forming an anisotropic melt comprising:

a. dissolving a monomer having the formula



in an aqueous reaction mixture of an alkali metal hydroxide and in the presence of a free radical initiator,

b. allowing sufficient time for polymerization to occur, and

c. recovering the polymer.

4,112,213

PRESSURE SENSITIVE ADHESIVE TAPES AND METHOD OF MAKING SAME

Harold Louis Waldman, Monsey, N.Y., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 32,756, Apr. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 399,837, Sep. 28, 1964, abandoned. This application Jun. 3, 1974, Ser. No. 475,707

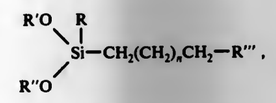
Int. Cl.² C08F *220/12*

U.S. Cl. 526—279 **13 Claims**

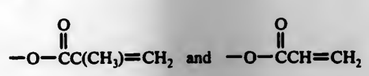
1. The method of making pressure sensitive adhesive coated articles having acrylate pressure sensitive adhesive coatings of improved internal strength comprising spreading a solution of acrylate pressure sensitive adhesive polymer in organic solvent on a substrate, the acrylate polymer containing randomly interpolymerized therein:

(a) at least 60% by weight of an alkyl acrylate monomer in which the alkyl group has 4 to 12 carbons; and

(b) a monomer containing an alkoxy silyl alkyl group, said alkoxy silyl alkyl group-containing monomer being present in an amount sufficient to provide from 0.01% to 1.0% by weight of the acrylate polymer of said alkoxy silyl alkyl groups, said alkoxy silyl alkyl group-containing monomer having the general formula



where R′ is one of the group consisting of CH_3— and CH_3CH_2—, R″ is one of the group consisting of CH_3— and CH_3CH_2—, R is one of the group consisting of CH_3—, CH_3CH_2—, CH_3O—, and CH_3CH_2O—, R‴ is one of the group consisting of



and *n* is a number selected from the group consisting of 0 and the integers 1 through 8, said alkoxy silyl alkyl group-containing monomer being interpolymerized in said polymer through its ethylenically unsaturated double bond; evaporating off the solvent and heating the coating of pressure sensitive adhesive to crosslink the same.

4,112,214

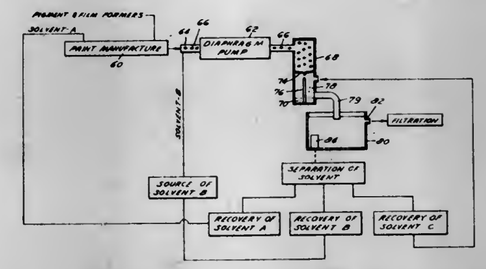
METHOD OF PREPARING POWDER PARTICLES BY CONTROL OF THE PARTICLE SHAPE

Ivan H. Tsou, Bloomfield Hills, Mich., assignor to Grow Chemical Corp., New York, N.Y.

Continuation of Ser. No. 557,538, Mar. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 460,109, Apr. 11, 1974, abandoned. This application Dec. 3, 1976, Ser. No. 747,221

Int. Cl.² C08F *6/12*

U.S. Cl. 528—494 **10 Claims**



1. A process for preparing powder paint particles having a desired particle shape comprising the steps of:

providing a pigmented solution having a film forming portion comprised of polyvinyl chloride and a first liquid portion in which the film forming portion is soluble;

forming droplets containing the film forming portion and the first liquid portion by contacting the solution with a second liquid which is at least partially miscible with the first liquid and in which the film forming portion is nonsoluble, the second liquid being saturated with the first liquid, and providing further that the second liquid is a solution mixture of water saturated with the first liquid;

diluting said droplets with a quantity of water in which the film forming portion precipitates as particles, whereby the first liquid is removed from the droplets by the water, the quantity by weight of the water employed being at least five times that of the first liquid; and

controlling the shape of the powdered particles by regulating the dilution of the first liquids from the droplets.

4,112,215

COPOLYMERIC RESIN BINDER POWDERS

Hanns Boessler, Darmstadt, and Hubert Rauch, Welterstadt, both of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Division of Ser. No. 603,608, Aug. 11, 1975, abandoned. This application Feb. 16, 1977, Ser. No. 769,290

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1975, 2512238

Int. Cl.² C08F *6/22*

U.S. Cl. 528—503 **2 Claims**

1. The method of making a copolymer powder having a residual monomer content therein of less than 0.05 percent by weight and having a primary particle size less than one micron in diameter, said powder being adaptable to rapid solution in an organic solvent to form a solution for coating a core comprising a therapeutically active ingredient, which method comprises spray drying an aqueous dispersion of copolymer particles at a temperature such that the temperature of the copolymer particles does not exceed the minimum film-forming temperature of the copolymer, said dispersion being prepared by the aqueous emulsion polymerization of monomers to give particles of a size less than one micron in diameter of a physiologically tolerable copolymer comprising

(a) 5 to 80 percent by weight of a water-soluble monomer selected from the group consisting of α,β-unsaturated mono- and dicarboxylic acids, acrylamide, methacrylamide, hydroxy lower alkyl esters of acrylic acid and methacrylic acid, monoalkyl- and dialkyl-amino lower alkyl esters of acrylic acid and methacrylic acid, quaternary ammonium salts of such amino lower alkyl acrylates and methacrylates, vinyl pyrrolidone, and vinyl imidazole; and

(b) 95 to 20 percent by weight of a monomer selected from the group consisting of styrene, vinyl acetate, and alkyl esters of acrylic acid and methacrylic acid having 1 to 10 carbon atoms in the alkyl portion thereof;

the relative amounts of monomers (a) and (b) in said copolymer being such that the minimum film-forming temperature thereof is greater than 80° C., said copolymer further being water-insoluble in one portion of the region between pH 1.5 and pH 8 and water-soluble or water-swellable in another portion of said region.

4,112,216

CONVERSION OF MOCIMYCIN TO ANTIBIOTIC X-5108 AND INTERMEDIATES

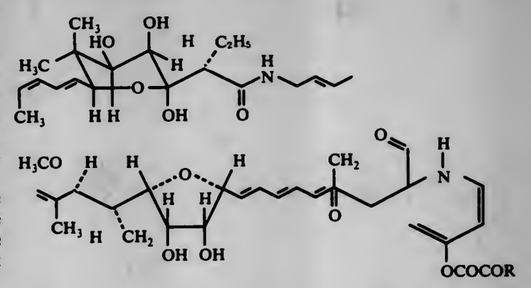
Hubert Maehr, Belleville, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 506,156, Sep. 16, 1974, abandoned. This application Dec. 10, 1976, Ser. No. 749,485

Int. Cl.² C07H *3/08*

U.S. Cl. 536—1 **6 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of lower alkoxy, lower alkyl, phenoxy, phenyl and lower alkyl phenyl and halo phenyl.

4,112,217

BIS-HYDRAZONES OF DAUNOMYCIN AND ADRIAMYCIN

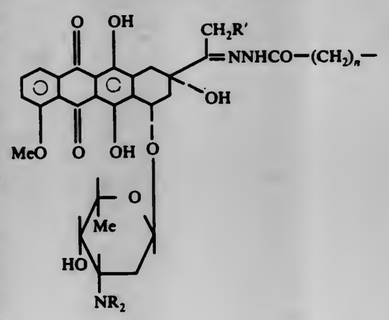
David W. Henry, Chapel Hill, N.C., and George L. Tong, Cupertino, Calif., assignors to SRI International, Menlo Park, Calif.

Filed Sep. 2, 1977, Ser. No. 830,091

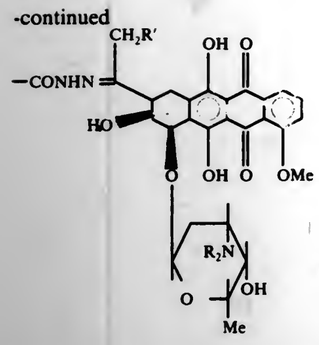
Int. Cl.² C07G *3/00*

U.S. Cl. 536—4 **11 Claims**

1. Compounds having the structure



-continued



wherein *n* is an integer having a value of from 0 through 8 and the radicals indicated by R and R′ each represent hydrogen except that in those instances in which *n* has a value of 2, the R groups, if not hydrogen, may be methyl radicals (with R′ remaining as hydrogen), and the R′ groups, if not hydrogen, may be hydroxy radicals (with R remaining as hydrogen), together with their pharmaceutically acceptable acid addition salts.

4,112,218

METHOD OF PREPARING STEROL GLYCOSIDES FROM PLANTS

Sho Inoue; Akira Sano, both of Uji, and Koji Kitaguchi, Joyo, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Dec. 2, 1976, Ser. No. 746,940
Claims priority, application Japan, Aug. 31, 1976, 51-104656
Int. Cl.² C07J *17/00*
U.S. Cl. 536—5 **7 Claims**

1. Process for the isolation of sterol glycosides from sterol glycoside-containing plant material which comprises heating said material in alkaline lower alkanol at temperatures up to the boiling point of said alkanol together with an alkali metal salt selected from the group consisting of carbonate, bicarbonate and nitrate, separating the solid which forms and removing the alkali metal salt and any other inorganics from said solid by washing with water.

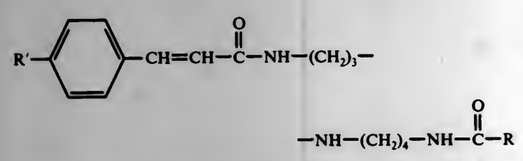
4,112,219

ACYL DERIVATIVES OF ANTIBIOTIC BM123γ

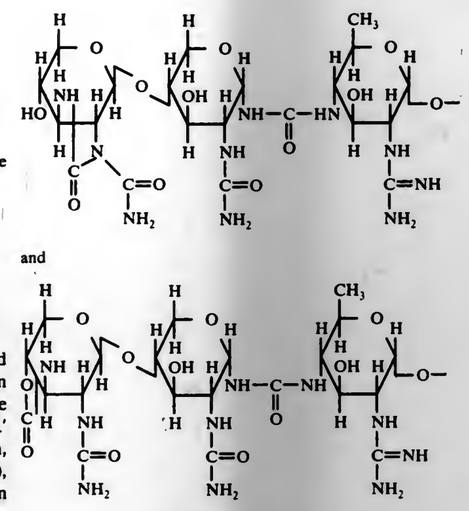
Joseph John Hlavka, Tuxedo Park, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 13, 1977, Ser. No. 815,340
Int. Cl.² C07H *13/12*
U.S. Cl. 536—17 **10 Claims**

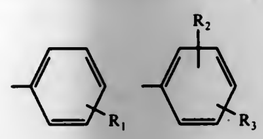
1. A compound selected from the group consisting of those of the formula:



wherein the configuration of the double bond is cis or trans; R′ is a moiety selected from the group consisting of those of the formulae:



and R is selected from the group consisting of hydrogen, lower alkyl, halo-substituted lower alkyl, straight chain alkyl having from 5 to 9 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, phenoxy-substituted lower alkyl, lower carboalkoxy, lower alkoxymethyl, styryl, pentachlorophenyl, pentafluorophenyl, 2,3,6-trichlorophenyl, 3,4,5-trimethoxyphenyl, 4-carbethoxy-3,5-dimethoxyphenyl, 1-naphthyl, 4-fluoro-1-naphthyl, 8-bromo-1-naphthyl, 2-naphthyl, 3-methoxy-2-naphthyl, 1-naphthyloxymethyl, 2-naphthyloxymethyl, trichloromethyl, chlorodiphenylmethyl, 2-pyridinyl-N-oxide, 2-thienyl, 2-furyl, 1,4-thiapyran-2-yl, 4-oxy-4H-thiapyran-3-yl, 4-ethyl-2,3-diketopiperazin-1-yl or moieties of the formulae:



wherein R_1 is hydrogen, fluoro, chloro, nitro, cyano, hydroxy, mercapto, formyl, trifluoromethyl, trifluoromethoxy, phenyl, phenoxy, benzyl, benzoyl, sulfamyl, 4-chlorophenylsulfonyl, lower alkyl, lower alkoxy, lower alkylthio, lower alkanoyloxy, lower alkanoylamino or di(lower akyl)-amino and R_2 and R_3 are the same and are fluoro, chloro, nitro, methyl or methoxy; and the pharmacologically acceptable acid-addition salts thereof.

4,112,220

NITRATE ESTERS OF GALACTOMANNAN GUMS AND METHODS FOR THEIR SYNTHESIS

William J. Carroll, Allentown, and George L. Griffith, Coopersburg, both of Pa., assignors to IMC Chemical Group, Inc., Terre Haute, Ind.

Filed Oct. 29, 1974, Ser. No. 518,664
Int. Cl.² C07G *3/00*; C08B *37/00*
U.S. Cl. 536—18 **9 Claims**

1. A nitrate ester of a galactomannan gum in which hydroxyl hydrogens of the galactomannan gum are replaced by nitro groups.

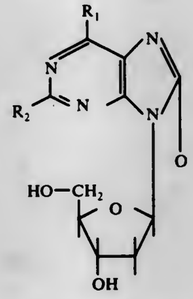
4,112,221

PROCESS FOR PREPARING 8,2′-O-ANHYDROPURINE NUCLEOSIDES

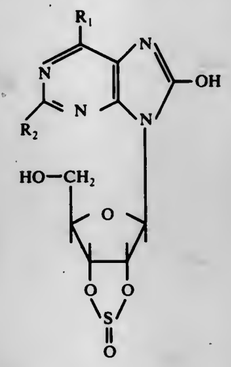
Kozo Tsunoda; Tsuneo Sowa, both of Nobeoka; Kunio Iitsuka, Fuji, and Kiyohide Sako, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1975, Ser. No. 594,829
Claims priority, application Japan, Jul. 17, 1974, 49-81171; Aug. 9, 1974, 49-90716
Int. Cl.² C07H *19/16*
U.S. Cl. 536—24 **5 Claims**

1. A process for preparing a 8,2′-O-anhydropurine nucleoside having the formula



wherein R_1 and R_2 individually represent a hydrogen atom, hydroxy group, amino group, mercapto group or a halogen atom which comprises heating at a temperature from about 80° to 160° C. a 2′,3-O-sulfinyl-8-oxypurine nucleoside having the formula



wherein R_1 and R_2 are as defined above in an aprotic polar solvent in the presence of salt selected from the group consisting of sodium hydrogencarbonate, potassium hydrogencarbonate, potassium borate, barium borate, sodium hydrogensulfite, calcium sulfite, potassium phosphate, disodium hydrogenphosphate, sodium nitrite, sodium iodine, sodium acetate, ammonium acetate, lithium acetate, sodium formate, potassium propionate, calcium butyrate, sodium tartrate, barium tartrate, sodium adipate, potassium hydrogenglutamate, sodium citrate, potassium hydrogenphthalate, sodium benzoate, potassium benzoate, sodium p-aminobenzoate and potassium salicylate.

4,112,222

METHOD OF PREPARING HYDROXYPROPYLATED STARCH DERIVATIVES

Wadym Jarowenko, Plainfield, N.J., assignor to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Jan. 7, 1977, Ser. No. 757,634
Int. Cl.² C08B *31/10*; C13L *1/08*
U.S. Cl. 536—111 **24 Claims**

1. In a method for producing a granular, cold-water dispersible hydroxypropylated starch ether which comprises reacting a granular starch base having a moisture content of 6–20% based on the weight of the starch with about 15–50% propylene oxide by weight, said reaction being carried out for about 4.5–24 hours at a temperature of about 70°–100° C. and at a pressure of about 10–100 p.s.i.g., the improvement comprising the steps of:

(a) impregnating said starch base with about 0.25–5.0%, based on the weight of the dry starch base, of a catalyst salt in aqueous solution form, said salt being a water-soluble alkali or alkali earth salt of a carboxylic acid which is unsubstituted or alkyl- or hydroxy-substituted, having no more than 20 carbon atoms in total, and, if aliphatic, having 1 to 6 carbon atoms in its primary carbon chain; and

(b) conducting said reaction in the presence of said salt.

4,112,223

REMOVAL OF TRACE HEAVY METAL CONTAMINANTS FROM ALGAE AND THE CARRAGEENAN CONTAINED THEREIN

Chii-Fa Lin, Tarrytown, N.Y., and Julian E. Blanch, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 538,624, Jan. 6, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,461
Int. Cl.² C08B *37/04*
U.S. Cl. 536—114 **9 Claims**

1. A process for removing trace heavy metal contaminants from algae that contain a major amount of lambda-type carrageenan and from said carrageenan which comprises treating said algae with a water solution containing an effective amount of a soluble food grade potassium salt for removal of said trace heavy metal contaminants using a concentration of potassium ion in the solution which is below 1.0 mole K^+/liter and at a temperature not in excess of about 10° C. such that there is no appreciable extraction of the lambda-type carrageenan from the algae.

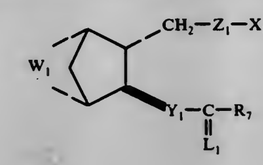
4,112,224

BIHETEROCYCLIC-9,11-TRIDEOXY-PGF COMPOUNDS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

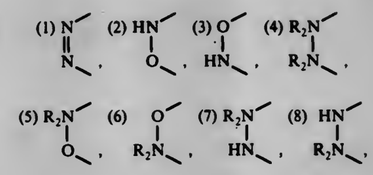
Continuation-in-part of Ser. No. 714,390, Aug. 16, 1976, abandoned, and Ser. No. 800,623, May 26, 1977, abandoned. This application Jun. 30, 1977, Ser. No. 810,811
Int. Cl.² C07D *231/04, 231/06, 261/02*; C01B *15/02*
U.S. Cl. 542—426 **52 Claims**

1. A prostaglandin analog of the formula



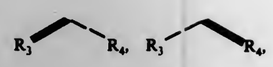
IV

wherein W_1 is

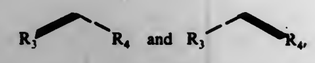


wherein R_2 is alkyl of one to 4 carbon atoms, inclusive or alkylcarbonyl of one to 4 carbon atoms, inclusive; wherein Y_1 is

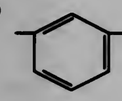
(1) trans—CH=CH—CH_2—,
(2) —$(CH_2)_3$-,
(3) —C|C—CH_2—,
(4) trans—CH_2—CH=CH—,or
(5) cis—CH=CH—CH_2—
wherein L_1 is



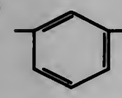
or a mixture of



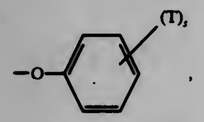
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7)



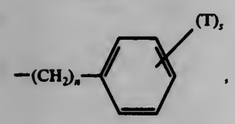
—CH_2—$(CH_2)_g$—, or
(8)



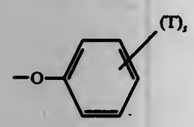
—O—$(CH_2)_g$—,
wherein *g* is one, 2, or 3; wherein R_7 is
(1) —$(CH_2)_m$—CH_3,
(2)



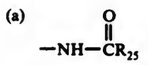
(3)



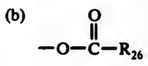
wherein *h* is zero to 3, inclusive, wherein *m* is one to 5, inclusive, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive and *s* is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



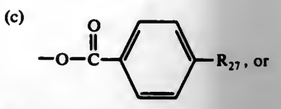
wherein T and *s* are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; wherein X_1 is
(1) —$COOR_1$ wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by
(a)



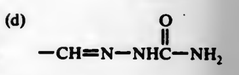
(b)



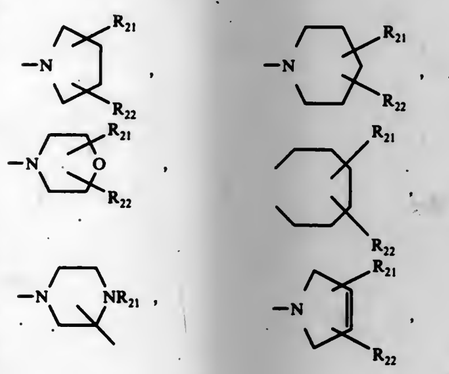
(c)



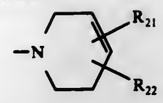
, or
(d)



wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is methyl, phenyl, —NH_2, or methoxy; and R_{27} is hydrogen or acetamido; inclusive, or a pharmacologically acceptable cation;
(2) —CH_2OH;
(3) —COL_4, wherein L_4 is
(a) amido of the formula —$NR_{21}R_{22}$, wherein R_{21} and R_{22} are hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl; phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro; carboxyalkyl of one to four carbon atoms, inclusive; carbamoylalkyl of one to four carbon atoms, inclusive; cyanoalkyl of one to four carbon atoms, inclusive, acetylalkyl of one to four carbon atoms, inclusive; benzoylalkyl of one to four carbon atoms, inclusive; benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, alkoxy of one to 3 carbon atoms, inclusive; carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive; or nitro; pyridyl; pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; or alkoxy of one to 3 carbon atoms, inclusive; pyridylalkyl of one to 4 carbon atoms, inclusive; pyridylalkyl of one to 4 carbon atoms, inclusive; pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, alkoxy of one to 3 carbon atoms, inclusive; hydroxyalkyl of one to 4 carbon atoms, inclusive; dihydroxyalkyl of one to 4 carbon atoms, and trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;
(b) cycloamido selected from the group consistng of



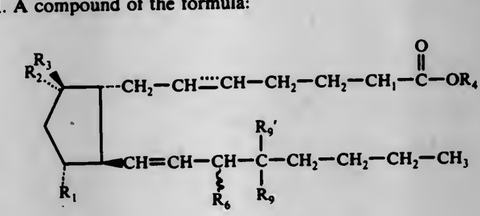
-continued
or



wherein R_{21} and R_{22} are as defined above;
(c) carbonylamido of the formula —$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above;
(d) sulphonylamido of the formula —$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or
(e) hydrazino of the formula —$NR_{23}R_{24}$, wherein R_{24} is amido of the formula —$NR_{21}R_{22}$, as defined above, or cycloamido, as defined above; or
(4) —$CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; or the pharmacologically acceptable acid addition salts thereof when
X_1 is not —$COOR_1$ and
R_1 a pharmacologically acceptable cation.

4,112,225
16-CF_3 PROSTAGLANDINS
George William Holland, North Caldwell; Jane Liu Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.
Continuation-in-part of Ser. No. 683,576, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 480,458, Jul. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Dec. 8, 1976, Ser. No. 745,257
Int. Cl.[2] C07C *177/00*
U.S. Cl. 542—426 11 Claims

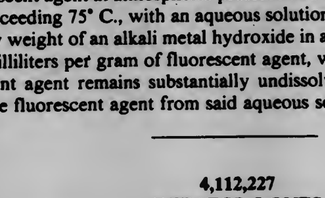
1. A compound of the formula:



wherein R_4 is hydrogen or lower alkyl; R_2 is hydroxy; R_3 is hydrogen or taken together with R_2 forms oxo; R_1 is hydrogen, lower alkyl, —CH_2OR_1', or —$COOR_1'$; R_6 is hydroxy, lower alkanoyloxy, benzoyloxy, benzyloxy, benzhydryloxy, trityloxy, trialkylsilyloxy, tetrahydropyranyloxy, or 4-methoxy-5,6-dihydro-2H-pyranyloxy; R_1' is hydrogen, or lower alkyl; R_9' is hydrogen, lower alkyl or fluoro; R_9 is trifluoromethyl; and the dotted bond can be optionally hydrogenated
or enantiomers or racemates thereof.

4,112,226
PROCESS FOR REMOVING NON-FLUORESCENT TRIAZINE DERIVATIVE IMPURITIES FROM FLUORESCENT AGENTS
Philip Richard Norman Eymond, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Oct. 22, 1976, Ser. No. 734,686
Claims priority, application United Kingdom, Oct. 24, 1975, 43849/75
Int. Cl.[2] C07D *251/08*
U.S. Cl. 542—461 6 Claims

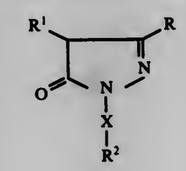
1. A process for removing non-fluorescent triazine derivative impurities having the structural formula:



wherein
R_1 is a hydroxy group or a halogen atom,
R_2 is a hydroxy group or the group—NR_4R_5, each of R_4 and R_5 being a hydrogen atom, alkyl, substituted alkyl, aryl or substituted aryl group, and R_3 is an alkyl, substituted alkyl, aryl or substituted aryl group,
from a fluorescent agent of
(a) 4,4-di(2'',4''-dianilinotriazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(b) 4,4'-di(2''-anilino-4''-morpholinotriazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(c) 4,4'-di(2''-anilino-4''-N-methylethanolamino-triazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(d) 4,4'-di(2''-anilino-4''-diethanolaminotriazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(e) 4,4'-di(2''-anilino-4''-dimethylaminotriazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(f) 4,4'-di(2''-anilino-4''-diethylaminotriazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(g) 4,4'-di(2''-anilino-4''-monoethanolaminotriazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(h) 4,4'-di(2''-anilino-4''-(1-methyl-2-hydroxy) ethylamino-triazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
(i) 4,4''-di(2''-methylamino-4''-p-chloroanilinotrazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts, or
(j) 4,4'-di(2''-diethanolamine-4''-sulphanilinotrazin-6''-ylamino)-stilbene-2,2'-disulphonic acid or its salts,
which consists essentially of the steps of contacting said fluorescent agent at atmospheric pressure and at a temperature not exceeding 75° C., with an aqueous solution containing 0.5–5% by weight of an alkali metal hydroxide in an amount of 25–150 milliliters per gram of fluorescent agent, wherein said fluorescent agent remains substantially undissolved, and separating the fluorescent agent from said aqueous solution.

4,112,227
PYRAZOL-5-ONES
Eike Möller; Karl Meng, both of Wuppertal; Egbert Wehinger, Neviges, and Harald Horstmann, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Division of Ser. No. 461,285, Apr. 15, 1974, Pat. No. 3,952,008. This application Jan. 24, 1975, Ser. No. 543,664
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1973, 2319279; Dec. 19, 1973, 2363138
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.[2] A61K *31/415*
U.S. Cl. 424—273 P 48 Claims

1. A pharmaceutical composition useful for effecting diuresis or saluresis in humans and animals and for treating hypertension in humans and animals which comprises a diuretically effective amount, a saluretically effective amount or an antihypertensive amount of a compound of the formula



(I)

or a pharmaceutically acceptable, nontoxic salt thereof, wherein

R is amino;

R^1 is hydrogen, lower alkyl or lower alkenyl;

X is propenyl or propenyl wherein 1 hydrogen atom on one, two or three of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, said propenyl being linked to the N^1 atom of the pyrazole ring via its methylene moiety; and

R^2 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by:

(a) 1 or 2 of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms and lower alkoxy;

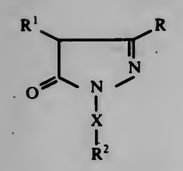
(b) cycloalkyl of 5, 6 or 7 carbon atoms or cycloalkenyl of 5, 6 or 7 carbon atoms;

(c) nitro; or

(d) nitro and 1 or 2 of the same or different substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halogen and trifluoromethyl;

in combination with a pharmaceutically-acceptable, nontoxic, inert diluent or carrier.

25. A method of effecting diuresis and saluresis in humans and animals and treating hypertension in humans and animals which comprises administering to a human or animal in need thereof a diuretically effective amount, a saluretically effective amount or an antihypertensive amount of a compound of the formula



(I)

or a pharmaceutically acceptable, nontoxic salt thereof, wherein

R is amino;

R^1 is hydrogen, lower alkyl or lower alkenyl;

X is propenyl or propenyl wherein 1 hydrogen atom on one, two or three of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, said propenyl being linked to the N^1 atom of the pyrazole ring via its methylene moiety; and

R^2 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by:

(a) 1 or 2 of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms and lower alkoxy;

(b) cycloalkyl of 5, 6 or 7 carbon atoms or cycloalkenyl of 5, 6 or 7 carbon atoms;

(c) nitro; or

(d) nitro and 1 or 2 of the same or different substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halogen and trifluoromethyl;

in combination with a pharmaceutically-acceptable, nontoxic, inert diluent or carrier.

4,112,228

7-(D-α-HYDROXY-2-ARYLACETAMIDO)-3-(2-CARBOXY-ALKYL-2,3-DIHYDRO-S-TRIAZOLO-[4,3-b]PYRIDAZIN-3-ON-6-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACIDS AND DERIVATIVES

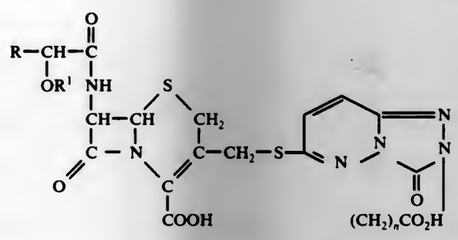
Takayuki Naito, Kawasaki; Jun Okumura, Yokohama, and Hajime Kamachi, Ichikawa, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 705,226, Jul. 13, 1976, abandoned. This application Mar. 16, 1977, Ser. No. 777,986

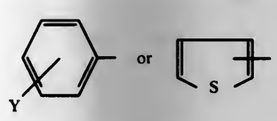
Int. Cl.[2] **C07D** *501/54, 501/56, 519/00*

U.S. Cl. 544—26 **45 Claims**

1. An acid having the D configuration in the 7-sidechain and the formula



wherein *n* is one or two, R^1 is hydrogen or formyl and R is



and Y is hydrogen, chlorine, bromine, fluorine, trifluoromethyl, amino, nitro, hydroxy, lower alkyl of 1–4 carbon atoms or lower alkoxy of 1–4 carbon atoms or a nontoxic, pharmaceutically acceptable salt thereof.

4,112,229

DIPHENYLAMINES FOR DYEING KERATINOUS FIBERS

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

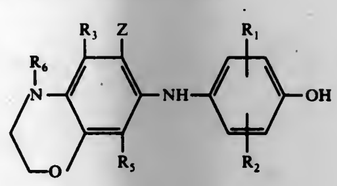
Division of Ser. No. 618,244, Sep. 30, 1975, Pat. No. 4,024,627, which is a continuation of Ser. No. 396,296, Sep. 11, 1973, abandoned, which is a division of Ser. No. 270,650, Jul. 11, 1972, Pat. No. 3,787,174, which is a continuation-in-part of Ser. No. 61,833, Aug. 6, 1970, Pat. No. 3,792,090. This application May 18, 1977, Ser. No. 798,011

Claims priority, application Luxembourg, Jul. 14, 1971, 63527; Aug. 11, 1969, 59265

Int. Cl.[2] **C07D** *265/14*

U.S. Cl. 544—105 **6 Claims**

1. A diphenylamine of the formula



wherein

R_1 is selected from the group consisting of methyl and chlorine,

R_2 is selected from the group consisting of hydrogen and methyl,

R_3 is selected from the group consisting of hydrogen and methyl,

R_5 is hydrogen,

R_6 is selected from the group consisting of hydrogen and methyl and

Z is selected from the group consisting of amino and hydroxy.

4,112,230

$\Delta^{2,3}$-1,4 MORPHOLINE-2-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

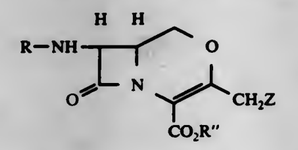
Marcel Menard; Gary M. F. Lim, both of Candiac, and Terry T. Conway, Brossard, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 567,323, Apr. 11, 1975, Pat. No. 4,011,216. This application Jan. 17, 1977, Ser. No. 759,710

Int. Cl.[2] **C07D** *265/36, 498/02;* **A01N** *9/00, 9/22*

U.S. Cl. 544—105 **82 Claims**

1. A compound having the formula



II

wherein R is an acyl group of the formula

$R^aC_nH_{2n}CO$— (i)

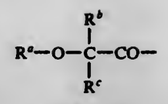
wherein R^a is (a) aryl selected from the group consisting of phenyl, 2-thienyl, 3-thienyl, furyl, 4-isoxazolyl, pyridyl, tetrazolyl, sydnone-3 or -4, imidazolyl, naphthoyl, quinoxalinyl, triazolyl, isothiazolyl, thiadiazolyl, thiazolyl, oxazolyl, oxadiazolyl, pyrazolyl, furazan, pyrazinyl, pyrimidinyl, pyridazinyl and triazinyl; (b) substituted aryl in which the aryl groups defined above under (a) are substituted by one or more chloro, bromo, iodo, fluoro, nitro, amino, cyano, (lower)alkanoyloxy, (lower)alkanoyl, (lower)alkoxyamino, (lower)alkoxy, (lower-)alkyl, (lower)alkylamino, hydroxy, guanidino, (lower)alkylthio, carboxy, phenyl, halophenyl, trifluoromethyl, di(-lower)alkylamino, sulfamyl, (lower)- alkanoylamino, phenyl(-lower)alkylamido, cycloalkylamino, allylamido, morpholinocarbonyl, pyrrolidinocarbonyl, piperidinocarbonyl, tetrahydropyridino, furfuylamido or N-alkyl-N-anilino radicals; (c) C_3–C_{12} cycloalkyl; (d) substituted C_{3-C12} cycloalkyl in which the substitutents are one or more chloro, bromo, fluoro, iodo, nitro, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkylamino, C_1–C_2 alkoxy or amino radicals; (e) C_3–C_{12} cycloalkenyl, said cycloalkenyl group having 1 or 2 double bonds; or (f) substituted C_3–C_{12} cycloalkenyl, said cycloalkenyl group having 1 or 2 double bonds and being substituted by one or more chloro, bromo, fluoro, iodo, nitro, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkylamino, C_1–C_2 alkoxy or amino radicals; and *n* is an integer from 1–4;

$C_nH_{2n+1}CO$— (ii)

wherein *n* is an integer from 1–7, the alkyl portion of said acyl group being straight or branched and optionally interrupted by an oxygen or sulfur atom;

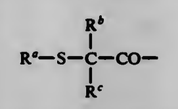
$C_nH_{2n-1}CO$— (iii)

wherein *n* is an integer from 2–7, the alkenyl portion of said acyl group being straight or branched and optionally interrupted by an oxygen or sulfur atom;



(iv)

wherein R^a is as defined above under (i) and in addition may be benzyl, C_{1-C5} alkyl or (lower)alkoxy carbonyl and R^b and R^c which may be the same or different each represent hydrogen, phenyl, benzyl, phenethyl or C_1–C_6 alkyl;



(v)

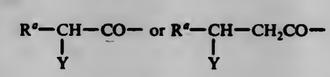
wherein R^a is as defined above under (i) and in addition may be benzyl or C_1–C_6 alkyl and R^b and R^c are as defined under (iv);

$R^aX(CH_2)_mCO$— (vi)

wherein R^a is as defined under (i) and in addition may be benzyl; X is oxygen or sulfur; and m is an integer of 2–5;

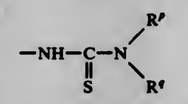
R^aCO— (vii)

wherein R^a is as defined under Ii);

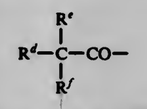


(viii)

wherein R^a is as defined under (i) and Y is hydrazino, guanidino, ureido; substituted ureido of the formula

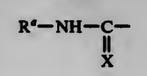


in which R^p is hydrogen or C_1–C_8 alkyl and R^q is hydrogen, C_1–C_8 alkyl, C_2–C_8 alkenyl, phenyl, benzoyl, C_1–C_8 alkoxy-C_1–C_8 alkyl or (carbo-C_1–C_8 alkoxy)C_1–C_8 alkyl; allophanamido; 3-guanyl-1-ureido; 3-(2-furoyl)ureido; 3-(benzoyl-)ureido; cyano; cyanamino; azido; amino; a group obtained by reacting the amino group Y with acetone, formaldehyde, acetaldehyde, butyraldehyde, acetylacetone, methyl acetoacetate, benzaldehyde, salicylaldehyde, methyl ethyl ketone or ethyl acetoacetate; hydroxy; (lower) alkoxy; carboxy; 5-indanyloxycarbonyl; triazolyl; tetrazolyl; halogeno; formyloxy; (lower-)alkanoyloxy; sulfo; or sulfoamino;



(ix)

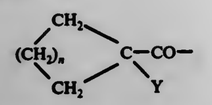
wherein R^d, R^e and R^f which may be the same or different may each represent C_1–C_6 alkyl, phenyl or phenyl substituted by one or more chloro, bromo, iodo, fluoro, trifluoromethyl, nitro, amino, cyano, (lower)alkanoyloxy,(lower)alkanoyl, (lower)alkoxyamino, (lower)alkoxy, (lower)alkyl, (lower)alkylamino, hydroxy, (lower)alkylthio, carboxy, di(lower)alkylamino or sulfamyl radicals;



(x)

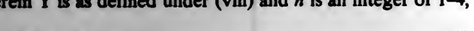
wherein R^a is as defined under (i) and in addition may be hydrogen, C_114 C_6 alkyl, halogen-substituted C_1–C_6 alkyl, phen-

ethyl, phenoxymethyl, benzyl or R^a—CO— and X is oxygen or sulfur;



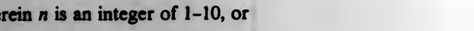
(xi)

wherein Y is as defined under (viii) and *n* is an integer of 1–4;

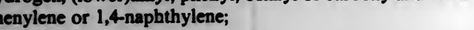


(xii)

wherein *n* is an integer of 1–10, or

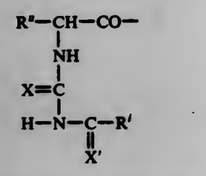


wherein *m* is O or an integer from 1–10, and *n* is 0, 1 or 2; R^a is hydrogen, (lower)alkyl, phenyl, benzyl or carboxy and Ar is p-phenylene or 1,4-naphthylene;



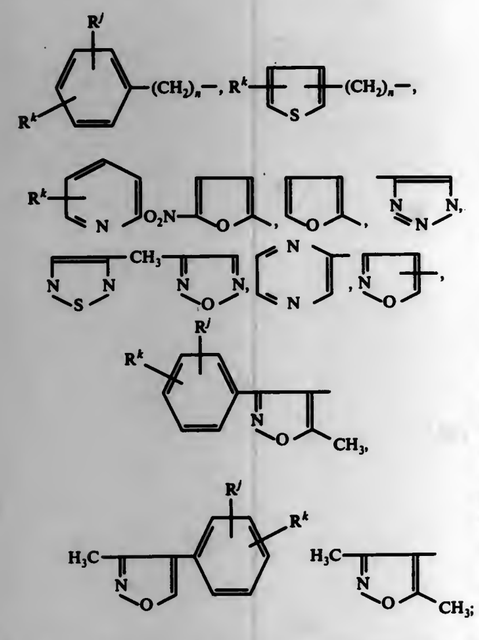
(xiii)

wherein R^h is 2-thienyl; 3-thienyl; α-naphthyl; 2-phenanthryl or a mono-, di- or tri-substituted phenyl group, the substituents being chloro, bromo, iodo, fluoro, amino, di(lower)-alkylamino, (lower)alkyl, (lower)alkoxy, nitro or (lower)-alkanoylamino;

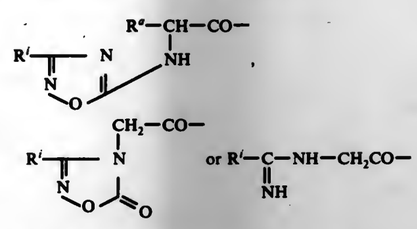


(xiv)

wherein R^a is as defined under (i); X is oxygen or sulfur; X′ is oxygen or imino; and R^i is (lower)alkyl, cycloalkyl having 4, 5, 6 or 7 carbon atoms, monohalo (lower)alkyl, dichloromethyl, trichloromethyl, (lower)alkenyl of 2–6 carbon atoms,

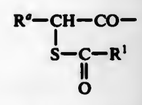


n is an integer from 0 to 3 inclusive and each of R^k and R^j is hydrogen, nitro, di(lower)alkylamino, (lower)alkanoylamino, (lower)alkanoyloxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, sulfamyl, chloro, iodo, bromo, fluoro, or trifluoromethyl;



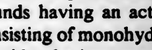
(xv)

wherein R^a is as defined under (i) and R^i is as defined under (xiv); or



(xvi)

wherein R^a is as defined under (i) and R^1 is (lower)alkyl, cycloalkyl of 3–12 carbon atoms, phenyl, a monocyclic heterocyclic radical having 5 or 6 atoms exclusive of hydrogen which are C, S, N or O, no more than 2 atoms being other than C, or a substituted monocyclic heterocyclic radical as defined above having one or more halo, (lower)alkyl, (lower)alkoxy or phenyl substituents, Z is esterified hydroxyl of the formula



wherein R_2 is hydrogen, amino or (lower)alkyl and R″ is hydrogen or an easily cleavable ester selected from the group consisting of benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)-alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl and acetoxymethyl, or a pharmaceutically acceptable salt thereof.

4,112,231

PROCESS FOR THE CONDENSATION OF EPOXIDES WITH ORGANIC COMPOUNDS HAVING AN ACTIVE HYDROGEN

Bengt John Gustaf Weibull, Stenungsund, and Leif Urban Folke Thorsell, Domsjoverken, both of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Filed Sep. 1, 1976, Ser. No. 719,646
Claims priority, application Sweden, Sep. 5, 1975, 7509916
Int. Cl.² C07C *41/02*
U.S. Cl. 544—174 **13 Claims**

1. In the process for the addition reaction of organic compounds having an active hydrogen selected from the group consisting of monohydric alcohols, polyols and amines with an epoxide, the improvement which comprises carrying out the reaction at a temperature within the range from about 80 to about 200° C at which the reaction proceeds in the presence of a concentration within the range from about 0.001% to about 10% by weight of the organic compound of an inorganic salt catalyst developing no appreciable acidity or alkalinity in the course of the reaction, accelerating the reaction, and favoring a narrow molecular distribution of adduct species in the reaction product, selected from the group consisting of sodium fluoborate and magnesium, calcium, manganese, nickel and zinc perchlorates.

4,112,232

PROCESS FOR PREPARING CYANURIC ACID

Mario G. R. T. de Cooker, Sittard, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Sep. 19, 1977, Ser. No. 834,664
Claims priority, application Netherlands, Sep. 23, 1976, 7610556
Int. Cl.² C07D *251/32*
U.S. Cl. 544—192 **12 Claims**

1. A process for preparing cyanuric acid, comprising:
heating a solution of urea, biuret or a mixture of urea and biuret in a molten salt solvent comprising at least one alkali metal salt or alkaline earth metal salt, and
forming cyanuric acid and ammonia in said solution.

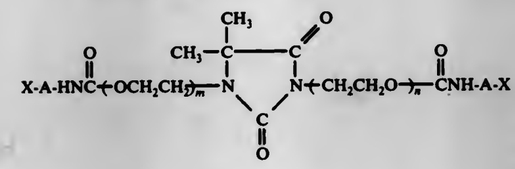
4,112,233

HYDANTOIN-CONTAINING POLYENE COMPOSITIONS

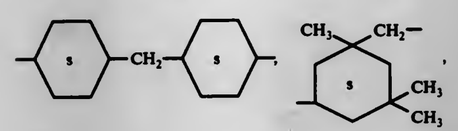
Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 614,577, Sep. 18, 1975, abandoned, which is a division of Ser. No. 461,207, Apr. 15, 1974, Pat. No. 3,945,982. This application Nov. 1, 1976, Ser. No. 737,309
Int. Cl.² C07D *233/72*
U.S. Cl. 548—312 **6 Claims**

1. A polyene of the formula:



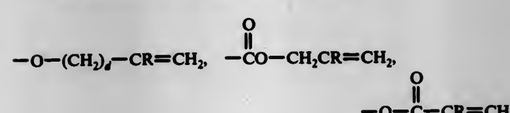
wherein
A is a member of the group consisting of alkylene having from 1 to 10 carbon atoms, cycloalkylene having from 5 to 15 carbon atoms,



arylene having from 6 to 12 carbon atoms, alkarylene having from 7 to 13 carbon atoms and aralkylene having from 7 to 13 carbon atoms;
X is a member of the group consisting of



B is alkylene having from 1 to 36 carbon atoms;
Y is a member of the group consisting of



and mixtures thereof with the proviso that no more than one Y can be on one carbon atom of B;
Z is $—(CH_2)_d—CR=CH_2$;
R is hydrogen or methyl; *x* is 1 to 3; *y* and *d* are 1 to 10; *z* is 1 to 2; *m* and *n* are each integers of at least 1 with $m + n$ in the range 2 to 22.

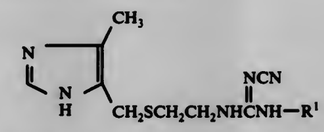
4,112,234

IMIDAZOLYLMETHYLTHIOETHYL ALKYNYL GUANIDINES

Ronnie Ray Crenshaw, Dewitt, and George Michael Luke, La-Fayette, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 826,796, Aug. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 803,009, Jun. 3, 1977, abandoned. This application Nov. 7, 1977, Ser. No. 848,959
Int. Cl.² C07D *233/64*
U.S. Cl. 548—342 **12 Claims**

1. A compound of the formula



wherein R^1 is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms, inclusive, or a nontoxic pharmaceutically acceptable acid addition salt thereof.

4,112,235

TRANSESTERIFICATION OF CARBOXYLIC ACIDS

Louis Schmerling, Riverside, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 28, 1976, Ser. No. 736,648
Int. Cl.² C07C *67/10*
U.S. Cl. 560—1 **9 Claims**

1. A transesterification process which comprises reacting, in the presence of a catalytic amount of stannic chloride, bromide or iodide at a temperature in the range of from about 0° to about 150° C. and a pressure in the range of from about atmospheric to about 100 atmospheres, a carboxylic acid selected from the group consisting of fatty acids of from 1 to about 20 carbon atoms, cycloalkanecarboxylic acids having from 5 to 8 carbon atoms in the ring and aromatic carboxylic acids with an alkyl, cycloalkyl, unsaturated aliphatic, cycloaliphatic or benzyl formate, acetate, butyrate, acrylate, crotonate, oleate or benzoate, and recovering the resultant esterified carboxylic acid.

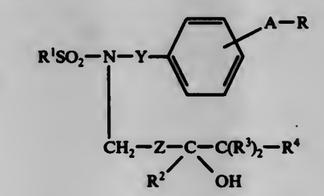
4,112,236

INTERPHENYLENE 8-AZA-9-DIOXOTHIA-11,12-SECOPROSTAGLANDINS

John B. Bicking, and Edward J. Cragoe, Jr., both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 4, 1977, Ser. No. 783,998
Int. Cl.² C07C *143/75*; A61K *31/21, 31/19*
U.S. Cl. 560—12 **28 Claims**

1. The compound having the following formula:

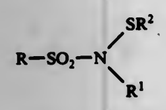


wherein
R is carboxy, a pharmaceutically acceptable carboxy salt, or alkoxycarbonyl of the formula —$COOR^5$ wherein
R^5 is alkyl of 1–10 carbon atoms;
A is $(CH_2)_n$ wherein n is 0 or 2, or oxymethylene or vinylene;
Y is $(CH_2)_n$ wherein n is 1, 3, or 4, provided that the sum of chain-forming elements in A and Y is either 3 or 4;
R^1 is lower alkyl of 1–4 carbon atoms;

Z is ethylene, vinylene, or ethynylene;
R^2 is hydrogen or methyl;
R^3 is hydrogen or methyl; and
R^4 is lower alkyl of 3–6 carbon atoms straight or branched or 3-butenyl, provided that in one instance wherein R^4 is lower alkyl and R^2 is methyl, R^4 and R^2 are joined together with abstraction of hydrogen to form a carbocyclic ring of form 6–9 members, and further provided that in one instance when R^4 is lower alkyl and R^2 is hydrogen, R^4 and the carbon bearing R^2 and OH are joined with abstraction of hydrogen to form a carbocyclic ring of from 5–8 members.

4,112,237
FUNGICIDAL, MITICIDAL AND OVICIDAL ALKOXYCARBONYLALKYL-SUBSTITUTED AND CARBAMYLALKYL-SUBSTITUTED N-HALOALKYLTHIOSULFONAMIDES
David Cheong King Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Oct. 22, 1976, Ser. No. 734,858
Int. Cl.² C07C 145/02; A01N 9/16
U.S. Cl. 560—12 6 Claims

1. A compound of the formula



wherein R is phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms; R^1 is alkoxycarbonylalkyl of 2 to 6 carbon atoms; and R^2 is alkyl of 1 to 2 carbon atoms and of 1 to 5 fluoro, chloro, bromo or iodo atoms.

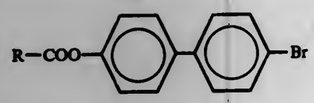
4,112,238
METHOD FOR THE PREPARATION OF PURE 2-ETHYLHEXYL GALLATE
Douglas W. Chapman, and Hugh C. Bertsch, both of St. Louis, Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.
Filed Feb. 17, 1977, Ser. No. 769,828
Int. Cl.² C07C 67/48, 69/88
U.S. Cl. 560—70 12 Claims

1. A method for preparing pure 2-ethylhexyl gallate which comprises treating crude 2-ethylhexyl gallate with a solvent system consisting essentially of a major proportion of a liquid aliphatic hydrocarbon solvent and a minor proportion of 2-ethylhexanol, the latter being present in a proportion of more than one percent and not more than about eight percent by volume, and separating pure 2-ethylhexyl gallate therefrom.

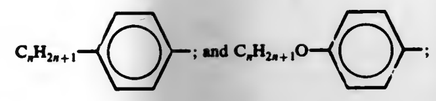
4,112,239
MESOGENIC BIPHENYL BENZOATES
Jean Claude Dubois, and Francoise Barre, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jan. 7, 1976, Ser. No. 647,745
Claims priority, application France, Jan. 10, 1975, 75 00719
Int. Cl.² C07C 69/76, 69/92
U.S. Cl. 560—73 3 Claims

1. A mesogenic compound of the formula:

(I)



wherein R is selected from the group consisting of



; and

and n is a whole number from 1 to 20.

4,112,240
PROCESS FOR THE MANUFACTURE OF LIGHT COLORED DIPROPYLENEGLYCOL DIBENZOATE
Hans Leo Hulsmann, Wetter, Ruhr, and Gustav Renckhoff, Witten, Ruhr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Bezirk Cologne, Fed. Rep. of Germany
Continuation of Ser. No. 505,113, Sep. 11, 1974, abandoned. This application Aug. 9, 1976, Ser. No. 712,580
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1973, 2346560
Int. Cl.² C07C 69/78
U.S. Cl. 560—112 6 Claims

1. Process for the manufacture of dipropyleneglycol dibenzoate isomer mixture, which comprises contacting technical methyl benzoate containing more than 80 wt.% methyl benzoate which is the product of production of dimethyl terephthalate by catalytic oxidation of p-xylene and/or methyl-p-toluate and esterification of the resulting acids with methanol, to produce a crude reaction product rich in dimethylterephthalate, treatment of the crude product to recover dimethylterephthalate and produce said technical methyl benzoate as a by-product, with dipropylene glycol commercial isomer mixture of 1,1'-oxy-di-2-propanol, 2-(hydroxypropoxy)-1-propanol, and 2,2''-oxy-di-1-propanol, in the presence of at least one of aluminum and aluminum silicon alkoxides of the formula

$$Al(OR)_3$$

or

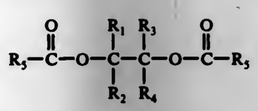
$$(RO)_3SiOAl(OR)_2$$

wherein the R's are alike or different and are lower alkyl, as catalyst, at temperature above 150° C, for a time sufficient for transesterification to produce said dipropyleneglycol dipropyleneglycol dibenzoate.

4,112,241
PROCESS FOR PRODUCING ALKYLENE GLYCOL ESTERS
Takeshi Okano, Machida; Naoto Wada, Komae, and Yoshimitsu Kobayashi, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 704,743, Jul. 12, 1976, abandoned. This application Mar. 30, 1977, Ser. No. 783,226
Claims priority, application Japan, Jul. 31, 1975, 50-93468; Jul. 31, 1975, 50-93469; Sep. 2, 1975, 50-106137; Dec. 25, 1975, 50-155192
Int. Cl.² C07C 67/05
U.S. Cl. 560—246 11 Claims

1. In a process for the production of alkylene glycol esters having the formula (I):

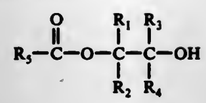
(I)



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, C_1-C_{20} alkyl and C_6-C_{20} aryl; and R_5 is C_1-C_{20} alkyl or C_6-C_{20} aryl,

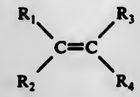
and/or the formula (II):

(II)



wherein R_1, R_2, R_3, R_4 and R_5 are as defined herein above, which comprises reacting an olefin having the formula (III):

(III)



wherein R_1, R_2, R_3 and R_4 are as defined herein above, a carboxylic acid having the formula (IV):

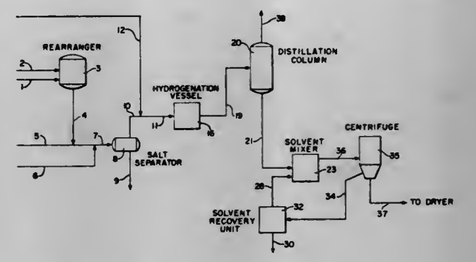
$$R_5 - CO_2H \quad \text{(IV)}$$

wherein R_5 is as defined herein above,
and molecular oxygen in the liquid phase, the improvement which comprises conducting said reaction in the presence of a catalyst of at least one nitrogen oxide selected from the group consisting of nitric acid, alkali metal salts of nitric acid, alkaline earth metal salts of nitric acid, aluminum nitrate, NO, NO_2, N_2O_3, N_2O_5 nitrous acid, alkali metal salts of nitrous acid, alkaline earth metal salts of nitrous acid, aluminum nitrite, alkyl esters of nitrous acid and alkyl esters of nitric acid in combination with at least one iodine-containing substance selected from the group consisting of iodine, hydroiodic acid, organic alkyl iodides, alkali metal salts of hydroiodic acid, alkaline earth metal salts of hydroiodic acids, aluminum iodide, hypoiodous acid, alkali metal salts of hypoiodous acid, alkaline earth metal salts of hypoiodous acid, aluminum hypoiodite, alkyl carbonyl hypoiodites, iodic acid, alkali metal salts of iodic acid, alkaline earth metal salts of iodic acid, aluminum iodate, peroxyiodic acid, alkali metal satls of peroxyiodic acid, alkaline earth metal salts of peroxyiodic acid, aluminum peroxyiodate, I_2O, I_2O_5, polyiodic acid, alkali metal salts of polyiodic acid, alkaline earth metal salts of polyiodic acid and aluminum polyiodate.

4,112,242
PROCESS FOR PRODUCTION OF 4,4-ISOPROPYLIDENE-BIS-2,6-DIBROMO/PHENOL
Janusz Swietoslawski; Andrzej Silowiecki, both of Jaworzno; Aleksander Ratajczak, Katowice; Barbara Nocoń, Wolbrom, and Zofia Baniak, Jaworzno, all of Poland, assignors to Zaklady Chemiczne "Organika-Azot", Jaworzno, Poland
Filed Apr. 25, 1977, Ser. No. 790,568
Claims priority, application Poland, May 4, 1976, 189331
Int. Cl.² C07C 37/00
U.S. Cl. 568—726 2 Claims

1. A process for production of 4,4'-isopropylidene-bis-/2,6-dibromo/phenol wherein each one mole of 4,4'-isopropylidenebisphenol reacts with 2,0–2,1 moles of liquid bromine in an organic solvent or organic solvent-water solution at 30°–45° C., significant in that the degree of bromine-utilisation is increased through subsequent treatment with about 0.67 mole of an alkali metal chlorate.

4,112,243
PRODUCTION OF HYDROQUINONE FROM NONAQUEOUS SOLVENT SYSTEMS
Edward Norbert Nowak, Uniontown; Lawson Gibson Wideman, Akron, and David Alan Hutchings, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 14, 1977, Ser. No. 833,203
Int. Cl.² C07C 39/08
U.S. Cl. 568—768 9 Claims



1. In a process for making hydroquinone comprising the steps of
(a) reacting a feed stream comprising p-diisopropylbenzene dihydroperoxide
(1) in a reaction solvent selected from the group consisting of benzene, monoalkyl benzenes wherein the alkyl group has from 1-4 carbon atoms (1-4C), dialkyl benzenes wherein the alkyl groups have 1-4C, trialkyl benzenes wherein the alkyl groups have 1-4C, mixtures of the aforesaid aromatics with acetone and acetone
(2) with an acid selected from the group consisting of H_3PO_4, $HClO_4$, p-toluene-sulfonic acid, SO_2, HBF_4, H_2SiF_6, BF_3 and any other Lewis acid
(3) in the temperature range of about 50° to 100° C. to form hydroquinone and acetone;
(b) adjusting the pH of the mixture after the reaction to from 2.5 to 5.5 by adding a base, thereby causing acid salts to form and precipitate;
(c) separating the precipitated salts from the supernatant mixture; wherein the improvement comprises the steps of:
(d) hydrogenating the supernatant from step (c) with a Raney nickel catalyst to remove color;
(e) concentrating the mixture of step (d);
(f) adding to the concentrated mixture a solvent selected from the group consisting of methylene chloride, carbon tetrachloride, 1,1,2-trichloroethane, trichloroethylene, fluorocarbons containing 2–6 carbon atoms, fluorochlorocarbons containing 1–4 carbon atoms, pentane, hexane, heptane, and cyclohexane, thereby causing hydroquinone crystals to precipitate; and
(g) separating the hydroquinone from the supernatant liquid in step (f).

4,112,244
RECOVERY OF HYDROQUINONE
Edward Norbert Nowak, Uniontown, and William Shepherd Hollingshead, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 16, 1978, Ser. No. 870,051
Int. Cl.² C07C 37/08
U.S. Cl. 568—768 9 Claims

1. In a process for making and recovering hydroquinone comprising the steps of:
(A) reacting a feed stream comprising p-diisopropylbenzenedihydroperoxide
(1) in a reaction solvent selected from the group consisting of methyl isopropyl ketone, diisopropyl ketone, methyl isobutyl ketone, cyclohexanone, 1-pentanol, 3-pentanol, diethyl ether, diisopropyl ether, ethylisopropyl ether and mixtures of the foregoing with acetone;

(2) with an acid catalyst selected from the group consisting of H_3PO_4, $HClO_4$, p-toluene-sulfonic acid, SO_2, HBF_4, H_2SiF_6, BF_3 and any other Lewis acid in a concentration of from 0.05 to 3.0 weight percent of the reaction mixture;

(3) with less than 3 weight percent water present in the reaction mixture;

(4) within a temperature range of from 50° to 100° C. to form hydroquinone and acetone;

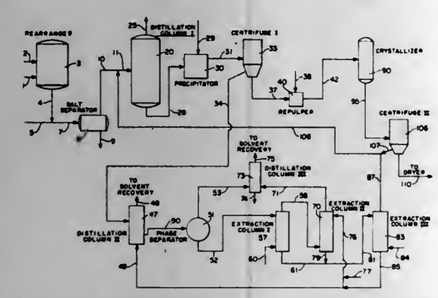
(B) adjusting the pH of the mixture to from about 2.5 to 5.5 after the reaction by adding a base selected from the group consisting of anhydrous ammonia, methylamines, triethylamines, and alkali and alkaline earth metal hydroxides, carbonates and oxides, thereby causing salts to form and precipitate; and

(C) separating the precipitated salts from the supernatant mixture;

(D) feeding the supernatant mixture to a first distillation column in which most of the more volatile components are stripped out in the distillate and a concentrated hydroquinone stream is removed as tower bottoms; the improvement which comprises the steps of:

(E) precipitating hydroquinone crystals by adding a precipitating solvent to the bottoms stream from step (D);

(F) separating the hydroquinone crystals in the slurry obtained in step (E) from the supernatant organic liquid;



(G) feeding the supernatant liquid from step (F) to a second distillation column in which are combined the unit operations of distillation, to remove the acetone and most of the reaction solvent in the distillate, and extraction of the hydroquinone into a water phase which exits the second distillation column together with an organic phase as the distillation bottoms stream;

(H) subjecting the bottoms from step (G) to a phase separation wherein the aqueous phase contains most of the hydroquinone and the organic phase contains substantially all the impurities and a small quantity of hydroquinone;

(I) extracting the aqueous phase from step (H) with an extractant selected from the group consisting of methyl isopropyl ketone, diisopropyl ketone, methyl isobutyl ketone, cyclohexanone, 1-pentanol, 3-pentanol, diethyl ether, diisopropyl ether and mixtures of the foregoing in order to remove tars;

(J) extracting the organic extract from step (I) with water in order to recover residual hydroquinone from said extract;

(K) combining the aqueous raffinate from step (I) with the aqueous extract from step (J) and extracting the combined stream with an extractant selected from the group consisting of methyl isopropyl ketone, diisopropyl ketone, methyl isobutyl ketone, cyclohexanone, 1-pentanol, 3-pentanol, diethyl ether, diisopropyl ether, ethylisopropyl ether and mixtures of the foregoing; and

(L) recycling the organic extract from step (K) to the distillation step (D).

4,112,245

PROCESS FOR THE PREPARATION OF ETHYLENE GLYCOL

Lee R. Zehner, Media, Pa., and R. Warren Lenton, Sewell, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 18, 1976, Ser. No. 715,747
Int. Cl.² C07C *29/00, 31/20*
U.S. Cl. 568—864 **13 Claims**

1. A process for the preparation of ethylene glycol which comprises reacting under vapor phase conditions a gaseous mixture of an oxalate ester having the formula

$$ROCCOR$$

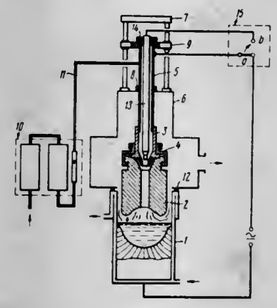
wherein R is an alkyl or aralkyl group which may contain substituents which would not interfere with the reaction, said oxalate ester having a sulfur content of less then 0.4 ppm, with an essentially sulfur-free hydrogen at a pressure of between about 15 psia and 1000 psia, the molar ratio of hydrogen to oxalate ester in the reaction being from 4:1 to 30:1, at a temperature in the range of about 150° C. and 300° C., and at a space velocity between about 3000 hr^{-1} and 20,000 hr^{-1} and a liquid hourly space velocity of between about 0.001 hr^{-1} and 5.0 hr^{-1} in the presence of an effective amount of a copper-containing hydrogenation catalyst which catalyst has been subjected to a prereduction in hydrogen at a temperature of from about 100° C. to 450° C. and at a hydrogen pressures of from about 0.01 to 10 atmospheres, and recovering the ethylene glycol.

4,112,246

PLASMARC FURNACE FOR REMELTING METALS AND ALLOYS

Viktor Iosifovich Lakomsky, ulitsa Anri Barbjusa, 22-26, kv. 119; Ivan Vasilievich Sheiko, ulitsa Schuseva, 36, kv. 32; Georgy Mikhailovich Grigorenko, ulitsa Frolovskaya, 1, kv. 5; Gennady Fedorovich Torkhov, ulitsa Prazhskaya, 3, kv. 456; Vladimir Kirillovich Trigub, ulitsa Vernadskogo, 63, kv. 61, all of Kiev; Albert Nikitovich Korotkov, prospekt Lenina, 228, kv. 2, Zaporozhie; Viktor Mikhailovich Kurganov, prospekt Lenina, 120, kv. 8, Zaporozhie; Evgeny Isaevich Moshkevich, ulitsa Stalevarov, 30, kv. 47, Zaporozhie; Alexei Ivanovich Pakhomov, ulitsa Pravdy, 25, kv. 9, Zaporozhie, and Emil Vasilievich Verkhovtsev, ulitsa Ordzhonikidze, 28, kv. 9, Izhevsk, all of U.S.S.R.

Filed Oct. 20, 1976, Ser. No. 734,032
Int. Cl.² H05H *1/26*
U.S. Cl. 13—2 P **2 Claims**



1. A plasma-arc furnace for remelting metals and alloys in a controlled atmosphere, which comprises: a crystallizer; a hollow consumable electrode having an axial cavity accommodated in said crystallizer; an arc plasmatron having an axial cavity and leads with a non-consumable electrode disposed above said hollow consumable electrode in coaxial relationship therewith; a hollow rod having an axial cavity disposed above said arc plasmatron with a nonconsumable electrode in coaxial relationship therewith; a vertical-travel mechanism connected to said hollow rod and driving same; a plasma-forming gas supply and flow rate control system connected with the plasma-discharge zone via a gas conduit defined by the cavities of the hollow rop, the arc plasmatron and the consumable electrode; and a source of electric power supply having opposite poles; said crystallizer and said hollow rod are coupled to the opposite poles of the source of electric power supply, and the leads of said arc plasmatron are insulated from the hollow rod.

4,112,247

GAS FEEDER PIPE ASSEMBLY INCLUDING ELECTRICAL CONDUCTORS

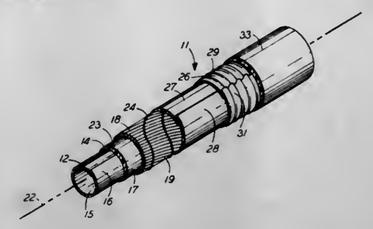
Matthew R. Dembiak, Clifton, N.J.; John F. Finnegan, Claymont; Thomas B. Reece, Wilmington, both of Del., and Howard W. Rudolph, Jr., Birdsboro, Pa., assignors to Western Electric Company, Inc. and American Telephone & Telegraph Co., Inc., both of New York, N.Y.

Filed Sep. 20, 1976, Ser. No. 724,669
Int. Cl.² H01B *7/18*
U.S. Cl. 174—16 R **4 Claims**

1. A conduit which comprises:

a central duct formed of a cylindrically rolled sheath bonded with an overlap to itself, and a plastic extrusion duct jacket bonded around the sheath in a pressurable combination for carrying a fluid under pressure, the duct jacket having a smooth outer surface;

a plurality of electrical, insulated conductors located in a peripheral skew about the duct, the conductors being slidably supported against the outer surface of the duct jacket; and



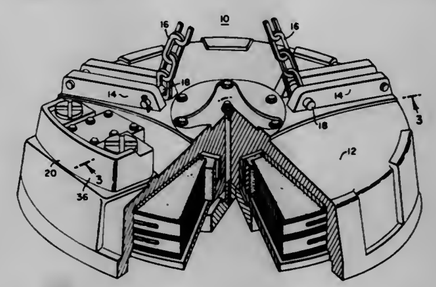
a continuously electrically conductive, flexible metal tube enclosing the duct and the conductors.

4,112,248

TERMINAL BOX FOR A LIFTING MAGNET

Ernest W. Leive, Wauwatosa, Wis., assignor to Square D Company, Milwaukee, Wis.

Filed Oct. 27, 1976, Ser. No. 735,928
Int. Cl.² H01F *7/06*
U.S. Cl. 174—50 **17 Claims**



1. A terminal box for a lifting magnet, comprising: an arcuate front wall slanting inwardly from the outer edge of its bottom surface as it extends upwardly therefrom; a pair of opposing side walls connected to the bottom surface of the front wall and to the ends of the front wall, said side walls extending upwardly from their bottom surfaces to the same height as the front wall and slanting inwardly towards one another as they extend upwardly from their bottom surfaces, said arcuate front wall and said side walls defining a protective shield; a top wall recessed below the upper edge of the protective shield and extending laterally outwardly from the concave side of the protective shield; a rear wall connected between the top wall and bottom surfaces of side walls and connected at each end to the side walls whereby the slant and arcuate shape of the protective shield causes blows directed at the terminal box when mounted on the magnet with its arcuate front wall adjacent the outer edge of the magnet to glance off without mechanical damage to the box.

4,112,249

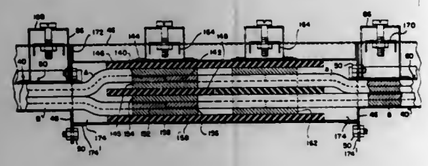
BUS TRAY ELECTRICAL DISTRIBUTION SYSTEM

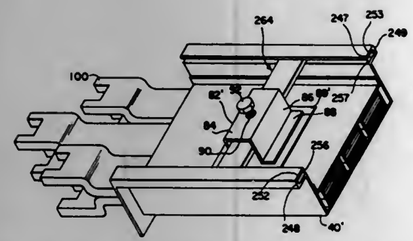
Elmer T. Carlson, Sandpiper Bay Marina, Port St. Lucie, Fla. 33452

Continuation-in-part of Ser. No. 554,684, Mar. 3, 1975, Pat. No. 4,008,365. This application Dec. 29, 1976, Ser. No. 755,446
Int. Cl.² H02G *5/06*
U.S. Cl. 174—68 B **12 Claims**

1. A bus bar and conduit setup comprising a U-cross-sectioned channel member having on the upper part of the U at least one pair of members on each side which pairs of members extend inwardly from an outermost point one above the other with a space between them, a set of bus bars within the channel member but insulated therefrom, which bus bars extend longi-

tudinally of the channel member, a cover inside the channel member and above the bus bars and insulated from them, a bridge member having legs extending down to the top of the cover and a bridge portion extending between the legs at a place higher than the cover, the bridge member having an opening for a bolt in it, a hold-down member extending across from within the space between one of the above pairs of members on the channel member to within the space between the other of the above-mentioned pairs of members on the channel member and passing under the bridge portion of the bridge member in between and having interior threads adapted to cooperate with a bolt, and a bolt extending down through the opening in the bridge member at least into the interior thread in the hold-down member and thus adapted to exert pressure on the bridge member and cover from the hold-down member and channel member.





4. In a bus tray electrical distribution system, flat insulated rigid and flexible laminated bus bars side by side and compressed into a coextending tray and cover having single and paired opposite phase bus bar ends extended, electrically separated, insulation removed for overlap joining to second bus bars that sandwich one half cross section and area of each bus bar end between the coextension of the remaining one half cross section and twice the area of the remainder half of each bus bar end, hold-down set-ups at intervals along the cover and remote from the tray and cover, extending across the tray and in one position engaging the two sides of the tray, channels bridging each hold-down setup from the cover and having in each case a base, bolts extending in each case through the base of the channel and through the hold-down setups, the hold-down setups including interior threads at least into which the bolts can extend, the hold-down setups in one position extending across the tray and securing the tray and also through each channel pressing the cover with respect to the tray.

4,112,250

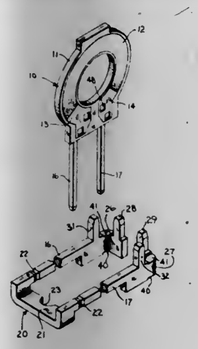
TERMINAL FOR ELECTRICAL COMPONENT AND METHOD OF MAKING SAME

Jerry T. Moffitt, Muskego, and Robert W. Bulgrin, Fort Atkinson, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 26, 1977, Ser. No. 800,680
Int. Cl.² H01C *1/14*
U.S. Cl. 338—322 **5 Claims**

1. A method of attaching a terminal lead member to an apertured, relatively flat, ceramic substrate having oppositely disposed surfaces, at least one of which supports a deposited electrical circuit layer, and wherein the apertures extend through the substrate and intersect each of said surfaces, said method comprising the steps of:

forming an elongated terminal lead member with a body portion, a lead portion extending outwardly of said substrate and lying in a plane substantially parallel with the plane of the circuit supporting layer of said substrate, and an integrally formed portion bent angularly relative to said body portion, a plurality of integrally formed, spaced apart projections each extending laterally relative to said terminal lead member, at least one of said projections being formed in said angularly bent portion and at least one of said projections being formed in said body portion;



inserting the projections of said lead member into respective substrate apertures with the said body portion and the said angularly bent portion each lying adjacent to the surface oppositely disposed from said circuit layer supporting surface of said substrate and with the distal end of each of said projections extending through their respective apertures beyond the circuit layer supporting surface of said substrate; and

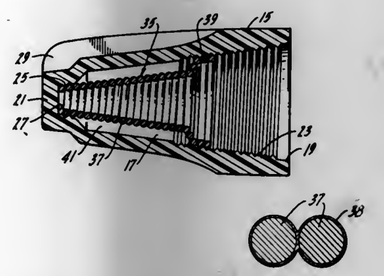
applying an axially directed force to said projections to upset the respective extended distal ends thereof to laterally distend the ends for clamping engagement with said substrate.

4,112,251

SCREW-ON WIRE CONNECTOR AND METHOD OF MAKING IT

William J. Scott, Sycamore, Ill., assignor to Ideal Industrie, Inc., Sycamore, Ill.

Continuation of Ser. No. 162,533, Jul. 14, 1971, abandoned. This application Aug. 6, 1975, Ser. No. 602,440
Int. Cl.² H01R *5/12*
U.S. Cl. 174—87 **33 Claims**



14. In an electrical connector for joining the stripped ends of two or more electrical wires, a circumferentially distortable relatively nonexpandable retainer for receiving the stripped ends of the wires and being generally tapered between an open larger end and a closed smaller end with an open interior

therebetween, a thread-forming surface on the open interior of the retainer, and exterior means on the retainer for transmitting wire connecting torque to the retainer to cause the thread-forming surface on the open interior thereof to be turned down on and thread the stripped ends of the wires.

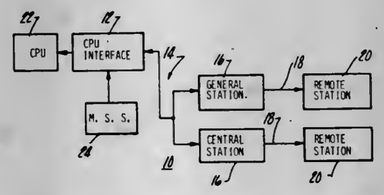
27. A method of making an electrical connector of the screw-on type, including the steps of winding a relatively stiff wire into a tapered coil, applying brazing material to the coil, heating the coil to a sufficient temperature such that the wire of the coil will be annealed sufficiently so that the turns will distort without expanding as it is screwed onto the ends of two or more wires and, at the same time, the brazing material will fuse the coil into a relatively solid structure, and thereafter enclosing the coil in an insulating plastic shell.

4,112,252

MULTI-TERMINAL SERIALLY COMMUNICATING SHARED LOGIC TEXT EDITING SYSTEM

Jerome E. Liebler, Milford, Mich., assignor to Omnitext, Inc., Ann Arbor, Mich.

Filed Oct. 20, 1976, Ser. No. 734,236
Int. Cl.² H04L *5/14*
U.S. Cl. 178—58 R **11 Claims**



1. A system for bi-directional serial communication along a single communications pathway between a central station and remote station, said communication including a data signal and at least two synchronization signals, said system comprising:

means for encoding said synchronization signals at said central station,

means for decoding said synchronization signals at said remote station,

means for inhibiting said data signal during said synchronization signals,

means for transferring a control signal from said central station to said remote station during one of said synchronization signals, and

means for transferring information from said remote station to said central station during the other of said synchronization signals.

4,112,253

DEVICE FOR THE TRANSMISSION OF PUSH-PULL SIGNALS ACROSS A TWO-WIRE LINE IN FULL DUPLEX OPERATION

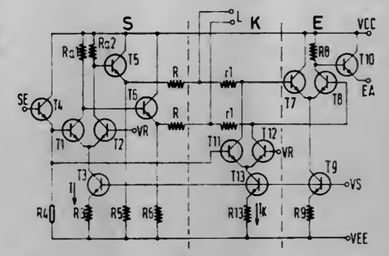
Wilhelm Wilhelm, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 24, 1977, Ser. No. 809,808
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2633066
Int. Cl.² H04L *5/14*
U.S. Cl. 178—58 R **5 Claims**

1. In a device for the transmission of push-pull signals over a two wire line in full duplex operation in which a push-pull transmitter is connected to the line and operable for the transmission of push-pull signals to an opposite station, a push-pull receiver is associated with the transmitter and coupled to the line for the simultaneous reception of the push-pull signals transmitted from the opposite station, and a compensation circuit is connected to the line and to the receiver for compensating the push-pull signal transmitted from the associated push-pull transmitter in relation to the inputs of the push-pull receiver, the improvement wherein:

said push-pull transmitter and said push-pull receiver each include a differential amplifier, each of said differential amplifiers including emitter-coupled transistors and a constant current feed to said emitter-coupled transistors; and

said compensation circuit is of symmetrical construction and



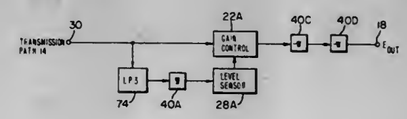
includes a pair of identical decoupling resistors which connect the inputs of said push-pull receiver to respective wires of the two wire line, and means for feeding currents to said decoupling resistors alternately and in the operating sequence of the push-pull transmitter to cause volate drops across said decoupling resistors which are equal in magnitude and in opposite direction to the signal amplitude placed on the two-wire line by the push-pull transmitter.

4,112,254

SIGNAL COMPANDER SYSTEM

David E. Blackmer, Wilton, N.H., assignor to DBX, Inc., Newton, Mass.

Filed Oct. 17, 1977, Ser. No. 842,465
Int. Cl.² H04B *3/04*
U.S. Cl. 179—1 VL **21 Claims**



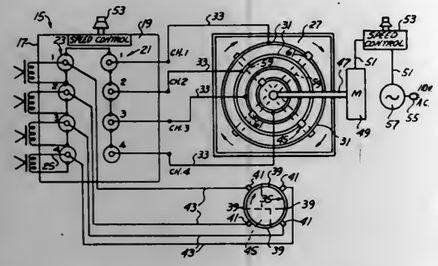
16. In a system for conditioning an input signal having a predetermined frequency bandwidth, said system comprising an input terminal for receiving said input signal, an output terminal, a signal path coupled between said input and output terminals and including amplification means for amplifying said input signal by a gain variable responsively to a control signal, and a level sensing path including means for sensing the amplitude of said input signal and for providing, responsively to said sensing, said control signal as a logarithmic function of the amplitude of said input signal, the improvement comprising:

means, including at least one network disposed in said signal path and at least one other network disposed in said level sensing path, for emphasizing and weighting within a portion of said frequency bandwidth the energy content of said input signal, with respect to the energy content of said input signal in the remaining portions of said frequency bandwidth so that the response of said system at said output terminal to a single-frequency sine wave sweep throughout said frequency bandwidth applied to said input terminal is substantially flat throughout said frequency bandwidth.

4,112,255
ROTA-PHONIC SYSTEM FOR STEREO QUADROPHONIC SOUND SYSTEM

Warren A. Draw, Detroit, Mich., assignor to Elizabeth Draw, Detroit, Mich., a part interest

Filed May 18, 1977, Ser. No. 798,069
Int. Cl.[2] H04R 5/00
U.S. Cl. 179—1 GQ 10 Claims



10. A rota-phonic balancing device adapted for connecting a series of independent sound channel inputs to a corresponding series of different output speakers, with each speaker receiving one output, and for progressively changing each channel input to a different speaker, so that each channel input is transferred to each of said speakers progressively;

comprising a housing;

a panel on the housing having a series of independent electrical sound outputs and a corresponding series of independent sound inputs;

a quad plate mounted within said housing;

a series of concentric circular conductors mounted on said plate in insulated relation, each conductor connected to one of said inputs;

a potentiometer-type of balancing ring parallel to and spaced from said quad plate and having a series of quadrants, each quadrant having a contact connected to one of said outputs respectively;

a conductive quad dial rotatively disposed between said quad plate and balancing ring in the form of a cross, with right-angularly related conductive arms, corresponding to said quadrants, each arm of said dial having a first contact on one side in continuous registry with one of said circular conductors respectively;

each arm upon its other side having a second contact connected to its first contact, in continuous engagement with and spaced around and movable over said balancing ring;

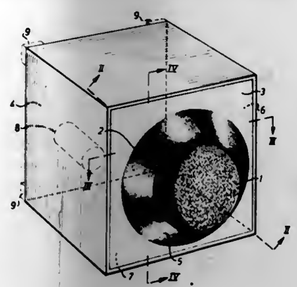
and motor means on said housing connected to said quad dial for continuous rotating said dial at a pre-set uniform speed.

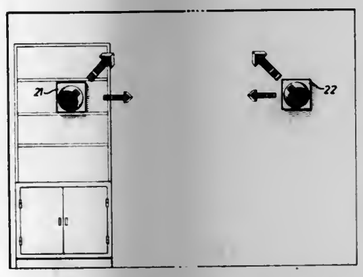
4,112,256
LOUDSPEAKER AND STEREOPHONIC LOUDSPEAKER SYSTEM

Stig Carlsson, Torkel Knutsonsgatan 15, Stockholm, Sweden

Continuation of Ser. No. 498,574, Aug. 19, 1974, abandoned.
This application Nov. 2, 1976, Ser. No. 738,006
Claims priority, application Sweden, Aug. 24, 1973, 7311561
Int. Cl.[2] H04R 5/02
U.S. Cl. 179—1 GA 13 Claims

1. A loudspeaker for use in a stereophonic or quadraphonic sound reproducing system and intended to be placed on a horizontal or vertical support, said loudspeaker comprising a substantially rectangular casing having a frontal wall, a rear wall and a bottom wall which walls define a frontal direction representing a normal to a vertical room-wall in front of which said casing is positioned in close proximity, a single high frequency radiating means, said mid-frequency radiating means, the high frequency radiating means and the mid-frequency radiating means having at least one loudspeaker mechanism mounted on said front wall of the casing, and said at least one loudspeaker mechanism for the high frequency range being mounted in such a manner as to face in a forwardly and sidewardly and upwardly direction which points sidewardly at an



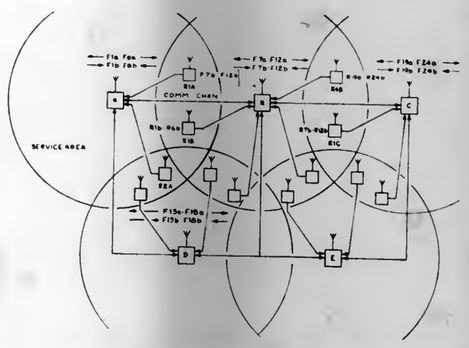


angle of at least $\pi/15$ radians to said frontal direction and upwardly at an angle of at least $\pi/15$ radians relative to said frontal direction.

4,112,257
COMPREHENSIVE AUTOMATIC MOBILE RADIO TELEPHONE SYSTEM

Edward G. Frost, 12000 Old Georgetown Rd., Rockville, Md. 20852

Filed Mar. 24, 1977, Ser. No. 780,915
Int. Cl.[2] H04M 7/04
U.S. Cl. 179—2 EB 21 Claims

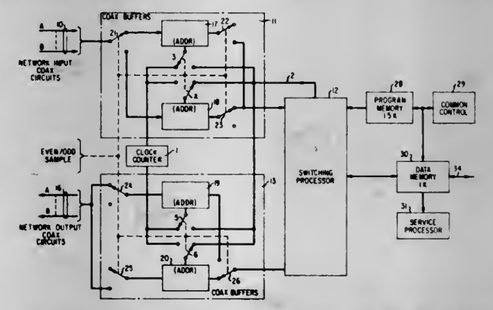


1. A multi-channel mobile radio telephone system of the type wherein mobile stations are capable of initiating and receiving calls to and from other mobile stations and stations in a public telephone system, wherein a base station serves as a relay link for all calls and is capable of transmitting and receiving calls via each of said channels, wherein a plurality of mobile stations are each individually tunable to respective channels for purposes of transmitting and receiving signals during calls, wherein each channel comprises a modulation band of audio frequencies modulating a respective carrier frequency, said system being characterized in that each modulation band is divided into at least two frequency sub-bands, a first of said sub-bands being reserved for voice communications, a second of said sub-bands being reserved exclusively for control and supervisory signalling, and further including means at said base station for transmitting said control and supervisory signals in said second sub-band of all said channels simultaneously.

4,112,258
COMMUNICATION SYSTEM USING INTELLIGENT NETWORK PROCESSOR

Harold Gene Alles, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1977, Ser. No. 841,365
Int. Cl.[2] H04J 3/00; H04Q 3/54
U.S. Cl. 179—15 AT 29 Claims



1. A switch for interconnecting respective digital call signals of different communication call paths between randomly selectable switch ports corresponding to the paths, the switch comprising

means for storing the signals of input ports of said switch in a first predetermined series of storage locations, respectively,

means for variably processing said stored signals in accordance with predetermined subroutines related at least to effecting said randomly selectable interconnecting of signals and optionally selectable additional subroutines related to predetermined characteristics of a communication call of which said signals are a part, to produce processed call signals, and

means for storing said processed signals in a second predetermined series of storage locations corresponding to output ports, respectively, of said switch.

27. A communication system switch for coupling any one of a plurality of received call signal samples from different sources to any one of a plurality of call signal destinations, said switch comprising

first signal storing means having a signal sample storage location for each of said sources,

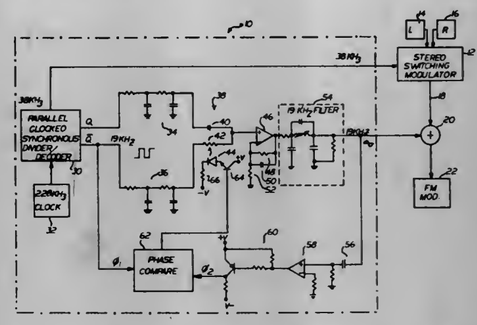
second signal storing means having a signal sample storage location for each of said destinations, and

means for selecting signal samples from said first storing means in any order, regardless of destination for each such sample, and coupling such sample into said second storing means at a location determined by said destination for such signal sample.

4,112,259
AUTOMATIC PHASE CONTROLLED PILOT SIGNAL GENERATOR

Geoffrey N. Mendenhall, Quincy, Ill., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 25, 1977, Ser. No. 781,101
Int. Cl.[2] H04H 5/00
U.S. Cl. 179—15 BT 6 Claims



1. Apparatus for generating a pilot signal for use in an FM stereo modulating system and comprising:

means for generating a first square wave signal to be used as a switching signal in an FM stereo modulating system and a second square wave signal in phase synchronism therewith but having one-half the frequency thereof;

controllable phase shifter means responsive to said second signal for generating a phase adjusted signal having a phase adjusted in accordance with a control signal supplied to said controllable phase shifter means;

filter means for filtering said phase adjusted signal to remove all harmonics above the fundamental whereby said fundamental is provided at the output of said filter means and serves as said pilot signal;

high speed comparator means responsive to said pilot signal for deriving a square waveform therefrom which is synchronized in phase with said pilot signal; and,

digital phase comparison means responsive to the relative logic states of said second signal and said square waveform derived from said pilot signal for determining therefrom the phase difference between said signals and providing said control signal in response to said phase difference so as to substantially synchronize the phase between said second signal and said pilot signal, whereby said pilot signal is substantially in phase synchronism with said switching signal.

6. Phase comparator apparatus for comparing the phase of first and second square wave signals and comprising:

a first flip-flop having a first output, a first edge-trigger input responsive to a specific type of logic transition in the signal appearing thereon for causing said output to assume a first logic state, and a second, level-trigger input responsive to a specific logic level in the signal appearing thereon for forcing said output to assume the logic state which is the logic inverse of said first logic state, regardless of the signal appearing on said first input;

a second flip-flop having a second output, a third edge-trigger input responsive to a specific type of logic transition in the signal appearing thereon for causing said output to assume a second logic state, and a fourth, level-trigger input responsive to a specific logic level in the signal appearing thereon for forcing said output to assume the logic state which is the logic inverse of said second logic state, regardless of the signal appearing on said third input;

means for directing said first signal to said first and fourth inputs and said second signal to said second and third inputs whereby said first flip-flop provides an output having first pulses having a pulse width corresponding to the amount by which said second signal lags said first

signal, and said second flip-flop provides an output having second pulses having a pulse width corresponding to the amount by which said second signal leads said first signal; and,

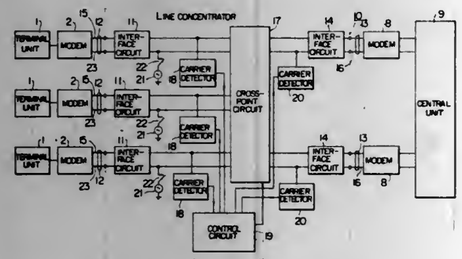
means responsive to said first and second output signals for providing a single phase difference signal indicating the difference in phase between said first and second signals.

4,112,260

AC TYPE LINE CONCENTRATOR

Takashi Kurokawa; Michio Fujiwara, both of Kodaira; Yoshio Akutsu, Koganei; Akoi Otani, Owariasahi; Harumi Nagasawa, Hadano; Masujiro Matsuo, Yokohama; Yasuo Ishii, Tokyo; Sigeru Ogawa, Musashino; Schun'ichi Itoh, Musashino, and Daisuke Takei, Musashino, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha; Japanese National Railways and Hitachi, Ltd., all of Japan

Continuation-in-part of Ser. No. 666,439, Mar. 12, 1976, abandoned. This application Feb. 1, 1977, Ser. No. 764,570
Claims priority, application Japan, Mar. 26, 1975, 50-35614
Int. Cl.² H04M *3/00*
U.S. Cl. 179—18 FC **6 Claims**



1. An ac type line concentrator for use in a data communication system including a central unit and a plurality of terminal units, comprising a crosspoint circuit composed of analog switches for disconnectably connecting m incoming lines and n ($n < m$) outgoing lines, a control circuit for applying a connection control instruction signal to said crosspoint circuit in response to the detection of a carrier frequency signal appearing on one of said incoming and outgoing lines, impedance matching means for maintaining constant the impedances of said lines irrespective of on-off operation of said analog switches in said crosspoint circuit, and means for applying the carrier frequency signal appearing on said incoming and outgoing lines to said crosspoint circuit in ac signal form without demodulating the same, whereby the carrier frequency signal can be transmitted over said incoming and outgoing lines in the ac signal form.

4,112,261

KEY TELEPHONE SYSTEM AND METHOD

Milo B. Shiff, Yorba Linda, Calif., assignor to The Anaconda Company, New York, N.Y.

Filed May 16, 1977, Ser. No. 797,490
Int. Cl.² H04M *1/00*
U.S. Cl. 179—99 **12 Claims**

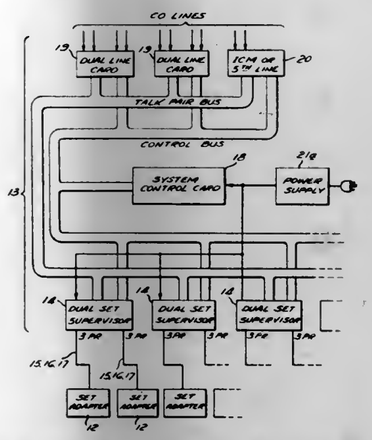
1. In a telephone system comprising a plurality of station sets, each including a plurality of finger actuated line select switches,

(a) multiple adapter units each connected with and proximate to a station set,

(b) multiple supervisory circuits to each of which at least two of said adapter units are connected via a talk pair and a control pair for each adapter unit, said circuits being remote from said adapter units,

(c) system control means connected with said supervisory circuits via a data control bus for asynchronously transmitting to each adapter unit, via said supervisory circuits, data including a start pulse causing the adapter to poll the line select and other switches in the station sets, and return the results of said polling to the system control means via the supervisory circuit in the form of a data word, following which the system control means transmits a data word corresponding to light, bell ringing or intercom bell ringing information,

(d) said system control means including clock means responsive to AC power frequency to produce a timing chain of pulses supplied to logic circuitry for controlling said data transmission and for controlling said supervisory circuits



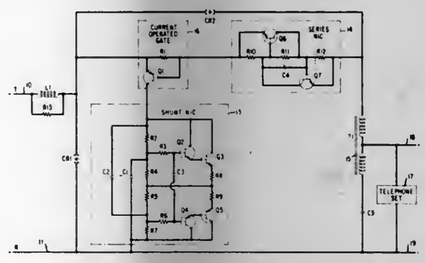
via strobe pulses, said logic circuitry also connected to be responsive to data words returned from the adapter units, the adapter units including other clock means responsive to a start pulse derived from said AC power frequency and used to produce a timing chain of pulses appropriately synchronized with the timing chain of pulses supplied to the system control means, said timing chain of pulses at the adapters being delayed relative to the timing chain pulses at the system control means to facilitate data handling at said adapter units, said delay causing a corresponding delay in said data word return to facilitate data handling at the system control means.

4,112,262

TELEPHONE STATION REPEATER

Kenneth Erwin Stiefel, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 26, 1977, Ser. No. 819,059
Int. Cl.² H04B *3/18, 3/36*
U.S. Cl. 179—170 G **9 Claims**



1. A negative impedance bidirectional amplifier for insertion at the subscriber end of a telephone line, said amplifier comprising:

a shunt negative impedance converter;

a series negative impedance converter; and

a shunt autotransformer;

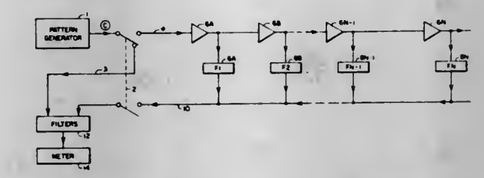
said negative impedance converters and said autotransformer being connected in a π configuration with respect to said telephone line.

4,112,263

MODIFIED DUOBINARY REGENERATIVE REPEATER TESTING ARRANGEMENT

Adam Lender, Palo Alto, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 6, 1977, Ser. No. 785,132
Int. Cl.² H04B *3/46, 1/60*
U.S. Cl. 179—175.31 R **10 Claims**



1. An arrangement for remotely testing, from a test location, the transmission characteristics of modified duobinary regenerative repeaters in situ in a repeatered line, said remote testing arrangement comprising:

means for generating a modified duobinary pulse test pattern composed of repetitious patterns of pulses, each said test pattern characterized by the presence of two pulses of one state followed by two pulses of the opposite state, which is followed by two pulses of said one state, said generating means comprising: means to vary the repetition rate of said test patterns, thereby changing the pulse density, and means to invert the polarity of the pulses in the pattern at any one of a number of predetermined rates, thereby generating one of a number of predetermined audio frequencies, one said predetermined audio frequency for each repeater location, said generating means having an output;

means for transmitting the predetermined audio frequency from the output of a repeater to said test location, said transmitting means having an output;

means for measuring the amplitude of the predetermined audio frequency, said measuring means having an input; and

means for selectively and simultaneously connecting the output of said pulse pattern generator to said repeatered line and said transmitting means to the input of said measuring means, and for selectively and simultaneously connecting the output of said pulse pattern generator to the input of said measuring means and disconnecting said transmitting means therefrom.

4,112,264

TESTING AND SWITCHING SYSTEM INCLUDING REMOTELY CONTROLLABLE STATIONS FOR INFORMATION TRANSMISSION AND COMMUNICATIONS NETWORKS AND SYSTEMS

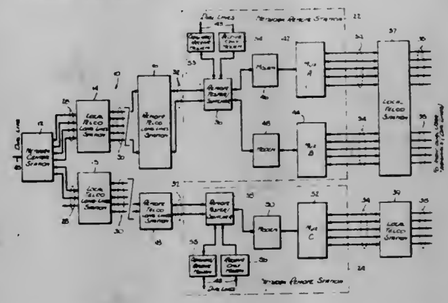
Carl N. Abramson, Bridgewater, N.J.; David Kohl, Brooklyn, N.Y., and Thomas Ogen, Corona, N.Y., assignors to Bowne Time Sharing, Inc., New York, N.Y.

Filed Dec. 28, 1976, Ser. No. 755,010
Int. Cl.² H04B *3/46*
U.S. Cl. 179—175.3 R **78 Claims**

1. Testing apparatus for information transmission systems including a one system station and at least another system station located remotely from the system station for performing tests related to information transmission between one system station and the remote station, the one system station and the remote system station being connected by a transmission link, comprising:

(a) receiving means disposed at the remote station for receiving from the one system station independently of the transmission link there between a plurality of different predetermined command signals each adapted to initiate the testing apparatus to conduct a different one of a plurality of predetermined tests related to the transmission of information over the transmission link;

(b) control means disposed at the remote station for providing a plurality of different control signals in response to different predetermined command signals from the one system station;



(c) a plurality of circuits disposed at the remote station for processing in response to said control signals other signals related to the information transmission between the one system station and the remote station, the processing being related to the performance of at least one predetermined test; and

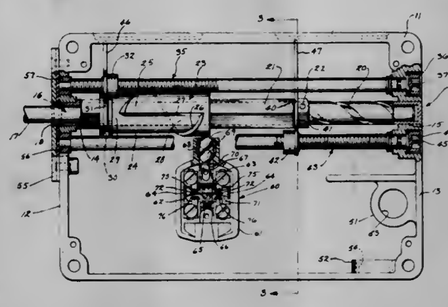
(d) test result signal means disposed at the remote station for deriving test result signals in response to processing of the other signals related to the information transmission by said plurality of circuits in the performance of a predetermined test.

4,112,265

ROTATABLE CAM LIMIT SWITCH WITH VARIABLE TIMING AND DWELL

Robert G. Crepeau, and Thomas G. Karakis, both of Greendale, Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Feb. 28, 1977, Ser. No. 772,707
Int. Cl.² H01H *19/00, 3/16*
U.S. Cl. 200—31 R **11 Claims**



1. A rotatable cam limit switch comprising in combination:

a housing member;

an electric switch in said housing and including a movable contact member and a cam follower arranged to move said contact member from a first operating position to a second operating position;

a drive shaft rotatably supported in said housing member;

a timing adjust sleeve circumjacent to said shaft and in

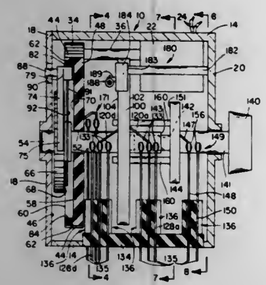
threading engagement with said shaft for axial adjustment relative to said cam follower and said drive shaft;
an elongated, generally cylindrical, tubular cam having a bore receiving the external surface of said timing adjust sleeve and arranged for axial movement therealong and rotation therewith,
said cam having a raised circumferential surface segment and a depressed circumferential surface segment, each segment extending substantially lengthwise of said cam and partially about the exterior thereof with the peripheral extent of each said segment varying from maximum to minimum between its ends, the surface segments of said cam means engaging said cam follower;
restraining means for preventing relative rotational movement between said timing adjust sleeve and said tubular cam;
dwell adjuster means for moving and maintaining said cam axially relative to said cam follower; and
timing adjuster means for moving and maintaining said timing adjust sleeve axially relative to said cam follower and said drive shaft;
whereby the relative position between said cam and said cam follower on said switch may be selectively determined in accordance with the axial positioning of said cam relative to said drive shaft and the point in a given cycle of rotation of said cam at which said cam follower moves between said raised and depressed surface segments being selectively variable in accordance with the combined rotational adjustment of said cam and said sleeve relative to said drive shaft.

4,112,266

APPLIANCE TIMER WITH CONTACT MOUNTING FOR FLEXIBLE CONTACTS

Wallace Leon Linn, 6705 Grosvenor Pl., Indianapolis, Ind. 46220

Continuation-in-part of Ser. No. 647,791, Jan. 9, 1976, Pat. No. 4,060,702. This application Feb. 23, 1977, Ser. No. 771,406
Int. Cl.² H01H *43/00, 1/24*
U.S. Cl. 200—38 C **21 Claims**



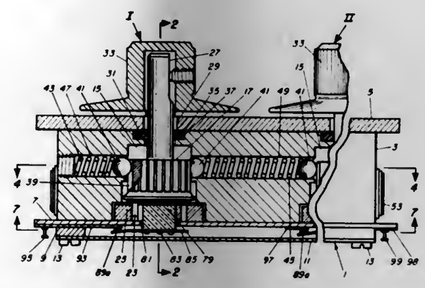
1. In an appliance timer comprising a program wheel rotatably mounted within the timer and having a plurality of program controlling surfaces, a plurality of switches, each switch including at least one throw member and one pole member, each said throw member including means defining a proximal end portion, a distal end portion, and an intermediate portion, means defining one each said throw member a contact and a controlling surface follower, each follower responsive to one of said program controlling surfaces for controlling said throw member, the improvement comprising a terminal block for mounting said throw members, the block including a portion for rigidly holding a proximal end portion of each said throw member, the block further including means for defining channels for maintaining alignment and spacing between said throw members during timer operation, said channels extending longitudinally of said throw members, each said channel cooperating with the intermediate portion of one of said throw members.

4,112,267

CODED SWITCHING DEVICE

Roy A. Zangrando, Lake Hiawatha, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 18, 1976, Ser. No. 715,278
Int. Cl.² H01H *27/06*
U.S. Cl. 200—43 **9 Claims**



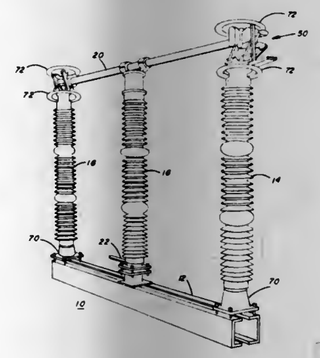
1. A coded switching device comprising at least one switch, each switch including:
stationary contact means;
rotatable contact means having a fixed number of angular orientations, in only one of which said contact means completes an electrical path through said switch;
rotatable actuating means coaxial with said rotatable contact means and including indicia means for indicating its angular orientation;
means for selectively engaging said actuating means with said rotatable contact means in any angular relation thereto; said actuating means being disengagable from said rotatable contact means to permit changing said angular rotation; and
means for preventing said disengagement unless said rotatable contact means is in a particular angular orientation.

4,112,268

DOUBLE SIDE AIR BREAK DISCONNECTING SWITCH

Asuncion Chung, Hoffman Estates, Ill., assignor to H. K. Porter Company, Inc., Chicago, Ill.

Filed Dec. 1, 1976, Ser. No. 746,380
Int. Cl.² H01H *31/02*
U.S. Cl. 200—48 SB **28 Claims**



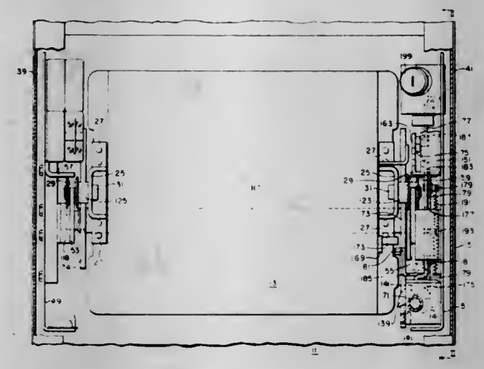
1. A double side air break disconnecting switch comprising:
a base formed from an elongated structural support;
a first insulator, which is stationary, connected in proximity to one end of said base;
a second insulator, which is stationary, connected in proximity to the other end of said base;
a third insulator, supported for rotary movement around its longitudinal axis from said base intermediate said first and second insulators;
an elongated blade rigidly secured intermediate its ends to said third insulator for unitary movement therewith;
a pair of jaw contacts, one being connected to each end of said elongated blade and each defining a bifurcated portion; and,
a pair of contact bars, one supported on said first insulator and the other supported on said second insulator disposed to be engaged by said pair of jaw contacts when said third insulator is moved to a closed position completing an electric circuit through the disconnecting switch.

4,112,269

DRAWOUT SWITCHGEAR WITH LEVERING-IN MECHANISM

Hugh A. Nelson, Plum Borough; Raymond H. Schweinebraten, Upper St. Clair; Nicholas A. Salemi, Plum Borough, and James O. Rexroad, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1977, Ser. No. 757,102
Int. Cl.² H01H *9/20*
U.S. Cl. 200—50 AA **11 Claims**



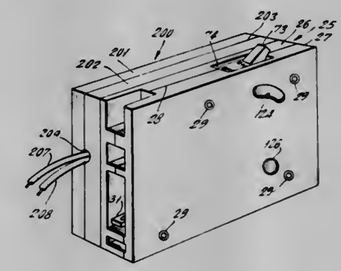
1. Drawout switchgear comprising a cell having a front opening, a circuit interrupting unit movable into and out of the cell, stationary primary terminal means supported in the cell, movable primary terminal means on said unit, retractable secondary contact means and movable secondary contact means movable into and out of contact with each other, one of the retractable contact means and movable secondary contact means being mounted on the circuit interrupter, the other of the retractable contact means and movable secondary contact means being on the cell, a levering-in mechanism mounted on the cell for moving said unit between disconnected, intermediate, and connected positions of said terminal and contact means, the levering-in mechanism comprising an operating shaft supported for rotation about an axis that extends generally in the direction of movement of said unit, the operating shaft comprising a threaded part, a travelling nut on the threaded part, a cam pivotally mounted on the cell and operatively connected to the nut for rotating the cam reversely between two positions corresponding to the disconnected and connected positions, the cam being rotatable in a plane parallel to the direction of movement of said unit, the cam having a slot including an open end at the cam periphery, the slot having outer and inner camming segments, the angles of directions of the segments with respect to the angle of rotation of the cam being such that the mechanical advantage of the outer segment is greater than that of the inner segments, a cam pin on said unit and movable into and out of the cam slot for movement of said unit between the disconnected, intermediate, and connected positions, said terminal means being disengaged in the disconnected and the intermediate positions and being engaged in the connected position, said contact means being disengaged in the disconnected position and being engaged in the intermediate and connected positions, during the movement of the unit between the disconnected and the intermediate positions the cam pin moving along the outer segment of the cam slot, during movement of the unit between the intermediate and connected positions the cam pin moving along the inner segment, so that for a constant speed of rotation of the operating shaft said unit moves faster between the intermediate and the disconnected positions than between the connected and intermediate positions.

4,112,270

MEANS CONNECTING CIRCUIT BREAKER AND AUXILIARY FEATURE MODULES

Tadeusz J. Rys, Bellefontaine, Ohio

Filed Sep. 2, 1977, Ser. No. 830,312
Int. Cl.² H01H *9/26*
U.S. Cl. 200—50 C **10 Claims**



1. Electrical circuit controlling apparatus comprising a circuit breaker including cooperating movable and stationary contacts; a contact arm carrying said movable contact, latch pivot means pivotally mounting said contact arm for movement between contact open and closed positions, an operating mechanism connected to said contact arm for opening and closing said contacts, said mechanism including a releaseable cradle and cradle pivot means pivotally mounting said cradle for movement between reset and tripped positions, said mechanism also including a latch and latch pivot means pivotally mounting said latch for movement between latching and unlatching positions, said latch when in said latching position holding said cradle in said reset position, said mechanism automatically opening said contacts when said cradle is in said tripped position; a first of said pivot means including a first pin keyed to the element pivotally mounted by said first of said pivot means; said first pin including an axially disposed connecting means for making an operative mechanical connection to an axially disposed cooperating connecting means on a bearing of an operator for an auxiliary feature which is to operate in conjunction with said circuit breaker.

4,112,271

COUNTER DEVICE ASSOCIATED WITH SWITCH ACTUATOR OF ELECTRICAL SHAVER TO DETERMINE BATTERY RECHARGING AND USE

Michael John Marchetti, Bridgeport, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

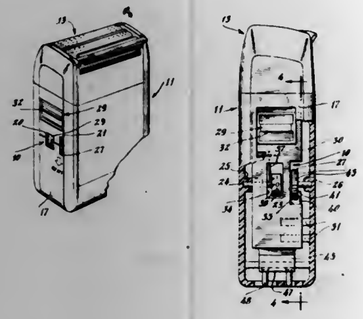
Filed Dec. 20, 1976, Ser. No. 752,491
Int. Cl.² H01H *35/00;* B26B *19/02*
U.S. Cl. 200—52 R **12 Claims**

1. A counter for visually indicating to the user the number of prior uses of a battery operated appliance including a casing having a display opening formed therein, a switch within the

casing for establishing an electrical circuit between batteries and appliance output means, said counter comprising;

a. an elongated slide member provided with a dial opening and slidably disposed against an inner surface of the casing for sliding movement between spaced limit positions for selectively operating the switch and including actuator means operable from outside the casing to effect said sliding movement,

b. an indicia dial attached to a shaft having opposite ends thereof rotatably mounted in trunnions formed on inner walls of the casing, said dial having a portion thereof disposed in the dial opening of the slide member and having numerals inscribed serially on the periphery of said portion of the dial,



c. ratchet means formed on said slide member and said dial operable upon movement of the slide member to a first of said spaced limit positions for rotating said dial a predetermined distance to expose the next highest numeral on the dial in the display opening in the casing,

d. reset means mounted on said shaft for rotation therewith and operable from outside the casing through a second opening formed in the casing for resetting the dial to an initial start position, and

e. detent means formed on said slide member and said reset means operable for detenting and holding said dial in said first limit position of the slide member upon rotation of the dial.

4,112,272

VALVE AND SWITCH DEVICE FOR MEASURING PRESSURE OF LIQUIDS IN LIVING OBJECTS

Sven Erik Jonsson, Kungsängen, and Olov Valter Ekström, Brottby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 744,833, Nov. 24, 1976, abandoned, which is a continuation of Ser. No. 607,862, Aug. 25, 1975, abandoned, which is a continuation of Ser. No. 439,618, Feb. 4, 1974, abandoned. This application Jun. 21, 1977, Ser. No. 808,703

Int. Cl.² H01H *9/06;* A61B *5/02*

U.S. Cl. 200—61.58 R **2 Claims**

1. An electro-mechanical switch and valve mechanism for use in a pressure measuring device comprising

an axial valve having a plurality of ports radially angularly arranged thereabout,

an electrical switch having an axial housing connected in fixed assembly to said valve and in axial alignment therewith,

a plurality of magnetically responsive encapsulated insulated switch contacts located within said switch housing in stationary relation thereto and in radially angularly spaced relation with respect to the axis thereof,

electrical conductors connected to said switch contact and extending through said switch housing,

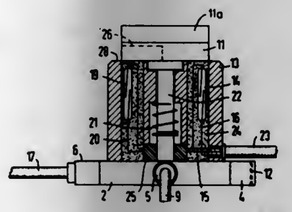
a rotatable and axially shiftable actuating member having a knob disposed outside said switch housing and an axial stem means extending into switch housing and into said valve,

said stem means being operative to open and close said ports upon rotation thereof,

said knob having a radial operating surface,

said switch housing having a radial outer surface facing said operating surface and having disposed therewithin a spring member for biasing said operating surface axially into abutting engagement with said outer surface, and a magnet located in said knob for joint rotation therewith,

said operating surface and said outer surface having axially extending cooperating lug and detent means formed thereon including a lug and a plurality of radially angularly spaced detents for receiving said lug,



said knob being axially shiftable against the bias of said spring member to move said operating surface out of engagement with said outer surface and said lug out of said detents and then being rotatable to enable said lug to be selectively received in one of said detents and said operating surface to be shifted axially back into abutting engagement with said outer surface,

said magnet and said contacts being constructed and arranged so that said contacts operatively respond to said magnet only when said lug is received in one of said detents and said operating surface of said knob is shifted axially back into engagement with said outer surface of said switch housing.

4,112,273

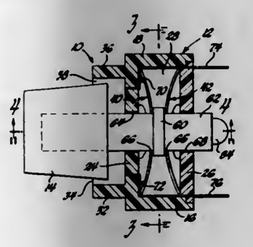
PUSH-PULL ELECTRIC SWITCH

Edward M. Arakelian, and Terrance W. Maugans, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 28, 1977, Ser. No. 846,422

Int. Cl.² H01H *15/18, 15/24*

U.S. Cl. 200—67 D **3 Claims**



1. A push-pull electric switch comprising a housing having a chamber defined by interconnected top, bottom and side walls and a front wall and a rear wall, front and rear spring contact plates located in said chamber, each of said contact plates being spherically shaped and having a plurality of leg portions formed therewith, the convex surfaces of the contact plates facing each other and each of said contact plates having an aperture centrally formed therein, the front wall of said housing having an opening therein which is axially aligned with the apertures in each of said contact plates, an actuator in the form of a rod having an inner portion extending into said housing through the opening in the front wall and the apertures in each of said contact plates, said actuator having an outer portion located exteriorly of said housing, an enlarged member rigidly formed with said inner portion and located between said contact plates and being of a size greater than the size of each aperture in said contact plates so that the latter normally biases said actuator to a neutral position, a pair of contact tabs formed with each of said contact plates, and a pair of stationary contact members carried by said front wall and said rear wall and located opposite to the pair of contact tabs formed with the associated contact plate whereby axial movement of the actuator in one direction causes the member to flex the rear contact plate towards the rear wall so that the contact tabs thereof engage the contact members on the rear wall while axial movement of the actuator in a direction opposite to said one direction causes the member to flex the front contact plate towards the front wall so that the contact tabs thereof engage the associated contact members mounted on the front wall.

4,112,274

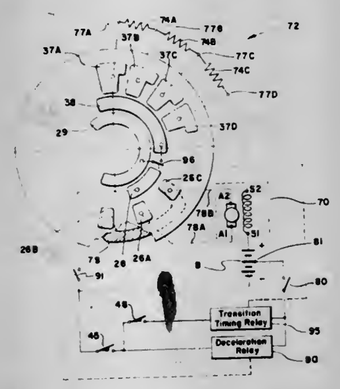
ELECTRICAL CONTROL

Chester Joseph Pigman, Uniontown, and James Arthur Pewton, Sr., North Canton, both of Ohio, assignors to General Power Corp., Akron, Ohio

Filed Feb. 4, 1976, Ser. No. 655,251

Int. Cl.² H01H *3/00;* H01F *29/04*

U.S. Cl. 200—146 R **40 Claims**



1. An electrical control apparatus comprising, mounting means, a plurality of discrete load contact means disposed in fixed relation on said mounting means and connected with differing magnitudes of impedance, power contact means movable relative to said discrete load contact means for permitting continuously progressive, sequential engagement therewith, transition contact means connected to each of said discrete load contact means prior to engagement by said power contact means, and transition circuit means providing a maintainable full load alternate current path through said transition contact means and each of said plurality of discrete load contact means prior to engagement of said discrete load contact means by said power contact means, thereby providing a graduated change in the magnitude of electrical energy transfer substantially without arcing between said contact means.

4,112,275

CONTACT STRUCTURE FOR ELECTRICAL SWITCHING APPARATUS

Helmut Kohler, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

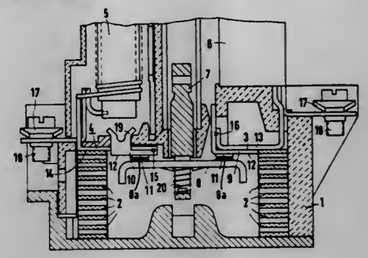
Germany

Continuation of Ser. No. 453,401, Mar. 21, 1974, abandoned. This application Jul. 8, 1976, Ser. No. 703,583

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1973, 7311345[U]

Int. Cl.² H01H *33/20*

U.S. Cl. 200—147 R **4 Claims**



1. In an electric switching apparatus including stationary and movable electrical contacts disposed within a housing, an improved contact structure, comprising:

a planar electrical arc conducting member constructed of ferromagnetic material;

an electrical contact member, disposed on one side of said electrical arc conducting member for engagement with an opposing contact of said switching apparatus, and constructed of non-magnetic material; and

an electrical line conductor disposed flat on the other side of said electrical arc conducting member and electrically connected to said arc conducting member at a point away from said electrical contact member, said line conductor, said electrical connection between said electrical line conductor and said electrical arc conducting member, and said electrical arc conducting member comprising a coupling arrangement forming a current conducting loop for inducing travel of electrical arcs.

4,112,276

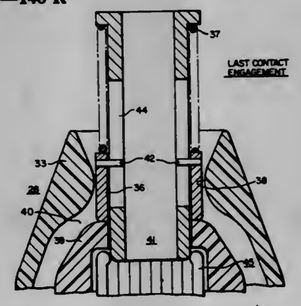
COMPRESSED-GAS CIRCUIT-INTERRUPTER HAVING A SLEEVE-VALVE FOR TEMPORARILY BLOCKING THE ORIFICE THROAT

Charles F. Cromer, Level Green-Penn Township, Allegheny County; Kue H. Yoon, Pittsburgh, and Willie B. Freeman, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 28, 1976, Ser. No. 727,510

Int. Cl.² H01H *33/88*

U.S. Cl. 200—148 R **13 Claims**



1. A compressed-gas circuit-interrupter including a pair of separable contacts separable to establish an arc during the

opening operation of the circuit-interrupter, means defining a hollow insulating orifice structure having an inner throat portion through which said established arc is drawn, a sleeve-valve surrounding one of said separable contacts rendering it captive and having a lost-motion mechanical connection therewith, means biasing said sleeve-valve to an extended position relative to said captive contact wherein it, together with its inner-disposed captive contact, substantially blocks the flow of compressed gas through said throat portion in the closed-circuit position of the device, at least one of said separable contacts being vented so that hot, ionized, products of decomposition may exhaust therethrough during the initial stage of arcing and also during the time of valve-blocking action, while the sleeve-valve blocks the said orifice throat portion, and the said captive contact picking up the sleeve-valve following take-up of the said lost-motion connection, so that unblocking action occurs at the throat portion at a time of substantial arc length and also at a time when arc extinction is possible.

4,112,277

PUSH-BUTTON SWITCH UNITS

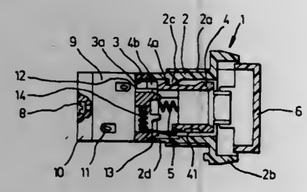
Markus Kleeb, Reinach, Switzerland, assignor to Tschudin & Heid AG, Switzerland

Filed Aug. 25, 1976, Ser. No. 717,691

Claims priority, application Switzerland, Aug. 29, 1975, 11235/75

Int. Cl.² H01H *3/14*

U.S. Cl. 200—153 J **5 Claims**



1. A push-button unit comprising, in combination, a sleeve member having a longitudinal axis; a push-rod member mounted to be axially displaceable in said sleeve member between an outer position and an inner position; a guide groove system defined in a surface portion of said push-rod member; a latching element mounted on said sleeve member to extend internally thereof, said guide groove system being engageable by a portion of said latching element, responsive to said push rod being displaced to said inner position, thereby to latchably retain said push-rod in said inner position and, responsive to renewed pressure being applied to said push-rod, to allow said push-rod to return to said outer position; an opening provided in said sleeve member in the vicinity of said latching element to provide access thereto; a recess defined in said surface portion of said push-rod member; and a rib member defined in said surface portion of said push-rod member and extending between said recess and said guide groove system; said push-rod surface portion and the inner surface of said sleeve defining a free intermediate space for lateral displacement of said latching element portion; whereby said latching element is selectable positionable on either side of said rib member, by a tool inserted through said opening, to cause said latching element portion to enter a selected one of said guide groove system and said recess; whereby, in dependence on the selected setting of said latching element said push-button unit is ready for operation selectively with latching action and without latching action without any disassembly of the components of the unit or displacement of any such components except said latching element.

4,112,278

PUSH BUTTON SWITCH

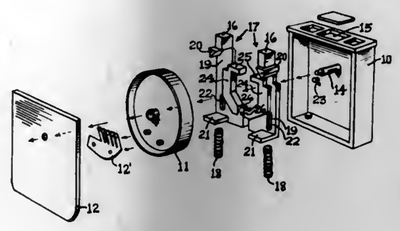
Günter Greiner, Bayreuth, and Günter Murmann, Neuses, both of Fed. Rep. of Germany, assignors to Cherry Electrical Products Corp., Waukegan, Ill.

Filed Oct. 26, 1977, Ser. No. 845,489

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653172

Int. Cl.² H01H *3/34, 13/58*

U.S. Cl. 200—156 **7 Claims**



1. In a multiple-position push-button rotary switch having switch contacts movable in either direction through a plurality of switch positions and housed within an open-sided hollow case, the combination comprising

(a) a rotatable ratchet wheel carried by a switch position indicator mounted for rotation within the switch housing,

(b) a pair of independent actuators diametrically disposed on opposite sides of the axis of said ratchet wheel and mounted for independent reciprocal linear movement within said housing into and out of tangential contact with said ratchet wheel,

(c) each of said actuators providing an elongated flat plate having an uninterrupted surface on one side thereof for facial displacement against one side wall of said housing, and a substantially C-shaped reinforcing area on the opposite side surface,

(d) said C-shaped reinforcing area providing at one end thereof an actuating cam and at the opposite end a stop cam adapted to be alternately engageable with said ratchet wheel to rotate the same in step-by-step movement in either direction, and

(e) yieldable means for maintaining said actuators in one position with their respective stop cams in engagement with certain teeth of said ratchet wheel to maintain the same in a set switching position.

4,112,279

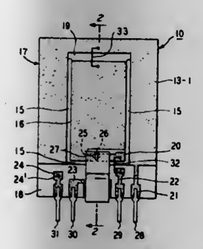
PIEZOELECTRIC RELAY CONSTRUCTION

Ivan Eugene Brohard, Westerville, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 2, 1977, Ser. No. 830,154

Int. Cl.² H01H *57/00*

U.S. Cl. 200—181 **13 Claims**



1. A piezoelectric switch device comprising a bimorph sheet

comprising layers of material exhibiting piezoelectric properties, each having electrodes comprising metallic surface coatings thereon, and an electrode comprising a conductive center-vane, said sheet having a substantially "U" shaped perforation therethrough to present an armature member having a moveable free end within the boundaries of said sheet, a first electrical contact mounted on said free end of said armature member, a conductive clip member mounted on said sheet, and a second electrical contact mounted on said clip member in opposition to and spaced apart from said first contact.

4,112,280

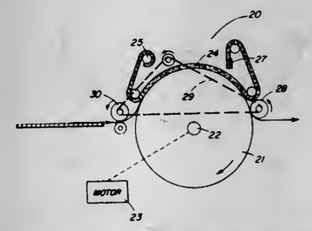
THERMAL PROCESSOR

Robert Charles Salsich, Canandaigua, and Roger Edwin Bartell, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 28, 1977, Ser. No. 819,797

Int. Cl.² H05B *1/00*

U.S. Cl. 219—216 **7 Claims**



1. Apparatus for thermal development of imaging material, said apparatus comprising:

(a) a development drum mounted for rotation on a central axis, said drum having a peripheral surface with a low coefficient of friction;

(b) means for rotating said drum;

(c) means for heating said drum surface;

(d) means providing a stationary, low-coefficient-of-friction, support surface extending around a portion of said drum from a material inlet to a material outlet;

(e) means for urging said support surface toward the successive portions of the drum surface moved therepast, the force provided by said urging means being sufficient to maintain material between said drum and said support surface in heat transfer relation with said drum but insufficient to create any substantial drive transmission forces between such material and said drum; and

(f) first and second drive-inducing means located respectively proximate said inlet and said outlet, at least one of said drive-inducing means being an idler roller mounted with respect to said drum surface in a manner creating normal forces, between contiguous portions of said roller and drum surface, of magnitude effecting transport by said drum of interposed material.

4,112,281

COMBINED WATER HEATER AND SAUNA ROOM HEATER DEVICE

L. Macon Epps, Huntington, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 8, 1976, Ser. No. 674,771

Int. Cl.² F24D *3/08;* F24H *1/18;* A61H *33/06;* H05B *1/00*

U.S. Cl. 219—283 **4 Claims**

1. In combination with a sauna room, a combined domestic hot water and sauna room heater device mounted in said sauna room, said device comprising

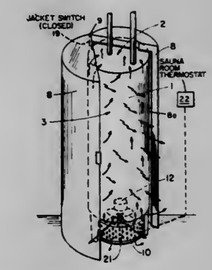
a domestic hot water heating unit including a water tank having a top, sides and a bottom and leg means supporting the tank with its bottom at a predetermined distance above a supporting surface in said sauna room, said tank having a cold water inlet means and a hot water outlet for connection to a domestic hot water system of a building, said tank including thermostatically controlled heating means for heating the water therein to a predetermined temperature;

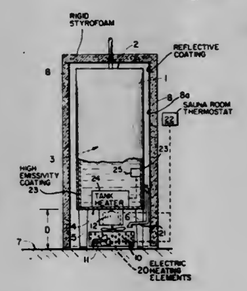
a split jacket of substantially rigid thermal insulation movably mounted about the tank and selectively covering the top and sides of the tank and extending to the supporting surface, said jacket being selectively movable between a closed position completely enclosing and insulating the tank and an open position exposing part of the top, sides and bottom of the tank and part of the area between the supporting surface and the bottom of the tank, the exposed part of the tank serving as a heat exchange surface for radiating heat from the hot water in the tank to the sauna room;

a separate perforated housing mounted within said jacket in the area between the supporting surface and the bottom of the tank;

sauna rocks in the perforated housing;

electric heating means in the perforated housing for heating the sauna rocks;





electric fan means mounted in said area for directing heated air via forced draft from the housing upward past the exposed part of said tank to pick up additional heat therefrom and thence into the sauna room;

circuit means including switch means and a thermostat means responsive to sauna room temperature, said switch means and thermostat means being electrically connected to the heating means and the fan means to energize the heating means and fan means when the switch means is closed and when said sauna room is below the desired temperature for maintaining desired sauna room temperature under the control of said thermostat means, said switch means being coupled to the jacket in a manner whereby when the jacket is moved to its open position said switch means is automatically closed to energize the electric heating means and fan means, said switch means being open when said jacket is in its closed position; and

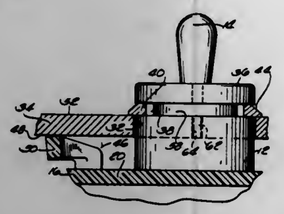
selectively operable means associated with said tank for supplying water from the tank to the heated rocks in the perforated housing for generating steam in the sauna room.

4,112,282

SNAP-IN MEANS FOR MOUNTING ELECTRICAL DEVICES OR THE LIKE IN A SUPPORT PANEL APERTURE

Earl T. Piber, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Division of Ser. No. 638,811, Dec. 8, 1975, Pat. No. 4,070,559. This application Aug. 26, 1977, Ser. No. 827,856
Int. Cl.² H01H *9/02*
U.S. Cl. 200—296 **7 Claims**



1. A snap-in mounting means for a device adapting the device to be mounted from the back of and through a hole in a support panel to secure the device to the panel so that part of the device is accessible from the front of the panel comprising

an elongated bushing carrying the accessible part of the device and having an outer end portion to be received in the panel mounting hole, said bushing outer end portion including an annular groove,

a split ring which is disposed in said bushing groove, which is radially compressible and expandable within said bushing groove between a normally expanded position where its outer dimension is larger than the dimension of the panel mounting hole and a compressed position where it can pass through the panel mounting hole, and which is adapted to engage the back rim of the panel mounting hole and be cammed thereby to said compressed position as said bushing outer end portion is inserted into the hole during mounting, said split ring returning to its normally expanded position, where at least a portion thereof overlies the front of the support panel in the area surrounding the mounting hole, after said bushing outer end portion has been inserted through the mounting hole,

and a plurality of circumferentially spaced spring fingers extending inwardly from the inner periphery of said ring and bearing against the inner wall of said bushing groove to evenly space said ring from said groove inner wall when said ring is in said expanded position,

biasing means adapted to urge said bushing in an axial direction away from the back of the support panel and thereby hold said split ring in tight engagement with the front of the support panel after mounting.

4,112,283

DISTRIBUTOR CAP AND DUST SHIELD WITH HERMETIC SEALING AND MOISTURE DETECTION APPARATUS

James Lathrop, Rte. #1, Wayne City, Ill. 62895

Filed Mar. 18, 1977, Ser. No. 779,062
Int. Cl.² H01H *19/06*; B65D *81/26*
U.S. Cl. 200—302 **24 Claims**

1. A spark ignition distributor cap assembly comprising in combination:

A. a distributor cap comprising a cup-shaped member having an interior defined by an inner surface and an exterior defined by an outer surface with a circumferentially extending lower end intermediate said surfaces,

B. a base having a circumferentially extending upper end adapted to receive said lower end of said distributor cap in overlapping relationship therewith,

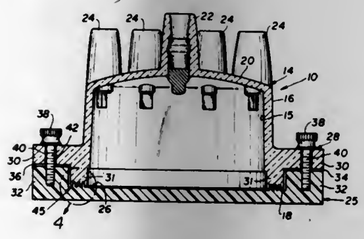
C. coupling means for removably securing said cap to said base during use of the ignition cap assembly,

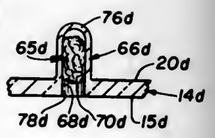
D. sealing means operatively associated with said cap and said base to provide a multiple barrier therebetween so as to prevent liquid such as road water splash or the like from entering the interior of said cap,

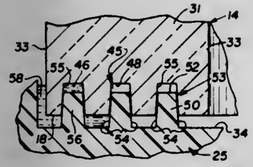
E. said sealing means comprises:

(1) a plurality of circumferentially extending concentrically formed grooves on said cap, each one of said grooves having an inner end terminating below said lower end of said cap, and

(2) a plurality of circumferentially upwardly extending annular ribs formed on said base, each one of said ribs concentrically formed relative to each other and having a terminal end above said upper end of said base, said ribs adapted to extend in interfitting relationship with each other when said coupling means secures said cap and said base in assembled relationship to each other,







F. engaging means operatively associated with each one of said ribs and said grooves, said engaging means comprising inclined surfaces on said ribs and said grooves for abutting engagement therebetween, each one of said corresponding pair of inclined surfaces of each one of said mating ribs and grooves providing sealing engagement therebetween such that a liquid barrier is obtained,

G. detecting means operatively associated with said cap for indicating by visual means the moisture condition of the air within said cap when assembled with the base, said detecting means comprises a chemical compound that changes its color when hydrated or percipitated,

H. housing means mounted on said cap for receiving said detecting means therein, and

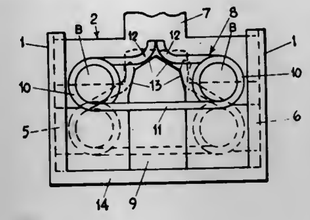
J. said housing means being contained on said inner surface and includes an aperture adapted to receive said detecting means therein.

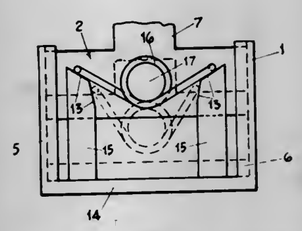
4,112,284

FALL-THROUGH RETURN SPRING ARRANGEMENT FOR A PUSH-BUTTON SWITCH MECHANISM

John Harwood Leworthy, Newton Aycliffe, England, assignor to The General Electric Company Limited, London, England

Filed Aug. 20, 1976, Ser. No. 716,155
Claims priority, application United Kingdom, Aug. 22, 1975, 34934/75
Int. Cl.² H01H *3/12*
U.S. Cl. 200—340 **7 Claims**





1. A push-button switch mechanism for linearly actuating a set of switch contacts, said switch mechanism including:

(A) a housing,

(B) a push button,

(C) means mounting said push-button for substantially linear motion with respect to said housing, and

(D) a return-spring arrangement to provide substantially the sole restoring force acting between the push-button and the housing and tending to reverse said linear motion, said arrangement consisting of:

(I) a first means presenting a ramp surface having a first portion inclined at a first angle to said direction of motion and a second portion inclined to said direction of motion at a smaller angle than said first angle, and

(II) second means including a spring of which part is arranged to bear successively during said linear motion firstly upon said first portion of said ramp surface to provide an increasing restoring force as said linear motion progresses and secondly upon the second portion of said ramp surface to provide a lesser value of restoring force due to a smaller angle at which said second portion is inclined to said direction of motion, one of said first and second means being secured to said push-button and the other of said first and second means being secured to said housing.

4,112,285

INDUCTION HEATING USING PARALLEL ELECTRIC/MAGNETIC FIELDS

Peter N. Y. Pan, Country Club Hills, and Steve F. Wronski, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Mar. 14, 1977, Ser. No. 776,840
Int. Cl.² H05B *5/06*
U.S. Cl. 219—10.41 **33 Claims**

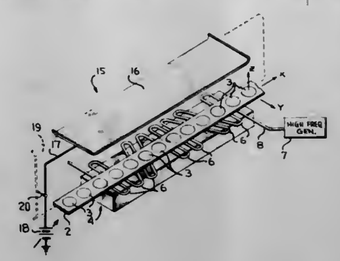
26. A method of counteracting tear-away forces while fusing substrates having charged powder particles deposited thereon, comprising the steps of:

(a) conveying said substrates along a predetermined path;

(b) providing at least one induction heater coil adjacent to said predetermined path;

(c) applying high frequency current to said at least one induction heater coil so as to fuse said substrates, while imposing on said powder particles a tear-away force in a direction away from said predetermined path; and

(d) applying a DC electric field to said substrates so as to impose a counter-force on said powder particles in a direction toward said predetermined path, whereby to counteract said tear-away force.

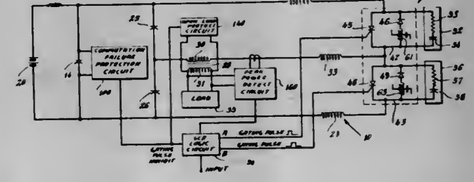


4,112,286

POWER CIRCUIT FOR INDUCTION HEATING

Arnold N. Alderman, Stratford, Conn., and Shashi B. Dewan, Toronto, Canada, assignors to Firing Circuits, Inc., Norwalk, Conn.

Filed Jun. 28, 1976, Ser. No. 700,601
Int. Cl.² H05B *5/04*
U.S. Cl. 219—10.41 **10 Claims**



1. A high voltage, induction heating, power circuit for supplying a high current to a load, said power circuit comprising:

a. a source of electrical potential having a positive and a negative terminal;

b. an inverter module in series with said source of electrical potential, said inverter module being comprised of a first section and a second section, each of said sections being comprised of

1. at least one thyristor gatable to conduct in a first direction

2. at least one diode means connected in parallel with said thyristor and conducting in the opposite direction, so that alternate current paths through said inverter module section are provided,

3. a saturable reactor in series with said diode means, said saturable reactor placing a reverse voltage across the thyristors when the diode means begins conduction, said saturable reactor also limiting the rate of rise of the voltage across said respective thyristor when said thyristors have turned off, and

4. a snubber connected in parallel with said thyristor, said snubber being comprised of a series connected resistor and capacitor and operating to limit the rate of rise of voltage across the thyristor when said thyristor has turned off;

c. an SCR logic circuit for selectively providing gating pulses to said thyristors of said inverter module, each of said thyristors becoming conductive when receiving a gating pulse;

d. a first inductance series connected with said positive terminal of said source of electrical potential and said first section of said inverter module;

e. a second inductance series connected with said negative terminal of said source of electrical potential and said second section of said inverter module;

f. a pair of series connected charging capacitors connected in parallel with said inverter module between said first and second inductances and said source of potential;

g. a load connected from between said charging capacitors to between said first and second sections of said inverter module;

whereby said power circuit is in operation, current flows through one current path of said first section of said inverter module, through said load and through said series capacitors thereby charging them, said capacitors then discharging and sending current back through said load and through said alternate current path in said first section of said inverter module, the operation then being repeated with said second section of said inverter module, and whereby when the SCR logic circuit provides gating pulses at sufficiently high frequency, said thyristor of said second section begins conduction while said diode means of said first section is still conducting, thereby diverting current from the alternate current path in said first section to the thyristor current path of said second section, the operation then being repeated with the said second section of said inverter module, the snubber limiting the rate of rise of the forward blocking voltage of the thyristor and the saturable reactor sweeping the thyristor clean to reduce its turn off time and also limiting the rate of rise of the forward blocking voltage of the thyristor, thereby reducing power loss in the snubber.

4. A commutation failure protection circuit which senses a voltage collapse condition across a filter capacitor of a DC buss which feeds an inverter circuit consisting of sequenced switches and LC circuits controlled by said switches, and which provides direct current transfer while maintaining voltage isolation from said inverter module where the voltage collapse occurs, said commutation failure protection circuit comprising a Hall device whose output voltage is proportional to its input current, means for comparing the output voltage of said Hall device with a selectively set voltage and means for sending an output signal from said commutation failure protection circuit depending upon the magnitude of the output voltage of said Hall device in comparison with said set voltage.

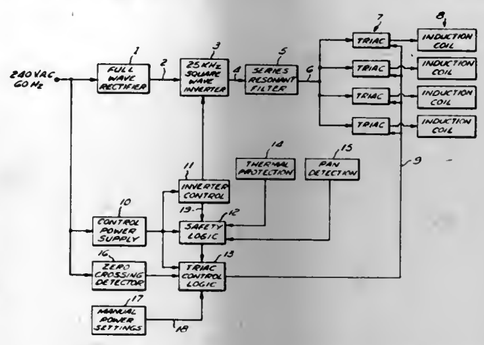
5. An improvement in a circuit comprising a gated thyristor conducting in a first direction and a diode connected in parallel with the thyristor and conducting in a second direction to provide alternate current paths occuring at high frequency, the improvement comprising a saturable reactor in series with the diode and a snubber in parallel with the thyristor, the snubber comprising a series connected resistor and capacitor operating to limit the rate of rise of the forward blocking voltage of the thyristor when the circuit is conducting in the second direction and the saturable reactor sweeping the thyristor clean to reduce its turnoff time and also limiting the rate of rise of the forward blocking voltage of the thyristor, thereby reducing power loss in the snubber.

4,112,287

CENTRAL OSCILLATOR FOR INDUCTION RANGE USING TRIAC BURNER CONTROLS

Robert M. Oates, and Theodore M. Heinrich, both of Murrysville, Pa., assignors to White-Westinghouse Corporation, Pittsburgh, Pa.

Filed Nov. 4, 1976, Ser. No. 738,904
Int. Cl.² H05B 5/04
U.S. Cl. 219—10.49 R 20 Claims



1. An apparatus for inductively heating cooking utensils comprising:

power supply means for providing a DC output pulsating at regular intervals between a zero point and a maximum point;

oscillator means electrically connected to said DC output for providing an AC sinusoidal output which is fully amplitude modulated by said DC output, said sinusoidal output being in the form of power pulses defined by a pulse train of generally identical modulation envelopes;

AC switching means electrically connected to said AC sinusoidal output and operable to switch between an electrically nonconducting condition and an electrically conducting condition only when said DC output is approximately at said zero point; and

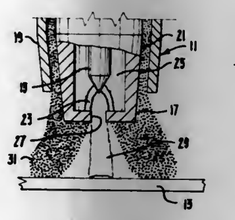
at least one induction heating coil electrically connected to said AC switching means, said coil producing an alternating magnetic field only when said AC switching means is in said conducting condition, said induction heating coil being power regulated by supplying a selective number of said power pulses to said induction heating coil via said AC switching means.

4,112,288

ORIFICE TIP

William R. Pieren, and Robert F. Stetson, both of San Diego, Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Apr. 17, 1975, Ser. No. 569,068
Int. Cl.² B23K 9/00
U.S. Cl. 219—121 P 3 Claims



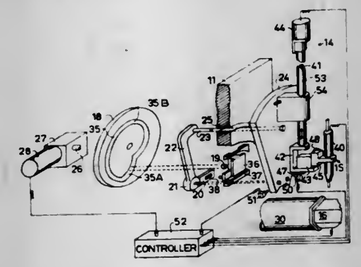
1. In a plasma arc torch having an orifice tip, the improvement in said tip comprising a substantially cylindrical rod-like member having an interior axial passage, an integral portion of said cylindrical member forming an electrode for development of said arc and also forming a passage for communication of plasma developed by said arc away from said welding and cutting torch, said member being formed from an isotropic graphite of substantially uniform thermal conductivity in the longitudinal and transverse directions of the axial passage and having an average particle grain size of less than about 0.003 inches and an average pore size of less than about 1 micron and providing a good machinable graphite for forming said passage, the isotropic graphite forming said cylindrical member having selected qualities of a coefficient of thermal expansion in the range of about 4.6×10^{-6} to about 5×10^{-6} per degree Fahrenheit and a good electrical resistivity in the range of about 0.7×10^{-3} ohm inches to 1×10^{-3} ohm inches at 70° F.

4,112,289

WELDING APPARATUS

Kenneth W. Mead, and K. Stewart Peters, both of El Cajon, Calif., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed Mar. 15, 1977, Ser. No. 777,847
Int. Cl.² B23K 9/00
U.S. Cl. 219—124.33 12 Claims



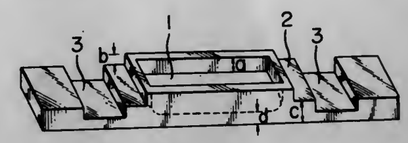
1. Welding apparatus for polygonal or non-circular workpieces, comprising a welding torch assembly, means for rotating a workpiece about an axis thereof with said axis in predetermined relation to said welding torch assembly so that successive points along a predetermined path of a weld to be made along the periphery of said workpiece are rotated past said welding torch assembly and define an arc gap extending between each of said points in succession and said welding torch assembly, means responsive to changes in the distance across said arc gap from a predetermined value for moving said welding torch assembly toward or away from said workpiece to restore said predetermined value, said weld path having at least one elongated portion thereof having a substantially different radius of curvature than an adjacent portion thereof, means for adjusting the instantaneous attitude of said welding torch assembly to said path so as to maintain the same substantially perpendicular to the surface of said workpiece in the plane of said path at each of said successive points, said last mentioned means including cam means conformed for synchronization with at least a part of said weld path and a cam follower responsive thereto and linked to said welding torch assembly, and means for actuating said cam means and cam follower in predetermined synchronized relation to the rotation of said workpiece.

4,112,290

EVAPORATION VESSEL FOR USE IN VACUUM EVAPORATION

Yukihiko Nakajima, Machida; Shuzou Watanabe, Kawasaki; Akira Miyai, Machida, and Masaji Ishii, Tokyo, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1976, Ser. No. 736,169
Int. Cl.² C23C 13/12
U.S. Cl. 219—275 8 Claims



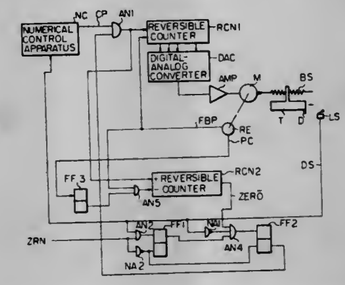
1. In an evaporation vessel solidly made of electroconductive ceramic for vacuum evaporation of a metallic or non-metallic substance by virtue of resistance heating generated by directly passing electric current through said evaporation vessel, the improvement wherein the surface of the adjoining portion on the both sides of a cavity through which electricity passes is lower than the top of the outside wall of said cavity for increasing the temperature in said adjoining portions due to a smaller cross-sectional area having an increased electrical resistance.

4,112,291

POSITIONING SYSTEM IN A NUMERICALLY CONTROLLED APPARATUS

Hiroomi Fukuyama, Higashiyamato, and Masahiro Kaku, Tachikawa, both of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Mar. 22, 1977, Ser. No. 780,113
Claims priority, application Japan, Mar. 30, 1976, 51-34860
Int. Cl.² G06M 3/14
U.S. Cl. 235—92 MP 6 Claims



1. A positioning system in a numerically controlled apparatus in which positioning of a controlled object is performed by command pulses delivered from a numerical control apparatus, said positioning system comprising:

detecting means for generating first pulses each of which is indicative of a first predetermined amount of displacement of said object, for generating second pulses each of which is indicative of a second predetermined amount of displacement of said object larger than said first predetermined amount, and;

counting means which has a capacity which is equivalent to the number of the first pulses generated while the object moves said second predetermined amount, said counting means being adapted to count up said command pulses and said counting means being adapted to count down said first pulses until the first one of said second pulses are generated;

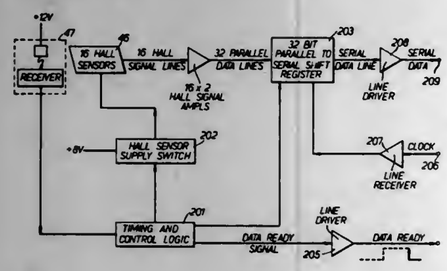
means for stopping said command pulses when the content of said counting means reaches a predetermined value.

4,112,292

MAGNETIC IDENTIFICATION APPARATUS

David Anthony Varvel, Mosman; Frederick William Millar, Frankston, and Stuart Connall Farquharson, Manly, all of Australia, assignors to Access Control Systems Proprietary Limited, Victoria, Australia

Filed Feb. 17, 1977, Ser. No. 769,532
Claims priority, application Australia, Aug. 17, 1976, 7034/76
Int. Cl.² G06K 7/08
U.S. Cl. 235—449 5 Claims



1. Magnetic identification apparatus comprising a magnetically coded instrument and a reader to which to apply the instrument, said instrument having a flat plate part including a plurality of discrete magnetized portions disposed at certain locations on a rectangular grid of possible locations to determine the magnetic code of the instrument, and said reader comprising:

a body defining a flat cavity to serve as a guideway for said flat part of said instrument;

a pair of parallel sensor mounting plates disposed on opposite sides of said cavity;

a plurality of sensor elements equal in number to the number of said possible locations and mounted on said sensor mounting plates such that the sensor elements on one plate register with alternate ones of said possible locations on said flat plate part of said instrument when said instrument is inserted within said cavity and the sensor elements on the other plate register with the remainder of said possible locations, said sensor elements each being comprised of a Hall Effect device including a semi-conductor layer, a pair of control current electrodes through which to pass a control current through said semi-conductor layer in one direction and a pair of sensor electrodes through which to sense a potential difference between locations on the semiconductor layer which are spaced apart in a direction which is transverse to said one direction, said Hall Effect devices being oriented such that potential differences are generated by the presence of the magnetic fields of said magnetized portions of the instrument;

electrical input means to supply control current to the electrodes of the Hall Effect devices; and

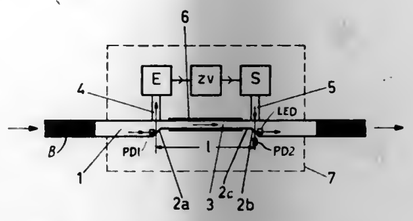
electric output means, conditioned by the generation of potential differences between the sensing electrodes of the Hall Effect devices, to provide an electrical output from the reader.

4,112,293

OPTICAL FIBER DATA TRANSMISSION SYSTEM

Alfred Käch, Untersiggenthal, Switzerland, assignor to Patelhold Patentverwertungs & Elektro-Holding AG, Glarus, Switzerland

Filed Mar. 15, 1977, Ser. No. 777,768
Claims priority, application Switzerland, Mar. 18, 1976, 3399/76
Int. Cl.² H04B 9/00
U.S. Cl. 250—199 11 Claims



1. An optical fiber data transmission system in which the individual subscriber stations are connected by means of T-couplers arranged at discrete positions along a main lead and the coupling out and in of the light is effected directionally, so that two T-couplers are necessary for the connection of one subscriber's station, which effect directional coupling and collectively form a unit termed a TT-coupler, the incoming light being divided into two components in the first T-divider of the TT-coupler, of which one of said components passes to the receiver of the subscriber station and the second of said components passes directly through the TT-coupler, and wherein for the purpose of ensuring continued data transfer between the remaining subscriber stations connected along the main lead in the event of failure of one or more subscriber's stations, each subscriber station further possesses intermediate amplifier means for demodulating a signal arriving at a subscriber station said demodulating means including means for regenerating a signal not addressed to that station transmitter means responsive to the regenerated signal for passing the signal into the main lead by way of the second T-coupler, and wherein the attenuation of the individual transmission sections of the TT-coupler is so chosen, having regard to the limiting sensitivity of the receivers and the instantaneous light output of the transmitter means, that in the event of failure of one or more stations, the drop in signal level thus resulting can be compensated for by the next following operative station so as to be returned to a signal level within the normal operating range.

4,112,294

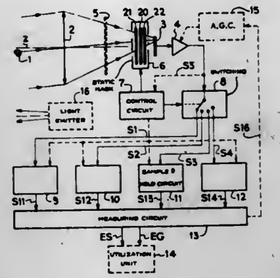
RADIANT ENERGY DETECTION SYSTEM FOR THE ANGULAR LOCATION OF A LIGHT-RADIATING OBJECT

Robert Pressiat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 22, 1977, Ser. No. 808,836
Claims priority, application France, Jun. 25, 1976, 76 19422
Int. Cl.² G01J 1/20
U.S. Cl. 250—203 R 9 Claims

1. A radiant energy detection system for determining the angular location of a light radiating object, comprising, in combination: an opto-electrical receiver including, successively, an optical arrangement for focussing the radiation from the said object, a mask device of a static type controlled by an associated electrical control circuit, a photosensitive detector element centered on the optical axis and circuits for processing the detected signal to provide signals representing the divergence in bearing and elevation for the object being aimed at; the said static mask being controlled to present a configuration having a transparent area corresponding to n measurement

quadrants (n being a whole number at least equal to 1 and at most equal to 3) and an opaque area formed by the remaining $4-n$ measurement quadrants, said control providing four successive operating states which are distinguished from one another by an angular displacement of $\pi/2$ radians of the said configuration around the optical axis, and the said processing circuits including a switching circuit operated synchronously



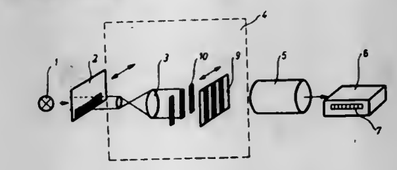
with the said static mask by the said control circuit to connect successively the output of the detector element to four reception channels each including a memory circuit for storing the detected signal value of a corresponding operating state, said reception channels serving to supply inputs to a divergence measuring circuit for measuring the said divergences from four detected signal values.

4,112,295

APPARATUS FOR DIRECT MEASUREMENT OF DISPLACEMENTS WITH A HOLOGRAPHIC SCALE

Adam Dubik; Henryk Zenon Kowalski; Pawel Osiennik, and Franciszek Król, all of Warsaw, Poland, assignors to Instytut Geodezji i Kartografii, Warsaw, Poland

Continuation of Ser. No. 643,618, Dec. 22, 1975, abandoned.
This application Aug. 9, 1977, Ser. No. 824,209
Claims priority, application Poland, Dec. 30, 1974, 176959
Int. Cl.² H01J 3/14
U.S. Cl. 250—237 G 4 Claims



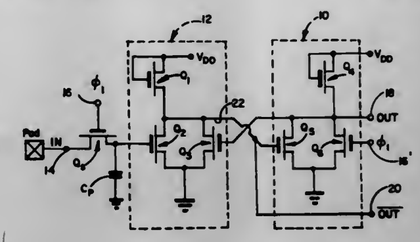
1. Apparatus for direct digital measurement of linear and angular displacement, comprising: a holographic scale of a density from several hundred to several thousand lines per millimeter, an optical system discriminating against zero order diffraction line order from said scale, a striated diaphragm comprising a magnified pattern of zero order diffraction lines orders of said scale, and a detector transforming light pulses generated due to mutual displacement of the scale and diaphragm into corresponding electrical pulses, said holographic scale being located so as to fill completely the transmission field of the optical system.

4,112,296

DATA LATCH

Gary L. Heimbigner, Anaheim, and Robert K. Booher, El Toro, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 7, 1977, Ser. No. 804,220
Int. Cl.² H03K 3/286, 3/353, 5/18, 17/28
U.S. Cl. 307—279 10 Claims



1. In combination:

input signal source means,

a first NOR gate,

a second NOR gate,

each of said first and second NOR gates including a respective pair of interconnected multi-terminal transistor devices,

clock terminal means to provide a clock enabling signal, and transmission gate means,

said tranmission gate means having a conduction path connected between said input signal source means and said first NOR gate and a control electrode connected to said clock terminal means to receive said clock enabling signal,

a first transistor device from the pair of transistor devices included by said first NOR gate having control and conduction path terminals respectively cross-connected to conduction path and control terminals of a first transistor device from the pair of transistor devices included by said second NOR gate,

the second transistor device from the pair of transistor devices included by said first NOR gate having a control terminal connected to the conduction path at said transmission gate means to receive an input signal therefrom, and

the second transistor device from the pair of transistor devices included by said second NOR gate having a control terminal connected to said clock terminal means to receive said clock enabling signal.

4,112,297

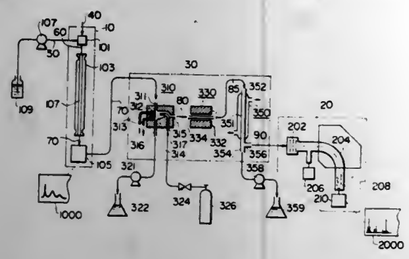
INTERFACE FOR USE IN A COMBINED LIQUID CHROMATOGRAPHY - MASS SPECTROMETRY SYSTEM

Hiroyuki Miyagi; Fumito Nakajima, and Yoshijiro Arikawa, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 30, 1977, Ser. No. 811,720
Claims priority, application Japan, Jun. 30, 1976, 51-76362
Int. Cl.² B01D 59/44
U.S. Cl. 250—288 7 Claims

1. An interface for use in a combined liquid chromatography — mass spectrometry system which extracts a sample component out of the effluent including the sample component and a solvent component from a liquid chromatograph and supplies the extracted sample component for a mass spectrometer, characterized in that the interface comprises first means for nebulizing the effluent from the liquid chromatograph and heating it in a manner that only the solvent component is

evaporated, and second means for separating said nebulized effluent into the nebulized sample component and the evapo-



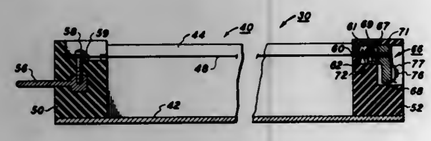
rated solvent component to extract and supply only the nebulized sample component for the mass spectrometer.

4,112,298

CORONA WIRE MOUNTING MEANS

Donald J. Weikel, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1977, Ser. No. 783,359
Int. Cl.² H01T *19/04*
U.S. Cl. 250—324 **5 Claims**



1. A corona device comprising
an elongated coronode supported between first and second fixed support members,
means for fixing one end of said coronode to said first support member,
a coil spring coaxially carried adjacent the other end of the electrode,
an interference member outboard of said spring and attachable to said coronode adjacent said other end thereof,
said second member defining a bearing surface against which one end of said spring rests,
said second member further comprising first and second bores in communication with each other through which said coronode passes, said bearing surface located intermediate said bores, said second bore housing said spring and having a diameter larger than said first bore, said interference member being reciprocally movable within said second bore,
whereby said coronode is placed under tension by fixing said one end of said coronode to said first support member in a position to draw said interference member into loading contact with said spring and place it under tension between said surface and said interference member.

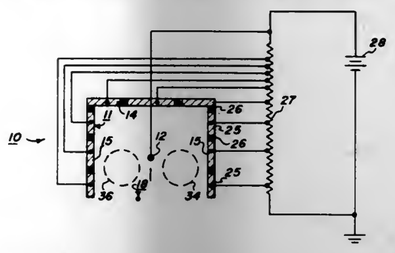
4,112,299

CORONA DEVICE WITH SEGMENTED SHIELD

Thomas G. Davis, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 710,525, Aug. 2, 1976, abandoned, which is a continuation of Ser. No. 553,339, Feb. 26, 1975, abandoned. This application Jul. 25, 1977, Ser. No. 818,782
Int. Cl.² G03G *15/00, 15/02*
U.S. Cl. 250—326 **6 Claims**

1. A corona device for charging a surface comprising an elongated wire,
means for applying a corona generating potential to said wire, and
a shield disposed on the side of said wire opposite said surface, said shield being formed of a plurality of conductive segments insulated from each other and biased to different potentials with respect to said wire, each of said conduc-



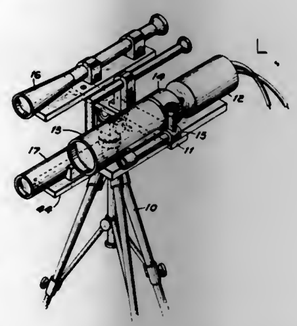
tive segments located with respect to said wire to substantially effect the density of charge in areas intermediate said wire and said segments as a function of the potential on said segment.

4,112,300

INFRARED ELECTRONIC COUNTERMEASURES

Freeman F. Hall, Jr., and Jerome J. Redmann, both of Los Angeles, Calif., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jul. 18, 1966, Ser. No. 567,346
Int. Cl.² G01J *1/00*
U.S. Cl. 250—330 **7 Claims**



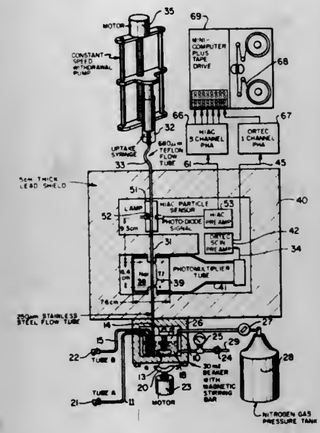
1. An infrared electronic countermeasure device for interfering with an enemy's detection capability by jamming or damaging his detector, comprising:
a source of jamming irradiation;
means for detecting a target; and
means coupled to said detecting means for aiming said source of jamming irradiation at said detected target,
said target detecting means including a proximity focused image converter tube, an objective lens system, an erector lens, crosshairs and an ocular whereby said objective lens system forms an inverted image of a target at the photocathode of said proximity focused image converter tube, which image is transferred to the phosphor screen thereof, furthermore said image is transferred to the plane of said crosshairs by said erector lens and orientated to its true orientation for viewing through said ocular.

4,112,301

MOVING PARTICLES SUSPENDED IN A CARRIER FLUID THROUGH A FLOW CHANNEL HAVING AN INPUT END UNDER GAS PRESSURE

Martin Annis, Newton; Paul Bjorkholm, Sharon; Carolus M. Cobb, Arlington; Edwin Frederick, Concord, and Alan Ramsey, Harvard all of Mass., assignors to American Science and Engineering, Inc., Cambridge, Mass.

Filed Jun. 3, 1976, Ser. No. 692,322
Int. Cl.² G01T *1/20*
U.S. Cl. 250—364 **11 Claims**



1. A method of moving particles suspended in a carrier fluid through a flow channel which method includes the steps of,
introducing the suspension of the particles in the carrier fluid into said flow channel,
applying gas pressure at the input end of said flow channel,
establishing a proper variable pressure at said output end to establish substantially constant average velocity of said suspension through said flow channel,
applying mechanical pressure at the output end of said flow channel so that the rate of flow of said suspension through said flow channel is determined by the mechanical pressure at said output end by withdrawing a plunger connected to the output end of said flow channel at constant velocity,
and applying gas under pressure into a sealed chamber embracing a liquid container,
the said liquid container embracing the input end of said flow channel.

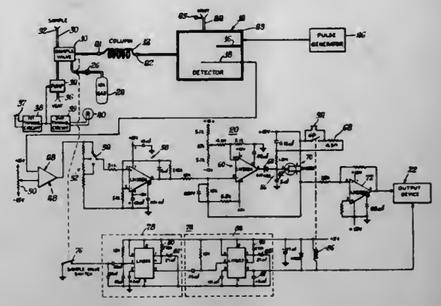
4,112,302

GAS MONITOR

Brian S. Flanagan, San Diego; Phillip L. Turner, Del Mar; Richard D. Broce, Vista, and Peter L. Lagus, Olivenhain, all of Calif., assignors to Systems, Science and Software, La Jolla, Calif.

Filed Mar. 2, 1977, Ser. No. 773,605
Int. Cl.² G01T *1/18*
U.S. Cl. 250—381 **9 Claims**

1. A gas monitor comprising means for detecting changes in electron flow between two electrodes caused by absorption of the electrons by an electron capture gas flowing between said electrodes, means for supplying a carrier gas to said detecting means at a predetermined velocity, valve means for adding a sample of gas to said carrier gas at a first predetermined time, said sample gas containing a trace of a first type of electron capture gas, column means connected between said adding means and said detecting means for selectively slowing down the velocity of any other type of electron capture gas in said sample with respect to the velocity of the first type of electron capture gas, means coupled to said detector for measuring the maximum decrease in the electron flow caused by said first



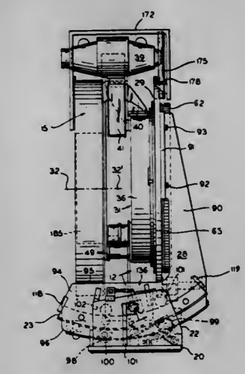
type of electron capture gas, and means coupled to said measuring means for indicating said maximum decrease.

4,112,303

GANTRY FOR COMPUTED TOMOGRAPHY

Richard Thornton Brandt, New Berlin, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 25, 1977, Ser. No. 771,864
Int. Cl.² A61B *6/02*; G01N *23/08*
U.S. Cl. 250—445 T **2 Claims**



1. X-ray tomographic apparatus comprising:
frame means supported for movement along a curved path about a laterally directed virtual axis to thereby enable said frame means to be tilted between opposite angles with respect to vertical,
curved track means disposed downwardly convexly and mounted, respectively, to opposite sides of said frame means for supporting said frame means, the radii of curvature of said track means passing through said virtual laterally directed axis,
stationary support means spaced from each other in the lateral direction at opposite sides of said frame means adjacent said tracks, respectively,
roller means supported for rotation respectively on said stationary support means, one of said track means bearing on one of said roller means and another of said track means bearing on another of said roller means, and
brake means operable to hold said frame means at a selected angle of tilt, said brake means comprising:
a brake shoe body having a surface for being disposed in proximity with said track and for being moved into frictional engagement with said track,
a first cylindrical shaft journaled for rotation in said body,
a second cylindrical shaft journaled for rotation in said first shaft with the axis of the second shaft in parallel with the axis of said first shaft,

an extension shaft projecting axially from said second shaft and the axis of said extension shaft being eccentric with respect to the axis of said second shaft, said extension having means for enabling said extension to be engaged and rotated,

stationary means having an aperture through which said shaft extension projects to expose said means which enable rotation, rotation of said extension causing said second shaft to rotate eccentrically to thereby set the spacing between said brake shoe surface and said track,

means for clamping said shaft extension against rotation when said spacing has been set, and

means for selectively rotating said first cylindrical shaft through small opposite angles to thereby engage and disengage said shoe with said track.

4,112,304

X-RAY CASSETTE WITH A WINDOW FOR ILLUMINATING PATIENT DATA

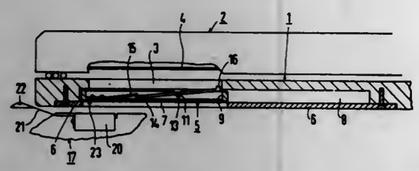
Robert Huettner, Heroldsbach, Thura, and Gerhard Kuetterer, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 29, 1977, Ser. No. 782,523

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646725

Int. Cl.² G03C *5/16*

U.S. Cl. 250—476 **9 Claims**



1. An x-ray film cassette with a window for illuminating patient data and a slide sealing the window tightly against light, a spring means for locking the slide in a closed position and which can be released magnetically by positioning a magnet adjacent the slide, said spring means including a see-saw like lever arm of ferromagnetic material pivotably mounted about a tilt axis passing through the center of gravity of said lever arm and a spring biasing the lever arm into a position for locking the slide.

4,112,305

METHOD OF PROJECTING A BEAM OF CHARGED PARTICLES

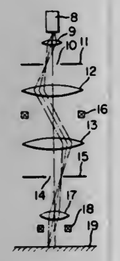
Eiichi Goto, Fujisawa; Takashi Soma, Kiyose, and Masanori Idesawa, Wako, all of Japan, assignors to Rikagaku Kenkyusho, Japan

Filed Oct. 15, 1976, Ser. No. 732,919

Claims priority, application Japan, Oct. 23, 1975, 50-127833

Int. Cl.² A61K *27/02*

U.S. Cl. 250—492 R **9 Claims**



1. A method of projecting a beam of charged particles to a target through two apertured masks which comprises focusing a beam of charged particles on the first of said masks, passing said beam through the aperture of said first mask to establish a beam cross-section corresponding to the contour of said first mask aperture, deflecting said beam, after passing through the first of said masks and before passing through the second of said masks, in a transverse direction and by a given distance with respect to said second aperture, focusing the deflected beam on the second of said masks, passing only a portion of said beam through the aperture of said second mask to modify the cross-section of said beam in accordance with the contour of said second mask aperture and the direction and distance of said deflection to thereby establish by the combined interception action of said masks a predetermined beam cross-section at the incidence of the beam on the target.

4,112,306

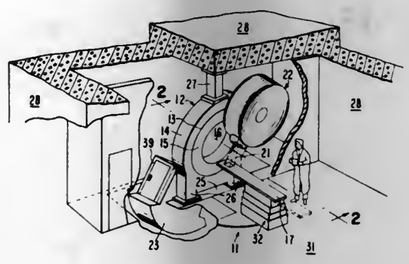
NEUTRON IRRADIATION THERAPY MACHINE

Craig S. Nunan, Los Altos Hills, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 6, 1976, Ser. No. 748,020

Int. Cl.² G21G *4/02*

U.S. Cl. 250—499 **26 Claims**



1. In a neutron irradiation therapy machine for treating patients with a beam of neutrons:

cyclotron means for accelerating protons to a high energy and for bombarding a target to generate a beam of high energy neutrons to be applied to the patient, said cyclotron means having magnet means for generating a magnetic field for interaction with the protons, said magnet means including a pair of pole portions spaced apart to define a magnetic gap therebetween and within which the magnetic field of said magnet means produces a force on said protons, said magnet means having a yoke means of ferromagnetic material interconnecting said pair of pole portions for providing a relatively low reluctance magnetic flux path for returning the magnetic flux to the respective pole portions, magnetomotive force generating mean coupled in magnetic flux exchanging relation with said pole portions for generating a magnetomotive force and for exciting said magnetic pole portions to opposite magnetic polarities,

proton source means for supplying protons to the region between said pole portions to be accelerated to an energy in excess of 15 MeV, and

gantry means for pivoting said cyclotron about a patient treatment region,

neutron filter means disposed in the neutron beam between the target and the patient treatment region for attenuating relatively low energy neutrons of the beam.

4,112,307

ELECTRON BEAM SOURCE WITH AN ELECTRON EXIT WINDOW CONNECTED VIA A WINDOW FLANGE

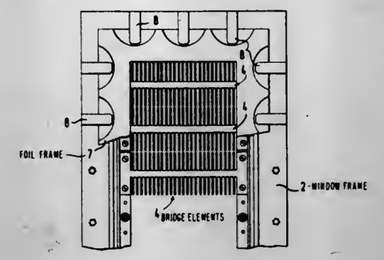
Eberhard Föll, Mössingen, and Helmut Vetter, Tübingen, both of Fed. Rep. of Germany, assignors to Polymer-Physik GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 9, 1977, Ser. No. 767,027

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1976, 2606169

Int. Cl.² G21F *3/02*

U.S. Cl. 250—510 **3 Claims**



1. In an electron beam source with an electron exit window which is connected thereto, with the window comprising essentially a window frame, a support grid, and a foil, permeable to electrons, supported by the support grid, the improvement comprising, in combination, said support grid being constituted by at least one bridge element in the form of a substantially rectangular metal plate having a plurality of milled slots extending inwardly from each of a pair of opposite edges thereof and terminating at a main bridge extending substantially centrally of said plate substantially parallel to said opposite edges, whereby each bridge element has the form of a one-piece double comb formed solely by a mechanical machining of a one-piece metal plate; and disengageable mechanical fastening elements securing each bridge element to said window frame and constituting the sole means disengageably connecting each bridge element to said window frame.

4,112,308

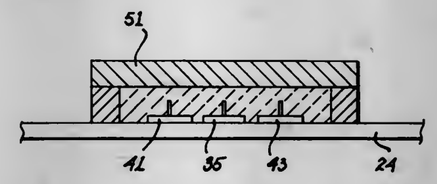
OPTICAL COUPLING SYSTEM

Wilfred W. Olschewski, and Robert M. Stitt, both of Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Continuation-in-part of Ser. No. 671,324, Mar. 29, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,586

Int. Cl.² G02B *27/00*

U.S. Cl. 250—551 **7 Claims**



1. An optical coupling system for use in an electrical circuit for electrically isolating one portion of said electrical circuit from another portion of said electrical circuit, said optical coupling system comprising in combination:

(a) an electrically insulating and optically opaque substrate;

(b) a plurality of co-planar electrically conductive strips positioned on said substrate, including first and second conductive strips separated by a first non-conductive gap, and third and fourth conductive strips separated by a second non-conductive gap;

(c) a light emitting semiconductive device mounted on the upper surface of said first conductive strip adjacent the first gap;

(d) first means for electrically connecting the top electrode of said light emitting semiconductive device to said second conductive strip on the other side of the first gap to provide an electrically continuous path to said light emitting semiconductive device;

(e) a first photo detector semiconductive device mounted on the upper surface of said third conductive strip adjacent the second gap;

(f) second means for electrically connecting said first photo detector semiconductive device to said fourth conductive strip adjacent the second gap to provide an electrically continuous path to said second photo detector semiconductive device;

(g) said light emitting semiconductive device and said first photo detector semiconductive device being mounted in substantially co-planar relationship with respect to each other; and

(h) an open bottom housing mounted on said substrate over said semiconductive devices to enclose said semiconductive devices, said open bottom housing having light reflecting interior surfaces, said first, second, third and fourth conductive strips extending outwardly from the bottom of said open bottom housing;

whereby, light emitted by said light emitting semiconductive device is reflected throughout said open-bottom housing and impinges upon said photo detector semiconductive device.

4,112,309

APPARATUS FOR MEASURING THE LINE WIDTH OF A PATTERN

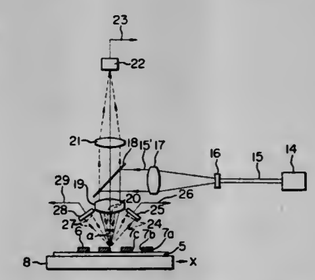
Kiwao Nakazawa, Tokyo, and Akikazu Tanimoto, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 10, 1976, Ser. No. 740,495

Claims priority, application Japan, Nov. 22, 1975, 50-139740

Int. Cl.² G01N *21/30*

U.S. Cl. 250—560 **3 Claims**



1. An apparatus for photoelectrically detecting the position of each of the edges of a line having the opposite edges thereof formed substantially parallel to each other on a substrate, to thereby measure the width of the line, comprising:

a light source emitting coherent light;

means for condensing the coherent light into a tiny light spot smaller than the width of the line and illuminating said line with said light spot;

means for imparting to said tiny light spot a minute oscillation having an amplitude less than the width of said line;

means for moving said tiny light spot and said line relative to each other so that diffracted light may be created at each of the edges of said line;

first photoelectric converter means for receiving chiefly the diffracted light created at one of the edges of said line and producing an output signal modulated by said oscillation;

second photoelectric converter means for receiving chiefly the diffracted light created at the other edge of said line

and producing an output signal modulated by said oscillation; and

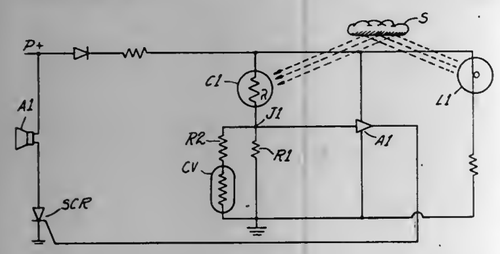
a circuit for producing position signals corresponding to the edges of said line in response to the modulated output signals from said first and second photoelectric converter means.

4,112,310

SMOKE DETECTOR WITH PHOTO-RESPONSIVE MEANS FOR INCREASING THE SENSITIVITY DURING DARKNESS

William J. Malinowski, Pembroke, Mass., assignor to Chloride, Incorporated, Tampa, Fla.

Filed May 19, 1977, Ser. No. 798,582
Int. Cl.² G01N *21/26*
U.S. Cl. 250—574 **9 Claims**



1. A particle detector, in which means is provided responsive to the presence of particles to produce an output signal, said detector having two modes of operation and being responsive in a first mode to a predetermined concentration of particles to produce an alarm signal, and being responsive in a second mode to produce an alarm signal at a particle concentration substantially less than said predetermined concentration, in which the detector shifts automatically from one mode to another with a substantial change in the ambient light level.

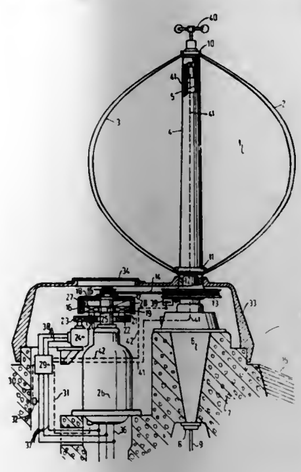
4,112,311

WINDMILL PLANT FOR GENERATING ENERGY

Frederik H. Theyse, Bensberg-Herkenrath, Fed. Rep. of Germany, assignor to Stichting Energieonderzoek Centrum Nederland, The Hague, Netherlands

Filed Dec. 10, 1976, Ser. No. 749,267
Claims priority, application Netherlands, Dec. 18, 1975, 7514750
Int. Cl.² H02P *9/04*; F03D *9/00*
U.S. Cl. 290—44 **10 Claims**

1. A Wind-driven power generating system comprising: a wind-driven impeller having blades; a variable ratio transmission having a main rotary output, a main rotary input and a rotary connection capable of operating either as an input or an output, the rotation of the main output being a function of the rotations of the main input and the rotary connection; means drivingly connecting the impeller to the main transmission input; a main energy convertor drivingly connected to the main transmission output for converting rotation of the latter to another form of energy; means for selectively increasing the decreasing the rotational speed of said main transmission output, said means including a reversible variable speed auxiliary energy-convertor operatively connected to said main convertor and to the rotary connection of the transmission, said auxiliary convertor being operable in a first mode to withdraw energy from the power flow through said main convertor and converting the withdrawn energy to rotation of said rotary connection in an input direction and in a second mode to withdraw energy from said rotary connection when rotating in an output direction and add the withdrawn energy to the power flow through said main convertor; and control means responsive to at least one variable of the system for controlling



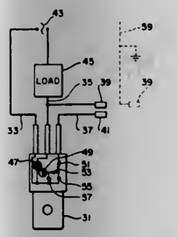
said auxiliary convertor to operate in a selective one of said modes.

4,112,312

FLUID SENSITIVE SWITCHING MEMBER

James D. McGalliard, 11171 Fenwick Pl., Santa Ana, Calif. 92705

Filed Mar. 14, 1977, Ser. No. 777,183
Int. Cl.² H01H *35/18*
U.S. Cl. 307—118 **10 Claims**



1. A device for electrically connecting a power source to a load in response to the presence of a fluid within a cavity, comprising:

means for sensing the presence of said fluid within said cavity;

a high current solid state switching device responsive to said sensing means and connected in series between said power source and said load, said switching device closing the circuit between said power source and load when fluid is in said cavity and opening the circuit between said power source and load when fluid is absent from said cavity, said switching device producing heat sufficient to degrade said switching device when said switching device closes said circuit unless said switching device is cooled, said switching device not producing such self-degrading heat when said switching device opens said circuit; and

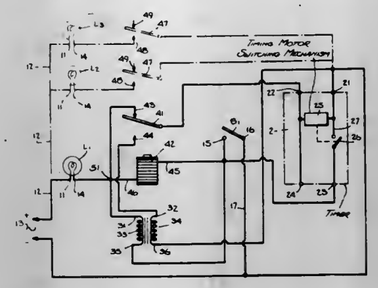
means for conducting heat from said high current switching means to said fluid within said cavity to cool said switching device when said heat conducting means is in direct contact with said fluid in said cavity, said conducting means being incapable of cooling said high current switching means when fluid is absent from said cavity.

4,112,313

TIMER CONTROL ARRANGEMENT FOR USE WITH A WALL SWITCH

Lawrence H. Kutin, 2 Warren Pl., Plainview, N.Y. 11803

Filed Jun. 8, 1977, Ser. No. 804,861
Int. Cl.² H01H *43/00*
U.S. Cl. 307—141 **8 Claims**



1. A timer control arrangement for use with a wall switch, said wall switch having first and second contacts, said first contact being connected to one terminal of an ac voltage source and said wall switch being adapted to connect a first terminal of a light source to said one terminal of said voltage source, the light source having a second terminal connected to the other terminal of said voltage source, said arrangement comprising:

a timer assembly adapted to connect for a predetermined period of time said first terminal of said light source to said one terminal of said voltage source, said timer assembly including: first, second and third terminals, said second and third terminals being adapted to be connected to the respective first and second contacts of said wall switch; a current path connected between said second and third terminals, said current path including a switch for opening and closing said current path; and a timing motor switching means connected between said first and second terminals for controlling said switch to close said current path during said predetermined period of time;

a transformer having a primary and secondary winding, said primary winding having a first end adapted to be connected to said first terminal of said light source and a second end connected to said third terminal of said timer assembly, said secondary winding having a first end connected to said second terminal of said timer assembly;

and switch means for selectively connecting said first end of said primary winding and a second end of said secondary winding to said first terminal of said terminal of said timer assembly.

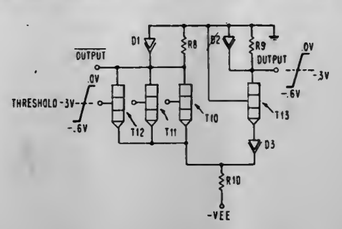
4,112,314

LOGICAL CURRENT SWITCH

Venkappa Laxmappa Gani, and Frank Alfred Montegari, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1977, Ser. No. 827,929
Int. Cl.² H03K *19/08, 19/12, 19/30, 19/34*
U.S. Cl. 307—215 **6 Claims**

1. In a logical current switch adapted to receive a plurality of logical inputs each having a predetermined voltage swing and providing a first in phase logical output and a second out of phase logical output, said first and second outputs each having said predetermined voltage swing and being respectively a predetermined logical function of said plurality of inputs, said logical current switch being characterized by including only a single power supply coupled across the collector emitter current paths of at least one first bipolar transistor, which is responsive to a logical input voltage swing, and a second bipolar transistor, and further including a Schottky



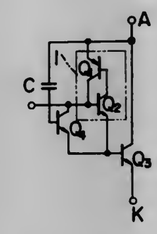
barrier diode connected between the emitters of said first and second bipolar transistors.

4,112,315

SEMICONDUCTOR SWITCH CIRCUIT

Ichiro Ohhinata, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Sep. 7, 1976, Ser. No. 720,759
Claims priority, application Japan, Sep. 8, 1975, 50-108714; Sep. 8, 1975, 50-108715; Sep. 10, 1975, 50-108969
Int. Cl.² H03K *17/72, 17/60*
U.S. Cl. 307—254 **8 Claims**



1. A semiconductor switch circuit comprising:

an input terminal to be connected to a current source;

an output terminal to be connected to a load to which a load current is supplied from said current source;

a transistor having a collector-emitter circuit connected between said input and output terminals for allowing said load current to flow therethrough;

a PNPN semiconductor switch of an equivalently four-layered PNPN structure including three PN-junctions, two main electrodes and at least a gate electrode and adapted to be rendered conductive for allowing current flow between said two main electrodes or nonconductive for preventing such current flow by adjusting a gate current applied to said gate electrode; and

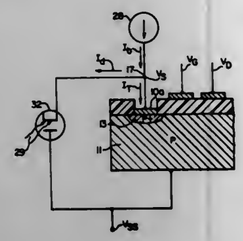
a variable impedance bypass circuit, said variable impedance bypass circuit being connected to shunt one of said three PN-junctions at either one end of said PNPN switch, said main electrodes being connected through a base-emitter circuit of said transistor between said input and output terminals for allowing a part of said load current to flow therebetween through said base-emitter circuit when said PNPN switch is rendered conductive and for rendering said transistor nonconductive when said PNPN switch is rendered nonconductive.

4,112,316

CHARGE COUPLED DEVICE CIRCUIT WITH INCREASED SIGNAL BANDWIDTH

John L. Wentz, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1977, Ser. No. 792,089
Int. Cl.² H01L 29/78; G11C 19/00; H03K 3/42
U.S. Cl. 307—304 6 Claims



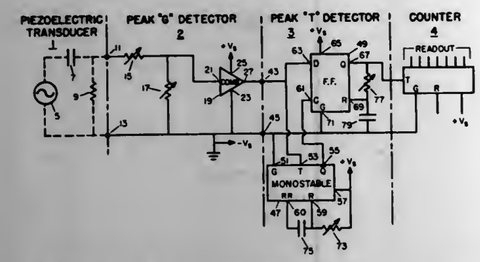
1. A metal-oxide-semiconductor device circuit comprising:
a semiconductor device including a semiconductor substrate and an input electrode making ohmic contact with a surface of said substrate and forming an ohmic junction therewith, said junction being characterized by an input impedance, $1/g_m$, wherein g_m is the transconductance of said junction, an output electrode adjacent said input electrode overlying and electrically connected to said surface of said substrate, a gate electrode between said input and output electrodes overlying and insulated from said surface of said substrate;
means for generating an electrical signal;
means for connecting said electrical signal to said input electrode; and
current source means for applying an additional current to said input electrode to reduce the input impedance of said ohmic junction.

4,112,317

PULSE AMPLITUDE AND WIDTH DETECTION SYSTEM

David N. Everswick, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 5, 1977, Ser. No. 793,820
Int. Cl.² H03K 5/153, 5/18
U.S. Cl. 307—308 6 Claims



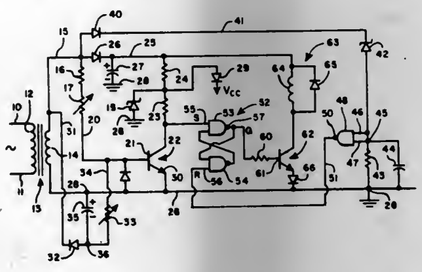
1. A detection system comprising:
a piezoelectric transducer means for measuring shock and generating output pulses in response thereto,
CMOS circuit means, connected to said transducer means, for detecting each pulse having an amplitude at least equal to a predetermined amplitude
said CMOS circuit means being adapted to produce an output signal in response to an analog input potential at least equal to a predetermined fraction of a reference potential applied thereto;
means, connected to the output of said pulse amplitude detecting means, for detecting each pulse having a time width at least equal to a predetermined width at said predetermined amplitude; and
means, connected to the output of said pulse width detecting means, for recording said detected pulses.

4,112,318

CONDITION CONTROL SYSTEM UTILIZING DIGITAL LOGIC

William B. Hamelink, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 17, 1977, Ser. No. 769,752
Int. Cl.² H03K 3/26; G01N 27/00; G08B 21/00
U.S. Cl. 307—308 15 Claims



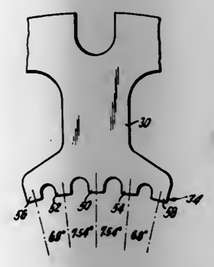
1. A condition control system energized from an alternating current source, including: amplifier means having input means connected to condition responsive means which is energized from said alternating current source, and said amplifier means further including directed current bias means; said amplifier means including output means having a logic response to a selected level of a condition at said condition response means; S-R latch mmeans including input means connected to said amplifier output means and receiving logic input from said amplifier output means; said S-R latch means having further logic input means, and output means; logic generating means connected to said further logic input means to periodically provide said S-R latch means with a logic input; and switching output means having an input connected to said latch output means with said latch means causing said switching output means to provide an output only when both of said S-R latch logic input means respond to the presence of logic indicating said selected level of said condition is present.

4,112,319

SYNCHRONOUS MOTOR WITH HETEROGENEOUSLY PITCHED TEETH

John H. Field, Norfolk, Mass., assignor to Sigma Instruments, Inc., Braintree, Mass.

Filed Dec. 23, 1976, Ser. No. 753,883
Int. Cl.² H02K 37/00
U.S. Cl. 310—49 R 24 Claims



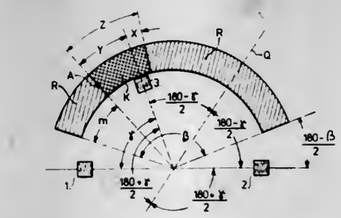
1. An electric motor, comprising a stator having an axis, said stator having a plurality of axially extending radially projecting stator poles, a rotor, said rotor having a pair of rotor members coaxial with said stator and positioned at two positions along the axis, said stator and said rotor being axially rotatable relative to each other, said rotor members being at least partially radially aligned with said stator poles, magnetic means magnetically coupled to said rotor members for causing one member to exhibit a magnetic polarity opposite to that of the other member, said rotor members having a plurality of radially projecting rotor teeth, said stator poles each having a plurality of pole teeth radially projecting toward said rotor teeth, the teeth on one of said rotor members being angularly displaced one-half tooth pitch from the teeth on the other of said rotor members, the teeth on each of said stator poles having substantially the same average pitch as the teeth of the rotor members but having varying pitches within each pole which pitches vary symmetrical about the average pitch.

4,112,320

ANISOTROPIC MAGNET STRUCTURE, PARTICULARLY SEGMENTAL MAGNET STRUCTURE FOR PERMANENT MAGNET DYNAMO ELECTRIC MACHINES

Adolph Mohr, Buhlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 6, 1977, Ser. No. 757,149
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1976, 2602650
Int. Cl.² H02K 21/26, 23/04
U.S. Cl. 310—154 5 Claims



1. In combination with a three-brush motor, having two electrically diametrically located brushes and the third brush positioned unsymmetrically between said two brushes,
a magnet structure having
an elongated arcuate magnet element consisting of a ferrite selected from the group of at least one of: barium, strontium,
said magnet element having zones of ferrite material with different magnetic properties with respect to coercivity and remanence, wherein the ferrite material of high coercive force is located intermediate the arcuate extent of the magnetic element and unsymmetrically with respect to its length and positioned in the angular region of the third, unsymmetrically positioned brush,
and the end portions of the structure adjacent said material of high coercive force comprises ferrite material of high remanence.

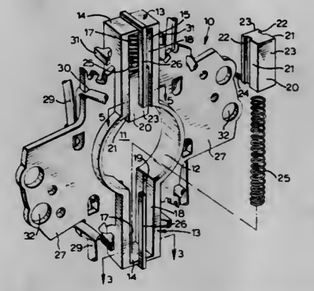
4,112,321

BRUSH HOLDER AND BRUSH ASSEMBLY FOR A DYNAMOELECTRIC MACHINE

John P. Wan, Cambridge, Canada, assignor to Electrohome Limited, Kitchener, Canada

Filed Jul. 26, 1977, Ser. No. 819,413
Int. Cl.² H02K 13/00
U.S. Cl. 310—242 9 Claims

1. A brush holder and brush assembly for a dynamoelectric machine, said holder comprising a moulded, one-piece member of electrical insulating material having an opening therein adapted to receive a rotating part of the machine that is adapted to be contacted by electrical current carrying brushes, said member including at least two oppositely disposed brush holding housings, each of said housings having an end wall remote from the aforesaid opening and being open on two opposite sides thereof, each of said housings also having two spaced apart side walls facing each other and extending from said end wall thereof, each of said housings also having a second end opposite said end wall, said second end being open and opening into the aforesaid opening adapted to receive said rotating part of said machine, each of said side walls of each of said housings having inwardly projecting ribs extending from adjacent one end wall of the said housing to adjacent the other end of the housing, an electrical current carrying brush mounted in each of said housings, each said brush having side



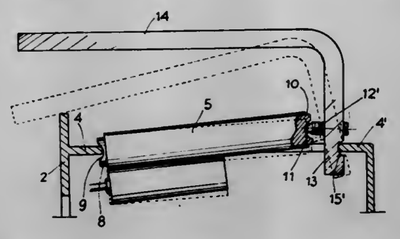
walls with recesses therein into which said ribs extend, thereby providing tracks for guiding said brushes as they move longitudinally in said housings, said brushes bearing against said side walls of said housings, spring means located within said housings between said end walls thereof and said brushes and biasing said brushes into the opening in said member that is adapted to receive said rotating part of said machine, each of said housings also including a finger located adjacent one of said open sides of said housing and formed integral with said member, said finger and said ribs of each said housing contacting said spring in said housing and serving to prevent said spring from falling out of said housing through said open sides thereof.

4,112,322

PIEZOELECTRIC GAS IGNITER USING OPEN FRAME

Luigi Venturi, Via N. Castellini 3, Brescia, Italy

Filed Dec. 20, 1976, Ser. No. 752,322
Claims priority, application Italy, Dec. 23, 1975, 5259 A/75; Apr. 7, 1976, 5145 A/76
Int. Cl.² H01L 41/10
U.S. Cl. 310—339 8 Claims



1. A piezoelectric gas igniter comprising an outer body member; a frame support attached to said body member; a window opening on said support and having two sides opposed to each other; an elongated, angularly displaceable piezoelectric cartridge positioned within said opening and having a slit on a first end thereof for receiving one of said opposed sides of said window opening therein, said cartridge having a seat on said second end thereof opposite said first end, a control lever

that is angularly displaceable in a direction that is opposite said angular displacement of said cartridge, said control lever being coupled to said outer body member and having a first slit therein for receiving said other side of said opening therein; and an axially displaceable screw positioned with its tip engaged within said seat on the said second end of said cartridge, said screw being threaded through and movable together with said lever, said screw being adapted to compress said cartridge when said lever is angularly displaced.

4,112,323

CIRCULAR FLEXURAL MODE PIEZOELECTRIC VIBRATOR WITH INTEGRAL SUPPORT ARMS

Hirofumi Kawashima, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Jan. 28, 1977, Ser. No. 763,712

Claims priority, application Japan, Jan. 29, 1976, 51-8633; Feb. 13, 1976, 51-14690

Int. Cl.² H01L *41/10*

U.S. Cl. 310—348 **6 Claims**



1. A piezoelectric flexural mode vibrator comprising a thin flat plate of piezoelectric crystal having a uniform thickness of 25 to 150 microns and having peripheral edges chemically etched to define a generally circular disc less than 10mm. across and a plurality of circumferentially spaced integral support portions projecting from the periphery of said disc and constituting the outermost portions of said plate, said support portions having outer edge surfaces for bonding to a support surface and a pair of electrodes applied directly to opposite faces of said disc, each of said electrodes comprising two electrically connected portions of which one portion is disposed on one face of said disc and the other portion is disposed on the opposite face of the disc, each portion of each of said electodes being disposed opposite a corresponding portions of the other electrode on the opposite face of the disc for excitation of said disc in the flexural mode of vibration.

4,112,324

MOUNTING FOR PLURAL PIEZOELECTRIC VIBRATOR UNITS

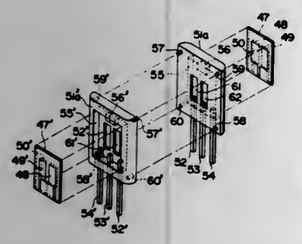
Kazumasa Yamaguchi; Kunio Nasaki, and Masanori Ohshiro, all of Komae, Japan, assignors to Kabushiki-Kaisha Kinsekisha-Kenkyujo, Tokyo, Japan

Filed Feb. 14, 1977, Ser. No. 768,525

Claims priority, application Japan, Feb. 14, 1976, 51-16574[U]; Apr. 20, 1976, 51-49695[U]; May 14, 1976, 51-61033[U]

Int. Cl.² H01L *41/10*

U.S. Cl. 310—353 **7 Claims**



1. In a piezoelectric vibrator unit having (i) a pair of vibrator assemblies each consisting of a holder case, a vibrator plate having excitation electrode means formed on the principal faces thereof, and lead wires for said excitation electrodes, and (ii) a metal plate for preventing mutual interference between the vibrator plates in said vibrator assemblies, the improvement which comprises, in combination:
(a) said holder case is of an electrically insulating material and has a front side provided with a recess for receiving therein said vibrator plate,
(b) said lead wires extend through and are secured in a side wall of said case bounding said recess and have tip portions located in alignment with one another within said recess so that said tip portions can serve for the spacing of said vibrator plate from a bottom wall of said case bounding said recess,
(c) said vibrator plate is fixed within said recess by said tip portions being bonded to said excitation electrode means,
(d) said bottom wall includes port means therethrough to permit the micro-adjustment of said excitation electrode means facing said bottom wall,
(e) said front side of one of said holder cases of said pair of vibrator assemblies faces in a direction opposite to the direction faced by said front side of the other of said holder cases of said pair of vibrator assemblies,
(f) said respective front sides of said holder cases are covered by said metal plate and are attached thereto at the respective sides of said metal plate, said pair of vibrator assemblies being coupled fixedly to each other together through the medium of said metal plate, and thereby providing port means for the microadjustment of vibration frequencies of both vibrator plates at the outer faces of said piezoelectric vibrator unit.

4,112,325

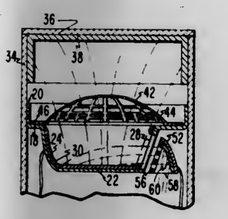
ELECTRON DISCHARGE TUBE HAVING A CUP-SHAPED SECONDARY ELECTRON EMISSIVE ELECTRODE

Richard Dale Faulkner, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 655,166, Feb. 4, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 813,075

Int. Cl.² H01J *39/04, 43/10, 43/26*

U.S. Cl. 313—95 **14 Claims**



1. An electron discharge tube comprising:
(a) an evacuated tube having a faceplate and a tubular body, with a portion of the body having a substantially circular cross-section;
(b) a cup-shaped electron emissive electrode having:
i. a substantially circular top opening;
ii. a base;
iii. a sidewall;
iv. a substantially circular rim around the periphery of said top opening, said rim projecting outward radially from said sidewall and terminating in flange having a diameter substantially equal to the diameter of the substantially circular cross-section;
v. an electron emissive coating on the inside of said cup-shaped electrode adapted to release electrons in response to impinging photons or photoelectrons; and
vi. a side opening in said sidewall through which said electrons pass to exit from said cup-shaped electrode;

(c) said electrode positioned in the portion of the body having the substantially circular cross-section with said projecting rim substantially parallel to the plane of the substantially circular cross-section, and with said top opening facing said faceplate;
(d) means for collecting said electrons, said means positioned laterally adjacent said cup-shaped electrode between said side opening and said body; and
(e) an anode.

4,112,326

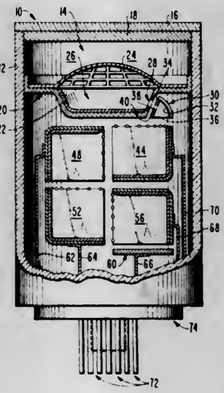
NON-UNIFORM DYNODE MESH FOR AN ELECTRON DISCHARGE TUBE

Richard Dale Faulkner, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,657

Int. Cl.² H01J *39/00*

U.S. Cl. 313—95 **6 Claims**



1. An electron discharge device comprising an envelope containing a photocathode, an anode, and a plurality of dynodes for propagating and concatenating electron emission from said photocathode to said anode,
said dynodes including a series of hollow, box-like secondary dynodes, each of which has an input aperture for receiving electrons from a previous stage and an output aperture for ejecting electrons to a following stage,
the input and output apertures of each of said secondary dynodes being adjacent to, and at an angle to, each other,
the input aperture of at least one of said secondary dynodes being covered by a conductive, electron-transmissive member, the electron transmission of at least a portion of which varies from a maximum at the edge thereof adjacent to the dynode's output aperture to a minimum at the opposite edge thereof.

4,112,327

CATHODE STRUCTURE AND METHOD

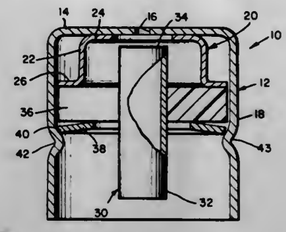
Franz X. Eisele, Oceanside, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 18, 1976, Ser. No. 733,657

Int. Cl.² H01J *1/20, 19/14*

U.S. Cl. 313—337 **6 Claims**

1. A cathode structure comprising;
a cathode cup having a side wall and having a front wall therein;
a stop in said cup spaced from said front wall;
a cathode comprised of an insulator disc and a cathode tube mounted on said insulator disc, said insulator disc being engaged against said stop;
a spring engaged against said cathode insulator disc, said spring having an inner edge and an outer edge and being non-planar in its non-deflected position, said spring having said inner edge engaged against said cathode insulator disc, said spring having said outer edge positioned substantially against said sidewall of said cup and away from said cathode insulator disc in its undeflected position, said outer edge of said spring engaging against an abutment



within said cup and mounted on said cup, said abutment being positioned to hold said spring in its deflected position to force said cathode insulator disc against said stop in all conditions.

4,112,328

BARIUM MAGNESIUM FLUORIDE PHOSPHORS AND LAMPS AND X-RAY SCREENS EMBODYING SAME

Robert W. Wolfe, Wysox, and Russell F. Messier, Pennsylvania Furnace, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 615,543, Sep. 22, 1975, abandoned. This application Jan. 27, 1977, Ser. No. 763,051

Int. Cl.² C09K *11/46*

U.S. Cl. 313—486 **9 Claims**

1. A luminescent composition comprising a host selected from the group consisting of barium magnesium fluoride compounds and mixtures of barium fluoride and magnesium fluoride, wherein the MgF_2content of said host is from about 40 to about 85 mole percent and the BaF_2 content is from about 15 to about 60 mole percent and, as an activator, from about 0.01 to about 0.2 moles EuF_2 per mole of host, and from 0 to about 0.3 moles MnF_2 per mole of host.

4,112,329

GAS DISCHARGE DISPLAY DEVICE

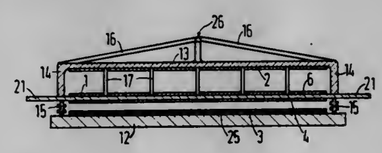
Werner Veith, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,720

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615721

Int. Cl.² H01J *61/067, 61/30, 61/42*

U.S. Cl. 313—491 **15 Claims**



1. A gas discharge display device, comprising a gas-filled, gas-tight enclosure, an insulating matrix member dividing the enclosure into two chambers, which is in the form of an insulating plate having a plurality of apertures therethrough, arranged in an array of rows and columns corresponding in number to a desired number of image points, a plasma electrode disposed in one chamber, and a luminescent screen electrode disposed in the other chamber, a plurality of anode conductors disposed on the side of said plate facing said plasma electrode, and a plurality of control conductors disposed on the side of said plate facing said luminescent screen electrode,

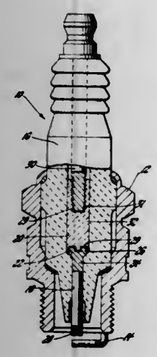
each of the conductors extending around the edges of the associated apertures, with each of the conductors on one side being associated with a row of apertures, and each of the conductors on the other side being associated with a column of apertures, said column conductor apertures having an elongated configuration, in particular an oval or slot-shaped configuration, the plasma electrode being so disposed that upon application of appropriate potentials to the respective conductors and plasma electrode a gas discharge can burn in the discharge chamber and the luminescent screen electrode is disposed sufficiently close to the adjacent conductors on the matrix member, that under such conditions even a few kV applied to such screen electrode cannot trigger any undesired gas discharge, the effective size of the apertures in the control conductors adjacent said screen electrode having a sufficiently small size and configuration that an effective control grid action results with respect to electron flow through the aperture.

4,112,330

METALLIZED GLASS SEAL RESISTOR COMPOSITIONS AND RESISTOR SPARK PLUGS

Grant L. Stimson, and Patrick N. Kesten, both of Davison, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1977, Ser. No. 798,858
Int. Cl.² H01J 7/44, 13/46, 17/34, 19/78
U.S. Cl. 315—46 **7 Claims**



1. In a glass-type resistor composition adapted to form a gas tight seal within the centerbore of a ceramic insulator between metal contact members, said composition including a metal powder to control oxidation of said metal contact members, the invention comprising the use of a glass mixture consisting essentially of about 25–50% borosilicate glass and about 50–75% barium borate glass, and the use of a mixture of metal powders consisting essentially of from about, in parts by weight, 1–4 parts antimony and 2–8 parts silicon, to obtain stable electrical resistance in field use, resistance to oxidation of metal contact members and said metal powders, and improved RFI suppression.

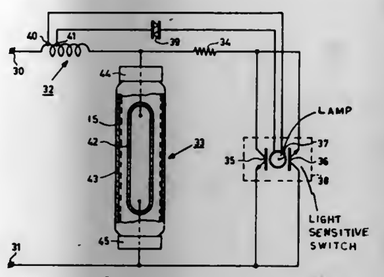
4,112,331

DEVICE FOR IMPROVING THE EFFICIENCY OF A LOW-PRESSURE SODIUM VAPOR DISCHARGE LAMP

Thomas Geert Verbeek, and Robertus Laurentius Clemens de Vaan, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 699,342, Jun. 24, 1976, abandoned.
This application Dec. 9, 1977, Ser. No. 859,059
Claims priority, application Netherlands, Jun. 30, 1975, 7507734
Int. Cl.² H05B 37/02, 41/392
U.S. Cl. 315—125 **13 Claims**

1. An illumination device comprising, a low-pressure sodium vapour discharge lamp and a current-stabilizing ballast element connected in series therewith, the lamp including a discharge tube which contains sodium and a rare gas, the lamp being provided with an infrared radiation reflecting coating which envelops a large part of the discharge tube whereby in the operating condition of the lamp the effective temperature T of



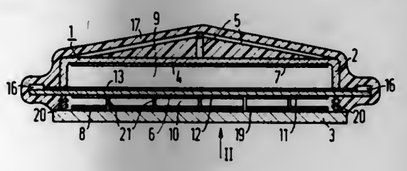
the discharge tube wall is maintained between 245° C. and 270° C., and means for supplying an operating current to the tube so that — with the exception of any peak current having a duration smaller than 0.5 msec — the instantaneous current density in the discharge tube is kept below the value $S = 165 + 1.3 (T - 245)^2$ mA/cm² and the effective current density in the discharge tube is kept above the value 0.8 S mA/cm².

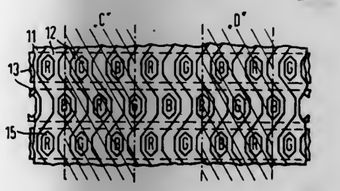
4,112,332

MATRIX-ADDRESSED GAS-DISCHARGE DISPLAY DEVICE FOR MULTI-COLORED DATA DISPLAY

Werner Veith, Munich, and Martin Bechteler, Unterfoehring, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 1, 1977, Ser. No. 783,570
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615569
Int. Cl.² H05B 37/00, 39/00, 41/00
U.S. Cl. 315—169 TV **20 Claims**





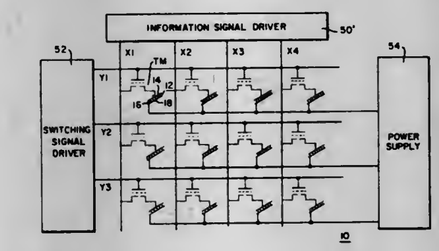
1. A gas discharge display device for multicolored data display in three basic colors, comprising a gas-filled, gastight enclosure, a board-like matrix control structure, dividing the enclosure into two chambers, which is in the form of an insulating plate having a plurality of apertures therethrough, arranged in an array of coordinate lines corresponding in number to a desired number of image points, a plasma electrode disposed in one chamber, and a luminescent screen electrode disposed in the other chamber, the control structure having a plurality of auxiliary anode conductors disposed on the side of said plate facing said plasma electrode, and a plurality of control conductors disposed on the side of said plate facing said luminescent screen electrode, with each of the conductors extending around the edges of the associated apertures, each of the conductors on one side being associated with a row of apertures, and each of the conductors on the other side being associated with a column of apertures, the plasma electrode being so disposed that upon application of appropriate potentials to the respective conductors and plasma electrode a gas discharge can burn in the discharge chamber and the luminescent screen electrode is disposed sufficiently close to the adjacent conductors on the matrix member, than under such conditions even a few kV applied to such screen electrode cannot trigger any undesired gas discharge, the auxiliary anode conductors each containing a corresponding line of apertures with each three successive apertures being allotted to the three basic colors, and each third aperture being allotted to the same basic color, each control conductor interconnecting each successive aperture along the line in which such conductor extends, with each two successive apertures being allotted to two of the three basic colors and each second aperture being allotted to the same basic color, the color allocation for even-numbered auxiliary anodes is shifted relative to the odd-numbered auxiliary anodes by one aperture in the direction in which the auxiliary anodes extend.

4,112,333

DISPLAY PANEL WITH INTEGRAL MEMORY CAPABILITY FOR EACH DISPLAY ELEMENT AND ADDRESSING SYSTEM

Juris A. Asars, and Karl K. Yu, both of Murrysville Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 23, 1977, Ser. No. 780,624
Int. Cl.² H05B 37/00, 39/00, 41/00
U.S. Cl. 315—169 TV **7 Claims**



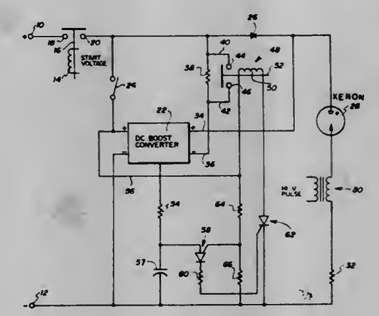
1. A display system comprising:
(a) an X–Y display element array panel, in which X–Y row and column buses are disposed on a substrate insulated from each other for peripheral connection to drive signal means, and for interconnection of the display elements,
(b) display elements defined between the X–Y row and column intersections with a display medium disposed between spaced-apart electrodes, with an integral thin film memory transistor connected at each display element to the row and column buses and to one display element electrode,
(c) means for addressing an information potential to each floating gate of the memory transistor associated with each display element which information potential determines the conductance state for the memory transistor, which means provides a transistor turn on pulse signal applied via the selected Y bus to turn on the selected transistor if the selected transistor is not already biased on, and provides a simultaneous charge equalizing pulse signal applied via the X bus if the selected transistor is not already biased on, and wherein the information potential is thereafter applied as the sum of pulse signals applied on the selected X and Y bus for the selected display element to induce a corresponding information potential on the selected floating gate,
(d) means for applying a selected periodic display drive potential to a common display element electrode, with the display medium disposed between the common display element electrode and the spaced apart individual display element electrodes which are connected to a contact of the respective memory transistor associated with the display element, and including means for connecting the selected X and Y buses at a selected display element to a common reference potential relative to the periodic display drive potential to permit actuation of the display medium when the stored information potential on the floating gate of the memory transistor biases the transistor on to control the amplitude and duty cycle of signal across the display element electrodes for actuating the display element.

4,112,334

IGNITION SYSTEM FOR EXTENDING THE LIFETIME OF GAS FILLED ELECTRIC LAMPS

Leon Hodge, Garland, Tex., assignor to Varo, Inc., Garland, Tex.

Filed Jan. 28, 1977, Ser. No. 763,500
Int. Cl.² H05B 37/02, 41/18
U.S. Cl. 315—171 **18 Claims**



12. An igniter circuit for extending the lifetime of a gas filled electric lamp comprising:
a D.C. boost converter for generating an open circuit D.C. voltage for application to the lamp prior to ignition of the lamp,
a resistance connected between said converter and the lamp for limiting the current applied to the lamp to a first predetermined level,
timing means connected to be energized concurrently with said converter for generating a timing signal after a predetermined time interval, and
means responsive to said timing signal for establishing a short circuit across said resistance in order to increase the current applied to the lamp to a second predetermined level higher than said first level.

4,112,335

RAPID PULSE ULTRAVIOLET LIGHT APPARATUS

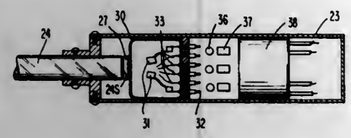
Donald I. Gonser, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

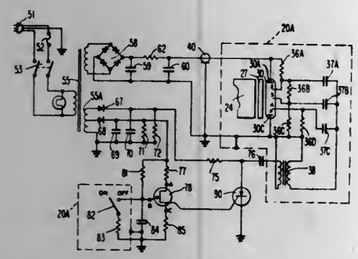
Continuation of Ser. No. 560,290, Mar. 20, 1975, abandoned.
This application Jun. 13, 1977, Ser. No. 806,316
Int. Cl.² H05B 37/00
U.S. Cl. 315—241 R **14 Claims**

1. Light source apparatus for delivering a substantial continuum of ultraviolet radiation in the range of 320 to 400 nanometers to a restricted surface area, comprising:
a. ultraviolet light source means containing xenon at greater than 3 atmospheres and less than 10 atmospheres pressure,

and including means to cut off wavelengths below 320 nanometers;

b. a housing, adapted to contain said ultraviolet light source means and suitable for hand-held operation;





c. means for pulsing of said ultraviolet light source means; and

d. light delivery means in operative association with said light source means for delivering ultraviolet radiation from said light source means to the restricted surface area.

4,112,336

LAMP-STARTING DEVICE

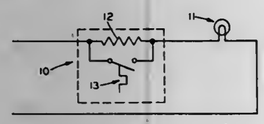
Donald J. Rios, 3923 Cranberry La., St. Louis, Mo. 63121

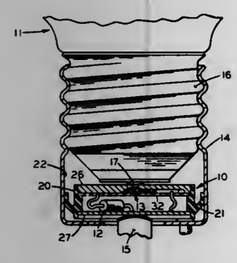
Continuation-in-part of Ser. No. 635,649, Nov. 26, 1975, Pat. No. 4,005,338. This application Dec. 6, 1976, Ser. No. 747,520

The portion of the term of this patent subsequent to Jan. 25, 1994, has been disclaimed.

Int. Cl.² H05B *39/02*

U.S. Cl. 315—362 **5 Claims**





1. A lamp-starting device for use in a lamp socket adapted to receive the base of a lamp, comprising:

(a) a housing,

(b) a pair of electrically-conductive plates disposed in spaced relation in the housing, and electrically insulated from each other,

(c) an electrical resistor located between and electrically connecting the plates, the resistor being in the circuit when the lamp is initially energized, and

(d) a temperature-actuated mercury switch located between the plates, the mercury switch being located in heat transfer relation to the plate that is adapted to engage the lamp base, and operatively electrically interconnecting the plates when the switch is heated by conductive heat from the lamp socket to the plate adapted to engage the lamp base to bypass the resistor in the circuit after initial energization.

4,112,337

HIGH VOLTAGE GENERATOR

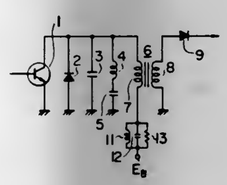
Tadashi Nagasaki; Mitsuharu Akatsu, and Mitsuo Ohtsu, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 3, 1976, Ser. No. 747,324

Claims priority, application Japan, Dec. 8, 1975, 50-145059; Dec. 8, 1975, 50-145060

Int. Cl.² H01J *29/70*

U.S. Cl. 315—411 **14 Claims**



1. A high voltage generator comprising:

a horizontal output circuit for generating a flyback pulse during a retrace period of horizontal scan,

a flyback transformer having primary and secondary windings for stepping up said flyback pulse,

a rectifying circuit for rectifying the steeped-up voltage for supplying a D.C. voltage to a CRT,

a frequency dependent attenuation circuit connected in series with said primary winding of said flyback transformer for causing substantial power loss in a harmonic component in a high voltage output waveform of said flyback transformer while causing substantially no power loss in a fundamental component of the high voltage output waveform, and

said attenuation circuit attenuating the harmonic component in the high voltage output waveform of said flyback transformer to flatten the top of the retrace pulse waveform of the high voltage output.

4,112,338

WIRING ARRANGEMENT FOR BLOWER MOTORS OF AN AIR CONDITIONER

Teruo Kawasaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Nov. 3, 1976, Ser. No. 738,572

Claims priority, application Japan, Nov. 19, 1975, 50-157114[U]

Int. Cl.² H02P *1/54*

U.S. Cl. 318—59 **11 Claims**

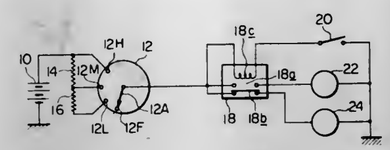
1. A wiring arrangement of an air conditioner for a vehicle having an electric power source, comprising:

a first electric motor for driving a first blower when energized, said first electric motor and said first blower being parts of an air heating device;

a second electric motor for driving a second blower when energized, said second electric motor and said second blower being parts of an air cooling device;

voltage controlling means for controlling the magnitude of electric current directed to said first and second motors from said electric power source so as to vary the running speeds of said first and second motors; and

switching means having first and second states thereof, said first state being a state in which said first electric motor is electrically connected to said electric power source to be energized and simultaneously, said second electric motor



is disconnected from said electric power source to be de-energized, said second state being a state in which said first electric motor is disconnected from said electric power source to be de-energized and simultaneously, said second electric motor is connected to said electric power source to be energized.

4,112,339

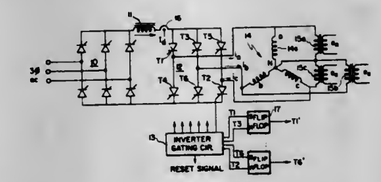
MEASUREMENT OF PULSATING TORQUE IN A CURRENT SOURCE INVERTER MOTOR DRIVE

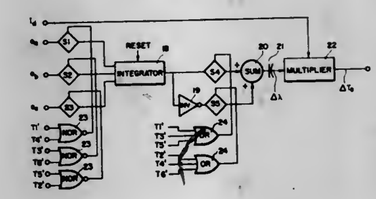
Thomas A. Lipo, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 21, 1977, Ser. No. 817,625

Int. Cl.² H02P *5/40*

U.S. Cl. 318—227 **10 Claims**





1. A circuit for measuring the pulsating component of electromagnetic torque in an electric motor operated from a polyphase current source inverter comprising

means for effectively sensing the amplitude of the nominally rectangular inverter current supplied by said current source inverter to the motor phase windings, the zero current intervals in each phase winding, and the instantaneous voltage across each phase winding, and for generating signals respectively representative thereof, and

a computation circuit including means for successively integrating each phase winding voltage during the interval the current in that phase winding is zero to thereby produce signals representative of motor air gap flux, and further comprising means for filtering said flux signals to reject the direct-current component and for multiplying the flux signals by the inverter current signal to generate an output representing the instantaneous pulsating component of torque.

4,112,340

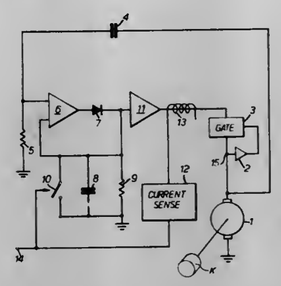
CONTROL DEVICES

Graham John Clarke, St. Albans, England, assignor to Marconi Instruments Limited, England

Filed Mar. 16, 1977, Ser. No. 778,256

Int. Cl.² H02K *27/20*

U.S. Cl. 318—331 **11 Claims**



6. A control device comprising, in combination:

a d.c. ironless motor having a rotatable member which generates a back e.m.f. when rotated;

a control member connected to said rotatable member;

storage means connected to the back e.m.f. generated by said motor for storing a signal whose amplitude is related to rotational speed imparted to said control member; and

driving circuit means connect to said storage means and to said motor for rotating said rotatable member in accord with the amplitude of the signal stored by said storage means whereby rotation of said rotatable member initially imparted by said control member is continued by said driving circuit means.

4,112,341

DRIVE AND BRAKE CIRCUIT FOR SPEED CONTROLLED DC MOTORS

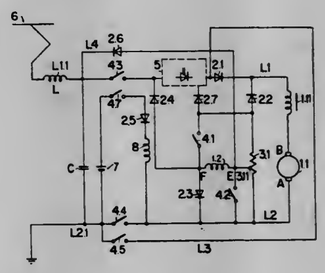
Horst Fath, Weinheim, and Reiner Nill, Leutershausen, both of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Dec. 15, 1976, Ser. No. 750,671

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557208

Int. Cl.² H02P *3/14*

U.S. Cl. 318—370 **24 Claims**



1. For a DC motor having a field winding and an armature winding, a drive and brake circuit comprising a choke, a DC controller, a rectifier, a brake resistance, a first diode, said brake resistance and said first diode being connected in series with each other and across the field winding, a plurality of switches, circuit means including the plurality of said switches for forming a series connection of the field winding and said rectifier and connecting the series connection parallel to the armature winding so as to drive the motor and for connecting the brake resistance in series with the rectifier and connecting

the series connected brake resistance and rectifier parallel to the armature winding to brake the motor, said rectifier being ignitably controllable, a second diode, an extinguishing diode in the controller, said brake resistor having a terminal, a third diode, said field winding having two field winding terminals, two choke terminals on the choke, said second diode being connected between the extinguishing diode of the controller and one terminal of said brake resistor, said third diode being connected between one terminal of the field winding and one terminal of the choke.

4,112,342

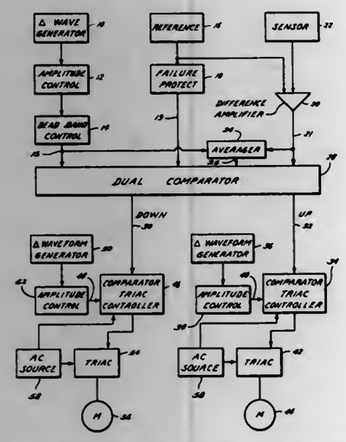
SOLID STATE CONTROLLER

Harry Samuel Elliott, Houston, Tex., assignor to Varco, Inc., Houston, Tex.

Continuation of Ser. No. 495,142, Aug. 6, 1974, abandoned. This application Sep. 27, 1976, Ser. No. 727,001

Int. Cl.² G05B *11/28*

U.S. Cl. 318—599 **28 Claims**



1. A control system using a power supply for positioning a device associated with a physical variable wherein the position of the device is controlled by an alternating current electric prime mover driven by an alternating current source and the position of the device is represented by a state signal whose variable amplitude is a function of the position, comprising:

means responsive to the physical variable for generating a reference input signal of settable magnitude representing a desired position of the device;

a first wave form generating means for generating an electrical generated signal;

difference means responsive to the state signal, said reference signal and said electrical generated signal for simultaneously generating at least one variable error signal having a magnitude and polarity only proportional to a difference relationship between the magnitudes of the state signal and said refernce signal over time and at least one generated error signal having a magnitude and polarity proportional to the relationship between said variable error signal and said electrical generated signal; said error signals having waveforms differing from said electrical waveform, and said electrical generated signal and said error signals being coordinated in time;

comparator means responsive to said difference means and said first waveform generating means for producing first variable duration output pulses at a plurality of outputs; said variation of duration being a function in time of the magnitude of said electrical generated signal and said variable error signal, said difference means being electrically connected between the state signal and said reference signal and said comparator means, and said first waveform generating means being electrically connected between said comparator means and the power supply; and

a solid state switching means responsive to said outputs of said comparator means for switching power to the alternating current electric prime mover to vary the position of the device, said solid state switching means being electrically connected between said comparator means and the alternating current electric prime mover and the alternating current source.

4,112,343

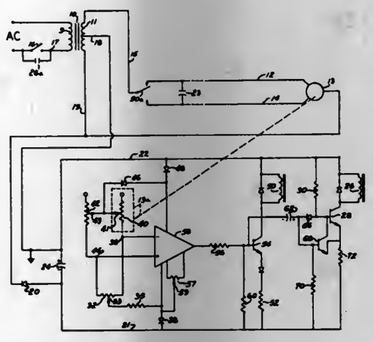
BIDIRECTIONAL SELF BALANCING BRIDGE

Philip N. Douglas, Cary, N.C., assignor to Cornell-Dubilier Electric Corp., Newark, N.J.

Continuation of Ser. No. 545,146, Jan. 29, 1975, abandoned. This application Apr. 27, 1977, Ser. No. 791,554

Int. Cl.² G05B *1/06*

U.S. Cl. 318—674 **25 Claims**



1. A self-balancing direct current bridge system, including a mechanical output device; a position sensor coupled to said output device to provide a signal representing the actual position of said device; a reversible motor for operating said output device; a first relay effective when energized to connect said motor to a power source; means for energizing said first relay; a second relay arranged when de-energized to permit motor rotation in one direction and when energized to permit motor rotation in the opposite direction; direct-current bridge means; an output circuit for said bridge means; an adjustable control element to provide a signal representing a desired position for said output device, means coupling said actual and desired position signals in said bridge means whereby said bridge means is balanced when said position signals represent like desired and actual positions and is unbalanced otherwise; means connected to said bridge output circuit for selectivity energizing or deenergizing said second relay such that the motor operates to restore the bridge means to its balanced condition; said output circuit including means responsive to the rate of change of bridge balance to produce a control signal; and means responsive to any polarity reversal of the rate of change of bridge balance for de-energizing said first relay and thereby de-energizing said motor.

4,112,344

RECORD FEEDING APPARATUS AND METHOD

Rudolph J. Klein, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

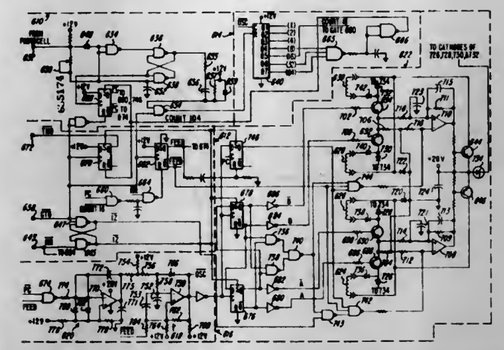
Division of Ser. No. 537,481, Dec. 30, 1974, Pat. No. 4,002,277. This application Feb. 4, 1976, Ser. No. 655,174

Int. Cl.² G05B *19/40*

U.S. Cl. 318—685 **11 Claims**

1. A control system for a stepping motor having a drive shaft and a plurality of windings, the sequential electrical energization of said windings being effective to rotate said drive shaft in predetermined increments, the control system comprising:

means for alternately energizing the windings in a predetermined sequence, the energizing means including means for altering the sequence to change the magnitude of the increments; and means connected to said energizing means for



determining the rate at which the windings are energized, said rate determining means including means for gradually increasing the energizing rate for accelerating the stepping motor and for gradually decreasing the energizing rate for decelerating the stepping motor.

4,112,345

STEPPING MOTOR WITH ENERGIZING CIRCUIT

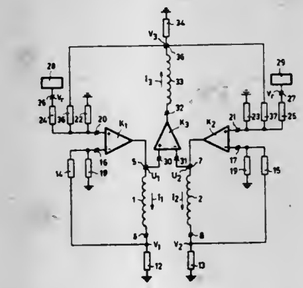
Bernardus Henricus Antonius Goddijn, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1977, Ser. No. 764,027

Claims priority, application Netherlands, Feb. 24, 1976, 7601844

Int. Cl.² H02P *1/40*

U.S. Cl. 318—696 **8 Claims**



1. A stepping motor and energizing circuit which comprises: a stepping motor having a rotor, first and second phase windings, and means for the stepwise energization of said first and second phase windings simultaneously including first and second sources having a high internal resistance relative to said first and second phase windings, said sources supplying energizing currents to said first and second phase windings to be energized, and an active network for generating a first current at a first output and a second current at a second output, said first and second currents being substantially in phase opposition and each having a magnitude which is a function of the difference between the voltages across said first and second phase windings, said first output being connected to said first phase winding and said second output being connected to said second phase winding to actively damp movement of said rotor.

4,112,346

CONSTANT CURRENT CIRCUIT

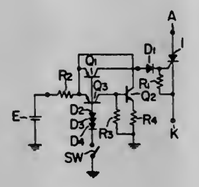
Michio Tokunaga, Zushi; Ichiro Ohhinata, Yokohama, and Shinzi Okuhara, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 9, 1977, Ser. No. 823,197

Claims priority, application Japan, Aug. 11, 1976, 51-94881

Int. Cl.² G05F *1/56*

U.S. Cl. 323—4 **7 Claims**



1. A constant current circuit comprising: characteristic-correlated first and second PNP transistors having common-connected emitters and common-connected bases, and

an NPN transistor whose base is connected to the collector of said second PNP transistor and whose collector is connected to said common-connected emitters of said first and second PNP transistors in which constant current is derived from the collector of said first PNP transistor.

4,112,347

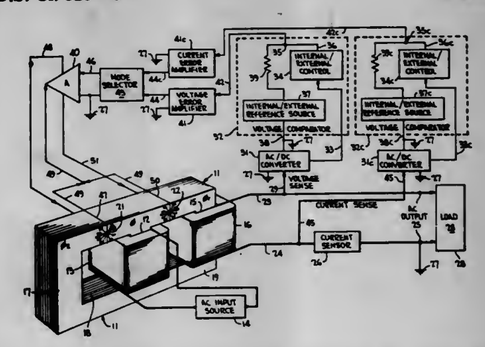
CONVERSION AND CONTROL OF ELECTRICAL ENERGY BY ELECTROMAGNETIC INDUCTION

Nathan A. Moerman, 7310 Maple Ave., Chevy Chase, Md. 20015

Division of Ser. No. 635,007, Nov. 25, 1975, Pat. No. 4,020,440. This application Jan. 26, 1977, Ser. No. 762,896

Int. Cl.² G05F *1/14*

U.S. Cl. 323—6 **7 Claims**



7. An electromagnetic induction means for the control and stabilization of alternating current power at a load from an alternating current power source comprising,

an alternating current power transformer means including a first closed magnetic path about an input leg and an output leg, and a second closed magnetic paths about the input leg and a bypass leg,

a first permeance control section coupling said input leg to the output leg in said first closed magnetic path, and

a second permeance control section coupling said input leg to the by-pass leg in said second closed magnetic path,

an alternating current power input winding means surrounding said input leg,

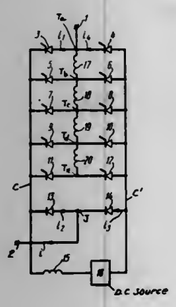
an alternating current power output winding means surrounding said output leg,

said output winding means having a pair of output leads,

a load current sensor means,

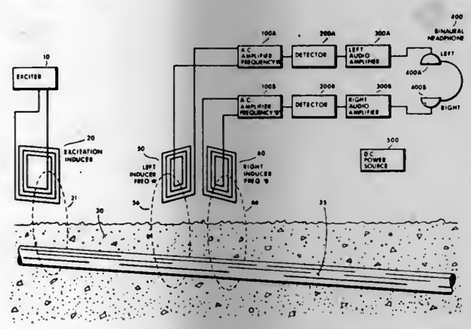
a load terminal means connected to one of said output winding leads in series with said current sensor means,
a first voltage comparator means including a stabilized voltage reference and an output voltage setting control means,
a voltage feedback means coupled from said load terminals to said first voltage comparator means,
a voltage error signal amplifier means,
means connecting the output of said first voltage comparator means to said voltage error signal amplifier means,
a second voltage comparator means including a stabilized reference voltage and an output current setting control,
a feedback current sensing means coupled to said current sensor and to said second voltage comparator means,
a current error signal amplifier means,
means connecting the output of said second voltage comparator means to said current error signal amplifiers means,
means connecting the output of said second voltage comparator means to said current error signal amplifier means,
a control mode selector means,
means connecting the outputs of said voltage error amplifier means and said current error amplifier means as the inputs to said control mode selector means, and
a permeance control complementary amplifier means coupling said mode selector means and said first and second permeance control sections for selectively apportioning the magnetic flux between said first and second closed magnetic paths while maintaining the magnetic flux in said input leg relatively constant,
whereby electromagnetic induction in said alternating current power output winding means produces a stabilized alternating current voltage at the terminals of said load means in response to said first voltage comparator means with said control mode selector means enabling voltage mode operation,
whereby electromagnetic induction in said alternating current power output winding means produces a stabilized output alternating power current to said load means in response to said second voltage comparator means and with said control mode selector means enabling current mode operation.

4,112,348
CONTACTLESS SWITCH FOR REGULATING TAPS OF INDUCTION ELECTRIC MACHINES
Grigory Markovich Rabashev, V.O. 15 Linia, 34, kv. 37; Vladislav Ruvimovich Alperovich, ulitsa Dybenko, 27, korpus 3, kv. 22, and Jury Iosifovich Lazovsky, poselok Pesochnaya, ulitsa Sovetskaya, 26, all of Leningrad, U.S.S.R.
Filed Dec. 27, 1976, Ser. No. 754,680
Int. Cl.² G05F *1/20*
U.S. Cl. 323—43.5 S **6 Claims**



1. A contactless switch for regulating taps of inductive electric machines, comprising a plurality of series-connected induction machine coils the terminals of which define a plurality tapping steps or taps: a pair of electrical conductors; a pair of controlled gates connected between each of said taps and another one of said electrical conductors; a pair of uncontrolled gates connected in series to each other to form a junction point and connected to said electrical conductors; and a reactor connected between said electrical conductors, said gates being arranged to form one of a plurality of single-phase bridge circuits when a pair of controlled gates are rendered conductive, each bridge circuit comprising one pair of said controlled gates which form two arms of a respective bridge circuit, said uncontrolled gates being common to all bridge circuits and forming the other two arms thereof, and said reactor being disposed in the diagonals of said bridge circuits, whereby a load may be connected to a desired tap by one of said bridge circuits by actuation of a selected pair of said controlled gates.

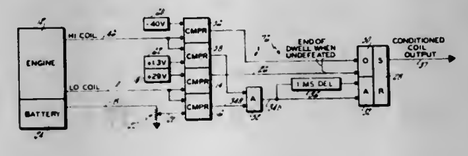
4,112,349
APPARATUS INCLUDING BIVOLUMETRIC TONE SUBAUDITION MEANS FOR POSITIONALLY SPOTTING AND TRACING SUBJACENTLY CONCEALED CONDUCTIVE STRUCTURES
Harold James Weber, 20 Whitney Dr., Sherborn, Mass. 01770
Filed May 9, 1977, Ser. No. 795,194
Int. Cl.² G01V *3/10*
U.S. Cl. 324—3 **12 Claims**



1. A receptor apparatus wherein the utility lies as a means for providing improved acuity and sense of relative, say, right or left hand, perceptibility as to the lay of a concealed structure through the novel use of a plurality of separate position indicative sensory indications to an operator, said receptor including in operative combination;
a. Plural inducer means arranged in a noncoincident relationship for the interception of electromagnetic field lines of various magnitudes produced sympathetically in the said concealed structure by separate exciter means, said exciter means operative to provide at least two distinctly different higher frequency alternating current signals each of which is modulated in amplitude at an audio frequency rate, wherein each of said plural inducer means is responsive to a different one of the said distinctly different frequencies so as to provide minute alternating current levels proportional to the relative power of the said electromagnetic induction field lines at the respective frequency intercepted by each of the said plural inducers,
b. A.C. amplifier means, with plural inputs connected to said plural inducer means, operative to independently amplify said minute alternating current levels produced by each of the operatively connected plural inducer means to provide plural different frequency output signals of increased amplitude, each of said different frequency output signals being proportional to each of the respective plural minute alternating current level AC amplifier inputs,
c. a plurality of detector means, each operative to detect a respective one of the different frequency plural A.C. amplifier output signals from the operatively connected A.C. amplifier means for producing plural audio signal outputs from said detector means, each audio signal output being proportional in amplitude to a respective one of the said minute alternating current level inputs,

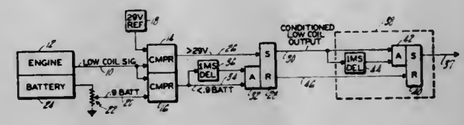
d. Audio amplifier means coupled to the output of each of the detector means operative to independently amplify each of the said plural audio signal outputs derived from said detector means,
e. Audio reproducer means comprising a plurality of separate transducers with at least one of said transducers coupled to each of the said audio amplifier means to provide at least two audio tone sensations for the operator consisting of at least a left ear signal and a right ear signal the respective volumes of which are individually proportional to a respective one of the said plural audio signal inputs to the reproducer means,
f. D.C. power source operative connected to each the said A.C. amplifier means, detector means, and audio amplifier means.

4,112,350
NEGATIVE AND POSITIVE SWITCHING IGNITION SIGNAL CONDITIONER
Thomas G. Van Vessem, Enfield, and Paul R. Back, Somersville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Sep. 15, 1977, Ser. No. 833,633
Int. Cl.² F02P *17/00*
U.S. Cl. 324—16 R **2 Claims**



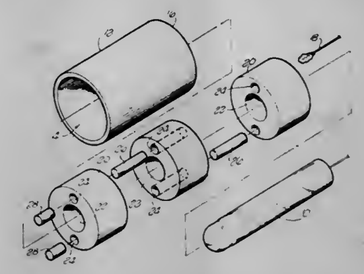
1. Apparatus for generating an accurate signal representation of the dwell and firing time of a spark ignition engine in which the ignition coil primary may be switched either at the grounded end or the ungrounded end, comprising:
first means for comparing the low coil signal against a positive reference voltage which is between the highest voltage that the low coil signal can reach in the dwell period and the lowest peak voltage which the low coil signal can reach during ignition-defeated operation in a negatively switched ignition system to provide a first signal related in time to the end of dwell period;
second means for comparing the low coil signal against a reference voltage which is between the most negative voltage that the high coil signal can reach in the dwell period and the lowest negative peak voltage which the low coil signal can reach during ignition-defeated operation in a positively switched ignition system to provide a second signal related in time to the end of a dwell period;
third means for comparing the low coil signal against a substantial faction of the voltage of the battery of the engine to provide a third signal related in time to the beginning of the dwell period;
fourth means for comparing the high coil signal against a small positive reference voltage which is lower than any voltage which occurs within the dwell period of a positively switched ignition system to provide a fourth signal related in time to the beginning of the dwell period; and
output means connected for response to said first, second, third and fourth means, and operative at the end of dwell period in response to either said first signal or said second signal and operative at the end of the dwell period in concurrent response to both said third signal and said fourth signal, for providing a signal delineating the dwell period from the firing time without regard to whether the ignition system under test is positively switched or negatively switched.

4,112,351
DUAL THRESHOLD LOW COIL SIGNAL CONDITIONER
Paul R. Back, Somersville, and Thomas G. Van Vessem, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Sep. 1, 1977, Ser. No. 829,857
Int. Cl.² F02P *17/00*
U.S. Cl. 324—16 R **3 Claims**



1. Apparatus for generating an accurate signal representation of the dwell and firing time of a spark ignition engine comprising:
first means for comparing the low coil signal against a reference voltage which is between the highest voltage that the low coil signal can reach in the dwell period with the lowest peak voltage which the low coil signal can reach during ignition-defeated operation to provide a signal related in time to the end of a dwell period;
second means for comparing the low coil signal against a substantial fraction of the voltage of the battery of the engine to provide a signal related in time to the beginning of a dwell period; and
output means responsive to said first and second comparing means for providing a signal delineating the dwell period from the firing time.

4,112,352
ELECTROCHEMICAL REFERENCE CELL WITH IMPROVED LIQUID JUNCTION
Theodore R. Barben, II, Carson City, Nev., assignor to Thomas Barben Instruments, Carson City, Nev.
Filed Oct. 11, 1977, Ser. No. 841,169
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 R **16 Claims**



1. A reference cell for use in measuring the pH of a sample fluid stream comprising:
an elongated rigid enclosure having an open end exposed to said sample fluid and a closed end;
at least two transversely adjacent longitudinal series of plug means disposed in longitudinally overlapping relationship with an interlocking fit to fill the open end of said enclosure;
a reference cell containing a reservoir electrolyte solution in contact with said cell means at the opposite end of said enclosure and separated from said sample fluid by said plug means;
each of said plug means consisting of successive longitudinally disposed layers of semipermeable material permeated with said electrolyte solution;

an impermeable seal between abutting transverse end surfaces of said plug means in each series and joined to the surrounding longitudinal surfaces of the overlapping adjacent plug means and said enclosure at approximately midway between the end portions of the adjacent series, the outer end surface of at least one plug means exposed to said sample fluid at the open end being unsealed to provide fluid communication between said layers;

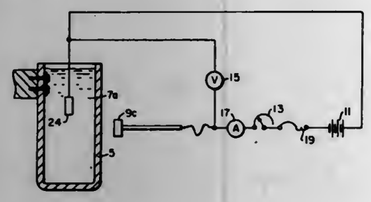
whereby an ion transfer path between said sample fluid stream and said electrolyte solution is established transversely through successive layers of said semipermeable material in passing between the longitudinal surfaces of the plug means in one series to the abutting overlapping longitudinal surfaces of adjacent plug means in the other series.

4,112,353

METHOD FOR TESTING DIELECTRIC ADEQUACY AND FOR INDICATING PHYSICAL DEFECTS IN A NONCONDUCTING MATERIAL BY DEPOSITING TRACES OF CARBON ON THE MATERIAL

Robert W. Thompson, Pearland, Tex., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 603,074, Aug. 8, 1975, Pat. No. 4,010,416. This application Sep. 21, 1976, Ser. No. 725,314
Int. Cl.² G01R *31/12*
U.S. Cl. 324—54 **2 Claims**



1. A method for testing a personnel container for physical defects and dielectric adequacy, comprising the steps of:

placing an ionic solution in the container;

placing a first electrode in said solution;

passing a second electrode having a wiper blade formed from an elastomer filled with conductive particulate material over the outer portion of said container which is filled with said ionic solution;

imposing a predetermined DC voltage across said electrodes, and determining the location of a mark of smudge on said container, said particulate material in the elastomer leaving a mark outlining a defect or a smudge if the thickness is below some minimum value.

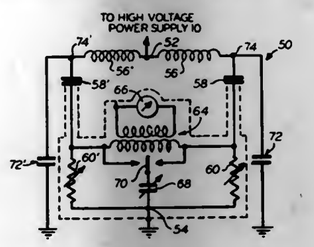
4,112,354

MOBILE BRIDGE TEST APPARATUS AND METHOD UTILIZING A SUB-POWER FREQUENCY TEST SIGNAL FOR CABLE SYSTEM EVALUATION

George Babder, Edison; George S. Eager, Jr., Upper Montclair, and Rafael Suarez, Avenel, all of N.J., assignors to General Cable Corporation, Greenwich, Conn.

Filed Nov. 9, 1976, Ser. No. 739,847
Int. Cl.² G01R *31/12, 27/00*
U.S. Cl. 324—54 **9 Claims**

1. Mobile field-test apparatus for the partial-discharge testing of a given length of an installed shielded high-voltage multiple-cable system when the cable conductors of the given length of the system have been disconnected from the system at predetermined spaced points, the shields being left in installed grounded condition, said apparatus comprising a bridge having two sides and interconnected at their opposite ends, one of said ends including a high-voltage connection and the other of said ends including a low-voltage balancing network having a ground connection, corresponding inductive and capacitative reactance elements similarly and series-interconnected in each side of said bridge, the inductive elements being connected to said high-voltage connection and the low-voltage ends of the capacitative reactance elements being connected to corresponding parts of said balancing network, first means for connecting one conductor of a disconnected high-voltage cable-system length under test to the interconnection of the reactance elements of one side of said bridge, second means for connecting a second conductor of the disconnected cable system to the interconnection of the reactance elements of the



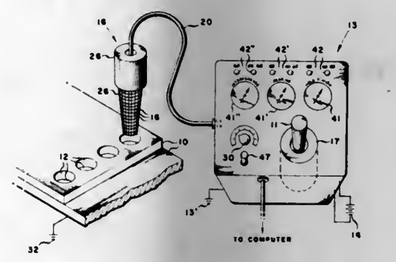
other side of said bridge, said balancing network including a transformer having a primary connecting the low-voltage sides of the respective capacitative reactance elements, meter means connected across the secondary of said transformer, and a high-voltage power source connected to the respective ends of said bridge, said power source being characterized by an output voltage which varies between zero and high voltage at a rate which is very substantially more slow than the cyclic rate of high-voltage power distribution for which the cable system is installed.

4,112,355

QUALITY AND FIT MEASURING APPARATUS FOR FASTENERS AND THEIR HOLES

Harry S. Gibson, Jr., and Charlie Gene Trevillion, both of Atlanta, Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Oct. 22, 1976, Ser. No. 734,805
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 R **7 Claims**



1. A quality and fit measuring apparatus for fasteners and their holes in structural members to be joined by such fasteners when installed therein comprising in combination:

a control box including a source of electrical power and a plurality of indicators;

a computer operatively connected to said control box;

a probe having a surface conforming in size and shape to that of the shank of each said fastener, said probe surface being defined by a plurality of capacitors electrically connected to said control box;

a receptacle having a surface conforming in size and shape to the surface of said members defining said holes, said receptacle surface being defined by a plurality of capacitors electrically connected to said control box;

a first electrical circuit within said control box including an individual conductor between each said probe capacitor and said computer;

a second electrical circuit within said control box including an individual conductor between each said receptacle capacitor and said computer;

a stepping switch in each of said first and second circuits operative to make and break connection of each probe and receptacle capacitor with said computer in a predetermined sequence; and

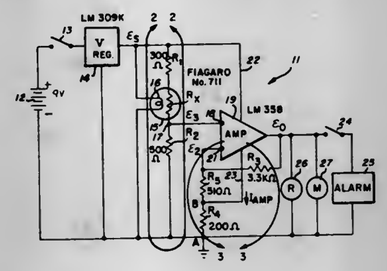
a connection between said first and second circuits between said stepping switch and said computer to coordinate corresponding capacitors of said probe and said receptacle during operation of the stepping switch as aforesaid when said probe is located in the structural member holes and the fastener shank aforesaid is located in said receptacle whereby comparisons between the fastener and hole surfaces are made by the computer and registered by said indicators.

4,112,356

SEMICONDUCTOR GAS DETECTOR CIRCUIT

Stephen M. Toy, 4190 Manuela Ave., Palo Alto, Calif. 94306

Filed Dec. 20, 1976, Ser. No. 752,413
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 SN **11 Claims**



1. In a semiconductive gas detector circuit:

semiconductive gas detector means disposed in gas communication with a gas to be detected and having a sensing resistor means with a value of resistance which varies in accordance with the concentration of the gas constituent to be detected and also having a temperature coefficient of resistance of a first polarity;

second resistor means series connected with said sensing resistor means to form a voltage divider network therewith which is to be connected across a source of voltage and having an output node connected intermediate said sensing and second resistor means on which is established a first output signal which varies in accordance with the concentration of the detected gas constituent and which has a temperature dependence;

differential amplifier means having first and second signal input terminals, an output signal terminal and a pair of power supply terminals, for supplying a flow of current through said differential amplifier means, the value of supply current having a temperature coefficient of current of a second polarity opposite to that of said first polarity, means for coupling said first output signal into said first input terminal of said differential amplifier means;

third and fourth resistor means series connected to form a second voltage divider network and being connected across the output of said differential amplifier means for voltage dividing thereacross the output signal of said differential amplifier means and having a feedback signal node between said third resistor means and said fourth resistor means on which to derive a feedback signal which varies as the output signal, a supply current node disposed between said fourth resistor means and said third resistor means, means for applying the supply current of said differential amplifier means through said fourth resistor means, to derive a temperature compensation feedback signal component of said feedback signal and means for coupling said feedback component signal into said second input terminal of said differential amplifier means; and

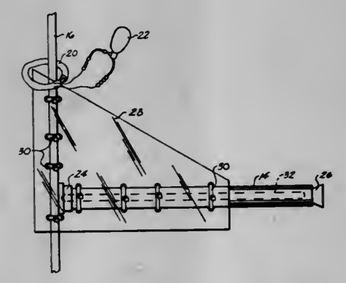
the ratio of the resistance value of said second resistor means to that of said fourth resistor means being such as to compensate for the temperature dependence of said first output signal.

4,112,357

LIGHTING CURRENT DETECTOR

Stephen F. Livermore, Satellite Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 22, 1977, Ser. No. 835,544
Int. Cl.² G01R *31/02*
U.S. Cl. 324—72 **7 Claims**



1. An apparatus for measuring the intensity of a current produced in an elongated electrical conductive member by a lightning strike for determining the intensity of said lightning strike, said apparatus comprising:

(a) an elongated strip of magnetic material,

(b) means for holding said elongated strip of magnetic material perpendicular to said elongated electrical conductive member,

(c) a predetermined electrical signal recorded along the length of said elongated strip of magnetic material,

(d) one end of said magnetic material being positioned closely adjacent said electrical conductive member with the magnetic material extending perpendicularly outward from said electrically conductive member a greater distance than the distance of a magnetic field that is produced by current induced in said conductive member caused by an anticipated lightning strike,

whereby by analyzing the distance that said recorded signal is disturbed from said one end of said magnetic material by the magnetic field, the intensity of said lightning strike can be determined.

4,112,358

DIGITAL FREQUENCY MEASURING DEVICE

Hitoshi Ashida, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Apr. 8, 1977, Ser. No. 785,909
Claims priority, application Japan, Apr. 9, 1976, 51-40655
Int. Cl.² G01R *23/02*
U.S. Cl. 324—78 D **5 Claims**

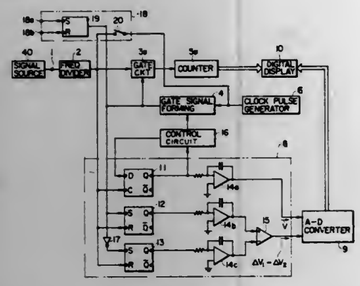
1. A digital frequency measuring device comprising:

a gate circuit supplied with an input pulse signal to be measured in frequency and controlled by a gate signal to be opened and closed;

a gate signal forming circuit for generating and supplying the gate signal of unit time to the gate circuit;

a counter supplied with the input pulse signal having passed through the gate circuit to count the input pulses;

a fraction detector circuit supplied with the gate signal and the input pulse signal for performing an operation $(\Delta T_1 - \Delta T_2)/T$ where ΔT_1 and ΔT_2 are the time intervals between the leading and trailing edges of the gate signal and the input pulses respectively following them in predetermined relationships thereto, and T is the period of the input pulse signal;



an A–D converter supplied with the result of operation from the fraction detector circuit to convert it into a digital value; and

a display for displaying the output from the A–D converter as the count value of the counter and a number below its minimum unit.

4,112,359

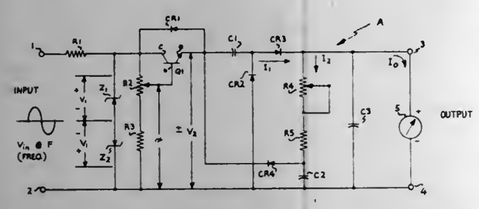
FREQUENCY TRANSDUCER CIRCUIT WITH OUTPUT CALIBRATION

Donald R. Hyer, Lynnfield, Mass., assignor to General Electric Company, New York, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,907

Int. Cl.² G01R *23/02*

U.S. Cl. 324—78 E **10 Claims**



1. A frequency transducer circuit for providing a precisely adjusted range of output currents, comprising a diode pump circuit in combination with a low impedance input circuit including a first transistor having its collector and emitter connected in series with the primary capacitor of the diode pump circuit, a first variable impedance means operably connected for adjusting the current output of said first transistor thereby to adjust output current of the transducer circuit at the upper limit of said range, and a second variable impedance means connected to provide biasing current to the output of said transistor for adjusting output current of the transducer circuit at the lower limit of said range.

4,112,360

APPARATUS AND METHOD FOR TUNING ELECTRO-MECHANICAL FILTER COMPONENTS

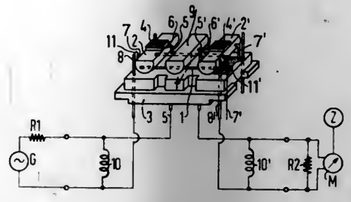
Horst Bergmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 7, 1977, Ser. No. 766,075

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608137

Int. Cl.² G01R *23/00*

U.S. Cl. 324—80 **5 Claims**



1. A process for the tuning of a resonator by frequency adjustment of an electromechanical filter which comprises two electromechanical transducers capable of operating in electrostrictive action, two end mechanical resonators on which said electromechanical transducers are mounted, at least one other resonator without such a transducer, said two end and said other resonators being coupled together by mechanical coupling elements, two coils respectively connected to said two end transducers and said coils having an inductance value which is such that said coils together with the static capacitance of the respective one of said two end electromechanical transducers form parallel resonant clamping circuits which are tuned to the desired resonant frequency of said other resonator which is to be tuned and including the coupling elements connected thereto, including the steps wherein during the tuning process which is carried out on said other resonator one of said transducers is fed with electrical energy tunable over a frequency range from a feed circuit which has sufficient high ohmic impedance to assure that the quality factor of this clamping circuit is only slightly changed, the resonator connected to this clamping circuit thereby feeding said other resonator with low amplitude mechanical oscillations of the desired frequency, and simultaneously the resonant output frequency of said other resonator is measured by a measuring circuit having a high input impedance connected to one of said clamping circuits.

4,112,361

LIQUID CRYSTAL APPLIED VOLTMETER

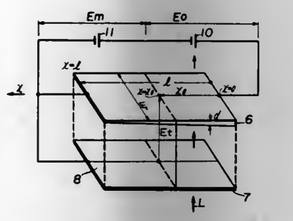
Takashi Nakada, and Toshiharu Takoh, both of Tokyo, Japan, assignors to Tokyo Seimitsu Co. Ltd., Japan

Filed Jun. 1, 1976, Ser. No. 691,664

Claims priority, application Japan, Jun. 5, 1975, 50-67857; Feb. 20, 1976, 51-017786; Mar. 11, 1976, 51-026564

Int. Cl.² G02F *1/13*

U.S. Cl. 324—92 **4 Claims**



1. A decibel meter comprising:

(a) a pair of polaroidal plates disposed in parallel opposed position, said polaroidal plates being arranged so that their polarizing directions intersect at a right angle,

(b) a pair of light-transmitting electrodes disposed in spaced parallel relationship between said polaroidal plates, one of said electrodes comprising an electrical resistance film, the other of said electrodes comprising a conductor film, one end of said electric resistance film being electrically connected to one end of said conductor film,

(c) a nematic liquid crystal, adapted to produce a DAP effect, filling a space defined between said electrodes

(d) a scale indicating means on one of said polaroidal plates on a surface thereof which is remote from said liquid crystal, said scale means having graduations at substantially equal intervals

(e) a constant voltage power supply electrically connected to said one electrode comprising said electrical resistance film for applying a constant voltage to thereto such that a voltage gradient occurs from one end to the other of said electrode, the resistance value per unit length of said resistance film from one end to the other of said film varying as the inverse of an exponential function, said constant voltage and a voltage to be measured being applied in series across the two ends of said electrical resistance film.

4,112,362

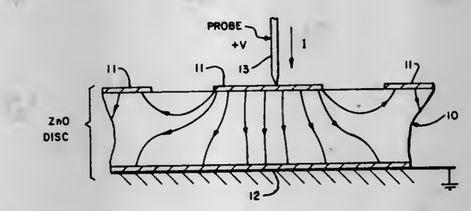
METHOD FOR THE NONDESTRUCTIVE TESTING OF VOLTAGE LIMITING BLOCKS

Philip L. Hower, Pittsburg; William G. Carlson, Murrysville, and Tapan K. Gupta, Monroeville, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 30, 1976, Ser. No. 755,619

Int. Cl.² G01R *31/02*

U.S. Cl. 324—158 R **3 Claims**



1. A method for the nondestructive testing of voltage limiting blocks comprising the following steps: placing a plurality of discrete electrical contacts on one surface of a block and a full electrode on the opposite surface of the block; sequentially applying a voltage to each contact and measuring the resultant current; deriving from said voltage and current empirical constants representative of the particular microstructure of said block in proximity to a respective contact; utilizing said derived constants to effectively draw a contour map of current density across said block; and determining the maxima of said contour to permit the calculation of a quality rating of said block.

4,112,363

MULTICONTACT TEST PROBE APPARATUS

Robert A. Morrison, Granada Hills, and Lyle C. Armstrong, Sunland, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Dec. 27, 1976, Ser. No. 754,346

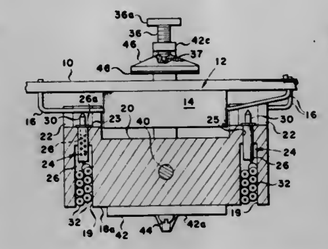
Int. Cl.² G01R *31/02, 1/06*

U.S. Cl. 324—158 P **4 Claims**

1. A test probe apparatus adaptable to connect with an integrated circuit device which is mounted on a circuit board and which has a plurality of electrical contact tabs protruding therefrom, said test probe comprising:

guide means including an elongated channel having a side slot for each of said contact tabs, the body portion of said integrated circuit device adapted to closely fit within said elongated channel whereby said circuit device is in a preselected position for testing thereof;

a plurality of separate spaced apart electrical contact probes mounted within said housing in a pattern to contact said tabs at an angle substantially normal thereto when said circuit device engages said housing, each said contact probe being resiliently biased normal against the engaged tab with a pressure not sufficient to damage the connection of said tab to said circuit device;



releasable clamping means for engaging the surface of said circuit board away from said circuit device and the surface of said guide means away from said guide means for securing said housing in engaged position with said integrated circuit device;

said guide means is pivotally mounted upon said releasable clamping means to permit canting of said guide means at various angles in respect to said clamping means; and

a separate conductive wire connected to each of said probes for testing said circuit device.

4,112,364

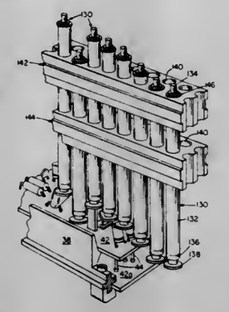
CIRCUIT BOARD TESTING APPARATUS

Jonathon H. Katz, Brookline, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Apr. 4, 1977, Ser. No. 784,266

Int. Cl.² G01R *31/02, 15/12*

U.S. Cl. 324—158 F **7 Claims**

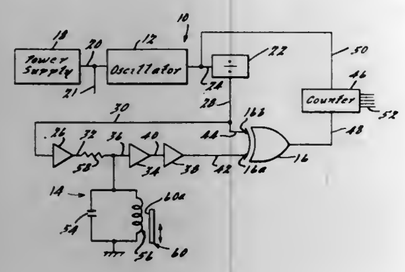


1. A circuit board test apparatus comprising; a weighting assembly having a frame and an array of weights mounted in said frame, each of said weights having a body portion mounted for independent free vertical sliding in said frame and a tip for contacting electrical elements loaded on said board and beneath said weights; and a multiplicity of test pins extending upwardly beneath said board; said weights being heavy enough to hold said board in electrical contact with said pins.

4,112,365
POSITION DETECTING SYSTEM

Gerald L. Larson, Battle Creek, and Walter K. O'Neil, Southfield, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 15, 1977, Ser. No. 768,928
Int. Cl.² G01R *15/12*
U.S. Cl. 324—173 **32 Claims**

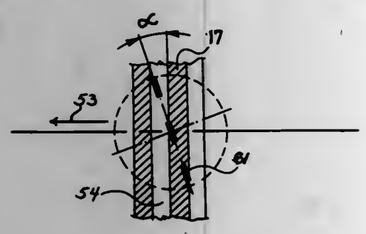


1. An electronic system comprising:
means for producing a first square wave cyclic signal;
a resonant circuit including reactive means, said resonant circuit excited by said first cyclic signal and operative to produce a second cyclic signal shiftable in phase relative to said first cyclic signal in response to changes in effective impedance of said resonant circuit:
coupling means movable relative to said reactive means and operative in response to such relative movement to change said effective impedance and shift the phase of said second cyclic signal relative to the phase of said first cyclic signal;
wave shaping means operative to shape said second cyclic signal into a second cyclic square wave signal; and
detector means operative to produce a cyclic output signal having an amplitude independent of the difference in phase between said first and second square wave cyclic signals and having a duty cycle representative of the difference in phase between said first and second square wave cyclic signals.

4,112,366
ELECTROMAGNETIC DISPLACEMENT SCANNER USING AN E-SHAPED CORE OBLIQUE TO THE SCAN DIRECTION

Oldrich Kouril, and Jaroslav Knourek, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Sep. 27, 1976, Ser. No. 726,576
Claims priority, application Czechoslovakia, Sep. 25, 1975, 6470-75
Int. Cl.² G01R *33/12*
U.S. Cl. 324—208 **5 Claims**

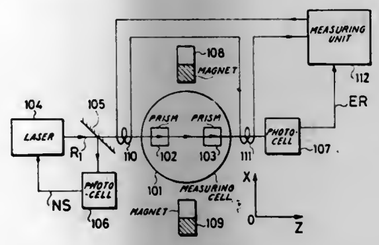


1. In an electromagnetic scanner positionable opposite a regularly grooved ferromagnetic surface relatively movable with respect to the scanner in a first predetermined direction at a first rate for generating, at the output of the scanner, an electrical indication variable at the first rate as the grooves move relatively to the scanner, said scanner comprising a substantially flat, E-shaped magnetic core having a crosspiece and three parallel arms disposed in space relation and extending outwardly from the crosspiece toward the grooved surface, at least two of the arms of the core terminating in aligned relation to define a first surface parallel to and spaced a predetermined distance from the grooved surface to establish an air gap therebetween, and first and second coils positioned in parallel relation around and coaxial with the crosspiece of the core between the respective outer arms of the core and the central arm thereof, the ferromagnetic surface exhibiting a series of teeth and grooves regularly spaced in alternating relation in the first direction, the plane of the core being oblique to the first direction and to said grooves, the maximum thickness of the core in the first direction being equal to half the width of the groove in the first direction.

4,112,367
MAGNETOMER USING A THIN MAGNETIC FILM OPTICAL WAVEGUIDE WITH A.C. MODULATION AND AUTOMATIC NULLING

Georges Hepner, and Bernard Désormiére, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 14, 1977, Ser. No. 806,479
Claims priority, application France, Jun. 18, 1976, 76 18600
Int. Cl.² G01R *33/02*
U.S. Cl. 324—244 **7 Claims**

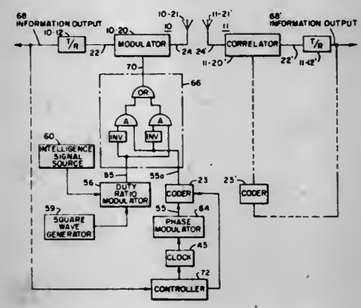


1. A device for measuring an external magnetic field having a given direction, which comprises:
means for generating a first light beam having a linear polarization;
a thin film of magnetic material immersed in said external magnetic field and extending along a plane in which said given direction extends, for propagating said first light beam along said given direction in a first guided mode corresponding to said linear polarization and in a second guided mode under the influence of said external magnetic field; the distribution of said light beam between said two modes being dependent on the intensity of said external field;
means for coupling said first light beam into said thin film along said given direction;
means for extracting from said thin film a second light beam corresponding to the portion of said first beam propagated in said second guided mode;
means for applying to said thin film a fixed polarization magnetic field parallel to said plane and perpendicular to said given direction;
means for applying to said thin film an AC magnetic field parallel to said given direction and having a given frequency, whereby the intensity of said second light beam is modulated;
means for detecting in said second light beam an AC component having said given frequency and a first variable intensity and delivering a control signal representative of said first variable intensity;
means for applying to said thin film a variable magnetic field having said given direction, opposed to said external magnetic field, and having a second variable intensity; and
means for feedback controlling said second variable intensity under the control of said control signal until said first variable intensity is set to zero said second variable intensity being a measure of the external field.

4,112,368
CONSTANT AMPLITUDE CARRIER COMMUNICATIONS SYSTEM

Walter Ewanus, Ellicott City, Md., and Gerald F. Sage, Grand Rapids, Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1970, Ser. No. 54,259
Int. Cl.² H04K *1/00*
U.S. Cl. 325—32 **10 Claims**

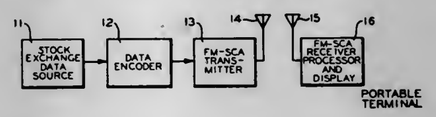


1. In a signalling system, means for generating a carrier wave, means for generating square wave pulses, means for modulating the duty ratio of said square wave unit in accordance with the amplitude of intelligence signals, means for generating code signals, means for modulo-2 adding the output of said duty ratio modulating means with the output of said code generating means, means for phase modulating said carrier and means responsive to the output of said modulo-2 adding means for controlling said phase modulating means.

4,112,369
SECURE SCA BROADCASTING SYSTEM INCLUDING SUBSCRIBER ACTUATED PORTABLE RECEIVING TERMINALS

Aubry S. Forman, Toledo, Ohio; Charles A. Schultz, and John F. Schultz, both of Gainesville, Fla., assignors to Digital Data, Inc., Toledo, Ohio

Filed Apr. 9, 1976, Ser. No. 675,504
Int. Cl.² H04K *1/00*
U.S. Cl. 325—34 **8 Claims**

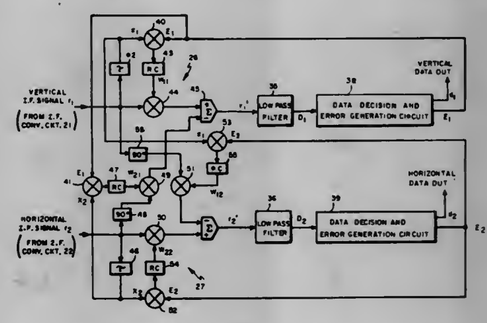


1. An information broadcasting system including a transmitting station for encoding and transmitting in serial form data received from an information source by modulating a carrier wave with the encoded data and at least one portable terminal for receiving and decoding the encoded data, said portable terminal comprising:
receiver means for receiving and demodulating the encoded data from the carrier wave;
receiver interface means connected to said receiver means for converting the encoded data from serial to parallel form;
programmed processing means connected to said receiver interface means for reading the encoded data in parallel form, decoding the encoded data in response to a password, and selecting a portion of the decoded data and performing arithmetic and logic operations on the selected data in response to a request for information to be displayed to generate output data in parallel form representing the selected data;
keyboard means for entering said password and said request for information;
display means for displaying said output data; and
bus means connecting said keyboard means and said display means to said processing means.

4,112,370
DIGITAL COMMUNICATIONS RECEIVER FOR DUAL INPUT SIGNAL

Peter Monsen, Stow, Mass., assignor to Signatron, Inc., Lexington, Mass.

Filed Aug. 6, 1976, Ser. No. 712,147
Int. Cl.² H04B *1/12*
U.S. Cl. 325—40 **13 Claims**



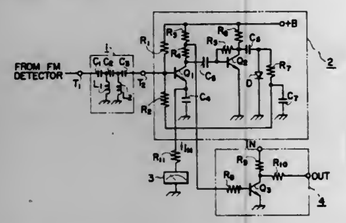
1. A dual channel receiver system for processing first and second digital data signals having, when transmitted, first and second polarizations, respectively, said receiver comprising:
first and second receiver channels for receiving said first and second digital data signals, respectively, said first signal having, when received, a principal signal component corresponding to said first polarization and at least one error signal component corresponding to said second polarization and said second signal having a principal signal component corresponding to said second polarization and at least one error signal component corresponding to said first polarization;
first and second adaptive filter equalization means in said first and second receiver channels, respectively, responsive to said received first and second signals and to error control signals for providing a plurality of weighting signals and for selectively combining said weighting signals with said first and second signals to produce receiver output signals in each of said receiver channels having reduced error signal components; and
first and second error signal generating means responsive to the receiver output signals and to desired data out signals in said first and second receiver channels, respectively, for providing said error control signals to control the weighting signals in said adaptive filter equalization means.

4,112,371

MUTING AND TUNING INDICATOR SYSTEM FOR AN FM RECEIVER

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 31, 1976, Ser. No. 719,150
Claims priority, application Japan, Sep. 3, 1975, 50/106057
Int. Cl.² H04B *1/10, 1/16*
U.S. Cl. 325—319 **10 Claims**



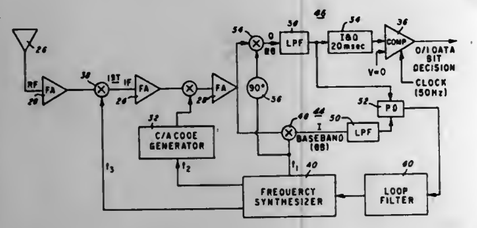
1. A system adapted for use in a tuned FM receiver in order to control at least one of the functions of muting audio output from the receiver and providing an indication of the state of tuning of the receiver, said system comprising:
means for demodulating a received signal;
means for extracting noise components from the demodulated signal;
an automatic gain control amplifier joined to said extracting means for receiving and amplifying the noise components;
a rectifier connected to said amplifier for rectifying amplified noise components and delivering a dc signal which changes in accordance with variations in the level of said noise components;
means for directing said dc signal to the amplifier for biasing thereof to produce a controlling signal at an output of said amplifier; and
means operatively joined to the amplifier and responsive to the controlling signal for performing said function.

4,112,372

SPREAD SPECTRUM COMMUNICATION SYSTEM

Jerry D. Holmes, Dallas; Charles R. Johnson, Garland; Allen S. Jones, Dallas, and Charles R. Hewes, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 11, 1977, Ser. No. 758,520
Int. Cl.² H04L *1/00*
U.S. Cl. 325—321 **11 Claims**



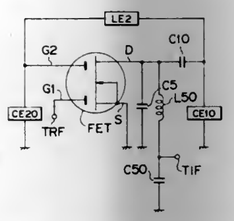
1. A spread spectrum RF energy receiver comprising:
(a) an RF energy receiving means for receiving an RF signal modulated with a first and second code;
(b) a first mixer means connected to the RF energy receiving means and local oscillator frequency generating means for converting the received RF energy signal to baseband;
(c) a code acquisition and synchronizing circuit connected to the first mixer means, the code acquisition and synchronizing circuit including a charge transfer device matched filter for determining the presence of a preselected second code in the received RF energy signal and producing a synchronization pulse;
(d) a frequency generating means for producing responsively to the synchronization pulse of the code acquisition and synchronizing circuit a replica of the preselected second code;
(e) a second mixer means connected to the frequency generating means and first mixer means for converting the baseband signal to the first code signal;
(f) a frequency drift compensating circuit connected to the second mixer for producing a phase difference signal applied to the frequency generating means for automatic frequency and/or phase control; and
(g) means operatively connected to the receiver for converting the first code signal to a binary code.

4,112,373

SELF-EXCITED MIXER CIRCUIT USING FIELD EFFECT TRANSISTOR

Hiroshi Miyamoto, and Mitsuhisa Shinagawa, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 14, 1977, Ser. No. 759,412
Claims priority, application Japan, Jan. 19, 1976, 51-4103; Jan. 19, 1976, 51-4104; Jan. 19, 1976, 51-4105; Dec. 1, 1976, 51-143332
Int. Cl.² H04B *1/28*
U.S. Cl. 325—440 **21 Claims**



1. A self-excited mixer circuit comprising a dual gate field effect transistor having a source, a drain, a first gate and a second gate, said field effect transistor being grounded at said source, a capacitor connected at one terminal thereof to the drain of said field effect transistor, a first capacitive impedance element connected across the other terminal of said capacitor and ground, an inductive impedance element connected across the other terminal of said capacitor and the second gate of said field effect transistor, said capacitive impedance element and said inductive impedance element constituting an oscillation circuit across the drain and the second gate of said field effect transistor, means for applying a radio frequency signal to the first gate of said field effect transistor, and means for deriving the resultant signal of a predetermined intermediate frequency from the drain of said field effect transistor, wherein circuit constants of said impedance elements are provided so as to be able to derive said predetermined intermediate frequency from the drain upon receiving said radio frequency signal at the first gate of said field effect transistor.

4,112,374

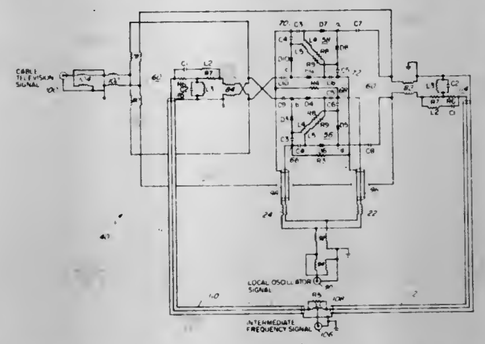
DOUBLY BALANCED MIXER WITH OPTIMIZED DYNAMIC RANGE

Donald H. Steinbrecher, Carlisle, Mass., assignor to Steinbrecher Corporation, Woburn, Mass.

Filed Sep. 23, 1976, Ser. No. 725,714
Int. Cl.² H04B *1/26*
U.S. Cl. 325—446 **18 Claims**

1. A circuit for mixing first and second *rf* signals to produce an output signal containing a beat frequency comprising:
(a) a pair of switches, each having a balun for balancing and removing common mode signals from the first *rf* signal, a diode bridge receiving the balanced first *rf* signal at a control port for controlling the conductive state of the diodes to provide alternating high and low impedance

levels at a switch port, the switch port of the bridges providing opposite impedance levels during each half cycle of the first *rf* signal, and means for providing matched termination of the first *rf* signal irrespective of the conductive state of the switch;
(b) said means for providing matched termination including a terminating resistor and a characteristic impedance of a transmission line which are equal to the peak reverse bias voltage of the diodes divided by the peak forward bias current of the diode to provide optimum dynamic range for the circuit; and
(c) a hybrid receiving the second *rf* signal at an input port and having summing and difference ports coupled to the switch port of the bridges to produce the beat frequency at an output port, the hybrid having a balun for balancing and removing common mode signals from the second *rf*



signal and a balun for removing common mode signals from the output signal;
each of said diode bridges including four interconnected branches each having at least one diode and wherein one pair of opposed junctions of the branches defines the control port and another pair of opposed junctions of the branches defines the switch port, the diodes being coupled in the same conduction sense with respect to the junctions defining the control port, and wherein the means providing matched termination includes first and second resistors each being coupled between a control port junction of one bridge to a control port junction of the other bridge, the diode bridges and the resistors defining a single bridge in which each of one pair of opposed branches contains one of the diode bridges and in which each of the other pair of opposed branches contains one of the first and second resistors.

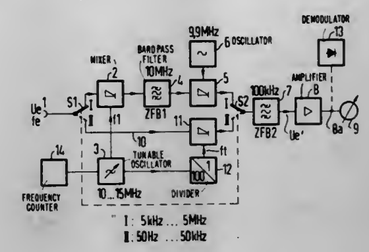
4,112,375

TUNABLE SELECTIVE SUPER HETERODYNE RECEIVER

Johannes Schittko, Krailling, and Konrad Rauchenecker, Ottobrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 25, 1977, Ser. No. 771,966
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1976, 2612720
Int. Cl.² H04B *1/32*
U.S. Cl. 325—452 **6 Claims**

1. A receiver comprising an input terminal, a first switch, a first mixer connectible by said first switch to said input terminal, a first tunable injection oscillator supplying an input to said first mixer, a first band pass filter connected to the output of said first mixer, a second injection oscillator, a second mixer receiving inputs from said first band pass filter and said second injection oscillator, a second switch, a second band pass filter connectible by said second switch to the output of said second mixer, signal measuring means connected to the output of said second band pass filter, a third mixer connectible by said first switch to receive an input from said first input terminal and its output connectible by said second switch to supply its output to said second band pass filter, and a divider supplying an input to said third mixer and receiving an input from said first tunable injection oscillator and wherein the dividing factor of said divider is equal to the center frequency of said first band pass filter divided by the center frequency of said second band pass filter.

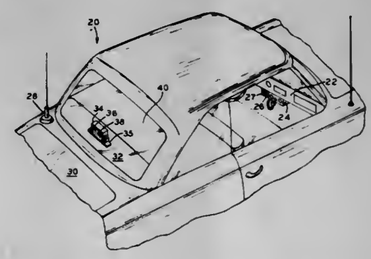


4,112,376

RADIO CHANNEL DISPLAY AND METHOD OF DISPLAY

Robert D. Fosnough, and Max A. Nelson, both of Logansport, Ind., assignors to Controls, Inc., Logansport, Ind.

Filed Sep. 30, 1976, Ser. No. 728,272
Int. Cl.² H03J *1/04;* H04B *1/16*
U.S. Cl. 325—455 **6 Claims**

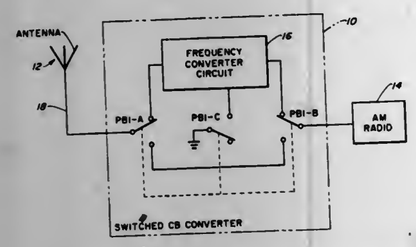


6. A digital readout device for use in a motor vehicle for indicating CB radio channel selection comprising:
first means manually adjustable by the radio operator for visually indicating a selected one of a plurality of channels to the vehicle operator;
second means for visually and digitally indicating said selected channel to persons exteriorly of the vehicle;
third means for electrically coupling said first means to said second means to vary the digital indication on said second means concurrently with and corresponding to the manual adjustment of said first means;
said first means comprises a channel-shaped switch housing having a base and two generally parallel sides extending laterally from said base and having opposing faces; said opposing faces on said sides each having an elongate groove formed therein; said grooves being generally parallel and opposed; each of said grooves having a bed and generally laterally extending parallel walls; each of said beds being slanted relative to their respective groove walls; a switch plate being mounted in said housing transversely of said sides and having opposite edges extending respectively into said grooves; said plate edges being in cammed relation to the respective slanted beds against their respective groove walls to securely hold said plate in said housing.

4,112,377
C. B. CONVERTER

James L. Tanner, Reseda, and Bruno A. Rist, Northridge, both of Calif., assignors to Tanner Electronic Systems Technology, Van Nuys, Calif.

Continuation of Ser. No. 648,836, Jan. 14, 1976, abandoned. This application Nov. 15, 1976, Ser. No. 741,659
Int. Cl.[2] H04B 1/18
U.S. Cl. 325—461 6 Claims



6. A system for affording the capability of citizens band broadcast to a standard radio comprising:

dual-gate field effect transistor means connected as self-oscillating converter means for converting citizens band transmissions to the AM frequency band;

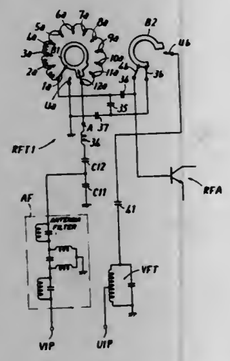
coupling means coupled to the output of said dual-gate field effect transistor means and connectable to the antenna line of said radio; and

switch means for switching said radio from standard broadcast to citizens band broadcast, said coupling means being connectable to the input of the antenna line of said radio in response to switching by said switch means, said switch means including means for grounding the output of said coupling means upon switching into the standard broadcast mode.

4,112,378
TELEVISION TUNER CIRCUIT FOR SELECTION OF VHF AND UHF/VHF CONVERTED TELEVISION SIGNALS

Katsuo Ito; Bunjiro Murata, both of Kanazawa; Yoji Maeda, Ishikawa, and Eiichi Hibino, Kanazawa, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 22, 1977, Ser. No. 780,112
Claims priority, application Japan, Dec. 25, 1976, 51-156695
Int. Cl.[2] H04B 1/06
U.S. Cl. 325—464 14 Claims



1. A VHF television tuner circuit for selection of VHF television channels and a UHF/VHF converted television channel through mechanical selection of induction coils, comprising:

first receiving means for receiving a VHF television signal, said VHF television signal comprising a high band channel VHF television signal and a low band channel VHF television signal;

second receiving means for receiving a UHF/VHF converted channel television signal;

mechanical switching channel selection means including a rotatably mounted channel selection shaft for selecting one of a plurality of channel positions by rotation of said channel selection shaft, said channel positions including at least high band channel positions, low band channel positions and a UHF/VHF converted channel position, said mechanical switching channel selection means comprising a radio frequency inductance coil switching stage and an oscillation inductance coil switching stage;

radio frequency inductance coil means comprising a plurality of induction coils for establishing a radio frequency tuned circuit of inductance value corresponding to said selected channel position in response to said radio frequency inductance coil switching stage by rotation of said channel selection shaft so as to provide a desired radio frequency signal corresponding to said selected channel position;

oscillation inductance coil means for establishing an oscillation tuned circuit in response to said oscillation inductance coil switching stage by rotation of said channel selection shaft;

radio frequency amplifying means coupled to said radio frequency inductance coil means for selectively amplifying said desired radio frequency signal;

local oscillating means coupled to said oscillation inductance coil means for providing a local oscillation frequency signal of frequency corresponding to said oscillation tuned circuit and which is different, by a given frequency difference, from the frequency of said selectively amplified desired radio frequency signal;

mixing means responsive to said selectively amplified desired radio frequency signal from said radio frequency amplifying means and said local oscillation frequency signal from said local oscillating means for providing an intermediate frequency signal;

said first receiving means, said radio frequency inductance coil means, and said radio frequency amplifying means being connected in sequence to define a transmission path for said VHF television signal, and said second receiving means and said radio frequency amplifying means being connected in sequence to define a transmission path for said UHF/VHF converted television signal;

said radio frequency inductance coil switching range comprising only a first stage radio frequency switch and a second stage radio frequency switch, said first receiving means being connected to said first stage radio frequency switch and said second receiving means being connected to said second stage radio frequency switch;

said first stage radio frequency switch comprising disabling means responsive to selection of said UHF/VHF converted channel position for disabling the transmission path for said VHF television signal, and means associated with said high and low band channel positions for selecting said induction coils corresponding to said selected channel position for connecting the same to said second stage radio frequency switch;

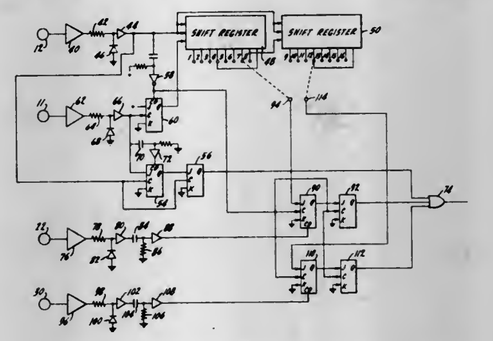
capacitor means coupled to said radio frequency inductance coil means for establishing, with said selected induction coils, a resonance circuit corresponding to and selecting said desired radio frequency, said capacitor means comprising a first capacitor and a second capacitor;

said second stage radio frequency switch comprising selective connecting means responsive to selection of said UHF/VHF converted channel position for selectively connecting said second receiving means to said radio frequency amplifying means, additional connecting means responsive to selection of said high band channel positions for connecting said first and second capacitors in said resonance circuit in a parallel fashion, and further connecting means responsive to selection of said low band channel positions for connecting said first capacitor in said resonance circuit and for connecting said second capacitor between said resonance circuit and said radio frequency amplifying means.

4,112,379
JAM DETECTOR

Stephen R. Schmidt, Chicago, Ill., assignor to Copar Corporation, Oak Lawn, Ill.

Filed May 23, 1977, Ser. No. 799,217
Int. Cl.[2] B65H 7/04
U.S. Cl. 328—5 10 Claims



1. A system for use in detecting jams in a series of members which are sequentially moving through predetermined spaced fixed stations, there being an operation performed on said members in at least one of said stations, said system including detection means at each station providing an output signal indicating the presence of a member at the station, a first circuit means having an input connected to the detection means at one of said stations and a reset input connected to the detection means at another of said stations, a second circuit means having an input connected to the detection means at said one of said stations and an output providing a signal indicating a jam condition,

said first circuit means having an output connected to an input of said second circuit means, with simultaneous inputs at said second circuit means causing an output indicative of a jam condition;

the improvement comprising means for indicating the absence of a member at said one of said stations, and means responsive to said means for indicating the absence of a member for preventing a false jam indication.

4,112,380
CLOCK SEQUENCING APPARATUS HAVING MORE STATES THAN CLOCK PHASE OUTPUTS

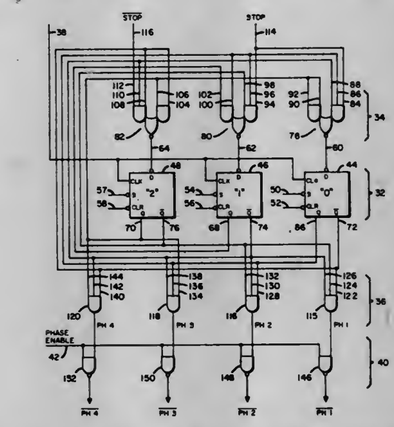
Steve Douglas Thatcher, Roseville, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 19, 1976, Ser. No. 706,663
Int. Cl.[2] H03K 3/04, 1/17, 17/26
U.S. Cl. 328—62 8 Claims

2. In a clock sequencing apparatus consisting of a multi-state digital sequential circuit having a stop signal as an input, having an output consisting of a sequence containing a predetermined number of clock phases in a fixed time relationship, and having a separate state for each clock phase and means for sequencing through each state from a first state to a last state in a predetermined order and returning to said first state for continuous operation, the improvement comprising the addition of at least one additional state which has no associated clock phase to said multi-state digital sequential circuit and for passage through said additional state between said last state and said first state if said stop signal is active.

8. A clock sequencing apparatus for producing an output of a plurality of clock phases in a predetermined order and having a stop signal as an input, comprising:

(a) a multi-state digital sequential circuit having a separate state for each of said clock phases including a direct correspondence between each clock phase and each said separate state and at least one additional state, said multi-state digital sequential circuit sequencing from said state associated with a first of said clock phases through said state associated with a last of said clock phases in said predetermined order and then back to said state associated with said first of said clock phases unless said stop signal is



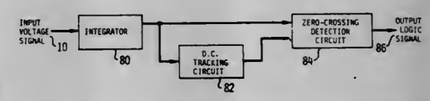
active in which case said multi-state digital sequential circuit sequences from said state associated with said last of said clock phases to said additional state to said state associated with said first of said clock phases instead of directly from said state associated with said last of said clock phases to said state associated with said first of said clock phases; and

(b) a decoding means, selectively coupled to said multi-state digital sequential circuit, for producing said plurality of clock phases by decoding each of said states associated with a clock phase as that clock phase and by decoding said additional state as no clock phase.

4,112,381
PEAK DETECTOR

Alan Craig Mortensen, and Scott A. DeHart, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 607,726, Aug. 25, 1975, abandoned. This application May 9, 1977, Ser. No. 794,862
Int. Cl.[2] H03K 5/153
U.S. Cl. 328—150 2 Claims



1. A peak detector circuit for indicating the occurrence of a peak of an alternating input signal, the circuit comprising:

an integrator for receiving the alternating input signal and for providing an alternating integrated signal having a phase shift of 90° with respect to said alternating input signal;

D.C. tracking means coupled to said integrator for receiving the alternating integrated signal, for sampling every consecutive pair of peaks of said alternating integrated signal, and for providing a reference level signal that is propor-

tional to the mean value of the algebraic sum of the most recently sampled pair of peaks of said alternating integrated signal; and

zero-crossing detection means coupled to said integrator and said D.C. tracking means for receiving said alternating integrated signal and said reference level signal, and for issuing a logic signal at each point in time wherein said reference level signal and said alternating integrated signal are in a predetermined voltage relationship that establishes a selected level of hysteresis.

4,112,382

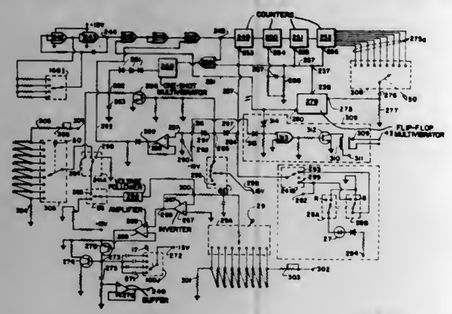
DIGITAL SWEEP CIRCUIT FOR GENERATING SAWTOOTH WAVE FORM

Robert S. Morrow, Columbus, and Lloyd D. Penn, Johnstown, both of Ohio, assignors to IRD Mechanalysis, Inc., Columbus, Ohio

Division of Ser. No. 637,751, Dec. 4, 1975, Pat. No. 4,044,310, which is a division of Ser. No. 420,594, Nov. 30, 1973, Pat. No. 3,938,394. This application Apr. 15, 1976, Ser. No. 677,143

Int. Cl.² H03K *4/10, 4/02*

U.S. Cl. 328—181 **7 Claims**



1. A digital sweep circuit adapted to generate an electrical output signal having multiple cycles at each of uniformly increasing frequencies comprising:

clock means for generating uniformly spaced constant voltage signals;

a constant current conductor connecting said clock means to a first capacitor for charging the said first capacitor with a uniform charge increment with each clock signal;

output signal generating means adapted to generate a repeating output signal corresponding in frequency to an applied voltage;

conductor means connecting the said first capacitor to said output signal generating means for delivering the voltage of said first capacitor as the applied voltage for the said output signal generating means.

4,112,383

MILLER-ENCODED MESSAGE DECODER

Albert Burgert, Arcueil, France, assignor to Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 27, 1977, Ser. No. 819,383

Claims priority, application France, Aug. 4, 1976, 76 23808

Int. Cl.² H03K *9/10, 13/24*

U.S. Cl. 329—50 **4 Claims**

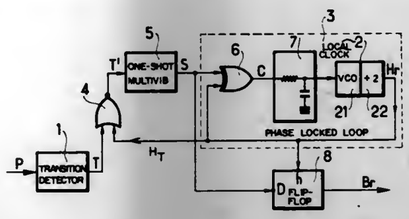
1. Apparatus for decoding a Miller-encoded signal in the form of binary data at a clock frequency F, which comprises:

a transition detector, receiving said Miller-encoded signal, for detecting the transitions in said signal;

a phase controllable local clock, having a control signal input, for generating a clock signal Hr at the rate F, said clock signal comprising a train of bidirectional pulses providing first and second levels each of duration 1/2F;

means, connected to the output of said transition detector and to the output of said clock circuit, for generating a pulse I of duration 1/2F subsequent to each transition in the signal to be decoded when clock signal Hr is at a predetermined one of said first and second levels, said pulses I constituting an output signal S,

means for generating a control signal for said local clock from said clock signal Hr and said signal S, said local clock control signal generating means comprising means, connected to the output of said pulse-generating means and to the output of said clock circuit, for phase modulat-



ing said signal Hr by said signal S, and a low-pass filter connected to the output of said phase modulating means, the output signal of said low-pass filter being applied to the control signal input of said local clock so that the pulses of signal Hr providing said predetermined level are centered on the Miller-encoded signal transitions which produced pulses I, the original binary data being restored by sampling signal S with edges of signal Hr which go from said predetermined level to the other.

4,112,384

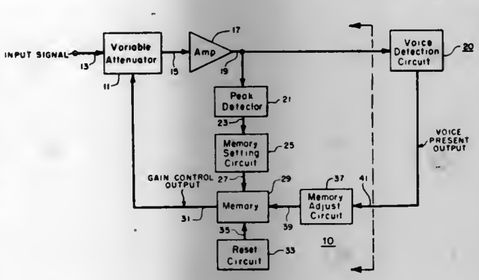
CONTROLLED RECOVERY AUTOMATIC GAIN CONTROL AMPLIFIER

Gregory D. Buchberger, Mount Prospect, Ill., assignor to Morgan Industries, Chicago, Ill.

Filed May 24, 1977, Ser. No. 800,003

Int. Cl.² H03G *3/20*

U.S. Cl. 330—141 **27 Claims**



1. An automatic gain control amplifier comprising:

controllable means for accepting an input signal and for amplifying said input signal to produce an amplified output signal, said controllable means having a controllable gain;

detection means responsive to said amplified output signal for producing a memory setting signal when said amplified output signal exceeds a predetermined threshold level;

control means responsive to information derived from said amplified output for producing a memory control signal; and

memory means responsive to said memory setting signal and said memory control signal for producing a gain control signal which varies as a function of both said memory setting signal and said memory control signal, said gain control signal cooperating with said amplifying means to decrease the gain of said amplifying means in response to said memory setting signal and to increase the gain of said amplifying means in response to said memory control signal.

4,112,385

SOUND AMPLIFIER CIRCUIT

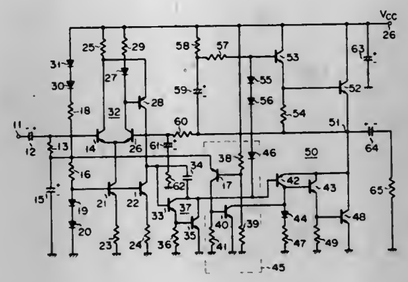
Jiro Kusumi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,030

Claims priority, application Japan, Apr. 9, 1976, 51-44197[U]

Int. Cl.² H03F *3/26*

U.S. Cl. 330—262 **2 Claims**



1. A sound amplifier circuit comprising a power supply terminal; a signal output terminal; a push-pull amplifier comprising an upper side power transistor circuit connected between the power supply terminal and the output terminal to amplify the upper side portion of an amplitude of an input signal, a reference potential source and a lower side power transistor circuit connected between the reference potential source and the signal output terminal to amplify the lower side portion of an amplitude of the input signal; an input signal terminal; an input decoupling capacitor coupled to the input signal terminal; a detection circuit parallely connected across the input decoupling capacitor to detect a discharge of the input decoupling capacitor; and means for causing the lower side power transistor circuit to be disabled by an output of the detection circuit.

4,112,386

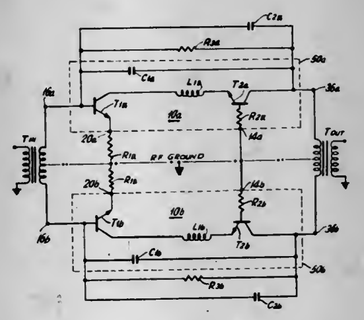
MODULAR RADIO FREQUENCY AMPLIFIER HAVING A GAIN VARIABLE BY EXTERNAL PASSIVE COMPONENT SELECTION

Norman Everhart, Richboro, and Dieter Bruno Brauer, Hatboro, both of Pa., assignors to Jerrold Electronics Corp., Hatboro, Pa.

Filed Feb. 14, 1977, Ser. No. 768,415

Int. Cl.² H03F *3/26*

U.S. Cl. 330—265 **7 Claims**



1. In combination in a radio frequency amplifier, first and second cascode amplifier stages each having an input and output port connected in push-pull arrangement; each of said first and second cascode amplifier stages included a first transistor connected in a grounded emitter mode and a second transistor connected in a grounded base mode, the collector of said first transistor in each of said first and second cascode amplifier stages being connected to the emitter of said second transistor therein included; each of said first and second cascode amplifier stages including first inductance means serially connected between the collector of said first transistor and the emitter of said second transistor further comprising a hybrid circuit substrate upon which are mounted said first and second transistors of each of said first and second cascode amplifier stages, said first inductance means in each of said cascode amplifier stages comprising an irregular, supertine conduction path formed of a conducting material mounted on said substrate connected to said transistor electrodes.

4,112,387

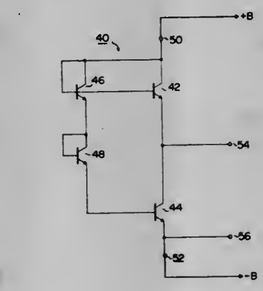
BIAS CIRCUIT

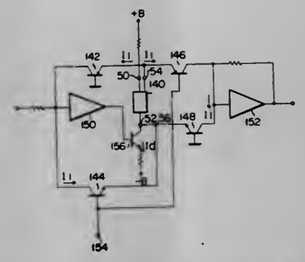
Masayuki Katakura, Yokohama, and Hisashi Yamada, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 14, 1977, Ser. No. 768,560

Int. Cl.² H03G *3/30*

U.S. Cl. 330—285 **8 Claims**





1. A voltage controlled variable gain circuit comprising

an input terminal;

first and second control terminals;

an output terminal;

first and second voltage sources having opposite polarities;

an amplification circuit, the input side of which is connected to the input terminal;

first and second transistors of a first conductivity type cascade-connected between the first and second voltage sources, the collector and the base of the first transistor being connected to the first voltage source, the emitter of the first transistor being connected to the collector of the second transistor, the emitter of the second transistor being connected to the second voltage source, and the emitter of the second transistor being connected to the output sides of the amplification circuit;

first and second diode means series-connected between both

bases of the first and second transistors and forward-biased by part of a drive current toward the first and second transistors;

a first feedback circuit provided between the input side of the amplification circuit and the emitter of the second transistor, the first feedback circuit including a third transistor of the first conductivity type, the collector, emitter and base of which are connected to the input side of the amplification circuit, the emitter of the second transistor and the first control terminal, respectively, and the third transistor having a first input voltage-output current characteristic with respect to a first input voltage having a first polarity and a first output current having a first polarity;

a second feedback circuit provided between the input side of the amplification circuit and the emitter of the first transistor, the second feedback circuit including a first active means having a second input voltage-output current characteristic with respect to a second input voltage having a second polarity opposite to the first polarity of the first input voltage and a second output current having a second polarity opposite to the first polarity of the first output current, and the second input voltage-output current characteristic being symmetrical to the first input voltage-output current characteristic;

a first output circuit provided between the emitter of the second transistor and the output terminal, the first output circuit including a fourth transistor of the first conductivity type, the collector, emitter and base of which are connected to the output terminal, the emitter of the second transistor and the second control terminal, and the fourth transistor having a third input voltage-output current characteristic with respect to the first input voltage having the first polarity and the first output current having the first polarity; and

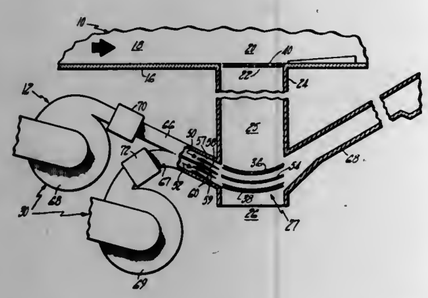
a second output circuit provided between the emitter of the first transistor and the output terminal, the second output circuit including a second active means having a fourth input voltage-output current characteristic with respect to the second input voltage having the second polarity opposite to the first polarity of the first input voltage and the second output current having the second polarity opposite to the first polarity of the first output current, and third characteristic being symmetrical to the fourth characteristic.

4,112,388

AERODYNAMIC WINDOW METHOD AND APPARATUS

George H. McLafferty, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 30, 1976, Ser. No. 701,347
Int. Cl.[2] H01S *3/05, 3/22*
U.S. Cl. 331—94.5 D 6 Claims



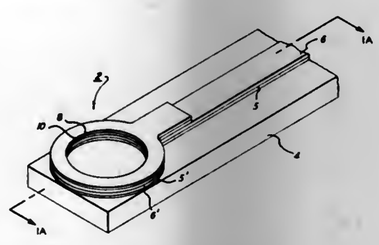
5. In an aerodynamic window system for producing an aerodynamic window between the first and second separate gas regions with substantially different static pressures and indices of refraction and comprising first conduit means for connecting the separate gas regions and providing an unobstructed optical beam transmission passageway therebetween, and aerodynamic window producing means having second conduit means intersecting the first conduit means and operable for discharging a high velocity gas medium across the optical beam transmission passageway to produce an aerodynamic window for preventing substantial gas flow through the passageway between said gas regions, the improvement wherein the second conduit means provides first and second separate passageways upstream of the aerodynamic window for discharging first and second different aerodynamic window gas medium components respectively at high velocity across the optical beam transmission passageway and at opposite sides of the aerodynamic window adjacent to said first and second gas regions respectively, and wherein the aerodynamic window producing means provides for discharging through the first and second separate passageway sections, said first and second gas medium components respectively having substantially different stagnation indices of refraction which are generally the same as the different indices of refraction of said first and second gas regions respectively, and so as to produce a said aerodynamic window with turbulent shear zones on opposite sides thereof having substantially uniform stagnation indices of refraction respectively.

4,112,389

DIODE LASER WITH RING REFLECTOR

William Streifer, Palo Alto; Donald R. Scifres, and Robert D. Burnham, both of Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 21, 1977, Ser. No. 761,110
Int. Cl.[2] H01S *3/19*
U.S. Cl. 331—94.5 H 4 Claims



1. A semiconductor device including:

a laser portion and a waveguide portion, supported by a substrate,

said laser portion comprising a plurality of semiconductor layers including a laser active region having a ring-shaped portion and a first coupler portion connected to said ring-shaped portion,

a rectifying junction between two of said semiconductor layers within said laser portion, means for forward biasing said rectifying junction, carriers injected across said junction upon sufficient forward biasing thereof providing the emission of light waves of wavelength λ,

at least a portion of said emitted light waves traveling around said ring-shaped portion of said active region, said ring-shaped portion of said active region having a path length which causes said light waves of wavelength λ to experience a phase shift relative to their starting phase as the light waves travel around said ring-shaped portion from said connection with said first coupler portion and back to said connection whereby, due to the phase difference, the light waves destructively interfere to reflect light back into said ring-shaped portion and into said first coupler portion, and light reflected back into said ring-shaped portion providing the necessary feedback to provide for lasing of said laser portion, and

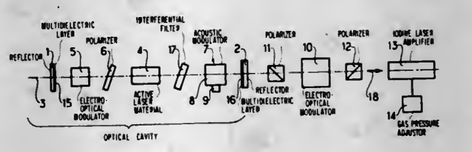
said first coupler portion being coupled to said waveguide portion whereby at least some of the light waves reflected into said first coupler portion propagate into said waveguide portion.

4,112,390

LASER GENERATOR DEVICE EMITTING AT A WAVELENGTH CLOSE TO 1.3 MICRONS

Jean-Claude Farcy, Briis sur Forges, France, assignor to Compagnie Generale d'Electricite S.A., Paris, France

Filed Nov. 4, 1976, Ser. No. 738,993
Claims priority, application France, Nov. 17, 1975, 75 34994
Int. Cl.[2] H01S *3/10, 3/23, 3/16, 3/22*
U.S. Cl. 331—94.5 G 17 Claims



1. A laser generator device emitting at a wavelength close to 1.3 microns, said device comprising:

a laser oscillator for emitting a light signal, said oscillator including:

a resonant optical cavity formed by two reflectors, one of which is semi-transparent;

an active material;

means for exciting said active material;

means for triggering at least one light pulse in said cavity containing the excited active material; and

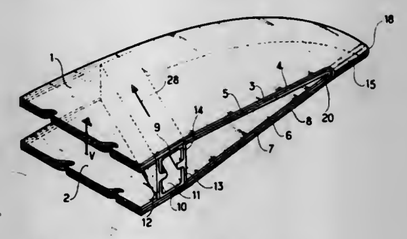
at least one amplifier disposed at the output of said oscillator, said amplifier comprising an active gas constituted by an iodine compound and means for exciting said active gas; and wherein the active material of said oscillator is an active material doped with neodymium and has selective means for allowing the passing in said amplifier of the radiation of said signal situated in a wavelength range covering the emission lines of the neodymium close to 1.3 microns and the various emission lines of said active gas, said wavelength range excluding the neodymium emission lines close to 1.06 and 0.9 microns.

4,112,391

GAS LASER GENERATOR

Bruno Godard, Gif-sur-Yvette, France, assignor to Compagnie Generale d'Electricite S.A., Paris, France

Filed Aug. 12, 1976, Ser. No. 713,946
Claims priority, application France, Aug. 21, 1975, 75 25897
Int. Cl.[2] H01S *3/00*
U.S. Cl. 331—94.5 PE 7 Claims



1. A gas laser generator comprising:

superimposed plates in the following order:

a first metallic plate, a first insulating plate and a second metallic plate, these plates forming a first excitation line;

a third metallic plate, a second insulating plate and a fourth metallic plate, these plates forming a second excitation line;

said second metallic plate and said third metallic plate each including respectively a first slot and a second slot separating them into two distinct parts, these first and second slots being arranged adjacent to each other, the second and third metallic plates being separated over at least a part of their surface to provide a gap between the slots;

two electrodes disposed respectively, on either side of the slots, each of said electrodes being connected to the second and third metallic plates along an edge of these slots; and

means disposed in said gap to maintain a gaseous active medium between the electrodes; characterized in that:

the surface of each of the first and second electric lines is limited:

by an arc of a half parabola, said arc not including the apex of said half parabola and being limited by a first point situated near the apex thereof and a second point which is remote from the apex;

by a segment joining together the focus of the half parabola and the first point;

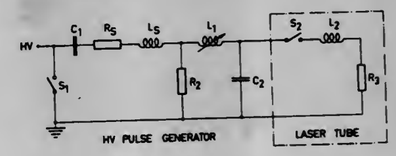
and by a portion of the axis of said half parabola situated in relation to said apex beyond said focus, and wherein each half parabola has the same focal distance, the first and second slots form an angle greater than zero with the axes of said half parabolas, said first and second electric lines being in electrical continuity along said segments, the focusses of the half parabolas being merged at a third point, the first metallic plate being connected to the fourth metallic plate, the first insulating plate being connected to the second insulating plate, the second metallic plate being connected to the third metallic plate; such that when a brief discharge is fired at the third point a progressive current wave is generated simultaneously in the two excitation lines.

4,112,392

METHOD AND APPARATUS FOR PRODUCING LASER PULSES WITH HIGH REPRODUCIBILITY

Hans E. B. Andersson, 14, Napenkroken, Lund, Sweden (S-222 47), and Wladimir Wladimiroff, 43B, St. Olofsgatan, Uppsala, Sweden (S-753 30)

Continuation of Ser. No. 614,215, Sep. 17, 1975, abandoned. This application Apr. 29, 1977, Ser. No. 792,102
Int. Cl.[2] H01S *3/097*
U.S. Cl. 331—94.5 PE 3 Claims



1. A pulsed gas laser system comprising an elongated high voltage conductor having a back terminal end and a front end connected with a high voltage electrode, a capillary extending straight forwardly from said electrode axially with respect to said conductor to a front end having a grounded electrode forming a laser beam passage, said capillary being axially aligned with said conductor and containing gas between said electrodes and which gas after a delay period suddenly breaks down under high voltage on said high voltage terminal and produces a laser pulse through said passage, a shielding tube surrounding said conductor and capillary and connected with said grounded electrode and thereby forming a first capacitor, a second capacitor having one side connected with a source of high voltage and shunted by a high voltage switch to ground and a second side connected to the terminal end of said elongated conductor, said first and second capacitors being parts of cooperating interconnected circuits comprising a high voltage pulse-forming network, each circuit having capacitance, resistance and inductance relatively valued with respect to each other so as to produce a high voltage pulse upon actuation of

said switch and which pulse rises to a maximum value on said second side of the capacitor, said maximum value being reached simultaneously with the termination of said delay period when said gas suddenly breaks down and produces said laser pulse, repetitive actuation of said switch causing the production of laser pulses with high pulse-to-pulse reproducibility.

4,112,393

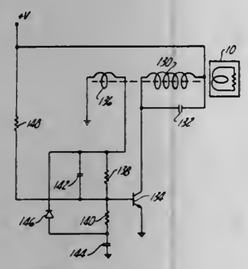
AUTOMATICALLY STABILIZED OSCILLATOR

Lindsey E. Waldorf, and Kenneth E. Monroe, both of Ann Arbor, Mich., assignors to Patents Licensing International, Ltd., Southfield, Mich.

Continuation-in-part of Ser. No. 560,396, Mar. 20, 1975, Pat. No. 4,020,310. This application Apr. 25, 1977, Ser. No. 790,436

Int. Cl.² H03B *3/02*

U.S. Cl. 331—109 **7 Claims**



1. A generator for applying an oscillatory electromagnetic field to an electrically conductive load to induce currents in said load, comprising: a transistor; a tank circuit connected in the emitter-collector circuit of the transistor, the tank circuit including a capacitor and an inductor adapted to be disposed in operating relationship to said load; a bias circuit consisting of a capacitor and a rectifier connected in the base circuit of the transistor; and a tickler coil supported to experience the electromagnetic field generated by the inductor and connected to the bias circuit, whereby the generator begins oscillation as a class A oscillator and achieves class C oscillation after start-up, and the charge on the bias circuit varies as an inverse function of the tank circuit impedance to maintain a constant average tank circuit current independent of variations in the tank circuit impedance.

4,112,394

METHOD AND MEANS OF LINK COUPLING WITH SEPARATE CONTROL OF LINK REACTANCE AND COUPLING COEFFICIENT

Joseph E. Kershaw, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 3, 1977, Ser. No. 756,575

Int. Cl.² H03H *7/46*

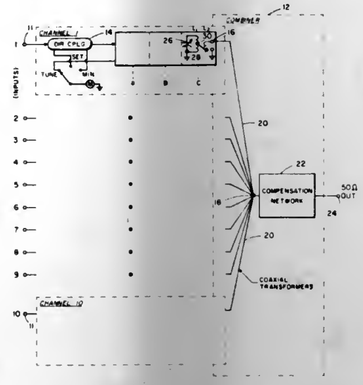
U.S. Cl. 333—6 **2 Claims**

1. A multicoupler for coupling in the 30–76 MHz range and at power levels in the 100 watt range comprising:

a plurality of not less than four variable frequency channels, each channel including an input/output terminal and being tunable to a particular band pass within said 30–76 MHz range;

combiner circuit means including a common junction;

each of said channels having a link coupler including an inductor coil from which energy is to be coupled and having a first terminal coupled to said input/output terminal and a second terminal connected to ground, a reactive link of a predetermined reactance having an input terminal and an output terminal positioned for close coupling with said inductor coil and means connecting said reactive link input terminal to said inductor coil at a point above ground to provide the desired coupling coefficient; and



coaxial transformer means connecting the output terminl of said reactive link to said common junction.

4,112,395

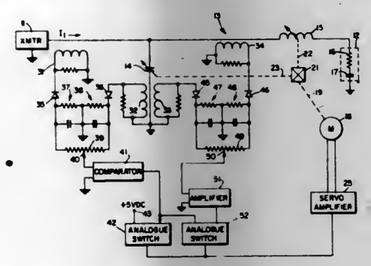
METHOD OF AND APPARATUS FOR MATCHING A LOAD CIRCUIT TO A DRIVE CIRCUIT

Glen Seward, Cincinnati, Ohio, assignor to Cincinnati Electronics Corp., Cincinnati, Ohio

Filed Jun. 10, 1977, Ser. No. 805,340

Int. Cl.² H03H *7/40*

U.S. Cl. 333—17 M **21 Claims**



10. Apparatus for matching a load circuit to a drive circuit, one of said circuits being of a first reactive type, comprising a matching network connected between the circuits, said network including: an L network having a series arm and a shunt arm, one of said arms being on a side of the L network connected to the other of said circuits, the other of said arms being on a side of the network connected to said one circuit, said other arm including a reactance of a second reactive type, opposite to the first reactive type, said one arm including a further reactance having a value to provide an approximate match between the circuits; means for measuring the amplitude of first and second parameters respectively indicative of: (a) the energy in said one arm, and (b) the energy in said other arm and the one circuit, the two measured parameters being of the same type; and means responsive to the measuring means for adjusting the value of the reactance in the other arm.

4,112,396

ECHO ANNEXATION DEVICE

Chuzo Honda, 2-45, Shiroki-cho, Chikusa-ku, Nagoya-shi, Aichi-ken, Japan (464)

Filed Feb. 2, 1976, Ser. No. 654,715

Claims priority, application Japan, Feb. 17, 1975, 50-20204; May 19, 1975, 50-59415; Jun. 13, 1975, 50-72304

Int. Cl.² H03H *9/30*; G10H *1/02*; H03H *9/26*

U.S. Cl. 333—30 R **10 Claims**



1. An echo annexation device for use in an apparatus having a drive-transducer and a pickup-transducer, said device comprising:

a continuous helically coiled spring helically wound about a central axis and connected between said drive-transducer and said pickup-transducer, said coiled spring being comprised of a plurality of equal diameter helical first coil segments coaxially aligned with each other and said central axis through said spring; and

at least one second coil segment between two of said first coil segments, said second coil segment being a helical loop with a diameter greater than the diameter of said first coil segments and wound in the same direction as said first coil segments about said central axis, said helical loop having a tip portion, and said tip portion being bent downwardly at an angle toward said central axis.

4,112,397

X-RAY TUBE ARRANGEMENT

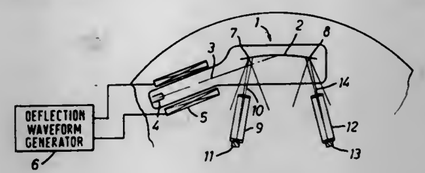
Robert Paul Randall, Uxbridge, England, assignor to EMI Limited, Hayes, England

Filed Jul. 11, 1977, Ser. No. 814,334

Claims priority, application United Kingdom, Aug. 14, 1976, 33903/76

Int. Cl.² G03B *41/16*

U.S. Cl. 250—401 **5 Claims**



1. An X-ray tube arrangement including an anode, means for generating an electron beam and directing it to be incident on said anode to generate X-rays at the region of incidence, means for deflecting the electron beam to scan repetitively the region of incidence between two positions at which the deflection is reversed, monitoring means arranged to monitor the intensity of X-rays emitted at two points, on the anode, in the vicinity of each of which a reversal is intended to occur and means for operating on the output of each monitoring means to estimate the variation of the position of the respective reversals from its intended position.

4,112,398

TEMPERATURE COMPENSATED MICROWAVE FILTER

Gary L. Burnett, Anaheim, and George I. Tsuda, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 5, 1976, Ser. No. 712,113

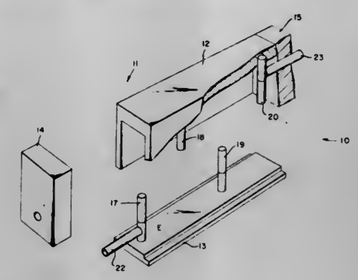
Int. Cl.² H01P *7/06, 1/20, 1/30*

U.S. Cl. 333—73 R **7 Claims**

1. A lightweight microwave filter having temperature compensation for providing stable resonant frequencies in response to temperature changes, comprising:

a housing being of a lightweight metal alloy having a first coefficient of thermal expansion; and

a fixed resonator rod for providing a resonant frequency disposed within said housing, said resonator rod being segmented, a first cylindrically shaped segment being of said lightweight metal alloy, a second cylindrically shaped segment being a metal alloy having a coefficient of thermal expansion being smaller than said first coefficient of



thermal expansion, said first and second segments being axially mounted together, said resonator rod and said housing providing a tuning capacitance therebetween depending upon the variance in relative length of said resonator rod and said housing, the lengths of said first and second segments being determined such that the variation in tuning capacitance between the end of said resonant rod and said housing compensates for the resonant frequency shift due to thermal expansion of said resonator rod so that said resonant frequency remains relatively constant.

4,112,399

MINIATURE RELAY

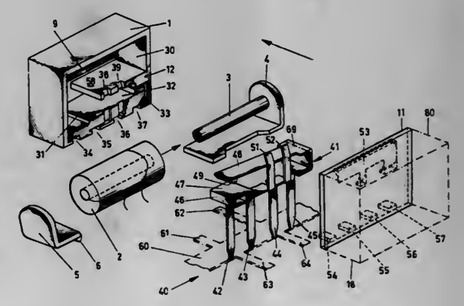
Ernst Pracher, Oberhaching; Wolfgang Adalbert Schrötter, Unterhaching, and Wolfgang Heider, Lenggries, all of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sep. 13, 1976, Ser. No. 723,101

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1975, 2545180

Int. Cl.² H01H *67/00*

U.S. Cl. 335—106 **12 Claims**



1. A miniature relay comprising:

a housing including a base and a lid, said base having a plurality of recesses therein for receiving and supporting electro-mechanical elements for said relay in predetermined positions, said lid closing a side of said housing base and having contours on its inner surface to aid in positioning the electro-mechanical elements in said predetermined positions;

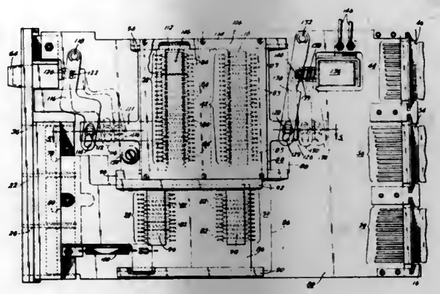
a plurality of connector pins penetrating the bottom of said housing, said connector pins arranged in a row and lying in a common plane;
at least two contacts supported in said housing and connected to respective ones of said connector pins;
a solenoid coil supported in said housing, the axis of said solenoid coil located in said common plane, said coil having a pair of lead wires connected to respective ones of said connector pins, said lid and said base both including shaped portions embracing said solenoid coil; and
an armature movable by energization of said solenoid coil and engageable with at least one of said contacts to effect selective opening and closing of said contacts.

4,112,400
RELAY FOR PRINTED CIRCUITS
John H. Jaidinger, Marengo, and Mamoru Sakazaki, Chicago, both of Ill., assignors to Jaidinger Mfg. Co., Inc., Chicago, Ill.
Filed May 17, 1977, Ser. No. 797,693
Int. Cl.² H01H 67/02
U.S. Cl. 335—128 **6 Claims**



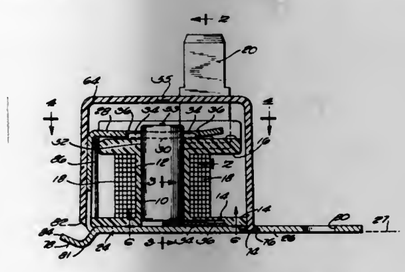
1. An electrical relay assembly comprising:
a yoke member;
a coil member and associated axial core member therein;
an armature pivotally supported by said yoke member in operative relationship with said coil member and associated core member;
said armature having a contact arm extending over one side of said coil member;
a pair of flexible contact arm members supported from the axis of said coil member and having their spaced respective contact arms positioned to said side and above and below said contact arm of said armature for makebreak contact therewith; and
support means between said coil member and said flexible contact arm members holding said arm members in insulated, spaced and non-rotative relationship from the axis of said coil member.

4,112,401
ELECTRICAL SWITCHING APPARATUS AND CONTROL SYSTEM FOR USE THEREWITH
James E. Palmer, Moorestown; Donald C. Lavallee, Haddon Heights, and George Huber, Mt. Laurel, all of N.J., assignors to Spectron Corporation, Mt. Laurel, N.J.
Filed Mar. 14, 1977, Ser. No. 777,117
Int. Cl.² H01H 36/00
U.S. Cl. 335—206 **19 Claims**



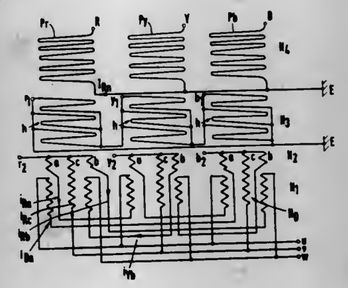
1. Electrical switching apparatus, comprising:
a plurality of magnetically-actuatable switch means;
magnet means positioned adjacent said switch means;
electromechanical means responsive to changes in an electrical quantity for controlling the effect of said magnet means upon said switch means to accomplish actuation of said switch means from a first electrical state thereto to a second electrical state thereof; and
manually-operable mechanical means for also controlling the effect of said magnet means upon said switch means, alternatively to control said actuation of said switch means.

4,112,402
COMPACT FAIL-SAFE BUZZER
Spencer C. Schantz, 16608 W. Rogers Dr., New Berlin, Wis. 53151
Filed Oct. 28, 1976, Ser. No. 736,610
Int. Cl.² H01F 7/16
U.S. Cl. 335—252 **16 Claims**



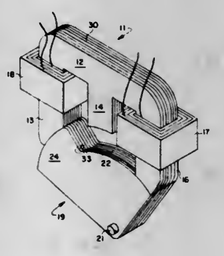
1. In an electrical device having an inner member and having a plastic housing which is open at one end and closed at the other end and which covers said inner member and which has flexible sides with slots, the improvement comprising chamfered tabs projecting from said inner member in snap-engagement with the slots in said housing to fasten said housing to said inner member, triangular posts in the corners of said housing, the lower ends of said posts being positioned to act as abutments in cooperation with portions of said inner member to limit movement of said housing relative to said inner member, and a stud projecting from said housing, there being a frame member having an opening receiving said stud, and said opening being counterbored and said stud being staked in said counterbore to aid in securing the housing to the frame.

4,112,403
SATURATED REACTOR ARRANGEMENTS
Erich Siegfried Friedlander, Sutton Coldfield, England, assignor to Associated Electrical Industries Limited, London, England
Filed Nov. 22, 1976, Ser. No. 743,790
Claims priority, application United Kingdom, Nov. 25, 1975, 48358/75
Int. Cl.² H01F 33/00; G05F 3/06
U.S. Cl. 336—12 **10 Claims**



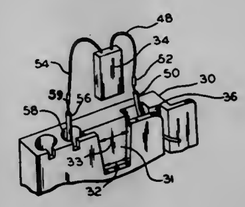
1. A saturated reactor arrangement for use in a voltage stabilising system, the reactor arrangement comprising a reactor core having nine wound limbs, a symmetrical star-connected primary winding distributed over said nine wound limbs, a set of phase-shifting windings arranged on said nine limbs and interconnected to produce fluxes in the nine limbs of phases uniformly staggered throughout 360°, each arm of said primary star-connected winding embracing three of said nine limbs whose flux phases are such as to provide net cancellation of third harmonic voltages in that arm, and a mesh-connected winding coupling said nine limbs to provide a path for the circulation of ninth harmonic current, and a terminal connection for earthing the star point of said primary winding.

4,112,404
VARIABLE FLUX TRANSFORMER
Homer A. Boushey, 235 Golden Oak Dr., Portola Valley, Calif. 94025
Filed Oct. 12, 1976, Ser. No. 731,133
Int. Cl.² H01F 21/06
U.S. Cl. 336—133 **2 Claims**



1. A variable flux transformer comprising:
A. a transformer core of a magnetic flux-conductive material having at least three legs extending from a common crossbar, which legs terminate at free ends spaced from one another;
B. a primary electrical coil interactively associated with a first one of said core legs to generate magnetic flux therein, the free end of said first leg terminating at a location beyond the terminus of said second and third legs;
C. a secondary electrical coil interactively associated with a second one of said core legs for the inducement in said coil of an electromotive force in response to a magnetic flux flow change in said second leg; and
D. a rotary magnetic flux path control switch of a magnetic flux-conductive material mounted adjacent said free ends of said legs for continuously variable rotary positioning relative to the ends of said legs selectively bridging the spacing therebetween to complete essentially an infinite number of differing low reluctance paths for flow of magnetic flux generated in said first leg through said second leg interactively by said secondary electrical coil and through said third leg bypassing said secondary electrical coil, said control switch:
(1) being rotatable from a first end position connecting said first leg with said second leg completely bypassing said third leg to a second position connecting said first leg with said third leg completely bypassing said second leg;
(2) including a first leg contacting surface which remains in flux connecting contact with the end of said first leg on rotation of said switch between said first and second end positions; and
(3) including a lobe extension providing a second leg end contacting surface separate from said first leg end contacting surface, which second contacting surface moves between said second and third legs to connect said first leg respectively with said second and third legs upon rotation of said switch from said first to said second end position; and
(4) having an axis of rotation positioned closer to the free end of said first leg than to the free ends of said second and third legs.

4,112,405
COIL WITH PROTECTION AGAINST OVERHEATING
Mark Joseph, 2400 N. Lake View, Chicago, Ill. 60614
Filed Aug. 16, 1976, Ser. No. 714,342
Int. Cl.² H02K 11/00
U.S. Cl. 337—4 **7 Claims**

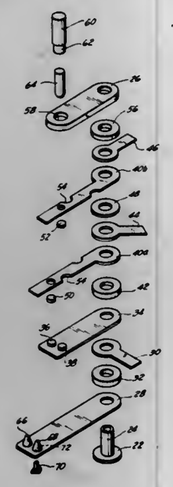


1. A heat protected coil comprising an integral bobbin including a hub terminated on each end by a flange, at least one of the flanges having a recess formed therein with an open side facing a winding area in said bobbin, whereby wire wound upon the bobbin forms a wall of wire closing the open side of said recess, a thermal fuse in an electrically insulated housing pressed into said recess, said insulated housing shaped and configured to fit into said recess with intimate physical contact with the layers of a coil forming said wall of wire wound into said winding area, and means for electrically connecting said fuse in series with said coil.

4,112,406
DUPLEX THERMOSTAT
Colin D. Hickling, Woodstock, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.
Filed Apr. 4, 1977, Ser. No. 784,555
Int. Cl.² H01H 37/52
U.S. Cl. 337—338 **10 Claims**

1. A thermostat comprising a support, first and second resilient means mounted in spaced relation on said support, each of

said means having mounted thereon a pair of contacts, each of said contacts on one of said means being aligned with a different contact on the other of said means, a thermally deformable element mounted on said support and spaced from said first means, means operably connecting said element and said first means such that deformation of the former moves the latter



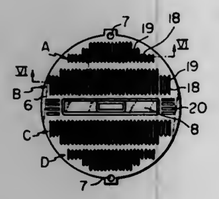
relative to said second means, means for adjustably positioning said second means relative to said first means, said first means being formed of first and second isolated parts upon each of which is mounted one of said contacts, and means for spacing said first and second parts, respectively, different distances from said element.

4,112,407

FIRE SENSING DEVICE

Yasuyoshi Kameyama, Kobe, and Satoru Suzaki, Suita, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 27, 1977, Ser. No. 791,489
Claims priority, application Japan, Jul. 30, 1976, 51-91822
Int. Cl.² H01H *37/46*
U.S. Cl. 337—398 **5 Claims**



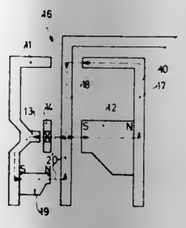
1. A fire sensing device for actuating fire alarm system comprising a base body, a heat-responsive switch mounted to said base body, and a heat receiving plate member thermally connected to said switch and expanding around the switch, said heat receiving plate member being provided therein with at least two groups of slits defined by fins formed by being raised from the plate member, said fins in each of said groups being raised respectively in the same direction, and said raised direction of the fins in each of the groups being different from that in the other groups.

4,112,408

DEVICE FOR PRODUCING AN ELECTRICAL PULSE IN RESPONSE TO PASSAGE OF A MAGNETICALLY CONDUCTING MEMBER THROUGH AN AIR GAP

Herman Roozenbeek, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 21, 1977, Ser. No. 844,352
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647818
Int. Cl.² H01L *43/04*
U.S. Cl. 338—32 H **3 Claims**



1. A device for producing an electrical signal in response to movement of a magnetically conducting flux-by-pass member thereof past a stator member thereof that comprises a first permanent magnet and a Hall generator and provides an air gap in the stator structure through which said flux-by-pass member is able to pass and in passing to complete a magnetic circuit for said permanent magnet that excludes said Hall generator, said device having the improvement wherein:

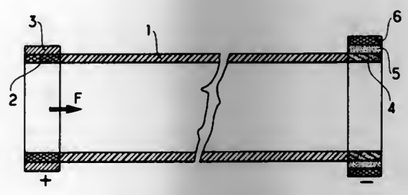
a second magnet (15) is provided and mounted on a portion of said stator in such a configuration that when said flux-by-pass member (18) is in said air gap (16), said second magnet (15) sets up a magnetic flux in said Hall generator (14) in a direction opposite to that of magnetic flux in said Hall generator (14) set up by said first magnet (12) when said air gap (16) is clear of intrusion by said flux-by-pass member.

4,112,409

ELECTROLYTIC RESISTOR

Jean Jacquelin, Marolles en Hurepois, France, assignor to Compagnie Generale d'Electricite S.A., France

Filed Nov. 19, 1976, Ser. No. 743,256
Claims priority, application France, Dec. 3, 1975, 75 36968
Int. Cl.² H01C *10/02*
U.S. Cl. 338—222 **15 Claims**



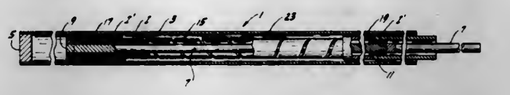
1. An electrolytic resistor of the type containing a flow of an alkaline aqueous solution including a metal in suspension and a hydroxide of said metal in solution, said resistor comprising a tube made of an electrically insulative material for containing said flow, the positive end of said electrolytic resistor comprising a grid made of a conductive material capable of retaining particles of said metal in suspension and the negative end of said resistor comprising an inner porous insulator and hydrophilous separator layer, an intermediate electrode layer capable of consuming oxygen in the air and of producing hydroxide ions therefrom, and an outer conductive grid layer.

4,112,410

HEATER AND METHOD OF MAKING SAME

Ronald M. Wrob, Kirkwood, and Jeffrey P. Melly, St. Louis, both of Mo., assignors to Watlow Electric Manufacturing Company, St. Louis, Mo.

Filed Nov. 26, 1976, Ser. No. 744,961
Int. Cl.² H01C *1/028*
U.S. Cl. 338—243 **8 Claims**



1. A heater comprising:

a metallic tubular sheath;

an elongate electrical conductor disposed substantially coaxially within said sheath;

fibrous, inorganic electrical insulation material surrounding said conductor;

an electrical resistance heating element surrounding said insulated center conductor, the heating element being substantially coaxial with the center conductor and electrically connected thereto and said heating element and said conductor being adapted for connection to a source of electrical power to energize the heating element; and

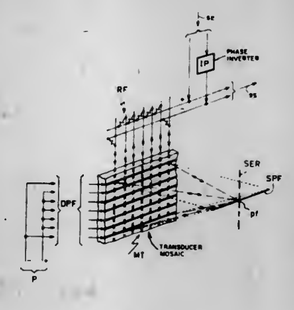
other electrical insulation material disposed between said heating element and said sheath to electrically insulate the heating element from the sheath and provide a conductive heat transfer path between the heating element and the sheath.

4,112,411

DEVICE FOR ECHOGRAPHY BY MEANS OF FOCUSSED ULTRASONIC BEAMS

Pierre Alais, Dampierre, and Michel Joseph Auphan, Paris, both of France, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Dec. 9, 1976, Ser. No. 748,691
Claims priority, application France, Dec. 11, 1975, 75 37929
Int. Cl.² G01S *9/66*
U.S. Cl. 340—1 R **14 Claims**



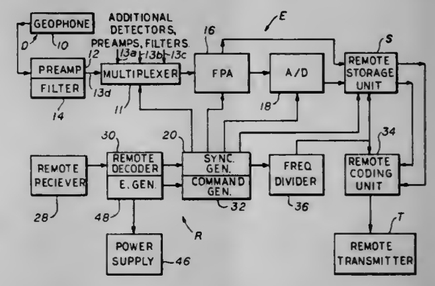
1. A device for echography comprising, a mosaic of ultrasonic transducers arranged in N rows and M columns for transmitting ultrasonic vibrations to a surface to be examined and for receiving and converting ultrasonic vibrations into electrical signals after reflection by said surface, means for operating selected transducers in phase or in phase-opposition in accordance with a predetermined program set out in a focussing diagram so that the ultrasonic vibrations are transmitted and received as focussed beams, the transducers being made of a material which can be brought into one of two characteristic states by applying a prepolarization signal thereto, the phase of an electrical signal corresponding to an ultrasonic wave being dependent upon the state obtained by the transducer by prepolarization, and means for prepolarizing the transducers selected from a group of *n* rows or columns ($n \leqq$ N and M) of transducers according to a predetermined prepolarization diagram so that certain selected rows or columns of transducers are prepolarized in the one state and others are prepolarized in the other state so that the ultrasonic waves transmitted or received by these rows or columns together form a prefocussed beam having a line focus which is situated in a predetermined position.

4,112,412

DIGITAL SEISMIC TELEMETRY SYSTEM

Donald L. Howlett, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 530,913, Dec. 9, 1974, abandoned. This application Dec. 10, 1976, Ser. No. 749,646
Int. Cl.² G01V *1/00*
U.S. Cl. 340—15.5 TS **5 Claims**



1. A digital seismic telemetry system for recording seismic data from a plurality of spatially separated seismic signal detectors positioned at selected spatially separated detector stations, comprising:

a plurality of remote seismic units, each being positioned at a seismic detector station, and each including;

remote storage means for storing seismic data from a detector in digital form;

converter means operably connected to said remote storage means for converting seismic data from a seismic detector into digital form and for supplying the digital seismic data to said remote storage means; and

remote transmitting means operably connected to said remote storage means for transmitting seismic data from said remote storage means to a master receiver, said remote transmitting means including transmission rate control means, responsive to a signal from a master control means, for controlling the rate at which said remote transmitting means transmits digital seismic data to said master receiver;

master receiver means for receiving transmitted seismic data from each of said plurality of remote seismic units;

master recorder means, operably connected to said master receiver, for recording received data from any of said remote seismic units; and

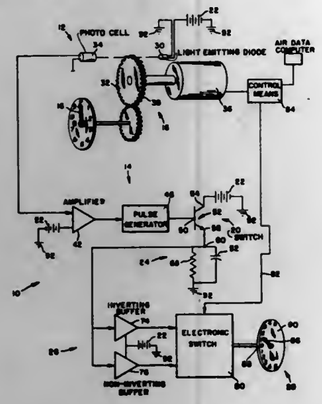
master control means, including a control transmitting means for transmitting control signals to each of said remote units, for controlling the selection of a remote unit and for controlling the rate of transmission of data from said remote seismic units to said master receiver means, whereby the number of and the transmission rate of said remote seismic units transmitting seismic data to said master receiver means at any given time is controlled.

4,112,413

RATE OF CHANGE IN ALTITUDE APPARATUS

Donald Paul Muhs, and Russell Frank Hart, both of Davenport, Iowa, assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 27, 1976, Ser. No. 726,882
Int. Cl.² G08B *5/36*
U.S. Cl. 340—27 R **10 Claims**



1. A rate of change in altitude indicating apparatus comprising:

a source of electrical current;

detector means for producing a sinusoidal input signal indicative of changes in altitude;

generator means connected to said detector means for generating a pulse signal representative of each positive node of said sinusoidal input signal;

first switch means responsive to said pulse signal to allow electrical current to flow from said source during the duration of each positive node;

means responsive to said electrical current for creating a voltage signal which is directly proportional to the frequency of said sinusoidal input signal; and

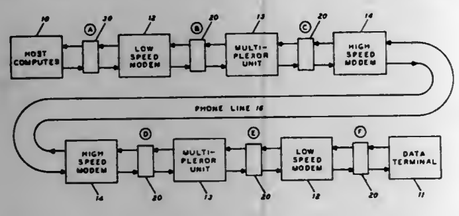
indicator means responsive to said voltage signal for providing an operator with information relating to said rate of change of altitude.

4,112,414

HOST-CONTROLLED FAULT DIAGNOSIS IN A DATA COMMUNICATION SYSTEM

Lewis Iscol, Berkeley, and Lynn E. Cochran, San Mateo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 3, 1977, Ser. No. 756,528
Int. Cl.² G06F *11/04;* H04B *3/46*
U.S. Cl. 340—146.1 E **5 Claims**



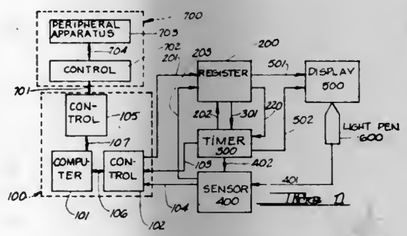
1. In the transfer of digital data between a host computer and one or more remote data terminals via a data communication system that includes one or more circuit elements supplied by a common carrier tariffed by the Federal Communications Commission and other circuit elements supplied by tariffed or nontariffed vendors, the improvement for automatically determining which of said circuit elements of said data communication system in a nonoperative state is faulty, comprising one or more diagnostic networks inserted logically between said elements of said data communication system, each selectively and independently operative in response to digital signals generated by and sent from a properly programmed host computer, said one or more diagnostic networks being selectively addressable using digital signals having the same protocol as said host computer uses in addressing said one or more data terminals of said data communication system, said one or more diagnostic networks each including first means for continuously monitoring all digital signals generated by said host computer and second means interconnected to said first means and selectively operating in response thereto to engage in an exchange of protocol and other messages with said host computer whereby said programmed host computer can determine rapidly which element of said data communication system is faulty.

4,112,415

SYSTEM FOR OPTICALLY ENTERING, DISPLAYING AND DECODING HANDWRITTEN SYMBOLS

Johan O. Hilbrink, 4002 Sharon Park Lane 24, Sharonville, Ohio 45241

Continuation-in-part of Ser. No. 635,884, Nov. 28, 1975, abandoned. This application Nov. 22, 1976, Ser. No. 744,124
Int. Cl.² G06F *3/02;* G06K *9/00*
U.S. Cl. 340—146.3 SY **20 Claims**



1. An interactive optical data entry and display system for decoding a handwritten trace into a data processing code defined by a set of predetermined symbols, said system comprising:

(a) a control means for generating a signal sequence;

(b) a display responsive to said signal seequence for displaying a corresponding pattern of display elements;

(c) tracing means for making said handwritten trace on said display;

(d) sensing means in association with said control means and said tracing means for identifying, in terms of a first coordinate and a second coordinate, the positions of those display elements passed over by said tracing means while making said handwritten trace; and

(e) computing means responsive to said sensing means and said control means comprising:

i. for each of said predetermined symbols, a stored trace uniquely corresponding thereto;

ii. means for comparing said handwritten trace with each of said stored traces such that the best comparison identifies said written trace as the symbol corresponding to the stored trace which caused said best comparison;

iii. means for tabulating a first ordered list of values corresponding to those of said first coordinates identified by said handwritten trace and a second ordered list of values corresponding to those of said second coordinates identified by said hand-written trace;

iv. a plurality of matrices; and

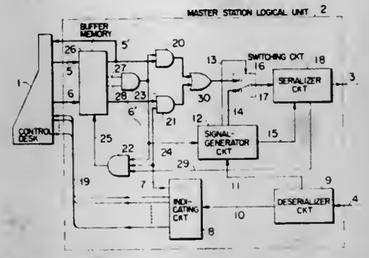
v. calculating means for multiplying one of said matrices with said first ordered list to derive a first vector and for multiplying one of said matrices with said second ordered list to derive a second vector.

4,112,416

CONTROL METHOD FOR A REMOTE SUPERVISORY CONTROL SYSTEM

Akiji Hasegawa; Isao Yasuda, and Kazuhiko Kobayashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 8, 1976, Ser. No. 674,761
Claims priority, application Japan, Apr. 9, 1975, 50-42295
Int. Cl.² H04Q *5/00*
U.S. Cl. 340—147 R **4 Claims**



1. In a remote supervisory control system comprising a control desk operated by an operator, a single master station which receives signals from the control desk and a plurality of remote stations whose states are supervised and controlled by the master station, in which the master station has a buffer memory device for storing a selection signal selecting at least one from among the plurality of remote stations and an operation control signal for the selected remote station which are given by the operator through the control desk, a control method comprising:

a first step of storing the selection signal originated by the operator in said buffer memory device,

a second step of storing the operation control signal originated by the operator in said buffer memory device when it has been indicated on the control desk that the first step has been completed, the operation control signal corresponding to the predetermined remote station selected by the selection signal stored in said buffer memory device,

a third step of transmitting the selectionsignal from the buffer memory device to the selected remote station when both the selection signal and operation control signal have been stored in the buffer memory device,

a fourth step of transmitting a selection completion signal to the master station from the selected remote station,

a fifth step of transmitting the operation control signal stored in the buffer memory device to the selected remote station when the selection completion signal from the selected remote station has been received by the master station.

4,112,417

APPARATUS FOR DETECTING LEAKAGE OF LIQUID SODIUM

Yoshiaki Himeno, Mito, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

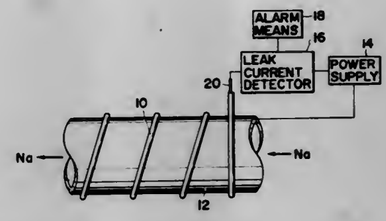
Filed Sep. 15, 1976, Ser. No. 723,637
Claims priority, application Japan, Sep. 18, 1975, 50-112117
Int. Cl.² G08B *21/00*
U.S. Cl. 340—605 **11 Claims**

1. An apparatus for detecting the leakage of liquid sodium through a wall of liquid sodium-containing equipment, said apparatus comprising:

an elongated cable-shaped sensor formed of an electrically conductive inner core wire, an electrically insulative layer consisting essentially of a metal oxide material surrounding said core wire, and an outer layer consisting essentially of a metal material surrounding said insulative layer and separated from said core wire by said insulative layer, said metal oxide material and said metal material being corrodible by the reaction products resulting from a reaction of liquid sodium with water vapor or oxygen in the atmospheric air, said cable-shaped sensor being deformable so that it may be conformed to the configuration of and directly secured to the wall of a liquid sodium-containing equipment at a position such that upon leakage of liquid sodium through the wall, reaction products are formed and contact said sensor and corrode said outer layer and insulative layer;

electric power supply means for applying a predetermined constant voltage between said core wire and the wall of a sodium-containing equipment, for thereby passing a relatively small current through said insulative layer and said outer layer between said core wire and the wall when there is no leakage of liquid sodium through the wall, and for passing an increased current between said core wire and the wall due to corrosion of said insulative layer upon leakage of liquid sodium through the wall; and

leak current detector means, connected in series to said power supply means, for detecting said increase in current as an indication of the leakage of liquid sodium through the wall.

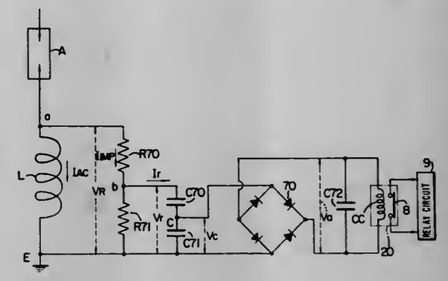


4,112,418

LIGHTNING CURRENT RESPONSIVE ALARM

Toshio Ishikawa; Jun Ozawa, and Masaoki Tamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 7, 1977, Ser. No. 766,568
Claims priority, application Japan, Feb. 25, 1976, 51-18921
Int. Cl.² G08B *21/00;* H02H *9/06*
U.S. Cl. 340—659 **14 Claims**



1. A lightning current responsive alarm device connected between protective coordination gap means, across which discharge takes place in response to the application of a lightning stroke voltage, and earth for alarming the operation of said protective coordination gap means, said alarm device comprising:

non-linear resistor means with a low voltage variation over a wide current range connected between said protective coordination gap means and earth,

capacitor means connected to said non-linear resistor means so that it is charged up with the drop voltage appearing across said non-linear resistor means,

sensor means operated by the discharge current of said capacitor, and

impedance means connected in parallel with said non-linear resistor means for providing a low impedance against a low frequency, but a high impedance against a high frequency.

4,112,419
APPARATUS FOR DETECTING THE NUMBER OF OBJECTS

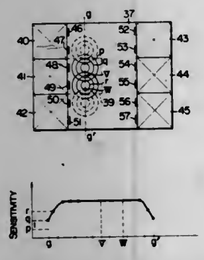
Hiroshi Kinoshita; Tatsuo Iwasaka, both of Katsuta, and Hisao Hanmura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 25, 1976, Ser. No. 669,802

Claims priority, application Japan, Mar. 28, 1975, 50-36956; May 26, 1975, 50-61958; May 28, 1975, 50-62912

Int. Cl.² G01S *9/66*

U.S. Cl. 340—560 **9 Claims**



1. An apparatus for detecting the number of objects comprising: a plurality of transmitter-receivers, each of said transmitter-receivers including at least one transmitter for transmitting an ultrasonic wave or microwave signal toward the objects and at least one receiver for receiving the ultrasonic wave or microwave signal reflected from the objects, said transmitter-receivers being arranged to have respective detection regions overlapped with each other so that a uniform detection sensitivity may be obtained substantially over a surveillance area of the apparatus, a timing signal generator circuit for simultaneously energizing at least two adjacent transmitter-receivers to obtain a uniform detection sensitivity substantially over at least a portion of said surveillance area, and means for summing and integrating the outputs of the receivers included in said plurality of transmitter-receivers.

4,112,420
APPARATUS FOR DETECTING THE BREAKAGE OF AN ACOUSTICALLY CONDUCTIVE MEDIUM

Hideo Mifune; Kenroku Tani, and Toyota Noguchi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company Limited, Japan

Filed Jul. 7, 1976, Ser. No. 703,291

Claims priority, application Japan, Jul. 31, 1975, 50-94020; Aug. 18, 1975, 50-100412; Aug. 20, 1975, 50-101354

Int. Cl.² G08B *13/04*

U.S. Cl. 340—550 **11 Claims**

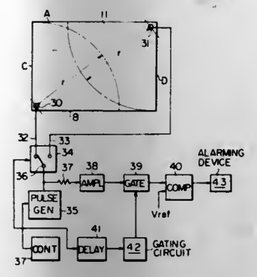
1. Apparatus for detecting breakage of an acoustically conductive medium, comprising:

means for generating an electrical pulse at predetermined intervals;

a piezoelectric transducer located in said acoustically conductive medium for transmitting said electrical pulse to the medium to introduce discrete elastic wave pulse vibrations in said medium and receiving vibrations from said medium to provide a received electrical signal;

discriminating gate means connected to said transducer for passing signals of which the amplitude is in excess of a predetermined value;

means for activating said gate means at delayed intervals from the instant of generation of said electrical pulse to detect said received electrical signal; and



alarm generating means connected to be responsive to pulses passed through said gate means for providing an alarm when the received electrical signal exceeds a predetermined threshold level.

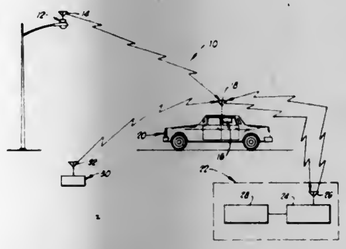
4,112,421
METHOD AND APPARATUS FOR AUTOMATICALLY MONITORING OBJECTS

Charles C. Freeny, Jr., Fort Worth, Tex., assignor to Information Identification Company, Inc., Ft. Worth, Tex.

Filed Apr. 16, 1975, Ser. No. 568,671

Int. Cl.² G01S *3/02*

U.S. Cl. 343—112 D **53 Claims**



1. Apparatus for use in monitoring objects within a predetermined monitored area comprising:

at least two signpost units, each signpost unit being positioned within the monitored area and each signpost unit having a predetermined signpost code encoded therein identifying the signpost unit and providing an output signal encoded with the signpost code, each signpost unit outut signal establishing a far-field region extending a distance generally from the signpost unit, each signpost unit being positioned with respect to at least one other signpost unit so a portion of the far-field region of each signpost unit overlaps a portion of the far-field region of at least one other signpost unit, thereby forming an overlap region encompassing a predetermined coverage region with the monitored area;

means in the monitored object receiving the signpost unit output signals having a portion detecting the signpost code encoded in the received signpost unit output signal and providing an output signal in response to the received signpost unit output signal for indicating the location of the monitored object as being within the far-field region of the signpost unit identified via the signpost code corresponding to the signpost code encoded in the received signpost unit output signal; and

means in the monitored object for determining and indicating the location of the monitored object as being within one of the overlap regions.

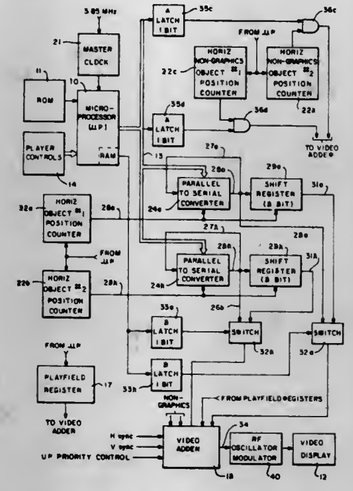
4,112,422
METHOD AND APPARATUS FOR GENERATING MOVING OBJECTS ON A VIDEO DISPLAY SCREEN

Steven T. Mayer, Auburn, and Ronald E. Milner, Grass Valley, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Dec. 13, 1976, Ser. No. 749,725

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 AD **9 Claims**



1. A method of generating an object on a video display screen scanned in successive frames by an image forming beam traversing the screen along a plurality of horizontal lines in response to horizontal and vertical synchronizing signals and where a microprocessor has stored in its associated memory graphics data said method comprising the following steps: sensing the current vertical position of said scan and the desired vertical object position and storing a plurality of data bits, representing said graphics data, in a first memory under control of said microprocessor if an object is to be displayed; one horizontal line later shifting said data to a second memory while recirculating such data back into said first memory; sensing the horizontal window of said horizontal line where said data is to be displayed and causing said data from one of said first and second memories to be displayed on said screen in response to the vertical object position starting on the first or second line of a horizontal line pair; and in response to the next horizontal line repeating the display of the data in the previous line.

4,112,423
DUAL-SCREEN DATA DISPLAY TERMINAL FOR DATA PROCESSING UNITS

Robert B. Bertolasi, Rockford, Ill., assignor to Kelsey-Hayes Co., Romulus, Mich.

Filed Sep. 13, 1976, Ser. No. 722,727

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 AD **25 Claims**

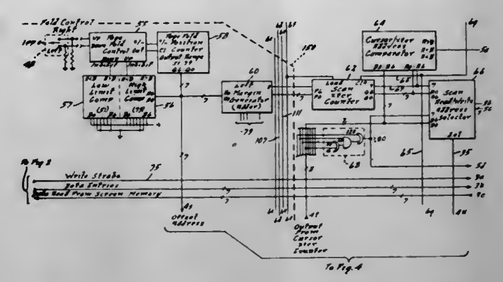
1. A data display terminal for displaying data received from a remote data processor or for entering data into a remote data processor including:

video display means including a pair of cathode ray tubes positioned side-by-side so that their associated screens form a substantially continuous display area;

memory means for sorting at least one computer page of data to be displayed on said screens;

input means for entering data into said memory means;

output means for reading data from said display memory means and providing said data to said video display means so that said data is displayed in sequence across said screens, including offset means for generating an offset and control means for controlling the positioning of said data within said display area in accordance with said offset



so that the junction of said two screens separates said data at a convenient location.

4,112,424
ALPHANUMERIC DISPLAY SYSTEM

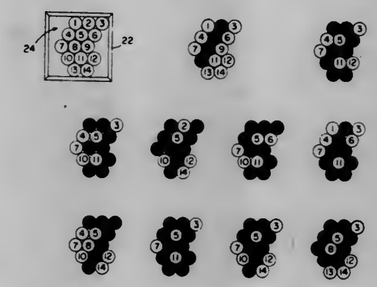
James M. Lapeyre, New Orleans, La., assignor to Digicourse, Inc., New Orleans, La.

Filed Mar. 12, 1976, Ser. No. 666,456

The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.

Int. Cl.² G09F *9/32*

U.S. Cl. 340—336 **15 Claims**



1. An alphanumeric display comprising:

an array of at least 14 and not more than 15 light emitting elements; said array consisting of four horizontal rows each including at least three of said elements and one horizontal row of at least two elements, all of said elements of said array being arranged in a nested relation so as to form at least four plural element columns, each inclined with respect to said horizontal rows at an angle of about 60° from the upper right to the lower left as seen by the viewer and at least five plural element columns, each inclined with respect to said horizontal rows at an angle of about 60° from the upper left to the lower right as seen by the viewer.

4,112,425
TRANSIENT ANALOG SIGNAL CAPTURE AND TRANSMISSION SYSTEM

Gerald J. Zobrist; William L. Townsend, and Steven K. Orr, all of Cincinnati, Ohio, assignors to Zonic Technical Laboratories, Inc., Cincinnati, Ohio

Filed Mar. 3, 1976, Ser. No. 663,356

Int. Cl.² H03K *13/00*

U.S. Cl. 340—347 AD **24 Claims**

1. A method for monitoring a physical phenomenon manifested by a change in displacement produced by the application of a time-varying force capturing an analog electrical signal associated therewith having a component of interest at a given

frequency not exceeding approximately 100 KHz. and transmitting said captured signal over a low grade communication link having an upper frequency limit substantially less than said given frequency, said method comprising:

transducing the variation in displacement associated with said changing physical phenomenon produced by said time-varying force with a displacement transducer to produce an analog electrical signal having a component of interest at a given frequency not exceeding approximately 100 KHz.,

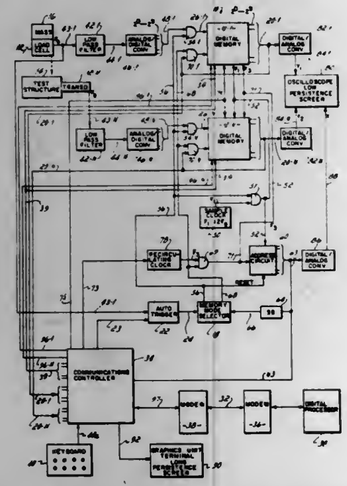
generating a trigger signal,

generating sampling signals at a first predetermined rate greater than twice said given frequency of said analog electrical signal component of interest,

sampling said analog signal output from said displacement transducer, under control of said sampling signals, at said first predetermined rate,

converting said analog signal samples output from said sampling means into digital signal samples, each digitized signal sample including plural data signals in parallel,

storing at said first predetermined rate, said digital signal samples output from said converter in a digital memory accessed under control of said trigger and sampling signals,



accessing said digital memory at a second predetermined rate substantially lower than 100 KHz., to ready for transmission, at said second predetermined rate, said stored digital signal samples, said transmission being via a communication link having a frequency response limit exceeding said second rate and substantially lower than 100 KHz.,

transmitting said stored plural data signals of each stored digital signal samples serially over the communication link at said second predetermined rate to a digital processor remote from said displacement transducer and said digital memory,

performing a mathematical transformation on said transmitted high frequency-containing digital samples in said digital processor to mathematically transform said high frequency-containing samples into a form useful for analyzing said physical phenomenon being monitored,

whereby digital signal samples containing a component of interest of an analog signal having a frequency not exceeding approximately 100 KHz. are conveyed to a remote digital processor for processing thereat over a low grade communication link having an upper frequency response limit which is substantially lower than 100 KHz. at a rate not exceeding said frequency response limit,

transmitting said processed signals from said remote processor over said low grade communication link at a receiving rate not exceeding said upper frequency response limit of said communication link, and

visually displaying said received processed signals transmitted from said digital processor, whereby interaction on a substantially real time basis occurs between said remote digital processor and test personnel at the site of said physical phenomenon being monitored whereat said transducer is located.

4,112,426

APPARATUS FOR CONVERTING ANALOG SIGNALS INTO DIGITAL SIGNALS AND DIGITAL SIGNALS INTO ANALOG SIGNALS

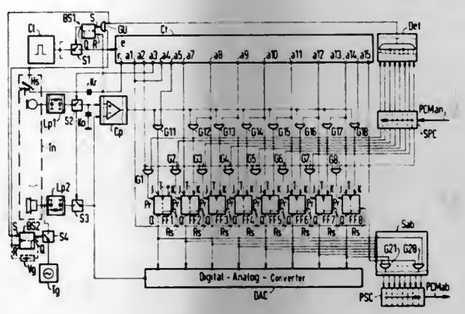
Ernst Höfer, and Klaus Wintzer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 30, 1976, Ser. No. 718,673

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1975, 2538580; Sep. 29, 1975, 2543388; Sep. 30, 1975, 2543608

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 C **6 Claims**



1. In a telecommunication system having subscriber stations constructed to send and receive analog signals and wherein signals are transmitted from subscriber station to subscriber station in digital form, apparatus for converting an incoming digital signal into an analog signal and an analog signal into an outgoing digital signal comprising:

input register means for receiving incoming digital signals;

buffer register means having a plurality of bistable stages having first inputs connected to said input register means for receiving the incoming digital signals;

digital to analog converter means having inputs connected to outputs of said bistable stages of said buffer register for converting the incoming digital signals to analog signals;

analog output means connected to receive the output of said digital to analog converter;

comparator means having one input connected to receive the output of said digital to analog converter and another input connected to receive an analog signal to be converted, the output of said comparator means being coupled to second inputs of said bistable stages of said buffer register;

output register means having inputs coupled to the outputs of said bistable stages of said buffer register for receiving the outgoing digital signals corresponding to the analog signal received by said another input of said comparator means;

multistage binary counter means having a predetermined starting position and a plurality of outputs coupled to said buffer register means for enabling said buffer register and said digital to analog converter to convert the incoming digital signals to analog signals during a first portion of the counting interval and for enabling the combination of said analog comparator, said buffer register and said analog to digital converter to convert analog signals to outgoing digital signals during a second portion of the counting interval;

clock generator means connected to said binary counter means for driving said binary counter means; and

initiating means for actuating said binary counter means responsive to the reception of a predetermined calling bit sequence in said input register means, said initiating means including detector means connected to said input register means for producing a first signal responsive to the appearance of the calling bit sequence in said input register, sensing means for producing a second signal responsive to the subscriber station being rendered operative and first switching means for connecting said clock generator to said binary counter means when said first and second signals appear in coincidence.

4,112,427

REVERSIBLE ANALOG-TO-DIGITAL CONVERTER

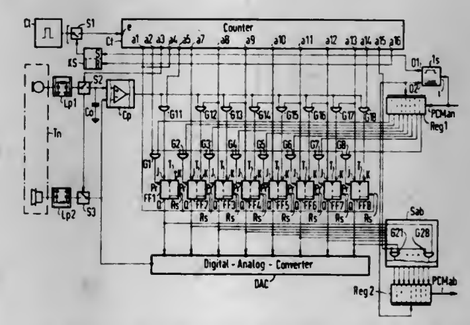
Ernst Höfer; Peter Hirschmann, and Klaus Wintzer, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 19, 1976, Ser. No. 715,864

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1975, 2538543; Sep. 30, 1975, 2543609; Sep. 29, 1975, 2543390; Nov. 28, 1975, 2553632

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 C **16 Claims**



1. A method of converting incoming PAM analog signals into outgoing PCM digital signals, and of converting incoming PCM digital signals into outgoing PAM analog signals in a telecommunication installation having telephone stations, each of said telephone stations comprising a transmitting unit supplying analog signals and a receiving unit accepting analog signals, wherein said telecommunication installation communicates with a PCM switching center by supplying PCM digital signals to said PCM switching center and receiving PCM digital signals from said PCM switching center, said telecommunication installation being in communication with said PCM switching center for the duration of the channel time slot pulses of the PCM channel time slot pulse train, said telecommunication installation comprising an analog-to-digital converter for the conversion of the incoming PAM analog signals into outgoing PCM digital signals, said analog-to-digital converter functioning according to the iterative principle and comprising a counter with a given counting interval, an intermediate register controlled by the outputs of said counter, a digital-to-analog converter following said intermediate register, and an analog comparator with one input connected to the output of said digital-to-analog converter and another input connected to receive analog signals from said transmitting unit which are intended to be converted into digital signals, the output signals of said comparator being supplied to said intermediate register, said telecommunication installation further comprising digital signal converting means including said intermediate register and said digital-to-analog converter for converting incoming PCM digital signals to outgoing PAM analog signals and sending the converted PCM digital signals to said receiving unit of said telephone station, the method comprising the steps of:

sharing the counting interval of said counter by converting the PCM digital signal from said PCM switching center to a PAM analog signal during a first portion of the counting interval of said counter and by converting the PAM analog signal from said transmitting unit of said telephone station to a PCM digital signal during a second portion of the counting interval of said counter; and,

initiating the counting interval of said counter within which said counter passes through all counter positions upon the appearance of each channel time slot pulse of the PCM channel time slot pulse train from said PCM switching center.

4,112,428

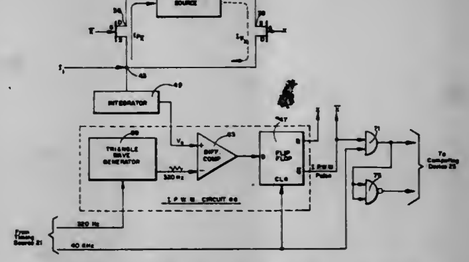
CLOCKED PRECISION INTEGRATING ANALOG TO DIGITAL CONVERTER SYSTEM

Adrian K. Dorsman, Bellflower, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 579,123, May 19, 1975, abandoned. This application Aug. 23, 1977, Ser. No. 827,046

Int. Cl.² H03K *13/20*

U.S. Cl. 340—347 NT **23 Claims**



1. An analog-to-digital conversion system comprising:

first means for generating a precision unipolar constant current;

a summing terminal for receiving an analog current;

means for enabling the precision unipolar constant current to flow by way of a first direction through said enabling means from a reference potential through said first means to said summing terminal during a first mode of operation and to flow by way of a second direction through said enabling means from said summing terminal through said first means to the reference potential during a second mode of operation;

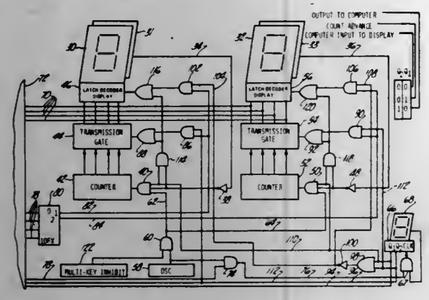
an integrator for generating a voltage signal proportional to the integral of the sum of the precision and analog currents flowing through said summing terminal; and

second means, coupled to said enabling means, being responsive to the voltage signal and to clock pulses for controlling the first and second modes of operation of said enabling means and for generating a digital representation of the amplitude of the analog current.

4,112,429
MULTIFUNCTION SEQUENCE OPERATED INTEGRATED SWITCH-DISPLAY DEVICE

Wallace K. Tsuha, 36048 Lucerne, Mt. Clemens, Mich. 48043, and Timothy R. Schlax, 3150 Bloomcrest, Rochester, Mich. 48063

Filed Jan. 30, 1976, Ser. No. 653,793
Int. Cl.² G06F 3/14
U.S. Cl. 340—365 R **13 Claims**



1. A combined display-selector device for electronic data transmission systems comprising:

digital display means responsive to electronic actuation to provide a visual display of a numeric symbol on the face thereof;

switch means physically interconnected with said display means and responsive to manual contact with the face of said display means to assume a condition to pass an electrical signal;

a counter having an input for receiving electrical pulses and outputs for presenting in electrically coded form a signal representing the number of pulses received by said counter;

a pulse source connected to the input of the counter through said switch means whereby manual contact with the display means advances the count;

and means for connecting the outputs of the counter to the display means to advance the numeric display, said means being further adapted for connection to an external device.

4,112,430
BEAMFORMER FOR WIDEBAND SIGNALS

James A. Ladstatter, Baldwinsville, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

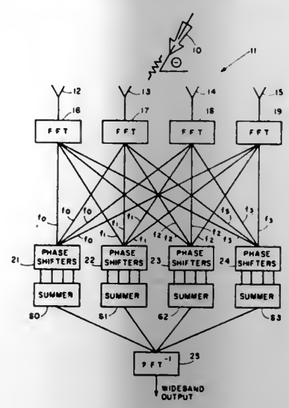
Filed Jun. 1, 1977, Ser. No. 802,330
Int. Cl.² G01S 3/74, 9/66
U.S. Cl. 343—100 R **12 Claims**

7. In a method for receiving a wideband signal, the steps of detecting said wideband signal with an array of sensors;

converting each elemental signal produced by a sensor into a multiplicity of narrowband signals,

said narrowband signals having frequencies that correspond to different Fourier coefficients which are present in said wideband signal;

forming a like multiplicity of narrowband directional beams from said multiplicity of narrowband signals; and

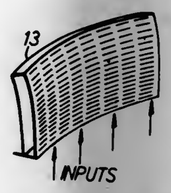


reconstructing said wideband signal from said narrowband beams.

4,112,431
RADIATORS FOR MICROWAVE AERIALS

John Paul Wild, Strathfield, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jun. 8, 1976, Ser. No. 694,128
Claims priority, application Australia, Jun. 9, 1975, PC1921
Int. Cl.² H01Q 3/26
U.S. Cl. 343—768 **8 Claims**



1.A radiator for a microwave aerial for generating scanning planar radio beams comprising, a conducting parallel plate transmission system, said parallel plate

shaped as at least a segment of a cylindroid, said cylindroid having an axis of generation,

a regular two-dimensional array of slots in one of its parallel plates, said array comprising a columnar arrangement of slots, each slot having its long dimension in a plane perpendicular to the axis of generation of the cylidroid, and

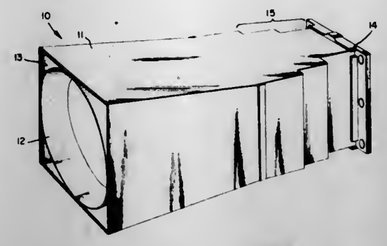
aperture means between one pair of parallel concentric edges of said plates, through which aperture means microwave power is fed into the parallel plate structure for transmission therethrough, the microwave power emerging from the slots in a plurality of adjacent columns of the array, forming a planar radio beam, the plane of said radio beam being coplanar with the axis of the cylindroid,

whereby distributed microwave excitation moves around said aperture means and is effective to cause the planar radio beam to scan about the axis of generation of the cylindroid.

4,112,432
SQUARE HORN ANTENNA HAVING IMPROVED ELLIPTICITY

Mon N. Wong, and Timothy A. Crail, both of Culver City, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 21, 1976, Ser. No. 734,707
Int. Cl.² H01Q 13/02; H01P 5/12
U.S. Cl. 343—786 **4 Claims**



1. A horn antenna having improved ellipticity, comprising:

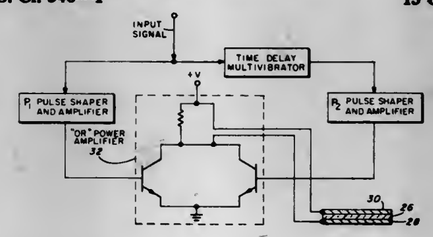
an N-sided horn antenna having a predetermined angle of flare, N being at least four, said horn having an input port and an aperture, said horn having a predetermined length; and

a right circular truncated hollow conical section being mounted tangentially to the inside of said N-sided horn antenna at the aperture thereof, said conical section having a predetermined relatively short length and being of an electrically conductive material having a thickness of less than 0.1 wavelength and being attached to each side of said N-sided horn antenna so that a wave propagating through said conical section is not attenuated, said conical section being for improving the ellipticity of a wave passing therethrough.

4,112,433
MENISCUS DAMPENING DROP GENERATOR

Richard H. Vernon, Richardson, Tex., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 634,315, Nov. 21, 1975, abandoned.
This application May 26, 1977, Ser. No. 800,833
Int. Cl.² G01D 15/16
U.S. Cl. 346—1 **13 Claims**

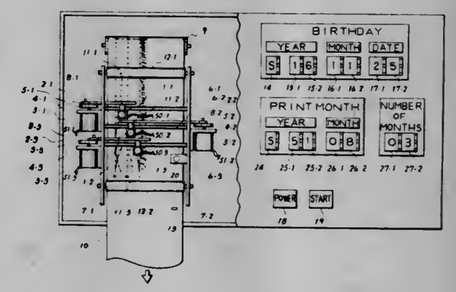


1. An ink jet assembly comprising: a droplet outlet orifice; a droplet producing pressure chamber means operatively communicated with said orifice to express a liquid droplet therethrough; means responsive to electrical pulses to effect a pressure increase in said chamber means; first means for effecting a first electrical pulse at said responsive means to effect a first pressure increase in the liquid in said chamber means; second means for effecting a second electrical pulse, which is separate from said first pulse, at said responsive means for effecting a second pressure increase in the liquid in said chamber means at a predetermined instant after said first pressure increase; the magnitude and duration of said first electrical pulse effecting said first pressure increase of such nature to express a liquid droplet from said droplet outlet orifice; the expression of a droplet from said droplet outlet orifice resulting in an inherent vibration amplitude of the meniscus formed in said outlet orifice after the droplet leaves therefrom; the predetermined instant, the magnitude and duration of said second electrical pulse effecting said second pressure increase of such nature to provide a pressure front at an effective meniscus dampening zone at substantially the instant the droplet leaves said orifice to substantially dampen the inherent vibration amplitude of the meniscus and decrease the period of meniscus stabilization.

4,112,434
BIORHYTHM CHART DRAWING-UP APPARATUS

Yujiro Shirai, No. 4-9 Sugamo 3-chome, Toshima-ku, and Akinori Satake, both of Tokyo, Japan, assignors to Yujiro Shirai, Tokyo, Japan

Filed Sep. 7, 1977, Ser. No. 831,158
Claims priority, application Japan, Sep. 10, 1976, 51-108448
Int. Cl.² G01D 9/00, 9/28; A61B 5/00
U.S. Cl. 346—33 ME **3 Claims**



1. A biorhythm chart drawing-up apparatus comprising digital switches for setting a date for the birthday of an examinee, a date for examination and a number of months to be recorded monthly, pulse motors provided in association with a physical rhythm, a rhythm of sentiment and a rhythm of intellect, said pulse motors rotate in association with respective periods, discs respectively coupled to an axis of each of said pulse motors, pins eccentrically extending from the center of respective said discs, converting means for converting circular motions of said pulse motors into reciprocating motions by T-shaped piston rods provided with slits for guiding said pins, guide members for guiding said piston rods, plungers provided with ball point pens contactedly movable on a recording paper, respectively fixed to said piston rods, a control unit for storing data put in by said digital switches, said control unit calculates respective guide numbers for respective biorhythms and provides a number of pulses corresponding to the guide number for placing said ball point pen at a starting point for drawing up a biorhythm chart, a feeding means for feeding said recording paper up to a distance determined by said digital switch for setting the number of months to be recorded, a first start controlling means, for detecting a reference position, provided in said recording paper, at a time of drawing up said chart for the first date in a month, which date arrives at a position below a first ball point pen positioned in a feeding direction and above said recording paper so as to initiate rotation of said pulse motor corresponding to the period of physical rhythm and energize said plunger to have said ball point pen contact said recording paper for drawing up said chart, a second start controlling means for initiating rotation of said pulse motor corresponding to a period of rhythm to be recorded and energize one of said plungers to have a second of said ball point pens contact said recording paper for drawing up said chart at a time when said first date in the month arrives below said second ball point pen arranged in a second position in the feeding direction of said recording paper, a third start controlling means for initiating rotation of said pulse motor corresponding to a period of rhythm to be recorded and energize one of said plungers to have a third of said ball point pens

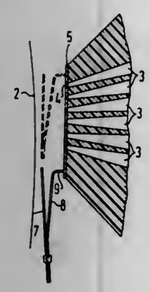
contact said recording paper for drawing up said chart at a time when said first date in the month arrives below said third ball point pen arranged in a third position in the feeding direction of said recording paper, operation interruption means respectively combined with said start controlling means for interrupting rotations of said pulse motors and deenergizing said plungers upon completion of drawing said charts per one month, thereby continuing the feeding of said recording paper up the point of obtaining a feeding length specified by said input data from said digital switches and when detection of said reference position provided in said recording paper for the next month is carried out, the operation is repeated and detection of said reference position is carried out until completion of drawing up said chart for a number of months specified by said digital switches and thereafter, the feeding of said recording paper is stopped.

4,112,435

PROTECTIVE AND CLEANING DEVICE FOR WRITING HEADS IN INK RECORDER DEVICES

Erich Kattner, and Güenter Rosenstock, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 16, 1977, Ser. No. 769,099
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1976, 2607313
Int. Cl.² G01D *15/18*
U.S. Cl. 346—140 R **9 Claims**



1. In an ink recording device having a writing head with a plurality of ink dispensing openings therein, the improvement of a shield device attached to the writing head, the shield device including a shield member positioned in front of the writing head and moveable between a blocking position opposed to the openings and an operating position away from the openings the shield member having a resilient means attached thereto, the resilient means having a wiping face associated therewith, the wiping face urged into contact with an end face of the writing head under spring action of the resilient means, movement of the shield from the blocking to the operating position causing movement of the wiping face across an end face of the writing head.

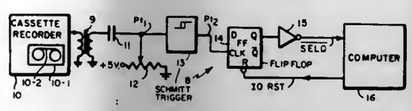
4,112,436

GLASS NOZZLE ARRAY FOR AN INK JET PRINTER AND METHOD OF FORMING SAME

Donald Roy Cone, Palo Alto, Calif., assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 24, 1977, Ser. No. 771,523
Int. Cl.² G01D *15/18*; B23P *17/00*
U.S. Cl. 346—140 R **20 Claims**

1. A method of forming a glass nozzle array for use in an ink jet printing apparatus as part of an orifice plate, charge ring assembly or the like, the steps comprising:
supporting a plurality of cylindrical glass tubes in spaced parallel alignment;
placing a first plate beneath said tubes in a plane parallel thereto;
spreading epoxy resin through the spaces between said tubes and onto the upper surface of said first plate;
placing a second plate above said tubes in a plane parallel to said first plate and having a lower surface in contact with said epoxy resin;



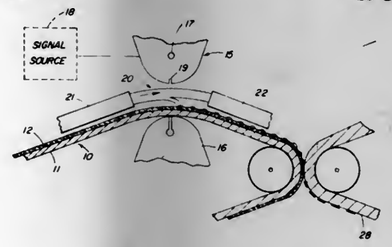
curing said resin to form an assembly of said plates, tubes and epoxy;
cutting said assembly orthogonal to the axes of said tubes at a predetermined thickness to form said nozzle array.

4,112,437

ELECTROGRAPHIC MIST DEVELOPMENT APPARATUS AND METHOD

José Manuel Mir, Webster, and Jerry Reubon Varner, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,142
Int. Cl.² G03G *15/044*
U.S. Cl. 346—159 **18 Claims**



1. A method of electrographic imaging comprising the steps of:
(a) modulating a stream of ions directed toward an imaging zone in accordance with an image pattern;
(b) flowing a mist of substantially-neutrally-charged colorant-activating particles over said imaging zone and through said ion stream;
(c) moving a receiver through said imaging zone in synchronization with the modulation of said ion stream so that colorant-activating particles can deposit thereon in said image pattern; and
(d) providing a developer for contacting deposited particles and for cooperating with such particles to form a developed image pattern.

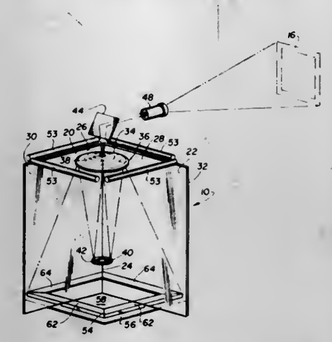
4,112,438

METHOD AND PROJECTION APPARATUS

Dale A. Jones, 11A Bayview La., Huntington, N.Y. 11743

Filed Jul. 18, 1977, Ser. No. 816,443
Int. Cl.² G03B *21/06, 21/28*
U.S. Cl. 353—66 **23 Claims**

1. In an apparatus for the projection of a completed image of an incomplete object,
at least two reflective surfaces perpendicularly arranged relative to each other to complete the reflection of an incomplete object positioned in an area partially bounded by said mirrors,
means for illuminating the incomplete object,
a parabolic reflector to receive the completed reflection of the incomplete object and to reflect the same in condensed form as a completed image,
a reflective member receiving said condensed completed image to reflect the same through said parabolic reflector,



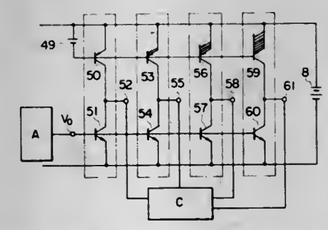
means on said parabolic reflector to permit said condensed completed image to pass through the same, and
a further reflective means angled to receive said completed reflected image after the same is directed through said parabolic reflector and to reflect the completed image onto a surface such that the image reflected onto a surface appears to be the reflection of a completed image of the incomplete object.

4,112,439

DIGITAL DISPLAY CIRCUIT FOR A PHOTOGRAPHIC EXPOSURE METER

Masahiro Kawasaki, and Yoshio Sawada, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1976, Ser. No. 744,851
Claims priority, application Japan, Nov. 25, 1975, 50-140,917
Int. Cl.² G03B *7/08, 17/20*
U.S. Cl. 354—23 D **6 Claims**



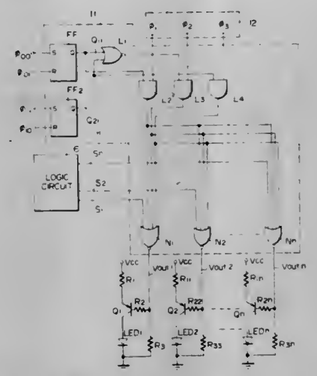
1. An analog-to-digital converter circuit for a photographic exposure meter, comprising;
a. a light measuring circuit for producing an output voltage proportional to the logarithm of the brightness of an object as a function of predetermined photographic parameters,
b. a plurality of transistors connected in parallel and having equal emitter areas,
c. means connecting the output voltage of said light measuring circuit to the base of each of said transistors,
d. an equal plurality of constant current sources for producing output currents differing from each other in accordance with a predetermined ratio, and
e. means individually connecting the outputs of said constant current sources to the collectors of said plurality of transistors, whereby the voltages produced at the collectors of said plurality of transistors represent a digital threshold conversion of the output voltage of said light measuring circuit in accordance with said predetermined ratio.

4,112,440

CONTROL CIRCUIT FOR EXPOSURE INFORMATION INDICATOR

Kenji Kanemaru, Musashino, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 25, 1977, Ser. No. 771,994
Claims priority, application Japan, Feb. 25, 1976, 51-18960
Int. Cl.² G03B *17/20*
U.S. Cl. 354—23 D **4 Claims**



1. A control circuit for an exposure information indicator in a photographic camera in which a light measuring photoreceptor is connected to a circuit for converting the output of the photoreceptor to a voltage indicative of the scene brightness measured by the photoreceptor, and the output of the circuit is used for indicating exposure information by means of a light emitting indicator wherein the improvement comprises means connected with said converting circuit for generating a plurality of digital output signals which represent the level of the output voltage of said converting circuit, a plurality of means for generating pulses which have different duty cycles, and a selecting circuit connected at its input with said signal generating circuit and said plurality of pulse generating means and at its output with said light emitting indicator for selecting said plurality of digital output signals and selecting said pulses of different duty cycles to be fed to the light emitting indicator, whereby the luminance of the light emitting indicator is controlled to correspond to the scene brightness.

4,112,441

EXPOSURE CONTROL DEVICE

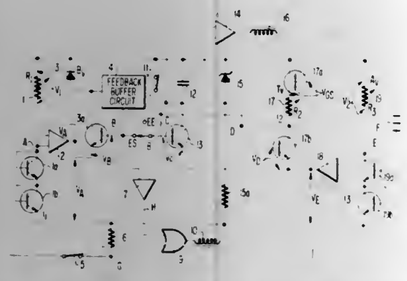
Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1975, Ser. No. 644,012
Claims priority, application Japan, Dec. 26, 1974, 50-4470[U]
Int. Cl.² G03B *7/08*
U.S. Cl. 354—24 **3 Claims**

1. An automatic exposure control device for a camera, said device being capable of accomplishing at least the aperture cominant exposure control operation and the shutter dominant exposure control operation, said device being of the type having a logarithmic compression circuit for developing voltages V_E, V_D, V_A and V_B dependent on the APEX indicating quantities Av, Tv, Sv and Bv, respectively, of aperture level A, manual exposure time T, film sensitivity S and brightness of an object B, so as to carry out the APEX operation in accordance with the relationship of $Av + Tv = Sv + Bv$; shutter speed control means for said camera having an input circuit means, said shutter speed control means being adapted to control the shutter speed in dependence upon the voltage applied to said input means, an aperture level determining means selectively

operative to start adjustment of the aperture mechanism of said camera in response to the shutter release operation of said camera and to carry out said adjustment at a predetermined speed; said logarithmic compression circuit means including an aperture transducer means coactive with said aperture level determining means to develop said voltage V_E dependent upon the Av quantity; the improvement being characterized by

a. automatic aperture circuit means responsive to the voltages corresponding to the Bv, Sv and manually set Tv quantities for stopping the aperture level determining means when the aperture mechanism is closed down an amount to cause said developed voltage V_E to become equal or greater than $(V_A+V_B-V_D)$, said automatic aperture circuit means being selectively connectable and disconnectable with said aperture level determining means for shutter dominant and aperture dominant operations, respectively, and



b. switchable shutter circuit means for selectively applying to said input circuit of said shutter control circuit, a voltage dependent directly upon V_D for shuter preferred operation and a voltage dependent upon $(V_A+V_B-V_E)$ for aperture dominant operation, wherein said switchable shutter circuit means comprises, a transistor having base, emitter and collector terminals, said emitter being connected to said voltage V_E, said collector being connected to said shutter speed conrol means, and switch means selectively connecting the base of said transistor to a point of voltage V_A+V_B for aperture dominant operation and to a point of voltage V_D+V_E for shutter dominant operation.

4,112,442

CAMERAS WITH ELECTRICALLY CONTROLLED EXPOSURE FOR USE WITH ELECTRONIC FLASH DEVICE

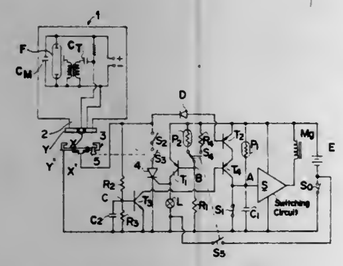
Keisuke Maeda, Osaka, and Seiji Yamada, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 17, 1976, Ser. No. 742,427

Claims priority, application Japan, Dec. 4, 1975, 50-145357

Int. Cl.² G03B *15/05*

U.S. Cl. 354—31 **9 Claims**



1. A camera for use with an electronic flash device including a flash tube, said camera comprising:

brightness detecting means for generating an output commensurate with the brightness of an object;

level detecting means for detecting the level of the output of said brightness detecting means to generate a low brightness signal only when the brightness of the object is lower than a first predetermined level;

firing circuit means connected to said level detecting means for conditioning said flash tube to fire in the presence of said low brightness signal;

timing means connected to said brightness detecting means for integrating a first current commensurate with the output of said brightness detecting means;

means for initiating the integration of said timing means upon commencement of an exposure;

a switching circuit for terminating the exposure when the voltage of said timing means reaches a second predetermined level;

flash preparation detecting means for detecting whether said flash device has been completely prepared for firing said flash tube;

a current supplying circuit for supplying a second current to said timing means, and including a first and a second switching means and actuated with both of said first and second switching means being conductive, said first switching means being connected to said level detecting means to be conditioned to be conductive in the presence of said low brightness level signal and said second switching means being connected to said flash preparation detecting means to be conditioned to be conductive upon detection of completion of the preparation of said flash device for firing said flash tube, and said second current causing the voltage of said timing means to reach said second predetermined level sooner than with only said first current supplied to said timing means; and

trigger means responsive to the initiation of exposure for actuating said firing circuit and for initiating conduction of said first and second switching means.

4,112,443

SHUTTER AND LOW-LIGHT INDICATOR ACTUATING DEVICE FOR A CAMERA

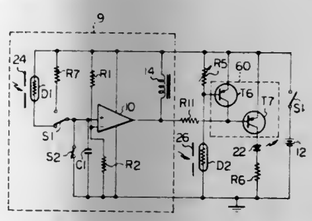
Susumi Iguchi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1977, Ser. No. 760,889

Claims priority, application Japan, Jan. 26, 1976, 51-7658; Jan. 27, 1976, 51-8190; Jan. 27, 1976, 51-8492[U]

Int. Cl.² G03B *7/08*

U.S. Cl. 354—31 **4 Claims**



1. A shutter and low-light indicator actuating device comprising:

a D.C. voltage source;

light sensitive shutter actuator means powered by the voltage source for producing an electric shutter opening signal for a length of time corresponding to the sensed light level;

light sensitive low-light sensor means connected directly across the voltage source for producing an electric signal analogous to the sensed level; and

comparator means connected to the low-light sensor means and the shutter actuator means for producing an electric indicator activating signal only while the electrical signal produced by the low-light sensor means corresponds to a sensed light level below a predetermined value and the shutter opening signal is produced by the shutter actuator means;

the comparator means comprising an indicator current switching transistor, the shutter actuator means being connected to a base of the switching transistor, and a voltage comparator transistor, a base of the comparator transistor being connected to the low-light sensor means and a collector circuit of the comparator transistor being connected between the base of the switching transistor and the voltage source in such a manner that the comparator transistor is turned off while the electric signal produced by the low-light sensor means corresponds to a sensed light level below the predetermined value and turned on thereby connecting the base of the switching transistor to the voltage source with a polarity to turn off the switching transistor while the electric signal produced by the low-light sensor corresponds to a sensed light level above the predetermined value.

4,112,444

CAMERA WITH PHOTOFLASH MEANS AND DATA PHOTOGRAPHIC MEANS OPERATED WITH SINGLE BATTERY

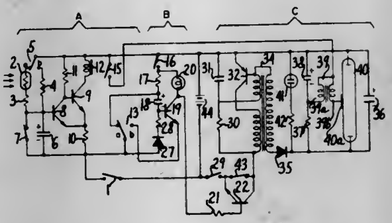
Tomoo Yonemoto; Yukio Morino; Hiroaki Ishida, and Shinji Nagaoka, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Aug. 17, 1977, Ser. No. 825,400

Claims priority, application Japan, Aug. 17, 1976, 51-109784[U]; Aug. 17, 1976, 51-109785[U]

Int. Cl.² G03B *17/24, 15/03*

U.S. Cl. 354—106 **4 Claims**



1. A camera with at least photoflash means and data photographic means operated with a single battery, said photoflash means having means for performing its preparatory operation of charging a main capacitor with high voltage produced in a step-up circuit by electrical oscillation with the battery used as a power source and its flash operation in synchronization with exposure operation for flash photography, said data photographic means being so arranged as to electrically control its operation of recording data on film with the same battery used as a power source, said camera comprising means for interrupting the preparatory operation of the photoflash means with an operating signal for the data photographic means during its recording operation, in case a picture is taken by operating the photoflash means and the data photographic means.

4,112,445

TELEVISION PLAYER WITH AN IDENTIFICATION SIGNAL ADDING DEVICE

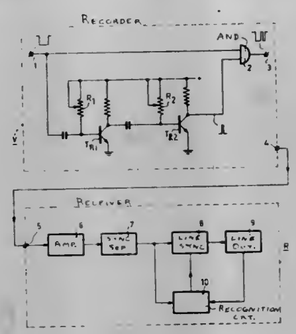
Wolfgang Otto Gotthard Steinkopf, Eindhoven, Netherlands, and Rudolf Drabek, Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 592,866, Jul. 3, 1975. This application Jan. 31, 1977, Ser. No. 763,982

Claims priority, application Netherlands, Jul. 15, 1974, 7409514

Int. Cl.² G11B *5/02*

U.S. Cl. 358—127 **19 Claims**



1. A television player desirably for use with a receiver having an identification signal recognition circuit, said player comprising a video storage device means for storing a recorded video signal, and means for adding an identification signal at specific predetermined locations to said video signal so that said recorded video signal can be distinguished upon playback by said recognition circuit of said receiver from a standard broadcast television signal, said identification signal not being detected in said player and being compatible with a standard broadcast television signal, whereby said recorded video signal with said added identification signal can be reproduced by a receiver not having said identification signal recognition circuit.

4,112,446

EXPOSURE CONTROL CIRCUIT FOR CAMERAS WITH SHUTTER RELEASE LOCKING MEANS

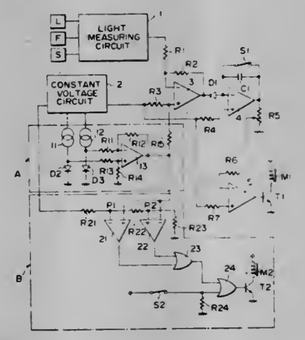
Saburo Numata, and Shinichiro Okazaki, both of Urawa, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya-shi, Japan

Filed Jul. 15, 1977, Ser. No. 816,187

Claims priority, application Japan, Jul. 17, 1976, 51-85400

Int. Cl.² G03B *7/08, 17/38*

U.S. Cl. 354—50 **6 Claims**



1. An exposure control circuit for a camera with a shutter release locking means comprises a light measuring circuit for measuring the scene brightness, an arithmetic circuit con-

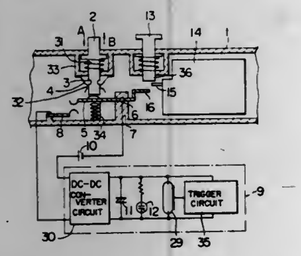
nected with the light measuring circuit, and an exposure determining circuit connected with the arithmetic circuit for determining the exposure of a film in the camera according to the output of the arithmetic circuit, wherein the improvement comprising a temperature compensating circuit which measures the ambient temperature of the camera and compensates the output of said arithmetic circuit for the temperature, said temperature compensating circuit having a compensable range in which the output of the arithmetic circuit can be correctly compensated for the ambient temperature, and a shutter release locking circuit connected with said temperature compensating circuit for locking the shutter release when the ambient temperature is beyond the compensable range.

4,112,447

FLASH AND CAMERA DEVICE

Hiroshi Iwata, Osaka, Japan, assignor to West Electric Co, Ltd., Osaka, Japan

Filed Mar. 14, 1977, Ser. No. 777,351
Claims priority, application Japan, Mar. 17, 1976, 51-29511
Int. Cl.² G03B *17/38*
U.S. Cl. 354—145 **3 Claims**



1. A flash and camera device having in combination a photographic camera device and an electronic flash device in which energy stored in a main discharge capacitor is consumed by a flash discharge tube to emit flash light, comprising:
- a power supply battery;
- a switch having a pair of electric contacts which when closed connects said power supply battery to said electronic flash device;
- a closing means movable between a switch opening and switch closing position for closing said switch;
- a lock means for maintaining said closing means in said switch closing position; and
- a releasing means operative in response to the depression of a shutter button of said photographic camera device for releasing said lock means and allowing said closing means to move to said switch opening position.

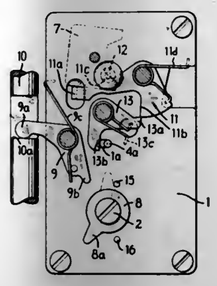
4,112,448

RESETTABLE SELF-TIMER

Yukio Nakamura, and Shogo Kato, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Dec. 20, 1976, Ser. No. 752,557
Claims priority, application Japan, Dec. 19, 1975, 50-171639[U]
Int. Cl.² G03B *9/64*
U.S. Cl. 354—239 **9 Claims**

1. A self-timer mechanism for a camera comprising rotatable driving means which is biased to rotate in a predetermined angular direction for driving a camera shutter release member, charging means for rotating said driving means in the opposite angular direction, a member having a drive connection with said driving means, locking means for releasably locking the said member and thus said driving means, release means which is movable into a released position for releasing said locking means to permit said driving means to rotate in the said predetermined angular direction, and drive disconnection means which, whenever said charging means is operated to rotate said driving means in the said opposite angular direction, effects disconnection of said connection and movement of said



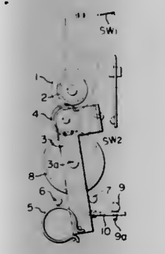
locking means into its locked position, the said drive connection being automatically restored when the charging means is no longer so operated.

4,112,449

STOP MOTION DEVICE FOR MOTOR DRIVEN DEVICE

Shigeo Akasaka, Kodaira, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 15, 1976, Ser. No. 723,583
Claims priority, application Japan, Oct. 4, 1975, 50-119378
Int. Cl.² G03B *1/18*; B65H *25/04*
U.S. Cl. 354—173 **10 Claims**



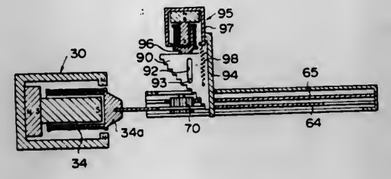
1. In apparatus having an electric motor energized from a power circuit for driving a mechanism, a stop motion device for deenergizing the motor when the mechanism is prevented from moving, the stop motion device comprising switch means for opening and closing the power circuit, a displacement member displaceable between a closing position for closing the switch means and an opening position for opening the switch means, means for urging the displacement member in the direction of the closing position when the displacement member is positioned at the closing position, a first transmission member rotatably supported on the displacement member and rotated in response to energization of the motor, a second transmission member engaged with the first transmission member and normally rotated thereby to drive said mechanism, and means supporting said displacement member such that when said mechanism is prevented from moving and the second transmission member is stopped, the first transmission member is compelled to turn around the second transmission member by the driving force of the motor and to displace the displacement member to the opening position.

4,112,450

SHUTTER DEVICE FOR A PHOTOGRAPHIC CAMERA

Toshihiro Kondo, Chofu, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan, a part interest

Filed Feb. 16, 1977, Ser. No. 769,299
Claims priority, application Japan, Feb. 18, 1976, 51-16765; Apr. 12, 1976, 51-41135; Apr. 1, 1976, 51-36282; Mar. 26, 1976, 51-33764; Mar. 31, 1976, 51-39255[U]
Int. Cl.² G03B *9/14, 9/24, 9/40, 9/62*
U.S. Cl. 354—235 **5 Claims**



1. In a shutter device for a photographic camera, the combination of, a permanent magnet unit comprising an elongated central pole and an outer pole extending parallel thereto, said poles being of opposite polarity and forming a magnetic gap at one end of said central pole, shutter means including a pair of shutter blades each of which has an exposure window, said blades being positioned in side-by-side relationship and being adapted to move longitudinally of a common center line progressively between an exposure position in which said windows are in alignment and a non-exposure position in which the window in each of said blades is closed by the other of said blades, means mounting said blades for said longitudinal movement, said common center line being in substantial alignment with the central portion of said central pole, an electromagnet operatively connected to one of said blades and positioned around said central pole and adapted to move longitudinally through said magnetic gap, means constituting an electric power source including control means to supply electric current to said electromagnet and to reverse the direction of flow therethrough whereby said electromagnet is moved back and forth along an operating path parallel to said common center line, said electromagnet being operatively connected to one of said blades, means mechanical interconnecting said blades whereby said movement of one of them in one direction causes the other blade to move simultaneously in the other direction, a step cam positioned to move perpendicular to said longitudinal movement of said blades and having a plurality of steps each of which provides a stop surface which is transverse to said common center line, said step cam being operatively related to one of said blades whereby it presents a stop surface to the blade and thereby limits the blade movement in one direction, said stop surfaces being spaced from each other in the direction parallel to said common center line whereby the position of said step cam determines which of said stop surfaces limits the movement of the blade, and means to control the position of said step cam to thereby determine the step surface on the respective step which is engaged by the blade and hence the size of the exposure opening provided by overlapping portions of said windows in said plates.

4,112,451

LOW-INERTIA ELECTRONIC SHUTTER

Graham Edward Asker, Ware, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1977, Ser. No. 780,150
Int. Cl.² G03B *9/16, 9/62*
U.S. Cl. 354—258 **3 Claims**

1. In a photographic camera, an improved shutter of the type having an opening blade movable from an aperture covering position to an aperture uncovering position to initiate an exposure, a closing blade movable from an aperture uncovering position to terminate the exposure, a latch actuatable for releasably holding said closing blade in its aperture uncovering position, and an impact member movable between a cocked position and a released position and adapted to engage a portion of said opening blade upon movement from the cocked position to the released position to move said opening blade from its aperture covering position to its aperture uncovering position, the improvement comprising:

said opening blade including a portion disposed to engage said impact member while in its cocked position to secure



said opening blade against inadvertent movement from its aperture covering position; and

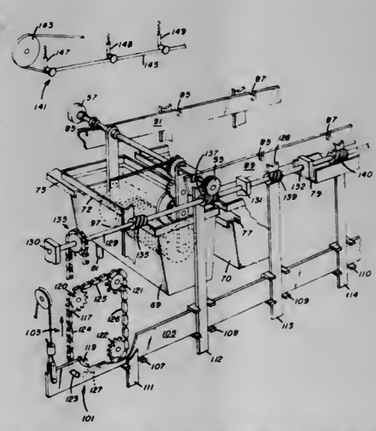
said latch including a cantilever spring the free end of which is adapted to engage a portion of said closing blade, and an electromagnet operatively coupled to said spring, said electromagnet having (1) a first state in which the free end of said spring is urged into latching engagement with said closing blade, and (2) a second state in which said closing blade is released for movement relative to said spring to its aperture covering position.

4,112,452

APPARATUS FOR PROCESSING PHOTOGRAPHIC FILM

David Lynn Patton, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1977, Ser. No. 774,721
Int. Cl.² G03D *3/04*
U.S. Cl. 354—322 **12 Claims**



1. Apparatus for processing in successive baths of processing solutions a plurality of disc-shaped photographic film elements on a spindle, each respective element having a substantially flat imaging surface, the spindle supporting the elements with the imaging surfaces in closely spaced parallel relation relative to each other and defining a longitudinal axis passing through central sections of the elements; said apparatus comprising:

transport means for automatically conveying the spindle and

thereby the film elements between the successive baths and for automatically immersing the elements edgewise, with the spindle axis horizontal, in one bath after another; and

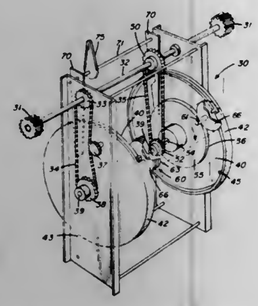
drive means for spinning the film elements about the spindle axis to agitate the elements in each respective bath.

4,112,453

ROTARY FILM PROCESSING APPARATUS

William Joseph Hutchison, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1977, Ser. No. 774,717
Int. Cl.² G03D *3/10*
U.S. Cl. 354—330 **12 Claims**



1. Processing apparatus for processing in photographic processing chemicals a plurality of photographic film elements supported on a common shaft passing through apertures in the central portions of the film elements, said apparatus comprising:

a processing tank for containing photographic processing chemicals, the processing tank having a first side and a second side opposite the first side;

means for supporting the shaft in said processing tank;

means for transporting the supported shaft through the processing tank downwardly from the first side and upwardly toward the second side; and

means for rotating the supported film elements during transport of the supported shaft through said processing tank;

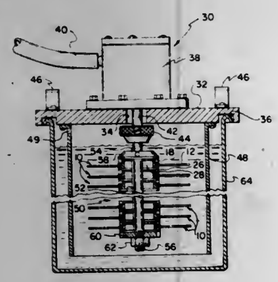
whereby the film elements are simultaneously rotated and transported through the processing chemicals from the first side to the second side of said tank.

4,112,454

METHOD AND APPARATUS FOR TREATING ELEMENTS OF PHOTOGRAPHIC FILM

Donald Malcolm Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1977, Ser. No. 774,722
Int. Cl.² G03D *3/04*
U.S. Cl. 354—330 **8 Claims**



1. Apparatus for processing in a bath of processing solution a plurality of individual photographic film elements, each film element having a centrally-apertured hub having a predetermined thickness and a flat image support having a predetermined thickness less than the thickness of the hub; said apparatus comprising:

an elongate spindle adapted to extend through the hub apertures to receive the film elements;

means for inhibiting relative rotation between said spindle and the film elements, whereby rotation of said spindle on its longitudinal axis will rotate the film elements on such axis;

means for retaining the film elements in side-by-side relationship with the hubs in contact and with the image supports positioned normal to the longitudinal axis of the spindle and in spaced parallel relationship with each other;

means for supporting the spindle with the retained film elements in contact with the bath of processing solution; and

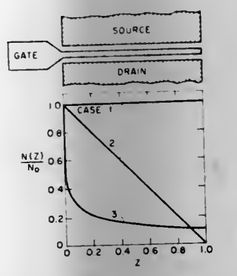
drive means for rotating said spindle with the film elements in contact with the solution to agitate the film elements in the solution and thereby enhance the contact between the film elements and the solution.

4,112,455

FIELD-EFFECT TRANSISTOR WITH EXTENDED LINEAR LOGARITHMIC TRANSCONDUCTANCE

Robert L. Seliger, Agoura, and James W. Ward, Canoga Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1977, Ser. No. 763,265
Int. Cl.² H01L *29/78*
U.S. Cl. 357—23 **2 Claims**



1. A field-effect transistor of the type having a source region, a drain region and a channel region within which current flow takes place between said source and drain regions

said channel region having a length dimension which is uniform and corresponds to the distance over which said current travels as it flows between said source and drain regions of said transistor and having a width dimension which is perpendicular to said length dimension and to the direction along which said current travels as it flows between said source and drain regions,

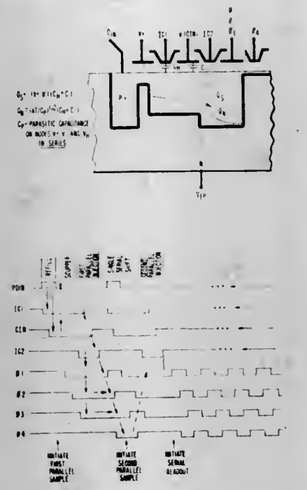
said channel region having a non-linear dopant profile along its width dimension which is such that said field-effect transistor exhibits a logarithmic transconductance which is linear with gate signal voltage over an extended range.

4,112,456

STABILIZED CHARGE INJECTOR FOR CHARGE COUPLED DEVICES WITH MEANS FOR INCREASING THE SPEED OF PROPAGATION OF CHARGE CARRIERS

Donald R. Lampe, Ellicott City; Marvin H. White, Laurel, and Arthur S. Jensen, Baltimore, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 507,115, Sep. 17, 1974, abandoned. This application Oct. 24, 1975, Ser. No. 625,701
Int. Cl.² H01L *29/78*
U.S. Cl. 357—24 **14 Claims**



14. A method of controlling a stabilized charge injection for injecting charges into a receiving well of a charge transfer device, said charge transfer device including an input source/-drain region contacted by a source/drain electrode, and, in succession, a first electrode, a first gate electrode, a second electrode, and a second gate electrode, capacitance means associated with said second electrode and said first gate electrode for increasing the speed of propagation of charges,

wherein said method includes the steps of:

applying an input signal to one of said first and second electrodes, and

applying control signals to said source/drain electrode to operate said region as a source of minority carriers;

rendering said first gate and said second electrode attractive in succession to fill the potential well defined by said first gate electrode and said second electrode with said charge carriers;

operating said diffusion region as a drain to remove excess carriers in a scupper operation, and a transfer process including maintaining said second gate electrode attractive and said first electrode, said second electrode, and said first gate electrode repulsive for injecting charges into a receiving well of said charge transfer device.

4,112,457

PHOTOVOLTAIC DEVICE HAVING AN EXTENDED PN JUNCTION

Robert Vincent D'Aiello, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,915
Int. Cl.² H01L *31/06*
U.S. Cl. 357—30 **5 Claims**

1. A photovoltaic device having a body of semiconductor material comprising:

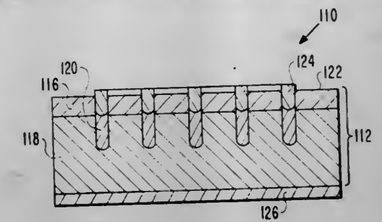
(a) a first region of semiconductor material of one conductivity type and having a predetermined degree of conductivity, said first region having an incident surface where incident radiation is capable of impinging said device;

(b) a second region of semiconductor material of conductivity type opposite to that of said first region, contiguous to said first region and defining therewith a portion of a PN junction;

(c) a plurality of pocket regions electrically coupled to said first region, said pocket regions being of said one conductivity type, said pocket regions defining with said second region further portions of said PN junction, said pocket regions extending from below the incident surface of said first region into said second region thereby extending said PN junction into said second region;

(d) a first electrode in said first region electrically contacting said pocket regions and said first region; and

(e) a second electrode on a surlface of said body opposite said incident surface.

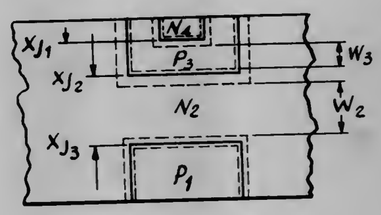


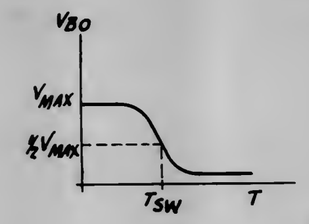
4,112,458

SILICON THYRISTOR SENSITIVE TO LOW TEMPERATURE WITH THERMAL SWITCHING CHARACTERISTICS AT TEMPERATURES LESS THAN 50° C

Stanley V. Jaskolski, Sussex; Robert W. Lade, Waukesha; Herman P. Schutten, Elm Grove, and Gordon B. Spellman, Mequon, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jan. 26, 1976, Ser. No. 652,192
Int. Cl.² H01L *29/74*
U.S. Cl. 357—38 **14 Claims**





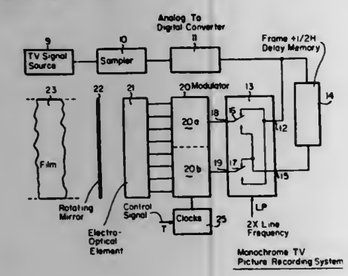
1. A silicon thyristor comprising a bistable semiconductor device comprising three junctions of opposite conductivity type silicon,

said thyristor having a plurality of middle regions disposed between two end regions,
each said end region having a terminal connected thereto,
said thyristor having a low current, high resistance OFF state and a high current, low resistance ON state between said terminals,
said thyristor having a two terminal breakover voltage defined as the magnitude of voltage required to be applied across said terminals, without any bias applied to any of said middle regions, to cause said thyristor to switch from said OFF state to said ON state,
said two terminal breakover voltage exhibiting thermal dependency at low temperature such that said two terminal breakover voltage is nominally equal to one-half Vmax at a temperature less than 50° C,
where Vmax is defined as the maximum value of said two terminal breakover voltage of said thyristor with respect to temperature.

4,112,459
TELEVISION PICTURE PHOTOGRAPHIC FILM RECORDING SYSTEM

Christian Jean Gautier, Acigne; Bernard Marti, Noyal, Vilaine; Michel Robert Mauduit, Pace; André Jean-Francois Louineau, Janze, and Christiane Schwartz nee Luneau, Cesson-Sevigne, all of France, assignors to Etablissement Public dit "Telediffusion de France", Montrouge, France

Filed Sep. 23, 1976, Ser. No. 725,727
Claims priority, application France, Oct. 6, 1975, 75 31014
Int. Cl.² H04N *5/84*
U.S. Cl. 358—6 **12 Claims**

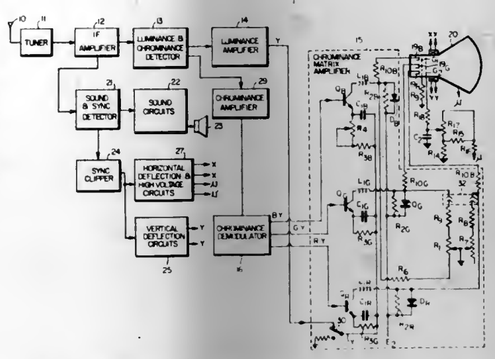


1. A system for recording television pictures on film, said system comprising means for sampling the television video signal at a sampling rate which is determined by the photographic film resolution, every sample including digital luminance and digital chrominance data corresponding to a point in the television picture, digital means for storing said digital luminance and chrominance data in a digital form, means for reading every sample from the digital store in the form of a digital signal, means responsive to said reading means for selectively applying said signals to a set of electrodes of a steady electro-optic device, the said set of electrodes producing an image on a surface of said electro-optic device, and means including a photographic film camera for recording said image in either monochrome or polychrome, the image produced by said set of electrodes being a light point having a luminous intensity and color, which varies as a function of the sample contents.

4,112,460
SIMPLIFIED BIAS AND GAIN ADJUST SYSTEM FOR COLOR CATHODE RAY TUBE

Blayne E. Arneson, Evergreen Park, Ill., assignor to Admiral Corporation, Schaumburg, Ill.

Filed May 2, 1977, Ser. No. 792,610
Int. Cl.² H04N *9/52, 9/537*
U.S. Cl. 358—29 **17 Claims**



1. In a transistor amplifier circuit, a transistor amplifier having a base element, a collector element and an emitter element, first and second potential sources, first and second impedance means for coupling, respectively, said first and second potential sources to said collector element, said first impedance means being variable whereby both the gain of said transistor amplifier and the DC voltage established at said collector element are controlled in proportion to the adjustment of said first impedance means.

5. In a color television receiver comprising:
a. a color CRT having first and second electron guns, each including a cathode element and an accelerating electrode;
b. first and second transistor amplifiers for first and second color channels, respectively, each of said first and second amplifiers having a base, an emitter and a collector;
c. first and second potential sources associated with each of said first and second transistor amplifiers;
d. second impedance means for coupling said second sources to said collectors of said first and second transistor amplifiers; and
e. first variable impedance means for coupling said first sources to said collectors of said first and second transistor amplifiers, said first variable impedance means being varied to control both the gain and the collector DC voltage of said first and second transistor amplifiers in proportion to the adjustment of said first variable impedance means.

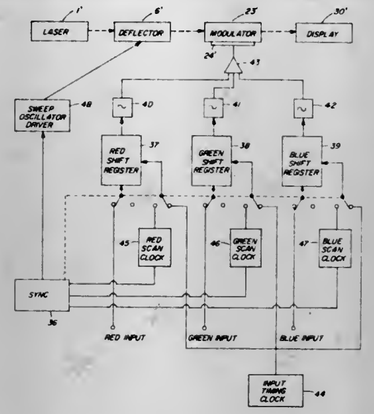
4,112,461
MULTIWAVELENGTH LIGHT BEAM DEFLECTION AND MODULATION

James Carl Owens, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1976, Ser. No. 729,622
Int. Cl.² H04N *9/14*; G02F *1/33*
U.S. Cl. 358—63 **12 Claims**

1. Apparatus for diffracting light of a plurality of different selected optical wavelengths including a first wavelength and at least one other wavelength longer than said first wavelength, said apparatus diffracting the light into a plurality of respectively different wavelength beams such that the diffracted light beams scan the same angular range with no more than a predetermined maximum variation of the light intensity, said apparatus comprising:
an acoustooptic deflector cell in the path of the light;

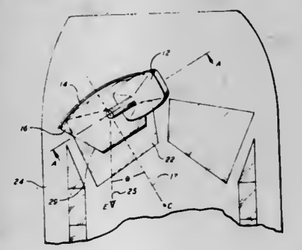
means for generating variable frequency acoustic waves in said cell;
means for selectively activating the light of said first wavelength only during those times during which said variable frequency is within a range which will result in no more than said predetermined maximum light intensity variation, and for selectively activating the light of said other wavelengths only during those times during which said variable frequency is within a range which will result in angular diffraction ranges which will match the angular diffraction range of the diffracted light of said first wavelength when activated.



4,112,462
INFINITY IMAGE DISPLAY HAVING INCREASED VERTICAL FIELD OF VIEW

ichard A. Mecklenborg, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Nov. 26, 1976, Ser. No. 745,004
Int. Cl.² H04N *7/18*
J.S. Cl. 358—104 **23 Claims**

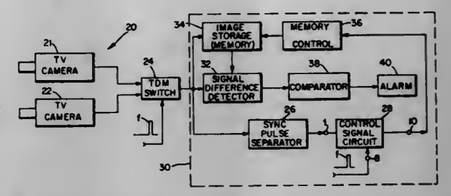


1. A method for increasing the field of view of a displayed image provided by an image source-spherical mirror-beam-splitter display to an observer whose eyepoint is normally located near the center of curvature of said mirror, said display being operable to transform an input image from the image source into a displayed image that appears to be at infinity to said observer, comprising the steps of:
shifting the mirror's center of curvature laterally and rearwardly with respect to the observer's eyepoint; and
displacing the input image to correct any heading error of the displayed image produced by the shifting step.

4,112,463
SYSTEM FOR DETECTING A MOTION IN THE MONITORING AREA OF TWO OR MORE TELEVISION CAMERAS

Gerhard Robert Kamin, Traisa, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 31, 1977, Ser. No. 783,322
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613706
Int. Cl.² H04N *5/22, 7/18*
U.S. Cl. 358—105 **6 Claims**

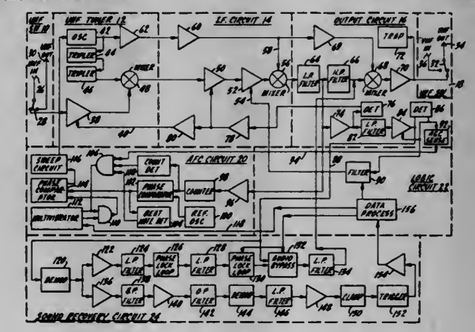


1. A control circuit adapted to be connected in a plural-camera television monitoring system and comprising an input terminal for receiving time-division multiplexed synchronizing signals that are separated from the video signals of a plurality of television monitoring cameras in said system, first means connected to said input terminal for separating from the time-division multiplexed synchronizing signals only the alternatively occurring ones of the vertical signal portions that occur at the beginning of a preselected one of the odd and even video signal picture fields, and second means connected to said first means for deriving a pulse from each separated vertical signal portion to mark the beginning of said pre-selected one of said fields.

4,112,464
SUBSCRIPTION TV DECODER LOGIC SYSTEM

Stanley E. Guif; Terry L. Nimmer; Donald A. Weigt, all of Madison; Glenn Wolenec, Cross Plains, and Richard C. Gall, Middleton, all of Wis., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed May 11, 1977, Ser. No. 795,765
Int. Cl.² H04N *7/16*
U.S. Cl. 358—122 **9 Claims**



9. A subscription TV decoder for processing encoded audio and video signals in which the decoder enabling signal has address and data portions thereof, including audio and video decoder circuits and a decoder enabling circuit connected thereto, said enabling circuit including address storage means, means for comparing the address portion of a received message with the stored address, means responsive to said comparing means for storing the data portion of a message including a plurality of temporary storage elements, means for comparing the data stored in said elements and a further storage element for storing said data when the data in said temporary storage

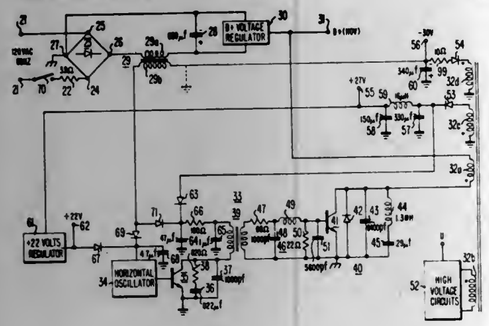
elements is the same, means responsive to a subsequently received enabling message having an address common to a plurality of subscribers for comparing the stored data with the enabling message data, and enabling means responsive to said last-named comparison means for enabling said audio and video decoder circuits.

4,112,465

THRUSH CURRENT START-UP CIRCUIT FOR A TELEVISION RECEIVER INCLUDING A START-UP DECOUPLING CIRCUIT

Donald Henry Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1977, Ser. No. 826,693
Int. Cl.[2] H04N *3/18*
U.S. Cl. 358—190 **10 Claims**



1. A start-up power supply, comprising:
first rectifying means responsive to a source of first alternating current potential for providing a pulsating direct current voltage;
filter means coupled to said first rectifying means for providing a first direct current voltage and in which an inrush current flows during an initial interval;
a first inductor coupled to said filter means in which said inrush current flows;
first means coupled to said first inductor and responsive to said inrush current for developing a second alternating current potential during said initial interval;
a load circuit;
second rectifying means coupled to said first means and responsive to said second alternating current potential for coupling a first operating voltage to said load circuit during said initial interval;
second means coupled to said load circuit for providing a second operating voltage to said load circuit for replacing said first operating voltage during a steady state interval; and
third means for coupling a third voltage to said second rectifying means, said third voltage varying in value from said initial interval to said steady state interval in a manner providing for decoupling of said second alternating current potential from said load circuit during the entirety of said steady state interval.

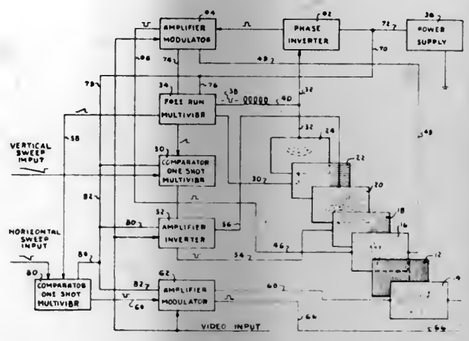
4,112,466

FLAT TELEVISION SCREEN

Donald J. Bendiks, 1020 W. Water St., New Buffalo, Mich. 49117

Filed Jun. 11, 1976, Ser. No. 695,023
Int. Cl.[2] H04N *3/14*
U.S. Cl. 358—241 **2 Claims**

1. A television apparatus comprising: a plurality of sheets in planular juxtaposition, at least one of said sheets being an electroluminescent sheet, and other of said sheets being electroconductive sheets and electrically resistant sheets, means responsive to a horizontal sweep input to apply electrical pulse signals to propagate horizontally through two of said electroconductive sheets so that in one sheet the electrical pulse signals propagate from left to right and in the other from right to left, means responsive to a vertical sweep input to apply electrical pulse signals to propogate vertically through two of said electroconductive sheets so that in one sheet the electrical pulse signals propagate from top to bottom and in the other from bottom to top, means to modulate said electrical pulse signals with a video input, so that said electroluminescent sheet produces an electroluminescent dot at a point where the horizontal and vertical pulse signals intersect while propagating



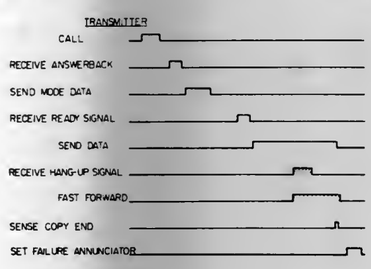
through the electroconductive sheets, said electroluminescent sheet being interposed between two of said electroconductive sheets, and an electrically resistant sheet being interposed between each of the remaining planular juxtaposed electroconductive sheets, said sheets having an order from first to last, one of said electroconductive sheets for horizontal signals, said electroluminescent sheet, the other electroconductive sheet for horizontal signals, an electrically resistant sheet, one of said electroconductive sheets for vertical signals, another electrically resistant sheet, and the other electroconductive sheet for vertical signals.

4,112,467

FAILURE MODE CONTROL APPARATUS FOR ELECTRONIC GRAPHIC DATA TRANSMISSION SYSTEM

Mutsuo Ogawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1976, Ser. No. 751,878
Claims priority, application Japan, Dec. 30, 1975, 50/158565
Int. Cl.[2] H04N *1/32*
U.S. Cl. 358—257 **7 Claims**



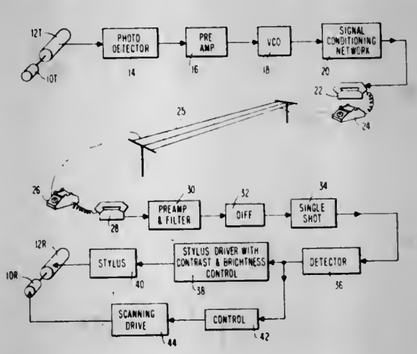
1. In an electronic data transmission system including a transmitter and a receiver, a failure mode control apparatus comprising:
transmitter failure sensing means provided to the transmitter to detect a transmitter failure;
transmitter failure signal generator means provided to the transmitter to generate a transmitter failure signal in response to the detected transmitter failure and transmit the transmitter failure signal to the receiver;
transmitter reset means provided to the transmitter to reset the transmitter to an initial status thereof in response to the detected transmitter failure;
receiver failure sensing means provided to the receiver to detect a receiver failure;
receiver failure signal generator means provided to the receiver to generate a receiver failure signal in response to the detected receiver failure and transmit the receiver failure signal to the transmitter; and
receiver reset means provided to the receiver to reset the receiver to an initial status thereof in response to the detected receiver failure, the receiver reset means being further operative to reset the receiver to the initial status thereof in response to the transmitter failure signals;
the transmitter reset means being further operative to reset the transmitter to the initial status thereof in response to the receiver failure signal.

4,112,468

FACSIMILE RECEIVER

Richard L. Nelson, New York, N.Y., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 21, 1975, Ser. No. 606,506
Int. Cl.[2] H04B *1/02, 1/22*
U.S. Cl. 358—280 **6 Claims**



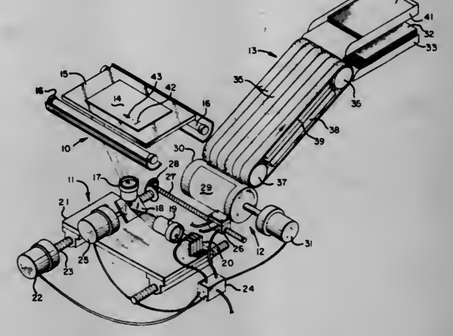
1. A facsimile receiver for producing a copy at a receiving location in response to FM signals transmitted over conventional voice communication lines where said FM signals lie within a predetermined facsimie facsimile and represent light-dark variations in a document at a remote transmitting location one frequency substantially representing white on the document and another frequency substantially representing black on the document said receiver comprising:
trigger means responsive to said FM signals to generate trigger signals having a variable frequency proportional to the frequency of said FM signals;
a single-shot multivibrator coupled to the output of said trigger means for generating a multivibrator output signal having an astable state of fixed duration initiated in response to said trigger signals, the ratio of the astable state duration to the period of the multivibrator cycle being directly proportional to the frequency of said trigger signals;
detecting means coupled to the output of said single-shot multivibrator for detecting the ratio of said astable state duration to the period of the multivibrator cycle in generating a control signal representing said ratio;
a stylus drive circuit coupled to the output of said detecting means and responsive to said control signal said stylus drive circuit comprising a transistor having a base terminal coupled to the output of said detecting means;
a stylus coupled to the output of said stylus drive circuit for marking a copy medium to reproduce light-dark variations in said document;
scanning means for moving said stylus relative to said copy medium; and
control means having an input connected to the output of said detecting means and an output connected to the input of said scanning means for deactivating said scanning means when the ratio of said astable state duration to the period of the multivibrator cycle falls below a predetermined level indicating a poor signal quality transmission or loss of signal from the remote transmitting location;
the improvement comprising:
filter means coupled to the input of said trigger means for passing FM signals in the facsimile band while substantially attenuating noise signals outside said band so as to substantially preclude the erroneous interruption of said scanning by said control means in response to noise signals while the receiver is receiving FM signals in the facsimile band while at the same time improving the quality of the facsimile; and
contrast control means comprising a potentiometer connected in the collector-emitter circuit of said transistor, said stylus also being connected to said collector-emitter circuit for adjusting the output of said drive circuit so as to control the contrast in the light-dark variations on said copy medium.

4,112,469

JET DROP COPYING APPARATUS

Suresh C. Paranjpe, and James E. Burnett, both of Xenia, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 21, 1977, Ser. No. 789,417
Int. Cl.[2] H04N *1/04, 1/22*
U.S. Cl. 358—296 **9 Claims**



1. Jet drop printing apparatus for copying or duplicating comprising:
Rotary support means for supporting a print receiving sheet,
Paper handling means for feeding said sheet to the rotary support means and removing the sheet therefrom,
Rotary drive means for causing rotary motion of the rotary support means,
A print head including an orifice plate provided with a series of orifices defining an array of jet printing nozzles for generating an array of parallel jets to print a series of non-contiguous tracks of image information on a sheet mounted as aforesaid on the rotary support means and rotated therewith,
Advancing means for advancing said array of jets in a direction parallel to the axis of said rotary motion and at a speed for interlacing said tracks to produce a solid coverage print,
Flat bed document support means for supporting a document to be copied,
Illuminating means for illuminating said document,

Collimating means for collimating light reflected by said document,

A rotating mirror assembly for variable angular deflection of said collimated light in correspondence with the rotation of the rotary support means,

A focusing lens for focusing said collimated and angularly deflected light to create an image of at least a part of said document,

An array of photosensing elements arranged in like manner as said jet printing nozzles and positioned at the image plane of the focusing lens,

Transport means for transporting said photosensing elements, said focusing lens, said mirror assembly, and said collimating means in a direction parallel to the axis of rotation of the mirror assembly and in synchronism with aforesaid axial advancing of said nozzle array,

Print control means responsive to the photosensing elements for controlling the operation of said nozzles, and

Means for initiating removal of the print receiving sheet from the rotary support means by the paper handling means.

4,112,470

SYSTEM FOR REPEATEDLY REPRODUCING A RECORDED MATERIAL OF A LIMITED DURATION

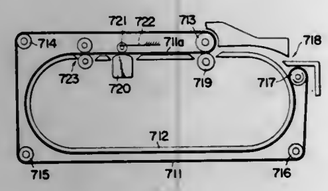
Satoshi Yamauchi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1976, Ser. No. 655,574

Claims priority, application Japan, Feb. 6, 1975, 50-15783

Int. Cl.² G11B *15/26*; G06K *13/18, 13/24*

U.S. Cl. 360—88 **17 Claims**



1. A system for repeatedly reproducing recorded information of a limited duration comprising in combination:

a. a recording medium comprising at least one recording tape of predetermined length having respective information recorded thereon along at least one recording track extending in the lengthwise direction of the tape; and

b. a playback unit comprising:

i. means defining a circulating path for accommodating said tape for circulating therethrough, said path having a length longer than the tape length and an inlet for the tape;

ii. means for continuously circulating the tape entered from said inlet around said path in one direction, said circulating means comprising: a stationary member disposed along the inside of said circulating path and having its outer surface finished smoothly; a plurality of rollers; and an endless belt entrained around said plurality of rollers and having a run which is maintained in sliding contact with the outer surface of said stationary member and serves as a driving means for the tape through the frictional engagement of one surface thereof with the tape, at least one of said rollers serving as a drive roller;

iii. means disposed along said path for picking up the information recorded on the circulating tape;

iv. means for reproducing the picked up information; and

v. means for optionally diverting the circulating tape out of said path to deliver the same outside the unit.

4,112,471

DISK CARTRIDGE CONTAMINATION SHIELD

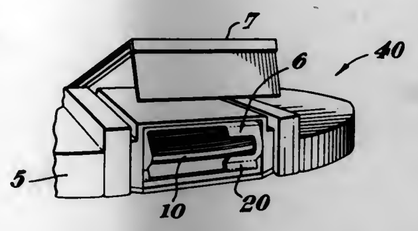
Christopher A. Pollard, Kinneswood, and David Stiven, Kirkcaldy, both of Scotland, assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 4, 1976, Ser. No. 729,532

Claims priority, application United Kingdom, Mar. 2, 1976, 8218/76

Int. Cl.² G11B *23/02, 25/04, 5/012*

U.S. Cl. 360—98 **10 Claims**



1. In an information storage apparatus having a rotatable memory disk and a disk drive unit including a transducer, a housing positionable within the apparatus comprising:

(a) a disk cartridge containing a disk, said disk cartridge having an aperture formed therein to permit the transducer to be juxtaposed to said disk, said aperture allowing air-borne contaminants to flow freely therethrough when the transducer is in juxtaposition to said disk, and

(b) means supported by said disk cartridge for substantially reducing the flow of air-borne contaminants through said aperture when said transducer is in juxtaposition to said disk,

said means having a contoured first transverse edge-surface and a contoured-and-slotted second transverse edge-surface,

where both of the contours are shaped so that the surfaces radially straddle the disk circumference, with the top and bottom ends of the surfaces located radially closer than the midpoints of the surfaces to the disk axis, and

where the slot enables the second transverse edge-surface to cross-circumferentially, as well as radially, straddle the disk circumference, with the aperture-end of the surface located radially closer than the cartridge-end of the surface to the disk axis.

4,112,472

LONGITUDINAL SCAN, CAM SHAPED, TURNTABLE ROTOR FOR MAGNETIC RECORDING

Francis Edward Hauke, Boulder; Everette Ray McCully, Erie, both of Colo.; Robert Marion McElroy, Jr., Huntsville, Ala.; Peter Alan Stevenson; Stephen Martin Vogel, both of Boulder, Colo., and John Walton Woods, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,892

Int. Cl.² G11B *15/64, 15/60, 21/04*

U.S. Cl. 360—102 **7 Claims**

1. A longitudinally scanned recording device comprising in combination:

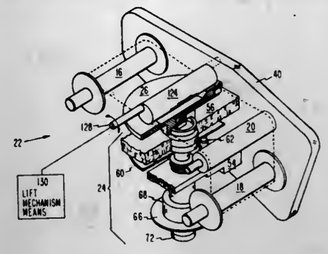
a length of media positioned in a first plane;

a turntable rotor, said turntable rotor having an axis of rotation substantially perpendicular to the first plane and a transducing surface thereon with an apex, and a sloping profile facing the media;

transducing means being operably positioned on the apex of said transducing surface;

transporting means operable to transport said media past the transducing means;

drive means operable to rotate said transducing means relative to said media whereby an air film is being developed between the transducing means and the media thereby enabling the media to fly relative to the transducing means



as data is being transduced into arcuate tracks on said media.

4,112,473

APPARATUS FOR DETERMINING A D-C POTENTIAL IN METAL-ENCAPSULATED HIGH VOLTAGE SWITCHING INSTALLATIONS AND EQUIPMENTS

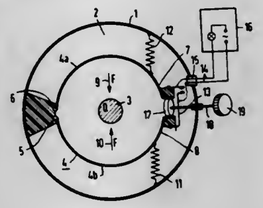
Willi Olsen, and Christian Pircher, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1976, Ser. No. 742,222

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1975, 2552381

Int. Cl.² H02H *1/00*

U.S. Cl. 361—1 **6 Claims**



1. Apparatus for determining the d-c potential in a metal-encapsulated switching installation equipped with at least one high-voltage conductor supported by insulators within a grounded encapsulation, the apparatus comprising:

a measuring device including:

a first means responsive to the charge on said conductor, said first means including a hollow cylinder surrounding said conductor and spaced therefrom by an insulated space, said hollow cylinder being split along its axis to form two pivotably supported half-shells;

and a second means responsive to said first means for delivering a signal when said d-c potential is present, said second means including a switching device responsive to said cylinder.

4,112,474

CAPACITOR PROTECTIVE DEVICE

S. R. Wilson, Glens Falls, and D. B. Jones, Hudson Falls, both of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Filed Jan. 27, 1977, Ser. No. 763,089

Int. Cl.² H02H *7/16*

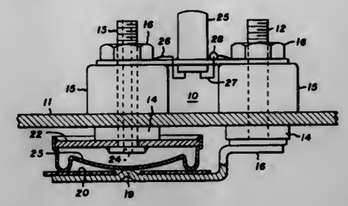
U.S. Cl. 361—15 **7 Claims**

1. In combination with an electrical capacitor, a safety device comprising

a. an electrical switch means having a pair of electrical terminals projecting from said capacitor and adapted to be connected to a source of electrical power other than the power source connecting said capacitor,

b. a pressure sensitive element connected to said switch means and adapted to sense a pressure rise in said capacitor,

c. normally closed electrical contact means connected to said pressure sensitive element and adapted to be opened by a pressure increase in said capacitor,



d. said contacts in their closed position providing an electrical circuit from one of said terminals through said contacts to the other of said terminals,

e. an indicating means electrically connected across said terminals and in shunt with said circuit said indicating means being adapted not to be energized when said switch contacts are in their closed position.

4,112,475

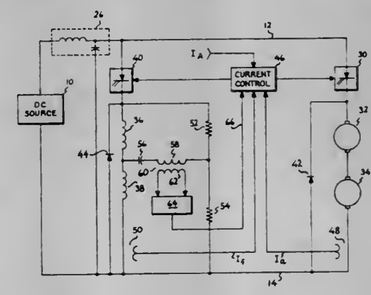
D-C MOTOR FLASHOVER PROTECTION

Thomas Detlor Stitt, and Dennis Francis Williamson, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Dec. 22, 1976, Ser. No. 753,406

Int. Cl.² H02H *7/09*

U.S. Cl. 361—33 **10 Claims**



1. A protection system for a direct current electric traction motor, said motor having armature and field means adapted for receiving direct current electric power from a direct current power source, said system comprising:

a. regulating means interconnecting said motor current path;

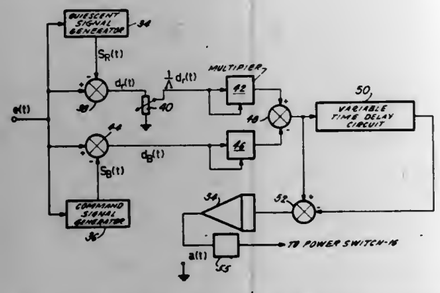
b. detection means connected for monitoring the polarity and magnitude of voltage on said field means, said detection means being responsive to rapid reversal of said polarity for producing a flashover signal; and

c. means coupling said flashover signal to said regulating means, said regulating means being responsive to said flashover signal for interrupting said motor current path.

4,112,476
GROUND FAULT PROTECTION SYSTEM

Hans Benninger, Nussbaumen; Fritz Eggimann, Zurich, and Ole Eskegaard, Gebenstorf, all of Switzerland, assignors to Patelhold Patentverwertungs & Elektro-Holding AG, Glarus, Switzerland

Filed May 20, 1977, Ser. No. 798,760
Claims priority, application Switzerland, May 25, 1976, 6565/76
Int. Cl.² H02H 7/26
U.S. Cl. 361—42 **7 Claims**



1. A ground fault protection system for monitoring a circuit carrying high-voltage between two points A and B and for disconnecting said circuit from the remainder of a high-voltage network when a fault is detected in said circuit, said system comprising:

(a) first and second power switches for disconnecting points A and B, respectively, from the remainder of a high-voltage network when a fault is detected in said circuit;

(B) first detection circuit means for detecting faults occurring in said high-voltage carrying circuit at any location extending from point A to at least one-half the distance to point B and for opening said first and second power switches when a fault is detected, said first detection circuit means comprising:

(1) first fault detector means associated with point A for detecting faults occurring in said high-voltage carrying circuit at any location extending from point A to at least one-half the distance to point B;

(2) first transmission means for generating a quiescent signal $e(t) = S_R(t) + r(t)$ when said first fault detector means does not detect a fault in said high-voltage carrying circuit and for generating a command release signal $e(t) = S_B(t) + r(t)$ when said first detector means detects a fault in said high-voltage carrying circuit;

(3) first receiver means responsive to said signals transmitted by said first transmitter means for causing said second power switch to open when said first detector means detects a fault in said high-voltage carrying circuit, said first receiver means including means for causing said second power switch to open when a first signal

$$w_R = \frac{1}{A^2}\int_{t-T}^{t}[e(\tau) - S_R(\tau)]^2\,d\tau$$

is greater than a second signal

$$w_B = \int_{t-T}^{t}[e(\tau) - S_B(\tau)]^2\,d\tau$$

wherein A is an adjustable factor greater than zero and T is a determinable time delay;

(C) second detection circuit means for detecting faults occurring in said high voltage carrying circuit at any location extending from point B to at least one-half the distance to point A and for opening said first and second power switches when a fault is detected, said first detection circuit means comprising:

(1) second fault detector means associated with point B for detecting faults occurring in said high voltage carrying circuit at any location extending from point B to at least one-half the distance to point A;

(2) second transmission means for generating a quiescent signal $e'(t) = S_R'(t) + r'(t)$ when said second fault detector means does not detect a fault in said high voltage carrying circuit and for generating a command release signal $e'(t) = S_B'(t) + r'(t)$ when said second detector means detects a fault in said high-voltage circuit;

(3) second receiver means responsive to said signals transmitted by said second transmitter means for causing said first power switch to open when said second detector means detects a fault in said high-voltage carrying circuit, said second receiver means including means for causing said first power switch to open when a first signal

$$w_R' = \frac{1}{2}\int_{t-T}^{t}[e'(\tau) - S_R'(\tau)]^2\,d\tau$$

is greater than a second signal

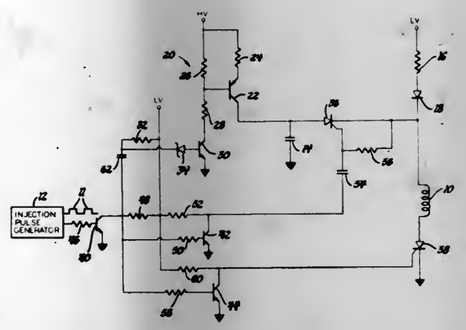
$$w_B' = \int_{t-T}^{t}[e'(\tau) - S_B'(\tau)]^2\,d\tau$$

wherein A is an adjustable factor greater than zero and T is a determinable time delay.

4,112,477
CIRCUIT FOR ENERGIZING A FUEL INJECTOR VALVE COIL

Walter M. Sherwin, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 6, 1977, Ser. No. 803,744
Int. Cl.² H01H 47/32
U.S. Cl. 361—155 **3 Claims**



1. A circuit for energizing a fuel injector valve coil in response to fuel injection pulses to provide measured amounts of fuel to an internal combustion engine, the circuit comprising:

a storage capacitor;

a charging circuit including a relatively high voltage source and a first switch means in series effective to charge the storage capacitor;

a capacitor discharge circuit, the discharge circuit including a second switch means responsive to the initiation of a fuel injection pulse effective to discharge the capacitor through the injector valve coil to affect abrupt injection valve opening and also effective to terminate capacitor discharge when the capacitor discharge current decreases to a predetermined value which is reached after valve opening occurs;

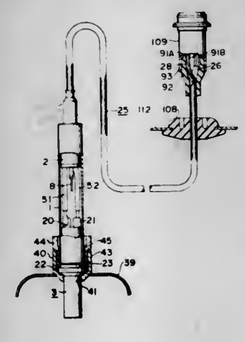
means including a reactive timing element responsive to the initiation of the fuel injection pulse effective to control the first switch means to disable the charging circuit for a predetermined time period required for the capacitor discharge current to decrease to said predetermined value at which the capacitor discharge is terminated, the charging circuit being effective after said predetermined time period to activate capacitor charging; and

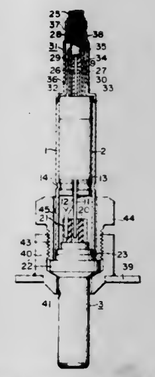
a holding circuit responsive to the injection pulse effective to maintain the injector coil energized for the duration of the injection pulse, the activation of the capacitor charging being independent from the energization of the injector coil by the holding circuit so that the capacitor charges for a time independent from the duration of the injection pulses.

4,112,478
HIGH-TEMPERATURE DETECTING APPARATUS

Toru Takahasi, Mito; Sadayasu Ueno, and Tomoji Inui, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 23, 1977, Ser. No. 780,328
Claims priority, application Japan, Mar. 24, 1976, 51-31253
Int. Cl.² H01N 35/00
U.S. Cl. 361—162 **8 Claims**



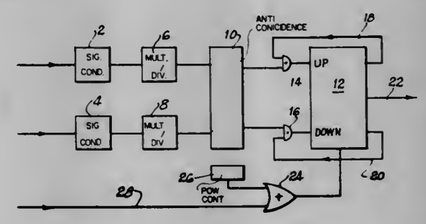


1. A high-temperature detecting apparatus comprising a thermocouple capable of generating an electromotive force by a temperature difference between the hot and cold junctions thereof, an electromagnetic coil, a reed switch disposed within said electromagnetic coil, first connecting means for connecting said electromagnetic coil to said cold junctions of said thermocouple thereby to form a closed loop, lead means for taking out an electrical signal indicative of the operation of the contacts of said reed switch, said electromagnetic coil being excited thereby to actuate said reed switch in response to an increase in the temperature difference between said hot and cold junctions of said thermocouple, said actuation being transmitted outside by said lead means; said apparatus further comprising casing means, means for fixing said thermocouple to said casing means, means for fixing said reed switch and said electromagnetic coil to said casing means, and means for fixing the reed switch side terminal of said lead means to said casing means.

4,112,479
SYNCHRONIZING CONTROL SYSTEM

Robert I. White, 20 N. Main, Deerfield, Wis. 53531

Continuation of Ser. No. 422,961, Dec. 7, 1973, abandoned. This application Jan. 24, 1977, Ser. No. 761,791
Int. Cl.² H01H 47/00
U.S. Cl. 361—243 **4 Claims**

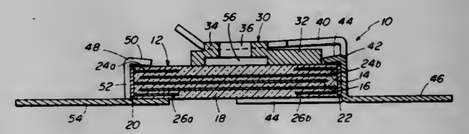


1. In a speed synchronizing system comprising means for receiving master synchronizing periodic signals and means for receiving periodic pulses representative of the speed of a device to be synchronized with the master synchronizing pulses, the improvement comprising: an up/down counter having a plurality of counting states and an up count input terminal and down count input terminal; means for deriving an output from said counter based upon the count stored in said counter so as to establish a threshold value; means for supplying the master synchronizing periodic signals to one input terminal; means for supplying the speed representative synchronizing periodic pulses of the slave to the other input terminal whereby a first output is derived from said counter when the count stored in said counter is less than the threshold value and a second and different output is provided when the count stored in said counter is more than threshold value; means for connecting the output to the device to control the speed thereof; and including means for inhibiting master or slave representative pulses to said up/down counter when said counter is counted to either its upper or lower limit, respectively.

4,112,480
TUNABLE EXTENDED RANGE CHIP CAPACITOR

Norman E. Johanson, Boonton, N.J., and Emil Seidler, Burbank, Calif., assignors to Johanson Manufacturing Corporation, Boonton, N.J.

Filed Jul. 8, 1977, Ser. No. 814,059
Int. Cl.² H01G 5/06, 1/00
U.S. Cl. 361—271 **3 Claims**



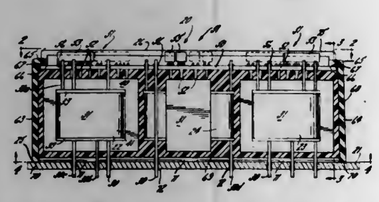
1. A tunable, extended range multilayered ceramic chip capacitor comprising:

a multilayered chip capacitor having upper and lower base surfaces and two metallized terminal ends, and having a fixed capacitance value;

a plurality of metallized electrode patterns embedded within said chip capacitor and oriented parallel to and in near

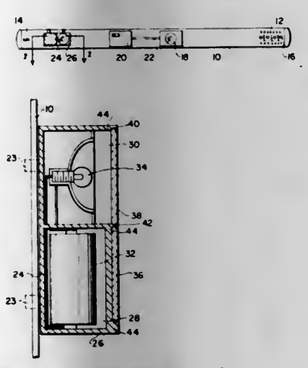
proximity to the upper and lower surfaces of said chip capacitor, as the upper and lower electrode layers therein;
said electrode patterns being symmetrically disposed with each pattern being in contact with one metallized terminal end of said chip capacitor and spaced apart from any other pattern in the same layer;
a metallic rotor having a central circular hub and a rotor blade emanating from said hub, the outer perimeter of said blade terminating short of one terminal end of said chip;
said rotor having a square opening in its hub for insertion of a tool bit to turn said rotor;
said rotor being centrally positioned over the upper surface of said chip capacitor such that the central hub of said rotor does not overlap an embedded electrode pattern in the upper electrode layer;
a rotor contact spring having two spaced apart, horizontally extending arms having circular cut-outs to grip the hub of said rotor, said cut-outs having a diameter slightly less than the diameter of said rotor hub, to exert an inward pressure on said rotor, said arms being inclined inwardly and downwardly toward said hub and upwardly beyond said hub to effect a downward pressure on said rotor, resulting in a uniformly distributed contact between the lower surface of said rotor and the upper surface of said chip capacitor;
said rotor contact spring having a vertical portion to grip a metallized terminal end of said chip capacitor, inwardly extending tab portions to grip the upper and lower surfaces of said chip capacitor, and an outwardly extending portion to serve as a terminal connection;
said rotor contact spring serving to anchor said rotor in position and provide an electrical connection to one terminal end of said chip;
a second spring clip having horizontal tabs to grip the upper and lower surfaces of the outer terminal end of said chip, a vertical portion to provide electrical connection to the metallized terminal end and an outward extending portion to provide a terminal contact; said second spring clip serving as a stator spring clip;
the range of said capacitor being extended and tunable by the rotation of said rotor blade over a portion of the electrode pattern connected to the terminal end opposite that to which said rotor is connected.

4,112,481
MINIATURE MULTI-IMPEDANCE TRANSFORMER MODULE
Ralph R. Roge, Lemont; Mark S. Ziermann, Bolingbrook, and Anthony J. Wilkis, Downers Grove, all of Ill., assignors to Wescom, Inc., Downers Grove, Ill.
Filed May 5, 1977, Ser. No. 793,942
Int. Cl.² H02B *1/18*
U.S. Cl. 361—395 **7 Claims**



1. A miniature multi-impedance transformer module comprising at least two transformers having windings and impedance changing taps, connector pins mechanically connected to said transformers, at least some of the connector pins being electrically connected to respective ones of said windings and taps, at least some of the connector pins extending both above and below the transformers, a printed circuit board having apertures receiving the pins projecting above the transformers, selector means on the printed circuit board connected to at least some of the pins for selectively connecting said windings and taps to program the impedance characteristics of said module, a miniaturized enclosure having an open base for receiving the printed circuit board and transformers and an open top for allowing access to the selector means, means potting the printed circuit board and transformers in place in said enclosure with some of said pins extending below the transformers and projecting below said base for electrical and mechanical connection to a second printed circuit board.

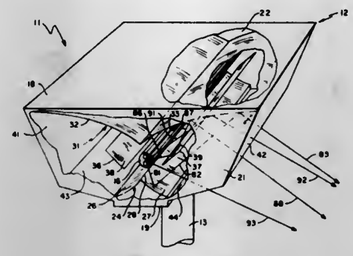
4,112,482
NIGHT LIGHT BELT
Virgil Powell, 1111 Victoria St., Los Angeles, Calif. 90019
Filed May 9, 1977, Ser. No. 795,067
Int. Cl.² F21V *33/00*
U.S. Cl. 362—108 **4 Claims**



1. A night light belt comprising:
an elongated member composed of reflective material having quick-coupling means adjacent the opposite ends thereof,
an elongated rectangular lamp-battery housing provided with clips for detachably engaging with said elongated member to hang the housing thereon, said housing normally hanging on said elongated member, said housing being divided into two separate side-by-side compartments in a plane parallel to said elongated member when hung thereon, one containing a battery for energizing a reflector lightbulb contained in the other, open compartment, said housing further having adjacent planar frames provided in the front of each of said compartments
two panes composed of different colored reflective light transmissible material which snap-fit into said front frames of said compartments for interchange with each other,
another lamp mounted at the rear of said elongated member when worn by a wearer, and
a battery-switch unit mounted at the left side of said elongated member when so worn, for operating said lamp.

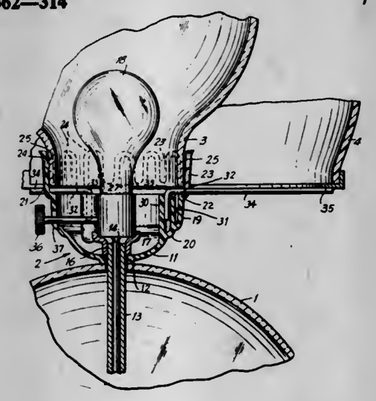
4,112,483
LIGHTING FIXTURE AND METHOD USING MULTIPLE REFLECTIONS
Edward A. Small, Jr., Santa Rosa, Calif., and Ian Lewin, Scottsdale, Ariz., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Continuation of Ser. No. 709,414, Jul. 28, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,691
Int. Cl.² F21V *7/00*
U.S. Cl. 362—298 **14 Claims**

1. In a lighting fixture, a housing having an open side, a lamp mounted in the housing and producing rays of light, first and second reflecting surface carried by the housing for reflecting light from a lamp, said first and second reflecting surfaces being positioned on opposite sides of the lamp whereby direct rays of the lamp will strike the first reflecting surface and be reflected onto the second reflecting surface and then will be reflected through the open side at a high angle in the vicinity of 70° and greater with respect to vertical, each of said first and second reflecting surfaces being formed of a metal layer and a



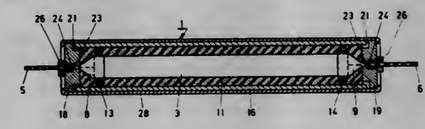
multi-layer high reflectivity coating carried on the metal layer, said multi-layer high reflectivity coating being formed of materials having high and low indices of - refraction to provide a reflectivity which does not fall below 95% for light at any angle.

4,112,484
CUP MEMBER FOR A LAMP HAVING SUPPORT MEANS FOR A CHIMNEY AND A SHADE
Steven William Schwartz, 38 W. Fourth St., Freeport, N.Y. 11520
Filed Oct. 8, 1976, Ser. No. 731,102
Int. Cl.² F21L *19/02*; F21V *17/00*
U.S. Cl. 362—314 **7 Claims**



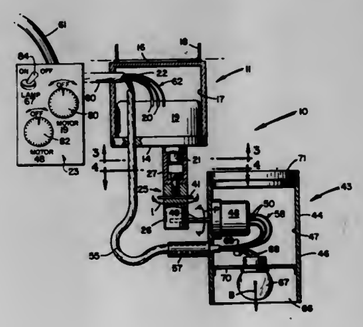
1. In a lamp construction having a base, a chimney, a bulb fixture, and a shade, an improvement comprising a cup member of plastic material detachably restable on the base for receiving the bulb fixture, said cup member including an upstanding annular rim having a plurality of spaced slots therein defining a plurality of upstanding flexible fingers between said slots for frictionally receiving the chimney, and a plurality of upstanding bushings integral with said cup member, said bushings being hollow and having upper ends disposed below the upper ends of said flexible fingers, said bushings being angularly disposed in alignment with selected of said slots, and a plurality of rods having bent ends removably engaged in said bushings, said rods extending from said bent ends in the bushings through the aligned slots radially outwards from the cup member, said rods having ends remote from said cup member for supporting said shade, said cup member comprising a lower dome portion which rests on said base in inverted fahion, a cylindrical portion extending upwardly from said dome portion and having a larger diameter than said dome portion with a step formed between said dome portion and said cylindrical portion, said rim extending upwardly from said cylindrical portion and having a larger diameter than said cylindrical portion with a second step between the rim and the cylindrical portion, said bushings extending upwardly from said dome portion to a spaced location inwards of said cylindrical portion, said upper ends of the bushings being disposed at a level below the slots, said selected slots for the passage of the rods extending in the rim to the level of said second step, the other slots extending less deeply in the rim to define a lower circumferential band above said second step joining said fingers to said second step.

4,112,485
IMPACT RESISTANT EXPLOSION PROOF LAMP COMPRISING ENCAPSULATED LIGHT SOURCE
Aldo Sutter, im Berghof 1, 8700 Kusnacht, Switzerland
Filed May 3, 1976, Ser. No. 682,754
Claims priority, application Switzerland, May 9, 1975, 5940/75
Int. Cl.² F21V *15/04*
U.S. Cl. 362—369 **18 Claims**



1. A fluid-tight self-cooling impact-resistant electric lamp comprising: a light source, and a multilayered casing having a translucent region and in which said light source is entirely embedded, said casing completely enveloping and in contact with said light source in sealed relationship for inhibiting transmission of shock forces to said light source, said multilayered casing comprising at least two layers of material, namely, an inner layer of material and an outer layer of material, with one layer of material being relatively more resilient thatn the other layer of material, and wherein said inner layer of material completely and seamlessly surrounds and is in contact with said light source and wherein said outer layer of material completely surrounds and is in contact with said inner layer of material, said inner layer of material adhering to said light source for maximum attenuation of induced oscillations resulting from said shock forces.

4,112,486
REMOTELY CONTROLLED POSITIONING DEVICE FOR ILLUMINATING UNIT AND THE LIKE
Murray Tovi, New York, N.Y., assignor to Murray Tovi Designs, Inc., New York, N.Y.
Filed May 26, 1976, Ser. No. 690,288
Int. Cl.² F21M *3/18*; F21S *3/02, 1/02*
U.S. Cl. 362—419 **23 Claims**



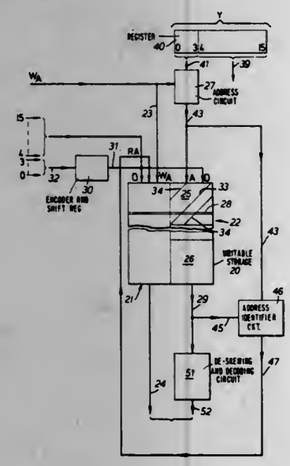
11. A remotely controlled illuminating device comprising, in

combination: a fixed driving unit including a first motor having a first rotatable shaft extending therefrom; a light unit including a second motor having a second rotatable shaft extending therefrom; mounting means for mounting said light unit on said driving unit, said mounting means coupling the end of said first shaft extending from said fixed driving unit directly to the end of said second shaft extending from said light unit in a substantially right angle relationship so that said first shaft, said mounting means and said second shaft define an "L" connection; illuminating means mounted in said light unit; means for actuating said illuminating means for directing a beam of light out of said light unit; means for actuating said first motor for rotating said light unit about the axis of said first shaft; means for actuating said second motor for rotating said light unit about the axis of said second shaft; first stop means for limiting the rotation of said light unit about said first shaft to less than 360°; and second stop means for limiting the rotation of said light unit about said second shaft to less than 360°; wherein said means for actuating said second motor and said illuminating means includes flexible continuous electrically conductive cables extending from said fixed driving unit to said light unit.

4,112,487
APPARATUS FOR WRITING DATA IN UNIQUE ORDER INTO AND RETRIEVING SAME FROM MEMORY

Geoffrey Nutter, Heald Green, and William McGibbon, Levenshulme, both of England, assignors to Ferranti Limited, Hollinwood, England

Filed Nov. 16, 1976, Ser. No. 742,230
Claims priority, application United Kingdom, Nov. 21, 1975, 47988/75
Int. Cl.² G06F *7/04*
U.S. Cl. 364—200 1 Claim



1. Data processing appartus for processing a plurality of information items, said data processing apparatus comprising:

a. a memory having an input and an output, and operable in a write mode for receiving and storing at least a portion of each of the plurality of information items into a plurality of corresponding multi-bit word locations and in a read mode, for reading out information items from said plurality of word location;

b. an addressing circuit for addressing selected word locations of said memory in both the write and read modes of operation;

c. loading means coupled to said input of said memory and including an encoder circuit for receiving and encoding said portion of each said plurality of information items, and a shift circuit for successively imparting to said encoded portion of each of said plurality of information items a shift of a predetermined number of bits in a predetermined direction, whereby said encoded portion of each of said plurality of information items is stored into a separate multi-bit word location as determined by said address circuit in a manner that one of said stored information items has a sequence of bits arranged in order different from that order of any other stored information item;

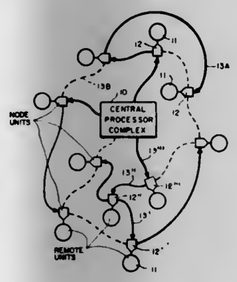
d. translating means coupled to said output of said memory for reading out simultaneously from said memory a single bit of each of said plurality of information items stored in said plurality of corresponding word locations and applying a shift of said predetermined number of bits to said single bits in a direction reversed to said predetermined direction; and

e. comparator means coupled to said output of said memory for comparing one of said single bits with another selected bit from a different information item.

4,112,488
FAULT-TOLERANT NETWORK WITH NODE BRANCHING

Thomas Basil Smith, III, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Mar. 7, 1975, Ser. No. 556,086
Int. Cl.² G06F *3/00, 11/00;* H04L *5/00*
U.S. Cl. 364—200 13 Claims



1. A network providing for digital data communication among a plurality of separate data handling units comprising

a central processing and control unit;

a plurality of said data handling units remote from said central processing and control unit;

a plurality of node units, each node unit being associated with at least one of said remote data handling units, each node unit having at least one terminal, the terminals of each said node unit being made available for connective communication with one or more of the others of said node units or with said central processing and control unit;

a plurality of duplex communication links for interconnecting said node units with each other and with said central unit;

means for activating a selected number of said communication links, one end of each said activated link being designated as an inboard side of said link and the other end thereof being designated as an outboard side of said link;

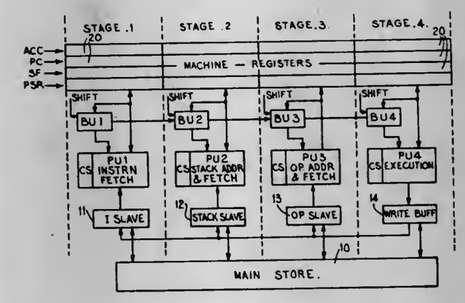
means for selectively assigning an inboard status to terminals of said node units connected to an outboard side of an activated communication link, an outboard status to terminals of said node units connected to an inboard side of an acitvated communication link, and an inactive status to terminals connected to a non-activated communication link; and

means for effecting outbound communication channels from said central processing and control unit to selected node units, which channels traverse said links from inboard sides to outboard sides, and inbound communication channels in the reverse direction and for effecting outboard and inboard communication channels which traverse said links between selected node units for providing an interconnected network configuration in which each node unit and the at least one remote data handling unit associated therewith are in duplex communication with said central processing and control unit through a unique non-loop forming path comprising at least some of said activated communication links, the number of terminals made available at each said node unit being selected so that, if one or more of said activated communication links become inoperative, one or more of said non-activated communication links can be activated and said duplex communication can be reliably maintained.

4,112,489
DATA PROCESSING SYSTEMS

Keith William Wood, Manchester, England, assignor to International Computers Limited, London, England

Filed Feb. 4, 1977, Ser. No. 765,872
Claims priority, application United Kingdom, Feb. 6, 1976, 04684/76
Int. Cl.² G06F *7/00*
U.S. Cl. 364—200 7 Claims



1. A register arrangement for use in a pipelined data processing system, the arrangement including;

a plurality of information registers each having an input and an output;

first shift paths interconnecting the registers in series to form a sequence, each shift path being connected between the output of one register and the input of the next register in the sequence;

separate marker registration means associated respectively with each of the registers settable to indicate validity of information contained in the associated register;

second shift paths interconnecting the marker registration means into a sequence corresponding to that of the registers;

an output path corresponding to each register;

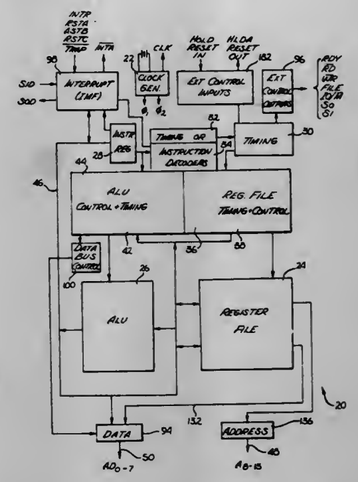
output control means for each output path responsive to setting of the marker registration means associated with the corresponding register to apply to the output path information contained within that register if the marker registration means is set to indicate validity of that information and otherwise to apply to the output path information from the first succeeding register, if any, of the sequence whose associated marker registration means is set; and

shift control means to generate shift control signals, the information registers and marker registration means being responsive to the shift control signals to shift their contents over the first and second shift paths respectively in synchronism each into the next succeeding register and registration means respectively of the sequence.

4,112,490
DATA TRANSFER CONTROL APPARATUS AND METHOD

William B. Pohlman, Los Gatos, and Andrew M. Volk, Santa Clara, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 24, 1976, Ser. No. 744,469
Int. Cl.² G06F *3/00*
U.S. Cl. 364—200 11 Claims



1. An apparatus for bidirectionally transferring digital information, such as words and bytes of addresses, codes and data, in a plurality of transfer modes, said apparatus being connected to a plurality of peripheral devices, said apparatus and plurality of peripheral devices being coupled by an external control bus and an external address and data bus, said apparatus coupled with first means, said first means for selectively processing digital information in response to a progammable set of instructions collectively denoted as a program and for employing a plurality of internal control signsals to control said apparatus with respect to said bidirectional transferring of digital information, said apparatus comprising:

means for multiplexing digital information on at least part of said external address and data bus to and from said first means, said multiplexing means being coupled to said first means and to said external address and data bus; and

means for generating and receiving a plurality of external bus control signals being connected to said external control bus encoded for communicating with said peripheral devices the availability of at least part of said address and data bus for transfer of digital information according to one of said plurality of transfer modes, said generating and receiving means being coupled to said first means,

whereby said apparatus is characterized by simplified control of said address and data bus in that the number of connections devoted to addressing and data transfers is reduced by the multiplexing of said digital information on said external address and data bus.

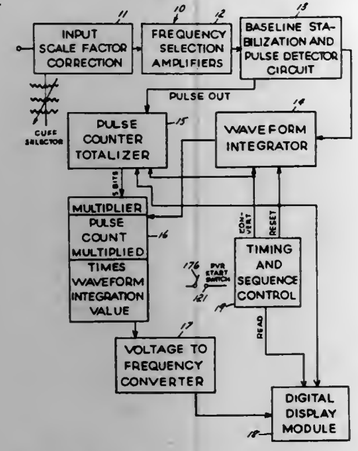
4,112,491
DIRECT READOUT REAL TIME PHYSIOLOGICAL PARAMETER ANALOG COMPUTER

Al Bugay, Canaan, N.H., assignor to Life Sciences, Inc., Greenwich, Conn.

Filed Jul. 5, 1977, Ser. No. 812,752
Int. Cl.² A61B *5/04;* G06F *15/20*
U.S. Cl. 364—415 3 Claims

1. An improved physiological parameter analog computer for displaying components of measured pulsatile flow comprising: first means receiving a pulsatile wave form signal repre-

senting said flow; second frequency selection amplifier means passing frequency components of said signal above a predetermined frequency level; third means stabilizing signals received from said second means relative to a known baseline reference voltage; fourth means detecting each pulsatile impluse wave form from said third means and producing a single output pulse



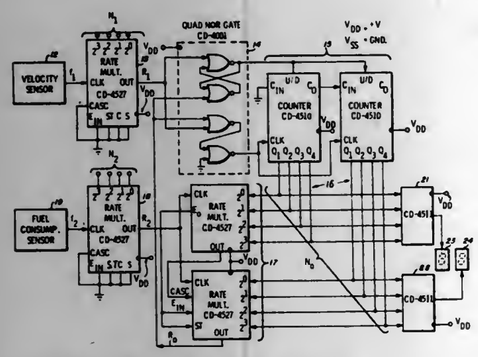
therefrom; fifth means providing a measured time interval; sixth means performing a voltage summation time derivative measurement during said time interval; seventh counter/means counting the number of pulsatile impulses occurring during said measured time interval; and eighth means multiplying the output of said seventh means by the output of said sixth means; and ninth means displaying the output of said eighth means.

4,112,492

FUEL ECONOMY MEASURING CIRCUIT EMPLOYING RATE MULTIPLIER COMPONENTS

Gary J. Summers, 1454 Nesbit Ct., San Jose, Calif. 95120

Filed Jan. 18, 1977, Ser. No. 760,426
Int. Cl.² G01M *15/00*
U.S. Cl. 364—442 **6 Claims**



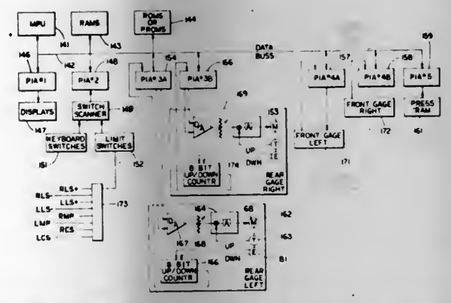
1. In a fuel economy measuring circuit:
rate multiplier means responsive to an inputted first signal comprising a train of pulses at a first rate R_2 which is a function of the rate of consumption of fuel and to an inputted second signal N_0 which is a function of the output signal of the measuring circuit in distance per unit of fuel quantity to produce an output signal R_0 comprising a train of pulses at a rate corresponding to the product R_2N_0 of said first and second inputted signals; and
up-down counter means having input terminal means connected to receive a train of pulses having a rate R_1 which is a function of the velocity of the vehicle for counting in one direction and to receive said output train of pulses at the rate R_0 derived from the output of said rate multiplier for counting in the opposite direction, said up-down counter means being responsive to said inputted train of pulses to derive said output signal N_0 which is a measure of the fuel economy in distance per unit of fuel consumption of the vehicle.

4,112,493

TWIN MOTOR AND SCREW DRIVE FOR WORKPIECE POSITIONING STOPS AND FOR PRESS RAM DRIVE AND THE LIKE

Gerald V. Roch, and Chris L. Hadley, both of Indianapolis, Ind., assignors to Hurco Manufacturing Company Inc., Indianapolis, Ind.

Filed Nov. 7, 1975, Ser. No. 630,011
Int. Cl.² G06F *15/46*; B21D *5/02*
U.S. Cl. 364—476 **20 Claims**



1. In machine tool apparatus including at least two members to be driven linearly in synchronism, and at least two drive motor and screw combinations for driving said members, one motor and screw combination being for each of said members, the improvement comprising:
digital data processing control means coupled to said motors and monitoring, separately for each motor-screw combination, a mechanical movement uniformly related to the linear position of the member driven by said combination, and controlling at least one of the combinations to limit the difference between such mechanical movements, said control means being thereby able to cause said motor-screw combinations to drive said members in synchronism to a plurality of discrete predetermined linear positions in said apparatus, and stop said members in synchronism at said predetermined positions, one-at-a-time.

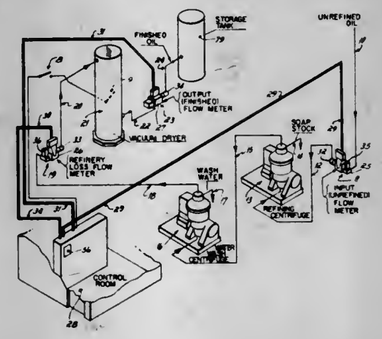
4,112,494

REFINERY AND PIPELINE MONITORING SYSTEM

Peter F. D. Elliott, and Kenneth Elliott, P.O. Box 31227, Cincinnati, Ohio 45231

Filed Jul. 12, 1976, Ser. No. 704,538
Int. Cl.² G01M *3/28*; G01F *1/00*; G06F *15/46*
U.S. Cl. 364—510 **14 Claims**

1. Apparatus for monitoring losses in a fluid flow system, such as a refinery or pipeline, comprising:
at least two measurement stations located at separate positions along a fluid flow path, each said measurement station having means for measuring data related to fluid flowing through said fluid flow path at said separate positions during a series of intervals of operation of said fluid flow system,
said data including a gross amount of fluid which has flowed past each said measurement station during each interval of said series of intervals of operation,
memory means for storing information related to accuracy of operation of said data measuring means and information related to physical properties of said fluid,
sample number selector means for entering a preselected number, and
a loss indicator associated with said at least two measurement stations, memory means, and sample number selector means, said loss indicator including
(a) net fluid calculation means responsive to said data and information for calculating a net amount of fluid which has flowed past each of said at least two measurement stations during each interval of said series of intervals of operation,
(b) current loss calculation means for subtracting said net amount of fluid for a first of said at least two measurement stations from said net amount of fluid for a second of said at least two measurement stations to signify a current loss for each interval of said series of intervals of operation,
(c) a flag having a reset condition when said current loss relates to a first interval of operation and a set condition when said currrent loss relates to subsequent intervals of operation,
(d) first means under control of said flag when said flag is in said reset condition for entering said current loss as a reference loss,
(e) second means under control of said flag when said flag is in said reset condition for setting said flag,
(f) third means under control of said flag when said flag is in



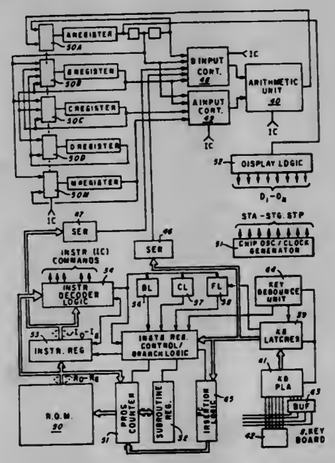
said reset condition for entering the quantity zero as a reference increment,
(g) fourth means responsive to said preselected number and under control of said flag when said flag is in said set condition for determining when said preselected number is zero and non-zero,
(h) fifth means under control of said fourth means when said preselected number is zero for entering said current loss as said reference loss,
(i) current increment calculation means under control of said fourth means when said preselected number is non-zero for dividing said current loss by said preselected number to signify a current increment,
(j) first decision means responsive to said current increment for determining when said current increment has a different polarity than said reference increment,
(k) second decision means responsive to said current increment for determining when said current increment has a greater magnitude than said reference increment,
(l) third decision means responsive to said current increment for determining when said current increment is zero,
(m) sixth means under control of said decision means for entering said current increment as said reference increment when said polarity is different, when said magnitude is greater, and when said current increment is zero,
(n) loss indication calculation means for adding said reference increment and said reference loss to signify a loss indication, and
(o) means for displaying said loss indiction,
said loss indicator for distributing a surge in the operation of said fluid flow system which occurs during any of said subsequent intervals of operation over a number of intervals of operation equal to said preselected number so as to smooth each said surge over a series of loss indications.

4,112,495

ELECTRONIC CALCULATOR OR MICROPROCESSOR HAVING A SELECTIVELY LOADABLE INSTRUCTION REGISTER

Steven J. Easley, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 9, 1977, Ser. No. 767,084
Int. Cl.² G06F *9/06*
U.S. Cl. 364—700 **16 Claims**

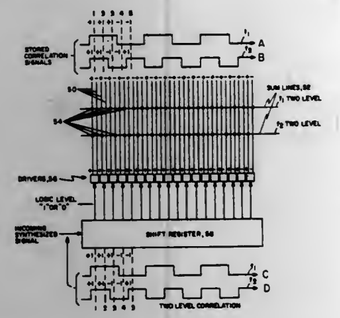


1. An electronic microprocessor system comprising:
(a) a data memory for storing numeric data,
(b) an arithmetic unit for performing arithmetic operations on the numeric data stored in said data memory,
(c) an instruction memory for storing a plurality of instruction words, said instruction words controlling the operation of said system, including controlling the transfer of data from said data memory to said arithmetic unit,
(d) a program counter for addressing said instruction memory,
(e) first decoder logic means responsive to at least a portion of each instruction word outputted from said instruction memory for generating an enabling signal for selected ones of said plurality of instruction words,
(f) an instruction word register means for temporarily storing the instruction word outputted from said instruction memory when enabled by said first decoder logic means,
(g) second decoder logic means for decoding said selected ones of said plurality of instruction words loaded into said instruction word register,
(h) third decoder logic means for decoding those instruction words outputted from said instruction memory means which are not loaded into said instruction word register means, and
(i) means for inserting a predetermined digital code in said instruction word register means when not enabled by said enabling signal.

4,112,496
CAPACITOR MATRIX CORRELATOR FOR USE IN THE CORRELATION OF PERIODIC SIGNALS

Robert R. Stevens, Chelmsford, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Division of Ser. No. 532,344, Dec. 13, 1974, Pat. No. 4,028,699.
This application Feb. 18, 1977, Ser. No. 769,994
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—728 7 Claims



1. Apparatus for detecting the degree of correlation between two periodic signals comprising:

means for forming a digital representation of a first periodic signal;

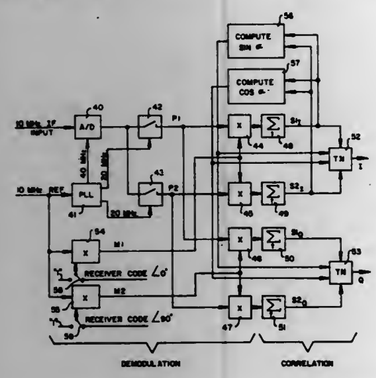
capacitive means for correlating said digital representation with a correlation wave form corresponding to a second periodic signal to form a third signal, said capacitive means including a cross point matrix, the cross points defining said second periodic signal, the amplitude of said third signal indicating the degree of correlation between said two periodic signals, and

means for detecting when the amplitude of said third signal exceeds a predetermined threshold.

4,112,497
DIGITAL DEMODULATOR-CORRELATOR

James C. Fletcher, Administrator of the National Aeronautics and Space administration, with respect to an invention of; James W. Layland; Warren L. Martin, both of La Canada; Arthur I. Zygielbaum, Arcadia; Richard M. Goldstein, La Canada, and William P. Hubbard, Glendale, all of Calif.

Filed Mar. 29, 1977, Ser. No. 782,464
Int. Cl.[2] G06F *15/34;* G01S *9/38*
U.S. Cl. 364—728 12 Claims



1. Apparatus for demodulation of a code modulated signal having a predetermined frequency and for correlation of the demodulated signal with a reference code, comprising

means for sampling said code modulated signal at a frequency four times said predetermined frequency and for converting each sample to digital form, thereby to produce four equally spaced successive samples A1, B1, A2 and B2 in digital form for each cycle of said modulated signal,

four separate means for accumulating multiplication products of M1 and M2 with said samples in digital form thereby to produce four sums according to the following equations:

$$S1_I = \sum_t (A1 - A2)\,M1 \qquad S1_Q = \sum_t (A1 - A2)\,M2$$

$$S2_I = \sum_t (B1 - B2)\,M1 \qquad S2_Q = \sum_t (B1 - B2)\,M2$$

where M1 is a reference signal at said predetermined frequency multiplied by said reference code, and M2 is said reference signal multiplied by said reference code delayed one quarter of a cycle,

means for computing inphase and quadrature correlation functions I and Q, respectively, from said sums in accordance with the following equations:

$$I = S1_I \cos\alpha - S2_I \sin\alpha$$

$$Q = S1_Q \cos\alpha - S2_Q \sin\alpha$$

where sin α and cos α are determined at the start of demodulation operations according to the following equations:

$$\sin\alpha = \frac{S1_I}{\sqrt{S1_I^2 + S2_I^2}}, \quad \cos\alpha = \frac{S2_I}{\sqrt{S1_I^2 + S2_I^2}}$$

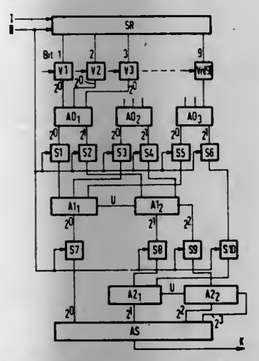
while both multipliers M1 and M2 are made to be equal to said reference signal, and

means for making both multipliers M1 and M2 equal to said reference by setting said reference code and said reference code delayed one quarter of a cycle equal to 1 at the start of demodulation and correlation operations while sin α and cos α are being determined.

4,112,498
DIGITAL CORRELATION RECEIVER

Udo Reiner, Munich, and Gerhard Hinrichsen, Geretsried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 3, 1977, Ser. No. 765,401
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1976, 2607433
Int. Cl.[2] G06F *15/34;* H04B *7/19*
U.S. Cl. 364—728 4 Claims

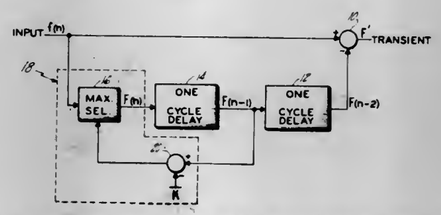


1. In a digital correlation receiver, in particular for satellite communications transmission, in which the signal bursts, which are combined in a time division multiplex arrangement and provided with a preamble comprising a synchronizing word, from various ground stations, are time-staggered at the satellite end and, relative to the reference burst which marks the beginning of the frame, are combined to form a frame and retransmitted with time division multiple access, the combination of a shift register to which the incoming bit flow at the receiving end is supplied, comparator means to which the individual cells of the shift register are connected, and at whose second comparator inputs a logic state exists representing the synchronizing word, with which the received word in the respective shift register cells, following complete input thereof into the register, should coincide, a first group of adder stages to which is connected the respective outputs of the comparator means, a plurality of storage elements, each adder stage having a pair of outputs, respectively having the values 2^0 and 2^1, each of which outputs is connected to a respective storage element, at least one second group of adder stages, to which outputs of said storage elements are connected in predetermined grouping, further storage elements to which the intermediate addition results of said second group of adder stages are respectively supplied, an analysis device, means for producing a data word, said means connected between said second group of adder stages and said analysis device to provide said data word as an input to said analysis device, said analysis device in the presence of a correct data word supplying a correlation signal, and timing means for controlling such shift register and the respective storage elements.

4,112,499
DIGITAL TRANSIENT DISCRIMINATOR WITH NOISE SPIKE CLIPPING

Norman W. Mangum, Jr., and Howard W. Ripy, both of Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 17, 1977, Ser. No. 778,640
Int. Cl.[2] G06F *13/00, 15/20*
U.S. Cl. 364—732 4 Claims



1. For a sensor that produces an input signal to logic means for determining the unidirectional transient in said input, said logic including means responsive to an output signal for generating a first delayed cycle signal and a second delayed cycle signal, first summer means for combining the first delayed cycle signal with a constant, second summer means for combining the second delayed cycle signal with said input signal and a maximum selector means responsive to said input signal and the output of said first summer means for selecting the higher value of either said input signal or the output of said first summer means to generate an input signal to said generating means.

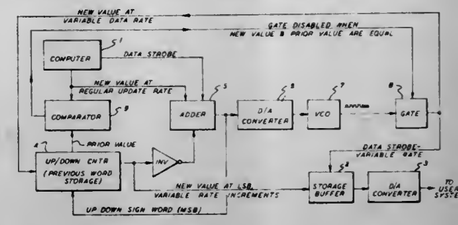
4,112,500
SMOOTHING OF UPDATED DIGITAL DATA

David L. Peters, Whitney Point, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Jan. 19, 1976, Ser. No. 650,102
Int. Cl.[2] G06F *3/00, 5/06*
U.S. Cl. 364—900 8 Claims

1. In a digital computer system in which data is updated periodically, a method for interfacing a computer and a user system which is responsive to said computer, whereby updated data is transmitted to the user system, at variable data rates, relatively higher than the nominal data update rate of the computer, and in least significant bit increments comprising the steps of:

(a) determining, at the nominal computer update rate, a delta word that is the difference between the value of the data prior to update and its value when updated;



(b) converting said delta word into a signal whose output frequency is proportional to the magnitude of said delta word;

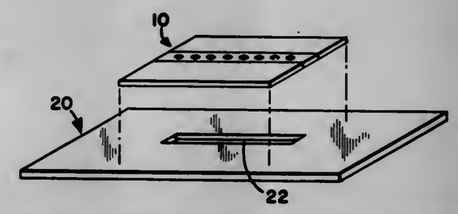
(c) using said signal to update said prior data to new values in least significant bit increments; and

(d) strobing said new values out to the user system.

4,112,501
SYSTEM AND METHOD FOR LOADING COMPUTER DIAGNOSTIC PROGRAMS

Alf Gunnar Önnestam, Kungsängen, Sweden, assignor to Data General Corporation, Westboro, Mass.

Filed Jun. 9, 1976, Ser. No. 694,442
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—900 5 Claims



1. Diagnostic computer program transfer system comprising a magnetic tape having a diagnostic computer program of 1 and 0 bits magnetically stored thereon at audio frequencies, a magnetic tape converter means for playing said magnetic tape and providing an electrical sinusoidal wave train of two different audio frequencies representing the 1 or 0 bits of the diagnostic computer program stored by said magnetic tape, wave shaping means for converting the sinusoidial wave train into a series of pulses of different widths depending upon the instantaneous frequency of the sinusoidal wave train, wave train generating means for generating a wave train of pulses from said series of pulses of different widths, the spacing between successive pulses representing either a 1 or 0 bit, a computer having storage means for receiving said wave train of pulses to thereby store said diagnostic computer program, and control means providing signals to control the generation of said wave train of pulses by said wave train generating means.

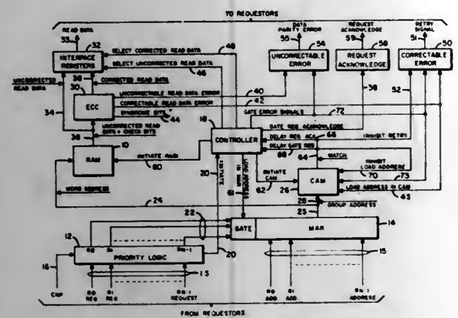
4,112,502
CONDITIONAL BYPASS OF ERROR CORRECTION FOR DUAL MEMORY ACCESS TIME SELECTION

James Herman Scheuneman, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 733,687, Oct. 18, 1976, Pat. No. 4,058,851.
This application Jul. 18, 1977, Ser. No. 817,081
The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.[2] G06F *11/10, 13/00, 11/00, 1/04*
U.S. Cl. 364—900 3 Claims

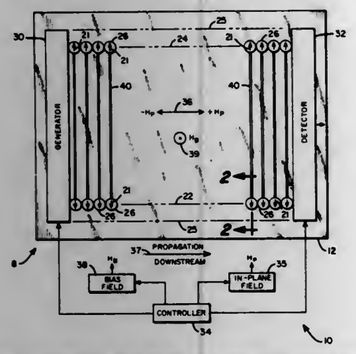
1. A method of conditionally bypassing the error correction circuitry of an error correcting memory system, comprising:

reading out the uncorrected read bits that are stored in a memory;
determining if said read out uncorrected read bits had or had not been previously corrected;
coupling said uncorrected read bits to error correction circuitry;
generating corrected read bits from said uncorrected read bits;



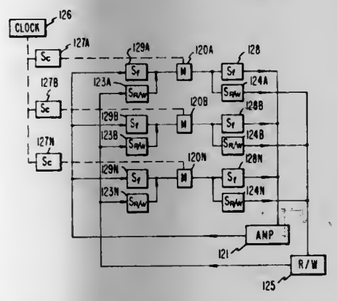
coupling said uncorrected read bits to gating means;
coupling said corrected read bits to said gating means;
gating said uncorrected read bits from said gating means at a relatively fast memory access time if said uncorrected read bits had not been previously corrected or, alternatively, gating said corrected read bits from said gating means at a relatively slow memory access time if said uncorrected read bits had been previously corrected.

4,112,503
STRIPE DOMAIN PROPAGATION USING CONTIGUOUS BICORE DISK FILE STRUCTURE
Stanley James Lins, Bloomington, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Apr. 8, 1977, Ser. No. 785,808
Int. Cl.² G11C *19/08*
U.S. Cl. 365—29 **7 Claims**



1. A stripe domain propagation system, comprising:
a non-magnetic substrate;
a stripe domain layer of a material capable of sustaining stripe domains and having a stripe domain propagation axis in the plane thereof;
two substantially similar contiguous disk files parallelly aligned along said propagation axis and separated for forming a stripe domain area therebetween through which stripe domains are to be propagated in said magnetizable layer in a downstream propagation direction along said propagation axis, each of said contiguous disk files comprised of;
a plurality of Bicore disks aligned in contiguous series along said propagation axis, each of said Bicore disks comprising,
a relatively hard magnetizable disk having an axis of anisotropy oriented transverse to said propagation axis;
a relatively soft magnetizable disk for providing a closed flux path for the otherwise open flux path of the external field of said relatively hard magnetizable disk, the external field of said relatively hard magnetizable disk orienting the magnetization of said relatively soft magnetization disk antiparallel therewith except when effected by an appropriate drive field; and,
an insulative layer sandwiched between said relatively soft and hard magnetizable layer for providing magnetostatic coupling therebetween;
a stripe domain in said stripe domain layer having each of its two ends associated with an associated one of said relatively soft magnetizable disks in the associated one of said two contiguous disk files;
drive field means coupling a bipolar drive field directed along said propagation axis, said drive field having a relatively slowly increasing leading edge and a relatively quickly decreasing trailing edge, said trailing edge rotating the magnetization of said two end associated relatively soft magnetizable disks out of alignment with the axis of anisotropy of said relatively hard magnetizable disks toward a direction opposite to said propagation direction for capturing the ends of said stripe domain at an upstream position, said leading edge then rotating the magnetization of said two end associated relatively soft magnetizable disks toward said propagation direction and propagating said captured stripe domain in said propagation direction from said upstream position to a downstream position, and then said trailing edge rotating the magnetization of said two end associated relatively soft magnetizable disks quickly back toward said direction opposite to said propagation direction for leaving said captured stripe domain behind in said propagated downstream position to be captured and propagated by the magnetization of the next downstream two end associated relatively soft magnetization disks upon the occurrence of the next successive leading edge of said drive field.

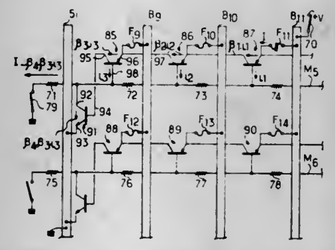
4,112,504
FAST ACCESS CHARGE COUPLED DEVICE MEMORY ORGANIZATIONS FOR A SEMICONDUCTOR CHIP
Satish L. Rege, Piscataway, N.J., and Beng-Yu Woo, San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Oct. 20, 1976, Ser. No. 734,351
Int. Cl.² G11C *21/00*
U.S. Cl. 365—77 **5 Claims**



1. A charge coupled device memory organization including a plurality of storage loops, said organization comprising:
a read/write station;
a plurality of pairs of read and write switches, one pair for each storage loop to selectively couple that respective storage loop to said read/write station for reading and writing operations; and

a refresh amplifier coupled to said storage loops separate from the coupling of said read/write station.

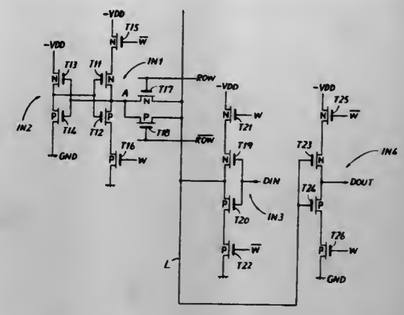
4,112,505
READ-ONLY-MEMORY WITH SHUNT PATH TO DIVERT PROGRAMMING CURRENT
Jean-Claude Duval, Le Perreux; Francis Joseph Mottini, Eaubonne; Serge Auguste Touron, Bagnolet; Jean-Jacques Francois Rennard, Sartrouville, and Ruchela Marie Duval, Le Perreux, all of France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeyweli Bull, Paris, France
Filed Dec. 1, 1976, Ser. No. 746,435
Claims priority, application France, Dec. 5, 1975, 75 37358
Int. Cl.² G11C *17/00*
U.S. Cl. 365—96 **11 Claims**



1. An integrated circuit read-only memory formed on a semiconductor substrate programmable by selectively applying programming currents to destructable memory elements comprising:
(a) word rows of mutually parallel, linear resistive semiconductor bands in the substrate,
(b) bit columns of N mutually parallel conductive wires which cross the bands at intersections;
(c) an insulating layer on said substrate separating said bands and wires;
(d) destructible memory elements for connecting a band to a wire at each of the intersections whereby a group of N of said elements connect a word row to the N wires; and
(e) a single shunt path for diverting programming current applied to each group of N memory elements connecting a word row to the N wires, the shunt path diverting the programming currents from a portion of the semiconductor band in each row.

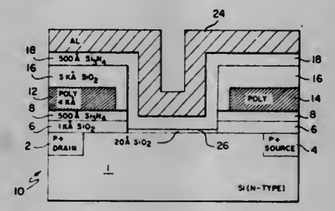
4,112,506
RANDOM ACCESS MEMORY USING COMPLEMENTARY FIELD EFFECT DEVICES
Mituo Zibu, Ueno, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 27, 1977, Ser. No. 837,287
Claims priority, application Japan, Oct. 7, 1976, 51-121141
Int. Cl.² G11C *13/00*
U.S. Cl. 365—181 **4 Claims**

1. A random access memory using complementary field effect devices, comprising an array of a plurality of storing locations, address signal lines for addressing said plurality of storing locations, a data signal line commonly coupled to said plurality of storing locations for inputting/outputting a data signal, each said location comprising a storing cell including first and second inverter means cross connected to each other and each implemented by complementary field effect devices and having an input/output node, field effect switching means connected in series with said first inverter means and adapted to be non-conductive in a write operation mode, transmission gate means connected between said input/output node of said storing means and said data signal line to be operable as a function of the signal in said address signal line, said transmission gate means comprising two complementary field effect switching devices connected in parallel with each other, each individually responsive to the complementary state of the signal in said address signal line, said random access memory further comprising third inverter means implemented by com-



plementary field effect devices and having the output connected to said data signal line, and field effect switching means connected in series with said third inverter means and adapted to be conductive in the write operation mode.

4,112,507
ADDRESSABLE MNOS CELL FOR NON-VOLATILE MEMORIES
Marvin Hart White, Laurel, and Donald Ross Lampe, Ellicott City, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 30, 1976, Ser. No. 653,849
Int. Cl.² G11C *11/40*
U.S. Cl. 365—184 **17 Claims**

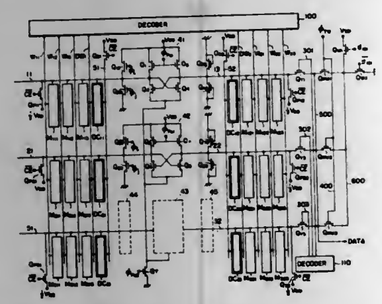


1. A MNOS transistor comprising:
a substrate of a given conductivity type;
a plurality of separated diffusion regions in said substrate of opposite conductivity type, defining drain and source diffusions;
a first address gate defining a memory window between said diffusion regions;
a second address gate overlapping said source diffusion and extending toward said memory window; and
dual dielectric insulation means of different thicknesses associated with said gates for storing charges in a non-volatile manner.

4,112,508
SEMICONDUCTOR MEMORY
Kiyoo Itoh, Higashikurume, Japan, assignor to Hitachi, Ltd., Japan
Filed Sep. 7, 1977, Ser. No. 831,138
Claims priority, application Japan, Sep. 10, 1976, 51-107792
Int. Cl.² G11C *11/40, 13/00*
U.S. Cl. 365—154 **25 Claims**

1. In a memory comprising:
(a) first and second data lines;
(b) a plurality of word lines arranged so as to cross said first and second data lines;

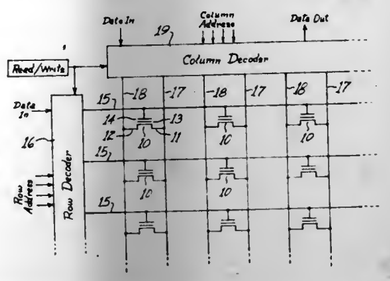
(c) first means for selectively applying a predetermined signal to one of said word lines;
(d) memory cells provided at the intersections of said data lines and said word lines for storing therein a potential level on said data line at the time of selection of the corresponding word lines thereof;
(e) second means for applying a first or second level to said second data line depending upon information "1" or "0" to be written; and
(f) a flip-flop including at least first and second transistors with said first transistor having its output electrode connected to said first data line and its control electrode to said second data line, said second transistor having its control electrode connected to said first data line and its output electrode to said second data line, and said first and second transistors having their input electrodes coupled to each other, respectively.
the improvement comprising:
(g) first switching means connected to said first data line for



applying a voltage to said first data line for turning off said second transistor connected to said first data line;
(h) second switching means having its output electrode connected to said first data line, its input electrode to a power supply whose potential level is substantially equal to said first potential level and its control electrode supplied with an on-off control signal, the value of conductance of said second switching means between said input and output electrodes in its on-state being selected to be smaller than that of said first transistor in its conductive state;
(j) means for controlling said first switching means so as to be operative during a predetermined time prior to the storing of information into said memory cells; and
(k) means for applying a control signal making said second switching means low resisitive to said control electrode of said second switching means after the lapse of said predetermined time and in a state in which said predetermined potential is applied to said second data line with the aid of said second means.

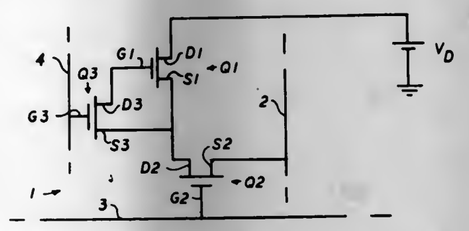
4,112,509
ELECTRICALLY ALTERABLE FLOATING GATE SEMICONDUCTOR MEMORY DEVICE
Lawrence S. Wall, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 27, 1976, Ser. No. 754,144
Int. Cl.² G11C *11/40*
U.S. Cl. 365—185 **10 Claims**

1. An electrically programmable, non-volatile, floating gate, semiconductor memory array comprising: a plurality of MOS transistor devices each having a source, a drain, a floating gate, and a control gate, the transistor devices being arranged in an array of rows and columns; means for connecting the control gates of all devices in each row together to provide row lines; means connecting the sources of all devices in each column together to provide first column lines generally perpendicular to the row lines; means connecting the drains of all devices in each column together to provide second column lines generally parallel to the first column lines; means for selecting one of the row lines and applying a high voltage to it while applying a low voltage to the remaining row lines; means for selecting one of the first column lines and applying a low voltage to it



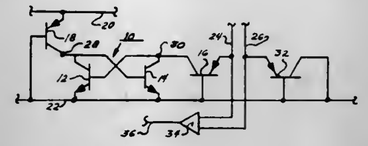
while applying a high voltage to all of the other first column lines; means for applying high voltage to all of the second column lines; and means to deprogram the memory including means for applying low voltage to all of the second column lines.

4,112,510
DYNAMIC MEMORY CELL WITH AUTOMATIC REFRESHING
Roger Thomas Baker, Box 240, Mt. Tabor, N.J. 07878
Filed May 25, 1977, Ser. No. 800,450
Int. Cl.² G11C *11/40, 7/00*
U.S. Cl. 365—187 **19 Claims**



1. A semiconductor memory cell comprised of
a first IGFET and a second IGFET, both of said IGFETs having a source, a drain, and a gate,
the said source of said first IGFET and the said source of said second IGFET being connected in common,
the said gate of said first IGFET and the said drain of said second IGFET being connected in common,
said second IGFET having a first channel region and a second channel region, both said first and said second channel regions being located generally beneath the said gate of said second IGFET,
said source of said second IGFET, said first channel region, said second channel region, and said drain of said second IGFET being disposed such that they are electrically in series, in the order specified above, and
the electronic properties of said first channel region being related to the electrical potential of said gate of said second IGFET by one set of parameters,
the electronic properties of said second channel region being related to the electrical potential of said gate of said second IGFET by a second set of parameters, and
said first set of parameters being different from said second set of parameters.

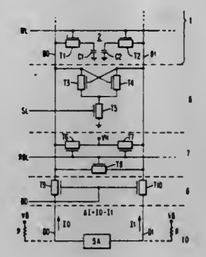
4,112,511
FOUR TRANSISTOR STATIC BIPOLAR MEMORY CELL USING MERGED TRANSISTORS
Raymond A. Heald, Los Gatos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Sep. 13, 1977, Ser. No. 832,940
Int. Cl.² G11C *11/40, 13/00*
U.S. Cl. 365—188 **18 Claims**



5. A memory, comprising:
(a) a plurality of pairs of address lines extending in a given direction, each address line pair including a first address line and a second address line,
(b) a like plurality of third address lines, one for each of said address line pairs, extending in a direction transverse to said given direction, and forming with said address line pairs a plurality of address line groupings each of which includes one each of said first, second, and third address lines,
(c) a plurality of memory cells arranged adjacent to and interconnected with said address line groupings, there being a memory cell for each one of said address line groupings and each memory cell connected with a respectively different address line grouping, each of said memory cells comprising:
(1) first and second switching transistors each having base, emitter, and collector terminals, with their base terminals cross coupled to their collector terminals to form first and second node points and their emitter terminals connected to one of said second address lines,
(2) A first source transistor having base, emitter and collector terminals, with its base terminal connected to said one second address line, its emitter terminal connected to one of said third address lines and its collector terminal connected to said second node point, and
(3) a second source transistor having base, emitter, and collector terminals, with its base terminal connected to said one second address line, its emitter terminal connected to one of said first address lines, and its collector terminal connected to said first node point.

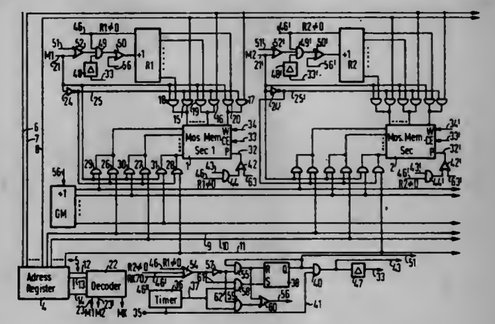
4,112,512
SEMICONDUCTOR MEMORY READ/WRITE ACCESS CIRCUIT AND METHOD
Luis Maria Arzubi, Colchester, Vt.; Joerg Gschwendtner, Esslingen, and Robert Schnadt, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1977, Ser. No. 863,566
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712735
Int. Cl.² G11C *11/40*
U.S. Cl. 365—203 **8 Claims**

1. A read/write circuit for a dynamic field effect transistor memory system including a matrix of dynamic storage cells, each storage cell having a capacitive storage node capable of being coupled to a column line in response to an addressable row selection means, a plurality of pre-amplifiers connected to said column lines for detecting and amplifying signals coupled to said column lines by said row selection means and at least one input/output terminal capable of being coupled to at least some of said column lines by the current conducting terminals of a field effect transistor switching means, the improvement comprising:
column line precharging means for precharging said column lines to a predetermined first reference potential corresponding to a first stored logic state;
input/output terminal precharging means for precharging said input/output terminal to a second predetermined reference potential having a magnitude less than said first reference potential by more than one field-effect transistor threshold voltage drop and greater than a potential corresponding to a second logic state; and
addressable column selection means coupled to the gate electrode of said switching means for selectively applying



a third reference potential to at least one of said switching means, said third reference potential having a magnitude not greater than one field effect threshold voltage drop above said second reference potential, whereby said field-effect transistor switching means will become conductive when the potential of a data signal to be coupled between a selected on of said column lines and said input/output terminal has a magnitude of less than one field-effect transistor threshold drop below said third reference potential.

4,112,513
METHOD FOR REFRESHING STORAGE CONTENTS OF MOS MEMORIES
Peter Elsner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Sep. 27, 1973, Ser. No. 401,190
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1972, 2247835
Int. Cl.² G11C *29/00*
U.S. Cl. 365—222 **12 Claims**



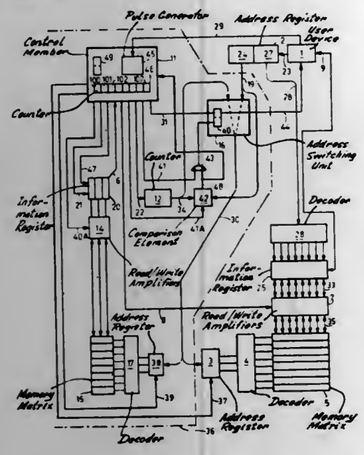
1. A method for refreshing the contents of a dynamic MOS memory, having a plurality of independently addressable sections, including the steps of simultaneously refreshing all but one section of said memory concurrently with each normal access for reading or writing to said one section, said refreshment occurring during each normal access to said one section, said one section comprising any one of said plurality of sections.

4,112,514

MEMORY WITH DYNAMIC INFORMATION STORAGE

Gerrit Adriaan Spoelder, Apeldoorn, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 17, 1977, Ser. No. 759,746
Claims priority, application Netherlands, Jan. 22, 1976, 7600648
Int. Cl.² G11C *11/40*
U.S. Cl. 365—222 2 Claims



1. A memory system for operation with a user device, comprising:

a first memory comprising memory sections for information storage, and having a first memory cycle time;

a first address line connected to said first memory for receiving first partial address signals from said user device for addressing a memory section thereof, and controlling a refresh operation therein;

a second address line connected to said first memory for receiving second partial address signals from said user device for addressing a portion of said memory section addressed by said first partial address signals,

an information transport line connected to said first memory for transporting information signals between said user device and said memory section portion addressed by said first and second partial address signals;

a second memory having a second memory cycle time substantially shorter than said first memory cycle time and having a plurality of memory positions each corresponding to a predetermined one of said memory sections;

a third address line connected to said second memory for receiving said first partial address signals in parallel with said first address line,

a data register having an input for receiving an incrementation signal and an output;

control means habing a first state and a second state, including an address-counter for said second memory, and a clock for cycling said control means between said states,

said control means in said first state being operative for transmitting said first partial address signals to said second memory and for writing predetermined information into a memory position thus addressed,

said control means in said second state being operative for transmitting the contents of said address counter after an incrementation thereof to said second memory for controlling a read-write cycle for the memory position thus addressed under further generation of an incrementation signal for writing back an incremented information,

an output signal of said data register blocking the next subsequent transition to said first state, whereby said first memory thereupon is addressed by the contents of said address counter in lieu of by said first partial address signals, a memory section thus addressed being refreshed at least once within its reliability period.

4,112,515

MIXING CATALYST AND CARRIER GAS FOR CURING FOUNDRY MOLDS AND CORES

Louis W. Sandow, N94 W15888 Ridgeview Dr., Menomonee Falls, Wis. 53051

Filed Nov. 19, 1976, Ser. No. 743,368
Int. Cl.² B01J *8/02;* B22C *9/12*
U.S. Cl. 366—17 6 Claims

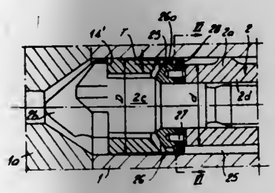
1. A method of mixing a carrier fluid which is gaseous at standard conditions of temperature and pressure with a foundry mold catalyst fluid which is liquid at standard conditions of temperature and pressure, comprising the steps of heating said liquid foundry mold catalyst fluid to vaporize it before it is mixed with the carrier fluid, flowing said carrier fluid in the gaseous state through a first conduit into a second conduit, flowing said foundry mold catalyst fluid in the gaseous state through a third conduit into said second conduit to form a gaseous mixture therein, controlling the flow rate in at least one of said first and third conduits in accordance with the equation $X_2 = KX_1$ where X_1 is the flow rate of said carrier fluid in the gaseous state, X_2 is the flow rate of said foundry mold catalyst fluid in the gaseous state, K is a predetermined mass ratio between said foundry mold catalyst fluid and said carrier fluid in said gaseous mixture.

4,112,516

PLASTICIZING DEVICE OF AN INJECTION MOLDING MACHINE FOR PLASTICS

Alfons Hotz, Nafels, Switzerland, assignor to Netstal-Maschinen AG, Switzerland

Filed Sep. 15, 1976, Ser. No. 723,228
Claims priority, application Switzerland, Sep. 17, 1975, 12072/75
Int. Cl.² B29B *1/10, 5/04*
U.S. Cl. 366—80 3 Claims



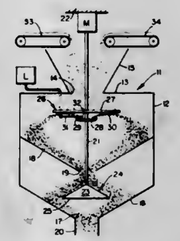
1. A plasticizing device for an injection molding machine for plastic material comprising a screw housing having a cylindrical plasticizing material chamber and an end of said chamber having a discharge opening, a cylindrical screw rotatably and axially displaceably mounted in said housing and having a screw head portion adjacent the discharge opening, a uniform diameter portion with a radially extending spiral screw and an intermediate body portion located between said head portion and said uniform diameter portion, a seal ring of an outer diameter substantially the same as the interior diameter of said chamber disposed in said chamber and having an inner diameter greater than and spaced radially outwardly from said intermediate portion of said screw to define a plasticizing material passage therebetween, a seal washer on said screw in the vicinity of the junction between said intermediate body portion and said uniform diameter portion having a sealing face cooperatively opposed to a sealing face of said seal ring, means defining a plurality of axially extending and circumferentially spaced passages around the periphery of said screw adjacent said seal washer in at least two spaced apart rows which are disposed in axial relationship, and a separate insert ring mounted on said screw between said seal washer and said screw, wherein said rows are offset from each other and the passages extend radially inwardly substantially to the diameter of said uniform diameter portion, one of said rows being disposed around said seal washer, the other of said rows being disposed around said insert ring and defining a space between said two rows, wherein said passages intersect at acute angles to each other.

4,112,517

MIXING APPARATUS

Giuseppe Giombini, Rome, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 593,997, Jul. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 465,760, May 1, 1974, Pat. No. 3,986,706. This application Apr. 20, 1977, Ser. No. 789,102
Claims priority, application Italy, May 23, 1973, 60165 A/73
Int. Cl.² B01F *5/26, 13/02*
U.S. Cl. 366—102 19 Claims



1. Apparatus for homogeneously mixing relatively dry particulate material with liquid material comprising a distributor member rotatable about a vertical axis, means for feeding dry particulate material directly onto said distributor member for centrifugal distribution therefrom whereby there is formed below said distributor member a continuous annular free falling curtain layer of said particulate material, means below said distributor member within said curtain layer for forming and directing a separate continuous annular film or spray of liquid material into direct intersecting relation with said falling curtain layer in an annular region spaced outwardly beyond and below the periphery of said distributor member, further distributor means rotatable about said axis and located below said liquid film forming means to receive and centrifugally distribute the mixed particulate and liquid materials, means above said further distributor means for collecting said falling curtain and the admixed liquid materials and directing the same to said further distributor means, and means for collecting and discharging the centrifugally distributed material from said further distributor means.

4,112,518

MIXER FOR LIQUID CHARGES

Leslie H. Garlinghouse, 2415 E. Washington, Los Angeles, Calif. 90021

Continuation of Ser. No. 364,881, May 29, 1973, Pat. No. 3,962,892, and a continuation-in-part of Ser. No. 575,437, May 7, 1975, Pat. No. 4,072,030, and Ser. No. 774,193, Mar. 3, 1977.
This application Jun. 29, 1977, Ser. No. 811,163
Int. Cl.² B01F *7/16*
U.S. Cl. 366—219 5 Claims

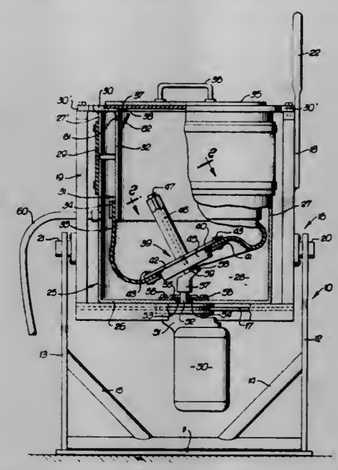
1. A mixer for a charge of predetermined volume of a liquid-like consistency, said mixer comprising a frame, a composite container means on the frame for said charge comprising a lower flexible section with a lower chamber of variable volume and having an upper perimetrical edge, an upper rigid section with an upper chamber of fixed volume having a rigid cylindrical wall with a lower perimetrical edge, and an attachment joining said lower and upper sections together at said edges,

a wobble plate mounted on the bottom of the flexible section,

a wobble drive rotatably journaled in a lower portion of said frame and having a driving relationship with said wobble plate,

a motor on said frame at a location below and exterior relative to said container means,

said motor having a single direction driving connection with the wobble drive whereby to impart an oscillatory motion to the flexible section and the charge, a connection between the upper rigid section and the frame, the connection being at a location spaced from the lower perimetrical edge, the volume of the lower chamber being less than the volume of the charge, and the aggregate volumes of the chambers respectively in the lower and upper sections being such as to provide a liquid level intermediate upper and lower ends of the upper rigid section, the charge being adapted to shift cyclically between said chambers during an operation in response to action of said wobble plate.

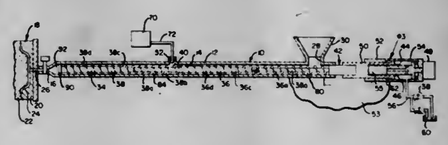


4,112,519

VENTED INJECTION MOLDING MACHINE AND METHOD

George A. Kruder, Marion, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Filed Jul. 8, 1976, Ser. No. 703,440
Int. Cl.² B29B *1/08, 5/04*
U.S. Cl. 366—266 9 Claims



1. In a vented injection molding machine operable during a plasticizing portion of a molding cycle to accept synthetic resinous material in particulate form and to plasticize the material to a moldable consistency and operable during an injection portion of the molding cycle to shape the plasticized material into a useful form, the machine having a barrel with a feed opening, a vent opening communicating with atmospheric pressure and a discharge opening, and a rotatable reciprocable screw with a vent section in the barrel, an improvement for avoiding degradation of the plasticized material in the barrel comprising:

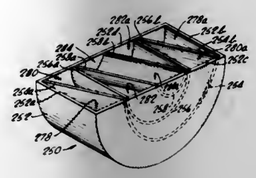
exclusion means operatively positioned with respect to the

barrel and the vent opening for inhibiting ingestion of deleterious atmospheric constituents so as to avoid contact of deleterious atmospheric constituents and plasticized material while permitting atmospheric pressure to prevail in the vent section; and,

wherein the exclusion means includes flood means for bathing the vent opening with an inert gas from a first time preceding inception of the injection portion until a second time after inception of the injection portion of the molding cycle where the first time and the second time are selected to bracket the time period during which the machine experiences subatmospheric pressure.

4,112,520
STATIC MIXER
Oscar Patton Gilmore, Riverside, Calif.
Filed Mar. 25, 1976, Ser. No. 670,388
Int. Cl.[2] B01F *5/24*
U.S. Cl. 366—337 **3 Claims**

1. In apparatus for mixing at least two streams of flowing materials including a structure defining a flow passage having means therein for combining, dividing and re-combining streams of flowing materials, the improvement wherein said passage extends along a path that bends about an axis angulated relative to the direction of flow therein, and said passage has substantially flat and mutually parallel side walls, said means including a flow dividing web in said path, said web being bent to substantially follow the bend in said path and being twisted relative to said path along the length thereof, said flow divider

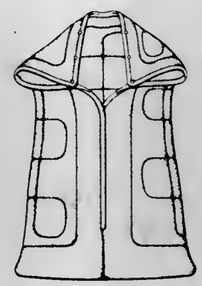


web being positioned between said walls, and said web being defined by a segment cut at an angle from a longitudinally split right circular cylinder.

DESIGNS

SEPTEMBER 5, 1978

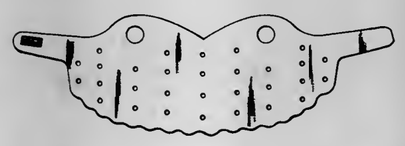
249,196
INSULATED BODY GARMENT
John C. Wrightson, Darien, Conn., assignor to Heritage Quilts, Inc., New York, N.Y.
Filed Jul. 25, 1977, Ser. No. 818,969
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—25



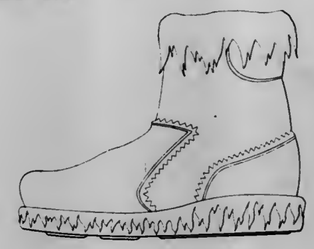
249,197
VEST
Bela Bill Szoke, 251 - E. 7th St., Long Beach, Calif. 90813
Filed May 10, 1976, Ser. No. 684,757
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190



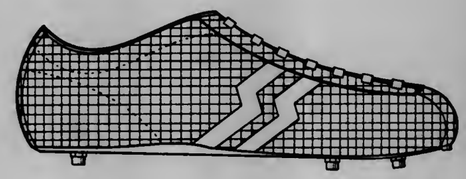
249,198
HAIRDRESS PROTECTOR
Stanley W. Schulman, 2 Maplewood La., Roslyn, L.I., N.Y. 11576
Filed Nov. 4, 1976, Ser. No. 739,029
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—241



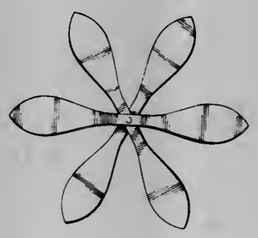
249,199
BOOT
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.
Filed Aug. 23, 1976, Ser. No. 716,410
Term of patent 3 years
Int. Cl. D2—*04*
U.S. Cl. D2—274



249,200
ATHLETIC SHOE
Keiji Iimuro, No. 4-14, 3-chome, Nihonbashi, Chuo-ku, Tokyo, Japan
Filed Jan. 22, 1976, Ser. No. 651,357
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—311



249,201
NEEDLEWORK ACCESSORY
Elizabeth Nagy, 3215 E Ave. T-10, Littlerock, Calif. 93543
Filed Aug. 4, 1976, Ser. No. 711,627
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D3—19 R



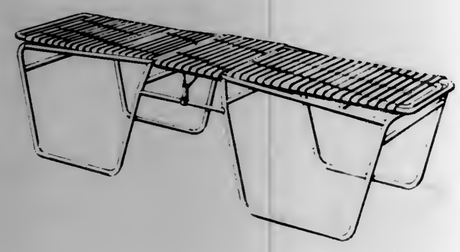
249,202
JEWELRY DISPLAY STAND
Rose L. Struble, 3298 Montieth Ave., Cincinnati, Ohio 45208, and Adele S. Katz, 8770 Arborcrest Dr., Cincinnati, Ohio 45236
Filed Sep. 2, 1976, Ser. No. 719,778
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—29



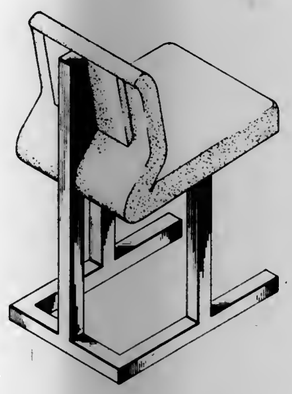
249,203
SWIVEL CHAIR
Hilton A. Gill, Sheboygan, Wis., assignor to R-Way Furniture Company, Sheboygan, Wis.
Filed Feb. 14, 1977, Ser. No. 768,044
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



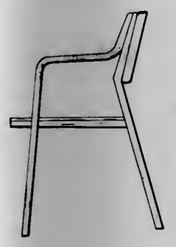
249,204
BLOOD DONOR LOUNGE
Robert T. Schwartz, Takoma Park, Md., and Marc S. Harrison, Foster, R.I., assignors to American National Red Cross
Filed Nov. 9, 1976, Ser. No. 739,841
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38



249,205
CHAIR
Ernest Newell Spencer, 8625 Lakeview Dr., Orchard Beach, Lexington, Mich. 48450
Filed Feb. 28, 1977, Ser. No. 772,776
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—55



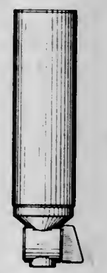
249,206
ARM CHAIR
Hilton A. Gill, Sheboygan, Wis., assignor to R-Way Furniture Company, Sheboygan, Wis.
Filed Feb. 14, 1977, Ser. No. 768,036
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



249,207
PEDESTAL FOR MAGNETICALLY SUSPENDING A BAR OF SOAP
David Emmer, 255 S. Rengstorff, Apt. #20, Mountain View, Calif. 94040
Filed May 9, 1977, Ser. No. 794,757
Term of patent 14 years
Int. Cl.[2] D23—*02;* D6—*04*
U.S. Cl. D6—89



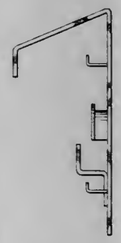
249,208
DISPENSER FOR GRANULATED OR POWDERED PRODUCTS OR THE LIKE
Denis Victor Dibling, Avenue Brugmann 197, 1180 Brussels, Belgium
Filed Nov. 28, 1975, Ser. No. 635,921
Claims priority, application Benelux, May 28, 1975, PV157-00
Term of patent 14 years
Int. Cl.[2] D23—*02*
U.S. Cl. D6—95



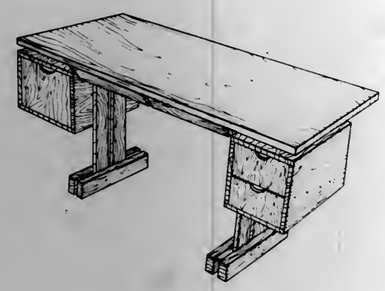
249,209
AXIALLY PIVOTING SUPPORT FOR TELEPHONE DIRECTORIES OR THE LIKE
Gerard Drag, Morton Grove, Ill., assignor to General Binding Corporation
Filed Aug. 9, 1976, Ser. No. 712,734
Term of patent 14 years
Int. Cl.[2] D6—*04;* D19—*04*
U.S. Cl. D6—113



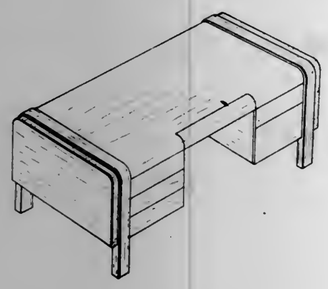
249,210
RACK FOR FIBEROPTIC SCOPES OR THE LIKE
Armin V. Banez, 510 Gypsy La., Youngstown, Ohio 44505
Filed Nov. 10, 1976, Ser. No. 740,857
Term of patent 14 years
Int. Cl. D6—*04;* D24—*31*
U.S. Cl. D6—114



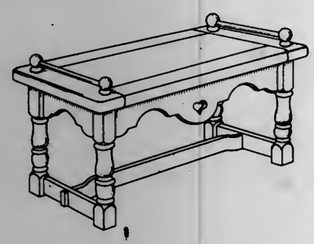
249,211
MODULAR DESK
Peter H. Wright, 47 Alvarado St., Berkeley, Calif. 94705, and Ralph G. Panecaldo, 2682 Hillgard St., Berkeley, Calif. 94709
Filed Sep. 17, 1976, Ser. No. 724,372
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



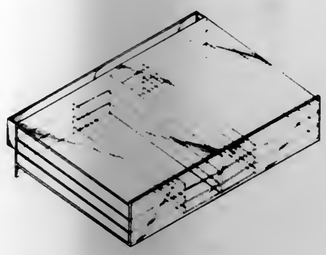
249,212
DESK
Hilton A. Gill, 2809 S. 11th St., Sheboygan, Wis. 53081
Filed Dec. 30, 1976, Ser. No. 755,786
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



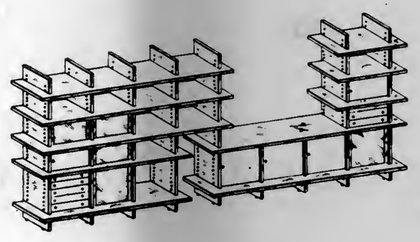
249,213
TABLE
Nicholas A. Ungaro, Louisville, Ky., assignor to Peters-Revington Corporation, Delphi, Ind.
Filed Nov. 8, 1976, Ser. No. 739,754
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



249,214
PORTABLE EDITING DESK
Irving N. Rothman, 8811 S. Rice Ave., Houston, Tex. 77096
Filed Jun. 9, 1976, Ser. No. 694,371
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189



249,215
COMBINED STORAGE CABINET AND SHELF UNIT
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Italy
Division of Ser. No. 595,406, Jul. 14, 1975. This application Oct. 26, 1976, Ser. No. 735,532
Claims priority, application Italy, Jan. 15, 1975, 60904 B/75; Jan. 15, 1975, 60905 B/75
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—190



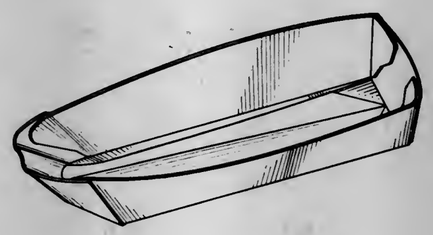
249,216
TABLE FRAME
Werner Blaser, Bottmingen, Switzerland, assignor to Dasu Anstalt, Vaduz, Liechtenstein
Filed Mar. 21, 1975, Ser. No. 560,634
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



249,217
PORTABLE BACK REST OR SIMILAR ARTICLE
James E. Pierce, 5 Ash La., Ojai, Calif. 93023
Filed Feb. 24, 1976, Ser. No. 660,805
Term of patent 14 years
Int. Cl.[2] D6—*99*
U.S. Cl. D6—200

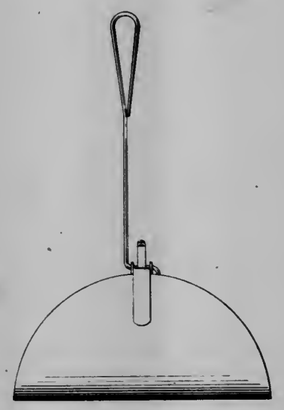


249,218
SERVING TRAY
Richard Gene Mathison, Newnan, Ga., and Clifford Gustave Peters, Appleton, Wis., assignors to American Can Company, Greenwich, Conn.
Filed Aug. 6, 1976, Ser. No. 712,159
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5

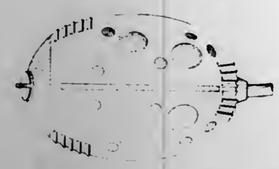


249,219
TACO SHELL MOLD
Jesse W. Stence, Rte. 1, Box 966, Leander, Tex. 78641
Filed Dec. 6, 1976, Ser. No. 747,949
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—43





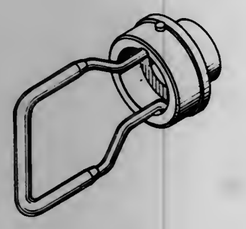
249,220
ROTISSERIE MOTOR OR THE LIKE
Fred H. Bent, 75 York St., Apt. 1606, Kitchener, Ontario, Canada (N2G 1T5)
Filed May 25, 1976, Ser. No. 689,795
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—129



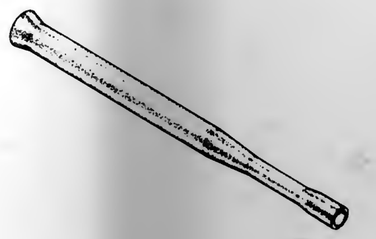
249,221
SPOON OR SIMILAR ARTICLE OF FLATWARE
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Aug. 18, 1976, Ser. No. 715,482
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



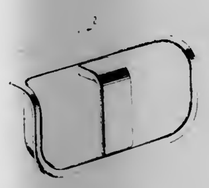
249,222
BORE-ALIGNING TOOL
Sam S. Melamed, Cleveland Heights, Ohio, assignor to Lempco Industries, Inc., Cleveland, Ohio
Filed Jul. 15, 1976, Ser. No. 705,603
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



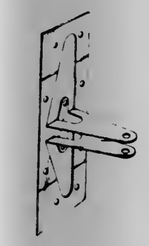
249,223
WIRE GUIDING TUBE
Paul John Holden, 1017 Bienvenida Ave., Pacific Palisades, Calif. 90272
Filed Feb. 18, 1977, Ser. No. 769,856
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



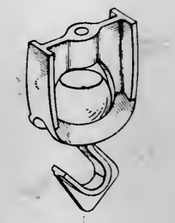
249,224
HANDLE FOR FURNITURE DOORS, DRAWERS OR THE LIKE
Roland Spellier, Lemgo, Fed. Rep. of Germany, assignor to Firma Richard Heinze GmbH & Co. KG, Herford, Fed. Rep. of Germany
Filed Jan. 30, 1976, Ser. No. 653,862
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1975, 6 AR 138/75
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—313



249,225
DOOR CLOSER BRACKET
Blake F. Moe, 258 N. Shore Dr., South Haven, Mich. 49090
Filed Oct. 29, 1976, Ser. No. 736,953
Term of patent 14 years
Int. Cl. D8—*07, 08*
U.S. Cl. D8—330



249,226
ROTATABLE BOLT-HANGER
Alys Hills, 6647 W. 82nd St., Los Angeles, Calif. 90045; Ronald E. Mari, 13900 Panay Way #5305, Marina Del Rey, Calif. 90291, and Joseph Vulgan, 4703 W. 132 St., Hawthorne, Calif. 90250
Filed Nov. 15, 1976, Ser. No. 741,607
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



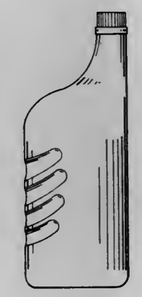
249,227
CLOSET BOLT AND COVER NUT UNIT
Martin E. Ismert III, and Joseph P. Ismert, both c/o Sioux Chief Manufacturing Co., Inc., P.O. Box 282, 4000 Main St., Grandview, Mo. 64030
Filed Jan. 3, 1977, Ser. No. 756,055
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—387



249,228
BOTTLE
Louis Schacher, and Esther Schacher, both of 4910 Fifteenth Ave., Brooklyn, N.Y. 11219
Filed Jul. 21, 1976, Ser. No. 707,228
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44



249,229
BOTTLE
Louis Schacher, and Esther Schacher, both of 4910 Fifteenth Ave., Brooklyn, N.Y. 11219
Filed Jul. 21, 1976, Ser. No. 707,229
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44



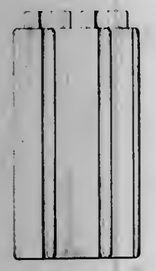
249,230
COMBINED PACKAGING CONTAINER AND TOY CONSTRUCTION BLOCK
Germaine Van Der Veken, Vrijheidslaan 176, 1080 Brussels, Belgium
Filed Jul. 14, 1976, Ser. No. 705,121
Claims priority, application Belgium, Jan. 22, 1976, 5080001
The portion of the term of this patent subsequent to Jul. 12, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—167



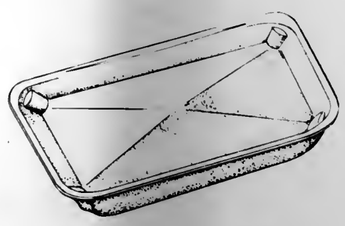
249,231
COMBINED PACKAGING CONTAINER AND TOY CONSTRUCTION BLOCK
Germaine Van der Veken, Vrijheidslaan 176, 1080 Brussels, Belgium
Filed Jul. 14, 1976, Ser. No. 705,122
Claims priority, application Belgium, Jan. 22, 1976, 5080002
The portion of the term of this patent subsequent to Jul. 12, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—167



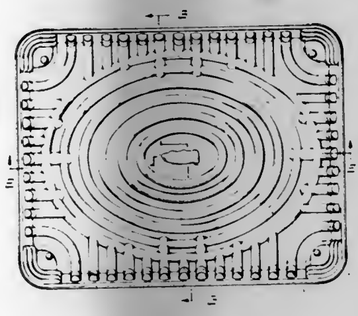
249,232
COMBINED PACKAGING CONTAINER AND TOY CONSTRUCTION BLOCK
Germaine Van der Veken, Vrijheidslaan 176, 1080 Brussels, Belgium
Filed Jul. 14, 1976, Ser. No. 705,299
Claims priority, application Belgium, Jan. 22, 1976, 5080003
The portion of the term of this patent subsequent to Jul. 12, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—167



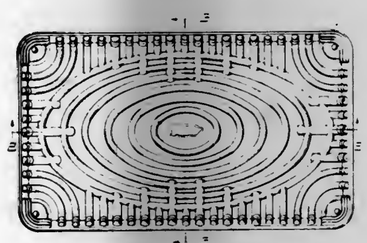
249,233
PACKAGING TRAY OR THE LIKE
John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Nov. 15, 1976, Ser. No. 741,914
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



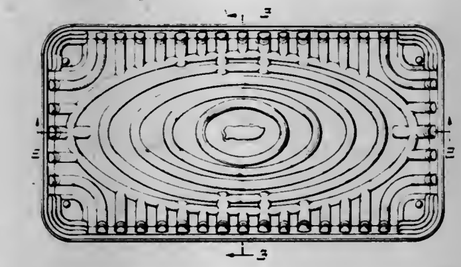
249,234
PACKAGING TRAY
Victor Limon, and Jose M. Ibañez, both of P.O. Box 326, Cidra, P.R. 00639
Filed Dec. 28, 1976, Ser. No. 755,073
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



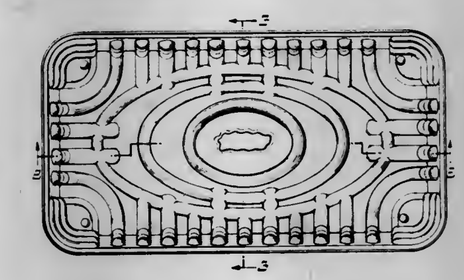
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PACKAGING TRAY
Victor Limon, and Jose M. Ibañez, both of P.O. Box 326, Cidra, P.R. 00639
Filed Dec. 28, 1976, Ser. No. 755,074
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



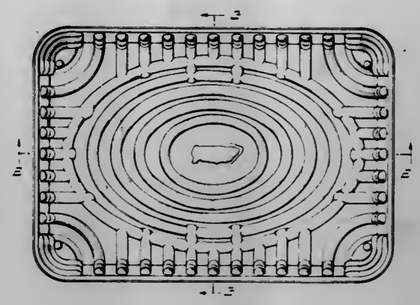
249,236
PACKAGING TRAY
Victor Limon, and Jose M. Ibañez, both of P.O. Box 326, Cidra, P.R. 00639
Filed Dec. 28, 1976, Ser. No. 755,075
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



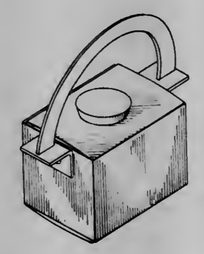
249,237
PACKAGING TRAY
Victor Limon, and Jose M. Ibañez, both of P.O. Box 326, Cidra, P.R. 00639
Filed Dec. 28, 1976, Ser. No. 755,076
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



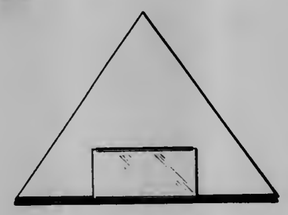
249,238
PACKAGING TRAY
Victor Limon, and Jose M. Ibañez, both of P.O. Box 326, Cidra, P.R. 00639
Filed Dec. 28, 1976, Ser. No. 755,077
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



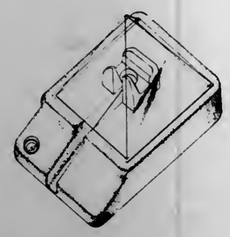
249,239
COMBINED PACKAGING AND CARRYING CONTAINER
LaVern M. Pfeifer, 1153 24th Ave., Columbus, Nebr. 68601
Filed Jul. 12, 1976, Ser. No. 704,201
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—222



249,240
JEWELRY BOX
William S. Klitzner, 400 Narragansett Pkwy., Warwick, R.I. 02888
Filed Nov. 1, 1976, Ser. No. 737,854
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—231



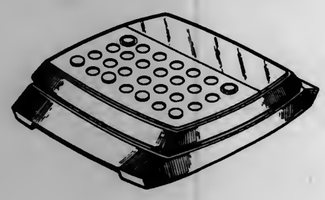
249,241
DISPLAY CONTAINER FOR A SAFETY RAZOR
Lee Halleron, 5725 Charles City Cir., Richmond, Va. 23231
Filed Oct. 15, 1976, Ser. No. 732,875
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—239



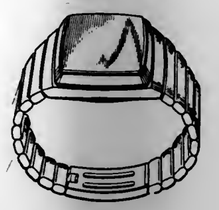
249,242
COMBINED CLOCK AND LAMP
Clarence Williams, 2660 Dwight Rd., Memphis, Tenn. 38114
Filed Dec. 22, 1976, Ser. No. 753,220
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—5



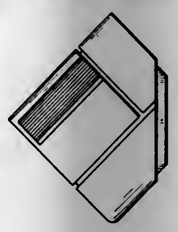
249,243
WRISTWATCH CALCULATOR
Edward E. Salter, Redwood City, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 12, 1976, Ser. No. 741,328
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—31

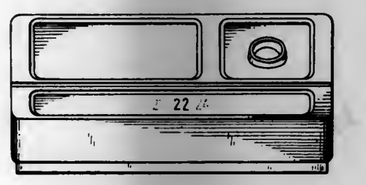


249,244
ELECTRONIC WRISTWATCH OR THE LIKE
Edward E. Salter, Redwood City, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 12, 1976, Ser. No. 741,179
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32



249,245
COMBINED THERMOMETER AND HOLDER FOR A CALENDER AND A BALL POINT PEN
Walter Henkels, Holunderweg 1, 5142 Hückelhoven, Fed. Rep. of Germany
Filed Jun. 22, 1976, Ser. No. 698,321
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1976, MR 95
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—53

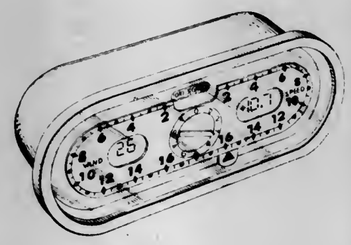




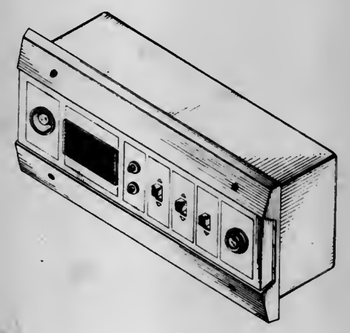
249,246
VISUAL INDICATING ELECTRONIC OUTPUT TESTER
Joseph D. Dahl, 815 E. 51 St., Minneapolis, Minn. 55417
Filed Sep. 17, 1976, Ser. No. 724,339
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



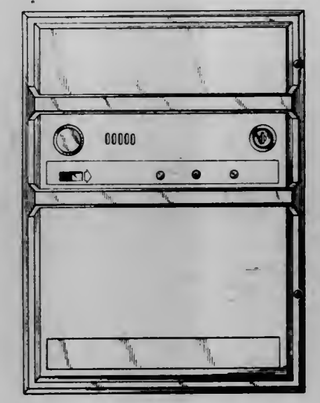
249,247
MULTIPLE DISPLAY SAILING INSTRUMENT
Frederic G. Shotz, c/o International Marine Instrument Inc., Joshua Slocum Dock, Dolphin Cove Quay, Stamford, Conn. 06902; John Hepplewhite, c/o Rhapsody Ltd., 55 Ballingdan St., and Michael Bungay, 43 Landsdown Rd., both of Sudbury, England
Filed Oct. 3, 1975, Ser. No. 619,362
Term of patent 14 years
Int. Cl.[2] D10—*04*
U.S. Cl. D10—98



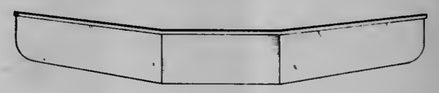
249,248
CONTROL UNIT HOUSING FOR AN ELECTRICAL PROTECTION SYSTEM
Terence E. Gibbs, Pomona, N.Y., assignor to American District Telegraph Company
Filed Feb. 14, 1977, Ser. No. 768,196
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



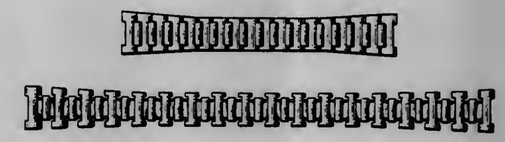
249,249
CONTROL UNIT HOUSING FOR AN ELECTRICAL PROTECTION SYSTEM
Terence E. Gibbs, Pomona, N.Y., assignor to American District Telegraph Company
Filed Feb. 14, 1977, Ser. No. 768,286
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



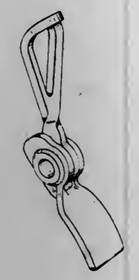
249,250
COMBINED LIGHT AND SPEAKER HOUSING FOR AN EMERGENCY VEHICLE
Alfred John Peirish, Jr., Fountain Valley, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 5, 1976, Ser. No. 712,024
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D10—114



249,251
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray Lawrence Cowan, Norwood, Mass., assignor to Textron Inc.
Filed Jul. 6, 1976, Ser. No. 703,099
The portion of the term of this patent subsequent to Aug. 17, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—19



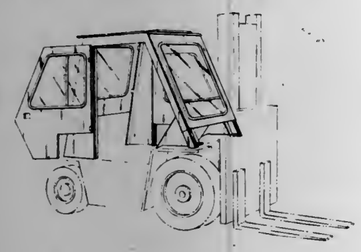
249,252
CLASP FOR ENGAGING PIERCED EARRING POST
Norman Gatof, New York, N.Y., assignor to Monet Jewelers, Inc., New York, N.Y.
Filed Jul. 27, 1976, Ser. No. 709,054
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—88



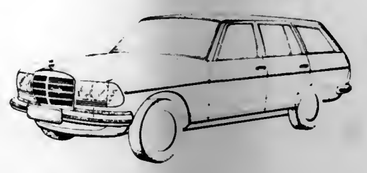
249,253
PENDANT ORNAMENT
Alan D. Watkins, P.O. Box 631, El Dorado, Kans. 67042
Filed Dec. 20, 1976, Ser. No. 752,473
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—128



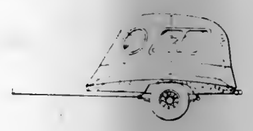
249,254
LIFT TRUCK CAB
Robert P. Martin, Sr., 7809 W. 130th St., Parma, Ohio 44129
Filed Feb. 17, 1977, Ser. No. 769,540
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—61



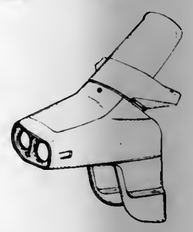
249,255
AUTOMOBILE
Hans O. Scherenberg; Werner Breitschwerdt, both of Stuttgart; Bruno Sacco, and Joseph Gallitzendorfer, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Feb. 3, 1977, Ser. No. 765,121
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 4561
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



249,256
COMBINED UTILITY AND RECREATIONAL TRAILER
John Joseph Simoneau, 1402 Myrtle Ave., San Diego, Calif. 92103
Filed Dec. 13, 1976, Ser. No. 750,049
Term of patent 14 years
Int. Cl.[2] D12—*10*
U.S. Cl. D12—103



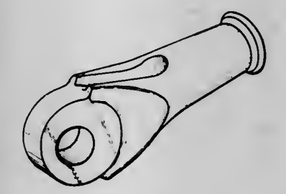
249,257
MOTORCYCLE FAIRING
Thomas S. Beaubien, Rancho Palos Verdes; Harold H. Larsen, Long Beach, and Robert E. Oehring, Norwalk, all of Calif., assignors to Bates Industries, Inc.
Filed Feb. 3, 1977, Ser. No. 765,357
Term of patent 14 years
Int. Cl.[2] D12—*11*
U.S. Cl. D12—182



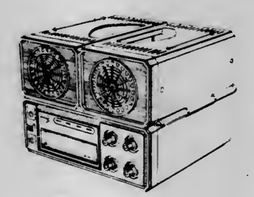
249,258
MIRROR SUPPORT HOUSING
Richard D. Hutchinson, Jr., Holland; Wayne VandenBrink, and Philip D. Stegenga, both of West Olive, all of Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.
Filed Aug. 5, 1977, Ser. No. 822,087
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



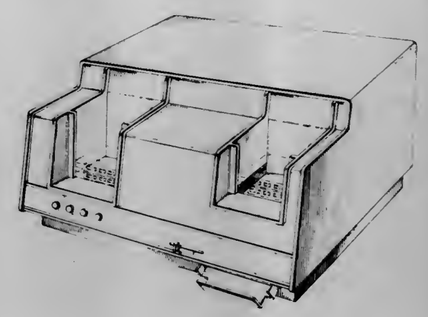
249,259
STRAIN INSULATOR FITTING
Albert Medler, Jackson, Mich., assignor to Plastigage Corporation
Filed Jun. 6, 1977, Ser. No. 803,732
Term of patent 14 years
Int. Cl.[2] D13—*03*
U.S. Cl. D13—18



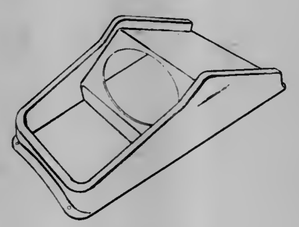
249,260
COMBINED CARTRIDGE RECORDER AND PLAYER
Kashichi Hirota, Hachioji, Japan, assignor to Kyowa Denki Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 22, 1976, Ser. No. 707,541
Claims priority, application Japan, Jan. 23, 1976, 51-1645
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



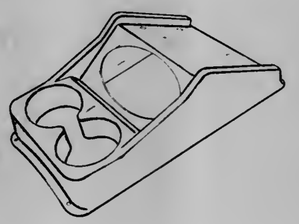
249,261
MULTIPLE CASSETTE RECORDING MACHINE
Arthur J. Pulos, 201 Churchill La., Fayetteville, N.Y. 13066; Paul B. Sweeney, 4658 Broad Rd., Syracuse, N.Y. 13224; Michael Cridland, Chatham Rd., Manlius, N.Y. 13104, and Arthur Mikalsen, Knollcrescent Rd., Carmel, N.Y. 10512
Filed Sep. 15, 1976, Ser. No. 723,483
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



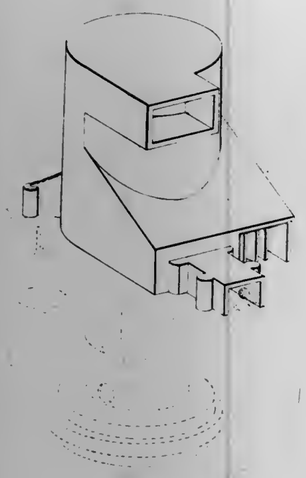
249,262
BASE FOR MOUNTING AUDIO EQUIPMENT IN A VEHICLE
Roy M. Neece, 9828 Tranquil Acres Rd., Saginaw, Tex. 76179
Filed Apr. 11, 1977, Ser. No. 786,356
Term of patent 14 years
Int. Cl. D14—*99*; D12—*16*
U.S. Cl. D14—10



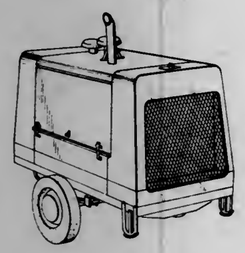
249,263
BASE FOR MOUNTING AUDIO EQUIPMENT IN A VEHICLE
Roy M. Neece, 9828 Tranquil Acres Rd., Saginaw, Tex. 76179
Filed Apr. 11, 1977, Ser. No. 786,506
Term of patent 14 years
Int. Cl. D14—*99*; D12—*16*
U.S. Cl. D14—10



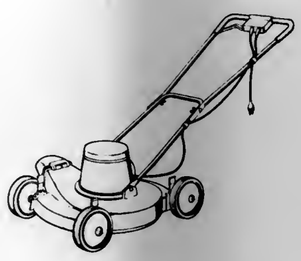
249,264
PUMP COVER
Douglas J. Bingler, Furlong, Pa., assignor to Milton Roy Company, Ivyland, Pa.
Filed Feb. 14, 1977, Ser. No. 768,690
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



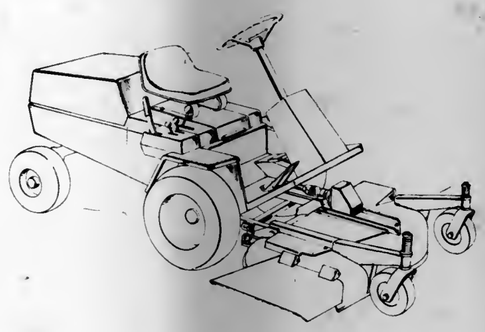
249,265
COMPRESSOR
Shigenobu Nanjo, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jan. 4, 1977, Ser. No. 756,720
Term of patent 7 years
Int. Cl. D15—*02*
U.S. Cl. D15—9



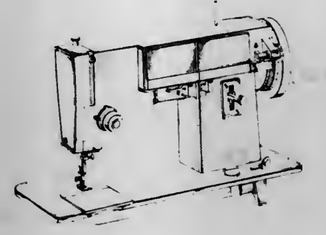
249,266
LAWN MOWER
Akiyasu Furuya, Hatogaya, Japan, assignor to Fuso Keigokin Co., Ltd., Tokyo, Japan
Filed Feb. 24, 1977, Ser. No. 771,668
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—14



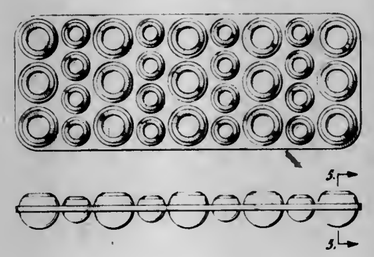
249,267
COMBINED SELF-PROPELLED TRACTOR AND MOWING APPARATUS
John F. Brackin, Minnetonka; Robert D. Lampher, Burnsville; Melvin H. Jendersee, Apple Valley, and James F. Stewart, Shoreview, all of Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Aug. 1, 1977, Ser. No. 821,294
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—15



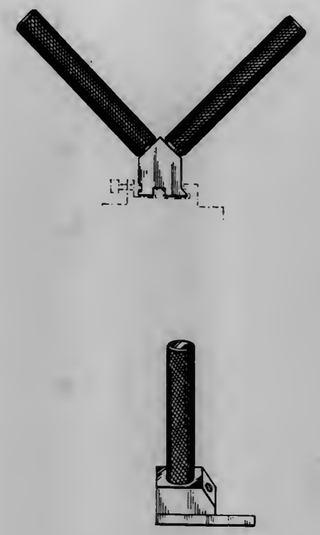
249,268
SEWING MACHINE
Wayne Allen Current, Holmdel, N.J., assignor to The Singer Company
Filed Jan. 10, 1977, Ser. No. 758,119
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69



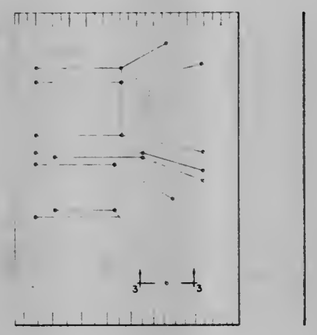
249,269
ICE TRAY
Robert E. Pitts, 6611 E. Central - Suite C, Wichita, Kans. 67206
Filed Feb. 10, 1977, Ser. No. 767,562
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—90



249,270
ADJUSTING HANDLES FOR BASE ASSEMBLY FOR MICROSCOPES
Richard E. Feinbloom, New York, and Laszlo Endrodi, Elmhurst, both of N.Y., assignors to Designs for Vision, Inc., New York, N.Y.
Filed Jun. 21, 1976, Ser. No. 697,926
Term of patent 14 years
Int. Cl. D16—*06, 99*
U.S. Cl. D16—83



249,271
DRAWING GUIDE FOR KITCHEN PLANNING OR THE LIKE
Joseph M. Boarman, 1814 W. Wyoming St., Indianapolis, Ind. 46221
Filed Dec. 17, 1976, Ser. No. 751,314
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—37



249,272
DESK SET
Louis Sommerfeld, 165 West End Ave., New York, N.Y. 10023
Filed Dec. 10, 1976, Ser. No. 749,553
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



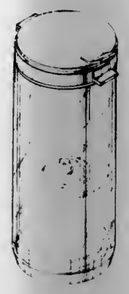
249,273
COMBINED CHARGE FORM STORAGE UNIT AND WRITING INSTRUMENT HOLDER
Ida Janet Day, R.R. #6, Bloomington, Ind. 47401
Filed Nov. 29, 1976, Ser. No. 745,525
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78



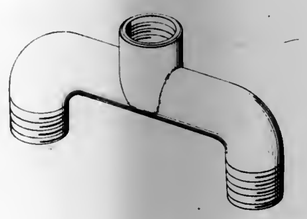
249,274
FISH HOOK REMOVER
Harold L. Hawkins, 5772 Lisbon Rd., Leetonia, Ohio 44431
Filed Jan. 26, 1978, Ser. No. 652,424
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



249,275
PORTABLE WATER FILTER
Frederick G. Mackay, Tarzana, and Spencer L. Mackay, Glendale, both of Calif., assignors to Teledyne Industries, Inc.
Filed Mar. 24, 1977, Ser. No. 780,812
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



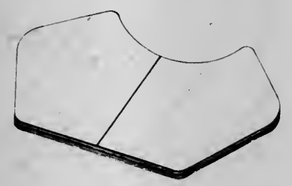
249,276
Y-TYPE FITTING FOR TWO SHOWERHEADS
Eugene Levin, 1420 Northgate Rd., Colorado Springs, Colo. 80908
Filed Apr. 1, 1976, Ser. No. 672,765
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



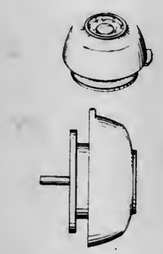
249,277
CONTAINER FOR AIR-TREATING COMPOSITION
Jean-Claude Balland, Marnes la Coquette, and Philippe Lecomte, Plaisance Vouille, both of France, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Aug. 15, 1975, Ser. No. 604,993
Claims priority, application France, Feb. 19, 1975, 75 1239
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



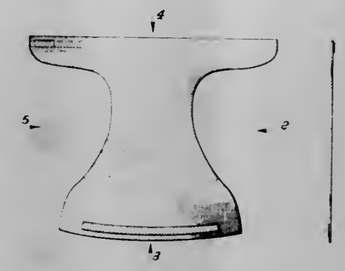
249,278
FEMALE GONADAL RADIATION SHIELD
Elfriede B. Milligan, Bellevue, Wash., assignor to Lok-A-Bin Systems, Inc., Portland, Oreg.
Filed Jun. 20, 1977, Ser. No. 808,234
Term of patent 14 years
Int. Cl. D24—*99;* D29—*02*
U.S. Cl. D24—2



249,279
EXHAUST VALVE OF RESPIRATORY MASK
Sigurd Alfons Bäcklund, Kemira A 2, SF-65230 Vassa 23, Finland
Filed Feb. 12, 1976, Ser. No. 657,561
Claims priority, application Finland, Sep. 1, 1975, 75469
Term of patent 14 years
Int. Cl. D24—*02;* D23—*01*
U.S. Cl. D24—7



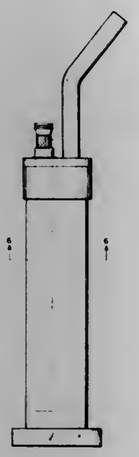
249,280
PINLESS DIAPER
Adolph S. Banuelos, 534 N. Lazar St., San Fernando, Calif. 95695
Filed May 3, 1976, Ser. No. 682,273
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—50



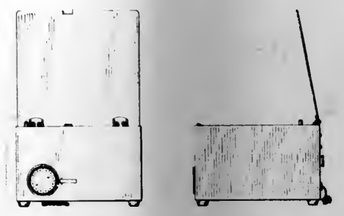
249,281
SMOKING DEVICE
Roger Graham, 931 Selim Rd., Silver Spring, Md. 20910
Filed Jan. 16, 1976, Ser. No. 649,697
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



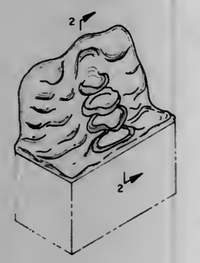
249,282
WATER PIPE
Stephen J. Nielsen, 2285 E. Skillman, North St. Paul, Minn. 55109
Filed Apr. 6, 1977, Ser. No. 785,072
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



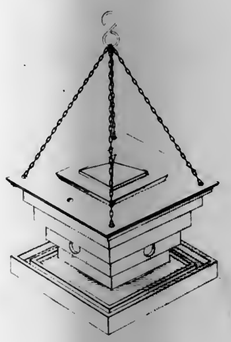
249,284
AUTOMATIC PET FEEDER
Alphonse J. Hericourt, 299 N. Almenar Dr., San Rafael, Calif. 94904
Filed Apr. 21, 1977, Ser. No. 789,596
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



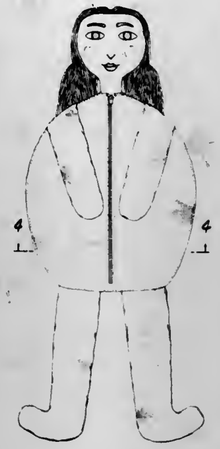
249,283
AQUARIUM COVER
Steven Conte, 17304 Euclid, Fountain Valley, Calif. 92335
Filed Nov. 11, 1977, Ser. No. 850,707
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



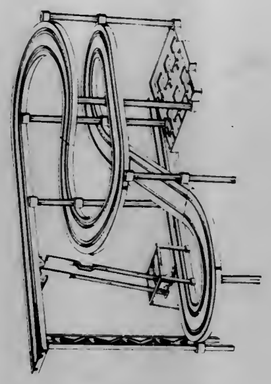
249,285
COLLAPSIBLE BIRD FEEDER
Walter H. Podjan, 1500 Rocky Gap, Benton Harbor, Mich. 49022
Filed Sep. 19, 1977, Ser. No. 834,435
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



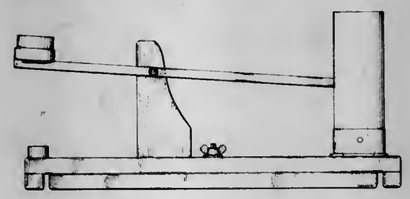
249,286
DOLL
Laura I. O'Connor, 943 Venango Ave., Los Angeles, Calif. 90029
Filed Mar. 7, 1977, Ser. No. 775,266
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



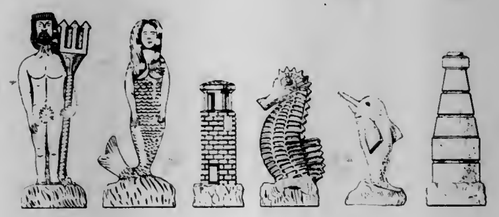
249,289
TOY AUTO RACEWAY
Larry R. Burcham, Hendersonville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.
Filed May 3, 1976, Ser. No. 680,331
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 K



249,287
BALL PROJECTOR BATTING AID
Theodore M. Strout, 24 Sharon La., Wethersfield, Conn. 06109
Filed Sep. 15, 1976, Ser. No. 723,452
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 R



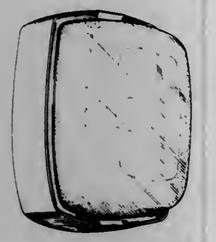
249,288
SET OF CHESS PIECES
Fredric J. Hodkin, 2648 Scott St., Hollywood, Fla. 33020
Filed Mar. 3, 1977, Ser. No. 773,919
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH



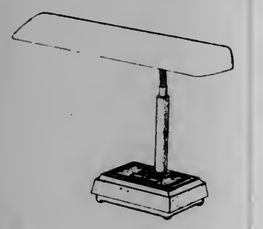
249,290
TOY WORK BENCH
Edward M. Ferguson, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.
Filed Nov. 3, 1976, Ser. No. 736,849
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AC



249,291
WIRELESS LIGHT FIXTURE
Whitley Pemberton, Stoughton, Wis., assignor to ESB Ray-O-Vac Management Corporation, Philadelphia, Pa.
Filed Mar. 15, 1976, Ser. No. 666,862
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B



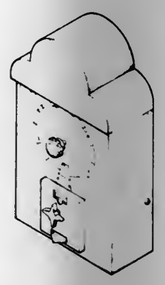
249,292
DESK LAMP
Shoji Ishikawa, Nara; Tadahisa Hatogai, Neyagawa; Osamu Harada, Minou, and Etsuko Kubota, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 4, 1977, Ser. No. 793,912
Claims priority, application Japan, Dec. 7, 1976, 51-47886
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F



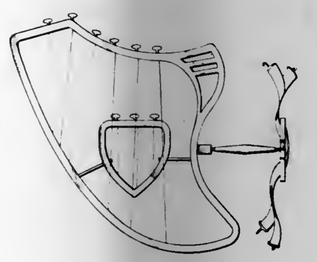
249,293
EMERGENCY LIGHT
Masahiko Yamada, and Tadanori Fujiwara, both of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Jun. 1, 1977, Ser. No. 802,409
Claims priority, application Japan, Dec. 3, 1976, 51/47802
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



249,294
VENDING MACHINE
Richard W. Housman, 3416 Manning Ave., Los Angeles, Calif. 90064
Filed Aug. 12, 1976, Ser. No. 713,945
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R



249,295
UPPER TORSO ATTACHABLE HARP OR THE LIKE
Walter Pinkins, Jr., 4240 N. Guilford Ave., Indianapolis, Ind. 46205
Filed Nov. 29, 1976, Ser. No. 745,526
Term of patent 14 years
Int. Cl.[2] D17—*03*
U.S. Cl. D56—1 A



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TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF SEPTEMBER, 1978

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Adams, David G., to Norton Company. Woven polyester backed flexible coated abrasive having microballoons in backsize. 4,111,667, Cl. 51-295.000.
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Alexander, William; and Webb, John T. H., to Wharton Engineers (Elstree) Limited. Haulage winches. 4,111,398, Cl. 254-175.500.
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Johnson, Samuel B., 4,110,904, Cl. 29-628.000.
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Allen, George Rodger, Jr.; Hanifin, John William, Jr.; Moran, Daniel Bryan; and Albright, Jay Donald, to American Cyanamid Company. 6-Phenyl-1,2,4-triazolo[4,3-b]pyridazine hypotensive agents. 4,112,095, Cl. 424-250.000.
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Rubashev, Grigory Markovich; Alperovich, Vladislav Ruvimovich; and Lazovsky, Jury Iosifovich, 4,112,348, Cl. 323-43.50S.

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Paris, Rene Antoine; Amblard, Paul Alexis; and Rousset, Abel Claude, 4,111,686, Cl. 75-0.50A.

Amcord, Inc.: *See—*
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Ashani, Yacov; Amitai, Gavriel; Grunfeld, Yona; Kalir, Asher; and Cohen, Sasson, to State of Israel, Prime Minister's Office, The Israel Institute for Biological Research, The. Pharmaceutical composition for treating glaucoma and compound 1,3,2-dioxaphospheringnes. 4,112,082, Cl. 424-209.000.

Ashida, Hitoshi, to Takeda Riken Kogyo Kabushikikaisha. Digital frequency measuring device. 4,112,358, Cl. 324-78.00D.

Asker, Graham Edward, to Eastman Kodak Company. Low-inertia electronic shutter. 4,112,451, Cl. 354-258.000.

Asogawa, Tatsuo: *See—*
Funakoshi, Yoshiro; Asogawa, Tatsuo; Satake, Eiichi; Motoyama, Shimesu; Yamada, Shuri; and Kakukawa, Morio, 4,111,626, Cl. 425-203.000.

Associated Electrical Industries Limited: *See—*
Friedlander, Erich Siegfried, 4,112,403, Cl. 336-12.000.

Atari, Inc.: *See—*
Mayer, Steven T.; and Milner, Ronald E., 4,112,422, Cl. 340-324.0AD.

Atkinson, Joseph George: *See—*
Rooney, Clarence Stanley; Rokach, Joshua; and Atkinson, Joseph George, 4,112,112, Cl. 424-274.000.

Atlantic Richfield Company: *See—*
Zehner, Lee R.; and Lenton, R. Warren, 4,112,245, Cl. 568-864.000.

Audiffred, Sidney J.: *See—*
Pearce, Shairyl I.; and Audiffred, Sidney J., 4,111,071, Cl. 74-753.000.

Augusztin, Bela. Grinding arbor. 4,110,936, Cl. 51-218.00R.

Auphan, Michel Joseph: *See—*
Alais, Pierre; and Auphan, Michel Joseph, 4,112,411, Cl. 340-1.00R.

Auracher, Franz; Zeitler, Karl-Heinz; and Rauscher, Walter, to Siemens Aktiengesellschaft. Device for coupling two light conducting fiber cables. 4,111,522, Cl. 350-96.210.

Auriemma, Robert S. Highway marker. 4,111,581, Cl. 404-10.000.

aus der Funten, Helmut: *See—*
Bier, Gerhard; Blaschke, Franz; aus der Funten, Helmut; and Schade, Gerhard, 4,111,921, Cl. 528-338.000.

Automatic Grinding Machine & Engineering Co. Ltd.: *See—*
Varley, Bernard Scott, 4,111,075, Cl. 76-41.000.

Automotive Products Limited: *See—*
Farrant, David John Rowland, 4,111,571, Cl. 403-27.000.
Young, Alastair John, 4,111,494, Cl. 303-6.00C.

Avery International Corporation: *See—*
Nemeth, Suzette B., 4,111,205, Cl. 128-284.000.

AVM Corporation: *See—*
Sheppard, William L., 4,111,395, Cl. 251-306.000.

Avtex Fibers Inc.: *See—*
Franko-Filipasic, Borivoj Richard; Orwoll, Edward F.; and Patel, Vithal C., 4,111,701, Cl. 106-15.0FP.

B. F. Goodrich Company, The: *See—*
Black, Arthur Leroy, 4,111,897, Cl. 260-42.330.

B & G Equipment Company: *See—*
Brehm, William L., 4,111,368, Cl. 239-394.000.

Babcock, Robert A.; Glasfeld, Rolf D.; and Holt, Luther E., to General Dynamics Corporation. Tank support joint. 4,111,146, Cl. 114-74.00A.

Babinsky, Andrew D., to Diamond Shamrock Corporation. Converting a diaphragm electrolytic cell to a membrane electrolytic cell. 4,112,149, Cl. 427-34.000.

Bachman, Gerald L., to Monsanto Company. Hydrolysis of esters of α-L-aspartyl-L-phenylalanine. 4,111,925, Cl. 260-112.50R.

Back, Paul R.; and Van Vessem, Thomas G., to United Technologies Corporation. Dual threshold low coil signal conditioner. 4,112,351, Cl. 324-16.00R.

Back, Paul R.: *See—*
Van Vessem, Thomas G.; and Back, Paul R., 4,112,350, Cl. 324-16.00R.

Baddour, Raymond F., to Energy Resources Co. Inc. Recovering surfactant. 4,111,812, Cl. 210-257.00M.

Badertscher, Ernest; and Easton, George Anthony, to Societe d'Assistance Technique pour Produits Nestle S.A. Butter-like food product. 4,112,132, Cl. 426-603.000.

Baggett, Joseph M.; and Ham, George E., to Dow Chemical Company, The. Heat stabilized thermoplastic resins containing compounds with phosphorus to phosphorus bonds. 4,111,899, Cl. 260-45.80R.

Baggett, Joseph M., to Dow Chemical Company, The. Polycarbonates having carbamate terminal groups. 4,111,910, Cl. 528196-.

Bahder, George; Eager, George S., Jr.; and Suarez, Rafael, to General Cable Corporation. Mobile bridge test apparatus and method utilizing a sub-power frequency test signal for cable system evaluation. 4,112,354, Cl. 324-54.000.

Bailey, Allen R., to U.S. Rubber Reclaiming Co., Inc. Ground rubber elastomeric composite useful in surfacings and the like, and methods. 4,112,176, Cl. 428-304.000.

Bailey, C. Richard. Apparatus for concealing auxiliary equipment and methods of constructing and utilizing same. 4,111,133, Cl. 108-45.000.

Bailey, Frederick Eugene; and Koleske, Joseph Victor, to Union Carbide Corporation. Impact modifiers for polyvinyl chloride. 4,111,876, Cl. 260-29.6RB.

Bailey, John M., to Monitoring Systems Inc. Hydrostatic head pressure monitor with remote readout. 4,111,047, Cl. 73-302.000.

Baird, David Boyd; Campbell, James Stanley; Fishwick, Brian Ribbons; and McClelland, Robert David, to Imperial Chemical Industries Limited. Process for the manufacture of heterocyclic compounds. 4,111,956, Cl. 260-329.0AM.

Baird, William G., Jr.; Holbrook, Stanley E.; and Platt, Jeremy A., deceased, to W. R. Grace & Co. Method for preparing a film of vinylidene chloride polymer. 4,112,181, Cl. 428-336.000.

Bakelite Xylonite Limited: *See—*
Jack, James, 4,111,860, Cl. 521-84.000.

Baker, Roger Thomas. Dynamic memory cell with automatic refreshing. 4,112,510, Cl. 365-187.000.

Bakermans, Johannes Cornelis Wilhelmus: *See—*
Peppler, Michael Seigman; and Bakermans, Johannes Cornelis Wilhelmus, 4,110,880, Cl. 29-33.00K.

Bakker, Jouke, to Douwe Egberts Tabaksmaatschappij B.V. Dosing and weighing of cut tobacco. 4,111,212, Cl. 131-21.00A.

Balatinecz, John J. Producing recycle composition paper flake board. 4,111,730, Cl. 156-62.200.

Baldwin, John J.: *See—*
Novello, Frederick C.; and Baldwin, John J., 4,111,944, Cl. 260-296.00R.

Balke, David E.; and Perez, Donald E., to Ciba-Geigy Corporation. Process for the preparation of methyliminoisobutyrate hydrochloride. 4,111,976, Cl. 260-453.0RW.

Ball Packaging Products, Inc.: *See—*
Zappia, Anthony T., 4,111,674, Cl. 65-77.000.

Ballard, Albert Stevens: *See—*
Arya, Satya Prakash; Ballard, Albert Stevens; and Foster, Stephen James, 4,111,335, Cl. 222-57.000.

Ballard, Geoffrey Martin, to Pilkington Brothers Limited. Thermal treatment of glass in a fluidized bed. 4,111,675, Cl. 65-114.000.

Bamberg, Wolfgang: *See—*
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, 4,111,987, Cl. 562-401.000.

Ban, Thomas E.; and Rao, Ashok D., to McDowell-Wellman Engineering Company. Method of producing pelletized fixed sulfur fuel. 4,111,755, Cl. 201-6.000.

Bangay, Alan John; Raw, Peter Michael; Llewellyn, Rees Jenkin; and Gregory, Peter, to BICC Limited. Fabrication of copper. 4,110,892, Cl. 29-420.000.

Baniak, Zofia: *See—*
Swietoslawski, Janusz; Silowiecki, Andrzej; Ratajczak, Aleksander; Nocon, Barbara; and Baniak, Zofia, 4,112,242, Cl. 568-726.000.

Banister, Peter George, to Conwed Corporation. Resilient foam cushion structure. 4,110,857, Cl. 5-337.000.

Bannister, Ramon A. Method of inhibiting corrosion. 4,111,830, Cl. 422-17.000.

Bantz, Paul Edward; and Mayer, Robert William, to Globe-Union Inc. Ladle gate. 4,111,256, Cl. 164-335.000.

Banwell, Richard Hugh: *See—*
Hinchlieff, Henry Russell; and Banwell, Richard Hugh, 4,111,211, Cl. 131-2.000.

Baranow, Sanford, to Special Metals Corporation. Dispersion-strengthened cobalt-bearing metal. 4,111,685, Cl. 75-951.000.

Barben, Theodore R., II, to Thomas Barben Instruments. Electrochemical reference cell with improved liquid junction. 4,112,352, Cl. 324-30.00R.

Barbini, Richard J., to Chemineer, Inc. Motionless mixer. 4,111,402, Cl. 366-338.000.

Barbosa, Ely Rubens. Game of naval strategy and chance. 4,111,428, Cl. 273-262.000.

Bardos, Andrew Miklos: *See—*
Gillis, Alva Knox; Otten, Thomas Harvey; and Bardos, Andrew Miklos, 4,111,519, Cl. 350-3.660.

Bargiotti, Alberto: *See—*
Arcamone, Federico; Bargiotti, Alberto; di Marco, Aurelio; and Penco, Sergio, 4,112,076, Cl. 424-180.000.

Barnette, Jon H., to United States of America, Energy. Manually operated coded switch. 4,111,017, Cl. 70-293.000.

Barr, Irwin R., to AAI Corporation. Solar energy concentrating and collecting arrangement and method. 4,111,360, Cl. 237-1.00A.

Barrat, Christian Roland; Arnau, Jose Luis; and Wevers, Jean, to Procter & Gamble Company, The. Liquid enzyme containing detergent composition. 4,111,855, Cl. 252-545.000.

Barre, Francoise: *See—*
Dubois, Jean Claude; and Barre, Francoise, 4,112,239, Cl. 560-73.000.

Bartell, Roger Edwin: *See—*
Salsich, Robert Charles; and Bartell, Roger Edwin, 4,112,280, Cl. 219-216.000.

Barthe, Marie-Pierre: *See—*
Battigelli, Jean A.; and Barthe, Marie-Pierre, 4,111,672, Cl. 65-3.00C.

Bartus, Stephen P., Jr.: *See—*
Motter, Theodore J.; Mattimoe, Paul T.; and Bartus, Stephen P., Jr., 4,112,171, Cl. 428-213.000.

Barwick, Morris L., to Xerox Corporation. Means and method for providing indicating of end portion of web material. 4,111,378, Cl. 242-57.000.

Barzda, Justin J., to United States of America, Navy. Deployable rotor. 4,111,602, Cl. 416-89.000.

Baschang, Gerhard; Sele, Alex; Stanek, Jaroslav; and Rossi, Alberto, to Ciba-Geigy Corporation. Furanose-O-pyridylcarboxylic acid esters. 4,112,075, Cl. 424-180.000.

BASF Aktiengesellschaft: *See—*
Sander, Bruno; Bonitz, Eckhard; and Scherling, Kurt, 4,112,029, Cl. 264-11.000.

BASF Wyandotte Corporation: *See—*
Login, Robert Bernard, 4,111,816, Cl. 252-8.600.

Bassoe, Jorgen: *See—*
Jorgensen, Arne; Berthelsen, Poul; and Bassoe, Jorgen, 4,111,352, Cl. 229-31.00R.

Battelle Development Corporation: *See—*
Peterson, Palmer L.; Duffy, James B.; and Tokarz, Richard D., 4,111,798, Cl. 209-172.500.

Battelle Memorial Institute: *See—*
Zega, Bogdan, 4,112,137, Cl. 427-38.000.

Battigelli, Jean A.; and Barthe, Marie-Pierre, to Saint-Gobain Industries. Method and apparatus for suppression of pollution in mineral fiber manufacture. 4,111,672, Cl. 65-3.00C.

Bauer, Jochen: *See—*
Pasternak, Rudolf; and Bauer, Jochen, 4,111,665, Cl. 48-77.000.

Bauer, John R., to Goodyear Tire & Rubber Company, The. Sidewall protector. 4,111,250, Cl. 152-187.000.

Baum, Burton M.: *See—*
Blumbergs, John H.; Finley, Joseph H.; and Baum, Burton M., 4,111,651, Cl. 8-111.000.

Baumgartner, Franklin: *See—*
Liu, James, 4,111,689, Cl. 75-122.000.

Baupres AG: *See—*
Cambiuzzi, Giulio; and Montanelli, Michele, 4,110,949, Cl. 52-437.000.

Baxter, Ronald Dale, to Leeds & Northrup Company. Small-size high-performance radiation thermopile. 4,111,717, Cl. 136-225.000.

Baxter Travenol Laboratories, Inc.: *See—*
Bellamy, David; and Winchell, David A., 4,111,325, Cl. 215-232.000.
Bogga, Daniel R.; and Brown, Richard I., 4,111,356, Cl. 233-26.000.
Winchell, David A., 4,111,324, Cl. 215-232.000.

Bayer Aktiengesellschaft: *See—*
Buxbaum, Gunter; and Hund, Franz, 4,112,063, Cl. 423-633.000.
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, 4,112,012, Cl. 260-835.000.
Eckert, Heiner; Ugi, Ivar; and Kabbe, Hans-Joachim, 4,111,933, Cl. 260-239.100.
Enders, Edgar; Stendel, Wilhelm; and Voege, Herbert, 4,112,065, Cl. 424-45.000.
Giesecke, Henning; Hocker, Jurgen; and Merten, Rudolf, 4,111,918, Cl. 528-73.000.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammen, Ingeborg; and Homeyer, Bernhard, 4,112,080, Cl. 424-200.000.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,112,081, Cl. 424-200.000.
Kunzel, Hans Egon; and Bentz, Francis, 4,111,920, Cl. 526-6.000.
Martin, Manfred; Schmidt, Walter; and Scharfe, Gerhard, 4,111,967, Cl. 260-396.00R.
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,112,109, Cl. 424-273.00P.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,112,227, Cl. 424-273.00P.
Niederprum, Hans; Meussdoerffer, Johann-Nikolaus; Nieder-Vahrenholz, Hans-George; and Bockelmann, Wolfgang, 4,112,046, Cl. 423-53.000.
Rohbock, Klaus; Wiemers, Rudolf; Woditsch, Peter; and Thiel, Reinhard, 4,111,832, Cl. 252-412.000.
Thiem, Karl-Werner; Hamers, Adolf; and Heinen, Josef, 4,112,005, Cl. 260-645.000.
Traenckner, Hans-Joachim; Rosenkranz, Hans Jurgen; Fischler, Hans-Michael; and Eimers, Erich, 4,112,018, Cl. 260-861.000.

Bayerische Motoren Werke AG: *See—*
Ederer, Georg; Fischer, Adolf; Rosche, Paul; Troll, Helmar; Wurst, Wolfgang; Hengl, Helmut; and Seidl, Jiri, 4,111,163, Cl. 123-52.00M.
Kob, Adolf; and Blatner, Eduard, 4,111,457, Cl. 280-728.000.

BBC Brown, Boveri & Company Limited: *See—*
Fath, Horst; and Nill, Reiner, 4,112,341, Cl. 318-370.000.

Bean, Samuel Louis: *See—*
Hoffmann, Robert Joel; Bean, Samuel Louis; Seeling, Philip; and Swaine, James William, Jr., 4,112,061, Cl. 423-512.00A.

Beard, Charles D.; and Moffitt, Robert B., III, to Union Carbide Corporation. Cleavage of silylated carboranes and method for preparing meta-carborane employing same. 4,111,999, Cl. 260-606.50B.

Bearden, Roby, Jr.: *See—*
Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,111,787, Cl. 208-10.000.

Beatrice Foods Co.: *See—*
Chesnut, Jon C.; and Epstein, Edward, 4,112,125, Cl. 426-250.000.
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Beaty, Ronald L.: *See—*
Kockler, Barry C.; and Beaty, Ronald L., 4,111,293, Cl. 400-208.000.

Beaulieu: *See—*
Mazoyer, Jean, 4,111,432, Cl. 274-15.00R.

Bechteler, Martin: *See—*
Veith, Werner; and Bechteler, Martin, 4,112,332, Cl. 315-169.0TV.

Beck, Warren R., to Minnesota Mining and Manufacturing Company. Hollow spheres. 4,111,713, Cl. 106-288.00B.

Becker, Kenneth W.: *See—*
Sullivan, Daniel S., 3rd; Strubelt, Charles E.; and Becker, Kenneth W., 4,112,001, Cl. 568-855.000.

Becker, Willi; and Nesseldreher, Wilfried, to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH. Turbomolecular pump with magnetic mounting. 4,111,595, Cl. 415-90.000.

Beckman Instruments, Inc.: *See—*
Ishimaru, Kenzo, 4,111,355, Cl. 233-20.00R.

Beckmann, Klaus; and Linke, Horst, to Gewerkschaft Eisenhutte Westfalia. Stacked mineral mining plows independently driven or coupled. 4,111,489, Cl. 299-34.000.

Becton, Dickinson and Company: *See—*
Percarpio, Edward P., 4,111,326, Cl. 215-247.000.

Beeby, Philip J., to Syntex (U.S.A.) Inc. Cephalosporin type antibacterials having a substituted propenyl group in the 3-position. 4,112,087, Cl. 424-246.000.

Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, to Johnson & Johnson. Hydrophilic random interpolymer from quaternary ammonium monomers and method for making same. 4,111,922, Cl. 526-292.000.

Begany, Albert J.: *See—*
Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., 4,112,094, Cl. 424-250.000.
Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., 4,112,101, Cl. 424-263.000.
Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., 4,112,106, Cl. 424-270.000.

Behrenz, Wolfgang: *See—*
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Bein, Kenneth E. Holding means for gem stones. 4,110,937, Cl. 51-229.000.

Bell Fibre Products Corporation: *See—*
Geschwender, Robert C., 4,111,862, Cl. 521-55.000.

Bell & Howell Company: *See—*
Wells, Thomas R., 4,111,149, Cl. 353-78.000.
Wells, Thomas R.; and Dahlen, Theodore E., 4,111,537, Cl. 353-101.000.

Bell, Malcolm R.: *See—*
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Bell, Malcolm Rice: *See—*
Carlson, John Alan; and Bell, Malcolm Rice, 4,112,105, Cl. 424-270.000.

Bell Telephone Laboratories, Incorporated: *See—*
Alles, Harold Gene, 4,112,258, Cl. 179-15.0AT.
Bindell, Jeffrey Bruce; Holschwandner, Lowell Henry; Labuda, Edward Franklin; and Ryden, William Dennis, 4,111,783, Cl. 204-298.000.
Brohard, Ivan Eugene, 4,112,279, Cl. 200-181.000.
Cho, Alfred Yi; DiLorenzo, James Vincent; and Mahoney, Gerard Edward, 4,111,725, Cl. 148-175.000.
Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, 4,111,523, Cl. 350-96.140.
Kaminow, Ivan Paul; and Presby, Herman Melvin, 4,111,525, Cl. 350-96.310.
Stiefel, Kenneth Erwin, 4,112,262, Cl. 179-170.00G.
Tomlinson, Walter John, III, 4,111,524, Cl. 350-96.190.

Bellamy, David; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Sealed closure for plastic container with interlocking protective outer closure. 4,111,325, Cl. 215-232.000.

Beloit Corporation: *See—*
Cancilla, Vincent W., 4,111,799, Cl. 209-273.000.

Bemrose, Harold E. Forced air food drier. 4,110,916, Cl. 34-197.000.

Bendiks, Donald J. Flat television screen. 4,112,466, Cl. 358-241.000.

Bendix Autolite Corporation: *See—*
Davis, Donald Colen; Bilger, Alan H.; and Madson, Kent Christ, Jr., 4,111,778, Cl. 204-195.00S.

Bendix Corporation, The: *See—*
Carp, Ralph W.; Ang, Leoncio T.; and Rini, Guy T., 4,111,497, Cl. 303-110.000.
Jordan, David D., 4,111,576, Cl. 403-134.000.
Muhs, Donald Paul; and Hart, Russell Frank, 4,112,413, Cl. 340-27.00R.

Bendix Machine Tool Corporation: *See—*
Hipwell, Donald D.; and Menzel, Klaus Rudolf, 4,110,897, Cl. 29-568.000.

Benko, John M., to Pullman Incorporated. Flame cutting machine for modification of railway car side sills. 4,111,404, Cl. 266-58.000.

Benninger, Hans; Eggimann, Fritz; and Enkegaard, Ole, to Patelhold Patentverwertungs & Elektro-Holding AG. Ground fault protection system. 4,112,476, Cl. 361-42.000.

Benno, Edward Leonard: *See—*
Braun, Leonard Charles; and Benno, Edward Leonard, 4,111,135, Cl. 111-2.000.

Benoit, Roland A.; and Guillot, Edmond P., to InterRoyal Corporation. Hospital bed. 4,110,856, Cl. 5-68.000.

Bentz, Francis: *See—*
Kunzel, Hans Egon; and Bentz, Francis, 4,111,920, Cl. 526-6.000.

Bepex Corporation: *See—*
Cory, Charles E., 4,111,115, Cl. 100-116.000.

Berges, David A., to SmithKline Corporation. 7β-Acylamino-3-(phosphonoalkyl and esterified phosphonoalkyl substituted tetrazolylthiomethyl)cephalosporins. 4,112,086, Cl. 424-246.000.

Berges, David A., to SmithKline Corporation. 7-Acyl-3-(sulfoalkyl substituted oxadiazolylthiomethyl) cephalosporins. 4,112,088, Cl. 424-246.000.

Berghahn, Walter G.; and Weinstein, Jack, to Bristol-Myers Company. Liquid applicator. 4,111,567, Cl. 401-202.000.

Bergman, Ernest R., to Copeland Corporation. Discharge muffler. 4,111,278, Cl. 181-249.000.

Bergmann, Horst, to Siemens Aktiengesellschaft. Apparatus and method for tuning electro-mechanical filter components. 4,112,360, Cl. 324-80.000.

Bernal G., Enrique, to Honeywell Inc. Fabrication of optical waveguides. 4,111,520, Cl. 350-96.120.

Bernauer, Lawrence J.: *See—*
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Berney, Jean Claude. Control for a step motor for the measurement of time. 4,110,968, Cl. 58-23.00A.

Bernstein, Jack: *See—*
Hoehn, Hans; Bernstein, Jack; and Vogt, Berthold Richard, 4,111,940, Cl. 260-293.600.

Berol Kemi AB: *See—*
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Berstermann, Wilhelm: *See—*
Grisar, Ulrich; and Berstermann, Wilhelm, 4,111,556, Cl. 356-86.000.

Berthelsen, Poul: *See—*
Jorgensen, Arne; Berthelsen, Poul; and Bassoe, Jorgen, 4,111,352, Cl. 229-31.00R.

Berthold, Richard: *See—*
Bormann, Gerhard; and Berthold, Richard, 4,112,111, Cl. 424-274.000.

Bertolasi, Robert B., to Kelsey-Hayes Co. Dual-screen data display terminal for data processing units. 4,112,423, Cl. 340-324.0AD.

Bertolette Machines, Inc.: *See—*
Bertolette, Reed, 4,111,346, Cl. 225-96.500.

Bertolette, Reed, to Bertolette Machines, Inc. Tube cutting machine with break-off means. 4,111,346, Cl. 225-96.500.

Bertsch, Hugh C.: *See—*
Chapman, Douglas W.; and Bertsch, Hugh C., 4,112,238, Cl. 560-70.000.

Berwick, Martin Alfred: *See—*
Wright, Hal Eldon; and Berwick, Martin Alfred, 4,111,693, Cl. 96-1.600.

BesPak Corporation: *See—*
Mackiernan, Stuart W., 4,111,351, Cl. 229-17.00M.

Best, Donald Charles, to Union Carbide Corporation. Nickel-rhenium hydrogenation catalyst and methods of preparing same and using same. 4,111,840, Cl. 252-432.000.

Betancourt, Osmundo J.: *See—*
Jay, John; Bonner, Gary D.; and Betancourt, Osmundo J., 4,111,801, Cl. 210-40.000.

Bettencourt, Darryl G.: *See—*
Freeman, Daniel L.; Bettencourt, Darryl G.; and Marshall, George E., Jr., 4,111,210, Cl. 130-30.00R.

Bevan, Leonard Graham: *See—*
Pairaudeau, Reginald David; Turnbull, David; and Bevan, Leonard Graham, 4,111,710, Cl. 106-90.000.

Beverly Limited: *See—*
Kent, Jan Herbert Farquharson, 4,111,619, Cl. 425-43.000.

Bevins, Bruce V.: *See—*
Shanto, Albert J.; and Bevins, Bruce V., 4,111,213, Cl. 131-173.000.

Bezstarosti, Ladislav; Lindental, Antonin; Lanta, Jiri; and Cizek, Jaroslav, to Vyzkumny ustav bavlnarsky. Apparatus for controlling shed formation in a travelling-wave loom. 4,111,238, Cl. 139-436.000.

BICC Limited: *See—*
Bangay, Alan John; Raw, Peter Michael; Llewellyn, Rees Jenkin; and Gregory, Peter, 4,110,892, Cl. 29-420.000.

Bicking, John B.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. Interphenylene 8-aza-9-dioxothia-11,12-secoprostaglandins. 4,112,236, Cl. 560-12.000.

Biegel, Peter; and Dumont, Anton, to Klockner-Humboldt-Deutz Aktiengesellschaft. Apparatus for the treatment of the outer contour of a worm conveyor. 4,111,403, Cl. 266-58.000.

Bier, Gerhard; Blaschke, Franz; aus der Funten, Helmut; and Schade, Gerhard, to Dynamit Nobel Aktiengesellschaft. Transparent polyamides. 4,111,921, Cl. 528-338.000.

Bilger, Alan H.: *See—*
Davis, Donald Colen; Bilger, Alan H.; and Madson, Kent Christ, Jr., 4,111,778, Cl. 204-195.00S.

Bimond, Jean-Pierre; and Lazarre, Flavien, to Societe Nationale Elf Aquitaine (Production). Device for destroying foam. 4,111,829, Cl. 252-361.000.

Bindell, Jeffrey Bruce; Holschwandner, Lowell Henry; Labuda, Edward Franklin; and Ryden, William Dennis, to Bell Telephone Laboratories, Incorporated. Triode sputtering system. 4,111,783, Cl. 204-298.000.

Binder, Kerry: *See—*
King, M. Dale; and Binder, Kerry, 4,111,274, Cl. 180-25.00R.

Biola, Georges: *See—*
Masotti, Robert; Biola, Georges; and Guerpillon, Henri, 4,111,662, Cl. 422-231.000.

Biondetti, Mario, to Escher Wyss Limited. Rolling device having a controlled-deflection roll. 4,111,746, Cl. 162-272.000.

Bistrick, Eugene J.; Miller, Stewart F.; Abrahamsson, Axel B.; and Schlaf, Richard A., to Lear Siegler, Inc. Broach. 4,111,586, Cl. 407-16.000.

Bivens, David J., to Bivens-Winchester Corporation. Adjustable width side brush arrangement for large vehicle washing machines. 4,110,865, Cl. 15-53.0AB.

Bivens-Winchester Corporation: *See—*
Bivens, David J., 4,110,865, Cl. 15-53.0AB.

BJ-HUGHES Inc.: *See—*
Gray, Charles Alexander, 4,111,235, Cl. 138-109.000.

Bjorkholm, Paul: *See—*
Annis, Martin; Bjorkholm, Paul; Cobb, Carolus M.; Frederick, Edwin; and Ramsey, Alan, 4,112,301, Cl. 250-364.000.

Blachura, Leon, to North Oakland Development Corporation. Home building method. 4,110,952, Cl. 52-745.000.

Black, Arthur Leroy, to B. F. Goodrich Company, The. EPDM composition. 4,111,897, Cl. 260-42.330.

Black Clawson Company, The: *See—*
Tetro, Richard S.; and Harmon, Paul E., 4,111,377, Cl. 242-56.00R.

Black, John W., to Pemco-Kalamazoo, Inc. Apparatus for assembling bearing unit in a wheel. 4,111,623, Cl. 425-129.00R.

Blackburn, Keith; and Ross, Douglas, to Dock Truck, Inc. Terminal tractor. 4,111,273, Cl. 180-14.00R.

Blackmer, David E., to DBX, Inc. Signal compander system. 4,112,254, Cl. 179-1.0VL.

Blair, Ronald A.; Nickstadt, Gerhard A.; and Imbrogno, Gaetano O., to General Electric Company. Drive motor mounting base for a gear motor having a C-faced reducer. 4,111,069, Cl. 74-606.00R.

Blake, Joseph Walter, III: *See—*
Einhorn, Ruediger; Chasen, Lee Richard; and Blake, Joseph Walter, III, 4,110,907, Cl. 30-164.950.

Blanch, Julian E.: *See—*
Lin, Chii-Fa; and Blanch, Julian E., 4,112,223, Cl. 536-114.000.

Blaschke, Franz: *See—*
Bier, Gerhard; Blaschke, Franz; aus der Funten, Helmut; and Schade, Gerhard, 4,111,921, Cl. 528-338.000.

Blaszyk, Paul E.; Shoup, Robert D.; and Wein, William J., to Corning Glass Works. Silica-containing porous bodies of controlled pore size. 4,112,032, Cl. 264-42.000.

Blatner, Eduard: *See—*
Kob, Adolf; and Blatner, Eduard, 4,111,457, Cl. 280-728.000.

Blattner, Hans, to Ciba-Geigy Corporation. Oxygenated azatetracyclic compounds. 4,112,110, Cl. 424-274.000.

Blau, Henry H., Jr.; and Kebabian, Paul L., to Environmental Research & Technology, Inc. Method of making a light equalizer. 4,111,731, Cl. 156-86.000.

Blau, Henry H., Jr.; and Kebabian, Paul L., to Environmental Research & Technology, Inc. Light equalizer and method of making same. 4,112,028, Cl. 264-1.000.

Blomberg, Peter Erik, to Aktiebolaget Electrolux. Gas operated refrigerator having a sealed combustion system with separated fresh air and combustion gas conduits. 4,111,004, Cl. 62-476.000.

Bluestein, Ben A., to General Electric Company. Process for producing a cyclotrisiloxane in a cracking reaction. 4,111,973, Cl. 260-448.20E.

Blumbergs, John H.; Finley, Joseph H.; and Baum, Burton M., to FMC Corporation. Sulfonic anhydrides in peroxygen bleaching. 4,111,651, Cl. 8-111.000.

Blumig, Theodore: *See—*
Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, 4,111,922, Cl. 526-292.000.

Bo Moderatho & Company AB: *See—*
Moderatho, Bo, 4,110,924, Cl. 40-158.00B.

Bob Mallard Enterprises, Inc.: *See—*
Mallard, Robert G., 4,111,240, Cl. 139-449.000.

Bockelmann, Wolfgang: *See—*
Niederprum, Hans; Meussdoerffer, Johann-Nikolaus; Nieder-Vahrenholz, Hans-George; and Bockelmann, Wolfgang, 4,112,046, Cl. 423-53.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Tamm, Rolf, 4,111,563, Cl. 356-244.000.
Tamm, Rolf Gunther Arnold; and Huber, Bernhard Werner, 4,111,051, Cl. 73-423.00A.

Bodlaj, Viktor, to Siemens Aktiengesellschaft. Apparatus and method for measuring distance from and speed components of an object traveling vertical to a reference line. 4,111,552, Cl. 356-4.000.

Bodolai, John J., to Carborundum Company, The. Cuprous oxide containing resin bonded abrasive article and process for manufacturing same. 4,110,939, Cl. 51-298.00R.

Boeing Company, The: *See—*
Falcioni, Joseph G., 4,111,580, Cl. 85-9.00R.
Geithman, Glenn Allen; and Woodmansee, Wayne Earl, 4,111,053, Cl. 73-588.000.
Hilliard, Lonnie George; and Verzemnieks, Juris, 4,111,081, Cl. 181-290.000.
Roman, Stephan; and Spitko, Richard J., 4,111,605, Cl. 416-141.000.

Boer, Melle; and Rentema, Albertus Pieter, to U.S. Philips Corporation. Shaving head for a dry-shaving apparatus. 4,110,906, Cl. 30-43.920.

Boessler, Hanns; and Rauch, Hubert, to Rohm GmbH. Copolymeric resin binder powders. 4,112,215, Cl. 528-503.000.

Boesten, Wilhelmus H. J., to Stamicarbon, B.V. Process for preparing optically active phenyl glycine. 4,111,980, Cl. 562-401.000.

Boggs, Daniel R.; and Brown, Richard I., to Baxter Travenol Laboratories, Inc. Centrifugal apparatus with flexible sheath. 4,111,356, Cl. 233-26.000.

Bolin, Philip C., to Westinghouse Electric Corp. High current contact assembly. 4,111,511, Cl. 339-64.00R.

Bolinger, Jimmy W.; Pollman, Frederic W.; and Polaski, David N., to Sundstrand Corporation. Hydraulic transmission drive assembly with noise attenuation means. 4,111,003, Cl. 60-469.000.

Bolivia Lumber Company: *See*—
Garner, Lynn Thomas, 4,112,038, Cl. 264-138.000.

Bolliger, Alfred R. Assembly for testing shock absorbers incorporated in vehicles. 4,111,033, Cl. 73-11.000.

Bollman, James E., to Xerox Corporation. Field lens for an electrophotographic printing machine. 4,111,540, Cl. 355-4.000.

Bollman, James E.: *See*—
Mailloux, Louis D.; and Bollman, James E., 4,111,542, Cl. 355-14.000.

Bonassi, Luciano, to Costruzioni Barbarossa. Three-speed winch particularly for nautical use. 4,111,397, Cl. 254-150.00R.

Bone, Arnold R., to Dennison Manufacturing Company. Fastener attachment apparatus. 4,111,347, Cl. 227-68.000.

Bonisch, Frank Henry: *See*—
United States of America, National Aeronautics and Space Administration; and Bonisch, Frank Henry, 4,111,068, Cl. 74-586.000.

Bonitz, Eckhard: *See*—
Sander, Bruno; Bonitz, Eckhard; and Scherling, Kurt, 4,112,029, Cl. 264-11.000.

Bonner, Gary D.: *See*—
Jay, John; Bonner, Gary D.; and Betancourt, Osmundo J., 4,111,801, Cl. 210-40.000.

Booher, Robert K.: *See*—
Heimbigner, Gary L.; and Booher, Robert K., 4,112,296, Cl. 307-279.000.

Boomus, Mary; Sobin, Bernard; and Vincent, Monty E., to Gelman Instrument Company. Mouth filter for use with pipettes. 4,111,807, Cl. 210-152.000.

Borden Ost A/S: *See*—
Norgaard, Erik Bach, 4,111,333, Cl. 221-73.000.

Borg-Warner Corporation: *See*—
Fogelberg, Mark John, 4,111,288, Cl. 192-38.000.
Hechenbleikner, Ingenuin, 4,111,901, Cl. 260-45.80N.
Marien, Bruce Arthur; and Kaufman, Paul Richard, 4,112,022, Cl. 260-881.000.

Bormann, Dieter; Merkel, Wulf; and Mania, Dieter, to Hoechst Aktiengesellschaft. Derivatives of 5-aminobenzoic acid having a heterocyclic substituent in the 3-position. 4,111,953, Cl. 260-326.410.

Bormann, Gerhard; and Berthold, Richard, to Sandoz Ltd. Indolinylguanidines. 4,112,111, Cl. 424-274.000.

Borum, Charles Jerry, to Hobart Corporation. Multi-impression printer for pressure sensitive labels. 4,111,121, Cl. 101-227.000.

Bosy, George; Edwards, Edwin N.; Hoffbeck, Willis M.; Silvio, Paul A.; and Warwick, Leonard A., to Kraft, Inc. Method for manufacture of process cheese. 4,112,131, Cl. 426-582.000.

Bottomley, Alan Stuart. Electromagnetic apparatus. 4,111,027, Cl. 72-320.000.

Bouldin, David L.: *See*—
Hollis, Ben R., Jr.; Feltner, William R.; Bouldin, David L.; and Routh, Donald E., 4,111,775, Cl. 204-192.00C.

Bour, Edmond H. J. P., to Stamicarbon, B.V. Stabilization of polypyrrolidone. 4,111,904, Cl. 260-45.75N.

Bourrie, Georges; and Lensel, Robert, to R. Alkan & Cie. Box opening device. 4,111,473, Cl. 292-126.000.

Boushey, Homer A. Variable flux transformer. 4,112,404, Cl. 336-133.000.

Bowley, Wallace W., to Hammond, Graeme L. Mass and heat transfer exchange apparatus. 4,111,659, Cl. 422-48.000.

Bowne Time Sharing, Inc.: *See*—
Abramson, Carl N.; Kohl, David; and Ogen, Thomas, 4,112,264, Cl. 179-175.30R.

Boyer, Peter W., to PHD, Inc. Non-rotatable fluid powered nozzle and valve combination. 4,111,100, Cl. 91-401.000.

Bozzelli, John W.; Shier, George D.; Pearce, Roscoe L.; and Martin, Charles W., to Dow Chemical Company, The. Absorption of sulfur compounds from gas streams. 4,112,049, Cl. 423-226.000.

BP Chemicals Limited: *See*—
Long, Dennis James George, 4,112,122, Cl. 426-19.000.

Bracht, Donald L.; and Swank, Harry R., to GTE Sylvania Incorporated. Floating tension tool and strap locating guide apparatus and method. 4,110,877, Cl. 29-25.130.

Bradley, Bruce R.; Eckelman, Larry D.; and Gilmer, Donald G., to Monsanto Company. Spun-like hand yarn process. 4,110,965, Cl. 57-157.0TS.

Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., to Bristol-Myers Company. Antibiotic complex. 4,112,071, Cl. 424-118.000.

Brady, John F.; and McDowell, Donald J., to Felt Products Mfg. Co. Roadway joint seal and sealing assembly. 4,111,583, Cl. 404-69.000.

Brandt, Richard Thornton, to General Electric Company. Gantry for computed tomography. 4,112,303, Cl. 250-445.00T.

Brass, Robert L., to General Mills Fun Group, Inc. Toy construction system having reusable distensible joining members. 4,110,932, Cl. 46-29.000.

Brauer, Dieter Bruno: *See*—
Everhart, Norman; and Brauer, Dieter Bruno, 4,112,386, Cl. 330-265.000.

Braukmann Armaturen AG: *See*—
Edelmann, Gunther, 4,111,392, Cl. 251-214.000.

Braun, Anton. Multistage gas compressor. 4,111,609, Cl. 417-243.000.

Braun, James R.: *See*—
Olson, Robert E.; and Braun, James R., 4,111,038, Cl. 73-65.000.

Braun, Leonard Charles; and Benno, Edward Leonard, to Illinois Tool Works Inc. Planting machine. 4,111,135, Cl. 111-2.000.

Breeding, Robert D., to Warner & Swasey Company, The. Material handling apparatus having means for connecting material handling tool with a boom. 4,111,320, Cl. 214-145.00A.

Bregman, David: *See*—
Wolvek, Sidney; Hanson, Bruce L.; and Bregman, David, 4,111,209, Cl. 128-400.000.

Brehm, William L., to B & G Equipment Company. Dispensing apparatus. 4,111,368, Cl. 239-394.000.

Breitschwerdt, Werner; Kania, Sigmund; Ukena, Theodor; and Schwammle, Otto, to Daimler-Benz Aktiengesellschaft. Hollow bearer of a passenger motor vehicle. 4,111,480, Cl. 296-28.00R.

Breuer, Hermann; and Treuner, Uwe, to E. R. Squibb & Sons, Inc. Cyanomethylthioacetylcephalosporin intermediates. 4,111,978, Cl. 260-465.00D.

Bricard, Alain; de Cachard, Maurice; Goffinet, Pierre; Kurka, Gerard; and Moracchioli, Robert, to Commissariat a l'Energie Atomique. Method of heat accumulation and a thermal accumulator for the application of said method. 4,111,260, Cl. 165-104.00S.

Briggs, Paul Clayton, Jr.; and Muschiatti, Lawrence Carl, to Du Pont de Nemours, E. I., and Company. Adhesive composition. 4,112,013, Cl. 260-878.00R.

Brisebarre, Marcel, to Systems and Technics S.A. Centrifugal coin sorter. 4,111,216, Cl. 133-3.00A.

Brishka, Alexander R.; and DeChamp, David W., to International Telephone and Telegraph Corporation. Polarizing keying device for electrical connectors. 4,111,514, Cl. 339-186.00R.

Bristol-Myers Company: *See*—
Berghahn, Walter G.; and Weinstein, Jack, 4,111,567, Cl. 401-202.000.
Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., 4,112,071, Cl. 424-118.000.
Crenshaw, Ronnie Ray; and Luke, George Michael, 4,112,234, Cl. 548-342.000.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,112,230, Cl. 544-105.000.
Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, 4,112,228, Cl. 544-26.000.

British Petroleum Company Limited, The: *See*—
Kolombos, Alexander John; McNeice, Donald; and Wood, Dennis Charles, 4,111,793, Cl. 208-121.000.
Kolombos, Alexander John, 4,112,011, Cl. 260-683.15R.

Broce, Richard D.: *See*—
Flanagan, Brian S.; Turner, Phillip L.; Broce, Richard D.; and Lagus, Peter L., 4,112,302, Cl. 250-381.000.

Brocklehurst, Jack, to Plastona (John Waddington) Ltd. Moulding of synthetic plastics sheet material. 4,112,042, Cl. 264-322.000.

Brohard, Ivan Eugene, to Bell Telephone Laboratories, Incorporated. Piezoelectric relay construction. 4,112,279, Cl. 200-181.000.

Brokmann, Manfred; Sanders, Kurt; Sanders, Dieter; and Westhoff, Hermann. Net for forming an elastic support in furniture. 4,112,163, Cl. 428-107.000.

Broser, Philip R. Rhythm instrument. 4,111,094, Cl. 84-402.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Gonnai, Tohru; and Yamashita, Chikao, 4,111,140, Cl. 112-254.000.

Brown, Albert E., to Columbia Ribbon & Carbon Manufacturing Co., Inc. Aqueous polyurethane undercoats. 4,112,178, Cl. 428-306.000.

Brown, Albert P.: *See*—
Hoddinott, David C.; and Brown, Albert P., 4,111,376, Cl. 242-25.00A.

Brown, Henry C. Wave-powered, pivoted float pumping system with increasing opposition to extreme movement of lever arm. 4,111,610, Cl. 417-332.000.

Brown, James L. Cassette tape cartridge holder. 4,111,308, Cl. 211-59.100.

Brown, Michael A.; and Shade, Steven F. Waterproof slide fastener. 4,112,150, Cl. 427-284.000.

Brown, Richard I.: *See*—
Boggs, Daniel R.; and Brown, Richard I., 4,111,356, Cl. 233-26.000.

Brown, Stanley L., to Roscoe Brown Corporation. Slack takeup apparatus for an endless excavating member. 4,110,920, Cl. 37-97.000.

Bruce, Peter. Link chain. 4,110,971, Cl. 59-84.000.

Brummett, Earl Ray, to Wallace Murray Corporation. Dimpled bimetal temperature responsive fan drive coupling. 4,111,289, Cl. 192-58.00B.

Bruner, Albert H., to Monsanto Company. Draw texturizing process. 4,110,964, Cl. 57-157.0TS.

Brunker, Dieter, to Anker-Schiffarts-Gesellschaft mbH & Co. KG. Valve bag. 4,111,354, Cl. 229-62.500.

Brunswick Corporation: *See*—
Fitzner, Arthur O.; and Sleder, Richard L., 4,111,174, Cl. 123-148.0CC.

Bryant, Lorton W., to Dresser Industries, Inc. Combined pressure and temperature correction apparatus for gas meters. 4,111,042, Cl. 73-194.00M.

Buchberger, Gregory D., to Morgan Industries. Controlled recovery automatic gain control amplifier. 4,112,384, Cl. 330-141.000.

Buchert, Hermann: *See*—
Postman, William; Louch, James B.; and Buchert, Hermann, 4,111,818, Cl. 252-8.900.

Buckholdt, Robert E., to Selas Corporation of America. Rotary hearth furnace with preheat conveyor. 4,111,644, Cl. 432-179.000.

Buckler, Ernest Jack; and Richmond, Michael Hugh, to Polysar Limited. Cups, plates, trays or containers formed from laminates containing filled polystyrene. 4,111,349, Cl. 229-3.50R.

Buckmaster, Adrian C.: *See*—
Glossop, Mark B.; Buckmaster, Adrian C.; Cook, Neville G. W.; Hojem, Justin P. M.; Joughin, Noel C.; Taylor, Richard F.; Cramp, Robert W.; and Hatcher, John L., 4,111,296, Cl. 198-519.000.

Buckwalter, Mervin R.; Bulson, Walter T.; Leininger, Larry W.; Posipanko, Thomas; and Ray, Leonard N., Jr., to Armstrong Cork Company. Method of no-contact printing of carpet with a transfer sheet. 4,111,646, Cl. 8-2.50A.

Budish, Joseph D. Temporary side view mirror for covering a vehicular mirror. 4,111,532, Cl. 350-307.000.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,112,229, Cl. 544-105.000.

Bugay, Al, to Life Sciences, Inc. Direct readout real time physiological parameter analog computer. 4,112,491, Cl. 364-415.000.

Bugg, John: *See*—
Epstein, David; and Bugg, John, 4,111,253, Cl. 164-43.000.

Bula, Karl, to Sulzer Brothers Ltd. Net- or chain-like vehicle traction device for vehicular wheels. 4,111,251, Cl. 152-219.000.

Bulgrin, Robert W.: *See*—
Moffitt, Jerry T.; and Bulgrin, Robert W., 4,112,250, Cl. 338-322.000.

Bulidon, Jacques: *See*—
Pavan, Charles; and Bulidon, Jacques, 4,111,993, Cl. 260-586.00R.

Bullock, Robert L., to Standard Car Truck Company. Resilient railroad car truck. 4,111,131, Cl. 105-224.100.

Bulson, Walter T.: *See*—
Buckwalter, Mervin R.; Bulson, Walter T.; Leininger, Larry W.; Posipanko, Thomas; and Ray, Leonard N., Jr., 4,111,646, Cl. 8-2.50A.

Bundy, Gordon L., to Upjohn Company, The. Biheterocyclic-9,11-trideoxy-PGF compounds. 4,112,224, Cl. 542-426.000.

Bunker Ramo Corporation: *See*—
Golladay, James D.; and Abler, Norman C., 4,111,006, Cl. 66-9.00B.
Pracher, Ernst; Schrotter, Wolfgang Adalbert; and Heider, Wolfgang, 4,112,399, Cl. 335-106.000.

Burcenski, Michael J. Lawn game device with swung launching stick. 4,111,422, Cl. 273-101.000.

Burg, Karlheinz: *See*—
Sextro, Gunter; Burg, Karlheinz; Schlaf, Helmut; Sabel, Hans-Dieter; and Heller, Alwin, 4,111,912, Cl. 528-45.000.

Burgert, Albert, to Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel. Miller-encoded message decoder. 4,112,383, Cl. 329-50.000.

Burk, George A.; Goralski, Christian T.; and Mixan, Craig E., to Dow Chemical Company, The. 4-(2,2-Dichloro-1,1-difluoroethoxybenzene) sulfonyl chloride and its preparation. 4,111,988, Cl. 260-543.00R.

Burkart, Robert C.; and Newbould, Gilbert J., to Eash, Robert E., a part interest. Positive feed drill. 4,111,590, Cl. 408-14.000.

Burke, Edward F., Jr., to MFE Corporation. Method of making a limited-rotation motor with integral displacement transducer. 4,110,879, Cl. 29-25.420.

Burlington Industries, Inc.: *See*—
McConnell, Bobby Lee; Thornton, Raymond; and Graham, Louis Atkins, 4,111,648, Cl. 8-30.000.
Sorrells, Samuel Ray, 4,112,161, Cl. 428-95.000.

Burnett, Gary L.; and Tsuda, George I., to Hughes Aircraft Company. Temperature compensated microwave filter. 4,112,398, Cl. 333-73.00R.

Burnett, James E.: *See*—
Paranjpe, Suresh C.; and Burnett, James E., 4,112,469, Cl. 358-296.000.

Burnham, Robert D.: *See*—
Streifer, William; Scifres, Donald R.; and Burnham, Robert D., 4,111,521, Cl. 350-96.130.
Streifer, William; Scifres, Donald R.; and Burnham, Robert D., 4,112,389, Cl. 331-94.50H.

Burns, William M. Automobile ventilation system. 4,111,106, Cl. 98-2.130.

Burr-Brown Research Corporation: *See*—
Olschewski, Wilfred W.; and Stitt, Robert M., 4,112,308, Cl. 250-551.000.

Burroughs Corporation: *See*—
Chen, Chau-Shiong, 4,111,726, Cl. 148-175.000.
Pollard, Christopher A.; and Stiven, David, 4,112,471, Cl. 360-98.000.
Rege, Satish L.; and Woo, Beng-Yu, 4,112,504, Cl. 365-77.000.
Sniderman, Albert, 4,111,052, Cl. 73-432.00R.

Burton-Dixie Corporation: *See*—
Crown, Barry S., 4,111,241, Cl. 140-92.700.

Burwasser, Herman; and Wyhof, John R., to GAF Corporation. Dielectric imaging member. 4,112,172, Cl. 428-215.000.

Bush, James A.: *See*—
Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., 4,112,071, Cl. 424-118.000.

Butler, Donald Eugene, to Warner-Lambert Company. 3-(Thienyloxy)-pyridines and methods for their production. 4,111,943, Cl. 260-294.80D.

Butterworth, George A. M.; and Fillwalk, Frank, to Johnson & Johnson. Method of controlling water repellency in non-woven fabric. 4,112,153, Cl. 427-390.00E.

Buxbaum, Gunter; and Hund, Franz, to Bayer Aktiengesellschaft. Continuous production of iron oxide hydroxide. 4,112,063, Cl. 423-633.000.

Buynak, Gabriel Ralph; and Sauerland, Franz Ludwig, to Transat Corp. Vacuum deposition method for frequency adjustment of piezoelectric resonators. 4,112,134, Cl. 427-10.000.

Buzhinsky, Vladimir Lukyanovich; Raschepkin, Konstantin Egorovich; Dunjushkin, Mikhail Grigorievich; Lysogorsky, Gennady Tikhonovich; Valeev, Rustem Ibragimovich; Nisenbaum, Yakov Arkadievich; and Ikhsanov, Deviz Faizrakhmanovich. Machine for cleaning outer surface of pipes of a mainline. 4,110,862, Cl. 15-88.000.

C. R. Bard, Inc.: *See*—
Hessel, Stephen Roy, 4,111,204, Cl. 128-276.000.

C. van der Lely NV: *See*—
van der Lely, Ary, 4,111,265, Cl. 172-59.000.

Cabasso, Victor J., to Cutter Laboratories, Inc. Canine lung cell strain culture systems and processes for the cultivation of viruses and vaccines therefrom. 4,112,068, Cl. 424-89.000.

Cabiro, Jorge Canals: *See*—
Jarque, Ricardo Granados; Cartes, Juan Bosch; Cabiro, Jorge Canals; Roldan, Cristobal Martinez; and Peinado, Fernando Rabadan, 4,111,945, Cl. 260-297.00R.

Caesar, Philip D.; Garwood, William E.; Krudewig, William F.; and Wise, John J., to Mobil Oil Corporation. Combination process for upgrading synthol naphtha fractions. 4,111,792, Cl. 208-79.000.

Cahn, Robert P.; and Nicholson, Edward W., to Exxon Research & Engineering Co. Thermal energy storage by means of reversible heat pumping utilizing industrial waste heat. 4,110,987, Cl. 60-652.000.

Cairns, James E.: *See*—
Shair, Salem A.; Paul, Stewart N.; and Cairns, James E., 4,111,679, Cl. 71-67.000.

Calcaterra, Luigi: *See*—
Zurbuchen, Jacques; Leutenegger, Willi; and Calcaterra, Luigi, 4,111,645, Cl. 8-1.00W.

Callaghan, William I., to Towmotor Corporation. Control mechanism for hydrostatic transmissions. 4,111,062, Cl. 74-96.000.

Callahan, William A.; Glenn, Eldridge Myles; and Rector, Douglas L., to Upjohn Company, The. Methods of use of pyridylalkyl phenylthioureas. 4,112,100, Cl. 424-263.000.

Callan, John E., to Cities Service Company. Hot melt butyl sealant intermediate. 4,112,020, Cl. 260-873.000.

Cambiuzzi, Giulio; and Montanelli, Michele, to Baupres AG. Building block. 4,110,949, Cl. 52-437.000.

Cameron, Russell J., to Ross Operating Valve Co. Multiple function four poppet valve system. 4,111,226, Cl. 137-269.000.

Campbell, Alfred: *See*—
Wittle, Eugene Leroy; Rebstock, Mildred Catherine; Nicolaides, Ernest D.; and Campbell, Alfred, 4,111,923, Cl. 260-112.50R.

Campbell, James Stanley: *See*—
Baird, David Boyd; Campbell, James Stanley; Fishwick, Brian Ribbons; and McClelland, Robert David, 4,111,956, Cl. 260-329.0AM.

Canada-Cities Service, Ltd.: *See*—
Porteous, Kenneth; Falkenberg, Leigh; and Lane, Stephen, 4,111,789, Cl. 208-11.0LE.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Victor, William E., 4,111,217, Cl. 135-15.0PQ.

Canadian General Electric Company: *See*—
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,110,900, Cl. 29-596.000.
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,112,041, Cl. 264-263.000.

Canadian Patents and Development Limited: *See*—
Meadus, Frederick W.; Sparks, Bryan D.; and Puddington, Ira E., 4,111,874, Cl. 260-23.00R.
Woodhams, Raymond T.; and Xanthos, Marinos, 4,112,036, Cl. 264-28.000.

Cancilla, Vincent W., to Beloit Corporation. Stock screen foil. 4,111,799, Cl. 209-273.000.

Candor, James T. Electrostatic method and apparatus for treating material. 4,111,773, Cl. 204-180.00R.

Canevari, Roger: *See*—
Regnier, Gilbert; Canevari, Roger; and Poignant, Jean-Claude, 4,112,092, Cl. 424-250.000.

Canney, John J. Combustion air system. 4,111,181, Cl. 126-77.000.

Canon Kabushiki Kaisha: *See*—
Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,111,539, Cl. 355-3.00R.
Ikemori, Keiji, 4,111,558, Cl. 350-189.000.

Canplan Filtration Limited: *See*—
Jay, John; Bonner, Gary D.; and Betancourt, Osmundo J., 4,111,801, Cl. 210-40.000.

Canron Railgroup: *See*—
Keyes, John, 4,111,128, Cl. 104-7.00B.
von Beckmann, Helmuth, 4,111,129, Cl. 104-12.000.

Capriotti, Alfred J.; Lazzaretti, Louis G.; and O'Donnell, Brian, to United States Steel Corporation Method of assembling continuous casting discharge rack. 4,110,889, Cl. 29-407.000.

Carborundum Company, The: *See*—
Bodolai, John J., 4,110,939, Cl. 51-298.00R.
Walker, Thomas Bruce; Seider, Robert J.; and Cichy, Paul, 4,111,668, Cl. 51-309.00A.

Carel, Philippe Robert Raymond; Decamp, Rene Paul Auguste; and Perronin, Jean, to Produits Chimiques Ugine Kuhlmann. Process for sizing substrate and products obtained thereby. 4,112,155, Cl. 427-439.000.

Carl Freudenberg, Firma: *See—*
Schuhmacher, Gunter; and Muhlfeld, Horst, 4,111,913, Cl. 528-273.000.
Sick, Hans-Hermann; and Habel, Erich, 4,111,441, Cl. 277-183.000.

Carlson, Charles E. K.: *See—*
Rothman, Edward A.; and Carlson, Charles E. K., 4,111,600, Cl. 416-2.000.

Carlson, Elmer T. Bus tray electrical distribution system. 4,112,249, Cl. 174-68.00B.

Carlson, Gaynor. Animal guard. 4,110,943, Cl. 52-101.000.

Carlson, Gaynor. Animal protective guard. 4,110,944, Cl. 52-101.000.

Carlson, John Alan; and Bell, Malcolm Rice, to Sterling Drug Inc. Anti-inflammatory 3-(substituted-amino)-2,1-benzisothiazoles. 4,112,105, Cl. 424-270.000.

Carlson, Karl Gunnar: *See—*
Olsson, Jan Christer Holger; and Carlson, Karl Gunnar, 4,110,954, Cl. 53-433.000.

Carlson, William G.: *See—*
Hower, Philip L.; Carlson, William G.; and Gupta, Tapan K., 4,112,362, Cl. 324-158.00R.

Carlsson, Hans Ake Ulf. Automatic coupling unit for braking and electrical functions between parts in a vehicle combination. 4,111,452, Cl. 280-421.000.

Carlsson, Jan-Erik: *See—*
Dahlman, Goran; and Carlsson, Jan-Erik, 4,111,024, Cl. 72-60.000.

Carlsson, Stig. Loudspeaker and stereophonic loudspeaker system. 4,112,256, Cl. 179-1.0GA.

Carlstedt, Richard A., to Aetna Bearing Company. Thrust bearing with spring clip mounting. 4,111,290, Cl. 192-98.000.

Carmosin, Richard J.: *See—*
Carson, John Robert; Carmosin, Richard J.; and Stefanski, Anthony T., 4,111,954, Cl. 260-326.620.

Carnation Company: *See—*
Nielsen, Ramon W.; and Widmar, Craig C., 4,112,126, Cl. 426-250.000.

Carp, Ralph W.; Ang, Leoncio T.; and Rini, Guy T., to Bendix Corporation, The. Pressure command generator with initial condition logic for adaptive braking system. 4,111,497, Cl. 303-110.000.

Carpenter, C. Thomas; and Stunkard, Norman W., to Voltage Systems, Inc. Alignment plate construction for electrostatic particle orientation. 4,111,294, Cl. 198-381.000.

Carpenter Technology Corporation: *See—*
Mead, Kenneth W.; and Peters, K. Stewart, 4,112,289, Cl. 219-124.330.

Carr, Ronald R., to Panel Clip Co., The. Machine for applying nail plates for truss assembly. 4,111,114, Cl. 100-100.000.

Carrico, Philip H.: *See—*
Nash, James L.; Polich, Stanley J.; and Carrico, Philip H., 4,112,034, Cl. 264-95.000.

Carrillo, Rolando, Jr. Wiped cutter. 4,111,593, Cl. 408-204.000.

Carroll, William J.; and Griffith, George L., to IMC Chemical Group, Inc. Nitrate esters of galactomannan gums and metnods for their synthesis. 4,112,220, Cl. 536-18.000.

Carrozo, Camelita R., to Colgate-Palmolive Company. Needlepoint, embroidery and crewel carrying case. 4,111,341, Cl. 223-106.000.

Carson, John Robert; Carmosin, Richard J.; and Stefanski, Anthony T., to McNeil Laboratories, Incorporated. Preparation of 1-methylpyrrole-2-acetonitrile. 4,111,954, Cl. 260-326.620.

Carter, Donna B., sole heir: *See—*
Carter, Thomas A., Jr., deceased, 4,111,362, Cl. 239-1.000.

Carter, L. Dean: *See—*
Rocha, James; and Carter, L. Dean, 4,111,076, Cl. 81-9.50A.

Carter, Thomas A., Jr., deceased (by Carter, Donna B., sole heir), to Airco, Inc. System for making carbon dioxide snow. 4,111,362, Cl. 239-1.000.

Carter, Walter L. Tool holder. 4,111,083, Cl. 82-36.00A.

Cartes, Juan Bosch: *See—*
Jarque, Ricardo Granados; Cartes, Juan Bosch; Cabiro, Jorge Canals; Roldan, Cristobal Martinez; and Peinado, Fernando Rabadan, 4,111,945, Cl. 260-297.00R.

Caruso, Gerard P., to Shell Oil Company. Grease compositions. 4,111,822, Cl. 252-51.50A.

Casey, Donald James: *See—*
Huffman, Kenneth Robert; Casey, Donald James; and Thomas, Walter Moreland, 4,112,169, Cl. 428-206.000.

Casey, Gary L., to General Motors Corporation. Ignition system for use with fuel injected-spark ignited internal combustion engines. 4,111,178, Cl. 123-32.0SA.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 4,110,966, Cl. 58-4.00A.

Casse, Christian Robert: *See—*
Pompei, Michel; and Casse, Christian Robert, 4,111,478, Cl. 293-63.000.

Casselbrant, Sven Gustav, to Svenska Utvecklingaktiebolatget. Structural chipboard wood beam. 4,112,162, Cl. 428-106.000.

Caterpillar Tractor Co.: *See—*
Alstrin, Charles E.; McClung, Carl L.; and Smith, James C., 4,111,166, Cl. 123-97.00B.
Chelgren, Walter C., 4,111,370, Cl. 239-533.300.
Daniels, Jerry Lee; and Woody, Albert Lloyd, 4,111,287, Cl. 192-3.270.
Hickman, Donald A.; and Kershaw, Samuel L., 4,111,455, Cl. 280-690.000.
Pearce, Shairyl I.; and Audiffred, Sidney J., 4,111,071, Cl. 74-753.000.
Poker, John M., Jr., 4,110,921, Cl. 37-141.00R.
Purcell, Robert J., 4,111,064, Cl. 74-243.0DR.

Cates, Robert E., to Marley Company, The. Method for indirect evaporative cooling of upflowing fluid by contact with downflowing water from overlying evaporative cooling section. 4,112,027, Cl. 261-151.000.

Cathers, William P., to PPG Industries, Inc. Conveyor for separating and aligning glass sheets. 4,111,412, Cl. 271-251.000.

Cathers, William P.: *See—*
Donley, Harold E.; and Cathers, William P., 4,111,150, Cl. 118-7.000.

Caunt, Anthony David; and Williams, Ian Gabriel, to Imperial Chemical Industries Limited. Process for preparing a transition metal compound and it's use as a component in an olefin polymerization catalyst. 4,111,834, Cl. 252-429.00B.

Cawse, James Norman; and Vidal, Jose Luis, to Union Carbide Corporation. Catalytic process for producing polyhydric alcohols and derivatives. 4,111,975, Cl. 260-449.00L.

Cazel, Gerald C.: *See—*
Cazel, Thomas R.; and Cazel, Gerald C., 4,111,549, Cl. 355-68.000.

Cazel, Thomas R.; and Cazel, Gerald C. Platemaker and contact frame exposure indicator. 4,111,549, Cl. 355-68.000.

Celanese Corporation: *See—*
Choe, Eui Won, 4,112,212, Cl. 526-234.000.
DiEdwardo, Andrew H.; and Dix, Robert, 4,112,059, Cl. 423-447.600.
Lazear, Nelson R., 4,112,146, Cl. 427-54.000.
Lin, Victor J., 4,111,620, Cl. 425-66.000.
Shaner, Jay R.; and Edelman, Robert, 4,111,887, Cl. 260-37.0AL.
Taylor, Paul D., 4,111,837, Cl. 252-430.000.
Thomas, Norman W.; Model, Frank S.; and Smart, Charles L., 4,111,684, Cl. 71-115.000.

Celanese Polymer Specialties Company: *See—*
Simons, James Brandon, 4,111,909, Cl. 528-123.000.

Ceskoslovenska akademie ved: *See—*
Puffr, Rudolf; and Sebenda, Jan, 4,111,869, Cl. 260-18.00N.
Strop, Petr; Coupek, Jiri; and Mikes, Otakar, 4,111,859, Cl. 521-33.000.

Cgee Alsthom: *See—*
Debaigt, Jean, 4,111,517, Cl. 339-198.0GA.

Champion International Corporation: *See—*
Roccaforte, Harry I., 4,111,306, Cl. 206-611.000.
Roudebush, Allen T.; and Thompson, Kenneth P., 4,112,173, Cl. 428-215.000.

Chan, David Cheong King, to Chevron Research Company. Fungicidal, miticidal and ovicidal alkoxycarbonylalkyl-substituted and carbamylalkyl-substituted N-haloalkylthiosulfonamides. 4,112,237, Cl. 560-12.000.

Chana, Howard E., to General Motors Corporation. Progressively variable transmission. 4,111,073, Cl. 74-865.000.

Chapman, Douglas W.; and Bertsch, Hugh C., to Mallinckrodt, Inc. Method for the preparation of pure 2-ethylhexyl gallate. 4,112,238, Cl. 560-70.000.

Charkoudian, John C.; and Hoffman, Arnold, to Polaroid Corporation. Battery electrolyte corrosion inhibitor. 4,112,205, Cl. 429-199.000.

Charles, John J.: *See—*
Gasman, Robert C.; and Charles, John J., 4,111,893, Cl. 260-40.00R.

Charles Stark Draper Laboratory, Inc., The: *See—*
Smith, Thomas Basil, III, 4,112,488, Cl. 364-200.000.

Chasen, Lee Richard: *See—*
Einhorn, Ruediger; Chasen, Lee Richard; and Blake, Joseph Walter, III, 4,110,907, Cl. 30-164.950.

Chelgren, Walter C., to Caterpillar Tractor Co. Fuel inlet fitting for a fuel injection nozzle. 4,111,370, Cl. 239-533.300.

Chellis, Marge. Rain chapes. 4,110,845, Cl. 36-2.00R.

Chemed Corporation: *See—*
Shair, Salem A.; Paul, Stewart N.; and Cairns, James E., 4,111,679, Cl. 71-67.000.

Chemetron Corporation: *See—*
Williamson, Hilding Victor, 4,111,671, Cl. 62-10.000.

Chemineer, Inc.: *See—*
Barbini, Richard J., 4,111,402, Cl. 366-338.000.

Chen, Chau-Shiong, to Burroughs Corporation. Bipolar integrated circuit process by separately forming active and inactive base regions. 4,111,726, Cl. 148-175.000.

Chen, Edward S.; Sadak, John C.; and Lakshminarayanan, G. Raman, to United States of America, Army. Method and electrolyte for the electrodeposition of cobalt and cobalt-base alloys in the presence of an insoluble anode. 4,111,760, Cl. 204-26.000.

Chen, Nai Yuen; Miale, Joseph Nicolas; and Reagan, William Joseph, to Mobil Oil Corporation. Preparation of zeolites. 4,112,056, Cl. 423-329.000.

Chen, Robert H. K., to Ortho Pharmaceutical Corporation. Isolation of uteroevacuant substances from plant extracts. 4,112,078, Cl. 424-195.000.

Chen, Robert H. K., to Ortho Pharmaceutical Corporation. Isolation of uteroevacuant substances from plant extracts. 4,112,079, Cl. 424-195.000.

Cheng, Robin; and Cross, Kenneth MacLean, to 3C Chemical Laboratories Pty. Limited. Wall mounted actuator for aerosol can. 4,111,338, Cl. 222-180.000.

Chenot, Charles Frederic; Mathers, James Evan; and Shaffer, Francis Nathan, to GTE Sylvania Incorporated. Hexagonal hafnium, zirconium phosphate luminescent material, method of preparation, and x-ray intensifying screen containing the same. 4,112,194, Cl. 428-539.000.

Cherry Electrical Products Corp.: *See—*
Greiner, Gunter; and Murmann, Gunter, 4,112,278, Cl. 200-156.000.

Chervenak, Michael C.; and Johanson, Edwin S., to Hydrocarbon Research, Inc. Staged hydrogenation of low rank coal. 4,111,788, Cl. 208-10.000.

Chesnut, Jon C.; and Epstein, Edward, to Beatrice Foods Co. Semi-moist shelf stable particle for carrying a food color and flavor. 4,112,125, Cl. 426-250.000.

Chevron Research Company: *See—*
Chan, David Cheong King, 4,112,237, Cl. 560-12.000.
Iscol, Lewis; and Cochran, Lynn E., 4,112,414, Cl. 340-146.10E.
Singer, Malcolm Scott, 4,111,683, Cl. 71-104.000.
Woo, Gar Lok, 4,111,864, Cl. 521-117.000.

Chicago Lock Co.: *See—*
Scherbing, Frank J., 4,111,020, Cl. 70-363.000.

Chloride, Incorporated: *See—*
Malinowski, William J., 4,112,310, Cl. 250-574.000.

Cho, Alfred Yi; DiLorenzo, James Vincent; and Mahoney, Gerard Edward, to Bell Telephone Laboratories, Incorporated. Selective lift-off technique for fabricating GaAs FETs. 4,111,725, Cl. 148-175.000.

Choe, Eui Won, to Celanese Corporation. Ultra-high molecular weight polymethacryloyloxybenzoic acid and method of preparation. 4,112,212, Cl. 526-234.000.

Christensen, La Mon D.: *See—*
Schreiber, Ronald E.; and Christensen, La Mon D., 4,111,424, Cl. 273-106.50C.

Christian, Timothy T. Controlling the fluid in a ball valve. 4,111,229, Cl. 137-614.170.

Christman, Peter C.: *See—*
Haeflich, Jack; and Christman, Peter C., 4,110,973, Cl. 60-39.050.

Chung, Asuncion, to H. K. Porter Company, Inc. Double side air break disconnecting switch. 4,112,268, Cl. 200-48.0SB.

Chyu, Hyun S., to Monsanto Company. Method of extruding thermoplastic sheets. 4,112,166, Cl. 428-141.000.

Ciarimboli, Joseph P., to Pennsylvania Coke Technology, Inc. Smokeless and non-recovery type coke oven battery. 4,111,757, Cl. 202-93.000.

Ciba Geigy AG: *See—*
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,111,888, Cl. 260-31.600.
Ward, Frank, deceased; Hildreth, John David; and Potts, Herbert Alexander, 4,111,649, Cl. 8-41.00R.
Zurbuchen, Jacques; Leutenegger, Willi; and Calcaterra, Luigi, 4,111,645, Cl. 8-1.00W.

Ciba-Geigy Corporation: *See—*
Balke, David E.; and Perez, Donald E., 4,111,976, Cl. 260-453.0RW.
Baschang, Gerhard; Sele, Alex; Stanek, Jaroslav; and Rossi, Alberto, 4,112,075, Cl. 424-180.000.
Blattner, Hans, 4,112,110, Cl. 424-274.000.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,111,771, Cl. 204-159.220.
Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 4,111,950, Cl. 260-308.00R.
Green, George Edward; Stark, Bernard Peter; and Waterhouse, John Sidney, 4,111,907, Cl. 260-830.00R.
Haas, Georges; and Rossi, Alberto, 4,112,099, Cl. 424-263.000.
Hindermann, Peter; Adam, Jean-Marie; and Karlen, Urs, 4,111,966, Cl. 260-373.000.
Jager, Horst, 4,111,817, Cl. 252-8.800.
Lacroix, Roger; and Haberli, Roland, 4,111,650, Cl. 8-85.00R.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,111,947, Cl. 260-299.000.
Mazour, Zdenek; and Dayer, Francis Louis, 4,111,974, Cl. 260-448.80R.
Miles, Peter; Richardson, Norman; and Finan, Michael Anthony, 4,111,804, Cl. 210-58.000.
Polony, Rudolf; Rauchle, Adolf; and Heizler, Fritz, 4,111,844, Cl. 252-106.000.

Cichy, Paul: *See—*
Walker, Thomas Bruce; Seider, Robert J.; and Cichy, Paul, 4,111,668, Cl. 51-309.00A.

Cincinnati Electronics Corp.: *See—*
Seward, Glen, 4,112,395, Cl. 333-17.00M.

Cirkler, Werner; and Krueger, Hans, to Siemens Aktiengesellschaft. Optical display device. 4,111,534, Cl. 350-345.000.

Cisterni, Leandro, to S.U.B. Societa Utilizzazione Brevetti S.r.l. Method of manufacturing a lining layer. 4,112,145, Cl. 427-274.000.

Cities Service Company: *See—*
Callan, John E., 4,112,020, Cl. 260-873.000.
Dizon, Edwin S., 4,111,189, Cl. 126-400.000.

Citizen Watch Company Limited: *See—*
Funazawa, Masakazu; and Matsumura, Osamu, 4,110,970, Cl. 58-90.00R.

Cizek, Jaroslav: *See—*
Bezstarosti, Ladislav; Lindental, Antonin; Lanta, Jiri; and Cizek, Jaroslav, 4,111,238, Cl. 139-436.000.

Clark Equipment Company: *See—*
Hastings, Russell, Jr., 4,111,283, Cl. 187-9.00R.

Clarke, Graham John, to Marconi Instruments Limited. Control devices. 4,112,340, Cl. 318-331.000.

Clarkson, Stanley G.: *See—*
Tates, Donald W.; and Clarkson, Stanley G., 4,111,410, Cl. 271-173.000.

Clavaud, Bernard Alain: *See—*
Kiehl, Jean-Pierre; Jost, Victor; and Clavaud, Bernard Alain, 4,111,711, Cl. 106-97.000.

Clay, Robert B. Water-in-oil blasting composition. 4,111,727, Cl. 149-2.000.

Clements, Joseph A., Jr., to Clements, Joseph A., Sr. Ski pole with timing device. 4,111,444, Cl. 280-11.37E.

Clements, Joseph A., Sr.: *See—*
Clements, Joseph A., Jr., 4,111,444, Cl. 280-11.37E.

Cluett, Peabody & Co. Inc.: *See—*
Rockerath, John L.; and Schreck, Harold J., 4,111,138, Cl. 112-141.000.

Clunie, James Spence: *See—*
Dake, Timothy William; Clunie, James Spence; and Early, Allen Dale, 4,112,167, Cl. 428-154.000.

Coal Industry (Patents) Limited: *See—*
Mullins, Rex, 4,111,487, Cl. 299-1.000.
Price, David Watkin; Hodges, Newton John; and Furley, Robert, 4,111,709, Cl. 105-67.000.

Coale, Cecil R., Jr.: *See—*
Allen, John B.; and Coale, Cecil R., Jr., 4,111,383, Cl. 244-3.130.

Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, to Smith Kline & French Laboratories Limited. 3-Chloro-6-phenylpyridazine compounds. 4,111,935, Cl. 544-224.000.

Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, to Smith Kline & French Laboratories Limited. Pyridazinethiones. 4,111,936, Cl. 544-239.000.

Coats & Clark, Inc.: *See—*
Einhorn, Ruediger; Chasen, Lee Richard; and Blake, Joseph Walter, III, 4,110,907, Cl. 30-164.950.
Schleifstein, Robert, 4,111,647, Cl. 8-4.000.

Cobb, Carolus M.: *See—*
Annis, Martin; Bjorkholm, Paul; Cobb, Carolus M.; Frederick, Edwin; and Ramsey, Alan, 4,112,301, Cl. 250-364.000.

Coca-Cola Company, The: *See—*
Gupta, Ashis S., 4,112,130, Cl. 426-471.000.

Cochran, Lynn E.: *See—*
Iscol, Lewis; and Cochran, Lynn E., 4,112,414, Cl. 340-146.10E.

Coghlan, Charles C. Therapy of leg muscle cramps. 4,112,115, Cl. 424-300.000.

Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Silicon ester of carboxylic acid. 4,111,961, Cl. 260-345.80R.

Cohen, Sasson: *See—*
Ashani, Yacov; Amitai, Gavriel; Grunfeld, Yona; Kalir, Asher; and Cohen, Sasson, 4,112,082, Cl. 424-209.000.

Cojan, Yves, to Thomson-CSF. Display instrument using optical collimation. 4,111,527, Cl. 350-174.000.

Colgate-Palmolive Company: *See—*
Carrozo, Camelita R., 4,111,341, Cl. 223-106.000.
Giombini, Giuseppe, 4,112,517, Cl. 366-102.000.

Colilla, William; and Lloyd, Norman E., to Standard Brands Incorporated. Process for converting liquefied starch to a mixture of glucose and fructose utilizing a multi-component immobilized enzyme system. 4,111,750, Cl. 195-31.00F.

Colin, Jean-Michel; and Herouard, Dominique, to Compagnie Francaise de Raffinage. Process for the specific quantitative detection of sulfur compounds and apparatus for carrying out this process. 4,111,554, Cl. 356-36.000.

Collins, Steven; and Fausett, A. Wayne, to Alton Box Board Company. Partitioned tray and multiple tray container. 4,111,353, Cl. 229-34.00R.

Collo GmbH: *See—*
Kalbow, Heinz, 4,111,666, Cl. 51-295.000.

Colman, Gregory D.: *See—*
Jandl, Frank W.; and Colman, Gregory D., 4,110,977, Cl. 60-270.00R.

Columbia Ribbon & Carbon Manufacturing Co., Inc.: *See—*
Brown, Albert E., 4,112,178, Cl. 428-306.000.

Combey, Malcolm: *See—*
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,111,888, Cl. 260-31.600.

Combs, James M.: *See—*
Lytle, John David; and Combs, James M., 4,110,912, Cl. 33-312.000.

Commercial Shearing, Inc.: *See—*
Mauch, David L., 4,111,103, Cl. 92-57.000.

Commissariat a l'Energie Atomique: *See—*
Artaud, Robert, 4,112,055, Cl. 423-261.000.
Bricard, Alain; de Cachard, Maurice; Goffinet, Pierre; Kurka, Gerard; and Moracchioli, Robert, 4,111,260, Cl. 165-104.00S.

Commonwealth Scientific and Industrial Research Organization: *See—*
Plate, Dieter Erich Alexander; and Feehan, John Desmond, 4,110,963, Cl. 57-86.000.
Wild, John Paul, 4,112,431, Cl. 343-768.000.

Communications Satellite Corporation: *See—*
Dunlop, James D.; and Stockel, Joseph, 4,112,199, Cl. 429-29.000.

Compagnie Francaise de Raffinage: *See—*
Colin, Jean-Michel; and Herouard, Dominique, 4,111,554, Cl. 356-36.000.
Weisang, Joseph-Edouard; and Engelhard, Philippe, 4,111,841, Cl. 252-439.000.

Compagnie Generale d'Electricite S.A.: *See—*
Farcy, Jean-Claude, 4,112,390, Cl. 331-94.50G.
Godard, Bruno, 4,112,391, Cl. 331-94.5PE.
Jacquelin, Jean, 4,112,409, Cl. 338-222.000.

Compagnie Generale des Etablissements Michelin: *See—*
deZarauz, Yves, 4,112,210, Cl. 526-187.000.

Compagnie Internationale pour l'Informatique Cii-Honeywell Bull: *See—*
Duval, Jean-Claude; Mottini, Francis Joseph; Touron, Serge Auguste; Rennard, Jean-Jacques Francois; and Duval, Ruchela Marie, 4,112,505, Cl. 365-96.000.

Compton, Peter Arnold, to Mars Limited. Plastics containers. 4,111,303, Cl. 206-520.000.

Cone, Donald Roy, to Mead Corporation, The. Glass nozzle array for an ink jet printer and method of forming same. 4,112,436, Cl. 346-140.00R.

Conley, Earl, to Kane, Cyril Cecil, a part interest. Carburetor by-pass. 4,111,167, Cl. 123-102.000.

Connick, William J., Jr.; and Ellzey, Samuel E., Jr., to United States of America, Agriculture. Polyfluorinated amine oil-repellent, stain-release fabric treatment. 4,111,700, Cl. 106-2.000.

Consolidated Natural Gas Service Company, Inc.: *See—*
Syska, Andrew J., 4,111,687, Cl. 75-13.000.

Consumers Digital Systems Corp.: *See—*
Fetterman, Charles P., 4,111,243, Cl. 141-102.000.

Conti, Allen C. Coating and methods for pulling cable and drawing wire. 4,111,820, Cl. 252-49.500.

Continental Group, Inc., The: *See—*
Jordan, Thomas F., 4,111,330, Cl. 220-306.000.
Mascia, Carmen T.; and Hasegawa, Gary K., 4,111,298, Cl. 206-151.000.
Pan, Peter N. Y.; and Wronski, Steve F., 4,112,285, Cl. 219-10.410.

Continental Oil Company: *See—*
Wingrave, James A., 4,112,206, Cl. 526-3.000.

Controls, Inc.: *See—*
Fosnough, Robert D.; and Nelson, Max A., 4,112,376, Cl. 325-455.000.

Conway, Terry T.: *See—*
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,112,230, Cl. 544-105.000.

Conwed Corporation: *See—*
Banister, Peter George, 4,110,857, Cl. 5-337.000.
Van Natta, Cletus L., 4,111,673, Cl. 65-6.000.

Cook, George E.: *See—*
Sullivan, Neal; and Cook, George E., 4,111,443, Cl. 219-497.000.

Cook, Neville G. W.: *See—*
Glossop, Mark B.; Buckmaster, Adrian C.; Cook, Neville G. W.; Hojem, Justin P. M.; Joughin, Noel C.; Taylor, Richard F.; Cramp, Robert W.; and Hatcher, John L., 4,111,296, Cl. 198-519.000.

Cooke, Theodore M., to Monarch Marking Systems, Inc. Impregnating porous articles. 4,112,151, Cl. 427-322.000.

Cooksey, James Judson: *See—*
Weiss, William Robert; Cooksey, James Judson; and Gordon, Rob Roy, Jr., 4,110,876, Cl. 28-271.000.

Cooley, Jack Seabron: *See—*
Culpepper, Will Lester; and Cooley, Jack Seabron, 4,111,105, Cl. 93-37.0SP.

Cooper, Erwin E., to Texas Instruments Incorporated. Scanner system for laser beam rider guidance systems. 4,111,384, Cl. 244-3.130.

Cooper, Hugh Melvin: *See—*
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,111,888, Cl. 260-31.600.

Coors Porcelain Company: *See—*
Ford, Wilson; and Gagnon, John Temple, 4,111,026, Cl. 72-289.000.

Copar Corporation: *See—*
Schmidt, Stephen R., 4,112,379, Cl. 328-5.000.

Copeland Corporation: *See—*
Bergman, Ernest R., 4,111,278, Cl. 181-249.000.

Cordes, William Frederick, III, to American Cyanamid Company. Heat stabilized halogen-containing polymers. 4,111,873, Cl. 260-23.0XA.

Cordonnier, Raymond: *See—*
Truffier, Jean-Claude; Lucotte, Gerard; and Cordonnier, Raymond, 4,112,074, Cl. 424-177.000.

Cornelius Company, The: *See—*
Hassell, David Allen, 4,111,222, Cl. 137-69.000.

Cornell-Dubilier Electric Corp.: *See—*
Douglas, Philip N., 4,112,343, Cl. 318-674.000.

Corning Glass Works: *See—*
Blaszyk, Paul E.; Shoup, Robert D.; and Wein, William J., 4,112,032, Cl. 264-42.000.
Flannery, James E.; and Wexell, Dale R., 4,111,708, Cl. 106-53.000.
Rauscher, Herbert E., 4,112,170, Cl. 428-212.000.
Weetall, Howard H., 4,111,752, Cl. 195-103.50M.

Coronet-Werke Heinrich Schlerf GmbH: *See—*
Weihrauch, Georg, 4,110,870, Cl. 16-114.00R.

Corpus, Enrique: *See—*
Wendler, Gunter K.; Corpus, Enrique; and Ohannesian, Michael J., 4,110,886, Cl. 29-255.000.

Cory, Charles E., to Bepex Corporation. Continuous filter press. 4,111,115, Cl. 100-116.000.

Costruzioni Barbarossa: *See—*
Bonassi, Luciano, 4,111,397, Cl. 254-150.00R.

Coulton, Derek A.: *See—*
Selig, Thomas R.; Yasar, Tugrul; and Coulton, Derek A., 4,112,196, Cl. 428-594.000.

Coupek, Jiri: *See—*
Strop, Petr; Coupek, Jiri; and Mikes, Otakar, 4,111,859, Cl. 521-33.000.

Courtaulds Limited: *See—*
Robinson, Frank; and Whatmough, Nigel Stephen, 4,111,008, Cl. 66-176.000.
Robinson, Frank; Girt, Keith Harry; and Whatmough, Nigel Stephen, 4,111,009, Cl. 66-189.000.

Cox, Rollin Webb; and Watson, Randy Charles. Posterior knee immobilizing brace. 4,111,194, Cl. 128-80.00C.

Cragoe, Edward J., Jr.: *See—*
Bicking, John B.; and Cragoe, Edward J., Jr., 4,112,236, Cl. 560-12.000.

Crail, Timothy A.: *See—*
Wong, Mon N.; and Crail, Timothy A., 4,112,432, Cl. 343-786.000.

Cramp, Robert W.: *See—*
Glossop, Mark B.; Buckmaster, Adrian C.; Cook, Neville G. W.; Hojem, Justin P. M.; Joughin, Noel C.; Taylor, Richard F.; Cramp, Robert W.; and Hatcher, John L., 4,111,296, Cl. 198-519.000.

Cranston, Dale O., to Litton Industrial Products, Inc. Ultrasonic dental scaler. 4,110,908, Cl. 32-50.000.

Crawford, Douglas W.: *See—*
Elliott, J. Kelly; and Crawford, Douglas W., 4,111,608, Cl. 417-112.000.

Crawford, Thomas C., to Pfizer Inc. Ascorbic acid synthesis. 4,111,958, Cl. 260-340.700.

Creekmore, Mark D.; and Watts, William A., to Goodyear Tire & Rubber Company, The. Packaging films and packaged articles therewith. 4,112,158, Cl. 428-35.000.

Crenshaw, Ronnie Ray; and Luke, George Michael, to Bristol-Myers Company. Imidazolylmethylthioethyl alkynyl guanidines. 4,112,234, Cl. 548-342.000.

Crepeau, Robert G.; and Karakis, Thomas G., to Allen-Bradley Company. Rotatable cam limit switch with variable timing and dwell. 4,112,265, Cl. 200-31.00R.

Creusot-Loire: *See—*
Dulaquais, Pierre, 4,111,029, Cl. 72-342.000.

Cricket Corporation: *See—*
Maness, John F., 4,110,931, Cl. 43-55.000.

Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., to Westinghouse Electric Corp. Compressed-gas circuit-interrupter having a sleeve-valve for temporarily blocking the orifice throat. 4,112,276, Cl. 200-148.00R.

Crompton & Knowles Corporation: *See—*
Hoddinott, David C.; and Brown, Albert P., 4,111,376, Cl. 242-25.00A.

Cross, Kenneth MacLean: *See—*
Cheng, Robin; and Cross, Kenneth MacLean, 4,111,338, Cl. 222-180.000.

Crounse, Nathan N.; and Desai, Kantilal B., to Sterling Drug Inc. Certain substituted 2-phenylnaphtho[1,2-b]furane and -[2,1-b]furane. 4,111,962, Cl. 260-346.710.

Crown, Barry S., to Burton-Dixie Corporation. Spring forming means in automatic coil spring assembling machine. 4,111,241, Cl. 140-92.700.

Cuff, David W., to Leesona Corporation. Pelletizing process. 4,112,039, Cl. 264-142.000.

Culpepper, Will Lester; and Cooley, Jack Seabron, to Mead Corporation, The. Machine and method for placing an insert into an article carrier cell. 4,111,105, Cl. 93-37.0SP.

Cummings, Henry S.; and Leone, Richard P., to Lowell Corporation. Ratchet wrench. 4,111,077, Cl. 81-63.000.

Cunningham, Robert W.: *See—*
Kurtz, Abraham N.; Cunningham, Robert W.; and Naumann, Alfred W., 4,111,983, Cl. 562-535.000.

Cushman, David W.: *See—*
Ondetti, Miguel Angel; and Cushman, David W., 4,112,119, Cl. 424-317.000.

Cussons, Frank Michael; Mather, Douglas Edward; and Williams, Thomas Alan, to Albright & Wilson Ltd. Process for preparing phosphate salts. 4,112,118, Cl. 423-313.000.

Cutler-Hammer, Inc.: *See—*
Jaskolski, Stanley V.; Lade, Robert W.; Schutten, Herman P.; and Spellman, Gordon B., 4,112,458, Cl. 357-38.000.
Piber, Earl T., 4,112,282, Cl. 200-296.000.

Cutter Laboratories, Inc.: *See—*
Cabasso, Victor J., 4,112,068, Cl. 424-89.000.

Cyborg Corporation: *See—*
James, J. Michael; Fee, James F.; and Horton, Richard M., 4,110,918, Cl. 35-22.00R.

Dahl, Klaus J., to Raychem Corporation. Polyketones and methods therefor. 4,111,908, Cl. 528-361.000.

Dahlen, Theodore E.: *See—*
Wells, Thomas R.; and Dahlen, Theodore E., 4,111,537, Cl. 353-101.000.

Dahlman, Goran; and Carlsson, Jan-Erik, to ASEA Aktiebolag. Pressing tool structure for sheet metal forming. 4,111,024, Cl. 72-60.000.

Dahms, Harald. Apparatus for electrophoresis. 4,111,784, Cl. 204-299.0EC.

Dahms, Ronald H., to Monsanto Company. Resole resin binder composition. 4,112,188, Cl. 428-436.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Takase, Katsuji; Tsuji, Toshimoto; Fukuda, Jun-ichi; and Hiyamori, Yasuchika, 4,111,884, Cl. 260-30.60R.

D'Aiello, Robert Vincent, to RCA Corporation. Photovoltaic device having an extended PN junction. 4,112,457, Cl. 357-30.000.

Daikin Kogyo Co., Ltd.: *See—*
Torikai, Eiichi; Kawami, Youji; Kai, Shinichiro; Namba, Mutsusuke; and Simasaki, Shuhei, 4,111,866, Cl. 521-53.000.

Daimler-Benz Aktiengesellschaft: *See—*
Breitschwerdt, Werner; Kania, Sigmund; Ukena, Theodor; and Schwammle, Otto, 4,111,480, Cl. 296-28.00R.
Wiegard, Klaus, 4,111,257, Cl. 165-9.000.

Dake, Timothy William; Clunie, James Spence; and Early, Allen Dale, to Procter & Gamble Company, The. Skin cleansing product having low density wiping zone treated with a lipophilic cleansing emollient. 4,112,167, Cl. 428-154.000.

Dalkov, Poul Flemming, to Skandinavisk Radio & Television Akts. Record player with record determining means. 4,111,431, Cl. 274-9.00A.

Danckaert, Valere Frans: *See—*
Pollet, Robert Joseph; Vandenberghe, Antoon Leon; Danckaert, Valere Frans; Willems, Jozef Frans; and Van Veelen, George Frans, 4,111,697, Cl. 96-66.500.

Dangelmaier, Karl, to L. Schuler GmbH. Aligning and stacking arrangement. 4,111,086, Cl. 83-90.000.

Daniels, Jerry Lee; and Woody, Albert Lloyd, to Caterpillar Tractor Co. Shift modulating control accumulator. 4,111,287, Cl. 192-3.270.

Daniels, Ronald. Non-twisting spinning lure. 4,110,930, Cl. 43-42.140.

Darms, Roland; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Crosslinkable tetra-imidyl derivatives and crosslinked polymers therefrom. 4,111,771, Cl. 204-159.220.

Data General Corporation: *See—*
Onnestam, Alf Gunnar, 4,112,501, Cl. 364-900.000.

Datascope Corporation: *See—*
Wolvek, Sidney; Hanson, Bruce L.; and Bregman, David, 4,111,209, Cl. 128-400.000.

Davenport, Bobby E.: *See—*
Nix, Edwin Lee; and Davenport, Bobby E., 4,111,481, Cl. 296-39.00R.

David Kopf Instruments: *See—*
Seiler, William, Jr., 4,111,207, Cl. 128-305.000.

Davis, Donald Colen; Bilger, Alan H.; and Madson, Kent Christ, Jr., to Bendix Autolite Corporation. Protection assembly and ground for gas constituent sensor. 4,111,778, Cl. 204-195.00S.

Davis, Edgar D., to Phillips Petroleum Company. Production of highly aromatic extract oil. 4,111,791, Cl. 208-78.000.

Davis, Gerald Titus; and Shackle, Dale Richard, to Mead Corporation, The. Manifold carbonless form and process for the production thereof. 4,112,138, Cl. 427-54.000.

Davis, Thomas G., to Xerox Corporation. Corona device with segmented shield. 4,112,299, Cl. 250-326.000.

Davison, Ellard D., Jr., to General Motors Corporation. Engine with low friction piston. 4,111,104, Cl. 92-127.000.

Davison, Sol: *See—*
Gergen, William P.; and Davison, Sol, 4,111,894, Cl. 260-40.00R.
Gergen, William P.; and Davison, Sol, 4,111,895, Cl. 260-42.180.
Gergen, William P.; and Davison, Sol, 4,111,896, Cl. 260-42.180.

Dawson, Raymond B., to Super Stud Products, Inc. Locking fastener assembly. 4,111,016, Cl. 70-58.000.

Day, Edward G.; and Dziobek, Edmund, to United Technologies Corporation. Method for making molds and mold components for casting single crystal metallic articles. 4,111,252, Cl. 164-23.000.

Dayer, Francis Louis: *See—*
Mazour, Zdenek; and Dayer, Francis Louis, 4,111,974, Cl. 260-448.80R.

DBX, Inc.: *See—*
Blackmer, David E., 4,112,254, Cl. 179-1.0VL.

Deatcher, John H., to Stauffer Chemical Company. Flame retardant plasticizer formulation for polyvinyl chloride containing dimethyl methylphosphonate for haze reduction. 4,111,882, Cl. 260-30.60R.

Debaigt, Jean, to Cgee Alsthom. Junction block with two fixing orientations. 4,111,517, Cl. 339-198.0GA.

deBarbadillo, John Joseph, II: *See—*
Larson, Floyd Gotthard, Jr.; and deBarbadillo, John Joseph, II, 4,111,691, Cl. 75-170.000.

De Bin, Rene Francois; and Van der Gucht, William, to FMC Corporation. Corner tucking device for laminated sheets. 4,111,739, Cl. 156-486.000.

DeBlasi, Douglas S., to Sun Chemical Corporation. Printing ink resins. 4,111,916, Cl. 528-75.000.

de Cachard, Maurice: *See—*
Bricard, Alain; de Cachard, Maurice; Goffinet, Pierre; Kurka, Gerard; and Moracchioli, Robert, 4,111,260, Cl. 165-104.00S.

Decamp, Rene Paul Auguste: *See—*
Carel, Philippe Robert Raymond; Decamp, Rene Paul Auguste; and Perronin, Jean, 4,112,155, Cl. 427-439.000.

DeChamp, David W.: *See—*
Brishka, Alexander R.; and DeChamp, David W., 4,111,514, Cl. 339-186.00R.

de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, to Bayer Aktiengesellschaft. Pulverulent coating agents. 4,112,012, Cl. 260-835.000.

de Cooker, Mario G. R. T., to Stamicarbon, B.V. Process for preparing cyanuric acid. 4,112,232, Cl. 544-192.000.

Decor, Jean-Pierre, to Rhone-Poulenc S.A. Process for the preparation of aromatic aldehydes. 4,111,998, Cl. 260-599.000.

Dee-Mac Construction Co., Inc.: *See—*
DeWitte, Richard Donald, 4,111,366, Cl. 239-222.170.

Deepwater Chemical Co.: *See—*
Garrison, James A., 4,111,991, Cl. 260-583.00P.

de Fremery, Frank P., to N.V. Industrieele Handelscombinatie Holland. Rotatable coupling for a plurality of conduits, particularly for a buoy. 4,111,467, Cl. 285-136.000.

Degen, Ludwig; Viglia, Aurelio; Fascetti, Eugenio; and Perricone, Elena, to Snamprogetti, S.p.A. Method of converting racemic hydantoins into optically active aminoacids. 4,111,749, Cl. 195-2.000.

DeHart, Scott A.: *See—*
Mortensen, Alan Craig; and DeHart, Scott A., 4,112,381, Cl. 328-150.000.

Del Mar Avionics: *See—*
Skidmore, William J., III, 4,111,055, Cl. 73-620.000.

dela Cruz, Luis. Dispensing device. 4,110,853, Cl. 4-227.000.

DeMarco, Thomas M., to NFE International, Ltd. Truck mounted separator apparatus. 4,111,670, Cl. 55-315.000.

Dembiak, Matthew R.; Finnegan, John F.; Reece, Thomas B.; and Rudolph, Howard W., Jr., to Western Electric Company, Inc.; and American Telephone & Telegraph Co., Inc. Gas feeder pipe assembly including electrical conductors. 4,112,247, Cl. 174-16.00R.

DeMent, Hill D., Jr. Peg board game apparatus and method of playing games therewith. 4,111,418, Cl. 273-1.00R.

Demessemaekers, Emiel Mathilde Anna Alfons: *See—*
Spadini, Gianfranco Luigi; and Demessemaekers, Emiel Mathilde Anna Alfons, 4,111,854, Cl. 252-541.000.

Den Hartog, Herman Charles; and Walus, Aloysius Norbert, to Du Pont de Nemours, E. I., and Company. Primer composition of an acrylic epoxy ester graft copolymer, a high molecular weight epoxy resin and a heat reactive condensate. 4,111,870, Cl. 260-21.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakajima, Yukihiko; Watanabe, Shuzou; Miyai, Akira; and Ishii, Masaji, 4,112,290, Cl. 219-275.000.

Denney, Jerry W.; and Long, Robert L., to American Monitor Corporation. Creatinine assay and reagent system. 4,111,657, Cl. 23-230.00B.

Dennison Manufacturing Company: *See—*
Bone, Arnold R., 4,111,347, Cl. 227-68.000.

De Nora, Vittorio; Nidola, Antonio; and Spaziante, Placido Maria, to Diamond Shamrock Technologies S.A. Silicon carbide-valve metal borides-carbon electrodes. 4,111,765, Cl. 204-67.000.

Dentsply Research & Development Corp.: *See—*
Gonser, Donald I., 4,112,335, Cl. 315-241.00R.

Dera, Alain, to Regie Nationale des Usines Renault. Quick fastening and adjusting safety clasp especially for safety helmets. 4,110,847, Cl. 2-421.000.

Derbyshire, George Cecil, to Jacobs Manufacturing Company, Limited, The. Keys for drill chucks. 4,111,079, Cl. 81-90.00A.

Deregibus, Alfio D. A. Collapsible tanker hose coupling. 4,111,466, Cl. 285-133.00R.

Derrickson, Charles H.: *See—*
Green, Melvin E.; Derrickson, Charles H.; and Lala, Louis A., 4,111,118, Cl. 101-123.000.

Desai, Kantilal B.: *See—*
Crounse, Nathan N.; and Desai, Kantilal B., 4,111,962, Cl. 260-346.710.

Desormiere, Bernard: *See—*
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Deuterium Corporation: *See—*
Spevack, Jerome S., 4,112,062, Cl. 423-580.00H.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Noise reduction circuit for a digital tone generator. 4,111,090, Cl. 84-1.010.

de Vaan, Robertus Laurentius Clemens: *See—*
Verbeek, Thomas Geert; and de Vaan, Robertus Laurentius Clemens, 4,112,331, Cl. 315-125.000.

Devine, Donald R.; and Gardiner, William L., to Norton Company. Supporting guide rail for ladder safety device. 4,111,280, Cl. 182-8.000.

Devro, Inc.: *See—*
Greenham, Joseph G.; and Moore, Sanford A. B., 4,110,871, Cl. 17-33.000.

Dewan, Shashi B.: *See—*
Alderman, Arnold N.; and Dewan, Shashi B., 4,112,286, Cl. 219-10.410.

DeWeese, Herbert F. Trap shoot simulator and method. 4,111,423, Cl. 273-101.100.

DeWitte, Richard Donald, to Dee-Mac Construction Co., Inc. Spinner nozzle for use in cooling tower. 4,111,366, Cl. 239-222.170.

deZarauz, Yves, to Compagnie Generale des Etablissements Michelin. Polymerization process. 4,112,210, Cl. 526-187.000.

Dhein, Rolf: *See—*
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, 4,112,012, Cl. 260-835.000.

Diamond Shamrock Corporation: *See—*
Babinsky, Andrew D., 4,112,149, Cl. 427-34.000.

Diamond Shamrock Technologies S.A.: *See—*
De Nora, Vittorio; Nidola, Antonio; and Spaziante, Placido Maria, 4,111,765, Cl. 204-67.000.

Dick, Roy E. Automobile front end alignment equipment. 4,110,913, Cl. 33-336.000.

Dickert, Yancey J.: *See—*
Tomalia, Donald A.; Dickert, Yancey J.; and McCarty, Leslie P., 4,112,067, Cl. 424-78.000.

Dickinson, Thomas: *See—*
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Dickman, Michael D.: *See—*
Folsom, Max H.; and Dickman, Michael D., 4,111,753, Cl. 195-126.000.
Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., to United States Steel Corporation. Process for separating ammonia and acid gases from waste waters containing fixed ammonia salts. 4,111,759, Cl. 203-7.000.
DiEdwardo, Andrew H.; and Dix, Robert, to Celanese Corporation. Process for the production of carbon filaments utilizing an acrylic precursor. 4,112,059, Cl. 423-447.600.
Dierks & Sohne Maschinenfabrik, Firma: *See—*
Melliger, Guido W., 4,111,371, Cl. 241-18.000.
Diesel Equipment Limited: *See—*
Martin, John C.; and Martin, Paul H., 4,111,485, Cl. 298-1.00B.
Digicourse, Inc.: *See—*
Lapeyre, James M., 4,112,424, Cl. 340-336.000.
Digital Data, Inc.: *See—*
Forman, Aubry S.; Schultz, Charles A.; and Schultz, John F., 4,112,369, Cl. 325-34.000.
DiLorenzo, James Vincent: *See—*
Cho, Alfred Yi; DiLorenzo, James Vincent; and Mahoney, Gerard Edward, 4,111,725, Cl. 148-175.000.
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Arcamone, Federico; Bargiotti, Alberto; di Marco, Aurelio; and Penco, Sergio, 4,112,076, Cl. 424-180.000.
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Pechev, Miloslav Ivanov; and Shentov, Varban Petrov, 4,111,548, Cl. 355-30.000.
Dix, Robert: *See—*
DiEdwardo, Andrew H.; and Dix, Robert, 4,112,059, Cl. 423-447.600.
Dixon, Dale D.; and Herman, Frederick L., to Air Products & Chemicals, Inc. Allyl esters of N-alkyl-omega-(alkyleneureido) amic acids and their synthesis and use in aqueous emulsion polymer systems. 4,111,877, Cl. 260-29.60R.
Dixon, Eugene H. Coin machine slug rejector. 4,111,292, Cl. 194-101.000.
Dixon, Rolland E., to Phillips Petroleum Company. Parallel alkylation zones with alkylate product and propane removal from a flash zone and a fractionation zone. 4,112,010, Cl. 260-683.480.
Dizon, Edwin S., to Cities Service Company. Combined solar radiation collector and thermal energy storage device. 4,111,189, Cl. 126-400.000.
Djerassi, Isaac. Method of collecting transfusable granulocytes by gravity leukopheresis. 4,111,199, Cl. 128-214.00R.
Dobson, John Vincent; and Dickinson, Thomas, to National Research Development Corporation. Ion-sensitive electrodes. 4,111,777, Cl. 204-195.00M.
Dock Truck, Inc.: *See—*
Blackburn, Keith; and Ross, Douglas, 4,111,273, Cl. 180-14.00R.
Dr. C. Otto & Comp. G.m.b.H.: *See—*
Wackerbarth, Folkard, 4,111,758, Cl. 202-138.000.
Doderer, Klaus: *See—*
Ehrmann, Karl; Gerber, Richard; and Doderer, Klaus, 4,111,168, Cl. 123-117.00A.
Dole Refrigeration Company: *See—*
Klotz, Michael C.; and Mei, Viung C., 4,110,997, Cl. 62-81.000.
Dolk, Matti; Era, Vaino; and Lindberg, Jarl Johan. Method for manufacturing polyurethane films and surface coatings from tall oil pitch. 4,112,152, Cl. 427-385.00R.
Dolle, Meinolf, to Spinnstoffabrik Zehlendorf Aktiengesellschaft. Process and equipment for the production of a yarn tail. 4,111,375, Cl. 242-18.0PW.
Dombrowski, Theodor, to Wilhelm Hegenscheidt GmbH. Apparatus for simultaneously measuring the outer diameter of sets of profiled wheels. 4,110,910, Cl. 33-141.00R.
Donaldson, Donald J., to Kaiser Aluminum & Chemical Corporation. Pretreatment system for goethitic bauxites. 4,112,047, Cl. 423-123.000.
Donley, Harold E.; and Cathers, William P., to PPG Industries, Inc. Apparatus for coating an advancing substrate. 4,111,150, Cl. 118-7.000.
Dorsman, Adrian K., to Rockwell International Corporation. Clocked precision integrating analog to digital converter system. 4,112,428, Cl. 340-347.0NT.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Hayashi, Kiyozumi; and Sato, Kenji, 4,111,748, Cl. 176-68.000.
Himeno, Yoshiaki, 4,112,417, Cl. 340-605.000.
Douglas, Philip N., to Cornell-Dubilier Electric Corp. Bidirectional self balancing bridge. 4,112,343, Cl. 318-674.000.
Douwe Egberts Tabaksmaatschappij B.V.: *See—*
Bakker, Jouke, 4,111,212, Cl. 131-21.00A.
Dow Badische Company: *See—*
Postman, William; Louch, James B.; and Buchert, Hermann, 4,111,818, Cl. 252-8.900.
Dow Chemical Company, The: *See—*
Anand, Joginder N., 4,112,203, Cl. 429-104.000.
Baggett, Joseph M.; and Ham, George E., 4,111,899, Cl. 260-45.80R.
Baggett, Joseph M., 4,111,910, Cl. 528196-.
Bozzelli, John W.; Shier, George D.; Pearce, Roscoe L.; and Martin, Charles W., 4,112,049, Cl. 423-226.000.
Burk, George A.; Goralski, Christian T.; and Mixan, Craig E., 4,111,988, Cl. 260-543.00R.
Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., 4,112,209, Cl. 526-65.000.
Heikel, Henrik R.; and Leddy, James J., 4,112,140, Cl. 427-126.000.
Jones, Giffin D., 4,112,207, Cl. 526-17.000.
Kresta, Jiri; and Shen, Chen S., 4,111,914, Cl. 528-48.000.
Najvar, Daniel J., 4,111,770, Cl. 204-159.150.
Paul, George A., 4,111,881, Cl. 260-29.60E.
Redemann, Carl T., 4,111,938, Cl. 260-290.0HL.
Sheahan, James P., 4,110,945, Cl. 52-173.00R.
Tomalia, Donald A.; Dickert, Yancey J.; and McCarty, Leslie P., 4,112,067, Cl. 424-78.000.
Winn, Fred M., Jr.; and Harris, Monty E., 4,111,334, Cl. 221-75.000.
Downer, John D., to Texaco Trinidad Inc. Foliar feeding organometallic composition. 4,111,678, Cl. 71-27.000.
Drabek, Rudolf: *See—*
Steinkopf, Wolfgang Otto Gotthard; and Drabek, Rudolf, 4,112,445, Cl. 358-127.000.
Dragerwerk Aktiengesellschaft: *See—*
Warncke, Ernst; and Gdulla, Manfred, 4,111,197, Cl. 128-142.400.
Draw, Elizabeth: *See—*
Draw, Warren A., 4,112,255, Cl. 179-1.0GQ.
Draw, Warren A., to Draw, Elizabeth, a part interest. Rota-phonic system for stereo quadrophonic sound system. 4,112,255, Cl. 179-1.0GQ.
Dreikorn, Hans Wendell: *See—*
Hannes, George John; Rohweder, Theodore Richard; Dreikorn, Hans Wendell; and Shepherd, Philip Bickford, 4,112,174, Cl. 428-220.000.
Dresser Industries, Inc.: *See—*
Bryant, Lorton W., 4,111,042, Cl. 73-194.00M.
Stratienko, Andrew, 4,111,070, Cl. 74-625.000.
Drisan Packaging Ltd.: *See—*
Jarvis, Alexander S., 4,112,124, Cl. 426-234.000.
D'Silva, Themistocles D. J., to Union Carbide Corporation. N-Substituted alkanesulfenyl-N-alkyl and N-substituted alkanethio-sulfenyl-N-alkyl carbamoyl halide compounds. 4,111,989, Cl. 260-544.00C.
D'Silva, Themistocles Damasceno Joaquim: *See—*
Durden, John Apling; and D'Silva, Themistocles Damasceno Joaquim, 4,111,955, Cl. 260-327.00M.
Dubik, Adam; Kowalski, Henryk Zenon; Osiennik, Pawel; and Krol, Franciszek, to Instytut Geodezji i Kartografii. Apparatus for direct measurement of displacements with a holographic scale. 4,112,295, Cl. 250-237.00G.
Dubois, Jean Claude; and Barre, Francoise, to Thomson-CSF. Mesogenic biphenyl benzoates. 4,112,239, Cl. 560-73.000.
Duensing, Willard John; and Miga, Christian John, to Johns-Manville Corporation. Cooking oil treating system and composition therefor. 4,112,129, Cl. 426-417.000.
Duffy, James B.: *See—*
Peterson, Palmer L.; Duffy, James B.; and Tokarz, Richard D., 4,111,798, Cl. 209-172.500.
Duistermaat, Jan Hendrik; and van Nes, Johannes Cornelis Adrianus, to U.S. Philips Corporation. Method for manufacturing the picture display screen of a color television tube using a cylinder lens. 4,111,694, Cl. 96-36.100.
Dulaquais, Pierre, to Creusot-Loire. Manufacture of pipe stubs in walls of very great thickness. 4,111,029, Cl. 72-342.000.
Dumont, Anton: *See—*
Biegel, Peter; and Dumont, Anton, 4,111,403, Cl. 266-58.000.
Dumont, Claude; and Oberlander, Claude, to Roussel Uclaf. Stimulating dopaminerginic activity. 4,112,093, Cl. 424-250.000.
Duncan, Grant, to Smith International, Inc. Junk boot. 4,111,262, Cl. 166-99.000.
Dunjushkin, Mikhail Grigorievich: *See—*
Buzhinsky, Vladimir Lukyanovich; Raschepkin, Konstantin Egorovich; Dunjushkin, Mikhail Grigorievich; Lysogorsky, Gennady Tikhonovich; Valeev, Rustem Ibragimovich; Nisenbaum, Yakov Arkadievich; and Ikhsanov, Deviz Faizrakhmanovich, 4,110,862, Cl. 15-88.000.
Dunlop, James D.; and Stockel, Joseph, to Communications Satellite Corporation. Lanthanum nickel hydride-hydrogen/metal oxide cell. 4,112,199, Cl. 429-29.000.
Dunnigan, Daniel Ambrose: *See—*
Winn, Martin; Kyncl, Jaroslav; Dunnigan, Daniel Ambrose; and Jones, Peter Hadley, 4,112,097, Cl. 424-251.000.
Du Pont de Nemours, E. I., and Company: *See—*
Briggs, Paul Clayton, Jr.; and Muschiatti, Lawrence Carl, 4,112,013, Cl. 260-878.00R.
Den Hartog, Herman Charles; and Walus, Aloysius Norbert, 4,111,870, Cl. 260-21.000.
Goddard, Steven Jerome, 4,111,681, Cl. 71-92.000.
Moulds, Gordon Mars, 4,112,016, Cl. 260-849.000.
Sam, Donnie Joe, 4,111,960, Cl. 260-340.90R.
Stiles, Alvin B., 4,111,847, Cl. 252-463.000.
Durant, Graham John; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,112,104, Cl. 424-270.000.
Durden, John Apling; and D'Silva, Themistocles Damasceno Joaquim, to Union Carbide Corporation. N-Trihalomethanesulfenyl carbamoyloximino di-sulfur heterocyclic compounds. 4,111,955, Cl. 260-327.00M.
Duval, Jean-Claude; Mottini, Francis Joseph; Touron, Serge Auguste; Rennard, Jean-Jacques Francois; and Duval, Ruchela Marie, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull. Read-only-memory with shunt path to divert programming current. 4,112,505, Cl. 365-96.000.

Duval, Ruchela Marie: *See—*
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Dvirka, Miro. Spray cooling temperature control system. 4,110,999, Cl. 62-171.000.
Dvorak, Antonin J., to General Electric Company. Hydraulic gimbal system for beam projection lamps. 4,111,562, Cl. 356-244.000.
Dworak, Gert. Process for producing water-soluble binders for electrodeposition. 4,111,872, Cl. 260-23.70A.
Dynamit Nobel Aktiengesellschaft: *See—*
Bier, Gerhard; Blaschke, Franz; aus der Funten, Helmut; and Schade, Gerhard, 4,111,921, Cl. 528-338.000.
Hulsmann, Hans Leo; and Renckhoff, Gustav, 4,112,240, Cl. 560-112.000.
Richtzenhain, Hermann; and Schrage, Klaus, 4,111,902, Cl. 260-45.80A.
Weissenfels, Franz; and Junger, Hans, 4,111,911, Cl. 260-38.000.
Wulff, Gunter; and Sarhan, Ali, 4,111,863, Cl. 521-63.000.
Dziobek, Edmund: *See—*
Day, Edward G.; and Dziobek, Edmund, 4,111,252, Cl. 164-23.000.
E. R. Squibb & Sons, Inc.: *See—*
Breuer, Hermann; and Treuner, Uwe, 4,111,978, Cl. 260-465.00D.
Hoehn, Hans; Bernstein, Jack; and Vogt, Berthold Richard, 4,111,940, Cl. 260-293.600.
Ondetti, Miguel Angel; and Cushman, David W., 4,112,119, Cl. 424-317.000.
Vogt, B. Richard, 4,112,096, Cl. 424-251.000.
Vogt, B. Richard, 4,112,098, Cl. 424-251.000.
Eager, George S., Jr.: *See—*
Bahder, George; Eager, George S., Jr.; and Suarez, Rafael, 4,112,354, Cl. 324-54.000.
Early, Allen Dale: *See—*
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Burkart, Robert C.; and Newbould, Gilbert J., 4,111,590, Cl. 408-14.000.
Easley, Steven J., to Texas Instruments Incorporated. Electronic calculator or microprocessor having a selectively loadable instruction register. 4,112,495, Cl. 364-700.000.
Eastman Kodak Company: *See—*
Asker, Graham Edward, 4,112,451, Cl. 354-258.000.
Harvey, Donald Malcolm, 4,112,454, Cl. 354-330.000.
Hutchison, William Joseph, 4,112,453, Cl. 354-330.000.
Krueger, Spencer Milton, 4,111,699, Cl. 96-87.00R.
McConnell, Richard L.; and Weemes, Doyle A., 4,112,208, Cl. 526-57.000.
Mir, Jose Manuel; and Varner, Jerry Reubon, 4,112,437, Cl. 346-159.000.
Newland, Gordon C.; and Pacifici, James G., 4,112,182, Cl. 428-336.000.
Owens, James Carl, 4,112,461, Cl. 358-63.000.
Patton, David Lynn, 4,112,452, Cl. 354-322.000.
Salsich, Robert Charles; and Bartell, Roger Edwin, 4,112,280, Cl. 219-216.000.
Schaeffer, James Robert; Snoke, Roy Eugene; and Harris, Harry Wayne, 4,111,838, Cl. 252-430.000.
Wright, Hal Eldon; and Berwick, Martin Alfred, 4,111,693, Cl. 96-1.600.
Eastman, Larry Bruce: *See—*
Kenigsberg, Irwin Jeffrey; and Eastman, Larry Bruce, 4,111,386, Cl. 244-17.270.
Easton, George Anthony: *See—*
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Eaton Corporation: *See—*
Larson, Gerald L.; and O'Neil, Walter K., 4,112,365, Cl. 324-173.000.
Eck, John E.; and Kasberg, Alvin H., to United States of America, Energy. Packed rod neutron shield for fast nuclear reactors. 4,111,747, Cl. 176-40.000.
Eckelman, Larry D.: *See—*
Bradley, Bruce R.; Eckelman, Larry D.; and Gilmer, Donald G., 4,110,965, Cl. 57-157.0TS.
Eckert, Heiner; Ugi, Ivar; and Kabbe, Hans-Joachim, to Bayer Aktiengesellschaft. Protection of functional groups during reaction and their subsequent restoration. 4,111,933, Cl. 260-239.100.
Ecosol, Ltd.: *See—*
Lebduska, John Lawrence, 4,111,259, Cl. 237-1.00A.
Edbro Limited: *See—*
Webster, Raymond George, 4,111,321, Cl. 214-501.000.
Edelman, Abraham: *See—*
Marx, Alvin J.; and Edelman, Abraham, 4,111,198, Cl. 128-214.00E.
Edelman, Leonard E.: *See—*
Sprengling, Gerhard R.; and Edelman, Leonard E., 4,111,715, Cl. 134-10.000.
Edelman, Robert: *See—*
Shaner, Jay R.; and Edelman, Robert, 4,111,887, Cl. 260-37.0AL.
Edelmann, Gunther, to Braukmann Armaturen AG. Valve, especially a radiator valve. 4,111,392, Cl. 251-214.000.
Eder, Hans: *See—*
Gundlach, Arnold; and Eder, Hans, 4,111,389, Cl. 248-162.000.
Ederer, Georg; Fischer, Adolf; Rosche, Paul; Troll, Helmar; Wurst, Wolfgang; Hengl, Helmut; and Seidl, Jiri, to Bayerische Motoren Werke AG. Air induction system for an internal combustion engine. 4,111,163, Cl. 123-52.00M.
Edsbyns Industri AB: *See—*
Haggblom, Per, 4,110,933, Cl. 47-57.500.
Edwards, Edwin N.: *See—*
Bosy, George; Edwards, Edwin N.; Hoffbeck, Willis M.; Silvio, Paul A.; and Warwick, Leonard A., 4,112,131, Cl. 426-582.000.
Eggert, Hans Joachim; Oberberger, Otto; Zenkert, Heinrich; and Kuehne, Rudi, to Siemens Aktiengesellschaft. Prefabricated housing for electrical components. 4,111,328, Cl. 220-4.00R.
Eggimann, Fritz: *See—*
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Ehrmann, Karl; Gerber, Richard; and Doderer, Klaus, to Robert Bosch GmbH. Ignition distributor-circuit breaker assembly for internal combustion engines. 4,111,168, Cl. 123-117.00A.
Eichler, Kenneth M.: *See—*
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Eimers, Erich: *See—*
Traenckner, Hans-Joachim; Rosenkranz, Hans Jurgen; Fischler, Hans-Michael; and Eimers, Erich, 4,112,018, Cl. 260-861.000.
Einhorn, Ruediger; Chasen, Lee Richard; and Blake, Joseph Walter, III, to Coats & Clark, Inc. Glass cutter. 4,110,907, Cl. 30-164.950.
Eisele, Franz X., to Hughes Aircraft Company. Cathode structure and method. 4,112,327, Cl. 313-337.000.
Ekstrom, Olov Valter: *See—*
Jonsson, Sven Erik; and Ekstrom, Olov Valter, 4,112,272, Cl. 200-61.58R.
Elam, Richard C.; and Ulion, Nicholas E., to United Technologies Corporation. Fabrication of Co-Cr-Al-y feed stock. 4,110,893, Cl. 29-420.500.
Elastometal Limited: *See—*
Fyfe, Edward, 4,111,584, Cl. 404-69.000.
Electric Power Research Institute, Inc.: *See—*
Hower, Philip L.; Carlson, William G.; and Gupta, Tapan K., 4,112,362, Cl. 324-158.00R.
Wolk, Ronald H.; and Stewart, Norman C., 4,111,663, Cl. 422-191.000.
Electrohome Limited: *See—*
Wan, John P., 4,112,321, Cl. 310-242.000.
Elitex, Koncern textilniho strojirenstvi: *See—*
Svaty, Vladimir, 4,111,239, Cl. 139-438.000.
Ellenberger & Poensgen GmbH: *See—*
Heydner, Konrad, 4,111,474, Cl. 292-144.000.
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Krueger, Theodore H., Jr.; Eller, Robert; O'Brien, John; and Robbins, William L., 4,111,255, Cl. 164-255.000.
Elliott Brothers (London) Limited: *See—*
Ellis, Stafford Malcolm, 4,111,555, Cl. 356-141.000.
Elliott, Curtis Homer, Jr., to W. R. Grace & Co. Hydrosol and catalyst preparation. 4,111,846, Cl. 252-455.00Z.
Elliott, Harry Samuel, to Varco, Inc. Solid state controller. 4,112,342, Cl. 318-599.000.
Elliott, J. Kelly; and Crawford, Douglas W., to Schlumberger Technology Corporation. Gas lift system. 4,111,608, Cl. 417-112.000.
Elliott, Kenneth: *See—*
Elliott, Peter; and Elliott, Kenneth, 4,112,494, Cl. 364-510.000.
Elliott, Peter; and Elliott, Kenneth. Refinery and pipeline monitoring system. 4,112,494, Cl. 364-510.000.
Ellis, Michael W. Surface treatment of fibrous substances. 4,112,144, Cl. 427-223.000.
Ellis, Stafford Malcolm, to Elliott Brothers (London) Limited. Apparatus for measuring the angular displacement of a body. 4,111,555, Cl. 356-141.000.
Ellzey, Samuel E., Jr.: *See—*
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Elsner, Peter, to Siemens Aktiengesellschaft. Method for refreshing storage contents of MOS memories. 4,112,513, Cl. 365-222.000.
Emerson Electric Co.: *See—*
Scott, Walter W., deceased, 4,111,640, Cl. 431-46.000.
EMI Limited: *See—*
Randall, Robert Paul, 4,112,397, Cl. 250-401.000.
Emmett, Lionel C. R., to Emmett, Lionel C. R. Intrauterine contraceptive device of C or omega form with tubular inserter and method of placement. 4,111,196, Cl. 128-130.000.
Enami, Mamoru: *See—*
Fukuda, Shozo; Seike, Yajuro; Iizuka, Masafumi; Kasai, Hironao; and Enami, Mamoru, 4,111,811, Cl. 210-242.00S.
Enders, Edgar; Stendel, Wilhelm; and Voege, Herbert, to Bayer Aktiengesellschaft. Compositions of bis(ortho-substituted phenyl)carbodiimides and quaternary ammonium salts and their use thereof in combatting ectoparasitic tick infestations of animals. 4,112,065, Cl. 424-45.000.
Energy Resources Co. Inc.: *See—*
Baddour, Raymond F., 4,111,812, Cl. 210-257.00M.
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Haeflich, Jack; and Christman, Peter C., 4,110,973, Cl. 60-39.050.
Engelhard, Philippe: *See—*
Weisang, Joseph-Edouard; and Engelhard, Philippe, 4,111,841, Cl. 252-439.000.

Engleke, Donald J. Double walled smokestack apparatus. 4,111,107, Cl. 98-60.000.

Engler, Edward Martin; Nichols, Kenneth Herbert; Patel, Vishnubhai Vitthalbhai; Rivera, Nilda Martinez; and Schumaker, Robert Rhees, to International Business Machines Corporation. Highly conducting organometallic polymers. 4,111,857, Cl. 528-226.000.

English, Austin L., to Weyerhaeuser Company. One-piece chair shipping container. 4,111,301, Cl. 206-326.000.

Enkegaard, Ole: *See—*
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Enoki, Toshio: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,111,780, Cl. 204-266.000.

Enoksson, Bertil Petrus, to Nitro Nobel AB. Electrified fence. 4,111,400, Cl. 256-47.000.

Entreprise d'Equipements Mecaniques et Hydrauliques EMH: *See—*
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Environmental Research & Technology, Inc.: *See—*
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Epps, L. Macon, to Raymond Lee Organization, Inc., The, a part interest. Combined water heater and sauna room heater device. 4,112,281, Cl. 219-283.000.

Epstein, David; and Bugg, John, to White Sea & Baltic Company Limited, The. Foundry processes and compositions. 4,111,253, Cl. 164-43.000.

Epstein, Edward: *See—*
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Epstein, Norman. Combination lock. 4,111,014, Cl. 70-25.000.

Era, Vaino: *See—*
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Ericson, Richard A.: *See—*
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Ernst Leitz Wetzlar GmbH: *See—*
Fuehrer, Werner; Huttel, Richard; Lisfeld, Robert; and Leonhardt, Karl, deceased, 4,111,530, Cl. 350-252.000.

Ernst, Richard A.: *See—*
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Etablissement Public dit "Telediffusion de France": *See—*
Gautier, Christian Jean; Marti, Bernard; Mauduit, Michel Robert; Louineau, Andre Jean-Francois; and Schwartz nee Luneau, Christiane, 4,112,459, Cl. 358-6.000.

Ethyl Corporation: *See—*
Hayes, Thomas H., 4,111,367, Cl. 239-333.000.
Tesoro, Giuliana C., 4,111,652, Cl. 8-116.00P.

Etoh, Kuniomi; Tanaka, Shinichi; Kato, Yoshio; and Kazuo, Watanabe, to Toyo Boseki Kabushiki Kaisha. Electrostatic printing plate. 4,111,692, Cl. 96-1.00R.

Eubanks, Lloyd S.; and Price, Jerry L., to Monsanto Company. Coproduction of acetic and propionic acids. 4,111,982, Cl. 562-519.000.

Evans, A. Gary, to United States of America, Energy. Activated carbon material. 4,111,833, Cl. 252-429.00R.

Everhart, Norman; and Brauer, Dieter Bruno, to Jerrold Electronics Corp. Modular radio frequency amplifier having a gain variable by external passive component selection. 4,112,386, Cl. 330-265.000.

Everswick, David N., to United States of America, Army. Pulse amplitude and width detection system. 4,112,317, Cl. 307-308.000.

Everswick, David N.: *See—*
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Ewanus, Walter; and Sage, Gerald F., to Westinghouse Electric Corp. Constant amplitude carrier communications system. 4,112,368, Cl. 325-32.000.

Exxon Nuclear Company, Inc.: *See—*
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Exxon Production Research Company: *See—*
Jahns, Hans O.; Galate, Joseph W.; and Wheeler, John A., Jr., 4,111,258, Cl. 165-40.000.

Exxon Research & Engineering Co.: *See—*
Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,111,787, Cl. 208-10.000.
Cahn, Robert P.; and Nicholson, Edward W., 4,110,987, Cl. 60-652.000.
Mueller, Wolfgang H.; Oswald, Alexis A.; and Hall, Daniel N., 4,112,024, Cl. 260-956.000.
Nelson, Richard L., 4,112,468, Cl. 358-280.000.
Sartori, Guido; and Leder, Frederic, 4,112,050, Cl. 423-223.000.
Sartori, Guido; and Leder, Frederic, 4,112,051, Cl. 423-223.000.
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Sullivan, Daniel S., 3rd; Strubelt, Charles E.; and Becker, Kenneth W., 4,112,001, Cl. 568-855.000.
West, Theodore H., 4,111,790, Cl. 208-33.000.

Eymond, Philip Richard Norman, to Lever Brothers Company. Process for removing non-fluorescent triazine derivative impurities from fluorescent agents. 4,112,226, Cl. 542-461.000.

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Fahey, Darryl R.; and Mahan, John E., to Phillips Petroleum Company. Organophosphorus nickel complexes and use thereof. 4,111,972, Cl. 260-439.00R.

Fahlvik, Hans Anders; and Fahlvik, Nils Arne, to Aktiebolaget Electrolux. Autoclave apparatus and method for sterilization of articles. 4,111,654, Cl. 422-26.000.

Fahlvik, Nils Arne: *See—*
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Fair, John H. Apparatus for sludge digestion. 4,111,808, Cl. 210-197.000.

Falcioni, Joseph G., to Boeing Company, The. Continuously curved fastener head and countersink have interference fit. 4,111,580, Cl. 85-9.00R.

Falkenberg, Leigh: *See—*
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Far-Mar-Co, Inc.: *See—*
Rao, Ganta V.; Shoup, Floyd K.; and Popenhagen, Gerald R., 4,112,133, Cl. 426-650.000.

Farcy, Jean-Claude, to Compagnie Generale d'Electricite S.A. Laser generator device emitting at a wavelength close to 1.3 microns. 4,112,390, Cl. 331-94.50G.

Farina, Samuel T.: *See—*
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Farquharson, Stuart Connall: *See—*
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Farrant, David John Rowland, to Automotive Products Limited. Ball and socket joints. 4,111,571, Cl. 403-27.000.

Farrenkopf, Bruce Charles; and Gomez, Magdalena Usategui, to Hoffmann-La Roche Inc. Stabilized angiotensin I solutions. 4,112,064, Cl. 424-1.000.

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Fasth, Ulf Kenneth Folke, to AB Fast-Devel. Fastening device. 4,111,096, Cl. 85-11.000.

Fath, Horst; and Nill, Reiner, to BBC Brown, Boveri & Company Limited. Drive and brake circuit for speed controlled DC motors. 4,112,341, Cl. 318-370.000.

Faulkner, Richard Dale, to RCA Corporation. Electron discharge tube having a cup-shaped secondary electron emissive electrode. 4,112,325, Cl. 313-95.000.

Faulkner, Richard Dale, to RCA Corporation. Non-uniform dynode mesh for an electron discharge tube. 4,112,326, Cl. 313-95.000.

Fausett, A. Wayne: *See—*
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Faust, Richard C.: *See—*
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Fawkes, David Melville, to Imperial Chemical Industries Limited. Tetrahydroquinoline azo triazole dyestuffs. 4,111,929, Cl. 260-146.00R.

Fedor, Robert J., to Gould Inc. Low copper NO_x reduction catalyst. 4,111,849, Cl. 252-474.000.

Fee, James F.: *See—*
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Feingold, Michael; and Sparks, John, to New England Industrial Chemical Co. Process and apparatus for removing ethylene oxide from gas compositions. 4,112,054, Cl. 423-245.000.

Feistel, Gerald R.; and Pessimisis, George N., to Nalco Chemical Company. Silica-alumina and silica catalyst support bodies. 4,111,843, Cl. 252-451.000.

Felt Products Mfg. Co.: *See—*
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Feltner, William R.: *See—*
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Felzer, Bertold: *See—*
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Fenton, Alvin P.; Gault, Roger T.; and Bernauer, Lawrence J., to Kohler Co. Engine shutdown control. 4,111,176, Cl. 123-198.0DB.

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Ferranti Limited: *See—*
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Ferrara, Angelo: *See—*
Ricciardi, Ronald J.; Ferrara, Angelo; Hartmann, Joseph L.; and Lauterbach, Gary R., 4,111,272, Cl. 177-50.000.

Fessler, Julius H. Process of cold stabilizing wine. 4,112,128, Cl. 426-330.400.

Fetterman, Charles P., to Consumers Digital Systems Corp. Beverage dispensing device. 4,111,243, Cl. 141-102.000.

Ficken, Kent L. Fibered synthetic clay composition for use in aesthetic arts. 4,111,868, Cl. 260-17.4ST.

Field, John H., to Sigma Instruments, Inc. Synchronous motor with heterogeneously pitched teeth. 4,112,319, Cl. 310-49.00R.

Field, Roger; and Steger, Thomas. String instrument, in particular a guitar with foldable neck portion. 4,111,093, Cl. 84-267.000.

Fillwalk, Frank: *See—*
Butterworth, George A. M.; and Fillwalk, Frank, 4,112,153, Cl. 427-390.00E.

Finan, Michael Anthony: *See—*
Miles, Peter; Richardson, Norman; and Finan, Michael Anthony, 4,111,804, Cl. 210-58.000.

Finley, Joseph H.: *See—*
Blumbergs, John H.; Finley, Joseph H.; and Baum, Burton M., 4,111,651, Cl. 8-111.000.

Finnegan, John F.: *See—*
Dembiak, Matthew R.; Finnegan, John F.; Reece, Thomas B.; and Rudolph, Howard W., Jr., 4,112,247, Cl. 174-16.00R.

Firing Circuits, Inc.: *See—*
Alderman, Arnold N.; and Dewan, Shashi B., 4,112,286, Cl. 219-10.410.

Firth, Jack Graham; Gentry, Stephen John; and Jones, Alan, to National Research Development Corporation. Catalytic gas detectors. 4,111,658, Cl. 23-232.00E.

Fiscelli, Nicolino: *See—*
Foschini, Giorgio; Fiscelli, Nicolino; and Galli, Paolo, 4,111,835, Cl. 252-429.00C.

Fischer, Adolf: *See—*
Ederer, Georg; Fischer, Adolf; Rosche, Paul; Troll, Helmar; Wurst, Wolfgang; Hengl, Helmut; and Seidl, Jiri, 4,111,163, Cl. 123-52.00M.

Fischer, Artur; and Fischer, Klaus, to Fischer, Artur. Drilling assembly. 4,111,270, Cl. 175-220.000.

Fischer, Earl R.; and Gural, John A., to General Motors Corporation. Two-stage vacuum motor. 4,111,099, Cl. 91-173.000.

Fischer, Klaus: *See—*
Fischer, Artur; and Fischer, Klaus, 4,111,270, Cl. 175-220.000.

Fischler, Hans-Michael: *See—*
Traenckner, Hans-Joachim; Rosenkranz, Hans Jurgen; Fischler, Hans-Michael; and Eimers, Erich, 4,112,018, Cl. 260-861.000.

Fisher Gauge Limited: *See—*
Fisher, William Frederick, 4,110,885, Cl. 29-239.000.

Fisher, John T. Bathtub drain and overflow testing apparatus. 4,111,037, Cl. 73-40.50R.

Fisher, William Frederick, to Fisher Gauge Limited. Encapsulating block and removal apparatus. 4,110,885, Cl. 29-239.000.

Fishwick, Brian Ribbons: *See—*
Baird, David Boyd; Campbell, James Stanley; Fishwick, Brian Ribbons; and McClelland, Robert David, 4,111,956, Cl. 260-329.0AM.

Fitchman, Arthur Emil: *See—*
Klein, Gerhart Paul; Oliver, John N.; and Fitchman, Arthur Emil, 4,111,155, Cl. 118-642.000.

Fitz, Herbert: *See—*
Kuhls, Jurgen; Steininger, Alfred; and Fitz, Herbert, 4,112,211, Cl. 526-219.000.

Fitzner, Arthur O.; and Sleder, Richard L., to Brunswick Corporation. Ignition system with idle speed governor apparatus. 4,111,174, Cl. 123-148.0CC.

Fives-Cail Babcock: *See—*
Ghestem, Gerard, 4,110,915, Cl. 34-20.000.

Flanagan, Brian S.; Turner, Phillip L.; Broce, Richard D.; and Lagus, Peter L., to Systems, Science and Software. Gas monitor. 4,112,302, Cl. 250-381.000.

Flannery, James E.; and Wexell, Dale R., to Corning Glass Works. Machinable glasses. 4,111,708, Cl. 106-53.000.

Fleming, Robert Willerton, to Parke, Davis & Company. Antiarrhythmic (+,−)-cis-α-[3-(2,6-dimethyl-1-piperidinyl)propyl]-α-phenyl-2-pyridinemethanols. 4,112,103, Cl. 424-267.000.

Flesher, Robert W. Water pipe. 4,111,214, Cl. 131-173.000.

Flexible Steel Lacing Company: *See—*
Pray, Winston C., 4,111,080, Cl. 29-243.510.

Flow Technology, Inc.: *See—*
Guthrie, James F.; and Zimmerman, Richard E., 4,111,043, Cl. 73-197.000.

FMC Corporation: *See—*
Blumbergs, John H.; Finley, Joseph H.; and Baum, Burton M., 4,111,651, Cl. 8-111.000.
De Bin, Rene Francois; and Van der Gucht, William, 4,111,739, Cl. 156-486.000.
Gunnarsson, Arne Nils, 4,110,864, Cl. 15-340.000.
Knight, Houston W., 4,111,465, Cl. 285-114.000.

Fogelberg, Mark John, to Borg-Warner Corporation. Gear changing mechanism. 4,111,288, Cl. 192-38.000.

Foll, Eberhard; and Vetter, Helmut, to Polymer-Physik GmbH & Co. KG. Electron beam source with an electron exit window connected via a window flange. 4,112,307, Cl. 250-510.000.

Folsom, Max H.; and Dickman, Michael D., to National Appliance Company. Controlled atmosphere apparatus and method of transferring specimens to same. 4,111,753, Cl. 195-126.000.

Fonzi, Frank, to Materials Technology Corporation. Method of co-deposit coating aluminum oxide and titanium oxide. 4,112,148, Cl. 427-248.00C.

Ford, Gary P.: *See—*
Mutzner, John E.; and Ford, Gary P., 4,111,237, Cl. 138-125.000.

Ford, Wilson; and Gagnon, John Temple, to Coors Porcelain Company. Stepped cone draw block. 4,111,026, Cl. 72-289.000.

Forman, Aubry S.; Schultz, Charles A.; and Schultz, John F., to Digital Data, Inc. Secure SCA broadcasting system including subscriber actuated portable receiving terminals. 4,112,369, Cl. 325-34.000.

Formica Corporation: *See—*
Huffman, Kenneth Robert; Casey, Donald James; and Thomas, Walter Moreland, 4,112,169, Cl. 428-206.000.

Foschini, Giorgio; Fiscelli, Nicolino; and Galli, Paolo, to Montedison S.p.A. Catalysts for polymerizing olefins to spheroidal-form polymers. 4,111,835, Cl. 252-429.00C.

Fosnough, Robert D.; and Nelson, Max A., to Controls, Inc. Radio channel display and method of display. 4,112,376, Cl. 325-455.000.

Foster, Edson Perkins, to Foster Needle Company. Swaged needle. 4,110,875, Cl. 28-115.000.

Foster Needle Company: *See—*
Foster, Edson Perkins, 4,110,875, Cl. 28-115.000.

Foster, Stephen James: *See—*
Arya, Satya Prakash; Ballard, Albert Stevens; and Foster, Stephen James, 4,111,335, Cl. 222-57.000.

Foulke, Willing B. Apparatus for producing mechanical kinetic energy from falling water. 4,110,980, Cl. 60-325.000.

Fraik, Robert D., to Minnesota Mining and Manufacturing Company. Hidden entry or latent image methods and systems. 4,111,702, Cl. 106-19.000.

Franko-Filipasic, Borivoj Richard; Orwoll, Edward F.; and Patel, Vithal C., to Avtex Fibers Inc. Flame retardant regenerated cellulose filaments containing cross-linked polymeric phosphazenes. 4,111,701, Cl. 106-15.0FP.

Franz Kuhlmann KG.: *See—*
Gundlach, Arnold; and Eder, Hans, 4,111,389, Cl. 248-162.000.

Frayer, James A.: *See—*
Yanik, Stephen J.; Montagna, Angelo A.; and Frayer, James A., 4,111,796, Cl. 208-216.000.

Frechette, Michael W.; and Fasching, James L., to State of Rhode Island, The Board of Regents for Education of the. Piezoelectric probe for detection and measurement of gaseous pollutants. 4,111,036, Cl. 73-23.000.

Frederick, Edwin: *See—*
Annis, Martin; Bjorkholm, Paul; Cobb, Carolus M.; Frederick, Edwin; and Ramsey, Alan, 4,112,301, Cl. 250-364.000.

Freeman, Daniel L.; Bettencourt, Darryl G.; and Marshall, George E., Jr., to University of California, The Regents of the. Trash-freeing rear cross-conveyor for tomato harvester. 4,111,210, Cl. 130-30.00R.

Freeman, Willie B.: *See—*
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., 4,112,276, Cl. 200-148.00R.

Freeny, Charles C., Jr., to Information Identification Company, Inc. Method and apparatus for automatically monitoring objects. 4,112,421, Cl. 343-112.00D.

Friedlander, Erich Siegfried, to Associated Electrical Industries Limited. Saturated reactor arrangements. 4,112,403, Cl. 336-12.000.

Friesen, Milo E.: *See—*
Wilson, George E.; Friesen, Milo E.; and Smith, Albert J., 4,112,025, Cl. 261-29.000.

Frisbee, Claude M., to J. I. Case Company. Scraper blade control. 4,111,268, Cl. 172-805.000.

Fross, Arthur E., to Etablissement Gelan. Method for the production of carbon black from liquid or gaseous hydrocarbons. 4,112,060, Cl. 423-450.000.

Frost, Edward G. Comprehensive automatic mobile radio telephone system. 4,112,257, Cl. 179-2.0EB.

Fryer, Rodney Ian; Sternbach, Leo Henryk; and Walser, Armin, to Hoffmann-La Roche Inc. 1,5-Benzodiazepin-4-ones. 4,111,934, Cl. 260-239.30B.

Fryer, Rodney Ian: *See—*
Walser, Armin; and Fryer, Rodney Ian, 4,111,931, Cl. 260-239.30B.

Fuehrer, Werner; Huttel, Richard; Lisfeld, Robert; and Leonhardt, Karl, deceased (by Leonhardt, Herta, administratrix), to Ernst Leitz Wetzlar GmbH. Microscope objective mount. 4,111,530, Cl. 350-252.000.

Fuji Heavy Industries Limited: *See—*
Oya, Hiroo; and Tatejima, Masakazu, 4,110,976, Cl. 60-282.000.

Fuji Photo Film Co., Ltd.: *See—*
Idota, Yoshio; and Shibaoka, Haruo, 4,111,766, Cl. 204-109.000.
Kondo, Toshihiro, 4,112,450, Cl. 354-235.000.
Sato, Masamichi, 4,111,698, Cl. 96-79.000.
Sera, Hidefumi; Shiraishi, Hisashi; and Ishii, Tsumoru, 4,111,926, Cl. 260-117.000.

Fuji Photo Optical Co., Ltd.: *See—*
Kanemaru, Kenji, 4,112,440, Cl. 354-23.00D.
Numata, Saburo; and Okazaki, Shinichiro, 4,112,446, Cl. 354-50.000.

Fujii, Hiroo: *See—*
Okuno, Ryuzo; Fujii, Hiroo; and Toyoda, Keio, 4,111,159, Cl. 122-27.000.

Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, to Canon Kabu-

shiki Kaisha. Electrostatic printing master apparatus. 4,111,539, Cl. 355-3.00R.
Fujikura, Yoshiaki: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Ikeda, Hiroshi, 4,111,990, Cl. 260-561.00R.
Fujimori, Shigeaki; Hirata, Shigekazu; and Kitamura, Akira, to Osaka Fuji Kogyo, Ltd. Apparatus for cleaning inner surfaces of moulds. 4,110,863, Cl. 15-104.10C.
Fujimoto, Noriki: *See—*
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, 4,111,898, Cl. 260-42.530.
Fujino, Masahiko; Nishimura, Osamu; and Kitada, Chieko, to Takeda Chemical Industries, Ltd. Method for removal of thiol-protecting groups. 4,111,924, Cl. 260-112.50R.
Fujita, Hiro. Method and system for driving liquid crystal display device. 4,110,967, Cl. 58-23.00R.
Fujitsu Fanuc Limited: *See—*
Fukuyama, Hiroomi; and Kaku, Masahiro, 4,112,291, Cl. 235-92.0MP.
Fujiwara, Michio: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.
Fukuda, Jun-ichi: *See—*
Takase, Katsuji; Tsuji, Toshimoto; Fukuda, Jun-ichi; and Hiyamori, Yasuchika, 4,111,884, Cl. 260-30.60R.
Fukuda, Kenji: *See—*
Sugimura, Hidehiko; Murakami, Hisashi; Ohtsubo, Toshikatsu; and Fukuda, Kenji, 4,111,786, Cl. 208-8.000.
Fukuda, Makoto: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,111,780, Cl. 204-266.000.
Fukuda, Shozo; Seike, Yajuro; Iizuka, Masafumi; Kasai, Hironao; and Enami, Mamoru, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for collecting effluent oil. 4,111,811, Cl. 210-242.00S.
Fukuichi, Takuro, to Kabushiki Kaisha Daini Seikosha. Digital electronic alarm timepiece. 4,110,969, Cl. 58-57.500.
Fukuoka, Sadao: *See—*
Asano, Teryoshi; Fukuoka, Sadao; and Sawada, Takashi, 4,111,464, Cl. 285-111.000.
Fukuyama, Hiroomi; and Kaku, Masahiro, to Fujitsu Fanuc Limited. Positioning system in a numerically controlled apparatus. 4,112,291, Cl. 235-92.0MP.
Funabashi, Masayuki: *See—*
Sanada, Hisao; Saito, Ritaro; Funabashi, Masayuki; Inada, Kazuyoshi; and Seguchi, Koji, 4,112,053, Cl. 423-239.000.
Funakoshi, Yoshiro; Asogawa, Tatsuo; Satake, Eiichi; Motoyama, Shimesu; Yamada, Shuri; and Kakukawa, Morio, to Takeda Chemical Industries, Ltd. Powder compacting machine. 4,111,626, Cl. 425-203.000.
Funazawa, Masakazu; and Matsumura, Osamu, to Citizen Watch Company Limited. Water-proof watch case. 4,110,970, Cl. 58-90.00R.
Furley, Robert: *See—*
Price, David Watkin; Hodges, Newton John; and Furley, Robert, 4,111,709, Cl. 106-67.000.
Fyfe, Edward, to Elastometal Limited. Expansion joints seal assembly. 4,111,584, Cl. 404-69.000.
Gabbrielli, Ernesto. Extrusion device having intermediate extruder. 4,111,631, Cl. 425-215.000.
Gabrys, Kenneth F., to Pentaject Corporation, The. Mechanism for opening the molding dies of an injection molding machine. 4,111,633, Cl. 425-451.000.
GAF Corporation: *See—*
Burwasser, Herman; and Wyhof, John R., 4,112,172, Cl. 428-215.000.
Gasman, Robert C.; and Charles, John J., 4,111,893, Cl. 260-40.00R.
Ruhf, Truman J., 4,111,878, Cl. 260-29.6ME.
Schneider, Louis; and Graham, David E., 4,112,002, Cl. 260-612.00R.
Terwilliger, Bruce J., 4,112,189, Cl. 428-443.000.
Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, to Ciba-Geigy Corporation. Triazolyl benzophenones. 4,111,950, Cl. 260-308.00R.
Gagnon, John Temple: *See—*
Ford, Wilson; and Gagnon, John Temple, 4,111,026, Cl. 72-289.000.
Galate, Joseph W.: *See—*
Jahns, Hans O.; Galate, Joseph W.; and Wheeler, John A., Jr., 4,111,258, Cl. 165-40.000.
Gale, Richard A.; and Kahl, Donald L. Rotary piston mechanism. 4,111,617, Cl. 418-61.00B.
Galinke, Joachim: *See—*
Abendroth, Henning; Galinke, Joachim; and Wiemers, Norbert, 4,111,880, Cl. 260-29.6MP.
Gall, Richard C.: *See—*
Guif, Stanley E.; Nimmer, Terry L.; Weigt, Donald A.; Wolenec, Glenn; and Gall, Richard C., 4,112,464, Cl. 358-122.000.
Galli, Paolo: *See—*
Foschini, Giorgio; Fiscelli, Nicolino; and Galli, Paolo, 4,111,835, Cl. 252-429.00C.
Ganellin, Charon Robin: *See—*
Durant, Graham John; and Ganellin, Charon Robin, 4,112,104, Cl. 424-270.000.
Gani, Venkappa Laxmappa; and Montegari, Frank Alfred, to International Business Machines Corporation. Logical current switch. 4,112,314, Cl. 307-215.000.
Gardiner, William L.: *See—*
Devine, Donald R.; and Gardiner, William L., 4,111,280, Cl. 182-8.000.
Gardner, James A. Torso exerciser. 4,111,417, Cl. 272-136.000.
Garlinghouse, Leslie H. Mixer for liquid charges. 4,112,518, Cl. 366-219.000.
Garner, Joseph L.: *See—*
Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., 4,112,209, Cl. 526-65.000.
Garner, Lynn Thomas, to Lowe Paper Company; and Bolivia Lumber Company. Method for producing molded articles. 4,112,038, Cl. 264-138.000.
Garnys, Vytenis Peter, to Unisearch Limited. Multi-sample transporting and heating apparatus for use in atomic absorption spectrometry. 4,111,553, Cl. 356-36.000.
Garrison, James A., to Deepwater Chemical Co. Process for making halogen salts. 4,111,991, Cl. 260-583.00P.
Garwood, William E.: *See—*
Caesar, Philip D.; Garwood, William E.; Krudewig, William F.; and Wise, John J., 4,111,792, Cl. 208-79.000.
Gasman, Robert C.; and Charles, John J., to GAF Corporation. Polybutylene terephthalate molding resin. 4,111,893, Cl. 260-40.00R.
Gates Rubber Company, The: *See—*
Hug, Leonard F.; McClelland, Donald H.; and Uba, Toshio, 4,112,202, Cl. 429-94.000.
Gatti, Arno: *See—*
Noone, Michael J.; and Gatti, Arno, 4,111,572, Cl. 403-28.000.
Gault, Roger T.: *See—*
Fenton, Alvin P.; Gault, Roger T.; and Bernauer, Lawrence J., 4,111,176, Cl. 123-198.0DB.
Gautier, Christian Jean; Marti, Bernard; Mauduit, Michel Robert; Louineau, Andre Jean-Francois; and Schwartz nee Luneau, Christiane, to Etablissement Public dit "Telediffusion de France". Television picture photographic film recording system. 4,112,459, Cl. 358-6.000.
Gaylord, John A., to H. Koch & Sons, Inc., a division of Global Systems, a Gulf & Western Company. Retractable pin disconnect. 4,110,874, Cl. 24-230.0AS.
Gdulla, Manfred: *See—*
Warncke, Ernst; and Gdulla, Manfred, 4,111,197, Cl. 128-142.400.
Geithman, Glenn Allen; and Woodmansee, Wayne Earl, to Boeing Company, The. Audible bond tester. 4,111,053, Cl. 73-588.000.
Gelman Instrument Company: *See—*
Boomus, Mary; Sobin, Bernard; and Vincent, Monty E., 4,111,807, Cl. 210-152.000.
Gelnett, Leland E., to Rockwell International Corporation. Control line relief valve. 4,111,223, Cl. 137-115.000.
Gelotte, Karl O.; Zalay, Andrew W.; and Bell, Malcolm R., to Sterling Drug Inc. Preparation of 3-(pyridinyl)-2-cyclohexen-1-ones. 4,111,946, Cl. 260-297.00R.
General Atomic Company: *See—*
Arya, Satya Prakash; Ballard, Albert Stevens; and Foster, Stephen James, 4,111,335, Cl. 222-57.000.
Pieren, William R.; and Stetson, Robert F., 4,112,288, Cl. 219-121.00P.
General Cable Corporation: *See—*
Bahder, George; Eager, George S., Jr.; and Suarez, Rafael, 4,112,354, Cl. 324-54.000.
General Dynamics Corporation: *See—*
Babcock, Robert A.; Glasfeld, Rolf D.; and Holt, Luther E., 4,111,146, Cl. 114-74.00A.
Lasker, George, 4,111,097, Cl. 89-36.00A.
General Electric Company: *See—*
Blair, Ronald A.; Nickstadt, Gerhard A.; and Imbrogno, Gaetano O., 4,111,069, Cl. 74-606.00R.
Bluestein, Ben A., 4,111,973, Cl. 260-448.20E.
Brandt, Richard Thornton, 4,112,303, Cl. 250-445.00T.
Dvorak, Antonin J., 4,111,562, Cl. 356-244.000.
Hicks, William R.; and Woodard, Richard S., 4,111,372, Cl. 241-37.500.
Hyer, Donald R., 4,112,359, Cl. 324-78.00E.
Kydd, Paul H., 4,111,604, Cl. 416-97.00R.
Lipo, Thomas A., 4,112,339, Cl. 318-227.000.
Mark, Victor; and Wilson, Phillip Steven, 4,111,883, Cl. 260-30.60R.
Mark, Victor, 4,111,977, Cl. 260-45.95R.
Nash, James L.; Polich, Stanley J.; and Carrico, Philip H., 4,112,034, Cl. 264-95.000.
Noone, Michael J.; and Gatti, Arno, 4,111,572, Cl. 403-28.000.
Stitt, Thomas Detlor; and Williamson, Dennis Francis, 4,112,475, Cl. 361-33.000.
Waugh, Richard A., 4,111,011, Cl. 68-17.00R.
Wilson, S. R.; and Jones, D. B., 4,112,474, Cl. 361-15.000.
General Electric Company Limited, The: *See—*
Leworthy, John Harwood, 4,112,284, Cl. 200-340.000.
General Mills Fun Group, Inc.: *See—*
Brass, Robert L., 4,110,932, Cl. 46-29.000.
General Motors Corporation: *See—*
Abu-Isa, Ismat A., 4,111,885, Cl. 260-31.80R.
Arakelian, Edward M.; and Maugans, Terrance W., 4,112,273, Cl. 200-67.00D.
Arnold, Willi; Pflughaupt, Rolf; and Felzer, Bertold, 4,111,456, Cl. 280-692.000.
Casey, Gary L., 4,111,178, Cl. 123-32.0SA.

Chana, Howard E., 4,111,073, Cl. 74-865.000.
Davison, Ellard D., Jr., 4,111,104, Cl. 92-127.000.
Fischer, Earl R.; and Gural, John A., 4,111,099, Cl. 91-173.000.
Gordon, Ralph A.; Mathues, Thomas P.; and Parker, Donald L., 4,110,985, Cl. 60-548.000.
Harmon, Kenneth B.; Koenig, Richard J.; and Lentz, Carl A., 4,111,072, Cl. 74-864.000.
Joseph, Bernard W., 4,111,526, Cl. 350-162.0SF.
LaBoda, Mitchell A., 4,111,761, Cl. 204-26.000.
Livesay, J. D., 4,111,005, Cl. 62-503.000.
Loos, John H., 4,111,001, Cl. 62-427.000.
Magyar, Joseph J., 4,111,459, Cl. 280-744.000.
Mutzner, John E.; and Ford, Gary P., 4,111,237, Cl. 138-125.000.
Sharpe, Cecil H., 4,111,369, Cl. 239-400.000.
Sherwin, Walter M., 4,112,477, Cl. 361-155.000.
Stimson, Grant L.; and Kesten, Patrick N., 4,112,330, Cl. 315-46.000.
Vennemeyer, Alfred C.; and Ernst, Richard A., 4,111,031, Cl. 72-359.000.
West, Gene A.; and Hamren, Glen C., 4,111,035, Cl. 73-35.000.
Zens, John F., 4,110,934, Cl. 49-218.000.
General Power Corp.: *See—*
Pigman, Chester Joseph; and Pewton, James Arthur, Sr., 4,112,274, Cl. 200-146.00R.
Gentry, Stephen John: *See—*
Firth, Jack Graham; Gentry, Stephen John; and Jones, Alan, 4,111,658, Cl. 23-232.00E.
Gerber, Richard: *See—*
Ehrmann, Karl; Gerber, Richard; and Doderer, Klaus, 4,111,168, Cl. 123-117.00A.
Gergen, William P.; and Davison, Sol, to Shell Oil Company. Multicomponent halogenated thermoplastic-block copolymer-polymer blends. 4,111,894, Cl. 260-40.00R.
Gergen, William P.; and Davison, Sol, to Shell Oil Company. Multicomponent polycarbonate-block copolymer-polymer blends. 4,111,895, Cl. 260-42.180.
Gergen, William P.; and Davison, Sol, to Shell Oil Company. Multicomponent nitrile resin-block copolymer-polymer blends. 4,111,896, Cl. 260-42.180.
Gerresheimer Glas Aktiengesellschaft: *See—*
Mainz, Franz, 4,110,950, Cl. 52-518.000.
Geschwender, Robert C., to Bell Fibre Products Corporation. Mastic composition and composite structural panels formed therefrom. 4,111,862, Cl. 521-55.000.
Getson, John C.; and Johnson, Wendell L., to SWS Silicones Corporation. Curable organopolysiloxane compositions containing titanium esters. 4,111,890, Cl. 260-37.0SB.
Gewerkschaft Eisenhutte Westfalia: *See—*
Beckmann, Klaus; and Linke, Horst, 4,111,489, Cl. 299-34.000.
Ghestem, Gerard, to Fives-Cail Babcock. Manufacture of cement. 4,110,915, Cl. 34-20.000.
Gibson, Harry S., Jr.; and Trevillion, Charlie Gene, to Lockheed Corporation. Quality and fit measuring apparatus for fasteners and their holes. 4,112,355, Cl. 324-57.00R.
Giesecke, Henning; Hocker, Jurgen; and Merten, Rudolf, to Bayer Aktiengesellschaft. Polyparabanic acid derivatives. 4,111,918, Cl. 528-73.000.
Gillette Company, The: *See—*
Lindemann, Martin K. O.; and Lazar, Harvey A., 4,111,653, Cl. 8-161.000.
Gillis, Alva Knox; Otten, Thomas Harvey; and Bardos, Andrew Miklos, to Harris Corporation. Recording and reading synthetic holograms. 4,111,519, Cl. 350-3.660.
Gilmer, Donald G.: *See—*
Bradley, Bruce R.; Eckelman, Larry D.; and Gilmer, Donald G., 4,110,965, Cl. 57-157.0TS.
Gilmore, Oscar Patton. Static mixer. 4,112,520, Cl. 366-337.000.
Giombini, Giuseppe, to Colgate-Palmolive Company. Mixing apparatus. 4,112,517, Cl. 366-102.000.
Girling Limited: *See—*
Honick, Hermann Hans, 4,111,285, Cl. 188-73.600.
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Robinson, Frank; Girt, Keith Harry; and Whatmough, Nigel Stephen, 4,111,009, Cl. 66-189.000.
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Glasfeld, Rolf D.: *See—*
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Gleason, John Gerald, to SmithKline Corporation. Intermediates for preparing substituted phenylglycylcephalosporins. 4,111,981, Cl. 562-444.000.
Glenn, Eldridge Myles: *See—*
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Globe-Union Inc.: *See—*
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Glossop, Mark B.; Buckmaster, Adrian C.; Cook, Neville G. W.; Hojem, Justin P. M.; Joughin, Noel C.; Taylor, Richard F.; Cramp, Robert W.; and Hatcher, John L. Rock conveyors. 4,111,296, Cl. 198-519.000.
Godard, Bruno, to Compagnie Generale d'Electricite S.A. Gas laser generator. 4,112,391, Cl. 331-94.5PE.
Goddard, Steven Jerome, to Du Pont de Nemours, E. I., and Company. Cycloalkanapyrazole-3-carbonitrile herbicides. 4,111,681, Cl. 71-92.000.
Goddijn, Bernardus Henricus Antonius, to U.S. Philips Corporation. Stepping motor with energizing circuit. 4,112,345, Cl. 318-696.000.
Godlewski, Robert Everett, to Union Carbide Corporation. Method of molding polyurethanes having mold release properties. 4,111,861, Cl. 521-123.000.
Godtland, Magne. Jet engine having combustion chamber within compressor. 4,110,975, Cl. 60-262.000.
Goeke, Alfons, to Th. Kieserling & Albrecht. Multiple cutting plate for peeling machines. 4,111,589, Cl. 407-114.000.
Goetz, Gerald F.: *See—*
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Gohlisch, Hans-Joachim, to Paul Troester Maschinenfabrik. Process and apparatus for producing rubber hose with textile thread reinforcing. 4,112,031, Cl. 264-26.000.
Goldberg, Leon, to Weinberger, Lawrence P., a part interest. Method and apparatus for reducing pollutant emissions while increasing efficiency of combustion. 4,111,636, Cl. 431-2.000.
Goldstein, Richard M.: *See—*
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Golladay, James D.; and Abler, Norman C., to Bunker Ramo Corporation. Apparatus for producing patterned deep pile circular knitted fabrics. 4,111,006, Cl. 66-9.00B.
Gomez, Magdalena Usategui: *See—*
Farrenkopf, Bruce Charles; and Gomez, Magdalena Usategui, 4,112,064, Cl. 424-1.000.
Gonnai, Tohru; and Yamashita, Chikao, to Brother Kogyo Kabushiki Kaisha. Thread tensioning device for a sewing machine. 4,111,140, Cl. 112-254.000.
Gonser, Donald I., to Dentsply Research & Development Corp. Rapid pulse ultraviolet light apparatus. 4,112,335, Cl. 315-241.00R.
Goodrich, Edward Verle. Rock holding device. 4,111,180, Cl. 125-35.000.
Goodwin, Elwood. Golf club swing training device. 4,111,426, Cl. 273-186.00C.
Goodyear Tire & Rubber Company, The: *See—*
Bauer, John R., 4,111,250, Cl. 152-187.000.
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Nowak, Edward Norbert; Wideman, Lawson Gibson; and Hutchings, David Alan, 4,112,243, Cl. 568-768.000.
Nowak, Edward Norbert; and Hollingshead, William Shepherd, 4,112,244, Cl. 568-768.000.
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Gordon, Ralph A.; Mathues, Thomas P.; and Parker, Donald L., to General Motors Corporation. Dual power brake booster. 4,110,985, Cl. 60-548.000.
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Gore, Christopher Robert; and Arm, Geoffrey George, to Imperial Chemical Industries Limited. Moulding compositions. 4,112,023, Cl. 260-901.000.
Gorkiewicz, Mitchell F. Tilting hanger apparatus. 4,111,506, Cl. 312-211.000.
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Murray, James T.; and Gorman, Walter T., 4,110,947, Cl. 52-249.000.
Goto, Eiichi; Soma, Takashi; and Idesawa, Masanori, to Rikagaku Kenkyusho. Method of projecting a beam of charged particles. 4,112,305, Cl. 250-492.00R.
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Gould, Peter Brian, to Advance Industries Limited. Moulded plastic clip device. 4,110,872, Cl. 24-67.110.
Graham, David E.: *See—*
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Lawton, William R., 4,111,703, Cl. 106-21.000.
Gratacos, Jaime; Perrolet, Christian; and Mousteou, Roger, to Societe

Nationale Elf Aquitaine (Production). Testing for corrosion of the internal wall of a metal chamber. 4,111,040, Cl. 73-105.000.
Graves, Bernard Albert; and Mockett, John Edward, to Masson Scott Thrissell Engineering Ltd. Sheet stacking apparatus. 4,111,411, Cl. 271-199.000.
Gray, Charles Alexander, to BJ-HUGHES Inc. Pipe cap. 4,111,235, Cl. 138-109.000.
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Green, George Edward; Stark, Bernard Peter; and Waterhouse, John Sidney, to Ciba-Geigy Corporation. Photopolymerizable ketones. 4,111,907, Cl. 260-830.00R.
Green, Melvin E.; Derrickson, Charles H.; and Lala, Louis A., to American Screen Printing Equipment Co. Multi-purpose screen printing machine. 4,111,118, Cl. 101-123.000.
Green, Robin John: *See—*
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Gross, Chris, to United States of America, National Aeronautics and Space Administration. Electrically scanned pressure sensor module with in situ calibration capability. 4,111,058, Cl. 73-714.000.
Grossi, Carlo; and Taffelli, Aldo C., to Worthington Pump, Inc. Centrifugal pump with centripetal inducer. 4,111,597, Cl. 415-143.000.
Grow Chemical Corp.: *See—*
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Gruffaz, Max; and Locatelli, Jean-Louis, to Rhone-Poulenc Industries. Thermosetting composition from a bis-maleimide and N-vinyl pyrrolidone. 4,111,919, Cl. 526-264.000.
Grumman Aerospace Corporation: *See—*
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Grunfeld, Yona: *See—*
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GTE Sylvania Incorporated: *See—*
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Chenot, Charles Frederic; Mathers, James Evan; and Shaffer, Francis Nathan, 4,112,194, Cl. 428-539.000.
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Guif, Stanley E.; Nimmer, Terry L.; Weigt, Donald A.; Wolenec, Glenn; and Gall, Richard C., to Oak Industries Inc. Subscription TV decoder logic system. 4,112,464, Cl. 358-122.000.
Guillot, Edmond P.: *See—*
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Guinosso, Charles J.: *See—*
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Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., 4,112,101, Cl. 424-263.000.
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Schulz, Johann G. D.; Selwitz, Charles M.; and Onopchenko, Anatoli, 4,111,825, Cl. 252-63.000.
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Gundlach, Arnold; and Eder, Hans, to Franz Kuhlmann KG. Column drawing table. 4,111,389, Cl. 248-162.000.
Gunnarsson, Arne Nils, to FMC Corporation. Sweeper hood with transverse air duct and broom compartments. 4,110,864, Cl. 15-340.000.
Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., to Dow Chemical Company, The. Process for making polystyrene. 4,112,209, Cl. 526-65.000.
Gupta, Ashis S., to Coca-Cola Company, The. Spray drying of orange juice. 4,112,130, Cl. 426-471.000.
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Guthrie, James F.; and Zimmerman, Richard E., to Flow Technology, Inc. Turbine flowmeter. 4,111,043, Cl. 73-197.000.
Gutman, Arnold David, to Stauffer Chemical Company. N-(aminoalkylene thiomethyl)-N'-(aryl) urea herbicides. 4,111,682, Cl. 71-98.000.
Gwozdz, Joseph W., to McKinney Manufacturing Company. Retractable door stop for bidirectional swinging door. 4,110,867, Cl. 16-82.000.
H. F. Henderson Industries: *See—*
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H. Koch & Sons, Inc., a division of Global Systems, a Gulf & Western Company: *See—*
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H. Waterbury & Sons Company: *See—*
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Haag, Werner O.; and Whitehurst, Darrell Duayne, to Mobil Oil Corporation. Insoluble resin-metal compound complex prepared by contacting weak base ion exchange resin with solution of metal-ligand. 4,111,856, Cl. 521-30.000.
Haas, Georges; and Rossi, Alberto, to Ciba-Geigy Corporation. Cyclo aliphatic-phenylene-carbonyl-pyridines. 4,112,099, Cl. 424-263.000.
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Haggblom, Per, to Edsbyns Industri AB. Process and an apparatus for killing trees or woody plants. 4,110,933, Cl. 47-57.500.
Haglund, John Helge, to Kanthal Corporation, The. Metal casting method. 4,111,254, Cl. 164-138.000.
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Hambleton, Thomas P., to International Paper Company. Six-cell container divider. 4,111,350, Cl. 229-15.000.
Hamelink, William B., to Honeywell Inc. Condition control system utilizing digital logic. 4,112,318, Cl. 307-308.000.
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Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,111,735, Cl. 156-384.000.
Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Apparatus for printing and applying pressure sensitive labels. 4,111,736, Cl. 156-384.000.
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Hannes, George John; Rohweder, Theodore Richard; Dreikorn, Hans Wendell; and Shepherd, Philip Bickford, to Johns-Manville Corporation. Fibrous mat especially suitable for roofing products. 4,112,174, Cl. 428-220.000.
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Hanson, Donald O., to Phillips Petroleum Company. Production of carbon monoxide from carbonaceous material and zinc oxide. 4,112,058, Cl. 423-415.00A.
Hanson, Douglas R. Dough piece imprinter and controls therefore. 4,111,624, Cl. 425-135.000.
Harendza-Harinxma, Alfred J. Process for treating municipal solid waste and raw sewage sludge. 4,111,800, Cl. 210-10.000.
Harmening, Denise M., to Research Corporation. Blood preservation system. 4,112,070, Cl. 424-101.000.
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Harvey, Donald Malcolm, to Eastman Kodak Company. Method and apparatus for treating elements of photographic film. 4,112,454, Cl. 354-330.000.
Hasegawa, Akiji; Yasuda, Isao; and Kobayashi, Kazuhiko, to Hitachi, Ltd. Control method for a remote supervisory control system. 4,112,416, Cl. 340-147.00R.
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Hashimoto, Hideo. Catapult toy. 4,111,179, Cl. 124-7.000.
Hassell, David Allen, to Cornelius Company, The. Adjustment limiter in a compressed gas pressure regulator. 4,111,222, Cl. 137-69.000.
Hastings, Paul F. Handlebar latching mechanism for lawn and yard implement. 4,110,869, Cl. 16-111.00A.
Hastings, Russell, Jr., to Clark Equipment Company. Regulator valve. 4,111,283, Cl. 187-9.00R.
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Haugen, Donald. Animal litter container. 4,111,157, Cl. 119-1.000.
Hauke, Francis Edward; McCully, Everette Ray; McElroy, Robert Marion, Jr.; Stevenson, Peter Alan; Vogel, Stephen Martin; and Woods, John Walton, to International Business Machines Corporation. Longitudinal scan, cam shaped, turntable rotor for magnetic recording. 4,112,472, Cl. 360-102.000.
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Hayashi, Kiyozumi; and Sato, Kenji, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Nuclear fuel rod with stress relieving device. 4,111,748, Cl. 176-68.000.
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Heald, Raymond A., to Signetics Corporation. Four transistor static bipolar memory cell using merged transistors. 4,112,511, Cl. 365-188.000.
Heaps, Joseph D.; and Tufte, Obert N., to Honeywell Inc. Method for dip-coating ceramic with molten silicon. 4,112,135, Cl. 427-11.000.
Hechenbleikner, Ingenuin, to Borg-Warner Corporation. Hindered five-membered nitrogen rings as polyolefin stabilizers. 4,111,901, Cl. 260-45.80N.
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Heerema, Pieter Schelte, to Panama Overseas Shipping Corporation Inc. Apparatus for driving piles. 4,110,993, Cl. 405-228.000.
Heger, Adolf; Mockel, Gerrit; Passler, Helmar; Pohlink, Jochen; and Wunsch, Werner, to VEB Plauener Gardine. Method of making a pattern-dyed, pattern-textures, or lace like textile or foil. 4,112,136, Cl. 427-36.000.
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Heikel, Henrik R.; and Leddy, James J., to Dow Chemical Company, The. Electrode coating process. 4,112,140, Cl. 427-126.000.
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Heimbigner, Gary L.; and Booher, Robert K., to Rockwell International Corporation. Data latch. 4,112,296, Cl. 307-279.000.
Heinen, Josef: *See—*
Thiem, Karl-Werner; Hamers, Adolf; and Heinen, Josef, 4,112,005, Cl. 260-645.000.
Heinrich, Theodore M.: *See—*
Oates, Robert M.; and Heinrich, Theodore M., 4,112,287, Cl. 219-10.49R.
Heinz, Henry, Jr., to Union Carbide Corporation. Galvanic cell having a primary radial seal and a secondary resealable vent closure. 4,112,200, Cl. 429-54.000.
Heisterkamp, Wilhelm: *See—*
Lagemann, Gunther; and Heisterkamp, Wilhelm, 4,111,756, Cl. 201-41.000.
Heizler, Fritz: *See—*
Polony, Rudolf; Rauchle, Adolf; and Heizler, Fritz, 4,111,844, Cl. 252-106.000.
Heller, Alwin: *See—*
Sextro, Gunter; Burg, Karlheinz; Schlaf, Helmut; Sabel, Hans-Dieter; and Heller, Alwin, 4,111,912, Cl. 528-45.000.
Henderson, Henry F., Jr.: *See—*
Ward, William H.; Henderson, Henry F., Jr.; and Kardux, Kenneth H., 4,111,336, Cl. 222-58.000.
Hengartner, Urs Oskar, to Hoffmann-La Roche Inc. Process for L-3,4-dehydroproline. 4,111,951, Cl. 260-326.200.
Hengl, Helmut: *See—*
Ederer, Georg; Fischer, Adolf; Rosche, Paul; Troll, Helmar; Wurst, Wolfgang; Hengl, Helmut; and Seidl, Jiri, 4,111,163, Cl. 123-52.00M.
Henkel Inc.: *See—*
Lindner, Robert Arthur; and Limon, Robert James, 4,111,886, Cl. 260-31.80T.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Abendroth, Henning; Galinke, Joachim; and Wiemers, Norbert, 4,111,880, Cl. 260-29.6MP.
Henrichon, Lucien. Ski trail forming and conditioning drag. 4,110,919, Cl. 37-10.000.
Henry, David W.; and Tong, George L., to SRI International. Bishydrazones of daunomycin and adriamycin. 4,112,217, Cl. 536-4.000.

Henry, Edgar. Adjustable garment assembly. 4,111,309, Cl. 211-104.000.

Hepner, Georges; and Desormiere, Bernard, to Thomson-CSF. Magnetomer using a thin magnetic film optical waveguide with a.c. modulation and automatic nulling. 4,112,367, Cl. 324-244.000.

Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources: *See—*
Porteous, Kenneth; Falkenberg, Leigh; and Lane, Stephen, 4,111,789, Cl. 208-11.0LE.

Her Majesty the Queen in right of the Province of Alberta, Department of, Education Energy and Natural Resources, Alberta Syncrude Equity: *See—*
Porteous, Kenneth; Falkenberg, Leigh; and Lane, Stephen, 4,111,789, Cl. 208-11.0LE.

Herbert, Colin Wray. Apparatus facilitating removal of a kort rudder ring on a marine vessel. 4,111,148, Cl. 115-76.000.

Herman, Frederick L.: *See—*
Dixon, Dale D.; and Herman, Frederick L., 4,111,877, Cl. 260-29.60R.

Herman, Gerald J., to Williams Research Corporation. Governor. 4,110,974, Cl. 60-39.28R.

Hermann Finckh Maschinenfabrik: *See—*
Holz, Emil, 4,111,373, Cl. 241-46.110.

Hernandez, Robert. Combined scarf and hood. 4,110,846, Cl. 2-203.000.

Herouard, Dominique: *See—*
Colin, Jean-Michel; and Herouard, Dominique, 4,111,554, Cl. 356-36.000.

Herrling, Siegfried: *See—*
van Wersch, Hubert Maria Agnes; Herrling, Siegfried; and Muckter, Heinrich, 4,112,077, Cl. 424-185.000.

Herron, Keith Roderick, to James Kemp & Co. Pty. Ltd. Drilling holes in pressurized pipes. 4,111,588, Cl. 408-110.000.

Hessel, Stephen Roy, to C. R. Bard, Inc. Suction collection system. 4,111,204, Cl. 128-276.000.

Hessler, Edward J., to Upjohn Company, The. Process. 4,111,968, Cl. 260-465.600.

Heuckroth, Carl C. Welding wire spool shroud. 4,111,380, Cl. 242-128.000.

Heurtey Metallurgie: *See—*
Kissel, Roland; and Wang, Robert, 4,111,154, Cl. 118-10.000.

Hewes, Charles R.: *See—*
Holmes, Jerry D.; Johnson, Charles R.; Jones, Allen S.; and Hewes, Charles R., 4,112,372, Cl. 325-321.000.

Hewlett-Packard Company: *See—*
Mortensen, Alan Craig; and DeHart, Scott A., 4,112,381, Cl. 328-150.000.

Heydner, Konrad, to Ellenberger & Poensgen GmbH. Electrically operated door lock. 4,111,474, Cl. 292-144.000.

Hi-Shear Corporation: *See—*
Wing, George S., 4,111,568, Cl. 403-2.000.

Hibino, Eiichi: *See—*
Ito, Katsuo; Murata, Bunjiro; Maeda, Yoji; and Hibino, Eiichi, 4,112,378, Cl. 325-464.000.

Hickling, Colin D., to American Thermostat Corporation. Duplex thermostat. 4,112,406, Cl. 337-338.000.

Hickman, Donald A.; and Kershaw, Samuel L., to Caterpillar Tractor Co. Method and apparatus for mounting a vehicle wheel on a vehicle frame. 4,111,455, Cl. 280-690.000.

Hicks, William R.; and Woodard, Richard S., to General Electric Company. Food processor interlock. 4,111,372, Cl. 241-37.500.

Higuchi, Noboru; Ogasawara, Takayuki; and Seike, Shoji, to Nippon Gaishi Kabushiki Kaishi. Electrical insulators. 4,112,193, Cl. 428-539.000.

Hilbrink, Johan O. System for optically entering, displaying and decoding handwritten symbols. 4,112,415, Cl. 340-146.3SY.

Hildreth, John David: *See—*
Ward, Frank, deceased; Hildreth, John David; and Potts, Herbert Alexander, 4,111,649, Cl. 8-41.00R.

Hill, David T., to SmithKline Corporation. Bis(sulfide)gold(1+) salts. 4,112,113, Cl. 424-275.000.

Hilliard, Lonnie George; and Verzemnieks, Juris, to Boeing Company, The. Low non-linearity factor sound attenuating laminate. 4,111,081, Cl. 181-290.000.

Hillman, William S., II, to Phillips Petroleum Company. Control system for plurality of gas supplies. 4,111,637, Cl. 431-12.000.

Himeno, Yoshiaki, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Apparatus for detecting leakage of liquid sodium. 4,112,417, Cl. 340-605.000.

Hinago, Yasuhiro, to Nippon Gakki Seizo Kabushiki Kaisha. Touch response sensor for an electronic musical instrument. 4,111,091, Cl. 84-1.010.

Hinchliff, Henry Russell; and Banwell, Richard Hugh, to Imperial Chemical Industries Limited. Smoking mixtures. 4,111,211, Cl. 131-2.000.

Hindermann, Peter; Adam, Jean-Marie; and Karlen, Urs, to Ciba-Geigy Corporation. 1,5-Dihydroxy-4,8-diamino-anthraquinone compounds arylated in 3-position. 4,111,966, Cl. 260-373.000.

Hinrichsen, Gerhard: *See—*
Reiner, Udo; and Hinrichsen, Gerhard, 4,112,498, Cl. 364-728.000.

Hippchen, Hermann; Schneider, Hans-Georg; and Schwingeler, Renate, to Pfeifer & Langen. Process for obtaining amino acids from the raw juices of sugar manufacture. 4,111,714, Cl. 127-46.00A.

Hipwell, Donald D.; and Menzel, Klaus Rudolf, to Bendix Machine Tool Corporation. Apparatus for automatically changing tool heads. 4,110,897, Cl. 29-568.000.

Hirai, Hironori: *See—*
Tsubata, Kazuo, 4,110,960, Cl. 57-34.00R.

Hirama, Hideo, to Kabushiki Kaisha Daini Seikosha. Material handling unit. 4,111,311, Cl. 214-1.0BC.

Hirata, Shigekazu: *See—*
Fujimori, Shigeaki; Hirata, Shigekazu; and Kitamura, Akira, 4,110,863, Cl. 15-104.10C.

Hirsch, Martin: *See—*
Reh, Lothar; Hirsch, Martin; and Plass, Ludolf, 4,111,158, Cl. 122-4.00D.

Hirschmann, Peter: *See—*
Hofer, Ernst; Hirschmann, Peter; and Wintzer, Klaus, 4,112,427, Cl. 340-347.00C.

Hisatomi, Takashi: *See—*
Nishizawa, Mamoru; and Hisatomi, Takashi, 4,111,172, Cl. 123-119.00A.

Hitachi Denshi Engineering Kabushiki Kaisha: *See—*
Ito, Yukio; and Morishima, Susumu, 4,111,116, Cl. 100-281.000.

Hitachi Denshi Kabushiki Kaisha: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.

Hitachi, Ltd.: *See—*
Hasegawa, Akiji; Yasuda, Isao; and Kobayashi, Kazuhiko, 4,112,416, Cl. 340-147.00R.
Ishikawa, Toshio; Ozawa, Jun; and Tamura, Masaoki, 4,112,418, Cl. 340-659.000.
Itoh, Kiyoo, 4,112,508, Cl. 365-154.000.
Kinoshita, Hiroshi; Iwasaka, Tatsuo; and Hanmura, Hisao, 4,112,419, Cl. 340-560.000.
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.
Miyagi, Hiroyuki; Nakajima, Fumito; and Arikawa, Yoshijiro, 4,112,297, Cl. 250-288.000.
Miyamoto, Hiroshi; and Shinagawa, Mitsuhisa, 4,112,373, Cl. 325-440.000.
Nagasaki, Tadashi; Akatsu, Mitsuharu; and Ohtsu, Mitsuo, 4,112,337, Cl. 315-411.000.
Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, 4,110,899, Cl. 29-571.000.
Nishimiya, Torazo; Oyama, Yoshishige; and Oshima, Ryoichiro, 4,110,978, Cl. 60-276.000.
Ogiue, Katumi; Kondo, Hiroyuki; Ishikawa, Takashi; Mori, Takaaki; and Nitta, Takahisa, 4,111,724, Cl. 148-175.000.
Ohhinata, Ichiro, 4,112,315, Cl. 307-254.000.
Sakazume, Akio; Iwata, Hiroshi; Nakamura, Hiroo; Ogawa, Hiroyuki; Kashiwazaki, Susumu; and Nakao, Saneaki, 4,111,000, Cl. 62-262.000.
Takahasi, Toru; Ueno, Sadayasu; and Inui, Tomoji, 4,112,478, Cl. 361-162.000.
Tamura, Teizou; and Konishi, Katsuo, 4,110,902, Cl. 29-603.000.
Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,112,346, Cl. 323-4.000.

Hitachi Metals: *See—*
Sato, Kuniaki; Nakamura, Yoshihiro; and Ninomiya, Hideaki, 4,111,578, Cl. 403-189.000.

Hitchler, Edward Willard; and Klein, Albert Joseph, to American Can Company. Strip cast aluminum heat treatment. 4,111,721, Cl. 148-2.000.

Hiyamori, Yasuchika: *See—*
Takase, Katsuji; Tsuji, Toshimoto; Fukuda, Jun-ichi; and Hiyamori, Yasuchika, 4,111,884, Cl. 260-30.60R.

Hlavka, Joseph John, to American Cyanamid Company. Acyl derivatives of antibiotic BM123γ. 4,112,219, Cl. 536-17.000.

Ho, Shih M.; and Gupta, Tapan K., to Westinghouse Electric Corp. Pre-glassing method of producing homogeneous sintered ZnO nonlinear resistors. 4,111,852, Cl. 252-518.000.

Hobart Corporation: *See—*
Borum, Charles Jerry, 4,111,121, Cl. 101-227.000.

Hobbs, James W., to Phillips Petroleum Company. Absorption process method and apparatus. 4,111,218, Cl. 137-2.000.

Hoch, Samuel; and Szabo, Emery, to Tenneco Chemicals, Inc. Organotin compounds and vinyl halide resin compositions stabilized therewith. 4,111,903, Cl. 260-45.75S.

Hocker, Jurgen: *See—*
Giesecke, Henning; Hocker, Jurgen; and Merten, Rudolf, 4,111,918, Cl. 528-73.000.

Hoddinott, David C.; and Brown, Albert P., to Crompton & Knowles Corporation. Continuous strand winding apparatus. 4,111,376, Cl. 242-25.00A.

Hodge, Gerard; and Holsgrove, Robert J., to Kenhar Products Incorporated. Coating roller. 4,110,882, Cl. 29-118.000.

Hodge, Leon, to Varo, Inc. Ignition system for extending the lifetime of gas filled electric lamps. 4,112,334, Cl. 315-171.000.

Hodges, Newton John: *See—*
Price, David Watkin; Hodges, Newton John; and Furley, Robert, 4,111,709, Cl. 106-67.000.

Hodson, Donald R., to Rockwell International Corporation. Rupturable flywheel energy system. 4,111,067, Cl. 74-572.000.

Hoechst Aktiengesellschaft: *See—*
Bormann, Dieter; Merkel, Wulf; and Mania, Dieter, 4,111,953, Cl. 260-326.410.

Kostrzewa, Michael; and Muck, Karl-Friedrich, 4,111,858, Cl. 521-25.000.
Kuhls, Jurgen; Steininger, Alfred; and Fitz, Herbert, 4,112,211, Cl. 526-219.000.
Noetzel, Siegfried; Jastrow, Horst; and Uebe, Rudolf, 4,111,900, Cl. 260-45.70P.
Schubert, Hans; and Wunder, Friedrich, 4,112,006, Cl. 260-645.000.
Sellmann, Dieter; and Thallmair, Ernst, 4,111,971, Cl. 260-438.50R.
Sextro, Gunter; Burg, Karlheinz; Schlaf, Helmut; Sabel, Hans-Dieter; and Heller, Alwin, 4,111,912, Cl. 528-45.000.

Hoehn, Hans; Bernstein, Jack; and Vogt, Berthold Richard, to E. R. Squibb & Sons, Inc. 1,5,6,11-Tetrahydro[5,6]cyclohepta-[1,2,-b]pyrazolo[4,3-e]pyridine derivatives. 4,111,940, Cl. 260-293.600.

Hofer, Ernst; and Wintzer, Klaus, to Siemens Aktiengesellschaft. Apparatus for converting analog signals into digital signals and digital signals into analog signals. 4,112,426, Cl. 340-347.00C.

Hofer, Ernst; Hirschmann, Peter; and Wintzer, Klaus, to Siemens Aktiengesellschaft. Reversible analog-to-digital converter. 4,112,427, Cl. 340-347.00C.

Hofer, Johann: *See—*
Lang, Winfried; Schmidt, Dietrich; Hofer, Johann; Pachnek, Rudolf; and Rath, Heinz-Jorg, 4,112,057, Cl. 423-342.000.

Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammen, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O-alkyl-S-[1,6-dihydro-6-oxo-pyridazin(1)ylmethyl]-(thiono)-(di)-thiolphosphoric(phosphonic) acid esters. 4,112,080, Cl. 424-200.000.

Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. O,O-Di-alkyl-O-(1-6-pyridazinon-3-yl)-(thiono)-phosphoric acid esters and their pesticidal use. 4,112,081, Cl. 424-200.000.

Hoffbeck, Willis M.: *See—*
Bosy, George; Edwards, Edwin N.; Hoffbeck, Willis M.; Silvio, Paul A.; and Warwick, Leonard A., 4,112,131, Cl. 426-582.000.

Hoffman, Arnold: *See—*
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Hoffman-La Roche Inc.: *See—*
Holland, George William; Jernow, Jane Liu; and Rosen, Perry, 4,112,225, Cl. 542-426.000.

Hoffmann-La Roche Inc.: *See—*
Cohen, Noal; and Saucy, Gabriel, 4,111,961, Cl. 260-345.80R.
Farrenkopf, Bruce Charles; and Gomez, Magdalena Usategui, 4,112,064, Cl. 424-1.000.
Fryer, Rodney Ian; Sternbach, Leo Henryk; and Walser, Armin, 4,111,934, Cl. 260-239.30B.
Hengartner, Urs Oskar, 4,111,951, Cl. 260-326.200.
Maehr, Hubert, 4,112,216, Cl. 536-1.000.
Rosenberger, Michael, 4,111,992, Cl. 260-586.00R.
Walser, Armin; and Fryer, Rodney Ian, 4,111,931, Cl. 260-239.30B.

Hoffmann, Robert Joel; Bean, Samuel Louis; Seeling, Philip; and Swaine, James William, Jr., to Allied Chemical Corporation. Production of sodium sulfite utilizing mother liquor from the sodium metabisulfite process. 4,112,061, Cl. 423-512.00A.

Hojem, Justin P. M.: *See—*
Glossop, Mark B.; Buckmaster, Adrian C.; Cook, Neville G. W.; Hojem, Justin P. M.; Joughin, Noel C.; Taylor, Richard F.; Cramp, Robert W.; and Hatcher, John L., 4,111,296, Cl. 198-519.000.

Holbrook, Stanley E.: *See—*
Baird, William G., Jr.; Holbrook, Stanley E.; and Platt, Jeremy A., deceased, 4,112,181, Cl. 428-336.000.

Holden, Kenneth George; and Yim, Nelson Chi-Fai, to SmithKline Corporation. Substituted 1-thienyl and furyl-2,3,4,5-tetrahydro-1H-3-benzazepine compounds. 4,111,957, Cl. 260-332.20C.

Holland, George William; Jernow, Jane Liu; and Rosen, Perry, to Hoffman-La Roche Inc. 16-CF_3 prostaglandins. 4,112,225, Cl. 542-426.000.

Hollingshead, William Shepherd: *See—*
Nowak, Edward Norbert; and Hollingshead, William Shepherd, 4,112,244, Cl. 568-768.000.

Hollis, Ben R., Jr.; Feltner, William R.; Bouldin, David L.; and Routh, Donald E., to United States of America, National Aeronautics and Space Administration. Multilevel metallization method for fabricating a metal oxide semiconductor device. 4,111,775, Cl. 204-192.00C.

Holmes, Gordon W., to Professional Packaging Limited. Reclosable bag closure system. 4,110,953, Cl. 53-419.000.

Holmes, Jerry D.; Johnson, Charles R.; Jones, Allen S.; and Hewes, Charles R., to Texas Instruments Incorporated. Spread spectrum communication system. 4,112,372, Cl. 325-321.000.

Holschwandner, Lowell Henry: *See—*
Bindell, Jeffrey Bruce; Holschwandner, Lowell Henry; Labuda, Edward Franklin; and Ryden, William Dennis, 4,111,783, Cl. 204-298.000.

Holsgrove, Robert J.: *See—*
Hodge, Gerard; and Holsgrove, Robert J., 4,110,882, Cl. 29-118.000.

Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R. Method of separating lignin and making epoxide-lignin. 4,111,928, Cl. 260-124.00R.

Holt, Luther E.: *See—*
Babcock, Robert A.; Glasfeld, Rolf D.; and Holt, Luther E., 4,111,146, Cl. 114-74.00A.

Holz, Emil, to Hermann Finckh Maschinenfabrik. Apparatus for defibering conglomerates of fiber in fibrous suspensions, especially in the processing of mixed waste paper. 4,111,373, Cl. 241-46.110.

Hom, Jim M.: *See—*
Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., 4,111,906, Cl. 528-229.000.

Homeyer, Bernhard: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammen, Ingeborg; and Homeyer, Bernhard, 4,112,080, Cl. 424-200.000.

Honda, Chuzo. Echo annexation device. 4,112,396, Cl. 333-30.00R.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Okada, Motohiro; Oka, Katsumi; Honda, Kiyoshi; and Matsuura, Kazuo, 4,111,458, Cl. 280-739.000.

Honda, Kiyoshi: *See—*
Okada, Motohiro; Oka, Katsumi; Honda, Kiyoshi; and Matsuura, Kazuo, 4,111,458, Cl. 280-739.000.

Honeywell Inc.: *See—*
Bernal G., Enrique, 4,111,520, Cl. 350-96.120.
Hamelink, William B., 4,112,318, Cl. 307-308.000.
Heaps, Joseph D.; and Tufte, Obert N., 4,112,135, Cl. 427-11.000.

Hongo, Masafumi: *See—*
Kamada, Kazumasa; and Hongo, Masafumi, 4,111,892, Cl. 260-40.00R.

Honick, Hermann Hans, to Girling Limited. Slidable caliper and pivotal mounting means therefor. 4,111,285, Cl. 188-73.600.

Horn, Richard E., to Pitt Metals and Chemicals, Inc. Process for electrodialytically controlling the alkali metal ions in a metal plating process. 4,111,772, Cl. 204-180.00P.

Horstman, Gilbert F., to Horstman Manufacturing Co., Inc. Centrifugal friction mechanism. 4,111,291, Cl. 192-105.00C.

Horstman Manufacturing Co., Inc.: *See—*
Horstman, Gilbert F., 4,111,291, Cl. 192-105.00C.

Horstmann, Harald: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,112,109, Cl. 424-273.00P.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,112,227, Cl. 424-273.00P.

Hortlik, Frantisek: *See—*
Havel, Josef; Vobornik, Vaclav; Ripka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Planansky, Agaton; and Rehackova, Bozena, 4,110,961, Cl. 57-58.890.

Horton, Richard M.: *See—*
James, J. Michael; Fee, James F.; and Horton, Richard M., 4,110,918, Cl. 35-22.00R.

Hoshijima, Tokitaro: *See—*
Yamawaki, Takeshi; Hoshijima, Tokitaro; and Aga, Kiichiro, 4,111,039, Cl. 73-81.000.

Hoshino, Masao. Tube coupling. 4,111,575, Cl. 403-104.000.

Hotz, Alfons, to Netstal-Maschinen AG. Plasticizing device of an injection molding machine for plastics. 4,112,516, Cl. 366-80.000.

Houdaille Industries, Inc.: *See—*
Wilson, George E.; Friesen, Milo E.; and Smith, Albert J., 4,112,025, Cl. 261-29.000.

Hovercraft Development Limited: *See—*
Rapson, John Edward; and Alders, Dean, 4,111,276, Cl. 180-117.000.

Howard, Dennis D., to Lord Corporation. Radiation curable coating compositions. 4,112,017, Cl. 260-359.00R.

Hower, Philip L.; Carlson, William G.; and Gupta, Tapan K., to Electric Power Research Institute, Inc. Method for the nondestructive testing of voltage limiting blocks. 4,112,362, Cl. 324-158.00R.

Howlett, Donald L., to Texaco Inc. Digital seismic telemetry system. 4,112,412, Cl. 340-15.5TS.

HPM Corporation: *See—*
Kruder, George A., 4,112,519, Cl. 366-266.000.

Hubbard, William P.: *See—*
United States of America, National Aeronautics and Space Administration; Layland, James W.; Martin, Warren L.; Zygielbaum, Arthur I.; Goldstein, Richard M.; and Hubbard, William P., 4,112,497, Cl. 364-728.000.

Huber, Bernhard Werner: *See—*
Tamm, Rolf Gunther Arnold; and Huber, Bernhard Werner, 4,111,051, Cl. 73-423.00A.

Huber, George: *See—*
Palmer, James E.; Lavallee, Donald C.; and Huber, George, 4,112,401, Cl. 335-206.000.

Huber, Thomas L., to Research Corporation. Treatment of ruminants. 4,112,069, Cl. 424-93.000.

Huber, Ulrich, to Givaudan Corporation. Process for preparing polyphenols. 4,112,003, Cl. 260-613.00D.

Hubner, Rolf H. Apparatus for monitoring the solvent content of air. 4,111,034, Cl. 73-23.000.

Huettner, Robert; and Kuetterer, Gerhard, to Siemens Aktiengesellschaft. X-ray cassette with a window for illuminating patient data. 4,112,304, Cl. 250-476.000.

Huffman, Kenneth Robert; Casey, Donald James; and Thomas, Walter Moreland, to Formica Corporation. Elastomer modified melamine resin containing laminates. 4,112,169, Cl. 428-206.000.

Hug, Leonard F.; McClelland, Donald H.; and Uba, Toshio, to Gates Rubber Company, The. Spirally wound electrochemical cell and method and apparatus for its production. 4,112,202, Cl. 429-94.000.

Hughes Aircraft Company: *See—*
Burnett, Gary L.; and Tsuda, George I., 4,112,398, Cl. 333-73.00R.
Eisele, Franz X., 4,112,327, Cl. 313-337.000.
Wong, Mon N.; and Crail, Timothy A., 4,112,432, Cl. 343-786.000.
Zurcher, Rudolf F., 4,111,510, Cl. 339-17.00F.
Zurcher, Rudolf F., 4,111,518, Cl. 339-252.00R.

Hulsmann, Hans Leo; and Renckhoff, Gustav, to Dynamit Nobel Ak-

tiengesellschaft. Process for the manufacture of light colored dipropyleneglycol dibenzoate. 4,112,240, Cl. 560-112.000.
Hund, Franz: *See—*
Buxbaum, Gunter; and Hund, Franz, 4,112,063, Cl. 423-633.000.
Hungerbach, Paul, to Thyssen Schachtbau GmbH. Bulk-storage receptacle with helical chute. 4,111,315, Cl. 214-17.00C.
Hunter, George Sherwood: *See—*
Walker, Brian; Hunter, George Sherwood; and Hunter, Susanne Phyllis, 4,111,815, Cl. 210-487.000.
Hunter, Susanne Phyllis: *See—*
Walker, Brian; Hunter, George Sherwood; and Hunter, Susanne Phyllis, 4,111,815, Cl. 210-487.000.
Hurco Manufacturing Company Inc.: *See—*
Roch, Gerald V.; and Hadley, Chris L., 4,112,493, Cl. 364-476.000.
Huret, Jacques Andre. Device for transmitting movement to a speed indicator instrument and/or a distance counter. 4,111,059, Cl. 74-12.000.
Hurst, Kerney J.; and Pearson, Walter G. Article counting device. 4,111,332, Cl. 221-7.000.
Hurt, William S., to Rohm and Haas Company. Pesticidal O,S-dialkyl O-sulfonyloxyphenyl phosphorothiolates and phosphorodithioates. 4,112,083, Cl. 424-215.000.
Hussein, Ma'moun M., to Life Savers, Inc. Breath freshener composition and method. 4,112,066, Cl. 424-48.000.
Hutchings, David Alan: *See—*
Nowak, Edward Norbert; Wideman, Lawson Gibson; and Hutchings, David Alan, 4,112,243, Cl. 568-768.000.
Hutchison, George G., III, to Hutchison-Western. Panel fence. 4,111,399, Cl. 256-32.000.
Hutchison-Western: *See—*
Hutchison, George G., III, 4,111,399, Cl. 256-32.000.
Hutchison, William Joseph, to Eastman Kodak Company. Rotary film processing apparatus. 4,112,453, Cl. 354-330.000.
Huttel, Richard: *See—*
Fuehrer, Werner; Huttel, Richard; Lisfeld, Robert; and Leonhardt, Karl, deceased, 4,111,530, Cl. 350-252.000.
Hyder, Charles L. Method for forming domes from subterranean diapiric material. 4,110,988, Cl. 405-131.000.
Hydrocarbon Research, Inc.: *See—*
Chervenak, Michael C.; and Johanson, Edwin S., 4,111,788, Cl. 208-10.000.
Hyer, Donald R., to General Electric Company. Frequency transducer circuit with output calibration. 4,112,359, Cl. 324-78.00E.
Ichijo, Michio, to Agency of Industrial Science and Technology. Method for separating gold from acid aqueous solution. 4,111,688, Cl. 75-118.00R.
Ichinose, Isao; Sakemoto, Mitsuhiro; and Suzuki, Noboru, to Japan Crown Cork Co., Ltd. Crown closure. 4,111,323, Cl. 215-230.000.
ICI Americas Inc.: *See—*
Restaino, Alfred Joseph, 4,112,019, Cl. 260-866.000.
Ideal Industrie, Inc.: *See—*
Scott, William J., 4,112,251, Cl. 174-87.000.
Idemitsu Kosan Company, Ltd.: *See—*
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, 4,111,898, Cl. 260-42.530.
Idesawa, Masanori: *See—*
Goto, Eiichi; Soma, Takashi; and Idesawa, Masanori, 4,112,305, Cl. 250-492.00R.
Idota, Yoshio; and Shibaoka, Haruo, to Fuji Photo Film Co., Ltd. Process for the recovery of silver from fixing solutions. 4,111,766, Cl. 204-109.000.
Iguchi, Susumi, to Ricoh Co., Ltd. Shutter and low-light indicator actuating device for a camera. 4,112,443, Cl. 354-31.000.
Ihara Chemical Industry Co., Ltd.: *See—*
Mori, Kogoro; Izawa, Taro; Mizuno, Yoshifumi; and Matsui, Sadayoshi, 4,111,879, Cl. 260-29.60N.
Iitsuka, Kunio: *See—*
Tsunoda, Kozo; Sowa, Tsuneo; Iitsuka, Kunio; and Sako, Kiyohide, 4,112,221, Cl. 536-24.000.
Iizuka, Masafumi: *See—*
Fukuda, Shozo; Seike, Yajuro; Iizuka, Masafumi; Kasai, Hironao; and Enami, Mamoru, 4,111,811, Cl. 210-242.00S.
Ikeda, Hiroshi: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Ikeda, Hiroshi, 4,111,990, Cl. 260-561.00R.
Ikeda, Masachika: *See—*
Takizawa, Tatsuo; and Ikeda, Masachika, 4,111,119, Cl. 101-127.100.
Ikeda, Saburoo: *See—*
Obiya, Yasuaki; and Ikeda, Saburoo, 4,111,101, Cl. 91-405.000.
Ikemori, Keiji, to Canon Kabushiki Kaisha. Retrofocus type wide angle objective lens. 4,111,558, Cl. 350-189.000.
Ikhsanov, Deviz Faizrakhmanovich: *See—*
Buzhinsky, Vladimir Lukyanovich; Raschepkin, Konstantin Egorovich; Dunjushkin, Mikhail Grigorievich; Lysogorsky, Gennady Tikhonovich; Valeev, Rustem Ibragimovich; Nisenbaum, Yakov Arkadievich; and Ikhsanov, Deviz Faizrakhmanovich, 4,110,862, Cl. 15-88.000.
ILC Technology, Inc.: *See—*
McRae, Russell C., 4,112,204, Cl. 429-181.000.
Illinois Tool Works Inc.: *See—*
Braun, Leonard Charles; and Benno, Edward Leonard, 4,111,135, Cl. 111-2.000.
Imazaike, Yasutaka. Air damper. 4,110,868, Cl. 16-84.000.
Imbrogno, Gaetano O.: *See—*
Blair, Ronald A.; Nickstadt, Gerhard A.; and Imbrogno, Gaetano O., 4,111,069, Cl. 74-606.00R.
IMC Chemical Group, Inc.: *See—*
Carroll, William J.; and Griffith, George L., 4,112,220, Cl. 536-18.000.
Imperial Chemical Industries Limited: *See—*
Baird, David Boyd; Campbell, James Stanley; Fishwick, Brian Ribbons; and McClelland, Robert David, 4,111,956, Cl. 260-329.0AM.
Caunt, Anthony David; and Williams, Ian Gabriel, 4,111,834, Cl. 252-429.00B.
Fawkes, David Melville, 4,111,929, Cl. 260-146.00R.
Gore, Christopher Robert; and Arm, Geoffrey George, 4,112,023, Cl. 260-901.000.
Hinchlieff, Henry Russell; and Banwell, Richard Hugh, 4,111,211, Cl. 131-2.000.
Mansfield, John Rickard, 4,111,776, Cl. 204-195.00T.
Remmington, Timothy Alan; and Robinson, William, 4,111,625, Cl. 425-174.80E.
Smithers, Michael James, 4,112,120, Cl. 424-323.000.
Imperial Oil Limited: *See—*
Porteous, Kenneth; Falkenberg, Leigh; and Lane, Stephen, 4,111,789, Cl. 208-11.0LE.
Inaba, Norihiko: *See—*
Kobayashi, Kazuo; Suzuki, Akira; Tanaka, Motoharu; Inaba, Norihiko; and Yuyama, Hisao, 4,111,823, Cl. 252-62.10P.
Inada, Kazuyoshi: *See—*
Sanada, Hisao; Saito, Ritaro; Funabashi, Masayuki; Inada, Kazuyoshi; and Seguchi, Koji, 4,112,053, Cl. 423-239.000.
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Miyake, Tetsuya; Seko, Maomi; Inada, Kohji; Ochi, Kazushi; and Sakamoto, Tomio, 4,112,044, Cl. 423-7.000.
Inagaki, Tokuich: *See—*
Ueno, Zene; Morita, Akira; Iwaki, Shigeo; Nagaoka, Tadahiko; and Inagaki, Tokuich, 4,111,161, Cl. 123-3.000.
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Ikeda, Hiroshi, to Kao Soap Co., Ltd. 1-Acetylaminotricyclo [4.3.1.1^{2,5}] undecane and process for the preparation thereof. 4,111,990, Cl. 260-561.00R.
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, to Idemitsu Kosan Company, Ltd. Process for production of resin compositions with excellent plating properties. 4,111,898, Cl. 260-42.530.
Information Identification Company, Inc.: *See—*
Freeny, Charles C., Jr., 4,112,421, Cl. 343-112.00D.
Ingvason, Sigurdur. Ship's docking plant. 4,111,144, Cl. 114-48.000.
Inoue, Mitsumasa: *See—*
Nakajima, Masao; Masaki, Kenji; and Inoue, Mitsumasa, 4,111,170, Cl. 123-119.0EC.
Inoue, Mitsuo: *See—*
Kumaki, Yoshihiro; Kawade, Junpei; Takano, Toshiaki; and Inoue, Mitsuo, 4,111,486, Cl. 299-1.000.
Inoue, Satoshi: *See—*
Komorita, Fujio; Nozawa, Nobuhiro; and Inoue, Satoshi, 4,111,707, Cl. 106-47.00Q.
Inoue, Sho; Sano, Akira; and Kitaguchi, Koji, to Nippon Shinyaku Co., Ltd. Method of preparing sterol glycosides from plants. 4,112,218, Cl. 536-5.000.
Insinooritoimisto Innotec Oy: *See—*
Jolanki, Jorma; Saxelin, Ilpo; and Ponni, Hannu, 4,111,560, Cl. 356-205.000.
Institut Francais du Petrole: *See—*
Marcilly, Christian, 4,112,008, Cl. 260-671.00M.
Institutul Oncologic Bucuresti: *See—*
Simionescu, Radu, 4,111,228, Cl. 137-512.000.
Instytut Geodezji i Kartograffi: *See—*
Dubik, Adam; Kowalski, Henryk Zenon; Osiennik, Pawel; and Krol, Franciszek, 4,112,295, Cl. 250-237.00G.
Intel Corporation: *See—*
Pohlman, William B.; and Volk, Andrew M., 4,112,490, Cl. 364-200.000.
International Business Machines Corporation: *See—*
Arzubi, Luis Maria; Gschwendtner, Joerg; and Schnadt, Robert, 4,112,512, Cl. 365-203.000.
Engler, Edward Martin; Nichols, Kenneth Herbert; Patel, Vishnubhai Vitthalbhai; Rivera, Nilda Martinez; and Schumaker, Robert Rhees, 4,111,857, Cl. 528-226.000.
Gani, Venkappa Laxmappa; and Montegari, Frank Alfred, 4,112,314, Cl. 307-215.000.
Hauke, Francis Edward; McCully, Everette Ray; McElroy, Robert Marion, Jr.; Stevenson, Peter Alan; Vogel, Stephen Martin; and Woods, John Walton, 4,112,472, Cl. 360-102.000.
Mader, Siegfried R.; Masters, Burton J.; and Pogge, H. Bernhard, 4,111,719, Cl. 148-1.500.
Michel, Alwin E.; Schwenker, Robert O.; and Ziegler, James F., 4,111,720, Cl. 148-1.500.
International Computers Limited: *See—*
Wood, Keith William, 4,112,489, Cl. 364-200.000.
International Nickel Company, Inc., The: *See—*
Larson, Floyd Gotthard, Jr.; and deBarbadillo, John Joseph, II, 4,111,691, Cl. 75-170.000.
International Paper Company: *See—*
Hambleton, Thomas P., 4,111,350, Cl. 229-15.000.

International Patent Transactions Company Limited: *See—*
Hatanaka, Takefumi, 4,111,587, Cl. 407-91.000.
International Telephone and Telegraph Corporation: *See—*
Brishka, Alexander R.; and DeChamp, David W., 4,111,514, Cl. 339-186.00R.
Hall, Freeman F., Jr.; and Redmann, Jerome J., 4,112,300, Cl. 250-330.000.
Waddoups, Ray O., 4,111,050, Cl. 73-362.00R.
InterRoyal Corporation: *See—*
Benoit, Roland A.; and Guillot, Edmond P., 4,110,856, Cl. 5-68.000.
Inui, Tomoji: *See—*
Takahasi, Toru; Ueno, Sadayasu; and Inui, Tomoji, 4,112,478, Cl. 361-162.000.
IRD Mechanalysis, Inc.: *See—*
Morrow, Robert S.; and Penn, Lloyd D., 4,112,382, Cl. 328-181.000.
Iscol, Lewis; and Cochran, Lynn E., to Chevron Research Company. Host-controlled fault diagnosis in a data communication system. 4,112,414, Cl. 340-146.10E.
Ishibashi, Ichiroh: *See—*
Kaneko, Akira; Ishibashi, Ichiroh; and Nakano, Eisyo, 4,111,889, Cl. 260-31.80M.
Ishida, Hajime, to Tomy Kogyo Co., Ltd. Folding bicycle. 4,111,447, Cl. 280-278.000.
Ishida, Hiroaki: *See—*
Yonemoto, Tomoo; Morino, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 4,112,444, Cl. 354-106.000.
Ishida, Yasuhiko: *See—*
Miyagi, Hideo; Oishi, Kiyohiko; Ishida, Yasuhiko; and Yamaguchi, Shunzo, 4,110,979, Cl. 60-276.000.
Ishidoshiro, Hiroshi: *See—*
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Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, to Mitsubishi Rayon Co., Ltd. Process for producing unsaturated aldehydes, and unsaturated fatty acids. 4,111,984, Cl. 562-538.000.
Ishii, Hiromichi: *See—*
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,111,985, Cl. 562-546.000.
Ishii, Hiroyuki, to Sugatsune Industrial Co., Ltd. Caster equipped with a stopper. 4,110,866, Cl. 16-35.00R.
Ishii, Masaji: *See—*
Nakajima, Yukihiko; Watanabe, Shuzou; Miyai, Akira; and Ishii, Masaji, 4,112,290, Cl. 219-275.000.
Ishii, Tsumoru: *See—*
Sera, Hidefumi; Shiraishi, Hisashi; and Ishii, Tsumoru, 4,111,926, Cl. 260-117.000.
Ishii, Yasuo: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.
Ishikawa, Takashi: *See—*
Ogiue, Katumi; Kondo, Hiroyuki; Ishikawa, Takashi; Mori, Takaaki; and Nitta, Takahisa, 4,111,724, Cl. 148-175.000.
Ishikawa, Toshio; Ozawa, Jun; and Tamura, Masaoki, to Hitachi, Ltd. Lightning current responsive alarm. 4,112,418, Cl. 340-659.000.
Ishimaru, Kenzo, to Beckman Instruments, Inc. Multi-compartment centrifuge rotor liner. 4,111,355, Cl. 233-20.00R.
Ishizuka, Ichiro: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,111,680, Cl. 71-88.000.
Isuzu Motors Limited: *See—*
Kimbara, Motoyasu, 4,111,365, Cl. 239-93.000.
Ithaco, Incorporated: *See—*
Jorgensen, Hans G.; and Hautaniemi, B. Wendell, 4,111,054, Cl. 73-611.000.
Ito, Hidehumi: *See—*
Torii, Shinkity; Kawagoshi, Sakae; Yoneshige, Tetsuhiko; and Ito, Hidehumi, 4,111,848, Cl. 252-466.0PT.
Ito, Katsuo; Murata, Bunjiro; Maeda, Yoji; and Hibino, Eiichi, to Murata Manufacturing Co., Ltd. Television tuner circuit for selection of VHF and UHF/VHF converted television signals. 4,112,378, Cl. 325-464.000.
Ito, Shohei, to Seiko Seiki Kabushiki Kaisha. Infeeding method for internal grinders. 4,110,938, Cl. 51-281.00R.
Ito, Toshimichi: *See—*
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, 4,111,898, Cl. 260-42.530.
Ito, Yukio; and Morishima, Susumu, to Hitachi Denshi Engineering Kabushiki Kaisha; and Musashi Kabushiki Kaisha. Apparatus for clamping and binding a stack of paper. 4,111,116, Cl. 100-281.000.
Itoga, Masaaki: *See—*
Asakura, Toshiyuki; Itoga, Masaaki; Hayakawa, Takeshi; and Tanimura, Masamitsu, 4,112,187, Cl. 428-474.000.
Itoh, Kiyoo, to Hitachi, Ltd. Semiconductor memory. 4,112,508, Cl. 365-154.000.
Itoh, Schun'ichi: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.
ITT Industries, Incorporated: *See—*
Andersson, Karl-Gunnar; and Sjostrand, Karl Evert, 4,111,611, Cl. 417-360.000.
ITW de France, S.A.: *See—*
Morel, Henri, 4,111,570, Cl. 403-18.000.
Ivanova, Tatyana Lukyanovna: *See—*
Vishnevsky, Alexandr Alexandrovich; Korolkov, Ivan Alexandrovich; Smirnov, Boris Andreevich; Ivanova, Tatyana Lukyanovna; Adamian, Arnold Aramovich; and Mitkova, Galina Vladimirovna, 4,111,206, Cl. 128-305.000.
Iwaki, Shigeo: *See—*
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Iwasaka, Tatsuo: *See—*
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Iwata, Hiroshi, to West Electric Co, Ltd. Flash and camera device. 4,112,447, Cl. 354-145.000.
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Izawa, Taro: *See—*
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Izon Corporation: *See—*
Yevick, George Johannus, 4,111,695, Cl. 96-40.000.
Izumi, Hideki: *See—*
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J.F. Enterprises, Inc.: *See—*
Acker, Donald J., 4,110,855, Cl. 5-45.000.
J. I. Case Company: *See—*
Frisbee, Claude M., 4,111,268, Cl. 172-805.000.
J. Ray McDermott & Co.: *See—*
Reiher, Max A. W.; and Faust, Richard C., 4,111,313, Cl. 214-15.00R.
J. Young (Scientific Glassware) Ltd.: *See—*
Young, James, 4,111,440, Cl. 277-165.000.
Jack, James, to Bakelite Xylonite Limited. Process for the productions of multi-cellular stretched articles. 4,111,860, Cl. 521-84.000.
Jackson, R. Neil: *See—*
Van Pool, Joe; and Jackson, R. Neil, 4,111,805, Cl. 210-71.000.
Jacobs, David R.: *See—*
Spanel, Abram N.; Eiland, P. Frank; and Jacobs, David R., 4,111,136, Cl. 112-79.00R.
Jacobs Manufacturing Company, Limited, The: *See—*
Derbyshire, George Cecil, 4,111,079, Cl. 81-90.00A.
Jacobs, Max. Building front rope lift. 4,111,281, Cl. 182-10.000.
Jacobs, Stanley A. Latch handle and container lock. 4,111,476, Cl. 292-246.000.
Jacobs, Stanley C.: *See—*
Stoehr, Robert A.; Ormesher, Robert J.; and Jacobs, Stanley C., 4,111,764, Cl. 204-64.00R.
Jacobson, Ronald H.; and Miller, Brian J. Wire wrapping and cut-off tool. 4,111,242, Cl. 140-124.000.
Jacquelin, Jean, to Compagnie Generale d'Electricite S.A. Electrolytic resistor. 4,112,409, Cl. 338-222.000.
Jaeger, Robert Charles, to Pennwalt Corporation. Dental chair headrest locking device. 4,111,483, Cl. 297-410.000.
Jaeger, Robert Charles, to Pennwalt Corporation. Dental chair headrest locking device. 4,111,484, Cl. 297-410.000.
Jager, Horst, to Ciba-Geigy Corporation. Heterocyclic nitrogen compounds, process for their manufacture and their use. 4,111,817, Cl. 252-8.800.
Jagger, Brian E., to Xerox Corporation. Apparatus for sensing when paper utilized in a printer has been depleted. 4,111,565, Cl. 400-708.000.
Jahns, Hans O.; Galate, Joseph W.; and Wheeler, John A., Jr., to Exxon Production Research Company. Split air convection pile. 4,111,258, Cl. 165-40.000.
Jaidinger, John H.; and Sakazaki, Mamoru, to Jaidinger Mfg. Co., Inc. Relay for printed circuits. 4,112,400, Cl. 335-128.000.
Jaidinger Mfg. Co., Inc.: *See—*
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James, J. Michael; Fee, James F.; and Horton, Richard M., to Cyborg Corporation. Modular biofeedback training system. 4,110,918, Cl. 35-22.00R.
James Kemp & Co. Pty. Ltd.: *See—*
Herron, Keith Roderick, 4,111,588, Cl. 408-110.000.
Janakiev, Nikolai. Pressure vessel. 4,111,327, Cl. 220-3.000.
Jandl, Frank W.; and Colman, Gregory D., to United States of America, Navy. Pyrogen igniter ramjet ignition system. 4,110,977, Cl. 60-270.00R.
Janys Designs Limited: *See—*
Waski, Jane, 4,111,429, Cl. 273-271.000.
Japan Crown Cork Co., Ltd.: *See—*
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Japan Steel Works Limited, The: *See—*
Shiomi, Kozen; and Shimizu, Ryoichi, 4,111,630, Cl. 425-462.000.
Japanese National Railways: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo;

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Jarowenko, Wadym, to National Starch and Chemical Corp. Method of preparing hydroxypropylated starch derivatives. 4,112,222, Cl. 536-111.000.

Jarque, Ricardo Granados; Cartes, Juan Bosch; Cabiro, Jorge Canals; Roldan, Cristobal Martinez; and Peinado, Fernando Rabadan, to Laboratories Made, S.A. Process for the preparation of 3,4,5-trimethoxy-phenyl-(1,4-dimethyl-1,2,3,6-tetrahydro-2-pyridyl)-carbinol. 4,111,945, Cl. 260-297.00R.

Jarvis, Alexander S., to Drisan Packaging Ltd. Food packaging system and method. 4,112,124, Cl. 426-234.000.

Jaskolski, Stanley V.; Lade, Robert W.; Schutten, Herman P.; and Spellman, Gordon B., to Cutler-Hammer, Inc. Silicon thyristor sensitive to low temperature with thermal switching characteristics at temperatures less than 50° C. 4,112,458, Cl. 357-38.000.

Jastrow, Horst: *See—*
Noetzel, Siegfried; Jastrow, Horst; and Uebe, Rudolf, 4,111,900, Cl. 260-45.70P.

Jaudt, Andreas. Adjusting device for the gland packing of a flat slide-valve. 4,111,394, Cl. 251-214.000.

Jay, John; Bonner, Gary D.; and Betancourt, Osmundo J., to Canplan Filtration Limited. Filtration system. 4,111,801, Cl. 210-40.000.

Jensen, Arthur S.: *See—*
Lampe, Donald R.; White, Marvin H.; and Jensen, Arthur S., 4,112,456, Cl. 357-24.000.

Jensen, Ronald P., to Jensen, Ronald P. Intraocular lens for implantation into the posterior chamber of a human eye. 4,110,848, Cl. 3-13.000.

Jernow, Jane Liu: *See—*
Holland, George William; Jernow, Jane Liu; and Rosen, Perry, 4,112,225, Cl. 542-426.000.

Jerrold Electronics Corp.: *See—*
Everhart, Norman; and Brauer, Dieter Bruno, 4,112,386, Cl. 330-265.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Lavelle, Joseph E.; and Munroe, James L., 4,111,531, Cl. 350-293.000.

Jinotti, Walter J. Exerciser. 4,111,416, Cl. 272-96.000.

Johanson, Edwin S.: *See—*
Chervenak, Michael C.; and Johanson, Edwin S., 4,111,788, Cl. 208-10.000.

Johanson Manufacturing Corporation: *See—*
Johanson, Norman E.; and Seidler, Emil, 4,112,480, Cl. 361-271.000.

Johanson, Norman E.; and Seidler, Emil, to Johanson Manufacturing Corporation. Tunable extended range chip capacitor. 4,112,480, Cl. 361-271.000.

Johns-Manville Corporation: *See—*
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Hannes, George John; Rohweder, Theodore Richard; Dreikorn, Hans Wendell; and Shepherd, Philip Bickford, 4,112,174, Cl. 428-220.000.
Lambert, Gerard Lucien, 4,111,113, Cl. 100-74.000.
Pusch, Walter George, 4,111,712, Cl. 106-120.000.
Reynolds, Harold John, Jr., 4,111,891, Cl. 260-38.000.

Johnson, Charles R.: *See—*
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Johnson Controls, Inc.: *See—*
Matthews, Russell Byron, 4,111,639, Cl. 431-25.000.

Johnson, George William, to Lockheed Corporation. Compound curvature cutting machine. 4,111,085, Cl. 83-1.000.

Johnson & Johnson: *See—*
Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, 4,111,922, Cl. 526-292.000.
Butterworth, George A. M.; and Fillwalk, Frank, 4,112,153, Cl. 427-390.00E.
Waldman, Harold Louis, 4,112,213, Cl. 526-279.000.

Johnson, Reynold B., to Microsonics Corporation. Hand held record player with record holding attachment. 4,111,430, Cl. 274-9.00B.

Johnson, Samuel B., to Allen-Bradley Company. Substrate with terminal connections and method of making the same. 4,110,904, Cl. 29-628.000.

Johnson, Wendell L.: *See—*
Getson, John C.; and Johnson, Wendell L., 4,111,890, Cl. 260-37.0SB.

Johnston, Gordon Boyd; and Strandberg, Hasse Eivind, to SKF Industrial Trading & Development Co., B.V. Bearing cage. 4,111,501, Cl. 308-201.000.

Jolanki, Jorma; Saxelin, Ilpo; and Ponni, Hannu, to Insinooritoimisto Innotec Oy. Method and apparatus for determining a property of a given substance. 4,111,560, Cl. 356-205.000.

Jones, Alan: *See—*
Firth, Jack Graham; Gentry, Stephen John; and Jones, Alan, 4,111,658, Cl. 23-232.00E.

Jones, Allen S.: *See—*
Holmes, Jerry D.; Johnson, Charles R.; Jones, Allen S.; and Hewes, Charles R., 4,112,372, Cl. 325-321.000.

Jones, D. B.: *See—*
Wilson, S. R.; and Jones, D. B., 4,112,474, Cl. 361-15.000.

Jones, Dale A. Method and projection apparatus. 4,112,438, Cl. 353-66.000.

Jones, Giffin D., to Dow Chemical Company, The. Radiation-curable polymers bearing quaternary nitrogen groups. 4,112,207, Cl. 526-17.000.

Jones, Peter Hadley: *See—*
Winn, Martin; Kyncl, Jaroslav; Dunnigan, Daniel Ambrose; and Jones, Peter Hadley, 4,112,097, Cl. 424-251.000.

Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., to TRW Inc. Polyimides prepared from perfluoroisopropylidene diamine. 4,111,906, Cl. 528-229.000.

Jones, William C., to Markus, Franklyn M. Folding table and seat assembly. 4,111,482, Cl. 297-159.000.

Jonsson, Sven Erik; and Ekstrom, Olov Valter, to Siemens Aktiengesellschaft. Valve and switch device for measuring pressure of liquids in living objects. 4,112,272, Cl. 200-61.58R.

Jordan, David D., to Bendix Corporation, The. Steering linkage having resilient ring. 4,111,576, Cl. 403-134.000.

Jordan, Thomas F., to Continental Group, Inc., The. Reclosable vacuum container. 4,111,330, Cl. 220-306.000.

Jorgensen, Arne; Berthelsen, Poul; and Bassoe, Jorgen, to Lever Brothers Company. Trough-shaped folded cardboard container. 4,111;352, Cl. 229-31.00R.

Jorgensen, Hans G.; and Hautaniemi, B. Wendell, to Ithaco, Incorporated. Gravidity detection method and apparatus. 4,111,054, Cl. 73-611.000.

Joseph, Bernard W., to General Motors Corporation. Rotationally independent optical correlation for position determination. 4,111,526, Cl. 350-162.0SF.

Joseph, Mark. Coil with protection against overheating. 4,112,405, Cl. 337-4.000.

Jost, Victor: *See—*
Kiehl, Jean-Pierre; Jost, Victor; and Clavaud, Bernard Alain, 4,111,711, Cl. 106-97.000.

Joughin, Noel C.: *See—*
Glossop, Mark B.; Buckmaster, Adrian C.; Cook, Neville G. W.; Hojem, Justin P. M.; Joughin, Noel C.; Taylor, Richard F.; Cramp, Robert W.; and Hatcher, John L., 4,111,296, Cl. 198-519.000.

Journey, John, to Thexton Manufacturing Company. Belt enrailer and derailer. 4,111,063, Cl. 74-242.600.

Jousson, Pierre J., to Les Produits Associes LPA S.A. Pulsed liquid hygiene apparatus. 4,111,193, Cl. 128-66.000.

Joy Manufacturing Company: *See—*
Kendrick, Frank B., 4,111,066, Cl. 74-471.00R.

Junger, Hans: *See—*
Weissenfels, Franz; and Junger, Hans, 4,111,911, Cl. 260-38.000.

Junovich, July Moiseevich; Zhukovsky, Sergei Semenovich; Sudakas, Lev Girshovich; Turkina, Ljudmila Ivanovna; Smirnov, Anatoly Ilich; Lyass, Abram Moiseevich; and Teplyakov, Sergei Dmitrievich. Self-hardening moulding mixture for making foundry moulds and cores. 4,111,705, Cl. 106-38.350.

Jyo, Shigeru, to Tekken Kensetu Co. Ltd. Brush-type packing means for shield excavator. 4,110,992, Cl. 405-147.000.

Kabasawa, Yozo; and Tanimura, Takenori. Liquid-liquid extraction method and apparatus. 4,111,660, Cl. 423-8.000.

Kabbe, Hans-Joachim: *See—*
Eckert, Heiner; Ugi, Ivar; and Kabbe, Hans-Joachim, 4,111,933, Cl. 260-239.100.

Kabelschlepp Gesellschaft mit beschrankter Haftung: *See—*
Moritz, Werner, 4,111,236, Cl. 138-120.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Fukuichi, Takuro, 4,110,969, Cl. 58-57.500.
Hirama, Hideo, 4,111,311, Cl. 214-1.0BC.
Kawashima, Hirofumi, 4,112,323, Cl. 310-348.000.

Kabushiki Kaisha Fuji Tekkosho: *See—*
Matsumoto, Yukimichi; and Ueyama, Minoru, 4,111,084, Cl. 82-48.000.

Kabushiki-Kaisha Kinsekisha-Kenkyujo: *See—*
Yamaguchi, Kazumasa; Nasaki, Kunio; and Ohshiro, Masanori, 4,112,324, Cl. 310-353.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kasuya, Tamotsu, 4,111,598, Cl. 415-202.000.

Kabushiki Kaisha Ohara Kogaku Garasu Seizosho: *See—*
Komorita, Fujio; Nozawa, Nobuhiro; and Inoue, Satoshi, 4,111,707, Cl. 106-47.000Q.

Kabushiki Kaisha Tiger Machine Seisakusho: *See—*
Kitahara, Yutaka, 4,111,627, Cl. 425-421.000.

Kach, Alfred, to Patelhold Patentverwertungs & Elektro-Holding AG. Optical fiber data transmission system. 4,112,293, Cl. 250-199.000.

Kachik, Robert H., to United States Steel Corporation. Method of repairing slag and cinder pots and other heavy steel articles. 4,110,887, Cl. 29-401.00A.

Kahl, Donald L.: *See—*
Gale, Richard A.; and Kahl, Donald L., 4,111,617, Cl. 418-61.00B.

Kai, Shinichiro: *See—*
Torikai, Eiichi; Kawami, Youji; Kai, Shinichiro; Namba, Mutsusuke; and Simasaki, Shuhei, 4,111,866, Cl. 521-53.000.

Kaiser Aluminum & Chemical Corporation: *See—*
Donaldson, Donald J., 4,112,047, Cl. 423-123.000.

Kajan Specialty Company, Inc.: *See—*
Perkins, Lee E., 4,111,271, Cl. 175-297.000.

Kaji, Hidehiko: *See—*
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, 4,111,898, Cl. 260-42.530.

Kajima Corporation: *See—*
Sato, Kuniaki; Nakamura, Yoshihiro; and Ninomiya, Hideaki, 4,111,578, Cl. 403-189.000.

Kako, Yuji; Kikuga, Toyoji; and Toko, Akira, to Sumitomo Durez Company, Ltd. Solid adherend substrates bonded with rubber cement compositions. 4,112,160, Cl. 428-460.000.

Kaku, Masahiro: *See—*
Fukuyama, Hiroomi; and Kaku, Masahiro, 4,112,291, Cl. 235-92.0MP.

Kakukawa, Morio: *See—*
Funakoshi, Yoshiro; Asogawa, Tatsuo; Satake, Eiichi; Motoyama, Shimesu; Yamada, Shuri; and Kakukawa, Morio, 4,111,626, Cl. 425-203.000.

Kalbow, Heinz, to Collo GmbH. Method of making cleaning, scouring and/or polishing pads and the improved pad produced thereby. 4,111,666, Cl. 51-295.000.

Kalir, Asher: *See—*
Ashani, Yacov; Amitai, Gavriel; Grunfeld, Yona; Kalir, Asher; and Cohen, Sasson, 4,112,082, Cl. 424-209.000.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. Diphenylamines for dyeing keratinous fibers. 4,112,229, Cl. 544-105.000.

Kamachi, Hajime: *See—*
Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, 4,112,228, Cl. 544-26.000.

Kamada, Kazumasa; and Hongo, Masafumi, to Mitsubishi Rayon Co., Ltd. Reinforced fire retardant resin composition improved in electrical characteristics. 4,111,892, Cl. 260-40.00R.

Kameyama, Yasuyoshi; and Suzaki, Satoru, to Matsushita Electric Works, Ltd. Fire sensing device. 4,112,407, Cl. 337-398.000.

Kamin, Gerhard Robert, to Robert Bosch GmbH. System for detecting a motion in the monitoring area of two or more television cameras. 4,112,463, Cl. 358-105.000.

Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, to Bell Telephone Laboratories, Incorporated. Thin film optical waveguide. 4,111,523, Cl. 350-96.140.

Kaminow, Ivan Paul; and Presby, Herman Melvin, to Bell Telephone Laboratories, Incorporated. Silica based optical fiber waveguide using phosphorus pentoxide and germanium dioxide. 4,111,525, Cl. 350-96.310.

Kane, Cyril Cecil: *See—*
Conley, Earl, 4,111,167, Cl. 123-102.000.

Kaneko, Akira; Ishibashi, Ichiroh; and Nakano, Eisyo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Plasticized halogen containing rigid resin composition. 4,111,889, Cl. 260-31.80M.

Kanemaru, Kenji, to Fuji Photo Optical Co., Ltd. Control circuit for exposure information indicator. 4,112,440, Cl. 354-23.00D.

Kania, Sigmund: *See—*
Breitschwerdt, Werner; Kania, Sigmund; Ukena, Theodor; and Schwammle, Otto, 4,111,480, Cl. 296-28.00R.

Kanthal Corporation, The: *See—*
Haglund, John Helge, 4,111,254, Cl. 164-138.000.

Kanzaki Kokyukoki Mfg. Co., Ltd.: *See—*
Yamaoka, Kojiro; Mihara, Toshihide; and Tanaka, Akira, 4,110,898, Cl. 29-568.000.

Kao, Henry S.; Sklarz, William A.; and Weinstock, Leonard M., to Merck & Co., Inc. Process for the preparation of 4-methylthiazole. 4,111,948, Cl. 260-302.00R.

Kao Soap Co., Ltd.: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Ikeda, Hiroshi, 4,111,990, Cl. 260-561.00R.

Karakis, Thomas G.: *See—*
Crepeau, Robert G.; and Karakis, Thomas G., 4,112,265, Cl. 200-31.00R.

Karayannis, Nicholas M.; and Grams, Harold, to Standard Oil Company (Indiana). Process for forming high performance titanium trichloride olefin polymerization catalyst components. 4,111,836, Cl. 252-429.00B.

Kardux, Kenneth H.: *See—*
Ward, William H.; Henderson, Henry F., Jr.; and Kardux, Kenneth H., 4,111,336, Cl. 222-58.000.

Karlen, Urs: *See—*
Hindermann, Peter; Adam, Jean-Marie; and Karlen, Urs, 4,111,966, Cl. 260-373.000.

Kasai, Hironao: *See—*
Fukuda, Shozo; Seike, Yajuro; Iizuka, Masafumi; Kasai, Hironao; and Enami, Mamoru, 4,111,811, Cl. 210-242.00S.

Kasai, Tsutomu: *See—*
Taninaka, Kuniaki; Kurono, Hitoshi; and Kasai, Tsutomu, 4,112,089, Cl. 424-248.550.

Kasberg, Alvin H.: *See—*
Eck, John E.; and Kasberg, Alvin H., 4,111,747, Cl. 176-40.000.

Kashio, Toshio, to Casio Computer Co., Ltd. Electronic timepiece with stop watch. 4,110,966, Cl. 58-4.00A.

Kashiwaya, Sadao: *See—*
Yoshida, Eiichi; Nakao, Hideo; Goto, Norimasa; Sugiyama, Toul; and Kashiwaya, Sadao, 4,112,141, Cl. 427-142.000.

Kashiwazaki, Susumu: *See—*
Sakazume, Akio; Iwata, Hiroshi; Nakamura, Hiroo; Ogawa, Hiroyuki; Kashiwazaki, Susumu; and Nakao, Saneaki, 4,111,000, Cl. 62-262.000.

Kassai Kabushiki Kaisha: *See—*
Kassai, Kenzou, 4,111,446, Cl. 280-275.000.

Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,111,454, Cl. 280-649.000.

Kassai, Kenzou, to Kassai Kabushiki Kaisha. Tricycle for children. 4,111,446, Cl. 280-275.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Folding baby carriage. 4,111,454, Cl. 280-649.000.

Kasuya, Tamotsu, to Kabushiki Kaisha Komatsu Seisakusho. Turbine casing for superchargers. 4,111,598, Cl. 415-202.000.

Katakura, Masayuki; and Yamada, Hisashi, to Tokyo Shibaura Electric Co., Ltd. Bias circuit. 4,112,387, Cl. 330-285.000.

Kato, Shogo: *See—*
Nakamura, Yukio; and Kato, Shogo, 4,112,448, Cl. 354-239.000.

Kato, Yoshio: *See—*
Etoh, Kuniomi; Tanaka, Shinichi; Kato, Yoshio; and Kazuo, Watanabe, 4,111,692, Cl. 96-1.00R.

Kattner, Erich; and Rosenstock, Guenter, to Siemens Aktiengesellschaft. Protective and cleaning device for writing heads in ink recorder devices. 4,112,435, Cl. 346-140.00R.

Katz, Jonathon H., to Teradyne, Inc. Circuit board testing apparatus. 4,112,364, Cl. 324-158.00F.

Kaufman, Paul Richard: *See—*
Marien, Bruce Arthur; and Kaufman, Paul Richard, 4,112,022, Cl. 260-881.000.

Kavick, Edward M., to Samuel Moore and Company. Hydraulic hose and coupling assembly. 4,111,469, Cl. 285-256.000.

Kawade, Junpei: *See—*
Kumaki, Yoshihiro; Kawade, Junpei; Takano, Toshiaki; and Inoue, Mitsuo, 4,111,486, Cl. 299-1.000.

Kawagishi, Shigemitsu; and Arisato, Yasunori, to Okuno Chemical Industry Co., Ltd. Electrolytic stripping bath for removing metal coatings from stainless steel base materials. 4,111,767, Cl. 204-146.000.

Kawagoshi, Sakae: *See—*
Torii, Shinkity; Kawagoshi, Sakae; Yoneshige, Tetsuhiko; and Ito, Hidehumi, 4,111,848, Cl. 252-466.0PT.

Kawai, Kiyohisa: *See—*
Noguchi, Shunsaku; Aono, Tetsuya; Araki, Yoshiaki; and Kawai, Kiyohisa, 4,111,997, Cl. 260-591.000.

Kawai Musical Instrument Mfg. Co. Ltd.: *See—*
Deutsch, Ralph, 4,111,090, Cl. 84-1.010.

Kawamata, Kiyoshi, to Nihon Seikan Kabushiki Kaisha. Apparatus for heating seams of cans. 4,111,142, Cl. 113-1.00E.

Kawami, Youji: *See—*
Torikai, Eiichi; Kawami, Youji; Kai, Shinichiro; Namba, Mutsusuke; and Simasaki, Shuhei, 4,111,866, Cl. 521-53.000.

Kawamura, Koichi; and Kawamura, Yoshiko. Portable water fountain display apparatus. 4,111,363, Cl. 239-20.000.

Kawamura, Takahide: *See—*
Nakamura, Norihiko; and Kawamura, Takahide, 4,111,175, Cl. 123-198.0DC.

Kawamura, Yoshiko: *See—*
Kawamura, Koichi; and Kawamura, Yoshiko, 4,111,363, Cl. 239-20.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Okuno, Ryuzo; Fujii, Hiroo; and Toyoda, Keio, 4,111,159, Cl. 122-27.000.

Kawasaki, Masahiro; and Sawada, Yoshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Digital display circuit for a photographic exposure meter. 4,112,439, Cl. 354-23.00D.

Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure control device. 4,112,441, Cl. 354-24.000.

Kawasaki, Teruo, to Nissan Motor Company, Limited. Wiring arrangement for blower motors of an air conditioner. 4,112,338, Cl. 318-59.000.

Kawashima, Hirofumi, to Kabushiki Kaisha Daini Seikosha. Circular flexural mode piezoelectric vibrator with integral support arms. 4,112,323, Cl. 310-348.000.

Kazuo, Watanabe: *See—*
Etoh, Kuniomi; Tanaka, Shinichi; Kato, Yoshio; and Kazuo, Watanabe, 4,111,692, Cl. 96-1.00R.

Kebabian, Paul L.: *See—*
Blau, Henry H., Jr.; and Kebabian, Paul L., 4,111,731, Cl. 156-86.000.
Blau, Henry H., Jr.; and Kebabian, Paul L., 4,112,028, Cl. 264-1.000.

Kegg, Larry R.: *See—*
Pankratz, Richard R.; and Kegg, Larry R., 4,111,087, Cl. 83-210.000.

Kelsey-Hayes Co.: *See—*
Bertolasi, Robert B., 4,112,423, Cl. 340-324.0AD.

Kempl, Willard E.; and Morrison, Bert L., to ACF Industries, Incorporated. Fabricated gate valve structure. 4,111,396, Cl. 251-328.000.

Kendall, Ben O.: *See—*
Laird, Willy S.; and Kendall, Ben O., 4,111,348, Cl. 228-181.000.

Kendrick, Frank B., to Joy Manufacturing Company. Control means. 4,111,066, Cl. 74-471.00R.

Kenhar Products Incorporated: *See—*
Hodge, Gerard; and Holsgrove, Robert J., 4,110,882, Cl. 29-118.000.

Kenigsberg, Irwin Jeffrey; and Eastman, Larry Bruce, to United Technologies Corporation. Helicopter rotor and transmission mounting and vibration isolation system. 4,111,386, Cl. 244-17.270.

Kent, Jan Herbert Farquharson, to Beverly Limited. Apparatus for preparing tread bands for use in tire retreading. 4,111,619, Cl. 425-43.000.

Kenwell, Edward A. Travelling hand support. 4,111,566, Cl. 401-6.000.

Kerr, Jack R. Lock nut forming apparatus. 4,110,858, Cl. 10-72.00R.

Kershaw, Joseph E., to United States of America, Navy. Method and means of link coupling with separate control of link reactance and coupling coefficient. 4,112,394, Cl. 333-6.000.

Kershaw, Samuel L.: *See—*
Hickman, Donald A.; and Kershaw, Samuel L., 4,111,455, Cl. 280-690.000.

Kessler, Harvey. Automobile tape storage case. 4,111,502, Cl. 312-10.000.

Kesten, Patrick N.: *See—*
Stimson, Grant L.; and Kesten, Patrick N., 4,112,330, Cl. 315-46.000.

Keyes, John, to Canron Railgroup. Switch lifting frame. 4,111,128, Cl. 104-7.00B.

KFC Corporation: *See—*
Sullivan, Neal; and Cook, George E., 4,111,443, Cl. 219-497.000.

Kiehl, Jean-Pierre; Jost, Victor; and Clavaud, Bernard Alain, to Societe Europeenne des Produits Refractaires. Cements and concretes which contain them. 4,111,711, Cl. 106-97.000.

Kikuchi, Yoshikazu; Suzuki, Hirotsugu; and Yabe, Kenji, to Toray Industries, Inc. Sound insulating sheet containing lead fibers. 4,112,175, Cl. 428-236.000.

Kikuga, Toyoji: *See—*
Kako, Yuji; Kikuga, Toyoji; and Toko, Akira, 4,112,160, Cl. 428-460.000.

Kimbara, Motoyasu, to Isuzu Motors Limited. Fuel injection system and its nozzle holder. 4,111,365, Cl. 239-93.000.

King, M. Dale; and Binder, Kerry, to King, M. Dale. Electrically-powered tricycle. 4,111,274, Cl. 180-25.00R.

Kinkor, Charlene R.: *See—*
Roberts, Marvin E., 4,111,021, Cl. 70-406.000.

Kinoshita, Hiroshi; Iwasaka, Tatsuo; and Hanmura, Hisao, to Hitachi, Ltd. Apparatus for detecting the number of objects. 4,112,419, Cl. 340-560.000.

Kirby, Gary R. Breathing apparatus. 4,111,342, Cl. 137-557.000.

Kirby, Robert Willis, to Hampton Industries, Inc. Cuff making machine. 4,111,137, Cl. 112-121.150.

Kissel, Roland; and Wang, Robert, to Heurtey Metallurgie. Apparatus for the surface treatment of galvanized sheet-iron. 4,111,154, Cl. 118-10.000.

Kissinger, Charles W., to United States of America, Navy. Apparatus for compensating a ballistic missile for atmospheric perturbations. 4,111,382, Cl. 244-3.100.

Kitada, Chieko: *See—*
Fujino, Masahiko; Nishimura, Osamu; and Kitada, Chieko, 4,111,924, Cl. 260-112.50R.

Kitaguchi, Koji: *See—*
Inoue, Sho; Sano, Akira; and Kitaguchi, Koji, 4,112,218, Cl. 536-5.000.

Kitahara, Yutaka, to Kabushiki Kaisha Tiger Machine Seisakusho. Apparatus for molding concrete-blocks. 4,111,627, Cl. 425-421.000.

Kitajima, Sigenori: *See—*
Norimatsu, Hideaki; Kobayashi, Akio; Masuda, Akira; and Kitajima, Sigenori, 4,111,162, Cl. 123-32.0EE.

Kitamura, Akira: *See—*
Fujimori, Shigeaki; Hirata, Shigekazu; and Kitamura, Akira, 4,110,863, Cl. 15-104.10C.

Kitamura, Shinzo. Suspension system of bobbin hanger. 4,111,381, Cl. 242-130.200.

Kiyosawa, Kesaomi, to Nihon Space Union Co., Ltd. Tube joint. 4,111,577, Cl. 403-172.000.

Klann, Paul A. Photographic distortion apparatus. 4,111,551, Cl. 355-84.000.

Kleeb, Markus, to Tschudin & Heid AG. Push-button switch units. 4,112,277, Cl. 200-153.00J.

Klein, Albert Joseph: *See—*
Hitchler, Edward Willard; and Klein, Albert Joseph, 4,111,721, Cl. 148-2.000.

Klein, Gerhart Paul; Oliver, John N.; and Fitchman, Arthur Emil, to P. R. Mallory & Co., Inc. Cathode coating apparatus. 4,111,155, Cl. 118-642.000.

Klein, Rudolph J., to Monarch Marking Systems, Inc. Record feeding apparatus and method. 4,112,344, Cl. 318-685.000.

Klein, Werner: *See—*
Schroder, Hubert; and Klein, Werner, 4,112,142, Cl. 427-166.000.

Kless, Benjamin, to Vwnding Components, Inc. Method of making induction coils. 4,110,903, Cl. 29-605.000.

Kline, Dennis D. Pool structure. 4,110,852, Cl. 4-172.000.

Klitzky, Bruce R.: *See—*
Wade, Jackie F.; Peyton, John E.; Klitzky, Bruce R.; and Groff, Roy E., 4,111,762, Cl. 204-33.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Biegel, Peter; and Dumont, Anton, 4,111,403, Cl. 266-58.000.

Klockner-Werke AG: *See—*
Grisar, Ulrich; and Berstermann, Wilhelm, 4,111,556, Cl. 356-86.000.

Klotz, Michael C.; and Mei, Viung C., to Dole Refrigeration Company. Hot gas defrost system. 4,110,997, Cl. 62-81.000.

Klundt, Kurt, to Pfaff Industriemaschinen GmbH. Multineedle guard construction. 4,111,139, Cl. 112-226.000.

Knapp, Malcolm H.: *See—*
Lazarus, Allan K.; and Knapp, Malcolm H., 4,111,821, Cl. 252-49.900.

Knifton, John F., to Texaco Inc. Process for preparing lower lactams from allylic amine substrates. 4,111,952, Cl. 260-326.5FN.

Knigge, Heinz Friedrich, to Lummus Company, The. Oil filter. 4,111,814, Cl. 210-323.00T.

Knight, Houston W., to FMC Corporation. Torsionally controlled swivel joint. 4,111,465, Cl. 285-114.000.

Knight, Stephen Vincent, to North Western Scaffolding Company Limited. Scaffolding. 4,111,579, Cl. 403-387.000.

Knourek, Jaroslav: *See—*
Kouril, Oldrich; and Knourek, Jaroslav, 4,112,366, Cl. 324-208.000.

Kob, Adolf; and Blatner, Eduard, to Bayerische Motoren Werke AG. Inflatable restraining device for motor vehicles. 4,111,457, Cl. 280-728.000.

Kobayashi, Akio: *See—*
Norimatsu, Hideaki; Kobayashi, Akio; Masuda, Akira; and Kitajima, Sigenori, 4,111,162, Cl. 123-32.0EE.

Kobayashi, Juichi: *See—*
Sato, Mitsuo; Miyagawa, Norio; and Kobayashi, Juichi, 4,112,190, Cl. 428-457.000.

Kobayashi, Kazuhiko: *See—*
Hasegawa, Akiji; Yasuda, Isao; and Kobayashi, Kazuhiko, 4,112,416, Cl. 340-147.00R.

Kobayashi, Kazuo; Suzuki, Akira; Tanaka, Motoharu; Inaba, Norihiko; and Yuyama, Hisao, to Ricoh Co., Ltd. Dry developing powder including toner powders of different particle size. 4,111,823, Cl. 252-62.10P.

Kobayashi, Masao: *See—*
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, 4,111,984, Cl. 562-538.000.
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,111,985, Cl. 562-546.000.

Kobayashi, Yoshimitsu: *See—*
Okano, Takeshi; Wada, Naoto; and Kobayashi, Yoshimitsu, 4,112,241, Cl. 560-246.000.

Kockler, Barry C.; and Beaty, Ronald L., to Xerox Corporation. Ribbon transporting and shifting mechanism. 4,111,293, Cl. 400-208.000.

Kodama, Yutaka: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,112,090, Cl. 424-251.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Kutzner, Willi Albert Peter; and Schneider, Georg, 4,111,122, Cl. 101-228.000.

Koenig, Richard J.: *See—*
Harmon, Kenneth B.; Koenig, Richard J.; and Lentz, Carl A., 4,111,072, Cl. 74-864.000.

Kogelnik, Herwig Werner: *See—*
Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, 4,111,523, Cl. 350-96.140.

Kohara, Tadao, to Maruzen Sewing Machine Co., Ltd. Sewing machine cabinet. 4,111,503, Cl. 312-27.000.

Kohl, David: *See—*
Abramson, Carl N.; Kohl, David; and Ogen, Thomas, 4,112,264, Cl. 179-175.30R.

Kohler Co.: *See—*
Fenton, Alvin P.; Gault, Roger T.; and Bernauer, Lawrence J., 4,111,176, Cl. 123-198.0DB.

Kohler, Helmut, to Siemens Aktiengesellschaft. Contact structure for electrical switching apparatus. 4,112,275, Cl. 200-147.00R.

Kobori, Kiyotaka. Center assembly including oil reservoir for machine tools. 4,111,082, Cl. 82-33.00R.

Kojima, Hajime: *See—*
Nakamura, Yoshimitsu; and Kojima, Hajime, 4,110,901, Cl. 29-598.000.

Kokubu, Yoshikazu: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,111,780, Cl. 204-266.000.

Koleske, Joseph Victor: *See—*
Bailey, Frederick Eugene; and Koleske, Joseph Victor, 4,111,876, Cl. 260-29.6RB.

Kolombos, Alexander John; McNeice, Donald; and Wood, Dennis Charles, to British Petroleum Company Limited, The. Olefins production. 4,111,793, Cl. 208-121.000.

Kolombos, Alexander John, to British Petroleum Company Limited, The. Oligomerization process. 4,112,011, Cl. 260-683.15R.

Komatsu, Kogiro: *See—*
Mabuchi, Kenichi; and Komatsu, Kogiro, 4,112,201, Cl. 429-62.000.

Komatsu, Miwako: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,112,090, Cl. 424-251.000.

Komorita, Fujio; Nozawa, Nobuhiro; and Inoue, Satoshi, to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho. Optical glass. 4,111,707, Cl. 106-47.00Q.

Komuro, Keiji; Ohishi, Tetsu; Waku, Tetsuo; Sugi, Nagatoshi; Suzuki, Souichi; and Ueda, Akio, to Nippon Zeon Co., Ltd. Rubber composition for tire treads. 4,111,867, Cl. 260-5.000.

Kondo, Hiroyuki: *See—*
Ogiue, Katumi; Kondo, Hiroyuki; Ishikawa, Takashi; Mori, Takaaki; and Nitta, Takahisa, 4,111,724, Cl. 148-175.000.

Kondo, Toshihiro, to Fuji Photo Film Co., Ltd., a part interest. Shutter device for a photographic camera. 4,112,450, Cl. 354-235.000.

Konishi, Katsuo: *See—*
Tamura, Teizou; and Konishi, Katsuo, 4,110,902, Cl. 29-603.000.

Kopp, Hermann, to Max Weishaupt GmbH. Burner for liquid fuels. 4,111,642, Cl. 431-347.000.

Koppers Company, Inc.: *See—*
League, John S., IV, 4,111,669, Cl. 55-112.000.
Leaver, Richard Hazen, 4,111,632, Cl. 425-382.00R.

Korenaga, Hiroshi: *See—*
Kotera, Norio; Okabe, Hiromichi; and Korenaga, Hiroshi, 4,111,979, Cl. 260-509.000.

Kornis, Gabriel: *See—*
Moon, Malcolm W.; and Kornis, Gabriel, 4,111,939, Cl. 260-293.600.
Moon, Malcolm W.; and Kornis, Gabriel, 4,111,941, Cl. 260-293.600.

Korolkov, Ivan Alexandrovich: *See—*
Vishnevsky, Alexandr Alexandrovich; Korolkov, Ivan Alexandrovich; Smirnov, Boris Andreevich; Ivanova, Tatyana Lukyanovna; Adamian, Arnold Aramovich; and Mitkova, Galina Vladimirovna, 4,111,206, Cl. 128-305.000.

Korotkov, Albert Nikitovich: *See—*
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich, 4,112,246, Cl. 13-2.00P.

Kosa, Yasunobu: *See—*
Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, 4,110,899, Cl. 29-571.000.

Koss, Muriel L., to Rohr Industries, Inc. Acoustical laminate. 4,112,164, Cl. 428-116.000.

Kostrzewa, Michael; and Muck, Karl-Friedrich, to Hoechst Aktiengesellschaft. Process for the preparation of polyhydroxy methylene ethers and ion exchangers composed thereof. 4,111,858, Cl. 521-25.000.

Kotera, Norio; Okabe, Hiromichi; and Korenaga, Hiroshi, to Sumitomo Chemical Company, Limited. Process for producing 8-amino-1-naphthol-3,6-disulfonic acid. 4,111,979, Cl. 260-509.000.

Koumura, Noboru: *See—*
Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,111,539, Cl. 355-3.00R.

Kouril, Oldrich; and Knourek, Jaroslav, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Electromagnetic displacement scanner using an E-shaped core oblique to the scan direction. 4,112,366, Cl. 324-208.000.

Kowalski, Henryk Zenon: *See—*
Dubik, Adam; Kowalski, Henryk Zenon; Osiennik, Pawel; and Krol, Franciszek, 4,112,295, Cl. 250-237.00G.

Kozima, Hiroshi: *See—*
Shima, Takesaburo; Kozima, Hiroshi; Yoshida, Tomio; and Nakamura, Joji, 4,112,021, Cl. 260-880.00R.

Kraft, Inc.: *See—*
Bosy, George; Edwards, Edwin N.; Hoffbeck, Willis M.; Silvio, Paul A.; and Warwick, Leonard A., 4,112,131, Cl. 426-582.000.

Krelis, Peter S.; and Prox, Larry M., to United States Steel Corporation. Seal between wall members of a metallurgical vessel enclosure. 4,111,405, Cl. 266-158.000.

Kremzow, Martin, to Siemens Aktiengesellschaft. Method and system for the production of sheet or platter shaped information carriers. 4,112,030, Cl. 264-25.000.

Krenzer, John, to Velsicol Chemical Company. Thiadiazolylimidazolidinone esters of tetrahydrofuryl substituted acids. 4,111,949, Cl. 260-306.80D.

Kresta, Jiri; and Shen, Chen S., to Dow Chemical Company, The. Initiators for isocyanate reactions. 4,111,914, Cl. 528-48.000.

Kreuder, Hans Joachim: *See—*
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, 4,112,012, Cl. 260-835.000.

Krob, Erwin, to TMC Corporation. Release binding. 4,111,453, Cl. 280-626.000.

Krol, Franciszek: *See—*
Dubik, Adam; Kowalski, Henryk Zenon; Osiennik, Pawel; and Krol, Franciszek, 4,112,295, Cl. 250-237.00G.

Kruder, George A., to HPM Corporation. Vented injection molding machine and method. 4,112,519, Cl. 366-266.000.

Krudewig, William F.: *See—*
Caesar, Philip D.; Garwood, William E.; Krudewig, William F.; and Wise, John J., 4,111,792, Cl. 208-79.000.

Krueger, Hans; Mahlein, Hans F.; and Rauscher, Walter, to Siemens Aktiengesellschaft. Method of producing a film which promotes homeotropic orientation of liquid crystals and a liquid crystal utilizing the film. 4,112,157, Cl. 428-1.000.

Krueger, Hans: *See—*
Cirkler, Werner; and Krueger, Hans, 4,111,534, Cl. 350-345.000.

Krueger, Spencer Milton, to Eastman Kodak Company. o-Nitro-o-azaarylidene photobleachable dyes and photographic elements utilizing them. 4,111,699, Cl. 96-87.00R.

Krueger, Theodore H., Jr.; Eller, Robert; O'Brien, John; and Robbins, William L., to Seal Incorporated. Formation of metal parts. 4,111,255, Cl. 164-255.000.

Krupp-Koppers GmbH: *See—*
Lagemann, Gunther; and Heisterkamp, Wilhelm, 4,111,756, Cl. 201-41.000.

Kruschel, William A., to Minnesota Mining and Manufacturing Company. Manual crimping tool. 4,111,022, Cl. 72-410.000.

Kubota, Ltd.: *See—*
Matsuyoshi, Hideaki; Mori, Kazushige; and Shimono, Yukio, 4,111,319, Cl. 214-131.00A.

Kuehne, Rudi: *See—*
Eggert, Hans Joachim; Oberberger, Otto; Zenkert, Heinrich; and Kuehne, Rudi, 4,111,328, Cl. 220-4.00R.

Kuetterer, Gerhard: *See—*
Huettner, Robert; and Kuetterer, Gerhard, 4,112,304, Cl. 250-476.000.

Kugelfischer Georg Schafer & Co.: *See—*
Schuster, Friedrich; Thielemann, Max; and Lang, Otto, 4,110,962, Cl. 57-77.400.

Kuhls, Jurgen; Steininger, Alfred; and Fitz, Herbert, to Hoechst Aktiengesellschaft. Process for the manufacture of homo- and copolymers of tetrafluoroethylene employing as the reducing agent in the redox catalyst an ayodicarboxylic acid, salt of ayocarboxylic acid, azodicarbonamide, or mixtures thereof. 4,112,211, Cl. 526-219.000.

Kumaki, Yoshihiro; Kawade, Junpei; Takano, Toshiaki; and Inoue, Mitsuo, to Tekken Construction Co. Ltd. Method and system for performing attitude control of tunnel excavating shield. 4,111,486, Cl. 299-1.000.

Kumazawa, Toshiharu, to Mitsubishi Precision Co., Ltd. Bubble generating apparatus. 4,112,026, Cl. 261-29.000.

Kunzel, Hans Egon; and Bentz, Francis, to Bayer Aktiengesellschaft. Polyether urethanes as antistatic additives in polyamide compositions. 4,111,920, Cl. 526-6.000.

Kupsky, Frederick E. Method and apparatus for fabricating reticular sheet material. 4,111,028, Cl. 72-324.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Kaneko, Akira; Ishibashi, Ichiroh; and Nakano, Eisyo, 4,111,889, Cl. 260-31.80M.
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,111,780, Cl. 204-266.000.
Sanada, Hisao; Saito, Ritaro; Funabashi, Masayuki; Inada, Kazuyoshi; and Seguchi, Koji, 4,112,053, Cl. 423-239.000.

Kurganov, Viktor Mikhailovich: *See—*
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich, 4,112,246, Cl. 13-2.00P.

Kurka, Gerard: *See—*
Bricard, Alain; de Cachard, Maurice; Goffinet, Pierre; Kurka, Gerard; and Moracchioli, Robert, 4,111,260, Cl. 165-104.00S.

Kuroda, Seietsu: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,112,090, Cl. 424-251.000.

Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, to Hitachi Denshi Kabushiki Kaisha; Japanese National Railways; and Hitachi, Ltd. AC type line concentrator. 4,112,260, Cl. 179-18.0FC.

Kurono, Hitoshi: *See—*
Taninaka, Kuniaki; Kurono, Hitoshi; and Kasai, Tsutomu, 4,112,089, Cl. 424-248.550.

Kurple, Kenneth R.: *See—*
Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R., 4,111,928, Cl. 260-124.00R.

Kurple, Wasyl W.: *See—*
Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R., 4,111,928, Cl. 260-124.00R.

Kurple, William M.: *See—*
Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R., 4,111,928, Cl. 260-124.00R.

Kurtz, Abraham N.; Cunningham, Robert W.; and Naumann, Alfred W., to Union Carbide Corporation. Oxidation of unsaturated aldehydes to unsaturated acids. 4,111,983, Cl. 562-535.000.

Kusel Equipment Company: *See—*
Smith, Gary R., 4,111,110, Cl. 99-456.000.

Kusumi, Jiro, to Tokyo Shibaura Electric Co., Ltd. Sound amplifier circuit. 4,112,385, Cl. 330-262.000.

Kutin, Lawrence H. Timer control arrangement for use with a wall switch. 4,112,313, Cl. 307-141.000.

Kutzner, Willi Albert Peter; and Schneider, Georg, to Koenig & Bauer Aktiengesellschaft. Method of and apparatus for threading web material preferably into web-fed rotary printing presses. 4,111,122, Cl. 101-228.000.

Kvita, Vratislav: *See—*
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,111,771, Cl. 204-159.220.

Kwalwasser, William David, to AMP Incorporated. Organic photoconductors and methods. 4,111,850, Cl. 252-501.000.

Kydd, Paul H., to General Electric Company. Bucket tip construction for open circuit liquid cooled turbines. 4,111,604, Cl. 416-97.00R.

Kyncl, Jaroslav: *See—*
Winn, Martin; Kyncl, Jaroslav; Dunnigan, Daniel Ambrose; and Jones, Peter Hadley, 4,112,097, Cl. 424-251.000.

L C Chemical Company Limited: *See—*
Nakamura, Kenji; and Seno, Iwao, 4,111,533, Cl. 350-337.000.

L. Schuler GmbH: *See—*
Dangelmaier, Karl, 4,111,086, Cl. 83-90.000.

La Bate, Micheal Donald. Sealing and filling material for metallurgical applications. 4,111,706, Cl. 106-44.000.

Labelette Company: *See—*
Wesley, John G., 4,111,737, Cl. 156-458.000.

LaBoda, Mitchell A., to General Motors Corporation. Method and apparatus for flow-through plating including pneumatic electrolyte shuttling system. 4,111,761, Cl. 204-26.000.

Laboratories Made, S.A.: *See—*
Jarque, Ricardo Granados; Cartes, Juan Bosch; Cabiro, Jorge Canals; Roldan, Cristobal Martinez; and Peinado, Fernando Rabadan, 4,111,945, Cl. 260-297.00R.
Labuda, Edward Franklin: *See—*
Bindell, Jeffrey Bruce; Holschwandner, Lowell Henry; Labuda, Edward Franklin; and Ryden, William Dennis, 4,111,783, Cl. 204-298.000.
Lacroix, Roger; and Haberli, Roland, to Ciba-Geigy Corporation. Stable concentrated liquid preparation of a paper dye of the copper phthalocyanine class. 4,111,650, Cl. 8-85.00R.
Lade, Robert W.: *See—*
Jaskolski, Stanley V.; Lade, Robert W.; Schutten, Herman P.; and Spellman, Gordon B., 4,112,458, Cl. 357-38.000.
Ladstatter, James A., to United States of America, Navy. Beamformer for wideband signals. 4,112,430, Cl. 343-100.00R.
LaFaver, Edward B. Apparatus and method for conserving water. 4,110,849, Cl. 137-435.000.
Lagemann, Gunther; and Heisterkamp, Wilhelm, to Krupp-Koppers GmbH. Method of and apparatus for heating up a chamber of a coking battery. 4,111,756, Cl. 201-41.000.
Lagus, Peter L.: *See—*
Flanagan, Brian S.; Turner, Phillip L.; Broce, Richard D.; and Lagus, Peter L., 4,112,302, Cl. 250-381.000.
Laird, Willy S.; and Kendall, Ben O., to Westinghouse Electric Corp. Grid braze application mold. 4,111,348, Cl. 228-181.000.
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich. Plasmarc furnace for remelting metals and alloys. 4,112,246, Cl. 13-2.00P.
Lakshminarayanan, G. Raman: *See—*
Chen, Edward S.; Sadak, John C.; and Lakshminarayanan, G. Raman, 4,111,760, Cl. 204-26.000.
Lala, Louis A.: *See—*
Green, Melvin E.; Derrickson, Charles H.; and Lala, Louis A., 4,111,118, Cl. 101-123.000.
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, to Ciba Geigy AG. Plasticized polymers of vinyl acetate. 4,111,888, Cl. 260-31.600.
Lambert, Gerard Lucien, to Johns-Manville Corporation. Packaging asbestos fibers. 4,111,113, Cl. 100-74.000.
Lampe, Donald R.; White, Marvin H.; and Jensen, Arthur S., to Westinghouse Electric Corp. Stabilized charge injector for charge coupled devices with means for increasing the speed of propagation of charge carriers. 4,112,456, Cl. 357-24.000.
Lampe, Donald Ross: *See—*
White, Marvin Hart; and Lampe, Donald Ross, 4,112,507, Cl. 365-184.000.
Lampman, John Edward. Container with tamperproof and stackable lid. 4,111,329, Cl. 220-266.000.
Lancaster, Patrick R.: *See—*
Lancaster, William G.; and Lancaster, Patrick R., 4,110,957, Cl. 53-589.000.
Lancaster, William G.; and Lancaster, Patrick R. Reverse wrap. 4,110,957, Cl. 53-589.000.
Landis, Joel Victor, to Petrolite Corporation. Electrofiltration of animal fats. 4,111,774, Cl. 204-186.000.
Lane, Stephen: *See—*
Porteous, Kenneth; Falkenberg, Leigh; and Lane, Stephen, 4,111,789, Cl. 208-11.0LE.
Lang, Otto: *See—*
Schuster, Friedrich; Thielemann, Max; and Lang, Otto, 4,110,962, Cl. 57-77.400.
Lang, Winfried; Schmidt, Dietrich; Hofer, Johann; Pachnek, Rudolf; and Rath, Heinz-Jorg, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for purifying halogenosilanes. 4,112,057, Cl. 423-342.000.
Lange, Heinz E.; and Ostlie, Dean A., to Minnesota Mining and Manufacturing Company. Latent, sensitizing ink. 4,111,462, Cl. 282-27.500.
Lange, Louis G., III; and Vallee, Bert L., to President and Fellows of Harvard College. Method of purifying alcohol dehydrogenase. 4,111,751, Cl. 195-66.00R.
Lange, Roger W.; and Sowman, Harold G., to Minnesota Mining and Manufacturing Company. Ultraviolet absorbing coatings. 4,112,186, Cl. 428-411.000.
Langemeier, Heinz: *See—*
Mayr, Ernst; and Langemeier, Heinz, 4,110,909, Cl. 33-126.70R.
Lanta, Jiri: *See—*
Bezstarosti, Ladislav; Lindental, Antonin; Lanta, Jiri; and Cizek, Jaroslav, 4,111,238, Cl. 139-436.000.
Lapeyre, James M., to Digicourse, Inc. Alphanumeric display system. 4,112,424, Cl. 340-336.000.
La Pointe, Roland. Log-splitting accessory for back hoe power equipment. 4,111,246, Cl. 144-193.00A.
Larker, Hans: *See—*
Adlerborn, Jan; and Larker, Hans, 4,112,143, Cl. 427-191.000.
Larkin, William A.; and Touval, Irving, to M&T Chemicals Inc. Flame retarding agents and polymer compositions containing same. 4,111,905, Cl. 260-45.75B.
Larsen, Donald Wayne, to W. R. Grace & Co. Use of latent amines to cure epoxy resins. 4,111,917, Cl. 528-45.000.
Larsen, Robert D.: *See—*
McCrary, Carl M.; and Larsen, Robert D., 4,111,245, Cl. 144-2.00Z.
Larson, Floyd Gotthard, Jr.; and deBarbadillo, John Joseph, II, to International Nickel Company, Inc., The. Crushable low reactivity nickel-base magnesium additive. 4,111,691, Cl. 75-170.000.
Larson, Gerald L.; and O'Neil, Walter K., to Eaton Corporation. Position detecting system. 4,112,365, Cl. 324-173.000.
Lasker, George, to General Dynamics Corporation. Armor. 4,111,097, Cl. 89-36.00A.
Lathrop Corporation of America, The: *See—*
Lathrop, George Edward, 4,111,425, Cl. 273-157.00R.
Lathrop, George Edward, to Lathrop Corporation of America, The. Jigsaw puzzle holder and display apparatus. 4,111,425, Cl. 273-157.00R.
Lathrop, James. Distributor cap and dust shield with hermetic sealing and moisture detection apparatus. 4,112,283, Cl. 200-302.000.
Lauterbach, Gary R.: *See—*
Ricciardi, Ronald J.; Ferrara, Angelo; Hartmann, Joseph L.; and Lauterbach, Gary R., 4,111,272, Cl. 177-50.000.
Lauzanne-Morelle, Eliane M. T.: *See—*
Morelle, Jean V.; and Lauzanne-Morelle, Eliane M. T., 4,112,085, Cl. 424-245.000.
Lavallee, Donald C.: *See—*
Palmer, James E.; Lavallee, Donald C.; and Huber, George, 4,112,401, Cl. 335-206.000.
Lavelle, Joseph E.; and Munroe, James L., to Jersey Nuclear-Avco Isotopes, Inc. Multi-dimensional corrective system for long radiation beams. 4,111,531, Cl. 350-293.000.
Lawrence, Geoffrey Lloyd, to Zenith Carburetter Company Limited, The. Spark ignition internal combustion engines. 4,111,169, Cl. 123-119.0EC.
Lawrence, Leslie John; and Ansbro, Denis, to Tioxide Group Limited. Production of calcinable material. 4,112,035, Cl. 264-113.000.
Lawton, William R., to Graphic Controls Corporation. Heat-sensitive coating composition with 4-aromatic and hydroxy substituted piperidine derivative and cyclic polyketo compound. 4,111,703, Cl. 106-21.000.
Layland, James W.: *See—*
United States of America, National Aeronautics and Space Administration; Layland, James W.; Martin, Warren L.; Zygielbaum, Arthur I.; Goldstein, Richard M.; and Hubbard, William P., 4,112,497, Cl. 364-728.000.
Lazar, Harvey A.: *See—*
Lindemann, Martin K. O.; and Lazar, Harvey A., 4,111,653, Cl. 8-161.000.
Lazarre, Flavien: *See—*
Bimond, Jean-Pierre; and Lazarre, Flavien, 4,111,829, Cl. 252-361.000.
Lazarus, Allan K.; and Knapp, Malcolm H., to Tenneco Chemicals, Inc. Lubricants for reciprocating compressors for oxygen-free gases. 4,111,821, Cl. 252-49.900.
Lazear, Nelson R., to Celanese Corporation. Polyester resin compositions which are photocurable in the presence of oxygen and an organic hydrazone polymerization initiator. 4,112,146, Cl. 427-54.000.
Lazovsky, Jury Iosifovich: *See—*
Rubashev, Grigory Markovich; Alperovich, Vladislav Ruvimovich; and Lazovsky, Jury Iosifovich, 4,112,348, Cl. 323-43.50S.
Lazzaretti, Louis G.: *See—*
Capriotti, Alfred J.; Lazzaretti, Louis G.; and O'Donnell, Brian, 4,110,889, Cl. 29-407.000.
League, John S., IV, to Koppers Company, Inc. Magnetic impulse rapper control system. 4,111,669, Cl. 55-112.000.
Lear Siegler, Inc.: *See—*
Bistrick, Eugene J.; Miller, Stewart F.; Abrahamsson, Axel B.; and Schlaf, Richard A., 4,111,586, Cl. 407-16.000.
Leary, John Joseph. Kite-controller. 4,111,387, Cl. 244-155.00A.
Leaver, Richard Hazen, to Koppers Company, Inc. Pellet mill die. 4,111,632, Cl. 425-382.00R.
Lebduska, John Lawrence, to Ecosol, Ltd. Energy conservation system. 4,111,259, Cl. 237-1.00A.
Leddy, James J.: *See—*
Heikel, Henrik R.; and Leddy, James J., 4,112,140, Cl. 427-126.000.
Leder, Frederic: *See—*
Sartori, Guido; and Leder, Frederic, 4,112,050, Cl. 423-223.000.
Sartori, Guido; and Leder, Frederic, 4,112,051, Cl. 423-223.000.
Sartori, Guido; and Leder, Frederic, 4,112,052, Cl. 423-228.000.
Lee, Cheuk Man; and Zaugg, Harold Elmer, to Abbott Laboratories. 10-Amino-5H-[1]benzopyrano[4,3-c]pyridines. 4,111,942, Cl. 260-293.580.
Leeds & Northrup Company: *See—*
Baxter, Ronald Dale, 4,111,717, Cl. 136-225.000.
Leemann-Dittmann, Ruth. Apparatus for the display of information. 4,110,922, Cl. 40-447.000.
Leesona Corporation: *See—*
Cuff, David W., 4,112,039, Cl. 264-142.000.
Le Grelle, Guy Oscar, to Xaverius College. Electronic experimenting kit. 4,110,917, Cl. 35-19.00A.
Leiber, Heinz, to Robert Bosch GmbH. Hydraulic brake booster. 4,111,496, Cl. 303-92.000.
Leibrock, Kurt, to Saarbergwerke Aktiengesellschaft. Method of and an arrangement for making stable massive compacted coal charge bodies for use in a coking oven. 4,111,664, Cl. 44-10.00G.
Leichhardt, Harold A. Golf club carrier. 4,111,248, Cl. 150-1.50R.
Leigh, Arthur George; and Green, Robin John, to Lever Brothers Company. Bleaching assistants. 4,111,826, Cl. 252-89.00R.
Leininger, Larry W.: *See—*
Buckwalter, Mervin R.; Bulson, Walter T.; Leininger, Larry W.; Posipanko, Thomas; and Ray, Leonard N., Jr., 4,111,646, Cl. 8-2.50A.

Leive, Ernest W., to Square D Company. Terminal box for a lifting magnet. 4,112,248, Cl. 174-50.000.
Lemkey, Franklin David, to United Technologies Corporation. Directionally solidified eutectic superalloy articles. 4,111,723, Cl. 148-32.000.
Lender, Adam, to GTE Automatic Electric Laboratories Incorporated. Modified duobinary regenerative repeater testing arrangement. 4,112,263, Cl. 179-175.31R.
Lensel, Robert: *See—*
Bourrie, Georges; and Lensel, Robert, 4,111,473, Cl. 292-126.000.
Lenton, R. Warren: *See—*
Zehner, Lee R.; and Lenton, R. Warren, 4,112,245, Cl. 568-864.000.
Lentz, Carl A.: *See—*
Harmon, Kenneth B.; Koenig, Richard J.; and Lentz, Carl A., 4,111,072, Cl. 74-864.000.
Leone, Richard P.: *See—*
Cummings, Henry S.; and Leone, Richard P., 4,111,077, Cl. 81-63.000.
Leonhardt, Herta, administratrix: *See—*
Fuehrer, Werner; Huttel, Richard; Lisfeld, Robert; and Leonhardt, Karl, deceased, 4,111,530, Cl. 350-252.000.
Leonhardt, Karl, deceased: *See—*
Fuehrer, Werner; Huttel, Richard; Lisfeld, Robert; and Leonhardt, Karl, deceased, 4,111,530, Cl. 350-252.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy Corporation. Novel metal complexes of azomethines and process for their manufacture. 4,111,947, Cl. 260-299.000.
Leppich, Erhard, to Volkswagenwerk Aktiengesellschaft. Shock absorber valve. 4,111,231, Cl. 137-852.000.
Lerner, Edward; and Ventura, John A. Coffee brewer with means for dispensing controlled quantities of hot water. 4,111,337, Cl. 222-146.0HE.
Lerner, Melvin; and Ericson, Richard A., to United States of America, Customs Service. Apparatus for securing vapor samples. 4,111,049, Cl. 73-421.50R.
Les Produits Associes LPA S.A.: *See—*
Jousson, Pierre J., 4,111,193, Cl. 128-66.000.
Leuenberger, Roland. Process for drilling holes in hard materials, in surgical procedures, and apparatus for carrying out the process. 4,111,208, Cl. 128-305.100.
Leutenegger, Willi: *See—*
Zurbuchen, Jacques; Leutenegger, Willi; and Calcaterra, Luigi, 4,111,645, Cl. 8-1.00W.
Levensalor, George W., to Great Northern Nekoosa Corporation. Barrier coat for groundwood carbonless coated paper. 4,111,461, Cl. 282-27.500.
Lever Brothers Company: *See—*
Eymond, Philip Richard Norman, 4,112,226, Cl. 542-461.000.
Jorgensen, Arne; Berthelsen, Poul; and Bassoe, Jorgen, 4,111,352, Cl. 229-31.00R.
Leigh, Arthur George; and Green, Robin John, 4,111,826, Cl. 252-89.00R.
Lewin, Ian: *See—*
Small, Edward A., Jr.; and Lewin, Ian, 4,112,483, Cl. 362-298.000.
Leworthy, John Harwood, to General Electric Company Limited, The. Fall-through return spring arrangement for a push-button switch mechanism. 4,112,284, Cl. 200-340.000.
Libbey-Owens-Ford Company: *See—*
Motter, Theodore J.; Mattimoe, Paul T.; and Bartus, Stephen P., Jr., 4,112,171, Cl. 428-213.000.
Lichti, Robert D. Passenger loading ramp. 4,110,859, Cl. 14-71.500.
Liebler, Jerome E., to Omnitext, Inc. Multi-terminal serially communicating shared logic text editing system. 4,112,252, Cl. 178-58.00R.
Liesveld, Daniel J. Method and apparatus for channel cutting of hard materials using high velocity fluid jets. 4,111,490, Cl. 299-17.000.
Life Savers, Inc.: *See—*
Hussein, Ma'moun M., 4,112,066, Cl. 424-48.000.
Life Sciences, Inc.: *See—*
Bugay, Al, 4,112,491, Cl. 364-415.000.
Lim, Gary M. F.: *See—*
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,112,230, Cl. 544-105.000.
Limbach, Paul; and Socha, Paul, to H. Waterbury & Sons Company. Apparatus for producing papermaker's felt. 4,111,634, Cl. 425-505.000.
Limon, Robert James: *See—*
Lindner, Robert Arthur; and Limon, Robert James, 4,111,886, Cl. 260-31.80T.
Lin, Chii-Fa; and Blanch, Julian E., to Stauffer Chemical Company. Removal of trace heavy metal contaminants from algae and the carrageenan contained therein. 4,112,223, Cl. 536-114.000.
Lin, Chiu-Hong, to Upjohn Company, The. 5,6-Didehydro-ω-phenoxy-PGE$_2$ analogs. 4,111,969, Cl. 260-410.90R.
Lin, Victor J., to Celanese Corporation. Heated spray spinning nozzle and attenuation system. 4,111,620, Cl. 425-66.000.
Lindberg, Jarl Johan: *See—*
Dolk, Matti; Era, Vaino; and Lindberg, Jarl Johan, 4,112,152, Cl. 427-385.00R.
Lindemann, Martin K. O.; and Lazar, Harvey A., to Gillette Company, The. Alkali stannite depilatories. 4,111,653, Cl. 8-161.000.
Lindental, Antonin: *See—*
Bezstarosti, Ladislav; Lindental, Antonin; Lanta, Jiri; and Cizek, Jaroslav, 4,111,238, Cl. 139-436.000.
Lindner, Robert Arthur; and Limon, Robert James, to Henkel Inc. Plastics compositions with higher alcohol esters as lubricants and release agents. 4,111,886, Cl. 260-31.80T.
Lingl Corporation: *See—*
Lingl, Hans, 4,112,033, Cl. 264-44.000.
Lingl, Hans, to Lingl Corporation. Method of using sludge for making ceramic articles. 4,112,033, Cl. 264-44.000.
Linke, Horst: *See—*
Beckmann, Klaus; and Linke, Horst, 4,111,489, Cl. 299-34.000.
Linn, Wallace Leon. Appliance timer with contact mounting for flexible contacts. 4,112,266, Cl. 200-38.00C.
Lins, Stanley James, to Sperry Rand Corporation. Stripe domain propagation using contiguous bicore disk file structure. 4,112,503, Cl. 365-29.000.
Lipo, Thomas A., to General Electric Company. Measurement of pulsating torque in a current source inverter motor drive. 4,112,339, Cl. 318-227.000.
Lisfeld, Robert: *See—*
Fuehrer, Werner; Huttel, Richard; Lisfeld, Robert; and Leonhardt, Karl, deceased, 4,111,530, Cl. 350-252.000.
Little, David Murray: *See—*
Parmer, Kenneth Ronald; and Little, David Murray, 4,111,512, Cl. 339-105.000.
Litton Industrial Products, Inc.: *See—*
Cranston, Dale O., 4,110,908, Cl. 32-50.000.
Stager, Francis W., 4,111,407, Cl. 267-166.000.
Liu, James, to Baumgartner, Franklin. Method of storing hydrogen. 4,111,689, Cl. 75-122.000.
Livermore, Stephen F., to United States of America, National Aeronautics and Space Administration. Lighting current detector. 4,112,357, Cl. 324-72.000.
Livesay, J. D., to General Motors Corporation. Press-on plastic baffle for accumulator-dehydrator. 4,111,005, Cl. 62-503.000.
Llewellyn, Rees Jenkin: *See—*
Bangay, Alan John; Raw, Peter Michael; Llewellyn, Rees Jenkin; and Gregory, Peter, 4,110,892, Cl. 29-420.000.
Lloyd, Norman E.: *See—*
Colilla, William; and Lloyd, Norman E., 4,111,750, Cl. 195-31.00F.
Locatelli, Jean-Louis: *See—*
Gruffaz, Max; and Locatelli, Jean-Louis, 4,111,919, Cl. 526-264.000.
Lockheed Aircraft Corporation: *See—*
Morrison, Robert A.; and Armstrong, Lyle C., 4,112,363, Cl. 324-158.00P.
Lockheed Corporation: *See—*
Gibson, Harry S., Jr.; and Trevillion, Charlie Gene, 4,112,355, Cl. 324-57.00R.
Johnson, George William, 4,111,085, Cl. 83-1.000.
Login, Robert Bernard, to BASF Wyandotte Corporation. Phosphorus-containing polyester and size compositions. 4,111,816, Cl. 252-8.600.
Long, Dennis James George, to BP Chemicals Limited. Preservation process. 4,112,122, Cl. 426-19.000.
Long, Robert L.: *See—*
Denney, Jerry W.; and Long, Robert L., 4,111,657, Cl. 23-230.00B.
Longfoot, Gerald, to Wellworthy Limited. Sealing ring assemblies for pistons. 4,111,438, Cl. 277-148.000.
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., to Canadian General Electric Company. Corona inhibition in dynamo-electric machines. 4,110,900, Cl. 29-596.000.
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., to Canadian General Electric Company. Method for reducing corona in dynamoelectric machines. 4,112,041, Cl. 264-263.000.
Look, Robert A. Ski lock. 4,111,015, Cl. 70-58.000.
Loos, John H., to General Motors Corporation. Room air conditioner door operating mechanism. 4,111,001, Cl. 62-427.000.
Lord Corporation: *See—*
Howard, Dennis D., 4,112,017, Cl. 260-359.00R.
L'Oreal: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,112,229, Cl. 544-105.000.
Loshaek, Samuel; and Shen, Chah M., to Wesley-Jessen Inc. Gas-permeable lens. 4,111,535, Cl. 351-160.000.
Louboutin, Robert, to Societe Degremont. Water treatment apparatus and method. 4,111,802, Cl. 210-46.000.
Louch, James B.: *See—*
Postman, William; Louch, James B.; and Buchert, Hermann, 4,111,818, Cl. 252-8.900.
Louineau, Andre Jean-Francois: *See—*
Gautier, Christian Jean; Marti, Bernard; Mauduit, Michel Robert; Louineau, Andre Jean-Francois; and Schwartz nee Luneau, Christiane, 4,112,459, Cl. 358-6.000.
Louis, Jean F.: *See—*
Amana, Okon M.; and Louis, Jean F., 4,111,596, Cl. 415-115.000.
Louther, William P., Jr., to AFP Corporation. Split back furniture article and method of assembly. 4,110,946, Cl. 52-223.00R.
Love, Francis Lee. Knock-down workpiece-supporting standard and overspray shield. 4,111,408, Cl. 269-289.00R.
Lowe Paper Company: *See—*
Garner, Lynn Thomas, 4,112,038, Cl. 264-138.000.
Lowell Corporation: *See—*
Cummings, Henry S.; and Leone, Richard P., 4,111,077, Cl. 81-63.000.
Lucas, Bernard, to Padeg A.G. Cartridge having individual isolated cells. 4,111,304, Cl. 206-534.000.
Lucas Industries Limited: *See—*
Skinner, Robert Thomas John, 4,111,173, Cl. 123-139.0AQ.
Lucifer S.A.: *See—*
Stampfli, Harald, 4,111,230, Cl. 137-625.500.

Lucotte, Gerard: *See—*
Truffier, Jean-Claude; Lucotte, Gerard; and Cordonnier, Raymond, 4,112,074, Cl. 424-177.000.

Luke, George Michael: *See—*
Crenshaw, Ronnie Ray; and Luke, George Michael, 4,112,234, Cl. 548-342.000.

Lummus Company, The: *See—*
Knigge, Heinz Friedrich, 4,111,814, Cl. 210-323.00T.

Lundh, Roy Walfrid, to Poseidon Marketing and Development Co. Marine pipeline. 4,110,994, Cl. 405-158.000.

Luscher, Rene, to Gretag Aktiengesellschaft. Cassette for strip material. 4,111,379, Cl. 242-71.100.

Lutz, David Edward. Loading and unloading apparatus for vehicles. 4,111,318, Cl. 214-83.220.

Lyass, Abram Moiseevich: *See—*
Junovich, July Moiseevich; Zhukovsky, Sergei Semenovich; Sudakas, Lev Girshovich; Turkina, Ljudmila Ivanovna; Smirnov, Anatoly Ilich; Lyass, Abram Moiseevich; and Teplyakov, Sergei Dmitrievich, 4,111,705, Cl. 106-38.350.

Lysogorsky, Gennady Tikhonovich: *See—*
Buzhinsky, Vladimir Lukyanovich; Raschepkin, Konstantin Egorovich; Dunjushkin, Mikhail Grigorievich; Lysogorsky, Gennady Tikhonovich; Valeev, Rustem Ibragimovich; Nisenbaum, Yakov Arkadievich; and Ikhsanov, Deviz Faizrakhmanovich, 4,110,862, Cl. 15-88.000.

Lytle, John David; and Combs, James M., to United States of America, Army. Triaxial deflection meter. 4,110,912, Cl. 33-312.000.

M&T Chemicals Inc.: *See—*
Larkin, William A.; and Touval, Irving, 4,111,905, Cl. 260-45.75B.

Mabuchi, Kenichi; and Komatsu, Kogiro, to Mabuchi Motor Co., Ltd. Power source unit. 4,112,201, Cl. 429-62.000.

Mabuchi Motor Co., Ltd.: *See—*
Mabuchi, Kenichi; and Komatsu, Kogiro, 4,112,201, Cl. 429-62.000.

Mabuchi, Shunsuke; and Tsuzuki, Kenji, to Toyo Soda Manufacturing Co., Ltd. Process for producing alcohol. 4,112,004, Cl. 568-861.000.

Maccalous, Joseph W.; and Thomas, Donald A. Method of coating with ablative heat shield materials. 4,112,179, Cl. 428-325.000.

MacDonald, Archie T. Spare tire and wheel securing device. 4,111,344, Cl. 224-42.240.

Mackaness, James B. Commodity conveying means. 4,111,374, Cl. 241-101.700.

Mackiernan, Stuart W., to BesPak Corporation. Paperboard carton. 4,111,351, Cl. 229-17.00M.

MacMillan, Kenneth T. Process of and molds for applying precured rubber tires and other objects. 4,111,732, Cl. 156-96.000.

Mader, Siegfried R.; Masters, Burton J.; and Pogge, H. Bernhard, to International Business Machines Corporation. Minimization of misfit dislocations in silicon by double implantation of arsenic and germanium. 4,111,719, Cl. 148-1.500.

Madson, Kent Christ, Jr.: *See—*
Davis, Donald Colen; Bilger, Alan H.; and Madson, Kent Christ, Jr., 4,111,778, Cl. 204-195.00S.

Maeda, Keisuke; and Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Cameras with electrically controlled exposure for use with electronic flash device. 4,112,442, Cl. 354-31.000.

Maeda, Yoji: *See—*
Ito, Katsuo; Murata, Bunjiro; Maeda, Yoji; and Hibino, Eiichi, 4,112,378, Cl. 325-464.000.

Maehr, Hubert, to Hoffmann-La Roche Inc. Conversion of mocimycin to antibiotic X-5108 and intermediates. 4,112,216, Cl. 536-1.000.

Magnat Corp.: *See—*
Mengel, William Rudolph, 4,111,569, Cl. 403-5.000.

Magnavox Company, The: *See—*
Mierzwinski, Eugene P., 4,111,421, Cl. 273-85.00G.

Magyar, Joseph J., to General Motors Corporation. Seat belt utilization recorder. 4,111,459, Cl. 280-744.000.

Mahan, John E.: *See—*
Fahey, Darryl R.; and Mahan, John E., 4,111,972, Cl. 260-439.00R.

Mahlein, Hans F.: *See—*
Krueger, Hans; Mahlein, Hans F.; and Rauscher, Walter, 4,112,157, Cl. 428-1.000.

Mahoney, Gerard Edward: *See—*
Cho, Alfred Yi; DiLorenzo, James Vincent; and Mahoney, Gerard Edward, 4,111,725, Cl. 148-175.000.

Maier, Adolph J., Jr. Thermal insulating clips for metal insulated walls and roofs. 4,110,948, Cl. 52-402.000.

Maier, Edward E.: *See—*
Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., 4,111,759, Cl. 203-7.000.

Mailloux, Louis D.; and Bollman, James E., to Xerox Corporation. Collating system for opaque documents and slide reproductions. 4,111,542, Cl. 355-14.000.

Mainka, Christian M., to Morse Boulger, Inc. Bearing assembly for a stoker carriage. 4,111,134, Cl. 110-328.000.

Mainz, Franz, to Gerresheimer Glas Aktiengesellschaft. Insulating double glass pane. 4,110,950, Cl. 52-518.000.

Malinowski, William J., to Chloride, Incorporated. Smoke detector with photo-responsive means for increasing the sensitivity during darkness. 4,112,310, Cl. 250-574.000.

Mallard, Robert G., to Bob Mallard Enterprises, Inc. Loom drive mechanism. 4,111,240, Cl. 139-449.000.

Mallinckrodt, Inc.: *See—*
Chapman, Douglas W.; and Bertsch, Hugh C., 4,112,238, Cl. 560-70.000.
Margherita, Salvatore S., 4,111,656, Cl. 23-230.60J.

Maness, John F., to Cricket Corporation. Insect bait dispensing device. 4,110,931, Cl. 43-55.000.

Maness, Roy F., to Exxon Nuclear Company, Inc. Inhibiting corrosion of stainless steel by ruthenium-containing nitric acid solution. 4,111,831, Cl. 422-12.000.

Manfredi, John L., to Moore & White Company, The. Adjustable bearing assembly for web decurling apparatus. 4,111,745, Cl. 162-271.000.

Mangum, Norman W., Jr.; and Ripy, Howard W., to United Technologies Corporation. Digital transient discriminator with noise spike clipping. 4,112,499, Cl. 364-732.000.

Mania, Dieter: *See—*
Bormann, Dieter; Merkel, Wulf; and Mania, Dieter, 4,111,953, Cl. 260-326.410.

Mannesmann Aktiengesellschaft: *See—*
Torkuhl, Joachim, 4,110,991, Cl. 405-157.000.

Mansfield, John Rickard, to Imperial Chemical Industries Limited. Analytical apparatus and processes. 4,111,776, Cl. 204-195.00T.

MAR-PHA, Societe d'Etude et d'Exploitation de Marques: *See—*
Mardiguian, Jean, 4,112,000, Cl. 568-734.000.

Marchaj, Tadeusz J., to Preload Technology, Inc. System for storing liquified gas. 4,110,995, Cl. 62-50.000.

Marchetti, Michael John, to Sperry Rand Corporation. Counter device associated with switch actuator of electrical shaver to determine battery recharging and use. 4,112,271, Cl. 200-52.00R.

Marcilly, Christian, to Institut Francais du Petrole. Process for alkylation-transalkylation of aromatic hydrocarbons by means of methanol. 4,112,008, Cl. 260-671.00M.

Marconi Instruments Limited: *See—*
Clarke, Graham John, 4,112,340, Cl. 318-331.000.

Marcus, Emanuel J. Game in the form of a miniature mine containing a precious gem. 4,111,413, Cl. 272-1.00R.

Mardiguian, Jean, to MAR-PHA, Societe d'Etude et d'Exploitation de Marques. Terpenophenols. 4,112,000, Cl. 568-734.000.

Maret, Arthur R., to Xerox Corporation. Ultrasonic cleaning apparatus for an electrostatographic reproducing machine. 4,111,546, Cl. 355-15.000.

Margherita, Salvatore S., to Mallinckrodt, Inc. Radioimmunoassay methods for the determination of L-triiodothyronine and thyroxine. 4,111,656, Cl. 23-230.600.

Margres, Jack J.: *See—*
Rubino, Andrew M.; and Margres, Jack J., 4,112,072, Cl. 424-155.000.

Marien, Bruce Arthur; and Kaufman, Paul Richard, to Borg-Warner Corporation. Nitrile resins stabilized against discoloration and method for producing the same. 4,112,022, Cl. 260-881.000.

Mark, Victor; and Wilson, Phillip Steven, to General Electric Company. Plasticized polycarbonate composition. 4,111,883, Cl. 260-30.60R.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate composition. 4,111,977, Cl. 260-45.95R.

Markow, Edward G., to Grumman Aerospace Corporation. Band reinforced radial tire. 4,111,249, Cl. 152-330.0RF.

Markus, Franklyn M.: *See—*
Jones, William C., 4,111,482, Cl. 297-159.000.

Marley Company, The: *See—*
Cates, Robert E., 4,112,027, Cl. 261-151.000.

Mars Limited: *See—*
Compton, Peter Arnold, 4,111,303, Cl. 206-520.000.

Marshall, George E., Jr.: *See—*
Freeman, Daniel L.; Bettencourt, Darryl G.; and Marshall, George E., Jr., 4,111,210, Cl. 130-30.00R.

Martel, Jacques; and Tessier, Jean, to Roussel Uclaf. Preparation of optically active allethrolone. 4,111,994, Cl. 260-586.00R.

Marti, Bernard: *See—*
Gautier, Christian Jean; Marti, Bernard; Mauduit, Michel Robert; Louineau, Andre Jean-Francois; and Schwartz nee Luneau, Christiane, 4,112,459, Cl. 358-6.000.

Martin, Charles W.: *See—*
Bozzelli, John W.; Shier, George D.; Pearce, Roscoe L.; and Martin, Charles W., 4,112,049, Cl. 423-226.000.

Martin, John C.; and Martin, Paul H., to Diesel Equipment Limited. Dump truck with telescoping container body. 4,111,485, Cl. 298-1.00B.

Martin, Manfred; Schmidt, Walter; and Scharfe, Gerhard, to Bayer Aktiengesellschaft. Silicon containing catalysts. 4,111,967, Cl. 260-396.00R.

Martin Marietta Corporation: *See—*
Wade, Jackie F.; Peyton, John E.; Klitzky, Bruce R.; and Groff, Roy E., 4,111,762, Cl. 204-33.000.

Martin, Paul H.: *See—*
Martin, John C.; and Martin, Paul H., 4,111,485, Cl. 298-1.00B.

Martin, Thomas B.; and Pieters, Ferdinandus A., to Micropump Corporation. Magnetically coupled gear pump construction. 4,111,614, Cl. 417-420.000.

Martin, Warren L.: *See—*
United States of America, National Aeronautics and Space Administration; Layland, James W.; Martin, Warren L.; Zygielbaum, Arthur I.; Goldstein, Richard M.; and Hubbard, William P., 4,112,497, Cl. 364-728.000.

Maruzen Sewing Machine Co., Ltd.: *See—*
Kohara, Tadao, 4,111,503, Cl. 312-27.000.

Marx, Alvin J.; and Edelman, Abraham, to Marx, Alvin J. Automated intravenous fluid regulating and administering apparatus. 4,111,198, Cl. 128-214.00E.

Masaki, Kenji: *See—*
Nakajima, Masao; Masaki, Kenji; and Inoue, Mitsumasa, 4,111,170, Cl. 123-119.0EC.

Mascaro, Thomas C. Module and modular support for turfgrass and like areas. 4,111,585, Cl. 404-70.000.

Mascher, Werner. Air-regeneration filter. 4,112,048, Cl. 423-210.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Regar, Karl-Nikolaus, 4,110,982, Cl. 60-413.000.
Willeitner, Eberhard, 4,111,123, Cl. 101-407.00A.

Mascia, Carmen T.; and Hasegawa, Gary K., to Continental Group, Inc., The. Reusable can carrier strip. 4,111,298, Cl. 206-151.000.

Masotti, Robert; Biola, Georges; and Guerpillon, Henri, to Rhone-Poulenc Industries. Arrangement for preparing alkylaluminums. 4,111,662, Cl. 422-231.000.

Masson Scott Thrissell Engineering Ltd.: *See—*
Graves, Bernard Albert; and Mockett, John Edward, 4,111,411, Cl. 271-199.000.

Masters, Burton J.: *See—*
Mader, Siegfried R.; Masters, Burton J.; and Pogge, H. Bernhard, 4,111,719, Cl. 148-1.500.

Mastromatteo, Michael. Control devices. 4,111,056, Cl. 73-706.000.

Masuda, Akira: *See—*
Norimatsu, Hideaki; Kobayashi, Akio; Masuda, Akira; and Kitajima, Sigenori, 4,111,162, Cl. 123-32.0EE.

Masuda, Joji; and Moriya, Makoto, to Nissan Motor Company, Limited. Compact cab-over equipped with a cooler condenser. 4,111,275, Cl. 180-68.00R.

Materials Technology Corporation: *See—*
Fonzi, Frank, 4,112,148, Cl. 427-248.00C.

Mather, Douglas Edward: *See—*
Cussons, Frank Michael; Mather, Douglas Edward; and Williams, Thomas Alan, 4,112,118, Cl. 423-313.000.

Mathers, James Evan: *See—*
Chenot, Charles Frederic; Mathers, James Evan; and Shaffer, Francis Nathan, 4,112,194, Cl. 428-539.000.

Mathues, Thomas P.: *See—*
Gordon, Ralph A.; Mathues, Thomas P.; and Parker, Donald L., 4,110,985, Cl. 60-548.000.

Matikainen, Martti; and Sivonen, Matti, to Valmet Oy. Roll and roll-driving assembly. 4,111,065, Cl. 74-410.000.

Matsui, Sadayoshi: *See—*
Mori, Kogoro; Izawa, Taro; Mizuno, Yoshifumi; and Matsui, Sadayoshi, 4,111,879, Cl. 260-29.60N.

Matsumoto, Yukimichi; and Ueyama, Minoru, to Kabushiki Kaisha Fuji Tekkosho. Lug end cutting apparatus for roll-like products. 4,111,084, Cl. 82-48.000.

Matsumura, Osamu: *See—*
Funazawa, Masakazu; and Matsumura, Osamu, 4,110,970, Cl. 58-90.00R.

Matsuo, Masujiro: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.

Matsushita Electric Industrial Company Limited: *See—*
Mifune, Hideo; Tani, Kenroku; and Noguchi, Toyota, 4,112,420, Cl. 340-550.000.
Watanabe, Iwao, 4,111,615, Cl. 417-423.00A.

Matsushita Electric Works, Ltd.: *See—*
Kameyama, Yasuyoshi; and Suzaki, Satoru, 4,112,407, Cl. 337-398.000.
Nakamura, Yoshimitsu; and Kojima, Hajime, 4,110,901, Cl. 29-598.000.

Matsuura, Kazuo: *See—*
Okada, Motohiro; Oka, Katsumi; Honda, Kiyoshi; and Matsuura, Kazuo, 4,111,458, Cl. 280-739.000.

Matsuyoshi, Hideaki; Mori, Kazushige; and Shimono, Yukio, to Kubota, Ltd. Apparatus for loading and unloading a working machine to and from main equipment. 4,111,319, Cl. 214-131.00A.

Matsuzawa, Hideo: *See—*
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, 4,111,984, Cl. 562-538.000.
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,111,985, Cl. 562-546.000.

Matthews, Russell Byron, to Johnson Controls, Inc. Proven pilot fuel ignition system with sampling flame sensor. 4,111,639, Cl. 431-25.000.

Mattimoe, Paul T.: *See—*
Motter, Theodore J.; Mattimoe, Paul T.; and Bartus, Stephen P., Jr., 4,112,171, Cl. 428-213.000.

Matumoto, Hiromi: *See—*
Nakajima, Koe; and Matumoto, Hiromi, 4,111,025, Cl. 72-164.000.

Mauch, David L., to Commercial Shearing, Inc. Thrust rings for swash plate pumps and motors. 4,111,103, Cl. 92-57.000.

Mauduit, Michel Robert: *See—*
Gautier, Christian Jean; Marti, Bernard; Mauduit, Michel Robert; Louineau, Andre Jean-Francois; and Schwartz nee Luneau, Christiane, 4,112,459, Cl. 358-6.000.

Maugans, Terrance W.: *See—*
Arakelian, Edward M.; and Maugans, Terrance W., 4,112,273, Cl. 200-67.00D.

Maurer, Fritz: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammen, Ingeborg; and Homeyer, Bernhard, 4,112,080, Cl. 424-200.000.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,112,081, Cl. 424-200.000.

Max Weishaupt GmbH: *See—*
Kopp, Hermann, 4,111,642, Cl. 431-347.000.

Mayer, Robert William: *See—*
Bantz, Paul Edward; and Mayer, Robert William, 4,111,256, Cl. 164-335.000.

Mayer, Steven T.; and Milner, Ronald E., to Atari, Inc. Method and apparatus for generating moving objects on a video display screen. 4,112,422, Cl. 340-324.0AD.

Mayr, Ernst; and Langemeier, Heinz. Device for cleaning oil dipsticks. 4,110,909, Cl. 33-126.70R.

Mazour, Zdenek; and Dayer, Francis Louis, to Ciba-Geigy Corporation. Process for the production of alkoxy-β-halogenoethylsilanes. 4,111,974, Cl. 260-448.80R.

Mazoyer, Jean, to Beaulieu. Automatic device for positioning the tone arm of a record player. 4,111,432, Cl. 274-15.00R.

McAllister, William D.; and Rajczi, Frank D., to Schatz Federal Bearings Co., Inc. Method and apparatus for installing a bearing shield or seal into the annular space of a bearing. 4,110,883, Cl. 29-148.40S.

McCarty, Leslie P.: *See—*
Tomalia, Donald A.; Dickert, Yancey J.; and McCarty, Leslie P., 4,112,067, Cl. 424-78.000.

McCarty, Stuart Wayne; and O'Shields, Clarence Morris, to Olin Corporation. Method for obtaining uniform porosity in printed inherently porous cigarette tipping papers. 4,112,154, Cl. 427-401.000.

McClelland, Donald H.: *See—*
Hug, Leonard F.; McClelland, Donald H.; and Uba, Toshio, 4,112,202, Cl. 429-94.000.

McClelland, Robert David: *See—*
Baird, David Boyd; Campbell, James Stanley; Fishwick, Brian Ribbons; and McClelland, Robert David, 4,111,956, Cl. 260-329.0AM.

McCloskey, Albert R., to Heim Universal Corporation, The. Bearing assembly and liner. 4,111,499, Cl. 308-72.000.

McClung, Carl L.: *See—*
Alstrin, Charles E.; McClung, Carl L.; and Smith, James C., 4,111,166, Cl. 123-97.00B.

McClure, Charles A. Flow monitoring. 4,111,044, Cl. 73-215.000.

McClurg, William E.; and Partridge, Charles C., to ACF Industries, Incorporated. Ball valve seat assembly having a removably mounted face seal insert. 4,111,393, Cl. 251-174.000.

McConnell, Bobby Lee; Thornton, Raymond; and Graham, Louis Atkins, to Burlington Industries, Inc. Reactive dyeing systems using dyes with carboxylic acid groups. 4,111,648, Cl. 8-30.000.

McConnell, Richard L.; and Weemes, Doyle A., to Eastman Kodak Company. Peroxide treated substantially amorphous polyolefins useful as pressure-sensitive adhesives. 4,112,208, Cl. 526-57.000.

McCormick, Donald Hugh; and Perkins, William Weldon. Self-latching yoke gate latch. 4,111,475, Cl. 292-216.000.

McCrary, Carl M.; and Larsen, Robert D., to Weyerhaeuser Company, by said Carl M. McCrary. Tree delimber. 4,111,245, Cl. 144-2.00Z.

McCully, Everette Ray: *See—*
Hauke, Francis Edward; McCully, Everette Ray; McElroy, Robert Marion, Jr.; Stevenson, Peter Alan; Vogel, Stephen Martin; and Woods, John Walton, 4,112,472, Cl. 360-102.000.

McDermid, Terry: *See—*
Sherman, Clarence A., 4,110,983, Cl. 60-477.000.

McDowell, Donald J.: *See—*
Brady, John F.; and McDowell, Donald J., 4,111,583, Cl. 404-69.000.

McDowell-Wellman Engineering Company: *See—*
Ban, Thomas E.; and Rao, Ashok D., 4,111,755, Cl. 201-6.000.

McElroy, Robert Marion, Jr.: *See—*
Hauke, Francis Edward; McCully, Everette Ray; McElroy, Robert Marion, Jr.; Stevenson, Peter Alan; Vogel, Stephen Martin; and Woods, John Walton, 4,112,472, Cl. 360-102.000.

McFadden, Buryl L., to United States of America, Air Force. Separable coupling for plural pressure lines. 4,111,463, Cl. 285-25.000.

McGalliard, James D. Fluid sensitive switching member. 4,112,312, Cl. 307-118.000.

McGibbon, William: *See—*
Nutter, Geoffrey; and McGibbon, William, 4,112,487, Cl. 364-200.000.

McKay, Dwight L. Cracking catalyst modified by antimony thiophosphate. 4,111,845, Cl. 252-455.00Z.

McKinney Manufacturing Company: *See—*
Gwozdz, Joseph W., 4,110,867, Cl. 16-82.000.

McLafferty, George H., to United Technologies Corporation. Aerodynamic window method and apparatus. 4,112,388, Cl. 331-94.50D.

McNeice, Donald: *See—*
Kolombos, Alexander John; McNeice, Donald; and Wood, Dennis Charles, 4,111,793, Cl. 208-121.000.

McNeil Laboratories, Incorporated: *See—*
Carson, John Robert; Carmosin, Richard J.; and Stefanski, Anthony T., 4,111,954, Cl. 260-326.620.

McRae, Russell C., to ILC Technology, Inc. Battery terminal seal structure. 4,112,204, Cl. 429-181.000.

Mead Corporation, The: *See—*
Cone, Donald Roy, 4,112,436, Cl. 346-140.00R.
Culpepper, Will Lester; and Cooley, Jack Seabron, 4,111,105, Cl. 93-37.0SP.
Davis, Gerald Titus; and Shackle, Dale Richard, 4,112,138, Cl. 427-54.000.
Paranjpe, Suresh C.; and Burnett, James E., 4,112,469, Cl. 358-296.000.

Mead, Kenneth W.; and Peters, K. Stewart, to Carpenter Technology Corporation. Welding apparatus. 4,112,289, Cl. 219-124.330.

Meadus, Frederick W.; Sparks, Bryan D.; and Puddington, Ira E., to Canadian Patents and Development Limited. Transparent pressure-sensitive coatings. 4,111,874, Cl. 260-23.00R.

Mechling, Charles H.; Niedermier, James B.; and Steber, Norman J., to PPG Industries, Inc. Adaptation of glass shaping means for tempering flat glass. 4,111,676, Cl. 65-114.000.

Mecklenborg, Richard A., to Singer Company, The. Infinity image display having increased vertical field of view. 4,112,462, Cl. 358-104.000.

Meguro, Satoshi: *See—*
Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, 4,110,899, Cl. 29-571.000.

Mei, Viung C.: *See—*
Klotz, Michael C.; and Mei, Viung C., 4,110,997, Cl. 62-81.000.

Meier, Rene: *See—*
Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 4,111,950, Cl. 260-308.00R.

Meiller, Francois, to Rhone-Poulenc Industries. Modified mineral supports. 4,112,185, Cl. 428-403.000.

Melliger, Guido W., to Dierks & Sohne Maschinenfabrik, Firma. Granulation process. 4,111,371, Cl. 241-18.000.

Melly, Jeffrey P.: *See—*
Wrob, Ronald M.; and Melly, Jeffrey P., 4,112,410, Cl. 338-243.000.

Meltzer, David W., to Xerox Corporation. Vibrating blade cleaner. 4,111,545, Cl. 355-15.000.

Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., to Bristol-Myers Company. $\Delta^{2,3}$-1,4 Morpholine-2-carboxylic acid derivatives as antibacterial agents. 4,112,230, Cl. 544-105.000.

Mendenhall, Geoffrey N., to Harris Corporation. Automatic phase controlled pilot signal generator. 4,112,259, Cl. 179-15.0BT.

Meng, Ilse Heide Frieda, legal representative: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,112,109, Cl. 424-273.00P.

Meng, Karl: *See—*
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,112,227, Cl. 424-273.00P.

Meng, Karl, deceased: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,112,109, Cl. 424-273.00P.

Mengel, William Rudolph, to Magnat Corp. Shell and shaft subassembly. 4,111,569, Cl. 403-5.000.

Menzel, Klaus Rudolf: *See—*
Hipwell, Donald D.; and Menzel, Klaus Rudolf, 4,110,897, Cl. 29-568.000.

Merck & Co., Inc.: *See—*
Bicking, John B.; and Cragoe, Edward J., Jr., 4,112,236, Cl. 560-12.000.
Kao, Henry S.; Sklarz, William A.; and Weinstock, Leonard M., 4,111,948, Cl. 260-302.00R.
Novello, Frederick C.; and Baldwin, John J., 4,111,944, Cl. 260-296.00R.
Rooney, Clarence Stanley; Rokach, Joshua; and Atkinson, Joseph George, 4,112,112, Cl. 424-274.000.

Merendino, Michael J.: *See—*
Zuckerman, Robert E.; and Merendino, Michael J., 4,111,048, Cl. 73-338.000.

Merkel, Wulf: *See—*
Bormann, Dieter; Merkel, Wulf; and Mania, Dieter, 4,111,953, Cl. 260-326.410.

Merten, Rudolf: *See—*
Giesecke, Henning; Hocker, Jurgen; and Merten, Rudolf, 4,111,918, Cl. 528-73.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Thomanek, Franz Rudolf, 4,111,126, Cl. 102-52.000.

Messier, Russell F.: *See—*
Wolfe, Robert W.; and Messier, Russell F., 4,112,328, Cl. 313-486.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Reh, Lothar; Hirsch, Martin; and Plass, Ludolf, 4,111,158, Cl. 122-4.00D.
Steinberg, Friedhelm; and Voss, Gunter, 4,111,704, Cl. 106-25.000.

Metz, W. Peter. Manufacture of improved electrical contact materials. 4,112,197, Cl. 428-629.000.

Meussdoerffer, Johann-Nikolaus: *See—*
Niederprum, Hans; Meussdoerffer, Johann-Nikolaus; Nieder-Vahrenholz, Hans-George; and Bockelmann, Wolfgang, 4,112,046, Cl. 423-53.000.

Meybeck, Jacques, to Sandoz Ltd. Monoazo dyes having an aryloxyalkyl group on the nitrogen atom in the para position of a 1,4-phenylene coupling component radical. 4,111,930, Cl. 260-207.500.

Meyer, Jeffrey G., to Anderson Development Company. Nickel bis-organo-orthosphosphate combination catalyst. 4,111,839, Cl. 252-431.00P.

MFE Corporation: *See—*
Burke, Edward F., Jr., 4,110,879, Cl. 29-25.420.

Miale, Joseph Nicolas: *See—*
Chen, Nai Yuen; Miale, Joseph Nicolas; and Reagan, William Joseph, 4,112,056, Cl. 423-329.000.

Michel, Alwin E.; Schwenker, Robert O.; and Ziegler, James F., to International Business Machines Corporation. Method for forming a non-epitaxial bipolar integrated circuit. 4,111,720, Cl. 148-1.500.

Michel, Jacques: *See—*
Trombe, Felix; and Michel, Jacques, 4,111,359, Cl. 237-1.00A.

Micropump Corporation: *See—*
Martin, Thomas B.; and Pieters, Ferdinandus A., 4,111,614, Cl. 417-420.000.

Microsonics Corporation: *See—*
Johnson, Reynold B., 4,111,430, Cl. 274-9.00B.

Midland-Ross Corporation: *See—*
Zanow, Andrey L., 4,111,406, Cl. 267-153.000.

Mieczkowski, Walter L. High energy saving heat exchanger for furnaces. 4,111,357, Cl. 236-11.000.

Mierzwinski, Eugene P., to Magnavox Company, The. Optical linked remote control video game apparatus. 4,111,421, Cl. 273-85.00G.

Mifune, Hideo; Tani, Kenroku; and Noguchi, Toyota, to Matsushita Electric Industrial Company Limited. Apparatus for detecting the breakage of an acoustically conductive medium. 4,112,420, Cl. 340-550.000.

Miga, Christian John: *See—*
Duensing, Willard John; and Miga, Christian John, 4,112,129, Cl. 426-417.000.

Mihara, Toshihide: *See—*
Yamaoka, Kojiro; Mihara, Toshihide; and Tanaka, Akira, 4,110,898, Cl. 29-568.000.

Mikes, Otakar: *See—*
Strop, Petr; Coupek, Jiri; and Mikes, Otakar, 4,111,859, Cl. 521-33.000.

Mikoshiba, Hitoshi: *See—*
Tezuka, Chikao; and Mikoshiba, Hitoshi, 4,111,117, Cl. 101-93.280.

Miles, Peter; Richardson, Norman; and Finan, Michael Anthony, to Ciba-Geigy Corporation. Novel compositions of matter for use in the treatment of aqueous systems. 4,111,804, Cl. 210-58.000.

Millar, Frederick William: *See—*
Varvel, David Anthony; Millar, Frederick William; and Farquharson, Stuart Connall, 4,112,292, Cl. 235-449.000.

Miller, Brian J.: *See—*
Jacobson, Ronald H.; and Miller, Brian J., 4,111,242, Cl. 140-124.000.

Miller, Conrad O. M.: *See—*
Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., 4,112,209, Cl. 526-65.000.

Miller, David Samuilovich: *See—*
Zuev, Alexandr Borisovich; and Miller, David Samuilovich, 4,110,894, Cl. 29-527.600.

Miller, Robert Eric. Bearings. 4,111,498, Cl. 308-5.00R.

Miller, Stewart F.: *See—*
Bistrick, Eugene J.; Miller, Stewart F.; Abrahamsson, Axel B.; and Schlaf, Richard A., 4,111,586, Cl. 407-16.000.

Milliken Research Corporation: *See—*
O'Neill, John H., Jr., 4,111,012, Cl. 68-205.00R.

Milner, Ronald E.: *See—*
Mayer, Steven T.; and Milner, Ronald E., 4,112,422, Cl. 340-324.0AD.

Minakata, Matsuo: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,111,434, Cl. 277-3.000.

Minami, Hidehiro, to Nissan Motor Company, Limited. Automotive internal combustion engine. 4,111,010, Cl. 60-276.000.

Minnesota Mining and Manufacturing Company: *See—*
Beck, Warren R., 4,111,713, Cl. 106-288.00B.
Fraik, Robert D., 4,111,702, Cl. 106-19.000.
Kruschel, William A., 4,111,022, Cl. 72-410.000.
Lange, Heinz E.; and Ostlie, Dean A., 4,111,462, Cl. 282-27.500.
Lange, Roger W.; and Sowman, Harold G., 4,112,186, Cl. 428-411.000.
Roiko, Russell A., 4,110,896, Cl. 29-566.300.
Salditt, Ferdinand; and Hansen, William L., 4,112,177, Cl. 428-304.000.
Strand, Neal T.; and Esboldt, Richard J., 4,110,925, Cl. 40-466.000.

Minolta Camera Kabushiki Kaisha: *See—*
Maeda, Keisuke; and Yamada, Seiji, 4,112,442, Cl. 354-31.000.

Mir, Jose Manuel; and Varner, Jerry Reubon, to Eastman Kodak Company. Electrographic mist development apparatus and method. 4,112,437, Cl. 346-159.000.

Mitkova, Galina Vladimirovna: *See—*
Vishnevsky, Alexandr Alexandrovich; Korolkov, Ivan Alexandrovich; Smirnov, Boris Andreevich; Ivanova, Tatyana Lukyanovna; Adamian, Arnold Aramovich; and Mitkova, Galina Vladimirovna, 4,111,206, Cl. 128-305.000.

Mitsubishi Chemical Industries Limited: *See—*
Morita, Yoshiharu; Omata, Kenzo; Ohya, Junichi; Wagatsuma, Kazuo; and Shirasaka, Tadashi, 4,111,932, Cl. 260-239.100.
Okano, Takeshi; Wada, Naoto; and Kobayashi, Yoshimitsu, 4,112,241, Cl. 560-246.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fukuda, Shozo; Seike, Yajuro; Iizuka, Masafumi; Kasai, Hironao; and Enami, Mamoru, 4,111,811, Cl. 210-242.00S.

Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See—*
Yamawaki, Takeshi; Hoshijima, Tokitaro; and Aga, Kiichiro, 4,111,039, Cl. 73-81.000.

Mitsubishi Petrochemical Company Limited: *See—*
Aritomi, Mitsutoshi, 4,111,871, Cl. 260-22.0CB.

Mitsubishi Precision Co., Ltd.: *See—*
Kumazawa, Toshiharu, 4,112,026, Cl. 261-29.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, 4,111,984, Cl. 562-538.000.
Kamada, Kazumasa; and Hongo, Masafumi, 4,111,892, Cl. 260-40.00R.

Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,111,985, Cl. 562-546.000.
Sato, Mitsuo; Miyagawa, Norio; and Kobayashi, Juichi, 4,112,190, Cl. 428-457.000.

Mitsui Coke Co., Ltd.: *See—*
Sugimura, Hidehiko; Murakami, Hisashi; Ohtsubo, Toshikatsu; and Fukuda, Kenji, 4,111,786, Cl. 208-8.000.

Mitsui Mfg. Co., Ltd.: *See—*
Mitsui, Yoshiaki, 4,110,895, Cl. 29-564.200.

Mitsui, Yoshiaki, to Mitsui Mfg. Co., Ltd. Apparatus for manufacturing laminated cores. 4,110,895, Cl. 29-564.200.

Mixan, Craig E.: *See—*
Burk, George A.; Goralski, Christian T.; and Mixan, Craig E., 4,111,988, Cl. 260-543.00R.

Miyagawa, Norio: *See—*
Sato, Mitsuo; Miyagawa, Norio; and Kobayashi, Juichi, 4,112,190, Cl. 428-457.000.

Miyagi, Hideo; Oishi, Kiyohiko; Ishida, Yasuhiko; and Yamaguchi, Shunzo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippon Soken, Inc. Apparatus for introducing secondary air into an exhaust system of an internal combustion engine. 4,110,979, Cl. 60-276.000.

Miyagi, Hiroyuki; Nakajima, Fumito; and Arikawa, Yoshijiro, to Hitachi, Ltd. Interface for use in a combined liquid chromatography - mass spectrometry system. 4,112,297, Cl. 250-288.000.

Miyai, Akira: *See—*
Nakajima, Yukihiko; Watanabe, Shuzou; Miyai, Akira; and Ishii, Masaji, 4,112,290, Cl. 219-275.000.

Miyake, Tetsuya; Seko, Maomi; Inada, Kohji; Ochi, Kazushi; and Sakamoto, Tomio, to Asahi Kasei Kogyo Kabushiki Kaisha. Chromatographic separation of uranium isotopes. 4,112,044, Cl. 423-7.000.

Miyaki, Tetsuya: *See—*
Seko, Maomi; and Miyaki, Tetsuya, 4,112,045, Cl. 423-7.000.

Miyamoto, Hiroshi; and Shinagawa, Mitsuhisa, to Hitachi, Ltd. Self-excited mixer circuit using field effect transistor. 4,112,373, Cl. 325-440.000.

Mizuno, Yoshifumi: *See—*
Mori, Kogoro; Izawa, Taro; Mizuno, Yoshifumi; and Matsui, Sadayoshi, 4,111,879, Cl. 260-29.60N.

Mobil Oil Corporation: *See—*
Caesar, Philip D.; Garwood, William E.; Krudewig, William F.; and Wise, John J., 4,111,792, Cl. 208-79.000.
Chen, Nai Yuen; Miale, Joseph Nicolas; and Reagan, William Joseph, 4,112,056, Cl. 423-329.000.
Haag, Werner O.; and Whitehurst, Darrell Duayne, 4,111,856, Cl. 521-30.000.

Mockel, Gerrit: *See—*
Heger, Adolf; Mockel, Gerrit; Passler, Helmar; Pohlink, Jochen; and Wunsch, Werner, 4,112,136, Cl. 427-36.000.

Mockett, John Edward: *See—*
Graves, Bernard Albert; and Mockett, John Edward, 4,111,411, Cl. 271-199.000.

Model, Frank S.: *See—*
Thomas, Norman W.; Model, Frank S.; and Smart, Charles L., 4,111,684, Cl. 71-115.000.

Moderatho, Bo, to Bo Moderatho & Company AB. Mount for X-ray films. 4,110,924, Cl. 40-158.00B.

Moerman, Nathan A. Conversion and control of electrical energy by electromagnetic induction. 4,112,347, Cl. 323-6.000.

Moffitt, Jerry T.; and Bulgrin, Robert W., to Allen-Bradley Company. Terminal for electrical component and method of making same. 4,112,250, Cl. 338-322.000.

Moffitt, Robert B., III: *See—*
Beard, Charles D.; and Moffitt, Robert B., III, 4,111,999, Cl. 260-606.50B.

Mohr, Adolph, to Robert Bosch GmbH. Anisotropic magnet structure, particularly segmental magnet structure for permanent magnet dynamo electric machines. 4,112,320, Cl. 310-154.000.

Molins, Desmond Walter; and Rowlands, Tom, to Molins Limited. Apparatus for joining axially abutting rods of the cigarette industry. 4,111,740, Cl. 156-498.000.

Molins Limited: *See—*
Molins, Desmond Walter; and Rowlands, Tom, 4,111,740, Cl. 156-498.000.

Moller, Eike; Meng, Karl, deceased (by Meng, Ilse Heide Frieda, legal representative); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Bayer Aktiengesellschaft. 4-Substituted pyrazoles. 4,112,109, Cl. 424-273.00P.

Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. Pyrazol-5-ones. 4,112,227, Cl. 424-273.00P.

Momonoi, Kaishu: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,112,090, Cl. 424-251.000.

Monarch Marking Systems, Inc.: *See—*
Cooke, Theodore M., 4,112,151, Cl. 427-322.000.
Hamisch, Paul H., Jr., 4,111,735, Cl. 156-384.000.
Hamisch, Paul H., Jr., 4,111,736, Cl. 156-384.000.
Klein, Rudolph J., 4,112,344, Cl. 318-685.000.

Monitoring Systems Inc.: *See—*
Bailey, John M., 4,111,047, Cl. 73-302.000.

Monroe, Kenneth E.: *See—*
Waldorf, Lindsey E.; and Monroe, Kenneth E., 4,112,393, Cl. 331-109.000.

Monsanto Company: *See—*
Bachman, Gerald L., 4,111,925, Cl. 260-112.50R.
Bradley, Bruce R.; Eckelman, Larry D.; and Gilmer, Donald G., 4,110,965, Cl. 57-157.0TS.
Bruner, Albert H., 4,110,964, Cl. 57-157.0TS.
Chyu, Hyun S., 4,112,166, Cl. 428-141.000.
Dahms, Ronald H., 4,112,188, Cl. 428-436.000.
Eubanks, Lloyd S.; and Price, Jerry L., 4,111,982, Cl. 562-519.000.
Mount, Ramon A.; and Raffelson, Harold, 4,111,963, Cl. 260-346.750.
Wang, Donald S. T., 4,111,828, Cl. 252-182.000.

Monsen, Peter, to Signatron, Inc. Digital communications receiver for dual input signal. 4,112,370, Cl. 325-40.000.

Montagna, Angelo A.: *See—*
Yanik, Stephen J.; Montagna, Angelo A.; and Frayer, James A., 4,111,796, Cl. 208-216.000.

Montanelli, Michele: *See—*
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Montaruli, Elio. Refillable cutting dispenser. 4,111,089, Cl. 83-542.000.

Montedison S.p.A.: *See—*
Foschini, Giorgio; Fiscelli, Nicolino; and Galli, Paolo, 4,111,835, Cl. 252-429.00C.

Montegari, Frank Alfred: *See—*
Gani, Venkappa Laxmappa; and Montegari, Frank Alfred, 4,112,314, Cl. 307-215.000.

Montiel, Esteban. Storage file and retrieval system. 4,111,504, Cl. 312-183.000.

Moon, Malcolm W.; and Kornis, Gabriel, to Upjohn Company, The. Furyl pyrazole thioamides. 4,111,939, Cl. 260-293.600.

Moon, Malcolm W.; and Kornis, Gabriel, to Upjohn Company, The. Thienyl pyrazole thioamides. 4,111,941, Cl. 260-293.600.

Moorby, Donald G.: *See—*
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,110,900, Cl. 29-596.000.
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,112,041, Cl. 264-263.000.

Moore, Sanford A. B.: *See—*
Greenham, Joseph G.; and Moore, Sanford A. B., 4,110,871, Cl. 17-33.000.

Moore & White Company, The: *See—*
Manfredi, John L., 4,111,745, Cl. 162-271.000.

Moracchioli, Robert: *See—*
Bricard, Alain; de Cachard, Maurice; Goffinet, Pierre; Kurka, Gerard; and Moracchioli, Robert, 4,111,260, Cl. 165-104.00S.

Moran, Daniel Bryan: *See—*
Allen, George Rodger, Jr.; Hanifin, John William, Jr.; Moran, Daniel Bryan; and Albright, Jay Donald, 4,112,095, Cl. 424-250.000.

Moreau, Marc, to Trefimetaux. Method for continuous extrusion. 4,111,023, Cl. 72-60.000.

Morel, Henri, to ITW de France, S.A. Ball and socket joint cage. 4,111,570, Cl. 403-18.000.

Morelle, Jean V.; and Lauzanne-Morelle, Eliane M. T. Metallic compositions. 4,112,085, Cl. 424-245.000.

Morelli, Morello: *See—*
Sanfilippo, Domenico; and Morelli, Morello, 4,112,007, Cl. 260-666.00A.

Morgan, Charles R., to W. R. Grace & Co. Hydantoin-containing polyene compositions. 4,112,233, Cl. 548-312.000.

Morgan Industries: *See—*
Buchberger, Gregory D., 4,112,384, Cl. 330-141.000.

Mori, Kazushige: *See—*
Matsuyoshi, Hideaki; Mori, Kazushige; and Shimono, Yukio, 4,111,319, Cl. 214-131.00A.

Mori, Kogoro; Izawa, Taro; Mizuno, Yoshifumi; and Matsui, Sadayoshi, to Ihara Chemical Industry Co., Ltd. Composition for inhibiting adhesion of shellfish and algae. 4,111,879, Cl. 260-29.60N.

Mori, Takaaki: *See—*
Ogiue, Katumi; Kondo, Hiroyuki; Ishikawa, Takashi; Mori, Takaaki; and Nitta, Takahisa, 4,111,724, Cl. 148-175.000.

Morino, Yukio: *See—*
Yonemoto, Tomoo; Morino, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 4,112,444, Cl. 354-106.000.

Morishima, Susumu: *See—*
Ito, Yukio; and Morishima, Susumu, 4,111,116, Cl. 100-281.000.

Morissette, Gilles. Collapsible boat anchor. 4,111,147, Cl. 114-298.000.

Morita, Akira: *See—*
Ueno, Zene; Morita, Akira; Iwaki, Shigeo; Nagaoka, Tadahiko; and Inagaki, Tokuich, 4,111,161, Cl. 123-3.000.

Morita, Yoshiharu; Omata, Kenzo; Ohya, Junichi; Wagatsuma, Kazuo; and Shirasaka, Tadashi, to Mitsubishi Chemical Industries Limited. Amino acid derivatives of 6-(2-amino-2-arylacetamido)penicillanic acids. 4,111,932, Cl. 260-239.100.

Moritz, Werner, to Kabelschlepp Gesellschaft mit beschrankter Haftung. Transmission line carrier. 4,111,236, Cl. 138-120.000.

Moriya, Makoto: *See—*
Masuda, Joji; and Moriya, Makoto, 4,111,275, Cl. 180-68.00R.

Morris, Jack LeRoy. Spent long gun shell caddy. 4,110,927, Cl. 42-1.00T.

Morris, James F., to United States of America, National Aeronautics and Space Administration. Thermocouples of molybdenum and iridium alloys for more stable vacuum-high temperature performance. 4,111,718, Cl. 136-236.00R.

Morrison, Bert L.: *See—*
Kempl, Willard E.; and Morrison, Bert L., 4,111,396, Cl. 251-328.000.

Morrison, Charles F. Injection system for fuel combustion. 4,111,641, Cl. 431-4.000.

Morrison, Robert A.; and Armstrong, Lyle C., to Lockheed Aircraft Corporation. Multicontact test probe apparatus. 4,112,363, Cl. 324-158.00P.

Morrow, Robert S.; and Penn, Lloyd D., to IRD Mechanalysis, Inc. Digital sweep circuit for generating sawtooth wave form. 4,112,382, Cl. 328-181.000.

Morse Boulger, Inc.: *See—*
Mainka, Christian M., 4,111,134, Cl. 110-328.000.

Mortensen, Alan Craig; and DeHart, Scott A., to Hewlett-Packard Company. Peak detector. 4,112,381, Cl. 328-150.000.

Morton-Norwich Products, Inc.: *See—*
Pelosi, Stanford S., Jr., 4,111,964, Cl. 260-347.700.

Moser, Louis. Percolator. 4,111,108, Cl. 99-289.00R.

Moshkevich, Evgeny Isaevich: *See—*
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich, 4,112,246, Cl. 13-2.00P.

Motegi, Minoru: *See—*
Umeki, Shinji; Uebori, Tatsuo; and Motegi, Minoru, 4,112,184, Cl. 428-403.000.

Motorola, Inc.: *See—*
Schafft, Hugo Willy, 4,112,168, Cl. 428-198.000.
Selinko, George Joseph, 4,111,343, Cl. 224-5.00H.

Motoyama, Shimesu: *See—*
Funakoshi, Yoshiro; Asogawa, Tatsuo; Satake, Eiichi; Motoyama, Shimesu; Yamada, Shuri; and Kakukawa, Morio, 4,111,626, Cl. 425-203.000.

Motter, Theodore J.; Mattimoe, Paul T.; and Bartus, Stephen P., Jr., to Libbey-Owens-Ford Company. Automotive glazing structure and method of producing the same. 4,112,171, Cl. 428-213.000.

Mottini, Francis Joseph: *See—*
Duval, Jean-Claude; Mottini, Francis Joseph; Touron, Serge Auguste; Rennard, Jean-Jacques Francois; and Duval, Ruchela Marie, 4,112,505, Cl. 365-96.000.

Moulds, Gordon Mars, to Du Pont de Nemours, E. I., and Company. Polyamide fiber. 4,112,016, Cl. 260-849.000.

Mount, Ramon A.; and Raffelson, Harold, to Monsanto Company. Method for preparing maleic anhydride. 4,111,963, Cl. 260-346.750.

Mousteou, Roger: *See—*
Gratacos, Jaime; Perrolet, Christian; and Mousteou, Roger, 4,111,040, Cl. 73-105.000.

Moviefig APS: *See—*
Ravn, Borge Andreas, 4,110,926, Cl. 40-485.000.

Mraz, Joseph. Pneumatic conveying apparatus and method. 4,111,492, Cl. 302-39.000.

Muck, Karl-Friedrich: *See—*
Kostrzewa, Michael; and Muck, Karl-Friedrich, 4,111,858, Cl. 521-25.000.

Muckter, Heinrich: *See—*
van Wersch, Hubert Maria Agnes; Herrling, Siegfried; and Muckter, Heinrich, 4,112,077, Cl. 424-185.000.

Mueller, Wolfgang H.; Oswald, Alexis A.; and Hall, Daniel N., to Exxon Research & Engineering Co. Phosphoryl sulfenyl chloride olefin adducts. 4,112,024, Cl. 260-956.000.

Muhlfeld, Horst: *See—*
Schuhmacher, Gunter; and Muhlfeld, Horst, 4,111,913, Cl. 528-273.000.

Muhs, Donald Paul; and Hart, Russell Frank, to Bendix Corporation, The. Rate of change in altitude apparatus. 4,112,413, Cl. 340-27.00R.

Muijs, Herman M., to Shell Oil Company. Textile fiber lubricant. 4,111,819, Cl. 252-8.900.

Mullins, Rex, to Coal Industry (Patents) Limited. Underground mining machine with longwall guidance system. 4,111,487, Cl. 299-1.000.

Multinorm, B.V.: *See—*
Oosterling, Pieter Adriaan; and van Staveren, Hendricus Cornelis, 4,110,959, Cl. 56-295.000.

Munroe, James L.: *See—*
Lavelle, Joseph E.; and Munroe, James L., 4,111,531, Cl. 350-293.000.

Murakami, Hisashi: *See—*
Sugimura, Hidehiko; Murakami, Hisashi; Ohtsubo, Toshikatsu; and Fukuda, Kenji, 4,111,786, Cl. 208-8.000.

Muramatsu, Takao: *See—*
Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,111,539, Cl. 355-3.00R.

Murata, Bunjiro: *See—*
Ito, Katsuo; Murata, Bunjiro; Maeda, Yoji; and Hibino, Eiichi, 4,112,378, Cl. 325-464.000.

Murata Manufacturing Co., Ltd.: *See—*
Ito, Katsuo; Murata, Bunjiro; Maeda, Yoji; and Hibino, Eiichi, 4,112,378, Cl. 325-464.000.

Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus and process for the electrolytic treatment of alkali metal halide solution with ion exchange membranes. 4,111,780, Cl. 204-266.000.

Murgor Electric Company, Inc.: *See—*
Murray, James T.; and Gorman, Walter T., 4,110,947, Cl. 52-249.000.

Murmann, Gunter: *See—*
Greiner, Gunter; and Murmann, Gunter, 4,112,278, Cl. 200-156.000.

Murphy, John A., Jr. Extruded metal solar collector roofing shingle. 4,111,188, Cl. 126-271.000.

Murphy, John R. Hydraulic motor with air distributor-operated valves. 4,110,981, Cl. 60-371.000.

Murray, James T.; and Gorman, Walter T., to Murgor Electric Company, Inc. Storage tank installation. 4,110,947, Cl. 52-249.000.

Murray Tovi Designs, Inc.: *See—*
Tovi, Murray, 4,112,486, Cl. 362-419.000.

Musashi Kabushiki Kaisha: *See—*
Ito, Yukio; and Morishima, Susumu, 4,111,116, Cl. 100-281.000.

Muschiatti, Lawrence Carl: *See—*
Briggs, Paul Clayton, Jr.; and Muschiatti, Lawrence Carl, 4,112,013, Cl. 260-878.00R.

Mutou, Toshiaki, to Tokico Ltd. Gas chamber forming method in closed cylinder of gas enclosed type. 4,110,888, Cl. 29-404.000.

Mutzner, John E.; and Ford, Gary P., to General Motors Corporation. Braid reinforced flexible brake hose. 4,111,237, Cl. 138-125.000.

Nadelson, Jeffrey, to Sandoz, Inc. Isoxazolyl benzamides. 4,112,108, Cl. 424-272.000.

Nagaoka, Shinji: *See—*
Yonemoto, Tomoo; Morino, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 4,112,444, Cl. 354-106.000.

Nagaoka, Tadahiko: *See—*
Ueno, Zene; Morita, Akira; Iwaki, Shigeo; Nagaoka, Tadahiko; and Inagaki, Tokuich, 4,111,161, Cl. 123-3.000.

Nagasaki, Tadashi; Akatsu, Mitsuharu; and Ohtsu, Mitsuo, to Hitachi, Ltd. High voltage generator. 4,112,337, Cl. 315-411.000.

Nagasawa, Harumi: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.

Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, to Hitachi, Ltd. Method for manufacturing complementary insulated gate field effect transistors. 4,110,899, Cl. 29-571.000.

Nagatoshi, Kikuo: *See—*
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, 4,111,898, Cl. 260-42.530.

Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, to Bristol-Myers Company. 7-(D-α-Hydroxy-2-arylacetamido)-3-(2-carboxyalkyl-2,3-dihydro-s-triazolo-[4,3-b]pyridazin-3-on-6-ylthiomethyl)-3-cephem-4-carboxylic acids and derivatives. 4,112,228, Cl. 544-26.000.

Najvar, Daniel J., to Dow Chemical Company, The. Radiation curable epoxy resin. 4,111,770, Cl. 204-159.150.

Nakada, Takashi; and Takoh, Toshiharu, to Tokyo Seimitsu Co. Ltd. Liquid crystal applied voltmeter. 4,112,361, Cl. 324-92.000.

Nakajima, Fumito: *See—*
Miyagi, Hiroyuki; Nakajima, Fumito; and Arikawa, Yoshijiro, 4,112,297, Cl. 250-288.000.

Nakajima, Koe; and Matumoto, Hiromi, to Nippon Steel Corporation. Straightening mill for section steel. 4,111,025, Cl. 72-164.000.

Nakajima, Masao; Masaki, Kenji; and Inoue, Mitsumasa, to Nissan Motor Company, Limited. Air-fuel ratio control system. 4,111,170, Cl. 123-119.0EC.

Nakajima, Yasuo: *See—*
Aoyama, Syuniti; Hayashi, Yoshimasa; and Nakajima, Yasuo, 4,111,165, Cl. 123-90.150.

Nakajima, Yukihiko; Watanabe, Shuzou; Miyai, Akira; and Ishii, Masaji, to Denki Kagaku Kogyo Kabushiki Kaisha. Evaporation vessel for use in vacuum evaporation. 4,112,290, Cl. 219-275.000.

Nakamura, Hiroo: *See—*
Sakazume, Akio; Iwata, Hiroshi; Nakamura, Hiroo; Ogawa, Hiroyuki; Kashiwazaki, Susumu; and Nakao, Saneaki, 4,111,000, Cl. 62-262.000.

Nakamura, Joji: *See—*
Shima, Takesaburo; Kozima, Hiroshi; Yoshida, Tomio; and Nakamura, Joji, 4,112,021, Cl. 260-880.00R.

Nakamura, Kenji; and Seno, Iwao, to L C Chemical Company Limited. Liquid crystal display device. 4,111,533, Cl. 350-337.000.

Nakamura, Norihiko; and Kawamura, Takahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for preventing afterburning in an internal combustion engine. 4,111,175, Cl. 123-198.0DC.

Nakamura, Yoshihiro: *See—*
Sato, Kuniaki; Nakamura, Yoshihiro; and Ninomiya, Hideaki, 4,111,578, Cl. 403-189.000.

Nakamura, Yoshimitsu; and Kojima, Hajime, to Matsushita Electric Works, Ltd. Method of fabricating rotor coil for coreless motors. 4,110,901, Cl. 29-598.000.

Nakamura, Yukio; and Kato, Shogo, to Seiko Koki Kabushiki Kaisha. Resettable self-timer. 4,112,448, Cl. 354-239.000.

Nakano, Eisyo: *See—*
Kaneko, Akira; Ishibashi, Ichiroh; and Nakano, Eisyo, 4,111,889, Cl. 260-31.80M.

Nakao, Hideo: *See—*
Yoshida, Eiichi; Nakao, Hideo; Goto, Norimasa; Sugiyama, Toul; and Kashiwaya, Sadao, 4,112,141, Cl. 427-142.000.

Nakao, Saneaki: *See—*
Sakazume, Akio; Iwata, Hiroshi; Nakamura, Hiroo; Ogawa, Hiroyuki; Kashiwazaki, Susumu; and Nakao, Saneaki, 4,111,000, Cl. 62-262.000.

Nakazawa, Kiwao; and Tanimoto, Akikazu, to Nippon Kogaku K.K. Apparatus for measuring the line width of a pattern. 4,112,309, Cl. 250-560.000.

Nalco Chemical Company: *See—*
Feistel, Gerald R.; and Pessimisis, George N., 4,111,843, Cl. 252-451.000.

Namba, Mutsusuke: *See—*
Torikai, Eiichi; Kawami, Youji; Kai, Shinichiro; Namba, Mutsusuke; and Simasaki, Shuhei, 4,111,866, Cl. 521-53.000.

Nara, Toshihide: *See—*
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, 4,111,898, Cl. 260-42.530.

Narasaki Shipbuilding Company Limited: *See—*
Ohsaka, Teruhiro, 4,111,145, Cl. 114-72.000.

Nasaki, Kunio: *See—*
Yamaguchi, Kazumasa; Nasaki, Kunio; and Ohshiro, Masanori, 4,112,324, Cl. 310-353.000.

Nash, James L.; Polich, Stanley J.; and Carrico, Philip H., to General Electric Company. Biaxial film process and rotary apparatus therefor. 4,112,034, Cl. 264-95.000.

National Appliance Company: *See—*
Folsom, Max H.; and Dickman, Michael D., 4,111,753, Cl. 195-126.000.

National Marine Service, Inc.: *See—*
Wright, David A.; and Walters, Chester H., 4,111,806, Cl. 210-115.000.

National Micronetics, Inc.: *See—*
Selig, Thomas R.; Yasar, Tugrul; and Coulton, Derek A., 4,112,196, Cl. 428-594.000.

National Research Development Corporation: *See—*
Dobson, John Vincent; and Dickinson, Thomas, 4,111,777, Cl. 204-195.00M.
Firth, Jack Graham; Gentry, Stephen John; and Jones, Alan, 4,111,658, Cl. 23-232.00E.

National Starch and Chemical Corp.: *See—*
Jarowenko, Wadym, 4,112,222, Cl. 536-111.000.

Naumann, Alfred W.: *See—*
Kurtz, Abraham N.; Cunningham, Robert W.; and Naumann, Alfred W., 4,111,983, Cl. 562-535.000.

Neff, Robert O.; Grunwald, Lynn O.; Potter, Roderick B.; and Hahn, Norbert, to Rite-Hite Corporation. Leveler assembly for a loading dock. 4,110,860, Cl. 14-71.700.

Nelson, Hugh A.; Schweinebraten, Raymond H.; Salemi, Nicholas A.; and Rexroad, James O., to Westinghouse Electric Corp. Drawout switchgear with levering-in mechanism. 4,112,269, Cl. 200-50.0AA.

Nelson, Max A.: *See—*
Fosnough, Robert D.; and Nelson, Max A., 4,112,376, Cl. 325-455.000.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-ω-phenoxy-PGD analogs. 4,111,995, Cl. 260-590.00C.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxy-methyl-ω-phenoxy-PGA or 9-deoxy-9,10-didehydro-PGD analogs. 4,111,996, Cl. 260-590.00D.

Nelson, Peter H.; and Untch, Karl G., to Syntex (U.S.A.) Inc. Esters of 2-substituted-5-oxo-5H-dibenzo[a,d]cycloheptenes having pharmaceutical activity, and methods and compositions for the use thereof. 4,112,114, Cl. 424-285.000.

Nelson, Richard L., to Walnut Sand & Gravel Co. Transportable silo. 4,111,314, Cl. 214-17.00A.

Nelson, Richard L., to Exxon Research & Engineering Co. Facsimile receiver. 4,112,468, Cl. 358-280.000.

Nemeth, Suzette B., to Avery International Corporation. Refastenable diaper tab closure. 4,111,205, Cl. 128-284.000.

Nerini, Fulvio. Drill attachment for converting rotary motion to reciprocatory motion. 4,111,060, Cl. 74-56.000.

Nesseldreher, Wilfried: *See—*
Becker, Willi; and Nesseldreher, Wilfried, 4,111,595, Cl. 415-90.000.

Nesvadba, Hans; and Reinshagen, Hellmuth, to Sandoz Ltd. Polyhalo alkyl or alkenyl alcohol esters of piperazino acids. 4,112,091, Cl. 424-250.000.

Netstal-Maschinen AG: *See—*
Hotz, Alfons, 4,112,516, Cl. 366-80.000.

Nettleton, Donald E., Jr.: *See—*
Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., 4,112,071, Cl. 424-118.000.

Neuber, Ralph E.; and Rehkopf, Charles H., to GTE Sylvania Incorporated. Apparatus for high voltage conditioning cathode ray tubes. 4,111,507, Cl. 316-27.000.

Neufeld, Alonzo J. Orthopedic upper and lower leg support. 4,111,195, Cl. 128-83.000.

New England Industrial Chemical Co.: *See—*
Feingold, Michael; and Sparks, John, 4,112,054, Cl. 423-245.000.

Newbould, Gilbert J.: *See—*
Burkart, Robert C.; and Newbould, Gilbert J., 4,111,590, Cl. 408-14.000.

Newland, Gordon C.; and Pacifici, James G., to Eastman Kodak Company. Plastic moldings and sheeting. 4,112,182, Cl. 428-336.000.

NFE International, Ltd.: *See—*
DeMarco, Thomas M., 4,111,670, Cl. 55-315.000.

Nichols, Kenneth Herbert: *See—*
Engler, Edward Martin; Nichols, Kenneth Herbert; Patel, Vishnubhai Vitthalbhai; Rivera, Nilda Martinez; and Schumaker, Robert Rhees, 4,111,857, Cl. 528-226.000.

Nicholson, Edward W.: *See—*
Cahn, Robert P.; and Nicholson, Edward W., 4,110,987, Cl. 60-652.000.

Nickstadt, Gerhard A.: *See—*
Blair, Ronald A.; Nickstadt, Gerhard A.; and Imbrogno, Gaetano O., 4,111,069, Cl. 74-606.00R.

Nicolaides, Ernest D.: *See—*
Wittle, Eugene Leroy; Rebstock, Mildred Catherine; Nicolaides, Ernest D.; and Campbell, Alfred, 4,111,923, Cl. 260-112.50R.

Nidola, Antonio: *See—*
De Nora, Vittorio; Nidola, Antonio; and Spaziante, Placido Maria, 4,111,765, Cl. 204-67.000.

Nieder-Vahrenholz, Hans-George: *See—*
Niederprum, Hans; Meussdoerffer, Johann-Nikolaus; Nieder-Vahrenholz, Hans-George; and Bockelmann, Wolfgang, 4,112,046, Cl. 423-53.000.

Niedermier, James B.: *See—*
Mechling, Charles H.; Niedermier, James B.; and Steber, Norman J., 4,111,676, Cl. 65-114.000.

Niederprum, Hans; Meussdoerffer, Johann-Nikolaus; Nieder-Vahrenholz, Hans-George; and Bockelmann, Wolfgang, to Bayer Aktiengesellschaft. Disintegration of silica-rich chromite. 4,112,046, Cl. 423-53.000.

Nielsen, Ramon W.; and Widmar, Craig C., to Carnation Company. Process for counter-coloring of decharacterized meat products. 4,112,126, Cl. 426-250.000.

Nigg, Jurg. Lamp holder for twin-socket type halogen lamps. 4,111,515, Cl. 339-112.00R.

Nihon Nohyaku Co., Ltd.: *See—*
Taninaka, Kuniaki; Kurono, Hitoshi; and Kasai, Tsutomu, 4,112,089, Cl. 424-248.550.

Nihon Seikan Kabushiki Kaisha: *See—*
Kawamata, Kiyoshi, 4,111,142, Cl. 113-1.00E.

Nihon Space Union Co., Ltd.: *See—*
Kiyosawa, Kesaomi, 4,111,577, Cl. 403-172.000.

Nill, Reiner: *See—*
Fath, Horst; and Nill, Reiner, 4,112,341, Cl. 318-370.000.

Nimmer, Terry L.: *See—*
Guif, Stanley E.; Nimmer, Terry L.; Weigt, Donald A.; Wolenec, Glenn; and Gall, Richard C., 4,112,464, Cl. 358-122.000.

Ninomiya, Hideaki: *See—*
Sato, Kuniaki; Nakamura, Yoshihiro; and Ninomiya, Hideaki, 4,111,578, Cl. 403-189.000.

Nippon Gaishi Kabushiki Kaishi: *See—*
Higuchi, Noboru; Ogasawara, Takayuki; and Seike, Shoji, 4,112,193, Cl. 428-539.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Adachi, Takeshi, 4,111,092, Cl. 84-1.270.
Hinago, Yasuhiro, 4,111,091, Cl. 84-1.010.
Ogita, Minoru, 4,112,371, Cl. 325-319.000.

Nippon Kogaku K.K.: *See—*
Akasaka, Shigeo, 4,112,449, Cl. 354-173.000.
Nakazawa, Kiwao; and Tanimoto, Akikazu, 4,112,309, Cl. 250-560.000.

Nippon Oil Seal Industry Company, Ltd.: *See—*
Yazawa, Hiroyuki, 4,111,436, Cl. 277-92.000.

Nippon Shinyaku Co., Ltd.: *See—*
Inoue, Sho; Sano, Akira; and Kitaguchi, Koji, 4,112,218, Cl. 536-5.000.

Nippon Soken, Inc.: *See—*
Miyagi, Hideo; Oishi, Kiyohiko; Ishida, Yasuhiko; and Yamaguchi, Shunzo, 4,110,979, Cl. 60-276.000.

Nippon Steel Corporation: *See—*
Nakajima, Koe; and Matumoto, Hiromi, 4,111,025, Cl. 72-164.000.

Nippon Zeon Co., Ltd.: *See—*
Komuro, Keiji; Ohishi, Tetsu; Waku, Tetsuo; Sugi, Nagatoshi; Suzuki, Souichi; and Ueda, Akio, 4,111,867, Cl. 260-5.000.

Nippondenso Co., Ltd.: *See—*
Norimatsu, Hideaki; Kobayashi, Akio; Masuda, Akira; and Kitajima, Sigenori, 4,111,162, Cl. 123-32.0EE.

Nisenbaum, Yakov Arkadievich: *See—*
Buzhinsky, Vladimir Lukyanovich; Raschepkin, Konstantin Egorovich; Dunjushkin, Mikhail Grigorievich; Lysogorsky, Gennady Tikhonovich; Valeev, Rustem Ibragimovich; Nisenbaum, Yakov Arkadievich; and Ikhsanov, Deviz Faizrakhmanovich, 4,110,862, Cl. 15-88.000.

Nishikawa, Masaji; Suzuki, Yoshiro; and Yasuda, Tadahiro, to Olympus Optical Co., Ltd. Devices for developing an electrostatic charge image on a record sheet by a developer solution. 4,111,156, Cl. 118-662.000.

Nishimiya, Torazo; Oyama, Yoshishige; and Oshima, Ryoichiro, to Hitachi, Ltd. Apparatus for purifying exhaust gas. 4,110,978, Cl. 60-276.000.

Nishimura, Osamu: *See—*
Fujino, Masahiko; Nishimura, Osamu; and Kitada, Chieko, 4,111,924, Cl. 260-112.50R.

Nishizawa, Mamoru; and Hisatomi, Takashi, to Nissan Motor Company, Limited. System to feed exhaust gas into the induction passage of an internal combustion engine. 4,111,172, Cl. 123-119.00A.

Nissan Motor Company, Limited: *See—*
Aono, Shigeo; and Asano, Masaharu, 4,111,171, Cl. 123-119.0EC.
Aoyama, Syuniti; Hayashi, Yoshimasa; and Nakajima, Yasuo, 4,111,165, Cl. 123-90.150.
Kawasaki, Teruo, 4,112,338, Cl. 318-59.000.
Masuda, Joji; and Moriya, Makoto, 4,111,275, Cl. 180-68.00R.
Minami, Hidehiro, 4,111,010, Cl. 60-276.000.

Nakajima, Masao; Masaki, Kenji; and Inoue, Mitsumasa, 4,111,170, Cl. 123-119.0EC.
Nishizawa, Mamoru; and Hisatomi, Takashi, 4,111,172, Cl. 123-119.00A.
Torii, Shinkity; Kawagoshi, Sakae; Yoneshige, Tetsuhiko; and Ito, Hidehumi, 4,111,848, Cl. 252-466.0PT.
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Yoshida, Eiichi; Nakao, Hideo; Goto, Norimasa; Sugiyama, Toul; and Kashiwaya, Sadao, 4,112,141, Cl. 427-142.000.

Nitro Nobel AB: *See—*
Enoksson, Bertil Petrus, 4,111,400, Cl. 256-47.000.

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Ogiue, Katumi; Kondo, Hiroyuki; Ishikawa, Takashi; Mori, Takaaki; and Nitta, Takahisa, 4,111,724, Cl. 148-175.000.

Nix, Edwin Lee; and Davenport, Bobby E. Truck bed liner. 4,111,481, Cl. 296-39.00R.

Nocon, Barbara: *See—*
Swietoslawski, Janusz; Silowiecki, Andrzej; Ratajczak, Aleksander; Nocon, Barbara; and Baniak, Zofia, 4,112,242, Cl. 568-726.000.

Noetzel, Siegfried; Jastrow, Horst; and Uebe, Rudolf, to Hoechst Aktiengesellschaft. Bromine-containing phosphinic acid esters and flame-resistant plastic molding compositions. 4,111,900, Cl. 260-45.70P.

Noguchi, Shunsaku; Aono, Tetsuya; Araki, Yoshiaki; and Kawai, Kiyohisa, to Takeda Chemical Company, Ltd. Benzalicyclic carboxylic acid derivative. 4,111,997, Cl. 260-591.000.

Noguchi, Toyota: *See—*
Mifune, Hideo; Tani, Kenroku; and Noguchi, Toyota, 4,112,420, Cl. 340-550.000.

Noone, Michael J.; and Gatti, Arno, to General Electric Company. Ceramic-metal assembly. 4,111,572, Cl. 403-28.000.

Norgaard, Erik Bach, to Borden Ost A/S. Slice dispenser unit. 4,111,333, Cl. 221-73.000.

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Normark Corporation: *See—*
Ruder, Nils, 4,110,914, Cl. 33-355.00D.

North Oakland Development Corporation: *See—*
Blachura, Leon, 4,110,952, Cl. 52-745.000.

North Western Scaffolding Company Limited: *See—*
Knight, Stephen Vincent, 4,111,579, Cl. 403-387.000.

Northern Conveyor & Manufacturing Corp.: *See—*
Zimmerman, John E.; and Reis, Richard M., Sr., 4,111,013, Cl. 69-21.000.

Northup, Robert Powers, to United States of America, Army. Hydraulic control for hydromechanical transmission. 4,111,074, Cl. 74-867.000.

Norton Company: *See—*
Adams, David G., 4,111,667, Cl. 51-295.000.
Devine, Donald R.; and Gardiner, William L., 4,111,280, Cl. 182-8.000.

Novak, John. Electric plug lock means. 4,111,509, Cl. 339-14.00P.

Novello, Frederick C.; and Baldwin, John J., to Merck & Co., Inc. Anti-hyperuricemia composition. 4,111,944, Cl. 260-296.00R.

Nowak, Edward Norbert; Wideman, Lawson Gibson; and Hutchings, David Alan, to Goodyear Tire & Rubber Company, The. Production of hydroquinone from nonaqueous solvent systems. 4,112,243, Cl. 568-768.000.

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Komorita, Fujio; Nozawa, Nobuhiro; and Inoue, Satoshi, 4,111,707, Cl. 106-47.00Q.

Numata, Saburo; and Okazaki, Shinichiro, to Fuji Photo Optical Co., Ltd. Exposure control circuit for cameras with shutter release locking means. 4,112,446, Cl. 354-50.000.

Nunan, Craig S., to Varian Associates, Inc. Neutron irradiation therapy machine. 4,112,306, Cl. 250-499.000.

Nussbaumer, Thomas, to Patent & Inventions Ltd. Closure device for an injection molding machine or injection press. 4,111,629, Cl. 425-451.200.

Nusslein, Ludwig; and Pieroh, Ernst Albrecht, to Schering Aktiengesellschaft. 5-Nitrothiazole containing pesticide composition. 4,112,107, Cl. 424-270.000.

Nutter, Geoffrey; and McGibbon, William, to Ferranti Limited. Apparatus for writing data in unique order into and retrieving same from memory. 4,112,487, Cl. 364-200.000.

N.V. Industrieele Handelscombinatie Holland: *See—*
de Fremery, Frank P., 4,111,467, Cl. 285-136.000.

N.V. Optische Industrie "de Oude Delft": *See—*
Versteeg, Frits Johan, 4,111,528, Cl. 350-175.00E.

Oak Industries Inc.: *See—*
Guif, Stanley E.; Nimmer, Terry L.; Weigt, Donald A.; Wolenec, Glenn; and Gall, Richard C., 4,112,464, Cl. 358-122.000.

Oates, Robert M.; and Heinrich, Theodore M., to White-Westinghouse Corporation. Central oscillator for induction range using triac burner controls. 4,112,287, Cl. 219-10.49R.

Oberberger, Otto: *See—*
Eggert, Hans Joachim; Oberberger, Otto; Zenkert, Heinrich; and Kuehne, Rudi, 4,111,328, Cl. 220-4.00R.

Oberlander, Claude: *See—*
Dumont, Claude; and Oberlander, Claude, 4,112,093, Cl. 424-250.000.

Obiya, Yasuaki; and Ikeda, Saburoo, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for closing guide vanes of a hydraulic machine. 4,111,101, Cl. 91-405.000.

O'Brien, John: *See—*
Krueger, Theodore H., Jr.; Eller, Robert; O'Brien, John; and Robbins, William L., 4,111,255, Cl. 164-255.000.

Obrist, Albert; and Aichinger, Dietmar, to Albert Obrist AG. Synthetic plastic cap for bottles. 4,111,322, Cl. 215-230.000.

Ochi, Kazushi: *See—*
Miyake, Tetsuya; Seko, Maomi; Inada, Kohji; Ochi, Kazushi; and Sakamoto, Tomio, 4,112,044, Cl. 423-7.000.

O'Donnell, Brian: *See—*
Capriotti, Alfred J.; Lazzaretti, Louis G.; and O'Donnell, Brian, 4,110,889, Cl. 29-407.000.

Ogasawara, Takayuki: *See—*
Higuchi, Noboru; Ogasawara, Takayuki; and Seike, Shoji, 4,112,193, Cl. 428-539.000.

Ogawa, Hiroyuki: *See—*
Sakazume, Akio; Iwata, Hiroshi; Nakamura, Hiroo; Ogawa, Hiroyuki; Kashiwazaki, Susumu; and Nakao, Saneaki, 4,111,000, Cl. 62-262.000.

Ogawa, Mutsuo, to Ricoh Co., Ltd. Failure mode control apparatus for electronic graphic data transmission system. 4,112,467, Cl. 358-257.000.

Ogawa, Shinsaku: *See—*
Seko, Maomi; Ogawa, Shinsaku; Ajiki, Nobuo; and Yoshida, Muneo, 4,111,779, Cl. 204-255.000.

Ogawa, Sigeru: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.

Ogen, Thomas: *See—*
Abramson, Carl N.; Kohl, David; and Ogen, Thomas, 4,112,264, Cl. 179-175.30R.

Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Muting and tuning indicator system for an FM receiver. 4,112,371, Cl. 325-319.000.

Ogiue, Katumi; Kondo, Hiroyuki; Ishikawa, Takashi; Mori, Takaaki; and Nitta, Takahisa, to Hitachi, Ltd. Method of manufacturing oxide isolated semiconductor device utilizing selective etching technique. 4,111,724, Cl. 148-175.000.

Oglia, Thomas F.: *See—*
Anderson, Paul L.; and Oglia, Thomas F., 4,112,117, Cl. 424-304.000.

Ohannesian, Michael J.: *See—*
Wendler, Gunter K.; Corpus, Enrique; and Ohannesian, Michael J., 4,110,886, Cl. 29-255.000.

Ohhinata, Ichiro, to Hitachi, Ltd. Semiconductor switch circuit. 4,112,315, Cl. 307-254.000.

Ohhinata, Ichiro: *See—*
Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,112,346, Cl. 323-4.000.

Ohishi, Tetsu: *See—*
Komuro, Keiji; Ohishi, Tetsu; Waku, Tetsuo; Sugi, Nagatoshi; Suzuki, Souichi; and Ueda, Akio, 4,111,867, Cl. 260-5.000.

Ohishi, Yoshikatsu, to Rank Xerox, Ltd. Platen cover for prevention of displacement of an original. 4,111,550, Cl. 355-75.000.

Ohsaka, Teruhiro, to Narasaki Shipbuilding Company Limited. Roll on/off - lift on/off cargo vessel. 4,111,145, Cl. 114-72.000.

Ohshiro, Masanori: *See—*
Yamaguchi, Kazumasa; Nasaki, Kunio; and Ohshiro, Masanori, 4,112,324, Cl. 310-353.000.

Ohsugi, Motoyoshi: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Ikeda, Hiroshi, 4,111,990, Cl. 260-561.00R.

Ohtsu, Mitsuo: *See—*
Nagasaki, Tadashi; Akatsu, Mitsuharu; and Ohtsu, Mitsuo, 4,112,337, Cl. 315-411.000.

Ohtsubo, Toshikatsu: *See—*
Sugimura, Hidehiko; Murakami, Hisashi; Ohtsubo, Toshikatsu; and Fukuda, Kenji, 4,111,786, Cl. 208-8.000.

Ohya, Junichi: *See—*
Morita, Yoshiharu; Omata, Kenzo; Ohya, Junichi; Wagatsuma, Kazuo; and Shirasaka, Tadashi, 4,111,932, Cl. 260-239.100.

Oishi, Kiyohiko: *See—*
Miyagi, Hideo; Oishi, Kiyohiko; Ishida, Yasuhiko; and Yamaguchi, Shunzo, 4,110,979, Cl. 60-276.000.

Oka, Katsumi: *See—*
Okada, Motohiro; Oka, Katsumi; Honda, Kiyoshi; and Matsuura, Kazuo, 4,111,458, Cl. 280-739.000.

Okabe, Hiromichi: *See—*
Kotera, Norio; Okabe, Hiromichi; and Korenaga, Hiroshi, 4,111,979, Cl. 260-509.000.

Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, to Mitsubishi Rayon Co., Ltd. Process for producing unsaturated aldehydes and unsaturated carboxylic acids. 4,111,985, Cl. 562-546.000.

Okada, Motohiro; Oka, Katsumi; Honda, Kiyoshi; and Matsuura, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Safety air cushion bag in automotive vehicles. 4,111,458, Cl. 280-739.000.

Okano, Takeshi; Wada, Naoto; and Kobayashi, Yoshimitsu, to Mitsubishi Chemical Industries Limited. Process for producing alkylene glycol esters. 4,112,241, Cl. 560-246.000.

Okazaki, Shinichiro: *See—*
Numata, Saburo; and Okazaki, Shinichiro, 4,112,446, Cl. 354-50.000.

Okuhara, Shinzi: *See—*
Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,112,346, Cl. 323-4.000.

Okumura, Jun: *See—*
Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, 4,112,228, Cl. 544-26.000.

Okuno Chemical Industry Co., Ltd.: *See—*
Kawagishi, Shigemitsu; and Arisato, Yasunori, 4,111,767, Cl. 204-146.000.

Okuno, Ryuzo; Fujii, Hiroo; and Toyoda, Keio, to Kawasaki Jukogyo Kabushiki Kaisha. Recovery of heat from molten slag from metallurgical processes. 4,111,159, Cl. 122-27.000.

Olin Corporation: *See—*
McCarty, Stuart Wayne; and O'Shields, Clarence Morris, 4,112,154, Cl. 427-401.000.

Oliver, John N.: *See—*
Klein, Gerhart Paul; Oliver, John N.; and Fitchman, Arthur Emil, 4,111,155, Cl. 118-642.000.

Oliver, Owen Norman, to Halliburton Company. Wellhead isolation tool. 4,111,261, Cl. 166-86.000.

Olschewski, Wilfred W.; and Stitt, Robert M., to Burr-Brown Research Corporation. Optical coupling system. 4,112,308, Cl. 250-551.000.

Olsen, Charles R. Low restriction, normally open valve construction having a deformable bladder. 4,111,221, Cl. 137-67.000.

Olsen, Willi; and Pircher, Christian, to Siemens Aktiengesellschaft. Apparatus for determining a d-c potential in metal-encapsulated high voltage switching installations and equipments. 4,112,473, Cl. 361-1.000.

Olson, Robert E.; and Braun, James R., to Ray Cook Golf Putters, Inc. Method and apparatus for determining the center of gravity of a golf ball. 4,111,038, Cl. 73-65.000.

Olsson, Jan Christer Holger; and Carlson, Karl Gunnar, to Tex Innovation AB. Horizontal packaging apparatus. 4,110,954, Cl. 53-433.000.

Olympus Optical Co., Ltd.: *See—*
Nishikawa, Masaji; Suzuki, Yoshiro; and Yasuda, Tadahiro, 4,111,156, Cl. 118-662.000.
Takizawa, Tatsuo; and Ikeda, Masachika, 4,111,119, Cl. 101-127.100.
Yamashita, Nobuo, 4,111,529, Cl. 350-225.000.

Omata, Kenzo: *See—*
Morita, Yoshiharu; Omata, Kenzo; Ohya, Junichi; Wagatsuma, Kazuo; and Shirasaka, Tadashi, 4,111,932, Cl. 260-239.100.

Omnitext, Inc.: *See—*
Liebler, Jerome E., 4,112,252, Cl. 178-58.00R.

Ondetti, Miguel Angel; and Cushman, David W., to E. R. Squibb & Sons, Inc. Method for alleviating angiotensin related hypertension. 4,112,119, Cl. 424-317.000.

O'Neil, Walter K.: *See—*
Larson, Gerald L.; and O'Neil, Walter K., 4,112,365, Cl. 324-173.000.

O'Neill, John H., Jr., to Milliken Research Corporation. Dyeing machine. 4,111,012, Cl. 68-205.00R.

Onnestam, Alf Gunnar, to Data General Corporation. System and method for loading computer diagnostic programs. 4,112,501, Cl. 364-900.000.

Ono, Hiroomi, to Takeda Chemical Industries, Ltd. Medicinal composition comprising adrenal cortical hormone and thyroid stimulating hormone releasing hormone. 4,112,073, Cl. 424-177.000.

Onopchenko, Anatoli: *See—*
Schulz, Johann G. D.; Selwitz, Charles M.; and Onopchenko, Anatoli, 4,111,824, Cl. 252-63.000.
Schulz, Johann G. D.; Selwitz, Charles M.; and Onopchenko, Anatoli, 4,111,825, Cl. 252-63.000.

Ontario Energy Corporation: *See—*
Porteous, Kenneth; Falkenberg, Leigh; and Lane, Stephen, 4,111,789, Cl. 208-11.0LE.

Oosterling, Pieter Adriaan; and van Staveren, Hendricus Cornelis, to Multinorm, B.V. Mowing device. 4,110,959, Cl. 56-295.000.

Optical Coating Laboratory, Inc.: *See—*
Small, Edward A., Jr.; and Lewin, Ian, 4,112,483, Cl. 362-298.000.

OPTO Produkte AG: *See—*
Rottenkolber, Hans; and Steinbichler, Hans, 4,111,557, Cl. 356-168.000.

O'Rell, Michael K.: *See—*
Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., 4,111,906, Cl. 528-229.000.

Orentreich, Norman. Method of making fibers containing hair particles. 4,112,040, Cl. 264-176.00F.

Ormesher, Robert J.: *See—*
Stoehr, Robert A.; Ormesher, Robert J.; and Jacobs, Stanley C., 4,111,764, Cl. 204-64.00R.

Orr, Steven K.: *See—*
Zobrist, Gerald J.; Townsend, William L.; and Orr, Steven K., 4,112,425, Cl. 340-347.0AD.

Ortho Pharmaceutical Corporation: *See—*
Chen, Robert H. K., 4,112,078, Cl. 424-195.000.
Chen, Robert H. K., 4,112,079, Cl. 424-195.000.

Orwoll, Edward F.: *See—*
Franko-Filipasic, Borivoj Richard; Orwoll, Edward F.; and Patel, Vithal C., 4,111,701, Cl. 106-15.0FP.

Osaka Fuji Kogyo, Ltd.: *See—*
Fujimori, Shigeaki; Hirata, Shigekazu; and Kitamura, Akira, 4,110,863, Cl. 15-104.10C.

O'Shields, Clarence Morris: *See—*
McCarty, Stuart Wayne; and O'Shields, Clarence Morris, 4,112,154, Cl. 427-401.000.

Oshima, Ryoichiro: *See—*
Nishimiya, Torazo; Oyama, Yoshishige; and Oshima, Ryoichiro, 4,110,978, Cl. 60-276.000.

Osiennik, Pawel: *See—*
Dubik, Adam; Kowalski, Henryk Zenon; Osiennik, Pawel; and Krol, Franciszek, 4,112,295, Cl. 250-237.00G.

Ostberg, Henry D. Cigarette lighter. 4,111,638, Cl. 431-13.000.

Ostlie, Dean A.: *See—*
Lange, Heinz E.; and Ostlie, Dean A., 4,111,462, Cl. 282-27.500.

Oswald, Alexis A.: *See—*
Mueller, Wolfgang H.; Oswald, Alexis A.; and Hall, Daniel N., 4,112,024, Cl. 260-956.000.

Otani, Akoi: *See—*
Kurokawa, Takashi; Fujiwara, Michio; Akutsu, Yoshio; Otani, Akoi; Nagasawa, Harumi; Matsuo, Masujiro; Ishii, Yasuo; Ogawa, Sigeru; Itoh, Schun'ichi; and Takei, Daisuke, 4,112,260, Cl. 179-18.0FC.

Otani, Kanji, to Sumitomo Electric Industries, Ltd. Apparatus for manufacturing electric wire having a coated layer of cross linked synthetic resinous material. 4,111,621, Cl. 425-97.000.

Otten, Thomas Harvey: *See—*
Gillis, Alva Knox; Otten, Thomas Harvey; and Bardos, Andrew Miklos, 4,111,519, Cl. 350-3.660.

Ottestad, Jack B. Hydraulically-powered impact tool. 4,111,269, Cl. 173-134.000.

Owen, Charles. Apparatus for detecting and removing contaminants from a refrigeration system. 4,110,998, Cl. 62-125.000.

Owens, Albert H.: *See—*
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Owens-Illinois, Inc.: *See—*
Amberg, Stephen W., 4,111,738, Cl. 156-458.000.
Rutherford, Arthur J., 4,111,295, Cl. 198-399.000.

Owens, James Carl, to Eastman Kodak Company. Multiwavelength light beam deflection and modulation. 4,112,461, Cl. 358-63.000.

Oxy Metal Industries Corporation: *See—*
Reghi, Gary A.; and Farina, Samuel T., 4,111,722, Cl. 148-6.15R.

Oya, Hiroo; and Tatejima, Masakazu, to Fuji Heavy Industries Limited. Thermal reactor system. 4,110,976, Cl. 60-282.000.

Oyama, Yoshishige: *See—*
Nishimiya, Torazo; Oyama, Yoshishige; and Oshima, Ryoichiro, 4,110,978, Cl. 60-276.000.

Ozawa, Jun: *See—*
Ishikawa, Toshio; Ozawa, Jun; and Tamura, Masaoki, 4,112,418, Cl. 340-659.000.

P. R. Mallory & Co., Inc.: *See—*
Klein, Gerhart Paul; Oliver, John N.; and Fitchman, Arthur Emil, 4,111,155, Cl. 118-642.000.
Przybyla, Franciszek J.; and Smith, Michael J., 4,112,198, Cl. 429-27.000.

Pachnek, Rudolf: *See—*
Lang, Winfried; Schmidt, Dietrich; Hofer, Johann; Pachnek, Rudolf; and Rath, Heinz-Jorg, 4,112,057, Cl. 423-342.000.

Pacifici, James G.: *See—*
Newland, Gordon C.; and Pacifici, James G., 4,112,182, Cl. 428-336.000.

Pacifico, Antonio: *See—*
Rescalli, Carlo; and Pacifico, Antonio, 4,112,009, Cl. 260-677.00A.

Paczuski, Andrew Waclaw, to Sundstrand Corporation. Hermetic compressor lubrication system. 4,111,612, Cl. 417-372.000.

Padeg A.G.: *See—*
Lucas, Bernard, 4,111,304, Cl. 206-534.000.

Padrun, John. Connecting clip for joining concrete reinforcing bars. 4,110,951, Cl. 52-686.000.

Pairaudeau, Reginald David; Turnbull, David; and Bevan, Leonard Graham, to Union Carbide Corporation. Method of incorporating carbon fibers into cement to produce reinforced structures having improved flexural strengths. 4,111,710, Cl. 106-90.000.

Pakhomov, Alexei Ivanovich: *See—*
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich, 4,112,246, Cl. 13-2.00P.

Pall Corporation: *See—*
Pall, David B., 4,112,159, Cl. 428-36.000.

Pall, David B., to Pall Corporation. Continuous production of tubular modular filter elements using nonwoven webs from thermoplastic fibers and products. 4,112,159, Cl. 428-36.000.

Pallos, Ferenc, to Stauffer Chemical Company. Certain cyclopropane thiolcarboxylates and use thereof as miticides. 4,112,116, Cl. 424-301.000.

Palmer, James E.; Lavallee, Donald C.; and Huber, George, to Spectron Corporation. Electrical switching apparatus and control system for use therewith. 4,112,401, Cl. 335-206.000.

Pan, Peter N. Y.; and Wronski, Steve F., to Continental Group, Inc., The. Induction heating using parallel electric/magnetic fields. 4,112,285, Cl. 219-10.410.

Panama Overseas Shipping Corporation Inc.: *See—*
Heerema, Pieter Schelte, 4,110,993, Cl. 405-228.000.
Panel Clip Co., The: *See—*
Carr, Ronald R., 4,111,114, Cl. 100-100.000.
Pankratz, Richard R.; and Kegg, Larry R. Cheese packaging apparatus. 4,111,087, Cl. 83-210.000.
Panter, Hubert Gerald: *See—*
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,110,900, Cl. 29-596.000.
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,112,041, Cl. 264-263.000.
Paranjpe, Suresh C.; and Burnett, James E., to Mead Corporation, The. Jet drop copying apparatus. 4,112,469, Cl. 358-296.000.
Paris, Rene Antoine; Amblard, Paul Alexis; and Rousset, Abel Claude. Production of metals and metal alloys of high purity. 4,111,686, Cl. 75-0.50A.
Park, Hydow. Immunological testing devices and methods. 4,111,754, Cl. 195-127.000.
Parke, Davis & Company: *See—*
Fleming, Robert Willerton, 4,112,103, Cl. 424-267.000.
Wittle, Eugene Leroy; Rebstock, Mildred Catherine; Nicolaides, Ernest D.; and Campbell, Alfred, 4,111,923, Cl. 260-112.50R.
Parker, Donald L.: *See—*
Gordon, Ralph A.; Mathues, Thomas P.; and Parker, Donald L., 4,110,985, Cl. 60-548.000.
Parker, Roy B.; and Saindon, Richard R., to Albany International Corp. Process of making air filter fabric. 4,112,037, Cl. 264-126.000.
Parmer, Kenneth Ronald; and Little, David Murray, to AMP Incorporated. Strain relief cover for flat flexible cable connector. 4,111,512, Cl. 339-105.000.
Partain, James H., to Stone Container Corporation. Paperboard wardrobe container. 4,111,300, Cl. 206-280.000.
Partridge, Charles C.: *See—*
McClurg, William E.; and Partridge, Charles C., 4,111,393, Cl. 251-174.000.
Pascale, Frank R.; and Preuss, Ralph I. Method and apparatus for producing factory-trimmed wall covering. 4,111,124, Cl. 101-426.000.
Passler, Helmar: *See—*
Heger, Adolf; Mockel, Gerrit; Passler, Helmar; Pohlink, Jochen; and Wunsch, Werner, 4,112,136, Cl. 427-36.000.
Pasternak, Rudolf; and Bauer, Jochen, to Steag A.G. Apparatus for the gasification under pressure of bituminous coal, especially of fine coal in a generator. 4,111,665, Cl. 48-77.000.
Patel, Vishnubhai Vitthalbhai: *See—*
Engler, Edward Martin; Nichols, Kenneth Herbert; Patel, Vishnubhai Vitthalbhai; Rivera, Nilda Martinez; and Schumaker, Robert Rhees, 4,111,857, Cl. 528-226.000.
Patel, Vithal C.: *See—*
Franko-Filipasic, Borivoj Richard; Orwoll, Edward F.; and Patel, Vithal C., 4,111,701, Cl. 106-15.0FP.
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Benninger, Hans; Eggimann, Fritz; and Enkegaard, Ole, 4,112,476, Cl. 361-42.000.
Kach, Alfred, 4,112,293, Cl. 250-199.000.
Patent & Inventions Ltd.: *See—*
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Waldorf, Lindsey E.; and Monroe, Kenneth E., 4,112,393, Cl. 331-109.000.
Patterson, Nelson. Space travel game. 4,111,427, Cl. 273-250.000.
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Paul, Stewart N.: *See—*
Shair, Salem A.; Paul, Stewart N.; and Cairns, James E., 4,111,679, Cl. 71-67.000.
Paul Troester Maschinenfabrik: *See—*
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Paul, Wolfgang, to VEB Polygraph Leipzig, Kombinat fuer Polygraphische Maschinen und Austruestungen. Arrangement for shutting off the drive for a supply roll. 4,111,741, Cl. 156-504.000.
Paulin, Arthur. Cartridge for hardware packages. 4,111,297, Cl. 206-44.120.
Paulson, Harold E. Two color swing-away press. 4,111,120, Cl. 101-175.000.
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Pecora, Daniel. Tire cleaning apparatus. 4,110,861, Cl. 15-53.00B.
Peeples, Denny L. Load sensing proportioner with proportioner delay. 4,111,495, Cl. 303-6.00C.
Peggs, Albert L., to Peggs Company Inc., The. Display supporting merchandise section divider. 4,111,307, Cl. 211-1.500.
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Peissel, Michel Francois; and Trillo, Robert Longley. Gas cushion vehicle. 4,111,277, Cl. 180-122.000.
Pellegrino, Peter P. Practice hockey puck. 4,111,419, Cl. 273-1.00B.
Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 3-[5-(4-Nitrophenyl)furfurylamino)]-1,2-propanediol hydrochloride. 4,111,964, Cl. 260-347.700.
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Jaeger, Robert Charles, 4,111,484, Cl. 297-410.000.
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Peppler, Michael Seigman; and Bakermans, Johannes Cornelis Wilhelmus, to AMP Incorporated. Cable harness assembly and electrical testing machine. 4,110,880, Cl. 29-33.00K.
Percarpio, Edward P., to Becton, Dickinson and Company. Closure for air evacuated container. 4,111,326, Cl. 215-247.000.
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Perkins, Lee E., to Kajan Specialty Company, Inc. Hydraulic jarring device. 4,111,271, Cl. 175-297.000.
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Phelps, Charles W. Sewage disposal method and system. 4,111,225, Cl. 137-240.000.

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Thompson, Max W., 4,110,996, Cl. 62-54.000.
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Piber, Earl T., to Cutler-Hammer, Inc. Snap-in means for mounting electrical devices or the like in a support panel aperture. 4,112,282, Cl. 200-296.000.
Pichon, Jacques, to Societe Generale de Constructions Electriques et Mecaniques Alsthom. Device for the removal of a liquid layer on water. 4,111,809, Cl. 210-242.00R.
Pickett, William Hayden. Construction assemblies. 4,111,401, Cl. 256-13.100.
Pieren, William R.; and Stetson, Robert F., to General Atomic Company. Orifice tip. 4,112,288, Cl. 219-121.00P.
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Pilolla, Joseph J., to Sloan Valve Company. Pinch valve. 4,111,391, Cl. 251-5.000.
Pilvet, Aksel. Card operated lock assembly. 4,111,018, Cl. 70-352.000.
Pinto, Robert R. Multiple hook-up, movable axle trailer with removable track extensions, slidable kingpin, and pivotal axle assemblies. 4,111,450, Cl. 280-405.00A.
Pinto, Robert R. Multi-trailer, dolly-connected, movable-axle, containerized cargo trailer system. 4,111,451, Cl. 280-408.000.
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Plum, Hans; and Schroeer, Ulrich, to Schering Aktiengesellschaft. Bactericidal and fungicidal tin compounds. 4,112,084, Cl. 424-226.000.
Plummer, William T., to Polaroid Corporation. Defocused unicell photometer with diffusion zone. 4,111,561, Cl. 356-225.000.
Plumridge, Jane. Medical applicator assembly for chain cystourethrographic procedure. 4,111,190, Cl. 128-2.00A.
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Popeil, Samuel J., to Popeil Brothers, Inc. Method for processing and filling a dough product. 4,112,127, Cl. 426-283.000.
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Pray, Winston C., to Flexible Steel Lacing Company. Staple fastening tool. 4,111,080, Cl. 29-243.510.
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RCA Corporation: *See—*
D'Aiello, Robert Vincent, 4,112,457, Cl. 357-30.000.
Faulkner, Richard Dale, 4,112,325, Cl. 313-95.000.
Faulkner, Richard Dale, 4,112,326, Cl. 313-95.000.
Willis, Donald Henry, 4,112,465, Cl. 358-190.000.
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Redemann, Carl T., to Dow Chemical Company, The. Preparation of 2,3,5-trichloropyridine. 4,111,938, Cl. 260-290.0HL.
Redmann, Jerome J.: *See—*
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Regar, Karl-Nikolaus, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Auxiliary drive assembly for accelerating a vehicle. 4,110,982, Cl. 60-413.000.
Rege, Satish L.; and Woo, Beng-Yu, to Burroughs Corporation. Fast access charge coupled device memory organizations for a semiconductor chip. 4,112,504, Cl. 365-77.000.
Reghi, Gary A.; and Farina, Samuel T., to Oxy Metal Industries Corporation. Tannin treatment of aluminum with a fluoride cleaner. 4,111,722, Cl. 148-6.15R.
Regie Nationale des Usines Renault: *See—*
Dera, Alain, 4,110,847, Cl. 2-421.000.
Regnier, Gilbert; Canevari, Roger; and Poignant, Jean-Claude, to Science Union et Cie. 1-Naphthylmethyl-4-(thiazolyl-2)-piperazines. 4,112,092, Cl. 424-250.000.
Regueiro, Jose F., to Teledyne Industries, Inc. Internal combustion engine. 4,111,177, Cl. 123-32.0ST.
Reh, Lothar; Hirsch, Martin; and Plass, Ludolf, to Metallgesellschaft Aktiengesellschaft. Method of and apparatus for carrying out an exothermic process. 4,111,158, Cl. 122-4.00D.
Rehackova, Bozena: *See—*
Havel, Josef; Vobornik, Vaclav; Ripka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Planansky, Agaton; and Rehackova, Bozena, 4,110,961, Cl. 57-58.890.
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Reiher, Max A. W.; and Faust, Richard C., to J. Ray McDermott & Co Diving bell handling system and method. 4,111,313, Cl. 214-15.00R
Reineke, Horst. Stayed ground mine, especially for rivers. 4,111,125, Cl 102-18.00R.

Reiner, Udo; and Hinrichsen, Gerhard, to Siemens Aktiengesellschaft. Digital correlation receiver. 4,112,498, Cl. 364-728.000.
Reiniger, Haigh M. Process for producing fused cellulose products. 4,111,744, Cl. 162-100.000.
Reinshagen, Hellmuth: *See—*
Nesvadba, Hans; and Reinshagen, Hellmuth, 4,112,091, Cl. 424-250.000.
Reis, Richard M., Sr.: *See—*
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Reitano, Andrew. Exercising apparatus to aid in the practice of karate. 4,111,415, Cl. 272-94.000.
Remmington, Timothy Alan; and Robinson, William, to Imperial Chemical Industries Limited. Polymeric film production. 4,111,625, Cl. 425-174.80E.
Renckhoff, Gustav: *See—*
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Rennard, Jean-Jacques Francois: *See—*
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Rentema, Albertus Pieter: *See—*
Boer, Melle; and Rentema, Albertus Pieter, 4,110,906, Cl. 30-43.920.
Rescalli, Carlo; and Pacifico, Antonio, to Snamprogetti, S.p.A. Method for removing acetylenic compounds from saturated, olefinic and dienic hydrocarbons or mixtures thereof. 4,112,009, Cl. 260-677.00A.
Research Corporation: *See—*
Harmening, Denise M., 4,112,070, Cl. 424-101.000.
Huber, Thomas L., 4,112,069, Cl. 424-93.000.
Restaino, Alfred Joseph, to ICI Americas Inc. Stabilized polymerizable polyester compositions. 4,112,019, Cl. 260-866.000.
Rexroad, James O.: *See—*
Nelson, Hugh A.; Schweinebraten, Raymond H.; Salemi, Nicholas A.; and Rexroad, James O., 4,112,269, Cl. 200-50.0AA.
Reynolds, Harold John, Jr., to Johns-Manville Corporation. Friction material for railroad disc brakes. 4,111,891, Cl. 260-38.000.
Rhone-Poulenc Industries: *See—*
Gruffaz, Max; and Locatelli, Jean-Louis, 4,111,919, Cl. 526-264.000.
Masotti, Robert; Biola, Georges; and Guerpillon, Henri, 4,111,662, Cl. 422-231.000.
Meiller, Francois, 4,112,185, Cl. 428-403.000.
Rhone-Poulenc S.A.: *See—*
Decor, Jean-Pierre, 4,111,998, Cl. 260-599.000.
Ricciardi, Ronald J.; Ferrara, Angelo; Hartmann, Joseph L.; and Lauterbach, Gary R., to Acrison, Incorporated, a part interest. Weigh feeding apparatus. 4,111,272, Cl. 177-50.000.
Rice, William J., to United States of America, National Aeronautics and Space Administration. Indicated mean-effective pressure instrument. 4,111,041, Cl. 73-115.000.
Richard, Joseph G. Adjustable windmill. 4,111,601, Cl. 416-41.000.
Richardson, Norman: *See—*
Miles, Peter; Richardson, Norman; and Finan, Michael Anthony, 4,111,804, Cl. 210-58.000.
Richmond, Michael Hugh: *See—*
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Richter, Marvin J. Method and apparatus for separating particulate materials of different specific gravities. 4,111,797, Cl. 209-14.000.
Richtzenhain, Hermann; and Schrage, Klaus, to Dynamit Nobel Aktiengesellschaft. Heptabromodibenzofuran, highly brominated dibenzofurans and the preparation and use thereof as flame retardants. 4,111,902, Cl. 260-45.80A.
Ricoh Co., Ltd.: *See—*
Iguchi, Susumi, 4,112,443, Cl. 354-31.000.
Kobayashi, Kazuo; Suzuki, Akira; Tanaka, Motoharu; Inaba, Norihiko; and Yuyama, Hisao, 4,111,823, Cl. 252-62.10P.
Ogawa, Mutsuo, 4,112,467, Cl. 358-257.000.
Sakamoto, Koji, 4,111,152, Cl. 118-7.000.
Yamauchi, Satoshi, 4,112,470, Cl. 360-88.000.
Riebel, Hans-Jochem: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammen, Ingeborg; and Homeyer, Bernhard, 4,112,080, Cl. 424-200.000.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,112,081, Cl. 424-200.000.
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Summers, Kenneth L., 4,111,331, Cl. 220-319.000.
Rigali, Paul D. Window guard release. 4,111,477, Cl. 292-252.000.
Rikagaku Kenkyusho: *See—*
Goto, Eiichi; Soma, Takashi; and Idesawa, Masanori, 4,112,305, Cl. 250-492.00R.
Rini, Guy T.: *See—*
Carp, Ralph W.; Ang, Leoncio T.; and Rini, Guy T., 4,111,497, Cl. 303-110.000.
Rios, Donald J. Lamp-starting device. 4,112,336, Cl. 315-362.000.
Ripka, Josef: *See—*
Havel, Josef; Vobornik, Vaclav; Ripka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Planansky, Agaton; and Rehackova, Bozena, 4,110,961, Cl. 57-58.890.
Ripy, Howard W.: *See—*
Mangum, Norman W., Jr.; and Ripy, Howard W., 4,112,499, Cl. 364-732.000.
Rist, Bruno A.: *See—*
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Neff, Robert O.; Grunwald, Lynn O.; Potter, Roderick B.; and Hahn, Norbert, 4,110,860, Cl. 14-71.700.
Rivera, Nilda Martinez: *See—*
Engler, Edward Martin; Nichols, Kenneth Herbert; Patel, Vishnubhai Vitthalbhai; Rivera, Nilda Martinez; and Schumaker, Robert Rhees, 4,111,857, Cl. 528-226.000.
Rizzotto, John D., Sr., to Raymond Lee Organization, Inc., The, a part interest. Vehicle top camper. 4,111,479, Cl. 296-23.0MC.
Robbins, William L.: *See—*
Krueger, Theodore H., Jr.; Eller, Robert; O'Brien, John; and Robbins, William L., 4,111,255, Cl. 164-255.000.
Robert Bosch GmbH: *See—*
Affeldt, Karl-Heinz; and Raupach, Gerhard, 4,111,057, Cl. 73-709.000.
Ehrmann, Karl; Gerber, Richard; and Doderer, Klaus, 4,111,168, Cl. 123-117.00A.
Kamin, Gerhard Robert, 4,112,463, Cl. 358-105.000.
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Mohr, Adolph, 4,112,320, Cl. 310-154.000.
Roozenbeek, Herman, 4,112,408, Cl. 338-32.00H.
Sauer, Rudolf; and Vogt, Dieter, 4,111,045, Cl. 73-228.000.
Roberts, Alvin V. Book with cover and method and apparatus for making the cover. 4,111,460, Cl. 281-29.000.
Roberts, Edward A. Exercising device for assisting a person to perform pullups. 4,111,414, Cl. 272-62.000.
Roberts, Herbert E.; and Wharff, Donald D. Franklin stove attachments. 4,111,182, Cl. 126-110.00B.
Roberts, Marvin E., to Roberts, Marvin E.; Ward, James E.; Roberts, Reid A.; and Kinkor, Charlene R. Key construction. 4,111,021, Cl. 70-406.000.
Roberts, Reid A.: *See—*
Roberts, Marvin E., 4,111,021, Cl. 70-406.000.
Roberts, Willard Lewis, to Beatrice Foods Co. Nutritionally balanced single food composition and method of production. 4,112,123, Cl. 426-72.000.
Robinson, Frank; and Whatmough, Nigel Stephen, to Courtaulds Limited. Sweater blank and method of knitting same. 4,111,008, Cl. 66-176.000.
Robinson, Frank; Girt, Keith Harry; and Whatmough, Nigel Stephen, to Courtaulds Limited. Knitting method and article for a body panel. 4,111,009, Cl. 66-189.000.
Robinson, Morris D. Platform lift. 4,111,317, Cl. 214-77.00P.
Robinson, William: *See—*
Remmington, Timothy Alan; and Robinson, William, 4,111,625, Cl. 425-174.80E.
Roccaforte, Harry I., to Champion International Corporation. Self-contained baking tray carton. 4,111,306, Cl. 206-611.000.
Roch, Gerald V.; and Hadley, Chris L., to Hurco Manufacturing Company Inc. Twin motor and screw drive for workpiece positioning stops and for press ram drive and the like. 4,112,493, Cl. 364-476.000.
Rocha, James; and Carter, L. Dean. Limited access wire stripper. 4,111,076, Cl. 81-9.50A.
Rockerath, John L.; and Schreck, Harold J., to Cluett, Peabody & Co. Inc. Sewing machine material preassembly system. 4,111,138, Cl. 112-141.000.
Rockwell International Corporation: *See—*
Dorsman, Adrian K., 4,112,428, Cl. 340-347.0NT.
Gelnett, Leland E., 4,111,223, Cl. 137-115.000.
Heimbigner, Gary L.; and Booher, Robert K., 4,112,296, Cl. 307-279.000.
Hodson, Donald R., 4,111,067, Cl. 74-572.000.
Rodot, Frederic B. Method of transferring passengers from vehicles to a station. 4,111,130, Cl. 104-28.000.
Roe, Anthony Maitland: *See—*
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,111,935, Cl. 544-224.000.
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Roge, Ralph R.; Ziermann, Mark S.; and Wilkis, Anthony J., to Wescom, Inc. Miniature multi-impedance transformer module. 4,112,481, Cl. 361-395.000.
Rohbock, Klaus; Wiemers, Rudolf; Woditsch, Peter; and Thiel, Reinhard, to Bayer Aktiengesellschaft. Process for regenerating spent vanadium oxide containing oxidation catalysts. 4,111,832, Cl. 252-412.000.
Rohe, Lothar: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammen, Ingeborg; and Homeyer, Bernhard, 4,112,080, Cl. 424-200.000.
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Rohrbach, Peter H., to Harris Corporation. Adhesive dispensing apparatus for card tipper. 4,111,153, Cl. 118-7.000.
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Hannes, George John; Rohweder, Theodore Richard; Dreikorn, Hans Wendell; and Shepherd, Philip Bickford, 4,112,174, Cl. 428-220.000.
Roiko, Russell A., to Minnesota Mining and Manufacturing Company. Cable connecting station. 4,110,896, Cl. 29-566.300.

Rokach, Joshua: *See—*
Rooney, Clarence Stanley; Rokach, Joshua; and Atkinson, Joseph George, 4,112,112, Cl. 424-274.000.
Roldan, Cristobal Martinez: *See—*
Jarque, Ricardo Granados; Cartes, Juan Bosch; Cabiro, Jorge Canals; Roldan, Cristobal Martinez; and Peinado, Fernando Rabadan, 4,111,945, Cl. 260-297.00R.
Rolnick, Edward M., to Gulf & Western Manufacturing Company. Combination tap and die wrench. 4,111,591, Cl. 408-117.000.
Roman, Stephan; and Spitko, Richard J., to Boeing Company, The. Composite hingeless rotor hub for rotary wing aircraft. 4,111,605, Cl. 416-141.000.
Ronnholm, Arvi. Method of recovering heat as well as fractions containing volatile alcohols and sulphur compounds from black liquor in connection with pulping. 4,111,743, Cl. 162-16.000.
Rooney, Clarence Stanley; Rokach, Joshua; and Atkinson, Joseph George, to Merck & Co., Inc. Pyrrolo[2,1-b] [3]benzazepines useful for producing a skeletal muscle relaxing or tranquilizing effect. 4,112,112, Cl. 424-274.000.
Roozenbeek, Herman, to Robert Bosch GmbH. Device for producing an electrical pulse in response to passage of a magnetically conducting member through an air gap. 4,112,408, Cl. 338-32.00H.
Rosche, Paul: *See—*
Ederer, Georg; Fischer, Adolf; Rosche, Paul; Troll, Helmar; Wurst, Wolfgang; Hengl, Helmut; and Seidl, Jiri, 4,111,163, Cl. 123-52.00M.
Roscoe Brown Corporation: *See—*
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Rosenberger, Michael, to Hoffmann-La Roche Inc. Preparation of food coloring agents. 4,111,992, Cl. 260-586.00R.
Rosenfeld, Jerome E. Dry transfer product and process for using same. 4,111,734, Cl. 156-234.000.
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Roskam, Willem Gerrit. Apparatus for preparative electrophoresis. 4,111,785, Cl. 204-299.00R.
Ross, Donald K.; and Wright, Wallace A., Jr. Flat plate solar collector. 4,111,186, Cl. 126-271.000.
Ross, Douglas: *See—*
Blackburn, Keith; and Ross, Douglas, 4,111,273, Cl. 180-14.00R.
Ross Operating Valve Co.: *See—*
Cameron, Russell J., 4,111,226, Cl. 137-269.000.
Rossi, Alberto: *See—*
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Haas, Georges; and Rossi, Alberto, 4,112,099, Cl. 424-263.000.
Roth, Nathan, to Alza Corporation. Cartoned medical instrument package. 4,111,302, Cl. 206-363.000.
Rothenberger GmbH Werkzeuge und Maschinen KG: *See—*
Rothenberger, Gunther, 4,111,661, Cl. 422-117.000.
Rothenberger, Gunther, to Rothenberger GmbH Werkzeuge und Maschinen KG. Oxygen generator with cartridge holder for oxygen-yielding cartridges. 4,111,661, Cl. 422-117.000.
Rothman, Edward A.; and Carlson, Charles E. K., to United Technologies Corporation. Breakaway fan blade. 4,111,600, Cl. 416-2.000.
Rottenkolber, Hans; and Steinbichler, Hans, to OPTO Produkte AG. Method for the optical determination and comparison of shapes and positions of objects, and arrangement for practicing said method. 4,111,557, Cl. 356-168.000.
Roudebush, Allen T.; and Thompson, Kenneth P., to Champion International Corporation. Concrete module unit. 4,112,173, Cl. 428-215.000.
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Rousset, Abel Claude: *See—*
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Routh, Donald E.: *See—*
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Rubashev, Grigory Markovich; Alperovich, Vladislav Ruvimovich; and Lazovsky, Jury Iosifovich. Contactless switch for regulating taps of induction electric machines. 4,112,348, Cl. 323-43.50S.
Rubino, Andrew M.; and Margres, Jack J., to Armour Pharmaceutical Company. Resuspendable dried antacids. 4,112,072, Cl. 424-155.000.
Ruckdeschel, Frederick R., to Xerox Corporation. Multi-particle developability regulating system. 4,111,151, Cl. 118-7.000.
Ruder, Nils, to Normark Corporation. Hand compasses. 4,110,914, Cl. 33-355.00D.
Rudolph, Hans: *See—*
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Rudolph, Howard W., Jr.: *See—*
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Ruhf, Truman J., to GAF Corporation. Water based ink composition for vinyl flooring. 4,111,878, Cl. 260-29.6ME.
Runyon, John F. Hinge joint assembly. 4,111,574, Cl. 403-54.000.
Russell, Malcolm Clifford, to Russell Manufacturing Company. X-ray film mount. 4,112,165, Cl. 428-134.000.
Russell Manufacturing Company: *See—*
Russell, Malcolm Clifford, 4,112,165, Cl. 428-134.000.
Rutherford, Arthur J., to Owens-Illinois, Inc. High speed method of and apparatus for similarly orienting articles. 4,111,295, Cl. 198-399.000.
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Bindell, Jeffrey Bruce; Holschwandner, Lowell Henry; Labuda, Edward Franklin; and Ryden, William Dennis, 4,111,783, Cl. 204-298.000.
Rys, Tadeusz J. Means connecting circuit breaker and auxiliary feature modules. 4,112,270, Cl. 200-50.00C.
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Periers, Gilbert, 4,111,733, Cl. 156-204.000.
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Saarbergwerke Aktiengesellschaft: *See—*
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Sabel, Hans-Dieter: *See—*
Sextro, Gunter; Burg, Karlheinz; Schlaf, Helmut; Sabel, Hans-Dieter; and Heller, Alwin, 4,111,912, Cl. 528-45.000.
Sadak, John C.: *See—*
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Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. Novel penicillins and cephalosporins and process for producing the same. 4,112,090, Cl. 424-251.000.
Saindon, Richard R.: *See—*
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Saint-Gobain Industries: *See—*
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Sakagami, Teruo: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,111,780, Cl. 204-266.000.
Sakamoto, Koji, to Ricoh Co., Ltd. Electrostatographic apparatus comprising improved development bias means. 4,111,152, Cl. 118-7.000.
Sakamoto, Tomio: *See—*
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Sakazume, Akio; Iwata, Hiroshi; Nakamura, Hiroo; Ogawa, Hiroyuki; Kashiwazaki, Susumu; and Nakao, Saneaki, to Hitachi, Ltd. Room air conditioner. 4,111,000, Cl. 62-262.000.
Sakemoto, Mitsuhiro: *See—*
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Sakurazawa, Hatuo. Wheat flour product manufacturing equipment. 4,111,109, Cl. 99-353.000.
Salditt, Ferdinand; and Hansen, William L., to Minnesota Mining and Manufacturing Company. Porous adhesive tape. 4,112,177, Cl. 428-304.000.
Salemi, Nicholas A.: *See—*
Nelson, Hugh A.; Schweinebraten, Raymond H.; Salemi, Nicholas A.; and Rexroad, James O., 4,112,269, Cl. 200-50.0AA.
Salsich, Robert Charles; and Bartell, Roger Edwin, to Eastman Kodak Company. Thermal processor. 4,112,280, Cl. 219-216.000.
Sam, Donnie Joe, to Du Pont de Nemours, E. I., and Company. Substituted dioxolanes and photosensitive and degradable polymers useful in imaging. 4,111,960, Cl. 260-340.90R.
Samuel Moore and Company: *See—*
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Sanada, Hisao; Saito, Ritaro; Funabashi, Masayuki; Inada, Kazuyoshi; and Seguchi, Koji, to Kureha Kagaku Kogyo Kabushiki Kaisha. Dry method for the denitrification of exhaust gas containing nitrogen oxides. 4,112,053, Cl. 423-239.000.
Sander, Bruno; Bonitz, Eckhard; and Scherling, Kurt, to BASF Aktiengesellschaft. Manufacture of fibrids of polyolefins. 4,112,029, Cl. 264-11.000.
Sanders Associates, Inc.: *See—*
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Brokmann, Manfred; Sanders, Kurt; Sanders, Dieter; and Westhoff, Hermann, 4,112,163, Cl. 428-107.000.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,111,434, Cl. 277-3.000.
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, to Sando Iron Works Co., Ltd. Method of pressure seal simultaneously employing air-balance of a high pressure steamer and an apparatus therefor. 4,111,434, Cl. 277-3.000.
Sandow, Louis W. Mixing catalyst and carrier gas for curing foundry molds and cores. 4,112,515, Cl. 366-17.000.
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Anderson, Paul L.; and Oglia, Thomas F., 4,112,117, Cl. 424-304.000.
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Bormann, Gerhard; and Berthold, Richard, 4,112,111, Cl. 424-274.000.
Meybeck, Jacques, 4,111,930, Cl. 260-207.500.
Nesvadba, Hans; and Reinshagen, Hellmuth, 4,112,091, Cl. 424-250.000.
Sandstrom, Wayne. Water distribution system. 4,111,224, Cl. 137-207.000.
Sanfilippo, Domenico; and Morelli, Morello, to ANIC S.p.A. Selective hydrogenation in gaseous phase of cyclopentadiene or a mixture of ethylene and acetylene using a palladium zinc catalyst deactivated with ammonia, ammonium chloride, steam, or their mixtures. 4,112,007, Cl. 260-666.00A.
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Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., 4,111,759, Cl. 203-7.000.
Sano, Akira: *See—*
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Sarhan, Ali: *See—*
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Sartori, Guido; and Leder, Frederic, to Exxon Research & Engineering Co. Process for removing carbon dioxide containing acidic gases from gaseous mixtures using a basic salt activated with a hindered amine. 4,112,050, Cl. 423-223.000.
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Sato, Kuniaki; Nakamura, Yoshihiro; and Ninomiya, Hideaki, to Kajima Corporation; and Hitachi Metals. Fittings for connecting columns and beams of steel frame construction. 4,111,578, Cl. 403-189.000.
Sato, Masamichi, to Fuji Photo Film Co., Ltd. Spin-coated photosensitive silver halide photomask. 4,111,698, Cl. 96-79.000.
Sato, Mitsuo; Miyagawa, Norio; and Kobayashi, Juichi, to Mitsubishi Rayon Co., Ltd. Metallized plastic molding. 4,112,190, Cl. 428-457.000.
Satterlee, Lowell D., to University of Nebraska, Board of Regents of the. Extraction of protein from *Phaseolus aureus, Phaseolus vulgaris* and *Phaseolus lunatus* beans using sodium chloride. 4,111,927, Cl. 260-123.500.
Saucy, Gabriel: *See—*
Cohen, Noal; and Saucy, Gabriel, 4,111,961, Cl. 260-345.80R.
Sauer, Rudolf; and Vogt, Dieter, to Robert Bosch GmbH. Air flow meter. 4,111,045, Cl. 73-228.000.
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Sawada, Takashi: *See—*
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Sawada, Yoshio: *See—*
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Saxelin, Ilpo: *See—*
Jolanki, Jorma; Saxelin, Ilpo; and Ponni, Hannu, 4,111,560, Cl. 356-205.000.
Saylor, Lee H., to Sealed Power Corporation. Oil control ring spacer-expander with improved slip latch. 4,111,437, Cl. 277-139.000.
Sbarra, Frank; and Spector, George. Eye drop dispenser. 4,111,200, Cl. 128-233.000.
Schade, Gerhard: *See—*
Bier, Gerhard; Blaschke, Franz; aus der Funten, Helmut; and Schade, Gerhard, 4,111,921, Cl. 528-338.000.
Schaeffer, James Robert; Snoke, Roy Eugene; and Harris, Harry Wayne, to Eastman Kodak Company. Composition for chromatography. 4,111,838, Cl. 252-430.000.
Schafft, Hugo Willy, to Motorola, Inc. High stiffness speaker cone. 4,112,168, Cl. 428-198.000.
Schantz, Spencer C. Compact fail-safe buzzer. 4,112,402, Cl. 335-252.000.
Scharfe, Gerhard: *See—*
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McAllister, William D.; and Rajczi, Frank D., 4,110,883, Cl. 29-148.40S.
Scherbing, Frank J., to Chicago Lock Co. Pick-resistant axial split-pin tumbler-type lock mechanism. 4,111,020, Cl. 70-363.000.
Schering Aktiengesellschaft: *See—*
Nusslein, Ludwig; and Pieroh, Ernst Albrecht, 4,112,107, Cl. 424-270.000.
Plum, Hans; and Schroeer, Ulrich, 4,112,084, Cl. 424-226.000.
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Scheuneman, James Herman, to Sperry Rand Corporation. Conditional bypass of error correction for dual memory access time selection. 4,112,502, Cl. 364-900.000.
Schittko, Johannes; and Rauchenecker, Konrad, to Siemens Aktiengesellschaft. Tunable selective super heterodyne receiver. 4,112,375, Cl. 325-452.000.
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Schleifstein, Robert, to Coats & Clark, Inc. Method for making fire retardant zipper. 4,111,647, Cl. 8-4.000.
Schlumberger Technology Corporation: *See—*
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Schmerling, Louis, to UOP Inc. Transesterification of carboxylic acids. 4,112,235, Cl. 560-1.000.
Schmidlin, Albertus E., to United States of America, Army. Centrifugal rolling ball locking device. 4,111,127, Cl. 102-237.000.
Schmidt, Dietrich: *See—*
Lang, Winfried; Schmidt, Dietrich; Hofer, Johann; Pachnek, Rudolf; and Rath, Heinz-Jorg, 4,112,057, Cl. 423-342.000.
Rath, Heinz-Jorg; Schmidt, Dietrich; and Zulehner, Werner, 4,111,742, Cl. 156-617.0SP.
Schmidt, Ferenc J., to Ametek, Inc. Method of separating solids from a fluid system. 4,111,768, Cl. 204-151.000.
Schmidt, Ingo, to Thomas GmbH. Mounting cup for aerosol valves. 4,111,339, Cl. 222-394.000.
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, to V E B Jenapharm. Lithium pantoate and optically active isomers thereof and process of making the same. 4,111,987, Cl. 562-401.000.
Schmidt, John Kenneth, to Amcord, Inc. Rotary seal. 4,111,439, Cl. 277-153.000.
Schmidt, Stephen R., to Copar Corporation. Jam detector. 4,112,379, Cl. 328-5.000.
Schmidt, Walter: *See—*
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Schneider, Louis; and Graham, David E., to GAF Corporation. Mononitrotrifluoromethyl diphenylethers. 4,112,002, Cl. 260-612.00R.
Schneider, Michael. Hydraulic boring device. 4,111,468, Cl. 285-190.000.
Schneider, Rolf. Rotary piston engine using electric heating to flash motive fluid. 4,110,984, Cl. 60-509.000.
Schneider, Wolfgang: *See—*
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Schnitzler, Hanns. Multi-zone drilling system with spiral drills and quick adjustment for flat and deep drillings at a minimum jutting-out length of the drill attachment. 4,111,592, Cl. 408-197.000.
Scholten, Joseph J. F.: *See—*
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Schrage, Klaus: *See—*
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Schreiber, Ronald E.; and Christensen, La Mon D. Arrow and arrow attachment. 4,111,424, Cl. 273-106.50C.
Schroder, Hubert; and Klein, Werner, to Glaswerk Schott & Gen. Method for the production of light-reflecting layers on a surface of a transparent glass article. 4,112,142, Cl. 427-166.000.
Schroeder, Merrill W., to Pol, Gerrit Vander. Herbicide applying machine. 4,111,364, Cl. 239-77.000.
Schroeer, Ulrich: *See—*
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Schrotter, Wolfgang Adalbert: *See—*
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Schubert, Hans; and Wunder, Friedrich, to Hoechst Aktiengesellschaft. Process for nitrating toluene. 4,112,006, Cl. 260-645.000.
Schuhmacher, Gunter; and Muhlfeld, Horst, to Carl Freudenberg, Firma. Polyurethane elastic molding material. 4,111,913, Cl. 528-273.000.
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Schultz, John F.: *See—*
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Schulz, Johann G. D.; Selwitz, Charles M.; and Onopchenko, Anatoli, to Gulf Research & Development Co. Liquid dielectric composition based on a fraction derived from the alkylation product of benzene with ethylene. 4,111,824, Cl. 252-63.000.
Schulz, Johann G. D.; Selwitz, Charles M.; and Onopchenko, Anatoli, to Gulf Research & Development Co. Liquid dielectric composition based on a fraction derived from the alkylation product of benzene with ethylene. 4,111,825, Cl. 252-63.000.
Schumaker, Robert Rhees: *See—*
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Schwartz, Steven William. Cup member for a lamp having support means for a chimney and a shade. 4,112,484, Cl. 362-314.000.
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Scott Paper Company: *See—*
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Scott, Robert K. Instant open goose and duck pit cover. 4,110,941, Cl. 52-66.000.
Scott, Walter W., deceased (by Scott, Jayne E., executrix), to Emerson Electric Co. Cycling pilot burner control system with pressure switch. 4,111,640, Cl. 431-46.000.
Scott, William J., to Ideal Industrie, Inc. Screw-on wire connector and method of making it. 4,112,251, Cl. 174-87.000.
Seal Incorporated: *See—*
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Sealed Air Corporation: *See—*
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Seamon, Paul. Extractor for plastic risers. 4,111,078, Cl. 81-71.000.
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Seefried, Carl G., Jr.; Whitman, Robert D.; and Van Cleve, Russell, to Union Carbide Corporation. Polymer/polyols and polyurethane forms and elastomers therefrom. 4,111,865, Cl. 521-137.000.
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Seiler, William, Jr., to David Kopf Instruments. Notched tubular cutting instrument. 4,111,207, Cl. 128-305.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
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Seko, Maomi; Ogawa, Shinsaku; Ajiki, Nobuo; and Yoshida, Muneo, to Asahi Kasei Kogyo Kabushiki Kaisha. Bipolar system electrolytic cell. 4,111,779, Cl. 204-255.000.
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Seko, Maomi: *See—*
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Selig, Thomas R.; Yasar, Tugrul; and Coulton, Derek A., to National Micronetics, Inc. Beam lead arrangement for microelectronic devices. 4,112,196, Cl. 428-594.000.
Seliger, Robert L.; and Ward, James W., to United States of America, Navy. Field-effect transistor with extended linear logarithmic transconductance. 4,112,455, Cl. 357-23.000.
Selinko, George Joseph, to Motorola, Inc. Retractable mounting clip arrangement for miniature portable apparatus or the like. 4,111,343, Cl. 224-5.00H.
Selkirk, Thomas. Piling fabricated from synthetic material. 4,110,989, Cl. 405-248.000.
Sellmann, Dieter; and Thallmair, Ernst, to Hoechst Aktiengesellschaft. Process for the manufacture of metal-azomethine complex compounds. 4,111,971, Cl. 260-438.50R.
Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., to American Home Products Corporation. N-(2-pyrazinyl) 1H- (or 2H) tetrazole-5-carboxamide derivatives for the prevention of immediate type hypersensitivity reactions. 4,112,094, Cl. 424-250.000.
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Selman, Charles M., to Phillips Petroleum Company. Lithium alkenoxides in preparation of functional liquid conjugated diene polymers. 4,111,915, Cl. 528-58.000.
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Semple, Alexander M., to Ranco Incorporated. Oven control. 4,111,358, Cl. 236-15.00A.
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Sera, Hidefumi; Shiraishi, Hisashi; and Ishii, Tsumoru, to Fuji Photo Film Co., Ltd. Hardening agent for gelatin and method for hardening gelatin. 4,111,926, Cl. 260-117.000.
Sessa, Terenzio. Cable-actuated, car-side-window-lifting mechanism. 4,110,935, Cl. 49-352.000.
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Seward, Glen, to Cincinnati Electronics Corp. Method of and apparatus for matching a load circuit to a drive circuit. 4,112,395, Cl. 333-17.00M.
Sextro, Gunter; Burg, Karlheinz; Schlaf, Helmut; Sabel, Hans-Dieter; and Heller, Alwin, to Hoechst Aktiengesellschaft. Process for the manufacture of coarse-granular oxymethylene polymers. 4,111,912, Cl. 528-45.000.
Sforza, Pasquale M. Fluid flow energy conversion systems. 4,111,594, Cl. 415-1.000.
Shackle, Dale Richard: *See—*
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Shai, Michael Charles, to United States of America, National Aeronautics and Space Administration. Electrically conductive thermal control coatings. 4,111,851, Cl. 252-518.000.
Shair, Salem A.; Paul, Stewart N.; and Cairns, James E., to Chemed Corporation. Polyquaternary compounds for the control of microbiological growth. 4,111,679, Cl. 71-67.000.
Shaner, Jay R.; and Edelman, Robert, to Celanese Corporation. Reinforced polyoxymethylene molding composition capable of forming composite articles exhibiting improved physical properties. 4,111,887, Cl. 260-37.0AL.
Shanto, Albert J.; and Bevins, Bruce V. Smoking pipe. 4,111,213, Cl. 131-173.000.
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Sharpe, Cecil H., to General Motors Corporation. Fuel nozzle. 4,111,369, Cl. 239-400.000.
Shaw, Robert F. Apparatus and method for examining blood vessels of interest by tracking position with respect to time of particles introduced therein. 4,111,191, Cl. 128-2.05F.
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Gergen, William P.; and Davison, Sol, 4,111,896, Cl. 260-42.180.
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Sheridon, Nicholas K., to Xerox Corporation. Projection system of high efficiency. 4,111,538, Cl. 353-122.000.
Sherman, Clarence A., to McDermid, Terry. Air operated hydraulic pump apparatus. 4,110,983, Cl. 60-477.000.
Sherwin, Walter M., to General Motors Corporation. Circuit for energizing a fuel injector valve coil. 4,112,477, Cl. 361-155.000.
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Shiff, Milo B., to Anaconda Company, The. Key telephone system and method. 4,112,261, Cl. 179-99.000.
Shima, Takesaburo; Kozima, Hiroshi; Yoshida, Tomio; and Nakamura, Joji, to Sumitomo Naugatuck Co., Ltd. Process for producing thermoplastic resin. 4,112,021, Cl. 260-880.00R.
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Shimono, Yukio: *See—*
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Shin-Etsu Chemical Company: *See—*
Arai, Shigeru; and Akiya, Fumio, 4,111,810, Cl. 210-23.00H.
Shinagawa, Mitsuhisa: *See—*
Miyamoto, Hiroshi; and Shinagawa, Mitsuhisa, 4,112,373, Cl. 325-440.000.
Shiomi, Kozen; and Shimizu, Ryoichi, to Toyo Soda Manufacturing Co., Ltd.; and Japan Steel Works Limited, The. Multi-core rotary circular die. 4,111,630, Cl. 425-462.000.
Shionogi & Co., Ltd.: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,111,680, Cl. 71-88.000.
Shirai, Yujiro; and Satake, Akinori, to Shirai, Yujiro. Biorhythm chart drawing-up apparatus. 4,112,434, Cl. 346-33.0ME.
Shiraishi, Hisashi: *See—*
Sera, Hidefumi; Shiraishi, Hisashi; and Ishii, Tsumoru, 4,111,926, Cl. 260-117.000.
Shirasaka, Tadashi: *See—*
Morita, Yoshiharu; Omata, Kenzo; Ohya, Junichi; Wagatsuma, Kazuo; and Shirasaka, Tadashi, 4,111,932, Cl. 260-239.100.
Shirk, Albert; and Redmond, John Peter, to AMP Incorporated. Process for rendering kapton or other polyimide film photo sensitive to catalyst for the deposition of various metals in pattern thereon. 4,112,139, Cl. 427-54.000.
Shore, Frank. Presentation-frame and backing units pad. 4,110,923, Cl. 40-152.000.
Shoup, Floyd K.: *See—*
Rao, Ganta V.; Shoup, Floyd K.; and Popenhagen, Gerald R., 4,112,133, Cl. 426-650.000.
Shoup, Robert D.: *See—*
Blaszyk, Paul E.; Shoup, Robert D.; and Wein, William J., 4,112,032, Cl. 264-42.000.
Shultz, Andrew; and Stepan, F. Quinn, to Stepan Chemical Company. Particulate composition of sodium alpha olefin sulfonate and sodium silicate. 4,111,853, Cl. 252-536.000.
Sick, Hans-Hermann; and Habel, Erich, to Carl Freudenberg, Firma. Self-arresting sealing ring. 4,111,441, Cl. 277-183.000.
Siebenhofer, Gottfried: *See—*
Sigott, Siegfried; Suessenbeck, Heinrich; Zitz, Alfred; and Siebenhofer, Gottfried, 4,111,227, Cl. 137-469.000.
Siemens Aktiengesellschaft: *See—*
Auracher, Franz; Zeitler, Karl-Heinz; and Rauscher, Walter, 4,111,522, Cl. 350-96.210.
Bergmann, Horst, 4,112,360, Cl. 324-80.000.
Bodlaj, Viktor, 4,111,552, Cl. 356-4.000.
Cirkler, Werner; and Krueger, Hans, 4,111,534, Cl. 350-345.000.
Eggert, Hans Joachim; Oberberger, Otto; Zenkert, Heinrich; and Kuehne, Rudi, 4,111,328, Cl. 220-4.00R.
Elsner, Peter, 4,112,513, Cl. 365-222.000.
Hofer, Ernst; and Wintzer, Klaus, 4,112,426, Cl. 340-347.00C.
Hofer, Ernst; Hirschmann, Peter; and Wintzer, Klaus, 4,112,427, Cl. 340-347.00C.
Huettner, Robert; and Kuetterer, Gerhard, 4,112,304, Cl. 250-476.000.
Jonsson, Sven Erik; and Ekstrom, Olov Valter, 4,112,272, Cl. 200-61.58R.
Kattner, Erich; and Rosenstock, Guenter, 4,112,435, Cl. 346-140.00R.
Kohler, Helmut, 4,112,275, Cl. 200-147.00R.
Kremzow, Martin, 4,112,030, Cl. 264-25.000.
Krueger, Hans; Mahlein, Hans F.; and Rauscher, Walter, 4,112,157, Cl. 428-1.000.
Olsen, Willi; and Pircher, Christian, 4,112,473, Cl. 361-1.000.
Reiner, Udo; and Hinrichsen, Gerhard, 4,112,498, Cl. 364-728.000.
Schittko, Johannes; and Rauchenecker, Konrad, 4,112,375, Cl. 325-452.000.
Veith, Werner, 4,112,329, Cl. 313-491.000.
Veith, Werner; and Bechteler, Martin, 4,112,332, Cl. 315-169.0TV.
Wilhelm, Wilhelm, 4,112,253, Cl. 178-58.00R.
Sigma Instruments, Inc.: *See—*
Field, John H., 4,112,319, Cl. 310-49.00R.
Signatron, Inc.: *See—*
Monsen, Peter, 4,112,370, Cl. 325-40.000.
Signetics Corporation: *See—*
Heald, Raymond A., 4,112,511, Cl. 365-188.000.
Sigott, Siegfried; Suessenbeck, Heinrich; Zitz, Alfred; and Siebenhofer, Gottfried, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Pressure relief valve for hydraulic mine supporting elements. 4,111,227, Cl. 137-469.000.
Sigott, Siegfried; Zitz, Alfred; and Wrulich, Herwig, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Method for cutting minerals and cutting machine. 4,111,488, Cl. 299-10.000.
Sigri Elektrographit GmbH: *See—*
Pietzka, Gerhard; and Tillmanns, Harald, 4,111,794, Cl. 208-131.000.
Silowiecki, Andrzej: *See—*
Swietoslawski, Janusz; Silowiecki, Andrzej; Ratajczak, Aleksander; Nocon, Barbara; and Baniak, Zofia, 4,112,242, Cl. 568-726.000.
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Silvio, Paul A.: *See—*
Bosy, George; Edwards, Edwin N.; Hoffbeck, Willis M.; Silvio, Paul A.; and Warwick, Leonard A., 4,112,131, Cl. 426-582.000.
Simasaki, Shuhei: *See—*
Torikai, Eiichi; Kawami, Youji; Kai, Shinichiro; Namba, Mutsusuke; and Simasaki, Shuhei, 4,111,866, Cl. 521-53.000.
Simionescu, Radu, to Institutul Oncologic Bucuresti. Respiratory valve, especially for anaesthetic circuits. 4,111,228, Cl. 137-512.000.
Simons, James Brandon, to Celanese Polymer Specialties Company. Controlled reactivity epoxy resin compositions. 4,111,909, Cl. 528-123.000.
Simons, Steven R. Percussion instrument mounting apparatus. 4,111,095, Cl. 84-422.00R.

Simpson, Howard D., to Union Oil Company of California. Hydrodesulfurization of hydrocarbon with cobalt-molybdenum-alumina catalyst of high metal content and high surface area. 4,111,795, Cl. 208-216.000.
Singer Company, The: *See—*
Mecklenborg, Richard A., 4,112,462, Cl. 358-104.000.
Peters, David L., 4,112,500, Cl. 364-900.000.
Taylor, Charles L., 4,111,536, Cl. 352-132.000.
Singer, Malcolm Scott, to Chevron Research Company. N-alkyl or alkoxy-N'-substituted hydrocarbyl urea. 4,111,683, Cl. 71-104.000.
Sirlin, Jerome. Composite image design method. 4,111,696, Cl. 96-42.000.
Sivonen, Matti: *See—*
Matikainen, Martti; and Sivonen, Matti, 4,111,065, Cl. 74-410.000.
Sjolie, Robert H. Modular base for waterbed or the like. 4,110,854, Cl. 5-2.00R.
Sjostrand, Karl Evert: *See—*
Andersson, Karl-Gunnar; and Sjostrand, Karl Evert, 4,111,611, Cl. 417-360.000.
Skandinavisk Radio & Television Akts.: *See—*
Dalkov, Poul Flemming, 4,111,431, Cl. 274-9.00A.
SKF Industrial Trading & Development Co., B.V.: *See—*
Johnston, Gordon Boyd; and Strandberg, Hasse Eivind, 4,111,501, Cl. 308-201.000.
Skidmore, William J., III, to Del Mar Avionics. Pulse echo ultrasonic system. 4,111,055, Cl. 73-620.000.
Skinner, Robert Thomas John, to Lucas Industries Limited. Fuel pumping apparatus. 4,111,173, Cl. 123-139.0AQ.
Sklarz, William A.: *See—*
Kao, Henry S.; Sklarz, William A.; and Weinstock, Leonard M., 4,111,948, Cl. 260-302.00R.
Sklodowsky, Paul George. Motorcycle passenger support. 4,111,448, Cl. 280-289.00E.
Slater, Robert Antony: *See—*
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,111,935, Cl. 544-224.000.
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,111,936, Cl. 544-239.000.
Sleder, Richard L.: *See—*
Fitzner, Arthur O.; and Sleder, Richard L., 4,111,174, Cl. 123-148.0CC.
Sloan Valve Company: *See—*
Pilolla, Joseph J., 4,111,391, Cl. 251-5.000.
Slocomb, Leon F., Jr. Window frame manufacture. 4,110,942, Cl. 52-100.000.
Small, Edward A., Jr.; and Lewin, Ian, to Optical Coating Laboratory, Inc. Lighting fixture and method using multiple reflections. 4,112,483, Cl. 362-298.000.
Smart, Charles L.: *See—*
Thomas, Norman W.; Model, Frank S.; and Smart, Charles L., 4,111,684, Cl. 71-115.000.
Smirnov, Anatoly Ilich: *See—*
Junovich, July Moiseevich; Zhukovsky, Sergei Semenovich; Sudakas, Lev Girshovich; Turkina, Ljudmila Ivanovna; Smirnov, Anatoly Ilich; Lyass, Abram Moiseevich; and Teplyakov, Sergei Dmitrievich, 4,111,705, Cl. 106-38.350.
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Smith, Albert J.: *See—*
Wilson, George E.; Friesen, Milo E.; and Smith, Albert J., 4,112,025, Cl. 261-29.000.
Smith, Chester L.; and Everswick, David N., to United States of America, Army. Apparatus for determining the transmissivity of an optical medium. 4,111,559, Cl. 356-201.000.
Smith, Christopher Joseph: *See—*
Smith, Noel Edward; and Smith, Christopher Joseph, 4,111,781, Cl. 204-280.000.
Smith, Curtis P.; and Ulrich, Henri, to Upjohn Company, The. O,O'-Bis(hydroxyalkyl) N,N-di(lower-alkyl)aminomethane phosphonates. 4,112,014, Cl. 260-945.000.
Smith, Gary R., to Kusel Equipment Company. Portable cheese press frame assembly. 4,111,110, Cl. 99-456.000.
Smith International, Inc.: *See—*
Duncan, Grant, 4,111,262, Cl. 166-99.000.
Smith, James C.: *See—*
Alstrin, Charles E.; McClung, Carl L.; and Smith, James C., 4,111,166, Cl. 123-97.00B.
Smith, James D.B., to Westinghouse Electric Corp. Flexible resin rich epoxide-mica winding tape insulation containing organo-tin catalysts. 4,112,183, Cl. 428-363.000.
Smith, Joseph E. Safety device for preventing unauthorized actuation of a touch-actuated mechanism. 4,110,928, Cl. 42-66.000.
Smith Kline & French Laboratories Limited: *See—*
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,111,935, Cl. 544-224.000.
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,111,936, Cl. 544-239.000.
Durant, Graham John; and Ganellin, Charon Robin, 4,112,104, Cl. 424-270.000.
Smith, Loring E.; and Aloisi, Mario J. Tamper-proof emergency exit window grate. 4,111,472, Cl. 292-92.000.
Smith, Michael J.: *See—*
Przybyla, Franciszek J.; and Smith, Michael J., 4,112,198, Cl. 429-27.000.
Smith, Noel Edward; and Smith, Christopher Joseph. Dangler assembly for electro-chemical apparatus. 4,111,781, Cl. 204-280.000.
Smith, Thomas Basil, III, to Charles Stark Draper Laboratory, Inc., The. Fault-tolerant network with node branching. 4,112,488, Cl. 364-200.000.
Smith, Willis A., to Wasylchak, Russell W., a part interest. Universal jig for table rotary cutting tools. 4,111,409, Cl. 269-304.000.
Smithers, Michael James, to Imperial Chemical Industries Limited. Methods and compositions for use in animal husbandry. 4,112,120, Cl. 424-323.000.
SmithKline Corporation: *See—*
Berges, David A., 4,112,086, Cl. 424-246.000.
Berges, David A., 4,112,088, Cl. 424-246.000.
Gleason, John Gerald, 4,111,981, Cl. 562-444.000.
Hill, David T., 4,112,113, Cl. 424-275.000.
Holden, Kenneth George; and Yim, Nelson Chi-Fai, 4,111,957, Cl. 260-332.20C.
Snamprogetti, S.p.A.: *See—*
Degen, Ludwig; Viglia, Aurelio; Fascetti, Eugenio; and Perricone, Elena, 4,111,749, Cl. 195-2.000.
Rescalli, Carlo; and Pacifico, Antonio, 4,112,009, Cl. 260-677.00A.
Sniderman, Albert, to Burroughs Corporation. Pressure-sensitive writing stylus. 4,111,052, Cl. 73-432.00R.
Snoke, Roy Eugene: *See—*
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Sobin, Bernard: *See—*
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Societa' Farmaceutici Italia S.p.A.: *See—*
Arcamone, Federico; Bargiotti, Alberto; di Marco, Aurelio; and Penco, Sergio, 4,112,076, Cl. 424-180.000.
Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe Europeenne des Produits Refractaires: *See—*
Kiehl, Jean-Pierre; Jost, Victor; and Clavaud, Bernard Alain, 4,111,711, Cl. 106-97.000.
Societe Generale de Constructions Electriques et Mecaniques Alsthom: *See—*
Pichon, Jacques, 4,111,809, Cl. 210-242.00R.
Societe Lorraine de Laminage Continu: *See—*
Rault, Daniel Raymond, 4,111,032, Cl. 72-366.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Bimond, Jean-Pierre; and Lazarre, Flavien, 4,111,829, Cl. 252-361.000.
Gratacos, Jaime; Perrolet, Christian; and Mousteou, Roger, 4,111,040, Cl. 73-105.000.
Solar Energy Research Corp.: *See—*
Wiegand, James B., 4,111,187, Cl. 126-271.000.
Soma, Takashi: *See—*
Goto, Eiichi; Soma, Takashi; and Idesawa, Masanori, 4,112,305, Cl. 250-492.00R.
Sonneville, Roger Paul, to Suprotec S.A. Device for insulating and fastening railway rails. 4,111,361, Cl. 238-338.000.
Sorrells, Samuel Ray, to Burlington Industries, Inc. Tufted pile fabric and method of making and installing the same. 4,112,161, Cl. 428-95.000.
Sowa, Tsuneo: *See—*
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Sowman, Harold G.: *See—*
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Spadini, Gianfranco Luigi; and Demessemaekers, Emiel Mathilde Anna Alfons, to Procter & Gamble Company, The. General purpose household cleaner. 4,111,854, Cl. 252-541.000.
Spanel, Abram N.; Eiland, P. Frank; and Jacobs, David R., to Spanel, Abram N. Yarn clamping apparatus. 4,111,136, Cl. 112-79.00R.
Sparks, Bryan D.: *See—*
Meadus, Frederick W.; Sparks, Bryan D.; and Puddington, Ira E., 4,111,874, Cl. 260-23.00R.
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Spaziante, Placido Maria: *See—*
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Special Metals Corporation: *See—*
Baranow, Sanford, 4,111,685, Cl. 75-951.000.
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Spectron Corporation: *See—*
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Spellman, Gordon B.: *See—*
Jaskolski, Stanley V.; Lade, Robert W.; Schutten, Herman P.; and Spellman, Gordon B., 4,112,458, Cl. 357-38.000.
Sperber, Henry. Feeding apparatus for a pneumatic conveying system. 4,111,493, Cl. 302-42.000.
Sperry, Charles Richard, to Sealed Air Corporation. Bladder actuated pumping system. 4,111,613, Cl. 417-394.000.
Sperry Rand Corporation: *See—*
Lins, Stanley James, 4,112,503, Cl. 365-29.000.
Marchetti, Michael John, 4,112,271, Cl. 200-52.00R.
Scheuneman, James Herman, 4,112,502, Cl. 364-900.000.
Thatcher, Steve Douglas, 4,112,380, Cl. 328-62.000.
Spevack, Jerome S., to Deuterium Corporation. Improvements in evaporation condensation systems. 4,112,062, Cl. 423-580.00H.
Spinnstoffabrik Zehlendorf Aktiengesellschaft: *See—*
Dolle, Meinolf, 4,111,375, Cl. 242-18.0PW.
Spitko, Richard J.: *See—*
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Spoelder, Gerrit Adriaan, to U.S. Philips Corporation. Memory with dynamic information storage. 4,112,514, Cl. 365-222.000.
Sprengling, Gerhard R.; and Edelman, Leonard E., to Westinghouse Electric Corp. Apparatus and method for chemically removing plastics. 4,111,715, Cl. 134-10.000.
Square D Company: *See—*
Leive, Ernest W., 4,112,248, Cl. 174-50.000.
SRI International: *See—*
Henry, David W.; and Tong, George L., 4,112,217, Cl. 536-4.000.
Stager, Francis W., to Litton Industrial Products, Inc. Conical compression spring. 4,111,407, Cl. 267-166.000.
Stahl, William F., to Westinghouse Electric Corp. Ceramic rotor blade assembly for a gas turbine engine. 4,111,603, Cl. 416-95.000.
Stahle, Martin. Centrifugal pump for viscous media. 4,111,599, Cl. 415-215.000.
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Boesten, Wilhelmus H. J., 4,111,980, Cl. 562-401.000.
Bour, Edmond H. J. P., 4,111,904, Cl. 260-45.75N.
de Cooker, Mario G. R. T., 4,112,232, Cl. 544-192.000.
van Montfoort, Abraham; and Scholten, Joseph J. F., 4,111,842, Cl. 252-447.000.
Stampfli, Harald, to Lucifer S.A. Servo-controlled valve. 4,111,230, Cl. 137-625.500.
Standard Brands Incorporated: *See—*
Colilla, William; and Lloyd, Norman E., 4,111,750, Cl. 195-31.00F.
Standard Car Truck Company: *See—*
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Standard Oil Company (Indiana): *See—*
Karayannis, Nicholas M.; and Grams, Harold, 4,111,836, Cl. 252-429.00B.
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Ashani, Yacov; Amitai, Gavriel; Grunfeld, Yona; Kalir, Asher; and Cohen, Sasson, 4,112,082, Cl. 424-209.000.
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Frechette, Michael W.; and Fasching, James L., 4,111,036, Cl. 73-23.000.
Stauffer Chemical Company: *See—*
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Pallos, Ferenc, 4,112,116, Cl. 424-301.000.
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Steber, Norman J.: *See—*
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Stefanski, Anthony T.: *See—*
Carson, John Robert; Carmosin, Richard J.; and Stefanski, Anthony T., 4,111,954, Cl. 260-326.620.
Steger, Thomas: *See—*
Field, Roger; and Steger, Thomas, 4,111,093, Cl. 84-267.000.
Steigelman, James Q., to GTE Sylvania Incorporated. Refractory metal carbide articles and laminating method for producing same. 4,112,180, Cl. 428-332.000.
Steinberg, Friedhelm; and Voss, Gunter, to Metallgesellschaft Aktiengesellschaft. Printing paste. 4,111,704, Cl. 106-25.000.
Steinbichler, Hans: *See—*
Rottenkolber, Hans; and Steinbichler, Hans, 4,111,557, Cl. 356-168.000.
Steinbrecher Corporation: *See—*
Steinbrecher, Donald H., 4,112,374, Cl. 325-446.000.
Steinbrecher, Donald H., to Steinbrecher Corporation. Doubly balanced mixer with optimized dynamic range. 4,112,374, Cl. 325-446.000.
Steinebrunner, Walter; Zahoransky, Arthur; and Zahoransky, Heinz, to Zahoransky, Anton. Method and apparatus for feeding bristles in brush making machines. 4,111,491, Cl. 300-21.000.
Steiner, Edward L., to Xerox Corporation. Apparatus and method for noise immunity in distributing control signals in electrostatographic processing machines. 4,111,543, Cl. 355-14.000.
Steiner, Edward L., to Xerox Corporation. Apparatus and method for noise immunity for control signals in electrostatographic processing machines. 4,111,544, Cl. 355-14.000.
Steininger, Alfred: *See—*
Kuhls, Jurgen; Steininger, Alfred; and Fitz, Herbert, 4,112,211, Cl. 526-219.000.
Steinkopf, Wolfgang Otto Gotthard; and Drabek, Rudolf, to U.S. Philips Corporation. Television player with an identification signal adding device. 4,112,445, Cl. 358-127.000.
Stemmle, Denis J., to Xerox Corporation. Duplex document copying. 4,111,547, Cl. 355-24.000.
Stendel, Wilhelm: *See—*
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Stenudd, Sven Gunnar Valter, to Facit Aktiebolag. Method for making dust cover for printing needles. 4,110,884, Cl. 29-163.50R.
Stepan Chemical Company: *See—*
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Sterling Drug Inc.: *See—*
Ackerman, James H., 4,111,937, Cl. 260-281.0GN.
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Sterrett, Dale E., to Tenneco Inc. Louver flow muffler. 4,111,279, Cl. 181-264.000.
Stetson, Robert F.: *See—*
Pieren, William R.; and Stetson, Robert F., 4,112,288, Cl. 219-121.00P.
Stevens, Albert F. Extraction of contents from envelopes. 4,110,958, Cl. 53-386.000.
Stevens, Robert R., to Sanders Associates, Inc. Capacitor matrix correlator for use in the correlation of periodic signals. 4,112,496, Cl. 364-728.000.
Stevenson, James Santon, to Terminator Products, Inc. Method and apparatus for preparing empty chemical containers for disposal. 4,111,716, Cl. 134-10.000.
Stevenson, Peter Alan: *See—*
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Stewart, Norman C.: *See—*
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Stichting Energieonderzoek Centrum Nederland: *See—*
Theyse, Frederik H., 4,112,311, Cl. 290-44.000.
Stiefel, Kenneth Erwin, to Bell Telephone Laboratories, Incorporated. Telephone station repeater. 4,112,262, Cl. 179-170.00G.
Stiles, Alvin B., to Du Pont de Nemours, E. I., and Company. Methanol synthesis catalyst. 4,111,847, Cl. 252-463.000.
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Stitt, Thomas Detlor; and Williamson, Dennis Francis, to General Electric Company. D-C motor flashover protection. 4,112,475, Cl. 361-33.000.
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Stone Container Corporation: *See—*
Partain, James H., 4,111,300, Cl. 206-280.000.
Strand, Neal T.; and Esboldt, Richard J., to Minnesota Mining and Manufacturing Company. Automatic scroll sign. 4,110,925, Cl. 40-466.000.
Strandberg, Hasse Eivind: *See—*
Johnston, Gordon Boyd; and Strandberg, Hasse Eivind, 4,111,501, Cl. 308-201.000.
Stratienko, Andrew, to Dresser Industries, Inc. Valve actuator and spring biasing cartridge. 4,111,070, Cl. 74-625.000.
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Stubbings, James Henry, to Potomac Applied Mechanics, Inc. Assembly of straight duct and transitions. 4,111,143, Cl. 113-1.00N.
Stueben, Kenneth Charles, to Union Carbide Corporation. Radiation curable pressure sensitive adhesive composition. 4,111,769, Cl. 204-159.150.
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Suarez, Rafael: *See—*
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Sucheck, Robert J. Shingle gage. 4,110,911, Cl. 33-188.000.
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Sugatsune Industrial Co., Ltd.: *See—*
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Sugi, Nagatoshi: *See—*
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Yoshida, Eiichi; Nakao, Hideo; Goto, Norimasa; Sugiyama, Toul; and Kashiwaya, Sadao, 4,112,141, Cl. 427-142.000.
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Sullivan, Neal; and Cook, George E., to KFC Corporation. Control system for energizing electrical resistance heaters in cooking fluids. 4,111,443, Cl. 219-497.000.
Sulzer Brothers Ltd.: *See—*
Bula, Karl, 4,111,251, Cl. 152-219.000.
Sumimoto, Shinzaburo: *See—*
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Sumitomo Chemical Company, Limited: *See—*
Kotera, Norio; Okabe, Hiromichi; and Korenaga, Hiroshi, 4,111,979, Cl. 260-509.000.
Sumitomo Durez Company, Ltd.: *See—*
Kako, Yuji; Kikuga, Toyoji; and Toko, Akira, 4,112,160, Cl. 428-460.000.
Sumitomo Electric Industries, Ltd.: *See—*
Otani, Kanji, 4,111,621, Cl. 425-97.000.
Sumitomo Naugatuck Co., Ltd.: *See—*
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Summers, Gary J. Fuel economy measuring circuit employing rate multiplier components. 4,112,492, Cl. 364-442.000.
Summers, Kenneth L., to Riehe Corporation. Tamper-proof closure device. 4,111,331, Cl. 220-319.000.
Sun Chemical Corporation: *See—*
DeBlasi, Douglas S., 4,111,916, Cl. 528-75.000.
Sundstrand Corporation: *See—*
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Paczuski, Andrew Waclaw, 4,111,612, Cl. 417-372.000.
Super Stud Products, Inc.: *See—*
Dawson, Raymond B., 4,111,016, Cl. 70-58.000.
Suprotec S.A.: *See—*
Sonneville, Roger Paul, 4,111,361, Cl. 238-338.000.
Sutch, Brian Leo Chudleigh, to Airfix Industries Limited. Production of containers. 4,111,622, Cl. 425-112.000.
Sutter, Aldo. Impact resistant explosion proof lamp comprising encapsulated light source. 4,112,485, Cl. 362-369.000.
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Suzuki, Hirotsugu: *See—*
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Suzuki, Shirou: *See—*
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Suzuki, Yoshiro: *See—*
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Svaty, Vladimir, to Elitex, Koncern textilniho strojirenstvi. Apparatus for releasably securing a fluid-operated gripper shuttle in a launch position. 4,111,239, Cl. 139-438.000.
Svenska Utvecklingaktiebolatget: *See—*
Casselbrant, Sven Gustav, 4,112,162, Cl. 428-106.000.
Swackhamer, Stanley B., to Xerox Corporation. Magnetic toner recovery method using alternating magnetic field polarities. 4,112,156, Cl. 427-444.000.
Swaine, James William, Jr.: *See—*
Hoffmann, Robert Joel; Bean, Samuel Louis; Seeling, Philip; and Swaine, James William, Jr., 4,112,061, Cl. 423-512.00A.
Swank, Harry R.: *See—*
Bracht, Donald L.; and Swank, Harry R., 4,110,877, Cl. 29-25.130.
Swann, Frederick R. Solar heating system. 4,111,185, Cl. 126-271.000.
Swietoslawski, Janusz; Silowiecki, Andrzej; Ratajczak, Aleksander; Nocon, Barbara; and Baniak, Zofia, to Zaklady Chemiczne "Organika-Azot". Process for production of 4,4-isopropylidene-bis-2,6-dibromo/phenol. 4,112,242, Cl. 568-726.000.
Swiss Aluminium Ltd.: *See—*
Pryor, Michael J., 4,111,763, Cl. 204-38.00A.
SWS Silicones Corporation: *See—*
Getson, John C.; and Johnson, Wendell L., 4,111,890, Cl. 260-37.0SB.
Syntex (U.S.A.) Inc.: *See—*
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Nelson, Peter H.; and Untch, Karl G., 4,112,114, Cl. 424-285.000.
Syska, Andrew J., to Consolidated Natural Gas Service Company, Inc. Process for the production of intermediate hot metal. 4,111,687, Cl. 75-13.000.
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Flanagan. Brian S.; Turner, Phillip L.; Broce, Richard D.; and Lagus, Peter L., 4,112,302, Cl. 250-381.000.
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Tacchi, Victorio. Systems for making use of the energy carried by a fluid and supplied thereto by solar energy. 4,110,986, Cl. 60-641.000.
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Takahasi, Toru; Ueno, Sadayasu; and Inui, Tomoji, to Hitachi, Ltd. High-temperature detecting apparatus. 4,112,478, Cl. 361-162.000.
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Takase, Katsuji; Tsuji, Toshimoto; Fukuda, Jun-ichi; and Hiyamori, Yasuchika, to Dai Nippon Toryo Co., Ltd. Anticorrosion primer coating composition. 4,111,884, Cl. 260-30.60R.
Takashi, Kurioka. Water supply suspending implement with stopping piece. 4,111,233, Cl. 138-89.000.
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Takeda Chemical Company, Ltd.: *See—*
Noguchi, Shunsaku; Aono, Tetsuya; Araki, Yoshiaki; and Kawai, Kiyohisa, 4,111,997, Cl. 260-591.000.
Takeda Chemical Industries, Ltd.: *See—*
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Funakoshi, Yoshiro; Asogawa, Tatsuo; Satake, Eiichi; Motoyama, Shimesu; Yamada, Shuri; and Kakukawa, Morio, 4,111,626, Cl. 425-203.000.
Ono, Hiroomi, 4,112,073, Cl. 424-177.000.
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Takei, Daisuke: *See—*
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Takekawa, Nobuhiro: *See—*
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Takizawa, Tatsuo; and Ikeda, Masachika, to Olympus Optical Co., Ltd.

Record sheet clamping mechanism for drum type facsimile and the like. 4,111,119, Cl. 101-127.100.
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Nakada, Takashi; and Takoh, Toshiharu, 4,112,361, Cl. 324-92.000.
Talenti, Pier F. Method and apparatus for operating combustion engines. 4,111,160, Cl. 123-1.00A.
Tamm, Rolf, to Bodenseewerk Perkin-Elmer & Co., GmbH. Graphite tube assembly having a sample supporting inner body. 4,111,563, Cl. 356-244.000.
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Tamura, Masaoki: *See—*
Ishikawa, Toshio; Ozawa, Jun; and Tamura, Masaoki, 4,112,418, Cl. 340-659.000.
Tamura, Teizou; and Konishi, Katsuo, to Hitachi, Ltd. Method for manufacturing a magnetic head for video signal. 4,110,902, Cl. 29-603.000.
Tanaka, Akira: *See—*
Yamaoka, Kojiro; Mihara, Toshihide; and Tanaka, Akira, 4,110,898, Cl. 29-568.000.
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Tanaka, Shinichi: *See—*
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Tanimura, Takenori: *See—*
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Taninaka, Kuniaki; Kurono, Hitoshi; and Kasai, Tsutomu, to Nihon Nohyaku Co., Ltd. 4-Substituted-1,3-dithiolan-2-ylidene malonates and pharmaceutical compositions containing the same. 4,112,089, Cl. 424-248.550.
Tanner Electronic Systems Technology: *See—*
Tanner, James L.; and Rist, Bruno A., 4,112,377, Cl. 325-461.000.
Tanner, James L.; and Rist, Bruno A., to Tanner Electronic Systems Technology. C. B. converter. 4,112,377, Cl. 325-461.000.
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Tates, Donald W.; and Clarkson, Stanley G., to Xerox Corporation. Sorting apparatus and reproducing machine. 4,111,410, Cl. 271-173.000.
Taub, David. Deformable container. 4,111,299, Cl. 206-215.000.
Tavor, Chanany, to Amiad Systems Ltd. Linear hydraulic motor. 4,111,607, Cl. 417-46.000.
Taylor, Challen E., to Goodyear Tire & Rubber Company, The. Apparatus for vulcanizing continuous lengths of flexible material. 4,111,628, Cl. 425-445.000.
Taylor, Charles L., to Singer Company, The. Automatic registration of projector images. 4,111,536, Cl. 352-132.000.
Taylor, Edwin Michael: *See—*
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,111,935, Cl. 544-224.000.
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,111,936, Cl. 544-239.000.
Taylor, Otis Max: *See—*
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Taylor, Paul D., to Celanese Corporation. Homologation of alkanols. 4,111,837, Cl. 252-430.000.
Taylor, Richard F.: *See—*
Glossop, Mark B.; Buckmaster, Adrian C.; Cook, Neville G. W.; Hojem, Justin P. M.; Joughin, Noel C.; Taylor, Richard F.; Cramp, Robert W.; and Hatcher, John L., 4,111,296, Cl. 198-519.000.
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Umeki, Shinji; Uebori, Tatsuo; and Motegi, Minoru, 4,112,184, Cl. 428-403.000.
Tedei, Thomas C. Flush valve assembly. 4,110,850, Cl. 4-326.000.
Tekken Construction Co. Ltd.: *See—*
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Teledyne Industries, Inc.: *See—*
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Tenta, Louis T. Method and composition for the treatment of seborrheic keratosis. 4,112,121, Cl. 424-346.000.
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Terwilliger, Bruce J., to GAF Corporation. Process for multi-color valley printing and embossing of flooring material and the like and flooring material made by said process. 4,112,189, Cl. 428-443.000.
Tesoro, Giuliana C., to Ethyl Corporation. Synergistic flame retardant mixtures and products. 4,111,652, Cl. 8-116.00P.
Tessier, Jean: *See—*
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Tetro, Richard S.; and Harmon, Paul E., to Black Clawson Company, The. Method and apparatus for continuously winding a roll of web material. 4,111,377, Cl. 242-56.00R.
Tex Innovation AB: *See—*
Olsson, Jan Christer Holger; and Carlson, Karl Gunnar, 4,110,954, Cl. 53-433.000.
Texaco Inc.: *See—*
Howlett, Donald L., 4,112,412, Cl. 340-15.5TS.
Knifton, John F., 4,111,952, Cl. 260-326.5FN.
Vest, Eugene W., 4,111,244, Cl. 141-348.000.
Texaco Trinidad Inc.: *See—*
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Allen, John B., 4,111,385, Cl. 244-3.130.
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Easley, Steven J., 4,112,495, Cl. 364-700.000.
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Thatcher, Steve Douglas, to Sperry Rand Corporation. Clock sequencing apparatus having more states than clock phase outputs. 4,112,380, Cl. 328-62.000.
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Thexton Manufacturing Company: *See—*
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Theyse, Frederik H., to Stichting Energieonderzoek Centrum Nederland. Windmill plant for generating energy. 4,112,311, Cl. 290-44.000.
Thibault, Olida. Hydraulic wheel II. 4,111,618, Cl. 418-152.000.
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Thiem, Karl-Werner; Hamers, Adolf; and Heinen, Josef, to Bayer Aktiengesellschaft. Process for the preparation of mononitroaromatic compounds. 4,112,005, Cl. 260-645.000.
Thomanek, Franz Rudolf, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Warhead for use against armored targets. 4,111,126, Cl. 102-52.000.
Thomas Barben Instruments: *See—*
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Thomas, Claude E. Packaged dinner serving tray. 4,111,305, Cl. 206-563.000.
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Thomas GmbH: *See—*
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Thomas, Hubert E. Variable eccentric vibration generating mechanism. 4,111,061, Cl. 74-61.000.
Thomas, Norman W.; Model, Frank S.; and Smart, Charles L., to Celanese Corporation. Herbicide-filled cellulose ester particles having controlled release properties. 4,111,684, Cl. 71-115.000.
Thomas, Walter Moreland: *See—*
Huffman, Kenneth Robert; Casey, Donald James; and Thomas, Walter Moreland, 4,112,169, Cl. 428-206.000.

Thompson, Edwin C., to Western Electric Company, Inc. Method of manufacturing a monolithic crystal filter. 4,112,147, Cl. 427-100.000.
Thompson, Isadore; and Fehr, Rudolph. Method and structure for rehabilitating sheet pile cellular coffer dams. 4,110,990, Cl. 405-14.000.
Thompson, John; and Pitfield, Adrian, to Wilkinson Sword Limited. Aerosol foams. 4,111,827, Cl. 252-90.000.
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Roudebush, Allen T.; and Thompson, Kenneth P., 4,112,173, Cl. 428-215.000.
Thompson, M. Stafford. Resilient article and method of manufacture. 4,110,881, Cl. 29-91.100.
Thompson, Max W., to Phillips Petroleum Company. Method and apparatus for recovering vapor. 4,110,996, Cl. 62-54.000.
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Thomson-CSF: *See—*
Cojan, Yves, 4,111,527, Cl. 350-174.000.
Dubois, Jean Claude; and Barre, Francoise, 4,112,239, Cl. 560-73.000.
Hepner, Georges; and Desormiere, Bernard, 4,112,367, Cl. 324-244.000.
Pressiat, Robert, 4,112,294, Cl. 250-203.00R.
Thomson, James E., to Western Stamping Corporation. Thread tensioner. 4,111,141, Cl. 112-254.000.
Thornton, John A.: *See—*
Penfold, Alan S.; and Thornton, John A., 4,111,782, Cl. 204-298.000.
Thornton, Raymond: *See—*
McConnell, Bobby Lee; Thornton, Raymond; and Graham, Louis Atkins, 4,111,648, Cl. 8-30.000.
Thorpe, John E., to Pfizer Inc. Halopyridyl derivatives of m-aminotetramisole as anthelmintics. 4,112,102, Cl. 424-266.000.
Thorsell, Leif Urban Folke: *See—*
Weibull, Bengt John Gustaf; and Thorsell, Leif Urban Folke, 4,112,231, Cl. 544-174.000.
Thurston, Bruce E.; Owens, Albert H.; and Pocsi, Powell J., to United States of America, Army. Cable-connector backshell adapter device. 4,111,513, Cl. 339-143.00R.
Thyssen Schachtbau GmbH: *See—*
Hungerbach, Paul, 4,111,315, Cl. 214-17.00C.
Tillmanns, Harald: *See—*
Pietzka, Gerhard; and Tillmanns, Harald, 4,111,794, Cl. 208-131.000.
Tinsler, Theodore E., to White-Westinghouse Corporation. Humidifier drive system. 4,112,015, Cl. 261-92.000.
Tioxide Group Limited: *See—*
Lawrence, Leslie John; and Ansbro, Denis, 4,112,035, Cl. 264-113.000.
Tippett, Samuel. Expansion joint. 4,111,582, Cl. 404-47.000.
TMC Corporation: *See—*
Krob, Erwin, 4,111,453, Cl. 280-626.000.
TMC, Inc.: *See—*
Hallberg, John Emil; and Taylor, Otis Max, 4,111,219, Cl. 137-3.000.
Tokarz, Richard D.: *See—*
Peterson, Palmer L.; Duffy, James B.; and Tokarz, Richard D., 4,111,798, Cl. 209-172.500.
Tokico Ltd.: *See—*
Amemori, Hiroyuki; Izumi, Hideki; and Tanaka, Katsuyuki, 4,111,046, Cl. 73-231.00R.
Mutou, Toshiaki, 4,110,888, Cl. 29-404.000.
Toko, Akira: *See—*
Kako, Yuji; Kikuga, Toyoji; and Toko, Akira, 4,112,160, Cl. 428-460.000.
Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, to Hitachi, Ltd. Constant current circuit. 4,112,346, Cl. 323-4.000.
Tokyo Seimitsu Co. Ltd.: *See—*
Nakada, Takashi; and Takoh, Toshiharu, 4,112,361, Cl. 324-92.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Obiya, Yasuaki; and Ikeda, Saburoo, 4,111,101, Cl. 91-405.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Katakura, Masayuki; and Yamada, Hisashi, 4,112,387, Cl. 330-285.000.
Kusumi, Jiro, 4,112,385, Cl. 330-262.000.
Tomalia, Donald A.; Dickert, Yancey J.; and McCarty, Leslie P., to Dow Chemical Company, The. Method for treating poison ivy dermatitis using certain polyamines and polytertiaryamides. 4,112,067, Cl. 424-78.000.
Tomari, Hitomi: *See—*
Inayoshi, Akio; Ito, Toshimichi; Nagatoshi, Kikuo; Nara, Toshihide; Sagata, Shinsuke; Tomari, Hitomi; Fujimoto, Noriki; and Kaji, Hidehiko, 4,111,898, Cl. 260-42.530.
Tomlinson, Walter John, III, to Bell Telephone Laboratories, Incorporated. Wavelength division multiplexer. 4,111,524, Cl. 350-96.190.
Tomy Kogyo Co., Ltd.: *See—*
Ishida, Hajime, 4,111,447, Cl. 280-278.000.
Tong, George L.: *See—*
Henry, David W.; and Tong, George L., 4,112,217, Cl. 536-4.000.
Toray Industries, Inc.: *See—*
Asakura, Toshiyuki; Itoga, Masaaki; Hayakawa, Takeshi; and Tanimura, Masamitsu, 4,112,187, Cl. 428-474.000.
Kikuchi, Yoshikazu; Suzuki, Hirotsugu; and Yabe, Kenji, 4,112,175, Cl. 428-236.000.
Torii, Shinkity; Kawagoshi, Sakae; Yoneshige, Tetsuhiko; and Ito, Hidehumi, to Nissan Motor Company, Limited. Catalyst for oxidation of carbon monoxide and hydrocarbons in combustion engine exhaust gas. 4,111,848, Cl. 252-466.0PT.
Torikai, Eiichi; Kawami, Youji; Kai, Shinichiro; Namba, Mutsusuke; and Simasaki, Shuhei, to Agency of Industrial Science and Technology; and Daikin Kogyo Co., Ltd. Method of making a chemical-resistant diaphragm thereof. 4,111,866, Cl. 521-53.000.
Torkhov, Gennady Fedorovich: *See—*
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich, 4,112,246, Cl. 13-2.00P.
Torkuhl, Joachim, to Mannesmann Aktiengesellschaft. Preparing tubing or pipelines for submarine installation. 4,110,991, Cl. 405-157.000.
Touron, Serge Auguste: *See—*
Duval, Jean-Claude; Mottini, Francis Joseph; Touron, Serge Auguste; Rennard, Jean-Jacques Francois; and Duval, Ruchela Marie, 4,112,505, Cl. 365-96.000.
Touval, Irving: *See—*
Larkin, William A.; and Touval, Irving, 4,111,905, Cl. 260-45.75B.
Tovi, Murray, to Murray Tovi Designs, Inc. Remotely controlled positioning device for illuminating unit and the like. 4,112,486, Cl. 362-419.000.
Towmotor Corporation: *See—*
Callaghan, William I., 4,111,062, Cl. 74-96.000.
Townend, Robert E., to United States of America, Agriculture. Process for recovering proteinaceous matter from acid whey and tannery unhairing effluents. 4,111,803, Cl. 210-51.000.
Townsend, Robert H., to Xerox Corporation. Exposure system for electrostatic reproduction machines. 4,111,541, Cl. 355-8.000.
Townsend, William L.: *See—*
Zobrist, Gerald J.; Townsend, William L.; and Orr, Steven K., 4,112,425, Cl. 340-347.0AD.
Toy, Stephen M. Semiconductor gas detector circuit. 4,112,356, Cl. 324-71.0SN.
Toyama Chemical Co., Ltd.: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,112,090, Cl. 424-251.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Etoh, Kuniomi; Tanaka, Shinichi; Kato, Yoshio; and Kazuo, Watanabe, 4,111,692, Cl. 96-1.00R.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Mabuchi, Shunsuke; and Tsuzuki, Kenji, 4,112,004, Cl. 568-861.000.
Shiomi, Kozen; and Shimizu, Ryoichi, 4,111,630, Cl. 425-462.000.
Toyoda, Keio: *See—*
Okuno, Ryuzo; Fujii, Hiroo; and Toyoda, Keio, 4,111,159, Cl. 122-27.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Miyagi, Hideo; Oishi, Kiyohiko; Ishida, Yasuhiko; and Yamaguchi, Shunzo, 4,110,979, Cl. 60-276.000.
Nakamura, Norihiko; and Kawamura, Takahide, 4,111,175, Cl. 123-198.0DC.
Traenckner, Hans-Joachim; Rosenkranz, Hans Jurgen; Fischler, Hans-Michael; and Eimers, Erich, to Bayer Aktiengesellschaft. Unsaturated polyester resins suitable for the production of cross-linked polyesters which are difficult to saponify. 4,112,018, Cl. 260-861.000.
Transat Corp.: *See—*
Buynak, Gabriel Ralph; and Sauerland, Franz Ludwig, 4,112,134, Cl. 427-10.000.
Trefimetaux: *See—*
Moreau, Marc, 4,111,023, Cl. 72-60.000.
Treuner, Uwe: *See—*
Breuer, Hermann; and Treuner, Uwe, 4,111,978, Cl. 260-465.00D.
Trevillion, Charlie Gene: *See—*
Gibson, Harry S., Jr.; and Trevillion, Charlie Gene, 4,112,355, Cl. 324-57.00R.
Trice, James R., Jr. Reference plane production. 4,111,564, Cl. 356-247.000.
Trigub, Vladimir Kirillovich: *See—*
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich, 4,112,246, Cl. 13-2.00P.
Trillo, Robert Longley: *See—*
Peissel, Michel Francois; and Trillo, Robert Longley, 4,111,277, Cl. 180-122.000.
Troll, Helmar: *See—*
Ederer, Georg; Fischer, Adolf; Rosche, Paul; Troll, Helmar; Wurst, Wolfgang; Hengl, Helmut; and Seidl, Jiri, 4,111,163, Cl. 123-52.00M.
Trombe, Felix; and Michel, Jacques, to Agence Nationale de Valorisation de la Recherche (Anvar). Dwellings equipped with natural airconditioning installations. 4,111,359, Cl. 237-1.00A.
Truffier, Jean-Claude; Lucotte, Gerard; and Cordonnier, Raymond. Compositions comprising ovomucoid fraction of white of quail's egg. 4,112,074, Cl. 424-177.000.
TRW Inc.: *See—*
Andrews, James D., 4,111,677, Cl. 65-271.000.
Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., 4,111,906, Cl. 528-229.000.
Tschudin & Heid AG: *See—*
Kleeb, Markus, 4,112,277, Cl. 200-153.00J.
Tsou, Ivan H., to Grow Chemical Corp. Method of preparing powder particles by control of the particle shape. 4,112,214, Cl. 528-494.000.
Tsubata, Kazuo, to Hirai, Hironori. Method and apparatus for piecing-up the broken yarn in an open-end spinning system. 4,110,960, Cl. 57-34.00R.
Tsuda, George I.: *See—*
Burnett, Gary L.; and Tsuda, George I., 4,112,398, Cl. 333-73.00R.
Tsuha, Wallace K.; and Schlax, Timothy R. Multifunction sequence operated integrated switch-display device. 4,112,429, Cl. 340-365.00R.
Tsuji, Toshimoto: *See—*
Takase, Katsuji; Tsuji, Toshimoto; Fukuda, Jun-ichi; and Hiyamori, Yasuchika, 4,111,884, Cl. 260-30.60R.
Tsukada, Syusei: *See—*
Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,111,539, Cl. 355-3.00R.
Tsunoda, Kozo; Sowa, Tsuneo; Iitsuka, Kunio; and Sako, Kiyohide, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing 8,2'-O-anhydropurine nucleosides. 4,112,221, Cl. 536-24.000.
Tsuzuki, Kenji: *See—*
Mabuchi, Shunsuke; and Tsuzuki, Kenji, 4,112,004, Cl. 568-861.000.
Tufte, Obert N.: *See—*
Heaps, Joseph D.; and Tufte, Obert N., 4,112,135, Cl. 427-11.000.
Turkina, Ljudmila Ivanovna: *See—*
Junovich, July Moiseevich; Zhukovsky, Sergei Semenovich; Sudakas, Lev Girshovich; Turkina, Ljudmila Ivanovna; Smirnov, Anatoly Ilich; Lyass, Abram Moiseevich; and Teplyakov, Sergei Dmitrievich, 4,111,705, Cl. 106-38.350.
Turnbull, David: *See—*
Pairaudeau, Reginald David; Turnbull, David; and Bevan, Leonard Graham, 4,111,710, Cl. 106-90.000.
Turner, Phillip L.: *See—*
Flanagan, Brian S.; Turner, Phillip L.; Broce, Richard D.; and Lagus, Peter L., 4,112,302, Cl. 250-381.000.
Tyner, Frederick Carlson. Energy absorbing basketball goal/backboard unit. 4,111,420, Cl. 273-1.50R.
Uba, Toshio: *See—*
Hug, Leonard F.; McClelland, Donald H.; and Uba, Toshio, 4,112,202, Cl. 429-94.000.
Uebe, Rudolf: *See—*
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Uebori, Tatsuo: *See—*
Umeki, Shinji; Uebori, Tatsuo; and Motegi, Minoru, 4,112,184, Cl. 428-403.000.
Ueda, Akio: *See—*
Komuro, Keiji; Ohishi, Tetsu; Waku, Tetsuo; Sugi, Nagatoshi; Suzuki, Souichi; and Ueda, Akio, 4,111,867, Cl. 260-5.000.
Ueno, Sadayasu: *See—*
Takahasi, Toru; Ueno, Sadayasu; and Inui, Tomoji, 4,112,478, Cl. 361-162.000.
Ueno, Zene; Morita, Akira; Iwaki, Shigeo; Nagaoka, Tadahiko; and Inagaki, Tokuich, to Nissan Motor Company, Limited. Engine operated on hydrogen-supplemented fuel. 4,111,161, Cl. 123-3.000.
Ueyama, Minoru: *See—*
Matsumoto, Yukimichi; and Ueyama, Minoru, 4,111,084, Cl. 82-48.000.
Ugi, Ivar: *See—*
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Ukena, Theodor: *See—*
Breitschwerdt, Werner; Kania, Sigmund; Ukena, Theodor; and Schwammle, Otto, 4,111,480, Cl. 296-28.00R.
Ulion, Nicholas E.: *See—*
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Ulrich, Henri: *See—*
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Umeki, Shinji; Uebori, Tatsuo; and Motegi, Minoru, to TDK Electronic Company. Magnetic recording medium and method of preparing. 4,112,184, Cl. 428-403.000.
Union Carbide Corporation: *See—*
Bailey, Frederick Eugene; and Koleske, Joseph Victor, 4,111,876, Cl. 260-29.6RB.
Beard, Charles D.; and Moffitt, Robert B., III, 4,111,999, Cl. 260-606.50B.
Best, Donald Charles, 4,111,840, Cl. 252-432.000.
Cawse, James Norman; and Vidal, Jose Luis, 4,111,975, Cl. 260-449.00L.
D'Silva, Themistocles D. J., 4,111,989, Cl. 260-544.00C.
Durden, John Apling; and D'Silva, Themistocles Damasceno Joaquim, 4,111,955, Cl. 260-327.00M.
Godlewski, Robert Everett, 4,111,861, Cl. 521-123.000.
Heinz, Henry, Jr., 4,112,200, Cl. 429-54.000.
Kurtz, Abraham N.; Cunningham, Robert W.; and Naumann, Alfred W., 4,111,983, Cl. 562-535.000.
Pairaudeau, Reginald David; Turnbull, David; and Bevan, Leonard Graham, 4,111,710, Cl. 106-90.000.
Seefried, Carl G., Jr.; Whitman, Robert D.; and Van Cleve, Russell, 4,111,865, Cl. 521-137.000.
Stueben, Kenneth Charles, 4,111,769, Cl. 204-159.150.
Union Oil Company of California: *See—*
Simpson, Howard D., 4,111,795, Cl. 208-216.000.
Unisearch Limited: *See—*
Garnys, Vytenis Peter, 4,111,553, Cl. 356-36.000.
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Agriculture: *See—*
Connick, William J., Jr.; and Ellzey, Samuel E., Jr., 4,111,700, Cl. 106-2.000.
Townend, Robert E., 4,111,803, Cl. 210-51.000.
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Army: *See—*
Chen, Edward S.; Sadak, John C.; and Lakshminarayanan, G. Raman, 4,111,760, Cl. 204-26.000.
Everswick, David N., 4,112,317, Cl. 307-308.000.
Lytle, John David; and Combs, James M., 4,110,912, Cl. 33-312.000.
Northup, Robert Powers, 4,111,074, Cl. 74-867.000.
Schmidlin, Albertus E., 4,111,127, Cl. 102-237.000.
Smith, Chester L.; and Everswick, David N., 4,111,559, Cl. 356-201.000.
Thurston, Bruce E.; Owens, Albert H.; and Pocsi, Powell J., 4,111,513, Cl. 339-143.00R.
Zangrando, Roy A., 4,112,267, Cl. 200-43.000.
Customs Service: *See—*
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Energy: *See—*
Barnette, Jon H., 4,111,017, Cl. 70-293.000.
Eck, John E.; and Kasberg, Alvin H., 4,111,747, Cl. 176-40.000.
Evans, A. Gary, 4,111,833, Cl. 252-429.00R.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Bonisch, Frank Henry. Locking redundant link. 4,111,068, Cl. 74-586.000.
Layland, James W.; Martin, Warren L.; Zygielbaum, Arthur I.; Goldstein, Richard M.; and Hubbard, William P. Digital demodulator-correlator. 4,112,497, Cl. 364-728.000.
Perkins, Gerald S. Sun tracking solar energy collector. 4,111,184, Cl. 126-270.000.
Thompson, Wallace W. Inhibited solid propellant composition containing beryllium hydride. 4,111,729, Cl. 149-19.900.
National Aeronautics and Space Administration: *See—*
Gross, Chris, 4,111,058, Cl. 73-714.000.
Hollis, Ben R., Jr.; Feltner, William R.; Bouldin, David L.; and Routh, Donald E., 4,111,775, Cl. 204-192.00C.
Livermore, Stephen F., 4,112,357, Cl. 324-72.000.
Morris, James F., 4,111,718, Cl. 136-236.00R.
Rice, William J., 4,111,041, Cl. 73-115.000.
Shai, Michael Charles, 4,111,851, Cl. 252-518.000.
Navy: *See—*
Amana, Okon M.; and Louis, Jean F., 4,111,596, Cl. 415-115.000.
Barzda, Justin J., 4,111,602, Cl. 416-89.000.
Jandl, Frank W.; and Colman, Gregory D., 4,110,977, Cl. 60-270.00R.
Kershaw, Joseph E., 4,112,394, Cl. 333-6.000.
Kissinger, Charles W., 4,111,382, Cl. 244-3.100.
Ladstatter, James A., 4,112,430, Cl. 343-100.00R.
Seliger, Robert L.; and Ward, James W., 4,112,455, Cl. 357-23.000.
U.S. Philips Corporation: *See—*
Boer, Melle; and Rentema, Albertus Pieter, 4,110,906, Cl. 30-43.920.
Duistermaat, Jan Hendrik; and van Nes, Johannes Cornelis Adrianus, 4,111,694, Cl. 96-36.100.
Goddijn, Bernardus Henricus Antonius, 4,112,345, Cl. 318-696.000.
Spoelder, Gerrit Adriaan, 4,112,514, Cl. 365-222.000.
Steinkopf, Wolfgang Otto Gotthard; and Drabek, Rudolf, 4,112,445, Cl. 358-127.000.
Strijker, Hendrik Willem, 4,110,905, Cl. 30-43.600.
Van Mal, Harmannus Hinderikus; and Ferguson, Eric Tapley, 4,111,002, Cl. 62-467.00R.
Verbeek, Thomas Geert; and de Vaan, Robertus Laurentius Clemens, 4,112,331, Cl. 315-125.000.
Zwaneburg, Dirk Jan, 4,111,970, Cl. 260-438.50R.
U.S. Phillips Corporation: *See—*
Alais, Pierre; and Auphan, Michel Joseph, 4,112,411, Cl. 340-1.00R.
U.S. Rubber Reclaiming Co., Inc.: *See—*
Bailey, Allen R., 4,112,176, Cl. 428-304.000.
United States Steel Corporation: *See—*
Capriotti, Alfred J.; Lazzaretti, Louis G.; and O'Donnell, Brian, 4,110,889, Cl. 29-407.000.
Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., 4,111,759, Cl. 203-7.000.
Kachik, Robert H., 4,110,887, Cl. 29-401.00A.
Krelis, Peter S.; and Prox, Larry M., 4,111,405, Cl. 266-158.000.
United Technologies Corporation: *See—*
Anderson, William S., 4,112,191, Cl. 428-497.000.
Back, Paul R.; and Van Vessem, Thomas G., 4,112,351, Cl. 324-16.00R.
Day, Edward G.; and Dziobek, Edmund, 4,111,252, Cl. 164-23.000.

Elam, Richard C.; and Ulion, Nicholas E., 4,110,893, Cl. 29-420.500.
Kenigsberg, Irwin Jeffrey; and Eastman, Larry Bruce, 4,111,386, Cl. 244-17.270.
Lemkey, Franklin David, 4,111,723, Cl. 148-32.000.
Mangum, Norman W., Jr.; and Ripy, Howard W., 4,112,499, Cl. 364-732.000.
McLafferty, George H., 4,112,388, Cl. 331-94.50D.
Prewo, Karl Michael, 4,111,606, Cl. 416-224.000.
Rothman, Edward A.; and Carlson, Charles E. K., 4,111,600, Cl. 416-2.000.
Van Vessem, Thomas G.; and Back, Paul R., 4,112,350, Cl. 324-16.00R.
Young, John H.; and Goetz, Gerald F., 4,110,972, Cl. 60-230.000.

University of California, The Regents of the: *See—*
Freeman, Daniel L.; Bettencourt, Darryl G.; and Marshall, George E., Jr., 4,111,210, Cl. 130-30.00R.
Winters, Harry K., 4,111,220, Cl. 137-39.000.

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Satterlee, Lowell D., 4,111,927, Cl. 260-123.500.

Untch, Karl G.: *See—*
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UOP Inc.: *See—*
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Bundy, Gordon L., 4,112,224, Cl. 542-426.000.
Callahan, William A.; Glenn, Eldridge Myles; and Rector, Douglas L., 4,112,100, Cl. 424-263.000.
Hessler, Edward J., 4,111,968, Cl. 260-465.600.
Lin, Chiu-Hong, 4,111,969, Cl. 260-410.90R.
Moon, Malcolm W.; and Kornis, Gabriel, 4,111,939, Cl. 260-293.600.
Moon, Malcolm W.; and Kornis, Gabriel, 4,111,941, Cl. 260-293.600.
Nelson, Norman A., 4,111,995, Cl. 260-590.00C.
Nelson, Norman A., 4,111,996, Cl. 260-590.00D.
Smith, Curtis P.; and Ulrich, Henri, 4,112,014, Cl. 260-945.000.

Uva, Pasquale A. Composition of heel base for shoes. 4,111,875, Cl. 260-23.00R.

V E B Jenapharm: *See—*
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, 4,111,987, Cl. 562-401.000.

Valeev, Rustem Ibragimovich: *See—*
Buzhinsky, Vladimir Lukyanovich; Raschepkin, Konstantin Egorovich; Dunjushkin, Mikhail Grigorievich; Lysogorsky, Gennady Tikhonovich; Valeev, Rustem Ibragimovich; Nisenbaum, Yakov Arkadievich; and Ikhsanov, Deviz Faizrakhmanovich, 4,110,862, Cl. 15-88.000.

Vallee, Bert L.: *See—*
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Valmet Oy: *See—*
Matikainen, Martti; and Sivonen, Matti, 4,111,065, Cl. 74-410.000.

Van Cleve, Russell: *See—*
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Vandenberghe, Antoon Leon: *See—*
Pollet, Robert Joseph; Vandenberghe, Antoon Leon; Danckaert, Valere Frans; Willems, Jozef Frans; and Van Veelen, George Frans, 4,111,697, Cl. 96-66.500.

Van der Gucht, William: *See—*
De Bin, Rene Francois; and Van der Gucht, William, 4,111,739, Cl. 156-486.000.

van der Lely, Ary, to C. van der Lely NV. Soil cultivating machines. 4,111,265, Cl. 172-59.000.

van der Lely, Cornelis. Soil tilling machines. 4,111,263, Cl. 172-54.000.

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van der Lely, Cornelis. Rotary harrows. 4,111,267, Cl. 172-59.000.

Vanderlyn, Donald. Anchoring system. 4,110,940, Cl. 52-23.000.

Van Mal, Harmannus Hinderikus; and Ferguson, Eric Tapley, to U.S. Philips Corporation. Cyclic desorption refrigerator and heat pump, respectively. 4,111,002, Cl. 62-467.00R.

van Montfoort, Abraham; and Scholten, Joseph J. F., to Stamicarbon, B.V. Process for the preparation of supported catalysts. 4,111,842, Cl. 252-447.000.

Van Natta, Cletus L., to Conwed Corporation. Mineral fiberizing wheel. 4,111,673, Cl. 65-6.000.

van Nes, Johannes Cornelis Adrianus: *See—*
Duistermaat, Jan Hendrik; and van Nes, Johannes Cornelis Adrianus, 4,111,694, Cl. 96-36.100.

Van Pool, Joe; and Jackson, R. Neil, to Phillips Petroleum Company. Separation of solvent from liquid sulfur. 4,111,805, Cl. 210-71.000.

van Staveren, Hendricus Cornelis: *See—*
Oosterling, Pieter Adriaan; and van Staveren, Hendricus Cornelis, 4,110,959, Cl. 56-295.000.

Van Veelen, George Frans: *See—*
Pollet, Robert Joseph; Vandenberghe, Antoon Leon; Danckaert, Valere Frans; Willems, Jozef Frans; and Van Veelen, George Frans, 4,111,697, Cl. 96-66.500.

Van Vessem, Thomas G.; and Back, Paul R., to United Technologies Corporation. Negative and positive switching ignition signal conditioner. 4,112,350, Cl. 324-16.00R.

Van Vessem, Thomas G.: *See—*
Back, Paul R.; and Van Vessem, Thomas G., 4,112,351, Cl. 324-16.00R.

van Wersch, Hubert Maria Agnes; Herrling, Siegfried; and Muckter, Heinrich. Diazaborines and drug compositions. 4,112,077, Cl. 424-185.000.

Varco, Inc.: *See—*
Elliott, Harry Samuel, 4,112,342, Cl. 318-599.000.

Varian Associates, Inc.: *See—*
Nunan, Craig S., 4,112,306, Cl. 250-499.000.

Varley, Bernard Scott, to Automatic Grinding Machine & Engineering Co. Ltd. Grinding machine. 4,111,075, Cl. 76-41.000.

Varner, Jerry Reubon: *See—*
Mir, Jose Manuel; and Varner, Jerry Reubon, 4,112,437, Cl. 346-159.000.

Varo, Inc.: *See—*
Hodge, Leon, 4,112,334, Cl. 315-171.000.

Varvel, David Anthony; Millar, Frederick William; and Farquharson, Stuart Connall, to Access Control Systems Proprietary Limited. Magnetic identification apparatus. 4,112,292, Cl. 235-449.000.

Vayda, Michael Mark, Jr. Single-stop shopping facility and method. 4,111,282, Cl. 186-1.00C.

VEB Plauener Gardine: *See—*
Heger, Adolf; Mockel, Gerrit; Passler, Helmar; Pohlink, Jochen; and Wunsch, Werner, 4,112,136, Cl. 427-36.000.

VEB Polygraph Leipzig, Kombinat fuer Polygraphische Maschinen und Austruestungen: *See—*
Paul, Wolfgang, 4,111,741, Cl. 156-504.000.

Veith, Werner, to Siemens Aktiengesellschaft. Gas discharge display device. 4,112,329, Cl. 313-491.000.

Veith, Werner; and Bechteler, Martin, to Siemens Aktiengesellschaft. Matrix-addressed gas-discharge display device for multi-colored data display. 4,112,332, Cl. 315-169.0TV.

Velsicol Chemical Company: *See—*
Krenzer, John, 4,111,949, Cl. 260-306.80D.

Vennemeyer, Alfred C.; and Ernst, Richard A., to General Motors Corporation. Powder metal crown gear forming process. 4,111,031, Cl. 72-359.000.

Ventura, John A.: *See—*
Lerner, Edward; and Ventura, John A., 4,111,337, Cl. 222-146.0HE.

Venturi, Luigi. Piezoelectric gas igniter using open frame. 4,112,322, Cl. 310-339.000.

Verbeek, Thomas Geert; and de Vaan, Robertus Laurentius Clemens, to U.S. Philips Corporation. Device for improving the efficiency of a low-pressure sodium vapor discharge lamp. 4,112,331, Cl. 315-125.000.

Verchere, Maurice. Coupling. 4,110,873, Cl. 24-230.00R.

Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Sigott, Siegfried; Suessenbeck, Heinrich; Zitz, Alfred; and Siebenhofer, Gottfried, 4,111,227, Cl. 137-469.000.
Sigott, Siegfried; Zitz, Alfred; and Wrulich, Herwig, 4,111,488, Cl. 299-10.000.

Verkhovtsev, Emil Vasilievich: *See—*
Lakomsky, Viktor Iosifovich; Sheiko, Ivan Vasilievich; Grigorenko, Georgy Mikhailovich; Torkhov, Gennady Fedorovich; Trigub, Vladimir Kirillovich; Korotkov, Albert Nikitovich; Kurganov, Viktor Mikhailovich; Moshkevich, Evgeny Isaevich; Pakhomov, Alexei Ivanovich; and Verkhovtsev, Emil Vasilievich, 4,112,246, Cl. 13-2.00P.

Vernon, Richard H., to Xerox Corporation. Meniscus dampening drop generator. 4,112,433, Cl. 346-1.000.

Versteeg, Frits Johan, to N.V. Optische Industrie "de Oude Delft". Magnifier. 4,111,528, Cl. 350-175.00E.

Verzemnieks, Juris: *See—*
Hilliard, Lonnie George; and Verzemnieks, Juris, 4,111,081, Cl. 181-290.000.

Vest, Eugene W., to Texaco Inc. Extendable fuel dispensing nozzle. 4,111,244, Cl. 141-348.000.

Vetter, Helmut: *See—*
Foll, Eberhard; and Vetter, Helmut, 4,112,307, Cl. 250-510.000.

Vice, George A. Child-proof cabinet. 4,111,505, Cl. 312-209.000.

Victor, William E., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Arctic tent pole. 4,111,217, Cl. 135-15.0PQ.

Vidal, Jose Luis: *See—*
Cawse, James Norman; and Vidal, Jose Luis, 4,111,975, Cl. 260-449.00L.

Viglia, Aurelio: *See—*
Degen, Ludwig; Viglia, Aurelio; Fascetti, Eugenio; and Perricone, Elena, 4,111,749, Cl. 195-2.000.

Vilain, Robert, to Entreprise d'Equipements Mecaniques et Hydrauliques EMH. Fluid-tight sealing devices. 4,111,435, Cl. 277-9.000.

Vincent, Monty E.: *See—*
Boomus, Mary; Sobin, Bernard; and Vincent, Monty E., 4,111,807, Cl. 210-152.000.

Vishnevsky, Alexandr Alexandrovich; Korolkov, Ivan Alexandrovich; Smirnov, Boris Andreevich; Ivanova, Tatyana Lukyanovna; Adamian, Arnold Aramovich; and Mitkova, Galina Vladimirovna. Surgical instrument for applying metal staples to organs and tissues and for simultaneous division thereof. 4,111,206, Cl. 128-305.000.

Vobornik, Vaclav: *See—*
Havel, Josef; Vobornik, Vaclav; Ripka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Planansky, Agaton; and Rehackova, Bozena, 4,110,961, Cl. 57-58.890.

Voege, Herbert: *See—*
Enders, Edgar; Stendel, Wilhelm; and Voege, Herbert, 4,112,065, Cl. 424-45.000.

Vogel, Stephen Martin: *See—*
Hauke, Francis Edward; McCully, Everette Ray; McElroy, Robert Marion, Jr.; Stevenson, Peter Alan; Vogel, Stephen Martin; and Woods, John Walton, 4,112,472, Cl. 360-102.000.

Vogt, B. Richard, to E. R. Squibb & Sons, Inc. Pyrazolo(1,5-c)quinazoline derivatives and related compounds. 4,112,096, Cl. 424-251.000.

Vogt, B. Richard, to E. R. Squibb & Sons, Inc. Pyrazolo[1,5-c]quinazoline derivatives and related compounds. 4,112,098, Cl. 424-251.000.

Vogt, Berthold Richard: *See—*
Hoehn, Hans; Bernstein, Jack; and Vogt, Berthold Richard, 4,111,940, Cl. 260-293.600.

Vogt, Dieter: *See—*
Sauer, Rudolf; and Vogt, Dieter, 4,111,045, Cl. 73-228.000.

Volk, Andrew M.: *See—*
Pohlman, William B.; and Volk, Andrew M., 4,112,490, Cl. 364-200.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Leppich, Erhard, 4,111,231, Cl. 137-852.000.

Voltage Systems, Inc.: *See—*
Carpenter, C. Thomas; and Stunkard, Norman W., 4,111,294, Cl. 198-381.000.

von Beckmann, Helmuth, to Canron Railgroup. Method and apparatus for the vibratory tamping of railway tracks. 4,111,129, Cl. 104-12.000.

von der Crone, Jost: *See—*
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,111,947, Cl. 260-299.000.

Voss, Gunter: *See—*
Steinberg, Friedhelm; and Voss, Gunter, 4,111,704, Cl. 106-25.000.

Vossen, Franz. Method of severing useful lengths interconnected through small fillets. 4,111,345, Cl. 225-1.000.

Vreeland, Jay H., to Scott Paper Company. Method of finishing coated paper. 4,112,192, Cl. 428-511.000.

Vwnding Components, Inc.: *See—*
Kless, Benjamin, 4,110,903, Cl. 29-605.000.

Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
Kouril, Oldrich; and Knourek, Jaroslav, 4,112,366, Cl. 324-208.000.

Vyzkumny ustav bavinarsky: *See—*
Bezstarosti, Ladislav; Lindental, Antonin; Lanta, Jiri; and Cizek, Jaroslav, 4,111,238, Cl. 139-436.000.
Havel, Josef; Vobornik, Vaclav; Ripka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Planansky, Agaton; and Rehackova, Bozena, 4,110,961, Cl. 57-58.890.

W. C. Heraeus GmbH: *See—*
Harmsen, Nils, 4,111,690, Cl. 75-165.000.

W. R. Grace & Co.: *See—*
Baird, William G., Jr.; Holbrook, Stanley E.; and Platt, Jeremy A., deceased, 4,112,181, Cl. 428-336.000.
Elliott, Curtis Homer, Jr., 4,111,846, Cl. 252-455.00Z.
Larsen, Donald Wayne, 4,111,917, Cl. 528-45.000.
Morgan, Charles R., 4,112,233, Cl. 548-312.000.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Lang, Winfried; Schmidt, Dietrich; Hofer, Johann; Pachnek, Rudolf; and Rath, Heinz-Jorg, 4,112,057, Cl. 423-342.000.
Rath, Heinz-Jorg; Schmidt, Dietrich; and Zulehner, Werner, 4,111,742, Cl. 156-617.0SP.

Wackerbarth, Folkard, to Dr. C. Otto & Comp. G.m.b.H. Apparatus for the uniform distribution of combustion media in a battery of coke ovens. 4,111,758, Cl. 202-138.000.

Wada, Naoto: *See—*
Okano, Takeshi; Wada, Naoto; and Kobayashi, Yoshimitsu, 4,112,241, Cl. 560-246.000.

Waddoups, Ray O., to International Telephone and Telegraph Corporation. Thermometer with birefringent sensing element in fiber optic coupling. 4,111,050, Cl. 73-362.00R.

Wade, Jackie F.; Peyton, John E.; Klitzky, Bruce R.; and Groff, Roy E., to Martin Marietta Corporation. Optically black coating and process for forming it. 4,111,762, Cl. 204-33.000.

Wagatsuma, Kazuo: *See—*
Morita, Yoshiharu; Omata, Kenzo; Ohya, Junichi; Wagatsuma, Kazuo; and Shirasaka, Tadashi, 4,111,932, Cl. 260-239.100.

Waku, Tetsuo: *See—*
Komuro, Keiji; Ohishi, Tetsu; Waku, Tetsuo; Sugi, Nagatoshi; Suzuki, Souichi; and Ueda, Akio, 4,111,867, Cl. 260-5.000.

Waldman, Harold L.: *See—*
Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, 4,111,922, Cl. 526-292.000.

Waldman, Harold Louis, to Johnson & Johnson. Pressure sensitive adhesive tapes and method of making same. 4,112,213, Cl. 526-279.000.

Waldorf, Lindsey E.; and Monroe, Kenneth E., to Patents Licensing International, Ltd. Automatically stabilized oscillator. 4,112,393, Cl. 331-109.000.

Walker, Brian; Hunter, George Sherwood; and Hunter, Susanne Phyllis, to Process Scientific Innovations Limited. Filter elements for gas or liquid and methods of making such elements. 4,111,815, Cl. 210-487.000.

Walker, Thomas Bruce; Seider, Robert J.; and Cichy, Paul, to Carborundum Company, The. Fused aluminum oxide abrasive grain containing reduced titanium oxide. 4,111,668, Cl. 51-309.00A.

Wall, Lawrence S., to Texas Instruments Incorporated. Electrically alterable floating gate semiconductor memory device. 4,112,509, Cl. 365-185.000.

Wallace Murray Corporation: *See—*
Brummett, Earl Ray, 4,111,289, Cl. 192-58.00B.

Walnut Sand & Gravel Co.: *See—*
Nelson, Richard L., 4,111,314, Cl. 214-17.00A.

Walser, Armin; and Fryer, Rodney Ian, to Hoffmann-La Roche Inc. 1,2,3,5-Tetrahydro-4H-1,5-benzodiazepine-4-ones. 4,111,931, Cl. 260-239.30B.

Walser, Armin: *See—*
Fryer, Rodney Ian; Sternbach, Leo Henryk; and Walser, Armin, 4,111,934, Cl. 260-239.30B.

Walters, Chester H.: *See—*
Wright, David A.; and Walters, Chester H., 4,111,806, Cl. 210-115.000.

Walus, Aloysius Norbert: *See—*
Den Hartog, Herman Charles; and Walus, Aloysius Norbert, 4,111,870, Cl. 260-21.000.

Wan, John P., to Electrohome Limited. Brush holder and brush assembly for a dynamoelectric machine. 4,112,321, Cl. 310-242.000.

Wang, Donald S. T., to Monsanto Company. Storage stable polyol mixture. 4,111,828, Cl. 252-182.000.

Wang, Robert: *See—*
Kissel, Roland; and Wang, Robert, 4,111,154, Cl. 118-10.000.

Wappler, Joachim Harold Richard. Truck mounted hoist. 4,111,316, Cl. 214-75.00H.

Ward, Frank, deceased (by Ward, Robina Rutherford Flucker, legal representative); Hildreth, John David; and Potts, Herbert Alexander, to Ciba-Geigy AG. Dyestuff preparations and processes for their production. 4,111,649, Cl. 8-41.00R.

Ward, James E.: *See—*
Roberts, Marvin E., 4,111,021, Cl. 70-406.000.

Ward, James W.: *See—*
Seliger, Robert L.; and Ward, James W., 4,112,455, Cl. 357-23.000.

Ward, Robina Rutherford Flucker, legal representative: *See—*
Ward, Frank, deceased; Hildreth, John David; and Potts, Herbert Alexander, 4,111,649, Cl. 8-41.00R.

Ward, William H.; Henderson, Henry F., Jr.; and Kardux, Kenneth H., to H. F. Henderson Industries. Weight loss control system. 4,111,336, Cl. 222-58.000.

Warncke, Ernst; and Gdulla, Manfred, to Dragerwerk Aktiengesellschaft. Respiratory device coupling construction. 4,111,197, Cl. 128-142.400.

Warner-Lambert Company: *See—*
Butler, Donald Eugene, 4,111,943, Cl. 260-294.80D.

Warner & Swasey Company, The: *See—*
Breeding, Robert D., 4,111,320, Cl. 214-145.00A.

Warwick, Leonard A.: *See—*
Bosy, George; Edwards, Edwin N.; Hoffbeck, Willis M.; Silvio, Paul A.; and Warwick, Leonard A., 4,112,131, Cl. 426-582.000.

Waski, Jane, to Janys Designs Limited. Game apparatus. 4,111,429, Cl. 273-271.000.

Wasylchak, Russell W.: *See—*
Smith, Willis A., 4,111,409, Cl. 269-304.000.

Watanabe, Iwao, to Matsushita Electric Industrial Company, Limited. Fluid exhausting device. 4,111,615, Cl. 417-423.00A.

Watanabe, Shuzou: *See—*
Nakajima, Yukihiko; Watanabe, Shuzou; Miyai, Akira; and Ishii, Masaji, 4,112,290, Cl. 219-275.000.

Waterhouse, John Sidney: *See—*
Green, George Edward; Stark, Bernard Peter; and Waterhouse, John Sidney, 4,111,907, Cl. 260-830.00R.

Watlow Electric Manufacturing Company: *See—*
Wrob, Ronald M.; and Melly, Jeffrey P., 4,112,410, Cl. 338-243.000.

Watson, Randy Charles: *See—*
Cox, Rollin Webb; and Watson, Randy Charles, 4,111,194, Cl. 128-80.00C.

Watts, Loyd A.: *See—*
Wells, James W.; and Watts, Loyd A., 4,111,234, Cl. 138-99.000.

Watts, William A.: *See—*
Creekmore, Mark D.; and Watts, William A., 4,112,158, Cl. 428-35.000.

Waugh, Richard A., to General Electric Company. Additive dispensing system. 4,111,011, Cl. 68-17.00R.

Wawrzyniak, Walter W. Floating tool holder. 4,111,442, Cl. 279-16.000.

Webb, John T. H.: *See—*
Alexander, William; and Webb, John T. H., 4,111,398, Cl. 254-175.500.

Weber, Harold James. Apparatus including bivolumetric tone subaudition means for positionally spotting and tracing subjacently concealed conductive structures. 4,112,349, Cl. 324-3.000.

Webster, Raymond George, to Edbro Limited. Mechanisms for loading and unloading containers onto and from a vehicle. 4,111,321, Cl. 214-501.000.

Weemes, Doyle A.: *See—*
McConnell, Richard L.; and Weemes, Doyle A., 4,112,208, Cl. 526-57.000.

Weetall, Howard H., to Corning Glass Works. Comparative test for Neisseria. 4,111,752, Cl. 195-103.50M.

Wehinger, Egbert: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,112,109, Cl. 424-273.00P.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,112,227, Cl. 424-273.00P.

Weibull, Bengt John Gustaf; and Thorsell, Leif Urban Folke, to Berol Kemi AB. Process for the condensation of epoxides with organic compounds having an active hydrogen. 4,112,231, Cl. 544-174.000.

Weigand, Dwayne R. Fishing rod and projectile firing gun. 4,110,929, Cl. 43-19.000.

Weigelt, Christian: *See—*
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, 4,111,987, Cl. 562-401.000.

Weigt, Donald A.: *See—*
Guif, Stanley E.; Nimmer, Terry L.; Weigt, Donald A.; Wolenec, Glenn; and Gall, Richard C., 4,112,464, Cl. 358-122.000.

Weihrauch, Georg, to Coronet-Werke Heinrich Schlerf GmbH. Handle mounting for cleaning implements. 4,110,870, Cl. 16-114.00R.

Weikel, Donald J., Jr., to Xerox Corporation. Corona wire mounting means. 4,112,298, Cl. 250-324.000.

Wein, William J.: *See—*
Blaszyk, Paul E.; Shoup, Robert D.; and Wein, William J., 4,112,032, Cl. 264-42.000.

Weinberger, Lawrence P.: *See—*
Goldberg, Leon, 4,111,636, Cl. 431-2.000.

Weinstein, Jack: *See—*
Berghahn, Walter G.; and Weinstein, Jack, 4,111,567, Cl. 401-202.000.

Weinstock, Leonard M.: *See—*
Kao, Henry S.; Sklarz, William A.; and Weinstock, Leonard M., 4,111,948, Cl. 260-302.00R.

Weisang, Joseph-Edouard; and Engelhard, Philippe, to Compagnie Francaise de Raffinage. Catalysts for the hydrotreatment of hydrocarbons and a process for preparation and application of said catalysts. 4,111,841, Cl. 252-439.000.

Weisberg, Warren. Apparatus for forming, filling and sealing bags made from flattened plastic tubular plastic stock. 4,110,956, Cl. 53-558.000.

Weiss, Martin Joseph, to American Cyanamid Company. 15,16-Dioxy prostenoic acids and esters and intermediates in their preparation. 4,111,959, Cl. 260-340.90R.

Weiss, William Robert; Cooksey, James Judson; and Gordon, Rob Roy, Jr., to Allied Chemical Corporation. Jet muffler. 4,110,876, Cl. 28-271.000.

Weissenfels, Franz; and Junger, Hans, to Dynamit Nobel Aktiengesellschaft. Method of hardening liquid resols. 4,111,911, Cl. 260-38.000.

Welcker, Friedrich. Releasable coupling and method for making such coupling. 4,111,470, Cl. 285-320.000.

Welland, John M., to Perkin-Elmer Corporation, The. Vent control for a thermal system. 4,111,643, Cl. 432-48.000.

Wells, James W.; and Watts, Loyd A. Repair device for pipes. 4,111,234, Cl. 138-99.000.

Wells, Thomas R., to Bell & Howell Company. Optical structure for microfiche reader. 4,111,149, Cl. 353-78.000.

Wells, Thomas R.; and Dahlen, Theodore E., to Bell & Howell Company. Optical structure for microfiche reader. 4,111,537, Cl. 353-101.000.

Wellworthy Limited: *See—*
Longfoot, Gerald, 4,111,438, Cl. 277-148.000.

Wendler, Gunter K.; Corpus, Enrique; and Ohannesian, Michael J. Tool for removing injectors from diesel engines. 4,110,886, Cl. 29-255.000.

Wentz, John L., to Westinghouse Electric Corp. Charge coupled device circuit with increased signal bandwidth. 4,I12,316, Cl. 307-304.000.

Wenzel, Kurt. Method for manufacturing an impregnated wound foil capacitor. 4,110,878, Cl. 29-25.420.

Wescom, Inc.: *See—*
Roge, Ralph R.; Ziermann, Mark S.; and Wilkis, Anthony J., 4,112,481, Cl. 361-395.000.

Wesley-Jessen Inc.: *See—*
Loshaek, Samuel; and Shen, Chah M., 4,111,535, Cl. 351-160.000.

Wesley, John G., to Labelette Company. Apparatus for labeling sheeting rolls. 4,111,737, Cl. 156-458.000.

West Electric Co, Ltd.: *See—*
Iwata, Hiroshi, 4,112,447, Cl. 354-145.000.

West, Gene A.; and Hamren, Glen C., to General Motors Corporation. Engine knock signal generating apparatus with noise channel inhibiting feedback. 4,111,035, Cl. 73-35.000.

West, Theodore H., to Exxon Research & Engineering Co. Dilution chilling dewaxing solvent. 4,111,790, Cl. 208-33.000.

Western Electric Company, Inc.: *See—*
Dembiak, Matthew R.; Finnegan, John F.; Reece, Thomas B.; and Rudolph, Howard W., Jr., 4,112,247, Cl. 174-16.00R.
Thompson, Edwin C., 4,112,147, Cl. 427-100.000.

Western Stamping Corporation: *See—*
Thomson, James E., 4,111,141, Cl. 112-254.000.

Westhoff, Hermann: *See—*
Brokmann, Manfred; Sanders, Kurt; Sanders, Dieter; and Westhoff, Hermann, 4,112,163, Cl. 428-107.000.

Westinghouse Electric Corp.: *See—*
Asars, Juris A.; and Yu; Karl K., 4,112,333, Cl. 315-169.0TV.
Bolin, Philip C., 4,111,511, Cl. 339-64.00R.
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., 4,112,276, Cl. 200-148.00R.
Ewanus, Walter; and Sage, Gerald F., 4,112,368, Cl. 325-32.000.
Ho, Shih M.; and Gupta, Tapan K., 4,111,852, Cl. 252-518.000.
Laird, Willy S.; and Kendall, Ben O., 4,111,348, Cl. 228-181.000.
Lampe, Donald R.; White, Marvin H.; and Jensen, Arthur S., 4,112,456, Cl. 357-24.000.
Nelson, Hugh A.; Schweinebraten, Raymond H.; Salemi, Nicholas A.; and Rexroad, James O., 4,112,269, Cl. 200-50.0AA.
Smith, James D.B., 4,112,183, Cl. 428-363.000.
Sprengling, Gerhard R.; and Edelman, Leonard E., 4,111,715, Cl. 134-10.000.
Stahl, William F., 4,111,603, Cl. 416-95.000.
Thompson, Robert W., 4,112,353, Cl. 324-54.000.
Wentz, John L., 4,112,316, Cl. 307-304.000.
White, Marvin Hart; and Lampe, Donald Ross, 4,112,507, Cl. 365-184.000.
Winkler, Charles L.; and Eichler, Kenneth M., 4,111,284, Cl. 187-29.00R.

Wevers, Jean: *See—*
Barrat, Christian Roland; Arnau, Jose Luis; and Wevers, Jean, 4,111,855, Cl. 252-545.000.

Wexell, Dale R.: *See—*
Flannery, James E.; and Wexell, Dale R., 4,111,708, Cl. 106-53.000.

Weyerhaeuser Company: *See—*
English, Austin L., 4,111,301, Cl. 206-326.000.
Hasenwinkle, Earl Dean, 4,111,247, Cl. 144-316.000.
McCrary, Carl M.; and Larsen, Robert D. (said Carl M. McCrary assors. to), 4,111,245, Cl. 144-2.00Z.

Wharff, Donald D.: *See—*
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Wharton Engineers (Elstree) Limited: *See—*
Alexander, William; and Webb, John T. H., 4,111,398, Cl. 254-175.500.

Whatmough, Nigel Stephen: *See—*
Robinson, Frank; and Whatmough, Nigel Stephen, 4,111,008, Cl. 66-176.000.
Robinson, Frank; Girt, Keith Harry; and Whatmough, Nigel Stephen, 4,111,009, Cl. 66-189.000.

Wheeler, John A., Jr.: *See—*
Jahns, Hans O.; Galate, Joseph W.; and Wheeler, John A., Jr., 4,111,258, Cl. 165-40.000.

White, Marvin H.: *See—*
Lampe, Donald R.; White, Marvin H.; and Jensen, Arthur S., 4,112,456, Cl. 357-24.000.

White, Marvin Hart; and Lampe, Donald Ross, to Westinghouse Electric Corp. Addressable MNOS cell for non-volatile memories. 4,112,507, Cl. 365-184.000.

White, Robert I. Synchronizing control system. 4,112,479, Cl. 361-243.000.

White Sea & Baltic Company Limited, The: *See—*
Epstein, David; and Bugg, John, 4,111,253, Cl. 164-43.000.

White-Westinghouse Corporation: *See—*
Oates, Robert M.; and Heinrich, Theodore M., 4,112,287, Cl. 219-10.49R.
Tinsler, Theodore E., 4,112,015, Cl. 261-92.000.

Whitehurst, Darrell Duayne: *See—*
Haag, Werner O.; and Whitehurst, Darrell Duayne, 4,111,856, Cl. 521-30.000.

Whitman, Robert D.: *See—*
Seefried, Carl G., Jr.; Whitman, Robert D.; and Van Cleve, Russell, 4,111,865, Cl. 521-137.000.

Wicklander, Gosta. Coin sorting mechanism. 4,111,215, Cl. 133-3.00C.

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Wiegand, James B., to Solar Energy Research Corp. Modular solar radiation collector. 4,111,187, Cl. 126-271.000.

Wiegard, Klaus, to Daimler-Benz Aktiengesellschaft. Seal for rotating heat exchanger. 4,111,257, Cl. 165-9.000.

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Wild, John Paul, to Commonwealth Scientific and Industrial Research Organization. Radiators for microwave aerials. 4,112,431, Cl. 343-768.000.

Wilhelm Hegenscheidt GmbH: *See—*
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Wilhelm, Wilhelm, to Siemens Aktiengesellschaft. Device for the transmission of push-pull signals across a two-wire line in full duplex operation. 4,112,253, Cl. 178-58.00R.

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Willis, Donald Henry, to RCA Corporation. Thrush current start-up circuit for a television receiver including a start-up decoupling circuit. 4,112,465, Cl. 358-190.000.

Willsey, Charles H. Separating mechanism for egg breaking machine. 4,111,111, Cl. 99-499.000.

Wilson, George E.; Friesen, Milo E.; and Smith, Albert J., to Houdaille Industries, Inc. Method of and apparatus for jet aeration. 4,112,025, Cl. 261-29.000.

Wilson, Leslie Henry. Transport vehicles. 4,111,312, Cl. 214-6.00B.

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Winn, Fred M., Jr.; and Harris, Monty E., to Dow Chemical Company, The. Ball injector. 4,111,334, Cl. 221-75.000.

Winn, Martin; Kyncl, Jaroslav; Dunnigan, Daniel Ambrose; and Jones, Peter Hadley, to Abbott Laboratories. Antihypertensive agents. 4,112,097, Cl. 424-251.000.

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LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF SEPTEMBER, 1978

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Blatzer, Bruce T., to Caterpillar Tractor Co. Apparatus and method for electrically heating a moving wire containing treating agents. T974,002, 9-5-78, Cl. 219-155.000.
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Millen, Edward G. Cure accelerator for polysulfide polymer based sealants. T974,003, 9-5-78, Cl. 528-374.000.
Neal, James G., to Caterpillar Tractor Co. Guard for tilt cylinder hoses and fittings. T974,001, 9-5-78, Cl. 214-140.000.

LIST OF REISSUE PATENTEES

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Elias, Abram G.; and Elias, Peter G. Means for filing documents. Re. 29,751, Cl. 312-184.000.
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CLASSIFICATION OF PATENTS

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271 4,110,876

CLASS 29

25.13 4,110,877
25.42 4,110,878
4,110,879
33 K 4,110,880
91.1 4,110,881
118 4,110,882
148.4 S 4,110,883
163.5 R 4,110,884
239 4,110,885
243.51 4,111,080
255 4,110,886
401 A 4,110,887
404 4,110,888
407 4,110,889
408 4,110,890
4,110,891
420 4,110,892
420.5 4,110,893
527.6 4,110,894
564.2 4,110,895
566.3 4,110,896
568 4,110,897
4,110,898
571 4,110,899
596 4,110,900
598 4,110,901
603 4,110,902
605 4,110,903
628 4,110,904

CLASS 30

43.6 4,110,905
43.92 4,110,906
164.95 4,110,907

CLASS 32

50 4,110,908

CLASS 33

126.7 R 4,110,909
141 R 4,110,910
188 4,110,911
312 4,110,912
336 4,110,913
355 D 4,110,914

CLASS 34

20 4,110,915
197 4,110,916

CLASS 35

19 A 4,110,917
22 R 4,110,918

CLASS 36

2 R 4,110,845

CLASS 37

10 4,110,919
97 4,110,920
141 R 4,110,921

CLASS 40

152 4,110,923
158 B 4,110,924
447 4,110,922
466 4,110,925
485 4,110,926

CLASS 42

1 T 4,110,927
66 4,110,928

CLASS 43

19 4,110,929
42.14 4,110,930
55 4,110,931

CLASS 44

10 G 4,111,664

CLASS 46

29 4,110,932

CLASS 47

57.5 4,110,933

CLASS 48

77 4,111,665

CLASS 49

218 4,110,934
352 4,110,935

CLASS 51

218 R 4,110,936
229 4,110,937
281 R 4,110,938
295 4,111,666
4,111,667
298 R 4,110,939
309 A 4,111,668

CLASS 52

23 4,110,940
66 4,110,941
100 4,110,942
101 4,110,943
4,110,944
173 R 4,110,945
223 R 4,110,946
249 4,110,947
402 4,110,948
437 4,110,949
518 4,110,950
686 4,110,951
745 4,110,952

CLASS 53

386 4,110,958
419 4,110,953
433 4,110,954
445 4,110,955
558 4,110,956
589 4,110,957

CLASS 55

112 4,111,669
315 4,111,670

CLASS 56

295 4,110,959

CLASS 57

34 R 4,110,960
58.89 4,110,961
77.4 4,110,962
86 4,110,963
157 TS 4,110,964
4,110,965

CLASS 58

4 A 4,110,966
23 A 4,110,968
23 R 4,110,967
57.5 4,110,969
90 R 4,110,970

CLASS 59

84 4,110,971

CLASS 60

39.05 4,110,973
39.28 R 4,110,974
230 4,110,972
262 4,110,975
270 R 4,110,977
276 4,110,978
4,110,979
4,111,010
282 4,110,976
325 4,110,980
371 4,110,981
413 4,110,982
469 4,111,003
477 4,110,983
509 4,110,984
548 4,110,985
641 4,110,986
652 4,110,987

CLASS 62

10 4,111,671
50 4,110,995
54 4,110,996
81 4,110,997
125 4,110,998
171 4,110,999
262 4,111,000
427 4,111,001
467 R 4,111,002
476 4,111,004
503 4,111,005

CLASS 65

3 C 4,111,672
6 4,111,673
77 4,111,674
114 4,111,675
4,111,676
271 4,111,677

CLASS 66

9 B 4,111,006
125 R 4,111,007
176 4,111,008
189 4,111,009

CLASS 68

17 R 4,111,011
205 R 4,111,012

CLASS 69

21 4,111,013

CLASS 70

25 4,111,014
58 4,111,015
4,111,016
293 4,111,017
352 4,111,018
358 4,111,019
363 4,111,020
406 4,111,021

CLASS 71

27 4,111,678
67 4,111,679
88 4,111,680
92 4,111,681
98 4,111,682
104 4,111,683
115 4,111,684

CLASS 72

60 4,111,023
4,111,024
164 4,111,025
289 4,111,026
320 4,111,027
324 4,111,028
342 4,111,029
351 4,111,030
359 4,111,031
366 4,111,032
410 4,111,022

CLASS 73

11 4,111,033
23 4,111,034
4,111,036
35 4,111,035
40.5 R 4,111,037
65 4,111,038
81 4,111,039
105 4,111,040
115 4,111,041
194 M 4,111,042
197 4,111,043
215 4,111,044
228 4,111,045
231 R 4,111,046
302 4,111,047
338 4,111,048
362 R 4,111,050
371 Re.29,750
421.5 R 4,111,049
423 A 4,111,051
432 R 4,111,052
588 4,111,053
611 4,111,054
620 4,111,055
706 4,111,056
709 4,111,057
714 4,111,058

CLASS 74

12 4,111,059
56 4,111,060
61 4,111,061
96 4,111,062
242.6 4,111,063
243 DR 4,111,064
410 4,111,065
471 R 4,111,066
572 4,111,067
586 4,111,068
606 R 4,111,069
625 4,111,070
753 4,111,071
864 4,111,072
865 4,111,073
867 4,111,074

CLASS 75

0.5 A 4,111,686
13 4,111,687
118 R 4,111,688
122 4,111,689
165 4,111,690
170 4,111,691
951 4,111,685

CLASS 76

41 4,111,075

CLASS 81

9.5 A 4,111,076
63 4,111,077
71 4,111,078
90 A 4,111,079

CLASS 82

33 R 4,111,082
36 A 4,111,083
48 4,111,084

CLASS 83

1 4,111,085
90 4,111,086
210 4,111,087
471.2 4,111,088
542 4,111,089

CLASS 84

1.01 4,111,090
4,111,091
1.27 4,111,092
267 4,111,093
402 4,111,094
422 R 4,111,095

CLASS 85

9 R 4,111,580
11 4,111,096

CLASS 89

36 A 4,111,097

CLASS 90

4 4,111,098

CLASS 91

173 4,111,099
401 4,111,100
405 4,111,101
480 4,111,102

CLASS 92

57 4,111,103
127 4,111,104

CLASS 93

37 SP 4,111,105

CLASS 96

1 R 4,111,692
1.6 4,111,693
36.1 4,111,694
40 4,111,695
42 4,111,696
66.5 4,111,697
79 4,111,698
87 R 4,111,699

CLASS 98

2.13 4,111,106
60 4,111,107

CLASS 99

289 R 4,111,108
353 4,111,109
456 4,111,110
499 4,111,111
538 4,111,112

CLASS 100

74 4,111,113
100 4,111,114
116 4,111,115
281 4,111,116

CLASS 101

93.28 4,111,117
123 4,111,118
127.1 4,111,119
175 4,111,120
227 4,111,121
228 4,111,122
407 A 4,111,123
426 4,111,124

CLASS 102

18 R 4,111,125
52 4,111,126
237 4,111,127

CLASS 104

7 B 4,111,128
12 4,111,129
28 4,111,130

CLASS 105

224.1 4,111,131
469 4,111,132

CLASS 106

2 4,111,700
15 FP 4,111,701
19 4,111,702
21 4,111,703
25 4,111,704
38.35 4,111,705
44 4,111,706
47 Q 4,111,707
53 4,111,708
67 4,111,709
85 Re.29,753
90 4,111,710
97 4,111,711
120 4,111,712
288 B 4,111,713

CLASS 108

45 4,111,133

CLASS 110

328 4,111,134

CLASS 111

2 4,111,135

CLASS 112

79 R 4,111,136
121.15 4,111,137
141 4,111,138
226 4,111,139
254 4,111,140
4,111,141

CLASS 113

1 E 4,111,142
1 N 4,111,143

CLASS 114

48 4,111,144
72 4,111,145
74 A 4,111,146
298 4,111,147

CLASS 115

76 4,111,148

CLASS 118

7 4,111,150
4,111,151
4,111,152
4,111,153
10 4,111,154
642 4,111,155
662 4,111,156

CLASS 119

1 4,111,157

CLASS 122

4 D 4,111,158
27 4,111,159

CLASS 123

1 A 4,111,160
3 4,111,161
32 EE 4,111,162
32 SA 4,111,178
32 ST 4,111,177
52 M 4,111,163
78 E 4,111,164
90.15 4,111,165
97 B 4,111,166
102 4,111,167
117 A 4,111,168
119 A 4,111,172
119 EC 4,111,169
4,111,170
4,111,171
139 AQ 4,111,173
148 CC 4,111,174
198 DB 4,111,176
198 DC 4,111,175

CLASS 124

7 4,111,179

CLASS 125

35 4,111,180

CLASS 126

77 4,111,181
110 B 4,111,182
270 4,111,183
4,111,184
271 4,111,185
4,111,186
4,111,187
4,111,188

400 4,111,189

CLASS 127

46 A 4,111,714

CLASS 128

2 A 4,111,190
2.05 F 4,111,191
38 4,111,192
66 4,111,193
80 C 4,111,194
83 4,111,195
130 4,111,196
142.4 4,111,197
214 E 4,111,198
214 R 4,111,199
233 4,111,200
260 4,111,201
4,111,202
4,111,203
276 4,111,204
284 4,111,205
305 4,111,206
4,111,207
305.1 4,111,208
400 4,111,209

CLASS 130

30 R 4,111,210

CLASS 131

2 4,111,211
21 A 4,111,212
173 4,111,213
4,111,214

CLASS 133

3 A 4,111,216
3 C 4,111,215

CLASS 134

10 4,111,715
4,111,716

CLASS 135

15 PQ 4,111,217

CLASS 136

225 4,111,717
236 R 4,111,718

CLASS 137

2 4,111,218
3 4,111,219
39 4,111,220
67 4,111,221
69 4,111,222
115 4,111,223
207 4,111,224
240 4,111,225
269 4,111,226
435 4,110,849
469 4,111,227
512 4,111,228
557 4,111,342
614.17 4,111,229
625.5 4,111,230
852 4,111,231
882 4,111,232

CLASS 138

89 4,111,233
99 4,111,234
109 4,111,235
120 4,111,236
125 4,111,237

CLASS 139

436 4,111,238
438 4,111,239
449 4,111,240

CLASS 140

92.7 4,111,241
124 4,111,242

CLASS 141

102 4,111,243
348 4,111,244

CLASS 144

2 Z 4,111,245
193 A 4,111,246
316 4,111,247

CLASS 148

1.5 4,111,719
4,111,720
2 4,111,721
6.15 R 4,111,722
32 4,111,723
175 4,111,724
4,111,725
4,111,726

CLASS 149

2 4,111,727
19.5 4,111,728
19.9 4,111,729

CLASS 150

1.5 R 4,111,248

CLASS 152

187 4,111,250
219 4,111,251
330 RF 4,111,249

CLASS 156

62.2 4,111,730
86 4,111,731
96 4,111,732
204 4,111,733
234 4,111,734
384 4,111,735
4,111,736
458 4,111,737
4,111,738
486 4,111,739
498 4,111,740
504 4,111,741
617 SP 4,111,742

CLASS 162

16 4,111,743
100 4,111,744
271 4,111,745
272 4,111,746

CLASS 164

23 4,111,252
43 4,111,253
138 4,111,254
255 4,111,255
335 4,111,256

CLASS 165

9 4,111,257
40 4,111,258
104 S 4,111,260

CLASS 166

86 4,111,261
99 4,111,262

CLASS 172

54 4,111,263
59 4,111,264
4,111,265
4,111,266
4,111,267
805 4,111,268

CLASS 173

134 4,111,269

CLASS 174

16 R 4,112,247
50 4,112,248
68 B 4,112,249
87 4,112,251

CLASS 175

220 4,111,270
297 4,111,271

CLASS 176

40 4,111,747
68 4,111,748

CLASS 177

50 4,111,272

CLASS 178

58 R 4,112,252
4,112,253

CLASS 179

1 GA 4,112,256
1 GQ 4,112,255
1 VL 4,112,254
2 EB 4,112,257
15 AT 4,112,258
15 BT 4,112,259
18 FC 4,112,260
99 4,112,261
170 G 4,112,262
175.3 R 4,112,264
175.31 R 4,112,263

CLASS 180

14 R 4,111,273
25 R 4,111,274
68 R 4,111,275
117 4,111,276
122 4,111,277

CLASS 181

249 4,111,278
264 4,111,279
290 4,111,081

CLASS 182

8 4,111,280
10 4,111,281

CLASS 186

1 C 4,111,282

CLASS 187

9 R 4,111,283
29 R 4,111,284

CLASS 188

73.6 4,111,285

CLASS 192

3.27 4,111,287
38 4,111,288
58 B 4,111,289
98 4,111,290
105 C 4,111,291

CLASS 194

101 4,111,292

CLASS 195

2 4,111,749
31 F 4,111,750
66 R 4,111,751
103.5 M 4,111,752
126 4,111,753
127 4,111,754

CLASS 198

381 4,111,294
399 4,111,295
519 4,111,296

CLASS 200

31 R 4,112,265
38 C 4,112,266
43 4,112,267
48 SB 4,112,268
50 AA 4,112,269
50 C 4,112,270
52 R 4,112,271
61.58 R 4,112,272
67 D 4,112,273
146 R 4,112,274
147 R 4,112,275
148 R 4,112,276
153 J 4,112,277
156 4,112,278
181 4,112,279
296 4,112,282
302 4,112,283
340 4,112,284

CLASS 201

6 4,111,755
41 4,111,756

CLASS 202

93 4,111,757
138 4,111,758

CLASS 203

7 4,111,759

CLASS 204

26 4,111,760
4,111,761
28 Re.29,754
33 4,111,762
38 A 4,111,763
64 R 4,111,764
67 4,111,765
109 4,111,766
146 4,111,767
151 4,111,768
159.15 4,111,769
4,111,770
159.22 4,111,771
180 P 4,111,772
180 R 4,111,773
186 4,111,774
192 C 4,111,775
195 M 4,111,777
195 S 4,111,778
195 T 4,111,776
255 4,111,779
266 4,111,780
280 4,111,781
298 4,111,782
4,111,783
299 EC 4,111,784
299 R 4,111,785

CLASS 206

44.12 4,111,297
151 4,111,298
215 4,111,299
280 4,111,300
326 4,111,301
363 4,111,302
520 4,111,303
534 4,111,304
563 4,111,305
611 4,111,306

CLASS 208

8 4,111,786
10 4,111,787
4,111,788
11 LE 4,111,789
33 4,111,790
78 4,111,791
79 4,111,792
121 4,111,793
131 4,111,794
216 4,111,795
4,111,796

CLASS 209

14 4,111,797
172.5 4,111,798
273 4,111,799

CLASS 210

10 4,111,800
23 H 4,111,810
40 4,111,801
46 4,111,802
51 4,111,803
58 4,111,804
71 4,111,805
115 4,111,806
152 4,111,807
197 4,111,808
242 R 4,111,809
242 S 4,111,811
257 M 4,111,812
282 4,111,813
323 T 4,111,814
487 4,111,815

CLASS 211

1.5 4,111,307
59.1 4,111,308
104 4,111,309

CLASS 214

1 BC 4,111,311
1 QD 4,111,310
6 B 4,111,312
15 R 4,111,313
17 A 4,111,314
17 C 4,111,315
75 H 4,111,316
77 P 4,111,317
83.22 4,111,318
131 A 4,111,319
145 A 4,111,320
501 4,111,321

CLASS 215

230 4,111,322
4,111,323
232 4,111,324
4,111,325
247 4,111,326

CLASS 219

10.41 4,112,285
4,112,286
10.49 R 4,112,287
121 P 4,112,288
124.33 4,112,289
216 4,112,280
275 4,112,290
283 4,112,281
497 4,111,443

CLASS 220

3 4,111,327
4 R 4,111,328
266 4,111,329
306 4,111,330
319 4,111,331

CLASS 221

7 4,111,332
73 4,111,333
75 4,111,334

CLASS 222

57 4,111,335
58 4,111,336
146 HE 4,111,337
180 4,111,338
394 4,111,339
527 4,111,340

CLASS 223

106 4,111,341

CLASS 224

5 H 4,111,343
42.24 4,111,344

CLASS 225

1 4,111,345
96.5 4,111,346

CLASS 227

68 4,111,347

CLASS 228

181 4,111,348

CLASS 229

3.5 R 4,111,349
15 4,111,350
17 M 4,111,351
31 R 4,111,352
34 R 4,111,353
62.5 4,111,354

CLASS 233

20 R 4,111,355
26 4,111,356

CLASS 235

92 MP 4,112,291
449 4,112,292

CLASS 236

11 4,111,357
15 A 4,111,358

CLASS 237

1 A 4,111,259
4,111,359
4,111,360

CLASS 238

338 4,111,361

CLASS 239

1 4,111,362
20 4,111,363
77 4,111,364
93 4,111,365
222.17 4,111,366
333 4,111,367
394 4,111,368
400 4,111,369
533.3 4,111,370

CLASS 241

18 4,111,371
37.5 4,111,372
46.11 4,111,373
101.7 4,111,374

CLASS 242

18 PW 4,111,375
25 A 4,111,376
56 R 4,111,377
57 4,111,378
71.1 4,111,379
128 4,111,380
130.2 4,111,381

CLASS 244

3.1 4,111,382
3.13 4,111,383
4,111,384
4,111,385
17.27 4,111,386
155 A- 4,111,387

CLASS 248

49 4,111,388
162 4,111,389
274 4,111,390

CLASS 250

199 4,112,293
203 R 4,112,294
237 G 4,112,295
288 4,112,297
324 4,112,298
326 4,112,299
330 4,112,300
364 4,112,301
381 4,112,302
401 4,112,397
445 T 4,112,303
476 4,112,304
492 R 4,112,305
499 4,112,306
510 4,112,307
551 4,112,308
560 4,112,309
574 4,112,310

CLASS 251

5 4,111,391
174 4,111,393
214 4,111,392
4,111,394
306 4,111,395
328 4,111,396

CLASS 252

8.6 4,111,816
8.8 4,111,817
8.9 4,111,818
4,111,819
49.5 4,111,820
49.9 4,111,821
51.5 A 4,111,822
62.1 P 4,111,823
63 4,111,824
4,111,825
89 R 4,111,826
90 4,111,827
106 4,111,844
182 4,111,828
361 4,111,829
412 4,111,832
429 B 4,111,834
4,111,836
429 C 4,111,835
429 R 4,111,833
430 4,111,837
4,111,838
431 P 4,111,839
432 4,111,840
439 4,111,841
447 4,111,842
451 4,111,843
455 Z 4,111,845
4,111,846
463 4,111,847
466 PT 4,111,848
474 4,111,849
501 4,111,850
518 4,111,851
4,111,852
536 4,111,853
541 4,111,854
545 4,111,855

CLASS 254

150 R 4,111,397
175.5 4,111,398

CLASS 256

13.1 4,111,401
32 4,111,399
47 4,111,400

CLASS 260

5 4,111,867
17.4 ST 4,111,868
18 N 4,111,869
21 4,111,870
22 CB 4,111,871
23 R 4,111,874
4,111,875
23 XA 4,111,873
23.7 A 4,111,872
29.6 E 4,111,881
29.6 ME 4,111,878
29.6 MP 4,111,880
29.6 N 4,111,879
29.6 R 4,111,877
29.6 RB 4,111,876
30.6 R 4,111,882
4,111,883
4,111,884
31.6 4,111,888
31.8 M 4,111,889
31.8 R 4,111,885
31.8 T 4,111,886
37 AL 4,111,887
37 SB 4,111,890
38 4,111,891
4,111,911
40 R 4,111,892
4,111,893
4,111,894
42.18 4,111,895
4,111,896
42.33 4,111,897
42.53 4,111,898
45.7 P 4,111,900
45.75 B 4,111,905
45.75 N 4,111,904
45.75 S 4,111,903
45.8 A 4,111,902
45.8 N 4,111,901
45.8 R 4,111,899
45.95 R 4,111,977
112.5 R 4,111,923
4,111,924
4,111,925
117 4,111,926
123.5 4,111,927
124 R 4,111,928
146 R 4,111,929
207.5 4,111,930
239.1 4,111,932
4,111,933
239.3 B 4,111,931
4,111,934
281 GN 4,111,937
290 HL 4,111,938
293.58 4,111,942
293.6 4,111,939
4,111,940
4,111,941
294.8 D 4,111,943
296 R 4,111,944
297 R 4,111,945
4,111,946
299 4,111,947
302 R 4,111,948
306.8 D 4,111,949
308 R 4,111,950
326.2 4,111,951
326.41 4,111,953
326.5 FN 4,111,952

326.62 4,111,954
327 M 4,111,955
329 AM 4,111,956
332.2 C 4,111,957
340.7 4,111,958
340.9 R 4,111,959
4,111,960
345.8 R 4,111,961
346.71 4,111,962
346.75 4,111,963
347.7 4,111,964
348.16 4,111,965
359 R 4,112,017
373 4,111,966
396 R 4,111,967
410.9 R 4,111,969
438.5 R 4,111,970
4,111,971
439 R 4,111,972
448.2 E 4,111,973
448.8 R 4,111,974
449 L 4,111,975
453 RW 4,111,976
465 D 4,111,978
465.6 4,111,968
509 4,111,979
543 R 4,111,988
544 C 4,111,989
561 R 4,111,990
583 P 4,111,991
586 R 4,111,992
4,111,993
4,111,994
590 C 4,111,995
590 D 4,111,996
591 4,111,997
599 4,111,998
606.5 B 4,111,999
612 R 4,112,002
613 D 4,112,003
645 4,112,005
4,112,006
666 A 4,112,007
671 M 4,112,008
677 A 4,112,009
683.15 R 4,112,011
683.48 4,112,010
830 R 4,111,907
835 4,112,012
849 4,112,016
861 4,112,018
866 4,112,019
873 4,112,020
878 R 4,112,013
880 R 4,112,021
881 4,112,022
901 4,112,023
945 4,112,014
956 4,112,024

CLASS 261

29 4,112,025
4,112,026
92 4,112,015
151 4,112,027

CLASS 264

1 4,112,028
11 4,112,029
25 4,112,030
26 4,112,031
28 4,112,036
42 4,112,032
44 4,112,033
95 4,112,034
113 4,112,035
126 4,112,037
138 4,112,038
142 4,112,039
176 F 4,112,040
250 4,112,043
263 4,112,041
322 4,112,042

CLASS 266

58 4,111,403
4,111,404
158 4,111,405

CLASS 267

153 4,111,406
166 4,111,407

CLASS 269

289 R 4,111,408
304 4,111,409

CLASS 271

173 4,111,410
199 4,111,411
251 4,111,412

CLASS 272

1 R 4,111,413
62 4,111,414
94 4,111,415
96 4,111,416
136 4,111,417

CLASS 273

1 B 4,111,419
1 R 4,111,418
1.5 R 4,111,420
85 G 4,111,421
101 4,111,422
101.1 4,111,423
106.5 C 4,111,424
157 R 4,111,425
186 C 4,111,426
250 4,111,427
262 4,111,428
271 4,111,429

CLASS 274

9 A 4,111,431
9 B 4,111,430
15 R 4,111,432
23 R 4,111,433

CLASS 277

3 4,111,434
9 4,111,435
92 4,111,436
139 4,111,437
148 4,111,438
153 4,111,439
165 4,111,440
183 4,111,441

CLASS 279

16 4,111,442

CLASS 280

11.37 E 4,111,444
79.3 4,111,445
275 4,111,446
278 4,111,447
289 E 4,111,448
402 4,111,449
405 A 4,111,450
408 4,111,451
421 4,111,452
626 4,111,453
649 4,111,454
690 4,111,455
692 4,111,456
728 4,111,457
739 4,111,458
744 4,111,459

CLASS 281

29 4,111,460

CLASS 282

27.5 4,111,461
4,111,462

CLASS 285

25 4,111,463
111 4,111,464
114 4,111,465
133 R 4,111,466
136 4,111,467
190 4,111,468
256 4,111,469
320 4,111,470

CLASS 289

18 4,111,471

CLASS 290

44 4,112,311

CLASS 292

92 4,111,472
126 4,111,473
144 4,111,474
216 4,111,475
246 4,111,476
252 4,111,477

CLASS 293

63 4,111,478

CLASS 296

23 MC 4,111,479
28 R 4,111,480
39 R 4,111,481

CLASS 297

159 4,111,482
410 4,111,483
4,111,484

CLASS 298

1 B 4,111,485

CLASS 299

1 4,111,486
4,111,487
10 4,111,488
17 4,111,490
34 4,111,489

CLASS 300

21 4,111,491

CLASS 302

39 4,111,492
42 4,111,493

CLASS 303

6 C 4,111,494
4,111,495
92 4,111,496
110 4,111,497

CLASS 307

118 4,112,312
141 4,112,313
215 4,112,314
254 4,112,315
279 4,112,296
304 4,112,316
308 4,112,317
4,112,318

CLASS 308

5 R 4,111,498
72 4,111,499
187 4,111,500
201 4,111,501

CLASS 310

49 R 4,112,319
154 4,112,320
242 4,112,321
329 Re.29,755
339 4,112,322
348 4,112,323
353 4,112,324

CLASS 312

10 4,111,502
27 4,111,503
183 4,111,504
184 Re.29,751
209 4,111,505
211 4,111,506

CLASS 313

95 4,112,325
4,112,326
337 4,112,327
486 4,112,328
491 4,112,329

CLASS 315

46 4,112,330
125 4,112,331
169 TV 4,112,332
4,112,333
171 4,112,334
241 R 4,112,335
362 4,112,336
411 4,112,337

CLASS 316

27 4,111,507

CLASS 318

59 4,112,338
227 4,112,339
331 4,112,340
370 4,112,341
599 4,112,342
674 4,112,343
685 4,112,344
696 4,112,345

CLASS 323

4 4,112,346
6 4,112,347
43.5 S 4,112,348

CLASS 324

3 4,112,349
16 R 4,112,350
4,112,351
30 R 4,112,352
54 4,112,353
4,112,354
57 R 4,112,355
71 SN 4,112,356
72 4,112,357
78 D 4,112,358
78 E 4,112,359
80 4,112,360
92 4,112,361
158 F 4,112,364
158 P 4,112,363
158 R 4,112,362
173 4,112,365
208 4,112,366
244 4,112,367

CLASS 325

32 4,112,368
34 4,112,369
40 4,112,370
319 4,112,371
321 4,112,372
440 4,112,373
446 4,112,374
452 4,112,375
455 4,112,376
461 4,112,377
464 4,112,378

CLASS 328

5 4,112,379
62 4,112,380
150 4,112,381
181 4,112,382

CLASS 329

50 4,112,383

CLASS 330

141 4,112,384
262 4,112,385
265 4,112,386
285 4,112,387

CLASS 331

94.5 D 4,112,388
94.5 G 4,112,390
94.5 H 4,112,389
94.5 PE 4,112,391
4,112,392
109 4,112,393

CLASS 333

6 4,112,394
17 M 4,112,395
30 R 4,112,396
73 R 4,112,398

CLASS 335

106 4,112,399
128 4,112,400
206 4,112,401
252 4,112,402

CLASS 336

12 4,112,403
133 4,112,404

CLASS 337

4 4,112,405
338 4,112,406
398 4,112,407

CLASS 338

32 H 4,112,408
222 4,112,409
243 4,112,410
322 4,112,250

CLASS 339

14 P 4,111,509
14 R Re.29,752
17 F 4,111,510
64 R 4,111,511
105 4,111,512
112 R 4,111,515
113 R 4,111,516
143 R 4,111,513
186 R 4,111,514
198 GA 4,111,517
252 R 4,111,518

CLASS 340

1 R 4,112,411
15.5 TS 4,112,412
27 R 4,112,413
146.1 E 4,112,414
146.3 SY 4,112,415
147 R 4,112,416
324 AD 4,112,422
4,112,423
4,112,424
336 4,112,425
347 AD 4,112,426
347 C 4,112,427
4,112,428
347 NT 4,112,429
365 R 4,112,420
550 4,112,419
560 4,112,417
605 4,112,418
659

CLASS 343

100 R 4,112,430
112 D 4,112,421
768 4,112,431
786 4,112,432

CLASS 346

1 4,112,433
33 ME 4,112,434
140 R 4,112,435
4,112,436
159 4,112,437

CLASS 350

3.66 4,111,519
96.12 4,111,520
96.13 4,111,521
96.14 4,111,523
96.19 4,111,524
96.21 4,111,522
96.31 4,111,525
162 SF 4,111,526
174 4,111,527
175 E 4,111,528
189 4,111,558
225 4,111,529
252 4,111,530
293 4,111,531
307 4,111,532
337 4,111,533
345 4,111,534

CLASS 351

160 4,111,535

CLASS 352

132 4,111,536

CLASS 353

66 4,112,438
78 4,111,149
101 4,111,537
122 4,111,538

CLASS 354

23 D 4,112,439
4,112,440
24 4,112,441
31 4,112,442
4,112,443
50 4,112,446
85 Re.29,756
106 4,112,444
145 4,112,447
173 4,112,449
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239 4,112,448
258 4,112,451
322 4,112,452
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4,112,454

CLASS 355

3 R 4,111,539
4 4,111,540
8 4,111,541
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4,111,543
4,111,544
15 4,111,545
4,111,546
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30 4,111,548
68 4,111,549
75 4,111,550
84 4,111,551

CLASS 356

4 4,111,552
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4,111,554
86 4,111,556
141 4,111,555
168 4,111,557
201 4,111,559
205 4,111,560
225 4,111,561
244 4,111,562
4,111,563
247 4,111,564

CLASS 357

23 4,112,455
24 4,112,456
30 4,112,457
38 4,112,458

CLASS 358

6 4,112,459
29 4,112,460
63 4,112,461
104 4,112,462
105 4,112,463
122 4,112,464
127 4,112,445
190 4,112,465
241 4,112,466
257 4,112,467
280 4,112,468
296 4,112,469

CLASS 360

88 4,112,470
98 4,112,471
102 4,112,472

CLASS 361

1 4,112,473
15 4,112,474
33 4,112,475
42 4,112,476
155 4,112,477
162 4,112,478
243 4,112,479
271 4,112,480
395 4,112,481

CLASS 362

108 4,112,482
298 4,112,483
314 4,112,484
369 4,112,485
419 4,112,486

CLASS 364

200 4,112,487
4,112,488
4,112,489
4,112,490
415 4,112,491
442 4,112,492
476 4,112,493
510 4,112,494
700 4,112,495
728 4,112,496
4,112,497
4,112,498
732 4,112,499
900 4,112,500
4,112,501
4,112,502

CLASS 365

29 4,112,503
77 4,112,504
96 4,112,505
154 4,112,508
181 4,112,506
184 4,112,507
185 4,112,509
187 4,112,510
188 4,112,511
203 4,112,512
222 4,112,513
4,112,514

CLASS 366

17 4,112,515
80 4,112,516
102 4,112,517
219 4,112,518
266 4,112,519
337 4,112,520
338 4,111,402

CLASS 400

208 4,111,293
708 4,111,565

CLASS 401

6 4,111,566
202 4,111,567

CLASS 403

2 4,111,568
5 4,111,569
18 4,111,570
27 4,111,571
28 4,111,572
42 4,111,573
54 4,111,574
104 4,111,575
134 4,111,576
172 4,111,577
189 4,111,578
387 4,111,579

CLASS 404

10 4,111,581
47 4,111,582
69 4,111,583
4,111,584
70 4,111,585

CLASS 405

14 4,110,990
131 4,110,988
147 4,110,992
157 4,110,991
158 4,110,994
228 4,110,993
248 4,110,989

CLASS 407

16 4,111,586
91 4,111,587
114 4,111,589

CLASS 408

14 4,111,590
110 4,111,588
117 4,111,591
197 4,111,592
204 4,111,593

CLASS 415

1 4,111,594
90 4,111,595
115 4,111,596
143 4,111,597
202 4,111,598
215 4,111,599

CLASS 416		580 H	4,112,062	301	4,112,116	322	4,112,151	104	4,112,203	503	4,112,215
2	4,111,600	633	4,112,063	304	4,112,117	385 R	4,112,152	181	4,112,204	**CLASS 536**	
41	4,111,601	**CLASS 424**		317	4,112,119	390 E	4,112,153	199	4,112,205	1	4,112,216
89	4,111,602	1	4,112,064	323	4,112,120	401	4,112,154	**CLASS 431**		4	4,112,217
95	4,111,603	45	4,112,065	346	4,112,121	439	4,112,155	2	4,111,636	5	4,112,218
97 R	4,111,604	48	4,112,066	**CLASS 425**		444	4,112,156	4	4,111,641	17	4,112,219
141	4,111,605	78	4,112,067	43	4,111,619	**CLASS 428**		12	4,111,637	18	4,112,220
224	4,111,606	89	4,112,068	66	4,111,620	1	4,112,157	13	4,111,638	24	4,112,221
CLASS 417		93	4,112,069	97	4,111,621	35	4,112,158	25	4,111,639	111	4,112,222
46	4,111,607	101	4,112,070	112	4,111,622	36	4,112,159	46	4,111,640	114	4,112,223
112	4,111,608	118	4,112,071	129 R	4,111,623	95	4,112,161	347	4,111,642	**CLASS 542**	
243	4,111,609	155	4,112,072	135	4,111,624	106	4,112,162	**CLASS 432**		426	4,112,224
332	4,111,610	177	4,112,073	174.8 E	4,111,625	107	4,112,163	48	4,111,643		4,112,225
360	4,111,611		4,112,074	203	4,111,626	116	4,112,164	179	4,111,644	461	4,112,226
372	4,111,612	180	4,112,075	215	4,111,631	134	4,112,165	**CLASS 521**		**CLASS 544**	
394	4,111,613		4,112,076	382 R	4,111,632	141	4,112,166	25	4,111,858	26	4,112,228
420	4,111,614	185	4,112,077	421	4,111,627	154	4,112,167	30	4,111,856	105	4,112,229
423 A	4,111,615	195	4,112,078	445	4,111,628	198	4,112,168	33	4,111,859		4,112,230
472	4,111,616		4,112,079	451	4,111,633	206	4,112,169	53	4,111,866	174	4,112,231
CLASS 418		200	4,112,080	451.2	4,111,629	212	4,112,170	55	4,111,862	192	4,112,232
61 B	4,111,617		4,112,081	462	4,111,630	213	4,112,171	63	4,111,863	224	4,111,935
152	4,111,618	209	4,112,082	505	4,111,634	215	4,112,172	84	4,111,860	239	4,111,936
CLASS 422		215	4,112,083	533	4,111,635		4,112,173	117	4,111,864	**CLASS 548**	
12	4,111,831	226	4,112,084	**CLASS 426**		220	4,112,174	123	4,111,861	312	4,112,233
17	4,111,830	245	4,112,085	19	4,112,122	236	4,112,175	137	4,111,865	342	4,112,234
26	4,111,654	246	4,112,086	72	4,112,123	304	4,112,176	**CLASS 526**		**CLASS 560**	
48	4,111,659		4,112,087	234	4,112,124		4,112,177	3	4,112,206	1	4,112,235
117	4,111,661	248.55	4,112,088	250	4,112,125	306	4,112,178	6	4,111,920	12	4,112,236
124	4,111,655	250	4,112,089		4,112,126	325	4,112,179	17	4,112,207		4,112,237
191	4,111,663		4,112,091	283	4,112,127	332	4,112,180	57	4,112,208	70	4,112,238
231	4,111,662		4,112,092	330.4	4,112,128	336	4,112,181	65	4,112,209	73	4,112,239
CLASS 423			4,112,093	417	4,112,129		4,112,182	187	4,112,210	112	4,112,240
7	4,112,044		4,112,094	471	4,112,130	363	4,112,183	219	4,112,211	246	4,112,241
	4,112,045		4,112,095	582	4,112,131	403	4,112,184	234	4,112,212	**CLASS 562**	
8	4,111,660	251	4,112,090	603	4,112,132		4,112,185	264	4,111,919	401	4,111,980
53	4,112,046		4,112,096	650	4,112,133	411	4,112,186	279	4,112,213		4,111,987
123	4,112,047		4,112,097	**CLASS 427**		436	4,112,188	292	4,111,922	444	4,111,981
210	4,112,048	263	4,112,098	10	4,112,134	443	4,112,189	**CLASS 528**		519	4,111,982
223	4,112,050	266	4,112,099	11	4,112,135	457	4,112,190	45	4,111,912	535	4,111,983
	4,112,051	267	4,112,100	34	4,112,149	460	4,112,160		4,111,917	538	4,111,984
226	4,112,049	270	4,112,101	36	4,112,136	474	4,112,187	48	4,111,914	546	4,111,985
228	4,112,052		4,112,102	38	4,112,137	497	4,112,191	58	4,111,915	549	4,111,986
239	4,112,053		4,112,103	54	4,112,138	511	4,112,192	73	4,111,918	**CLASS 568**	
245	4,112,054		4,112,104		4,112,139	539	4,112,193	75	4,111,916	726	4,112,242
261	4,112,055		4,112,105		4,112,146		4,112,194	123	4,111,909	734	4,112,000
313	4,112,118		4,112,106		4,112,147	542	4,112,195	226	4,111,857	768	4,112,243
329	4,112,056		4,112,107	100	4,112,140	594	4,112,196	229	4,111,906		4,112,244
342	4,112,057	272	4,112,108	126	4,112,141	629	4,112,197	273	4,111,913	855	4,112,001
415 A	4,112,058	273 P	4,112,109	142	4,112,142	**CLASS 429**		338	4,111,921	861	4,112,004
447.6	4,112,059	274	4,112,110	166	4,112,143	27	4,112,198	361	4,111,908	864	4,112,245
450	4,112,060		4,112,111	191	4,112,144	29	4,112,199	494	4,112,214		
512 A	4,112,061	275	4,112,112	223	4,112,148	54	4,112,200				
		285	4,112,113	248 C	4,112,145	62	4,112,201				
		300	4,112,114	274	4,112,150	94	4,112,202				
			4,112,115	284			4,112,203				

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	241	249,198		190	249,215			249,232			249,249		14	249,266			249,282
	274	249,199		191	249,216		219	249,233		114	249,250		15	249,267	D30—	12	249,283
	311	249,200		200	249,217			249,234	D11—	19	249,251		69	249,268		13	249,284
D3—	19 R	249,201	D7—	5	249,218			249,235		88	249,252		90	249,269		15	249,285
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	31	249,203		129	249,220			249,237	D12—	61	249,254	D19—	37	249,271		5 CH	249,288
	38	249,204		137	249,221			249,238		91	249,255		75	249,272		5 R	249,287
	55	249,205	D8—	14	249,222		222	249,239		103	249,256		78	249,273		15 AC	249,290
	73	249,206			249,223		231	249,240		182	249,257	D22—	31	249,274		15 K	249,289
	89	249,207		313	249,224		239	249,241		187	249,258	D23—	4	249,275	D48—	4 B	249,291
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	113	249,209		367	249,226		31	249,243	D14—	6	249,260		150	249,277		24 R	249,293
	114	249,210		387	249,227		32	249,244			249,261	D24—	2	249,278	D52—	3 R	249,294
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,111,234	4,111,908	4,111,097		4,112,432		4,111,519	4,111,535			
	4,111,976	4,112,047	4,111,179		4,112,455		4,111,545	4,111,537			
2 :	4,111,224	4,112,126	4,111,184		4,112,483		4,111,585	4,111,546			
4 :	4,110,852	4,112,128	4,111,191		4,112,490		4,112,249	4,111,549			
	4,111,043	4,112,263	4,111,201		4,112,492		4,112,357	4,111,583			
	4,111,188	4,112,327	4,111,203		4,112,497		4,112,499	4,111,633			
	4,111,471	4,112,394	4,111,269		4,112,518	13 :	4,110,998	4,111,670			
5 :	4,110,927	4,112,436	4,111,291	08 :	4,111,026		4,111,085	4,111,679			
6 :	4,110,845	4,112,482	4,111,335		4,111,399		4,111,105	4,111,721			
	4,110,848	4,112,511	4,111,366		4,111,426		4,111,112	4,111,737			
	4,110,854	4,112,520	4,111,419		4,111,493		4,111,120	4,111,836			
	4,110,864	8 : 4,111,180	4,111,430		4,111,689		4,111,219	4,111,843			
	4,110,874	4,111,183	4,111,475		4,111,762		4,111,232	4,111,853			
	4,110,886	4,111,187	4,111,477		4,111,808		4,111,300	4,111,942			
	4,110,928	4,111,341	4,111,521		4,111,891		4,111,301	4,111,949			
	4,110,977	4,111,490	4,111,538		4,112,129		4,111,732	4,111,986			
	4,110,990	4,112,144	4,111,565		4,112,179		4,112,069	4,112,025			
	4,111,037	9 : Re.29,754	4,111,593		4,112,195		4,112,130	4,112,097			
	4,111,050	4,110,881	4,111,663		4,112,202		4,112,355	4,112,121			
	4,111,055	4,110,936	4,111,683		4,112,381	16 :	4,110,941	4,112,125			
	4,111,067	4,110,973	4,111,716		4,112,472	17 :	Re.29,753	4,112,127			
	4,111,083	4,111,190	4,111,729	09 :	Re.29,752		4,110,850	4,112,131			
	4,111,090	4,111,252	4,111,782		4,110,856		4,110,861	4,112,153			
	4,111,102	4,111,254	4,111,795		4,110,893		4,110,921	4,112,168			
	4,111,115	4,111,346	4,111,906		4,110,932		4,110,956	4,112,235			
	4,111,132	4,111,376	4,111,938		4,110,972		4,110,997	4,112,251			
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	4,111,202	4,111,407	4,112,068		4,111,602		4,111,028	4,112,268			
	4,111,207	4,111,476	4,112,114		4,111,613		4,111,064	4,112,283			
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	4,111,229	4,111,606	4,112,164		4,111,723		4,111,118	4,112,384			
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	4,111,414	4,111,449	4,112,302		4,111,960		4,111,306	4,111,100			
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	4,111,465	06 : Re.29,755	4,112,312		4,112,019		4,111,314	4,111,288			
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	4,111,514	4,110,853	4,112,363	12 :	4,110,964		4,111,330	4,111,331			
	4,111,518	4,110,859	4,112,377		4,110,965		4,111,356	4,111,369			
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	4,111,614	4,110,951	4,112,398		4,111,194		4,111,391	4,111,421			
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[Notice of Dec. 16, 1969, 869 O.G. 6877]

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34 : T974,003

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent and Trademark Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Late Filed Fees for Section 8 Affidavits/Declarations and Notices of Opposition in Trademark Cases

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: This notice adopts rule changes which permit the acceptance of late fees in connection with notices of opposition and affidavits or declarations under § 8 of the act of July 5, 1946, as amended. These changes eliminate the need for petitioning the Commissioner for acceptance of such late fees. Under these changed rules, the Office will notify parties of the missing or deficient fees and provide for the acceptance of the appropriate fee within a designated time period upon payment of a service charge.

EFFECTIVE DATE: September 11, 1978.

FOR FURTHER INFORMATION CONTACT: J. Paul Williamson, Patent and Trademark Office, 703–557–2521.

SUPPLEMENTARY INFORMATION: On February 2, 1978, the Patent and Trademark Office published for comments a proposal (43 FR 4441, FR Doc. 78–2922) to revise §§ 2.1, 2.6, 2.101 and 2.162 of title 37 of the Code of Federal Regulations. Ten written comments were received in connection with the proposed changes and these written comments, together with an analysis of the comments, are available for public inspection in room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Va. All comments were given careful consideration in the preparation of these final rules.

The only comment received which opposed the proposed rulemaking expressed the opinion that timely payment of a fee for at least one class was mandated by the statute in connection with an affidavit or declaration under § 8 and with an opposition.

Section 31 of the statute sets the required fees for the majority of activities in the Trademark Operation. However, it was held in "In re Kleiner," 185 USPQ 362 (Comr. Pat. 1975) that this section of the statute does not preclude the payment of a fee beyond the time allowed for filing a § 8 affidavit or declaration. Section 31 is not construed to require the "timely" filing of any fee. That section only determines the amount of the fee which must be paid. When the necessary fee must be paid is determined from other sections of the statute, that is, the particular sections dealing with the activity for which a fee is required.

Section 8 of the statute makes no reference to a fee and therefore there is no statutory mandate regarding the timeliness of such fee. Likewise, § 13 of the Statute does not preclude the payment of the required fee beyond the time allowed for filing the opposition. See *"Colgate-Palmolive Co.* v. *Brenner, Comr. of Pats."*, 148 USPQ 535 (S.D.N.Y. 1965) and *"Marzall, Comr. of Pats.* v. *Libby, McNeill and Libby,"* 89 USPQ 10 (D.C. Cir. 1951).

Finally, the comment opposing the rules changes expressed the concern that these changes may increase the administrative burden on the Patent and Trademark Office and, in a sense, encourage inattention to compliance with the act and the rules by some parties. With respect to the administrative burden on this Office, it is believed that the new procedures can be handled more efficiently and with less burden on the Office than the petition process now requires. Furthermore, as indicated in the proposed rules notice, the handling of such fees is considered to be of a ministerial nature and it is not believed that substantive rights should be immediately denied due to a failure to comply with a requirement of that nature. However, where the proposed procedure is not complied with, relief by way of petition to the Commissioner will require that the stringent standards of § 2.148 be satisfied.

One of the comments favoring the proposed changes also recommended that § 2.85(e) be amended to delete reference to the § 8 and opposition fees and to incorporate the concept of that rule into §§ 2.101 and 2.162. The basis of this suggestion was that the concept of § 2.85(e) does not logically fit with the other elements of § 2.85 and since changes are being made with §§ 2.101 and 2.162, it would make better sense to add this concept to those rules. While there is merit to the suggestion that the concept of § 2.85(e) does not logically fit with the other elements of § 2.85, it is believed that attorneys and other parties regularly practicing before this Office are now well aware of § 2.85(e). In those cases where parties are not aware of § 2.85(e), the Office notification of a deficiency of fees for the number of classes involved sufficiently alerts parties such that no prejudice results rom the "location" of the concept within the rules themselves. Therefore, rather than trying to embody the concept in five different rules covering fees for appeals, oppositions, cancellations, renewals and § 8 affidavits or declarations, it is considered more efficient to leave § 2.85(e) as is. However, the suggestion of this commenter that the revision to § 2.1 should include a reference to § 2.85(e) is valid and that change has been incorporated into the final rule.

Accordingly, pursuant to the authority contained in §§ 31 (b) and 41 of the act of July 5, 1946, as amended, the proposed amendments to the rules of practice, with the change noted above, are adopted as set forth below.

1. By revising § 2.1 to read as follows:

§ 2.1 *Sections of Part 1 applicable.*

Section 1.1 to 1.26 of this chapter are applicable to trademark cases except such parts thereof which specifically refer to patents and except § 1.22 to the extent that it is inconsistent with §§ 2.85(e), 2.101(c) or 2.162(d). Other sections of part 1 incorporated by reference or referred to in particular sections of this part are also applicable to trademark cases.

2. By the addition of new paragraph (g) to § 2.6 to read as follows:

§ 2.6 *Trademark fees.*

* * * * *

(g) For the special service of handling late filed fees in connection with an:

Affidavit or declaration under § 8	10.00
Opposition	25.00

* * * * *

3. By the addition of new paragraph (c) to § 2.101 to read as follows:

§ 2.101 *Filing an opposition.*

* * * * *

(c) If no fee, or a fee insufficient to cover at least one class, is filed within 30 days after publication of the mark to be opposed or within an extension of the time for filing an opposition, the opposition will not be refused if the required fee(s) and service charge (see § 2.6(g)) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. In situations covered by this paragraph, § 2.85(e) may not be utilized.

4. By revising paragraph (d) of § 2.162 to read as follows:

§ 2.162 *Requirements for affidavit or declaration during sixth year.*

* * * * *

(d) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed before the expiration of the sixth year following the date of registration or of publication under § 12(c) of the act, the affidavit or declaration will not be refused if the required fee(s) and service charge (see § 2.6(g)) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. In situations where a notice of deficiency is sent because no fee, or a fee insufficient to cover at least one class, is filed, § 2.85(e) may not be utilized. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified;

* * * * *

Dated: July 28, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Approved:

FRANCIS W. WOLEK,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 78–22330; Filed 8–9–78; 8:45 am]

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,676,921, Re. S.N. 908,846, Filed May 23, 1978, Cl. 29/571, SEMICONDUCTOR DEVICE COMPRISING AN INSULATED GATE FIELD EFFECT TRANSISTOR AND METHOD OF MANUFACTURING THE SAME, Else Kooi, Owner of Record: by mesne assigmts. to *U.S. Philips Corporation, New York, N.Y.*, Attorney or Agent: Frank R. Trifari, et al., Ex. Gp.: 254

3,962,475, Re. S.N. 905,077, Filed May 11, 1978, Cl. 426/331, METHOD FOR PRESERVING HIGH MOISTURE CONTENT AGRICULTURAL GRAINS, Joseph G. Forest, et al., Owner of Record: *Inventor,* Attorney or Agent: Mark P. Levy, Ex. Gp.: 172

3,970,611, Re. S.N. 925,605, Filed Jul. 17, 1978, Cl. 526/65, MELT FINISHING PROCESS FOR POLYMERS PRODUCED BY VAPOR STATE POLYMERIZATION PROCESSES, James L. Jezl, et al., Owner of Record: *Standard Oil Company (Indiana), Chicago, Ill.*, Attorney or Agent: Arthur G. Gilkes, et al., Ex. Gp.: 144

3,971,768, Re. S.N. 925,602, Filed Jul. 17, 1978, Cl. 526/68, VAPOR PHASE REACTOR OFF-GAS RECYCLE SYSTEM FOR USE IN THE VAPOR STATE POLYMERIZATION OF MONOMERS, Edwin F. Peters, et al., Owner of Record: *Standard Oil Company (Indiana), Chicago, Ill.*, Attorney or Agent: Arthur G. Gilkes, et al., Ex. Gp.: 144

3,996,836, Re. S.N. 912,416, Filed Jun. 5, 1978, Cl. 86/20 C, APPARATUS FOR TRANSPORTING AND CHARGING UNCARTRIDGED EXPLOSIVES MORE PARTICULARLY PLASTIC EXPLOSIVES, Hubert Lichtenberg, Owner of Record: *Dynamit Nobel A.G., Troisdorf, Germany,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 223

4,003,736, Re. S.N. 903,298, Filed May 5, 1978, Cl. 75/3, METHOD FOR PREPARING DRY COLLECTED FUME FOR USE IN METALLURGICAL FURNACES, John W. Kreiger, et al., Owner of Record: *Bethlehem Steel Corporation, Bethlehem, Pa.*, Attorney or Agent: Joseph J. O'Keefe, et al., Ex. Gp.: 111

4,004,916, Re. S.N. 903,297, Filed May 5, 1978, Cl. 75/3, METHOD FOR AGGLOMERATING WET-COLLECTED FUME FOR USE IN METALLURGICAL FURNACES AND AGGLOMERATES PRODUCED THEREBY, John W. Kreiger, Owner of Record: *Bethlehem Steel Corporation, Bethlehem, Pa.*, Attorney or Agent: Joseph J. O'Keefe, et al., Ex. Gp.: 111

4,021,270, Re. S.N. 921,924, Filed Jul. 3, 1978, Cl. 148/1.5, DOUBLE MASTER MASK PROCESS FOR INTEGRATED CIRCUIT MANUFACTURE, Merrill Roe Hunt, et al., Owner of Record: *Motorola Inc., Chicago, Ill.*, Attorney or Agent: John A. Fisher, Ex. Gp.: 165

4,046,490, Re. S.N. 911,207, Filed May 31, 1978, Cl. 417/28, METHOD AND APPARATUS FOR ANTISURGE PROTECTION OF A DYNAMIC COMPRESSOR, Alexander Rutshtein, et al., Owner of Record: *Compressors Controls Corporation, Des Moines, Iowa,* Attorney or Agent: H. Robert Henderson, et al., Ex. Gp.: 343

4,050,893, Re. S.N. 922,654, Filed Jul. 7, 1978, Cl. 8/94.11, ARRANGEMENT FOR PREPARING NATURAL TISSUE FOR IMPLANTATION, Warren D. Hancock, et al., Owner of Record: *Hancock Laboratories Incorporated, Anaheim, Calif.*, Attorney or Agent: Richard F. Carr, Ex. Gp.: 141

4,077,901, Re. S.N. 907,080, Filed May 18, 1978, Cl. 223/252, ENCAPSULATION OF NUCLEAR WASTES, John L. Arnold, et al., Owner of Record: *Inventor,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 223

PATENT NOTICES

Certificates of Correction for the Week of Sept. 12, 1978

Re.28,780	4,065,025	4,080,437	4,085,681
Re.29,591	4,066,561	4,080,722	4,085,683
D.246,335	4,068,103	4,080,814	4,085,695
D.247,017	4,070,225	4,080,940	4,085,757
3,976,476	4,070,311	4,081,135	4,085,865
4,018,437	4,070,938	4,081,687	4,086,004
4,031,690	4,073,004	4,081,719	4,086,131
4,035,835	4,073,309	4,081,977	4,086,371
4,037,216	4,073,430	4,082,429	4,086,640
4,040,379	4,073,855	4,082,497	4,086,641
4,041,435	4,074,276	4,082,598	4,087,045
4,041,658	4,075,003	4,082,955	4,087,161
4,042,497	4,075,593	4,083,037	4,087,204
4,045,588	4,076,606	4,083,512	4,087,229
4,047,099	4,078,195	4,083,748	4,087,231
4,049,154	4,078,212	4,083,934	4,087,237
4,050,891	4,078,451	4,084,243	4,087,311
4,057,075	4,078,492	4,084,327	4,087,630
4,060,611	4,078,991	4,084,463	4,088,034
4,060,630	4,079,280	4,084,629	4,088,120
4,061,745	4,079,702	4,085,030	
4,061,792	4,080,201	4,085,212	
4,064,802	4,080,337	4,085,284	

Dedication

3,815,015.—*William A. Swin* and *Flavian Reising, Jr.*, Fort Wayne, Ind. TRANSFORMER-DIODE ISOLATED CIRCUITS FOR HIGH VOLTAGE POWER SUPPLIES. Patent dated June 4, 1974. Dedication filed Oct. 17, 1977, by the assignee, *General Electric Company*.

Hereby dedicates to the Public the above-identified patent.

Disclaimers

Design No. 208,474.—*Gerald A. Curl*, Los Angeles County, Calif. MINIATURE LAMP. Patent dated Sept. 5, 1967. Disclaimer filed Sept. 29, 1977, by the assignee, *Chemetron Corporation*.

Hereby enters this disclaimer to the sole and complete claim of said patent.

3,607,866.—*Denis M. Bailey*, East Greenbush, N.Y. 3,4-DIHYDRO-1H-1,3,4-BENZOTRIA-ZEPINE-2,5-DIONES AND THEIR PREPARATION. Patent dated Sept. 21, 1971. Disclaimer filed July 17, 1978, by the assignee, *Sterling Drug Inc.*

Hereby enters this disclaimer to claims 1 through 22 of said patent.

3,678,421.—*Ichiro Ono*, Tokyo, Japan. PRESET DEVICE FOR ALL CHANNEL TUNER USING VARIABLE REACTANCE ELEMENT AS TUNING ELEMENT. Patent dated July 18, 1972. Disclaimer filed Mar. 27, 1978, by the assignee, *Alps Electric Co., Ltd.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,013,785.—*Leonard Weintraub*, Millburn, and *Allan H. Rosenberg*, Randolph, N.J. APAP TABLET CONTAINING FUMED SILICA AND PROCESS FOR MANUFACTURING SAME. Patent dated Mar. 22, 1977. Disclaimer filed Dec. 8, 1977, by the assignee, *Bristol-Myers Company*.

Hereby enters this disclaimer to claims 10 and 13 of said patent.

4,088,281.—*Albert R. Close*, Newhall, Calif. DUAL TENSION SINGLE SPRING RETRACTOR. Patent dated May 9, 1978. Disclaimer filed May 30, 1978, by the assignee, *American Safety Equipment Corporation*.

The term of this patent subsequent to May 31, 1994, has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 12, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-12-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-17-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-17-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-6-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordinance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-28-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-11-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-23-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	11-24-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	5-24-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-8-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

REISSUES

SEPTEMBER 12, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,757

REPLACEMENTS FOR BICONDYLAR JOINTS IN HUMAN LIMBS

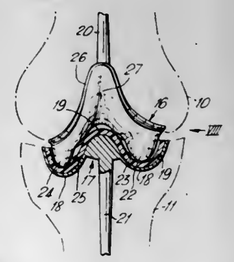
Arthur Jacob Helfet, 1917 Trust Bank Centre, Capetown, South Africa

Original No. 3,748,662, dated Jul. 31, 1973, Ser. No. 246,448, Apr. 21, 1972. Application for reissue Jul. 16, 1975, Ser. No. 596,375

Claims priority, application United Kingdom, Apr. 21, 1971, 10551/71

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.91 **16 Claims**



9. A replacement assembly for a bicondylar joint articulating two members of a human limb comprising two pairs of coacting male and female load-bearing mechanical condylar components, the male components consisting of one spherical or spheroidal protruberance and one arcuate ridge having a curvature in each of two planes at right angles, one of said planes being normal to the general axis of the limb when straight and the other being parallel to the said axis, one of the female components being provided with a spherical or spheroidal socket adapted to coact with the correspondingly shaped male component and the other of the female components being provided with one arcuate groove having a curvature in at least one of the said two planes, the curvature of the arcuate ridge and the arcuate groove in the plane normal to the general axis of the limb being an arc of a circle struck about the center of the sphere represented by the spherical or spheroidal components.

Re. 29,758

REINFORCED HEM FORMING DEVICE

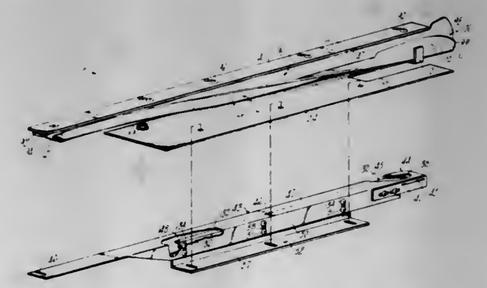
John L. Rockerath, and Harold J. Schreck, both of Utica, N.Y., assignors to Cluett, Peabody & Co., Inc., Troy, N.Y.

Original No. 3,906,877, dated Sep. 23, 1975, Ser. No. 515,492, Oct. 17, 1974. Application for reissue Sep. 21, 1977, Ser. No. 835,233

Int. Cl.² D05B *35/02*

U.S. Cl. 112—141 **12 Claims**

1. A reinforced hem forming device for use in a sewing machine installation for automatically forming a reinforced hem, along a lateral edge of a material blank as the blank is conveyed longitudinally forwardly through the forming device, having a front hem face, an elongated reinforcing ribbon underlying the front face, and an outer lateral inwardly folded edge section having a back hem face underlying the reinforcing ribbon and a tucked edge portion intermediate the front and back hem faces, the reinforced hem forming device comprising a longitudinally extending inner face member having an upper inner face for receiving a front hem face portion of a material blank as the material blank is conveyed longitudinally forwardly through the forming device and an outer longitudinally extending fold edge for folding an outer lateral edge section of the material blank inwardly therearound to underlie the front hem face portion of the material blank to form a back hem face portion, a longitudinally extending ribbon guide underlying the inner face member providing a longitudinally extending ribbon channel therebelow for conveying a reinforcing ribbon longitudinally forwardly beneath the front hem face portion of the material blank, and a folder extending longitudinally forwardly generally below the inner face member and ribbon guide and defining a material receiving guide trough for receiving the outer lateral edge section of the material blank, the folder having a double longitudinally extending twist with a first longitudinally extending twist section twisting forwardly in a clockwise direction to define a first longitudinally



extending guide trough section for folding the outer lateral edge section of the material blank inwardly around said fold edge of the inner face member and a second longitudinally extending twist section twisting in the clockwise direction to define a second longitudinally extending guide trough section for folding a tucked edge portion of the outer lateral edge section of the material blank to overly the back hem face portion of the material blank, the folder having a forward exit end adjacent the inner face member to provide that a hem formed on a material blank by the hem forming device exits from the forming device in a fully preformed condition with the reinforcing ribbon between the front and back hem faces thereof.

Re. 29,759

FUEL INJECTION TYPE ROTARY PISTON ENGINE

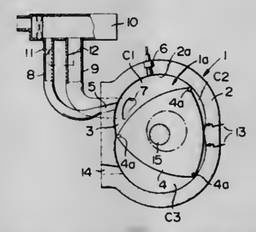
Kenichi Yamamoto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Original No. 3,901,198, dated Aug. 26, 1975, Ser. No. 463,830, Apr. 24, 1974. Application for reissue Jun. 3, 1976, Ser. No. 692,384

Claims priority, application Japan, Apr. 30, 1973, 48/51262

Int. Cl.² F02B *53/10*

U.S. Cl. 123—205 **12 Claims**



1. A rotary piston type internal combustion engine comprising a casing including a rotor housing having a trochoidal

inner peripheral wall and a pair of side housings secured to the opposite sides of said rotor housing to define a rotor chamber therein, a substantially polygonal rotor rotatably mounted in said rotor chamber and having apices slidingly contacting the trochoidal inner peripheral wall of the rotor housing so as to define working chambers between the casing and the rotor, means for rotating the rotor so as to effect volumetic changes of each working chamber through intake, compression, combustion and exhaust strokes, first air intake port means formed in at least one of said side housings so as to open into the working chamber which is in the intake stroke, first air intake passage means communicating with said first air intake port means and having first throttle valve means positioned therein, second air intake port means formed in said rotor housing so as to open into the working chamber which is in the intake stroke, second air intake passage means communicating with said second air intake port means and having second throttle valve means positioned therein, means for closing said first throttle valve means in said first air intake passage means during light load operation of the engine while keeping the second throttle valve of said second air intake passage means open, and fuel injection means for injecting fuel into the working chamber which is in the intake stroke.

Re. 29,760

POLYFUNCTIONAL ALKOXY ENDBLOCKED POLYSILOXANES AND THEIR CURED COMPOSITIONS

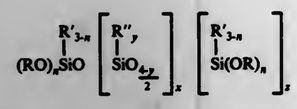
Paul L. Brown, Saginaw, and James Franklin Hyde, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Original No. 3,161,614, dated Dec. 15, 1964, Ser. No. 145,455, Oct. 16, 1961. Application for reissue Sep. 13, 1977, Ser. No. 832,842

Int. Cl.² C08G *77/04*

U.S. Cl. 528—41 **2 Claims**

1. A composition of matter consisting essentially of a siloxane of the formula



in which R is selected from the group consisting of monovalent haloaliphatic hydrocarbon radicals having no halogen on the carbon alpha to the oxygen and monovalent aliphatic hydrocarbon radicals both of said radicals having from 1 to 8 inclusive carbon atoms, both R' and R" are each selected from the group consisting of monovalent hydrocarbon radicals, monovalent halohydrocarbon radicals and monovalent cyanoalkyl radicals all of from 1 to 18 carbon atoms, n has an average value from 2 to 3 inclusive, y has an average value from 1.99 to 2 inclusive, z has an average value from 1 to 1.01 inclusive and the sum of y+z is 3 and x has a value of at least 7.

Re. 29,761

GUANIDINO, THIOUREIDO AND ISOTHIOUREIDO DERIVATIVES CONTAINING IMIDAZOLE GROUPS

Graham John Durant, and Charon Robin Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

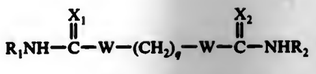
Original No. 3,968,227, dated Jul. 6, 1976, Ser. No. 542,971, Jan. 22, 1975. Application for reissue Oct. 19, 1977, Ser. No. 843,399

Claims priority, application United Kingdom, Feb. 7, 1974, 5596/74

Int. Cl.² C07D *233/64*; A61K *31/415*

U.S. Cl. 424—273 R **19 Claims**

1. A compound of the formula:



wherein R_1 and R_2, which may be the same or different, each represent a grouping of the structure:

$$\text{Het} - (CH_2)_m Z - (CH_2)_n -$$

wherein Het is imidazole which is attached at a ring carbon and which is optionally substituted by lower alkyl or halogen; Z is sulphur or a methylene group; m is 0, 1 or 2; n is 2 or 3 and the sum of m and n is 3 [,] *or* 4 [or when the adjoining X_1 or X_2 is sulphur, 2]; X_1 and X_2, which may be the same or different, are each sulphur or NY wherein Y is hydrogen or lower alkyl; W is NH, and when X_1 and X_2 are NH, W may also be sulphur; and q is an integer from 2 to 8; or a pharmaceutically acceptable acid addition salt thereof.

17. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering to an animal in need of inhibition of said H-2 histamine receptors in an effective amount to inhibit said H-2 histamine receptors a compound of claim 1.

Re. 29,762

PROCESS FOR WELDING SHEET METAL COATED WITH LAYERS

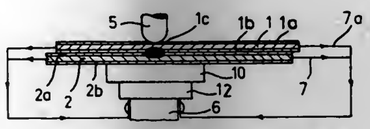
Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Fed. Rep. of Germany

Original No. 3,798,407, dated Mar. 19, 1974, Ser. No. 181,149, Sep. 16, 1971. Continuation-in-part of Ser. No. 823,077, May 8, 1969, Pat. No. 3,614,375. Application for reissue Oct. 17, 1977, Ser. No. 843,114

Claims priority, application Fed. Rep. of Germany, May 8, 1968, 1765366; May 28, 1968, 1765489; Aug. 19, 1968, 1765970; Sep. 3, 1968, 1790058; Sep. 17, 1968, 1790142; Jan. 17, 1969, 1902569

Int. Cl.² B23K *9/28*

U.S. Cl. 219—92 **11 Claims**



1. In a process of connecting, by the electrical fusion of a metal, sheet metal panels and the like articles coated on at least one surface with a layer of material differing from the sheet metal, at least one of said layers being an outer layer on superposing said sheet metal panels the improvement which consists in

a. conducting the welding current from one pole of a current source directly by means of a first contact device attached to a surface area on one of said superposed metal panels, said surface area being stripped of said coating, into and through said first sheet metal panel essentially parallel to its surface to and through the predetermined welding area of said first sheet metal panel and

b. causing the welding current to pass from said welding area to and through the predetermined welding area of the second superposed sheet metal panel through said second sheet metal panel essentially parallel to its surface and through a second contact device attached to said second sheet metal panel to the other pole of the current source,

c. thereby effecting welding connection of the two sheet metal panels with each other without substantially affecting at least one of the outer layers of said coated sheet metal panels.

Re. 29,763

CRYSTAL VIBRATOR MOUNTING

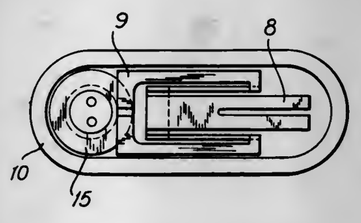
Masanori Kawai, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Original No. 3,909,640, dated Sep. 30, 1975, Ser. No. 454,888, Mar. 26, 1974. Application for reissue Oct. 20, 1976, Ser. No. 734,054

Claims priority, application Japan, Mar. 27, 1973, 48-34107

Int. Cl.² H01L *41/10*

U.S. Cl. 310—344 **14 Claims**



10. A hermetically sealed quartz crystal vibrator assembly particularly suitable for use as a time standard in an oscillator circuit comprising in combination a flexural mode tuning fork quartz crystal vibrator having first and second substantially opposed planar surfaces and being adapted to vibrate in the first vibratory direction substantially parallel to said surfaces, and a pair of mounting plates, each mounting plate having a first portion secured to said first opposed surfaces of said vibrator at a non-vibratory portion of said tuning fork vibrator, each said mounting plate including a second portion mounted to a reference member, each said mounting plate having a first elongated resilient portion and a second elongated resilient portion intermediate said first and second portions, said first resilient portion being adapted to vibrate at an angle of about 90° with respect to said first vibratory direction and said second resilient portion being adapted to vibrate in a direction parallel to said first vibratory direction.

Re. 29,764

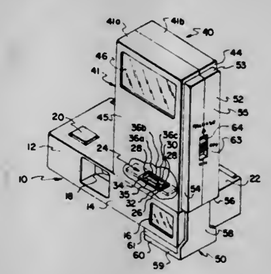
ELECTRONIC FLASH UNIT HAVING AN ADJUSTABLE MOUNTING MECHANISM AND MOVABLE ELECTRICAL PLUG

Jeffrey R. Stoneham, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,997,775, dated Dec. 14, 1976, Ser. No. 566,633, Apr. 8, 1975. Application for reissue Mar. 9, 1977, Ser. No. 776,022

Int. Cl.² G03B *15/02*

U.S. Cl. 354—145 **10 Claims**



1. In an electronic flash unit having a housing, a flashtube mounted within said housing, and electrical means for energizing said flashtube, the improvement comprising:

a. electrical contacts adapted to be electrically connected to the output terminals of a flash-firing mechanism;

b. means associated with said housing for defining an operational path;

c. means electrically connecting said electrical contacts to said electrical means; and

d. means mounting said electrical contacts for moving said contacts along said path while said contacts remain electrically connected to said electrical means to position said contacts over a continuous range of flashfiring locations relative to said flashtube.

PLANT PATENTS

GRANTED SEPTEMBER 12, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,298

KALANCHOE PLANT

Claude Hope, Carbago, Costa Rica, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Aug. 11, 1977, Ser. No. 823,853
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of kalanchoe plant known by the cultivar name Largo and characterized particularly as to uniqueness by the combined characteristics of red purple flower color; excellent placement of flowers and superior keeping qualities; the large mound-type floral display; small compact foliage; profuse self-branching; excellent rooting qualities, and by the characteristic of being ideally suited for either normal or miniature flowering.

4,299

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 14, 1977, Ser. No. 833,376
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Superstar and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; white ray floret color; diameter across face of capitulum ranging from 100 to 120 mm. at maturity; uniform seven week photoperiodic flowering response to short days; tall plant height when grown as a single stem cut spray; and semi-upright branching pattern.

4,300

DOGWOOD TREE

Mel Wills, Box 484, 365 Second St., Fairview, Oreg. 97024

Filed Sep. 16, 1977, Ser. No. 834,154
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of dogwood tree substantially as herein shown and described, characterized particularly as to novelty by having variegated leaves with a generally centrally oriented sharply defined dark colored area surrounded by a light colored peripheral area, many of such leaves also having sharply defined patches of intermediate coloration.

4,301

ROSE PLANT

David L. Armstrong, Orange, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 17, 1977, Ser. No. 843,139
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of hybrid tea rose, substantially as described and illustrated herein, said plant being characterized by a very vigorous upright-spreading to semi-climbing habit, which grows tall and bushy and has foliage of a medium olive-green color with leaflets tending to be somewhat folded inward bilaterally from the midrib, yet hanging downward from the rachis, the flowering of said plant being characterized in that its sepals turn down quickly as the bud begins to open, the blooms have double petalage of from about 25 to 34 petals with two to four petaloids; and the bloom spreads from 5 to 5½ inches, producing an overall color effect at first of a medium golden yellow, without significant other coloration, which lightens in shade as the bloom matures.

PATENTS

GRANTED SEP. 12, 1978

ERRATA

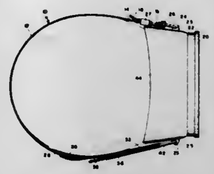
For CLASS	See PATENT NO.
405–063	4,112,689
405–057	4,112,690
405–119	4,112,691
405–271	4,112,692
405–132	4,112,693
405–150	4,112,694
405–163	4,112,695
405–145	4,112,696
405–209	4,112,697
405–167	4,112,698
060–641	4,112,745
074–217 R	4,112,767
070–363	4,112,820
134–141	4,112,937
400–333	4,113,081
339–091 R	4,113,179
151–054	4,113,227
366–056	4,113,238
277–001	4,113,242
272–069	4,113,246
356–155	4,113,393
422–191	4,113,435
422–065	4,113,436
422–193	4,113,438
422–177	4,113,439
422–132	4,113,440
422–197	4,113,441
428–220	4,113,537
209–609	4,113,609
209–705	4,113,610
521–029	4,113,666
521–163	4,113,667
521–060	4,113,668
521–108	4,113,669
521–095	4,113,670
521–108	4,113,671
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528–271	4,113,693
528–094	4,113,697
528–481	4,113,698
528–126	4,113,699
528–138	4,113,700
528–075	4,113,702
528–299	4,113,703
528–289	4,113,704
528–289	4,113,706

PATENTS

GRANTED SEPTEMBER 12, 1978

GENERAL AND MECHANICAL

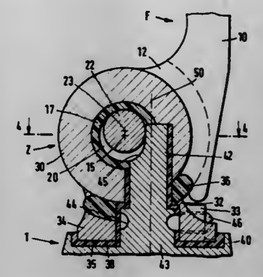
4,112,521
QUICK ADJUST STRAP FOR DIVER'S FACE MASK
Alan K. Uke, 2306 Ocean Front, Del Mar, Calif. 92014
Continuation of Ser. No. 542,724, Jan. 21, 1975, abandoned. This application Mar. 3, 1977, Ser. No. 774,127
Int. Cl.² A61F *9/02*
U.S. Cl. 2—452 **6 Claims**



1. A quick adjust strap for a diver's face mask equipped with brackets and attachment rings on each side of the mask for the connection of the strap thereto, said strap comprising,
a flexible resilient headband to enclose a diver's head and provided with slots in one end,
a flexible ribbon attached to one end of said headband for being threaded through the face mask attachment rings and doubling back upon itself,
said ribbon having a tacky material on a face thereof.
said ribbon being foldable back upon itself with the tacky material maintaining the fold and permitting fold separation only by application of an outward pulling force on said ribbon fold,
a resilient tab formed on one free end of said ribbon that is grippable for adjustment of the strap, said tab being larger than the opening in the associated attachment ring such that it must be forced through the attachment ring when threading said ribbon through the attachment ring,
said ribbon being superimposed over a part of said tab and permanently fixed thereto in the overlapping area of said ribbon and said tab,
said tab having a first end extending between the end portions of said tacky material and said ribbon, said tab forming a backing for said tacky material for allowing greater force to be applied when making the connection to the tacky material on said ribbon surface,
said tab having an integral second end with a thickness and width substantially larger than the thickness and width of said ribbon,
said tacky material only covering the first end portion of said tab leaving the enlarged second end free from connection to said tacky material and being spaced therefrom for making said second end readily locatable and grippable.

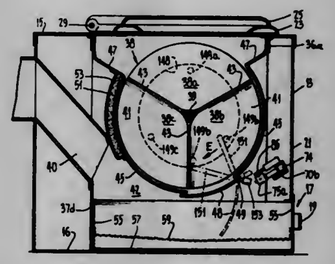
4,112,522
KNEE-JOINT PROSTHESIS
Aram Dadurian, Knochenhauer Strasse 15, D 2800 Bremen, and Günther Rehder, Mummelmannstrasse 10, D 2805 Stuhr 3, both of Germany
Filed Nov. 4, 1976, Ser. No. 738,978
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1975, 2549318
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.91 **10 Claims**

1. A joint prosthesis having a flexing-axis pin having a flexing axis, first and second parts which are adapted to be anchored in first and second bones, respectively, on opposite sides of said joint and which are pivotable through a range of flexing angle relative to one another about said flexing-axis pin, said joint prosthesis further comprising:
a pivot disposed on one of said first and second parts and extending along the longitudinal axis of that part on which it is disposed; and
an intermediate element having a pin receiving bore for receiving said flexing-axis pin, a pivot-receiving bore for



receiving said pivot and a securing element for securing said pivot in said pivot-receiving bore, the central portion of said flexing-axis pin together with said pivot forming an abduction and rotation abutment in which the amount of permissible of rotation is dependent on the flexing angle.

4,112,523
SANITARY DISPOSAL UNIT
Geoffrey N. Williams, 12 Rembrandt Dr., Mulgrave, Australia (3170)
Filed Mar. 9, 1976, Ser. No. 665,441
Int. Cl.² A47K *11/02*
U.S. Cl. 4—111.3 **8 Claims**

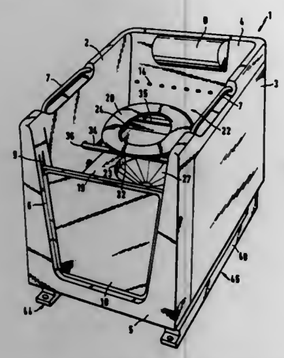


1. A sanitary disposal unit including: a rotatable waste receptacle means having at least one waste receiving compartment; a combustion chamber disposed below said receptacle means; heating means located within said combustion chamber; and upwardly facing arcuate sealing means located closely adjacent said receptacle means and between said combustion chamber and said receptacle means, said sealing means including an opening having a door; said rotatable waste receptacle means being locatable in a first position in which said waste-receiving compartment may be loaded from above, whereafter said receptacle means is rotatable to a second position thereby allowing said waste to fall downwardly from said compartment through said opening and into said combustion chamber wherein said heating means causes combustion of said wastes; said sealing means inhibiting communication of heat and odour from said combustion chamber to said receptacle means; said door opening means being responsive to the rotation of said receptacle means from said first to said second positions to open said door to thereby enable said waste to fall through said opening.

4,112,524
SHOWER-BATH TUB

Hans A. Johansson, Treharadsvägen 36, Eslöv, Sweden

Filed Jul. 12, 1976, Ser. No. 704,376
Int. Cl.² A47K 3/22
U.S. Cl. 4—148 7 Claims



1. A shower-bath tub adapted to rest on a supporting surface, and having at least one shower water emitting device for washing a person sitting on a seat disposed within the tub, the shower-bath tub comprising a bottom portion provided with a shower-water discharge and an upright portion disposed adjacent said bottom portion, the improvement consisting in that: a holed part of said upright portion forms the bottom of an area within the tub adapted to have said seat disposed therein during washing, said holed part being spaced substantially beneath said seat when said seat is disposed in said area with the hole in said holed part aligned beneath a hole provided in said seat, and in that a space is provided beneath said upright portion and has a discharge device housed therein for collecting and flushing away feces passing down through said aligned holes in said seat and in said holed part, said discharged device comprising a bowl disposed beneath said holed part for collecting feces, at least one flushing water conduit connected to said bowl for flushing away feces, and a discharge conduit connected to the bottom of said bowl for conveying feces into a sewage disposal system, said discharge conduit including a drain-trap portion, and said holed part including a rim depending from the periphery of the hole therein so as to project downwardly into the upper portion of said bowl and to form within the latter an inner wall of an annular downwardly opening flushing channel into which said flushing water conduit opens, said discharge device being disposed so that the drain-trap portion of said discharge conduit is spaced above said supporting surface, and there being a compartment formed between the bottom of said shower-bath tub and said supporting surface, said compartment being open toward three sides of the tub, and said tub further including: a wheel-chair having a low undercarriage receivable with said compartment beneath the tub, said undercarriage carrying column means being arranged to extend vertically of said tub; carrier arm means on the upper end of said column means; and a seat carried by said carrier arm means, and positionable within said tub.

4,112,525
DRYING RACK ASSEMBLY FOR BATHING COMPARTMENTS

Jack C. Roberts, 413 Virginia Dr., Orlando, Fla. 32803

Filed Aug. 25, 1977, Ser. No. 827,477
Int. Cl.² A47K 3/14
U.S. Cl. 4—154 10 Claims

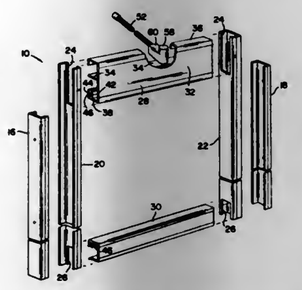
1. A closure for a bathing compartment such as a shower, bathtub or the like, comprising:

an extrusion adapted to be rigidly positioned between opposing closure walls of said bathing compartment, said extrusion including a lengthwise partition dividing said extrusion into two separate and contiguous portions;

a foldable closure member suspended from a first one of said portions of said extrusion and adapted to be drawn between said closure walls;

a drying arm coupled at one end in the second portion of said extrusion; and

pivoting and sliding means in said second portion of said extrusion and coupled with said one end of said drying arm for permitting said arm to slide along said extrusion

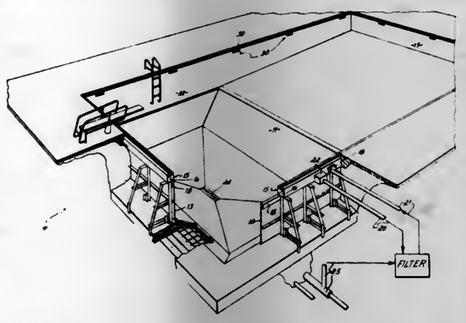


and be folded within said second portion; and further comprising low friction bearing means carried by said extrusion in said lower portion, said bearing means coupled to said closure member whereby said bearing means and said closure member may be moved back and forth across said extrusion; and further comprising a second extrusion spaced below said one extrusion and a second low friction bearing means carried by said second extrusion and coupled to the lower edge of said closure member.

4,112,526
WATER LEVEL CONTROLLER FOR SWIMMING POOL GUTTER

James A. Patterson, 2375 Valleyview Dr., Columbus, Ohio 43204

Continuation of Ser. No. 653,512, Jan. 29, 1976, abandoned, which is a division of Ser. No. 592,950, Jul. 3, 1975. This application Feb. 28, 1977, Ser. No. 772,732
Int. Cl.² E04H 3/20
U.S. Cl. 4—172.17 2 Claims



1. In a swimming pool having generally vertical walls and a filter system adjacent said pool, a nonflooding perimeter gutter system for returning water from said pool to said filter system comprising,

an open upper gutter section located adjacent the top of said vertical walls and extending around the perimeter of said pool and having an inner wall, a back wall and a bottom wall, said upper gutter section being operative to accommodate sudden water surges over said inner wall,

a closed lower gutter section forming conduit around the perimeter of the pool adjacent said upper gutter section, said lower gutter section, at all times during operation, beingcompletely filled with water,

means connecting said lower gutter section to said upper gutter section at a plurality of locations spaced around the perimeter of said pool, said connecting means providing passageways for the flow of water from said upper section to said lower section,

a plurality of skimmer openings spaced around the perimeter of said pool and located in said inner gutter wall adjacent the top of said inner gutter wall,

means independently and automatically closing each said opening, said closing means including a float located in said gutter and associated with each said opening, said float being located well below said skimmer openings but above said lower gutter section, and effecting the closing of said openings when the level of water in said gutter, lifting said float, rises to a level well below said opening and well above the level of said passageways in said second gutter section,

said skimmer openings and said closing means continuously supplying water from said pool to said upper gutter section at locations spaced around the perimeter of said pool to maintain a constant flow of water to said lower gutter section above said passageways during both periods of quiescence and periods of greater pool activity, and

suction means connected to said lower gutter section for positively withdrawing water therefrom and directing it to said filter system,

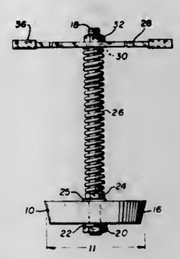
thereby continuously withdrawing water simultaneously from all portions of said perimeter gutter through said plural passageways in order to maintain a constant flow of water in said gutters with a constant removal of water from said gutters, without relying on gravity flow to said filter system, thereby creating substantially uniform surge capacity around the perimeter of said pool,

the maintenance of water in said upper section preventing air from flowing into said lower section and into said pump.

4,112,527
TEMPORARY STOPPER FOR OUTLETS OF TOILET BOWLS

Lauro B. Giubilo, 194 Smallwood Ave., Belleville, N.J. 07109

Filed Aug. 11, 1977, Ser. No. 823,873
Int. Cl.² A47K 1/14
U.S. Cl. 4—295 9 Claims

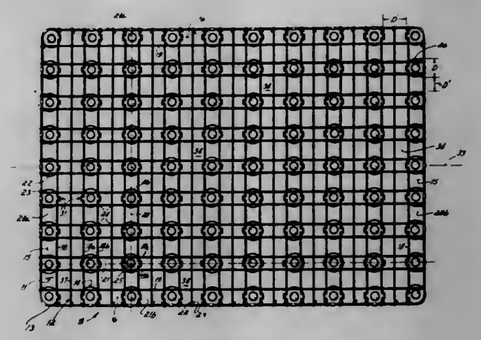


1. A temporary stopper for closing an outlet of a toilet bowl of conventional construction and having a generally oval top and a lip around a substantial portion thereof, the installed stopper preventing unwanted back flow of fluid and the like from a connected sewer, said stopper including: (a) a substantially rigid rod of selected length; (b) a disc member of at least partially resilient material, said disc having a diametrical extent at least slightly larger than the outlet of said bowl, this disc mounted on one end of the rod; (c) means for retaining said disc at the end of the rod and also for retaining this disc so that at its mounting position on the rod and in back flow stopping condition in the bowl the disc is sealed at the rod to inhibit any fluid flow thereby; (d) a handle having a hole at a midportion thereof, this hole sized to provide at least a sliding fit on the rod, the handle of a length less than the long extent of the opening at the top of the bowl and greater than the opening at the shorter transverse opening of the bowl, said handle being a channel member and having end members which members are slidable in this channel to a selected extended condition and means is provided by securing these ends in the selected position, said means including a bolt and nut and a slot slidably accommodating the shank of the bolt, and a through hole sized for the turning therein of the shank of the bolt, the slot formed in one component and the hole in the other component, the midportion of the handle forming one component and an end member providing the other component; (e) a compression spring slidable and carried on and by the rod, this spring disposed between the handle and the means for retaining the disc, the spring bias urging the handle away from the disc, and (f) means for limiting the outward travel of the handle on the rod when a temporary closing of the outlet of the toilet bowl against back flow is achieved by positioning the disc member over the outlet of the bowl and pressing this disc into flow inhibiting condition by moving the handle downwardly on the rod to compress the spring and at this downward position the handle is maneuvered and turned to bring both ends of the handle under a lip portion of the toilet bowl whereat the handle is released with the ends engaged by the lip as and with the spring bias urging and maintaning the disc in a flow sealing condition.

4,112,528
BOX SPRING ASSEMBLY AND SMALL DIAMETER SINGLE CONE COIL SPRING FOR USE IN THAT ASSEMBLY

Larry Higgins, Carthage, Mo., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Continuation-in-part of Ser. No. 726,811, Sep. 27, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 784,439
Int. Cl.² D47C 23/04
U.S. Cl. 5—248 5 Claims



1. An improved box spring assembly comprising

a plurality of conical coil springs oriented in a plurality of parallel columns and a plurality of parallel rows, each of the coil springs being of a regular single cone frustoconical configuration, each of the coil springs having the same diameter as all other coil springs, and each of the coil springs having a top loop diameter no greater than three and one-half inches so that said coils exhibit a substantially straight line deflection curve over a major portion of their possible range of deflection,

the coil springs of each of said columns being spaced from the adjacent coil springs in the adjacent column a distance at least as great as the diameter of the coil springs, and the coil springs of each of said rows being spaced from the adjacent coil springs in the adjacent row a distance at least as great as the diameter of the coil springs, and

a welded wire grid having at least one longitudinal wire provided for each column of coil springs and at least one

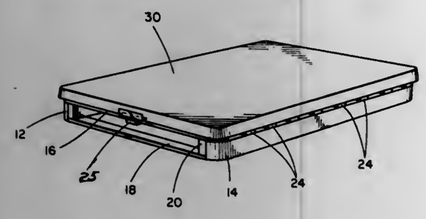
transverse wire provided for each row of coil springs, said transverse and longitudinal wires being welded one to the other, and at least one of said transverse and longitudinal wires being connected to each of said coil springs.

4,112,529

FOUNDATION UNIT FOR BEDDING

Gerald A. Golembeck, Lake Elmo, and Thomas L. Horwitz, St. Paul, both of Minn., assignors to The United States Bedding Company, St. Paul, Minn.

Filed Jun. 20, 1977, Ser. No. 807,968
Int. Cl.² A47C *23/00*
U.S. Cl. 5—354 **5 Claims**



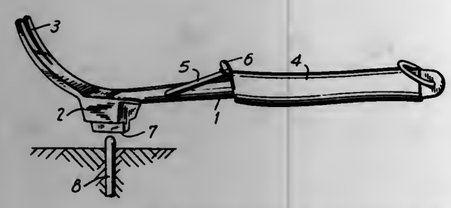
1. A foam foundation unit for bedding comprising a base frame member formed of a pair of longitudinal side frame members and a pair of transverse end frame members joined one to the other to provide a base frame of rectangular shape, a plurality of longitudinally spaced apart slats extending crosswise between the longitudinal side frame members, a grid of spaced crosswise and lengthwise extending metal members, and means fixedly securing the grid directly to the slats and the base frame members at points where the grid crosses over the slats at base frame members, and a foam layer supported on the top side of the grid.

4,112,530

CAMPING TOOL, IN PARTICULAR FOR DRIVING AND EXTRACTING FROM THE GROUND ANCHORAGE PEGS OF CAMPING TENTS

Giovanni Lecce, Milan, and Paolo Andena, Lodi, both of Italy, assignors to Leyan S.r.l., Milan, Italy

Filed Mar. 22, 1977, Ser. No. 780,066
Int. Cl.² B66F *15/00*
U.S. Cl. 7—146 **3 Claims**



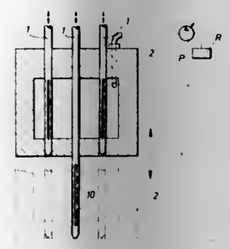
1. A camping tool, particularly for driving and extracting pegs for anchoring of tents on the ground, comprising: an elongated metallic body with a longitudinal axis; a curved portion at one end of said body and curved with respect to the longitudinal axis of said body; said curved body having a V-shaped gap with straight-lined edges forming the V-shaped, a mass portion at said one end of said body and located where said curved portion joins said elongated body for driving said pegs; a handle at the other end of said body for using and operating the tool; a ring-shaped member pivoted on said elongated metallic body for connecting hookingly with a peg for extracting the peg from the ground; and a projecting portion on said ring-shaped member for extending into a hole in a peg for extracting the peg from the ground.

4,112,531

METHOD OF PRINTING WEBS

Mathias Mitter, Falkenstr. 57, 4815 Schloss Holte, Fed. Rep. of Germany

Division of Ser. No. 735,198, Oct. 26, 1976. This application Apr. 15, 1977, Ser. No. 788,003
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608005
Int. Cl.² D06B *1/08*
U.S. Cl. 8—149 **6 Claims**



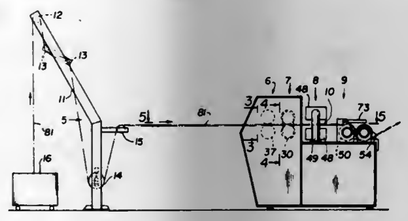
1. A method of printing webs, particularly textile webs, comprising the steps of
providing a plurality of individual dot-printing elements each having a free end;
supporting a web to be printed in a path in which a surface of the web faces the free ends of the printing elements;
supplying printing medium to the printing elements for entrainment by the same;
moving respective ones of the printing elements until the free ends thereof contact at least the surface of the web to yield up the entrained printing medium to the web; and
retracting the printing elements subsequently to such contact.

4,112,532

METHOD OF PADDING AND EXTRACTING A CONTINUOUSLY ADVANCING CIRCULAR KNIT FABRIC TUBE

Frank Catallo, 84 Wheatley Rd., Old Westbury, N.Y. 11568

Division of Ser. No. 739,258, Nov. 5, 1976. This application May 31, 1977, Ser. No. 801,550
Int. Cl.² D06B *3/10, 15/02*
U.S. Cl. 8—151 **2 Claims**



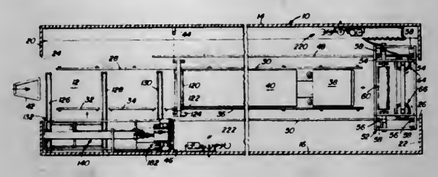
1. In a method of padding and extracting a continuously advancing circular knit fabric tube having upper and lower layers by passage through a puddle of impregnating liquid contained within an upwardly open nip defined by a pair of opposed horizontally disposed squeeze rolls, the steps of spreading the advancing fabric tube to a predetermined width, then immediately directing said spread fabric tube onto one of said squeeze rolls for advance in a generally downward direction through said puddle into said nip, the said upper layer of said fabric tube being free from contact with either of said squeeze rolls until its passage through said nip, and expelling any entrapped air in said fabric tube through the said upper layer thereof during its advance over the said one of said squeeze rolls toward engagement with said nip as the result of directing said fabric tube into said puddle of impregnating liquid under controlled tension.

4,112,533

INTERIOR-EXTERIOR TRUCK BODY WASH

Douglas R. Brager, 707 6th St., East Missoula, Mont. 59801

Filed Oct. 7, 1976, Ser. No. 730,642
Int. Cl.² B60S *3/06*
U.S. Cl. 15—53 A **16 Claims**



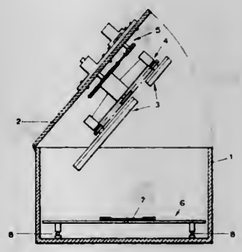
1. An apparatus for washing a trailer body of the type including a rear opening therein, said apparatus including an elongated extendable boom structure having base and free ends, support means supporting said boom structure from said base end in generally horizontal position and for generally horizontal lateral shifting, a washing head assembly carried by said free end, and means operative to selectively extend and retract said free end of said boom wherein said free end of said boom includes support wheel means for rollingly supporting said free end from and for movement along the inside floor of a trailer into which said free end is extended, said support means including a carriage from which said base end is supported, a support surface, means guidingly supporting said carriage from said surface for back and forth movement relative thereto in a horizontal path extending transversely of said boom, and said carriage including a horizontal surface upon which said wheel means is supported when said boom is retracted and a bridge structure positionable to bridge a narrow gap between said horizontal surface and the floor of a trailer behind which said carriage is registered.

4,112,534

WASHER FOR NYLOPRINT PRINTING BLOCKS OR THE LIKE

Oyvind Hovengen, 3370 Vikersund, Norway

Filed Feb. 25, 1977, Ser. No. 771,995
Claims priority, application Norway, Feb. 27, 1976, 760662
Int. Cl.² A46B *13/02*
U.S. Cl. 15—77 **8 Claims**



1. An apparatus for the washing out of printing blocks of the "Nyloprint" type or the like, comprising a brush device coupled to a driving means and adapted to be moved across a printing block which, during the washing is fixedly disposed in a container with a cleaning bath in which the printing block and the brush device is immersed, wherein the brush device comprises at least two brush units which are rotatably mounted about respective substantially parallel rotational axes, and which by means of a motion mechanism are adapted to move along a circular path during simultaneous rotation about their rotational axes, and wherein each of said brush units has a larger radial size than the distance between its rotational axis and the center of said circular path, and such a shape and orientation in relation to the other brush unit that individual rotation of the units during their movement in said circular path takes place without mutual interference.

4,112,535

HIGH PRESSURE JET WALL CLEANER APPARATUS

Robert W. Wild, South Wales, and Joseph G. Keeney, Tonawanda, both of N.Y., assignors to C. H. Heist Corporation, Clearwater, Fla.

Filed Jun. 21, 1976, Ser. No. 697,964
Int. Cl.² A47L *11/38*
U.S. Cl. 15—98 **30 Claims**



1. A unit for cleaning a substantially even wall surface comprising a housing, an opening in said housing for placement in contiguous relationship to said wall surface, means in said housing for projecting high pressure water against the portion of said wall framed by said opening, means in communication with said housing for conducting water away from said housing, sealing means for physical engagement with said wall, and affixing means for affixing said sealing means on said housing substantially entirely around said opening to confine said water in said housing by preventing escape of water between the junction of said sealing means with said wall.

4,112,536

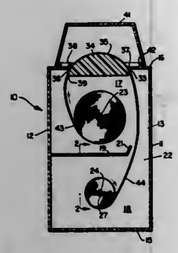
APPLICATOR

John C. Carson, Jr., Manasquan Park; Clarence R. Robbins, Piscataway, and Divaker B. Kenkare, South Plainfield, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 647,932, Jan. 9, 1976, abandoned. This application Nov. 17, 1977, Ser. No. 852,348
Int. Cl.² B05C *17/00*
U.S. Cl. 15—104.94 **5 Claims**

1. Disposable apparatus for dispensing a fluent composition for personal body use comprising a casing having a top wall opening, a stationary web backing member extending across said casing with a sector thereof projecting through said opening, said sector having a smooth firm cylindrical surface extending externally of said casing about an axis within the casing, means in said casing below said member rotatably mounting a supply roll of a pre-treated carrier web bearing said composition, said supply roll being rotatable on an axis substantially coincident with the axis of said cylindrical surface

and said web passing directly from said supply roll out through said opening at one side of said member to closely overlie said cylindrical surface of said member and present a firmly backed stationary applicator area outside said casing and then passing into said casing along the other side of said member, and web rewind means rotatably mounted in said casing below said supply roll located to directly receive said web and operable for displacing said web to selectively dispose a fresh area of



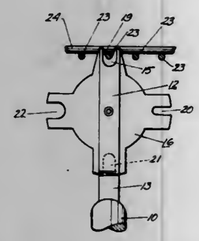
web in overlying relation to said member, said web rewind means comprising a spindle having web attachment means and mounted for unidirectional rotation such that the web may be displaced only in the direction to provide a fresh exposed area overlying said cylindrical surface, and said casing being so constructed as to serve as a handle to be grasped by the user while rubbing the backed exposed web area over the part to be treated.

4,112,537

GRILL SCRAPER

Roger W. Heuck, Cincinnati, Ohio, assignor to M. E. Heuck Company, Cincinnati, Ohio

Filed Dec. 23, 1977, Ser. No. 863,947
Int. Cl.² A47J *37/07*; A47L *17/00*; B25F *1/04*
U.S. Cl. 15—105 **4 Claims**



1. A tool for scraping the rods or wires constituting a grill, comprising

(a) a handle member,

(b) a support fixed to the distal end of said handle member,

(c) a scraper wheel having a plurality of rod scraping extensions having notches of different widths and depths on its periphery, and rotatably secured to said support,

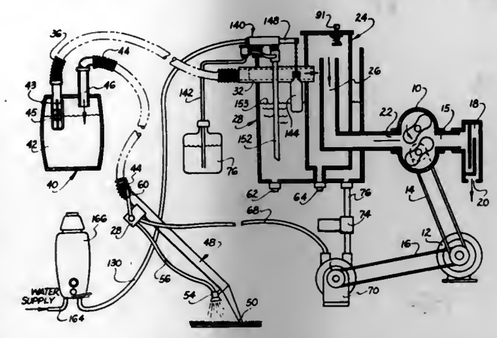
(d) said support having at its distal end a U-shaped notch of a width substantially the same size as but at least equal to the width of the widest scraping notch on said wheel and of a depth at least equal to the deepest scraping notch, whereby the notch of any of said scraping extensions may be aligned with said U-shaped notch to hold said wheel against rotation during a scraping operation.

4,112,538

CARPET CLEANING MACHINE

Jack A. Bates, 2530 Fishinger, Columbus, Ohio 43221

Continuation-in-part of Ser. No. 471,508, May 20, 1974, Pat. No. 3,942,217, which is a continuation of Ser. No. 260,586, Jun. 7, 1972, abandoned. This application Mar. 9, 1976, Ser. No. 665,268
Int. Cl.² A47L *7/00*
U.S. Cl. 15—321 **8 Claims**



1. A carpet cleaning machine comprising, in combination, wheeled frame means; a dirty fluid collecting means on the upper portion of said frame means and including a collecting means inlet and outlet; blower means mounted on said frame means and including a blower inlet communicating with said outlet of said dirty fluid collecting means and a blower outlet communicating with the enviroment; a manually manipulatable carpet cleaning tool including a tool outlet for dispensing cleaning fluid and a tool inlet for collecting dirty fluid from the carpet; passage means for delivering said dirty fluid from said tool inlet to said collecting means; means forming a source of hot water; a cleaning fluid reservoir for holding a supply of cleaning fluid; holding tank means for holding a solution of cleaning fluid and hot water mounted on said frame means and including a holding tank inlet and a holding tank outlet; first conduit means connecting said holding tank means inlet with said source of hot water for delivering a flow of hot water to said holding tank means inlet; second conduit means for delivering cleaning fluid from said reservoir to said holding tank means inlet; valve means interposed in both said first and second conduit means for simultaneously controlling a flow of cleaning fluid and a flow of hot water to said holding tank inlet to thereby form said solution in said holding tank means; and automatic valve actuator for opening said valve means upon attainment of a predetermined lower level of solution in said holding tank means, and for closing said valve means upon attainment of a predetermined upper level of solution in said holding tank means; pump means including a pump inlet communicating with said holding tank outlet and a pump outlet; a flexible cleaing fluid conduit connecting said tool outlet with said outlet of said pump means; and motor means mounted on said frame means for driving said pump means and blower means.

4,112,539

STRUCTURAL-REINFORCEMENT MEANS FOR PRECISION, TELESCOPING, LINEAR SLIDE MECHANISMS

Magnus F. Hagen, 434 Panorama Dr., Laguna Beach, Calif. 92651

Filed May 12, 1976, Ser. No. 685,638
Int. Cl.² E05D *13/02*
U.S. Cl. 16—88 **7 Claims**

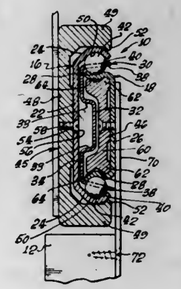
1. A structural-reinforcement means for precision, telescoping, linear, suspension slides of the type that includes:

an outer slide member having a bottom wall and inwardly-formed, ball raceways arranged along the side edges of said bottom wall in a longitudinal, parallel relationship to each other, said raceways being concave in cross-section and facing each other;

an inner slide member having a channel-shaped configuration defined by a bottom wall and oppositely disposed raceways along the side edges thereof, said ball raceways being concave in cross-section and facing outwardly, the inner slide member being operably disposed within the outer slide member;

ball bearings disposed in adjacent raceways of the respective outer and inner slide members;

a ball retainer operably positioned between the outer and inner slide members for retaining said balls in spaced relationship to each other and in said raceways;



an outer, structural-reinforcing bar having a channel-shaped cross section defined by a rear wall and outwardly-extending, flange members integrally formed along the longitudinal side edges of said rear wall, said flanges having a recess formed throughout the length thereof, wherein said outer slide member is fixedly received within said channel of said reinforcing bar, whereby said outer slide is prevented from being misaligned when a load is applied thereto; and

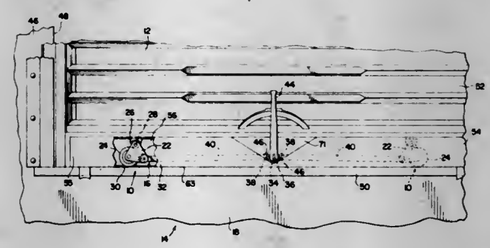
an inner, structural-reinforcing, bar member having an elongated main wall, the longitudinal edges thereof forming a continuous truss member for direct engagement with each oppositely disposed raceway of said inner slide member, said inner reinforcing member being mounted within said channel of said inner slide member, thereby preventing distortion thereof when a load is applied thereto.

4,112,540

ELEVATING AND SHIFTING RAILWAY CAR SLIDING DOOR MECHANISM

Glenn Lamont Wright, Canfield, and James Arthur Ellis, Columbiana, both of Ohio, assignors to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Jan. 28, 1977, Ser. No. 763,289
Int. Cl.² A47H *33/02*; B61D *17/08, 19/00*; E05D *13/02*
U.S. Cl. 16—99 **1 Claim**



1. A mechanism for moving a sliding door of a railway car between a first position in which the bottom surface of the sliding door is supported on the body of the railway car and a second position in which the sliding door is supported by said mechanism and is moveable along the railway car body, said mechanism comprising:

a pair of crank means;

a roller mounted on each of said crank means for rotation about first axes;

means for mounting said crank means to the sliding door for rotation about second axes spaced between said first axes which allow limited arcuate movement of said rollers through a pair of openings in the bottom portion of the sliding door in arcs which provide clearance between said rollers and the openings when said rollers move partially into and out of the openings;

a selectively manually operated actuating member mounted on the sliding door for rotation about a third axis, said actuating member having a pair of lugs thereon;

a pair of single elongated connecting links connected to said crank means for rotation about fourth axes spaced between said second axes and connected to said lugs for rotation about fifth axes spaced from the third axis of rotation of said actuating member;

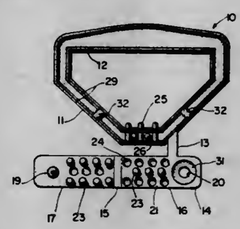
said third, fourth and fifth named axes being located in the area between the bottom of said rollers and said second axes when said sliding door is in both said first position and said second position, thereby providing a compact and efficient mechanism having the capability of positively selectively driving said door between said first and second positions.

4,112,541

HANDLE FOR BAGS PARTICULARLY OF NET OR PLASTIC MATERIAL

Constantinos Tetradis, 19 Hatzigianni St., Ayos Ioannis Rentis, Attica) Piraeus, Greece

Filed May 31, 1977, Ser. No. 802,171
Int. Cl.² B65D *33/06*
U.S. Cl. 16—114 R **4 Claims**



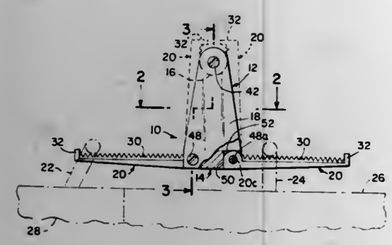
1. A handle for bags particularly of a net or plastic material comprising a carrying member having an elongated closed loop portion adapted to be gripped manually, a link extending perpendicularly from said closed loop and a bendable strip attached to said link spaced from said closed loop and foldable back upon itself to define two portions having opposed inner surfaces, said strip being substantially parallel to said elongated portion of the carrying member, a snap fastener on one strip portion detachably engageable with the other strip portion to engage said strip portion in a clamped position, and means on the opposed inner surfaces of said strip portions for clampingly engaging bag material received between said strip portions, said clamping means comprising a plurality of detents on one of said strip portions and recesses on the other of said strip portions spaced to correspond with said detents, a bag of flexible material having an opening, the bag material at said opening being gathered together and passed between said clamped strip portions to be doubled around a portion of said carrying member to which said link is attached and passed back between said strip portions so that the handle is securely but detachably fastened to said bag when said strip portions are engaged by said snap fastener.

4,112,542

AUXILIARY HANDLE FOR PLURALITY OF CARRYING HANDLES

John M. Snyder, 186 Riverside Dr., New York, N.Y. 10024, assignor to John M. Snyder; Bernard J. Steinberg, both of New York, N.Y. and Edward Halle, Fort Lauderdale, Fla.

Filed Aug. 11, 1977, Ser. No. 823,719
Int. Cl.[2] A45C *13/22*
U.S. Cl. 16—114 R 11 Claims



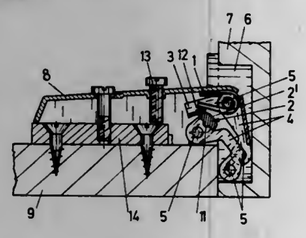
1. An auxiliary handle construction for selective use in carrying a plurality of items comprising primary handles: comprising, a main body portion comprising auxiliary handle, base and connector elements, and holding elements for holding a plurality of said primary handles, in which the holding elements are movable from a first to a second position selectively, the movable holding elements comprise a flat end portion, and the base element comprises at least one flat portion, whereby at least one holding element flat portion and at least one base element flat portion are in faced contacting relation when at least one holding element is in second position.

4,112,543

FURNITURE HINGE

Erich Röck, Höchst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft M.B.H., Höchst, Austria

Filed Jun. 3, 1977, Ser. No. 803,305
Claims priority, application Austria, Jun. 4, 1976, 4102/76
Int. Cl.[2] E05D *3/06, 11/10;* E05F *1/12*
U.S. Cl. 16—164 5 Claims



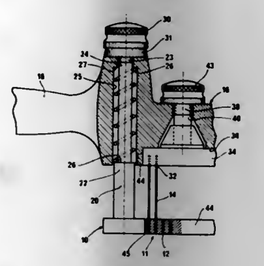
1. A hinge, particularly for use in hingedly connecting a furniture door to an article of furniture, said hinge comprising:
- a hinge arm adapted to be connected to an article of furniture;
- a casing adapted to be connected to a furniture door;
- a first, inner hinge link having first and second opposite ends, said first end of said inner link being pivotally connected to said hinge arm by a first axle, and said second end of said inner link being pivotally connected to said casing by a second axle;
- a second, outer hinge link having first and second opposite ends, said first end of said outer link being pivotally connected to said hinge arm by a third axle, and said second end of said outer link being pivotally connected to said casing by a fourth axle;
- said inner and outer links cooperating to form a quadrangular linkage connecting said casing to said hinge arm, such that said casing is movable about said quadrangular linkage between an open first position and a closed second position;
- an element formed of plastic material and having a curved guiding edge, said element being fixedly positioned on said inner link at a position thereon adjacent the pivotal connection of said first end thereof about said first axle to said hinge arm, with said curved guiding edge facing outwardly away from said first axle, said element having a side surface facing laterally away from said curved guiding edge;
- a metal guiding lever pivotally connected to said third axle, said guiding lever having thereon first and second pressure sections which extend at an angle to each other, said first pressure section contacting said curved guiding edge of said element when said casing is at or moving toward said open first position thereof, and said second pressure section contacting said side surface of said element when said casing is at or closely adjacent said closed second position thereof; and
- spring means for urging said guiding lever toward said element, such that when said casing is at or moving toward said open first position thereof said spring means and said first pressure section produce no torque urging said inner link about said first axle, and such that when said casing is at or closely adjacent said closed second position thereof said spring means and said second pressure section produce a torque urging said inner link about said first axle in a direction tending to urge said casing toward said closed second position thereof.

4,112,544

TENDERIZER FOR BUTCHER'S MEAT

Philippe d'Arras, Paris, France, assignor to Societe Coupax, Selles Sur Cher, France

Filed Dec. 30, 1976, Ser. No. 755,825
Claims priority, application France, Jan. 8, 1976, 76 00328
Int. Cl.[2] A22C *9/00*
U.S. Cl. 17—25 2 Claims



1. An appliance for tenderizing butcher's meat, comprising:
- a base including an open frame and, a lower major surface for contacting the meat;
- a plate having an apertured grid detachably interlocked with and forming a major portion of the base, said grid having a multiplicity of elongated slots oriented perpendicular to said lower major surface;
- projections and recesses on two opposite edges of said plate and corresponding recesses and projections on the adjacent edges of the frame opening, and a sliding locking device on one edge of frame, to hold the plate in the base;
- a main body having at least one handle, said body being disposed of near one side of said base remote from said lower major surface thereof;
- an elongated upright secured to said base and slidably connected to said main body to permit linear sliding movement between said base and said body;
- a spring for urging said upright away from said main body;

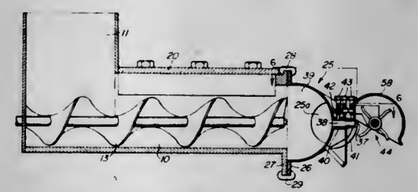
said main body having a recess therein for receiving a blade assembly;
- a blade assembly comprising a block of plastic material having a mounting surface and an opposite blade holding surface said assembly being detachably interlockably secured to said main body with said block disposed in said recess and said mounting surface abutting a wall of said recess, said blade holding surface being generally parallel to said lower major surface of said base;
- a corresponding multiplicity of elongated blades each having one end embedded in said plastic block at said blade holding surface thereof and a free end adjacent said lower major surface, each blade being in alignment with and extending through a corresponding aperture of said grid,
- whereby said main body may be moved toward said base to cause said blade to extend through said slots and beyond said lower major surface to tenderize said meat, said spring returning said body to a rest position wherein said free ends of said blades are disposed within said slots, and said plate and said blade assembly may be readily removed from said base and main body respectively for cleaning purposes.

4,112,545

METHOD AND APPARATUS FOR FORMING TORN, RANDOM SIZE PIECES OF SAUSAGE MEAT

Wayne L. Covington, and Glen R. Green, both of Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Boise, Id.

Filed Feb. 3, 1977, Ser. No. 765,100
Int. Cl.[2] A22C *7/00*
U.S. Cl. 17—45 8 Claims



1. A method of forming random size pieces of a chopped or ground sausage meat or like material, comprising the steps of continuously extruding, as a continuous column, material of the type specified through an extrusion passage having an unrestricted outlet opening freely into an extrudate-receiving space; and successively and repeatedly tearing respective chunks of material from the extruded column as said column emerges from said outlet, by passing wiping means across different fractional portions of the extrusion outlet.

4,112,546

METHOD OF AND APPARATUS FOR MAKING LINK SAUSAGES

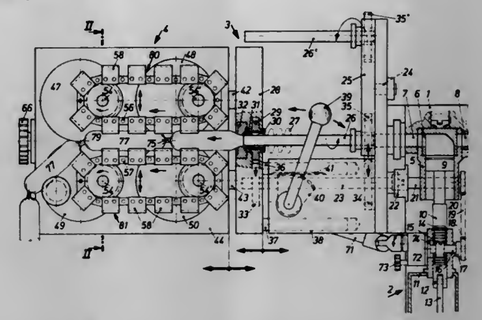
Johann Müller, Biberach, Germany, assignor to Firma Albert Handtmann, Biberach, Germany

Division of Ser. No. 540,722, Jan. 13, 1975, Pat. No. 4,021,885.
This application Sep. 30, 1976, Ser. No. 728,190
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1974, 2402817
The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.
Int. Cl.[2] A22C *11/00, 11/04, 11/10*
U.S. Cl. 17—49 15 Claims

1. In a method of making sausage links of uniform length and weight in a common sausage casing wherein individual portions are formed by rotating the empty portion of the sausage casing relative to the prepared links which are prevented from rotating and which are radially gripped at the filled portions and advanced with an adjustable speed, the improvement which comprises the steps of:

subdividing the sausage casing into the individual portions by twisting off the sausage casing with intermittent control of the twisting operation dependent upon the volume of the sausage filling fed during the previous interval;

establishing the length of the sausage links solely by varying the advancing speed of the filled portions by engaging them with a conveyor free from projections separating links from one another;



effecting the filling of the links and the drawing off of the sausage casing alternately and synchronously with the twisting off operation; and

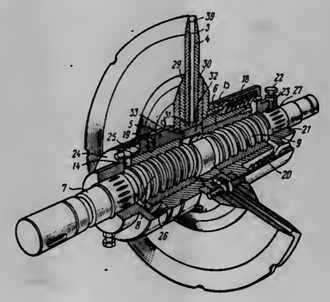
synchronously changing the speed of advance of the filled sausage lengths in the same sense as the pulsating ejection speed of the sausage filling mass.

4,112,547

AUTOMATICALLY ADJUSTABLE CUTTING APPARATUS FOR PURPOSES SUCH AS FILLETING FISH

Alexandra Ivanovich Glushkov, Ulitsa Sofii, perovskoi, 18, kv.5; Sergei Vasilievich Krutov, Kolsky prospekt, 20, kv.45; Vladimir Ivanovich Semenov, Ulitsa Gadzhieva, 11, kv.17; Anatoly Fedorovich Gusev, prospekt Lenina, 46, kv.26, all of Murmansk, U.S.S.R.

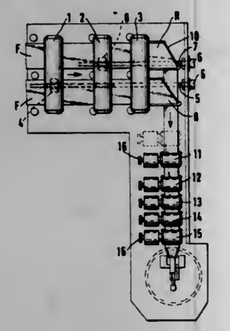
Filed Dec. 21, 1976, Ser. No. 752,999
Int. Cl.[2] A22C *25/16*
U.S. Cl. 17—57 10 Claims



1. In an automatically adjustable cutting apparatus, such as a fish filleting apparatus, rotary shaft means and a pair of disc-shaped cutting means coaxially mounted on said shaft means for rotation therewith and axially spaced from each other to define between themselves a predetermined gap through which material such as the spine and bones of a fish can pass, thread means formed on said shaft means and at least at one of said cutting means for providing at least at said one cutting means not only rotation with said shaft means but also the possibility of turning relative to said shaft means for changing the width of said gap, and spring means connected between said one cutting means and said shaft means for yieldably and resiliently resisting turning of said one cutting means with respect to said shaft means, said spring means yielding when said one cutting means encounters a sufficient resistance to

turning together with said shaft means, for providing then for relative turning of said one cutting means with respect to said shaft means at said thread means in a direction which will increase the width of said gap, said spring means operating when said resistance diminishes to return said one cutting means with respect to said shaft means back toward an initial position of said one cutting means on said shaft means.

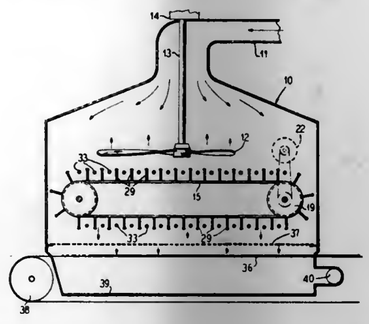
4,112,548
DRAFTING MACHINE
Joseph Sauvage, Avenue de Parc, 57, 4920 Embourg, Belgium
Filed Sep. 22, 1976, Ser. No. 725,668
Claims priority, application Belgium, Sep. 23, 1975, 645181; Jul. 9, 1976, 645597; Dec. 4, 1975, 645280
Int. Cl.² D01H *5/00*
U.S. Cl. 19—243 24 Claims



1. A machine for blending, matting, shortening or sizing natural or artificial fibers, comprising
a first and second working stage, each of said stages comprising a plurality of trains of rollers adapted to perform work, each of said trains consisting of three rollers including an upper presser roller and two twin carrier rollers under said presser roller,
said plurality of trains including, a plurality of single heads and twin carrier rollers of large size constituting said first working stage, and said second working stage sequentially operatively arranged relative to said first working stage, said single heads comprising means for delivering at least two separated webs of slivers of fibers therethrough,
means for forming a narrow thick lap constituting directional juxtaposing members for feeding the two separated webs emerging from said single heads along a horizontal plane towards said second working stage in a combined single lap having a width at least 50% less than the width of an individual of said two separated webs,
said second working stage including a reducer head comprising a number of said trains, including frames and a twin lower supporting roller and control roller, respectively, overhangingly mounted on said frames, adjustably spaced from each other.

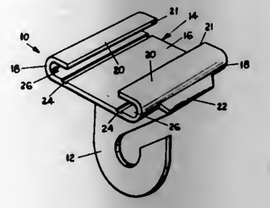
4,112,549
APPARATUS FOR DEFLOCCULATING FIBROUS WAD AND UNIFORMLY DISTRIBUTING THE DISINTEGRATED FIBROUS MATERIAL ON A DRY FIBER LAYER FORMING SURFACE
Tony C. Min, Houghton, Mich., and Richard E. Hergert, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.
Filed Sep. 19, 1977, Ser. No. 834,788
Int. Cl.² D04H *1/00*
U.S. Cl. 19—304 6 Claims

1. An apparatus for deflocculating a dry suspension of fibers which comprises:
a housing,
inlet means for introducing said suspension of fibers vertically into said housing for free fall therethrough,
an impeller positioned below said inlet means and in the path of the falling suspension of fibers,
drive means for rotating said impeller in a manner such that it provides vertically upward directed air currents in



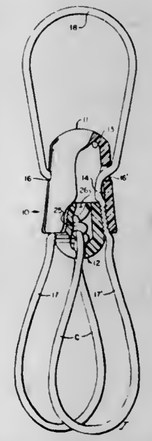
opposition to the settling tendencies of said suspension of fibers,
a foraminous forming means below said impeller means, and
suction means acting on said foraminous forming means to form a sheet of fibers from the fibers settling onto said forming means.

4,112,550
SUSPENDED CEILING HOOK
Stuart DeWitt, and James S. DeWitt, both of 799 Wendover Blvd., Muskegon, Mich. 49441
Filed May 13, 1977, Ser. No. 796,765
Int. Cl.² A44B *21/00;* E04C *17/18*
U.S. Cl. 24—73 BP 9 Claims



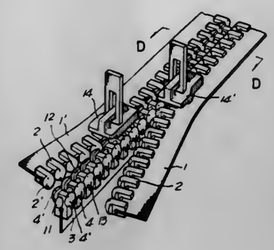
1. A hanger device for attachment to a support member with a rim with two outwardly extending planar edges comprising:
an integrally formed upper portion including two inwardly extending and opposing flanges having inner edges spaced apart from each other and means defining a flexure point for each of said opposing flanges;
a recess formed within the upper portion with the inwardly extending flanges defining the upper border of the recess, the recess adapted to receive the rim of the support member;
tab means for manually moving the flanges outwardly about the flexure point to enlarge the distance between the inner edges to allow the rim of the support member to be received in or withdrawn from the recess, the tab means connected to the outer portion of the upper portion and extending downwardly and outwardly therefrom for manual movement to inward positions such that the flanges move resiliently about the flexure point when the tab means are manually moved inwardly, the flanges being adapted to securely engage the rim of the support member when the tab means are released; and
a downwardly extending hanger portion connected to the upper portion.

4,112,551
DRAW STRINGS PULLER AND FASTENER
Buenaventura Z. Sales, 5234 Westmont Ave., San Jose, Calif. 95130
Filed Feb. 24, 1977, Ser. No. 771,622
Int. Cl.² F16G *11/14, 11/10*
U.S. Cl. 24—117 5 Claims



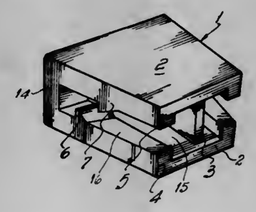
1. A draw string puller and fastener for a draw string engaging a hem, eyelets, hooks, and the like of a closable member comprising in combination:
1. a cord having a mid portion interlacingly circumscribing such closable member;
2. a cap member having a bell like body with a closed end from which a resilient flared cylindrical wall extends toward an open end;
3. a pair of apertures formed through the closed end of said cap member through which the free ends of said cord slidingly pass and extend for opening and closing the looped mid portion thereof relative to said closable member;
4. a plug element having a closed end from which a tapered opposite end extends, a bore formed through said plug element for passage of the terminal ends of said cord therethrough, and a cavity formed in the tapered opposite end of said plug element;
5. a knot formed on the terminal ends of said cord for tying them together beyond said plug element for manually pulling the extended ends of said cord away from the cap member as it is held in abutting relation relative to the closable member for closing the looped mid portion of the cord upon the latter; and
6. said tapered opposite end of said plug element conforming to the internal surface of said resilient flared cylindrical wall of said cap member and adapted for pressed fit into the open end of said cap member to thereby retain the free ends of said looped cord in juxta-position therebetween and the looped mid portion of said cord in closed condition relative to said closable member.

4,112,552
THREE-WAY SLIDE FASTENER
Haeng Yong Lee, 1091, Seocho-dong, Kangnam-ku, Seoul, Korea
Filed Aug. 24, 1976, Ser. No. 717,180
Claims priority, application Rep. of Korea, Aug. 27, 1975, 1896
Int. Cl.² A44B *19/02, 19/04*
U.S. Cl. 24—205 R 4 Claims



1. A three-way slide fastener comprising:
first flank means for providing a first row of single head teeth elements;
second flank means for providing a second row of single head teeth elements;
intermediate tape means for providing a row of teeth elements each element being a dual head; and
slider means for selectively interlocking and releasing said first and second flank means to and from said intermediate tape means wherein said slider means is comprised of two independently operable sliders, each slider capable of selectively interlocking and releasing only one of said flank means to and from said tape means.

4,112,553
SLIDE FASTENER BOTTOM ENDS
Jonas Weitzner, Cespedes 3857, Buenos Aires, Argentina
Filed Feb. 22, 1977, Ser. No. 770,375
Claims priority, application Argentina, May 28, 1976, 263438
Int. Cl.² A44B *19/36*
U.S. Cl. 24—205.11 R 5 Claims



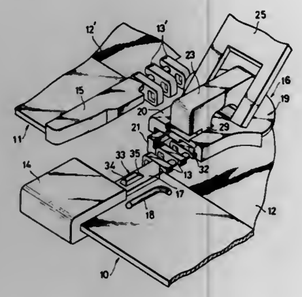
1. A stop member for retaining the two ends of a slide fastener, at least one end having a surface with at least one locking recess defined thereon, comprising, a top and bottom face portion spaced from and facing each other, a web portion connected between adjacent edges of said top and bottom face portions, said face portions and web portion forming a groove, a partition connected between said top and bottom face portions dividing said groove into first and second groove spaces for admitting the respective ends of the slide fastener, flange means extending into said groove from lateral edges of said top and bottom face portions to form a slot therebetween in each groove space, and at least one of said flange means in said first groove space including at least one tooth extending into said slot, said tooth having an inclined surface sloping inwardly toward said slot in the direction of said web portion, and having a vertical surface facing said web, the slide fastener end having at least one recess thereon being lockably engageable

into said first groove space by said tooth engaging into said recess.

4,112,554
SEPARABLE SLIDE FASTENER WITH AN AUTOMATICALLY LOCKING SLIDER

Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Oct. 5, 1977, Ser. No. 839,438
Claims priority, application Japan, Oct. 13, 1976, 51-137352[U]
Int. Cl.[2] A44B *19/36, 19/30*
U.S. Cl. 24—205.11 R **5 Claims**

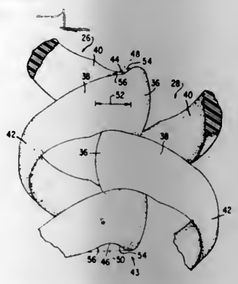


1. A separable slide fastener comprising, in combination:
(a) a pair of complementary stringer tapes;
(b) rows of interlocking fastener elements affixed respectively to the confronting longitudinal edges of the stringer tapes;
(c) separable coupling means for connecting and disconnecting the stringer tapes, the separable coupling means comprising:
(1) a pin member secured to the fastener element-carrying edge of one of the stringer tapes under the row of fastener elements thereon; and
(2) a box member secured to the fastener element-carrying edge of the other stringer tape under the row of fastener elements thereon, the box member being adapted to receive the pin member when the stringer tapes are connected;
(d) an automatically locking slider movable along both rows of fastener elements for coupling and uncoupling same when the stringer tapes are connected by the separable coupling means, and along the row of fastener elements associated with the box member when the stringer tapes are disconnected, the slider comprising:
(1) a body defining therein a guide channel for the rows of fastener elements;
(2) spring means; and
(3) a locking member pivotally supported at one end on the slider body and having first and second legs formed adjacent its other end, the first leg of the locking member being normally biased by the spring means into a position of interference with the row of fastener elements associated with the pin member when the slider is riding on both rows of fastener elements, the second leg of the locking member being normally biased by the spring means toward the row of fastener elements associated with the box member and being restrained from locking engagement therewith; and
(e) means on the box member of the separable coupling means for retracting the first leg of the locking member away from its interference position by engaging the second leg of the locking member and causing the latter to move against the bias of the spring means when the slider is moved into abutting contact with the box member;
(f) whereby the pin member of the separable coupling means can be smoothly inserted into the box member thereof through the slider for connecting the pair of stringer tapes while the slider is held in abutting contact with the box member.

4,112,555
SLIDE FASTENER

George B. Moertel, Crawford, Pa., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 539,802, Jan. 9, 1975, Pat. No. 4,044,431.
This application Jun. 14, 1977, Ser. No. 806,487
Int. Cl.[2] A44B *19/12*
U.S. Cl. 24—205.13 C **4 Claims**



1. A stringer for a slide fastener comprising
a tape;
a spiral coupling member secured to one longitudinal edge of the tape and formed from a continuous filament into successive coupling sections;
each coupling section having a head portion, a pair of leg portions extending from respective opposite sides of the head portion, and a heel portion interconnecting to a leg portion of an adjacent coupling section,
said continuous filament having an oblate cross section perpendicular to the filament with the longest dimension of the filament cross section in the head portions extending substantially parallel to the one edge of the tape and with the longest dimension of the filament cross section in the leg portions revolving from substantially parallel to the one edge of the tape at the head portions to an oblique angle to the tape at the heel portions;
each of said leg portions having a notch contiguous the respective head portion to reduce the longest dimension of the filament cross section; and
said notches having generally obtuse and scalene triangular cross sections with the head portions bordering the shortest side of the notch cross sections and with the leg portions bordering the next shortest side of the notch cross sections.

4,112,556
ZIPPER CONSTRUCTION

Dennis Michael Flaum, 1 E. Schiller, Chicago, Ill. 60610, and Herman Lawrence Fleishman, 6518 N. Kenton, Lincolnwood, Ill. 60645

Filed Sep. 14, 1977, Ser. No. 833,003
Int. Cl.[2] A44B *19/34, 19/00*
U.S. Cl. 24—205.1 R **4 Claims**

1. A closure fashioned from slide fasteners, each of said slide fasteners including two ribbons, each said ribbon having thereon a series of interconnectable elements alternatingly positioned and spaced apart, and a slider which is moved along said two ribbons in a first direction to open or in a second direction to close said fasteners by deinterconnecting or interconnecting said two series of interconnectable elements, said closure comprising:
a plurality of said slide fasteners arranged to abut one another in parallel stacked alignment,
each said slide fastener oriented to open in a direction opposite that of its immediately suprajacent or subjacent partner,

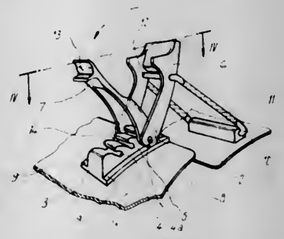


said ribbons of each said slide fastener being attached directly to the corresponding of said ribbons on said immediately said subjacent or suprajacent partner.

4,112,557
DEVICES FOR FASTENING SKI BOOTS

Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. des Etablissements Francois Salomon & Fils, Annecy, France

Filed Aug. 19, 1977, Ser. No. 826,941
Claims priority, application France, Sep. 7, 1976, 76 26829
Int. Cl.[2] A43C *11/14*
U.S. Cl. 24—69 SK **14 Claims**



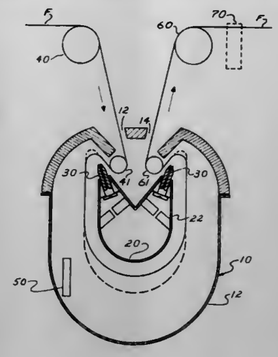
1. A fastening device for a ski boot comprising a toggle for drawing two edges of said boot together and including a rack for fixing to a first edge of the boot and having at least one notch, a clamping lever integral with an engagement pin also constituting a pivot pin for the lever engaging in said notch of said rack, a traction member pivoted, on the one hand, to a second edge of the boot and, on the other hand, to the clamping lever, the latter being able to occupy a first position in which it is closed flat on the boot, a second stable intermediate walking position, or position of partial opening and a third position of complete opening in which the engagement pin is released from the notch, and an unlocking lever having a positive action, pivoted on the rack or clamping lever, and whose pivotal movement causes the removal of the engagement pin of the clamping lever from the notch of the rack in which this pin was housed.

4,112,558
FABRIC BULKING PROCESS

Donald K. Christian, 119 Woodbine Ter., Spartanburg, S.C. 29301

Continuation-in-part of Ser. No. 409,180, Oct. 24, 1973, Pat. No. 3,925,865. This application Dec. 15, 1975, Ser. No. 640,421
Int. Cl.[2] D06C *1/00*
U.S. Cl. 26—18.5 **6 Claims**

1. A method for bulking a textile fabric comprising feeding the fabric under a restraining means into a treating vessel having two upwardly oriented nozzles therein at predetermined angles withdrawing the fabric passing in transit under said restraining means, over an upwardly oriented nozzle, under a pressure manifold system which supplies the nozzles, over another upwardly oriented nozzle and under another restraining means thus forming a downwardly extending loop

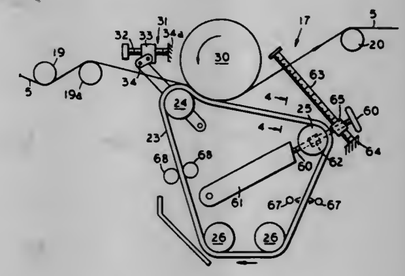


within the vessel, said loop generally encircling the pressure manifold system, the said loop being suspended from and formed solely by an upwardly directed gaseous flow from said nozzles, the fabric being bulked by actions induced therein by said air streams within the treating vessel.

4,112,559
APPARATUS FOR COMPRESSIVELY SHRINKING TEXTILE FABRICS AT HIGH SPEED

Walter S. Troope, Latham, and Jackson Lawrence, West Sand Lake, both of N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Division of Ser. No. 354,708, Apr. 26, 1973, Pat. No. 3,940,833.
This application Jun. 30, 1975, Ser. No. 591,293
Int. Cl.[2] D06C *21/00*
U.S. Cl. 26—18.6 **3 Claims**



1. In an apparatus for longitudinally compressively shrinking a light weight textile fabric web at high speed and having a heated cylinder, rotatable about its cylinder axis and having a hard surface with low frictional resistance, a plurality of rollers each of which is mounted for rotation about an axis parallel to the cylinder axis, an endless rubber elastic belt trained over said rollers, one of said rollers being a nip roller and another of said rollers being a take-up roller located opposite the nip roller on the other side of the cylinder, said belt being wrapped in turn around the nip roller then engaging an arc of the cylinder and then around the take-up roller, said nip roller being movable substantially only radially relative to the cylinder to variably compress the belt against the cylinder, the improvement comprising:
link means swingably mounting said take-up roller for movement along an arcuate path toward and from said cylinder, said arcuate path being concave toward said nip roller and configured such that movement of said take-up roller therealong will vary the length of the arc of contact be-

tween said belt and cylinder without substantially changing the tension in said belt; and

selectively operable means for swinging said link means to move said take-up roller along said arcuate path.

2. In an apparatus for longitudinally compressively shrinking a light weight textile fabric web at high speed and having a heated cylinder, rotatable about its cylinder axis and having a hard surface with low frictional resistance, a plurality of rollers each of which is mounted for rotation about an axis parallel to the cylinder axis, an endless rubber elastic belt trained over said rollers, one of said rollers being a nip roller and another of said rollers being a take-up roller located opposite the nip roller on the other side of the cylinder, said belt being wrapped in turn around the nip roller then engaging an arc of the cylinder and then around the take-up roller, said nip roller being movable radially relative to the cylinder to form a variable nip between the belt and the cylinder, the improvement comprising:

link means swingably mounting said take-up roller for movement along an arcuate path toward and from said cylinder, said arcuate path being such that movement of said take-up roller therealong will vary the length of the arc of contact between said belt and cylinder without substantially changing the tension in said belt;

selectively operable means for swinging said link means to move said take-up roller along said arcuate path; and

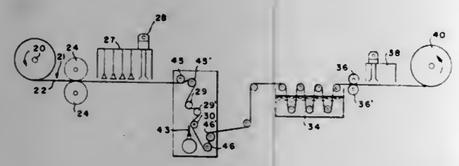
further selectively operable means for adjusting the position of said take-up roller along said link means to thereby change the radius of said arcuate path and the tension in said belt.

4,112,560

METHOD FOR SCULPTURING PILE FABRICS

Charles E. Willbanks, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 15, 1976, Ser. No. 750,618
Int. Cl.² D06C *23/02*
U.S. Cl. 28—160 **15 Claims**



1. A method of trimming the fibers in the pile from selected regions of pile fabrics comprising the steps of:

applying stiffening agent only to the regions of the fabric in which the pile is to be trimmed while leaving other regions unstiffened;

hardening the stiffening agent; and

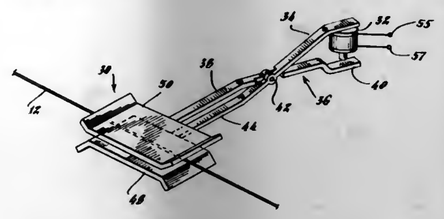
passing the fabric over a support member closely adjacent to a blade which contacts the fibers both in the regions to which stiffening agent has been applied and the unstiffened regions but severs only the fibers in the regions to which stiffening agent has been applied and deflects without severing the fibers in those regions to which stiffening has not been applied, said blade cutting in the same fashion as a knife or razor as opposed to cutting like a pair of scissors.

4,112,561

APPARATUS FOR MANUFACTURING FILAMENTS OF VARYING DENIER AND ACTUATING MEANS THEREFOR

Alan H. Norris, and Phillip W. Chambley, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.

Filed Feb. 24, 1977, Ser. No. 771,425
Int. Cl.² D02J *1/22*
U.S. Cl. 28—243 **8 Claims**



1. An apparatus for fabricating a filament exhibiting variations in denier along its length comprising:

(a) means to propel a running length of filament from a feed roller to a draw roller;

(b) electrically activated tension means disposed between said feed roller and said draw roller intermittently engaging said filament for providing variable tension thereon, said electrically activated tension means comprising solenoid means including a solenoid coupled to first and second contact plates in juxtaposition, said first and second contact plates adapted to slidably receive said filament therebetween said contact plates increasing the tension on said filament upon activation of said solenoid, and

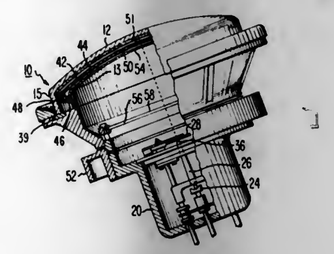
(c) actuating means coupled to said electrically activated means for random energization thereof.

4,112,562

PROCESS OF FABRICATING A CATHODE RAY TUBE

Ralph James D'Amato, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 10, 1977, Ser. No. 823,336
Int. Cl.² H01J *9/02, 9/227*
U.S. Cl. 29—25.14 **9 Claims**



1. In a process of fabricating a cathode-ray tube having a faceplate panel and an apertured color selection electrode mounted to said panel, the improvement comprising,

exposing a photosensitive coating on a surface of said panel with actinic radiation passed through a patterned screen master,

developing the exposed photosensitive coating on said panel,

then mounting a formed imperforate member to said panel, said imperforate member having a photosensitive coating thereon,

subsequently exposing the photosensitive coating on said imperforate member with actinic radiation passed through a patterned color selection electrode master while said imperforate member is mounted to said panel,

developing said exposed photosensitive coating on said imperforate member, and

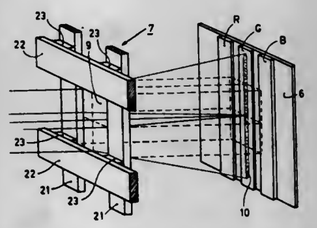
etching said imperforate member to form an apertured color selection electrode.

4,112,563

COLOR DISPLAY TUBE AND METHOD OF MANUFACTURING SAME

Johannes Van Esdonk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 759,111, Jan. 13, 1977, Pat. No. 4,066,923.
This application Aug. 8, 1977, Ser. No. 822,733
Int. Cl.² H01J *9/02, 9/18*
U.S. Cl. 29—25.14 **8 Claims**



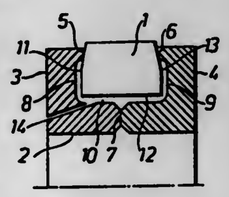
1. In the method of manufacturing a color selection means of a first and second system of electrodes for a color display television tube comprising a pair of metal electrodes with aperatures used to focus electron beams, said electrodes being separated by an insulating spacing member, at least one of said apertured metal electrodes being initially separate from said insulating spacer member, the steps comprising providing a metallic coating on at least one surface of the insulating member, placing an apertured electrode in contact with said metallic coating, heating said electrode and said insulating member with the metallic coating in contact therewith and applying sufficient pressure while heating to effect a diffusion bond therebetween providing the other aperatured electrode on an opposite surface of said insulating member, and thereafter selectively etching said metallic coating and insulating member to form apertures therein corresponding to those in said electrodes.

4,112,564

METHOD OF MAKING A COMPOSITE ROLLER

Kaj-Ragnar Loqvist, Fagersta, Sweden, assignor to Seco Tools Aktiebolag, Fagersta, Sweden

Continuation-in-part of Ser. No. 654,415, Feb. 2, 1976, abandoned. This application Apr. 13, 1977, Ser. No. 787,213
Claims priority, application Sweden, Jan. 31, 1975, 7501066
Int. Cl.² B21D *53/12;* B21B *31/08;* B60B *7/04, 11/04*
U.S. Cl. 29—148.4 D **5 Claims**



1. A method of making a roller for hot and cold rolling comprising the steps of:

providing a wear ring (1) of hard metal having outwardly convergent conical end parts, the cross-section of which decreases radially outwardly: providing a supporting structure composed of two supporting rings (3,4) L-shaped in cross-section; positioning the wear ring between said supporting rings with its conical outer parts in abutment with corresponding conical abutment surfaces (5,6) on said supporting rings;

said positioning being such as to bring said support rings into abutment at end surfaces (7) of opposed leg portions of said support rings, while leaving

a closed U-space (10) between the wear ring and said support rings;

positioning the whole composite structure thus produced on a bottom support (25);

providing a high frequency electric induction coil (20) interiorly of said composite structure which is caused to effect heating and welding at surfaces (7) for a predetermined time period, thus causing expansion of said composite structure;

applying pressure on said composite structure against said bottom support (25) so as to bring said support rings back to their position before expansion; and

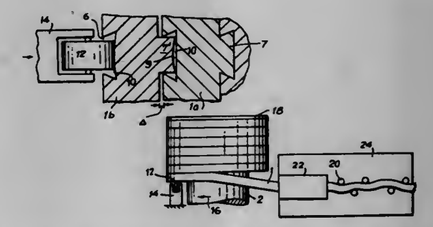
switching off the induction coil, thus cooling the composite structure whereby said support rings shrink against the wear ring and exert compressive forces thereto.

4,112,565

METHOD OF MAKING STRIP-COVERED ROLL

Vaino Sailas, Vaajakoski, Finland, assignor to Valmet Oy, Finland

Filed Jun. 28, 1977, Ser. No. 811,136
Claims priority, application Finland, Jun. 30, 1976, 761903
Int. Cl.² B21D *53/12;* B21H *1/12;* B21K *1/02*
U.S. Cl. 29—148.4 D **6 Claims**



1. A method of manufacturing a roll of the type suitable for use in a paper machine, comprising the steps of successively surrounding an inner roll body with a plurality of circumferential strip portions which engage an exterior surface of the inner roll body to cover the latter at said exterior surface thereof, so that said circumferential strip portions become situated on said roll body one after the other while being distributed axially along said inner roll body, each circumferential strip portion being formed at one circumferential side surface thereof with a groove situated between inner and outer edges of said one side surface and each circumferential strip portion having at an opposed side surface thereof in circumferential alignment with said groove an integral circumferential projection of predetermined cross-sectional configuration, said groove of each circumferential strip portion having at said one side surface thereof a radial dimension with respect to the axis of said inner roll body which is smaller than a radial dimension of said groove in the interior thereof spaced from said one side surface of each circumferential strip portion, and the radial dimension of said circumferential projection of each strip portion initially being small enough for each circumferential strip portion to enter into the groove of an adjoining strip portion while initially engaging said adjoining strip portion in the interior of said groove thereof in a manner preventing said adjoining strip portion from engaging at said one side surface thereof the adjoining side surface of the circumferential strip portion whose projection is received in said groove of said adjoining strip portion, so that initially there is a gap between adjoining strip portions at said side surfaces thereof, and pressing said adjoining strip portions into engagement with each other at said adjoining side surfaces thereof while simultaneously de-

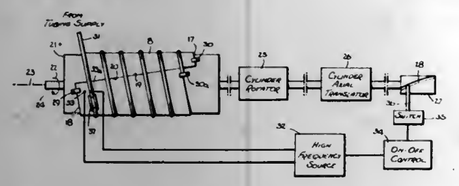
forming said projection to fill said groove, so as to interlock adjoining strip portions.

4,112,566

METHOD OF MANUFACTURING HEAT EXCHANGE PANELS

Clayton DuBosque, Jr.; Wallace C. Rndd, both of New Canaan, Conn., and Richard J. Allen, New Rochelle, N.Y., assignors to Thermatool Corp., Stamford, Conn.

Filed Apr. 25, 1977, Ser. No. 790,330
Int. Cl.² B23P *15/26*
U.S. Cl. 29—157.3 C **10 Claims**



1. A method for making a heat exchange panel comprising a sheet of metal having end edges and side edges and having several laterally spaced apart, finite lengths of metal tubing secured by welding to said sheet except at opposite end portions thereof which lengths of opposite end portions are small relative to said finite lengths, said lengths, of tubing extending in the direction from one said end edge to the other of said end edges, said method comprising forming said sheet into a hollow cylinder with said end edges adjacent each other, feeding metal tubing toward and into contact with the exterior surface of said cylinder and while causing relative movement between said tubing and said cylinder both in a direction around the axis of said cylinder and in a direction parallel to said axis of said cylinder, pressing said tubing against said exterior surface of said cylinder as said tubing engages said cylinder, supplying high frequency electric current to said tubing and said cylinder shortly in advance of the point at which they engage and are pressed together to heat the facing surfaces thereof to welding temperature by the time they engage thereby forming a continuous weld between said tubing and said cylinder during the time that high frequency current is supplied to said tubing and said cylinder, interrupting the supply of current to said tubing and said cylinder so that from shortly before to shortly after said end edges pass beneath said tubing, welding of portions of said tubing to said cylinder is prevented, said portions extending circumferentially of said cylinder, being adjacent to said end edges and being small relative to the circumference of said cylinder, and after a plurality of rotations of said cylinder severing said portions of said tubing above said end edges and discontinuing the welding of said tubing to said cylinder to provide a panel having said lengths of tubing welded thereto except at said opposite end portions, and thereafter, forming the cylinder with the tubing welded thereto to the desired shape.

4,112,567

METHOD OF INSTALLING PLUMBING

John Bretone, Jr., 91 Woodview Rd., West Hempstead, N.Y. 11552

Division of Ser. No. 610,863, Sep. 5, 1975, Pat. No. 4,038,737. This application May 26, 1977, Ser. No. 800,794
Int. Cl.² B21D *53/00*; B21K *29/00*; B23P *15/26*
U.S. Cl. 29—157 R **6 Claims**

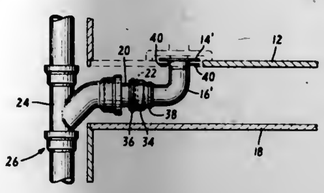
1. A method of installing a discharge pipe which extends from a toilet to a ferrule structure projecting from a section of a sewage system, the method comprising the steps of:

obtaining access to the space for the discharge pipe at the ferrule structure by leaving incomplete a portion of a floor adjacent the location for the toilet;

installing the ferrule structure with a bead about the end which projects from the section of the sewage system;

positioning the discharge pipe with one end adjacent the ferrule structure and the other end positioned for connection to the toilet;

attaching a flange to the other end of the discharge pipe for connecting and sealing the discharge pipe to the toilet;



placing a compressible sleeve over the adjacent ends of the discharge pipe and ferrule structure; and

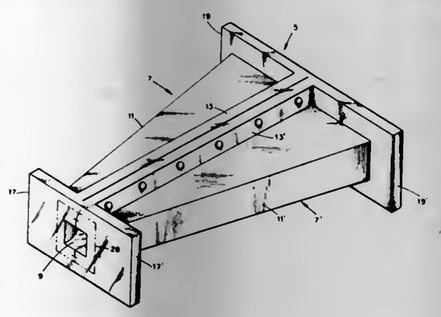
compressing portions of the sleeve about the discharge pipe and ferrule structure with clamps for sealing the sleeve to the discharge pipe and ferrule structure.

4,112,568

METHOD OF FABRICATING A FLOW DEVICE

Robert L. Hale, Kingston, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 1, 1977, Ser. No. 802,346
Int. Cl.² B23P *15/00*
U.S. Cl. 29—157 C **8 Claims**



1. The method of fabricating a tubular metal article comprising:

(a) providing two metal subassemblies, each corresponding to a longitudinal half-section of said article, each subassembly being formed with transversely extending end flanges and opposed side flanges which extend between said end flanges;

(b) arraying the subassemblies with their corresponding flanges in confronting relation and defining two channels extending for the length of the array, and with elongated gaskets positioned in the channels, said gaskets being composed of metal capable of forming a fusion bond with the subassemblies;

(c) mechanically joining the confronting side flanges of the subassemblies to deform said gaskets and longitudinally seal the resulting tubular assembly; and

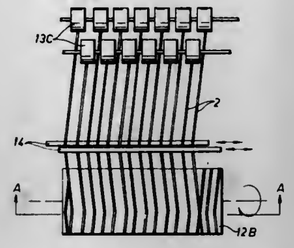
(d) fusing the end portions of said gaskets to portions of said end flanges contiguous therewith to transversely seal said assembly.

4,112,569

METHOD OF MANUFACTURING A HEAT EXCHANGER

Peter Heinrich Erwin Margen, and Rolf Paul Naslund, both of Nykoping, Sweden, assignors to Aktiebolaget Atomenergi, Stockholm, Sweden

Division of Ser. No. 681,471, Apr. 29, 1976. This application Nov. 15, 1976, Ser. No. 742,215
Claims priority, application Sweden, May 7, 1975, 7505362
Int. Cl.² B23P *15/26*; B22C *17/00*
U.S. Cl. 29—157.3 R **6 Claims**



1. A method for producing a heat-exchanger tube coil comprising:

(a) providing a plurality of sources of tubes;

(b) axially withdrawing a plurality of said tubes from a corresponding number of said sources;

(c) arranging said tubes in a spaced, parallel array;

(d) winding said tube array onto a support core having a central axis to produce a plurality of parallel, spaced, helical windings, said windings being at an angle to a plane normal to said support core axis; and

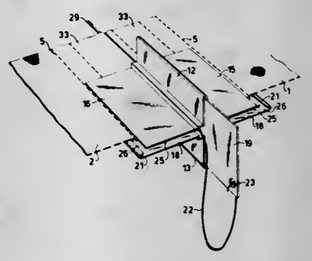
(e) reversing the pitch angle of said tube array to said plane at an odd number of fixed radial angle positions around the circumference of the support core during each winding revolution, the angle formed by the array in the reverse direction being substantially the mirror image of the angle of winding in the forward direction, whereby the separate tubes of individual winding turns are guided by the spaces between the tubes of a corresponding preceding winding turn at said fixed angle positions.

4,112,570

APPARATUS FOR FORMING A JOINT FOR WIRE CLOTH

Einar Gustav-Vilhelm Svensson, Halmstad, Sweden, assignor to Wallbergs Fabriks AB, Halmstad, Sweden

Filed Feb. 24, 1976, Ser. No. 660,933
Claims priority, application Sweden, Mar. 10, 1975, 7502616
Int. Cl.² B23P *19/04*
U.S. Cl. 29—241 **4 Claims**



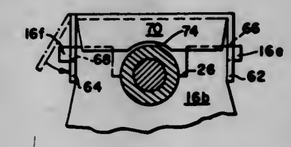
1. Apparatus for joining two wire cloth ends to form a wire cloth joint, the ends each having a folded portion joined to its respective wire cloth by seams or the like, and the folded portion of one wire cloth having attached to its edge an endless wire screw extending along the wire cloth end and with said screw having loops lying freely outside the end, said apparatus comprising guide means for acting against the folded portions of the respective wire cloth ends for pressing free portions of the wire screw into spaces between warp wire loops along the edge of the end portion of the other wire cloth, said guide means comprising first upper and lower guide members spaced apart to accommodate said one wire cloth end therebetween and second upper and lower guide members spaced apart to accommodate said other wire cloth end therebetween, means interconnecting said first guide members with said second guide members and defining a passage for accommodating said warp wire loops in an opened-out condition, said passage having a depth greater than the spacing between the respective upper and lower guide members, and a substantially U-shaped bar longitudinally slidable into said passage for holding open said warp wire loops to maintain them in said opened-out condition for the insertion of a locking wire through said loops and through the pressed-in portions of the wire screw.

4,112,571

KEEPER FOR IDLER ROLLS

Ralph W. Coutant, Ridgewood, N.J., assignor to Litton Systems, Inc.

Division of Ser. No. 620,771, Oct. 8, 1975, Pat. No. 4,048,207, which is a division of Ser. No. 446,009, Feb. 25, 1974, Pat. No. 3,934,711. This application Mar. 25, 1977, Ser. No. 781,318
Int. Cl.² B23P *11/00*
U.S. Cl. 29—243.5 **11 Claims**





1. In combination, a keeper for use with an idler roll set and a manual tool for installing the keeper,

1. said keeper comprising:

(a) a planar body member having a first leg formed at one end thereof and a second leg formed at the opposite end thereof,

(b) said first leg having a first aperture defined therein and said second leg having a second aperture defined therein,

(c) said first aperture in said first leg adapted to be forced over a first projection on a bracket and said second aperture in said second leg adapted to be forced over a second projection on a bracket,

(d) a first flange formed at one lateral side of the body member and a second flange formed at the opposite side thereof, said flanges adapted to bear against a pair of idler rolls,

(e) the planar body of said keeper being interrupted by a plurality of openings,

(f) said keeper being executed in a malleable metal that takes a set and lacks any significant resilience characteristic,

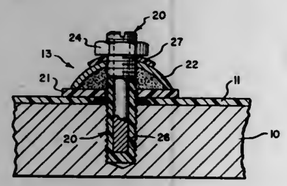
2. said tool comprising:

(a) an elongated handle that terminates in a cavity at its forward end,
(b) a lug joined to the handle,
(c) an L-shaped member including a horizontally extending arm and a vertically extending finger,
(d) a pin extending across said cavity and through said arm of the L-shaped member to secure one end of said member within the cavity of said handle,
(e) said handles and lug being rotatable relative to said pin,
(f) said finger being insertable into the openings in the planar body of the keeper so that said handle of the tool can be rotated to press the lug against each leg of said keeper until each aperture is forced over the projections on the bracket.

4,112,572
METHOD FOR REPAIRING PROTECTIVELY LINED REACTOR VESSELS

Seymour Schlosberg, East Brunswick, and Michael J. Lerman, Carteret, both of N.J., assignors to De Dietrich (USA), Inc., Union, N.J.

Division of Ser. No. 663,113, Mar. 2, 1976, Pat. No. 4,078,697. This application Aug. 1, 1977, Ser. No. 820,918
Int. Cl.² B22D *19/10*
U.S. Cl. 29—401 R **8 Claims**



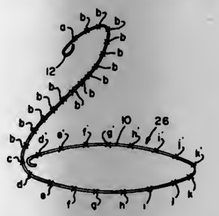
1. A method for repairing a break in the lining of a protectively lined reactor vessel for containing conductive liquid and an object comprised of a first metal disposed in the liquid, the reactor vessel being of the type comprising a conductive metal support wall and an insulating protective inner liner, the method comprising the steps of:
producing an anchoring aperture in the portion of said metal support wall underlying said break; and
forming in said aperture a repair plug comprising a second metal galvanically dissimilar from said first metal by (a) anchoring an insulating stud into said anchoring aperture, (b) disposing a gasket on the portion of said protective lining surrounding said break, (c) applying a washer outside said sealing gasket, and (d) applying between said washer and said anchored stud a clamping pressure for clamping said gasket onto said protective lining throughout a periphery surrounding said break, thereby sealing said break.

4,112,573
METHOD OF FORMING AN ANIMAL-FIGURE DECORATION

Helen Ione Moye, P.O. Box 53, Wharton, N.J. 07885

Filed Sep. 21, 1977, Ser. No. 835,433
Int. Cl.² B21F *45/00*
U.S. Cl. 29—428 **10 Claims**

1. A method of forming an animal-figure decoration, such as a swan or the like, comprising the steps of:
providing a length of compliant wire rod;
forming a small loop at one end of said rod;
forming a plurality of ruches; and
forming annuli of said ruches; wherein
said ruches-plurality-forming step comprises forming said ruches of fabric strips of both discrete and common widths; and further including
enveloping said rod with said annuli in juxtaposition therealong; and wherein
said enveloping step comprises disposing said annuli in envelopment of said rod with (a) a first annular ruche formed of a first width disposed adjacent to said loop, (b) with a first plurality of second annular ruches all of which are formed of a second, common width disposed adjacent to said first annular ruche, (c) with a third annular ruche formed of a third width disposed adjacent to said first plurality of ruches, (d) with a second plurality of annular ruches formed of progressively increasing widths disposed adjacent to said third annular ruche, (e) with a third plurality of annular ruches formed of progressively increasing widths disposed adjacent to said second plurality of ruches, (f) with a fourth plurality of annular ruches

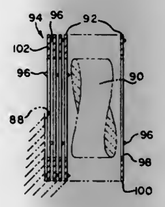


formed of progressively diminishing widths disposed adjacent to said third plurality of ruches, and (g) with a fifth plurality of annular ruches formed of progressively diminishing widths disposed adjacent to said fourth plurality of of ruches;
bending said rod to define a substantially elliptical and uniplanar loop of said second, third, fourth and fifth plurality of ruches;
bending said wire rod whereat said third annular ruche is disposed to dispose said first plurality of annular ruches substantially diagonal to, and partially overlying said elliptical loop, in a plane normal to said elliptical loop; and
bending said one end of said rod into a substantially U-shaped configuration, in said normal plane, with the terminal end of said rod disposed outward relative to said elliptical loop.

4,112,574
TORSIELASTIC THRUST BUSHING FOR TRACK CHAINS

Jack M. Deli, Wheaton, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 2, 1976, Ser. No. 737,967
Int. Cl.² B22D *11/126*; B21D *53/10*
U.S. Cl. 29—527.1 **6 Claims**

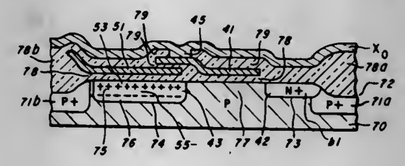


1. Method of construction of a unitary bushing laminated from alternating layers of disk metal, and of generally uniformly thin elastomer unitarily bonded to one another in aligned overlying relationship, with each such elastomer layer being of predetermined, substantially imcompressible thickness, comprising the steps of:
providing rings of protrusion spacers on the metal disks so as to protrude from their sides to an axial extent corresponding to the predetermined thickness of the elastomer layers to be included;
stacking such disks in a mold with each in the stack separated to said axial extent from the next and with the end disks separated to said extend from the mold faces confronting the ends of the stack; and
introducing into the mold a flowing elastomer mass filling the spaces due to said separation and bonding to the metal disks as included elastomeric layers therebetween.

4,112,575
FABRICATION METHODS FOR THE HIGH CAPACITY RAM CELL

Horng-sen Fu, Dallas; Thomas C. Holloway, Garland; Al F. Tasch, Jr., Richardson, and Pallab K. Chatterjee, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1976, Ser. No. 752,598
Int. Cl.² H01L *21/70*
U.S. Cl. 29—577 C **51 Claims**



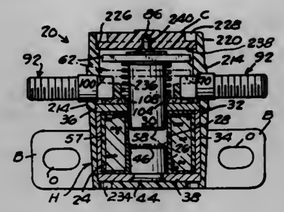
1. A method of constructing an array capacity memory cells comprising the steps of:
(a) forming in a first surface of a semiconductor substrate, channel stop regions and overlying field insulator regions which are patterned to define a cell area for each cell of said array and several bit line areas which selectively interconnect said cell areas;
(b) introducing ions having majority carriers of a first conductivity type throughout said cell areas, thereby forming a shallow ion layer throughout each cell area;
(c) introducing ions having majority carriers of a second conductivity type throughout said cell areas at a level lying below said shallow ion layers, thereby forming a deep ion layer throughout each cell area;
(d) disposing a first insulating layer on said first surface overlying said cell areas;
(e) forming a patterned layer of conductive material on said insulating layer to define a storage gate region partially overlying each of said cell areas and spaced apart from said bit line areas;
(f) removing from each of said cell areas, the portions of said shallow ion layer lying between said storage gate regions and said bit line areas, and
(g) introducing ions having majority carriers of said first conductivity type, throughout the portion of each cell area lying between said storage gate regions and said bit line areas, at approximately the same depth and concentration as said deep ion layer lying therein.

4,112,576
METHOD OF MAKING A SWITCH

Harry Robert Gross, 127 Carpenter St., West Branch, Mich. 48661

Filed Nov. 17, 1975, Ser. No. 632,405
Int. Cl.² H01H *11/06*
U.S. Cl. 29—602 R **45 Claims**

1. In the manufacture of a switch having a plastic housing which contains a contact member movable to and from electrical contact with a surface of a terminal within the housing, the method of making the housing and terminal assembly which comprises,
providing a set of dies cooperable in closed condition to define the configurations of the housing,
one of said dies having a face which conforms accurately to the contour of said terminal surface,
with said dies in open condition, positioning said terminal so that said surface is positioned for engagement against said face,
effecting relative closing movement of said dies and thereby causing said surface and face to advance toward each other in substantially the direction of relative movement of such contact member and surface for making electrical contact,
exerting force to cause said surface and face to interengage tightly,

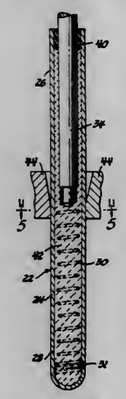


injecting fluent plastic under pressure into the closed dies for forming said housing and causing portions of said plastic to encapsulate portions of said terminal,
during said injecting step utilizing said die face for accurately positioning said terminal surface in said direction relative to said housing,
said force and accuracy of contour being sufficient so that during said injecting step they are utilized to exclude said plastic substantially entirely from penetration between said surface and face,
then after said plastic has set, opening said dies and removing the assembly of said formed housing and encapsulated terminal.

4,112,577
METHOD OF MAKING ELECTRIC HEATER

Gamdur S. Mann, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1978, Ser. No. 876,692
Int. Cl.² H05B *3/00*; F02P *19/00*
U.S. Cl. 29—611 **2 Claims**



1. The method of making an electric heater of the type having an elongated electrically conductive tubular metal sheath closed at one end and containing an axially extending heating coil electrically grounded at one end to the sheath adjacent its closed end and insulated therefrom elsewhere by

heat conductive insulation, said method comprising the steps of:

(a) forming the sheath with a width substantially larger than the desired finished size thereof,

(b) forming the heating coil in a width dimension smaller than the interior width of the sheath except at one end where a tightly wound portion is formed with an enlarged outer width dimension about equal to the sheath inner width dimension, the coil other end being attached to an electrical conductor,

(c) placing the heating coil and conductor in the sheath with the enlarged portion engaging the sheath adjacent to its closed end, the engaging surfaces of the sheath interior and the coil enlarged portion being free from foreign substances, and centering the remainder of the coil within the sheath with the attached conductor extending from the open end,

(d) filling the open interior of the sheath with granular high temperature electrical insulating material tightly packed around and within the heating coil and sealing the open end of the sheath to retain the insulating material in place, and

(e) swaging the heater assembly to reduce the width and extend the length of the sheath and interior heating coil to finished dimensions

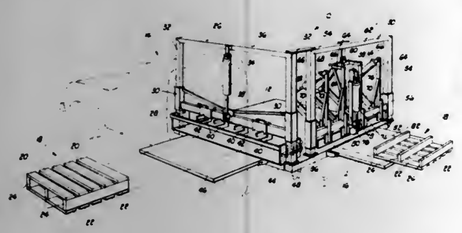
said sheath and said heating coil being formed of compatable metals whereby said swaging step causes the engaging portions of the sheath and heating coil to establish a low resistance electrical connection therebetween.

4,112,578

APPARATUS FOR DISASSEMBLING PALLETS

Dale J. Sanford, Anthony, Kans., assignor to Curfman, Brainerd, Harris, Bell, Weigans and Depew, Wichita, Kans.

Filed Jul. 8, 1977, Ser. No. 813,896
Int. Cl.² B23P *19/00*
U.S. Cl. 29—700 **8 Claims**



1. An apparatus for disassembling pallets, the apparatus mounted on the rear of a flat bed truck, a flat bed trailer, or the like, the pallet being a standard wooden pallet used with a fork lift and having parallel top boards and bottom boards nailed to lateral stringers therebetween, the apparatus comprising:

a vertical side frame mounted on the side of the flat bed;

means for removing the top boards of the pallet, said means for removing slidably mounted on said side frame, said means for removing receiving the top boards therein and raising the top boards upwardly thereby disengaging the top boards from the stringers;

a vertical rear frame mounted on the rear of the flat bed and disposed adjacent one end of said side frame; and

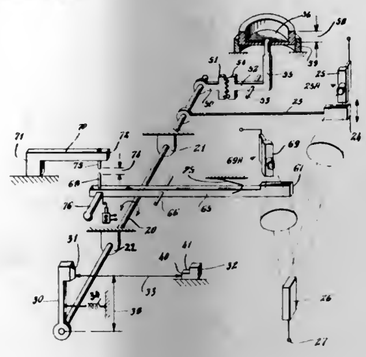
means for removing the lateral stringers of the pallet, said means for removing the lateral stringers clamping the stringers therebetween and raising the stringers upwardly thereby disengaging the stringers from the bottom boards of the pallet.

4,112,579

OPTO-MECHANICAL MEASURING SYSTEM

Morton Kaye, 122 Third St., Stamford, Conn. 06905

Filed Aug. 12, 1976, Ser. No. 713,701
Int. Cl.² G01B *5/02*
U.S. Cl. 33—174 L **7 Claims**



1. An opto-mechanical system for sequentially measuring a plurality of different physical dimensions of an object, comprising a plurality of receiving means for separately receiving said object, each of said receiving means having a fixed stop for engaging a first point of said object and a movable mechanical feeler positioned to engage a second point of said object in said receiving means, whereby the position of said feeler is related to the dimension of said object between said first and second points, a plurality of photodetectors arranged closely adjacent one another in a row, light source means for projecting at least one light beam toward said photodetectors, vane means between said light source means and photodetectors, lens means for imaging said vane means on said photodetectors, and means mechanically coupling said vane means to said feelers, whereby said vane means block said light in dependence upon said distance and the output of said photodetectors constitutes a digital representation of said distance, said light source means comprising first and second light sources for directing first and second light source beams toward said photodetectors, and said vane means comprises a first vane mounted to intercept said first light beam and a second vane mounted to intercept said second light beam, said first and second vanes being mechanically coupled to be movable by first and second of said movable mechanical feelers, whereby the same photodetectors are responsive to the positions of said first and second feelers.

4,112,580

DEVICE FOR DETERMINING ANGLES

William A. Fitzsimmons, 1015 Edgehill Dr., Madison, V.I. 53701, and James E. Lawler, Madison, Wis., assignors to William A. Fitzsimmons, Madison, Wis.

Filed Apr. 11, 1977, Ser. No. 786,646
Int. Cl.² G01B *3/56*
U.S. Cl. 33—174 S **9 Claims**

1. A device for determining angles, comprising:

(a) a support frame;

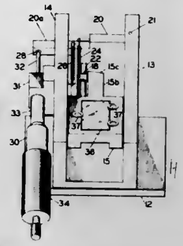
(b) a plate member having a planar surface;

(c) means for pivotally mounting said plate member to said frame for rotation of said plate member about a laterally extending axis of rotation;

(d) a pivot arm member;

(e) means for pivotally mounting said pivot arm member to said frame for rotation thereof about an axis of rotation which is perpendicular to the axis of rotation of said plate member, said pivot arm member being mounted in position to be engageable with said plate member over a selected portion of the rotational displacement of said plate member;

(f) drive means, mounted to said frame and including a drive member, for driving said drive member back and forth in a longitudinal direction perpendicular to the axis of rotation of said plate member and the axis of rotation of said pivot arm member, said drive means being mounted to said frame in position to have the drive member thereof engage said pivot arm member to rotate the same; and



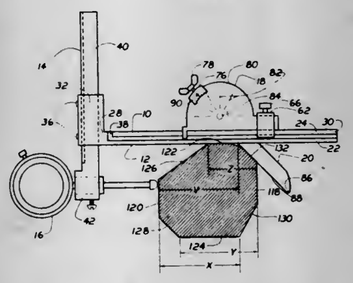
(g) means for maintaining said pivot arm member in low friction rolling contact with said plate member over a portion of the rotational displacement of said plate member such that a linear longitudinal displacement of said drive member in contact with said pivot arm member results in a related change in the angle at which the plate of the planar surface of said plate member intersects a plane which is parallel to the axes of rotation of said plate member and said pivot arm member.

4,112,581

MICROMETER JIG

Isaac W. Hornsby, 2706 Anza, Bakersfield, Calif. 93305

Filed Jun. 23, 1977, Ser. No. 809,386
Int. Cl.² G01B *5/00*
U.S. Cl. 33—174 R **12 Claims**



9. A measurement jig comprising:

a frame having a planar work engaging surface;

a measurement indicator mounting means interconnected with said frame disposed to mount a measurement indicator with its axis parallel to, but laterally offset from, said frame work engaging surface; and

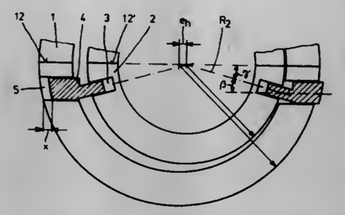
a movable member interconnected with said frame and having an elongated planar movable member work engaging surface forming a variable angle with said frame work engaging surface with its apex directed toward said measurement indicator work engaging surface.

4,112,582

APPARATUS FOR POSITIONING COAXIAL ARRANGED MACHINE PARTS

Wolfgang Beckershoff, Aarau, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 3, 1976, Ser. No. 682,633
Claims priority, application Switzerland, Jul. 4, 1975, 8731/75
Int. Cl.² G01B *5/25*
U.S. Cl. 33—181 R **10 Claims**



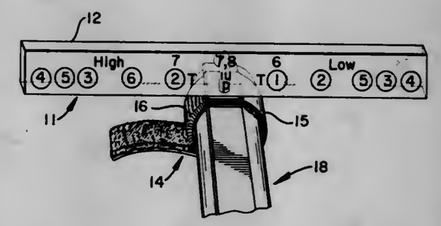
1. In an arrangement for positioning an inner circular machine part within an outer circular machine part, and wherein the inner circular part is desired to be adjustable within a first plane perpendicular to the longitudinal axis of the machine, the improvement wherein the outer periphery of said inner machine part is provided with radially extending recesses spaced around the periphery thereof, said recesses being located within the first vertical plane and extending symmetrically to a second vertical plane including the longitudinal axis of the machine, and the center lines of said radial recesses forming an angle γ with the horizontal axis of the inner machine part, said outer machine part being provided with circumferentially spaced non-radial recesses within the first vertical plane and located in alignment with said radial recesses, and angular positioning keys interconnecting each said radial recess with a non-radial recess, respectively, said keys being slidable in said recesses and the center line of the portion of each key engaging said radial recess forming an angle β with the center line of the portion of each key slidable within said non-radial recess whereby adjustment of said keys effects movement of one of said machine parts in said first vertical plane.

4,112,583

GUN LEAD SIGHT

Antonio Jose Castilla, 1804 Armstrong Dr., Plano, Tex. 75074

Filed Nov. 15, 1976, Ser. No. 741,674
Int. Cl.² F41G *1/00, 11/00*
U.S. Cl. 33—261 **9 Claims**



1. In a lead sight for guns: a transparent elongate member having visually discernable numbers carried on the face thereof at respective transversely located positions, said numbers per se comprising respective front sight indicia usable for corresponding numbered shooting positions of a standard skeet range with predetermined ones of said numbers carried at first and second ones of said transversely located positions on respective opposite sides of the transverse center region of said elongate member for use with each of high-house and low-house released targets while at those predetermined shooting positions, mounting means for mounting said transparent elon-

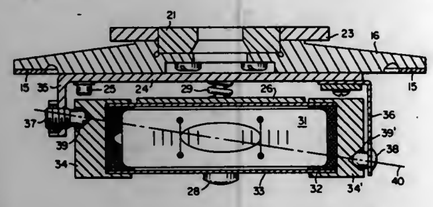
gate member on barrelling of a gun adjacent the muzzle end of the gun barrelling and wherein said mounting means includes flexible strapping having interlocking overlapping ends for inclosing and locking on the barrelling of guns.

4,112,584

TELESCOPE LEVEL ADJUSTING MEANS

J. Peter E. Kool, Succasunna, and Stephen Vagyoczky, Landing, both of N.J., assignors to Keuffel & Esser Company, Morristown, N.J.

Filed Sep. 9, 1977, Ser. No. 831,845
Int. Cl.² G01C *1/02, 9/28*
U.S. Cl. 33—292 **7 Claims**



4. In a geodetic instrument comprising an alidade, the improvement in telescope leveling means which comprises:

a. a base member mounted to one end of the axle of the telescope of said alidade and disposed substantially perpendicular to said axle;

b. a pair of flange members outstanding from said base member;

c. pivot means associated with each of said flange members;

d. a spirit level bubble vial; and

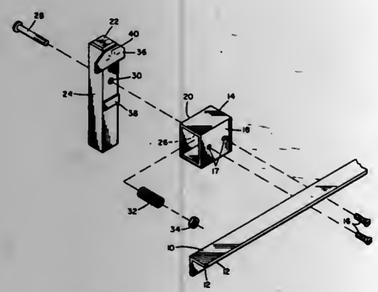
e. means mounting said vial longitudinally between said pivot means for rotation substantially about the longitudinal axis of said vial, said mounting means being so situated with respect to said vial axis as to establish an axis of vial rotation which is disposed at an angle to said vial axis, whereby rotation of said vial about said rotational vial axis will impart an angular displacement of the longitudinal axis with respect to the line of sight of said telescope.

4,112,585

LEVEL INDICATING INSTRUMENT

William Thomas Pease, Melbourne, Fla., assignor to Alproco, Inc., Melbourne, Fla.

Filed Feb. 7, 1977, Ser. No. 766,443
Int. Cl.² G01C *9/28*
U.S. Cl. 33—388 **9 Claims**



1. A level indicating instrument, comprising:

an angle bar having a pair of elongated members joined together along adjacent longitudinal edges and disposed in predetermined angular relationship,

a support base secured to said angle bar,

a mounting member rotatably connected to said support base,

level indicating means mounted on said mounting member, said mounting member having angle indicating means provided on a portion thereof disposed adjacent to said support base, and having spaced guide plates positioned to engage with opposite portions of said support base to releasably retain said mounting member and said support base in a predetermined angular relationship.

4,112,586

METHOD OF DRYING A CARDBOARD OR A PAPER WEB AND DRYING DEVICE FOR APPLYING THIS METHOD

Jukka A. Lehtinen, Tampere, Finland, assignor to Oy. Tampella AB, Tampere, Finland

Filed Dec. 9, 1976, Ser. No. 748,736
Claims priority, application Finland, Dec. 30, 1975, 753689; May 28, 1976, 761516
Int. Cl.² F26B *3/00, 13/26*
U.S. Cl. 34—9 **15 Claims**

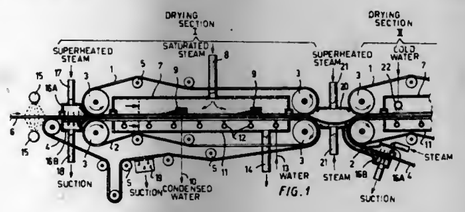


FIG. 1

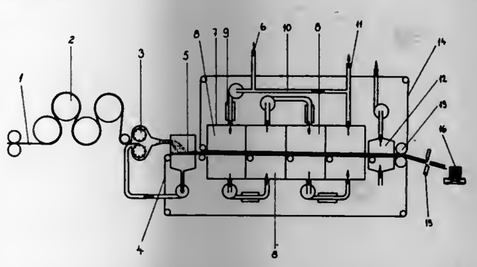
1. A method of drying a moving wet web of cardboard of paper comprising aupporting said web on a moving, drying band, contacting said web with a moving, heated drying surface in order to evaporate water from said web and into said drying band, and simultaneously contacting said drying band with a moving, cooling surface to condensed water received and contained by said drying band, removing the condensed water from said drying band and separating a dried web of cardboard or paper from the drying band.

4,112,587

METHOD AND MEANS FOR DRYING A FIBRE MATERIAL CONTAINING CELLULOSE

Frey Viking Sundman, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Finland

Filed Jan. 6, 1977, Ser. No. 757,351
Claims priority, application Finland, Feb. 9, 1976, 760294
Int. Cl.² F26B *7/00*
U.S. Cl. 34—12 **5 Claims**



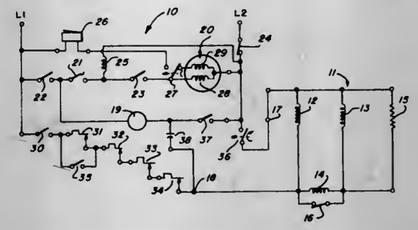
1. A method for drying a fibre material containing cellulose, and preparing a coherent web therefrom which comprises (1) predrying the fibre material in the form of a web or flakes to a dryness of 60 to 70%, (2) disintegrating the pre-dried fibre material whereby a layer of fibres is formed from the disintegrated fibre material; (3) drying said fibre material by passing hot gases through the layer of fibres to a dryness of 90%; (4) cooling said dried fibre material by passing air through the layer of fibres and (5) compressing the fibre layer to obtain a web.

4,112,588

DRIER APPLIANCE CONTROL

Roque Denis Marcade, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 17, 1977, Ser. No. 760,118
Int. Cl.² F26B *11/04*
U.S. Cl. 34—45 **8 Claims**



1. In a drier appliance having a heating means including an electrical component, thermostat switch means connected in series with said component for operating said heating means as an incident of the temperature sensed by said thermostat means being below a preselected temperature, a timer including a timer motor, a control switch connected in series with the motor for controlling operation of the timer, and means for electrically connecting the appliance to a power supply having a preselected voltage for effecting operation of the appliance, the improvement comprising a capacitor connected from between said timer motor and said control switch to between said thermostat means and said electrical component for connecting said timer motor in series with said electrical component through said capacitor when the control switch is open, said capacitor further connected between the timer motor and the thermostat switch means with said timer motor and said capacitor being effectively shorted by the thermostat switch means when the thermostat switch means is closed to energize said electrical component, said series arrangement of the timer motor, capacitor, and electrical component being connected to have the power supply voltage applied thereacross when the thermostat switch means and control switch are open, the capacitance of said capacitor being preselected to form with the inductance of said timer motor a series resonant circuit condition when said thermostat switch means and said control switch are open wherein the voltage across said timer motor is at least the minimum operating voltage of said timer motor and the voltage across the electrical component is less than the minimum operating voltage necessary to cause effective heating operation of said heating means.

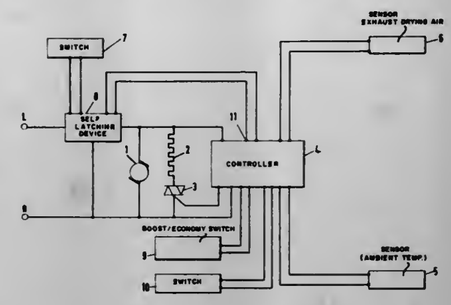
4,112,589

CONTROL SYSTEM FOR DRIER

Lesley Francis Palfrey, Havant, and Ronald John Fellows, Portsmouth, both of England, assignors to Thorn Domestic Appliances (Electrical) Ltd., London, England

Filed Sep. 27, 1976, Ser. No. 727,015
Int. Cl.² F26B *19/00*
U.S. Cl. 34—48 **8 Claims**

1. An air drier comprising: a housing; a chamber in the housing and in which, in use, articles are placed for drying; means for causing air to pass through the chamber; an inlet and an outlet for said air passing through said chamber; means for heating the air entering the chamber; and a controller for controlling the amount of heat supplied, during a drying cycle of the drier, to said incoming air by said heating means, the controller comprising first and second sensors for detecting the temperature of air leaving the chamber and the temperature of ambient air and a circuit for controlling said amount of heat in dependence on the detected difference in said temperatures,



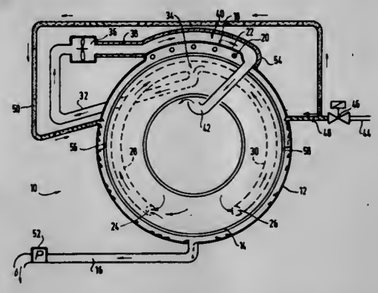
the circuit being effective to maintain said difference at a substantially constant value throughout the drying cycle.

4,112,590

COMBINED DRUM WASHER AND DRYING ARRANGEMENT

Franz Müller, Bad Honnef, Fed. Rep. of Germany, assignor to August Lepper, Maschinen- und Apparatebau GmbH, Bad Honnef, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 697,739, Jun. 18, 1976. This application Oct. 12, 1976, Ser. No. 731,818
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1975, 2545795; Jul. 2, 1975, 2529577
Int. Cl.² F26B *11/04*
U.S. Cl. 34—75 **30 Claims**



1. A device for both washing and drying laundry comprising: outer container means for enclosing the washing and drying compartment; inner container means forming the washing and drying chamber and for holding the laundry being treated, said inner container being rotatably mounted within and spaced from said outer container means; air circulation means for forming an air circulation path within said device and for circulating air through that circulation path such that air is provided to and withdrawn from said inner container; heating means adjacent the air circulation path for heating air being circulated in the air circulation means, said heating means positioned so as to heat air prior to the circulation of such air into said inner container means; cooling means for cooling air within said air circulation means, said cooling means positioned to cool air as the air is withdrawn from said inner container means; said cooling means including a first condensation means located in the space defined between said inner and outer container means, cooling medium supply means for supplying a cooling medium to said first condensation means; drain means for draining away the cooling medium and the condensation said drain means including the inlet to said air circulation means; said air circulation means including means for directing air withdrawn from said inner container

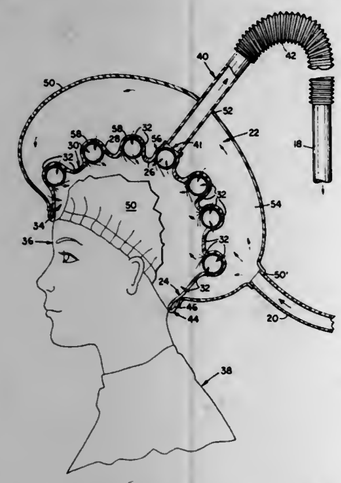
means through said first condensation means and thereafter out of said outer container through said drain means and into the inlet of said air circulation means.

4,112,591

HAIR DRYER

Charles W. Marsh, 660 Miramar Ave., San Francisco, Calif. 94112

Continuation of Ser. No. 480,019, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 97,385, Dec. 11, 1970, abandoned, which is a continuation of Ser. No. 858,008, Sep. 15, 1969, abandoned, which is a continuation-in-part of Ser. No. 724,666, Mar. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 595,693, Nov. 21, 1966, abandoned. This application May 19, 1975, Ser. No. 579,013
Int. Cl.² A45D *20/18*
U.S. Cl. 34—99 9 Claims



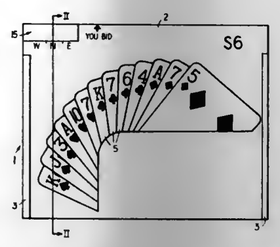
1. Hair drying apparatus comprising: a pliable membrane having an inner hair-engaging surface and an outer surface; said membrane including a multiplicity of spaced perforations dispersed throughout the hair-engaging area of said membrane for communication between said inner and outer surfaces, said hair-engaging area being large enough to closely conform to a complex hair configuration on the user's head; and means for maintaining a pressure differential between said inner and outer surfaces comprising a peripheral head-gripping portion on said membrane, subambient pressure means outside of said membrane, and conduit means for providing communication of the subambient pressure with the inner surface of said membrane, said conduit means including multiple suction conduits, said conduit means communicating with the inner surface of said membrane through air inlet means comprising multiple air inlets, wherein there is sufficient pliability of the combined structure of said membrane and said conduit means to assure that all such air inlets, simultaneously, are positionable onto hair-wrapped curlers of random sizes wherein said hair-wrapped curlers are randomly positioned on the user's head, wherein said multiple suction conduits are flexible and communicate with the inner surface of said membrane, wherein such suction conduits are located away from the periphery of said membrane, and wherein all such suction conduits are joined directly to an intermediate conduit means located in spaced relation to said membrane.

4,112,592

APPARATUS FOR TEACHING OR PRACTISING BRIDGE

Arthur Jose De Castro Basto, Las Torres II, 3°B, Los Boliches Fuengirola, Spain

Filed Mar. 4, 1977, Ser. No. 774,400
Claims priority, application United Kingdom, Mar. 12, 1976, 9970/76
Int. Cl.² G09B *19/22*
U.S. Cl. 35—8 B 7 Claims



1. An apparatus for teaching bridge comprising:
a first set of first sheets, each bearing a representation of the cards of a bridge hand, the cards being selected from a first predetermined group of cards;
a second set of first sheets, each bearing a representation of the cards of a bridge hand, the cards being selected from a second predetermined group of cards, the two groups of cards being mutually exclusive;
a first multiplicity of second sheets, each associated with a first sheet of the first set, each bearing information relating to one way of bidding the hand represented on its associated first sheet in a given situation and when the hand is in partnership with a hand represented on a first sheet of the second set, and each being moveable relative to its associated first sheet to reveal progressively different parts of the information on the second sheet; and
a second multiplicity of second sheets, each associated with a first sheet of the second set, each bearing information relating to one way of bidding the hand represented on its associated first sheet in a given situation and when the hand is in partnership with a hand represented on a first sheet of the first set, and each being moveable relative to its associated first sheet to reveal progressively different parts of the information on the second sheet.

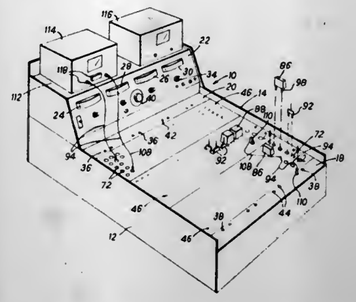
4,112,593

APPARATUS FOR THE USE IN THE CONSTRUCTION OF ELECTRIC CIRCUITS

David Arthur Hill, and Abraham Lomnitzer, both of P.O. Box 10523, Johannesburg 2000, South Africa

Filed Sep. 7, 1977, Ser. No. 831,310
Int. Cl.² G09B *23/18*
U.S. Cl. 35—19 A 15 Claims

1. A circuit board comprising:
(a) a matrix member,
(b) a plurality of apertures in the matrix member,
(c) a plurality of cluster members one in each aperture and each having a main prong receiving socket therein and at least one subsidiary socket, and



(d) engaging means on the board and the cluster members to prevent rotation of the cluster relative to the board.

4,112,594

COLOR COORDINATING IMPLEMENT

Leona R. Impastato, 27 Gray Rock La., Chappaqua, N.Y. 10514

Filed Apr. 28, 1977, Ser. No. 792,018
Int. Cl.² B44D *2/00*
U.S. Cl. 35—28.3 5 Claims

1. A color coordinating implement comprising a generally circular base member of stable sheet material having therein a series of openings arranged in a circular concentric with said base member, an annular band of color surrounding each of said openings, the colors of said color bands being selected in the manner that colors which blend well are disposed adjacent one another while contrasting colors are disposed at opposite sides of said base member, and an indicator member rotatably mounted on said base member concentric therewith, said indicator member being radially inside said circular series of openings and surrounding color bands, said indicator member having thereon indices to indicate key color, colors blending with said key color and contrasting color, whereby in use said implement is placed over a colored article and positioned so that said article shows through a selected one of said openings which is surrounded by a band having a color matching the color of said article and said indicator member is turned so that the key color index thereof is positioned adjacent said selected opening and associated color band whereupon said blending color indices indicate blending colors and said contrasting color index indicates contrasting color each of said annular color bands being divided into sectors each of a shade of the respective color of said band.

4,112,595

TEACHING DEVICES

Santiago Julio Fernandez, and Maria del Cármen Fernandez, both of Paseo & Portola, Palm Desert, Calif. 92260

Continuation-in-part of Ser. No. 623,320, Oct. 17, 1975. This application Jan. 24, 1977, Ser. No. 762,191
Int. Cl.² G09B *19/08*
U.S. Cl. 35—35 E 2 Claims



1. A language teaching device to be used by a plurality of users comprising, in combination, at least two distinct and unique books, each of said books comprising a plurality of bound sheets and containing a selected number of unique questions in the given language followed respectively by a grammatical clue indicating the grammatical structure that should be used in answering the question, said questions being followed respectively by at least a portion of its model answer in the given language to be elicited by the user receiving the question; the totality of questions being constituted by a sequentially numbered set, the sequence alternating between the respective user's books, the questions of each book being so designed and coordinated as to simulate a conversation.

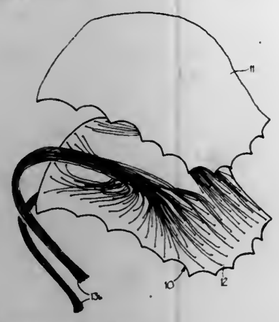
2. The method of teaching a given language or subject to a plurality of users comprising the steps of:
(a) providing each user with a distinct and unique book, wherein each book comprises a separate and distinct plurality of bound sheets and containing a selected number of question in the given language followed respectively by a grammatical clue indicating the grammatical structure that should be used in answering the question, said questions being followed respectively by at least a portion of a model answer in the given language, the totality of questions being constituted by a sequentially numbered set, the sequence alternating between the respective user's books, the questions of each book being so designed and coordinated as to simulate a conversation;
(b) commencing with the user having the book with question number one, said user asking said question and eliciting an answer in the given language by the recipient thereof which is intended to conform to the model answer appearing with said question, said user utilizing the grammatical clue to insure the grammatical correctness of the recipient's answer;
(c) proceding to the user having the book with question number two, said user asking said second question and eliciting an answer in the given language by the recipient thereof which is intended to conform to the model answer appearing with said second question, said user utilizing the grammatical clue to insure the grammatical correctness of the recipient's answer;
(d) continuing this alternating pattern throughout the set.

4,112,596

PSEUDO PALATE USEFUL FOR DIAGNOSIS AND TREATMENT OF SPEECH IMPAIRMENT

Samuel G. Fletcher, 2208 Avanti La., Birmingham, Ala. 35226, and Martin J. McCutcheon, 2313 Garland Dr., Birmingham, Ala. 35216

Filed Jan. 3, 1977, Ser. No. 756,070
Int. Cl.[2] G09B *19/04*
U.S. Cl. 35—35 R 5 Claims



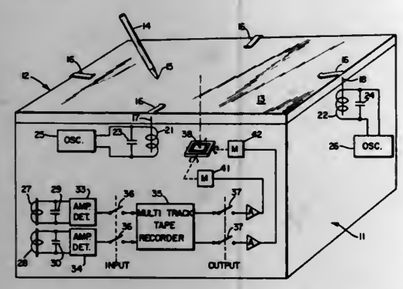
1. A pseudo palate comprising:
(a) a sheet of electrically non-conducting material of from about 0.1 to about 0.5 mm thick and shaped to conform to the palate of a person,
(b) a plurality of electrodes on the lingual surface of the pseudo palate positioned in a predetermined pattern thereon, and
(c) a conductor for each electrode embedded in the sheet and exiting adjacent the rear portion of the pseudo palate, whereby through the use of other apparatus the type and extent of lingual contact may be determined.

4,112,597

APPARATUS FOR ENABLING THE MOTION OF A SCRIBER TO BE REPRODUCED

William H. Seaver, P. O. Box 86, New London, N.C. 28127

Filed May 16, 1977, Ser. No. 797,407
Int. Cl.[2] G09B *11/00*
U.S. Cl. 35—36 10 Claims



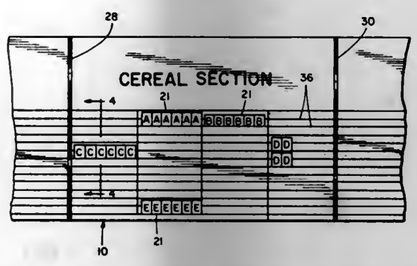
1. Apparatus for enabling the motion of a scriber to be reproduced comprising a body having a writing surface on which the scriber is adapted to be moved, radiator means coupled to the body, oscillator means for driving said radiator means so that the radiator emits waves that are replicas of waves derived by the oscillator means, receiver means for receiving waves transmitted by said radiator means, said body being formed of a material that does not perturb a characteristic of the transmitted and received waves, the scriber being formed of a material that perturbs the characteristic of the waves received by said receiver means, said radiator means being excited by the oscillator means and cooperating with the receiver means and scriber so that there is a unique relationship between each position of the scriber on the surface and the value of the characteristic received by said receiver means.

4,112,598

SHELF MANAGEMENT DEVICE

Edward A. Maass, Minneapolis, Minn., and William A. Stoneberg, Naperville, Ill., assignors to Magnecorp, Inc., Oak Brook, Ill.

Filed May 9, 1977, Ser. No. 794,978
Int. Cl.[2] G09B *1/08*
U.S. Cl. 35—53 1 Claim



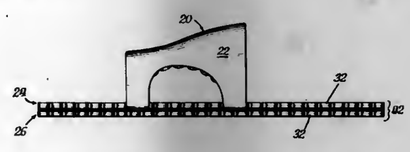
1. In combination with a shelf management device of the class which comprises a rigid primary panel (40) carrying a pair of rigid secondary panels, (24–26) each hinged to the primary panel at an upright edge thereof, each of said panels having a layer of ferromagnetic material coextensive with the surface of the panel and a plurality of magnetized plaques (21) adapted for detachable securement to the front side of the panels in selected arrangements, means for supporting the device with said panels co-planar and inclined to an ultimate supporting surface, said means comprising a central flap (42) mounted on the rear face of the primary panel on a horizontal axis and adapted to be swung outwardly to define an acute angle between the primary panel (40) and central flap (42), an element (50) extending between said rear face and flap to limit rotation of the flap, said flap having two parallel lateral edges, a pair of second flaps (45—45) each having one edge hingedly connected to a respective said upright edge of the central flap to be folded and unfolded into flat relation with the central flap, said second flaps (45—45), when folded, together having no greater widthwise extent than the widthwise extent of the central flap so that, when folded, the second flaps (45—45) will lie flat against the central flap, each of said second flaps (45—45) being hinged at the top to the top of the central flap (42) to enable a collapsed assembly no greater in thickness at its thickest part than the combined thickness of a second flap (45), the central flap (42) and the primary panel (40).

4,112,599

METHOD OF CUSHIONING AND VENTILATING A FOOT, AND FOOTWEAR INCLUDING DISPOSABLE SLIPPERS AND INSOLES FOR PRACTICING SUCH METHOD

Jacob Krippelz, 1121 Lebanon St., Aurora, Ill. 60538

Filed Jul. 1, 1977, Ser. No. 812,169
Int. Cl.[2] A43B *3/12, 13/38, 7/06*
U.S. Cl. 36—11.5 9 Claims



1. In the method of cushioning and ventilating a foot, the improvement which comprises placing

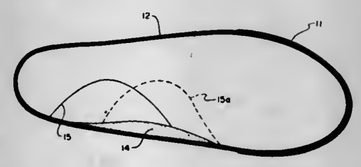
a cushioning and ventilating member against a foot surface;
the cushioning and ventilating member being of laminated construction consisting of a cushioning sheet and a web sheet both of non-rubberlike plastics material having flexibility, low resilience, low extensibility, and high tensile strength characteristics comparable to polyethylene;
the cushioning sheet being formed with a plurality of separate and independent pockets of uniform depth having sidewalls extending in one direction from the web sheet toward the foot surface and having substantially coplanar top end walls engaging the foot surface;
the web sheet being sealed against the concave side of the cushioning sheet to close the open ends of the pockets to provide a plurality of independent, closed air cells with air sealed at atmospheric pressure therein;
said air cells having spaces between them enabling free circulation of air in said spaces while the foot surface is engaged with the top end walls of the pockets;
the material of said cushioning sheet being sufficiently thin and flexible that the normal weight of a person applied to said cushioning and ventilating member through said foot surface causes said top end walls of said pockets to lend themselves fleixbly, conformably, and flatwise to said foot surface.

4,112,600

ORTHOPEDIC SHOES

George J. Hayward, 6285 Granada Dr., Salt Lake City, Utah 84121

Continuation-in-part of Ser. No. 633,275, Nov. 19, 1975, Pat. No. 3,997,984. This application Dec. 17, 1976, Ser. No. 751,263
The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.
Int. Cl.[2] A43B *7/22;* A61F *5/14*
U.S. Cl. 36—91 9 Claims



1. A flexible orthopedic sole having a medial wedge forming part of the lower surface in the heel portion thereof which gradually slopes laterally and forwardly to become integral with the normal sole surface, said sole being filled in and curving upwardly in the area of the plantar arch, terminating such that the medial side of the sole forms essentially a straight line extending from the heel of the sole to the portion of the sole adapted to accommodate the medial side of the ball of the foot, the upper surface of said sole containing a rim around the periphery thereof thereby forming an upper surface receptacle adapted to receive a shoe upper therein.

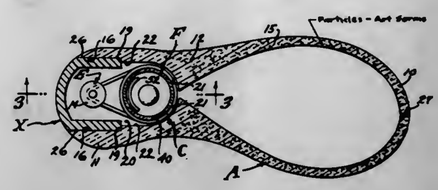
4,112,601

DYNAMICALLY ILLUMINATED FOOTWEAR

Gasper Chiaramonte, Jr., 229 Court Ave., Lyndhurst, N.J. 07071

Filed Mar. 23, 1977, Ser. No. 780,490
Int. Cl.[2] A43B *23/00;* F21V *33/00*
U.S. Cl. 36—137 6 Claims

1. In combination with a shoe platform having a riser comprised of a curvilinear perimeter wall of light transmitting material that conducts light within its solid substance and with a receptacle and an adjoining recess therein; a light modulator means comprising a power supplied body carried in the receptacle and a light source energized thereby with a color change means comprised of a series of color filters moveably disposed within said recess and means moving the same between the light source and light transmitting material of the riser.

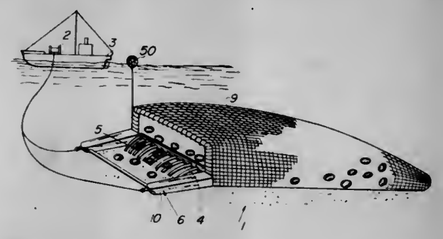


4,112,602

APPARATUS FOR COLLECTING SHELLFISH AND THE LIKE

Hisao Kato, No. 37, 2-Chome, Showa-Machi, Nemuro City, Hokkaido, and Yohei Sakamoto, No. 1, 1-Chome, Hon-Cho, Nemuro City, Hokkaido, both of Japan

Filed Sep. 15, 1976, Ser. No. 723,470
Int. Cl.[2] A01K *75/00;* E07F *5/00*
U.S. Cl. 37—55 6 Claims



1. Apparatus for collecting shellfish and the like from the bed of a body of water comprising a frame including a pair of longitudinally extending parallel spaced runners and a bag net support member projecting upwardly from the rear ends of said runners, a bag net mounted on said support member adapted to receive and hold shellfish collected from the bed by a rake, a rake carried pivotably by and extending between said runners and comprising a pivot shaft having a plurality of substantially parallel spaced tines thereon, at least one of said runners having an upwardly extending columnar member with at least one aperture therein, said pivot shaft being journaled in said columnar member and having an adjusting arm secured to at least one end of said pivot shaft for rotation therewith, one end of said adjusting arm comprising an offset section in which a plurality of apertures are formed alignable with said at least one aperture in said columnar member, and fastening means for insertion through the aligned apertures of the corresponding columnar member and adjusting arm for fixing the shaft and the tines thereon in predetermined angular relation to the bed of the body of water.

4,112,603

LUGGAGE TAG

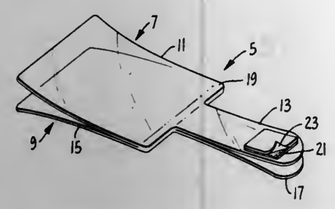
Joe D. Giulie, Palo Alto, Calif., assignor to General Binding Corporation, Northbrook, Ill.

Filed Mar. 14, 1977, Ser. No. 776,823
Int. Cl.[2] A44C *3/00*
U.S. Cl. 40—2 R 3 Claims

1. A tag for luggage or the like comprising in combination:
a. a first sheet of a plastic material having an outer surface and inner surface and having an enlarged portion and a tongue extending therefrom;
b. a second sheet of substantially the same configuration;

c. said first and second sheets lying over each other with their inner surfaces together and being attached together adjacent the junction between the enlarged portion and the tongue, leaving most of the area of the enlarged portions free;

d. at least one of said first and second sheets having a heat-activated plastic coating on the inner surface of the enlarged portion thereof;



e. an area of pressure sensitive adhesive on the outer surface of said tongues, said pressure sensitive adhesive being protected by a layer of material which can be striped off of said pressure sensitive adhesive;

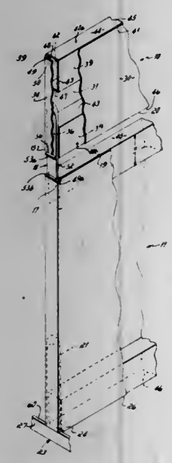
f. whereby one can place a card or the like between said first and second sheets and heat and press only the enlarged portions thereof leaving said tongues free and said protective layer removed from said pressure sensitive adhesive and the tongues adhered together.

4,112,604

DISPLAY PANEL ASSEMBLY

Robert B. Ott, Cincinnati, Ohio, and Lawrence R. Heringer, Edgewood, Ky., assignors to The Hennegan Company, Cincinnati, Ohio

Filed Dec. 27, 1976, Ser. No. 754,423
Int. Cl.[2] G09F *15/00*
U.S. Cl. 40—610 8 Claims



1. An improved display panel assembly comprising

(a) a hollow three-dimensional display panel comprising

a front display face wall, a rear display face wall, and two side walls connected between said display face walls,

a support member extending along and adjacent to each of the top and bottom edges of said display panel, at least one of said support members being tubular and having two spaced apart edge walls that each define at least one end edge, said two end edges thereby being spaced apart one from the other, said support members being erectable from a storage position where said face walls are collapsed one on top of the other to a use position where said face walls are spaced one from the other a distance generally equal to the width of said edge walls, and one side wall and said two end edges of said tubular member's edge walls cooperating to define a passageway for carrying a connector strip along the inside face of said side wall when said tubular support member is erected, and

slot and tab structure partially carried by said tubular support member and partially carried by a face wall of said display panel, said slot and tab structure cooperating to maintain said display panel in a three-dimensional erect attitude when said slot and tab structure is engaged and to permit said display panel to collapse into a storage attitude when said slot and tab strucure is disengaged, and

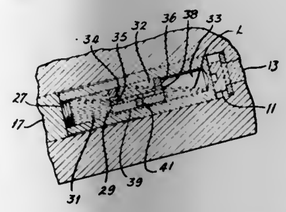
(b) a connector strip having a rigid tongue portion at one end thereof, said tongue portion having a cross-sectional configuration the same as the cross-sectional configuration of said passageway, said tongue portion being of cross-sectional dimensions substantially equal to but no greater than the cross-sectional dimensions of said display panel passageway, and said tongue portion being of a length greater than the length of said display panel passageway, the dimensions and cross-sectional configuration of said connector strip and said passageway, including said end edges of said tubular support member, cooperating to retain said connector strip in lateral position with said passageway.

4,112,605

GUN RECOIL REDUCER

John W. Staub, 261 Herbert, Alton, Ill. 62002

Filed Jun. 20, 1977, Ser. No. 807,912
Int. Cl.[2] F41C *27/00*
U.S. Cl. 42—1 V 10 Claims



1. A device for reducing recoil in a shoulder-fired firearm comprising a cylinder arranged to be mounted in a direction in part axially of the firearm, partition structure within said cylinder intermediate the ends thereof and dividing said cylinder into a forward and a rear chamber, said partition structure being provided with restricted orifice means through it of substantially less area than the internal cross section of said cylinder, and liquid of high specific gravity partially filling said cylinder, whereby to react against said partition structure and the forward end of said cylinder during rearward movement of the firearm during recoil thereof, said reaction and the retardation caused by the restricted orifice means through said partition structure combining to retard rearward movement of the firearm due to recoil and thereby absorb a substantial portion of the recoil energy.

4,112,606

MUZZLE LOADING DEVICE

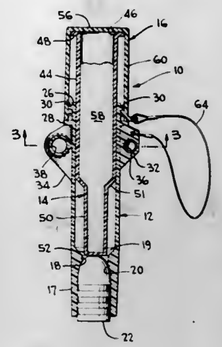
William Griffin, 224 N. Sunset Terr., Jackson, Miss. 39212

Filed May 12, 1977, Ser. No. 796,053
Int. Cl.[2] F41C *27/00*
U.S. Cl. 42—90 17 Claims

1. A muzzle-loading device for carrying materials for muzzle-loading firearms comprising

a tubular body having a first end adapted to hold a projectile and a second end;

an elongate container for holding powder having a closed end and an open end, said container having a portion including said closed end inserted in said tubular body; and



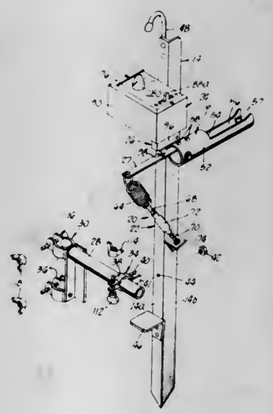
a cover extending over said open end of said container and removably secured to said second end of said body to seal said open end of said container and hold said container in said body.

4,112,607

FISHING POLE HOLDING APPARATUS

Bernard B. Scher, 10702 Haddon, Pacoima, Calif. 91331

Filed Jan. 17, 1977, Ser. No. 759,821
Int. Cl.[2] A01K *97/12*
U.S. Cl. 43—17 11 Claims



1. An apparatus for holding a fishing rod and signaling a fish feeding on the bait comprising:

(a) a generally vertically disposed support member;

(b) a rod holding means pivotally connected to said support member for holding the fishing rod in a forwardly extending, cantilevered position, comprising:

(1) a first portion having a generally cylindrically shaped rod handle receiving portion and a forwardly extending open top rod handle cradle portion which is generally semi-circular in cross-section; and

(2) a second interconnected portion comprising an actuating lever extending rearwardly of said vertically disposed support member a substantial distance, said rod holding means being adapted for rotational movement about a transverse pivot axis located intermediate said first and second portions of said rod holding means whereby the weight of the rod will urge downward rotation of said first portion about said pivot axis and upward rotation of said actuating lever about said pivot axis against the counter balancing forces exerted by said actuating lever;

(c) biasing means acting between said actuating lever and said first support member for yieldably resisting upward rotation of said actuating lever;

(d) adjustment means associated with said biasing means for continuously adjusting the resisting force exerted by said biasing means whereby with the rod in operative position within the apparatus said rod holding means can be yieldably held in precise nonrotational equilibrium;

(e) signaling means mounted on said first support member for emitting visual and audible signals upon actuation thereof; and

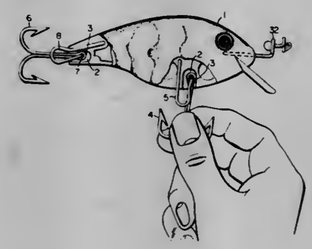
(f) sensor means disposed intermediate said signaling means and said rearwardly extending actuating lever of said rod supporting means, said sensor means being operably associated with said signaling means and responsive to upward rotational movement of said actuating lever to actuate said signaling means.

4,112,608

METHOD AND APPARATUS FOR FABRICATING FISHING LURES ETC.

Welbourne D. McGahee, 1896 Coolidge Ave., Melbourne, Fla. 32935

Filed Jan. 21, 1977, Ser. No. 760,927
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.09 29 Claims



1. A fishing lure, comprising:

a lure body; and

a hook hanger, comprising: a first bore penetrating the surface of said body; a second bore penetrating said body and an elongated retainer fabricated from a material having spring properties, said retainer including a secured end held rigidly within said body by the side walls of said second bore and a free end positioned adjacent to the wall of said first bore so that said elongated retainer descends into and crosses a majority of the diameter of said first bore.

4,112,609

PREFABRICATED DISPOSABLE FLY TRAP BLANK

Robert J. Kaveloski, 39663 Balboa, Sterling Heights, Mich. 48073

Filed May 12, 1977, Ser. No. 796,178
Int. Cl.[2] A01M *1/10*
U.S. Cl. 43—118 10 Claims

1. A prefabricated blank adapted to be folded into a disposable fly trap, said blank comprising

an elongated approximately T-shaped member of flexible sheet material including

a longitudinal end panel adapted to be folded at a first predetermined fold location into an arch-shaped inner wall of the fly trap and thereby to define an inner fly trap chamber,

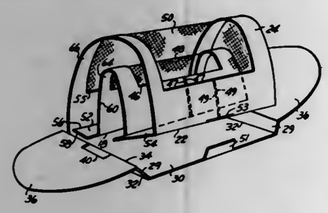
a bridge portion disposed adjacent said longitudinal end

panel and adapted to be folded relatively thereto at a second predetermined fold location,

a longitudinal intermediate panel disposed adjacent said bridge portion and adapted to be folded relatively thereto at a third predetermined fold location into an arch-shaped outer wall of the fly trap disposed in outwardly-spaced relationship to the arch-shaped inner wall thereof and to define therebetween an outer fly trap chamber,

each of said above-mentioned panels having therein a light-transmitting opening with a border portion adjacent thereto and a fly restraining network screen extending across said opening and having a peripheral portion overlapping said border portion and secured thereto,

each of said panels having border portion covering means movable into superimposed relationship with the respective border portion thereof and also with the respective overlapping screen peripheral portion,



said longitudinal end panel having a fly exit port therein adapted in the arch-shaped folded positions of said panels to lead from the inner chamber to the outer chamber,

and a transverse end panel disposed adjacent said longitudinal intermediate panel and adapted to be folded relatively thereto at a fourth predetermined fold location into a floor wall of the fly trap,

said transverse end panel having at its opposite ends arch-shaped wings to be folded upward into end-closing relationship with the opposite ends of the inner and outer arch-shaped walls,

one of said wings having a fly entrance doorway therein adapted in the folded condition of the blank to lead from the exterior of the trap into the inner chamber thereof.

4,112,610
TOY GARAGE

Hiroshi Sano, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

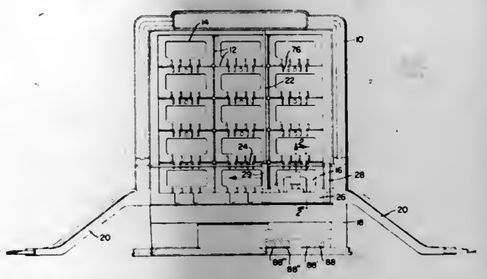
Filed Mar. 11, 1977, Ser. No. 776,780
Claims priority, application Japan, Mar. 12, 1976, 51-30123; Apr. 6, 1976, 51-38931
Int. Cl.² A63H *33/00*
U.S. Cl. 46—12 **6 Claims**

1. An amusement device, comprising:

a cabinet provided with a plurality of openings therein,

a carrier, means mounting said carrier to move up and down with respect to said cabinet and from side to side with respect to said cabinet to align said carrier with a desired one of said openings of said cabinet including a first rod passing through an opening provided in said carrier and terminating in gear wheels at each end thereof, said cabinet being provided with two racks of teeth along which gears of said first rod move, a second rod passing through an opening provided in said carrier and termining in gear wheels at each end thereof, said cabinet being provided with two racks of teeth along which said gears of said second rod move, and

a control panel having first, second, third and fourth actuating members, and means operatively connecting said actuating members to said carrier to move said carrier up, down, left and right, respectively, including a first band provided with a continuous rack of teeth therein and attached to said first rod, a second band provided with a continuous rack of teeth therein and attached to said second rod, a first gear mounted to rotate and engaging said rack of teeth of said first band, a second gear mounted to rotate and engaging said rack of teeth of said second band, and means responsive to movement of said first

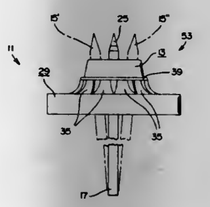


actuating member for rotating said first gear in one direction and responsive to movement of said second actuating member for rotating said first gear in the opposite direction, and means responsive to movement of said third actuating member for rotating said second gear in one direction and responsive to movement of said fourth actuating member for rotating said second gear in the opposite direction.

4,112,611
TWIRLING TOY DEVICE

Samuel H. Kernell, 1052 Railton, Memphis, Tenn. 38111

Filed Oct. 18, 1976, Ser. No. 734,541
Int. Cl.² A63H *1/32*
U.S. Cl. 46—47 **16 Claims**



1. A toy device comprising an elongated rod having a distal end and a proximal end, and tubular means for encircling said elongated rod in a twirling motion when said rod is manipulated to cause said tubular means to twirl at various selectable locations along the length thereof, said rod having a substantial cylindrical shape thereto, and said rod being unobstructed at the distal end thereof for movement of said tubular means onto and off of said distal end, said tubular means having first and second remotely disposed open ends and having a substantially unobstructed interior for allowing said elongated rod to selectively extend completely therethrough.

4,112,612
CONVERTIBLE AERIAL PROJECTILE TOY

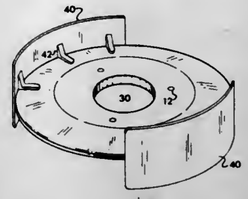
William W. Woods, 901 Grayland St., Greensboro, N.C. 27408

Filed Feb. 22, 1977, Ser. No. 770,599
Int. Cl.² A63H *27/00*
U.S. Cl. 46—74 D **9 Claims**

1. An aerial projectile toy comprising:

(a) a substantially circular disc formed of a self-supporting, relatively soft, lightweight, moldable material;

(b) a plurality of flight altering structures, each of which, when attached to said disc, provides predictable aerodynamic characteristics of the air flow path around and over said disc during flight which differ from such characteristics achieved with the other of said structures;

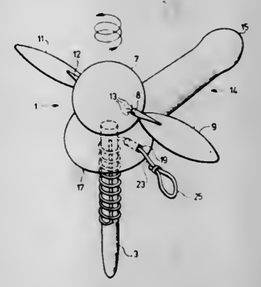


(c) cooperative means on said disc and said flight altering structures for releasably temporarily securing selected ones of said structures at a time to said disc.

4,112,613
SPINNING TOY

Steve Toplak, 14 Islay Ct., Weston, Ontario, Canada (M9M 1V3)

Filed Jun. 2, 1977, Ser. No. 802,622
Int. Cl.² A63H *27/00*
U.S. Cl. 46—83 **4 Claims**



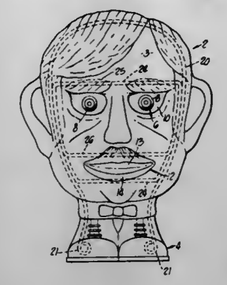
1. A spinning toy adapted for flight and for subsequent spinning on a landing surface as a top; said toy having an elongated lower stem portion for winding a string therearound which upon rapid unwinding, spins said toy; an enlarged upper portion and wings extending outwardly from said enlarged upper portion for flying said toy; each of said wings comprising a blade and a cylindrical shaft; said enlarged upper portion being provided with a cylindrical passage within which the shafts of said wings are journaled; the ends of said shafts being interconnected by a gear arrangement so that said wings are manually adjustable to vary the flight time to surface spinning time of said toy.

4,112,614
REINFORCED ARTICLES OF ELASTOMERIC MATERIAL

Arthur C. Clokey, c/o Prema Toy Co., P.O. Box 707, Topanga, Calif. 90290

Filed Apr. 7, 1977, Ser. No. 785,488
Int. Cl.² A63H *3/04*
U.S. Cl. 46—151 **9 Claims**

1. An article of elastomeric material having a facial portion in the form of a facial likeness or a caricature capable of assuming a variety of different facial expressions, said article having deformable reinforcement embedded in the elastomeric material and said facial portion and said reinforcement being capable of being manually manipulated and said reinforcement holding the elastomeric material in the selected facial expression, said reinforcement comprising a first reinforcing member extending substantially around the periphery of the facial portion of the article and a second reinforcing member extending transversely across the facial portion of the article, said

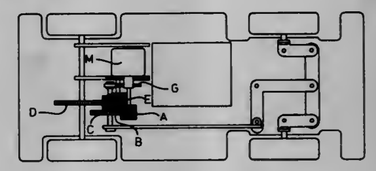


second reinforcing member being affixed to said first reinforcing member.

4,112,615
REMOTE CONTROL SYSTEM FOR A MOVABLE TOY VEHICLE

Zenichi Ishimoto, Tokyo, Japan, assignor to Nikko Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1976, Ser. No. 727,622
Int. Cl.² A63H *29/18, 30/00*
U.S. Cl. 46—254 **3 Claims**



1. A remote control system for a travelling toy vehicle comprising a transmitter unit including a high frequency generating means for a carrier signal of specific predetermined frequency, and a receiving unit including a super regenerative detection circuit for receiving said signal and for normally generating an amplifiable noise signal, said receiving unit serving to attenuate said noise signal when receiving said carrier signal, a relay having a two-position switch normally retained in a first position when energized by the amplified noise signal and movable to a second position when the noise signal is attenuated by the transmission of the carrier signal, a motor for driving said vehicle and a battery-operated control circuit including the switch of said relay to selectively operate the motor in opposite directions.

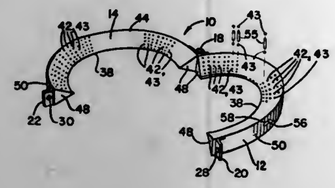
4,112,616
METHOD AND APPARATUS FOR SELECTIVELY PREVENTING OR PERMITTING SAP FLOW TO CONTROL BUD FORMATION

Bobbie O. Savage, P.O. Box 2434, Farmington, N. Mex. 87401

Continuation-in-part of Ser. No. 823,473, Aug. 10, 1977. This application Dec. 12, 1977, Ser. No. 860,022
Int. Cl.² A01G *15/00*
U.S. Cl. 47—1 R **4 Claims**

1. Apparatus for preventing premature bud formation comprising at least two arcuate units adapted to be interposed in a generally horizontal section cut around the periphery of a tree and into an area around the outer edge of heartwood of the tree, each of said units including perforated means permitting sap-flow communication between sap-carrying cells if desired and means which may be selectively conditioned to block perforations of said perforated means to prevent sap-flow communication or to be clear of the perforations of said perfo-

rated means to permit sap-flow communication between sap-carrying cells through said perforated means, said perforated means having wick means in perforations thereof wherein some of said wick means will be out of alignment with others



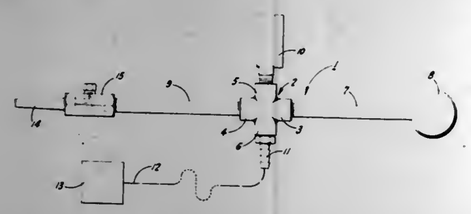
of said wick means when said perforated means are conditioned to prevent sap-flow and wherein all of said wick means are in alignment with others of said wick means is conditioned for sap-flow communication.

4,112,617

DEVICE FOR INJECTING A LIQUID INTO THE TRUNK OF A TREE

Billy Joe Purviance, 3737 N. Duncan Rd., Linden, Calif. 95236

Filed Apr. 1, 1977, Ser. No. 783,705
Int. Cl.[2] A01G *29/00*
U.S. Cl. 47—57.5 **1 Claim**



1. A device, for pressure injecting a tree-treating liquid solution into the trunk of a tree, comprising a central fitting of cross-type including front, rear, top, and bottom necks, the front neck being in communication with the top and bottom mecks, a rigid tube secured to and projecting forwardly from the front neck, an elongated, tapered nozzle fixed in communication with and projecting axially forward from the front end of the tube, a one-way check valve associated with the tube and opening in the direction of the nozzle, a rigid rod secured to and projecting rearwardly from the rear neck, a manual thrust member mounted on the rear end of the rod, the nozzle being adapted to be jam-fitted in a bore in the tree by hand-thrusting of said member, a hose-connection stem secured to and depending from the bottom neck, a flexible hose coupled to said stem, the hose being adapted to pressure-feed a metered quantity of the tree-treating solution through said stem, central fitting, tube, and nozzle when the latter is so jam-fitted in a bore in the tree, and a pressure gauge connected to and upstanding from the top neck.

4,112,618

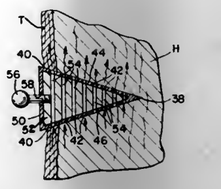
METHOD AND APPARATUS FOR SELECTIVELY PREVENTING OR PERMITTING SYSTEMIC SAP FLOW TO CONTROL BUD FORMATION

Bobbie O. Savage, P.O. Box 2434, Farmington, N. Mex. 87401

Filed Aug. 10, 1977, Ser. No. 823,473
Int. Cl.[2] A01G *15/00*
U.S. Cl. 47—58 **12 Claims**

1. Method for preventing premature bud formation in a tree when its dormancy is interrupted by unseasonably warm weather which would promote flow of tree sap and consequently premature formation of buds which upon resumption of cold weather would be subjected to kill back and result in severe damage to the tree, wherein said method comprises the steps of:

(a) cutting all around and through the bark and sap-carrying cells of a tree to the outer edge around the tree's heartwood;



(b) interposing means within the area between the cut portions of sap-carrying cells which may be selectively conditioned to prevent or permit sap-flow communication between the remains of the cut portions of sap-carrying cells; and

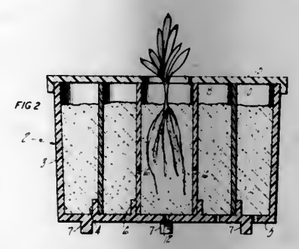
(c) sealing the periphery of the tree in the area around the cut with grafting tar to inhibit loss of sap.

4,112,619

GROW-POT

Rosemary Morsani, 14 Palm Point Dr., Jupiter, Fla. 33458, and Edwin G. Nelson, 310 Walton Blvd., West Palm Beach, Fla. 33405

Filed Jul. 12, 1976, Ser. No. 704,643
Int. Cl.[2] A01G *9/02*
U.S. Cl. 47—66 **13 Claims**



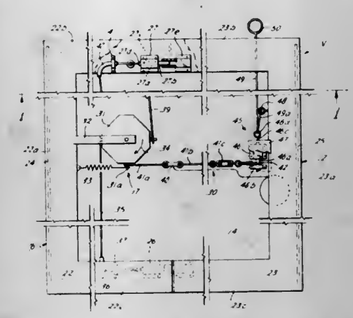
1. A grow-pot for growing plants comprising an outer pot having a first side wall with a bottom wall for containing the roots of a plant in a growing mixture, a tubular member having a second side wall with a top end and a bottom end, said second side wall being open at each end, said bottom end having no bottom wall, guide means on said bottom wall of said outer pot, said second side wall being smaller than said first side wall to be positioned in said outer pot with said bottom open end of said second side wall positioned in said guide means on the bottom wall, said guide means being spaced inwardly from the first side wall of said outer pot with said second side wall providing a smaller sized pot within said outer pot for initially containing the roots of a plant in a growing mixture during its early growth, said second side wall comprising a plurality of lengthwise segments for ease of removal from a growing mixture, said lengthwise segments having top and bottom ends, said guide means on said bottom wall of said outer pot for locating and supporting the bottom ends of said lengthwise segments of said second side wall at its position spaced inwardly from the first side wall, said lengthwise segments being longitudinally slideable with respect to each other when supported by said guide means.

4,112,620

SMOKE AND HEAT VENT

Kiyoshi Sandow, Baytown, Tex., assignor to Plasteco, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 647,368, Jan. 8, 1976, abandoned. This application Mar. 10, 1977, Ser. No. 776,237
Int. Cl.[2] E05F *15/20*
U.S. Cl. 49—8 **16 Claims**



1. A new and improved heat and smoke vent adapted to be mounted with an opening in the roof of a building or the like, comprising:

a cover-supporting frame assembly having an opening therein and being adapted for mounting over an opening in the roof of a building or the like;

a cover positioned on said frame assembly;

said frame assembly including a frame section and frame mount means mounting said frame section for pivotal movement between a first, horizontal position for supporting said cover and a second, vertical position;

emergency release means mounted with said frame section for releasing said frame section from said first horizontal position under emergency conditions in order to allow said frame section to pivotally move downwardly; and

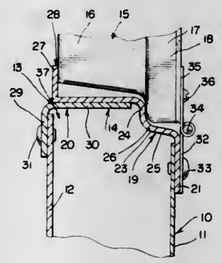
said frame section, frame mount means, cover and emergency release means allowing said cover to fall away from said frame section for releasing said cover only for falling movement downwardly at least partially out of said roof opening in response to pivotal movement downwardly of said frame section in order to allow heat and smoke to pass out of such building.

4,112,621

ADJUSTABLE THICKNESS VENT DOOR ASSEMBLY FOR CARGO BODIES

Leonard M. Ehrhart, Country Club Hills; John R. Pratte, Naperville, and Paul E. Mazik, Jr., Chicago, all of Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed May 27, 1977, Ser. No. 801,199
Int. Cl.[2] E05D *7/00*
U.S. Cl. 49—400 **1 Claim**



1. In a cargo transporting body having a wall construction including an opening, said wall construction including parallel opposite wall sides having a certain cross-sectional dimension, the improvement of a door and frame assembly for said opening, said arrangement being adapted for assembly with walls of different cross-sectional dimensions, comprising:

a door of relatively constant thickness dimensions having first and second parallel door side walls,

a door frame extending about said door including a first angle shaped frame part having a first flange extending outwardly of said door being substantially flush with a first door side wall,

means hingedly connecting said first flange to said first door side wall,

a second flange extending perpendicular to and connected to said first flange,

said second flange extending toward said second door side,

a third flange connected to said second flange and extending in a direction inwardly toward and overlapping said second door side,

a second angle shaped frame part having a fourth flange extending in the direction of said first flange,

a fifth flange connected to said fourth flange extending perpendicular to said fourth flange and overlapping said second flange,

means connecting said first and fourth flanges respectively to said opposite wall sides in overlapping relation,

means interconnecting said second and fifth overlapping flanges,

said body wall construction including panel type walls,

said third flange having a continous edge portion forming a second opening defined by said door frame,

said door including a base portion in a closed position engaging said third flange to block said second opening,

an outwardly projecting ledge portion on said base,

an offset corner portion connecting said first and second flanges, providing a recess on said frame for seating said ledge in substantially flush relation relative to said wall construction,

said corner portion including a flange portion extending laterally with respect to said second flange,

a second flange portion extending laterally with respect to said first flange,

an arcuate flange portion connecting said first and second flange portions, and

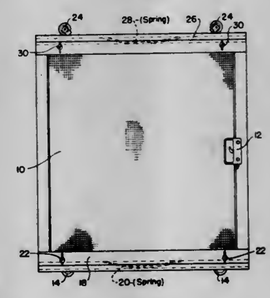
said hinge means having a hinge axis substantially in lateral alignment with said second flange portion in opposing relation to said arcuate flange portion.

4,112,622

ROLLER ASSEMBLY FOR SLIDING SCREEN DOOR, AND THE LIKE

David E. Stewart, Los Angeles, Calif., assignor to Empire Metal Products Corp., Los Angeles, Calif.

Filed Sep. 7, 1976, Ser. No. 720,888
Int. Cl.[2] E05D *13/02, 15/16*
U.S. Cl. 49—421 **6 Claims**



1. In combination: a roller assembly and a sliding screen

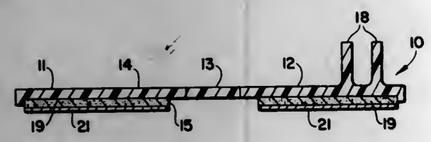
door, said door having a channel in the edge thereof, and an opening in the channel for receiving the roller assembly, said roller assembly comprising: an open-ended, open-topped housing having a pair of parallel sides adapted to fit into said opening and having integral lugs formed on said sides adjacent the upper edges thereof and adapted to extend beyond the edges of said opening to enable the housing to be suspended into said opening; and a roller mounted in said housing for rotation about an axis extending transversely with respect to said housing.

4,112,623

MEETING RAIL FOR SLIDING WINDOWS

Neil Soden McPherson, 1162 W. 26 Ave., Vancouver, B.C., Canada (V6H 2A7)

Filed Sep. 12, 1977, Ser. No. 832,158
Int. Cl.[2] E06B 7/22
U.S. Cl. 49—488 1 Claim



1. A meeting rail assembly for application to over-lapping marginal edge portions of closable sliding window panes comprising:
(a) a pair of meeting rails, one for each window,
(b) each meeting rail comprising:
(i) a pair of parallel planar strips of semi-rigid thermoplastic material having inner and outer side surfaces,
(ii) a connecting strip of flexible thermoplastic material extending parallel to and positioned between and fused at its edges to adjacent edges of the semi-rigid strips,
(iii) a plurality of parallel, longitudinally extending spaced-apart ribs disposed on the outer side surface of one of the semi-rigid strips of each rail, said ribs being of a flexible thermoplastic material and being fused to said one semi-rigid strip,
(iv) a pressure sensitive adhesive on the inner surfaces of the semi-rigid strips for enabling the meeting rails to be applied and secured to said marginal edge portions of the panes in a position in which the ribs of opposing rails extend in inter-digital relationship when the panes are closed.

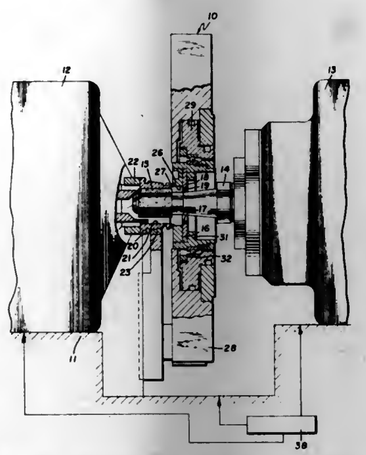
4,112,624

GRINDING MACHINE

Herbert R. Uhtenwoldt, and Norman S. Humes, both of Worcester, Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Continuation of Ser. No. 651,434, Jan. 22, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,268
Int. Cl.[2] B24B 53/14
U.S. Cl. 51—5 D 12 Claims

7. Grinding machine for finishing a bore in a tubular workpiece, comprising:
(a) a base,
(b) a wheelhead mounted on the base and having a rotatable spindle with an abrasive wheel,
(c) a workhead mounted on the base, said workhead including means which engages to workpiece and rotates it and including shoes which engage the outer surface of the workpiece,
(d) a support body fixedly mounted on the base, the support body having a circular aperture through which the abrasive wheel advances axially during parts of the grinding cycle,
(e) a dressing wheel in the form of a rigid annulus mounted on the support body with its inner dressing surface protruding into the aperture and located in a general plane extending transversely of the spindle axis, the inner dressing surface of the annulus having a diameter substantially larger than the external diameter of the abrasive wheel, the dressing wheel being mounted in bearings in the support body aperture for rotation independently of the wheelhead about the major axis of the annulus, and
(f) feed means producing relative movement between the wheelhead and the dressing wheel to bring about dressing engagement between the said inner surface of the dressing wheel and the said external surface of the abrasive wheel.

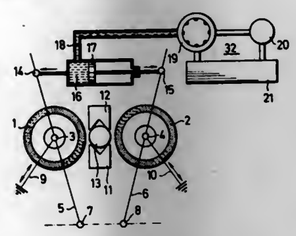


4,112,625

DEVICE FOR GRINDING ELONGATED CYLINDRICAL WORKPIECES

Walter Wetzels, Eynatten, Belgium, assignor to SCHUMAG Schumacher Metallwerke Gesellschaft mit beschänkter Haftung, Aachen, Germany

Division of Ser. No. 713,571, Aug. 11, 1976, Pat. No. 4,063,906. This application Mar. 25, 1977, Ser. No. 781,191
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1975, 2537151
Int. Cl.[2] B24B 7/02, 7/12
U.S. Cl. 51—33 W 3 Claims



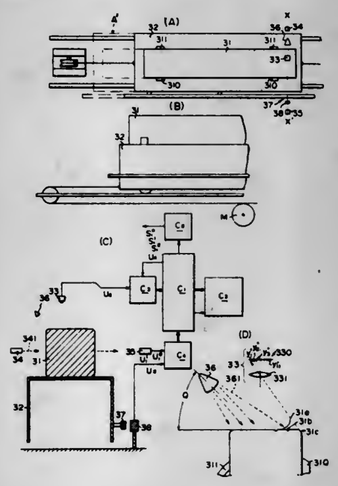
1. Device for carrying out a method of grinding elongated, cylindrical workpieces while being rotated about the longitudinal axes thereof, comprising guide means extending in longitudinal direction of a workpiece for guiding and supporting the workpiece, at least one grinding wheel adjacent said guide means and operable so as to apply prestressing grinding pressure transversely to the workpiece, means for mechanically supporting and feeding said grinding wheel toward the workpiece, and means for exerting pulsating grinding pressure through said grinding wheel on the workpiece, the pulsating grinding pressure having a frequency that is outside the frequency ranges of resonant vibrations of the workpiece and the device, and including an hydraulic cylinder connected to said mechanical supporting and feeding means for said grinding wheel, said means for exerting pulsating grinding pressure including a device for generating pulsations in the hydraulic cylinder, said device for generating pulsations comprising a rotary piston valve, a pump, and a pressure fluid tank, respectively connected to one another.

4,112,626

AUTOMATIC DESEAMING APPARATUS FOR ELONGATE BLOCK OF METALLIC MATERIAL

Kazuo Watanabe, Ohbu; Toshio Endo, Nagoya, and Katsuhiro Kojima, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 8, 1977, Ser. No. 786,114
Int. Cl.[2] B24B 7/02
U.S. Cl. 51—35 4 Claims



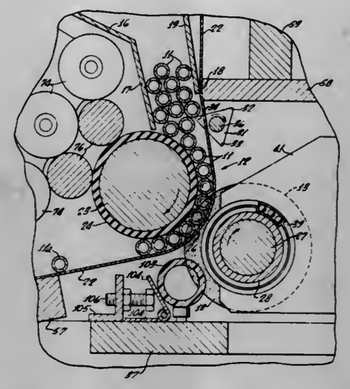
1. An automatic deseaming apparatus for removing defects from an elongate block of metallic material comprising:
a defect marking detector for detecting defect markings applied to defects on the surface of said block, said defect markings consisting of a material containing a flourescent pigment;
a defect marking position detector;
a grinding controller responsive to said defect marking detector and said defect marking position detector for formulating first data representative of the positions of portions of said detected defect markings;
a memory for storing said first data representative of said detected defect markings, said grinding controller being further responsive to compile from said stored first data second data representative of the positions of each entire marked defect and for formulating grinding sequence data from said compiled second data, said sequence data enabling a grinding wheel to successively move to all marked defects in a minimum of time; and,
a grinding wheel for reciprocally grinding each said defect in the direction of the longitudinal axis of said block, said grinding wheel being responsive to said grinding sequence formulated by said grinding controller.

4,112,627

GLASS CYLINDER SUBDIVIDING APPARATUS AND METHOD

Hendrik de Kanter, Santa Ana, Calif., assignor to DKA, Inc., Marina Del Rey, Calif.

Filed Apr. 20, 1977, Ser. No. 789,338
Int. Cl.[2] B24B 1/00, 5/50
U.S. Cl. 51—79 55 Claims



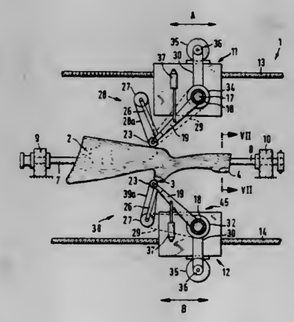
55. A method of fully separating cylindrical glass tubes into predetermined discrete shorter tubes, which comprises:
(a) effecting sequential rolling of a multiplicity of parallel cylindrical glass tubes along a support, and
(b) effecting, when each such tube reaches a predetermined station, simultaneous full separation of such tube into at least several discrete shorter component tubes,
said separations being so performed that the end faces of said component tubes are substantially perpendicular to their axes.

4,112,628

DUPLICATING GRINDING MACHINE

Erich Schmidt, Maversbach, Austria, assignor to Maschinenfabrik Zuckermann Komm. Ges., Vienna, Austria

Filed Apr. 5, 1977, Ser. No. 784,725
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614843
Int. Cl.[2] B24B 21/04, 17/02
U.S. Cl. 51—140 9 Claims



1. A duplicating grinding machine for grinding irregularly shaped three-dimensional workpieces consisting of at least two materials having different grinding properties comprising:
a pattern including first and second partial models,
means for mounting said pattern and a workpiece in spaced parallel relation one to the other,

means for rotating said pattern and the workpiece about parallel longitudinal axes,

a first carrier arm unit including first and second carrier arms interconnected one with the other, a scanning roller carried by said first carrier arm for scanning the first partial model of said pattern,

a first grinding assembly carried by the second carrier arm for engaging the workpiece,

a second carrier arm unit including first and second carrier arms interconnected one to the other, a scanning roller carried by the first carrier arm of said second carrier arm unit for scanning the second partial model of said pattern, a second grinding assembly carried by the second carrier arm of said second carrier arm unit for engaging the workpiece, said first and second grinding assemblies having different grinding characteristics for grinding materials of different grinding properties, respectively,

means for longitudinally displacing the workpiece and pattern on the one hand and said first and second carrier arm units on the other hand relative to one another whereby said scanning rollers and said grinding assemblies are adapted to traverse the entire length of the pattern and workpiece respectively,

said first and second partial models having first and second raised areas, respectively, and first and second working shape areas, respectively, the working shape area of each partial model being complementary to the raised area of the other partial model, and also associated with grinding a predetermined area of like material of the workpiece, the scanning roller of said first carrier arm of said first carrier arm unit enabling said first grinding assembly to engage the workpiece when scanning said first working shape area of said first partial model to shape the workpiece in accordance therewith and to disengage from said workpiece when scanning said raised area of said first partial model, the scanning roller of said first carrier arm of said second carrier arm unit enabling said second grinding assembly to engage the workpiece when scanning said second working shape area of said second partial model to shape the workpiece in accordance therewith and to disengage from the workpiece when scanning said raised area of said second partial model, whereby said grinding assemblies selectively grind the different materials of the workpiece respectively at different locations therealong in accordance with the pattern and during a single relative longitudinal displacement of the workpiece and pattern on the one hand and the carrier units on the other hand.

4,112,629

MEASURING AND CONTROL APPARATUS FOR INTERNAL GRINDING MACHINES

Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs Soc. in Accomandita Semplice di Mario Possati & C., Bentivoglio, Italy

Filed Apr. 28, 1977, Ser. No. 791,881
Claims priority, application Italy, May 5, 1976, 3418 A/76
Int. Cl.² B24B *49/04*
U.S. Cl. 51—165.93 **6 Claims**

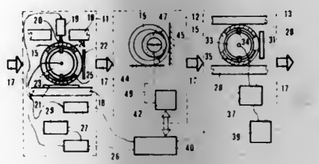
1. A measuring and control apparatus for an internal grinding machine, the grinding machine including:

resting devices for cooperating with the outer surface of the workpiece being machined; and control means for controlling the displacement of the grinding wheel relative to the workpiece, the control means including measuring means for providing a signal responsive to said displacement; the apparatus comprising:

a measuring machine arranged upstream of the grinding machine for subsequently receiving and measuring the workpieces to be machined in the grinding machine, the measuring machine including a first gauge generating a signal responsive to the diameter of the outer surface of the subsequent workpieces; a second gauge generating a signal responsive to the diameter of the internal surfaces of the workpieces; and an ejection device;

transfer means for transferring in succession workpieces from the measuring machine to the grinding machine and away from the grinding machine;

processing means connected with said measuring machine, transfer means and control means for controlling their operation, the processing means including: comparison circuits connected with said first and second gauges and with said ejection device for controlling the ejection of scrap workpieces and that of workpieces having diameters which would render unsafe the machining operation; a first delay circuit connected with said first gauge and with



said control means for setting the control means depending on the outer diameter of a workpiece to be machined; a second delay circuit connected with said second gauge; a comparator circuit connected with said first and second delay circuits and with the control means for controlling the change of the grinding wheel speed from fast approach speed to feed speed for stock removal; further comparator circuits connected with said control means for changing the grinding wheel feed speed during the stock removal depending on said signal responsive to displacement; and

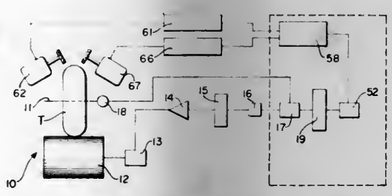
synchronizing means connected with said measuring machine, grinding machine and transfer means for synchronizing their operation.

4,112,630

REDUCTION OF LATERAL FORCE VARIATIONS OF A TIRE EFFECTIVE IN BOTH FORWARD AND REARWARD SENSES OF ROTATION

Jack E. Brown, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 8, 1977, Ser. No. 822,770
Int. Cl.² B24B *1/00*
U.S. Cl. 51—281 R **3 Claims**



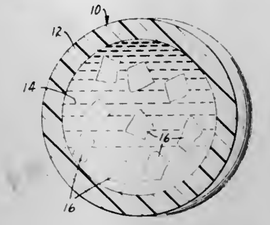
1. Method of reducing lateral force exerted by a tire, on the surface on which the tire rolls, in a direction parallel to the rotational axis of the tire, which method comprises determining for each successive increment of circumference of the tire the summation of the lateral force of such increment measured while the tire rotates in a first rotational sense and the lateral force of such increment measured while the tire is rotated in the opposite rotational sense, generating a variant signal proportional to said summation of said successive increments of circumference, and grinding the tire to reduce the variation of said signal from its mean value thereby effecting a reduction in the total lateral force variations in the tire.

4,112,631

ENCAPSULATED ABRASIVE GRAINS AND ARTICLES MADE THEREFROM

Robert N. Howard, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 29, 1973, Ser. No. 364,671
Int. Cl.² B24D *3/06, 3/24*
U.S. Cl. 51—295 **6 Claims**



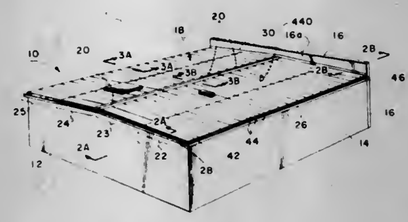
1. A coated abrasive product in which a layer of capsules is bonded to a flexible sheet backing by a cured binder, said capsules being spheroidal and containing a plurality of abrasive grains dispersed in a lubricant, the abrasive grains having a nominal diameter of from about 0.5 to 25 microns and constituting about 5–30% by volume of capsule content, the diameter of said capsules being in the range of about 10–200 microns and at least about twice the nominal diameter of said abrasive grains, the capsule walls consisting of gelatin or resinous materials formed by interfacial encapsulation.

4,112,632

PREFABRICATED WATERTIGHT STRUCTURAL SYSTEM

Harold G. Simpson, Oklahoma City, Okla., assignor to Star Manufacturing Company of Oklahoma, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 336,364, Feb. 27, 1973, and Ser. No. 624,587, Oct. 22, 1975. This application Oct. 28, 1975, Ser. No. 625,883
Int. Cl.² E04B *7/00;* E04D *13/06*
U.S. Cl. 52—11 **12 Claims**



1. The building system comprising:

a plurality of exterior water repellant walls each having interior and exterior surfaces and a substructure for a roof deck extending between the walls;

a plurality of panels arrayed on the supporting substructure to provide a continuous roof deck extending thereover having a top surface and an edge surface; and

a continuous chloro sulfonated polyethylene membrane bonded to the roof deck including an edge flashing portion extending over the edge surface of the roof deck and connected to the water repellant walls for preventing water from reaching the interior surface of the walls, the continuous chloro sulfonated polyethylene membrane including a plurallity of chloro sulfonated polyethylene mechanical strip fasteners and sealing means interconnecting a plurality of chloro sulfonated polyethylene panels, and wherein

the exterior walls include walls disposed below the edge of the roof deck which include panel means disposed along the upper edge of said walls having an upper edge inset from and disposed above the bottom edge of the edge surface of the roof deck;

the flash portion of the continuous chloro sulfonated polyethylene membrane extends downwardly around the bottom edge of the edge surfaces of the roof deck, then inwardly and upwardly over the top edge of the panel means and then down behind the panel means; and

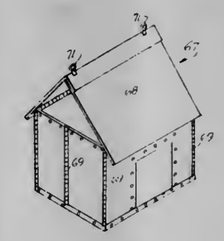
the panel means sheds water away from the interior face of the wall.

4,112,633

PROTECTIVE WORKMAN AND EQUIPMENT COVERS

Frank L. Mitchell, 4929 S. Troost, Tulsa, Okla. 74105

Division of Ser. No. 543,874, Jan. 24, 1975, Pat. No. 3,968,602. This application Mar. 24, 1976, Ser. No. 669,723
Int. Cl.² E04B *1/346*
U.S. Cl. 52—66 **1 Claim**



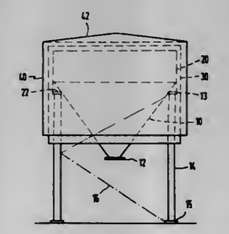
1. Equipment and personnel protection means comprising a plurality of vertical standing panels to form a rectangular enclosure, hinges at the junction of the panels, a hinge in the center of the two end panels, a pair of horizontal hinges along the top edges of the two side panels, a pair of relatively large roof panels connected to the horizontal hinges, and locking tabs along the top edge of one roof panel to project through holes in the top edge of the other roof panel whereby the roof panels may fold inwardly and the end panels may pivot outwardly to provide a dismantled substantially flat structure.

4,112,634

STORAGE BIN

Wilma Bissinger, Muhlstrasse 30, D-7129 Pfaffenhofen, Germany

Filed Feb. 25, 1977, Ser. No. 772,251
Claims priority, application Fed. Rep. of Germany, May 12, 1976, 2621009
Int. Cl.² E04B *1/346*
U.S. Cl. 52—67 **17 Claims**



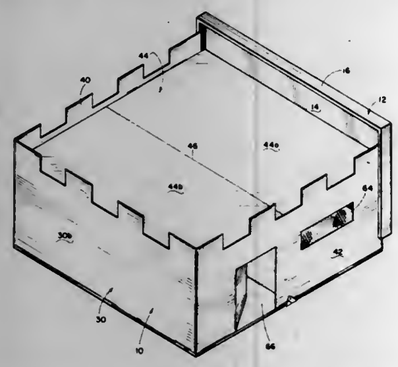
1. A storage bin such as a silo or the like comprising a plurality of sections adapted to be superimposed one on the other, said sections increasing stepwise in external dimension, in axial succession from bottom to top of said bin, and being telescop-

ingly nested together between a collapsed and an extended position, said sections being provided with an outwardly directed flange adjacent their upper edge and an inwardly directed flange adjacent their lower edge, said flanges having overlapping surfaces whereby the outwardly directed flange of a lower section engages over the inwardly directed flange of the next contiguous upper section, and means for removably securing said sections together comprising at least one pivotable latch removably mounted on the outer surface of the respective lower component spaced below the outwardly extending flange, said latch being adapted to be pivoted into engagement with the inwardly directed flange of the next adjacent section to apply a clamping force thereagainst said inwardly directed flange against the adjacent outwardly directed flange.

4,112,635
CHILD'S PLAYHOUSE TYPE COLLAPSIBLE STRUCTURE

DeMaris C. Rylander, 4521 E. 55th St., Tulsa, Okla. 75135

Continuation of Ser. No. 640,538, Dec. 15, 1975, abandoned.
This application Jun. 24, 1977, Ser. No. 809,636
Int. Cl.[2] E04B *1/344*
U.S. Cl. 52—69 8 Claims

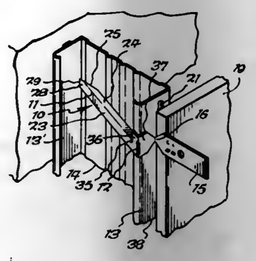


1. A collapsible playhouse type structure comprising main storage box means secured to a wall of a room and having the exposed side thereof open to the interior of the room, first plate means hingedly secured to the main storage box means and movable between a storage position within the confines of the storage box and an extended position beyond the open face in the proximity of the surface of the ground and substantially perpendicular with respect to the storage box to provide a half-floor for the playhouse type structure, second plate means hingedly secured to the first plate means along the edge thereof oppositely disposed with respect to the storage box means and movable between a folded position adjacent the first plate means and an extended position providing a second half-floor section substantially co-planar with the extended first plate means, said second plate means including a foldable section attached thereto opposite the first plate means and movable between a collapsed position and a substantially upright position to provide a sidewall for the playhouse type structure, said second plate means also including first and second flap means secured to the opposite ends of the foldable section and movable between positions adjacent the foldable section and positions substantially perpendicular with respect thereto to provide oppositely disposed sidewalls for the playhouse type structure, said flap means removably engagable with said storage box section whereby the storage box section provides a fourth sidewall for the assembled playhouse structure, and said first and second plate means being collapsible for storage within the confines of the storage box means whereby the collapsed playhouse type structure is unobstructive in the room when not in use.

4,112,636
WALLBOARD LAMINATING CLIP

Joseph C. Hays, 340 Woodbridge Ave., Buffalo, N.Y. 14214

Filed Mar. 14, 1975, Ser. No. 558,310
Int. Cl.[2] E04B *1/38*
U.S. Cl. 52—98 33 Claims



1. A laminating clip for temporarily holding adjacent planar members having first and second sides in end-to-end relationship with a seam therebetween relative to a base member with said first sides facing toward said base member comprising attachment portion means for permanent attachment to said base member, first portion means including side means for lying flat against said base member, said first portion means having first and second ends with said first end formed integrally with said attachment portion means, second portion means for extending substantially perpendicularly to said side means and for extending through said seam between said planar members, said second portion means having first and second ends with said first end of said second portion means being formed integrally with said second end of said first portion means, retaining member supporting means on said second portion means for supporting retaining member means in retaining engagement with said second sides of said planar members, and severable means connecting said first end of said second portion means to said second end of said first portion means to permit said second portion means to be severed from said first portion means after said planar members have been secured relative to said base member by permanent attaching means, said severable means being located on said clip for positioning between said base member and said second sides.

4,112,637
REMOVABLE PRESS ANCHOR WITH DESTRUCTIBLE ANCHOR BODY

Thomas Herbst, Munich, Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany

Filed Feb. 10, 1977, Ser. No. 767,316
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1976, 2606095
Int. Cl.[2] E02D *5/74*
U.S. Cl. 52—155 6 Claims

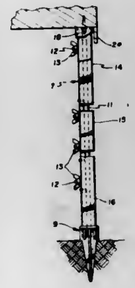


1. A removable press anchor comprising a tubular sheathing, a traction element removably carried and arranged for longitudinal movement within said tubular sheathing, and a destructible anchor body releasably connected with said traction element, said anchor body being embedded in a press body formed by pressing in hardening material, said anchor body comprising a head and a plurality of rods connected thereto being formed of glass fibers, whereby said anchor body is destructible by exerting forces extending transverse to the longitudinal axis thereof so as to be capable of absorbing large forces in the direction of its longitudinal length and only small forces in the direction transverse to its longitudinal length.

4,112,638
SKIRT MOUNTING DEVICE FOR MOBILE HOMES

Paul D. Hanson, Sr., Minneapolis, Minn., assignor to Technical Plastics Corporation, St. Paul, Minn.

Filed Mar. 17, 1977, Ser. No. 778,575
Int. Cl.[2] E02D *27/00*
U.S. Cl. 52—169.12 14 Claims



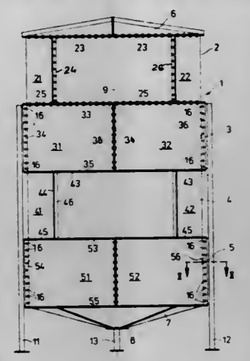
1. A longitudir.ally adjustable skirt mounting device for mobile homes and the like, comprising:
(a) an elongated rigid shank member having upper and lower end portions;
(b) a plurality of mounting members each shorter than said shank member and slidably mounted thereon for relative longitudinal movement therebetween;
(c) releasable securing means associated with said shank member and said mounting members to permit adjustment of the position of the latter along the length of said shank member and securing the same thereat;
(d) at least some of said mounting members having portions thereof made of material adapted to have skirting panels secured thereto;
(e) a sleeve member adapted to telescopingly receive the lower end portion of the lowest of said mounting members therein in close-fitting relation and to be slid upwardly therealong;
(f) a base stake fixedly carried by said sleeve member at one side thereof and extending downwardly therefrom to fix said sleeve member and said shank member to the ground when said base stake is extended thereinto;
(g) a rigid mounting socket adapted to receive the upper end of the uppermost of said mounting members therein in close-fitting relation;
(h) means for rigidly affixing said mounting socket to the upper end of said uppermost of said mounting members when the latter is so received therein; and
(i) said mounting socket being adapted to be fixedly secured to the underside of such a mobile home adjacent the periphery of the latter whereby skirting panels may be mounted upon and supported by said mounting members in desired position relative to the mobile home.

4,112,639
SHELL SILO

Adolf Zimmermann, Osterburken, Fed. Rep. of Germany, assignor to AZO-Maschinenfabrik Adolf Zimmermann, Germany

Filed Feb. 18, 1977, Ser. No. 770,018
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606582
Int. Cl.[2] E04H *7/30*
U.S. Cl. 52—174 4 Claims

1. Shell-type silo consisting of several superimposed stages, stabilizer legs attached to said stages, each stage being formed from several arcuate shells, said shells having a flange along each of the longitudinal edges of said shells substantially radially thereof and being connected by screws to the flanges of respective circumferentially adjacent shells, and a sealing means inter-posed between the flanges of said adjacent shells, characterized in that each of the stabilizer legs are provided

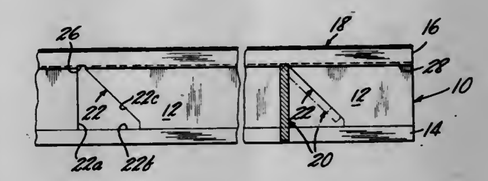


with a single longitudinal flange that extends radially with respect to the silo, the width of which corresponds approximately to the width of the flanges of the shells, and which is attached to circumferentially adjacent flanges of the shells of at least the lowermost panel by means of the screws joining the flanges of the shells together.

4,112,640
FOOT GRILLE

Howard B. Reifsnyder, Williamsport, Pa., assignor to Construction Specialties, Inc., Cranford, N.J.

Filed Dec. 5, 1977, Ser. No. 857,793
Int. Cl.[2] E04F *19/10*
U.S. Cl. 52—177 6 Claims



1. In a foot grille having a multiplicity of parallel closely-spaced elongated tread rails, each of which is generally T-shaped in cross section, is of substantially uniform cross section along its length and includes in cross section an upper flange, a lower flange and a web portion, and at least two spaced-apart key lock bars extending transversely of the rails, passing through the web portions of the rails and rigidly interconnecting the rails, the improvement wherein the web portion of each rail has longitudinally spaced-apart generally triangular cutouts, each of which has a vertical edge substantially perpendicular to the longitudinal axis of the rail and extending substantially the full height of the web portion between the flanges, a lower edge substantially co-extensive with the juncture between the web portion of the lower flange and an oblique edge having a length not less than the height of the lock bar such that the lock bar can be passed lengthwise through the cutout, and wherein each lock bar has a height greater than the height of the web portion of the rail and has notches along its lower edge receiving and engaging lower flanges of the rails, portions of the upper edge of each lock bar engaging at least two areas on the underside of the upper flange of each rail at loca-

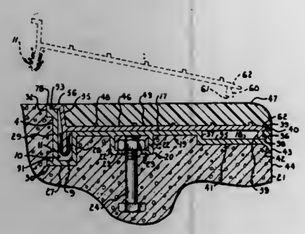
tions spaced a substantial distance from each other lengthwise of the lock bar, and portions of one face of each lock bar engaging the vertical walls of the cutouts in the rails.

4,112,641

STAIR NOSING STRUCTURE

Claude P. Balzer, Wichita, Kans., assignor to Balco, Inc., Wichita, Kans.

Filed Oct. 27, 1977, Ser. No. 846,153
Int. Cl.² E04F *11/16*
U.S. Cl. 52—179 **11 Claims**



1. A stair nosing structure for stair steps comprising:
(a) an elongated, substantially rigid base member having forward and rearward longitudinal edges, and including:
(1) an anchor portion for mounting said base member on a stair step;
(2) an interlocking portion disposed adjacent one of said forward and rearward edges;
(3) a channel portion having opposing faces and being disposed adjacent the other of said forward and rearward edges and extending therealong;
(b) an elongated tread member overlying said base member, being supported thereby, and including:
(1) an interlocking portion matingly engaging the interlocking portion of said base member and preventing relative vertical translation therebetween;
(2) a depending rib having opposed surfaces disposed between and spaced from the opposing faces of said channel portion; and
(c) a plurality of fastening clips disposed in the channel portion of said base member in spaced relation therealong; each of said clips being bent from one piece of rigidly resilient sheet metal to form a channel shaped body having a first portion thereof with tongues extending therefrom and engaging a face of the channel of the base member facing the interlocking portions of the base member and tread member and a second portion with tongues engaging the rib surface adjacent said engaged channel face, said depending rib of the tread member compressing said clips in said channel portion of the base member and increasing the engagement between the tongues and rib surface and channel face to resist removal of the rib from said channel portions, the resiliency of the compressed clips urging the mating interlocking portions of the base member and tread member together for cooperation with the engagement of said clip tongues with the rib and base member channel face in retaining the tread member on the base member.

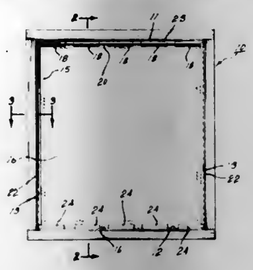
4,112,642

INSULATING INSTALLATION FOR A WINDOW FRAME

Paul D'Aragon, 21 St-Jacques St., St-Sauveur des Monts, Quebec, Canada

Filed May 2, 1977, Ser. No. 792,498
Int. Cl.² E06B *3/26*
U.S. Cl. 52—202 **7 Claims**

1. A temporary transparent insulating installation for mounting on the inside of at least one glazing of a window frame with a top surface, bottom surface, and two side surfaces, the installation comprising a clear plastic sheet having a length greater than the height of the window frame, and a width slightly less than the width of the window frame, and having a first connecting strip along a top edge, the sheet having flexible and elastic sealing means adapted to seal with two side surfaces and top surface of the window frame, said sealing means comprising a strip of flexible and elastic material attached at the side and top edges of the sheet and which, when said installation is mounted on a window frame, bends into a substantially L-shaped configuration with one leg pressing directly against the respective side surfaces and top surface of the window frame,



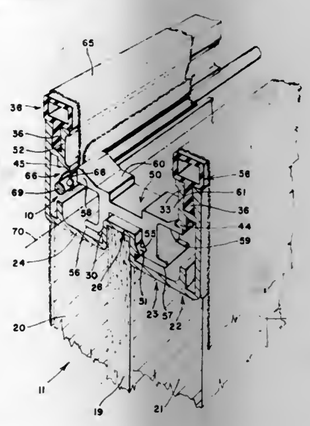
such that the flexible strips take up differences in width due to contraction or expansion of the plastic sheet, a second sheet connecting strip permanently attached to the top surface of the window frame, adapted to provide an immovable mating connection with the first connecting strip along the top edge of the plastic sheet, and at least one weight adapted to hold down the plastic sheet on the bottom surface of the window frame, forming a substantially L-shaped configuration such that rearrangement of the holding weight can be made to remove wrinkles in the plastic sheet.

4,112,643

SNUB ASSEMBLY FOR SECURING COVERING MATERIAL TO A WALL PANEL MODULE

Lloyd Burr Decker, Colon, Mich., assignor to Harter Corporation, Sturgis, Mich.

Filed May 9, 1977, Ser. No. 795,415
Int. Cl.² E04B *1/82*
U.S. Cl. 52—222 **5 Claims**



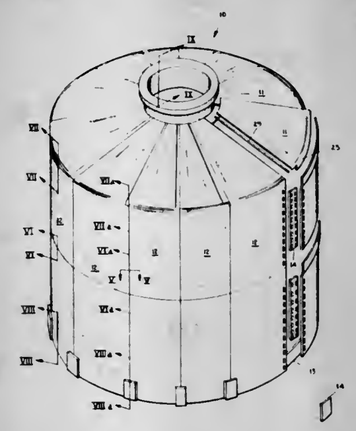
1. A snubbing assembly for releasably securing a sheet of covering material onto the face of a wall panel module having a peripheral frame, said peripheral frame being comprised of channels having a web wall and at least one side wall, the channels being disposed with the web wall facing inwardly with respect to the wall panel module and the side wall extending outwardly with respect to the wall panel module, a longitudinal flange extending parallel with the side wall and spaced laterally inwardly thereof, a snub being presented from said longitudinal flange, a medial rib being provided along the web wall of the channels forming the wall panel frame, at least one retainer clip, said retainer clip recessed matingly to receive said medial rib, means by which selectively to secure the body portion of said retainer clip to said medial rib, gate means being presented from said retainer clip, a sheet of material having a marginal edge portion being disposed on the face of the wall panel module, an anchor means secured to the marginal edge portion of said covering material, the marginal edge portion of the decorative sheet extending between said opposed snub and gate means, the anchor means being releasably secured behind said snub and gate means tautly to maintain the decorative sheet material on the face of the wall panel module.

4,112,644

FIBERGLASS TANK AND METHOD FOR MAKING THE SAME

John D. Allen, 5005 Zahm Rd., Belding, Mich. 48809

Filed Dec. 1, 1976, Ser. No. 746,465
Int. Cl.² B65D *7/02*
U.S. Cl. 52—245 **16 Claims**



1. Fiber tank components for forming a tank having a perimeter of prefabricated arcuate wall sections and means for joining said sections including:
an elongated joiner panel having pairs of transversely spaced protrusions extending outwardly from a panel body; said pairs being spaced along the length of said joiner panel; said joiner panel having a plurality of aligned fibers extending in said panel body between each pair of spaced protrusions and curving to extend into said protrusions so said plurality of fibers extends substantially the length of said protrusions thus having generally a U-shape and adapted to couple a force applied to one protrusion in a pair to the other protrusion in the pair; and
each of said arcuate wall sections having a plurality of openings spaced from an edge of said section to be coupled to the openings of another such section; said first and second openings shaped and spaced to receive a pair of protrusions of said joiner panel.

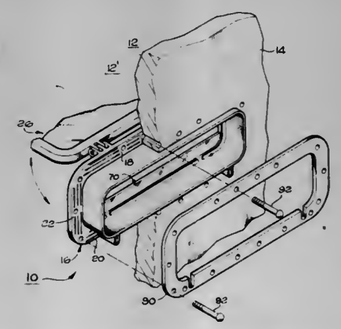
4,112,645

PORTHOLE ARRANGEMENT

Frederick Dale Greenfield, 25028 S. Vermont, Harbor City, Calif. 90710

Filed Mar. 16, 1977, Ser. No. 778,095
Int. Cl.² E06B *1/14*
U.S. Cl. 52—304 **16 Claims**

1. In a porthole arrangement for mounting on the wall of a vehicle the improvement comprising, in combination:
an interior frame means, having top, bottom and opposed side walls;
a fitting means having top, bottom and opposed side walls coupled to said interior frame means and extending through the wall of the vehicle from the interior to regions exterior thereof and each of said interior frame means and said fitting means having first walls defining a aligned aperture therethrough;
screen bracket means comprising an upstanding rim means coupled to said first walls of said fitting means and extending therearound and into said aperture therein a first preselected distance and spaced from said interior frame means a second preselected distance;
a transparent rain shield means coupled to said interior frame means along said bottom wall thereof and projecting a third preselected distance into said aperture therein, and



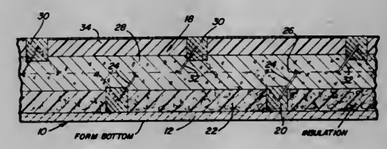
said third preselected distance greater than said first preselected distance;
said screen bracket means having drain aperture walls therethrough defining water drain means along said bottom wall of said fitting means and providing communication between said bottom wall of said fitting means and said bottom wall of said interior frame means;
U-shaped channel means coupled to said bottom wall of said fitting and extending therebelow and having walls defining a U-shaped channel;
first water passage means extending through said bottom wall of said fitting means and communicating with said U-shaped channel; and
second water passage means extending through said bottom wall of said interior frame means and communicating with said U-shaped channel.

4,112,646

PRE-CAST INSULATED WALL STRUCTURE

John J. Clelland, 449 Lombard St., Rochester, N.Y. 14606

Filed Feb. 14, 1977, Ser. No. 768,712
Int. Cl.² E04B *2/20, 2/48*
U.S. Cl. 52—372 **3 Claims**



1. A panel for use as a building unit and including large, planar, spaced side faces interconnected by parallel end edges and parallel side edges, said panel comprising a continuous core of reinforced, monolithic cementitious material having side faces spaced inwardly from the side faces of the panel, a plurality of stud members partially embedded in each side surface of the cementitious core, said stud members being parallel to each other, laterally spaced from each other, ex-

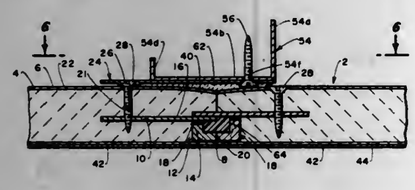
tending from side edge to side edge of the panel, having the outer surface thereof substantially flush with the side faces of the panel, and having a major portion of their thickness projecting from the core, means on each stud member embedded in the core to lock the stud members thereto, insulation panels disposed against each side face of the panel and between adjacent stud members, said insulation panels completely filling the space between adjacent stud members with the outer side faces thereof substantially flush with the side faces of the panel and the outer surfaces of the stud members, said stud members and insulation panels being assembled with core when the cementitious material is fluent for securing the stud members to the core with the insulation panels slowing moisture flow from the cementitious material while it hardens thereby controlling the curing time and strength of the core, said stud members being consturcted of material penetrable by fasteners to facilitate attachment of a finish panel to the planar side faces of the panel.

4,112,647

MOVABLE PARTITION WALL SYSTEM

Lloyd J. Scheid, 4404 Grimes Pl., Encino, Calif. 91316

Filed May 2, 1977, Ser. No. 792,873
Int. Cl.² E04B *2/30*
U.S. Cl. 52—481 **20 Claims**



1. Movable partition wall construction comprising the combination: spaced horizontal ceiling and floor support members having spaced intermediate vertical support members forming infrastructure adapted to receive first and second panels forming spaced first and second exterior wall surfaces, respectively, said first panel comprising a gypsum board member having a first and second lateral edges adapted to coact with like first panels in abutting relationship to form over- and underlapping joint construction, and having vertically aligned, externally concealed securement means spaced from said first and second lateral edges for dismountable securement to one of said vertical members adjacent thereto; said second panel member comprising a gypsum board member similar in construction to said first panel and additionally including spaced spring clip means adapted to cooperatively engage an adjacently positioned vertical member in retained and releaseable fashion, said lateral edges of said first and second panels having a recessed notched portion extending the length thereof, said recessed notched portion having a communicating slot substantially coextensive therewith.

4,112,648

WALL STRUCTURE OF HOT FLUID CHAMBER

Hiroshige Suzuki, Tokyo; Eizi Horie, Aichi, and Hideo Nagashima, Tokyo, all of Japan, assignors to The President of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 31, 1977, Ser. No. 846,939
Claims priority, application Japan, Nov. 8, 1976, 51/148976[U]
Int. Cl.² E04G *11/04*; B65D *25/18*
U.S. Cl. 52—508 **5 Claims**

1. A wall structure of a hot fluid chamber, comprising
an inner metal wall directly contacting a hot fluid;
support pins outwardly projecting from the outer surface of the inner metal wall and equidistantly arranged in both longitudinal and lateral directions of the inner metal wall;
coupling members fixed to the inner metal wall by the support pins, each coupling member made of a heat-insulating refractory material and having a truncated quadrangular pyramid shape;
rod-like heat-insulating refractory blocks, each mounted between two adjacent coupling members, having an oblong upper face, an oblong lower face, two trapezoidal side faces conforming with and making sliding motions along the trapezoidal side faces of the coupling member, two reversed trapezoidal side faces, and a cushioning layer formed of an elastic refractory material and providing the lower portion of the rod-like block;

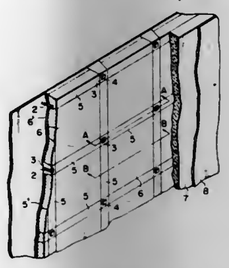


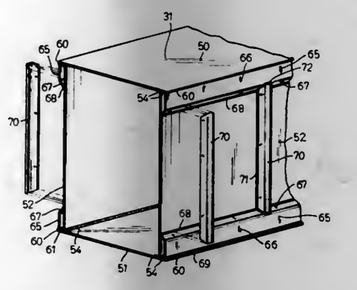
plate-like heat-insulating refractory blocks, each having a reversed truncated quadrangular pyramid shape, mounted in a concavity formed by four rod-like heat-insulating refractory blocks in a manner to make sliding motions along the reversed trapezoidal side faces of the rod-like blocks, and having a cushioning layer made of an elastic refractory material in the underside portion of the plate-like block;
a heat-insulating layer formed of an elastic refractory material and uniformly covering the outer faces of the coupling members and of the heat-insulating refractory blocks; and
an outer metal wall covering the heat-insulating layer.

4,112,649

BOOM SECTION FOR TELESCOPIC CRANE BOOM

Robert A. Fritsch; Narahari Gattu, and Lembit Vaerk, all of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Aug. 26, 1977, Ser. No. 827,871
Int. Cl.² E04C *3/04*; E04H *12/34*
U.S. Cl. 52—731 **10 Claims**



7. In a hollow rectangular boom section for a telescopic crane boom:
a top plate having lateral edges;
a bottom plate having lateral edges;
a pair of spaced apart side plates disposed between and welded to said top plate and said bottom plate at locations inwardly of the lateral edges of said top plate and said bottom plate whereby said top plate and said bottom plates have outwardly projecting edge portions, each side plate being at right angles to said top plate and said bottom plate;

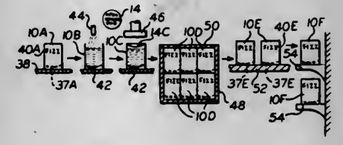
a plurality of longitudinal corner stiffeners, one for each corner of said boom section, each longitudinal corner stiffener having an angular cross-section and including a flat side portion and an inwardly extending portion, each longitudinal corner stiffener being welded to a side plate and to an outwardly projecting edge portion of one of said top plates or bottom plates inwardly of a lateral edge thereof so that said flat side portion is spaced from and parallel to an associated side plate;
and a plurality of vertical side stiffeners, each having a U-shaped cross-section, said vertical side stiffeners disposed in spaced apart relationship along said side plates, each vertical side stiffener being welded to a side plate and to the longitudinal corner stiffeners for the side plate.

4,112,650

METHOD OF PREVENTING CONTAMINATION OF BEVERAGE CONTAINERS

Hubert J. Tucker, 6600 Marguerite La., Little Rock, Ark. 72201

Continuation of Ser. No. 639,447, Dec. 10, 1975, abandoned.
This application May 27, 1977, Ser. No. 801,340
Int. Cl.² B65B *3/00, 55/00, 61/18*
U.S. Cl. 53—412 **8 Claims**



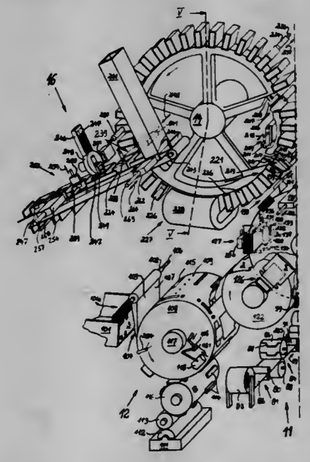
1. The method of preventing contamination of the discharge end of a beverage container which has a tear out portion in one end of the container and means for tearing the tear out portion of the container to leave a discharge opening in the end of the container at a location where the surfaces of the container, adjacent to said opening, necessarily contact with the lips of a person drinking the beverage directly from said opening, said method comprising:
(a) locating the tearout portion in the bottom wall of the container and recessing the bottom of the container so that it forms a compartment between the container bottom and a plane determined by a bottom edge of a side wall of the container with the recess high enough above said plane so that the tear out portion and areas of the container bottom around the tear out portion are spaced from any flat surface on which the container is placed with the bottom of the container confronting said surface,
(b) filling the container through the top thereof, and then closing and sealing the top of the container,
(c) placing lettering on the side of the container with at least the predominant part of the lettering oriented so that the lettering is right side up only when the container is oriented with its bottom end lowermost,
(d) storing and merchandising the container with the compartment containing the tear out portion at the bottom and closed by a surface on which the container rests and with the compartment containing the tear out portion and said means for tearing it protected from dust, dirt and insect sprays by the part of the container covering the compartment.
(e) displaying the conainer during merchanising with information displayed that said container opens at the bottom, and
(f) continuing the protection of the tear out portion and its adjacent area from contamination after sale of each individual container by placing and supporting said container, even though separated from a merchandizing pack, on an underlying surface to thereby close said bottom compartment during storage by the purchaser while awaiting opening and discharge of the container through said discharge opening.

4,112,651

METHOD AND MACHINE FOR THE PRODUCTION OF HINGED-LID PACKS FOR GROUPS OF CIGARETTES OR THE LIKE

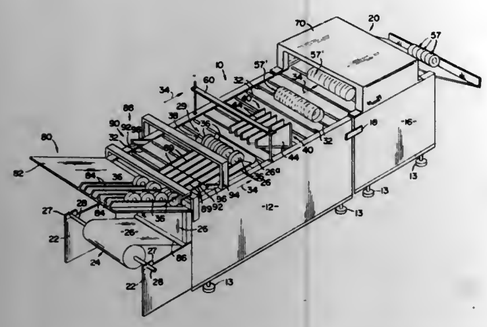
Dietrich Bardenhagen, Hamburg, and Bernhard Schubert, Neubörnsen, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Fed. Rep. of Germany

Division of Ser. No. 455,926, Mar. 28, 1974, Pat. No. 4,004,395, which is a division of Ser. No. 331,028, Feb. 9, 1973, Pat. No. 3,802,325. This application Nov. 10, 1976, Ser. No. 740,368
The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.
Int. Cl.² B65B *41/18, 57/00*
U.S. Cl. 53—449 **12 Claims**



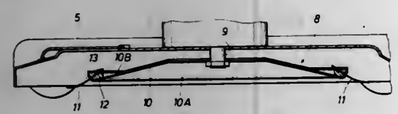
1. A method of making packs for groups of cigarettes or analogous rod-shaped articles wherein each pack consists of a plurality of components including at least one inner envelope, an outer envelope provided with a pivotable lid and an insert disposed between said inner and outer envelopes and having edge portions for performing at least one of the functions of yieldably retaining the lid in closed position and guiding the lid during pivoting between open and closed positions, comprising the steps of establishing a source of groups of articles and discrete sources of first, second and third blanks for conversion into inner envelopes, corresponding inserts and corresponding outer envelopes of packs; transporting successive groups, first second and third blanks along first, second, third and fourth paths toward discrete first, second, third and fourth portions of a fifth path; transporting said groups and said blanks in predetermined direction along said fifth path, said third portion of said fifth path being located ahead of said fourth portion but behind said second portion of said fifth path, as considered in said direction; converting sets of blanks each of which includes a first, a corresponding second and a corresponding third blank into packs each of which confines the corresponding one of said groups not later than in said fifth path; monitoring at least one of said third and fourth paths; producing signals in response to detection of at least one of the defects including the absence and improper transport of blanks along said one path; interrupting the transport of corresponding blanks along said second path and the other of said third and fourth paths in response to said signals; interrupting the transport of corresponding groups along said first path in response to said signals; and completing the conversion of each of said blanks into a pack irrespective of the interruption of transport of blanks in response to said signals.

4,112,652
HOT WIRE PACKAGING MACHINE
William A. Bodolay, 5621 Live Oak Rd., Lakeland, Fla. 33803
Filed Sep. 9, 1976, Ser. No. 721,833
Int. Cl.[2] B65B *11/04*
U.S. Cl. 53—211 9 Claims



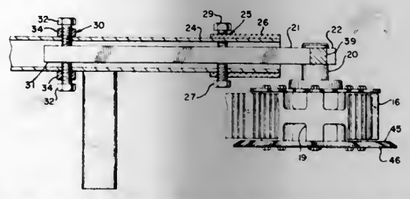
1. A packaging machine of the type primarily designed to utilize heat shrinkable material in wrapping a plurality of objects having a predetermined configuration, said packaging machine comprising: a housing, transport means comprising a conveyor assembly movably mounted on said housing and at least partially defining a path of travel of material and objects being packaged; said conveyor assembly including wrapper means structured to wrap a plurality of separate objects in a single wrapper and comprising a plurality of roller elements rotatably attached to said conveyor assembly and disposed for constant rotary motion along at least a portion of said path of travel, a material severing assembly comprising a plurality of heated cutting elements disposed in spaced apart relation to one another, said plurality of heated cutting elements correspondingly positioned relative to said constant rotating roller elements and in interruptive disposition to the material and the objects being packaged, wherein each of said heated cutting elements comprise a substantially elongated configuration and extend along and in spaced above relation to said predetermined portion of said path of travel and further angularly oriented in a declining relation to said path of travel where constant rotary motion of said roller elements occurs, whereby the objects being packaged are maintained in rotary motion during severing of the material by said heated cutting elements into a plurality of individual packages.

4,112,653
LAWN MOWER AND METHOD
George C. Ballas, and Albert W. Mitchell, both of Houston, Tex., assignors to Weed Eater, Inc., Houston, Tex.
Filed Apr. 7, 1976, Ser. No. 674,323
Int. Cl.[2] A01D *55/18*
U.S. Cl. 56—12.7 34 Claims



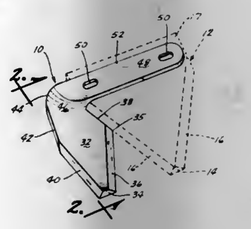
1. In a rotary-type lawn mower having a wheeled chassis adapted to travel over a greensward and carrying a motor having a rotatable shaft, the improvement comprising:
- a head member having at least one peripheral aperture and mounted on said shaft for rotation in a cutting path aligned substantially parallel with said greensward and intersecting vegetation thereon,
- at least one one non-metallic cord-like cutting member disposed partially in said head member and having a finger-like free traveling end portion extending from said aperture outwardly of said head member into said cutting path, and
- support means having an elongate passageway connecting with and extending with said head member from said aperture for restraining an adjacent portion of said cutting member along a length sufficient to support said free traveling end portion of said cutting member against deflection from said cutting path by said vegetation.

4,112,654
ROTARY KNIFE ADJUSTER ASSEMBLY
Donald A. Picha, Plainfield, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Dec. 23, 1976, Ser. No. 753,751
Int. Cl.[2] A01D *45/02, 55/32*
U.S. Cl. 56—98 11 Claims



1. In a row crop harvesting machine of the type including a pair of crop dividers defining a crop passageway having an opening forwardly of said machine, a rotary crop cutting knife mounted to the frame of one of said dividers adjacent the forward end of said passageway, said knife having a rotational axis and a cutting plane perpendicular thereto, drive means for said rotary knife, and cooperative cutting means associated with said knife such that the crop stalks are cut therebetween, the improvement wherein said knife is mounted to said divider frame by mounting means providing a tilting adjustment of said cutting plane relative to said cooperative means about an axis generally transverse of the said divider, said mounting means comprising a bar having a portion extending longitudinally within said divider frame, said rotary knife being rotatably mounted to and dependent from the portion of said bar extending externally of said divider frame and a plurality of vertically adjustable clamping means for clamping the bar within the divider frame, said clamping means providing independent vertical adjustments of the rearward portion of said bar and of the forward portion of said bar within said divider frame.

4,112,655
END SECTION FOR A RECIPROCATING MOWER
Hubert H. Henry, Rte. 2, Bedford, Iowa 50833
Filed Jan. 14, 1977, Ser. No. 759,337
Int. Cl.[2] A01D *55/02*
U.S. Cl. 56—301 4 Claims



1. An end section for a reciprocating type mower, having a mower bar, a backing bar adapted to reciprocate within a channel formed in the mower bar, and a plurality of standard sickle sections spaced along the backing bar and attached thereto, said end section comprising:

a first portion disposed outwardly of and coplanar with the next adjacent standard sickle section and extending forward of and normal to the mower bar, said first portion including:
- a single point extending forward of the mower bar;
- an inner cutting edge extending inwardly and rearwardly of said point to the outboard cutting edge of the next adjacent standard sickle section;
- a blunt inner edge extending outwardly and rearwardly from the rearwardmost portion of said inner cutting edge along the outboard cutting edge of the next adjacent standard sickle section;
- an outer cutting edge extending outwardly and rearwardly of said point, said inner and outer cutting edges being disposed at opposite and equal angles from a line extending through said point and normal to the mower bar;
- a blunt outer edge extending rearwardly from the rearwardmost portion of said outer cutting edge and disposed normal to the mower bar; and

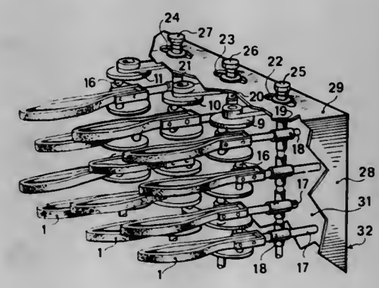
a second portion extending inwardly of said first portion and formed above the plane of said first portion such that the lower surface of said second portion is coplanar with and contacts the upper surface of the next adjacent standard sickle section, said second portion having holes formed therein registerable with holes formed in the underlying standard sickle section, for providing attachment of said end section to the backing bar via the next adjacent standard sickle section.

4,112,656
LAWN MOWING BRUSH CUTTER
Jerry Ranko, 504 Reiss St., Meraux, La. 70043, and Frederick E. Ranko, 2709 Barton Dr., Meraux, La. 70075
Continuation-in-part of Ser. No. 645,777, Dec. 31, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,596
Int. Cl.[2] A01D *55/18*
U.S. Cl. 56—320.1 3 Claims



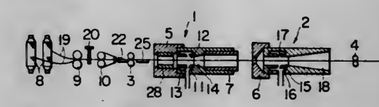
1. A lawn mowing brush cutter comprising in combination:
- a. a cart having a base with a forward center recess, a pair of small front wheels, a pair of large weight carrying rear wheels, and a rear handle for propelling and guiding said cart by said large wheels;
- b. a power supply mounted on said cart between said pair of weight carrying rear wheels and forwardly of said rear handle;
- c. dual purpose cutter means horizontally mountable on said cart and in said base and between said front wheels and said power supply for rotation by the power supply to cut swathes of brush and grass defined by the forward center recess in said base;
- d. a single purpose mowing means mountable on said dual purpose cutting means in radial extension thereof and in combination therewith for mowing a wider swathe of grass than said dual purpose cutter means; and
- e. base adapter means including (1) a removable cover means for covering said forward center recess to make said base continuous and permitting said dual purpose cutter means and said single purpose cutter means to cut grass and (2) a removable recess member positionable with said forward center recess and cooperable with said dual purpose cutter means to establish and mowing swathes.

4,112,657
BEATER FOR A GRAPE HARVESTING MACHINE, AS WELL AS GRAPE HARVESTING MACHINES PROVIDED WITH SUCH A BEATER
Bernard Henri Jean Bénac; Jacques Marie Lucien Bénac, and Henri Bénac, all of Berdoues par Mirande (Gers), France
Filed Mar. 4, 1976, Ser. No. 664,003
Claims priority, application France, Mar. 7, 1975, 75 07302; Feb. 24, 1976, 76 05100
Int. Cl.[2] A01D *46/00*
U.S. Cl. 56—330 10 Claims



1. A beater apparatus for harvesting grapes comprising an elongated body, said elongated body formed of a vane of resilient material having at least one longitudinal opening, and means for driving said elongated body in a substantially elliptical movement, said opening of the vane is made by several perforations connected by grooves having a width smaller than the perforations.

4,112,658
SPINNING APPARATUS FOR SPUN YARN
Toshihumi Morihashi, Kyoto, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed May 3, 1976, Ser. No. 682,272
Claims priority, application Japan, May 6, 1975, 50-55003
Int. Cl.[2] D01H *5/28*
U.S. Cl. 57—51 4 Claims



1. A spun yarn spinning apparatus having a pair of front rollers and a pair of delivery rollers, which comprises first yarn twisting means disposed between the front rollers and delivery rollers and including a cylindrical yarn passage therethrough and a plurality of air injection nozzles opening into the cylindrical yarn passage tangentially of the passage at a predetermined angle with respect to the central axis of the passage and toward the delivery rollers, an untwisting device disposed adjacent to the nozzles, and second yarn twisting means disposed between the front rollers and delivery rollers including a second cylindrical yarn passage therethrough and a plurality of air injection nozzles opening into the second cylindrical yarn passage tangentially of the passage at a predetermined angle with respect to the central axis of the passage and toward the delivery rollers, wherein said air injection nozzles of the second yarn twisting means are so oriented that the direction of the helical fluid jet stream caused thereby is in counter

direction with respect to that caused by the air injection nozzles of the first yarn twisting means.

4,112,659

OPEN END SPINNING UNIT WITH A BRAKING DEVICE

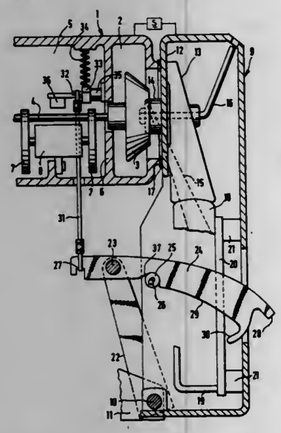
Fritz Stahlecker, Josef-Neidhart-Str. 18, 7341 Bad Ueberkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Suessen, both of Fed. Rep. of Germany

Filed Nov. 30, 1976, Ser. No. 746,068

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2555059

Int. Cl.² D01H *1/241, 1/12*

U.S. Cl. 57—58.89 12 Claims



1. Spinning machine apparatus comprising:
a spinning rotor,
a vacuum housing for said spinning rotor,
a movable housing section which forms a lid for said vacuum housing,
a first detent means on said movable housing section,
braking means for applying braking forces to the spinning rotor,
and a brake lever for controlling operation of said braking means with said braking means being in a braking position when said brake lever is in a first brake operating position and with said braking means being in a non-braking position when said brake lever is in a second brake non-operating position,
said brake lever including a second detent means and a guide surface extending from immediately adjacent said second detent means, said second detent means being configured to lockingly engage said first detent means when said housing section is in a closed position and said brake lever is in its second brake non-operating position, said guide surface being configured to engage said first detent means to maintain said brake lever in its first brake operating position whenever said housing section is moved away from its closed position such that continuous braking force is applied to said rotor for all opened positions of the housing section,
whereby said brake lever serves both as a brake control lever and a latch for said housing section, while also assuming automatic actuation of said braking means when said housing section is open irrespective of the position of said housing section.

4,112,660

APPARATUS FOR LAYING-UP TOGETHER A PLURALITY OF FRAGILE FILAMENTS

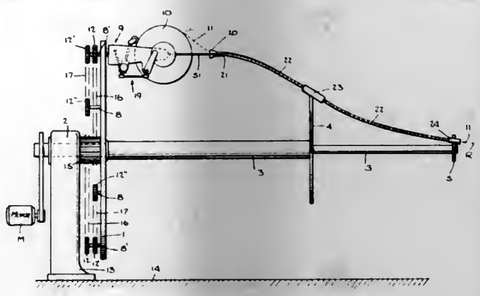
Antonio Ferrentino, Monza, Milan, and Antonio Brovedan, Milan, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Aug. 30, 1977, Ser. No. 829,003

Claims priority, application Italy, Sep. 3, 1976, 26807 A/76

Int. Cl.² D07B *3/06*

U.S. Cl. 57—59 19 Claims



1. Apparatus for laying up a plurality of fine filaments comprising:
a platform for rotation around a first axis;
a plurality of bobbins, one for each of said filaments, each bobbin having a second axis about which it rotates when a filament is fed therefrom;
a plurality of bobbin support means, one for each of said bobbins, mounted on said platform and, rotatably mounting said bobbins around and spaced from said first-mentioned axis, said support means mounting said bobbins for rotation both around a third axis parallel to said first axis and perpendicular to the bobbin second axis and around said second axis;
driving means connected to said bobbin support means for rotating said bobbins around said third axis with rotation of said platform around said first axis but in a direction opposite to the direction of rotation of said platform;
braking means connected to said bobbins for braking them as the filaments are unwound therefrom and maintaining a constant tension on the filaments;
and filament support means from said bobbins on the side thereof opposite from said platform, said filament support means comprising a plurality guide tubes, one for each filament, each guide tube extending from adjacent a bobbin to a laying-up point spaced from said platform, means securing one end of each tube to a bobbin support means and tube supporting means rotatably supporting each guide tube.

4,112,661

OPEN-END SPINNING MACHINE AND A METHOD OF STOPPING THE SAME

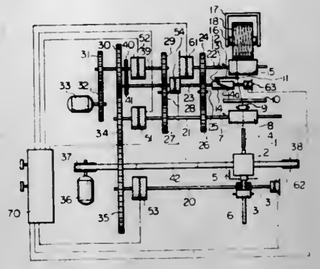
Yoshihisa Suzuki, Nagoya; Katuaki Sugiura, Okazaki; Osamu Suzuki, Obu, and Ichiro Tashiro, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan

Filed Apr. 15, 1977, Ser. No. 787,760

Int. Cl.² D01H *1/12, 13/16, 15/00*

U.S. Cl. 57—34 R 8 Claims

3. An open-end spinning machine comprising:
feed rollers for supplying fibers to a combing roller so as to comb the fibers;
a spinning rotor for collecting said combed fibers into a yarn and for twisting said yarn;
a pair of draw off roller means, for withdrawing said yarn from said spinning rotor, having a first means for engaging with and disengaging from a power source thereof;
a traverse guide for traversing said withdrawn yarn along a bobbin supported by cradle means, said traverse guide being connected to a second means for engaging with and disengaging from a power source thereof;
a winding drum, for frictionally driving said bobbin to wind said yarn around said bobbin and form a cheese, connected to said first means, and;



controlling means, for controlling the above-mentioned two means according to a predetermined program, by which said traverse guide is stopped before both said draw off roller means and said winding drum are stopped.

4,112,662

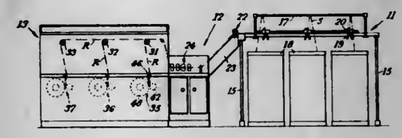
WINDING MACHINES

James Lappage, Christchurch, New Zealand; Neil Doggett, Middleton, and Stephen William Yates, Bolton, both of England, assignors to Platt Saco Lowell Limited, Rossendale, England

Continuation-in-part of Ser. No. 615,189, Sep. 19, 1975, abandoned. This application Apr. 26, 1977, Ser. No. 790,877

Int. Cl.² D01H *5/28*

U.S. Cl. 57—34 AT 10 Claims



1. Apparatus for winding an elongate fibrous material comprising: package tube mounting means to support first and second package tubes in winding positions in transversely spaced parallel relationship; a material delivery arm for delivering material first to one of the package tubes to form a first package and then to the other of the package tubes to form a second package; drive means for rotating the package tubes for winding on material; said delivery arm being arranged during the building of a package to contact the package at a winding-on point which lies in a plane containing the axes of rotation of the two package tubes and to deliver material at the winding-on point direct to said package under a winding tension localised in the region of the winding-on point by the delivery arm; first traversing means for causing relative traversing movement between each package tube and the delivery arm in the direction of the axis of rotation of the tube for building a parallel-build package on the tube means for supporting the delivery arm, and second traversing means operative during the building of each package to monitor the increasing diameter of the package and to cause in a direction perpendicular to the axis of rotation of the tubes a relative displacement between the supporting means and the package tube to accommodate the increasing diameter of the package being built on the tube and to maintain the winding-on point in said plane.

4,112,663

METHOD OF AND APPARATUS FOR COOLING SPINNING UNITS OF OPEN-END SPINNING MACHINES

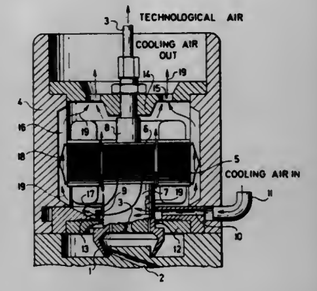
Milan Chrtek, Ceska Trebova; Josef Gäbler; Frantisek Tüma, both of Usti nad Orlici; Karel Kašpárek, Zachlumi, and Ján Blaško, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Jun. 16, 1977, Ser. No. 807,003

Claims priority, application Czechoslovakia, Jul. 6, 1976, 4456/76

Int. Cl.² D01H *1/12*

U.S. Cl. 57—58.89 5 Claims



2. In an open-end spinning apparatus having a spinning unit with a spinning rotor and a housing therefore, a high-speed electric motor disposed in the housing, the rotor of the electric motor being directly coupled with the spinning rotor, there being a technological air flow into and through the spinning rotor of the unit, the improvement which comprises a hub connecting the rotor of the motor to the spinning rotor, means sealing the hub to the housing to isolate the motor from the interior of the spinning rotor, a supply of cooling air, means to supply said cooling air into the space within the housing downstream of said sealing means, means to conduct the thus fed cooling air to the gap between the rotor and stator of the motor, means to conduct the air issuing from such gap outwardly of the housing, a plurality of longitudinally extending by-pass passages in the housing directly communicating with the radially outer surface of the stator of the motor, and means connecting the space within the housing between the rotor of the motor and the spinning rotor which receives cooling air with the adjacent ends of the longitudinally extending by-pass passages, said by-pass passages communicating at their other ends with air-discharging openings through the wall of the housing.

4,112,664

FRICTION FALSE-TWIST DEVICE

Kurt Muhlegg, Jona, Switzerland, assignor to Heberlein Maschinenfabrik AG, Wattwil, Switzerland

Filed Oct. 3, 1977, Ser. No. 839,017

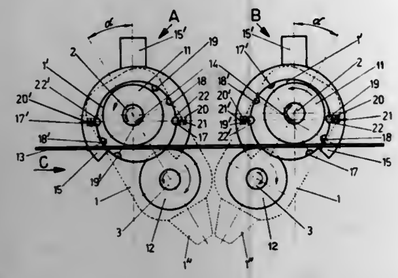
Claims priority, application Switzerland, Oct. 13, 1976, 12925/76

Int. Cl.² D01H *7/92;* D02G *1/04*

U.S. Cl. 57—77.4 6 Claims

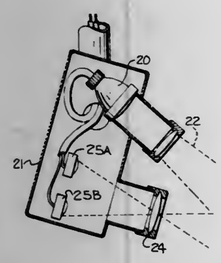
1. Friction false-twist apparatus comprising a bearing unit formed therein with two journal bearing means respectively for two parallel rotary shafts, a first rotary shaft mounted in one said bearing means, a first friction element fixed to said first shaft, said first friction element comprising a first portion presenting a first convex surface of revolution about the axis of said first shaft, with said axis intersecting the convex end portion of said convex surface, and a second portion presenting a second convex surface of revolution about said axis of said first shaft and inverted relatively to said first portion to present a convex end portion of its convex surface facing oppositely to said first-mentioned convex end portion, a second rotary shaft

mounted in the other said bearing means, a second friction element in the form of a circular disc-like friction member fixed co-axially with the axis of said second shaft, said first and second portions being displaced axially from one another with respect to said axis of said first shaft and said disc-like member being formed and positioned so that its rim projects between said first and second portions, first and second driving rollers mounted coaxially respectively on said shafts, releaseable means for locking each said roller to its respective shaft whereby each said roller may be locked to or rendered loose



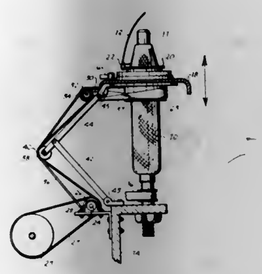
on its shaft, a common tangential driving belt arranged to travel in a straight line between said rollers, a support for said bearing unit, pivotal bearing means interposed between said bearing unit and said support whereby said bearing unit can be swivelled about a fixed axis displaced from and parallel to said first-mentioned axis towards an adjacent surface of said driving belt, and means for fixing said bearing unit in at least two positions about said fixed axis, the first of said positions being such that said rollers are free from said driving belt and the second of said positions being such that said rollers respectively engage opposite faces of said belt.

4,112,665
PLURAL SENSOR ENDS DOWN DETECTING APPARATUS
Lyman L. Werst, Acton, Mass., assignor to Parks-Cramer Company, Fitchburg, Mass.
Filed Jun. 23, 1977, Ser. No. 809,428
Int. Cl.² D01H *13/16*
U.S. Cl. 57—81 **6 Claims**



1. In the combination of an elongate textile yarn forming machine having a plurality of yarn forming stations spaced therealong, and a traveling apparatus movable along the machine and having photoelectric detector means for sensing and responding to yarns formed at the stations, an improvement in said detector means which minimizes interference with detector means operation otherwise possibly resulting from ambient lighting or machine reflection, the improvement comprising a common optical system means for focusing light reflecting from yarns, a plurality of photoelectric sensor means mounted in vertical array for receiving light passing through said optical system means from vertically spaced locations and for signalling electrically fluctuations in light received, and electrical gate means operatively connected with said sensor means for distinguishing between (a) signalling from all of said sensor means within a predetermined time period and indicative of the presence of a yarn at said locations, and (b) signalling from less than all of said sensor means and indicative of a fluctuation in ambient lighting or machine reflection.

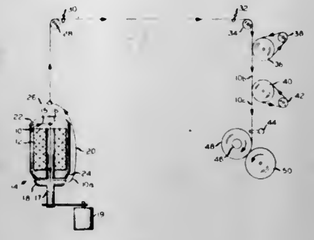
4,112,666
COMPENSATING DRIVE FOR REVOLVING RINGS
Manuel Costales, and Moustafa I. Hakki, both of P.O. Box 884, Belmont, N.C. 28012
Filed Nov. 25, 1977, Ser. No. 854,597
Int. Cl.² D01H *7/58, 1/20*
U.S. Cl. 57—105 **7 Claims**



1. The improved method of rotating rings in a machine having a frame including
a. a spindle rail,
b. bobbins on the spindle rail,
c. bobbins drive means on the frame for rotating the bobbins at high speed,
d. a ring rail around each bobbin mounted on the frame to move up and down,
e. a ring on the ring rail around each bobbin,
f. said ring mounted for rotation on the ring rail, and
g. a traveler on each ring for feeding yarn to each bobbin; comprising the steps of:
h. extending a belt from a drive shaft and pulley on the spindle rail around two idler pulleys mounted on an idler shaft to a shell on the ring rail and a belt from the shell to the ring,
j. moving the idler pulleys responsive to the movement of the ring rail so that the total distance from the drive shaft to the idler shaft and from the idler shaft to the shell is always the same and the belts are always taut.

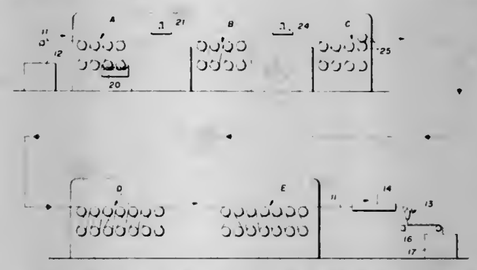
2. In a machine having a frame including
a. a spindle rail,
b. bobbins on the spindle rail,
c. bobbin drive means on the frame for rotating the bobbins at high speed,
d. a ring rail around each bobbin mounted on the frame to move up and down,
e. a ring on the ring rail around each bobbin,
f. the ring mounted for rotation on the ring rail, and
g. a traveler on each ring for feeding yarn to each bobbin; the improved structure for rotating each ring comprising;
h. a drive pulley on the spindle rail,
j. at least two idler pulleys for each drive pulley,
k. a shell journalled to the ring rail,
m. a belt trained around the drive pulley, idler pulleys and shell,
n. a ring drive belt from the shell to the rings, and
o. compensating means on the frame for moving the idler pulleys responsive to movement of the ring rail so that the total distance from the drive pulley to the idler pulleys and from the idler pulleys to the shell is always the same and the belt is always taut, and
p. said idler pulleys being mounted on the compensating means.

4,112,667
APPARATUS AND PROCESS SUITABLE FOR TWIST-DRAWING A YARN
Charles S. Hatcher, Greenville, S.C., and Kenneth E. Smith, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 22, 1977, Ser. No. 770,551
Int. Cl.² D01H *13/04;* D02G *3/00*
U.S. Cl. 57—157 S **12 Claims**



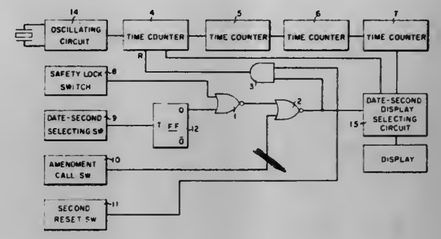
1. A method comprising:
passing an essentially as spun twisted yarn from a twisting zone to a guiding zone;
guiding the yarn from the twisting zone to a drawing zone, said guiding zone having at least one guiding member, each member having a cylindrical roller guide having an axis which is adjustable wherein the axis is adjusted so that the yarn rides on the surface of the roll in a relatively fixed position and substantial twist is not trapped in the yarn ahead of the guiding zone;
drawing the twisted yarn to produce a twisted and drawn yarn; and
winding the thus twisted and drawn yarn.

4,112,668
METHOD FOR TREATING POLYESTER FILAMENTS
Herbert A. Spiller, Pine Bluff, Ark., assignor to Monsanto Company, St. Louis, Mo., Decatur, Ala.
Continuation of Ser. No. 729,566, Oct. 4, 1976, abandoned. This application Jun. 17, 1977, Ser. No. 807,474
Int. Cl.² D02J *1/22;* D01G *1/06*
U.S. Cl. 57—157 S **4 Claims**



1. The method for treating polyester filaments to cause said filaments to have sufficiently low elongation and shrinkage and high tenacity and modulus for use in sewing thread, cord, twine and in cordage products, comprising
a. heating a tow of polyester filaments to about 70° – 80° C,
b. wetting the tow amd stretching the wet tow about 2.5 to 6X,
c. heating the tow to about 90° – 100° C,
d. stretching the tow 1.1 to 2X,
e. drying the tow at a temperature of about 130° – 140° C,
f. stretching the dried tow 1.1 to 1.2X, said stretching taking place within a sufficiently short time interval following said drying that said stretching can be accomplished without filament breakage, and
g. heat setting the tow at a temperature of 170° to 200° C for a period of at least 10 seconds.

4,112,669
DIGITAL ELECTRONIC TIMEPIECE
Noboru Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan
Filed Oct. 13, 1976, Ser. No. 732,028
Claims priority, application Japan, Oct. 13, 1975, 50/123009
Int. Cl.² G04B *19/24*
U.S. Cl. 58—4 A **1 Claim**

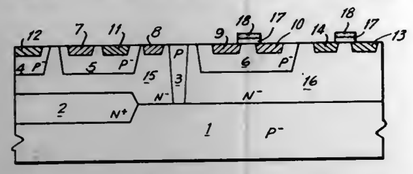


1. An electronic timepiece, comprising: an oscillator circuit for generating a repetitive time standard signal; a second counter, a minute counter, an hour counter, and a date counter connected in cascade in the named order and connected to count the time standard signal for developing respective counts representative of seconds, minutes, hours and date; a display reponsive to the counts developed by respective ones of said counters for displaying time represented by said counts; date-seconds selecting means responsive to a control signal for selectively applying a respective one of the counts developed by said second counter and said date counter under control of said control signal; and control means for applying the control signal to said date-seconds selecting means, said control means comprising a safety lock switch, a date-second selecting switch, an amendment call switch and a second reset switch each operable between an open condition and a closed condition for applying a signal, a first flip-flop connected to receive a signal applied to said date-second selecting switch and developing an output signal according to the setting of said date-second selecting switch; a first NOR-gate connected to receive an output of said flip-flop and a signal applied by said safety lock switch for developing an output signal determined by the setting of said safety lock switch and the output of said flip-flop; a second NOR-gate connected to receive the output of said first NOR-gate and a signal applied under control of said amendment call switch for developing as an output signal said control signal and for applying the same to said date-seconds selecting means; and an AND gate connected for receiving said control signal and a signal applied under control of said second reset switch and connected for applying an output thereof to reset said seconds counter when said control signal and the signal applied by said second reset switch are simultaneously developed.

4,112,670
ELECTRONIC TIMEPIECE
Shinji Morozumi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Mar. 4, 1976, Ser. No. 663,946
Claims priority, application Japan, Mar. 4, 1975, 50-26703
Int. Cl.² G04C *3/00*
U.S. Cl. 58—23 A **21 Claims**

1. An electronic timepiece comprising timekeeping circuitry for producing timekeeping signals and display means for displaying time in response to said timekeeping signal, and an integrated circuit chip substrate, at least a portion of said timekeeping circuitry being formed of C-MOS transistors formed

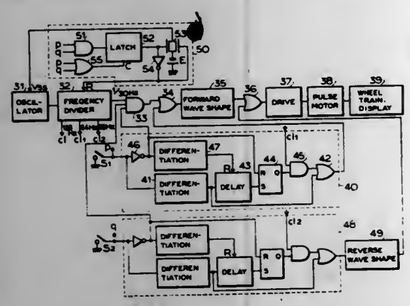
on said circuit chip substrate, a further portion of said time-keeping circuitry being formed of bipolar transistors formed on said integrated circuit chip substrate and a layer of semiconductor material formed on said circuit chip substrate, said layer of semiconductor material forming at least one electrode of one of said bipolar transistors and further having a diffused region therein forming at least one C-MOS transistor.



4,112,671
PULSE MOTOR DRIVING SYSTEM FOR USE IN A TIMEPIECE

Yoshiaki Kato, Higashimurayama, and Jinro Motoki, Houya, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,538
Claims priority, application Japan, Dec. 26, 1975, 51-157169
Int. Cl.² G04C 5/00, 9/00
U.S. Cl. 58—23 D **10 Claims**



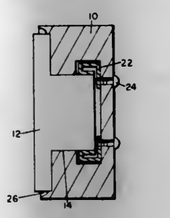
1. A pulse motor driving system for use in a timepiece comprising:
- a. a pulse motor having a stator, a driving coil wound on said stator and a permanent magnet rotor coupled to said stator;
- b. a forward correction control circuit including a forward rotation wave shaping circuit generating a pulse train having pulses of alternating polarity;
- c. a reverse correction control circuit including a reverse rotation wave shaping circuit generating a reverse rotation composite pulse train having composite pulses of alternating polarity; and
- d. selection circuit means selectively applying an output of said forward correction control circuit and an output of said reverse correction control circuit to said pulse motor driving circuit.

4,112,672
CLOCK DISPLAY DEVICE

Anthony Ginefra, Sr., 1184 Rockaway Ave., Brooklyn, N.Y. 11236

Filed Jul. 19, 1976, Ser. No. 706,143
Int. Cl.² G04B 37/00
U.S. Cl. 58—53 **1 Claim**

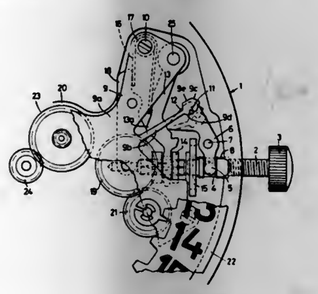
1. A time keeping display device comprising, in combination: a housing portion formed of a predetermined decorative shape, said housing portion being formed with a clock-receiving cavity therein, said clock-receiving cavity occupying a portion of said housing portion normally viewed by a user, said housing portion being further formed with an annular clip receiving cavity which communicates coaxially with respect to said clock-receiving cavity, said housing portion being yet further formed with a pair of fastener openings through a rearward side thereof and each communicating with said clip receiving cavity, said housing portion being yet further formed with a pair of indentations proximate said clock-receiving cavity for accommodating the fingers of a user wishing to remove the contents of said clock-receiving cavity; a plurality of spring clips disclosed within said clip receiving cavity; a clock mechanism disposed and held within said clock-receiving cavity by means of said spring clips; and fasteners extending through said fastener openings for removably holding said spring clips.



4,112,673
OPERATING MECHANISM FOR MECHANICAL WATCH MOVEMENT

Beat Gilomen, Lengnau, Switzerland, assignor to A. Schild S.A., Grenchen, Switzerland

Filed Mar. 11, 1977, Ser. No. 776,617
Claims priority, application Switzerland, Mar. 18, 1976, 3422/76
Int. Cl.² G04B 19/24, 27/02
U.S. Cl. 58—85.5 **8 Claims**

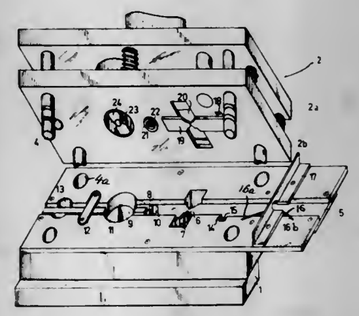


1. An operating mechanism for a mechanical watch movement comprising a control stem arranged radially with respect to said movement, a clutch pinion engaged on said stem, a setting lever controlled through said stem, a yoke controlled through said setting lever and controlling said clutch pinion, said lever and yoke pivoting simultaneously in opposite directions around parallel axes in response to a displacement of the stem, a pivoting lever controlled through said yoke and having a hand setting wheel pivotally mounted thereon, means for maintaining said pivoting lever in an abutting position when it is not controlled through said yoke, and a guard plate provided with a linear elastic arm which acts as setting-lever spring and has a spring head at its free end, said head having a front edge and a rear edge and the setting lever being equipped with a pin which cooperates with one of the edges of the head so as to fix the mechanism in several different positions, the front edge and the rear edge of the head of the setting-lever spring both having at their ends two opposite ramps arranged so as to be able to cooperate with the pin in order to fix the mechanism in two extreme positions.

4,112,674
MACHINERY FOR THE MASS PRODUCTION OF PRONGED MEMBERS OR OF CONTINUOUS STRIPS OF PRONGED MEMBERS

Amedee Fesquet, 12380 Saint-Sernin-sur-Rance, France

Filed May 19, 1977, Ser. No. 798,356
Claims priority, application France, May 20, 1976, 76 15598
Int. Cl.² B21Q 7/02; B21D 53/46
U.S. Cl. 59—72 **5 Claims**



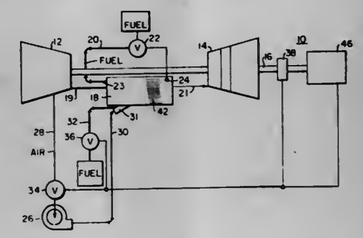
1. Machinery for the mass production of rigid pronged members having a solid head and at least one pointed prong comprising first and second dies adapted to be assembled facing each other on a stamping press and to be brought sequentially into pressing contact with each other, the first die having a longitudinal groove and having, successively along the length of the groove, an inlet section for guiding a strip of metal, a cutting section composed of a stamp cutting die piece with an opening for scrap removal for cutting the strip into successive blanks composed of a head with at least one laterally projecting prong, a die stamping section composed of at least one die stamping finger protruding from a cavity provided in the first die toward the groove and finally an outlet section where the bottom of the groove has at least one slot for guiding the respective prongs; and said second die having opposite the above-mentioned cutting section, a counterpiece with movable cutting punch corresponding to the shape of said cutting die piece and, opposite the die stamping section, at least one movable punch positioned opposite each die stamping finger for shaping said head and at least one hollow punch surrounding said movable punch for bending the prong or prongs to a position out of the plane of the metal strip.

4,112,675
APPARATUS AND METHOD FOR STARTING A LARGE GAS TURBINE HAVING A CATALYTIC COMBUSTOR

Paul W. Pillsbury, Wallingford, and Serafino M. DeCorso, Media, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 613,842, Sep. 16, 1975, abandoned. This application Sep. 30, 1976, Ser. No. 728,334
Int. Cl.² F02C 7/26
U.S. Cl. 60—39.06 **7 Claims**

1. A method of starting continuous catalytic supported combustion in a gas turbine engine having a main compressor and a turbine in fluid flow communication through a fixed geometry combustion chamber housing the catalytic reactor element therein, said method comprising:
- rotating the shaft of said main compressor from an external power source to initiate at least some flow from said main compressor to said turbine through said catalytic reactor element;
- delivering compressed air from a supplemental compressor to a flame holding combustion zone out of the path but in flow communication with the main flow through said combustion chamber upstream of said catalytic reactor element;
- delivering fuel for mixture with said air in said flame holding zone;
- igniting said air/fuel mixture in said flame holding zone for self-sustaining continuous combustion therein;
- passing the hot gases of combustion in said zone into the main path of said combustion chamber for flow through said catalytic reactor element to heat said element;

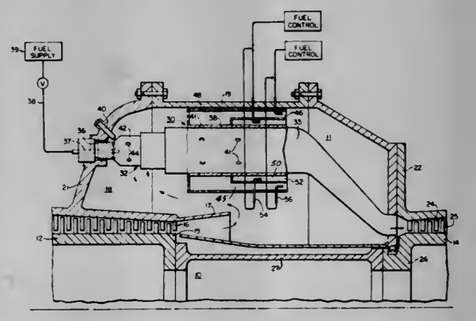


- monitoring the temperature of said element and upon said element attaining an auto-combustion temperature therein, initiating main fuel delivery into the main flow of said combustion chamber upstream of said catalytic reactor element for combustion of said main fuel therewithin; and
- subsequently terminating the delivery of fuel and air to said flame holding combustion zone to extinguish combustion upstream of said cataytic reactor element and regulating the supply of main fuel into said combustion chamber in accordance with the load on said engine.

4,112,676
HYBRID COMBUSTOR WITH STAGED INJECTION OF PRE-MIXED FUEL

Serafino M. DeCorso, Upper Providence Township, Delaware County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 5, 1977, Ser. No. 784,754
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.71 **6 Claims**



1. A combustion apparatus for a gas turbine engine comprising: a combustion chamber having, in the direction of fluid flow therethrough, a head end, an intermediate portion, and a discharge end; a first fuel injecting means for discharging fuel into said head end; air inlet means in said head end providing combustion air for said fuel; ignition means for igniting said fuel/air mixture in said head end for diffusion burning; and, means for introducing pre-mixed fuel and air into said chamber downstream of said diffusion burning, said last-named means comprising:

a first duct means having an open inlet end for receiving compressed air and providing confined flow communication therefrom to within the intermediate portion of said combustion chamber at one axial location thereof, said first duct generally enclosing fuel injecting means adjacent its open end for injecting fuel into the air flowing therethrough for pre-mixing prior to entry into said combustion chamber;

at least a second duct means having an open inlet end for receiving compressed air and providing confined fluid flow communication therefrom to within the intermediate portion of said chamber at a separate axial location downstream of said one axial location, said second duct generally enclosing fuel injecting means adjacent its open end for injecting fuel into the air flowing therethrough for pre-mixing prior to entry into said chamber; and,

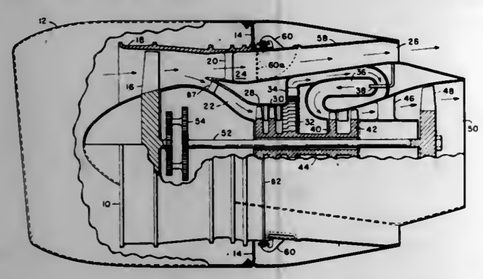
means for independently controlling the rate of fuel flow to each of said fuel injecting means.

4,112,677

THRUST SPOILER FOR TURBOFAN ENGINE

Joseph R. Kasmarik, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Jan. 31, 1977, Ser. No. 763,770
Int. Cl.² F02K *3/06*
U.S. Cl. 60—226 R **7 Claims**



1. In a turbofan engine having a driven fan rotating in an annular duct which is a continuation of the engine air intake, said fan providing an airstream which is divided, one part of said airstream being fed to the engine compressor of the gas producer unit, the other part of said airstream being ducted through an annular bypass which surrounds the turbine, apparatus for reducing the thrust output of the bypassing portion of the engine airstream at low throttle settings, said apparatus comprising:

a multiplicity of retractable spoilers placed at spaced apart intervals circumferentially around the outer wall forming the annular duct carrying the bypass airstream the active area of each of said spoilers being a generally rectangular plate; and

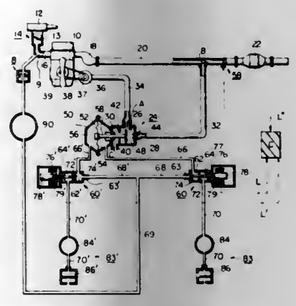
means for positioning said spoilers to an actuated and a retracted position, said retracted position being that which recesses the generally rectangular plate of each of said spoilers into the outer wall enclosing said bypass ducting allowing air to freely flow therethrough when the spoilers are retracted, said actuated position being that which deploys said spoilers into the bypass air passage, said deployment being such that the forward facing side of each generally rectangular plate portion of each of said spoilers lies in a plane which is perpendicular to the axial centerline of said gas producer section; the deployment of said spaced apart spoilers being for the purpose of both partially blocking airflow in the bypass air passageway and at the same time creating turbulent air flow conditions within the passageway.

4,112,678

SYSTEM FOR INTRODUCING SECONDARY AIR INTO AN INTERNAL COMBUSTION ENGINE

Hideo Miyagi, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 1, 1976, Ser. No. 737,667
Claims priority, application Japan, Jun. 18, 1976, 51/70965
Int. Cl.² F01N *3/10*
U.S. Cl. 60—276 **5 Claims**



1. A system for introducing secondary air into an exhaust system of an internal combustion engine provided with a three-way catalytic converter in its exhaust system, which comprises:

a source of secondary air, a flow control valve between said source and said converter, said valve having a first control chamber and a second control chamber;

a vacuum signal port in the engine intake system,

a first vacuum signal switching valve and a second vacuum signal switching valve, means connecting each of said switching valves to the corresponding control chamber of said flow control valve, each of said switching valves having a first position in which the corresponding control chamber is opened to said vacuum signal port, and a second position in which the corresponding control chamber is opened to atmosphere;

a sensor for sensing and signaling the air-combustion products ratio in the exhaust system;

an operating unit for switching said first and second vacuum signal switching valves in accordance with the signals from said sensor in such a manner that said first vacuum signal switching valve is switched to its first position and said second vacuum signal switching valve is switched to its second position when there is an excess air being fed to the converter to transmit the vacuum signal from said vacuum port into said first control chamber of said flow control valve in order to move the valve member thereof in one direction allowing the amount of the secondary air to be decreased, and in such a manner that said first vacuum signal switching valve is switched to its second position and said second vacuum signal switching valve is switched to its first position when lack of air reaches a predetermined value to transmit the vacuum signal into the second control chamber in order to move the valve member in another direction opposite to said one direction allowing the amount of secondary air to be increased, and;

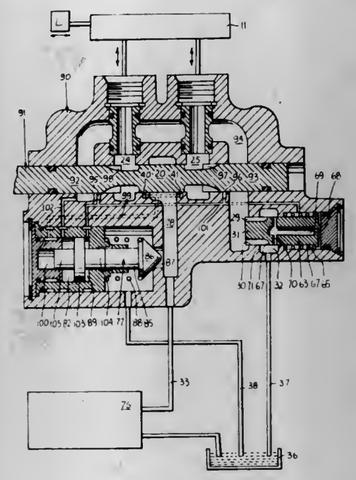
means for causing a quick movement of said valve member within a limited distance in each of said directions at the moment when said switching operation of the first and second vacuum signal switching valves is carried out, so that said excess air ratio λ is rapidly controlled to be near 1.0, which is suitable for the operation of the three way catalytic converter.

4,112,679

LOAD RESPONSIVE FLUID CONTROL VALVES

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Division of Ser. No. 522,324, Nov. 8, 1974, Pat. No. 3,998,134, which is a continuation-in-part of Ser. No. 377,044, Jul. 6, 1973, Pat. No. 3,882,896. This application Dec. 6, 1976, Ser. No. 731,367
Int. Cl.² F16H *39/46*
U.S. Cl. 60—445 **7 Claims**



1. A load responsive control system comprising a combination of

(a) a variable delivery fluid pump;

(b) a discharge pressure compensator for varying pump delivery rate in inverse relation to discharge pressure to thereby limit that pressure to a predetermined maximum value;

(c) a fluid pressure motor connected to a load;

(d) a fluid reservoir;

(e) fluid distributing means for selectively directing discharge fluid from the pump to the motor and exhaust fluid from the motor to the reservoir;

(f) resistance means to vary resistance to fluid flow from the motor to the reservoir;

(g) control means responsive to said resistance means to vary pump delivery rate in inverse relation to said resistnce to maintain said resistance at a first constant preselected value when discharge pressure of said pump is below said predetermined maximum value.

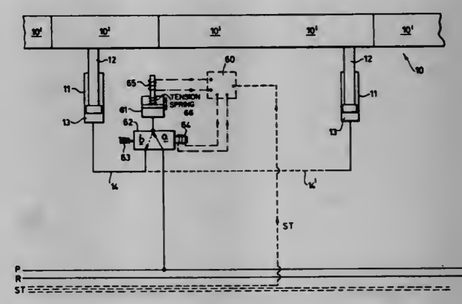
4,112,680

CONTROL SYSTEMS AND ARRANGEMENTS FOR MINERAL MINING INSTALLATIONS

Hans Theodor Grisebach, Unna, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 632,191, Nov. 17, 1975, Pat. No. 4,046,058, which is a division of Ser. No. 423,483, Dec. 10, 1973, Pat. No. 3,965,797. This application Feb. 7, 1977, Ser. No. 766,069
The portion of the term of this patent subsequent to Jun. 29, 1993, has been disclaimed.
Int. Cl.² F15B *7/02*
U.S. Cl. 60—538 **12 Claims**

1. In a mineral mining installation with a plurality of shifting rams arranged in a mine working and serving to displace mining apparatus through a predetermined distance, each shifting ram having a working chamber which is charged with pressure fluid to extend the shifting ram; an improved control system for operating the shifting rams and effecting fine control of the displacement of the mining apparatus, said system comprising: pressure fluid supply means for supplying pressure fluid used for operating the shifting rams; and a plurality of fluid-apportioning devices each allocated to at least one of the shifting rams, each apportioning device including a piston and cylinder unit having a piston and having a single working chamber located solely on one side of the piston, mechanical means for biasing the piston in the direction which increases the volume of the single working chamber, automatic means for alternately and cyclically connecting the pressure fluid supply means to the single working chamber of the piston and cylinder unit, and connecting the working chamber of the at least one shifting ram solely to the single working chamber of the piston and cylinder unit, means for cyclically operating the



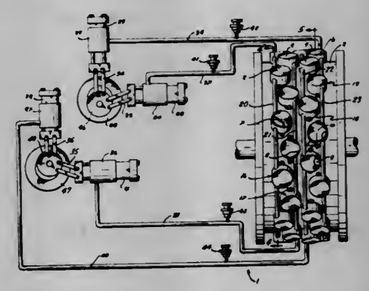
piston of the piston and cylinder unit to alternately permit the single working chamber of the piston and cylinder unit to be charged with pressure fluid and to expel the pressure fluid to the working chamber of the associated shifting ram in predetermined non-variable quantities in successive doses, each dose corresponding to the expelling displacement of the piston of the piston and cylinder unit and to a single connecting cycle of the connecting means, and means for generating and transmitting separate control signals for causing the operating means and the connecting means to cooperatively transfer a succession of fluid doses to the associated shifting ram, thereby moving the mining apparatus through a fraction of the predetermined distance.

4,112,681

HYDRAULIC COUPLING AND SPEED MULTIPLYING MECHANISM

Rafael Tuti Roces, 1646-C F. Agoncillo St., Ermita, Manila, Philippines

Filed Aug. 18, 1976, Ser. No. 715,625
Claims priority, application Philippines, Sep. 5, 1975, 17545
Int. Cl.² F15B *7/02*
U.S. Cl. 60—539 **2 Claims**



1. A hydraulic coupling and speed multiplying mechanism for transmitting rotary motion from a driving shaft to a driven shaft comprising an annular cylinder block, said annular cylinder block having therein several laterally spaced apart circu-

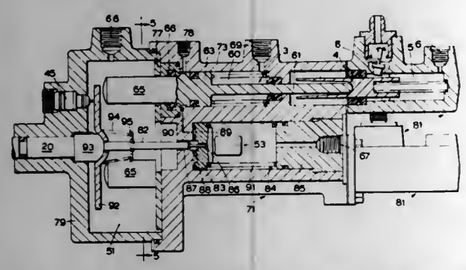
larly arranged rows of radially disposed pressure transmitting cylinders, the pressure transmitting cylinder in each circular row, being uniformly spaced apart angularly and staggeredly arranged relative to each of the transmitting cylinders in the other circumferential rows; corresponding pistons operatively disposed in all said pressure transmitting cylinders; an interconnected cylinder head assembly secured to said annular cylinder block to cover the pressure transmitting cylinders in each circular row, a cam assembly with a driving shaft disposed within said cylinder block to actuate the pistons in each circular row simultaneously and sequentially relative to the pistons in said other circular rows, receiving hydraulic cylinders, operatively connected by corresponding pipe lines to said circular rows of pressure transmitting cylinders, each said receiving hydraulic cylinders having a corresponding piston with linkages, at least a pair of said receiving hydraulic cylinder pistons being connected to a common crankshaft, whereby upon rotation of the driving shaft of said cam assembly, said cam assembly actuates said pistons of said transmitting hydraulic cylinders causing the fluid in each said corresponding pipe lines to flow back and forth and causing also the pistons of said receiving hydraulic cylinders to reciprocate and rotate the crank shaft connected thereto faster than the rotation of said driving shaft.

4,112,682

MASTER CYLINDER ASSEMBLIES

David Anthony Harries, Shirley, England, assignor to Girling Limited, Birmingham, England

Division of Ser. No. 424,886, Dec. 14, 1973, Pat. No. 3,994,535.
This application Apr. 5, 1976, Ser. No. 674,058
Claims priority, application United Kingdom, Jul. 25, 1973, 35393/73
Int. Cl.² B60T 13/12
U.S. Cl. 60—548 2 Claims



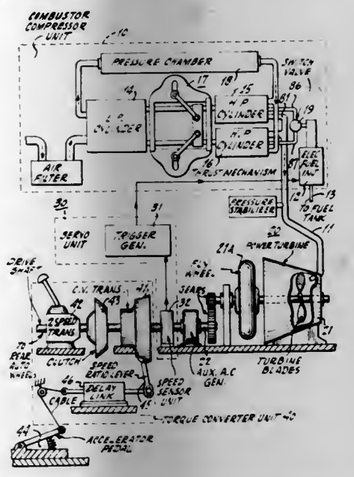
1. A power-operated hydraulic master cylinder assembly for a vehicle hydraulic braking system comprising a housing having a bore, a piston adapted to be advanced in said bore to generate fluid pressure in a pressure space defined in the bore at a position in advance of said piston, said housing also incorporating an inlet port for connection to a reservoir for fluid, and an outlet port leading from said pressure space for connection to a wheel brake, a normally open reservoir valve through which said pressure space is connected to said inlet port and which is closed when said piston is advanced in said bore, means defining in said housing a power chamber into which pressure fluid is admitted to advance said piston in said bore, a booster-valve assembly for controlling a supply of booster fluid to said power chamber, said booster-valve including a pedal-operated valve actuating member for applying an applying force manually to said piston in the event of a failure in said supply of booster fluid, and a stop member in said housing movable between an operative position and a retracted position spaced from said operative position, said stop member normally being biased by fluid pressure into said operative position to prevent said pedal-operated member from being advanced through a distance sufficient to transmit a force to said piston, and a reduction in pressure in said power chamber reducing the effective pressure acting on said stop member to allow said stop member to move into said retracted position in response to an applying force applied to said pedal-operated valve actuating member and transmitted to said piston, wherein said housing also includes a blind bore in which said stop member is located, said stop member includes a valve face, and a wall in said housing between said power chamber and said blind bore has a seating face which is engaged by said valve face when said stop member is in said operative position, said wall having a passage providing a connection between said blind bore and said power chamber, and said stop member having a passage aligned with said passage in said wall, an inlet valve being located in said stop member to control flow through said passage therein, and said actuating member extending through said passage in said wall to operate said inlet valve.

4,112,683

CONTROLLED PULSE TURBINE ENGINE

Leon Bess, 433 B. S. 2nd Ave., Highland Park, N.J. 08904

Filed Jun. 20, 1977, Ser. No. 807,988
Int. Cl.² F02B 71/06; F02D 39/10
U.S. Cl. 60—595 7 Claims



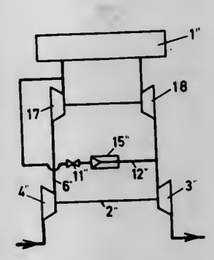
1. A controlled pulse turbine engine, comprising:
(a) turbine means having a shaft rotatably coupled thereto for supplying power to a load, said turbine means driven by a nozzle adapted to receive compressed gas for rotation of said turbine and hence, said shaft,
(b) a combustor-compressor means having a piston assembly adapted to move in a relatively linear path, said piston assembly comprising first and second high pressure cylinders, each having a separate actuatable piston, a crosspiece block, means coupling each of said pistons to said crosspiece block, a low pressure cylinder having a actuatable piston capable of moving upon application thereto of a substantially lower pressure than that accommodated by said high pressure cylinders and upon moving to cause a charge of air to be conducted from the atmosphere into said low pressure cylinder, said piston coupled to said crosspiece block by means of at least one piston rod, and thrust counter-force means coupled to said crosspiece block for maintaining equilibrium of said piston assembly, while constraining said assembly to move in said linear path,
(c) servo means operative to monitor the rotation of said turbine and operative to develop a signal for activating either one of said high pressure cylinders to move said two high pressure pistons, said low pressure piston as coupled thereto and said crosspiece block in a linear path,
(d) exhaust means coupled to said high pressure cylinders to provide a series of pulses at an output, each pulse in said series manifesting a charge of hot compressed gas indicative of always the same fuel charge generated by the motion of said high pressure pistons within said associated cylinder,
(e) means for applying said pulse series to said turbine nozzle for rotation of said shaft, and
(f) means for conducting compressed air charges emitted from said low pressure cylinder into either of said high pressure cylinders.

4,112,684

MULTIPLE WORKING CHAMBER FORMING COMBUSTION MACHINE WITH EXHAUST TURBO CHARGER

Paul Tholen, Bensberg-Refrath, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jun. 22, 1976, Ser. No. 698,312
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1975, 2527871
Int. Cl.² F02B 37/00
U.S. Cl. 60—606 1 Claim



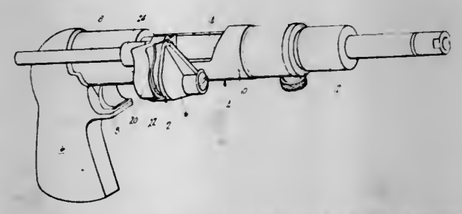
1. In combination, an internal combustion engine forming multiple working chambers, a multi-stage exhaust gas turbocharger having high and low pressure compressor and turbine stages, and a controllable bypass line between the pressure side of the high pressure compressor stage and the exhaust gas system wherein the bypass line empties into a zone of low pressure, between the high and low pressure turbine stages, the pressure of compresed air being higher than exhaust gas pressure when the bypass line branches off behind the high pressure stage of the compressor and before the low pressure stage of the turbine.

4,112,685

LOADING DEVICE FOR A POWER ACTUATED TOOL

Marc Combette, 116 rue des Moulins, and Jean Ollivier, 89 avenue des Beaumes, both of Valence, France (26000)

Filed Nov. 29, 1976, Ser. No. 745,747
Int. Cl.² F01B 29/08; F02N 13/00
U.S. Cl. 60—634 9 Claims



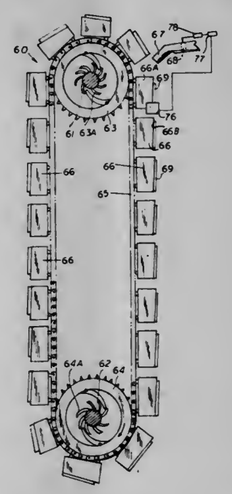
1. In a power-actuated tool of the type having a housing with a loading port through which a power charge can be loaded into the tool, the tool also having a barrel assembly slidable in the housing between a rearward firing position and a forward loading position and return, the barrel having opening through its rearward end a firing chamber for reception of a power charge, an improved loading assembly comprising:
(a) support means fixedly secured to an outer surface of said tool housing, said support means being adapted to releasably support a container of stacked power charges, and said support means having a through bore sized to permit free passage of the power charges from the container thereof through at least a portion of said support means;
(b) transfer means movably mounted on the exterior of said tool housing, said transfer means being movable between a charge-receiving position and a charge-loading position and return, said transfer means being provided with a bore, open at both ends, for receiving ones of the power charges to transport the latter from the support means to the tool firing chamber, said transfer means bore being coaxial with said support means through bore when said transfer means is in said charge-receiving position, and said transfer means bore being coaxial with said tool firing chamber when said transfer means is in said charge-loading position, said transfer means bore having an axial dimension which is only slightly longer than the axial length of a power charge and having a diameter which is larger than the diameter of a power charge to permit the power charge to slide through said transfer means bore solely under the influence of gravity, said transfer means having an end portion in which said transfer means bore is located, which end portion is adapted to pass through said tool loading port upon actuation of said transfer means;
(c) first means adjacent to said support means for selectively overlying said support means through bore to close the latter against passage of a power charge therethrough when said transfer means is not in said first position;
(d) second means adjacent to said transfer means for overlying said transfer means bore until said transfer means is in said second charge-loading position; and
(e) locating means on said transfer means for stopping movement of said transfer means in each of said first and second positions to ensure proper positioning of said transfer means bore.

4,112,686

METHOD AND APPARATUS FOR HARNESSING THE POWER OF MOVING WATER

Robert Trotta, 2954 West 8th St., Brooklyn, N.Y. 11224

Division of Ser. No. 627,237, Oct. 30, 1975, Pat. No. 4,052,856.
This application Aug. 4, 1977, Ser. No. 821,639
Int. Cl.² F03B 7/00, 9/00
U.S. Cl. 60—639 5 Claims



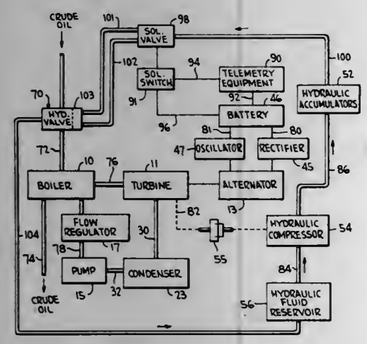
1. A system for harnessing the power of moving water for producing useful work comprising:
a pair of spaced apart shafts,

rotary means journalled on said shafts for effecting the drive thereof,
an endless flexible drive means threaded over said rotary means for effecting the drive thereof,
a plurality of containers connected to said flexible drive at spaced intervals therealong,
said containers having an open upper end portion,
means for successively filling each of said containers with water whereby the weight of water in said containers effects the drive of said flexible drive and associated rotary means,
said containers being emptied as they round one of said rotary means,
and control means for controlling the flow of water to successively fill each of said containers with a predetermined amount of water in accordance with the demand for power and the speed of said system, wherein said control means includes a valve means for controlling the flow of water of a water supply,
acutating means operatively connected to said valve means for operating said valve means between an operative and inoperative position,
and means connected to said container for energizing said actuating means when said container has reached a predetermined filling position.

4,112,687
POWER SOURCE FOR SUBSEA OIL WELLS

William Paul Dixon, 22811 Fincastle Dr., Katy, Tex. 77450

Filed Sep. 16, 1975, Ser. No. 613,744
Int. Cl.² F03G 7/02
U.S. Cl. 60—641 8 Claims



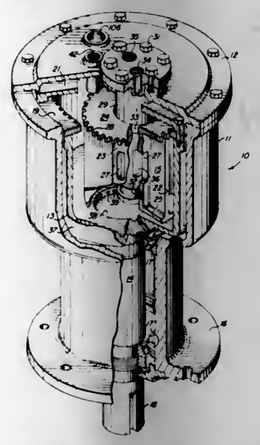
1. In combination, a subsea oil well and means for generating electrical power in situ, said means comprising a working fluid, a heat exchanger adapted to pass crude oil from said well through one side thereof and said working fluid through the other side thereof to transfer heat from said oil to said working fluid to heat said fluid, a turbine driven by said heated working fluid, a generator driven by said turbine, a condenser cooled by ambient sea water, means for passing said working fluid exhausted from said turbine through said condenser to cool it, and a compressor adapted to return said working fluid cooled by said condenser to said heat exchanger.

4,112,688
POSITIVE DISPLACEMENT GAS EXPANSION ENGINE WITH LOW TEMPERATURE DIFFERENTIAL

John B. Shaw, 1812 E. Marlette, Phoenix, Ariz. 85016

Filed Oct. 8, 1976, Ser. No. 731,009
Int. Cl.² F01K 11/00
U.S. Cl. 60—669 28 Claims

1. A device comprising:
a housing,
a first shaft journaled for rotation in said housing and having provisions for a power connection at one end thereof,
the other end of said first shaft forming a hollow cylinder arranged within said housing,
a ducted second shaft affixed to said housing for extending into said cylinder,
a multi-cavity rotor arranged within said cylinder and journaled on said second shaft,
the longitudinal axis of rotation of said rotor being offset from and parallel with the axis of rotation of said cylinder,
said rotor comprising a hollow cylindrical core having a plurality of spacedly radially positioned vanes arranged around said core forming a plurality of cavities one arranged between every pair of said vanes,
fixed heat exchange means positioned within said rotor cavities for transferring heat retained thereby,
coupling means arranged between said rotor and said cylinder for causing one to rotate the other,



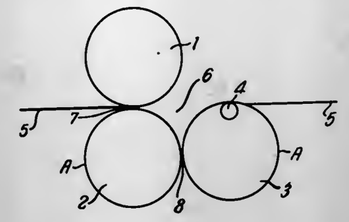
a plurality of openings radially formed around said core each providing a slot from the hollow interior of said core into a different one of each of said cavities,
said second shaft being provided with a plurality of ports extending from its ducted interior through its outer periphery for sequential alignment with some of the openings in said core,
whereby when liquid is placed within said cylinder and at least in some of said cavities of said rotor, a centrifugally disposed sealing means is provided between the inside of said cylinder and said cavities of said rotor upon rotation thereof,
inlet means for conducting a gas through said core and thence sequentially through said openings and into said cavities where a differential rotation force is manifested, and
outlet means for exhausting said gas.

4,112,689
OIL BOOM

Michael Guthrie Webb, Wootton Bridge, England, assignor to The British Petroleum Company Limited, London, England

Filed Aug. 2, 1977, Ser. No. 821,159
Claims priority, application United Kingdom, Aug. 6, 1976, 32804/76
Int. Cl.² E02B 15/04
U.S. Cl. 405—63 11 Claims

1. A barrier for the containment and recovery of oil spilt on water comprising at least one elongated, flexible buoyant chamber, at least one elongated, flexible ballast water chamber and at least one further flexible water chamber of greater buoyancy than the ballast chamber, the buoyant chamber and the further water chamber each being joined to the ballast water chamber in side by side relationship and the chambers being so positioned relative to one another that when in use on water the buoyant chamber and the ballast water chamber

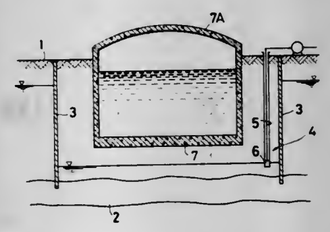


together form a barrier for oil spilt on water and the further water chamber defines a weir between itself and the other chambers, said weir being provided with means to remove oil and water therefrom.

4,112,690
METHOD AND CONSTRUCTION OF UNDERGROUND TANK WELL

Kazuo Hosoya, Tokyo, and Munetaka Kubota, Hino, both of Japan, assignors to Kajima Kensetsu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1976, Ser. No. 741,679
Claims priority, application Japan, Nov. 22, 1975, 50-140458; Nov. 22, 1975, 50-140459
Int. Cl.² B65G 5/00; E02D 31/02
U.S. Cl. 405—57 3 Claims

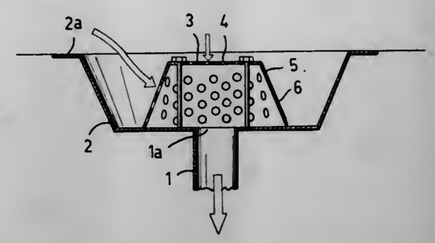


1. The method of constructing an underground tank in water permeated soil, comprising the steps of:
sealing off an excavation area to reduce ground water seepage;
installing pumping means in said excavating area to be at a level beneath the bottom of the installed tank;
insertion of ground hardening material into the ground outwardly of and below said sealed off area while pumping out said ground water with pumping means from the center of said sealed off area to draw said hardening material inwardly toward the center of said sealed off area to provide a water impervious hardened base;
excavating said area above said water impervious hardened base sufficient to receive a tank therein;
installing said tank in said excavated area above said water impervious hardened base;
back filling around said tank;
leaving said pumping means in place and operable to remove water seepage from the back fill around said tank after underground installation thereof.

4,112,691
RAIN WATER ROOF OUTLET OR SIMILAR FOR A BUILDING

Martti Olavi Aladar Ebeling, and Risto Waldemar Lundén, both of Helsinki, Finland, assignors to Kontekla Oy., Helsinki, Finland

Filed Jun. 20, 1977, Ser. No. 808,348
Int. Cl.² E02B 5/08, 9/04
U.S. Cl. 405—119 1 Claim

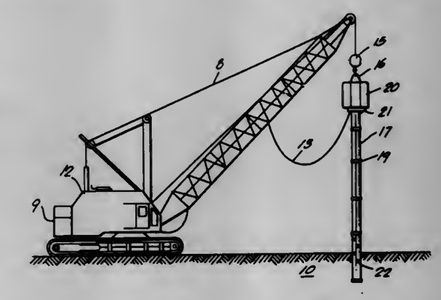


1. A rain water roof outlet for a building, comprising a vertical pipe having a mouth at its upper end, said pipe leading from a roof or some other collecting area, a trough connected to and in communication with the upper end of said pipe, said trough being wider than the mouth of said pipe and having the free upper edge located at a higher level than the mouth of the vertical pipe, and a lid fastened above the mouth so as to leave a space between the lid and the mouth through which water can flow from the trough into the mouth, said lid being wider than the mouth but smaller than the trough and the lower edge thereof being located at a lower level than the upper edge of the trough so that the lid prevents the formation of an air whirl in the vertical pipe when the trough is filled with water, characterized in that the lid portion located above the mouth of the vertical pipe is provided with a perforation the total area of which is so small, maximum 15 percent of the cross-sectional area of the vertical pipe, that the formation of an air whirl in the vertical pipe is prevented in spite of the air entering the mouth through said perforation.

4,112,692
SOIL COMPACTION SYSTEM

Lowell M. Anderson, 5422 Panorama Dr., Huntsville, Ala. 35801, and William D. Simmons, 1216 Seventh St., Long Beach, Miss. 39560

Division of Ser. No. 24,207, Mar. 31, 1970, abandoned. This application Jun. 20, 1977, Ser. No. 808,299
Int. Cl.² E02D 3/12
U.S. Cl. 405—271 20 Claims



1. Vibratile apparatus for deep sub-surface compaction of granular soil material using continuously applied vibrational energy, comprising
(a) probe means for transmitting a wave-like harmonic vibrational motion below the surface of the granular soil material when subjected to the continuously applied vibra-

tional energy, said probe means including an elongated thin-walled member having opposed lateral surfaces separated only by the wall thickness of said elongated thin-walled member and having a substantially uniform cross-sectional shape perpendicular to its longitudinal axis, said elongated thin-walled member being shaped for insertion endwise into the granular soil material to cause both said opposed lateral surfaces to contact directly and transmit vibrational energy into the granular soil material to cause compaction of the granular soil material on both sides of said elongated thinwalled member; and

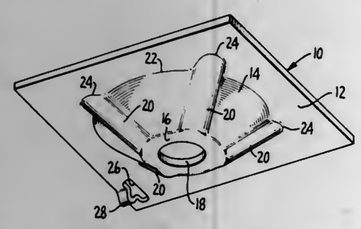
(b) vibration increasing means attached to one of said lateral surfaces of said elongated thin-walled member for increasing the amount of vibrational energy conveyed into the granular soil material adjacent said one lateral surface while the other said lateral surface of said thin-walled member is still in contact with the granular soil material, said vibration increasing means including at least one continuous raised lateral projection extending outwardly across the full horizontal extent of said one lateral surface when said probe means is inserted into the granular material.

4,112,693

MINE ROOF SUPPORT PLATE

Alvaro L. Collin, Orinda, and Gordhan M. Patel, Cerritos, both of Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.

Filed Sep. 30, 1976, Ser. No. 728,254
Int. Cl.² E21D *21/00*; F16B *29/00*
U.S. Cl. 405—132 **6 Claims**



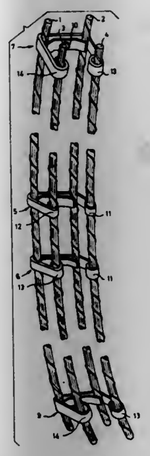
1. A mine roof support plate having a rigid sheet steel body of generally uniform thickness, said body having outer and inner sides and comprising: a generally planar peripheral section; a domed section extending outwardly from, and surrounded by, the planar section, said domed section intersecting the peripheral section to define a distinct fillet extending around the domed section and merging with the peripheral section; a central section at the outer extremity of the domed section, said central section having a bolt hole extending therethrough and defining a generally flat bearing area extending around said hole and disposed in parallel spaced relationship to the peripheral section; and a plurality of ribs formed in the domed section so as to extend radially from the central section in angularly spaced relationship to one another, said ribs protruding from the domed section and merging at the distal ends thereof with the peripheral section to define radial extensions of the fillet between the domed and peripheral sections.

4,112,694

TUNNEL-LAGGING ELEMENT AND SYSTEM

Rudolf Gruber, Millstatt am See, Austria, assignor to GD Anker Gebirgs-Dübel-Anker GmbH & Co. KG, Millstatt am See, Austria

Filed May 5, 1977, Ser. No. 794,317
Claims priority, application Austria, May 7, 1976, 3362/76
Int. Cl.² E21D *11/14, 11/18*
U.S. Cl. 405—150 **8 Claims**



1. A tunnel-lagging element for embedding in a concrete tunnel lining, comprises:

a first pair of mutually parallel transversely spaced curved rods adapted to lie relatively proximal to a tunnel wall;

a second pair of transversely spaced mutually parallel curved rods spaced from said first pair of rods and relatively distal from said wall;

first means at the central third of the length of the elements for securing all of said rods in spaced-apart relation without relative freedom of longitudinal movement; and

respective second means toward each end of the element for retaining said rods in spaced-apart relation while permitting longitudinal displacement of said first pair of rods relative to said second pair of rods each of said second means securing the rods of said first pair against longitudinal displacement relative to one another.

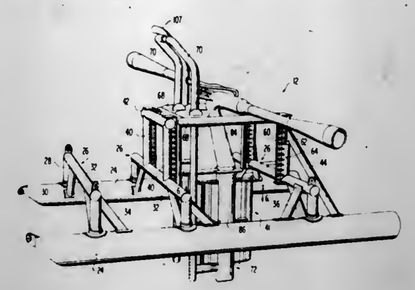
4,112,695

SEA SLED FOR ENTRENCHING PIPE

Nuke Ming Chang; Elmer R. Remkes, both of Orange, Calif., and William Cook, Jr., Houma, La., assignors to Santa Fe International Corp., Orange, Calif.

Filed Feb. 28, 1977, Ser. No. 773,015
Int. Cl.² E02F *5/02*; F16L *1/00*
U.S. Cl. 405—163 **63 Claims**

1. Apparatus for use in making a trench in a sea bottom and for removing spoil formed during making such a trench, said apparatus including: at least one suction tube having a bent portion merging with an eductor tube section; a jet pump associated with said suction tube and comprising first and second nozzles which are arranged substantially coaxially in tandem, the first nozzle projecting through a side of said suction tube into the bent portion in the direction of the outlet of the eductor tube section, the second nozzle having an outlet end located within and radially spaced from an inlet section of the first nozzle such that said first nozzle is intended to be in communication with ambient water during a trenching operation, and means for supplying high pressure water to said second nozzle to cause said water supply to flow through said nozzles to entrain ambient water and to cause spoil produced during the trenching operation to flow through the suction



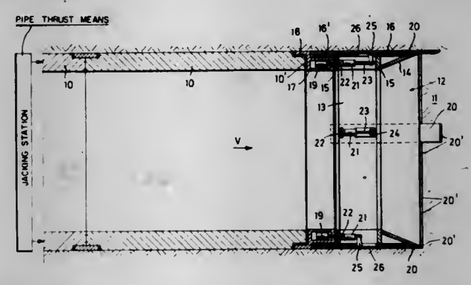
tube to be entrained with said water supply and ambient water and discharged through the eductor tube section.

4,112,696

DRIVE SHIELD

Hans Jutte, Kamphecke 13, and Helmut Weber, Spannerweg 16, both of 4600 Dortmund, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,813
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617782
Int. Cl.² E01G *3/02*
U.S. Cl. 405—145 **15 Claims**



1. A drive shield for use in a tunnelling operation, the drive shield comprising:

(a) a generally cylindrical cutting shield having a cutting edge supported by a frame,

(b) a generally cylindrical knife shield surrounding the cutting shield,

(c) said knife shield having a plurality of elongate members each of which is extensible relative to the cutting edge in the direction of tunnel advance, wherein the knife shield and the cutting edge are telescoped together,

(d) each elongate member is provided with a respective device for extending that elongate member relative to the cutting shield,

(e) each said extending device is constituted by a hydraulic ram which acts between the cutting shield and a respective elongate member,

(f) said hydraulic rams are arranged within the cutting shield, and

(g) a respective coupling element connects each hydraulic ram to the corresponding elongate member,

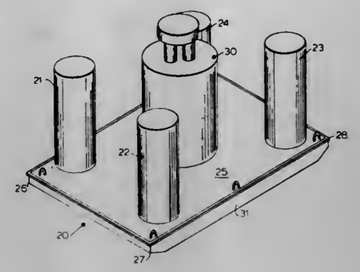
(h) each respective coupling element extends through a respective aperture in the cutting shield.

4,112,697

METHOD OF PRODUCING AND INSTALLING OFFSHORE STRUCTURES

Philip Y. Chow, Orinda, Calif., assignor to Lin Offshore Engineering, Inc., San Francisco, Calif.

Division of Ser. No. 574,110, May 2, 1975, Pat. No. 4,015,554.
This application Dec. 13, 1976, Ser. No. 749,926
Int. Cl.² E02D *5/00*; F02D *23/02*
U.S. Cl. 405—209 **1 Claim**



1. A method for constructing and placing an offshore structure, comprising the steps of:

completely constructing said offshore structure in a water-floatable mode on the deck of a barge while said barge is floating in shallow water, said barge having at each corner a column stabilizer and also having ballast tanks,

locking said offshore structure to the hull of said barge during said constructing, so as to connect said offshore structure to said barge,

towing the barge with said offshore structure locked thereto to a deeper water location,

ballasting said tanks to sink said barge to a depth where the offshore structure can float freely in the water, while keeping it stable by means of said column stabilizers,

unlocking the connection between said offshore structure and said barge,

displacing the barge away from the offshore structure,

refloating the barge by deballasting said tanks and returning it to shore, and

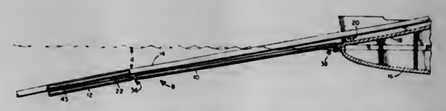
lowering the offshore structure to its desired position.

4,112,698

ARTICULATED STINGER

Wayne F. Lammert; Dayton M. Simpson, and Ardeshir R. Desai, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed May 20, 1977, Ser. No. 798,814
Int. Cl.² B63B *35/04*; F16L *1/00*
U.S. Cl. 405—167 **12 Claims**



1. An articulated stinger apparatus connected to a floating vessel for laying the pipe along the bottom of a body of water from said vessel, said stinger apparatus comprising

a relatively long, non-articulated stinger link, said stinger link being connected at a first end to said vessel for pivotal movement in at least a vertical plane;

a buoyant stinger means having at least one relatively short, buoyant stinger element, said one buoyant element being linearly connected to a second end of said non-articulated stinger link for pivotal movement at least in the vertical plane;

each said buoyant stinger element having pipeline support

means for supporting and guiding said pipe along a pipe path leading to the bottom of the body of water;

a last pipeline support element on said vessel and a first contacted pipeline support of said stinger apparatus cooperating to support said pipe in a position disposed above, spaced from, and free of contact with said non-articulated stinger link throughout an effective wave action water depth;

said pipe receiving no contacting support between said last pipeline support element on said vessel to said first stinger apparatus support;

said last pipeline support element on said vessel and said first contacted pipeline support of said stinger apparatus cooperating for reducing banging of said pipe and said stinger link throughout said wave action depth; and

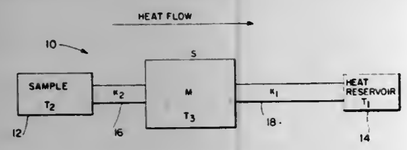
said non-articulated link in combination with said pipe and said buoyant stinger means being operable to position said buoyant stinger element and said pipeline support means beneath said effective wave action water depth.

4,112,699

HEAT TRANSFER SYSTEM USING THERMALLY-OPERATED, HEAT-CONDUCTING VALVES

George Elbert Hudson, III, Silver Spring, and Arthur E. Clark, Adelphi, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1977, Ser. No. 793,573
Int. Cl.² F25B *21/02*; F28F *27/00*
U.S. Cl. 62—3 **10 Claims**



1. A heat transfer system adapted to be coupled in heat transfer relationship between a heat reservoir and an object to be cooled or heated, said heat transfer system comprising the serial arrangement of:

a first thermal valve having a thermal conductivity which increases with decreasing temperature;

a working substance, the temperature of which may be varied by an external means;

a second thermal valve having a thermal conductivity which increases with increasing temperature; and,

an external means to vary the temperature of said working substance.

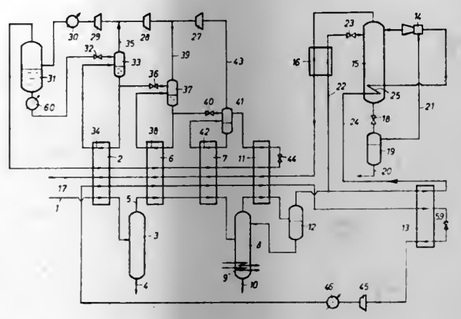
4,112,700

LIQUEFACTION OF NATURAL GAS

Wolfgang Förg, Icking, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Jul. 18, 1975, Ser. No. 597,093
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1974, 2438443
Int. Cl.² F25J *3/02*
U.S. Cl. 62—28 **15 Claims**

1. In a process for the liquefaction of natural gas by heat exchange, initially with a precooling first multicomponent mixture and thereafter with a deep cooling second multicomponent mixture, each of these mixtures being in separate closed refrigeration cycles, being compressed, at least partially liquefied, and expanded, wherein the improvement comprises the first multicomponent mixture consisting essentially of by volume 8 to 20% C_2 and 92 to 80% C_3 hydrocarbons, subjecting the first multicomponent mixture, after its partial liquefaction, to a phase separation step to obtain a first miltcomponent gaseous fraction and a first multicomponent liquid fraction; expanding resultant first multicomponent liquid fraction, and at least partially evaporating at least a portion of the thus-expanded liquid fraction in indirect heat exchange relationship with (a) the natural gas to cool same, (b) said first multicomponent gaseous fraction to cool same, and (c) the second multicomponent mixture to cool same; subjecting another portion of said thus-expanded liquid fraction to at least one further expansion, and at least partially evaporating at least a portion of the thus further expanded liquid fraction in indirect heat exchange relationship with (a) the natural gas to cool same, (b) said first multicomponent gaseous fraction to at least partially liquefy same, and (c) the second multicomponent mixture to cool same; and expanding resultant liquefied first multicomponent



gaseous fraction, and at least partially evaporating resultant expanded liquefied first multicomponent gaseous fraction in indirect heat exchange with the cooled natural gas and the second multicomponent mixture, the latter being at least partially liquefied during this heat exchange, completely liquefying at least a part of the resultant at least partially liquefied second muticomponent mixture, expanding resultant completely liquefied second multicomponent mixture and evaporating resultant expanded second multicomponent mixture in indirect heat exchange with (a) said at least part of the resultant at least partially liquefied second multicomponent mixture to completely liquefy the latter and with (b) the natural gas previously cooled by the first multicomponent mixture so as to liquefy at least part of the aforesaid natural gas.

4,112,701

METHOD AND MEANS FOR COOLING THE OIL IN A SYSTEM INCLUDING A COMPRESSOR WITH OIL SUPPLY, AS WELL AS SUCH SYSTEMS

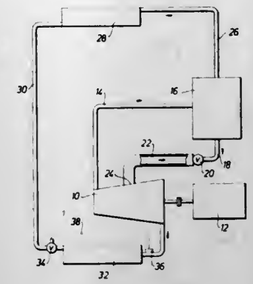
Hjalmar Schibbye, Saltsjöbaden, and Lennart Eriksson, Färentuna, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Sep. 29, 1976, Ser. No. 728,466
Claims priority, application United Kingdom, Sep. 29, 1975, 39768/75
Int. Cl.² F25B *43/02, 31/00*
U.S. Cl. 62—84 **29 Claims**

1. Method for cooling the oil in a gas compression system comprising rotary compressor with oil supply to its working space, an oil separator in the discharge line thereof and an oil supply line between the oil separator and the compressor, said gas being soluble in said oil and the solubility of the gas in the oil increases as the pressure increases, characterized by

throttling the oil in an intermediate portion of the oil supply line between the oil separator and the compressor to lower the pressure and cause refrigerant which was dissolved in said oil to boil off and form a two-phase fluid comprising gaseous refrigerant and oil having a decreased temperature; and

passing the throttled output to the compressor through the remainder of the oil supply line, the time for passing said



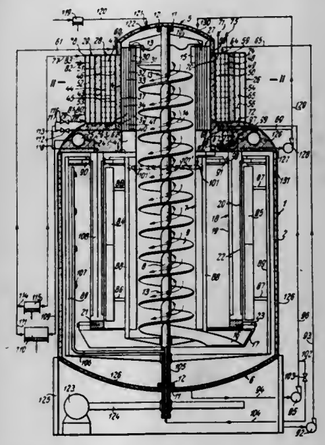
throttled output through said remainder of the oil supply line being between about 0.1 second and 10 seconds.

4,112,702

FREEZE DESALINATION AND CONCENTRATION APPARATUS

Leonard Fedorovich Smirnov, ulitsa Segedskaya, 3, kv. 37; Vladimir Mikhailovich Parkhitko, ulitsa Baranova, 28, kv. 5, both of Odessa; Valentin Ivanovich Zverkhovsky, ulitsa 28 ijunya, 1, Moldavskaya SSR, Chimishliisky raion, poselok Bessarabka; Oleg Antonovich Burtov, ulitsa Kirova, 25; Nikolai Ivanovich Razuvaev, ulitsa Sadovaya, 27, kv. 9, both of Yalta Krymskoi oblasti; Fedor Evdokimovich Dovzhko, ulitsa Sinelnikova, 2, kv. 92, Khabarovsk; Moisha Gershovich Kleiman, pereulok Grazhdansky, 11, kv. 12, Khabarovsk, and Valentin Ivanovich Dzyan, ulitsa Panfilovtsev, 43, kv. 63, Khabarovsk, all of U.S.S.R.

Filed Jan. 3, 1977, Ser. No. 756,131
Claims priority, application U.S.S.R., Feb. 23, 1976, 2320651; Feb. 23, 1976, 2320652; Feb. 23, 1976, 2320653
Int. Cl.² B01D *9/04*; C02B *1/12*
U.S. Cl. 62—123 **9 Claims**



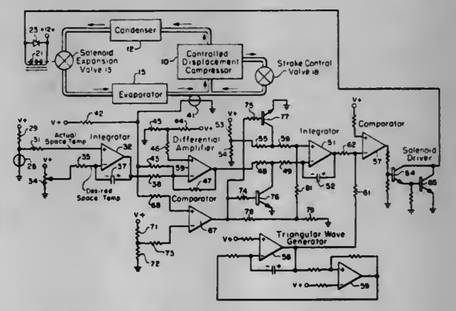
1. In a freeze desalination and concentration apparatus, starting-solution feed means and brine feed means for respectively feeding starting solution and brine, heat-exchanger means communicating with both of said feed means for receiving the starting solution and brine therefrom and for placing them in heat-exchange relationship so that the starting solution is cooled by the brine at said heat-exchanger means, discharge conduit means communicating with said-exchanger means for receiving the cooled starting solution therefrom and for discharging the same, said brine feed means also communicating with said discharge conduit means for delivering brine thereto to be mixed with said cooled solution so that said discharge conduit means discharge a mixture of brine and starting solution, ice-forming means having a surface onto which said discharge conduit means discharges said mixture to form ice from said mixture at said surface of said ice-forming means, scraper means cooperating with said surface of said ice-forming means for scraping ice therefrom, perforated wall means situated beneath said ice-forming means to receive ice which falls therefrom, ice-raising means cooperating with said wall means for raising ice which collects thereon upwardly therefrom up to a predetermined elevation, condenser means situated adjacent said ice-raising means just beneath said elevation to which the ice is raised thereby for receiving ice from said ice-raising means and for melting the ice as the latter travels through said condenser means, collecting chamber means communicating with said condenser means for receiving therefrom the melted ice in the form of distilled water, distilled water circulating means communicating with said collecting chamber for receiving the distilled water therefrom and for circulating distilled water to said elevation to which the ice is raised by said ice-raising means for delivery at said elevation both to said condenser means to flow therethrough with the ice and to said ice raising means to flow downwardly along the latter in countercurrent to the raised ice for washing the latter and forming a brine which passes through said perforated wall means, said brine-feed means receiving the latter brine which passes through said perforated wall means for feeding the latter, and said distilled water circulating means also communicating with said heat-exchanger means for delivering distilled water thereto to travel therethrough and be extracted therefrom while being placed by said heat-exchanger means also in heat exchange relationship with the starting solution, said ice-forming means having an inner refrigerant-containing space, and refrigerant circulating means communicating with the latter space for receiving the refrigerant therefrom and delivering the refrigerant in vapor form to said condenser means to travel therethrough while being condensed therein into liquid refrigerant form, said condenser means extracting from said refrigerant heat which is utilized for melting the ice delivered to said condenser means by said ice-raising means, said refrigerant circulating means receiving the condensed refrigerant from said condenser means and returning the condensed refrigerant to said space.

4,112,703

REFRIGERATION CONTROL SYSTEM

Kenneth John Kountz, Hoffman Estates, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 27, 1976, Ser. No. 754,194
Int. Cl.² F25B *41/04*
U.S. Cl. 62—211 **18 Claims**



1. In a refrigeration system where refrigerant flows through a closed vapor cycle refrigeration circuit having in series an evaporator, a compressor and a condenser, a control system for controlling the operation of the refrigeration system to vary the effectiveness of the evaporator in order to maintain a

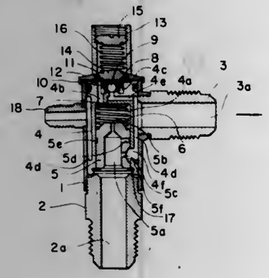
substantially constant desired temperature in a space to which cooled air is supplied by the refrigeration system, comprising:
means, including a first thermistor, for providing a space temperature electrical signal representing the actual ambient temperature in the space to be temperature controlled;
means, including a potentiometer, for providing a temperature set point electrical signal representing the desired temperature for the temperature controlled space;
means, including a second thermistor positioned adjacent to the evaporator outlet, for providing an evaporator outlet temperature electrical signal representing the actual temperature of the refrigerant at the evaporator outlet;
an electromechanical valve included in series with the refrigeration circuit between the condenser and evaporator for controlling the refrigerant flow rate through the circuit, said electromechanical valve also functioning as the expansion device in the refrigeration circuit;
and control means responsive to said space temperature electrical signal, said temperature set point electrical signal, and said evaporator outlet temperature electrical signal for varying the actuation of said electromechanical valve to modulate the refrigerant flowing through the evaporator to adjust the refrigerant temperature at the evaporator outlet to vary the evaporator effectiveness as required to maintain the controlled space at the desired temperature.

4,112,704

PILOT VALVE-TYPE EVAPORATING PRESSURE-REGULATING VALVE USED IN REFRIGERATORS

Moriwo Kaneko, Sayama, Japan, assignor to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Mar. 8, 1977, Ser. No. 775,424
Claims priority, application Japan, Jul. 6, 1976, 51-98615[U]
Int. Cl.² F25B *41/04*; F16K *17/26*
U.S. Cl. 62—217 **3 Claims**



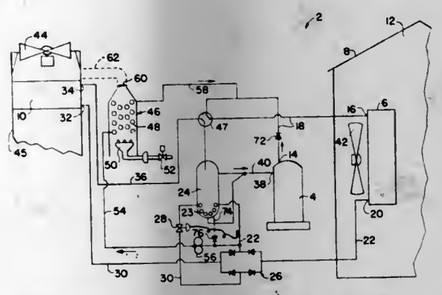
1. A pilot-type evaporating pressure-regulating valve adapted to be disposed in a low pressure system between an evaporator and a compressor of a refrigerator cycle comprising:
a valve sleeve having an outer and an inner wall, said inner wall separating an inner chamber from an annular outer chamber,
a primary connecting pipe in communication with said evaporator, provided at one axial end of said valve sleeve,
a partition wall provided at the other end of said valve sleeve, defining a pilot chamber,
a diaphragm confronting said pilot chamber, a spring of variable force acting on said diaphragm to maintain a set pressure and a mechanism for adjusting said set pressure,
a secondary connecting pipe provided in the outer wall of said regulating valve to connect said outer chamber with said compressor and a junction for an equalizing pipe, said connecting pipe also formed in said outer wall of said regulating valve,
a piston valve housed by said valve sleeve for opening and closing a passage for the refrigerant between said primary junction and said outer chamber,
a pilot passage formed in said end wall to connect said pilot chamber with said inner and outer chambers,
a pilot valve adapted to open and close said pilot passage being actuated and controlled by said diaphragm,
an equalizer hole formed in said piston valve allowing a flow rate of said refrigerant smaller than that provided by said pilot passage when the latter is opened, in order to equalize the pressures within said inner chamber across itself when said pilot passage is closed by said pilot valve, and
a spring acting on said piston valve adapted to move said piston valve to its closing position to close said passage for refrigerant when said pressures across said equalizer are equalized in said inner chamber in the state of closing of said pilot valve, said pressures across said equalizer within said inner chamber causing a differential, when said pilot valve is closed, to move said piston valve for opening said passage for said refrigerant.

4,112,705

FUEL FIRED SUPPLEMENTARY HEATER FOR HEAT PUMP

Francis J. Sisk, Apollo, and Stephen E. Veyo, Murrysville, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 18, 1977, Ser. No. 769,830
Int. Cl.² F25B *27/02, 13/00, 29/00*
U.S. Cl. 62—238 **4 Claims**



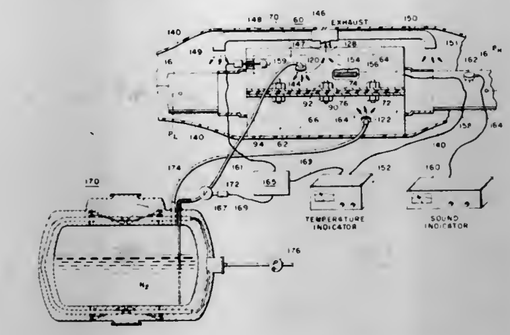
1. A heat pump for heating and cooling an indoor space comprising in combination: a refrigerant vapor compressor; a liquid refrigerant evaporator; a refrigerant vapor condensor; conduits for flowing the refrigerant between the compressor, the evaporator, and the condenser; a liquid refrigerant vaporizer including a refrigerant vaporization coil and a burner for heating the coil, the burner being sized to evaporate a given amount of liquid refrigerant received by the vaporization coil from the condenser; a first pipe connecting an intake side of the vaporization coil with an outlet side of the condenser; flow inducing means in the first pipe for flowing liquid refrigerant to the intake side of the vaporization coil, the flow inducing means being sized to supply the vaporization coil with a quantity of liquid refrigerant that exceeds the given amount of liquid refrigerant evaporated by the burner to maintain the refrigerant vapor in its wet state and to thereby prevent a decomposition of the refrigerant due to overheating; and a second pipe fluidly connected to an outlet side of the vaporization coil and to a vapor intake side of the condenser for flowing heated, vaporized refrigerant from the vaporization coil to the condenser to thereby supply the condenser with additional heat energy that is released upon the condensation of the vapor from the vaporization coil.

4,112,706

APPARATUS FOR FREEZING A SLUG OF LIQUID IN A SECTION OF A LARGE DIAMETER FLUID TRANSMISSION LINE

Beryle D. Brister, P.O. Box 2329, Amarillo, Tex. 79105

Filed Sep. 13, 1976, Ser. No. 722,665
Int. Cl.² F25D *17/00*; G01M *03/02*
U.S. Cl. 62—514 R **22 Claims**



1. Apparatus for freezing a slug of liquid in a section of a fluid transmission line comprising:
an envelope having side portions for enclosing a section of the transmission line and end portions for engaging the transmission line, the side and end portions defining an annular chamber when assembled around the transmission line, the chamber being operable when filled to confine a volume of cryogenic cooling fluid in its liquid phase in intimate contact with the entire exterior surface of the transmission line enclosed by the envelope whereby the freezing effect is achieved substantially by sensible heat flow from the surface of the transmission line through the surrounding mass of liquid cooling fluid in response to convection currents generated by said sensible heat transfer, said envelope including intake port means for admitting a flow of cryogenic cooling fluid into the chamber and exhaust port means for discharging cryogenic cooling fluid out of the chamber;
manifold means disposed within the chamber connected in fluid communication with the intake port means for distributing the flow of cryogenic cooling fluid within the chamber; and,
a plurality of conduit means connected in fluid communication with said manifold, each conduit means including an opening for discharging a stream of cryogenic cooling fluid into the chamber and onto at least a portion of the surface of the transmission line.

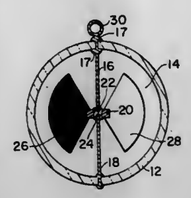
4,112,707

JEWELRY ARTICLE WITH RADIOMETER THEREIN

Robert Joseph, 25 Hahn Pl., Kitchener, Ontario, Canada (N2M 1R4)

Filed Sep. 8, 1976, Ser. No. 721,347
Int. Cl.² A44C *17/00, 25/00*
U.S. Cl. 63—31 **4 Claims**

1. An article of jewelry comprising:
an evacuated substantially transparent chamber,
means within said chamber for mounting a plurality of vanes for rotation about an axis, each said vane having a light absorbing surface on one side and a light reflecting surface on the other, said mounting means including a pair of coaxial shafts fixed to said chamber having spaced but adjacent ends, and a hub rotatably mounted between the ends of said shafts upon which said vanes are mounted,
a ring attached to one of said shafts exteriorly of said chamber, and



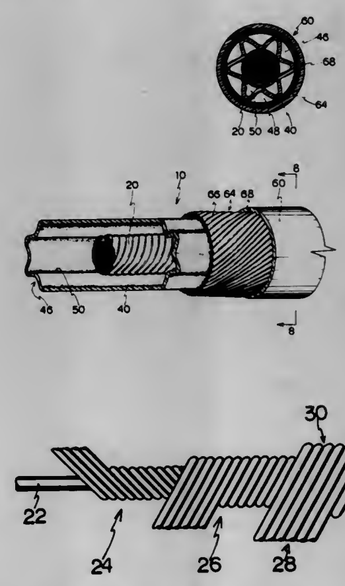
means on said ring for attaching and securing said chamber to a person.

4,112,708

FLEXIBLE DRIVE CABLE

Mataharu Fukuda, Toyonaka, Japan, assignor to Nippon Cable Systems Inc., Takarazuka, Japan

Filed Jun. 21, 1976, Ser. No. 697,939
Int. Cl.² F16C *1/10*
U.S. Cl. 64—2 R **20 Claims**

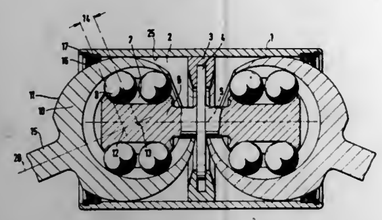


1. A flexible drive cable which comprises:
an elongated torque-transmitting core member;
an elongated tubular liner member made of plastic material defining an internal passage adapted to receive and rotatably support said core member;
an elongated tubular outer member for holding therein said liner member; and
at least one caved portion being disposed between the exterior of said liner member and the interior of said outer member.

4,112,709
DOUBLE UNIVERSAL JOINT

Werner Krude, Neunkirchen, Fed. Rep. of Germany, assignor to Uni-Cardan AG, Lohmar, Rheinland, Fed. Rep. of Germany

Filed Sep. 24, 1976, Ser. No. 726,120
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1975, 2542736
Int. Cl.² F16D *3/30*
U.S. Cl. 64—21 6 Claims

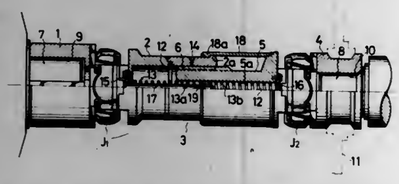


1. A double universal joint comprising a pair of individual universal joints each having first and second joint members, said second joint members each having a spherical outer surface, a centering plate positioned axially between said individual universal joints and movable perpendicular to the axis of rotation of the joint, said centering plate connected to the first members of each joint, a casing having guide surfaces thereon to guide the spherical outer surfaces of said second joint members, means within said casing for guiding said centering plate in movement perpendicular to the axis of rotation of the double universal joint, the centers of curvature of said spherical surfaces being offset equal distances from the centers of the respective individual universal joints when the joint is in its unbent position.

4,112,710
DRIVE SHAFT FOR ROLLING MILLS AND THE LIKE

Hiroji Okuda, Nara, and Shigenori Harada, Kashiharashi, both of Japan, assignors to Koyo Seiko Company Limited, Osaka, Japan

Filed Jul. 15, 1977, Ser. No. 816,088
Int. Cl.² F16D *3/06*
U.S. Cl. 64—23 5 Claims



1. A drive shaft for a rolling mill inter-connecting a drive shaft element and a driven shaft element for the transmission of torque and maintaining the drive shaft element in alignment with the driven shaft element comprising:

a drive fitting yoke fittable to the drive shaft element and rotatable therewith,

a driven fitting yoke fittable to the driven shaft element rotatably therewith and detachably mountable on the driven shaft element,

a sleeve-shaped drive shaft member connected to the drive fitting yoke by a joint member, the drive fitting yoke, the joint member and the drive shaft member providing a universal joint assembly, the drive shaft member being splined at its one end,

a sleeve-shaped driven shaft member connected to the driven fitting yoke by a joint member, the driven fitting yoke, the second-mentioned joint member and the driven shaft member providing a universal joint assembly, the driven shaft member being splined and engaged with the splined end of the drive shaft member so as to be slidable only axially and to transmit the torque, the drive and driven shaft members being combined to define a hollow chamber coaxially extending through the shaft members,

a spring disposed within the hollow chamber defined by the shaft members and biasing the shaft members axially away from each other, and

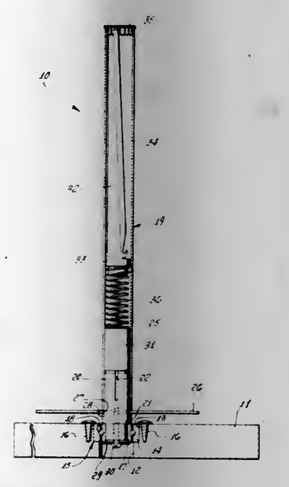
means limiting the maximum length of axial extension of the shaft members, the limiting means restraining the shaft members from extension so that the entire length of the drive shaft is not greater than the definite invariable distance between the base portion of the drive shaft element and the base portion of the driven shaft element,

whereby the limiting means prevent the biasing force of the spring from being delivered to the joint members, the fitting yokes, the drive shaft element and the driven shaft element when the drive shaft is mounted in place.

4,112,711
DIRECT-FROM-SKEIN YARN FEEDER

Luther W. Tripp, 937 Campus, Redlands, Calif. 92373

Filed Mar. 7, 1977, Ser. No. 774,979
Int. Cl.² D04B *33/00*
U.S. Cl. 66—1 A 4 Claims



1. A direct-from-the-skein yarn feeder comprising:

a base comprising a circular flat block of pressed wood or the like, having a central bore and a counterbore;

a bearing on said base, said bearing comprising a radial ball bearing with co-planar inner and outer races, said outer race fitting in said counterbore;

a skein mounting mast, said mast comprising a cylindrical tube, the lower end whereof having inserted upwardly therein a wooden plug which also fits downwardly into said inner race and thereby journals in said bearing;

a skein supporting platform fixed on said mast near the lower end thereof, said mast and platform freely rotating with a skein mounted thereon as yarn is withdrawn from said skein;

means for securing said inner race to said plug;

means for securing said outer race rigidly to said base; and

a short tubular collar of approximately the same inside diameter as said tubular mast fitting said plug so as to itself rest on the upper end of said inner bearing race,

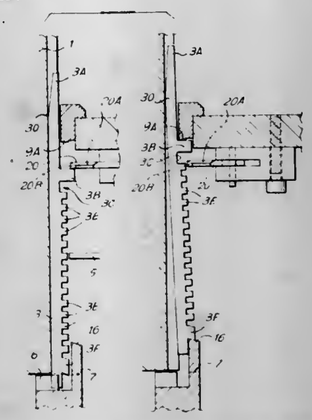
said platform being formed of thin sheet material and having a central hole with the same inside diameter as said tubular mast,

said platform fitting said plug and being assembled thereon between said mast and said collar so as to be snugly gripped between said mast and said collar and said inner race when said plug is assembled as aforesaid on said inner race.

4,112,712
ROCKING JACK SAFETY DEVICE

Franco Bini, Florence, Italy, assignor to Macchine Tessili Circolari Matec S.p.A., Rome, Italy

Filed Jun. 30, 1977, Ser. No. 811,822
Claims priority, application Italy, Jul. 21, 1976, 9534 A/76
Int. Cl.² D04B *35/10*
U.S. Cl. 66—157 3 Claims



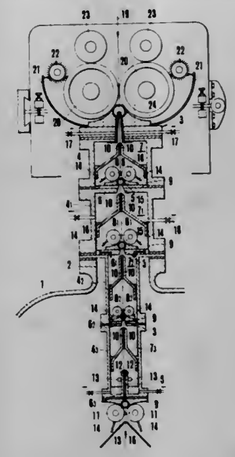
1. In a circular knitting machine, rocking selector jacks having butts including: selection butts, needles associated with the jacks, means co-operating with the selection butts to provide a selection of said selector jacks, a first, raising, cam for raising the selected jacks whereby the associated needles are raised in a zone to take a yarn, and a second cam located in correspondence of said raising zone being defined by a forward end portion including an entry profile, said entry profile being inclined to the radial direction of the cylinder, and being further defined by a lower profile extending parallel to the trajectory of the jacks which have not been raised by the raising cam, said lower profile of the second cam co-operating with a butt of the latter jacks to prevent unintentional raising thereof, said butt being longer than butts adjacent thereto; and resilient bias means biasing the second cam whereby the second cam can be displayed against said bias, by a said butt of a jack which has been raised, unintentionally, prior to reaching the second cam.

4,112,713
SELVAGE CURLING PREVENTION APPARATUS FOR A KNITTED CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Japan

Filed Apr. 18, 1977, Ser. No. 788,466
Claims priority, application Japan, Apr. 26, 1976, 51-47521
Int. Cl.² D06B *23/18*
U.S. Cl. 68—5 E 7 Claims

1. A selvage curling prevention apparatus for a knitted cloth comprising a high pressure steamer vessel having a cloth inlet, wall means mounted on and extending outwardly from said vessel and forming an elongated passageway through said cloth inlet into said vessel for the straight line passage of the cloth through the passageway into said steamer vessel, said passageway having a first end located exteriorly of said vessel and a second end located within said vessel, a roll sealing mechanism located at the first end of said passageway and including a pair of sealing rolls positioned at the first end of said passageway and forming a seal closure for the cloth being introduced into said passageway for subsequent passage into said vessel, said wall means including transverse walls dividing said elongated passageway transversely of its elongated direction into a plurality of serially arranged pressure reduction chambers with said transverse walls forming aligned openings disposed in a straight line therethrough for passage of the cloth between adjacent said pressure reduction chambers, said transverse walls having a first side closer to the first end of said passageway and a second side facing in the opposite direction and being closer to the second end of said passageway, pairs of first metal gap rolls each mounted on the first side of at least a plurality of adjacent said transverse walls commencing with said transverse wall closest to the first end of said passageway,



each said pair of metal gap rolls forming a gap therebetween selected so that the cloth can pass therethrough in a flat manner, a pair of second metal gap rolls located on the second side of said transverse wall located at the second end of said passageway and positioned within said vessel and said pair of second metal gap rolls having a gap therebetween corresponding to the gap of said pairs of first metal gap rolls and permitting steam from said vessel into said passageway so that the steam heats the metal gap rolls for heating the cloth and the steam within said passageway also supplies humid heat to the cloth while said pair of sealing rolls seal the first end of said passageway.

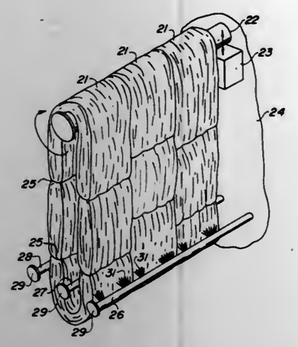
4,112,714
ASYMMETRIC SKEIN DYEING

Isadore Rosenthal, Levittown; Lawrence J. Exner, Ambler; Gregory J. Niksa, Collegeville; Warren I. Weiss, Southampton, all of Pa., and Maurice G. Young, Cinnaminson, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 641,405, Dec. 17, 1975, Pat. No. 4,052,155.
This application May 16, 1977, Ser. No. 797,096
Int. Cl.² D06B *1/02, 11/00*
U.S. Cl. 68—206 10 Claims

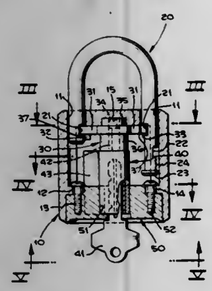
1. Apparatus for random skein dyeing of yarn, including rotatable support means for axially supporting and rotating at least one skein thereon, first and second dye delivery means below said support member and spaced apart on opposing sides of said skein and generally parallel to said sides, said first dye delivery means being adjacent an exterior side of said skein and said second dye delivery means extending through said skein, said dye delivery means having dye discharge outlets posi-

tioned to discharge dye to at least one discrete location on said skein but to less than the number of locations effective for



dyeing across the full width of said skein, and said dye delivery means being devoid of other dye discharge outlets.

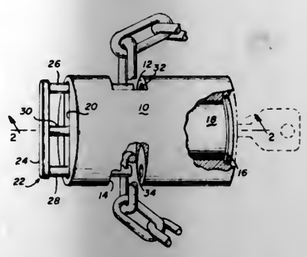
4,112,715
PADLOCK
Tim M. Uyeda, South San Gabriel, Calif., assignor to Klaus W. Gartner, La Palma, Calif.
Continuation of Ser. No. 617,514, Sep. 29, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,301
Int. Cl.² E05B *67/02, 67/12*
U.S. Cl. 70—38 A **1 Claim**



1. In a padlock having a body, shackle means having first and second portions, means for receiving said portions of said shackle means within said body and internal locking means for locking with said portions and operable by an associated key in a given direction to open the padlock, said shackle means having a first, fully locked position in which said first and second portions thereof are received in said receiving means, and a second fully unlocked position in which said second portion is outside said body, the improvement comprising the provision of:

means for removeably retaining said first portion of said shackle means to said body when said shackle means portions are unlocked by said internal locking means, said retaining means and said first shackle portion comprising cooperating means for fully releasing said first portion for complete removal of said shackle means from said body upon positioning said shackle means first portion in a position in said body intermediate said fully locked and fully unlocked positions and upon rotating said shackle means about the axis of said first portion to a predetermined position in which said second portion is non-aligned with said receiving means therefor and upon turning said associated key in said locking means in a reverse direction to said given direction.

4,112,716
PADLOCK DEVICE
Joachim Wippich, Campbell, Calif., assignor to Research Machine & Development, Inc., Santa Clara, Calif.
Filed May 18, 1976, Ser. No. 687,515
Int. Cl.² E05B *67/02, 67/22*
U.S. Cl. 70—38 C **11 Claims**



1. A padlock device comprising:

an elongated unitary body having

a first bore extending longitudinally into one end thereof,

a second bore extending longitudinally into the other end thereof and in communication with a first side portion of said first bore,

a first recess formed in a side of said body and located such that the axis of said second bore passes therethrough, said first recess having an external perimeter formed such that said axis of said second bore lies internal of any line connecting opposite sides of said perimeter,

a third bore extending longitudinally into said other end of said body and in communication with a second side portion of said first bore, and

a second recess formed in another side of said body and located such that the axis of said third bore passes through a central portion thereof;

a lock cylinder adapted to fit within said first bore and having

a first laterally movable pawl capable of being extended at least part way into said second bore,

a second laterally movable pawl capable of being extended at least part way into said third bore, and

a first eccentric cam for engaging said first pawl and a second eccentric cam for engaging said second pawl, said cams being joined and rotatable together and being configured such that rotation thereof through a first angle causes said first pawl to be moved into said second bore and rotation through a second angle causes said second pawl to be moved into said third bore; and

shackle means including first and second elongated shackle pins each having a notch provided in one side near distal ends thereof, said pins being respectively disposed within said second and third bores and movable between a first position in which said distal ends respectively extend completely through said first and second recesses so that said notches can be engaged by said first and second pawls, and a second position wherein said distal ends extend less than half way through said first and second recesses, the distal end portions of said pins being partially enclosed by and thus protectively shielded by the portions of said body surrounding said recesses.

4,112,717
KEY BOX
Terrag W. Bradley, Monroe, Oreg., assignor to Supra Products, Inc., Salem, Oreg.
Filed Apr. 15, 1977, Ser. No. 787,837
Int. Cl.² B65D *55/14;* E05B *65/52*
U.S. Cl. 70—63 **5 Claims**

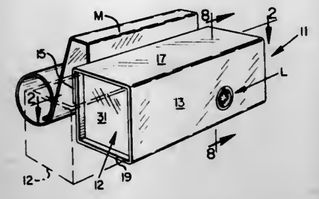
1. In a key box,

a case,

a drawer slidable into the case,

first locking means within the case for locking the drawer against removal,

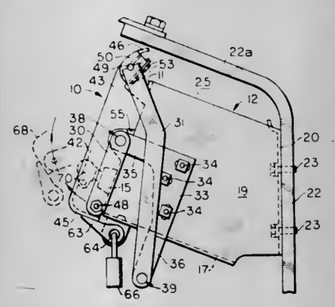
and second locking means exposed at the exterior of the case



for actuating the first locking means and for pushing said drawer outwardly,

said second locking means having a lost motion action to facilitate actuation of the first lock means prior to exerting a pushing force against said drawer.

4,112,718
LINK-SUPPORTED INSTRUMENT PANEL GUARD
John S. Logsdon, Chillicothe, and George H. Meiner, III, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 10, 1977, Ser. No. 823,300
Int. Cl.² B60K *37/00*
U.S. Cl. 70—159 **10 Claims**



1. A vandalism guard for a vehicle control console having an upright front panel containing instruments to be protected comprising:

a protective cover for enclosing the instrument front panel of the console, said cover being movable between an out-of-the-way storage position above and overlaying the console and an enclosing position over the instrument front panel, the upper and lower ends of said cover being respectively positioned adjacent the top and bottom of the instrument front panel when said cover is moved to said enclosing position;

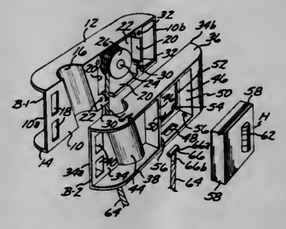
a first long link pivotally connecting the upper end of said cover to a pivot base support carried by the vehicle below and rearwardly of the instrument front panel, said first link guiding and controlling swinging movement of the cover upper end between said instrument enclosing and storage positions through a relatively flat arc extending from the upper front panel to the upper rear console;

a second short link pivotally connecting the lower end of said cover to a pivot base support carried by the vehicle adjacent the instrument front panel intermediate the top and bottom thereof, said second link guiding and controlling swinging movement of the cover lower end between said instrument enclosing and storage positions through a relatively sharp arc extending from the lower front panel to the upper front panel; and

lock means for securing said cover to the vehicle in enclosing position, said links holding the cover immovable relative to the vehicle when said lock means is engaged.

4,112,719
Patent Not Issued For This Number

4,112,720
BICYCLE LOCK ASSEMBLY
Leonard O. Green, 620 E. Pine, Santa Ana, Calif. 92701
Filed Dec. 1, 1976, Ser. No. 746,486
Int. Cl.² E05B *71/02*
U.S. Cl. 70—233 **2 Claims**



1. In combination with a lock of the type that includes a substantially square body of substantial width that has a first opening therein that leads to a bifurcated bolt that may be selectively moved to either a first or second position by manually operated means that form a part of said lock, a support assembly for holding said lock in a fixed position on a tubular frame of a bicycle adjacent one of the wheels thereof, each of which wheels includes a plurality of circumferentially spaced radially extending spokes and a rim, said lock support assembly including:

a. first and second mating housing portions that interlock to engage a section of said frame adjacent one of said wheels, said first housing portion defining a confined spaced, said

second housing defining a cavity that is transversely aligned with said confined space, said first and second housing portions cooperating to provide a housing when interlocked with one another, with said cavity of such size that said lock body fits snuggly therein to have said first opening axially aligned with a second opening in said second housing portion;

b. first means for holding said first and second portions in interlocking relationship on said frame, said first means being concealed when said lock is disposed in said cavity;

c. second means for maintaining said lock in a permanent position in said cavity with said first and second openings axially aligned;

d. a cable that has first and second ends;

e. a spring loaded reel rotatably supported in said confined space, said first end of said cable secured to said reel, with said cable wound on said reel, and a portion of said cable extending outwardly through a third opening in said housing; and

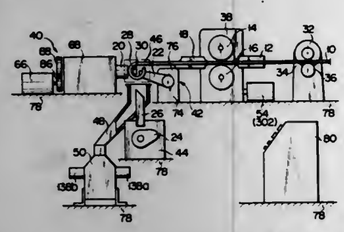
f. a rigid T-shaped member rigidly secured to said second end of said cable, said T-shaped member including a first leg normal to said second end of said cable and a second leg axially aligned with said cable, with said cable when partially withdrawn from said housing, subsequently looped between spokes of one of said wheels, with said T-shaped member extended upwardly through said first and second openings being thereafter engaged by said bifurcated bolt when said lock is manually manipulated to move said bolt from said first to said second position and the looped portion of said cable maintaining the one of said wheels through which it extends in a substantially non-rotatable position to prevent the unauthorized riding of said bicycle.

4,112,721

NC COIL SPRING MANUFACTURING APPARATUS

Hirobumi Takase, Yokohama, and Yutaka Utsunomiya, Ina, both of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Apr. 5, 1977, Ser. No. 784,917
Claims priority, application Japan, Apr. 7, 1976, 51-39089; Dec. 18, 1976, 51-152635
Int. Cl.² B21F *3/04, 11/00*
U.S. Cl. 72—12 **11 Claims**



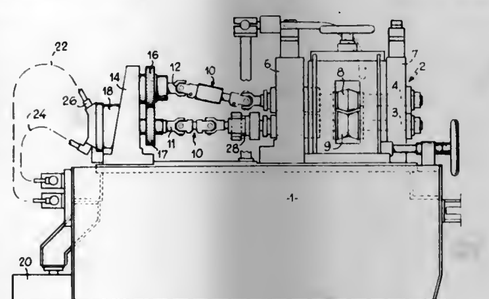
1. A NC apparatus for manufacturing coil springs, said springs having closely coiled end portions and portions of changing pitch extending from said end portions and merging with the ends of an intermediate portion of coil turns having a predetermined pitch, said apparatus comprising: a coil spring forming mechanism having a pitch tool, a diameter tool, and a cutter; feed rollers for feeding an element wire into said coil spring forming mechanism; a mechanism for driving said feed rollers; a microcomputer having a memory storage and a central processing unit; an input unit for inputting data for coil spring forming into said computer; a rotary encoder for transmitting a pulse signal at a frequency corresponding to the travelling speed of said element wire; first, second and third counters for receiving setting signals transmitted from said computer and pulse signals transmitted from said rotary encoder and transmitting control signals for driving said pitch tool, coiling point, and cutter respectively; a first pulse motor and a second pulse motor to rotate upon receipt of control signals from said first and second counters respectively, thereby to drive said pitch tool and diameter tool, respectively, so as to form a coil spring, and a pitch tool feed mechanism driven by said first pulse motor for rapidly advancing said pitch tool at an initial speed from a first position where said pitch tool serves to form the closely coiled end portions of a coil spring to a second position where said pitch tool serves to form the coil turns at said predetermined pitch between the closely coiled end portions, said initial speed being sufficient to reduce the extent of said portions of changing pitch to a minimum, and for rapidly moving said pitch tool from the second position and abruptly stopping said pitch tool at the first position after the coil turns have been formed.

4,112,722

COLD PROFILING MACHINE

Michel Jean Boucard, Fontenay-le-Fleury, France, assignor to Societe Industrielle et Financiere le Profil, Saint-Cloud, France

Filed Jul. 28, 1977, Ser. No. 820,012
Claims priority, application France, Feb. 14, 1977, 77 04066
Int. Cl.² B21D *5/08*
U.S. Cl. 72—181 **5 Claims**



1. A profiling machine employing a cold deformation comprising a succession of heads aligned one behind the other, an individual hydraulic drive motor provided for each head, each head including two superimposed rolls, each roll having a support shaft, one of the support shafts in each head being connected to the corresponding hydraulic drive motor, connecting means for connecting said one support shaft of each of adjacent heads to the corresponding one support shaft of the adjacent head, said connecting means being capable of being disconnected, and a source of fluid under pressure being connected to all said hydraulic motors.

4,112,723

HYDROSTATIC EXTRUSION APPARATUS

Akira Asari, Osaka, and Hidehiro Tsuzuki, Toyonaka, both of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Division of Ser. No. 629,891, Nov. 7, 1975, Pat. No. 4,083,214.
This application May 19, 1977, Ser. No. 798,572
Claims priority, application Japan, Nov. 7, 1974, 49/28758; Nov. 7, 1974, 49/28759
Int. Cl.² B21D *22/10*
U.S. Cl. 72—60 **3 Claims**

1. A hydrostatic extrusion apparatus for extruding a billet which comprises:

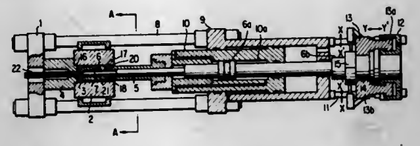
a container movably disposed along the central axis of said extrusion apparatus;

a platen disposed in front of said container;

a supply unit charged with an extrusion die, a pressure medium, said billet and a seal block member for sealing said pressure medium within said supply unit;

a stem mounted on said platen for increasing the pressure of said pressure medium within said supply unit;

means for retaining said supply unit at a charging position such that the forward end of said supply unit is held in close contact with and in coaxial alignment with said container;



means for driving said stem so as to move said extrusion die, said pressure medium, said billet, and said seal block member into said container; and,

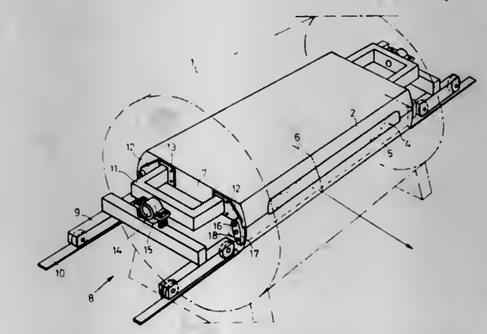
means for extruding said billet through said extrusion die.

4,112,724

TRANSPORTATION UNITS FOR SUPPORTING AND MOVING PLATE-FORMED ATTACHMENT MEMBER INTO AND OUT OF A PRESS STAND OF HYDRAULIC PRESS

Harry Claesson, and Keijo Hellgren, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Jun. 8, 1977, Ser. No. 804,838
Claims priority, application Sweden, Jun. 9, 1976, 7606461
Int. Cl.² B21D *22/10*
U.S. Cl. 72—63 **7 Claims**



1. A hydraulic press for pressing sheets of metal against a tool in order to be formed thereby, the press comprising:

an elongated press stand which is fixedly mounted, the press stand including a pressure space therein which is capable of containing a tool,

an elongated plate-formed attachment member which supports a flexible bag-like diaphragm and a press pad which is capable of contacting a sheet of metal and forming it around a tool in the pressure cell,

two transportation units connected to said plate-formed attachment member for moving said plate-formed attachment member with supported diaphragm and press pad into and out of said pressure space within said press stand,

track means for supporting said two transportation units and for conveying said two transportation units into and out of said pressure space within said press stand,

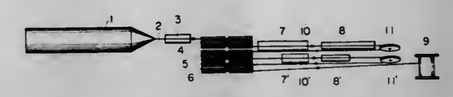
said two transportation units each including a transportation car and a connection, each said connection unit being connected to said plate-formed attachment member and each transportation unit including a bearing such that the plate-formed attachment member is rotatable about an axis formed between said transportation units, and at least one of said two transportation units includes means for raising and lowering the connection unit thereof and thus said plate-formed attachment member at the connection point with said connection unit.

4,112,725

METHOD AND APPARATUS FOR CONTINUOUSLY HOT-STRETCHING A STEEL CABLE

Yasuo Yamaguchi, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 13, 1977, Ser. No. 832,863
Claims priority, application Japan, Sep. 14, 1976, 51-110587
Int. Cl.² B21F *21/00*
U.S. Cl. 72—128 **7 Claims**



1. A method of hot-stretching a cable in which first, second and third capstans of different diameters, having a common rotating shaft, and having grooves on the circumferential surfaces thereof for winding said cable a plurality of turns are provided in parallel between a stranding machine and a winding machine and positioned adjacent to the stranding machine, first and second guide pulleys are provided in parallel and positioned adjacent to the winding machine, a front heat treatment equipment for heating said cable is provided between said first capstan and said second capstan, and a rear heat treatment equipment for heating said cable is provided between said second capstan and said third capstan, said method comprising the steps of

winding said cable around said winding machine through said first capstan, said first guide pulley, said second capstan, said second guide pulley and said third capstan,

increasing the operating speed of said stranding machine to a predetermined low speed after starting, and after the predetermined low speed is maintained for a predetermined period of time, gradually increasing the operating speed to a rated operating speed of said stranding machine, and

selectively operating said front heat treatment equipment and said rear heat treatment equipment, while at the same time selectively subjecting a first part of said cable lying between said first capstan and said second capstan and a second part of said cable lying between said second capstan and said third capstan to a predetermined tension, until the operating speed of said stranding machine reaches said rated operating speed after starting so that the entire length of said stranded cable is continuously and effectively subjected to a hot-stretching treatment.

4,112,726

METHOD AND APPARATUS FOR FORMING A ROW OF SPRING COILS FROM A CONTINUOUS LENGTH OF WIRE

Elvin E. Adams; Tom J. Wells, both of Carthage, Mo.; Horst F. Wentzek, Kenosha, Wis.; Henry Zapletal, Carthage, Mo., and Marty J. Zugel, Cleveland, Ohio, assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Sep. 12, 1977, Ser. No. 832,399
Int. Cl.² B21F *27/16*
U.S. Cl. 72—137 **49 Claims**



1. A method for forming a row of spring coils from a continuous length of spring wire, said method comprising the steps of forming a helix of continuous length from said continuous length of spring wire,

thereafter folding said continuous length helix into a wave-like configuration for providing a plurality of spring coils in a coil row, each of said coils being connected at one end with an adjacent coil to one side thereof by one connector section and being connected at the other end with an adjacent coil to the other side thereof by another connector section, each of said connector sections being disposed in a three-dimensional looped attitude in said folding step, and

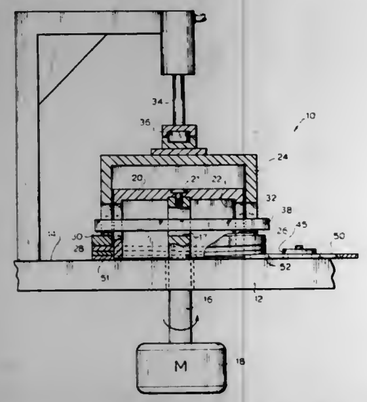
thereafter forming each of said connector sections into a desired configuration from that three-dimensional looped attitude established in said folding step, said forming step being performed after said folding step has been performed.

4,112,727

METHOD AND APPARATUS FOR MAKING PIPE FLANGES

Marshall B. Brown, P.O. Box 9515, Winter Haven, Fla. 33880

Filed Apr. 1, 1977, Ser. No. 783,668
Int. Cl.² B21D *7/04, 11/06*
U.S. Cl. 72—142 **15 Claims**



1. Apparatus for making flanges from bar stock of the type having a generally rectangular cross-section, comprising:

a substantially flat work surface for suporting said bar stock with the long sides of said stock parallel with the plane of said work surface;

a rotatable die positioned adjacent to said work surface;

means for rotating said die;

means for pinning one end of said bar stock in a position substantially parallel with said work surface;

a hollow bonnet surrounding said die and having a peripheral edge engaging said bar stock;

means for applying a force against said bonnet in directions generally parallel with the axis of said die;

means for rotating said pinning means with said die for bending said bar stock about one short side thereof and wrapping said bar stock about said die; and

means for rotating said bonnet with said die.

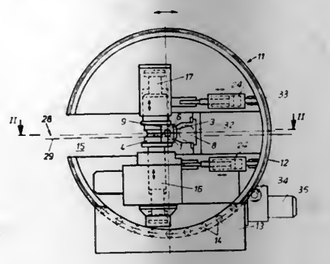
4,112,728

DEVICE FOR BENDING PIPES

Rolf Noack; Joachim Schuster, and Udo Lohse, all of Oberhausen, Germany, assignors to Deutsche Babcock Aktiengeselischaft, Germany

Continuation-in-part of Ser. No. 715,871, Aug. 19, 1976, abandoned. This application Jan. 26, 1978, Ser. No. 872,366
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1975, 2537382
Int. Cl.² B21D *7/04*
U.S. Cl. 72—154 **10 Claims**

1. In a device for bending pipes into a serpentine pipe bank having alternating right-hand and left-hand bends and in which the pipe is held, during the bending opertion, on a bending rail and the pipe end to be bent is clamped in a bending form, the improvement comprising, in combination, a cylindrical frame; means mounting a single set of bending tools, consisting of a non-rotatable rail and a driven rotatable bending form, within said cyindrical frame for bending a pipe length extending coaxially through said cylindrical frame and through said bending tools; the already formed portion of a serpentine pipe bank swinging in a horizontal plane during formation of each additional pipe bend therein; stationary support means adjacent said cylindrical frame supporting the pipe bank during such swinging thereof in a horizontal plane; said cylindrical



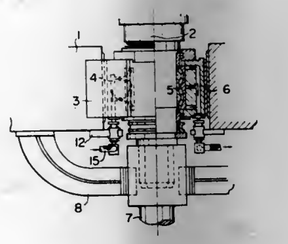
frame being formed with a radial slot accommodating the already formed portion of the pipe bank during such swinging thereof; such already formed portion being displaced horizontally out of said radial slot prior to formation of the next pipe bend; and means mounting said frame for rotation about the longitudinal axis of the pipe length to be bent without rotation of said bending form relative to said cylindrical frame and with the bending tools disengaged from the pipe length, whereby the bending tools can make alternating right-hand and left-hand bends in the pipe length without turning of the pipe length or a pipe bank including the pipe length about the longitudinal axis of the pipe length.

4,112,729

COUPLING DEVICE OF OIL FEEDING PIPE FOR ROLLING MILL

Takao Sakanaka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1977, Ser. No. 823,748
Claims priority, application Japan, Aug. 25, 1976, 51/100543
Int. Cl.² B21B *27/06, 31/08*
U.S. Cl. 72—236 **12 Claims**



1. A coupling device of oil feeding pipe for rolling mill housing a roll assembly composed of a roll rotatably supported by a pair of roll chocks on driving and driven side of said rolling mill and a mill housing in which said roll assembly being built and exchangeable in axial direction of said roll comprising;

a tubular coupling having a pair of tubular members provided at least one of driving and driven side being in liquid sealing engagement to supply and exhaust lubricating oil to and from said roll chocks,

one of said tubular member provided on said roll chock and the other provided on a guide member slidably mounted on said mill housing in such a manner that said tubular members are capable to move in response to vertical movement of said roll assembly, and

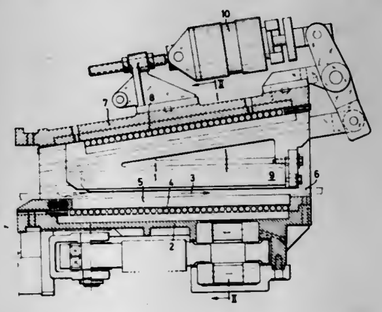
said tubular member coaxially positioned to couple upon exchange of said roll assembly.

4,112,730

CARRIAGE DRAWING MACHINE FOR UNIFORMLY DRAWING ELONGATED MATERIAL TO BE DRAWN

Johann Greven, Aachen, Germany, and Johann Mostert, Eupen, Belgium, assignors to Schumag Schumacher Metallwerke Gesellschaft mit beschrankter Haftung, Aachen, Germany

Filed Aug. 29, 1977, Ser. No. 828,884
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716657
Int. Cl.² B21C *1/28*
U.S. Cl. 72—290 **14 Claims**



1. In a carriage drawing machine for uniformly drawing elongated material to be drawn, having two drawing carriages reciprocatingly displaceable in mutually opposite directions, a drawing jaw vise on each carriage for alternately gripping the material to be drawn, each of the vises having two drawing jaws held in a housing by a wedge structure with bearing rollers interposed which serves to self-lock during the drawing, both of said drawing jaw vises being disposed to receive and simultaneously draw two bars of the material to be drawn, at least one of said two drawing jaws being engageable in common with both of the bars, and including an equalizing support in association with the other of said two drawing jaws.

4,112,731

LIGHT GAUGE SHEET METAL FORMING MACHINE

Leroy E. Anderson; David V. Charlson, and Mark A. Vierkant, all of Detroit Lakes, Minn., assignors to Manufacturers Systems, Inc., Detroit Lakes, Minn.

Filed Jan. 24, 1977, Ser. No. 761,801
Int. Cl.² B21D *5/04*
U.S. Cl. 72—320 **24 Claims**

1. A sheet metal forming machine comprising:

(a) a rigid frame;

(b) a bed fixedly carried by said frame and having a breaking edge at the forward end thereof;

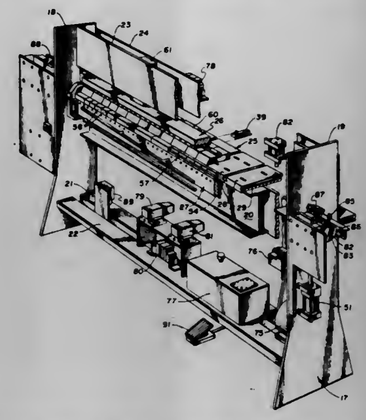
(c) a clamping bar movably mounted upon said frame for movement between clamping and non-clamping position relative to said bed for clamping a sheet of metal therebetween along said breaking edges and having an underside surface;

(d) an elongated mounting channel extending longitudinally of said clamping bar and formed in its said underside surface and having vertically extending side walls;

(e) said clamping bar including a plurality of clamping fingers of various widths each having an upstanding mounting bar extending upwardly thereabove constructed and arranged to be laterally slidable and removably received within said channel to support its associated clamping finger upon said bar for universal sliding adjustment longitudinally of said channel along said breaking edge;

(f) the forward ends of said clamping fingers terminating co-planar with said breaking edge of said bed when so mounted within said channel;

(g) horizontally adjustable mechanical securing means carried by said clamping bar opposite said channel and extending thereinto transversely of its side walls for securing said mounting bars of said clamping fingers in desired position within said channel; and



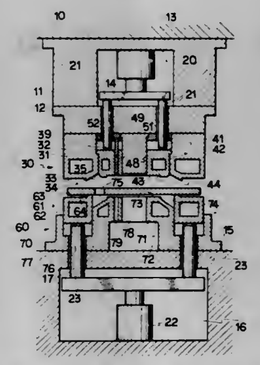
(h) a forming bar pivotally mounted on said frame for close pivotal arcuate movement around said clamping bar fingers and the breaking edge of said bed for cooperative forming of such a sheet of metal therebetween.

4,112,732

METHOD AND APPARATUS FOR SHAPING INTEGRALLY-SHAPED TYPE BRAKE DISKS FOR CARS

Hiromu Okunishi, Sayama; Hideki Nakaji, Kawagoe; Hiroyuki Suwa, Sayama, and Hideaki Sato, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1977, Ser. No. 789,013
Claims priority, application Japan, Apr. 28, 1976, 51-48962
Int. Cl.² B21J *13/02*
U.S. Cl. 72—334 **13 Claims**



1. A method of forming an integrally-shaped brake disk for a vehicle, comprising the steps of:

heating a brake disk material to a quenching temperature or a heating temperature range set from the hardness required for said brake disk;

maintaining said material heated while inserting said heated

material between upper and lower dies of a brake disk forming apparatus;

strongly pressing and holding the outer peripheral portion and central portion of said material with outer and inner movable upper and lower dies;

biting both front and back surfaces of a first boundary part between an intermediate portion and said outer peripheral portion of said material and a second boundary part between said intermediate portion and central portion of said material, by inner peripheral projecting portions and outer peripheral projecting portions of said outer and inner upper and lower dies;

drawing and shaping the intermediate portion between said central and outer peripheral portions of said material by relative vertical motion between either inner or outer upper and lower dies, while said central and outer peripheral portions of said material are maintained pressed and held; and

continuously quenching said material while it is maintained pressed and held by said outer and inner upper and lower dies.

4,112,733

DEVICE FOR MONITORING ABSOLUTE VELOCITY OF POINTS OF DRIVEN PILES DURING IMPACT

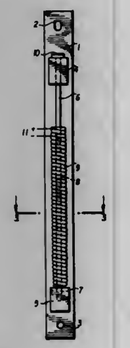
Silvano Marchetti, Viá Bracciano, 38, Rome, Italy

Filed Apr. 6, 1977, Ser. No. 785,292

Claims priority, application Italy, Apr. 6, 1976, 48881 A/76

Int. Cl.² G01N *3/34*

U.S. Cl. 73—12 **3 Claims**



1. A device for the measurement of the absolute velocity of a driven pile during hammer impact comprising: a base plate adapted to be rigidly attached to a pile; a magnetic core velocity transducer comprising a magnetic core, a hollow coil surrounding the core and terminals, the axis of the velocity transducer being aligned in the direction of movement of the pile during impact; and support means rigidly attached to the base plate and rigidly supporting the core of the velocity transducer so that during impact of the pile only relative movement of the coil over the core occurs which generates a voltage at the transducer terminals proportional to the relative velocity of the transducer with respect to the pile.

4,112,734

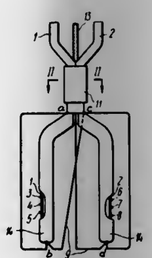
DIFFERENTIAL SCANNING MICROCALORIMETER

Vladimir Ilich Goryachev, Mikroraion V, 31, kv. 32; Grigory Vladimirovich Kotelnikov, Mikroraion G, 10, kv. 56, both of Puschino Serpukhovskogo raiona, Moskovskoi oblasti, and Pavel Semenovich Makurin, Sirenevy bulvar, 62, kv. 213, Moscow, all of U.S.S.R.

Filed Nov. 10, 1975, Ser. No. 630,362

Int. Cl.² G01K *17/00*

U.S. Cl. 73—15 B **5 Claims**



1. A differential scanning microcalorimeter comprising: a sample calorimetric chamber made as an elongated tube bent so that both ends of the tube are in close contact with each other over a section disposed between the outlet ends of the tube and a working volume of the sample chamber; a reference calorimetric chamber made as an elongated tube bent so that both ends of the tube are in close contact with each other over a section disposed between the outlet ends of the tubes and a working volume of the reference chamber, said sections of each of said tubes being in close contact with each other; first temperature regulator means for equalizing the temperatures between the chambers by applying additional electric power to heat said sample chamber responsive to a signal indicating a temperature difference between said chambers and for issuing a signal proportional to said additional power to be recorded in recording means, said first temperature regulator means having an input and an output; heater elements, for heating said sample and reference chambers, connected to said output of said first temperature regulator means and disposed on said chambers; temperature-sensing elements, for determining the temperature of each of said chambers, connected to said input of said first temperature regulator means and installed on each of said chambers; means for shaping a program for temperature scanning of said chambers and having an output; second temperature regulator means for program-controlled temperature scanning of said chambers by supplying variable power to said heater elements of said chambers in response to a signal from said means for shaping a program for temperature scanning, said second temperature regulator means having inputs and outputs, said inputs being coupled with said temperature-sensing elements and with said output of said means for shaping a program for temperature scanning, and said outputs being coupled with said heater elements of said chambers; third temperature regulator means serving to separate the working volumes, said third temperature regulator means having an input and an output; additional temperature-sensing elements for separating the working volumes, installed on said working volumes of said chambers and coupled to said input of said third temperature regulator means to supply said third temperature regulator means with a signal indicating a temperature difference over the length of the working volumes of each of said chambers; an additional heater element coupled to said output of said third temperature regulator means and disposed on said section of contact between said chambers beyond said working volumes, said additional heater element serving to reduce to zero the temperature difference over the length of the working volumes by heating them from said third temperature regulator means in response to a signal indicating the temperature difference over the length of the working volumes and supplied from said additional temperature-sensing elements.

4,112,735

DETECTION OF BUBBLES IN A LIQUID

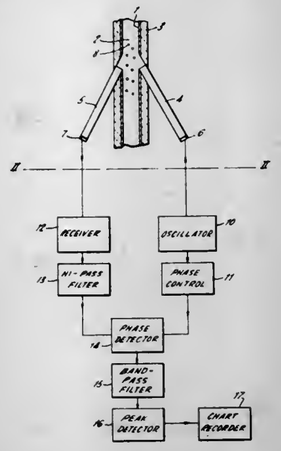
James Alan McKnight, Altrincham, England, assignor to United Kingdom Atomic Energy Authority, England

Filed Aug. 30, 1977, Ser. No. 829,134

Claims priority, application United Kingdom, Sep. 13, 1976, 37927/76

Int. Cl.² G01N *29/02*

U.S. Cl. 73—19 **11 Claims**



1. Apparatus for detecting a bubble in a liquid stream contained in a metal duct and comprising,

(a) a transmitter waveguide;

(b) an ultrasonic sending transducer disposed at one end of the transmitter waveguide for sending an ultrasonic signal of 1MHz through the waveguide;

(c) a receiver waveguide;

(d) a receiving transducer at one end of the receiver waveguide, the waveguides being disposed one on one side and one on the other side of the duct and of the same material and integral with the duct as the other end of the waveguides, each waveguide being at the same angle of between 15° to 30° to the longitudinal axis of the duct;

(e) a sending oscillator connected to the sending transducer;

(f) a receiving means for receiving a signal from the receiving transducer;

(g) a first high-pass filter for removing background noise to which the receiving means provides an output in response to the signal from the receiving transducer;

(h) a frequency translator which is arranged to receive an output signal from the first high-pass filter, and from the sending oscillator, and is arranged to reduce the frequency of the signal it receives from the high-pass filter to 4 KHz;

(i) an amplitude limiter to which the frequency translator provides an output and which ensures that all signals therefrom have the same amplitude without changing the phase thereof;

(j) a reference oscillator to which the frequency translator also provides an output and which averages the frequency of the output it receives and introduces a delay thereby;

(k) a phase control means to which the reference oscillator provides an output;

(l) a phase detector means for detecting and accepting transient asymmetric sidebands in the waveband of signals it receives from the amplitude limiter and the phase control means and rejecting both symmetric and non-transient asymmetric signals thereof;

(m) a second high-pass filter for receiving an output from the phase detector means to limit the frequency range of the output signal from the second high-pass filter;

(n) a peak detector means for receiving an output signal from the second high-pass filter, and

(o) a pulse height analyser for receiving an output from the peak detector means.

4,112,736

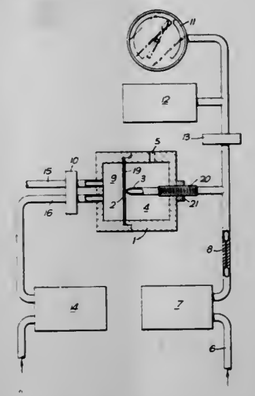
GAS DETECTOR

Alfred G. Wheldon, and Ernest D. Harris, both of Dagenham Dock, England, assignors to The Distillers Company (Carbon Dioxide) Ltd., Reigate, England

Filed Jan. 17, 1977, Ser. No. 759,900

Int. Cl.² G01N *7/10*

U.S. Cl. 73—23 **27 Claims**



1. A detector for detecting the presence of a particular gas in a mixture of gases, a membrane having two faces permeable by said particular gas at a rate greater than the other gases in said mixture, a thin flexible diaphragm and wall means, said membrane, said diaphragm and said wall means defining an enclosed space, said detector also including a nozzle to which, in use, a gas is supplied at a steady pressure, said nozzle having an opening at one end in proximity to said diaphragm so that movement of said thin flexible diaphragm interferes directly with the flow of said gas through said nozzle, and means for supplying said mixture of gases to one face of said membrane, the arrangement being such that when said particular gas is present in said mixture of gases said particular gas permeates through said membrane from said one face to change the pressure in said enclosed space causing said diaphragm to move to interfere with the flow through said nozzle and thereby produce a change of pressure in said supply of gas upstream from said nozzle, whereby said change in pressure constitutes a pneumatic signal indicating the presence of said particular gas in said mixture of gases.

4,112,737

TRANSFORMER FAULT DETECTION

James E. Morgan, Kirkland, Canada, assignor to Morgan Schaffer Corporation, Montreal, Canada

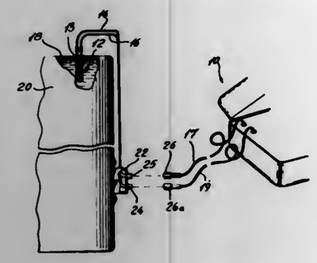
Filed Apr. 27, 1977, Ser. No. 791,512

Int. Cl.² G01N *7/10*

U.S. Cl. 73—23 **8 Claims**

1. In electrical equipment containing insulating oil wherein fault gases may be generated, the improvement comprising means for detecting and measuring said fault gases, said means comprising a cell adapted to be located in a potential fault gas environment within said electrical equipment, said cell including an inlet manifold and an outlet manifold, a plurality of elongated hollow tubes, each of said tubes communicating respectively with said inlet and outlet manifolds, each of said tubes being permeable to gases but impermeable to liquids, hollow extension leads extending from said inlet and outlet manifolds, a portable analytical measuring device, means for removably connecting said hollow extension leads to respective inlet and outlet conduits in said measuring device, said

measuring device including a gas chromatograph analyzing means, means in said portable measuring device for passing a carrier gas through said inlet conduit, through said hollow tubes, and through said extension leads and said outlet conduit for flushing into said gas chromatograph analyzing means a sample gas which is allowed to come to equilibrium in said cell, the minimum volume of sample gas in said cell at equilibrium being defined by the internal volume of said plurality of hollow



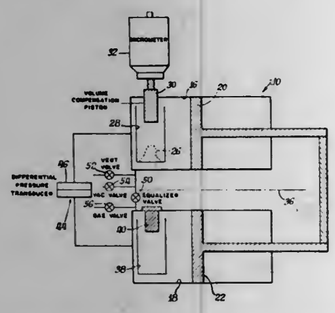
tubes and said manifolds, said minimum sample gas volume being sufficiently large so that individual gases separated by said gas chromatograph analyzing means temporarily attain constant concentrations in said carrier gas, said constant concentrations being independent of said sample gas volume so that concentrations of individual fault gases in said sample gas can be measured without consideration of the actual volume of said sample gas.

4,112,738

METHOD AND APPARATUS FOR DETERMINING THE VOLUME OF A CONDENSED MATERIAL SAMPLE

Philip L. Turner, Del Mar, Calif., assignor to Systems, Science and Software, La Jolla, Calif.

Filed Apr. 18, 1977, Ser. No. 788,559
Int. Cl.² G01F *17/00*
U.S. Cl. 73—32 R **12 Claims**



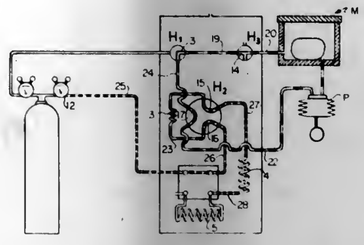
1. A method for determining the volume of a condensed material sample comprising the steps of; confining a predetermined gas in each of a pair of substantially equal volume chambers one of which is adapted to receive a condensed material sample therein of unknown volume, establishing equal free space volumes within said chambers by adjusting the volume of one of said chambers so that the number of moles of said gas within each chamber is equal, inserting said sample of unknown volume within said sample receiving chamber, and again establishing equal free space volumes within said chambers by changing the free space volume of said sample receiving chamber so that the number of moles of gas within each chamber are equal, said change in free space volume of said sample receiving chamber after inserting said sample therein being the exact volume of said sample.

4,112,739

PROCESS AND APPARATUS FOR THE ISOSTATIC MEASUREMENT OF THE PERMEABILITY OF A MATERIAL TO THE PASSAGE THERETHROUGH OF A GAS OR VAPOR

Georges H. Lyssy, Rotflubstrasse 87, CH 8702 Zollikon 2H, Switzerland

Filed Oct. 13, 1977, Ser. No. 841,956
Claims priority, application Switzerland, May 20, 1977, 006222/75
Int. Cl.² G01N *15/08*
U.S. Cl. 73—38 **17 Claims**



1. A process for the isostatic measurement of the permeability of a material to the passage therethrough of gas or vapor, said process comprising:

positioning a material to be tested within a gas-tight chamber such that first and second opposite sides of said material are isolated from each other within said chamber;

circulating a reference gas through an enclosed reference circuit which includes a first portion of the interior of said chamber which is on said first side of said material;

maintaining the pressure of said reference gas within said reference circuit at the same pressure as the gas or vapor existing in a second portion of said chamber which is on said second side of said material;

whereby said gas or vapor will permeate through said material, from said second side to said first side thereof, into said reference gas within said reference circuit, as a function of the permeability of said material, thereby forming contaminated reference gas;

continuously passing, as a carrier gas, the same type of gas as said reference gas through a carrier circuit which includes a gas chromatography detection apparatus;

maintaining said carrier gas at a pressure higher than said pressure of said reference gas;

periodically injecting a portion of said contaminated reference gas within said reference circuit into said carrier circuit, whereby said carrier gas carries said portion of said contaminated reference gas to said detection apparatus; and

measuring the amounts of the components of said gas or vapor in said contaminated reference gas, by operation of said detection apparatus, as an indication of the permeability of said material.

4,112,740

METHOD AND APPARATUS FOR DETERMINING A CHANGE OF THE FLOW STATE OF FLOWABLE SUBSTANCES FROM ITS STATIC STATE TO ITS FLOWING STATE OR VICE VERSE

Marco Brandestini, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Jul. 18, 1977, Ser. No. 816,715
Claims priority, application Switzerland, Jan. 13, 1977, 392/77
Int. Cl.² G01N *29/02*
U.S. Cl. 73—53 **18 Claims**

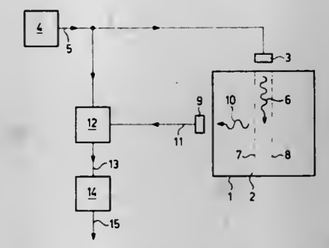
1. A method of determining a change of the flow state of a flowable substance, comprising the steps of:

transmitting ultrasonic waves of substantially constant frequency to a spatial region of the substance;

receiving ultrasonic waves backscattered by the substance;

transforming the backscattered ultrasonic waves into a primary signal which is amplitude and phase modulated in accordance with the backscattering;

demodulating the primary signal to obtain a modulation signal which can be subdivided into a spectrum of signal components of different frequencies and possessing pseudo periods which are defined as the time spacing between successive mutually corresponding momentary values of the signal modulation;



determining at least one time point at a mean value of the psuedo periods having a monotonous variation with time which entails a monotonous variation with time of the time duration of a predetermined number of pseudo periods;

comparing a time duration corresponding to a predetermined number of pseudo periods with a predetermined time duration; and wherein

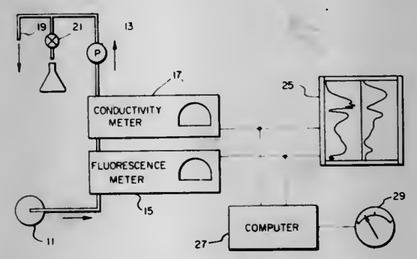
the time duration of the predetermined number of pseudo periods traverses the predetermined time duration in the course of its monotonous variation with time.

4,112,741

SCANNING APPARATUS FOR SEPTIC EFFLUENTS

William B. Kerfoot, Falmouth, and Edward C. Brainard, II, Marion, both of Mass., assignors to Environmental Devices Corporation, Marion, Mass.

Filed Aug. 29, 1977, Ser. No. 828,471
Int. Cl.² G01N *21/34, 27/08*
U.S. Cl. 73—53 **10 Claims**



1. Apparatus for scanning shorelines to detect septic effluents emanating from on-shore septic systems; said apparatus comprising:

continuously operable sample intake means for drawing water from a preselected subsurface level adjacent the shoreline, said means being traversable along the shoreline;

a fluorometer for continuously measuring the fluorescence of the sampled water to determine the presence of aromatic hydrocarbons and soap whiteners which are present in distinctive proportions in recharged septic effluents and for generating a signal which varies as a function thereof;

conductivity measuring means for continuously measuring the conductivity of the sample water and for generating a signal which varies as a function thereof; and

signal processing means for generating an output signal which varies as a function of the conjoint deviation of said measurement signals from the values thereof which are representative of background water levels.

4,112,742

INSTRUMENT FOR MEASURING THE CONSISTENCY OF HIGH-CONSISTENCY MATERIALS

Edward A. Zahn, No. 2 San Remo Cir., Naples, Fla. 33940

Filed May 6, 1977, Ser. No. 794,666
Int. Cl.² G01N *11/00, 33/26*
U.S. Cl. 73—54 **4 Claims**



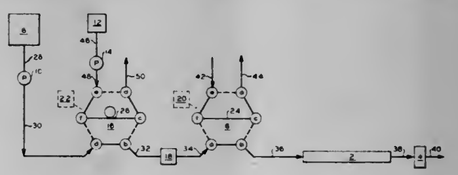
1. An instrument for measuring the consistency of high-consistency materials comprising a cylindrical tube which is flared at one end and an inverted springy U-shaped bale the legs of which terminate in turned end portions and engage diametrically spaced holes through the tube wall at a distance from the flared end less than one half the length of the tube, said bale serving to assist complete immersion into and withdrawal from a volume of the material to be measured, the amount of the material retained on the entire surface of said tube at the end of the drip cycle following its withdrawal being a measure of its consistency.

4,112,743

STEP-WISE GRADIENT CARRIER FOR LIQUID CHROMATOGRAPHY

Richard A. Mowery, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 15, 1976, Ser. No. 723,395
Int. Cl.² G01N *31/08*
U.S. Cl. 73—61.1 C **13 Claims**



1. A liquid chromatographic apparatus comprising:

a. a chromatographic column having an inlet and an outlet;

b. detector means in operable communication with the outlet of said column;

c. a first carrier liquid reservoir containing a first carrier liquid;

d. a second carrier liquid reservoir containing a second carrier liquid having a composition different from the composition of said first carrier liquid;

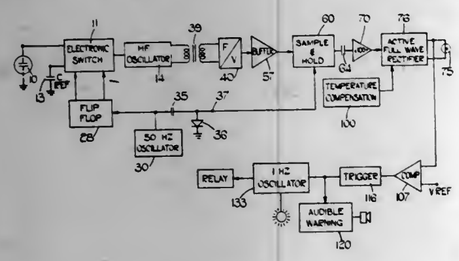
e. means for introducing said first carrier liquid under high pressure to the inlet of said column;
f. means for introducing a liquid sample to the inlet of said column; and
g. carrier valve means connected between said column inlet and said means for introducing said first carrier, said carrier valve means having a chamber of fixed volume, for said second carrier, including actuating means, for normally flowing said first carrier liquid through said valve means and for normally flowing said second carrier liquid from said second reservoir through said chamber for said second carrier and upon actuation of said carrier valve means for flowing said first carrier liquid through said carrier chamber thereby propelling at least a portion of said second carrier liquid into said column.

4,112,744

APPARATUS FOR DETECTING WATER IN OIL

Peter Francis Tassano, Reading, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 14, 1977, Ser. No. 777,537
Claims priority, application United Kingdom, Mar. 13, 1976, 10158/76
Int. Cl.² G01N *27/22*
U.S. Cl. 73—61.1 R **13 Claims**



1. Apparatus for the detection of water in oil comprising a capacitive probe unit through which the oil under test is caused to flow, a reference capacitor, switch means alternately connecting the capacitive probe and the reference capacitor into the circuit of an oscillator whereby the oscillator frequency is determined in alternate periods by the dielectric constant of the oil, a frequency to d.c. voltage converter connected to the output of the oscillator, filter means connected to the output of the converter for producing a signal fluctuating at the frequency of operation of said switch means and indicator means a.c. coupled to the output of the filter means sensitive to the amplitude of said fluctuating signal.

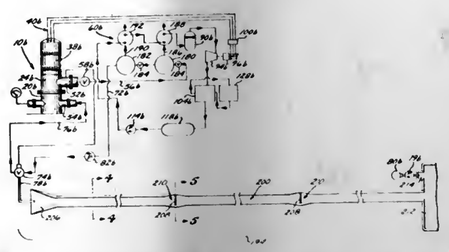
4,112,745

HIGH TEMPERATURE GEOTHERMAL ENERGY SYSTEM

Barkman C. McCabe, Los Angeles, and Edward Zajac, Hollywood, both of Calif., assignors to Magma Energy, Inc., Los Angeles, Calif.

Division of Ser. No. 683,506, May 5, 1976, Pat. No. 4,043,129. This application Jun. 7, 1977, Ser. No. 804,458
Int. Cl.² F03G *7/00*
U.S. Cl. 60—641 **16 Claims**

1. The method of returning hot geothermal brine from a geothermal brine production well back into the ground, which comprises the steps of:
flowing said brine through a long, open ditch proximate the surface of the ground,
lowering the temperature of said brine in said ditch so as to cause precipitation of minerals out of the brine in said ditch and thereby reduce the mineral concentration in said brine, and



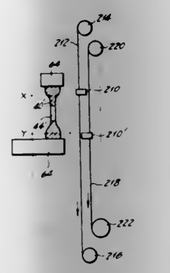
reinjecting said brine of reduced mineral concentration back into the ground through a reinjection well.

4,112,746

OPTO-ELECTRONIC TENSILE TESTING SYSTEM

Hiroyuki Itoh, Kawasaki; Kenhachi Mitsuhashi, Hiratsuka, and Hiromitsu Akashi, Ise, all of Japan, assignors to The Yokohama Rubber Co., Ltd. and Fuji Telecasting Co., Ltd., both of, Japan

Filed Mar. 29, 1977, Ser. No. 782,492
Claims priority, application Japan, Apr. 2, 1976, 51-37541; Jun. 10, 1976, 51-68058; Oct. 6, 1976, 51-120180; Oct. 29, 1976, 51-131088; Jan. 20, 1977, 52-5214
Int. Cl.² G01N *3/08*
U.S. Cl. 73—95 **25 Claims**



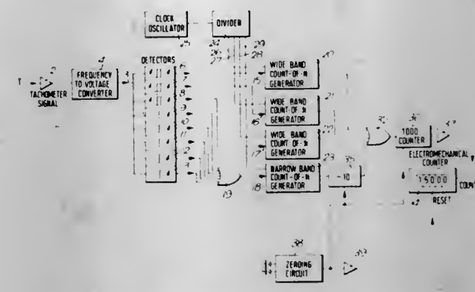
1. A tensile testing system for opto-electronically indicating the stress-strain properties of materials under tension comprising, in combination, scanning means for scanning a test specimen made of a material being tensile tested and a test region of the test specimen subjected to elongation by pulling stresses during tensile testing and for detecting and converting to an electrical output signal an optical characteristic of the test region different from other optical characteristics of other surfaces of the test specimen and developing said output signal as elongation of the test region progresses, circuit means receptive of said output signal for deriving therefrom portions thereof representative of the increasing length of the test region during elongation thereof and said scanning means comprising an area scanner developing a two-dimensional scene including the test specimen.

4,112,747

REAL-TIME RECORDING OF FATIGUE DAMAGE

Trevor John Aldridge, Aston-on-Trent; Alan Howard Lock, Belper, and Robert Martin Alistair Bell, Borrowash, all of England, assignors to Rolls-Royce Limited, London, England

Filed May 17, 1977, Ser. No. 797,803
Claims priority, application United Kingdom, May 22, 1976, 21303/76
Int. Cl.² G01M *15/00*
U.S. Cl. 73—116 **16 Claims**



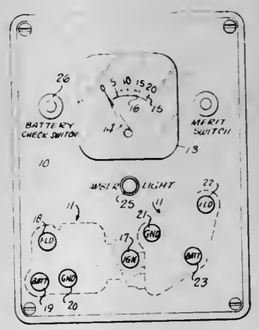
1. A method for real-time recording of elapsed fatigue life of a component of a rotary machine which is cyclically stressed as its rotational speed is cyclically varied, in which the rotational speed of the component is continuously monitored during its operation and each time the speed cycles through any one or more of a plurality of predetermined wide speed bands and any one or more of a plurality of predetermined narrow speed bands wherein each of the speed bands is defining a different operational speed cycle of said component of the rotary machine, a corresponding predetermined number of fatigue life units is added to an accumulating total of such units, the value of said number depending upon which band or bands are concerned in accordance with known empirically or theoretically deduced data.

4,112,748

AUTOMATIC PORTABLE SOLID STATE VOLTAGE REGULATOR TESTER

Richard J. Walley, 6392 Marshall Ave., Buena Park, Calif. 90621

Filed Jun. 8, 1977, Ser. No. 804,724
Int. Cl.² G01M *19/00*
U.S. Cl. 73—118 **4 Claims**



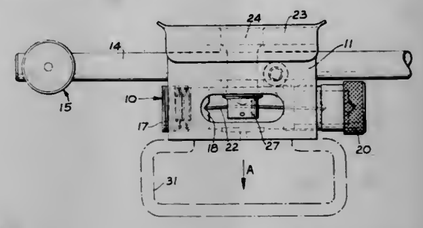
1. A battery powered voltage regulator tester wherein the batteries provide a source of potential, including a plurality of contacts spaced to fit the particular regulator under test, a switch to apply the potential to the regulator comprising a pressure operated blade and a plurality of normally open contacts, and a capacitance and a bulb connected across a pair of said switch contacts wherein the capacitance developed in testing is discharged through the bulb to flash said bulb when said switch is deactivated, and a meter which indicates the amount of potential used by the regulator.

4,112,749

WRENCHES AND OTHER HAND TOOLS

Norman Linfoot Smyth, Sheffield, England, assignor to Britool Limited, West Midlands, England

Filed Jan. 7, 1977, Ser. No. 757,569
Claims priority, application United Kingdom, Jan. 14, 1976, 1294/76
Int. Cl.² B25B *23/142*
U.S. Cl. 73—139 **8 Claims**



1. A torque unit for use on a lever handle of a wrench or the like including a body member provided with releasable clamping means for rigid attachment thereof to said handle so as to maintain said member at a selected distance along said handle from the axis of rotation of an element to be engaged and turned by the wrench in use and in predetermined relationship to the plane in which said handle moves about said axis in use; a second member operatively connected to said body member and guided for rectilinear movement relative to the body member substantially in said plane in a direction normal to said lever handle through which member a turning moment is applied to said handle by a user in use; resilient means exerting force biasing the second member in opposition to said turning moment; and warning means actuated by displacement of said second member in opposition to said force when the load transmitted by the resilient means exceeds a predetermined level for giving a signal to be sensed by the user; said resilient means comprising a leaf spring adapted to be intermediately engaged by said second member bowed so that it snaps over centre under predetermined lateral pressure applied by the second member, and said spring also comprising part of said warning means.

4,112,750

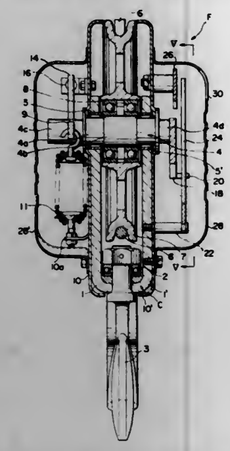
HOOK DEVICE

Sakae Murakami, Fukuyama, assignor to Nippon Hoist Co., Ltd., Hiroshima, Japan

Filed Aug. 12, 1976, Ser. No. 713,803
Claims priority, application Japan, Aug. 12, 1975, 50/111377[U]
Int. Cl.² B66C *1/40*; G01L *5/00*
U.S. Cl. 73—141 AB **4 Claims**

1. Hook device applicable to a crane, a hoist or the like device characterized by that said hook device comprises:
(a) a support means for supporting a hook,
(b) an eccentric shaft mounted rotatably on said support means,
(c) a pulley arranged rotatably on the eccentric portion of said eccentric shaft,
(d) a spring means connected to said shaft for urging said eccentric shaft in a specific direction, and
(e) a load indicating means connected to said eccentric shaft, said load indicating means being operable by rotation of said eccentric shaft when a load in excess of a predetermined weight is applied to said shaft, said load indicating means comprising an arm set fast to said eccentric shaft,

two pins studded onto said arm, a pointer arranged rotatably on said support means, said pointer being between said pins for engagement with said pins whereby rotation of said shaft causes said pins to move with the movement



of said pins thereby causing said pointer to rotate, an indication plate set fast to said support means, and said indication plate being located corresponding to the range of rotation of said pointer.

4,112,751

ARRANGEMENT FOR MEASURING A RADIAL FORCE APPLIED TO A BEARING

Heinrich Grünbaum, Am Bollwerk 6, CH-4102 Binningen, Switzerland

Filed Jun. 24, 1977, Ser. No. 809,515

Claims priority, application Switzerland, Jun. 28, 1976, 008323/76

Int. Cl.² G01L *5/10*

U.S. Cl. 75—141 A **7 Claims**



1. A bearing mounting unit for measuring a radial force applied to the mounted bearing, said unit comprising a unitary bearing mounting member having an outer annular portion and an inner annular portion surrounded by said outer annular portion ad defining therewith an annular gap, and a web extending across said gap and being of one piece with said portions so as to support said inner annular portion with freedom of radial displacement relative to said outer annular portion, said inner annular portion having an inner circumferential surface for receiving and retaining therein a rolling contact bearing, said inner and outer annular portions having respective faces which together bound said gap and which are provided at diametrically opposite locations with sets of concave recesses having open sides facing one another across said gap; a pair of overload protecting pins each received in one of said sets of concave recesses and extending parallel to one another and to a central axis of said member; and means mounted on the web for originating and transmitting signals commensurate with the stressing of said web resulting from the radial displacement of said inner annular portion relative to said outer annular portion.

4,112,752

APPARATUS FOR MEASURING SEVERAL FORCE COMPONENTS

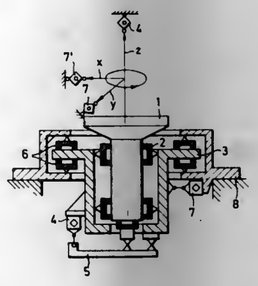
Hans Wilhelm Häfner, and Frieder Pfister, both of Augsburg, Germany, assignors to Pfister Waagen GmbH, Germany

Filed May 11, 1977, Ser. No. 795,707

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1976, 2624647

Int. Cl.² G01M *9/00*

U.S. Cl. 73—147 **11 Claims**



1. An apparatus for measuring several force components exerted by a flowing medium on a measuring object, comprising an object carrier to which the measuring object is fixedly connected and which provides the force components to be measured, said object carrier being arranged in a bearing system means for allowing movement in the directions of the force components, said bearing system means including a first guide arrangement positioned for movement in a second guide arrangement, said object carrier being restrained in the directions of the force components by force measuring devices, the bearing system means being arranged on an additional bearing system means for permitting a pivoting movement of the object carrier in all directions about the measuring object center point, the bearing system means on the additional bearing system means being restrained by force measuring devices, and the additional bearing system means and the bearing system means each having hydrostatic bearings.

4,112,753

METEOROLOGICAL MEASURING APPARATUS

David B. Call, 2998 Loma Pl., Boulder, Colo. 80301

Filed May 9, 1977, Ser. No. 794,936

Int. Cl.² G01W *1/08*

U.S. Cl. 73—170 R **19 Claims**



1. Apparatus for sensing meteorological conditions in the atmosphere comprising:

a central body of aerodynamic configuration containing meteorological instruments and including means for transmitting signals of conditions sensed by said meteorological instruments;

propeller means disposed at circumferentially spaced intervals on said body, each of said propeller means inclining rearwardly away from said body and terminating in a tip end, said propeller means being operative to spin said apparatus about the central axis of said body; and

at least one temperature-sensing element disposed on at least one of said propeller means at a point spaced radially outwardly of the outer periphery of said body.

4,112,754

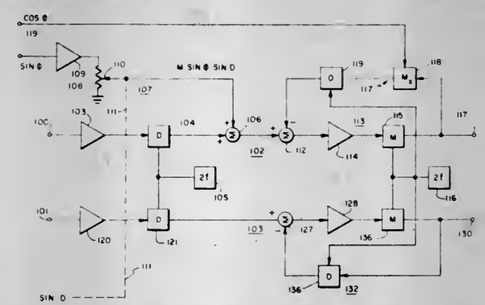
PENDULOUS INDUCTION COMPASS TRANSMITTER INCLUDING MEANS EXTERNAL TO THE TRANSMITTER TO COMPENSATE FOR HEADING ERRORS IN TURNS DUE TO THE VERTICAL COMPONENT OF THE EARTH'S MAGNETIC FIELD AND DUE TO TWO CYCLE ERROR

John Suminsby, 65 Arbor St., Wenham, Mass. 01984

Filed Dec. 20, 1976, Ser. No. 752,278

Int. Cl.² G01C *21/00*

U.S. Cl. 73—178 R **5 Claims**



1. In a pendulous induction compass transmitter compensated for errors due to the Earth's vertical field during turns, the combination comprising:

a. magnetic sensing means for producing modulated signals proportional to the strength of the Earth's field along the fore/aft and athwartships axes of an aircraft;

b. means to demodulate the modulated signal representative of the sensed fore/aft field to produce a varying, DC, demodulated signal proportional to the sensed Earth's field along the fore/aft axis of the aircraft and thus to the cosine of the magnetic heading angle ψ and of the aircraft;

c. means to demodulate the modulated signal representative of the sensed athwartships field to produce a varying, DC, demodulated signal proportional to the sensed Earth's field along the athwartships axis of the aircraft and thus to the sine of the magnetic heading angle ψ of the aircraft;

d. means to compensate the demodulated signals for errors due to the Earth's vertical field during turns, including;

1. means to generate a DC correction signal proportional to the product of the Earth's magnetic field M, the sine of the magnetic dip angle D and the sine of the bank angle ϕ,

2. means to add said DC correcting signal algebraically to said demodulated DC signal proportional to the Earth's field and thus to the sine of the magnetic heading angle ψ to cancel the signal component due to the Earth's vertical field sensed along the athwartships axis during turns.

4,112,755

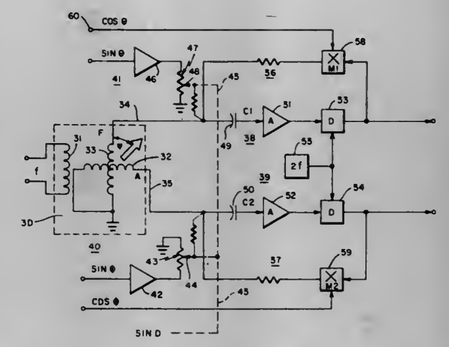
"STRAPDOWN" INDUCTION COMPASS TRANSMITTER WITH MEANS TO COMPENSATE FOR HEADING ERRORS DURING TURNS AND DURING DIVES AND CLIMBS DUE TO THE VERTICAL COMPONENT OF THE EARTH'S MAGNETIC FIELD AND DUE TO TWO CYCLE ERROR

Gerald Leslie Sullivan, 24 Scollay Cir., Salem, Rockingham, N.H. 03079

Filed Dec. 20, 1976, Ser. No. 752,064

Int. Cl.² G01C *21/00*

U.S. Cl. 73—178 R **5 Claims**



1. In a strapdown induction compass transmitter system compensated for errors due to the Earth's vertical field and for two cycle errors occurring during turns and during climbing and diving maneuvers, the combination comprising:

(a) magnetic sensing means for producing a first modulated signal responsive to the strength of the Earth's magnetic field along one axis of an aircraft, and a second modulated signal responsive to the strength of the Earth's magnetic field along another axis of the aircraft,

(b) means to compensate said signals for errors due to the Earth's vertical magnetic field during turns and while climbing and diving including:

(1) means to generate a first correction signal proportional to the product of the Earth's magnetic field M, the magnetic dip D, and the roll angle ϕ, said first correction signal being equal to the vertical field error in the magnetic field sensed along one of the axes of the aircraft during a turn,

(2) means to generate a second correction signal proportional to the product of the Earth's magnetic field M, the magnetic dip angle D and the pitch angle θ, said second correction signal being equal to the vertical field error in the magnetic field sensed along the other axis of the aircraft during climbing and diving maneuvers,

(3) means responsive to said first and second correction signals to produce flux fields which cancel the flux sensed by said magnetic sensing means along the respective axes of the aircraft due to the Earth's vertical field during turns and while climbing or diving,

(c) means for demodulating the compensated first and second modulated signals including,

(1) first and second demodulators each having inputs and outputs associated with the magnetic sensing means to produce respectively, first and second demodulated signals from said compensated first and second modulated signals,

(2) feedback paths from the outputs to the inputs of said first and second demodulators for producing negative feedback signals,

(d) and means to correct said first and second signals for two cycle error including means to reduce the negative feedback in one of said paths by a factor proportional to the cosine of the bank angle 100 and the negative feedback in

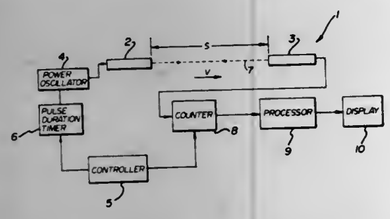
the remaining paths by a factor proportional to the pitch angle θ whereby the demodulated signals from the outputs of the demodulators are increased correspondingly to cancel two cycle error.

4,112,756

ULTRASONIC AIR DATA SYSTEM

P. H. Barry MacLennan, Almonte; Graham A. Ireland, Ottawa, and William J. Werba, Hazeldean, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Aug. 26, 1977, Ser. No. 828,225
Int. Cl.² G01P *5/00*
U.S. Cl. 73—181 **13 Claims**



1. An ultrasonic system for determining data in a medium comprising:

first ultrasonic transducer means;

second ultrasonic transducer means positioned accoustically facing the first ultrasonic transducer means at a predetermined distance;

means for energizing the first transducer means to generate a controlled ultrasonic energy pulse for transmission through the medium to the second transducer means, a portion of the ultrasonic energy pulse incident on the second transducer means being reflected from the second transducer means to the first transducer means and back to the second transducer means through the medium, whereby the second transducer means provides successive output signals for successive ultrasonic energy pulse incidence; and

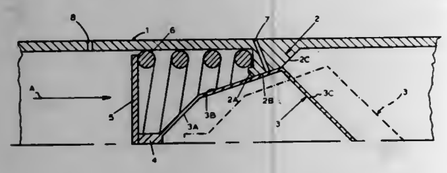
means coupled to the second transducer means for receiving the output signals to determine the ultrasonic energy pulse transit times from the first transducer to the second transducer and from the second transducer to the first transducer.

4,112,757

FLOWRATE METERS

Alan Thomas Joseph Hayward, East Kilbride, Scotland, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 8, 1977, Ser. No. 822,577
Claims priority, application United Kingdom, Aug. 16, 1976, 34062/76
Int. Cl.² G01F *1/22, 1/44*
U.S. Cl. 73—207 **6 Claims**



1. A fluid flowrate meter comprising a duct through which, in use, the fluid of which the flowrate is to be measured flows in a given direction;

a control member mounted within the duct to define with the adjacent portion of the duct a convergent-divergent flowpath for the fluid, the control member and the adjacent portion of the duct comprising adjacent surfaces of complementary form between which the throat of said flowpath is defined, resilient biasing means coupled to said control member, the control member and the adjacent portion of the duct being relatively displaceable against said resilient biasing means in response to the flow of fluid through the duct and to an extent determined by the rate of such flow so that the cross-sectional area of said throat varies with the rate of fluid flow through the duct;

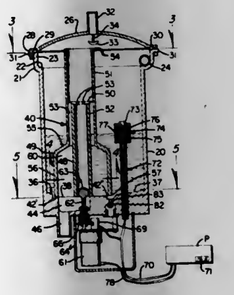
and means sensitive to the difference in static pressure between the throat of said convergent-divergent flowpath and a station upstream thereof for obtaining a measure of the rate of fluid flow through the duct.

4,112,758

MILK MONITORING METHOD AND APPARATUS

Robert F. Heldecker, Longmont, Colo., assignor to Dairy Systems, Inc., Longmont, Colo.

Filed Oct. 21, 1977, Ser. No. 844,369
Int. Cl.² G01F *11/10*
U.S. Cl. 73—218 **28 Claims**



1. In milk monitoring apparatus adapted for use with mechanical milking equipment to measure the milk volume production of cows, the combination comprising:

a generally cylindrical housing having an elongated central axis, an inlet port adjacent to the upper end of said housing, flow guide means along the inner wall of said housing adjacent to the upper end to reduce the velocity of flow of milk from said inlet port into said housing;

a cover adapted to establish flush engagement with the upper edge of said housing, and sealing means interposed between the flat surface of said cover and the upper edge of said housing;

a bottom wall extending across the lower end of said housing provided with an upper surface including a first shallow recess formed in the surface and a second relatively deep recess in diametrically opposed relation to the first recess, said second recess communicating with a discharge port in said bottom wall;

rotor means centered in said housing with respect to said recesses, motive drive means including a drive shaft drivingly connected to said rotor means to impart rotation to said rotor means within said housing at a predetermined rate of speed, said rotor means divided into a plurality of compartments at equally spaced circumferential intervals in open communication with the upper surface of said bottom wall, each compartment adapted to be filled with milk from the annular space between such rotor means and the cylindrical housing as it traverses said first recess and to be emptied of milk as it traverses said second recess;

a float member including first sensing means for sensing the level of milk in the annular space and to generate a signal energizing said motive drive means when the milk reaches a predetermined level in said annular space; and

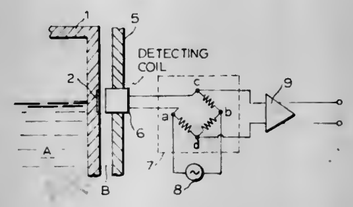
second sensing means adapted to count the number of compartments traversing said second recess.

4,112,759

DEVICE FOR DETECTING THE SURFACE LEVEL OF MOLTEN METAL IN A MOLD

Michitaka Mizuno; Kazuo Idene, and Masashi Oya, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 11, 1976, Ser. No. 741,019
Claims priority, application Japan, Nov. 20, 1975, 50-156854[U]
Int. Cl.² G01F *23/26*
U.S. Cl. 73—295 **5 Claims**



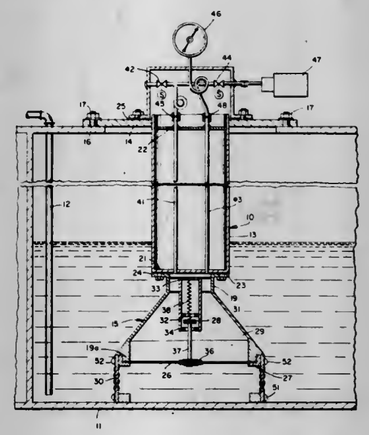
1. A device for detecting the surface level of molten metal in a mold, comprising at least one thermosensitive magnetic element which undergoes variations in the relative magnetic permeability depending on temperature in the range of temperature of the mold at all levels of molten metal therein and mounted on the outer wall surface of the mold, at least one coil positioned opposite to said magnetic element and spaced slightly therefrom to leave a gap between the magnetic element and the coil, an A.C. power supply coupled to said coil having a frequency for causing substantially none of the magnetic field of said at least one coil to penetrate the mold into the molten metal, and means of sensing variations in the electromagnetic coupling between the magnetic element and said coil.

4,112,760

LIQUID LEVEL MEASURING DEVICE

Samford P. Ishiwata, New Rochelle, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,642
Int. Cl.² G01F *23/18*
U.S. Cl. 73—299 **6 Claims**



1. A liquid level gauge for a liquid holding tank which includes:

means forming a fluid tight pressure sensing chamber (29),

a flexible diaphragm member (26) defining a wall to said pressure sensing chamber (29), and being displaceable in response to a pressure imposed against either side thereof,

a casing (13) supportably engaging said pressure sensitive chamber (29), being adapted to position said chamber (29) in a liquid holding tank,

pressure control means communicated with said pressure sensing chamber (29) and including:

a source of pressure (47),

conduit means (41) having an electrically controlled valve (42) therein, being communicated with said pressure sensing means (47),

vent means including at least one electrically actuated fluid control valve (42) communicated with said pressure sensing chamber (29),

flow regulating means including a spring biased pin (37) connected to said diaphragm (26) whereby to permit longitudinal movement of said pin (37) corresponding to displacement of said diaphragm (26),

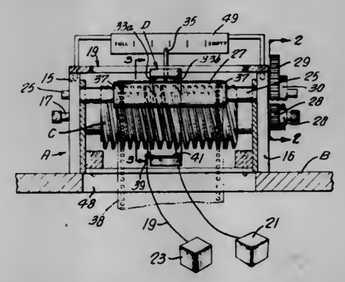
electrical contact means (28) depending from said pin (37), being positioned to selectively engage spaced apart electrical elements (32, 34) whereby to separately actuate said respective control valves (42, 44) in response to longitudinal movement of said pin (37).

4,112,761

LIQUID LEVEL MEASURING APPARATUS

Bernard H. Engelhardt, 85 Colville Rd., Toronto, Ontario, and Marcus Mintz, 1493 Montcalm, Chomedey, Quebec, both of Canada

Continuation-in-part of Ser. No. 692,379, Jun. 3, 1976, Pat. No. 4,036,055. This application May 23, 1977, Ser. No. 799,231
Int. Cl.² G01F *23/08*
U.S. Cl. 73—312 **8 Claims**



1. Apparatus for measuring and recording increases and decreases in the magnitude or intensity of a variable, and comprising:

a record inscribing means and a record retaining carrying means, one of said means being adapted to define a substantially linear path of motion in two directions and comprising first drive means for driving said one of said means in said two directions;

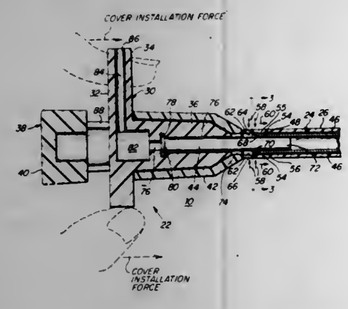
the other one of said means being adapted to define a path of motion in a direction to intercept the linear path of motion, said other means comprising second drive means operable in one direction only;

transducer means for measuring said increases and decreases and translating said increases and decreases into two directional motion corresponding, respectively, with said increases and decreases;

linking means connecting the output of said transducer to said second drive means and to said first drive means such that an output in either direction of said transducer will cause a corresponding motion in either direction of said one means, whereas an output in one direction of said transducer will cause said other means to move in said one direction but an output in the other direction of said transducer will not cause said other means to move;

whereby,
when said magnitude of said variable changes in one way causing an output from said transducer in the other direction thereof, a first substantially straight line will be inscribed on said record retaining means by the motion of one means relative to said other means;
and
when said magnitude of said variable is changing in the other way causing an output from said transducer in the one direction thereof, a substantially straight line will be inscribed at an angle to said one straight line on said record retaining carrying means by the motion of both said one means and said other means.

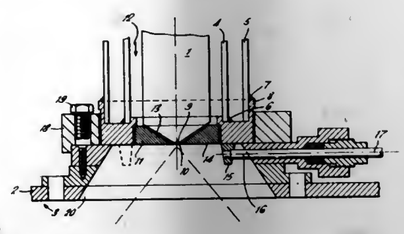
4,112,762
PROBE COVER GRIP AND RELEASE DEVICE
Robert Bruce Turner, Weymouth; Marvin Menzin, Lexington; Hugh A. Robinson, Wenham, and Thomas S. Williams, Newtonville, all of Mass., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Apr. 28, 1976, Ser. No. 681,348
Int. Cl.² G01K 1/08, 7/16
U.S. Cl. 73—343 R 7 Claims



1. In combination, a probe member and a disposable probe cover attachable thereto, said probe member having a handle and an elongated generally cylindrical metallic probe element depending outwardly therefrom, said probe element being deformed to define at least one integral, substantially rigid salient section flaring outwardly from a longitudinal axis of said probe element and towards said handle portion, said section terminating in a sharp edge, said probe cover being composed of a material deformable and penetrable relatively to the metallic material of said section, said handle portion including means for slidably inserting said probe element into said probe cover, said means for inserting forcing said probe cover to deform over said salient section and causing said sharp edge to inscribe itself fixedly into said probe cover, whereby said probe cover is rigidly mounted onto said probe member.

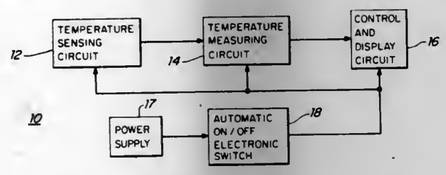
4,112,763
INSPECTING THE INTERIOR OF AN ENCLOSURE
Robert Alfred Pirlet, Embourg, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium
Filed Jun. 30, 1976, Ser. No. 701,026
Claims priority, application Belgium, Jul. 1, 1975, 830895
Int. Cl.² G01J 5/04
U.S. Cl. 73—355 R 7 Claims

1. A device for inspecting the interior of an enclosure, comprising:
(a) an instrument for receiving radiation from the interior of the enclosure, the radiation being received through an orifice at one end of the instrument;
(b) a screen located immediately in front of the instrument a portion of said screen defining a surface interior to said enclosure, the screen having an opening in register with the said orifice, of the instrument said screen and said instrument defining a restricted space therebetween;
(c) means for passing a compressed gas through the space between the instrument and the screen and then through the opening in the screen; and



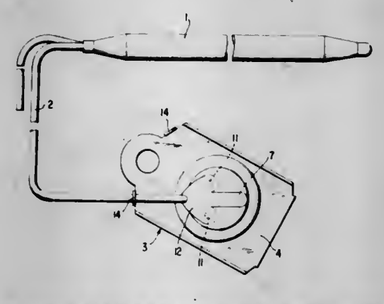
(d) means for cleaning at least that part of said surface of the screen remote from the instrument which part contains the said opening.

4,112,764
AUTOMATIC ON/OFF DIGITALLY TIMED ELECTRONIC SWITCH
Robert B. Turner, Weymouth, Mass., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Jan. 12, 1977, Ser. No. 758,618
Int. Cl.² G01K 7/16; H03K 17/26
U.S. Cl. 73—362 AR 5 Claims



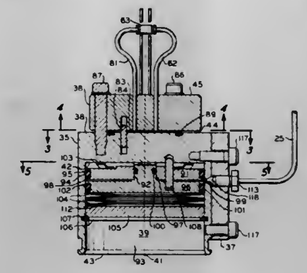
1. In an electronic thermometer system comprising:
power supply means;
a temperature measuring circuit for measuring temperature variations and providing a signal representative thereof;
normally open actuator switch means having a momentary closure property;
a time measuring circuit;
a display circuit responsive to said time measuring circuit and said temperature measuring circuit, for indicating the measured temperature during one period and the measured time during another period;
the improvement comprising an automatic on/off digitally timed electronic switch responsive to momentary closure of said actuator means to turn on and remain on for a predetermined interval and thereby to energize said time measuring circuit, said temperature measuring circuit, and said display circuit said automatic on/off switch including:
an electronic switch including a latching circuit means adapted for connection to said power supply means; interim enabling means activated for a fixed temporary period by closure of said actuator means; a drive circuit means for operating said time and temperature measuring circuits and said display circuit responsive to said interim enabling means to provisionally begin operating and to provide a gating signal to operate said latching circuit; and means interconnecting said latching circuit and said drive circuit and responsive to provisional operation of said drive means, for subsequently continuing operation of said drive circuit independent of the momentary enablement of said interim means; and,
a digital timer circuit including counting means successively responsive to momentary operation of said actuator, and thence to said means for subsequently continuing, to begin counting and provide at a predetermined count an output to inhibit further operation of said drive circuit and deenergize said latching circuit.

4,112,765
EXPANSION DIAPHRAGM-TYPE TEMPERATURE SENSOR
Walter Hollweck, Nuremberg, Fed. Rep. of Germany, assignor to Inter Control Hermann Köhler Elektrik GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany
Filed Feb. 28, 1977, Ser. No. 772,600
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1976, 2608675
Int. Cl.² G01K 5/32; H01H 37/40
U.S. Cl. 73—368.3 4 Claims



1. In a temperature sensor including a liquid-filled sensor tube, an expansion diaphragm assembly and a capillary tube maintaining communication between the sensor tube and the diaphragm assembly for introducing into the diaphragm assembly temperature-dependent amounts of liquid for causing displacement of a diaphragm component to thereby actuate a switch; the improvement wherein said expansion diaphragm assembly comprises
(a) a substantially flat, stable carrier plate including a dished portion defining a cavity and having an opening;
(b) a substantially flat, circular, resilient, expandable diaphragm disc having a radially extending flat circumferential edge zone; said diaphragm disc extending over said cavity to define therewith an expansion chamber;
(c) a fluidtight weld in said edge zone for affixing said diaphragm disc along said edge zone to said carrier plate;
(d) a metal disc positioned in said expansion chamber generally parallel to said diaphragm disc; said metal disc having a perimeter engaging unbonded said carrier plate; and
(e) securing means for directly affixing said capillary tube to said dished portion; said capillary tube maintaining communication between said sensor tube and said expansion chamber; said securing means including
(2) means defining an elongated depression provided in a face of said dished portion orientated towards said diaphragm disc; said depression extending approximately parallel to said diaphragm disc; said opening of said dished portion being disposed at one end of said depression; a terminal portion of said capillary tube passing through said opening and being conformingly received by said depression; and
(2) means attaching said metal disc, inwardly of said perimeter, to said carrier plate and said terminal portion of said capillary tube.

4,112,766
FLUID ACTUATED VALVE
Wilbur G. Ragains, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 21, 1977, Ser. No. 761,175
Int. Cl.² G01N 1/10
U.S. Cl. 73—422 GC 15 Claims



1. A two-position, fluid actuated, diaphragm-sealed valve, comprising in combination:
a unitary body having a planar surface at one end thereof and a cylindrical recess formed in the opposite end thereof with the central axis of said cylindrical recess being perpendicular to said planar surface, said cylindrical recess having a closed end and an open end;
a second body having a planar first face and an opposite face; said second body having a series of six spaced recesses arranged in a suitable array in said planar first face of said second body; said second body having first, second, third, and fourth spaced passageways formed therein communicating between a respective one of said spaced recesses on said planar first face of said second body and said opposite face of said second body; means adapted to provide fluid communication between the remaining two of said spaced recesses in said planar first face of said second body;
said unitary body having first, second, third, fourth, fifth and sixth linear passageways, with each said linear passageway extending perpendicularly from said planar surface to the closed end of said cylindrical recess;
a diaphragm positioned against said planar first face of said second body and encompassing the portion of said planar first face containing said spaced recesses;
means for releasably securing said second body to said unitary body with said planar surface facing said planar first face with said diaphragm positioned therebetween and with each said linear passageway being in alignment with the space between a respective pair of said spaced recesses;
six plunger means, with each plunger means being positioned in a respective one of said linear passageways;
closure means positioned adjacent the open end of said cylindrical recess to seal the open end of said cylindrical recess;
an annular piston means having an axial opening therethrough, said annular piston means being positioned in said cylindrical recess between said closure means and said closed end of said cylindrical recess for reciprocal movement along the central axis of said cylindrical recess in sealing engagement with the cylindrical wall of said cylindrical recess;
a second piston means positioned in said cylindrical recess between said closure means and said annular piston means for reciprocal movement along the central axis of said cylindrical recess in sealing engagement with the cylindrical wall of said cylindrical recess, said second piston means having an axially projecting section which extends from the main portion of said second piston means through said axial opening in said annular piston means, said second piston means and said annular piston means

being of such configuration that a first chamber is formed between said main portion of said second piston means and said annular piston means, said unitary body having a first fluid passageway extending therethrough which communicates with said first chamber;

first spring means positioned between said closed end of said cylindrical recess and said annular piston means to urge said annular piston means away from said closed end of said cylindrical recess;

second spring means positioned between said closure member and said second piston means to urge said second piston means toward said closed end of said cylindrical recess;

the lengths of said six plunger means and the configurations of said annular piston means and said second piston means being such that only a first set of three of said six plunger means engages said diaphragm to seal the corresponding spaces between adjacent pairs of spaced recesses when the fluid pressure in said chamber is less than a first predetermined value and only the remaining set of three of said six plunger means engages said diaphragm to seal the corresponding spaces between adjacent pairs of spaced recesses when the fluid pressure in said chamber is greater than a second predetermined value which is higher than said first predetermined value;

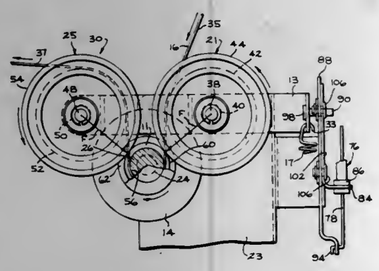
said unitary body having a second fluid passageway therethrough which communicates with a second chamber constituted by the portion of said cylindrical recess between said closure member and said second piston means, means for selectively applying fluid under pressure through said first fluid passageway to said first chamber to move said annular piston means toward said closed end of said cylindrical recess or through said second fluid passageway to said second chamber to move said second piston means toward said closed end of said cylindrical recess.

4,112,767

CLOTHES DRYER VARIABLE SPEED DRIVE SYSTEM

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 4, 1977, Ser. No. 784,605
Int. Cl.² F16H 7/12, 11/08
U.S. Cl. 74—217 R **6 Claims**



1. In a clothes dryer having a driven rotatable drum and a mechanism for transmitting torque between a driving rotatable member and the driven rotatable drum through an endless drive belt, the improvement comprising:

(a) the driving rotatable member having a first diameter area and a second diameter area, the first area having a greater diameter than the second area,

(b) two pulley assemblies, one being pivotable about the first diameter area and one pivotable about the second diameter area and each assembly including two pulleys with outside diameter flanges, reduced interior diameters, and having their longitudinal axes of rotation parallel and spaced a fixed distance apart by a spacing member secured to each pulley at their respective axes of rotation; the driving member having its longitudinal axis of rotation parallel to the rotational axes of the pulleys and arranged in a wedge-like relationship therebetween, the flanges of each pulley being in contact with the driving member;

(c) a drive belt for each pulley assembly passing over the respective first and second areas of the driving member and then over the reduced interior diameters of both of the flanged pulleys of the respective assemblies; and

(d) a shift mechanism to provide three modes of drum operation including;

(i) means to transmit torque from the first driving member area through its pulley assembly and belt to the drum causing the belt around the second driving member area to slip,

(ii) means to rotate the pulley assembly about the first driving member area opposite the direction of rotation of the driving member thereby causing the belt to slip while torque is transmitted to the drum from the second driving member through its pulley assembly and belt, and

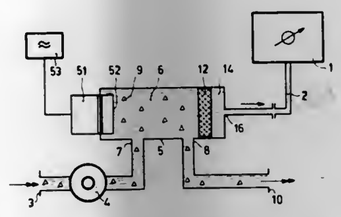
(iii) means to rotate both pulley assemblies simultaneously about the driving member opposite the direction of rotation of the driving member to cause both belts to slip whereby no torque is transmitted to the drum.

4,112,768

DEVICE FOR TAKING A LIQUID SAMPLE

Johannes Holland, and Hubertus Franciscus Marie Wagemans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1977, Ser. No. 833,153
Claims priority, application Netherlands, Sep. 17, 1976, 7610352
Int. Cl.² G01N 1/14
U.S. Cl. 73—422 R **4 Claims**



1. Apparatus for taking a liquid sample from a contaminated liquid stream, which comprises a first compartment having an inlet and an outlet for the contaminated liquid stream, a second compartment having an outlet for the liquid sample, a filtering element separating the first compartment and the second compartment from each other, and an ultrasonic generator associated with said compartments for effecting cleaning of the filtering element by means of ultrasonic vibrations generated in the liquid.

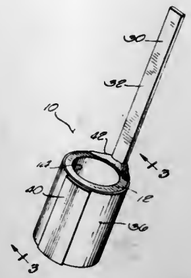
4,112,769

MOLTEN METAL DIP SAMPLER

Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186

Filed Jun. 22, 1977, Ser. No. 808,850
Int. Cl.² G01N 1/12
U.S. Cl. 73—425.4 R **2 Claims**

1. A molten metal dip sampler comprising a refractory cup having wall means having an exterior surface and an interior surface and an end surface, said wall means defining a sample cavity, a refractory bottom wall for said cup providing a bottom for said sample cavity, a metal handle for manipulating said sampler, said handle comprising a relatively thin elongated handle portion and an inturned portion and paperboard sleeve skull preventing means on said exterior surface of said wall means to prevent skull formation on said wall and for securing said elongated handle portion in abutting contact along the entire length of said exterior surface of said cup and said inturned portion extending beneath a refractory bottom wall to support said refractory cup on said inturned portion.

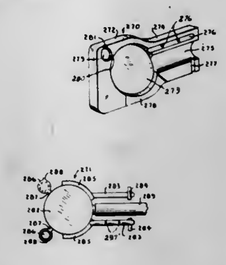


4,112,770

MOLTEN METAL SAMPLER

Robert F. McDevitt, Box 551 Ogden Dunes, Ogden Dunes, Ind. 46368

Division of Ser. No. 720,697, Sep. 7, 1976, which is a continuation of Ser. No. 565,396, Apr. 4, 1975, abandoned. This application Apr. 29, 1977, Ser. No. 792,394
Int. Cl.² G01N 1/12
U.S. Cl. 73—425.4 R **27 Claims**



1. A device for obtaining a sample of liquid from a supply thereof, said device comprising a pair of elongated mating sections, each of said sections being provided with an enlarged portion provided with a recess and a smaller channel portion, means securing said enlarged portions together and means securing said channel portions together whereby said recesses and said channel portions respectively form a chamber and an elongated opening, said enlarged portions also having external side surfaces and cavities, inner passages connecting these cavities with said chamber for receiving fluid therefrom and outer passages venting said cavities at said surfaces, and a tube having an inner extremity secured in said opening and an outer extremity provided with an entrance for a liquid for flow into said chamber via said tube.

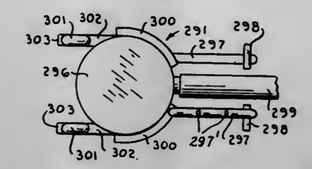
4,112,771

DEVICE FOR RECEIVING A SAMPLE OF MOLTEN METAL

Robert F. McDevitt, Box 551, Ogden Dunes, Portage, Ind. 46368

Division of Ser. No. 720,697, Sep. 7, 1976, and a continuation of Ser. No. 565,396, Apr. 7, 1975, abandoned. This application Apr. 29, 1977, Ser. No. 792,395
Int. Cl.² G01N 1/12
U.S. Cl. 73—425.4 R **23 Claims**

1. A device for obtaining a sample of molten liquid from a supply thereof, said device comprising a pair of elongated half sections, each of said sections being provided with an enlarged portion provided with a primary recess and outer relatively thick corner areas provided with elongated grooves which are enlarged intermediate their ends to provide a cavity, means securing said sections together whereby said recesses, grooves and cavities respectively form a primary chamber, a pair of passages and a pair of secondary chambers, and tubular means through which the liquid may flow into said chambers and through said passages whereby a solid sample may be obtained which has a head portion and a pair of elongated portions extending therefrom which are disposed in a generally parallel relation to said tubular means.

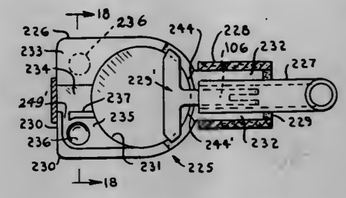


4,112,772

DEVICE AND METHOD FOR OBTAINING A SAMPLE OF LIQUID

Robert F. McDevitt, Box 551, Ogden Dunes, Portage, Ind. 46368

Continuation of Ser. No. 565,396, Apr. 7, 1975, abandoned. This application Sep. 7, 1976, Ser. No. 720,697
Int. Cl.² G01N 1/12
U.S. Cl. 73—425.4 R **30 Claims**



1. A device for obtaining a sample of liquid from a stream thereof, said device comprising a pair of elongated half sections, each of said sections being provided with an enlarged portion provided with a recess and a smaller channel portion, generally U-shaped clip means securing said enlarged portions together and means securing said channel portions together whereby said recesses and said channel portions respectively form a chamber and an elongated opening, and a tube having an inner extremity secured in said opening and an outer extremity provided with an entrance for a liquid for flow into said chamber via said tube.

4,112,773

ULTRASONIC PARTICULATE SENSING

Leigh Roy Abts, Providence, R.I., assignor to Rhode Island Hospital, Providence, R.I.

Filed May 2, 1977, Ser. No. 792,669
Int. Cl.² G01N 29/02; B06B 3/04
U.S. Cl. 73—642 **8 Claims**

1. A pulse echo device comprising

a conduit,

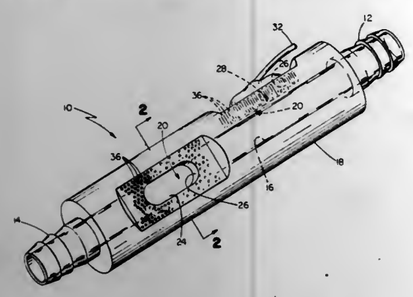
said conduit including a blind hole and

an inwardly concave transmitter-receiver surface, and

an acoustical transducer mounted in said blind hole for delivering ultrasonic energy through said transmitter-receiver surface,

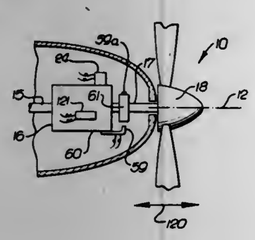
said transmitter-receiver surface being located to serve as a lens for and to thereby focus said ultrasonic energy to

a focal point at a distance transversely of said conduit, in a direction from said transmitter-receiver surface



toward said focal point, of not more than twice the distance in said direction across said conduit.

4,112,774
AIRCRAFT ROTOR OUT-OF-TRACK CORRECTION METHOD AND APPARATUS
James R. Chadwick, Bradbury, Calif., assignor to Chadwick-Helmuth Company, Inc., Monrovia, Calif.
Filed Jan. 7, 1977, Ser. No. 757,622
Int. Cl.² G01M *1/22, 1/28, 9/00*
U.S. Cl. 73—455 **25 Claims**



1. In the method of reducing vibration produced by rotation of a bladed rotor having multiple blades with adjustable pitch angles, and wherein structure associated with the rotor is subject to vibratory motion due to an out-of-track condition of the blades, the steps that include:

(a) rotating the rotor at a selected power level, at which vibration is produced,

(b) detecting an out-of-track condition of a blade being rotated at that power level,

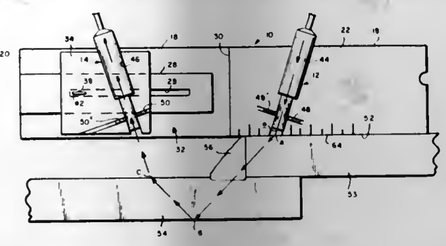
(c) repeating said (a) and (b) steps, but at another selected power level at which said vibration is also produced,

(d) said detection being carried out to detect at each power level the magnitude of out-of-track of a selected blade and its characteristic angularity about the blade axis at which said magnitude of out-of-track occurs, and

(e) adjusting the pitch angle of the blade in a direction to reduce said out-of-track condition.

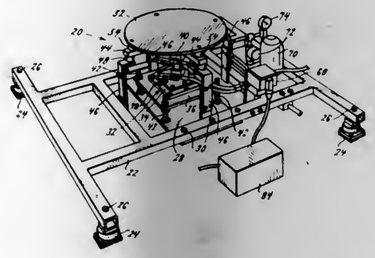
4,112,775
FILLET WELD INSPECTION SYSTEM
Bruce J. Sylvester, Duxbury, and Roger P. Sylvester, Kingston, both of Mass., assignors to J. G. Sylvester Associates, Inc., Rockland, Mass.
Filed Apr. 28, 1977, Ser. No. 792,063
Int. Cl.² G01N *29/04*
U.S. Cl. 73—627 **9 Claims**

1. An instrument for detecting defects in lap welds comprising a rigid, elongate block having a bottom planar surface and containing a recess in its front side which extends from one end to substantially the midlength of the block, said unrecessed portion of the block containing an opening from the top to the bottom, a first transducer mounted in said opening, a carriage block slidably mounted to the block in the unrecess for linear movement relative to the unrecessed portion, said carriage block containing an opening from top to bottom, a second transducer mounted in the opening in the carriage block in alignment with the first transducer, said first and second transducers being capable of generating and detecting ultrasonic



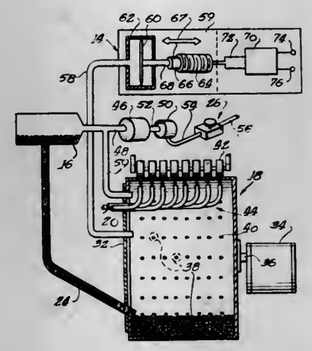
beams, and means for adjusting the distance between the transducers by movement of the carriage block in the recess relative to the unrecessed portion of the block, said openings being inclined to the bottom planar surface at converging angles corresponding to the angles of incidence and refraction of the ultrasonic beams transmitted through the couplant medium with which the instrument is to be used.

4,112,776
EARTHQUAKE SIMULATOR
Joseph Fernand Ouellette, Glendale, and David L. Poeling, St. Charles, both of Mo., assignors to Quellette Machinery Systems, Inc., St. Louis, Mo.
Filed Sep. 30, 1976, Ser. No. 728,126
Int. Cl.² B06B *1/14*
U.S. Cl. 73—665 **1 Claim**



1. A device to vibrate a surface having a frame, means in the frame mounting a plate, the mounting means including a first resilient mount connected to the plate, the resilient mount being connected to a driving lever, the driving lever being connected at one end to a second resilient mount and the second resilient mount being connected to a damping support connected to the frame, the driving lever being connected at a second end to a driving piston, the piston having a power cylinder capable of reciprocating the piston at a preselected frequency and thereby oscillating the driving lever to thereby oscillate the plate through the first resilient mount, the first and second resilient mounts being positioned to reduce the amplitude of the oscillations of the plate relative to the oscillations of the reciprocating piston, the power cylinder being mounted on a shock absorbing plate having a plurality of layers, at least two of the layers having different vibrational modes, the plate being mounted in the frame, valve means adapted to control a power source, the valve being connected to the power cylinder to actuate the cylinder at a preselected frequency in response to an input signal, means increasing the response sensitivity of the power cylinder, and a feedback cylinder connected to the plate to generate a positional feedback signal for comparison with an input signal, the frame having shock absorbing means to absorb vibration transmitted to the frame.

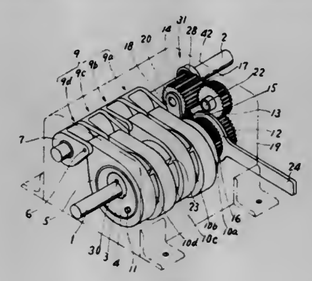
4,112,777
AIR PRESSURE MONITOR
John T. Knepler, Chatham, Ill., assignor to Dickey-john Corporation, Auburn, Ill.
Filed Jun. 30, 1977, Ser. No. 808,807
Int. Cl.² G01L *9/10*
U.S. Cl. 73—728 **9 Claims**



1. A fluid pressure monitor comprising electromechanical sensor means having a variable impedance which varies systematically according to the fluid pressure applied to said sensor means, circuit means connected to said sensor means for producing output signal means suitable for driving a digital display corresponding to said fluid pressure applied to said sensor means, said circuit means including first oscillator means connected to said sensor means for producing a pressure signal at a frequency proportional to said pressure in response to said impedance of said sensor means, second oscillator means for producing a reference signal at a frequency corresponding to the frequency of said pressure signal produced by said first oscillator means when said pressure applied to said sensor means is substantially zero, mixer means connected to said first and second oscillator means for producing a difference signal at a frequency corresponding to the difference between the frequencies of said pressure and reference signals and signal conversion circuit means connected to said mixer means for converting said difference signal to produce said output signal means, said signal conversion circuit means including a trigger circuit connected to said mixer means for producing a plurality of pulses at substantially the same frequency as and in response to said difference signal and a divider circuit connected to said trigger circuit for decreasing the frequency of said pulses by a predetermined proportion to produce a divider circuit signal at a frequency suitable for driving a digital display so as to be readable, while maintaining a relatively high degree of resolution afforded by the proportionately higher frequencies of said first and second oscillator means.

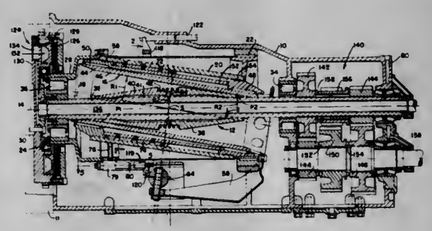
4,112,778
VARIABLE SPEED POWER TRANSMISSION
Akira Korosue, 19-6, Tashiro-cho, Nishinomiya, Hyogo, Japan
Filed Dec. 1, 1976, Ser. No. 746,341
Claims priority, application Japan, Dec. 2, 1975, 50/145792
Int. Cl.² F16H *29/04*
U.S. Cl. 74—117 **1 Claim**

1. In a variable speed power transmission having a rotary unit comprising an inner eccentric cam secured to an input axis, an outer eccentric cam mounted on the periphery of said inner eccentric cam, a connecting link on the input side having at its one end a round hole rotatably fitted to the periphery of said outer eccentric cam, a one-way rotary mechanism fixed to the output axis, a connecting link on the output side with its one end fixed to the periphery of said one-way rotary mechanism; the other end portions of said connecting links on the input side and on the output side are connected rotatably with each other by means of a connecting pin, a plurality of sets of said rotary units with a phase angle difference therebetween are mounted on said input axis and said output axis with the fixed space therebetween, a synchronous slit plate with a slit in diametrical direction is rotatably fixed to the input axis and adjacent each outer eccentric cam, said synchronous slit plate, the outer eccentric cam and a succeeding synchronous plate



are connected together by a synchronous pin through an axial hole in the outer eccentric cam and a slit of each synchronous slit plate, and a phase angle regulating mechanism including a gear rotatable with said input axis, a gear rotatable about said input axis and secured to one said synchronous slit plate, a variable eccentric gear train drive from said gear rotatable with said input axis to said rotatable about said input axis including a drive gear with a fixed axis driven by said gear rotatable with said input axis, a variable speed lever rotatable about said input axis, a moveable eccentric drive means and linkages linked to said variable speed lever to move said gear rotatable about said input axis to change its phase.

4,112,779
VARIABLE SPEED TRANSMISSION DEVICE
Yves Jean Kemper, Birmingham, Mich., and Lucien Bigot, Nantes, France, assignors to Vadetec Corporation, Troy, Mich.
Filed Nov. 3, 1976, Ser. No. 738,472
Int. Cl.² F16H *15/16*
U.S. Cl. 74—191 **30 Claims**



1. In a variable speed transmission having a frame, drive input means, drive output means, and means interconnecting the input and output means including a first element having a first axis fixed relative to the frame, a second element having concentric rolling and journal surfaces of revolution about a second axis intersecting the first axis at a point of axes intersection, a third element journalled in the frame for rotation on the first axis and having journal means to engage the journal surfaces of the second element and support the second element to positively establish an angle of intersection between the first and second axes during movement of the second axis in a biconical path circumferentially about the first axis, the first

element having a pair of rolling surfaces of revolution about the first axis, one on each side of the point of axes intersection, the rolling surfaces of the second element being disposed also one on each side of the point of axes intersection, the respective rolling surfaces on the first and second elements being in rolling frictional engagement at two points in a plane containing the first and second axes and located one on each side of the point of axes intersection, and means urging the respective rolling surfaces on the first and second elements into rolling frictional engagement with each other at the two points of rolling frictional engagement, the improvement comprising:

axially fixed means to define the rolling surfaces of the second element;

axially shiftable means to define the rolling surfaces of the first element;

the respective generatrices of the rolling surfaces on the first and second elements being shaped so that the ratio of rolling surface radii on the first and second elements at the two points of rolling friction engagement varies with changes in the angle at which the first and second axes intersect and with axial shifting movement of the rolling surfaces on the first element toward and away from the point of axes intersection; and

control means for adjustably tilting the second element to change the angle of intersection between the first and second axes and thereby adjust the ratio of rolling surface radii on the first and second elements at the two points of rolling friction engagement.

9. In a transmission device having a frame, drive input means, drive output means, and means interconnecting the input and output means including a first element having a first axis fixed relative to the frame, a second element having a second axis intersecting the first axis at a point of axes intersection, support means rotatable on the first axis and rotatably supporting the second element for conical movement about the point of axes intersection and circumferentially of the first axis, the first element having a pair of rolling surfaces disposed about the first axis, one on each side of the point of axes intersection, the second element having a pair of rolling surfaces disposed about the second axis, one on each side of the point of axes intersection, the respective rolling surfaces on the first and second elements being in rolling frictional engagement at two points in a plane containing the first and second axes and located one on each side of the point of axes intersection, and means urging the respective rolling surfaces on the first and second elements into rolling friction engagement with each other at the points of rolling frictional engagement, the improvement comprising:

means establishing an interior cylindrical surface to define the rolling surfaces of one of the elements;

a pair of members supported for rotation with the other of the elements and for axial movement toward and away from the point of axes intersection, each of said members having exterior surfaces of revolution defined by a curved generatrix to be convex in axial section and converging from the point of axes intersection; and

means for adjusting the angle of intersection between the first and second axes to shift the two points of rolling frictional engagement in opposite axial directions along said members thereby to vary the radii of the rolling surfaces on the other element at the two points of rolling frictional engagement.

4,112,780

VARIABLE SPEED TRANSMISSION DEVICE

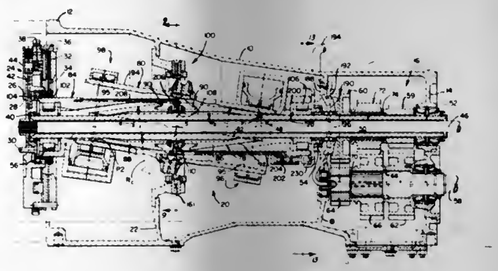
Yves Jean Kemper, Birmingham, Mich., and Lucien Bigot, Nantes, France, assignors to Vadetec Corporation, Troy, Mich.

Filed Apr. 1, 1977, Ser. No. 783,776
Int. Cl.² F16H *15/06, 15/16*
U.S. Cl. 74—191 **23 Claims**

1. In a variable speed transmission having a frame, drive input means, drive output means, and means interconnecting the input and output means including a first element having a first axis fixed relative to the frame, a second element having concentric rolling and journal surfaces of revolution about a second axis intersecting the first axis at a point of axes intersection, a third element rotatable on the first axis and having journal means to engage the journal surfaces of the second element during movement of the second axis in a biconical path circumferentially about the first axis, the first element having a pair of rolling surfaces disposed about the first axis, one on each side of the point of axes intersection, the rolling surfaces of the second element being disposed also one on each side of the point of axes intersection, the respective rolling surfaces on the first and second elements being in rolling frictional engagement at two points in a plane containing the first and second axes and located one on each side of the point of axes intersection, and means urging the respective rolling surfaces on the first and second elements into rolling frictional engagement with each other at the two points of rolling frictional engagement, the improvement comprising:

means establishing an interior cylindrical surface to define the rolling surfaces of one of the elements;

a pair of members supported for rotation with the other of the elements and for axial movement toward and away from the point of axes intersection, each of said members having exterior surfaces of revolution defined by a curved generatrix to be convex in axial section and generally inclined oppositely and symmetrically from the point of axes intersection, said exterior surfaces of revolution establishing the rolling surfaces on the other of the elements;



means defining the third element and including a sleeve-like member extending between the rolling surfaces of the first and second elements and having openings to enable the rolling frictional engagement of the respective rolling surfaces at the two points containing the first and second axes; and

means carried by the third element for adjusting the angle of intersection between the first and second axes to shift the two points of rolling frictional engagement in opposite axial directions along said member thereby to vary the radii of the rolling surfaces on the other element at the two points of rolling frictional engagement.

2. The apparatus recited in claim 1, wherein said interior cylindrical surface establishing means defines the rolling surfaces of the second element and the first element includes said pair of members.

3. The apparatus recited in claim 2, wherein the journal means of the third element are located at opposite ends of the second element and movable in diametrically opposite directions relative to the third member, and including a pair of piston/cylinder devices for positioning the journal means symmetrically about the point of axes intersection.

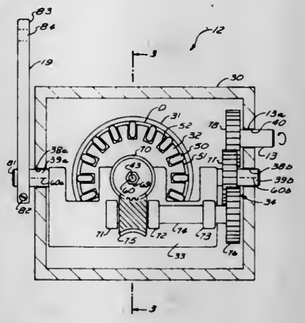
4. The apparatus recited in claim 3, wherein said piston/cylinder devices comprise cylinder defining means carried by said sleeve-like member and a piston operable in said cylinder and fixed to the journal means.

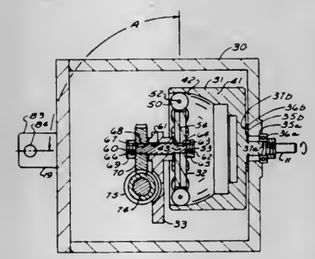
4,112,781

ROTATIONAL SPEED REDUCTION AND REVERSING MECHANISMS

Benton F. Baugh, 14626 Oak Bend, Houston, Tex. 77079

Filed Jul. 9, 1976, Ser. No. 704,030
Int. Cl.² F16H *13/04, 17/02, 17/00*
U.S. Cl. 74—198 **5 Claims**





1. A rotational speed changing mechanism comprised of: a first rotating member with an internal spherical surface mounted for rotation; a second rotating member mounted for rotation with a plurality of rollers spaced around its circumference; said rollers mounted to turn about their individual axis and to contact the internal spherical surface of the first member in such a manner that the second member may rotate on the internal surface of the first member; a housing provided with mounting means for pivoting the second member in relation to the first member and near the center of rotation of the first member; said second member pivotably mounted on said housing so as to rotate about an axis in such a fashion as to maintain contact between one or more of said rollers on the second member and the spherical internal surface of the first member; and an output gear train provided to allow the output drive axis of the second member to be rotated about the pivoting axis of the mounting means while also allowing the power output of the rotational speed changing mechanism to be set off at a 90° angle to the power input.

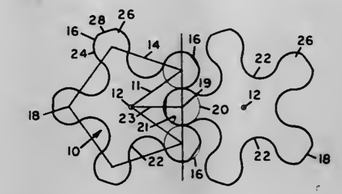
4,112,782

COMPATIBLE GEAR SYSTEM

Max Mullins, c/o Mrs. Nel Mullins, 1370 NE. Miami Court, Miami, Fla. 33161

Filed Jun. 21, 1977, Ser. No. 808,469
Int. Cl.² F16H *55/06*
U.S. Cl. 74—462 **6 Claims**

1. A compatible gear system wherein each gear (30, 32) has an odd number of teeth (26), five or more, the shape and size of the gear (30, 32) and gear teeth (26) being determined by laying out a regular polygon (10) with its corners (18) a pitch radius distance (23) from its center (12), thus being the pitch radius of the desired gear (30, 32), the polygon (10) having an odd number of sides (14) equal to the odd number of teeth (26) in the desired gear (30, 32), laying out circles (16) about each polygon corner (18) with a radius equal to one-fourth of the length of a polygon side (14), then laying out intermediate circles (20) tangent to and between said polygon corner centered circles (16) with the same radius, the intermediate circles (20) each



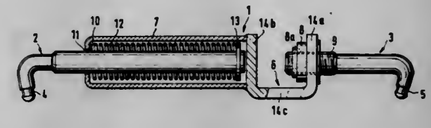
being centered at the mid-points (19) of its polygon side (14), the corner centered circles (16) defining gear teeth (26) that are greater than semi-circular and merge inwardly with the inner portions (21) of the intermediate circles (20) which define semi-circular gear teeth meshing recesses (22).

4,112,783

EXHAUST GAS RETURN VALVE ACTUATING ROD

Alfred Beler, Braunschweig-Hondelage, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 16, 1977, Ser. No. 777,893
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613781
Int. Cl.² G05G *1/00;* F16B *7/10*
U.S. Cl. 74—470 **4 Claims**



1. An exhaust gas control valve actuating rod comprising a first rod portion adapted for connection to an exhaust gas control valve, a second rod portion axially aligned with said first rod portion and adapted for connection to a throttle linkage, and a connecting element, including a U-shaped section having arms extending perpendicular to the axis of said first and second rod portions, one of said arms having a threaded insert having a self-locking thread into which one of said rod portions is threaded for changing the length of said actuating rod, and the other of said arms being connected to the remaining rod portion by a spring connection, said connecting element extending eccentrically with respect to the axis of said first and second rod portions.

4,112,784

APPARATUS FOR PRODUCING MOTION OF A WORKPIECE

Harry Jose Cosh, 33 Wallace St., Bairnsdale Victoria, Australia

Filed Jun. 30, 1976, Ser. No. 701,419
Claims priority, application Australia, Jul. 4, 1975, 2230/75
Int. Cl.² F16C *1/22*
U.S. Cl. 74—501.5 R **6 Claims**

1. A compensator for Bowden cables comprising

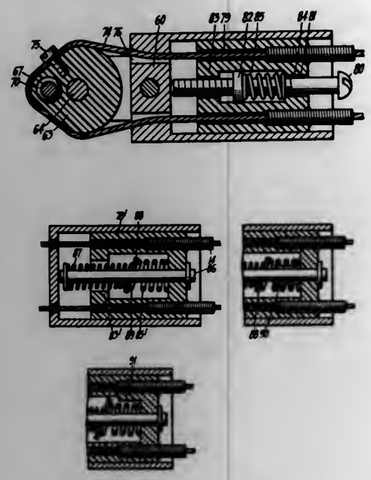
a housing having a hollow interior;

a block mounted in the hollow interior of the housing for movement relative to the housing in an axial direction only and being adapted to retain therein the outer sheath of a cable;

shaft means passing through the block in the axial direction and acting on an inner end wall of the housing;

a first compression spring mounted on the shaft inside the block;

a retaining device located on said shaft in a position that is adjustable with respect to said housing for holding said first compression spring against unwanted axial movement relative to the shaft; and



a primary adjusting means mounted on said shaft to provide for adjustment to allow for variations in cable length and size;

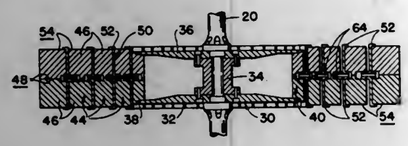
said first compression spring and said retaining device cooperating, in a condition of low cable tension, to bias the block in an outward direction and, in a condition of high cable tension, to allow the block to compress the spring to compensate for that high cable tension.

4,112,785

RING ASSEMBLY FOR INERTIAL ENERGY STORAGE ROTOR

William M. Brobeck, Orinda, Calif., assignor to Electric Power Research Institute, Inc., Pala Alto, Calif.

Filed Jul. 1, 1976, Ser. No. 701,826
Int. Cl.² F16C *15/00*
U.S. Cl. 74—572 **23 Claims**



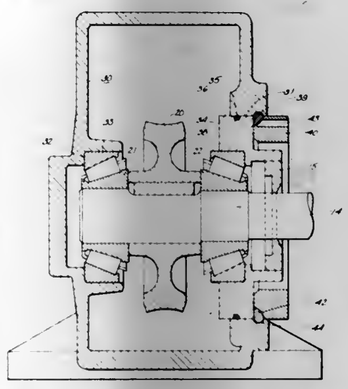
1. A rotor ring for use with an inertial energy storage wheel comprising: a plurality of coaxial rings having like inner and outer diameters, opposing faces of the rings including a plurality of circumferentially spaced apart, aligned grooves, each set of corresponding grooves defining a radially oriented, open hole; and a plurality of connecting members constraining the rings to each other, the members having a U-shaped configuration defined by a center section that is parallel to the axis of the rings and a pair of radially oriented lips disposed substantially perpendicular to the center section, the lips being spaced apart a distance substantially equal to the combined axial thickness of the rings, the member further including radially oriented plug means extending from the center section and having a configuration complementary to the holes; whereby the connecting members mutually align and constrain the rings to each other by inserting the plug means in the respective holes and engaging free end faces of the rings with the lips.

4,112,786

BOLTLESS HOUSING FOR GEAR HEADS AND THE LIKE

Richard J. Thomas, Wallingford, Conn., assignor to Robbins & Myers, Inc., Springfield, Ohio

Filed Jan. 19, 1977, Ser. No. 760,814
Int. Cl.² F16H *57/02, 1/16;* B21D *53/28;* F16C *1/06*
U.S. Cl. 74—606 R **4 Claims**



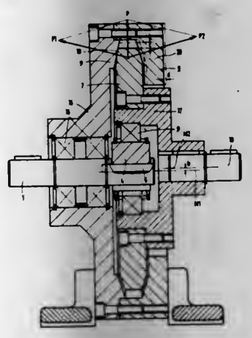
1. A housing containing a shaft-mounted rotatable element, said housing having one integral side carrying a shaft bearing, said housing having a circular bore on the other side, through which said shaft bearing may be emplaced, and through which said shaft and rotatable member may be inserted into said housing, a circular side plate for said housing carrying a second shaft bearing, said side plate fitting in said bore with very small clearance, an O-ring between said bore and side plate for sealing purposes, an internal annular groove in said bore, and an annular key filling said annular groove and having an annular portion exposed on the outside of said side plate, said key locking said side plate in position and being removable by machining, melting and the like for repair.

4,112,787

EPICYCLIC FRICTION TRANSMISSION WITH TORQUE-DEPENDENT PRESSURE-EXERTING DEVICE

Heinrich Tippmann, and Wolfgang Huber, both of Munich, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 13, 1976, Ser. No. 749,687
Int. Cl.² F16H *13/06, 15/56*
U.S. Cl. 74—798 **6 Claims**



1. An epicyclic, friction type, mechanical transmission in which a planet wheel makes a friction contact with the larger diameter inside surface of a fixed sun wheel, said transmission having first and second independent shafts concentric with said sun wheel and said planet wheel, respectively, but having centers offset with respect to each other, the combination comprising:

means for transmitting torque between said first and second shafts, said second shaft being mechanically fixed to said planet wheel, said means including the circumferential force produced by friction between said sun wheel inside surface and said planet wheel rolling eccentrically within said sun wheel;

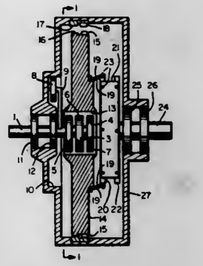
and means operative between said first shaft and said planet wheel including a cam surface associated with one of the two members consisting of said first shaft and said second shaft and a cam counterpart affixed to the other of said two members, said cam and counterparts being arranged to effectively resolve said torque couple into tangential and radially outward forces, said radially outward force being directed substantially along a line containing said offset shaft centers, the surface of said cam providing a wedging action such that the magnitude of said radially outward force is a direct function of the magnitude of said torque couple between said shafts.

4,112,788

TORQUE TRANSMISSION DEVICE

Albert Patrick Sfredda, 2106 Iris Pl., Bethlehem, Pa. 18018

Filed Aug. 24, 1976, Ser. No. 716,990
Int. Cl.² F16H *3/44, 1/28*
U.S. Cl. 74—804 **8 Claims**



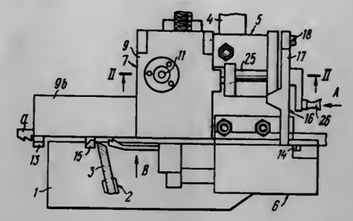
1. A torque transmission device comprising; a wheel having an inner concentric raceway, the rim of said wheel having a rolling surface and teeth formed about said rim, a fixed annular raceway having teeth formed about the path of said annular raceway, said annular raceway encircling and engaging said wheel, the diameter of said raceway being larger than the diameter of said wheel so as to permit wheel rotation thereon; said wheel teeth having a rolling drive interengagement with said raceway teeth thereby permitting positive wheel rotation on said annular raceway, a rotatably supported drive shaft positioned concentrically relative to said fixed annular raceway, a drive member secured to said drive shaft, said drive member engaging a portion of the inner raceway of said wheel, whereby rotation of said drive shaft will cause said drive member to impart a radial drive force to said wheel, a rotatably supported output shaft positioned concentrically to said drive shaft and coupling means connecting said output shaft to said wheel, whereby torque produced by the orbital rotation of said wheel is transmitted to said output shaft.

4,112,789

MACHINE FOR WORKING SAW TEETH

Vladimir Viktorovich Idel, selo Kolchino, ulitsa Kirova, 11, Zakarpatskaya oblast, Mukachevsky raion, U.S.S.R.

Filed Mar. 24, 1977, Ser. No. 781,016
Claims priority, application U.S.S.R., Mar. 30, 1976, 2333521; Mar. 30, 1976, 2333524
Int. Cl.² B23D *63/04*
U.S. Cl. 76—58 **25 Claims**



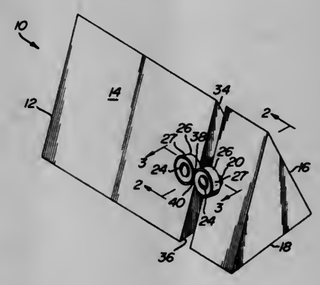
1. A machine for working band saw teeth, comprising: a bed; an abrasive wheel for sharpening band saw teeth, said abrasive wheel being mounted on said bed; means for rotating said abrasive wheel; a clamping device for holding the band saw involved on the side and back surfaces thereof, said clamping device being mounted on the bed and arranged to reciprocate for the purpose of feeding said band saw to the abrasive wheel; a driving mechanism of the machine; a mechanism for effecting reciprocating movement of said clamping device, said mechanism being kinematically connected with said driving mechanism of the machine; a band saw pitch-feed mechanism mounted on said clamping device and kinematically connected with said driving mechanism of the machine; at least two tooth tip supporting elements, one of them being located before said abrasive wheel, as viewed in the direction of pitch feed, and the other supporting element being mounted on said clamping device after said abrasive wheel, as viewed in the direction of pitch feed; at least two shaped surfaces formed on said other supporting element and arranged to make contact with the tips of the saw teeth, said other supporting element being mounted on said clamping device so as to be able to be moved relative thereto for the purpose of positioning said shaped surfaces so that the side surfaces of the tooth tips make contact with the appropriate shaped surfaces, whereby the saw teeth are set, the setting being performed only in the zone of the tooth tips.

4,112,790

KNIFE SHARPENER

William Z. Marder, North Wales, Pa., assignor to Zevco Enterprises, Inc., North Wales, Pa.

Filed Nov. 24, 1976, Ser. No. 744,588
Int. Cl.² B21K *5/12*
U.S. Cl. 76—87 **8 Claims**



1. A knife sharpener comprising:

a support;

a pair of axles attached to said support, each axle including

a first section and a second section, the transverse dimension of said second section being less than the transverse dimension of said first section;

a discrete cutting wheel having a bore journaled on the second section of each axle for rotary motion during the sharpening of a knife, the axis length of said second section being greater than the thickness of the blade at the bore;

means including a wrench engaging surface on the outer periphery of said first section for providing an eccentric mounting for at least one wheel for moving the axis of rotation of said one wheel toward the other wheel;

fastening means for securing the first section of said axles to said support in a fixed rotative position without applying axially directed pressure to said cutting wheels;

said cutting wheels being supported adjacent one another with their outer periphery in rolling contact and forming between them a means for cutting an edge of a knife being sharpened.

4,112,791

CABLE-STRIPPING TOOL

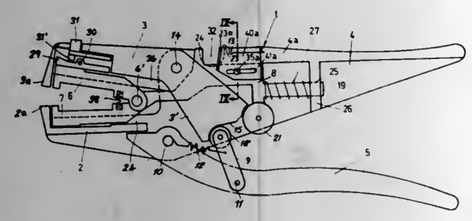
Hans Wiener, Täby, Sweden, assignor to C. A. Weidmuller KG, Detmold, Germany

Filed Nov. 10, 1976, Ser. No. 740,833

Claims priority, application United Kingdom, Nov. 11, 1975, 46580/75

Int. Cl.[2] H02G *1/12*

U.S. Cl. 81—9.5 A **10 Claims**



1. A tool for handling slender workpieces, comprising:

an elongate body provided at a front end thereof with a first gripping jaw and terminating at a rear end thereof in a first shank;

a second gripping jaw swingably mounted on said body, said gripping jaws being respectively provided with confronting first and second guide tracks extending rearwardly from a pair of cable-clamping extensions;

a first stripping jaw slidable along said first guide track;

a second stripping jaw articulated to said first stripping jaw and slidable along said second guide track;

a link member with a front portion, an intermediate portion and a rear portion slidable along said body in a longitudinal direction generally parallel to said first guide track, said front portion being positively coupled with said stripping jaws, said first shank being provided with restraining means engaging said rear portion for preventing lateral excursions thereof in the swing plane of said second gripping jaw;

a handle pivotally mounted on said body, said handle forming a second shank alongside said first shank and being operatively connected with said second gripping jaw and with said link member for moving said extensions toward each other and rearwardly retracting said stripping jaws and said link member upon being swung toward said first shank; and

a guide member detachably secured to said body close to said intermediate portion and coupled by coacting formations with said link member for joint removal from said body together with said stripping jaws, said formations enabling relative displacement of said members in said longitudinal direction while preventing such displacement in a direction transverse to said swing plane, said body being provided with abutment means engaging said guide member and preventing any relative displacement thereof, said intermediate portion having a projection provided with a rearwardly facing land confronting a forwardly facing land of said guide member across a laterally open recess narrowing upon rearward movement of said link member under the control of said handle, said recess being further bounded by a lateral land extending generally in said longitudinal direction, at least one of said lands having a cutting edge for biting into the insulation of a cable inserted into said recess.

4,112,792

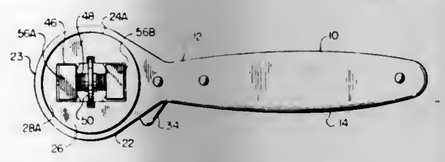
ADJUSTABLE RATCHET WRENCH

Henry L. Guimarin, 2812 Milam, Fort Worth, Tex. 76112

Filed Apr. 11, 1977, Ser. No. 786,505

Int. Cl.[2] B25B *13/46*

U.S. Cl. 81—63 **3 Claims**



1. An improved adjustable ratchet wrench comprising:

a body formed of two complementary side pieces and defining an elongated handle portion and two parallel, spaced apart members each terminating in a generally circular enlarged ratchet holding head;

a circular ratchet disk member having a plurality of ratchet teeth about its periphery and hub portions of reduced diameter extending from opposite sides;

each of said ratchet holding heads including a circular opening receiving a different one of the hub portion of said ratchet disk member, said openings being coaxial and supporting said ratchet disk member for rotation;

a generally triangular shaped pawl member mounted between said spaced apart members and pivotal between first and second positions in which first and second abutments selectively engage said ratchet teeth to selectively control the direction in which said ratchet disk member can be rotated;

spring means cooperatively associated with a third abutment of said pawl member for biasing said pawl member into said first and second positions;

a double acting lead screw;

said ratchet disk member including a centrally disposed rectangular opening for receiving the double acting lead screw;

said ratchet disk member including three portions positioned as three layers, one of the portions including an outer rim having the ratchet teeth formed therein, and the centrally disposed rectangular opening in the middle layer portion being larger than the centrally disposed rectangular openings in the two outermost layers so as to form a groove when the three portions are layered together, and means effective when the three portions are positioned in opposed relationship for preventing rotation of the portions relative to each other;

a pair of opposed jaw members each having a threaded base and carried by said lead screw for movement selectively toward and away from each other dependent upon the direction of rotation of the lead screw; said jaw members including outwardly extending flanges adapted to fit in the ratchet disk member groove; and

opposed faces of said jaw members including two obliquely angled planes defining a spread V shape extending from the free end of the jaw member toward said base a limited distance.

4,112,793

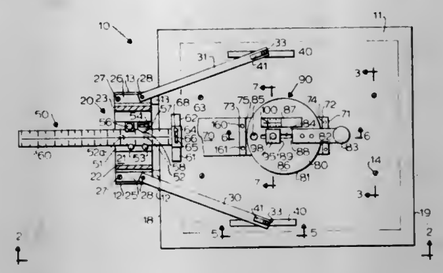
DEVICE FOR CUTTING OVALS IN MATS OR GLASS SHEETS

Donald Cameron Pierce, 1253 C Redwood Blvd., Novato, Calif. 94947

Filed Apr. 6, 1977, Ser. No. 785,244

Int. Cl.[2] B23B *41/04*; B41L *11/04*

U.S. Cl. 82—1.3 **20 Claims**



1. An oval-cutting assembly including in combination:

a flat elongated frame member having a pair of parallel transverse members and a longitudinal through slot in between them,

a circular disc in between and tangent to said transverse members and having a radially extending through slot lying mainly to one side of the disc's center and a handle rigidly secured eccentrically to said disc on the other side of the disc's center,

a rotatable disc-shaped upper bearing rotatably and slidably mounted in said longitudinal slot and having a flat face with a non-circular extension therefrom that fits non-rotatably but slidably in said radially-extending slot, said circular disc resting on said flat face,

a rotatable lower bearing member keyed to said upper bearing for rotation therewith and bearing rotatably on the bottom of said frame member,

clamp means for clamping said extension to said disc at a selected position in said radially-extending slot to provide a chosen amount of eccentricity,

cutter holder means,

attachment means securing said cutter holder means to said lower bearing member for rotating said cutter holder means and moving it longitudinally with said upper bearing,

a cutter assembly including a cutter blade, spring means for yieldably urging said blade against any object to be cut, and a cutter holder bar,

means for rigidly securing said cutter holder bar to said cutter holder means, and

means for setting said cutter holder bar at a chosen position relative to said cutter holder means to determine the minor diameter of said oval.

4,112,794

TUBE CUTTER WITH PHASE CHANGER

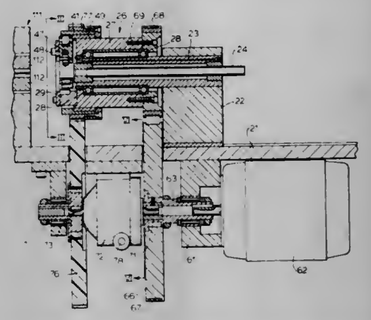
Lawrence A. Franks; Steven L. Stroup, and James E. Perry, all of Sturgis, Mich., assignors to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Filed Sep. 6, 1977, Ser. No. 830,389

Int. Cl.[2] B23B *3/04, 5/14*

U.S. Cl. 82—64 **11 Claims**

1. In an apparatus for cutting a tubular element, said apparatus having a frame, means associated with said frame for holding an elongated tubular element, and a rotatable cutting head assembly positioned in surrounding relationship to said tubular element and rotatable about an axis substantially aligned with the axis of said tubular element, said cutting head assembly including rotatable support means having a rotatable cutting element mounted thereon for rotation therewith, and mounting means coacting between said cutting element and said support means for permitting said cutting element to move radially inwardly into rolling engagement with the tubular element to effect cutting thereof as the cutting element rolls therearound due to rotation of said support means, the improvement comprising ringlike cam means concentrically rotatably supported on said support means, said cam means having a cam surface cooperating with said mounting means for causing the cutting element to be urged radially inwardly toward the tubular element so as to rollingly cuttingly engage same, and drive means for causing high speed rotation of said support means



and said cam means, said drive means including first and second power transmission means respectively drivingly connected to said support means and said cam means for normally causing rotation thereof at the same rotational speed, said drive means also including phase change means coacting with at least one of said power transmission means for selectively causing a small rotational speed differential between said support means and said cam means, said speed differential causing said cam means to relatively rotate with respect to said mounting means for camming said cutting element radially inwardly for engagement with the tubular element.

4,112,795

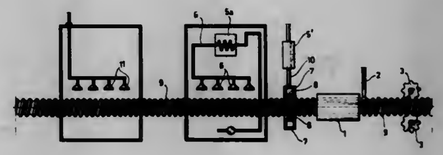
PROCESS FOR PERFORATING PLASTICS TUBES

Warner Jan de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Continuation of Ser. No. 664,939, Mar. 8, 1976, abandoned. This application Dec. 9, 1977, Ser. No. 859,159

Int. Cl.[2] B23B *39/20*

U.S. Cl. 83—15 **5 Claims**



1. In a process for perforating a thin-walled corrugated tube composed of a polyolefinic material by means of a punching or cutting operation, the improvement wherein prior to the punching or cutting operation the tube is sequentially

(1) contacted with a liquid spray which is at a temperature of between about 0° to 5° C., and

(2) contacted with a stream of air at a temperature less than the temperature of the water spray of step (1).

4,112,796

CUTTER APPARATUS FOR DIVIDING A FORM BAND OR THE LIKE INTO INDIVIDUAL FORMS

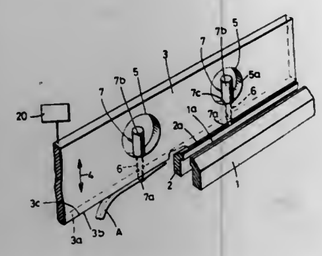
Heinz Brechbühl, Oberdiessbach, Switzerland, assignor to Maschinenfabrik Kern AG Konolfingen, Konolfingen, Switzerland

Filed Sep. 1, 1977, Ser. No. 829,869

Claims priority, application Switzerland, Sep. 7, 1976, 011331/76

Int. Cl.² B26D *7/18*

U.S. Cl. 83—141 **2 Claims**



1. A cutter apparatus for dividing a form band or the like into individual forms, comprising:

two stationary cutters:

a movable cutter beam coacting with said two stationary cutters;

said movable cutter beam having a lower narrow side equipped at both marginal regions thereof with two cutter edges which cut out of the form band a transverse strip during each cutting stroke of said cutter beam;

at least one ejector element comprising an ejector bolt freely movably mounted at the cutter beam between two terminal positions and disposed essentially perpendicular to said narrow side of said cutter beam;

said ejector element being movably between an inner terminal position in which said ejector element is located completely within the cutter beam and an outer terminal position in which an end region of the ejector element neighboring the narrow side of the cutter beam protrudes therefrom, in such a manner that during a rapid return stroke of the cutter beam away from said two stationary cutters the ejector element subjected to the action of inertia detaches a transverse strip from the cutter beam which has just been cut out of the form band;

said cutter beam possesses a number of transverse holes distributed over its length;

each said ejector bolt being arranged to cooperate with a related one of said holes;

said cutter beam possessing a respective bore merging with each said hole;

each ejector bolt having a thicker upper portion freely movable within a related one of the holes and a lower portion guided in a bore of the related hole of the cutter beam; and

each said lower portion including the end region of the ejector element acting upon the cutoff transverse strip.

4,112,797

FLUID JET CUTTING APPARATUS

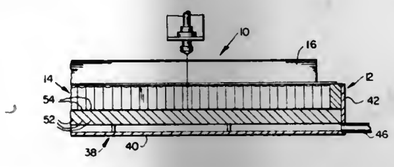
David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Oct. 7, 1977, Ser. No. 840,273

Int. Cl.² B26F *3/00*; D06H *7/00*

U.S. Cl. 83—177 **23 Claims**

1. Fluid jet cutting apparatus comprising a bed assembly including a plurality of spaced apart members having sharp upper portions disposed in a common generally horizontal plane and defining a fluid permeable sheet material supporting surface, a fluid jet cutting tool mounted above said supporting surface and including a jet nozzle directed toward said fluid permeable supporting surface for discharging a high velocity stream of cutting fluid to impinge upon material supported on said fluid permeable supporting surface, and controlled positioning means for moving said fluid jet cutting tool relative to



said fluid permeable supporting surface with said jet nozzle directed toward said fluid permeable supporting surface.

4,112,798

DRUM TYPE FLYING SHEAR

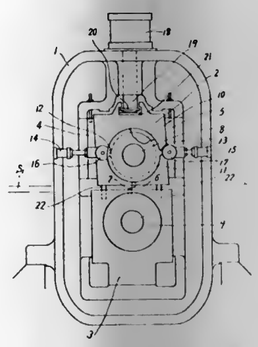
Isamu Yoshizawa; Hiroyuki Okubo, both of Yokohama; Hiroshi Isozaki, Zushi; Tsutomu Hara, and Bunpei Masuda, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Ote, Japan

Filed Apr. 26, 1977, Ser. No. 791,050

Claims priority, application Japan, Apr. 28, 1976, 51/49588

Int. Cl.² B23D *25/12*

U.S. Cl. 83—344 **2 Claims**



1. A drum type flying shear comprising a housing, an upper bearing box supporting an upper drum having an upper blade and a lower bearing box supporting a lower drum having a lower blade, said bearing boxes are mounted said housing, guide means in said housing, at least one of said bearing boxes being fitted between guide means in such a way that, it is slidable downwardly and upwardly at an angle to the vertical, driving cylinder means is provided for said guided bearing box for said slidable movement thereof, cam means are attached to the shaft of the drum carried by said guided bearing box, an hydraulic cylinder means having a piston rod cam follower means in the form of a roller is attached to the free end of said piston rod and is in engagement with the periphery of each of said cam means, said driving hydraulic cylinder means and said hydraulic cylinder means are hydraulically intercommunicated with each other to establish a closed-loop hydraulic circuit, and balancing means is provided for pressing against the movement of said guided bearing box by the driving hydraulic cylinder.

4,112,799

CUTTING APPARATUS

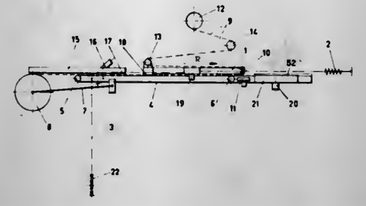
Bernardus Daenen, Uitgeest, Netherlands, assignor to Van der Molen Machinefabriek B.V., Zaandam, Netherlands

Filed Jan. 31, 1977, Ser. No. 764,173

Claims priority, application Netherlands, Feb. 13, 1976, 7601478

Int. Cl.² A24B *7/00*

U.S. Cl. 83—409 **5 Claims**



1. An apparatus for cutting wrapper for cigars from a ribbon, comprising a frame, a guide for a conveyor mounted on said frame, a conveyor movable on said guide, an endless conveyor belt positioned beneath said conveyor parallel to said guide and passing over rollers mounted on said frame, a support means for a roll of tobacco ribbon mounted on said frame, a suction head spaced above said conveyor belt and located directly behind the support means but in front of said conveyor, means for moving the conveyor over the guide, clamp for the conveyor with which the combination tobacco ribbon-carrier and belt can be urged to the conveyor, pneumatic means connected to the conveyor moving means to govern the control functions of the apparatus and clamp, a blade and a forming block corresponding to the contour of the wrapper positioned at one end of said conveyor belt.

4,112,800

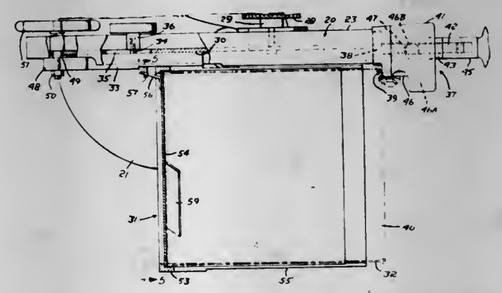
APPARATUS FOR SUCCESSIVELY DISPENSING FROM A CAN OF A JELLIED PRODUCT SLICES OF A CROSS SECTIONAL AREA LESS THAN THAT OF THE CAN

Lawrence S. Cole; Ruth J. Cole, both of High Street, North Carver, Mass. 02355, and Rigo Facchini, North Plymouth, Mass. 02360

Continuation of Ser. No. 672,870, Apr. 2, 1976, abandoned. This application Jun. 30, 1977, Ser. No. 811,476

Int. Cl.² B26D *4/80, 7/04*

U.S. Cl. 83—411 A **19 Claims**



1. Apparatus for successively dispensing slices of a jellied product from a can that is open at one end, the slices of a cross sectional area less than that of the can, said apparatus comprising a dispenser including a can holder disposed and dimensioned to hold said can open end downwardly thus ensuring movement of the product toward its open end by gravity and so that it may be rotated, an insert in said can frictionally held thereby so that the can and the insert turn together and become parts of a unit, said insert including walls spaced and arranged to divide its contents into a plurality of lengthwise sections, a fixed retaining plate associated with said holder engageable by the product as a stop to prevent such movement, said walls terminating above said plate, said plate having a slot extending outwardly from the center thereof and including a forwardly and upwardly inclined blade at the rear of said slot with the cutting edge of the blade close to the lower ends of the walls of the insert and operable as the can is rotated to sever the sections successively and to force them through said slot, and means attached to a part of said unit and operable to effect the rotation thereof in the appropriate direction relative to the blade.

4,112,801

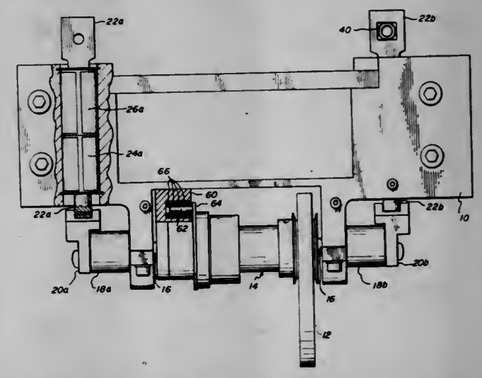
KNIFE ASSEMBLY FOR PHOTOGRAPHIC STRIP CUTTER

Robert E. Diesch, Rogers, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Sep. 29, 1977, Ser. No. 837,998

Int. Cl.² B26D *5/08*

U.S. Cl. 83—586 **18 Claims**



1. A knife assembly for cutting photographic strip material, the knife assembly comprising:

a base;

stationary blade means mounted to the base;

a source of rotary power;

a crankshaft for rotation about a crankshaft axis;

clutch means for selectively imparting the rotary power from the source of rotary power to the crankshaft;

first and second linear drive shafts connected to the crankshaft and extending through the base along first and second drive shaft axes which are substantially parallel to one another and normal to the crankshaft axis;

first and second linear bearing means mounted in the base along the first and second drive shaft axes, the first and second linear drive shafts and the first and second linear bearing means, respectively, forming an interference fit; and

movable blade means connected between the first and second linear drive shafts, whereby a single revolution of the crankshaft causes the movable blade means to engage the stationary blade means and cut the strip material and then withdraw to a non-engaging rest position.

4,112,802

ORGAN CIRCUITRY FOR PROVIDING FILL NOTES AND METHOD OF OPERATING THE ORGAN

John William Robinson, Jasper, Ind.; Thomas C. Crosby, Monroeville, Pa., and Stephen Louis Howell, Ireland, Ind., assignors to Kimball International, Inc., Jasper, Ind.

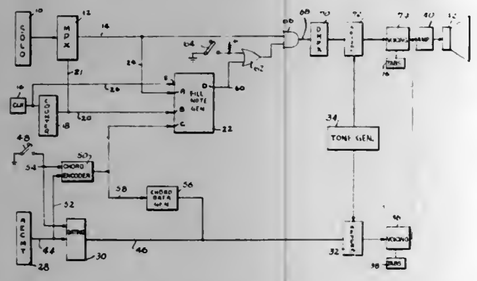
Filed Dec. 20, 1976, Ser. No. 752,830

Int. Cl.² G10H *1/00, 5/00*

U.S. Cl. 84—1.01 **30 Claims**

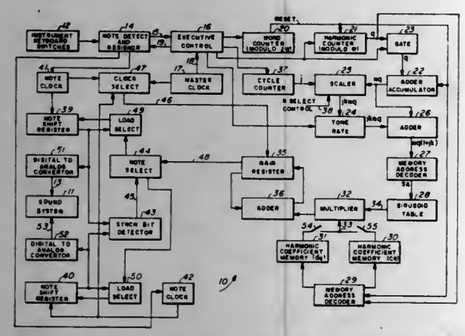
1. The method of operating an electronic organ having tone

generator means and transducer means and keyers interposed therebetween, keyboard means having playing keys and comprising a solo portion and an accompaniment portion, a multiplexer for scanning at least said solo portion of said keyboard and including a clock driven binary counter, said multiplexer generating a data stream on each scan of the keyboard containing key down signals in respective time slots for each depressed playing key, and a demultiplexer synchronized with and connected to said multiplexer and responsive to key down data supplied thereto by said multiplexer for actuating said keyers, said playing keys including chord playing keys each



operable when depressed to cause a chord to sound, said method comprising: storing the count from the counter which corresponds to the first depressed key encountered during a scan of the keyboard, adding two predetermined different binary words to the count to form a pair of binary words of differing but both of higher value than the stored count, comparing the two thus formed binary words with the count from the counter to develop two pulses when the compared words are equal to the respective counts of the counter, and supplying the pulses sequentially to the demultiplexer in the time slots corresponding to said respective counts.

4,112,803
ENSEMBLE AND ANHARMONIC GENERATION IN A POLYPHONIC TONE SYNTHESIZER
Ralph Deutsch, Sherman Oaks, Calif., assignor to Deutsch Research Laboratories, Ltd., Los Angeles, Calif.
Filed Dec. 29, 1975, Ser. No. 644,450
Int. Cl.² G10H *1/02, 5/00*
U.S. Cl. 84—1.24 **22 Claims**



1. A musical instrument exhibiting an ensemble effect comprising;
- a first memory means for writing master data set to be thereafter read out, wherein number N designates the address of words in said first memory means,
- means to set contents of first memory means to zero values at start of a computation cycle,
- first means for computing number Y(N) in master data set during each computation cycle of a sequence of computation cycles for providing an emsemble effect, wherein said master data set is composed of a multiplicity R+1 of submaster data sets each containing numbers Z(N), $X_1(N)$, $X_2(N)$, . . . , $X_R(N)$ and such computing is in accordance with the relations

$$Y(N) = Z(N) + X_1(N) + X_2(N) + \ldots + X_R(N)$$

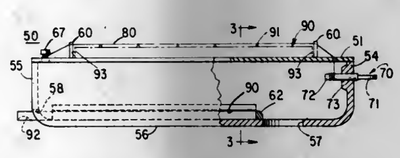
$$Z(N) = \sum_{q=1}^{W} c_q \sin(\pi Nq/W)$$

$$X_1(N) = \sum_{g=1}^{M_1} d_{1q} \sin[\pi Nq(1+jk_1)/W]$$

$$X_p(N) = \sum_{g=1}^{M_p} d_{pq} \sin[\pi Nq(1+jk_p)/W]$$

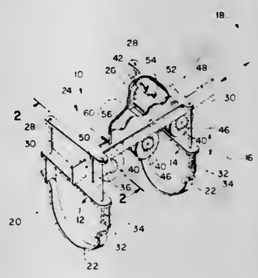
where $q=1,2,\ldots,W$; $N=1,2,\ldots,2W$; W is the number of harmonic components defining said number Z(N) and c_q is the harmonic coefficient of the corresponding qth harmonic establishing the relative amplitude of the corresponding qth component of Z(N); $p=1,2,\ldots,R$ is an index designating the out-of-tune submaster data sets; M_p is an integer not greater than W which specifies the number of harmonic components defining said numbers $X_p(N)$ and d_{pq} is the harmonic coefficient of the corresponding qth harmonic establishing the relative amplitude of the corresponding qth components; the numbers k_p are phase constants selected from a set of phase constants; j is a number incremented repetitively; said first means comprising
- a memory storing said harmonic coefficient sets c_q and d_{pq},
- a sinusoid table comprising a memory storing values of $\sin(\pi\phi/W)$ for $0 \leqq \phi \leqq 2W$ at intervals of D where D is a resolution constant,
- harmonic component evaluation circuitry utilizing said memory and said sinusoid table to calculate $c_q \sin(\pi Nq/W)$ for each of the W harmonic components of said number Z(N) in accordance with a selected value of N and to calculate $d_{pq}\sin[\pi Nq(1+jkp)/W]$ for each of the M_p harmonic components of said numbers $X_p(N)$ in accordance with a selected value of N,
- means for successively algebraically summing output of said harmonic evaluation circuitry with contents of word N in said first memory means,
- second memory means for storing a master data set to be thereafter read out,
- second means responsive to first means for transferring said master data set from first memory means to said second memory means,
- means for converting a master data set to a musical waveshape, and
- third means responsive to said second means for repetitively reading out the words of said master data set from second memory means and providing said read out words to said means for converting, the musical waveshape so produced exhibiting an ensemble effect.

4,112,804
STRINGED MUSICAL INSTRUMENT
Jack Cecchini, 5344 N. Magnolia, Chicago, Ill. 60640
Filed Mar. 18, 1977, Ser. No. 778,941
Int. Cl.² G10D *1/00*
U.S. Cl. 84—173 **9 Claims**



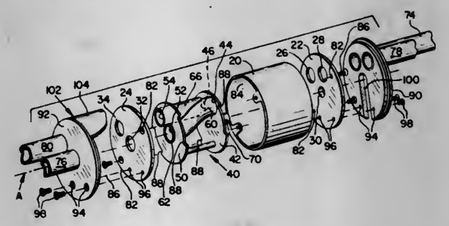
1. A stringed device, comprising a sound chamber having a first aperture therein, a plurality of longitudinally extending and transversely spaced-apart strings extending over said first aperture, stop means for fixedly securing one end of said strings near one end of said sound chamber, tensioning means connected to the other end of said strings near the other end of said sound chamber for adjusting the tension in said strings across said aperture, a second aperture in said sound chamber in the rear thereof sized to facilitate operation of said tensioning means and to provide a grip for holding the device, and bridge means intermediate said stop means and said tensioning means for maintaining said strings a sufficient distance away from said sound chamber to accommodate a finger board between said sound chamber and said strings.

4,112,805
CHORD LOCATER FOR STRINGED MUSICAL INSTRUMENTS
Ian T. Carter, 3624 156th St., Surrey, B.C., Canada (V3S/4N7)
Filed May 25, 1977, Ser. No. 800,279
Int. Cl.² G10D *3/04*
U.S. Cl. 84—317 **6 Claims**



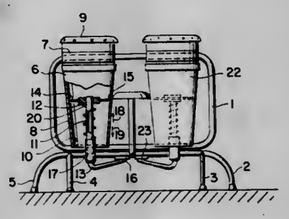
1. A chord locator for a stringed musical instrument comprising:
- clamp means adapted to be mounted on the stringed musical instrument,
- a housing reciprocably mounted on said clamp means,
- a plurality of drums rotatably mounted in said housing above the strings of the musical instrument,
- means on said housing for selectively rotating said drums in unison, and
- a plurality of stops fixed in predetermined spaced relation to the circumference of each of said drums above the strings of said musical instrument,
- whereby upon movement of said housing towards the strings of said musical instrument said stops will stop said string in proper position to produce a predetermined chordal note.

4,112,806
AXIAL FLOW VALVE
Orla E. Thayer, P.O. Box 473, Waldport, Oreg. 97394
Filed Jan. 31, 1977, Ser. No. 764,028
Int. Cl.² G10D *9/04*
U.S. Cl. 84—390 **2 Claims**



1. A musical wind instrument comprising:
- a lead pipe having a mouthpiece at one end thereof;
- a main bore terminating in an instrument bell;
- a slide loop;
- a casing having two opposite ends, said main bore and one end of said loop being connected to one of said opposite ends, said lead pipe and the other end of said loop being connected to the other of said opposite ends;
- a rotor rotatable in said casing having a primary rotor passage which directly connects said lead pipe to said main bore when said rotor is in a first position and which connects said lead pipe to said one end of said loop when said rotor is rotated to a second position, said rotor also having a secondary rotor passage which connects said other end of said loop to said main bore when said rotor is in said second position.

4,112,807
CONGA DRUM SET
Peter R. Quibell, Ocean Springs, Miss., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 25, 1977, Ser. No. 771,936
Int. Cl.² G10D *13/02*
U.S. Cl. 84—411 R **4 Claims**

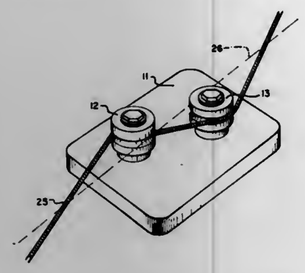


1. A conga drum set, comprising
- a frame;
- a conga drum having a band therearound and being affixed to the frame via the band, said drum having a substantially tapered hollow cylindrical housing covered by a skin head and having an open bottom;
- a piston rod type member extending into the housing of the drum through the open bottom thereof substantially coaxially therewith and having spaced opposite first and second ends, the first end being in the housing and the second end being spaced below the housing and outside said housing;
- a piston type member affixed to the first end of the piston rod type member;
- a pedal extending from the second end of the piston rod type member outside the housing; and
- moving means mounting the piston rod type member for movement in axial directions whereby said piston rod type member is axially movable via the pedal and moves the piston type member accordingly to vary the pitch of the drum.

4,112,808
DEVICE FOR CLEANING AND REVITALIZING WOUND STRINGS FOR MUSICAL INSTRUMENTS
Richard J. Ketterer, 35 Glenbrook Dr., Pittsburgh, Pa. 15235
Filed Jun. 9, 1977, Ser. No. 805,184
Int. Cl.² G10G *7/00*; G10C *9/00*
U.S. Cl. 84—453 **4 Claims**

1. A device for cleaning and revitalizing the wound strings of musical instruments comprising a polygonal base plate of light-weight material, and capable of being conveniently held in one hand, two similar cylindrical rollers mounted for rotation on respective axes perpendicular to the plane of said base plate, said rollers being of hardened metal and having respective aligned annular grooves therein normal to the axes of rotation, the bottom of said grooves being substantially semicircular in contour, the axes of said rollers being spaced laterally and longitudinally in a ratio of approximately 1 to 3 to

insure distension of the wound turns in the musical strings as the device is shifted longitudinally along a musical string en-



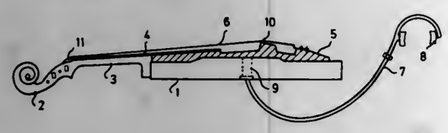
gaging an arc on the side of one roller and an arc on the diametrically opposite side of the other roller.

4,112,809

STRINGED INSTRUMENT FOR PLAY TRAINING

Gunnar Sjöstrand, and Staffan Sjöstrand, both of Åtvidaberg, Sweden, assignors to Musikindustriell Forskning MIFO AB, Atvidaberg, Sweden

Filed Jul. 9, 1976, Ser. No. 704,086
Claims priority, application Sweden, Jul. 17, 1975, 7508174
Int. Cl.² G10D *3/04*; G09B *15/06, 15/00*
U.S. Cl. 84—465 **3 Claims**



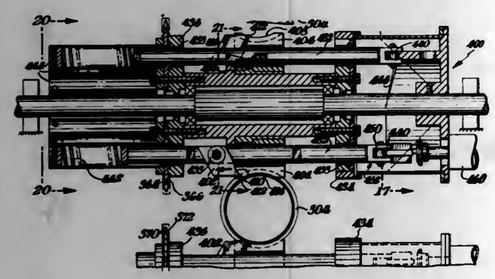
1. Training instrument for practicing the playing of a stringed instrument comprising the neck and grip-board of a stringed instrument for a set of strings to be attached at one of their ends to said neck, a plate attached to said grip-board to support the other ends of said strings, a structure to simulate a resonance-box comprising a body of sound-damping material to minimize the exterior dispersion of sounds produced by the strings, and acoustic sound pickup means attached to said plate within said structure to transmit sounds from the strings to the user of the instrument.

4,112,810

TUBE SLOTTER

Logan L. Dreibelbis, Cincinnati, Ohio, assignor to Advanced Drainage Systems, Inc., Columbus, Ohio

Filed Oct. 20, 1976, Ser. No. 734,197
Int. Cl.² B26D *3/16*
U.S. Cl. 83—490 **22 Claims**



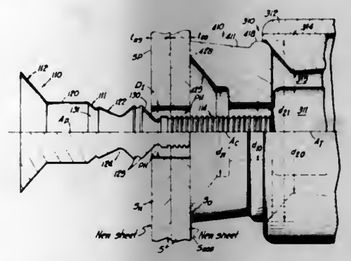
1. A tube slotting machine for cutting a series of transverse slotted openings in flexible corrugated tubing comprising a main framework, tube supporting and conveying means connected to the framework for guiding the tubing through the machine, and cutting means adapted to engage the tubing as it travels through the machine and to cut transverse slotted openings therein, the cutting means including a plurality of primary cutter blades, an equal number of spaced apart secondary blade pairs, the secondary blades of each secondary blade pair being slightly spaced apart with a primary blade located therebetween, each primary blade being mounted for sliding engagement with the secondary blades of its associated secondary blade pair, each of the secondary blades having a curved portion that complements the curvature of the tubing, means for positioning the curved secondary blade pairs next to the exterior of the tubing as it moves through the machine along its path of travel, and means for shifting the primary cutter blade across its associated secondary blade pair when that blade pair is next to the exterior of the tubing whereby the primary blade penetrates the tubing and sweeps across its associated secondary blade pair in sliding engagement therewith to thereby cut a slivered portion from the tubing to provide a transverse slotted opening therein.

4,112,811

SELF-DIMPLING FASTENER PIN

John Olmsted King, 3990 N. Ivy Rd., Atlanta, Ga. 30342

Filed Apr. 15, 1977, Ser. No. 787,758
Int. Cl.² F16B *19/08*
U.S. Cl. 85—7 **6 Claims**



1. A self-dimpling fastener pin with a common pin central axis for use in forming dimpled fastener joints connecting thin sheets of material having aligned fastener holes of an initial hole diameter therethrough comprising:

a shank; a head integral with one end of said shank; and, a pintail integral with the opposite end of said shank with said shank, head and pintail coaxial with each other and concentric about the pin central axis,

said head defining a tapered head bearing surface on the underside thereof facing said shank concentric about the pin central axis and having a size and shape corresponding to the desired size and shape of the dimple in the sheets of material when installation of the fastener pin is complete,

said shank defining a shank bearing surface thereon which joins with said head bearing surface, said shank bearing surface concentric about the pin central axis and having a minimum outside diameter larger than the initial hole diameter and corresponding to the diameter of the holes through the sheets of material when installation of the fastener pin is complete,

said pintail defining a gripping surface thereon adapted to be gripped to pull the fastener pin into the holes through the sheets of material, pintail first, said pintail having a maximum outside gripping diameter smaller than the initial hole diameter so that said gripping surface on said pintail will slidably pass through the holes in the sheets of material prior to the formation of the dimple therein, and,

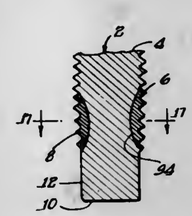
said fastener pin further defining at least one tapered dimple bending surface thereon facing and trailing said gripping surface on said pintail and leading said shank bearing surface having a size and shape such that said dimple bending surface will bend the sheets of material to form the dimple therein as the fastener pin is pulled into the holes, pintail first, until said head bearing surface is in bearing contact with the sheets of material in the thusly bent dimple.

4,112,812

HEAT-TREATED ARTICLE

Charles H. Wardwell, and Norman L. Holcomb, both of South Dartmouth, Mass., assignors to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Division of Ser. No. 128,040, Mar. 25, 1971, Pat. No. 3,769,103.
This application Feb. 22, 1973, Ser. No. 334,705
Int. Cl.² F16B *25/00, 33/06*
U.S. Cl. 85—46 **7 Claims**



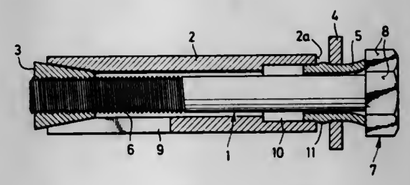
1. An article of manufacture having a shank with a work-entering end, a first zone over a portion of the length thereof, and a second zone over another portion of the length thereof, said zones being peripherally threaded, the thread at said first zone including means for producing a thread in a workpiece and the thread at said second zone constituting a means for engaging the thread that is produced in the workpiece, said first zone being intermediate said work-entering end and said second zone, the first zone being locally heat-treated at its peripheral region to a depth that includes at least a portion of the thread depth thereat but leaves a core of the shank at both zones and the thread on said second zone of a lesser hardness, the locally heat-treated part of said first zone being of substantially the same composition as the core surrounded thereby.

4,112,813

EXPANSION ANCHOR ASSEMBLY INCLUDING A YIELDING MEMBER

Wolf Kuhlmann, Munich, and Gerhard Rumpp, Inning, both of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Aug. 13, 1976, Ser. No. 714,333
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1975, 2536137
Int. Cl.² F16B *13/06, 31/02*
U.S. Cl. 85—74 **7 Claims**



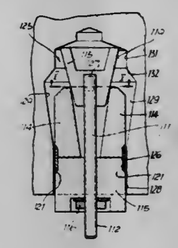
1. An expansion anchor or straddling dowel insertable into a borehole in a support structure for securing a member to the support structure, said anchor comprising an axially elongated bolt having a first end and a second end, the first end of said bolt arranged to be inserted first into the borehole in the support structure, means on the second end of said bolt forming a laterally outwardly projecting shoulder facing toward the first end of said bolt for use in securing the member to the support structure, an expansion sleeve laterally enclosing at least a portion of the axial length of said bolt and having a first end closer to the first end of said bolt and a second end spaced between and from the first end of said expansion sleeve and said shoulder means, a spreader positioned on the first end of said bolt and arranged to expand the first end of said expansion sleeve when said bolt is displaced axially, stop means positioned on said bolt and extending laterally outwardly from said bolt and located adjacent the second end thereof for limiting the depth of insertion of said bolt into the borehole in the support structure, wherein the improvement comprises means located between the second end of said expansion sleeve and said shoulder means for yielding under the application of the forces applied for expanding said expansion sleeve by said spreader so that the axial distance between said shoulder means and the second end of said expansion sleeve is reduced and for yieldably spacing said stop means from said shoulder means before the administration of the axially applied forces which expand said expansion sleeve said means for yielding under the application of axially applied forces and for yieldably spacing said stop means from said shoulder means comprises an unitary axially elongated tubular shaped member having a first end and a second end spaced apart in the axial direction with the second end thereof in contact with said shoulder means, said stop means comprising an annular washer laterally enclosing said tubular shaped member at a position spaced from the first and second ends thereof, at least a portion of said tubular shaped member between the location thereon of said washer and the second end of said tubular shaped member having an outside diameter which is greater than the smallest inside diameter of said washer and said tubular shaped member being deformable so that the outside surface thereof can be displaced through the opening through said washer.

4,112,814

DOWELS AND PROCESS FOR ANCHORING DOWELS

Heinrich Bernhard Schafers, Wachmannstrasse 22, Bremen, Germany (2800)

Filed Mar. 24, 1977, Ser. No. 780,844
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613499
Int. Cl.² F16B *13/06*
U.S. Cl. 85—75 **11 Claims**



1. A dowel for anchoring in a borehole having a frustum-shaped enlargement defining a conical surface, said dowel having expanded and unexpanded positions and comprising a central bolt having an inner end and a spreader head on said inner end, a segmented ring of shells arranged about said bolt axially adjacent the spreader head in the unexpanded position of the dowel, means flexibly connected to said ring of shells for holding said ring of shells about said bolt, means for moving said ring of shells and spreader head axially relative to each other to urge the ring of shells radially outwardly toward the expanded position of the dowel, stop means for limiting the axial relative movement between the ring of shells and spreader head to determine the expanded position of the dowel, said shells having outer surfaces which define, in the

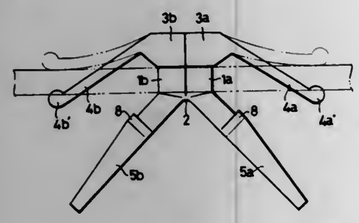
expanded position of the dowel as determined by said stop means, a truncated conical surface which corresponds with the shape of said frustum-shaped enlargement, whereby substantially the entire outer surfaces of said shells engage the conical surface of said frustum-shaped enlargement.

4,112,815

PLASTIC FIXING DEVICE

Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed Apr. 14, 1977, Ser. No. 787,664
Claims priority, application Japan, Apr. 15, 1976, 51/46034[U]
Int. Cl.² F16B *19/00*
U.S. Cl. 85—80 **4 Claims**



1. A one-piece plastic fastener adapted to be accepted in an apertured workpiece including a shank which is axially split into two substantially D-shaped opposed shank sections which when in abutting relationship form a solid cylinder, said shank sections connected to each other at respective first ends by a hinge means so that said shank sections can be freely moved toward abutting relationship and away from each other about said hinge means, head means extending laterally at the opposite ends of each of said shank sections, said head means having surfaces abutting when said shank sections abut and having undersurfaces with a greater lateral extent than said aperture for engaging said workpiece, said head means each being relieved along an edge opposite said abutting surface and further including a pair of resilient wing members integral with said head means along said edge in spaced relation to said shank, said wings extending outwardly away from said head means and angularly downwardly toward said first ends of said shank sections, said wing members terminating in free ends lying substantially on a common plane perpendicular to said axial split, said plane being spaced from said head means a distance at least equal to the distance from said head means to said hinge means, and a pair of substantially D-shaped integral leg members initially extending outwardly and angularly away from the first ends of said shank sections generally parallel to said wing member attached to their respective shank sections, each of said leg members includes shoulder means spaced from and facing said shank.

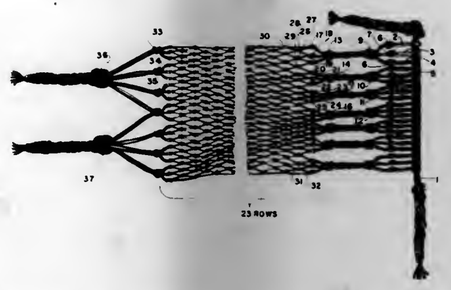
4,112,816

METHOD OF MAKING A CORD HAMMOCK

Meryl L. Muskus, Chicago, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 1, 1977, Ser. No. 820,438
Int. Cl.² A45F *3/22*; A47C *17/84*; D04G *1/00*
U.S. Cl. 87—12 **1 Claim**

1. A method of making a cord hammock, comprising the steps of
cutting a length of cord into 23 strands 28 feet long;
cutting two of the strands into 12 4-foot 8-inch long strands;
knotting the 12 strands at two points 9 inches from each end to provide a mounting cord;
braiding the 12 strands from each knot and tying an overhand knot to end each braid, leaving a few inches of tassle thereby completing the mounting cord;
extending the mounting cord taut;
tying each of the 21 strands on the mounting cord by Lark Head knots thereby having 21 knots making 42 single strands;
tying a first overhand knot in each double strand 5 inches down from the Lark Head Knot;
tying one large second overhand knot 2 inches down from the first overhand knots with each three first overhand knots, forming a row of seven large knots;
braiding each six strand bundle about 4 inches;
tying seven additional overhand knots to end the braids;
separating the six strands into twos and tying three overhand knots 1 inch down from each of the seven knots, forming



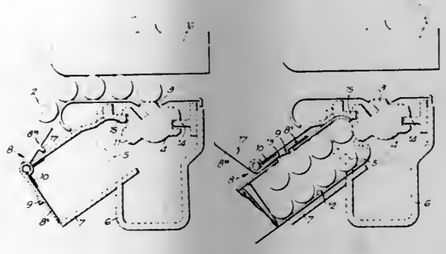
a row of 21 knots and a row of 42 loose strands, and skipping the first strand, tying an overhand knot 2 inches down in the second and third strands, the fourth and fifth strands, the sixth and seventh strands, and so on, leaving the 42nd strand;
tying the first strand to the second strand, and third and the fourth strands, the fifth and the sixth strands, and so on, ending in tying the 41st and 42nd strands;
repeating the two preceding steps until 23 rows are formed;
tying an overhand knot 3 inches down with each three double strands to form a last row of seven large knots;
dividing the 42 strands into two sections and tying two large overhand knots 5 inches down from the last row; and
braiding both strands about 6 inches down.

4,112,817

SUPPLY DEVICE FOR A PORTABLE FIREARM BY MEANS OF CARTRIDGE BELTS OR BY MEANS OF RIFLE MAGAZINES USING THE SAME AMMUNITION

Maurice V. Bourlet, Liege, Belgium, assignor to Fabrique Nationale Herstal S.A. en abrege FN, Herstal, Belgium

Filed Apr. 18, 1977, Ser. No. 788,342
Claims priority, application Belgium, Jun. 23, 1976, 255131
Int. Cl.² F41D *9/02*
U.S. Cl. 89—33 B **5 Claims**



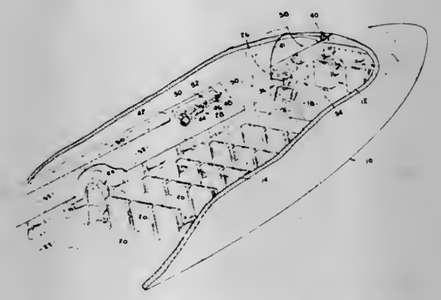
1. Device for supplying portable arms by means of cartridge belts or by means of rifle magazines using the same ammunition, characterized by the fact that the weapon is provided with a lateral opening extended by a sleeve which serves as guide for a magazine, aforesaid sleeve being fitted with a flap which is conditioned in such a manner as to be able to close aforesaid sleeve and to serve as guide for the cartridge belt, the bolt having at least two tenons, one of which is used to act, one by one, upon the cartridges of a belt, and the other being used to act, one by one, upon the cartridges of a magazine.

4,112,818

SURVEILLANCE AND WEAPON SYSTEM

Jacob W. Garehime, Jr., 1700 Griffith Ave., Las Vegas, Nev. 89104

Continuation of Ser. No. 254,541, May 18, 1972, abandoned.
This application Jul. 19, 1974, Ser. No. 490,053
Int. Cl.² F41C *9/00*; F41H *13/00*
U.S. Cl. 89—41 TV **22 Claims**



1. A remotely controlled surveillance and weapon system for the protection of a limited region, which comprises a weapon and optical scope means in fixed alignment so that the aim thereof is substantially coincident, means mounting said weapon and scope means for at least pan and tilt movability, one-way vision screen means interposed between said region and said weapon and scope means permitting vision in the direction from said scope means toward said region and precluding vision in the direction from said region toward said weapon and scope means, said screen means being arranged to substantially completely obscure said weapon and scope means from the view of persons in said limited region, electronic image sensor means optically coupled with said scope means to receive an optical image therefrom and substantially completely obscured from the view of persons in said limited region; a surveillance and control station disposed outside of said limited region, said station including a video surveillance screen operatively connected to said image sensor to exhibit a video image derived from said image sensor and reticle means in fixed position in said optical scope means whereby an image of said reticle is exhibited on said video image to indicate the point at which said weapon is aimed, a movement control unit operatively connected to said weapon and scope means and operable to produce at least pan and tilt movements of the weapon and scope means, and remote weapon firing means operatively connected to the weapon for firing the weapon through said screen means.

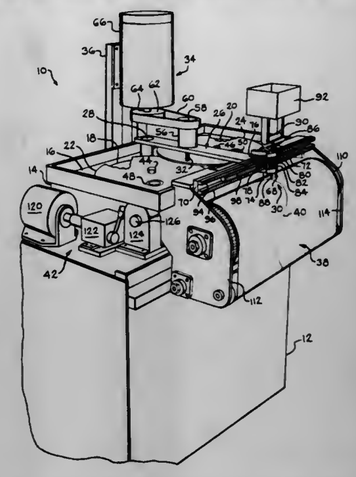
4,112,819

APPARATUS FOR PRODUCING CAMS

Richard A. Dooley, 400 S. Westwood Ave., Toledo, Ohio 43609

Filed Feb. 25, 1977, Ser. No. 772,076
Int. Cl.² B23C *1/18*
U.S. Cl. 90—13.9 **14 Claims**

1. Apparatus for shaping cams from cam blanks comprising a housing, a cutting tool, an arm rotatably carrying said cutting tool, said arm being pivotally connected to said housing on one side of said cutting tool and said arm being connected to a pointer on the other side of said cutting tool, first means and second means on said housing for holding and rotating a first cam blank and a second cam blank, respectively, said first and second holding and rotating means being located between the pointer and the pivotal connection to the housing and being laterally spaced apart to each side of said pivotal connection for supporting the first and second cam blanks in an overlapping relationship, whereby said cutting tool can engage and shape both of said cam blanks simultaneously.

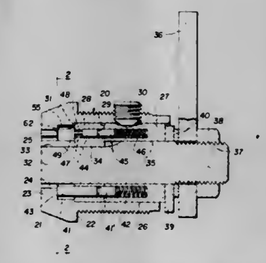


4,112,820

TAMPER-PROOF AXIAL TUMBLER TYPE LOCK

William H. Conger, and Ronald F. Gehringer, both of Sioux Falls, S. Dak., assignors to Nordica International, Inc., Sioux Falls, S. Dak., a part interest

Filed Nov. 23, 1977, Ser. No. 854,330
Int. Cl.² E05B *15/14, 19/02, 27/08*
U.S. Cl. 70—363 **4 Claims**



1. A tamper-proof lock comprising a relatively stationary casing, fixed and rotational cylinder sections within the casing having axially extending tumbler bores, a set of regular axially divided tumblers within said tumbler bores of said cylinder section and normally bridging a shear line face between said cylinder sections when the lock is active, a special axially divided tumbler within tumbler bores of said cylinder sections including a leading part which is flush with the outer end face of the rotational cylinder section, an axial post and laterally extending lock plate keyed to the rotational cylinder section to turn therewith, and a key for opening the lock including a tubular shank to engage over the post and into the casing and into abutment with the outer end face of the rotational cylinder section, the key having leading end peripheral recesses to engage and depress said regular tumblers to said shear line face and having a pin extension projecting forwardly of the leading end of said tubular shank and engaging said leading part of said special axially divided tumbler to depress the special tumbler to said shear line face when said key is fully inserted into the lock, whereby the key is then able to rotate the rotational cylinder section with said post and lock plate, and said special tumbler leading part including a reduced diameter forward

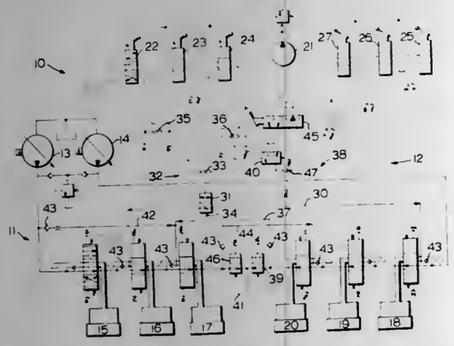
section axially aligned with and adapted to be abutted by the leading end of the pin extension of said key, said rotational cylinder section having an axial opening into which said reduced diameter forward section of the special tumbler extends flush with the outer end face of the rotational cylinder section and an internal shoulder in the tumbler bore of the rotational cylinder section which receives the special tumbler and limiting forward movement of the special tumbler in such tumbler bore.

4,112,821

FLUID CONTROL SYSTEM FOR MULTIPLE CIRCUITED WORK ELEMENTS

Donald Louis Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 3, 1976, Ser. No. 747,274
Int. Cl.[2] F15B *11/16*
U.S. Cl. 91—6 **7 Claims**



1. In a fluid system having at least first and second circuits each having a fluid source, a reservoir, a plurality of work elements connected in interruptible series, a work fluid pathway for each circuit, said work fluid pathways comprising a passageway connecting each source to the work elements of the respective circuit and to the reservoir, and a pilot pump connected to each work element through a respective control valve for controlling the operation of said work element, the improvement comprising:

a first bypass line separate from said work fluid pathways and being connected at one end to the first circuit at a location between work elements of said first circuit and at the other end to a preselected location on the second circuit;

a flow control valve positioned in the first bypass line, said flow control valve being movable between a first flow restricting position and a second open position;

first means for moving the flow control valve to the second position in response to operation of selected work elements of the first circuit and for moving the valve to the first position in response to termination of operation of selected work elements of the first circuit;

a second bypass line separate from said work fluid pathways and being connected at one end to the first circuit at a preselected location and at the other end to a preselected location on the second circuit; and

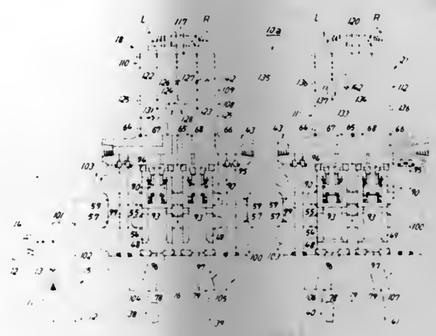
second means for controllably passing fluid from the second circuit into the second bypass line in response to operation of preselected work elements of the first circuit.

4,112,822

PRESSURE RESPONSIVE SEQUENCING DEVICE

Hikaru Murata, Gifu, Japan, assignor to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Jun. 6, 1975, Ser. No. 584,586
Int. Cl.[2] F15B *11/20, 13/07*
U.S. Cl. 91—29 **2 Claims**



1. A pressure responsive sequencing system, comprising

primary actuating circuit means having a primary double-acting fluid actuator and adapted to perform a first circuit operation;

secondary actuating circuit means having a secondary double-acting fluid actuator and adapted to perform a secondary circuit operation, each line of said actuating circuit means including an amplifier valve means having a main flow passage with a main orifice and a pilot pressure responsive supply and exhaust valve inserted therein and a pilot flow passage having a detector orifice inserted therein, the flow rate of the main flow in said main flow passage being amplified with respect to the flow rate in said pilot flow passage in a proportion corresponding to the ratios of the flow cross-section of said main and detector orifices whereby pilot and main flow join prior to entering a respective actuator;

a primary fluid supply line communicating with said pilot passage of said primary circuit means and having a meter-in flow control valve inserted therein;

a primary discharge line communicating with said pilot passage of said primary circuit means and with a reservoir and having a meter-out flow control valve inserted therein;

a secondary fluid supply line communicating said primary fluid supply line with said secondary circuit means; a secondary discharge line communicating with said secondary actuator;

means for initiating said second circuit operation only upon the completion of said first circuit operation, comprising a pressure responsive sequencing valve in said secondary fluid supply line and operative to initiate said second circuit operation, and pressure responsive means for triggering the operation of said sequencing valve only upon completion of said first circuit operation and as a function of a pressure differential between the respective secondary supply and discharge lines;

two position pressure responsive switching valve means interposed between said primary supply and discharge lines and responsive to pressure differences in said primary lines by switching from a first position to a second position in which it communicates the respectively lower-pressure one of said primary lines with said reservoir.

4,112,823

METHODS AND APPARATUS FOR CONTROLLING AN HYDRAULIC CYLINDER

Harvey W. Liberman, Knoxville, and James Stephen Whitehead, Maryville, both of Tenn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 17, 1975, Ser. No. 641,370
Int. Cl.[2] F15B *21/02*
U.S. Cl. 91—36 **5 Claims**



1. A method of controlling the extension of a multi-stage hydraulic cylinder through a plurality of successive uniform length increments comprising the steps of:

selecting a time delay between successive length increments by adjusting a first timer;

interrupting extension of the hydraulic cylinder for a time corresponding to the selected time delay;

extending the hydraulic cylinder through one length increment by controlling a valve with a second timer;

sequentially repeating the interrupting and extending steps until the cylinder is extended to a predetermined length exceeding the one length increment:

wherein the step of interrupting includes initiating the first timer in response to a start signal and generating a pulse at the end of the selected time delay;

wherein the step of extending includes, starting the second timer and opening the valve in response to the pulse, and closing the valve and generating the start signal when the second timer reaches a time corresponding to one length increment; and

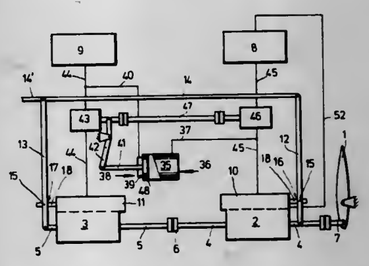
further including the step of switching the second timer to a different time as each successive stage of the hydraulic cylinder becomes active.

4,112,824

DOUBLE-HYDRAULIC ACTUATOR

Alois Krause, Neubiberg, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung, Munich, Germany

Continuation of Ser. No. 621,389, Oct. 10, 1975, abandoned.
This application Jun. 16, 1977, Ser. No. 807,184
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1974, 2450330
Int. Cl.[2] F15B *11/16*
U.S. Cl. 91—413 **3 Claims**



1. In a redundant fluid actuator system comprising at least two separate and separably operated servomotors, first and second fluid pressure sources, each of said servomotors having a first piston rod connected to each other and mounted for reciprocal movement and a control valve for controlling the movement of said first piston rods, each of said control valves having a second piston rod thereon, a common control member for controlling both of said servomotors, said common control member including means for mechanically coupling said common control member to at least each of said piston rods, means for preventing the operation of one of said servomotors while permitting an operation of the other of said servomotors, and change-over means for effecting a change-over in operation from one of said servomotors to the other of said servomotors, the improvement comprising wherein each of said control valves has a hollow sleeve member with a first axially extending opening therethrough, said hollow sleeve member having an intake port, a return port and plural outlet ports connected in fluid circuit with a respective one of said servomotors associated therewith, a hollow sleeve valve member having a second axially extending opening therethrough reciprocally mounted in said first opening, a slide valve member reciprocally mounted in said second opening, coupling means for coupling said slide valve member to said second piston rod of the respective one of said control valves associated with said respective one of said servomotors and connecting means for connecting said slide valve member to said hollow sleeve valve member for normal simultaneous movement together, said connecting means having a positive but a force limiting threshold connection characteristic to enable said slide valve member to move relative to said hollow sleeve member when said hollow sleeve valve member fails to move relative to said hollow sleeve member in response to a force applied by said common control member to said second piston rod which is greater than the threshold value of said connecting means;

wherein said change-over means consist of a differential cylinder having a reciprocal piston mounted therein and a rod connected to said piston and movable therewith, and a pair of shut-off valves each connected to fluid circuit between one of said first and second fluid pressure sources and one of said two servomotors for controlling the supply of pressurized fluid to said servomotors, a fluid circuit between said first and second fluid pressure sources and the corresponding one of said servomotors including a conduit, a first fluid connection to one end of said differential cylinder on one side of said piston and to said first fluid pressure source supplying pressurized fluid to one of said servomotors, a second fluid connection to the other end of said differential cylinder on the other side of said piston and connected directly to the one of said conduits extending between one of said shut-off valves and the other of said servomotors, each of said pair of shut-off valves having a control lever and means for connecting said control levers together and to said rod of said differential cylinder for simultaneous operation thereby;

wherein said differential cylinder has chambers of differing effective cross sectional area on opposite sides of said piston, a greater cross sectional area side corresponding to said other end of said differential cylinder and a lesser cross sectional area side corresponding to said one end of said differential cylinder, the pressure of said pressurized fluid from said first and second fluid pressure sources being equal wherein said piston will be urged to said one end of said differential cylinder having said lesser cross sectional area to effect an opening of the fluid pressure supply to said other servomotor while simultaneously shutting off the fluid pressure supply to said one servomotor;

wherein a shifting of the said slide valve member relative to said sleeve valve member effects a fluid connection between said intake port and said return port through an opening of such a cross section as to effect a fluid discharge from said intake port direct to said return port to cause a pressure drop in fluid pressure in said other end of said differential cylinder having the larger cross section and a shifting of said piston to cause a shutting off of said fluid pressure supply to said other servomotor while si-

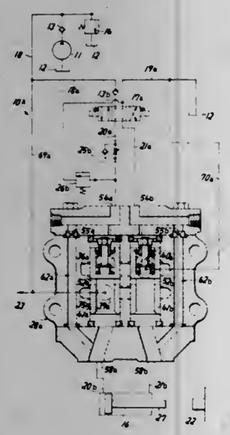
multaneously opening the fluid pressure supply to said one servomotor; and said first fluid pressure source being at all times in open fluid communication with said one end of the differential cylinder through said first fluid connection and said other end of the differential cylinder being at all times in open fluid communication with said one of said shut-off valves and the control valve for said other servomotor.

4,112,825

PRESSURE-REDUCING DEVICE

Hikaru Murata, Gifu, Japan, assignor to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed May 21, 1975, Ser. No. 579,436
Int. Cl.[2] F15B *13/08*
U.S. Cl. 91—447 **8 Claims**



1. A hydraulic control circuit, comprising
a user having a primary side and a secondary side;
a source of hydraulic fluid;
fluid supply conduit means connecting said source with said primary side of said user;
a pump in said conduit means for supplying hydraulic fluid under pressure from said source to said primary side of said user at a first flow rate;
pressure compensating flow rate control valve means in said conduit means intermediate said pump and said user and operative for limiting the fluid flow to said primary side of said user to a second flow rate which is smaller than said first flow rate; and
relief valve means interposed in said conduit means between said control valve means and said user and communicating with said source, said relief valve means responding to pressure increase at said secondary side of said user by shunting the fluid flow from said pump back to said source so as to thereby control the maximum working pressure of said control valve means and reduce the pressure of said secondary side to the pressure limit given by the setting of said relief valve means.

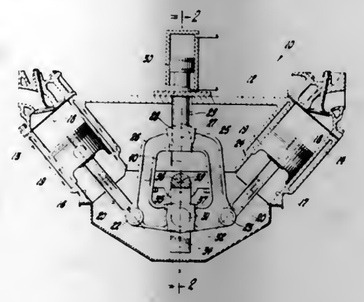
4,112,826

VARIABLE DISPLACEMENT RECIPROCATING PISTON MACHINE

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 2, 1977, Ser. No. 792,668
Int. Cl.[2] F01B *31/14*; F02B *75/04*
U.S. Cl. 92—13.1 **5 Claims**

1. The combination in a reciprocating piston machine of a variable displacement mechanism whereby piston displacement may be varied at will while maintaining a predetermined range of compression ratios, said machine comprising
a frame defining at least one cylinder having an axis,
a piston disposed in the cylinder and reciprocable on the axis thereof,
a rocker member pivotable in a plane parallel to the cylinder axis about a rocker axis normal to said plane, said rocker member having a point laterally spaced from the rocker axis and connected with the piston by a connecting rod,
a lever member oscillatable about a lever axis parallel with and spaced from the rocker axis, said lever member having a lateral lever arm portion slidably engaging the rocker member at a point spaced from both said rocker and lever axes, and
means for laterally shifting the rocker axis toward and away from the lever axis to vary the effective length of said lever arm portion at its engagement point with the rocker member, while at the same time moving the rocker member in a direction to vary the clearance of the piston in its cylinder in a ratio correlated with the variation in the effective lever arm length such that the piston displacement is varied while maintaining the piston compression ratio in a desired range.

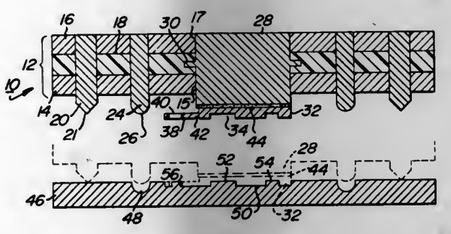


4,112,827

METHOD OF MAKING CUTTING, SCORING AND EMBOSSING DIE SET

Pierson S. Kang, Lansdale, Pa., assignor to ChemPar Corporation, Montgomeryville, Pa.

Filed Jun. 3, 1977, Ser. No. 803,336
Int. Cl.[2] B31B *1/20*
U.S. Cl. 93—58.3 **6 Claims**



1. A method of forming a cutting, scoring and embossing die set comprising the steps of:
(a) forming a first die by:
(1) forming slots and an aperture in a support for a cutting rule, a scoring rule and a mounting block,
(2) inserting a cutting rule and a scoring rule in the slots and inserting a mounting block in the aperture;
(3) attaching the cutting and scoring rules and the block to the support, and
(4) providing first embossing means for attachment to the mounting block;

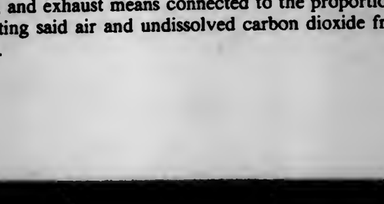
(b) forming a mating die including mating means for cooperating with the cutting and scoring rules and mating embossing means for cooperating with the first embossing means on the first die;
(c) registering the first embossing means of the first die with the mating embossing means of the mating die; and
(d) securing the first embossing means to the mounting block while the first embossing means and the mating embossing means are in registration.

4,112,828

REFLUX DEAERATION SYSTEM

Harry G. Mojonnier, River Forest, and Sigmund P. Skoli, Elmwood Park, both of Ill., assignors to Mojonnier Bros. Co., Chicago, Ill.

Continuation of Ser. No. 654,596, Feb. 2, 1976, abandoned. This application Aug. 2, 1977, Ser. No. 821,215
Int. Cl.[2] C02D *1/04*
U.S. Cl. 99—275 **12 Claims**



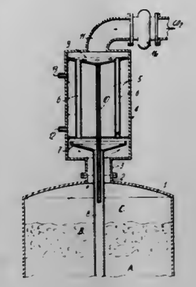
1. In a beverage processing system comprising a source of treated water containing dissolved air, a proportioner for adding beverage ingredients to the water to form a beverage, a first conduit means connected between the source of treated water and the proportioner, pump means connected in the first conduit means for pumping the water from the source to the proportioner at a given low pressure, a combined carbonator and cooler unit for cooling the beverage and for primarily adding carbon dioxide gas to the beverage to form a carbonated beverage, first conduit extending means between the proportioner and the combined carbonator and cooler unit for delivering the beverage from the proportioner to the combined carbonator and cooler unit, means for introducting carbon dioxide into the combined carbonator and cooler unit at a given high pressure, said high carbon dioxide pressure being greater than said low water pressure in said first conduit means, the improvement comprising second conduit means connected between the combined carbonator and cooler unit and a point in the first conduit means, the point being located between the pump means and the proportioner means, the second conduit means being provided for preliminarily introducing carbon dioxide gas, at the given carbonator and cooler unit high pressure, from the combined carbonator and cooler unit to the water at the given water low pressure in the first conduit so as to drive out air dissolved in the water by replacing the dissolved air with carbon dioxide gas, and check valve means for prohibiting the flow of water and gas backward along the first conduit toward the pump means and water source, and exhaust means connected to the proportioner for exhausting said air and undissolved carbon dioxide from the system.

4,112,829

APPARATUS FOR PURIFYING CARBON DIOXIDE VAPORS OF FERMENTING LIQUIDS

Elisabeth Michèle Poinsard, and Robert Gaston Poinsard, both of Le Boucaret, France, assignors to Establissement Valvin, Vaduz, Liechtenstein

Filed Oct. 13, 1976, Ser. No. 732,065
Int. Cl.[2] C12F *3/02*
U.S. Cl. 99—277 **7 Claims**



1. In combination with a container of fermenting liquids, notably in a vinificator, a recuperation and carbonic-gas purifying apparatus comprising:
a condenser, connected to said container to receive carbonic gas to be purified by the removal of vapors contained therein, for condensing said vapors;
a refrigerating unit connected to said condenser, and
means for extracting purified carbonic gas from the condenser;
means for returning the liquid condensate of said vapors from the condenser to the container,
said condenser comprising a body fixed on and connected to an upper part of the container by a delivery member, said body having an inner part, a series of reflux tubes through which the carbonic gas passes and in which said vapors reflux, said reflux tubes being housed in the inner part of the body and including a plurality of hemispherical baffles vertically spaced on a pair of carrying bars each of said baffles being provided with an orifice, said orifice of adjacent baffles being laterally offset from one another to provide a tortuous path for said vapours within said reflux tubes, and means for circulating a refrigerating fluid from said refrigerating unit to said inner part of the condenser body, said condensate returning means including in a lower part of said body, under said reflux tubes, a funnel having a delivery tube which in use extends into the fermenting liquid in said container, and said extracting means further including an exhaust pipe connected to an upper part of said body to evacuate the purified carbonic gas.

4,112,830

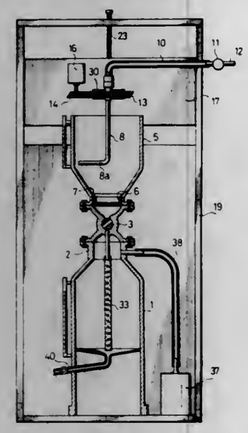
EXTRACTING BLACK TEA AND COFFEE AND CLOSED EXTRACTOR THEREFOR

Isamu Saito, 201, 3-12, 1-chome, Akabanedai, Kita-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 427,246, Dec. 21, 1973, abandoned. This application Jan. 15, 1976, Ser. No. 649,230
Claims priority, application Japan, Dec. 27, 1972, 48/590
Int. Cl.[2] A47J *31/057*
U.S. Cl. 99—300 **7 Claims**

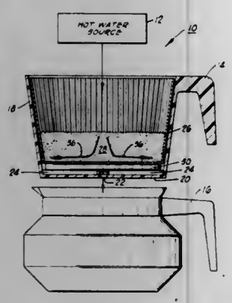
1. Coffee and tea making apparatus comprising, a liquid-receiving tank for containing a tea or coffee filtrate therein in a vacuum-tight manner, an immersing tank mounted above the liquid-receiving tank for receiving heaped tea or coffee therein, a filter in said immersing tank upstream of the liquid-receiving tank, driven sprinkler means in said immersing tank spaced in use from said heaped tea or coffee therein for sequentially sprinkling next adjacent areas of heaped tea or coffee when driven to successive positions overlying said areas with

periods of sprinkling each followed immediately by a period of non-sprinkling of the previously wetted area until said coffee or tea is well wet-expanded in said immersing tank for making a tea or coffee filtrate filtered through said filter, drive means for continuously rotating said sprinkler means several rotations during operation for sequentially sprinkling said areas of said heaped tea or coffee each during a sprinkling period of wetting with each period of sprinkling immediately followed by a sequential period of non-wetting of a previously wetted area, the periods of non-wetting constituting expansion intervals of the tea or coffee before a next successive wetting period and



sequential expansion interval thereby to preclude collapse of the wetted tea or coffee during the sprinkling, means for connecting said sprinkling means to a source of unheated tap water for sprinkling said water on said heaped tea or coffee, valve means for providing selective communication between the two tanks for selectively allowing filtrate passed through said filter to enter said liquid-receiving tank, and means for periodically drawing filtrate from said liquid-receiving tank as a tea or coffee drink.

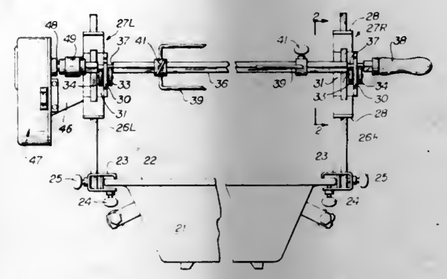
4,112,831
COFFEE BLENDERS
Herman B. Scott, 7 S. Pennsylvania, Oklahoma City, Okla. 73107
Filed Apr. 14, 1977, Ser. No. 787,544
Int. Cl.² A47J *31/00*
U.S. Cl. 99—306 **3 Claims**



1. A device for use in combination with a drip coffee blender of the type where heated water is released through a holder containing filter paper and dry coffee grounds for blending and final release of brewed coffed into a holding pot, the improvement device comprising:

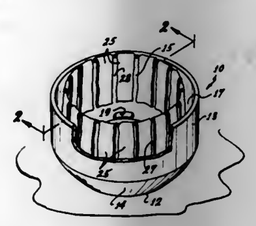
a disc member generally shaped to the same size and configuration as the bottom panel area of said filter paper and being disposed between the bottom of said filter paper and the bottom of said holder receptacle, said disc member being formed from solid material to be relatively thin as compared to the diameter whereby water released through said holder is diverted radially before final release of the brewed coffee.

4,112,832
ROTISSERIE AND CLOCKWORK MOTOR THEREFOR
Anton Severdia, 918 Washington St., Oakland, Calif. 94070, and Adrian Joseph, 127 Boyo Vista, Oakland, Calif. 94611
Filed Jan. 24, 1977, Ser. No. 761,868
Int. Cl.² A47J *37/04*
U.S. Cl. 99—421 HH **8 Claims**



1. A rotisserie attachment comprising a pair of stanchions, means holding said stanchions in approximately parallel relation to each other and in proximity to a fire container, a clamp slidably adjustable on each of said stanchions, a bracket projecting from each said clamp, a first and a second roller rotatably mounted on each said bracket, the outlines of said rollers viewed in elevation intersecting to provide a space between their upper peripheries, said bracket extending horizontally away from said stanchion and being formed on its upper edge with a notch, said rollers being mounted on either side of said notch and said space being within said notch, a spit fitting into said space, whereby said rollers support the entire weight of said spit and its contents, a motor, means mounting said motor from one of said stanchions, and drive means to turn said spit from said motor.

4,112,833
MICROWAVE COOKING DEVICE
Roy N. Oda, and Lorraine K. Oda, both of 1553 Copper Lantern Dr., Hacienda Heights, Calif. 91745
Filed Oct. 25, 1977, Ser. No. 844,889
Int. Cl.² H05B *9/06*; A47S *27/00*
U.S. Cl. 99—425 **15 Claims**



1. A utensil for use in cooking products by microwave wherein the products contain fats released as hot grease during the cooking energy comprising:

a base member,

a first generally vertically upstanding outer shell member supported by said base member and cooperating therewith to form the outer wall of an open-ended container,

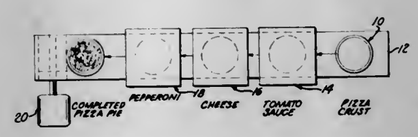
a second generally vertically upstanding inner shell member supported by said base member and forming the wall of an open-ended inner container,

said inner shell member being spaced from said outer shell member and cooperating with said outer shell member to form a chamber between said inner and outer shells,

said inner shell member including means forming an aperture therein to permit flow of fat between the chamber and inner container, at least said first and second shells being of a microwave transparent material, and

said base being of a material stable against deformation when contacted by hot grease.

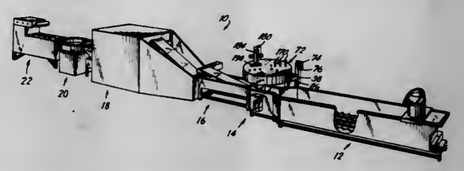
4,112,834
FOOD PROCESSING APPARATUS
Geza A. Thiry, 6204 Washington St., Ravenna, Ohio 44266
Filed Jan. 19, 1976, Ser. No. 650,558
Int. Cl.² A23P *1/00*
U.S. Cl. 99—450.1 **19 Claims**



1. Apparatus comprising first conveyor means for sequentially moving pizza shells along a first path through a first food processing station and through a second food processing station, said first food processing station comprising means for supporting a body of cheese, first cutting means at said first food processing station for cutting elongated pieces of cheese from said body of cheese, second cutting means at said first food processing station for cutting the elongated pieces of cheese into relatively short lengths, means for guiding the short lengths of cheese toward a location at which the short lengths of cheese are associated with a pizza shell as it is moved through said first food processing station under the influence of said first conveyor means, said second food processing station comprising means for supporting a body of pepperoni, blade means for severing pieces of pepperoni from said body of pepperoni, second conveyor means for receiving severed pieces of pepperoni and for moving the severed pieces of pepperoni along a path toward a location at which the severed pieces of pepperoni are associated with a pizza shell as it is moved through said second food processing station under the influence of said first conveyor means, said second conveyor means including surface means movable along at least a portion of said second path for applying a force to the severed pieces of pepperoni to positively move the severed pieces of pepperoni along said second path, said first conveyor means including drive means for effecting continuous operation of said first conveyor means to move pizza shells through said first and second food processing stations at a substantially constant speed, said second conveyor means including means for moving said surface means and the severed pieces of pepperoni disposed thereon in timed relation to the speed that pizza shells are moved through said first and second food processing stations by said first conveyor means.

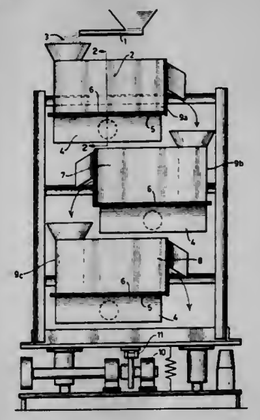
4,112,835
CHEESE PROCESSING SYSTEM
Angelo Mongiello, 820-62nd St., Brooklyn, N.Y. 11220
Filed Feb. 18, 1977, Ser. No. 770,107
Int. Cl.² A23C *3/04*
U.S. Cl. 99—455 **2 Claims**

1. A cheese processing system comprising, in combination: means for feeding product to an elevating location, means disposed at said elevating location for elevating the product to bottommost portions of and thereafter into a plurality of forms at an input station, means for rotating the forms which contain product form said input station along a path to a discharge station, fluid means for cooling outer surfaces of said forms without contacting product therewithin, and positive ejection



means for urging substantially packagingready formed and cooled product from said forms at said discharge station.

4,112,836
APPARATUS FOR TREATING OIL CONTAINING VEGETABLE RAW MATERIALS
Johan Frederik Witte, Amsterdam-Nieuwendam, Netherlands, assignor to Stork Amsterdam B.V., Sportlaan, Amstelveen, Netherlands
Continuation of Ser. No. 443,844, Feb. 19, 1974, abandoned. This application Jan. 5, 1976, Ser. No. 646,867
Claims priority, application Netherlands, Feb. 20, 1973, 7302358
Int. Cl.² A27C *3/02*
U.S. Cl. 99—483 **3 Claims**



1. An installation for pre-treating oil-containing vegetable raw materials in order to allow the extraction of oil from the vegetable raw materials comprising:

(a) a first vibratory gutter having a perforated bottom and provided with means for subjecting the gutter to vibratory movement having a vertical component, said first gutter having a steam supply-opening connected to a source of steam pressure below said first gutter in order to subject the oil-containing vegetable raw material to a pre-treatment, said gutter having an overflow outlet;

(b) a second vibratory gutter having a perforated bottom and provided with means for subjecting the second gutter to vibratory movement having a vertical component, said second gutter having an inlet positioned below the outlet of the first gutter for receiving the material treated in the first gutter, means connected to a source of heated fluid for introducing a heated fluid below the perforated bottom of said second gutter in order to maintain the finely divided vegetable raw material at a temperature from 95° to 115° C. in said second gutter to inactivate enzymes having a detrimental action on the oil, said second gutter having an overflow outlet; and

(c) a third gutter having a perforated bottom and provided with means for subjecting the third gutter to vibratory movement having a vertical component, said third gutter

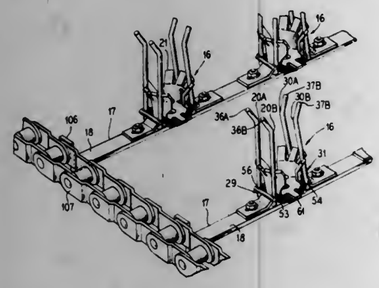
having an inlet positioned below the outlet of the second gutter for receiving the treated material from the second gutter, means connected to a source of drying gaseous fluid for supplying a drying gaseous fluid to the vegetable raw materials in said third gutter from below the perforated bottom of the third gutter to reduce the moisture content and the temperature of the raw vegetable materials to values required for extraction or crushing, said third gutter having an overflow outlet.

4,112,837

HOLDER FOR FRUIT AND THE LIKE

James E. Altman, and Eston Altman, both of Gray, Ga. 31032

Filed Jun. 23, 1976, Ser. No. 698,798
Int. Cl.[2] A23N *15/02*; B65G *47/22*
U.S. Cl. 99—537 **22 Claims**



1. A holder assembly for fruit and the like comprising
(A) a base member,
(B) a cup member for holding fruit defined by side wall portions which terminate in a flared mouth,
(C) mounting means securing said cup member to said base member,
(D) a pair of generally upstanding rigid grasping arms, each one being located adjacent to a different outside region of said side portions in opposed relationship to the other thereof, each one having a pivot axis located below said mouth for reciprocal movement of said one arm towards and away from its said respective region,
(E) independent pivot means for each one of said arm pairs, and
(F) spring means independently yieldingly generally equally biasing each arm towards its said respective region, thereby permitting independent movement of each one of said arm pairs.

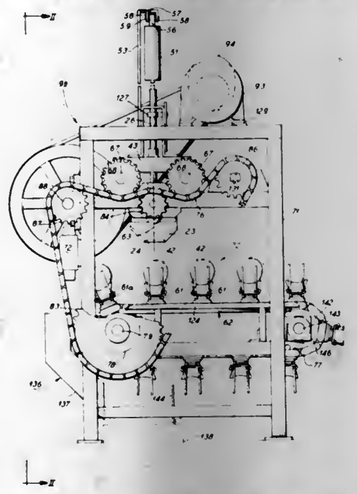
4,112,838

HALVING AND CALYX REMOVING APPARATUS FOR PEARS AND THE LIKE

James E. Altman, and Eston Altman, both of Gray, Ga. 31032

Filed Jun. 23, 1976, Ser. No. 698,849
Int. Cl.[2] A23N *15/02*
U.S. Cl. 99—546 **10 Claims**

7. Automatic continuously operable apparatus for sequential halving and calyx removal of each of a plurality of pears or the like comprising
(A) a supporting frame assembly,
(B) a blade assembly comprising a flattened blade member for splitting a pear, a blade shaft means associated therewith, and associated support means for supporting and guiding said blade shaft during reciprocal movements of said blade member relative to an edge portion thereof in a plane defined thereby,
(C) first drive means for so reciprocally moving said blade member through predetermined cycles of reciprocal movement, including transfer means functionally associating said drive means with said blade shaft,
(D) a plurality of holder means, each adapted for positioning and supporting a pear or the like generally axially of said blade shaft,
(E) a pair of sheet-like members each conforming generally to a tapered section with the smaller edge thereof having a cutting edge surface defined therealong for removing the calyx region of a pear as said pear is split,
(F) mounting means securing each one of said sheet-like members in opposed relationship to the other thereof and to said blade member with said respective tapered sections defining together generally a conical section and with said blade member extending transversely therebetween, the taper of said conical section extending generally towards said cutting edge portion, said conical section being ori-



ented with said smaller circular edges thereof being in spaced relationship to said cutting edge portion
(G) continuously movable conveyor means for translating each of said holder means in a fixed path into and away from a predetermined position beneath said flattened blade member,
(H) control means for synchronizing reciprocations of said blade shaft means relative to each of said holder means as such continuously translate generally tranversely relative said shaft means by said conveyor means, said holder means being in generally equally spaced, longitudinally aligned relationship to one another as respects the direction of such translation.

4,112,839

APPARATUS FOR CONNECTING THE TYING MEANS ENDS ON TYING MACHINES

Hans Hugo Büttner, Obmettmann 13, 4020 Mettmann, Fed. Rep. of Germany

Filed Mar. 14, 1977, Ser. No. 777,098
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1976, 2616033
Int. Cl.[2] B65B *13/24*
U.S. Cl. 100—33 PB **11 Claims**

1. An apparatus for connection of the ends of a tying means at a tying position on tying machines, comprising:
means for connecting the ends of the tying means including an upper pressing jaw means and a lower pressing jaw means for cooperatively pressing the ends of the tying means together in a pressing position,
a gripper means for holding one of the ends of the tying means, said gripper means mounted displaceable from one side of the tying position to the other side, said gripper means having side surfaces,
a cutter-knife means for separating the tying means being arranged on said lower pressing jaw means adjacent to and for cooperating with said gripper means so as to cut the tying means during a relative movement,
said lower pressing jaw means being arranged directly adjacent one of said side surfaces of said gripper means and being mounted displaceable with and relative to the latter,

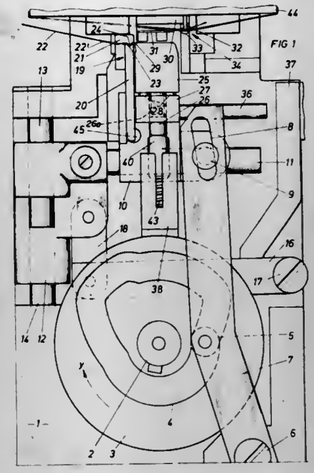


FIG 1

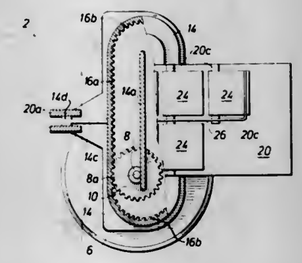
means for moving said gripper means and said lower pressing jaw means jointly with and relatively to each other, respectively.

4,112,840

DRIVING DEVICE FOR A PRINT HEAD

Gösta Roland Englund, Stockholm, Sweden, assignor to Svenska Dataregister Aktiebolag, Sweden

Filed Jun. 17, 1976, Ser. No. 697,187
Claims priority, application Sweden, Jun. 30, 1975, 7507468
Int. Cl.[2] B41J *9/04*
U.S. Cl. 101—93.15 **4 Claims**



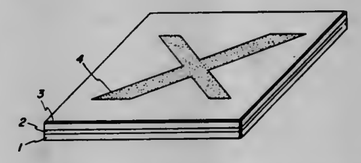
1. A driving device for a print head including printing means actuated at predetermined times for marking characters on a data carrier carried by a print roll, comprising:
motion converting means comprising a housing including an interior continuous gear path;
said housing being coupled to said print head;
said gear path comprising a pair of opposing straight path portions substantially parallel to the axis of said print roll; said straight path portions being joined, at each end thereof, by respective curved path portions;
rotatable pinion means in continual engagement with said gear path;
said pinion means being coupled to the shaft of a motor driving means;
said straight path portions being mutually separated by a distance greater than the outside diameter of said pinion means and said curved path portions being mutually separated by a distance substantially greater than the distance separating said straight path portions;
rotary motion of said pinion means being converted to reciprocating movement of said housing and corresponding movement of said print head;
said housing and said print head being coupled by guide means comprising a guided member joined to said housing and a guiding member joined to said print head;
said guided member comprising at least a pair of projections extending substantially perpendicular to said straight path portions and said guiding member comprising at least a pair of channels, each one receiving a respective projection;
said projections being capable of relative movement within said respective channel in a direction perpendicular to said straight path portions and said channels preventing relative movement with respect to its respective projection in a direction parallel to said straight path portions;
said guide means permitting movement of said housing and said print head in a direction substantially parallel to the axis of said print roll whenever said pinion engages said straight path portions and
said guide means allowing movement of said housing in a direction substantially perpendicular to the axis of said print roll whenever said pinion engages said curved path portions.

4,112,841

RESILIENT LITHOGRAPHIC MASTERS FOR DIRECT PRINTING

Narayan V. Deshpande, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 601,005, Aug. 1, 1975, abandoned. This application Jan. 7, 1977, Ser. No. 757,714
Int. Cl.[2] B41F *7/00, 13/08*
U.S. Cl. 101—141 **2 Claims**



1. In a direct printing process of transferring an inked image directly from the printing master to a receiving sheet, the improvement comprising employing a master consisting essentially of a suitable supporting substrate, a resilient layer between 25 and 200 microns on said substrate, said layer having a Shore A durometer of between 30 and 80, a surface layer and an image layer of up to 2.5 microns and supporting the receiver sheet by a resilient blanket having a Shore A durometer between about 70 and 90.

4,112,842

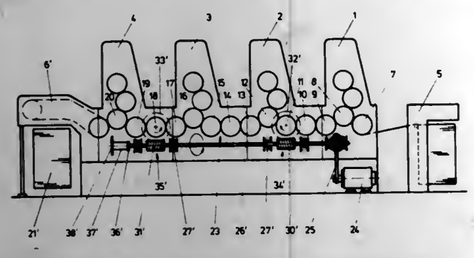
DRIVE FOR SHEET-FED ROTARY PRINTING PRESSES WITH AT LEAST TWO TANDEM-MOUNTED PRINTING UNITS

Willi Jeschke, Heidelberg-Boxberg, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Aug. 9, 1974, Ser. No. 496,169
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1973, 2354541; Aug. 9, 1973, 2340263
Int. Cl.[2] B41F *5/02*
U.S. Cl. 101—183 **3 Claims**

1. Drive for sheet-fed rotary printing machines with at least two tandem-mounted printing units having a drive motor, comprising a closed gear train connecting the printing units to each other, a continuous main drive shaft driven by the drive

motor and extending parallel to said closed gear train, and main drive shaft being mounted so as to be axially displaceable, a pair of drive worms having opposing pitch directions secured on said main drive shaft, worm gears in meshing engagement



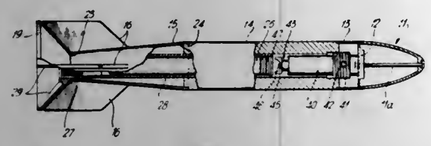
with said drive worms and connecting said main drive shaft thereby to said closed gear train at two force input locations, and force generating means comprising a force generator exerting a force on one end of said main drive shaft in axial direction thereof.

4,112,843

MODULAR PRACTICE BOMB

Maurice A. Laviolette, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Jan. 6, 1977, Ser. No. 757,215
Claims priority, application Canada, Aug. 16, 1976, 259143
Int. Cl.² F42B *25/02*
U.S. Cl. 102—7.6 **14 Claims**



7. A method of closely simulating the horizontal range of a wide variety of actual bombs within acceptable limits under various release conditions, comprising providing a standard configuration Modular Practice Bomb of fixed effective diameter and substantially constant weight, and varying the coefficient of drag of the Modular Practice Bomb to provide a close match of the ballistic coefficient and horizontal range of the Modular Practice Bomb with that of a predetermined actual bomb, while maintaining flight stability, within a specified release envelope by calculating the drag coefficient of said practice bomb required to match the drag coefficient of said actual bomb and increasing the drag coefficient of said practice bomb to said calculated value by providing the practice bomb with a detachable tail-mounted module of an appropriate configuration.

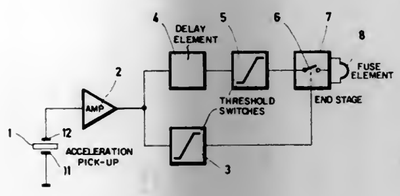
4,112,844

RELEASING DEVICE WITH PRESET RESPONSE SENSITIVITY FOR ELECTRICAL FUZES FOR USE WITH MINES

Manfred Held, Kuhbach, and Hans Spies, Pfaffenhofen, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung, Munich, Germany

Filed Sep. 1, 1971, Ser. No. 177,179
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1970, 2047422
Int. Cl.² F42C *15/14*
U.S. Cl. 102—19.2 **1 Claim**

1. Releasing device, having a preset sensitivity, for electrical fuzes for use with mines, comprising, in combination, a piezoelectrical acceleration pick-up; first and second circuits electrically connected, in parallel with each other, to said pick-up; said first circuit including a first threshold switch, and said second circuit including a delayed-response second threshold switch having a threshold value different from that of said first threshold switch; a fuze element operatively associated with both said circuits; switch means actuable by said threshold switches and controlling energization of said fuze element; said switch means blocking energization of said fuze element in the presence of a signal from said first threshold switch; respective amplifiers connecting said threshold switches to said pick-up; said amplifiers having respective different gains for respective different input voltage and respective frequency ranges; the amplifier connecting said first threshold switch to said pick-up



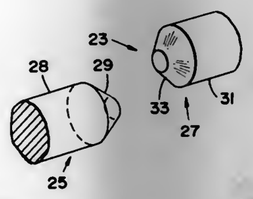
having a low gain and a wide band width for input voltages resulting from high acceleration of said acceleration pick-up in higher frequency ranges; said amplifier connecting said second threshold switch to said pick-up having a high gain and narrow band width for input voltages resulting from low acceleration of said acceleration pick-up in low frequency ranges; said switch means including an AND-gate having an output controlling energization of said fuze element and respective inputs electrically connected to said first and second threshold switches; and a monostable trigger stage connecting said first threshold switch to the associated input of said AND-gate and, when non-operative, supplying a signal voltage to said AND-gate.

4,112,845

APPARATUS FOR DETONATING ACROSS A GAP

Jacob Savitt, Capitola, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1976, Ser. No. 709,577
Int. Cl.² C06C *5/06*
U.S. Cl. 102—27 R **4 Claims**



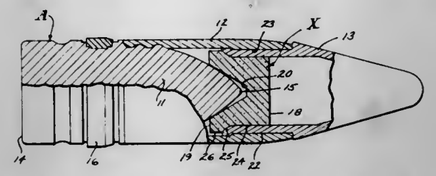
1. An apparatus for detonating across a gap comprising:
(a) a donor charge of an explosive material in a tubular casing
(b) an acceptor charge of an explosive material in a tubular casing; and
(c) means for causing detonation of said acceptor charge by said donor charge across said gap therebetween when said charges are misaligned from each other, said means being end tips on each of said donor and acceptor charges of non-cylindrical configuration, the configuration of said end tips being a function of the misalignment between said donor charge and said acceptor charge.

4,112,846

ARMOR-PIERCING INCENDIARY PROJECTILE

Henry L. Gilbert, Compton, and Cayrl W. Van Ordstrand, Redondo Beach, both of Calif., assignors to Martin Marietta Aluminum Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 477,077, Jun. 11, 1966, abandoned, which is a continuation-in-part of Ser. No. 360,554, Apr. 16, 1954, abandoned. This application Dec. 19, 1966, Ser. No. 602,852
Int. Cl.² F42B *11/14*
U.S. Cl. 102—52 **14 Claims**



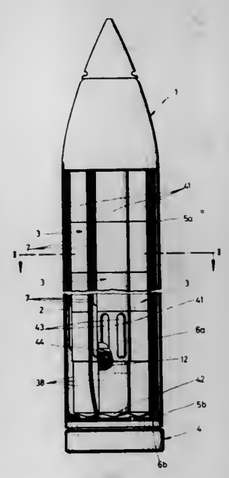
1. In an armor-piercing incendiary projectile having a penetrator and an incendiary, the improvement which comprises: an incendiary having a matrix of a first metal selected from the group consisting of zirconium, titanium, thorium, hafium, uranium, and mixtures thereof; and interdispersed therein an intermetallic compound formed between said first metal and a second metal selected from the group consisting of tin, lead, and mixtures thereof.

4,112,847

WARHEAD WITH A DISINTEGRATING JACKET TO HOUSE SEVERAL PROJECTILES

Franz Rudolf Thomanek, Sandizell, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung, Munich, Germany

Filed Dec. 8, 1970, Ser. No. 97,451
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1969, 1961881
Int. Cl.² F42B *13/50*; F42C *11/00*
U.S. Cl. 102—67 **11 Claims**



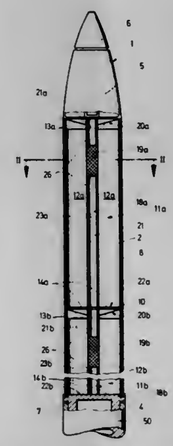
1. A warhead with an disintegrating jacket to house several projectiles, in particular splinter projectiles, each of them being equipped with an ignition and backfiring charge system, and each falling to earth individually after disintegration of the warhead jacket, and being fired upwards from the ground by means of the backfiring charge system ignited by the ignition system, said ignition system comprising a time-delay fuze, which is initiated when the projectile impacts with relatively soft ground and which ignites the backfiring charge after adjusted times differing at least partly for the individual projectiles, and an impact fuze, which effects an immediately ignition of the backfiring charge when the projectile strikes relatively hard ground.

4,112,848

WARHEAD CONSTRUCTION

Georg Lallinger, Muhlried, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung, Munich, Germany

Filed Nov. 2, 1970, Ser. No. 86,282
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1969, 1955777
Int. Cl.² F42B *13/50*
U.S. Cl. 102—69 **12 Claims**



1. A warhead construction comprising an outer tubular jacket for said warhead, at least one assembly of a plurality of longitudinally extending and substantially coextensive circumferentially arranged explosive charges in said jacket adjacent the interior wall of said jacket and defining a longitudinally extending hollow space at the center of said charges, and an ejection cartridge located within said hollow space adjacent one end of said charges, said jacket having a plurality of circumferentially spaced breaking seams extending longitudinally along the length thereof and overlying said assembly in a position to break from the ejection cartridge end toward the opposite wall upon ignition of said cartridge to permit the spreading out of said charges, said ejection cartridge producing pressure forces which act first upon the ends of said explosive charges which are adjacent to said cartridge and which thereafter, upon pressure burning of said explosive charges in a progressive manner toward the opposite ends thereof, cause progressive and uniform separation and breaking away of said jacket along said breaking seams toward the opposite end.

4,112,849

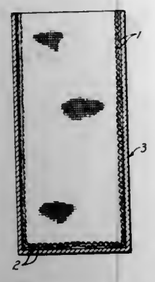
SMOKELESS SLOW BURNING CAST PROPELLANT

John Leslie Jones, Los Angeles, Calif., assignor to California Institute Research Foundation, Pasadena, Calif.

Filed Feb. 11, 1949, Ser. No. 75,755
Int. Cl.² F42B *1/00, 33/10*; C06B *45/10, 21/00*
U.S. Cl. 102—103 **10 Claims**

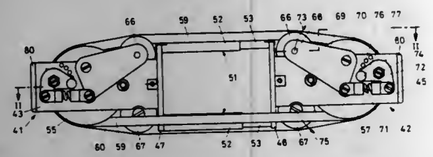
1. A cast, combustible composition comprising: granular ammonium nitrate; catalytic amounts of a powdered combustion catalyst intimately mixed with the ammonium nitrate, said catalyst being selected from the group consisting of zirconium hydride, cobalt, nickel, alloys of cobalt, nickel, and zirconium,

and the oxides of cobalt and nickel; and an elastic, combustible, crosslinked, resinous fuel consisting of a copolymer which is



preponderantly methyl acrylate in sufficient amount to fill the voids between the granules of ammonium nitrate and catalyst.

4,112,850
CONVEYOR APPARATUS FOR THE INTERIOR OF PIPELINES
Alwin Sigel-Gfeller, Nussberg, 8418 Schlatt, Switzerland
Filed Feb. 17, 1977, Ser. No. 769,452
Claims priority, application Switzerland, Feb. 24, 1976, 2258/76
Int. Cl.² F17D *5/00*
U.S. Cl. 104—138 G **13 Claims**



1. Conveyor apparatus for moving test devices through the interior of a pipeline which is inaccessible without digging into the ground comprising:

first and second chassis sections, each said chassis sections having a longitudinal axis and each being symmetrical thereabout and means connecting said chassis sections to each other for movement together and for movement relative to each other in an axial direction parallel to the axis of the pipeline;

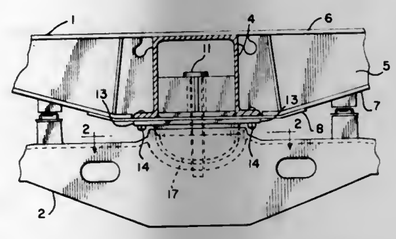
each said chassis section including first and second guide rollers and first and second swivel rollers, said guide rollers being substantially equally diametrically spaced from the longitudinal axis and being fixed for rotation to said chassis section, and said swivel rollers being diametrically spaced from the longitudinal axis and being fixed for rotation to said chassis section;

said connection means consisting of a telescoping arrangement of the sections with a pressure spring between opposing axially disposed surfaces of the sections and first and second endless belts disposed around the sections that counteract the action of the pressure spring, said first belt being carried by said first guide rollers, and being in contact with said first swivel rollers, said second belt being carried by said second guide rollers and being in contact with said second swivel rollers;

a swing plate for each said swivel roller coupled to one of said chassis sections, each said swivel roller being coupled to its said respective swing plate, said swing plates being individually adjustable to adjust the spacing between said swivel rollers in a diametrical direction transverse to the longitudinal axis of said chassis section, said swivel rollers being adjustable both in a direction towards the longitudinal axis and away from the longitudinal axis so that the longitudinal axis of said chassis can be centered within the interior of the pipeline substantially coinciding with the pipeline axis; and,

spring means connected with said chassis section operative to urge said swivel rollers into contact with the interior wall of the pipeline whereby to take care of minor variations in the diameter of the pipeline.

4,112,851
RESILIENT CONSTANT CONTACT CENTER BEARING ASSEMBLY
George L. Rousseau, Munster, and Richard C. Snyder, Michigan City, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Feb. 25, 1977, Ser. No. 765,504
Int. Cl.² B61F *1/14, 5/14, 5/20;* F16C *17/04*
U.S. Cl. 105—199 C **6 Claims**



1. A vibration damping center bearing assembly for a railway vehicle including a car body bolster and a supporting wheel truck having a transverse truck bolster including upper horizontal plate portions extending between its ends,

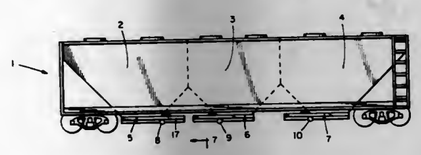
a bowl supported on said truck bolster having a peripheral rim flange extending upwardly beyond said plate portions and a downwardly concave curved inner surface generally semi-ovoidally shaped,

a shiftable insert disposed in said bowl having a generally semi-ovoidal lower surface contiguous to the inner surface of the bowl in radial and vertical load supporting relation thereto and a flat upper surface within a bowl and substantially in the horizontal plane defined by said upper plates portions,

a complementary resilient liner interposed between said lower and inner surfaces and bonded to one of said surfaces, and

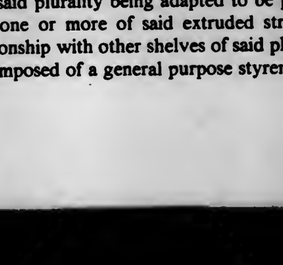
a center plate adapted to support said body bolster having a flat lower surface mating with the flat upper surface of said insert and supported thereon for relative rotative movement therebetween.

4,112,852
RAILWAY HOPPER CAR LABYRINTH GATE SEAL
Clarence J. Koranda, 5042 Lawn Ave., Western Springs, Ill. 60558
Filed Dec. 27, 1976, Ser. No. 754,836
Int. Cl.² B61D *7/02, 7/20, 7/22, 7/26*
U.S. Cl. 105—282 A **10 Claims**



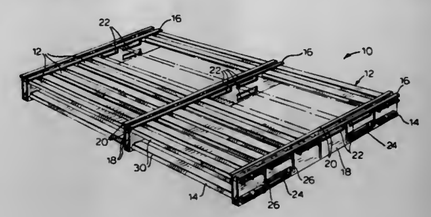
1. In a hopper outlet chute having a discharge opening defined by a sidewall frame with a sliding plate gate operating in the opening and an undercarriage support frame fixed to the chute sidewall frame to support the gate for sliding movement relative the opening, an improved gate seal comprising an upwardly directed gate flange integrally formed on at least part of the periphery of the gate plate, the flange being disposed on the outside of the chute frame, a pair of spaced elongated seal elements disposed in the space betweeen the gate flange and the adjacent hopper sidewall frame with one of the seal elements being fixed to the gate and the other to the adjacent chute sidewall frame and with both seal elements defining a tortuous labyrinth gap therebetween which serves as a seal for any granular matter within the chute.

4,112,853
SHELVING APPARATUS
Cosmo N. Tisbo, Barrington, and Thomas A. Tisbo, Roselle, both of Ill., assignors to Custom Plastics, Inc., Elk Grove Village, Ill.
Filed Jul. 5, 1977, Ser. No. 812,668
Int. Cl.² F16B *7/00*
U.S. Cl. 108—111 **2 Claims**



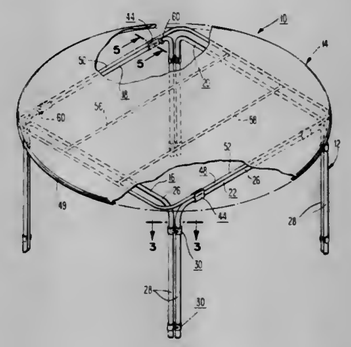
1. A shelving apparatus for holding articles comprising: a plurality of unitary molded joint connectors composed of high impact styrene, each unitary molded joint connector of said plurality having a hollow cubical center section and a plurality of arms having U-shaped cross-sections extending from the hollow cubical center section, each arm being positioned substantially perpendicular to a respective face of said hollow cubical center section, each arm of said plurality of arms having a first substantially rectangular wall extending the length of the arm, a second substantially rectangular tapered wall being formed integral with and perpendicular to the first substantially rectangular wall, a third substantially rectangular tapered wall being formed integral with and perpendicular to the first substantially rectangular wall, said second and third substantially rectangular tapered walls each having a respective free edge, each of said arms having a pair of beads formed therein, each pair of beads on a given joint connector being parallel to each other pair of beads on each other arm of that joint connector; the beads in at least one arm extending the length of said arm outwardly from said center section, a plurality of stringers composed of high impact styrene, each of said stringers having a hollow square cross-section interior, each of said stringers having a first rectangular stringer wall, a second rectangular stringer wall, a third rectangular stringer wall and a fourth rectangular stringer wall, each of said extruded stringers being adapted to receive one of said arms of said joint connectors, said extruded stringers being adapted to fit flush with said hollow cubical center sections; and a plurality of frosted square shelves, each of said frosted square shelves having a plurality of right angle notches formed in a plurality of shelf corners, each of said frosted square shelves of said plurality having a plurality of pins, each pin of said plurality of pins being positioned adjacent a respective right angle notch, each shelf of said plurality being adapted to be positioned in contact with one or more of said extruded stringers in an abutting relationship with other shelves of said plurality, each shelf being composed of a general purpose styrene.

4,112,854
METAL PALLET
Peter R. Pitchford, 188 Grenadier Rd., Toronto, Ontario, Canada (M6R 1R7)
Filed Oct. 7, 1977, Ser. No. 840,435
Int. Cl.² B65D *19/28*
U.S. Cl. 108—56.1 **14 Claims**



1. In a pallet having coplanar, adjacent deck members defining a load bearing surface, and a plurality of transverse stringer members supporting the deck members, the improvement comprising: a pair of parallel spaced-apart, generally U-shaped stringer members having generally upright, laterally resilient sides defining longitudinally spaced-apart, transverse openings located adjacent to the upper marginal edges of the sides; a plurality of coplanar, parallel, laterally spaced-apart, elongate deck members having longitudinal, downwardly and outwardly disposed, laterally resilient sides, the ends of the deck members being adapted to pass through said stringer openings upon lateral inward deflection of said deck member sides; and the deck member sides defining opposed pairs of parallel slot openings located adjacent to the deck member ends, the longitudinal spacing between said slot openings being different than the normal transverse spacing between the stringer sides, so that upon assembly of the pallet, the stringer and deck member sides are laterally deflected, the peripheral edges of said stringer openings are located in said slot openings, and the deck members and stringer members are biased into mutual engagement.

4,112,855
FOLDABLE FURNITURE UNIT
Donald B. Colby, Los Angeles, Calif., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Sep. 29, 1977, Ser. No. 837,894
Int. Cl.² A47B *3/06*
U.S. Cl. 108—159 **6 Claims**



1. A folding table including a tabletop that is removably connected to, and completely separable from a foldable base framework; the improvement wherein the framework includes a plurality of support members, each support member having a horizontal cross-piece joined at opposite ends to vertically dispose leg sections, each leg section of each support member

being adjacent to and substantially vertically aligned with a leg section of a different support member to provide a plurality of double-leg section supports, each double-leg section support being horizontally spaced from an adjacent double-leg section support by the horizontal cross-piece of a support member to provide ample leg room for accommodating individuals about substantially the entire perimeter of the tabletop, tabletop retaining means for removable connecting the tabletop to cross-pieces of more than one support member and connecting means including space-apart leg-engaging sections for rotatably joining together, in a spaced-apart relationship, the two leg sections forming each double-leg section support, one leg-engaging section of the connecting means being fixed against rotation to one of the two leg sections of the double-leg section supports, and the other leg-engaging section of the connecting means being rotatably joined through interengaging surfaces to the other leg section of the double-leg section supports, whereby the other leg sections of the double-leg section supports constitute the axes of rotation about which the support members can be rotated into a collapsed condition when the tabletop is removed from the framework, and interengaging surfaces also aiding in establishing and maintaining the desired relationship between the support members.

4,112,856

ASH REMOVAL EQUIPMENT ARRANGED ON A LIFTING MECHANISM FOR PULVERIZED-COAL FURNACES OF LARGE-CAPACITY STEAM GENERATORS

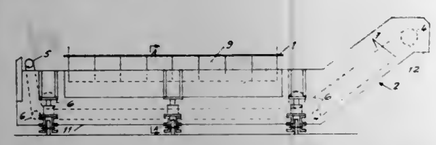
Günther Georg Fuhrman, Im Lerchenrain 16, 7000 Stuttgart 1; Uwe Jonny Krogmann, Stöckhofstr. 26/1, 7250 Leonberg, and Gerhard Wolfgang Schroth, Blautopfstr. 2, 7000 Stuttgart 61, all of Germany

Filed May 19, 1977, Ser. No. 798,351

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620836

Int. Cl.² F23J *1/02*

U.S. Cl. 110—165 R **6 Claims**



1. In ash removal equipment for a high capacity steam generator using pulverized coal as fuel, said steam generator being of the type which is top suspended and includes a combustion chamber having an elongated bottom ash discharge outlet suspended over a water containing ash quenching trough extending along the underside of said outlet through which a submerged scraper chain conveyor arrangement is disposed for delivering the quenched ash externally for disposal, said bottom ash discharge outlet further including pairs of hinged trap doors disposed along said ash discharge outlet and movable from a closed position with their free ends meeting to close off said discharge outlet to an open substantially vertical downard hanging position where their free ends are submerged in said water and the doors form a protective hood along the sides of said trough to prevent entry of outside air into said combustion chamber, the improvement comprising adjustable lifting means supporting said trough for varying the relative vertical distance between said trough and the free ends of said trap doors when the latter are in said open position and for maintaining said free ends submerged in said water.

4,112,857

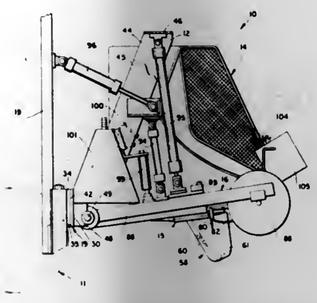
SPOT PLANTER

Edmund G. Bradley, Lithia Springs, Ga., assignor to Marden Manufacturing Company, Inc., Auburndale, Fla.

Filed Oct. 21, 1976, Ser. No. 734,547

Int. Cl.² A01C *11/00*

U.S. Cl. 111—3 **5 Claims**



1. A spot planter comprising a frame movable forwardly over the ground behind a towing vehicle, a passenger compartment supported by said frame and including means for supporting a passenger facing opposite to the forward direction of movement of said frame, dibble means mounted on said frame and movable up and down adjacent said passenger compartment to cut planting pockets along a path in the ground, seedling ejector means movable up and down with said dibble means for inserting seedlings into the planting pockets, packing means mounted on said frame and movable up and down beside and behind said dibble means to close the planting pockets, said packing means comprising a wheel including an annular ground engaging surface with one side portion of the annular ground engaging surface being of larger diameter than the other side portion thereof and with the larger diameter portion of said wheel being positioned away from the path of the planting pockets and the smaller diameter portion of said wheel being positioned adjacent the path of the planting pockets, said wheel being rotatable about an axis inclined upwardly from the position of the wheel toward the planting pockets and angled forwardly from the position of the wheel toward the line of the pockets whereby when the wheel engages the ground adjacent a planting pocket it tends to sweep the soil toward the planting pocket and to press the soil at a downward inclined angle toward the lower portion of the planting pocket substantially without reducing the height of the soil adjacent the seedling.

4,112,858

SEWING MACHINE WITH A PATTERN GENERATING DEVICE

Toshihide Kakinuma, Tokyo; Toshiaki Kume, Tachikawa; Hideaki Takenoya, Hachioji; Hachiro Makabe, Fussa, and Kazuo Watanabe, Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

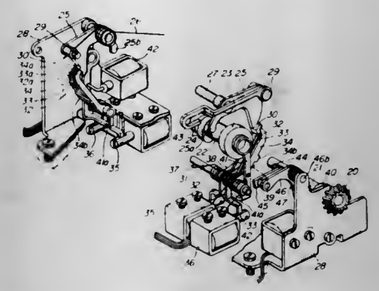
Filed Feb. 17, 1977, Ser. No. 769,796

Claims priority, application Japan, Feb. 27, 1976, 51-20034

Int. Cl.² D05B *3/02*

U.S. Cl. 112—158 E **18 Claims**

1. In a sewing machine having a machine housing, a main shaft rotatably journaled in the machine housing, stitch forming instrumentalities movable to different positions defined by different respective position coordinates for changing the relative position between the needle and the sewn work in order to form stitches in a pattern, in combination, motion-generating means operative in synchronism with main shaft rotation for generating motion in a first path of motion; transmission means connected to the motion-generating means and to the stitch forming instumentalities and operative for moving the latter to different positions defined by different respective position coordinates by receiving the motion generated by the motion-generating means and transmitting such motion to the stitch forming instrumentalities; positioning means connected to the motion-generating means and to the transmission means and operative in synchronism with main shaft rotation for performing motion in a second path of motion which is parallel to said first path of motion and in so doing moving through a plurality of different position-coordinate settings which establish the different position coordinates for the stitch forming instrumentalities; electrically activatable and releasable locking means for locking the positioning means in different ones of said position-coordinate settings; and pattern-selecting means connected to the locking means and operative in synchronism with main shaft rotation for selecting the position-coordinate settings in which the positioning means is to be locked and causing the locking means to lock the positioning means in such settings.



4,112,859

AUXILIARY SEWING MACHINE SUPPORT TABLE FOR USE WITH A SEWING MACHINE TABLE

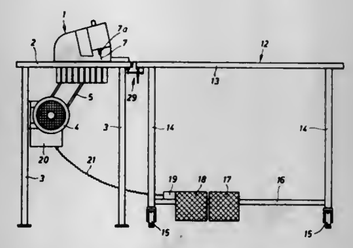
Erich Willenbacher, Rheinstetten, Germany, assignor to Pfaff Industriemaschinen GmbH, Germany

Filed Oct. 14, 1977, Ser. No. 842,354

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 7634272[U]

Int. Cl.² D05B *75/00*

U.S. Cl. 112—217.1 **8 Claims**



1. An auxiliary support table for use with a sewing machine table with a sewing machine which has a reciprocating needle, and which has a table top for supporting a part of the workpiece with a sewing table edge extending transversely of the material feed direction to the needle and also having a first portion of an engagement rail trackway extending along the edge, comprising an auxiliary table having an edge extending substantially parallel to the sewing table edge and having a complementary second portion of the engagement rail and trackway which is engageable with the first portion of the engagement rail and trackway, said auxiliary table being shiftable in the direction transverse to the feed direction relative to the sewing machine table with said second portion in engagement with the first portion on the sewing machine support table.

4,112,860

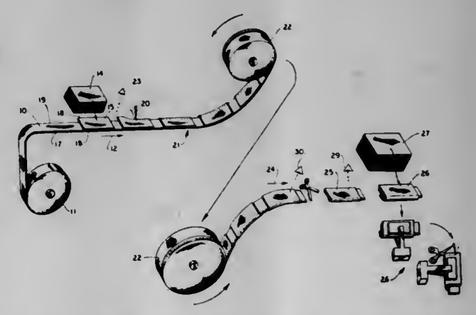
METHOD OF FABRICATING SHIRT CUFFS

Gordon H. Ellington; William O. Mitchell, and Don E. Estapa, all of Vidalia, Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 521,297, Nov. 6, 1974, Pat. No. 3,901,173. This application Feb. 11, 1975, Ser. No. 548,968

Int. Cl.² D05B *1/00*

U.S. Cl. 112—262 **14 Claims**



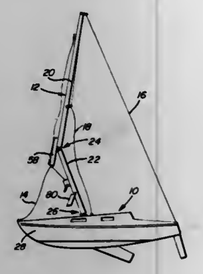
1. A process of forming shirt cuffs or the like comprising moving a continuous web of lining material or the like along a path through a sewing machine at a first work station, placing panels of cuff material on the web of lining material spaced along the length of the web of lining material with an edge portion of the panels of cuff material overlying an edge of the lining material before the web of lining material is moved through the sewing machine and moving the panels of cuff material with the continuous web of lining material toward the sewing machine, detecting the space between adjacent ones of the panels of cuff material on the web, terminating the movement of the panels of cuff material and the continuous web of lining material toward the sewing machine when the spacing between adjacent ones of the panels of cuff material is not within a predetermined range of distances, folding the overlying edge portion of each of the panels of cuff material about the edge of the web of lining material as the web of lining material and panels of cuff material move toward the sewing machine, sewing through the folds of the panels of cuff material and the web of lining material to form a connected series of partially completed cuff assemblies, accumulating a supply of the connected series of partially completed cuff assemblies from the sewing machine, transferring the accumulated supply of the connected series of partially completed cuff assemblies to a second work station, moving the connected series of partially completed cuff assemblies along its length from its accumulated supply to a fabric cutter, stopping the movement of the connected series of partially completed cuff assemblies in response to the movement of a leading panel of cuff material moving past a predetermined position and cutting the lining material behind the leading panel to separate the leading partially completed cuff assembly from the rest of the series of partially completed cuff assemblies, removing the separated partially completed cuff assembly from the series of partially completed cuff assemblies, and beginning the movement of the rest of the connected series of cuff assemblies toward the fabric cutter in response to the removal of the separated partially completed cuff assembly from the series of partially completed cuff assemblies.

4,112,861

MAST STEPPING AND UNSTEPPING STRUCTURE

Barry R. Lewis, 1005 Orange Ave., Sarasota, Fla. 33577

Filed Sep. 30, 1977, Ser. No. 839,105
Int. Cl.² B63B *15/00*
U.S. Cl. 114—91 **10 Claims**



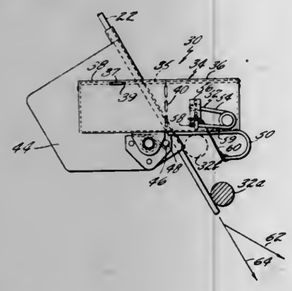
1. A sailboat including a hull, an upright mast, said mast including upper and lower end portions, first means pivotally supporting the lower end of said lower end portion from said hull for swinging between an upright position and a lowered position with the upper end of said lower end portion swung toward one end of said hull, second means pivotally supporting the lower end of said upper end portion from the upper end of said lower end portion for swinging between an upright position and a lowered position with the upper end of said upper end portion swung toward the other end of said hull, amd third means operatively connected between said upper and lower end portions and said hull operative for sequentially controllably lower said lower end portion from its upright position to its lowered position while maintaining said upper end portion upright and thereafter controllably lower said upper end portion from its upright position to its lowered position and for sequentially controllably raising said upper end portion from its lowered position to an upright position and thereafter controllably raise said lower end portion from its lowered position to its upright position while maintaining said upper end portion upright.

4,112,862

APPARATUS AND MEANS FOR PERMANENTLY MARKING A BUOYANT MINE WHICH HAS BEEN SEVERED FROM ITS MOORING WIRE DURING MINE SWEEPING OPERATIONS

William Huly, Stratford, and Rudolph G. Brouillette, Milford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 11, 1971, Ser. No. 154,242
Int. Cl.² B63B *9/00, 51/00, 51/02, 21/60*
U.S. Cl. 114—221 R **14 Claims**



1. Apparatus for marking a buoyant mine which has been severed from its mooring wire during mine sweeping operations including:

(A) multi-piece container mechanism,

(B) means to pivotally connect said container mechanism to the sweep wire of mine sweeping gear so as to be pivotable from a first position wherein said container mechanism will intercept a mine mooring wire to a second position by the force of the sweep wire passing along the mooring wire wherein said container is attached to the mine mooring wire,

(C) hook means operatively connected to said container means and positioned to receive the mine mooring wire therein as said container means moves from said first to said second positions,

(D) means to lock the mooring wire in said hook so that as the sweep wire continues to pass along the mooring wire, said multi-piece container mechanism will separate with at lease one portion thereof connected to said hook,

(E) means to sever the mooring wire at a location therealong on the opposite side of said hook from the mine to thereby permit the mine to float to the surface of the water carrying said hook and said portion of the container connected thereto therewith, and

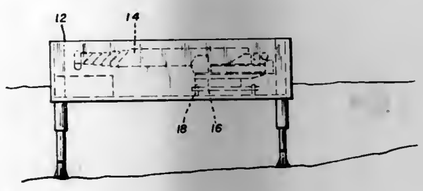
(F) marker means positioned in said container mechanism and connected to said portion thereof which is attached to the hook to thereby mark the buoyant mine and its wire so severed.

4,112,863

BARGE-SUPPORTED CRANE WITH HYDRAULICALLY ACTUATED RAM CORNER LIFT MEANS

Christian E. Nelson, 216 Brookvale Rd., Kinnelon, Smoke Rise, N.J. 07405

Filed Aug. 31, 1977, Ser. No. 829,450
Int. Cl.² B63B *35/44*
U.S. Cl. 114—264 **15 Claims**



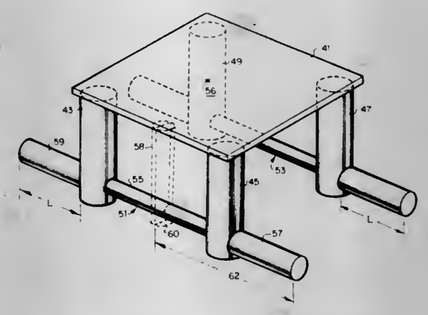
1. A barge adapted for carrying a crane within the hold portion thereof and in the presence of inert gas, the crane in a raised condition above the deck of the barge adapted to conventionally lift loads and rotate, this barge including: (a) a barge having sides, a bottom and a deck in which an access opening is formed and through which a folded crane may be raised and lowered; (b) at least four corner rams carried by the barge and by hydraulic means and the like, these rams selectively movable downward from the barge to carry a foot portion secured to each corner post toward the bottom of the harbor and when bottom is available the rams having a travel sufficient to engage the bottom and lift the barge to a condition above bouyancy; (c) a crane carried by and on a platform, this platform carried by a plurality of jack means which is actuated to move the platform from a position near the floor of the barge whereat the crane is collapsed and is placed in a stored condition to a position near the deck of the barge so that the crane may be elevated and put to use; (d) means for supporting the crane platform in its lifted condition so as to transfer any and all loads of the crane from said platform to the side walls of the barge as and when the jack means by which the crane platform is lifted is relaxed so that the load of and carried by the crane and the platform is supported by the side walls of the barge; (e) hatch cover means for selectively covering and closing the access opening in the deck when the crane is lowered to a stored condition, this cover means adapted to seal the hold to provide a substantially gas-tight condition, and (f) means feeding a sufficient amount of inert gas into said sealed hold to provide inhibiting protection of the crane and mechanism from spray, salt air and like factors during transport and storage.

4,112,864

HEAVE STABILIZATION OF SEMI-SUBMERSIBLE PLATFORMS

Gunnar B. Bergman, Montecito, Calif., assignor to Seatek Corporation, Santa Barbara, Calif.

Filed Oct. 8, 1976, Ser. No. 731,007
Int. Cl.² B63B *21/52*
U.S. Cl. 114—265 **2 Claims**



1. A semi-submersible floating structure comprising:

deck means;

four columns attached to and extending below said deck means near the extremes thereof for submersion in water to provide buoyant supporting force for the structure, each of the columns having an effective center of gravity of displacement;

pontoon means including a first pontoon attached to a first pair of said columns near the lower ends thereof that are adapted to be submerged and a second pontoon attached to a second pair of columns near the lower ends thereof that are adapted to be submerged, said pontoon means having upper horizontal surface projections which are positioned to remain submerged and having portions which extend longitudinally from the associated column with greater cross-sectional area than the portions thereof between columns.

4,112,865

NAVIGATION HARNESSES

Patrick Carn, Route de Benodet, 29000 Quimper, France

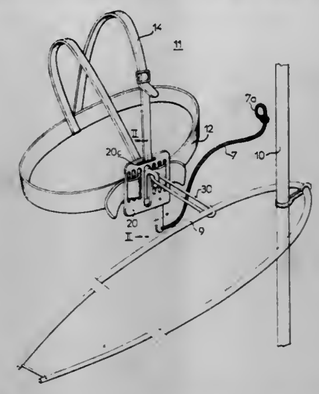
Filed Mar. 22, 1977, Ser. No. 780,073
Claims priority, application France, Mar. 23, 1976, 76 08298; Dec. 13, 1976, 76 37521
Int. Cl.² B63B *9/08*
U.S. Cl. 114—270 **10 Claims**

1. Improved traction harness, particularly for navigation, and particularly for a sail surfboard type craft, the harness comprising a chest bolt of adjustable length with shoulder straps adjustable to the size of the user, the belt being provided on the belly side with a rigid plate having an attachment point for a connecting element releaseable by the user, the connecting element having one extremity adapted to be attached to said point and another extremity attached to a part of the craft, and a rip cord adapted to be connected to a body extremity of the user, the improved harness being characterized in that

the attachment point to the plate for the releaseable connecting element is formed by an open hook having an operating shank and a retaining portion for the connecting element, the hook being positioned in a vertical slot provided in the plate in such manner that the retaining portion of the hook which receives the connecting element is oriented to protrude from the outer face of the plate,

the said hook being pivotally attached through the vertical slot in the plate, so as to be capable of assuming either of two distinct positions, a hooking-on position for the connecting element in which position the retaining portion and the operating shank of the said hook are approximately parallel to the plane of the plate, and a release position for the said connecting element in which position the retaining portion and the operating shank of the said hook are approximately perpendicular to the plane of the plate,

the said rip cord being coupled to the hook shank so that simple pulling on the cord by the user causes the hook to assume the said release position, thereby freeing the connecting element.

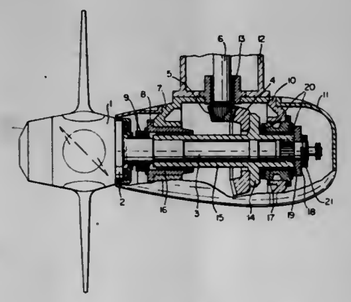


4,112,866

PROPELLER MECHANISM HAVING REMOVABLE PROPELLER SHAFT

Anders Marius Liasen, Alesund, Norway, assignor to A.M. Liasen A/S, Alesund, Norway

Filed Apr. 28, 1977, Ser. No. 791,697
Int. Cl.² B63H *1/14*
U.S. Cl. 115—34 R **2 Claims**



1. A propeller mechanism, comprising a casing, a propeller shaft disposed in said casing, means for rotating said propeller shaft including a drive shaft disposed at an angle to said propeller shaft and intermeshed bevel gears, one of said gears being coaxially disposed on said drive shaft, a sleeve member surrounding said propeller shaft, the other of said gears being mounted on said sleeve member and being coaxially disposed relative to said propeller shaft, bearing means in said casing in engagement with said sleeve member for supporting said other bevel gear in an intermeshed position with said one bevel gear, said propeller shaft thereby being indirectly supported by said bearing means, and means for detachably securing said propeller shaft within said sleeve member for preventing rotational movement of said propeller shaft and said sleeve member relative to one another but permitting axial withdrawal of said

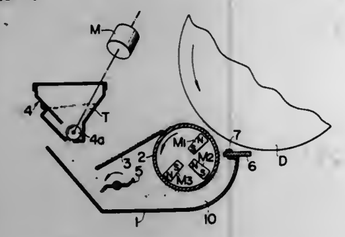
propeller shaft from within said sleeve member while maintaining said intermeshed position of said gears.

4,112,867

APPARATUS FOR CONTROLLING THE TONER CONCENTRATION OF A DEVELOPER USED IN A DRY TYPE DEVELOPING SYSTEM

Koichi Suzuki; Shigeru Suzuki, and Minoru Suzuki, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Japan

Continuation of Ser. No. 587,660, Jun. 17, 1975, abandoned.
This application Feb. 24, 1977, Ser. No. 771,732
Claims priority, application Japan, Jun. 18, 1974, 49-69335; Jun. 19, 1974, 49-69854
Int. Cl.² G03G *15/09*
U.S. Cl. 118—7 **5 Claims**



1. An apparatus for controlling the toner concentration of a dry toner in a copying device using a drum having an electrostatic latent image thereon comprising; a dry developer container, a dry developer in said container including a magnetic carrier and a non-magnetic toner, magnetic field producing means for picking up developer with toner from the container and establishing a stationary magnetic field in respect to said container, a rotatable sleeve of non-magnetic material arranged over said stationary magnetic field spaced from the drum and being rotatable to pick up a portion of the toner and carrier supply so as to form a magnetic brush on its surface to be brought into contract with the electrostatic latent image on the drum, a doctor blade having an edge disposed in spaced relationship to said sleeve and contacting and deflecting a portion of the thickness of said magnetic brush so as to retain a remaining magnetic brush of a lesser predetermined thickness and to shape said magnetic brush which has been retained on the surface of said sleeve, a magnetic leakage flux detector means disposed on said blade in a position to detect the magnitude of the leakage flux to the atmosphere adjacent said brush immediately before said brush is brought into contact with the electrostatic latent image on the drum with said leakage flux being generated by said magnetic field producing means, said leakage flux magnitude being proportional to the toner concentration in said brush, supply means in said container for supplying toner to replenish the toner concentration in said developer, and control means connected to said supply means and said detector means to regulate said supply means to suppply toner to said container in quantities to maintain a selected leakage flux magnitude adjacent said magnetic brush immediately before said brush comes into contact with the latent image on the drum.

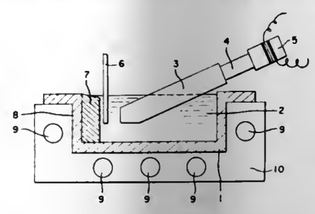
4,112,868

SOLDERING APPARATUS

Koji Nomaki, and Yoshihito Saoyama, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Division of Ser. No. 689,527, May 24, 1976, Pat. No. 4,042,725.
This application Apr. 11, 1977, Ser. No. 786,193
Int. Cl.² B05C *3/05*
U.S. Cl. 118—429 **3 Claims**

1. In an apparatus for providing a solder layer on a surface of a soldering material by dipping the soldering material in a bath of molten solder while applying ultrasonic vibration to the molten solder bath, the improvement which comprises a vessel for the bath of molten solder, a tip for imparting ultrasonic vibration to the bath of molten solder in the bath, and a dummy block for concentrating the ultrasonic vibration between the tip for imparting the ultrasonic vibration and a side wall of the vessel, wherein the dummy block concentrator and at least



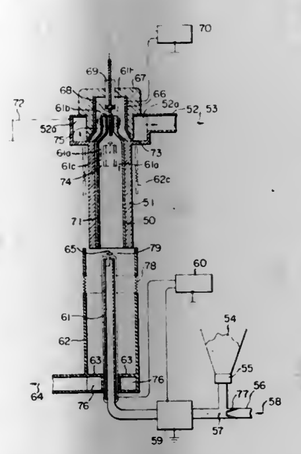
part of the tip are composed of a metal selected from the group consisting of tantalum, niobrium, molybdenum, tungsten and an alloy thereof having at least one of those metals as the main component.

4,112,869

APPARATUS FOR FORMING A POWDER LAYER ON THE SURFACE OF A METALLIC SQUEEZE-OUT TUBE

Tsutomu Itoh, Tokyo; Nobuo Furuya, and Kenji Ohuchi, both of Chiba, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

Filed Jan. 26, 1977, Ser. No. 762,504
Claims priority, application Japan, Feb. 3, 1976, 51-10005; Mar. 8, 1976, 51-24867
Int. Cl.² B05B *5/02*
U.S. Cl. 118—623 **16 Claims**



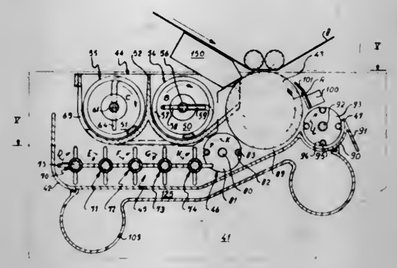
1. An apparatus for forming a powder layer on a surface of a metallic squeeze-tube having a transition shoulder portion and a neck portion comprising: an upright cylindrical masking holder; a charged particle feeder pipe mounted for vertical movement within and spaced from the inner surface of the masking holder to form a space gap therebetween; an annular electrode disposed above the masking holder opposite to and separated from the outer surface of the neck and the transition shoulder portions of the squeeze-tube, one source of high voltage DC connected to the feeder pipe, said squeeze-tube being connected to ground, and a source of high voltage DC connected to the annular electrode.

4,112,870

APPARATUS FOR DEVELOPING ELECTROSTATIC CHARGE IMAGES

Piet M. J. Extra, Venlo-W.; Lambertus R. J. M. Smeets, Swalmen; Adrianus W. M. Van Bavel, Venlo-W.; Jacobus J. Van Lieshout, Grubbenvorst, and Albert T. Deckers, Maasbree, all of Netherlands, assignors to Océ-van der Grinten N.V., Venlo, Netherlands

Filed Apr. 26, 1977, Ser. No. 791,158
Claims priority, application Netherlands, Apr. 26, 1976, 7604400
Int. Cl.² G03G *15/08*
U.S. Cl. 118—657 **11 Claims**



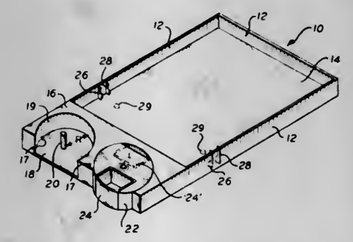
1. In an apparatus for developing electrostatic charge images on a moving support, including a reservoir for holding a developing powder composed of toner particles and magnetizable carrier particles and a rotating magnetic roller for transporting powder from the reservoir through a developing zone wherein the support moves substantially tangentially over the magnetic roller, means at the side of said roller where its surface moves toward said zone for supplying developing powder to said zone at a rate greater than the rate of transport of powder through said zone by said roller, said means including a partition forming with part of the surface of said roller a passage narrowing in the direction toward said zone and means for propelling powder from a part of the reservoir into the wider end of said passage.

4,112,871

BIRD CAGE FEEDER

Philip Newman, New Rochelle, N.Y., assignor to New Rochelle Manufacturing Co., Inc., New Rochelle, N.Y.

Filed Apr. 14, 1977, Ser. No. 787,335
Int. Cl.² A01K *39/00*
U.S. Cl. 119—18 **10 Claims**



1. A bird feeder assembly of the type arranged to be mounted in the lower portion of a bird cage, said feeder assembly comprising:

a tray member arranged to be removably slidably mounted in said bird cage and having a recessed region located at one end thereof, the recessed region extending within the bird cage when said tray member is placed therein;

at least one container means for containing a supply of bird food;

at least one feeding member shaped to be partially disposed within said recessed region and to be rotatably movable therein, said feeding member having a portion thereof shaped to accommodate said container means, the container means being rotatable with said feeding member to a first position outisde of the bird cage, and a second position inside of the bird cage, when said tray member is inside the cage; and

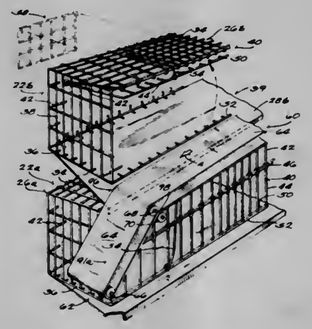
locking means operative to engage said feeding member so that the member becomes locked in a selected one of said first and second positions, said locking means including at least one locating tab disposed in the recessed region of the tray, said feeding member having at least one corresponding opening to accommodate said tab when at one of said first and second positions.

4,112,872

POULTRY CAGE SYSTEM WITH POULTRY REMOVAL

Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Continuation of Ser. No. 504,968, Sep. 12, 1974, Pat. No. 4,008,690. This application Jul. 2, 1976, Ser. No. 702,339
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.² A01K *29/00*
U.S. Cl. 119—22 **2 Claims**



1. A poultry cage system comprising, in combination: a plurality of poultry cages arranged in a row, each of said cages having a generally horizontal bottom panel and means defining an access opening extending in a vertical plane through which poultry confined therein can be removed, each of said cages including front panel means movable selectively between a first position relative said opening wherein said front panel means covers said opening to prevent movement of poultry therethrough and a second position wherein said front panel means is removed from said opening to permit discharge therethrough, a conveyor means fixably positioned along and extending substantially the length of said row immediately adjacent said openings and in substantially the same horizontal plane as the lower edge of each of said access openings for conveying poultry urged out of said cages through said openings whereby more than one of said cages may be emptied at the same time, and enclosure means having an open side facing all of said access openings for preventing premature departure of poultry conveyed on said conveyor means.

4,112,873

ANIMAL CLIMBING STRUCTURE KIT

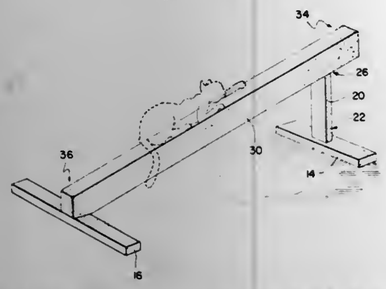
Robert D. Van Zandt, 611 Kennon St., Middletown, R.I. 02840

Filed Jan. 5, 1977, Ser. No. 756,899
Int. Cl.² A01K *29/00*
U.S. Cl. 119—29 **5 Claims**

1. A kit for the assembly of an animal climbing structure comprising:

a pair of base members each having at least one rod-like support element projecting upwardly therefrom;

a column member adapted to be supported at one end thereof atop one of said base members and provided with at least one blind bore in said one end adapted to accomodate therein said at least one rod-like support element of one of said base members and at least one blind bore being provided in the other end of said column member;



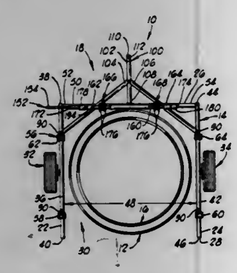
and an elongated beam member covered with a carpet material and having at least one rod-like support element projecting downwardly therefrom adjacent one end thereof adapted to be positioned within the corresponding blind bore in said other end of said column member and at least one blind bore adjacent the other end thereof adapted to accomodate therein said at least one rod-like support element of the other of said base members.

4,112,874

LIVESTOCK TRANSPORT APPARATUS

William J. Forrest, 3400 NW. Expressway, Suite 704, Oklahoma City, Okla. 73112

Filed Feb. 11, 1977, Ser. No. 767,764
Int. Cl.² A01K *13/00*; A61D *11/00*
U.S. Cl. 119—158 **10 Claims**



1. A livestock transport apparatus for moving livestock or the like from one location to another location, comprising:

a cage;

a movable frame, having a first side, a second side, a forward end and a rearward end, an opening being formed through the movable frame and a portion of the opening intersecting the rearward end of the movable frame, the cage being movable through the opening formed in the movable rame, a portion of the cage being engageable with a portion of the movable frame in a first position of the cage and the cage being supported via the movable frame in a position elevated a distance generally above the ground surface in the first position of the cage, the movable frame including:

means removably connected to the movable frame having one position for engaging the cage in the first position of the cage and preventing the cage from being moved through the opening in the movable frame;

means for movably supporting the movable frame; and

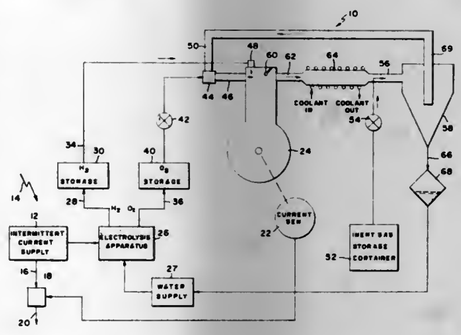
positioning means, having a portion connected to the movable frame and a portion connected to the cage, for positioning the cage in the first position and for raising the cage relative to the first position to a second position wherein the cage is supported a distance above the means for engaging the cage in the first position of the cage, and for lowering the cage to a third position wherein the cage is disposed near the ground surface for loading the livestock into the cage, the means for engaging the cage in the first position of the cage being removable from the movable frame in the second position of the cage.

4,112,875

HYDROGEN-FUELED ENGINE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Eugene A. Laumann, Pasadena, and Rollin K. Reynolds, Tujunga, both of Calif.

Filed Aug. 27, 1976, Ser. No. 718,268
Int. Cl.² F02B *75/12, 43/08*
U.S. Cl. 123—1 A **6 Claims**



1. A method for operating a hydrogen-fueled internal combustion engine comprising:

introducing a mixture of oxygen and a working fluid into the cylinder of said engine;

compressing said mixture; and

injecting hydrogen into the cylinder, to combust the oxygen and hydrogen;

a majority of said working fluid consisting of a noble gas.

4,112,876

METHOD AND APPARATUS FOR STARTING UP A GAS GENERATOR FOR CONVERTING HYDROCARBONS INTO A FUEL GAS, AND AN INTERNAL COMBUSTION ENGINE TO BE SUPPLIED WITH THE FUEL GAS

Hellmuth Mentschel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 9, 1976, Ser. No. 721,851
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2542997
Int. Cl.² F02B *43/08*
U.S. Cl. 123—3 **6 Claims**

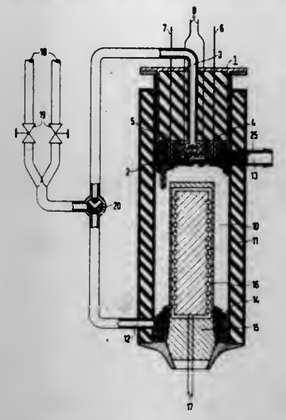
1. In a method for starting a gas generator for the catalytic conversion of hydrocarbons with an oxygen containing gas to form a fuel gas and for starting an internal combustion engine which is supplied with the fuel gas, comprising the steps of temporarily electrically heating catalytic material disposed in a reaction chamber containing a catalytic charge, conducting a mixture of hydrocarbons and air, which is richer in oxygen than in continuous operation, over the catalytic material; and exothermically reacting the mixture for further heating up the catalytic charge and feeding the fuel gas produced to the internl combustion engine, the improvement comprising:

(a) electrically heating a small part of the volume of the catalytic charge to the start up temperature of the catalyst;

(b) then terminating the electric heating;

(c) cranking the internal combustion engine;

(d) introducing the hydrocarbon/air mixture and reacting it at the heated small part of the volume without flame causing the catalytic charge to be further heated through the spreading of the exothermic reaction; and



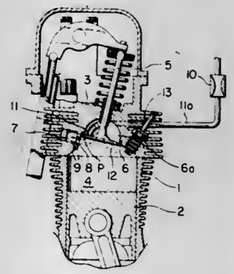
(e) after the remainder of the volume of the catalytic charge is sufficiently heated feeding the hydrocarbons and the oxygen containing gas to the remainder of the volume of the catalytic charge in the generator together along with an oxygen component for the reaction during continuous operation.

4,112,877

INTERNAL COMBUSTION ENGINE

Kenji Goto, and Takao Niwa, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 19, 1976, Ser. No. 733,909
Int. Cl.² F02B *19/10, 19/18*
U.S. Cl. 123—32 ST **12 Claims**



1. An internal combustion engine having means to supply a lean mixture to the combustion chamber after combustion and prior to the exhaust stroke, said engine comprising:

(a) a first means for forming a main combustion chamber, including an intake port through which an air-fuel mixture is supplied to said main combustion chamber, an intake valve for opening and closing said intake port and having one side facing said main combustion chamber,

(b) a second means for forming an auxiliary combustion chamber to hold said lean mixture and located immediately adjacent the intake valve, including passageways communicating said auxiliary combustion chamber only with said main combustion chamber;

(c) a spark plug located remote from said auxiliary combustion chamber and having a spark producing end facing the inside of said main combustion chamber, and a piston; and

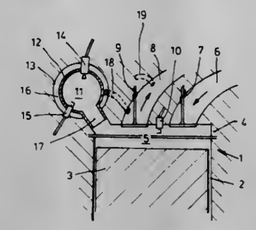
(d) means for providing additional air and introducing the additional air into said auxiliary combustion chamber during the suction stroke of said piston.

4,112,878

INTERNAL COMBUSTION ENGINE WITH A MAIN COMBUSTION CHAMBER AND AN AUXILIARY COMBUSTION CHAMBER

Herbert Heitland, and Udo Renger, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1975, Ser. No. 624,924
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1974, 2450305
Int. Cl.² F02B *19/10*
U.S. Cl. 123—32 ST **10 Claims**



1. In a spark ignited internal combustion engine including a main combustion chamber, an auxiliary combustion chamber connected to the main combustion chamber, and fuel delivery means for supplying separate partial quantities of fuel to the main combustion chamber and auxiliary combustion chamber; the improvement wherein:

the partial quantity of fuel delivered to the auxiliary combustion chamber is an easily dissociable fuel capable of substantial thermal dissociation at an elevated operating temperature; said improvement comprising means for constantly maintaining the auxiliary combustion chamber at the elevated operating temperature, and means, including the auxiliary combustion chamber, for dissociating the easily dissociable fuel, the main combustion chamber and the auxiliary combustion chamber being in continuous communication with each other so that prior to ignition of a fuel-air mixture in the main combustion chamber a predetermined amount of dissociated fuel mixes with the fuel-air mixture to contribute to exhaust gases low in noxious substances.

4,112,879

PROCESS FOR THE REGULATION OF THE OPTIMUM OPERATIONAL BEHAVIOR OF AN INTERNAL COMBUSTION ENGINE

Jürgen Assenheimer, Vaihingen; Valerio Bianchi, Hochdorf; Johannes Brettschneider, Ludwigsburg; Reinhard Latsch, Vaihingen, and Dieter Scherenberg, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

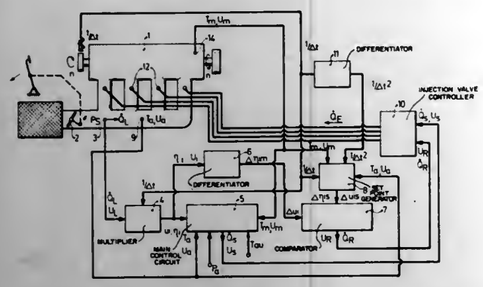
Filed Feb. 24, 1976, Ser. No. 661,006
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1975, 2507917
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 EA **26 Claims**

1. A process for controlling the operation of an internal combustion engine, said engine including a fuel metering system, and an air flow metering system, comprising the steps of:

measuring the volumetric efficiency of said engine, generating first signals related thereto and deriving therefrom a nominal fuel quantity;

differentiating said first signals to obtain second signals related to fluctuations of said volumetric efficiency;

comparing said second signals with set-point values related to permissible magnitudes of said fluctuations;
deriving from said comparison a correction variable; and



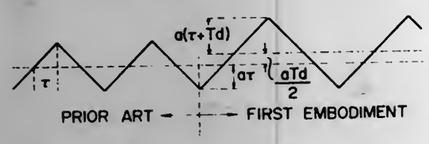
altering the prevailing fuel-air ratio of the engine in dependence on said correction variable; whereby said fluctuations of the volumetric efficiency constitute a controlled variable of the engine.

4,112,880

METHOD OF AND MIXTURE CONTROL SYSTEM FOR VARYING THE MIXTURE CONTROL POINT RELATIVE TO A FIXED REFERENCE

Masaharu Asano, and Shunichi Kadowaki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 21, 1976, Ser. No. 752,962
Claims priority, application Japan, Dec. 27, 1975, 51-155767; Dec. 27, 1975, 51-155768
Int. Cl.² F02B *3/08*; F02M *7/12*; F01N *3/08*
U.S. Cl. 123—32 EE **10 Claims**



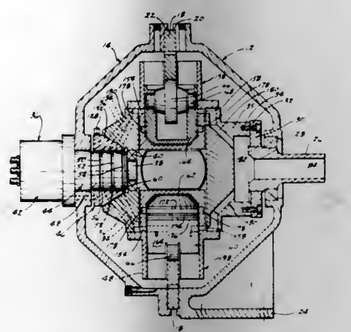
1. A mixture control system for an internal combustion engine including means for supplying mixture of air and fuel thereto in a variable ratio depending upon a signal representative of the concentration of a predetermined constituent gas of the emissions from said engine, and an exhaust gas sensor for generating said signal having a sharp transition in amplitude in response to the presence of said predetermined constitutent gas being above or below a predetermined value corresponding to an air-fuel ratio at or near stoichiometry, comprising:
means for generating a deviation signal representative of the deviation of said transitional signal from a reference representing said predetermined air-fuel ratio, said deviation signal having first and second voltage levels depending upon whether said transitional signal is above or below said predetermined value;
means for extending the duration of said deviation signal at said first voltage level a predetermined time; and
means for integrating said duration-extended deviation signal with time to generate a time integral signal.

4,112,881

ROTARY INTERNAL COMBUSTION ENGINE EMPLOYING COMPRESSION IGNITION

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Division of Ser. No. 494,409, Aug. 5, 1974, Pat. No. 4,038,953, which is a continuation-in-part of Ser. No. 286,189, Sep. 5, 1972, abandoned, and a continuation-in-part of Ser. No. 301,096, Oct. 26, 1972, Pat. No. 3,857,372, and a continuation-in-part of Ser. No. 378,701, Jul. 12, 1973, Pat. No. 3,874,348. This application Feb. 7, 1977, Ser. No. 766,042
Int. Cl.² F02B *3/12, 75/02*; F02D *39/04*; F02P *23/00*
U.S. Cl. 123—32 B **2 Claims**



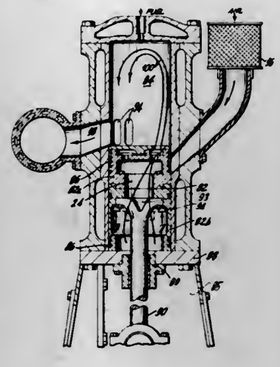
1. A compression combustion engine comprising,
a cylinder means having a permanently closed top portion and a cylinder wall portion extending downwardly therefrom,
a piston means having a top portion and being slidably movably mounted in said cylinder means, said top portion being complementary in shape to said closed top portion of said cylinder means,
said piston means being movable between a position of maximum compression and an expanded position, said position of maximum compression comprising that position of said piston when the top portion thereof is closely spaced with respect to the top portion of said cylinder to define a relatively small combustion chamber therebetween,
means for supplying a combustible fuel into said cylinder,
said engine means having a reservoir cavity means for receiving and storing a portion of the combustible fuel therein, said cavity means being in communication with said cavity means being in communication with said cylinder at a position where said piston means closely approaches said position of maximum compression in said cylinder and just before said fuel has been compressed sufficiently for ignition, thereby leaving a remaining quantity of combustible fuel confined in said cylinder within said relatively small combustion chamber above said piston means whereby a slight further displacement of said piston means will suddenly and abruptly increase the pressure of said remaining quantity of fuel to cause combustion thereof throughout said relatively small combustion chamber and substantially across the entire area of the top portion of said piston means,
said means for sealing said reservoir cavity means from said relatively small combustion chamber in said cylinder means as said piston means approaches its position of maximum compression whereby the combustion mixture in said cavity means will not be ignited until after combustion of said remaining quantity of combustible fuel has occurred and said seal means on said piston means has opened said cavity means as said piston means moves from its position of maximum compression towards its expanded position.

4,112,882

TWO-CYCLE ENGINE AND PISTON

Jan Henryk Tews, 173 Bedford Ave., Brooklyn, N.Y. 11211

Filed Jun. 26, 1975, Ser. No. 590,573
Int. Cl.² F01L *11/00*
U.S. Cl. 123—47 A **20 Claims**



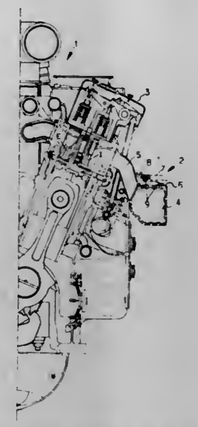
1. A piston assembly for use in an internal combustion two-cycle engine which has an exhaust port and an intake port, comprising:
a piston having a top surface and sidewalls depending therefrom to form a generally open hollow cavity therein, said piston having a plurality of relatively small, generally spaced charging passages formed in said top surface in a generally outer circular circumferential zone thereof, to provide communication with said hollow cavity;
means formed in said pistion for pivotally connecting a piston rod thereto;
a piston head adapted for attachment to said top surface by a generally central truck formed on its bottom to provide a dispensing space between said piston head and said top surface of said piston, and rib members formed on the bottom of said piston head extending downwardly for spaced relation with said top surface, said piston head being provided with a plurality of dispensing ports along its generally outer peripheral top surface with a solid sector formed on said peripheral top surface between two adjacent dispensing ports to separate said adjacent ports a distance at least equal to the width of the exhaust port of the engine in which said piston is intended for use;
means for attaching said trunk of said piston head to said top surface of said piston; and
a generally circular pressure sensitive valve comprising a substantially thin donut-shaped valve section for controlling all of said passages, said valve being formed with at least two hinge members adapted to be received between said trunk and said top surface of said piston for flexibly affixing said valve section to the top surface of said piston, such that said valve is substantially sensitive to pressure variations, rising until restricted by the bottoms of said rib members to open said charging passages when pressure from below slightly exceeds pressure from above and to close said passages when pressure from above slightly exceeds pressure from below.

4,112,883

INTERNAL COMBUSTION ENGINE FIT-UP DEVICE

Jean-Claude Bouquet, Pantin, France, assignor to Societe d'Etudes de Machines Thermiques, Saint-Denis, France

Continuation of Ser. No. 639,923, Dec. 11, 1975, abandoned, which is a continuation of Ser. No. 461,889, Apr. 18, 1974, abandoned. This application May 11, 1977, Ser. No. 795,911
Claims priority, application France, Aug. 13, 1973, 73 29568
Int. Cl.² F02B *75/18*
U.S. Cl. 123—52 M **7 Claims**



1. An internal combustion engine fit-up device for large sized Diesel engines provided with intake and exhaust valve means for controlling the intake of air and the exhaust of the combustion gases respectively, and installable in locations of vehicles wherein the available space in said locations is very small, comprising a Diesel engine provided with said intake and exhaust valve means, intake manifolds for said engine, associated cylinder heads and engine pipes requisite for engine operation, said intake and said exhaust valve means being located in said cylinder heads, wherein each said intake manifold is arranged at a level lower than that of its associated cylinder head, each said manifold presenting a top surface that is approximately plane and horizontal, supporting means located on said top surface, and a walkway mounted by said means above each said intake manifold and providing a space between said surface of each said manifold and the under face of said walkway, and wherein said engine pipes are located in said space between said walkway and said intake manifold, so as to eliminate obstruction of said cylinder heads and provide free access to said cylinder heads and other engine parts located above said walkway.

4,112,884

VALVE LIFTER FOR INTERNAL COMBUSTION ENGINE

Akira Tominaga, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 2, 1976, Ser. No. 702,291
Claims priority, application Japan, Mar. 12, 1976, 51-26047
Int. Cl.² F01L *1/14*
U.S. Cl. 123—90.48 **7 Claims**

1. A valve lifter adapted for actuating a valve positioned in either intake or exhaust port formed in a cylinder of an internal combustion engine comprising:
a hollow sleeve fixedly mounted in a head portion of said engine cylinder, the sleeve having therein a cylindrical inner wall;
a round lifter element slidably fitted in said hollow sleeve;
a push rod connected to said round lifter element;
a rocker arm co-operable with said push rod for opening the valve;
a plunger arranged to be movable into and away from said

hollow sleeve and to be also angularly movable about the axis thereof, said plunger including a first and a second cylindrical lands both arranged to be slidable along the cylindrical inner wall of said hollow sleeve, said first and second cylindrical lands defining therebetween an annular space;

a liquid chamber defined between said round lifter element and said first cylindrical land of said plunger;

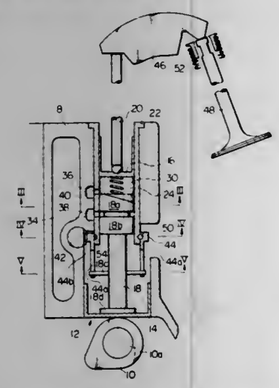
a liquid-introduction port formed in said inner wall of said sleeve and fluidly connectable to said annular space;

a liquid-discharge port formed in said inner wall of said sleeve and fluidly connectable to said liquid chamber;

a liquid-inlet passageway formed in said engine cylinder head so as to be connected to said liquid-introduction port;

a liquid-outlet passageway formed in said engine cylinder head so as to be connected to said liquid-discharge port;

a liquid passageway means fluidly connecting between said annular space and said liquid chamber;



a valve cam driven by said engine for causing the axial movement of said plunger into and away from said hollow sleeve, and;

means for providing said plunger with the angular movement in response to the change in the operation condition of said internal combustion engine, said first land being provided with an end surface for compressing a liquid in said liquid chamber in response to the movement of said plunger into said hollow sleeve, and a circumferential surface for facing and covering said liquid-discharge port in response to the movement of said plunger into said hollow sleeve, said circumferential surface of said first land being formed with a cut defining a spirally extending edge co-operable with said liquid-discharge port so that the time for initiating the compression of the liquid in said liquid chamber by said compression end surface of said first land is varied in response to the angular movement of said plunger.

4,112,885

THROTTLE VALVE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Toshiharu Iwata; Tadashi Hattori; Kouichi Mori, all of Okazaki, and Tomojiro Akiyama, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 17, 1976, Ser. No. 688,080

Claims priority, application Japan, May 23, 1975, 50/62408

Int. Cl.² F02P 9/00; F02D 1/04

U.S. Cl. 123—98 **10 Claims**

1. A throttle valve control system for an internal combustion engine comprising:

accelerator means movably mounted on a vehicle and operable as required;

accelerator sensing means connected to said accelerator means for generating an electric signal corresponding to the amount of movement of said accelerator means;

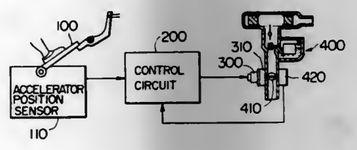
a throttle valve disposed in an intake passage of said internal combustion engine for controlling the area of opening of said intake passage;

throttle valve opening sensing means connected to said throttle valve for generating an electrical signal corresponding to the opening of said throttle valve;

a reversible motor operatively connected to said throttle valve for operating said throttle valve;

engine condition sensing means provided in said internal combustion engine for detecting the operating conditions of said engine;

a control circuit joined to each of said sensing means and connected to said reversible motor for controlling the direction and amount of rotation of said reversible motor,



said control circuit including an amplifier for amplifying one of the electric signals of said accelerator sensing means and said throttle valve opening sensing means by an amplification factor which is changed in accordance with said detected operating conditions, a comparison circuit for comparing the amplified signal from said amplifier and the other of said two electric signals as to relative magnitude so as to generate a comparison signal, and a driving circuit responsive to said comparison signal for determining the direction of rotation of said reversible motor, whereby the opening of said throttle valve is maintained at a value corresponding to the operating conditions of said engine and the amount of movement of said accelerator means; and

a power source for energizing said reversible motor and said control circuit.

4,112,886

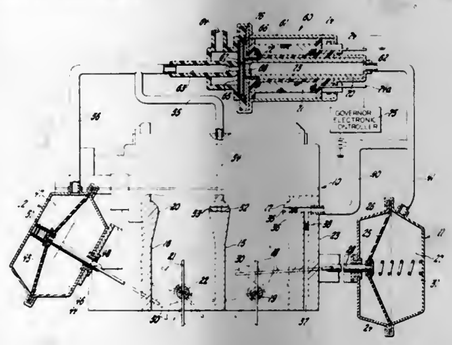
ENGINE SPEED GOVERNOR

Roland G. Kibler, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1976, Ser. No. 746,394

Int. Cl.² F02D 11/08

U.S. Cl. 123—103 R **2 Claims**



1. An engine speed governor for an internal combustion engine having a carburetor wherein the carburetor includes a primary intake passage having a venturi and a primary throttle valve for controlling the flow of fluid therethrough, a secondary intake passage having a venturi and a secondary throttle valve therein, said engine speed governor including a vacuum actuated first governor actuator operatively connected to said primary throttle valve, governor spring means operatively connected to said primary throttle valve to bias said primary throttle valve in a valve opening direction, a first conduit, including orifice passage means, connecting said first governor actuator to said primary intake passage whereby said first governor actuator can be actuated by primary venturi vacuum for closing said primary throttle valve against the biasing action of said governor spring means, a vacuum actuated second governor actuator operatively connected to said secondary throttle valve, a second conduit connecting said secondary governor actuator to at least said primary intake passage whereby said second governor actuator is actuated by primary venturi vacuum to permit normal secondary throttle valve operation, resilient means operatively connected to said secondary throttle valve for normally biasing said secondary throttle valve toward a closed position; and a three-way, solenoid governor valve having a normally open port, a normally closed port and a port open to the atmosphere, said solenoid governor valve having said normally open port connected to said first conduit and said normally closed port connected to said second conduit, said solenoid governor valve being operatively connectable to an electrical power source through an engine speed sensing means whereby during operation of the engine when the engine speed is below governed speed, said solenoid governor control valve will be de-energized thus allowing air to bleed into said first governor actuator keeping it in a non-governing position while allowing vacuum to build up in said second governor actuator to permit normal operation of said secondary throttle valve; whereby when with increasing engine speed the engine operates close to governed speed said solenoid valve can be duty cycled so as to restrict air bleed to said first governor actuator and to allow restricted air bleed to flow to said secondary governor actuator; and, whereby when the engine operates above a governed speed, said solenoid valve can be continuously energized so as to shut off the flow of bleed air to said first governor actuator thereby allowing primary venturi vacuum to effect operation of said first governor actuator to close said primary throttle valve while allowing bleed air to flow to said second governor actuator whereby to permit said resilient means to close said secondary throttle valve.

4,112,887

AUTOMATIC SPARK TIMING DEVICE

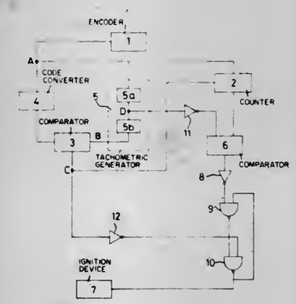
Louis Jean Château, Rosny sur Bois, France, assignor to Ducellier et Co., Paris, France

Filed Jul. 28, 1975, Ser. No. 599,338

Claims priority, application France, Jul. 31, 1974, 74 26581; Dec. 27, 1974, 74 42950

Int. Cl.² F02P 5/04

U.S. Cl. 123—117 D **2 Claims**



1. An internal combustion engine ignition system comprising an ignition coil periodically supplied with current, a spark circuit connected to the coil so that a spark is generated thereby each time the current in the ignition coil is interrupted, an angular position detecting means providing a digital output varying in accordance with displacement of the engine shaft beyond a datum position, a tachometric generator producing a digital output representing the engine shaft speed, ignition control means responsive to the digital signals from the angular position detecting means and the tachometric generator determining the instant of cessation of current flow in said coil in accordance with a predetermined ignition advance law, and coil current control means responsive to the digital signal from the tachometric generator and to the output of said ignition control means for determining when current flow in the coil is recommenced following each spark.

4,112,888

IGNITION TIMING CONTROLLER FOR A GASOLINE ENGINE

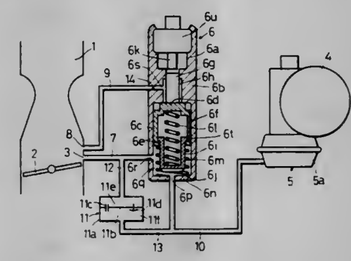
Keiichi Okabayashi, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 28, 1976, Ser. No. 681,040

Claims priority, application Japan, Dec. 26, 1975, 50-176951[U]

Int. Cl.² F02P 5/14

U.S. Cl. 123—117 A **3 Claims**



1. An ignition timing controller for a gasoline engine comprising:

a thermosensor having a first port connected through a first passage to an advancer port opening to a carburetor, said advancer port opening being located at a portion above the upper edge of a throttle valve when in closed position, a second port connected through a second passage to an advance control port opening to said carburetor and located above said advancer port and a third port connected through a third passage to a vacuum advancer of a distributor, said first port being adapted for communication with said third port through said thermosensor over a first engine temperature range no higher than a predetermined value, and with said second port through said thermosensor over a second engine temperature range higher than said predetermined value, said communication of said first and second ports being cut off over said first temperature range and said communication of said first and third ports being cut off over said second temperature range;

a negative pressure delay valve, connected to said first passage and said third passage, for delaying transmission of negative pressure from said carburetor to said vacuum advancer when negative pressure is increased from a predetermined level and for transmitting negative pressure from said carburetor to said vacuum advancer without delay when negative pressure is decreased; and

a throat in said second passage.

4,112,889

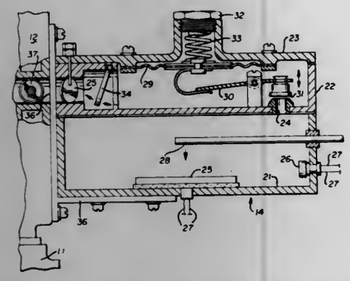
FUEL SYSTEM AND VAPORIZER FOR INTERNAL COMBUSTION ENGINES

Webster B. Harpman, Poland, Ohio, assignor to Energy Research Inc., Murrysville, Pa.

Continuation of Ser. No. 535,110, Dec. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 400,413, Sep. 24, 1973, Pat. No. 3,968,775. This application Nov. 26, 1976, Ser. No. 745,167

Int. Cl.² F02D *19/00*

U.S. Cl. 123—25 B **9 Claims**



1. An improved fuel system for an internal combustion engine having an inlet manifold; a metering valve in communication therewith arranged to control air flowing therethrough and to control and introduce gaseous fuel into said air and direct said air and gaseous fuel to said inlet manifold, a water vaporizer and a supply of water therefor and a liquid fuel vaporizer and a supply of liquid fuel therefor, heating means for said water and fuel vaporizers for generating water vapor and hot gaseous fuel under pressure respectively and means establishing communication between said water vapor and said metering valve and between said liquid fuel vaporizer and said metering valve, said liquid fuel vaporizer including means responsive to temprature to exclusively control the vaporization of said liquid fuel, a pressure regulator device in said communication means between said liquid fuel vaporizer and said metering valve arranged to control the pressure of and to permit said hot gaseous fuel to flow only from said pressure regulator device to said metering valve.

4,112,890

CONTROLLED IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE TO PROVIDE, SELECTIVELY, ONE OR MORE IGNITION PULSES FOR ANY IGNITION EVENT

Hansjorg Manger, Schwieberdingen; Gerhard Sohner, Remshalden, and Gerd Hohne, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 11, 1977, Ser. No. 776,740

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616693

Int. Cl.² F02P *5/04*

U.S. Cl. 123—117 R **17 Claims**

1. Ignition system to provide, selectively, one ignition impulse, or a series of ignition pulses to a spark gap (20) in which the one, or the first one of said pulses occurs at a predetermined time after occurrence of a cyclically recurring event,

particularly to provide said pulses to the spark plug of an internal combustion engine (E) with respect to a predetermined angular position of the crankshaft of the engine and having

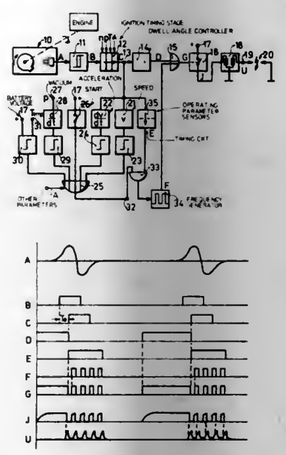
an ignition coil (18), and a spark gap (20) connected to the secondary of the ignition coil;

means (10, 11, 12; 10′) determining the timing of the event;

and a controlled switch (16) in series with a source of current (17) and the primary of the ignition coil (18) to periodically supply current to the coil and generate said ignition pulse by transformer action, and comprising

an ignition pulse control stage (14) connected to and controlling operation of the controlled switch (16) to command closing of the switch at a predetermined time after occurrence of the preceding event, and in advance of the next subsequent event, and to command generation of said one, or first one of said ignition pulses as determined by the timing of the next subsequent event;

and means (34; 100, 101) generating a plurality of ignition pulses connected to said controlled switch (16) and con-



trolling said switch to repetitive operation and cause, after occurrence of said event and at a rate which is rapid with respect to the recurrence rate of said events, to provide a pulse train for generation of a train of sparks at said spark gap, the timing of the first one of said ignition pulses being determined by said ignition pulse control stage;

and means (32; 33, 33′, 33″) selectively controlling application of the plurality of ignition pulses, in excess of said first pulse to said spark gap (20).

4,112,891

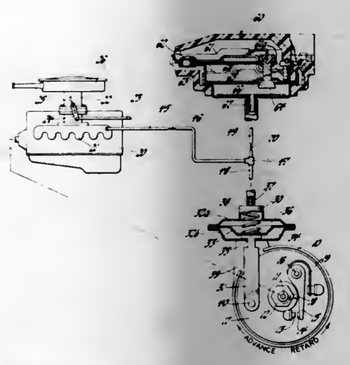
TEMPERATURE COMPENSATED INTERNAL COMBUSTION ENGINE IGNITION SPARK VACUUM ADVANCE SYSTEM

James R. Spaulding, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1976, Ser. No. 734,532

Int. Cl.² F02P *5/12*

U.S. Cl. 123—117 A **4 Claims**



1. A temperature compensated internal combustion engine ignition spark vacuum advance system comprising in combination with an associated internal combustion engine having an

intake air passage: an engine vacuum signal source; an ignition spark initiating mechanism operated by a vacuum responsive device for adjusting ignition spark timing in response to changes of engine vacuum; means for applying said engine vacuum signal to said vacuum responsive device; and means responsive to engine intake air temperature for adjusting the level of said engine vacuum signal as applied to said vacuum responsive device proportionally with changes of engine intake air temperature, said last-named means being arranged to effect said adjustment in a direction toward atmosphere as the temperature of said engine intake air increases and vice versa.

4,112,892

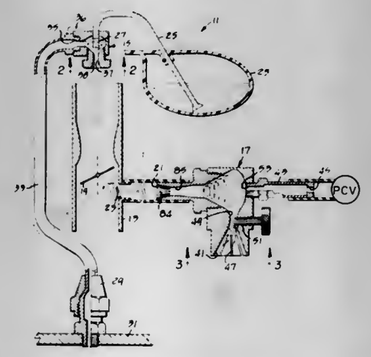
COMBUSTION CONTROL SYSTEM FOR ADDING FLUID ABOVE THE BUTTERFLY VALVE

John E. Lindberg, Berkeley, Calif., assignor to Owen, Wickersham & Erickson, San Francisco, Calif.

Filed May 4, 1977, Ser. No. 793,556

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **13 Claims**



1. A combustion control system for adding a fluid to the air-fuel mixture of the induction system of an internal combustion engine in response to engine need for the added fluid to improve the combustion of the fuel, said system comprising

variable impedance flow control means for producing an impedance to flow through the control means which varies in relationship to the pressure differential across the flow control means and which also varies in relationship to an acceleration of flow through the variable impedance flow control means,

outlet means connecting the outlet of the variable impedance flow control means to the induction system of the engine,

input means for supplying a liquid and engine exhaust gases to the inlet of the variable impedance flow control means, and

wherein the outlet means include an outlet positioned above the butterfly valve of the engine.

4,112,893

AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE HAVING HIGH INPUT IMPEDANCE CIRCUIT

Makoto Anzai, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

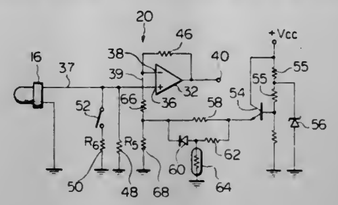
Filed Dec. 13, 1976, Ser. No. 749,909

Claims priority, application Japan, Dec. 25, 1975, 50/174440[U]

Int. Cl.² F02M *7/00*

U.S. Cl. 123—119 EC **5 Claims**

1. In a feedback control system for controlling the air-to-fuel ratio of a combustible mixture fed to an internal combustion engine, the system including an electrically controllable air-fuel proportioning device, an exhaust sensor which is installed in the exhaust line of the engine to develop an output voltage representing the concentration of a definite component of the exhaust gas as an indication of an actual air-to-fuel ratio realized in the engine, and a control circuit which provides a control signal to the air-fuel proportioning device based on th magnitude of a deviation of the output voltage the improvement comprising an input circuit, as a prefatory circuit to the control circuit, including an operational amplifier with a noninverting input terminal thereof connected to the output terminal of the exhaust sensor, said input circuit having an input impedance high enough to match with the internal impedance of the exhaust sensor even when said internal impedance rises with a variation in the exhaust gas temperature, two resistors different in resistance, and a switching means for grounding the input line connecting said noninverting input terminal to the output terminal of the exhaust sensor selectively through at least one of said two resistors depending on the exhaust gas temperature.



4,112,894

APPARATUS FOR RECIRCULATING EXHAUST GASES

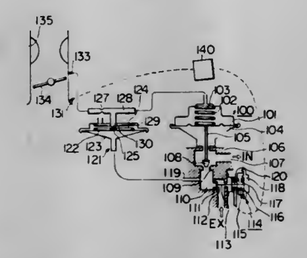
Hidetaka Nohira, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Feb. 2, 1976, Ser. No. 654,176

Claims priority, application Japan, Oct. 3, 1975, 50-118927

Int. Cl.² F02M *7/12*

U.S. Cl. 123—119 A **3 Claims**



1. A recirculating exhaust gas control system for maintaining a substantially constant proportion of inert gas to total gas in the cylinders of an operating engine comprising:

an exhaust system connected with said engine;

a fuel and air supply system for said engine containing a throttle valve therein;

conduit means connecting said exhaust system to said supply system to supply recirculated inert gas to said cylinders;

exhaust gas recirculating valve means disposed in said conduit for regulating the flow of said recirculated inert gas therethrough, said valve means including a first pressure responsive valve device biased toward a conduit blocking position and responsive to the negative pressure existing in said supply system upstream of said throttle for unblocking said first conduit by an amount proportional to said upstream negative pressure, a second pressure responsive valve device biased toward a conduit opening position and responsive to the negative pressure existing in said supply system downstream of said throttle for blocking said first conduit by an amount proportional to said downstream negative pressure, and a constant pressure chamber

disposed in said recirculated inert gas path between said first and second valve devices; and,

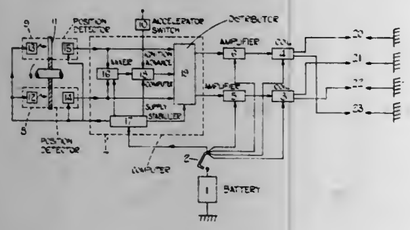
regulator means responsive to the pressure existing in said constant pressure chamber for controlling the operation of said first pressure responsive valve device to maintain a substantially constant pressure in said chamber, said first and second valve devices and regulator means operating to control the flow of said recirculated inert gas through said conduit to maintain a substantially constant proportion of inert gas to total gas contained in said cylinders at any partial load operating region of said engine.

4,112,895

ELECTRONIC DISTRIBUTION AND CONTROL DEVICE FOR THE IGNITION OF INTERNAL COMBUSTION ENGINES, PARTICULARLY FOR MOTOR VEHICLES

Roger Habert, Epinay, sur Seine, France, assignor to Ducellier et Cie, Paris, France

Continuation-in-part of Ser. No. 466,484, May 2, 1974, abandoned. This application Feb. 3, 1976, Ser. No. 654,946
Claims priority, application France, May 10, 1973, 73.16946
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 R **4 Claims**



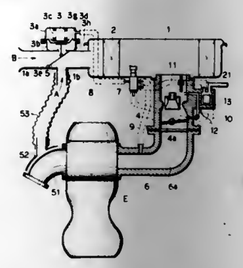
1. An internal combustion engine having an electronic ignition distribution and control system, said system comprising detector means including a part rotatable by the engine and directly detecting fixed limit positions between which ignition must take place for each cylinder of the engine, said detector means generating respectively first and second output signals at said limit positions, a computer including an ignition advance system connected to said detector means to trigger said ignition advance system into operation whenever the first output signal is produced, said ignition advance system including delay determining means sensitive to at least one engine operating parameter to determine delay between triggering of said advance system and production of a spark producing output signal thereby, said advance system also including means for producing a spark producing signal independently of said delay determining means whenever the second output signal occurs before termination of the delay, at least one amplifier connected to said computer for amplifying the spark producing signal, a voltage step-up coil means having a primary connected to said amplifier and a secondary connected to at least one spark plug for producing a spark at said spark plug either after a delay determined by said at least one engine operating parameter following production of the first output signal, or upon production of the second output signal, whichever occurs first.

4,112,896

TEMPERATURE RESPONSIVE DEVICE FOR INTERNAL COMBUSTION ENGINES

Hajime Akado, Anjo; Yoshiro Uchida, Toyota; Akihide Yamaguchi, Kariya; Takao Nonoyama, Toyota; Suminobu Ootsubo, Toyota, and Toshiro Harada, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 27, 1978, Ser. No. 872,776
Claims priority, application Japan, Jan. 27, 1977, 52-8489[U]
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 D **2 Claims**



1. In an internal combustion engine having

an air cleaner connected to an intake manifold for supplying air thereto through a filter element in said air cleaner, said air cleaner having a throat opening to the atmosphere for introducing air from the atmosphere into said air cleaner, and

a carburetor, connected between said air cleaner and said intake manifold, having a float chamber and a slow-port passage,

a temperature responsive system comprising:

a switching valve pivotally mounted in said throat adjacent to an aperture formed in said throat for closing and opening the same;

a negative pressure motor mounted on said throat and having a negative pressure chamber and a movable diaphragm responding the negative pressure applied to said negative pressure chamber, said diaphragm being connected to said switching valve so that said switching valve is actuated to close and open said aperture in response to the movement of said diaphragm;

a conduit connected to said aperture at one end and opening to a portion of an exhaust manifold of said engine so as to introduce warmed air around said exhaust manifold into said air cleaner when said aperture is opened; and

a thermostatic valve mounted in said air cleaner having an inlet connected to said intake manifold and an outlet connected to said negative pressure chamber,

wherein said thermostatic valve comprises:

temperature responding means, exposed to the inside of said air cleaner, having a temperature responding expanding material and a driving lever driven by the expansion of said expanding material, the expansion thereof being responsive to the temperature of the air in said air cleaner;

valve casing means coupled to said temperature responding means and defining therein first and second compartments, said valve casing means having an air vent port for communicating said first compartment with the atmosphere, a first port for communicating said first compartment with said negative pressure chamber of said negative pressure motor, a second port for communicating said first compartment with the intake manifold of said engine, a third port for communicating said second compartment with the float chamber of said carburetor, and a fourth port for communicating said second compartment with the slow-port passage of said carburetor;

a first valve member disposed in said first compartment and operatively coupled to said driving lever of said temperature responding means for closing and opening said air vent port in accordance with the movement of said driving lever; and

a second valve member disposed in said second compartment and operatively driven by said driving lever for closing and opening said third port in accordance with the movement of said driving lever, the communication between said third and fourth ports being established when said second valve member opens said third port.

4,112,897

ROTATIONAL SPEED GOVERNOR FOR AN INJECTION PUMP IN AIR-COMPRESSING INJECTION INTERNAL COMBUSTION ENGINES

Ernst-Wilhelm Hufendiek, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 22, 1976, Ser. No. 743,980
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1975, 2552991
Int. Cl.² F02M *39/00;* F02D *1/02;* F02N *17/00*
U.S. Cl. 123—139 ST **11 Claims**



1. A rotational speed controller for an injection pump with an abutment means for controlling the injection quantity by interacting with a control rack of the injection pump, which abutment means releases the travel of the control rack in the direction toward a starting quantity, which is increased relative to a post warm-up fuel quantity, during the starting operation of an internal combustion engine, characterized in that an engine temperature-dependent control means is provided which cooperates with said abutment means and which is operable to cancel the release of the increased starting quantity above a predetermined temperature.

4,112,898

INTERNAL COMBUSTION ENGINE WITH CHARCOAL CANISTER

Masatami Takimoto, Toyota, and Koichi Mizutani, Seto, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 7, 1977, Ser. No. 785,671
Claims priority, application Japan, Jan. 13, 1977, 52-1940
Int. Cl.² F02M *33/02*
U.S. Cl. 123—136 **1 Claim**

1. An internal combustion engine comprising: an engine body;

a carburetor for forming a combustible air-fuel mixture, said carburetor being provided with a throttle valve for controlling an amount of said mixture:

an intake system located downstream of said throttle valve, for supplying said air-fuel mixture to said engine body;

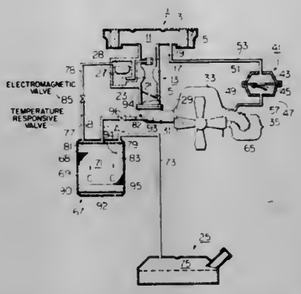
an exhaust system for receiving the resultant exhaust gas from said engine body;

a secondary air introducing system adapted for introducing secondary air into said exhaust system;

an exhaust gas purifying system for oxidizing unburnt toxic components remaining in the exhaust gas together with the secondary air;

a charcoal canister which includes a casing and a charcoal layer arranged in said casing, said casing having on one side thereof a first opening communicating with the atmosphere for introducing purge air into said casing and having on the other side thereof a second opening and a third opening;

a first pipe means which connects the second opening with the engine at a place where the evaporation of fuel takes place for introducing evaporative fuel into the charcoal layer wherein the evaporative fuel is caused to be absorbed by the charcoal layer;



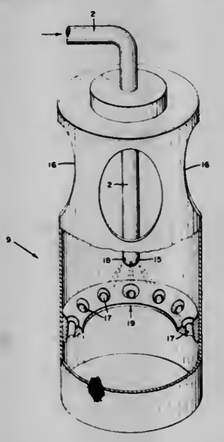
a second pipe means which connects the third opening with the engine intake system said second pipe means having an orifice for producing a controlled amount of said absorbed evaporative fuel into said intake system; and, temperature responsive valve means provided in said second pipe means for preventing the introduction of evaporative fuel into said intake system when the temperatue of said engine is extremely increased.

4,112,899

PRESSURIZING FUEL RAM AIR CHARGER

John B. Kramer, Houston, Tex., assignor to Allied Chemical Corporation, Morristown, N.J.

Continuation of Ser. No. 655,196, Feb. 4, 1976, which is a continuation of Ser. No. 162,885, Jul. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 19,950, Mar. 15, 1970, Pat. No. 3,664,315. This application Jan. 7, 1977, Ser. No. 757,803
Int. Cl.² F02M *39/00;* F02B *3/00*
U.S. Cl. 123—139 AW **5 Claims**



1. A method of introducing gasoline liquid into the air intake system of an internal combustion engine which comprises atomizing at least a portion of said liquid to droplets at a point of constriction in air entrainment injection means so as to create a substantially maximum venturi effect at said point of

constriction, entraining separately introduced air with said atomized liquid droplets at the point of constriction, immediately thereafter subjecting the atomized liquid droplets and said air to mixing at and after the point of constriction by passing the same through mixing ports bypassing said point of constriction, further entraining secondarily supplied air as a result of the mixing, and then moving said atomized liquid droplets and air, homogeneously mixed, for introduction into the internal combustion engine.

4,112,900

FUEL INJECTION SYSTEM

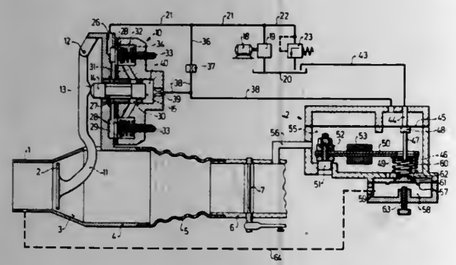
Reinhard Schwartz, Stuttgart; Heinrich Knapp, Leonberg; Klaus Riel, Möglingen, and Klaus-Jürgen Peters, Affalterbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 683,401, May 5, 1976, abandoned. This application Sep. 23, 1977, Ser. No. 836,184

Claims priority, application Fed. Rep. of Germany, May 7, 1975, 2520322

Int. Cl.² F02M *7/18*

U.S. Cl. 123—139 AW **5 Claims**



1. A fuel injection system for externally ignited internal combustion engines comprising, in combination:

(a) a suction tube for air intake to the engine;

(b) an air sensor disposed in said suction tube;

(c) an arbitrarily operable butterfly valve disposed in said suction tube in series with said air sensor;

(d) a fuel supply conduit;

(e) a control pressure conduit;

(f) a fuel metering valve connected to said fuel supply conduit and said control pressure conduit for continuously injecting fuel into said suction tube;

(g) a control plunger, serving as the movable member of said fuel metering valve, said control plunger being acted upon on one end by said air sensor, and on an opposite end by a return force provided by liquid under constant but arbitrarily variable pressure delivered by said control pressure conduit, for metering a fuel quantity that is proportionate to the quantity of air measured by said air sensor; and

(h) at least one pressure control valve in the form of a flat seat valve having a membrane as the movable valve part, said pressure control valve being disposed in said control pressure conduit for varying pressure in said control pressure conduit in dependence on at least one operating parameter of the engine and thereby varying the fuel-air ratio at or near full load operations wherein said pressure control valve includes:

(i) a valve membrane;

(ii) a control membrane;

(iii) two pressure chambers separated from one another by said control membrane;

(iv) a pressure conduit connected to a first one of the pressure chambers and to the suction tube downstream of the butterfly valve;

(v) means for communicating a reference pressure to a second one of the pressure chambers;

(vi) a valve spring disposed in the first one of the pressure chambers, said valve spring acting against the valve membrane; and

(vii) a control spring disposed between the valve membrane and the control membrane.

4,112,901

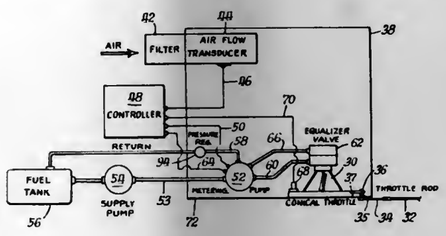
FUEL SYSTEM WITH METERING PUMP FOR INTERNAL COMBUSTION ENGINES

Leonard Lee Chapin, and James Walter Merrick, both of El Paso, Tex., assignors to Autotronic Controls, Corp., El Paso, Tex.

Filed Apr. 1, 1977, Ser. No. 783,610

Int. Cl.² F02M *39/00*

U.S. Cl. 123—139 E **20 Claims**



1. A fuel supply system for supplying volatile fuel at a controlled rate to an air-fuel mixing chamber leading to a subatmospheric intake manifold of an internal combustion engine, said system comprising:

a positive displacement rotary metering pump having an inlet side and a discharge side for pumping fuel from said inlet side to said discharge side,

fuel pump means for supplying volatile fuel from a fuel reservoir to said inlet side at a substantial elevated pressure at which said fuel remains liquid passing through said metering pump,

equalizer valve means including a valve body forming a valve chamber with an outlet opening therefrom, a resilient diaphragm dividing said valve chamber into first and second parts with said outlet opening in said first part and mounted in said valve body for movement by pressure differentials between said first and second parts, a valve closure member for closing said outlet opening supported in said valve chamber by said diaphragm for motion therewith, and means biasing said diaphragm to effect closure of said outlet opening by said valve closure member when the pressure in said first part is less than a small differential greater than the pressure in said second part, said small predetermined differential being insufficient to produce any substantial leakage of liquid through said metering pump,

first fluid conduit means connecting said discharge side of said metering pump to said first part of said valve chamber,

second fluid conduit means connecting said inlet side of said metering pump to said second part of said valve chamber,

third fluid conduit means for connecting said outlet opening from said valve chamber to said air-fuel mixing chamber,

a variable speed electrical pump motor coupled to said metering pump for driving said metering pump,

control means for providing an electrical control signal systematically related to a desired rate of fuel supply,

speed measuring means coupled to said metering pump for producing a feedback signal systematically related to metering pump speed, and

circuit means responsive to said control signal and said feedback signal for providing electrical power to said pump motor to drive said motor at a controlled rate whereat said positive displacement metering pump pumps said volatile fuel at substantially the desired rate from said inlet side to said discharge side, whence said fuel flows at substantially said desired rate through said first conduit means to said first part of said valve chamber wherein it produces pressure relative to that in said second part whereat said valve closure member is positioned relative to said outlet opening for said fuel to flow therethrough at said desired rate to said air-fuel mixing chamber.

4,112,902

HYDRAULIC SPEED CONTROL SYSTEMS FOR INTERNAL COMBUSTION ENGINES

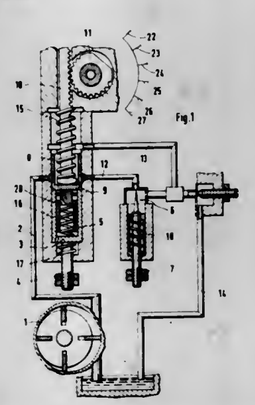
Jose Esteban Torralba, Zaragoza, Spain, assignor to Talleres Diesel, S.A., Zaragoza, Spain

Filed Jun. 7, 1976, Ser. No. 693,495

Claims priority, application Spain, Aug. 9, 1975, 440.157

Int. Cl.² F02M *39/00*; F02D *1/06, 1/04*

U.S. Cl. 123—140 FG **5 Claims**



1. A hydraulic speed control for internal combustion engines, comprising a cylinder, a pump, whose pumping rate is proportional to that of the engine whose speed is being controlled, an inlet from said pump to said cylinder, at least two outlets in said cylinder at different levels, a plunger in said cylinder, a control linkage, a spring urging said control linkage against said plunger, means for controlling the amount of fuel supplied to the engine, said control linkage engaging said means for controlling, an accelerator means for controlling the flow from at least one outlet, said plunger being free to move against the force of said spring under the urging of said fluid, the position assumed by said plunger being determined by the fluid pressure from said pump and the position of said accelerator, a chamfer on said plunger said chamfer forming a channel having a variable passage, said variable passage being effective to stabilize said plunger in the tick-over speed position.

4,112,903

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Noboru Sugiura, Nakamachi, and Seiji Suda, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

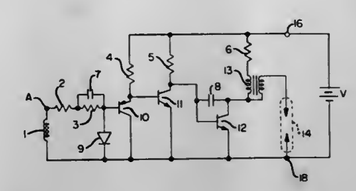
Filed Jul. 6, 1976, Ser. No. 702,896

Claims priority, application Japan, Jul. 4, 1975, 50-81794

Int. Cl.² F02P *3/02*

U.S. Cl. 123—148 E **8 Claims**

1. An ignition system for an internal combustion engine comprising an ignition coil having a primary winding, switching means connected to said primary winding for controlling the current flow therethrough, generating means for producing alternating signals in timed relationship with engine rotation, and control means responsive to said alternating signals for controlling the operation of said switching means, said control means including a first transistor connected to said generating means and operated in accordance with the alternating signals therefrom, and a second transistor having substantially identical temperature characteristics as said first transistor and being of opposite conductivity type connected between said first transistor and said switching means such that the conduction of said first transistor biases said second transistor into non-conduction, and such that the temperature effects of the base to emitter paths of these transistors compensate each other.



4,112,904

ELECTROMAGNETIC TYPE CONTACTLESS IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

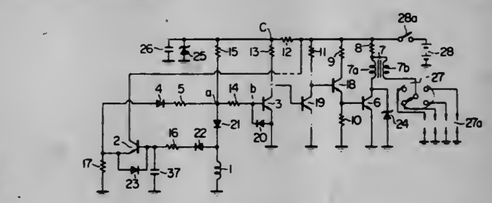
Eiichi Uno, Toyota, and Takasi Hachiga, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 6, 1976, Ser. No. 747,870

Claims priority, application Japan, Dec. 8, 1975, 50-146616

Int. Cl.² F02P *3/04*

U.S. Cl. 123—148 E **1 Claim**



1. An electromagnetic type contact ignition apparatus for an internal combustion engine of the type including a battery, and an ignition coil having a primary coil and a secondary coil connected with spark plugs;

said ignition apparatus comprising:

timing means for generating an output signal in timed relationship with the engine, said timing means including a pickup coil whose one end is grounded and a diode with its cathode connected with the other end of said pickup coil;

an input transistor having a base connected with the anode of the diode of said timing means to be conductive and non-conductive in response to the output signal of said timing means;

switching means connected in series with said battery and the primary coil of said ignition coil said switching means responsive to said input transistor for charging and discharging said ignition coil with an electric energy in response to the output of said timing means; and

operating level control means connected with said input transistor in parallel with said timing means for applying to said input transistor a DC bias voltage which increases as the rotational speed of said engine increases, last said means including a control transistor having an emitter-collector path connected with said battery, a capacitor charging circuit, a capacitor discharging circuit and an operating level supplying diode with its cathode connected through a resistor with said input transistor, said capacitor charging circuit including a diode with its anode connected with said other end of said pickup coil, a resistor and a capacitor with its one end being grounded, said capacitor discharging circuit including said capacitor, the base-emitter path of said control transistor and a resistor with its one end being grounded with its other end being

connected with the anode of said operating level supplying diode.

4,112,905

SPARK PLUGS FOR INTERNAL COMBUSTION ENGINES

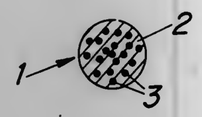
Dieter Stöckel, and Friedrich Schneider, both of Pforzheim, Germany, assignors to G. Rau, Pforzheim, Germany

Continuation of Ser. No. 530,500, Dec. 6, 1974, abandoned. This application Aug. 4, 1976, Ser. No. 711,683

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1973, 2361274

Int. Cl.² H01T *13/20*

U.S. Cl. 123—169 EL **17 Claims**



1. In an internal combustion engine spark plug of the type including a center electrode, the improvement wherein said center electrode comprises:

a length of fibre reinforced material made up of at least two metals, a first of said metals forming a matrix and a second of said metals comprising a plurality of wires or fibres embedded in and solidly metallically bonded to said matrix, at least said fibres being made up of initially solid wires, at least one of said metals of said matrix and said fibres possessing the properties of high electrical and thermal conductivity, said fibre reinforced material being produced by the joint plastic shaping of wire-shaped initial matrix and fibre metals, with at least said initial fibre metal being in the form of said solid wires.

4,112,906

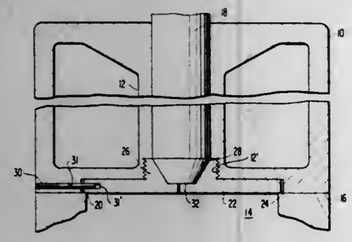
FIRING DECK INSERT FOR INTERNAL COMBUSTION ENGINES

Boyd La Russell Spencer, Gladewater, Tex., assignor to Spencer Heads, Inc., Gladewater, Tex.

Filed Dec. 20, 1976, Ser. No. 752,271

Int. Cl.² F02F *1/24*

U.S. Cl. 123—191 A **11 Claims**



1. A replaceable firing deck insert for an internal combustion engine having a coolant jacketed engine body including at least one combustion chamber and having a firing deck surface with a critical area surrounding an ignition device and subject to thermal stresses, the ignition device being sealed from the coolant jacket by a generally tubular shaped wall structure and the firing deck surface having a circular counterbore recess in the critical area thereof and disposed axially of the ignition device, and having an axially disposed internally threaded bore extending into the tubular wall structure, said insert comprising a circular body to be nested in and to conform to the counterbore recess with peripheral clearance and to cover at least a portion of the critical area of the firing deck surface, the diameter of said insert being slightly smaller than that of the counterbore recess with the peripheral edge of said insert spaced from the peripheral wall of the counterbore recess and providing the peripheral clearance as an expansion area for said insert to accommodate absorption by said insert of heat and strain independently of the engine body, and a centrally disposed externally threaded boss of reduced diameter extending axially from the inner surface of said insert body and threadable into the internally threaded bore in the engine body for securing the insert and body together, the thickness of said insert being substantially equal to the depth of the counterbore with the exposed surface of said insert generally contiguous with and conforming to the engine body surface surrounding the counterbore, said boss having an axially disposed opening therethrough and including a portion defining a seat for the ignition device and an opening for exposing the ignition device to the combustion chamber, whereby said insert body is centrally fixed by said boss relative to the point of combustion in the chamber but is free to expand radially from said boss as it absorbs heat of combustion without stress or strain.

4,112,907

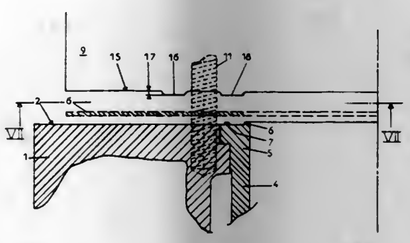
METHOD AND DEVICE FOR ENSURING THE TIGHTNESS OF A CYLINDERHEAD ON THE CYLINDER BLOCK OF A THERMAL ENGINE, IN PARTICULAR, A DIESEL ENGINE

Jean Nikly, Caluire, France, assignor to Automobiles M. Berliet, Lyons, France

Filed Jul. 2, 1975, Ser. No. 592,783

Int. Cl.² F02F *1/10*

U.S. Cl. 123—193 CH **1 Claim**



1. A device for securing together a cylinder block and a cylinderhead of an engine with an interposed gasket which bears on the raised top of at least one liner disposed in said cylinder block, comprising:

a plurality of screws disposed around said liner and oriented substantially parallel to the longitudinal axis of said liner;

the stem of each said screw passing through said cylinder head and gasket into said cylinder block intermediate to support portions of substantially equal thickness, said support portions being disposed between the top major surface of said cylinder block and the bottom major surface of said cylinderhead;

one of said support portions being defined by the raised portion at the top of said liner;

each said screw being mounted intermediate said support portions in the manner of a compensator to provide for balancing the stresses at the time of tightening said cylinderhead;

at least a first raised support portion, on one side of each said screw, located between the opposite planes of said cylinderhead and said cylinder block, the thickness of said first support portion being substantially equal to the thickness of a second raised support portion located on the other side of said screw and comprising the projecting portion of said top of the corresponding cylindrical liner;

a cylinderhead gasket the thickness of which is substantially

constant, and a first support portion defined by a raised strip projecting from the underface of the cylinderhead; and

the underface of the cylinderhead including another raised portion having a substantially circular shape, which projects outside the plane of assembly of the cylinderhead above the flange of the liner.

4,112,908

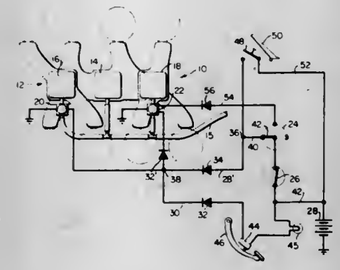
FUEL SYSTEM MODIFICATION

Robert Kuitunen, 8145 Highway 85, Riverdale, Ga. 30274

Filed Jun. 28, 1976, Ser. No. 700,230

Int. Cl.² F02D *13/06*

U.S. Cl. 123—198 F **1 Claim**



1. An economizing fuel supply system for multi-cylinder internal combustion engines having first, second and third groups of cylinders and further having conventional accelerator pedal and brake pedal linkages, comprising:

(a) a first carburetor on said engine to continuously supply fuel to said first group of cylinders;

(b) a second carburetor on said engine to supply fuel to said second group of cylinders;

(c) a third carburetor on said engine to supply fuel to said third group of cylinders;

(d) an electrical switching circuit including an accelerator pedal switch operable upon a predetermined movement of said accelerator pedal and a brake pedal switch operable upon a predetermined movement of said brake pedal, said accelerator pedal switch and said brake pedal switch independently operable to actuate said second and third carburetors simultaneously; and

(e) a manually operable switch in said circuit for selective actuation among said first carburetor, a combination of said first, second and third carburetors and a combination of said first and second carburetors.

4,112,909

COMPOUND BOW

Joseph M. Caldwell, Tujunga, Calif., assignor to Jennings Compound Bow, Inc., Valencia, Calif.

Continuation of Ser. No. 582,717, Jun. 2, 1975, abandoned. This application May 2, 1977, Ser. No. 793,089

Int. Cl.² F41B *5/00*

U.S. Cl. 124—23 R **26 Claims**

1. In a compound bow having a center handle portion, upper and lower limbs having inner ends connected to the center portion and free outer ends, and upper and lower draw pulleys mounted respectively on the free outer ends of the upper and lower limbs, the improvement comprising:

each of said draw pulleys having a peripheral portion, a central portion extending diametrically through the center of the pulley, first and second spaced grooves in said peripheral portion, and a passage leading through said central portion and connecting said first and second grooves;

each pulley having an inner surface portion and an outer surface portion on said peripheral portion with the inner surface portion facing said bow with the bow in its rest position and the outer surface portion directed away from said bow with the bow in its rest position;

a pivotal mounting for each of said pulleys with the pulleys being eccentrically positioned for rotational movement with respect to said mountings during draw of the bow;

each of said mountings being positioned relative to one of the pulleys on a radial line passing through the approximate geometric center of the pulley with said mounting being disposed off-center on said radial line so that said line is divided into a shorter line segment and a longer line segment by the position of the mounting on said line;

a first draw cable having one end secured to the lower limb and a free end passing into contact with the inner surface portion of the first groove on the upper draw pulley with the bow in its rest position, then passing through the passage in the upper pulley into the second groove, and then passing over the inner surface portion of the second groove and into contact with the outer surface portion of the second groove;

a second draw cable having one end secured to the upper



limb and a free end passing into contact with the inner surface portion of the first groove on the lower draw pulley with the bow in its rest position, then passing through the passage in the lower pulley into the second groove and then passing over the inner surface portion of the second groove and into contact with the outer surface portion of the second groove, and

a bowstring interconnecting the free ends of the first and second draw cables,

whereby with the bow in its rest position each of the draw pulleys are positioned with said longer line segment directed toward the inner end of the bow limb supporting the pulley and said shorter line segment directed toward the outer end of the bow limb supporting the pulley and with each of the pulleys undergoing rotation during draw of the bow to a position with said longer line segment directed toward the outer end of the bow limb supporting the pulley and said shorter line segment directed toward the inner end of the bow limb supporting the pulley with each of the bow limbs being effectively lengthened during draw of the bow.

4,112,910

PRE-LUBE DEVICE

Donald W. Percy, Londonberry, N.H., assignor to Prelube Corporation, Derry, N.H.

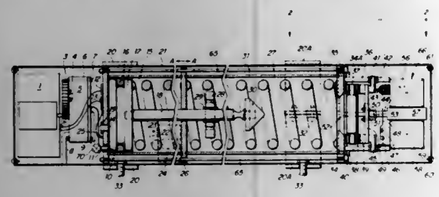
Filed Apr. 23, 1976, Ser. No. 679,828

Int. Cl.² F01M *1/00*

U.S. Cl. 123—196 S **6 Claims**

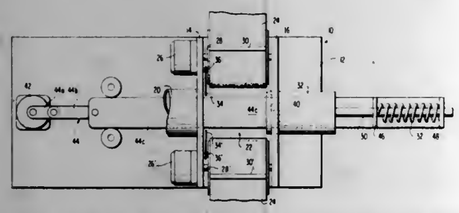
1. A device for lubricating an internal combustion engine upon ignition and prior to the start thereof, comprising:

chamber means for storing a quantity of oil of sufficient amount to prelubricate said engine, said chamber means being adapted for fluid communication with said engine,
pump means in fluid communication with an oil pan of the engine and with said chamber means for the supplying oil under pressure to said chamber,
rigid moveable piston means disposed within said chamber for evacuating oil from the chamber to said engine, said piston means having an elongated rod associated therewith; said piston rod having a head mounted to an end surface thereof,
power chamber means disposed adjacent to said oil chamber means, said power chamber means including power spring means, at least one surface of which abuts said piston means for moving the piston means under pressure within



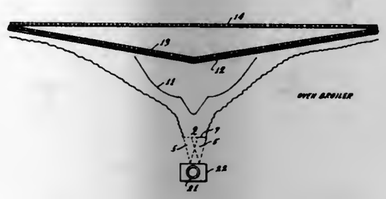
said oil chamber means in order to evacuate oil therefrom, and
locking means for releaseably receiving said piston rod head, comprising moveable roller means adapted to receive and secure said head said roller means comprising multiple rollers adapted to move radially outwardly from the diameter of said piston rod and adapted to secure said head around the circumference thereof, in order to secure said piston means associated therewith against movement such that when said ignition is actuated it causes movement of said roller means thereby releasing said head and said power spring means, whereby said piston means is moved under pressure in such a manner as to evacuate the oil from said chamber into and throughout said engine in order to lubricate the engine prior to start.

4,112,911
BALL COLLECTOR AND PROJECTOR APPARATUS
Paul J. Petrick, Sr., Joppa, Md., assignor to Shooting Star Tennis, Arlington, Va.
Filed Mar. 29, 1977, Ser. No. 782,359
Int. Cl.[2] F41F *1/04*
U.S. Cl. 124—56 **12 Claims**



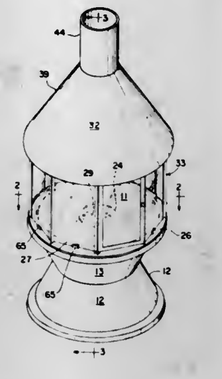
1. An apparatus for collecting and transporting generally spherical objects such as conventional tennis balls comprising a frame defining a chamber having an upper inlet opening adapted to receive a said spherical object and a delivery zone adjacent thereto, and an upwardly-extending member defining an object exit port adjacent said delivery zone and of sufficient size to permit a said spherical object to pass therethrough; said delivery zone being dimensioned so as to allow only one spherical object at a time to enter therein; an object moving and support means having ridges outwardly extending therefrom for directing said spherical objects to said inlet opening to pass by gravity to said delivery zone of said chamber; an object transport means in communication with said object exit port; resilient restraining means adjacent to said object exit port sufficient to restrict said spherical object from passing from said delivery zone through said object exit port; contact means in said delivery zone and in normal spaced alignment with said object exit port adapted to be activated to contact and force a said spherical object held by said resilient restraining means through said resilient restraining means and said object exit port into said transport means; and resilient drive means for activating said contact means to move said contact means between a normally open position in which a said spherical object can pass to the chamber and a contact position in which said contact means forces said object through said object exit port.

4,112,912
GAS BROILER
Earle W. Ballentine, 3641 Via Palomina St., Palos Verdes Estates, Calif. 90274
Continuation-in-part of Ser. No. 696,791, Jun. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 610,563, Sep. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 582,737, Jun. 2, 1975, abandoned. This application Aug. 22, 1977, Ser. No. 826,463
Int. Cl.[2] A47J *37/00*
U.S. Cl. 126—41 R **14 Claims**



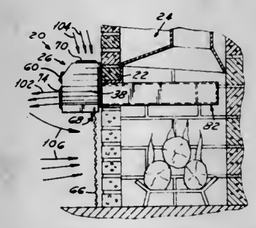
1. An oven-broiler for gas ranges comprising:
burner means for producing a combustible stoichiometric air-gas mixture, the burner means having chamber means with a planar top surface and an inlet for connection to a source of gaseous fuel, air for combustion flowing across the top surfaces;
aperture means positioned in the planar top surface of the chamber means for discharging free turbulent jets entraining a quantity of combustion air required for stoichiometric combustion of the gaseous fuel, said aperture means being arranged in a specific geometric array wherein the lineal distances between the apertures are identical and are approximately equal to the product of, (a) the stoichiometric air-gas ratio, (b) the aperture diameter, (c) a constant of proportionality which has a value of 2.42 and (d) the ratio of the Rankine temperatures of the gaseous fuel and the combustion air, said turbulent jets coalescing in the stoichiometric demarcation plane which is parallel to the planar top surface of the chamber means;
a first radiator means centered over the burner means and heated by the combustion products produced by the burner means;
a second radiator means heated by the cooled combustion products; and
broiler pan means positioned below the burner means for supporting food to be broiled.

4,112,913
FREE STANDING HEATING UNIT
Ronald J. Shimek, Rte. 3, Lakeview Dr., Prior Lake, Minn. 55372, and Daniel C. Shimek, 2090 Fairmount, St. Paul, Minn. 55105
Filed Mar. 15, 1977, Ser. No. 777,688
Int. Cl.[2] F24B *1/18*
U.S. Cl. 126—120 **16 Claims**



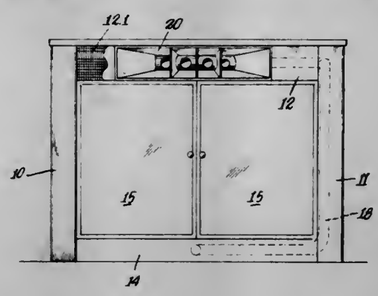
1. A free standing heating unit comprising:
base support means having a draft inlet therein,
a firebox chamber mounted on said base support means and having;
a substantially annular ring shaped floor means mounted on said base support means forming the floor of said firebox chamber,
an apertured grate mounted on said ring shaped floor means providing a central forge draft intake therethrough,
an outer vertical ring shaped deflector plate mounted on said ring shaped floor means,
a plurality of vertical columns mounted at the outer circumference of said floor means,
dome means mounted on said vertical columns forming the top and the outlet of said firebox chamber,
radiant panels mounted between adjacent vertical columns forming the sides of said firebox chamber, and
means supporting said radiant panels and for providing a horizontal space between the bottom of said radiant panels and said annular ring shaped floor means, whereby there is provided a horizontal edge draft intake through said space which confines the fire and smoke to the center of said firebox chamber.

4,112,914
COMBINED FIREPLACE HOOD AND HEATING UNIT
Rex M. Brown, 435 E., 1st N., Smithfield, Utah 84335
Continuation-in-part of Ser. No. 538,102, Jan. 2, 1975, abandoned. This application Aug. 20, 1975, Ser. No. 606,063
Int. Cl.[2] F24B *7/04*
U.S. Cl. 126—121 **32 Claims**



16. A combined fireplace hood and heating unit adapted to be mounted as a unit to a pre-existing fireplace having a fireplace opening and a fireplace hearth, said unit comprising a hood having the form of an elongated, enclosed housing, means providing intake and exhaut vents in said housing, heat exchanging means connecting said intake and exhaust vents, a blower carried within said hood to forcibly move air through said heat exchanging means, and means supporting said unit in the upper portion of said fireplace opening beneath the fireplace lintel such that said hood is carried externally of said fireplace and said heat exchanging means extend horizontally over the fireplace hearth, the rearward end of said heat exchanging means being spaced from the back wall of the fireplace.

4,112,915
FIREPLACE ENCLOSURE WITH HEAT EXCHANGER
John W. Slavik, 5275 Mahoning NW., Warren, Ohio 44485
Filed Apr. 11, 1977, Ser. No. 786,409
Int. Cl.[2] F24B *7/00*
U.S. Cl. 126—121 **18 Claims**



1. A unitary structure for use with a fireplace, comprising:
a flat metal frame that has an outline greater than the opening of a fireplace and adapted to be positioned flatwise of and in abutment with surfaces bordering the fireplace opening, said frame defining a fire view opening therethrough,
glass door means for spanning and closing said frame opening and preventing any substantial amount of heated air and products of combustion from the fire in said fireplace to flow through said frame opening and into the room in which said fireplace is located, said door means being movably mounted on said frame for movement to uncover said frame opening and thereby provide access to the fire in said fireplace,
an air heating device unitarily connected to said frame for bodily movement therewith, including heat exchange conduit means extending rearwardly from the upper portion of said frame and substantially concealed therebehind, air inlet means connected to said conduit means and extending forwardly through said frame and adapted to receive cool air from said room, and air outlet means connected to said conduit means and extending forwardly through said frame for expelling heated air into said room,
said air heating device being disposed in operative position within said fireplace in unobstructing relation to the area rearwardly of said glass door means to provide full view and enjoyment of the fire with said conduit means above the fire when said frame is positioned flatwise of and in abutment with said surfaces bordering said fireplace opening.

4,112,916

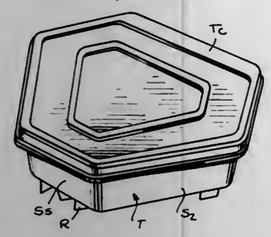
HOT AIR OVEN FOR FOOD-LOADED CARTRIDGES

Raul Guibert, 8343 W. 4th St., Los Angeles, Calif. 90048

Continuation-in-part of Ser. No. 713,977, Apr. 12, 1976. This application Mar. 11, 1977, Ser. No. 776,772

Int. Cl.[2] A47G *23/04*

U.S. Cl. 126—261 **15 Claims**



1. A hot-air oven for heating food comprising:

A. a turntable having a slightly raised annular shelf for supporting a load of food in a toroidal configuration, the space between said shelf and said turntable defining a restricted flow passage whose inlet is at the inner periphery of said shelf and whose outlet is at the outer periphery thereof, said load having a hollow central core whose boundary is defined by the inner surface of the load, said core communicating with the inlet of the restricted flow passage;

B. a heater assembly disposed in the region above the upper end of said load to heat the air in this region; and

C. flow directing means including a driven propeller disposed in said core to draw heated air from said region and to propel said heated air downwardly in a flow path passing through said central core into the inlet of said restricted flow passage, and from the outlet of said passage upwardly to create an air curtain surrounding the outer surface of said load, the heated air from the air curtain being returned to said region for recycling through said flow path, thereby enveloping said load in a recirculating toroidal flow pattern.

4,112,917

SOLAR-RAY HEATING APPARATUS

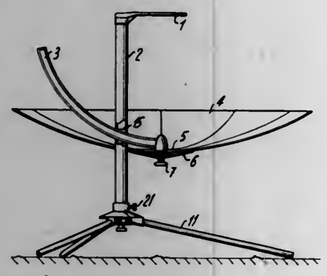
Roger Lang, 16, chemin de Roilbot, Chambesy, Geneva, Switzerland (CH-1292)

Filed Jan. 25, 1977, Ser. No. 762,276

Claims priority, application Switzerland, Jan. 29, 1976, 1105/76

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **8 Claims**



1. A solar-ray heating apparatus comprising a support, said support including a vertically extending post, means fixed on the upper part of the post and carrying an object to be heated, a concave reflector for converging the sun's rays to a focal point, and means mounted on said post and connected to the reflector for movement of the reflector relative to the post to enable orientation of the reflector relative to the sun, said connecting means allowing movement of the reflector only between positions in which said focal point remains substantially coincident with a location on said means at the upper part of the post for carrying an object to be heated.

4,112,918

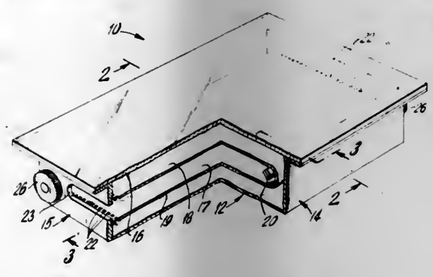
SOLAR ENERGY COLLECTOR

Mark Palkes, East Hampton, Conn., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Mar. 2, 1977, Ser. No. 773,706

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **6 Claims**



1. A solar heat collector, comprising:

a generally rectangular frame having a base and end walls and side walls extending upwardly therefrom;

a generally rectangular cover plate transparent to solar radiation disposed on top of said frame defining a chamber between the base and the cover plate;

a solar absorbing surface disposed within said chamber in heat transfer relationship with a fluid in said chamber;

an inlet and an outlet in the end walls of said frame communicating with said chamber;

a movable solar reflecting surface located within said chamber, said solar reflecting surface being a flexible stratum capable of being rolled and having geared teeth engaging openings in the marginal edges thereof;

a roll located in said chamber to which said stratum is operatively connected, whereby said stratum is rolled around said roll when said surface is positioned to expose said solar absorbing surface;

means for positioning said movable reflective surface so as to at least partially cover said solar absorbing surface when the temperature within the collector exceeds a predetermined high temperature whereby incident solar energy is at least partially reflected thereby; and

means for positioning said movable reflective surface so as to at least partially expose said solar absorbing surface when the temperature within the collector falls below a predetermined minimum temperature whereby incident solar energy is at least partially absorbed thereby.

4,112,919

WINDOW SOLAR HEATING UNIT

Edwin J. Davis, 2329 W. 2nd, Davenport, Iowa 52802

Filed Jun. 13, 1977, Ser. No. 805,915

Int. Cl.[2] F24J *3/02*

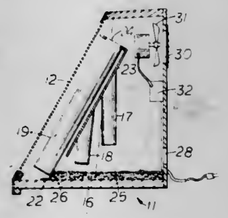
U.S. Cl. 126—270 **1 Claim**

1. A solar heating unit comprising:

a chamber having a mounting side to be attached to a building, an opposite transparent side to be exposed to the sun, and a bottom with an outer edge that is bowed outwardly; said mounting side having upper and lower openings through upper and lower portions respectively of the mounting side to permit flow of air between said chamber and the building to which said solar heating unit is attached, said transparent side facing slantingly upwardly for exposure to the sun,

a baffle plate having a slanting portion substantially parallel with said transparent side and an upper portion laterally across said chamber in proximity to said upper opening, said slanting portion to said baffle plate and said transparent side being spaced apart to define a heating space therebetween and each being bowed and gradually flared outwardly in a downward direction, a lower edge of said slanting portion of said baffle being above said bottom to provide a passageway between the bottom of said heating space and said lower opening,

a plurality of absorptive tubes, said upper portion of said baffle plate having an opening for each of said absorptive tubes, said absorptive tubes having respective upper ends



positioned within respective ones of said openings through said baffle plate, said absorptive tubes extending from said respective openings downwardly and outwardly within said heating space and having respective open lower ends approximate said passageway that communicates with said lower opening, different ones of said openings through said upper portion of said baffle plate being at different distances from a lateral edge of said upper portion of said baffle plate to provide different slants to said respective absorptive tubes and thereby to position walls of different ones of said absorptive tubes nearly perpendicular to the direction of the sun at different times of the day, and said upper ends of said absorptive tubes communicating through partitioned space above said upper portion of said baffle to said upper opening through said mounting side.

4,112,920

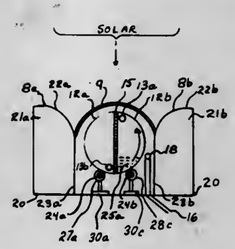
SOLAR LIQUID/AIR HEATER

Edwin K. Hillman, 907 W. Desert Cove, Phoenix, Ariz. 85029

Filed Aug. 16, 1976, Ser. No. 714,917

Int. Cl.[2] F24J *3/02*; F24H *7/00*

U.S. Cl. 126—271 **12 Claims**



1. Apparatus for utilizing solar energy to heat a fluid, said apparatus comprising in combination:

a. a rotatable tank for housing the fluid to be heated, said tank including first and second compartments defined by a tank divider element for alternately cyclically absorbing heat energy from the sun and transferring the absorbed energy to the fluid;

b. means for cyclically rotating said tank to sequentially repetitively subject said first and second compartments to radiant energy from the sun and sequentially repetitively heat said first and second compartments;

c. means for periodically introducing and withdrawing fluid from a heated one of said first and second compartments to effect a heat transfer from the heated one of said first and second compartments to the fluid;

d. means for directing radiant energy from the sun to said tank; and

e. means for reducing heat loss from said tank through convection;

whereby, a heated one of said first and second compartments transfers heat to a fluid temporarily introduced thereinto while the remaining one of said first and second compartments absorbs radiant heat from the sun preparatory to temporary introduction thereinto of fluid to be heated.

4,112,921

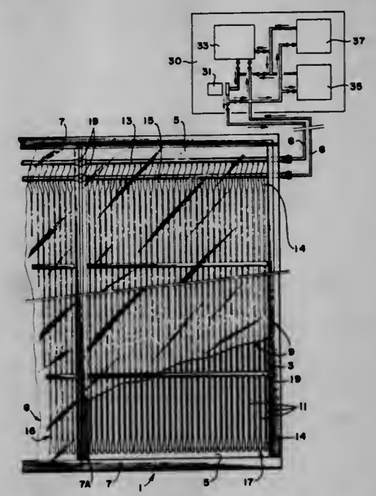
METHOD AND SYSTEM FOR UTILIZING A FLEXIBLE TUBING SOLAR COLLECTOR

Calvin Dodd MacCracken, Englewood, N.J., assignor to Calmac Manufacturing Corporation, Englewood, N.J.

Continuation-in-part of Ser. No. 790,484, Apr. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 692,887, Jun. 4, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 846,112

Int. Cl.[2] F24D *3/02*

U.S. Cl. 126—271 **29 Claims**



1. The method of transferring heat from the radiant energy of the sun to a recirculating liquid system comprising the steps of:

a. laying lightweight insulating material on a surface receiving heat from the sun,

b. covering the exposed surface of said insulating material with a coating of mastic adhesive,

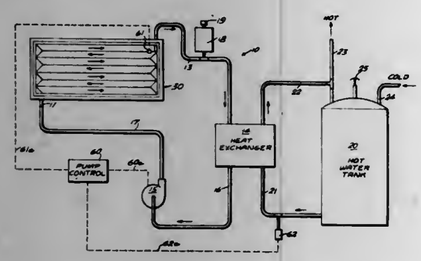
c. laying in the mastic coating a mat consisting of multiple lengths of closely-spaced, parallel black flexible synthetic tubing members running lengthwise held in a grid pattern by securing means so that the mat length is many times greater than its width,

d. connecting adjacent pairs of first ends of said tubing members to each other at one end of said mat by means of U-shaped conduit pieces,

c. providing supply and return headers extending across the other end of said mat and connecting said supply and return headers alternately to the second ends of said tubing members with the direction of flow of the circulating liquid being opposite in neighboring tubing members in the mat,

f. forming a raised perimeter of insulating material enclosing said mat on all four sides,
g. attaching a cover sheet of translucent solar energy transmitting material to said raised perimeter for creating an enclosed air space above said mat,
h. covering the exposed surfaces of the perimeter insulating material with watertight adhesive,
i. providing pipes leading to and from a recirculating pumped heat utilizing system and
j. connecting the supply and return headers to the supply and return pipes.

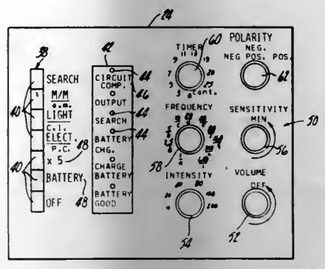
4,112,922
SOLAR ENERGY COLLECTOR
Leon S. Skinner, and Norman C. Taylor, both of Miami, Fla., assignors to All Sunpower, Inc., Miami, Fla.
Continuation-in-part of Ser. No. 669,487, Mar. 23, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 838,975
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **9 Claims**



1. In a solar energy collector, a flat coil tubular array for circulating a heat transfer fluid through a single continuous serpentine conduit comprising a plurality of rigid straight tube sections extending substantially the length of the array and arranged in side-by-side parallel relation defining the width of the array, each tube section having a central conduit and longitudinal flanges along opposite sides of the conduit, substantially flat top and bottom walls defining the cross-sectional shape of the conduit as a flattened ellipse having the width substantially greater than the thickness, said longitudinal flanges of adjacent tube sections being positioned in abutment and welded together into a rigid structure with the tube sections disposed in coplanar relation, a plurality of headers interconnecting the ends of pairs of adjacent tube sections in staggered relation and having conduit sections communicating with the conduits of said pairs of adjacent tube sections for 180° flow reversal of said fluid to form said continuous serpentine conduit, each header having a pair of conduit end edges cut to abut conduit end edges of said pair of interconnected adjacent tube sections and being joined together by a welded waterproof seam extending completely around each conduit, and end portions of said longitudinal flanges being cut away for accessibility for welding and visibility for inspecting each of said welded seams.

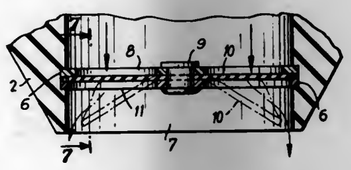
4,112,923
ANTONOMIC TRANSCUTANEOUS AFFECT DEVICE
Jerry J. Tomecek, 10730 Kennicott Trail, Brighton, Mich. 48116
Filed Aug. 24, 1976, Ser. No. 717,254
Int. Cl.[2] A61N *1/00*
U.S. Cl. 128—1.3 **12 Claims**

1. A device for detecting and treating points of impedance imbalance in a warm blooded animal to effect an autonomic transcutaneous affect to the tissues of the body, comprising:
(a) a housing,
(b) a battery disposed in the housing,
(c) a plural polarity power supply electrically connected to the battery,
(d) a plurality of logic circuits electrically connected to the power supply and controlling plural forms of energy outputs, each of the logic circuits defining means for varying the output of the power supply into electrical, magnetic or light energy, each logic circuit having an output associated therewith, and



(e) means associated with each of the associated logic circuits for applying the output of the logic circuits to the tissue area to have the affect applied thereto.

4,112,924
BLOOD COLLECTION VALVE
Louis Thomas Ferrara, 2988- Ave. T, and Janet Roccisano, 2169- E. 36th St., both of Brooklyn, N.Y. 11229
Filed Apr. 7, 1977, Ser. No. 785,656
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—2 F **4 Claims**

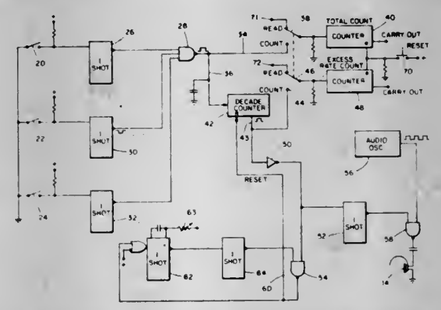


1. A non-return, or one way blood collection valve assembly essentially comprising in combination: three thin walled circular disk-like elements, two of which are substantially rigid, and having nearly the same diameter act thereby as supportive structures for the third element, which being of a diameter substantially intermediate of the other two elements and also thinner, is sandwiched inbetween said rigid elements, being affixed thereto by suitable means such as a rivet at the center of the entire assembly and being able to oscillate such as in an open and closed position intermittently said thinner element or membrane acts by flexion to allow blood to pass or enter in one direction whereby said valve assembly is held in place by the larger of the ridged elements at its circumferential edge within the confines of a hollow stopper-like element by a ridge that circumscribes the inner wall of said stopper; and said stopper being of a compliant nature such as rubber so as to allow intermittent penetration of a cannula, is used to intermittenly seal the opened end of an elongated tubular element which has been previously evacuated substantially of air and serves thereby to recieve and store blood as it enters via said cannula and pass the valve.

4,112,925
BLOOD SAMPLE CONTAINER HAVING AN ANTICOAGULANT COATING OF POLYVINYL PYRROLIDONE AND A SALT OF ETHYLENE DIAMINE TETRACETATE
Kevin J. Sullivan, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 679,166, Apr. 22, 1976, Pat. No. 4,069,185. This application Jun. 10, 1977, Ser. No. 805,525
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—2 F **1 Claim**

1. A blood sample container comprising
a capillary tube, and
an anticoagulant coating applied to the interior surface of said capillary tube consisting essentially of from about 10 percent to about 95 percent by weight of a salt of ethylene diamine tetracetate, and from about 5 percent to about 90 percent by weight of polyvinyl pyrrolidone.

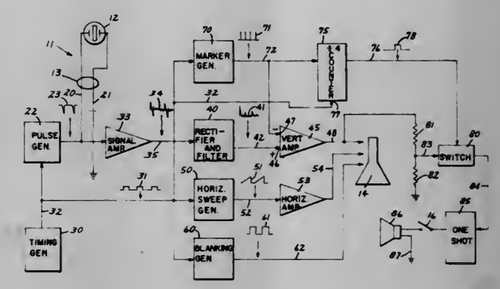
4,112,926
METHOD AND APPARATUS FOR MEASURING AND TREATING HYPERACTIVITY IN HUMAN BEINGS
Jerome L. Schulman, Chicago, and Jay Kaplan, Buffalo Grove, both of Ill., assignors to The Children's Memorial Hospital, Chicago, Ill.
Filed Dec. 8, 1976, Ser. No. 748,518
Int. Cl.[2] A61B *5/10*
U.S. Cl. 128—2 S **14 Claims**



1. A method of measuring hyperactivity in a human being comprising the steps of:
(a) detecting physical movement of said human;
(b) incrementing a first counting means each time physical movement is detected;
(c) repetitively generating a timing interval;
(d) determining when the number of physical movements during said timing interval exceed a selected maximum thereby indicating hyperactivity;
(e) incrementing a second counting means and initiating a new timing interval each time the selected maximum is exceeded;
(f) periodically reading out the values stored in the first and second counting means,
whereby the degree of hyperactive behavior may be determined.

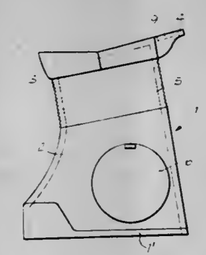
4,112,927
ULTRASONIC DETECTOR WITH AUDIBLE INDICATION SIGNAL
David L. Carlson, Ames, Iowa, assignor to Renco Corporation, Minneapolis, Minn.
Continuation of Ser. No. 637,825, Dec. 4, 1975, abandoned. This application Apr. 6, 1977, Ser. No. 785,174
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—2 V **11 Claims**

1. Ultrasonic animal pregnancy detection apparatus with automatic audible pregnancy indication, comprising:
(a) means for transmitting ultrasonic energy pulses and for receiving return pulses including a probe for placement on the body of the animal to be checked;
(b) signal amplifier means for amplifying said pulses received by said transmitting and receiving means, said signal amplifier means having an amplification factor independent of the pulse propagation conditions within the animal's body;
(c) means for generating a gating signal commencing after a predetermined time delay following the transmission of an ultrasonic energy pulse and continuing for a predetermined time interval, said time delay and time interval corresponding generally to the return pulse expected from the uterus of said animal;



(d) means for generating an audible signal in response to an amplified return pulse of predetermined amplitude, said predetermined amplitude corresponding to the amplitude of a return pulse from an enlarged uterus indicating animal pregnancy; and
(e) switching means for receiving said gating signal and for selectively transmitting amplified return pulses from said amplifier means to said audible signal generating means only during the time intervals defined by said gating signal, whereby the presence or absence of the expected return pulse is automatically audibly indicated.

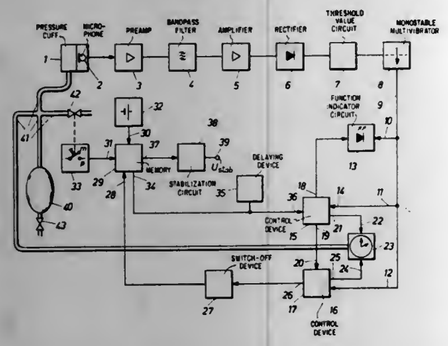
4,112,928
ERGOMETER
Peter Ulrich Putsch, Rockenhausen, Germany, assignor to Keiper Trainingsysteme GmbH & Co., Rockenhausen, Germany
Filed Sep. 8, 1976, Ser. No. 721,436
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1975, 2540493
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—2.05 R **9 Claims**



1. An ergometer for measuring and indicating physical exercise parameters comprising a housing including means for a user to apply physical energy into the ergometer, a digital computer disposed in said housing having digital display means arranged for ready observation by the user for determining and indicating at least one of said exercise parameters during the application of physical energy by the user, said computer including a memory for storing said exercise parameters and at

least one program, input unit means for providing said computer with values corresponding to personal data regarding the user, and means for the user to selectively summon from said computer during use information corresponding to said exercise parameters for display on said digital display means.

4,112,929
METHOD FOR MEASURING THE BLOOD PRESSURE OF A PATIENT
Karl-Heinz Affeldt; Günther Fritzsche; Joachim Ganzke, and Gerhard Raupach, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 1, 1977, Ser. No. 812,402
Int. Cl.² A61B 5/02
U.S. Cl. 128—2.05 M **14 Claims**



3. Apparatus for measuring the blood pressure of a subject according to the Riva-Rocci/Korotkoff method, said apparatus comprising

an inflatable pressure cuff arranged to be placed in pressure-transmitting relation with an artery of the subject;

manually-operable inflating means connected for inflating said cuff;

a controllable valve connected for permitting a pressure previously established within the cuff to decrease gradually;

an electromechanical signal transducer arranged to be in sound-receiving communication with the artery in the region of said cuff when said cuff is in pressure-transmitting relation with the artery;

signal processing means connected to said transducer for converting those electrical signals from said transducer which correspond to Korotkoff sounds into control signals;

a dual indicator manometer having first and second pressure value indicators connected to respond to the pressure in said cuff, and first and second electromagnets each associated with a respective indicator in a manner that each said electromagnet, upon being excited, releases its respective indicator to follow pressure variations and, upon being deexcited, locks its respective indicator at its present position;

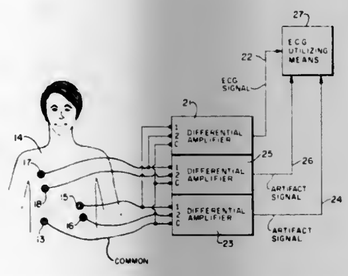
control circuit means connected to said signal processing means for receiving control signals therefrom and to said manometer for deexciting one of said electromagnets at the onset of a succession of control signals and deexciting the other of said electromagnets at the termination of such succession of control signals;

means defining an electronic block connected to said control circuit means and actuable to provide an output which maintains said electromagnets in their excited state;

electrical power supply means constituting a source of operating power for said control circuit means and said electronic block means, and

a two-position manually operable switch operatively associated with said valve, said control circuit means, said means defining an electronic block and said power supply means and switchable between a first position in which it effects closing of said valve, supply of power from said power supply means to said control circuit means, excitation of said electromagnets and actuation of said electronic block means, and a second position in which it effects opening of said valve to permit gradual reduction of the pressure previously established in said cuff, and deactuation of said electronic block means, and permits said control circuit means to be controlled by the control signals from said signal processing means and to terminate supply of power from said power supply means when both of said electromagnets have been deexcited.

4,112,930
APPARATUS AND METHOD FOR ECG BASELINE SHIFT DETECTING
Charles L. Feldman, and Mark Hubelbank, both of Sudbury, Mass., assignors to Electronics for Medicine, Inc., Pleasantville, N.Y.
Filed Dec. 27, 1976, Ser. No. 754,538
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.06 R **7 Claims**



1. Apparatus for providing an ECG signal and detecting baseline shift in said ECG signal comprising,

at least a first multielement electrode means having elements closely spaced but insulatedly separated electrode means for connection to a first surface portion of a patient for providing a first ECG potential and also for providing therebetween a signal representative of baseline shift while the ECG potential therebetween is negligible,

first means for differentially combining the potentials on said elements of said first electrode means to provide a first artifact signal representative of a baseline shift in said first ECG potential,

at least another electrode means for contacting a second surface of said patient for providing a second ECG potential different from said first ECG potential,

and second means for differentially combining said first and second ECG potentials to provide an ECG signal.

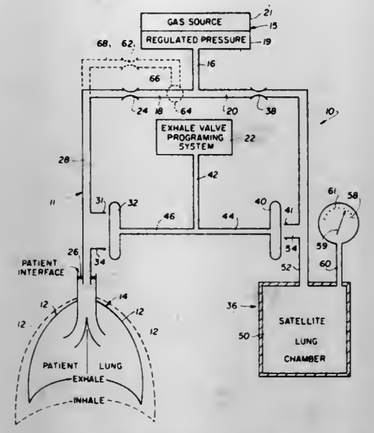
4,112,931
TIDAL VOLUME DISPLAY
Henry L. Burns, St. Helena, Calif., assignor to Cavitron Corporation, New York, N.Y.
Filed Jan. 5, 1977, Ser. No. 757,129
Int. Cl.² A61B 5/08
U.S. Cl. 128—2.08 **44 Claims**

1. A method of indicating the volume of gas supplied to a patient, comprising the steps of:

A. supplying a flow of gas under pressure to a patient from a supply of gas,

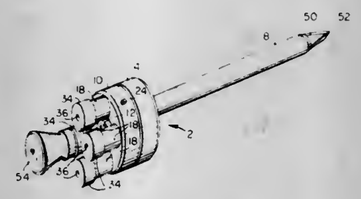
B. providing a fixed volume chamber operatively coupled to said supply of gas to receive another flow of said gas therein,

C. controlling said flows of said gas to the patient and to said chamber on an intermittent basis generally coinciding with the inhalation and exhalation periods of the patient, and proportioning said flows, so as to obtain proportional flows of said gas to the patient and into said chamber concurrently during the inhalation period and a venting of said supply of gas and said chamber concurrently to an initial pressure during the exhalation period, and



D. gauging the increase of pressure over said initial pressure in said chamber during each inhalation period so as to obtain a measurement of the tidal volume provided to the patient during each inhalation period.

4,112,932
LAPAROSCOPIC CANNULA
Robert D. Chiulli, 71 Cherry St., Somerville, Mass. 02143
Filed Feb. 24, 1977, Ser. No. 771,519
Int. Cl.² A61B 1/00, 17/36
U.S. Cl. 128—3 **9 Claims**



1. A cannula comprising a base member having a bore therethrough, a tubular member aligned with said bore and extending outwardly from a first side of said base member, a turret member connected to a second side of said base member, said turret member having first and second apertures therein alignable individually with said bore, said turret member being movable relative to said base member to place a selected one of said apertures in alignment with said bore, said turret member being further movable to place said selected aperture out of alignment with said bore.

4,112,933
LARYNGOSCOPE OF THE STRAIGHT BLADE TYPE
John A. Moses, 30 Kalan Cir., Fairfield, Conn. 06430
Filed Jan. 21, 1977, Ser. No. 761,371
Int. Cl.² A61B 1/06
U.S. Cl. 128—11 **10 Claims**

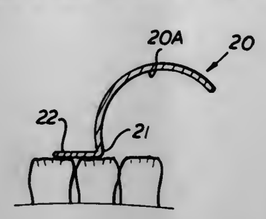
1. A laryngoscope blade comprising:

an essentially straight portion having an end portion adapted to extend into the throat beneath the epiglottis,

said straight portion being generally arcuate in cross section,

a flange connected to one edge of said arcuate cross section, said flange being substantially co-extensive to a longitudinal edge of said straight portion,

and said flange being turned laterally outwardly relative to the curvature of said arcuate cross section whereby the cross sectional arcuate curvature extends to one side of said flange,



said flange extending laterally of said arcuate cross section an amount sufficient to rest on more than one tooth so as to distribute the pressure thereover, and said flange extending generally along an extension of a radius of said cross section.

4,112,934
COMBINATION ALVEOLAR RIDGE PROTECTOR AND ANESTHETIC ADMINISTRATION AID
Samy F. Rizk, 1601-18 Third Ave., New York, N.Y. 10028
Filed Jun. 16, 1977, Ser. No. 807,253
Int. Cl.² A61B 1/00
U.S. Cl. 128—12 **14 Claims**

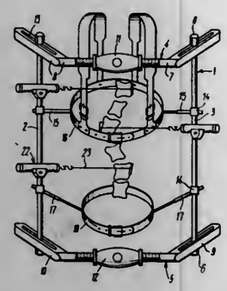


1. An apparatus for use in preventing damage to the alveolar ridge during surgery and for facilitating anesthetic administration, said apparatus comprising a protective member and a handle member, said protective member including means being constructed and arranged to straddle said alveolar ridge in a manner to avoid contact therewith and to avoid contact with protuberances therefrom and including first and second means, said first means being constructed and arranged for receiving force directed toward said alveolar ridge applied to said protective member and said second means being itself constructed and arranged and being constructed and arranged relative to said first means to direct said force received by said first means away from said alveolar ridge, said handle member including manipulation means constructed and arranged for permitting the application of force to said protective member through a connecting means, said connecting means being located between said protective member and said handle member and cooperating therewith and being constructed and arranged relative thereto for permitting force applied to said manipulating means to be transmitted to said protective member.

4,112,935
APPARATUS FOR SURGICAL TREATMENT OF SCOLIOSIS

Anvar Latypovich Latypov, ulitsa Shmidta, 37, kv. 33, and Vakif Barievich Abrarov, ulitsa Polevaya, 32, kv. 4, both of Kazan, U.S.S.R.

Filed Nov. 3, 1976, Ser. No. 738,467
Int. Cl.² A61F 5/01
U.S. Cl. 128—69 **12 Claims**

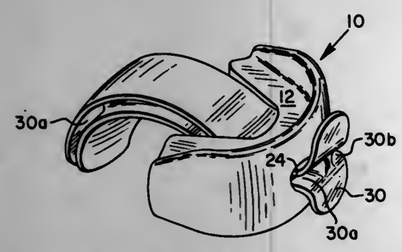


1. Apparatus for the surgical treatment of scoliosis, comprising: belt means to be strapped onto a patient's body, frame means to be situated at the exterior of the patient's body adjacent said belt means, said frame means including upper and lower yokes and upright strut means extending vertically between and fixed with said yokes, said strut means including at least one pair of upright struts for extending along both sides of the patient's trunk approximately in alignment with the spinal column, a plurality of stay rods respectively having inner ends operatively connected with said belt means and extending from said belt means outwardly toward the region of said strut means, adjustable connecting means adjustably connecting said stay rods with said strut means, flexible brace means to be secured to selected vertebrae while extending therefrom to the exterior of the patient's body, dynamometer means situated at the exterior of the patient's body and operatively connected with said flexible brace means for applying a predetermined tension thereto, and adjustable connecting means adjustably connecting said dynamometer means to said strut means, so that through said flexible brace means a corrective force can be exerted on the vertebrae.

4,112,936
BITE BLOCK ASSEMBLY ADAPTED FOR ADJUSTABLE MOUNTING AND HOLDING OF ORAL AIRWAYS AND METHOD OF USING SAME

Paul H. Blachly, 3348 NW Skyline Blvd., Portland, Oreg. 97229

Filed Sep. 27, 1976, Ser. No. 726,944
Int. Cl.² A61M 16/00
U.S. Cl. 128—136 **2 Claims**



1. A bite block and airway assembly for inserting between the teeth of a patient for absorbing the force of mandibular contractions comprising:

(a) a monolithic block of resilient material formed in a U-shaped such that the exterior of the block is generally convex and the interior of the block is generally concave;

(b) respective upwardly and downwardly facing teeth-engaging surfaces vertically spaced from one another extending longitudinally along each of the two sides of the U-shaped block wherein said respective upwardly and downwardly facing teeth-engaging surfaces tilt toward one another in transverse cross section, tending to converge in a direction toward the exterior of said block, so as to define wedge-shaped resilient material means therebetween for effectively resisting and withstanding the force of said mandibular contractions and directing said force against the wedge-shaped means in a direction toward the interior of the block to retain the block against outward dislodgment from the teeth;

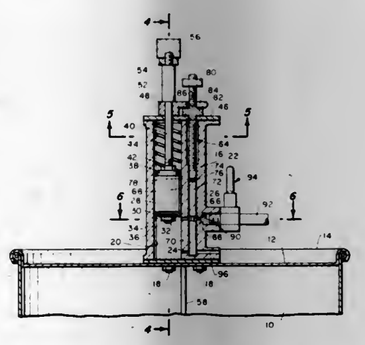
(c) means defining an aperture formed through a central portion of the U-shaped block which joins the two sides thereof together, said aperture extending between the exterior and interior of said block between the levels of said upwardly and downwardly facing teeth-engaging surfaces; and

(d) preformed, elongate, arcuate-shaped airway means slidably inserted through said aperture for conducting gas between the exterior and interior of said block while depressing the tongue of said patient, said airway means and aperture having mating surface means for frictionally and slidably engaging one another in any of a plurality of positions along the length of said airway means so as to permit slidable adjustment of said airway means with respect to said block.

4,112,937
GAS OPERATED RECIPROCATING CLEANING AGITATOR

Dick M. Hanning, 12092 Pine St., Los Alamitos, Calif. 90720

Filed Feb. 18, 1977, Ser. No. 769,878
Int. Cl.² B08B 3/04
U.S. Cl. 134—141 **1 Claim**



1. In a cleaning fluid agitator provided with a container having an interior fluid chamber, a lid for said container adapted to close said container and permit access into said fluid chamber and a cross-bar from which depends a pair of supporting rods that slidably extend through said lid and support a wire basket for supporting articles within said fluid chamber, an actuator to impart rapid reciprocating motion to said cross-bar, said actuator comprising:

a housing fixedly mounted upon said lid, a first chamber formed within said housing, a second chamber formed within said housing, said second chamber being spaced from said first chamber; and both of said first and second chambers are arranged in total isolation from said fluid chamber;

a piston reciprocably movably located in said first chamber and movable between a lower position and an upper position, said piston having a piston rod that extends upwardly through said housing, with the upper end of said piston being attached to said cross-bar;

a coil spring located in said first chamber constantly biasing said piston towards said lower position;

an elongated valve member reciprocably movably located within said second chamber and divided into upper and lower lands by an annular groove and a transverse opening is defined within said upper land and is slightly crimped at both ends;

a collar on said piston rod that engages vertically spaced nuts on said valve member after a predetermined amount of vertical movement of said piston towards said lower and upper positions to cause said valve member to move in synchronism with said piston;

a pair of ball bearings carried by said valve member and which are carried in said transverse opening in said upper land and are spring biased into the wall of said second chamber and are allowed to protrude only slightly exteriorally of said upper land, thereby precisely and continuously centering said valve member within said second chamber while exerting only rolling frictional drag on said valve member as it reciprocates within said second chamber.

a gas inlet passage assembly formed in said housing extending between a pressurized gas source and said second chamber and said first chamber for admitting pressurized gas into the latter to effect upward movement of said piston;

a gas outlet passage assembly formed in said housing below said gas inlet passage assembly, said gas outlet passage assembly including a horizontal inner outlet passage connecting said first and second chambers and a horizontal outer outlet passage connecting said second chamber directly with the atmosphere, said inner outlet passage being substantially smaller in cross sectional area than the cross sectional area of said outer outlet passage;

a cup shaped flexible washer fastened to the lower extremity of said piston above said gas inlet passage and disposed to face downward within said first chamber to form a substantially air tight and low friction seal between said piston and said first chamber;

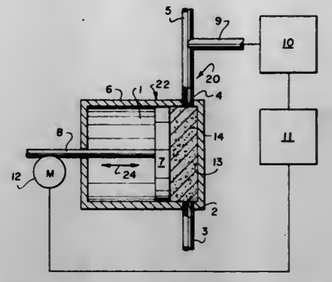
with said piston and said valve member being so configured that when said piston is in said lower position pressurized gas is conducted through said inlet passage assembly into said first chamber and said gas is not capable of being conducted through said outlet passage assembly, and when said piston is in said upper position pressurized gas is not capable of being conducted through said inlet passage assembly but is conductable through said outlet passage assembly.

4,112,938
DEVICE FOR CONTROLLING THE RESPIRATION IN RESPIRATORS

Stojan Jeretin, Ljubljana, Yugoslavia, assignor to Dragerwerk Aktiengesellschaft, Germany

Filed Feb. 25, 1976, Ser. No. 661,275
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1975, 2507981
Int. Cl.² A61M 16/00
U.S. Cl. 128—142 R **3 Claims**

1. A device for controlling the respiration through a person from a respirator in accordance with the partial pressure of CO_2 in the arterial blood or tissue measured in the alveolar expiration air, comprising a housing defining a chamber, a piston movably mounted in said housing for movement in one direction to expand the size of said chamber and in an opposite direction to reduce the size of said chamber, motor means connected to said piston to shift said piston to vary the size of said chamber, a first connection line adapted to be connected to said respirator and connected into said chamber from one side of said housing, a second connection line connected into said chamber from the opposite side of said housing and adapted to be connected to said respirator, sensor control means connected to said second connection line for sensing the partial CO_2 pressure therein and connected to said motor to

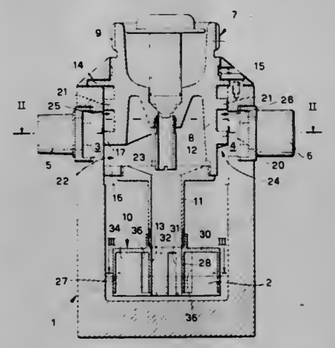


drive said motor to move said piston to vary the size of said chamber thereby, varying the partial pressure of CO_2 without changing the chosen minute volume of respiration and pressure.

4,112,939
EVAPORATING MIXER FOR VOLATILE ANAESTHETICS

Matteo Visconti, Milan, Italy, assignor to Soxil S.p.A., Milan, Italy

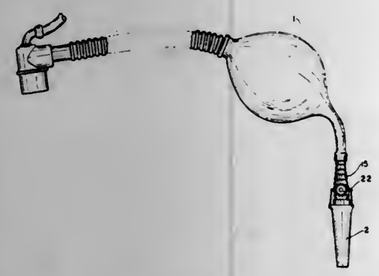
Filed Dec. 21, 1976, Ser. No. 753,352
Int. Cl.² A61M 17/00
U.S. Cl. 128—186 **2 Claims**



1. A mixing evaporator for anaesthetic products, comprising a vessel for containing in the lower portion thereof a liquid vaporizable anaesthetic product, said vessel having an inlet port formed through the upper portion thereof to permit the intake of a stream of a breathable gas and an outlet port formed through the upper portion thereof to permit the outflow of the same stream of a breathable product supplemented by an anaesthetic product in a variable proportion; means in said vessel defining two discrete passageways either of which directly connects the inlet port and outlet ports so as to convey breathable gas from the inlet port to the outlet port without addition of vaporizable product to the gas and the other of which connects these same ports and includes a deflected portion in communication with the lower portion of the vessel so as to contact and evaporate a portion of the vaporizable product in the lower portion of the vessel, said means including a rotatable body housed in said vessel, said rotatable body forming said passageways and cooperating with the wall of said vessel to throttle said passageways, said body including a depending vertical tubular portion extending into the lower portion of said vessel and terminating in a cylindrical body which is immersible in vaporizable anaesthetic product; said cylindrical

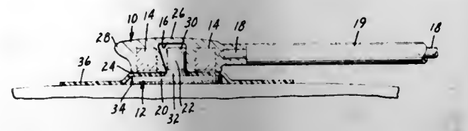
body including an inner tubular wall forming a chamber in communication with said depending tubular portion and an outer concentric tubular wall, said tubular walls defining an annular space which is closed at the top and open at the bottom, an imperforate radial partition connected between said concentric walls thereby forming said annular space into a passage, said inner concentric wall having an opening at one side of said partition and said outer concentric wall having an opening therein on the other side of said partition, and a plurality of radial paddles in said annular space having alternately arranged openings therein so that a flow path through said passage is tortuous, said passage forming part of said deflected portion of said other passageway.

4,112,940
SCAVENGING VALVE DEVICE
Alvin E. Parkes, Lewisburg, W. Va., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 25, 1977, Ser. No. 762,462
Int. Cl.² A61M *17/00*
U.S. Cl. 128—188 **2 Claims**



1. A scavenging valve device for anesthesia gas release in pediatric anesthesia apparatus, said scavenging valve device comprising
an anesthesia bag;
a scavenging valve of generally conical configuration having an axial bore extending therethrough from an open base to an open apex with a plurality of longitudinally extending fins around the bore in the valve, said scavenging valve having a plurality of external fin-like projections at its base, each of the fin-like projections having a hole formed therethrough for facilitating releasable affixing of the scavenging valve to an operating table to prevent shifting of said valve; and
a control valve comprising a pair of nipples each of generally conical configuration in base to base relation with an axial bore extending therethrough from one open apex end to the other, the control valve having a radially extending hole formed therethrough at the juncture of the bases of the nipples, said bore tapering down to each of the apices from the bases, means for coupling one of said nipples at said control valve to said anesthesia bag and the other of said nipples within the scavenging valve, said control valve having a gas flow control and shutoff valve plate pivotally mounted in the bore thereof in the area of the bases of the control valve, a manually operable control member outside the control valve, and a pin extending through the hole through the control valve and coupling the control member to the valve plate in a manner whereby the valve plate rotates in correspondence with rotation of the control member.

4,112,941
ELECTRODE AND MAGNETIC CONNECTOR ASSEMBLY
Frank C. Larimore, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 6, 1977, Ser. No. 757,148
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.06 E **7 Claims**



1. An electrode-connector assembly comprising: an electrode comprising:
(1) a ferromagnetic electrode plate having an upper surface and a lower surface;
(2) an upstanding electrically conductive contact member firmly affixed to the upper surface of said electrode plate adapted to mate with the connector portion of said assembly;
(3) means for affixing the electrode plate to the surface of the skin with said contact member projecting away from the skin; and
(4) means for conducting electrical impulses between the skin and the electrode plate;
and a connector electrically and mechanically mated to said electrode, comprising:
(1) a magnet having an upper surface and a lower surface and side walls with a hole in said lower surface into which said upstanding contact member is releasably fitted so that said contact member electrically contacts said connector on some portion of said contact member and a space exists between said magnet and the upper surface of said electrode plate; and
(2) a lead wire electrically connected to said magnet.

4,112,942
METHOD OF PREPARING AND ADMINISTERING A FOAM ENEMA
Colin Scaife, Cottingham, England, assignor to Reckitt & Colman Products Limited, London, England
Division of Ser. No. 615,104, Sep. 19, 1975, Pat. No. 4,052,986.
This application Jul. 29, 1977, Ser. No. 820,313
Claims priority, application United Kingdom, Oct. 9, 1974, 43787/74; Feb. 6, 1975, 5183/75
Int. Cl.² A61M *3/00*
U.S. Cl. 128—225 **8 Claims**

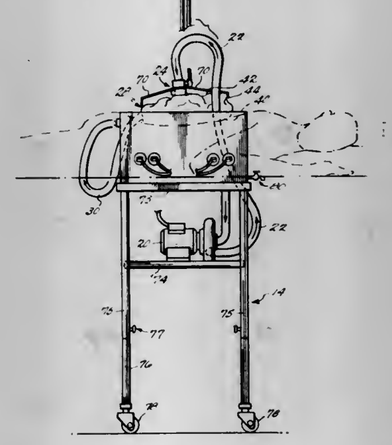
1. A method of preparing a foam enema for administration comprising the steps of:
(a) agitating an hermetically sealed container which is partially filled with a foamable substance to generate foam within the container;

(b) rupturing one end of said container and bringing a one-way air inlet valve into communication therewith; and



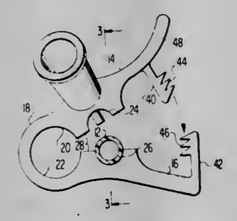
(c) rupturing the other end of the container to provide a discharge orifice.

4,112,943
THERAPEUTIC ASSEMBLY
Robbie J. Adams, Box 514A, Port Sulphur, La. 70083
Filed Mar. 26, 1975, Ser. No. 562,054
Int. Cl.² A61H *29/00*
U.S. Cl. 128—24.1 **11 Claims**



1. A portable assembly for heat-treating and massaging body parts comprising:
(a) a closed system for circulating heated liquid having momentum to any desired body part of a patient, said system comprising:
(i) A tank adapted to contain a volume of liquid therein,
(ii) a pump for circulating liquid in said system,
(iii) means for heating the liquid in said system,
(iv) a flexible bag member for transmitting the heat and momentum of liquid circulating through said system to a body part, said bag having an inlet and an outlet thereof, said outlet being larger than said inlet,
(v) first flexible hose means for circulating liquid from said pump to said bag inlet,
(vi) means for restricting a flow passage from said first flexible hose means to said bag at said bag inlet so that the velocity of liquid within said bag will be increased over the velocity within said first flexible hose, and the momentum thereof transferable through the walls of the bag increased, said means comprising a nozzle,
(vii) second flexible hose means for returning fluid from said bag outlet to said tank, and
(b) carrier means for mounting said closed system for ready movement thereof.

4,112,944
TUBE CLAMP AND PIERCING DEVICE
Gayland M. Williams, 3 Maple St., North Springfield, Vt. 05150
Filed Dec. 13, 1976, Ser. No. 750,338
Int. Cl.² A61M *5/00*
U.S. Cl. 128—214 R **10 Claims**

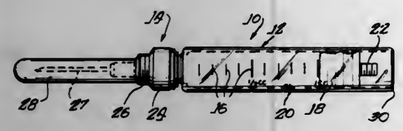


1. A clamp and piercing device for securely clamping a tubular member and piercing the wall thereof, comprising:
two clamp jaws constituting a clamp body,
a semi-circular depression in each jaw for accommodating a tubular member to be clamped and pierced,
hinge member connecting each clamp jaw at one end thereof to allow opening and closing of the clamp jaws,
a hollow piercing member extending through one of the clamp jaws in the area of the semi-circular depression to thereby pierce a wall of the tubular member held in the clamp when the clamp is closed,
means for attaching a take-off conduit to the hollow piercing member to establish a path for fluid communication with the inside of the tubular member being clamped,
a pair of locking end tabs one at the end of each of the clamp jaws,
means flexibly and integrally connecting one end of at least one end tab to the end of the corresponding clamp jaw,
locking means in the form of locking rachet teeth facing each other on the end tabs arranged so that they can be locked together to secure the clamp jaws in clamping position or unlocked by flexing at least one of the end tabs away from the other to quickly and easily unlock the clamp, and
a finger contact portion on at least the flexibly connected end tab for finger contact for moving such end tab to unlock the rachet teeth locking means.

4,112,945
OPERATOR MEANS FOR SYRINGE CARTRIDGES
Michael L. Helixon, and Barry S. Ward, both of Fort Worth, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Division of Ser. No. 650,248, Jan. 19, 1976. This application May 26, 1977, Ser. No. 800,864
Int. Cl.² A61M *5/00*
U.S. Cl. 128—218 D **6 Claims**

1. Operator means for use with a syringe cartridge having a barrel adapted to contain a quantity of fluid, discharge means on said barrel, and plunger means within said barrel and movable to effect fluid discharge from said barrel through said

discharge means; said operator means including cartridge holder means adapted to be mounted on said barrel adjacent said discharge end, said cartridge holder means having a plurality of arms extending longitudinally of said barrel, each of said arms defining a stop surface, said operator means further including plunger actuator means cooperable with said plunger means and movable to move said plunger means in a direction



to discharge fluid from said barrel, said actuator means having a plurality of stop surfaces thereon selectively engageable with said stop surfaces defined by said arms to limit movement of said actuator means in a direction to effect fluid discharge from said barrel, said stop surfaces on said actuator means and said stop surfaces on said arms being disposed to facilitate the discharge of a plurality of predetermined fluid dosages from said barrel.

4,112,946

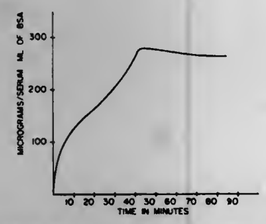
METHOD FOR THE TREATMENT OF WATER-LIVING ANIMALS WITH HEALTH MODIFYING AGENTS

Robert J. Herschler, 3080 NW. 8th St., Camas, Wash. 98607

Division of Ser. No. 657,228, Feb. 11, 1976, which is a continuation-in-part of Ser. No. 505,396, Sep. 12, 1974, abandoned. This application Dec. 2, 1976, Ser. No. 746,933

Int. Cl.² A61B *17/00*

U.S. Cl. 128—253 **13 Claims**



1. A process for the introduction of a health modifying agent into water-living animals comprising:

contacting a water-living animal body with a health modifying agent,

imposing a negative pressure differential on said animal body for a sufficient period of time to thereby expel the gas contained in said animal and thereby effect a substantial vacuum in the body structures and cavities of said animal, and while said animal is in contact with said agent, said negative pressure differential being insufficient to cause substantial injury to said animal,

rapidly relieving the negative pressure to bring the pressure up to at least ambient pressure,

thereby causing the animal body to accept by forced infiltration the agent in contact therewith at a plurality of locations on the animal body.

4,112,947

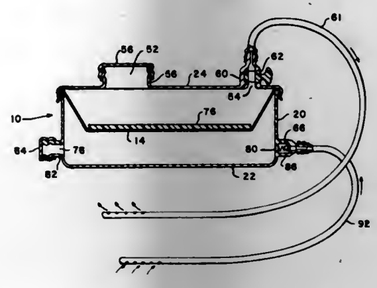
COMBINED IRRIGATOR AND EVACUATOR FOR CLOSED WOUNDS

John R. Nehring, Woodcliff Lake, N.J., assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 618,482, Oct. 1, 1975. This application Jan. 24, 1977, Ser. No. 762,433

Int. Cl.² A61M *1/00*

U.S. Cl. 128—278 **10 Claims**



1. A combined irrigator and evacuator for use in bathing a wound with an irrigating solution and removing fluid from the wound, comprising:

(a) a rigid housing forming a chamber having opposed ends and a wall, at least one of said ends being substantially planar;

(b) means under bias for dividing said chamber into a pressure-irrigating section and a suction-evacuating section, said means being substantially planar and substantially parallel to said planar end;

(c) seal means for preventing fluid flow between said pressure-irrigating section and said suction-evacuating section;

(d) means for filling said pressure-irrigating section with said irrigating solution against said bias, said bias tending to expel substantially all of said irrigating solution; and

(e) flow means under selective rate control for simultaneously expelling the irrigating solution from the pressure-irrigating section under said bias towards said wound and for admitting fluid removed from said wound into the suction-evacuating section by vacuum developed by the expelling of the irrigating solution.

4,112,948

SURGICAL DRAINAGE SYSTEM WITH PRESSURE INDICATOR AND ENCLOSED SOURCE OF LIQUID

Leonard D. Kurtz, Woodmere, and Robert E. Bidwell, Melville, both of N.Y., assignors to Deknatel, Inc., Queens Village, N.Y.

Filed May 7, 1976, Ser. No. 684,315

Int. Cl.² A61M *1/00*

U.S. Cl. 128—276 **7 Claims**

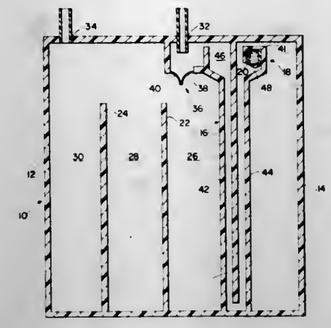
1. A surgical drainage system for the drainage of a cavity comprising,

a collection chamber adapted to be in fluid communication with the cavity to be drained,

a compartment disposed adjacent said collection chamber, said compartment having a single opening therein,

a U-tube manometer placing said collection chamber in fluid communication with said compartment through said single opening in said compartment,

said U-tube manometer having first and second tubes in fluid communication at their lower ends so as to form a U shape, said collection chamber being in fluid communication with the upper end of said first tube, said compartment being in fluid communication with the upper end of said second tube of said U-tube manometer, the volume of said manometer being small with respect to the volume of said compartment and,



means for storing a liquid in fluid communication with said manometer, said storing means comprising a rupturable container located at the upper end of said second tube.

4,112,949

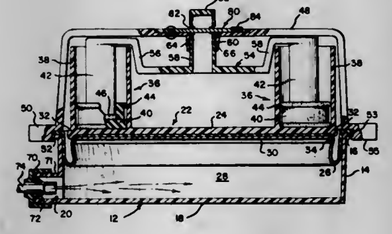
APPARATUS FOR COLLECTING BODY FLUID

Arthur Lee Rosenthal, Dover; Marvin Alpern, Glenridge, and Charles Edward Meisch, Jersey City, all of N.J., assignors to Howmedica Inc., New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 741,733

Int. Cl.² A61M *1/00*

U.S. Cl. 128—278 **9 Claims**



1. Apparatus for collecting body fluid from the area of tissue behind a closed wound, comprising:

a. a substantially rigid housing having

(i) side wall means and

(ii) an end wall connected to said side wall means thereby to close one end of said housing;

b. piston means axially movable relative to said end wall;

c. sealing means;

d. means connecting said sealing means both to said housing and piston means for sealing a chamber bounded substantially by said piston means and housing from ambient pressure conditions;

e. means supported by said piston means, said supported means being actuatable thereby to create a pressure differential on opposite sides of said piston means for enabling said movement of said piston means relative to said end wall;

f. means for actuating said supported means whereby said movement of said piston means when said chamber is in substantially closed fluid connection with said area of tissue will create a negative pressure in said chamber to draw said body fluid from said tissue for collection in said chamber;

g. said supported means including at least one cylindrically walled member, said cylindrically walled member having an axis longitudinal of said axis of movement of said piston means with an end surface formed by a portion of the surface of said piston means, and a piston element adapted for movement away from said end surface for development of a partial vacuum therebelow.

4,112,950

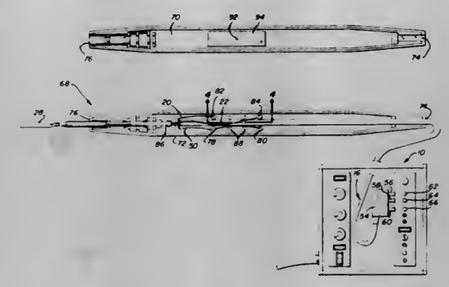
MEDICAL ELECTRONIC APPARATUS AND COMPONENTS

Harold L. Pike, Littleton, Colo., assignor to Aspen Laboratories, Littleton, Colo.

Filed Oct. 22, 1976, Ser. No. 735,097

Int. Cl.² A61B *17/36;* A61N *3/02*

U.S. Cl. 128—303.14 **6 Claims**



1. Medical electronic apparatus comprising:

a generator for producing high frequency, high voltage current;

a therapeutic instrument including an electrode for applying the generated current to a patient;

and a compound electrical power and control cable connected to the generator, therapeutic instrument and electrode:

the cable including a first therapeutic current conductor component comprising a length of multiple strand bare conductor wire, including one strand of substantially heavier gauge than the other strands, and at least one second signal current conductor component comprising a length of single strand conductor wire provided with a film coating of low voltage insulating material;

the components being arranged in contacting parallel juxtaposition;

and a protective sheath of high voltage insulating material surrounding the components;

both components carrying current at high voltage with a relatively small voltage differential between them;

and switch means connected between the heavier gauge bare wire and the signal current conductor component wire to selectively connect the components electrically;

the film coating on the signal current conductor component wire having a higher insulating value than the voltage differential between the components;

and the protective sheath having a higher insulating value than the voltage applied to either the therapeutic current conductor component or the signal current conductor component.

4,112,951

SURGICAL CLIP

Jaroslav Fabian Hulka, Chapel Hill, N.C., and George Selden Clemens, Northfield, Ill., assignors to Research Corporation, New York, N.Y.

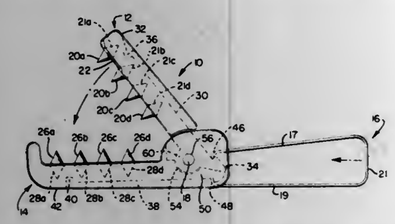
Filed Jan. 26, 1976, Ser. No. 652,616

Int. Cl.² A61B *17/12*

U.S. Cl. 128—346 **5 Claims**

1. A surgical clip for occluding tubes in a living animal, said clip comprising first and second jaw members; means adjacent one end of each jaw member for pivotally mounting the other ends of said jaw members for movement toward each other to a closed position and away from each other to an open position; said pivotal mounting means including a pair of side

flanges at said one end of the first jaw member, an arcuate recess between said side flanges, a pivot pin receiving bore in said side flanges the axis of which lies on a radius of said arcuate recess, said one end of the second jaw member having a width to be snugly received between the pair of side flanges of said first jaw member, an arcuate bearing element on said second jaw member adapted to be received in the arcuate recess of the first member, a transverse pivot pin receiving bore in the arcuate bearing element, the axis of said pivot pin receiving bore lying on a radius of the bearing element and co-axial with the bores in the side flanges and a pivot pin in said bore in side flanges and the bore in the arcuate bearing element; a generally U-shaped spring member consisting of a pair of legs and a connecting bridge portion, the pair of legs engaging remote surfaces of each jaw member and slidable from a first



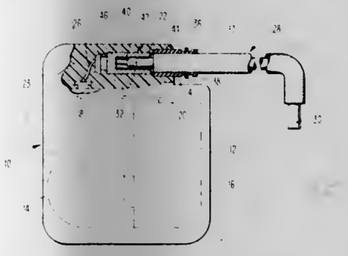
position on one side of the pivotal mounting to urge said jaw members into the open position to a second position on the other side of said pivotal mounting, to urge said jaw members into the closed position and, when the spring member is in the jaws closing position, the free end of each of the pair of legs of said U-shaped spring member having an inturned portion, a longitudinal U-shaped spring member receiving groove in each said first and second jaw members, said longitudinal groove terminating rearwardly of said pivot pin and forming with the inturned ends of the U-shaped spring stop members for the U-shaped spring when the spring is in said first position, the bridge portion thereof in conjunction with said side flanges carried by said first jaw member providing a smoothly contoured hinge end thereby reducing to a minimum zones for the entrapment of tissue which might be the cause of adhesions.

4,112,952
ELECTRODE FOR ARTIFICIAL PACEMAKER
George M. Thomas, Simpsonville; John W. Boretos, Rockville; Donald C. Syracuse, Bethesda, all of Md.; John A. Clark, Washington, D.C.; Anthony J. Vita, Mt. Airy, and Vincent A. Gaudiani, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.
Filed Feb. 11, 1977, Ser. No. 767,996
Int. Cl.² A61N *1/04*
U.S. Cl. 128—418 **5 Claims**



1. An electrode for implantation in the myocardium to control atrio-ventricular block by artificial pacemaker comprising:
a plurality of resilient electrically conductive thin tempered wires grouped in coextensive, parallel relationship to form a bundle, means proximate one end of said bundle to fix said wires rotationally with respect to one another, the ends of said wires proximate said means being deformed to described arcuate segments radiating about the axis of said bundle to form prongs in the same direction and adapted to penetrate the pericardium to be implanted in the myocardium of the heart, insulation surrounding said bundle between said means and the ends of said wires remote from said means; and
constraining means associated with said prongs to compress them to the diameter of said bundle for insertion of said prongs through the chest wall and to remotely release them for penetration of the pericardium and implantation in the myocardium after movement of said prongs into the pericardium.

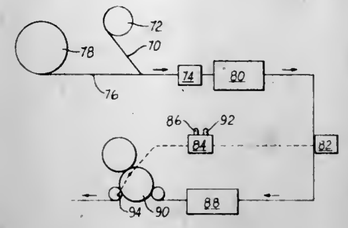
4,112,953
PACER STIMULATOR WITH IMPROVED LEAD CONNECTOR
Irvin Paul Shanker, Huntingdon Valley, and Teodozij Tryciecky, Philadelphia, both of Pa., assignors to Medcor, Inc., Hollywood, Fla.
Filed Mar. 11, 1977, Ser. No. 776,567
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 P **5 Claims**



1. In a pacer for stimulating living tissue and including pulse generator means and a source of electrical potential for the pulse generating means, means for connecting said pulse generator to a conductive lead, comprising:
(a) an elongate rigid body defining an elongate passage therewithin, said passage having a generally circular cross section and extending at least partway through said body;
(b) a plurality of metal strands extending helically within said passage, said strands being longitudinally stressed to define an expandable aperture for resiliently receiving a male connector member therewithin;
(c) said passage terminating in a flared orifice at a first end of said rigid body;
(d) a neck member extending from a second end of said body opposite said first end and having a size smaller than said body;
(e) a terminal member extending from the neck member and having a size larger than the neck member;
(f) conductor means for electrically coupling said terminal member to said pulse generator means so that the pulses produced by said pulse generating means are conducted through the terminal member to the conductive lead; and,
(g) a mass of hardenable non-conductive material molded about said elongate body, neck member, and said terminal member, whereby said terminal and neck member cooperate to resist withdrawal of said body from said mass of hardenable material.

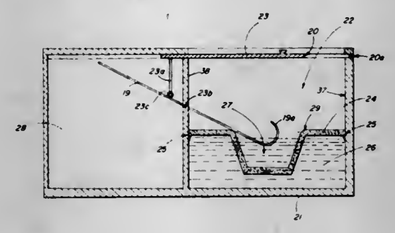
4,112,954
TESTING OF CIGARETTES
Edward George Preston, and Eryk Stefan Doerman, both of London, England, assignors to Molins Limited, England
Filed Aug. 27, 1976, Ser. No. 718,371
Claims priority, application United Kingdom, Aug. 28, 1975, 35479/75; Nov. 27, 1975, 48902/75
Int. Cl.² A24B *7/14*; A24C *5/32*
U.S. Cl. 131—21 R **16 Claims**

1. A machine for making filer-tipped cigarettes and for testing the wrappers of the cigarettes to detect any which allow an excessive leakage of air into the interior of the cigarette from the atmosphere, comprising means for feeding pieces of tipping paper each of which is wrapped around associated tobacco and filter portions to join those portions to one another; means for testing the wrappers of the cigarettes for leaks; an upsetting device for momentarily upsetting the filter



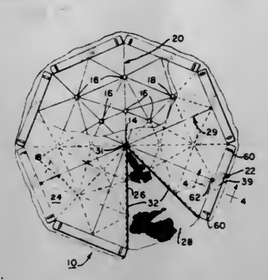
tipping operation to produce at least one cigarette with a deliberate leak in the joint between the tobacco and filter portions; and an ejection device arranged automatically to eject the deliberately faulty cigarette or cigarettes regardless of whether or not the wrapper tester detects the deliberately faulty cigarettes.

4,112,955
COIN OPERATED ULTRASONIC CLEANING DEVICE
Richard M. Gollel, 1148 Vroom Rd., Spencerport, N.Y. 14559
Filed Jan. 21, 1977, Ser. No. 761,305
Int. Cl.² B08B *3/04, 3/12*
U.S. Cl. 134—57 R **1 Claim**



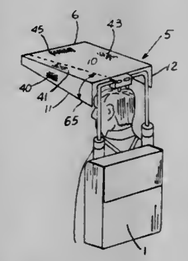
1. A coin operated ultrasonic cleaning device comprising:
a. a cleaning chamber for holding a cleaning liquid, said chamber having a bottom and vertical walls;
b. a cover for said chamber;
c. a coin controlled electromagnetic latch for locking and unlocking said cover;
d. a material receiving basket attached to the walls of said chamber;
e. a hook connected to the cover for lowering and raising the workpiece to be cleaned into and out of said basket, said hook being lowered into the basket when the cover is closed and being raised from the basket when the cover is opened; and
f. a source of ultrasonic vibrations positioned adjacent to the cleaning chamber; wherein the cover is slidably mounted at the upper end of the cleaning chamber, an actuating arm is positioned on the underside of the cover and attached thereto, and said hook extends through the wall of the cleaning chamber and is pivotably attached thereto whereby the straight portion of the hook is in communication with the actuating arm outside of the cleaning chamber and the curved portion of the hook is movably positionable inside of the cleaning chamber responsive to the position of said cover.

4,112,956
SHELTER CONSTRUCTION AND METHOD OF ASSEMBLING SAME
William H. Small, 7256 S. Coles, Chicago, Ill. 60649
Filed Nov. 22, 1976, Ser. No. 743,874
Int. Cl.² A45F *1/12, 1/16*
U.S. Cl. 135—1 D **11 Claims**



1. A shelter construction, comprising:
a series of upstanding posts adapted to be secured in the ground;
a group of tensile lines interconnecting directly the upper portions of said posts;
a single thin flexible sheet of imperforate material overlying and at least partially being supported from below by said group of tensile lines, said sheet being untensioned and resting on top of said posts and said tensile lines;
fastening means for fixing the periphery of said sheet to the ground; and
securing means for holding down loosely said sheet to confine the sheet in place over said tensile lines and the top portions of the posts.

4,112,957
SUN-SHIELD FOR BACKPACKERS
Earl U. Biven, 6352 Sierra Elena Rd., Irvine, Calif. 92664
Continuation of Ser. No. 586,304, Jun. 12, 1975, abandoned. This application Dec. 8, 1976, Ser. No. 748,661
Int. Cl.² A45B *11/02*
U.S. Cl. 135—5 C **2 Claims**



1. A sun-shield assembly adapted for shielding a back-packer from sunlight and adapted for connection to each of a plurality of back-pack frames of non-uniform structure, the combination comprising:
a. a canopy having an opaque member of substantially fixed dimensions and adapted to be suspended in spaced relation above and forward of a back-packer's head; said canopy assembly also having a rod-like frame having a rectangular portion along substantially the entire perimeter of said opaque member and support-rods extending from said rectangular portion in a direction substantially perpendicular to said opaque member at locations adapted to be on the rear-most horizontal edge of said opaque member;
b. adaptor means for connecting said sun-shield assembly to any one of said plurality of back-pack frames;

c. extender means providing a pair of angle members, each such member having first and second portions substantially perpendicular to each other, the first portion of each such angle member being connected to said adaptor means for extending the height of said back-pack frames; and

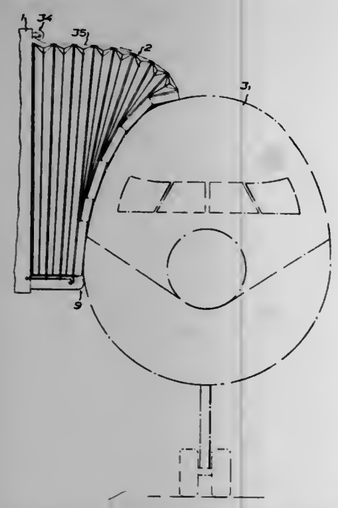
d. coupling means providing vertically extending slots slideably receiving said support-rods and also providing horizontally extending slots, the longitudinal axes of which are parallel to said rear edge of said opaque member, slideably receiving the second portions of said angle members, thereby coupling said support-rods of said canopy assembly frame to said extender means, whereby the distance between said second portions of said respective angle members may be varied while the distance between the support rods remains fixed.

4,112,958

CANOPY DEVICE

Nils-Eric Anderberg, Lund, Sweden, assignor to Fabriksmontering i Trelleborg AB, Trelleborg, Sweden

Filed May 6, 1977, Ser. No. 794,616
Claims priority, application Sweden, May 11, 1976, 7605337
Int. Cl.² B65G *11/14*
U.S. Cl. 135—5 A **6 Claims**



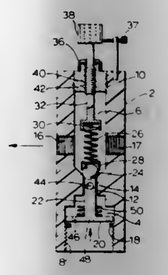
1. A canopy device intended to be connected between two through-openings which are orientable into alignment with one another and located each in one body the first one of which carries the canopy device and includes the first opening which is generally vertical, and the second body is a craft of varying shape and includes the second opening, said canopy device having a front portion which is movable into engagement with the craft to provide a weatherproof passage between the openings, said canopy device comprising: a collapsible and extensible bellows cloth having its rear edge secured to the two sides and the top part of the first opening; a series of generally U-shaped guide and support ribs which are attached to the cloth for guiding and bracing it and are mounted for pivotal movement at their bottom ends; and a retracting and extending means; the ribs disposed most remotely from said first opening being so arranged that the outermost rib is connected throughout its length with the front top edge of the cloth and, at the free ends of its side parts, is attached, for pivotal movement, to the respective side part of the next rib at a distance from the free end of this rib, said distance defining the lower portions of said side parts, said next rib and at least the immediately following rib being interconnected in the same way; wherein protective pads are attached to the top and side parts of the outermost rib and to the lower parts of the next ribs, at the sides of said parts facing the craft, and wherein, when the canopy device is being extended, the outermost rib with associated pads pivots in forward-downward direction due to gravity, whereupon the next ribs with their pads will follow successively into engagement with the craft.

4,112,959

ADJUSTABLE CHECK VALVE

Gunter R. Jaekel, 44 Coral Gable Dr., Weston, Ontario, Canada

Filed Apr. 22, 1977, Ser. No. 789,992
Int. Cl.² F16K *31/363, 15/04*
U.S. Cl. 137—504 **4 Claims**



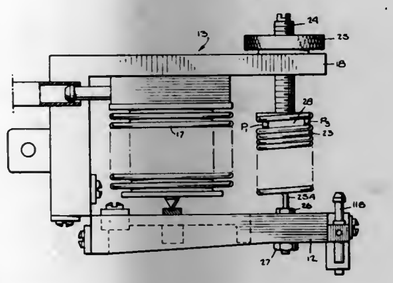
1. A check valve comprising a valve housing having an inlet and an outlet, a valve seating in the housing defining a passage between inlet and outlet chambers defined in said housing, a ball valve seatable on the seating on the outlet side thereof, a compression spring urging the ball onto the seat, a spring abutment adjustably mounted in the housing, the spring acting between the ball and the abutment to apply an adjustable bias to said ball tending to retain it on said valve seat, a cylinder defined in the housing between the inlet and the valve seat, a piston having a path of movement in said cylinder and having a stem extending into and substantially closing the passage defined by the valve seating, leakage path means placing in communication the portions of the cylinder on either side of the piston, and passageway means defined by the piston and extending from an inlet on the side of the piston nearest the inlet through the stem to at least one outlet in the side of the stem and so positioned that at one end of the path of movement of the piston the outlet is within the passage in the valve seating and at the other end of the travel of the piston is on the outlet side of the valve seat, the end of the stem being engageable with the ball valve member.

4,112,960

VARIABLE-GRADIENT SPRING SUB-ASSEMBLY

Henry M. Hermanns, Huntingdon Valley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 21, 1977, Ser. No. 779,511
Int. Cl.² G05B *11/44*
U.S. Cl. 137—85 **4 Claims**



1. In a feedback assembly for a pneumatic transmitter, said assembly having a fixed arm on which a pressure-responsive bellows is mounted to actuate a pivoted feedback arm that is caused thereby to swing downwardly in accordance with the applied pressure, a range spring sub-assembly for biasing said feedback arm and affording an adjustable variable gradient with minimum hysteresis, said sub-assembly comprising:

A. a helical spring bridging said arms, the lower end of said spring being secured to said feedback arm;

B. a span-adjustment screw terminating in an enlarged coupling head received in the upper end of said spring, the diameter of the head being substantially the same as the internal diameter of the helical spring, the screw extending through a bore in said fixed arm, said head having a set of at least three equi-spaced outwardly-projecting pins at different levels, each pin being interposed between a pair of adjacent spring convolutions, the difference in the levels being compatible with the helix angle of said spring, the convolutions entrapped by said pins being rendered inactive, the convolutions therebelow remaining active, the number of active convolutions being varied by rotation of said screw; and

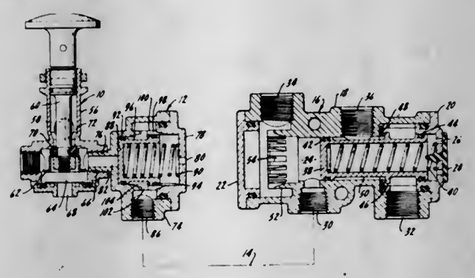
C. a zero-adjustment knob threadably mounted on the screw portion projecting beyond the fixed arm and resting on this arm whereby rotation of the knob causes an axial shift of said screw.

4,112,961

TRACTOR PROTECTION VALVE

Charles Horowitz, Niles, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Continuation-in-part of Ser. No. 651,410, Jan. 22, 1976, Pat. No. 4,019,525. This application Jun. 30, 1976, Ser. No. 701,086
Int. Cl.² B60T *15/36*
U.S. Cl. 137—102 **9 Claims**



1. Tractor protection valve means including a first housing having a chamber, tractor and trailer control ports and an exhaust port opening into said chamber, a piston movable in said chamber, spring means urging said piston to a position closing communication between said tractor and trailer ports,

tractor and trailer supply ports in said housing in communication through said chamber, air pressure at said tractor supply port moving said piston to a position opening communication between said tractor and trailer control ports,

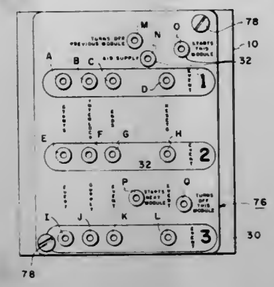
a second housing separate from said first housing and having a chamber, an inlet port, exhaust port and a delivery port opening into said chamber, conduit means connecting said second housing delivery port and said first housing tractor supply port, a piston movable in said second housing chamber, spring means urging said second housing piston to a position opening communication between said second housing exhaust and delivery ports, air pressure at said second housing inlet moving said second housing piston to open communication between said second housing inlet and delivery port and to close communication with said second housing exhaust port.

4,112,962

INTEGRATED PNEUMATIC LOGIC MODULE

Peter C. Huff, 6530 Dartbrook, Dallas, Tex. 75240

Filed Jan. 16, 1976, Ser. No. 649,646
Int. Cl.² F15B *13/07*
U.S. Cl. 137—119 **11 Claims**



10. A pneumatic logic control module comprising:

at least first and second valving means each having spool means shiftable between normal and active positions, and

pneumatic circuit means cooperating with the spool means for

shifting the first spool means from the normal position to the active position in response to a first pressure input signal to produce a first pressure output signal at a first outlet port which can be used to start a first event external to the module and for preventing a pressure signal from reaching a second outlet port, and

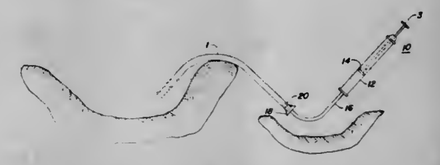
shifting the second spool means from the normal position to the active position in response to a first verification pressure input signal to shift the first valving means back to the normal position to terminate the first pressure output signal and to produce a second pressure signal at the second outlet port which can be used to start a second event external to the module.

4,112,963

SIPHON TUBE STARTER

John M. Brubaker, Star Rte. Box 48, Hammett, Id. 83627

Filed Apr. 11, 1977, Ser. No. 786,375
Int. Cl.² F04F *10/00*
U.S. Cl. 137—148 **3 Claims**



1. A device for priming a siphon tube comprising:

a cylinder;

an externally operable piston longitudinally movable within said cylinder;

a piston rod connected at one end to said piston, said piston rod upwardly extending through an aperture of a cap securedly affixed to one end of said cylinder;

a handle connected to the other end of said piston rod;

a base portion sealingly engaging the other end of said cylinder;

an inlet tubular extension having one end mounted to said base and extending at substantially a right angle to the axis of said cylinder, said tubular extension having a fluid passageway therein, the passageway communicating with the interior of said cylinder; and

a flexible, substantially conical abutment means surrounding and concentric with said tubular extension and mounted to

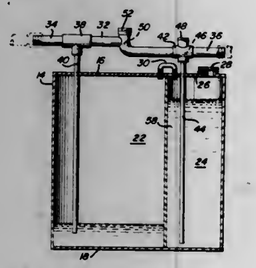
said tubular extension with the apex of said abutment means adjacent the other, free, end of said tubular extension, said conical abutment means operable to sealingly engage one end of the siphon tube during retraction of said piston within said cylinder to create a negative pressure within the siphon tube and operable to release from the siphon tube in the absence of the negative pressure.

4,112,964

LIQUID PROPORTIONER FOR PRESSURE FEED LINE

Benjamin W. Banks, P.O. Box 92, Downsville, La. 71234

Filed Feb. 28, 1977, Ser. No. 772,814
Int. Cl.² F16K *19/00*
U.S. Cl. 137—205.5 **2 Claims**



1. A closed hollow pressure container, said container including means dividing the interior of said container into a pair of first and second closed compartments, gas transfer means communicating upper portions of said compartments for the transfer of gas under pressure from an upper portion of said first compartment into the upper portion of said second compartment, a liquid pressure flow line supported from said ocntainer in elevated position relative to the upper extremity of said container, said flow line including inlet and outlet end portions to which the discharge and inlet ends of supply and discharge lines, respectively, may be removably coupled, flow reducing means in said line intermediate its inlet and outlet end portions, a restrictive flow bleed line communicating said flowline, upstream from said flow reducing means, with the lower portion of the interior of said first compartment adjacent the bottom thereof and a proportioned liquid feed line communicating the lower portion of said second compartment with said flow line downstream from said flow reducing means, said second compartment being adapted to receive a liquid therein to be proportionally fed into said flow line, said container including a valved drain outlet opening into a lower portion of said one chamber, the upper end of said container including a filler opening through which liquid to be proportionally fed into said flow line may be admitted into said other compartment, and a removable closure for said filler opening.

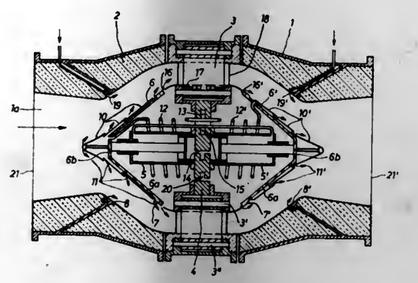
4,112,965

SHUTOFF ELEMENT

Julius Kruschik, Gumpoldskirchen, Austria, assignor to Klinger AG, Zug, Switzerland

Filed May 11, 1977, Ser. No. 795,948
Claims priority, application Fed. Rep. of Germany, May 12, 1976, 2620905; May 12, 1976, 2620904
Int. Cl.² F16K *49/00*
U.S. Cl. 137—219 **10 Claims**

1. A shutoff element for a work medium comprising:
a substantially tubular-shaped outer housing;
an inner housing arranged within said outer housing;
substantially rib-shaped supports for connecting said inner housing with said outer housing;
at least a first displaceable closure body arranged at said inner housing;
said inner housing including at least one double-acting work cylinder for displacing said closure body;
said inner housing and said closure body forming an inner body having an inner space in the open position of the shutoff element;
said double-acting work cylinder being arranged in the inner space of said inner body and carried by said inner housing;
said double-acting work cylinder having a free space about said work cylinder;



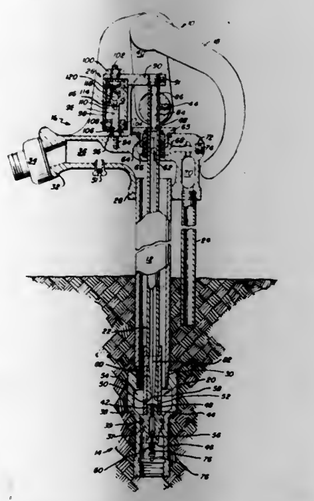
inlet means for a cooling medium opening into said free space;
means defining outlet opening means for the cooling medium in the direction of flow of the work medium;
said outlet opening means being formed by at least one substantially ring-shaped opening between the inner housing and a free end of the closure body.

4,112,966

EJECTOR PURGE HYDRANT

Donald E. Carlson, Highland Park, Ill., assignor to Mark Controls Corporation, Lake Zurich, Ill.

Filed Nov. 29, 1976, Ser. No. 745,603
Int. Cl.² E03B *9/14*
U.S. Cl. 137—282 **14 Claims**



1. In a hydrant for controlling fluid flow from a fluid supply including
a housing having a lower portion connected to said supply and an upper portion;
means connected to said upper portion for delivery of fluid from said upper portion;
means for controlling fluid flow from said supply to said lower portion, said controlling means including a handle mounted on said hydrant and a main fluid supply valve connected to said handle, said handle being movable between a closed position and a fluid supply position, the improvement comprising

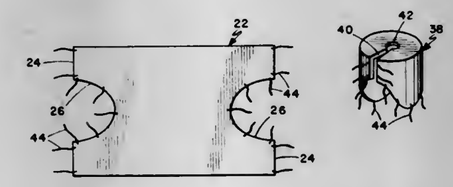
means for draining said housing of fluid remaining in said housing after termination of fluid flow, said draining means including a conduit within said housing and having an inlet adapted to communicate with said fluid supply and an outlet external to said housing, means establishing communication between the interior of said housing and said conduit, and valve means associated with said conduit inlet and movable from a closed to an open position upon movement of said handle from said fluid supply position to said closed position, whereby fluid remaining in said housing flows into said conduit and out of said outlet with fluid flowing through said valve means and said conduit, and means for automatically controlling the duration that said valve means is in said open position after said handle is moved to said closed position thereby controlling the duration of said draining of said housing by said draining means.

4,112,967

WEATHERPROOF INSULATED VALVE COVER

Ronald Withem, 4030 Payson Dr., La Mesa, Calif. 92041

Filed Dec. 29, 1976, Ser. No. 755,246
Int. Cl.² F16L *59/16*
U.S. Cl. 137—375 **3 Claims**



1. A removable, two-piece flexible, pre-fitted, water repellant insulated cover for a pipeline valve having a projecting stem connected to a control wheel and a stem housing enclosing a portion of said stem, said cover comprising:
(a) a first flexible sheet to cover portions of said pipeline adjacent said valve stem, said sheet having two edges which mate to define a cylinder around said pipe and said edges defining arcuate mating cutouts to define an opening for the protrusion of said valve stem housing through the cylinder defined by said sheet;
(b) a second separate flexible sheet removably attached to said first sheet along the cutouts in the edges thereof to cover said stem housing and having a flexible end piece with a hole therein to pass said stem therethrough;
(c) releasable twist wires provided in both sheets for fastening said second sheet to itself around said valve stem housing and to said first sheet and for fastening said first sheet to itself around said pipeline; and
(d) each of said sheets being multi-layered and having an insulating layer and a tough, inextensible, flexible, weatherproof, waterproof outer layer, whereby a pipeline valve may be effortlessly sealed from the elements by said valve cover and easily exposed for maintenance.

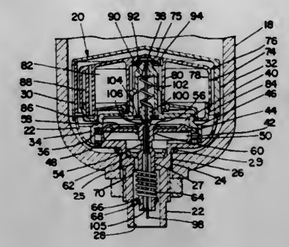
4,112,968

AUTOMATIC DRAIN VALVE FOR A COMPRESSED AIR SYSTEM

Robert K. Hoffman, Plainwell, and David C. Franson, Kalamazoo, both of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 637,134, Dec. 3, 1975, abandoned. This application May 3, 1977, Ser. No. 793,472
Int. Cl.² F16K *33/00*
U.S. Cl. 137—427 **2 Claims**

1. A float for a liquid drain valve comprising an inverted cup member, said member having radially inner and outer sidewall portions, an upper wall portion and a lower wall portion, said portions defining an annular chamber for air, said upper wall portion being integrally attached to the upper ends of said sidewall portions whereby leakage of air from said chamber between said upper wall portion and said sidewall portions is



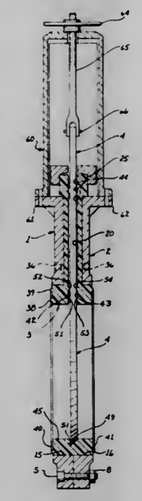
precluded, and said lower wall portion being a separate member that is attached to the lower ends of said sidewall portions, and said upper wall portion carrying a valve seat for cooperation with another portion of said drain valve.

4,112,969

REPLACEABLE ONE PIECE LINER FOR A GATE VALVE

Robert C. Still, Tucson, Ariz., assignor to New Concepts, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 614,350, Sep. 17, 1975, Pat. No. 3,993,092. This application Nov. 22, 1976, Ser. No. 743,776
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.
Int. Cl.² F16K *3/02*
U.S. Cl. 137—454.2 **8 Claims**

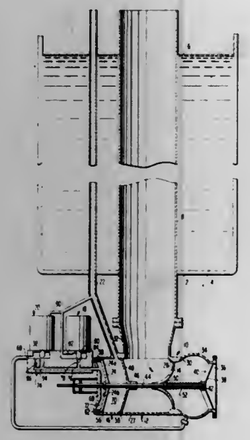


1. In a gate valve having a positionable gate with opposing surfaces disposed therein for regulating the flow of fluid intermediate an attached pair of pipes, the improvement comprising a pliant liner molded in one piece for receiving, guiding and seating the gate, said liner including:
a. a chest having a gate passageway with opposing sidewalls spaced from the opposing surfaces of the gate disposed therebetween;
b. a ring defining a bore and extending downwardly from said chest in general planar alignment therewith; and
c. a depression disposed within said bore for defining a seat for the gate; whereby, said liner avoids the assembly and disassembly of segregable elements during replacement of the gate guiding, seating and sealing elements of the gate valve.

4,112,970
OSCILLATION DAMPING PRESSURE RELIEF VALVE

Morley V. Friedell, Rte. 1, Box 175, Stevensville, Mont. 59870

Filed Feb. 11, 1977, Ser. No. 767,928
Int. Cl.² F16K *31/363*
U.S. Cl. 137—489.5 8 Claims

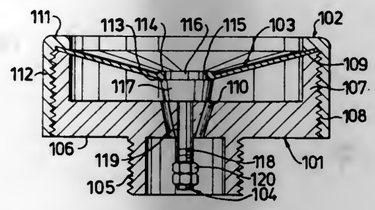


1. An oscillation damping pressure relief valve comprising:
a tubular main valve casing forming a main flow passage and having an inlet end open to a source of fluid under pressure,
means defining a circular valve seat within said main flow passage downstream of said inlet end,
a main valve poppet coaxially mounted within said flow passage casing for movement in the direction of fluid flow from said source and away from said valve seat from a first, closed position to a second, open position,
a poppet valve actuator piston operatively coupled to said valve poppet and fluid isolated from said main valve passage,
biasing means for normally biasing said valve poppet to said first, fully closed position in absence of fluid connection of said main valve casing to said pressure source,
casing means sealably and slidably supporting said actuator piston and defining first and second sealed chambers on opposite sides of said actuator piston and fluid isolated from said flow passage, said actuating piston having a larger effective surface area than that of said valve poppet,
means for continually subjecting said first chamber to said source pressure such that said actuator piston maintains said valve poppet at said first, fully closed position,
a primary pilot valve for connecting said second chamber to said fluid pressure source when said fluid pressure source reaches a predetermined value to balance the forces acting on said actuator piston and said valve poppet and permit the source pressure to overcome the biasing force of said biasing means to shift said poppet valve from said first, closed position towards said second, open position, and
means for venting a portion of the flow from the fluid pressure source through said primary pilot valve to said second chamber such that the fluid pressure slowly increases within the second chamber upon operation of the primary pilot valve and is maintained substantially below the fluid pressure within said first chamber.

4,112,971
SAFETY VALVE

Billy N. Nilson, Mjölby, Sweden, assignor to KeNova AB, Malmo, Sweden

Division of Ser. No. 564,080, Apr. 1, 1975, Pat. No. 4,061,254. This application May 12, 1977, Ser. No. 796,167
Claims priority, application Sweden, Apr. 4, 1974, 7404749; Nov. 20, 1974, 7414566
Int. Cl.² F16K *31/12*
U.S. Cl. 137—508 7 Claims

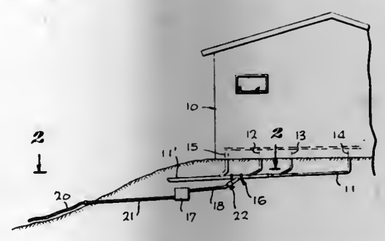


1. A self-resetting pressure release valve opening in response to a predetermined pressure and closing upon release of said pressure comprising:
a cuplike body having a base and a wall upstanding therefrom;
a valve member including a depending stem slidably mounted in said base and an abutment portion located in said body and movable with said stem, the abutment portion having a lower surface resting on the inner surface of said base in the closed position of the valve and an upper surface having thereon a cylindrical projection circumscribed by an annular shoulder;
an integral resilient annular diaphragm having a conical configuration when unstressed and passing through a substantially planar position under a predetermined pressure, said annular diaphragm having its outer periphery attached to said wall for positioning said diaphragm concavely in said body and having its inner periphery resting directly on said shoulder in the closed position of said valve, said body, diaphragm and abutment portion forming a cavity in said valve;
a plurality of passages through said base for applying fluid pressure to the lower surface of said abutment portion and into said cavity for stressing said diaphragm outwardly, said valve member being carried along with said diaphragm; and
means for separating said valve member from said diaphragm substantially at the planar position of the diaphragm, whereby said valve is opened.

4,112,972
WASTE WATER RECLAMATION APPARATUS

John B. Lajeuness, 3640 Virginia St., La Crescenta, Calif. 91214

Filed May 27, 1977, Ser. No. 801,036
Int. Cl.² E03B *3/00*
U.S. Cl. 137—597 6 Claims

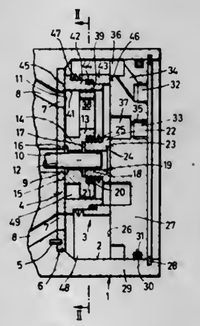


1. A waste water reclamation system and apparatus comprising the combination of:
a plurality of household waste water sources;
a common conduit;
conduit means coupling with said waste water sources to said common conduit whereby gravity flow urges the waste water into and through said common conduit;
storage means for holding said waste water;
diverter means including a conduit interconnecting said common conduit with said storage means; and
a multiplicity of outlets coupled to said storage means for selectively distributing said waste water for predetermined purposes.

4,112,973
CONTROL ARRANGEMENT FOR A HYDROSTATIC AXIAL OR RADIAL PISTON MACHINE

Jürgen Klie, Sprockhovel, Fed. Rep. of Germany, assignor to G. Duesterloh GmbH, Sprockhoevel, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,492
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 2630673
Int. Cl.² F16K *11/02*
U.S. Cl. 137—625.21 12 Claims

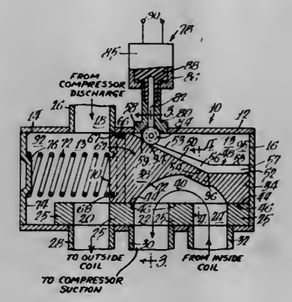


1. A control arrangement for a reversible hydrostatic piston machine, comprising housing means forming a planar control face and an opposite planar support face axially spaced from said control face; a machine shaft extending into said housing means coaxial therewith; a control body in said housing means between said control face and said support face and comprising an eccentric disk connected to said shaft for rotation therewith and having a peripheral surface and an inner and an outer control ring surrounding said peripheral surface of the eccentric disc and being telescopically guided in a sealed manner within each other, said control rings being hydraulically pressed apart in axial direction so that one of said control rings sealingly engages with one end face thereof said planar control face and the other of said control rings engages with an end face thereof said planar support face, said inner control ring having an inner surface in sliding contact with said peripheral surface of said eccentric disk, said eccentric disk being provided with fluid passages of relatively large cross-section therethrough and having a hub surrounding said shaft, said hub having an end face which is hydraulically pressed against said control face, said eccentric disk with the end face of the hub thereof engaging said control face forms together with said one sealing ring, the end face of which engages likewise said control face, an inner annular fluid guiding space which is sealed towards said shaft, said control rings forming between the outer peripheral surface thereof and said housing means an outer fluid guiding annular space; fluid guiding channels respectively communicating with said inner and said outer fluid guiding annular spaces; a sealing body connected to said shaft for rotation therewith but axially movable relative to said eccentric disk, said sealing body having an annular sealing face abutting against said support face; and spring means between said sealing body and said eccentric disk for urging said end face of said hub against said control face, with a predetermined minimum force irrespective of the presence or absence of hydraulic pressure.

4,112,974
REVERSING VALVE

Gerald L. Davis, and Timothy C. Scott, both of Bristol, Va., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 29, 1976, Ser. No. 736,878
Int. Cl.² F16K *31/04, 31/52*
U.S. Cl. 137—625.29 10 Claims

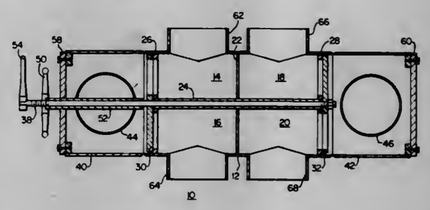


10. A flow control valve having a body with a chamber having a face and a plurality of ports at said face communicating with said chamber, a valve member having a surface engaging said face of the valve body and having a flow passage at said surface movable between two positions to vary the connection of said flow passage to said ports, means urging said valve member to one of said positions, a cam surface on said valve member at a side thereof opposite said surface, a reciprocable plunger operatively engageable with said cam surface, and means for exerting a force on the plunger having a magnitude sufficient to act on the cam surface and maintain said valve member and body in contact and a selectively greater force to extend the plunger to act on said cam surface and impart a component of force on said valve member in a direction to move the valve member against said urging means.

4,112,975
VALVING APPARATUS

Michael Csanady, Jr., Ridley Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar., 1977, Ser. No. 774,725
Int. Cl.² F16K *11/02*
U.S. Cl. 137—625.29 7 Claims



1. A valving apparatus comprising:
a housing;
a plurality of discrete chambers within said housing, said chambers including a first and second group each of which comprises at least two of said chambers, each said chamber having a transfer opening;
an inlet port for providing fluid communication to each chamber in said first group;
an outlet port for providing fluid communication to each chamber in said second group; and
means for regulating fluid communication through said inlet and outlet ports to selected chambers in said first and

second groups respectively, said regulating means comprising:

a rotatable shaft extending through said first and second groups of chambers, said shaft having a first end which is threaded and a second end;

a first valve disc having at least one aperture, said first valve disc being fixedly mounted on the second end of said shaft;

a second valve disc having at least one aperture, said second valve disc being disposed on said shaft so as to be rotatably fixed to the shaft and axially displaceable on the shaft, said second valve disc being disposed between said threads and said first valve disc;

a first valve seat interposed between said first valve disc and one of said groups of chambers, said valve seat being disposed in said port which provides fluid communication to that group of chambers, adapted to cooperate with said first valve disc aperture to selectively permit fluid communication to at least one chamber in that group;

a second valve seat interposed between said second valve disc and the other said group of chambers, said valve seat being disposed in said port which provides fluid communication to said other group of chambers, said valve seat being adapted to cooperate with said second valve disc aperture to selectively permit fluid communication to at least one chamber in said other group;

means for rotating said shaft;

a threaded handwheel engaged with said shaft threads in such manner as to seat said valve discs against said valve seats when said threaded handwheel is axially advanced toward said second valve disc and unseats both of said valve discs from said valve seats when said threaded handwheel is axially withdrawn from said second valve disc; and

means for precluding fluid communication interruption through said valve disc apertures and said valve seats during rotation of said shaft.

4,112,976

IMPROVEMENTS IN OR RELATING TO CONTROLS FOR HYDRAULIC VALVES

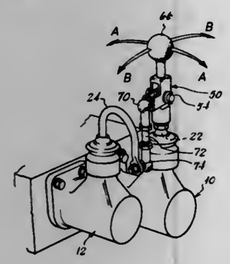
Angelo Sala, Latina, Italy, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Jan. 21, 1977, Ser. No. 761,143

Claims priority, application United Kingdom, Jan. 22, 1976, 02443/76

Int. Cl.² G05G *9/04*

U.S. Cl. 137—636.2 **12 Claims**



11. A single lever control for first and second control valves each having spools reciprocal within a housing for the valves, comprising:

an elongate first arm and opposing first and second ends on said first arm first end pivoted on the first valve spool;

a universal joint on said first arm between said first and second ends thereon pivotally supporting said first arm on the valve housing;

a handle pivotally mounted on said first arm second end for pivoting said first arm about said universal joint to stroke the first valve spool;

a second arm and first and second ends on said second arm, said second arm first end pivoted on the second valve spool;

a second universal joint on said second arm between said second arm first and second ends pivotally supporting said second arm, said first and second universal joints pivoting said first and second arms about parallel axes when said arms actuate the valve spools, said axes being spaced apart longitudinally of the valve housings; and

means operatively connecting said second arm and said handle for actuation of the second valve spool only when said handle is pivoted relative to said first arm and said first arm actuating the first valve spool only when said handle pivots said first arm.

4,112,977

VORTEX DIODES

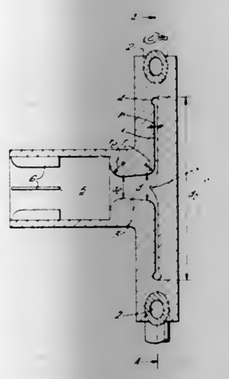
Nicholas Syred; John Grant, and Baldip Singh Sidhu, all of United Kingdom Atomic Energy Authority II Charles II St., London, England (SW1)

Filed Jun. 13, 1977, Ser. No. 805,917

Claims priority, application United Kingdom, Jun. 22, 1976, 25974/76

Int. Cl.² F15C *1/16*

U.S. Cl. 137—812 **6 Claims**



1. A vortex diode comprising a thin cylindrical vortex chamber, a peripheral channel about the chamber, an axial port and at least one tangential port in communication with the chamber, characterized by the following geometric parameters:

(a) the diameter d_t of at least one tangential port at the region of merger thereof with the channel is substantially equal to the diameter of the channel;

(b) the ratio r_t/d_t, where r_t and d_t are, respectively, the radius of curvature at the junction of a tangential port with the vortex chamber and the diameter of the tangential port at its region of merger with the chamber, lies in the range 0.5 to 2;

(c) the ratio r_i/d_i, where r_i and d_i are, respectively, the radius of curvature at the junction between the axial port and the vortex chamber and the diameter of the axial port at its region of merger with the vortex chamber, lies in the range 0.3 to 3;

(d) the ratio r_e/d_e, where r_e and d_e are, respectively, the radius of curvature at the junction between the axial port with a flow passage at the end of the axial port remote from the chamber and the diameter of the axial port at its end remote from the chamber, lies in the range 0.3 to 4;

(e) the ratio A_t/A_e, where A_t and A_e are, respectively, the cross-sectional areas of the axial and tangential ports at the regions of merger with the chamber, lies in the range 0.5 to 2;

(f) the ratio h/d_e, where h is the internal height of the chamber, ranges from 0.1 to 0.5; and

(g) the ratio d_o/d_e, where d_o is the overall diameter of the chamber, ranges from 4 to 10.

4,112,978

VALVE FOR AN OPENING OF A PRESSURE VESSEL

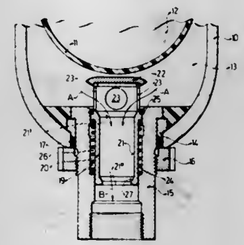
Gottfried Olbrich, Bietigheim, and Wilhelm Weigert, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 17, 1977, Ser. No. 797,794

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1976, 2634945

Int. Cl.² F16L *55/04*

U.S. Cl. 138—30 **15 Claims**



1. A pressure device comprising a hollow vessel having an outlet for discharging fluid therefrom, said outlet being provided with a valve seat; a valve member slidably mounted in said vessel above said valve seat for movement between an open position in which it permits fluid to discharge through said outlet and a closed position in which it prevents fluid from discharging through said outlet, said valve member being provided with a portion facing towards and corresponding to said valve seat and operative for fittingly engaging said valve seat when the valve member is in said closed position, said fluid exerting during its flow through said outlet a component of force upon said portion which tends to prematurely force said valve member into said closed position; resilient means for urging the valve member into said open position; and means for accelerating the discharge of said fluid through said outlet of said vessel in said open position, to thereby prevent premature movement of said valve member into said closed position under the action of said fluid.

4,112,979

END CAP FOR PIPES

Derek Gordon Widdicombe, Huddersfield, England, assignor to Naylor Brothers (Clayware) Limited, England

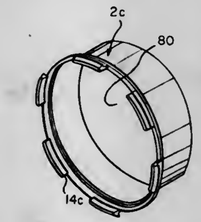
Continuation of Ser. No. 544,893, Jan. 28, 1975, Pat. No. 3,963,268. This application Mar. 29, 1976, Ser. No. 671,599

Claims priority, application United Kingdom, Jan. 31, 1974, 4552/74

The portion of the term of this patent subsequent to Jun. 15, 1993, has been disclaimed.

Int. Cl.² F16L *55/10*

U.S. Cl. 138—89 **8 Claims**



1. An end cap for a pipe, comprising

a tubular sleeve of synthetic material having opposite first and second ends,

said sleeve being closed at said first end by a wall extending transversely across the sleeve and being open at said opposite second end,

said sleeve at said second end having a plurality of spaced tongues extending substantially parallel to the axis of the sleeve,

each tongue being formed with a projection which extends therebeyond,

each projection also extending transversely to the corresponding tongue in a radial direction with respect to the longitudinal axis of the sleeve,

a clamping ring having a body formed with spaced through apertures in which the tongues are adapted to extend,

said apertures being wide enough in a radial direction relative to the longitudinal axis of the sleeve for the clamping ring to be push-fitted on the tongues by movement of the clamping ring towards said second end of the sleeve during which the projections enter the apertures first,

said clamping ring having a face portion facing away from said sleeve,

each projection having a face portion facing towards the first end of the sleeve and abutting against said face portion of said clamping ring,

said abutting face portions being in substantially the same plane and extending substantially perpendicular to the longitudinal axis of the sleeve whereby movement of the clamping ring along the said axis in a direction away from the sleeve is prevented,

said second end of said sleeve and said clamping ring defining between them an annular recess,

and a sealing ring of rubber-like material clamped in said annular recess between said clamping ring and said second end of said sleeve,

said sealing ring comprising a collar and an annular beading attached to the collar and extending around an inside of the sleeve for engaging an end of a pipe inserted into the sleeve through said second end of said sleeve.

4,112,980

LOOM HARNESS

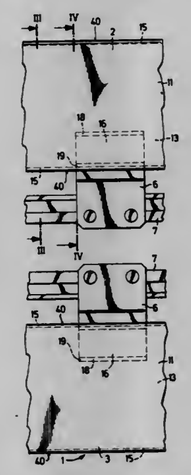
Hartmann Bader, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 1, 1977, Ser. No. 783,960

Claims priority, application Switzerland, Apr. 8, 1976, 4421/76; Feb. 15, 1977, 1836/77; Feb. 15, 1977, 1837/77

Int. Cl.² D03C *9/06*

U.S. Cl. 139—92 **11 Claims**



1. A loom harness including a harness frame adapted for to-and-fro movement comprising:

a pair of spaced longitudinal beams defining top and bottom rails;

a pair of transverse beams defining side struts for said top and bottom rails;

at least one holder element carried by one of the longitudinal beams for mounting thereat a member;

at least one elastic intermediate element means interposed between the holder element and said one longitudinal beam carrying said holder element for transmitting tensile and compressive force flux between the holder element and said one longitudinal beam during the to-and-fro movement of the harness frame.

4,112,981

DEVICE FOR FEEDING PILE WARP YARNS FOR PILE FABRIC LOOMS

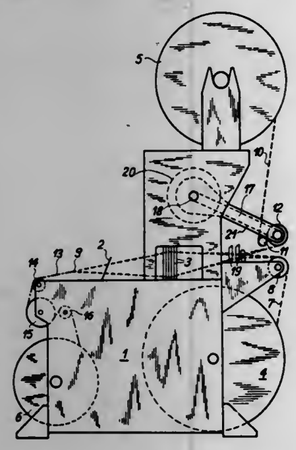
Erhard Freisler, Bubikon, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Dec. 15, 1976, Ser. No. 750,874

Claims priority, application Switzerland, Jan. 20, 1976, 623/76

Int. Cl.² D03C *49/06;* D03D *39/22*

U.S. Cl. 139—102 4 Claims



1. Device for the feeding of pile warp yarns for looms for weaving pile fabrics, having a pile warp beam, a feed roll, for the pulling of the pile warp yarns from the pile warp beam and guiding the pile warp yarns, arranged between the pile warp beam and a shed-forming mechanism, said feed roll simultaneously serving as guide roll and being arranged directly in front of the place of introduction of the pile warp yarns into the shed-forming mechanism of the loom and being supported by a common support arm which is swingable about a pivot mounted on the loom frame and adjustable to at least two positions of swing.

4,112,982

FORMING WIRE FOR USE IN PAPER-MAKING, CELLULOSE AND SIMILAR MACHINES

Hans Jörgen Bugge, Slattum; Ingvald Strandly, Oslo, and Carl Olof Swanberg, Bekkestua, all of Norway, assignors to Nordiska Maskinfilt Aktiebolaget, Halmstad, Sweden

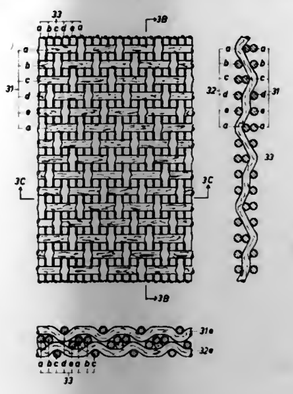
Filed Feb. 17, 1977, Ser. No. 769,779

Claims priority, application Sweden, Feb. 24, 1976, 7602211

Int. Cl.² D03D *15/02*

U.S. Cl. 139—425 A 9 Claims

1. An improved forming wire for use in paper-making, cellulose and similar machines, comprising a first layer of weft threads facing the material formed on the wire, a second layer of weft threads facing the machine drive rollers, and synthetic warp threads interweaving said two layers of weft threads, the improvement comprising said first layer of weft threads cross-



ing said warp threads on the outer face of said wire closest to the material to be formed, in at least 80% of all cross points.

4,112,983

PICKING BANDS AND DRIVE ARRANGEMENT FOR GRIPPER WEAVING MACHINE

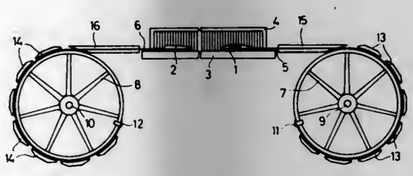
Fredy Oderbolz, Tann-Ruti, and Paul Bebie, Wolfhausen, both of Switzerland, assignors to Ruti Machinery Works Ltd, Ruti, ZH, Switzerland

Filed Jun. 28, 1977, Ser. No. 810,855

Claims priority, application Switzerland, Jul. 8, 1976, 8741/76

Int. Cl.² D03D *47/18*

U.S. Cl. 139—446 5 Claims



1. A gripper weaving machine having flexible weft picking bands for inserting weft threads into a weaving shed, each of said picking bands being secured at one end to a driving wheel positioned on a drive shaft capable of being driven in an oscillating manner during the operation of the weaving machine and having a gripper head secured to the other end of said picking band, the said picking bands being formed from a plastics material reinforced with carbon fibers so as to maintain the required flexibility and strength of the plastic bands during their continual oscillating in the weaving operation.

4,112,984

CAPPED FUEL TANK FUNNEL

Gaston Guglia, 10,227 de la Roche St., Montreal, and Jacques Lupien, 744 Camille St., Fabreville (Laval), both of Canada

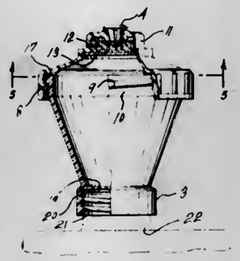
Filed Jul. 26, 1977, Ser. No. 819,611

Int. Cl.² B65B *39/04;* B67C *11/02*

U.S. Cl. 141—98 1 Claim

1. A funnel for attachment to the externally threaded neck of the filling opening of the fuel tank of an engine-operated machine, such as a lawn-mower, snowblower or the like, such funnel comprising a funnel body, made of molded plastic and having a large circumference upper end and a small circumference lower end, said lower end being provided with an integrally formed first cylindrical extension having internal threads and a sealing gasket for fluid-tight detachably securing said funnel body onto the externally threaded cylindrical neck

of the fuel tank filling opening, said upper end being provided with an integral second cylindrical extension having external threads, a detachable cap provided with a depending cylindrical skirt having a sealing gasket and internal threads complementary to the threads of said second cylindrical extension for fluid-tight and detachable connection of said cap to said funnel body, said cap having a central round top projection forming an upper external surface and having a tapered air inlet hole, said projection having buttons at its top external surface closely surrounding said hole, an air inlet hole plug having a tapered body fitted within said hole having a hat-shape top forming a rigidly protruding flange resting on said buttons and



maintained spaced from said top external surface, said tapered body being provided with a slit permitting air intake into said funnel body, said plug body being further provided with a lip at its inner smaller diameter end engaging the inner surface of said projection and maintaining said air inlet plug in position within said tapered hole, said plug allowing air to enter within said funnel body while substantially excluding water from entrance within said funnel body, an air filter, of open-cell foam, located within said projection below said plug and a perforated wafer located at the base of said projection below said air filter supporting the same and preventing upwardly splashing fuel from reaching said air filter.

4,112,985

HYDRAULIC LOG SPLITTER IMPLEMENT

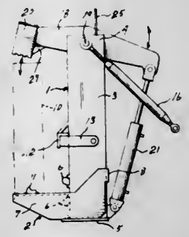
Yvon Gosselin, 11e rang, R.R. 1, Plessisville, Canada

Filed Mar. 18, 1977, Ser. No. 779,420

Claims priority, application United Kingdom, Mar. 22, 1976, 11367/76

Int. Cl.² B27L *7/00*

U.S. Cl. 144—193 A 1 Claim



1. A hydraulic log splitter implement comprising an elongated upstanding body portion, a pair of connectors secured at upwardly spaced-apart positions along said upstanding body portion and pivotally securable to a three-point hitch system of a farm tractor, a log support carried by said body portion, a splitting wedge movably carried by said upstanding body portion for movement toward and away from said log support, power means to cause movement of said splitting wedge, said wedge defining a thin edge directed toward said log support for splitting engagement of said splitting wedge into the upper end of a log positioned upright on said log support, said log support being upwardly adjustable along said upstanding body portion to a selected height below the splitting wedge in relation to the length of the logs to be split and wherein said upstanding body portion has a rectangular or square cross-section substantially uniform along its lower part, adjustment teeth serially spaced apart upwardly along a face of said lower part, and said log support includes a top substantially horizontal plate having an edge selectively resting on one of said adjusting teeth, and a collar member secured to said top plate, surrounding said body portion and including a collar part slidably engaging a second face of said lower part opposite to said first-named face, said collar part being at a higher level than said top plate and the latter being held in cantilever fashion on said body portion by said collar part and by said edge of said top plate.

4,112,986

AUTOMATIC DADOING MACHINE

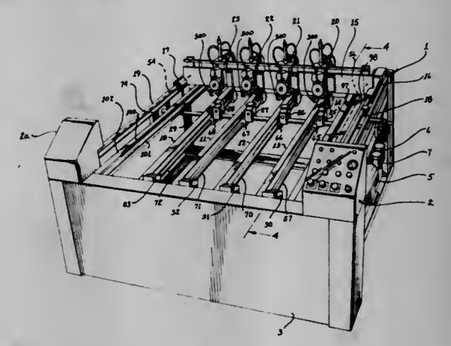
Delbert D. Strange, and Ronald M. Hunts, both of San Diego, Calif., assignors to Manufacturing Approaches & Total Concepts, Inc., San Diego, Calif.

Division of Ser. No. 600,726, Jul. 31, 1975, Pat. No. 4,005,738.

This application Sep. 30, 1976, Ser. No. 728,405

Int. Cl.² B27C *5/02*

U.S. Cl. 144—323 4 Claims



1. A method for automatically cutting grooves in sheet material with routers having downwardly extending cutting bits, said method comprising the steps of:

a. supporting the sheet material upon a plurality of continuously parallel maintained rails;

b. locating each of the plurality of rails in vertical alignment with the bit of one of the routers to provide support beneath each bit for the sheet material;

c. gripping one edge of the sheet material with a plurality of first clamps mounted upon a common shaft and each first clamp being mounted adjacent and movable with each rail;

d. clamping another edge of the sheet material with a plurality of second clamps extending from and movable with each rail to maintain the sheet material adjacent the plurality of rails and biased toward the plurality of first clamps;

e. actuating the plurality of second clamps by a first plurality of input controls to secure the sheet material in place;

f. identifying the number and length of the grooves to be cut in the sheet material by a second plurality of input controls;

g. translating the bit of each router with first drive means along and vertically upwardly displaced from the underlying one of the plurality of rails;

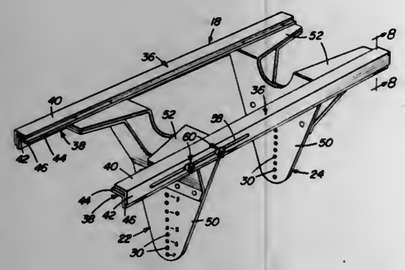
h. positioning the bottom of the bit of each router at a predetermined distance into and out of the plane of the sheet material with second drive means;

i. generating feedback signals with detection means indica-

tive of the location of the bits of the routers along the plurality of rails; and

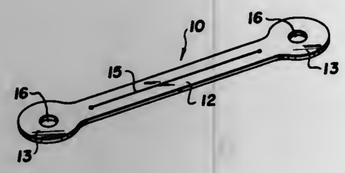
j. energizing the first and second drive means with control means responsive to the first and second plurality of input controls and the feedback signals generated by the detection means to form grooves in the sheet material through vertical positioning and horizontal translation of the bits of the routers.

4,112,987
RADIUS ROUTER GUIDE
Ben E. Pachnik, P.O. Box 107, Sparks, Nev. 89431
Filed Nov. 17, 1976, Ser. No. 742,456
Int. Cl.² B27C *5/10*
U.S. Cl. 144—323 **9 Claims**



1. A radius router guide, comprising, in combination:
(a) means defining a recess for receiving a workpiece at an end of the workpiece where a radius is to be cut;
(b) support means connected to the means defining a recess for receiving a router; and
(c) means defining a pivot provided on the means defining a recess for pivotally mounting the means defining a recess on the workpiece and permitting the means defining a recess and the support means to swing relative to the workpiece in order to cut a radius at the end of the workpiece, the means defining a recess including a pair of spaced brackets each having a leg portion substantially parallel to the corresponding leg portion of the other of the brackets, the brackets being mounted on the router support means and disposed extending codirectionally therefrom for receiving the workpiece between the substantially parallel leg portions.

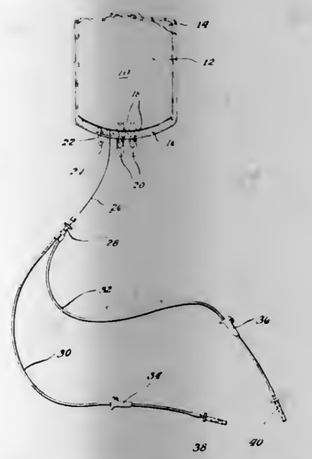
4,112,988
FASTENER HOLDING ATTACHMENT FOR A TOOL
Karl L. Nelson, 3870 Manitoba Ave., Powell River, British Columbia, Canada (V8A 2W4)
Filed Mar. 15, 1977, Ser. No. 777,707
Int. Cl.² B25B *15/00*
U.S. Cl. 145—50 D **4 Claims**



1. The combination of a tool and a fastener holder serving to start a fastener in a hard-to-reach location, said tool having a shank and a fastener-engaging part; said holder comprising a resilient member including an elongated centre portion and opposite end portions, said elongated centre portion having a longitudinal slot through which the fastener projects while engaged by the fastener-engaging part, said opposite end portions each being provided with an opening having a side edge, said side edges gripping the shank and being adjustable lengthwise thereof with the opposite end portions are overlapped above the fastener-engaging part and the resilient member wrapped around said part to allow the shank of the tool to project through the substantially aligned openings, and said centre portion then releasably retaining the fastener in engagement with the fastener-engagin part.

4. A method of releasably securing a fastener to a tool using a resilient member having a longitudinal slot and opposite end openings comprising the steps of:
forming the resilient member into a loop so that the longitudinal slot traverses an end of the tool to hold the fastener in engagement with the tool end and the opposite end openings engage a part of the tool remote from that end, and
tensioning the resilient member to resist passage of the fastener through the longitudinal slot.

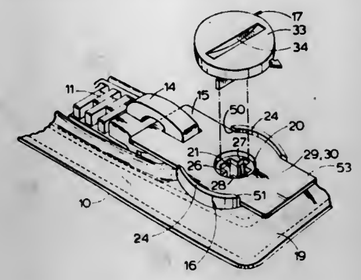
4,112,989
FLEXIBLE COLLAPSIBLE BLOOD FREEZING CONTAINERS
Gerald Arthur Grode, Grayslake; Daniel Roy Boggs, Round Lake Park, and James Irvin Wright, Mundelein, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Nov. 6, 1975, Ser. No. 629,347
Int. Cl.² A61M *5/14*
U.S. Cl. 150—1 **5 Claims**



1. An improved, flexible, collapsible container, having improved physical strength at cryogenic temperatures, defining walls which consist essentially of a biaxially-oriented ethylene-vinyl acetate copolymer containing from 10 to 35 percent by weight of vinyl acetate units, in which said walls have a thickness of from 0.01 to 0.025 inch, said walls being sealed together by a radio frequency generated seal to define said container.

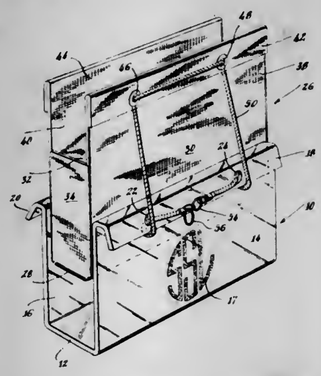
4,112,990
ENVELOPE
Michael Denny Anderson, Meopham, England, assignor to Versapak International Limited, England
Filed Feb. 11, 1977, Ser. No. 768,014
Claims priority, application United Kingdom, Feb. 18, 1976, 6380/76
Int. Cl.² B65D *55/06*
U.S. Cl. 150—3 **3 Claims**

1. A re-usable envelope having an opening, closure means for closing said opening, and sealing apparatus, the closure means including a locking part which is held in its closed position by the sealing apparatus to seal the closure means closed, the sealing apparatus including two parts, an expendable part and a part mounted on said envelope to be retained for re-use, the expendable part being engageable with the retained part to close the sealing apparatus and being removable to open the sealing apparatus, the expendable part only being removable by being broken, deformed or otherwise damaged so as not to be re-usable, the two parts each having trap surface means to trap therebetween, when the two parts



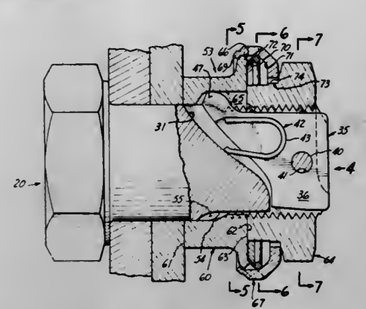
are engaged with one another, the locking part in its closed position, the locking part being shaped to include finger engagement means extending away from the sealing apparatus whereby the finger engagement means and an adjacent part of the envelope may be engaged between two fingers of one hand to hold together the locking part and the trap surface means of the retained part whilst fingers of the other hand engage the expendable part of the sealing apparatus with the retained part of the sealing apparatus.

4,112,991
CONVERTIBLE HANDBAG
Charlotte Barbaresi, Greenwich, Conn., assignor to Acricite Company, Inc., Bridgeport, Conn.
Filed Nov. 30, 1977, Ser. No. 855,830
Int. Cl.² A45C *13/00*
U.S. Cl. 150—28 A **4 Claims**



1. A convertible handbag which comprises: a relatively rigid basket member including first and second spaced side panels defining an opening therebetween; first and second elongated wing members depending, respectively, from said first and second side panels, adjacent said opening and extending outwardly therefrom; a bag supported within said basket defining a mouth positioned within said basket opening; first and second elongated flexible flaps extending from said bag on opposite sides of said mouth; and means associated with said flaps for interlocking with said first and second wing members.

4,112,992
SAFETY BOLT
George S. Wing, Palos Verdes Estates, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Jan. 19, 1977, Ser. No. 760,416
Int. Cl.² F16B *39/04*
U.S. Cl. 151—29 **5 Claims**



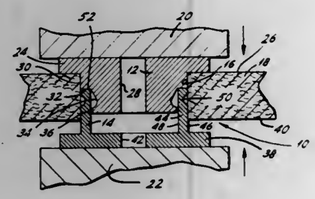
1. In combination: a safety bolt having an axis, a head, an axially extending solid shank with a diameter, and a retention section in that order, the safety bolt being installable in a hole in a workpiece, said workpiece having a face at each end of the hole, with the head against a first of said faces, the shank closely fitting in said hole, and the retention section projecting beyond the second of said faces, said retention section having an outer wall, an external thread, a slot opening through said outer wall, a latch member in said slot pivotally mounted to said retention section and movable to a first position wherein a portion of said latch member projects radially beyond the diameter of the shank whereby to bear against the second face to prevent the bolt from leaving the hole, and a second position wherein said portion lies within said diameter to permit the bolt to leave the hole, and bias means biasing the latch member toward said first position, said retention section also including notch means angularly spaced from the said portion of the latch means; a nut having an axis and an axial opening, an internal thread in said opening to engage the thread on the retention section, and a plurality of teeth extending around the axis; and an intermediate collar comprising a base ring proportioned to fit around said retention section and having an aperture and a finger in said aperture, said finger being proportioned and arranged to fit in said means to limit rotation of the base ring, sid base ring also having a plurality of engagement means around said axis, a locking ring having a plurality of engagement means to engage the engagement means on said base ring, and a plurality of teeth angularly selectively engageable with said teeth on the nut, said locking ring being axially shiftable, whereby to disengage said teeth to permit rotation of the nut in a first axial position of the locking ring and to engage them to prevent rotation of the nut in a second axial position of the locking ring, said engagement means always being engaged against relative rotation, and bias means biasing the locking ring toward said second axial position.

4,112,993
GROMMET ASSEMBLY
Ervin J. Dey, Santa Fe Springs, Calif., assignor to SPS Technologies, Inc., Jenkintown, Pa.
Filed Apr. 26, 1977, Ser. No. 791,090
Int. Cl.² F16B *19/08*
U.S. Cl. 151—41.74 **6 Claims**

1. A grommet assembly comprising:
a first member including an enlarged head at one end thereof adapted to bear on one surface of a workpiece, a shank portion extending from said head and formed to be inserted into an opening in the workpiece from said one surface thereof, said shank portion including a segment having an outer periphery substantially conforming to the

shape of the opening, a tip portion at the other end of said first member having an outer periphery less than the opening, a recessed portion between said shank portion and said tip portion, said recessed portion having at least some part of its outer periphery less than the outer periphery of said tip portion, and a shoulder disposed between the outer periphery of said shank portion and said recessed portion; and

a second member having an enlarged head at one end thereof adapted to bear on another surface of the workpiece, a shank portion extending from said head and formed to be inserted into the workpiece opening from said another surface thereof, said shank portion having an outer periphery substantially conforming to the shape of the opening



and an inner periphery greater than the first member tip portion outer periphery, an end portion at the other end of said second member, and a section of varying reduced thickness intermediate the ends of said second member shank portion varying from a maximum thickness adjacent each of said ends to a minimum thickness intermediate the ends of said reduced thickness section, said reduced thickness section being juxtaposed from and cooperating with said first member recessed portion to provide an interlock therebetween upon the application of opposing forces on said first and second members to form the grommet assembly, said first and second members each having a passageway extending therethrough, said passageways being in substantial alignment with each other when said first and second members are interlocked together.

4,112,994

PNEUMATIC TIRES HAVING LOW ASPECT RATIO

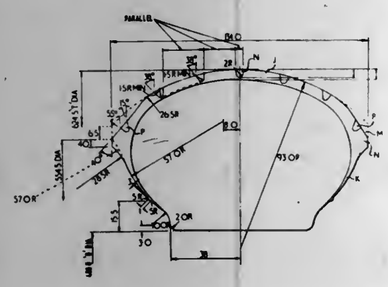
Anthony Mark Mills, and David Lyndon Buck, both of Sutton Coldfield, England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 392,209, Aug. 28, 1973, abandoned. This application May 30, 1975, Ser. No. 582,365

Claims priority, application United Kingdom, Sep. 1, 1972, 40641/72

Int. Cl.² B60C *13/00, 17/00, 9/02*

U.S. Cl. 152—354 R **36 Claims**



1. A pneumatic tire having two bead regions, an aspect ratio of less than 65% and a rubber tread, having a profile rounded in cross-section, comprising a carcass of crossed plies extending from one bead region to the other and comprising cords which are placed in tension when the tire is inflated, the bias angle of each carcass ply being less than 22° with respect to the mid-circumferential plane of the tire, the width of the tread measured in a direction parallel to the axis of the tire between the edges thereof being the maximum width of the tire measured in said direction, the tread rubber having a resilience measured on a Dunlop Healey Pendulum at 50° C of the order of 50 to 55 and a hardness at room temperature of the order of 64° to 66° BS, and the tread rubber has the following composition:

Component	Parts
Natural Rubber	50–70
LTP (styrene butadiene rubber containing 23.5% styrene)	50–30
Carbon Black	55–65
Extender Oil	7.5–12.5
Sulphur	1.75–2.25

4,112,995

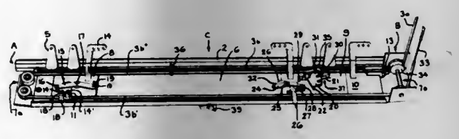
MULTIPLE OPERATION TRAVERSE APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Ralph R. Pasinski, 9204 Basset Ct. West, Livonia, Mich. 48150

Filed Apr. 4, 1977, Ser. No. 784,610

Int. Cl.² A47H *1/00*

U.S. Cl. 160—126 **7 Claims**



1. A traverse apparatus comprising:

at least one track member disposed substantially between a first position and a second position, said track member being disposed substantially horizontally adjacent and coextensive with a standard drapery rod to cooperate therewith;

a looped cord operably connected to said track member for selectively moving relative to said track member, said cord having a first drape supporting portion thereof disposed adjacent the peripheral edges of said horizontal track member and having a second pull portion thereof disposed substantially vertically adjacent said second position for selective pulling thereof in opposite directions by a user of said apparatus;

first, second and third carrier members operably connected to said looped cord, said carrier members being adapted to selectively move relative to said track member between said first and second positions;

a pair of standard drapes operably connected to said first, second and third carrier members, said drapes being adapted to selectively cover and uncover a space across which said track member is disposed;

said pair of drapes having three top edge corner portions thereof movably supported respectively by said first, second and third carrier members, with the remaining top edge portions of said pair of drapes being movably supported by said standard drapery rod;

said first, second and third carrier members being adapted to cooperate with said track member and said looped cord to selectively control said covering and uncovering of said space from said first position, and from said second position, and from a third position disposed between said first and second positions proximal the center portion of said track member;

said first carrier member and said second carrier member being adapted to support the two inner top edge corner portions of said pair of drapes, and said third carrier member being adapted to support the outer top edge corner portion of said pair of drapes which is in closest proximity to said second position;

said first carrier member and said second carrier member being provided with interlocking means for permitting said first carrier member and said second carrier member to be interlocked for integral movement thereof relative to said track member; and

said third carrier member being adapted to remain stationary relative to said track member and adjacent said second position when said interlocking means provided on said first carrier member and said second carrier member is in an inoperative position.

4,112,996

SAFETY DEVICE FOR ARRESTING UNROLLING OF ROLLER BLINDS

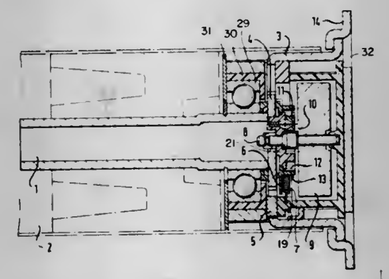
Artur Föhl, Haubersbronn, Germany, assignor to Repa Feinstanzwerk GmbH, Aldorf, Germany

Continuation-in-part of Ser. No. 692,275, Jun. 3, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,300

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1975, 2524421

Int. Cl.² E06B *9/208*

U.S. Cl. 160—296 **5 Claims**



1. In a roller blind with a horizontally oriented winding shaft, a safety device for arresting unrolling of the blind in the event of failure of support means for the blind, which comprises a concentric blocking shaft affixed to the winding shaft to prevent rotation of the blocking shaft relative to the winding shaft, a gear rigidly fastened to the blocking shaft near its end, a pivotally mounted pawl with a spring urging the pawl in contact with the teeth of said gear, a gate member holding the pawl out of contact with the teeth of the gear during normal unrolling of the blind, an inertial member supported relatively movably with respect to the blocking shaft whereby when said roller blind is rolled down in normal operation said inertial member will not change its relative movement to the blocking shaft but with increased unrolling velocity said inertial member will change its relative movement to the blocking shaft and activate said gate member to permit the pawl to enter in contact with the teeth of said gear and arrest unrolling of the blind.

4,112,997

METAL CASTING

George D. Chandley, Amherst, N.H., assignor to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Filed Feb. 28, 1977, Ser. No. 772,817

Int. Cl.² B22D *17/14;* **B22C** *9/08, 9/22*

U.S. Cl. 164—119 **3 Claims**

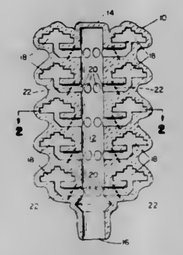
1. A method of casting a plurality of parts in a multiple cavity, gas permeable, shell mold, comprising the steps of

providing a mold with a central vertical riser passage having an open lower end and having a plurality of mold cavities connected to said riser passage by gate passages having screen means extending thereacross, said screen means extending across said gate passages in a slanted plane with the bottom portion thereof nearer to said mold cavities and at an angle of about 45° to 60° to the horizontal

lowering the open lower end of said mold beneath the surface of molten metal,

causing molten metal to fill said riser passage and said mold cavities through said gate passages and said stabilizing screen means therein and to filter out impurities, while gas in said cavities escapes through their walls

at least in part solidifying said molten metal around the periphery of said mold cavities and the portion of said gate passages between said stabilizing screen means and said mold cavities while maintaining said molten metal as a liquid in said riser passage and in the portion of said gate



passages between said stabilizing screen means and said riser passage and

draining molten metal from said riser passage and from the portion of said gate passages between said stabilizing screen means and said riser passage before complete solidification of said molten metal in said mold cavities, said stabilizing screen means stabilizing molten metal in said mold cavities and in the portion of said gate passages between said stabilizing screen means and said mold cavities during and subsequent to said drainage of molten metal from said riser passage and from the portion of said gate passages between said stabilizing screen means and said riser passage.

4,112,998

POURING METHOD AND APPARATUS THEREFOR

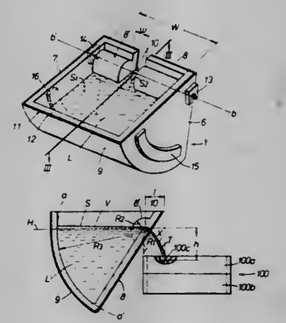
Jiro Sato, Nagoya, Japan, assignor to Fujiwa Kika Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 646,037, Jan. 2, 1976, abandoned. This application Nov. 15, 1976, Ser. No. 741,843

Claims priority, application Japan, Oct. 22, 1975, 50-126302; Nov. 7, 1975, 50-150722[U]; May 10, 1976, 51-52152

Int. Cl.² B22D *37/00, 41/04*

U.S. Cl. 164—136 **11 Claims**



1. A method for pouring molten metal from a tiltable ladle into a mold; said ladle having a front wall, and a pouring outlet from which such molten metal is poured disposed in said front

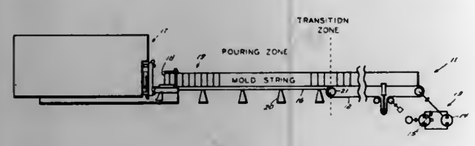
wall beneath the terminal edge thereof, said outlet having a bottom edge guide of arcuate sectional configuration for guiding the molten metal from the outlet in a constantly uniform stream into such mold; the extent of the arcuate shape of the molten metal guide being across the thickness of the front wall of the ladle such that the horizontal and vertical distances between the mold and the horizontal and vertical axes passing through the point at which the metal begins free fall remain substantially unchanged during all phases of pouring; the steps comprising tilting said tiltable ladle from a first position at a first velocity to a molten metal fall starting point at which molten metal begins to flow from said ladle outlet; continuing to tilt said ladle, without stopping, at a second velocity one-fortieth to one-one hundredth of said first velocity; said second tilting velocity being maintained constant; pouring a streamline of molten metal of consistent arcuate configuration between said ladle and mold while maintaining said second tilting velocity; said first velocity being reduced to said second velocity by means of a continuous deceleration within 0.5 second whereby undulation of the molten metal in said ladle is minimized; and tilting said ladle in the direction of said first position to terminate flow of molten metal from said ladle after a desired amount of such molten metal has been poured into such mold.

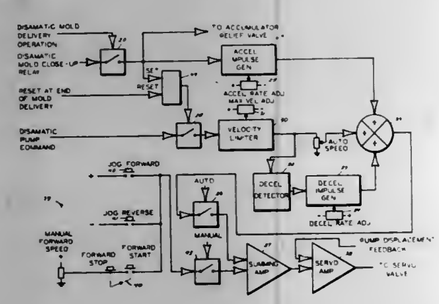
4,112,999

CONVEYOR CONTROL SYSTEM

Stephen A. Gasper, Lansing, Mich., assignor to Roberts Corporation, Lansing, Mich.

Filed Mar. 7, 1977, Ser. No. 775,164
Int. Cl.² B22C *19/04, 25/00*
U.S. Cl. 164—154 **5 Claims**





1. In a cooling conveyor system which includes a mold cooling conveyor and drive means therefor, and an automatic molding machine having a squeeze ram for delivering molds to the mold cooling conveyor and a mold close-up relay switch actuated by movement of the squeeze ram so as to generate a signal which actuates the automatic mold machine control system, comprising:

cooling conveyor control means for selectively controlling the movement of a cooling conveyor synchronously with the movement of the squeeze ram in response to signals received directly from the control system of the automatic mold machine in association therewith;

start track impulse generator means provided in said cooling conveyor control means for initially selectively accelerating the cooling conveyor, said start track impulse generator means actuated by a signal from the mold close-up relay switch activated by the squeeze ram of the automatic mold machine;

velocity limiter means provided in said cooling conveyor control means for selectively limiting the speed of the cooling conveyor to a point slightly slower than the maximum attempted velocity of the squeeze ram of the automatic mold machine;

deceleration impulse generator means provided in said cooling conveyor control means for selectively decelerating the cooling conveyor at a rate equal to or greater than that of the squeeze ram of the automatic mold machine, said deceleration impulse generator controlled by deceleration detector means which senses deceleration of the squeeze ram of the automatic mold machine; and

cooling conveyor drive means for selectively driving said cooling conveyor in response to signals from said cooling conveyor control means; and

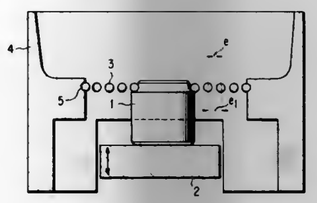
servo valve control means provided in association with said cooling conveyor control means and said cooling conveyor drive means for selectively controlling the speed of the cooling conveyor in selective response to signals received from said cooling conveyor control means, said start track impulse generator means, said velocity limiter means and said deceleration impulse generator means.

4,113,000

SELF-CLEANING EJECTOR-FILTER

Bernard Poisson, Paris, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Apr. 14, 1977, Ser. No. 787,514
Claims priority, application France, Apr. 14, 1976, 76 10948
Int. Cl.² B22C *17/00*
U.S. Cl. 164—227 **7 Claims**



1. A combination device for filtering the air from an air-sand mixture or an air-liquid metal mixture in molds for sand cores and metal castings at the moment of filling these molds, as well as for ejecting the finished part, comprising:

a filtering element in the form of a spiral spring, the turns of which are non-touching, for obstructing an air-evacuation orifice,

an ejector element situated in said orifice such that the central part of the spiral spring is wrapped around an end of said ejector element so as to support said spiral spring and to oppose any sag in the spiral spring; and,

means for moving said ejector element in an upward and downward direction.

4,113,001

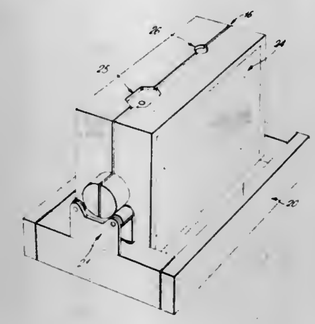
MOULD CLAMPING AND POSITIONING SYSTEM

John Workman, Lough House, Greyabbey, County Down, Northern Ireland

Filed Nov. 22, 1976, Ser. No. 744,095
Claims priority, application United Kingdom, Nov. 21, 1975, 47914/75
Int. Cl.² B22D *27/16, 5/02*
U.S. Cl. 164—255 **2 Claims**

1. Moulding apparatus, comprising:

a mould box formed in two separate parts, the box parts being unitable at a mould parting face and each said part incorporating at opposite ends thereof a lug member having a substantially semi-circular outside profile, the arrangement being such that the mould box parts can be abutted at the mould parting face and the lug members of one box part registered with the lug members of the other box part so that the substantially semi-circular surfaces of the adjacent lug members cooperate to form substantially circular lugs coaxially disposed at opposite ends of the mould box, said mould box also having casting and air-venting apertures located in one of the box sides, each of said apertures being intersected by said mould parting face and each being formed partly by each box part, and a mould box support structure incorporating a pair of spaced support members for receiving and supporting said



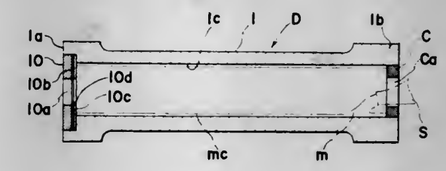
substantially circular lugs of said mould box, each support member having two parallel rollers respectively spaced on opposite sides of the medial plane conjoining said support members, the rollers of each support member being spaced by a distance less than the diameter of the pertaining substantially circular mould box lug, whereby the mould box may be supported on said rollers with the parting face either horizontal or vertical in which latter position the rollers of the mould box support structure provide a reaction force for the weight of the mould box and its contents during casting which biasses the two box parts together.

4,113,002

CHILL PREVENTING ARRANGEMENT FOR USE IN CENTRIFUGAL CASTING AND METHOD FOR PREVENTING CHILL THEREBY

Shigemi Fukuta; Hiroshi Izaki, both of Osaka, and Shoichi Yoshino, Tondabayashi, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 5, 1976, Ser. No. 712,068
Claims priority, application Japan, Dec. 11, 1975, 50-148902
Int. Cl.² B22D *13/02, 13/10*
U.S. Cl. 164—286 **10 Claims**



1. A method for preventing chilling at an end portion of a uniform diameter tubular casting formed in a centrifugal casting mold including an end plate against a flat surface of which said end portion is formed, said method comprising:

forming a groove in said end plate surface and roughening the surface of said groove;

then forming an intermediate metal alloy layer in said groove by flame or plasma spraying a metal alloy material therein;

forming a ceramic coating of a thickness greater than 0.7 mm on said intermediate layer by flame or plasma spraying ceramic material thereon until said ceramic coating is exposed from said end plate surface; and

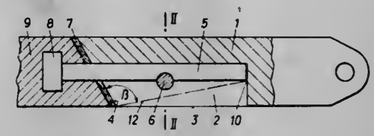
machining the exposed surface of said ceramic coating until it is smooth and flush with the inner surface of said end plate surface.

4,113,003

STARTER BAR HEAD ARRANGEMENT

Stefan Biricz, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Dec. 9, 1976, Ser. No. 749,119
Claims priority, application Austria, Dec. 12, 1975, 9448/75; Jun. 15, 1976, 4351/76
Int. Cl.² B22D *11/08*
U.S. Cl. 164—446 **9 Claims**



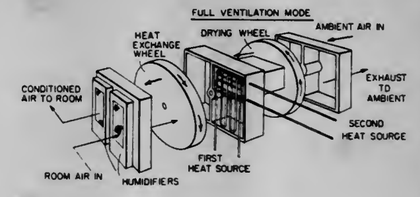
1. In a starter bar head arrangement to be used in continuous casting plants for strands with at least one strand anchoring piece protruding from the starter bar head at the front side thereof, a transverse bolt being provided for fixing the at least one strand anchoring piece, the starter bar head being connectable with the cast strand having a crop end by casting-on said at least one strand anchoring piece, an insulating layer being provided to cover the front face of the starter bar head, the improvement which comprises a recess provided in the starter bar head open towards the front face of the starter bar head, the at least one strand anchoring piece being inserted therein, and the at least one strand anchoring piece being automatically droppable after the removal of the transverse bolt and separation of the crop end, a certain portion of the at least one strand anchoring piece being inserted in said recess, said portion having such a cross-section that the distance between a forwardmost supporting place of the at least one strand anchoring piece on the starter bar head and an oppositely arranged limiting face of the at least one strand anchoring piece is, at most, equal to the shortest distance between a supporting place in the recess and an oppositely arranged wall of said recess.

4,113,004

AIR CONDITIONING PROCESS

William F. Rush, Arlington Heights; Jaroslav Wurm, N. Riverside, and Raymond J. Dufour, Wheaton, all of Ill., assignors to Gas Developments Corporation, Chicago, Ill.

Continuation of Ser. No. 520,616, Nov. 4, 1974, Pat. No. 4,014,380, which is a continuation-in-part of Ser. No. 415,323, Nov. 13, 1973, Pat. No. 3,889,742. This application Nov. 3, 1976, Ser. No. 738,481
Int. Cl.² F23L *15/02*; F24F *3/14*; F28D *19/04*
U.S. Cl. 165—3 **10 Claims**



1. An open-cycle air conditioning process for heating and removing moisture from air having a single rotating wheel functioning as an enthalpy exchanger wherein treatment air to

be heated is passed through a treatment air passageway and a regenerative air stream is passed through a separate regenerative air passageway comprising the steps:

passing treatment air to be heated through a treatment air passageway over an enthalpy exchanger and transferring heat from the enthalpy exchanger to the treatment air stream to provide heated air having desired temperature; and

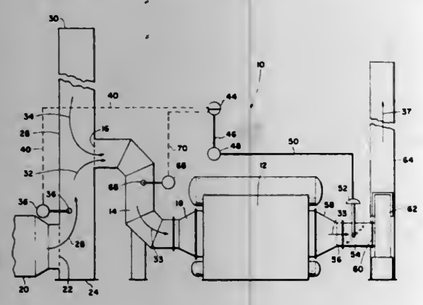
passing a regenerative air stream through a separate regenerative air passageway countercurrent to said treatment air stream, the entire regenerative air stream being heated by passing a low temperature heater means supplying heat to the entire regenerative air stream prior to said enthalpy exchanger, splitting said regenerative air stream into a first and a second portion, said first portion passing directly through a segment of said enthalpy exchanger to partially regenerate said segment and said second portion being further heated by passing a high temperature heater means and then passing said second portion through said segment of said enthalpy exchanger partially regenerated by said first portion at a sufficient temperature to complete regeneration of said enthalpy exchanger with respect to temperature and moisture.

4,113,005

WASTE HEAT BOILER TEMPERATURE CONTROL SYSTEM

Clifford J. Cantrell, Jr., Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Apr. 22, 1977, Ser. No. 789,939
Int. Cl.² F22D *1/16*
U.S. Cl. 165—40 **3 Claims**



1. In a thermal oxidizer stack system, including a first stack connected through a first opening near its base to the outlet of said thermal oxidizer, the hot products of combustion or stack gases passing up said stack, apparatus for recovery of the waste latent heat in said hot stack gases, comprising;

(a) heat exchanger means having an inlet and an outlet;

(b) sais inlet to said heat exchanger means connected by first conduit means through a second opening in the wall of said stack to the interior thereof, at a selected point intermediate the base and top of said stack, but always above said first opening;

(c) the outlet of said heat exchanger means connected through second conduit means to induced draft means;

(d) second stack means connected to the outlet of said induced draft means;

(e) first temperature indicator means responsive to the temperature inside said stack below said second opening in said stack;

(f) second temperature indicator means responsive to the temperature of the gases in said first conduit means; and

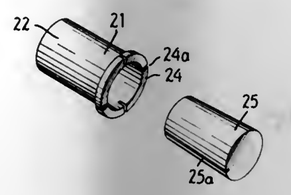
(g) control means responsive to the differential temperature indication of said first and second indicators to control the rate of flow of stack gases from said first stack through said heat exchanger means, to, and up said second stack means.

4,113,006

TWO-PIECE TUBE PLUG FOR REPAIRING TUBES IN HEAT EXCHANGERS AND THE LIKE

Porter B. Clapp, 8 Robin Hood La., New City, N.Y. 10956

Filed Jan. 31, 1977, Ser. No. 764,520
Int. Cl.² F28F *11/02*; F16L *55/10*
U.S. Cl. 165—76 **1 Claim**



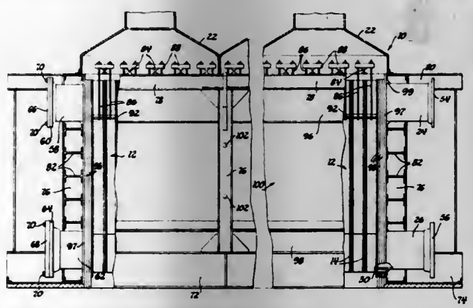
1. A two-piece tube repair plug for use in repairing damaged tubes in condensers, heat exchangers and the like comprising; a tubular thimble insertable in use into an open end of a damaged tube, mounted on a tube sheet, for isolating the tube sheet at the tube sheet; said thimble having a closed end and an opposite open end and insertable into said tube with said open end thereof disposed toward the open end of said tube; said thimble comprising a material deformable outwardly radially for engaging the interior of an end portion of said tube positively and closing it with a fluid-tight seal and comprising a tubular shell having a flange circumferentially of said open end thereof to limit the extent of axial entry into the open end of said tube a cylindrical plug insertable axially into said thimble through said open end thereof for deforming said thimble outwardly radially to effect said seal; and said plug being dimensioned to be received in said thimble and configured to deform said thimble outwardly radially; said thimble comprising a tapered bore converging in a direction toward said closed end thereof; said plug comprising a tapered cylinder converging toward one end thereof, the taper of said cylinder being different and lesser than the taper of said tapered bore, said plug being inserted in use with said one end thereof disposed for assembly with said thimble adjacent said closed end of said thimble; said plug comprising an axial recess on the periphery thereof along the full axial length of the plug to allow escape of air from internally of said thimble as said plug is inserted axially therein; and said flange having circumferentially spaced peripheral notches to allow said shell to deform outwardly radially.

4,113,007

RECUPERATOR

Robert J. Flower; Clarke R. Snedeker, both of Lockport, and Paul K. Beatenbough, Medina, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 20, 1977, Ser. No. 789,066
Int. Cl.² F28F *5/00*
U.S. Cl. 165—81 **5 Claims**



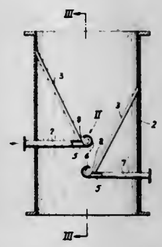
1. A rapid startup recuperative heat exchanger, including a core with air and gas passages formed between spaced plate members which extend in substantial parallelism with one another; said plates of the core having openings therein aligned with one another along both sides of the core; guide rod means extending through said aligned openings in a generally horizontal direction and engaging said plates in a manner permitting sliding movement thereon while maintaining alignment of said plates; a frame including upper beam members extending substantially parallel to said guide rods; connecting means between said beam members and guide rods for supporting said core; insulative panels extending in closely spaced parallelism to the core sides in contact with the gas in said gas passages to form yieldable side walls of the gas passages; air inlet and outlet fittings joined to the end plate of said core for passage of pressurized air to and from said air passages; said fittings and said end plate having substantially equal thicknesses to reduced resistance to heat flow and promote even heating thereof during a rapid core warmup; means for preventing abrupt sectional changes between the active heat exchange members, such as said end plate and the adjacent series of plates, by a gradual reduction in thickness between adjacent plates.

4,113,008

APPARATUS FOR SEPARATING CLEANING ELEMENTS FROM A FLUID

Friedrich-Wilhelm Treplin, Ratingen, and Werner Borchert, Ratingen-Tiefenbroich, both of Germany, assignors to Ludwig Taprogge, Reinigungsanlagen für Röhren-Wärmeaustauscher, Düsseldorf, Germany

Filed Mar. 25, 1977, Ser. No. 781,489
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612917
Int. Cl.² F28G *1/12*
U.S. Cl. 165—95 **8 Claims**



1. An apparatus for separating cleaning elements from a fluid stream traversing a heat exchanger, said apparatus comprising

a vertically disposed circular cylindrical duct;

at least one separating sieve disposed in said duct and lying in a plane inclined to the axis thereof, said sieve having an ellipsoidal upper boundary and a substantially horizontal lower boundary;

a diagonal collecting tube disposed along said lower boundary and formed with a longitudinally extending slit aligned with said lower boundary and receiving cleaning elements collected by said sieve, said slit extending over the entire lower boundary of said sieve and substantially the full length of said collecting tube, said slit being disposed so as to induce a tangential and swirling flow of the fluid axially, traversing said duct into said tube and entraining said cleaning elements from said sieve through said slit into said tube; and

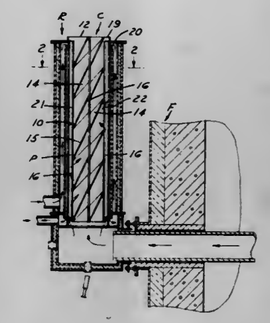
a fitting connected to said tube for withdrawing said elements therefrom.

4,113,009

HEAT EXCHANGER CORE FOR RECUPERATOR

Robert W. Meyer, Novi, and George A. Hall, III, Westland, both of Mich., assignors to Holcroft & Company, Livonia, Mich.

Filed Feb. 24, 1977, Ser. No. 771,458
Int. Cl.² F28F *13/06*
U.S. Cl. 165—154 **10 Claims**



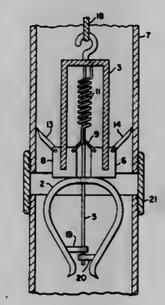
1. A recuperator comprising a cylinder for flue gases constituting a primary heat transfer surface, a core within said cylinder having a plurality of radial leaves extending outwardly to said cylinder thereby subdividing the same into a plurality of separate flue gas passageways each of which in cross section is bounded by two straight sides and an arcuate side, said radial leaves after receiving heat from said flue gases serving to reradiate said heat to said primary heat transfer surface, and a series of longitudinally spaced triangular baffles in each of said passageways, each baffle secured to the adjacent leaves, inclined to the horizontal, said baffles serving to interrupt said passageways and cause said flue gas to have a gentle swirling motion into and out of the spaces between the outer edges of said baffles and said cylinder, thereby enhancing the convective heat transfer between said flue gas and said primary heat transfer surface.

4,113,010

CASING STOP FOR WELL TOOLS AND AN INSERTION DEVICE THEREFORE

William Dwight Gramling, 5144 Newport Ave., Chevy Chase, Md. 20016

Division of Ser. No. 687,916, May 19, 1976, Pat. No. 4,070,134, which is a continuation-in-part of Ser. No. 569,056, Apr. 17, 1975, abandoned. This application Apr. 19, 1977, Ser. No. 788,781
Int. Cl.² E21B *23/02*
U.S. Cl. 166—213 **2 Claims**



1. Means for positioning and ejecting a restricting stop in well casing, said means comprising a vertically oriented body open at the lower end, fittings slidable on lower end of said

body, said fittings provided with resilient tabs held against and slidable on said casing, said fittings attached to said body, a vertically positioned rod attached to the top of and projecting through said open lower end of said body, a downwardly facing semi-circle of resilient bar compressed and slidable on said rod, said fittings remaining stationary relative to said body during downward movement of said ejecting means relative to said casing, said fittings remaining stationary relative to said casing and moving downward relative to said body during upward movement of said ejecting means relative to said casing, said downward movement of fittings relative to said body causing downward movement of said bar relative to said rod, said bar becoming ejected from said ejecting means, said bar contacting said well casing and becoming stationary in said well casing at a predetermined depth.

4,113,011

ENHANCED OIL RECOVERY PROCESS

George G. Bernard, La Mirada, and LeRoy W. Holm, Fullerton, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Mar. 7, 1977, Ser. No. 774,920
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—273 **18 Claims**

1. In a method for the recovery of oil from subterranean oil-bearing formations wherein carbon dioxide is injected into the formation at pressures above the miscible-displacement pressure to miscibly displace said oil to a recovery well, the improvement which comprises:

injecting into said formation not later than the injection of said carbon dioxide an aqueous solution containing from about 0.01 to about 10 weight percent of a surfactant comprising alkyl polyethylene oxide sulfates having 8 to 9 carbon atoms in the alkyl radical and from 1 to 5 ethylene oxide groups per molecule, said aqueous solution and said carbon dioxide being injected into said formation at a pressure above about 1,500 p.s.i. and above said miscible-displacement pressure.

4,113,012

RECLOSABLE CIRCULATION VALVE FOR USE IN OIL WELL TESTING

Robert T. Evans, and David L. Farley, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 27, 1977, Ser. No. 846,232
Int. Cl.[2] E21B *43/12, 47/00*
U.S. Cl. 166—264 **7 Claims**

1. A circulation valve apparatus for use in a test string having a flow channel therethrough and extending within a well bore from the surface to a formation to be tested comprising:

a tubular housing having an axial bore therethrough and arranged for incorporation into said test string with said axial bore communicating with said test string flow channel, said tubular housing having a circulation port providing fluid communication between the well bore exterior of said housing and said axial bore;

circulation valve means slidably located in said axial bore and movable between a first position preventing fluid communication through said circulation port into said axial bore, and a second position opening said circulation port and allowing fluid communication through said circulation port into said axial bore;

power mandrel means slidably located in said axial bore;

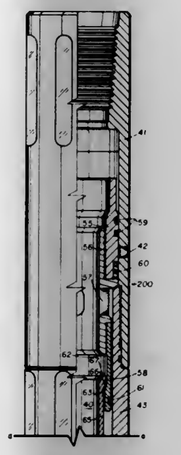
piston means on said power mandrel means responsive to pressure changes in said well bore for moving said power mandrel means;

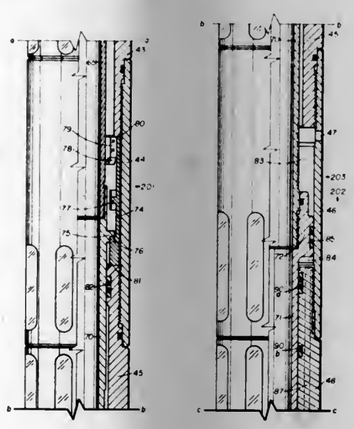
operating means between said power mandrel means and said tubular housing for imparting a bias to said piston means for holding said power mandrel means in the last position to which said power mandrel means moved responsive to said well bore pressure changes; and

indexing means operatively connecting said power mandrel means to said circulation valve means for moving said circulation valve means from its first position to its second position responsive to a predetermined movement of a plurality of movements by said power mandrel means, and for subsequently moving said circulation valve means from its second position to its first position responsive to a later predetermined movement of said power mandrel means.

6. A method of testing a formation using a testing string within an oil well bore extending from the surface to the formation to be tested, said testing string including a tester valve for opening and closing a flow channel through said testing string responsive to pressure changes in the well bore exterior of the testing string, said method comprising:

lowering said testing string into said well bore;





setting a packer mechanism at the end of said testing string for isolating said formation from the annulus of the oil well between the walls of the well bore and the testing string;

increasing the pressure in the well annulus;

responsive to said pressure increase, opening the tester valve in the testing string flow channel allowing fluid communication from the formation, through the testing string flow channel to the surface;

releasing the pressure increase in the well annulus;

responsive to said pressure release, closing said tester valve for closing-in said formation;

stepping an indexing means in a circulation valve in said testing string above said tester valve, which indexing means maintains said circulation valve in the closed condition until after a predetermined number of steps;

repeating the increasing and releasing pressure steps a predetermined number of times to conduct a formation testing program;

responsive to a predetermined pressure release, opening said circulation valve;

circulating fluid through the well annulus, the open circulation valve and the flow passage in the testing string for displacing fluid in the testing string flow channel to the surface;

increasing the pressure in the testing string flow channel and the well annulus;

responsive to said pressure increase, closing said circulation valve; and

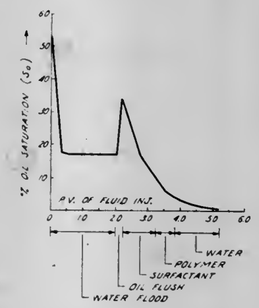
repeating the increasing and releasing pressure steps a predetermined number of times to conduct a subsequent formation testing program.

4,113,013

ASPHALTENES AS SACRIFICIAL AGENTS IN OIL RECOVERY PROCESSES

Will A. Ledoux, Houston; William Schoen, Missouri City, and Atul Kumar, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 4, 1976, Ser. No. 738,494
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—275 **4 Claims**



1. A process for recovering oil from a subterranean reservoir when a surfactant is injected into the reservoir to sweep oil from the reservoir, the improvement which comprises:

injecting asphaltenes mixed with the surfactant.

4,113,014

PROCESS FOR REINFORCING GEOLOGICAL FORMATIONS

Rolf Kubens, Odenthal, and Herbert Gebauer, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 16, 1977, Ser. No. 796,935
Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623346
Int. Cl.[2] E21B *33/138;* C08G *18/76;* E02B *3/12*
U.S. Cl. 166—295 **14 Claims**

1. Process for reinforcing geological formations and loose rock and earth masses comprising introducing into the cavities of the geological formations or masses of rock and earth which are required to be reinforced reaction mixtures based on organic polyhydroxyl compounds and organic polyisocyanates which react to yield polyurethanes, characterized in that the polyisocyanate component used is a polyisocyanate mixture containing from about 10 to 80%, by weight, of 2,4'-diisocyanato-diphenylmethane.

12. A process for reinforcing geological formations and loose rock and earth masses comprising

(a) introducing a two-chamber cartridge into a previously prepared bore hole wherein

(i) one chamber of said cartridge contains an organic polyhydroxyl compound, and

(ii) the second chamber of said cartridge contains an organic polyisocyanate mixture comprising from about 10 to 80%, by weight, of 2,4'-diisocyanato-diphenylmethane; and

(b) destroying said cartridge inside the bore hole to obtain a reaction mixture which reacts to form a polyurethane.

4,113,015

PROCESS FOR TREATING WELLS WITH VISCOUS EPOXY-RESIN-FORMING SOLUTIONS

Franciscus H. Meijs, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 16, 1977, Ser. No. 852,175
Claims priority, application United Kingdom, May 30, 1977, 22756/77
Int. Cl.[2] E21B *33/138, 43/02*
U.S. Cl. 166—295 **6 Claims**

1. In a process for treating a well by injecting, into the well and into any fluid-containing permeable earth formation in fluid-communicaton with the well, an epoxy-resin-forming solution from which a self-curing partially-cured resin is subsequently precipitated, the improvement comprising:

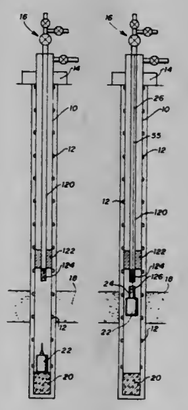
dissolving in the resin-forming solution to be injected a viscosity-increasing oil-soluble polymer that provides a solution effective viscosity at least substantially equaling that of the fluid within the well and any fluid-containing permeable earth formation which is in fluid-communication with the well.

4,113,016

CASING PERFORATION METHOD AND APPARATUS

Donald E. Trott, 2302 E. Loma Vista, Victoria, Tex. 77901

Filed Sep. 26, 1977, Ser. No. 836,758
Int. Cl.[2] E21B *29/00*
U.S. Cl. 166—297 **13 Claims**



1. A method for perforating the casing of a well at a predetermined strata with a perforator means, comprising the steps of:

(a) depositing said perforator means within said casing below said strata,

(b) installing a tubing string with an attached packer within said casing,

(c) joining a wireline to said perforator means,

(d) positioning said perforator means at the level of said strata by means of said wireline, and

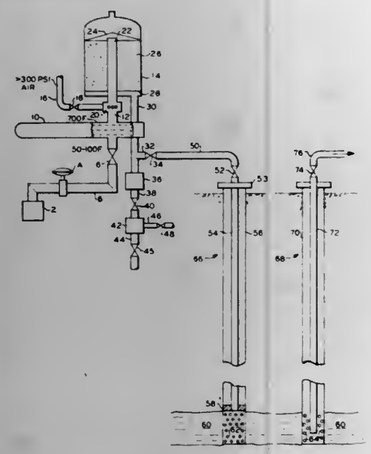
(e) activating said perforator means.

4,113,017

HOT EFFLUENT FROM PARTIAL OXIDATION OF NATURAL GAS INJECTED IN OIL RECOVERY PROCESS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 9, 1976, Ser. No. 749,196
Int. Cl.² E21B *43/24*
U.S. Cl. 166—303 **3 Claims**



1. A method for recovering oil from an underground formation comprising injecting into said formation combustion products containing both gas and liquid from partial oxidation of natural gas said combustion products at a temperature in the range of about 250° to about 400° F thereby providing hot gases, liquid solvent, and driving force for treatment of said underground formation.

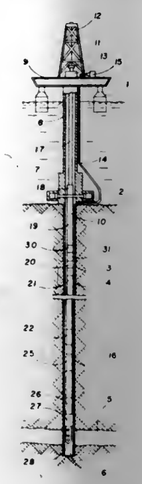
4,113,018

OIL WELL TESTING SAFETY VALVE

Burchus Q. Barrington, Duncan, Okla., and Jim R. Williamson, Carrollton, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 30, 1977, Ser. No. 811,506
Int. Cl.² E21B *47/00*
U.S. Cl. 166—334 **9 Claims**

1. An apparatus for use in a testing string extending to a submerged formation in an oil well comprising:
slip joint means in the testing string for absorbing wave motion;
means above said slip joint means for collapsing said slip joint means in the event said testing string is freely lowered into said oil well;
full opening valve means in said testing string above said slip joint means for controlling fluid flow through the interior of said testing string, said valve means being in the normally open position when the valve means is in tension, and being in the closed position when said valve means is in compression; and
operating means in said valve means for maintaining said valve means in the open position when tension appears between the ends of said valve means, and for closing said



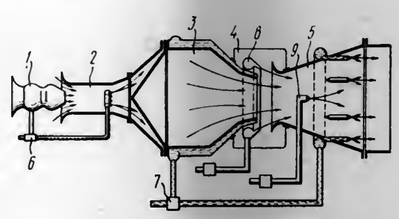
valve means when compression appears between the ends of said valve means.

4,113,019

INERT GAS GENERATOR BASED ON AIR JET ENGINE

Georgy Georgievich Sobolev, ulitsa Schepkina, 47/3, kv. 64, Moscow; Anatoly Ivanovich Kozljuk, ulitsa Postysheva, 135, kv. 46, Donetsk; Mikhail Vasilievich Kolyshenko, ulitsa Artema, 161, kv. 6, Donetsk; Valery Leonidovich Makarenko, ulitsa Baikova, 30, kv. 2, Donetsk; Valentin Vasilievich Vasilenko, ulitsa Levitskogo, 23, kv. 2, Donetsk; Leonid Denisovich Vishnevsky, ulitsa Levitskogo, 27, kv. 8, Donetsk, and Viktor Ivanovich Kukhno, ulitsa M. Ulyanovoi, 53, kv. 30, Donetsk, all of U.S.S.R.

Filed Apr. 22, 1976, Ser. No. 679,437
Claims priority, application U.S.S.R., Aug. 13, 1975, 2157152[I]
Int. Cl.² A62C *35/36*
U.S. Cl. 169—12 **5 Claims**



1. An inert gas generator for extinguishing fires comprising:
an air jet engine with fuel supply means adapted to produce exhaust gases; said air jet engine communicating with an ejector channel with fuel supply means, and adapted to draw in outside air; said ejector channel communicating with an afterburning chamber with cooling means and means for supplying an inert gas; said afterburning chamber communicating with a low pressure depression chamber adapted to limit access of outside air into the flow of said gases; said depression chamber communicating with manifold means for supplying an inert gas to the gas flow; said manifold means communicating with a diffuser with means for feeding halogenated hydrocarbons into the gas flow which exits at high velocity.

4,113,020

FIRE SAFETY CHRISTMAS ORNAMENT

Anthony Panetta, 39 Conkling St., Basking Ridge, N.J. 07920

Filed Dec. 13, 1976, Ser. No. 749,608
Int. Cl.² A62C *35/02*
U.S. Cl. 169—26 **5 Claims**



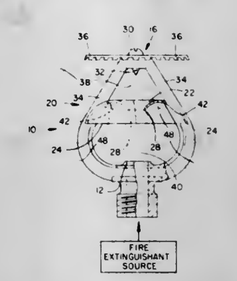
1. A decorative fire extinguishing tree ornament comprising a hollow two piece structure, the two pieces attached at spaced apart points along their juncture by a hot melt adhesive which softens at a temperature greater that 100° F., at least one hinge-like structure located at the top of said ornament and joining said two pieces, a compressed spring positioned inside the ornament, each end of said spring contacting a portion of each of the pieces and tending to force the pieces apart, a single means at the top of the ornament at the juncture of the two pieces for suspending said ornament on a tree limb, said ornament containing a fire extinguishing powder.

4,113,021

FIRE EXTINGUISHANT DISPENSING NOZZLES

Clements M. Werner, 4246 S. Whitnall Ave., Milwaukee, Wis. 53207

Filed Feb. 17, 1977, Ser. No. 769,425
Int. Cl.² A62C *37/14*
U.S. Cl. 169—37 **3 Claims**



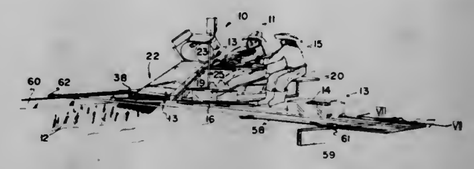
1. An upright sprinkler for attachment to a supply of a fire extinguishant, the sprinkler including a nozzle defining an opening for directing upwardly a stream of extinguishant, a deflector for deflecting a portion of the stream generally radially outwardly from the axis of the nozzle opening, means for supporting the deflector in fixed spaced-apart relation to the nozzle, and a second deflector for deflecting a second portion of the stream generally downwardly concentric with the axis of the nozzle opening, the second deflector comprising a downwardly facing concave surface having a radially outer, downwardly directed discharging lip, the first deflector including a radially outer skirt extending downwardly at an angle to the nozzle axis, the skirt terminating at a serrated edge to generate a fine extinguishant spray directed generally radially about the nozzle axis, and the second deflector including an inner directing lip defining a proportioning aperture for passing a fixed portion of the stream from the nozzle upwardly to the first-mentioned deflector and for directing a second portion of the stream upwardly, radially outwardly, and then downwardly along the downwardly facing concave surface to the discharging lip, the support means comprising a yoke having at least two arms, the second deflector including at least two slots for receiving the arms, and the arms defining notches within which the second deflector fits.

4,113,022

PLANT PULLER

Joe Balinte, and Michael Verhaeghe, both of P.O. Box 273, Courtland, Ontario, Canada

Filed Oct. 20, 1976, Ser. No. 734,091
Int. Cl.² A01D *25/04*
U.S. Cl. 171—61 **30 Claims**



1. A plant puller for pulling growing plants from a bed comprising:
(a) a frame mounted for travel over the bed;
(b) a conveyor mounted on the frame at an inclined position relative to the bed, including at least one pair of juxtaposed loop belts of resilient material, each having idler and drive wheels, the pair of belts being jointly disposed to have corresponding lower ends in close proximity to the ground to form an input terminus to the conveyor and having corresponding upper ends forming an upper terminus, and means attached to the frame for holding the adjacent segments of the loop belts in substantially juxtaposed relation between their respective wheels so that each belt has a proximate surface adjacent to that of the other belt from the lower terminus continuously to the upper terminus;
(c) means carried by the frame for counter-rotating each belt and their wheels and each belt so that the proximate surfaces of the two adjacent belts travel in the same direction from the lower terminus to the upper terminus;
(d) a collection receptacle, carried by said frame, and mounted below the upper terminus of the conveyor onto which the pulled plants fall;
(e) a track rigidly positioned at a predetermined distance above the bed;
(f) means for advancing the frame over the track and hence over the bed whereby the cooperative travel of the frame over the bed and of the conveyor belts causes the belts at the lower terminus to encompass the upper portion of the stalk of a plant and to pull the plant out of the bed whereby the plant is conveyed by the conveyor up and along the conveyor to be discharged from the upper terminus thereof and to fall onto the collection receptacle; and
(g) means mounted in the frame for locating the lower terminus of the conveyor at a specific predetermined distance from the bed for pulling larger plants above a predetermined height by the plant puller, whereas smaller plants below the predetermined height are left in the bed, during the travel of the plant puller over the bed.

4,113,023

MULTIPLE SHAFT, GROUND-RAKING ATTACHMENT FOR BUCKET-EQUIPPED TRACTORS

Theodore N. Baskett, 9514 Portland Ave., Tacoma, Wash. 98445

Filed Dec. 6, 1976, Ser. No. 747,966
Int. Cl.² A01D *19/02*
U.S. Cl. 171—63 **13 Claims**

1. For use with a tractor having a material handling bucket

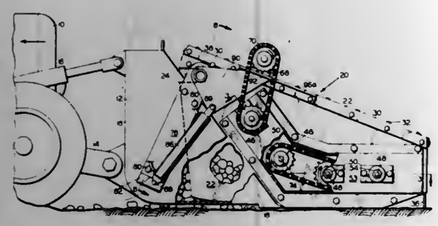
including a pair of spaced side walls and an open fron end, a ground-raking attachment comprising:

(a) a frame including a pair of spaced side members,

(b) frame mounting means mounting the frame on the bucket,

(c) at least one pair of rotatable shafts,

(d) shaft mounting means rotatably mounting the shafts between the frame side members in substantially parallel, spaced relation to each other,



(e) a plurality of rake teeth,

(f) rake tooth mounting means mounting the teeth radially on the shafts, the teeth on one shaft meshing with the teeth on the other, and

(g) drive means connected to the shafts for rotating them in timed relation to each other for advancing material engaged by the teeth progressively into the bucket.

4,113,024

SOIL CULTIVATING IMPLEMENTS

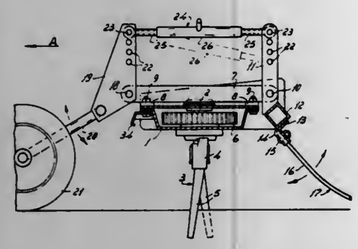
Ary van der Lely, Maasland, and Cornelis Johannes Gerardus Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Feb. 28, 1977, Ser. No. 772,858

Claims priority, application Netherlands, Mar. 1, 1976, 7602084

Int. Cl.² A01B *33/06*

U.S. Cl. 172—59 **19 Claims**



1. A soil cultivating implement comprising a frame and soil working means supported on an elongated portion of said frame, a leading supporting member being pivoted to said frame and positioned in front of said frame portion, a rear supporting member being pivoted to said frame and located to the rear of said frame portion, each of the supporting members bearing on the ground and supporting the implement during normal operation, said supporting members being connected to said frame portion by pivots and interconnected to one another with linkage means, said linkage means including at least one connection member located substantially above said frame portion, and said pivots, the pivotal movements of one supporting member with respect to the frame portion being transmitted to the other member through said pivots and the connection member, whereby the pivotal movements of said one member in one vertical direction displaces the other member in an opposite direction during implement travel.

4,113,025

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

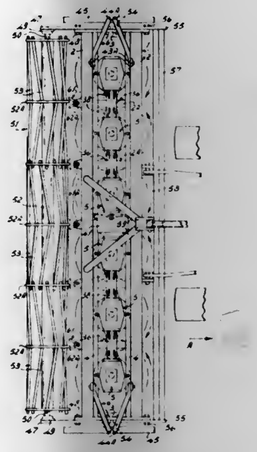
Filed Aug. 23, 1976, Ser. No. 716,768

Claims priority, application Netherlands, Aug. 25, 1975, 7509992

The portion of the term of this patent subsequent to Aug. 30, 1994, has been disclaimed.

Int. Cl.² A01B *33/06*

U.S. Cl. 172—59 **9 Claims**



1. A soil cultivating implement comprising a frame and a row of soil working members supported on said frame, said members being mounted on corresponding upwardly extending shafts, each member comprising radially extending arms, driving means connected to rotate neighboring members in relative opposite directions and said row extending transverse to the direction of implement travel, each member comprising at least two tined cultivating tools that are freely rotatable about respective downwardly extending shaft means supported adjacent the ends of said arms, said arms being substantially equally spaced apart from one another around the shaft of the corresponding soil working member and positioned such that the rotating paths of the tools on the adjacent arms overlap to work a continuous strip of soil said axes of rotation of the tools extending downwardly in convergent relationship with one another.

4,113,026

SOIL CULTIVATING IMPLEMENTS

Ary van der Lely, Maasland, and Cornelis Johannes Gerardus Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed May 14, 1976, Ser. No. 686,327

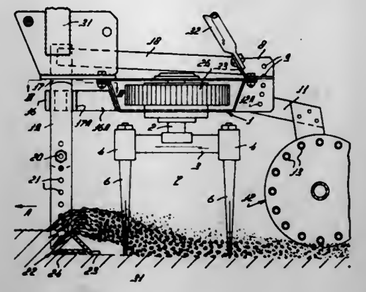
Claims priority, application Netherlands, May 15, 1975, 7505696

Int. Cl.² A01B *33/06, 33/16*

U.S. Cl. 172—59 **9 Claims**

1. A soil cultivating implement comprising a frame and a plurality of soil working rotors supported in a row on an elongated portion of said frame, said row extending transverse to the direction of implement travel, said rotors having downwardly extending tines and being rotatable about upwardly extending axes defined by corresponding shafts, driving means connected to rotate adjacent rotors in relative opposite directions, a transverse soil scraping and displacing member being connected to said frame and positioned adjacent, but spaced apart from the front side of the paths described by the tines of the rotors, said displacing member being elongated and comprising a leading cutting edge that is located at about the same horizontal level as the lower tips of said tines and substantially

forwardly thereof leaving a space said displacing member being positioned to displace a layer of soil upwardly and rearwardly to fall into said space and the rotating paths of the tines



of said rotors during operation, whereby the soil is deposited in a crumbled layer on a substantially unworked ground base an elongated supporting roller being interconnected to the frame and positioned to the rear of said rotors.

4,113,027

SOIL CULTIVATING IMPLEMENTS

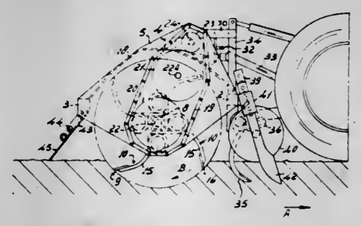
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Mar. 30, 1976, Ser. No. 672,036

Claims priority, application Netherlands, Apr. 1, 1975, 7503821

Int. Cl.² A01B *33/02*

U.S. Cl. 172—70 **5 Claims**



1. A soil cultivating implement comprising a frame and an elongated cultivating member rotatably mounted on said frame, said cultivating member being rotatable about a substantially horizontal axis and driving means connected to rotate said member, said cultivating member including a plurality of tines resiliently supported on a central support, said central support being polygonal in cross section and said tines being fastened to corresponding flat sides of the central support around its axis of rotation, each tine comprising an inner fastening portion clamped to a flat side of the support and an outer arcuately curved portion connected to said inner portion through an integral helical coil, said coil being located behind a plane which passes through the outer free end of the corresponding tine and the axis of rotation of said support, each coil comprising at least two substantially complete turns of 360° and the longitudinal axis of each coil intersecting the rotational axis of said support at an acute angle.

4,113,028

LIFT FOR DRAGGED IMPLEMENT

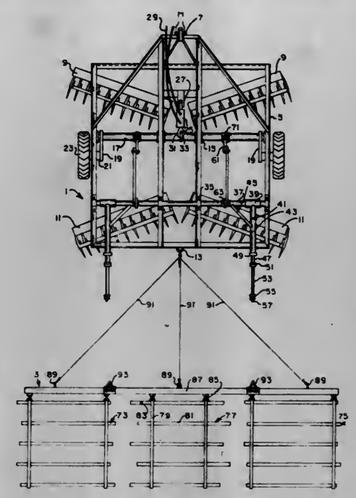
Robert D. Glueck, Rte 2, Box 122, Chaffee, Mo. 63740

Filed Apr. 15, 1977, Ser. No. 787,751

Int. Cl.² A01B *25/00*

U.S. Cl. 172—178 **12 Claims**

1. In combination with a farm implement having transporting wheels and actuating means for selectively lowering said wheels to a ground-engaging transport position, said implement further including hitch means for dragging a generally horizontal towed implement behind said hweeled farm implement, said hitch means comprising a plurality of flexible ties connected to a common tie point on said wheeled farm implement, improved lift means for transporting said dragged implement independent of said hitch means, said lift means comprising arms pivotably mounted on the wheeled farm implement, engagement means on said arms for releasably engaging



aligned connections on said dragged implement, and linkage means operatively connecting said arms to said actuating means for raising said arms sufficiently to carry said dragged implement suspended by said engagement means in a generally vertical position when said actuating means lower said wheels to said transport position.

4,113,029

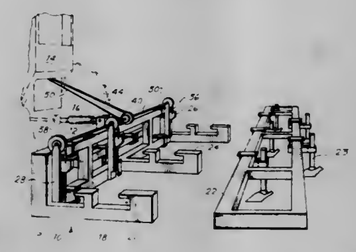
QUICK LATCH FOR FARM TOOL BAR

Vernon Ramsower, Rte. 3, Plainview, Tex. 79072

Filed Feb. 17, 1977, Ser. No. 769,433

Int. Cl.² A01B *51/00*

U.S. Cl. 172—272 **7 Claims**



1. In an apparatus for removably supporting an elongated farm tool bar having

a. a frame adapted to be secured at its front end to a farm vehicle, said frame including

b. a plurality of parallel rearwardly extending unimpeded support arms,

c. each of the support arms having at least one tool bar receiving portions thereon,

d. the tool bar receiving portions in one arm being substantially laterally aligned with the receiving portions of the other arm, and

e. said farm vehicle having means for raising and lowering the frame; and the improved structure for locking the tool bar into each of the arms comprising in combination with the above:

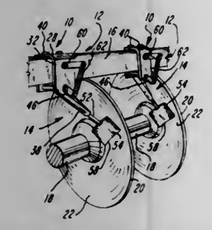
f. each of the tool bars receiving portions being C-shaped with the open portion forward facing the front end of the frame,
g. movable lock members mounted for attachment on the frame,
h. said lock members contacting the front of the tool bar when the tool bar is received in the C-shaped receiving portion of the support frame,
j. a shaft extending laterally along the frame journalled thereto, and
k. flexible members attached to the shaft,
m. each of the flexible members interconnecting the shaft and one of the lock members, whereby
n. rotation of the shaft winds the flexible members around the shaft,
o. thus raising the lock members from an engaged position to an unengaged position.

4,113,030

TWO-WAY SCRAPER FOR GROUND TILLAGE DISCS

Harold G. Walker, 724 3rd St., Wakeeney, Kans. 67672

Filed Jan. 12, 1977, Ser. No. 758,655
Int. Cl.² A01B *23/06*
U.S. Cl. 172—566 **6 Claims**



1. In a disc scraper assembly of the type having a bracket attachable to an implement frame above and to one side of the concave face of a ground tillage disc supported therebeneath and a blade-carrying arm subassembly depending from said bracket and extending downwardly therefrom into position to scrape said concave disc face, the improved connection between said arm subassembly and bracket which comprises: means carried by said bracket mounting said arm subassembly for pendulum-like relative pivotal movement therebeneath between a first operative position swung to one side of said axis of pivotal movement and a second operative position on the opposite side thereof, first spring attachment means carried by said arm subassembly for pivotal movement therewith between its operative positions, means carried by said bracket defining a second spring attachment means movable from a position on one side of the axis of pivotal movement of said arm subassembly to a second position on the other side thereof, and means comprising a tension spring connected between said first and second spring attachment means coacting therewith when both are positioned on the same side of said axis of pivotal movement to yieldably bias the supporting arm subassembly against a disc positioned on the same side thereof.

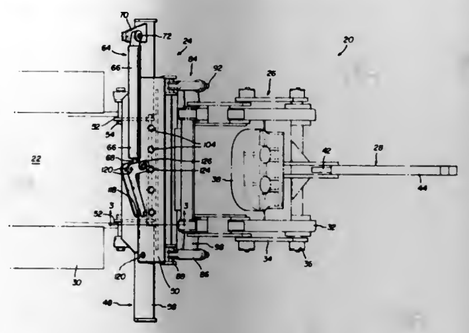
4,113,031

POWER SHIFT MECHANISM FOR EARTH WORKING IMPLEMENTS

Phillip G. Venable, Orion, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 25, 1977, Ser. No. 818,702
Int. Cl.² E02F *3/85*
U.S. Cl. 172—667 **10 Claims**

5. A generally vertical plow-like earth working implement mounted on a prime mover, said prime mover having a support frame, said implement mounted on a slide bracket and said bracket slideably mounted on said support frame permitting lateral shifting of said earth working implement relative to said prime mover, the improvement comprising:
an extensible and retractable fluid operated piston-cylinder mounted at one end to said support frame, the opposed end of said piston-cylinder connected to a pivot link, said pivot link pivotally connected to said slide bracket, said slide bracket having releasable connectors spaced on opposed sides of said bracket-link pivotal connection and said link having two mating releasable connectors, said



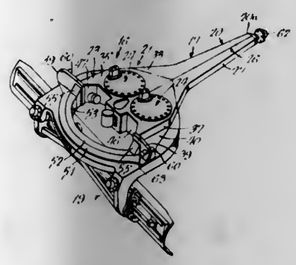
pivotal bracket-link connection and said releasable link connectors defining a triangle, and said piston-cylinder pivotally connected to said link between said releasable link connectors, whereby said piston-cylinder may be extended or retracted to rotate said pivot link about said bracket-link pivotal connection and slideably shift said bracket and said earth working implement when one of said releasable link connectors is connected to said bracket.

4,113,032

MOTOR GRADER WITH DRAW BAR AND CIRCLE SUPPORT STRUCTURE

Carroll Richard Cole, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 26, 1976, Ser. No. 735,245
Int. Cl.² E02F *3/76*
U.S. Cl. 172—781 **18 Claims**



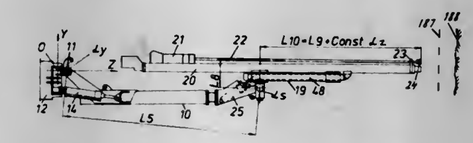
1. In a motor grader which includes a circle member having an internal ring gear and a grader blade suspended beneath said circle member, a unitary drawbar and circle mounting structure comprising, in combination:
a box-like drawbar beam having top and bottom plates and side plates, said beam increasing in width from a connecting end toward a rearward circle mounting end;
an enclosed drive housing integral with the rear portion of said drawbar beam, said drive housing having a lower portion extending below the drawbar beam bottom plate and having an upright forward wall which is an arc of a circle struck about the center of rotation of the circle member;
and a rearward portion of said circle mounting structure which has its forward part integrally connected to said lower portion of the enclosed drive housing and which includes an upright arcuate wall that completes said circle struck about the center of rotation of the circle member so that said drive housing and said rearward portion cooperate to provide a mounting for the circle member below the plane of the drawbar beam bottom plate, and there being a drive opening in the lower portion of the drive housing forward wall.

4,113,033

METHOD AND ARRANGEMENT FOR POSITIONING A WORKING TOOL TO A PREDETERMINED DIRECTION AND/OR A PREDETERMINED POINT

Lars Alfred Lindblad, Saltsjo-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 639,693, Dec. 11, 1975, abandoned.
This application Sep. 2, 1977, Ser. No. 830,213
Claims priority, application Sweden, Dec. 19, 1974, 7415975
Int. Cl.² E21C *11/02*
U.S. Cl. 173—1 **20 Claims**



1. In a method of automatically positioning an elongated rock drilling apparatus to a plurality of predetermined positions in space, comprising swinging a drill boom (10) relative to a boom bracket (12), swinging a feed bar (20) relative to said drill boom and displacing said feed bar (20) relative to said drill boom and boom bracket, said boom and feed bar being swung to reach alternate positions, moving a rock drilling machine (21) longitudinally slidably to and fro along said feed bar, said rock drilling machine driving a working implement, and defining said plurality of predetermined positions by a programmed drilling pattern,
the improvement comprising:
non-mechanically programming said plurality of predetermined positions such that they are in an imaginary plane (187) which is spaced from a rock surface (188) to be worked by entering set values corresponding to either of said predetermined directions and positions in a computer unit (93), sensing the actual values corresponding to either of the instantaneous direction and position of said drill bit, calculating the differences between said actual values and said set values, transforming said differences for providing control signals, and positioning said drill bit responsive to said control signals by means (15) for positioning said drill bit.

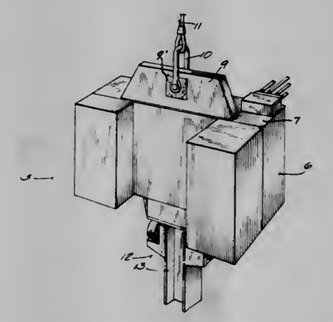
4,113,034

UNIAXIAL VARIABLE VIBRATORY FORCE GENERATOR

Roger L. Carlson, Fridley, Minn., assignor to Raygo, Inc., Minneapolis, Minn.

Filed Jun. 20, 1977, Ser. No. 807,833
Int. Cl.² E02D *7/18*
U.S. Cl. 173—49 **4 Claims**

1. In a vibratory force generator having a rigid frame structure through which the generated vibratory force may be uniaxially transmitted to a part which is to be subjected to said force, wherein the vibratory force is produced by rotation of a plurality of pairs of rotary eccentric weights rotatably mounted in said rigid frame structure with said pairs at spaced locations on the axis along which the vibratory force is to be transmitted, the weights of each pair thereof being constrained to counter-rotation about fixed axes that lie in a plane normal to said axis in such phase relationship that the direction of the vibratory force resulting from their counter-rotation, is confined to said axis, wherein power means drivingly connected with all of the rotary eccentric weights simultaneously imparts rotation thereto, and wherein an adjustable coupling between adjacent pairs of counter-rotating eccentric weights enables the phase relationship between said pairs of eccentric weights to be varied from an in-phase relationship for the production of maximum force, to an infinite number of less than in-phase relationships for selected reduction in the magnitude of the generated vibratory force; the improvement by which said coupling can be adjusted from a location remote from the vibratory force generator and without altering the RPM of the eccentric weights or otherwise interfering with them and which comprises:
A. first and second parallel shafts, one having a fixed driving relationship with the rotary eccentric weights of only one of said adjacent pairs thereof and the other having a fixed driving relationship with the rotary eccentric weights of only the other one of said adjacent pairs thereof;



B. first and second meshing gears, the first gear being on and fixed against relative rotation with respect to said first shaft and the second gear being on but rotatable with respect to said second shaft;
C. means for securing said second gear and said second shaft against relative rotation from a selected angular relationship, the selection of which determines the phase relationship of said adjacent pairs of rotary eccentric weights, said last means comprising
(1) a sleeve axially slidably but non-rotatably mounted on said second shaft, and
(2) means forming a helical splined driving connection between said sleeve and said second gear so that shifting said sleeve axially along the second shaft and with respect to said second gear adjusts the phase relationship between said adjacent pairs of rotary eccentric weights.

4,113,035

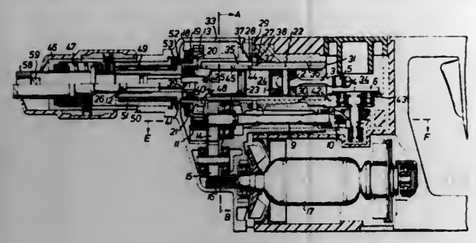
HAMMER DRILL WITH DRIVE AND PERCUSSION ELEMENTS ACCOMMODATED IN A CYLINDER

Erwin Stiltz, Winnenden-Schelmenholz; Rudolf Hoyer, Althütte, and Heinz Lindenmayer, Hegnach, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Germany

Filed Apr. 21, 1977, Ser. No. 789,680
Int. Cl.² B25D *9/00*
U.S. Cl. 173—116 **7 Claims**

1. A hammer drill comprising a housing; a cylinder received in said housing and defining a cylindrical piston chamber; means defining an air chamber around at least a portion of said piston chamber sealed against the ambient atmosphere and against the adjacent component parts of said housing; said housing defining a tool-receiving chamber aligned and communicating with said piston chamber; a percussion body movable in said piston chamber against a tool in said tool-receiving chamber; a motor-driven piston reciprocable in said piston

chamber relative to said percussion body; said cylinder also defining a pneumatic buffer zone between said piston and said percussion body, whereby air in said buffer zone provides a coupling and buffing fluid between said piston and said percussion body; a first air passage opening defined in said cylinder and interconnecting said air chamber and the interior of said cylinder in said buffer zone, said first air passage being spaced from said piston when said piston is in a forward dead-center



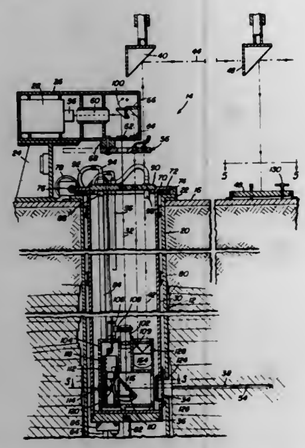
position; said housing having a collar-receiving recess; a radially outwardly extending collar-shaped shoulder formed on said cylinder and extending across said air chamber and into the recess in said housing, said shoulder having air passages extending therethrough, and said shoulder determining the spatial position of said cylinder in said housing; and means form-lockably interengaging said housing and said cylinder to hold said cylinder in said housing against rotation.

4,113,036

LASER DRILLING METHOD AND SYSTEM OF FOSSIL FUEL RECOVERY

Daniel W. Stout, 110 Wettaw La., North Palm Beach, Fla. 33408

Filed Apr. 9, 1976, Ser. No. 675,582
Int. Cl.² E21B 7/14
U.S. Cl. 175—11 **19 Claims**



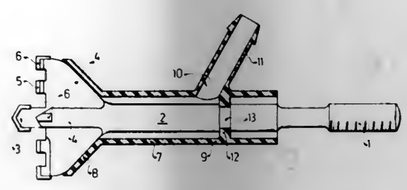
1. Apparatus for drilling in an underground formation extending from a vertical bore hole, including a laser beam generator projecting a laser beam through the vertical bore hole substantially parallel to a longitudinal axis, reflector means for reflecting the laser beam along a drilling path into the formation transversely of said longitudinal axis, an elongated tubular housing, means for angularly adjusting the housing about said longitudinal axis within the bore hole, and adjusting means connected to the reflector means for angular displacement thereof about perpendicular intersecting axes intersected by said longitudinal axis.

4,113,037

ROCK DRILL

Karl Wanner, Echterdingen, and Wilbert Reibetanz, Leinfelden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 9, 1976, Ser. No. 749,034
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605097; Aug. 11, 1976, 2636083; Oct. 9, 1976, 2645693
Int. Cl.² E21B 21/00
U.S. Cl. 175—207 **31 Claims**



1. A rock drill comprising a shaft having a leading end and a trailing end; a shank connected to said trailing end of said shaft; a drill head, having a centering drill bit, connected to said leading end of said shaft; means for transporting drillings from said leading end towards said trailing end of said shaft, said means including at least one channel extending substantially parallel to said shaft from said drill head toward said shank; and a shell coaxially surrounding said shaft and bounding said channel, said shell having an open front end adjacent said drill head, a closed rear end facing said shank and at least one substantially transverse bore adjacent said rear end and open at the outer surface of said shell, said shell having at least two portions, including a front portion adjacent said front end of said shell and constituted of a wear-resistant material, and a rear portion adjacent said rear end of said shell, said front portion of said shell having a first section extending towards said rear portion of said shell and having a reduced thickness, said rear portion of said shell having a second section extending towards said front portion of said shell and having a reduced thickness, one of said sections overlapping the other section.

4,113,038

DRILLING JAR

George M. Clark, Box 92002, Houston, Tex. 77006

Filed Apr. 18, 1977, Ser. No. 788,625
Int. Cl.² E21B 17/00
U.S. Cl. 175—300 **9 Claims**

1. A drilling jar for use with a drill string to assist in unsticking the drill string, comprising:

(a) an upper hollow mandrel having

(1) connector means enabling said upper mandrel to be connected into a drill string;

(2) a packer therein for sealing against a member inseated thereinto;

(3) a lower shoulder on said mandrel useable as a hammer;

(4) first and second spaced encircling internal grooves separated by a land in the lower portion of said mandrel;

(5) a transverse shoulder interrupting said grooves;

(6) a transverse groove across said land, said groove cooperating with said land to define a spline rib parallel to the axis of said upper mandrel;

(b) a lower hollow mandrel having

(1) an upper stinger pipe axially communicated with said lower mandrel and telescoped into said packer for sliding and sealing movement in said upper mandrel;

(2) an upwardly facing shoulder adopted to be used as an anvil and arranged on said lower mandrel for hammering by said lower shoulder on said upper mandrel;

(3) connector means at the lower end of said lower mandrel enabling said lower mandrel to be connected to the lower portions of a drill string;

(4) a protruding lug extending from said stinger pipe and having a profile such that said lug fits into either of said internal grooves and can rotatably move in said grooves until movement carries against said transverse shoulder whereupon said lug is constrained by said shoulder against further rotation in said grooves on drilling where the drill string turns to the right so that said upper hollow mandrel and said lower hollow mandrel



rotate together as a unit; and where said lug is moved away from said transverse shoulder and moves into alignment with said transverse groove wherein said lug has a profile to enable said lug to slidably move along said transverse groove as said upper and lower mandrels are telescoped relative to one another; and

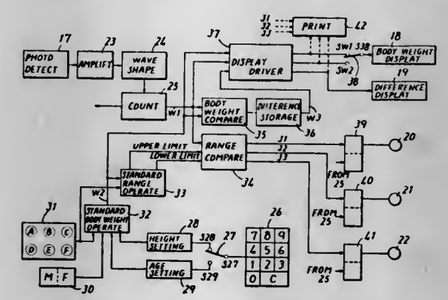
(5) said lug moving between said first and second encircling grooves on telescoping movement wherein the travel of said lug is equal to the stroke of said upper mandrel as it hammers against said lower mandrel to impact a jarring impact to the drill string.

4,113,039

BODY WEIGHT MEASURING APPARATUS

Tsutomu Ozaki, Amagasaki, and Setsuo Hijikata, Yao, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 9, 1976, Ser. No. 712,952
Claims priority, application Japan, Aug. 11, 1975, 50-98202
Int. Cl.² G01G 19/44
U.S. Cl. 177—25 **22 Claims**



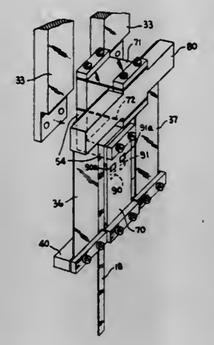
1. A body weight measuring apparatus, comprising sensing means responsive to the body weight of a person, being weighed on said apparatus to provide a measured displacement value representing the actual body weight, signal generating means operatively connected to said sensing means for generating an electrical signal representative of said actual body weight, setting means for providing fixed conditioning data including at least a reference signal value associated with the height of said person being weighed, signal evaluating means operatively connected to said setting means for determining a standard range of body weight values correlated to said conditioning data, means operatively connected to said signal generating means and to said signal evaluating means for determining the relativity of said measured actual body weight value relative to said standard body weight range values, and display means responsive to an output from said relativity determining means for displaying the result of said determining and correlating, wherein said signal evaluating means for determining a standard range of body weight values comprise first means responsive to said fixed conditioning data to evaluate a standard body weight value out of said standard range of body weight values and second means responsive to said first means and thus to said standard body weight value for evaluating an extremity value of said standard body weight range, said first means comprise memory means for storing a list of a plurality of standard body weight values in the form of electrical signals as classified in accordance with said conditioning data, said apparatus further comprising means responsive to said setting means and operatively connected to said memory means for addressing said list of standard body weight values for selectively reading out the corresponding standard body weight value to provide a respective electrical signal.

4,113,040

NULL TRANSDUCER FOR AN ANALYTICAL BALANCE

Anthony Storace, Tarrytown, N.Y., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jun. 17, 1977, Ser. No. 807,393
Int. Cl.² G01G 3/14, 3/08
U.S. Cl. 177—211 **5 Claims**



1. In an analytical balance having a balance beam which pivots in a first direction about a base in response to a known weight that is displaceable along said balance beam, and which pivots in a second, opposite direction in response to an unknown weight that acts upon the balance beam, a null transducer for detecting a balance condition in said balance beam, said null transducer comprising:

a first and second band each connected to said base and each supporting the balance beam, said bands each being relatively thin so as to offer little resistance to the balance beam in bending, while being relatively stiff in an axial direction for supporting the weight of said balance beam;

a third band carried by said base and supporting the balance beam, said third band being relatively thick with respect to said first and second bands and bendably mounted to be relatively soft in an axial direction supporting the weight of said balance beam; and

strain gage means disposed upon said third band for detecting when said balance beam has pivoted from a balanced

condition, while being relatively unaffected by changes in weight active upon said third band in an axial weight supporting direction.

4,113,041

METHOD AND TRACTOR FOR TOWING AIRCRAFT

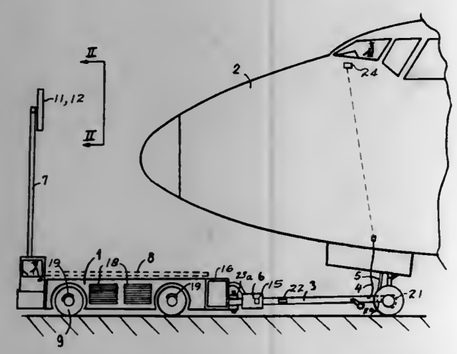
Mogens Birkeholm, Kagsaavej 59, DK-2730 Herlev, Denmark

Continuation of Ser. No. 584,029, Jun. 5, 1975, abandoned. This application Apr. 11, 1977, Ser. No. 786,565

Claims priority, application United Kingdom, Jun. 15, 1974, 26624/74

Int. Cl.² B60D *7/00*; B60T *8/02*

U.S. Cl. 180—14 C **10 Claims**



1. Towing apparatus comprising

a tractor having a front end and a rear end;

a tow bar hinged to the rear end of the tractor and adapted to be coupled to a vehicle to be towed;

a first sensing element for continuously measuring a force transmitted through said tow bar between said tractor and a towed vehicle and for continuously emitting a measured value signal in response thereto;

means for generating a traction effect of said tractor; and

a control unit for receiving and comparing said measured value signal with a desired value signal and for delivering a control signal to said traction effect generating means in response to a difference between said measured value signal and said desired value signal to selectively adjust the traction effect of the tractor.

4,113,042

MANUAL CONTROL HANDLE FOR ELECTRIC VEHICLE

Ronald E. Vaill, Penn Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 1, 1976, Ser. No. 737,366

Int. Cl.² B62D *51/04*

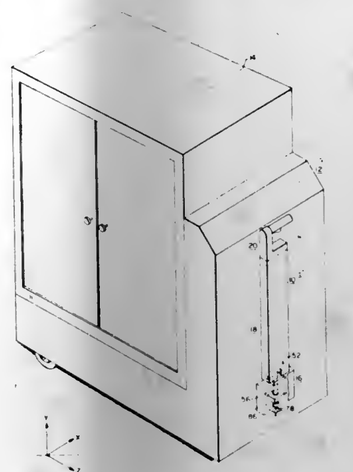
U.S. Cl. 180—19 H **8 Claims**

1. Apparatus for manual control of an electric traction vehicle comprising:

means for speed selection pivoted at one end on said vehicle and having a slotted portion thereon;

leverage means having a free end extended within said slotted portion, and a secured end;

means for electrical potential selection, connected to said secured end of said leverage means, for rotary displacement upon actuation of said leverage means, with said rotary displacement defining a voltage control signal, whereby rotation of said speed selection means by the user



displaces said leverage means to provide said voltage control signal for said traction vehicle.

4,113,043

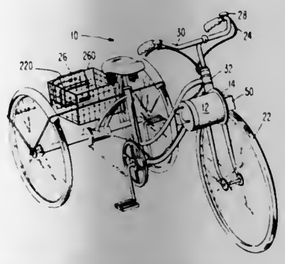
APPARATUS FOR DRIVING WHEELED VEHICLES

Jack P. Palmer, 509 1/2 Paden St., Endicott, N.Y. 13760

Continuation of Ser. No. 453,554, Mar. 21, 1974, abandoned. This application Sep. 7, 1976, Ser. No. 721,154

Int. Cl.² B60K *5/12, 17/30*

U.S. Cl. 180—33 A **5 Claims**



1. A mounting bracket for mounting a drive assembly for driving a cycle having at least two wheels comprising a substantially flat plate having a single bend therein, which bend separates said flat plate into first and second surfaces;

a first mounting hole on said first surface of said plate and a second mounting hole on said second surface of said plate for attaching said mounting bracket to said cycle to be driven; and

first and second slots in said first surface of said plate for slideably mounting a motor for driving said cycle.

4,113,044

ARTICULATED STEERING DIFFERENTIAL LOCK RELEASE

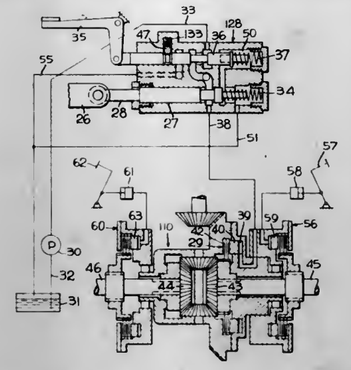
Douglas W. Williams, Waukesha, and George E. Kaiser, West Allis, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 15, 1976, Ser. No. 750,918

Int. Cl.² B60K *17/34*

U.S. Cl. 180—51 **10 Claims**

1. A differential lock release for an articulating vehicle comprising, an articulating joint including a bearing pivotally connecting one bogie to another bogie of the articulated vehicle, a cam mounted on one of the bogies, a follower mounted on the other bogie of the articulated vehicle, a differential lock control mechanism connected to the follower, control means operating a differential lock, a differential on a vehicle including differential locking means defining a differential clutch for releasing and locking said differential and providing differential and synchronous rotation of said gears, a wheel axle connected to one side gear and another wheel axle connected to another side gear, said control means connecting said differential lock control mechanism to said differential to operate said differential for differential and synchronous rotation of said axles responsive to articulation of said vehicle.



4,113,045

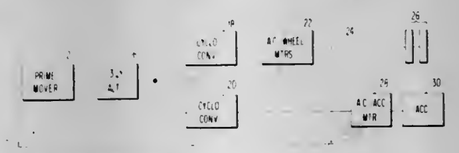
ALL-ELECTRIC A.C. TRACTOR

James H. Downing, Jr., Rte. 2, Box 90, Louisa, Va. 23093

Filed Feb. 16, 1977, Ser. No. 769,378

Int. Cl.² B60L *11/08*

U.S. Cl. 180—65 C **12 Claims**



1. In combination:

a land vehicle having a ground-engaging traction means;

a source of polyphase electrical power mounted on said vehicle;

first cycloconverter means electrically coupled to said source for providing a first variable frequency polyphase power output;

polyphase motor means mechanically coupled to said traction means;

means for energizing said motor means with the first power output from said first cycloconverter means to operate said traction means and drive said vehicle;

second cycloconverter means electrically coupled to said source for providing a second variable frequency polyphase power output;

a work-producing device associated with said land vehicle;

polyphase slave motor means associated with said device; and

means for energizing said slave motor means with the second power output for operating said device.

4,113,046

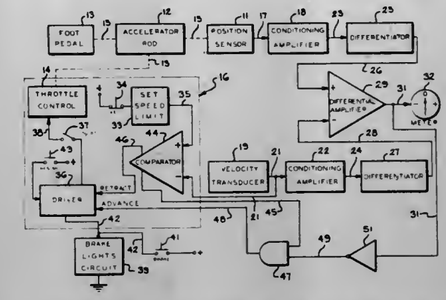
VEHICLE FUEL ECONOMY INDICATOR

Roberto Arpino, 4722 Shire Ridge Rd. W., Columbus, Ohio 43220

Filed Jun. 20, 1977, Ser. No. 808,024

Int. Cl.² B60K *31/00*

U.S. Cl. 180—105 E **13 Claims**



1. An apparatus for indicating the fuel economy of a vehicle, during acceleration comprising:

means for generating a vehicle acceleration signal having a magnitude proportional to the rate of change of speed of the vehicle;

means for generating a throttle rate signal having a magnitude proportional to the rate of change of the position of the vehicle throttle;

means responsive to said vehicle acceleration signal and said throttle rate signal for generating an efficiency signal having a magnitude proportional to the difference between the magnitudes of said vehicle acceleration signal and said throttle rate signal; and

indicator means responsive to said efficiency signal for indicating the fuel economy of the vehicle.

4,113,047

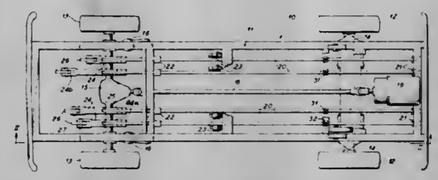
LEVER ASSEMBLIES FOR AUGMENTING PRIME MOVER POWER

Albert W. Turner, 1541 Hill Ave., Wheaton, Ill. 60187

Filed May 9, 1977, Ser. No. 794,971

Int. Cl.² B60L *11/18*

U.S. Cl. 180—65 D **3 Claims**



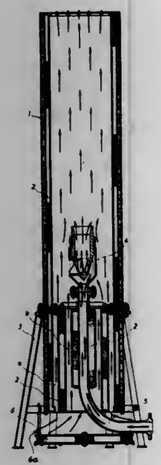
1. A lever system for augmenting power input to a prime mover including an automotive vehicle chassis driven by said prime mover which comprises longitudinally elongated levers pivotally mounted under the chassis, road engaging wheels mounted on the rear ends of said levers to tilt the levers as they ride over irregularities in the road bed traversed by said chassis, a fly wheel shaft on said chassis, links connecting said shaft with said levers to convert tilting motion of the levers into rotation of the shaft, and an electrical current generator driven by said fly wheel shaft.

4,113,048

METHOD OF AND DEVICE FOR ATTENUATING THE NOISE RADIATED BY GAS JETS

Constantin Teodorescu, Bucharest, Romania, assignor to Institutul National Pentru Creatie Stiintifica Si Tehnica - Increst, Bucharest, Romania

Filed Apr. 21, 1976, Ser. No. 678,728
Claims priority, application Romania, Jun. 12, 1975, 82514
Int. Cl.² G10K *11/04*; F01N *1/04, 3/04*; F04F *5/44*
U.S. Cl. 181—220 **5 Claims**



1. A device for attenuating noise generated by a jet of expanding gas, comprising:

a nozzle having an axis and discharging a jet of expanding gas, said nozzle including:

an outer cylindrical tubular body having a plurality of first orifices;

an inner cylindrical tubular body coaxial with said outer body and spaced from said outer body to define an annular slot opening in the direction of flow of the gas passing axially between said bodies, said inner body having a first wall portion extending axially beyond said outer body and lying radially inwardly of a second wall of the inner body portion surrounded by said outer body so that said first and second wall portions form an annular shoulder perpendicular to the axis of said nozzle and lying in a plane of the mouth of said slot; and

a tapered portion on said inner body formed with a plurality of second orifices in alignment with said first orifices and communicating therewith through respective channels;

a cylindrical tubular housing surrounding said nozzle coaxially and open at both ends, said housing being lined with sound-absorbing material; and

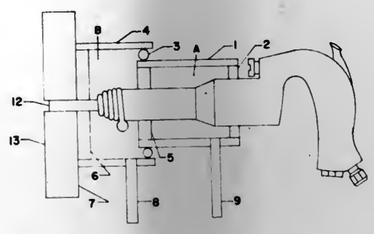
a conduit communicating with said outer body for feeding the gas through said annular slot, said gas expanding upon emergence from said slot at said mouth, impinging upon said first wall portion at an angle and spreading at an angle from the outer wall of said slot, and thereafter flowing along said first wall portion and beyond to entrain secondary air through said first orifices, said second orifices and the interior of said inner tubular body.

4,113,049

NOISE REDUCTION DEVICE FOR IMPACT TOOLS

Raymond S. Lieber, 1105 Alumni Ave., Las Cruces, N. Mex. 88003

Filed Apr. 14, 1976, Ser. No. 676,878
Int. Cl.² G10K *11/04*; E04B *1/99*
U.S. Cl. 181—230 **4 Claims**



1. A noise reduction device for use with a reciprocating impact tool comprising

a rigid cylinder;

resilient walls at both ends of said cylinder secured between said cylinder and the outer housing of said tool so as to provide a first compartment about said housing;

a second rigid cylinder having a larger diameter than said first rigid cylinder;

means for sealing one end of said second cylinder about the outer circumference of said first cylinder;

a resilient block having a substantially flat face;

an opening in said block for accepting the set of said impact tool, said set being in contact with said resilient block;

means for sealing said resilient block within the other end of said second cylinder; and

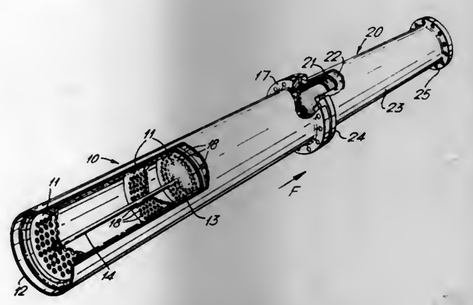
a conduit extending outwardly from said first and second compartments.

4,113,050

FLUID-FLOW NOISE REDUCTION SYSTEMS

Trevor Smith, Whitley Bay, England, assignor to British Gas Corporation, London, England

Filed Aug. 16, 1976, Ser. No. 714,984
Claims priority, application United Kingdom, Sep. 25, 1975, 39314/75
Int. Cl.² F01N *3/06, 1/08, 7/18*
U.S. Cl. 181—230 **8 Claims**



1. A gas-flow noise reduction unit comprising:

a cylindrical housing an upstream end for receiving a flow of gas and a downstream end for discharging said flow of gas;

means at said upstream and downstream ends for connection of said noise reduction unit in a gas flow conduit such that a flow of gas in said conduit passes through said reduction unit;

a plurality of circular plates located diametrically at predetermined spaced intervals along the length of the internal bore of the housing, each plate being formed with a plurality of orifices of predetermined size and constituting a pressure-reducing stage of the unit, each plate being positioned in groups of two or more plates with equal spacing between plates in each group, the spacing between each adjacent group of plates in the direction of flow from said upstream end of said unit to said downstream end thereof being of progressively increasing dimension and being sufficient to ensure that the kinetic energy in the jets of gas flowing through the orifices in each plate is dissipated before the gas reaches the next plate of the unit; and

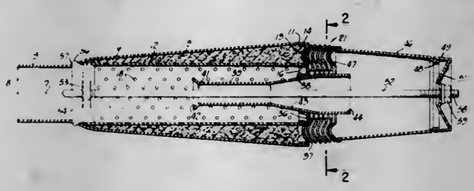
means for retaining the plates at said location within said housing.

4,113,051

ENGINE MUFFLER AND SPARK ARRESTER

Paul S. Moller, Dixon, Calif., assignor to Discojet Corporation, Davis, Calif.

Filed Oct. 4, 1976, Ser. No. 728,913
Int. Cl.² F01N *1/02, 3/02, 3/06*
U.S. Cl. 181—231 **6 Claims**



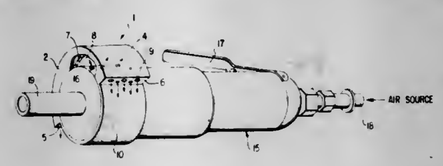
1. An engine muffler and spark arrester comprising an outer tube extending along an axis and having an inlet and an outlet; a partially toroidal end wall having an axial opening therein, said end wall engaging and seated against an end of said outer tube adjacent said outlet; a plurality of substantally identical, nested, partially toroidal cups disposed coaxially adjacent said end wall, each of said cups having in cross-section in a plane containing said axis a substantially S-shape with the radially inner edge of each of said cups directed toward said end wall and with the radially outer edge of each of said cups directed away from said end wall; a resonator-arrester chamber disposed coaxially with said cups and having an open end disposed against the end one of said cups and having a closed end disposed remote from said cups; and means for securing said outer tube, said cups and said resonator-arrester chamber together.

4,113,052

UNITARY ELASTIC MUFFLER ASSEMBLY FOR A PNEUMATIC DEVICE

John O. McElroy, Jr., Pottstown, Pa., assignor to Berkmont Industries, Boyertown, Pa.

Filed Dec. 13, 1976, Ser. No. 750,330
Int. Cl.² F01N *1/08*
U.S. Cl. 181—230 **9 Claims**



1. A unitary, elastic muffler assembly adapted for telescopic engagement with the tubular housings of variously sized pneumatic devices exhausting spent working fluid from vents in a discrete peripheral segment thereof, comprising:

a. an arcuate, channel-shaped, sound-muffling section terminating at opposite end walls bridged by elastic band means, said sound-muffling section having a central fluid receiving area comprising a minor arcuate segment of the sound-muffling section and having fluid exhaust ports in said opposite end walls, said central fluid receiving area dividing said spent working fluid into two oppositely directed arcuate fluid flow paths;

b. sound-attenuating material substantially filling said arcuate, channel-shaped, sound-muffling section; and

c. baffle structures extending between side walls of said sound-muffling section;

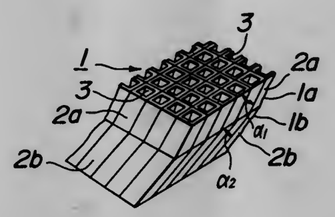
whereby, upon telescoping said assembly over the tubular housing of a pneumatic device, said arcuate, channel-shaped, sound-muffling section defines, with the tubular housing, two arcuate, sound-muffling, oppositely directed fluid flow paths divided from said central fluid receiving area through said sound-attenuating material and through said baffle structures to said exhaust ports in said opposite end walls.

4,113,053

SOUND ABSORBING BODY

Masayasu Matsumoto, Zushi; Kazuyoshi Iida, Yokohama; Yoshikazu Kondo, Yokohama, and Shosuke Suzuki, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 6, 1976, Ser. No. 730,115
Int. Cl.² E04B *2/00*; G10K *11/00*
U.S. Cl. 181—284 **5 Claims**



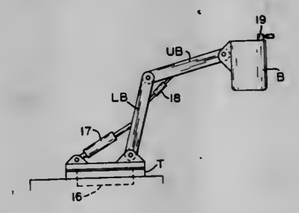
1. A sound absorbing body comprising, a plurality of sound absorbing bodies superimposed one upon the other and each provided with a number of sound absorbing cavities inclined at an angle which is less than 80° with respect to a transverse horizontal sectional plane, the sound absorbing cavities of adjacent sound absorbing bodies being inclined at angles with respect to said transverse horizontal sectional plane which are different from each other, said sound absorbing cavities being opened at a sound incident surface and closed at base portions thereof.

4,113,054

FLUID CONTROL SYSTEM FOR MOBILE AERIAL TOWERS

Lester L. Myers, Fort Wayne, Ind., assignor to Mobile Aerial Towers, Inc., Fort Wayne, Ind.

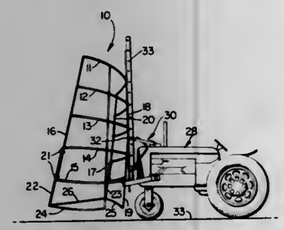
Filed Apr. 1, 1977, Ser. No. 783,938
Int. Cl.² B66F *11/04*; F16D *31/02*
U.S. Cl. 182—2 **34 Claims**



1. A mobile aerial tower comprising:

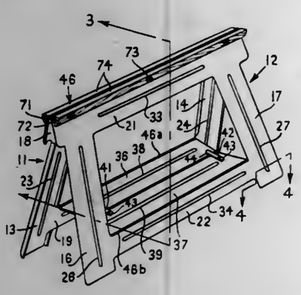
a personnel bucket,
a plurality of fluid operated positioning elements including first and second interconnected boom means one of which is connected to said bucket for positioning the same and turntable means connected to at least one of said boom means for rotating said boom means about an upright axis,
first and second variable speed pumps, and
selectively actuatable valve means for operatively connecting said first and second pumps respectively simultaneously to any two of said positioning elements or alternatively operatively connecting said first and second pumps simultaneously to any one of said positioning elements or alternatively operatively connecting either said first or second pump to any one of said positioning elements.

4,113,055
TREE LADDER
Frederick M. Gleockler, R.D. 1, Box 35, and Robert G. Gleockler, R.D. 1, Box 38, both of Ridgely, Md. 21660
Filed Apr. 27, 1977, Ser. No. 791,465
Int. Cl.[2] E06C *5/06, 1/24*
U.S. Cl. 182—63 8 Claims



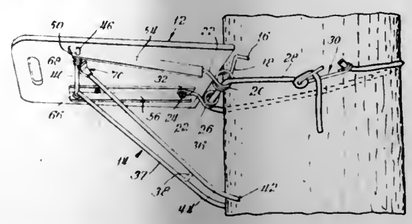
1. A harvesting ladder having an arcuate horizontal curvature to generally conform to the horizontal curvature of a segment of a tree, said ladder including end uprights, a plurality of integral curved rungs each connected at their ends to each of said uprights, and an intermediate upright connected to said rungs.

4,113,056
FOLDABLE SAW HORSE
Mario M. DeLorenzo, P.O. Box 203, Glen Ellen, Calif. 95442
Filed Jan. 28, 1977, Ser. No. 763,368
Int. Cl.[2] F16M *11/00*
U.S. Cl. 182—153 8 Claims



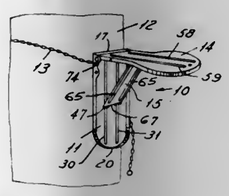
1. A foldable saw horse comprising a pair of similar stampings hingedly connected together at the tops thereof forming an elongated supporting surface and each defining a pair of legs at opposite ends thereof, upper and lower struts intermediate the top and bottom of each of said pair of stampings and spanning the defined legs thereof, and a pair of shelf sections hingedly secured together and spanning the lower struts to which each shelf section is hingedly connected.

4,113,057
PORTABLE SUPPORT
Max E. Bessinger, R.R. 3, Box 415, Three Rivers, Mich. 49093
Filed Mar. 24, 1977, Ser. No. 780,606
Int. Cl.[2] A47C *9/10;* A47F *5/12*
U.S. Cl. 182—187 30 Claims



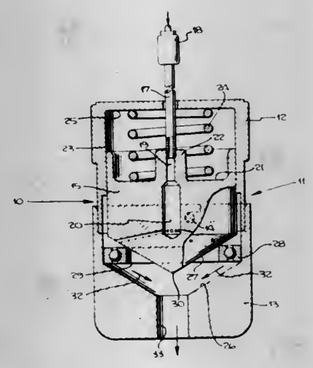
1. A portable support adapted to be attached to a vertical column and, when so attached, to function as a seat, a tree stand, a table, or the like, which comprises:
a planar support member;
tie means for tying said planar support member to said vertical column;
tie-attaching means for attaching said tie means to said planar support member with said planar support member initially in a vertical position along side said vertical column;
column engaging means located at the rear edge of said planar support member a substantial distance above said tie-attaching means and adapted to engage said vertical column;
spring means interposed between said tie means and said engaging means;
said spring means being adapted to be biased in spring-loaded position by the rotation of said planar support member toward a horizontal position whereby the planar support member, while in raised position, is constantly urged by the bias of said spring means to rotate toward the initial position along side the vertical column; and
brace means for holding said planar support member in horizontal position, said brace means being adapted to engage said vertical column and to be held in engagement with said vertical column by the tendency of said planar support member to rotate toward said vertical column under the influence of said spring means.

4,113,058
PORTABLE SEAT FOR HUNTERS
Harry J. Kobosh, 12890 - 25 Mile Rd., Utica, Mich. 48087
Filed Apr. 3, 1975, Ser. No. 564,744
Int. Cl.[2] E04G *3/00*
U.S. Cl. 182—187 7 Claims



1. A collapsible seat device for attachment to a tree comprising a body member for engaging the tree trunk to extend vertically, a seat member of similar size hingedly connected at one end of said body member to form a thin package and adapted to open to extend horizontally, a brace hinged to the inside of one of said members, a stop on the inside of the other of said members for receiving the free end of said brace, said brace being of a fixed non-adjustable length less than the length of the closed package to be fully contained therein when closed, the hinged end being so located on said seat member that the seat is approximately horizontal when the brace engages said stop, and a link chain for wrapping around said tree trunk with the ends attached to said body member below said hinged connection with said seat member, said attachment being at the upper corners of said vertical body member, in which said brace is hinged to said seat member and the stop is on said body member, one of said upper corners of said vertical body member having a slot through which one end link of said chain projects, means for anchoring said projecting end to the trunk-engaging side of said body member while the remainder of the chain is carried within said closed thin package.

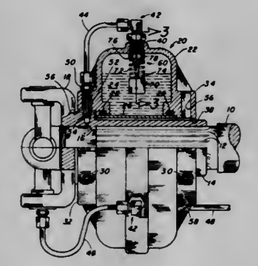
4,113,059
HAND HELD DEVICE FOR PACKING GREASE INTO WHEEL BEARINGS
Ognian Markovski, 2715 Jalmia Dr., West Hollywood, Calif. 90046
Filed Mar. 4, 1977, Ser. No. 774,324
Int. Cl.[2] F01M *11/00*
U.S. Cl. 184—1 D 8 Claims



6. A hand-held device for greasing a wheel bearing comprising:
a main housing portion;
a separable lower housing portion having an inner surface forming a generally fluid-tight chamber between said main housing portion and said lower housing portion;
a spring-biased piston mounted in said main housing portion having a generally conically shaped lower portion having an apex configured similarly to a conically-shaped portion on the inner surface of said lower housing portion;
a grease inlet having an opening leading into said upper housing portion;
a fluid conduit through said piston in fluid communication with said grease inlet;
a plurality of spaced ports opening exteriorly of said piston above the apex of said conical portion of said piston in fluid communication with said fluid conduit through said piston; and an opening through said lower housing portion to the exterior thereof in fluid communication with said chamber.

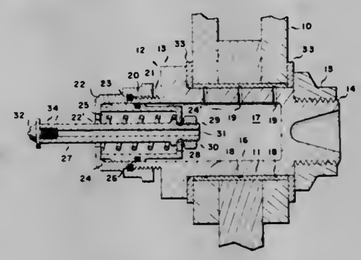
4,113,060
DRIVE SHAFT "U" JOINT LUBRICATOR
Roy B. Smith, 3480 NE. 62, Washington Ct. House, Ohio 43160
Continuation-in-part of Ser. No. 635,439, Nov. 26, 1975, Pat. No. 4,040,504. This application Jun. 20, 1977, Ser. No. 807,984
Int. Cl.[2] F16N *13/22*
U.S. Cl. 184—6 10 Claims

1. In the combination of a shaft rotatable about an axis and automatic lubrication apparatus for lubricating parts rotating with the shaft,
the lubrication apparatus including a reservoir adapted to store a lubricant,
said reservoir being defined by means forming a fluid tight rigid annular enclosure of constant volume removably rigidly mounted coaxially with and on the periphery of said shaft,
at least one aperture through the surface of the annular enclosure,
conduit means connected between said aperture and a bearing surface for conducting lubricant from said reservoir to said bearing surface, said bearing surface and conduit being connected to rotate with said shaft,



valve means mounted adjacent said aperture for allowing lubricant to flow only out of the reservoir into the conduit,
means forming a chamber adjacent said aperture,
said valve means being disposed near the radially outer end of said chamber means,
a piston mounted to reciprocate within said chamber means and biased radially inwardly,
opening means into the chamber means from the reservoir, said opening means being radially outward of said piston where said piston is biased to its radially innermost position,
a mass mounted to move with the said piston to drive said piston radially outward upon rotation of said shaft.

4,113,061
AUTOMATIC LUBRICATOR
Bertram Anthony Peaster, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.
Filed Jan. 17, 1977, Ser. No. 759,756
Int. Cl.[2] F16N *11/04, 11/10*
U.S. Cl. 184—41 4 Claims



1. An automatic lubricator to provide a lubricant to faying surfaces of relatively moving structural members interconnected by a mounting bolt comprising:
a chamber in the form of an axial bore in said bolt adapted to contain the selected lubricant;
an inlet to said chamber including a one-way valve to permit the filling of said chamber with said lubricant and its retention therein;
at least one passage between said chamber and the faying surfaces aforesaid;

a piston in the form of a cup opening adjacent the head end of said bolt slideable in said chamber and being normally forced to one end thereof by the lubricant acting against one side of said piston;

a rod connected to and extending from said piston through said bolt, said rod being bored axially constituting the inlet aforesaid; and

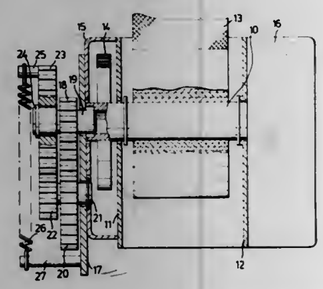
pressure producing means constantly operative on and against the other side of said piston tending to move it to the other end of said chamber against the resistance therof by the lubricant.

4,113,062

DEVICE FOR CHANGING THE FORCE ACTING ON A REVERSIBLY ROTATABLE SHAFT

Stig Gösta Bele Beland, Södertälje, Sweden, assignor to Gränges Essem Aktiebolag, Vesteras, Sweden

Filed Feb. 3, 1977, Ser. No. 765,282
Claims priority, application Sweden, Feb. 3, 1976, 7601103
Int. Cl.² B65H *75/42, 75/48;* F03G *1/08*
U.S. Cl. 185—10 **7 Claims**



1. Device for changing the force gradient acting on a reversibly rotatable shaft connected with a spring which is arranged to be tensioned during the rotation of the shaft in one direction and which then provides the rotation of the shaft in the opposite direction, comprising

a rotatably mounted means, a second spring to actuate said rotatable means,

a gear reduction device which is connected between the shaft and the rotatable means, said gear reduction device connecting the shaft with the rotatable means to cause the rotatable means to rotate less than one revolution during the whole rotation of the shaft in one direction, the second spring being arranged to provide an additional force on the shaft by way of the gear reduction device, and

means for causing the additional force from the second spring during a portion of the rotation of the shaft in one direction to act in opposite direction to the force from the first spring and during the rest of the rotation of the shaft to act in the same direction as the force from the first spring.

4,113,063

MECHANICAL STORED ENERGY POSITIONING ACTUATOR

M. Frank Troy, Hinsdale, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Dec. 6, 1976, Ser. No. 748,058
Int. Cl.² F03G *1/00*
U.S. Cl. 185—40 R **14 Claims**

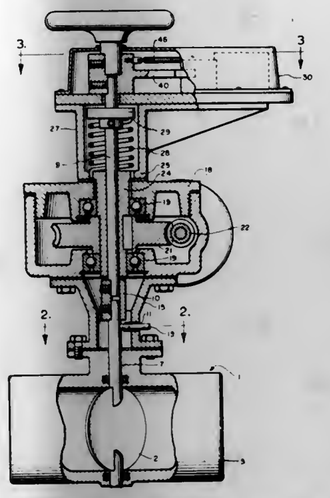
1. In a rotary mechanical valve actuator having a reversible drive motor, and a torque multiplier for furnishing in non-overlapping sequence, load and storage torque to an output shaft;

means storing in a predetermined amount of drive motor energy and torque intermediate said multiplier and output shaft during prescribed motion relative said multiplier and shaft;

means limiting output shaft travel and torque, providing said relative motion in one direction thereby storing said predetermined energy;

means signaling output shaft travel;

means actuated by said signal selectively and releasably locking said multiplier and shaft to limit said relative motion and retain said stored energy;



means actuated by said signal means reversing the drive motor;

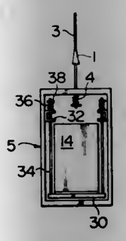
wherein the drive motor provides reversible rotary output shaft load torque over a prescribed amount of shaft rotation, and, on release of said latch and/or loss of motor torque said storage provides unidirectional torque, to return the shaft to a predetermined position.

4,113,064

ELEVATOR CAR MOUNTING

Masayuki Shigeta, Katsuta, and Tadashi Shibata, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 29, 1973, Ser. No. 420,050
Claims priority, application Japan, Dec. 1, 1972, 47-119844
Int. Cl.² B66B *11/02*
U.S. Cl. 187—1 R **24 Claims**



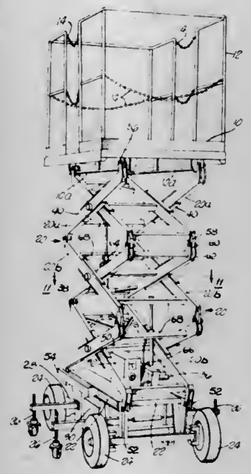
1. An elevator device for an elevator of the type comprising a car for carrying passengers or freight mounted in a framework hung by a wire rope and guided by guide means in its movement along guide rails fixed to a shaft, said elevator device being characterized in that means are provided for suspending said car in said framework to be freely swingable relative to the framework in at least a horizontal direction normal to the plane in which the framework is disposed.

4,113,065

SCISSORS LIFT

Bert J. Sikli, Venice, Calif., assignor to Robert Staines, Paramount, Calif.

Continuation of Ser. No. 594,103, Jul. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 542,508, Jan. 20, 1975, Pat. No. 3,983,960, which is a continuation-in-part of Ser. No. 406,260, Oct. 15, 1973, abandoned. This application Mar. 28, 1977, Ser. No. 781,545
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.² B66B *11/04;* E04G *1/22*
U.S. Cl. 187—18 **43 Claims**



20. A load lifting scissors lift assembly comprising: a base frame, an upper platform, first and second pairs of crossed lever arms forming a pair of vertically-extensible parallel scissor-type linkages interposed between said base frame and said upper platform, said lever arms of said linkages being operatively coupled to said base frame and said platform to enable vertical shiftable movement of said platform relative to said base frame, an extensible drive unit, means for operatively coupling said drive unit to said first and second pairs of crossed lever arms, said means for operatively coupling comprising at least one transverse means extending between each arm of said first pair of lever arms and at least one second transverse means extending between each arm of said second pair of lever arms, a first connecting means comprising a first saddle structure pivotally connected to one end of said drive unit and also being operatively pivotally connected to said first transverse means, and a second connecting means pivotally connected to the other end of said drive unit and also being operatively pivotally connected to the second of said transverse means, said first and second connecting means being located relative to said first and second pairs of crossed lever arms to enable said drive unit to remain in substantially the same position in space relative to movement of said lever arms during their vertically extensible movement.

4,113,066

ELEVATOR CONTROL APPARATUS HAVING A NOVEL HALL CALL ALLOTTING DEVICE

Kenji Yoneda; Masao Nakazato, and Takeo Yuminaka, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

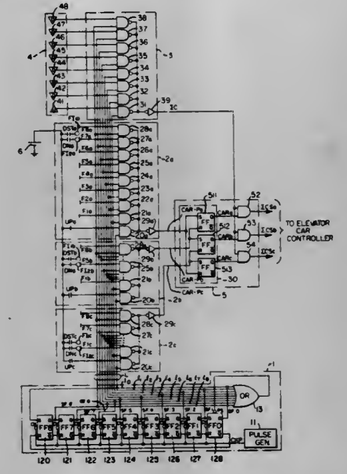
Filed Jul. 2, 1976, Ser. No. 702,145
Claims priority, application Japan, Jul. 2, 1975, 50-80814
Int. Cl.² B66B *1/18*
U.S. Cl. 187—29 R **14 Claims**

1. A control circuit for allotting hall calls to elevator cars in an elevator system comprising:

generator means for generating a scanning signal which consists of a plurality of scanning pulses,

hall call detector means for generating a signal when the number of the floor where a hall call occurs is equal to the number represented by said scanning signal,

a plurality of elevator car detectors each provided for a corresponding elevator car, each of which generates a signal when the number of the floor where the elevator car is located is equal to the number represented by said scanning signal,



memory circuit means for generating pulse signals, each of which is generated upon appearance of a signal from one of said elevator car detectors and remains until appearance of the next signal from another of said elevator car detectors, and

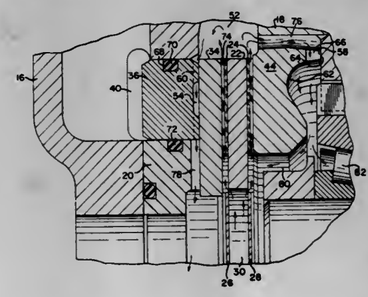
an allotting circuit having a plurality of detecting means, each of which generates an allotted hall call signal for corresponding elevator cars when the pulse from said hall detector means is supplied thereto simultaneously with the pulse signal from said memory circuit means.

4,113,067

COOLING FLUID CIRCULATION IN AN ANNULAR DISC BRAKE

Robert R. Coons, Indian Head Park; Richard G. Hennessey, Oak Lawn, both of Ill., and John Woffenden, Rotherham, England, assignors to International Harvester Company, Chicago, Ill.

Filed Jun. 30, 1977, Ser. No. 811,499
Int. Cl.² F16D *65/84*
U.S. Cl. 188—71.6 **4 Claims**



1. A disc brake operating in a fluid environment comprising:

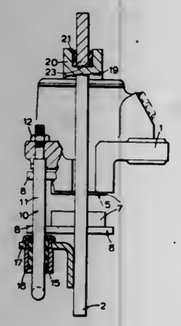
a housing, including a brake disc operating cavity including an annular fluid passage;
a reservoir source of fluid contained in said housing;
a rotatable shaft carried in said housing;
a brake disc including radial braking surfaces slideably carried on said rotatable shaft for rotation therewith, said brake disc partially submerged in said reservoir source of fluid, said brake disc having means to pump said fluid by centrifugal force from the radial surfaces of said brake disc to said annular fluid passage said annular fluid passage being located immediately circumferential to the outer periphery of the brake disc;
an inboard brake ring having flat surfaces on both sides thereof carried in said housing circumferentially disposed around said rotatable shaft, said inboard brake ring being adjacent said brake disc;
an annular piston carried in said housing circumferentially disposed with respect to said rotatable shaft, said annular piston having plurality of communication notches for allowing fluid to pass from said annular fluid passage to sid reservoir source of fluid and a circumferential annular channel formed in the outboard face thereof, said outboard face of said annular piston being adjacent said inboard brake ring;
an outboard brake ring adjacent said brake disc on the side opposite said inboard brake ring, fixedly mounted in said housing circumferentially disposed around said rotatable shaft, said outboard brake ring having a flat surface adjacent said brake disc and a contoured surface having a plurality of force transmission surfaces engaging said housing, a plurality of fluid access channels for allowing fluid to pass from said annular fluid pasage to said reservoir source of fluid and an annular depression therein;
whereby said communication notches in said annular piston and said fluid access channels in said outboard brake ring provide egress for fluid pumped into said annular fluid passage of said housing by said brake disc thereby allowing circulation of cooling fluid past said brake disc.

4,113,068

HYDRAULICALLY OPERATED DISC BRAKES

John Charles Ford, West Midlands, England, assignor to Girling Limited, Birmingham, England

Filed May 21, 1976, Ser. No. 688,914
Claims priority, application United Kingdom, May 29, 1975, 23525/75
Int. Cl.² F16D *55/228*
U.S. Cl. 188—72.5 **14 Claims**



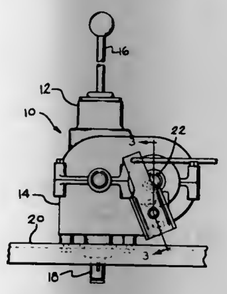
1. An hydraulically operated disc brake for a vehicle comprising a stationary drag-taking member, a rotatable disc adjacent to which said stationary drag-taking member is located, a yoke member extending over the peripheral edge of said disc and slidably guided on said stationary member for movement in a direction substantially parallel to the axis of said disc, a directly actuated friction pad assembly positioned adjacent to said stationary member for engagement with one side of said disc, an indirectly actuated friction pad assembly for engagement with the other side of said disc, an hydraulic actuator in said stationary member comprising oppositely acting first and second pistons, said first piston acting on said directly actuated friction pad assembly and said second piston acting through said yoke member on said indirectly actuated friction pad assembly, there being no direct engagement between said yoke and said stationary member for preventing movement of said yoke radially of the disc, drag on said indirectly actuated friction pad assembly being transmitted to said stationary member substantially solely through said yoke member, means for locating said friction pad assemblies against movement in a radial direction comprising a retainer extending between said stationary member and said yoke member, first and second axially spaced support means for supporting said yoke member comprising the sole support of said yoke member, said first support means consisting of a connection between said yoke member and said second piston, said second support means consisting of resilient connecting means between said yoke member and said retainer outboard of said indirectly actuated pad assembly, said resilient connecting means comprising at least one elastomeric bush and a mounting for said bush on said yoke, said retainer comprising at least one pin portion having first and second ends, said first end being received in said bush, and said second end being rigidly received in an opening in said stationary member, and a releasable connection detachably securing said retainer to said stationary member for locating said retainer against movement in an axial direction with respect to said stationary member.

4,113,069

SMALL TRANSMISSION WITH BRAKE

Jacob A. Craft, 9376 Mt. Gilead Rd., and Hans Hauser, 12336 Hilltop Dr., both of, Fredericktown, Ohio 43019

Filed May 26, 1977, Ser. No. 800,932
Int. Cl.² F16D *55/02*
U.S. Cl. 188—72.7 **4 Claims**



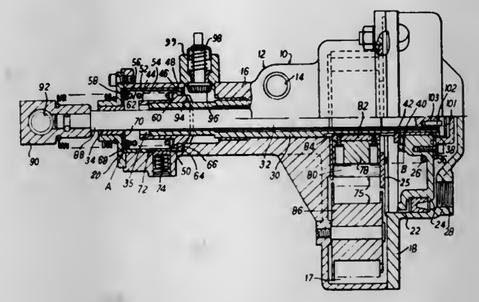
1. In combination, a transmission housing, an output shaft extending out of said housing, a brake element rotatable with said output shaft, a first brake puck, said housing having a recess with an open side facing away from said output shaft holding said first brake puck, said housing also forming a shoulder adjacent the open side of said recess, a supporting bolt secured to said housing and extending outwardly therefrom near said recess and said shoulder and outside the periphery of said brake element, second brake puck means, a stationary brake puck holder mounted in a fixed position on said bolt, said holder having an opening receiving said second brake puck means, said holder having a shank spacing said holder from said housing and engagable with a portion of said puck at the open side of said recess to retain said first puck in said recess, said shank also having a surface bearing against said housing shoulder to prevent said holder from pivoting on said bolt, a brake lever pivotally mounted on said bolt on the side of said holder opposite said brake element, and means connected between said brake lever and said second brake puck means for moving said second brake puck means towards said brake element and said first puck when said lever is moved.

4,113,070

BRAKE ACTUATOR

Philip Norman Paginton, London, England, assignor to Westinghouse Brake & Signal Co. Ltd., London, England

Filed Jul. 15, 1977, Ser. No. 816,133
Claims priority, application United Kingdom, Aug. 11, 1976, 33701/76
Int. Cl.² F16D *65/56*
U.S. Cl. 188—196 F **6 Claims**



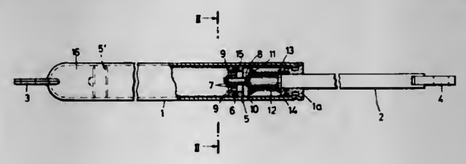
6. A brake actuator comprising: a variable volume chamber having a wall member movable by a fluid pressure medium; an elongate plunger longitudinally movable by said member and comprising two mutually screw-threaded parts arranged to vary the effective or overall length of the plunger upon relative rotation of said two parts; a tensator comprising two oppositely coiled spring portions to effect said relative rotation, one portion being coupled to one of the screw-threaded parts for rotatably driving it relative to the other of the screw-threaded parts in a direction to increase said effective or overall length of the plunger; and rotation preventing means coupled to said one part and releasable when the stroke of the plunger exceeds a predetermined or pre-set amount to permit torque transmission from the tensator to said one part to drivingly rotate the latter in said direction.

4,113,071

STAY

Hans Müller, Wolfsburg, and Georg Hanke, Hattorf, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 30, 1976, Ser. No. 746,101
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2555062
Int. Cl.² F16F *9/34*
U.S. Cl. 188—282 **5 Claims**



1. A stay for use with a cover or the like and comprising:
(a) a cylinder for containing a pressure fluid medium and having a sealing arrangement at one end thereof;
(b) a piston rod arranged for movement through said sealing arrangement into and out of said cylinder and having an interior end within said cylinder;
(c) a piston carried by said piston rod and slidably arranged within said cylinder, said piston being mounted on said piston rod, for axial displacement relative thereto and having opening means for allowing the flow of the pressure fluid medium through said piston;
(d) first abutment means arranged in the region of said interior end of said piston rod and second abutment means spaced from said first abutment means, said first and second abutment means being on said piston rod, said piston being arranged between said first and second abutment means such that said first and second abutment means limit the axial displacement of said piston with respect to said piston rod;
(e) a cover element mounted on said piston rod for axial displacement relative thereto and being adapted to close said opening means of said piston;
(f) spring means having one end coacting with said cover element for biasing the same toward said piston such that said cover element closes said opening means of said piston while said piston and piston rod are stationary and said piston is in a position wherein it is displaced toward said second abutment means; said piston, said first and second abutment means, said cover element and said spring means being arranged such that said piston is axially freely displaceable between said first and second abutment means without being under the influence of said spring means;
(g) third abutment means, arranged on said piston rod next to said second abutment means, for limiting the movement of said cover element toward said interior end of said piston rod; and
(h) fourth abutment means on said piston rod, the other end of said spring coacting with said fourth abutment means as well as with said sealing arrangement.

4,113,072

PISTON VALVE ASSEMBLY FOR A SHOCK ABSORBER

Dale A. Palmer, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Continuation of Ser. No. 668,915, Mar. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 542,617, Jan. 20, 1975, Pat. No. 3,945,474. This application Sep. 1, 1977, Ser. No. 829,954
Int. Cl.² F16F *9/34*
U.S. Cl. 188—282 **9 Claims**



1. A shock absorber piston construction comprising,
a piston body having means thereon connected to one end of an associated piston rod,
said piston body being formed with first and second sets of axially extending, circumferentially spaced flow ports,
said first set of flow ports being greater in number than said second set of flow ports and said second set of flow ports being spaced radially outwardly from said first set of flow ports,
a first annular axially extending valve seat being coaxial with said body on one side thereof adjacent said first set of flow ports,
a first valve member engageable with said first valve seat to block fluid flow through said first set of flow ports,
a plurality of circumferentially spaced valve seats on the opposite side of said piston body,
said plurality of valve seats defining radial flow paths there-

between which are communicable with said first set of flow ports,

said valve seats defining individual chambers at the ends of said second set of flow ports, each of said chambers being larger in cross-sectional area than the associated flow port terminating therein, with the sum of the cross-sectional areas of said chambers being of a predetermined ratio with respect to the sum of the cross-sectional areas of said second set of flow ports,

a second valve member in the form of a flat annular valve disc extending radially of said body directly adjacent said plurality of valve seats and engageable therewith to block fluid flow through said second set of flow ports,

said second valve member being movable between a first position permitting a first magnitude of fluid flow through said second set of flow ports and a second position permitting a second magnitude of fluid flow through said second set of flow ports, and

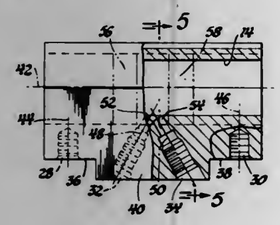
at least one spring disc disposed on the axially opposite side of said second valve member from said piston body for resisting movement of said second valve member from said first position toward said second position.

4,113,073

WHEEL CYLINDER

George Lusa, Dayton, and Thomas P. Mathues, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 23, 1977, Ser. No. 836,140
Int. Cl.[2] F16D *65/24*
U.S. Cl. 188—364 1 Claim



1. In a brake wheel cylinder assembly comprising a cylinder body having a cylinder bore formed therein, opposed wheel cylinder pistons reciprocably received in said cylinder bore and having an expander spring therebetween, said pistons having sealing cups on their adjacent ends so that said cups and said cylinder bore define a pressure chamber in which said expander spring is located, a wheel cylinder boot on either end of said wheel cylinder body sealing the cylinder ends, and wheel cylinder pins extending from said cylinder bore with one end of each pin engaging one of said pistons to be moved thereby, said pins extending through said boots; the improvement wherein:

said cylinder body including one tangentially, integrally extending block-like step on one side thereof extending axially parallel to the axis of said bore and extending from about one-fourth of the circumference of the cylinder body, said body being formed from a constant cross section extrusion along the entire extrusion length with a bore surface finish resulting from the extrusion process requiring no further machining operation to provide a bore surface which seals pressures delivered to said pressure chamber and which is sufficiently fine to accommodate reciprocal movements of said pistons and sealing cups without injury thereto;

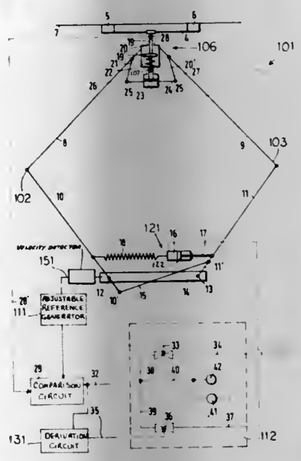
said block-like step having wheel cylinder assembly mounting holes formed therein adjacent the ends thereof and extending substantially perpendicular but skew to the bore axis, said step further having inlet port and bleeder screw holes formed therein between said mounting holes and in substantially linear alignment therewith along one face of said step, said inlet port and bleeder screw holes having their axes extending angularly toward the bore axis and screw thereto so that they open into said pressure chamber on a minor chord and at axially located points so closely axially centered in said pressure chamber that they are not engaged by said cups during wheel cylinder operation.

4,113,074

METHOD OF AND APPARATUS FOR REGULATING THE BRUSH CONTACT PRESSURE OF PANTOGRAPH ASSEMBLIES

Karl Stemmann, and Gerhard Holtmeier, both of Schuettorf, Fed. Rep. of Germany, assignors to August Stemmann OHG, Schuettorf, Fed. Rep. of Germany

Filed May 20, 1976, Ser. No. 688,269
Claims priority, application Fed. Rep. of Germany, May 23, 1975, 2522876
Int. Cl.[2] B60L *5/12*
U.S. Cl. 191—67 8 Claims



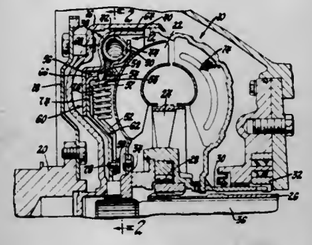
1. In a pantograph assembly supportable on an electric vehicle and associated with a brush adapted for wiping contact with an overhead conductor to convey drive power to the vehicle, the assembly comprising a frame including at least one scissor member having a first and a second rod disposed in a vertical plane, a lower end of the first rod being linked to an upper end of the second rod so that an upper end of the first rod moves in a vertical plane when a lower end of the second rod is moved along a horizontal path, a brush support assembly supporting the brush for movement in a vertical plane, the brush support assembly including a vertically oriented first cylinder supported by the upper end of the first rod and a first piston movable in the first cylinder, a first piston rod having a lower end affixed to the first piston and an upper end coupled to the brush sensor means associated with the brush for generating a first relatively high-frequency electrical indication proportional to variations in the instantaneous contact pressure of the brush on the overhead conductor, means for generating a variable second reference electrical indication indicative of a desired value of such contact pressure, comparison means coupled to the sensor means and to the second indication-generating means for generating a third indication proportional to the difference between the first and second indications, first control means coupled to the output of the comparison means for incrementally moving the first piston in accordance with changes in the third indication to compensate for changes in the contact pressure of the brush on the overhead conductor, means coupled to the output of the comparison means and responsive to the third indication for deriving a relatively low-frequency fourth indication therefrom, a second horizontally disposed cylinder carried by the vehicle, a second piston movable within the second cylinder, a second piston rod coupled to the second piston for imparting horizontal movement to the lower end of the second rod of the scissor member, and second control means coupled to the output of the deriving means for incrementally moving the second piston in accordance with changes in the fourth indication.

4,113,075

CENTRIFUGAL LOCK-UP CLUTCH AND TORQUE CONVERTER

Frank H. Walker, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 20, 1977, Ser. No. 798,768
Int. Cl.[2] F16H *41/18;* F16D *43/14*
U.S. Cl. 192—3.31 2 Claims



1. A centrifugal lock-up clutch and torque converter comprising; torque receiving input means including an input shell and a fluid impeller; torque delivery output means including a fluid turbine; clutch shoe means having leading and trailing edges disposed between said turbine and said input shell and being operable to frictionally engage said input shell in response to centrifugal forces thereon; drive spring means drivingly connected in a generally circumferential direction between said clutch shoe means and said turbine and being effective to transmit rotation to said clutch shoe means from said turbine prior to engagement and being resiliently effective to transmit drive torque from said input shell to said turbine after engagement of said clutch shoe means while permitting relative angular movement between the clutch shoe means and said turbine due to compression of said drive spring means while said clutch shoe means is engaged; clutch engagment control spring means operatively connected in a generally radial direction between said clutch shoe means and said turbine and applying a force therebetween resiliently resisting movement of said clutch shoes radially toward said input shell until the clutch shoe means frictionally engages the input shell and relative angular movement in the direction of input shell rotation between the clutch means and turbine occurs, the relative angular movement resulting in a reversal of force in said clutch engagement control spring means so as to increase the engagement force at the trailing edge of the clutch shoe means; and energy dissipating friction means operatively connected between the clutch shoe means and the turbine to dampen torsional vibrations.

4,113,076

INTERRELATED CONTROLS FOR VEHICLE BRAKES, TRANSMISSION AND MOTOR

Arthur L. Lee, and Arthur B. Coval, both of Columbus, Ohio, assignors to A. L. Lee Corporation, Columbus, Ohio

Filed Jul. 6, 1976, Ser. No. 702,396
Int. Cl.[2] B60K *29/00*
U.S. Cl. 192—4 A 6 Claims

1. A brake actuator for a vehicle comprising,

propelling means for said vehicle,

fluid pressure operated control means connected to said propelling means, said fluid pressure operated control means arranged when subjected to fluid under pressure to be connected to said propelling means,

fluid actuated brake means for engaging said propelling means and braking said vehicle,

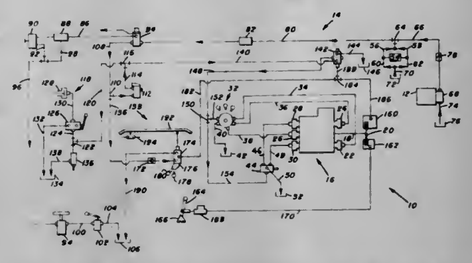
a source of fluid under pressure,

a brake actuator valve,

a fluid circuit for controlling the flow of fluid under pressure beween said source of fluid under pressure to said brake actuator valve, fluid actuated braking means, and said fluid pressure operated control means,

said brake actuator valve arranged in a brake disengaged position to supply said fluid actuated braking means with fluid under pressure from said source and maintain said fluid actuated braking means in a disengaged position,

said brake actuator valve arranged in a brake engaged position to vent said fluid under pressure from said fluid actuated braking means and vent said fluid under pressure from said pressure operated control means so that upon engagement of said fluid actuated brake means said fluid pressure operated control means is disengaged from said propelling means,



a brake actuator lever connected to said brake actuator valve, said brake actuator lever arranged to manually actuate said brake actuator valve and vent fluid under pressure from said fluid actuated braking means and said fluid pressure operated control means, and

a brake reset lever connected to said brake actuator valve, said brake reset lever movable to a brake engaged position upon engagement of said fluid actuated braking means to maintain said brake in an engaged position upon release of said brake actuator lever.

4,113,077

MARINE PROPULSION CONTROL SYSTEM WITH ENGINE IDLE BOOST

John M. Phinney, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 715,680, Sep. 19, 1976. This application Jan. 14, 1977, Ser. No. 759,390
Int. Cl.[2] F16D *67/00*
U.S. Cl. 192—.098 4 Claims

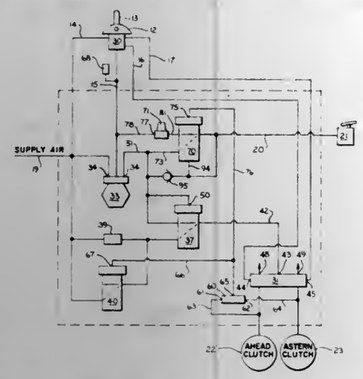
1. In a pneumatic clutch control system for a marine propulsion system having a prime mover controlled by a throttle speed governor, a drive train for transmitting power from the prime mover to a propeller drive shaft, an air inflatable clutch for selectively connecting the prime mover to said drive train, throttle means for actuation of the propulsion system, and inflation means responsive to movement of said throttle means for inflating said clutch and including a valve responsive to said throttle means and connected to a source of pressurized air to provide an air output signal at a pressure proportional to throttle position, the combination therewith of:

a governor control valve having a first inlet connected to receive said air output signal, a second inlet, and an outlet connected to said throttle speed governor; and

pressure regulator means connected to receive said air output signal and to pass the same to said second inlet of said governor control valve, said regulator means being adjust-

able to limit the maximum pressure which it passes to said governor valve,

said governor valve being normally biased to a position in



which said second inlet is connected to said outlet and adapted to be actuated to connect said first inlet to said outlet when the clutch pressure rises above a minimum level.

4,113,078

DRIVEN PLATES FOR FRICTION CLUTCHES

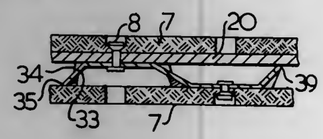
Ian Commander Maycock, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 17, 1977, Ser. No. 797,768

Claims priority, application United Kingdom, May 20, 1976, 20800/76

Int. Cl.² F16D *13/64*

U.S. Cl. 192—107 C **8 Claims**



1. A driven plate for a friction clutch of a vehicle comprising:

a hub member;

an annular plate member connected to and disposed around the hub member;

a plurality of resilient cushioning elements secured to and in circumferential array around the plate member;

and a pair of annular friction facings attached one either side to the resilient cushioning elements so that the friction friction facings are held generally parallel to each other and the two opposing back faces of the friction facings which are adjacent the resilient cushioning elements define two parallel faces;

wherein each cushioning element comprises:

at least one generally circumferentially extending operative resilient portion which extends between two parallel abutment surfaces associated with the parallel back faces of the friction facings and which tapers from a greater width at its radially inner end to a smaller width at its radially outer end.

4,113,079

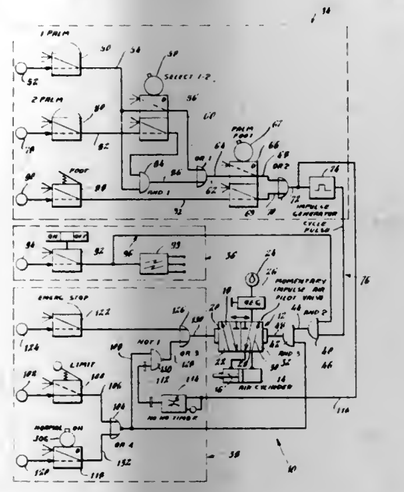
PRESS BRAKE CONTROL CIRCUIT

John T. Wright, Cattaraugus, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 23, 1976, Ser. No. 753,647

Int. Cl.² F16P *3/22*

U.S. Cl. 192—129 B **9 Claims**



1. A control circuit for operating a clutch to engage the drive of a press comprising:

motor means for engaging and releasing said clutch,

first logic circuit means responsive to an input signal from a first, second, and third switch means to actuate said motor means to engage said clutch, and

second logic circuit including means responsive to a second input signal from said third switch means to release said clutch, and

means responsive to a first input signal from said third switch means for blocking the second input signal to prevent release of the clutch.

4,113,080

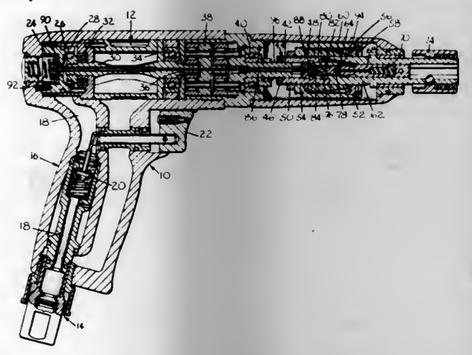
TORQUE WRENCH AIR SHUT-OFF

Clyde David Thackston, and Robert H. Alexander, both of Columbia, S.C., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 686,085, May 13, 1976, abandoned. This application Jun. 29, 1977, Ser. No. 811,423

Int. Cl.² F16D *43/20*

U.S. Cl. 192—150 **7 Claims**



1. In a power operated tool for setting fasteners and the like to a predetermined torque, said tool having a motor connected to rotate a drive shaft, said drive shaft being connected to the tool output through a torque-responsive coupling, said tool having a normally-closed valve in the line for supply of power to said motor, and said normally-closed valve being initially opened by engagement of said tool with a workpiece, the improvement comprising a shut-off means responsive to relative rotation between said drive shaft and said tool output to allow said valve to close, in which initial relative rotation between said drive shaft and said tool output arms said shut-off means to sense a predetermined magnitude of relative rotation and in which further relative rotation triggers said shut-off means to actuate said valve to interrupt the supply of power to said motor.

4,113,081

MECHANISM FOR ACTUATING A MEMBER OF A TYPEWRITER

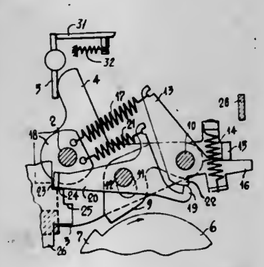
Ulrich Menzi, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Jun. 16, 1976, Ser. No. 696,864

Claims priority, application Switzerland, Jun. 24, 1975, 8170/75

Int. Cl.² B41J *19/54*

U.S. Cl. 400—333 **4 Claims**



1. In a typewriter, a mechanism for actuating a member from a continuously rotatable drive shaft, comprising a principal lever cooperating with said member and carrying a catch able to occupy an active position in the trajectory of a peripheral projection of the shaft and a rest position out of said trajectory, a control lever for said catch, wherein the principal lever additionally carries a locking lever cooperating with said control lever of the catch, said catch being connected to the control lever by a spring biasing said catch and said control lever relative to one another into an angular position defined by abutment means, and a fixed stop is disposed in the path of the control lever during movement of the principal lever in response to engagement of the catch by said projection to return the control lever to a position for locking the catch while the catch is still in engagement with said projection.

4,113,082

APPARATUS AND METHOD FOR STORING AND TRANSPORTING SUBSTRATES IN A BATCH-TYPE VACUUM PROCESS

Mitchell E. Timin, Berkeley, Calif., assignor to Airco, Inc., Montvale, N.J.

Filed May 17, 1976, Ser. No. 686,778

Int. Cl.² B23Q *7/03*

U.S. Cl. 198—339 **5 Claims**

1. Apparatus for storing and transporting substrates inside an evacuable chamber containing vacuum coating equipment, comprising:

(a) means for receiving and supporting a multiplicity of substrates in a first stack adjacent to the coating equipment;

(b) means for receiving and supporting a multiplicity of substrates in a second stack adjacent to the coating equipment;

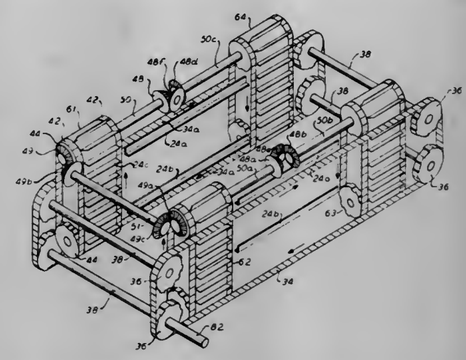
(c) means for conveying a substrate from the top of the first stack to the top of the second stack;

(d) means for moving the substrates in the second stack toward the bottom;

(e) means for conveying substrates from the bottom of the second stack to the bottom of the first stack;

(f) means for moving the substrates in the first stack toward the top; and

(g) energy storage means for overcoming inertia in the first



stack moving means and the second stack moving means, said storage means including a first shaft for driving the stack moving means, a second shaft for driving the first shaft, a detent cam fixed to the second shaft, a cam follower for alternately restraining and releasing the detent cam, and a torsion spring connected between the first shaft and the second shaft for storing energy as the first shaft rotates when the detent cam is restrained by the cam follower, and transmitting energy to rotate the second shaft when the detent cam is released.

4,113,083

APPARATUS FOR TRANSFERRING A DEFORMABLE CYLINDRICAL WORK PIECE FROM ONE WORK STATION TO ANOTHER

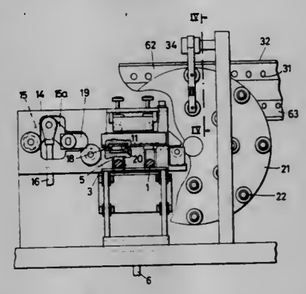
Axel Friese, Wuppertal, Fed. Rep. of Germany, and Stefan Simon, Moedling, Austria, assignors to Dr. Carl Hahn G.m.b.H., Dusseldorf, Fed. Rep. of Germany

Filed Oct. 13, 1976, Ser. No. 731,954

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1975, 2546245

Int. Cl.² B65G *29/00*

U.S. Cl. 198—480 **10 Claims**



1. An apparatus for receiving a deformable cylindrical work piece from a first station by axial displacement of said piece and for axially displacing said piece into a second station, comprising:

a transfer element extending substantially in one main plane and movable in said plane, said transfer element having a

plurality of openings therethrough said openings having an inner perimeter;

bushes for receiving said work piece, said bushes mounted within said openings for movement with said transfer element and with their axes transverse to said main plane;

means for moving each of said bushes into approximate axial alignment with said first station for receiving a work piece, and for moving said bushes into an approximate axial alignment with said second station for discharging said work piece; and

said bushes being floatingly mounted within said openings so as to be able to move in both the axial and radial direction to compensate for errors in said alignment;

said apparatus being provided with means for axially displacing said work piece into said transfer element and means for axially discharging said work piece into said second station.

4,113,084

SCRAPER CHAIN ASSEMBLIES

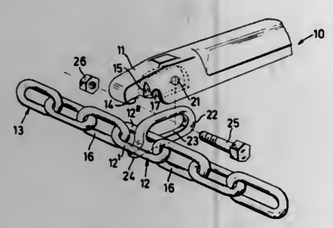
Helmut Temme, Waltrop, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Feb. 16, 1977, Ser. No. 769,094

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 2608289

Int. Cl.² B65G *19/00*

U.S. Cl. 198—731 **28 Claims**



1. In or for a scraper-chain assembly for a mine conveyor; a scraper unit comprising: a scraper with end portions shaped at their undersides to seat onto horizontal chain links of a pair of chains and provided with shaped internal pockets narrower than said end portions; locking elements for securing the scraper to said chain links; and means securing the scraper to said locking elements wherein said locking elements extend around the inner shanks of said links and are received and supported within said pockets and the pockets overlap the inner shanks of the chain links and have internal walls which engage with the locking elements to restrict lateral movement in both directions across the chain links and vertical movement above the chain links.

4,113,085

SEALING ARRANGEMENTS FOR USE UNDER WATER

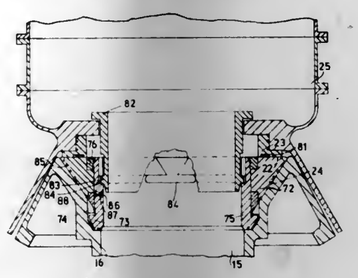
Kenneth Ball, Hightown, England, assignor to Vickers-Intertek Limited, London, England

Division of Ser. No. 685,676, May 12, 1976, which is a division of Ser. No. 456,769, Apr. 1, 1974, Pat. No. 3,968,656. This application Feb. 23, 1977, Ser. No. 771,356

Int. Cl.² F16J *13/02*; B63C *11/34*

U.S. Cl. 277—9 **4 Claims**

1. In and for a system for working on a fixed sub sea installation which system includes a transit capsule and a hollow body enclosing said installation, said body including an opening through which the interior of the body is normally exposed to the pressure of the surrounding water and wherein said transit capsule is sealingly engageable with said body around said opening so that the interior of said capsule and of said body can be subsequently connected together through said opening to form a sub sea capsule in which men can work on said installation at substantially atmospheric pressure, the invention comprising a sealing arrangement between said transit capsule and said body, comprising oppositely directed faces on said transit capsule and said body co-axially surrounding said opening, a member disposed between the capsule and said body and having faces complementary with the faces on said transit capsule and said body, said member being normally engaged with said body even in the absence of said transit capsule, a first seal disposed between the complementary faces on said member



and on said body and a second seal disposed between the complementary faces on said member and on said transit capsule, and cooperating means carried by said member and said capsule and operable from within said capsule to break the seal between said member and body and disengage said member from said body while simultaneously connecting said member to said transit capsule for transport of said member by said capsule to a position remote from said body.

4,113,086

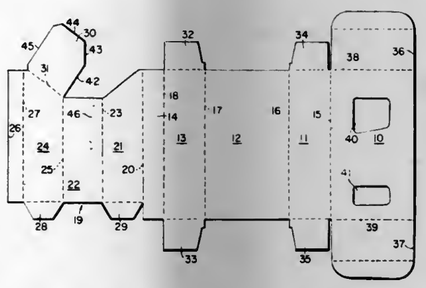
END LOADED CARTON WITH AUTOMATIC HEADER

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 14, 1977, Ser. No. 842,261

Int. Cl.² B65D *5/48, 5/50*

U.S. Cl. 206—45.14 **9 Claims**



1. An end loaded carton of generally parallelopiped configuration, formed from a single blank of paperboard or the like comprising, spaced outer front and rear walls separated from one another by a pair of outer side walls, end closure flaps for each end of the carton, and an inner product receiving compartment, said inner compartment comprising a pair of inner side wall panels spaced apart and inboard of said outer side walls and adhered to the said outer front and rear walls, the improvement comprising a first inner compartment header panel foldably attached to an end of one of said inner side wall panels along a diagonally oriented score line and adapted for automatic orientation over the end of said inner compartment when said carton is squared for loading, by the initial abutment of a lower edge of said header panel against the inside of said rear wall, said abutment causing the concomitant rotation of said header panel about its diagonal fold line.

4,113,087

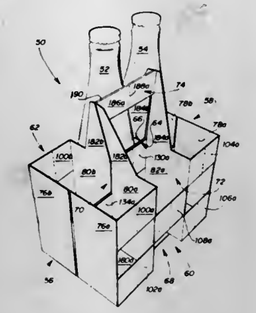
PLASTIC COLLAPSIBLE ARTICLE CARRIER

Paul J. Morcom, Rte. 1, Box 235, Henderson, Tex. 75652

Filed Mar. 17, 1976, Ser. No. 667,679

Int. Cl.² B65D *85/30*

U.S. Cl. 206—174 **18 Claims**



1. An injection molded plastic collapsible article carrier having open and collapsed positions and formed from two half sections which are hinged together, wherein each half section comprises:

first and second end walls parallel to one another when the carrier is in the open position;

first and second side walls parallel to one another and hingedly joined to edges of said first and second end walls to extend perpendicularly to said first and second end walls when the carrier is in the open position, portions of said side walls having heights less than the height of said end walls and portions of said first side wall being vertically spaced from portions of said second side wall, such that said portions of said first side wall are vertically offset from said portions of said second side wall to enable molding thereof in opposed dies;

first and second dividing walls, parallel to one another and parallel to said end walls, being hingedly joined at spaced locations between said first and second side walls to form a plurality of receiving cellular compartments between said first and second side walls within the collapsible article carrier; and

a bottom member hingedly joined to edges of at least one of said walls, wherein the collapsible article carrier may be folded about said hinged attachments to a flat collapsed position and folded to the open position to form a plurality of open ended cellular compartments for receiving articles.

4,113,088

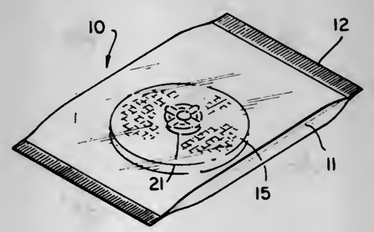
STERILE PACKAGE

Richard D. Binkhorst, 125 E. 74th St., New York, N.Y. 10021

Filed Jun. 6, 1977, Ser. No. 803,959

Int. Cl.² B65D *81/18*; A61F *1/16, 1/24*

U.S. Cl. 206—210 **7 Claims**



1. A sterile package including an intraocular lens implant comprising a case having a pair of separable cover parts in closed position thereby enclosing a space therebetween, means in one said cover part forming a seat removably receiving said intraocular lens implant, said other cover part cooperating with said one cover part in said closed position to retain said intraocular lens implant in said seat forming means, means in a said cover part defining an aperture through said cover part aligned with said lens, and sealed package means of thin, optically transparent material enclosing said case.

4,113,089

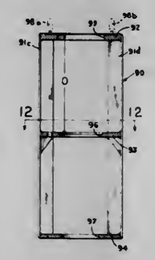
SUPPORT FIXTURES FOR PREASSEMBLED UNIT OR CARTRIDGE FOR MULTI-STAGE BARREL TYPE CENTRIFUGAL PUMPS

Austin R. Bush, Madison, and Frank L. Ferrarese, Nutley, both of N.J., assignors to Worthington Pump, Inc., Mountainside, N.J.

Division of Ser. No. 716,664, Aug. 23, 1976. This application Mar. 2, 1977, Ser. No. 773,778

Int. Cl.² B65D *85/68*

U.S. Cl. 206—319 **2 Claims**



1. A fixture for preassembling the working parts of a pumping unit to be mounted in engagement with spaced shoulders formed a predetermined spaced distance from each other in the outer casing of a multi-stage barrel type centrifugal pump includes,

a. a plurality of longitudinally extending side legs disposed in spaced relation to each other,

b. an upper transverse member connected to the upper end of said plurality of longitudinally extending side legs having, a sized access opening therethrough to permit the working parts of the pumping unit to be assembled to be passed into and out of said fixture,

c. at least one other transverse member connected to said plurality of longitudinally extending side legs a spaced distance from said upper transverse member having, a sized assembly opening therethrough for holding the working parts of the pumping unit to be assembled,

d. a first shoulder means formed on said upper transverse member about the sized access opening formed therethrough disposed for engagement with at least one of the working parts of the pumping unit to be assembled in the fixture.

e. a second shoulder member formed in said other transverse member about the sized assembly opening formed therethrough for abutting engagement with at least one other working part of the pumping unit to be assembled in the fixture,

f. said first should means and second shoulder means a predetermined spaced distance from each other equivalent to the predetermined spaced distance of the shoulders in said outer casing of the multi-stage barrel type centrifugal pump in which the preassembled working parts of the pumping unit will be mounted,

g. threaded bores in said upper transverse member, and

h. threaded means in the threaded bores in said upper transverse member to engage said at least one of said working parts to exert axial forces on said working parts of the pumping unit to place the same under compression stresses after the same have been assembled.

4,113,090

MEDICAL INSTRUMENT PACKAGE

Dennis L. Carstens, Columbus, Nebr., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Aug. 15, 1977, Ser. No. 824,412
Int. Cl.[2] B65D *85/24*
U.S. Cl. 206—365 **6 Claims**



1. A package for a medical instrument comprising; a hollow shield having an open end surrounded by a flange for insertion and removal of at least a portion of a medical instrument and means to support and protect the instrument when it is contained therein, a separate cap adapted to be mounted on the shield with an opening therein aligned with the opening in the shield to permit insertion and removal of the instrument with respect to the shield and cap, said cap being shiftable between a first position to cooperate with the shield in protecting the instrument and a second position exposing and positioning a portion of the instrument exteriorly of the package to facilitate grasping and removal thereof, wherein the cap is open at both ends, and has a shoulder on its inner surface intermediate the ends of the cap, the shield adapted to be extended through the opening in one end of the cap and to remain engaged with inner surfaces on the cap, the cap being in a first position and restricted from further movement in an upward direction by the underlying engagement of the lateral shoulder on the inner surface of the cap and the undersurface of the flange on the shield, the cap surrounding the portion of the hub extending from the shield when the cap is in the first portion, the cap being slidably shiftable to a second position with the shoulder on the cap being moved away from the flange on the shield and the cap in the second position exposing a portion of the hub extending from the shield to facilitate grasping of the hub and removal of the medical instrument from the shield, and removable closure means covering the opening in the cap and shield and, when removed, exposing the opening in the cap and shield to permit insertion of removal of a medical instrument.

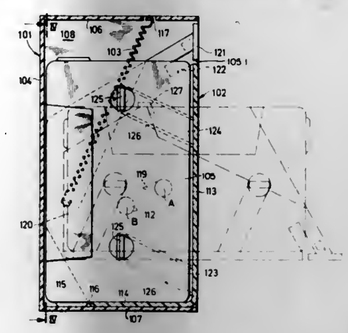
4,113,091

HOLDERS FOR TAPE CASSETTES

Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Lenzerheide, Switzerland

Filed Jun. 4, 1975, Ser. No. 583,756
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1974, 2427103
Int. Cl.[2] B65D *43/16*
U.S. Cl. 206—387 **11 Claims**

1. A holder for tape cassettes and the like comprising a housing for receiving the cassette and having broad and spaced sidewalls to receive a cassette therebetween and having narrow end and base walls between the sidewalls and also having a narrow slot-shaped entrance opposite one of said narrow walls whereby to receive and carry the cassette with the reel axes extending transversely through the broad sidewalls, manipulating means on the housing for engaging the cassette when introduced into the housing, said manipulating means including a cassette-engaging portion swingable relative to said narrow walls and about at least one axis extending transversely through the planes of the sidewalls to swing with the cassette as the cassette swings inwardly and outwardly of the entrance, said manipulating means including a spring urging said cassette-engaging portion generally toward the entrance for thrusting the cassette outwardly through the entrance, and said manipulating means also including locking means connected with the housing and opposing the thrust of the spring to cooperate with the cassette-engaging portion in retaining the cassette in the housing, and the manipulating means including



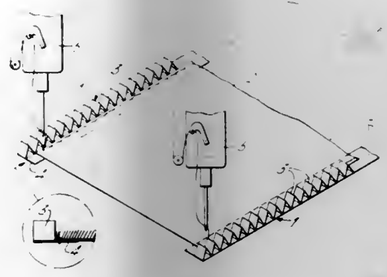
a pair of elongated flexible arms and a cam mounted on each of the arms and facing inwardly of the housing adjacent the entrance to confront, engage and obstruct the cassette as the cassette emerges partly through the entrance under the initial thrust provided by the spring and also retaining the cassette against falling out by tipping about axes lying parallel to the sidewalls of the housing.

4,113,092

PACKAGING

Raymond Williams, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation-in-part of Ser. No. 624,242, Oct. 20, 1975, abandoned. This application Dec. 17, 1976, Ser. No. 751,948
Claims priority, application United Kingdom, Oct. 30, 1974, 47013/74; Jan. 17, 1975, 2812/75; Jun. 18, 1975, 26017/75
Int. Cl.[2] B65D *85/66*
U.S. Cl. 206—408 **13 Claims**



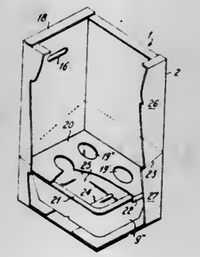
1. A coiled package comprising:
a coiled supporting strip;
a coiled pile fabric releasably secured to the coiled supporting strip along at least one longitudinally extending edge of the pile fabric such that a portion of said strip extends outwardly beyond said edge along the length of said edge;
spacing means comprising an elongate member having a height greater than the nominal thickness of said pile fabric secured to said portion of said strip and separating the turns of the coiled supporting strip, a surface of each turn of said elongate spacing member being adjacent a surface of each turn of said portion of said strip; and
a bonding agent between said surface of each turn of the elongate spacing member and the adjacent surface of each turn of said strip, said bonding agent being applied prior to coiling and bonding said surfaces together to form a unified spacer strip structure whereby the turns of the coil of fabric are separated and maintained apart by said spacer means.

4,113,093

PACKAGE CONVERTIBLE INTO A DISPLAY MEANS FOR CUT FLOWERS

Yves Hendrickx, Rte. d', Orleans, France (F-45000)

Filed Feb. 4, 1977, Ser. No. 765,545
Claims priority, application Belgium, Feb. 9, 1976, 164178; Jan. 19, 1977, 174217
Int. Cl.[2] B65D *85/52*
U.S. Cl. 206—423 **9 Claims**



1. A package convertible into a display means for selectively transporting, storing and displaying cut flowers having stems, which comprises
(a) a topless box-shaped casing cardboard having providing the free circulation of air and a plurality of side walls of a height sufficient for accommodating the cut flowers disposed in a vertical position,
(b) a cup of a water-impervious material at a lower portion of the casing and permanently connected therewith to form a part of the casing, for containing water, (c) score lines on the side walls of the casing defining a plane above the cup for cutting the side walls along said lines when the package is converted into the display means,
(d) a support for the cut flowers extending above the cup and defining at least one opening for receiving the stems of the flowers when the side walls are cut and the package has been coverted into the display means, and
(e) the upper edges of the side walls being inwardly folded to form a support frame around the edges only, thereby permitting the stacking of several packages.

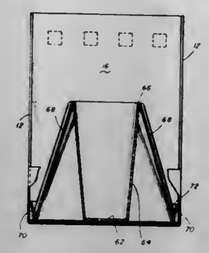
4,113,094

CONTAINER FOR CUT FLOWERS

Herbert S. Collin, 35 Stillings St., Boston, Mass. 02210

Division of Ser. No. 700,342, Jun. 28, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,333
Int. Cl.[2] B65D *85/50*
U.S. Cl. 206—423 **3 Claims**

1. A container for shipping and displaying cut flowers comprising:
a generally rectangular box having a front wall, a rear wall, a pair of sidewalls and top and bottom walls;
an insert, receivable in the bottom of the box, said insert being molded from a single piece of plastic, said insert including a central flower-receiving bucket portion including a bottom wall and upwardly diverging sidewall, said sidewall terminating at its upper end in a open mouth; a skirt extending from the upper end of the sidewall downwardly and outwardly about the central flower-receiving portion to define a generally pyramid-shaped support, the lower end of the skirt being of rectangular configuration and being disposed at the level of the bottom wall of the central bucket portion to enable the bucket and lower ends of the skirt to rest on the bottom wall of the box, the peripheral configuration of the lower end of the skirt corresponding to that of the bottom of the box; a flange extending about the lower end of the skirt, the flange extending upwardly and outwardly therefrom to define a trough about the lower end of the skirt; the peripheral configuration and dimensions of the upper edge of the



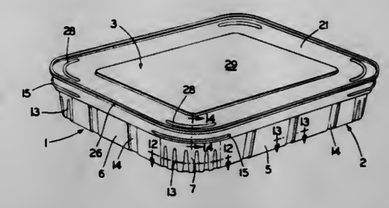
flange corresponding to that defined by the sidewalls of the box, the upper edge of the flange being in engagement with the inner surfaces of the sidewalls of the box and the corners defined at the juncture of the sidewalls of the box; and
means forming a plurality of heightwise extending ribs on the skirt.

4,113,095

TRAY-TYPE PROCESSED FOOD CONTAINERS

Raymond A. F. Dietz; Danny L. Fundom, both of Massillon; George J. Henning, Canton, and Lynn B. McKinney, Massillon, all of Ohio, assignors to Van Dorn Company, Cleveland, Ohio

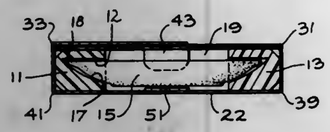
Filed Nov. 26, 1976, Ser. No. 744,965
Int. Cl.[2] B65D *21/02, 7/48, 7/46*
U.S. Cl. 206—508 **6 Claims**



1. One-piece tray construction for processed food containers including light gauge sheet metal, bottom, side and end walls forming a generally rectangular tray; the tray having an outer surface and an inner surface provided with a protective coating; the side and end walls being connected by curved corner walls; an outturned continuous ledge formed at the upper ends of the side, end and curved corner walls; said side, end and curved corner walls tapering upward outward between the bottom wall and ledge; second side, end and curved corner walls offset laterally outward of the first mentioned side, end and curved corner walls extending upward from the perimeter of the ledge and forming the upper open end of the tray; said second walls having an outturned continuous terminal beadforming flange at the open end of the tray; each second curved corner wall having a smaller radius of curvature than that of any of the first mentioned curved corner walls to provide widened ledge portions at end corner of the tray; horizontally oriented corrugation means embossed outwardly in each of said second curved corner walls; and said corner corrugation means being adapted to engage and be supported on the outturned terminal beadforming flange of a tray next below when a series of trays are stacked in nested condition, with the outer

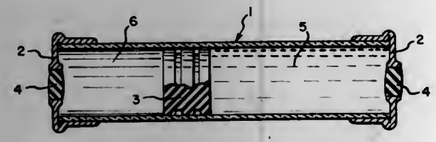
surfaces of the first mentioned side, end and curved corner walls of adjacent trays in the nested stack being spaced from the inner protective coated surfaces of the trays next below.

4,113,096
PACKING BOX FOR CHINA
Donald M. Scott, La Habra, Calif., assignor to Fibre Containers Company, City of Industry, Calif.
Filed Nov. 1, 1976, Ser. No. 737,600
Int. Cl.² B65D *81/02, 85/30*
U.S. Cl. 206—523 **1 Claim**



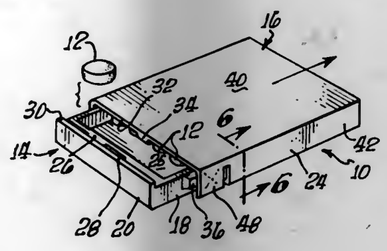
1. A packing box for a circular dish or plate having a circular edge in a single plane and having an annular portion sloping upwardly to said circular edge, including in combination:
- a pair of separate cushioning blocks of plastic foam material each having a length, a width and a height, and having upper and lower surfaces;
- each of said blocks having an indentation in one side intermediate said upper and lower surfaces thereof and complementary to and receiving an edge segment of the plate, said indentation in each block being arcuate when viewed from above said upper surface of said block and having substantially the same radius as the plate, said indentation in each block having a flat upper wall in the shape of a segment of a circle, when viewed in cross section, conforming to the plane of the circular edge of the plate, and said indentation in each block having a lower wall of generally conical shape which, when viewed in cross section, slopes upwardly to and converges with the circular edge of said flat upper wall and which is complementary to said annular portion of the plate; and
- a confining container enclosing said blocks having four side walls, a top wall, and a bottom wall, the length of the blocks being substantially equal to the length of opposite side walls of the containers, the height of the blocks being substantially equal to the distance between the top and bottom walls, said opposite walls of the container maintaining the blocks in intimate contact with opposed edge segments of the plate, with such edge segments of the plate firmly fitting into said indentations in said blocks, so as to suspend the plate from said blocks within and spaced from all the confining walls of said container.

4,113,097
AMPULE CAPABLE OF BEING AUTOCLAVED
James J. Finn, Upper Saddle River, N.J., assignor to Diagnostic Isotopes Incorporated, Upper Saddle River, N.J.
Filed Aug. 9, 1976, Ser. No. 712,802
Int. Cl.² A61J *1/06*; B65D *85/54*
U.S. Cl. 206—528 **4 Claims**



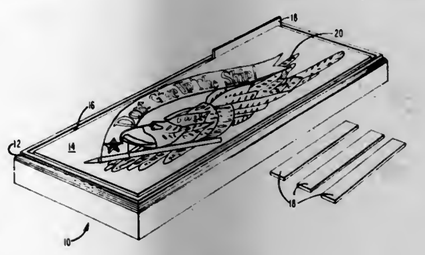
1. An ampule which comprises, in combination, a tubular body of uniform diameter having end members each containing a rubber seal, a plunger of unitary construction being impervious to fluids and disposed moveably within the tubular body, said plunger defining a first compartment containing a dosage solution and a second compartment containing a gas within an expansion space, whereby upon autoclaving the ampule said plunger moves toward the expansion space to accommodate the expansion of the dosage solution.

4,113,098
PILL-DISPENSING AND STORAGE CONTAINER
Charles S. Howard, 1500 W. 13th St., Upland, Calif. 91786
Filed May 25, 1977, Ser. No. 800,351
Int. Cl.² B65D *43/20, 85/56*
U.S. Cl. 206—540 **5 Claims**



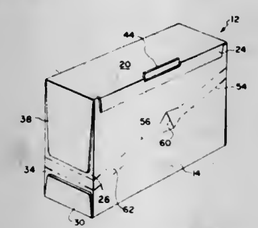
1. A dispensing-and-storage container for pills and like medication comprising:
- a box-like receptacle having a forward wall member, a rear wall member, oppositely disposed side wall members, and a substantially flat bottom member defining a storage compartment to receive pills therein;
- a cover slidably mounted to said receptacle, said cover having a top member and depending side members and open forward and rear ends, said cover being flexible;
- releasable locking means comprising a lock recess defined in the forward wall member of the receptacle, and a locking lug depending from and adjacent to the forward edge of the cover, said lug being positioned to engage in said lock recess when the cover is in closed position;
- said cover being adapted for upward bowing deformation to disengage the locking lug from the lock recess upon application of inward pressure on forward portions of the cover side members;
- interengaging slide means on said side members of said cover and said side wall members of said receptacle; and
- stop means intermediate the ends of said top member of said cover and depending therefrom for engagement with said rear wall member of said receptacle to limit the relative sliding movement therebetween.

4,113,099
WOOD CARVING KIT
Arthur Beckerman, 45 Hutchins St., Auburn, Me. 04210
Filed Oct. 3, 1977, Ser. No. 838,533
Int. Cl.² B65D *69/00*
U.S. Cl. 206—575 **8 Claims**



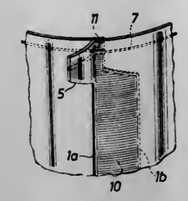
1. A wood carving kit comprising:
- a unitary block of wood having a carving surface;
- a frame portion around the periphery of the block and integral with the block;
- a groove around the periphery of the carving surface and extending inward from that surface to a predetermined depth in the block defining the maximum carving depth of a pattern to be carved into the carving surface, the groove separating the carving surface from the frame portion;
- a pattern provided in predetermined placement on the carving surface and depicting an item to be carved in accordance with that pattern; and
- at least one guard element sized and configured to be removably disposed in the groove and when fully inserted therein to extend above the carving surface by a predetermined amount, and operative to shield the frame portion from possible damage by a carving tool being used in portions of the carving surface adjacent the guard element.

4,113,100
DISPLAY CARTON
Lawrence M. Soja; Daniel F. Stokes, both of Chicago, and Richard W. Belle, Park Ridge, all of Ill., assignors to Stone Container Corporation, Chicago, Ill.
Filed Jan. 27, 1977, Ser. No. 762,874
Int. Cl.² B65D *5/54*
U.S. Cl. 206—602 **1 Claim**



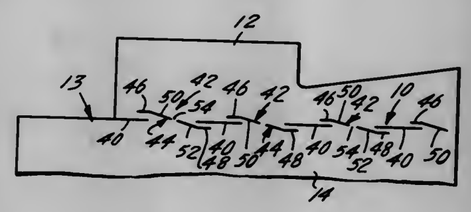
1. A folded display carton forming blank comprising two cartons end panels and two carton face panels, said panels each having opposed side edges and opposed end edges, one of said face panels being positioned between the two end panels with the opposed side edges of the one face panel being respectively integrally hinged to one side edge of each of the two end panels, the second of said face panels being integrally hinged to the second side edge of one of said end panels, the opposed end edges of the panels being generally aligned in two parallel rows along opposed longitudinal edges of the blank, each of said panels having a side flap integrally hinged to each of the opposed end edges thereof, the improvement comprising:
- a. a tear strip formed diagonally across each of said face panels between the opposed longitudinal edges of the blank, each tear strips, at the opposed ends thereof, including continuations extending across the associated side flaps generally perpendicular to the longitudinal edges of the blank, said tear strips being mirror images of each other;
- b. the side flap of a first end panel being longer than the side flap of the second end panel along a first longitudinal edge of the blank, the side flap of the second end panel being longer than the side flap of the first end panel along the second longitudinal edge of the blank;
- c. the combined lengths of the end panel side flaps on each longitudinal edge of the blank, perpendicular to the longitudinal edge, being less than the face panel width between the opposed side edges thereof to define a gap between the side flaps on each longitudinal edge of the blank in the folded carton alignable with the tear strip continuations in the side flaps of the face panels on the same longitudinal edge of the blank.

4,113,101
OPENING ARRANGEMENT FOR PACKING CONTAINERS
Herwig Pupp, and Otto Birger Andersson, both of Lund, assignors to AB Ziristor, Lund
Continuation-in-part of Ser. No. 720,516, Sep. 3, 1976. This application Mar. 15, 1977, Ser. No. 777,940
Int. Cl.² B65D *17/02*
U.S. Cl. 206—606 **4 Claims**



1. A packing container provided with an opening arrangement comprising a substantially cylindrical body member formed from a convoluted blank with overlapping sealed end portions, said body member being closed at the top and bottom thereof and comprised of a carton forming material having a base layer and at least one layer of thermoplastic material disposed on the inside of the body member, a tear thread disposed circumferentially on said thermoplastic layer on the inside of the body member adjacent to and spaced from the top thereof, the outer of said overlapped sealed end portions being provided, at the top thereof, with a circumferentially extending tab member having the tear thread passing circumferentially therealong, and the inner of said overlapped sealed end portions having a cut-out portion at the top thereof corresponding in size and shape with the tab member, the circumferential dimension of the cut-out portion being about ¾ to 4/5 of the width of the overlapping seal below said cut-out portion to provide an upper, vertically extending, narrow finger-like seal between the outer of said end portions adjacent said tab member and the inner of said end portions adjacent the cut-out portion, whereby opening the packing container may be facilitated by pulling the tab member and associated tear thread to tear through the narrow finger-like seal and cylindrical body members.

4,113,102
SCORE LINE CONFIGURATION FOR ICE CREAM CARTONS AND THE LIKE
David Charles Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.
Filed Oct. 11, 1977, Ser. No. 840,739
Int. Cl.² B65D *5/54, 17/24*
U.S. Cl. 206—611 **8 Claims**



1. A score line configuration comprising:
- a plurality of intermittent aligned cut scores which are spaced along and aligned in the principal tear direction of said configuration;
- a plurality of slanted Z configured cut scores in the spaces between said aligned cut scores, each having a diagonal

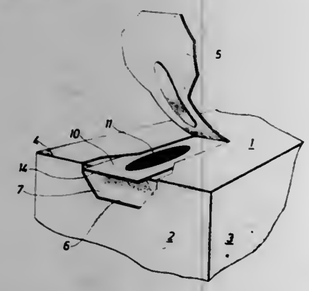
cut score extending from one end of a said aligned cut score to the adjacent end of the next aligned cut score, and a pair of cut score end extensions attached to the ends of said diagonal cut scores, said extensions being parallel to, juxtaposed with, and spaced apart from said aligned cut scores.

4,113,103

OPENING ARRANGEMENT FOR PACKING CONTAINERS

Lars Christer Carlsson, Blentarp, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Jun. 21, 1977, Ser. No. 808,690
Claims priority, application Sweden, Jul. 8, 1976, 7607803
Int. Cl.[2] B65D *5/54*
U.S. Cl. 206—611 **7 Claims**



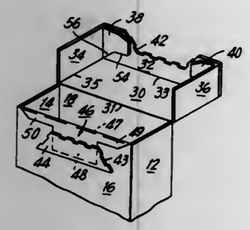
1. In a packing container having a first wall and a second wall intersecting along an edge, an opening arrangement comprising a plurality of layers of sheet material, the outer layer having a weakening line extending across said first wall and over said edge and along said second wall in the shape of a lug hinged on said first wall, a cover layer on the interior of the container, and a flexible, resilient, normally flat strip interposed between said outer layer and said cover layer, said strip having a pouring opening therein positioned in said first wall and underlying said lug, said strip projecting over said edge, and seal means between said layers for preventing the discharge of the contents of said container except through said pouring opening when said lug is torn away from said walls along said weakening line.

4,113,104

TAMPERPROOF RECLOSABLE CARTON

George Leroy Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 9, 1977, Ser. No. 805,096
Int. Cl.[2] B65D *17/16*
U.S. Cl. 206—626 **32 Claims**



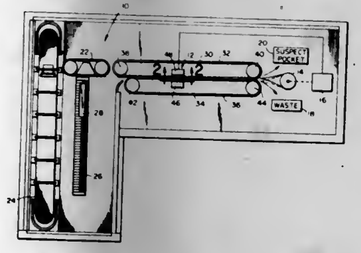
1. In a reclosable paperboard carton formed of a single cut and scored blank having a receptacle portion and a cover portion which telescopes over the upper edges of the receptacle portion and wherein the receptacle portion comprises hingedly connected front, rear, end and bottom panels, the cover portion comprises a top cover panel hingedly connected to the upper edge of the rear panel, end cover panels and a front cover panel all hingedly connected to the top cover panel and forming skirt portions parallel and adjacent to the respective underlying panels, a bridging panel hingedly connected along a line of weakness to the upper edge of the receptacle panel and folded outwardly to lie sandwiched between the front cover panel and the front receptacle panel and adhesively secured to the front cover panel, the improvement wherein said front cover panel comprises at least one central tab portion, defined by severable lines of weakness and adhesively secured to said bridging panel whereby severance of said central tab from said front cover panel is effected upon opening the carton.

4,113,105

DEVICE FOR CHECKING ENVELOPES FOR ENCLOSED DOCUMENTS

John R. DeHart, Coral Gables, Fla.; Larry L. Nelson, Redwood City, Calif., and William H. Krehl, Homestead, Fla., assignors to Docutronix, Inc., Homestead, Fla.

Filed Mar. 7, 1977, Ser. No. 775,386
Int. Cl.[2] B07C *5/344*
U.S. Cl. 209—549 **12 Claims**



1. In a device for checking a plurality of generally rectangular envelopes for enclosed documents, the combination comprising: means for feeding said envelopes one at a time past an inspection station at a substantially constant velocity with each of said envelopes being oriented so that two of its edges are leading and trailing edges, respectively, both perpendicular to its direction of movement and its remaining two edges are parallel to said direction of movement, and a detection means at said inspection station, said detection means comprising first, second and third opacity sensors spaced from one another along a line generally parallel to the plane of said envelopes and perpendicular to said direction of envelope movement and each producing an electrical output signal which varies with the opacity of an associated discrete sensed field, said three opacity sensors being arranged so that as said envelopes are moved past said inspection station the field sensed by said first sensor is located inboard of one of said two remaining edges of each envelope, said field sensed by said second sensor is located inboard of the other of said remaining edges of each envelope, and said field sensed by said third sensor is located between said fields of said first and second sensors, and suspect signal producing means responsive to the existence for a predetermined time of a substantial difference in the values of the output signals of said first and third opacity sensors or of the output signals of said second and third opacity sensors for producing a suspect signal indicating the suspected presence of a document in the envelope producing such suspect signal.

4,113,106

PROCESS OF TIN FLOTATION

Shiro Obinata, Tokyo; Shigeru Hashimoto, Yokohama, and Takeshi Sahara, Funabashi, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1975, Ser. No. 613,928
Claims priority, application Japan, Jun. 4, 1975, 50-66374
Int. Cl.[2] B03D *1/02*
U.S. Cl. 209—167 **10 Claims**

1. A process for the flotation of tin from a tin concentrate containing cassiterite and siderite to float cassiterite as a froth, wherein said tin concentrate is formed by removing in a froth sulfide minerals contained in a tin ore, removing fine slimes from the resulting flotation tailing and subjecting the substantially fine slime-free product to conventional tin flotation, characterized by

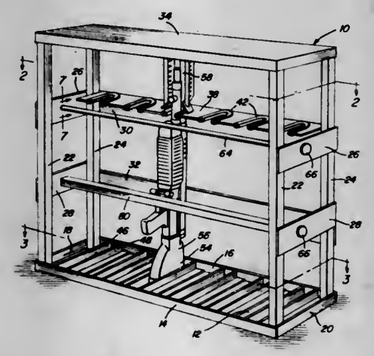
subjecting said tin concentrate containing cassiterite and siderite to flotation with a frother consisting essentially of pine oil or cresol in the presence of an inhibitor for siderite consisting essentially of at least one of sulfurous acid and a sulfite.

4,113,107

MACHINE GUN RACK

Dennis A. Jaeger, R.R. 1, Strandburg, S. Dak. 57265

Filed Nov. 2, 1977, Ser. No. 848,012
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—4 **10 Claims**



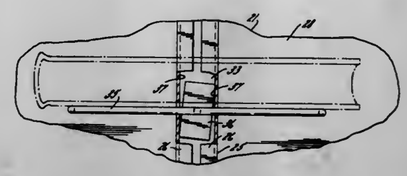
8. In combination with a gun rack including guide defining opposite side portions and adapted to support a row of upstanding long guns therein between said side portions with the trigger guards of said guns aligned in a path extending between said side portions in predetermined position relative to said rack, an elongated rigid support and lock member longitudinally and slidingly received through one of said side portions, said trigger guards and interlockingly engaged with the other of said side portions, an elongated rigid shield member defining a laterally outwardly opening cavity extending longitudinally thereof, said shield member being snugly lengthwise received between said side portions, a plurality of aligned guides spaced along and secured in said cavity, said shield member being positioned with said guides disposed along said path, said trigger guards received in said cavity between pairs of adjacent sleeves and said support and lock member being also received through said trigger guards with said support and lock member embraced by said shield member.

4,113,108

ADJUSTABLE BOOK HOLDING DEVICE

Lloyd R. Anderson, Fennville, Mich., assignor to C-Line Products, Inc., Des Plaines, Ill.

Division of Ser. No. 675,057, Apr. 8, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,332
Int. Cl.[2] A47B *65/00*
U.S. Cl. 211—43 **4 Claims**



1. An adjustable book holding device comprising, in combination:

(a) a support panel having a longitudinally extending guideway recessed therein;

(b) said guideway having an upper wall and a lower wall spaced therefrom and opposed side walls connected therebetween;

(c) a pair of opposed guideway flanges disposed in laterally spaced relation with each other and defining the upper wall of said guideway;

(d) at least one pair of upstanding book supports slidably mounted in said guideway and having a generally planar book engaging portion to abut against one or more books standing upright on said panel;

(e) each said book support having a depending shank adapted to slide freely between said opposed guideway flanges;

(f) a support base of generally rectangular form slidable generally along its longitudinal axis in said guideway and having a lateral dimension substantially less than that between the opposed side walls of said guideway; and

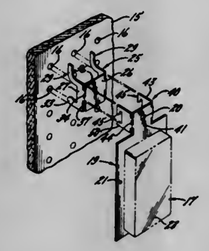
(g) said support base being fixed to said shank with its longitudinal axis skewed relative to the general plane of said book support, whereby diagonally opposed corner portions of said support base are driven into frictional locking engagement with said guideway side walls in response to lateral pressure from said books.

4,113,109

MERCHANDISING SYSTEM FOR USE WITH PERFORATED PANELS OR THE LIKE

Joseph W. Donnelli, and Richard D. Barnes, both of Rockford, Ill., assignors to Southern Imperial, Inc., Tupelo, Miss.

Filed Aug. 4, 1977, Ser. No. 821,809
Int. Cl.[2] A47F *7/00*; A47G *29/00*
U.S. Cl. 211—49 R **16 Claims**



1. A display package having a card for holding merchandise, said package having first means for hanging the package from and in front of an upright member and having second means enabling an identical display package to be hung from and in front of the first package at the same elevation as the first

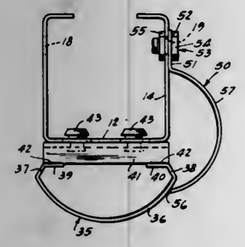
package, said first means comprising a pair of downwardly extending and laterally spaced hooks, hinges connecting said hooks to said card to swing rearwardly from a first position in which each hook is disposed in the same plane as said card to a second position in which each hook extends rearwardly from said card, and said second means comprising upwardly opening notches formed in said card at the upper ends of said hinges.

4,113,110

PALLET RACK AND POST PROTECTOR ASSEMBLY

Douglas C. Mittag, Bolingbrook, Ill., assignor to Aurora Equipment Company, Aurora, Ill.

Filed Mar. 28, 1977, Ser. No. 782,185
Int. Cl.² A47B 45/00; A47F 5/00; A47B 95/00
U.S. Cl. 211—191 **13 Claims**



1. In combination, a storage rack having a post with spaced keyhole slots on one margin and a second margin disposed at right angles to the first margin with said second margin having spaced holes,

a post protector including an arcuate intermediate section and opposed attachment sections at its opposite ends which attachment sections are disposed behind the intermediate section,

means joining attachment studs to said attachment sections and with said studs extended rearwardly in a direction away from said intermediate arcuate section and being engageable in said keyhole slots securing the post protector in assembly with the storage rack, and

a corner post protector having an attachment leg and fasteners securing said attachment leg with the holes in said second margin of said post and with said corner post protector having an arcuate section having a radius extending at right angles to a radius of said arcuate section of said post protector and with the arcuate section of said corner post protector having its outermost edge disposed for sliding edgewise engagement with respect to an outer curved surface of the arcuate section of the post protector.

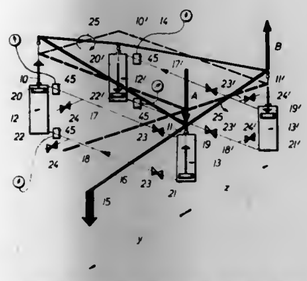
9. In combination, a storage rack having a post with spaced keyhole slots on one margin, and at least one beam having studs securing the beam in the keyhole slots on the post, a sheet metal post protector for attachment to said post and comprising a generally channel-shaped intermediate section having its opposite ends inwardly extended providing opposed attachment sections lying generally in a common plane, spacer plates extending rearwardly of said channel-shaped intermediate section and secured in assembly with said attachment section, the spacer plates having a thickness exceeding the thickness of said beam so as to provide a vertical slot between the post and the post protector of a sufficient size to allow said beam to be positioned in assembled relation with the post between the post protector and the post, and attachment studs secured to said spacer plates for attachment of the post protector to said post.

4,113,111

LOAD HANDLING VEHICLE WITH HYDRAULIC TORSION TRANSMITTING DEVICES

Josef Theurer, Vienna; Wilhelm Praschl, Linz-Urfahr, and Klaus Riessberger, Vienna, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H., Vienna, Austria

Filed Mar. 31, 1976, Ser. No. 672,276
Claims priority, application Austria, Apr. 25, 1975, 3222/75
Int. Cl.² B66C 23/00
U.S. Cl. 212—28 **8 Claims**



1. A vehicle comprising two undercarriages each having an axle carrying two wheels at respective end regions of the axle and a substantially rigid vehicle frame mounted on the undercarriages, a rotary load handling apparatus mounted on the vehicle frame for rotary movement thereon about a vertical axis and operative to apply a torsion force to said vehicle frame in one of the said end regions when lifting or supporting a load, spring means mounted between the undercarriages and the said vehicle frame as a yielding connection therebetween, and double-acting hydraulic torsion transmitting devices arranged separately and independently from the spring means, means mounting said torsion transmitting devices on the said undercarriages between the end regions of the axles and the said vehicle frame and being in force transmitting connection with the said frame, each of the said devices consisting of a cylinder member and a piston member dividing the cylinder member into an upper and a lower chamber, means connecting one of the said members directly to an associated one of the said undercarriages, and a respective conduit between the said upper chambers and the said lower chambers, respectively, of the said devices at corresponding end regions of the axles at each side of the vehicle, the conduits interconnecting the said upper and lower chambers of the said devices, respectively, for free and unobstructed flow of hydraulic fluid between the interconnected chambers, the said devices and interconnecting conduits forming a closed hydraulic system at each side of the vehicle, means connected to said conduits for selectively converting said torsion transmitting devices to shock absorbers, and the said cylinder chambers and conduits being filled with the hydraulic fluid whereby the torsional force in the said one end region is transmitted to the device in the one end region in a downward direction and to the interconnected device at the same side of the vehicle in an upward direction thereby twisting the said vehicle frame and distributing said force thereover.

4,113,112

CONSTANT BALANCE CRANE

Louis F. Ray, P.O. Box 14702, Baton Rouge, La. 70808

Filed Aug. 13, 1976, Ser. No. 714,228
Int. Cl.² B66C 19/00
U.S. Cl. 212—71 **6 Claims**

2. A constantly balanced crane comprising:

a tower assembly having an upper section and a base;

a horizontal gantry secured at a point intermediate its ends to the tower assembly between the base and the upper section;

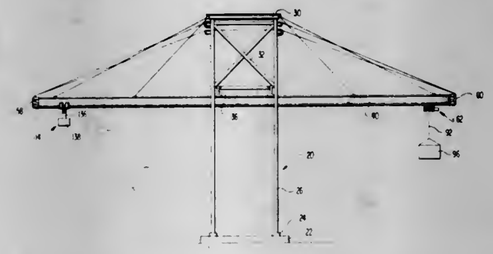
a plurality of track means extending substantially the full length of said gantry and through the center of said tower assembly and supporting a plurality of trolleys for bi-directional horizontal movement between the ends of said gantry and through the center of said tower assembly;

at least one of said trolleys being a lift trolley and having a lift mechanism for hoisting and lowering of objects to be moved;

at least one of the trolleys being a counterweight trolley and having a counterweight;

the trolleys each being horizontally movable in both directions through said intermediate point substantially the full length of the respective track means on which they are supported;

means to drive each of said trolleys along its respective track means;



separate manually actuated control means to activate said lift mechanism and to control horizontal movement of said lift trolley; and

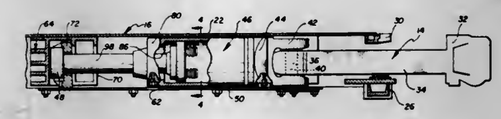
sensor means responsive to downward moments on the gantry occasioned by the load on the lift mechanism to actuate said drive means to horizontally move the counterweight to balance position so that the moments on both sides of the tower assembly are substantially equal, and for adjusting the counterweight to a horizontal position on either side of said tower assembly, during movement of the lift mechanism trolley along the length of its respective track means, to maintain said moments equal independently of the weight of the load and position of the lift trolley.

4,113,113

VALVE CLOSURE FOR RAILWAY CAR CUSHIONING DEVICE

James R. Reinhardt, and Mark P. Scott, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,947
Int. Cl.² B61G 9/02
U.S. Cl. 213—43 **9 Claims**



6. A fluid cushioning unit for railway cars comprising:

a cylinder having front and rear end portions, a piston mounted with the cylinder for reciprocal movement, a piston rod secured centrally to a face of the piston and extending through an opening in the rear end portion of the cylinder, said cylinder forming a high pressure chamber adjacent the front face of the piston and a low pressure chamber adjacent the rear face of the piston in which the piston rod is mounted, said piston having a plurality of openings therethrough between the low pressure and high pressure chambers; and

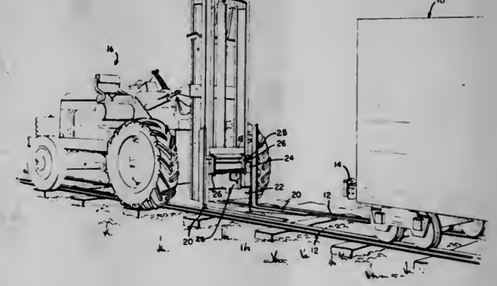
a metering valve mounted in each of said openings to control fluid flow between the low pressure chamber and the high pressure chamber and having a relatively large buff flow passage and a restricted draft flow passage, said metering valve comprising a movable buff member covering the buff flow passage and exposed to fluid pressure in the high pressure chamber, a buff spring urging the buff member toward a closed position of the buff flow passage, a movable draft member covering the draft flow passage and exposed to fluid pressure in the low pressure chamber, a draft spring urging the draft member toward a closed position of the draft flow passage, said draft spring and said buff spring being coiled springs arranged in concentric relation to each other, and means on at least one metering valve to restrict the flow of fluid through the buff flow passage adjacent the end of the buff travel thereby to reduce the amount of fluid being metered.

4,113,114

METHOD AND APPARATUS FOR RAILROAD CAR SHUNTING

William J. Pounds, 155 Velvet Dr., Jacksonville, Fla. 32220

Filed Mar. 14, 1977, Ser. No. 777,032
Int. Cl.² B61G 5/00
U.S. Cl. 213—75 R **11 Claims**



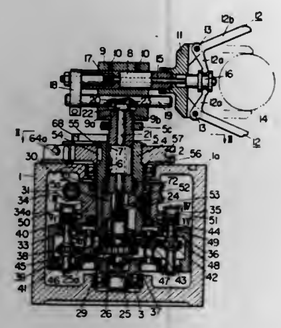
1. A load-bearing coupling adaptor for connecting a vertically displaceable carriage of a fork-lift truck, said carriage including a horizontal rigid support member and said carriage carrying fork members attached to their inner end portions thereto and disposed below said support member, to a coupler of a railroad car, said coupler having a central hollow and a locking pivotable knuckle pivotally mounted to one side of said coupler, comprising:

a. means for mounting to said horizontal support member of said carriage;

b. a coupling pin for engaging said coupler, said pin having an upper end; and

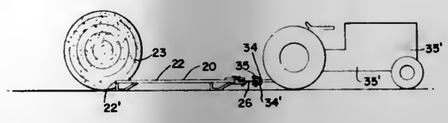
c. a load bearing member disposed above said inner end portions of said fork members, a first end of said load-bearing member rigidly connected to said means for mounting and said load bearing member extending outwardly therefrom and terminating in a second end which second end rigidly mounts said elongated coupling pin below its said upper end, the distance between said first and second ends being sufficiently great to accommodate such knuckle between said pin and said means for mounting and sufficiently small that said pin is disposed adjacent said carriage and above said inner end portions of said fork members.

4,113,115
MANIPULATOR
Hashimoto Yoshio, Hamamatsu, Japan, assignor to Kabushiki Kaisha Yachiyo Kogyo Kenkyusho, Hamamatsu, Japan
Filed Jun. 13, 1977, Ser. No. 805,840
Claims priority, application Japan, Jun. 18, 1976, 51-72056
Int. Cl.² B65G *47/90*
U.S. Cl. 214—1 BB **7 Claims**



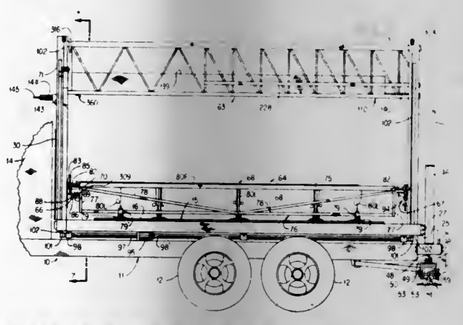
1. A manipulator for industrial purposes, which comprises in combination:
(a) a housing;
(b) a main shaft held on both upper and lower surfaces of said housing in a rotatable manner;
(c) an auxiliary shaft concentrically fitted in said main shaft in a manner as to be rotatable together with said main shaft, and projecting outwardly of said upper surface of said housing, said auxiliary shaft being also movable in the up and down direction;
(d) an arm member fixedly supported on the top end part of said auxiliary shaft substantially perpendicularly with respect to the axial line thereof, said arm member being provided therein with a control mechanism for holding, releasing and shifting a work-piece from one place to any other designated place;
(e) a hand member for clamp-holding the work-piece therein, said hand being mounted on one end part of said arm, and having at the tip end thereof a pair of finger members;
(f) a control shaft which is concentrically fitted within said auxiliary shaft in a rotatable manner, and which operates said control mechanism for opening and closing said finger members provided on said arm member;
(g) a reversible electric motor fixedly provided on one external surface part of said housing;
(h) a worm gear member which is rotatably mounted on an outer peripheral surface part of said main shaft, and receives the driving force of said reversible electric motor through a worm provided on said motor and being meshed therewith;
(i) a group of gears for moving said auxiliary shaft in the up and down direction;
(j) another group of gears for rotating said control shaft;
(l) an intermittent gear which rotates along with said worm gear, and selectively transmits the driving force of said reversible electric motor to said both groups of gears to cause said auxiliary shaft to move up and down, or to cause said control shaft to rotate in either direction;
(m) means to cause said main shaft to follow the movement of said worm gear after said main shaft is rotated for a certain definite rotational angle; and
(n) means to detect rotation of said main shaft after the same is rotated for a certain definite angle, and to cause said reversible electric motor to rotate forwardly or reversely, said worm, worm gear, both gear groups, supporting frame, intermittent gear, and means for causing said main shaft to follow the movement of said worm gear being accommodated within said housing.

4,113,116
DEVICE FOR TOWING ROLLED BALES OF HAY
Paul W. Brandt, McHenry, N. Dak., assignor to David W. Brandt, McHenry, N. Dak.
Filed Apr. 26, 1977, Ser. No. 791,030
Int. Cl.² A01D *90/12*
U.S. Cl. 214—1 HA **5 Claims**



1. A device for towing and transporting a roll of hay or the like comprising a pair of elongated, longitudinally extending arms each having lateral extending points at its rearward ends extending laterally inward toward one another, said pair of arms each having a laterally extending elongated arm portion fixed to the forward ends of the longitudinal arms and extending laterally inward toward one another, relatively small plate means mounted to each of said arms at the lateral inner ends of said arm portions, pivotal connecting means acting to pivotally connect said arms and plate means together at the lateral inner ends of the arm portions, said relatively small plate means being relatively small in relation to the length of said arms, leverage means mounted between said small plate means closely adjacent said pivotal connection to lever said arms, whereby said leverage takes place relatively close to the pivot in relation to the rearward outer ends of the arms, said lever means being movably mounted to move forward to lever said plate means about the pivotal connection to lever the arms toward one another at their rearward outer ends, whereby when towing the device forward with the lever means attached to the vehicle and the points engaged to a roll of hay, the forward movement of the vehicle will move the device forward and the forward movement of the vehicle will also move the lever means forward to lever the lateral arm portions toward one another to thereby move the longitudinal arms and the points toward one another to tighten the hold of the points to the roll of hay.

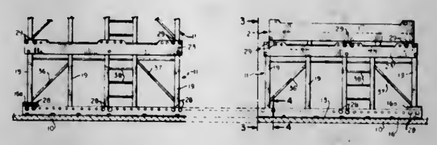
4,113,117
ARTICLE HANDLING APPARATUS
Waymon Joe Douglas, 2905 Nakomi Dr., Lexington, Ky. 40503, and Wilburn Cleatus Douglas, Rte. 5, Nicholasville, Ky. 40356
Filed Nov. 22, 1976, Ser. No. 743,787
Int. Cl.² B65G *15/26*
U.S. Cl. 214—8.5 C **21 Claims**



1. An article handling apparatus including:

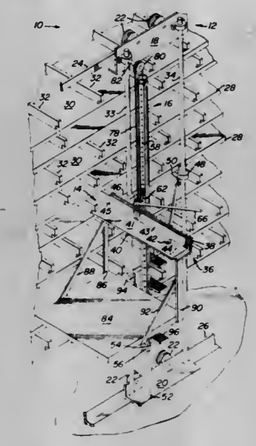
support means for supporting articles to be handled in a substantially horizontal position;
conveying means disposed in vertically spaced relation to said support means;
means to lift an article from said support means for disposition on said conveying means, said lifting means being supported by said support means;
said lifting means including disposing means to dispose the article in a substantially vertical position prior to being disposed on said conveying means;
said lifting means including:
first lifting means disposed on one side of said conveying means to lift articles from a first stack on said support means;
second lifting means disposed on the other side of said conveying means to lift articles from a second stack on said support means;
and said first lifting means and said second lifting means being movable separately;
and control means to control the separate movement of each of said first lifting means and said second lifting means so that said disposing means of only one of said first lifting means and said second lifting means is effective to dispose one of the articles on said conveying means at any time.

4,113,118
LOADING ARRANGEMENT
Nick P. Glumac, Chesterton, Ind., assignor to Toter-Tee, Inc., Chesterton, Ind.
Filed Jul. 26, 1976, Ser. No. 708,400
Int. Cl.² B65G *1/16*
U.S. Cl. 214—10.5 R **3 Claims**



1. A loading, stacking arrangement for load receiving pallets and the like and for mounting same securely to a loading platform including in combination, a pallet having a plurality of vertical legs adjacently and longitudinally arranged comprising side sections thereof, a base beam extending longitudinally beneath each said leg securely fastened thereto, a plurality of transverse cross beams connected to the upper ends of said legs, a first pair of lower channel members having a height in excess of the height of said base beams for closely encompassing and receiving the base beams beneath each side section, means for securing said lower channel members to said loading platform, a second pair of upper vertically oriented channel members attached to the upper ends of said side sections and to said cross beams, said upper pair of channel members being adapted to closely encompass and receive the base beams of a second pallet of similar configuration to the first mentioned pallet and adapted to rest upon said cross beams, said upper pair of channel members having a height in excess of the height of said base beams, and locking means for locking the respective base beams of said first mentioned and second pallets into respectively the lower and upper channel members receiving said respective base beams.

4,113,119
APPARATUS FOR LOADING ARTICLES ONTO VERTICALLY SPACED HORIZONTALLY DISPOSED SHELVES
William L. Brown, Easton, and Larry L. Reagan, Wind Gap, both of Pa., assignors to SI Handling Systems, Inc., Easton, Pa.
Filed Feb. 10, 1977, Ser. No. 767,267
Int. Cl.² B65G *1/04*
U.S. Cl. 214—16.4 A **9 Claims**

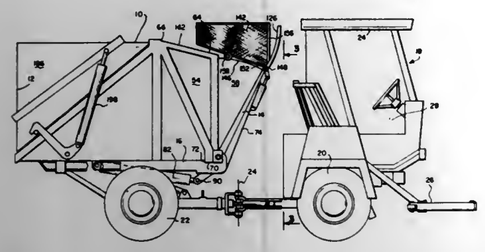


1. Apparatus comprising vertically spaced horizontally disposed shelves, said shelves having a discharge end and a replenishment end, a device adjacent the replenishment end of said shelves for loading articles onto said shelves, said device being guided by guide rails for reciprocating along the replenishment end of said shelves, said device including a pair of carriages spaced vertically from one another, each carriage having rollers for rolling engagement with one of said guide rails, at least one vertical member interconnecting said carriages, an article support surface, means supporting said article support surface so that the support surface may be manually moved relative to its support means to a position so that it partially overlies a replenishment end of one of said shelves, said surface support means being coupled to said vertical member for guided vertical movement by said vertical member, a hollow vertical member connected to one of said carriages and having a counterweight therein, the counterweight being connected to said surface support means by way of a cable extending around at least one pulley at the upper end of said device, said device having at least one case support shelf for supporting a case of articles prior to transfer of the articles from the case to said article support surface and for subsequent loading onto said shelves.

4,113,120
CONTAINER HANDLING AND TRANSPORTING APPARATUS
John W. Pickrell, 4206 N. 68th St., Scottsdale, Ariz. 85251
Filed Feb. 22, 1977, Ser. No. 770,398
Int. Cl.² B65F *3/02*
U.S. Cl. 214—38 D **17 Claims**

1. A vehicle chasis; a box like trash container removeably carried thereon; said container having a compactor side; first pivotal axis means; said compactor side being pivoted to said container by said first pivotal axis means; second pivotal axis means; a compactor actuator pivotally mounted on said chasis by said second pivotal axis means; means to selectively couple said compactor actuator to said compactor side of said container; and means on said chasis disposed to temporarily hold said container in such position thereon so as to temporarily

maintain said first and second pivotal axis means aligned on a common pivotal axis, means on said chassis and said compactor



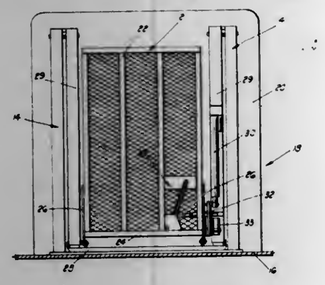
actuator for transferring said container relative to said chassis, and means for actuating said compactor actuator.

4,113,121

PIN RELEASE DEVICE FOR A WHEELCHAIR LIFT

Donald L. Collins, and Harold A. Downing, both of Hutchinson, Kans., assignors to Collins Industries, Inc., Hutchinson, Kans.

Filed Aug. 15, 1977, Ser. No. 824,533
Int. Cl.² B60P *1/44*
U.S. Cl. 214—75 R **4 Claims**



1. A pin release device for a wheelchair lift platform, the lift platform mounted in an opening of a vehicle and attached to a lift frame adjacent the opening, the lift platform is stored in a vertical position in the vehicle and lowered to a horizontal position for loading a wheelchair thereon, the device used for releasing the lift platform from the lift frame so that the lift platform may be lowered when the source of power normally used in lowering the lift platform fails, the device comprising:
- an elongated handle pivotally mounted on the lift platform;
- a pin arm attached at one end to said handle;
- a pin slidably received in a pin guide mounted on the lift platform, one end of said pin attached to the other end of said pin arm, the other end of said pin releasably engaging the side of the lift frame; and
- biasing means attached to the lift platform and said handle for pivoting said handle and holding said pin in engagement with the side of the lift frame.

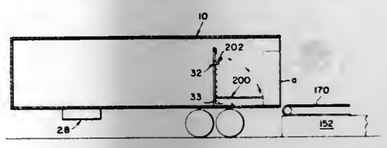
4,113,122

LOADING AND UNLOADING APPARATUS FOR VEHICLES

David Edward Lutz, 300 Washington La., Carlisle, Pa. 17103

Division of Ser. No. 543,608, Jan. 23, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,405
Int. Cl.² B60P *1/00*
U.S. Cl. 214—82 **2 Claims**

1. A loading and unloading apparatus for a vehicle having a framwork, a load carrying floor mounted on said framework, said floor having front and rear ends and a top surface, conveyor means on said floor supporting said load and moving said load longitudinally of said vehicle, bulkhead means connected to said conveyor between said load and said front end for assisting in moving loads from said front end to said rear end, said bulkhead being limited in its path of travel to the confines of said vehicle, a push bar attached to said bulkhead



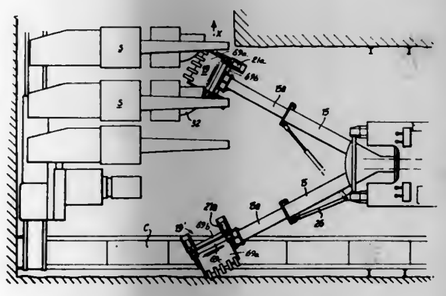
and movable from an inoperative vertical position to a horizontal load pushing position, said push bar being of sufficient length to push a load entirely from the vehicle at the rear thereof irrespective of the limitations on the travel of said bulkhead.

4,113,123

VEHICLE OR CARRIAGE MOUNTED MATERIALS TRANSPORTING MACHINE

Ian Campbell Jeffrey, Wigan, England, assignor to Dobson Park Industries Limited, Nottingham, England

Filed Sep. 26, 1975, Ser. No. 617,088
Claims priority, application United Kingdom, Sep. 27, 1974, 42086/74
Int. Cl.² E02F *3/44*
U.S. Cl. 214—141 **9 Claims**



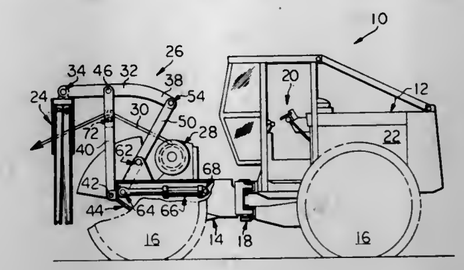
8. A mining machine for transporting materials comprising in combination:
- mobile support means including a chassis;
- a boom assembly including a box-like yoke, including motion limit means comprising outwardly diverging side walls pivotally mounted directly on said chassis for motion about a generally horizontal axis and two independently operable booms having mutually exclusive arcs of opertion slidably extensible and retractable in the direction of their respective length pivotally supported on said yoke for constrained motion within predetermined limits defined by said motion limit means about a generally vertical axis;
- means for slidably extending and retracting said booms in a direction of their length and maneuvering said booms laterally and upwardly and downwardly including a piston and cylinder arrangement secured to and extending between said support means and said yoke for moving the booms upwardly and downwardly;
- and a materials collecting, carrying and discharging means located on the end portion of each of said booms.

4,113,124

MOVABLE ARCH STRUCTURE FOR SKIDDER VEHICLE

John R. Muntjanoff, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 3, 1975, Ser. No. 554,936
Int. Cl.² B66C *1/42*
U.S. Cl. 214—147 G **6 Claims**



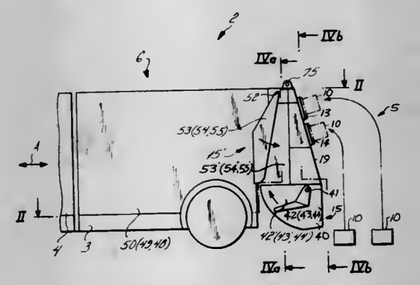
1. A movable arch unit for adjustably supporting a grapple on one end of a vehicle, comprising:
- first and second links, each of said links being of a fixed length and being connected to structural portions of a vehicle in spaced apart relation along a longitudinal axis thereof,
- a non-linear support beam pivotably connected at spaced apart locations to the other ends of the links,
- an extended portion of the support beam including means for connection to the grapple, the link adjacent the extended end of the beam being the second and being substantially longer than the other first link, and
- an extendable and retractable motor means substantially enclosed by structural portions of the vehicle and being pivotably interconnected between one of the links and the vehicle,
- the one link interconnected with the motor means being pivoted at the one links connection to the structural portions of the vehicle between the support beam and the motor means so that the one link acts as a lever through which the motor means is operable to position the grapple.

4,113,125

REFUSE COLLECTING SYSTEM AND A VEHICLE AND CONTAINER FOR USE THEREIN

Rolf Schiller, Hoher Weg 8, D-7990 Friedrichshafen-Kluftern, Fed. Rep. of Germany

Filed Dec. 21, 1976, Ser. No. 752,845
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558433
Int. Cl.² B65F *3/02, 3/20, 3/28*
U.S. Cl. 214—302 **20 Claims**



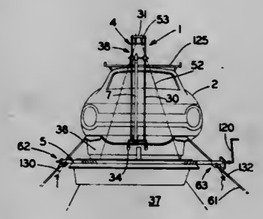
1. A system for accommodating and transporting materials, for example domestic refuse, comprising a collecting vehicle and a plurality of collecting containers, wherein the vehicle has two or more chambers for receiving the materials and wherein each collecting container has the same number of material receiving chambers as the vehicle so that when a collecting container is applied to the vehicle for transferring the materials from the collecting container to the vehicle, the several chambers of the vehicle are adjacent the respective chambers of the collecting container.

4,113,126

BOAT LOADER AND UNLOADER CONSTRUCTION

Allen M. Shotwell, 207 Simpson-Howell Rd., Elizabeth, Pa. 15037

Filed Aug. 19, 1977, Ser. No. 826,266
Int. Cl.² B60P *3/10*
U.S. Cl. 214—450 **23 Claims**



1. Boat loader and unloader construction including:
- (a) vertical column means having upper and lower ends, said lower end being adapted to be mounted on the rear of a vehicle and with said upper end being generally level with the top of the vehicle;
- (b) carriage means having first and second ends, said carriage means being pivotally mounted on the upper end of the column means for swinging movement between a lower vertical position and an upper horizontal condition, and being slidably mounted on said upper column end for general horizontal movement between retracted and forward positions;
- (c) clamp means mounted on the first end of the carriage means for clampingly engaging a transom of a boat;
- (d) reel means adapted to be mounted on a central portion of a boat;
- (e) cable means attached to and extending between the reel means and the second end of the carriage means, said cable means being controlled by the reel means to move a boat attached to the reel means between a horizontal upright position and a vertical upstanding position; and
- (f) the carriage means being adapted to pivot about the upper end of the column means for swinging movement of a boat between a vertical upstanding position and an inverted horizontal position, and with said carriage means being adapted to move horizontally along the column means upper end for moving an inverted boat between retracted and forward positions on top of a vehicle.

4,113,127

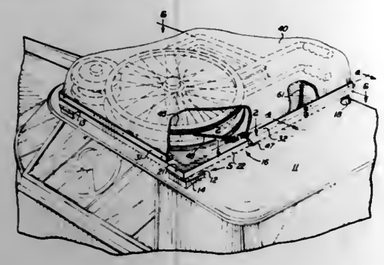
VEHICLE TOP LOADING MECHANISM

Clyde H. Clement, 8439 N. 13th Pl., Phoenix, Ark. 85020

Filed Aug. 29, 1977, Ser. No. 828,503
Int. Cl.² B60R *9/00*
U.S. Cl. 214—450 **6 Claims**

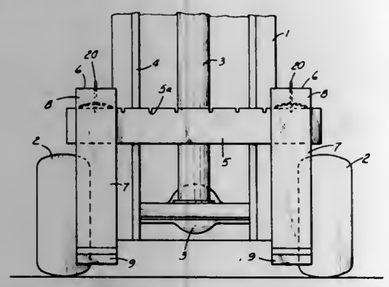
1. A loader adapted to be mounted on the top of a motor vehicle for raising objects from the ground alongside the vehicle to its top and for lowering objects from the top of the vehicle to the ground, the loader including in combination:
- a base frame member having at least first and second opposite edges, the first edge of which is located near the edge of a vehicle top when the loader is mounted on the top of a motor vehicle;
- first hinge means attached to said base frame member near

the first edge thereof for mounting said base frame member to the vehicle top;
second hinge means;
a cover frame member overlying said base frame member and attached to the second edge of said base frame member by said second hinge means;
means for positioning said base frame member from a first substantially horizontal position on the vehicle top to a



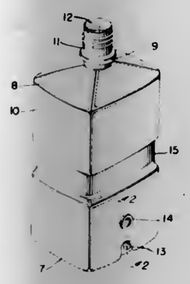
second substantially vertical position extending upwardly from the first edge thereof at said first hinge means;
means for pivoting said cover frame member on said second hinge means from a closed position overlying said base frame member to an open position when said base frame member is in the second position thereof; and
means for loading objects into and unloading objects from the loader when said cover frame member is open and said base frame member is in said second position.

4,113,128
LIFT FORK CONSTRUCTION
Richard W. Foss, Thompson, Ohio, assignor to Jos. Dyson & Sons, Inc., Eastlake, Ohio
Filed Mar. 10, 1977, Ser. No. 776,283
Int. Cl.[2] B66F 9/14
U.S. Cl. 214—750 **2 Claims**



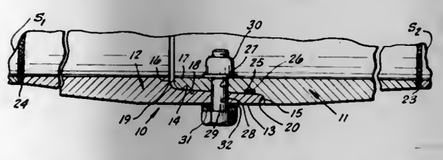
1. In lift fork construction of the class described, in combination, a fork body, a hook portion at one end thereof to engage a transverse support member on a lift truck in which support member a series of spaced notches is formed, latch instrumentalities carried by a hook portion and selectively engageable with the notches aforesaid, means to maintain said latch instrumentalities in engaging position, means to prevent such engagement, the latch instrumentalities comprise an inverted T-shaped member, the vertical element thereof extending upwardly through the hook portion and the cross-arm constituting a plate-like element having a width approximating the width of a notch to engage with the notches and likewise prevent such engagement, and an operating part connected to the vertical element above the hook portion to manipulate the latch instrumentalities, resilient means engaging the said member to maintain the same in notch engaging position, the said resilient means comprising a flat spring, a recess in the hook portion to locate the flat spring, said recess being formed to prevent bending of the spring thereinto when the T-shaped member is raised by the operating part.

4,113,129
CONTAINER FOR STERILE LIQUIDS
Orlando D. Cambio, Jr., Bristol, Wis., assignor to Respiratory Care, Inc., Arlington Heights, Ill.
Filed Jan. 5, 1978, Ser. No. 867,043
Int. Cl.[2] B65D 1/06
U.S. Cl. 215—1 C **6 Claims**



1. A blow-molded thermoplastic container for storing and dispensing liquids designed to be filled with said liquid during blow-molding comprising in combination a container having a body-portion, said body portion having a base portion, said body portion having a top portion, said top portion terminating in an elongated extending first neck, said neck terminating in a penetrable seal, said seal being contiguous with said neck and being formed during said blow-molding, a second relatively short neck extending outwardly from said body near substantially the base portion, said neck terminating in a penetrable seal, said seal being contiguous with said second neck and being formed during said blow-molding, a plug, said plug adapted and constructed to fit into a substantial portion of said second neck to thereby close any opening resulting when said seal of said second neck has been penetrated, a sealed depression in the body of said container adapted and constructed to frictionally retain said plug when said plug is not in use.

4,113,130
JOINT FOR A NESTABLE CARGO CARRIER
Webber W. Lazenby, Tulsa, and Daniel N. Pulliam, Broken Arrow, both of Okla., assignors to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Aug. 1, 1977, Ser. No. 820,930
Int. Cl.[2] B65D 7/02; B64D 37/02
U.S. Cl. 220—5 A **4 Claims**



4. A fluid-tight joint for nestable sections of an aircraft auxiliary fuel tank comprising:
a pair of cooperating joint elements, said elements being constructed from annularly formed extrusions and being secured to annular walls of said tank and forming ends for said sections of said tank, said elements being adapted for longitudinal telescopic interengagement and having circumferential elongated engaging surfaces, said surfaces being conically tapered, said elements having contoured distal end portions;
a plurality of radially extending and aligned openings through said elements and across said engaging surfaces;

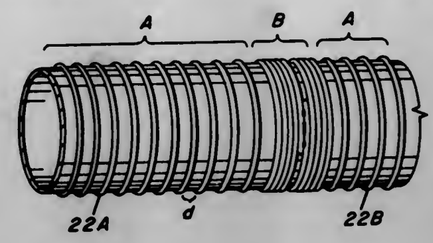
bolts disposed through said openings radially to maintain engagement of said surfaces, each of said bolts being provided with an annular resilient seal between a head of said each of said bolts and a radially outermost surface of one of said pair of elements;
an annular groove opening into the engaging surface of the radially innermost of said pair of elements, said groove being longitudinally positioned intermediate said plurality of openings and said distal end of said innermost of said elements; and
a resilient O-ring disposed in said annular groove and engageable with said engaging surface of said outermost of said elements whereby, in addition to said annular seal in association with said heads of said bolts, to provide the liquid-tight seal for said tank sections.

4,113,131
WIRE-NETTING BASKETS, BASKET HEIGHTENING DEVICES AND THE LIKE
Raymond Joseph, Schiltigheim, France, assignor to Ateliers Reunis Societe Anonyme, Schiltigheim, France
Filed Jul. 13, 1977, Ser. No. 815,366
Int. Cl.[2] B65D 7/20, 7/00, 7/24
U.S. Cl. 220—19 **5 Claims**



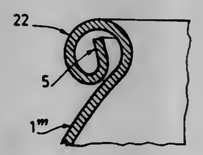
1. A container comprising four lateral panels to be assembled; first hook means of predetermined length located on the vertical edges of the first panel; first passage means provided on the rear vertical edges of the second and the third panels to be disposed in front of each other on either side of said first panel; said passage means being adapted to receive said hook means and being formed of a width commensurate with the length of said hook means so that said hook means may be received in said first passage means of said second and third panels without any possibility of being inadvertently loosened therefrom; second passage means provided at a lower portion of the front vertical edges of said second and third panels; third passage means provided at an upper portion of the front vertical edges of said second and third panels, second hook means of predetermined length at each lower corner of the fourth panel, said second hook means being adapted to be received by said second passage means when said fourth panel is placed on an outwardly inclined position; third hook means of predetermined length at each upper corner of the fourth panel, said third hook means being adapted to be received by said third passage means when a sliding moment is imparted to said fourth panel after engaging the second hook means of said fourth panel with said second passage means of said second and third panels, to thereby straighten said fourth panel to its final position, said second and third passage means having such a form and width as to prevent the fourth panel with said second and third hook means inserted respectively in said second and third passage means from being extracted out of the container by inadvertently pulling said fourth panel vertically upwards.

4,113,132
WIRE-WRAPPED CYLINDRICAL PRESTRESSED STRUCTURES
John E. Steiner, Edgewood Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Division of Ser. No. 639,329, Dec. 10, 1975. This application Aug. 2, 1976, Ser. No. 710,952
Int. Cl.[2] B65D 7/44
U.S. Cl. 220—71 **4 Claims**



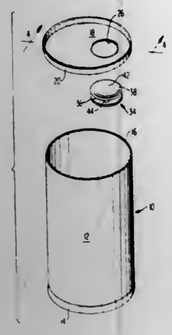
1. A wire reinforced pressure vessel comprising a cylindrical steel vessel and a length of wire wrapped around said cylindrical portion of the vessel such that the wire at the vessel midsection is wrapped with an open pitch and at the ends of said vessel, the wire is wrapped with a thread pitch to provide at least about 3 thread pitch hoops at each end of the cylindrical vessel, the ends of said wire secured in place by welding to the adjacent hoop and that portion of the wire wrapped with an open pitch is stressed to a greater extent than the portion wrapped with a thread pitch.

4,113,133
ROLLED EDGE IN CANS
Andre Berthet, Bellegarde, France, assignor to Cebal, Paris, France
Continuation of Ser. No. 595,772, Jul. 14, 1975, abandoned, which is a continuation of Ser. No. 366,492, Jun. 4, 1972, abandoned. This application Jan. 6, 1977, Ser. No. 757,135
Claims priority, application France, Jun. 5, 1972, 70.20123
Int. Cl.[2] B65D 7/44
U.S. Cl. 220—74 **3 Claims**



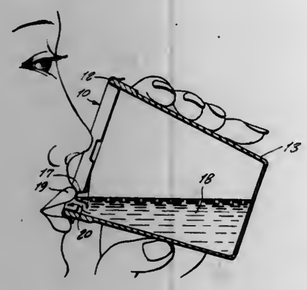
1. A rolled edge can for accomodating a product under pressure, having a rim extending outwardly from the upper edge of the can in which the rim consists essentially of a straight end portion and a circular rolled portion joining the straight end portion with the upper edge of the can, said rolled portion defining a circular section of more than 180°, with the straight portion extending angularly from the circular rolled portion into the space within the circular section and dimensioned to have a length greater than the internal radius of the circular rolled portion in which it is confined so as to resist unrolling, and in which the profile of the straight end portion is along a plane which passes through the axis of the can.

4,113,134
CAN CLOSURE
Leo A. Heintzelman, 4990 Burlingame, Wyoming, Mich. 49509
Filed Nov. 17, 1977, Ser. No. 852,258
Int. Cl.² B65D *51/18*
U.S. Cl. 220—256 3 Claims



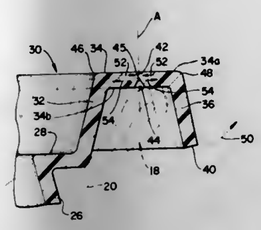
1. In a can type container having a substantially flat top with inner and outer surfaces:
the top having a circular opening of a given diameter formed therein;
the opening having a surrounding, interior flange joined to the can top by an integral fold portion;
a can closure for opening and closing said opening comprising a disc member within the can, said disc member being of a diameter at least greater than the given diameter of the opening;
an outer button having a substantially flat lower face, and a dome form upper surface;
a narrow stem connecting the disc member and the lower face of the button; and
said stem being of a length such that the button lower face is tightly frictionally engaged against the outer surface of can top, and the disc member is tightly frictionally engaged against the flange.

4,113,135
DRINKING CUP COVER
Takamitsu Yamazaki, 985 Shikawatashi, Yotsukaido-Machi, Chiba-ken, Japan
Filed Jun. 6, 1977, Ser. No. 803,587
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 4 Claims



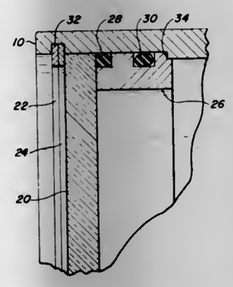
1. A disposable cover for a disposable drinking cup, comprising in combination, a circular disc formed of resilient think plastic, a circular groove on an underside of a periphery of said disc for snap-fitting on an upper edge of said cup, and a generally U-shaped slit on a central area framed by said groove forming a bendable tab, said tab having a hollow, raised rib along a free end edge thereof; said cover including a plurality of said tabs of different widths, a narrower width of said tabs having a higher said rib than a rib of the other.

4,113,136
TAMPER PROOF CONTAINER ASSEMBLY
Joseph L. Abbott, 2275 N. Cable, Apt. 184, Lima, Ohio 45087
Filed Jun. 6, 1977, Ser. No. 803,624
Int. Cl.² B65D *41/32*
U.S. Cl. 220—276 31 Claims



1. A reclosable container assembly comprising a container body having an open end, and a cover for closing said open end, said cover having wall means extending into said open end of said body, said body and said wall means having interengaging means providing a snap-fit therebetween releaseably holding said cover in place with respect to said open end of said body, said cover having peripheral flange means including a flange portion extending radially outwardly with respect to said body at said open end thereof, said flange means further including an outer end, means providing a peripheral line of weakness in said flange means spaced from said outer end, said flange means being independent of connection with said container body whereby any given peripheral portion of said flange means between said line of weakness and said outer end is free for pivotal displacement in the direction axially outwardly of said open end of said container body to stress the material of said cover at said line of weakness in the direction perpendicular to said line of weakness from said given peripheral portion of said flange means, said means providing said line of weakness providing for the material of said cover to rupture at said line of weakness in response to said pivotal displacement and under a force of displacement less than that required to release said cover from said container body.

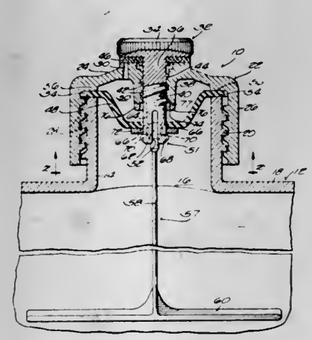
4,113,137
CAMERA HOUSING OPTICAL SEALING METHOD AND DEVICE
Walter Jamison Wind, San Diego, Calif., assignor to Cohu, Inc., San Diego, Calif.
Filed Sep. 21, 1977, Ser. No. 835,242
Int. Cl.² B65D *45/32, 25/54, 53/00*
U.S. Cl. 220—319 9 Claims



1. An improved camera container sealing device of the type in which the container is closed by a removable end plate, wherein the improvement comprises:

a seal retainer disposed within said container in close proximity to the inner surface of said container and end plate;
a substantially rectangular cross-section seal disposed between said end plate and said seal retainer;
a snap-ring groove disposed in the wall of said container; and
at least two snap-rings fitted within said groove to retain said end plate.

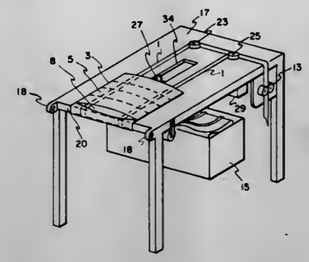
4,113,138
LIQUID TANK CAP HAVING A VENT
Ernest E. Fields, Shreveport, La., and Lester W. Reineck, Round Lake, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Aug. 11, 1977, Ser. No. 823,614
Int. Cl.² B65D *3/00, 51/16, 55/16*
U.S. Cl. 220—367 19 Claims



1. A cap for a liquid tank having a filler neck, said cap comprising a hollow body having a top wall portion for closing the filler neck and an annular flange depending from said top wall portion for releasably engaging the filler neck, a diaphragm disposed inside said body and spaced inwardly from said top wall portion to define a chamber therebetween, said diaphragm having a lowermost portion relative to the interior of the tank, a vent port in said top wall portion for communicating said chamber with the atmosphere, a closure member mounted on said top wall portion for selective reciprocative movement relative to said top wall portion between a first position to close said vent port and a second position to open said vent port, and means associated with said diaphragm lowermost portion and communicating the interior of the tank with said chamber for venting the tank to atmosphere when said closure member is in the second position and for draining liquid collected in said chamber back into the tank.

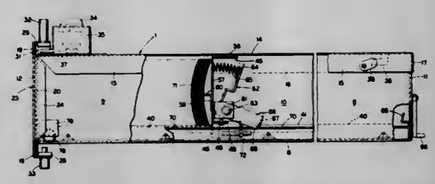
4,113,139
SEALED TAPED BAGS AND SEALED TAPE BAG DISPENSER
Lawrence James Berry, Amarillo, Tex., and Stanley Darwin Hall, Taylors, S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Filed May 12, 1977, Ser. No. 796,279
Int. Cl.² B65D *75/42*
U.S. Cl. 221—1 5 Claims

1. A method for dispensing flexible bags from a chain of imbricated bags, said bags being removably secured to a carrier, comprising the steps of:
moving said carrier in a first direction to dispose the leading bag of said chain of imbricated bags in a dispensing position, said bags having a closed end and an open end, said open and closed ends being connected by generally planar bag sides and substantially linear bag edges when said bags are in a flattened state, one of said sides adjacent said closed end being secured to said carrier, said carrier running substantially in the same direction as said edges, and said closed end preceding said open end in said first direction;
removing said lead bag from said chain along a path substantially oppositely opposed to said first direction; and



advancing said carrier along said first direction to dispose a second bag in said dispensing position.

4,113,140
SEALED TAMPER-INDICATING MONEY DISPENSING CONTAINERS FOR AUTOMATIC BANKING SYSTEMS
Harry T. Graef, Dover; Jack M. Richardson, Canton, and Robert P. Wolfarth, North Canton, all of Ohio, assignors to Diebold Incorporated, Canton, Ohio
Filed Jan. 21, 1977, Ser. No. 761,288
Int. Cl.² B65H *1/02*
U.S. Cl. 221—6 30 Claims



1. Banking equipment money dispensers of a type in which money dispensing picker mechanism removes paper money bills, one at a time, from a supply stack of such bills at a dispenser station, including:
(a) tamper-indicating paper money supply container means;
(b) retainer means at such dispenser station for the container means;
(c) the container means having walls forming a receiving compartment for a supply stack of paper money bills, said container walls being formed with access opening means throgh which such supply stack is loaded into the compartment at a loading station remote from said dispenser station, and which access opening means is adapted to communicate with money dispenser picker mechanism when the container means is retained at the dispenser station by said retainer means;
(d) closure means for the access opening means;
(e) the closure means including door means mounted on the container means for movement between closed and open positions;
(f) container sealing means including a lock member mounted on the container means, and means interengageable between the lock member, the closure means, and the container means holding the container closure means in sealed condition and the door means in closed condition when the lock member is locked;
(g) key means for the lock member including a first key located securely at the loading station, and a second similar key held captive by said retainer means at said dispenser station;
(h) the first key being operative at the loading station to unlock the lock member thereby permitting opening of the closure means for loading a stack of paper money bills

in said compartment through said access opening means and thereafter said first key being operative upon replacing the closure means to lock the lock member and to establish a container sealed condition of said container sealing means;

(i) coupling means including releasable interengageable means on the container and retainer means for coupling the container means in sealed condition with the retainer means; and

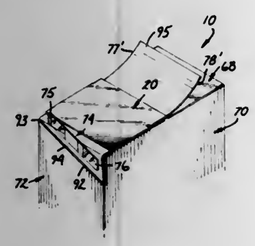
(j) the second key being operative to unlock the lock member and to hold the sealed container means coupled with the retainer means and simultaneously to release the door means for movement to open position to permit removal through said access opening means of paper money one bill at a time from said supply stack in the compartment by such picker mechanism.

4,113,141

DISPENSER PACKAGE FOR MAGNETIC TAPE SPLICING TABS

Mervin B. Kronfeld, Edina, Minn., assignor to Nortronics Company, Inc., Minneapolis, Minn.

Filed Oct. 20, 1976, Ser. No. 734,363
Int. Cl.² B65H 5/28
U.S. Cl. 221—70 **3 Claims**



1. A dispensing unit for the itemized dispensing of adhesive tabs comprising:

(a) a roll of flexible backing material having parallel front and back edges;

(b) a plurality of trapezoidal tabs, each tab having a leading and a trailing portion, releaseably disposed obliquely on said backing material by means of an adhesive portion between said leading and trailing portions, said tabs being in such parallel, spaced relationship to one another that a line drawn through a trailing portion of any tab and intersecting said front and back edges at right angles intersects a portion of at least one other tab; and

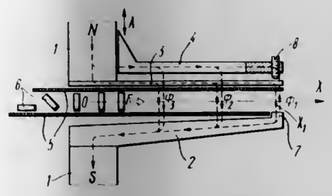
(c) a substantially closed housing wherein is disposed the roll, said housing including a side with an opening therein through which the backing material with the tabs thereon may be drawn, and a peeling edge adjacent the opening and along a line normal to the direction in which the backing material is drawn, over which the backing material may be further drawn, said opening being in the shape of a right triangle, said peeling edge defining one side of the triangle, and a second edge intersecting the peeling edge at an angle equal to the angle of obliquity at which the tabs are disposed on the roll defining the hypotenuse of the right triangle, so that as the leading portion of a tab is drawn over the peeling edge, one entire tab, and one only, is exposed exterior to the housing.

4,113,142

DEVICE FOR CONTACTLESS SEPARATION OF INDIVIDUAL FERROMAGNETIC COMPONENTS FROM A FLOW OF COMPONENTS

Vladimir Dmitrievich Ryzhov, ulitsa Pushkina, 167, kv. 14; Semen Kirillovich Litvinenko, ulitsa K. Marxa, 28, kv. 15; Roman Samullovich Leikin, ulitsa Radionova, 18, all of Kurgan; Anton Yanovich Kulberg, prospekt Komarova, 59, kv. 92, Riga; Benyamin Alexandrovich Ioffe, ulitsa Stirnu, 37 a, kv. 44, Riga, and Robert Karlovich Kalnin, ulitsa Gorkogo, 53, kv. 19, Riga, all of U.S.S.R.

Filed Jul. 12, 1976, Ser. No. 704,693
Claims priority, application U.S.S.R., Jul. 14, 1975, 2155109
Int. Cl.² B23Q 7/18; B65G 35/00
U.S. Cl. 221—171 **2 Claims**



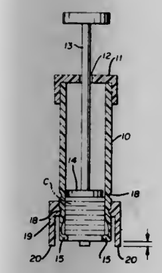
1. Apparatus for contactless separation of magnetizable components along a given path comprising, two elongated polepieces of opposite polarity for developing a magnetic field when energized and disposed opposite each other defining a channel therebetween along which magnetizable components move in a flow in the channel, two elongated, non-magnetic guards between the polepieces defining the path along with said components travel in said channel, said polepieces having a configuration defining the channel as a progressively narrowing channel in the direction of travel of said components in said flow, and developing a magnetic field of increasing intensity in the direction of travel of said components, one of said polepieces having a projection extending inwardly toward the channel and saturable with flux thereby to abruptly increase the intensity of a magnetic field developed by said polepieces at a narrowest point of said channel to accelerate a leading one of the components into a position separate from the other components in said flow, and two opposed magnetic shunts parallel with each other and adjustabe axially toward and away from said channel at points aligned with said projection thereby to increase the intensity of said magnetic field at said narrowest point of said channel.

4,113,143

BINGO CHIP DISPENSER

Raymond J. Spagnola, Jr., 707 Moore Ave., Campbell, Ohio 44405

Filed Mar. 2, 1977, Ser. No. 773,782
Int. Cl.² B65G 59/06
U.S. Cl. 221—267 **5 Claims**



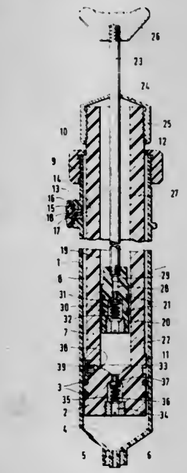
1. A bingo chip dispenser comprising a cylindrical body member open at one end and having a plunger movably positioned therein and extending out of the opposite end, a cylindrical thin wall portion on said cylindrical body member adjacent said open end defining a continuous ring-like member, a pair of oppositely disposed inwardly extending detents formed on said ring-like member, said ring-like member being distortable from a normally circular shape to an oval shape whereby bingo chips in said dispenser may be moved past said detents by said plunger and means on said cylindrical body normally spacing said ring-like member and the detents thereon above a supporting surface on which said chips are to be dispensed.

4,113,144

SYRINGES ADAPTED TO OVERCOME A PRESSURE RESISTANCE

Wolfgang Hein, Hahnstrasse, 3354 Dassel; Peter Grundmann, Amselweg, 5330 Konigswinter, and Claus Cosack, Südstrasse, 3354 Dassel, all of Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,714
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1976, 2615366
Int. Cl.² B65D 83/14
U.S. Cl. 222—396 **5 Claims**



1. A syringe for expelling a liquid medium for filtration, said syringe comprising:

a first cylinder cooperating with a first piston having a first hollow piston rod and defining a first pressure chamber, the hollow portion of said hollow piston rod defining a second cylinder having a smaller cross section than said first cylinder and cooperating with a second piston having a second piston rod and defining in said second cylinder a second pressure chamber, the space between said first cylinder and said first hollow piston rod defining a first piston rod chamber;

a cap on the rear of said piston rod with its inner diameter forming a gap relative to said second piston rod, said cap limiting the stroke of said second piston rod by abutment with the latter;

an axial duct formed within said first piston connnecting said first and second pressure chambers;

a check valve in said duct having a valve closure element and means biasing said valve closure element to open the valve upon an over-pressure in said second pressure chamber;

an inlet/outlet attachment on said first cylinder for the liquid medium opening into said first pressure chamber;

a second duct formed in said second piston opening into said second pressure chamber;

a second check valve in said second duct that opens in response to an under-pressure in said second pressure chamber during an air intake stroke of said second piston and that closes in response to an air over-pressure in said second pressure chamber during an air pressurizing stroke of said second piston;

a second cap for said first cylinder with its inner diameter forming a gap relative to the outer surface of said first piston rod;

a stop on said first piston which is able to abut said second cap in the extreme intake stroke position of the first piston, with said liquid medium charged into said first pressure chamber by means of an intake stroke of the first piston being expelled by means of an air over-pressure provided upon said liquid medium within said first pressure chamber by means of a pumping action of said second piston;

a pressure release duct connecting said second pressure chamber and said first piston rod chamber forwardly of the most forward point of travel of said second piston; and

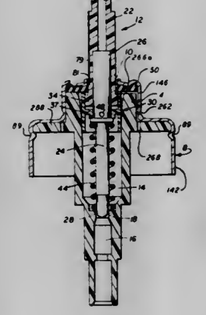
a pressure safety valve in said duct that opens when the pressure in the said first and second pressure chambers exceeds a predetermined pressure to thereby equalize the pressure of said liquid medium in said first and second pressure chambers and prevent bursting of said first cylinder.

4,113,145

DISPENSING UNIT FOR LIQUID AND METHOD OF DISPENSING

Philip Meshberg, 85 Old Oaks Rd., Fairfield, Conn. 06430

Continuation-in-part of Ser. No. 339,129, Mar. 8, 1973, abandoned. This application Nov. 20, 1975, Ser. No. 633,799
Int. Cl.² B05B 11/02; G01F 11/02
U.S. Cl. 222—1 **31 Claims**



1. The method of operating a pump assembly for dispensing a liquid from and admitting air to a sealed container, said pump assembly including a plunger having a discharge passage, which is depressed to carry out said dispensing and admitting, a pump chamber having an inlet opening and terminating in a surface for receiving a sealing disc; a piston disposed in said pump chamber with the pump plunger operatively coupled to said piston and extending from said pump chamber; an annular sealing disc disposed over said pump chamber and surrounding said plunger and means overlying said sealing disc for attaching said pump to the container comprising:

(a) operating a positive seal valve member to terminate fluid flow through the inlet opening in said pump chamber upon an initial, first predetermined motion of said plunger;

(b) opening a discharge port beneath said piston, to place said pump chamber in communication with the discharge passage in said plunger;

(c) forming a vent passage between cooperating surfaces of the plunger, the sealing disc, the pump chamber and the container upon said plunger being slid a predetermined distance through said sealing disc;

(d) dispensing liquid by further operation of said plunger;

(e) urging said piston and said plunger upward; and

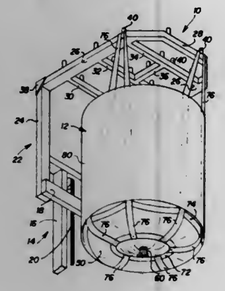
(f) preventing communication between the atmosphere and said vent passage upon the plunger reaching its fully raised position, by contacting means associated with said plunger against the sealing disc to thereby seal the container against leakage.

4,113,146

DISPOSABLE CONTAINER FOR BULK MATERIALS

Robert R. Williamson, Dallas, Tex., assignor to Better Agricultural Goals Corporation, Dallas, Tex.

Filed Apr. 11, 1974, Ser. No. 460,053
Int. Cl.[2] B65D *33/14, 33/28*
U.S. Cl. 222—105 **26 Claims**



1. A receptacle for flowable material comprising:
a bag of flexible sheet material defining a chamber for said materials;
said bag being formed from sheet material wrapped in a spiral with the edges adhesively attached together to form a cylindrical wall;
said sheet material being doubled to form a double walled bag;
straps attached to said sheet material at spaced locations on the exterior thereof for supporting said receptacle in a normal orientation;
selectively closable fill and discharge ports positioned, respectively, at the top and bottom of said receptacle when in said normal orientation for filling and discharging material;
the double walls of said bag being separate adjacent said fill and discharge ports; and
tie means for separately closing both walls at the fill and discharge ports.

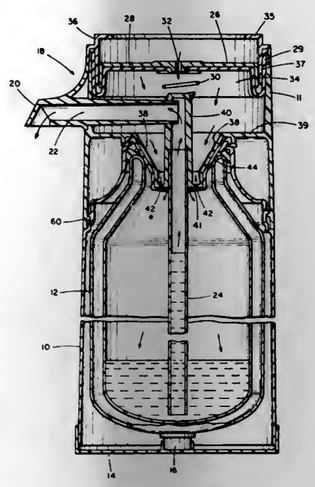
4,113,147

VACUUM BOTTLE WITH AIR PUMP TO PRESSURIZED BOTTLE TO EFFECT DISPENSING

Albert A. Frazier, Nashville, and Howard W. Phillips, Brentwood, both of Tenn., assignors to Aladdin Industries, Incorporated, Nashville, Tenn.

Continuation-in-part of Ser. No. 803,736, Jun. 6, 1977, abandoned. This application Sep. 29, 1977, Ser. No. 837,519
Int. Cl.[2] F04B *43/02*; B65D *47/34*; B67D *5/42, 5/54*
U.S. Cl. 222—131 **17 Claims**

15. A manually operated pump dispenser for a container comprising:
(a) a pump housing defining an interior space and having a first opening therein and at least one opening through the bottom of said housing, the latter opening for communicating said interior space with the interior of said container,
(b) means positioned in said housing for pumping air into said container including:
(i) a rigid force applying member positioned directly beneath said first opening and accessible therethrough for direct user actuation,
(ii) a flexible diaphragm including an outer portion which doubles back on itself disposed directly beneath said force applying member and in contact therewith, the outer edge of said diaphragm secured in position against said housing,



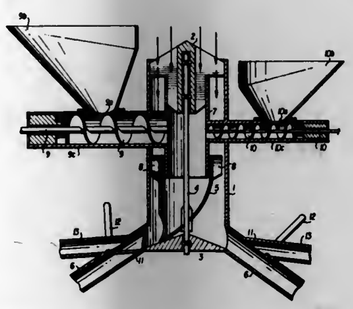
(c) means for permitting fluid to pass out of the container in response to the air pressure created in said container from the downward displacement of said pumping means.

4,113,148

DISPERSER HEAD FOR SEED AND FERTILIZER DRILL MACHINES

Ludwig Ernst, No. 26, Felderstrasse, 8831 Markt Berolzheim, Fed. Rep. of Germany

Filed Jan. 26, 1977, Ser. No. 762,688
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1976, 2603088
Int. Cl.[2] A01C *15/04*
U.S. Cl. 222—139 **13 Claims**



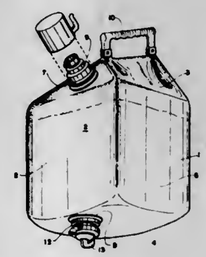
1. A disperser head for seed and fertilizer drill machines adapted to be driven by an air stream and comprising:
(a) an elongated, substantially vertically oriented housing having side walls and being closed at its lower end;
(b) a disperser element;
(c) means mounting said disperser element in said housing for free rotation about a substantially vertical axis with an annular space between the exterior of said disperser element and the interior of said housing;
(d) a plurality of discharge openings spaced about said housing in a plane perpendicular to said axis adjacent the lower end of said housing;
(e) said disperser element including an opening at the top thereof for receiving said seed and fertilizer, a discharge port in one side adjacent the bottom thereof confronting said discharge openings in said housing during rotation of said disperser element, a downwardly sloping wall extending from the opposite side to said one side for directing said seed and fertilizer towards said discharge port; and a plurality of helically oriented drive blades in said annular space about the exterior of said disperser element and extending towards the interior of said housing, whereby a portion of a downwardly flowing air stream passes through said disperser element and the remaining portion thereof passes between said drive blades in said annular space between said disperser element and said housing to drive said disperser element; and
(f) separate means for feeding said seed and fertilizer respectively through the side walls of said housing and into the top of said disperser element;
(g) whereby said seed and fertilizer form a mixture in said disperser element which is distributed through said discharge opening in said housing.

4,113,149

PORTABLE WATER SOURCE

Gustav Harsch, 2115 Orchard St., Santa Rosa, Calif. 95404

Filed Mar. 25, 1977, Ser. No. 781,199
Int. Cl.[2] B67D *5/06*
U.S. Cl. 222—181 **1 Claim**



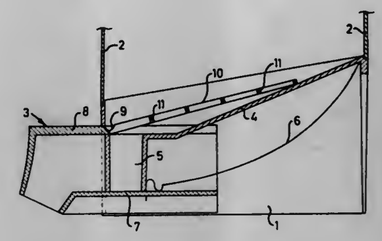
1. A portable water source, comprising
a plastic waterproof container for storing water, said container having a top, a bottom and a plurality of sides joining the top and bottom, said container having a top hole formed through the top and a bottom hole formed through the bottom;
a combination cap and spout device affixed to the top of the container and covering the top hole for selectively pouring water out of the container when said container is used in the manner of a bucket;
a handle affixed to and extending from the top of the container to facilitate holding said container when used in the manner of a bucket and to support said container from an overhead supporting member via a cord when said container is used as a water source;
a spigot device affixed to the bottom of the container and covering the bottom hole for selectively pouring water out of the container at a desired rate of flow when said container is used as a water source, said spigot device having a spigot handle outside said container for manual control of the water flow; and
volume control means in the container at the bottom in the area of the bottom hole for adjusting the volume of water passing into the spigot device, said volume control means comprising an inner housing having a bottom with flow holes formed therethrough and a stopper extending from the bottom thereof, said inner housing being threadedly coupled in the container with the stopper positioned a desired distance from the bottom hole of the container whereby water in said container flows into said inner housing and through the flow holes of said inner housing and is restricted in volume at said bottom hole of said container in accordance with the distance between said stopper and said bottom hole.

4,113,150

DISPENSER FOR GROUND COFFEE AND OTHER POWDERED PRODUCTS

Steen Ostergaard, No. 68 Kildeskovsvej, 2820 Gentofte, Denmark

Filed Dec. 27, 1976, Ser. No. 754,696
Int. Cl.[2] G01F *11/18*
U.S. Cl. 222—243 **1 Claim**



1. A dispenser for ground coffee and other powdered products, comprising:
a storage container having a bottom wall,
an outlet spout constituting a stationary measuring chamber and formed integrally with said bottom wall and having upper and lower open ends,
a valve member that is displaceable between a projected and a retracted position and includes upper and lower walls so arranged relative to said spout that said upper wall obstructs said upper end of the spout when the valve member is displaced toward its retracted position while said lower wall in the same situation does not obstruct said lower end of the spout, and
an agitator means formed integrally with said valve member and placed closely above said bottom wall, wherein said bottom wall is inclined downwardly toward said upper end of the spout, said agitator means being of ladder formation and at one end being connected to said upper wall while at its other end the agitator means rests slidably on said inclined bottom wall.

4,113,151

DISPENSING GUN

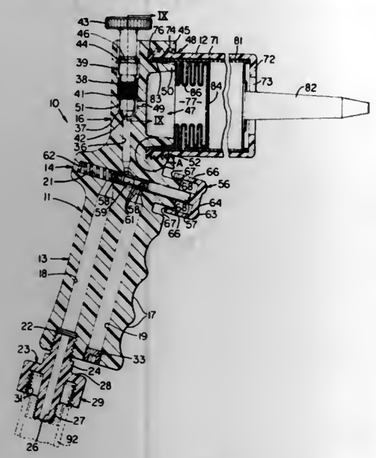
Robert M. Brown, Kalamazoo, and Rudolf R. Karliner, Portage, both of Mich., assignors to Valley Hydro-Luft, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 631,317, Nov. 12, 1975, abandoned. This application Sep. 15, 1976, Ser. No. 723,465
Int. Cl.[2] G01F *11/00*
U.S. Cl. 222—324 **13 Claims**

1. In a fluid operated dispensing gun for dispensing a viscous material, said gun having means defining a hand grip and means defining a barrel receiving portion on which a barrel is releasably secured and wherein a disposable cylindrical cartridge containing said viscous material and formed with an outlet for dispensing said viscous material therefrom has a rear cylindrical rim and is equipped with a piston-like rear wall, said viscous material being located between said piston-like rear wall and said outlet, said cartridge being positioned inside said barrel of said gun for advance of said piston-like rear wall of said cartridge toward said outlet by pressurized fluid introduced into the rear end of said barrel on the rear side of said piston-like rear wall, the improvement comprising:
fluid passageway means in said hand grip means and said barrel receiving portion for providing a fluid passageway to said rear end of said barrel;
first manually operated valve means on said hand grip means

and in said fluid passageway means for opening and closing said fluid passageway means;

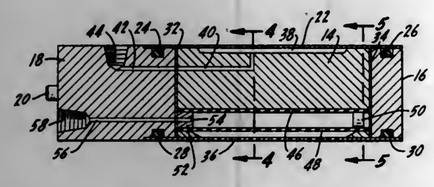
second manually operated flow rate control valve means on said barrel receiving portion and in said fluid passageway means between said first valve means and said rear end of said barrel and being independent of said first manually operated valve means for controlling the rate of flow of said fluid through said fluid passageway means and said



rear end of said barrel to thereby control the rate at which said piston-like rear wall is advanced toward said outlet and the rate at which said viscous material is ejected from said outlet; and

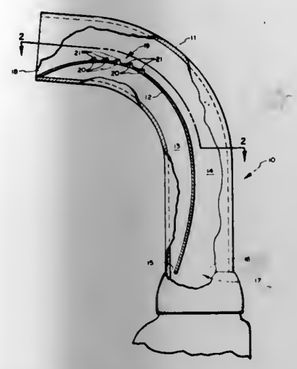
a bleeder hole in said barrel receiving portion providing fluid communication between said rear end of said barrel and the atmosphere, said fluid communication being controlled by said second manually operated valve means.

4,113,152
ADHESIVE DISPENSING DEVICE
Robert W. Schmidt, 5744 W. 77th St., Oak Lawn, Ill. 60459
Filed Mar. 14, 1977, Ser. No. 777,022
Int. Cl.² B05C 5/02
U.S. Cl. 222—485 **8 Claims**



8. A means for dispensing adhesive including a housing, an adhesive chamber in said housing, a sleeve positioned circumferentially about said housing with said chamber extending circumferentially within said sleeve, a plurality of openings in said sleeve in communication with said chamber, and an inflatable member in said chamber adjacent said sleeve openings, said inflatable member closing said openings when inflated.

4,113,153
GAS PUMP NOZZLE
James H. Wellman, 1809 San Andres, Santa Barbara, Calif. 93101
Filed Apr. 29, 1977, Ser. No. 792,463
Int. Cl.² B65D 25/40
U.S. Cl. 222—571 **3 Claims**



1. A nozzle for use with gasoline pumps and the like, comprising

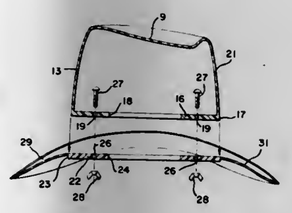
a gasoline pump nozzle housing having an inlet end adapted to be connected to a gasoline pump, a discharge end and a curved portion intermediate said inlet and discharge ends;

a baffle in the nozzle housing, said baffle extending from said inlet end to said outlet end between opposite side walls of the nozzle housing and forming with said housing an inner curve compartment and an outer curve compartment, said inner curve compartment being closed at a discharge end of the nozzle and open at the inlet end of the nozzle and the outer curve compartment being open at both the inlet end and the discharge end of the nozzle;

openings through the baffle to interconnect the inner curve compartment and the outer curve compartment, said openings being between said curved portion of said nozzle and said discharge end thereof; and

a louver adjacent each opening through the baffle, at least one of said louvers being at the downstream side of an opening when flow is being pumped through the housing from said inlet end to said outlet end, said louvers extending from said baffle into said outer curve compartment to channel the flow of excess fluid into said inner curve compartment.

4,113,154
CONVERTIBLE HAT BLOCKING STRUCTURE
Marvin L. Emmons, 2463 NW. Dallas St., Grand Prairie, Tex. 75050
Filed Mar. 7, 1977, Ser. No. 775,245
Int. Cl.² A42C 1/00
U.S. Cl. 223—24 **1 Claim**



1. A convertible hat blocking structure for simultaneously blocking hats having a variety of styles of crowns and brims, said hat blocking structure comprising:

a crown portion selected from a plurality of differently styled crown portions, said selected crown portion constituting a rigid body having an open end and a hollow interior defined by a generally ovate side wall and a top surface, said side wall and top surface being selectively depressed inwardly so as to be configured in the form of a selected hat crown style;

means secured to and at least partially closing the open end of said crown portion and including spaced apertures to receive fasteners;

a brim portion selected from a plurality of differently styled brim portions, said selected brim portion constituting a rigid body having an inner portion conforming generally in size and shape to the open end of the crown portion and an outer brim support portion extending radially outwardly from and integral with said inner portion, said brim support portion providing on its top surface a configuration corresponding to a selected hat brim style, said inner portion including spaced apertures to receive fasteners; and

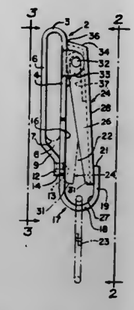
fastener means interposed between said means closing the open end of said crown portion and said brim portion and passing through corresponding spaced apertures therein for detachably fastening said crown and brim portions together in superposed relationship with said crown portion resting on the upper surface of said brim portion to produce a hat blocking structure having selected crown and brim portions which individually conform to selected crown and brim styles whereby a hat to be blocked may be draped over said crown and brim portions and be molded to the configuraton thereof to provide a hat having said selected crown and brim styles.

4,113,155
NEEDLE
Mabel K. Gibby, 4501 Granda Blvd., Coral Gables, Fla. 33146
Filed Jul. 22, 1977, Ser. No. 818,055
Int. Cl.² D05B 55/00
U.S. Cl. 223—102 **4 Claims**



1. An improved sewing needle for drawing thread through fabric comprising a needle length having a first end and a second end and a smooth outer surface, said needle being provided with a single eye adjacent the second end, said needle being generally circular in cross section between each of the ends and the eye, and an end zone being defined between said eye and said second end, said second end defining a rounded distal nose portion pusher means of a diameter no greater than but substantially equal to the maximum cross sectional area of the needle between the ends and the eye and defining a pusher zone for pushing the needle through cloth in sewing, and wherein the second end is rounded and smooth presenting a pad pusher surface.

4,113,156
KEY RING HOLDER
Teodoro Guzman Brito, 5714 Rotterdam La., San Jose, Calif. 95118
Filed Feb. 3, 1977, Ser. No. 765,267
Int. Cl.² A45F 5/02
U.S. Cl. 224—5 R **3 Claims**



1. A key ring holder comprising an elongated metal strip having:

a main body portion forming an integral part of said strip;

a belt-engaging re-entrant portion having a U-shaped upper end smoothly joining and forming an integral extension of the upper end of said main body portion, said re-entrant portion extending downwardly from said U-shaped upper end in spaced parallel alignment with a first surface of said main body portion and extending along a major portion of the length thereof, the lower, free end portion of said re-entrant portion being jogged inwardly so as to engage said main body portion at a point adjacent the lower end thereof;

a second, U-shaped, key-supporting re-entrant portion at the lower end of, and constituting an integral extension of, said main body portion, said second re-entrant portion having a bend portion smoothly joining said main body portion to a free leg portion extending upwardly, said free leg portion being substantially parallel to a second surface of said main body portion, in spaced alignment therewith, and terminating in a plane substantially including the point of engagement of said first mentioned re-entrant portion with said main body portion, said second re-entrant portion forming a relatively shallow hook within which may be supported a key ring, the U shape of said shallow hook defining an opening between said leg portion and said main body portion through which a key ring must pass in order to be suspended in said hook;

an enlarged flat section integral with and coplanar with said main body portion, located intermediate the upper and lower ends of said main body portion, and extending from opposite edges thereof to provide sufficient width to prevent twisting of said key ring holder on the belt of a wearer;

a pair of lugs integral with and perpendicular to the plane of said second surface of said main body portion of said strip projecting from opposite edges thereof, said second pair of lugs being parallel to each other and located adjacent the upper end of said main body portion;

a locking lever in the form of a channel having a web, integral, parallel flanges extending the full length of the web to form a rigid beam, and an end flange to close one end of said channel;

mounting means adjacent the closed end of said channel pivotally mounting said locking lever on said pair of lugs, the open side of said channel facing said main body portion with the free end of the locking lever extending into the opening of said hook for resilient impingement against the free leg portion of said hook; and

spring means interposed between said main body portion

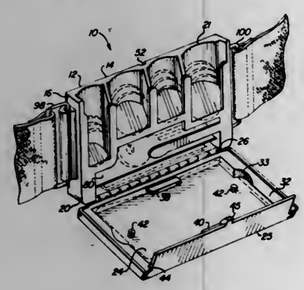
and said locking lever and disposed between said pair of lugs to resiliently bias the free end of said locking lever away from said main body portion toward engagement with said free leg portion of said hook to maintain said opening in a locked condition to preclude the inadvertent release therefrom of a key ring held therein.

4,113,157

COMPARTMENTED RECEPTACLE

Dean F. Woodbury, 2202 W.N. Loop, Apt. 247, Austin, Tex. 78756

Filed Mar. 8, 1976, Ser. No. 664,585
Int. Cl.[2] A45C *1/04*
U.S. Cl. 224—26 E 8 Claims



1. A receptacle for receiving and storing in an organized, convenient manner items such as coins, currency, credit cards and the like comprising:

(a) a first storage section including a rear plate having an inner and outer surface, a top edge, a bottom edge, and opposite sidewalls;

(b) at least one coin receiving channel in said first storage section including:

(i) first and second generally parallel spaced apart flanges upstanding from said inner surface, said inner surface being generally concave between said flanges,

(ii) lip means on said flanges generally parallel to said rear plate and defining an elongated opening therebetween;

(iii) a transverse end wall extending beneath and between said flanges and defining a generally obtuse angle with respect to said rear plate; and

(iv) the upper end of said coin receiving channel defining an opening free of obstruction whereby coins can be stacked in said channel in angled, partially overlapping arrangement for convenient manual engagement via said elongated opening and removal through said top opening;

(c) compartment means in said first storage section located subjacent said end wall of said coin receiving channel adapted for receipt of currency or similar items;

(d) a second storage section complementary with said first storage section when the receptacle is in a closed position, said second storage section having a front wall with inner and outer surfaces, peripheral top, bottom and side edges extending around the inner surface of said front wall and defining a generally rectangular document receiving compartment, said document receiving compartment being configured and sized to accommodate credit cards and including means for securing said credit cards in a position for convenient insertion and removal; and

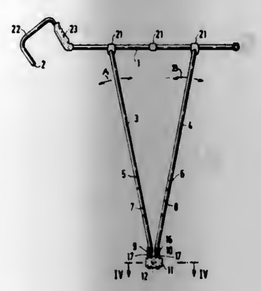
(e) releasing locking means for holding said receptacle in the closed position with the first and second sections in complementary relationship having the size and appearance in the closed position of a belt buckle with the peripheral top edge of the second storage section overlying and closing the upper end of the coin receiving channel of the first storage section.

4,113,158

LUGGAGE CARRIER FOR TWO-WHEEL VEHICLES, SUCH AS BICYCLES

Heinz Niemann, Herford, Fed. Rep. of Germany, assignor to ESGE-MARBY GmbH & Co., Bielefeld, Fed. Rep. of Germany

Filed Mar. 10, 1977, Ser. No. 776,421
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1976, 7617628[U]
Int. Cl.[2] B62J *7/04*
U.S. Cl. 224—39 9 Claims



1. Luggage carrier for cycles, such as bicycles, having a cycle frame, said carrier comprising

an elongated support frame (1) defining a support plane and having means (2) at one end to secure the support frame to the cycle frame;

two support rod pairs (3, 4) each pair being pivotally secured to the support frame, the rods of each pair being located at a respective side of the support frame and projecting towards the axle of a rear wheel of the cycle, the pairs being staggered along the length of the support frame,

whereby the carrier will be supported at three longitudinally staggered points along the length of the support frame

and wherein the free end portions (9, 10) of adjacent rods (5, 6; 7, 8) of the support rod pairs (3, 4) are angled with respect to the remainder of the rods and are approximately parallel to each other when placed adjacent each other and adjustable with respect to each other and the rear end portion of the cycle frame (13) so as to adjust the position of the support frame with respect to the rear wheel,

an attachment claw clamp (11) fitting around the approximately parallel free ends (9, 10) of the angled portions of the rods to clamp the free end portions of the rods against the rear end portion of the cycle frame (13), the claw clamp being formed with a bore (12);

and a clamping bolt to adjustably tighten the claw clamp to the rear end portion of the cycle frame (13) each of the free end portions of the rods held in an individually relative adjusted position between the clamp and the rear end of the cycle frame.

4,113,159

SHOE RETAINING AND CARRYING DEVICE

Ivor J. Allsop, 2079 N. Shore Rd., Bellingham, Wash. 98225

Filed Nov. 3, 1977, Ser. No. 848,098
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 S 23 Claims

1. A combination shoe retaining and carrying apparatus, said apparatus comprising:

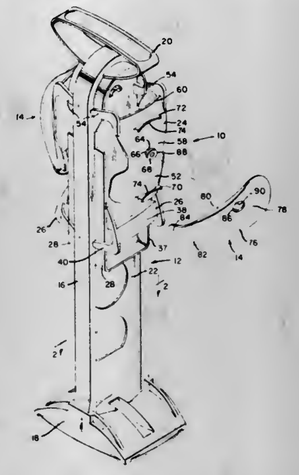
a. a base structure providing a support platform adapted to support at least one shoe thereon,

b. a first shoe retaining member mounted by an inner end thereof at one end of said platform, and having an outer end to extend outwardly from said platform to engage one end of a shoe on said platform,

c. a second shoe retaining member mounted at said platform at a location spaced from said first retaining member and arranged to extend from said platform to engage a second end of said shoe on said platform,

d. a shoe horn-type shoe manipulating device comprising an elongate foot engaging portion and a handle portion extending laterally from said foot engaging portion,

e. mounting means to removably attach said shoe manipulating device to said first retaining member, said mounting means arranged to position the handle portion of the shoe



manipulating device in a laterally extending shoe retaining position over said platform so as to extend over a shoe retained on said platform,

whereby said shoe manipulating device can be removed from said apparatus to be used in putting on a shoe retained on said apparatus, and with said shoe being placed on said apparatus to be retained thereby, said shoe manipulating device is able to perform an auxiliary shoe retaining function to hold said shoe more securely to the apparatus.

4,113,160

SHEET SLING

Dennis D. Spiers, 2688 N. 650 E., Ogden, Utah 84404

Filed Jan. 13, 1977, Ser. No. 759,078
Int. Cl.[2] B65G *7/12*
U.S. Cl. 224—45 R 5 Claims



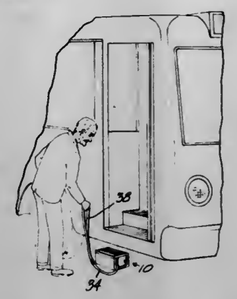
1. An adjustable hand held carrier for transporting sheets of material comprising two adjustable pieces having substantially the same dimensions being adjustably secured together in backwardly facing and extending positions thereby having similar adjoining ends and similar opposing ends, said adjoining ends containing longitudinal slots therein and being overlapped in such a manner that the longitudinal slots are in adjustable alignment and secured together in a fixed relationship by fastening means extending through the slots, said opposing ends terminating in a tray configuration.

4,113,161

COMBINATION CARRYING CASE AND STEP UNIT

Edward J. Manuszak, 1703 College St., South Bend, Ind. 46628

Filed May 31, 1977, Ser. No. 801,730
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—46 R 2 Claims



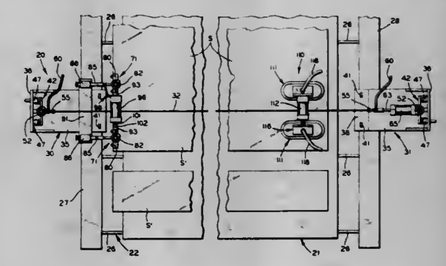
1. An article of manufacture comprising an article carrying case having side panels and water resistant top and bottom panels and of rigid construction to support the weight of a person standing thereon, said top panel also having a tread surface to prevent inadvertant slipping of said person when standing on said top panel, said top panel being pivoted to a side panel and releasably locked in operating position, a hand grip mounted on a side panel, and an extensible member adjustably carried by said grip-mounted side panel and having an extended position accommodating grasping thereof by said person while standing on said carrying case and descending or ascending from and climbing to a level above the top of the case and a second retracted position accommodating convenient transport of said carrying case from place to place, wherein said extensible member is an elongated flexible strap having means anchoring the ends thereof to said grip mounting side panel, at least one of said end anchoring means being releasable from said grip-mounted side panel, and the released end of said strap being grasped during said descending or ascending of said person so that said case may be retrieved when said person is no longer standing on said case.

4,113,162

METHOD OF AND APPARATUS FOR THERMALLY SEVERING GLASS

Hans W. Boehm, Toledo; Richard A. Herrington, Walbridge, and Waldemar W. Oelke, Rossford, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Feb. 9, 1977, Ser. No. 767,051
Int. Cl.[2] B26F *3/00, 3/12*
U.S. Cl. 225—2 17 Claims



1. A method of cutting glass along a desired line of cut comprising: scoring one edge of a glass sheet, applying concentrated heat against one surface of said glass sheet along a narrow line coincident with a desired line of cut in registry with the score mark on said edge causing said sheet to split progressively from said scored edge in a running cut along said line,

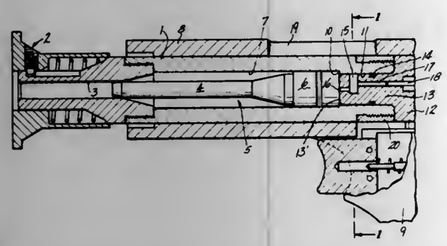
and physically spreading the severed portions on the opposite sides of said line apart as said running cut advances along said desired line of cut.

4,113,163

FASTENING TOOL USING CASELESS MUNITION

Marc Combette, 116, rue des Moulins, 26000 Valence; Roger Dorgnon, Avenue de St-Romain de Lerps, 07130 St Peray; Jean Lathringer, 16, Avenue Vion Whitcomb, 75016 Paris, and Jean Ollivier, 80, Avenue de Beaumes, 26000 Valence, all of France

Continuation-in-part of Ser. No. 723,831, Sep. 16, 1976, which is a continuation of Ser. No. 628,628, Nov. 4, 1976, abandoned.
This application Jun. 13, 1977, Ser. No. 805,663
Int. Cl.[2] B25C *1/14*
U.S. Cl. 227—10 10 Claims



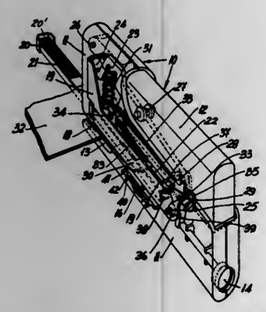
1. A powder-actuated tool of the type utilizing caseless munition, said tool including a housing, a breech in said housing, a barrel assembly mounted in said housing and having relative axial movement with respect to said breech between a forward and rearward position, said breech including an elongated portion extending toward said barrel, a caseless munition receiving chamber in said elongated portion, said receiving chamber including forward and rearward chamber walls and a munition loading opening in an axially extending surface of said elongated portion, closing means for overlying said opening to close the latter when the tool is in condition for firing, a low pressure chamber in said barrel assembly, and passageway means in said elongated portion providing communication between said chamber and said low pressure chamber.

4,113,164

STAPLER

Gustav Muthenthaller, Milan, Italy, assignor to Kores S.p.A., Milan, Italy

Continuation of Ser. No. 718,041, Aug. 26, 1976, abandoned.
This application Aug. 12, 1977, Ser. No. 823,963
Claims priority, application Italy, Mar. 4, 1976, 20856 A/76
Int. Cl.[2] B25C *5/02*
U.S. Cl. 227—124 4 Claims



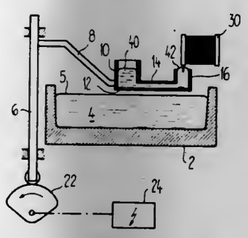
1. A portable office stapler, comprising:
(a) a generally hollow main body having a front slot for receiving sheets to be stapled together and an opening above said slot,
(b) a movable hammer above said slot,
(c) an anvil below said slot,
(d) a staple magazine slidably mounted within said body between an inner stapling position and an outer loading position wherein the forward end of said magazine extends through said opening beyond said body, said magazine having a stop at its forward end and a tooth at its rearward end,
(e) a staple pusher slidably mounted in said magazine,
(f) a lever rotatably mounted within said body and including a hook for engaging said tooth,
(g) means for biasing said pressure plate toward said stop for maintaining staples placed in said magazine against said stop and for urging said magazine toward said loading position, said biasing means also being secured to said lever for urging said hook into engagement with said tooth for maintaining said magazine in said stapling position, and
(h) a button slidably mounted on said body for engagement with said lever so that said button is biased by said biasing means acting through said lever toward a non-operative position and wherein movement of said button by an external force causes said lever to rotate against said biasing means for pulling said hook out of engagement with said tooth and thereby allowing the forward end of said magazine to be projected outside of said body by said biasing means.

4,113,165

SOLDERING APPARATUS

Hans Ott, Adliswil, Switzerland, assignor to Meteor AG, Ruschlikon, Switzerland

Filed Sep. 20, 1977, Ser. No. 835,032
Claims priority, application Switzerland, Oct. 7, 1976, 12678/76
Int. Cl.[2] B23K *3/06*
U.S. Cl. 228—36 3 Claims



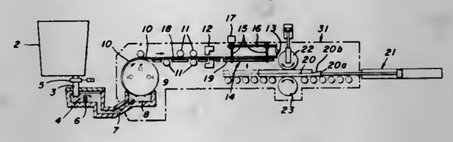
1. Soldering apparatus comprising a vessel for containing a molten soldering material, a ladle including a tank and a scoop, said ladle being movable into and out of said vessel so as to fill said tank and scoop with soldering material contained in said vessel, said tank and scoop portion being in fluid communication and each having a lip with the lip of said scoop lying in a horizontal plane that is spaced vertically above the lip of said tank.

4,113,166

METHOD OF AND APPARATUS FOR CONVERTING MOLTEN METAL INTO SOLIDIFIED PRODUCTS

Erik A. Olsson, Rotfluhstrasse 15, 8702 Zollikon, ZH, Switzerland

Continuation-in-part of Ser. No. 537,561, Dec. 30, 1974, Pat. No. 3,971,123, which is a continuation of Ser. No. 337,931, Mar. 5, 1973, abandoned. This application Jun. 28, 1976, Ser. No. 700,080
The portion of the term of this patent subsequent to Jul. 27, 1993, has been disclaimed.
Int. Cl.[2] B23K *19/00;* B21C *37/04*
U.S. Cl. 228—170 27 Claims



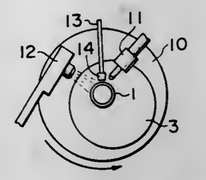
1. The method of converting molten metal into semifinished products for subsequent conversion into finished products, wherein:
(a) molten metal from a common heat substantially free of slag is congealed on a single casting unit with a moving chill surface on which the molten metal congeals and discharging the casting so formed from the unit as a plurality of non-laminated thin sections;
(b) transporting the sections as formed to an assembly unit where they are assembled into bodies of predetermined thickness with one section in face-to-face relation with another and with each section at a temperature where it will pressure weld to the contacting surface of another; and
(c) effecting pressure welding of the bodies so assembled and discharging them when the entire assembly has been integrated by welding.

4,113,167

EXHAUST SYSTEM MEANS FOR AUTOMOBILES

Yoshiro Komiyama, Okazaki; Katsumi Kondo, Toyota; Mototsugu Koyama, Toyota; Masaaki Nagaoka, Toyota, and Tsuneo Uchida, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 25, 1977, Ser. No. 781,408
Claims priority, application Japan, Nov. 16, 1976, 51-137988
Int. Cl.[2] B23K *31/02, 28/00*
U.S. Cl. 228—176 2 Claims



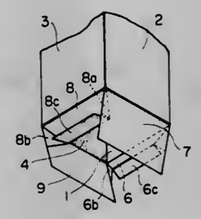
1. In a method of producing an exhaust system for automobiles which comprises at least two members joined together by welding along an arcuate or circular joining portion having a relatively small radius of curvature, said members each being made of a steel material having an anti-corrosive surface layer, wherein the improvement comprises the processes of rotating a preassembly of at least said two members around the center of curvature of said arcuate or circular joining portion, welding said two members together along said joining portion by employing a stationary welder so as to form a weld seam along said joining portion as said preassembly rotates, and spraying a molten metal onto said weld seam just after it has been formed and while it is still hot by employing a stationary molten metal sprayer located adjacent to said welder at its rearward position as seen in the moving direction of said weld seam, and preventing the turbulence of air caused by the molten metal spraying from affecting the welding process by placing a wind screen between said welder and said molten metal sprayer.

4,113,168

BOTTOM STRUCTURE OF CARDBOARD TYPE LIQUID PACKING CONTAINER

Kiyoshi Shirakawa, Tokorozawa, Japan, assignor to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 707,539, Jul. 22, 1976. This application Jun. 6, 1977, Ser. No. 803,932
Int. Cl.[2] B65D *5/08*
U.S. Cl. 229—37 R 1 Claim



1. In a bottom structure of a cardboard liquid packing container constructed from a laminated cardboard of synthetic resin, said container having four side sheets bonded through side folding lines, the improvement comprising:
four bottom sheets bonded to each other through extensions of said side folding lines, and respectively bonded to said side sheets through bottom folding lines separating said side and said bottom sheets; said bottom sheets including a first pair of opposed rectangular bottom sheets having end portions superimposed upon each other and heat sealed to form a bottom surface, and a second pair of opposed bottom sheets, each having oblique folding lines extending at an angle of 45° from apexes formed by the intersection of said extended side folding lines and said bottom folding lines, said oblique folding line defining a pair of triangular corner sealing surfaces, a trapezoidal exterior sealing surface between said triangular corner sealing surfaces, and a rectangular sealing flap adjacent said corner and said exterior sealing surfaces, said triangular corner sealing surfaces folded 180° along said oblique folding lines such that said corner surfaces overlap and contact the end portions of said trapezoidal exterior sealing surface and said sealing flap overlaps and contacts the center portion of said trapezoidal exterior sealing surface between the overlap of said corner sealing surfaces on said exterior sealing surface, said triangular corner sealing surfaces and said sealing flap overlapping the entire length of said exterior sealing surface and heat sealed thereto, and said first pair of bottom sheets also superimposed over said corner sealing surfaces, said sealing flap and said exterior sealing surface and heat sealed thereto.

4,113,169

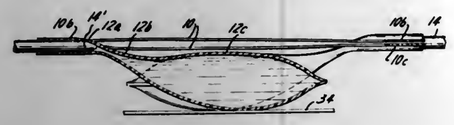
SERIES FILLED CONTAINERS

Richard S. Carlisle, 1051 Broadway, Thornwood, N.Y. 10594

Division of Ser. No. 427,433, Dec. 21, 1973, Pat. No. 3,975,885, which is a continuation-in-part of Ser. No. 231,288, Mar. 21, 1972, Pat. No. 3,815,794. This application Aug. 16, 1976, Ser. No. 714,746
Int. Cl.[2] B65D *27/10*
U.S. Cl. 229—53 5 Claims

1. An interconnected strip of pouches, comprising a pair of mutually opposed thermoplastic strips joined together by seams defining two series of pouches each having an open-

ended spout extending from a body with the spouts of one series of pouches directed toward one margin of the opposed pair of strips and with the spouts of the other series of pouches directed toward the opposite margin of said strips, the width of the body as measured along the strip generally being much



larger than the width of the spout as measured along the strip, the bodies of each series of pouches being adjacent spouts of the other series of pouches, and said interconnected strip of pouches including two continuous stip portions along the respective margins of said strips interconnecting the open end portions of said spouts.

4,113,170

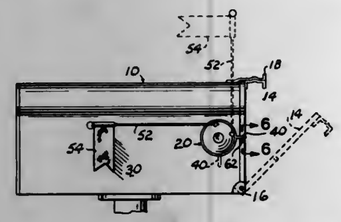
RURAL MAILBOX DELIVERY SIGNAL

Monroe T. Hunsicker, Rte. 1, Earlsboro, Okla. 74840

Filed Jul. 25, 1977, Ser. No. 819,013

Int. Cl.[2] A47G *29/12*

U.S. Cl. 232—35 **2 Claims**



1. A door controlled signal device for a rural mailbox having a side wall and having an entrance opened and closed by a door hingedly mounted for vertical swinging movement, comprising:

a base flatly connected with the outer surface of said side wall

at its end portion adjacent the entrance,

said base having a horizontally disposed hub;

a dome-shaped cover overlying said base,

said cover having a stub axle journalled by said hub for rotation of said cover with respect to said base;

a latch arm radially secured to the periphery of said cover;

a cover finger secured to the concave surface of said cover between said stub axle and said latch arm and projecting toward said base in parallel relation with respect to said stub axle;

a base finger secured to said base and projecting toward said cover in parallel spaced relation between said hub and said cover finger;

a signal flag supporting rod secured to and projecting beyond said cover with its axis disposed in off-set parallel relation with respect to the axis of said latch arm;

cam means including a pin secured to said door and underlying said latch arm for maintaining said cover in a first signal idle position; and,

a spring means surrounding said hub and having parallel end portions disposed on respective diametrically opposite sides of said cover finger and said base finger for biasing said cover toward a second signal activated position.

4,113,171

VALVE ARRANGEMENT FOR LIMITING TORQUE OF A HYDRAULIC MOTOR OF A CENTRIFUGE

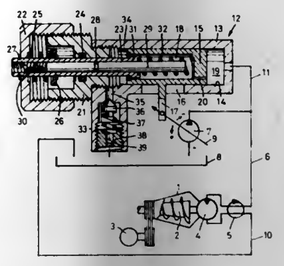
Ivan Jaroslav Cyphelly, Neuhaus, Hinteregg, Switzerland (8128)

Filed Apr. 12, 1977, Ser. No. 786,844

Claims priority, application Switzerland, Apr. 14, 1976, 4777/76; Mar. 21, 1977, 3516/77

Int. Cl.[2] B04B *1/20, 9/10*

U.S. Cl. 233—7 **17 Claims**



1. A valve arrangement for limiting the torque of a hydraulic motor of a centrifuge by adjusting the flow of a pressure medium supplied by a pressure source, wherein said hydraulic motor includes a housing and a shaft and said centrifuge includes a drum, driven by a main drive motor and a worm mounted inside said drum, and further wherein said hydraulic motor housing is firmly connected to said centrifuge drum and said hydraulic motor shaft is firmly connected with said centrifuge worm, in order to produce a slip speed between said drum and said worm, said valve arrangement being arranged to adjust the delivered flow of pressure medium by directly adjusting a pump or by adjusting a flow-measuring throttle element associated with a pressure source, said valve arrangement comprising:

a valve housing;

a spring disposed within and resting against said valve housing;

a pushing element means, mounted in said valve housing against said spring and being exposed to the pressure of the pressure medium, for causing adjustment of the delivered flow of pressure medium; and

adjustable auxiliary valve means for opening an overpressure channel to a part of the pressure medium when a certain threshhold pressure of the pressure medium is reached, in such manner that the flow of pressure medium which is delivered increases abruptly.

4,113,172

CENTRIFUGE WHOSE DRUM CASING IS CONTINUOUSLY COOLED BY A COOLANT CIRCULATED WITHIN AN INSERT DISPOSED IN THE SOLIDS CHAMBER

Gunthard Pautsch, and Werner Kohlstette, both of Oelde, Germany, assignors to Westfalia Separator Aktiengesellschaft, Oelde, Germany

Filed Jun. 29, 1977, Ser. No. 811,421

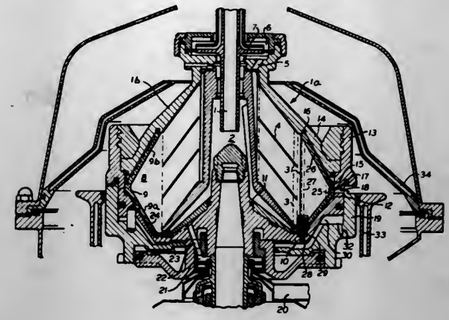
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1976, 2631110

Int. Cl.[2] B04B *15/02*

U.S. Cl. 233—11 **6 Claims**

1. Centrifuge comprising a rotatable drum having an outer casing, a solids chamber within the outer casing, a conical insert comprising an upper portion and a lower portion mounted in the drum and lining the wall of the outer casing within the drum, means defining a helical passageway for each the upper and lower portions of the insert, said passageways being for passage of heat exchange fluid between the insert and the wall of the outer casing within the drum, for indirect heat exchange with solids disposed in the solids chamber, the conical insert and the outer casing having aligned solids removal

apertures at spaced intervals about the peripheries thereof, a rib joining together the upper and lower insert portions, and a passageway in the rib, communicating the said helical passageways in the upper and lower insert portions for transfer of the



heat exchange fluid from one to the other of the upper and lower insert portions, and means for introducing and withdrawing the heat exchange fluid into and from the helical passageways.

4,113,173

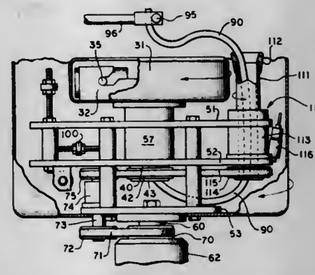
CENTRIFUGAL LIQUID PROCESSING APPARATUS

Houshang Lolachi, Rockville, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 562,748, Mar. 27, 1975, abandoned. This application Feb. 11, 1976, Ser. No. 657,187

Int. Cl.[2] B04B *5/02, 9/00*

U.S. Cl. 233—25 **8 Claims**



1. Apparatus for use in conjunction with a flexible communication conduit for maintaining communication with terminal means under centrifugation, comprising, in combination:

a stationary base;

a rotor drive assembly rotatably mounted to said base for rotation along a predetermined axis;

a rotor assembly, including terminal means, said rotor assembly being rotatably mounted to said rotor drive assembly for rotation with respect thereto along said axis by means including a support shaft journaled to said drive assembly, said support shaft including a central axially-extending aperture;

a rotor drive pulley locked for rotation with said rotor assembly;

support means for supporting said communication conduit above said rotor assembly along said axis;

guide means including a guide member on said rotor drive assembly for guiding the communication conduit from said support means through said axially-extending aperture to said terminal means, said guide means rotatably coupling said conduit to said rotor drive assembly with respect to said axis;

said rotor drive assembly being rotatably mounted to said base by means of a support shaft axially-aligned with said axis of rotation;

drive means for rotating said rotor assembly and said rotor drive assembly in like directions with a speed ratio of 2:1 to maintain communication without completely twisting said conduit, said drive means including a stationary pulley carried by said base, planetary drive means carried on said rotor drive assembly and coupled to said stationary pulley and said rotor drive pulley for driving said rotor assembly, said planetary drive means including a drive belt operatively engaged at one end to said stationary pulley and at its other end to said rotor drive pulley, and belt guide means comprising a pair of guide pulleys rotatably mounted on said rotor drive assembly for causing said drive belt to orbit with said rotor drive assembly about said predetermined axis of rotation.

4,113,174

TEMPERATURE CONTROLLED VALVE ASSEMBLY

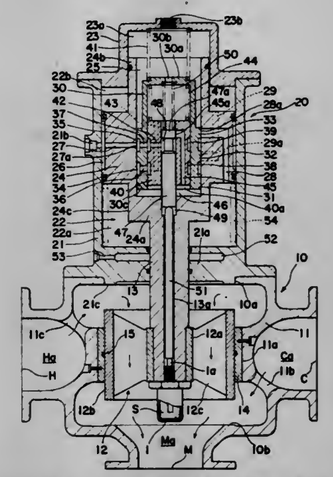
Yasuo Kagiyama, Toyonaka, and Nobumasa Miyazaki, Mino, both of Japan, assignors to Daihatsu Diesel Manufacturing Co., Ltd., Toyonaka, Japan

Filed May 3, 1977, Ser. No. 793,359

Claims priority, application Japan, May 17, 1976, 51-62945[U]

Int. Cl.[2] G05D *23/12, 11/16*

U.S. Cl. 236—12 A **12 Claims**



1. A temperature controlled valve assembly which comprises, in combination:

a valve housing structure including first and second housings having first and second compartments defined therein, respectively, said first housing having hot and cold fluid inlet ports for the introduction of hot and cold fluid mediums, respectively, from associated sources thereof into the first compartment and a common outlet port for the discharge of a mixture of the hot and cold fluid mediums to the outside of the first housing, said second housing further having a drive fluid inlet port adapted to be coupled to a source of a drive fluid under pressure and a vent hole for the discharge of the drive fluid to the outside of the second housing;

a proportioning valve means housed within the first compartment for movement between hot and cold positions, said proportioning valve member when moved towards the hot position decreasing the substantial opening of the cold fluid inlet port and correspondingly increasing the substantial opening of the hot fluid inlet port while said proportioning valve member when moved towards the cold position increases the substantial opening of the cold fluid inlet port and correspondingly decreases the substan-

tial opening of the hot fluid inlet port, said proportioning valve member being held in position substantially intermediately between the hot and cold positions when and so long as the fluid mixture attains a predetermined temperature;

a temperature sensor for sensing variation in temperature of the fluid mixture and for generating one at a time first and second mechanical signals indicative of reduction and increase in temperature of the fluid mixture, respectively, with respect to the predetermined temperature of the fluid mixture;

a power piston means connected with said proportioning valve means for movement together therewith and operatively housed within the second compartment, said second compartment being divided into first and second sealed working chambers one on each side of said power piston means, said power piston means having a cavity defined therein;

a relay passage means defined in the power piston means and having one end opening towards the cavity and the other end held in constant communication with the drive fluit inlet port during the movement of the power piston means;

first and second supply passage means defined in the power piston means, said first supply passage means having first and second open ends respectively opening towards the first working chamber and the cavity, said second supply passage means having first and second open ends respectively opening towards the second working chamber and the cavity, said second open ends of the respective first and second supply passage means being positioned spaced from each other a predetermined distance;

a switching valve means housed within said cavity in the power piston means for movement between first and second positions in a direction parallel to and coaxial with the direction of movement of the power piston means and dividing the cavity in the power piston means into third and fourth working chambers one on each side of the switching valve means, said third working chamber being communicated to the outside of the second housing through the vent hole;

first and second switching passage means defined in the switching valve means, said first switching passage means being constantly communicated to the relay passage means through said one end thereof during the movement of the switching valve means between the first and second positions and adapted to communicate selectively with the first and second supply passage means through their respective second open ends, said second switching passage means being adapted to communicate with said second supply passage means through the second open end thereof;

a first biasing means for causing the switching valve means to tend to move towards its second position, said first and second supply passage means being communicated to the first switching passage means and to the third working chamber, respectively, when the switching valve means is held in the second position irrespective of the position of the power piston means;

first and second lands defined on the switching valve means, said first and second lands closing the second open ends of the first and second supply passage means, respectively, when and so long as the fluid mixture attains the predetermined temperature with the switching valve means positioned substantially intermediately between the first and second positions, said first and second lands being spaced from each other a distance equal to the distance between the second open ends of the respective first and second supply passage means;

a first vent passage means communicating between the second switching passage means and the third working chamber, the first working chamber, when the second land opens the second open end of the second supply passage upon movement of the switching valve means towards the first position relative to the power piston means to establish the communication between the second supply passage means and the second switching passage means, being vented through said first vent passage means to the vent hole, the second open end of the first supply passage means being, when the second supply passage means is so communicated to the vent hole through said first vent passage means, communicated to the first switching passage means thereby allowing the drive fluid to be supplied into the second working chamber to move the power piston means in a direction with the proportioning valve member being consequently moved towards the cold position;

an operating valve means operatively associated with the temperature sensor and movable in first and second directions opposed to each other in response to the first and second mechanical signals, respectively, said operating valve means when moved in said second direction establishing a communication between the first switching passage means and the fourth working chamber thereby allowing the drive fluid to be supplied into the fourth working chamber to move the switching valve means towards the first position against the first biasing means with the drive fluid within the first switching passage means being also supplied into the second working chamber through the second supply passage means whereby the power piston means is moved in a direction with the proportioning valve member being moved towards the hot position, said operating valve means when moved in said first direction establishing a communication between the first switching passage means and the first working chamber through the first supply passage means, a communication between the fourth working chamber and the vent hole and a communication between the second working chamber to the vent hole through the second supply passage means whereby the power piston means is moved by the drive fluid, supplied into the first working chamber, in a direction with the proportioning valve member moved towards the cold position; and

a second biasing means for causing the operating valve means to tend to move in the second direction, said operating valve means being moved in the first direction against the second biasing means when the drive fluid is supplied into the fourth working chamber;

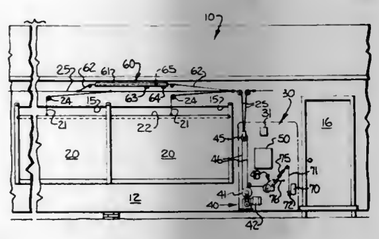
the pressure within the first working chamber and that within the second working chamber being equalized to each other in the absence of any one of the first and second mechanical signal.

4,113,175

VENTILATION SYSTEM FOR POULTRY OR LIVESTOCK HOUSE

James Alton Sutton, Jr., 1545 Shelton Ave., Statesville, N.C. 28677

Filed Aug. 20, 1976, Ser. No. 716,158
Int. Cl.² G05D *123/00*
U.S. Cl. 236—46 A **17 Claims**



1. A method of ventilating a confinement house of the type employed for rearing poultry and livestock and wherein there are ventilation openings in the walls of the house with adjustable closures for adjusting the effective size of the openings, said method comprising operating an exhaust fan for a relatively short period of time during each of a succession of predetermined intervals of longer duration to periodically draw outside air into the house through the ventilation openings, while sensing a differential in pressure between the inside and outside of the house as a result of operation of the exhaust fan, determining whether a predetermined minimum acceptable pressure differential is achieved during each such interval, and then following each such interval and in response to determining the failure of the exhaust fan in achieving a predetermined minimum acceptable pressure differential during such interval, effecting adjustment of the closures to a more closed position to bring about an increase in the pressure differential and a resulting increase in the velocity of the air drawn into the house to a desired level sufficient for effective ventilation of all areas of the house.

16. In a confinement house of the type employed for rearing poultry and livestock and having ventilation openings in the walls thereof and adjustable closures cooperating with the ventilation openings for adjusting the effective size thereof, the combination therewith of a ventilation system for supplying a controlled flow of fresh air throughout the confinement house, said ventilation system comprising a plurality of exhaust fans operable to establish a pressure differential between the inside and outside of the confinement house for drawing a flow of outside air into the house through the ventilation openings, timer means cooperating with certain of said exhaust fans for effecting cyclical operation thereof in regular cycles and for relatively short duration during predetermined normal temperature conditions in the confinement house to supply the minimum ventilation requirements for the house, thermostat means cooperating with at least certain other of the fans for effecting operation thereof during predetermined elevated temperature conditions in the confinement house for thereby supplying increased levels of ventilation in the house when needed, drive means connected to the adjustable closures for adjustably positioning the same, and closure control means for controlling the positioning of the adjustable closures by said drive means so as to maintain the velocity of the air drawn into the confinement house through the ventilation openings at an optimum level for effective ventilation of all areas of the house regardless of the number of exhaust fans in operation at a particular time, said closure control means including minimum condition responsive means for sensing the occurrence of a predetermined minimum acceptable differential in pressure between the inside and outside of the confinement house, and means associated with said minimum condition responsive means and operable in response to the failure of said predetermined minimum acceptable pressure differential being achieved as a result of operation of one or more of said exhaust fans for effecting adjustment of the closures to a more closed position to thereby bring about an increase in the pressure differential and a resulting increase in the air velocity drawn into the house through the ventilation openings.

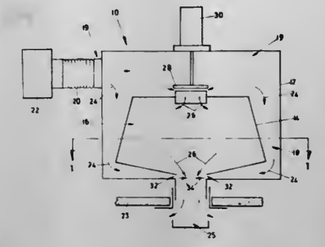
4,113,176

AIR-CONDITIONING

Nicholas Caknis, 24, Farmers Folly, Lynnwood, Pretoria, South Africa

Filed Apr. 21, 1976, Ser. No. 678,742
Int. Cl.² F24F *7/00*
U.S. Cl. 236—49 **8 Claims**

1. An air discharge terminal unit comprising a housing with an air inlet and an air outlet, means between the inlet and the outlet for dividing an air flow through the housing into primary and secondary air streams, means for directing a pair of opposing jets of primary air onto the secondary air stream, and means for directing jets of air onto opposing jets of primary air comprising first conduit means having openings positioned to direct air jets into the negative pressure zones on corresponding sides of the primary air jets and second conduit means



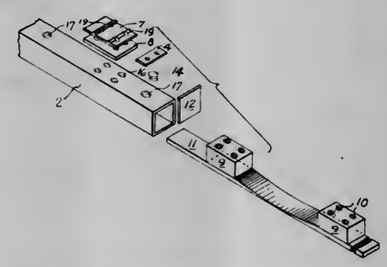
having openings positioned to direct air into the negative pressure zones on the opposite sides of the primary air jets.

4,113,177

COMPOSITE RAILROAD CROSS TIE WITH RAIL SUPPORT BLOCKS

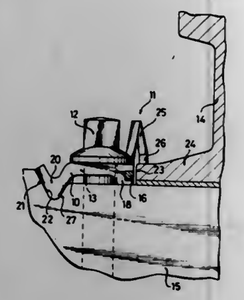
Walter Collins, 9543 Achates Cir., and Howard Blankumsee, 9324 Quesada Way, both of Sacramento, Calif. 95826

Filed Apr. 8, 1977, Ser. No. 785,834
Int. Cl.² E01B *3/18*
U.S. Cl. 238—72 **4 Claims**



1. A railroad cross tie comprising a hollow box member of rectangular configuration, block members positioned within the hollow of said box member provided with means to fixedly constrain their position in said box member, rail members overlying said block members disposed exteriorly of said box member and transverse thereto having means to fasten said rail members to said block members, and having means to insulate and damp said rail members from said box member, whereby said means to fixedly constrain includes a board member which is attached to said block members along their bottom surface, and end plates which are fastened to the openings of said hollow box member, and said means to fixedly constrain further includes sand injected within said hollow box member through a hole having a plug element and said means to fasten said rail members to said block members includes at least one bushing disposed within said block members having a knurled outer surface and threaded inner surface, an opening in said hollow box member in registry with said bushing, a support plate overlying said box having an opening which registers with said opening in said hollow box, a rail which overlies said support plate but does not extend over said support plate hole, collar means overlying a portion of said rail having a hole therein in registry with said support plate's hole, and bolt means threadedly fastened to said bushing while extending through said collar, support plate, and box member.

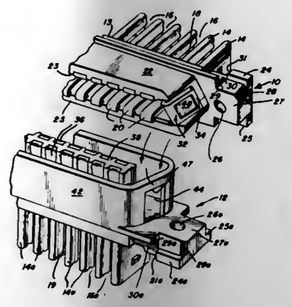
4,113,178
RESILIENT RAIL CONNECTION
Horst E. Steinfeld, Villigst, and Dieter Mathes, Hagen, both of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany
Filed Jan. 25, 1977, Ser. No. 762,347
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1976, 2602869
Int. Cl.² E01B *9/30*
U.S. Cl. 238—349 **6 Claims**



1. In combination with a rail having a rail foot: a rail understructure supporting said rail and having recess means respectively arranged on opposite sides of said rail foot in spaced substantially parallel relationship adjacent thereto, each of said recess means being provided with at least one surface inclined to the longitudinal central plane of said rail, a plurality of guiding plates respectively associated with said recess means, each of said guiding plates having an upwardly opening angular first end portion and an oppositely located second end portion in close proximity to the lateral surface of said rail foot to limit lateral movement of said rail, each of said angular first end portions respectively resting in said recess means and engaging an inclined surface, a plurality of spring elements respectively constantly under pre-load engaging under said second end portions of said guiding plates and confined between said second end portions and the lateral surfaces of said rail foot and resiliently urging said second end portions in upward direction, said spring elements having resilient ends extending over said rail foot to press said rail downwardly on said understructure, said guiding plates respectively being provided with oblong passages, and adjustable connecting bolts respectively extending through said passages and against the thrust of said spring means holding said guiding plates in firm connection with said understructure.

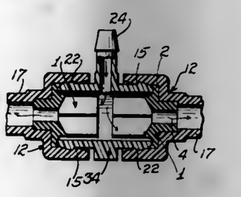
4,113,179
CONNECTOR CONSTRUCTIONS AND ATTACHING MEANS THEREFOR
William H. McKee, West Covina, Calif., assignor to TRW Inc., Elk Grove Village, Ill.
Filed Oct. 29, 1976, Ser. No. 736,942
Int. Cl.² H01R *13/54*
U.S. Cl. 339—91 R **37 Claims**

1. In a ribbon connector construction the combination comprising a body of electrically insulating plastic; a plurality of wire engaging contacts mounted thereon; each of said contacts having a wire termination portion for engaging a wire in electrical contact and a mating portion for engaging a contact mating portion of another connector in electrical contact; resilient latch means of substantially J-shaped configuration having a proximal longer arm anchored to said connector body and extending therefrom in a direction generally parallel to said mating portion of said contacts; said latch means having a shorter distal arm defining a detent and integrally formed with said proximal arm; said latch means detent being arranged on an outwardly disposed face of said distal arm and facing generally toward said connector body; said longer arm and shorter arm being resiliently movable relative to said connector body



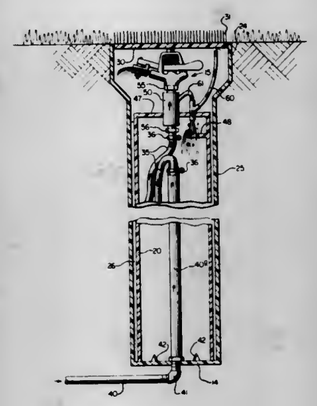
for resilient snap engagement with an element to which said connector is to be attached.

4,113,180
FLUSH-DRIP IRRIGATION EMITTER
Mark H. Christy, 1750 S. Zeyn St., Anaheim, Calif. 92802, and Lloyd Spencer, 220 Patrician Way, Pasadena, Calif. 91105
Filed Jul. 23, 1976, Ser. No. 708,062
Int. Cl.² B05B *1/32*
U.S. Cl. 239—109 **3 Claims**



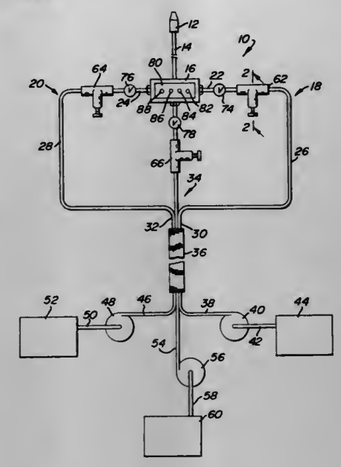
1. A flush-drip irrigation emitter element, comprising:
a. a mounting base having an outlet bore;
b. opposed, normally arched walls defining a flush passage therebetween essentially lens shaped in cross section and discharging into the mounting outlet bore the walls having lateral edges separated by slits;
c. one of the walls having at least one longitudinally extending drip channel disposed between the lateral edges of the flush passage;
d. the walls being formed of highly flexible elastomeric material and, when subject to a predetermined low pressure differential during initial flush flow, are caused to move into essentially flat mutual sealing contact throughout an area extending to the lateral edges and extending a predetermined distance axially, thereby to limit flow solely to the area of the drip channel, the lateral slits offering no resistance to closure of the walls into mutual sealing contact to minimize the pressure required to effect drip flow.

4,113,181
HIGH RISE SPRINKLERS
Kerney T. Sheets, P.O. Box 637, Duplessis, La. 70728
Continuation-in-part of Ser. No. 603,457, Aug. 11, 1975, Pat. No. 4,014,502, which is a division of Ser. No. 439,323, Feb. 4, 1974, abandoned. This application Jan. 12, 1977, Ser. No. 758,648
The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.
Int. Cl.² B05B *15/10*
U.S. Cl. 239—206 **16 Claims**



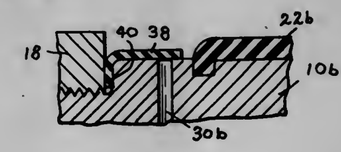
1. A projectable law, farm, and orchard sprinkler comprising:
(a) housing means having a top end means and a bottom end means;
(b) projectable float means located in said housing means;
(c) sprinkler head means connected to said projectable float means for spraying fluids;
(d) means connected to said projectable float means for pumping fluids into the interior of said projectable float means to float said projectable float means upward within said housing means, said pump means including:
(i) first inlet means having a first end and a second end for receiving and conveying a stream of liquids from said liquid supply means to outlet means, said first end being connected to said liquid supply means;
(ii) outlet means for discharging fluids into the interior of said projectable float means, said outlet means being connected to said second end of said first inlet means and in substantial alignment therewith, said outlet means having a first end and a second end;
(iii) second inlet means for conveying air to said stream of liquids; and,
(iiii) jet forming means including a reduced section means located in the downstream end of said first inlet means and substantially adjacent to the intersection of said second inlet means and said stream of liquids for increasing the velocity of said stream of liquids as said stream of liquids exits from said first inlet means into said outlet means; and,
(e) liquid supply means connected to said means for pumping fluids into the interior of said projectable float means and to said sprinkler head means for supplying liquid under pressure to said means for pumping fluids into the interior of said projectable float means and to said sprinkler head means.

4,113,182
MULTI-FLUID WASH SYSTEM
Reacelyn A. Brago, 1964 E. Oak Rd., Apt. J-6, Vineland, N.J. 08375
Filed Mar. 18, 1977, Ser. No. 779,151
Int. Cl.² B05B *7/26*
U.S. Cl. 239—304 **5 Claims**



1. A spray gun system comprising a spray nozzle in fluid connection with a mixing chamber, a plurality of conduits, each in direct fluid connection with said mixing chamber, a shut-off and metering valve means in each of said conduits, each of said conduits being in fluid connection with a separate corresponding source of fluid, each conduit having a separate corresponding pump operatively connected between it and its corresponding source of fluid, said conduits being separated from each other and interconnected only by said mixing chamber, and individual control means on said mixing chamber for individually passing fluids from each of said sources of fluid through the corresponding conduits into said mixing chamber, said spray nozzle being directly connected to said mixing chamber and extending therefrom.

4,113,183
NOZZLE FOR ROTARY FILTER PIPE
Fred E. Stuart, Sr., 1157 Bel Aire Dr., Daytona Beach, Fla. 32020
Filed Oct. 28, 1976, Ser. No. 736,475
Int. Cl.² B05B *1/32*
U.S. Cl. 239—533.13 **5 Claims**



1. In a nozzle, especially for mounting on the trailing side of a rotary filter pipe through which water is supplied to the nozzle, the water exiting the nozzle providing thrust tending to cause rotation of the pipe; a nozzle body having an inner end adapted for connection to a pipe and also having an outer end from which the water exits, said body also having a central passage extending axially therethrough from inner to outer end, further passage means in said body comprising a plurality of uniformly radially distributed auxiliary passage means each of a smaller cross-sectional area than the cross-sectional area of the central passage outer end and inclined from said central passage outwardly to the surface of said body so that water

may also exit the nozzle body by way of the further passage means in a direction to aid the thrust tending to cause rotation of the pipe, and valve means mounted on said body and normally closing said auxiliary passage means at the surface of said body to normally prevent flow of water through said auxiliary passage means and yieldable in response to the supply of water under pressure to said auxiliary passage means from said central passage to permit water to emerge from said auxiliary passage means to the exterior of the body, said valve means directing the water emerging from said auxiliary passage means angularly toward the outer end of said body.

4,113,184

WET GRINDING METHOD FOR CRUDE PHOSPHATE ROCK

Gregory D. Loughrie, Tampa, Fla., assignor to CF Industries, Inc., Long Grove, Ill.

Filed Sep. 19, 1977, Ser. No. 834,281
Int. Cl.² B02C *23/18*
U.S. Cl. 241—15 **10 Claims**

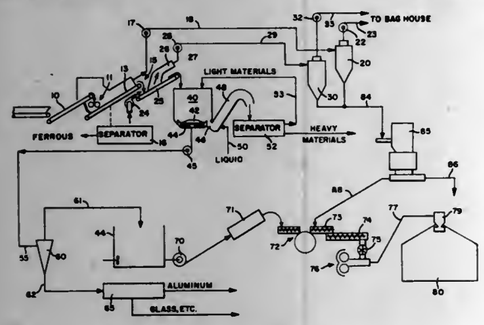
1. The method of wet grinding crude phosphate rock containing clay minerals or like siliceous impurities, which comprises the steps of: introducing coarsely sized, crude phosphate rock containing clay minerals or the like into a grinding mill with at least about 20% by weight of water; introducing a substantially calcium-free alkaline additive material into the mixture of crude rock and water to establish and maintain a pH of at least about 8.5 in the mixture; and wet grinding said mixture to a selected particle size whereby to produce a conveniently processable slurry.

4,113,185

PROCESS FOR PRODUCING FUEL FROM SOLID WASTE

Paul G. Marsh, Hamilton, and Dean H. Kohlhepp, Centerville, both of Ohio, assignors to Black Clawson Fibreclaim, Inc., Middletown, Ohio

Filed Jun. 8, 1977, Ser. No. 804,786
Int. Cl.² B02C *23/38*
U.S. Cl. 241—21 **9 Claims**



1. A process for recovering fuel, as well as other reusable materials, from municipal solid waste which includes paper and other fibrous materials, non-fibrous organic materials, metal, glass and other inorganic materials comprising:

a. dry shredding the waste to pieces of a range of predetermined sizes,

b. separating said shredded refuse by air classification into a light fraction which is predominantly paper and a heavy fraction,

c. treating said heavy fraction to reduce the relatively frangible portions thereof to less than a predetermined particle size by subjecting said heavy fraction in the presence of a liquid to substantial and violent mechanical and hydraulic shear to form a slurry,

d. separating the inorganics in said slurry from the organic material therein,

e. dewatering said organic material to a particulate mass, and

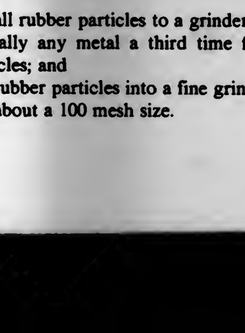
f. combining said particulate mass with said light fraction for use as fuel.

4,113,186

TIRE GRINDING SYSTEM

George William Smith, Woodbridge, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Jan. 18, 1977, Ser. No. 760,264
Int. Cl.² B02C *23/00*
U.S. Cl. 241—24 **1 Claim**



1. A process for treating rubber tires to break them down to a reduced size comprising:

debeading the inside rims of the tires;

transferring the tires to a granulator;

granulating the tires into chunks of tires of about 2.5 cm. in breadth;

transferring the chunks of tires to a holding unit and feeder arrangement;

feeding said chunks of tires to a weight unit;

weighing said chunks of tires to reach a predetermined quantity of from about 100 to about 500 pounds;

transferring said predetermined quantity of chunks of tires to a high intensity mixing machine;

grinding said chunks of tires in said high intensity mixing machine into smaller tire particles of about a 30 mesh size;

separating magnetically any metal from the 30 mesh size particles;

transferring said smaller tire particles into a hammer mill;

beating said smaller tire particles in said hammer mill, loosening the rubber portions and cord portions of said particles from one another;

transferring said loosened rubber portions and cord portions of said particles to a separating machine;

separating magnetically any metal a second time from the loosened tire portions;

separating small rubber particles from cord particles through several layers of vibrating screens;

directing any oversize tire particles back to said mixing machine;

transferring said small rubber particles to a grinder;

separating magnetically any metal a third time from the small rubber particles; and

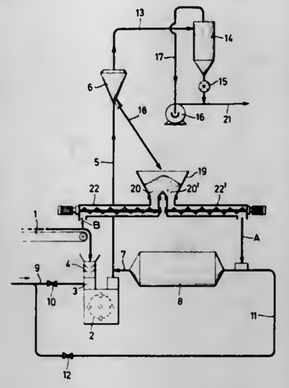
grinding said small rubber particles into a fine grind rubber product of up to about a 100 mesh size.

4,113,187

METHOD AND APPARATUS FOR DRYING AND GRINDING

Heinz Hoppen, Overath-Steinenbrück, and Heinz Fasbender, Krefeld, both of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Apr. 14, 1977, Ser. No. 787,598
Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620461
Int. Cl.² B02C *23/12*
U.S. Cl. 241—24 **8 Claims**



1. A method of grinding particulate material which comprises:

introducing the material to be ground into a coarse grinding device,

delivering the ground product from said coarse grinding device into a sifter and separating coarse residue from the ground product,

delivering the coarse residue from the sifter to a metering device,

selectively passing metered fractions of the coarse residue from said metering device into said coarse grinding device and into a fine grinding device,

and selectively metering the coarse residue from said metering device to said coarse grinding device and said fine grinding device selectively and substantially proportionately in accordance with loads in said grinding devices and thereby maintaining efficient load and grinding capacity relationship in said grinding devices.

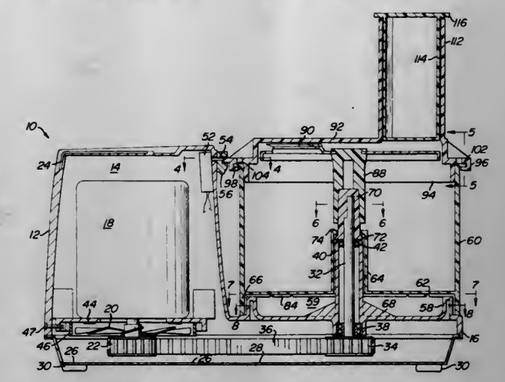
4,113,188

FOOD PROCESSOR

Irving R. Belinkoff, Queens Village, N.Y., assignor to Kidde Consumer Durables Corp., Bala Cynwyd, Pa.

Filed Apr. 25, 1977, Ser. No. 790,509
Int. Cl.² B02C *18/12*
U.S. Cl. 241—37.5 **11 Claims**

1. A food processor comprising an open bottom housing having an integral platform projecting generally horizontally from a lower end thereof, an electrical motor supported upright in said housing, the upper end of said motor being above the elevation of said platform, an upright drive spindle supported by said platform and projecting thereabove, drive means interconnecting said motor with said spindle, a bowl removably supported on said platform alongside the portion of the housing containing said motor, said bowl having a centrally located upstanding boss on a bottom wall thereof, said spindle extending through said boss, cooperating members on said bowl and platform for registering said bowl in a predetermined locked position relative to said housing, a cover removably attached to said bowl, a motor control switch on said motor housing adjacent the elevation of said cover, and an actuator extending radially outwardly from said cover for actuating said switch.

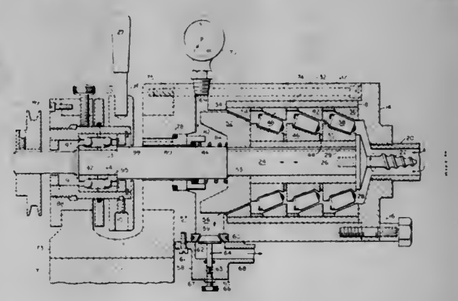


4,113,189

ROLLER-COLLOID MILL

Thomas A. Sullivan, 54 Felt St., Salem, Mass. 01970

Filed May 4, 1977, Ser. No. 793,733
Int. Cl.² B02C *23/38*
U.S. Cl. 241—43 **9 Claims**



1. In a colloid mill having a housing enclosing a rotor and a stator for the treatment of a slurry containing solid particles, the combination with said rotor and stator of at least a roller bearing assembly disposed in said housing, said roller bearing assembly including a generally conical inner raceway and a generally cup-shaped outer raceway and a plurality of rollers disposed between said inner raceway and said outer raceway, and means for feeding said slurry into said roller bearing assembly between said rollers and said inner and outer raceways, said slurry passing from said roller bearing assembly to said rotor and stator for completion of said treatment of said slurry and discharge from said housing.

4,113,190

DEVICE FOR SHAVING ICE

Israel Fudman, 6300 Red Cedar Pl., Baltimore, Md. 21209

Continuation-in-part of Ser. No. 688,372, May 20, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 814,448
Int. Cl.² B02C *18/12*
U.S. Cl. 241—92 **12 Claims**

1. A device for producing shaved ice having a range of ice textures from very fine to very coarse and comprising:

a hopper means for holding a supply of random size chunks of ice;

an agitator means positioned below said hopper means to agitate said chunks of ice in said hopper means;

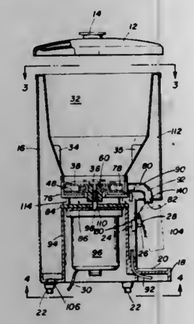
a comminution system containing a range of preadjusted ice

shaving components to produce said range of ice textures, said comminution system being coupled to said agitation means;

at least one baffle positioned within said hopper means and monolithic with said hopper means to impede turning of total ice mass, said baffle being located clear of disassembled parts of said comminution system that are removed in a vertical direction through the charging hopper;

an electrical switch means;

an activator having an open lip on the uppermost edge of



said activator, a bar attached to the outside of said device for producing said shaved ice, said open lip passing over and behind said bar and thereby mounting said activator for controlling said electrical switch means;

power means coupled to said comminution system and controlled by said activator mounted by said lip on said bar controlling said electrical switch means;

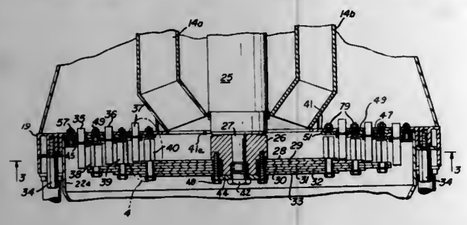
a delivery system located adjacent to said comminution system and communicating therewith for delivery of shaved ice to exterior of said device for producing shaved ice.

4,113,191

LAMINATED ROTOR PROCESSING APPARATUS

Gurdon B. Wattles, North Haven, and Louis R. Vecsey, Wallingford, both of Conn., assignors to Entoleter, Inc., Hamden, Conn.

Filed Mar. 17, 1977, Ser. No. 778,363
Int. Cl.² B02C *13/10*
U.S. Cl. 241—188 A **18 Claims**



1. Rotary processing apparatus comprising, in combination:

(a) a rotor housing,

(b) a rotary spindle adapted to be driven by a power source and having one end thereof passing through an aperture in said housing.

(c) a fabricated rotor in said housing attached to said spindle, said rotor comprising a first purality of processing members attached to at least three substantially flat, generally centrally apertured members arranged in a stack with said apertures being aligned, said spindle being mounted to pass through a predetermined number of said apertures, said flat members being substantially in contact with one another from the region where the rotor is attached to said spindle and extending radially outward therefrom, and

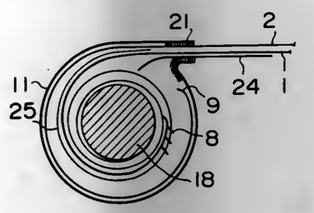
(d) means mounted on said spindle for retaining said stack on said spindle in releasable securement.

4,113,192

APPARATUS FOR WITHDRAWING THE TONGUE OF A FILM INCORPORATED IN A CARTRIDGE

Shinichi Osanai, Ichikawa, Japan, assignor to Labogiken Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1977, Ser. No. 838,059
Claims priority, application Japan, Oct. 4, 1976, 51-119174; Feb. 25, 1977, 52-22194[U]; Feb. 25, 1977, 52-22195[U]
Int. Cl.² G03B *1/02*; B25B *9/00*
U.S. Cl. 242—1 **5 Claims**



1. An apparatus for withdrawing the tongue of an exposed film incorporated in a cartridge using a thin resilient film withdrawal strip having hooks formed in the forward portion thereof and adapted to engage the film perforations, a thin resilient guide member having an inwardly curved tip and disposed above said film withdrawal strip, a support plate positioned below said strip to support it and said guide member, means for moving said guide member towards and away from the cartridge to sufficiently insert said guide member into the cartridge through its film withdrawal port and to retract said guide member from said cartridge, means for turning the cartridge spool several times so that the curved tip of said guide member always contacts the outermost portion of the wound film from the outside after said guide member has been inserted in said cartridge, means for moving said film withdrawal strip towards and away from said cartridge to introduce said film withdrawal strip into the cartridge through its film withdrawal port from between said support plate and said guide member inserted in said cartridge and to withdraw said film withdrawal strip so as to withdraw the film from the cartridge by means of engagement between the hooks of said film withdrawal strip and the perforations of the film and, in a case where the film has not been withdrawn, said means for turning said spool being operated to turn the spool again so as to change the position of the film end and said means for moving said film withdrawal strip being operated to repeatedly introduce said film withdrawal strip into the cartridge and to withdraw the film from the cartridge.

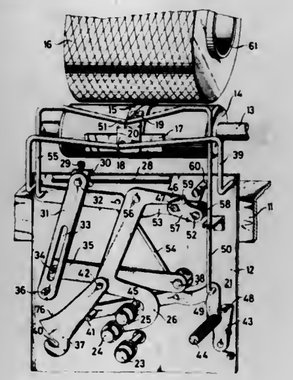
4,113,193

METHOD AND APPARATUS FOR WINDING CONICAL COILS OR CHEESES AT CONSTANT THREAD-FEEDING VELOCITY

Hans Raasch, Munchen Gladbach, and Lothar Müller, Kaarst, both of Germany, assignors to W. Schlafhorst & Co., Munchen Gladbach, Germany

Filed Nov. 20, 1975, Ser. No. 633,707
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1974, 2454917
Int. Cl.² B65H *54/02*
U.S. Cl. 242—18 R **24 Claims**

1. Method of winding conical cross-wound coils at constant thread-feeding velocity, wherein varying winding speeds between the largest and smallest periphery of the coils are compensated for by filling and emptying a controlled thread storage device, which comprises filling the thread storage device during a time interval wherein the thread is being guided in a three-dimensionally disposed spiral extending from a given neutral periphery of a coil to the smallest periphery thereof and back, and emptying the thread storage device during a time interval wherein the thread is being guided in a three-dimensionally disposed spiral extending from the given neutral periphery of the coil to the largest periphery thereof and back, the instantaneous length of the stored thread being varied in a wave-shaped substantially sinusoidal manner and the amplitude of the respective wave being proportional to the maximal length of the thread to be stored as required during each thread storing operation.



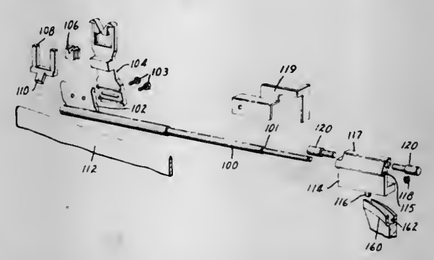
10. In an apparatus for carrying out a method of winding rotary conical cross-wound coils at constant thread-feeding velocity, means for winding a thread onto the coils, means for feeding the thread to said winding means, a thread storage device disposed at respective winding stations of a textile machine and controllably filled with thread and emptied thereof to compensate for varying winding speeds between the largest and smallest periphery of the coils, and a function generator in the form of a rotary control cylinder located at the textile machine and means in engagement with said cylinder cooperatively connected to the thread storage devices of a plurality of the winding stations for controlling the same.

4,113,194

TRAVERSE BAR AND SLIDE

William G. Hensley, Daisy, Tenn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 19, 1976, Ser. No. 743,463
Int. Cl.² B65H *54/30, 57/00*
U.S. Cl. 242—43 R **2 Claims**



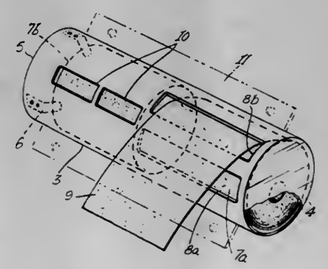
1. In a winding machine for winding yarn packages, having cam-operated means for traversing yarn lengthwise of the yarn package during the winding thereof and a traverse rod and a slider each of plastic material, said slider having a longitudinal hole and bearing a downwardly extending plastic cam roller, said traverse rod having bracket for attachment of thread guide supporting means at one end and distal thereto a reducing shoulder reducing the diameter of said traverse rod to a dimension to fit rotatably and be received in said longitudinal hole of said slider and means retaining said traverse rod rotatably in said slider, the improvement consisting essentially of said slider having an upward integral extension above said longitudinal hole and parallel thereto and a resilient elastomeric bumper of about 50 durometer test in each end of said extension for engagement with a fixed abutment on said machine at each end of the traverse of said slider.

4,113,195

DISPENSING DEVICE FOR WEB MATERIAL IN ROLL FORM

Eos Lee Theunissen, Johannesburg, South Africa, assignor to Manfred Sidley, Sandton, South Africa

Filed Nov. 24, 1976, Ser. No. 744,544
Int. Cl.² B65H *19/04*
U.S. Cl. 242—55.3 **6 Claims**



5. A device adapted for dispensing web material from rolls thereof, including a housing defining a tubular bore in which at least one roll may be located, said bore being closed at one end and providing an inlet at its other end whereby a said roll may be moved into said bore in an axial direction, security means at or adjacent said inlet comprising means extending axially relative to said bore of said housing, said means having a diameter progressively narrowing in the direction of movement of a said roll into said housing, the narrowest part of said means being of a diameter smaller than that of said roll at least when substantially charged with material, and two dispensing apertures in the bore wall in side-by-side circumferentially disposed relationship, the apertures being arranged to facilitate maneuvering of the roll in the course of tangentially dispensing material therefrom and for the removal of a spent core of the roll.

4,113,196

MAGNETIC TAPE CARTRIDGE LOADING APPARATUS

George D. Rehklau, Los Altos, Calif., assignor to Electro-Sound, Inc., Sunnyvale, Calif.

Filed Nov. 4, 1976, Ser. No. 738,899
Int. Cl.² B65H *19/26, 21/00*
U.S. Cl. 242—56 R **25 Claims**

1. Apparatus for loading tape onto the hub of a spool such as that contained in a magnetic tape cartridge, comprising:

a chassis for supporting the components of said apparatus;

tape supply means for supplying a continuous strip of tape;

carriage means for locating at a first position a spool upon which a predetermined length of said strip is to be wound;

hub drive means disposed proximate said first position and including spindle means for driveably engaging the hub of said spool, and motor means for rotating said spindle means and said hub;

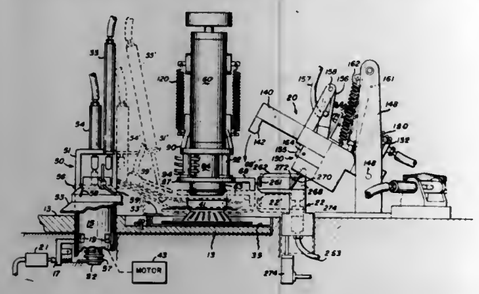
a cutting means disposed adjacent said first position;

flyer means carried by said spindle means for releasably holding the ends of said length of said strip;

tape supply arm means for moving the lead end of said strip

into contact with said flyer means, for guiding said strip as it is wound onto said hub, and for aligning and holding said strip relative to said cutting means as said predetermined length is cut therefrom;

take-up loop arm means for measuring out a selected loop length of the tail portion of said predetermined length, for holding said strip as said predetermined length is cut therefrom by said cutting means, and for moving the tail



end of said length into contact with said flyer means and in abutting relationship with said lead end;

splicing means disposed adjacent to said first position and operative to apply a segment of splicing tape across the abutted lead and tail ends of said length as they are held by said flyer means; and

control means for actuating each of said above-mentioned means in a predetermined sequence.

4,113,197

CIGARETTE PAPER SPLICING APPARATUS

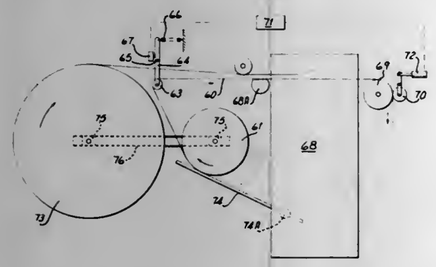
Timothy Cardell Harrington, and Hugh MacDonald Arthur, both of London, England, assignors to Molins Limited, United Kingdom

Filed Nov. 24, 1976, Ser. No. 744,880

Claims priority, application United Kingdom, Dec. 1, 1975, 49266/75

Int. Cl.² B65H *19/14, 69/06*

U.S. Cl. 242—58.1 **6 Claims**



1. A web splicing apparatus for joining the trailing end of a web on one reel (especially the paper web used as the cigarette wrapper in a continuous rod cigarette making machine) to the leading end of a web on a stand-by reel, comprising a web splicing device through which the web drawn from the in-use reel is arranged to pass; a movably mounted web guide means supporting both said reels such that both of the webs pass on the same side of said guide with the in-use web nearest to and tensioned around the guide, before reaching the web splicing device; means for urging the web guide towards the in-use web; means for detecting movement of the web guide when tension is lost in the in-use web, indicating that the web is about to expire, and for thereupon initiating operation of the web splicing device to join the in-use web to the stand-by web; and wherein said supporting means includes movable mounting means for supporting each reel so that each reel is movable between a first position which is occupied by the stand-by reel when web splicing is about to take place and a second position which is occupied by the in-use reel when web splicing is about to take place, and means operable after splicing to move the reel that is in use after splicing from the first position to the second position, such movement having the effect of changing the path of the web so that the in-use web engages the guide member and thereby resets the guide member.

4,113,198

REEL FOR COILING STRIP

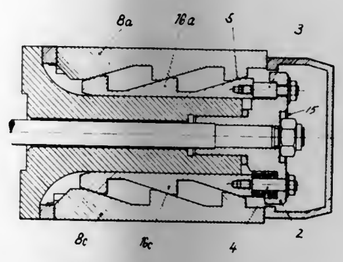
Alexander Rodach, Pforzheim, Fed. Rep. of Germany, assignor to Irma Ungerer Geb. Dollinger, Pforzheim, Fed. Rep. of Germany

Filed Mar. 21, 1977, Ser. No. 779,465

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636662

Int. Cl.² B21C *17/10*

U.S. Cl. 242—78.3 **9 Claims**



1. A reel for coiling strip, which comprises

a reel body formed with a stop,

at least three shell portions which are mounted on and are expansible relative to said reel body and comprise at least one first shell portion and at least one second shell portion, said shell portions having radial ribs inwardly projecting from the inner surface of said shell portions, the rib of said first shell portion having an enlarged foot portion, and

expanding and clamping means operable to expand said shell portions relative to said reel body,

said expanding and clamping means comprising a first radially movable clamping bar, which is in engagement with said first shell portion and defines a clamping gap therewith and is also in engagement with said second shell portion at one side of the latter, and a second radially movable clamping bar, which is formed with a recessed bearing surface in slidable engagement with said second shell portion on the side thereof opposite to said first clamping bar,

said reel body formed with first radial grooves for cooperation with the ribs and second radial grooves for cooperation with said clamping bars, said stop projecting inwardly in a respective one of said first radial grooves, that is in opposition to said foot portion,

said first clamping bar being radially outwardly movable to expand said first shell portion, urging said foot portion into engagement with said stop, and adapted to clamp a strip end portion in said clamping gap when said foot portion is in engagement with said stop,

said second shell portion and said reel body comprising cooperating constraining means permitting said second shell portion to move only parallel to said gap, and

said second shell portion being arranged to be expanded relative to said reel body parallel to said gap in response to outward radial movements of said first and second expanding bars and constituting a transition member adapted to support a strip portion adjacent to said strip end portion when the latter is clamped in said gap.

4,113,199

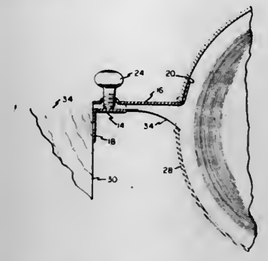
TAPE REEL HOLDER

Angelo Marino, 590 Randolph Rd., Middletown, Conn. 06457

Filed Jun. 10, 1977, Ser. No. 805,587

Int. Cl.² B65H *17/52*

U.S. Cl. 242—106 **6 Claims**



1. A tape reel holder having a body and means for the connection of a tape reel to said body, said body comprising a horizontal surface having one end thereof bent upwardly at an angle to form a lip, a member parallel to and bent under the other end of said horizontal surface, a vertical member bent downwardly from said parallel member, said vertical member located at one end of said body and said lip located at the other end of said body, whereby a tape reel may be hooked onto said lip and a tape may be introduced edgewise between a space formed by said horizontal surface and said parallel member.

4,113,200

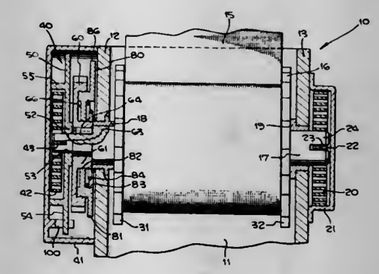
SAFETY BELT RETRACTOR WITH CONJUGATE RETURN SPRING MEANS

Akira Tanaka, Northridge, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.

Filed Jul. 1, 1976, Ser. No. 701,504

Int. Cl.² A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107 **5 Claims**



1. In a safety belt retractor having a belt storage reel including a reel shaft, first and second biasing means for biasing said reel toward a belt wound condition and means for selectively blocking out the bias of one of said first and second biasing means operable in response to a slight reel rewinding rotation to provide a reduced rewind bias on said reel, the improvement in said means for selectively blocking comprising the provision of:

ratchet means connected to said reel for rotation therewith and having ratchet teeth facing in the reel rewind direction;

pawl means for engaging said ratchet teeth; and

pawl carrier means rotatably mounted on said retractor and mounting said pawl means for movement on said carrier relative to said ratchet teeth between ratchet teeth engaging and non-engaging positions, and wherein

said one of said first and second biasing means comprises a spring having one end connected to said reel shaft and an opposite end connected to said pawl carrier means whereby the bias of said one of said first and second biasing means is blocked when said pawl means is in said ratchet teeth engaging position.

4,113,201

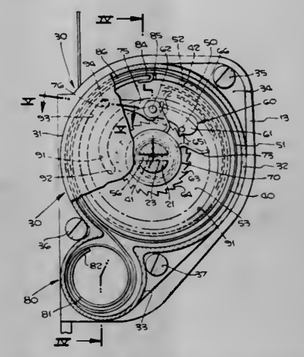
EXTENDED LOW TENSION RANGE DUAL TENSION SAFETY BELT RETRACTOR

Avraham Ziv, Sepulveda, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.

Filed Apr. 27, 1977, Ser. No. 791,477

Int. Cl.² A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107 **12 Claims**



1. In a safety belt retractor having a frame, a belt storage reel rotatably mounted to said frame, a rewind spring means for biasing said reel in a belt rewind direction under the urging of a first bias, tension reducing means for providing a second rewind bias on said reel of an amount less than said first bias to provide a reduced tension on said belt, activating means for activating said tension reducing means in response to reel rotation in a predetermined manner, the improvement in means for deactivating said tension reducing means in response to reel rotation under the urging of said second bias comprising the provision of:

spiral cam surface means mounted to said frame and presenting a spiral surface having an extent of more than one full revolution about a spiral center;

cam follower means mounted to said frame for movement along said surface;

means for driving said cam follower means along said surface in direct response to rotation of said reel; and

means operated by radial displacement of said cam follower means relative said spiral center due to travel of more than one full revolution about said center for deactivating said tension reducing means.

4,113,202

AIR-BORNE TRANSPORTATION SYSTEM CONVEYING TRUCK

Eijiro Ueno, Tokyo, Japan, assignor to Ueno Kohgyo Limited, Tokyo, Japan

Filed Apr. 7, 1977, Ser. No. 785,600

Claims priority, application Japan, Dec. 27, 1976, 52-159989

Int. Cl.² B65G *51/06*

U.S. Cl. 243—33 **2 Claims**

1. An air-borne transportation vehicle for transporting articles through a transportation tube, said vehicle comprising:

a container within said tube;

a closeable cover on one side of said container;

rotational cylindrical shafts projecting from opposite ends of said container;

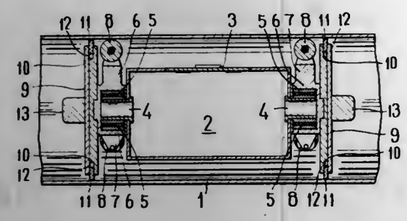
bearings surrounding and movable about each of said shafts;

pads mounted on the circumference of said bearings,

whereby said pads can rotate about said shafts on said bearings;

at least three support legs attached to and equally spaced about each of said pads, said legs extending radially from said pads;

at least one wheel rotatably mounted on each of said legs and in contact with the inside of said tube;



seal plates secured to the ends of said pads and longitudinally spaced from said legs and wheels, said seal plates each having a circumferential groove therearound;

seal member means slidably fitted into said groove in said seal plate and projecting against the inside of said tube for slidably sealing said container and said legs and wheels supporting said container in said tube; and

cushion means on the outsides of said seal plates for absorbing shocks when said vehicle hits an object in said tube.

4,113,203

METHOD AND APPARATUS FOR THRUST VECTOR CONTROL OF SPIN STABILIZED FLYING BODIES BY MEANS OF A SINGLE JET RUDDER

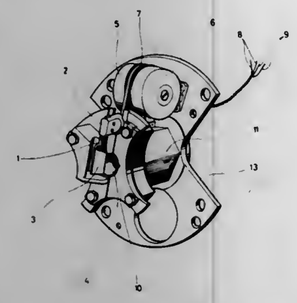
Heinz Kocher, Ottobrunn; Werner Kitzig, and Piet Jozef Witteveen, both of Munich, all of Germany, assignors to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn, Germany

Filed Jul. 12, 1966, Ser. No. 566,178

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1965, B 82920

Int. Cl.² F42B *15/00*

U.S. Cl. 244—3.11 **10 Claims**



1. In a method for the control, by a single control force producing device, of a flying body rotating about its rolling axis, and utilizing control signal producing means producing coordinated Cartesian horizontal and vertical control signals and supplied with reference signals produced by the flying body in accordance with its angular position about its rolling axis: the improvement comprising utilizing said reference signals to produce, in said control signal producing means, a sawtooth voltage in which each sawtooth voltage pulse corresponds to a 360° rotation of said flying body; utilizing each sawtooth voltage pulse to produce at least three function potentials spaced from each other by 90°; individually comparing each function potential with said Cartesian control signals to produce a respective pulse width modulating output potential; and combining said pulse width modulating potentials, corresponding to each 360° rotation of said flying body, to produce a control signal potential transmitted to said flying body, and which is phase rigid with respect to the angular position of said flying body about its rolling axis and contains, for the respective 360° rotation of said flying body, control information, for said control force producing device, which is separate for the vertical and horizontal directions and is in timed sequence.

4,113,204

AUXILIARY CONTROL OF VEHICLE DIRECTION

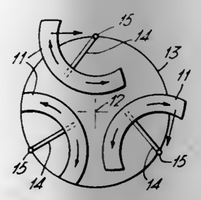
Stanley Leek, Hatfield, England, assignor to Hawker Siddeley Dynamics Limited, England

Filed Feb. 22, 1977, Ser. No. 770,793

Claims priority, application United Kingdom, Feb. 26, 1976, 7596/76

Int. Cl.² F42B *15/16, 19/01*

U.S. Cl. 244—3.21 **9 Claims**



1. An auxiliary aerodynamic or hydrodynamic control surface assembly for a vehicle travelling through a fluid medium, comprising a plurality of retractable arcuate control surfaces each pivotally mounted to be swung in opposite directions from the retracted position so as to protrude at one end or the other from a housing of generally circular cross-section into which they retract; and wherein each control surface is carried on the inner end of an arm that is mounted on a single pivot at or adjacent the circular periphery of the housing, the arm extending from the pivot in a generally inward radial direction of the housing when the control surface is retracted, and the arm pivots being spaced equidistantly around the casing periphery and having pivot axes parallel to the longitudinal axis of the casing.

4,113,205

AERODYNAMIC LIFTING MECHANISMS

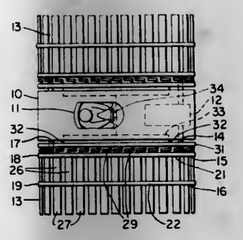
Harry Shaw, Aldershot, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jun. 7, 1977, Ser. No. 804,237

Claims priority, application United Kingdom, Jun. 16, 1976, 24987/76

Int. Cl.² B64C *39/00*

U.S. Cl. 244—20 **1 Claim**



1. An aircraft comprising:

a body with two sides;

an engine mounted within said body;

means on each side of said body for lifting said aircraft including: a first shaft extending in a horizontal plane and perpendicular to the direction of flight of said aircraft, rotatably mounted and drivable by said engine; first and second toothed pulleys axially spaced apart on and secured to said first shaft for rotation therewith; a second shaft horizontally spaced apart from and extending parallel to said first shaft; first and second rotatable toothed pulleys mounted on said second shaft in co-planar relationship respectively with said first and second pulleys on said first shaft; a first continuous toothed belt connecting said first pulleys and having a plurality of trunnion eyes; a second continuous toothed belt connecting said second pulleys and having a plurality of trunnion eyes; a plurality of sub-shafts rotatably mounted in said trunnion eyes and extending between said first and second belts; an aerofoil mounted on each of said sub-shafts between said first and second belts; an aerofoil mounted on each of said sub-shafts outboard of said second belt; for each of said sub-shafts, a lever having a first end secured to said sub-shaft, each said lever having a second end; a continuous member movably mounted on said body, said continuous member having a contour which substantially follows the contours of said first and second belts; said second ends of said levers being constrained to follow said contours of said continuous member; and

a control member, operable by a pilot, operatively connected to said continuous members on each side of said body for moving said continuous member relative to said body and hence to said belts and so varying the angles of attack of said aerofoils relative to airflow past said aircraft.

4,113,206

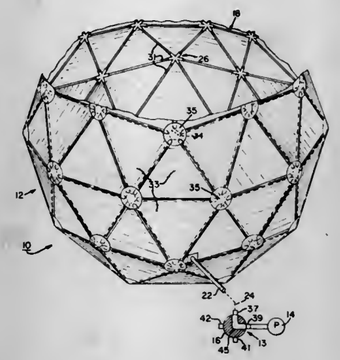
LIGHTER-THAN-AIR APPARATUS AND METHOD OF UTILIZING SAME

David C. Wheeler, 240 Tower Rd., Barrington, Ill. 60010

Filed May 16, 1977, Ser. No. 797,290

Int. Cl.² B64B *1/40*

U.S. Cl. 244—31 **10 Claims**



1. Lighter-than-air apparatus, comprising:

a light-weight inner rigid frame of spherelike shape having coarse openings therein, said frame including a plurality of light weight elongated members joined fixedly together at their ends to form a geodesic shape;

a thin, pliable air-tight outer envelope disposed in overlying relationship over said frame, said envelope having a sealable opening therein, said envelope being at least partially evacuated to render said apparatus lighter than air, said envelope including a group of thin flexible high tensile strength sheets disposed in an overlapping side-by-side manner with adjacent ones of said sheets overlapping at their marginal edges, and sealed together at said overlapping marginal edges, each one of said sheets being composed of Mylar film; and

outer frame means disposed within said envelope surrounding and engaging said inner frame for helping support said envelope, said outer frame means being composed of a stiff rigid open mesh material, the coarse openings in said inner frame being larger than the openings in said outer frame means.

4,113,207

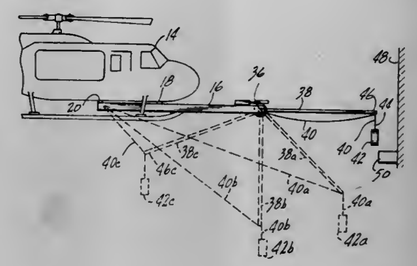
AIRBORNE RESCUE DEVICE

David G. Dalziel, 83 E. Laurel Ave., Lake Forest, Ill. 60045

Filed Sep. 14, 1977, Ser. No. 833,170

Int. Cl.² B64D *25/02*

U.S. Cl. 244—137 P **9 Claims**



1. An airborne rescue device comprising:

a. an elongated housing; said housing having an elongated slot therein, said housing fixedly secured at one end thereof to the body of a helicopter;

b. a rod, one end of said rod pivotably secured to the other end of said housing;

c. means to selectively position said rod from a storage position within said housing to an extended position wherein said rod is substantially disposed outwardly and parallel to said housing;

d. a flexible line;

e. means to exert controlled tension forces on one end of said line;

f. a pulley-like device swivelably attached to the other end of said rod, a portion of the length of said flexible line passing over the surface of said pulley-like device; and

g. means to independently manually selectively control said positioning means and said tensioning means.

4,113,208

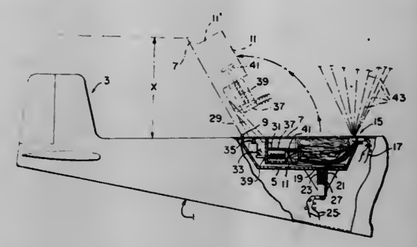
AIRCHUTE EJECTION

Dario John Manfredi, 45-38 48th St., Woodside, N.Y. 11377

Filed Nov. 8, 1976, Ser. No. 739,709

Int. Cl.² B64D *17/70*

U.S. Cl. 244—139 **1 Claim**



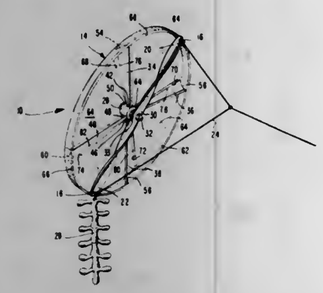
1. In an aircraft having a fuselage and including, in combination, a tail assembly, means under the control of the pilot of the aircraft for ejecting a parachute into operative position connected to the fuselage of the aircraft for the safe vertical descent thereof, a cradle for the storage of said parachute, the cradle being open at both ends, and said cradle removably

disposed within the fuselage, the parachute being ejectable through one open end of said cradle, said cradle with the contained parachute being movable outwardly from the fuselage under the control of said means and into operative position for ejecting the parachute from said cradle into operative position supporting the fuselage, and the open end of said cradle through which said parachute is ejected when said cradle is in operative parachute ejecting position being in a horizontal plane above the tail assembly of the aircraft, and said fuselage being provided with a well, a closure member therefor openable under the control of said means, and said cradle being fixed to the underside of said closure, the open end of said cradle through which said parachute is ejected being disposed in uppermost position when said closure member is in fully opened parachute ejecting position, and a latching mechanism is provided for maintaining said closure member in well closing position, said latching mechanism being unlatched by said first named means for swinging movement of said closure member to fully open parachute ejecting position and further means extending through said well and in engagement with said cradle and operable by said first named means to provide an upward thrust to said cradle thereby forcing said closure member and the attached cradle into the airstream for moving it to fully open parachute ejecting position, additional means is mounted on said closure member adjacent to the other open end of the cradle and said additional means being caused to operate when said closure member is in open parachute ejecting position, the additional means when operated being in engagement with said parachute and operable to eject said parachute from the cradle.

4,113,209
ROTATING KITE

Lewis Rodgers, 27470 Cochise Ave, Barstow, Calif. 92311

Continuation of Ser. No. 721,340, Sep. 8, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,979
Int. Cl.² B64C *31/06*
U.S. Cl. 244—153 A **7 Claims**

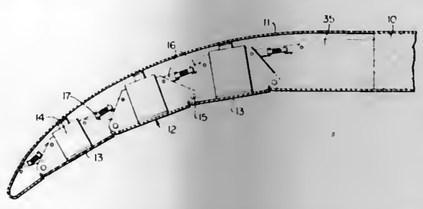


1. A rotating kite comprising:
an elongated rigid control arm having a first free end and a second free end, said control arm having pitched blades to interact with the air tending to cause rotation of said control arm in a preferred direction of rotation;
means for affixing a kite string to said first and second free ends of said control arm;
a spindle rotatably affixed to the central portion of said control arm, said spindle being rotatable around the longitudinal axis thereof, said longitudinal axis of said spindle being substantially normal to the longitudinal axis of said control arm;
a plurality of rigid air engaging arms each fixedly secured on a first end thereof to said spindle and being radially disposed therefrom, the longitudinal axis of each of said air engaging arms being substantially perpendicular to said longitudinal axis of said spindle;
a ring-like element dimensioned to enclose the second free ends of each of said air engaging arms, said second free ends each being fixedly secured thereto, and
a membrane fixedly secured to the free edges of said ring-like element farthermost from said control arm, said membrane covering the area enclosed by said ring-like element, said membrane having a plurality of slots located therein, each of said plurality of slots being adjacent one of each of said plurality of air engaging arms, said slots permitting air currents imparting force on said air engaging arms to pass therethrough, said air currents causing said spindle to rotate.

4,113,210
FLEXIBLE AEROFOILS

Donald Pierce, Aldershot, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 28, 1977, Ser. No. 781,866
Claims priority, application United Kingdom, Apr. 1, 1976, 13337/76
Int. Cl.² B64C *3/48*
U.S. Cl. 244—219 **3 Claims**



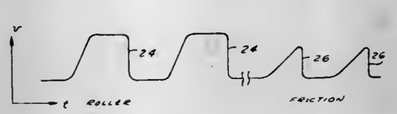
1. A flexible aerofoil comprising:
an internal structure including a bracket member;
a suction skin attached to said internal structure;
a pressure skin;
a series of rotatable members extending chordwise from said bracket member, each of said rotatable members being joined to at least one adjacent member by at least one joint to form a chain-like structure;
said pressure skin comprising a chordwise series of spanwise extending segments positioned adjacent to one another to provide a substantially continuous surface, each of said segments being secured to one of said members, said joints being adjacent said pressure skin, closer to the pressure skin than the suction skin;
a rod mounted for movement only in a spanwise direction for each of said joints;
means, adjacent said suction skin, closer to the suction skin than the pressure skin, connecting each of said rods to two adjacent ones of said members such that movement of said rod causes relative rotation of the joined rotatable members about spanwise extending axes passing through said joints and a consequent change in camber of said pressure skin; and
means connecting said suction skin to said rotatable members such that relative rotation of said rotatable members also causes a change in camber of said suction skin and such that the separation between said suction skin and said pressure skin is maintained in a predetermined relationship.

4,113,211
HOT BOX DETECTOR BEARING DISCRIMINATOR CIRCUIT

Arthur J. Glazar, Kings Park, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,700
Int. Cl.² B61K *9/04*
U.S. Cl. 246—169 A **5 Claims**

1. A method of discriminating between roller bearings and friction bearings in a railroad hot box detector system comprising the steps of:
a. scanning the bearings of a railroad car on a section of track with an infrared scanner to generate an output signal in response to and having a waveform indicative of the infrared radiation of and type of bearing scanned;
b. feeding said waveform into a first integrating circuit to

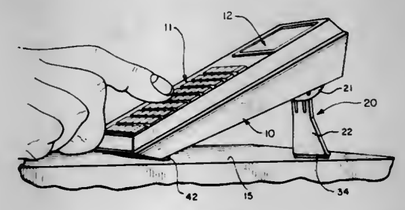


obtain a value indicative of the overall area under said waveform;
c. feeding a preselected portion of said waveform into a second integrating circuit to obtain a value indicative of the area of the preselected portion of said waveform; and,
d. comparing the outputs of the first and second integrating circuits whereby to obtain a ratio indicative of the nature of the bearing being scanned.

4,113,212
COLLAPSIBLE ELECTRONIC CALCULATOR STAND

Paul Coriden, 5501 W. Irving Park Rd., Chicago, Ill. 60641

Filed Jun. 8, 1977, Ser. No. 804,782
Int. Cl.² F16F *15/00*
U.S. Cl. 248—13 **6 Claims**

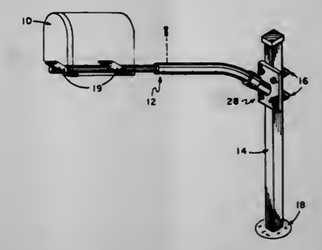


1. A collapsible stand for small electronic calculators, comprising:
a base, and a leg pivotably mounted to the base for movement between an open position, for supporting the calculator at an angle, and a collapsed postion, the base and the leg formed from plastic;
the base including a flat base member and two parallel, spaced apart, walls extending upward from the base member, the bottom of the base member having an adhesive containing layer for fastening the base to the back of a calculator;
the leg having a non-skid foot at one end offset with respect to the longitudinal plane of the leg, for resting on a surface when the leg is in its open position, the opposite end of the leg having a pair of outwardly extending pins, the leg's pin end formed into a center and two outer arm members separated from one another by grooves, each of the outer arm members carrying a pin, the center arm member having a stop for resting against the base member and supporting the leg when the leg is in its open position;
each of the walls having an opening in which one of the pins is disposed and having an inwardly projecting stud for cooperating with the leg to lock the leg into position, the distance between th studs being less than the distance between the outer edges of the leg's two outer arm members;
the non-skid foot and the stop being offset between 100° and 120° from the plane of the leg;
whereby the walls flex outwardly and the outer arm members of the leg flex inwardly as the leg passes over the studs, as the leg moves between its open and collapsed positions.

4,113,213
MAIL BOX SUPPORT

Guy R. Gay, and Nell Gay, both of P.O. Box A1, Weeks Mills, Me. 04361

Filed Mar. 10, 1977, Ser. No. 776,123
Int. Cl.² B65D *91/00*
U.S. Cl. 248—128 **1 Claim**



1. An improved mail box support arm device for affixation to a support post comprising:
a tubular arm base having a first and second end;
a tubular arm extension having a first and second end, said first end adapted to be slideably inserted within the first end of said arm base and affixed in a selected one of a plurality of positions to said arm base;
mail box mounting means positioned at the second end of said arm extension;
a shaft receipt member positioned within said arm base at its second end, said arm base being bent at a substantially 45° angle in proximity to said shaft receipt member, said shaft receipt member including at least one ball bearing member affixed therein and said arm base further having defined therein in proximity to said shaft receipt member a pin entry aperture;
a back plate member having defined therein at least one aperture for receipt of means to affix said device to a support post;
a shaft having a first and second end, the second end of said shaft extending from said back plate member at a substantially 45° angle, and having a shaft aperture defined laterally therethrough near its first end, said shaft's first end being inserted into said ball bearing member;
a shaft collar member surrounding a portion of said shaft in the vicinity of the second end of said shaft;
a pin member adapted to be inserted through said pin entry aperture in said arm base and into said shaft aperture so as to hold said arm base to said shaft; and
an arm base collar member affixed to said arm base surrounding said shaft receipt member and extending so as to surround and cover the area of contact between said shaft collar member and said shaft receipt member.

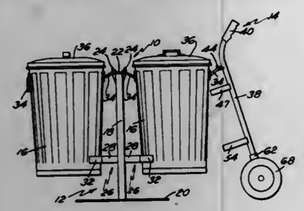
4,113,214
TRASH CAN TRANSPORTER

Leo Francis Dubois, Tower Hill Rd., Cumberland, R.I. 02864

Continuation-in-part of Ser. No. 619,682, Nov. 13, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,845
Int. Cl.² A47G *23/02*
U.S. Cl. 248—146 **2 Claims**

1. A mobile transporter for use in lifting a loaded garbage can onto or from a vertical support on which a flange is secured at the upper end thereof and a supporting bracket is secured intermediate the ends thereof, wherein the garbage can includes a body that tapers outwardly from bottom to top and has opposed handles joined to said body, one of said handles being engageable with said flange at the upper end of said

vertical support and the can body being engageable with said supporting bracket when said garbage can is mounted on said vertical support, the improvement comprising a central column having a U-shaped carriage joined to the lowermost end thereof and a handle joined to the uppermost end thereof, an axle extending through said carriage, wheels mounted on said axle for rotation relative to said carriage, an upper can brace and a lower can brace mounted on said column in spaced vertical relation for supporting said can during the transporting movement thereof, each of said can braces being formed in a one-piece construction and including outer angular side portions having ends that are joined to said column, inner angular side portions joined to said outer angular side portions and reversely bent relative thereto, and a central portion joined to said inner angular side portions and cooperating therewith



to define a pocket that is spaced forwardly relative to said column, the outer angular side portions of said lower can brace defining an angle with respect to said central column that is less than the angle that is defined therewith by the outer angular side portions of said upper can brace, wherein the pocket formed by said lower can brace extends more forwardly relative to said column than the pocket formed by said upper can brace, the pockets of each of said braces engaging the body of the can in supporting relation when said can is mounted on or lifted from said support by the transporter, the location of the can brace pockets compensating for the tapered configuration of said can body, and a handle bracket joined to said column adjacent to the upper end thereof and receiving the handle of the can thereover when said can is to be mounted on or removed from the vertical support by the transporter.

4,113,215

TILT MOUNTING HEADS

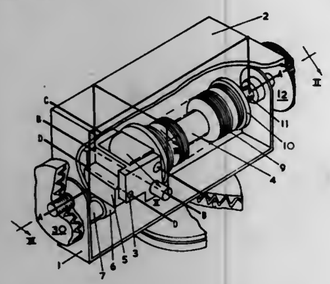
Harold Reginald Stapleton, Pakenham, England, assignor to W. Vinten Limited, Bury St. Edmunds, England

Filed Jan. 10, 1977, Ser. No. 757,933

Claims priority, application United Kingdom, Jan. 17, 1976, 01888/76

Int. Cl.² F16M *11/12*

U.S. Cl. 248—183 **16 Claims**



1. A tiltable mounting for an article, such as a camera or the like, comprising

first means for pivotably mounting about a first axis a tiltable support member on a base member, and

second means operably connecting said tiltable support member and said base member wherein said second means comprises a spring loaded cam operable on a cam follower which produces in operation a varying moment of force substantially equal and opposite to the moment of force produced when said tiltable support member with said article mounted thereon is tilted about said base member.

4,113,216

APPARATUS FOR HANGING A BOARD

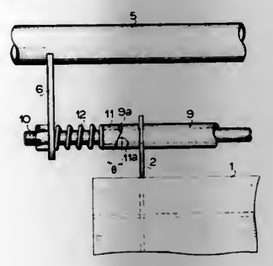
Takeshi Fuse, Kamakura; Toshio Yajima, Yokohama; Isao Hino, Amagasaki, and Shohei Oka, Minoo, all of Japan, assignors to Osaka Prefectural Office, Osaka, Japan

Filed Jan. 21, 1977, Ser. No. 761,278

Claims priority, application Japan, Jan. 23, 1976, 51-006864

Int. Cl.² A47B *96/06*

U.S. Cl. 248—204 **3 Claims**



1. An apparatus for suspending a sign board from a support, comprising a shaft for suspending the sign board from the support, a first cam sleeve rotatably surrounding a portion of the shaft and supporting the sign board, a second non-rotatable cam sleeve surrounding another portion of the shaft, and a spring for biasing said first and second cam sleeves axially into engagement with each other, one of said first and second cam sleeves being axially movable; each of said first and second cam sleeves having cam surfaces with a lower face, a higher face and a slant face connecting the lower and higher faces, said spring biasing the cam surfaces towards each other so that when wind pressure on the sign board is weaker than a first predetermined strength, the condition is maintained in which both slant faces of said first and second cam sleeves, and the higher face of the one and the lower face of the other correspond to and contact with each other, when wind pressure is greater than the first and less than a second predetermined strength, the first cam sleeve rotates and the rotating force of the sign board is absorbed by the compression of said spring caused by the relative sliding movement in an axial direction of one of the first and second cam sleeves and when wind pressure is greater than the second predetermined strength the first cam sleeve further rotates so that both higher faces of the first and the second sleeves contact each other so as to have the sign board rotate only against the force of sliding friction between the higher faces, the pressure of wind being exerted on the sign board being reduced by said rotation.

4,113,217

APPARATUS FOR REMOVABLY MOUNTING EQUIPMENT TO A VEHICLE

Joseph J. O'Connell, Albuquerque, N. Mex., assignor to Scientific Dimensions, Inc., Albuquerque, N. Mex.

Filed Apr. 7, 1977, Ser. No. 785,326

Int. Cl.² E05B *73/00*; F16B *41/00*

U.S. Cl. 248—221.3 **3 Claims**

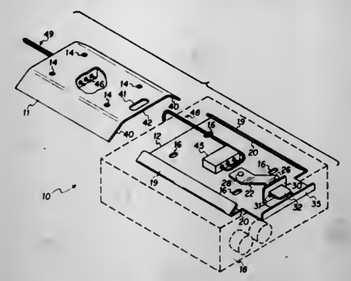
1. Apparatus for removably mounting equipment to a vehicle, comprising:

first and second generally planar frames, one of said frames adapted for attachment to the equipment and another of said frames adapted for attachment to the vehicle,

members defining grooves along opposite edges of said second frame,

said first frame having bends to form wings slideably receivable in a direction along said grooves and having a centrally located oblong hole for receiving a spring locking member,

and a spring locking member biased in a direction away from and attached at an end to said second frame, having a bend



for engagement with walls of said oblong hole adapted to engage said oblong hole at least at four opposing locations to constrain the motion therewithin in a direction transverse to said slideable direction, to urge said wings of said first into engagement with said grooves of said second frame to constrain any relative motion therebetween, and to lock said first and second frames against sliding relative movement.

4,113,218

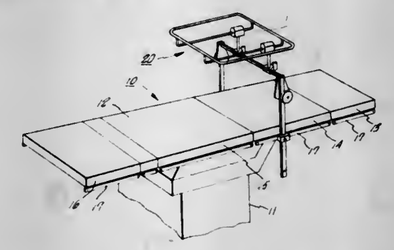
ADJUSTABLE FRAME ASSEMBLY FOR SUPPORTING A SURGICAL TRAY

Gerald S. Linder, 16693 Charmel La., Pacific Palisades, Calif. 90272

Filed Sep. 13, 1976, Ser. No. 722,798

Int. Cl.² A61G *13/00*

U.S. Cl. 248—291 **18 Claims**



1. An adjustable frame assembly adapted for attachment to an operating table for receiving and supporting a surgical tray above the operating table, comprising in combination:

(a) first and second upright supporting columns, each having an upper and a lower end, the lower end of each of said first and second supporting columns being adapted for secure attachment to the operating table;

(b) a horizontally-extending bar mounted between the upper ends of said first and second supporting columns for limited angular rotation about the longitudinal axis of said bar with respect to said supporting columns;

(c) at least one locking means intercoupled between one end of said horizontally-extending bar and one of said first or second supporting columns for locking the angular position of said horizontally-extending bar with respect to said one supporting column;

(d) first and second blocks spaced apart and mounted upon said horizontally-extending bar intermediate the ends of said bar;

(e) first and second vertically-extending posts supported, respectively, by said first and second blocks, said first and second posts extending substantially perpendicular to the longitudinal axis of said horizontal bar;

(f) a substantially rectangular open frame member adapted for receiving and supporting a surgical tray; and

(g) first and second connecting members supported, respectively, by the upper ends of said first and second vertically-extending posts, said first and second connecting members having vertically-extending ends attached to said rectangular open frame member.

4,113,219

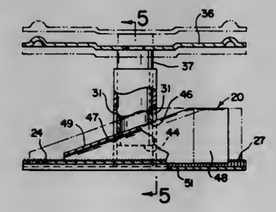
ADJUSTABLE PEDESTAL FOR ELEVATED FLOORS

David F. Mieyal, Strongsville, Ohio, assignor to Doun Products, Inc., Westlake, Ohio

Filed Jun. 3, 1977, Ser. No. 803,078

Int. Cl.² E04G *25/00*

U.S. Cl. 248—354 R **7 Claims**



1. A pedestal assembly comprising a lower base, and an upper carrier element, intermediate support means extending between the base and carrier element, elements for maintaining the carrier element in generally vertical alignment with the base, said support means including adjustment means for adjustably determining the height of the carrier element above the base within a range of adjustment, said adjustment means including a wedge element movable for adjustment of the carrier element relative to the base in a direction substantially perpendicular to the direction of height adjustment, means for locking said wedge element in a selected position of adjustment, said wedge locking means being arranged to be responsive to a downward force on said carrier element, said wedge locking means including taper locking means.

4,113,220

ADJUSTABLE GAS CYLINDER CHAIR CONTROL

Robert H. Godwin, and Herbert E. Collignon, both of Evansville, Ind., assignors to Bliss & Laughlin Industries Incorporated, Oak Brook, Ill.

Filed Jan. 31, 1977, Ser. No. 764,371

Int. Cl.² F16M *11/00*; F15B *15/17*

U.S. Cl. 248—400 **4 Claims**

1. An adjustable gas cylinder control comprising, in combination:

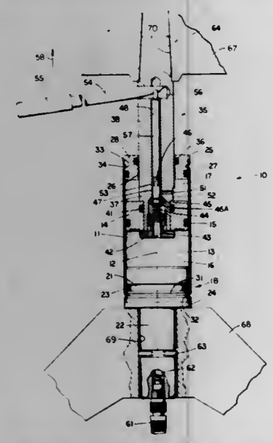
(a) a single tube having an axis and defining a single cylinder bore;

(b) a single piston in sealing engagement with said tube and slidable therein, said piston dividing said tube into a first and second compartment;

(c) a first end plug having a proximal portion and a distal portion, the proximal portion being adapted to sealably fit within one end of said tube thereby sealably enclosing the first compartment thereof;

(d) a second end plug having a central bushing portion and being adapted to sealably fit within the other end of said tube thereby sealably enclosing the second compartment thereof;

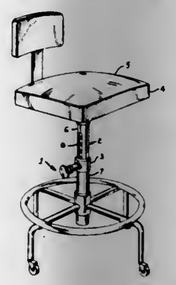
(e) a single spindle in sealing engagement with the bushing in said second end plug and slidable therein, said spindle having a proximal and a distal portion, the proximal portion being axially reciprocable in said tube, said piston being fixedly mounted on the proximal end of said spindle and reciprocable therewith;
(f) gas inlet means connected to said first end plug for charging and discharging the sealed first compartment of said tube with gas;
(g) valve means mounted in said piston and said spindle for allowing gas to flow between the first and second compartment of said tube thereby adjusting the position of said piston in said tube;
(h) lever means connected to the distal portion of said spindle for actuating said valve means;
(i) means for structurally supporting a chair seat and a chair base solely on the distal portion of said spindle and the distal portion of said first end plug, said first and second end plugs additionally comprising an abutment flange



adapted to abut the ends of said tube when said first and second end plugs are sealably fitted therein, said gas inlet means comprising an adjustable valve centrally located on the distal end of said first end plug and a central bore through said first end plug connecting said adjustable valve with the first compartment of said tube, said adjustable valve being adapted to allow easy charging and discharging of the sealed first compartment in said tube;
(j) a chair base having a central housing, the distal portion of said first end plug having a length of about twice the cross-sectional diameter thereof and including said adjustable valve being inserted in the housing in said chair base, the abutment flange on said first end plug being adapted to bear against said chair base adjacent the central housing therein; and
(k) a chair seat having a receiving mount, the distal end of said spindle located distally from said lever means being tapered and inserted in the mount in said chair seat to structurally support said chair seat thereon and above and apart from said chair base.

4,113,221
LOCKING DEVICE
Norvin J. Wehner, deceased, late of Kansas City, Mo. (by Virginia L. Wehner, surviving spouse), assignor to Cramer Industries, Inc., Kansas City, Kans.
Filed May 27, 1977, Ser. No. 801,055
Int. Cl.² F16M *11/04*
U.S. Cl. 248—408 **3 Claims**

1. In a chair structure having a vertically adjustable seat supported on a post depending therefrom and slidably received in a bore of a support standard, a locking device therefor comprising:
(a) a body member having one end portion thereof mounted on a stationary support standard, said body member having a bore extending longitudinally therethrough and communicating with a mounting bore in said support standard;
(b) an elongated plunger slidably positioned within the bore in said body member and having one end portion thereof movable into a selected one of a plurality of sockets in a post depending from a seat portion of a chair structure and slidable in said support standard bore;
(c) resilient means mutually engaging said body member and said plunger for urging the one end portion of said plunger outwardly beyond the one end portion of said body member and into a selected one of the sockets in said post;
(d) means defining a helical cam surface on said body member and inclined longitudinally between a shoulder adjacent the other end portion thereof toward said one end portion and terminating in a pocket spaced from said other end portion, said body member pocket defined by body



member portions extending over the adjacent cam surface in spaced relation thereto;
(e) a cam follower pin connected to the other end portion of said plunger and extending radially outwardly thereof, said pin being movably engaged with said cam surface and receivable into said pocket in response to rotation of said plunger and said resilient means moving said follower pin down said helical incline to extend said one end portion of the plunger into a selected socket, said pin being removable from said pocket in response to rotation of said plunger and movement up said inclined cam surface compressing said resilient means and retracting said one end portion of the plunger from said socket; and
(f) a handle sleeved over said other end portion of said body member and enclosing said helical cam surface and connected to said plunger by said cam follower pin, said handle being helically movable relative to said body member for moving said follower pin along said cam surface and into said pocket and extending said plunger longitudinally through said body member and into a selected one socket in said post.

4,113,222
INTRAVENOUS POLE
Jerry C. Frinzel, 3208 Mission Ave., Carmichael, Calif. 95608
Filed May 31, 1977, Ser. No. 801,478
Int. Cl.² F16M *11/00*
U.S. Cl. 248—412 **7 Claims**

1. An intravenous pole comprising:
a. a tube extending from a lower end to an upper end;
b. a hollow stem partially disposed within said tube in telescoping relation thereto, said hollow stem having a bottom end inside said tube and a top located above said upper end of said tube;
c. a pair of oppositely extending horizontal support bars mounted on said top end of said hollow stem said support bars including means for supporting an intravenous bottle;

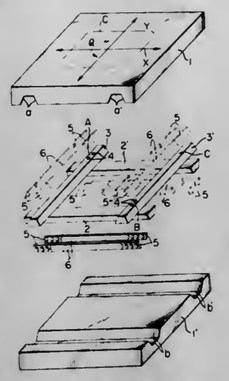
d. clutch means on said bottom end of said hollow stem for selectively engaging and disengaging the encompassing inside walls of said tube in order respectively to immobilize said hollow stem and to release said hollow stem;
e. an operating rod disposed within said hollow stem in telescoping relation thereto, said rod extending upwardly from a lower end in operating relation with respect to said clutch means to an upper end located above said top end of said hollow stem, said rod being movable between a first upper position in which said lower end of said rod actuates said clutch means and a second lower position in which said rod releases said clutch means;
f. trigger means mounted on said upper end of said operating



rod for urging said rod from said first position toward said second position, said trigger means including a crossbar centrally pivoted on said operating rod above said support bars and providing a pair of oppositely extending handles substantially parallel to said support bars when said rod is in said first upper position, and a pair of straps each depending from one of said handles into engagement with a respective one of said support bars, said support bars and said straps affording a stop limiting the upward movement of said rod; and,
g. spring means for urging said rod from said second position toward said first position, said spring means being effective to elevate said rod against the force of gravity but ineffective to resist a predetermined downward force.

4,113,223
CROSS-MOVABLE CARRIAGE
Yukio Kakizaki, Kawasaki, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed Feb. 14, 1977, Ser. No. 768,608
Claims priority, application Japan, Feb. 27, 1976, 51-20153
Int. Cl.² F16M *13/00*
U.S. Cl. 248—430 **4 Claims**

1. A cross-movable carriage comprising:
a movable base plate having two first guide grooves formed in one surface thereof;
a stationary base plate having two second guide grooves formed in one surface thereof;
two first guide members capable of fitting in said first guide grooves;
two second guide members capable of fitting in said second guide grooves;
one of said second guide members and one of said first guide members being fastened together to form a first assembly, the other of said second guide members and the other of said first guide members being fastened together to form a second assembly, said first and second assemblies being movable relative to each other to allow for variances in the position of said first and second guide grooves;
said guide members constituting a guide mechanism between

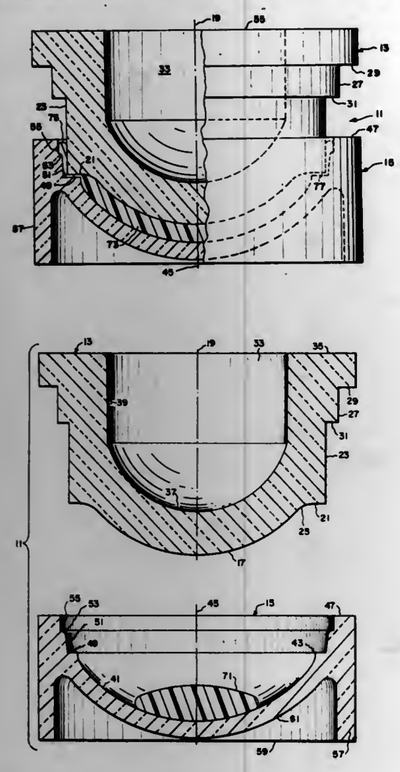


said movable base plate and said stationary base plate to permit said first guide members to fit in said first guide grooves and permit said second guide members to fit in said second guide grooves.

4,113,224
APPARATUS FOR FORMING OPTICAL LENSES
James A. Clark, Honeoye Falls; Donald V. Livesey, and Richard J. Wrue, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation-in-part of Ser. No. 564,403, Apr. 8, 1975, abandoned, and Ser. No. 693,402, Jun. 7, 1976, abandoned, said Ser. No. 693,402, is a division of Ser. No. 564,403, , which is a continuation-in-part of Ser. No. 466,933, May 6, 1974, abandoned. This application Jan. 27, 1977, Ser. No. 762,221
Int. Cl.² B29C *5/00*; B29D *11/00*
U.S. Cl. 249—105 **11 Claims**

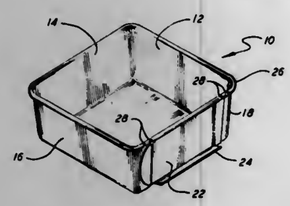
1. A lens mold comprising:
first and second cooperating mold members, said first mold member having a first mold surface, said second mold member having a second mold surface, said first and second mold surfaces cooperating to define a mold cavity, said first and second mold members including means for defining an annular reservoir, said first and second mold members also including means for defining an annular restriction interconnecting said reservoir with said mold cavity, said first and second mold members further includ-

ing means to align said mold members to control both the thickness and prism of the lens to be cast, said aligning



means being located on said first and second mold members between said reservoir and said mold cavity.

4,113,225
OPEN END BAKING PAN
Kenneth J. Corse, P.O. Box #181, Conklin, N.Y. 13748
Filed Jun. 10, 1977, Ser. No. 805,275
Int. Cl.² B41B *11/58*
U.S. Cl. 249—169 **3 Claims**



1. A baking utensil comprising:
three or more side portions and a bottom portion, one of said side portions having a removable member;
said removable member having one end thereof formed in a semi-circular pattern to enable said removable member to be used as a spatula to aid in removal of baked good product from said baking utensil;
a lip along a bottom of an opening of said side portion having a removable member to provide a leak-proof seal when said removable member is in place;
a curled lip around a top of said three or more side portions, said curled lip having one or more cuts therein to form sections of said curled lip which act as spring members to hold said removable member tightly in place.

4,113,226
APPARATUS TO ADJUST AND MAINTAIN THE DISTANCE BETWEEN WALL FORMS
Stanley Walski, Media, Pa., assignor to Con-Spec Devices Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 689,726, May 25, 1976, Pat. No. 4,058,285. This application Mar. 30, 1977, Ser. No. 782,877
The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.² E04G *17/08*
U.S. Cl. 249—216 **14 Claims**

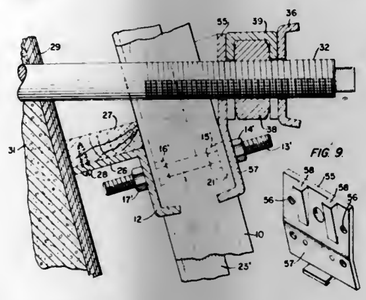


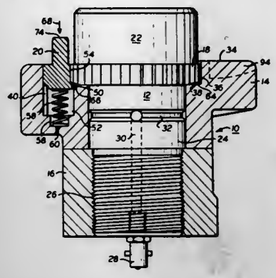
FIG. 9

1. Apparatus to adjust and maintain spacing between building members comprising
a front side plate having means to attach said front side plate to one of the building members,
a screw type wall tie adapted to extend between the building members and passing through said front side plate,
a nut mounted for rotation on said screw type wall tie,
means to enclose said nut attached to said front side plate and enclosing said nut,
said wall tie passing substantially through laterally centered openings in said front side plate and said nut enclosing means,
means to receive and attach to said screw type wall tie mounted on the opposite end of said wall tie and adapted to be attached to the other of the building members,
said means to enclose said nut including an auxiliary front side plate having U-shaped guide portions on laterally opposite ends of said auxiliary front side plate,
and means attaching said auxiliary front side plate to said front side plate.

4,113,227
CAM LOCK WITH VERTICAL PLUNGER
Irving Louis Cigliano, Oceanside, N.Y., assignor to Marine Moisture Control Co., Inc., Long Island, N.Y.
Filed Apr. 5, 1977, Ser. No. 784,702
Int. Cl.² F16L *23/02*
U.S. Cl. 151—54 **10 Claims**

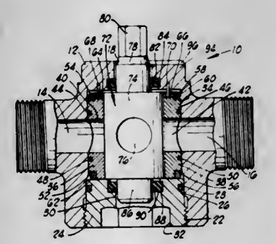
1. A coupling device for coupling together a pair of heavy pipes or hoses, comprising:
a clamp support;
a bolt threadedly received within and coupled to said clamp support, said bolt including a shank portion;
a rotable cam element retatable about said bolt and held to said clamp support as a unit; and,
moisture free releasable spring urged locking means to lock said cam element to said bolt to prevent rotation in any direction and for permitting the egress of liquid;
said releasable locking means including a ring gear fixed to said bolt and peripherally disposed on said shank portion, and

a spring urged plunger element carried by said cam element and movable in a direction parallel to the axis of said bolt,



said ring gear and said plunger having teeth axially aligned with the axis of said bolt and complementary to each other and adapted for engagement with each other.

4,113,228
ROTARY PLUG VALVE
James A. Frye, 1720 Drakestone, Oklahoma City, Okla. 73120
Continuation-in-part of Ser. No. 654,081, Feb. 2, 1976, abandoned. This application Oct. 26, 1976, Ser. No. 735,699
Int. Cl.² F16K *5/00, 5/18, 25/00*
U.S. Cl. 251—159 **8 Claims**



1. A rotary plug valve comprising:
a valve body defining a generally cylindrical bore and having inlet and outlet fluid passageways disposed therein on opposite sides of said bore, said bore being positioned transversely to said fluid passageways;
a pair of split, semi-cylindrical complementary liner members, including an upstream liner member and a downstream liner member, together forming a generally cylindrical liner positioned in said bore, said liner having inlet and outlet fluid passageways in said valve body, and said liner including a pair of longitudinally spaced annular grooves extending in substantially parallel planes and spaced along said cylindrical bore from each other;
a pair of radially elastically deformable, spaced retaining members disposed in tension around said liner and positioned in said annular grooves, said grooves having a depth at least equal to the thickness of the respective retaining member positioned therein whereby the outer cylindrical peripheral surface of said generally cylindrical liner is positioned radially outwardly at all points thereon from the radially outermost portion of each of said radially elastically deformable, spaced retaining members, and said retaining members are spaced radially inwardly from the valve body at a time when the outer cylindrical peripheral surface of said generally cylindrical liner is in contact with said valve body;
a cylindrical valve plug rotatably positioned within said generally cylindrical liner, and defining a flow passageway therein positioned for alignment and registry with said liner fluid passageways upon rotation, the dimensions of said valve plug, said liner members forming said liner and said retaining members being such that at pressures in the lower part of the working range of said valve, said retaining members are held in an elastically deformed condition and said valve plug and liner are maintained in forceful contact with each other independent of said valve body, and such that at relatively higher pressures above a predetermined intermediate pressure, said retaining members are elastically expanded by the force from the development of line pressure between said upstream liner member and said valve plug, and said upstream liner member and said valve plug separate, reducing the force required to open said valve; and
seal means interposed between said liner and said valve body about the peripheries of said fluid passageways in said liner.

4,113,229
SPHERICAL VALVE ASSEMBLY
Katsuji Fujiwara, 191, Nishitani, Hiroaka-cho, Kakogawa-shi, Hyogo-ken, Japan
Continuation of Ser. No. 621,127, Oct. 9, 1975, abandoned. This application Jun. 8, 1977, Ser. No. 804,589
Claims priority, application Japan, Oct. 18, 1974, 49/120475
Int. Cl.² F16K *25/00*
U.S. Cl. 251—174 **1 Claim**



1. A spherical valve assembly comprising:
a valve casing including an integrally formed main casing member and means defining a fluid passage through said valve casing;
means in said main casing member defining therein a valve stem supporting orifice and a sustaining stem supporting recess arranged in axial alignment with each other on opposite sides of said fluid passage defined through said valve casing;
a one-piece stem member including an upper valve stem portion, a flanged portion immediately adjacent thereto, a key portion adjacent said flanged portion and a sustaining stem portion extending from said key portion, said one-piece stem member being rotatably mounted within said valve casing to extend continuously across said fluid passage within and between said valve stem supporting orifice and said sustaining stem supporting recess with said upper valve stem portion fitted in said valve stem supporting orifice and with said sustaining stem portion fitted in said sustaining stem supporting recess thereby to mount said one-piece stem member to be rotatable about a substantially fixed immovable axis extending across said fluid passage;
a valve sphere having defined therethrough a fluid flow passage orifice adapted to be aligned with said fluid passage of said valve casing when said valve is in the open condition, said valve sphere being mounted upon said sustaining stem portion of said one-piece stem member and located within said fluid passage with said sustaining stem portion of said stem member extending in a direction generally perpendicularly to said fluid flow passage orifice in said valve sphere,
said valve sphere being structured to effect opening and closing of said fluid passage upon rotation of said one-piece stem member with simultaneous rotation therewith of said valve sphere;

fitting openings defined in said valve sphere arranged to receive therethrough said sustaining stem portion for mounting said sphere upon said one-piece stem member with said sustaining stem portion thereof extending completely across said fluid flow passage orifice of said valve sphere between said fitting openings thereby mounting said sphere upon said sustaining stem portion in an arrangement fixedly attaching said sphere relative to said one-piece stem member in tight engagement therewith;

a stem member receiving hole formed in said casing engaged about said flanged portion of said one-piece stem member;

a key slot formed in said valve sphere immediately adjacent one of said fitting openings thereon and having said key portion of said stem member engaged therein;

annular valve seat means displaceably mounted within said casing for supporting engagement with said valve sphere;

means resiliently urging said annular valve seat means into engagement with said valve sphere to enable movement of said valve seat means relative to said casing thereby to absorb variations in dimensional tolerances between said valve seat means and said valve sphere to thus accommodate rotation of said one-piece stem member to enable said rotation to occur about said fixed axis with said valve sphere fixedly mounted upon said one-piece stem member in tight engagement therewith; and

seat holders interposed between said valve seat means and said resiliently urging means;

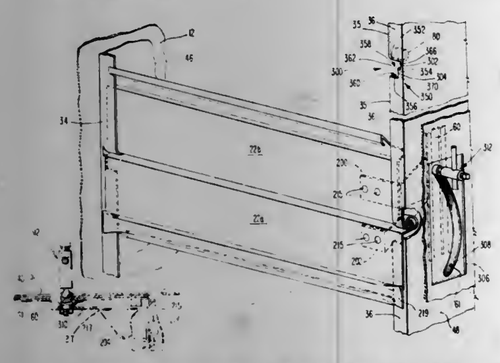
said valve casing including a pair of end members tightly engaging on opposite sides of said main casing member, said end members having formed therein orifices forming a part of said fluid flow passage, said orifices including enlarged portions wherein said valve seat means are mounted with said resiliently urging means being interposed between inner walls of said end members and said valve seat means.

4,113,230

ROTATING BLADE FIRE DAMPER

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173. This application Feb. 22, 1977, Ser. No. 770,831
Int. Cl.² F24F *13/14;* F16K *1/22*
U.S. Cl. 251—305 **12 Claims**



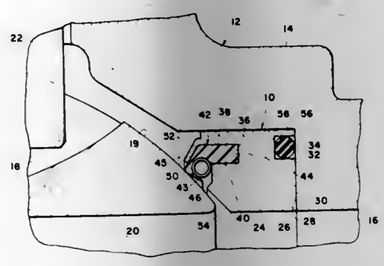
1. In an air control damper having a frame, at least one blade, rotation means for allowing selective rotational displacement of said blade with respect to said frame between open and closed positions, the improvement wherein said frame comprises a longitudinally extending, inwardly depending flange disposed within a plane which is substantially parallel to the plane of said blade in the closed position, said rotation means for allowing selective rotational displacement of said blade with respect to said frame comprising at least one integral hinge element notched from said flange and at least one complementally configured hinge portion in said blade adapted to slidingly engage said hinge element, said notch in said flange further comprising at least two portions, a first transverse portion for at least providing clearance of said hinge portion of said blade upon rotation of said blade, and a second longitudinal portion of smaller transverse dimension than said first transverse portion for at least providing a portion of the structure of said hinge element, whereby leakage through said damper when said blade is in the closed position is minimized.

4,113,231

SEAL RING FOR BALL VALVES

Joseph Charles Halpine, 1908 W. Latimer Pl., Tulsa, Okla. 74127

Filed Jul. 27, 1977, Ser. No. 819,356
Int. Cl.² F16K *5/00*
U.S. Cl. 251—317 **1 Claim**



1. In a ball valve having a housing, an inlet duct through said housing for flow of fluid, a cylindrical seat and shoulder for a seal ring means concentric with said duct, a spherical ball inside the cavity of said housing, duct means through said ball and shaft means to rotate said ball about an axis perpendicular to the direction of said duct in said ball;

the improvement in seal ring means for sealing against fluid pressure the space between said housing and said ball, comprising:

(a) a circular metal ring having an outer cylindrical surface, an inner cylindrical surface and a first end wall perpendicular thereto, said outer cylindrical surface and said first end wall adapted to fit said cylindrical seat and shoulder of said housing;

(b) first means to seal said seal ring means to at least one of said cylindrical seat and shoulder;

(c) a cylindrical groove, concentric with said seal ring means in the second end wall of said seal ring means, near the outer perimeter of said second end wall;

(d) a thin-walled cylindrical extension to said second end wall at the outer edge of said cylindrical groove;

(e) seat ring means, having in cross section a cylindrical portion adapted to fit into said cylindrical groove and a "C" shaped portion enclosing a ring cavity of circular cross section, the outer wall of said "C" shaped portion having two conical surfaces joining in a circular ridge having a selected radius of curvature;

(f) a helical spring of selected wire of selected diameter and selected length adapted to fit into said ring cavity in said C-shaped portion;

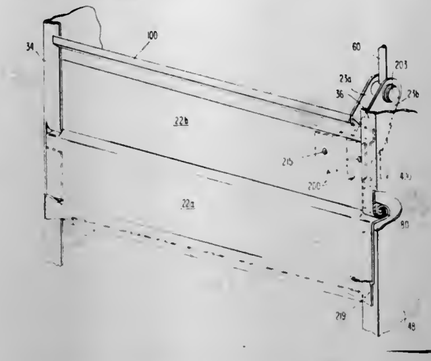
whereby when said spring is placed in said ring cavity and said seat ring is inserted into said groove and said thin-walled cylindrical extension bent inwardly over said seat ring, it will be held snugly in said groove and will retain said spring and when said seal ring means is placed in said housing, said circular ridge will press against the spherical surface of said ball to seal the space between said housing and said ball against the pressure of fluid in said inlet duct.

4,113,232

SMOKE, FIRE AND AIR CONTROL DAMPER WITH STAMPED BLADE

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173. This application Oct. 4, 1976, Ser. No. 729,831
Int. Cl.² F24F *13/14;* F16K *1/22*
U.S. Cl. 251—305 **5 Claims**



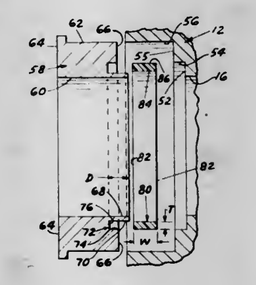
1. A damper, comprising: a frame, at least one blade associated with said frame, and rotation means for allowing selective rotational displacement of said blade with respect to said frame between open and closed positions; said rotation means comprising a plurality of hook-shaped hinge portions integrally formed from said blade, said blade comprising a plurality of substantially parallel spaced apart surfaces joined by at least one transverse connecting portion, at least a portion of one of said surfaces having been notched to form at least a portion of said hook-shaped hinge portions.

4,113,233

SEAT STRUCTURE FOR GATE VALVES

John A. Bond, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 841,225
Int. Cl.² F16K *3/00*
U.S. Cl. 251—328 **5 Claims**



1. A gate valve structure comprising a valve body having a valve chamber therein and inlet and outlet flow passages communicating with the valve chamber, a gate element slidably mounted within the valve chamber for movement between open and closed positions, said valve body having a recess about each flow passage defined by small and large diameter stepped counterbores, said small diameter counterbore forming a rear end wall and an intermediate annular wall perpendicular to the rear end wall, said large diameter counterbore forming an intermediate end wall and an outer annular wall perpendicular to the intermediate end wall;

a seat ring fitting within each recess and having inner and outer peripheral surfaces, said inner peripheral surface axially aligned with the forming a continuation of the associated flow passage and said outer peripheral surface in facing contact with said outer annular wall;

said seat ring having a rear face and a lip projecting from said rear face in abutting contact with said rear end wall, the inner peripheral surface of the lip forming a continuation of the flow passage and being coextensive with the inner peripheral surface of the seat ring, said rear face having a groove adjacent said lip with the outer peripheral surface of the lip defining the inner side of the groove, said groove defining with the small diameter counterbore a pocket of a generally rectangular cross-section;

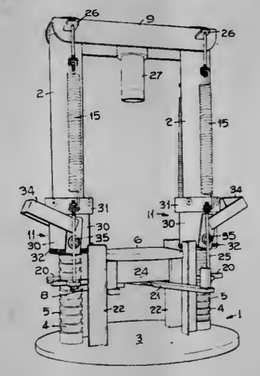
and a deformable seal of an elongate cross-section positioned within the generally rectangular pocket, said seal filling substantially the entire cross-sectional area of the pocket when the seat is passed within the recess.

4,113,234

HYDRAULIC JACKS

Donald Charles Wride, 35 Helen Ter., Valley View, South Australia, Australia (5093)

Filed Oct. 13, 1977, Ser. No. 841,723
Claims priority, application Australia, Oct. 18, 1976, PC7765
Int. Cl.² B66F *1/08*
U.S. Cl. 254—108 **10 Claims**



1. A hydraulic jack support for a jack which is independent of the support comprising:

a pair of telescopic members, one of said telescopic members comprising a base plate and spaced upstanding support means secured to said base, the other said member comprising a bridge and guide means, said guide means engaging said support means to guide said bridge toward and away from said base;

a platform for supporting a jack disposed between said base and said bridge engaging said support means to be movable along said support means to be variable in distance from said base;

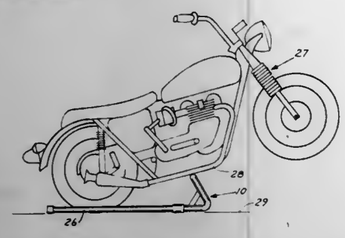
means to lock said platform to said support means;

means to lock said bridge and guide means to said support means;

means to release said lock means; and,

spring means connected between said bridge guide means and said platform whereby to urge said platform toward said bridge, whereby an independent lifting jack can be positioned on said platform to have the lifting ram of said jack engage said bridge in relation to said platform and whereby said platform is raised by said spring means for a multi-stage lift.

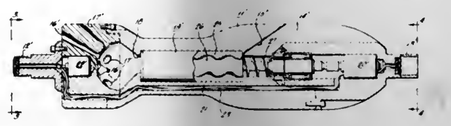
4,113,235
LEVER-ACTION LIFT JACK
Wilbert Hartman, Jr., 2774 S. Pierce St., Denver, Colo. 80227
Filed Aug. 18, 1977, Ser. No. 825,680
Int. Cl.² B66F 7/22
U.S. Cl. 254—131 11 Claims



1. A lever-action jack comprising:
a single tubular body forming a cross-support and
a pair of opposed lever members at opposite ends of said cross-support,
each of said lever members including a base portion and a stand portion and having an acute-angle bend between each stand portion and an associated base portion providing a rocking surface along the outside of said acute-angle bend and a right-angle bend between each end of said cross-support and one of said stand portions,
each of said stand portions extending at an acute inside angle relative to an associated base portion to locate said cross-support at an intermediate portion back beyond the midpoint between the ends of the associated base portion from the acute-angle bend to counteract loading forces that tend to cause a forward and rear tilting under load; and
a handle portion forming an extension of one of said base portions,
the perpendicular distance from each of said base portions to said cross-support being less than the combined length of one of said base portions and said handle portion extending from said one base portion to provide a longer lever arm for moving said cross-support means between said lowered and raised support positions and to provide stabilization against forward and rear tilting of the lever means in the raised support position,
whereby. in response to a turning force applied to said handle portion and said one base portion, the handle portion and said one base portion provide a force arm with a fulcrum at one end about which said base and stand portions turn in a lever action with said rocking surfaces turning on a supporting surface to move said cross-support from a lowered position with said cross-support and said stand portions resting on a supporting surface to a raised support position with said base portions resting on the supporting surface and said cross-support disposed above said base portions.

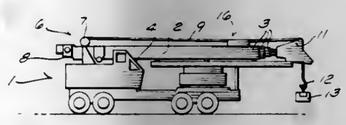
4,113,236
PULLING TOOL APPARATUS
Gary S. Neinast, Plano, Tex., assignor to Suntech, Inc., St. Davids, Pa.
Filed Aug. 23, 1976, Ser. No. 714,208
Int. Cl.² E21B 43/00; B65H 59/00; E21C 29/16; H02G 1/08
U.S. Cl. 254—134.5 5 Claims

1. A pulling tool for use in a wellbore having fluid therein to pull a cable and associated apparatus through the wellbore, said tool comprising:
(a) an elongated housing having an internal fluid flowpath therein which includes,
(i) an internal passageway,
(ii) a fluid inlet at a first end, and
(iii) a fluid outlet at the second end, so that fluid can flow through the fluid inlet, the internal passageway, and the fluid outlet; wherein said outlet comprises a plurality of discharge passageways extending from the internal passageway to the second end of the housing, said discharge passageways being angled rearwardly and sufficiently parallel to the wellbore to provide a thrust of fluid in a direction opposite to the direction of fluid flow through the internal fluid flowpath.
(b) means for connecting the housing to the cable to be pulled through the wellbore;



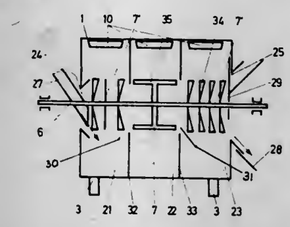
(c) means connected to said internal passageway for propelling the fluid in the wellbore through the internal fluid flowpath so that fluid is drawn in through the fluid inlet and expelled through the fluid outlet, thereby providing a force which pulls the cable and associated apparatus through the wellbore in a direction opposite to the direction of fluid flow through the internal fluid flowpath; and
(d) means for driving the propelling means.

4,113,237
CABLE TENSION CONTROL
Philip A. Derrwaldt, Mukwonago, Wis., assignor to D. G. Beyer, Inc., Milwaukee, Wis.
Filed Oct. 28, 1975, Ser. No. 625,822
Int. Cl.² B66D 1/76
U.S. Cl. 254—175.7 5 Claims



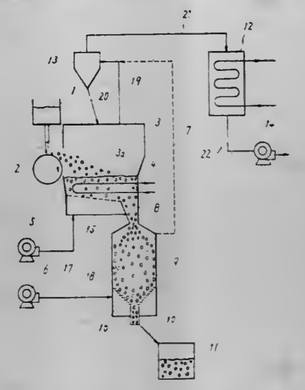
1. A load handling arrangement comprising, in combination;
a drum,
cable pay-out drive means spaced from said drum and comprising
first and second sheaves,
means supporting said first and second sheaves in spaced relationship and in general alignment with each other,
a third sheave,
means supporting said third sheave between and offset relative to said first and second sheaves,
and drive means for rotating said third sheave in one direction and permitting said third sheave to be rotated freely in response to retrieval of cable by said drum,
a cable reaved on said sheaves so that said cable follows a nonlinear path through said sheaves,
said cable coiled on said drum and extending from said drum to said cable pay-out drive means,
said cable pay-out drive means operative to draw cable from said drum and maintain constant tension on said cable between said drum and said cable pay-out means,
second drive means separate from said cable pay-out drive means and connected to said drum and operative to rotate said drum in one direction to coil said cable on said drum and said drum being freely rotatable in a pay-out direction,
and load engaging means connected to said cable with said cable pay-out drive means located intermediate said drum and said load engaging means so that said load engaging means is lowered by said cable pay-out drive means drawing cable from said drum and is raised by said drum retrieving cable through said cable pay-out means and so that by reason of said cable pay-out means drawing said cable from said drum in a pay-out direction and said second drive means retrieving said cable by drawing said cable through said cable pay-out means said cable is maintained under tension and in a taut condition between said drum and said cable pay-out drive means at all times.

4,113,238
DRUM MIXER
Franz Hofmann, Neuhausen, and Franz Szatmari, Schaffhausen, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland
Filed Oct. 6, 1976, Ser. No. 729,979
Claims priority, application Switzerland, Oct. 10, 1975, 13208/75
Int. Cl.² B28C 5/18; B01F 9/08
U.S. Cl. 366—56 10 Claims



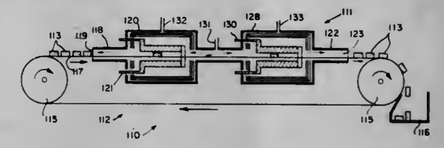
1. Mixer apparatus for treatment of bulk materials, particularly foundry sand, comprising: a drum mounted for rotation about an axis which extends at least approximately in a horizontal direction, said drum being arranged to define therein an upper drum interior region and a lower drum interior region located, respectively, above and below said axis, said lower drum interior region being arranged to have accumulated therein during rotation of said drum a portion of the bulk material being treated in said mixer apparatus; stationary deflection means arranged within said drum in said upper region thereof; rotating impact rotor means rotatably mounted within said drum at a location generally below said stationary deflection means to receive bulk material deflected therefrom and to enhance the mixing effect of said apparatus, said rotating impact rotor means including shaft means having a plurality of rigid rotor arms mounted thereon, said rotor arms being arranged to extend radially from said shaft means into said lower drum interior region a distance short of the lowermost point therein to permit in said lower drum region an accumulation of bulk material at a location out of the path of said rotating rotor arms; rotation of said drum about said axis operating to propel bulk material located therein upwardly by centrifugal force against said deflection means, said deflection means being structurally configured to deflect and direct said bulk material propelled thereagainst by rotation of said drum away from the inner wall of said drum into a downwardly falling jet directed at said rotating impact rotor means; and means unassociated with said impact rotor means and said deflection means for effecting axial conveyance of said bulk material through said drum.

4,113,239
APPARATUS FOR COOLING SLAG
Tetsuro Nakada, Chiba; Makoto Shimizu, Yokosuka, and Mayumi Yoshinaga, Takarazuka, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Ote and Sumitomo Metal Industries, Ltd., Osaka, both of, Japan
Filed Dec. 27, 1977, Ser. No. 864,252
Int. Cl.² F27D 15/02
U.S. Cl. 266—137 8 Claims



1. An apparatus for cooling slag comprising a device for converting molten slag into slag granules, a fluidized bed type cooler with a fluidized bed of solid particles through which passes gas, a moving bed type heat-exchanger which is communicated with the bottom of said cooler and which has a moving bed of slag granules through which passes gas, and a classifying pipe interconnecting between said cooler and said heat-exchanger for classifying the slag granules from solid particles of said fluidized bed.

4,113,240
CONTINUOUS OPEN-ENDED SINTERING FURNACE SYSTEM
Gerhart P. Klein, Manchester, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Continuation of Ser. No. 623,173, Jan. 16, 1976, abandoned. This application Feb. 16, 1977, Ser. No. 769,369
Int. Cl.² F27B 5/16
U.S. Cl. 266—252 4 Claims



1. A continuous sintering furnace system comprising:
(a) entrance and exit sections,
(b) a preheat chamber communicating with said entrance section,
(c) a first sintering chamber adjacent to and communicating with said preheat chamber,
(d) a connecting chamber connecting said first sintering chamber with a second sintering chamber,
(e) a cooling chamber adjacent to said second sintering chamber and communicating with it and said exit section,
(f) heating means disposed in said first and second sintering chambers,
(g) conveyor means carrying workpieces through said entrance section, said chambers, and said exit sections, and
(h) gas inlet means communicating with said first and second sintering chambers near their central portions, and a gas

inlet means communicating with said connecting chamber substantially midway between said first and second sintering chambers,

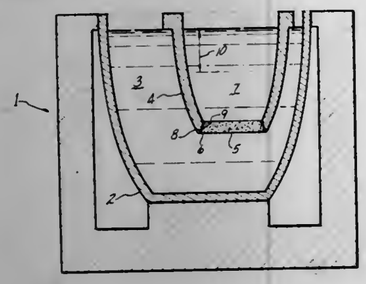
whereby there is a continuous gas flow toward both said entrance and exit sections.

4,113,241

APPARATUS FOR THE FILTRATION OF MOLTEN METAL IN A CRUCIBLE TYPE FURNACE

James E. Dore, Ballwin, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 22, 1977, Ser. No. 835,649
Int. Cl.[2] C22B 9/02
U.S. Cl. 266—227 25 Claims



1. An improved filtration apparatus for filtering molten metal used in the production of castings comprising:

a furnace crucible;

means to charge said furnace crucible with molten metal; a ladling crucible positioned in said molten metal within said furnace crucible;

said ladling crucible being formed at least in part of a material having an open cell structure characterized by a plurality of interconnected voids; and

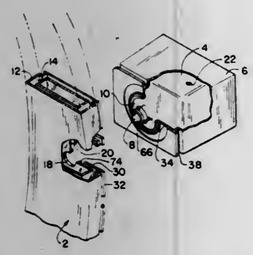
wherein said ladling crucible includes means to vertically slide within said furnace crucible on a support.

4,113,242

RELEASABLE, HIGH-PRESSURE SEAL AND METHOD OF FORMING SAME

Robert R. Holman, Bethel Park, and Daniel N. Turkall, West Mifflin, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 1, 1976, Ser. No. 737,761
Int. Cl.[2] G21F 5/00; B65D 51/00
U.S. Cl. 277—1 26 Claims



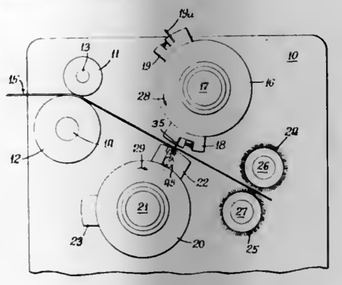
23. A method for establishing a releasable high-pressure seal between two sets of conduits, each set having an outer conduit and at least one inner conduit rigidly secured to the outer conduit, at least one of the inner conduits projecting past an end of the associated outer conduit a sufficient distance so that when the conduit sets are axially moved towads each other the inner conduits establish contact before the outer conduits do, the method comprising the steps of: positioning the conduit sets in substantial alignment with each other; placing a sealing member between the outer conduits; moving the conduit sets in an axial direction towards each other; engaging ends of the inner conduits to thereby axially align the conduit sets; continuing the relative axial movement of the conduit sets until the sealing member is engaged by both outer conduits; securing the ends of the outer conduits to each other to establish an initial sealing force between the outer conduits and the sealing member; raising the fluid pressure interiorly of the outer conduits relative to the ambient fluid pressure; and increasing the sealing force between the outer conduits and the sealing member as a function of the interior fluid pressure increase.

4,113,243

COMBINATION WEB TUCKER AND KNIFE WITH WEB GRIPPERS AND ANVIL

Clyde G. Gregoire, Bensenville; James A. Hartman, Brookfield, and Joseph M. Gregoire, Berwyn, all of Ill., assignors to Gregg Engineering Corp., Lyons, Ill.

Filed Aug. 8, 1977, Ser. No. 822,423
Int. Cl.[2] B41F 13/56
U.S. Cl. 270—21 7 Claims



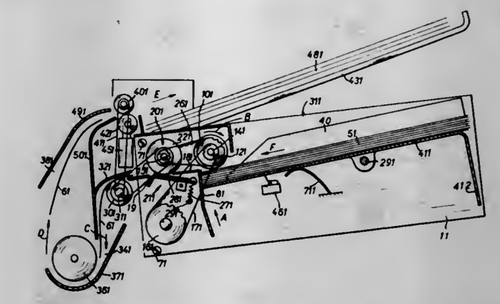
1. In an apparatus for the printing industry of the type having first and second cooperative operational rollers which have a continuously printed web fed therebetween, comprising a first tool carrying box adjustably mounted on the outer circumference of the first of said cooperative operational rollers, said first tool carrying box having a tool of a combination web tucker and knife projecting radially outwardly from said first operational roller, a second tool carrying box adjustably mounted on the outer circumference of the second of said cooperative operational rollers, said second tool carrying box having a tool of combination web grippers and an anvil, said cooperative operational rollers rotatably driven in opposite directions and the first and second boxes arranged on said rollers to tangentially engage each other during rotation, means opening and closing said web grippers at desired times during the rotation of said rollers, the said web grippers being in an open condition at a time when the first and second boxes are approaching an adjoining tangential relationship to permit the combination web tucker and knife to push a bight portion of the printed web into the open web grippers and causing the knife to sever the bight portion of the web when the knife engages the anvil of the combination web grippers and an anvil causing the formation of severed ends of the printed web, and when said boxes start separating again by continued rotation of the rollers the combination web tucker and knife pulls out of the web grippers and the web grippers close on and hold the severed ends of the printed web, said web grippers comprising a stationary jaw having a web gripping portion and a movable jaw having a web gripping portion arranged and constructed to move toward and away from the stationary jaw to effect a gripping of the printed web by the cooperation of the web gripping portions, and one of said jaws having an anvil located beneath its web gripping portion thereof and projecting toward the other of said jaws, and the other of said jaws having a cooperative recess located beneath its web gripping portion thereof and adapted when the jaws are in closed gripping position to telescopically receive the projecting anvil.

4,113,244

APPARATUS FOR AUTOMATICALLY FEEDING INDIVIDUAL SHEETS FROM A STACK THROUGH AN OFFICE MACHINE

Kurt Ruenzi, Kuesnachterstrasse 59, 8126 Zumikon, Switzerland

Continuation-in-part of Ser. No. 674,918, Apr. 8, 1976, Pat. No. 4,032,135. This application Mar. 21, 1977, Ser. No. 779,755
Claims priority, application Switzerland, Apr. 5, 1976, 4207/76; Apr. 15, 1975, 4758/75
Int. Cl.[2] B65H 5/22
U.S. Cl. 271—4 7 Claims



1. An apparatus for the automatic supply of individual sheets from a sheet supply stack to a roller in an office machine and back onto a sheet receiving stack, comprising sheet separating means, first sheet guide means which guide the sheets delivered by said sheet separating means from said sheet supply stack and feed these sheets to the back side of said roller, and second sheet guide means arranged in front of said roller, said second sheet guide means moving a sheet upwardly onto said sheet receiving stack located substantially above said supply stack, wherein said first sheet guide means deflects the sheets supplied by the sheet separating means by an angle of at least 45°, preferably by an angle of 90° toward said roller in the office machine, and wherein said second guide means comprise funnel means for the sheets for deflecting the sheets delivered by said roller into a direction which is extending substantially oppositely to the supply direction of said sheets of paper, wherein said second guide means further comprise two sheet withdrawing rollers arranged downstream of said funnel means, electromagnet means operatively connected to selectively separate said two withdrawing rollers from each other, and motor means operatively connected for positively driving at least one of said two withdrawing rollers, and wherein said sheet separating means comprises tiltable rocker means to hold the sheet supply stack, said sheet separating means further comprising a stop member against which the leading edges of the sheets in the sheet supply stack rest.

4,113,245

COMBING WHEEL FEED NIP WITH SECOND SHEET RESTRAINT

Donald Francis Colglazier; John Leslie Fallon; Ernest Paul Kollar, all of Longmont, and Fred Ralph Mares, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,570
Int. Cl.[2] B65H 3/52
U.S. Cl. 271—10 11 Claims

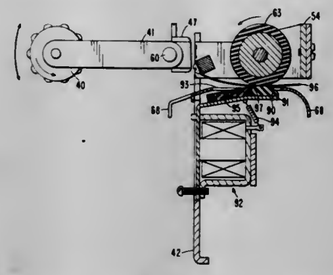
6. A closable drive nip adapted to receive the leading edge of the foremost one of a group of sheets which are shingled thereto by operation of a combing wheel, comprising:

a drive roller operable to feed the foremost shingled sheet in a given direction downstream of said roller;

a nip closing member spaced from said drive roller to define a drive nip;

means operable to produce relative movement between said drive roller and said nip closing member to effect closing of said drive nip;

a low friction, drive-roller-engaging member mounted on said nip closing member and cooperating with said drive



roller to physically push the leading edge of the foremost shingled sheet against said drive roller; and

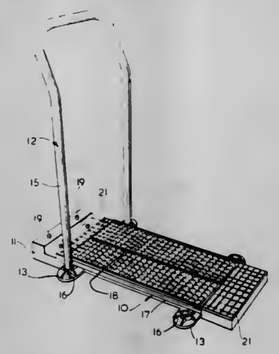
a recessed surface on said nip closing member upstream of said drive roller defining a step operable when said drive nip is closed to positively stop and capture the leading edge portions of the shingled sheets underlying the one which is being fed by said drive roller, to thereby inhibit feeding of the sheet immediately underlying the one fed sheet.

4,113,246

EXERCISING APPARATUS

David James Gibbs, 6 Linden Close, Green Park, Wootton Bassett, Swindon, Wiltshire, England

Filed Jun. 7, 1976, Ser. No. 693,965
Claims priority, application United Kingdom, Jun. 7, 1975, 24542/75
Int. Cl.[2] A63B 23/06
U.S. Cl. 272—69 2 Claims



1. Exercising apparatus comprising a supporting framework including a platform on which the user of the apparatus can stand and handgrip means for gripping by a person standing on the platform, said platform having a presented surface afforded by a multiplicity of rollers comprising a plurality of closely spaced rows of rollers which each row of rollers containing a plurality of closely spaced independently rotatable rollers, the rollers being of smooth cylindrical form and of uniform size with a diameter no more than about an inch and a length no more than about an inch, said rollers being arranged for rotation about substantially horizontal axes contained in a common

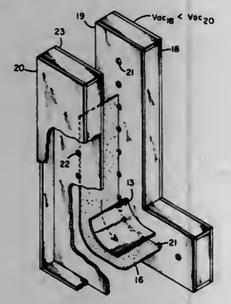
plane, the platform including a frame having parallel side members and a central rib disposed intermediate the side members, a plurality of parallel spindles extending between the central rib and each of the side members and the rollers being individually mounted on said spindles.

4,113,247

EDGE VACUUM GUIDE FOR FLEXIBLE MEMBERS

Edwin R. Phillips, Rosemont, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 317,815, Dec. 22, 1972, abandoned. This application Jul. 5, 1974, Ser. No. 486,245
Int. Cl.² 271/194; B65H 5/22, 5/38
U.S. Cl. 271—264 **2 Claims**



1. A system for transferring a flexible member in a path between locations comprising:

(a.) a two-sided, flat guide means only wherein said member traverses said path perpendicular to each side thereof, said path being substantially linear;

(b) a two-sided, flat extension connected to said guide means such that said path changes direction by approximately 90°;

(c) symmetrical ports connected to a vacuum means located in each side of said two-sided guide means and extension, said ports being located in the first side in a facing relationship with the ports located in the second side of said guide means;

(d) means located in the vicinity of said 90° turn, said means restricting the flow of air into said ports by said vacuum means.

4,113,248

BASEBALL BAT MADE OF LIGHT ALLOY

Seiichi Yanagioka, Hiratsuka, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed May 7, 1976, Ser. No. 684,351
Int. Cl.² A63B 59/06
U.S. Cl. 273—72 A **3 Claims**

1. A baseball bat having a barrel portion and a handle portion comprised of an aluminum alloy having on its surface a heat treated metallic alloy plating selected from the group consisting of nickel-phosphorus and nickel-boron, said metallic plating having been heat treated at a temperature sufficient to



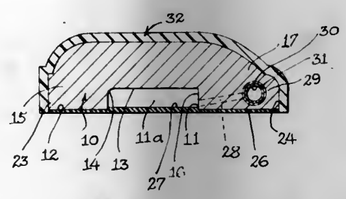
cause said plating to have a Vickers hardness in excess of about 550.

4,113,249

GOLF CLUB AND MANUFACTURE THEREOF

Peter W. Beery, Setauket, N.Y., assignor to Golf Resources, Ltd., Setauket, N.Y.

Continuation-in-part of Ser. No. 565,379, Apr. 7, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 803,976
Int. Cl.² A63B 53/04
U.S. Cl. 273—78 **9 Claims**



1. A golf club comprising an integral metallic body having toe, heel and flat impact face portions, said face portion having a central recess and the recess having downwardly extending side walls, a resilient and vibratory cover plate secured to said front wall and forming a sound resonating chamber with said recess, a hosel tube, said metallic body having an enlarged opening and in which said hosel tube at the inner end is mounted to form an amplification chamber therewith, a sound wave transmission chamber within said metallic body intermediate said sounding resonating and amplification chambers and communicating with each of said chambers, and a hollow shaft member mounted within and lying along said hosel tube and projecting therefrom whereby accurate top spin roll of the golf ball and characteristic feel and sound are effected on ball stroking by the club at the sweet spot and adjacent areas thereto of the cover plate.

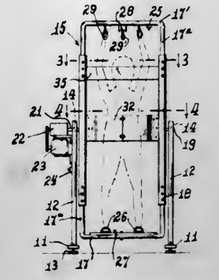
8. A method for manufacturing golf clubs including the steps of die-casting a metallic body having toe, heel and flat impact face portions and having a recess in the face portion, making an internal bore in said die-cast body from the recess side wall and terminating in an enlarged opening made in said die-cast body, securing a vibratory plate over the face portion of the die-cast body forming a resonating chamber with the recess in said front face, securing a hosel member in said enlarged opening and securing a shaft member in said hosel member.

4,113,250

MOTORIZED INVERTING EXERCISER WITH BODY GUARD PERMITTING SELECTION OF DESIRED STRESS

Edward B. Davis, 115 Walnut Dr., St. Charles, Ill. 60174

Filed Jun. 18, 1976, Ser. No. 697,361
Int. Cl.² A63B 21/00
U.S. Cl. 272—93 **19 Claims**



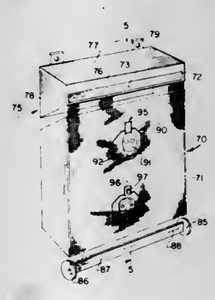
1. A theraputic apparatus for exercising the body of the user comprising (A) a substantially rectangular body frame journalled approximately midway between its longitudinal ends for 360° rotation on a horizontal axis, said body frame having a head end at one of its longitudinal ends and a foot end at the other of its longitudinal ends, supports for the feet of the user mounted at the foot end of the rectangular body frame, and means on the head end of said body frame engageable by the user to maintain his position in the body frame; (B) support framework means coupled to said body frame for rotationally supporting said body frame where journalled; (C) power means coupled to said body frame for rotating said body frame with uninterrupted motion of 360° about said axis; and (D) body support means coupled to said body frame for, at any position of said body frame about said axis, selectively reducing by any one of a plurality of different amounts the exertion required of the user to support the component of his body weight lying nonparallel to the longitudinal axis of his body while having a position in said body frame as said body frame rotates, one of said amounts being substantially zero, said body support means including a substantially circular enclosure with a diameter substantially larger than the body of a user to permit movement of the body in any lateral direction, said power means having the ability to rotate said body frame all of said 360° about said axis regardless of the position of the body of the user relative to said body support means.

4,113,251

TARGET GAME

Jack Imes, Jr., Chicago, Ill., assignor to RB Toy Development Co., Skokie, Ill.

Filed Dec. 22, 1976, Ser. No. 753,171
Int. Cl.² A63B 71/02
U.S. Cl. 273—95 R **11 Claims**



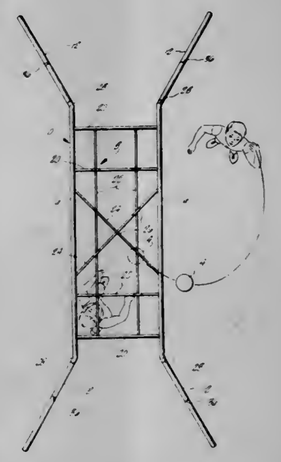
1. A game comprising a missile having at least a portion of its surface defined by a multitude of filamentary hook formations, a target adapted to be secured adjacent an upstanding support such as a vertical wall and composed of support means, and an open weave net having a thickness not greater than about ½ millimeter connected to said support means and having a plurality of openings therein, at least some of said openings having at least one dimension not greater than about three millimeters and all of said openings having a dimension not less than about ¼ millimeters to engage said filamentary hook formations upon contact therewith, at least one target representation and means for positioning said target representation on the side of the net away from the thrower, said target representation being visible through said net, contact between said net and said hook formations causing engagement thereof sufficient to retain said missile in place to indicate the portion of said target struck thereby, said missile being removable from said target without tearing of same.

4,113,252

REBOUNDING BALL GAME

Ronald L. Darby, 1910 N. Kenmore, North Hollywood, Calif. 90027

Filed Jan. 28, 1977, Ser. No. 763,427
Int. Cl.² A63B 63/00, 69/00
U.S. Cl. 273—95 R **4 Claims**



1. A rebounding ball game comprising a playing structure and means for supporting said structure above the heads of the players, said structure being comprised of a plurality of ball rebounding bars, two of said bars defining longitudinal end supports and others of said bars being disposed therebetween in substantially the same plane as said end supports and carried thereby such that said others of said bars intersect said end supports and each other in a plurality of different angles whereby upon directing a ball over said structure and upon said ball contacting said bars, said ball rebounds between said bars in different directions rapidly altering the path of the descent of said ball and thereby rendering more difficult the attempt to catch said ball prior to the ball striking the ground.

4,113,253

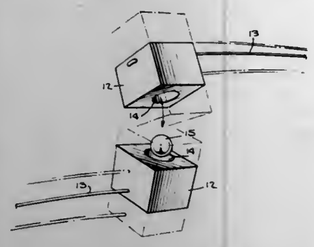
AMUSEMENT DEVICE REQUIRING CONCENTRATION AND COORDINATION

Henry H. Huston, Burlington, Vt., assignor to Weird Products Ltd., Vt.

Filed Mar. 4, 1977, Ser. No. 774,372
Int. Cl.² A63B 65/12
U.S. Cl. 273—96 R **14 Claims**

1. An amusement device comprising an elongated normally straight rod of springy material with a receptacle for receiving

a ball or the like attached at one end and elongated handle means attached at the other end of the rod, said rod being substantially longer than said handle means and sufficiently flexible such that said rod and receptacle swing in oscillating



manner through angles in any direction relative to the axis of elongation of said handle, including up and down and from side to side, in response to slight movement imparted to said handle when gripped by the hand.

4,113,254

GAME WITH TOY HAVING ROTATING AND STRAIGHT-LINE MOVEMENT

Tobin Wolf, 285 Ayerigg Ave., Passaic, N.J. 07055

Filed Feb. 11, 1977, Ser. No. 767,970
Int. Cl.² A63B 71/04; A63H 29/20
U.S. Cl. 273—108 4 Claims



1. A game which comprises a gameboard and a toy for use in conjunction with said gameboard, said gameboard comprising,
(a) a bottom surface, said bottom surface comprising a central start region and a plurality of sectors extending from said central start region and terminating at the perimeter of said bottom surface,
(b) a wall secured to said bottom surface and extending along the entire perimeter of said bottom surface said wall including an aperture therein extending to said bottom surface,
(c) a toy having a vertical cross-section at all points less than a vertical cross-section through said aperture, said toy comprising a body having skid means positioned for frictional engagement with said bottom surface and motor means within said body including a pair of wheels for engagement with said bottom surface, and means responsive to first predetermined rotational speeds of said wheels for causing only one of said wheels to lift off said bottom surface and cause said motor means to rotate in a circle about said skid means and responsive to second predetermined lower rotational speeds of said wheels for causing said motor means to travel in a substantially straight line, said toy being responsive to said straight travel, for movement towards said wall to stop in one of said sectors or to travel through said aperture in said wall.

4,113,255

TOY GAME FOR MOVING AN OBJECT UP AN INCLINED SURFACE

Adolph E. Goldfarb, 4614 Monarca Dr. Tarzana, Calif. 91356, Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316, and Don Robinson, Manhattan Beach, Calif., assignors to Adolph E. Goldfarb, Tarzana, and Erwin Benkoe, Encino, both of Calif.

Filed Feb. 18, 1977, Ser. No. 770,186
Int. Cl.² A63B 67/00; A63F 9/00; A63H 17/04
U.S. Cl. 273—108 19 Claims



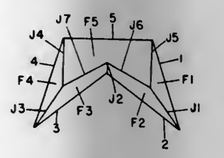
1. A toy game for removing objects from a trough with a toy vehicle, said toy game comprising:
(a) a playing board comprised of
(1) a pair of opposed player ends,
(2) an upper playing surface extending between said player ends, said playing surface having an upwardly and outwardly inclined wall at each of said opposed player ends with a central trough therebetween,
(b) a plurality of score representing objects located on said playing surface,
(c) a self-propelled toy selectively positionable at a player end, said toy vehicle being operable to move down the inclined wall at such player end and to engage one of said objects and move the same up the inclined wall at the opposed player end to achieve a score, and
(d) a pair of ramps each connected to an inclined wall at one of the player ends and inclined downwardly and outwardly therefrom to enable an object moved up the inclined wall at a player end to be pushed by the vehicle down the associated ramp.

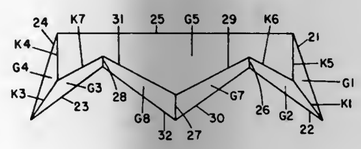
4,113,256

DUAL NATURE PUZZLE PIECES

David Roy Hutchings, R.R. 3, Box 149 S, Leander, Tex. 78641

Filed May 31, 1977, Ser. No. 802,253
Int. Cl.² A63F 9/12
U.S. Cl. 273—160 2 Claims





1. A puzzle piece, said piece having a shape comprising a polyhedron defined by a concave polygon and five other surfaces, said polygon having five equal sides, two of which said sides are imposed on the diagonals to the opposite side in the polygon, each of said other five surfaces bordering a different one of the said five sides and together making five dihedral angles with said polygon, four of which said dihedral angles measure about 63° each and the fifth angle about half that measure, said fifth dihedral angle located opposite of said imposed sides, said puzzle piece able to be combined with

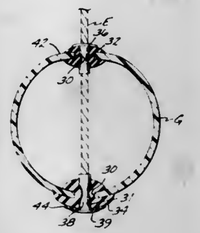
other pieces of the same configuration for the working of both tile-like puzzles or designs and three-dimensional puzzles.

4,113,257

GOLF PRACTICE DEVICE

Clinton D. Moffatt, 5610 Flagstone St., Long Beach, Calif. 90808

Filed Oct. 14, 1976, Ser. No. 732,318
Int. Cl.² A63B 69/36
U.S. Cl. 273—185 C 4 Claims



1. A golf practice device of the type that includes a base, an inverted L-shaped support that extends upwardly from said base, a rotatable member mounted on said support, a tethering cord secured to said rotatable member, a hollow resilient spherical shell that is a replica of a golf ball and is adapted to be hit with a golf club head, which shell has first and second diametrically aligned bores therein in which first and second resilient grommets are disposed through which a free end portion of said tethering cord extends, said golf practice device being characterized by including:
first and second fasteners on said tethering cord that are in abutting contact with said first and second grommets, with said first and second fasteners so longitudinally spaced on said tethering cord that said shell is diametrically compressed therebetween to circumferentially tension the portion of said shell that will be struck by said golf club head when said device is used for golf practice, with said shell when struck by said golf club head due to said tensioning, emitting a sound that is similar to the sound emitted by a real golf ball when impacted by a golf ball head, said shell having a plurality of circumferentially spaced openings therein adjacent one of said first or second grommets, with said opening serving the dual functions of creating sufficient wind resistance after said shell has been struck by a golf club head that said rotatable member, tethering cord and shell will stop rotating concurrently as a unit after a few turns, and said openings so weakening the portion of said shell in which they are formed that said shell may be diametrically compressed between said first and second fasteners.

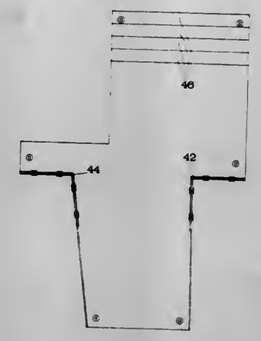
4,113,258

GOLFER'S CLUB SWING AND STANCE TRAINING DEVICE

Fiorenzo Midana, Corso Giovanni Agnelli 48, Turin, Italy

Filed Feb. 2, 1977, Ser. No. 764,816
Claims priority, application Italy, Dec. 20, 1976, 53717/76[U]
Int. Cl.² A63B 69/36
U.S. Cl. 273—186 C 5 Claims

1. A golfer's stance training device comprising a substantially flat member including first and second areas integrally connected at and extending respectively in opposite directions longitudinally from approximately the mid-region of the member, a plurality of longitudinally spaced laterally extending reference lines on said first area, a first longitudinally extending edge defining one side of said second area disposed substantially perpendicular to the transverse center line of the member, a second generally longitudinally extending edge spaced laterally from said first edge and diverging in relation thereto in the direction of said transverse center line defining the other side of said second area, third and fourth edges being provided extending parallel to the transverse center line of the member beginning at the juncture thereof with said first and second edges respectively and extending laterally outwardly therefrom, and a terminal edge of the member extending between said first and second edges to define one end of the member,



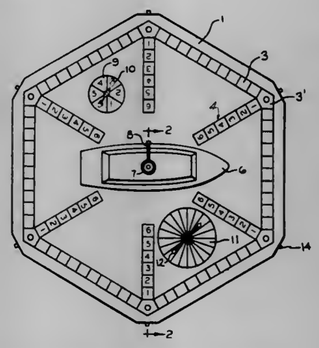
said second area defining a stance position such that the golfer standing astride said second area implanting his feet in a selected position such that the insteps respectively are adjacent said first and second edges and the toes of the shoes adjacent said third and fourth edges, and places the club to coincide with a selected one of the reference lines of said first area, whereby a natural free arrangement of the feet, body and hands is obtained while controlling the swing of the club.

4,113,259

BOARD GAME APPARATUS WITH WATER EJECTING DEVICE

Terry Michael Sands, 16 Ash, Belleville, Mich. 48111

Filed Nov. 29, 1976, Ser. No. 745,614
Int. Cl.² A63F 3/00
U.S. Cl. 273—241 9 Claims



1. A competitive game apparatus, comprising:
a casing having disposed adjacent the top portion thereof a substantially flat game playing surface having a continuous peripheral path, said path being divided into playing spaces;
first means for ejecting water, said first means being operatively and rotatably connected to said game playing surface and disposed at the center of said game playing surface in a position to permit the ejected water to be directed toward a selected player;
second means for supplying water to said first means, said second means being disposed within said casing;

at least one switch mechanism disposed in said casing adjacent said game playing surface and operatively connected to said first means for permitting a player to eject water from said first means;

at least one movable playing token associated with each player for indicating the position of the player on said path; and

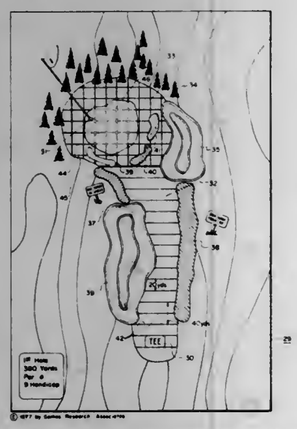
third means for randomly selecting the number of playing spaces that each of said tokens should be moved along said path.

4,113,260

SIMULATED GOLF GAME AND MATERIALS THEREFOR

Paul E. Sain, Salt Lake City, Utah, assignor to Games Research Associates, Salt Lake City, Utah

Filed Feb. 17, 1977, Ser. No. 769,557
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—245 4 Claims



1. A golf game including in combination, plural game spendable each provided with indicia, defining a course including tee, rough, fairway, hazard, area-round-green, green, and hole areas, whereby to simulate a playing course, from tee to green and hole, of an outdoor golf course; mutually spaced grid markings disposed on said course at and proximate said green area; mutually spaced bar markings disposed on said course along said fairway area; a series of dice selected ones of which are rollable over a chosen one of said game boards for determining player marker advance for a particular stroke; a supply of means, individual pluralities of which are distributable to, and spendably by, individual players according to their individual handicaps, for advancing the respective players' play without stroke penalty; a series of player markers advanceable along said bar and grid markings; and a spinner-card having a card provided with an upper surface and a spinner pivoted to and above said upper surface, said upper surface being provided with hazard, not-on-green, and various stroke-number areas.

4,113,261

JAW BREAKER GAME

Anson Sims, Northridge, and Lawrence T. Jones, Playa Del Rey, both of Calif., assignors to Aurora Products Corporation, West Hempstead, N.Y.

Filed Sep. 16, 1976, Ser. No. 723,815
Int. Cl.[2] A63F *3/04*
U.S. Cl. 273—249 12 Claims

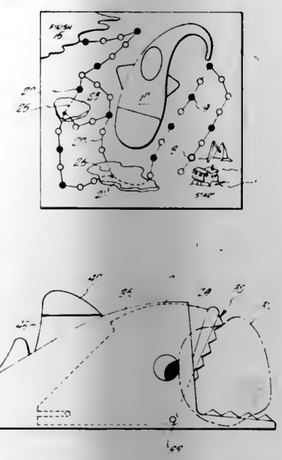
1. A game including a game board comprising:

at least one game token;

a path of incremental progress on said game board from a point of shipwreck to shore;

means for randomly determining the amount of incremental advance of said token along said path;

a three-dimensional toy positionable on said game board, said toy including jaw means capable of receiving an inflated balloon and movable toward a closed position to



break said balloon and means for manually incrementally moving said jaw means toward a closed position, and

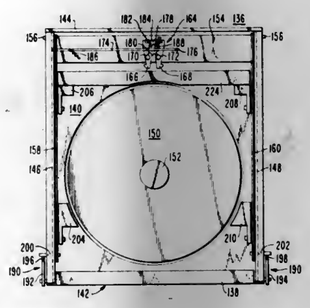
means associated with at least one portion of said path for directing a player to operate said jaw moving means to incrementally move said jaw means toward a closed position if said token lands on said portion.

4,113,262

RECORD SUPPORT AND ALIGNMENT APPARATUS FOR A VIDEO DISC PLAYER

Ralph DeStephanis, Middlesex, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 31, 1977, Ser. No. 801,728
Claims priority, application United Kingdom, Dec. 20, 1976, 53175/76
Int. Cl.[2] G11B *25/04*
U.S. Cl. 274—9 B 9 Claims



1. In a player for recovering prerecorded signals from a disc record removably subject to occupancy of a protective cover; said player including a housing having an input slot dimensioned to permit an insertion of a cover into said player and its removal therefrom; means aligned with said input slot for guiding said cover insertion and removal; a turntable rotatably mounted in said housing for supporting a record during playback; a platform mounted in said housing and disposed under said guide means for motion between an elevated position and a depressed position; means mounted in said player for protruding into a cover during arrival thereof at a fully inserted

position in said player; said protruding means being subject to operation in a first condition and a second condition; said protruding means, while disposed in said first condition, permitting cover arrival at said fully inserted position; said protruding means, while disposed in said second condition, precluding a removal from said player of a record during a cover withdrawal from said fully inserted position after an occupied cover arrival, whereby a record is retained in said player resting on said platform upon conclusion of said cover withdrawal; means for causing motion of said platform to said depressed position to effect a transfer of said retained record from said platform to said turntable; and means responsive to cover arrival at said fully inserted position in said player for alternating the condition of said protruding means between said first condition and said second condition; the improvement comprising:

record supporting means adapted for motion between a retracted condition and a depolyed condition;

said record supporting means being secured to said platform;

said record supporting means in said retracted condition allowing cover arrival at said fully inserted position in said player; and

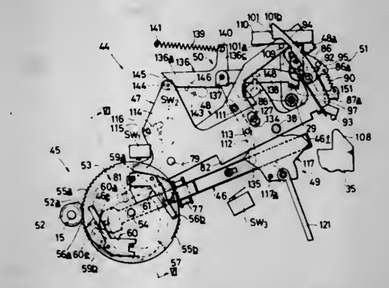
said record supporting means in said deployed condition supporting a retained record such that, while said platform is disposed in said elevated position, said record is aligned with a cover resting on said guide means.

4,113,263

PHONOGRAPH RECORD PLAYER

Kazuyuki Takizawa, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 9, 1976, Ser. No. 740,306
Claims priority, application Japan, Nov. 10, 1975, 50-135989
Int. Cl.[2] G11B *17/06*
U.S. Cl. 274—15 R 2 Claims



1. In a phonograph record player having a rotatable turntable for supporting a phonograph record during the playing thereof, drive means for rotating said turntable, and a tone arm assembly including a tone arm carrying a pickup with a stylus to track the groove of a phonograph record on said turntable during a play operation and being mounted for lateral swinging across said turntable and for raising and lowering the tone arm relative to said turntable: a control mechanism operative in a lead-in mode for effecting lead-in movement of said tone arm from an elevated rest position outside the perimeter of said turntable to a selected set-down position of said stylus on a record supported by said turntable so as to commence a play operation, and in a return mode for effecting a return movement of said tone arm to said rest position upon the termination of said play operation, said control mechanism comprising

a drive gear rotatable by said drive means;

a control gear having a cam groove therein and being turned by said drive gear in said lead-in and return modes of operation;

a pivotally mounted main lever having a cam follower engaging said cam groove for effecting swinging movements of said main lever in first direction from a stop position to a play position and in a second direction back to said stop position in response to the turning of said control gear in said lead-in and return modes of operation, respectively;

a lead-in lever mounted for pivoting about an axis apart from the axis of swinging of the tone arm;

releasable coupling means for urging said lead-in lever to swing with said main lever in said first direction;

tone arm drive means for swinging said tone arm in the direction of said lead-in movement thereof in response to the swinging of said lead-in lever with said main lever in said first direction;

a record size selecting member which is turntable about a fixed axis and which has an edge comprised of portions at different radial distances from said fixed axis;

manually actuable control means for turning said record size selecting member and thereby operatively disposing a selected one of said edge portions thereof; and

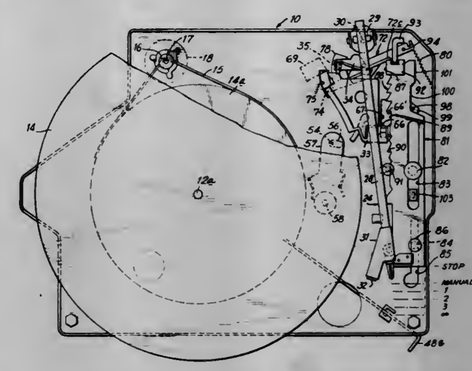
abutment means on said lead-in lever defining an abutment surface engageable with the operatively disposed edge portion of said record size selecting member for correspondingly limiting the swinging of said lead-in lever with said main lever in said first direction and thereby determining said selected set-down position, said abutment surface being cylindrical and said abutment means being rotatably adjustable in respect to said lead-in lever about an axis which is eccentric in respect to said cylindrical abutment surface for finely adjusting said set-down position.

4,113,264

PHONOGRAPH RECORD PLAYER

Toru Sato, Sagamihara; Shunji Tokumitsu, Tokyo; Masaaki Sakai, Kawasaki; Kazuhiko Kawasaki, Musashino; Kenichiro Kaimori, Zama, and Mitsuo Osawa, Fujisawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 765,374, Feb. 2, 1977, abandoned. This application May 19, 1977, Ser. No. 798,313
Claims priority, application Japan, Feb. 3, 1976, 51-9956
Int. Cl.[2] G11B *17/16*
U.S. Cl. 274—15 R 15 Claims



1. In a phonograph record player having a rotatable turntable for supporting a phonograph record during the playing thereof, drive means for rotating said turntable, and a tone arm assembly including a tone arm carrying a pickup with a stylus to track the groove of a phonograph record on said turntable during a play operation and being mounted for lead-in movement of said tone arm from an elevated rest position outside the perimeter of said turntable to a selected set-down position of the stylus on a record supported by said turntable for commencement of a play operation and for return movement of said tone arm to said rest position upon the termination of a play operation: a control mechanism comprising

gear means selectively driven by said drive means;

trip means actuable at will and upon completion of each play

operation to cause a period of driving of said gear means by said drive means;

lever means driven by said gear means for urging said tone arm to automatically undergo said return movement and then said lead-in movement during respective portions of each period of driving of said gear means;

a mode selecting member manually movable to positions for selecting stop, manual and repeat modes of operation, respectively, of the record player;

latch means which is normally engaged with said mode selecting member in said position thereof for selecting said manual mode of operation, said latch means being operative when engaged to prevent said lead-in movement of the tone arm under the urging of said lever means;

means for causing operation of said drive means when said mode selecting member is in any one of said positions thereof for selecting the manual and repeat modes of operation, respectively;

means for disengaging said latch means in response to the disposition of said mode selecting member in each said position thereof for selecting a repeat mode of operation; and

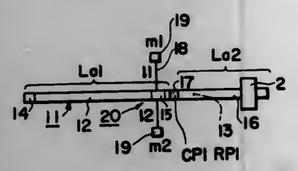
means responsive to driving of said gear means for temporarily disengaging said latch means in a concluding portion of each period of driving of the gear means following said portion thereof corresponding to the automatic lead-in movement of the tone arm so that, with said mode selecting member in the position thereof for selecting the manual mode of operation, said tone arm can then be manually lead-in from said rest position to a manually determined set-down position on the record.

4,113,265

TONE PICKUP ARM DEVICE KEEPING EXCELLENT DYNAMIC LATERAL BALANCE AND DAMPING EFFECT

Motoi Iyeta, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 11, 1977, Ser. No. 786,392
Claims priority, application Japan, Apr. 12, 1976, 51-41017
Int. Cl.[2] G11B *3/16*
U.S. Cl. 274—23 R 5 Claims



1. A pickup arm device comprising:

a pickup arm;

a dynamic damper provided in said pickup arm to divide the pickup arm into a rear and a front part;

a fulcrum supporting said pickup arm and positioned at said rear part of the pickup arm;

a head shell provided on one end of said front part of the pickup arm remote from said damper; and

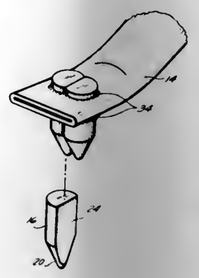
a dynamic lateral balancer provided on said front part of the pick arm but spaced from said damper and located closer to said fulcrum than is said head shell on said front part.

4,113,266

PLAYBACK STYLUS FOR PHONOGRAPH RECORD STAMPER

George Alexandrovich, Commack, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,391
Int. Cl.[2] G11B *3/02, 3/44*
U.S. Cl. 274—37 4 Claims



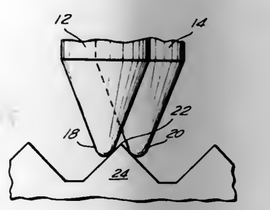
1. A stylus assembly for tracking a phonograph record stamper or matrix comprising: a first elongated member having a longitudinally extending body portion terminating at one end in a pointed tip having diametrically opposed edges contoured to engage a phonograph record; a first flat surface extending longitudinally along substantially the entire length of said first member; a second elongated member having a longitudinally extending body portion terminating at one end in a pointed tip having diametrically opposed edges contoured to engage a phonograph record; a second flat surface extending longitudinally along substantially the entire length of said second member; means bonding said first member and said second member to each other along said flat surfaces with said members aligned so that said tips together define a "V" with an edge of one member facing an edge of the other member so that the stylus assembly can simultaneously engage both sides defining a ridge of a stamper or matrix, an elongated tube, and means for bonding the ends of said members opposite said "V" to said tube with said tips defining a line perpendicular to the direction of said elongated tube.

4,113,267

DOUBLE STYLUS ASSEMBLY FOR PHONOGRAPH RECORD STAMPER PLAYBACK

Roland C. Wittenberg, New Hyde Park, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,397
Int. Cl.[2] G11B *3/02, 3/44*
U.S. Cl. 274—37 3 Claims



1. A stylus assembly for tracking a phonograph record stamper or matrix having raised ridges having information comprising:

a first stylus member having a longitudinally extending body portion terminating at one end in a pointed tip and having a record engaging edge;

a second stylus member having a longitudinally extending body portion terminating at one end in a pointed tip and having a record engaging edge;

an elongated tube; the ends of said first and second styli members opposite said tips being bonded to said tube, said tips defining a line angled to said tube axis at an angle other than zero; and,

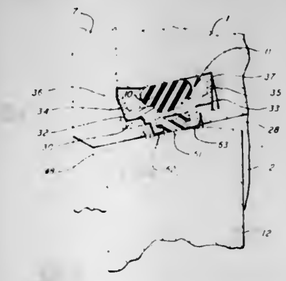
said first and second styli members being bonded to one another generally in the form of an inverted "V" and oriented so that said tips are aligned to engage the ridges from opposite sides offset from one another in the direction along the direction of tube elongation.

4,113,268

EXTENDED TEMPERATURE RANGE VALVE SEAL

Kenneth C. Simmons, Plainfield, Conn.; Harry C. Champlin, Jr., Ashaway, R.I.; Carl F. Livorsi, Holbrook, Mass., and Joseph A. Wucik, Jr., Westerly, R.I., assignors to Posi-Seal International, Inc., North Stonington, Conn.

Continuation-in-part of Ser. No. 777,644, Mar. 15, 1977, abandoned. This application May 18, 1977, Ser. No. 797,921
Int. Cl.[2] F16J *15/34*
U.S. Cl. 277—168 7 Claims



1. A seal ring for use as an extended-temperature range valve seat, the seal ring having a hard metal body formed with

a cylindrical shoulder portion, the shoulder portion being defined by a circumferential front surface, an opposed circumferential rear surface, and two ends,

a pair of circumferential flanges extending from the rear surface of the shoulder at each of the respective ends, each flange having a circumferential edge spaced radially from the rear surface of the shoulder portion,

a circumferential rib extending from the front face of the shoulder portion intermediate the ends and terminating in a circumferential seating surface, the width of the rib being less than the distance between said ends of the shoulder portion,

the seal ring being adapted to fit within an undercut circumferential groove in a seating region of a valve, such groove having substantially parallel sides spaced apart by a distance greater than the distance between the ends of the shoulder portion of the ring and an opening narrower than the distance between the sides of such groove, and the rib of the seal ring being adapted to extend through such a groove opening for movable mating engagement of the rib seating surface with a complementary sealing surface of such a valve, wherein the improvement comprises:

a circumferential groove being formed in the seating surface of said rib, the groove having an opening narrower than the width of an interior portion thereof and

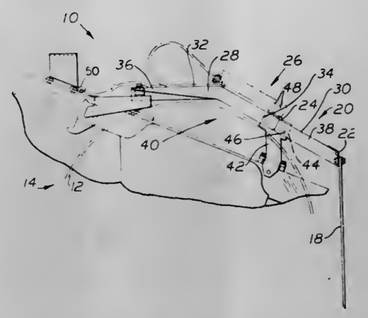
a seat ring of material softer than the metal of the seal ring, the seat ring fitting tightly within the groove in the rib and extending through the opening of the groove in the rib and beyond the rib seating surface to terminate in a primary valve seat surface, said primary valve seat surface of said seat ring being adapted to provide the only sealing engagement with such a complementary valve sealing surface unless the temperature inside such valve exceeds the destruction temperature of the seat ring material.

4,113,269

FENDER

Warner G. Richardson, and Eugene M. Wilson, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 22, 1977, Ser. No. 826,576
Int. Cl.[2] B62B *9/14*
U.S. Cl. 280—154.5 R 5 Claims



1. A composite, movable fender portion comprising:

a first assembly having a surface and first and second end portions;

a second assembly having a working member and being connected to the first assembly and movable relative to the first assembly between a first position at which the working member is spaced from the first assembly and a second position at which the working member is supported by the surface of the first assembly; and

means for maintaining the second assembly in a selected one of the first and second positions,

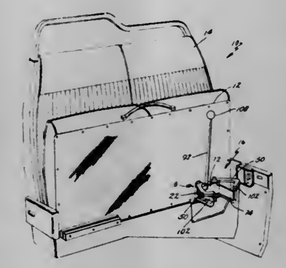
said maintaining means including a stationary support bracket having an opening, and a pin insertable in said opening, said opening being alignable with an opening in the second assembly at the first position of said second assembly, said support bracket supporting the second assembly through said pin and said openings at only the first position and continuously supporting the first assembly.

4,113,270

WHEELCHAIR RETAINER MECHANISM

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Filed Mar. 4, 1977, Ser. No. 774,528
Int. Cl. B60p *7/00*
U.S. Cl. 280—179 R 18 Claims



1. A wheelchair retainer attachable to the interior of a vehicle for retaining a wheelchair in a fixed position during vehicle movement, comprising:

a housing attachable to the interior of the vehicle and having an outwardly opening mouth dimensioned to receive a wheelchair wheel;

a pair of jaws, each pivotally mounted to said housing for movement from a first position permitting entrance of a wheelchair wheel into said housing to a second position closing the mouth of the housing and thereby retaining said wheel;

means slidably mounted on said housing independent of said jaws and engaged by an entering wheelchair wheel for engaging and pivoting said jaws from said first position to said second position; and

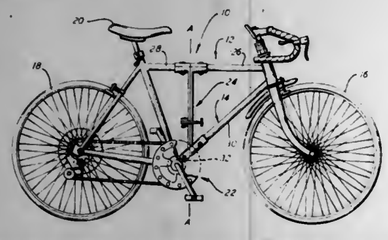
lock means mounted to said housing for locking said jaws in said second position after entrance of said wheelchair wheel.

4,113,271

FOLDING ATTACHMENT FOR BICYCLES

Arnold Furia, Wedgewood Apts. E-35, New Hartford, N.Y. 13413

Filed Mar. 4, 1977, Ser. No. 774,526
Int. Cl.² B62K *15/00*
U.S. Cl. 280—287 **4 Claims**



1. An attachment for converting a standard bicycle to a foldable bicycle by cutting the upper, horizontal, tubular frame member and the lower, diagonal, tubular frame member in a plane parallel to the wheel axes, thereby providing separate front and rear portions each having upper and lower frame end portions, said attachment comprising:

(a) first and second elongated, flat connecting bars each having a length substantially equal to the distance between said upper and lower frame end portions;

(b) hinge means connecting said bars to one another for relative movement about an axis parallel to the length thereof and spaced laterally therefrom;

(c) first and second semi-cylindrical members extending rigidly from the upper ends of said first and second bars, respectively, along axes perpendicular to the length thereof;

(d) third and fourth semi-cylindrical members extending rigidly from the lower ends of said first and second bars, respectively, along axes arranged at an angle with respect to the length of said bars equal to the angle of the axis of said diagonal frame member with the vertical; and

(e) each of said semi-cylindrical members having at least one opening therethrough and having an inside diameter substantially equal to the outside diameter of said frame end portions, whereby the latter may be placed in contact with each of said semi-cylindrical members and attached thereto by means of bolts extending through said openings in said semi-cylindrical members and registering openings in said frame end portions.

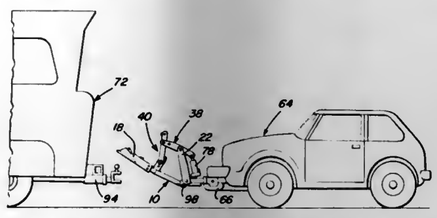
4,113,272

TOW BAR WITH TOWED VEHICLE SUSPENSION FEATURE

Carl M. Sebby, 211 Chateau Apartments, Minot, N. Dak. 58701

Filed Jul. 5, 1977, Ser. No. 812,896
Int. Cl.² B62D *53/04*
U.S. Cl. 280—402 **15 Claims**

1. An elongated tow bar construction including first front and second rear generally horizontal elongated tow bar arm sections joined together at one pair of corresponding end portions in generally end aligned relation and for relative angular displacement about a horizontal transverse axis, the free end of one of said sections remote from the other section including first means adapted to be connected to a towing vehicle by an articulated connection, the free end of said other section remote from said one section including second means for fixed attachment to a towed vehicle, and third means operatively connected between said arm sections to forcibly effect relative angular displacement of said arm sections to depress said free ends relative to said one pair of ends thereof, said



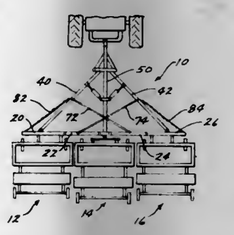
third means including rigid upstanding members carried by said first and second arm sections and spaced apart along said elongated tow bar construction, articulated connecting link means interconnected between upper portions of said upstanding members for angular displacement relative thereto, and force means interconnected between said connecting link means and one of said arm sections for angularly displacing said link means relative to said upstanding members whereby to force the upper end portions of said upstanding members apart.

4,113,273

MULTIPLE IMPLEMENT FOLDING HITCH

Michael Gates, Lansford, N. Dak. 58750

Filed Jul. 7, 1977, Ser. No. 813,517
Int. Cl.² B60D *1/14*
U.S. Cl. 280—413 **7 Claims**



1. A multiple implement folding hitch, comprising,

a first normally transversely extending and substantially horizontally disposed frame means comprised of a plurality of frame members pivotally connected together about vertical axes in an end-to-end relationship, said frame means being movable from the transversely extending field position to a folded transport position, said first frame means adapted to have at least a pair of trailing implements operatively connected thereto,

a first longitudinally extending and substantially horizontally disposed tubular frame means extending forwardly from the center of said first frame means for operative connection to a prime mover,

a first elongated member operatively pivotally connected at its forward end to said first tubular frame means adjacent the forward end thereof and extending rearwardly and outwardly therefrom and being operatively pivotally connected to said first frame means adjacent one outer end thereof,

a second elongated member operatively pivotally connected at its forward end to said first tubular frame means adjacent the forward end thereof and extending rearwardly and outwardly therefrom and being operatively pivotally connected to said first frame means adjacent one outer end thereof,

a second tubular frame means selectively telescopically mounted in said first tubular frame means adapted to have at least a third trailing implement connected thereto between the said pair of trailing implements when said first frame means is in its field position, said second tubular frame means adapted to be slidably moved rearwardly with respect to said first tubular frame means to permit the said third trailing implement connected thereto to be positioned rearwardly of the said pair of implements when said first frame means is moved to its folded transport position,

and means for maintaining said first frame means in said field and transport position.

4,113,274

PNEUMATIC LIFT FOR SINGLE AXLE TRAILER

Oscar Oswald Vahrenkamp, 317 Sparks Dr., Grand Prairie, Tex. 75050

Filed Nov. 22, 1976, Ser. No. 743,607
Int. Cl.² B60D *1/14*
U.S. Cl. 280—475 **8 Claims**



7. In a portable utility trailer assembly of the type including a frame supported by a single axle and having a tongue assembly including a hitch and coupling pin projecting from the frame for hookup to a tow truck, the combination with the trailer assembly of:

a pneumatic jack assembly and a source of compressed air operably connected thereto for assisting an operator in lifting the tongue to engage a hitch receptacle on the tow truck, the jack assembly including a ground engaging strut pivotally secured to the tongue, a pneumatic power transducer having a pressure chamber connected to receive compressed air from the compressed air source and an actuating arm operably coupled to the pressure chamber for transmitting a mechanical force in response to power derived from the compressed air in the pressure chamber, the power transducer being pivotally secured to the tongue and the actuating arm being pivotally secured to the strut to permit rotational movement of the power transducer and tongue relative to each other and relative to the strut as the tongue is lifted by the force exerted by the power transducer through the actuating arm;

a spring having an end portion secured to the tongue and an opposite end portion secured to the strut, the spring being stretched by the movement of the tongue relative to the strut when the actuating arm is extended, the stretched spring applying a recoiling force to retract the strut and actuating arm when the pressure chamber is de-energized; and,

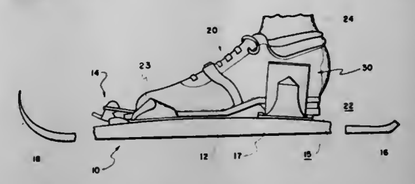
a latch having a first end portion for confining the coupling pin in registration with the hitch and coupling member and having a second end portion for engaging the strut, the latch being pivotally secured to the tongue and rotatable to a first position to permit access to the coupling pin when the strut and actuating arm are extended, and being rotatable to a second position wherein the coupling pin is confined by the first end portion and the second end portion is confined by the strut when the strut and actuating arm are fully retracted.

4,113,275

SKI BOOT HEEL RESTRAINING APPARATUS

William Claude Sherwin, Salt Lake City, Utah, assignor to Nortec Inc., Salt Lake City, Utah

Filed Oct. 12, 1976, Ser. No. 731,558
Int. Cl.² A63C *9/18*
U.S. Cl. 280—615 **10 Claims**



1. In combination with a ski assembly which comprises:

an elongated ski having an upper surface and a snow engaging lower surface and a forward portion and a rearward portion, and

a suitable binding apparatus carried by the forward portion for securing the toe of a ski boot to the upper surface of the ski,

the improvement of a ski boot heel restraining means carried by the ski, the heel restraining means comprising:

a base plate secured to the top surface of the ski by any suitable means:

at least one continuous member disposed upon the base plate comprising:

a pair of side portions thereof extending generally vertically from the base plate and disposed apart from each other so as to define a space therebetween to loosely accept the heel of the boot, and

a generally horizontal resilient center portion spanning the space between the vertical portions generally at the lower ends thereof, said center portion being curved upwardly away from the base plate, so that the weight of an operator of the ski acting through the heel upon the resilient raised center portion causes the center portion to lower toward the base plate and the vertical portions of the member to rotate toward the center of the ski so as to grip the heel and to prevent lateral movement thereof and so that the heel is released when subsequently raised from the center portion; and

means loosely securing the member to the base plate so that the member is centrally disposed laterally in respect to the ski and the said space is oriented transverse to the ski, said means permitting substantially unimpeded displacement of the center portion of the member a suitable amount upwardly and downwardly and permitting also unimpeded rotation of the vertical portions inwardly and outwardly in respect to the ski.

4,113,276

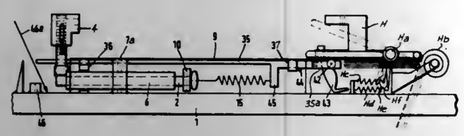
SKI BINDING AUTOMATICALLY RELEASABLE BY OVERSTRESS

Bernhard Kirsch, Im Litzelholz 23, 5500 Trier-Biewer, Fed. Rep. of Germany

Filed Jan. 3, 1977, Ser. No. 756,469
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1975, 2559271; Feb. 6, 1976, 2604513; Apr. 10, 1976, 2615806
Int. Cl.² A63C *9/08*
U.S. Cl. 280—616 **31 Claims**

1. In a ski binding including a toe clip and swivel means mounting the clip for swiveling about an axis extending longitudinally of a ski, the improvement comprising guide means guiding the swivel means for movement lengthwise of the ski between a rearward position in which the toe clip is engaged with a ski boot sole in retaining relationship and a forward position in which the toe clip is swivelable into sole-released

position, mounting means supporting said guide means for movement transversely of the ski, and resilient force-producing means for exerting a force on the swivel means normally retaining them in their rearward position.

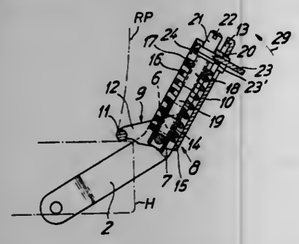


4,113,277

SAFETY SKI BINDING

Reinhold Zoor, Dachau, Fed. Rep. of Germany, assignor to Heinrich Wunder KG, Fed. Rep. of Germany

Filed Nov. 26, 1976, Ser. No. 746,185
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1975, 2553886; Feb. 28, 1976, 2608322
Int. Cl. A63c 9/08
U.S. Cl. 280—626 20 Claims



1. In a safety ski binding, a combination comprising a yoke which is pivotable with respect to the ski about an axis extending transversely of the skiing direction; pivot means provided in said yoke and extending in substantial parallelism with said axis; a lever movable about and in a direction substantially transversely of said pivot means, said lever having a shorter first arm constituting a holding-down device movable to and from an operative position of engagement with the heel of a ski boot or the like and a longer second arm; disengageable coupling means for normally maintaining said device in operative position, including a first coupling element provided on said second arm and a second coupling element on said yoke, said first element being movable relative to said second element from a first position of engagement with to a second position of disengagement from said second element; and means for biasing said first coupling element to said first position to thus determine the magnitude of that force which is required to move said first element to said second position, said biasing means being disposed behind said pivot means, as considered in the skiing direction.

4,113,278

ACCESSORY KIT AND METHOD FOR PROVIDING SUPPLEMENTAL ANTI-SWAY CONTROL FOR AUTOMOTIVE VEHICLES

C. Glen Rissberger, 5055 SW. Elm, Beaverton, Oreg. 97005

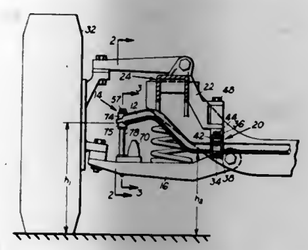
Filed May 17, 1977, Ser. No. 797,740
Int. Cl. B60g 11/20
U.S. Cl. 280—689 4 Claims

1. An accessory kit, connectable to the pair of steering idler arm mounts and to the A-arms on the undercarriage at the front wheels of an automotive vehicle, for providing supplementary anti-sway control at the front wheels thereof, said accessory kit comprising:

(a) an elongate bar having length sufficient to extend from a first lower A-arm of said vehicle to an opposing lower A-arm thereof and a configuration closely approximating the respective planes of the undercarriage of said vehicle intermediate said A-arms, said bar having an aperture formed in each of the ends thereof;

(b) a pair of bushings each composed of elastomeric material and having an aperture formed therein for closely receiving the respective ends of said bar therethrough;

(c) a pair of brackets each having an upper portion and a lower portion, said portions defining a space therebetween for closely receiving a respective one of said bushing pair



therein, said upper bracket portions each having a aperture formed therein suitable for receiving fastener means therethrough for securing said upper bracket portion to a respective one of said steering idler arm mounts;

(d) means for securing each of said lower bracket portions to its respective upper portion so as to lockingly engage said bushing therebetween; and

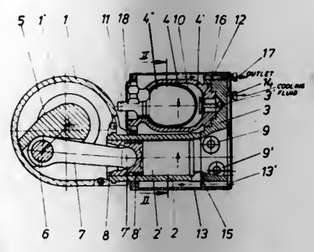
(e) a pair of fastener means comprised of elastomeric material for resiliently securing said respective rod ends to said respective A-arms.

4,113,279

HYDROPNEUMATIC SPRING ELEMENT

Helmut Hausenblas, Kassel-Ki., and Hans-Erich Holzforster, Fuldatal, both of Fed. Rep. of Germany, assignors to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jun. 2, 1976, Ser. No. 691,978
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1975, 2525493
Int. Cl.² B60G 3/12
U.S. Cl. 280—705 6 Claims



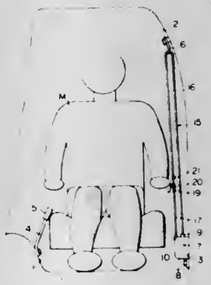
1. A hydropneumatic spring element, especially for use in connection with land vehicles, especially vehicles of the track laying type, which includes in combination: a crank case, cylinder-piston means connected to said crank case, girder means with first and second portions, hydraulic fluid storage means having an interior, said girder means having the first portion connecting one end of said cylinder-piston means and having said hydraulic fluid storage means connected to the second portion of said girder means, damping valve means supported by said girder means adjacent said cylinder-piston means including a cylinder with an interior and a piston, first conduit means adapted to be connected to a source of cooling fluid and leading to the interior of the cylinder of said cylinder-piston means and to the interior of said fluid storage means, rocker means rotatably journalled in said crank case for connection with a wheel rocker outside said crank case, a connecting rod with a crank pin at one end thereof pivotally connected to said rocker means, said connecting rod having another end portion pivotally connected to the piston of said cylinder piston means, a container made of elastomeric material arranged within said fluid storage means and provided with inlet valve means for connection with a source of gaseous medium and for conveying the gaseous medium into said container, a cooling jacket surrounding said girder means and said cylinder-piston means and said fluid storage means, and having an outlet and including second conduit means having an inlet connectable to a source of cooling liquid and communicating with the interior of said cooling jacket for conveying cooling liquid along the outer walls initially along said girder means and thereafter along said cylinder piston means and along said fluid storage means through said outlet.

4,113,280

SEAT BELT DEVICE FOR USE IN VEHICLE

Hiroshi Arai, Ohbu, and Mamoru Mori, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 3, 1977, Ser. No. 765,392
Claims priority, application Japan, Feb. 19, 1976, 51-18751[U]
Int. Cl.² A62B 35/00; B60R 21/10
U.S. Cl. 280—747 4 Claims



1. A seat belt device for use in a vehicle in which a belt is strung in a loop fashion so as to hold an occupant of a seat of the vehicle by a shoulder belt portion and a lap belt portion of the belt, and a part of the belt is wound on a shaft of a single retractor wherein the ends of said shoulder belt and said lap belt portions are coupled together by being overlapped one on the other to form a coupling portion of greater thickness than said shoulder belt portion, and wherein a tongue plate, having a slit which is wider than the thickness of said shoulder belt portion and narrower that the thickness of said coupling portion, is provided on the shoulder belt portion of the belt, said coupling portion acting as a stopper preventing the tongue plate from slipping down the belt when not in use.

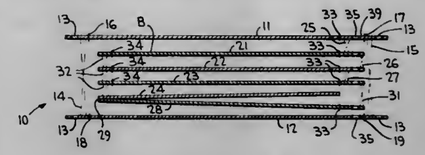
4,113,281

CONTINUOUS BUSINESS FORMS ASSEMBLY

Per Welen Halse, Oslo, Norway, assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 727,518, Sep. 28, 1976. This application Aug. 2, 1977, Ser. No. 821,223
Int. Cl.² B41L 1/20
U.S. Cl. 282—11.5 A 3 Claims

1. A series-connected business form adapted to be fed through the printing means of a business machine, comprising a continuous pair of superimposed outer webs, said webs each having a row of spaced feed holes extending along at least one marginal edge thereof in superimposed relationship and being arranged to engage the feed means of the business machine so that the business form is thereby advanced into and past the printing means, said outer webs being attached together by first securement means adjacent said superimposed holes, at least one intermediate web lying between said outer webs and having one marginal edge thereof spaced inwardly of said superimposed feed holes, said outer webs having spaced transverse lines of weakening in superimposed relationship, said intermediate web having cut portions presenting opposite edges spaced inwardly of said transverse lines of weakening, said form being separable into individual units along said transverse lines, said intermediate web being attached to only one of said outer webs by second securement means extending longitudinally of the form, and said one of said outer webs having a first longitudinal line of weakening thereon located between said first and second securement means, whereby upon the printing of a number of said units, the next to the last of said units so printed may be separated along said transverse lines of weakening whereafter said one of said outer webs and said intermediate web attached thereto of the last of said printed units may be separated from the other of said outer webs thereof to thereby leave said other web of said last unit available as a drive web for initiating the feed of the remaining units to be printed through the printing means.



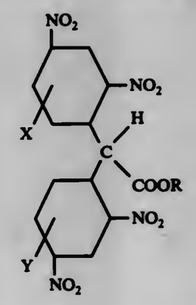
4,113,282

PRESSURE-SENSITIVE CARBONLESS COPY SYSTEM AND TRANSFER SHEET FOR USE THEREIN

Sydney Martin Spatz, Circleville, Ohio, and Dale Richard Shackle, Scottsboro, Ala., assignors to The Mead Corporation, Dayton, Ohio

Filed Feb. 10, 1977, Ser. No. 767,543
Int. Cl.² B41M 5/16, 5/22
U.S. Cl. 282—27.5 15 Claims

1. A pressure-sensitive carbonless copy system comprising a transfer sheet and a developer sheet, said transfer sheet comprising a paper substrate having a plurality of surfaces and having applied thereto on at least one of said surfaces microcapsules containing a solution of a color precursor in a carrier liquid, said carrier liquid being an oil immiscible with water, said color precursor having the following formula:



wherein R is selected from the group consisting of a C_1 to C_4 alkyl, methoxymethyl, methoxyethyl, ethoxymethyl and C_1 to C_4 chloroalkyl and X and Y are separately selected from the group consisting of hydrogen, a halogen, C_1 to C_4 alkyl, C_1 to C_4 alkoxy and C_1 to C_4 chloroalkyl, and said developer sheet being a paper substrate having a plurality of surfaces and having applied thereto on one of said surfaces an alkaline color developer selected from the group consisting of the hydroxides of sodium, potassium and lithium and ethylenediamine, dieth-

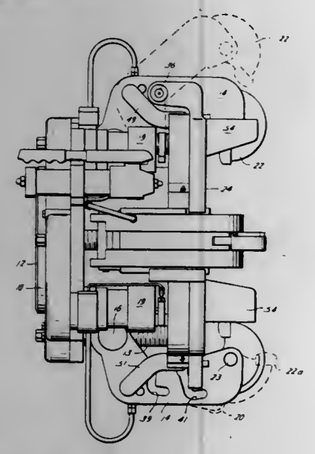
ylenetriamine, triethylenetetramine, tetraethylenepentamine, trimethylenediamine, N-methylethylenediamine, N-ethylethylenediamine, tetramethylenediamine, N-(2-hydroxyethyl)ethylenediamine, 1,8-bis-(dimethylamino)naphthalene, butylamine, piperidine, pyrrolidine, ethanolamine, N-methylguanidine, N-methylpiperidine, N-phenylguanidine, ethylamine, ethylpyrrolidine, xanthine and mixtures thereof.

4,113,283

PIPE COUPLER FOR VARIOUS SIZE FLANGES

William M. Curtis, and Dean E. Hermanson, both of Garland, Tex., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Apr. 26, 1977, Ser. No. 790,963
Int. Cl.² F16L *23/00*
U.S. Cl. 285—12 **9 Claims**



1. A coupler comprising,
a body having a flowway therethrough,
a plurality of clamp arms each having cam slot means therein,
pivot means mounting each arm on the body for swinging movement about the pivot,
means for moving said pivot means along the body,
an adapter ring having a flowway therethrough,
means releasably mounting said adapter ring on the body,
means sealing between the body and adapter ring about the flowways therethrough,
and cam follower means on the adapter ring cooperating with the cam slot means in each clamp arm controlling movement of the clamp arm during movement of the pivot means along the body.

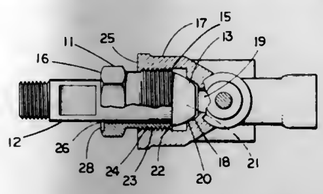
4,113,284

CONNECTION FITTING

William C. Blocker, 1406 N. Butler Ave., Indianapolis, Ind. 46218

Filed Mar. 30, 1977, Ser. No. 783,054
Int. Cl.² F16L *55/00*
U.S. Cl. 285—14 **9 Claims**

1. A fitting for connecting to an aperture of a container of a system whereby a substance is transferable in either direction through said fitting, which comprises:
a hollow cylinder having a first end and a second end, said first end being externally threaded and adapted to be received in the aperture;
a stem member having a bore extending therethrough and an enlarged head portion at its first end, said stem member being longer than said cylinder and slidably extending therethrough and extending out from either end of said cylinder, said head portion adapted to abut said first end of said hollow cylinder when said cylinder is received in the aperture;
first means between the first and second end of said cylinder operable to provide an escape path of least resistance to any leaks occurring between said head portion and a corresponding aperture in a container into which said



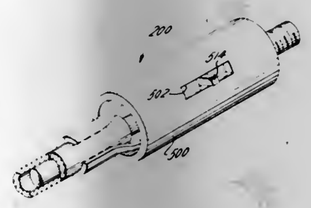
fitting is placed, said head portion being designed to substantially close off said aperture by interfacing therewith; and
second means for the retention of leak-test solution, said means includes a recessed area at the second end of said hollow cylinder and adjacent to the point of exit to the atmosphere of said first means.

4,113,285

CLAMPING DEVICE

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 658,582, Feb. 17, 1976, Pat. No. 4,062,573, which is a division of Ser. No. 479,667, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 427,149, Dec. 21, 1973, abandoned. This application Jul. 28, 1977, Ser. No. 819,819
Int. Cl.² F16L *33/22*
U.S. Cl. 285—45 **5 Claims**



1. A clamping member for attaching one part of a two part hose coupling device to a hose, comprising, in combination, a body section having a bore running therethrough, and comprising a first end portion, an intermediate portion and a second end portion, said first end portion being adapted to be connected to one part of a two part hose coupling device; at least a pair of spaced apart clamping rods each pivotally connected to said body section of said clamping member, each of said clamping rods including a clamp section connected at one end of said rod; rod moving means comprising a ring member disposed about said body section in contact with said clamping rods and which moves axially with respect to said body section and said clamping rods, said rod moving means further including at least a pair of spaced apart projections extending therefrom, a protective cover having at least a pair of spaced apart elongated slots which extend axially of said cover, said cover being disposed over said body portion of said clamping member in a manner such that said projections of said rod moving means protrude through said slots, and further including an inner sleeve member disposed within said bore of said body section of said clamping member, in a manner such that when a hose section is fitted within said clamping member, a portion of said hose is disposed over at least a portion of said inner sleeve member and said rod moving means can be positioned

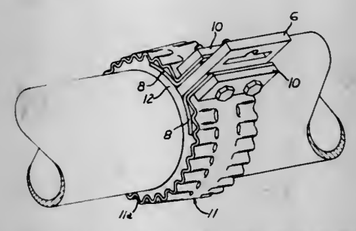
so as to force said connecting rods to be pivoted downwardly so that the clamp sections thereof will be forced against said hose and thereby hold said hose in place in said body section and in communication with said one part of said coupling device.

4,113,286

HANGER FOR PIPE

Harold Kennedy, Jr., Birmingham, Ala., assignor to United States Pipe and Foundry Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 724,061, Sep. 17, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,384
Int. Cl.² F16L *3/00*
U.S. Cl. 285—61 **5 Claims**



1. In combination, a pair of plain end pipes arranged in end to end relationship and generally horizontal, a sleeve type resilient gasket completely surrounding the abutting pipe ends, a metal band substantially surrounding said resilient gasket, said metal band having free ends and each free end having an upwardly extending portion, a hanger strip adapted to be clamped between said upwardly extending portions of said free ends, said hanger strip having a central upright leg with an upper and lower end and a pair of legs with one end of each leg extending upwardly adjacent said central upright leg and the other end of each of said pair of legs extending outwardly in an opposite and downwardly arcuate direction forming an arc underneath said free ends of said metal band and the lower end of said central upright leg extending interiorly of the arc formed by said other ends of said pair of legs, and means for clamping said hanger strip between said free ends of said metal band whereby the lower end of said central upright leg compresses said resilient gasket more than does said metal band.

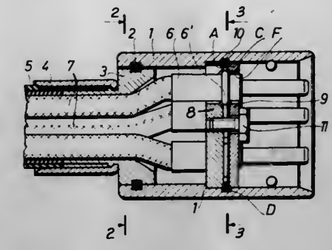
4,113,287

END FITTING FOR MULTI-CHANNEL HOSE

Nikolai Tikhonovich Bogatirev; Jevgeny Grigorievich Filianovich; Alexandr Dmitrievich Ignatyev; Alexandr Nikolaevich Merkulov; Jury Filippovich Ponomarenko; Jury Gheorghievich Shein, all of Moscow, U.S.S.R.; József Bassó, Budapest, Hungary; Béla Frituz, Budapest, Hungary; József Korbuly, Budapest, Hungary; Sándor Nagy, Budapest, Hungary; Sándor Mikes, Szeged, Hungary, and Zsolt Pap, Budapest, Hungary, assignors to Banyaszati Kutato Intezet, Budapest, Hungary; Skotchinksy Institut Gornogo Dela, Moscow, U.S.S.R. and Taurus Gumiipari Vallalat, Budapest, Hungary

Filed Apr. 14, 1977, Ser. No. 787,511
Int. Cl.² F16L *39/00*
U.S. Cl. 285—137 R **5 Claims**

1. An end fitting for a multi-channel hose, comprising a hollow body for positioning and retaining coupling elements of individual hoses; a positioning plate and a guiding plate respectively disposed within said body, at right angles to the longitudinal axis of the end fitting; respective apertures defined in said plates for receiving said coupling elements; adjusting means for varying the axial distance between said plates; and means disposed between said plates for resiliently spacing them apart, at least a part of said spacing means being farther from the longitudinal axis, when said plates are pulled towards each other under load, than in an unloaded state; wherein a groove is defined in the internal surface of said body, and said part of



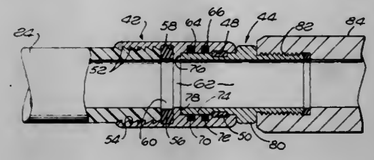
the spacing means is engaged in said groove when said plates are pulled towards each other.

4,113,288

SWIVEL COUPLING

Donald E. Cox, Rolling Hills Estates, Calif., assignor to Coxwells, Incorporated, Los Angeles, Calif.

Filed Dec. 6, 1976, Ser. No. 747,660
Int. Cl.² F16L *27/08*
U.S. Cl. 285—174 **4 Claims**



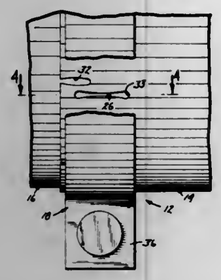
1. A coupling for connecting a tank for receiving or dispensing fluid with a hose having a circular inner cross section comprising:
a first mating member adapted to be securely connected to the tank, said first mating member having an inner hollow portion having a uniform circular cross section with the inside diameter equal to the inside diameter of the hose and adapted to transmit fluid therethrough, said first mating member further having a circumferential recess on the outer surface thereof;
a ring of nylon like material adapted to be fitted in said circumferential recess of said first mating member; and
a second mating member adapted to be rotatably coupled with said first mating member at one end with the hose at a second end, said second mating member including a circumferential recess on the inner surface thereof adapted to receive said ring to provide a rotatable mechanical coupling between said first mating member and said second mating member, said second mating member further including O-ring means mounted in grooves within the inner surface thereof for communicating with a portion of the outer surface of said first mating member to provide a fluid seal, said second mating member having a portion with an inner hollow surface for communicating with the fluid and having a circular inner cross sectional configuration which is identical to the circular cross sectional configuration of said inner hollow portion of said first mating member to provide an unobstructed flow path for fluid transmitted through said first and second mating members and the hose.

4,113,289

EXHAUST SYSTEM AND MUFFLER LAP JOINT

Wayne M. Wagner, Apple Valley, and John A. Campbell, Minneapolis, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 3, 1977, Ser. No. 773,847
Int. Cl.² F16L *21/06*
U.S. Cl. 285—322 **13 Claims**



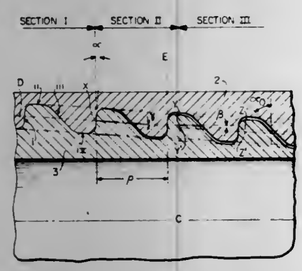
1. An exhaust conduit lap joint comprising, in combination:
a. an inner exhaust pipe having an end portion including a tubular wall;
b. an outer exhaust pipe having an end portion including a tubular wall with a free end, said tubular wall further having a plurality of captured slots therein, said slots being disposed inboard from said free end, whereby they do not extend through said free end, said end portion of said outer pipe extending telescopically over the end portion of the inner pipe; and
c. means for clamping the outer pipe to the inner pipe, including means encircling the outer pipe and covering the captured slots for preventing leakage of exhaust gas from the captured slots.

4,113,290

PRESSURE TIGHT JOINT FOR A LARGE DIAMETER CASING

Eishiro Milda, Tokyo, Japan, assignor to Tsukamoto Seiki Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 730,514, Oct. 7, 1976, abandoned. This application Sep. 20, 1977, Ser. No. 835,012
Claims priority, application Japan, Nov. 6, 1975, 50-133478
Int. Cl.² F16L *25/00*
U.S. Cl. 285—334 **3 Claims**



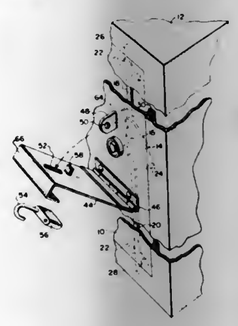
1. A pressure tight pipe joint for a large diameter pipe casing, said pipe joint comprising:
a first pipe member having internal threads;
a second pipe member having external threads;
said internal threads and said external threads each being in the form of buttress-type threads and including alternative crests and roots separated alternately by butt faces and back pressure faces;
one of said internal threads and said external threads being tapered and having a continuous and straight pitch diameter line inclined at an angle to the longitudinal axis of said pipe members;
the other of said internal threads and said external threads being divided into at least three tapered sections;
a first said section having a pitch diameter line coinciding with said continuous pitch diameter line of said one thread, such that said crests, roots, butt faces and back pressure faces of said first section fully contact respective faces of said one thread;
a second said section having a pitch diameter line diverging from said continuous pitch diameter line of said one thread, such that said butt faces of said second section contact respective butt faces of said one thread, but that said roots and crests and said back pressure faces of said second section are spaced from respective said crests and roots and said back pressure faces of said one thread; and
a third said section having a pitch diameter line which is parallel to but spaced from said continuous pitch diameter line of said one thread, such that said butt faces of said third section contact respective butt faces of said one thread, but that said roots and crests and said back pressure faces of said third section are spaced from respective said crests and roots and said back pressure faces of said one thread.

4,113,291

SECURITY LOCKING SYSTEM

Gordon Cameron, Greenwood, S.C., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 14, 1977, Ser. No. 777,050
Int. Cl.² E05C *1/06*; E05B *13/02*
U.S. Cl. 292—40 **4 Claims**



1. In an electric power distribution equipment housing having an access door with a door latching mechanism which includes an operating shaft rotatably mounted to the door, one end of the shaft extending out one side of the door to permit rotation of the operating shaft between a fully latched position and an unlatched position,
the improvement wherein said door is unlatched when said shaft is rotated less than 72° from its fully latched position, and said one end of said operating shaft is disposed within a recess defined by the surface of said one side of said door, said one end of said shaft comprising a five-sided shaft head which conforms to dimensional requirements of a pentahead bolt specified by the Rural Electrification Administration (R.E.A.) of the U.S. Department of Agriculture for securing an access door of an electric power distribution equipment housing, and said recess of said door conforming to dimensional requirements of a recess cup specified by said Rural Electrification Administration for use with said pentahead bolt; said improvement further comprising:
a bail, extending from said one side of said door on one side of said recess, which defines an opening therethrough for receiving a shackle of a padlock:

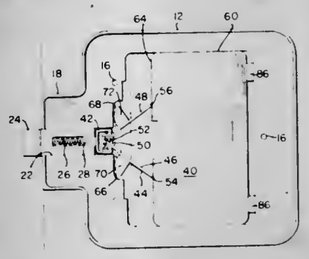
a hasp, pivotably mounted at one end to said side of said door on an opposite side of said recess or rotation between an open position and a closed position, having inner and outer surfaces defining a slot therethrough for receiving said bail as said hasp is rotated into its closed position, said hasp extending over said recess to prevent access to said shaft end therein when said hasp is closed; and
an index tab, disposed on said inner surface of said hasp, which projects into said recess adjacent a respective side of said five-sided shaft head, only when said shaft is in its fully latched position, and said hasp is in its closed position, to thereby lock said shaft in its fully latched position;
whereby said door can be padlocked closed only when said operating shaft is disposed in its fully latched position, an operating tool for said R.E.A. bolt can be used to unlatch said door when said hasp is in its open position, and said hasp can be used as a handle means for opening said door.

4,113,292

LATCH

Richard F. Gauron, Issaquah, and Susana S. Laconte, Auburn, both of Wash., assignors to Marketing Masters, Issaquah, Wash.

Filed Jul. 11, 1977, Ser. No. 814,330
Int. Cl.² E05C *1/16*
U.S. Cl. 292—165 **2 Claims**



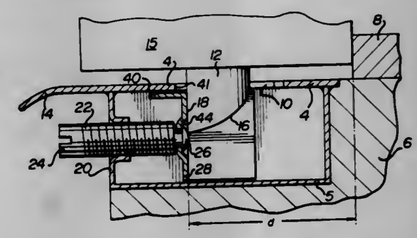
1. A latching apparatus comprising in combination:
a. a housing provided with mounting means and a hand insertable recess;
b. an associated striker plate;
c. a bolt slideably positioned inside of said housing and partly protruding therefrom for latching engagement with said associated striker plate;
d. a spring means mounted between said bolt and said housing for biasing said bolt in a position causing part of said bolt to protrude out of said housing for latching;
e. a handle cup means slideably positioned inside of said housing in alignment with said recess opening and adapted to receive part of one's hand;
f. a lever means including:
1. a first and a second lever each having a first geared end and a second end, each said first and second lever positioned between said bolt and said handle cup means at a predetermined angle with said second end of each said first and said second lever in slidable contact with said handle cup means;
2. a "U" shaped channel member mounted by its base to said bolt;
3. a hingeable connection formed between said "U" shaped channel member and said first geared end of each said first and second lever, respectively, whereby said first geared end of said first lever intermeshes with said first geared end of said second lever for synchronized movement of said first and said second lever;
g. shoulder means in said housing for engagement with said first and said second lever, at a location between said first geared end and said second end of each said first and said second lever whereby, upon manual sliding of said handle cup means, each said second end of said first and said second lever slides along said cup means thereby turning said first and said second lever about said hingeable connection in synchronized movement until said first and said second lever engages with said shoulder means so that said first and said second lever pivot about said shoulder means thereby pulling via said hingeable connection said slideably positioned bolt inside of said housing for unlatching said bolt from said associated striker plate, and whereby upon manual release of said handle cup means, said spring means slides said bolt in a latching position and repositions said lever means and said handle cup means.

4,113,293

ADJUSTABLE DOOR LATCH STRIKER

Rolland Paquette, P.O. Box 58, (Hwy. 69 North), Val Caron, Ontario, Canada

Filed Mar. 17, 1977, Ser. No. 778,693
Int. Cl.² E05C *21/02*
U.S. Cl. 292—341.18 **8 Claims**

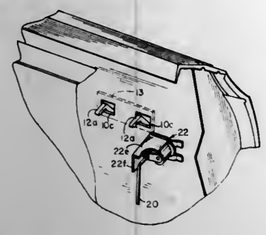


1. An adjustable strike for receiving a latch bolt of a swinging door, said latch bolt having a camming surface and keeper surface, the strike comprising:
a face plate, provided with an opening for receiving the latch bolt of the door when closed, for securing to a door jamb in a doorway over an appropriate cavity and adjacent a door stop;
a lip being an extension of the face plate, to extend from the doorway to engage and depress the latch bolt as the door closes;
a flange secured normal to the plate to extend into or beside the cavity between the plate opening and the lip;
a bolt extending through the flange, the end of the bolt towards the lip to be operatively exposed when the strike is installed and means whereby the bolt may be longitudinally adjusted and secured in the flange being associated with the bolt; and
a movable wall parallel to the flange and spaced therefrom to be within the cavity behind the face plate, positionable within the plate opening so that the keeper surface of the latch bolt will bear against this wall when the door is closed, the other end of the bolt being secured to this movable wall, longitudinal movement of the bolt in the flange causing the wall to move towards or away from the flange to permit alteration of the distance between the doorstop and this movable wall to a distance such that the door when closed will not vibrate against the door stop, forwardly extending sides fixed to the upper and lower ends of the movable wall, these sides slidably guided by guide means to assist in aligning the movable wall, the ends of these sides, after predetermined longitudinal movement of the bolt in one direction, acting as stops by abutting against an appropriately positioned abutment member to stop the bolt from becoming disengaged from the flange by further such longitudinal movement from the flange.

4,113,294
ANTI-THEFT CLIP

Francis Andrew Bierman, 1102 Magnolia Ave., Croydon, Pa. 19020

Filed Jun. 14, 1977, Ser. No. 806,374
Int. Cl.² E05C 13/00
U.S. Cl. 292—346 3 Claims

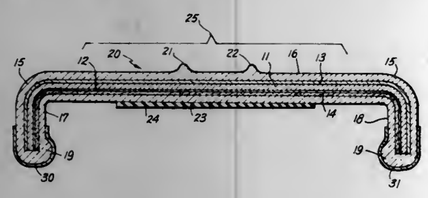


1. A resilient retaining clip for securing a lock cylinder to another member, said clip including a transverse connecting portion having spaced parallel legs extending therefrom a first panel extending from said transverse connecting portion and a second panel extending from said first panel wherein said spaced parallel legs are each bowed intermediate their respective ends.

4,113,295
LONGITUDINALLY CURVED IMPACT RESISTANT TRIM STRIPS

Brian A. Wenrick, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Filed Dec. 22, 1976, Ser. No. 753,449
Int. Cl.² B60R 19/00
U.S. Cl. 293—71 R 15 Claims

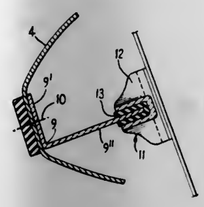


1. A laterally bent, reflective trim strip adapted to be longitudinally curved without subsequent wrinkling of the reflective material comprising, an extrusion comprising a transparent plastic sheath encapsulating a composite metallized strip, said metallized strip having a film of metal sandwiched between and bonded to a layer of high strength and high temperature resistant transparent plastic and a layer of opaque plastic so that the metal film is visible through the front face of said extrusion, said extrusion having a central portion lying in one plane and an edge portion lying in another plane so that when said extrusion is longitudinally curved, either the central portion or the edge portion will be placed in compression, and an elongated compression-resistant element secured to the rear face of said central portion where it is intended to concavely curve said strip and to said edge portion where it is intended to convexly curve said strip to minimize the compressive forces which are imposed upon any portion of the extrusion when the same is longitudinally curved.

4,113,296
BUMPERS ON MOTOR VEHICLES

Norbert Kirsch, Heidesheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 10, 1977, Ser. No. 776,202
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 7609080[U]
Int. Cl.² B60R 19/00
U.S. Cl. 293—96 4 Claims

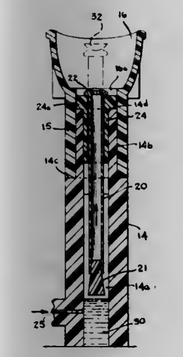


1. A motor vehicle having mounted on one end thereof a bumper terminating at each end in a portion bent to lie adjacent a facing side portion of the vehicle, two anchorages each comprising a plate having two upstanding facing portions defining a recess, and having a layer of a resilient material on each facing portion, each anchorage being secured on a respective one of the vehicle side portions with the recess opening towards the adjacent bumper end, two cranked retainer arms comprising two limbs, one limb being secured to a respective one of the bumper ends and the other limb being grippingly received and resiliently retained in the facing recess of the anchorage whereby, in the event of an impact on the bumper, the bumper ends can move in a generally horizontal plane of the vehicle as a result of said resilient retention.

4,113,297
DEVICE FOR INSERTING AND REMOVING CONTACT LENS

Jack Edward Quinn, 32724 Coastsite Dr., Rancho Palos Verdes, Calif. 90274

Filed Dec. 7, 1977, Ser. No. 858,436
Int. Cl.² A61F 9/00
U.S. Cl. 294—1 CA 5 Claims



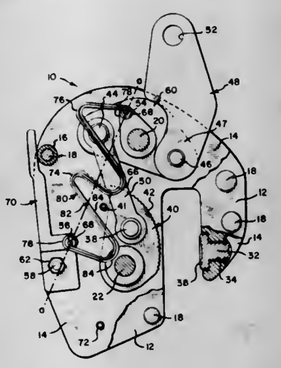
1. A device for inserting and removing contact lenses comprising:
- a liquid flotation chamber having a longitudinal compartment formed therein,
- means for supporting said chamber with said compartment along an axis having a generally vertical orientation, a rod member slidably mounted in said compartment for motion along an axis substantially parallel to the longitudinal axis of said compartment,

- means for positioning a human eye in a predetermined position directly above said flotation chamber,
- a liquid storage chamber having fluid contained therein, and
- means for providing fluid communications between said chambers,
- whereby when fluid is transferred from said liquid storage chamber to said flotation chamber to raise the level of liquid within said flotation chamber, said rod member is raised towards the eye to bring the contact lens placed on said rod into contact therewith.

4,113,298
LIFTING CLAMP AND SPRING THEREFOR

Valentine T. Kopp, Lynbrook, N.Y., assignor to Merrill Brothers, Maspeth, N.Y.

Filed Aug. 2, 1976, Ser. No. 710,736
Int. Cl.² B66C 1/48
U.S. Cl. 294—104 12 Claims

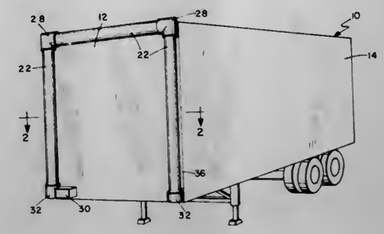


1. In a clamp of the type used for lifting steel plates including a pair of opposed jaws, said jaws facing each other across a plate-receiving space, one of said jaws being substantially fixed, the other of said jaws being movable across said space toward and away from said fixed jaw to grip a plate positioned therebetween, linkage means for moving said movable jaw into a locked on position in engagement with a plate in said space and out of said locked on position and into a locked open position in which said movable jaw is locked in a position out of contact with any plate in said space, said linkage means being such that when the weight of said plate is on said clamp the weight thereof tends to cause said movable jaw to move into tighter gripping engagement with the plate, and an operating lever for selectively moving said linkage means into and out of said locked on and locked open position, the improvement comprising:
- (a) a combination link-spring pivoted at one end to said operating lever and at the other end to said linkage means,
- (b) said link-spring when said lever is in said locked open position being under compression,
- (c) when said lever is in said locked on position said link-spring being under tension and,
- (d) said operating lever during at least the latter portion of its movement from the locked on to the locked open position exerting a compressive force through said link-spring to said linkage means to move the same to the locked open position.

4,113,299
ROTATING MAGNUS TUBES

David W. Johnson, 1884 Sunset Blvd., San Diego, Calif. 92103, and Gary C. Johnson, 724 Resconada La., El Paso, Tex. 79922

Filed Oct. 4, 1976, Ser. No. 729,195
Int. Cl.² B62D 35/00
U.S. Cl. 296—1 S 5 Claims

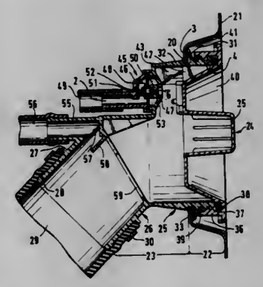


1. On a vehicle having a bluff face end wall producing resistance to air having a velocity component orthogonal to said bluff face, an air resistance reduction mechanism comprising:
- (a) a cylindrical tube parallel and adjacent to an edge of said bluff face;
- (b) means rotationally mounting said cylindrical tube on said vehicle; and
- (c) a motor for driving said tube such that the flow of air thereover is expedited to reduce drag, said motor being reversible to cause said tube to spin in the opposite direction to increase drag to augment the braking capability of the vehicle.

4,113,300
FILLER CONNECTION FOR VEHICLES DRIVEN BY INTERNAL COMBUSTION ENGINES

Bernd Schenk, Hamburg, Fed. Rep. of Germany, assignor to ITW-Ateco G.m.b.H., Norderstedt, Fed. Rep. of Germany

Filed Nov. 12, 1976, Ser. No. 741,187
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1975, 2553881
Int. Cl.² B60J 9/00
U.S. Cl. 296—1 C 15 Claims



1. A one-piece compact plastic fuel filler connection assembly for vehicles driven by internal combustion engines, said connection adapted to be fastened in a non-circular opening (20) in a vehicle body and connected with a conduit (29) leading to a fuel tank of the vehicle, said connection including a first annular portion (25) and an obtuse angularly disposed second annular portion (26) with said first annular portion including an outer section (22) extending through said opening (20) in an outer panel (21) of said body, integral means (32) for quick fastening said outer section (22) to said outer panel (21) in substantially non-rotative sealed relationship, said outer section further including means (4) for accepting a lid (24) in

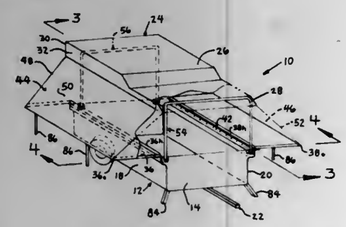
sealed relationship, a pair of membrane one-way check valves (44,45) communicating with an inner section (23) of said first annular portion (25) and said fuel tank and providing overpressure venting and vacuum relief to said tank, said valves (44,45) adapted to be positioned behind said outer panel (21) and non-valved venting means (55) communicating with said connection and said fuel tank for venting during filling.

4,113,301

COMPACT TENT-TYPE CAMPING TRAILER

William Dean Olmstead, Costa Mesa, Calif., assignor to Cycle-Kamp Inc., Anaheim, Calif.

Filed Oct. 26, 1976, Ser. No. 735,429
Int. Cl.[2] B60P *3/34*
U.S. Cl. 296—23 H 4 Claims



1. A lightweight and compact tent-type trailer which is easy to set up and collapse and which is especially adapted for towing by motorcycles and the like, comprising:

a trailer bed having upstanding sides and ends and defining a base for a tent when the trailer is in a set-up condition;

first and second hinge means at and along upper marginal edges of opposite ones of said upstanding sides of said trailer bed;

first and second flat floor defining members for said tent connected along one edge thereof to said first and second hinge means respectively to extend in horizontal directions from said bed in said set-up condition;

a top member for covering said trailer bed when the trailer is in a towing condition and for forming a top for said tent when said trailer is in its set-up condition, said top member having marginal edges extending along and outside respective ones of said first and second hinge means connected to said sides of said trailer bed;

tent material secured along said marginal edges of said top member and along an edge of each of said floor defining members opposite the one hinged edge thereof to lay within said trailer and between waid floor defining members and said top member when said trailer is in said towing condition and to form right and left sides, front and back of said tent when said top member is raised and said floor defining members swing outwardly to define said set-up condition, said tent material having a width between said edge of said floor defining members and marginal edge of said top member which is slightly greater than that of said floor member to which it is connected whereby said tent material exerts lifting forces on said floor defining members as said top member is raised to automatically swing said floor defining members upwardly over centers defined by said first and second hinge means as said top member is raised sufficiently high to allow said tent material and floor members to clear said top member and then outwardly from said trailer bed to said set-up condition; and

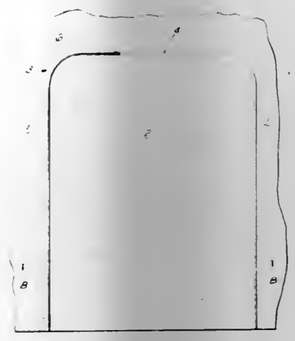
brace members at each corner of said trailer bed for supporting said top member in said set-up condition.

4,113,302

WIND DEFLECTOR

Frans Bos, Trollhattan, Sweden, assignor to Saab-Scania AB, Trollhattan, Sweden

Filed Jan. 19, 1977, Ser. No. 760,746
Claims priority, application Sweden, Jan. 29, 1976, 7600938
Int. Cl.[2] B60J *7/22*
U.S. Cl. 296—137 J 7 Claims



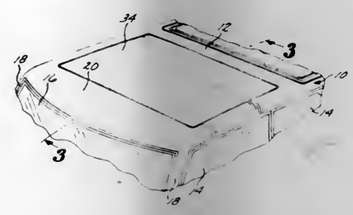
1. In a motor vehicle having a sheet metal roof, a generally rectangular opening in the roof, a shutter movable between open and closed positions for respectively opening and closing said rectangular opening, and a wind deflector extending at the leading transverse edge of said opening across the whole width of said opening, the improvement wherein said wind deflector comprises an integral part of the outer metal sheet of said vehicle roof, said deflector having a rearwardly and upwardly inclined section which overlaps the leading edge of said shutter when the latter is in a closed position, and a reinforcing plate fixed to the inside of said deflector and extending along said leading transverse edge of said roof opening.

4,113,303

ROOF STRUCTURE FOR AN AUTOMOBILE

Charles G. Yench, 3921 E. La Palma Suite Q, Anaheim, Calif. 92806

Filed Apr. 8, 1977, Ser. No. 786,039
Int. Cl. B60J *7/18*
U.S. Cl. 296—137 B 5 Claims



1. A roof structure for an automobile comprising in combination,

a sheet metal roof having spaced sheet metal support sections and formed with an opening,

a reinforcing-mounting member formed of plastic material and secured to said support sections to extend along the marginal edge of said opening to reinforce said roof from said support sections to the marginal edge of said opening, said member being formed with a U-shaped channel adjacent the marginal edge of said opening,

a cover for said opening comprising a plastic lid formed with an angularly offset marginal edge insertable into the channel of said reinforcing-mounting member,

sealing means comprising a generally U-shaped flexible sealing element about said marginal edge of said lid and a generally tubular seal interposed between said element and the side wall of said channel, said sealing means further including a sealing device interposed between said reinforcing-mounting member and the undersurface of said lid adjacent said marginal edge,

a generally U-shaped plastic wind deflector having a main portion and a pair of angularly disposed opposite side portions formed intergrally therewith for insertion within said channel when said cover is removed from said roof, the main and opposite side portions of said deflector each having an extension formed complementally of said channel to fit within and to be retained by the sides of said channel against external forces on said deflector, and

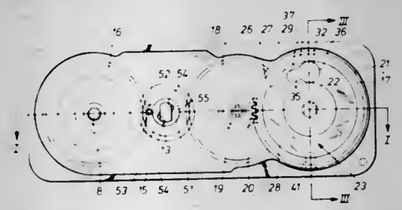
clamp means for securing said cover to said reinforcing-mounting member.

4,113,304

SLIDING AND TILTING ROOF FOR A MOTOR VEHICLE

Robert Leiter, Krailling, Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Germany

Continuation of Ser. No. 772,675, Feb. 25, 1977, abandoned. This application Dec. 23, 1977, Ser. No. 863,709
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612484
Int. Cl. B60j *7/02*
U.S. Cl. 296—137 G 9 Claims



1. Movable vehicle panel member apparatus including a vehicle panel member and driving means for moving said panel member with respect to adjacent vehicle structure, said driving means including:

a rotatable driving member which is drivingly connected to move said panel member in response to rotational movements of said driving member, said driving member having a first stop member,

a shaft,

a crank member drivingly connected to said shaft for applying rotational movement to said shaft,

and a driving plate carried by said shaft, said driving plate having a second stop member engageable with said first stop member to rotate said driving member along with said driving plate, said first and second stop members occupying a small circumferential length of said driving member and driving plate so that said driving plate can be freely rotated from a first position with the second stop member engaging one circumferential side of said first stop member to a second position with the second stop member engaging an oppositely facing circumferential side of said first stop member,

said shaft and said driving plate being connected by lost motion connecting means permitting free relative rotational movement corresponding to the angular range determined by the circumferential lengths of the first and second stop members,

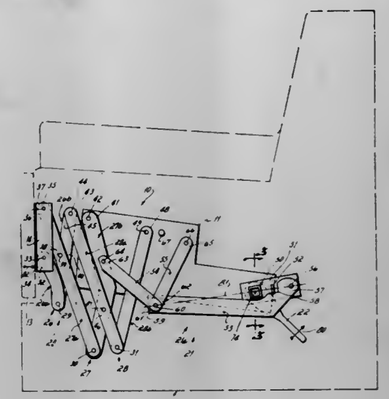
whereby said crank member can be freely returned to a predetermined rotated position for movement to a concealed position, irrespective of the rotative position of the drive member.

4,113,305

RECLINER LEG REST LINKAGE ASSEMBLY

Edward L. Hampton, Louisville, Ky., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Jun. 6, 1977, Ser. No. 803,955
Int. Cl.[2] A47C *1/02*
U.S. Cl. 297—69 9 Claims



1. A leg rest linkage assembly for a chair's leg rest, said leg rest linkage assembly being adapted to translate said leg rest between a fully extended use position and a fully retracted storage position, said leg rest linkage assembly comprising

a leg rest linkage structured to move said leg rest between said extended and retracted positions, said leg rest linkage being connected between said leg rest and a frame for said chair,

a handle connected to a drive shaft, said handle being accessible for manual operation by the chair's user, rotation of said drive shaft being provided manually through use of said handle, and

a control linkage directly connected in a mechanical linkage series between said drive shaft and said leg rest linkage for controlling movement of said leg rest linkage between extended and retracted positions in response to manual operation of said handle, said control linkage being structured to lock up in a first over-center position when said drive shaft is rotated in one of a clockwise and counterclockwise direction for locking said leg rest in said retracted position, and said control linkage being structured to lock up in a second over-center position when said drive shaft is rotated in the other of said clockwise and counterclockwise directions for locking said leg rest in said extended position, said locked up control linkage preventing drift of said leg rest out of said retracted position toward said extended position in response to a force exerted on said leg rest in the extension direction, and preventing drift of said leg rest out of said extended position toward said retracted position in response to a force exerted on said leg rest in the retraction direction, when no user is seated in said chair.

4,113,306

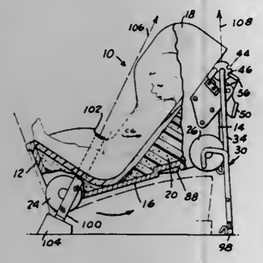
CONVERTIBLE CHILD RESTRAINT

Heinrich F. von Wimmersperg, 15721 Rosemont Rd., Detroit, Mich. 48223

Continuation-in-part of Ser. No. 635,653, Nov. 26, 1975, Pat. No. 4,067,608. This application Apr. 11, 1977, Ser. No. 786,078
Int. Cl.[2] B60R *21/10*
U.S. Cl. 297—216 7 Claims

1. A device convertible from a child's stroller to a safety restraint seat for use in a vehicle comprising, a shell in which the child is adapted to be placed in a generally inclined upright position; ground-engaging wheels mounted on the shell adja-

cent the front and rear ends thereof; a handle mounted adjacent the rear end of the shell and adjustable to a first position where it extends upwardly and rearwardly from the shell to enable use of the device as a child's stroller and to a second position where it extends downwardly from the shell to a level substantially below the plane of said wheels and means for locking the handle in either of said two positions relative to the shell whereby, when the device with the handle locked in said downwardly extending position is placed on a vehicle seat in a rearwardly facing direction, the free end of the handle projects downwardly forwardly of the front edge of the vehicle seat cushion and engages the vehicle floor structure to support the



shell such that the child therein is positioned in a rearwardly facing upwardly inclined position, means on said shell for interengaging the shell with a conventional vehicle seat belt associated with the vehicle seat so that the belt, when tightened around the shell, inclines upwardly in a forwardly direction, and rigid journal members on each side of said shell, said handle being pivotably mounted on said journal members for swinging movement between said first and second positions, said handle comprising a pair of generally parallel legs interconnected by a cross bar, said legs each comprising a pair of pivotably connected sections, said sections being swingable from an extended position to an overlapping nested position for shortening the effective length of the handle.

4,113,307

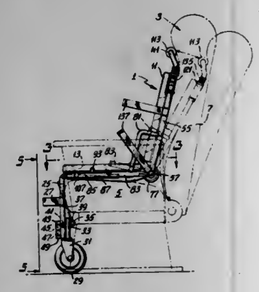
TRAVEL INSERT CHAIR AND METHOD OF TRANSPORTING THE PHYSICALLY HANDICAPPED

Frederick L. Day, Rte. 2, Box 78, Ladson, S.C. 29456

Continuation-in-part of Ser. No. 680,766, Apr. 27, 1976. This application May 25, 1977, Ser. No. 800,434

Int. Cl.[2] A47C *15/00*

U.S. Cl. 297—232 **19 Claims**



7. An insert travel chair comprising:
(a) a seat having a front and rear,
(b) a back attached to the rear of said seat,
(c) a pair of wheels,
(d) means for pivotally and rotatably attaching said wheels to the front of said seat,
(e) the area under the rear of said seat being substantially unobstructed whereby said seat may be positioned over a conventional seat,
(f) leg means extending downwardly from the rear of said seat, said leg means being movable from a ground engaging position to a non-ground engaging position,
(g) a pair of back handles extending from said back for pivoting the chair to permit movement from place to place,
(h) said pair of back handles being adjustably positioned on said back, means for pivoting said back handles from a substantially vertical position to a substantially horizontal position,
(i) a pair of front handles pivotally connected to the front of the chair adjacent said wheels and movable in a substantially horizontal plane from a position parallel to the front of the chair to a position substantially perpendicular to the front of the chair.

4,113,308

TILTABLE SEAT

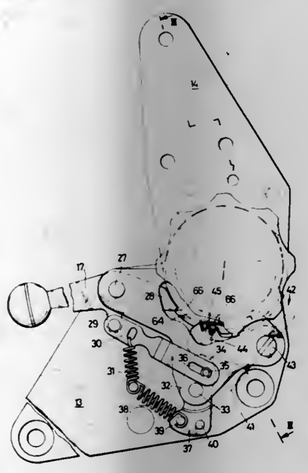
Paul Werner; Egon Wirtz, and Gerhard Lehmann, all of Remscheid, Fed. Rep. of Germany, assignors to Keiper K. G., Remscheid-Hasten, Fed. Rep. of Germany

Continuation of Ser. No. 616,410, Sep. 24, 1975, abandoned. This application Apr. 12, 1977, Ser. No. 786,815

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1974, 2446181

Int. Cl.[2] A47C *1/025*; B60N *1/06*

U.S. Cl. 297—362 **8 Claims**



1. In a seat, particularly in a vehicle seat, a combination comprising a seat element; a back element; means for mounting said back element on said seat element for tilting from a selected erect position in a frontward and a rearward range; two blocking arrangements interposed between said elements and each including engaging means normally so blocking said back element in said selected erect position as to prevent the same from tilting in both of said ranges, and abutment means normally so blocking said back element in said selected erect position as to prevent the same only from tilting in said rearward range; and means for releasing said back element for selective tilting, including shared first disengaging means for disengaging only said engaging means of both of said blocking arrangements to thereby release said back element for tilting only in said frontward range, and two mutually separate second disengaging means each for jointly disengaging both said engaging and said abutment means of only one of said blocking arrangements so as to require the actuation of both of said separate second disengaging means when it is desired to release said back element for tilting in said rearward range.

4,113,309

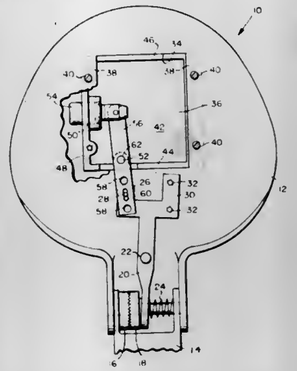
HEADREST FOR DENTAL CHAIR

Charles E. Brockway, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,351

Int. Cl.[2] A47C *1/10*

U.S. Cl. 297—408 **8 Claims**



1. In a headrest for dental chairs and the like including a headrest frame journaled for articulation to the dental chair, clutch members within the headrest frame for locking the headrest in an adjusted articulated position, and a lever arm pivoted within the headrest for disengaging the clutch members, the improvement comprising:
a. said lever arm having a bifurcate end remote from said clutch members;
b. a housing including side and end walls, said housing being attachable to said headrest frame in either a first position or a second position wherein the housing is rotated 180° from the first position;
c. a pivot post adjacent one of said end walls;
d. a push button extending through one of said side walls;
e. a link having one end connected to said push button and a second end;
f. said link, when said housing is in said first position being fixed to a first branch of said bifurcate lever end to form an extension of said one branch, said link and lever together forming a simple level system for disengaging said clutch members when said push button is operated; and
g. said link, when said housing is in said second position, being pivoted intermediate its ends to said pivot post, said second link end being pivotally connected to the second branch of said bifurcate lever end, said link and lever so connected together forming a compound lever system for disengaging said clutch members when said push button is operated.

4,113,310

HEADREST FOR VEHICLES

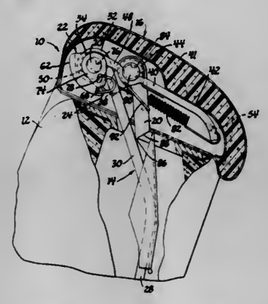
Harley L. Kapanka, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1977, Ser. No. 862,954

Int. Cl.[2] A47C *1/10*

U.S. Cl. 297—408 **2 Claims**

1. For use with the backrest of a vehicle seat, an angularly adjustable head restraint assembly comprising a post carried by and mounted interiorly of the backrest and projecting exteriorly therefrom at the upper end thereof, headrest means pivotally connected to said post and adapted to being manually pivotally moved from a horizontally oriented reclined attitude to a vertically oriented head support attitude, slot means formed in said post, cam means pivotally connected to said post and adapted to being pivotally moved into and out of said slot means, a locking lever pivotally connected to said headrest means adjacent said cam means, projection means formed on an upper portion of said locking lever, overcenter spring means operatively connected to said cam means, and resilient means operatively connected to said locking lever, said resilient means being adapted to initially urge said locking lever into contact with said post and then into said slot means into contact with said cam means when said headrest means is pivoted upwardly through a predetermined angle relative to said post means, thereby locking said headrest means against reverse rotation to said horizontally oriented reclined attitude until said headrest means is pivoted forwardly a predetermined



amount into a greater angular relationship with said post to contact and pivot said cam means so as to cause said cam means to snap overcenter in a rearward direction into said slot means under the force of said overcenter spring means and move said locking lever out of said slot means to permit said headrest means to be lowered toward said horizontally oriented reclined attitude until said projection means on said locking lever contacts said cam means and causes said cam means to snap overcenter in the other direction under the force of said overcenter spring means into position for the next sequence.

4,113,311

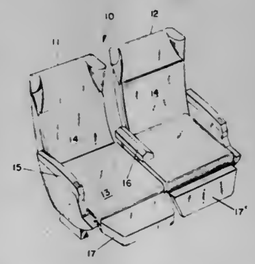
SINGLE PIVOT CONNECTION FOR A LEGREST

William D. Reida, Divide, Colo., assignor to AMI Industries, Inc., Colorado Springs, Colo.

Filed Jul. 25, 1977, Ser. No. 818,805

Int. Cl.[2] A47C *7/50*

U.S. Cl. 297—433 **5 Claims**



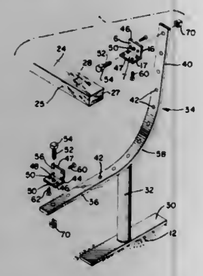
1. A single pivot connection for a legrest of a vehicle seat and the like comprising a mounting bracket secured to the inner sheel of an armrest of a seat and having a shaft extending therefrom, an arm bracket attached to a legrest and having a cylindrical portion with an end surface, there being a hub on the end surface of said cylindrical portion and having a circumferentially extending notch therein, said end surface being pivotally mounted on said shaft, a gear having peripheral gear teeth non-rotatably mounted on said shaft, a pawl member engageable with said gear teeth, means mounted on said hub and having limited pivotal movement thereon for disengaging said pawl member from said gear teeth when said legrest is pivoted through a predetermined angle with respect to said

seat, a braking disc between the cylindrical portion of said hub and said gear, and means for resiliently urging said hub, gear and braking disc together at a predetermined force so that said legrest is pivotable downwardly upon application of a predetermined force thereto.

4,113,312
BENCH

Gerald P. Skalka, Potomac, Md., assignor to Victor Stanley, Inc., Dunkirk, Md.

Filed Jan. 31, 1978, Ser. No. 873,976
Int. Cl.² A47C 7/02
U.S. Cl. 297—454 **10 Claims**



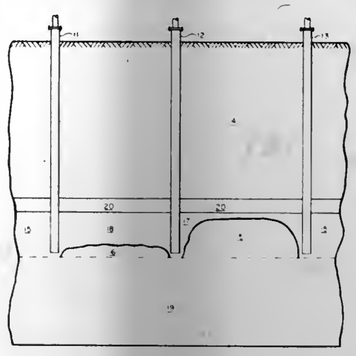
1. A bench including first and second spaced and aligned frame means each including a frame plate element of desired configuration, a plurality of angle brackets formed solely of first and second mutually perpendicular plates each having an inner face and an outer face, a plurality of wooden slat members each having a top face, a bottom face and two side faces, bracket attachment means attaching said first plates of said angle brackets to a respective one of said first and second spaced and aligned frame members with each of the outer faces of the first plates engaging the frame member to which it is attached and the brackets on the first frame means being aligned with the brackets on the second frame means with each bracket member having its second plate extending outwardly perpendicularly from the frame means to which it is attached, each of said slat members having its bottom face resting on the inner faces of the first plates of two of said aligned brackets and having a side face abutting against the inner faces of the second plates of the two aligned brackets on which the respective slat is mounted and slat fastener means fastening said slats to said second plates of said brackets.

4,113,313
RECOVERING URANIUM FROM COAL IN SITU

Ruel Carlton Terry, Denver, Colo., assignor to In Situ Technology, Inc., Denver, Colo.

Filed May 16, 1977, Ser. No. 797,536
Int. Cl.² E21B 43/28
U.S. Cl. 299—4 **11 Claims**

1. A method of recovering mineral values adsorbed in an underground coal deposit, comprising the steps of
establishing a first passage between a surface location and the underground deposit of coal,
establishing a second passage between a surface location and the underground deposit of coal, the said second passage being spaced apart from the said first passage,
establishing a third passage between the said first passage and the said second passage, the said third passage being located in the said coal.
igniting the said coal,
injecting an oxidizer into the said coal,
burning a portion of the said coal to residual ash,
terminating injection of said oxidizer,
injecting a cooling fluid into the burned out area,
continuing injection of the said cooling fluid until the temperature of the said residual ash is below the boiling point temperature of a leaching liquid,
terminating injection of the said cooling fluid,
injecting the said leaching fluid through the said first passage,

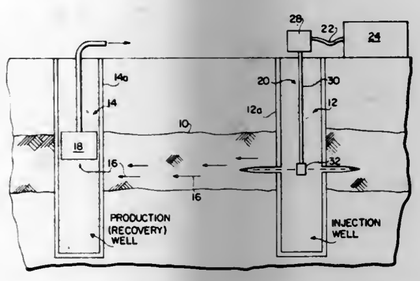


percolating the said leaching fluid through the said residual ash, and
capturing the said leaching fluid together with the mineral content taken into solution in the said leaching fluid and delivering the pregnant solution to the surface of the ground.

4,113,314
WELL PERFORATING METHOD FOR SOLUTION WELL MINING

George A. Savanick, Apple Valley, and Walter G. Krawza, Lakeville, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 24, 1977, Ser. No. 809,881
Int. Cl.² E21B 43/114; E21C 41/14
U.S. Cl. 299—4 **5 Claims**

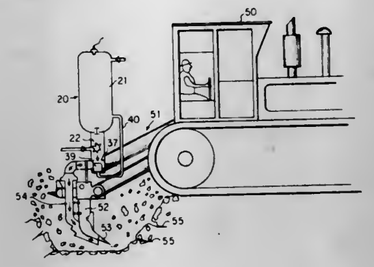


1. In a solution mining method wherein an injection well and at least one recovery well are employed which extend at least to the depth of a mineralized zone and a leaching solution is pumped from the injection well through the mineralized zone to the recovery well and pumped up from the latter in a liquid solution containing the mineral to be recovered and wherein the walls of said wells include a cemented plastic casing, the improvement in said method comprising the step of perforating the cemented plastic casing of the walls of said injection well and said at least one recovery well using a high pressure water jet so as to provide a plurality of holes therein, the pressure of said high pressure jets being several thousand psi, said holes in the recovery well being on a non-uniform, predetermined pattern along the height of the well adjacent to the mineralized zone with their greatest density being near the bottom of the mineralized zone and the least density of holes being adjacent to the top of the mineralized zone.

4,113,315
COMBUSTION APPARATUS FOR GENERATING REPETITIVE EXPLOSIONS

Rosser B. Melton, Jr., Helotes; John W. Colburn, Jr., and Charles D. Wood, III, both of San Antonio, all of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Division of Ser. No. 427,040, Dec. 21, 1973, Pat. No. 3,880,568.
This application Oct. 16, 1974, Ser. No. 515,310
Int. Cl.² E21C 29/00
U.S. Cl. 299—13 **5 Claims**



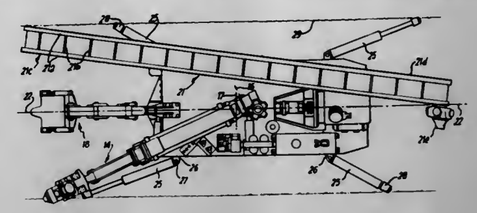
1. Apparatus employing repetitive explosions for earth fracture, comprising, in combination:
a tractor;
ripper means mounted on said tractor and adapted to penetrate the earth;
staged combustion apparatus for generating repetitive explosions in the earth adjacent said ripper means, said staged combustion apparatus comprising a first chamber including an inlet in said chamber adapted to be connected to a source of combustible fluid, ignition means mounted in said first chamber for igniting fluid therein, a second chamber adjacent said first chamber and including an outlet for repetitive discharge of ignited fluid under pressure, means providing for fluid communication from said first chamber to said second chamber, and valve means disposed in said second chamber for preventing the passage of fluid under pressure from said second chamber into said outlet except when the pressure in said second chamber exceeds the pressure in said first chamber by a predetermined amount; and
duct means connected to said outlet for conducting gas under pressure externally of said ripper means from said outlet for discharge into the earth adjacent an end of said ripper means.

4,113,316
FUNNELING MACHINE WITH INCLINED ADVANCING RAMS

Reginald Andrew Phillips, Skelmersdale; Terence Hamilton, Wigan, and Arthur David Thompson, Chorley, all of England, assignors to Dobson Park Industries Limited, Nottingham, England

Filed Oct. 15, 1976, Ser. No. 734,637
Claims priority, application United Kingdom, Oct. 15, 1975, 42122/75
Int. Cl.² E21D 9/10
U.S. Cl. 299—31 **6 Claims**

1. A vehicle for use in a mine working for enlarging a tunnel or forming a heading, comprising a chassis or like structure, a percussive action rock breaker and an independently operable bucket loader movably mounted on such chassis, a conveyor means supported by the chassis, the conveyor means extending generally longitudinally of the chassis from a position at the forward end thereof whereat the said conveyor means can receive rock and spoil collected by the bucket loader to a position at the rearward end of the chassis whereat the conveyor means can discharge rock and spoil for disposal, and a plurality of rams pivotally mounted on and extending laterally outwardly of the chassis, each for engagement with a respective opposed surface of the mine working, the plurality of rams including individual rams located at the sides of the chassis at the forward and rearward ends thereof, the rams at the forward end of the chassis inclined upwardly and adapted to be extended transversely outwardly of the chassis, the rams at the rearward end of the chassis inclined downwardly and adapted

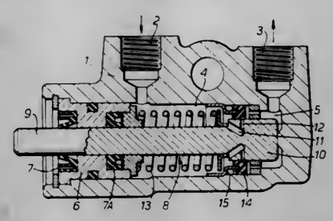


to be extended transversely outwardly of the chassis, and respective claws being provided at the outer ends of the rams for engagement with an opposed wall surface, said rams thereby being adapted to impart a selective translational motion to said chassis in the forward and rearward directions on alternate extension and retraction of the rearmost or foremost rams.

4,113,317
BRAKE PRESSURE REDUCING CONTROL VALVE

Glyn Phillip Reginald Farr, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 30, 1977, Ser. No. 782,938
Claims priority, application United Kingdom, Mar. 30, 1976, 12768/76; Aug. 12, 1976, 33688/76
Int. Cl.² B60T 8/26
U.S. Cl. 303—6 C **12 Claims**



1. A pressure reducing valve for a vehicle braking system, comprising a housing having an inlet and an outlet, differential area means in said housing subject to inlet and outlet pressures and arranged to provide a pressure at said outlet reduced from the pressure at said inlet, means defining a radial port having an inlet end in permanent communication with said inlet and an outlet end communicating with said outlet, and an elastomeric seal movable relative to said port between a closed position in which said seal covers said port and an open position, wherein in said closed position said seal is arranged to cover the port at the outlet end thereof and the interface between said seal and said port is at all times subjected to inlet pressure.

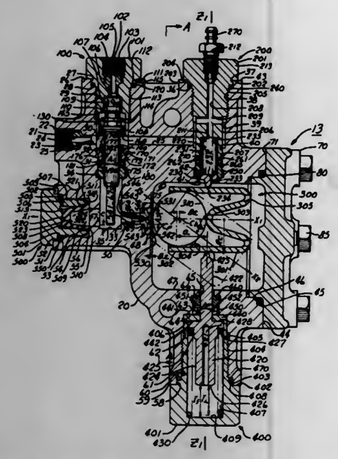
4,113,318
LOAD-RESPONSIVE PRESSURE PROPORTIONING REDUCING VALVE ASSEMBLY FOR VEHICLE HYDRAULIC BRAKE SYSTEM

Kaname Doi, Ibaraki, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 8, 1977, Ser. No. 804,572
Claims priority, application Japan, Jun. 11, 1976, 51-68878
Int. Cl.² B60T 8/14
U.S. Cl. 303—24 F **18 Claims**

17. A load-responsive pressure reducing valve assembly

comprising fluid pressure proportioning means for restricting the flow of fluid from a fluid inlet to a fluid outlet during a predetermined range of increasing fluid pressure at said outlet and deceleration sensing means including an inertia-responsive member responsive to a predetermined rate of deceleration of the assembly to move a predetermined distance from a stop to



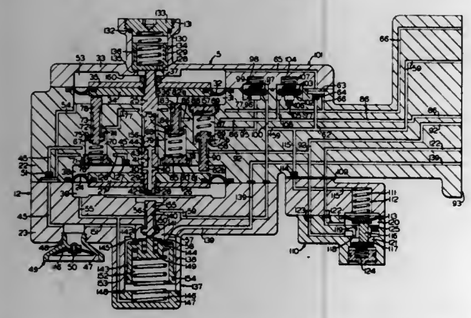
thereby set the starting pressure of said predetermined range of increasing fluid pressure, and a piston having only one effective pressure receiving area slidably received through a fluid seal and subjected to fluid under a predetermined pressure from said inlet to displace said piston against a bias and thereby act on said inertia-responsive member to increase the deceleration of the assembly to be sensed.

4,113,319

EMERGENCY PORTION FOR A BRAKE CONTROL VALVE

Michael T. Zoric, North Versailles, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Dec. 10, 1976, Ser. No. 749,288
Int. Cl.² B60T *15/44*
U.S. Cl. 303—37 **14 Claims**



1. For use in a brake apparatus including a brake pipe, an auxiliary reservoir and an emergency reservoir each normally charged to a certain chosen pressure, a brake cylinder and a fluid-pressure-operated service valve device, a fluid-pressure-operated emergency valve device operative in conjunction with said service valve device in response to a reduction of the pressure in the brake pipe at an emergency rate to effect the supply of fluid under pressure from said reservoirs to said brake cylinder to cause an emergency brake application, said emergency valve device comprising:

(a) a casing having therein a plurality of chambers, bores and passageways, each bore connecting at least two of said chambers and certain of said bores having formed at one end an annular valve seat and four of said passageways respectively opening at one end into four of said bores and having the other end connected respectively to the emergency reservoir, the brake cylinder, the brake pipe and another chamber other than one of said plurality of chambers,

(b) a plurality of poppet-type valves each having a fluted stem slidably mounted in one of said bores whereby the respective valve cooperates with the annular valves seat at the one end of the corresponding bore to control flow of fluid under pressure between one of said passageways and one of said chambers,

(c) a pair of spaced-apart movable abutments subject on one side respectively to the pressure in the brake pipe and in said another chamber, and on the other side to fluid pressure in an atmospheric chamber formed by the respective abutment and the casing, the deflection of said pair of abutments in one direction responsive to a reduction of the pressure in the brake pipe being effective to cause one of said abutments to operate a certain one of said poppet-type valves to effect a release of fluid under pressure from said another chamber through said certain one of said poppet-type valves directly, only to said atmospheric chamber and another of said poppet-type valves to effect the supply of fluid under pressure from the emergency reservoir to the brake cylinder, and the deflection of said pair of abutments in an opposite direction responsive to a subsequent increase of the pressure in the brake pipe being effective to cause the other of said abutments to operate still another of said poppet-type valves to effect the supply of fluid under pressure from the brake cylinder to the brake pipe,

(d) a first vent passageway between another one of said bores and atmosphere,

(e) a hollow stem interconnecting said pair of abutments and forming a central passageway via which fluid pressure in said atmospheric chamber is communicated with said first vent passageway, said stem being slidably mounted in said another one of said bores and including valve means for controlling said communication in accordance with deflection of said abutments, and

(f) a first choke in said first vent passageway via which the fluid pressure in said another chamber is vented to atmosphere at a certain chosen rate by said valve means when said certain one of said poppet-type valves is operated.

4,113,320

BRAKE VALVE DEVICE

Richard F. Balukin, Penn Hills, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sep. 21, 1977, Ser. No. 835,123
Int. Cl.² B60T *15/06*
U.S. Cl. 303—54 **10 Claims**

1. In a brake valve device, of the type having a fluid-pressure-operated relay valve device for controlling the application and release of brakes in accordance with variations in the pressure of fluid supplied to said relay valve device, the combination with said relay valve device of a control valve device for controlling the supply of fluid under pressure to and the release of fluid under pressure from said relay valve device, said control valve device comprising:

(a) release valve means for controlling the release of fluid under pressure from said fluid-pressure-operated relay valve device to atmosphere,

(b) a first valve means arranged in abutting relation to said release valve means for controlling the supply of fluid under pressure to said fluid-pressure-operated relay valve device,

(c) a first biasing means for providing a preselected biasing force corresponding to a desired maximum fluid pressure supplied to said relay valve device,

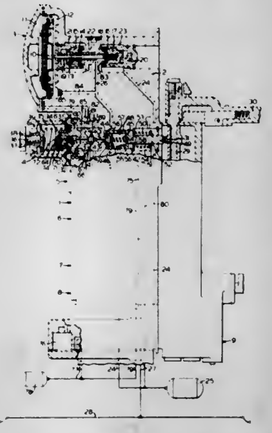
(d) a movable abutment subject opposingly to the pressure of fluid supplied to said relay valve device and to said preselected biasing force of said first biasing means, said abutment being so arranged with respect to said release valve means and said first valve means as to enable said first biasing means to effect closing of said release valve means and opening of said first valve means so long as as said preselected biasing force exceeds the fluid pressure force of the fluid supplied to the relay valve device thereby enabling said control valve device to operate as a self-lapping valve device to supply fluid under pressure to said relay valve device until said fluid pressure force is substantially equal to said preselected biasing force,

wherein the improvement comprises:

(e) a second valve means shiftable from a first position, in which it effects the supply of fluid under pressure to said first valve means, to a second and a third position in each of which positions said supply of fluid under pressure is cut off,

(f) a second biasing means so interposed between said first and second valve means as to, while said second valve means is in its said first and second positions, transmit a force to said first valve means to effect the closing thereof upon said fluid pressure force becoming substantially equal to said preselected biasing force,

(g) means carried by said second valve means for rendering said second biasing means ineffective to close said first valve means only upon shifting of said second valve means to its said third position,



(h) a third biasing means for effecting shifting of said second valve means from its said first position to its said second and third positions,

(i) operator-controlled means selectively operable to a first position to effect shifting of said second valve means against the yielding resistance of said third biasing means to its said first position in which fluid under pressure is supplied via said first and second valve means in series to said relay valve device until said fluid pressure force is substantially equal to said preselected biasing force, to a second position in which said third biasing means is rendered effective to shift said second valve means from its first position to its second position in which the supply of fluid under pressure to said second valve means is cut off, and to a third position in which said supply of fluid under pressure to said second valve means remains cut off, and said means carried by said second valve means renders said second biasing means ineffective to close said first valve means, and

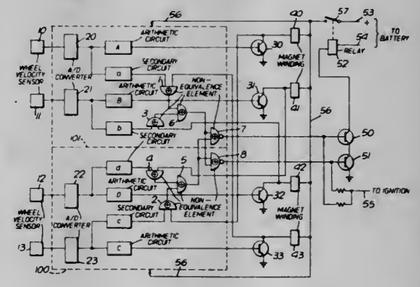
(j) a fourth biasing means carried by said movable abutment and operable to effect operation of said release valve means to release fluid under pressure from said fluid-pressure-operated relay valve device to atmosphere only upon shifting of said second valve means to its said third position, in which said means carried by second valve means renders said second biasing means ineffective to transmit a force to said first valve means to effect closing thereof.

4,113,321

ANTI-SKID ELECTRONIC CONTROL SYSTEM HAVING AN ERROR DETECTING CIRCUIT

Hans W. Bleckmann, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,798
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612356
Int. Cl.² B60T *8/00*
U.S. Cl. 303—92 **7 Claims**



1. An improvement in a digital anti-skid electronic control system including a different channel assigned to each controlled wheel, each of said channels having a converter to convert a sensed wheel velocity signal into a digital value and a digital arithmetic circuit connected to said converter to provide an output signal to control a final control element which controls braking pressure, said improvement comprising:

a digital secondary circuit for each of said channels, each of said secondary circuits being identical with one of said arithmetic circuits, each of said secondary circuits being connected to the output of a different one of said converters; and

a digital circuit means coupled to said arithmetic circuit and said secondary circuit of each of said channels, said circuit means being responsive to predetermined output signals from each of said arithmetic circuits and each of said secondary circuits to detect an error condition in any of said arithmetic circuits and any of said secondary circuits and to disable said control system entirely upon detection of said error condition.

4,113,322

DIGITAL CONTROL CIRCUIT FOR PRODUCING ACCELERATION AND DECELERATION CONTROL SIGNALS IN AN ANTISKID CONTROL SYSTEM

Gerhard Ruhnau; Wolfgang Gudat, both of Hanover; Peter Liermann, and Karl-Heinz Hesse, both of Gehrden, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 24, 1977, Ser. No. 809,886
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631227
Int. Cl.² B60T *8/08*
U.S. Cl. 303—105 **19 Claims**

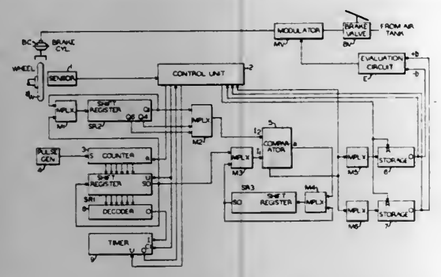
1. A vehicle antiskid control system including a brake cylinder, an operator's brake valve device, a conduit connecting said brake cylinder and said brake valve device via which fluid brake pressure is supplied to said brake cylinder from a source and released from said brake cylinder, a modulator valve unit in said conduit between said brake cylinder and said brake valve device for influencing the fluid brake pressure independently of said brake valve device, a wheel sensor for generat-

ing a pulse signal having a frequency proportional to the speed of the wheel with which said sensor is associated, circuit means operative responsive to said pulse signal for producing acceleration and deceleration response control signals; and an evaluation circuit subject to said control signals for effecting operation of said modulator valve unit, said circuit means comprising the improvement of:

(a) means for measuring the duration of a cycle of said pulse signal comprising:

(i) means for generating a clock signal of higher frequency than said pulse signal; and

(ii) a digital counter subject at its input to said clock signal,



said counter being periodically reset in synchronism with said pulse signal whereby said clock pulses are counted for the duration of a cycle of said pulse signal to provide a count signal representing the measured cycle duration;

(b) means for establishing a reference cycle duration from said measured cycle duration of a previous pulse signal; and

(c) means for providing said control signals when the difference between said reference cycle duration and said measured cycle duration of an immediate pulse signal exceeds said reference cycle duration by a predetermined admissible amount.

4,113,323

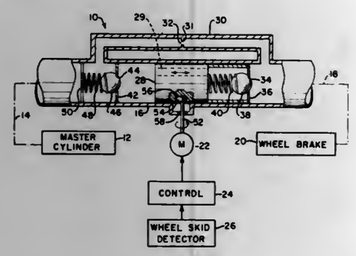
ANTI-SKID POWER VALVE

James Richard Haney, Uniontown, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 15, 1977, Ser. No. 806,796

Int. Cl.² B60T 8/10

U.S. Cl. 303—115 **12 Claims**



1. Brake control apparatus including a hydraulic pressure supply line, a wheel brake system, and an anti-skid power valve means operatively connecting the pressure supply line to the wheel brake system and comprising

a driven means including a check valve to force liquid from the wheel brake system to the pressure supply line when skid conditions exist, and

bypass means connecting said pressure supply line to the wheel brake system and including a flow control orifice to permit continual flow of pressure liquid to the wheel brake system, the flow rate of the liquid from the wheel brake system when said driven means are actuated being greater than the return pressure liquid flow through the orifice.

4,113,324

AUXILIARY BEARING FOR DETERMINING RADIAL AND AXIAL PLAY OF TURBINE SHAFTS

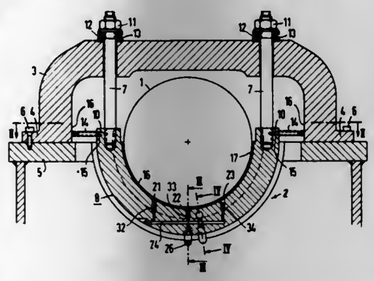
Karl Rohr, Mülheim, Ruhr, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Ruhr, Germany

Filed Nov. 16, 1976, Ser. No. 742,195

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1975, 2551801

Int. Cl.² F16C 23/00

U.S. Cl. 308—9 **3 Claims**



1. Auxiliary bearing for determining radial an axial play of a turbine shaft, the auxiliary bearing having a bridge-shaped carrying yoke mounted on bearing brackets, swingable and turnable adjusting bolts suspending a semicircular support yoke from the bridge-shaped carrying yoke, and adjusting bolts horizontally screwable into the semicircular support yoke so as to deflect the latter laterally, the improvement therein comprising a lining of antifriction babbitt metal disposed on the inner periphery of the semicircular support yoke for slideably supporting the turbine shaft, said lining of antifriction metal being formed with three oil pockets serially disposed in peripheral direction thereof, said lining of babbitt metal being formed with a respective oil collecting slot extending, respectively, on both sides of said three serially disposed oil pockets along the entire periphery of said support yoke, and including a separate pressure oil feed line connection to each of said three oil pockets, said separate pressure oil feed line connections comprise oil feed bores formed in said support yoke and communicating respectively with said oil pockets, and a choke respectively disposed in each of said oil feed bores, and having a flow-through cross secton adjusted to a given oil pressure for the respective oil feed bore.

4,113,325

SUPPORTING DEVICE

Helmut Miller, Niederrohrdorf, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Nov. 23, 1976, Ser. No. 744,319

Claims priority, application Switzerland, Dec. 2, 1975, 15606/75

Int. Cl.² F16C 32/06

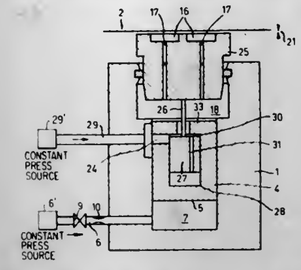
U.S. Cl. 308—9 **8 Claims**

1. Apparatus for supporting a mobile part which moves relatively to a load-bearing part and which is subjected to dynamic forces, the apparatus comprising

a. a hydrostatic support device including a supporting piston containing at least one pressure pocket which opens toward the mobile part, a hydraulic supporting motor having a pressure chamber and which urges the supporting piston toward the mobile part, and a throttled passage connecting the pressure chamber with the pocket;

b. first and second sources of hydraulic fluid at constant pressure connected with the pressure chamber by first and second supply passages, respectively, the second source having a higher pressure level than the first; and

c. hydraulic control means which responds to the rate of displacement of the supporting piston and which allows only the first source to pressurize the pressure chamber under static conditions and during slow displacements,



and allows only the second source to pressurize the pressure chamber when the piston is displaced rapidly in the direction which reduces pressure chamber volume,

d. whereby the supporting piston furnishes a constant, relatively small reaction under normal conditions, and a larger reaction when said rapid displacement occurs.

4,113,326

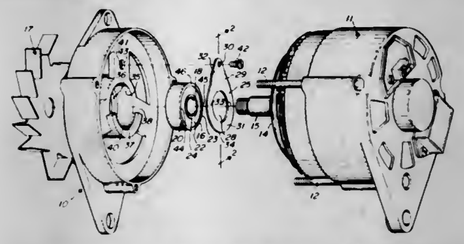
ALTERNATOR BEARING RETAINER PLATE

Franklin Crawford Brewster, Franklin Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 19, 1976, Ser. No. 706,670

Int. Cl.² F16C 35/00

U.S. Cl. 308—26 **17 Claims**



13. A method of retaining an automotive alternator bearing in a housing which comprises the steps of:

forming a recessed opening for the bearing in the housing;

forming a lip containing a groove in the housing;

forming a resilient retainer plate with a first and second portion, the first portion being adapted to be retained in the lip containing the groove;

inserting the first portion of the plate into the groove; and

drawing the second portion of the locking plate to the housing to bias the bearing into the recessed opening in said housing.

4,113,327

COMBINATION SEAL AND THRUST WASHER FOR ANTI-FRICTION BEARINGS

Hans W. Koch, Levittown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed Dec. 29, 1976, Ser. No. 755,445

Int. Cl.² F16C 33/78

U.S. Cl. 308—187.1 **7 Claims**

1. In combination,

an outer roller member having end flanges providing grooves spaced inwards from its ends with inner and outer radial faces and having therebetween an inside cylindrical surface providing an outer race,

a plurality of roller bearing rollers in supporting engagement with said outer race and terminating inwardly of the outer radial faces of the grooves,

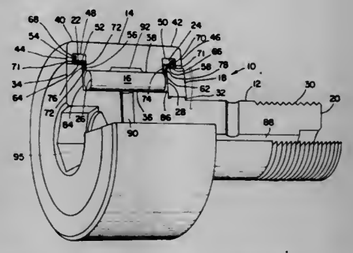
an inner member having an outside cylindrical surface spaced inwardly from said inside cylindrical surface and providing an inner race for engagement by said roller bearing rollers,

retainer members at each end of said inner member for holding said roller member, said roller bearing rollers and said inner member in position,

at least one of said retainer members being removably carried on said inner member,

said retainer members having outer cylindrical faces contiguous to said flanges and inner radial faces,

annular seals each having



an intermediate cylindrical portion in engagement with said outer cylindrical portion of one of said retainer members,

a radially outwardly extending flange portion extending from one end of said intermediate portion and in engagement with an outer radial face of one of said grooves, and

a radially inwardly extending flange portion extending from the other end of said intermediate portion and in engagement with an inner radially face of said one of said grooves.

4,113,328

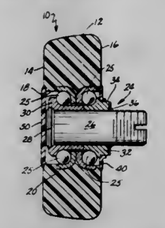
WHEEL BEARING ASSEMBLY WITH PLASTIC BEARING SEALS

Douglas J. Vander Meulen, Shelbyville, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Aug. 22, 1977, Ser. No. 826,758

Int. Cl.² F16C 33/72

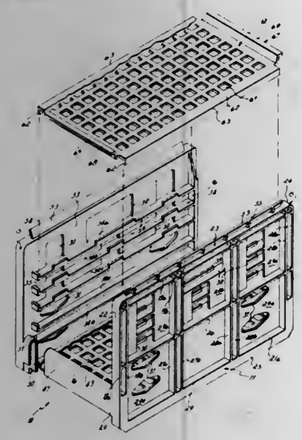
U.S. Cl. 308—187.1 **24 Claims**



1. A wheel bearing assembly comprising a wheel formed from a thermoplastic material and having an outer circumference, opposing sides and an axially extending, central aperture therethrough; an outer raceway in said axially extending central aperture for receiving at least one row of antifriction bearings; an inner race having an inner raceway radially spaced from and axially aligned with said outer raceway for receiving at least one row of antifriction bearings; a plurality of antifriction bearings disposed in at least one row in said raceways; said inner race having an annular surface axially outward of said inner raceway on at least one side of said inner raceway; and an annular seal formed from a resilient, thermoplastic material and having an outer edge with a maximum radial dimension smaller than the circumference of said wheel and an annular inner edge defining an aperture through said seal; said seal being assembled over said inner race such that said seal centers itself, an inner portion of said seal sealingly engaging said annular surface of said inner race, said seal aperture being coaxial and concentric with said inner race, an outer

portion of said seal spaced from said annular inner edge being fused to said thermoplastic wheel after such assembly whereby moisture, dirt and other contaminants are prevented from entering said bearing area including said raceways and bearings.

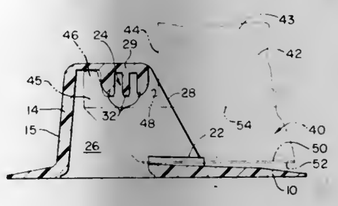
4,113,329
MULTI-TRAY BASKET
Paul G. Thurman, West Liberty, Ohio, assignor to Dare Pafco, Inc., Urbana, Ohio
Filed May 12, 1977, Ser. No. 796,478
Int. Cl.[2] B65D *21/04*; A47F *3/14*
U.S. Cl. 312—111 **7 Claims**



1. A multi-tray basket comprising
a molded basket frame having a floor and two opposing side walls, said frame being fabricated of a one-piece configuration,
at least one unitary molded tray adapted to be located between said opposing side walls at a vertical position elevated above said floor, said tray including a downwardly depending rib on each of the two opposing side edges thereof,
at least one shelf rail formed integral with each of said basket's two side walls, said tray's ribs being adapted to sit on said shelf rails for locating said tray at said elevated vertical position,
a front stop on at least one of said shelf rails, and a rear stop on at least one of said shelf rails, to prevent forward/rearward motion of said tray on said rails once said tray is seated thereon,
stacking structure molded integral with the top and bottom edges of each side wall for permitting an upper multi-tray basket to be stacked on top a lower multi-tray basket, said stacking structure including a stacking rib on the top edge of each side wall, and a stacking rail along the bottom edge of each side wall, said stacking ribs and rails being adapted to interfit one with the other to prevent forward/rearward motion of said upper basket relative to said lower basket and to prevent lateral motion of said upper basket relative to said lower basket.

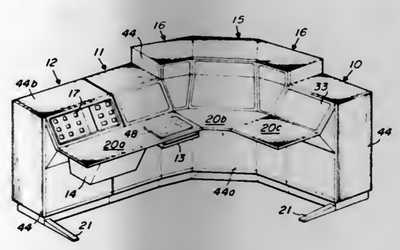
4,113,330
HOLDER FOR DOCUMENTATION CARTRIDGE
Jerome M. O'Toole, Spartanburg, S.C., and Edmund T. Paquette, Shrewsbury, Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Sep. 12, 1977, Ser. No. 832,729
Int. Cl.[2] A47B *63/00*; B42D *17/00*
U.S. Cl. 312—184 **17 Claims**

1. A holder for an elongate channel-form cartridge of the type adapted to support sheets of documents in a hanging position, said cartridge including a spine substantially coextensive with the closed portion of the cartridge channel and a pair of support hooks respectively extending beyond opposite transverse end walls of said channel, each of said hooks being open in the same direction as said channel and defining a slot extending transverse to said channel; said holder comprising:
an elongate flat base;
a ridge rising from said base defined by front and rear surfaces connected by a crest portion;
a chamber in said ridge defined between a pair of mutually spaced walls transverse to the long dimension of said base, said transverse walls being substantially perpendicular to



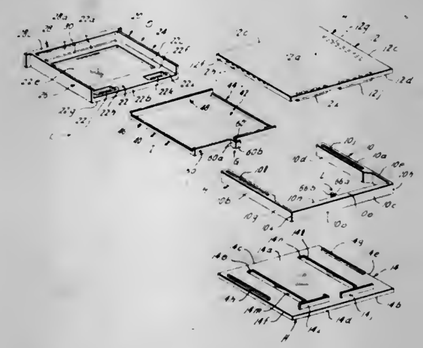
said base and extending forward from said rear surface to form an access opening through said front surface;
the roof of said chamber being formed by said crest portion and including an interiorly depending spline substantially parallel to said long dimension;
the base portion contained between said transverse walls including at least a pair of raised ribs transverse to said long dimension and including a notch therebetween; and
said holder being adapted to support said cartridge in a reversed position perpendicular to said long dimension such that said spine is disposed in said notch and one of said hooks engages said spline from below.

4,113,331
MODULAR CONSOLE ENCLOSURE WITH WRITING SURFACE
Terrence Edmund Derdzinski, Addision, Ill., and James Hilliard Karlin, Fairport, N.Y., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 9, 1975, Ser. No. 620,987
Int. Cl.[2] A47B *27/00*, *53/00*
U.S. Cl. 312—198 **3 Claims**



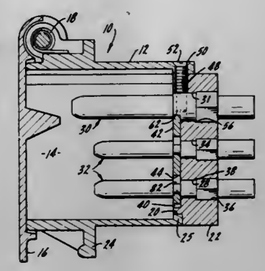
1. A modular enclosure for housing apparatus and providing desk-type capability, the enclosure comprising:
vertical support members;
horizontal bracing members for attaching to the vertical support members;
panel members adapted for being exteriorly attached to the vertical members;
a V-shaped channel member having a first inward horizontal surface and another inward surface forming an acute angle with the first surface;
integral retaining brackets fixedly attached to one of the inward surfaces of the V-shaped channel member, each bracket having a threaded aperture therein;
two wedge-shaped panel members each having a vertical edge and a structural member formed adjacent the vertical edge for mounting each panel member on one of said vertical support members, the panel members being adapted to support the V-shaped member in horizontal positioning between the outermost portions of the wedge-shaped members;
a rigid writing surface having a width equivalent to at least one module width;
frame means for supporting the writing surface, the inward ends of the frame means adapted to mate with the inward surfaces of said acute angle of the V-shaped member, frame means having apertures therein and positioned for being aligned with the apertures in the retaining brackets; and
fastener means adapted to cooperate with the apertures in the retaining brackets and the support frame means for attaching said support frame means to said retaining brackets of the V-shaped member, for retaining the inward ends of the frame means in abutting relationship with the surfaces of the acute angle of the V-shaped member.

4,113,332
SECRET COMPARTMENT CASE
James David McMaster, P.O. Box 55791, Houston, Tex. 77055
Filed Oct. 19, 1977, Ser. No. 843,566
Int. Cl.[2] A47B *97/00*, *17/04*
U.S. Cl. 312—204 **8 Claims**



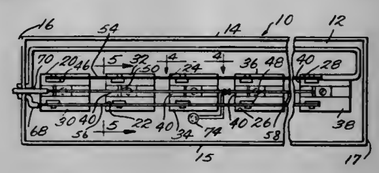
1. A secret compartment case, comprising:
a flexible housing being movable from a normal position to a flexed position;
an outer drawer adapted to be disposed in said flexible housing and movable between an open position and a shut position with respect to said flexible housing;
an inner drawer adapted to be disposed substantially within said outer drawer and said flexible housing, said inner drawer mounted for movement with respect to said flexible housing between a secured position wherein said inner drawer is positioned within said flexible housing and not movable therefrom while said flexible housing is in a normal position and an unsecured position wherein said inner drawer is movable from said flexible housing when said flexible housing is in said flexed position and said outer drawer is displaced from said shut position; and, release means operatively connecting said inner drawer and said flexible housing for releasing said inner drawer from said flexible housing to allow movement from said secured position to said unsecured position.

4,113,333
ELECTRICAL CONNECTOR RECEPTACLE
Charles Horowitz, Niles, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed May 23, 1977, Ser. No. 799,506
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 P **11 Claims**



1. In an electrical connector receptacle including a hollow housing having an end plate at one end and a closing cover at the opposite end, said end plate having a plurality of pin apertures extending therethrough, a plurality of male contact pins extending through said pin apertures and insertable from the outside of said end plate, cooperating means on said pins and pin apertures for limiting the extent to which said pins are inserted into said pin apertures, each of said pins having an annular groove, a locking plate positioned adjacent the inner wall of said end plate and slidable thereon, and means on said locking plate cooperating with the grooves in said pins for removably locking said pins in said pin apertures.

4,113,334
ELECTRICAL OUTLET STRIP
John C. Instone, Cherry Hill, N.J., assignor to SGL Industries, Inc., Haddonfield, N.J.
Filed Jul. 21, 1977, Ser. No. 817,849
Int. Cl.[2] H01R *9/00*
U.S. Cl. 339—22 R **11 Claims**



1. In combination a casing and at least two electrical outlet receptacles,
said receptacles all having live, neutral and ground terminals, all of the respective live, neutral and ground terminals of said receptacles being adapted to be connected into a parallel circuit,
said casing having a bottom with a corresponding number of apertures therein to receive said receptacles, and side and end walls to enclose a space therein into which said receptacles extend from said bottom, the casing having an open side opposite said bottom, there being a cover to complete the enclosure of the space inside the casing,
said receptacles being formed of an insulating body for supporting said terminals and having openings on one side that are exposed on the outside of the casing for receiving two and three pronged electrical plugs for connection to said terminals,
a three wire conductor for carrying an electrical current to said casing, said conductor having live, neutral and ground leads,
means for supporting each of said live, neutral and ground

terminal elements on said insulating bodies to extend beyond said bodies into said space in the casing so that said terminals are arranged in the same spaced apart positions one relative to the other on each of said insulating bodies and so that said ground terminal is intermediate said live and neutral terminals,

said insulating bodies being fitted into said bottom apertures of the casing with said openings for the plugs exposed to the outside of said casing, said insulating bodies being arranged in said apertures with like terminals of one kind adjacent one wall, like terminals of a second kind adjacent a wall opposite said one wall, and like ground terminals being positioned in said space between said live and neutral terminals,

all of said terminals being formed in a shape with spread apart arms, all of said terminals at the junctions of the spread apart arms being separated from one another by a relatively open and unobstructed space into which no significant part of said insulating body extends and

all of said terminals being supported in said space with the open arms facing said open side of the casing,

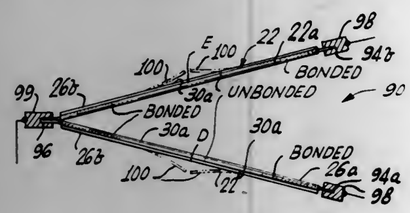
there being three separate bus wires adapted to be individually fitted between and attached to the open arms of the respective live, neutral and ground terminals when the cover of the casing is removed, said live and neutral terminals respectively being electrically connected to the live and neutral leads of said conductor and said ground lead having an electrical connection with the interconnected ground terminals and said casing.

4,113,335

RE-FORMABLE MULTI-CONDUCTOR FLAT CABLE

Roger J. Lang, and Gary E. Lang, both of Garden Grove, Calif., assignors to Eltra Corporation, Toledo, Ohio

Filed Oct. 28, 1976, Ser. No. 736,309
Int. Cl.² H01R 11/00
U.S. Cl. 339—29 R **16 Claims**



1. A re-formable multiconductor cable, which comprises:

a pliable, longitudinally extending, plastic film; and

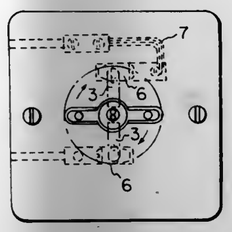
a plurality of longitudinally extending, laterally spaced insulated electrical conductors intermittently bonded to one surface only of said plastic film in segments of longitudinally extending peelably bonded areas alternating with segments of longitudinally extending non-bonded areas, the bond between said plastic film and insulated electrical conductors in said peelably bonded areas being of substantially lower tensile strength than that of the tear strength of said plastic film to thereby enable ready, complete separation of said plastic film from the conductor insulation to take place under the application of manual force within normal human limits, said non-bonded areas providing means for the formation of tear tabs usable for peeling of sections of said film across peelably bonded areas on opposite sides of said non-bonded areas.

4,113,336

SAFETY ELECTRIC RECEPTACLE AND THE PLUG

Luk Hon Man, Yung Ho Chen, Taipei Hsien, Taiwan

Filed Aug. 18, 1975, Ser. No. 605,767
Int. Cl.² H01R 13/54
U.S. Cl. 339—75 P **2 Claims**



1. A safety electric receptacle and plug assembly comprising:

a plug comprising two knife blade conductors in a perpendicular position with said plug at its one end, a round head at said end and a square head behind closely said round head;

said two blade conductors pointing out between said round head and said square head toward opposite directions;

a receptacle comprising a bottom plate and a cover;

said bottom plate including two conductors in a symetrical arrangement for engaging said knife blade conductors when said plug is rotated;

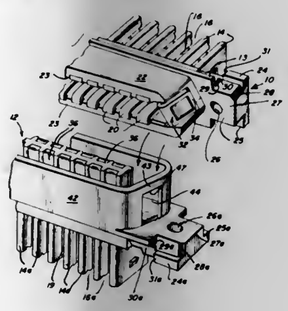
said cover includes an aperture for insertion of said plug into said aperture and for permitting rotation of the plug allowing insertion of said knife blade conductors into said bottom plate conductors.

4,113,337

CONNECTOR CONSTRUCTIONS AND MOUNTING MEANS AND HOODS THEREFOR

William H. McKee, West Covina, Calif., assignor to TRW Inc., Elk Grove Village, Ill.

Filed Oct. 29, 1976, Ser. No. 736,895
Int. Cl.² H01R 13/54
U.S. Cl. 339—91 R **29 Claims**



1. In a ribbon connector assembly, the combination comprising a connector body of electrically insulating plastic having a plurality of wire-engaging contacts mounted therein, a member with which said connector is adapted to assume a fixed positional relation, and means for joining said connector body to said member; said connector body having opposed longitudinal end portions of lesser height than an interposed body portion in which said contacts are mounted; distal corners of each of said connector end portions being relieved to provide opposed lateral mounting ears and opposed abutment shoulders disposed inwardly of the connector distal ends adjacent the inner ends of said ears; said joining means including spaced interlock elements for simultaneously slidably engaging each of said ears and for subsequently abutting said abutment shoulders to interlockingly engage said connector for attachment of said connector to said member with which said means are joined.

4,113,338

INSULATION-PIERCING CONTACT

Tedford Hollace Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 3, 1977, Ser. No. 756,497
Int. Cl.² H01R 11/20
U.S. Cl. 339—97 R **15 Claims**



1. A contact member for connection with an insulation-covered conductor comprising:

an active contact element; and

a terminal element adapted to pierce said insulation and electrically engage said conductor, said terminal element including insulation-cutting means for radially penetrating said insulation at a first longitudinal portion of said conductor, insulation-stripping means for stripping a segment of said insulation from a second longitudinal portion of said conductor and conductor-engaging means for contacting in wiping engagement substantially the entire length of said first and second longitudinal portions of said conductor, the portions of said terminal element contiguous with said conductor comprising smooth and continuous surfaces to prevent scoring of the conductor.

4,113,339

LOAD BREAK BUSHING

Edgar R. Eley, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 29, 1977, Ser. No. 828,467
Int. Cl.² H01R 13/52
U.S. Cl. 339—111 **11 Claims**

1. A load-break bushing for a fluid filled electrical apparatus, comprising:

a tank;

an electrical element disposed within said tank;

a quantity of dielectric fluid disposed within said tank;

a hollow elongated housing having an axial passage extending therethrough, said housing having upper and lower portions, said upper portion extending through said tank to the outside thereof, said lower portion extending into said dielectric fluid within said tank;

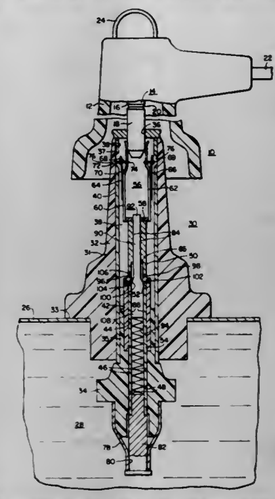
an electrical conductor, having first and second ends, disposed within said axial passage and adapted for movement therein between a first and second position;

a first electrical contact exteriorly movable relative to said housing;

said first end of said electrical conductor being adapted to engage said first contact;

a second electrical contact attached to said lower portion of said housing such that said second contact is surrounded by said dielectric fluid within said tank, said second contact being adapted to engage said second end of said electrical conductor in said second position and, further, being adapted for connection to said electrical element within said tank;

means for preventing movement of said electrical conductor from said first position until the engagement of said first contact with said first end of said electrical conductor to insure that the electrical circuit between said first contact,



said electrical conductor, said second contact and said electrical element is made within said dielectric fluid within said tank; and

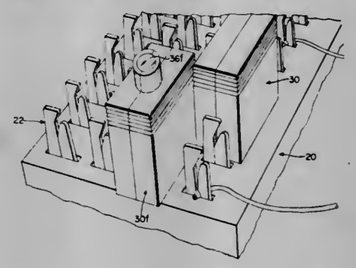
means for sealing said axial passage in said housing to prevent said dielectric fluid from entering therein such that said dielectric fluid surrounds only said second contact.

4,113,340

PROTECTIVE ELECTRICAL DEVICE

George M. Rapata, Schaumburg, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 27, 1977, Ser. No. 810,532
Int. Cl.² H01R 3/00
U.S. Cl. 339—113 R **10 Claims**



1. A protective electrical device adapted for use with electrical wiring terminal blocks having adjacently positioned elongated metallic terminal means, said device including a substantially rigid dielectric body means, two contact means, and an electrical component means connected to said contact means, said body means consisting of a pair of body portions including a plurality of positioning means for separating and retaining said contact and component means in predetermined relationship as if in spaced chambers, positioning means in said chambers for cooperative retention of said contacts that fixes one end of each of said contacts and permits lateral adjustability of each of the opposite ends of said contacts, each of said contacts being provided with cooperative means adjacent said one end complementary to shoulder means serving as said positioning means in each said chamber adapted to locate and retain said contact in fixed axial relation to said body, a transverse cham-

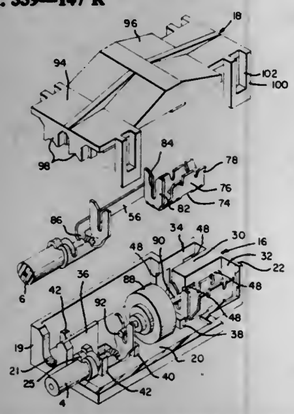
ber adjacent one end of said body means communicating with said contact and component means positions, and electrical connection means traversing said transverse chamber between said contact and component means, said body means further including spaced port means opening through said body means adapted with said contact means to accept a variety of predetermined spacings of said terminal means.

4,113,341

ELECTRICAL CONNECTOR HAVING PROVISION FOR CIRCUIT COMPONENTS

Donald Wayne Kent Hughes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 12, 1977, Ser. No. 824,023
Int. Cl.[2] H01R *19/34*
U.S. Cl. 339—147 R **14 Claims**



1. An electrical connector means for disengageably connecting a conductor to an external terminal member and for optionally connecting a circuit component in series with said conductor, said connector means comprising:
an insulating housing,
a connector terminal member, said connector terminal member comprising a conductor connecting portion and a mating portion, said mating portion being dimensioned to be mated with said external terminal member, said conductor connecting portion having means for securing said conductor thereto,
removable connecting strap means integral with, and extending between, said conductor connecting portion and said mating portion,
first and second lead wire-receiving means integral with said conductor connecting portion and said mating portion, each of said lead wire-receiving means comprising a plate like member having a lead wire-receiving slot extending therein,
said housing having terminal member receiving portions which are capable of receiving said terminal member when said connecting strap is integral therewith and capable of separately receiving said conductor connecting portion said mating portion, and a circuit component positioned between said conductor connecting and said mating portions with the lead wires of said component received in said lead wire connecting means.

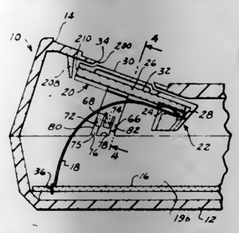
4,113,342

CONDUCTOR ARRANGEMENT AND ASSEMBLY METHOD

Joseph R. Andreaggi, Short Hills, N.J., assignor to Sangamo Weston, Inc., Newark, N.J.

Continuation of Ser. No. 675,931, Apr. 12, 1976, abandoned.
This application Oct. 11, 1977, Ser. No. 840,854
Int. Cl.[2] H01R *13/06*
U.S. Cl. 339—176 MP **18 Claims**

9. A conductor-connector assembly comprising a unitary metal electrical conductor assembly having flat, elongated, multiple, spaced apart conductor bodies in a common plane, a terminal tip at a common end of each of said multiple bodies, integral bridge means connected to each of said bodies at a location near its tip but between said conductor body and said terminal tip, said bridge means extending at an angle to the plane of said conductor bodies, each of said conductor bodies having a width substantially greater than its thickness so that the bodies are relatively stiff laterally, in their common plane, and flexible in a direction normal to their common plane, said bridge means providing means for maintaining said terminal



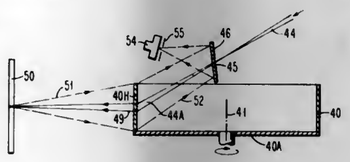
tips in predetermined spaced relation with respect to each other during association of the terminal tips with another terminal array, said bridge means extending at said angle to said plane of the conductor bodies at a location only slightly inwardly of the terminal tips, exposing said tips for simultaneous association with said another terminal array, and said bridge means being readily severable after association of the terminal tips with the terminals.

4,113,343

HOLOGRAPHIC OPAQUE DOCUMENT SCANNER

Robert Vladimir Pole, and Harald Willy Werlich, both of Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1977, Ser. No. 798,042
Int. Cl.[2] G02B *27/17, 5/32*
U.S. Cl. 350—3.71 **16 Claims**



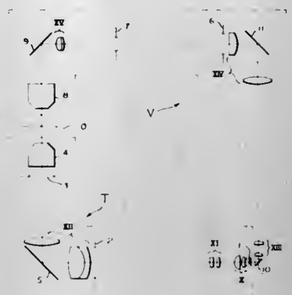
1. An opaque document scanner comprising:
(a) a least one hologram constructed from a first reference beam ϕA and a object beam ϕB;
(b) means for illuminating a portion of said hologram with a cone of coherent light corresponding to a fraction $\Delta\phi A$ of said reference beam ϕA to reconstruct a scanning cone corresponding to a fraction $\Delta\phi B$ of said original object beam ϕB;
(c) means positioning said hologram relative to a document to be scanned so that the focal point of said reconstructed beam $\Delta\phi B$ is positioned substantially in the plane of said document to cause a reflected pattern of radiation from the point on said document being illuminated by said beam $\Delta\phi B$;
(d) a detector for providing electrical signals which vary corresponding to the amount of light energy focused on said detector; and
(e) means including said hologram for imaging said pattern of reflected radiation onto said detector.

4,113,344

MICROSCOPE ILLUMINATOR FOR BOTH TRANSMITTED AND VERTICAL MICROSCOPY

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 25, 1975, Ser. No. 607,842
Int. Cl.[2] G02B *21/06*
U.S. Cl. 350—87 **9 Claims**



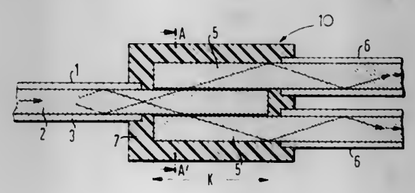
1. In a transmitted light microscope illumination system having a light source, a collecting lens system, a field diaphragm, a collimating lens system, and a condenser with a back aperture diaphragm all in alignment and in sequence along an optical axis, the improvement comprising a zoom lens system, between said collecting lens system and said field diaphragm, said zoom system consisting of first and second lens elements movable along said axis in unison, said first lens element being a convex-plano positive singlet and said second lens element being a plano-convex positive singlet and said first and second lens elements having adjacent plano surfaces.

4,113,345

BRANCHING ARRANGEMENT FOR COMMUNICATION TRANSMISSION LINKS HAVING OPTICAL GLASS FIBERS

Christian Gerndt, Geretsried, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 26, 1975, Ser. No. 635,366
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1974, 2456619
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 **6 Claims**



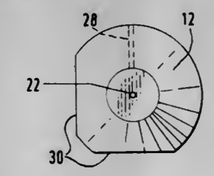
1. A branching arrangement for communication transmission links having a branching zone between overlapping end portions of an incoming cladded optical glass fiber and a plurality of outgoing cladded optical glass fibers, each of the glass fibers having a core enclosed in the cladding, said arrangement comprising each of the end portions of the glass fibers being completely free of the cladding in the area of the branching zone, a plurality of outgoing glass fibers being arranged with their cladding-free cores in a surrounding and overlapping relationship to the cladding-free core of the incoming glass fiber with the core of the incoming glass fiber being arranged with its axis parallel to the axis of each of the cores of the outgoing glass fibers, an intermediate material being disposed in the spaces between the overlapping cores of the incoming and the outgoing glass fibers, and a casing material surrounding the overlapping cores of all the glass fibers and the intermediate material, said casing material having an index of refraction n_U which is lower than the index of refraction of n_K of the cores and said intermediate material having an index of refraction n_Z which is approximately equal to the index of refraction n_K of the cores so that a light signal in the incoming glass fiber is transferred into each of the outgoing glass fibers.

4,113,346

METHOD OF MAKING OPTICAL FIBER TERMINATIONS

Thomas M. Jackson, Stortford, and Robert J. Hodges, Cheshunt, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 14, 1976, Ser. No. 732,500
Claims priority, application United Kingdom, Nov. 20, 1975, 47764/75
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.20 **3 Claims**



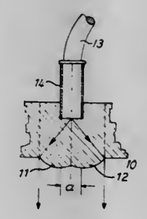
1. A method of making an optical fiber termination for use in a demountable optical fiber connector comprising the steps of:
providing an optical fiber having a core and a front end face;
securing the optical fiber in a ferrule to lie approximately along the ferrule axis;
locating the front end face of the fiber flush with one end of the ferrule;
directing light through the fiber from the end thereof opposite to said front end face to provide a visible reference point at the core of said fiber;
forming a first flat surface on the side of the ferrule a predetermined distance from said reference point; and
forming a second flat surface on the side of the ferrule at the same distance from said reference point as said first flat surface but at an angle to said first flat surface.

4,113,347

ARRANGEMENT FOR DIRECTIONAL RADIATION OF LIGHT IN SYMBOL-INDICATOR SYSTEMS

Waldemar Gaertner, Wenden, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 28, 1977, Ser. No. 782,187
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616298
Int. Cl.[2] G02B *5/16*
U.S. Cl. 350—96.24 **9 Claims**



1. In an arrangement for the directional radiation of light, in symbol-indicator systems which are to be effective over com-

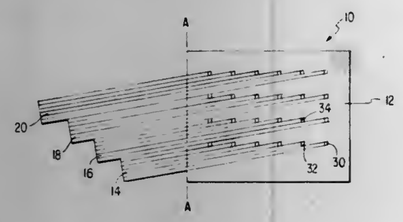
paratively great distances, with the symbols being formed by dots of a dot matrix, at which the ends of respective light-conductor-bundles terminate, and the opposite conductor ends of which may be illuminated by light sources, particularly for utilization as supplemental indicators in the railroad signalling field, the combination of a lens arrangement for each matrix dot, each of which comprises two horizontally adjacent lenses, each of which has a plane surface and a curved surface, with their plane surfaces facing the associated light conductor, and with the lenses of such lens arrangement being cooperably disposed to reproduce two horizontally adjacent partially superimposed light sources in the plane of observation.

4,113,348

CHANNEL ILLUMINATION SHEETS

George J. Yevick, Leonia, N.J., assignor to Izon Corporation, Stamford, Conn.

Filed Aug. 13, 1976, Ser. No. 714,215
Int. Cl.² G02B 5/17
U.S. Cl. 350—96.25 8 Claims



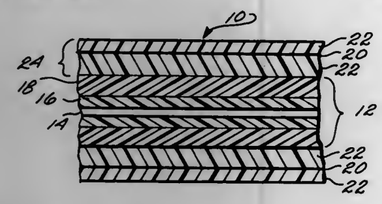
1. An illuminating sheet for illuminating microimages such as those carried by a microfiche, the sheet including,
(a) a supporting base,
(b) a transparent coating material of index of refraction n_1 on one surface of the base,
(c) a plurality of parallel strips of index n_2 of refraction, said strips positioned on the said coating of index n_1, the strips being spaced from each other so that they do not touch each other,
(d) a transparent filler of index n_3 of refraction covering said parallel strips,
(e) index n_2 being greater than either of indices n_1 or n_3,
(f) one end of each of the strips being biased and mirror finished to define a reflecting surface.

4,113,349

FIBER REINFORCED OPTICAL FIBER CABLE

Kenneth M. Stiles, San Dimas, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Filed Jul. 30, 1975, Ser. No. 600,202
Int. Cl.² G02B 5/16
U.S. Cl. 350—96.23 16 Claims



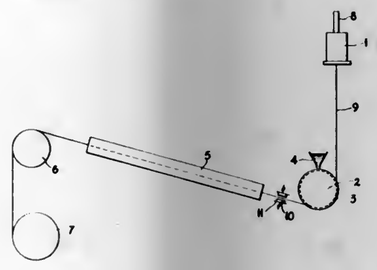
1. An optical cable comprising:
(a) an elongate optical fiber surrounded by a coating of a cured silicone rubber having a high coefficient of thermal expansion; and
(b) an outer shell surrounding the cured silicone rubber coating, said outer shell composed of a plurality of reinforcing fibers bound by a set resin, the resin being set when said coating of cured silicone rubber is in a thermally expanded state and said outer shell having a coefficient of thermal expansion less than the coefficientof thermal expansion of said cured silicone rubber coating wherein the ratio of coefficients of thermal expansion of the cured silicone rubber coating to said outer shell is from about 3:1 to about 30:1, said outer shell being substantially constrained by said cured silicone rubber coating when in its thermally non-expanded state from imparting radial compressive forces on said optical fiber.

4,113,350

OPTICAL FIBRE WAVEGUIDES

Ernest Martin Haines, Pinner, England, assignor to Telephone Cables Limited, Dagenham, England

Filed Mar. 8, 1976, Ser. No. 664,706
Claims priority, application United Kingdom, Mar. 18, 1975, 11192/75
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.29 8 Claims



1. An optical fibre waveguide consisting of a glass fibre having a composition and structure such that the refractive index of the fibre material varies over the cross-section of the fibre, and provided with a continuous surface coating of synthetic resin material, wherein the said coating is formed of a plurality of layers each from 3 to 5 micrometers in thickness, applied to the glass fibre sucessively as resin solutions and each cured before the application of a succeeding layer, and wherein at least the innermost layer of said coating consists of a thermosetting resin containing a dispersion of finely powdered, non-metallic, inorgainc filler material the modulus of elasticity of which is at least substantially equal to that of the said glass fibre, which powdered filler material is incorporated in said resin solution as a suspension, each filler containing layer of the said coating consisting of 10 to 45% of said filler material and 90 to 55% of the fully cured thermosetting resin, by weight.

4,113,351

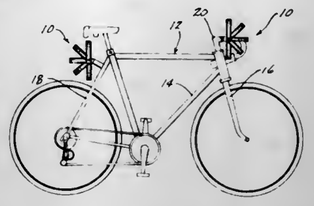
SAFETY REFLECTOR DEVICE FOR BICYCLES OR THE LIKE

John V. Kitrell, 1830 N. 49th, Lincoln, Nebr. 68504

Filed Oct. 7, 1976, Ser. No. 730,695
Int. Cl.² G02B 5/12
U.S. Cl. 350—99 4 Claims

1. A safety reflector device, comprising,
a plurality of substantially U-shaped members having first and second ends, said members having a light reflective surface on the outer surface,
first connection means connecting the first ends of said U-shaped members,

second connection means connecting the second ends of the said U-shaped members,



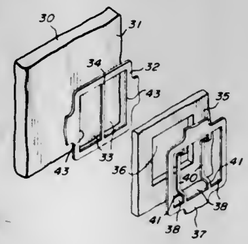
said U-shaped members being positioned relative to each other so that the majority of the lengths thereof are spaced apart.

4,113,352

ELECTRO-OPTIC MATRIX DISPLAY

Hugo Willy Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1977, Ser. No. 756,216
Int. Cl.² G02F 1/03
U.S. Cl. 350—150 10 Claims



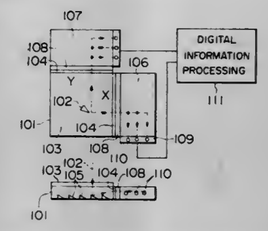
1. An electro-optic display device for selectively transmitting light comprising:
an electro-optic plate operable in the transverse bias mode;
a plurality of first conductors, located on a side of the plate, each first conductor having a plurality of predeterminedly spaced apertures provided therein;
an insulating layer superposed over said first conductors and having provided apertures substantially coincident with the apertures of the first conductors; and
a plurality of second conductors insulated from said first conductors by said insulating layer, said second conductors being generally superjacent to and crossing said first conductors, each of said second conductors having a plurality of apertures substantially coincident with predetermined apertures of the first conductor, each of said second conductors having contacting portions extendingg from each second conductor and lying on said side of the plate in predetermined electrical configuration with predetermined ones of said first conductors;
whereby a predetermined area of the electro-optic plate is adapted to be selectively activated in the transverse bias mode by application of an electric potential between selected ones of the first and second conductors.

4,113,353

INFORMATION PROCESSING OPTICAL DEVICE

Akira Matsushita, Kawasaki, Japan

Continuation of Ser. No. 495,491, Aug. 7, 1974, abandoned. This application Dec. 2, 1976, Ser. No. 746,830
Claims priority, application Japan, Apr. 20, 1974, 49-43908; Apr. 20, 1974, 49-43909
Int. Cl.² G02B 27/14
U.S. Cl. 350—171 4 Claims



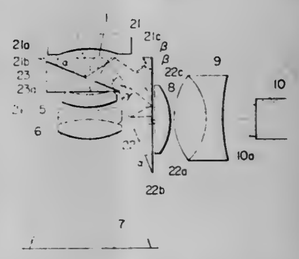
1. An information processing optical device which comprises: a body having on a major surface thereof a number of discrete spot-like beam input sections arranged in the form of a matrix, and beam output sections in first and second groups with said groups arranged on separate end surfaces of the body in correspondence with the lines and columns of the spot-like beam input sections; beam guide means of a material different than said body provided in the body for each individually optically connecting corresponding individual beam input sections with both a corresponding one of the output sections in the first group and a corresponding one in the second group and including beam-dividing means comprising means having reflecting surfaces integral therewith for separating and independently transmitting individual beam input signals of radiant energy from the discrete, spot-like beam input sections in the lines and columns of said matrix to the beam output sections in the first and second groups as two independent beams representative of directions representative of X and Y directions for specifying the position of the corresponding individual input beams in X and Y coordinates; first and second optical encoders provided respectively in correspondence to the individual beam output sections in the first and second groups; and beam input terminals on the optical encoders optically connected to the respective beam output sections in the first and second groups.

4,113,354

SINGLE-LENS REFLEX OPTICAL SYSTEM FOR AN ENDOSCOPE

Nobuo Yamasita, Tama, and Toshihiro Imai, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Mar. 1, 1977, Ser. No. 773,408
Claims priority, application Japan, Mar. 3, 1976, 51-22080
Int. Cl.² G02B 27/14; G03B 19/12; A61B 1/04
U.S. Cl. 350—172 27 Claims

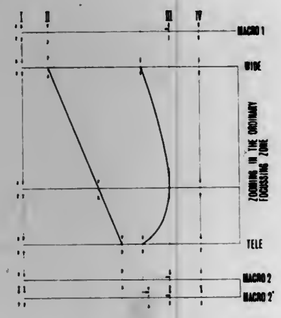


1. A single-lens reflex optical system for an endoscope comprising:

a photographing optical system for focusing an image of an object to be observed on a film surface;
a first prism having an entrance surface and a mirrored surface for reflecting object light received through said entrance surface by, sequentially, said mirrored surface and said entrance surface of said first prism;
said mirrored surface having a small hole arranged close to the position of the aperture stop of said photographing optical system for permitting a portion of said object light to pass to said film surface;
a second prism centered to said first prism and having a reflecting surface and an exit surface for receiving object light reflected by said entrance surface of said first prism and for reflecting said received object light by, sequentially, said exit surface and said reflecting surface of said second prism before said received object light passes out of said second prism through said exit surface;
a correcting prism cemented to said mirrored surface of said first prism;
an image guide having an end face; and
an observing optical system disposed near said exit surface of said second prism for focusing the object light passing out of said exit surface of said second prism into said image guide face.

4,113,355
MACRO ZOOM LENS

Sadahiko Tsuji, Kanagawa, and Yujiro Agari, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 585,654, Jun. 10, 1975, abandoned.
This application Dec. 5, 1977, Ser. No. 857,692
Claims priority, application Japan, Jun. 17, 1974, 49-68883
Int. Cl.² G02B *15/18*
U.S. Cl. 350—184 3 Claims



1. A macro zoom lens capable of taking close-up photography, at the edge of the wide and tele-side of the zooming zone, comprising:
focusing means, zooming means, and fixed image forming means arranged in the written order from an object side, said focusing means for focusing at an ordinary photographing distance, said zooming means including a first movable member and a second movable member, said fixed image forming means for focusing a light flux from said zooming means on a film;
at least one of said first movable member and second movable member being movable at the time of close-up photography;
said first and second movable members being within a zooming space during close-up photography in which said first and second movable members move at the time of zooming;
said first and second movable members being positioned at a position in said zooming space at the time of a close-up photograph from the wide edge and being positioned at a different position in said zooming space at the time of close-up photography from the tele-edge;
wherein the distance between said focusing means and the image forming means being substantially constant both at the time of close-up photography and at the time of photography at an ordinary distance,
the distance (e_1) between the focusing means and the first movable member,
the distance (e_2) between the first movable member and the second movable member, and
the distance (e_3) between the second movable member and the image forming means satisfy the following conditions:

e_1 min $\leqq e_1$ macro

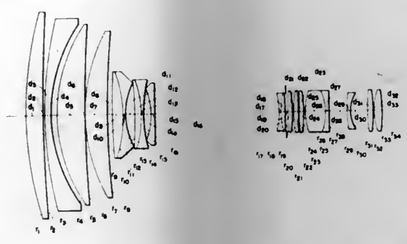
e_2 min $\leqq e_2$ macro

e_3 min $\leqq e_3$ macro

in which, e_1 min, e_2 min and e_3 min signify a minimum value of the distance e_1, e_2, e_3 respectively in the zooming state in an ordinary focusing zone, and e_1 macro, e_2 macro and e_3 macro signify a distance e_1, e_2 and e_3 respectively at the time of the close-up photography.

4,113,356
ZOOM LENS SYSTEM WITH HIGH ZOOMING RATIO

Masaki Matsubara, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Japan
Filed Apr. 19, 1977, Ser. No. 788,961
Claims priority, application Japan, Apr. 20, 1976, 51-45212; Apr. 20, 1976, 51-45213
Int. Cl.² G02B *15/18*
U.S. Cl. 350—186 22 Claims



1. A zoom lens system with high zooming ratio comprising a focusing lens group, variator lens group, compensator lens group, erector lens group and master lens group, said focusing lens group comprising three positive lens components and one negative lens component, said variator lens group comprising three negative lens components, said compensator lens group comprising a negative cemented doublet lens component, said erector lens group comprising two positive lens components, said master lens group comprising a first, second, third and fourth lens components, said first lens component having positive refractive power, said second lens component having negative refractive power, said third lens component being a positive lens, said fourth lens component being a positive lens, said zoom lens system with high zooming ratio satisfying the following conditions:

$1.45 < N_a < 1.65$ (1)

$1.57 < N_b < 1.82$ (2)

$|3f_v < Ra$ (3)

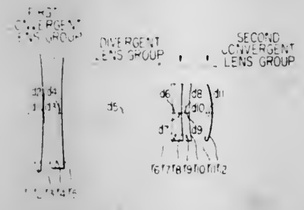
$0.05\ f_M < D_a < 0.36\ f_M$ (4)

$0.24\ f_M < D_b + D_c < 0.6 f_M$ (5)

wherein reference symbol N_a represents refractive indices of positive lenses in the focusing lens group (but, refractive indices of those lenses may be different from each other), reference symbol N_b represents refractive indices of two lenses on the object side in the variator lens group (but, refractive indices of the two lenses may be different from each other and, when one or both of those lenses are cemented doublets, N_b represents refractive indices of negative lenses constituting those cemented doublets), reference symbol R_a represents the radius of curvature of the lens surface closest to the image side in the variator lens group, reference symbol D_a represents the thickness of the thick lens constituting the first lens component in the master lens group, reference symbol D_b represents the airspace between the first and second lens components in the master lens group, reference symbol D_c represents the airspace between the second and third lens components in the master lens group, reference symbol f_V represents the focal length of the variator lens group, and reference symbol f_M represents the focal length of the master lens group.

4,113,357
TELEPHOTO LENS SYSTEM

Soichi Nakamura, Kamakura, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed Dec. 8, 1975, Ser. No. 638,708
Claims priority, application Japan, Dec. 28, 1974, 50-1298
Int. Cl.² G02B *13/02, 9/60, 9/62, 9/64*
U.S. Cl. 350—212 14 Claims



1. A telephoto lens system comprising, in the order as viewed from the object side, a first convergent lens group movable along the optical axis of the system, a divergent lens group movable along the optical axis of the system and a second convergent lens group stationary for focusing, said first convergent lens group and said divergent lens group forming substantially an afocal system for an object at infinite distance, and focusing upon a nearer object being attained by the movement of one of said first convergent lens group and said divergent lens group to lengthen the air space therebetween.

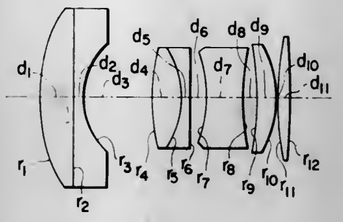
comprising a first negative cemented doublet lens component, a second positive cemented doublet lens component, a third negative lens component, a fourth positive meniscus lens component and a fifth positive lens component, and said wide-angle photographic lens system having the following numerical data:

$r_1 = 0.89501$		
$d_1 = 0.19296$	$n_1 = 1.72$	$\nu_1 = 42.1$
$r_2 = 12.63956$		
$d_2 = 0.05513$	$n_2 = 1.51633$	$\nu_2 = 64.2$
$r_3 = 0.38615$		
$d_3 = 0.40384$		
$r_4 = 1.17183$		
$d_4 = 0.15409$	$n_3 = 1.8061$	$\nu_3 = 40.9$
$r_5 = 0.55000$		
$d_5 = 0.05513$	$n_4 = 1.69895$	$\nu_4 = 30.1$
$r_6 = 17.11794$		
$d_6 = 0.09648$		
$r_7 = -0.81932$		
$d_7 = 0.23073$	$n_5 = 1.80518$	$\nu_5 = 25.4$
$r_8 = 2.53199$		
$d_8 = 0.03584$		
$r_9 = -3.16141$		
$d_9 = 0.12818$	$n_6 = 1.757$	$\nu_6 = 47.9$
$r_{10} = -0.59818$		
$d_{10} = 0.00276$		
$r_{11} = 1.77635$		
$d_{11} = 0.08270$	$n_7 = 1.757$	$\nu_7 = 47.9$
$r_{12} = -5.55394$		

$f = 1.0$, $f_B = 1.06413$, F/2.0
$f_{4,5} = 0.621$, $\Sigma d = 0.53643$

4,113,358
RETROFOCUS TYPE WIDE-ANGLE PHOTOGRAPHIC LENS SYSTEM

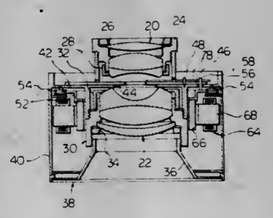
Jihei Nakagawa, Higashimurayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1975, Ser. No. 629,606
Claims priority, application Japan, Nov. 9, 1974, 49-128557
Int. Cl.² G02B *11/30*
U.S. Cl. 350—216 3 Claims



1. A retrofocus type wide-angle photographic lens system

4,113,359
AUTOMATIC DIAPHRAGM ASSEMBLY

Hiroshi Koike, No.5-10,1-Chome, Minami-Azabu, Minato-ku, Tokyo; Shoji Suzuki, No.17-7-104,3-Chome, Satagaya, Setagaya-ku, Tokyo, and Takeki Asakawa, No. 556, 4-Chome, Taisei-cho, Ohmiya City, Saitama Prefecture, all of Japan
Filed Mar. 16, 1977, Ser. No. 778,240
Int. Cl.² G05D *25/00*
U.S. Cl. 350—269 15 Claims



1. An automatic diaphragm assembly for an image pick-up device having lens systems, comprising a stationary support structure supporting said lens systems and including a flange formed with a substantially circular opening having a center axis therethrough, a plurality of diaphragm blades rotatable about respective axes disposed substantially symmetrically about said center axis, said diaphragm blades forming therebetween a variable aperture having maximum and minimum areas and a center axis substantially in line with the center axis of said opening, at least one neutral-density filter element rotatable about one of said respective axes of rotation of said diaphragm blades between an angular position located in its entirety out of said variable aperture when the diaphragm blades are in positions having the variable aperture enlarged to the maximum area and an angular position fully intercepting said variable aperture when the diaphragm blades are in positions having the variable aperture reduced to the minimum area, a ring-shaped permanent magnet having a center axis substantially in line with the center axis of said opening and having pole portions which have opposite polarities alternately disposed circumferentially of the magnet, a ferromagnetic ring positioned in substantially coaxial relationship to said permanent magnet and

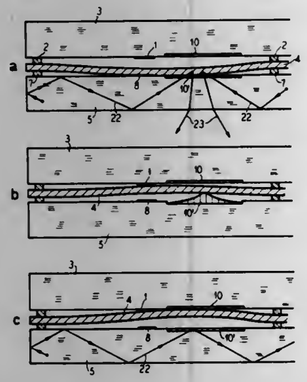
having a plurality of limb portions respectively terminating in end portions which are substantially regularly spaced apart from each other circumferentially of the ring and which have end faces located close to said permanent magnet, said limb portions consisting of a plurality of groups each consisting of three limb portions one of said permanent magnet and said ferromagnetic ring being fixedly held in position with respect to said support structure and the other thereof being rotatable about the center axis of said permanent magnet and in driving engagement with said diaphragm blades and said neutral-density filter element, and two coils carried on each of said groups, one of the two coils being wound on one pair of neighboring limb portions in each of said groups and the other of the two coils being wound on the other pair of neighboring limb portions in each of said groups, the coils on each of said groups being wound in the opposite directions to the coils on the neighboring groups.

4,113,360

INDICATING DEVICE FOR ILLUSTRATING SYMBOLS OF ALL KINDS

Günter Baur, Freiburg, and Waldemar Greubel, Denzlingen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 28, 1977, Ser. No. 782,186
Int. Cl.² G05D *25/00*
U.S. Cl. 350—285 **10 Claims**



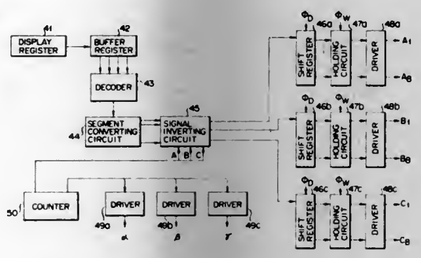
1. An indicating device for projecting symbols of all kinds comprising a plate of fluoreacing synthetic material, said plate having metallized edges to create a light trap for fluorescent light created in the plate; a layer of light dispersing material mounted in spaced relationship to a surface of said plate; a contact film disposed in at least selected areas between the layer and said plate; and means for selectively moving portions of the layer into optical contact with the contact film and plate to cause decoupling of the fluorescent light from said plate, said means including a plurality of electrodes disposed in the device in a given pattern and means for selectively applying electrical voltage of the electrodes to create a selected arrangement of electrical fields to move desired portions of the layer into contact with the plate to create a display of a desired symbol.

4,113,361

LIQUID CRYSTAL DISPLAY DEVICE

Harumi Nakano, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1976, Ser. No. 654,725
Claims priority, application Japan, Feb. 4, 1975, 50/14554
Int. Cl.² G02F *1/13*; G08B *5/36*
U.S. Cl. 350—332 **16 Claims**



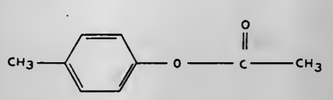
1. A plural digit liquid crystal display device comprising:
a plural digit liquid crystal display panel including a liquid crystal;
a plurality of first electrode groups disposed on one side of said display panel, each of said first electrode groups corresponding to and at least partially defining a respective digit of said plural digit display device and each of said fist electrode groups including a plurality of segment electrodes;
a plurality of second electrode groups disposed on the side of the display panel opposite to the side on which said first electrode group is disposed, each of said second electrode groups corresponding to and at least partially defining a respective digit of said plural digit display device and each of said second electrode groups including a plurality of segment electrodes;
said electrodes of said first electrode groups being in exact correspondence with said electrodes of said second electrode groups;
each of said first electrode groups being grouped into a plurality of first sub-groups of segment electrodes, said segment. electrodes of each first sub-group of segment electrodes being commonly connected together;
each of said second electrode groups being groups into a plurality of second sub-groups of segment electrodes which are different in configuration from said first sub-groups of segment electrodes, said segment electrodes of each second sub-group of segment electrodes being commonly connected together and corresponding second sub-groups of electrodes of each of said second electrode groups for each digit being commonly connected together;
means for sequentially applying phase-shifted drive signals of a predetermined cycle to the respective commonly connected segment electrode sub-groups of said second electrode groups; and
means for applying segment drive signals, corresponding to data to be displayed, simultaneously to a selected segment electrode sub-group of selected ones of said first electrode groups in synchronism with and concurrently with said application of a respective phase-shifted drive signal to effect a data display.

4,113,362

LIGHT VALVE, LIGHT VALVE SUSPENSION MATERIALS AND SUSPENSION THEREFOR

Robert L. Saxe, New York; Robert I. Thompson, Plainview, and Matthew Forlini, Ozone Park, all of N.Y., assignors to Research Frontiers Incorporated, Plainview, N.Y.

Continuation-in-part of Ser. No. 604,410, Aug. 13, 1975, Pat. No. 4,025,163. This application May 11, 1977, Ser. No. 795,819
Int. Cl.² G02B *5/23*
U.S. Cl. 350—362 **29 Claims**



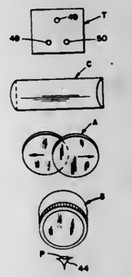
1. A light valve comprising:
a cell
means associated with said cell for applying an electric field thereto, and
an electrically responsive liquid suspension in said cell including:
a plurality of suspended particles which are responsive to an electric field to change the transmission of radiation through the suspension, and
a suspending medium that includes the combination of a suspending material comprising an aromatic ester derivable from an aromatic alcohol, and a dissolved polymer from the group consisting of (a) nitrocellulose and (b) a copolymer that includes at least two different monomers, at least one of which includes an unhindered functional group taken from the group consisting of an OH group and an acidic group, at least one of said monomers being soluble in the suspending medium, and at least one of said monomers being branched, and wherein the distance from the backbone to the available functional group most distant from the backbone in one monomer is less than the distance from the backbone to a non-functional group in another monomer, which combination acts to maintain the suspension of suspended particles, when an electric field is applied, in substantially the same condition of dispersion as in the absence of the electric field.

4,113,363

PROCESS AND APPARATUS FOR ASTIGMATIC AND SPHERICAL SUBJECTIVE TESTING OF THE EYE

William E. Humphrey, Orinda, Calif., assignor to Humphrey Instruments, Inc., San Leandro, Calif.

Continuation of Ser. No. 670,810, Mar. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 452,232, Mar. 18, 1974, Pat. No. 3,947,097. This application Apr. 25, 1977, Ser. No. 790,203
The portion of the term of this patent subsequent to Mar. 30, 1993, has been disclaimed.
Int. Cl.² A61B *3/02*
U.S. Cl. 351—17 **15 Claims**



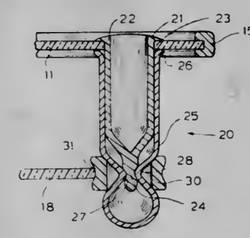
1. A process for determining optometric prescription for the eye in at least one astigmatic component including the steps of: providing a patient viewing station; providing a first line target of first arbitrary preselected angular alignment without regard to any suspected principal axis of the patient's eye to a view path from said patient viewing station at least to said target, said first line target including small angular divergence in the range of up to 20° from said arbitrary angular alignment; providing in said view path a constant power cylinder between said patient viewing station and said first target in the range of 1 to 6 diopters aligned normally to said first arbitrary preselected angular alignment; providing in said view path variable astigmatic optics for varying astigmatic lens power along first intersecting diagonals at substantially equal and opposite angles from the preselected angular alignment of said first line target; said first variable astigmatic optics varying said astigmatic power from positive to negative along one axis of said first intersecting diagonals, and from negative to positive along the other axis of said first intersecting diagonals; and, varying the first variable astigmatic optics responsive to subject patient visual acuity of said first line target to obtain a first component of astigmatic prescription for said patient.

4,113,364

SUNGLASS METHOD AND APPARATUS

Manlio V. Dussich, 383 N. Atlantic Ave., Cocoa Beach, Fla. 32931

Filed Aug. 1, 1977, Ser. No. 820,570
Int. Cl.² G02C *7/12, 1/00*; G03B *1/00*
U.S. Cl. 351—49 **10 Claims**



1. A variable density polarizing attachment for spectacles having polarizing lenses therein comprising in combination:
a pair of polarizing lenses;
a plurality of lens holding posts attachable to each lens of a pair of spectacles, said posts being grooved to rotatably retain said polarizing lens lenses; and
means for attaching each said holding post to said eyeglasses in predetermined position to rotatably support each said polarizing lens in said post groove adjacent to each spectacle lens including each of said plurality of lens holding posts having first and second post members, said second post member being adatped to lock said first and second post members together to lock said post to said lens to such spectacles whereby light transmission through said spectacles can be varied by rotating said attached polarizing lens.

4,113,365

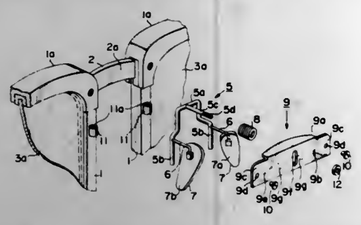
SPECTACLES' FRAME WITH VERTICALLY ADJUSTABLE NOSE PADS

Sotoichi Koketsu, 13 Fukigecho 6 chome, Gifu-shi, Gifu-ken 500 Japan

Filed May 20, 1976, Ser. No. 688,480
Int. Cl.² G02C *7/06, 5/12*
U.S. Cl. 351—128 **2 Claims**

1. A spectacle frame comprising: a pair of encircling portions for the insertion of lenses therein; a bridge connecting said encircling portions; a pair of bows; a lifting member movable at the back of said bridge; and a pair of vertically adjust-

able nose pads at lower ends of said lifting member; a lifting member being further defined by legs turning downwardly on both sides of a base having said nose pads attached to said legs by arms; said base having a horizontal lever at its center, and extending rearwardly therefrom, said lever being provided with threads; a spring fitted to said lever; guides fixed to the back of said encircling portions below said bridge employing



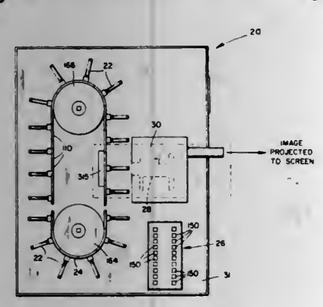
means defining a guide hole for inserting lower portions of said legs for vertical movement; a cover having a bottom wall affixed to said encircling portions at respective end portions, having a vertically elongated means defining a hole adapted to receive said lever therethrough; notches symmetrically formed on the bottom wall of said cover for receiving said legs; said cover lodging said lifting member and part of said spring; and fastening means positionable around said threads.

4,113,366

FILM PROJECTION SYSTEM

Ernest Glover, 309 E. 91st St., Brooklyn, N.Y. 11212

Filed Dec. 29, 1976, Ser. No. 755,132
Int. Cl.² G03B *31/00, 21/04*
U.S. Cl. 352—8 **8 Claims**



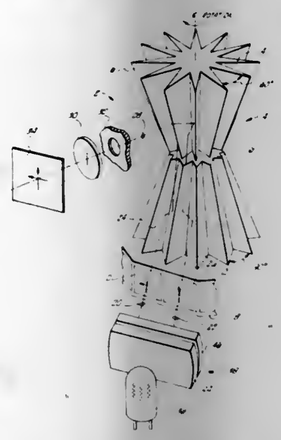
1. A sound film projections system comprising a displaceable film storage magazine, means for displacing said storage magazine, a plurality of discrete sound film cartridges mounted in said magazine, each of said cartridges containing a sound film program containing visual images and a sound track, a film projection adapted to receive one of said plurality of cartridges from said film storage magazine and to reproduce said sound film program contained in said one cartridge, a selector system, a transfer means adapted to remove said one cartridge from said storage means and position it within said film projector, said selector system including actuating means to manually actuate said storage magazine displacement means so that said one cartridge selected is positioned adjacent said transfer means, said transfer means being actuated to transfer said one cartridge from said film storage magazine to said film projection, means associated with said film projector adapted to activate said film projector upon the positioning of said cartridge therein to reproduce said sound film program contained in said one cartridge, and cuing means adapted to deactivate said film projector upon completion of said program and adapted to activate said transfer means to return said one cartridge to said film storage magazine upon completion of said sound film program, said transfer means including at least a first arm and a second arm, said arms being in telescoping orientation, a carriage for supporting said arms, said carriage being slidably mounted on a base, clamp members on said first arm adapted to engage said one cartridge, a transfer mechanism drive motor, means in said selector system to energize said transfer mechanism drive motor when said actuating means is manually actuated, so that said first arm is displaced and said clamp members engage the one cartridge, said transfer mechanism drive motor thereafter displacing said first and second arms on said carriage until said transfer mechanism drive motor is de-energized, a solenoid, said solenoid having a shaft connected to said carriage, and means in said selector system to energize said solenoid concomitantly with the de-energization of said transfer mechanism drive motor so that said one cartridge is place within said film projector.

4,113,367

ROOF REFLECTIVE POLYGON SCANNING APPARATUS

Ulrich M. Fritzler, 65-15 Booth St., Rego Park, N.Y. 11374, assignor to Ulrich M. Fritzler, New York, N.Y.

Filed Sep. 9, 1976, Ser. No. 721,892
Int. Cl.² G03B *41/02*
U.S. Cl. 352—105 **31 Claims**



1. An optical scanner apparatus for the reflective modification of a transmission energy beam relative to an adjacent position comprising:

a first member having an array of roof reflective members with a 60° included angle between each reflective surface;

a second member having a plurality of a roof reflective member with a 90° included angle between each reflective surface, and

mounting means for permitting a movement of the first and second members about a common axis, the first member reflective surfaces and the second member reflective surfaces mounted to reflect the energy beam three times on the first member and two times on the second member wherein d_3 is the distance from the common axis of the first and second members to the position, d_2 is the distance from the common axis to a plane containing the reflected transmission energy beam between the first member and second member reflective surfaces and d_1 is the distance between the first member and second member reflective surfaces in the plane containing the reflected transmission energy beam, the respective distances being related for an air equivalent optical path as follows:

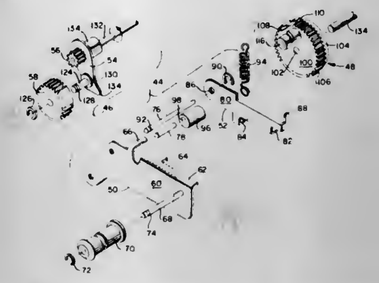
$$d_3 = 2d_2 - d_1$$

4,113,368

AUTOMATIC LOWER LOOP RESTORER MECHANISM

Albert J. Feltz, Rochester, and Howard C. Deck, Hearietta, both of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,913
Int. Cl.² G03B *1/56*
U.S. Cl. 352—159 **6 Claims**



1. A loop restoring mechanism for use in combination with a movie film projector having a film gate thru which film is incrementally driven, a sound drum around which the film is continuously driven, and a pre-defined film loop path therebetween comprising:

a pivotally mounted control arm having a film engaging element connected thereto;

said control arm having an initial park position which locates said film engaging element on the interior side of said film loop path;

said conrol arm pivotable from said park position to an extended position to cause said film engaging element to pull film from said film gate;

a rotatably mounted loop set gear having a crank pin extending therefrom;

said crank pin engageable with a surface portion of said control arm to cause said control arm to pivot from said park position to said extended position and back to said park position thereby causing said film engaging element to pull said film from said film gate;

drive means selectably engageable and disengageable with said loop set gear to cause said loop set gear to rotate and thereby cause said control arm to pivot from said park position to said extended position and back to said park position;

trigger means associated with said control arm and said loop set gear to cause said drive means to engage said loop set gear and pivot said control arm when said film loop is lost.

4,113,369

MOTION PICTURE PROJECTOR

Kuniyoshi Suzaki, Machida; Akira Ashida, Yokohama; Takashi Itani, Kandaiji; Tateo Yamada, Yokohama; Masaya Maeda, Kawasaki; Kiyoshi Takahashi, Kunitachi, and Hiroyuki Takimoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1976, Ser. No. 736,223
Claims priority, application Japan, Oct. 31, 1975, 50-131114; Oct. 31, 1975, 50-131115; Oct. 31, 1975, 50-131116
Int. Cl.² G03B *1/22*
U.S. Cl. 352—194 **10 Claims**

1. A motion picture projector capable of using movie film and of selecting various modes of operation, comprising:

(a) a housing having a film path therein and an image reproducing location for reproducing an image present on the film passing along the film path;

(b) a projection light source in said housing arranged in relation to the film passing along the film path within the image reproducing location;

(c) an optical projection means in said housing arranged in a position corresponding to the projection light source sandwiching the film path in the image reproducing location therebetween:

(d) a film feeding means in said housing for intermittently transporting the film passing along the film path in the image reproducing location, including:

a pull-down claw means engageable with the film at the image reproducing location;

a rotary cam means for actuating the pull-down claw, and including:

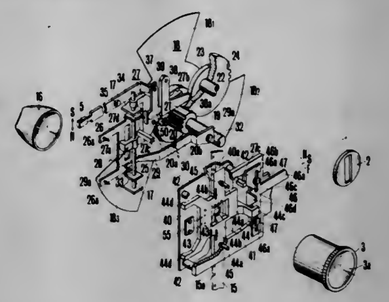
a first cam means for cyclically engaging the film to said claw means; and

a second cam means for reciprocating said claw means along the film path;

a first coupling means for coupling said first cam means and said claw means; and

a second coupling means for operatively coupling said second cam means and said claw means;

(e) a slow motion picture projection control means in said housing, including:



a slow motion picture projection cam means for engaging the film to the cam means at a slower cycle than the cycle applied to said claw means by said first cam means; and

a third coupling means for forcibly operatively coupling said slow motion picture projection cam means between said first coupling means and said first cam means; and

(f) a change-over means accessible on the exterior of said housing for forcibly blocking said claw means from selective engagement with the film and for operatively coupling said first coupling means and said claw means; including

a first mode cam means for operating said first coupling means and said claw means; and

a second mode cam means for inactivating said first coupling means and said claw means and preventing said claw means and said film from engaging each other, thus allowing still picture projection.

4,113,370

OPTICAL SYSTEM FOR ALTERNATIVELY PROJECTING ADJACENT IMAGES OF ADJACENT OBJECTS OR DOUBLE IMAGES OF A SINGLE OBJECT

John Alan Durbin, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

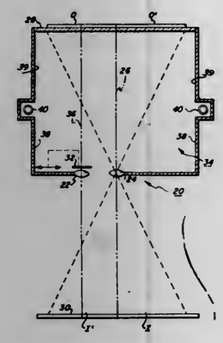
Filed Mar. 30, 1977, Ser. No. 782,865
Int. Cl.² G03B *21/00*
U.S. Cl. 353—122 **2 Claims**

1. An optical system for alternatively projecting an image of a full object field in a first mode of operation and projecting a plurality of images of a partial object field in a second mode of operation, including:

an object station defining an object field, said object field disposed within an integrating illumination cavity defined by an enclosure having a diffuse reflective inner member,

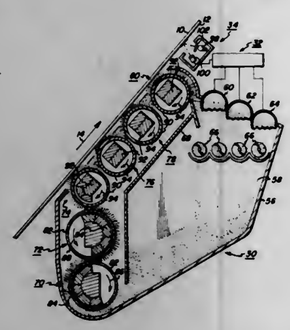
an image station defining an image field,

a first projection lens disposed on a first optical axis between said object and image stations,
said object and image fields being respectively in object and image conjugate relationship to said first projection lens,
a second projection lens disposed on a second optical axis between said object and image stations,
a first part of said object field and a first part of said image field being respectively in object and image conjugate relationship to said first projection lens,
said first part of said object field and a second part of said image field being respectively in object and image conjugate relationship to said second projection lens,



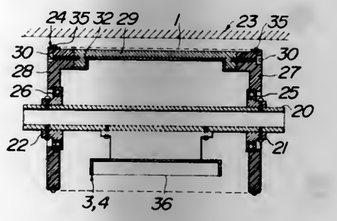
a shutter operatively disposed relative to said second projection lens to close optical communication through said second projection lens in said first mode of operation and to open optical communication through said second projection lens in said second mode of operation, and
a field stop operatively disposed in said image field and movable between a clear position to permit unobstructed optical communication between said object station and said image station in said first mode of operation and a masking position to mask out a second part of said object field in said second mode of operation.

4,113,371
COLOR DEVELOPMENT SYSTEM
Lawrence J. Fraser, and Alan Liebman, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 12, 1977, Ser. No. 758,538
Int. Cl.² G03G *15/01*
U.S. Cl. 355—4 **18 Claims**



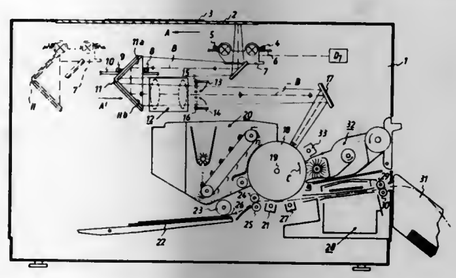
1. An apparatus for developing a latent image recorded on a receiving member, including:
means for storing a supply of particles:
means for dispensing a plurality of differently colored particles into said storing means, said dispensing means discharging the particles therefrom in a pre-selected ratio to form a mixture of particles in said storing means having a pre-selected resultant color; and
means for depositing the mixture of differently colored particles on the latent image recorded on the receiving member.

4,113,372
PHOTOSENSITIVE SCREEN DRUM FOR ELECTROGRAPHIC APPARATUSES
Katsuhiko Kimura, and Masaji Nishikawa, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Dec. 20, 1976, Ser. No. 752,839
Claims priority, application Japan, Dec. 23, 1975, 50-152877
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 SC **4 Claims**



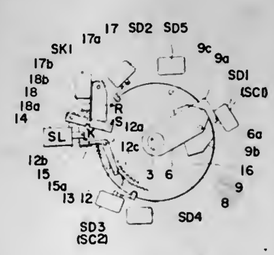
1. A photosensitive screen drum for electrographic apparatuses comprising: a casing; a fixed shaft secured to said casing; a cylindrical supporting body composed of a pair of insulating discs rotatably mounted on said fixed shaft and spaced apart from each other, and an electrically conductive supporting member secured at its both ends to said insulating discs, said electrically conductive supporting member being formed into an arcuate segment having at least an inner surface thereof with an insulating coating formed thereon; and a photosensitive screen wound around said cylindrical supporting body and secured at both ends thereto; said supporting member being formed of the same material and having the same thermal expansion coefficient as said photosensitive screen.

4,113,373
COPYING APPARATUS
Rudolf Eppe, Taufkirchen; Günther Schnall, Eching; Ludwig Müllritter; Johann Beck, both of Munich, and Karl Hartwig, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jun. 24, 1976, Ser. No. 699,341
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1975, 2528925
Int. Cl.² G03G *15/28*
U.S. Cl. 355—8 **6 Claims**



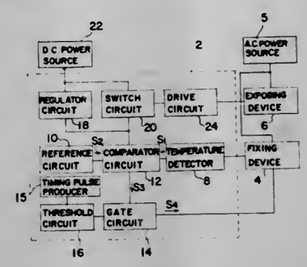
1. A copying apparatus, comprising first means for supporting an original to be copied; second means having a photosensitive surface for receiving an image thereon; third means for scanning said original and transmitting image-forming light beams from said first means along a path to said second means; and fourth means for varying the amount of light which reaches said surface, comprising a pair of baffles pivotally mounted symmetrically relative to said path, and means for synchronously moving said baffles into and out of said path along which said light beams are transmitted, including a control member accessible exteriorly of said apparatus for selectively moving said baffles, and a Bowden linkage interconnecting said control member and said baffles, said Bowden linkage comprising a Bowden line and a sheath surrounding the same over part of the length thereof, said sheath having two end portions; and further comprising means arrestably mounting one of said end portions on said apparatus for displacement relative to the other end portion of a plurality of positions.

4,113,374
ELECTROPHOTOGRAPHIC COPYING APPARATUS
Yoshihiro Nakamura, Toyokawa; Kenji Shibazaki, Aichi; Tateomi Kono, Toyokawa; Syotaro Inagaki, Okazaki, and Tomoji Murata, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan
Filed Oct. 27, 1976, Ser. No. 736,189
Claims priority, application Japan, Oct. 29, 1975, 50-130732
Int. Cl.² G03G *21/00*
U.S. Cl. 355—14 **10 Claims**



1. In an electrophotographic copying apparatus for effecting a series of copying operations which comprises a photoreceptor drum having a photoreceptor surface disposed on an outer periphery thereof, said photoreceptor surface having a discontinuity at a portion thereof, corona charging means for preliminarily charging said photoreceptor surface, exposure means for exposing said preliminarily charged photoreceptor surface to light images of an original to be copied through light rays transmitting means so as to form an electrostatic latent image of said original on said photoreceptor surface, scanning means for scanning a surface of said original, developing means for developing the electrostatic latent image formed on said photoreceptor surface into a visible toner image, transfer means for transferring said visible toner image onto transfer material transported following rotation of said photoreceptor drum, separation means for separating the transfer material from said photoreceptor surface after the transferring of said visible toner image onto the transfer material, and fixing means for fixing said visible toner image transferred onto the transfer material to said transfer material thus separated from said photoreceptor surface, an improvement of said electrophotographic copying apparatus which comprises:
means for initiating rotation of said photoreceptor drum;
a drum cam which rotates as one unit with the rotation of said photoreceptor drum;
a control cam coaxial with said drum cam which rotates independently of the rotation of said drum cam;
a first group of switches including at least a first switch, a second switch and a third switch disposed on the circumference of rotation of said drum cam for actuation by said drum cam;
a second group of switches including at least a first switch and a second switch disposed on the path of the transfer material for actuation by passage of the transfer material, said first switch being adapted for connection to said corona charging means, said scanning means and said exposure means for actuation of said corona charging means, said scanning means and said exposure means when actuated, and said second switch being actuated upon discharge of the transfer material out of said copying apparatus during normal operation;
a third group of switches disposed on the circumference of rotation of said control cam for actuation by said control cam;
a control cam rotation driving means associated with said control cam and coupled to said first switch of said second group of switches for starting rotation of said control cam with a rotational period less than the rotational period of said drum cam when said first switch of said second group of switches is actuated and for stopping the rotation of said control cam after one revolution; and
a transfer material feeding means coupled to said first, second and third switches of said first group of switches and said first and second switches of said second group of switches, for starting to feed the transfer material to said copying apparatus when said first switch of said first group of switches is actuated, for continuing to feed the transfer material to said copying apparatus when said second switch of said first group is actuated after said first switch of said second group is actuated, for ceasing to feed the transfer material to said copying apparatus when said second switch of said first group of switches is actuated without actuation of said first switch of said second group of switches and for ceasing to feed the transfer material to said copying apparatus when said third switch of said first group of switches is actuated without actuation of said second switch of said second group of switches.

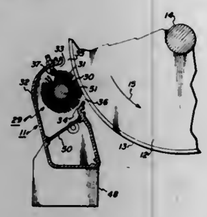
4,113,375
POWER REGULATING DEVICE FOR CONTROLLING EXPOSING MEANS AND FIXING MEANS IN ELECTROPHOTOGRAPHIC COPYING APPARATUS
Tomoji Murata, Toyokawa, and Kenji Shibazaki, Aichi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan
Filed Nov. 10, 1976, Ser. No. 740,725
Claims priority, application Japan, Nov. 13, 1975, 50-155035[U]
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 **18 Claims**

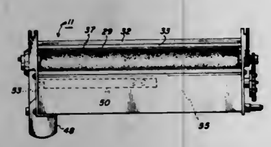


1. An improved control means in an electrophotorgraphic copying apparatus having an exposing means provided with a lamp element for exposing an original to be copied, an operating means for operating said exposing means, a fixing means provided with a heating element for heating a copy material for fixing thereon a pattern of said original and a control means for controlling the electric power to be supplied to said fixing means in accordance with the variations of temperature in said fixing means, said control means comprising a power limiting means which limits said electric power to a predetermined level during the operation of said exposing means when said electric power to be supplied to said fixing means in accor-

dance with said variations of said temperature in said fixing means is greater than said predetermined level.

4,113,376
CLEANING APPARATUS FOR REPRODUCING MACHINE
John C. Rodda, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 25, 1977, Ser. No. 800,581
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **14 Claims**

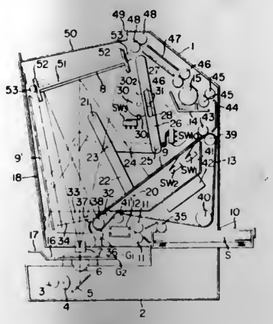




1. In a cleaning apparatus for removing residual material from an imaging surface comprising:
a rotary cleaning means for removing said residual material, said cleaning means being arranged for rotation about a given axis; a housing for supporting said cleaning means; and
means for providing a vacuum air flow through said housing and about said cleaning means in order to collect said residual material removed by said cleaning means, said vacuum air flow providing means including a vacuum port arranged adjacent one side of said housing which would create an asymmetric variation in the pressure and velocity of the air flow about said cleaning means from one side of said housing to an opposing side thereof; the improvement wherein said apparatus further comprises;
baffle means for reducing said asymmetrical distribution of said air flow, said baffle means comprising;
a plate member extending parallel to said axis of said cleaning means, said plate member being inclined away from said cleaning element transversely of said axis.

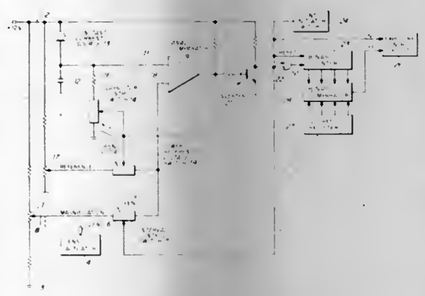
4,113,377
READER-PRINTER
Yoshiaki Sone, Tokyo; Takamasa Sawada, Yokohama, and Masanari Shirai, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 617,238, Sep. 26, 1976, Pat. No. 4,054,379.
This application Jun. 14, 1977, Ser. No. 806,515
Claims priority, application Japan, Sep. 28, 1974, 49-111845
Int. Cl.² G03B *13/28*
U.S. Cl. 355—45 **24 Claims**

1. A reader-printer comprising:
a housing having a viewing opening formed therein;
means for projecting an image to be read and printed along a light path formed in said housing;
screen means for displaying said projected image for observation through said viewing opening, said screen means being movable between a first position in said light path and a second position outside said light path;
means for conveying a reproduction material into said light path for exposure by said projected image; and



means for selectively admitting and blocking the admission of external light through said viewing opening.

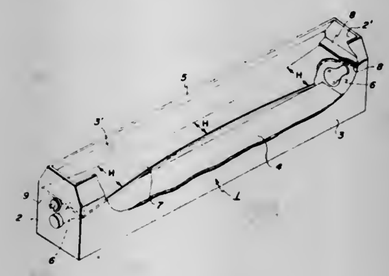
4,113,378
LINEAR EXPOSURE CONTROL SYSTEM
John Stanley Wirtz, Henrietta, N.Y., assignor to Itek Corporation, Lexington, Mass.
Filed Mar. 2, 1977, Ser. No. 773,568
Int. Cl.² G03B *27/76, 27/52*
U.S. Cl. 355—55 **13 Claims**



1. In an exposure control system for varying the exposure of an object to be photographed in linear fashion as a function of changes in magnification of the image of said object focused upon a photo-sensitive medium, the improvement comprising:
a. movable lens means;
b. a lens actuator for mechanically changing the position of said lens means for producing changes in magnification;
c. magnification signal generating means for producing a magnification signal proportional to the position of said lens actuator;
d. integration signal generating means for producing an integrated signal upon being actuated having a linear slope regardless of variations of said magnification signal;
e. reference signal generating means;
f. comparator means for assuming a first state when the signal applied to one input terminal thereof is greater than the signal applied to the other input terminal thereof, and for assuming a second state when the signal applied to the one input terminal thereof is less than the signal applied to the other input terminal thereof, said comparator means connected to compare the amplitudes of the signal produced by said integration signal generating means and said magnification signal generating means during a first interval and comparing the signal produced by said integration signal generating means and said reference signal generating means during a second interval, output pulses being produced by said comparator for each change of said comparator from said first state to said second state;

g. switch means coupling said integration signal generating means and said magnification signal generating means to said comparator during a first interval and deactuating said integration signal generating means while coupling said reference signal generating means to said comparator during a second interval for referencing said integration signal generating means, thereby to cause said comparator to revert from said second state back to said first state and for thereafter causing said comparator to again compare the signal produced by said magnification signal generating means with the signal produced by said integrator; and
h. counter means for counting the pulses produced by said comparator and for producing an output signal when the count thereof reaches a predetermined value, said output signal being utilized to terminate said exposure of said object.

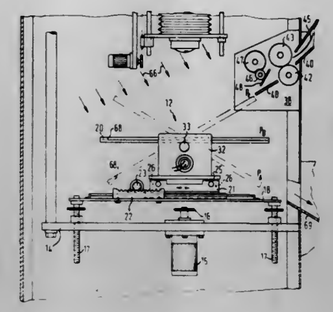
4,113,379
ILLUMINATION APPARATUS FOR ELECTRONIC COPYING MACHINES
Masaaki Harada, and Tsuguto Fujita, both of Ebina, Japan, assignors to Rank Xerox, Ltd., London, England
Filed Jul. 18, 1977, Ser. No. 816,773
Int. Cl.² G03B *27/54, 27/76*
U.S. Cl. 355—71 **3 Claims**



1. Illumination apparatus for use in a reproduction machine, said apparatus comprising:
a casing having an elongated opening in one wall thereof;
illumination means disposed at opposite ends of said casing; and
means supported intermediate said elongated opening and said illumination means to preclude direct emission of illumination from said opening, said means being shaped so as to provide a substantially uniform distribution of illumination along said elongated opening,
said means for precluding direct emission of illumination comprising a screen plate having the shape of a bow tie.

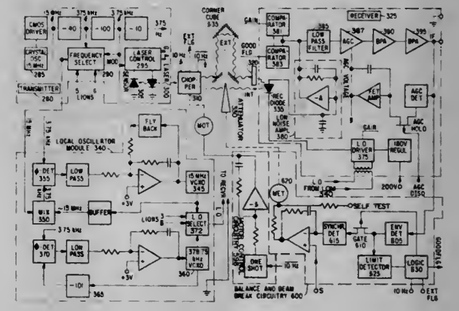
4,113,380
FEEDING AND ELECTROSTATIC HOLDING ORIGINALS IN A COPYING MACHINE
Karl Walter, Penzberg, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Aug. 29, 1977, Ser. No. 828,971
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638695
Int. Cl.² G03B *27/62*; B65H *9/08, 11/02*
U.S. Cl. 355—75 **12 Claims**

1. In a copying machine provided with means for performing an exposure operation by illuminating an original to be copied and projecting the image of the illuminated original onto copying material, in combination, an original carrier mounted to receive on its surface an infed original and support the original, the original carrier comprising a carrier plate, an electrically conductive metal plate atop the carrier plate, a layer of acrylic glass atop the metal plate, and atop the glass plate an angled member of electrically conductive metal having two legs extending along two edges of the original carrier for positioning the edges of originals to be copied; and holding means operative for holding an original flat on the carrier plate during the exposure operation by means of electrostatic holding force, including means operable when an original contacts



the angled member for establishing between the metal plate and the metal angled member a potential difference in the kilovolt range and disestablishing the potential difference for removal of the original from the original carrier upon performance of the exposure operation.

4,113,381
SURVEYING INSTRUMENT AND METHOD
James Stephen Epstein, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 18, 1976, Ser. No. 742,941
Int. Cl.² G01C *3/08*; G01B *11/26*
U.S. Cl. 356—5 **6 Claims**



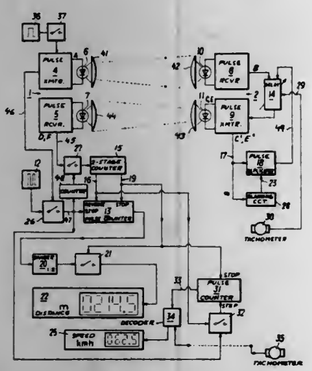
4. A method of controlling the operation of an electro-optical distance measuring apparatus having a photo-sensitive receiver for producing first and second electrical signals in response to first and second light beams respectively, comprising the steps of:
amplifying the first and second electrical signals by a selected amplification factor;
producing a first detect signal in response to the first electrical signal attaining a value outside a first predetermined range;
producing a second detect signal in response to the second electrical signal attaining a value outside a second predetermined range, the first range being larger and including the values of the second range;
selectably regulating the intensity of one of the light beams for substantially equalizing the values of the first and second electrical signals; and
selecting the amplification factor in response to the presence

of a second detect signal to alter the value of the second electrical signal to substantially equal a predefined value.

4,113,382
METHOD OF AND SYSTEM FOR MEASURING DISTANCES

Otto Freudenschuss, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Dec. 10, 1976, Ser. No. 749,333
Claims priority, application Austria, Dec. 12, 1975, 9443/75
Int. Cl.² G01C 3/08; G01S 9/56
U.S. Cl. 356—5 **5 Claims**



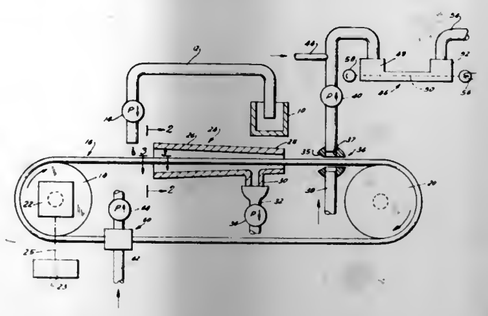
1. A method of measuring the distance between a first location and a second location, comprising the steps of:
sending an interrogation pulse from said first location to said second location;
sending back a reply pulse from said second location to said first location after a delay T from the instant of arrival of said interrogation pulse at said second location;
sending back a follow-up pulse from said second location to said first location after an equal delay T from the instant of emission of said reply pulse;
determining, at said first location, the length of time elapsed between the emission of said interrogation pulse and the reception of said reply pulse;
calculating a time τ proportional to the distance between said locations by deducting from said elapsed time the delay T as measured at said first location between the instants of arrival of said reply pulse and said follow-up pulse; and
varying said delay T as a measure of another parameter whose magnitude is to be communicated from said second location to said first location.

4,113,383
METHOD AND APPARATUS FOR SOLUTE TRANSFER

Donald Arthur Burns, Putnam Valley, and Henry Fontanilles, Fishkill, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,558
Int. Cl.² G01N 1/00, 21/26
U.S. Cl. 356—36 **14 Claims**

1. Apparatus transferring a substance from a first to a second liquid stream, comprising: means flowing said first stream from a source to a first station and depositing it upon a conveyor movable from said first station to a second station, means to move said conveyor, means flowing said second stream to said second station to pick up said substance, means to flow said deposited first stream along at least a portion of the conveyor

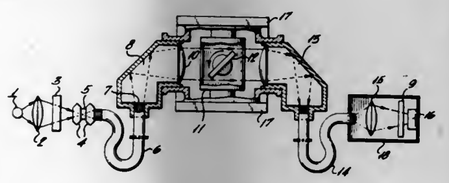


from said first station toward said second station, and means to actuate said conveyor-moving means.

4,113,384
VISCOSITY MEASURING SYSTEM

James L. Laner, Penn Wynne, and Melvin E. Peterkin, Brookhaven, both of Pa., assignors to Suntech, Inc., Wayne, Pa.

Filed Apr. 26, 1977, Ser. No. 791,089
Int. Cl.² G01N 33/28
U.S. Cl. 356—70 **3 Claims**



1. A method for measuring the viscosity of a lubricant fluid under very high pressures by placing a sample of lubricant contaning one or more rube crystals in a diamond anvil cell illuminated with a point source of visible light radiation, observing the rate of change of the width at half-height of the R_1 fluorescence band of the ruby emission spectra at given temperatures and pressures and correlating said change with an empirical calibration of a fluid of known viscosity under the same conditions.

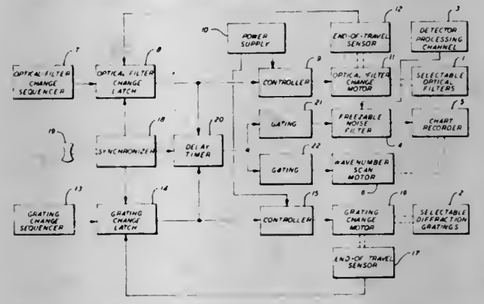
4,113,385
TRANSIENT SUPPRESSOR NETWORK FOR SPECTROPHOTOMETERS AND THE LIKE

Michael Alan Ford, 7 Islet Park House, Islet Park, Maidenhead, Buckinghamshire; Henry Manifold Mould, 82 Hazelmere Rd., Penn, Buckinghamshire, and Dieter Kolb, Boyne House, Grove Rd., Beaconsfield, Buckinghamshire, all of Great Britain

Filed Jan. 6, 1977, Ser. No. 757,204
Claims priority, application United Kingdom, Jan. 7, 1976, 00425/76
Int. Cl.² G01J 3/42; G01D 9/00; H03H 7/10
U.S. Cl. 356—96 **20 Claims**

1. In an apparatus having a plurality of operational elements adapted to cooperate for producing an electrical signal representing variations of an ordinate quantity with respect to an abscissa quantity changing at a controlled rate, at least one of said elements being subject to an adjustment during the evaluation of said variations that is capable of causing spurious transients to appear in said signal, an electrical filter for filtering

said signal, and a utilization device responsive to the output of said filter, means for substantially excluding said spurious transients from the filter output comprising:
(a) control means for interrupting the generation of the ordinate quantity signal related to abscissa change and for cutting off the filter for an operational time interval including the duration of said adjustment and additional time sufficient to allow said spurious transients to die away;
(b) storage means associated with said filter and operatively related to said control means during said operational time

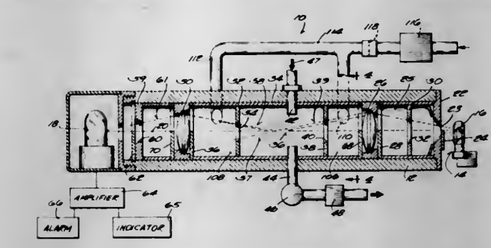


interval for holding the output level reached by the filter at cut off and for storing a plurality of electrical signal values which together represent the point on the impulse characteristic of the filter attained by the filter output at cut off, whereby upon the control means re-establishing the said ordinate quantity signal and removing the filter cut off at the end of said operational interval, and therefore after the spurious transients have died away, the filter output is restored both to said level and to said point as if no cut off had taken place, with the result that spurious transients are excluded from the filter output without the fidelity of the filter output being affected.

4,113,386
PHOTOMETER

James M. Lepper, Jr., Redlands, Calif., assignor to Climet Instruments Company, Redlands, Calif.

Filed Sep. 20, 1976, Ser. No. 725,027
Int. Cl.² G01N 21/00, 21/26
U.S. Cl. 356—103 **11 Claims**

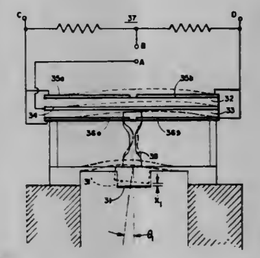


1. A forward light scattering photometer comprising
an elongate housing;
a light source for providing a beam of light along an axial path through said housing;
first and second axially spaced, spherical-surfaced, bi-convex lenses located inside said housing and disposed coaxially with said axial path, said lenses providing axial focusing of an image of said lamp on said axial path with radial aberrations and substantially no circumferential aberrations;
a first light trap located in said housing adjacent the upstream side of said first lens, said first light trap including a light-absorbing area and a light-transmitting area, the border between said areas extending radially in a straight line relative to said axial path so as to form an image with sharp radial edges at the focal region between said lenses;
means for introducing a fluid sample containing particles through said focal region;
a second light trap located inside said housing adjacent the upstream side of said second lens, said second light trap having light-absorbing and light-transmitting areas which are complementary to those of said first light trap whereby the portion of the light beam passing through said focal region and not scattered by the sample particles is absorbed on the light-absorbing area of said second light trap and the portion of the light beam passing through said focal region and scattered forwardly by the sample particles passes through the light-transmitting area of second light trap; and
light detecting means located downstream of said second lens for detecting the forwardly scattered light passing through said second lens and for producing a signal indicative of the number of particles in the sample.

4,113,387
DUAL MODE LASER OPTICS CONTROL FOR RING LASER GYRO

Sidney G. Shutt, Brea, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 14, 1977, Ser. No. 768,511
Int. Cl.² G01B 9/02; G01P 9/00
U.S. Cl. 356—106 LR **10 Claims**



1. In a laser gyro, laser optics adjustment means comprising
a duo-mode bimorph device having a single common electrode plate sandwiched in an axially stacked dual bimorph array having a first and second coded input, each responsive to a mutually exclusive one of a first and second synchronously detected photodetector laser output of said laser gyro for laser amplitude and frequency control, respectively; and
a mirror within the laser optics of said laser gyro being mounted upon said bimorph device, whereby closed-loop control of said laser optics is effected.

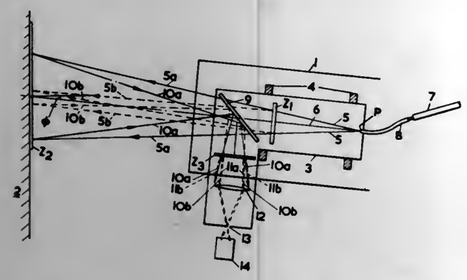
4,113,388
OPTICAL APPARATUS FOR DETERMINING RELATIVE POSITIONING OF TWO MEMBERS

John William Charles Gates, East Molesey; Roy Geoffrey Noel Hall, Teddington; Ian Norman Ross, Marcham, and Richard Frederick Stevens, Ashford, all of England, assignors to National Research Development Corporation, London, England

Filed Jun. 25, 1976, Ser. No. 700,037
Int. Cl.² G01B 9/02, 11/04
U.S. Cl. 356—110 **13 Claims**

1. An optical apparatus for monitoring the relative positioning of first and second members which are movable relative to each other, the apparatus comprising radiation means for generating an optical wavefield which provides, over a given area which has a predetermined location relative to the first member when the first member is in a given position relative to the second member, a distinctive light intensity distribution resulting from at least two wavefronts that differ from each other in

curvature in each of two mutually orthogonal planes; and fiducial means for interacting with the wavefield when the first member is in the vicinity of said given position to produce an interference pattern whose form is indicative of the displacement of the first member from said given position, the fiducial means comprising an optical element which is fixed relative to



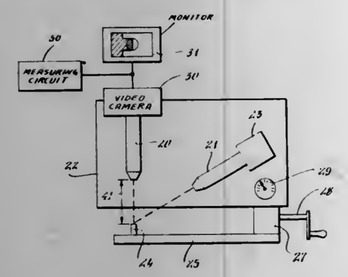
the second member in a location which coincides with said predetermined location when the first member is in said given position relative to the second member, the optical element having a structure representative of the light intensity distribution in the wavefield over at least one area which at least approximately corresponds in position to a least part of said given area.

4,113,389

OPTICAL MEASUREMENT SYSTEM

Morton Kaye, 122 Third St., Stamford, Conn. 06905

Filed Apr. 19, 1976, Ser. No. 678,059
Int. Cl.² G01B *9/04, 11/00*
U.S. Cl. 356—164 **9 Claims**



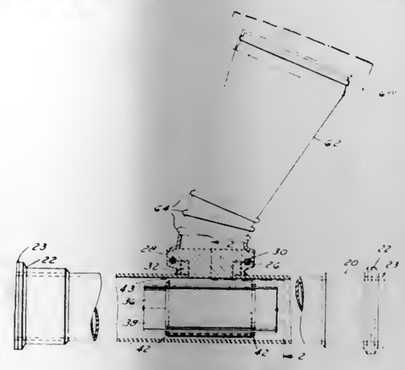
1. An apparatus for measuring a dimension of an object, comprising stage means for receiving siad object, a microscope viewing assembly positioned to view an object on the stage means on a first optical axis, projection means mounted to focus a knife edge image on said object on said stage means along a second optical axis, the light-dark transition of said image extending normal to the plane defined by said first and second optical axes, means relatively displacing said microscope viewing assembly along said first optical axis with respect to said stage means, measuring means for indicating displacement of said microscope assembly on said first optical axis, and means mounting said projection system for movement with said microscope assembly.

4,113,390

OPTICAL SIGHT TUBE FOR FLUID CONDUITS

Walter E. Levine, Port Huron, Mich., assignor to Bindicator Company, Port Huron, Mich.

Filed Mar. 14, 1977, Ser. No. 777,433
Int. Cl.² G01N *21/26*
U.S. Cl. 356—201 **12 Claims**



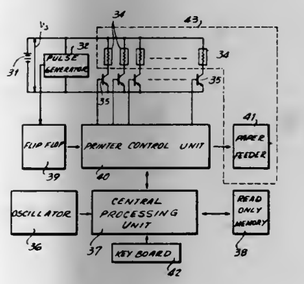
7. Apparatus for optically measuring a preselected characteristic of fluids flowing in a confined path comprising a cylindrical conduit disposed to define at least a portion of said confined fluid path, means providing an optical window in a wall of said conduit, means for optically detecting said material characteristic through said window, and reflective means including a hollow tube and means mounting said tube within said conduit to position an outer reflective surface of said tube adjacent said window and define a test material flow path between said surface and said window and a bulk material flow path remote from said window, said reflective means being adapted to reflect a measurement optical beam incident upon said surface through said window and test material back through test material and said window.

4,113,391

METHOD FOR CONTROLLING VOLTAGE AND PROVIDING TEMPERATURE COMPENSATION IN A THERMAL PRINTER

Masahiro Minowa, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Suwa, both of, Japan

Filed Oct. 27, 1976, Ser. No. 736,046
Claims priority, application Japan, Oct. 27, 1975, 50-129019
Int. Cl.² B41J *1/24, 3/20;* G08B *23/00*
U.S. Cl. 400—120 **14 Claims**



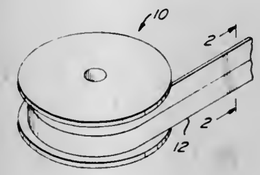
1. An apparatus for controlling a thermal printer having a plurality of exothermic printing elements and adapted to be energized for printing by a current pulse produced in response to the output voltage of a power source, comprising driving circuit means for selectively applying driving pulses to said exothermic elements and control circuit means connected for detection of said power source output voltage and operatively coupled to said driving circuit means for adjusting the width of the driving pulses applied to said exothermic printing elements in response to the level of said power source output voltage so that the width of said driving pulses is increased in response to a decrease in said output voltage and is decreased in response to an increase in said output voltage, said control circuit means including a pulse generation circuit operably couplable to receive said power source output voltage for producing an oscillatory signal, said pulse generation circuit including voltage sensitive means including a varistor independent of said plurality of exothermic elements for adjusting the period of said oscillatory signal in response to the level of said output voltage so that the period of said oscillatory circuit is increased in response to a decrease in said output voltage and decreased in response to an increase in said output voltage, said oscillatory signal being applied to said driving circuit means for determining the width of said driving pulses.

4,113,392

PRINTING RIBBON

Walter Ploeger, Jr., North Bellmore, N.Y., assignor to Filmon Process Corp., Westbury, N.Y.

Continuation-in-part of Ser. No. 485,641, Jul. 3, 1974, abandoned. This application May 19, 1975, Ser. No. 578,581
Int. Cl.² B41J *31/02*
U.S. Cl. 400—240.1 **6 Claims**



1. A printing ribbon comprising a longitudinally extending printing portion and a longitudinally extending correction portion joined thereto, said printing portion being the thickest portion of said ribbon and having a thickness not more than about 0.0035 inches, said printing portion being only a single thickness of inked fabric without any backing, said correction portion including a backing carrying thereon a layer of correction material whose width is narrower than the width of the backing, one side edge of said backing being connected with a butt weld directly to one side edge of said printing portion longitudinally along the ribbon, said weld being the only means interconnecting said printing and correction portions, side edges of the layer of correction material being generally parallel to and spaced from said one side edge of said backing, said correction portion lying between the planes defined by the side faces of said printing portion, and a side edge of said layer of correction material being spaced by said backing from said one side edge of the printing portion by a gap extending longitudinally down the middle of the ribbon to prevent ink from the printing portion bleeding into the correction material.

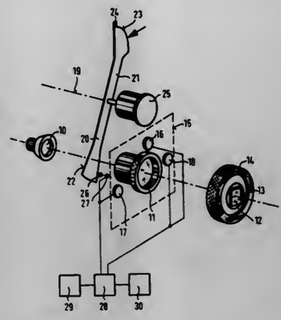
4,113,393

APPARATUS FOR MEASURING CASTER AND CAMBER IN MOTOR VEHICLES

Udo Kiefer; Wolf von Loeben, and Friedrich Wilhelm Schulz, all of Karlsruhe, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 31, 1977, Ser. No. 783,407
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614374
Int. Cl.² G01B *11/275*
U.S. Cl. 356—155 **17 Claims**

1. In an apparatus for measuring caster and camber in a motor vehicle including a mirror which is mountable on the respective hubs of the vehicle wheels and the normal to which mirror is directed parallel to the wheel axles of the vehicle; a projector disposed opposite the mirror; and a projection surface including a plurality of light-sensitive detectors for detecting images of horizontally-vertically oriented shutters disposed in the ray path of the projector reflected by the mirror; the



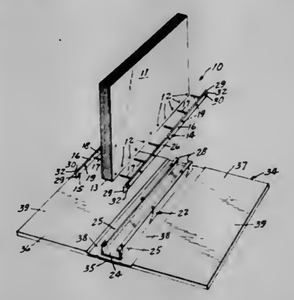
improvement comprising said shutters comprising measuring edges of rotatable arms disposed in an object plane of the projector, the angles of rotation of the arms between a reference position and a position of the arms at which an image of one of said measuring edges is reflected by said mirror onto at least one of said detectors being used as a measurement of the caster and camber angles of the wheels of said vehicle.

4,113,394

REMOVABLE BINDING DEVICE

Joe D. Giulie, Los Altos, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 23, 1975, Ser. No. 625,131
Int. Cl.² B42F *3/00, 13/12*
U.S. Cl. 402—46 **2 Claims**



1. A binding device for a stack of sheets having a plurality of spaced perforations along a spine edge surface of the stack, said device comprising;

first and second polymeric rake-like members, each rake-like member comprising an elongate rail having first and second opposite major elongate surfaces, and a plurality of spaced aligned studs projecting normally from the first surface of said rail, and a plurality of spaced sockets in the first surface of said rail, said second surface of said rail being smooth throughout its length for the portion opposite said studs and sockets, each stud having a base end attached to said rail and an opposite frustoconical terminal end, substantially all of said sockets opening through only the first surface of said rail adapted to receive terminal end portions of the studs on the other of said rails to afford mutual engagement therebetween providing a ladder-like assembly with said rails in spaced, parallel relationship

and to maintain said studs in alignment, said rake-like members being adapted to engage a said stack of sheets from opposite sides with said studs extending through the perforations and into said sockets to form said ladder-like assembly;

an elongate polymeric backing strip defining channels with opposed open sides adapted to slidably receive the rails of said ladder-like assembly and constituting the sole means for holding the terminal end portions of the studs in said sockets to maintain the rake-like members in mutual engagement with the studs projecting through a said stack of sheets, said backing strip comprising a generally flat elongate rectangular back portion adapted to extend along the spine edge surface of a said stack of sheets in the device, and spaced opposed flange portions projecting from the opposite long edges of the back portion having opposed inner surfaces and opposed inwardly directed lips along their edges opposite the back portion, the spacing between said lips being adapted to receive the spine of a said stack of sheets therebetween, said lips, flange portions and the portion of said back portion adjacent thereto defining said channels for slidably receiving said ladder-like assembly and conforming in shape to the rails so that when the ladder assembly is engaged with the backing strip the rails substantially fill the channels and are in contact throughout the length of the backing strip; and

means for releasably retaining said ladder-like assembly at a predetermined position longitudinally within said channels, said retaining means comprising two triangular end portions integrally formed on each of said rails, each of which end portions includes an apex forming the terminal end of said rail, a ledge remotely located from said apex and projecting at a right angle from the second surface of said rail with the ledges on both of said rails having an outer tip spaced from the rail second surface a distance far enough so that the distance between adjacent ledge outer tips of said ladder-like assembly exceeds the distance between said inner surfaces of said spaced opposed flange portions so that said ledge outer tips engage both of said backing strip flange portions to flex said rail end portions toward each other when said ladder-like assembly end portions are located within said channel, said ledges each contacting a corresponding terminal end of said opposed flange portions to lock said ladder-like assembly into said predetermined position when said ladder-like assembly is at said predetermined position, said end portions each having a flat cam surface extending from said ledge to said apex and being disposed at an acute included angle relative to said first surface, the cam surfaces on the opposite end portions at each end of said ladder-like assembly being disposed so that upon the manual application of pressure to said cam surface, the rails flex toward each other so that ledges on said adjacent end portions will each move out of engagement with said corresponding terminal end of said backing strip flange portions and into said channel.

4,113,395

BICYCLE STEM AND FORK TUBE ASSEMBLY

Carlton P. Pawsat, and Robert F. Humlong, both of Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.

Continuation of Ser. No. 573,746, May 1, 1975. This application Mar. 30, 1977, Ser. No. 782,662
Int. Cl.² F16B *2/14*
U.S. Cl. 403—22 **16 Claims**

1. A bicycle stem and fork tube assembly comprising:

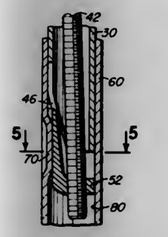
an elongate, hollow, substantially cylindrical fork tube having an interior surface with a predetermined interior diameter;

a stem including an elongate, hollow, substantially cylindrical barrel having an outer surface with a predetermined outer diameter;

a wedge nut having an outer surface and an outer diameter which is slightly less than said fork tube interior diameter;

an abutment defined in the interior surface of the fork tube at a predetermined axial location thereon with the remainder of said surface at said predetermined axial location being essentially smooth, said abutment being defined by an elongate flat surface having a length less than the overall length of said interior surface;

a relieved area comprising an elongate flat surface defined in said wedge nut outer surface at an axial location thereon predetermined to cooperate with said abutment, said wedge nut having an outer diameter just slightly smaller than said fork tube interior diameter and said axial location being selected so that said wedge nut is slidably receivable in said fork tube with said relieved area and said abutment contacting each other, said contacting being effected as soon as said wedge nut is slidably received in said fork tube far enough to align said abutment and relieved area whereby relative rotation between said wedge nut and fork tube is prevented without further adjustments of said wedge nut and fork tube; and



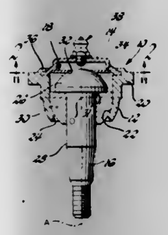
an elongate bolt passing through said stem and threadably engaging said wedge nut for imparting endwise longitudinal motion to said nut relative to said stem and fork tube for maintaining said relieved area and abutment in interlocking engagement with each other.

4,113,396

BALL JOINT WITH SLOTTED SPRING BIASED STUD

Stanley E. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1977, Ser. No. 829,279
Int. Cl.² F16D *1/12*
U.S. Cl. 403—138 **1 Claim**



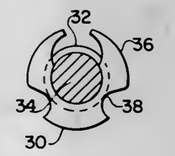
1. An improved preloaded ball joint comprising: a housing having an outward peripheral flange formed about an open end thereof and a reduced opening formed at the opposite end; a ball stud unit consisting of a generally spherical bearing head portion adjacent said open end of said housing and a stud portion disposed outwardly of said reduced opening; a combination preload spring and bearing member having a generally annular form with inner and outer edges disposed in said housing, the inner diameter edge being formed to engage the bearing portion of said ball stud unit at a location opposite said stud portion, the resilient properties of said preload spring and bearing member biasing the bearing portion of the ball stud unit against said housing; a cover member having an outwardly directed peripheral flange engaged by the outward flange of said housing to close said open housing end, the outer diameter edge of said preload spring and bearing member when assembled in the ball joint directly engaging said cover member to cause the spring inner edge to press against said bearing portion of said ball stud unit; said spring and bearing member having an interrupted inner edge portion formed by radially outwardly extending slots spaced thereabout, thereby shifting the location of the spring's greatest flexure and stress radially outward from the inner diameter edge which sustains the greatest frictional wear by movements of the stud unit.

4,113,397

PINLESS RESILIENT COUPLING

Francis H. Snyder, Littlebrook Farm, Newtown, Conn. 06470

Continuation-in-part of Ser. No. 623,513, Oct. 17, 1975. This application Mar. 19, 1976, Ser. No. 668,542
Int. Cl.² F16B *21/18*
U.S. Cl. 403—154 **18 Claims**



1. A resilient coupling device operable for engagement with grooved clevis pins and the like, said pins comprising an outer diameter and a core diameter defined by said groove, and comprising in combination:

(A) a resilient member having a base and two extending legs, wherein the inner surfaces of said base and said legs define a partial circular clamping section operable to resiliently engage partially around a core diameter of a grooved clevis pin and the like; wherein,

(B) said legs further define an entry section operable to resiliently engage said core diameter against dislodgement from between said legs, when said diameter is inserted therein, said entry section being defined by first opposing projections, between and proximate the distal ends of said legs thereby to define a gate dimension; and

(C) second opposing projections on said inner surfaces of said legs to define a transition dimension between said entry and clamping section; both of said dimensions being less than said core diameter so as to resiliently maintain said core diameter against dislodgement; wherein

(D) said base and said two extending legs define an annular bearing surface operable for engagement against the annulus defined between the outer and the core diameter of said grooved pin, wherein said base further includes a symmetrically placed single spring dimension below said clamping section, said single spring dimension defining the single minimum wall thickness of said device.

4,113,398

REINFORCED APERTURE IN MOLDED PLASTIC ARTICLE

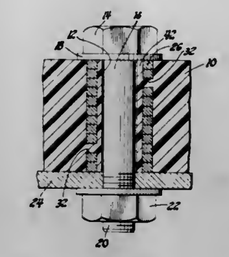
Edgar R. Jordan, 32260 W. Twelve Mile, Farmington, Mich. 48024

Filed Sep. 3, 1976, Ser. No. 720,107
Int. Cl.² B25G *3/34*
U.S. Cl. 403—267 **4 Claims**

1. A combination comprising:

a body formed of a molded plastic material, said body having an opening formed therein,

an insert molded in said body, said insert comprising a wire member formed into a coil having a plurality of convolutions each convolution having a diameter greater than the diameter of the body opening and being embedded in the body such that each convolution is disposed about said opening, each convolution being in contact with its neighboring convolution, and



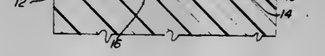
a fastener being disposed in the body opening, the fastener having a head engaged with one end of the coil, and means carried on the opposite end of the fastener for engaging the opposite end of the coil.

4,113,399

KNOB SPRING

Wray C. Hansen, Sr., 8755 W. 73rd Pl., Arvada, Colo. 80002

Filed Mar. 2, 1977, Ser. No. 773,523
Int. Cl.² F16D *1/06*
U.S. Cl. 403—329 **4 Claims**



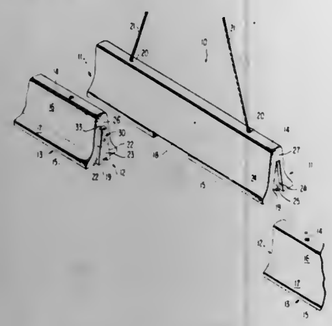
1. A knob spring for releasably attaching a knob to a shaft end wherein said knob has a recess having a configuration corresponding to that of the shaft end for receiving the shaft end therein and the knob further includes a slot undercut along one edge of the recess and extending beyond the edges of the recess providing guide ways for receiving the ends of the springs, said spring comprising:

a pair of spaced flat parallel strips lying in a plane and having a length substantially equal to the width of the slot so that said strips can be slidingly received in said slot; and

a bowed center member interconnecting said strips, said center member having a width substantially less than the length of said strips to form a leaf spring having a generally H-shaped configuration, said spring being slidable into said slot with the ends of said strips engaging the guide ways formed by said slot and said center bowed portion extending into said recess for engagement by an adjacent surface of the shaft end;

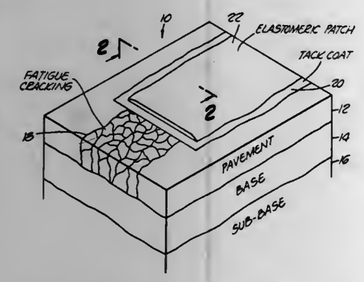
said bowed portion being dimensioned so that upon insertion of said shaft end in said recess the bowed portion will be flattened causing said strips to twist out of the plane so that the edges thereof grippingly engage said slot and the adjacent surface of said shaft end to releasably hold said shaft in said knob so that said knob does not wobble or twist on said shaft end.

4,113,400
IMPACT RESISTANT TONGUE-AND-GROOVE COUPLING FOR HIGHWAY TRAFFIC BARRICADES
Rodney I. Smith, Rte. #1, Midland, Va. 22728
Filed Apr. 18, 1977, Ser. No. 788,691
Int. Cl.² E01F *13/00*
U.S. Cl. 404—6 **17 Claims**



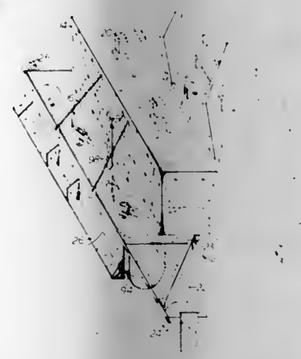
1. In a precast reinforced concrete barricade for use in the construction of a highway lane barrier composed of a plurality of said barricades to be joined by mating tongue-and-groove couplings in endwise alignment, said barricade being elongated and having a generally symmetrical cross-section along its length, the top surface being relatively narrow compared to the width of the base, the upper portions of the side surfaces being nearly vertical, the lower side surfaces being abruptly outwardly flared at an angle to deflect a vehicle wheel away from the barricade, and at least one end wall being provided with an outwardly projecting vertical tongue, the side walls of said tongue being tapered in a downwardly and outwardly transverse direction to facilitate entrance into a complementary groove provided in an adjacent barricade in a vertical direction, the improvement which comprises at least the upper exposed portion of said tongue comprising an impact resistant material.

4,113,401
METHOD OF PAVEMENT REPAIR
Charles H. McDonald, 3130 W. Pierce St., Phoenix, Ariz. 85009
Continuation of Ser. No. 683,381, May 5, 1976, which is a continuation-in-part of Ser. No. 585,836, Jun. 11, 1975, which is a continuation of Ser. No. 376,915, Jul. 5, 1973, which is a continuation-in-part of Ser. No. 589,190, Oct. 21, 1976. This application Apr. 4, 1977, Ser. No. 784,615
Int. Cl.² E01C *7/35*
U.S. Cl. 404—75 **31 Claims**



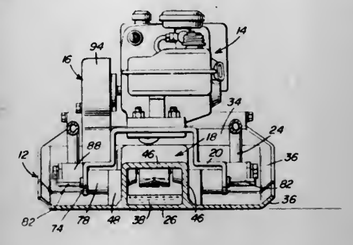
1. The method of repairing pavement subject to cracking which comprises the steps of:
preparing a hot elastomeric pavement repair material consisting essentially of paving grade asphalt and hydrocarbon rubber by mixing the paving grade asphalt and the hydrocarbon rubber in a ratio of about one to about three parts asphalt to about one part rubber at a temperature within the range of about 300 and about 500° F. to form a jellied composition, the mesh size of the rubber being from about −16 to +200;
treating the surface of the pavement area to be repaired with adhesive means to make the surface tacky and adhesive;
applying a layer of the hot elastomeric material over the pavement to be repaired at a rate of about 0.3 to about 1 gallon of hot elastomeric material per square yard of repaired pavement area;
applying a dressing of aggregate cover having a nomimal size of about one-fourth to about three-eighths inches over the top surface of the hot elastomeric material layer; and
working the aggregate into the hot elastomeric material, the aggregate being applied at a rate of about 25 to about 40 pounds of aggregate per square yard of the hot elastomeric material layer.

4,113,402
PRECISION GRADER
John D. Schillinger, 2417-29th St., Moline, Ill. 61265
Filed Aug. 8, 1977, Ser. No. 822,747
Int. Cl.² E01C *23/12*
U.S. Cl. 404—91 **9 Claims**



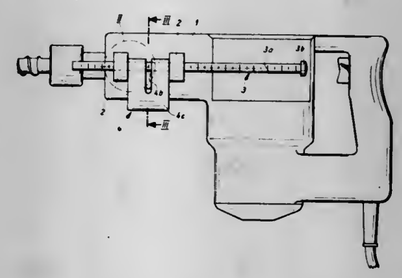
1. A machine for preparing precise subgrades comprising:
a plurality of rotary cutters, a screw conveyor, a leveling blade,
frame means having a coupling on the front thereof to be connected to a tractor hitch for setting the height and tilt of said frame means and for moving said frame means forward slowly, said rotary cutters being rotatably connected to said frame means side by side thereacross and rotatable below said frame means to pulverize soil within a strip of ground over which said frame means is being moved, said screw conveyor being rotatably mounted across said frame means behind said rotary cutters, said leveling blade being connected across said frame means at the rear thereof closely behind said screw conveyor, said rotary cutters being effective to cut a desired level for a subgrade, said leveling blade having a lower edge at a desired distance above said desired level, said screw conveyor being at least as high as an original grade beside said subgrade and having at least one end thereof extending substantially beyond the strip defined by said cutters as said machine is moved forwardly and therefore during operation positioned over said original grade beside said subgrade,
a collar connected to said frame means and fit closely behind and below said screw conveyor at a position in line with an edge of said strip, and said collar having sufficient width to prevent pulverized soil that is being conveyed from said subgrade to said original grade from falling back into said subgrade.

4,113,403
PLATE TYPE COMPACTOR
Christian T. Tertinek, Canandaigua, and Alan J. Stone, Honeoye, both of N.Y., assignors to Stone Construction Equipment Inc., Honeoye, N.Y.
Filed Aug. 31, 1977, Ser. No. 829,581
Int. Cl.² E01C *19/38*
U.S. Cl. 404—113 **16 Claims**



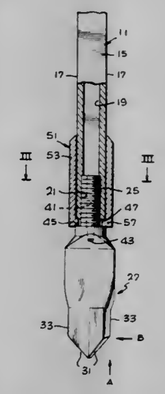
1. A vibratory compactor, comprising a base having a planar bottom portion adapted to be in contact with material to be compacted, a forward end portion, a rear end portion and spaced lateral side portions, housing means connected to the base in spaced relation to said lateral side portions and extending between the forward and rear end portions for confining a body of coolant in direct contact with the planar bottom portion of the base, vibration generating means mounted within the housing means above the planar bottom portion of the base for imparting vibration thereto and to the body of lubricant, a power generator drivingly connected to the vibration generating means for operation thereof, and misting means mounted on the vibration generating means in out of contact relation to the body of lubricant in a static condition for laterally directing the coolant displaced by said vibration from said body of lubricant into lubricating relation to the vibration generating means.

4,113,404
DEPTH STOP FOR A DRILLING MACHINE
Wolfgang Lippacher, Breitbrunn, and Gerhard Teger, Munich, both of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Apr. 28, 1977, Ser. No. 791,950
Claims priority, application Fed. Rep. of Germany, May 3, 1976, 7613952[U]
Int. Cl.² B23B *49/00, 45/14*
U.S. Cl. 408—241 S **7 Claims**



1. On a drilling machine including a casing, a depth stop mounted on said casing, said depth stop comprising an axially displaceable rod, wherein the improvement comprises a clamping lever having a bore therethrough with said rod extending through the bore, said lever being elongated and extending transversely of the axial direction of the bore therethrough, said lever having a clamping surface thereon and being pivotally displaceable about the axis of the bore therethrough for movement of the clamping surface into and out of contact with the casing so that with the clamping surface bearing on said casing, said rod is held against axial displacement, said clamping surface extending circumferentially of the axis of the bore and being arranged eccentrically of the axis, and a pair of bearing lugs secured to said casing and spaced apart in the axial direction of said rod, said lever being pivotally supported on said lugs.

4,113,405
APPARATUS FOR DRILLING OR REAMING
Lester L. Dillinger, 1569 W. 17th St., Long Beach, Calif. 90813
Filed Aug. 8, 1977, Ser. No. 822,790
Int. Cl.² B23B *31/44, 27/10*
U.S. Cl. 408—226 **7 Claims**



1. Apparatus for reaming comprising
a hollow drive shaft adapted to be reciprocatably driven along its longitudinal axis and rotatably driven about its longitudinal axis and having
a female threaded section adjacent one end thereof and co-axial with said longitudinal axis;
a cutterhead including
a cutting edge adjacent one end thereof,
a male threaded portion at the opposite end thereof threadable into said female threaded section of said drive shaft, and
shoulder means intermediate the ends of said cutterhead and oriented substantially perpendicular to the axis thereof, and
cap means removably mounted on said drive shaft adjacent said female threaded section and in frictional engagement with said shoulder means.

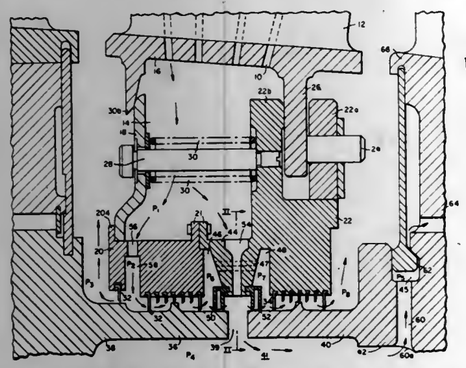
4,113,406
COOLING SYSTEM FOR A GAS TURBINE ENGINE
Richard M. Lee, Upper Providence, and Li C. Szema, Nether Providence, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 17, 1976, Ser. No. 742,739
Int. Cl.² F01D *5/08*
U.S. Cl. 415—115 **6 Claims**

1. In a gas turbine engine having:
a pair of axially adjacent rotor disc means for rotatably supporting rotor blades in the motive gas path, said disc means defining therebetween a relatively narrow axial space leading radially inwardly to a rotor cavity between said adjacent disc means;
stator means including a stationary stator vane disposed in the motive gas path between adjacent rotor blades, sealing means supported at the radially inner end of said vane and bridging said narrow axial space, said sealing means defin-

ing an axial series of seal points along each disc means; and,

coolant delivery means for supplying coolant fluid to both said sealing means and said disc cavity, said delivery means comprising:

a stationary chamber generally adjacent said rotor discs and having inlet means for receiving said coolant fluid at a pressure greater than the pressure of the motive gas at the seal points of the upstream disc of said axially adjacent discs, and having a first outlet means providing fluid flow communication between said chamber and said series of sealing points along said upstream disc,



and a second outlet means in alignment with said narrow axial space to discharge coolant fluid therethrough and into said cavity;

means defining a substantially confined flow path for fluid flow communication from between said seal points of said upstream disc to between the seal points along the adjacent downstream disc; and wherein,

the two outlets of said chamber are sized such that the relative pressure of the fluid is greater at the discharge of said second outlet than between said seal points whereby coolant will not flow into said cavity from between said sealing means.

4,113,407

HIGH PRESSURE INTERNALLY LINED PUMP CASING

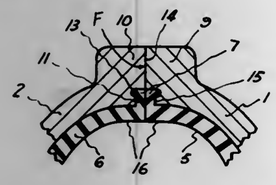
Anthony Grzina, Artarmon, Australia, assignor to Warman International Limited, Artarmon, Australia

Filed Jun. 1, 1976, Ser. No. 691,436

Claims priority, application Australia, Jun. 2, 1975, 1838/75

Int. Cl.² F04D *29/08, 29/40;* **F03B** *11/02;* **F01D** *25/24*

U.S. Cl. 415—170 R **3 Claims**



1. A high pressure internally lined pump casing adapted to receive an impeller and split in halves in a plane substantially perpendicular to an axis of rotation of the impeller, said casing halves including flanges with mating faces around the peripheries of said flanges, said mating faces being stepped, two liner halves of elastomeric material having flanges extending into the stepped mating faces, each of said stepped faces having a circumferential undercut groove therein and clamping means at the circumference of said faces for clamping said casing flanges together to displace material from said liner flanges into said grooves.

4,113,408

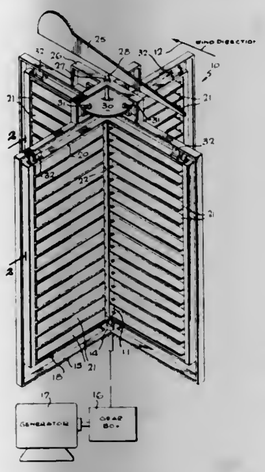
WIND GENERATOR SYSTEM

Frank R. Wurtz, Simi, and Thomas J. Hawkins, Los Angeles, both of Calif., assignors to Frank R. Wurtz, Simi Valley, Calif.

Filed Feb. 25, 1977, Ser. No. 772,270

Int. Cl.² F03D *7/06*

U.S. Cl. 416—17 **8 Claims**



1. Windmill generator apparatus for converting natural wind forces into useful energy comprising the combination of:

a stationary frame;

a shaft having a vertical longitudinal axis rotatably carried on said stationary frame;

at least four sets of blades outwardly extending from said rotatable shaft at approximately 90° angles with respect to each other;

each of sets of blades having a plurality of blades pivotally mounted on said shaft so as to rotate therewith and pivot between an open position defining a multiplicity of air passageways therebetween and a closed position occupying said air passageways;

wind direction sensing means moveably carried on and encased by said stationary frame and operably connected to said blades of said blade sets for actuating said blades between their open and closed position responsive to changes of oncoming wind direction;

electro-mechanical means interconnecting said wind direction sensing means with said blades which includes:

an electrical motor having a drive wheel and a rod connected to said wheel off-set from its center and said blades moveably connected to said rod at their ends opposite to the ends pivotally mounted on said shaft;

said wind direction sensing means includes:

a rotatable disk carried on said stationary frame;

a wind vane attached to said disk and responsive to change of wind direction to rotate said disk accordngly; and

electrical detection means responsive to rotation of said disk for selectively operating said blades between their respective open and closed positions.

4,113,409

HOSE PUMP WITH FRICTION DRIVE OF HOLLOW, RESILIENT ROLLER MEANS

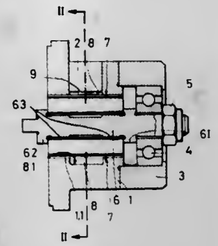
Otto Rossmanith, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Jan. 31, 1977, Ser. No. 764,022

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 2604002

Int. Cl.² F04B *43/08, 43/12, 45/06*

U.S. Cl. 417—477 **4 Claims**



1. A hose pump, comprising:

a housing having a chamber therein and a pair of axially spaced first rolling surfaces in said chamber;

a hose receiving arcuate groove having an inlet and an outlet, the axial center of said groove being located equidistant from said first rolling surfaces, the depth of said groove being less toward the radial center of said arc than at said inlet and outlet thereof;

a shaft and means supporting said shaft for rotation, said shaft having axially spaced flanges thereon located symmetrical with respect to and axially outside of said first rolling surfaces, said shaft further having a pair of axially spaced second rolling surfaces radially aligned with and spaced radially inwardly from said first rolling surfaces and having a radial dimension less than said flanges; and

a plurality of hollow, rigid cylindrical pinch rollers positioned around said shaft and between said flanges and held by said flanges against axial movement with respect thereto, said pinch rollers having an elastically deformable characteristic and having a diameter greater than said radial spacing between said first and second rolling surfaces whereby said pinch rollers are elastically compressed to an oval shape between said first and second rolling surfaces to thereby enhance a frictional rotary drive from said rotatable shaft to said pinch rollers and are free of engagement with said shaft between said second rolling surfaces.

4,113,410

LIQUID-SEALED TYPE VACUUM PUMP

Sumio Ando, Osaka, Japan, assignor to Otsuka Nutrition Research Institute Inc., Osaka, Japan

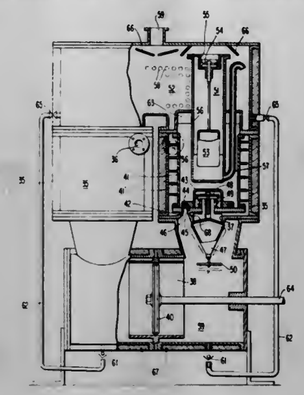
Filed Feb. 25, 1976, Ser. No. 661,077

Claims priority, application Japan, Feb. 25, 1975, 50-26257[U]; Feb. 25, 1975, 50-26258[U]; Aug. 6, 1974, 49-89958; Aug. 26, 1974, 49-97728; Feb. 25, 1975, 50-23618; Aug. 26, 1975, 50-103193

Int. Cl.² F04B *41/00*

U.S. Cl. 417—502 **13 Claims**

1. A liquid-sealed type vacuum pump comprising, at least one liquid containing cylinder having a liquid therein, said liquid containing cylinder including a chamber portion therein adapted to be vacuumized when the pressure of said liquid is reduced, a suction means adapted to be connected to an external device for evacuating said external device, and connected at the other end to said cylinder, a liquid tank connected to said liquid cylinder and pressure means in said liquid tank for alternately increasing and decreasing the pressure of said liquid in said liquid containing cylinder, valve means in said liquid containing cylinder for discharging said liquid when under high pressure and for admitting air from said suction means when said liquid is under lower pressure, means coupled to said suction means and to said cylinder for returning at least part of



said discharged liquid to said cylinder for effectuating a stabilized suction and discharge operation, and fluid cooling means positioned with respect to said suction means and said liquid containing cylinder for cooling and liquidizing the air admitted via said suction means.

4,113,411

EXTRUDER AND SIZER APPARATUS FOR HOLLOW PLASTIC SECTIONS

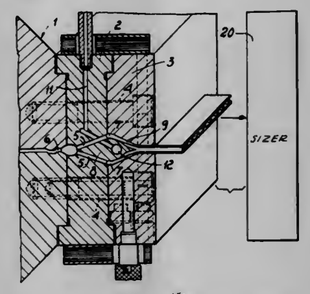
Marco Terragni, Milan, Via Puccini, 5 Italy

Filed Apr. 26, 1976, Ser. No. 680,269

Claims priority, application Italy, May 2, 1975, 22952 A/75

Int. Cl.² B29F *3/03, 3/04*

U.S. Cl. 425—325 **9 Claims**



1. An apparatus, particularly for manufacturing hollow boards of plastic material, comprising an extruder head for extruding a board and a sizer downstream of said extruder head, said sizer comprising a lower chamber and an upper chamber both communicating with a vacuum source, said lower and upper chambers being respectively closed by a generally plate-like lower member and a generally plate-like upper member respectively contacting a lower face and an upper face of said extruded board arranged to pass therebetween, wherein according to the improvement said generally plate-like lower and upper members comprise a plurality of bars arranged side by side and spaced apart such as to define slots therebetween for communicating respectively with said lower chamber and said upper chamber, said bars extending in a direction substantially perpendicular to the direction of advance of said extruded board.

4,113,412

APPARATUS FOR FORMING DOUGH PIECES

Torahiko Hayashi, P.O. Box 50, 2-3 Nozawa-machi Utsunomiya 320, Japan

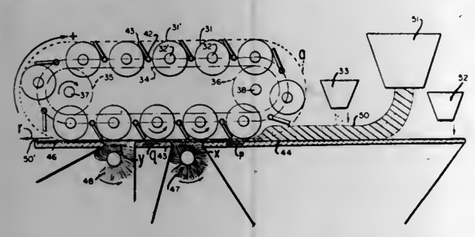
Continuation of Ser. No. 500,701, Aug. 26, 1974, Pat. No. 3,973,895, which is a continuation-in-part of Ser. No. 215,997, Jan. 14, 1972, abandoned. This application Aug. 9, 1976, Ser. No. 712,504

Claims priority, application Japan, Jan. 13, 1971, 46-820; Mar. 28, 1974, 49-35390

The portion of the term of this patent subsequent to Aug. 10, 1993, has been disclaimed.

Int. Cl.[2] A21C *3/02*

U.S. Cl. 425—335 2 Claims



1. An apparatus for forming moldable materials such as bakery dough, including:

(a) a conveyor belt adapted to receive said material;

(b) means operatively associated with said conveyor belt for moving said conveyor belt and said material thereon along a predetermined path;

(c) a plurality of rollers movable in unison about an endless roller path having a straight lower portion spaced above and along said conveyor belt, said rollers during their travel along said lower portion of said roller path being aligned transversely across said belt and in contact with said material thereon;

(d) means operatively associated with said rollers for moving said rollers laterally along said lower portion of said roller path in the same direction as said conveyor belt and at a speed greater than that of said conveyor belt and said material thereon so as to compress and stretch said material; and

(e) means operatively associated with said rollers during their contact with said material for rotating said rollers at a peripheral speed independent of the speed of travel of said material and in a direction opposite to that of the lateral movement of said rollers whereby said material can be stretched into a relatively thin sheet without the movement of said rollers therealong effecting the material undesirably.

4,113,413

ROTARY SCRAPER IN A ROTARY DRUM ASSEMBLY

Arthur Jacob Pietrusza, McMurray, and Harry James Kent, Pittsburgh, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1976, Ser. No. 709,427

Int. Cl.[2] B01J *2/12*

U.S. Cl. 435—222 13 Claims

1. A rotary drum assembly for forming an agglomerated product from agglomerative materials comprising,

a first drum member having an inlet portion for receiving the agglomerative material and a discharge end portion for discharging the formed agglomerated product,

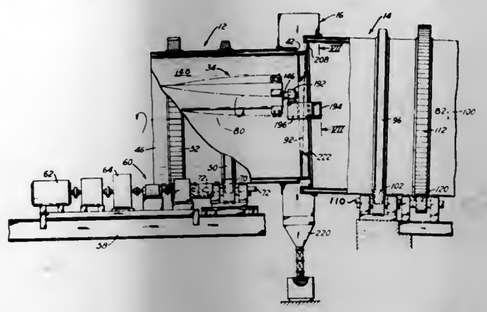
a second drum member having an inlet portion for receiving the agglomerated product from said first drum member and a discharge end portion for discharging the agglomerated product,

means for rotating said first drum member and said second drum member,

said first drum member discharge end portion extending into said inlet portion of said second drum member,

a rotary scraper having a longitudinal axis rotatably positioned in said first drum member,

said rotary scraper having a front end portion and a rear end portion, said rear end portion positioned in said first drum member,



first means for rotatably supporting said front end portion of said rotary scraper,

second means for rotatably supporting said rotary scraper rear end portion within said first drum member, and

means for rotating said rotary scraper.

4,113,414

TAMPER-PROOF SAFETY COVER FOR INJECTION MOLDING MACHINES

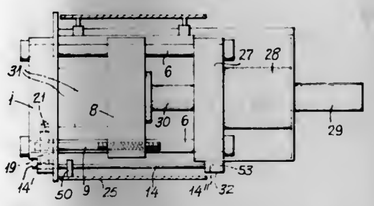
Karl Hehl, Arthur-Hehl-Strasse 32, 7291 Loosburg 1, Fed. Rep. of Germany

Filed May 10, 1976, Ser. No. 684,850

Claims priority, application Fed. Rep. of Germany, May 10, 1975, 2520876; Jun. 28, 1975, 2528907

Int. Cl.[2] B29F *1/00*; F16P *3/02*

U.S. Cl. 425—152 13 Claims



1. In an injection molding machine, a die closing unit comprising in combination:

a stationary die carrier plate mounted on a base frame of the injection molding machine and carrying the stationary half of an injection molding die;

a movable die carrier plate facing the stationary die carrier plate and die half at a longitudinal distance therefrom and carrying the movable half of said die;

means associated with said die carrier plates for guiding the movable die carrier plate in the longitudinal direction, relative to the stationary die carrier plate;

hydraulic drive means connected to the movable die carrier plate, for the creation of opening and closing movements of the movable die carrier plate, said drive means including an electric power supply;

a hydraulic control system and an electrical control system, both being operatively connected to said drive means;

a safety cover enclosing the two die halves and at least the movable die carrier plate in all longitudinal positions against the access to the die;

means guiding the safety cover for a longitudinal opening movement;

safety interlock means operatively connected to the safety cover and to at least one of said control systems, for an automatic shutdown of said drive means, through the interruption and inactivation of said connected control system, or systems, when the safety cover is displaced from its closed position, the safety interlock means including a tamper resistant control member which is non-detachably affixed to the safety cover, and at least one cooperating control system interrupting member which is attached to a stationary part of the machine, said control system interrupting member being inaccessibly enclosed within a housing; and

seal mens associated with said housing to prevent access to said control system interrupting member through said housing, without breaking the seal means.

4,113,415

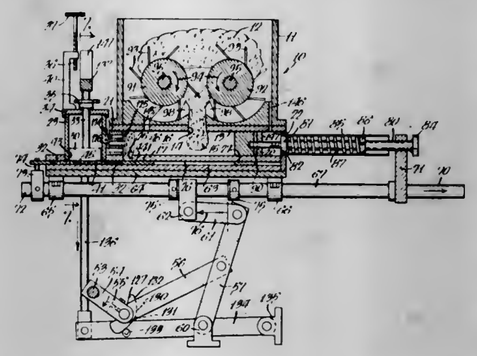
MOLDING APPARATUS

Harry H. Holly, Boca Raton, Fla., assignor to Hollymatic Corporation, Park Forest, Ill.

Continuation-in-part of Ser. No. 737,434, Nov. 1, 1976, Pat. No. 4,043,728, which is a continuation of Ser. No. 619,848, Oct. 6, 1975, abandoned. This application Aug. 18, 1977, Ser. No. 825,651

Int. Cl.[2] A22C *7/00*; B29C *1/00*

U.S. Cl. 425—542 4 Claims



1. Apparatus for pressure molding a shaped article from moldable material, comprising: supply means for said material; a pressure chamber communicating with said supply means to receive therefrom; a movable ram means in said pressure chamber for exerting pressure on material therein; a mold having a mold opening; supply passage means from said pressure chamber to said mold opening for supplying said material under pressure in an advancing flow to said mold opening; vent means for venting air from in front of said advancing flow upon movement of the ram means toward said supply passage means during said supplying of said material; normally open valve means in said vent means permitting said venting; and means operated by said advancing material for closing said valve means after said air is vented, said vent means and valve means being located in their entirety in said pressure chamber and away from said mold opening during said supplying of said material.

4,113,416

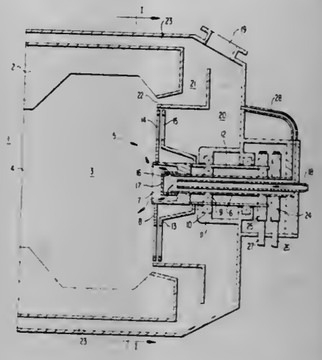
ROTARY BURNER

Rikio Kataoka; Shigeru Yano; Yoshito Kumamoto; Haruo Watanabe; Hisao Kaya, all of Kure; Kiyoshi Aoki, Chiba, and Masanao Kitamura, Tokyo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Ote, Japan

Filed Feb. 24, 1977, Ser. No. 771,665

Int. Cl.[2] F23D *11/04*

U.S. Cl. 431—1 13 Claims



1. A rotary burner comprizing

(a) a front rotary disk formed with a plurality of equiangularly spaced radially extended slits,

(b) a rear rotary disk formed with a plurality of equiangularly spaced radially extended slits whose configurations and pitch are same with those of the slits of said front rotary disks, said front and rear rotary disks being coaxially arrayed and spaced apart from each other by a predetermined distance,

(c) a combustion air supply passage for supplying the combustion air to pass through said slits of said rear and front rotary disks,

(d) a fuel supply means for supply the liquid fuel to the center of either of said front or rear rotary disk, and

(e) means whereby upon rotation of either one of said front and rear rotary disks or upon rotation of both of them in opposite directions, uniform and stable ultrasonic waves may be generated for uniformly atomizing the liquid fuel.

4,113,417

COMBUSTION OF HOT GASES OF LOW CALORIFIC POWER

Jean Deruelle, St. Avold, France, assignor to Stein Industrie, Velizy-Villacoublay (Yvelines), France

Division of Ser. No. 628,768, Nov. 4, 1975. This application Jan. 6, 1977, Ser. No. 760,140

Claims priority, application France, Nov. 6, 1974, 74 36828

Int. Cl.[2] F23D *13/20*

U.S. Cl. 431—5 8 Claims

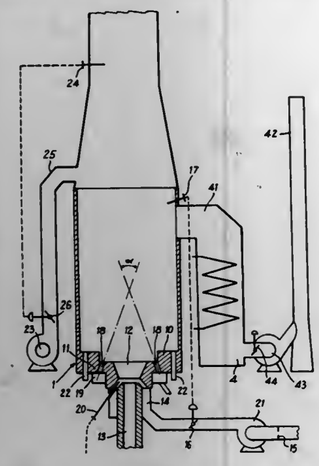
1. A process for the complete combustion of hot gases of low calorific power, such as reducing smoke of rich gases and by-products of the carbonisation of coal, which gases are available at a pressure close to atmospheric pressure, said process using at least one burner in a combustion chamber having means for introducing primary air and means for introducing secondary air and comprising the steps of:

(a) introducing the gases into the combustion chamber at the available pressure close to atmospheric pressure and at a temperature of between 600° and 900° C,

(b) introducing primary air at burner level in an amount limited to a maximum of 80% of the stoichiometric proportion,

(c) supplying secondary air near the base of the flame in an

excess relation to the stoichiometric amount such that the flame temperature is between 1,000° and 1,300° C, and



(d) discharging the combustion products from the combustion chamber by means of a chimney.

4,113,418

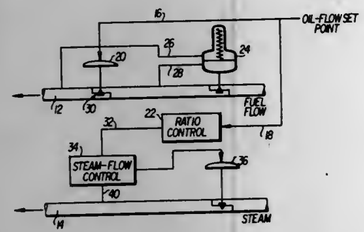
ROTARY BURNER CONTROL

Donald W. Larcen, 2417 Grenoble Rd., Richmond, Va. 23229

Continuation-in-part of Ser. No. 664,214, Mar. 5, 1976, Pat. No. 4,035,133. This application Jun. 8, 1977, Ser. No. 804,689

Int. Cl.² F23M *1/02*

U.S. Cl. 431—12 **14 Claims**



1. A method of operating a rotary burner of the type in which quantities of fuel and steam are controlled, respectively by a diaphragm motor valve and a steam-flow control mechanism to deliver fuel and steam into an air stream through a rotating member, said method comprising the steps of:

determining the amount of fuel flow that is required through said burner to produce various values of heat release;

adjusting a ratio-control device to provide an output signal level to said steam-flow control mechanism corresponding to a desired steam flow for each given fuel flow in a series of fuel flows;

setting said diaphragm motor valve to adjust flow area therein for providing a flow of fuel corresponding to a desired heat release value;

monitoring the differential pressure across said flow area and adjusting said fuel flow to maintain a differential pressure corresponding to the desired fuel flow through said flow area; and,

regulating said steam flow in accordance with the previously adjusted output signal level from said ratio-control device corresponding to said desired heat release value.

4,113,419

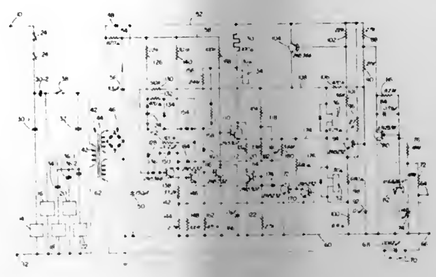
BURNER CONTROL APPARATUS

Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Apr. 12, 1976, Ser. No. 675,778

Int. Cl.² F23N *5/00* H01N *7/00*

U.S. Cl. 431—78 **37 Claims**



1. Burner control apparatus for use with a fuel burner installation having an operating control to produce a request for burner operation, a flame sensor to produce a signal when flame is present in said fuel burner installation, and means responsive to said burner control apparatus for controlling fuel flow, said burner control apparatus comprising

a control device for actuating said fuel control means,

a timing circuit for providing two successive timing intervals of precise duration, a pre-ignition timing interval and an ignition timing interval, said timing circuit having a common capacitor, one of said timing intervals being a function of the charging of said common capacitor and the other timing interval being a function of the discharging of said common capacitor,

means responsive to a request for burner operation to initiate an ignition sequence by actuating said timing circuit;

circuitry responsive to said actuated timing circuit for energizing said control device at the end of said first timing interval,

flame signal responsive circuitry responsive to a signal from said flame sensor to maintain said control device energized, and

circuitry for preventing the production of further timing intervals by said timing circuit,

and means responsive to loss of said signal from said flame sensor to cause said timing circuit to provide at least a further preignition ignition timing interval sequence.

4,113,420

FLASHLAMP ASSEMBLY WITH TAPERED HOUSING

Robert P. Bonazoli, Hamilton, and William H. Morgan, Jr., Assonet, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jul. 5, 1977, Ser. No. 812,916

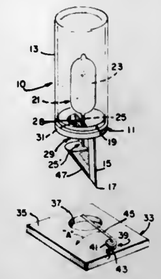
Int. Cl.² F21K *5/02*

U.S. Cl. 431—93 **10 Claims**

1. A flashlamp assembly comprising:

an elongated housing including a light-transmitting first end portion defining a chamber therein, a second end portion adjacent said first end portion, said second end portion including a tapered end portion and a recess between said tapered end portion and said first end portion; and

a percussively-ignitable flashlamp having a light-transmitting envelope and a primer tube projecting therefrom, said envelope positioned within said chamber within said first end portion and said primer tube securedly positioned



within said second end portion such that a portion of said primer tube is located within said recess.

4,113,421

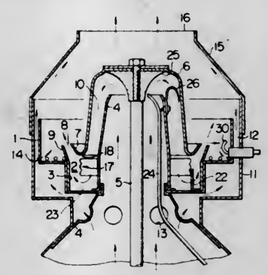
GASIFIED LIQUID FUEL BURNER

Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Claims priority, application Japan, May 29, 1976, 51-69368[U]; Dec. 14, 1976, 51-167311[U]

Int. Cl.² F23D *11/04*

U.S. Cl. 431—122 **9 Claims**



1. A gasified liquid fuel burner comprising:

a combustion chamber of a cylindrical shape closed at its bottom;

an air blast supply duct open at a forward end thereof and inserted into said combustion chamber;

a rotary shaft inserted into said combustion chamber;

a hollow rotary fuel gasifying member of a substantially conical shape connected at a closed end thereof to one end of said rotary shaft which extends through said forward open end of said air blast supply duct, said fuel gasifying member being located in spaced superposed relation to said air blast supply duct and open at a lower end thereof so that an obliquely outwardly turned portion is formed integrally with the open end of said fuel gasifying member;

a liquid fuel supply line having an open end positioned adjacent the closed end of the fuel gasifying member to supply a liquid fuel to an inner surface of the fuel gasifying member;

a gas chamber open at one end thereof and located at the bottom of said combustion chamber, said open end of said gas chamber having said obliquely outwardly turned portion of the fuel gasifying member slightly inserted therein so as to maintain communication between the interior of the fuel gasifying member and the gas chamber, and said gas chamber and the obliquely outwardly turned portion of the fuel gasifying member defining therebetween an annular gasified fuel-air mixture ejection opening; and

a gasified fuel-air mixing member of a cylindrical shape located in said gas chamber in such a manner that there is a small gap between the gasified fuel-air mixing member and the gasifying member.

4,113,422

SMOKER'S LIGHTER

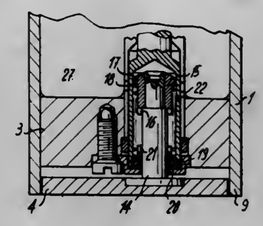
Andre Guenin, Petit-Lancy, Switzerland, assignor to La Nationale S.A., Geneva, Switzerland

Filed Jul. 13, 1976, Ser. No. 704,794

Claims priority, application Switzerland, Jul. 21, 1975, 9498/75

Int. Cl.² F23Q *2/38*

U.S. Cl. 431—124 **4 Claims**



1. A smoker's lighter comprising a reservoir having a bottom into which two orifices open, one for filing the reservoir and the other for the adjustment or replacement of an element of the lighter, a cover overlying said bottom, said cover carrying a pivot having an axis substantially perpendicular to said bottom and about which said cover can be rotated to uncover said two orifices while remaining parallel to itself, said axis of said pivot disposed outside a line joining the center point of said two orifices, said pivot disposed off-center in relation to the periphery of the cover so that in addition to a position covering the two orifices the cover can be brought into two other positions whereby in each one of said two other positions opposite ends of said cover respectively uncover and cover alternate ones of said two orifices.

4,113,423

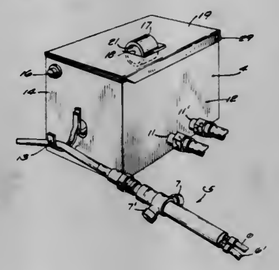
TORCH IGNITER

H. Karl Steiner, 3224 S. 92nd St., Milwaukee, Wis. 53227

Filed Jan. 24, 1977, Ser. No. 761,667

Int. Cl.² F23Q *3/00*

U.S. Cl. 431—128 **13 Claims**



1. An igniter for hand-held gas torches of the type having a nozzle from which combustible gas issues, comprising:

A. a box-like enclosure, one wall of which has an access opening;

B. a pair of electrodes across which a spark occurs upon connection of said electrodes with an appropriate source of e.m.f;

C. means mounting said electrodes in the enclosure at a location near said one wall of the enclosure but spaced from the access opening therein; and

D. gas flow directing means in the form of a metal cup mounted on said one wall and located in the access open-

ing therein, with the mouth of the cup straddling an edge portion of the access opening and facing towards the pair of electrodes, so that the cup coacts with said one wall to define a passage leading from an entrance at the outer face of said edge portion to an exit at the inner face of said edge portion facing towards the pair of electrodes,

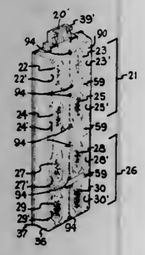
whereby a jet of combustible gas issuing from the torch and projected into the entrance of said passage impinges upon the bottom of the cup and is thereby reversed in direction to flow out of the exit towards the electrodes.

4,113,424

MULTILAMP PHOTOFLASH UNIT WITH STATIC GROUNDING SYSTEM

Donald E. Armstrong; John W. Shaffer, both of Williamsport; Paul M. Marecek, Montoursville, all of Pa., and Emery G. Audesse, Beverly, Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sep. 20, 1976, Ser. No. 724,792
Int. Cl.² F21K 5/02
U.S. Cl. 431—95 A **6 Claims**



1. A photoflash unit comprising a plurality of electrically ignitable flashlamps each having a pair of lead-in wires, a circuit board containing circuitry for selectively igniting said flashlamps, means electrically connecting the lead-in wires of said flashlamps to said circuitry, said circuitry including a common circuit conductor connected electrically to one lead-in wire of each of said flashlamps, a housing of insulating material enclosing said flashlamps and circuit board, connector means extending from said housing and having external terminals connected to said enclosed circuitry, said housing having at least one light-transmitting side wall adjacent to said plurality of flashlamps and having a plurality of openings therein, an electrically conductive array of refectors positioned between said lamps and said circuit board and shaped to reflect light from respective lamps through said light-transmitting side wall of said housing when the lamps are flashed, means electrically connecting said array of reflectors to said common circuit conductor, and a plurality of conductive projections from said reflector array and formed as integral parts of said array and which respectively fit into the openings in said light-transmitting side wall and protrude therethrough outside said housing.

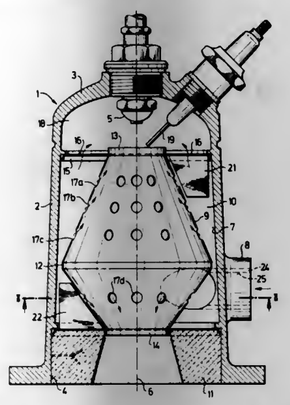
4,113,425

BURNER FOR FLUID FUELS

Robert von Linde; Joachim von Linde, both of Graefelfing, and German Kurz, Karlsfeld, all of Germany, assignors to Caloric Gesellschaft Fuer Apparatebau m.b.H, Germany

Filed May 27, 1976, Ser. No. 690,617
Claims priority, application Fed. Rep. of Germany, May 30, 1975, 2524036
Int. Cl.² F23D 15/02
U.S. Cl. 431—352 **10 Claims**

1. A burner for fluid fuels comprising an essentially cylindrical burner housing having an open end and a closed end, the open end being connectible to an exhaust pipe, a fuel supply means in the closed end and arranged in the longitudinal center axis of the housing, a combustion air supply passage in the peripheral wall of the housing, a tubular combustion chamber arranged coaxially within the housing, an annular space between said combustion chamber and the inner peripheral wall of the housing, said space being closed towards the open end of the housing, said combustion chamber having the shape of a double cone having its largest diameter between its ends, said double cone being asymmetrical and having said largest diameter farther away from the end adjacent the fuel supply means than from the other end, a separation between the end of the double cone adjacent the fuel supply means and said peripheral wall to form a prechamber comprising said fuel supply means and an ignition means, said separation being substantially perpendicular to the longitudinal axis of the combustion chamber



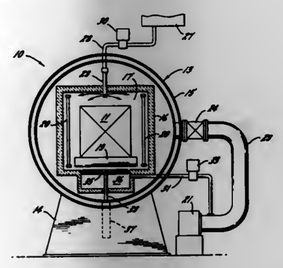
and separate from the burner housing, holes in said separation and in the wall of the double cone arranged and sized to form a rich fuel-air mixture in the prechamber, said air supply passage opening into said annular space with its longitudinal axis including an angle with a radial line passing through the center of the combustion chamber and the intersection between the longitudinal axis of said passage and the inner peripheral wall of the housing, thereby maintaining the flow of air in a helical path along the outer surface of the combustion chamber, a part of this air entering the holes of the combustion chamber and assuring a rotational path of travel forming an air veil along the inner surface of said combustion chamber.

4,113,426

METHOD FOR CIRCULATING A HEAT TREATING GAS

Ronald D. Rogers, Rockford, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Division of Ser. No. 547,107, Feb. 5, 1975, Pat. No. 4,030,712.
This application Mar. 25, 1977, Ser. No. 781,113
Int. Cl.² F27D 7/00
U.S. Cl. 432—25 **7 Claims**



1. A method of heat treating a work load comprising the steps of, admitting a sustantially continuous flow of processing gas into an inlet of a heated chamber containing the work load, exhausting a substantially continuous flow of gas from an outlet of said chamber, and imparting a repeated back and forth pulsating motion to the gas in the chamber as the gas flows through said chamber and while gas continues to flow into said inlet thereby to circulate the gas past the work load with a reciprocating action while substantially continuously replenishing the gas in the chamber, said pulsating motion being imparted to the gas by repeatedly increasing and decreasing the effective volume of the chamber.

4,113,427

PROCESS FOR DYEING CELLULOSIC TEXTILES WITH VAT AND SULFUR DYES

Andrew Fono, Montclair, N.J., and Ray F. Patton, Burlington, N.C., assignors to Royce Chemical Company, East Rutherford, N.J.

Filed Apr. 26, 1976, Ser. No. 680,198

Int. Cl.² C09B *9/00, 49/00;* D06P *1/22*

U.S. Cl. 8—34 **16 Claims**

1. A reducing agent composition for dyeing a cellulosic textile with a vat and sulfur dye which comprises about 85–97.5% by weight of sodium dithionite and about 2.5–15% by weight of sodium hydroxymethanesulfinate.

4,113,428

PROCESS FOR DYEING FIBRE MATERIALS

Herbert Hugl; Karl Heinz Schündehütte, both of Leverkusen; Kersten Trautner, Cologne, and Gerhard Wolfrum, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

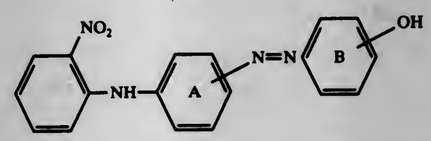
Filed Jul. 6, 1977, Ser. No. 813,311

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630991

Int. Cl.² C09B *27/00, 45/48;* C07C *107/06*

U.S. Cl. 8—41 R **10 Claims**

1. A process for dyeing a hydrophobic fiber material by applying a dyestuff from an aqueous or organic liquor in which said dyestuff has the formula

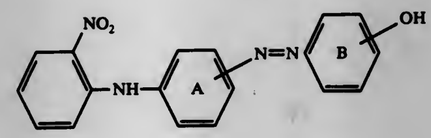


wherein

the aromatic rings A and B are unsubstituted or are substituted by halogen, alkyl, alkoxy cycloalkyl or aryl;

the azo group is in the meta-position or para-position relative to the amino group of the diphenylamine; and the phenolic hydroxyl group is in the ortho-position or para-position relative to the azo group.

6. A hydrophobic fiber material dyed with a dyestuff having the formula



wherein

the aromatic rings A and B are unsubstituted or are substituted by halogen, alkyl, alkoxy, cycloalkyl or aryl;

the azo group is in the meta-position or para-position relative to the amino group of the diphenylamine; and the phenolic hydroxyl group is in the ortho-position or para-position relative to the azo group.

4,113,429

PREPARATION OF A DISPERSE DYESTUFF CONTAINING A PHOSPHORIC ACID ESTER, HAVING IMPROVED SAFETY PROPERTIES AND HIGHER DYESTUFF YIELD WHEN DYED ON SYNTHETIC MATERIALS

Hubert Kruse, Kelkheim, Taunus, and Konrad Opitz, Liederbach, Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1976, Ser. No. 690,023

Claims priority, application Fed. Rep. of Germany, May 28, 1975, 2523659

Int. Cl.² D06P *1/16, 1/18, 1/20, 3/36*

U.S. Cl. 8—90 **1 Claim**

1. A dyestuff preparation consisting of

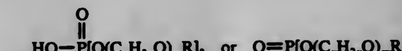
(1) 5 to 60 per cent by weight of a disperse dyestuff which is insoluble or sparingly soluble in water and which does not contain a water-solubilizing group,

(2) as a dispersing agent, 5 to 90 per cent by weight of a condensation product of a naphthalene sulfonic acid with formaldehyde, a condensation product of a naphtholsulfonic acid with formaldehyde, a condensation product of a phenol with formaldehyde, or a lignin sulfonic acid,

(3) as a wetting agent, 0 to 90 per cent by weight of an alkylated naphthalene sulfonic acid, a fatty acid, a resinic acid, a sulfated primary aliphatic alcohol of 10 to 18 carbon atoms, a sulfated unsaturated fatty acid, a fatty acid ether, a fatty acid amide, a sulfated alkylene oxide adduct, a sulfated partially esterified polyvalent alcohol, an alkylsulfonate, an alkylarylsulfonate, an alkylnaphthalene sulfonate, a sulfonate of a polycarboxylic acid ester, a sulfonate of a polycarboxylic acid amide or a condensation product of a fatty acid with an aminoalkylsulfonate,

(4) as a diluent or grinding auxiliary, 0 to 60 per cent by weight of a polyvinylsulfonate, gallic acid, a protective colloid, starch, dextrin, casein, an alginate, gelatin, carboxymethyl cellulose, polyvinyl pyrrolidone or polyacrylate, and

(5) 0.5 to 30 per cent by weight of a phosphoric ester of the formula



wherein n is 2 or 3, m is 0 to 10 and R is an alkyl radical of 8–20 carbon atoms.

4,113,430

METHOD FOR MODIFYING FIBERS OF A FABRIC AND THE PRODUCTS SO PRODUCED

Wolfgang K. F. Otto, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 729,260, Oct. 4, 1976. This application May 23, 1977, Ser. No. 799,623

Int. Cl.² D06M *9/00, 1/02*

U.S. Cl. 8—115.5 **13 Claims**

1. A method for modifying fibers in the stratum of fibers at one surface of a fabric comprising:

(a) applying an effective amount of a heat activated fiber modifying agent to a fabric to substantially cover a surface of the fibers of the fabric;

(b) heating the surface of the fabric containing the stratum of fibers to be modified to a temperature of from about 150° F. to about 425° F. for a period of time effective to initiate a chemical reaction between the fibers of the fabric within the stratum of fibers at the surface of the fabric being heated and said heat activated fiber modifying agent and thereby modify such fibers within the stratum;

(c) simultaneously maintaining a temperature differential between the heated surface of the fabric and the opposite surface of the fabric of at least about 50° F. so as to control

the depth of penetration of the chemical reaction and limit the fiber modification of the fibers to substantially the stratum of fibers at the surface of the fabric being heated;
(d) quenching the chemical reaction; and
(e) recovering a resulting product.

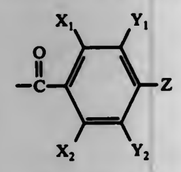
4,113,431

METHOD FOR DYEING CELLULOSE FIBERS BY DISPERSE DYES

Yasuhiko Terada, Kashihara; Jun Yasuda, Osaka, and Masao Kuriyama, Itami, all of Japan, assignors to Shikibo Limited, Osaka, Japan

Filed Feb. 26, 1976, Ser. No. 661,825
Claims priority, application Japan, Feb. 27, 1975, 50-25440
Int. Cl.² D06M *13/00*
U.S. Cl. 8—120 **10 Claims**

1. A method for dyeing cellulose fiber with improved color fastness using disperse dyes which comprises the steps of: reacting cellulose fiber with an aromatic acylating agent having an acyl group represented by a general formula



wherein X_1, X_2, Y_1, Y_2 and Z are members selected from the group consisting of hydrogen, halogen, alkyl, nitro, methoxy, phenylazo, and amino groups; controlling the reaction of cellulose fiber with the acylating agent by adjusting the concentration of reactants, temperature and reaction time whereby the acyl group is introduced into the cellulose fiber to form a cellulose fiber derivative having a substitution degree of between 0.10 and 0.50; recovering the cellulose fiber derivative; and contacting the cellulose fiber derivative with disperse dyes.

4,113,432

METHOD FOR MODIFYING FIBERS OF A FABRIC AND THE PRODUCTS SO PRODUCED

Wolfgang K. F. Otto, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 23, 1977, Ser. No. 799,620
Int. Cl.² D06M *1/02*
U.S. Cl. 8—125 **14 Claims**

1. A method for modifying fibers in the stratum of fibers at one surface of a fabric comprising:
(a) applying an effective amount of a heat activated fiber modifying agent to a fabric to substantially cover the fibers in the stratum of fibers of one or both surfaces of the fabric;
(b) applying an effective amount of a deactivating agent to a second surface of the fabric to substantially cover the fibers of said fabric which are to remain substantially unmodified within said fabric, said second surface being opposite the surface containing the stratum of fibers of said fabric to be modified with said heat activated fiber modifying agent;
(c) heating the surface of said fabric containing the stratum of fibers to be modified and covered with said heat activated fiber modifying agent at a temperature of from about 150° F. to about 425° F. for a period of time effective to allow modification of the fibers in the stratum of fibers to be modified by a chemical reaction between the fibers coated with the heat activated fiber modifying agent in such stratum of fibers and such agent;
(d) simultaneously maintaining a temperature differential of at least about 50° F. between the heated portion of the fabric containing the stratum of fibers to be modified and covered with said heat activated fiber modifying agent and second surface of said fabric so that the depth of penetration of the chemical reaction and fiber modification is controlled to substantially the stratum of fibers to be modified;
(e) quenching the chemical reaction; and
(f) recovering a resulting product.

4,113,433

RADIOIMMUNOASSAY OF HORMONES AND METABOLITES IN BLOOD SERUM AND PLASMA

Gyaneshwar Prasad Khare, 311 S. Heatherstone St., Orange, Calif. 92669

Filed Dec. 15, 1975, Ser. No. 640,841
Int. Cl.² G01R *33/16*
U.S. Cl. 23—230.6 **10 Claims**

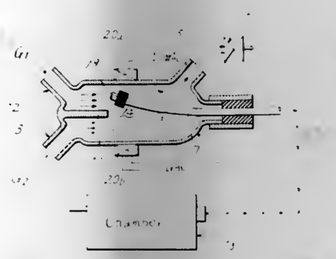
1. A process for assaying hormones or metabolities comprising the following:
(a) contacting antibody specific to said hormones or said metabolites coated pearl with a mixture containing reaction buffer, a sample being assayed, and a known amount of radioactive antigen, said radioactive antigen being specific to said antibody, for a period sufficient for antigen-antibody complex formation at 20° C to about 45° C,
(b) removing the mixture,
(c) washing the antigen-antibody complex,
(d) detecting the amount of radiation emanating from the pearl bound antigen-antibody complex,
(e) and relating the measured amount of radioactivity to the presence of said hormones or said metabolites in said sample.

4,113,434

METHOD AND APPARATUS FOR COLLECTIVELY SAMPLING A PLURALITY OF GASEOUS PHASES IN DESIRED PROPORTIONS FOR GAS ANALYSIS OR OTHER PURPOSES

Shinzo Tanaka, Osaka; Shinichi Tsubamoto, Kyoto; Koichi Yamashita; Tadashi Eguchi, both of Nara, and Kashirou Inoue, Osaka, all of Japan, assignors to Yanagimoto Seisakusho Co., Ltd., Kyoto, Japan

Filed Jul. 27, 1976, Ser. No. 709,088
Claims priority, application Japan, Jul. 30, 1975, 50-93741; Jul. 31, 1975, 50-94620
Int. Cl.² G01N *1/22*
U.S. Cl. 23—232 R **37 Claims**



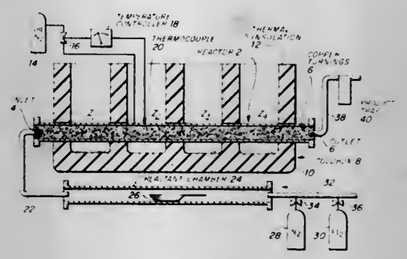
18. A method of gas analysis for a plurality of simultaneously fed gases, which comprises the steps of:
forming a plurality of continuous gas streams, each gas stream formed by a different gas;
introducing all of said gas streams into a common definite space so that mixing of said gas streams is substantially prevented, at least near the point of introduction into said space;
sequentially sampling predetermined stream lengths of gas from said gas streams through a single sampling conduit positioned within the defined space so that an essentially continuous flow is provided in the conduit, comprising a series of stream lengths of the different gases; and
conducting the continuous flow of gas stream lengths to a gas detector which is sensitive to a particular substance, detector adapted to generate a series of signals corresponding to the concentrations of said particular substance in each gas.

4,113,435

CRYOGENICALLY CONTROLLED DIRECT FLUORINATION APPARATUS

Richard J. Lagow, Manchester; James L. Adcock, and Norma J. Maraschin, both of Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 16, 1973, Ser. No. 379,876
Int. Cl.² B01J *1/00, 8/02;* C07C *53/16, 121/00*
U.S. Cl. 422—191 **14 Claims**



1. A direct fluorination apparatus comprising, in combination:
a. a reactor having a reactant inlet at one end of said reactor and a product outlet at the opposite end of said reactor;
b. means for separating said reactor into a plurality of independently controllable temperature zones positioned consecutively within said reactor between the reactant inlet and the product outlet;
c. means for introducing a source of first reactant at said reactant inlet, said first reactant being a source of elemental fluorine;
d. means for introducing a second gaseous reactant to be fluorinated into said reactor at said reactant inlet; and,
e. means for cooling each of said independently controllable temperature zones to a temperature in the range from about −190° C to about +20° C, said temperature being sufficiently low in each zone to cause partially fluorinated second reactant to condense therein as it passes therethrough whereby further fluorination of said second reactant takes place.

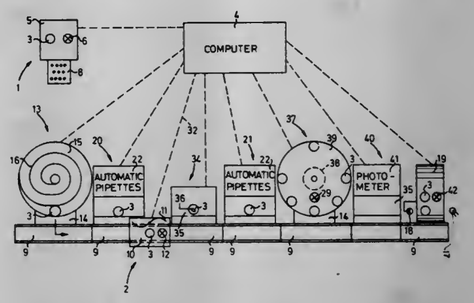
4,113,436

AUTOMATIC ANALYSIS APPARATUS

Roger Daniel Werder, Mohlin; Linus Meier, Effretikon, and Karl Lang, Uerikon, all of Switzerland, assignors to Mettler Instrumente AG, Greifensee, Switzerland

Filed Feb. 10, 1975, Ser. No. 551,517
Claims priority, application Switzerland, Feb. 15, 1974, 2119/74
Int. Cl.² G01N *1/14, 33/16*
U.S. Cl. 422—65 **14 Claims**

1. Analysis apparatus comprising, in combination:
(a) track means defining an elongated path;
(b) carrier means adapted to move on said track means in said path while carrying a container;
(c) a plurality of station means spaced along said path, each station means including a container support adjacent said path;
(d) drive means for moving said carrier means on said track means; p1 (e) transfer means adjacent said path for transferring a container between said carrier means and the container support of each of said station means when the carrier means is aligned with the station means transversely of said path,
(1) said transfer means including means for moving a container from said carrier means to the container support of a predetermined station means, and for simultaneously moving another container from the container support of said predetermined station means to said carrier means,



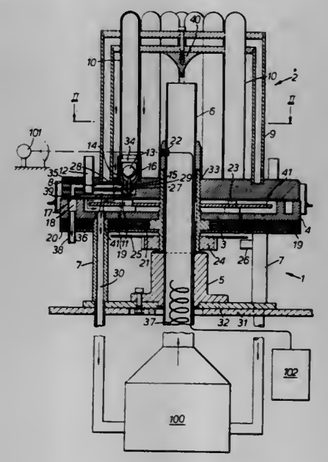
(2) one of said station means including dosing means for introducing a predetermined amount of liquid into a container supported on the container support of said one station means,
(3) another station means including analyzing means for analyzing the contents of a container transferred to the container support of said other station means; and
(f) control means for operating said drive means, said transfer means, said dosing means, and said analyzing means in timed sequence.

4,113,437

LIQUID STORAGE DEVICE

Ian David Duff, New York, N.Y.; John Hamilton Kennedy, and Roger Abraham Bunce, both of Birmingham, England, assignors to The Secretary of State for Social Services, London, England

Filed Aug. 6, 1976, Ser. No. 712,164
Claims priority, application United Kingdom, Aug. 13, 1975, 33797/75
Int. Cl.² B01L *3/00;* G01N *1/10*
U.S. Cl. 422—63 **11 Claims**



1. Liquid storage apparatus comprising a base part, a heat jacket on said base part, a plurality of liquid storage containers carried by said jacket and disposed with at least their lower

parts within said jacket, respective cups for the liquid storage containers, these cups being carried by said base part alongside said jacket and having upwardly facing openings through which access may be gained to liquid in the cups, passage means connecting the containers to the cups to replenish liquid withdrawn from any cup with fresh liquid from the respective liquid storage container, means, responsive to changes in liquid levels in the cups, to maintain the liquid in each cup at a substantially constant level, and means arranged to maintain the internal temperature of the jacket at a substantially constant value.

4,113,438

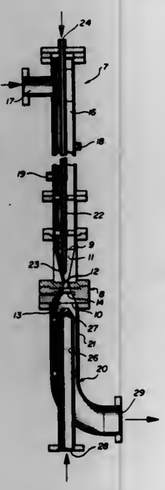
SULFONATING APPARATUS

Burton Brooks, Bellevue, and Richard J. Brooks, Seattle, both of Wash., assignors to The Chemithon Corporation, Seattle, Wash.

Division of Ser. No. 690,652, May 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 393,192, Aug. 30, 1973, abandoned. This application Dec. 1, 1976, Ser. No. 746,242

Int. Cl.² C07C *143/24*; B01D *47/10*; B01J *1/14*

U.S. Cl. 422—193 **9 Claims**



1. An apparatus for reacting a gaseous agent with a first liquid, said apparatus comprising:

a venturi having upstream and downstream ends, an approach zone between said ends with sides converging in a downstream direction and a throat between said approach zone and said downstream end;

a first conduit communicating with said venturi approach zone and axially aligned therewith;

a second conduit communicating with the downstream end of said venturi and having a vertically disposed conduit portion axially aligned with said venturi immediately downstream thereof;

fluid introducing means in said venturi approach zone;

a vertically disposed further conduit located concentrically within said axially aligned portion of said second conduit and having liquid outlet means located adjacent the downstream end of said venturi;

means for introducing a gaseous agent into said first conduit;

means for conducting a first liquid to said fluid introducing means;

means for removing fluid from said venturi through said second conduit;

means for introducing a second liquid into said further conduit;

means, including said liquid outlet means on said further conduit, for providing said second liquid as a continuous phase adjacent the downstream end of the venturi, with said second liquid in the form of a moving stream;

the inside surface of said vertically disposed portion of the second conduit and the outside surface of said further conduit comprising means defining a vertically disposed, axially elongated annulus having a pair of facing surfaces;

means, including said liquid outlet means on said further conduit, for flowing a film of said second liquid downwardly along said outside surface of said further conduit;

and means for flowing a film of said second liquid downwardly along said inside surface of said vertically disposed portion of the second conduit.

4,113,439

COOKING APPARATUS EMPLOYING A PURGING DEVICE

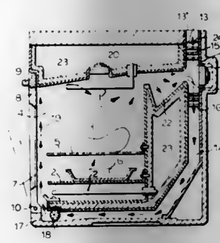
Toshio Ookubo, Nara; Atsushi Nishino, Neyagawa, and Tadashi Suzuki, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 8, 1976, Ser. No. 721,545

Claims priority, application Japan, Sep. 11, 1975, 50-110788; Dec. 26, 1975, 50-159379; Dec. 26, 1975, 50-159382

Int. Cl.² F23J *5/10*

U.S. Cl. 422—177 **2 Claims**



1. A cooking apparatus having a cooking chamber for cooking a food and a purging device for receiving the exhaust gas from the cooking chamber and purging the gas, said purging device having a housing with an exhaust inlet for receiving the exhaust gas from the cooking chamber and admitting it into the housing and an exhaust outlet for exhausting the gas into the outside of the apparatus, and at least one catalyzer arranged transversely of the housing and having passages therein through which the gas is passed for purifying it, said catalyzer having a specific surface area of 10 m^2/g to 100 m^2/g, and being composed of manganese dioxide as the main component and aluminic acid lime as a binder, and means for maintaining the temperature of the gas at the outlet of said housing higher than 130° C and wherein the inside condition of the apparatus is controlled so that the space velocity is 1,000 – 50,000 hr^{-1}.

4,113,440

APPARATUS FOR PRODUCING POLYMERS HAVING A WIDE MOLECULAR WEIGHT DISTRIBUTION

Dirk Klaasen, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Jul. 27, 1976, Ser. No. 709,080

Claims priority, application Netherlands, Aug. 5, 1975, 7509293

Int. Cl.² B01J *8/08*

U.S. Cl. 422—132 **4 Claims**

1. An installation for preparing polymers of wide molecular weight distribution comprising

two reactors A and B, each of said reactors being provided with an inlet means and an outlet means;

a first conduit means connecting said inlet means of reactor A with the outlet means of reactor B; and

a second conduit means connecting said inlet means of reactor B with outlet means of reactor A, thereby forming a

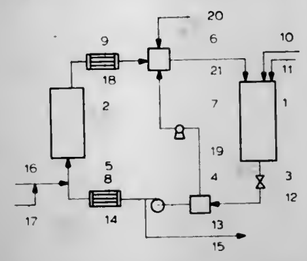
circuit for cycling at least part of the contents of reactor A to reactor B and then back to reactor A, through said first and said second conduit means;

a third conduit means communicating with said circuit, for feeding reactants and solvents into said circuit;

a discharge means, communicating with said circuit, for discharging at least a part of the contents of said circuit;

said circuit equipped with means for causing a flow of the contents of that circuit;

wherein said means for causing flow comprises a relief valve and a compressor, said relief valve being disposed in said first conduit means and communicating with the interior of said first conduit means and said compressor being in communication with said second conduit means, wherein said relief valve and said compressor allow polymerization in reactor A to occur at a different pressure from the pressure of polymerization in reactor B;



through reactor A, said second conduit means, reactor B, said first conduit means and reactor A, respectively, and said circuit being equipped with cooling means to remove heat of polymerization generated during the operation of said installation;

a vapor separator being in communication with said first conduit means, in a position between said relief valve and said inlet of reactor A;

a fourth conduit means disposed between, connecting and in communication with said first and second conduit means, and in communication with said vapor separator;

an absorber disposed in and in communication with said second conduit means, said absorber being between the inlet of reactor B and said compressor; and

a fifth conduit means being in communication with said circuit in a position after said outlet means of reactor A.

4,113,441

STEAM REFORMING REACTOR

Akira Suzuki, Tokyo; Kantaro Nakamura, Yokohama; Tetsuo Maejima, Kiyose; Masaru Kajiura, Tokyo; Toshio Aso, Kawasaki; Shoichi Abe, Yokohama; Toshihisa Suzuki, Yokohama; Katsuaki Takemura, Yokohama; Masaya Kuno, Machida; Kazumichi Yoshida, Yokohama; Junji Yokokawa, Yamato; Takeshi Miyasugi, Yokohama; Hiroshi Yagi, Tokyo, and Kiyohisa Mukai, Yokohama, all of Japan, assignors to Director-General Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 775,373

Claims priority, application Japan, Mar. 9, 1976, 51-24618

Int. Cl.² B01J *8/06*

U.S. Cl. 422—197 **12 Claims**

1. A steam reforming reactor comprising:

a pressure shell having inlet and outlet nozzles for each of process gas and heating gas, and a thermal insulating layer made of thermal insulating material provided on at least a part of the inner surface of the pressure shell;

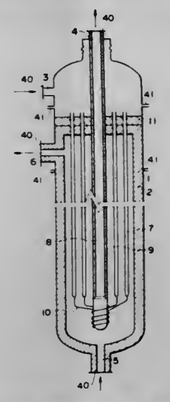
a plurality of catalyst tubes, each having two ends and being made of metal, the catalyst tubes being packed with a catalyst and located substantially vertically within the pressure shell, one end of each catalyst tube being communicated with the inlet nozzle of the process gas;

a riser pipe having two ends and being located substantially vertically within the pressure shell, the riser pipe having a thermal insulating layer made of thermal insulating material on the outer surface thereof, one end of the riser pipe being terminated in the outlet nozzle of the process gas;

a plurality of pipes connecting the other ends of the catalyst tubes to the other end of the riser pipe, said plurality of pipes having a smaller diameter than the catalyst tubes and riser pipe and taking up the difference in thermal expansion between the catalyst tubes and the riser pipe;

a baffle provided around the catalyst tubes to accelerate the transfer of heat from the heating gas to the catalyst tubes;

a cylindrical member around the outer periphery of the baffle to prevent a short flow path of the heating gas;



an annular plate assembly mounted on the cylindrical member and embedded in the thermal insulating layer on the pressure shell, the annular plate assembly comprising at least two annular plates disposed coaxially and overlapping partly on each other, one plate being outermost relative to the other, the outermost plate being secured in the pressure shell and the innermost plate being provided with a ground type seal mechanism having peripheral stuffing box within its inner periphery to take up the difference in thermal expansion between the cylindrical member and the pressure shell by sliding with the cylindrical member and to prevent a short flow path of the heating gas; and

a support member provided on the pressure shell to support the catalyst tubes and the riser pipe.

4,113,442

MIDDLE DISTILLATE FUEL COMPOSITIONS

Siebe Hoff; Gerhardus Ockers; Arnold A. Buitelaar, and Eduard J. Van De Kraats, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 772,383, Feb. 28, 1977, abandoned, which is a continuation of Ser. No. 618,082, Sep. 30, 1975, abandoned. This application Mar. 21, 1977, Ser. No. 779,645

Claims priority, application United Kingdom, Mar. 17, 1976, 10696/76

Int. Cl.² C10L *1/18*

U.S. Cl. 44—66 **19 Claims**

1. A middle distillate fuel composition of improved filterability, comprising a middle distillate fuel and, as filterability improver, from 50 to 800 parts per million, based on said fuel composition, of a C_{10}-C_{40} hydrocarbyl ester of a hydroxy-alkyl carboxylic acid in which the C_{10}-C_{40} hydrocarbyl group includes at least one uninterrupted chain of at least 8 methylene groups.

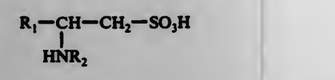
4,113,443

ANTISTATIC ADDITIVES

J. Ronald Spence, Warrenville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 27, 1977, Ser. No. 810,291
Int. Cl.[2] C10L 1/24
U.S. Cl. 44—72 11 Claims

1. A hydrocarbon composition having properties which prevents static charge buildup comprising a major proportion of a hydrocarbon and an effective amount of an antistatic additive of the general formula



wherein R_1 is an alkyl or alkenyl group of 1 to 24 carbon atoms, and R_2 is a hydrocarbon group with less than 18 carbon atoms, a radical of the general formula



wherein x is a number ranging from 1 to 6 and y is a number ranging from 1 to 5, a radical represented by the general formula



wherein z is a number ranging from 1 through 5 and R_3 is an alkyl or alkenyl group containing 1 to 24 carbon atoms or hydrogen.

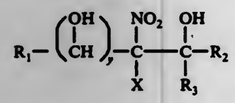
4,113,444

MICROBICIDE FOR USE WITH HYDROCARBON FUELS

Pamela M. Bunting, Cheswick, and John F. Deffner, Glenshaw, both of Pa., assignors to Gulf Research & Development Co., Pittsburgh, Pa.

Filed Dec. 17, 1976, Ser. No. 751,256
Int. Cl.[2] C10L 1/22
U.S. Cl. 44—72 13 Claims

1. A process for inhibiting the growth of gel-forming microorganisms in a binary liquid system comprising a major amount of a liquid distillate hydrocarbon fuel and a minor amount of an aqueous phase, which comprises adding to said binary liquid system a microbicidal amount of a water soluble halonitro alcohol of the formula:



wherein R_1, R_2 and R_3 are either alike or different members selected from hydrogen or alkyl having from 1 to about 7 carbon atoms; and Y is an integer selected from 0 or 1; and X is selected from bromine, chlorine or iodine.

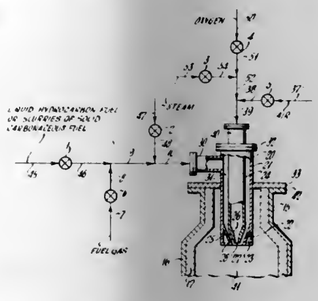
4,113,445

PROCESS FOR THE PARTIAL OXIDATION OF LIQUID HYDROCARBONACEOUS FUELS

Hans Gettert, Mannheim; Arnulf Jeck, Neustadt, and Dietmar Werner, Weisenheim, all of Fed. Rep. of Germany, assignors to Texaco Development Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 861,744
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703921
Int. Cl.[2] C10J 1/00
U.S. Cl. 48—197 R 7 Claims

1. In a partial oxidation process for producing gaseous mixtures comprising H_2 and CO, and at least one material from the group H_2O, CO_2, H_2S, COS, CH_4, N_2, NH_3, and Ar, and entrained particulate carbon by the partial oxidation of a liquid hydrocarbonaceous fuel with a free-oxygen containing gas optionally with a temperature moderator in a free-flow, noncatalytic refractory lined, gas generator at a temperature in the range of about 1800° to 3000° F. and a pressure in the range of about 1 to 250 atmospheres, including preheating the reaction zone of said gas generator at atmospheric pressure by introducing fuel gas into said reaction zone by means of a preheat burner and by the complete combustion of said fuel gas with air, stopping said flow of said fuel gas and air and removing said preheat burner from the gas generator, replacing said preheat burner with an annulus-type main burner, the improvement comprising removing said preheat burner from the gas generator when said reaction zone reaches a temperature in the range of about 1832° to 2012° F.; introducing air or compressed air in excess of stoichiometric into said reaction zone by way of one passage of said main burner and continuously passing fuel gas through another passage of said main burner, heating said



reaction zone by complete combustion of said fuel gas and air at a pressure in the range of about 0.5 to 1.0 atmospheres, connecting said main burner pressure tight to said reaction zone and continuing heating said reaction zone at a pressure in the range of about 0.5 to 250 atmospheres until the temperature required for ignition of the autothermal partial oxidation reaction of the liquid hydrocarbonaceous fuel and free oxygen containing gas in the presence of a temperature moderator in the range of about 2192° to 2642° F. is reached; stopping the flow of said streams of fuel gas and air and passing a stream of liquid hydrocarbonaceous fuel optionally in admixture with a temperature moderator through the same passage in said main burner that formerly carried said fuel gas, and passing a stream of free-oxygen containing gas optionally in admixture with a temperature moderator through the same passage in said main burner that formerly carried said air; and mixing said streams together to form a mixture, and igniting said mixture at atmospheric pressure and bringing said reaction zone up to operating pressure to produce said gaseous mixtures.

4,113,446

GASIFICATION PROCESS

Michael Modell, Cambridge; Robert C. Reid, Lexington, both of Mass., and Sanjay I. Amin, Kalamazoo, Mich., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 598,102, Jul. 22, 1975, abandoned. This application Nov. 17, 1976, Ser. No. 742,712
Int. Cl.[2] C10J 3/16
U.S. Cl. 48—202 10 Claims

1. The process for forming a gas composition having a high heating value which comprises reacting a liquid or solid organic material with water wherein the water is at least at its critical temperature and wherein the water pressure is at least at its critical pressure such as to achieve the critical density of water and recovering a gas product from the reaction without significant char formation.

4,113,447

METHOD OF CONDITIONING FLUE GAS

Robert P. Bennett, Bridgewater, and Alfred E. Kober, Hopatcong, both of N.J., assignors to Appollo Chemical Corporation, Whippany, N.J.

Filed May 2, 1977, Ser. No. 792,939
Int. Cl.[2] B03C 3/00
U.S. Cl. 55—5 28 Claims

1. A method of conditioning a particle-laden gas formed by the burning of coal comprising forming a mixture of:

(A) the particle-laden gas at a temperature of 200°–900° C., and

(B) finely divided sodium bisulfate; said mixture containing 75–1250 grams of sodium bisulfate per metric ton of coal burned to form said gas;

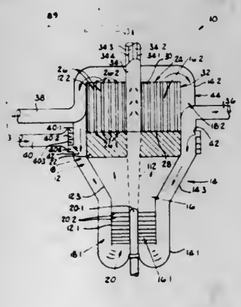
and thereafter passing the mixture through an electrostatic precipitator.

4,113,448

GAS SEPARATION PROCESS AND TREATMENT OF A GAS IN A GAS SEPARATION PROCESS

Pierre Cloete Haarhoff, Schoemansville, and Werner Adolf Schumann, Pretoria, both of South Africa, assignors to Atomic Energy Board, Pelindaba, South Africa

Continuation of Ser. No. 673,572, Apr. 5, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 819,016
Claims priority, application South Africa, Apr. 17, 1975, 75/2442
Int. Cl.[2] B01D 57/00
U.S. Cl. 55—17 24 Claims



1. In a separation process wherein a gas is passed through a cascade made up of a plurality of stages each comprising a separator, the method which includes the steps of:

withdrawing the gases issuing from the separators of a plurality of stages in the cascade to a single compressor, the gases from at least some of the separators having different compositions;

combining said gases to form a single stream the composition of which varies in a known fashion over a cross-section of the stream transverse to the direction of movement of the stream from a minimum with respect to the concentration of one of the gases being separated to a maximum with respect to said concentraton;

passing the stream through said single compressor without destroying the variation in composition;

separating the stream into a plurality of parts, at least some of which have different compositions; and

passing said parts through further stages in the cascade.

14. For a separation process wherein a gas is passed through a cascade made up of a plurality of stages each comprising a separator, the apparatus which comprises:

a compressor;

a plurality of separators arranged so that they are in different stages in the cascade;

conduit means for withdrawing gases of different compositions from various separators to the compressor and for combining said gases to form a single stream the composition of which varies in a known fashion over a cross-section of the stream transverse to the direction of movement of the stream from a minimum with respect to the concentration of one of the gases being separated to a maximum with respect to said concentration, and for feeding said stream to the compressor; and

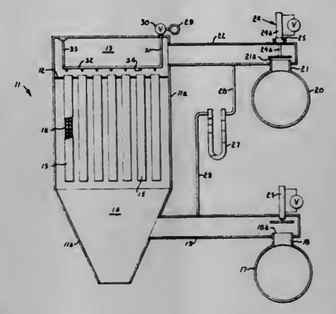
means for separating the stream issuing from the compressor into a plurality of parts at least some of which have different compositions, and for passing said parts through further stages in the cascade.

4,113,449

BAGHOUSE CLEANING METHOD

Richard P. Bundy, Prairie Village, Kans., assignor to Standard Havens, Inc., Kansas City, Mo.

Filed Aug. 26, 1977, Ser. No. 827,942
Int. Cl.[2] B01D 46/04
U.S. Cl. 55—96 2 Claims



1. In a baghouse comprising a housing, a partition disposed within and sealed against said housing defining a first chamber on one side of said partition and a second chamber on the other side thereof, an inlet conduit connected to said housing for directing a process gas stream containing particulate matter into said first chamber, an outlet conduit communicating with said second chamber to exhaust process gas therefrom, a plurality of gas passages through said partition establishing communication between said first and second chambers, and a plurality of filter assemblies associated with said gas passages for removing particulate matter from process gas flowing from said first chamber to second chamber, each said filter assembly comprising a cylindrical fabric sleeve having an open end portion sealingly secured to a gas passage through said partition, an elongate tubular portion and a closed end portion extending into said first chamber, and a cylindrical foraminous cage disposed with said sleeve for skeletal support; a method of cleaning said filter assemblies comprising the steps of:

restricting process gas flow through said housing to establish a pressure drop from said first chamber to said second chamber in the range of ¼ to 1½ inches water gauge; and

delivering an intermittent blast of high pressure cleaning gas to said filter assemblies to dislodge particulate matter collected thereon.

4,113,450

METHOD AND DEVICE RELATING TO SEPARATION OF LIQUID FROM LIQUID-CONTAINING COMPRESSED GAS

Lars Roland Goransson, Berchem, Belgium; Gosewinus Franciscus van Oorschot, Breda, Netherlands, and Jan Gustaaf Pittoors, Boechout, Belgium, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 15, 1976, Ser. No. 750,835
Claims priority, application Sweden, Dec. 23, 1975, 146514/75
Int. Cl.[2] B01D 45/16
U.S. Cl. 55—97 7 Claims

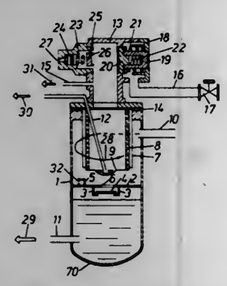
1. In the two-stage method of separating liquid from compressed air in liquid injected compressor systems and the like, in which the major portion of the liquid is removed from the

compressed gas in the first stage by introducing the compressed air and liquid mixture eccentrically in a container, and collected under pressure in a bottom collection zone thereof, remaining liquid being removed in the second stage by passing the compressed air and residual liquid resulting from the first stage into a filter zone normally in communication with the bottom collection zone, the improvement preventing blowback of liquid collected in the first stage into the filter zone of the first stage, comprising:

(a) sealing the pressurized liquid collected in the first stage from the compressed gas and residual liquid in the second stage when the pressure in the system falls below a predetermined value; and

(b) gradually equalizing the pressure between the first stage and the second stage.

2. A device for separating liquid from liquid-containing compressed gas comprising a container having liquid collect-



ing means, a conduit for supplying compressed liquid-containing gas to the container, said conduit being eccentrically connected to the container so that the container acts as a first stage cyclone separator for the liquid, a filter unit in said container acting as a second stage separator for the liquid, said second stage separator being in flow communication with said first stage separator, said container comprising wall means situated between the filter unit and the liquid collecting means, said wall means comprising a hole to allow liquid to flow through the wall means towards the liquid collecting means, valve means for automatically closing said hole when the pressure at the filter unit is lower than at the liquid collecting means so that collected liquid is automatically prevented from expanding into the filter unit, and a bleeder hole being provided for establishing a flow communication between the two sides of said wall means to allow the pressure at the liquid collecting means to slowly decrease to the pressure prevailing at the filter unit.

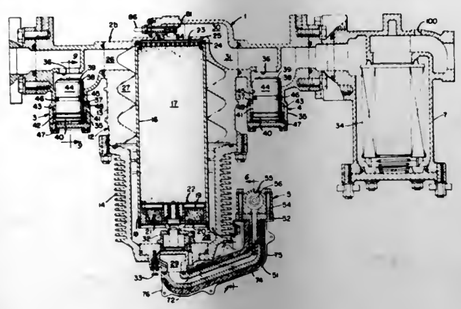
4,113,451

COMPRESSED GAS FILTER ASSEMBLY

Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales Corp., Salem, Va.

Filed Jun. 8, 1977, Ser. No. 804,733
Int. Cl.² B01D *53/00*
U.S. Cl. 55—162 **11 Claims**

1. A compressed gas filter assembly comprising filter unit means having housing means containing a desiccant and fitted with pneumatically opened and closed inlet and outlet check valve means and pneumatically opened spring-closed drain valve means for respectively passing unfiltered gas to and filtered gas from and draining any collected contaminant from said housing means, said filter unit means alternating between filtering cycles wherein said inlet and outlet valve means are open and said drain valve means closed and regenerating cycles wherein said inlet and outlet valve means are closed and said drain valve means open in response to exhausting of actuating compressed gas from said inlet and outlet valve means and supply of said gas to said drain valve means, and means so connecting all of said valve means to each other and a source of actuating compressed gas as to cause said inlet and outlet



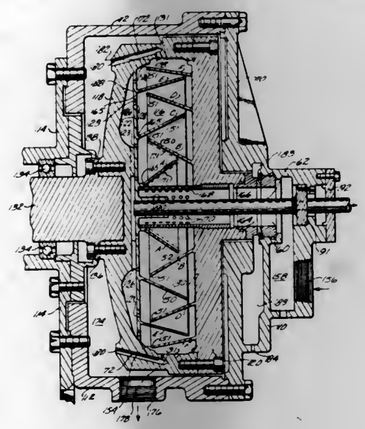
valve means to open after closing and close before opening of said drain valve means.

4,113,452

GAS/LIQUID SEPARATOR

Francis Barton Brown, La Crescenta, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Continuation-in-part of Ser. No. 600,844, Jul. 31, 1975, abandoned. This application Feb. 14, 1977, Ser. No. 768,581
Int. Cl.² B01D *45/12*
U.S. Cl. 55—203 **17 Claims**



1. Apparatus for degasification of liquids comprising:

a rotatable degassing chamber;

means for feeding liquid containing gas into the chamber;

means for venting gas from the chamber;

a plurality of baffles within the chamber providing a flow path for the liquid comprising a series of truncated, baseless, hollow, coaxial right circular cones, coaxial with the chamber and with progressively larger diameters, the open bases of adjacent conical baffles facing in opposite directions, the smaller ends of one set of baffles closed by one end wall of the chamber, and the smaller ends of the intervening baffles closed by the opposite end wall, the edge of the base of each baffle interleaved with and spaced from the inner surface of the next outer baffle to provide a fluid flow path along the inner walls of the baffles; and

a discharge passage from the rotatable chamber for discharging liquid from the inside of the chamber near a circumferential wall of the chamber to the outside of the chamber due to centrifugal acceleration of the chamber, the discharge passage having both a radially innermost wall and

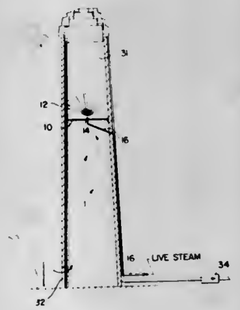
a radially outer most wall extending from an entrance port inside the chamber to an exit port outside the chamber, the radially innermost wall of the discharge passage having a portion upstream from said exit port which is radially farther from the chamber axis of rotation than is the radially outermost wall of said discharge passage at said exit port for forming a gas seal in the passage.

4,113,453

ANTI-POLLUTION DEVICE FOR INDUSTRIAL STACKS

Charles B. Rector, Buckhorn Lake St. Pk., Buckhorn, Ky. 41721

Filed Jun. 28, 1977, Ser. No. 811,129
Int. Cl.² B01D *50/00*
U.S. Cl. 55—263 **2 Claims**



1. In combination with an industrial stack that serves as a chimney, an anti-pollution system which conveys pollutants such as unburned particles and soot from the stack gases exhausted by the stack, comprising

a vertical stack for exhausting gases of combustion led into the lower end of said stack,

a source of steam terminating in a nozzle mounted in an upper portion of said stack, said nozzle oriented to spray the inner circumference of the stack with steam, so as to spray the combustion gases in said stack,

said stack fitted above its upper extremity adjacent and above the outlet of the stack with a plurality of sets of cooling coil means with each set of cooling coil means formed as a coil along a cylindrical path concentric within the axis of the stack, with each set of such coils formed along a cylindrical path of a lesser diameter than the set below the said set, with

circular drain means mounted immediately below each set of cooling coil means for collecting water containing pollutants that has been condensed by the cooling coil means from steam sprayed into the stack,

said drain means joined to a filter for separating said pollutants from the condensed water,

said cooling coils and drain means enclosed about their external radial periphery by an outer filter means for prevention of passage of condensed water vapor which means permits passage of exhaust stack gas so that water vapor condensed by said coils cannot escape in the radial outward direction from said stack.

4,113,454

COATING FILTER, SEPARATOR AND COLLECTOR SYSTEM

Daniel S. Cvacho, Forest, Va., assignor to Belgium Tool & Die Co., Lynchburg, Va.

Filed Sep. 28, 1976, Ser. No. 727,447
Int. Cl.² B01D *50/00*
U.S. Cl. 55—319 **5 Claims**

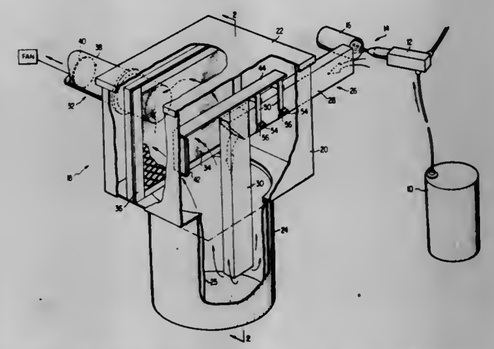
1. An apparatus for collecting the overspray of a coating system which comprises:

(a) a collection receptacle for receiving solid particles from the overspray of said coating system,

(b) a main support means attachable to said collection receptacle,

(c) a first duct system held by said main support means having an inlet end adapted to be positioned adjacent a coating station and an outlet end positioned within said collection receptacle,

(d) a second duct system held by said main support means having an inlet end in fluid communication with the outlet end of said first duct system,



(e) said first duct system being made from disposable materials and being in the form of a pair of interfitting tubular members,

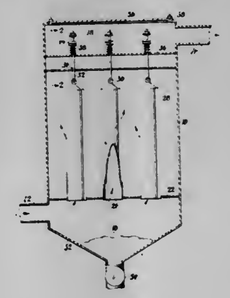
(f) said main support means including a tube support frame having a plug member over which a first of said pair of tubular members is telescoped and frictionally received thereon and the other of said tubular members is inserted through a side wall of the first tubular member and provided with a truncated end to provide a right angle turn for the overspray materials.

4,113,455

BAG TENSIONING ARRANGEMENT

Donald Louis Richmond, Scio, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 21, 1977, Ser. No. 862,894
Int. Cl.² B01D *46/02*
U.S. Cl. 55—378 **3 Claims**



1. Apparatus for filtering solids from a carrier gas comprising a housing having an inlet duct for dust bearing carrier gas and an outlet duct for clean gas from which dust has been removed, an apertured tube sheet comprising a plurality of apertures and extending across said housing to provide an inlet compartment adjacent the inlet duct and an outlet compartment adjacent the outlet duct, a plurality of tubular filter bags each having an open end thereof attached to the periphery of one of said apertures of the tube sheet and a closed end extending axially therefrom, means for holding the filter bags in an

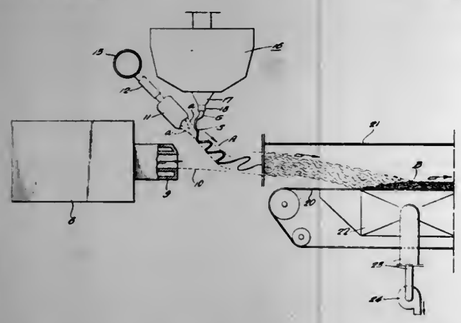
extended condition comprising an apertured beam extending across said housing, a linkage rod extending axially from the closed end of each filter bag through an aperture of said beam, spring means biasing each linkage rod axially relative to said beam to hold each filter bag in an extended condition, and spring adjusting means slidably mounted on each linkage rod to vary the tension of the spring biasing means on each of the filter bags.

4,113,456

FIBERIZATION ENERGY CONSERVATION

Marcel Levecque, Birchrunville, Pa.; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 780,589, Jan. 24, 1977, Pat. No. 4,070,173, Ser. No. 762,789, Jan. 25, 1977, and Ser. No. 676,755, Apr. 14, 1976, each is a continuation-in-part of Ser. No. 557,282, Mar. 11, 1975, Pat. No. 4,015,964, which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,885,940. This application Aug. 31, 1977, Ser. No. 829,515
Claims priority, application France, Aug. 23, 1977, 77 25695
Int. Cl.² C03B *37/06*
U.S. Cl. 65—5 **14 Claims**



12. A method for attenuating a thermoplastic material comprising

generating a gaseous blast,

generating a plurality of gaseous jet flows, each jet flow having a smaller cross sectional dimension than that of the blast in a direction transversely of the blast, each jet flow having a greater kinetic energy per unit of volume than the blast and being directed transversely into the blast, each jet flow thereby developing a zone of interaction in the blast,

delivering a stream of thermoplastic material into each interaction zone,

developing a combustible mixture of fuel and comburent in each of said interaction zones, and

igniting the mixture in each interaction zone.

4,113,457

APPARATUS FOR SUPPLYING GLASS BODIES TO GLASS MELTERS

Charles J. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 10, 1977, Ser. No. 758,109
Int. Cl.² C03B *37/02*
U.S. Cl. 65—11 R **6 Claims**

1. Apparatus for producing glass filaments comprising a marble hopper, a bushing, and means for feeding glass marbles sequentially from said hopper to said bushing, said bushing comprising means for melting the glass marbles and means for attenuating the molten glass into filaments, said feeding means comprising a conduit for generally spherical objects comprising a plurality of substantially coaxial helically wound wires, the wires being spaced apart by an ejector opening.

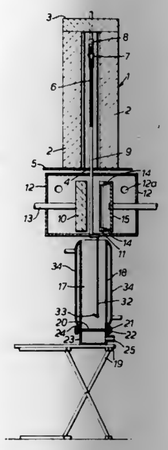


4,113,458

THERMAL TREATMENT OF GLASS IN A FLUIDIZED BED

Raymond Peter Cross, Preston, England, assignor to Pilkington Brothers Limited, St. Helens, England

Continuation of Ser. No. 717,171, Aug. 24, 1976, abandoned. This application Nov. 8, 1977, Ser. No. 849,632
Claims priority, application United Kingdom, Aug. 29, 1975, 35769/75; Jun. 10, 1976, 24123/76
Int. Cl.² C03B *27/00*
U.S. Cl. 65—114 **16 Claims**



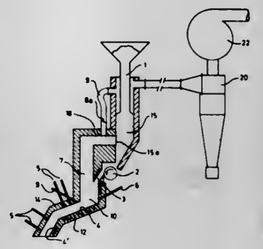
1. In a method of thermally treating glass in which the glass is contacted with a gas-fluidised particulate material to effect heat transfer between the surfaces of the glass and the fluidised material, and wherein gas is fed to said particulate material under pressure from an external source, the improvement wherein said gas-fluidised particulate material with which the glass is contacted is placed in a quiescent uniformly expanded state of particulate fluidisation through control of the gas feed such that the gas velocity while the glass is being contacted by said particulate material is between that velocity corresponding to incipient fluidisation and that velocity corresponding to maximum expansion.

4,113,459

METHOD AND APPARATUS FOR MELTING MINERAL MATERIALS

Rene Mattmuller, Malakoff, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 602,670, Aug. 7, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,441
Claims priority, application France, Nov. 2, 1976, 76 03720; Aug. 14, 1974, 74 28188
Int. Cl.² C03B *3/00*
U.S. Cl. 65—135 **35 Claims**



1. The method of obtaining a molten vitreous mass comprising the steps of:

(a) supplying the raw material to be melted in the form of solid granular elements with each element containing essentially the components in the proportions necessary for the formation of said molten mass;

(b) preheating the elements to a temperature below the fritting temperature at which the raw material becomes tacky;

(c) depositing the elements onto a molten surface of a thin receiving layer previously formed from the raw material;

(d) subjecting the raw material which is deposited onto the molten surface to an intense heating by hot gaseous currents to effect melting of the raw material;

(e) moving a portion of the resulting molten mass along a path extending away from the location of deposit of the raw material to leave a receiving layer with a molten surface; and

(f) recovering the vitreous molten mass.

8. Apparatus for obtaining a molten vitreous mass comprising:

(a) a hearth;

(b) heating means for heating the hearth;

(c) supply means for supplying the raw material to be melted to a location overlying the hearth, the raw material being in the form of solid granular elements with each element essentially containing the totality of components in the proportions necessary for the formation of the mass;

(d) preheating means for preheating the raw material at said location to a temperature below its fritting point;

(e) means for depositing the raw material onto the hearth;

(f) heating means for directing hot gases toward the hearth and onto said raw material in a direction approximately perpendicular thereto for effecting a rapid and homogeneous melting of the raw material to a molten mass at the location of deposit of said raw material; and

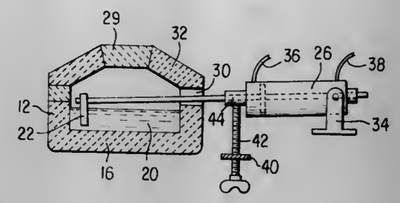
(g) means for moving a portion of the resulting molten mass along said hearth in a direction away from the location of deposit of the raw material and to a point of discharge from the apparatus and at a speed sufficient to continuously maintain a thin layer of the molten mass at said location after initial formation of said layer.

4,113,460

MOLTEN GLASS HOMOGENIZER

H. Larry Penberthy, 631 S. 96th St., Seattle, Wash. 98108

Filed May 20, 1977, Ser. No. 798,879
Int. Cl.² C03B *5/18*
U.S. Cl. 65—178 **16 Claims**



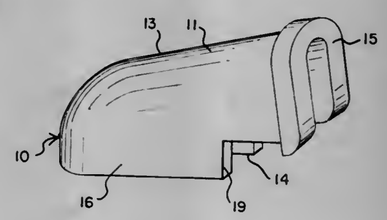
1. A glass mixing arrangement comprising a glass forehearth having a channel through which molten glass flows, a flat plate forming a paddle in said forehearth, said plate being oriented in said channel to present its thinnest dimension to the glass flow in said channel whereby said paddle presents a minimum impedance to the flow of glass through said channel, said paddle having at least one mixing aperture passing completely through it, said aperture slanting upwardly from one face of said paddle to the other, a drive rod coupled to said paddle and extending laterally of said channel out of said forehearth, and oscillatory drive means coupled to said rod for driving said paddle with substantially reciprocating motion transversely across said channel from adjacent one forehearth side wall to the other with the lower edge of said paddle near the bottom of the forehearth.

4,113,461

HOOD FOR GLASS FURNACE GATHERING HOLE

Michael R. Sturm, 137 Ridgeway Dr., Bridgeport, W. Va. 26330

Filed Sep. 14, 1977, Ser. No. 833,264
Int. Cl.² C03B *5/26*
U.S. Cl. 65—324 **5 Claims**



1. A hood for a glass furnace gathering hole comprising:

(a) a hollow elongated body member of generally inverted U-shape having two side walls, a closer rear end wall, an open front end, and an open bottom, said body being adapted to fit longitudinally through the gathering hole in the wall of a glass furnace and so seat on the bottom edges of said two side walls as to cause said rear end wall to tilt down into the furnace; and

(b) a collar of inverted U-shape integral with the body member at the open front end thereof, said collar being of a diameter greater than that of the glass furnace gathering hole for engaging the furnace wall at the gathering hole in the tilted position of the body member to provide a seal and for preventing the body member from passing completely through the gathering hole.

4,113,462

PROMOTION OF PLANT GROWTH WITH COMPOSITIONS CONTAINING A DITHIOCARBAMIC ACID DERIVATIVE

Romeo Barrick Wagner, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 20, 1977, Ser. No. 789,303
Int. Cl.² C05C *3/00, 9/00*
U.S. Cl. 71—7 **8 Claims**

1. A method for improving plant growth in soil containing fertilizer nitrogen in an amount corresponding to about one hundred pounds per acre, said method comprising impregnating said soil below the soil surface in a plant growing area with at least one nitrification inhibitor compound selected from the group consisting of ammonium dithiocarbamate and dimethylammonium dimethyldithiocarbamate in an amount corresponding to from about three to about thirty pounds per acre where said amount is effective to inhibit nitrification of the reduced nitrogen in the soil.

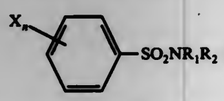
4,113,463

METHOD FOR CONTROLLING THE GROWTH OF PLANTS

Hiromichi Oshio; Hiroyuki Konishi; Shiunzi Matsumura; Kikuichi Ishikawa, and Eiichi Yoneyama, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 616,995, Sep. 26, 1975, Pat. No. 4,070,176. This application Mar. 11, 1977, Ser. No. 776,618
Claims priority, application Japan, Oct. 8, 1974, 49-116639; Jul. 2, 1975, 50-82157; Jul. 30, 1975, 50-93578
Int. Cl.² A01N *9/14*
U.S. Cl. 71—76 **15 Claims**

1. A method for regulating the elongation of plants so as to increase their resistance to lodging, characterized by applying a plant regulating effective amount of a plant growth regulator containing as active ingredient a benzenesulfonamide derivative represented by the general formula,



wherein X is a halogen atom, alkyl group having 1 to 5 carbon atoms, nitro group, amino group, alkoxy group having 1 to 5 carbon atoms, alkylthio group having 1 to 5 carbon atoms, alkylsulfonyl group having 1 to 5 carbon atoms, or a group of the formula R_3CONH— (where R_3 is alkyl group having 1 to 5 carbon atoms); n is an integer of 0 to 5; R_1 is

hydrogen,

alkyl group having 1 to 5 carbon atoms,

phenyl group, or

a group of the formula —(A)—$COOR_4$ where R_4 is hydrogen, alkyl group having 1 to 5 carbon atoms, Na^+, K^+, or NH_4^+ ion, and

(A) is a group of the formula —$(CH_2)_m$— (where m is an integer of 1 to 3), or a group of the formula



(where R_5 and R_6 are either hydrogen and alkyl group having 1 to 5 carbon atoms or are both alkyl groups having 1 to 5 carbon atoms); and R_2 is

hydroxyl group, aminoalkyl group having 1 to 5 carbon atoms, cyano-$C_{1.5}$-alkyl group, a group of the formula HSO_3—R— where R is an alkyl group having 1 to 5 carbon atoms, phenyl-substituted alkyl group having 1 to 5 carbon atoms, or a group of the formula —(A)—$COOR_4$ (where R_4 and (A) are as defined above), when R_1 is hydrogen; R_2 is

a group of the formula —(A)—$COOR_4$ (where R_4 and (A) are as defined above), or a group of the formula —(B)—OOCR_7 where R_7 is phenyl group and (B) is a group of the formula $(CH_2)j$- (where j is an integer of 1 to 3), or a group of the formula



(where R_5 and R_6 are as defined above), when R_1 is alkyl group having 1 to 5 carbon atoms; and R_2 is

a group of the formula —(A)—$COOR_4$ (where R_4 and (A) are as defined above), when R_1 is phenyl group or a group of the formula —(A)—$COOR_4$ (where R_4 and (A) are as defined above).

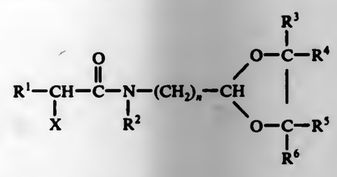
4,113,464

DIOXOLANE SUBSTITUTED AMIDES

Leonard J. Stach, Riverside; Roger D. Hotz, Evanston, both of Ill., and Sidney B. Richter, Barberton, Ohio, assignors to Velsicol Chemical Company, Chicago, Ill.

Filed Apr. 4, 1977, Ser. No. 784,212
Int. Cl.² A01N *9/20*; C07D *317/10*
U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



wherein R^1 is selected from the group consisting of hydrogen and alkyl; X is halogen; R^2 is selected from the group consisting of alkyl, alkenyl and alkynyl; n is the integer 1 or 2; and R^3, R^4, R^5 and R^6 are each selected from the group consisting of hydrogen and alkyl.

9. A herbicidal composition comprising an inert carrier and, as an essential active ingredient, a herbicidally effective amount of a compound of claim 1.

10. A method of controlling weeds which comprises contacting said weeds with a herbicidally effective amount of a herbicidal composition of claim 9.

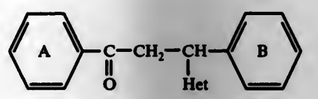
4,113,465

HERBICIDAL FORMULATIONS

Margaret Claire Shephard, Maidenhead; Balsubramanyan Sugavanam, Wokingham; Paul Anthony Worthington, Maidenhead; David John Collins, Crowthorne, and David Griffin, Maidenhead, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 13, 1976, Ser. No. 750,017
Claims priority, application United Kingdom, Dec. 16, 1975, 51458/75
Int. Cl.² A01N *9/22*; C07D *249/08*
U.S. Cl. 71—92 **8 Claims**

1. A compound of the formula:



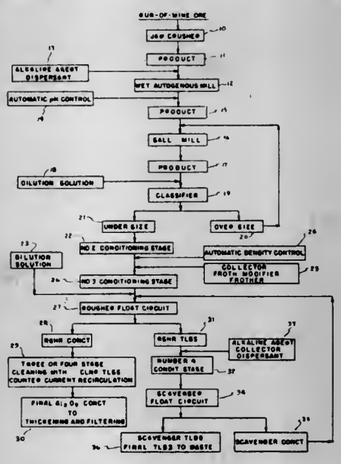
wherein rings A and B are unsubstituted, or carry one or more substituents, each substituent being a lower alkyl radical; a fluorine, chlorine, bromine, or iodine atom; a lower alkoxy radical; a cyano group; a nitro group; a lower alkylcarbonyloxy radical; a methylenedioxy radical; an amino group; or a mono- or di- lower alkyl substituted amino group, and wherein Het stands for a 1,2,4-triazol-1-yl radical, at least one of the rings A and B being substituted; and salts of compounds of the foregoing formula.

4,113,466

CONCENTRATION OF HYDRATED ALUMINUM OXIDE MINERALS BY FLOTATION

David Weston, Toronto, Canada, assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 28, 1976, Ser. No. 736,466
Int. Cl.² B03D *1/02*; C22B *1/00*
U.S. Cl. 75—2 **56 Claims**



1. A process for the concentration by flotation of hydrated aluminum oxide minerals from hydrated aluminum oxide bearing raw materials comprising: subjecting the said raw materials to at least three stages of conditioning prior to rougher flotation, the said at least three stages of conditioning comprising: a wet grinding circuit in which the said grinding of the said raw materials to form a pulp is carried out in the presence of a selected dispersing agent in controlled amounts to effectively and beneficially disperse the solids contained in said pulp to produce a product to said flotation varying between about 55 to 95% minus 500 mesh; subsequently subjecting the said pulp to a mechanical agitation conditioning stage in which the said pulp is mechanically agitation conditioned in the presence of at least an alkaline dispersing agent at an optimum pH point within the pH range of about 7.5 to 11.5 for a sufficient period of time to precipitate deleterious salts from the said pulp and beneficially affect the surfaces of the said aluminum oxide minerals for optimization of the said flotation of the said aluminum oxide minerals; subsequently subjecting the said mechanically agitation conditioned pulp to a further mechanical agitation conditioning stage at an optimum pH point in the range of about 7.5 to 11.5 and in the presence of a differential activating and flocculating agent comprising one or more agents selected from the group consisting of oxyhydryl anionic collectors to activate and flocculate the said aluminum oxide minerals; subsequently subjecting the said conditioned pulp to flotation to produce a rougher concentrate enriched in the said aluminum oxide minerals and rougher tailings impoverished in the said aluminum oxide minerals.

4,113,467

PROCESS FOR RECOVERING GOLD

Douglas S. Harrington, 1276 Fairfax St., Denver, Colo. 80220

Filed Feb. 22, 1977, Ser. No. 770,466
Int. Cl.² C22B *11/04*
U.S. Cl. 75—0.5 A **17 Claims**

1. A process for recovering precious metals selected from the group consisting of gold and silver from solution which comprises:

(a) adsorbing the solution onto sodium silicate to form a gelid reaction component;

(b) adding to the gelid reaction component a reducing agent for the precious metal to cause a reduction reaction catalyzed by the silicon-containing compound;

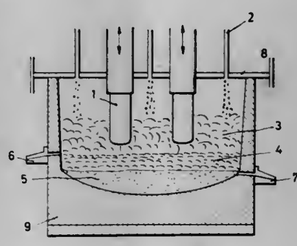
(c) recovering elemental precious metal from the gel.

4,113,468

CONTINUOUS SMELTING METHOD

H. W. Gudenau, Aachen; Horst König, Duisburg; Gero Rath, Mulheim, and Haye Roth, Breitscheid, all of Fed. Rep. of Germany, assignors to Demag, A.G., Duisburg, Fed. Rep. of Germany

Filed Feb. 24, 1977, Ser. No. 771,748
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 2608320
Int. Cl.² C21C *5/52*
U.S. Cl. 75—12 **1 Claim**



1. A method for continuously making substantially pure steel having a very low carbon content in an electric low shaft resistance furnace, the steps comprising

(a) maintaining a continuous slag layer in said furnace, said slag layer covering the molten metal therein;

(b) immersing the electrodes for said furnace in said slag layer;

(c) continuously charging said furnace with iron sponge; the improvement characterized by the steps of

(d) pre-reducing said iron sponge prior to charging to a carbon/oxygen ratio of within the range of between about 1:1.4 and 1:1.55;

(e) increasing the volume of said slag layer in said furnace by foaming a portion of said slag layer, the ratio of the volume of the non-foaming portion of said slag layer to said foaming portion being within the range of between about 1 to 1.2 and 1 to 5 ;

(f) maintaining continuously said volume of said slag layer obtained in step (e);

(g) said increasing and maintaining steps being carried out with a fluid and reactive basic slag containing calcium oxide and silicon dioxide;

(h) said slag having an iron oxide content within the range of between about 7 and 30% and a magnesium oxide content within the range of between about 5 and 12%; and

(i) withdrawing continuously said substantially pure product from said furnace.

4,113,469

REFINING MOLTEN METAL

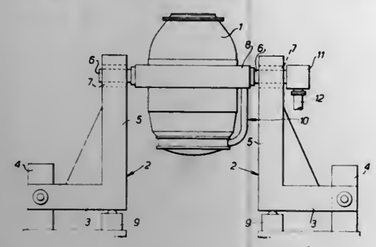
Hugh W. Grenfell; David J. Bowen, both of Swansea, Wales, and Robert Baker, Sheffield, England, assignors to British Steel Corporation, Great Britain

Filed May 2, 1977, Ser. No. 792,602

Claims priority, application United Kingdom, Apr. 30, 1976, 17724/76

Int. Cl.² C21C *5/30*

U.S. Cl. 75—60 **16 Claims**



1. A method for refining molten metal containing an impurity which is oxidisable in preference to at least one selected constituent element of the metal and which forms a gaseous oxide, the method comprising injecting oxygen and a diluent gas into the molten metal contained in a vessel so as to reduce the proportion of the impurity in the metal by evolution as the gaseous oxide, weighing the vessel during the refining to establish a point at which the weight of the vessel contents changes significantly due to the preferential oxidation of the at least one selected constituent element, initiating at the point a reduction in the ratio of oxygen: diluent gas so as to reduce the rate of oxidation of the at least one selected constituent element relative to the impurity and continuing injection until the proportion of the impurity is reduced to the desired level.

4,113,470

PROCESS FOR SUSPENSION SMELTING OF FINELY-DIVIDED SULFIDIC AND/OR OXIDIC ORES OR CONCENTRATES

Olavi August Aaltonen, Pori, and Jyrki Tapani Juusela, Harjavalta, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation-in-part of Ser. No. 592,332, Jul. 1, 1975, abandoned. This application Jan. 8, 1976, Ser. No. 647,506

Claims priority, application Finland, Jul. 5, 1975, 2088/74

Int. Cl.² C22B *15/02*

U.S. Cl. 75—74 **2 Claims**

1. A process for the suspension smelting of finely divided raw material selected from sulfide and oxide ores and concentrates comprising the steps of:

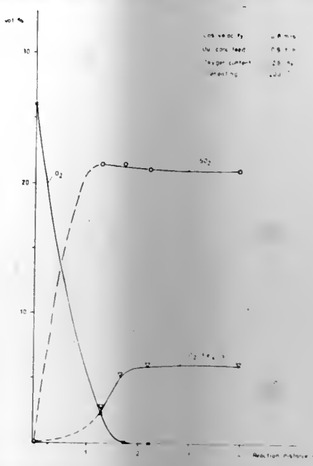
(a) feeding a flow of said finely divided raw material into a suspension reaction zone along with pre-heated oxygen containing gas at a point about 2 to 6 meters above the surface of an accumulated melt in said suspension reaction zone;

(b) causing said finely divided material to pass downwards through said suspension reaction zone as particles in suspension in said pre-heated oxygen containing gas and raising the heat content of said particles while controlling suspension flow velocity to cause an average delay period of said suspension in the suspension reaction zone of about 0.5 to 2 seconds;

(c) oxidizing and partially melting the finely divided material in said suspension in said reaction zone to produce an oxidized suspension;

(d) then causing said oxidized suspension to flow sidewards perpendicularly to its original flow direction, causing most of said particles with their increased heat content to impinge against a surface of said accumulated melt in said reaction zone; and

(e) then directing the residual oxidized suspension remaining after the impingement of step (d) to flow into a rising zone and separating solids from said residual suspension;



all of the heat required for said smelting process being supplied to the particles falling downward in suspension in said reaction zone during step (b).

4,113,471

EXTRACTION OF NON-FERROUS METAL VALUES FROM DOLOMITIC OXIDE ORES

Martin A. Langhorst; Gerard C. Sinke, both of Midland, and Elmer H. Mossner, Saginaw, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 2, 1976, Ser. No. 746,981

Int. Cl.² C22B *3/00*

U.S. Cl. 75—101 R **11 Claims**

1. A process for extracting values of non-ferrous metals selected from the group consisting of silver, copper, lead, zinc, gold, nickel, magnesium, and chromium from a dolomitic oxide ore comprising:

leaching the ore with an aqueous solution consisting essentially of at least one metal chloride salt selected from the group consisting of alkali metal chlorides and alkaline earth chlorides in the presence of an oxygen-containing gas at a temperature of from about 125° C to about 225° C at a pressure of from about 200 to about 600 pounds per square inch gauge to solubilize the non-ferrous metal values into the aqueous solution of the metal chloride salt.

10. The process of claim 1 including the subsequent step of recovering solubilized elemental non-ferrous metal values from the metal chloride salt solution.

4,113,472

HIGH STRENGTH ALUMINUM EXTRUSION ALLOY

Julius C. Fister, Jr., Hamden; John F. Breedis, Trumbull, and Michael J. Pryor, Woodbridge, all of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 4, 1977, Ser. No. 784,155

Int. Cl.² C22C *21/16*

U.S. Cl. 75—142 **14 Claims**

1. An aluminum base alloy of high strength properties having improved weldability, consisting essentially of 0.9–1.5% magnesium, 0.4–0.8% silicon, 0.9–1.5% copper, and from 0.05 to 0.4% of at least one member of the group of elements consisting of manganese, iron, and chromium, up to 0.2% each of zirconium, vanadium, and titanium, up to 0.4% cobalt, and up to 3.5% nickel, and balance aluminum, wherein the copper content does not exceed the sum of the magnesium plus silicon contents and the silicon content does not exceed the sum of 0.58 × magnesium content plus 0.25 × the sum of the manganese and iron contents, said alloy having substantially equal contents of magnesium and of copper.

4,113,473

PROCESS FOR OBTAINING NOVEL BLANKS FOR EXTRUSION BY IMPACT

Robert Gauvry, Paris, and Robert Portalier, Ville D'Avray, both of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Filed Mar. 16, 1977, Ser. No. 778,233

Claims priority, application France, Mar. 19, 1976, 76 08611

Int. Cl.² C22C *1/06*

U.S. Cl. 75—148 **5 Claims**

1. A process for obtaining homogeneous and isotropic cast blanks for impact extrusion of silicon-aluminum alloys containing more than 12% of silicon comprising the steps of

providing a liquid aluminum alloy with more than 12% of silicon,

refining said alloy by adding from 0.01% to 0.1% of phosphorus,

casting said alloy in a mold having a high thermal conductivity,

cooling the mold from the base,

applying, once solidification has begun, a pressure in the range of 0.1 to 5 bars.

4,113,474

COPPER ALLOYS OF EXCELLENT CORROSION RESISTANCE, MOLDABILITY AND WORKABILITY

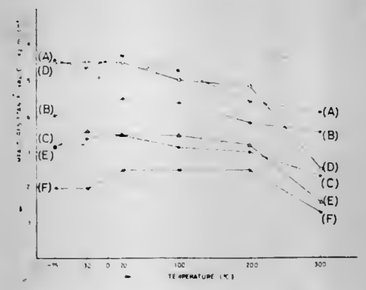
Masao Okano, Suwa, Japan, assignor to Toyo Valve Company, Ltd., Tokyo, Japan

Filed Jun. 23, 1976, Ser. No. 698,800

Claims priority, application Japan, Sep. 12, 1974, 49-105233

Int. Cl.² C22C *9/04*

U.S. Cl. 75—156.5 **3 Claims**



1. A copper alloy which is composed of 27.0–32.0 wt % zinc, 0.8–4.0 wt % lead, 0.2–0.8 wt % silicon, 0.1–2.0 wt % manganese, 0.01–0.1 wt % arsenic, 0.03–0.4 wt % aluminum, 0.01–1.0 wt % tin, the remainder being copper.

4,113,475

TARNISH RESISTANT COPPER ALLOY

Richard D. Smith, Acton, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 675,604, Apr. 9, 1976, abandoned. This application Feb. 17, 1977, Ser. No. 769,723

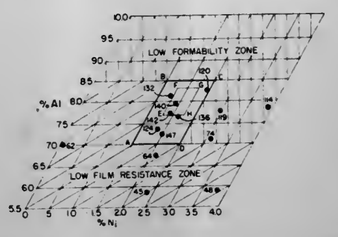
Int. Cl.² C22C *9/01*

U.S. Cl. 75—159 **8 Claims**

1. A tarnish resistant wrought copper alloy consisting essentially of the following constituents in the following amounts in percent by weight:

Aluminum	7.0 – 8.5
Nickel	1.5 – 2.5
Copper	89.0 – 91.5

and having a film resistance of at least 95 kilohms which is a measure of the alloys tarnish resistance and a microstructure



containing less than 2 volume percent of intermetallic β and γ phases said alloy having the following minimum properties in the annealed condition, yield strength of 46,000 psi, tensile strength of 85,000 psi, elongation of 38.5%, limiting draw ratio of 2.12 and Olsen Bulge Height of 0.413 inches.

4,113,476

METHOD OF TREATING LOW ANTIMONY ALLOY BATTERY GRID MATERIAL WITH PHOSPHORUS

John Nees, Wyomissing, and Kenneth Pike, Reading, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Oct. 20, 1976, Ser. No. 734,311

The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

Int. Cl.² C22C *11/00*

U.S. Cl. 75—166 C **4 Claims**

1. A method of treating a low-antimony battery grid lead alloy prior to casting comprising the steps of:

(a) bringing said alloy into a molten state; and

(b) adding between 0.001 to 0.010 wt-% of phosphorus to said molten alloy,

said alloy comprising between 2.25 and 2.75% antimony, between 0.25 and 0.50 wt-% tin, between 0.04 and 0.06 wt-% copper, between 0.003 and 0.01 wt-% sulfur, and a maximum of 0.15% arsenic.

4,113,477

METHOD OF TREATING LOW ANTIMONY ALLOY BATTERY GRID MATERIAL WITH PHOSPHORUS

John Nees, Wyomissing, and Kenneth Pike, Reading, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 734,311, Oct. 20, 1976. This application Feb. 16, 1977, Ser. No. 768,960

The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

Int. Cl.² C22C *11/00*

U.S. Cl. 75—166 C **6 Claims**

1. A method of treating a low-antimony battery grid lead alloy prior to casing comprising the steps of:

(a) bringing said alloy into a molten state; and

(b) adding between 0.001 to 0.010 wt-% of phosphorus to said molten alloy,

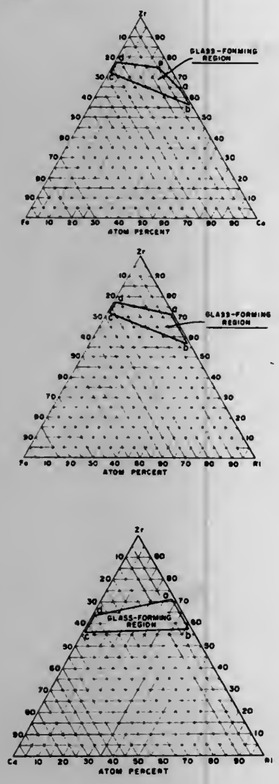
said alloy comprising between 2.25 and 2.75% antimony.

4,113,478

ZIRCONIUM ALLOYS CONTAINING TRANSITION METAL ELEMENTS

Lee E. Tanner, Summit, and Ranjan Ray, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 9, 1977, Ser. No. 823,080
Int. Cl.² C22C *16/00, 30/00*
U.S. Cl. 75—177 **6 Claims**



1. A primarily glassy zirconium-base alloy containing at least two transition metal elements selected from the group consisting of iron, cobalt and nickel, said alloy consisting essentially of a composition selected from the group consisting of

(a) zirconium, iron and cobalt which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Fe and atom percent Co, is represented by a polygon having at its corners the point defined by
(1) 64 Zr — 1 Fe — 35 Co
(2) 56 Zr — 1 Fe — 43 Co
(3) 72 Zr — 27 Fe — 1 Co
(4) 77 Zr — 22 Fe — 1 Co
(5) 75 Zr — 5 Fe — 20 Co;

(b) zirconium, iron and nickel which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Fe and atom percent Ni, is represented by a polygon having at its corners the points defined by
(1) 71 Zr — 1 Fe — 28 Ni
(2) 57 Zr — 1 Fe — 42 Ni
(3) 72 Zr — 27 Fe — 1 Ni
(4) 77 Zr — 22 Fe — 1 Ni; and

(c) zirconium, cobalt and nickel which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Co, and atom percent Ni, is represented by a polygon having at its corners the points defined by
(1) 71 Zr — 1 Co — 28 Ni
(2) 57 Zr — 1 Co — 42 Ni
(3) 56 Zr — 43 Co — 1 Ni
(4) 64 Zr — 35 Co — 1 Ni.

4,113,479

VACUUM SMELTING PROCESS FOR PRODUCING FERROTUNGSTEN

Donald O. Buker, Lakewood, Colo., assignor to AMAX Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 661,978, Feb. 27, 1976, Pat. No. 4,039,325, which is a continuation-in-part of Ser. No. 508,848, Sep. 24, 1974, Pat. No. 3,966,459. This application Feb. 14, 1977, Ser. No. 768,386
Int. Cl.² C22C *38/22*
U.S. Cl. 75—211 **14 Claims**

1. A process for producing a ferrotungsten alloy which comprises the steps of forming a substantially uniform particulated mixture comprised of a finely-particulated tungsten containing mineral concentrate selected from the group consisting of wolframite, ferberite, huebnerite, scheelite and mixtures thereof; a finely-particulated iron-bearing material present in an amount to adjust the iron content in the resultant ferrotungsten alloy to the desired concentration, and a finely-particulated carbonaceous reducing agent present in an amount slightly in excess of the stoichiometric quantity required to reduce the tungsten oxide compounds and any iron oxide compounds present to the metallic state, agglomerating said mixture into a plurality of shape-retaining pellets, heating said pellets to an elevated temperature above about 2500° F while under a pressure of less than about 0.5 Torr for a period of time sufficient to effect a reduction of substantially all of the tungsten oxide compounds and any iron oxide compounds present to the metallic state and an alloying of the reduced metallic tungsten and iron to form a ferrotungsten alloy and to volatilize the contaminating constituents in said pellets, continuously withdrawing the gaseous volatilized contaminating constituents and gaseous reaction products of the oxidized said reducing agent, and thereafter cooling and extracting the substantially dense sintered ferrotungsten alloy pellets.

4,113,480

METHOD OF INJECTION MOLDING POWDER METAL PARTS

Ronald D. Rivers, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Dec. 9, 1976, Ser. No. 748,821
Int. Cl.² B22F *3/14*
U.S. Cl. 75—214 **9 Claims**

1. A method of forming self-supporting compacts from metal powder, which formed compacts have green densities substantially equal to the tap density of the metal powder and being adapted for sintering without blistering or cracking by injection molding, comprising (1) mixing the metal powder with a plastic medium in an amount sufficient to substantially fill the entire void volume of the metal powder, thereby forming a plastic mixture, the plastic medium comprising an organic binder dissolved in a solvent in which it is soluble at room temperature but in which it is substantially less soluble at a higher temperature such that the plastic medium increases in viscosity at higher temperatures by rejection of the solvent, (2) injecting the plastic mixture under pressure at room temperature into a closed die preheated to that higher temperature, whereby solvent is rejected from the mixture and the rejection of solvent and increase in viscosity of the plastic medium produces a compact sufficiently self-supporting to hold its molded shape and to be ejected from a die cavity (3) removing the compact from which solvent has been rejected from the die and (4) drying the ejected compact to remove the remaining solvent therefrom and leave interconnecting pores in the compact for the escape of gases resulting from subsequent burning out of the binder during the sintering operation.

4,113,481

GREEN BALLS FORMED BY AGGLOMERATING WET-COLLECTED FUME PRODUCED IN METALLURGICAL FURNACES

John W. Kreiger, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 592,287, Jul. 1, 1975, Pat. No. 4,004,916. This application Oct. 18, 1976, Ser. No. 734,771
Int. Cl.² C22C *33/02, 39/54*
U.S. Cl. 75—256 **2 Claims**

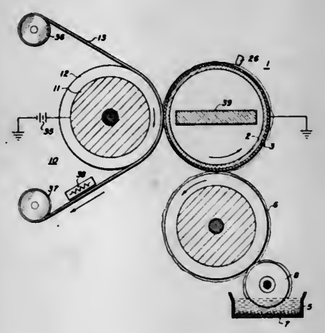
1. Green balls suitable for charging into steelmaking furnaces and derived from particles of fume formed in steelmaking furnaces, said fume comprising at least one fume taken from the group consisting of wet-collected fume and dry collected water leached fume and mixtures thereof, said particles of fume being spray-dried to substantially instantaneously dry the fume, impacted in a one-point impact step to fracture any spheroids formed during spray-drying whereby new fracture surfaces are formed, and the Blaine surface area of said fume is increased to more than 8000 square centimeters per gram and balled on a balling device whereon moisture required for balling is added to the fume, said green balls consisting of water and said particles of fume and being characterized by having a moisture content of 7 to 12% by weight, a moist compression strength of not less than 15 pounds, and moist strength sufficient to resist breakage when dropped at least 10 times from a height of about eighteen inches onto a steel plate.

4,113,482

MIGRATION IMAGING METHOD INVOLVING COLOR CHANGE

John B. Wells, Savannah, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 651,301, Jan. 22, 1976, abandoned, which is a division of Ser. No. 406,056, Oct. 12, 1973, which is a continuation-in-part of Ser. No. 199,683, Nov. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 863,507, Oct. 3, 1969, abandoned. This application Oct. 26, 1976, Ser. No. 735,344
Int. Cl.² G03Q *13/22*
U.S. Cl. 96—1 PS **1 Claim**



1. A migration imaging method comprising the steps of:

(a) providing a substrate having a layer of softenable material thereon, said softenable material being in contact with migration material, the migration material comprising an imaging composition which comprises at least two differently colored pigment particles dispersed and bound in a polymeric matrix, said particles comprising cyan, magenta, and yellow pigments, at least one of said particles or said matrix being electrically photoresponsive, said imaging compositions exhibiting the resultant color of the differently colored pigments and being capable of forming images in said resulting color without color or particle separation;
(b) subjecting said migration material to a migration force in image configuration;
(c) softening said softenable material whereby said migration material migrates in depth through said softenable material in imagewise configuration to said substrate to form an image;
(d) removing the softenable material and unmigrated material, and;
(e) selectively changing the color of said image by means of disrupting said matrix.

4,113,483

PHOTOSENSITIVE MATERIAL CONTAINING DI-IODOPROPYL CELLULOSE, PROCESS FOR ITS MANUFACTURE AND THE USE OF THIS MATERIAL

Alain Roman, Bossey; Jean-Pierre Sachetto, Saint-Julien en Genevois, both of France; Manfred Wust, Dardagny, and Jean Koutroulos, Carouge, both of Switzerland, assignors to Neste Oy, Finland

Filed Feb. 14, 1977, Ser. No. 768,494
Int. Cl.² G03G *0/00; G03C 1/00, 5/24*
U.S. Cl. 96—1 PC **20 Claims**

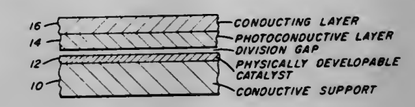
1. Photosensitive material comprising a substrate at least one surface portion of which contains uniformly distributed di-iodopropyl cellulose.

4,113,484

ELECTROPHOTOGRAPHIC ELEMENTS AND PROCESSES

Mark Lelental, Penfield, and William Andrew Light, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1977, Ser. No. 824,136
Int. Cl.² G03G *15/24*
U.S. Cl. 96—1 R **19 Claims**



1. A photographic element comprising:

(1) a non-catalytic conductive support;
(2) a substantially uniform first layer coated on said support, said layer comprising a physically developable catalyst having a coverage of 1×10^{-6} to 1×10^{-10} g/cm² of support;
(3) a photoconductive second layer separated from said first layer by an air gap of up to 20 microns; and
(4) a conductive layer over said second layer

wherein at least said conductive support (1) or said conductive layer (4) is transparent to the electromagnetic radiation to which said photoconductive second layer (3) is sensitive.

11. A process of preparing an image in an element comprising a conductive support having coated thereon a substantially uniform first layer comprising a physically developable catalyst having a coverage of 1×10^{-6} to 1×10^{-10} g/cm² and a second photoconductive layer separated from said first layer by an air gap of up to 20 microns, said process comprising the steps of:

(1) applying a voltage across said element of at least about 1×10^5 volts/cm up to the dielectric breakdown potential of said layers;
(2) imagewise destroying the developability of said catalyst by imagewise exposing said second layer to electromagnetic radiation while said voltage is being applied so as to subject the image areas of said first layer to a charge exposure greater than 1×10^{-8} coulombs/cm²; and
(3) developing said first layer by physical development.

4,113,485

PROCESS FOR MAKING PHOTO-MECHANICAL DROP-OUT MASK

Vincent M. Maselli, 8909 McVicker Ave., Morton Grove, Ill. 60053

Filed Jun. 2, 1977, Ser. No. 802,798
Int. Cl.² G03C 7/04, 7/16, 5/06
U.S. Cl. 96—5 7 Claims

1. A method of making a photo-mechanical drop-out mask to be used with a principal photograph taken of an object, which principal photograph was made by exposing a first portion of a given film in a camera positioned at a given location, said method comprising the steps of:

illuminating the object with substantially only a back illumination so as to silhouette the object;

while the object is so illuminated, taking a second photograph of the object using said camera at said location and using a second portion of said given film in said camera to produce a silhouette of the object on the second portion of the film;

processing both of said portions of said film under identical conditions to develop the film; and

exposing a high-contrast film to the developed second portion of the film to produce a negative of said silhouette on said high-contrast film from said second portion which constitutes the said drop-out mask.

4,113,486

METHOD FOR PRODUCING A PHOTOMASK

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Continuation of Ser. No. 517,285, Oct. 22, 1974, abandoned. This application Jun. 9, 1976, Ser. No. 694,423
Claims priority, application Japan, Oct. 22, 1973, 48-118692
Int. Cl.² G03C 5/32; C23F 1/00; G03B 27/00; G03C 11/00
U.S. Cl. 96—36 25 Claims

1. A method for producing a photo mask, which comprises exposing and development-processing a photographic light-sensitive material comprising a transparent support having thereon a masking layer and a silver halide emulsion layer to thereby form a silver image, bleaching said silver image with a bleaching solution containing hexavalent chromium ion, heating in the presence of oxygen to imagewise uncover the masking layer, etching away the uncovered masking layer, and then removing the emulsion layer at the non-image areas to uncover the masking layer corresponding to the non-image areas.

4,113,487

METHOD FOR MANUFACTURE OF EXPANDED ARTICLES HAVING AN EMBOSSED SURFACE

Kazuo Matsunaga, Fussa; Hideo Ishizawa, Tokyo, and Kenichi Kurata, Yokohama, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1976, Ser. No. 735,523
Claims priority, application Japan, Oct. 31, 1975, 50-131260; Mar. 26, 1976, 51-33167; Apr. 21, 1976, 51-46025; May 12, 1976, 51-53972; Jun. 24, 1976, 51-74652
Int. Cl.² G03C 5/00, 11/00
U.S. Cl. 96—38.1 16 Claims

1. A method for the manufacture of interior covering materials comprising the steps of providing a layer of a photo-setting and expandable resin composition containing a blowing agent, a photosensitizer and a reactive plasticizer, applying a colored design on the surface of said layer of resin composition with a light-screening substance, exposing the surface of said layer of resin composition to light to cause the reactive plasticizer contained in the layer not applied by the colored design to polymerize thereby causing the resin composition whose surface is not applied by the colored design to have a higher melt viscosity than the resin composition whose surface is applied by the colored design, and then heating said layer of resin composition to expand the colored design-applied portions of said layer of resin composition to form an embossed design registered to a colored design.

4,113,488

METHOD FOR IMPROVING THE LIGHT FASTNESS OF COLOR PHOTOGRAPHIC DYE IMAGES

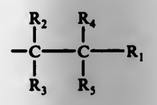
Minoru Yamada; Tadao Shishido, and Atsuaki Arai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 13, 1976, Ser. No. 686,201
Claims priority, application Japan, May 13, 1975, 50/56973
Int. Cl.² G03C 7/00, 1/40
U.S. Cl. 96—56 24 Claims

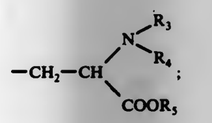
1. A method for improving the light fastness of a magenta color image in a silver halide color photograph which comprises incorporating into a layer containing a magenta color image, which is formed upon reaction of a magenta coupler and an oxidation product of an aromatic primary amine color developing agent, at least one light fastness improving phenolic compound selected from the group consisting of a phenol derivative in which at least one of the ortho positions to the hydroxy group thereof is substituted with a tertiary alkyl group, a bisphenol derivative, a phosphoric acid ester of a phenol derivative, a halophenol or a phenol derivative in which the para position to the hydroxy group is substituted with an oxygen atom and a 5- or 6-membered ring formed together with the oxygen atom is fused to the phenol nucleus of the phenol derivative and at least one synergistic light fastness improving agent selected from a sulfide or sulfoxide compound represented by the following General Formula (V):

X—B—Y (V)

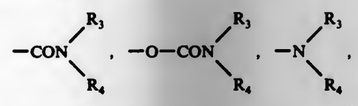
wherein B represents —S— or —SO—; X and Y, which may be the same or different, each represents $-(CH_2)_n-R_1$,



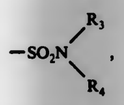
or



R_1 represents $-COOR_3$,



$-OR_6$, $-O-COR_6$, $-NHSO_2R_6$,



$-NHCOR_6$, a cyano group, an aryl group or a hydroxy group; R_2 represents an alkyl group of 1 to 30 carbon atoms, an aryl group, an aralkyl group, a hydroxy group, a cyano group or $-COOR_3$; R_3, R_4, R_5 and R_6 each represents a hydrogen atom, an alkyl group of 1 to 30 carbon atoms, an aryl group or an aralkyl group with the proviso that R_6 is not a hydrogen atom; and n is an integer of 1 to 4.

4,113,489

METHOD OF FORMING PHOTOGRAPHIC LINE AND HALF-TONE IMAGES

Mitsunori Sugiyama; Shoji Ishiguro; Nobuo Sugiyama; Yoo Iijima; Eiichi Okutsu; Haruhiko Iwano, all of Minami-ashigara; Katsumi Hosoya, and Hikoharu Hara, both of Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 1, 1972, Ser. No. 231,001
Int. Cl.² G03C 5/32, 5/38
U.S. Cl. 96—60 R 18 Claims

1. A method for forming a high-contrast silver halide photographic image, which comprises developing an exposed high-contrast silver halide photographic element containing at least 50 mol percent silver chloride with a developer containing:

(1) at least one dihydroxybenzene compound, and

(2) a sulfite ion, said sulfite ion being present in a concentration of 5 grams or less per liter of said developer, fixing said photographic element after developing and before or during fixation treating said developed photographic element with a solution containing a halide and an oxidizing agent selected from the group consisting of a bichromate, a ferricyanide, a persulfate and a perchlorate, or a solution containing a ferric ion chelate complex salt oxidizing agent.

4,113,490

METHOD FOR PROCESSING LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS

Mitsuto Fujiwhara; Syunji Matsuo; Toyoaki Masukawa; Mikio Kawasaki, and Yutaka Kaneko, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-Muro, Japan

Continuation of Ser. No. 594,492, Jul. 9, 1975, abandoned. This application Jul. 8, 1977, Ser. No. 814,121
Claims priority, application Japan, Jul. 12, 1974, 49-80321; Sep. 21, 1974, 49-109213
Int. Cl.² G03C 5/32, 5/38, 5/50, 7/16
U.S. Cl. 96—60 R 9 Claims

1. In a method for processing an imagewise exposed light-sensitive silver halide photographic material containing a coupler, which method comprises developing said silver halide photographic material with a developing bath for imagewise forming a catalytic silver and thereafter amplifying with an amplifying bath containing hydrogen peroxide, the improvement comprising treating, during said developing or after developing but before said amplifying, said exposed light-sensitive silver halide photographic material with a primary amine color developing agent and a compound capable of adsorbing on or dissolving silver halide at the exposed portion of the photographic material, thereby to effect deactivation of said unexposed silver halide, said compound being selected from the group consisting of mercapto compounds, azole compounds, oxonium compounds, silver halide solvents, benzyladenine, 8-hydroxyquinoline, o-phenanthroline, thiosugar and dyes.

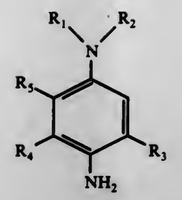
4,113,491

COLOR PHOTOGRAPHIC DEVELOPING COMPOSITION

Hidetaka Deguchi; Shoji Kikuchi; Hajime Wada; Shui Satoh, and Takaya Endo, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-muro, Japan

Filed Feb. 6, 1976, Ser. No. 656,084
Claims priority, application Japan, Feb. 10, 1975, 50-17246; Dec. 22, 1975, 50-153567
Int. Cl.² G03C 5/30, 7/16
U.S. Cl. 96—66 R 1 Claim

1. An aqueous, alkaline color photographic developing solution comprising as a color developing agent a compound, or its salt, represented by the general formula:



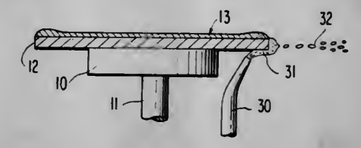
wherein R_1 is $-(R_7O)_{n_1}-(R_8O)_{n_2}-R_9$ wherein R_7 and R_8 are individually a substituted or unsubstituted alkylene group having 1 to 6 carbon atoms, said substituent being an aralkyl, aryl, alkoxy or halo group, n_1 and n_2 are individually 0 or an integer of 1 or more, the sum of n_1 and n_2 being 3 or more, and R_9 is an alkyl group, an aryl group or an aralkyl group; R_2 is a hydrogen atom, a substituted or unsubstituted alkyl group, said substituent being a hydroxy, amino, alkoxy, acylamido, carbamyl, alkylsulfonamido or aryloxy group or R_1; and R_3, R_4 and R_5 are individually a hydrogen or halogen atom, or a hydroxy, amino, alkoxy, sulfonamido, acylamido or substituted or unsubstituted alkyl group, said substituent being an acylamido or alkylsulfonamido group, provided that the alkyl group represented by each of R_2, R_3, R_4, R_5 and R_9 has 1 to 6 carbon atoms.

4,113,492

SPIN COATING PROCESS

Masamichi Sato, and Itsuo Fujii, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 8, 1977, Ser. No. 785,886
Claims priority, application Japan, Apr. 8, 1976, 51-39690
Int. Cl.² B05D 3/12
U.S. Cl. 96—67 14 Claims



1. A process of spin coating a coating composition on a surface of a base plate which comprises projecting material, which is compatible or dissolves the coating composition, in a liquid or vapor form to the opposite surface of the base plate to the surface on which the coating composition has been supplied while rotating the base plate to remove the coating composition flowing to the opposite surface and/or the edge of the base plate.

4,113,493

AMORPHOUS POLYESTER ADHESIVES FOR PHOTOGRAPHIC MATERIALS

Mohammad Akram Sandhu, Webster, and Kenneth Lloyd Tingler, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

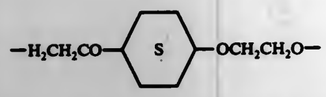
Filed Mar. 17, 1977, Ser. No. 778,635
Int. Cl.² G03C 1/76
U.S. Cl. 96—67 36 Claims

1. In a radiation-sensitive element comprising a support and having thereon at least one radiation-sensitive layer, the improvement wherein the element contains at least one layer containing an amorphous polyester adhesive having less than 1% crystallinity, capable of remaining amorphous at temperatures above about 20° C., soluble in halogenated solvents, having a glass transition temperature within the range of from about −30° C. to about +50° C., and comprising:

(a) an acid component comprising at least one phthalic acid derivative and

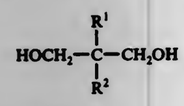
(b) a glycol component comprising:

(i) from about 15 to about 85 mole percent of at least one linear aliphatic glycol having the structure HO—R—H wherein R is selected from the group consisting of:



and $[CH_2CH_2O]_n$ wherein n is an integer of from 2 to 4; and

(ii) from about 85 to about 15 mole percent of at least one branched aliphatic glycol having the structure:



wherein R^1 and R^2 are alkyl.

34. In a photographic film unit comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

(b) a dye image-receiving layer;

(c) means for discharging an alkaline processing composition within the film unit;

(d) a neutralizing layer for neutralizing the alkaline processing composition;

(e) a spacer rail substrate; and

(f) a barrier timing layer located between the spacer rail substrate and the neutralizing layer and which is permeable by the alkaline processing composition after a predetermined time;

the film unit containing a silver halide developing agent, the improvement wherein the film unit contains at least one layer containing an amorphous adhesive having less than 1% crystallinity, capable of remaining amorphous at temperatures above about 20° C., soluble in halogenated solvents, having a glass transition temperature within the range of from about −30° C. to about +50° C., and comprising:

(a) an acid component which is terephthalic acid and

(b) a glycol component which comprises:

(i) from about 40 to about 60 mole percent of diethylene glycol and

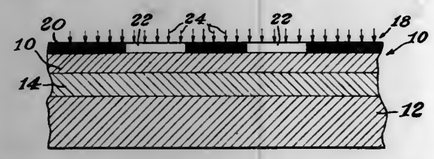
(ii) from about 60 to about 40 mole percent of neopentyl glycol.

4,113,494

STRUCTURE FOR PRODUCING IMAGED STRUCTURES

Robert W. Hallman, San Diego, Calif., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Dec. 8, 1971, Ser. No. 205,861
Int. Cl.² G03C *1/94, 1/52, 1/80*
U.S. Cl. 96—75 18 Claims



1. An imaging material comprising: a layer comprising a thin film of an energy sensitive high molecular weight condensation product of a nitrogen containing compound which is soluble in a first solvent and which upon the application of energy thereto is capable of giving off nitrogen thereby becoming insoluble in said first solvent; and a layer comprising a thin film of an image forming material, which is soluble in a second solvent and not soluble in said first solvent, the film of the condensation product and the film of the image forming material and the thinnesses thereof being such that the change in state of the condensation product upon the application of energy thereto and the dissolution by said second solvent of the image forming material in the areas where the condensation product has not undergone a change in state, can, together, take place in substantially less than 1 minute to provide an imaged product.

14. An imaging material comprising: a layer comprising a thin film of an energy sensitive material which is capable of changing upon the application of energy between two states, one of which is a state in which the material is soluble in a first solvent, the other being a state in which the material is not soluble in said first solvent; and a layer comprising as an image forming material a thin film of an opaque tellurium composition which comprises from about 50 atomic percent to 100 atomic percent tellurium and which is soluble in a second solvent, but not soluble in said first solvent, the film of energy sensitive material and the film of the tellurium composition and the thinnesses thereof being such that the change in state of the energy sensitive material upon the application of energy thereto and dissolution by said second solvent of the tellurium composition in the areas where the energy sensitive material has not undergone a change in state, can, together, take place in substantially less than 1 minute to provide an imaged product.

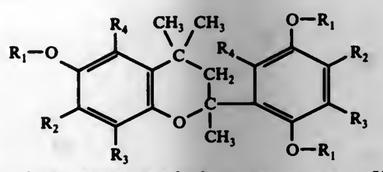
4,113,495

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CAPABLE OF PROVIDING STABLE COLOR IMAGES

Tadao Shishido; Hiroshi Hara, and Atsuaki Arai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 13, 1977, Ser. No. 806,121
Claims priority, application Japan, Jun. 11, 1976, 51-69148
Int. Cl.² G03C *1/40, 7/00*
U.S. Cl. 96—100 R 16 Claims

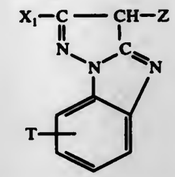
1. A color photographic silver halide lightsensitive material containig a coupler therein and, in at least one photographic layer, a compound represented by the following general formula (I):



(I)

wherein R_1 represents a hydrogen atom or an —X—Y group wherein X represents a carbonyl group or a sulfonyl group, and Y represents a straight chain, branched chain or cyclic alkyl group having 1 to 20 carbon atoms, an aryl group, an aralkyl group, an alkoxy group containing a straight chain, branched chain or cyclic alkyl group having 1 to 20 carbon atoms, an aryloxy group, an aralkoxy group, a straight chain, branched chain or cyclic alkoxycarbonyl group having 2 to 20 carbon atoms, an aryloxycarbonyl group, or an aralkoxycarbonyl group; and R_2, R_3 and R_4, which may be the same or different, each represents a hydrogen atom, a straight chain, branched chain or cyclic alkyl group having 1 to 20 carbon atoms, a straight chain, branched chain or cyclic alkoxy group having 1 to 20 carbon atoms, an aryl group, an aryloxy group, an aralkyl group, an aralkoxy group, an alkenyl group, an alkenoxy group, an acylamino group, a halogen atom, an alkylthio group containing a straight chain, branched chain or cyclic alkyl group having 1 to 20 carbon atoms, an aryl group, a diacylamino group, an acyl group having 1 to 20 carbon atoms, a sulfonamido group, a straight chain, branched chain or cyclic alkylamino group having 1 to 20 carbon atoms, a straight chain, branched chain or cyclic alkoxycarbonyl group

having 2 to 20 carbon atom or an acyloxy group having 1 to 20 carbon atoms, provided that R_2, R_3 and R_4 do not simultaneously represent hydrogen atoms, wherein said coupler is a magenta coupler represented by the general formula (II) or (III);



wherein W represents a hydrogen atom or has up to 35 carbon atoms and represents a straight chain or branched chain alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, or a cycloalkenyl group, which groups may be substituted with one or more substituents selected from the group consisting of a hydrogen atom, a nitro group, a cyano group, a monoaryl group, an alkoxy group, a monoaryloxy group, a carboxy group, an alkylcarbonyl group, a monoarylcarbonyl group, an alkoxycarbonyl group, a monoaryloxycarbonyl group, a sulfo group, an acyloxy group, a sulfamoyl group, a carbamoyl group, an acylamino group, a imido group, a ureido group, a thioureido group, a urethane group, a thiourethane group, a sulfonamido group, a heterocyclic group, an arylsulfonyloxy group, an alkylsulfonyloxy group, an arylsulfonyl group, an alkylsulfonyl group, an arylthio group, an alkylthio group, an alkylsulfinyl group, an arylsulfinyl group, an alkylamino group, a dialkylamino group, an anilino group, an N-arylanilino group, an N-alkylanilino group, an N-acylanilino group, a hydroxy group and mercapto group; an aryl group and an aryl group having 1 to 5 substituents selected from the group consisting of a halogen atom, an alkyl group, an alkenyl group, a monocycloalkyl group, an aralkyl group, a monocycloalkenyl group, a nitro group, a cyano group, a mono- or polycyclic aryl group, an alkoxy group, a mono- or polycyclic aryloxy group, a carboxy group, an alkylcarbonyl group, an arylcarbonyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfo group, an acyloxy group, a sulfamoyl group, a carbamoyl group, an acylamino group, an imido group, a ureido group, a thioureido group, a urethane group, a thiourethane group, a sulfonamido group, a heterocyclic group, an arylsulfonyloxy group, an alkylsulponyloxy group, an arylsulfonyl group, an alkylsulfonyl group, an arylthio group, an alkylthio group, an alkylsulfinyl group, an arylsulfinyl group, an alkylamino group, a dialkylamino group, an anilino group, an N-alkylanilino group, an N-arylanilino group, an N-acylanilino group, a hydroxy group and a mercapto group; a heterocyclic group or a heterocyclic group substituted with one or more substituents above described for the aryl group for W; an acyl group a thioacyl group; an alkylsulfonyl arylsulfonyl group; an alkylsulfinyl group; an arylsulfinyl group; a carbamoyl group; or a thiocarbamoyl group;

X_1 represents a hydrogen atom or has up to 35 carbon atoms and represents a straight chain or branched chain alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group and a cycloalkenyl group, which groups may be substituted with one or more substituents as described above for these groups for W; an aryl group or a heterocyclic group, each of which can be substituted with one or more substituents as described above the aryl group and the heterocyclic group for W; an alkoxycarbonyl group; an aryloxycarbonyl group; an aralkyloxycarbonyl group; an alkoxy group; an aryloxy group; an arylthio group; a carboxy group; an acylamino group; an imido group; an N-alkylacylamino group; an N-arylacylamino group; a ureido group; a thioureido group; a urethane group; a thiourethane group; an anilino group; an alkylamino group; a cycloamino group; an alkylcarbonyl group; an arylcarbonyl group; a sulfonamido group; a carbamoyl group; a sulfamoyl group; a guanidino group; a cyano group; an acyloxy group; a sulfonyloxy group; a hydroxy group; a mercapto group; a halogen atom; or sulfo group;

T represents a hydrogen atom or has up to 35 carbon atoms and represents a straight chain or branched chain alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, and a cycloalkenyl group which may be substituted with one or more substituents as described above for these groups for W; an aryl group or a heterocyclic group, each of which may be substituted with one or more substituents as described above for the aryl group and the heterocyclic group for W; a halogen atom; a cyano group; an alkoxy group; an aryloxy group; a carboxy group; an alkoxycarbonyl group; an aryloxycarbonyl group; an acyloxy group; an alkylcarbonyl group; an arylcarbonyl group; an alkylthiocarbonyl group; a sulfo group; a salfamoyl group; a carbamoyl group; an arylthiocarbonyl group; an acylamino group; an imido group; a ureido group; a thioureido group; a urethane group; a thiourethane group; a sulfonamido group; an alkylsulfonyloxy group; an arylsulfonyloxy group; an arylsulfonyl group; an alkylsulfonyl group; an arylthio group; an alkylthio group; an alkylsulfinyl group; an arylsulfinyl group; an alkylamino group; a dialkylamino group; an anilino group; an N-arylanilino group; an N-alkylanilino group; an N-acylanilino group; a hydroxy group; or a mercapto group; and

Z represents a hydrogen atom or a coupling-off group bonded to the coupling position through an oxygen atom, a nitrogen atom or a sulfur atom.

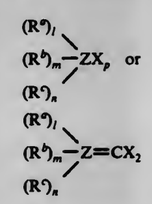
4,113,496

DRY IMAGE FORMING MATERIAL

Tetsuo Shiga; Masaru Ozaki; Tatsumi Arakawa, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1976, Ser. No. 751,778
Claims priority, application Japan, Dec. 16, 1975, 50-149054; Feb. 19, 1976, 51-16528
Int. Cl.² G03C *1/02, 3/00, 5/24, 1/76*
U.S. Cl. 96—114.1 12 Claims

1. A heat-activatable dry image forming material comprising a) and organic silver salt oxidizing agent, b) a reducing agent, and c) a component adapted by heating to interact with the silver ion of (a) to form a photosensitive interaction product, said component consisting essentially of (i) a compound or (ii) a composition which comprises a halogen atom and an organic compound containing at least one element selected from the group consisting of germanium, tin, lead, phosphorus, arsenic, antimony, bismuth, selenium, tellurium and polonium, said compound (i) having the formula



(I)

or

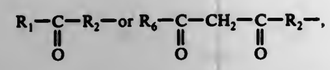
(II)

wherein R^a, R^b and R^c each independently is (1) a C_1–C_{22} alkyl group, (2) a C_1–C_{22} alkyl group substituted with a carboxyl group, a cyano group, a halogen atom, an aryl group, a hydroxyl group, an amino group, or a mono- or di-(C_1–C_5 alkyl-)amino group (3) a C_5–C_6 cycloalkyl group, (4) a C_5–C_6 cycloalkyl group substituted with a C_1–C_5 alkyl group, a C_1–C_5 alkoxy group, a halogen atom, a hydroxyl group, an amino group, or a mono- or di-(C_1–C_5 alkyl)amino group, (5) an aryl group (6) an aryl group substituted with a C_1–C_5 alkyl group, a C_1–C_5 alkoxy group, a halogen atom, a hydroxyl group, an amino group, a mono- or di-(C_1–C_5 alkyl) amino group, (7) a

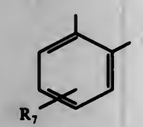
group of the formula $R_1—R_2—$, (8) a group of the formula $R_1—C\equiv C—$, (9) a group of the formula



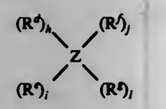
(10) a group of the formula



(11) a group of the formula $R_3—M—$, $(R_3)_2P—$ or $(R_3)_3M—$, (12) a group of the formula $—R_4—$, $—R_5—Y—R_5—$ or $—R_5—R_5—$ which forms 5- or 6- membered ring with Z, wherein R_1 is a hydroxyl group, a C_1–C_5 alkoxy group, an unsubstituted or substituted 5- or 6- membered heterocyclic group having 16 or less carbon atoms and containing in its ring at least one of oxygen and nitrogen, or a group defined in (1) to (7) above; R_2 is a C_1–C_4 alkylene group; R_3 is a group as defined in (1) to (7) above; R_4 is a C_4–C_5 alkylene group unsubstituted or substituted with a C_1–C_5 alkyl group, a C_1–C_5 alkoxy group, a mono- or di-(C_1–C_5 alkyl)amino group, an amino group or a hydroxyl group; R_5 is an ethylene group unsubstituted or substituted with a C_1–C_5 alkyl group, a C_1–C_5 alkoxy group, a mono- or di-(C_1–C_5 alkyl)amino group, an amino group or a hydroxyl group, or a group of the formula

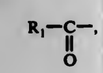


wherein R_7 is hydrogen, a C_1–C_5 alkyl group, a C_1–C_5 alkoxy group, a mono- or di-(C_1–C_5 alkyl)amino group, an amino group, a hydroxyl group or a halogen atom; M is tellurium, germanium, tin, lead or silicon; P is phosphorus; Y is oxygen, nitrogen, sulfur, M or $=MX_2$; and R_6 is a C_1–C_5 alkyl group; X is chlorine, bromine, or iodine; Z is germanium, tin, lead, phosphorus, arsenic, antimony, bismuth, selenium, tellurium or polonium; and m and n are 0 or a positive integer, and l and p are positive integers provided that in the general formula (I) above, $l+m+n+p=3$, 4 or 5 and in the general formula (II) above, $l+m+n+2=3$, 4 or 5; said composition (ii) comprising a halogen atom-containing component and an organic component having the formula (III):

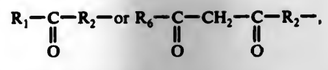


(III)

wherein R^d, R^e, R^f and R^g, each independently is (1) a C_1–C_{22} alkyl group, (2) a C_1–C_{22} alkyl group substituted with a carboxyl group, a cyano group, a halogen group, an aryl group, a hydroxyl group, an amino group, or a mono- or di-(C_1–C_5 alkyl)amino group (3) a C_5–C_6 cycloalkyl group, (4) a C_5–C_6 cycloalkyl group substituted with a C_1–C_5 alkyl group, a C_1–C_5 alkoxyl group, a halogen group, a hydroxyl group, an amino group, or a mono- or di-(C_1–C_5 alkyl)amino group, (5) an aryl group (6) an aryl group substituted with a C_1–C_5 alkyl group, a C_1–C_5 alkoxy group, a halogen group, a hydroxyl group, an amino group, a mono- or di-(C_1–C_5 alkyl) amino group, (7) a group of the formula $R_1—R_2—$, (8) a group of the formula $R_1—C\equiv C—$, (9) a group of the formula



(10) a group of the formula



(11) a group of the formula $R_3—M—$, $(R_3)_2P—$ or $(R_3)_3M—$, (12) a group of the formula $—R_4—$, $—R_5—Y—R_5—$ or $—R_5—R_5—$ which forms 5- or 6- membered ring with Z; and h is a positive integer, and i, j and k are 0 or a positive integer, provided that $h+i+j+k=2$, 3 or 4, there being no silver halide present in the material prior to said heating.

4,113,497

COMPOSITIONS WITH ORGANOHALOGEN COMPOUND AND DIAZONIUM SALTS AS PHOTOINITIATORS OF EPOXY COMPOUNDS IN PHOTO-POLYMERIZATION

Sheldon I. Schlesinger, East Windsor Township, Mercer County, N.J., assignor to American Can Company, Greenwich, Conn.

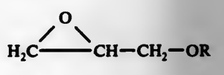
Continuation-in-part of Ser. No. 369,007, Jun. 11, 1973, abandoned. This application Feb. 17, 1976, Ser. No. 658,207

Int. Cl.[2] G03C *1/70, 1/54*

U.S. Cl. 96—115 P **6 Claims**

1. A polymerizable composition consisting of:

A monomeric or prepolymeric epoxide material or mixture thereof, said epoxide material being polymerizable to higher molecular weights cationically through the action of a cationic catalyst and being selected from the group consisting of glycidyl ethers of bisphenol A; epoxycycloalkanes; alkylene oxides; monoglycidyl ethers of the formula



wherein R is alkyl or aryl;

epoxy-esters; epoxy phenol or cresol novolacs; epoxy-vinyls; halogenated epoxides and bis(epoxy alkyl) ethers of alkylene glycols and mixtures thereof;

a radiation-sensitive catalyst precursor which decomposes upon exposure to irradiation to provide an active catalyst effective to initiate cationic polymerization of said epoxide material, said precursor being present in an amount by weight equal to from about 1 to about 50% of the epoxide material and being the combination of (1) an organohalogen selected from the group consisting of iodoform, bromoform, carbon tetrabromide and α,α'-dibromoxylene and (2) an amino-aryl diazonium salt of a complex halogenide which releases a Lewis Acid upon exposure to irradiation, the anion of said complex halogenide being selected from the formula $[MX_{n+m}]^{-m}$ wherein M is Fe, Sn, P, As, Sb, B and Bi; X is halogen, *m* is the net charge on the complex halogenide and *n* is the oxidation state of M, the relative proportion in said combination being from about 1 to about 6 moles organohalogen per mole of amino-aryl diazonium complex.

4,113,498

CORROSION INHIBITOR FOR METAL SURFACES

Josef Rones; Siegfried Möller, and Helmut Hoch, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Mar. 28, 1977, Ser. No. 781,820

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614234

Int. Cl.[2] C09D *5/08*

U.S. Cl. 106—14.13 **8 Claims**

1. An aqueous composition which, when diluted with water, is suitable for inhibiting corrosion of metallic surfaces, comprising the reaction product of:

(a) at least one aliphatic carboxylic acid having from 6 to 10 carbon atoms;

(b) at least one polyhydroxycarboxylic acid having from 4 to 10 carbon atoms; and

(c) an alkanolamine of an alkanol radical of up to 4 carbon atoms;

wherein the weight ratio of component a : b is from 1 : 0.5 to 1 : 7 and the molar ratio of c : a+b is at least 1.3 : 1.

4,113,499

SUSPENSION FOR MAKING MOLDS IN DISPOSABLE PATTERN CASTING

Valentin Nikolaevich Ivanov, Proletarsky prospekt, 15, kv. 120, and Anna Davydovna Chulkova, Abelmanovskaya ulitsa, 5, kv. 88, both of, Moscow, U.S.S.R.

Filed Mar. 18, 1976, Ser. No. 668,185

Int. Cl.[2] B28B *7/34*

U.S. Cl. 106—38.35 **6 Claims**

1. In a suspension suitable for making molds useful in disposable pattern casting, consisting essentially of from 2.5 to 9.0 percent by weight of a C_2–C_4 alkyl silicate, from 16.5 to 23.0 percent by weight of water, from 0.05 to 0.25 percent by weight of hydrochloric acid, from 0.02 to 0.10 percent by weight of a surfactant selected from the group consisting of alkyl sulfates, alkyl-aryl sulfonates, salts of sulfosuccinic acid esters, sodium salts of condensation products of fatty acid chlorides with methyl taurine, oxy-ethylated alkyl phenols and aliphatic alcohols, glycidol derivatives of alkyl phenol and sulfonated oxy-ethylated compounds, the balance being refractory filler having a grain size of not more than 50 mu; the improvement comprising from 0.2 to 1.0 percent by weight of a phosphate selected from the group consisting of diphosphates of copper, magnesium, calcium, zinc, aluminum, titanium, chromium, manganese, iron, nickel, cobalt, zirconium and barium, alumochromophospliate and their mixtures.

4,113,500

SINTERED APATITE BODY

Masatomi Ebihara; Masahide Inoue, and Tsuneo Hidaka, all of Tsurugashima, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1977, Ser. No. 802,856

Claims priority, application Japan, Jun. 2, 1976, 51-64184

Int. Cl.[2] C04B *35/00*

U.S. Cl. 106—39.5 **2 Claims**

1. A sintered apatite body comprising the product obtained by molding and sintering a mixture consisting essentially of an apatite powder, $Ca_5(PO_4)_3OH$, and 0.01 to 20% by weight of $(Ca, Mg)_3(PO_4)_2$.

4,113,501

TEMPORARY SEALANT OF A NOZZLE OPENING OF SLIDING NOZZLE

Yoshito Edamoto, No. 3515, Totsuka-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Jul. 28, 1977, Ser. No. 819,707

Int. Cl.[2] C04B *35/52*

U.S. Cl. 106—56 **6 Claims**

1. A composition adapted to be used as a temporary sealant in a nozzle opening which consists essentially of 92.0 to 98.8% by weight of at least one non-porous refractory material selected from the group consisting of siliceous sand, peridotite, chamotte, brick powder, bauxite, alumina, chromite, magnesia, dolomite, magnesite and spinel, said refractory material having a particle size distribution of more than 95% of said particles having a diameter ranging from 0.8 to 2.0 mm; 1 to 5% by weight of at least one carbonaceous material selected from the group consisting of graphite, coke, soot, charcoal, semi-coke and anthracite, said carbonaceous material having a particle size of less than 0.15 mm; and 0.2 to 3.0% by weight of at least one organic tackifier selected from the group consisting of starch, dextrin, sugar, mennan, algae starch, vegetable mucilage, glue, carboxy-methylcellulose, polyvinylates, polyvinyl alcohol, thermo-plastic resins, thermo-setting resins, cold-setting resins, pitch, asphalt, tar, heavy oil, caking coal, animal and plant drying oils.

4,113,502

ALUMINOUS REFRACTORY COMPOSITION

Harold L. Rechter, Chicago, Ill., assignor to Chicago Fire Brick Company, Chicago, Ill.

Filed Feb. 18, 1977, Ser. No. 770,117

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.[2] C04B *7/00*

U.S. Cl. 106—67 **10 Claims**

1. In a refractory composition comprising an aluminous refractory material including bentonite and a phosphate bonding agent, the improvement of having tetrasodium pyrophosphate present in the composition in amount effective to improve storage life.

4,113,503

METHOD OF FORMING A CERAMIC PRODUCT

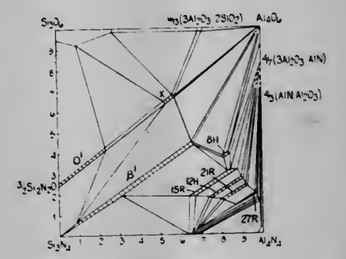
Roland John Lumby; Bernard North, both of Birmingham, and Alfred James Taylor, Solihull, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed May 31, 1977, Ser. No. 802,172

Claims priority, application United Kingdom, Jun. 3, 1976, 22923/76

Int. Cl.[2] C04B *35/58*

U.S. Cl. 106—73.4 **6 Claims**



1. A method of forming a ceramic material consisting of at least 90% by weight of a single phase silicon aluminium oxynitride obeying the formula:

$$Si_{6-z}Al_zN_{8-z}O_z$$

where *z* is greater than 0 and less than or equal to 5, comprising the steps of:

a. producing a ceramic intermediary containing a silicon aluminium oxynitride which is one of the phases indicated at 15R, 8H, 12H, 21R and 27R in the attached quaternary phase diagram, and

b. with said intermediary in powder form, heating the intermediary at a temperature between 1200° C. and 2000° C. in a protective environment and in the presence of silicon nitride and silica, at least part of the silica being present as an inherent impurity on the silicon nitride, the composition of said intermediary and the amount of said silicon nitride and silica being such that said intermediary is converted at said temperature into said ceramic material.

4,113,504

DISPOSAL OF HEAVY METAL CONTAINING SLUDGE WASTES

Kon S. Chen, Norwalk, Conn., and Helmut W. Majewski, Nyack, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 3, 1977, Ser. No. 838,510
Int. Cl.² C04B 7/02
U.S. Cl. 106—97 7 Claims

1. A method of treating heavy metal containing sludge waste to produce a cementitious solid product having reduced heavy metal leachability by mechanically mixing said waste with fixing ingredients comprising vermiculite and cement, said waste and fixing ingredients being mixed in a proportion effective to set as a cementitious solid product.

4,113,505

ZONED COLORATION

Nicolo Bellanca, and Thomas Edward Furia, both of San Jose, Calif., assignors to Dynapol, Palo Alto, Calif.

Continuation of Ser. No. 612,508, Sep. 11, 1975, abandoned, which is a division of Ser. No. 460,908, Apr. 15, 1974, Pat. No. 3,937,851. This application May 23, 1977, Ser. No. 799,795
Int. Cl.² C08L 5/00; C09H 9/00
U.S. Cl. 106—137 4 Claims

1. A permanently multicolored composition comprising a plurality of zones of viscoelastic material, said zones having dissolved therein different coloring amounts of polymeric dyes, and thereby permanently differing in color from one another.

4,113,506

EMULSIONS OF RESINIC ACID ISOCYANATES AS SIZING AGENTS FOR PAPER

Günter Sackmann, Leverkusen; Udo-Winfried Hendricks, Odenthal-Voiswinkel; Hans-Ludwig Honig; Günter Kolb, both of Leverkusen, and Friedhelm Müller, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 10, 1976, Ser. No. 749,455
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557409
Int. Cl.² C08J 3/02
U.S. Cl. 106—238 3 Claims

1. An aqueous emulsion suitable as a sizing agent for paper or paper-like materials, the organic phase of said emulsion containing (1) a resinic acid isocyanate selected from the group consisting of dehydroabietyl isocyanate, dihydroabietyl isocyanate, tetrahydroabietyl isocyanate, polyabietyl isocyanate, dehydropimaric isocyanate, dihydropimaric isocyanate, tetrahydropimaric isocyanate and polypimaric isocyanate, (2) at least one emulsifying agent for said resinic acid isocyanate selected from the group consisting of non-ionic emulsifiers and anionic emulsifiers and (3) a water-immisible solvent for said resinic acid isocyanate and said emulsifying agent selected from the group consisting of aliphatic, alicyclic and aromatic hydrocarbons having from 5 to 20 carbon atoms, chlorinated aliphatic, alicyclic and aromatic hydrocarbons having from 5 to 20 carbon atoms and mixtures of said hydrocarbons, the ratio by weight of the organic phase to the aqueous phase being between 10:1 and 1:100, the resinic acid isocyanate content of said emulsion being from 0.01 to 80% by weight and the amount of emulsifier being between 0.5 and 20% by weight, based on the weight of said resinic acid isocyanate.

4,113,507

METHOD OF PREPARING A SOLUTION FOR MAKING ELECTROCONDUCTIVE TIN OXIDE FILMS

Donald L. McHenry, Galion, and Charles H. Bechtel, Mansfield, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1976, Ser. No. 746,270
Int. Cl.² H01B 1/08
U.S. Cl. 106—287.18 3 Claims

1. In a method of preparing a tin oxide film forming composition by combining a tin compound which is decomposable at elevated temperatures for depositing a film on a substrate, a fluorine-containing compound and an organic solvent and an amine wherein the composition is subject to volatilization during mixing, the improvement comprising:

establishing a volume of the prepared tin oxide film forming composition in a container for use as a starter batch, and

preparing subsequent batches of tin oxide film forming composition by adding the tin compound, the fluorine-containing compound and the amine as separate ingredients to the volume of prepared tin oxide film forming composition while mixing, wherein the added ingredients are in amounts sufficient to provide a final volume of the tin oxide film forming composition that is from two to three times the volume of the first volume, whereby volatilization from the composition is substantially eliminated.

4,113,508

IRON BLUE PIGMENT COMPOSITION AND PROCESS FOR ITS PRODUCTION

Johan Jozef Einerhand; Leonardus Johannes Hubertus Erkens, both of Maastricht; René Johannes Laenen, Bunde, and Joseph Wilhelmus Jacobus Hoofs, Meersen, all of Netherlands, assignors to Hercules Incorporated, Wilmington, Del.

Filed Jun. 23, 1977, Ser. No. 809,336
Claims priority, application Netherlands, Jul. 7, 1976, 7607496
Int. Cl.² C09C 1/26
U.S. Cl. 106—304 10 Claims

1. In a process for producing an iron blue pigment composition in paste form by subjecting a mixture of water-wet iron blue and an oil binder to a flushing operation in the presence of an amine flushing agent until a separate water phase is formed, separating the water phase, removing residual water and recovering the resulting pigment composition, the improvement which consists of incorporating into the iron blue pigment composition at least one surfactant of the polyoxyethylene type.

4,113,509

ENZYMATICALLY PRODUCED MALTOSE-MALTOTRIOSE STARCH HYDROLYSATE

Harry Woods Leach, Willow Brook; Ronald Emil Hebeda, Woodridge, and Dennis John Holik, Naperville, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 577,523, May 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 437,452, Jan. 28, 1974, Pat. No. 3,915,618, which is a continuation-in-part of Ser. No. 349,899, Apr. 10, 1973, abandoned. This application Sep. 9, 1976, Ser. No. 721,926
Int. Cl.² C13K 1/06; C12D 13/02
U.S. Cl. 127—29 2 Claims

1. An enzymatically produced high maltose-maltotriose starch hydrolysate having a dextrose equivalent value in the range of from about 40 to about 55, and characterized as containing less than about 5%, by weight, dry basis, monosaccharides, from about 40% to about 55%, by weight, dry basis, disaccharides, from about 30% to about 45%, by weight, dry basis, trisaccharides, and about 20%, by weight, dry basis, polysaccharides having a degree of polymerization of four or more.

2. An enzymatically produced high maltose-maltotriose starch hydrolysate having a dextrose equivalent value in the range of from about 40 to about 50, and characterized as containing less than about 3%, by weight, dry basis, monosaccharides, from about 45% to about 50%, by weight, dry basis, disaccharides, and from about 30% to about 40%, by weight, dry basis, trisaccharides, and the remainder being polysaccharides having a degree of polymerization of four or more.

4,113,510

PROCESS FOR REGENERATING FOUNDRY SAND

Gerard Yves Richard, Precy sur Oise, France, assignor to Societe d'Applications de Procedes Industriels et Chimiques S.A.P.I.C., Asnieres, France

Continuation of Ser. No. 582,657, Jun. 2, 1975, abandoned. This application Oct. 8, 1976, Ser. No. 730,829
Claims priority, application France, Jun. 7, 1974, 74 19781
Int. Cl.² B08B 3/08
U.S. Cl. 134—2 7 Claims

1. In a process for reclaiming a granular material in the form of particles of foundry sand which had been used for molds or cores and were bound by resins, in order to eliminate a pellicle of resinous binder material accumulated around each of the particles for reconstituting the characteristics of the granular material, the improvement comprising subjecting said particles to a chemical oxidizing treatment effective to oxidize said resinous binder pellicle with or without a chemical neutralization treatment by contacting said particles with a liquid containing, for said oxidizing treatment, a peroxide oxidant, the amount of said oxidant and the time of said chemical oxidizing treatment being sufficient to remove said pellicles of resinous binder about said particles, and, for the neutralization treatment, by contacting said particles with the same or a different liquid containing a base or an alkaline salt.

4. In a process for reclaiming a granular material in the form of particles of foundry sand which had been used for molds or cores and were bound by resins, in order to eliminate the pellicle of resinous binder material accumulated around each of the particles for reconstituting the characteristics of the granular material, the improvement comprising subjecting said particles to a chemical oxidizing treatment effective to oxidize said resinous binder pellicle with or without a chemical neutralization treatment by contacting said particles with a liquid containing, for said oxidizing treatment, an oxidant selected from the group consisting of potassium perchlorate, potassium dichromate, lead chromate, lead oxide, manganese dioxide, ammonium perchlorate, potassium nitrate, ammonium dichromate, potassium permanganate, nitrobenzene, sodium vanadate, sodium meta vanadate, sodium molybdate, sodium tungstate, titanate of dipropyl ditriethanolamine, n-propyl tannate, sodium chlorate, sodium chlorite, potassium chlorate, sodium perborate, sodium percarbonate, and sodium persulfate, the amount of said oxidant and the time of said chemical oxidizing treatment being sufficient to remove said pellicles of resinous binder about said particles, and, for the neutralization treatment, by contacting said particles with the same or a different liquid containing a base or an alkaline salt.

4,113,511

LIQUID ADDITIONS TO FUSED CHEMICAL BATHS

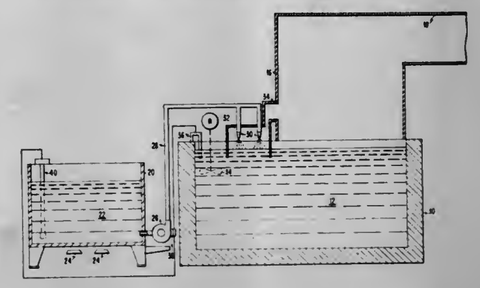
Robert H. Shoemaker, 1327 Northwood Blvd., Royal Oak, Mich. 48073, and William G. Wood, 274 Kercheval, Grosse Pointe Farms, both of Mich. 48236

Filed Jan. 17, 1977, Ser. No. 759,763
Int. Cl.² C23G 1/28; B01F 1/00
U.S. Cl. 134—10 6 Claims

1. A method of introducing a soluble chemical composition into an essentially non-aqueous fused chemical bath of which said composition constitutes a dissolved constituent, and wherein material to be treated is periodically introduced and removed from the bath, comprising the steps of,

dissolving said chemical composition in a volatile solvent having a boiling point less than the temperature of said bath,

providing spray nozzle means disposed to spray liquid droplets above said bath, and spraying said dissolved composition from said nozzle means above said bath in droplet size



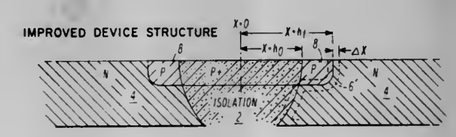
sufficiently small to allow said solvent to evaporate before said sprayed composition impinges on the surface of said bath, and agitating said bath, whereby the solvent will evaporate and the composition will enter the bath and become mixed therewith essentially free of volatile solvent.

4,113,512

TECHNIQUE FOR PREVENTING FORWARD BIASED EPI-ISOLATION DEGRADATION

Robert Lee Ayers, Manassas, and Raymond Weaver Hamaker, Catharpin, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,646
Int. Cl.² H01L 21/265
U.S. Cl. 148—1.5 9 Claims



1. A method of fabricating a semiconductor device so as to prevent forward biased epitaxial isolation junction degradation, comprising the steps of:

forming an isolation region of a first conductivity type having a width in a lateral direction and a first concentration in an epitaxial layer of a second conductivity type;

forming a guard ring of said first conductivity type having a second concentration less than said first concentration surrounding and contiguous with said isolation region extending beyond said isolation region in said lateral direction to prevent diffusion of ionic contaminants from said isolation region when the isolation region is forward biased relative to said epitaxial layer.

4,113,513

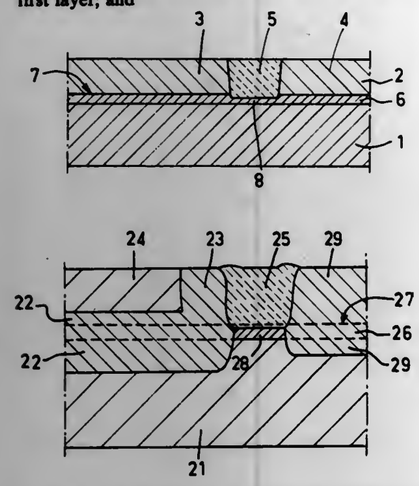
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY NON-SELECTIVELY IMPLANTING A ZONE OF PRE-DETERMINED LOW RESISTIVITY

Michel deBrebisson, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1977, Ser. No. 764,587
Claims priority, application France, Feb. 16, 1976, 76 04169
Int. Cl.² H01L 21/265
U.S. Cl. 148—1.5 7 Claims

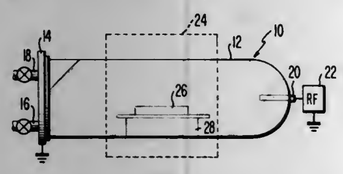
1. A method of manufacturing a semiconductor device which comprises:

providing a substrate of a first type conductivity semiconductor material;
providing a first semiconductor layer of said first type conductivity and having a higher doping concentration than that of said substrate over the entire substrate surface by ion implantation;
epitaxially growing a second semiconductor layer on said first layer; and



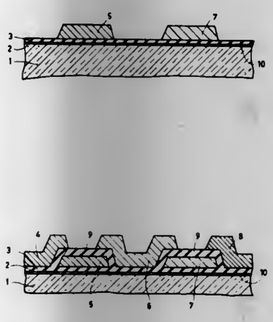
providing a localized zone of electrically isolating material which extends downwardly from the surface of said second layer through said second layer, and which contacts but does not extend entirely through said first layer, said localized zone providing electrical isolation between two regions of the second type conductivity situated on either side of said localized zone.

4,113,514
METHOD OF PASSIVATING A SEMICONDUCTOR DEVICE BY TREATMENT WITH ATOMIC HYDROGEN
Jacques Isaac Pankove, and Murray Alfred Lampert, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Jan. 16, 1978, Ser. No. 869,641
Int. Cl.² H01L *21/26, 21/265*
U.S. Cl. 148—1.5 **4 Claims**



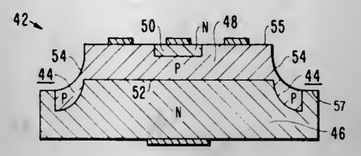
1. A method of passivating a semiconductor device having at least one active component disposed therein comprising exposing said device to atomic hydrogen at a temperature lower than about 450° C.

4,113,515
SEMICONDUCTOR MANUFACTURING METHOD USING BURIED NITRIDE FORMED BY A NITRIDATION TREATMENT IN THE PRESENCE OF ACTIVE NITROGEN
Else Kooi, and Joseph Gijsbertus vanLierop, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 592,867, Jul. 3, 1975, abandoned. This application Mar. 29, 1976, Ser. No. 671,419
Claims priority, application Netherlands, Jun. 4, 1975, 7506594
Int. Cl.² H01L *21/265, 21/31*
U.S. Cl. 148—1.5 **25 Claims**



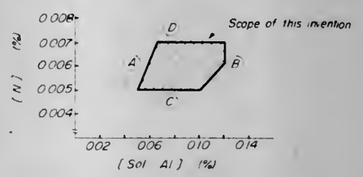
1. A method of manufacturing a semiconductor device, comprising providing a body having a silicon semiconductor surface region covered at least partly with a silicon oxide-containing layer, thereafter subjecting the silicon oxide-covered silicon region to a nitriding heat treatment in an atmosphere containing nitrogen capable of passing through the silicon oxide layer and chemically reacting at the silicon-silicon oxide interface until there is formed at the interface a nitrogen-containing material buried zone of a thickness capable of maintaining desired properties of the silicon portion under the buried zone during subsequent processing, and thereafter subjecting the body to processing which would cause a change in the properties of any silicon portions present which are not covered by the buried zone.

4,113,516
METHOD OF FORMING A CURVED IMPLANTED REGION IN A SEMICONDUCTOR BODY
Samuel Ponczak, and John Aaron Olmstead, both of Somerville, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Jan. 28, 1977, Ser. No. 763,721
Int. Cl.² H01L *21/265*
U.S. Cl. 148—1.5 **5 Claims**



1. A method of forming a region having a varying sheet resistivity in a body of semiconductor material which comprises the steps of:
providing a body of semiconductor material having at least one concave curved surfae along a side edge thereof; and
ion implanting conductivity modifying ions beneath said curved surface whereby a layer having a varying sheet resistivity is formed thereunder.

4,113,517
METHOD OF MAKING COLD-REDUCED AL-KILLED STEEL STRIP FOR PRESS-FORMING BY CONTINUOUS CASTING AND CONTINUOUS ANNEALING PROCESS
Kazuhide Nakaoka; Kenzi Araki; Akihiko Nishimoto, all of Yokohama; Kozi Iwase, Machida, and Haruo Kubotera, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 548,522, Feb. 10, 1975, abandoned. This application Aug. 12, 1976, Ser. No. 713,793
Claims priority, application Japan, Apr. 26, 1974, 49-46672
Int. Cl.² C21D *9/48*
U.S. Cl. 148—2 **3 Claims**



1. An improved method of making a press-formable cold reduced, Al-killed steel strip having low yield point and retarded aging properties, comprising the steps of
selectively controlling Nitrogen and Soluble Aluminum in the usual chemical composition of Al-killed steel in such a manner that the ratio of Sol. Al/N is within the range of 10 to 20 with N content being $0.005\% \leqq N \leqq 0.007\%$; and Sol. Al content being $10 \times N\% \leqq$ Sol. $\leqq 0.12\%$;
continuously casting said molten steel;
coiling, at the rolling stage, said steel strip at a temperature within the range of 700° C to 800° C to effect self-annealing; and
introducing the thusly treated steel strip into a continuous annealing process including an overaging treatment, said annealing process comprising the steps of
(A) heat from ambient temperature to 700 to 730° in 30 to 90 seconds;
(B) holding at the temperature of step (A) for 30 to 90 seconds;
(C) cooling at the rate of less than 30° C/sec to 550 to 650° C;
(D) rapidly cooling from the temperature of step (C) at the rate of more than 200° C/sec to ambient temperature;
(E) reheating to a temperature within the range of 300 to 500° C;
(F) slowly cooling from the temperature of step (E) but held within the range of 300 to 500° C for 30 to 180 seconds; and
(G) cooling at the rate of 3 to 170° C/sec.

4,113,518
METHOD OF MANUFACTURING A CORROSION RESISTANT ROTOR ASSEMBLY
David L. Henderson, O'Fallon, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 2, 1976, Ser. No. 663,146
Int. Cl.² C23F *7/10*
U.S. Cl. 148—6.15 Z **12 Claims**

1. A method of making a rust-resistant rotor comprising
(a) a step of forming an assembled rotor, said step including mounting a laminated rotor core on a steel shaft,
(b) thereafter a step of treating the assembled rotor in its entirety with surface oil retention solution, comprising an aqueous metal phosphate solution, said step including wicking said solution between laminations of said laminated rotor core, and
(c) thereafter a step of coating the exposed surfaces of said assembled rotor with oil, said step including wicking said oil between laminations of said laminated rotor core.

4,113,519
PHOSPHATING OF METALLIC SUBSTRATE WITH ELECTROLYTIC REDUCTION OF NITRATE IONS
Shoji Oka, Nara; Ryoichi Murakami, Kyoto, and Akiko Sueyoshi, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Apr. 27, 1977, Ser. No. 791,470
Claims priority, application Japan, Apr. 27, 1976, 51-49023
Int. Cl.² C23F *7/10*
U.S. Cl. 148—6.15 R **17 Claims**

1. In a method for phosphating the surface of a metallic substrate by treatment with a phosphating solution comprising nitrite ions and nitrate ions in an aqueous acidic medium, the improvement wherein the supply of the nitrite ions to the phosphating solution is carried out by electrolytic reduction of the nitrate ions therein by passing a direct current between an electrode as the cathode and an electrode as the anode dipped in the phosphating solution.

4,113,520
METHOD OF FORMING AN ALUMINUM OXIDE COATING
Geoffrey A. Dorsey, Jr., Danville, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Aug. 13, 1976, Ser. No. 714,157
Int. Cl.² C23F *7/06*
U.S. Cl. 148—6.27 **9 Claims**

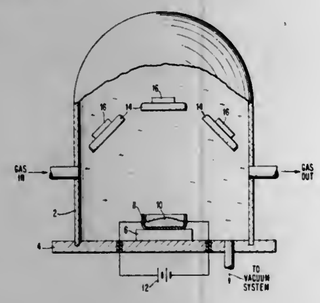
1. A method for developing an oxide coating less than 0.5 microns in thickness on an aluminum or aluminum alloy workpiece, wherein said oxide coating consists essentially of oxidized aluminum and alloy constituents from the metal of the workpiece, comprising treating the workpiece with an aqueous solution containing at least 0.001 gram/liter of a difficultly soluble magnesium compound, expressed as $MgCO_3$, with the temperature of the solution ranging from about 60° C. to the boiling point thereof, and with the pH of the solution ranging from 7–8.5.

4,113,521

PROCESS FOR PRODUCING MAGNETIC PARTICLES BY VACUUM EVAPORATION OF IRON WITH COLLECTION ON A MAGNETIZED SURFACE

Robert F. Bush, Poughkeepsie, and Joseph W. Mitchell, Montrose, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 460,842, Apr. 15, 1974, abandoned.
This application May 20, 1977, Ser. No. 799,034
The portion of the term of this patent subsequent to Jun. 12, 1994, has been disclaimed.
Int. Cl.[2] B22F *9/00*; C23F *7/06*; H01F *1/06*
U.S. Cl. 148—6.35 7 Claims



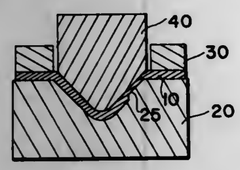
1. In a method for producing magnetic particles for use in making magnetic inks comprising the steps of
(a) placing substantially pure iron in a refractory support in a chamber that has been evacuated to a pressure of 10^{-6} mm.,
(b) backfilling said chamber with argon,
(c) heating said iron to its evaporation temperature and retaining it at such temperature until all or a portion of said iron has been evaporated,
(d) collecting said evaporated particles on a magnetized surface lying in a straight line from said refractory support, and
(e) oxidizing said collected particles at normal room temperatures and pressures.

4,113,522

METHOD OF MAKING A METALLIC STRUCTURE BY COMBINED SUPERPLASTIC FORMING AND FORGING

C. Howard Hamilton, Thousand Oaks, and Leonard A. Ascani, Palos Verdes Estates, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 28, 1976, Ser. No. 736,671
Int. Cl.[2] C22F *1/00*
U.S. Cl. 148—11.5 R 12 Claims



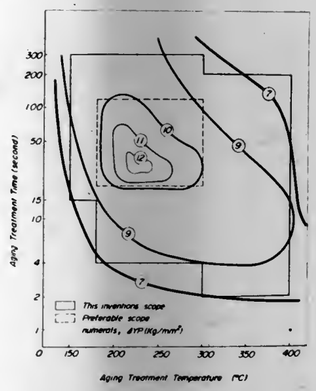
1. A method of making metallic structures comprising the steps of:
providing a metal preform having superplastic characteristics;
providing a shaping member substantially defining the desired final configuration of said preform;
bringing said preform to within a temperature range suitable for superplastic forming of said preform;
inducing tensile stress in said preform by applying pressure to said preform sufficient to cause at least a portion of said preform to expand superplastically; and
forging by increasing said pressure at least a portion of said preform against said shaping member.

4,113,523

PROCESS OF MAKING HIGH TENSION COLD-REDUCED AL-KILLED STEEL EXCELLENT IN ACCELERATED AGING PROPERTY

Kuniki Uchida; Kenzi Araki; Hiroai Narita; Shiro Fukunaka, and Takao Kurihara, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 491,375, Jul. 23, 1974, abandoned. This application Mar. 10, 1977, Ser. No. 776,288
Claims priority, application Japan, Jul. 25, 1973, 48/83045
Int. Cl.[2] C21D *7/02, 7/13, 7/14*
U.S. Cl. 148—12.3 1 Claim



1. Process of making a high tension cold-reducing steel sheet comprising the steps of
(A) preparing steel consisting essentially of 0.04 to 0.12% carbon, 0.10 to 1.60% manganese, and 0.01 to 0.20% soluble aluminum and balance essentially of iron;
(B) hot rolling said steel at a finishing temperature of more than 800° C and a coiling temperature of less than 630° C to make Al and N partially solute in the steel;
(C) cold reducing said steel;
(D) and fully continuously annealing said steel by the sequential steps consisting essentially of
(a) heating said steel to a temperature within the range of more than A_1 to 850° C at the heating rate of more than 200° C/min and holding said temperature for 10 to 120 seconds,
(b) rapidly cooling said heated steel at a rate of more than 3,000° C/sec from said held temperature by jet stream of water to room temperature, thereby to form a dual phase structure of ferrite-martensite,
(c) reheating said steel to a temperature within the range of 180° C to 300° C and holding at said temperature for 20 to 120 seconds thereby to cause part of said carbon to remain in solution in said steel as well as partially precipitate carbon, and
(d) cooling and coiling thereby to impart bake hardening properties to the steel.

4,113,524

METHOD OF ASSEMBLING COMPONENTS ON PRINTED CIRCUIT BOARDS

George Katz, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 24, 1977, Ser. No. 771,679
Int. Cl.[2] B23K *35/34*
U.S. Cl. 148—23 5 Claims

1. An extrudable, non-flowing, water soluble composition comprising 100 parts by weight of a solid polyalkylene glycol, from about 10 to about 30 parts by weight of soap, from about 10 to about 30 parts by weight of glycerin and from about 10 to about 100 parts by weight of water.

4,113,525

CARBOXYLIC ACID-CONTAINING WAX FLUXES

Robert A. Stayner, Lafayette; Richard C. Fox, San Rafael, and Thornton K. Jones, Greenbrae, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 30, 1977, Ser. No. 811,504
Int. Cl.[2] B23K *35/34*
U.S. Cl. 148—23 6 Claims

1. A wax-flux composition comprising:
(a) a major amount of a wax having a melting point between 40° and 100° C; and
(b) an amount effective to cause fluxing, at or below the soldering temperature of the piece to be soldered, of a wax-dispersible C_{12} to C_{28} aliphatic carboxylic acid.

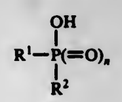
4,113,526

WAX FLUX COMPOSITIONS

Robert A. Stayner, Lafayette; Richard C. Fox, San Rafael, and Thornton K. Jones, Greenbrae, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 30, 1977, Ser. No. 811,505
Int. Cl.[2] B23K *35/34*
U.S. Cl. 148—23 10 Claims

1. A wax-flux composition comprising:
(a) a major amount of a wax having a melting point between 40° and 100° C; and
(b) an amount effective to cause fluxing at or below the soldering temperature of the piece to be soldered of a waxsoluble phosphorus-containing acid of the formula



wherein R^1 and R^2 are hydrogen, hydroxyl, hydrocarbyl or hydrocarbyloxy and wherein the total number of carbon atoms contained in said R^1 and R^2 groups is from 8 to 30 carbon atoms, and n is 0 or 1.

4,113,527

CHROME STEEL CASTING

John Arden Larson, Easton, and Robert Bowlby Fischer, Gouldsboro, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jul. 27, 1977, Ser. No. 819,355
Int. Cl.[2] C22C *38/12*
U.S. Cl. 148—36 4 Claims

1. A chromium nickel casting manufactured from a steel consisting of:

Ingredient	Wt. Percent
Carbon (C)	less than 0.06
Manganese (Mn)	less than 1.0
Phosphorus (P)	less than 0.04
Sulfur (S)	less than 0.04
Silicon (Si)	less than 0.75
Aluminum (Al)	0.05 to 0.12

-continued

Ingredient	Wt. Percent
Chromium (Cr)	4.75 to 5.75
Molybdenum (Mo)	0.45 to 0.65
Nickel (Ni)	2.75 to 3.50
Iron (Fe)	essentially balance

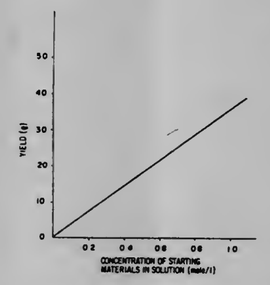
the finished casting manufactured to the standards of ASTM A 217 Gr. C5 and further having a first normalizing heat treatment at approximately 1900° F. (1038° C.) for 1 hour per inch of thickness, followed by air cooling to room temperature, followed by a second normalizing heat treatment at approximately 1600° F. (871° C.) for 1 hour per inch of thickness, followed by air cooling to room temperature, followed by a tempering at approximately 1200° F. (649° C.) for 2 hours per inch of thickness.

4,113,528

METHOD OF PREVENTING DETERIORATION OF CHARACTERISTICS OF FERROMAGNETIC METAL OR ALLOY PARTICLES

Yasumichi Tokuoka, and Kazumasa Fukuda, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1976, Ser. No. 744,115
Claims priority, application Japan, Dec. 8, 1975, 50-146161
Int. Cl.[2] H01F *1/09*
U.S. Cl. 148—105 4 Claims



1. A process for preparing ferromagnetic metal or alloy particles which comprises reducing ferromagnetic metal ions in a solution with a reducing agent under a magnetic field to obtain a slurry of ferromagnetic metal or alloy particles;
admixing with said slurry water in a volume quantity at least 30 times that of said slurry, and a quantity of air and at least one oxidizing agent selected from the group consisting of chromates, peroxides and permanganates sufficient to oxidize the surface of said ferromagnetic metal or alloy particles; adjusting the pH to range from about 6 to about 8; and recovering ferromagnetic metal or alloy particles having an oxidized surface.

4,113,529

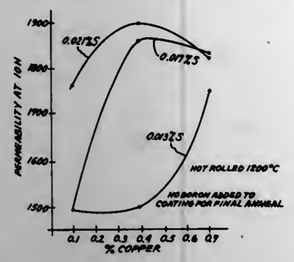
METHOD OF PRODUCING SILICON-IRON SHEET MATERIAL WITH COPPER AS A PARTIAL SUBSTITUTE FOR SULFUR, AND PRODUCT

Howard C. Fiedler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,504
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—111 7 Claims

1. The method of producing grain oriented silicon-iron sheet which comprises the steps of providing a silicon-iron melt containing 2.2 to 4.5 percent silicon, between about three and 35 parts per million boron, between about 30 and 75 parts per million nitrogen in the ratio to boron of one to 15 parts per part of boron, from 0.02 to 0.05 percent manganese, and sulfur and copper in amounts ranging respectively from 0.001 to 0.013

percent and 1.3 to 0.1 percent in the lower portion of the said manganese range and ranging respectively from 0.002 to 0.018 and 0.9 to 0.1 percent in the higher portion of said manganese range whereby the ratio of manganese to sulfur plus sulfur-equivalent copper is not greater than 1.7, casting the melt and



hot rolling the resulting billet to form an elongated sheet-like body, cold rolling the hot rolled body to provide a sheet of final gauge thickness, and subjecting the resulting cold-rolled sheet to a final heat treatment to decarburize it and to develop (110)[001] secondary recrystalline texture in it.

4,113,530

METHOD FOR FORMING A HEAT-RESISTANT INSULATING FILM ON A GRAIN ORIENTED SILICON STEEL SHEET

Hiroshi Shimanaka, Funabashi; Toshio Ichida, and Shigeru Kobayashi, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 570,173, Apr. 21, 1975, abandoned. This application Jan. 18, 1977, Ser. No. 760,376
Claims priority, application Japan, Apr. 23, 1974, 49-45036
Int. Cl.² H01F *1/04*
U.S. Cl. 148—113 **5 Claims**

1. In a method for forming a heat resistant insulating film on a grain oriented silicon steel sheet, wherein a cold rolled silicon steel strip containing 2–4% by weight of Si and having a desired final gauge is subjected to a decarburization annealing at a temperature of 700°–900° C for 1–10 minutes in wet hydrogen to remove carbon contained in the steel strip and at the same time to oxidize silicon contained in the strip, forming an oxide film containing silica (SiO_2) on the surface of the steel strip, and an annealing separator consisting mainly of MgO is applied on the steel strip after which the steel strip is wound up in the form of a coil and subjected to a final annealing at a temperature of 1,000°–1,200° C under hydrogen atmosphere, the improvement comprising using an annealing separator containing 1–10% by weight of titanium oxide (TiO_2) having such a particle size that at least 99.5% by weight of the agglomerated particles passes through 325-mesh (44u) Tyler standard sieve and having a dispersion degree in water of at least 85%, so as to substantially avoid black $MgTi_2O_4$ particle formation.

4,113,531

PROCESS FOR FABRICATING POLYCRYSTALLINE INP-CDS SOLAR CELLS

Kenneth W. Zanio, Agoura, and Lewis M. Fraas, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

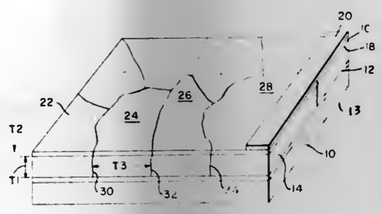
Filed Oct. 26, 1976, Ser. No. 735,560
Int. Cl.² H01L *21/36, 21/477, 27/14*
U.S. Cl. 148—174 **4 Claims**

1. A process for fabricating a polycrystalline indium phosphide-cadmium sulphide (InP/CdS) solar cell having large crystallites and a very thin layer of indium phosphide which comprises the steps of:

(a) depositing a layer of polycrystalline cadmium sulphide on a chosen substrate,

(b) heating said cadmium sulphide layer at a predetermined elevated temperature and time sufficient to induce a change in the crystal structure of said cadmium sulphide layer and substantially increase the size and lateral dimension of crystallites in said cadmium sulphide layer from approximately one micrometer to a lateral dimension of the order of 20 micrometers, and thereafter

(c) depositing a layer of polycrystalline indium phosphide on said polycrystalline cadmium sulphide layer and having an optical absorption length Λ and a thickness in the range of between 1 and 4 times Λ and further having relatively large crystallites with replicated grain sizes and boundaries of approximately the same lateral spacing as those in said cadmium sulphide layer, whereby the lateral grain boundary spacing in both said cadmium sulphide and indium phosphide layers is between 5 and 20 times Λ, and substantial numbers of photon generated carriers in said indium phosphide layer will cross a PN junction between said indium phosphide and cadmium sulphide layers without or before reaching said grain boundaries therein, and enabling the relatively low cost polycrystalline semiconductor fabrication of InP/CdS solar cells utilizing relatively small amounts of indium.

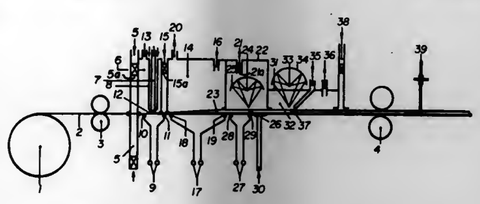


4,113,532

PROCESS FOR PRODUCING LARGE-SIZE SUBSTRATE-BASED SEMICONDUCTOR MATERIAL UTILIZING VAPOR-PHASE DEPOSITION AND SUBSEQUENT RESOLIDIFICATION

Bernhard Authier; Rudolf Griesshammer, both of Burghausen; Franz Köppl, Altötting; Winfried Lang, Burghausen; Erhard Sirtl, Marktl, Inn, and Heinz-Jörg Rath, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Nov. 1, 1976, Ser. No. 737,249
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638269
Int. Cl.² H01L *21/477, 21/84, 31/00*
U.S. Cl. 148—174 **10 Claims**



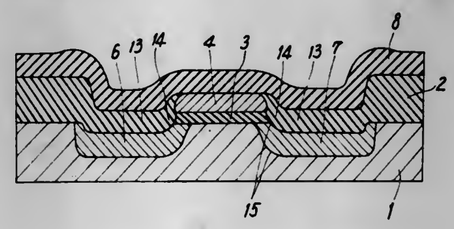
1. A process for producing large-size, substrate-based semiconductor material of silicon deposited on a substrate body from the gaseous phase, which comprises the steps of heating a substrate body by direct current passage to deposition temperature, contacting said body with a gaseous silicon-containing mixture to which a dopant has been added, until a deposit having a thickness from about 10 to 200 μm has been formed, subsequently melting 80 to 100% of the deposited silicon layer from the free surface downward, and resolidifying the molten silicon by adjustment of a temperature gradient from the substrate body upwardly to cause an oriented growth of the resolidifying silicon from the substrate body towards the free surface.

4,113,533

METHOD OF MAKING A MOS DEVICE

Tomisaburo Okumura, Kyoto; Hiroshi Okazaki, Takatsuki; Akira Tsuchitani, Joyo, and Seiji Ueda, Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Jan. 28, 1977, Ser. No. 763,679
Claims priority, application Japan, Jan. 30, 1976, 51-9871
Int. Cl.² H01L *29/78*
U.S. Cl. 148—187 **9 Claims**



1. A method of making a metal-oxide semiconductor device, said method including the following steps:

A. sequentially forming on a predetermined part of single crystal silicon substrate, (1) a silicon oxide film; (2) a polycrystalline film which, under processing conditions forms a conductor film, having a specified pattern, and serving as a diffusion mask thereafter as a gate electrode; and

B. diffusing an impurity into said substrate of step A from openings which are the parts other than those covered by said polycrystalline silicon film and said antioxidation film, said process characterized in that there is included the steps of

(i) forming an antioxidation film for preventing oxidation of said polycrystalline silicon film such that the antioxidation film has the same pattern as said polycrystalline silicon film, and the subsequent step of

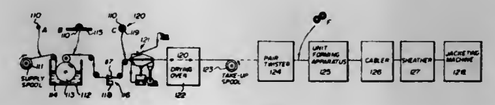
(ii) thermally oxidizing side-end parts of the silicon oxide film underneath said polycrystalline silicon film and also the specified parts of the surface of said silicon substrate.

4,113,534

PAPER PULP INSULATED CABLE AND METHOD OF MANUFACTURE

Thomas Charles Pound, Kingston, and Eric John Gouldson, Shawbridge, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 31, 1976, Ser. No. 672,366
Int. Cl.² H01B *13/06, 3/52*
U.S. Cl. 156—56 **23 Claims**



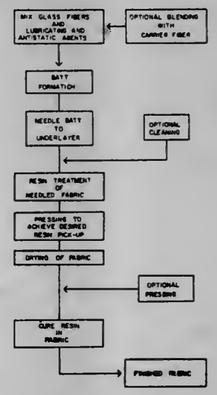
1. A method of making paper pulp insulated cable of 28 guage copper conductor comprising the steps of forming a paper pulp slurry having an average fiber length of 2.5 mm and a freeness of 480, applying the wet paper pulp from said slurry to said conductor in the amount of approximately 0.0194 grams/foot, and heating said conductor and said applied paper pulp to approximately 1500° F., 1150° F., and 650° F. for approximately 2 seconds at each temperature, twisting said insulated wire into pairs, stranding said pairs into units, and cabling said units into a core, sheathing said core with at least one layer.

4,113,535

HIGH TEMPERATURE FILTER FABRICS

Leonard R. Lefkowitz, Latham, and W. Hearik Krohn, Chatham, both of N.Y., assignors to Huyck Corporation, Wake Forest, N.C.

Division of Ser. No. 680,602, Apr. 27, 1976, Pat. No. 4,070,519. This application Sep. 12, 1977, Ser. No. 832,316
Int. Cl.² B32B *5/06*
U.S. Cl. 156—148 **11 Claims**



1. A method of making a filter fabric comprising the steps of:

(a) mixing a lubricating agent with glass fibers having a diameter of from 2–8 microns;

(b) forming a non-woven batt layer from said glass fibers;

(c) forming a base layer from mineral fibers;

(d) resin impregnating and needling together said base layer and said batt;

(e) pressing said fabric to a degree sufficient to obtain a predetermined resin solids pickup;

(f) drying said fabric at a temperature sufficient to remove any liquid solvent; and

(g) heating said fabric at a temperature sufficient to cure said resin.

4,113,536

METHOD AND APPARATUS FOR AUTOMATICALLY MAKING FRAMES

Peter Grossmann, An der Muhle 27, 6570 Kirn, Germany

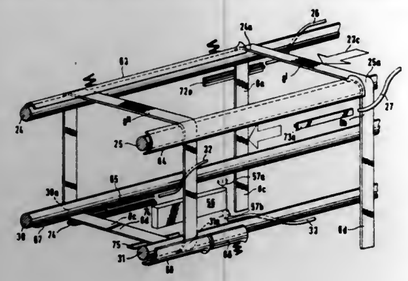
Filed Apr. 16, 1976, Ser. No. 677,541
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1975, 2517672
Int. Cl.² B29C *17/02, 24/00, 27/00*
U.S. Cl. 156—218 **3 Claims**

1. The method for making plastic frames having a plurality of straight portions connected by bent portions which comprises

heating elongated plastic workpieces of a heat sealable heat softenable plastic at longitudinally spaced areas corresponding to the portions to be bent,

successively moving each workpiece after it is heated continuously in a direction transverse to the direction of its length past a plurality of sets of stationary bending tools to

bend said workpiece successively at said heated areas and to bring the free ends of said workpiece into abutment,



heating the free ends of said workpiece,
and forcing the ends against one another to join the ends.

4,113,537

HEAT RESISTANT NONWOVEN FABRIC AND METHOD OF MANUFACTURING SAME

Werner Schäfer, Birkenau; Holger Buchwald, Hemsbach, and Dieter Bischoff, Furth, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Dec. 3, 1975, Ser. No. 637,488
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1974, 2458037; Dec. 7, 1974, 2458038
Int. Cl.² B32B *27/02*
U.S. Cl. 428—220 8 Claims

1. A high-temperature-resistant nonwoven fabric comprising crystalline synthetic fibers bonded to one another by fusion, said fibers comprising at least one polyaryl amide, polyaryl imide, polyaryl ester or polyaryl anhydride, said fibers being resistant to temperatures up to about 350° C. and the fabric being resistant to prolonged exposure to a temperature of at least 200° C.

4,113,538

METHOD OF AND MEANS FOR MOUNTING LABELS

Russell W. Green, P.O. Box 155, Wayne, Ill. 60184

Filed Aug. 24, 1976, Ser. No. 717,232
Int. Cl.² B32B *31/00*
U.S. Cl. 156—247 5 Claims



1. The method of adhesively securing to a sheet an adhesive coated label having a split backing covering the adhesive comprising laying said label on with its backing contacting said sheet, folding said label along said split to provide an upstanding portion, applying pressure against the side opposite the backing of said upstanding to cause the related backing portion to peel off said label and force said uncovered adhesive against said sheet, folding the other half of said label along said split to provide an upstanding portion, and applying pressure against the side opposite the backing of said upstanding portion to cause the related backing portion to peel off said label and force said uncovered adhesive against said sheet.

4. The method of removing a split backing from an adhesive coated label while attaching said label to a surface comprising the steps of folding said label upwardly along the line of said split to provide an upstanding portion, locating a straight edge at the fold on the side opposite the backing and advancing it against the upstanding portion to cause the related backing portion to peel off and to press the adhesive coated label portion against the surface, folding the other unattached portion of the label upwardly along the line of the split, locating a straight edge at the fold on the side opposite the backing and advancing it in the other direction against said upstanding portion to cause the related backing portion to peel off and to press the last named adhesive coated label portion against said surface.

4,113,539

OLEFIN RESIN-METAL BONDED STRUCTURE

Hisashi Hotta, and Fumio Mori, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Division of Ser. No. 678,053, Apr. 19, 1976, Pat. No. 4,062,997.
This application Jun. 20, 1977, Ser. No. 808,301
Int. Cl.² C09J *5/00, 7/00*
U.S. Cl. 156—306 1 Claim

1. A process for the preparation of olefin resin-metal bonded structure, which comprises applying on a metal substrate a primer coating composition formed by dissolving, in a mixed solvent consisting of at least two organic solvents (S1) and (S2), (A) an oxidized polyethylene having an oxygen content of 0.1 to 10% by weight, a saponification value of 2 to 200, a density of 0.90 to 1.2 and an average molecular weight of 1000 to 50000 and (B) a coating-forming base resin having a density higher by at least 0.1 than the oxidized polyethylene and containing a functional group selected from hydroxyl and carbonyl groups at a concentration of at least 1 meq/g, the mixing weight ratio of the oxidized polyethylene (A) and the base resin (B) being within the following range:

(A) : (B) = from 0.2 : 99.8 to 45 : 55,

the difference of the boiling point of the solvent (S1) having a highest boiling point among the mixed solvent-constituting solvents and the boiling point of the solvent (S2) having a lowest boiling point among the mixed solvent-constituting solvents being at least 20° C. and each of solvents (S1) and (S2) being present in the mixed solvent in an amount ranging from 10 to 70% by weight based on the total mixed solvent; heating the coating formed on the metal substrate at a temperature higher than the melting point of said oxidized polyethylene to evaporate the mixed solvent and thus form a primer layer having a multilayer distribution structure in which the base resin is predominantly concentrated on that side of the primer layer toward the metal substrate and the oxidized polyethylene is predominantly concentrated on that side of the primer layer opposite said metal substrate applying an olefin resin layer to said primer layer and fusion-bonding the olefin resin layer to said metal substrate through said primer layer under application of heat and pressure.

4,113,540

USE OF MULTIFUNCTIONAL MONOMERS IN THE PREPARATIONS OF EMULSIONS TO BE USED IN ADHESIVES

Ralph F. Patella, South Plainfield, and Edward J. Kuzma, Woodbridge, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 760,879, Jan. 21, 1977, abandoned. This application Dec. 2, 1977, Ser. No. 856,829
Int. Cl.² C09J *3/12*
U.S. Cl. 156—327 5 Claims

1. A method of forming a laminate which comprises bonding at least two substrates with an adhesive composition comprising an emulsion polymer of vinyl acetate with from about 5% to about 50% by weight of alkyl acrylate or methacrylate based on the total weight of vinyl acetate and alkyl acrylate or methacrylate and from about 2% to about 10% by weight, based on the total weight of said polymer, of an acrylic or methacrylic acid ester of a polyol in which at least three hydroxyl groups are esterified.

4,113,541

METHOD OF BONDING USING AN IMPROVED EPOXY COMPOSITION CONTAINING CHLORINE CONTAINING POLYOLS

Richard J. Turley, Orange, and Alexandre Ozolins, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 625,903, Oct. 28, 1975, Pat. No. 4,052,349.
This application Jun. 17, 1977, Ser. No. 807,456
Int. Cl.² C08G *59/62*
U.S. Cl. 156—330 12 Claims

1. In a method of bonding two surfaces together by means of an adhesive, the improvement of employing as said adhesive, a liquid, curable epoxy composition comprised of

(a) an epoxy resin having more than one α-epoxy group in the molecule,

(b) a curing agent for said resin, and

(c) a chlorine-containing polyether polyol having an average of 2–8 hydroxy groups and at least one (2,2-dichlorovinyl) ethylene group in the polyether polyol chain.

4,113,542

METHOD OF JOINING WOOD PRODUCTS

Ingvar Johansson, Spanga, Sweden, assignor to Svenska Traforskningsinstitutet, Stockholm, Sweden

Continuation of Ser. No. 692,950, Jun. 4, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,517
Claims priority, application Sweden, Jun. 13, 1975, 7506833
Int. Cl.² C09J *3/28, 3/16*
U.S. Cl. 156—335 10 Claims

1. A method of joining wood products together with an adhesive, comprising the steps of:

mixing lignin with a solution consisting essentially of phenol and a compound selected from the class consisting of formaldehyde and a substance yielding formaldehyde at a low temperature such that no substantial reaction takes place so that said phenol and said formaldehyde are absorbed by said lignin,

applying said lignin-phenol-formaldehyde mixture to the wood surfaces of said wood products to be joined, and

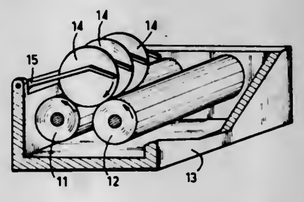
reacting said phenol and said formaldehyde with said lignin by heating so that a hardened lignin adhesive joins said wood products.

4,113,543

APPARATUS FOR ETCHING THE EDGES OF SEMICONDUCTOR PLATES

Yvon Salles, Epron; Pierre Léger, Thaon, and Gérard André David, Caen, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,345
Claims priority, application France, Oct. 3, 1975, 75 30332
Int. Cl.² H01L *21/306*
U.S. Cl. 156—345 4 Claims



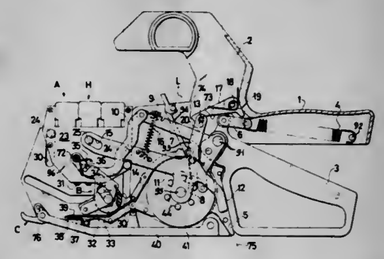
1. An apparatus for mechanochemical etching of the side wall of a circular plate, comprising a container for receiving an etching solution, at least one roller having a longitudinal axis and a circular cylindrical surface, means for mounting said roller in said container so that its longitudinal axis is horizontal and a lower portion only of said surface the roller is submerged in etching solution, means for rotating said roller about said axis, and means for holding a plate with its side wall in rolling contact with said roller surface only and above said etching solution, said plate being in a vertical position with faces of the plate perpendicular to the roller axis.

4,113,544

PORTABLE LABEL PRINTING AND APPLYING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Dec. 15, 1976, Ser. No. 750,845
Claims priority, application Japan, Dec. 20, 1975, 50-151235; Dec. 31, 1975, 51-158620
Int. Cl.² B41F *1/08, 1/38, 1/44*
U.S. Cl. 156—384 52 Claims



1. A portable label printing and applying machine, comprising:

a machine frame; a platen supported by said machine frame; label moving means for moving a label onto said platen to be imprinted;

an operating lever supported by and movable with respect to said machine frame between a first and a second position;

a printing head supported by and movable with respect to said machine frame between a third and a fourth position; said printing head including printing types; at said fourth position of said printing head, said printing types being in position to engage and engaging a label on said platen and imprinting the same;

biasing means operatively connected between said operating lever and said printing head for biasing said printing head away from said third position toward said fourth position as said operating lever is operated toward said second position;

printing head restraining means connected with said printing head for restraining movement thereof toward said fourth position as said operating lever is moving toward said second position;

restraining means release means connected with said restraining means and with said operating lever for moving said restraining means to release said printing head to move to said fourth position when said operating lever has moved a predetermined distance toward said second position, said biasing means then urging said printing head toward said fourth position; at said fourth position, said printing types facing toward and engaging and imprinting a label then on said platen;

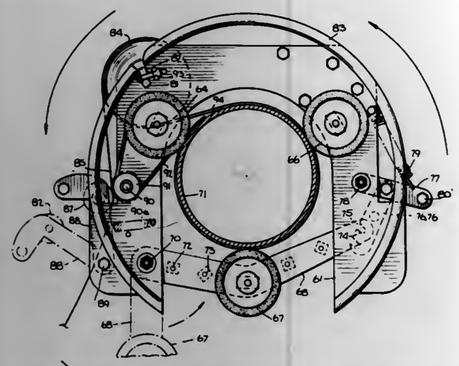
return means connected with said printing head for lifting said printing head off said fourth position and away from engagement with a label following imprinting of the label and prior to commencement of return of said operating lever toward said first position thereof.

4,113,545

PIPE JOINT WRAPPING MACHINE

Linden Stuart, Jr., Chester, N.J., and Harry Robert Davis, Lost Creek, W. Va., assignors to Stuart Steel Protection Corporation, South Bound Brook, N.J.

Filed Jul. 29, 1977, Ser. No. 820,292
Int. Cl.² B32B *31/00*; B65H *81/00*
U.S. Cl. 156—392 **7 Claims**



1. In a portable pipe wrapping machine for wrapping a pipe manually which comprises a pipe enveloping frame having a pipe receiving mouth, locking means mounted on said frame for disposition across said pipe receiving mouth to retain a pipe therein, and means mounted on said frame for rotatably supporting said frame concentrically on a pipe, the improvement which comprises a roll assembly that is mounted on said frame and that is adapted to receive and rotatably support a roll of wrapping material preformed with a separator sheet that is strippable therefrom and that in said roll separates adjoining plies of said wrapping material from each other with said roll in position for feeding wrapping material from said roll onto said pipe during rotation of said frame about said pipe, a sheet receiving assembly mounted in said frame that comprises a rotatable member presenting when rotated a moving surface adapted and positioned for receiving said separator sheet that is stripped from said wrapping material concomitantly with travel of said wrapping material from said roll to said pipe during rotation of said frame about said pipe, a wheel rotatably mounted in secured relation to said frame for frictional contact with said pipe and for rotation responsive to rotation of said frame about said pipe with said wheel in frictional contact therewith, means responsive to rotation of said wheel for rotating said rotatable member with movement of said travelling surface presented thereby at a rate sufficient to recieve thereon said protector sheet as it is stripped from said wrapping material during travel of said wrapping material from said roll to said pipe.

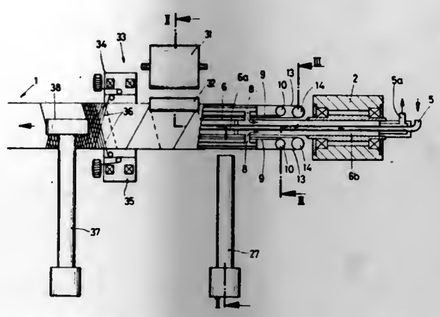
4,113,546

APPARATUS FOR PRODUCING TUBES BY HELICALLY WINDING SHEETS

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Fed. Rep. of Germany

Filed Apr. 12, 1977, Ser. No. 786,859
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2617140
Int. Cl.² B65H *81/00*
U.S. Cl. 156—431 **22 Claims**

1. Apparatus for producing tubes by helically winding strips of thermoplastics synthetic sheet material, the combination comprising a double-shell coolable draw-off mandrel onto which said sheet material at a temperature at which it is fusible is wound spirally in overlapping manner in such a way that it is formed into a tube with an obliquely extending winding seam, pull-off apparatus to cause and permit axial and rotational movement of said tube relative to said draw-off mandrel, first inner endless conveyor belts movable axially in relation to said draw-off mandrel, extending in the longitudinal direction around an outer shell of said draw-off mandrel and tensioned by a tensioning device, second inner endless conveyor belts overlapping said first inner conveyor belts and extending in the longitudinal direction on the outer shell and tensioned by



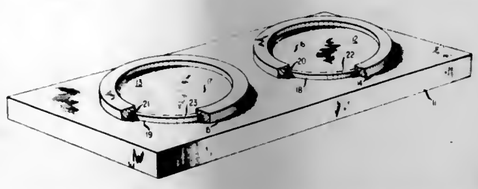
tensioning means, said first and said second inner endless conveyor belts being movable axially with respect to the draw-off mandrel, guide rollers within said draw-off mandrel to feed back said first and said second inner endless conveyor belts, said first and said second inner endless conveyor belts being driven by said pull-off apparatus directly or by way of said tube extruded thereon, and cooling means to act directly on said sheet material wound into said tube.

4,113,547

FORMATION OF EPITAXIAL LAYERS ON SUBSTRATE WAFERS UTILIZING AN INERT HEAT RADIATION RING TO PROMOTE UNIFORM HEATING

Lewis Emanuel Katz, and Carl Lewis Paulnack, both of Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 729,682, Oct. 5, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,126
Int. Cl.² H01L *21/205*; C23C *13/08*; H05B *5/08*
U.S. Cl. 156—612 **4 Claims**



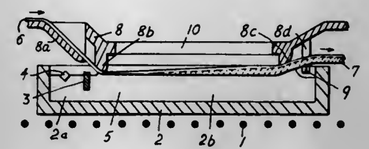
1. A method of suppressing slip dislocations in an epitaxial film grown by vapor deposition on a major surface of a semiconductor wafer by affecting the radiation of heat from portions of the wafer comprising;
(a) mounting the wafer on the surface of a susceptor member in an epitaxial reactor,
(b) heating the reactor including the wafer to an elevated temperature,
(c) depositing a film of epitaxial semiconductor material on the major surface of the wafer, and
(d) reducing the emission of heat from the rim and peripheral surface portions of the wafer by encircling the wafer with a ring of inert material which encloses both the rim and the peripheral portion of the major surface without touching the wafer, thereby to produce a substantially uniform temperature profile across the wafer.

4,113,548

PROCESS FOR THE PRODUCTION OF SILICON LAYERS

Hermann Sigmund, No. 88, Waldhornstrasse, 8034 Germering, Fed. Rep. of Germany

Filed May 11, 1977, Ser. No. 795,844
Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621145
Int. Cl.² H01L *21/368, 21/208*
U.S. Cl. 156—622 **9 Claims**



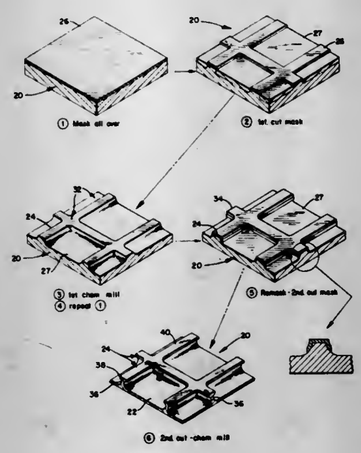
1. A process for the production of a semi-conducting silicon layer on a foreign substrate by means of melt epitaxy, wherein silicon is dissolved in an aluminum-zinc melt and a strip-like oxidized aluminum film is drawn across the surface of the melt solution.

4,113,549

CHEMICAL MILLING PROCESS

Daniel J. Brimm, La Jolla, Calif., assignor to Chem-tronics, Inc., Santee, Calif.

Filed Apr. 6, 1977, Ser. No. 785,168
Int. Cl.² C23F *1/02*
U.S. Cl. 156—639 **11 Claims**



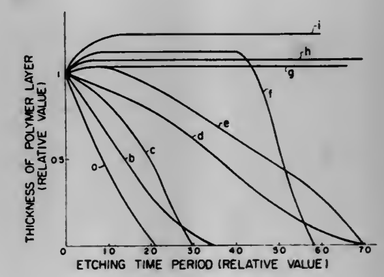
1. A method of chemically shaping a metallic workpiece to impart a selected configuration thereto which comprises the steps of: masking said workpiece; removing the masking from those areas of the workpiece in which metal is to be removed; immersing the workpiece in a body of a liquid etching composition to effect a controlled removal of metal from the workpiece; stripping the remaining original mask from and remasking said workpiece; removing that masking from areas in which the removal of additional metal is wanted; and immersing the workpiece in a body of liquid etching composition to effect said additional removal of metal, the workpiece being simultaneously rotated about two mutually perpendicular axes during these periods that it is immersed in a liquid etching composition to promote even and uniform etching of the workpiece.

4,113,550

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE AND ETCHANT FOR POLYMER RESIN

Atsushi Saiki, Musashimurayama; Toshio Okubo, Tokyo, and Seiki Harada, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 607,562, Aug. 25, 1975, abandoned. This application Jun. 11, 1976, Ser. No. 695,040
Claims priority, application Japan, Aug. 13, 1975, 50-98179; Aug. 23, 1974, 49-96157
Int. Cl.² H01L *7/00*; C09K *13/00*; C23F *1/00*
U.S. Cl. 156—656 **73 Claims**



1. A method for fabricating a semiconductor device comprising the steps of:
forming, on a body, a layer of semicured polymer resin selected from the group consisting of polyimide and polyimide-iso-indroquinazolinedione and semicured at 200°–250° C.; and
contacting an etchant consisting essentially of hydrazine or hydrazine hydrate and at least one of polyamines shown by a chemical formula of

$$NH_2.R.NH_2,$$

wherein R is selected from divalent radicals having 2–6 carbon atoms, the temperature of said etchant being in a range from 20° C. to 30° C., to a prescribed portion of said semicured layer so as to form an opening at said prescribed portion.

28. A method for fabricating a semiconductor device comprising the steps of:
forming at least one circuit element in a semiconductor body;
forming an insulating layer on the surface of said body;
forming at least one opening at prescribed portions of said insulating layer for exposing prescribed surfaces of said circuit element;
forming a metal layer on the surface of said insulating layer and on said exposed surface of said circuit element;
selectively etching said metal layer for forming a prescribed pattern of said metal layer, whereby prescribed surfaces of said insulating layer are exposed;
forming a layer of semicured prepolymer resin selected from the group consisting of polyimide and polyimide-iso-indroquinazolinedione and semicured at 200°–250° C., on the surfaces of said metal layer and exposed surfaces of said insulating layer;
forming a photoresist layer on the surface of said semicured prepolymer layer;
forming a prescribed pattern on said photoresist layer, so that prescribed surfaces of said semicured prepolymer layer are exposed;
contacting an etchant consisting essentially of hydrazine or

hydrazine hydrate and polyamine shown by a chemical formula of

$NH_2.R.NH_2$,

wherein R is selected from divalent radicals having 2–6 carbon atoms, the temperature of said etchant being in a range from 20° C. to 30° C. to the exposed surface of said prepolymer layer, so as to etch said prepolymer layer and to expose prescribed surfaces of said metal layer;

removing said photoresist layer;

curing said semicured prepolymer so as to form a cured layer of said polymer resin;

forming another metal layer on the surface of said cured polymer resin layer and exposed surface of said metal layer; and

etching said another metal layer so as to form a prescribed pattern.

52. An etchant for a polymer resin selected from the group consisting of polyimide and polyimide-isoindroquinazolinedione and semicured at 200°–250° C., consisting essentially of hydrazine and at least one of polyamines shown by a chemical formula of

$NH_2.R.NH_2$

wherein R is selected from divalent radicals having 2–6 carbon atoms.

4,113,551

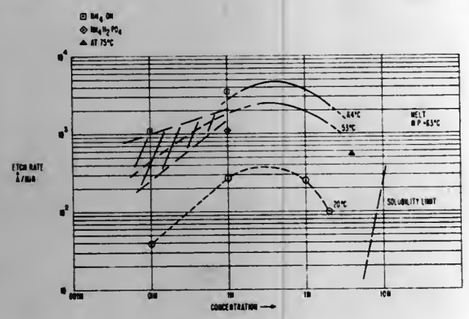
POLYCRYSTALLINE SILICON ETCHING WITH TETRAMETHYLAMMONIUM HYDROXIDE

Ernest Bassous, Riverdale, N.Y., and Cheng-Yih Liu, Woodbridge, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 743,362, Nov. 19, 1976, abandoned. This application Dec. 16, 1977, Ser. No. 861,373

Int. Cl.² H01L *21/306*

U.S. Cl. 156—662 **18 Claims**



10. A method for etching a polycrystalline silicon workpiece, comprising the step of:

applying to the surface of a polycrystalline silicon workpiece, an aqueous solution of

$N[R_a]_m[R_b]_{4-m}OH$,

containing no separate oxidant, where R_a and R_b are first and second alkyl groups respectively, and m is an integar of from 0 to 4, having a molar concentration in the range of from 0.0001 molar to the solubility limit at the etching temperature.

4,113,552

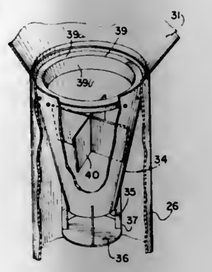
ELUTRIATION LEG AND METHOD

Frank Bella, Jr., South Holland, and Richard C. Bennett, Park Forest, both of Ill., assignors to Whiting Corporation, Harvey, Ill.

Filed Aug. 5, 1976, Ser. No. 712,033

Int. Cl.² B01D *1/30, 9/02*

U.S. Cl. 159—27 A **43 Claims**



1. In an apparatus which includes a main vessel wherein a slurry body containing solids to be recovered therefrom is subjected to agitational forces, which solids are gravitationally discharged as part of a slurry flow into the upper ends of a generably cylindrical elutriation leg mounted directly to the lower end of said main vessel, said leg including a feed inlet through which an elutriation liquor which is relatively weaker in dissolved solids than the liquor portion of said slurry is introduced for upward travel through said leg and into said main vessel, and means for removing solids in said leg adjacent the lower end thereof, the improvement comprising quiescent means for effectively minimizing the transfer of said agitational forces from said main vessel to said elutriation leg so as to provide improved efficiency of operation in said elutriation leg, said quiescent means including: slurry flow directing means including an open-ended sleeve mounted adjacent the upper end of said elutriation leg for directing flow of slurry from said main vessel in a downward flow path which is of generally reduced cross-sectional area with respect to the cross-sectional area of the elutriation leg; target means mounted below said slurry flow directing means and above said feed inlet for deflecting the downward flow of slurry from said slurry flow directing means radially outwardly; liquor flow directing means including a liquor passageway located adjacent the upper portion of said open-ended sleeve through which liquor which is relatively free of solids is directed for passage into said main vessel.

4,113,553

SODIUM SULFIDE PULPING WITH HYDROGEN SULFIDE GENERATION

Hans Olof Samuelson, Gothenburg, Sweden, assignor to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jan. 27, 1977, Ser. No. 763,203

Claims priority, application Sweden, Feb. 5, 1976, 7601284

Int. Cl.² D21C *3/02, 11/12*

U.S. Cl. 162—34 **23 Claims**

1. A process for pulping hardwood to produce cellulose pulp in good yield and of high quality, with a low requirement for causticized pulping liquor, which comprises in a first pulping stage, in the absence of added carbon dioxide, pulping the hardwood in an alkaline pulping liquor containing sodium sulfide at a pH within the range from about 10.5 to about 13 and at a temperature within the range from about 110° to about 170° C for a time sufficient to consume at least 3%, based on the dry weight of the wood, of alkali in the pulping liquor, determined as titratable alkali, in chemical reactions with the wood, thereby forming a large proportion of soluble organic acids in the pulping liquor, and generating hydrogen sulfide in situ in the alkaline pulping liquor by reaction of sodium sulfide with said organic acids; and then in a second pulping stage, following directly after the first pulping stage, continuing the pulping at a pH higher than said first stage pH, within the range from about 12.5 to about 14, and at a temperature higher than said first stage temperature, within the range from about 145° to about 190° C, in the presence of added alkaline pulping liquor comprising sodium hydroxide and sodium sulfide until cellulose pulp is produced.

4,113,554

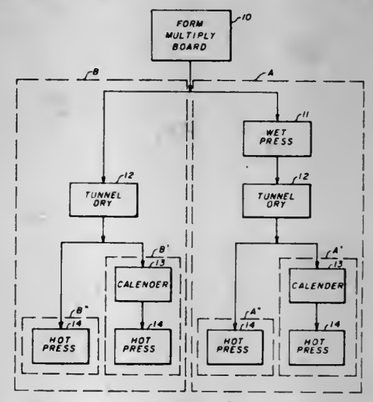
METHOD OF MANUFACTURING INSULATING BOARD

Francis J. McGarry, Thompson; Donald Greene, Danielson, and Jeffrey B. Otto, Brooklyn, all of Conn., assignors to Rogers Corporation, Rogers, Conn.

Continuation-in-part of Ser. No. 654,847, Feb. 3, 1976, abandoned. This application Nov. 1, 1977, Ser. No. 847,571

Int. Cl.² D21F *11/08;* D21J *1/04, 1/20*

U.S. Cl. 162—123 **10 Claims**



1. A process of forming insulating board comprising the steps of:

forming a wet multi-ply board of fibrous material, substantially free of resin, the board being formed on the roll of a wet cylinder machine;

drying the multi-ply board to reduce the moisture content thereof to about 1 to about 15%; and

asymmetrically hot pressing the dry board by pressing and heating the felt side of the board at a first predetermined temperature and pressing and heating the roll side of the board at a second predetermined temperature, the first predetermined temperature being higher than the second predetermined temperature to establish a temperature differential of about 15° F. to about 40° F. across the board, the asymmetric hot pressing being under pressure and occurring for at least 30 seconds.

4,113,555

HARD BOARD OR MEDIUM DENSITY BOARD, PROCESS FOR PRODUCTION THEREOF AND MEANS FOR PRACTICIZING THE PROCESS

Jan O. Nyrén, Grodinge; Sören B. Nordin, Johanneshov, and Leif A. Flodman, Lidingo, all of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Continuation-in-part of Ser. No. 519,203, Oct. 30, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 761,209

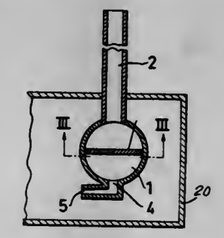
Claims priority, application Sweden, Nov. 8, 1973, 7315156

Int. Cl.² D21J *1/18*

U.S. Cl. 162—127 **20 Claims**

1. In a wallboard selected from the group consisting of hardboard having a density of 800–1100 kg/m³ and medium density board having a density of 400–800 kg/m³ made from lignocellulosic fibers, the thickness of the board being 2-25 mm and the board having two surface layers each comprising at least 10% of the board thickness and therebetween a central layer comprising 10–70% of the board thickness and prepared according to the wet process and being reinforced with a set resin, the improvement comprising: the central layer having a mean content of 1–15% by weight of said resin, based on the central layer, distributed evenly throughout said layer and the surface layers having a mean content of said resin of less than 1% by weight, the ratio of the mean resin content of said central layer and that of each of said surface layers being at least 4:1 and the resin content of the central layer steadily decreasing to that of the surface layers and there being no zone of the board having higher resin content than the central layer.

5. In a process for the preparation of building board selected from the group consisting of hard and medium density board made from lignocellulosic fibers, wherein an aqueous suspension of said lignocellulosic fibers having a consistency in the range of 1.0–4.0% is fed onto a moving wire screen of Fourdrinier type in a board machine for dewatering, whereafter the wet lap dewatered on said moving wire screen is subjected to the normal steps of pressing and baking, the improvement comprising introducing evenly across the width of the suspen-



sion an aqueous solution of a thermosetting resin into a central layer of said lignocellulosic fiber suspension having a consistency in said range near the headbox of said board machine such that the resin content of the central layer steadily decreases to that of the surface layers and such that there is no zone of the board having higher resin content than the central layer.

14. In a board making machine wherein a pulp slurry flow of a consistency of less than 4% is fed on to a moving wire screen, the improvement comprising a device for introducing a thermosetting resin solution into the pulp slurry flow in the direction of the slurry flow, said device comprising a straight pipe having the ends closed, the pipe being disposed in the slurry and transversely to the direction of the slurry flow and being provided with an internal partition plate provided with holes for distributing solution admitted to the pipe uniformly along the pipe, nozzles connected to the pipe and directed in the pulp flow direction, inlet means for feeding solution to the portion of the pipe other than that connected to the nozzles, and means for holding the device in position in the pulp flow.

4,113,556

PAPER MACHINE WITH TWIN-WIRE FORMER

Matti Kankaanpää, Espoo, Finland, assignor to Valmet Oy, Japan

Filed Apr. 14, 1977, Ser. No. 787,321

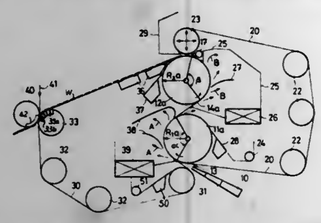
Claims priority, application Finland, Apr. 14, 1976, 761030

Int. Cl.² D21F *1/00, 9/00*

U.S. Cl. 162—272 **20 Claims**

1. In a paper machine, a pair of endless wire loops respectively having elongated portions which travel together upwardly along a common path where said wire loops form a twin-wire former, said common path having a lower receiving end for receiving pulp stock from which a web is to be formed and an upper discharge end from which a web issues from said twin-wire former while being transported by one of said endless wire loops beyond said discharge end of said common path, lower forming roll means around which said endless wire loops are lapped with said lower forming roll means determining the lower receiving end of said common path and an initial

portion of said common path along which the wire loops travel together, upper forming roll means around which said endless wire loops also are lapped with said upper forming roll means determining the discharge end of said common path and a final portion of said common path, said lower and upper forming roll means cooperating with said endless wire loops for providing at said lower and upper forming roll means dewatering which at least in part occurs in opposite directions at said lower and upper forming roll means, respectively, and said lower forming roll means having a solid shell through which fluid cannot penetrate and said lower forming roll means cooperating with said endless wire loops for providing at said lower forming roll means a dewatering which takes place at least to a substantial extent in a direction outwardly away from said lower forming roll means, said upper forming roll means being situated substantially in alignment with and above said lower forming roll means and also having a solid shell through which fluid cannot penetrate, said common path curving first in one direction about said lower forming roll means, then being substantially straight and tangential to both of said forming roll means, and then curving in an opposite direction around said upper forming roll means, so that said common path is of a substantially S-shaped configuration.

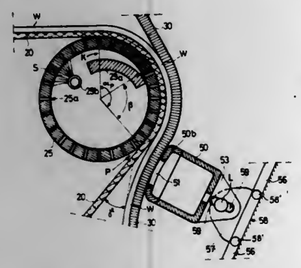


4,113,557

PAPER MANUFACTURING STRUCTURE PARTICULARLY FOR DETACHING A WEB FROM A WIRE

Matti Kankaanpää, Espoo, Finland, assignor to Valmet Oy, Finland

Filed Apr. 14, 1977, Ser. No. 787,334
Claims priority, application Finland, Apr. 14, 1976, 761031
Int. Cl.² D21F 1/52
U.S. Cl. 162—301 **10 Claims**



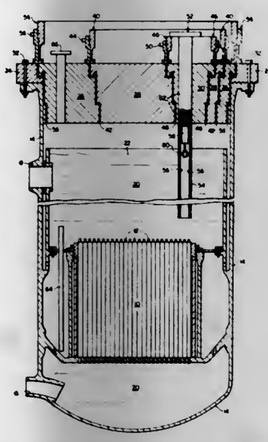
1. In a paper machine, wire means for transporting a web to a detaching location where the web is to be detached from the wire means and transported to a press section, felt means extending up to and beyond said detaching location for receiving the web detached from said wire means at said detaching location and transporting the web to the press section, the web being sandwiched between the wire means and felt means at said detaching location, air-flow means situated adjacent said detaching location for creating a flow of air travelling in a direction through the wire means toward the web and through the web toward the felt means as well as through and beyond the latter, with said air-flow means localizing said flow of air to a relatively narrow rectangular area extending transversely across the wire means, web, and felt means, and guide means situated at said detaching location and engaging said felt means for guiding the latter beyond said detaching location with the web adhering thereto while deflecting the felt means away from the wire means through a relatively small angle which is substantially less than 45°, said means creating said flow of air including a suction box situated in engagement with said felt means at the side thereof opposite from said web and having in engagement with said felt means a wall formed with an elongated slot which defines said localized area for said flow of air and through which air is sucked to flow first through said wire means, then through said web and then through said felt means into said suction box, said wall of said suction box having an exterior convexly curved surface engaging said felt means and forming said guide means, said wall of said suction box being formed with a pair of said slots situated one after the other in the direction of travel of said felt means, and said suction box having in its interior a partition means defining in the interior of said suction box separate chambers which respectively communicate with said slots.

4,113,558

NUCLEAR FUEL HANDLING GRAPPLE CARRIAGE WITH SELF-LUBRICATING BEARING

Elman E. Wade, Ruffsdale, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 7, 1976, Ser. No. 748,352
Int. Cl.² G21C 19/20; F16C 17/00, 1/24
U.S. Cl. 176—30 **4 Claims**



1. Nuclear fuel handling apparatus including a fuel transfer tube disposed on a closure head of a vessel containing fuel assemblies and extending from said closure head downward into a pool of coolant, tracks attached to the inside of said fuel transfer tube, a grapple carriage disposed in said fuel transfer tube, a grapple attached to the underside of said grapple carriage for engaging said fuel assemblies, a grapple control mechanism disposed on said closure head and attached to said grapple carriage and said grapple for lifting and lowering said grapple carriage and for controlling said grapple, and wheels attached to said grapple carriage for guiding said grapple carriage along said tracks, a bearing for each of said wheels, each of said bearings comprising:

an inner race mounted on an axle;

roller element bearings disposed in said inner race;

an outer race disposed around said inner race and enclosing said roller element bearings between said inner and outer races, said roller element bearings allowing said outer race to rotate relative to said inner race;

alignment means disposed on said axle and adjacent said outer race for maintaining alignment of said outer race with respect to said inner race while allowing rotation of said outer race;

a reservoir disposed in said axle in fluid communication with said roller element bearings and capable of being filled with coolant when said axle is submerged in said pool of coolant for supplying said coolant to said roller element bearing, thereby lubricating said roller element bearings; and

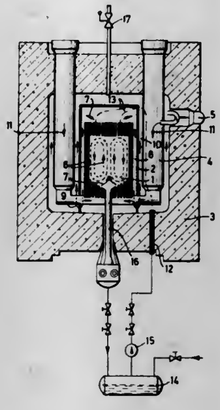
supply means establishing fluid communication between said reservoir and said roller element bearings for permitting said coolant to flow from said reservoir and between said outer race and said alignment means establishing an outward flow of said coolant thereby preventing impurities from seeping inward.

4,113,559

METHOD OF REMOVING THE DECAY HEAT OF RADIOACTIVE FISSION PRODUCTS

Fritz Schweiger, Kagen, Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen, Uentrop/Unna, Germany

Filed Apr. 7, 1976, Ser. No. 674,483
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1975, 2516123
Int. Cl.² G21C 9/00
U.S. Cl. 176—38 **12 Claims**



1. A method of removing the decay heat of radioactive fission products from the core of a helium-cooled graphite-moderated high temperature nuclear reactor using pebble type fuel elements after the fission reaction has been shut down and in an emergency situation wherein a fault or a combination of faults results in the inability of the normal operational systems of the reactor to remove the decay heat satisfactorily, comprising introducing water into the core of said reactor into direct surface contact with the pebble type fuel elements.

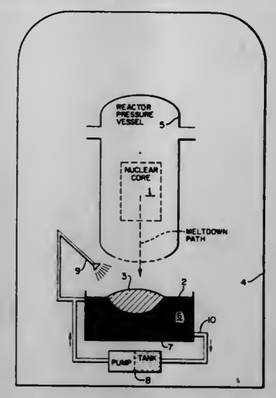
4,113,560

CORE CATCHER FOR NUCLEAR REACTOR CORE MELTDOWN CONTAINMENT

Michael J. Driscoll, Cambridge, Mass., and Frank L. Bowman, Gales Ferry, Conn., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 595,639, Jul. 14, 1975, abandoned, which is a continuation of Ser. No. 412,389, Nov. 2, 1973, abandoned. This application Sep. 15, 1976, Ser. No. 723,403
Int. Cl.² G21C 9/00
U.S. Cl. 176—38 **4 Claims**

1. In a nuclear reactor of the type having a liquid cooled core in a pressure vessel which is in a containment building having an emergency cooling fluid system the combination with a core catcher for the containment of the debris of a nuclear reactor core meltdown comprising, a bed of high thermal conductivity graphite particles placed under said nuclear reactor core pressure vessel, a bin for containing said particles, means for draining said bed of the core cooling fluid upon meltdown of said core into said bin, means for spraying said debris with said cooling fluid from said bin, means for flooding said bin with said cooling fluid, and said bin being large enough to contain said bed, core debris, and core cooling and emergency fluid.

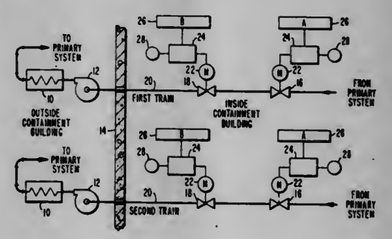


4,113,561

VALVE ARRANGEMENT FOR A NUCLEAR PLANT RESIDUAL HEAT REMOVAL SYSTEM

Gary L. Fidler, Plum Borough; Richard A. Hill, Monroeville, and John P. Carrera, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 17, 1976, Ser. No. 686,858
Int. Cl.² G21C 9/00
U.S. Cl. 176—38 **1 Claim**



1. An improved valve arrangement for an auxiliary residual heat removal system of a nuclear reactor plant, said plant including a first electrical bus, second electrical bus, and a primary reactor coolant system, said primary system disposed within a containment structure, said residual heat removal system having a first circulating fluid train and a second circulating fluid train, each of said trains having piping connecting said primary system, a pump, and a heat exchanger, said pump and heat exchanger disposed outside of said containment, wherein the improvement comprises:

three motor-operated isolation valves disposed along said piping of each said train within said containment downstream of said primary system positioned such that there is a single valve and two parallel-connected valves, one of which parallel valves is normally closed, said single and normally closed valves of said first train being connected to said first electrical bus and the other parallel valve being connected to said second bus, the single and normally closed valves of said second train being connected

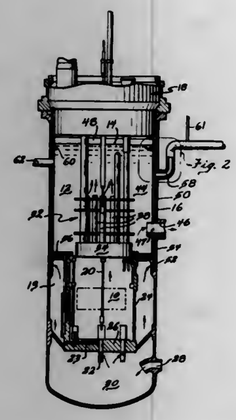
to said second electrical bus and the other parallel valve of said second train being connected to said first bus.

4,113,562

APPARATUS FOR CONTROLLING COOLANT LEVEL IN A LIQUID-METAL-COOLED NUCLEAR REACTOR

Robert D. Jones, Irwin, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 20, 1977, Ser. No. 789,154
Int. Cl.² G21C *1/02*
U.S. Cl. 176—40 **3 Claims**



1. In a liquid-metal-cooled fast-breeder reactor incorporating a core submerged in liquid metal coolant within a pressure vessel, there being an inlet coolant plenum below the core and an outlet coolant plenum above the core, a thermal liner extending from the bottom of the outlet plenum to above the normal operating coolant level in the outlet plenum spaced from the pressure vessel to define a bypass annulus therebetween, and means for establishing a bypass flow of coolant through the bypass annulus to insulate the pressure vessel from the hot coolant in the outlet plenum, said means for establishing a bypass flow of coolant including means for bypassing a portion of the coolant from the inlet coolant plenum around the core and into the bypass annulus, the improvement wherein the thermal liner has a plurality of control ports therein located just below the normal operating coolant level in the pressure vessel and wherein the improvement includes an overflow nozzle located in the pressure vessel below the control ports connected to an overflow line leading to an exterior overflow vessel, said overflow line including a portion at an elevation such that overflow coolant flow is established therethrough when the coolant level in the outlet plenum is above the top of the control ports.

4,113,563

FUEL ARRANGEMENT FOR HIGH TEMPERATURE GAS COOLED REACTOR

Joseph M. Tobin, McMurray, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

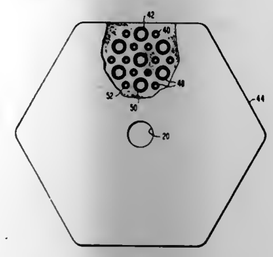
Filed Jan. 6, 1976, Ser. No. 646,812
Int. Cl.² G21C *5/00*
U.S. Cl. 176—84 **9 Claims**

1. A fuel arrangement for a high temperature gas cooled nuclear reactor comprising:

(a) a first arrangement of elongated cylindrical first fuel elements comprising primarily fissile nuclear material, said first elements having a concentric cylindrical first coolant passageway therethrough,

(b) a second arrangement of elongated cylindrical second fuel elements comprising primarily fertile nuclear material, said second elements having a concentric cylindrical second coolant passageway therethrough, and

(c) a plurality of elongated moderator blocks having a hexagonal cross section and each comprising cylincrical holes therethrough perpendicular to said cross-section, said holes being spaced from one another and sized to removably receive said first and second fuel elements, each said



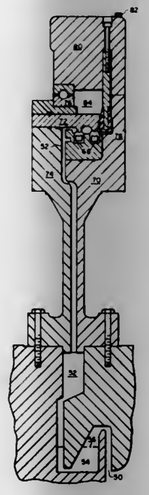
hole receiving only one of said elements, a centrally located control passageway parallel to said holes extending through said block, and means to retain each said fuel element within each respective hole, said means being affixed within said holes at an extremity thereof and having a circular cross section and a concentric opening therethrough.

4,113,564

CORE DISRUPTIVE ACCIDENT MARGIN SEAL

John Garin, Oak Ridge, Tenn., and James C. Belsick, Washington Township, Fayette County, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 13, 1976, Ser. No. 714,220
Int. Cl.² G21C *13/06*
U.S. Cl. 176—87 **4 Claims**



1. A nuclear reactor system including a vessel, fuel assemblies positioned therein, an inlet and an outlet for circulating a coolant in heat transfer relationship with said fuel assemblies, and a closure head disposed on said vessel in a fluid tight relationship, said closure head comprising:

seal means disposed in a first annulus defined between a first and a second component of said closure head for sealing said first annulus when actuated while allowing free rotation of said components with respect to each other when not actuated;

actuating means attached to said seal means for drawing said seal means substantially vertically into contact with both said first and said second component for sealing said first annulus.

4,113,565

GLUCOSE ISOMERIZATION WITH IRON ION-THIOL ACTIVATOR ION-GLUCOSE ISOMERASE SYSTEMS

Thomas L. Hurst, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 560,658, Mar. 20, 1975, Pat. No. 4,026,764. This application Dec. 13, 1976, Ser. No. 750,332
Int. Cl.² C12D *13/02*
U.S. Cl. 195—31 F **16 Claims**

1. In a method for isomerizing dextrose to fructose with a glucose isomerase in the presence of metal ion activator or co-metal ion activator combinations wherein the metal activator or co-metal ion activators are used to stabilize and activate the glucose isomerase during the isomerizaton of dextrose to fructose in a glucose isomerization reaction, the improvement which comprises isomerizing dextrose to fructose with glucose isomerase by adding to the isomerization reaction a stabilizing and activating amount of water-soluble iron ions and water-soluble thiol activator ions.

4,113,566

PROCESS FOR PREPARING 6-AMINOPENICILLANIC ACID

James J. Hamsher, Gales Ferry, and Merrill Lozanov, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 26, 1976, Ser. No. 745,212
Int. Cl.² C12D *13/06*
U.S. Cl. 195—36 P **5 Claims**

1. In the process for the enzymatic conversion of a penicillin to 6-aminopenicillanic acid wherein an aqueous solution of said penicillin is contacted with a particulate immobilized penicillin acylase catalyst, the improvement which comprises recirculating said solution through a bed comprising said particulate catalyst at a flow rate of at least0.4 bed volume per minute while maintaining said solution at a temperature of from about 15° and a pH of from about 6.5 to 9.0 and continuing said recirculation until said penicillin is substantially converted to said acid, said bed having a depth of up to about 6 centimeters.

4,113,567

INSOLUBILIZATION OF ENZYMES ON MODIFIED PHENOLIC POLYMERS

Merle S. Masri, Emeryville; Virginia G. Randall, and William L. Stanley, both of El Cerrito, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 712,298, Aug. 6, 1976, abandoned. This application Aug. 25, 1977, Ser. No. 827,659
Int. Cl.² C07G *7/02*
U.S. Cl. 195—63 **6 Claims**

1. A process for preparing an insoluble but active enzyme, which consists of

(a) dissolving a soluble active enzyme in water,

(b) mixing the resulting solution with a diazotized phenol-formaldehyde polymer, and

(c) separating the resulting insolubilized enzyme product from the reaction mixture.

4,113,568

PROCESS FOR THE RENEWAL OF AN INSOLUBILIZED GLUCOSE ISOMERASE

Yoshimasa Fujita, Tokyo; Akiyoshi Matsumoto, Hino; Isao Miyachi, Higashiyamato; Nobuo Imai, Higashimurayama; Isao Kawakami, Machida; Tadashi Hishida, Tokyo, and Akira Kamata, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd. and Seikagaku Kogyo Co., Ltd., both of Tokyo, Japan

Filed Mar. 24, 1977, Ser. No. 780,843
Int. Cl.² C07G *7/02*
U.S. Cl. 195—68 **15 Claims**

1. A process for the renewal of an insolubilized glucose isomerase comprising the steps of:

(1) desorbing the adsorbed materials from an insolubilized glucose isomerase by treating sequentially with an aqueous mineral acid in combination with an aqueous alkali solution, an aqueous electrolytic salt solution, an aqueous mineral acid or a mixture thereof, said insolubilized isomerase being glucose isomerase adsorbed on and bonded to a supporter of synthetic anion exchange macroporous resin and having been used in the isomerization of glucose into fructose,

(2) converting said supporter resin into a salt type to regenerate the supporter, and

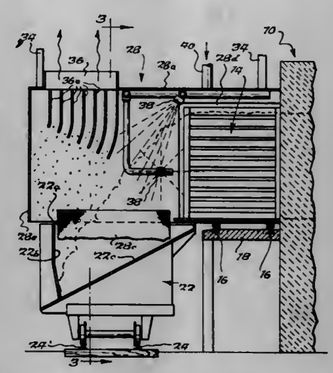
(3) adsorbing fresh glucose isomerase on the regenerated supporter.

4,113,569

COKE AIR POLLUTION CONTROL METHOD AND APPARATUS

Kevin D. Mahar, Buffalo, N.Y., assignor to Donner-Hanna Coke Corporation, Buffalo, N.Y.

Filed Nov. 28, 1975, Ser. No. 635,594
Int. Cl.² C10B *33/00, 39/00*
U.S. Cl. 201—39 **16 Claims**



1. In a coke air pollution control system for a coke oven having a plurality of oven chambers, the combination comprising:

means defining at least one vehicle having a reposing coke receiving cavity, a falling coke admitting opening communicating with said cavity and a self-unloading coke releasing exit communicating with said cavity, and said vehicle being adapted to travel between a coke receiving location and a coke quenching station,

a coke guide having an inlet and adapted to receive an ejected coke mass from any of said coke oven chambers and an outlet and laterally spaced from said coke oven for guiding said ejected coke mass to fall through said coke admitting opening of said vehicle to said coke receiving cavity thereof, and

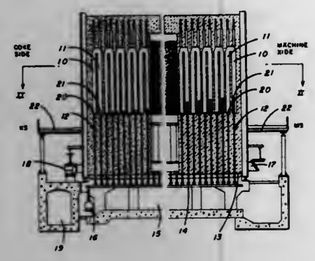
a hood apparatus disposed above said vehicle means and along the front of said plurality of coke oven chambers, said hood apparatus comprising a top wall, end wall and

oppositely disposed side walls, said end and side walls extending downwardly adjacent to the top of said vehicle and being connected together to envelop said coke guide and at least a portion of said coke admitting opening and coke receiving cavity of said vehicle, said hood being supported to maintain it in a substantially smoketight manner with said coke oven and said vehicle and further including liquid spraying means mounted on the interior surface thereof, supply means for supplying said spraying means with a liquid for the spraying thereof in predetermined quantities toward the mass of coke as it is ejected to thereby create substantially a vapor atmosphere within said hood and to reduce the temperature of the upper layer of reposing coke down to a pre-selected temperature range, said supply means supplying said liquid in quantities insufficient to quench said coke masses but sufficient to create said vapor atmosphere whereby particulate matter within said air space associated with said coke becomes wetted and entrained in said vapor, and an exhaust duct opening in said hood for venting said vapor and particulate matter entrained therein, said exhaust duct opening including means for removing wetted, entrained particulate matter from the vapor flow through said exhaust opening.

4,113,570
RICH-GAS BURNER ARRANGEMENT IN HEATING FLUES FOR COKE OVEN CHAMBERS

Erich Pries, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 3, 1976, Ser. No. 747,381
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1975, 2557084
Int. Cl.² C10B 5/02
U.S. Cl. 202—139 3 Claims

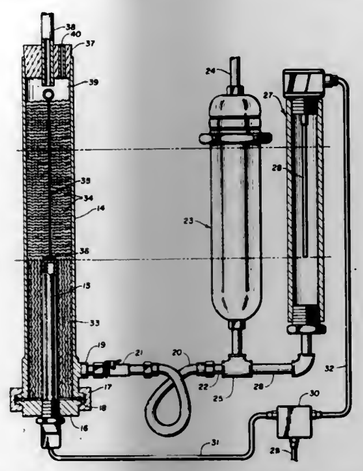


1. In a battery of coke ovens including coke oven chambers which decrease in width along their length from the coke side to the pusher side of the coke ovens, said coke oven chambers including individual heating walls and vertical heating flues formed by flue walls arranged to subdivide the space between heating walls of adjacent coke oven chambers, the combination therewith comprising rich-gas burners extending vertically from the flue soles along said vertical heating flues, said rich-gas burners being alternate flues and extending to progressively increasing elevations above the flue soles such that the rich-gas burner exit zones increase in height from burner-to-burner in heating flues between the heating walls for adjacent coke oven chambers, the flue soles within each row of heating flues being located on the same horizontal plane, said rich-gas burners extending to the greatest elevational height at the pusher side of each coke oven chamber for optimum heat consumption by a charge of coking coal through uniform heating thereof within the coke oven chambers along the decreasing width thereof.

4,113,571
WATER DISTILLER OF BOILER-CONDENSER TYPE

Nils Nygards, 7435 Hwy. 65 NE, Minneapolis, Minn. 55432

Filed Feb. 25, 1976, Ser. No. 661,252
Int. Cl.² B01D 3/02
U.S. Cl. 202—176 13 Claims



1. A water distiller comprising an upright elongated boiler tube, an electric heating member extending upwardly within said tube, means for connecting said member with a source of electric current for heating the same, a wire screen heat transmitter surrounding said member in close fitting relation to transfer heat rapidly therefrom and transmit same to surrounding water and to minimize turbulence in such water as distillation proceeds, means for introducing water into said tube to maintain a supply thereof therewithin around said screen and heating member as distillation proceeds, and means connected with said boiler tube and receiving water vapor therefrom for condensing and for collecting same.

4,113,572
POLLUTION CONTROL SYSTEM INCLUDING A ONE-SPOT QUENCH-CAR FOR COKE PRODUCING INSTALLATIONS

John G. Manda, Florissant, Mo.; Joe D. Burroughs, O'Fallon, Ill., and Donald F. Cairns, Webster Groves, Mo., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1976, Ser. No. 647,937
Int. Cl.² C10B 33/00, 39/14, 27/00
U.S. Cl. 202—227 18 Claims

1. For use in combination with a coking installation including a horizontally arranged battery of coke ovens and a coke guide mounted on a guide car for movement along a path in front of the battery and into a pushing position in alignment with the respective coke ovens for guiding coke pushed therefrom to a hot coke transfer car movable on rails parallel to the path of the guide car and outwardly spaced therefrom, with the transfer car being positioned in alignment with the oven and guide car during the pushing operation and movable along the rails to a quenching station spaced from the ovens, an improved one-spot hot coke transfer and quenching car comprising,

a generally rectangular receptacle for receiving and containing a full charge of hot coke from a coke oven,

said receptacle having a flat, generally horizontal bottom wall, upwardly extending side walls and end walls, and a top closure means,

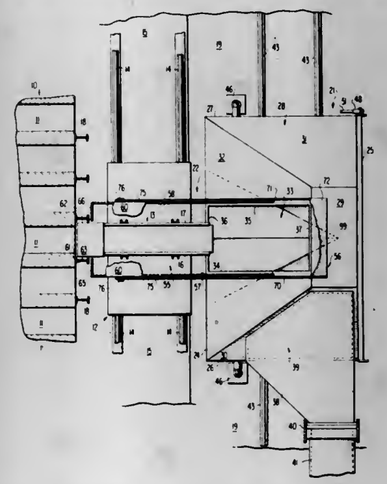
means forming a generally rectangular coke receiving opening in the top closure means, said side walls being longer than said end walls and extending transverse to the position of a plurality of coke ovens when the car is positioned to receive coke pushed from the ovens,

said coke receiving opening being located centrally between said end walls and extending transversely of the receptacle from a point adjacent the side wall thereof closest to an oven during the pushing operation,

coke distributing means mounted in said receptacle beneath said coke receiving opening,

said coke distributing means having upwardly directed deflector surface means including an apex extending in the general direction of pushing coke from an oven and located centrally within the receptacle beneath said opening to engage and divide coke falling from the coke guide through said coke receiving opening and to impart thereto a horizontal component of motion in a general direction toward said end walls to substantially evenly distribute the coke throughout said receptacle with said transfer car remaining stationary throughout the entire pushing operation.

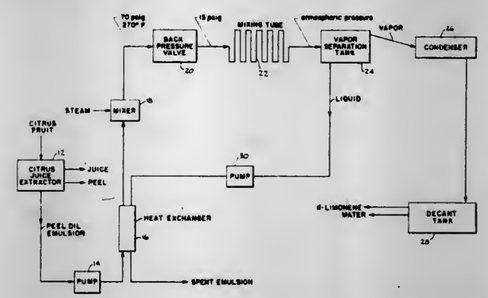
said coke receiving opening being adapted to receive coke quenching means therethrough to permit coke contained in the receptacle to be quenched therein at a quenching station.



4,113,573
METHOD OF AND APPARATUS FOR STEAM STRIPPING IMMISCIBLE MATERIALS

Gordon P. Gerow, Davenport, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Sep. 20, 1973, Ser. No. 399,238
Int. Cl.² B01D 3/42, 3/38
U.S. Cl. 203—2 13 Claims



1. In a process for steam stripping a volatile constituent from a liquid mixture of immiscible materials, the steps of injecting steam into said liquid mixture while flowing, heating said mixture while under superatmospheric pressure and in a flowing condition by said injection of steam therein, the pressure and temperature of said mixture and ad-mixed steam material being such that said steam is converted to and maintained substantially entirely in a liquid phase, substantially and abruptly reducing the superatmospheric pressure of said material to rapidly vaporize said steam component, immediately thereafter conducting the mixture and ad-mixed steam material through a relatively long turbulent passage while simultaneously further reducing the pressure to provide heat for further vaporizing the steam and said volatile constituent of said mixture, separating the vapors from the remaining liquid after the material has passed through said passage, condensing said vapors to obtain a condensate, and separating said volatile constituent from the water in said condensate.

4,113,574
ACRYLIC POLYMERIZATION INHIBITION

Ignatius Schumacher, Webster Groves, Mo., and James E. White, Coshocton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 22, 1976, Ser. No. 734,893
Int. Cl.² B01D 3/34; C07C 57/04, 69/54
U.S. Cl. 203—8 4 Claims

1. In a process wherein a mixture comprising a monomer selected from the group consisting essentially of acrylate esters, methacrylate esters, acrylic acid, methacrylic acid and mixtures thereof is vaporized, and a portion of the mixture is condensed, the improvement which comprises adding a polymerization inhibiting amount of 2,4-pentanedione to the mixture before it is vaporized.

4,113,575
SEPARATION OF ACETONE FROM N-BUTANE BY DISTILLATION

Glenn H. Dale, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1976, Ser. No. 669,539
Int. Cl.² B01D 3/40; C07C 49/08, 9/10
U.S. Cl. 203—62 6 Claims

1. A process for separating a mixture consisting essentially of acetone and n-butane which mixture forms an azeotrope under conventional distillation conditions which comprises:

(a) introducing the mixture into a fractionation zone and therein subjecting said mixture to fractional distillation conditions including pressures up to about 60 psia (0.414 MPa) and a corresponding temperature so that an azeotrope is not formed but the mixture is separated into an overhead containing substantially n-butane and a bottoms containing mainly acetone; and

(b) withdrawing an overhead stream containing essentially n-butane and being essentially free of acetone and a bottoms stream containing essentially acetone.

4,113,576
METHOD OF MAKING A THIN-COPPER FOIL-CARRIER COMPOSITE

Irving J. Hutkin, c/o Califoil, Inc. 7955 Arjons Dr., San Diego, Calif. 92126

Filed Jun. 17, 1976, Ser. No. 697,045
Int. Cl.² C25D 1/04, 1/20
U.S. Cl. 204—13 19 Claims

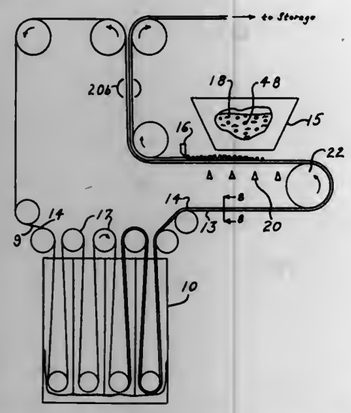
1. An improved method of making a thin copper foil-plastic composite, said method comprising:

a. forming a thin copper foil on a permanent metallic surface, said foil having an exposed side opposite the side thereof which contacts said metallic surface;

b. contacting only said exposed foil side, while said foil is still on said surface, with a plurality of fusible solid plastic

particles and depositing said particles only on said exposed side;

c. coalescing said plastic particles into a unitary foil-plastic composite sheet while preventing bleed-through of said plastic through any pinholes in said foil to said metallic surface; and



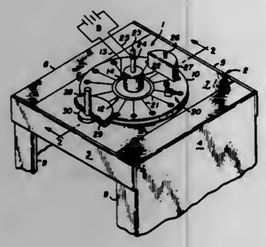
d. readily removing said composite from said metallic surface without rupturing said foil and without plastic buildup on said metallic surface, whereby the side of the foil which contacted the metallic surface is substantially free of any of said plastic.

4,113,577

METHOD FOR PLATING SEMICONDUCTOR CHIP HEADERS

John P. Ross, Cupertino, and Carl E. Bernardi, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 619,368, Oct. 3, 1975, Pat. No. 4,032,422.
This application Mar. 10, 1977, Ser. No. 776,162
Int. Cl.² C25D *5/08*
U.S. Cl. 204—15 **3 Claims**



1. A method of plating the die-attach area of a plurality of semiconductor chip headers comprising the steps of:

placing each of said headers in an inverted position against a sealing member in a cavity of a rotating disc assembly;

clamping said headers against said sealing member such that said sealing member forms a fluid-tight seal about said die-attach area;

jetting a plating solution containing a plating material against said exposed areas; and

causing a current to flow through said headers while said solution is being jetted against said exposed areas whereby plating material in said solution adheres to said exposed area; wherein said step of jetting comprises the step of jetting said solution against said die-attach area after said clamping of said headers and further wherein said step of causing a current to flow comprises the step of coupling a source of potential between a means for clamping said headers and a means for jetting said fluid against said die-attach areas such that said current will flow when said headers are contacted by said clamping means and said plating solution is flowing between said jetting means and said die-attach areas.

4,113,578

MICROCIRCUIT DEVICE METALLIZATION

Louis A. Del Monte, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 365,778, May 31, 1973, abandoned.
This application Jun. 27, 1977, Ser. No. 809,960
Int. Cl.² C25D *5/02, 7/12, 5/54;* C23C *15/00*
U.S. Cl. 204—15 **18 Claims**

1. A method for forming deposited metallic formations on selected portions of an electronic device interconnection network, provided on a structure having a layer of insulating material covering said selected portions, through using a sputtering chamber provided with one or more source electrodes each with a metal which is selected to be sputtered, said method comprising:

providing openings in said insulating layer to expose said selected portions;

providing said structure, masked with a separate mask having sputtering openings therein, in a sputtering chamber with said mask positioned against said structure in a manner such that said sputtering openings are positioned substantially concentric with the corresponding said selected portions;

providing a low pressure gas atmosphere in said chamber;

sputtering each said metal through said sputtering openings in a selected order for a time sufficient to obtain, through said sputtering openings, a selected amount of each of said metals;

removing said mask to leave a structure resultant surface;

providing a metal flash layer on said structure resultant surface;

providing a photoresist layer on said metal flash layer, said photoresist layer having plating openings therein which are substantially concentric with said selected portions; and

electroplating a plated metal layer through said plating openings onto said metal flash layer where provided on said metals as sputtered.

4,113,579

PROCESS FOR PRODUCING AN ALUMINUM ELECTROLYTIC CAPACITOR HAVING A STABLE OXIDE FILM

John J. Randall, Jr., and Walter J. Bernard, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 28, 1977, Ser. No. 791,656
Int. Cl.² C25D *11/12, 5/44*
U.S. Cl. 204—33 **6 Claims**

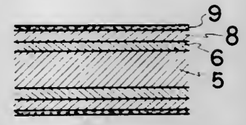
1. The process for producing an aluminum electrolytic capacitor having a stable oxide film comprising forming a hydrated oxide layer on an aluminum foil, and then anodizing said foil in a formation electrolyte containing borate anions, then depolarizing said anodized foil in a bath containing a hydration inhibitor selected from phosphate, borate, and alpha- or ortho-hydroxy carboxylic acid anions, the pH of said bath being between 2 and 7, and then reanodizing said foil.

4,113,580

STEEL SHEET USEFUL IN FORMING FOODSTUFF AND BEVERAGE CANS

Nobuyuki Tsutsui, Kudamatsu; Tsuneo Inui, Tokuyama, and Hiroaki Kawamura, Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1977, Ser. No. 818,099
Claims priority, application Japan, Aug. 18, 1976, 51-97739
Int. Cl.² C25D *5/50, 5/10*
U.S. Cl. 204—37 T **11 Claims**



1. A process for producing a steel sheet containing a first layer of an iron-tin alloy and a second layer of hydrated chromium oxide which comprises

electrolytically tin plating a substantially clean steel sheet base in an electrolyte containing stannous sulfate, stannous chloride, stannous fluoborate, sodium stannate or potassium stannate, to obtain a tin-plated steel sheet in which the amount of plated tin is 0.05–1.5 g/m²,

heating said tin-plated steel sheet at a temperature sufficiently above the melting point of tin for a time sufficient to form a first layer containing an iron-tin alloy on the surface of said base, the amount of said iron-tin alloy being 0.05–1.0 g/m², calculated as tin, the amount of any free tin in said first layer being less than one-third of the total amount of said plated tin, and

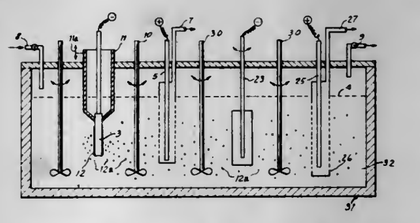
subjecting the resultant steel sheet to an electrolytic treatment at 5–20 coulombs/dm² in an electrolyte containing chromic acid and at least one additive selected from the group consisting of sulfuric acid, a fluorine compound, an aromatic disulfonic acid and thiourea, to form a second layer consisting essentially of hydrated chromium oxide in an amount of 0.005–0.05 g/m², calculated as chromium, any metallic chromium deposited between said first and second layers being present in an amount less than 0.005 g/m².

4,113,581

ELECTRODEPOSITION PROCESS

Shin-Ichi Tokumoto; Eiji Tanaka, both of Yokohama; Tatsuo Kikuchi, Hoya; Kenji Ogisu, Yokohama, and Toshiro Tsumori, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 31, 1977, Ser. No. 801,640
Claims priority, application Japan, Jun. 4, 1976, 51-65920
Int. Cl.² C25D *3/66*
U.S. Cl. 204—39 **10 Claims**



1. An electrodeposition process comprising the steps of:

(a) preparing a fused salt electrolytic bath containing a salt of a desired metal or salts of the constituent metals of a desired alloy;

(b) providing a main cathode in said bath for electrodeposition of a metal or alloy thereon from said bath;

(c) providing an auxiliary cathode in spaced relationship from said main electrode within said bath;

(d) growing a deposit of the desired metal or alloy on said auxiliary cathode, mechanically removing the deposited metal or alloy from said auxiliary cathode to produce solid particles, and dispersing such solid particles in said bath; and

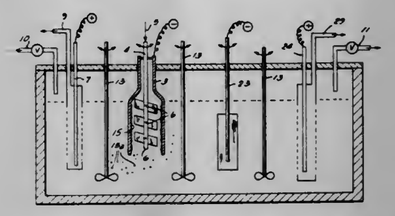
(e) electrodepositing the desired metal or alloy on said main cathode from said bath containing dispersed solid particles therein.

4,113,582

METHOD OF ADJUSTING A FUSED SALT ELECTROLYTIC BATH

Shin-ichi Tokumoto; Eiji Tanaka, both of Yokohama; Tatsuo Kikuchi, Hoya; Kenji Ogisu, Yokohama, and Toshiro Tsumori, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 1, 1977, Ser. No. 802,487
Claims priority, application Japan, Jun. 4, 1976, 51-65921
Int. Cl.² C25D *3/66*
U.S. Cl. 204—39 **12 Claims**



1. An electrodeposition process comprising the steps of:

(a) preparing a fused salt electrolytic bath containing at least alkali and alkaline earth metal chloride salts therein;

(b) providing at least operational first and second cathode electrodes and at least one operational anode electrode within said bath;

(c) adding a higher valency salt of a metal to be deposited from said bath or higher valency salts of constituent metals of an alloy to be deposited from said bath to said bath;

(d) reducing said higher valency salt into a lower valency salt on said first cathode;

(e) removing said lower valency salt from said first cathode and dispersing said lower valency salt within said bath; and

(f) electrodepositing the metal or alloy from said bath onto said second cathode.

4,113,583

METHOD FOR BRIGHTENING THE ELECTRODEPOSITS OF ZINC FROM ALKALINE ZINC ELECTROPLATING BATHS

Kathuhide Oshima, Tokyo; Haruyuki Takasaki, Ichihara, and Akio Takahashi, Kisarazu, all of Japan, assignors to Dipsol Chemical Company, Ltd., Tokyo, Japan

Filed Mar. 21, 1977, Ser. No. 779,560
Claims priority, application Japan, Apr. 27, 1976, 51-47162
Int. Cl.² C25D *3/22, 3/24*
U.S. Cl. 204—55 Y **6 Claims**

1. A method for the electrodeposition of bright zinc which comprises electrodepositing zinc from an aqueous alkaline zinc electroplating bath comprising a water soluble compound prepared by reacting an imidazole compound which is imidazole and/or at least one substituted imidazole with at least one organic compound selected from the group consisting of monochloroacetic acid, benzyl chloride, chloroacetamide, 3-aminobenzyl chloride, dichloroglycerine, methyl iodide, allyl chloride, dichloroethane, and monochloropropane,

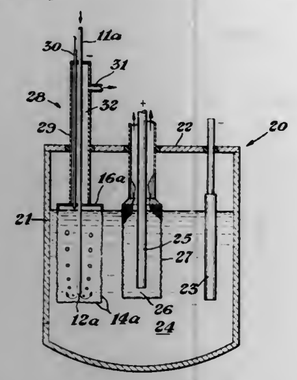
which quaternizes nitrogen in said imidazole compound in the presence of water.

4,113,584

METHOD TO PRODUCE MULTIVALENT METALS FROM FUSED BATH AND METAL ELECTROWINNING FEED CATHODE APPARATUS

David R. Johnson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 517,568, Oct. 24, 1974, abandoned. This application Sep. 13, 1976, Ser. No. 722,851
Int. Cl.[2] C25C *3/00*
U.S. Cl. 204—64 R 23 Claims



17. A method to electrolytically produce a multivalent metal from a compound of the metal in a fused halide electrolyte in an electrolytic cell comprising:

(a) feeding the multivalent metal compound to a feed cathode including a multivalent metal compound feed conduit with at least one outlet to pass the metal compound therethrough from a metal compound source to the electrolyte, a member surrounding and substantially entirely enclosing at least the outlet of the conduit, the member being at least partially formed of an electrically conductive foraminous body;

(b) impressing a negative electric potential on the foraminous body to at least partially reduce multivalent metal ions from the compound from a higher valence to a lower valence;

(c) impressing an electric potential between an anode and a deposition cathode in the electrolytic cell to release a halogen at the anode and to deposit the multivalent metal at the deposition cathode.

4,113,585

METHOD AND APPARATUS FOR ELECTROLYSIS OF ALKALI OR ALKALINE EARTH METAL HALIDE

Paul Raphael Resnick, Wilmington, Del., and Walther Gustav Grot, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 623,920, Oct. 20, 1975, which is a continuation-in-part of Ser. No. 406,361, Oct. 15, 1973, abandoned. This application Sep. 21, 1977, Ser. No. 835,804
Int. Cl.[2] C25B *1/16, 13/08*
U.S. Cl. 204—98 27 Claims

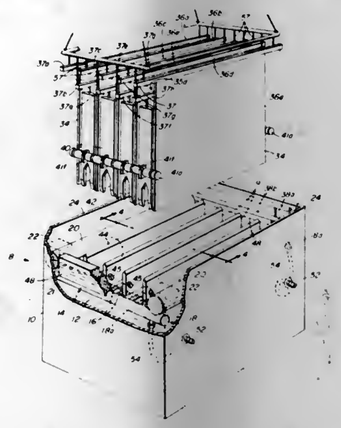
1. In a process of production of halogen and metal hydroxide of an alkali, alkaline earth metal, or combinations thereof, by electrolysis of a halide of said metal employing separate anode and cathode sections in an electrolytic cell, the improvement comprising passing ions of said metal through a film comprising a fluorine-containing polymer containing pendant side chains with sulfonyl groups attached to a carbon atom having at least one fluorine atom connected thereto, at least 40% of the sulfonyl groups in a first layer of said film in a thickness of at least 200 angstroms present as ion exchange sites of a salt of said metal of N-monosubstituted sulfonamido groups formed through reaction of a primary amine and at least a majority of the sulfonyl groups in a second layer of said film present as ion exchange sites in ionic form, said first layer facing the cathode portion of the cell.

4,113,586

METHOD AND APPARATUS FOR THE ELECTROLYTIC RECOVERY OF METAL EMPLOYING ELECTROLYTE CONVECTION

Glenn Cook, Harvard, and Paul Larson, Peabody, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Oct. 25, 1977, Ser. No. 845,128
Int. Cl.[2] C25C *1/00, 7/00*
U.S. Cl. 204—105 R 22 Claims



15. A method of performing electrodeposition at a high ratio of current density to metal ion concentration in a cell which includes anodes, cathodes, and an electrolyte with the attendant production of high quality metal which can be easily stripped from the cathodes, comprising the steps of:

positioning non-conductive convection edge baffles adjacent to opposite edges of the anode faces so as to extend toward the cathode faces,

providing cathodes that extend downwardly to a level below the bottom edge of the anodes, and that are wider than the anodes so that the edges of the cathodes extend outwardly beyond the convection edge baffles,

assembling said cathodes, anodes, and edge baffles to form an electrode assembly of spaced apart, interleaved cathodes and anodes, whereby said opposed anode and cathode faces are spaced apart from each other at a distance of less than about two inches,

providing a bottom baffle assembly to mate and align with the electrode assembly, said baffle assembly having bubble tubes spaced apart in an integral relationship thereto,

providing an upward force, acting on said bottom baffle assembly, urging said assembly to rise to an alignment state near the top of said electrolyte,

aligning said electrode assembly, having interleaved cathodes and anodes, with said baffle assembly as the electrode assembly is placed, as a unitary structure, into the electrolyte, and submerging said electrode assembly below the surface of the electrolyte, whereby said bottom baffle assembly is submerged, the bubble tubes are positionally aligned with non-conductive anode extensions and the cathode faces, and the non-conductive anode bottom extensions are positioned beneath the anodes,

supplying gas to said bubble tubes through at least one flexible conduit, and

electrodepositing metal on the cathodes while generating

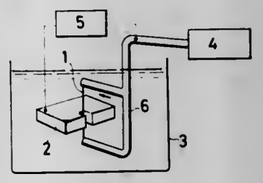
sheets of gas bubbles from the bubble tubes, each sheet passing through the electrolyte between opposed anode-cathode faces to produce agitation of the electrolyte over the cathode faces as metal is being deposited thereon and maintaining the convection edge baffles during electrodeposition to form enclosures between the anode and cathode faces to minimize lateral spreading and contraction of the sheets of bubbles and to prevent deposition of metal at edges of the cathodes extending beyond the baffles, and preventing electrodeposition on the bottom of the cathode faces by the combination of the submerged length of the cathodes and the anode bottom extensions.

4,113,587

METHOD FOR ELECTROCHEMICAL MACHINING

Kunio Chikamori, Tokyo, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan

Continuation of Ser. No. 602,135, Aug. 5, 1975, abandoned. This application Sep. 12, 1977, Ser. No. 833,862
Claims priority, application Japan, Aug. 5, 1974, 49-89723
Int. Cl.[2] B23P *1/00*
U.S. Cl. 204—129.1 5 Claims



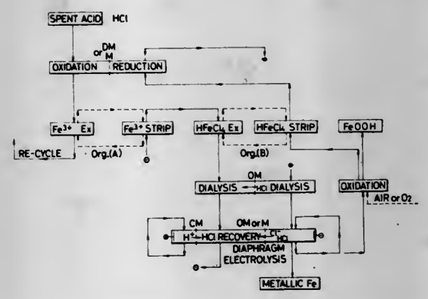
1. In a method for electrochemical machining wherein desired machining of a work blank is effected by having said work blank and a cathode disposed opposite each other across a gap in an electrolyte and supplying an electric current to flow between said work blank and said cathode at an anode current density of 30 to 300 A/cm^2, the improvement which comprises supplying a pulsating electric current having a pulse width of 0.01 ms to 10 ms and a duty factor of not more than 0.5 to flow between the work blank and the cathode while said electrolyte is moved only by gas generated in the electrolyte by the pulsating electric current.

4,113,588

PROCESS FOR RECOVERY OF WASTE H_2SO_4 AND HCL

Morio Watanabe, Amagasaki, and Sanji Nishimura, Kyoto, both of Japan, assignors to Solex Research Corporation of Japan, Osaka, Japan

Filed Mar. 2, 1977, Ser. No. 773,657
Claims priority, application Japan, Mar. 9, 1976, 51/25223; Mar. 25, 1976, 51/33029; Oct. 4, 1976, 51/118598
Int. Cl.[2] C25B *1/22*
U.S. Cl. 204—151 29 Claims



1. A process for the recovery of waste H_2SO_4 and HCl from aqueous metal pickling solutions which contain large amounts of Fe ions comprising:

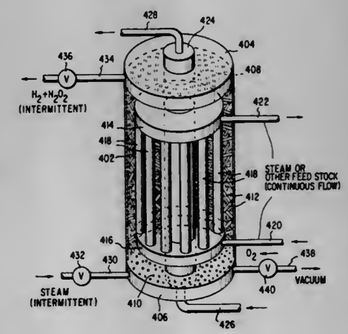
1. converting the Fe^{2+} ions in the waste to Fe^{3+} ions in an oxidation reduction cell wherein the waste solution is the anolyte and the catholyte is an HCl solution containing Fe^{3+} ions, the used catholyte thus containing Fe^{2+} ions;
2. extracting the Fe^{3+} ions from the anolyte from step (1) with an organic solvent A to recover the HCl or H_2SO_4;
3. stripping the Fe^{3+} ions from the used solvent A by contacting it with an HCl containing stripping solution and thus regenerating solvent A for reuse;
4. recovering the Fe^{3+} ions from the HCl stripping solution by liquid-liquid extraction thereof with an organic solvent B to form an $FeCl_3$-complex therein;
5. regenerating solvent B by contacting it with an aqueous extractant to extract the $FeCl_3$ therefrom and using the Fe^{3+} containing extractant as the catholyte in step (1);
6. recovering the iron values in the used catholyte from step (1) by diaphragm electrolysis; and
7. regnerating the HCl strip solution from step (4) by subjecting to the diaphragm electrolysis of step (6).

4,113,589

HIGH INTENSITY ENERGY TRANSFER TECHNIQUE

Sam L. Leach, P.O. Box 2536, Palos Verdes Peninsula, Calif. 90272

Filed Apr. 25, 1977, Ser. No. 790,320
Int. Cl.[2] B01J *1/00, 1/10*
U.S. Cl. 204—157.1 R 24 Claims



16. A method of reactively generating hydrogen and/or hydrogen peroxide from water vapor where the water vapor has a predetermined absorption versus frequency characteristic, comprising the steps of:

a. providing heat sink material comprising a metal or oxide thereof capable of displacing hydrogen from water vapor to form an oxide of said metal at a higher oxidation number exothermically with the production of a predetermined amount of heat; said metal oxide of higher oxidation number being capable of dissociation or disproportionation spontaneously to release oxygen at a predetermined dissociation temperature in the absence of free oxygen, with heat input less than said predetermined amount of heat;

b. heating said heat sink material to a temperature at which it will displace hydrogen from water vapor;

c. providing sensitizer material located in proximity to said heat sink material, said sensitizer material having an energy output characteristic when in the excited state which corresponds to at least one energy absorption region of said water vapor;

d. providing host material associated with said sensitizer material for absorbing energy from said heat sink material and for exciting said sensitizer;

e. passing water vapor over said heat sink material and in the immediate vicinity of said sensitizer and host material whereby said metal oxide of higher oxidation number and hydrogen are formed exothermically; and whereby the broad radiation versus frequency spectrum of said heat sink material is concentrated and applied to said water vapor in the absorption band or bands of said water vapor, to break up the water vapor molecule and form hydrogen and/or hydrogen peroxide;
f. removing said hydrogen and/or hydrogen peroxide;
g. dissociating oxygen from said metal oxide of higher oxidation number by removing free oxygen from the vicinity of said heat sink material with said heat sink material being at a temperature above said predetermined dissociation temperature, to thereby form said metal or oxide thereof and oxygen;
h. removing said oxygen continuously during the dissociation step (g); and
i. repeating steps (e), (f), (g), and (h).

4,113,590

PHOTOREDUCTION OF NITROGEN

Gerhard N. Schrauzer, and Ted D. Guth, both of La Jolla, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 5, 1977, Ser. No. 812,478
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—157.1 R **16 Claims**

1. A method for the photoreduction of nitrogen which comprises reducing nitrogen to ammonia by irradiating metal oxide selected from the group consisting of titanium dioxide and metal-doped titanium dioxide with ultraviolet light in the presence of gaseous nitrogen and water, and recovering such ammonia.

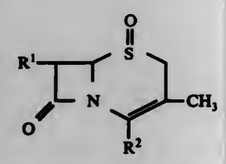
4,113,591

PREPARATION OF CEPHALOSPORIN COMPOUNDS

Brian Loasdon, Northolt; Brian Richard Cowley, Greenford, and David Cedric Humber, London, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

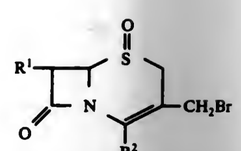
Continuation of Ser. No. 593,273, Jul. 7, 1975, abandoned, which is a continuation of Ser. No. 455,073, Mar. 27, 1974, abandoned, which is a continuation of Ser. No. 306,308, Nov. 14, 1972, abandoned, which is a division of Ser. No. 66,128, Aug. 21, 1970, abandoned. This application Dec. 10, 1976, Ser. No. 749,300
Claims priority, application United Kingdom, Aug. 26, 1969, 42502/69; Mar. 26, 1970, 14980/70; Jan. 23, 1970, 3463/70; Jul. 10, 1970, 33698/70
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—158 HA **4 Claims**

1. A process which comprises reacting in the presence of irradiation by ultraviolet, visible light or γ-rays a compound of the formula



(I)

wherein R^1 is phenylacetamido or phenoxyacetamido and R^2 is carboxy or blocked carboxy with a brominating agent to produce a compound of the formula



(II)

wherein R^1 and R^2 are as defined for formula (I).

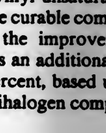
4,113,592

TRIHALOGENATED HYDROCARBONS AS CO-PHOTOINITIATORS

Charles B. Rybny, Clifton; John C. Trebellas, Berkeley Heights, both of N.J., and Donald E. Sargent, Greenfield Center, N.Y., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 14, 1975, Ser. No. 568,216
Int. Cl.[2] C08F *8/00, 2/46*
U.S. Cl. 204—159.16 **11 Claims**

1. In an ultraviolet curable titanium dioxide pigmented protective coating composition, said coating based on the total weight of the curable composition, containing about 40 to about 100 percent, by weight, of an alpha beta ethylenically unsaturated vinyl polymerizable compound containing at least about two sites of vinyl polymerizable unsaturation, about 60 to about 0 percent of another alpha beta ethylenically unsaturated vinyl polymerizable composition containing no more than about one site of vinyl unsaturation, and up to about 15 percent, by weight of the curable composition, of an ultraviolet organo photoinitiator, the improvement of which consists essentially of utilizing as an additional photoinitiator about 25 to about 200 weight percent, based upon the standard photoinitiator, of a terminal trihalogen compound having the general formula



wherein X is bromine, chlorine, or iodine, or mixtures thereof, A is bromine, chlorine, or iodine, a C_1–C_{12} hydrocarbon radical, a C_1–C_{12} halogenated hydrocarbon, or a C_1–C_{12} amine, carboxylic acid, alcohol, ketone, or aldehyde, and when X is iodine, A may, in addition, by hydrogen, wherein the A substituents are not interferingly reactive with the ultraviolet cure mechanism, and exposing the photoinitiator-containing coating to ultraviolet light at a power of about 200 watts for up to about 1 minute/linear foot.

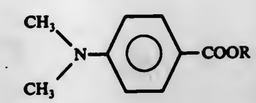
4,113,593

BENZOPHENONE-CONTAINING PHOTOPOLYMERIZABLE BINDERS FOR PRINTING INKS AND COATING COMPOSITIONS

Helmut Barzynski, Bad Durkheim, and Guenter Heil, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 634,877, Nov. 24, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,796
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1974, 2458345
Int. Cl.[2] C08F *8/18, 2/46*
U.S. Cl. 204—159.15 **14 Claims**

1. A binder for UV-curing coating compositions and printing inks, based on one or more polymerizable olefinically unsaturated compounds, which contains, as photoinitiator, a mixture of (a) a photoinitiator which consists essentially of benzophenone or a benzophenone derivative which has a relatively low absorption at from 300 to 380 nm and (b) a photosensitizer which has a stronger absorption in the same wavelength range, wherein the sensitizer (b) consists essentially of p-dimethylaminobenzaldehyde or an ester of p-dimethylaminobenzoic acid of the formula



where R is alkyl of 1 to 12 carbon atoms, aryl of 6 to 14 carbon atoms or cycloalkyl or aralkyl of 15 to 40 carbon atoms and a second p-diemthylaminobenzoate group may be present in R.

4,113,594

POLY(TETRAMETHYLENETEREPHTHALATE) CROSSLINKED BY IRRADIATION

David Dolph Nyberg, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 702,202, Jul. 2, 1976, Pat. No. 4,073,830, which is a continuation-in-part of Ser. No. 405,522, Oct. 11, 1973, Pat. No. 3,968,015. This application Dec. 1, 1977, Ser. No. 856,500
Int. Cl.[2] C08F *8/00;* C08G *18/00*
U.S. Cl. 204—159.15 **6 Claims**

1. A process for crosslinking poly(tetramethyleneterephthalate) comprising subjecting poly(tetramethyleneterephthalate) containing at least one part by weight of triallyl cyanurate per 100 parts by weight of polymer to irradiation with ionizing radiation to a dose of from about 2 to about 80 megarads and to a heating step wherein said heat may be applied during or after irradiation.

4,113,595

PROCESS FOR PRODUCING MOLDED PRODUCT COMPOSED OF CROSSLINKED RESIN OR CROSSLINKED-RESIN COATED MATERIAL ON A SUBSTRATE BY MEANS OF ELECTRON BEAM

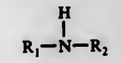
Miyuki Hagiwara, Maebashi; Kunio Araki, Takasaki; Shingo Matsuoka, Tokai, and Syunichi Fujimura, Hiratsuka, all of Japan, assignors to Japan Atomic Energy Research Institute and The Furukawa Electric Company Limited, both of Tokyo, Japan

Filed Dec. 9, 1975, Ser. No. 639,066
Claims priority, application Japan, Dec. 11, 1974, 49-142272
Int. Cl.[2] C08F *8/00*
U.S. Cl. 204—159.17 **13 Claims**

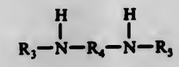
1. A process for preventing Lichtenberg breakdown in the production of a molded product by irradiating a polyolefin resin with an electron beam comprising forming a blend consisting essentially of
(1) a polyolefin-resin,
(2) a compound represented by the formula

X—Ym

wherein X is a group not containing an acetylenic linkage, Y is a group containing an acetylenic linkage, and *m* is an integer of 1 or more, which is compatible with the resin at a room temperature or an elevated temperature, and
(3) an aromatic secondary amino compound selected from the group consisting of (a) an aromatic secondary amino compound represented by the formula



wherein each of R_1 and R_2 is independently aliphatic hydrocarbon, alicyclic hydrocarbon, or aromatic hydrocarbon provided that at least one of R_1 and R_2 is aromatic hydrocarbon, and each of the aliphatic hydrocarbon, the alicyclic hydrocarbon and the aromatic hydrocarbon may be substituted with hydroxy, methoxy, nitrile, chloro, bromo or fluoro; (b) an aromatic secondary amino compound represented by the formula



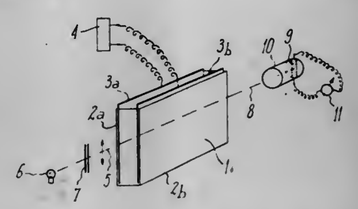
wherein each of R_3, R_4 and R_5 is independently aliphatic hydrocarbon, alicyclic hydrocarbon, or aromatic hydrocarbon, provided that at least one of R_3, R_4 and R_5 is aromatic hydrocarbon, and each of the aliphatic hydrocarbon, the alicyclic hydrocarbon and the aromatic hydrocarbon may be substituted with hydroxy, methoxy, nitrile, chloro, bromo or fluoro; and (c) a mixture thereof which is compatible with the resin at room temperature or at an elevated temperature the amount of the aromatic secondary amino compound being sufficient to prevent Lichtenberg breakdown of the resin; molding said blend or coating a substrate with said blend, and irradiating the resulting molded material or the resulting coated material with an electron beam.

4,113,596

METHOD OF MEASURING THE MOBILITY OF COLLOIDS IN AN ELECTRICAL FIELD

Pierre Albert Eugéne Treille, Saint Cloud; Jacques Claude Antoine Moles, Nanterre; Maurice Gabriel Ernst Bonnemay, Boulogne; Jean Paul Royon, La Varenne-St. Hilaire; Michel Marc Levart, Issay-les-Moulineaux; Henri Pierre Gaessler, Aubervilliers, and Yves Robert Richard, Marly-le-Roi, all of France, assignors to Degremont, Rueil-Malmaison, France

Filed Aug. 19, 1975, Ser. No. 605,926
Claims priority, application France, Sep. 6, 1974, 74 30259
Int. Cl.[2] G01N *27/26, 27/28*
U.S. Cl. 204—180 R **12 Claims**



1. A method for determining an optimum dosage of a coagulant to be added to a liquid to be treated and having colloidal particles suspended therein, to achieve optimum clarification of the liquid, said method comprising:
providing a tank having at two opposite walls thereof substantially parallelly spaced electrodes;
performing a plurality of density change measuring operations, each such density change measuring operation comprising:
placing a quantity of liquid to be treated within said tank;
adding a predetermined dosage of coagulant material to said liquid to thereby cause floculation of colloidal particles within said liquid;
passing a flat beam of radiation completely longitudinally through said liquid in said tank at a position closely adjacent one of said electrodes and spaced from the other of said electrodes, while maintaining said beam of radiation parallel to said electrodes;
measuring the intensity of said beam of radiation after passage thereof through said tank to obtain a first measurement of optical density of said liquid;
thereafter applying an electric field between said electrodes, thereby causing the unfloculated of said colloidal particles to move from a first of said electrodes toward a second of said electrodes;
thereafter, after a predetermined period of time, again

measuring the intensity of said beam of radiation after passage thereof through said tank to obtain a second measurement of optical density of said liquid, while maintaining said beam of radiation closely adjacent said first electrode; and

comparing the first and second measurements of optical density to obtain a measurement of the change in optical density of the liquid as a function of the amount of unfloculated of said colloidal particles within said liquid;

the predetermined dosage of coagulant material added in each of said density change measuring operations being different; and

comparing the measurements of change in optical density obtained from each of said density change measuring operations to determine the particular dosage representative of the least amount of change in optical density, such particular dosage representing the optimum dosage to achieve optimum clarification of the liquid to be treated.

4,113,597

CATHODIC ELECTRODEPOSITION OF POLYAMINE RESINS USING CARBONIC ACID NEUTRALIZATION

Rafat T. Rabi, Villa Park, Ill.; Edward J. Murphy, Williamsport, Pa., and John A. Bessoms, Chicago, Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Nov. 26, 1976, Ser. No. 745,240
Int. Cl.² C25D *13/06, 13/10*
U.S. Cl. 204—181 C 9 Claims

1. A method for the cathodic electrodeposition of polyamine resin from a dispersion thereof in an aqueous electrocoating bath comprising, selecting a polyamine resin which is stably dispersible in water in the form of a salt with a solubilizing acid at a pH of from 6.0–7.5, a proportion of the amine groups in said polyamine resin within said bath being reacted with a relatively nonvolatile solubilizing acid, substantially completely neutralizing said polyamine resin with carbonic acid, dispersing said neutralized resin in water in the form of an amine carbonate or bicarbonate, and passing a unidirectional electrical current through an aqueous electrocoating bath containing said amine carbonate or bicarbonate at pH 6.0–7.5 to deposit said polyamine resin at the cathode and cause the release of carbon dioxide.

4,113,598

METHOD FOR ELECTRODEPOSITION

Edward L. Jozwiak, Jr., Gibsonia, and Suryya K. Das, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 599,746, Jul. 28, 1975. This application Jun. 7, 1977, Ser. No. 804,410
Int. Cl.² C25D *13/06*
U.S. Cl. 204—181 R 7 Claims

1. A method of coating an electrically conductive surface which comprises passing electric current between an electrically conductive anode and an electrically conductive cathode in contact with a water-dispersed coating composition comprising a resinous vehicle which is the addition polymerization reaction product of:

(A) a material having $CH_2{=}C<$ moieties,

(B) an at least 30 percent neutralized reaction product of:

(1) an alpha, beta-ethylenically unsaturated dicarboxylic acid or its anhydride containing from 4 to 11 carbon atoms, and

(2) polybutadiene which is a liquid at room temperature and which has a molecular weight of 700–5000;

said polymeric reaction product having been produced in aqueous medium in the presence of an oil-soluble free radical polymerization catalyst and a chain transfer agent.

4,113,599

SPUTTERING TECHNIQUE FOR THE DEPOSITION OF INDIUM OXIDE

F. Howard Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 26, 1977, Ser. No. 836,269
Int. Cl.² C23C *15/00*
U.S. Cl. 204—192 P 6 Claims

1. A method for the controlled deposition of an oxide-containing film of a metal selected from the group consisting of metals having an atomic number from 48 to 51 and mixtures thereof, comprising the steps of

a. evacuating a coating chamber to a pressure less than 10^{-1} torr;

b. flowing through said chamber a gas mixture comprising oxygen and a chemically inert gas while maintaining a total pressure of less than 10^{-1} torr;

c. heating a substrate selected from the group consisting of glass and other refractory materials to at least 200° C. in the evacuated chamber;

d. applying sufficient voltage to a cathode, spaced from and in facing relation to said substrate and faced with the selected metal, to cause sputtering of the selected metal;

e. monitoring the discharge current and gas pressure in the chamber during the course of sputtering;

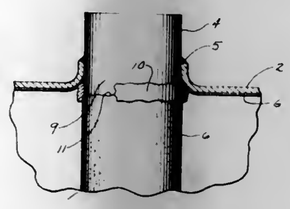
f. increasing the flow rate of oxygen and decreasing the flow rate of the chemically inert gas into the chamber as necessary in response to changes in said monitored discharge current and gas pressure to maintain a constant discharge current at a constant pressure.

4,113,600

FLUE PIPE ANODE RING FOR WATER HEATER

Robert E. Cook, Kankakee, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Apr. 21, 1977, Ser. No. 789,643
Int. Cl.² C23F *13/00*
U.S. Cl. 204—197 1 Claim



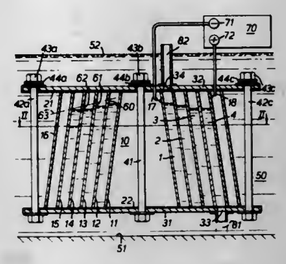
1. In a water heater having a shell and an upper head secured to the shell and a glass coating fused to the inside of the shell and head, a metal flue extending through the upper head and secured to the head to provide a tight joint therebetween to discharge products of combustion, a glass coating on the outside of the flue extending to a line slightly removed from the inside of the upper head to expose the metal of the flue below the upper head, and anodic metal selected from the group consisting of zinc, aluminum and magnesium flame sprayed in the form of a continuous strip of metal on the exposed metal of the flue in intimate mechanical bond and electrical contact therewith and over the upper terminating end portion of the glass coating on the flue and into the joint between the head and shell to provide a press fit with the head and shell and a more consistent fit between the upper head and shell and operate as a separate located anode to protect any exposed metal of the flue directly below the upper head from corrosion.

4,113,601

WATER DECOMPOSING APPARATUS

Ernst Spirig, Movenstrasse 37, CH-8640 Rapperswil, Switzerland

Filed Feb. 4, 1977, Ser. No. 765,677
Claims priority, application United Kingdom, Dec. 9, 1976, 51446/76
Int. Cl.² C25B *15/00*
U.S. Cl. 204—230 13 Claims



1. Water decomposition apparatus for producing detonating gas, comprising

(a) an electrode assembly including

(1) a plurality of concentrically arranged vertically oriented hollow electrodes, the innermost and outermost electrodes being imperforate throughout their lengths, each of the intermediate electrodes containing adjacent its upper end at least one aperture;

(2) upper and lower insulating and sealing members cooperating with the upper and lower ends of said electrodes to form concentrically arranged individual cells between each adjacent pair of said electrodes, respectively, said lower member containing an inlet opening in communication with one of the innermost and outermost cells, and said upper member containing an outlet opening in communication with the other one of said innermost and outermost cells;

(3) means for supplying a liquid electrolyte into said one cell via said inlet opening, thereby to effect successive filling of said cells to the levels of the apertures associated therewith; and

(b) means for applying a direct-current potential across said innermost and outermost electrodes, whereby the gas evolved in said cells by said potential flows toward said outlet opening via the apertures associated with said cells.

4,113,602

INTEGRATED PROCESS FOR THE PRODUCTION OF HYDROCARBONS FROM COAL OR THE LIKE IN WHICH FINES FROM GASIFIER ARE COKED WITH HEAVY HYDROCARBON OIL

Martin L. Gorbaty, Fanwood, N.J.; Frank F. Tao, and Peter S. Maa, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Jun. 8, 1976, Ser. No. 693,830
Int. Cl.² C10G *1/04, 1/08, 9/32*
U.S. Cl. 208—8 12 Claims

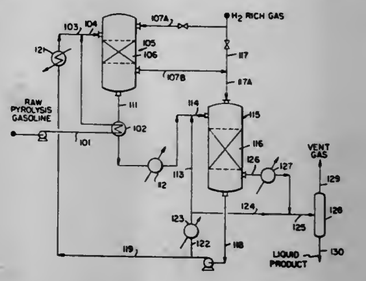
1. In a process wherein carbonaceous solids are gasified in a fluidized bed gasifier to produce a raw product gas and solid fines are carried overhead from said fluidized bed gasifier with said gas and separated from the gas, the improvement which comprises blending the separated fines with from about 0.1 to about 5 parts by weight per part of said fines of a heavy hydrocarbon oil boiling above about 1000° F., coking the resulting blend at atmospheric pressure and recovering coke particles having an average particle size substantially greater than that of said fines.

4,113,603

TWO-STAGE HYDROTREATING OF PYROLYSIS GASOLINE TO REMOVE MERCAPTAN SULFUR AND DIENES

William V. Bauer, New York, N.Y., assignor to The Lummus Company, Bloomfield, N.J.

Filed Oct. 19, 1977, Ser. No. 843,413
Int. Cl.² C10G *23/04*
U.S. Cl. 208—89 14 Claims



1. A process for hydrotreating a liquid petroleum fraction, containing dienes and mercaptan sulphur, comprising:

hydrotreating said liquid fraction, containing dienes and mercaptan sulphur, in a first stage in the presence of a non-noble metal catalyst to reduce the mercaptan sulphur content thereof; and

hydrotreating hydrotreated product from the first stage in a second stage in the presence of a noble metal catalyst to reduce the diene value.

4,113,604

PROCESS FOR TREATING A SOUR PETROLEUM DISTILLATE WITH ANION EXCHANGE RESIN AND WITH METAL PHTHALOCYANINE CATALYST

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 23, 1977, Ser. No. 799,825
Int. Cl.² C10G *27/06*
U.S. Cl. 208—206 7 Claims

1. A catalytic process for treating a mercaptan-containing sour petroleum distillate contaminated with acidic catalyst toxins or toxin precursors which comprises:

(a) contacting in a first step said distillate with an anion exchange resin comprising a porous styrene-divinylbenzene cross-linked polymer matrix having tertiary amine functional groups and recovering said distillate reduced in mercaptan content and substantially free of acidic catalyst toxins and precursors thereof;

(b) contacting in a second step said resultant distillate from step (a) with a supported metal phthalocyanine catalyst in admixture with an oxidizing agent and an alkaline solution having a pH of from about 9 to about 14; and

(c) recovering the thus treated distillate from step (b) substantially free of mercaptans.

4,113,605

CATALYTIC HYDROFINING PROCESS

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 776,762, Mar. 11, 1977, Pat. No. 4,094,820. This application Oct. 28, 1977, Ser. No. 846,419
Int. Cl.² B01J *23/88, 23/28;* C10G *13/06*
U.S. Cl. 208—216 10 Claims

1. A process for the hydrofining of a mineral oil feedstock containing organic sulfur and/or nitrogen compounds, which comprises contacting said feedstock plus added hydrogen, and under hydrofining conditions, with a sulfided catalyst which, prior to sulfiding, contained about 2–20 weight-percent of CoO

and/or NiO and about 5-35 weight-percent MoO_3, said catalyst having been prepared by the steps of:

(1) reacting in an aqueous slurry at least one carbonate or hydroxide of cobalt or nickel with at least a stoichiometric proportion of MoO_3 and/or molybdic acid to form finely divided undissolved crystalline cobalt- and/or nickel molybdate in aqueous suspension;

(2) mixing said aqueous suspension with sufficient alumina hydrate consisting essentially of gelatinous boehmite to provide about 50-90 wt.% Al_2O_3 in the finished catalyst;

(3) digesting and/or mulling the resulting mixture for at least about 0.5 hour with at least sufficient water to provide an extrudable plastic mixture;

(4) recovering from step (3) an extrudable plastic mixture;

(5) extruding the plastic mixture to provide extrudates of desired size and shape; and

(6) drying and calcining the extrudates at a maximum temperature between about 800° and 1500° F.

4,113,606

METHOD OF REMOVING SULFUR-CONTAINING IMPURITIES FROM HYDROCARBONS

Bernard F. Mulaskey, Fairfax, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 28, 1976, Ser. No. 727,488
Int. Cl.² C10G *29/04*
U.S. Cl. 208—244 **7 Claims**

1. In a process for removing an impurity comprising sulfur from a refined hydrocarbon feed by contacting said feed with a metal sulfide- and mercaptide-forming agent under sulfide- and mercaptide-forming conditions, thereby forming a metal sulfide and/or mercaptide, the improvement comprising employing as said agent a rigidly interconnected pack of irregularly shaped particles, said pack having a pore volume of at least 0.15 cc per cc and having access channels among said particles throughout said pack, said channels being interconnected macropores having diameters, as determined by mercury porosimetry, in the range of from about 0.1 to about 15 microns, and said macropores contributing at least 5 percent of said pore volume; said particles of said pack being (1) of the same or different materials and (2) sized in the average diameter range below about 0.15 mm; and (3) composed of at least one material selected from the group consisting of (a) the metals copper, iron and zinc and sulfide- and mercaptide-forming compounds of said metals, (b) composites of at least one of said metals and compounds in (a) with at least one refractory oxide selected from the oxides of the metals of Groups II, III and IV of the Periodic Chart of the Elements and (c) at least one of said refractory oxides; said pack (1) having a surface area in the range of from about 2 to 700 square meters per gram, and (2) containing at least one weight percent of said at least one material listed in 3(a) above.

4,113,607

DENITRIFICATION PROCESS FOR HYDROGENATED DISTILLATE OILS

Stephen J. Miller, Emeryville, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 3, 1977, Ser. No. 773,995
Int. Cl.² C10G *21/00, 29/12*
U.S. Cl. 208—254 R **9 Claims**

1. A process for upgrading a hydrogenated distillate oil containing a residual nitrogenous component in an amount, calculated as nitrogen, in the range of from about 10 to 600 ppmw, comprising:

(1) extracting a major portion of said component from said oil using a solution of ferric chloride, said extracting being under conditions including (a) a temperature in the range of from about 0° to 50° C and (b) a solution-to-oil volume ratio in the range of from about 0.1 to 5, said solution containing at least a major portion of furfural as the solvent thereof and containing said ferric chloride therein in the range of from about 0.001 to 10 weight percent thereby forming a raffinate oil phase containing a minor portion of said nitrogenous component; and

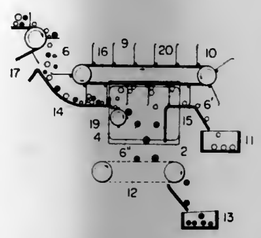
(2) withdrawing said raffinate oil phase from step (1).

4,113,608

APPARATUS FOR SEPARATING NON-MAGNETIC MATERIALS OF DIFFERENT DENSITIES

Saburo Kazama, Hiratsuka; Hideo Abe, Yokosuka; Isao Satoh, Yokohama; Takashi Ikeguchi, Hitachi; Shunsuke Nogita, Hitachi; Masayoshi Kubota, Hitachi, and Kiyoshi Muramori, Yokohama, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 3, 1976, Ser. No. 720,502
Claims priority, application Japan, Sep. 3, 1975, 50-10600
Int. Cl.² B03B *5/28, 13/04*
U.S. Cl. 209—1 **3 Claims**



1. An apparatus for separating substantially non-magnetic materials of different densities, comprising:

means, including a pair of poles pieces laterally spaced from each other on opposite sides of a horizontal conveying path, for generating a magnetic field having a gradient in a vertical direction in an air gap defined between the pair of spaced magnetic pole pieces through which the conveying path extends; generally vertical side walls generally parallel to and on opposite sides of the conveying path; a quantity of magnetic fluid retained completely between both of said side walls, having opposed open entrance and exit end surfaces aligned with the conveying path and an open bottom surface;

a first horizontal guide bottom for supplying the materials to be separated to the magnetic fluid and extending from an end portion outside of one end of said magnetic fluid along said conveying path through the entrance surface of said magnetic fluid to an inside end portion within said magnetic fluid;

a second horizontal guide bottom extending from an inner end portion within said magnetic fluid that is horizontally spaced from and aligned with the first guide bottom inner end, extending along said conveying path through the exit surface of said magnetic fluid to an outside end portion outside of the opposite end of said magnetic fluid, for discharging materials separated by flotation within said magnetic fluid, and having a portion depending from the inner end to adjacent said open bottom surface;

means for supplying a mixture of substantially non-magnetic material of different densities onto the outside end portion of said first horizontal guide bottom;

an endless conveyor means located completely above said magnetic fluid having an endless array of downwardly opening comb-like flights extending into said magnetic fluid and running horizontally along the conveying path through an upper part of said magnetic fluid between said side walls, above said guide bottoms, and through said entrance and exit surfaces of said magnetic fluid;

said conveying means raking material supplied onto the outside end of said first horizontal guide bottom along said first horizontal guide bottom through said entrance surface and into said magnetic fluid to the spacing between said inner end portions of said first and second horizontal guide bottoms, conveying the ones of said materials that are floating within the spacing between said inner end portions across the spacing between said inner end portions onto said inside end portion of said second horizontal guide bottom;

said conveyor means further raking the floating ones of said materials along said second guide bottom through said exit surface and out of said magnetic fluid to a recovery station; and

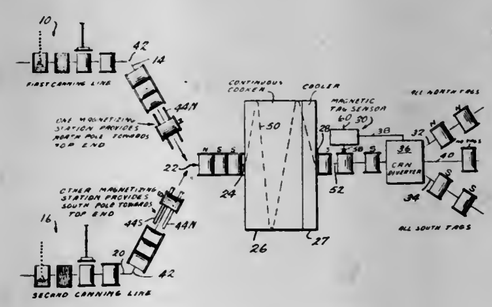
separate means for recovering the others of said materials after they have sunk downwardly in said magnetic fluid through said open bottom surface from the spacing between said inner end portions and downwardly below the endless path of said flights, said separate means being located entirely beneath said magnetic fluid.

4,113,609

MAGNETIC CAN SORTER

Charles A. King, Vienna, Va., and Robert P. Gutterman, Bethesda, Md., assignors to General Kinetics, Incorporated, Rockville, Md.

Filed Aug. 20, 1976, Ser. No. 716,285
Int. Cl.² B07C *5/34*
U.S. Cl. 209—609 **23 Claims**



1. A magnetic can sorting method, comprising:

(a) filling and closing cans in a first line;

(b) filling and closing cans in a second line;

(c) magnetically tagging each can from the first line with a like sense of polarity, and not likewise tagging the cans from the second line thereby providing a basis for discriminating between cans originating in the first and second line; in step (c) the sidewall of each can from the first line being magnetized in a sense which provides a north pole adjacent the same one end of each can from the first line, and a south pole adjacent the same opposite end of each can from the first line;

(d) after performing step (c), merging the cans from the first and second lines into a common group;

(e) performing at least one processing or transporting step in common upon the common group of cans;

(f) examining each can for the presence of said like sense of polarity;

in step (f) a like end of each can being moved into proximity with an electrical conductor whose electrical conductivity is substantially affected by the proximity and orientation of a magnetic field but not by the velocity of each can relative to the conductor; and the examining step includes

sensing whether change in conductivity of the electrical conductor is characteristic of that produced by proximity of a can tagged with said like sense of polarity;

in moving each can into proximity with an electrical conductor, said like end of each can is brought into proximity with a ring-shaped probe element of the electrical conductor, the ring-shaped probe having substantially the same diameter as the can and each examination being made at the respective moment when each respective can is substantially in coaxial registry with the probe;

and on the basis of such exmination:

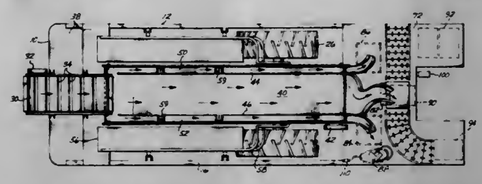
(g) sorting the common group of cans into a first sort consisting of cans having said like sense of plarity and a second sort consisting of cans not having said like sense of polarity.

4,113,610

AGRICULTURAL SORTING AND PACKING APPARATUS

Loren H. Mueller, Rte. 7, Box 62, Yakima, Wash. 98903

Filed Oct. 28, 1976, Ser. No. 736,560
Int. Cl.² B07C *7/00*
U.S. Cl. 209—705 **6 Claims**



1. An agricultural sorting and packing apparatus comprising in combination:

(a) a base frame construction,

(b) an input conveyor assembly mounted on said frame construction carrying a slanted upward moving endless belt for receiving associated harvested produce,

(c) a sorting conveyor assembly mounted on said frame construction sequentially next to said input conveyor assembly for receiving said produce to be sorted, said sorting conveyor carrying a substantially horizontally positioned moving endless belt,

(d) a control station assembly mounted on said frame construction, sequentially next to said sorting conveyor, comprising guideways and a platform, for guiding said sorted produce from said sorting conveyor belt via said guideways to containers positioned on said platform for packing and shipping,

(e) said input conveyor assembly, said sorting conveyor assembly and said control station assembly mounted in compact, successive arrangement whereby said sorting conveyor assembly is located at an elevated position so that an associated tractor or the like is positioned and fastened by connecting means for fastening said tractor underneath said sorting conveyor assembly to said base frame construction, and wherein said input conveyor assembly can be manually removed from said frame construction whereby an entry opening is formed in said agricultural sorting and packing apparatus front portion for receiving said tractor so that part of said frame construction remains underneath said tractor between said tractor's wheels for mounting of said tractor at rear and front to said frame construction, and

(f) said connection means for said tractor to said frame construction comprises (1) back-in-rear tractor connector means mounted to said frame construction, and (2) front fastening means provided between said tractor front portion and said base frame construction for mounting said tractor to said frame construction so that said tractor, when mounted to said frame construction, forms a one mobile unit.

4,113,611

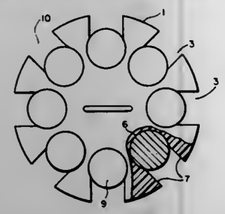
MAGNETIC PIPE CLEANER

William G. Gohn, Springfield, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 16, 1976, Ser. No. 742,474
Int. Cl.² B03C *1/28*
U.S. Cl. 209—215 **6 Claims**

1. A magnetic pipe cleaner comprising a cylindrical non-

magnetic plug slightly smaller in diameter than the pipe to be cleaned, means for attaching a cable to said plug, said plug having a plurality of radially disposed kerfs extending inwardly from the outer periphery thereof, a plurality of magnets disposed in the bottom portions of said kerfs, said magnets



being so disposed in said kerfs so that there is a space between the outer periphery of the plug and the magnet, whereby when pulled through a pipe magnetic debris is collected in the space between the magnet and the outer periphery of the plug and is removed from the pipe.

4,113,612

METHOD OF IMPROVING THE BACKWASHING OF FIXED BEDS FORMED OF GRANULAR MATERIALS

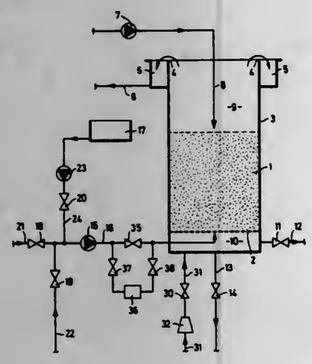
Ivan Sekoulov, and Wolf-Rüdiger Müller, both of Stuttgart, Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 25, 1977, Ser. No. 771,959

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608899

Int. Cl.² C02C *1/04*; B01D *37/00*

U.S. Cl. 210—17 **23 Claims**



1. A method of improving the backwashing of fixed beds composed of granular material and employed in the purification of waste water of sewage or in the preparation of water, comprising the steps of:

filling the fixed bed during the course of a backwashing operation with a liquid containing hydrogen peroxide;

maintaining the fixed bed filled with said liquid during a predetermined period of time while the liquid is in a substantially quiescent state;

contacting said liquid containing hydrogen peroxide with at least one catalyst taken from the group consisting essentially of granular iron, manganese dioxide, potassium permanganate, or an enzyme or enzyme product of a microorganism which yields oxygen as a gaseous component as a result of a spontaneous, catalytically triggered decomposition reaction;

allowing such decomposition reaction to occur in the fixed bed and rapidly releasing gaseous oxygen in a short time to intensely agitate the filter bed; and

then backwashing the fixed bed of water.

4,113,613

METHOD OF IMPROVING THE OPERATION OF BACKWASHABLE FIXED BEDS FORMED OF GRANULAR MATERIALS

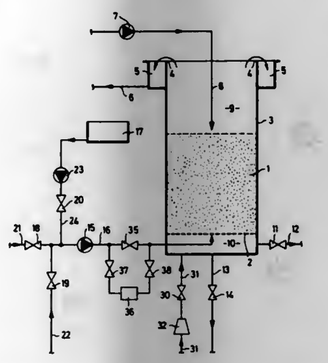
Ivan Sekoulov, and Wolf-Rüdiger Müller, both of Stuttgart, Fed. Rep. of Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 25, 1977, Ser. No. 771,958

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608899

Int. Cl.² C02C *1/04*; B01D *37/00*

U.S. Cl. 210—17 **14 Claims**



1. A method of improving the operation of backwashable fixed beds of granular material and employed in the purification of waste water or water treatment, comprising the steps of:

a. cleaning the fixed bed by backwashing at the conclusion of purification;

b. conditioning the cleaned bed prior to placing it onstream for filtration, and conditioning step being carried out by filling the fixed filter bed with a liquid containing hydrogen peroxide in an amount effective to release gaseous oxgyen;

c. contacting said hydrogen peroxide containing liquid with a catalyst capable of spontaneously reacting with said hydrogen peroxide to release gaseous oxygen as a decomposition product; and

d. placing the conditioned filter bed onstream for filtering waste water to be purified.

4,113,614

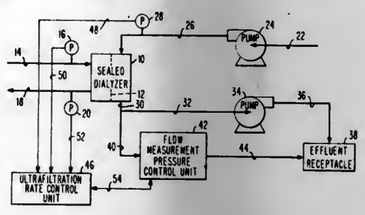
AUTOMATED HEMODIALYSIS TREATMENT SYSTEMS

Anita Hand Rollo, Hollywood, and David Burrell Stearns, Lighthouse Point, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,585

Int. Cl.² B01D *13/00, 31/00*

U.S. Cl. 210—22 A **19 Claims**



1. An automated hemodialysis treatment system for controlling ultrafiltration rate to a preset value, measuring said ultrafiltration rate, and measuring the total quantity of ultrafiltrate removed from a patient under treatment comprising:

a sealed dialyzer separated into a blood side and a dialysate side by a semipermeable membrane having constant and known filtration characteristics for removing water and impurities from the blood;

a blood supply line connected to said blood side of said dialyzer for supplying blood to be treated from said patient under treatment;

blood supply pressure sensing means connected to said blood supply line for sensing the pressure of said blood to be treated and for converting said pressure of said blood to be treated into an electrical signal;

a blood return line connected to said blood side of said dialyzer for returning treated blood to said patient under treatment;

blood return pressure sensing means connected to said blood return line for sensing the pressure of said treated blood therein; and for converting said pressure of said treated blood into an electrical signal;

a dialysate supply means connected to said dialysate side of said sealed dialyzer via a dialysate supply line for pumping dialysate into said sealed dialyzer; the pumping rate of dialysate entering said dialyzer being the same as the pumping rate of dialysate effluent leaving said dialzyer;

dialysate supply pressure sensing means connected to said dialysate supply line for sensing the pressure of dialysate therein, and for converting said pressure of said dialysate into an electrical signal;

flow measurement pressure control means connected to said dialysate side of said sealed dialyzer via a flow measurement pressure control input line for receiving a quantity of dialysate effluent equivalent to the amount of ultrafiltrate removed from the blood through said semipermeable membrane, and for controlling the fluid pressure and simultaneously metering the fluid flow therethrough; said dialysate effluent, in turn, being routed via a flow measurement pressure control output line to a dialysate effluent receptacle;

said flow measurement pressure control means being comprised of valve means for controlling the flow of said dialysate effluent through said flow measurement pressure control input line into said flow measurement pressure control means, and for controlling the flow of said dialysate effluent out of said flow measurement pressure control means and into said flow measurement pressure control output line; at least two fluid chambers with pistons therein connected to said valve means with each of the two fluid chambers receiving and transmitting a known volume of dialysate effluent at alternate times; the pistons in each of said at least two fluid chambers providing a bias force against the filling of the two fluid chambers; a reciprocating motor for supporting an arm that is operably connected to the pistons at ends that are opposite the ends of the pistons that provide a bias force against the filling of the fluid chambers; said reciprocating motor providing reciprocating motion to the arm to control the amount of bias force that is imparted to the pistons via the arm to thereby control the pressure in the dialysate system; and switching means comprised of at least two switches that are positioned so as to be activated by the ends of the arm as it is being reciprocated, and with each activation of the switches corresponding to the known volume of dialysate effluent that is received by each of the fluid chambers; and

ultrafiltration rate control means operatively connected to said flow measurement pressure control means via a sensor-control instrumentation conductor and said ultrafiltration rate control means also being operatively connected to said electrical signal of said blood supply pressure sensing means, said electrical signal of said blood return pressure sensing means and said electrical signal of said dialysate supply pressure sensing means for controlling said ultrafiltration rate to a preset value, measuring said ultrafiltration rate and said total quantity of ultrafiltrate removed from said patient under treatment.

4,113,615

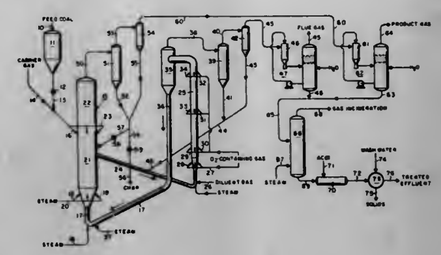
METHOD FOR OBTAINING SUBSTANTIALLY COMPLETE REMOVAL OF PHENOLS FROM WASTE WATER

Martin L. Gorbaty, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Dec. 3, 1975, Ser. No. 637,443

Int. Cl.² C02B *1/14*; C02C *5/02*

U.S. Cl. 210—40 **15 Claims**



9. A process for the substantially complete removal from waste of organic compounds whose molecules dissociate in solution to produce organic anions and hydrogen ions comprising:

(a) contacting said waste water in a contacting zone with char derived from the thermal processing of a coal that yields an ash containing a total of at least 15 weight percent calcium, magnesium, potassium and sodium expressed as oxides on a moisture-free basis when completely burned;

(b) maintaining the pH of the resultant slurry in said contacting zone at a value such that the ratio of the highest dissociation constant of said organic compounds to the hydrogen ion concentration of said slurry is less than about 0.01; and

(c) recovering said waste water depleted in said organic compounds from said contacting zone.

4,113,616

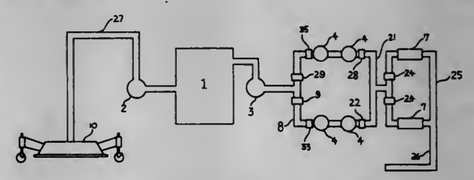
FISH MANURE REMOVAL METHOD

Richard W. Kaes, 910 Robertson St., Buhl, Id. 83316

Filed Jul. 25, 1977, Ser. No. 818,946

Int. Cl.² B01D *21/00, 29/10*

U.S. Cl. 210—67 **1 Claim**



1. A method for recovering fish manure in amounts sufficient for commercial use, from a fish pond, by means of a portable, self-contained apparatus, said method comprising:

(a) sucking a quantity of a suspension of fish manure and other solids through a movable vacuum chamber which comprises a plate having a plurality of holes suitably sized to prohibit the passage of fish therethrough, said vacuum chamber being attached to the remaining elements of said apparatus by a long flexible conduit means;

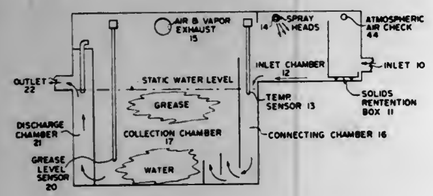
(b) passing said quantity through said conduit means by vacuum, to a settling tank; said settling tank being suitably sized to provide a period of time sufficient to allow pebbles, sand and other heavy debris to come out of suspension from said quantity and fall to the bottom of the settling tank;

(c) pumping the remainder of said quantity from said settling tank through hydrocyclone means, to provide a dewatered fish manure underflow stream and an effluent water overflow stream;
(d) passing said effluent water overflow stream through basket filter means, so as to remove residual fish manure therefrom;
(e) combining said residual fish manure and said dewatered fish manure underflow stream to provide said amount suitable for commercial use.

4,113,617
GREASE SEPARATOR

Fred Phillip Bereskin, 117 Red Oak La., Highland Park, Ill. 60035, and Joseph Jerome Borowczyk, 116 W. Central Blvd., Villa Park, Ill. 60181

Filed Apr. 21, 1977, Ser. No. 789,426
Int. Cl.² B01D *17/04*
U.S. Cl. 210—72 16 Claims



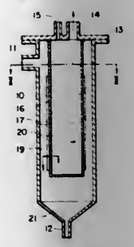
1. A system for separating hot, emulsified grease and oil from water to prevent contamination of a sewage system comprising:
an inlet chamber, including a plurality of steel plates forming the chamber walls and floor, a solids retention bed adjacent one wall of the chamber, an inlet channel extending through said one wall and into said box, a temperature sensor positioned below the chamber floor for providing a control signal dependent on temperature and, at least one water spray head positioned in the chamber walls, and means to provide said hot, emulsified grease and oil as a free flowing film on said chamber floor; said at least one spray head being sized to spray cool, ambient temperature water over substantially the entire of said free flowing film;
a collection chamber also having a plurality of steel plates forming the chamber walls and floor, a plurality of baffles positioned to deflect incoming liquids upwardly, and a grease level sensor at a desired height above the floor of the collection chamber;
a connecting chamber between the inlet chamber and the collection chamber for directing the flow of grease and water from the inlet chamber downwardly to enter the collection chamber adjacent said baffles;
a discharge chamber including a common wall with the collection chamber, which common wall has an opening at the bottom to admit liquids and an outlet in another wall of the discharge chamber to pass liquids to a sewer;
a valve coupled to a source of water supply and responsive to the control signal; and,
a means between the solenoid valve and spray heads for preventing back-up of liquids through the valve to the water supply.

7. The method of separating heated emulsified grease from water to prevent the contamination of a sewer system by cooling and sequentially regulating passage of the grease and water mixture through a grease-separator system having an inlet chamber, a collection chamber and a discharge chamber, said inlet chamber having a sensing means for sensing temperature, a spray means for spraying cool, ambient temperature water into the inlet chamber and an actuating means for actuating said spray means, comprising the steps of:
admitting the heated emulsified grease and water mixture into said inlet as a free flowing film on the horizontal planar floor of said inlet chamber;
sensing the temperature of the heated mixture in the inlet chamber by said sensing means;
signaling said actuating means with said sensing means;
actuating said spray means with said actuating means so as to spray substantially the entire of said free flowing film with said water;
allowing said cooled mixture to pass from the inlet chamber into the bottom of said collection chamber;
said grease separating from the cooled mixture and rising to the top of the mixture;
the water separating from the cooled mixture and sinking to the bottom of the collection chamber; allowing the separated water to pass from the bottom of the collection chamber to the bottom of said discharge chamber and to be removed from said system, and,
removing the cooled and separated grease from the collection chamber.

4,113,618
METHOD OF AND APPARATUS FOR SOLID-LIQUID SEPARATION

Yasuo Koseki; Sankichi Takahashi, both of Ibaraki, and Azuma Naksoka, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1976, Ser. No. 748,762
Claims priority, application Japan, Dec. 8, 1975, 50-145085; Jan. 7, 1976, 51-885
Int. Cl.² B01D *29/38*
U.S. Cl. 210—82 16 Claims



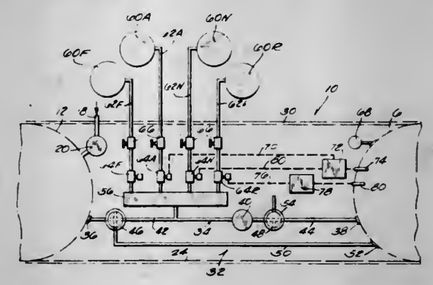
1. Method of treating a process fluid consisting of liquid and suspended solid particles for separation of the solid particles from the liquid with elastic sheet filter comprising steps of:
providing the elastic sheet filter with a plurality of pores for filtration formed such that the pore diameter is larger than an average diameter of the solid particles and smaller than the maximum diameter of the solid particles and an original shape prior to filtration;
passing the process fluid to the sheet filter so that the liquid and particles smaller than the average pass through the sheet filter to develope a pressurized filter residue layer of the solid particles that are larger than average to be held on the sheet filter, thereby increasing filtration with the filtered residue layer of the solid particles that are larger than average so as to thereafter filter out both the solid particles that are smaller and larger than average as the liquid continues to pass through the sheet filter;
thereafter continuing the passing of the process fluid to the sheet filter and the filtering out of substantially all of both the larger and smaller than average particles with the filtered residue layer to increase the filter pressure and correspondingly elastically deform the elastic sheet filter from its original shape until the fluid flow resistance reaches an undesirable level; and
thereafter, before any further filtering, stopping said passing of the process fluid to and the liquid through the sheet filter when the fluid flow resistance reaches the undesirable level so that the elastic sheet filter will return to its original shape and causing the liquid surrounding the filtered residue to flow in the counter direction to liquid flow occurred during filtration of the liquid to separate the filtered residue from the elastic sheet filter in large flakes.

6. Apparatus as defined in claim 5, wherein the elastic sheet filter means comprises an elastic filter net and means for supporting the filter net.

4,113,619
WASTE FLUID TREATMENT SYSTEM

James R. Arrington, Muskego, Wis., assignor to Arrington Co., Inc., Muskego, Wis.

Filed Mar. 22, 1973, Ser. No. 343,733
Int. Cl.² C02B *3/06, 1/20*
U.S. Cl. 210—96 R 3 Claims

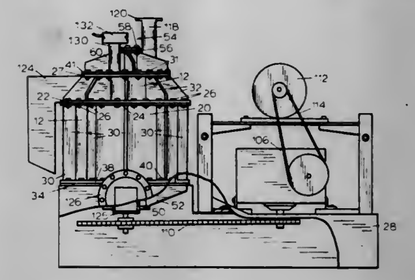


1. A system for treating a waste fluid containing a chemically reactive substance comprising a storage tank including a fluid outlet, a reaction tank including a fluid inlet and a fluid outlet, first conduit means connecting said storage tank outlet and said reaction tank inlet in fluid communication, a pump located in said first conduit means and dividing said first conduit means into an upstream portion and a downstream portion, second conduit means connecting said reaction tank outlet and said first conduit means upstream portion in fluid communication, third conduit means communicating with said first conduit means downstream portion for discharging fluid from the system, first valve means connected between said first conduit means downstream portion and said third conduit means for selectively controlling fluid flow from said first conduit means downstream portion into said reaction tank and from said first conduit means downstream portion into said third conduit means, second valve means connected between said first conduit means upstream portion and said second conduit means for selectively controlling fluid flow from said storage tank to the upstream side of said pump and from said second conduit means to the upstream side of said pump, means for selective, coordinated actuation of said first and second valve means so that said pump selectively transfers the fluid from said storage tank through said first conduit means including said pump and into said reaction tank, recirculates the fluid from said reaction tank, through said second conduit means, and through first conduit means including said pump and into said reaction tank, and discharges the fluid from said reaction tank through said second conduit means, through said first conduit means including said pump, and through said third conduit, means for containing a treatment reagent for the waste fluid, and means for selectively connecting said reagent container means in communication with said first conduit means upstream portion between said second valve means and said pump whereby pumping action of said pump draws the treatment reagent into the system.

4,113,620
PULP PRESS HAVING A PLANAR DEWATERING DISC BELOW AN ANNULAR PRESS CHAMBER

Eigild S. Thomsen, 1110 SW. Hallinan Cir., Portland, Oreg. 97034

Filed Oct. 26, 1976, Ser. No. 735,906
Int. Cl.² B30B *9/20*
U.S. Cl. 210—152 16 Claims



1. A press for removing liquid continuously from aqueous pulp comprising:
(a) a cylindrical housing;
(b) a planer de-watering disk located intermediate the ends of the housing dividing the housing into a press chamber and a working chamber, said de-watering disk defining a plurality of openings therethrough arranged for preventing passage of the pulp while permitting passage of the liquid;
(c) a cylindrical sleeve located centrally in the press chamber so as to form an annular chamber therefrom;
(d) an annular squeeze plate located in the press chamber forming the end thereof opposite the de-watering disk, said squeeze plate being arranged in a manner for causing the cross-sectional area of the press chamber to range from a maximum area to a minimum area progressing angularly around the press chamber;
(e) at least two blades located at spaced angular positions in the working chamber and arranged for being extensible into the press chamber, each blade having a width substantially equal to the width of the press chamber, and actuation means operably engaging the blades in a manner for movement of the blades around the press chamber;
(f) means located exteriorily of the press chamber for continuously varying the extension of said blades into the press chamber, said means configured for positioning the blades in a manner such that the blades substantially fill the press chamber between the de-watering disk and the squeeze plate at all times;
(g) inlet means located in the housing in a manner for introducing aqueous pulp into the press chamber substantially at its point of maximum area;
(h) outlet means located in the housing in a manner for removal of dehydrated pulp from the press chamber substantially at its point of minimum area; and
(i) drain means located in the housing in a manner for removal of liquid from the working chamber.

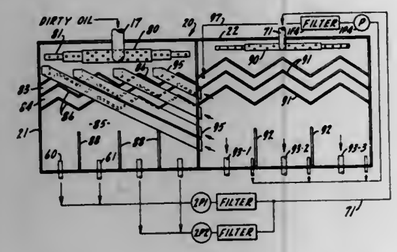
4,113,621
HYDRAULIC APPARATUS

Earl E. Frank, Tallman, N.Y., and Bing S. Yee, Paramus, N.J., assignors to Abex Corporation, New York, N.Y.

Division of Ser. No. 630,155, Nov. 10, 1975, Pat. No. 4,027,595.
This application Sep. 20, 1976, Ser. No. 724,720
Int. Cl.² B01D *33/40*
U.S. Cl. 210—167 17 Claims

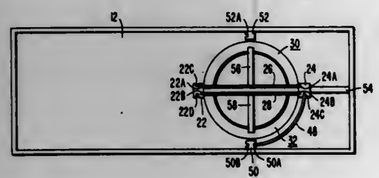
1. In a hydraulic system where filtered oil in a reservoir is to be delivered under pressure by a plurality of pressure pumps to a remote location and returned to the reservoir, reservoir apparatus comprising:

a first tank for receiving the return oil;
a second tank for containing filtered oil to be delivered;
at least three pressure pumps communicating with respective pump inlet ports in the second tank for delivering oil in the second tank to the remote location;
two of the pressure pumps being normally active and one being a normally inactive reserve pump;
said inlet ports being separated from one another by dividers to prevent the suction vortex of one port from overlapping the suction vortex of an adjacent port;
a return conduit terminating at an opening in the first tank for feeding return oil to the first tank;



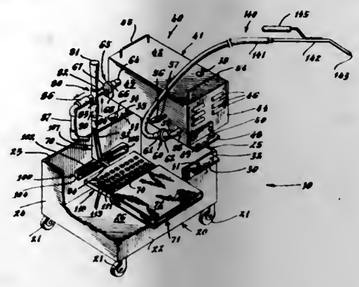
an exchange pump connected with an exchange pump inlet in the first tank for transferring oil from the first tank to the second tank through a transfer conduit having an outlet in the second tank, said transfer conduit having a filter between the exchange pump and second tank to filter oil delivered by the exchange pump to the second tank;
and a plurality of baffles interposed between the inlet ports in the second tank and said outlet in the second tank to remove turbulence from the transfer oil entering the second tank.

4,113,622
DUAL STRAINER GATE ARRANGEMENT FOR TURBINE OIL SYSTEMS
Michael Csanady, Jr., Ridley Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 10, 1976, Ser. No. 749,555
Int. Cl.² B01D *35/12*
U.S. Cl. 210—167 **4 Claims**



1. A fluid cleansing system comprising: a plurality of strainers of predetermined mesh size with each of said strainers being fluidly sealed and independently operable from all other strainers, wherein said strainers, when assembled together in operating position, form a generally cylindrical body with fluid sealing means being disposed between the arc length extremes of each strainer in a chordwise manner along the length of said cylindrical body; and a fluid-tight, nonporous member disposable radially beyond said cylindrical body for obstructing said fluid's access to selected strainers whereby said selected strainers, during said fluid's obstruction thereto, can be purged of impurities previously removed from said fluid and inspected while unobstructed strainers continue to filter the fluid.

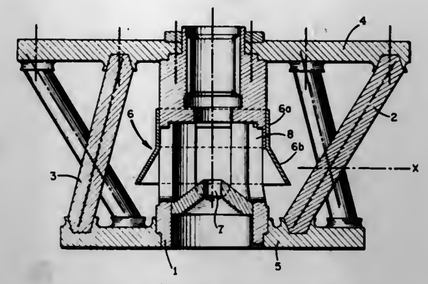
4,113,623
FILTER APPARATUS
Bernard G. Koether, Westport, and William J. Shaughnessy, Brookfield, both of Conn., assignors to Food Automation-Service Techniques, Inc., Stratford, Conn.
Filed Apr. 25, 1977, Ser. No. 790,429
Int. Cl.² G01D *21/16*
U.S. Cl. 210—167 **16 Claims**



1. A filter apparatus for filtering liquids, including cooking oil, comprising:
A. a tank for receiving liquid to be filtered;
B. a pump and pump motor assembly comprising a modular element of the filter apparatus detachably mounted to and at least partially above the tank;
C. a filter assembly comprising a one-piece filter element for filtering liquid passing therethrough, the filter element having an interior and an exterior and defining an opening, a filter intake pipe defining at least one intake opening, the filter element mounted to the filter intake pipe with the filter element opening sealed to the intake pipe and the intake opening in communication with the interior of the filter element whereby liquid entering the intake opening must pass through the filter element, the intake pipe detachably mounted to the pump of the pump and pump motor assembly by means of a first quick disconnect fitting, the filter assembly being supported in the tank when so mounted and removable from the tank and pump and pump motor assembly as modular element,
whereby the filter apparatus is comprised of modular elements easily separable for cleaning, and with respect to the filter assembly, for installation or replacement of the filter element.

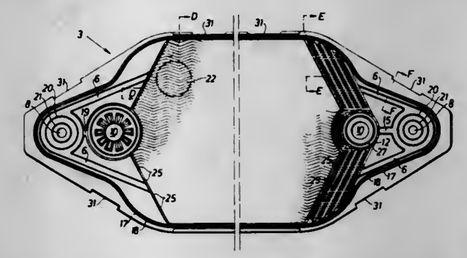
4,113,624
FLOTATION APPARATUS WITH MECHANICAL AGITATION
Jean-Arnaud Casalis, Mareil-Marly; Yves Teil, Sevres, and Raymond Motte, Houilles, all of France, assignors to Societe Miniere et Metallurgique de Penarroya, Paris, France
Filed Aug. 11, 1976, Ser. No. 713,371
Claims priority, application France, Aug. 14, 1975, 75 25429
Int. Cl.² B01F *3/04*
U.S. Cl. 210—219 **9 Claims**

1. A flotation apparatus comprising a tank for holding a body of pulp, an agitator rotatable in said tank, means for rotating said agitator, and means for flowing pressurized gas into the pulp along an axis of said agitator, said agitator comprising two layers of bars which are disposed symmetrically on the generatrices of two opposite, coaxial truncated cones and which are mounted at their ends on circular bases, at least one base being perforated to allow passage of flotation medium and the bases being connected by a hollow central hub of which the upper portion is adapted to receive pressurized gas and the lower portion is provided with at least one orifice for discharging the gas, which agitator also includes a solid, downwardly open, frustoconical skirt which is situated between the bars and



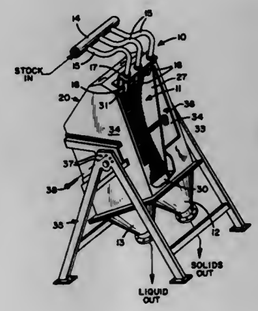
the central hub, is coaxial with the hub and is attached at its upper end to the hub.

4,113,625
DIFFUSION DEVICE
Gerhard Riede, Vellinge, Sweden, assignor to Gambro AG, Zug, Switzerland
Filed Jun. 2, 1977, Ser. No. 802,363
Claims priority, application Sweden, Jun. 11, 1976, 7606623
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 B **9 Claims**



1. An apparatus for diffusing matter between a first and second fluid comprising a plurality of spacer plates, a plurality of semipermeable membranes, said spacer plates and said semipermeable membranes each including first and second openings for said first and second fluids, respectively, said spacer plates and said semipermeable membranes being arranged in a stacked configuration so that said first and second openings form first and second vertical flow passages disposed perpendicular to said spacer plates, said first fluid adapted to flow through said first vertical flow passage and said second fluid adapted to flow through said second vertical flow passage, said spacer plates including grooves formed in the upper and lower surfaces thereof which in their stacked configuration cooperate to form horizontal flow passages being disposed parallel to said spacer plates and being connected to said first and second vertical flow passages, said grooves adjacent at least one end of said spacer plates being laid out in the upper and lower surfaces of said spacer plates substantially in the shape of a first V to form a first V-shaped flow path, said first V-shaped flow path enclosing said first and second vertical flow passages and being disposed along the bisectrix of said first V-shaped flow path, said second vertical flow passage being disposed at the point of said first V-shaped flow path, at least one semipermeable membrane being disposed within each of said horizontal flow passages so that said first fluid is adapted to flow on one side of said membrane and said second fluid is adapted to flow on the other side of said membrane, said arrangement providing for the improved flow of said first and second fluids within said apparatus.

4,113,626
DEWATERING SCREEN
Theodore E. Detcher, Monroe, Ohio, assignor to The Black Clawson Company, Middletown, Ohio
Continuation of Ser. No. 614,885, Sep. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 451,876, Mar. 18, 1974, abandoned. This application May 23, 1977, Ser. No. 799,555
Int. Cl.² B01D *21/02, 25/04*
U.S. Cl. 210—409 **4 Claims**



1. Screening apparatus of the type described for separating a flowing liquid slurry into fractions by substantially unidirectional flow along a perforate screening surface, comprising
(a) means defining a perforate screening surface having opposed sides and ends,
(b) said screening surface means being of rigid structure and concave semi-parabolic shape from end to end thereof such that the curvature thereof varies from a zero point at one end thereof through a series of short radius adjacent said one end to a maximum radii adjacent the other end thereof in accordance with the formula $Y=nX^2$ where the zero point of said curvature is at the intersection of the X and Y axes, and n varies between 1.5 and 1/12,
(c) said screening surface means including an assembly of multiple parallel bars extending in closely spaced relation substantially parallel with said ends of said surface and having exposed flat surface areas which define said semi-parabolic screening surface,
(d) the spaces between adjacent said bars constituting slots defining the perforations in said screening surface,
(e) means supporting said screening surface means with said zero point end uppermost,
(f) inlet means for supplying the slurry to said higher end of said screening surface whereby the angular velocity of the slurry is adjacent the maximum end of its range while the liquid content of the slurry is adjacent the maximum end of its range,
(g) means for collecting the fraction of the slurry which is retained on said screening surface from the lower end thereof, and
(h) means for separately collecting the fraction of said slurry which passes through said screening surface.

4,113,627

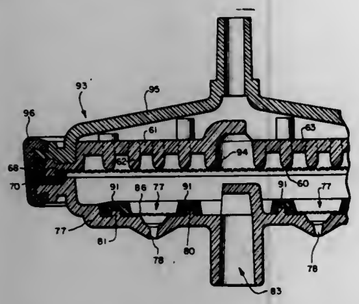
PROCESS FOR MAKING HERMETICALLY SEALED FILTER UNITS AND FILTERS MADE THEREBY

Hayden L. Leason, Humacao, P.R., assignor to Filtertek, Inc., Hebron, Ill.

Continuation-in-part of Ser. No. 653,012, Jan. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 548,544, Feb. 10, 1975, abandoned. This application May 19, 1977, Ser. No. 798,644

Int. Cl.² B01D *25/00*

U.S. Cl. 210—446 13 Claims



7. A filter assembly for a filter unit for removing bacteria and other contaminants from a fluid stream, comprising:

a thermoplastic support member, a porous filter element and a thermoplastic overmold member;

said thermoplastic support member having at least one fluid flow passageway, at least one filter aligning tab, and a flat shelf between the passageway and the aligning tab, said shelf surrounding the passageway;

said filter element extending over the passageway, its outer portion resting on the shelf with the periphery of said filter element disposed adjacent to the aligning tab; and

said thermoplastic overmold member disposed over the periphery of said filter element and over the aligning tab to seal the periphery of the filter element to the support.

4,113,628

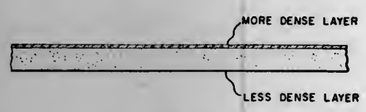
ASYMMETRIC POLYIMIDE MEMBRANES

Constance Wright Alegranti, Sao Paulo, Brazil, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

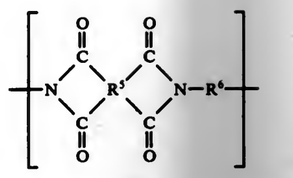
Continuation of Ser. No. 476,536, Jun. 5, 1974, abandoned, which is a continuation of Ser. No. 273,805, Jul. 20, 1972, abandoned. This application Apr. 15, 1976, Ser. No. 677,443

Int. Cl.² B01D *31/00*

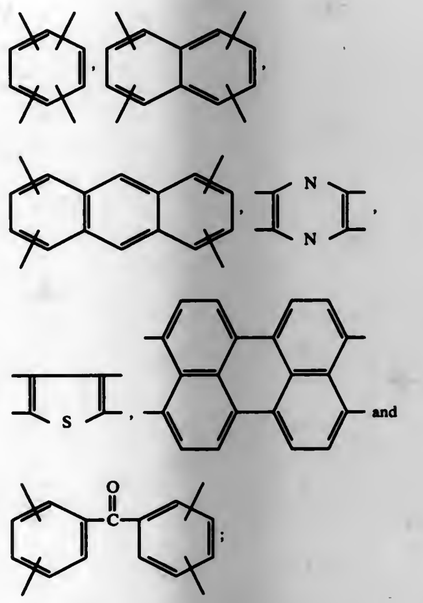
U.S. Cl. 210—500 M 6 Claims



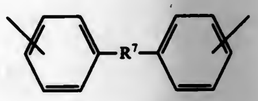
1. A microporous, opaque, asymmetric polyimide membrane not dissolving more than 10% by weight at 25° C in N,N-dimethylacetamide and consisting essentially of a polyimide having the repeating formula



wherein R^5 is selected from the group consisting of



and



in which R^7 is selected from the group consisting of oxygen, sulfur and methylene, said membrane being shiny on one surface and dull on the other surface, and having a corrected small angle X-ray scattering pattern such that the intensity of the scattering radiation from nickel filtered CuKα radiation multiplied by the fourth power of the scattering angle ($2\frac{1}{2}$) does not vary more than ± 10% for at least 0.2° within the angle range (2θ) from 0.2–0.8°.

4,113,629

SEPARATION DEVICE PROVIDED WITH A COALESCENCE APPARATUS

Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex B.V., Assendelft, Netherlands

Continuation of Ser. No. 527,583, Nov. 27, 1974, abandoned. This application Mar. 1, 1976, Ser. No. 662,838

Int. Cl.² B01D *21/00*

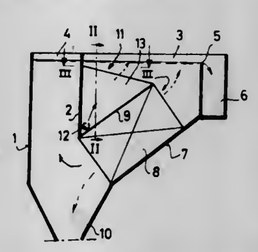
U.S. Cl. 210—522 6 Claims

1. A separation device incorporating a coalescence apparatus to enhance the efficiency of separation without substantially increasing the space occupied by the separation device, comprising:

a basin having a partition extending transversely across it to define a supply chamber and a discharge chamber;

a parallel plate separator having an intake end in said supply chamber and having an outflow end opening into said discharge chamber, said separator defining a passage for liquid flow from said supply chamber to said discharge chamber, said separator having an upper wall extending with an upward inclination from said vertical partition to the intake end of said separator to define an upwardly diverging wedge-shaped space in said supply chamber above said separator;

parallel plate coalescence apparatus situated in said wedge-shaped space above said separator;



supply means opening into a lower portion of said wedge-shaped space near its vertex, and supplying liquid to said coalescence apparatus, said coalescence apparatus communicating with said supply chamber so as to require the liquid supplied by said supply means to pass through said coalescence apparatus prior to entering said supply chamber;

said coalescence apparatus promoting particle growth in the liquid supplied by said supply means so as to enhance the effeciency of said separator; and, an outlet for removing the particles from the base of said discharge chamber and an outlet for removing clarified liquid from said discharge chamber.

4,113,630

ARTICLE FOR CONDITIONING FABRICS

Clifford K. Hagner, and Richard B. Wissel, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 25, 1977, Ser. No. 781,385

Int. Cl.² D06M *13/46*

U.S. Cl. 252—8.6 23 Claims

1. A laundry article, providing fabric softening and static-control benefits, for use in both the washer and the dryer, consisting essentially of a water-insoluble substrate, carrying an effective amount of an intimate mixture, having a maximum solublity in water of 50 ppm at 25° C and a softening point of from 100° to 200° F, consisting essentially of:

(a) from about 10 to 90% by weight of quaternary ammonium fabric conditioning compounds having the formula $[R_1R_2R_3R_4N]^+Y^-$, wherein at least one, and not more than two, of the R_1, R_2, R_3, or R_4 groups is an organic radical containing a group selected from a C_{12} to C_{22} aliphatic radical, or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1 to C_4 alkyl; C_2 to C_4 hydroxy alkyl, and cyclic structures in which the nitrogen atom forms part of the ring, Y constitutes an anionic radical selected from the group consisting of hydroxide, halide, sulfate, methyl sulfate, and phosphate ions; and

(b) from about 10 to 90% by weight of a dispersion inhibitor, being a solid organic material having a maximum solubility in water of 50 ppm at 25° C and a softening point in the range of 100° F to 200° F, said material being selected from the group consisting of paraffinic waxes, cyclic and acyclic mono- and polyhydric alcohols, substituted and unsubstituted aliphatic carboxylic acids, esters of cyclic and acyclic mono- and polyhydric alcohols and acids, condensates of C_2 to C_4 alkylene oxide with any of the foregoing types of materials, whether or not said materials themselves meet the above solubility and softening point limits, and mixtures thereof;

said intimate mixture penetrating into the substrate and extending above the substrate to a height of from about 1/32 inch to about ½ inch.

4,113,631

FOAMING AND SILT SUSPENDING AGENT

James L. Thompson, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1976, Ser. No. 713,168

Int. Cl.² E21B *43/27, 43/26*

U.S. Cl. 252—8.55 C 45 Claims

1. A composition suitable for imparting foaming and silt suspending properties to aqueous based fluids of the type suitable for use in treating subterranean formations, comprising a blend of:

(a) at least one alkyltrimmethylammonium chloride, wherein the alkyl chain length is from 8 to 18 carbon atoms and the mode alkyl chain length is 12 or 14 carbon atoms, and

(b) an amine oxide selected from the group consisting of bis(2-hydroxyethyl) cocoamine oxide, dimethylhexadecylamine oxide, and dimethyl-hydrogenated tallowamine oxide, wherein

Component (a) and Component (b) are in a weight ratio to one another of

(i) from about 45:55 to about 85:15 when Component (a) is cocotrimethyl ammonium chloride and Component (b) is bis(2-hydroxyethyl) cocoammine oxide, and

(ii) from about 40:60 to about 95:5 when said Components (a) and (b) are selected so as to provide a combination other than cocotrimethyl ammonium chloride and bis(2-hydroxyethyl) cocoamine oxide.

4,113,632

OIL RECOVERY BY SURFACTANT WATERFLOODING

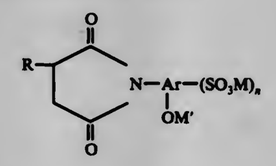
Stamoulis Stournas, Flemington, and El Ahmadi I. Hefba, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 719,135, Aug. 31, 1976, which is a continuation-in-part of Ser. No. 488,885, Sep. 15, 1974, abandoned. This application Feb. 18, 1977, Ser. No. 770,164

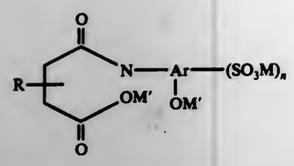
Int. Cl.² E21B *43/22*

U.S. Cl. 252—8.55 D 27 Claims

1. In a method for the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems in which an aqueous fluid is introduced into said reservoir via said injection system to displace oil to said production system, the improvement comprising employing as at least a portion of the fluid introduced into said injection system an aqueous solution of a surfactant selected from the group consisting of an aliphatic substituted succinimido aryl hydroxy sulfonate characterized by the formula



and its corresponding succinamic acid amide derivative characterized by the formula



wherein R is a lipophilic aliphatic group containing from 8 to 25 carbon atoms,

Ar is a mononuclear or condensed ring dinuclear aryl group,

M is an alkali metal ammonium or substituted ammonium ion, *n* is 1 or 2, and

M′ is the same as M or hydrogen.

4,113,633

PENETRATING OIL COMPOSITION

Paul J. Gibbons, 831 Logan Ave., New York, N.Y. 10465

Filed Dec. 15, 1976, Ser. No. 750,735
Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—11 **2 Claims**

1. A penetrating oil composition essentially consisting of:

Mono- and di-methylbenzenes	12 - 35%
Lower alkanols (C_1 - C_4)	12 - 30%
Polymethacrylate or methyl antioxidant selected from tert-dibutyl-p-oresol, alkyl succinic acid, and zinc dialkyl thiophosphate	0.2 - 4%
Polymethacrylate or methyl silicone viscosity improving agents	0 - 5%
paraffin bright stock lube oil to	100%

4,113,634

METAL ARYL DITHIOPHOSPHATES AND THEIR MANUFACTURE

Albert R. Sabol, Munster, Ind., and Nicolas C. Petrellis, Lisle, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 1, 1977, Ser. No. 773,346
Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—32.7 E **31 Claims**

1. A process for the manufacture of metal diaryl dithiophosphate which comprises:

reacting P_2S_5 with a hydroxyl aryl compound to form a dithiophosphoric acid; and

neutralizing said dithiophosphoric acid with zinc, barium, cadmium, magnesium or nickel base in the presence of an effective amount of a promoter, said promoter comprising dialkyl dithiophosphoric acid.

21. A lubricating oil composition comprising a major proportion of lubricating oil and about 0.05 to about 5 weight percent of a metal diaryl dithiophosphate, said diaryl dithiophosphate made by a process comprising:

reacting P_2S_5 with a hydroxy aryl compound to form a dithiophosphoric acid; and

neutralizing said dithiophosphoric acid with zinc, barium, cadmium, magnesium or nickel base in the presence of small amounts of a promoter, said promoter comprising dialkyl dithiophosphoric acid.

4,113,635

RUST-PROOF LUBRICANT COMPOSITIONS

Toshio Sakurai, Yokohama; Shoji Shimada, and Yoshiharu Kamimura, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 528,885, Dec. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 314,503, Dec. 13, 1972, abandoned. This application Jul. 30, 1976, Ser. No. 710,312
Claims priority, application Japan, Dec. 13, 1971, 46-100881
Int. Cl.² C10M *3/02, 7/02, 7/20*
U.S. Cl. 252—49.6 **3 Claims**

1. In a rust-proof lubricant composition of the solid-film type which is composed of a major amount of a base oil and not more than 10 percent of at least one member selected from the group consisting of phenol oxidization preventives, amine oxidization preventives, boron oxidization preventives, nonionic, anionic and cationic surface active agents, the improvement which comprises said base oil consisting of the partial ester obtained by the esterification reaction between a fatty acid and pentaerythritol selected from the group consisting of mono, di- and tri-esters, said partial ester being present in an amount of at least about 40% by weight of the composition.

4,113,636

AMINATED POLYMERIC ADDITIVES FOR FUELS AND LUBRICANTS

Lawrence J. Engel, Green Brook, and John B. Gardiner, Mountainside, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Jul. 31, 1974, Ser. No. 493,328
Int. Cl.² C10M *1/32*
U.S. Cl. 252—51.5 R **5 Claims**

1. A composition comprising a major proportion of a lubricating oil and dissolved therein about 0.25 to 10 wt. % of an oil-soluble sludge dispersing, viscosity-index improving product, which is free of haze contributing components comprising:

the reaction product of a polyethylene amine with an oxygen containing, mechanically degraded copolymer of ethylene and one or more C_3 to C_8 alpha-olefins, said copolymer prior to degradation being characterized by:

a. an ethylene content in the range of about 70 to 80 mole percent;

b. a degree of crystallinity of 3 to 25 weight percent as determined by X-ray and differential scanning calorimetry;

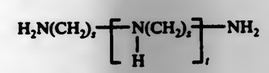
c. a weight average molecular weight (M_w) in the range of about 30,000 to 400,000;

d. a number average molecular weight (M_n) in the range of about 10,000 to 100,000; and

e. a range of molecular weights as measured by the ratio of M_w/M_n of 8 or less;

said copolymer being degraded by mechanical working in the absence of solvent and in the presence of air at temperatures in the range of about 250° to 750° F., to thereby incorporate into said copolymer about 0.05 to 2.0 wt. % oxygen, based on the weight of the oxygenated copolymer;

said amine having the general formula:



wherein *s* is 2 and *t* is 2 to 6;

and wherein only 50 to 95% of the oxygenated groups of said oxygenated copolymer are reacted with said amine by heating, whereby less than a stoichiometric amount of said amine is reacted and the presence of excess unreacted amine is avoided to thereby form a haze-free product.

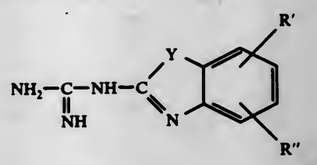
4,113,637

ALKYL-GUANIDINO-HETEROCYCLIC COMPOUNDS, THEIR MANUFACTURE AND USE AS ADDITIVES FOR FUELS AND LUBRICANTS

Choua Cohen, and Bernard Sillion, both of Grenoble, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Division of Ser. No. 608,966, Aug. 29, 1975, Pat. No. 4,071,459. This application Aug. 1, 1977, Ser. No. 821,054
Claims priority, application France, Sep. 10, 1974, 74 30819
Int. Cl.² C10M *1/32*
U.S. Cl. 252—51.5 A **15 Claims**

1. An alkyl-guanidino heterocyclic compound produced by alkylation at 100°-250° C. with a halogenated hydrocarbon of the general formula RX_n, of a guanidino-heterocyclic compound (A) of the formula:



in which R is a hydrocarbon radical containing about 10 to 200 carbon atoms, X is a halogen atom and *n* is 1 or 2; Y is a —CONH— group in which the carbon atom is directly bound to the benzene ring, R′ and R″ are each a hydrogen atom, or an alkyl radical having from 1 to 10 carbon atoms, or a —Z—Ar group in which Z is —O—, —S—, or alkylene and Ar is aromatic hydrocarbyl or R′ and R″ together when they are in ortho position, represent a carbocyclic ring fused to the benzene ring, the proportion of the reactants being 0.7-2.5 moles of (A) per gm. atom of halogen in RX_n.

7. A lubricating composition comprising a major amount of a mineral oil, and in a sufficient proportion to obtain dispersing properties of at least one compound according to claim 1.

4,113,638

FROTHING COMPOSITION FOR GYPSUM DISPERSIONS

Robert Coleman Taylor, King of Prussia, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 4, 1976, Ser. No. 711,761
Int. Cl.² C09K *3/00*
U.S. Cl. 252—61 **13 Claims**

1. A frothing composition useful for preparing aqueous gypsum dispersions comprising:

(a) about 50 to 95 parts by weight of a first component which is a neutralized alkylaryl sulfonic acid having an average of about 10 to 14 alkyl carbon atoms, and

(b) about 5 to 50 parts by weight of a second component which is a neutralized dipropyl benzene sulfonic acid or a mixture of neutralized alkylbenzene sulfonic acids containing at least 50% by weight of neutralized dipropyl benzene sulfonic acid and having an average alkyl carbon content of about 4.5 to 8 atoms per molecule.

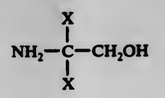
4,113,639

LUBRICATING OIL COMPOSITION CONTAINING A DISPERSING-VARNISH INHIBITING COMBINATION OF AN OXAZOLINE COMPOUND AND AN ACYL NITROGEN COMPOUND

Thorkild F. Lonstrup, Plainfield; Darrell W. Brownawell, Scotch Plains; Edward Goletz, Jr., North Plainfield, and Solomon J. Numair, Edison, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 11, 1976, Ser. No. 741,032
Int. Cl.² C10M *1/32, 1/50*
U.S. Cl. 252—51.5 A **6 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and a minor but dispersing amount of a dispersing and varnish inhibiting combination of: (a) one part by weight of an oil-soluble oxazoline reaction product having a number average molecular weight of from about 1,000 to about 3,300 obtained from the reaction of one molar proportion of a hydrocarbyl substituted C_4-C_{10} monounsaturated dicarboxylic acid material wherein said hydrocarbyl substituent contains at least 50 aliphatic carbon atoms, and from about 1.5 to about 2 molar proportions of a 2,2-disubstituted-2-amino-1-alkanol having 2 to 3 hydroxy groups and containing a total of 4 to 8 carbons and represented by the formula:



wherein X is an alkyl, or hydroxy alkyl group, with at least one of the X substituents being a hydroxy alkyl group of the structure $—(CH_2)_nOH$, wherein n is 1 to 3; and, (b) from 0.25 to 4 parts by weight of an oil-soluble acylated nitrogen compound having a number average molecular weight ranging from about 1,300 to 8,000 characterized by the presence within its structure of a substantially saturated hydrocarbon-substituted polar group selected from the class consisting of acyl, acylimidoyl, and acyloxy radicals wherein the substantially saturated hydrocarbon substituent contains at least about 50 aliphatic carbon atoms and a nitrogen-containing group characterized by a nitrogen atom attached directly to said polar radical.

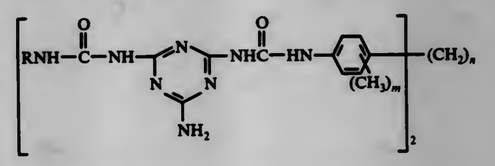
4,113,640

TRIAZINE-UREA GREASE THICKENERS

Thomas F. Wulfers, Hazelcrest, Ill., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 769,252, Feb. 16, 1977, abandoned, which is a division of Ser. No. 635,532, Nov. 26, 1975, Pat. No. 4,026,890. This application Nov. 17, 1977, Ser. No. 852,395
Int. Cl.² C10M *1/32, 3/26, 5/20, 7/30*
U.S. Cl. 252—51.5 A **10 Claims**

1. A grease composition consisting essentially of a major amount of a lubricating oil base vehicle and in an amount sufficient to thicken the base vehicle to grease consistency, a triazine-urea compound defined by the formula:



wherein R is an aliphatic hydrocarbyl radical of 16 to 22 carbon atoms and *m* and *n* are integers of 0–1.

4,113,641

CARRIER PARTICLES HAVING THE SURFACE THEREOF TREATED WITH PERFLUORO SULFONIC ACID AND METHOD OF MAKING THE SAME

George Brana, Bridgeport, and John J. Russell, Woodbury, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Oct. 7, 1977, Ser. No. 840,305
Int. Cl.² G03G *9/10, 9/14*
U.S. Cl. 252—62.1 P **5 Claims**

1. A carrier for electrophotographic development of latent electrostatic images, comprising particles selected from the group consisting of metal particles and metallic particles, said particles having adhered to the surface thereof a layer of perfluoroalkyl sulfonic acid.

4,113,642
HIGH VISCOSITY NEUTRAL POLYESTER LUBRICANTS

Karlheinz Koch, Haan, and Willi Breitzke, Dusseldorf-Holthausen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 11, 1976, Ser. No. 741,160
Int. Cl.[2] C10M *3/20*
U.S. Cl. 252—56 S **8 Claims**

1. A high viscosity neutral complex polyester lubricant produced by esterifying a mixture of

(a) a branched alkanepolyol having 2 to 4 primary hydroxyls and 4 to 10 carbon atoms,

(b) polyacids produced by the dimerization and trimerization of unsaturated fatty acids having 16 to 18 carbon atoms, wherein said polyacids are a mixture containing at least 75% of dimeric fatty acids, and

(c) alkanoic acids having 6 to 16 carbon atoms selected from the group consisting of

(1) mixtures of saturated fatty acids having 6 to 12 carbon atoms, and

(2) alkanoic acids having 12 to 16 carbon atoms and having a branched chain in the α-position to the carboxyl group,

in such proportions that the acid number of said polyester is 0.3 or below, the hydroxyl number of said polyester is 0.5 or below, and the proportion of said hydroxyl groups being esterified by said alkanoic acid is from 50% to 90%.

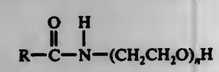
4,113,643
AEROSOL FOAMS

John Thompson, Maidenhead, and Adrian Pitfield, High Wycombe, both of England, assignors to Wilkinson Sword Limited, England

Filed Feb. 27, 1976, Ser. No. 662,266
Claims priority, application United Kingdom, Feb. 27, 1975, 8249/75
The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.
Int. Cl.[2] C11D *17/00*
U.S. Cl. 252—90 **5 Claims**

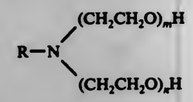
1. An aerosol shaving foam dispenser containing an aqueous soap-free, surfactant concentrate, and emulsified or readily emulsifiable therewith, a gaseous propellant in liquid phase, said concentrate consisting essentially of water and:

(i) from 1 to 15% by weight based on the weight of the concentrate, of a nitrogen-containing synthetic surfactant selected from the group consisting of:



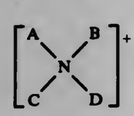
I

where R is C_{12}–C_{18} alkyl; and *n* is 0 or an integer of from 1–2 inclusive;



II

where R is as above defined and *m* and *n* are positive integers whose sum is from 2–9 inclusive; and



III

where A is $(C_3H_6O)_pH$, where *p* is an integer of from 8–50; X is an anion; and B, C and D are each C_1–C_3 alkyl;

(ii) from 0.5–6.0% by weight, based on the concentrate, of a long chain fatty alcohol containing from 12–18 carbon atoms; and

(iii) from 1–15% by weight based on the concentrate, of an additional surfactant compatible with the nitrogen-containing surfactant and being a water-soluble synthetic surfactant having an HLB value in the range 12–40 and as its hydrophobic part, a straight chain alkyl group of from 12–18 carbon atoms or an alkyl-substituted benzene or naphthalene group containing s straight chain alkyl group of from 5–12 carbon atoms; the weight ratio of components (i) and (iii) together to component (ii) being in the range 0.5:1 to 12:1, and the surfactants being such that the HLB value of the total surfactant component of the concentrate is from 8–18.

4,113,644
PROTECTED GLASSY PHOSPHATE DETERGENT ADDITIVE

William R. Ashcraft, 16202 El Camino Real, Apt. No. 921, Houston, Tex. 77058

Continuation-in-part of Ser. No. 551,475, Feb. 20, 1975, abandoned. This application Nov. 11, 1975, Ser. No. 631,026
Int. Cl.[2] C11D *3/06, 3/37, 17/00, 17/06*
U.S. Cl. 252—91 **6 Claims**

1. A granular detergent consisting essentially of:

(A) 1 to 15 parts by weight of a detergent additive comprising:

(I) 1% to 90% by weight of a glassy phosphate having a general formula

$$M_{2y+2}P_{2y}O_{6y+1}$$

wherein M is an alkali metal and *y* is from about 7 to about 12; and

(II) 10% to 99% by weight of a polyethylene glycol having a molecular weight from about 1,400 to about 30,000; and

(B) 85 to 99 parts by weight of detergent granules comprising:

(I) 2% to 35% by weight of a surface-active agent selected from the group consisting of anionic, nonionic, ampholytic, and zwitterionic surface-active materials; and

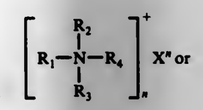
(II) 10% to 65% by weight of a detergent builder.

4,113,645
BLEACH COMPOSITIONS CONTAINING PERFUME OILS

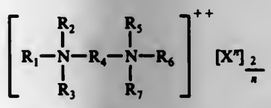
Robert Santora DeSimone, Middletown, N.Y., assignor to Polak's Frutal Works, Inc., Middletown, N.Y.

Filed Jul. 26, 1977, Ser. No. 819,517
Int. Cl.[2] C11D *3/395, 7/54, 9/44*
U.S. Cl. 252—187 H **5 Claims**

1. In an alkali metal hypochlorite bleach solution containing a perfume oil to mask the chlorine odor thereof and a dispersant for said perfume oil, the improvement which comprises said dispersant being at least one quaternary ammonium compound having the structural formula



or

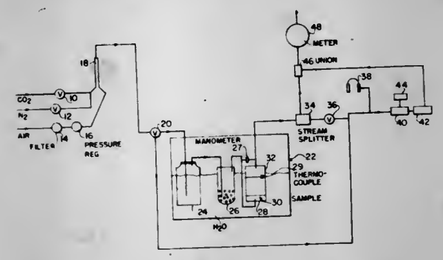


where R_1 is an alkyl or aromatic group containing from about 1 to 20 carbon atoms, R_2 through R_7 are selected from the group consisting of alkyl and aromatic groups containing about 1 to 14 carbon atoms, cycloalkyl groups containing about 5 to 18 carbon atoms, alkaryl groups containing from 7 to 10 carbon atoms, and pyridyl groups and X is selected from the group consisting of fluoride, chloride, nitrate, sulfate, methyl sulfate, carbonate, sulfonate, chlorate and hydroxide, and *n* is either 1 or 2 and is equal to the valence of X.

4,113,646
AIR REVITALIZATION COMPOSITIONS

Paul R. Gustafson, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1977, Ser. No. 790,623
Int. Cl.[2] C01B *13/02;* A62B *21/00*
U.S. Cl. 252—184 **4 Claims**



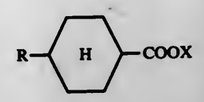
1. In an air-revitalization composition which comprises potassium superoxide, the improvement which comprises, based on the total composition weight, from about 2 to about 10 weight percent of lithium monoxide, from about 0 to about 2 weight percent of silicon dioxide, and a salt selected from the group consisting of calcium sulfate and lithium metaborate, provided that, calcium sulfate is in amount from about 3 to about 8 weight percent and lithium metaborate is in an amount from 5 to 10 weight percent.

4,113,647
LIQUID CRYSTALLINE MATERIALS

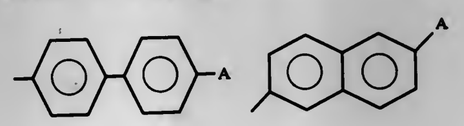
David Coates, Bishops Stortford; George William Gray, Cottingham, and Damien Gerard McDonnell, Hull, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 2, 1977, Ser. No. 821,146
Claims priority, application United Kingdom, Aug. 13, 1976, 33858/76; Mar. 15, 1977, 10839/77
Int. Cl.[2] G02F *1/13;* C09K *3/34;* C07C *69/74, 121/62, 121/64*
U.S. Cl. 252—299 **52 Claims**

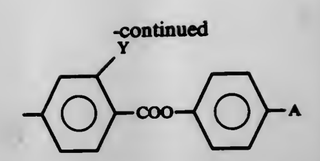
1. A liquid crystal material which comprises a trans-4-alkylcyclohexane-1-carboxylic acid ester having the general formula:



where R is a normal or branched chain alkyl group, which may contain a chiral center containing up to ten carbon atoms, and X is selected from the groups:



-continued



in which A is a cyano group, a normal or branched chain alkyl group, which may also contain a chiral center, containing up to ten carbon atoms, or an alkoxy group in which the alkyl group is as defined immediately above, and where Y is a halogen or hydrogen.

4,113,648
TERBIUM-ACTIVATED RARE EARTH OXYSULFIDE PHOSPHORS WITH CONTROLLED DECAY

John L. Ferri, Towanda; James E. Mathers, and Ramon L. Yale, both of Ulster, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 20, 1974, Ser. No. 525,589
Int. Cl.[2] C09K *11/46*
U.S. Cl. 252—301.4 S **3 Claims**

1. A phosphor composition consisting essentially of a host selected from the group consisting of lanthanum oxysulfide, gadolinium oxysulfide, yttrium oxysulfide, and mixtures thereof and, as an activator, from about 0.0005 to about 0.1 moles of terbium per mole of host and from 1 ppm to about 500 parts by weight per million parts by weight of host of a decay deaccelerator selected from the group consisting of ytterbium and europium.

4,113,649
METHOD FOR THE SOLUBILIZING OF ALKALI METAL SALTS WITH POLYETHYLENEGLYCOLDIETHERS AND THE UTILIZATION THEREOF

Herbert Lehmkuhl, Mülheim, Germany, and Farroch Rabet, Tehran, Iran, assignors to Studiengesellschaft Kohle mbH, Mulheim an der Ruhr, Germany

Filed Aug. 4, 1976, Ser. No. 711,742
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1975, 2534851
Int. Cl.[2] B01F *3/00*
U.S. Cl. 252—363.5 **14 Claims**

1. Process of solubilizing a material which is an alkali metal, an alkali metal salt or an alkaline earth metal salt, which comprises contacting the material with open-chain polyethyleneglycoldiether of the formula

$$RO—[CH_2CH_2O]_nR'$$

wherein $n = 6$ or more and R and R′ are identical or different and each is alkyl, aryl or cycloalkyl.

4,113,650
PRODUCING DISPERSANT COMPOSITIONS COMPATIBLE WITH MANY RESIN SYSTEMS

Edgar N. Putman, New Hope; George Patterson, Philadelphia; Scotty Wimer, Bethlehem, and John B. McCool, 3rd, Ottsville, all of Pa., assignors to PFD/Penn Color, Inc., Doylestown, Pa.

Continuation of Ser. No. 340,453, Mar. 12, 1973, Pat. No. 3,959,193. This application Aug. 4, 1975, Ser. No. 601,628
The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.
Int. Cl.[2] B01F *3/00*
U.S. Cl. 252—363.5 **1 Claim**

1. A method of producing cellulose acetate butyrate containing dispersant compositions which are compatible with many commercially significant, preselected final resin systems, comprising the steps of,

(a) providing a given weight of resin additive dispersant composition consisting essentially of cellulose acetate butyrate, aryl sulfonamide-formaldehyde resin, and a nonionic surfactant, said surfactant comprising up to 1% by weight of said composition, the remainder of said composition comprising:
(i) said cellulose acetate butyrate, and
(ii) said aryl sulfonamide-formaldehyde resin in a weight ratio (ratios of (i) to (ii)) from 80:20 to 30:70, and
(b) mixing said resin additive into said resin additive dispersant composition in a ratio from two-thirds to nine times said given weight of resin additive dispersant composition, to produce a dispersed resin additive composition, exhibiting compatibility with said preselected final resin systems.

4,113,651

MANUFACTURE OF A METAL IMPREGNATED CARBON FROM PEAT MATERIAL

Esteban Chornet, Sherbrooke, Canada, and Jean-Claude Cavalier, Biarritz, France, assignors to Universite de Sherbrooke, Canada

Filed Jun. 29, 1977, Ser. No. 811,438
Claims priority, application Canada, May 18, 1977, 278700
Int. Cl.² B01J *21/18*; C01B *31/12*; B01J *37/02*
U.S. Cl. 252—422 **5 Claims**

1. In a process for preparing a finely divided carbon supported metal catalyst by pyrolyzing a dried metal impregnated ammoniated peat, the improvement which comprises treating dried peat with gaseous ammonia at a temperature of between 45° and 80° C., thereby producing an ammoniated peat characterized by a higher ion exchange capacity than the unammoniated peat, contacting said ammoniated peat with a metal salt solution to produce metal impregnated ammoniated peat having a metal content higher than the normal saturation capacity of unammoniated peat with said metal.

2. A process according to claim 1 wherein the dried peat has a moisture content of 10 to 15%.

3. A process according to claim 1 wherein the pyrolysis is carried out at about 500° to 800° C., in the presence of an inert gas.

4,113,652

OXYGEN ABSORBENT

Yoshio Yoshikawa, Ushiku; Akira Amemiya; Toshio Komatsu, both of Tokyo; Yoshiaki Inoue, Iizuka, and Megumu Yuyama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 17, 1976, Ser. No. 751,668
Claims priority, application Japan, Dec. 25, 1975, 50-156923; Feb. 4, 1976, 51-11126
Int. Cl.² B01J *31/02, 27/14, 27/24, 27/02*
U.S. Cl. 252—428 **11 Claims**

1. An oxygen absorbent consisting essentially of at least one alkaline earth metal sulfite, at least one ferrous salt and free water, the amount of the free water being from about 2 to about 200 parts by weight per 100 parts by weight of the combined weight of the sulfite and the ferrous compound, and the amount of the ferrous salt being from about 0.1 part to about 150 parts by weight of the sulfite.

4,113,653

POLYMERIZATION OF α-PINENE

Erwin Richard Ruckel, Darien, and Long Shyong Wang, Greenwich, both of Conn., assignors to Arizona Chemical Company, Wayne, N.J.

Division of Ser. No. 613,777, Sep. 16, 1975, Pat. No. 4,057,682.
This application Jul. 11, 1977, Ser. No. 814,527
Int. Cl.² C08F *4/14*
U.S. Cl. 252—429 B **5 Claims**

1. A polymerization catalyst system which comprises:
(a) a major amount ranging from 2 to 10%, by weight, of aluminum chloride, aluminum bromide or mixtures of the same, and
(b) a minor amount ranging from 0.08 to 0.1%, by weight, of an alkyl germanium halide or an aryl germanium halide in admixture with from 0.4 to 1.0%, by weight, of an alkyl halide, alkenyl halide or aralkyl halide, said percentages being based on the weight of monomer to be polymerized.

4,113,654

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Adolfo Mayr, Ferrara; Velmore Davoli, Reggio Emilia; Antonio Leccese, and Ermanno Susa, both of Ferrara, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 505,901, Sep. 13, 1974, abandoned, which is a continuation of Ser. No. 245,665, Apr. 19, 1972, abandoned. This application Oct. 18, 1976, Ser. No. 733,709
Claims priority, application Italy, Apr. 20, 1971, 23399 A/71
Int. Cl.² C08F *4/64*
U.S. Cl. 252—429 C **3 Claims**

1. A catalyst for the polymerization of olefins and the starting components of which comprise
(A) a catalyst-forming component which is an organometallic compound of aluminum and
(B) a catalyst-forming component which is the product obtained by mixing (1) an organic magnesium halide having the formula RMgX, in which R is selected from the group consisting of alkyl, aryl, aralkyl and alkyl-aryl radicals and X is a halogen atom, and (2) a halogenated titanium compound selected from the group consisting of halides, oxyhalides, haloalcoholates, halotitanates, said catalyst-forming component (B) containing from 0.05% to 10% by weight of titanium.

4,113,655

CATALYST OF CHLORINATION AND COMBINED CHLORINATION/FLUORINATION BASED ON COPPER/CALCIUM/FLUORIDE

Wim J. M. Pieters, Morristown, and Emery J. Carlson, Chatham, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 683,995, May 6, 1976, Pat. No. 4,039,596.
This application Apr. 28, 1977, Ser. No. 791,767
Int. Cl.² B01J *27/24, 27/12*
U.S. Cl. 252—438 **6 Claims**

1. Catalyst effective for oxidation, by elemental oxygen, of hydrogen chloride accompanied by chlorination of organic material or by such chlorination together with fluorination with hydrogen fluoride, which catalyst consists essentially of a calcium fluoride matrix and a thermally stable phase containing copper ion, calcium ion, and alkali metal or ammonium ion in combination with fluoride ion, which phase is herein referred to to as the "A phase"; said catalyst having Debye-Scherrer X-ray diffraction pattern including lines characteristic of calcium fluoride and lines, characteristic of the A phase, having the following Bragg spacings in Angstrom units and the following relative intensities (I/I^1):

Bragg spacings	Relative intensities
4.68	100
2.87	70
2.34	50
2.03	55

said catalyst being thermally stable to at least 600° C. upon heating for 24 hours.

4,113,656

HYDROTREATING CATALYST AND PROCESS UTILIZING THE SAME

Kenneth L. Riley, Baton Rouge, and Lloyd A. Pine, Greenwell Springs, both of La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 644,835, Dec. 29, 1975, Pat. No. 4,069,139.
This application Feb. 28, 1977, Ser. No. 773,427
Int. Cl.² B01J *21/04, 21/12, 23/24, 23/74*
U.S. Cl. 252—439 **9 Claims**

1. A catalyst comprising an alumina support composited with a hydrogenation component comprising at least one Group VIB metal component selected from the group consisting of at least one elemental metal, metal oxide or metal sulfide of a Group VIB element of the Periodic Table of Elements and at least one Group VIII metal component selected from the group consisting of at least one elemental metal, metal oxide or metal sulfide of a Group VIII metal of the Periodic Table of Elements, said catalyst having a median pore radius ranging from about 70 to about 95 Angstroms, a total pore volume between 0.45 and 1.50 ml/g; less than 0.05 ml/g of said pore volume being in pores with radii greater than 100 Angstroms; at least 0.40 ml/g of said pore volume being in pores with radii in the range between said median pore radius to about 10 Angstroms above and 10 Angstroms below said median pore radius; at least 75 percent of said pore volume being in pores with radii in the range between said median pore radius to about 10 Angstroms above and 10 Angstroms below said median pore radius; less than 0.05 ml/g of said pore volume being in pores with radii below 60 Angstroms, and a total surface area ranging between 130 and 500 square meters per gram.

4,113,657

ALKYLATION PROCESS

Sheldon Herbstman, Spring Valley; Allen N. Webb, and John H. Estes, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 604,586, Aug. 14, 1975, Pat. No. 4,066,716.
This application Dec. 2, 1976, Ser. No. 746,766
Int. Cl.² B01J *27/10*
U.S. Cl. 252—442 **8 Claims**

1. An alkylation catalyst consisting essentially of alumina and chlorine prepared by contacting an active chlorided alumina catalyst comprising from about 3.0 to 15.0 weight percent chlorine, said alumina catalyst being prepared by contacting alumina with a chlorinating agent under non-reducing conditions, wherein said alumina catalyst is initially contacted at a temperature of between 700° and 1200° F. in an oxidizing atmosphere and thereafter with aluminum chloride at a temperature between 300° and 650° F., wherein 100 parts by weight of said alumina catalyst are contacted with from about 2 to 40 parts by weight of vaporized aluminum chloride thereby further chlorinating said alumina catalyst's surface with an additional 2 to 15 weight percent chlorine without the deposition of aluminum chloride.

4,113,658

PROCESS FOR HOMOGENEOUS DEPOSITION PRECIPITATION OF METAL COMPOUNDS ON SUPPORT OR CARRIER MATERIALS

John W. Geus, Geleen, Netherlands, assignor to Stamicarbon, N.V., Geleen, Netherlands

Continuation of Ser. No. 361,492, May 18, 1973, abandoned, which is a continuation of Ser. No. 108,081, Jan. 20, 1971, abandoned, and a continuation-in-part of Ser. No. 721,051, Apr. 12, 1968, abandoned, Ser. No. 743,000, Jul. 8, 1968, abandoned, Ser. No. 814,703, Apr. 9, 1969, abandoned, Ser. No. 858,318, Sep. 16, 1969, abandoned, Ser. No. 886,693, Dec. 19, 1969, abandoned, Ser. No. 879,625, Nov. 24, 1969, abandoned, and Ser. No. 577, Jan. 5, 1970, Pat. No. 3,654,161. This application Mar. 2, 1976, Ser. No. 663,106
Claims priority, application Netherlands, Apr. 14, 1967, 6705259; Aug. 31, 1967, 6712004
Int. Cl.² B01J *21/08, 21/06, 21/04*; C04B *35/00*
U.S. Cl. 252—454 **5 Claims**

1. A process for the preparation of a particulate at least inchoately catalytically active composition affixed to the surfaces of a solid particulate supporting material which comprises the combination of steps of:
(A) forming a body of a solution-suspension aqueous medium by admixing
(1) a solution of at least one metal compound and wherein said metal is Bi(III), Co(II), Cr(III), Fe(II), Mo(VI), Ni(II), Sn(IV) or Pt(IV) which compound is:
(a) substantially soluble in said aqueous medium within at least a range of pH value below a pre-determined pH value of less than about 7: and
(b) said at least one metal is capable of forming an insoluble compound at a pH above said range; and
wherein said solution of said compound contains up to 15% by weight of the metal ion of said metal compound; and
(2) a finely divided stable particulate solid, nucleating surface providing supporting material which is SiO_2, Al_2O_3, or TiO_2 and which has a sedimentation rate sufficiently low to permit homogeneous distribution thereof in said solution under the agitated conditions during the process and to form a suspension under said agitated conditions in said solution; the particles thereof having a surface which, under the conditions of the process is a nucleating surface with respect to said insoluble compounds; and
(b) initially controlling and adjusting the pH of said aqueous medium to a value within said pH range within which said compound is substantially soluble in said aqueous medium;
(C) sufficiently vigorously agitating the resulting aqueous medium so that said suspension particles are homogeneously distributed throughout said body, along with said dissolved at least one metal compound; while also
(D) increasing the total hydroxyl ion concentration within said agitated suspension-solution, wherein the total hydroxyl ion concentration is
(a) at a level sufficiently high to initiate nucleation and deposition precipitation of said insoluble compound on and over the said surface of the said particulate supporting material itself, but
(b) below that concentration at which the total hydroxide ion concentration and the total concentration of ions of said metal exceed the solubility product of that insoluble compound of step (A) (1) (b) in said suspension-solution and thus at a level insufficient to induce any substantial free nucleation of said insoluble compound within the solution phase per se and with rapid dilution and distribution of any local momentary incremental increase of hydroxyl-ion wherein the step of increasing the hydroxyl-ion concentration is effected
by introducing a hydrolizable agent into said solution, which hydrolizable agent will, under the conditions of the process, hydrolize to form hydroxyl ions, and hydrolizing said agent to form said hydroxl ions during the

process under controlled and gradual conditions; wherein the control of said hydrolysis is essentially effected by controlling the temperature of said solution at a level whereat the required and desired rate of hydrolysis, under the conditions of the process, take place, wherein said temperature can be up to 100° C., and

(E) continuing increasing total hydroxyl-ion concentration as in step (D) until the desired amount of insoluble metal compound has been transferred from said solution to said supporting material, wherein the rate of said further increases in said total hydroxyl ion concentration is maintained substantially at the level of the rate of migration of said metal to the said surface of said supporting material; and thereafter separating said solid supporting materials, having said insoluble compound substantially homogeneously deposited thereon, from the remaining aqueous solution of the said aqueous medium.

2. The process of claim 1, wherein said solution contains 5 to 15% by weight of metal ion of said water-soluble salt.

3. The process of claim 1, wherein said hydrolizable agent is introduced into said solution-suspension in an amount of 1 to 10 times the theoretical quantity required to convert said water-soluble salt to said insoluble metal compound.

4. The process of claim 3, wherein said hydrolizable agent is urea, acetamide or hydrolizable derivatives thereof.

4,113,659

CATALYTIC COMPOSITE AND METHOD OF MANUFACTURE

Edward Michalko, Chicago, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 671,893, Mar. 29, 1976, abandoned, and Ser. No. 671,895, Mar. 29, 1976, abandoned. This application Apr. 11, 1977, Ser. No. 786,527

Int. Cl.² B01J *29/06*; C07C *3/00, 3/58*

U.S. Cl. 252—455 Z **19 Claims**

1. A catalytic composite comprising a calcined mixture of a refractory inorganic oxide and a zeolite of the mordenite crystal structure containing less than about 5 wt. % sodium as Na_2O, said zeolite having been treated with an aqueous ammoniacal base solution at a pH of at least about 9.5 in admixture with said refractory inorganic oxide in a substantially acid anion-free state, said zeolite being in from about a 1:3 to about a 3:1 weight ratio with said refractory inorganic oxide.

10. A method of manufacture providing a catalytic composite of improved activity which comprises subjecting a zeolite of the mordenite crystal structure, and containing less than about 5 wt. % sodium as Na_2O, to an aqueous ammoniacal treatment of a pH of at least about 9.5 in admixture with a substantially acid anion-free refractory inorganic oxide to form a catalytic composite therewith.

4,113,660

PRODUCTION OF SHAPED CATALYSTS OR CARRIERS COMPRISING TITANIUM OXIDES

Kazunobu Abe, Izumi; Hiroaki Rikimaru, Nara; Iwao Yamazaki, and Hiroshi Hasegawa, both of Osaka, all of Japan, assignors to Sakai Chemical Industry Co., Ltd., Sakai, Japan

Filed Dec. 22, 1976, Ser. No. 753,323

Claims priority, application Japan, Dec. 23, 1975, 50-154606; Jul. 26, 1976, 51-89429; Aug. 24, 1976, 51-101350

Int. Cl.² B01J *21/04, 21/06, 21/08, 23/22*

U.S. Cl. 252—455 R **17 Claims**

1. A process for preparing shaped catalysts or carriers mainly containing titanium oxide which comprises calcining a material mainly comprising titanium oxide or a substance convertible into titanium oxide on calcination in the presence of metatitanic acid sol or gel, said metatitanic acid sol being the one prepared by deflocculation of metatitanic acid obtained in the course of the production of titanium oxide according to a conventional sulfuric acid process and said metatitanic acid gel being the one prepared by adjusting said metatitanic acid sol to pH 1 or higher.

4,113,661

METHOD FOR PREPARING A HYDRODESULFURIZATION CATALYST

Paul Whitfield Tamm, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 387,100, Aug. 9, 1973. This application Aug. 12, 1974, Ser. No. 496,788

Int. Cl.² B01J *21/04, 23/84, 23/88*

U.S. Cl. 252—465 **5 Claims**

1. A method for preparing a hydrocarbon hydrodesulfurization catalyst which comprises impregnating a porous carrier with an aqueous solution containing at least one catalytic agent or catalytic agent precursor selected from the group consisting of Group VIB and Group VIII iron group compounds, said compounds being thermally decomposable to the metal oxides and thereafter drying and calcining the resulting impregnated carrier, said carrier having been prepared by

(a) treating a peptizable particulate solid comprising predominantly alpha-alumina monohydrate sized in the range below about 500 microns by admixing the solid with an aqueous solution of at least one acid selected from the group consisting of nitric, hydrochloric, hydrofluoric and hydrobromic acids, said solution containing an amount of the acid in the range from about 0.05 to 0.20 equivalent per formula weight of the alumina;

(b) neutralizing at least a portion of the admixed acid by admixing into the treated solid an aqueous solution of a nitrogen base, said base having the formula R_3N or R_3NHOH, wherein said R groups are the same or different and are selected from the group consisting of hydrogen and of alkyl groups having a carbon atom content in the range from one to three inclusive, said solution containing an amount of the base in the range from about 0.6 to 1.2 equivalents per equivalent of said acid;

(c) shaping the neutralized or partially neutralized solid; and

(d) completing the carrier by drying and calcining the shaped solid in a dry or humid atmosphere at a temperature in the range from about 150° to 1700° F.;

and said carrier being substantially free of pores having a pore diameter above 1000 Angstroms, and having a pore volume of at least 0.5 cc/g in which at least 70% of said pore volume constitutes pores having a pore diameter in the range between 80 and 150 Angstroms.

4,113,662

CATALYST FOR ESTER HYDROGENATION

Robert G. Wall, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 711,909, Aug. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 578,799, May 19, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,366

Int. Cl.² B01J *23/72, 23/80, 27/20*

U.S. Cl. 252—473 **9 Claims**

1. A catalyst suitable for use in the hydrogenation of carboxylic acid esters the metal components of which are not fused and consist essentially of the elemental, oxide, hydroxide, or carbonate form of cobalt, zinc, and copper.

4,113,663

2-ETHYL-6,6-DIMETHYL-2-CYCLOHEXENE-1-CARBOXYLIC ACID ETHYL ESTER PERFUME COMPOSITIONS

Hanspeter Schenk, Zumikon, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed Oct. 4, 1976, Ser. No. 729,521

Claims priority, application Switzerland, Oct. 9, 1975, 13117/75; Jul. 27, 1976, 9584/76; Sep. 23, 1976, 12073/76

Int. Cl.² C11B *9/00*

U.S. Cl. 252—522 **4 Claims**

1. A perfume composition which contains an olfactorily-effective amount of damascone-like 2-ethyl-6,6-dimethyl-2-cyclohexene-1-carboxylic acid ethyl ester and at least one other olfactory agent.

4,113,664

2,4-DIOXA-SPIRO(5,5)UNDEC-8-ENE PERFUME COMPOSITIONS

Jens Conrad, Hilden, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

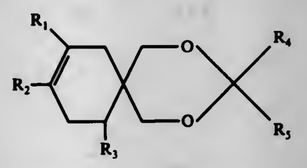
Filed Feb. 4, 1977, Ser. No. 765,531

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1976, 2604553

Int. Cl.² C11B *9/00*

U.S. Cl. 252—522 **28 Claims**

1. A perfumery composition consisting essentially of from 1 to 50% by weight of a 2,4-dioxa-spiro(5,5)undec-8-ene of the formula



wherein R_1, R_2 and R_3 are members selected from the group consisting of hydrogen and methyl, R_4 is a member selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, methoxy, ethoxy, vinyl and 1-propenyl, R_5 is a member selected from the group consisting of hydrogen and alkyl having 1 to 4 carbon atoms, and R_4 and R_5 taken together are $-(CH_2)_n-$ where n is an integer from 4 to 6, and the remainder, customary constituents of perfumery compositions.

4,113,665

COATINGS PREPARED FROM TRIALKOXYSILANES

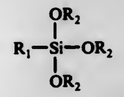
Gabriel H. Law, Rancho Palos Verdes, and Albert Peter Gysegem, Monrovia, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Filed Feb. 3, 1977, Ser. No. 765,223

Int. Cl.² C08G *77/00*

U.S. Cl. 260—37 SB **49 Claims**

1. A binder for chemically resistant coatings, wherein the major portion of the binder is prepared by reacting in the presence of an aqueous acidic solution (i) trialkoxysilanes having the formula



where R_1 is selected from the group consisting of alkyl, aryl and cycloalkyl groups containing up to about 6 carbon atoms and where each R_2 is independently selected from the group consisting of alkyl, hydroxyalkyl, alkoxyalkyl and hydroxyalkoxyalkyl groups containing up to about 6 carbon atoms, and (ii) aliphatic polyols containing an average of at least two carbon bonded hydroxy groups per polyol and having an average molecular weight of at least 62, wherein the weight ratio of silanes to polyols is from about 5:1 to about 20:1.

4,113,666

METHOD FOR PRODUCING STRONG-ACID CATION EXCHANGE FIBER BY TREATING FIBROUS POLYETHYLENE WITH GASEOUS SULFUR TRIOXIDE

Takezo Sano, Takatsuki; Akira Kobayashi, Ibaragi, and Haruo Inoue, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 24, 1976, Ser. No. 699,255

Int. Cl.² C08F *28/00*

U.S. Cl. 521—29 **9 Claims**

1. A process for producing strongly acidic cation-exchange fiber, which comprises charging fibrous polyethylene in a reactor and passing a gas comprising gaseous sulfur trioxide and an inert gas through said reactor to treat said fibrous polyethylene with said gaseous sulfur trioxide, while agitating the fibrous polyethylene by rotating the reactor.

4,113,667

FLAME RESISTANT POLYURETHANE FOAM AND PROCESS FOR PRODUCING THE SAME

Shigeo Mori, and Takeshi Fujita, both of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 440,622, Feb. 7, 1974, abandoned. This application Sep. 25, 1975, Ser. No. 616,722

Claims priority, application Japan, Feb. 8, 1973, 48-15863; Mar. 15, 1973, 48-30704; Mar. 24, 1973, 48-33699; Mar. 26, 1973, 48-34883; Mar. 31, 1973, 48-37114; Apr. 1, 1973, 48-38050

Int. Cl.² C08G *18/32, 18/38*

U.S. Cl. 521—163 **25 Claims**

1. A process for producing a flame resistant soft polyurethane foam comprising reacting a mixture of

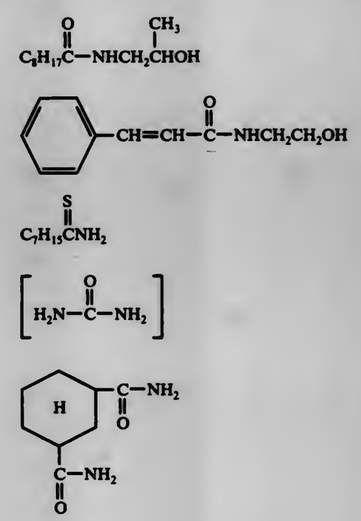
(a) a polyetherpolyol or a polyesterpolyol, each having at least two active hydrogen atoms,

(b) a polyisocyanate,

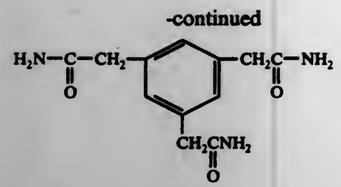
(c) at least one foaming agent,

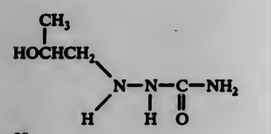
(d) a catalyst and about 0.1 to 5 parts by weight of the polyetherpolyol or polyesterpolyol of an amine component comprising

(e) an amine compound selected from the group consisting of

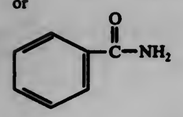


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or

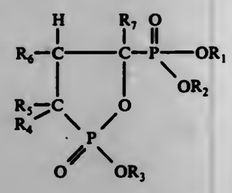


4,113,668
ALKYL VINYL COPOLYMER
Cleve H. Forward, 1803 Duquain, and Jerry G. Higgins, Sterling City Rte., both of Big Spring, Tex. 79720
Division of Ser. No. 552,560, Feb. 24, 1975, Pat. No. 3,957,911. This application Feb. 4, 1976, Ser. No. 655,205
Int. Cl.[2] C08J 9/18
U.S. Cl. 521—60 15 Claims

1. A random suspension copolymer suitable for molding consisting essentially of from about 0.25 to about 15% by weight of a 1-olefin monomer having from 14 to 60 carbon atoms and the balance of a vinyl aromatic compound prepared by forming a suspension of said 1-olefin and said vinyl aromatic compound in an admixture of water, a suspending agent, a free radical polymerization catalyst, and optionally a surfactant, with agitation, and then copolymerizing said 1-olefin and said vinyl aromatic compound at a temperature of from about 90° to 125° C. for a period of time sufficient to form small hard copolymer beads having a size of from about 30 to 100 mesh.

4,113,669
POLYMERS FLAMEPROOFED WITH 1,2-OXAPHOSPHOLANES
Helmut Zondler, Bottmingen; Emil Saladin, Augst, and Rudolf Kirchmayr, Münchenstein, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 615,455, Sep. 22, 1975, Pat. No. 4,045,518, which is a continuation-in-part of Ser. No. 499,888, Aug. 23, 1974, abandoned. This application Jun. 13, 1977, Ser. No. 806,044
Claims priority, application Switzerland, Sep. 7, 1973, 12890/73; May 21, 1974, 6981/74; Jul. 29, 1974, 10465/74
Int. Cl.[2] C08K 5/53
U.S. Cl. 521—108 11 Claims

1. A method of flameproofing thermoplastic polymers, polyurethanes, cellulose or cellulose derivatives which comprises adding to the polymer at least one compound of formula I



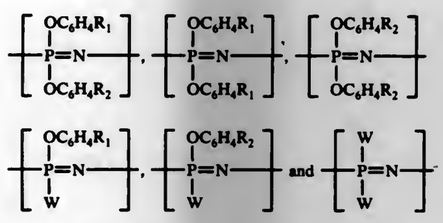
(I)

wherein

each of R_1, R_2 and R_3 independently represents alkyl with 1 to 18 carbon atoms, haloalkyl or alkoxyalkyl having not more than 18 carbon atoms, alkenyl with 3 to 18 carbon atoms, tetrahydrofurfuryl, aralkyl with 7 to 15 carbon atoms, or aralkyl with altogether 7 to 15 carbon atoms which is substituted by halogen or alkoxy of 1 to 4 carbon atoms, R_4 represents hydrogen or methyl, R_5 represents hydrogen, alkyl with 1 to 8 carbon atoms, aryl with 6 to 10 carbon atoms, aryl with 6 to 10 carbon atoms which is substituted by halogen, alkyl or alkoxy groups with 1 to 4 carbon atoms or represents 2-furyl, 2-thienyl or 2-pyridyl, R_6 represents hydrogen, methyl or phenyl, and R_7 represents alkyl with 1 to 8 carbon atoms, aryl with 6 to 10 carbon atoms, aryl with 6 to 10 carbon atoms which is substituted by halogen, alkyl or alkoxy groups with 1 to 8 carbon atoms or represents 2-furyl, 2-thienyl or 2-pyridyl.

4,113,670
CURABLE ARYLOXYPHOSPHAZENE POLYMERS
Ronald L. Dieck; Alan B. Magnusson, and Edwin J. Quinn, all of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Division of Ser. No. 768,603, Feb. 14, 1977. This application Feb. 17, 1978, Ser. No. 878,679
Int. Cl.[2] C08G 79/04; C08J 9/10
U.S. Cl. 521—95 4 Claims

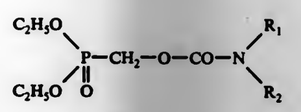
1. A process for foaming and curing a phosphazene copolymer having randomly distributed repeating units represented by the formulas



wherein R_1 is linear or branched C_1 to C_{10} alkoxy, R_2 is hydrogen, linear or branched C_1-C_{10} alkyl or halogen, and W represents a monovalent radical containing a group capable of a crosslinking chemical reaction at moderate temperatures, said group being attached to a P atom by a -O- linkage, which process comprises mixing said phosphazene copolymer with a chemical blowing agent and a sulfur-type curing agent and heating the resulting mixture to a temperature sufficient to decompose said blowing agent and cure the copolymer.

4,113,671
CARBAMATE-PHOSPHONATES AS FLAME-PROOFING AGENTS IN POLYURETHANE FOAM
Serge L. Lecolier, Janville sur Juine, and Jean-Marie J. Biehler, Brunstatt, both of France, assignors to Societe Nationale des Poudres et Explosifs, France
Division of Ser. No. 614,706, Sep. 18, 1975, Pat. No. 4,077,964. This application Oct. 3, 1977, Ser. No. 838,460
Claims priority, application France, Oct. 17, 1974, 74 34948
Int. Cl.[2] C08G 18/32, 18/38, 18/14
U.S. Cl. 521—108 7 Claims

1. A rigid or flexible polyurethane foam which contains, as flameproofing agent, a carbamate-phosphonate of the formula:



wherein R_1 and R_2 are the same or different and are linear or branched alkyl or hydroxyalkyl radicals containing 2 or 3 carbon atoms or R_1 or R_2 together with the nitrogen atom to which they are attached form a 5 or 6 member ring containing one nitrogen atom and 4 or 5 carbon atoms, or R_1 is phenyl and R_2 is hydrogen.

4,113,672
MOLDING EXPANDABLE STYRENE POLYMER PARTICLES
Walter O. Pillar, Monroeville, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.
Continuation-in-part of Ser. No. 744,571, Nov. 24, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 848,972
Int. Cl.[2] C08V 9/18
U.S. Cl. 521—60 8 Claims

1. In a process for making styrene polymer particles less flammable by impregnating the polymer particles by heating in aqueous suspension in the presence of a non-polymeric organic halogen compound and a blowing agent at temperatures between 100° C and 125° C, the improvement comprising adding, prior to heating for the impregnation, about 0.001 to 0.50 percent by weight, based on polymer particles, of a tin compound selected from the group consisting of dialkyl tin maleate, dialkyl tin fumarate and mixtures of these wherein the alkyl group may contain 1–20 carbon atoms and a synergistic amount of from 0.001 to 0.40 percent by weight based on polymer particles, of a hindered phenolic antioxidant consisting essentially of an alkylated phenol where said alkyl groups contain from 3 to 20 carbon atome and at least one such alkyl group is in the position ortho to the Hydroxy group of the phenol, whereby the polymer molecular weight is not degraded during the aqueous impregnation process and, whereby expandable styrene polymer particles having improved molding properties are made.

4,113,673
COATING COMPOSITION FOR LEAK DETECTION IN AIR TEST
Nobuyoshi Hirota, and Akio Shibata, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 7, 1977, Ser. No. 775,328
Claims priority, application Japan, Mar. 18, 1976, 51/28637; Apr. 19, 1976, 51/43590
Int. Cl.[2] C08L 89/00
U.S. Cl. 260—8 7 Claims

1. A coating composition for leak detection in an air test, comprising an aqueous solution containing from 1.6 to 9.6 percent by weight soluble starch, from 0.04 to 0.75 percent by weight water-soluble acrylic resin, from 0.05 to 0.5 percent by weight gelatin, and from 0.5 to 1.0 percent by weight a foaming agent, and said solution having a pH range between 4 and 10.

4,113,674
POLY-2-ALKYL-2-OXAZOLINE MODIFIED REGENERATED CELLULOSICS
Stephen L. Miller, and Yancey J. Dickert, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Dec. 27, 1976, Ser. No. 754,730
Int. Cl.[2] C08L 1/24
U.S. Cl. 260—9 17 Claims

1. A modified, regenerated cellulosic comprising regenerated cellulose and at least one weight percent of a poly-2-alkyl-2-oxazoline having a weight average molecular weight of at least about 10,000, the poly-2-alkyl-2-oxazoline being an integral part of the cellulosic.

4,113,675
METHYLOLATED KRAFT LIGNIN POLYMER RESIN
Michael R. Clarke, Aylmer, and Allan J. Dolenko, Ottawa, both of Calif.X, assignors to Canadian Patents and Development Limited, Ottawa, Canada
Filed Dec. 20, 1976, Ser. No. 752,628
Claims priority, application Canada, Jan. 13, 1976, 243397
Int. Cl.[2] C08H 5/02; C08G 8/24
U.S. Cl. 260—17.5 22 Claims

1. A process for producing a highly cross linkable methylolated kraft lignin resin which comprises reacting kraft or soda lignin under alkaline conditions with a methylolating agent to thereby produce methylolated lignin and subsequently mixing said methylolated lignin with a phenolic cross linking agent and providing a pH below 7 to produce an intimately associated resin complex of methylolated lignin and phenolic cross linking agent curable at elevated temperature.

4,113,676
AQUEOUS DISPERSIONS OF ESTERS STABILIZED WITH CARBODIIMIDES
Kenneth W. Niederst, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 31, 1977, Ser. No. 801,673
Int. Cl.[2] C08G 18/83, 63/76; C08K 5/29
U.S. Cl. 260—22 T 19 Claims

1. A method for stabilizing aqueous dispersions of organic ester-containing compositions against degradation which comprises adding to said aqueous dispersion a stabilizing amount of a monocarbodiimide.

4,113,677
POLISHED COMPOSITION CONTAINING MICROCRYSTALLINE WAX
Stanley Svedas, and Champak C. Shah, both of Chicago, Ill., assignors to Turtle Wax, Inc., Chicago, Ill.
Filed Jan. 14, 1976, Ser. No. 649,078
Int. Cl.[2] C08L 7/02
U.S. Cl. 260—23 R 17 Claims

1. A polish having a controlled rate of evaporation and capable of withstanding large differentials in temperature which is applicable to an automobile finish as a dilute solution in hot water, said polish comprising an aminofunctional silicone and a dimethyl silicone fluid present in a combined amount of from about 3 to about 6 parts by weight with the aminofunctional silicone being present in an amount not less than 0.1 parts by weight and the dimethyl silicone fluid being present in an amount not less than 0.1 parts by weight; from about 0.8 to about 1.4 parts by weight of an emulsifiable microcrystalline wax; from about 6 to about 16 parts by weight of a mineral oil having an SSU viscosity at 100° F. in the range between about 40 and about 100; from about 13 to about 31 parts by weight of an aliphatic hydrocarbon having an initial boiling point of about 375° F. and an end boiling point of about 500° F.; from about 0.1 to about 10 parts by weight of dicoco dimethyl ammonium chloride; from about 0.1 to about 3.5 parts by weight ethomeen acetate; from about 0.1 to about 3 parts by weight of a metal stearate selected from the class consisting of aluminum stearate, calcium stearate and magnesium stearate; from about 0.1 to about 2 parts by weight of ethoxylated phenol wetting agent; from about 0.015 to about 1.125 parts by weight of a cyclized rubber; and the balance water; the ratio by weight between said silicones and said wax being in the range from about 2.5 to about 4.1; the ratio by weight between said silicones and said mineral oil being in the range from about 0.3 to about 0.5; the ratio by weight between said silicones and said aliphatic hydrocarbon being in the range from about 0.15 to about 0.23; whereby there is provided a polish having a controlled rate of evaporation and capable of withstanding large differentials in temperature which is applicable to an automobile finish as a dilute solution in hot water to provide a protec-

tive coating having high detergent and wear resistance and a deep luster.

4,113,678

TIN SULFIDE STABILIZER FOR STYRENE POLYMER

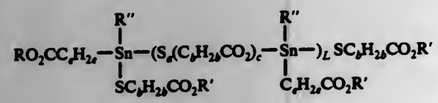
Motonobu Minagawa, Koshigaya; Toshio Ohzeki, Urawa, and Tetsuo Sekiguchi, Hasuda, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jun. 14, 1977, Ser. No. 806,521
Claims priority, application Japan, Jun. 14, 1976, 51-69455
Int. Cl.[2] C08K 5/58
U.S. Cl. 260—23.7 M 24 Claims

1. A sulfide compound of four-valent tin having linked to tin through carbon from 1 to 2 alkoxycarbonylalkylene groups having 1 to 8 carbon atoms in the alkoxy group and 2 to 3 carbon atoms in the alkylene group, and directly linked to tin at least one bivalent sulfide group, represented by one of the formulae

$$[S_a(C_bH_{2b}CO_2)_cSn_d(C_eH_{2e}CO_2R)_2]_n$$

and



in which R is an alkyl group having from 1 to 8 carbon atoms, R' is a hydrocarbon group having from 4 to 18 carbon atoms, R'' is $-C_eH_{2e}CO_2R$ or $-SC_bH_{2b}CO_2R'$ *a* is an integer from 1 to 4, *b* is 1 or 2, *c* is 0 or 1, *d* is 1 or 2, *e* is 2 or 3, *n* is from 1 to about 100 and L is a number from 1 to 10, provided that when *d* is 2, *a* is at least 3.

4,113,679

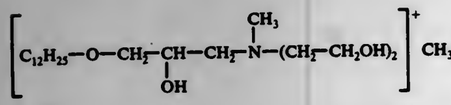
ANTISTATIC THERMOPLASTIC MOLDING COMPOSITIONS AND SHAPED ARTICLES MADE THEREFROM

Hans-Joachim Andrascheck, and Rainer Mucke, both of Burgkirchen, Alz, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 8, 1976, Ser. No. 721,276
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1975, 2540655
Int. Cl.[2] C08K 5/19
U.S. Cl. 260—28.5 D 1 Claim

1. Antistatic thermoplastic molding composition wherein the thermoplastic material is selected from the group consisting of vinyl chloride homo-, co- and graftcopolymers having a content of at least 50% by weight of polymerizable vinyl chloride and wherein the antistatic agent is a mixture of the following three components:

A. a quaternary ammonium salt of the formula



B. glycerol monooleate in an amount of 70% by weight and glycerol dioleate in an amount of 30% by weight; and

C. wax OP;

component A being present in an amount of from 0.4 to 1.5% by weight, component B in an amount of from 0.5 to 2.5% by weight, and component C in an amount of from 0.5 to 1.5% by weight, each relative to the total composition.

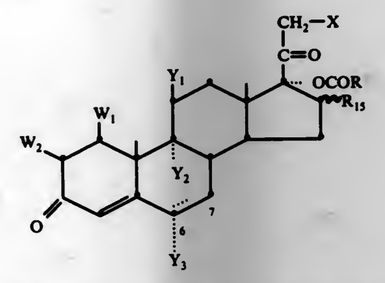
4,113,680

METHOD FOR PREPARING 17 α-ESTER-21-HALO PREGNANES

Yoshiaki Kamano, Tokyo; Kazuhiko Michishita, Saitama; Teruya Seki, and Ichiro Tanaka, both of Tokyo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1976, Ser. No. 671,693
Claims priority, application Japan, Mar. 31, 1975, 50-38914; May 1, 1975, 50-52085
Int. Cl.[2] C07J 5/00
U.S. Cl. 260—397.45 15 Claims

1. A method for preparing a 17α-ester-21-halo pregnane of the formula



wherein R is selected from the group consisting of alkyl containing 1 to 9 carbon atoms, cycloalkyl containing 4 to 6 carbon atoms, phenyl, lower alkylphenyl, nitrophenyl and halophenyl,

X is halogen,

Y_1 is halogen, hydroxy or oxo, Y_2 is hydrogen or halogen, or Y_1 and Y_2, together with their adjacent carbon atoms, form an epoxy ring or a double bond,

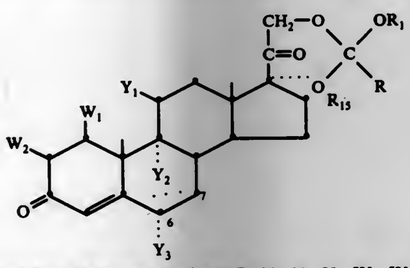
Y_3 is halogen, hydrogen or methyl,

W_1 is hydrogen or methyl, W_2 is hydrogen or methyl, or W_1 and W_2, together with their adjacent carbon atoms, form a cyclopropane ring or a double bond,

R_{15} is hydrogen, methyl, methylene, hydroxy, lower alkoxy or acyloxy containing 2 to 8 carbon atoms,

the wavy line represents the α- or β- configuration, and the bond between the carbon atoms at the 6 and 7 positions is a single or double bond,

which comprises reacting a 17α,21-cyclic orthoester of a 17α,21-dihydroxy pregnane of the formula



wherein Rhd 1 is lower alkyl and R, Y_1, Y_2, Y_3, W_1, W_2, R_{15}, the wavy line and the bond between the carbon atoms at the 6 and 7 positions are as defined above,

with a halo compound selected from the group consisting of silyl halides, acyl halides, phosphorus oxyhalides, sulfonyl halides, N-haloimides, N-haloamides and phosphorus pentahalides, in the presence of an organic polar solvent selected from the group consisting of dimethylformamide, N-methylpyrrolidone, hexamethylphosphoric triamide and dimethylsulfoxide, or a mixture of said organic polar solvent and an organic non-polar solvent, which mixture of solvents contains at least 50% by weight of the organic polar solvent.

4,113,681

THERMOPLASTIC POLYVINYL CHLORIDE-ACRYLIC POWDER COATING COMPOSITION

Charles Moore Harmuth, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 10, 1977, Ser. No. 795,565
Int. Cl.[2] C08L 91/00, 63/00
U.S. Cl. 260—28.5 D 10 Claims

1. A thermoplastic powder coating composition of powder particles having a particle size of about 1–100 microns; wherein the powder particles consist essentially of a binder of a blend of:

(A) about 45–85% by weight of a polyvinyl chloride terpolymer consisting essentially of

(1) 72–87% by weight, based on the weight of the terpolymer, of vinyl chloride,

(2) 10–25% by weight, based on the weight of the terpolymer, of vinyl acetate and

(3) 0.1–3% by weight, based on the weight of the terpolymer, of maleic acid; wherein the terpolymer has a weight average molecular weight of about 20,000–125,000 determined by gel permeation chromatography using polystyrene as a standard;

(B) about 5–40% by weight of an acrylic polymer consisting essentially of 40–95% by weight of a methyl methacrylate, 4.7–55% by weight of an alkyl acrylate or an alkyl methacrylate having 2–12 carbon atoms in the alkyl group and 0.3–5% by weight of an α-β ethylenically unsaturated carboxylic acid and having a weight average molecular weight of about 10,000–100,000 determined as above; and

(C) about 10–25% by weight of a plasticizer of triisodecyl trimellitate

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4,113,682

COATING COMPOSITION CONTAINING RESIN HAVING TERTIARY ALIPHATIC GROUP AND REACTIVE HYDROXYL GROUP, PROCESS FOR ITS PREPARATION AND ARTICLE COATED WITH THE COMPOSITION

Nobuyoshi Nagata, Nara, and Ryuzo Mizuguchi, Osaka, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 439,797, Feb. 5, 1974, abandoned, which is a continuation of Ser. No. 163,492, Jul. 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 732,526, May 28, 1968, abandoned. This application Jun. 23, 1976, Ser. No. 699,025
Claims priority, application Japan, Jun. 2, 1967, 42-34872
Int. Cl.[2] C08L 61/28, 61/24
U.S. Cl. 260—29.4 UA 28 Claims

1. A process for preparing a coating composition containing water, a water-soluble, organic solvent and a water-soluble thermosetting resin, which comprises preparing a mixture of

(1) 5 to 30 parts by weight of an α,β-ethylenically unsaturated carboxylic acid having 3 to 5 carbon atoms or a monoester thereof with an alkanol having 1 to 4 carbon atoms,

(2) 5 to 50 parts by weight of an addition product of a polymerizable α,β-ethylenically unsaturated carboxylic acid having 3 to 5 carbon atoms with a glycidyl ester of a tertiary aliphatic monocarboxylic acid, or an addition product of a monoglycidyl ester of a polymerizable, α,β-ethylenically unsaturated carboxylic acid having 3 to 5 carbon atoms with a tertiary aliphatic monocarboxylic acid, wherein said tertiary aliphatic group contains 4 to 25 carbon atoms,

(3) 40 to 90 parts by weight of a hydroxy-free polymerizable unsaturated monomer having 2 to 30 carbon atoms, and

(4) up to 20 parts by weight of a polymerizable unsaturated monomer having a hydroxyl group and 3 to 8 carbon atoms,

heating the resulting mixture in the presence of a polymerization initiator to form a copolymer, adding to the resulting copolymer 0.5 to 2.0 equivalents of an amine with respect to the carboxyl group in said copolymer to form a water-soluble salt, and then mixing the resulting salt with 4 to 50 parts by weight of a water-soluble amino resin, based on 100 parts by weight of said copolymer.

4,113,683

PRODUCTION OF HIGH TEMPERATURE RESISTANT POLYMER COMPOSITIONS CAPABLE OF FORMING SUPERIOR FIBER REINFORCED COMPOSITE ARTICLES

Ilmar L. Kalnin, Millington, and George J. Breckenridge, Clark, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 17, 1977, Ser. No. 759,927
Int. Cl.[2] C08G 41/02, 51/16, 69/48, 73/18
U.S. Cl. 260—857 TW 30 Claims

1. A process for providing a high temperature resistant composition from a normally intractable high temperature resistant polymer, which composition is capable of forming a three dimensional shaped article which comprises:

I. providing a solution of a substance selected from the group consisting of:

(a) a nitrogenous intractable high temperature resistant polymer which does not have a glass transition temperature below its decomposition temperature, or precursors capable of forming the same; and

(b) an admixture comprising from about 60 to about 95 parts by weight of the intractable polymer of (a) and from about 5 to about 40 parts by weight of at least one cross-linkable polymer exhibiting a glass transition temperature above 200° C and below its decomposition temperature, or precursors capable of forming the same;

II. providing a suspension of partially plasticized organic fibers derived from polymers selected from the group consisting of:

(a) the intractable polymer of step I(a),

(b) polybenzimidazoles,

(c) high temperature resistant aromatic polyamides,

(d) high temperature resistant aromatic polyesters, and mixtures thereof;

III. combining the suspension of II and the solution of I in a manner sufficient to provide a precipitation of a major portion of the dissolved substance of I affixed to the suspended organic fibers of II thereby forming a mixture containing a fiber-particle aggregate;

IV. combining the mixture of III with a non-solvent in a manner sufficient, and with properties sufficient to precipitate, affix, and incorporate the remaining portion of the dissolved substance of I from the mixture of III into the fiber-particle aggregate to form a fiber-particle aggregate composition comprising from about 95 to about 50%, by composition weight, of the substance present in the solution of I affixed to and intimately admixed with from about 5 to about 50%, by composition weight, of said organic fibers of II; and

V. filtering and washing the composition to remove residual solvent.

4,113,684

LOW TEMPERATURE CURE EPOXY-AMINE ADHESIVE COMPOSITIONS

Edward M. Petrie, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 10, 1976, Ser. No. 749,592
Int. Cl.[2] C08L 63/00
U.S. Cl. 260—29.2 EP 7 Claims

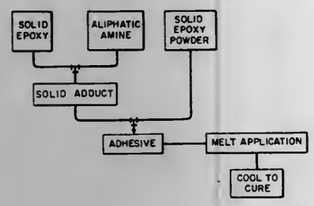
1. A composition admixture which consists of:

(A) a particulated solid reaction product adduct consisting of:

(i) 1 part by weight of a solid epoxy resin selected from the group consisting of diglycidyl ethers of bisphenol A epoxy resins, diglycidyl ethers of bisphenol F epoxy resins, and mixtures thereof, and

(ii) about 0.20 part by weight of about 1.5 parts by weight of an aliphatic polyamine, to provide a stoichiometric excess of amine, and

(B) about 1 part by weight to about 6 parts by weight, for each 1 part of adduct, of a reactive solid epoxy resin powder having an average particle size range of from about 10 microns to about 420 microns, selected from the group consisting of diglycidyl ethers of bisphenol A epoxy resin, diglycidyl ethers of bisphenol F epoxy resins



and mixtures thereof, having a melting point of between about 55° C. to about 225° C.; wherein the composition is a solid two phase reactive mass comprising a uniform solid dispersion of adduct (A) and epoxy powder (B), wherein the melting point of the adduct is within about 1° C. to about 50° C. of the melting point of the epoxy powder; said composition being capable of melting at temperatures of over about 60° C., and forming a cross linked adhesive material on cooling after melting.

4,113,685

FLOCCULATING AGENT COMPRISING WATER-IN-OIL EMULSION OF STABILIZER PLUS NH-ACTIVE POLYMER CARRYING FORMALDEHYDE AND AMINE RADICALS

Wolfgang Hubner, Kempen; Eduard Barthell, Krefeld, and Kurt Dahmen, München-Gladbach, all of Germany, assignors to Chemische Fabrik Stockhausen & Cie, Krefeld, Germany

Continuation-in-part of Ser. No. 538,428, Jan. 2, 1975, which is a continuation-in-part of Ser. No. 485,474, Jul. 3, 1974, abandoned. This application May 3, 1976, Ser. No. 682,543

Claims priority, application Fed. Rep. of Germany, May 6, 1975, 2520028

Int. Cl.² C08L *61/20*

U.S. Cl. 260—29.4 UA **11 Claims**

1. In a flocculation, sedimentation, dehydration or retention composition comprising a stable dispersion of about 10 to 50% concentration by weight of a water-soluble polymeric Mannich base in a mixture of water, a water-insoluble liquid and a quantity of an emulsifier of a suitable HLB number effective to produce a stable water-in-oil emulsion, the Mannich base comprising an H- active polymer carrying carbonamide groups reacted with formaldehyde and a primary or secondary alkyl- or hydroxylalkylamine wherein the alkyl groups have up to about 18 carbon atoms, said formaldehyde and said amine being employed in the reaction in approximately equimolar amounts, and said formaldehyde being present in at least about 0.1 times the molar amount of the carbonamide groups, the improvement which comprises including in said emulsion a stabilizing member selected from the group consisting of

(a) a water-soluble salt of an amine,

(b)(a) in admixture with an amine,

(c)(a) in admixture with ammonia,

(d) an ammonium salt of a mineral acid plus ammonia, and

(e) a carboxylic acid amide,

whereby said emulsion is stable even after storage for prolonged periods of time.

4,113,686

HYDROPHILIC CONTACT LENSES AND LENS POLYMER

Frank O. Holcombe, Jr., Beltsville, Md., assignor to Burton, Parsons and Company, Inc., Washington, D.C.

Filed Jun. 9, 1977, Ser. No. 805,146

Int. Cl.² C08F *4/36, 120/06, 20/06;* C08L *33/02*

U.S. Cl. 260—29.6 TA **3 Claims**

1. A hydrophilic gel polymer consisting of the addition copolymer of about the following in parts of volume:

2-hydroxethyl methacrylate — 100 parts

isobutyl methacrylate — 10 parts

trimethylolpropane trimethyacrylate — 0.136 parts

methacrylic acid — 1.35 parts

2,5 dimethyl 2,5 bis(2-ethyl hexoyl peroxy) hexane — 0.25 parts.

4,113,687

PROCESS FOR PREPARING LATEX

John Ugelstad, Trondheim, Norway, assignor to Sintef, Norway

Filed Aug. 16, 1977, Ser. No. 825,136

Claims priority, application Norway, Aug. 10, 1977, 772805

Int. Cl.² C08F *2/24*

U.S. Cl. 260—29.6 XA **21 Claims**

1. A process for preparing a latex which comprises homogenizing under pressure an aqueous mixture containing an emulsifier and a water-insoluble solvent for the vinylic monomer(s) to be polymerized, said solvent having a water-solubility at 25° C. of $<10^{-3}$ g/l H_2O to form a stable preemulsion of said solvent in water, whereby the increased pressure of homogenization resulting in smaller but more drops in said preemulsion and consequently in the final latex, and then adding to said preemulsion the monomer(s) to be polymerized and optionally additional water, together with or followed by a polymerization initiator selected from water-soluble polymerization initiators and oil-soluble polymerization initiators having sufficient water solubility to diffuse through the aqueous phase into the drops formed by diffusion of the monomer(s) into said solvent, the weight ratio of emulsifier and solvent to total water being 1:500–1:50 and 1:1000–3:100, respectively, and the weight ratio of emulsifier and solvent to monomer(s) being 1:500–1:30 and 1:1000–1:20, respectively.

4,113,688

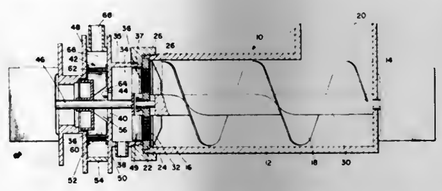
PROCESS FOR RAPIDLY DISSOLVING GELS OF WATER-SOLUBLE POLYMERS BY EXTRUSION, CUTTING AND THEN SLURRYING UNDER HIGH SHEARING FORCES

Stephen C. Pearson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 14, 1977, Ser. No. 860,423

Int. Cl.² C08L *33/02*

U.S. Cl. 260—29.6 PM **6 Claims**



1. A process for preparing dilute aqueous solutions of water-soluble polymer having an intrinsic viscosity of at least one deciliter per gram measured in 2 normal sodium chloride 25.5 C. from gels of said polymer, said process comprising the steps of:

(a) extruding the water-soluble polymer gels into flowing water through die holes in an extrusion die plate, said die holes having diameters of from at least about 0.06 inch to about 0.50 inch, forming polymer gel strands,

(b) cutting the extruding polymer gel strands at the exterior surface of the extrusion die plate to a length of less than about 0.75 inch, forming a slurry of the cut gel particles in the flowing water,

(c) subjecting the slurry of gel particles of step (b) to high shearing forces immediately after formation of said slurry such that no substantial dissolution of the gel particles occurs prior to subjecting of said particles to said high shearing forces, said forces being sufficient to reduce the particle size of the cut gel particles to less than about 0.030 inch in greatest dimension, and

(d) mixing the resultant slurry of fine gel particles and additional water under low shear conditions sufficient to maintain the suspension of particles in water, rapidly forming a dilute aqueous solution of polymer.

4,113,689

HALOGENATED ESTERS OF POLYCARBOXYLIC ACIDS AND PLASTICIZERS FOR CHLORO-VINYL POLYMERS BASED ON SAID ESTERS

Mario Modena, Bollate (Milan); Pietro Massardo, and Lucio Castelnuovo, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 463,363, Apr. 23, 1974, abandoned. This application Jun. 9, 1976, Ser. No. 695,748

Claims priority, application Italy, Apr. 24, 1973, 23364 A/73

Int. Cl.² C08K *5/10*

U.S. Cl. 260—31.8 HA **7 Claims**

1. Plasticized compositions comprising polymers of chlorinated monomers selected from the group consisting of chlorovinyl and chlorovinylidene polymers and, per 100 parts by weight of said polymers, from 1 to 150 parts by weight of a halogenated ester of a carboxylic acid having the general formula

$$A\text{—}[CH_2\text{-}CH = CX_2]_2 \qquad \text{I}$$

in which X is halogen and A is a bivalent radical of formula

$$\text{-OOC-R-COO-} \qquad \text{II}$$

in which R is an aromatic hydrocarbon group.

4,113,690

SILICONE ELASTOMERS CONTAINING ALKOXYSILOXANOLS

Richard Newton Lewis, Tecumseh, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 645,734, Dec. 31, 1975, abandoned, Division of Ser. No. 435,151, Jan. 24, 1975, Pat. No. 3,979,546, which is a division of Ser. No. 214,406, Dec. 30, 1971, Pat. No. 3,799,962. This application Feb. 16, 1977, Ser. No. 769,062

Int. Cl.² C08L *00/00*

U.S. Cl. 260—37 SB **8 Claims**

1. An improved composition containing a silicone gum and a reinforcing filler, the improvement which comprises incorporating in said composition from 1 to 30 percent by weight based on the weight of the silicone gum of an alpha-alkoxy-omega-siloxanol of the formula $R'O(R_2SiO)_xH$, in which R is selected from the class consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals having from 1 to 8 carbon atoms, R' is an alkyl radical having up to 4 carbon atoms, and x is an integer of from 2 to 10.

4,113,691

POLYMERIC ORGANOSILICON COMPOUNDS

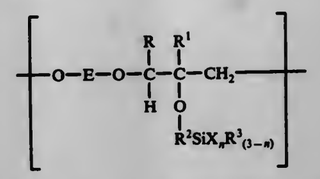
Robert James Ward, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 2, 1977, Ser. No. 773,776

Int. Cl.² C08L *63/02*

U.S. Cl. 260—37 EP **12 Claims**

1. A polymeric organosilicon compound characterized by the repeating unit



wherein R and R^1 are each, individually, hydrogen or methyl; E is the residue obtained by removing the hydroxyl groups from a dihydric polynuclear phenol in which the hydroxyl groups are attached to different nuclei; R^2 is a divalent organic radical; R^3 is hydrogen or alkyl of up to 4 carbon atoms; n is an integer having a value of from 1 to 3; and X is a hydrolyzable groupm, said compound having a weight average molecular weight of from 1,000 to 100,000 and containing from 0.5 to 5.5 weight per cent silicon.

4,113,692

REINFORCED THERMOPLASTIC COMPOSITIONS OF POLYESTER RESINS AND A POLYCARBONATE RESIN

Allen Dale Wambach, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 6, 1976, Ser. No. 747,635

Int. Cl.² C08K *7/14*

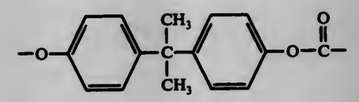
U.S. Cl. 260—40 R **7 Claims**

1. A thermoplastic molding composition which, after molding, possesses increased resistance to warpage, the composition comprising, in intimate admixture:

(a) a poly(1,4-butylene terephthalate) resin;

(b) a poly(ethylene terephthalate) resin;

(c) a polycarbonate resin having repeating units of the formula



and

(d) a reinforcing agent comprising glass fibers in an amount at least sufficient to provide reinforcement.

4,113,693

PROCESS FOR THE PRODUCTION OF ACRYLIC COMPOUNDS AND RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 703,925, Jul. 9, 1976, Pat. No. 4,011,253. This application Jun. 9, 1977, Ser. No. 804,897

Int. Cl.² C08G *77/04*

U.S. Cl. 528—271 **18 Claims**

1. The process for the production of acrylic compounds and resinous products by the following steps:

(a) mixing about 2 parts by weight of a fine granular silica with an acrylic compound in water;

(b) adding 0.5 to 1.5 parts by weight of an alkali catalyst;

(c) adding a catalytic amount of a peroxide initiator;

(d) heating the said mixture to 80° to 100° C. while agitating for 10 to 30 minutes at ambient pressure, thereby

(e) producing an emulsion of an acrylic silicate resinous product.

4,113,694

PROCESS FOR PRODUCING STABILIZED OLEFIN TERPOLYMERS AND STABILIZED OLEFIN TERPOLYMERS PRODUCED ACCORDING TO SAID PROCESS

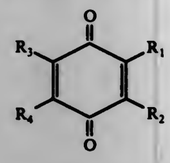
Sergio Arrighetti; Sebastiano Cesca; Giuseppe Ghetti, and Eugenio Vajna, all of San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Milan, Italy

Division of Ser. No. 567,299, Apr. 11, 1975, Pat. No. 4,055,535, which is a division of Ser. No. 275,936, Jul. 28, 1972, Pat. No. 3,892,712. This application Mar. 9, 1977, Ser. No. 775,776
Claims priority, application Italy, Jul. 31, 1971, 27014 A/71
Int. Cl.² C08L 9/00
U.S. Cl. 260—875 **9 Claims**

1. A process for preparing an olefin terpolymer which is stabilized against oxidative aging, which comprises reacting in a hydrocarbon solvent and at a temperature between 0° and 150° C:

(a) a terpolymer of ethylene, another alpha olefin, and a polyene selected from the group consisting of dehydro-iso-dicyclopentadiene and 2-(2',4'-dimethyl-penta 1',3'-dienyl-)-norborn-5-ene, having in addition to a double bond for participating in the terpolymer formation, conjugated double bonds in the cyclopentadienyl substituent, with

(b) a dienophilic agent of the general formula:



wherein R_1, R_2, R_3, and R_4 may be hydrogen or alkyl, aryl, cycloalkyl or aralkyl radicals having up to 8 carbon atoms, moreover the R_1-R_2 and R_3-R_4 pairs may be divalent radicals forming condensed rings.

4,113,695

NON-OPAQUE FLAME-RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Oct. 15, 1976, Ser. No. 733,015
Int. Cl.² C08K 5/34
U.S. Cl. 260—45.8 N **14 Claims**

1. An improved non-opaque flame-retardant polycarbonate composition of an aromatic carbonate polymer in admixture with 0.001 to about 2.0 parts per hundred parts of the aromatic carbonate polymer of an additive selected from the group consisting of organic alkali metal salts of aromatic sulfonic acids, organic alkaline earth metal salts of aromatic sulfonic acids or mixtures thereof, the improvement which comprises having in admixture with the flame-retardant aromatic carbonate polymer 0.001 to about 2.0 parts per hundred parts of the aromatic carbonate polymer an inorganic halide selected from the group consisting of an alkali metal halide, an alkaline earth metal halide or mixtures thereof, the halogen substituent in said inorganic halide being bromine, chlorine or iodine and said aromatic carbonate polymer, said organic metal salts or mixtures thereof, and said inorganic halide each having a refractive index in the range of 1.54 to 1.65.

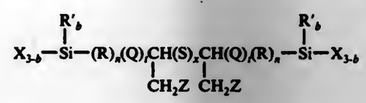
4,113,696

POLYSULFIDE SILICON COMPOUNDS

Thomas Charles Williams, Ridgefield, Conn., and George Edward Totten, Hartsdale, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 28, 1977, Ser. No. 810,785
Int. Cl.² C08G 77/04
U.S. Cl. 260—448.2 B **15 Claims**

1. A polysulfide silicon composition of matter selected from the class consisting of polysulfide silanes having the formula



(I)

wherein

R' is hydrogen or a monovalent radical selected from the class consisting of hydrocarbon radicals and substituted hydrocarbon radicals;

wherein X is a hydrolyzable radical selected from the class consisting of alkoxy, aryloxy, acyloxy, secondary amino and aminooxy radicals;

wherein R is a divalent bridging group selected from the class consisting of hydrocarbon radicals, groups of the formula —R"OR"— and groups of the formula —R"SR"— wherein R" is a divalent hydrocarbon radical;

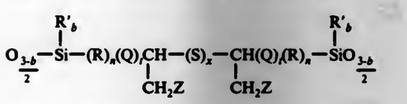
wherein Q is an oxygen atom or a sulfur atom;

wherein Z is a monovalent organic amino radical the nitrogen atom of which is directly bonded to the carbon atom of the (CH_2) group of the above formula;

wherein *n* has a value of 0 or 1 and *t* has a value of 0 or 1, with the proviso that when *n* is 0, then *t* is 0; and

wherein *b* has a value of 0 to 2, and *x* has a value of 2 to 4;

(ii) polysulfide siloxane homopolymers consisting essentially of siloxy units having the formula



(II)

wherein R', R, Q, Z, *n*, *t*, *b* and *x* are the same as defined above; and (iii) polysulfide siloxane copolymers consisting essentially of at least one siloxy unit represented by formula (II) above and at least one siloxy unit represented by the formula



(III)

wherein R' is the same as defined in formula (II) above, and wherein *c* has a value of from 0 to 3 inclusive.

4,113,697

POLYETHER DIAMIDE EPOXY ADDITIVES

Heinz Schulze, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Development Corporation, New York, N.Y.

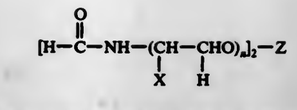
Filed Nov. 22, 1976, Ser. No. 743,818
Int. Cl.² C08G 59/46
U.S. Cl. 528—94 **14 Claims**

1. An epoxy resin composition having superior resistance to thermal shock and being the cured product of a curable admixture which comprises:

a vicinal polyepoxide having an epoxide equivalency of greater than 1.8;

a curing amount of an alkyl substituted dicarboxylic bicyclic vicinal anhydride curing agent; and,

an effective amount of an additive consisting essentially of a polyether diamide having the formula



wherein X is hydrogen, a methyl radical or an ethyl radical; Z is a hydrocarbon alkylene radical having 2 to 5 carbon atoms and *n* is a number selected such that the molecule of the above formula has a molecular weight of from about 2000 to about 3000.

4,113,698

AROMATIC POLYMER PRODUCTION

Philip Anthony Staniland, Tewin Wood, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 10, 1977, Ser. No. 767,333
Claims priority, application United Kingdom, Feb. 10, 1976, 5172/76
Int. Cl.² C08G 65/40, 75/20
U.S. Cl. 528—481 **11 Claims**

1. A process for the separation of an aromatic etherketone polymer or etherketone/sulphone copolymer containing phenylene groups linked by oxygen atoms and by ketone groups, not more than 25% of the combined total of ketone and sulphone groups being sulphone groups, from the reaction product resulting from the nucleophilic polycondensation of at least one member of the group consisting of i) a mixture of 49–50% molar of at least one alkali metal bisphenate and correspondingly 51–50% molar of at least one dihalo compound, and ii) at least one alkali metal halophenate, in an aromatic sulphone solvent of formula

in which Y is a direct link, oxygen or a pair of hydrogen atoms, one attached to each benzene ring, and Z and Z', which may be the same or different, are hydrogen atoms or phenyl groups, comprising cooling the reaction product from the polymerisation temperature until the reaction product has solidified, finely dividing the reaction product, leaching out the alkali metal halide with water and then heating the resultant finely divided material to a temperature of at least 200° C, but below the melting point of the material, under reduced pressure to distil off any remaining water and the aromatic sulphone solvent.

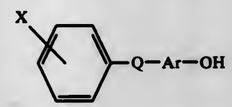
4,113,699

PRODUCTION OF AROMATIC POLYMERS

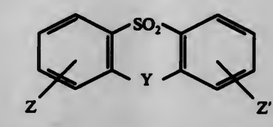
John Brewster Rose, Letchworth, and Philip Anthony Staniland, Tewin Wood, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 24, 1977, Ser. No. 810,355
Claims priority, application United Kingdom, Jul. 8, 1976, 28432/76; Feb. 1, 1977, 4013/77
Int. Cl.² C08G 65/38, 75/23
U.S. Cl. 528—126 **9 Claims**

1. A process for the manufacture of aromatic polyethersulphones and ketones and copolymers thereof comprising heating at 200 to 400° C at least one halophenol of the formula



where X is halogen and is ortho or para to Q, Q is —CO— or —SO_2—, and Ar is a divalent aromatic radical, with about 0.5 moles of alkali metal carbonate, or about 1 mole of an alkali metal bicarbonate, per mole of halophenol, in the presence of a solvent selected from N-methyl pyrrolidone, dimethyl sulphone and an aromatic sulphone of formula



where Y is a direct link, an oxygen atom or two hydrogen atoms (one attached to each benzene ring) and Z and Z', which may be the same or different, are hydrogen atoms or phenyl groups, said alkali metal carbonate or bicarbonate being in granular form of particle size less than 1000 μm.

4,113,700

PROCESS FOR PREPARING HIGH ORTHO NOVOLAC RESINS

Harry M. Culbertson, Belchertown, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 10, 1977, Ser. No. 758,370
Int. Cl.² C08G 8/10
U.S. Cl. 528—138 **8 Claims**

1. In a process for the production of phenol-aldehyde novolac resins of the class which is characterized by having a preponderance of ortho/ortho methylene bridges and which is prepared by an acid aqueous reaction mixture containing a material selected from the group consisting of phenol and metaalkylphenols in molar excess with a source of formaldehyde, conducting said reacting in the presence of a catalyst comprising:

(A) a divalent electropositive metal compound selected from the group consisting of oxides, hydroxides and organic acid salts selected from the group consisting of formates, lactates, acetates and benzoates or mixtures thereof wherein the improvement comprises conducting said reacting with said catalyst in combination with

(B) a divalent electropositive metal salt selected from the group consisting of sulfonates and fluoroborates or

(C) acids selected from the group consisting of sulfonic and fluoroboric and mixtures thereof, said reacting being carried out under aqueous reflux conditions, with a phenol to formaldehyde molar ratio of about 1.20:1 to 2.0:1, said ortho/ortho methylene bridges being present in an amount of 75 to 100%.

4,113,701

METHOD FOR THE PREPARATION OF HARDENABLE UREA FORMALDEHYDE RESINS

Arnold Laqua, and Ulrich Holtschmidt, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed May 3, 1977, Ser. No. 793,315
Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620478
Int. Cl.² C08G 14/08, 14/10; G08G 12/12
U.S. Cl. 260—29.4 R **1 Claim**

1. In a process for the preparation of solutions of hardenable urea-formaldehyde resins suitable for impregnating and coating paper supports for coating the surface of wood-based panels wherein

(a) an aqueous solution of urea and formaldehyde in a mole ratio of 1 : 1 to 2.5 are reacted for 10 to 30 minutes at 70° to 95° C in the presence of 0.2 to 1.0 mmoles of an aminosulfonic acid and 20 to 100 mmoles of ammonia, each based on 1 mole of urea, until the 50% solution has a viscosity of 55 to 65 cP at 20° C;

(b) 0.8 to 10 mmoles of an aminosulfonic acid are then added,

and a pH of 4.0 to 4.5 is maintained by ammonia addition during a reaction time of 10 to 25 minutes at 70° to 95° C, until the 50% solution has a viscosity of 80 to 110 cP at 20° C, and then;

(c) the reaction product from step (b) is treated with 40 to 200 mmoles of ammonia as well as 0.1 to 0.3 moles of urea and the reaction mixture is reacted at a temperature of 70° to 95° C for 15 to 45 minutes, until the 50% solution has a viscosity of 85 to 125 cP at 20° C.

the improvement which comprises replacing from 0.01 to 0.05 moles of the urea in step (a) with equimolar amounts of melamine.

4,113,702

METHOD OF PREPARING POLYESTER VARNISH RESINS OF LOW VISCOSITY

Erich Pseneik, Witten-Bommern, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 22, 1975, Ser. No. 598,084

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1974, 2436371

Int. Cl.² C08G 63/76

U.S. Cl. 528—75 **18 Claims**

1. A process for preparing a varnish resin having a viscosity of 1,000 to 4,000 cP, an acid number from 0 to 1 and a hydroxyl number between 100 and 250 which comprises:

A. condensing at 50° to 260° C a polycarboxylic acid or anhydride with an alcohol until a resin is formed having an acid number between 10 and 80 a hydroxyl number of 120–250 and a viscosity between 30,000 and 180,000 cP; and

B. thereafter adjusting the temperature thereof to 80°–100° C and adding to the resultant resin a glycidyl ester of a saturated aliphatic carboxylic acid having 10 to 30 carbon atoms in an amount of 30 to 70% by weight based upon the weight of the resin obtained in step A and condensing the glycidyl ester with the resin from step A at a temperature of 110 to 150° C until the acid number of the resin in between 0 and 1 and the resin has a viscosity of 1000 to 4000 cP.

4,113,703

UNSATURATED POLYESTERS DERIVED FROM CHLOROXYLYLENE DIOLS

Georg Blumenfeld, St. Augustin, and Norbert Vollkommer, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of Ser. No. 488,601, Jul. 12, 1974, abandoned. This application Dec. 12, 1975, Ser. No. 640,312

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1973, 2336704

Int. Cl.² C08G 63/54, 63/68

U.S. Cl. 528—299 **13 Claims**

1. An unsaturated polyester soluble in styrene in an amount of 20 to 80% by weight and soluble in methylacrylate, methyl methacrylate, acrylonitrile, divinylbenzene and diallylphthalate and capable of being formed into a colorless transparent plate, said unsaturated polyester prepared by the condensation polymerization of a mixture of monomers, said mixture consisting essentially of:

A. A member selected from the group consisting of fumaric acid, maleic acid, maleic acid anhydride, an alkali salt of maleic acid and an alkali salt of fumaric acid;

B. A member selected from the group consisting of hexachlorenedomethylene tetrahydrophthalic acid, hexachlorophthalic acid, tetrahydrophthalic acid, adipic acid, their alkali salts or anhydrides, orthophthalic acid, its alkali salt, anhydride or lower alkyl ester, isophthalic acid, its alkali salt, anhydride or lower alkyl ester and terephthalic acid, its alkali salt, anhydride or lower alkyl ester;

C. An alcohol selected from the group consisting of ethylene glycol, diethylene glycol, propanediol-1,2, butanediol-1,3, butanediol-1,4, neopentyl glycol and 1,4-bis-(hydroxymethyl)-cyclohexane; and

D. 1 to 100 mol percent, relative to the sum of the C components, of a member selected from the group consisting of 2,3,5,6-tetrachloro-p-xylylene glycol, 2,3,4,6-tetrachloro-m-xylylene glycol, 2,3,5,6-tetrachloro-p-xylylene glycol-bis-(2,2-dimethyl-γ-hydroxypropyl ether), 2, 3, 5, 6-tetrachloro-p-xylylene dichloride and 2,3,4,6-tetrachloro-m-xylylene dichloride.

4,113,704

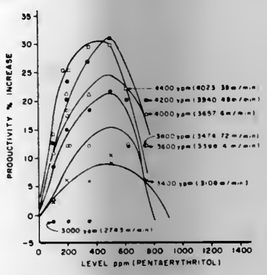
POLYESTER FILAMENT-FORMING POLYMER AND ITS METHOD OF PRODUCTION

Donald L. MacLean, Raleigh, and Robert T. Estes, Cary, both of N.C., assignors to Monsanto Company, Decatur, Ala.

Filed Jun. 24, 1976, Ser. No. 699,543

Int. Cl.² C08G 63/12

U.S. Cl. 528—289 **20 Claims**



1. A polyester filament-forming copolymer suitable for high throughput melt spinning and comprising a polyester polymer and a chain branching agent, the copolymer being chain branched with the chain branching agent to the extent provided by 1–10 microequivalents of available chain branching reactive sites based on one gram of the copolymer.

4,113,705

TRIISOCYANATES USEFUL FOR THE PRODUCTION OF POLYURETHANE RESINS

Manfred Bock, Leverkusen; Josef Pedain, Cologne, and Walter Uerdingen, Bergisch-Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

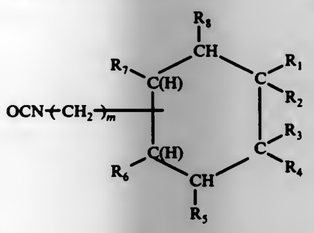
Filed Mar. 17, 1977, Ser. No. 778,631

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614243

Int. Cl.² C07C 119/045; C08G 18/75

U.S. Cl. 260—859 R **7 Claims**

1. Triisocyanates of the formula



in which R_1, R_2, R_3 and R_4, which may be the same or different, represent hydrogen, a methyl group or the group—$(CH_2)_n$—NCO where n represents an integer of from 1 to 3 and two of the groups represented by R_1, R_2, R_3 or R_4 are —$(CH_2)_n$—NCO groups; m represents 0, 1 or 2; and R_5, R_6, R_7 and R_8, which may be the same or different, represent hydrogen or a methyl group, the total number of methyl groups represented by R_5, R_6, R_7 and R_8 being limited to a maximum of 2.

3. In an isocyanate polyaddition process for the production of polyurethane resins, the improvement comprising reacting compounds having a molecular weight of from about 400 to 10,000 which contain at least two hydrogen atoms capable of reacting with isocyanate groups and the triisocyanates of claim 1.

4,113,706

AROMATIC IMINO ACIDS AND RESINS DERIVED THEREFROM

Daniel J. Lange, St. Louis, Mo., assignor to The P. D. George Company, St. Louis, Mo.

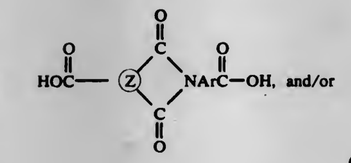
Continuation-in-part of Ser. No. 676,550, Apr. 12, 1976, Pat. No. 4,069,209. This application Aug. 11, 1977, Ser. No. 823,732

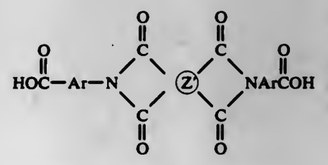
Int. Cl.² C08G 63/68, 69/44

U.S. Cl. 528—289 **11 Claims**

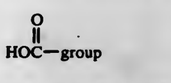
1. A resin derived from

(A) a dicarboxylic acid component which is an imino-dicarboxylic acid of the formula

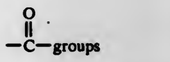




where Ⓩ and Ⓩ' are aromatic moieties, the indicated



attached to Ⓩ being attached to an aromatic ring of Ⓩ, the



linking an N to Z or Z' each being attached to an aromatic ring in Ⓩ or Ⓩ' and being present in a 5 membered imide ring and the moiety Ar being an aromatic ring, the N and COOH moieties being attached to the aromatic ring; and of a polyhydric alcohol component which is at least one of

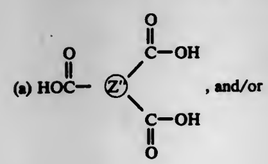
(B) a glycol component, and

(C) a polyol component containing at least three esterifiable hydroxyl groups; and any further components of said resin being

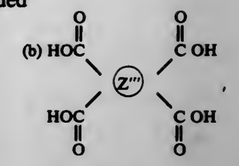
(D) the imide or imide-amide of

(D_1) an aromatic diamine and

(D_2) an aromatic tricarboxylic or aromatic tetracarboxylic acid, of the formulae, respectively,



-continued



or the anhydrides thereof, two of the COOH groups of the acid (a) and each of the COOH groups of each of the two pairs of such groups of the acid (b) being attached to adjacent carbons of a benzene ring of the Ⓩ'' and Ⓩ'' moieties, respectively, Ⓩ'' and Ⓩ''' being aromatic moieties;

where (A) and at least one of (B) and (C) and (D) are the sole polymer-forming components of said resin and only the components (A) and at least one of (B) and (C) are required to be present as polymer forming components.

4,113,707

POLY(OXYALKYLENE)-POLYESTER-POLY(SULFIDE)-POLYTHIOL PREPARED BY ESTER INTERCHANGE

Rector P. Louthan, and Richard C. Doss, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 720,474, Sep. 3, 1976, abandoned. This application Nov. 2, 1976, Ser. No. 737,948

Int. Cl.² C08G 63/68

U.S. Cl. 528—279 **26 Claims**

1. A method of preparing a poly(oxyalkylene)-polyester-poly(sulfide)-polythiol having on the average more than two pendant thiol groups comprising reacting in the presence of a transesterification catalyst a mixture of

(a) an alkyl mercaptocarboxylate of the formula

$$HS—CR_2—_nCOOR'$$

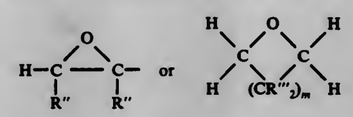
wherein R' is an alkyl radical containing from 1 to 5 carbon atoms, wherein R is hydrogen or R', wherein n is an integer having a value of from 1 to 5 and wherein the total number of carbon atoms in all R groups is up to 15 carbon atoms per molecule; and

(b) at least one dialkyl thiodicarboxylate of the formula

$$R'OOC—CR_2—_nS_r—CR_2—_nCOOR'$$

wherein r is an integer of from 1 to 5, R, R', and n are as defined in (a) and wherein said dialkyl thiodicarboxylate contains a total of no more than 30 carbon atoms per molecule for all R groups; with

(c) a poly(oxyalkylene)-polyol produced by reacting one or more epoxy-substituted hydrocarbons of the formula



wherein R'' is H or alkyl with the total number of carbon atoms in the molecule being up to 20 and wherein R''' is alkyl or H with the total number of carbon atoms per molecule being up to 20 and wherein m is an integer of from 1 to 10, with a polyol of the general formula

$$Y(OH)_x$$

wherein Y is a hydrocarbon moiety with at least two carbon atoms per moiety and a valence equal to the value of x, x being an integer of at least two.

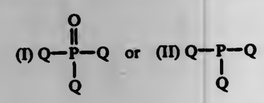
4,113,708

MELT PREPARATION OF 6TA/6IA POLYMERS WITH PHOSPHORUS COMPOUND TO REDUCE AMMONIA FORMATION

Richard D. Chapman; Donald A. Holmer, and George A. Mortimer, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 14, 1977, Ser. No. 759,313
Int. Cl.[2] C08G *69/28*
U.S. Cl. 528—313 8 Claims

1. In a process for preparing a random copolyamide by melt polymerization of a mixture consisting essentially of (i) hexamethylenediammonium terephthalate and (ii) hexamethylenediammonium isophthalate in a mole ratio of 30:70 to 80:20, respectively, and (iii) from 0 to 15 mole %, based on the moles of (i) and (ii), of a lactam or salt of a diamine of the formula $NH_2 - R' - NH_2$ and a diacid of the formula HOOC — R" — COOH, where R' is a C_2 to C_{10} alkylene and R" is a C_3 to C_{10} alkylene, the improvement comprising adding to said mixture prior to melt polymerization thereof from 20 to 20,000 parts per million, based on the weight of said copolymer, of at least one phosphorus compound whereby the amount of ammonia formed during melt polymerization is reduced, said phosphorus compound or compounds being of the formula



where Q is a hydrogen atom or a radical selected from the group consisting of R, OR, OM and OH wherein R is a hydrocarbon radical and M is an alkali metal atom, with the proviso that each said phosphorus compound has no more than one OH radical and in formula (I) at least one of the Q's is hydrogen.

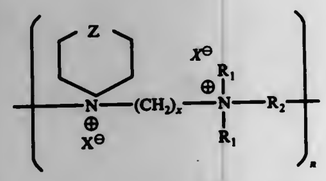
4,113,709

POLYQUATERNARY POLYTHIAZINES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 12, 1976, Ser. No. 713,666
Int. Cl.[2] C08G *75/24*
U.S. Cl. 424—78 17 Claims

1. Polymers of quaternary thiazines having following recurrent structure



where Z is S, SO, SO_2, x is 2 or more, R_1 is alkyl or hydroxyalkyl or both R_1's may be joined to form a heterocyclic group, R_2 is alkylene, alkenylene, aralkylene, or alkylene ether, X is a halide and n is a number fron 3-500.

17. The reaction product of the polymers of claim 1 with a polystyrene sulfonate.

4,113,710

PROCESS FOR PREPARING SUBSTANTIALLY LINEAR WATER-SOLUBLE INTERPOLYMERIC INTERFACIALLY SPREADING POLYELECTROLYTES

Dale M. Pickelman, Sr., Auburn, and Ritchie A. Wessling, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 706,974, Jul. 19, 1976, abandoned. This application Mar. 10, 1977, Ser. No. 776,167
Int. Cl.[2] C08F *8/34, 8/32, 8/40*
U.S. Cl. 526—30 10 Claims

1. A process for preparing a substantially linear water-soluble interpolymeric interfacially spreading polyelectrolyte in the absence of oppositely charged surfactants wherein:

(A) said polyelectrolyte is composed of a mixture of nonionic hydrophobic units and ionic hydrophilic units wherein said nonionic hydrophobic units are copolymerized ethylenically unsaturated monomers which when in the form of an amorphous homopolymer is less than about 0.1 percent soluble in water and wherein said monomer has no substituent extending more than about 10 Angstrom units from the point of ethylenic unsaturation said units being randomly distributed in the backbone of said polyelectrolyte and wherein said ionic hydrophilic units are copolymerized ethylenically unsaturated monomers which when in the form of amorphous homopolymers are soluble in water and wherein said ionic hydrophilic units remain substantially ionized over a pH range of 0 to 14; and

(B) said polyelectrolyte when incorporated into a dispersion is adsorbed at the disperse phase of said dispersion in a substantially flat configuration and where the area occupied by each ionic hydrophilic unit of said polyelectrolyte at the disperse phase surface is from about 60 to 100 square Angstrom units per ionic hydrophilic unit, and wherein said polyelectrolyte has an adsorption constant equal to or greater than 1 at the point where the disperse phase is saturated with said polyelectrolyte wherein said adsorption constant is determined as the amount of polyelectrolyte in the disperse phase divided by the amount of polyelectrolyte in the continuous phase;

said process comprising (1) the homogeneous polymerization in an aqueous emulsion containing a surfactant and a polymerization initiator of a mixture of ethylenically unsaturated nonionic monomers which monomers form water-insoluble copolymers and wherein at least one of said monomers contains a reactive group to form an interpolymer containing nonionic functional groups, then (2) adding a coreactant compound to said aqueous emulsion in an amount sufficient to convert said interpolymer to a water-soluble polyelectrolyte said polyelectrolyte having a charge which is the same as the charge of the emulsion of (1) above.

4,113,711

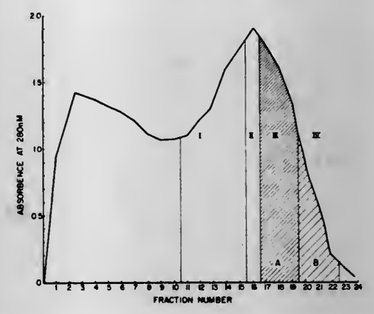
VASOACTIVE LUNG POLYPEPTIDES

Sami I. Said, 5323 Harry Hines Blvd., Dallas, Tex. 75235, and Viktor Mutt, Karolinska Institutet, Stockholm, Sweden

Filed Jan. 19, 1976, Ser. No. 649,968
Int. Cl.[2] B66F *1/04;* A61K *37/00;* C07C *103/52*
U.S. Cl. 260—112 R 1 Claim

1. The active polypeptide characterized as inducing peripheral vasodilation and systemic hypotension, and contracting non-vascular smooth muscle organs and being the fraction of hatched area B of FIG. 2, said polypeptide being a vasoactive material extracted and isolated from the lungs of animals, the process comprising the steps of collecting, boiling and mincing lung portions, extracting the resulting lung portions with acetic acid at a temperature of about 0°–5° C., filtering the resulting extract, and subjecting the extract to alginic acid absorption by the steps comprising lowering the pH with HCl acid and stirring with alginic acid, allowing the alginic acid mixture to settle and discarding supernatant liquid, recovering

the resulting sediment, washing with dilute HCl and eluting from the alginic acid with HCl, adding sodium chloride to the eluate and collecting a salt precipitate, dissolving the salt precipitate in water, neutralizing the resulting solution to a pH of about 7, heating the solution with vigorous stirring and then extracting it with an alcohol, acidifying with mineral acid and collecting an alcoholic extract material, subjecting the alcoholic extract material to gel chromatography over a cross-linked dextran at least one time while dissolved in an organic acid, collecting fractions from the beginning of introduction of the extract into the chromatographic column, combining the recovered fractions, saturating with sodium chloride and salting out the product, collecting the fractions from the gel chromatography in two parts, testing for the most active fractions by tests of femoral blood flow on anesthetized dogs and on isolated smooth muscle organs, subjecting the active fractions to at least one ion-exchange chromatography over carboxymethyl cellulose while dissolved in a buffer solution at a pH of 6–7, centrifuging to eliminate insoluble materials, collecting separate fractions and treating with alginic acid for absorbtion of peptides and eluting with mineral acid, freeze drying and lyophilizing the resulting fractions, and identifying the separate active fractions by characterization on blood flow and smooth muscle organs.



4,113,712

HBsAG PARTICLE COMPOSED OF SINGLE POLYPEPTIDE SUBUNITS AND THE PREPARATION PROCEDURE

Satoshi Funakoshi, Katano, Japan, assignor to The Green Cross Corporation, Osaka, Japan

Filed Mar. 8, 1976, Ser. No. 664,983
Int. Cl.[2] A61K *39/12, 39/42;* C07G *7/00;* G01N *33/16*
U.S. Cl. 260—112 R 8 Claims

1. A method for the preparation of uniform size hepatitis B surface antigen particles composed of single polypeptide subunits of molecular weight of 55,000 dalton ($HBsAg_{55}$) comprising heating hepatitis B surface antigen for 5 to 120 minutes at 40° to 80° C with a surfactant selected from the group consisting of alkali metal salts of bile acids, alkali metal salts of lauroyl sarcosinic acid, polyoxyethylene alkyl phenol containing an average of 7 to 10 molecules of oxyethylene and polyoxyethylene sorbitan monoalkylester containing an average of 20 molecules of oxyethylene capable of delipidation in isotonic sodium chloride solution at about neutral pH, collecting by gel filtration using a gel of dextran, polyacrylamide or agarose, said antigen particles having a molecular weight of about 2,200,000 dalton as an aqueous solution, and removing surfactant from said aqueous antigen particles solution by dialysis or gel filtration.

4,113,713

METHOD FOR CLEAVING THE PEPTIDE-RESIN BOND IN SOLID PHASE PEPTIDE SYNTHESIS BY HYDROGENOLYSIS

James M. Schlatter, Glenview, and Owen Goodmonson, Chicago, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jun. 16, 1977, Ser. No. 807,083
Int. Cl.[2] C07C *103/52;* C07G *7/00*
U.S. Cl. 260—112.5 R 2 Claims

1. In a process for cleaving peptides bound to a polymer by way of benzylester linkage during solid phase peptide synthesis, the improvement comprising hydrogenolysis of said linkage by catalytic hydrogenation using a palladium (II) salt with a weak acid anion as the catalyst.

4,113,714

[DES-ALA[1], GLY[2]-DESAMINO-CYS[3]]SOMATOSTATIN

Victor M. Garsky, Havertown, and William H. McGregor, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 3, 1975, Ser. No. 538,628
Int. Cl.[2] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 S 2 Claims

1. The compound N^{α}-(3-mercaptopropionyl)-L-Lys-L-Asn-L-Phe-L-Phe-L-Trp-L-Lys-L-Thr-L-Phe-L-Thr-L-Ser-L-Cys cyclic (1–11) disulfide and pharmaceutically acceptable salts thereof.

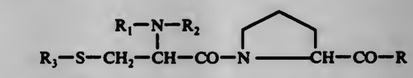
4,113,715

AMINO ACID DERIVATIVES

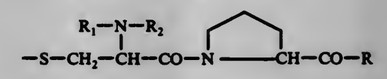
Miguel Angel Ondetti, Princeton, and Michael Edward Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 17, 1977, Ser. No. 759,685
Int. Cl.[2] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R 9 Claims

1. A compound of the formula



and salts thereof, wherein R is hydroxy or lower alkoxy;
R_1 is hydrogen, lower alkanoyl or amino(imino)methyl;
R_2 is hydrogen, lower alkyl or phenyl-lower alkylene; and
R_3 is hydrogen, lower alkanoyl, benzoyl or



4,113,716

PROCESS FOR PREPARING IMPROVED SOY PROTEIN MATERIALS

Teruo Gomi, Yokohama; Yuji Hisa, and Takahiko Soeda, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 25, 1977, Ser. No. 790,440
Claims priority, application Japan, Apr. 27, 1976, 51-48262
Int. Cl.[2] A23J *1/14;* A23L *1/20*
U.S. Cl. 260—123.5 11 Claims

1. A process for preparing soy protein material having improved solubility which comprises preparing an aqueous slurry of denatured defatted soybean flake material, wherein said aqueous slurry is adjusted to pH 6.5 to 9; heating said aqueous slurry to a temperature in the range of about 110° to 140° C; and subsequently retaining the heated slurry at a temperature in said range for from 2 seconds to 3 minutes; wherein the NSI of said denatured defatted soybean flake material is not more

than 70%, and the NSI of the soy protein in the resultant heated and retained slurry is not less than 75%.

4,113,717

QUATERNIZED AZO DYESTUFFS

Brian Parton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

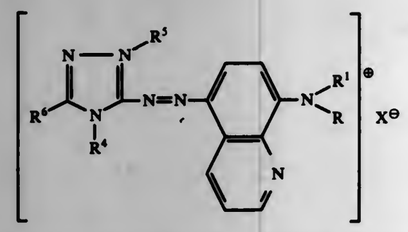
Filed Jan. 12, 1976, Ser. No. 648,568

Claims priority, application United Kingdom, Jan. 23, 1975, 2990/75

Int. Cl.² C09B *43/00*

U.S. Cl. 260—146 R **2 Claims**

1. Azo dyestuff of the formula:



wherein X is an anion, R is an alkyl group of from 1 to 6 carbon atoms and R^1 is hydrogen, R^4 and R^5 are optionally substituted alkyl or aralkyl radicals and R^6 is hydrogen or optionally substituted aryl, alkyl or aralkyl group.

4,113,718

BASIC AZO DYES

Peter Loew, Munchenstein, and Stefan Koller, Ramlinsburg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

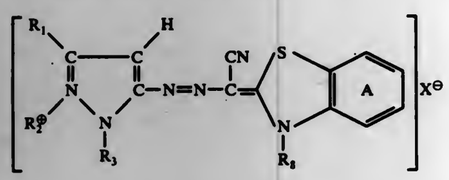
Filed Apr. 13, 1976, Ser. No. 676,599

Claims priority, application Switzerland, Apr. 29, 1975, 5527/75; Apr. 29, 1975, 5526/75

Int. Cl.² C09B *43/00, 29/36*

U.S. Cl. 260—147 **1 Claim**

1. A cationic dyestuff of the formula



wherein

R_1 is C_1–C_4 alkyl; C_1–C_4 alkyl substituted by C_1–C_4 -alkoxy, bromo, chloro, phenyl, hydroxy, cyano, —$CONH_2$, N-lower alkyl carboxamide, N,N-dilower alkyl carboxamide, or lower alkoxycarbonyl; phenyl; or phenyl substituted by chloro, bromo, nitro, cyano, lower alkyl, lower alkoxy, lower alkylcarbonylamino, lower alkoxycarbonyl lower alkylaminocarbonyl or trifluoromethyl;

R_2 is C_1–C_5 alkyl; C_1–C_5 alkyl substituted by C_1–C_4 alkoxy, bromo, chloro, phenyl, hydroxy, cyano, —$CONH_2$, N-lower alkyl carboxamide, N,N-dilower alkylcarboxamide or lower alkoxycarbonyl; benzyl; or benzyl substituted by lower alkoxy, lower alkyl, nitro, chloro, bromo or lower alkoxycarbonyl;

R_3 is C_1–C_5 alkyl, C_1–C_5 alkyl substituted by C_1–C_4 alkoxy, bromo, chloro, phenyl, hydroxy, cyano, —$CONH_2$, N-lower alkyl carboxamide, N,N-dilower alkyl carboxamide or lower alkoxycarbonyl; phenyl; phenyl substituted by chloro, bromo, nitro, cyano, lower alkyl, lower alkoxy, lower alkylcarbonylamino, lower alkoxycarbonyl, lower alkylaminocarbonyl, or trifluoromethyl; or benzyl substituted by lower alkoxy, lower alkyl, nitro, chloro, bromo, or lower alkoxycarbonyl;

R_8 is C_1–C_5-alkyl, C_1–C_5-alkyl substituted by C_1–C_4-alkoxy, bromo, chloro, phenyl, hydroxy, cyano, —$CONH_2$, N-lower alkyl carboxamide, N,N-dilower alkyl carboxamide; or benzyl substituted by lower alkoxy, lower alkyl, nitro, chloro, bromo or lower alkoxycarbonyl;

the benzo ring A is unsubstituted or substituted by alkyl of 1–4 carbon atoms, chloro, bromo, nitro, cyano, carboalkoxy of 1–4 carbon atoms, aminosulfonyl or alkoxy of 1 to 4 carbon atoms; and

X is an anion.

4,113,719

1:2-COBALT-COMPLEX AZO DYESTUFFS HAVING AN ACETOACETYLAMINO DIPHENYLAMINO COUPLER

Hermann Fuchs, Kelkheim, Taunus, and Klaus Filzinger, Hofheim, Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

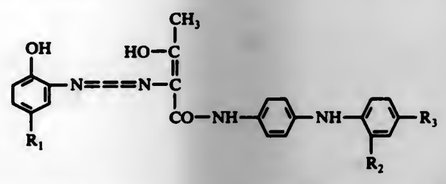
Filed Feb. 2, 1977, Ser. No. 765,004

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616405

Int. Cl.² C09B *45/20*

U.S. Cl. 260—149 **1 Claim**

1. A 1:2-cobalt complex compound of a monoazo compound of the formula



in which R_1 is halogen, nitro, lower alkyl, a sulfonamido group of the formula —SO_2—NR_4R_5 or a carbonamido group of the formula —CO—NR_4R_5, wherein R_4 and R_5 are identical or different and each is hydrogen or alkyl having 1 to 4 carbon atoms, or R_5 is phenyl unsubstituted or substituted by 1, 2 or 3 substitutents selected from the group lower alkly, lower alkoxy and chlorine, and R_2 is different from R_3 and each is nitro or sulfo.

4,113,720

DISPERSE AZO DYE WITH DIAMINOPYRIMIDINE COUPLING COMPONENT

Johannes Dehnert, and Guenter Dunkelmann, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Continuation of Ser. No. 414,409, Nov. 9, 1973, abandoned. This application Feb. 24, 1976, Ser. No. 660,985

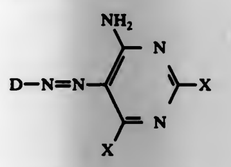
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1972, 2255525

The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.

Int. Cl.² C09B *29/36*; D06P *1/18, 3/36, 3/54*

U.S. Cl. 260—154 **5 Claims**

1. A dye of the formula



where D is phenyl substituted by chlorine, bromine, methyl, methoxy, nitro, cyano, methylsulfonyl, ethylsulfonyl, phenylsulfonyl, carbalkoxy of 2 to 5 carbon atoms, carbo-β-alkoxyethoxy, said alkoxy having 1 to 4 carbon atoms, or N,N-dialkyl sulfamoyl, said alkyl having 1 to 3 carbon atoms; phenylazophenyl; phenylazophenyl substituted by methyl, chlorine, bromine or nitro; benzthiazolyl; benzthiazolyl substituted by nitro, cyano, methylsulfonyl or ethylsulfonyl; benzisothiazolyl substituted by chlorine, bromine, cyano or nitro; thiazolyl substituted by cyano or nitro; thienyl substituted by methyl, cyano, nitro or carbalkoxy of 2 to 5 carbon atoms; or thiadiazolyl substituted by phenyl, methyl, chlorine, bromine, methylmercapto or alkoxycarbonylethylmercapto, said alkoxy having 1 to 4 carbon atoms; one X is NH_2 and the other X is alkyl of 1 to 6 carbon atoms substituted by alkoxy of 1 to 4 carbon atoms, phenoxy, phenoxyethoxy, benzyloxy, phenyl; cyclohexyl; norbornyl; phenyl; phenyl substituted by methyl, ethyl, methoxy, ethoxy, chloro, bromo, nitro, sulfamoyl or carbamoyl or $(CH_2)_2(OC_2H_4)_nOR$ and R is alkyl of 1 to 4 carbon atoms or benzyl and n is 1 or 2.

4,113,721

WATER-SOLUBLE, NON-POLAR SOLVENT-SOLUBLE ETHYLENEOXY-PROPYLENEOXY CONTAINING FUGITIAL TINTS

Peter Jacob Hauser, Inman, and Hans Heinrich Kuhn, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 609,369, Sep. 2, 1975, abandoned. This application Jul. 13, 1977, Ser. No. 815,122

Int. Cl.² C09B *11/04, 29/06, 29/08, 35/04*

U.S. Cl. 260—178 **7 Claims**

1. A water-soluble, non-polar solvent-soluble fugitive tint having the formula

R[(ethyleneoxy)$_n$(propyleneoxy)$_m$]$_x$

wherein R is an organic dyestuff radical, [(ethyleneoxy)$_n$(-propyleneoxy)$_m$] is a polymer constituent formed by polymerizing n moles of ethylene oxide and m moles of propylene oxide, x is from 1 to 6, said polymer constituent containing from 40 to about 60 mole percent ethyleneoxy units, and the product of $(n + m)_x$ is from 30 to about 200.

4,113,722

STEROIDAL[16α,17-b]BENZODIOXINS

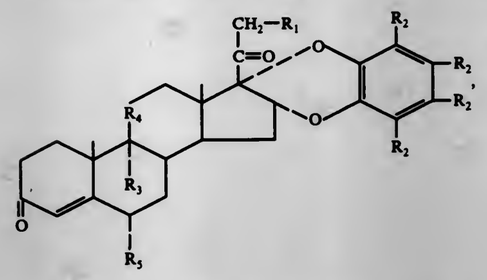
Ravi K. Varma, Belle Mead, and Christopher M. Cimarusti, Hamilton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 11, 1977, Ser. No. 850,514

Int. Cl.² C07J *5/00*

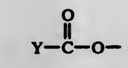
U.S. Cl. 260—239.55 R **16 Claims**

1. A steroid having the formula



or the 1,2-dehydro derivative thereof, wherein

R_1 is hydrogen, halogen, alkoxy of 1 to 10 carbon atoms, or



wherein Y is alkyl of 1 to 10 carbon atoms or phenyl;

R_2 is halogen or cyano;

R_3 is hydrogen or halogen;

R_4 is carbonyl, β-hydroxymethylene or β-acetyloxymethylene; and

R_5 is hydrogen or fluorine.

4,113,723

15-SUBSTITUTED-ω-PENTANORPROSTAGLANDINS

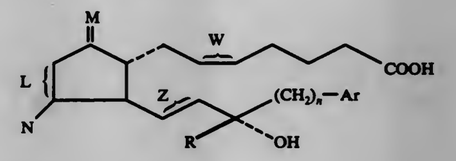
Hans-Jurgen E. Hess, Old Lyme; Michael R. Johnson, Gales Ferry; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 705,768, Jul. 15, 1976, division of Ser. No. 633,374, Nov. 19, 1975, Pat. No. 3,980,642, which is a division of Ser. No. 485,596, Jul. 3, 1974, Pat. No. 3,956,284, which is a continuation-in-part of Ser. No. 425,517, Dec. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 271,220, Jul. 13, 1972, abandoned. This application Nov. 23, 1977, Ser. No. 854,392

Int. Cl.² C07D *307/54*

U.S. Cl. 260—347.3 **9 Claims**

1. A compound of the structure:



wherein

Ar is α- or β-furyl; α-

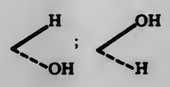
R is hydrogen or lower alkyl;

n is an integer from 0 to 5;

W and L are each a single bond orcis double bond;

Z is single bond;

M is keto



N is hydrogen or α-hydroxy or;

and wherein L, M and N are so selected as to complete the structure of a prostaglandin of the A, E or F series.

4,113,724

ARYLTHIODICYANOPYRAZINES AS PLANT DISEASE CONTROL AGENTS

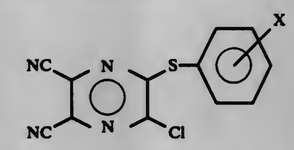
Robert Charles Portnoy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 9, 1977, Ser. No. 805,150

Int. Cl.² C07D *241/24*

U.S. Cl. 544—408 **6 Claims**

1. A compound of the formula



where X is hydrogen, methoxy or alkyl of 1–4 carbon atoms.

4,113,725

MULTIFUNCTIONAL ADDITIVES

John C. Nnadi, Glassboro, and Israel J. Heilweil, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

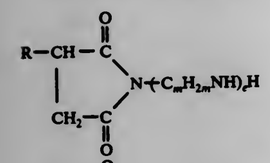
Continuation-in-part of Ser. No. 248,226, Apr. 27, 1972, Pat. No. 3,888,773. This application Apr. 3, 1975, Ser. No. 564,954
Int. Cl.[2] C07D *239/46, 239/50, 401/14, 403/06*
U.S. Cl. 544—296 25 Claims

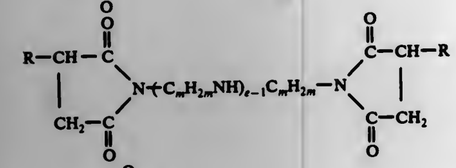
1. A heterocyclic nitrogen compound selected from the class consisting of

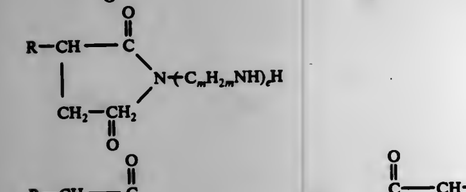
(a) a compound comprising two monovalent amine substituted mononuclear diazine nuclei in which each said monovalent amine substituent is bonded through an amino nitrogen atom to a carbon atom of one of said diazine nuclei, said diazine nuclei being linked one to the other through a bivalent amine radical bonded through an amino nitrogen atom to a carbon atom of each of said diazine nuclei;

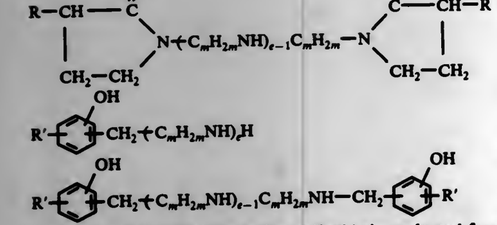
(b) a monovalent amine substituted mononuclear diazine in which said monovalent amine substituent is bonded through an amino nitrogen atom to a carbon atom of the diazine nucleus,

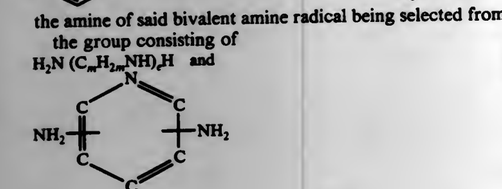
the amine of said monovalent amine substituent being selected from the group consisting of:

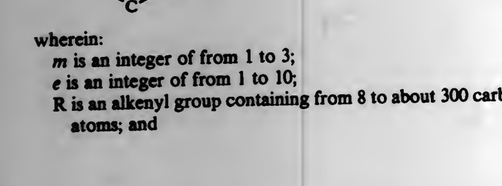
(1) 



(2) 

(3) 

(4) 

(5) 

(6) 

the amine of said bivalent amine radical being selected from the group consisting of $H_2N(C_mH_{2m}NH)_eH$ and

(7) (8)

wherein:

m is an integer of from 1 to 3;

e is an integer of from 1 to 10;

R is an alkenyl group containing from 8 to about 300 carbon atoms; and

R' is an alkyl group containing from 8 to about 300 carbon atoms.

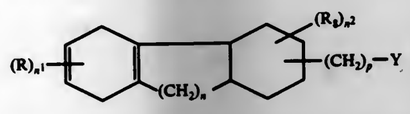
4,113,726

PERHYDROFLUORENETETROL AND PERHYDROPHENANTHRENETETROL DERIVATIVES

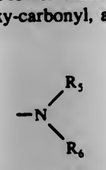
Frederic Peter Hauck, Somerville, and Christopher Michael Cimarusti, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 265,065, Jun. 21, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 446,837
Int. Cl.[2] C07D *295/02, 295/08, 295/14*
U.S. Cl. 544—380 3 Claims

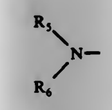
1. A compound of the structure



wherein *n* is 1 or 2; n^1 is 0, 1 or 2; n^2 is 0, 1, 2 or 3; *p* is an integer of from 0 to 10; R is lower alkyl, lower alkoxy, or cycloalkyl; R_8 is hydrogen, lower alkyl, cycloalkyl, di-lower alkylamino-lower alkyl, hydroxy or $R_9O(CH_2)_q$-; q is an integer of from 1 to 10; R_9 is hydrogen, an acyl radical having less than 12 carbon atoms selected from the group consisting of lower alkanoyl, lower alkenoyl, monocyclic aroyl, monocyclic aryl-lower alkanoyl, cycloalkanoyl, cycloalkenoyl, cycloalkyl-lower alkanoyl and cycloalkenyl-lower alkanoyl, lower alkyl, halo-lower alkyl, lower alkoxy-carbonyl, amido or lower alkoxy-alkylene; Y is



wherein R_5 and R_6 may be the same or different and are hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, monocyclic cycloalkyl, monocyclic cycloalkyl-lower alkyl, lower alkanoyl, halo-lower alkanoyl, hydroxy-lower alkyl, monocyclic aryloyl, monocyclic aryl, or monocyclic aryl-lower alkyl; or



can be taken together to form a 5-, 6- or 7-membered nitrogen heterocyclic radical containing not more than one hetero atom in addition to the nitrogen atom, wherein said additional hetero atom may be oxygen, nitrogen, or sulfur; wherein the term cycloalkyl refers to cycloalkyl groups having 3 to 6 carbon atoms and wherein the term aryl refers to phenyl or phenyl substituted with lower alkyl, halogen, nitro, or lower alkoxy; stereoisomers thereof, acid salts thereof, quaternary salts thereof and N-oxides thereof.

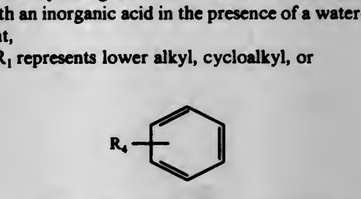
4,113,727

PROCESS FOR THE PREPARATION OF SUBSTITUTED ISOXAZOLO[4,5-c]PYRIDIN-4-(5H)-ONES

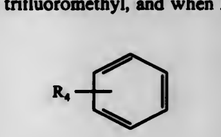
Max Denzer, Parsippany, and Joseph A. Smith, Fanwood, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Apr. 26, 1977, Ser. No. 790,896
Int. Cl.[2] C07D *491/04*
U.S. Cl. 544—362 8 Claims

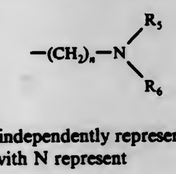
1. A process for preparing a compound of the formula



which comprises reacting a compound of the formula



with a compound of the formula



in the presence of an inert organic solvent to form an intermediate of the formula

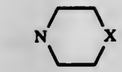
and thereafter cyclizing said intermediate under an inert atmosphere with an inorganic acid in the presence of a water-miscible solvent,

wherein R_1 represents lower alkyl, cycloalkyl, or

where R_2, R_2' and R_4 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, lower alkoxy, or trifluoromethyl, and when R_1 represents

and R_2' represents hydrogen, R_2 may also represent

wherein R_5 and R_6 independently represent hydrogen or lower alkyl or together with N represent



where

X is CH_2, O or N-CH_3, and

n is 1 to 3, and

R_3 represents lower alkyl.

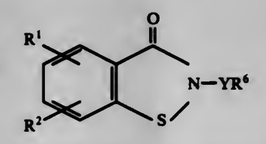
4,113,728

2-SUBSTITUTED BENZISOTHIAZOLONES

Keith Howard Baggaley, Redhill, England, assignor to Beecham Group Limited, Great Britain

Filed Nov. 2, 1976, Ser. No. 738,000
Claims priority, application United Kingdom, Nov. 18, 1975, 47373/75
Int. Cl.[2] C07D *217/04, 275/04*
U.S. Cl. 260—283 S 10 Claims

1. A compound of the formula

(IV) 

or a pharmaceutically acceptable non-toxic acid addition salt thereof when there is a basic nitrogen in the molecule wherein R^1 and R^2 are the same or different and each is hydrogen, alkyl of up to 4 carbon atoms, alkoxy of up to 4 carbon atoms, trifluoromethyl, nitro, amino, acetylamino or halogen, or R^1 and R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or an oxy-alkyleneoxy moiety of 1 to 3 carbon atoms; Y is straight- or branched-chain alkylene of 1 to 12 carbon atoms, and R^6 is 3-azabicyclo [3.2.2]non-3-yl, 9-azabicyclo[3.3.1]non-9-yl, 2-azabicyclo[2.2.-2]oct-2-yl, 1,2-benzisothiazol-3-on-2-yl, or tetrahydroisoquinolyl.

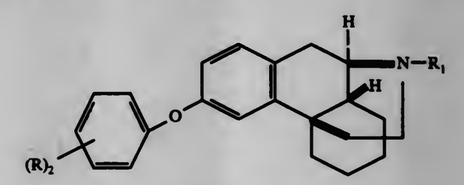
4,113,729

3-PHENOXYMORPHINANS AND DERIVATIVES THEREOF

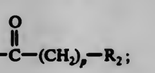
Ernest Mohacsi, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 748,022, Dec. 6, 1976, abandoned. This application Jun. 29, 1977, Ser. No. 811,233
Int. Cl.[2] C07D *221/28, 217/20*
U.S. Cl. 260—285 18 Claims

1. A compound of the formula



wherein R is halo, lower alkyl, lower alkoxy, hydroxy, nitro or hydrogen; R_1 is hydrogen, lower alkenyl containing from 2 to 7 carbon atoms, $—CH_2—(CH_2)_pR_2$, and



R_2 is phenyl, cyclo-lower alkyl containing from 3 to 6 carbon atoms, or a 5 or 6 membered heteroaromatic ring containing a

hetero atom selected from the group consisting of oxygen, nitrogen and sulfur; *p* is an integer from 0 to 3; and *n* is an integer from 1 to 5; and the lower alkoxy and lower alkyl substituents contain from 1 to 7 carbon atoms and pharmaceutically acceptable salts thereof.

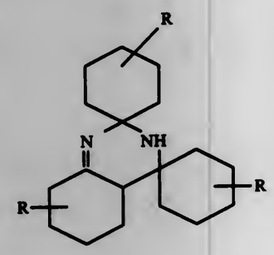
4,113,730

PREPARATION OF OCTAHYDROPHENANTHRIDINES

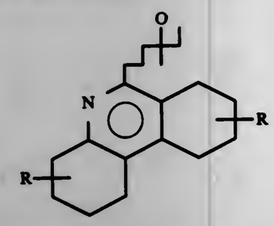
Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 5, 1977, Ser. No. 812,888
Int. Cl.² C07D *217/02*
U.S. Cl. 260—286 A **5 Claims**

1. A process of converting 2,3,4,5-tetrahydropyrimidines of the formula



to octahydrophenanthridines of the formula



where R is hydrogen or alkyl of from one to 25 carbon atoms, which comprises the step of heating said tetrahydropyrimidines to a temperature between 75° C. and 350° C. sufficiently high to remove ammonia and hydrogen so as to form said octahydrophenanthridines.

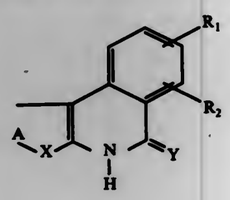
4,113,731

FUSED ISOQUINOLINE DERIVATIVES

Giorgio Winters, and Nunzio DiMola, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Aug. 9, 1976, Ser. No. 713,011
Claims priority, application Italy, Aug. 27, 1975, 26591/75
Int. Cl.² C07D *471/14, 495/14, 513/14*
U.S. Cl. 260—288 CF **21 Claims**

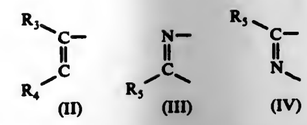
1. A compound of following Formula (I)



(I)

wherein:

A is a divalent radical selected from the groups:



(II) (III) (IV)

wherein R_3 and R_4 taken together with the adjacent C=C double bond, represent an unsubstituted benzene ring or a benzene ring substituted with a C_1–C_{15} alkyl, C_3–C_{15} alkenyl, phenyl, cyano, trifluoromethyl, nitro, sulfo or a sulfamoyl group;

R_5 represents hydrogen, hydroxyl, C_1–C_{15} alkyl or an unsubstituted phenyl group or a phenyl group substituted with a C_1–C_{15} alkyl, C_3–C_{15} alkenyl, phenyl, cyano, trifluoromethyl, nitro, sulfo or a sulfamoyl group;

Y is O;

X is S or NR_6 wherein R_6 represents hydrogen, C_1–C_{15} alkyl or an unsubstituted phenyl group or a phenyl group substituted with a C_1–C_{15} alkyl, C_3–C_{15} alkenyl, phenyl, cyano, trifluoromethyl, nitro, sulfo or a sulfamoyl group;

R_1 and R_2 each independently represents hydrogen, C_1–C_{15} alkyl, alkoxy or halo.

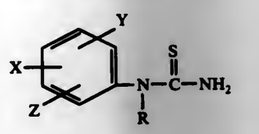
4,113,732

MANUFACTURE OF BENZOTHIAZOLES

Hans-Joachim Opgenorth, Frankenthal, and Horst Scheuermann, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen a. Rhein, Fed. Rep. of Germany

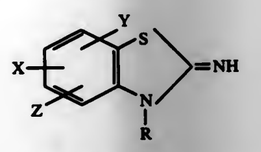
Filed Jun. 29, 1977, Ser. No. 810,950
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1976, 2631163
Int. Cl.² C07D *277/82*
U.S. Cl. 260—305 **8 Claims**

1. A process for the manufacture of benzothiazoles from an N-phenylthiourea of the formula



I

where X is hydrogen, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxycarbonyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or phenoxy, Y is hydrogen, chlorine, nitro, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, acetylamino, benzoylamino, methylsulfonyl, ethylsulfonyl, cyano, alkoxycarbonyl (where alkoxy is of 1 to 4 carbon atoms) or sulfamoyl which may or may not be substituted by alkyl of 1 to 4 carbon atoms, Z is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms and R is hydrogen, alkyl of 1 to 8 carbon atoms, benzyl or phenylethyl, by oxidative ring closure to produce a benzothiazole of the formula II



II

in which X, Y, Z and R have the above meanings, said process comprising contacting and reacting said N-phenylthiourea with chlorine in an aprotic organic solvent in which said N-phenyl-thiourea is dissolved or suspended and in the presence in the reaction mixture of a catalytic amount of bromine or iodine.

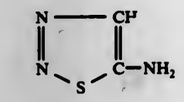
4,113,733

PROCESS FOR MAKING 5-AMINO-1,2,3-THIADIAZOLES

Hans Krüger, Berlin, Fed. Rep. of Germany, assignor to Schering AG, Berlin & Bergkamen, Fed. Rep. of Germany

Filed Aug. 9, 1977, Ser. No. 823,526
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636994
Int. Cl.² C07D *285/06*
U.S. Cl. 260—306.8 D **12 Claims**

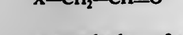
1. A process for making 5-amino-1,2,3-thiadiazoles of the formula



I

the said process comprising

[a] halogenoacetaldehydes of the formula



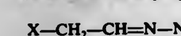
II

or acetals thereof are reacted with hydrazine derivatives of the formula



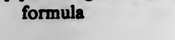
III

so as to form acylhydrazones of the formula



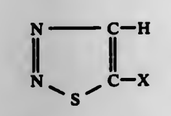
IV

[b] reacting the acylhydrazones with thionylchlorides of the formula



V

so as to form 5-halogeno-1,2,3-thiadiazoles of the formula



VI

and then

[c] reacting the halogen compounds with ammonia whereby the 5-amino-1,2,3-thiadiazole is formed,

X in these reactions being halogen and R being alkoxy, amino or alkylamino.

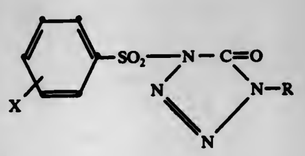
4,113,734

MASKED ISOCYANATES

Georges Joseph Smets, Heverlee, and Jean Marie Vandensavel, Tienen, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

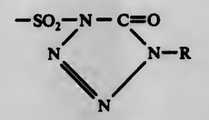
Division of Ser. No. 257,235, May 26, 1972, Pat. No. 3,790,377.
This application Oct. 15, 1973, Ser. No. 406,350
Claims priority, application United Kingdom, Jun. 2, 1971, 18691/71
Int. Cl.² C07D *257/06*
U.S. Cl. 260—308 D **2 Claims**

1. A compound of the formula:



wherein:

X represents a hydrogen atom, a halogen atom, a nitro group, an alkyl group of 1 to 4 carbon atoms, or a group according to the formula:



and R represents an aliphatic, aromatic or araliphatic hydrocarbon radical.

4,113,735

PROCESS FOR THE PRODUCTION OF N-ACETYL-2-PYRROLIDONE

Victor P. Kurkov, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 13, 1976, Ser. No. 750,310
Int. Cl.² C07D *207/00*
U.S. Cl. 260—326.5 FL **5 Claims**

1. A process for producing N-acetyl-2-pyrrolidone which comprises:

(a) reacting allylamine with acetic acid to thereby obtain N-acetyl-allylamine; and

(b) contacting the N-acetyl-allylamine with a catalyst of palladium or platinum, coordinated with an aryl phosphine selected from the group consisting of triphenylphosphine; diphenyl-n-butyl phosphine; tri-(p-methylphenyl)-phosphine and tri-(p-methoxyphenyl)-phosphine, and carbon monoxide in the presence of acetic acid and in the absence of water in a reaction zone, at a temperature between 50° and 200° C and a carbon monoxide partial pressure above 100 psig.

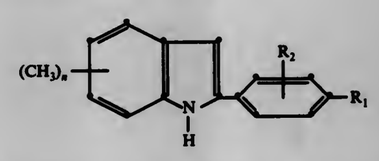
4,113,736

2-PHENYL-INDOLE DERIVATIVES

Charles Pigerol, Saint-Ouen; Paul de Cointet de Fillain, Sisteron, and Souli Nanthavong, Grenoble, all of France, assignors to S. A. Labaz, Brussels, Belgium

Filed Mar. 17, 1976, Ser. No. 667,557
Claims priority, application France, Mar. 21, 1975, 75 08871
The portion of the term of this patent subsequent to May 17, 1994, has been disclaimed.
Int. Cl.² C07D *209/12*
U.S. Cl. 260—326.16 **5 Claims**

1. A compound of the formula:



wherein R_1 represents a hydroxy or dodecyloxy group, R_2 represents a hydrogen atom, a methyl or methoxy group and *n* is 1 or 2, with the proviso that when R_2 represents a hydrogen atom, *n* is 2.

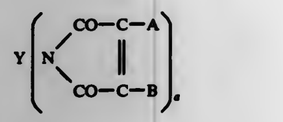
4,113,737

POLYAMINES WITH IMIDE GROUPS

Maurice Balme, Sainte-foy-les-Lyons, and Max Gruffaz, La Mulatiere, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Oct. 16, 1972, Ser. No. 297,738
Claims priority, application France, Oct. 18, 1971, 71.37311
Int. Cl.[2] C07D *403/10, 403/14*
U.S. Cl. 260—326.26 13 Claims

1. A polyamine obtained by heating at least one unsaturated polyimide of the formula:



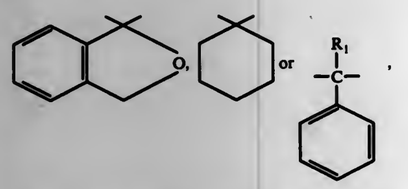
with at least one polyamine of the formula:

$$Z(NH_2)_b$$

in bulk at a temperature sufficient to initiate a reaction, said temperature being between 50° and 200° C., in which *a* and *b* each independently represents a number ranging from 2 to 4 corresponding to the valency of Y and Z, respectively, Y and Z, which may be identical or different represents either:

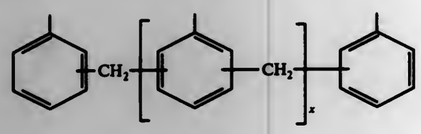
a divalent organic radical which is a straight or branched chain alkylene radical with less than 13 carbon atoms, a phyenylene radical or cyclohexylene radical, a radical of one of the formulae:

wherein n represents an integer from 1 to 3, or a plurality of phenylene or cyclohexylene radicals joined to one another either by a valency bond or by a group which is one of the following —O—, —S—, an alkylene group with 1 to 3 carbon atoms, —CO—, —SO_2—, —CONH—, —COO—, —P(O)R_1—, —CONH—X—NHCO—,



wherein R_1 represents a hydrogen atom, an alkyl radical with 1 to 4 carbon atoms, phenyl or cyclohexyl and X represents an alkylene radical with less than 13 carbon atoms, the phenylene or cyclohexylene radical being unsubstituted or substituted by methyl groups;

or a 2 to 4 valent radical of formula:



in which *x* is a number from 0.1 to 2,

A and B, which may be identical or different, represents a hydrogen atom, a methyl group or a chlorine atom,

the ratio of the number of NH_2 groups introduced by the polyamine to the number of imide groups introduced by the polyimide being from 1.05 to 2.

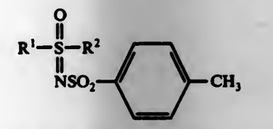
4,113,738

CONVERSION OF N-TOSYLSULFOXIMIDES TO SULFOXIMINES

David H. Evans, and Richard B. Greenwald, both of Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 764,862, Feb. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 679,487, Apr. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,463, Jun. 30, 1975, abandoned. This application Apr. 5, 1977, Ser. No. 784,669
Int. Cl.[2] C07D *339/08*
U.S. Cl. 260—327 M 18 Claims

1. A method which comprises reacting about 1 molar equivalent of an N-tosylsulfoximide of the formula:



wherein R^1 and R^2 when taken individually (1) each represent an alkyl moiety containing up to 20 carbon atoms, unsubstituted or substituted with an alkali-stable group, or (2) R^1 is an alkyl moiety containing up to 20 carbon atoms and R^2 is $(-CH_2)_n$-S-R^3 wherein n is greater than or equal to 2 and R^3 is an alkyl moiety containing up to 20 carbon atoms and R^1 and R^2 when taken together represent (a) an alkylene moiety having 5 or 6 carbon atoms unsubstituted or substituted with an alkali-stable group; (b) $-(CH_2)_x-SO_2-(CH_2)-$ wherein *x* is 3 or 4; or (c) $-(CHR)-SO_2-(CH_2CR'CR''CH_2)-$ where R is hydrogen or R"S$-(CH_2)_y-$ wherein R" *ισ μεπηυλ ανδ y* is 0 or a positive integer greater than 1, R' and R" when taken individually are hydrogen or methyl and R' and R" when taken together are 1,3-dioxolane-2, and at least about 3 equivalents of an alkali metal in liquid ammonia at refluxing ammonia temperatures, to yield the corresponding sulfoximine and isolating said sulfoximine.

4,113,739

PROCESS FOR PREPARATION OF (POLY)CYCLIC POLYETHERS

Roger O. Trucks, and Edwin C. Steiner, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 28, 1974, Ser. No. 437,425
Int. Cl.[2] C07D *493/10*
U.S. Cl. 260—338 11 Claims

1. In the process of preparing (poly)cyclic polyethers by:

(a) autocondensing a polyoxyalkylene α,ω-halohydrin in the presence of a strong alkali metal base;

(b) condensing, by contacting, a (poly)oxyalkylene α,ω-diol with an alkylene or a (poly)oxyalkylene α,ω-dihalide in the presence of a strong alkali metal base; or

(c) condensing, by contacting, the dialkali metal salt of a (poly)oxyalkylene α,ω-diol with an alkylene or a (poly-)oxyalkylene α,ω-dihalide;

the improvement of effecting the preparation in a hindered alkanol or hindered alkanol mixture the alkanol(s) having from 4 to about 14 carbon atoms.

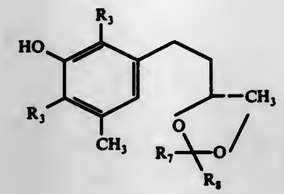
4,113,740

SYNTHESIS OF OPTICALLY ACTIVE VITAMIN E

Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 17, 1977, Ser. No. 797,712
Int. Cl.[2] C07D *317/10*
U.S. Cl. 260—340.9 R 6 Claims

1. A compound of the formula

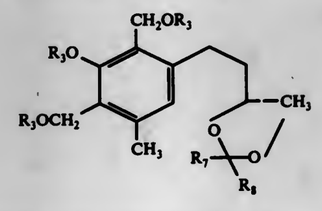


wherein R_3 is methyl or



and R_4, R_7 and R_8 are lower alkyl.

4. A compound of the formula



wherein R_3 is hydrogen or lower alkanoyl; R_7 and R_8 are lower alkyl.

4,113,741

METHOD OF PREPARING PHTHALIDE

Helmut aus der Fünten, Niederkassel, and Wilhelm Vogt, Cologne, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Germany

Filed Apr. 1, 1977, Ser. No. 783,576
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616741
Int. Cl.[2] C07D *307/88*
U.S. Cl. 260—343.3 R 8 Claims

1. Method of preparing phthalide which comprises reacting 3-chlorophthalide with hydrogen at a pressure of about 0.2 to about 100 bars in the presence of a hydrogenation catalyst and in the presence of an HCl acceptor.

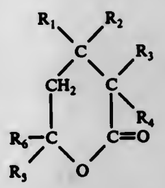
4,113,742

PROCESS FOR THE PREPARATION OF ALPHA-PYRONES

Pierre Simon, Sevres, France, assignor to Union Chimique Continentale-U.C.C., Puteaux, France

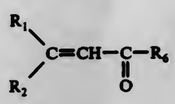
Filed Jun. 14, 1976, Ser. No. 695,751
Claims priority, application France, Jun. 13, 1975, 75 18491
Int. Cl.[2] C07D *309/10*
U.S. Cl. 260—343.5 7 Claims

1. A process for preparing tetrahydro-α-pyrone of the formula



wherein R_3 is phenyl and R_4 and R_5 are hydrogen, and R_6, R_1 and R_2 are individually H, alkyl, aryl or aralkyl, consisting essentially of:

in a first stage, slowly reacting benzyl cyanide with an alkenone having the formula



at a temperature not exceeding 0° C in the presence of KOH and in an ethanol-hexane mixture to obtain a 4-oxo alkane carbonitrile;

in a second stage, reacting the resultant 4-oxo alkane carbonitrile with an alkanol in the presence of acid to esterify said 4-oxo alkane carbonitrile and thereby obtain the alkyl ester of 5-oxo alkanoic acid; and

in the third stage, saponifying, hydrogenating at superatmospheric pressure in the presence of Raney nickel as catalyst, and cyclizing in the presence of an acid capable of facilitating cyclization, said alkyl ester of 5-oxo alkanoic acid to provide said tetrahydro-α-pyrone.

4,113,743

2-[[6-METHOXY-(3,4-DIHYDRO-2H-1-BENZOPYRANYL)]AMINO]-1-PHENYLPROPANOL HYDROCHLORIDE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products. Inc., Norwich, N.Y.

Filed Apr. 1, 1977, Ser. No. 783,811
Int. Cl.[2] C07D *311/02;* A01K *31/35*
U.S. Cl. 260—345.5 1 Claim

1. The compound 2-[[6-methoxy-(3,4-dihydro-2H-1-benzopyranyl)]amino]-1-phenylpropanol hydrochloride.

4,113,744

MICROCRYSTALLINE 3-(ALPHA-ACETONYLBENZYL)-4-HYDROXYCOUMARIN (WARFARIN) AND METHODS OF MAKING

Nasri W. Badran, 428 Oxford Rd., New Rochelle, N.Y. 10804, assignor to Nasri W. Badran, New Rochelle, N.Y.

Filed Aug. 13, 1974, Ser. No. 496,932
Int. Cl.[2] C07D *311/20*
U.S. Cl. 260—343.44 12 Claims

1. Method for the production of warfarin acid crystals having a length of from 0.1 to 4 microns comprising the steps of dissolving warfarin in aqueous solution at an alkaline pH of 7–10 with a buffer selected from the group comprising sodium acetate, ammonium acetate, sodium citrate, phosphates, amines and mixtures thereof, bringing the obtained solution to a specific pH of 8.0 to 9.0, removing impurities by filtration or centrifugation to obtain a clear aqueous solution of the buffered warfarin, and neutralizing the buffer system to bring the solution to a pH of 5.0 to 7.0 at which the microcrystalline warfarin acid precipitates and recovering the precipitated microcrystalline warfarin.

12. Microcrystalline warfarin acid, (3-alpha-acetonyl-benzyl-4-hydroxy coumarin), having a crystal size ranging from 0.1 to 4.0 microns in length, having an average (of 20) crystal length of about 0.62 microns, being translucent, having sharp edges and being needle shaped.

4,113,745

CATALYST FOR AND METHOD OF PRODUCING MALEIC ANHYDRIDE

Edwin J. Strojny, Midland, Mich.; Hans R. Friedli, and Milton S. Wing, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 29, 1977, Ser. No. 828,409
Int. Cl.² C07D *307/60*
U.S. Cl. 260—346.75 3 Claims

1. A process for preparing maleic anhydride which comprises treating a crude C_5 stream at a temperature of 80° to 100° C for about 8–32 hours, separating the resulting stream by distillation into an overhead stream of isoprene and components boiling below isoprene, and a bottoms stream comprised predominantly of piperylene and closely boiling C_5 hydrocarbons and dicyclopentadiene and its codimers, introducing the said bottoms stream and oxygen or an oxygen-containing gas, into a reaction zone containing a catalyst which comprises a mixture of vanadium oxide, molybdenum oxide, and titanium oxide supported on an inert carrier in an amount to supply from 3–20 weight percent of the mixture having a ratio of $V_2O_5/MoO_3/TiO_2$ of 25 to 60 weight percent V_2O_5, 5 to 40 weight percent MoO_3, 30 to 60 weight percent TiO_2, said carrier being alumina-silica or α-alumina having a surface area of less than about 1 square meter per gram, calcined at about 100° to 500° C over a 2- to 6-hour period maintaining said reaction zone and contents at a temperature between about 380° to about 450° C, maintaining said stream feed to said reaction zone and said oxygen at a gas hourly space velocity per hour (GHSV/hr^{-1}) at from between about 1,500 and about 15,000, said C_5 stream being from 0.5 to 1.5 volume percent of said total feed, withdrawing said products, cooling said product stream to condense the organic fraction therefrom, and recovering the maleic anhydride from said condensed fraction.

2. A process for preparing maleic anhydride which comprises treating a crude C_5 stream at a temperature of from 80° to 100° C for from about 8 to 32 hours, separating the resulting stream by distillation into an overhead of isoprene and piperylene and their closely related C_5 components, and a bottoms stream comprised predominantly of dicyclopentadiene and its codimers, introducing said bottoms stream and oxygen or oxygen-containing gas into a reaction zone containing a catalyst which comprises a mixture of vanadium oxide, molybdenum oxide, and titanium oxide supported on an inert carrier in an amount to supply from 3–20 weight percent of the mixture having a ratio of $V_2O_5/MoO_3/TiO_2$ of 25 to 60 weight percent V_2O_5, 5 to 40 weight percent MoO_3, 30 to 60 weight percent TiO_2, said carrier being alumina-silica or α-alumina having a surface area of less than about 1 square meter per gram, calcined at about 100° to 500° C over a 2- to 6-hour period maintaining said reaction zone and contents at a temperature between about 380° to about 450° C, maintaining said stream feed to said reaction zone and said oxygen at a gas hourly space velocity per hour (GHSV/hr^{-1}) at from between about 1,500 and about 15,000, said C_5 stream being from 0.5 to 1.5 volume percent of said total feed, withdrawing said products, cooling said product stream to condense the organic fraction therefrom, and recovering the maleic anhydride from said condensed fraction.

4,113,746

PROCESS FOR CONTINUOUS PRODUCTION OF EPICHLOROHYDRIN

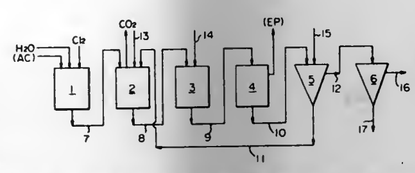
Takamasa Kawabe; Masaaki Kadoma; Kazuyoshi Murakami, and Hatsuhide Itoh, all of Kurashiki, Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed Dec. 8, 1976, Ser. No. 748,473
Claims priority, application Japan, Dec. 9, 1975, 50-147062
Int. Cl.² C07D *301/26*
U.S. Cl. 260—348.22 4 Claims

1. A process for continuously producing epichlorohydrin which comprises reacting chlorine and allyl chloride in an aqueous medium to produce an hydrochloric acid-acidified solution containing glycerol dichlorohydrin,

neutralizing the resulting acidified solution with an alkali selected from the group consisting of calcium carbonate, calcium hydroxide and a mixture thereof in a neutralization zone,

saponifying the resulting neutralized solution in a saponification zone, separate from the neutralization zone, by adding calcium hydroxide to form a solution containing epichlorohydrin,



separating epichlorohydrin from the saponified solution to form a residual slurry,

separating said residual slurry in a slurry separating zone into a first slurry containing mainly calcium carbonate and calcium hydroxide, and a second slurry containing magnesium hydroxide,

recycling the first slurry containing mainly calcium carbonate and calcium hydroxide to the neutralization zone, and,

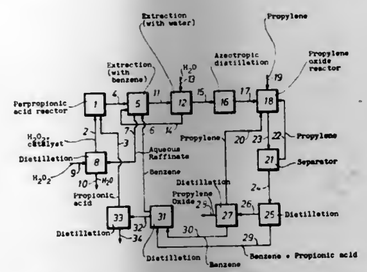
withdrawing the second slurry containing mainly magnesium hydroxide.

4,113,747

PROCESS FOR THE PREPARATION OF PROPYLENE OXIDE

Günter Prescher; Gerd Schreyer, both of Hanau; Otto Weiberg, Neu-Isenburg; Rolf Wirthwein, Hanau; Helmut Waldmann, Leverkusen; Hermann Seifert, Cologne; Wulf Schwerdtel, Leverkusen, and Wolfgang Swodenk, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, both of, Germany

Filed Apr. 28, 1976, Ser. No. 678,822
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519298
Int. Cl.² C07D *301/14*
U.S. Cl. 260—348.25 32 Claims



1. Process for the continuous production of propylene oxide from propylene and aqueous hydrogen peroxide which comprises:

(a) contacting aqueous hydrogen peroxide with propionic acid for reaction of hydrogen peroxide and propionic acid to form perpropionic acid, in the presence of a water-soluble acid catalyst for the reaction, the amount of water, catalyst and hydrogen peroxide corresponding to an aqueous solution of catalyst and hydrogen peroxide containing 15 to 45% by weight of catalyst and 25 to 35% by weight of hydrogen peroxide, and the molar ratio of hydrogen peroxide to propionic acid being 0.8 to 1.5 at a temperature of 10° to 70° C.

(b) extracting the resulting reaction mixture with benzene for formation of a benzene phase rich in perpropionic acid, propionic acid, and containing hydrogen peroxide, and an aqueous raffinate phase rich in hydrogen peroxide and catalyst.

(c) treating the aqueous raffinate to remove water therefrom and form a concentrated solution of hydrogen peroxide and catalyst.

(d) recycling said concentrated solution of hydrogen peroxide and catalyst to step (a),

(e) extracting the benzene phase of step (b) with water or an aqueous solution for formation of a benzene phase containing perpropionic acid, propionic acid, water and a reduced amount of hydrogen peroxide, and an aqueous phase containing hydrogen peroxide.

(f) subjecting the benzene phase produced in step (e) to azeotropic distillation to reduce the water content thereof to less than 0.5% by weight.

(g) contacting the benzene phase of reduced water content of step (f) with propylene at a temperature of 40° to 100° C and a pressure of 2 to 30 bars for reaction of perpropionic acid of the benzene phase with propylene to form propylene oxide and reaction mixture containing the propylene oxide, and other materials,

(h) distilling the reaction mixture is distill overhead propylene, propylene oxide and benzene and removing bottoms comprising benzene and propionic acid;

(i) subjecting the overhead from step (h) to a second distillation to distill off overhead propylene and recycling said propylene to step (g);

(j) introducing the bottoms consisting essentially of propionic acid and benzene from the distillation of step (i) to a third distillation and distilling off overhead benzene and recycling said benzene to step (b),

(k) removing bottoms from said third distillation consisting essentially of propionic acid and materials of higher boiling point than propionic acid and introducing said bottoms into a fourth distillation and distilling over propionic acid and recycling said propionic acid to step (a) and separating bottoms consisting essentially of the material of higher boiling point than propionic acid, and

(l) recovering propylene oxide as a side cut from said second distillation.

4,113,748

FLUORINE AND SULFUR-CONTAINING COMPOSITIONS

Robert Bonner Hager, Collegeville; Sameeh Said Toukan, Phoenixville, and Gerald Joseph Walter, King of Prussia, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 283,886, Aug. 25, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 459,132
Int. Cl.² C07D *303/34*
U.S. Cl. 260—348.43 1 Claim

1. An epoxide having the formula

$$(CF_3)_2CFO(CF_2)_y(CH_2)_nSCH_2\underset{\diagdown\,O\,\diagup}{CH}-CH_2$$

in which

n is 1–12; and

y is an integer of 1 to 14.

4,113,749

PROCESS FOR PRODUCING ANTHRONE

Ryo Matsuura, Yamato; Shuichi Nakatani, Yokohama; Kazuya Nagaoka, Yokohama, and Katsuhiko Hioki, Yokohama, all of Japan, assignors to Kawasaki Kasei Chemicals Ltd., Tokyo, Japan

Filed Jul. 25, 1977, Ser. No. 818,761
Int. Cl.² C09B *3/64*
U.S. Cl. 260—351 15 Claims

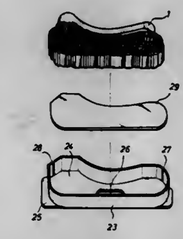
1. A process for producing anthrone which consists essentially of intramolecularly condensing a hydroanthraquinone by heating said hydroanthraquione in vacuo or in the presence of an inert gas, and in the absence of oxygen, wherein said hydroanthraquinone is 1,4,4a,9a-tetrahydroaquinone or 1,4-dihydroanthrahydroquinone and wherein when said hydroanthraquinone is tetrahydroanthraquinone the reaction is effected at a temperature of higher than 200° C and when said hydroanthraquinone is dihydroanthrahydroquinone, the reaction is effected at a temperature of higher than 150° C.

4,113,750

PACK FOR ENDLESS INK RIBBON CARTRIDGE

Minoru Isobe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 28, 1976, Ser. No. 691,200
Int. Cl.² B65D *85/67*
U.S. Cl. 206—388 2 Claims



1. A pack comprising a case housing an endless ink ribbon in a folded and stacked state therein for use with an endless ink ribbon cartridge having a chamber for housing an endless ribbon for use with a printing means, said case being formed of a rigid material and having a shape and size substantially similar to said chamber, said case comprising an upstanding wall having slits therein for passing a part of said endless ink ribbon to form a strip upon which initial printing will occur, removable packaging material enclosing said case for maintaining said folded and stacked ink ribbon in said case while said pack is inserted in said chamber, pushing place locating inside said case for ejecting said folded and stacked ribbon from said case and pushing said ribbon into said chamber, said packaging material being removed prior to said ink ribbon being inserted into said chamber.

4,113,751

STABILIZER FOR ESTROGENS

Hanfried Arnold, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 731,436, Oct. 12, 1976, abandoned. This application Dec. 17, 1976, Ser. No. 751,676
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1975, 2546063
Int. Cl.² C07J *1/00*
U.S. Cl. 260—397.4 10 Claims

1. A solid mixture of a storage unstable alkali metal salt of a 3-hemisulfate ester of a 3-hydroxy aromatic A-ring estrogen, and a stabilizing amount of sodium acetate.

4,113,752

METHOD FOR REFINING OF PALM OILS

Haruo Watanabe, Ichikawa, and Masaaki Negishi, Chiba, both of Japan, assignors to Showa Sangyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 183,057, Sep. 23, 1971, abandoned. This application Jun. 17, 1976, Ser. No. 697,192

Int. Cl.[2] C11B *3/04*

U.S. Cl. 260—424 4 Claims

1. A method for the refining of palm-type oils which consists essentially of adding 0.01 to 2.0% by weight of phosphoric acid to a liquid, substantially phosphatide-free crude palm-type oil in which carotinoids remain substantially in a heat sensitive condition, followed by mixing, adding activated clay to the resultant mixture while increasing the temperature of the mixture to around 100° C., maintaining the mixture at a temperature of about 100° C. for about 5 to 30 minutes, separating the clay from the oil and subjecting the oil to decolorization by steam distillation at a temperature of 200°–270° C. while blowing superheated steam into the oil.

4,113,753

TETRA (BICYCLOHEPTYL) TRANSITION METAL COMPOUNDS

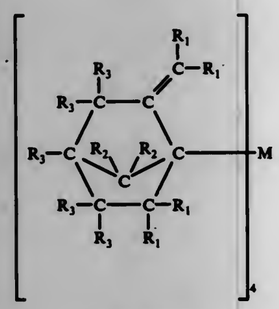
Barton Keeley Bower, Nottingham, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 25, 1977, Ser. No. 782,265

Int. Cl.[2] C07F *7/28*

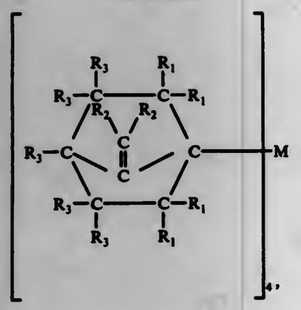
U.S. Cl. 260—429.5 7 Claims

1. A bicyclic organometallic compound having either the formula



I

or the formula



II

wherein M is a transition metal selected from Ti, Zr, Hf, V, Cr, Mn, Fe and Co and wherein the R substituents are either hydrogen or from one to five methyl groups, with the proviso that only one of the R_1's may be methyl, and then only if both of the R_2's are hydrogen.

4,113,754

ISOLATION AND REGENERATION OF RHODIUM-CONTAINING CATALYSTS FROM DISTILLATION RESIDUES OF HYDROFORMYLATION REACTIONS

Rudolf Kummer, Frankenthal; Heinz-Walter Schneider, and Kurt Schwirten, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Mar. 23, 1977, Ser. No. 780,297

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614799

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R 10 Claims

1. A process for isolating and regenerating a catalyst of type I

$$ClRh(CO)(PR_3)_2 \qquad I$$

wherein the R 's are identical or different optionally halogen- or oxygen-substituted hydrocarbon radicals, in a pure form, by regenerating an aqueous rhodium salt solution as obtained on treating a distillation residue of a rhodium-catalyzed hydroformylation reaction product mixture with an oxygen-containing mineral acid and a peroxide, wherein the said aqueous rhodium salt solution is treated with a cation exchanger, the latter is then separated from the solution, the absorbed rhodium ions are desorbed with hydrochloric acid, the hexachlororhodate solution containing hydrochloric acid is reacted in the presence of a water-soluble organic solvent and a tertiary phosphine PR_3 and at from 0° to 150° C. and from 1 to 5 bars with carbon monoxide or with a compound which eliminates carbon monoxide, and the resulting complex I, is separated off.

4,113,755

SYNTHESIS OF PROSTAGLANDIN PRECURSORS

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Filed May 18, 1977, Ser. No. 798,092

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 L 8 Claims

1. A process of making prostaglandin precursors, which comprises:

reacting a norbornene type compound selected from the group consisting of norbornene, substituted norbornene compounds and norbornene related bicyclic olefins, with an alkenyl mercuric halide, in the presence of a noble metal salt to provide a cis-(beta)-alkenyl bicyclic noble metal salt.

4,113,756

CONVERSION OF MONO-VALENT THALLIUM TO TRI-VALENT THALLIUM

Richard A. Johnson, Midland Park, N.J., assignor to Halcon International, Inc., New York, N.Y.

Filed Nov. 8, 1976, Ser. No. 740,147

Int. Cl.[2] C07F *5/00*

U.S. Cl. 260—429 R 11 Claims

1. In a process for converting a thallium (I) compound to a thallium (III) compound in which the thallium (I) compound is reacted with molecular oxygen in the presence of a Group VIII noble metal, the improvement which comprises effecting said reaction in the presence of a promoter comprising a Group IA metal compound.

4,113,757

TITANIUM COMPOUNDS

Peter Dunlop Kay, Hartlepool, England, assignor to Tioxide Group Limited, Billingham, England

Filed Mar. 3, 1977, Ser. No. 774,140

Claims priority, application United Kingdom, Mar. 13, 1976, 10157/76

Int. Cl.[2] C07F *7/28*

U.S. Cl. 260—429.5 3 Claims

1. A titanium chelate comprising a reaction product of an alpha-hydroxy acid selected from the class consisting of lactic acid, alpha-hydroxy butyric acid, citric acid and glyceric acid and a titanate selected from the class consisting of ethylene glycol titanate, propylene glycol titanate, diethylene glycol titanate and hexylene glycol titanate.

4,113,758

PROCESS FOR PREPARING ORGANOTIN HALIDES

John D. Collins, Albrighton, and Trevor E. Jones, Halesowen, both of England, assignors to Albright & Wilson Ltd., Warley, England

Filed Mar. 25, 1977, Ser. No. 781,118

Claims priority, application United Kingdom, Mar. 30, 1976, 12693/76

Int. Cl.[2] C07F *7/22*

U.S. Cl. 260—429.7 17 Claims

1. A process for preparing triorganotin halides, which comprises

adding 3 ± 0.3 molar proportions of a cycloalkyl magnesium halide Grignard Reagent in which the cycloalkyl group is selected from the group consisting of cyclohexyl groups and alkyl cyclohexyl groups, in which there are 1–3 alkyl groups each of 1–4 carbon atoms, and in which the halide is selected from the group consisting of chloride, bromide and iodide, to one molar proportion of a stannic halide, in which the halide is selected from the group consisting of chloride, bromide and iodide, the cycloalkyl magnesium halide Grignard Reagent being dissolved in a completely water miscible ether solvent and the stannic halide being in an inert liquid diluent, said ether having a boiling point lower than that of said diluent, the weight percentage of stannic halide to said diluent being between 5% and 25%, the addition being carried out with agitation to form a reaction mixture comprising a tricycloalkyltin halide,

evaporating at least some of said ether from said reaction mixture leaving a mixture depleted of ether,

treating said reaction mixture depleted of ether with an aqueous acid to produce an organic phase comprising tricycloalkyltin halide and inert diluent, and an aqueous phase, and

separating said phases.

4,113,759

METAL-CONTAINING DISAZOMETHINE COMPOUNDS, PROCESS FOR PREPARING THEM AND THEIR USE AS COLORANTS

Theodor Papenfuhs, Frankfurt am Main, and Heinrich Volk, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

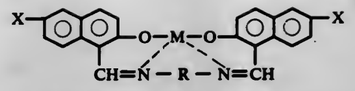
Continuation of Ser. No. 707,876, Jul. 22, 1976, abandoned. This application May 20, 1977, Ser. No. 799,001

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1975, 2533947

Int. Cl.[2] C07F *15/04*

U.S. Cl. 260—439 R 8 Claims

1. A metal-complex disazomethine compound of the formula



wherein R is phenylene or phenylene substituted by one or two substituents selected from the group consisting of chlorine, lower alkyl, lower alkoxy, nitro, trifluoromethyl, carboxylic acid (C_1–C_5-alkyl)ester, carbonyl amide, carbonyl phenylamide, acetylamino, benzoylamino, sulfonic acid amide, sulfonic acid (C_1–C_5-alkyl)-amide and sulfonic acid phenylamide, X is carboxy, carboxylic acid (C_1–C_4-alkyl)ester, carboxylic acid amide, carboxylic acid N-(C_1–C_4-alkyl)-amide or carboxylic acid phenylamide, and M is copper, nickel or zinc.

4,113,760

PREPARATION OF ORGANOPOLYSILOXANE POLYMERS

Volker Frey; Rudolf Riedle; Peter John; Gerhard Kalchgruber, all of Burghausen; Helmut Spork, Altotting, and Robert Leser, Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jun. 22, 1977, Ser. No. 808,767

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 2630744

Int. Cl.[2] C07F *7/08*

U.S. Cl. 260—448.2 E 11 Claims

1. An improved process for equilibrating organosiloxanes by reacting organosiloxanes with chlorosilanes in the presence of a catalyst, the improvement which consists essentially of conducting the equilibration reaction in the presence of a catalyst selected from the class consisting of (a) activated charcoal and (b) activated charcoal and an inorganic acid.

4,113,761

METHOD OF PREPARING ORTHOSILICIC ACID ALKYL ESTERS

Gerhard Kreuzburg, Niederkassel; Arnold Lenz, Koln-Stammheim, and Walter Rogler, Bonn, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Jul. 19, 1976, Ser. No. 706,864

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532473; Jul. 19, 1975, 2532475; Jul. 19, 1975, 2532476

Int. Cl.[2] C07F *7/04*

U.S. Cl. 260—448.8 A 12 Claims

1. A process for preparing an orthosilicic acid tetraalkyl ester having 2 to 6 C atoms in the ester group which comprises contacting metallic silicon with an alcohol corresponding to the ester group in the presence of the corresponding alkali alcoholate

A. in the additional presence of a surface active substance; or

B. in the additional presence of a compound containing a methoxy group.

4,113,762

METHOD OF MAKING CARBONIC ACID ESTERS

Wolfgang Gaenzler, Darmstadt-Arheilgen; Klaus Kabe, Seeheim, and Günter Schröeder, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Rohm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 678,698, Apr. 20, 1976, abandoned. This application Aug. 25, 1977, Ser. No. 827,771

Claims priority, application Fed. Rep. of Germany, May 9, 1975, 2520708

Int. Cl.[2] C07C *68/00*

U.S. Cl. 260—463 3 Claims

1. A method for making a carbonic acid ester of the formula



wherein R is $-CH_3$, $-C_2H_5$, or $-C_3H_7$, which comprises reacting the corresponding alcohol, ROH, with carbon monoxide and oxygen at a temperature between about 100° and 200° C. and at a pressure between about 10 and 200 atmospheres in the presence of a catalytic amount of a copper-containing catalyst, said catalyst consisting essentially of a complex each molar part of which is formed between one molar part of copper-I-chloride and one molar part of a member selected from the group consisting of vanadium trichloride, chromium trichloride, iron trichloride, cobalt-II-chloride, aluminum trichloride, and silicon tetrachloride.

4,113,763

PROCESS FOR CYANOHYDRIN ESTERS

Richard V. Norton, Wilmington, Del., assignor to Suntech, Inc., Wayne, Pa.

Filed Mar. 10, 1977, Ser. No. 776,452
Int. Cl.² C07C *121/66*
U.S. Cl. 260—465 D **4 Claims**

1. A process for making aromatic cyanohydrin esters which consists of adding a lower aliphatic acid anhydride under essentially anhydrous conditions to a mixture of an alkali metal cyanide and an aromatic aldehyde of the structure R-ArCHO, where Ar is a member of the benzene or naphthalene series and R is hydrogen or lower alkyl, said aromatic aldehyde and said cyanide being used in approximate equimolar amounts and said anhydride being used in a molar excess and controlling the exothermic reaction to maintain a temperature between about 0° and 50° C.

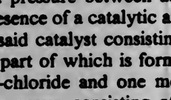
4,113,764

MANUFACTURE OF N-SUBSTITUTED GLYCINONITRILES

Harry Distler, Bobenheim; Helmut Schlecht, and Erwin Hartert, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

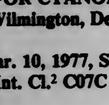
Filed Nov. 19, 1976, Ser. No. 743,517
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1975, 2555769
The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.
Int. Cl.² C07C *120/00, 120/02*
U.S. Cl. 260—465.5 A **9 Claims**

1. A process for the manufacture of an N-alkylglycinonitrile of the formula



I

where R^1 and R^2 may be identical or different and each is alkyl of 1 to 20 carbon atoms or alkenyl of 2 to 20 carbon atoms, and R^2 may also be hydrogen, which process comprises: reacting an N-alkylamine of the formula



II

where R^1 and R^2 have the above meanings, with formaldehyde and hydrocyanic acid in the presence of water for from 0.1 to 4 hours and at a temperature of from above 40° up to 80° C., the concentration of the hydrocyanic acid during the reaction being not more than 0.1 percent by weight, based on the reaction mixture.

4,113,765

CONTINUOUS PROCESS FOR SULFONATING ALKYL AROMATICS

Eugene E. Richardson, Aurora, and Frank Sidorowicz, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 560,639, Mar. 21, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,842
Int. Cl.² C07C *143/24*
U.S. Cl. 260—505 S **23 Claims**

1. A continuous process for the sulfonation of an alkylaromatic reactant, comprising the following steps:

(a) introducing liquid sulfur trioxide into a vaporizer and heating to a temperature ranging from about 120° F. to about 160° F. at a pressure ranging from about 10 psi to about 70 psi;

(b) mixing a sulfonator - static inline mixer (1) a stream of sulfur trioxide gas produced in step (a) and (2) a reactant stream, comprising an inert solvent solution of the alkylaromatic reactant containing a promoter of about 1 wt.% to about 3 wt.% quantity of sulfuric acid;

(c) mixing the product from step (b), having a temperature of between approximately 130° F. and about 200° F., with water which is introduced into the system as the product passes to a static inline mixer thereby forming an aqueous solution comprising a sulfonation product and aqueous sulfuric acid;

(d) passing the product from step (c) at a pressure ranging from about 2.5 psi to about 5.5 psi through a heat exchanger to produce an aqueous solution comprising a sulfonation product and aqueous sulfuric acid at about 140° F.; and

(e) separating the sulfonation product from the aqueous sulfuric acid.

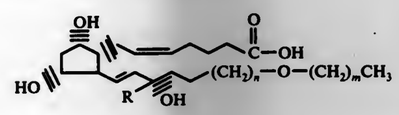
4,113,766

OXAPROSTAGLANDINS

Hans-Jurgen E. Hess, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 355,644, Apr. 30, 1973, which is a continuation-in-part of Ser. No. 259,215, Jun. 2, 1972, abandoned. This application Mar. 26, 1975, Ser. No. 562,208
Int. Cl.² C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the structure:



wherein R is hydrogen or alkyl having 1 to 3 carbon atoms, *n* is an integer of from 0 to 1 and *m* is an integer of from 0 to 4.

4,113,767

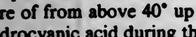
PROCESS FOR THE PREPARATION OF ALKALI METAL SALTS OF 3,3-DIMETHYL-2-OXO-BUTYRIC ACID

Walter Merz, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 15, 1975, Ser. No. 640,830
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1974, 2460889
Int. Cl.² C07C *51/04, 51/06*
U.S. Cl. 562—577 **26 Claims**

1. A process which comprises

(1) reacting pinacolone, of the formula



(IV),

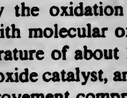
with a sulfur chloride of the general formula



(XII),

wherein *n* is 1 or 2, at a temperature between 0° and 80° C

(2) reacting the reaction mixture directly, without further purification, with an aqueous solution of an amine of the general formula



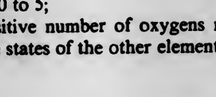
(XIII),

in which

R and R' which may be identical or different, are each hydrogen, alkyl of from 1 to 8 carbon atoms, cycloalkyl of from 5 to 6 carbon atoms or aryl of from 6 to 10 carbon atoms and which is optionally substituted by methyl or chlorine, or

R and R' conjointly form a radical $-(CH_2)_m-$ (where m = 4, 5, or 6) or $-(CH_2)_2-O-(CH_2)_2-$, and

(3) hydrolyzing the thus-formed tert.-butyl-glyoxylthioamide of the general formula



(XIV)

wherein R and R' identified as above without intermediate isolation by adding at least 2 moles of alkali metal hydroxide of the formula MOH per mole of pinacolone (IV) and heating for from 2 to 10 hours at 80° to 150° C, to give an alkali metal salt of 3,3-dimethyl-2-oxo-butyric acid of the formula

(Ia),

wherein M is an alkali metal.

4,113,768

PREPARATION OF ACRYLIC OR METHACRYLIC ACID FROM ACROLEIN OR METHACROLEIN

James F. White, Akron, and Michael D. Applequist, Mayfield Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 701,259, Jun. 30, 1976, abandoned. This application Dec. 6, 1976, Ser. No. 748,081
Int. Cl.² C07C *51/32*
U.S. Cl. 562—535 **20 Claims**

1. In a process for the preparation of acrylic acid or methacrylic acid by the oxidation of acrolein or methacrolein, respectively, with molecular oxygen in the vapor phase at a reaction temperature of about 200° C to about 500° C in the presence of an oxide catalyst, and optionally in the presence of steam, the improvement comprising

using as the catalyst a catalyst of the formula

wherein M is at least one element selected from the group consisting of iron, chromium, nickel, manganese, tellurium, palladium, antimony, rhodium, or mixtures thereof;

X is a halogen selected from the group consisting of chlorine, bromine, or iodine;

and wherein *a, b,* and *c* are numbers from 0.001 to 10;

d is from 0 to 10;

e is from 0 to 5;

f is a positive number of oxygens required to satisfy the valence states of the other elements present.

4,113,769

PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACIDS BY GAS PHASE CATALYTIC OXIDATION OF THE CORRESPONDING ALDEHYDES

Mario Padovan, Milan; Giordano De Alberti, Besnate; Giancarlo Battiston, Baranzate, and Romano Covini, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 20, 1976, Ser. No. 734,248
Claims priority, application Italy, Oct. 23, 1975, 28606 A/75
Int. Cl.² C07C *51/32*
U.S. Cl. 562—534 **3 Claims**

1. A process for preparing acrylic acid or methacrylic acid comprising reacting in vapor phase acrolein or methacrolein with molecular oxygen or an oxygen-containing gas, at a temperature between 200° and 350° C, in the presence of a solid catalyst, and with a contact time between 0.5 and 5 seconds, characterized in that the solid catalyst consists essentially of molybdenum, vanadium, tungsten, cobalt, chromium and oxygen chemically combined with these elements, the atomic ratios amongst the aforesaid elements being represented by the empirical formula: $Mo_{12}V_aW_bCo_cCr_dO_e$, wherein:

a is between 0.5 and 10,

b is between 0.5 and 8,

c is between 1 and 6,

d is between 0.1 and 3, and

e is a number sufficient to satisfy the valence requirements of the other elements;

and with the further proviso that $a+b+c$ is equal to or greater than 8.5.

4,113,770

PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACIDS

Shinichi Akiyama, and Haruhisa Yamamoto, both of Taksoka, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 557,170, Mar. 10, 1975, abandoned. This application Mar. 15, 1977, Ser. No. 777,679
Claims priority, application Japan, Mar. 14, 1974, 49-29406
Int. Cl.² C07C *51/32*
U.S. Cl. 562—532 **15 Claims**

1. A process for the preparation of an unsaturated carboxylic acid selected from the group consisting of acrylic acid and methacrylic acid which comprises reacting an unsaturated aldehyde selected from the group consisting of acrolein and methacrolein with molecular oxygen in the vapor phase in the presence of an oxidation catalyst composition having the following empirical formula



wherein Q is at least one element selected from the group consisting of Rb, Cs and K; L is at least one element selected from the group consisting of Sr, Zn, Cd, V, Nb, B, Pb, Bi and W; and *a, b, c, d, e* and *f* each represent the number of atoms of each element; the atomic ratio of *a:b:c:d:e* is 12:0.1–8:0.1–8:0–.1–8:0.01–6; and *f* is the number of oxygen atoms determined by the valence requirement of the other elements present.

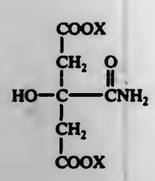
4,113,771

PROCESS FOR THE PURIFICATION OF CITRIC ACID

Walter W. Lawrence, Jr., Tom W. McKay, and Karl E. Wiegand, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 325,174, Jan. 19, 1973, which is a continuation-in-part of Ser. No. 131,885, Apr. 7, 1971, Pat. No. 3,770,796. This application Jun. 17, 1977, Ser. No. 807,738
Int. Cl.² C07C *59/16, 101/20*
U.S. Cl. 562—568 **3 Claims**

1. The amide:



where X is H or alkali metal.

4,113,772

METHOD FOR PRODUCING PERFLUOROETHER OLIGOMERS HAVING TERMINAL CARBOXYLIC ACID GROUPS

Richard J. Lagow, 21 Magnolia Ave., Manchester, Mass. 00144, and Shoji Inoue, 1494, Tsuda-machi, Kodaira, Tokyo 187, Japan

Filed Jul. 21, 1975, Ser. No. 597,937
Int. Cl.² C07C *59/22*
U.S. Cl. 562—583 8 Claims

1. A process for forming perfluoroether oligomers having terminal carboxylic acid groups comprising:

a. placing a polyether having a molecular weight higher than the desired oligomer product in an enclosed reactor which is maintained at a temperature below the decomposition point of said polyether; and,

b. directly fluorinating said polyether by introducing a source of elemental fluorine into said reactor until said perfluorinated polyether having terminal carboxylic acid groups is formed.

4,113,773

PROCESS FOR THE PRODUCTION OF BENZOYL CYANIDE (I)

Herbert Klenk, Hanau; Theodor Lüssling, Constance; Alfred Maierhofer, Allensbach; Heribert Offermanns, Hanau, and Hans Wagner, Constance, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Germany

Filed Jun. 20, 1977, Ser. No. 802,946
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624891
Int. Cl.² C07C *63/06*
U.S. Cl. 260—545 R 22 Claims

1. In a process for preparing benzoyl cyanide by reacting an alkali metal cyanide with benzoyl chloride in the presence of a copper (I) salt the improvement comprising carrying out the reaction at a temperature of about 50° to 160° C. in the presence of a carboxylic acid nitrile inert under the reaction conditions.

4,113,774

N-(DICHLOROACETYL) DIAMINE COMPOUNDS AND PROCESS OF PREPARING SAME

Alexander R. Surrey, Albany, and Joseph C. Collins, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sep. 9, 1977, Ser. No. 831,942
Int. Cl.² C07C *102/06, 102/22*
U.S. Cl. 260—558 D 14 Claims

1. A compound having the formula



where *n* is 1 or 2.

9. A compound having the formula

$$H_2N(CH_2)_nNHCOCHCl_2$$

where *n* is 6 or 8, or acid-addition salt thereof.

4,113,775

TRIAMINOGUANIDINIUM SALT OF TETRANITROETHANE

Louis R. Grant, Los Angeles, and Joseph E. Flanagan, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 15, 1976, Ser. No. 732,624
Int. Cl.² C07C *133/10*
U.S. Cl. 260—564 G 5 Claims

1. An energetic composition consisting of a triaminoguanidinium salt of tetranitroethane.

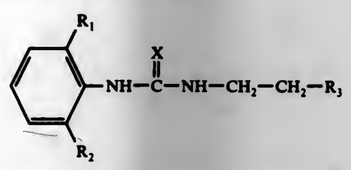
4,113,776

1-(2-AMINOETHYL)-3-(2,6-DIHALOPHENYL)GUANIDINES

Michael Robert Cohen, West Orange; Richard Wightman Kierstead, and Jefferson Wright Tilley, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 763,189, Jan. 27, 1977, Pat. No. 4,066,695, which is a division of Ser. No. 677,106, Apr. 15, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 844,570
Int. Cl.² C07C *133/10, 129/12*
U.S. Cl. 260—565 3 Claims

1. A compound of the formula



wherein R_1 and R_2, independently, are halogen; R_3 is amino; and X is imino; or an addition salt thereof with a pharmaceutically acceptable acid.

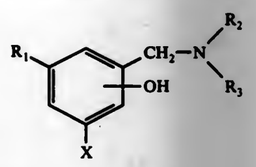
4,113,777

2- OR 4-HYDROXY-3,5-DIHALO-BENZYLAMINES AND SALTS THEREOF

Johannes Keck; Sigfrid Püschmann; Gerd Krüger, all of Biberach an der Riss; Klaus-Reinhold Noll, Warthausen-Oberhofen; Mátyás Leitold, Biberach an der Riss, and Helmut Pieper, Mettenberg, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 635,220, Nov. 25, 1975, Pat. No. 4,073,942, which is a continuation-in-part of Ser. No. 408,071, Oct. 19, 1973, abandoned, and Ser. No. 561,223, Mar. 24, 1975, abandoned. This application Jul. 1, 1977, Ser. No. 812,325
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1972, 2251891; Apr. 26, 1973, 2320967; Sep. 17, 1973, 2346743; Apr. 3, 1974, 2416143
Int. Cl.² C07C *87/28*
U.S. Cl. 260—570.9 10 Claims

1. A compound of the formula



wherein

X and R_1 are each chlorine or bromine;

R_2 is isopropyl; tert.butyl; tert.pentyl; mono-, di- or trihydroxy-substituted branched alkyl of 3 to 5 carbon atoms; cyclohexyl; or hydroxycyclohexyl; and

R_3 is alkyl of 1 to 4 carbon atoms or, when R_2 is other than cyclohexyl, also hydrogen;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

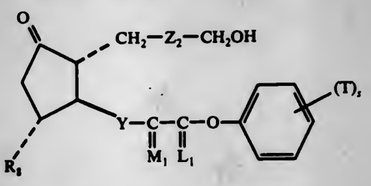
4,113,778

2-DECARBOXY-2-HYDROXY-METHYL-ω-PHENOXY-PGE ANALOGS

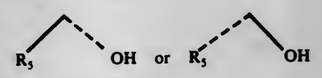
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,357, Jan. 8, 1976, Pat. No. 4,055,602. This application Aug. 5, 1977, Ser. No. 822,305
Int. Cl.² C07C *49/82, 49/84*
U.S. Cl. 260—590 C 83 Claims

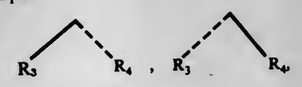
1. A prostaglandin analog of the formula



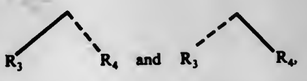
wherein R_8 is hydrogen or hydroxy;
wherein Y is trans-CH=CH—;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein Z_2 is
cis-CH=CH—CH_2-$(CH_2)_g$-CF_2—;
cis-CH_2-CH=CH-$(CH_2)_g$-CH_2—; or
—$(CH_2)_3$-$(CH_2)_g$-CF_2—;
wherein *g* is one, 2, or 3; and
wherein *s* is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl.

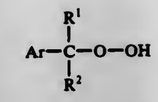
4,113,779

PREPARATION OF KETONES

Pierre-Etienne Bost, Paris, and Guy Lartigau, Rhone, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 24, 1974, Ser. No. 473,267
Claims priority, application France, May 28, 1973, 73.19288
Int. Cl.² C07C *45/00*
U.S. Cl. 260—592 18 Claims

1. A process for the preparation of an aryl ketone which comprises effecting the catalytic decomposition of a tertiary hydroperoxide of the formula:



(I)

in which Ar represents a monovalent aromatic radical, the free valency of which is carried by a carbon atom belonging to an aromatic ring, and R^1 and R^2, which may be identical or different, each represents a monovalent aliphatic radical or R^1 and R^2 together form a divalent aliphatic radical, in an acidic reaction medium comprising water, a catalytic amount of a water-soluble inorganic or organic cupric salt such that the ratio of the number of mols of hydroperoxide to the number of gram-atoms of copper in the cupric salt is from 5 to 10^4 and a phenol of the formula Ar-OH in which Ar is as defined above, the ratio of the number of mols of phenol to the number of grams of copper in the copper salt being from 0.01 to 2, and at a temperature of from 50° C. to 150° C.

4,113,780

EXTRACTIVE DISTILLATION OF ACETONE

Günter Strehlke, Rheinkamp-Baeri, and Günther Osterburg, Homberg, both of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Feb. 6, 1975, Ser. No. 547,846
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1974, 2405730
Int. Cl.² C07C *45/24*
U.S. Cl. 260—593 P 6 Claims

1. A process for the production of low water content acetone from a feed comprising acetone and water, said feed having been distilled, if necessary, to remove C_6 and lighter volatile material therefrom, which comprises

(a) introducing the feed into the top of the stripping section of a distillation column comprising a rectifying section and a stripping section under distillation conditions comprising a reflux ratio of 2:1 to 10:1 and a column top pressure of 0.5 to 2.0 atmospheres absolute,

(b) introducing isopropyl alcohol, having a water content of 0.1 weight percent maximum, into the rectifying section intermediate the feed inlet and the column top whereby the water-containing acetone is subjected to extractive distillation by said isopropyl alcohol, said isopropyl alcohol addition being 5 to 15 volume percent of the column load,

(c) recovering from the overhead from said column as the product therefrom acetone having a maximum water content of less than 0.2 weight percent, and

(d) recovering from the bottoms from said column a product comprising isopropyl alcohol and water.

4,113,781

PHENYLPROPANALS

Werner Aquila, Mannheim; Werner Hoffmann, Neuhofen; Walter Himmele, Walldorf, and Hardo Siegel, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Aug. 5, 1974, Ser. No. 494,457
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1973, 2340812
Int. Cl.² C07C *47/52*
U.S. Cl. 260—599 1 Claim

1. 3-(4-Isopropyl-phenyl)-butanal-1.

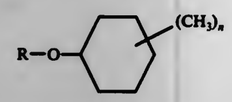
4,113,782

PROCESS FOR THE PREPARATION OF FORMYLATED PHENOXY COMPOUNDS

Imamura Juichi, Chofu; Takehara Masahiko, Chigasaki, and Kizawa Kazuhiro, Kanagawa, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 13, 1976, Ser. No. 657,887
Claims priority, application Japan, Feb. 18, 1975, 50-19458
Int. Cl.² C07C *45/00*
U.S. Cl. 260—600 R **14 Claims**

1. A process for the preparation of formylated phenoxy compounds, which comprises oxidizing a methylated phenoxy compound represented by the general formula:



wherein R is a hydrocarbyl group with 1–20 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl groups which may be substituted by, hydrocarbyloxy groups with 1–10 carbon atoms, hydrocarbyloxy carbonyl groups and halogen atoms and *n* is an integer of 1–5, in the liquid phase, under heat, with a pressurized oxygen-containing gas in the presence of a reaction solvent selected from the group consisting of lower fatty acids with 1–8 carbon atoms and anhydrides thereof which may be halogen-substituted, said process utilizing: a molar ratio of said reaction solvent to said methylated phenoxy compound of 0.3–18; a catalyst which is at least one salt soluble in said solvent and of a metal selected from the group consisting of cobalt, manganese, chromium and nickel; a molar ratio of said catalyst to said methylated phenoxy compound of 0.001–0.5; a molar ratio of said catalyst to said reaction solvent of 0.0001–1.0; an oxidation reaction temperature within the range of 100°–250° C.; a partial pressure of oxygen within a range of 2–100 kg/cm²; a reaction rate of conversion of less than about 90%, thereby collectively converting the methyl group of said methylated phenoxy compound into a formyl group.

4,113,783

REDUCTION OF TRIPHENYLPHOSPHINE OXIDE TO TRIPHENYLPHOSPHINE

Dennis B. Malpass, LaPorte, and G. Scott Yeargin, Pasadena, both of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Continuation-in-part of Ser. No. 686,978, May 17, 1976, abandoned. This application Jun. 9, 1977, Ser. No. 805,194
Int. Cl.² C07F *9/50*
U.S. Cl. 260—606.5 P **17 Claims**

1. A process for the conversion of triphenylphosphine oxide to triphenylphosphine comprising the steps of

(a) reacting triphenylphosphine oxide with a dialkylaluminum hydride of which the alkyl groups are the same or different and each contain from 1 to 15 carbon atoms in a straight or branched chain; and

(b) hydrolyzing the product of step (a).

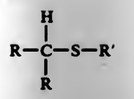
4,113,784

CONVERSION OF ORGANIC SULFIDES TO CORRESPONDING SULFOXIDES

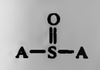
William G. Billings, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 29, 1977, Ser. No. 811,426
Int. Cl.² C07C *147/14*
U.S. Cl. 260—607 AR **24 Claims**

9. A process for preparing an organic sulfoxide comprising reacting at least one organic sulfide of the formula



wherein each R is individually selected from the group consisting of hydrogen radicals, hydrocarbon radicals and hydrocarbyl radicals substituted with groups which don't interfere with the reaction or wherein the two R groups are combined to form a hydrocarbyl carbocyclic ring or a carbocyclic ring substituted with groups which don't interfere with the reaction, and wherein R′ is selected from the group consisting of hydrocarbyl radicals and hydrocarbyl radicals substituted with groups which don't interfere with the reaction, with at least one hydrocarbyl sulfoxide of the formula



wherein each A is individually selected from the same or different alkyl radical having from 1 to 12 carbon atoms or wherein two such A alkyl groups are combined by a bond to form a sulfur-containing cyclic ring containing at least 4 carbons in the cyclic ring, in the presence of a reaction promoting amount of hydrogen chloride and at least one promoter selected from the group consisting of graphite, covalent metal halide capable of forming coordination compounds, chloroplatinic acid, and noncovalent metal halides.

4,113,785

POLYETHER POLYOLS AND METHOD OF PREPARING SAME

Herbert Helfert, Frankenthal, Fed. Rep. of Germany; Paula Davis, Gibraltar, and William Keith Langdon, Grosse Ile, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 29, 1976, Ser. No. 736,959
Int. Cl.² C07C *41/02, 43/10*
U.S. Cl. 260—615 B **10 Claims**

1. A process for preparing a high molecular weight water soluble polyoxyalkylene polyol, which comprises the following steps in the order given,

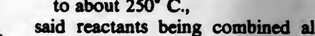
converting a polyoxyalkylene glycol having a molecular weight greater than about 500 to the dialkalialcholate form in substantially complete conversion,

reacting said alcoholate with an alkylene glycol bis glycidyl ether or a polyoxyalkylene glycol bis glycidyl ether under anhydrous conditions at a temperature of from about 25° to about 250° C.,

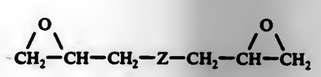
said reactants being combined all at once in equivalent amounts under conditions of mixing for a time sufficient to complete the reaction, and

converting the alcoholate groups in the final mixture to alcohol groups, whereby a primarily straight chain high molecular weight product is obtained.

7. A high molecular weight, water soluble primarily straight chain, polyoxyalkylene polyol obtained by combining equivalent amounts of an alcoholate having the formula:



wherein R is hydrogen or methyl, M is sodium, potassium, or lithium, *n* is an integer having a sufficient value to provide an average molecular weight of the glycol form of the alcoholate above about 500, and a diepoxy compound having the formula:



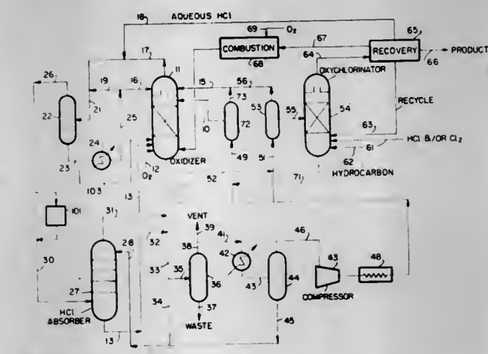
wherein Z is —O—; $—O(CH_2)_p—O—$ where *p* is 2–10; or $—O(RC_2H_3—O)_m$, where R is hydrogen or methyl and *m* is an integer from 1 to 5, with the reactants combined all at once with mixing at a temperature of from about 25° to about 1250° C., and with the reaction being carried out under substantially anhydrous conditions, and replacing the M groups with hydrogen by ion exchange or acid neutrilization.

4,113,786

HYDROGEN CHLORIDE RECOVERY

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 2, 1976, Ser. No. 673,095
Int. Cl.² C07C *17/00*
U.S. Cl. 260—659 A **7 Claims**



1. A process for recovering hydrogen chloride, comprising:

(a) contacting in an oxychlorination reaction zone aqueous hydrogen chloride and gaseous molecular oxygen with a salt mixture comprising a multivalent metal chloride in its higher and lower valence state to produce a salt mixture enriched in the higher valent metal chloride;

(b) withdrawing a gas containing hydrogen chloride and water vapor from the oxychlorination reaction zone;

(c) cooling the gas to a temperature of from 170° to 250° F, at a pressure of from 1 to 20 atmospheres without condensation of aqueous hydrogen chloride from the gas;

(d) contacting gas from Step (c) having hydrogen chloride and water vapor in an amount whereby condensation would provide an aqueous hydrogen chloride solution containing no greater than 8%, by weight, hydrogen chloride with water to absorb hydrogen chloride and provide a remaining gas having a hydrogen chloride concentration of no greater than 0.01 mole %, said contacting being effected at a gas outlet temperature of from 170° to 250° F, and a pressure of from 1 to 20 atmospheres without condensation of water vapor from the gas, said water being introduced in a quantity to provide an adsorbed aqueous hydrogen chloride solution having a hydrogen chloride concentration of from 10% to 20%, by weight;

(e) passing absorbed aqueous hydrogen chloride solution to the oxychlorination reaction zone;

(f) neutralizing the remaining gas at a temperature of from 170° to 250° F and at a pressure of from 1 to 20 atmospheres; and

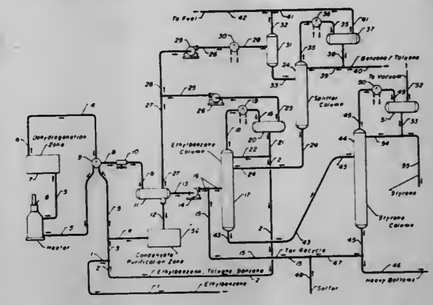
(g) venting a portion of the neutralized remaining gas at the temperature of from 170° to 250° F whereby water present in the gas and produced in the oxychlorination reaction zone is vented as water vapor.

4,113,787

AROMATIC HYDROCARBON DEHYDROGENATION PROCESS

Dennis J. Ward, South Barrington, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 10, 1977, Ser. No. 758,092
Int. Cl.² C07C *15/09, 15/10*
U.S. Cl. 260—669 R **7 Claims**



1. A process for the production of styrene by the dehydrogenation of ethylbenzene which comprises the steps of:

(a) admixing a primary feed stream comprising ethylbenzene with an aqueous stream and a recycle stream comprising ethylbenzene, benzene and toluene to thereby form a combined feed stream;

(b) passing the combined feed stream through a dehydrogenation zone as a vapor, the dehydrogenation zone being maintained at dehydrogenation promoting conditions, and effecting the formation of a dehydrogenation zone effluent stream which comprises ethylbenzene, styrene, toluene, benzene and hydrogen;

(c) cooling and effecting a partial condensation of the dehydrogenation zone effluent stream, and passing the dehydrogenation zone effluent stream into a first phase separation zone maintained at a subatmospheric pressure;

(d) withdrawing a first vapor stream comprising hydrogen, toluene and ethylbenzene from the first phase separation zone;

(e) withdrawing a first hydrocarbon liquid stream and a liquid water stream from the first phase separation zone;

(f) passing the first hydrocarbon liquid stream into an intermediate point of a first fractionation column operated at conditions effective to separate the first hydrocarbon liquid stream into a first overhead vapor stream and a first bottoms liquid stream comprising styrene;

(g) passing the first bottoms stream into a second fractionation column operated at conditions effective to produce an overhead product stream of substantially pure styrene and recovering the latter;

(h) cooling and partially condensing the first overhead vapor stream to effect the formation of a second vapor stream comprising hydrogen, benzene and toluene and a hydrocarbon liquid phase, and removing the hydrocarbon liquid phase as a second hydrocarbon liquid stream comprising benzene, toluene and ethylbenzene, and admixing a portion of the second hydrocarbon liquid stream with the primary feed stream as the aforementioned recycle stream;

(i) admixing and effecting a partial condensation of the first vpaor stream and the second vapor stream to form a mixed-phase stream which is passed into a second phase separation zone;

(j) withdrawing a third vapor stream comprising hydrogen and a third hydrocarbon liquid stream comprising benzene, toluene and ethylbenzene from the second phase separation zone;

(k) passing the third hydrocarbon liquid stream into a third fractionation column operated at conditions effective to produce a net overhead liquid stream comprising benzene

and toluene and a second bottoms stream comprising toluene and ethylbenzene; and,

(1) passing the second bottoms stream into the first fractionation column at an intermediate point above the intermediate point at which the first hydrocarbon liquid stream enters the first fractionation column.

4,113,788

SELECTIVE PRODUCTION OF PARA-XYLENE

Warren W. Kaeding, Westfield, and Lewis Brewster Young, Kendall Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 638,861, Dec. 8, 1975, Pat. No. 4,034,053. This application May 3, 1977, Ser. No. 793,470

Int. Cl. C07C *3/03, 3/34*

U.S. Cl. 260—673 **11 Claims**

1. A process for conversion of olefins to xylenes in which the proportion of para-xylene isomer is substantially in excess of its normal equilibrium concentration which comprises contacting, under conversion conditions, including a temperature between about 300° and about 700° F, a pressure between about atmospheric and about 1500 psig and a weight hourly space velocity of between about 1 and about 1000, an olefinic charge stock in which the C_2–C_{10} olefin content is more than 50 volume percent with a catalyst consisting essentially of a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, said catalyst having combined therewith magnesium in an amount of at least about 0.5 percent by weight, as a result of contact of said zeolite with a magnesium compound in the liquid phase; cooling the resulting product and separating paraxylene therefrom.

4,113,789

HYDROISOMERIZATION OF NORMAL PARAFFIN WITH A CATALYST OF NOBLE METAL, ALUMINA SUPPORT AND CHLORINE

Babu Y. Rao, Fishkill; John T. Nolan, Jr., and John H. Estes, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 3, 1977, Ser. No. 774,099

Int. Cl.² C07C *5/30*

U.S. Cl. 260—683.68 **9 Claims**

8. A process for the hydroisomerization of C_4 to C_6 n-paraffin which comprises contacting said paraffin under hydroisomerization conditions with a catalyst comprising an alumina support, about 0.01 to 2.0 weight percent of a noble metal on said support, about 0.1 to 2.0 weight percent alumina on said metal and support and about 3.0 to 15.0 weight percent chlorine, said alumina on said metal and support being effective for retaining said noble metal on the catalyst's surface during the addition of chlorine.

4,113,790

PROCESS FOR THE PREPARATION OF LINEAR ALPHA-OLEFIN OLIGOMERS, SUBSEQUENT HYDROGENATION THEREOF AND SATURATED PRODUCTS THUS OBTAINED

Sebastiano Cesca; Aldo Priola, and Giuseppe Ferraris, all of San Donato Milanese (Milan), Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese (Milan), Italy

Continuation of Ser. No. 601,183, Aug. 1, 1975, abandoned. This application May 9, 1977, Ser. No. 795,225

Int. Cl.² C07C *3/10*

U.S. Cl. 260—683.15 B **6 Claims**

1. Process for the preparation of a polymer having a molecular weight of from 200–3000 from a linear alpha-olefin having a carbon atom number of from 3 to 12 wherein the reaction is carried out in the presence of a catalyst system consisting of:

(a) an aluminum halide having the formula AlX_3 in which X is a halogen atom, and

(b) a compound able to react with the aforesaid halides to give the catalyst species capacity to start the polymerization selected from the ones belonging to one of the following classes:

(I) halogen or interhalogen compounds having the general formula X'Y in which X' and Y, the same or different, and are selected from the group consisting of chlorine, bromine, iodine and fluorine; or

(II) a metal halide having the formula BCl_3 said reaction being carried out in the presence of a suspension medium selected from the hydrocarbons having a carbon atom number of from 3 to 12.

4,113,791

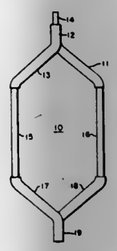
FLUID SOLVENTLESS EPOXY-ANHYDRIDE COMPOSITIONS CONTAINING METAL ACETYLACETONATE ACCELERATORS AND ORGANIC CARBOXYLIC ACID CO-ACCELERATORS

James D. B. Smith, Wilkins Township, Allegheny County, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 3, 1977, Ser. No. 773,875

Int. Cl.² C08L *63/00*

U.S. Cl. 260—830 TW **8 Claims**



1. A highly fluid, solventless, high voltage capability, resinous impregnating composition consisting essentially of the admixture of:

(A) 100 parts by weight of a resin comprising:

(1) a first epoxy resin consisting of a diglycidyl ether of an aliphatic diol; and

(2) a second epoxy resin selected from the group consisting of bisphenol A epoxy resins, bisphenol F epoxy resins, novolac epoxy resins, glycidyl ester epoxy resins, hydantoin epoxy resins, cycloaliphatic epoxy resins and mixtures thereof, wherein the weight ratio of diglycidyl ether of an aliphatic diol:second epoxy resin is from about 1.0:0.0 to about 1.0:9.0,

(B) about 25 parts to about 200 parts by weight of an organic carboxylic acid anhydride,

(C) about 0.01 part to about 2.0 parts by weight of a metal acetylacetonate selected from the group consisting of chromium (III) acetylacetonate, zirconium (IV) acetylacetonate, and mixtures thereof, acting as a latent accelerator, and

(D) about 0.3 to about 30 parts by weight of an organic carboxylic acid selected from the group consisting of acetic acid, propionic acid, butyric acid, isobutyric acid, valeric acid, caproic acid, heptanoic acid, caprylic acid, benzoic acid, toluic acids, chlorobenzoic acids, nitrobenzoic acids, succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, phthalic acid, isophthalic acid, terephthalic acid and mixtures thereof, acting as sole co-accelerator, wherein the resinous composition is highly fluid, having an initial viscosity of below about 350 cps. at 25° C.

4,113,792

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Stephen D. Pastor, Edison, and Martin M. Grover, Upper Montclair, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jun. 20, 1977, Ser. No. 808,101

Int. Cl.² C08L *63/10, 23/34, 67/06*; C08F *255/02*

U.S. Cl. 260—834 **21 Claims**

1. An improved pressure sensitive adhesive composition comprising

(i) an adhesive base component comprising

(A) from 50 to 85% by weight of an acrylate based pressure sensitive adhesive polymer,

(B) from 4 to 24% by weight of a chlorosulfonated polyethylene, and

(C) from 11 to 40% by weight of a polymerizable low molecular weight vinyl monomer or polymerizable unsaturated oligomer or mixtures thereof; and

(ii) an initiator comprising a condensation reaction product of a primary or secondary amine and an aldehyde to effect curing of the adhesive base component.

4,113,793

RAPID CURING HIGH SOLIDS THERMOSETTING COATINGS

Kazys Sekmakas, Des Plaines, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Sep. 24, 1976, Ser. No. 726,141

Int. Cl.² C08L *61/28, 67/02, 67/04*

U.S. Cl. 260—850 **13 Claims**

1. A high solids thermosetting solution coating composition containing less than about 30% of volatile organic solvent consisting essentially of a mixture of:

(1) an hydroxy functional polyester resin consisting essentially of:

(A) diol having a neo-structure, said diol being 2,2-dimethyl-3-hydroxypropyl-2,2-dimethyl-3-hydroxypropionate;

(B) isophthalic acid; and

(C) a polyhydric alcohol containing at least three hydroxy groups per molecule;

said polyester having an equivalent ratio of hydroxyl to carboxyl functionalities of from 1.35:1 to 2.0:1 and said polyhydric alcohol containing at least three hydroxy groups providing from 5 to 25% of the total hydroxy functionality in said polyester;

(2) liquid low volatile polyhydric alcohol containing from 2–4 hydroxy groups and having an average molecular weight of at least about 350; and

(3) liquid hexafunctional melamine resin;

said polyester constituting from about 30% to 70% of the mixture, said liquid polyhydric alcohol constituting from about 10 to 50% of the mixture, and said liquid melamine resin constituting from 15 to 50% of the mixture.

4,113,794

COPOLYMER OF BLOCKS OF RANDOM POLY(DIOXA-AMIDE) AND POLYAMIDE

Robert M. Thompson, Wilmington, Del., and Richard S. Stearns, Malvern, Pa., assignors to Sun Ventures, Inc., Radnor, Pa.

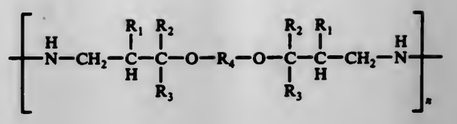
Continuation-in-part of Ser. No. 557,716, Mar. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 415,582, Nov. 14, 1973, abandoned. This application Mar. 16, 1977, Ser. No. 777,999

Int. Cl.² C08G *69/40*

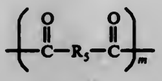
U.S. Cl. 260—857 TW **63 Claims**

1. A copolymer having a molecular weight of about 5000–100,000 and the following two components:

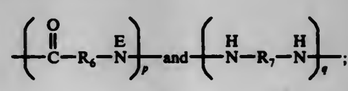
(a) a block component consisting of the following groups:



and



and one of the following:



wherein the relative proportions of each are n = 1–10, m = 1–10, p = 0–10 and q = 0–10 and said groups within the block are randomized and wherein the

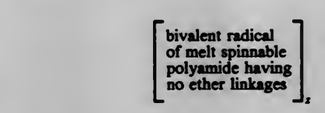


and the



form an amide linkage; and wherein R_1; R_2 and R_3 are selected from the group consisting of H, C_1–C_{14} alkyls and C_3–C_{10} isoalkyls; R_4 is selected from the group consisting of C_1–C_{10} alkylenes and C_3–C_{10} isoalkylenes; R_5 is selected from the group consisting of C_0–C_{10} alkylenes, C_3–C_{10} isoalkylenes and C_6–C_{10} arylenes; R_6 and R_7 are selected from the group consisting of C_5–C_{11} alkylenes; and wherein said block has a molecular weight of about 350–80,000;

(b) and a block component consisting of



wherein z = 4–200.

4,113,795

FLAME-RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITION

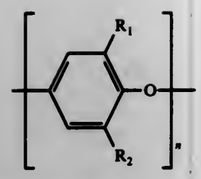
Shinichi Izawa, Tokyo; Jun Sugiyama; Tsutomu Tanaka, both of Yokohama; Atsuo Nakanishi, Kanagawa, and Toranosuke Saito, Kobe, all of Japan, assignors to Asahi-Dow Limited, Tokyo and Sanko Kaihatsu Kagaku Kenkyusho, Osaka, both of, Japan

Filed Jul. 5, 1977, Ser. No. 812,737

Int. Cl.² C08K *5/53*

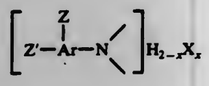
U.S. Cl. 260—874 **40 Claims**

1. A flame-retardant polyphenylene ether resin composition, substantially comprising 80 to 98% by weight of a mixed resin consisting of 20 to 80% by weight of a polyphenylene ether represented by the generic formula:



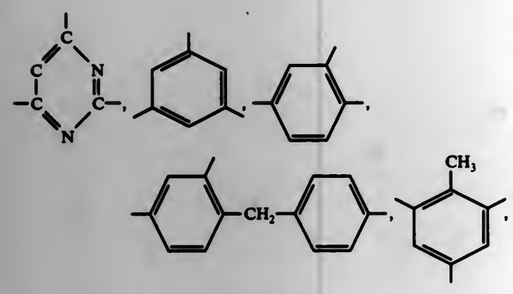
(wherein, R_1 and R_2 each denote an alkyl group having 1 to 4 carbon atoms and *n* denotes the degree of polymerization) and 20 to 80% by weight of a styrenic polymer and 2 to 20% by weight of at least one member selected from the group consisting of organic phosphorus compounds represented by the generic formula:

(A)



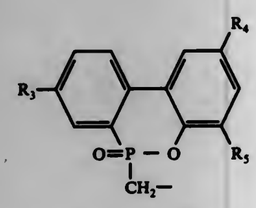
(B)

(wherein, Ar denotes a trifunctional residue of the formula:



and Z and Z' each denote a monofunctional residue selected from the class consisting of a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an aryl group having 6 to 10 carbon atoms and a $-NH_{2-y}X_y$ group, X denotes a residue of the formula

(C)



wherein, R_3, R_4 and R_5 each denote a monofunctional residue selected from the class consisting of a hydrogen atom, a halogen atom, an alkyl having 1 to 8 carbon atoms, an aralkyl group, a cyclohexyl group and a phenyl group, *x* denotes an integer having the value of 1 or 2 and *y* denotes an integer having the value of 0, 1 or 2).

4,113,796

PROCESS FOR WORKING UP DISPERSIONS OF ELASTIC-THERMOPLASTIC OR THERMOPLASTIC PLASTICS

Jürgen Bischoff, Dormagen; Friedrich Kowitz; Karl-Heinz Ott, both of Leverkusen; Herbert Schuster; Harry Röhr, both of Cologne, and Hans Weitzel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 229,182, Feb. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 87,236, Nov. 5, 1970, abandoned. This application Sep. 26, 1973, Ser. No. 400,980

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1969, 1958498

Int. Cl.[2] C08F *6/18, 6/22;* C08L *51/00*

U.S. Cl. 260—876 R **10 Claims**

1. A process for working up dispersions of thermoplastic or thermoelastic plastics into a powder of limited water and precipitant content and uniform grain size, said process consisting essentially of the steps of intensively mixing a polymer dispersion and a precipitant under conditions exhibiting a consumption of mechanical energy of 0.2 to 0.6 KWh per m^3 polymer dispersion to thereby generate high turbulence, precipitating polymer particles while maintaining said high turbulence at a temperature below the sintering temperature of the polymer, agglomerating and allowing the resulting polymer particles to harden in the precipitation liquor and separating the agglomerated and hardened polymer particles directly from the precipitation liquor in the form of a powder of uniform grain size, said polymer being selected from the group consisting of polystyrene, a copolymer of styrene and up to two monomers selected from the group consisting of acrylonitrile, methyl methacrylate, α-methyl styrene, other methyl-substituted styrenes and halo-styrene; polymethylmethacrylate; a homopolymer of vinyl chloride; a copolymer of vinyl chloride and vinyl acetate and a mixture containing

(A) from 5 to 100% by weight of a graft copolymer obtained by the graft polymerization of

(a) from 10 to 95% by weight of a mixture of

(i) 50 to 90% by weight of styrene, methyl-substituted styrene, methyl methacrylate or a mixture thereof and

(ii) 50 to 10% by weight of acrylonitrile, methyl-substituted acrylonitrile, methyl methacrylate or a mixture thereof and as grafting substrate

(b) from 90 to 5% by weight of a polymer of a conjugated diolefin containing at least 80% by weight of conjugated diolefin,

and

(B) from 0 to 95% by weight of a thermoplastic copolymer of

(a) from 50 to 95% by weight of styrene, methyl styrene, methyl methacrylate or a mixture thereof, and

(b) from 50 to 5% by weight of acrylonitrile, methyl-substituted acrylonitrile, methyl methacrylate or a mixture thereof,

the total sum of resin-forming monomers in components A and B being at least 40% by weight.

4,113,797

THERMOPLASTIC MOLDING COMPOSITIONS OF RUBBER MODIFIED COPOLYMERS OF A VINYL AROMATIC COMPOUND AND AN α,β-UNSATURATED CYCLIC ANHYDRIDE

Gim Fun Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 29, 1976, Ser. No. 671,569

Int. Cl.[2] C08L *51/04*

U.S. Cl. 260—876 B **9 Claims**

1. A thermoplastic molding composition which comprises an intimate admixture of:

(i) from about 5 to about 95 parts by weight of a rubber-modified copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride;

(ii) from about 30 to about 1 parts by weight of a block copolymer of a vinyl aromatic compound and a conjugated diene, and

(iii) from 0 to about 95 parts by weight of a polyphenylene ether resin, said composition having improved impact strength and improved tensile elongation in comparison with a corresponding composition in which the copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride is not rubber-modified.

4,113,798

TRANSPARENT ABS POLYBLENDS

James R. Moran, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 11, 1975, Ser. No. 612,614

Int. Cl.[2] C08L *55/02*

U.S. Cl. 260—876 R **12 Claims**

1. An improved transparent polyblend composition of:

A. from about 50 to 90 percent by weight of a matrix terpolymer comprising from about 35 to 60 percent by weight of an monovinylidene aromatic monomer, from about 15 to 25 percent by weight of a ethylenically unsaturated nitrile monomer and from about 20 to 45 percent by weight of an acrylate monomer selected from the group consisting of alkyl acrylate and alkyl alkacrylate monomers, and from 10 to 30 percent by weight of,

B. a graft copolymer having a graftable rubber substrate containing a diene rubber forming monomer and a superstrate of a copolymer consisting essentially of a monovinylidene aromatic monomer and an ethylenically unsaturated nitrile monomer, wherein the improvement comprises: said graft copolymer having an average clustered particle size diameter of about 0.3 to 0.6 microns and a superstrate to substrate ratio of 20 to 60:100, said superstrate copolymer comprising at least about 70 percent by weight monovinylidene aromatic monomer and from about 10 to 30 percent by weight of ethylenically unsaturated nitrile monomer, said rubber substrate comprising at least about 70 percent by weight of a conjugated diene monomer and from about 0–30 percent by weight of a monovinylidene aromatic monomer, said graft copolymer being dispersed in said matrix terpolymer as clustered particles providing improved toughness.

4,113,799

ELASTOMERIC SEALANT COMPOSITION

Joel V. Van Ornum, Kirkland, Wash., and Peter L. Stang, Port Tobacco, Md., assignors to Rocket Research Corp., Redmond, Wash.

Filed Jul. 14, 1975, Ser. No. 595,351

Int. Cl.[2] C08L *53/00, 45/00, 23/22*

U.S. Cl. 260—876 B **7 Claims**

1. A sealant composition comprising a reinforced partially cross-linked matrix comprising a high average molecular weight butyl rubber having a molecular weight in the range of approximately 100,000 to 400,000 and a low average molecular weight butyl rubber having a molecular weight in the range of approximately 10,000 to 40,000, in a ratio of high to low molecular weight butyl rubber of between about 35/65 and 45/55, in admixture with a tackifier present in an amount between about 55 and 70 weight % of the composition.

4,113,800

HIGH IMPACT POLYPHENYLENE ETHER RESIN COMPOSITIONS THAT INCLUDE A-B-A BLOCK COPOLYMERS

Gim Fun Lee, Jr., Albany, N.Y., assignor to General Electric, Pittsfield, Mass.

Filed Nov. 25, 1974, Ser. No. 527,142

Int. Cl.[2] C08L *51/00, 53/00*

U.S. Cl. 260—876 B **14 Claims**

1. A thermoplastic molding composition which comprises:

(a) from 10–80 parts by weight of a polyphenylene ether resin;

(b) from 30–65 parts by weight of a block copolymer of an alkenyl aromatic compound and a diene rubber, said copolymer having a major amount of said alkenyl aromatic compound; and

(c) from 5–25 parts by weight of a hydrogenated block copolymer of the A-B-A type wherein A is an alkenyl aromatic block and B is a diene rubber block.

4,113,801

COPOLYMERS OF ALPHA-METHYLSTYRENE AND STYRENE AND USES THEREOF

Paul S. Douglas, Jefferson Township, Fayette County; Anargiros Pete Patellis, Rostraver Township, Westmoreland County, and Walter A. Vredenburgh, Pleasant Hills, all of Pa., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 333,215, Feb. 16, 1973, Pat. No. 3,932,332. This application Nov. 25, 1975, Ser. No. 636,340

Int. Cl.[2] C08L *51/00*

U.S. Cl. 260—876 B **5 Claims**

1. A new composition of matter comprising a blend of (A) an elastomer selected from the group consisting of styrene-butadiene rubber, block copolymers of styrene and isoprene, and polychloroprene and (B) a copolymer of α-methyl-styrene and styrene having a softening point (ring and ball) between 60° and 100° C., said component (B) being a copolymer produced by the copolymerization of, by weight, from about 90% to about 50% of α-methylstyrene and from about 10% to about 50% of styrene at a temperature range from about 15° C. to about 45° C. in the presence of a Friedel-Crafts catalyst.

4,113,802

PROCESS FOR PREPARING POLYPROPYLENE COMPOSITIONS HAVING HIGH IMPACT STRENGTH AT LOW TEMPERATURES

Mario Matteoli, and Luciano Luciani, both of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 631,526, Nov. 13, 1975, abandoned. This application Dec. 29, 1976, Ser. No. 755,503

Claims priority, application Italy, Nov. 14, 1974, 29436 A/74

Int. Cl.[2] C08F *297/08*

U.S. Cl. 260—878 B **1 Claim**

1. Process for preparing polymeric compositions containing at least 50% by weight of isotactic polypropylene comprising the following steps:

(a) polymerizing propylene to isotactic polypropylene by polymerizing propylene in a hydrocarbon solvent at a temperature of from 50° C to 80° C and at a pressure between 3 and 10 kg/cm^2 gauge, in the presence of hydrogen and of a stereospecific catalyst comprising the product obtained by mixing a titanium trihalide with a dialkyl aluminum monohalide, to obtain a suspension of substantially isotactic polypropylene in the hydrocarbon solvent;

(b) feeding ethylene continuously into the polymerization suspension while feeding propylene discontinuously into the suspension to obtain, during the propylene feeding, a molar ratio of ethylene to propylene of from 60/40 to 85/15 and, in the feed as a whole, a molar ratio of at least 80/20 between the total amount of ethylene fed and the total amount of propylene fed, both monomers being polymerized at a temperature of from 60° C to 80° C and

at a pressure lower than 10 kg/cm² gauge, until the resulting copolymer makes up from 8% to 18% by weight of the total composition.

4,113,803

ACRYLIC SHEET HAVING IMPROVED THERMOSHAPING PROPERTIES

Brian George Price, Westerhope, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 363,159, May 23, 1973, abandoned. This application May 23, 1975, Ser. No. 580,147

Claims priority, application United Kingdom, Jun. 2, 1972, 25867/72

Int. Cl.² C08L *31/02*

U.S. Cl. 260—885 8 Claims

1. A thermoformable acrylic sheet comprising an intimate blend of 10–95% by weight of a acrylic polymer fraction soluble in chloroform having a reduced viscosity of not more than 4.0 and 5–90% by weight of an acrylate polymer fraction wherein the reduced viscosity of the fully polymerized sheet when made in the absence of cross-linking agent is between 1.5 and 4.0, said acrylate polymer fraction containing sufficient cross-linking agent to improve the tensile properties of the sheet in comparison with the sheet made in the absence of cross-linking agent.

4,113,804

COMPOSITIONS COMPRISING POLYBUTENE EPDM AND POLYOLEFIN

Roger C. Cotten, Metairie, La.; David W. Young, Homewood, and Aram Y. Kandanian, Roselle, both of Ill., assignors to Southern Chemical Company, Metairie, La.

Continuation-in-part of Ser. No. 737,423, Nov. 1, 1976, abandoned. This application Nov. 15, 1977, Ser. No. 851,764

Int. Cl.² C08L *23/16*

U.S. Cl. 260—897 A 23 Claims

1. A composition of matter comprising polybutene-1 as base polymer and an amount sufficient to enhance the working or adhesive characteristics of the composition of a crosslinked, thermoplastic elastomer comprising an EPDM interpolymer elastomer of ethylene, polyene and monoolefin having 3 to about 16 carbon atoms; and a minor amount of polyethylene; with or without normally solid polymer of monoolefin having 3 to about 16 carbon atoms.

4,113,805

THERMOPLASTIC COMPOSITIONS COMPRISING PVC AND CHLORINATED POLYETHYLENE

Hans-Helmut Frey, Bad Soden am Taunus, and Helmut Klug, Aystetten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 635,326, Nov. 26, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 849,161

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1974, 2456278

Int. Cl.² C08L *23/28*

U.S. Cl. 260—897 C 5 Claims

1. Thermoplastic composition consisting of

(a) 95 to 70% by weight of a vinyl chloride polymer and

(b) 5 to 30% by weight of a chlorinated high-density polyethylene, wherein the chlorinated high-density polyethylene has a chlorine content of 38 to 42% by weight, a residue value of 55 to 70% by weight (determined by extraction with toluene/acetone in a ratio of 1:1) and a swelling value of less than 1% by weight (measured in methyl-cyclohexane) and has been prepared from high-density polyethylene having a density of 0.955 to 0.965 g/cm³, a melting index MFI 190/5 (DIN 53 735) of 20 to 65 g/10 min. and a reduced specific viscosity (ISO/R 1191) of 1 to 2 dl/g, by chlorinating in water or hydrochloric acid in the presence of 0 to 2% by weight of silicic acid and 0 to 1% by weight of siloxane oil, each time calculated on the high-density polyethylene used, at temperatures of from 50 to 120° C., while introducing at least the last 10% of chlorine at a temperature of from 110° to 120° C.

4,113,806

POLYPROPYLENE IMPACT BLENDS HAVING IMPROVED OPTICAL PROPERTIES

Albert T. Watson, Washington, W. Va., and Robert L. Hull, Minooka, Ill., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 30, 1976, Ser. No. 718,846

Int. Cl.² C08L *23/16*

U.S. Cl. 260—897 A 7 Claims

1. A polypropylene impact blend having high clarity and a good balance of overall mechanical properties, consisting essentially of:

about 70 to about 95% by weight of polypropylene having a melt flow rate of from about 0.5 to about 30;

about 1 to about 18% by weight of a low density polyethylene having a density of no more than about 0.929 g/cc and a melt index of from about 0.5 to about 50; and

about 2 to about 24% by weight of an amorphous ethylene-propylene copolymer elastomer, with or without a non-conjugated diene, having a combined ethylene content of at least 50% by weight of said elastomer and a Mooney viscosity of from about 40 to about 120 ML 1+8′ at 212° F.

4,113,807

ARBUZOV REARRANGEMENT OF TRIPHENYL PHOSPHITE

Ingenuin Hechenbleikner, West Cornwall, and William Palmer Enlow, Falls Village, both of Conn., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 10, 1977, Ser. No. 795,461

Int. Cl.² C07F *9/40*

U.S. Cl. 260—969 9 Claims

1. A process for the preparation of diphenyl phenylphosphonate comprising preparing a reaction mixture comprising triphenyl phosphite and minor proportions of each of a metal halide or metal phosphite complex catalyst, and iodobenzene, and heating said mixture at a temperature above about 200° C.

4,113,808

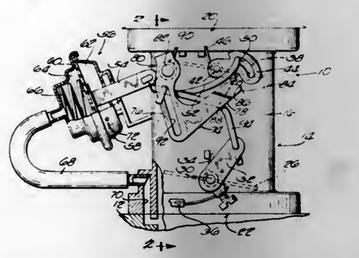
CARBURETOR HAVING AN AUTOMATIC CHOKE

Eugene R. Hackbarth, Kenosha, and Russell J. Van Rens, Milwaukee, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 24, 1977, Ser. No. 780,590

Int. Cl.² F02M *1/14*

U.S. Cl. 261—52 5 Claims



1. A carburetor for an internal combustion engine having an intake, said carburetor comprising a body defining an induction passage having an inlet and an outlet adapted to communicate with the engine intake, a choke valve pivotally mounted in said induction passage and movable between a closed position and an open position to control the admission of air into said induction passage through said air inlet, first biasing means for pivoting said choke valve toward the closed position, a choke lever connected to said choke valve for common pivotal movement therewith between first and second positions corresponding respectively to the open and closed positions of said choke valve, pressure responsive means adapted for communication with the engine intake, means connecting said pressure responsive means to said choke valve for moving said choke valve from the closed position toward the open position in response to the presence of subatmospheric pressure in the engine intake during engine operation, said means connecting said pressure responsive means to said choke valve including a first link connected between said pressure responsive means and said choke lever for pivoting said choke lever, in response to the presence of subatmospheric pressure in the engine intake, toward the second position and thereby to open said choke valve against the closing force of said first biasing means, a throttle valve pivotally mounted in said induction passage between said choke valve and said outlet and movable between an engine idle position and a range of advance speed positions, and means interconnecting said throttle valve and said choke valve for holding said choke valve in the open position independently of said pressure responsive means after said throttle valve is moved from the idle position past a predetermined advance speed position and for permitting said pressure responsive means to be effective for controlling movement of said choke valve when said throttle valve is moved past the pre-determined speed position toward the idle position, said means interconnecting said throttle valve and said choke valve including a choke pull-out lever mounted for pivotal movement between a locked position and a released position wherein said choke pull-out lever engages said choke lever and is operable for pivoting said choke lever toward the second position, second biasing means for pivoting said choke pull-out lever toward the released position and for overcoming said first biasing means, and thereby holding said choke valve in the open position when said choke pull-out lever is in the released position, a throttle lever connected to said throttle valve for common pivotal movement therewith, and means connecting said throttle lever to said choke pull-out lever for locking said choke pull-out lever in the locked position when said throttle lever is located in the idle position or between the idle position and the pre-determined advance speed position, and for permitting said second biasing means to pivot said choke pull-out lever to the released position when said throttle lever is moved from the idle position past the pre-determined advance speed position.

4,113,809

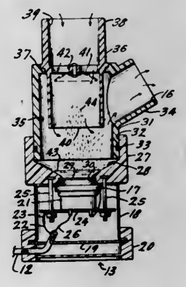
HAND HELD ULTRASONIC NEBULIZER

Raymond L. Abair, and Stanley J. Kulish, Jr., both of Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 4, 1977, Ser. No. 784,044

Int. Cl.² A61M *15/00*

U.S. Cl. 261—81 7 Claims



1. An ultrasonic nebulizer comprising, in combination, means defining a liquid reservoir, transducer means for atomizing liquid in the reservoir, said transducer means functioning essentially as a bulk capacitance in parallel with a series resonant circuit when excited within a predetermined frequency range of resonance, said series resonant circuit when excited within such frequency range having a predetermined high resistance when liquid is present in said reservoir and a predetermined lower resistance when mechanically unloaded by the absence of liquid from said reservoir, an oscillator having an output within such frequency range, and means coupling said oscillator output to said transducer means including an inductor, said inductor cooperating with said bulk capacitance and any stray capacitance in circuit with said bulk capacitance to form a series resonant circuit resonating within such frequency range whereby, when liquid is removed from said reservoir, said predetermined low resistance reduces the voltage across said bulk capacitance to in turn reduce power dissipated in such mechanically unloaded transducer means.

4,113,810

DISTILLATION COLUMN PACKING

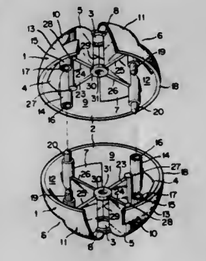
Reiji Ikawa, Tokyo, Japan, assignor to Tokyo Special Wire Netting Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1977, Ser. No. 809,329

Claims priority, application Japan, Jul. 2, 1976, 51-78733

Int. Cl.² B01F *3/04*

U.S. Cl. 261—98 2 Claims



1. A spherical distillation column packing comprising an assembly of one subassembly joined to another subassembly of the same structure as said one subassembly, each of said subassemblies being formed of a hemispherical body having a bowl-like shape and an open end, said hemispherical body including a through-hole formed in the top thereof, a plurality of cutout openings and covering portions formed alternately in the side surface of said hemispherical body, an engaging tube formed on the inner surface of one of said covering portions, an engaging post formed on the inner surface of a different one of said covering portions, said engaging post being shaped to fit into the engaging tube of the other subassembly, a plurality of contact pieces each having one end thereof secured to the outer side of the associated one of said engaging tubes and posts and projecting inwardly of said hemispherical body, said contact pieces having the inner end edges thereof opposed to and spaced from other to define a spacing therebetween so as to not close the interior of said hemispherical body, and a connecting piece connecting the inner end edges of said contact pieces with one another.

4,113,811

PROCESS FOR THE PRODUCTION OF FLEXIBLE EXPLOSIVE FORMED CHARGES

Werner Helfgen, Troisdorf; Gerhard Lindner, Leverkusen; Paul Lingens, Odenthal-Glöbusch, and Helmut Kaufmann, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 702,020, Jul. 2, 1976, abandoned. This application Jul. 6, 1976, Ser. No. 702,593
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1975, 2529432
Int. Cl.² C06B 45/10
U.S. Cl. 264—3 R 9 Claims

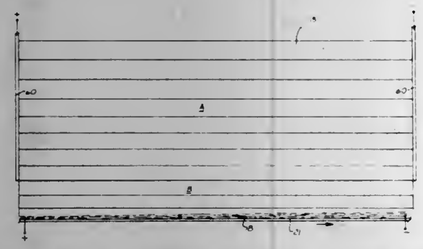
1. A process for the production of flexible explosive formed charges having a detonation velocity above 6000 m/sec which comprises mixing, without the addition of water, a volatile solvent, or mixtures thereof, a thermoplastic synthetic resin comprising at least one elastomer which exhibits an elongation of at least 800% and a tear strength of between 50 and 350 kp./cm² and which comprises a copolymer of ethylene with about 45% by weight of vinyl acetate, a copolymer of acrylonitrile, butadiene and styrene, or a copolymer of an acrylic ester with ethylene, propylene, or vinyl chloride, with a crystalline, high-brisance explosive component having a detonation velocity above 8000 m/sec and at least one plasticizer having a melting point of less than −20° C. and that practically does not evaporate up to a temperature of 90° C., and thereafter forming the mixture into an explosive charge, the high-brisance explosive component being utilized in amounts of 60–85% by weight, the elastomer being employed in amounts of 15–40% by weight, and the ratio of elastomer to plasticizer being between 1:10 and 10:1.

4,113,812

METHOD OF FORMING A COMPOSITE MAT OF DIRECTIONALLY ORIENTED LIGNOCELLULOSIC FIBROUS MATERIAL

John W. Talbott, Moscow, Id., and James D. Logan, Pullman, Wash., assignors to Washington State University Research Foundation, Pullman, Wash.

Filed Dec. 3, 1976, Ser. No. 747,391
Int. Cl.² B29J 5/00
U.S. Cl. 264—24 10 Claims



1. A method of forming a continuous composite mat of directionally oriented lignocellulosic fibrous material, comprising the steps of:

causing a multitude of elongated small pieces of lignocellulosic fibrous material to individually descend as separate and discrete objects into an orienting zone;

said elongated small pieces having a dry weight moisture content of between six percent and twenty percent, with their major dimension along the fiber direction;

moving a horizontal mat-support surface immediately below the orienting zone to receive the descending pieces thereon with the elongated pieces overlapping each other to form a continuous mat;

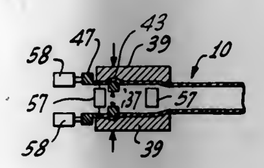
causing an electric current to flow within the continuous mat to produce a directional electric field immediately above the mat in the orienting zone in which the electric field is substantially parallel with the mat-support surface within the orienting zone and directed in the direction of movement of the mat-support surface tending to orient the longer dimension of the elongated small pieces in the direction of the electric field as the pieces descend through the orienting zone.

4,113,813

METHOD OF PREPARING AND BELLING THERMOPLASTIC PIPE WITH THICKENED WALLS

Clyde E. Wilson, Brazil, Ind., assignor to Wilson-Tek Corporation, Brazil, Ind.

Filed Apr. 25, 1977, Ser. No. 790,303
Int. Cl.² B29D 23/00
U.S. Cl. 264—25 12 Claims



10. A method of preparing a section of thermoplastic pipe for belling and of forming an enlarged bell on one end portion of the pipe section and a raised annular external rib on said bell defining an internal seal groove in the bell, said method comprising the steps of:

differentially heating said one end portion to provide an intermediate zone of higher temperature and plasticity than the remainder of said one end portion in the area of said one end portion that will form said rib;

expanding said one end portion radially to form the enlarged bell on said pipe section;

axially compressing said one end portion to thicken at least the intermediate zone;

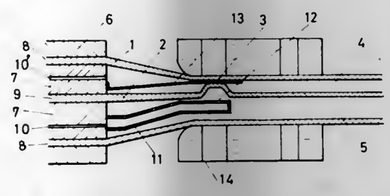
and die-shaping the thickened intermediate zone to the desired final configuration.

4,113,814

METHOD FOR PRODUCING SPECIAL PIPES HAVING LONGITUDINALLY EXTENDING DIAPHRAGM PARTITIONS

Susumu Kojimoto, Takatsuki; Takami Sato, Toyonaka, and Toshio Mori, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 16, 1976, Ser. No. 723,977
Claims priority, application Japan, Sep. 22, 1975, 50-114969; Sep. 22, 1975, 50-114970
Int. Cl.² B29C 17/02
U.S. Cl. 264—89 5 Claims



1. A method for the production of a thermoplastic resin pipe having a longitudinally extending diaphragm partition dividing the pipe into two conduits with a plurality of longitudinally spaced apart barriers projecting from the diaphragm toward the inside wall of the pipe, said method comprising:

(a) extruding the pipe through an annular opening of a die head while simultaneously extruding the diaphragm material from a rectangular opening within said annular opening into the central portion of the pipe;

(b) applying a force generally perpendicular to the longitudinal axis of the diaphragm against the diaphragm at a position located downstream of the die head but where the material of the diaphragm is still warm enough to be deformed;

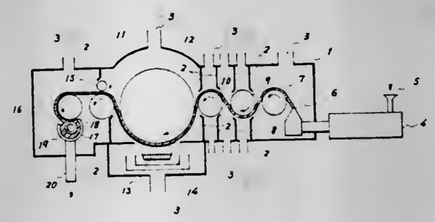
(c) forming said plurality of barriers projecting from the diaphragm by deforming the still warm material with intermittent applications of said generally perpendicular force at spaced intervals of time as the diaphragm material flows past said downstream position.

4,113,815

METHOD FOR MANUFACTURING COMPOSITION INCLUDING FINE PARTICLES DISPERSED THEREIN

Yuzo Kawamura, 6-14-304, Honmaru-cho, Ohtsu-shi, Shiga-ken, Japan

Continuation-in-part of Ser. No. 487,581, Jul. 11, 1974, abandoned, which is a continuation of Ser. No. 246,604, Apr. 24, 1972, abandoned, which is a continuation of Ser. No. 40,229, May 25, 1970, abandoned. This application May 21, 1976, Ser. No. 688,639
Int. Cl.² B01J 2/24
U.S. Cl. 264—101 3 Claims



1. A method of manufacturing a master batch of a synthetic thermoplastic resin containing flake pigment particles having a substantially smooth mirror surface, a substantially uniform particle size and a diameter/thickness of as large as 1000, comprising

a. moving a thin film of synthetic thermoplastic resin having uniformly controlled thickness through a vacuum chamber,

b. subjecting a mass of the material for forming said pigment particles to evaporation within said vacuum chamber and depositing said evaporated material as a thin film having a uniformly controlled thickness upon one surface of said moving resin film, and

c. heating said moving films to melt said thermoplastic resin film, and

d. subjecting said molten resin and said deposited film to agitation to break up said deposited film into said pigment flake particles within said resin to form said master batch.

4,113,816

PROCESS FOR THE MANUFACTURE OF LAYERED TABLETS INCORPORATING CONTROLLED RELEASE MICROCAPSULES

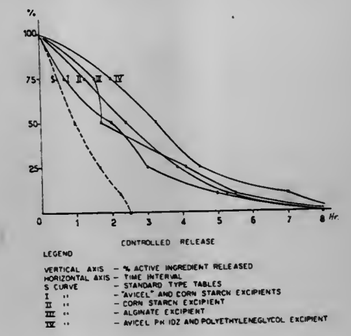
Yvette Fr. M. J. Estevenel; Maurice H. Thely, both of Paris, and Wladimir A. Coulon, Claye-Souilly, all of France, assignors to Choay S.A., Paris, France

Continuation of Ser. No. 604,029, Aug. 12, 1975, abandoned, which is a division of Ser. No. 487,042, Jul. 10, 1974, Pat. No. 3,922,338. This application Feb. 11, 1977, Ser. No. 767,885
Claims priority, application France, Jul. 12, 1973, 73 25531
Int. Cl.² B29C 6/00
U.S. Cl. 264—113 9 Claims

1. A process of making layered tablets having upper and lower surfaces and a peripheral surface and incorporating controlled-release microcapsules, comprising:

(a) depositing in a tablet-making machine a bottom external layer comprising essentially excipients in granular form and levelling the upper surface of said layer by a tamping action;

(b) depositing on said levelled layer a superposed layer comprising microcapsules containing a pharmaceutically active substance, and similarly levelling said microcapsule layer;



(c) depositing on said levelled microcapsule layer a superposed top external layer comprising excipients in granular form; and

(d) then compressing said superposed layers by a force sufficient to bond the granules and microcapsules without crushing the latter to produce tablets having a hardness of about 10 to 20 kg on the said upper and lower surfaces and about 8 to 15 kg on the peripheral surface.

4,113,817

COAL-CONTAINING SHAPED BODIES AND PROCESS FOR MAKING THE SAME

Carl Kröger, Aachen; Ingo Romey, and Georg Kölling, both of Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Continuation of Ser. No. 461,738, Apr. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 238,519, Mar. 27, 1972, abandoned. This application Jan. 16, 1976, Ser. No. 649,920
Claims priority, application Fed. Rep. of Germany, May 18, 1971, 2124555; Apr. 3, 1971, 2116417
Int. Cl.² C08L 7/00
U.S. Cl. 264—120 19 Claims

1. A process for making shaped bodies by extrusion or injection molding, the bodies having the form of slabs, sheets, profiles, tubes, pipes or foils,

the said process comprising forming a mixture between (a) coal particles having a size of at most 200 microns and (b) about 10 to 30% by weight of a mixture of an elastomer with a thermoplastic polymer or copolymer,

and shaping said mixture by extrusion or injection molding to its final form at a temperature of about 100° to 250° C.

4,113,818

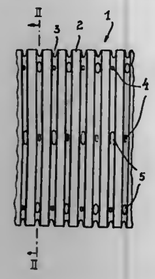
DRAIN PIPE METHOD

Hubert Drossbach, Rain Am Lech, Fed. Rep. of Germany, assignor to Agro-Drip, Incorporated, Hampton, N.H.

Filed Mar. 2, 1977, Ser. No. 773,766
Int. Cl.² B29C 17/10
U.S. Cl. 264—154 3 Claims

1. The method of producing corrugated pipe having water inlet orifices in the troughs of said corrugations characterized by forming corrugations of uniform inner diameter in the wall of said pipe and forming outwardly extending protrusions in

said troughs along a line extending axially along said pipe by providing a forming mold having corrugations with interruptions corresponding to said protrusions and deforming said pipe into said corrugations and said interruptions, said protrusions spaced along said line in troughs alternating with other



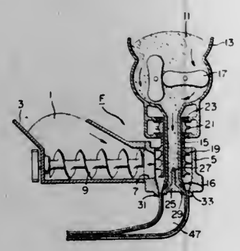
troughs having no protrusions along said line, moving said pipe linearly relative to a cutter arranged inwardly of said protrusions and outwardly of said troughs, and cutting said troughs by said relative linear motion of said pipe and cutter to form said orifices in said troughs in line with said protrusions which remain uncut.

4,113,819

METHOD AND APPARATUS FOR CONTINUOUSLY MANUFACTURING MULTI-LAYERED DOUGH MATERIALS

Torahiko Hayashi, 3-4, Nozawa-machi; Minoru Kageyama, 48-1, Kamitomatsuri-cho, and Michio Morikawa, 67, 1-chome, Yossi-cho, all of Utsunomiya-shi, Tochigi-Ken, Japan

Filed Mar. 9, 1976, Ser. No. 665,326
Claims priority, application Japan, Mar. 10, 1975, 50-29355
Int. Cl.² A21D *8/02*
U.S. Cl. 264—173 **5 Claims**



1. A method of continuously manufacturing multi-layered food materials, comprising the steps of:

forming food material continuously into a strip having at least a layer of dough;

folding said strip onto the upper flight of a moving conveyor belt constituting the first in a series of conveyor belts so as to form on said upper flight a pile composed of a plurality of layers of said strip, said upper flight moving generally upwardly along a sloped path; and

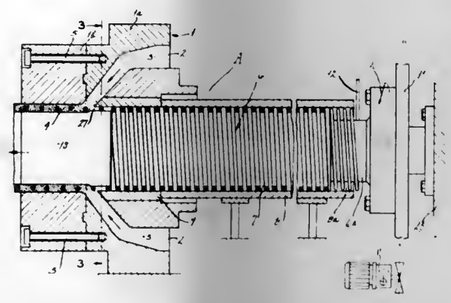
reducing the thickness of said pile by engaging it with a plurality of rollers moving about an endless roller path at a speed faster than any of said conveyor belts, said roller path having a lower straight portion spaced above and partially along the higher end portion of said upper flight and the rest of the conveyor belts in said series thereof.

4,113,820

PROCESS OF THE MAKING OF EXTRUDED THERMOPLASTIC BODIES AND DEVICE FOR THE CARRYING OUT OF THE SAID PROCESS

Ariberto Tamborini, and Giancarlo Tamborini, both of Via 25 Aprile, Daverio, Italy

Division of Ser. No. 460,378, Apr. 12, 1974, Pat. No. 3,969,052. This application Apr. 7, 1976, Ser. No. 674,566
Claims priority, application Italy, May 29, 1973, 24685 A/73
Int. Cl.² B29F *3/10*
U.S. Cl. 264—173 **3 Claims**



1. A method for embedding a preformed helically wound reinforcing wire substantially intermediately within the sized walls of a molded thermoplastic cylinder comprising providing a source of thermoplastic material, feeding said thermoplastic material flowingly into a sized run constituted of a continuous rectilinear path of annular cross-section having inner and outer boundaries for travel of said material therealong, providing a helically wound wire of less inside and outside diameter than the respective inside and outside diameters of said sized run inside and outside boundaries, providing rotating means substantially axially concentric with said sized run but terminating spacedly therefrom for externally carrying said helical wire toward said sized run for unsupportedly delivering and feeding to the transverse central portion of said sized run that portion of the wire to be embedded within the thermoplastic material during and concurrently with the feeding of the thermoplastic material to said sized run whereby said reinforcing wire will be located in substantially equally spaced distance from the inner and outer boundaries of the molded thermoplastic cylinder.

4,113,821

PROCESS FOR PREPARING HIGH STRENGTH POLYAMIDE AND POLYESTER FILAMENTARY YARN

William Norman Russell; James Isaac Bruton, both of Colonial Heights, and Ian Charles Twilley, Chesterfield County, all of, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 689,236, May 24, 1976, abandoned, which is a continuation of Ser. No. 555,494, Mar. 5, 1975, abandoned, which is a continuation of Ser. No. 183,224, Sep. 23, 1971, abandoned. This application Sep. 1, 1977, Ser. No. 829,764
Int. Cl.² D01D *5/12*
U.S. Cl. 264—210 F **3 Claims**

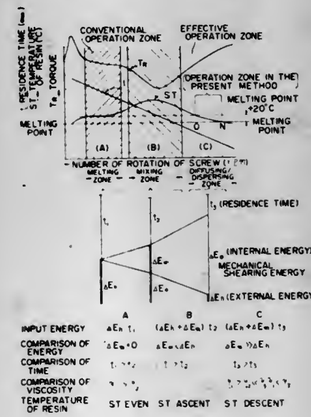
1. A process of producing drawn polyethylene terephthalate yarn which comprises continuously melt-spinning at a temperature of about 295° C. filaments of a synthetic linear fiber-forming polyethylene terephthalate polymer having an intrinsic viscosity of at least 0.90 dl., quenching the spun filaments, pretensioning the quenched filaments by subjecting them to a tension of about 0.03 and 0.07 gram per denier at ambient room temperature on pretensioning rolls immediately prior to feed rolls, said feed rolls being maintained at ambient temperature, and thereafter instantaneously and simultaneously heating the pretensioned filaments and drawing them between draw rolls and said feed rolls at a temperature in the range of from about 70° C. to about 250° C. in a heated draw point localizing zone between said feed rolls and said draw rolls.

4,113,822

METHOD OF DISPERSING INORGANIC ADDITIVES WITHIN EXTRUDER

Mamoru Takiura, Kawasaki, and Yoshihiro Hayashizaki, Sagamihara, both of Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 602,143, Aug. 5, 1975, abandoned. This application Mar. 2, 1977, Ser. No. 773,669
Claims priority, application Japan, Aug. 9, 1974, 49-91224
Int. Cl.² B29B *1/04*
U.S. Cl. 264—349 **4 Claims**



1. A process for uniformly dispersing inorganic additive particles in a synthetic resin that does not decompose at a temperature in the range between its melting point and a temperature 20° C. above its melting point and that possesses the property that when it is molten and agitated in the below-mentioned twin screw extruder its temperature decreases within said temperature range as the speed of rotation of the screws increases within a range of high speed rotation of said screws, which comprises the steps of: continuously feeding a preblended mixture of inorganic additive particles and said synthetic resin in a non-molten state into a twin-screw extruder in which the screws have the same external thread diameter and the threads of the screws intermesh with the exterior of the thread of one screw being radially spaced from the radially opposed portion of the root of the other screw and with the ratio of

$$\frac{\text{radial depth of the zone where the screw threads intermesh}}{\text{external thread diameter of the screws}}$$

being equal to or less than 0.1, and simultaneously rotating said screws at a high speed effective to apply, along the entire lengths of said screws, a uniform high internal mechanical shearing energy to said mixture sufficient initially to break up agglomerates of said inorganic additive particles into primary inorganic additive particles before said resin becomes molten and then after said resin has become molten, wetting the surfaces of the primary inorganic additive particles with the molten resin and dispersing said wetted primary inorganic additive particles in the remainder of the molten resin whereby to form a uniform dispersion of said primary inorganic additive particles in said molten resin, the rotation of the screws being carried out such that the ratio of

$$\frac{\text{actual residence time of at least 90\% the mixture in the extrusion zone}}{\text{the average residence time of the mixture as a whole in the extrusion zone}}$$

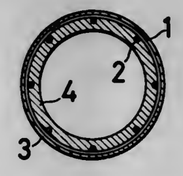
is from 0.9 to 1.1, the temperature in the extrusion zone is maintained in the range of from the melting point of the resin to 20° C. above said melting point as a maximum and the speed of rotation of the screws is maintained in the range wherein an increase in the speed of rotation of the screws causes the temperature of the resin in a molten state to decrease within said temperature range.

4,113,823

METHOD OF MANUFACTURING PRESTRESSED CONCRETE PIPE

Hideo Iida, Sagamihara, Japan, assignor to Nippon Hume Pipe Company Limited, Tokyo, Japan

Division of Ser. No. 463,764, Apr. 24, 1974, Pat. No. 3,982,565, which is a continuation-in-part of Ser. No. 393,188, Aug. 30, 1973, abandoned, which is a continuation of Ser. No. 174,787, Aug. 24, 1971, abandoned. This application Aug. 18, 1976, Ser. No. 715,493
Int. Cl.² B28B *23/10, 23/12;* F16L *9/08*
U.S. Cl. 264—228 **2 Claims**



1. A method of manufacturing prestressed concrete pipe in a form comprising the steps of forming a reinforcing cage of laterally spaced longitudinally extending reinforcing members arranged in a circle and wrapping circumferentially extending reinforcement about the exterior surface of the longitudinally extending reinforcing members so that the outside diameter of the reinforcing cage is smaller than the inside diameter of the outer form wall with as little gap as possible between the outside surface of the cage and the inside wall surface of the outer form wall, arranging the longitudinally extending reinforcing members and the circumferentially extending reinforcement so that the effective reinforcement ratio for longitudinally extending reinforcing members is in the range of 0.16 to 0.25% and the circumferentially extending reinforcement is in the range of 1.0 to 1.6%, based on the cross-sectional area of the respective components divided by the cross-sectional area of the concrete inwardly of the center axis of the circumferentially wrapped reinforcement and arranging the ratio of effective reinforcement ratios consisting of the effective reinforcement ratio of the longitudinally extending reinforcement members divided by the effective reinforcement ratio of the circumferentially extending reinforcement in the range of 0.1 to 0.25 so that cracking in the circumferential direction is avoided by maintaining the ratio at more than 0.1 and effective prestressing is attained by maintaining the ratio at less than 0.25, placing the reinforcing cage in the form, casting ordinary concrete within the form and rotating the form for forming a layer of ordinary concrete between the outer periphery of the reinforcing cage and the inner wall surface of the outer form wall, and then casting expensive concrete in the form for filling the form inwardly of the layer of ordinary concrete and encasing the reinforcing cage, and centrifugally forming the pipe.

2. A method of manufacturing prestressed concrete pipe in a form comprising the steps of forming a reinforcing cage of laterally spaced longitudinally extending reinforcing members arranged in a circle and wrapping circumferentially extending

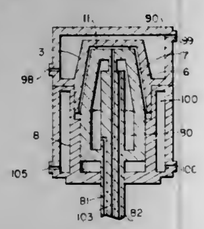
reinforcement about the exterior surface of the longitudinally extending reinforcing members so that the outside diameter of the reinforcing cage formed is smaller than the inside diameter of the outer form wall with as little gap as possible between the outside surface of the reinforcing cage and the inner wall surface of the outer form wall, arranging the longitudinally extending reinforcing member and the circumferentially extending reinforcement so that the effective reinforcement ratios for the longitudinally extending reinforcing members is in the range of 0.16 to 0.25% and in the circumferentially extending reinforcement is in the range of 1.0 to 1.6%, based on the cross-sectional area of the respective reinforcement component divided by the cross-sectional area of the concrete inwardly of the center axis of the circumferentially wrapped reinforcement and arranging the ratio of effective reinforcement ratios consisting of the effective reinforcement ratio of the longitudinally extending reinforcing members divided by the effective reinforcement ratio of the circumferentially extending reinforcement in the range of 0.1 to 0.25 so that cracking in the circumferential direction is avoided by maintaining the ratio at more than 0.1 and effective prestressing is attained by maintaining the ratio at less than 0.25, placing the reinforcing cage in the form, casting expansive concrete within the form with the reinforcing cage disposed outwardly of the center of the wall thickness of the concrete layer and centrifugally forming the pipe.

4,113,824

PROCESS FOR PRODUCING RECEPTACLES FROM A THERMOPLASTIC RESIN FOAM SHEET

Takashi Matsui, Nara; Sadao Sugimura, Gose, and Kunio Noo, Nara, all of Japan, assignors to Sekisui Kaseikin Kogyo Kabushiki Kaisha, Nari, Japan

Filed Jul. 8, 1976, Ser. No. 703,421
Claims priority, application Japan, Jul. 11, 1975, 50-85549
Int. Cl.² B29C *13/00*
U.S. Cl. 264—230 **24 Claims**



1. A method for producing a receptacle from a thermoplastic resin foam sheet, which comprises

forming a cylindrical article by bonding the opposite sides of a rectangular-shaped unidirectionally shrinkable thermoplastic resin foam sheet which, when heated, shrinks in a first direction to a greater extent than in a direction perpendicular to said first direction, so that when heated, a resulting cylindrical article will shrink toward the central axis thereof,

fitting said cylindrical article over a male mold having a cylindrical lower portion, with an end portion of said cylindrical article extending beyond the flat end surface of the male mold,

heating said cylindrical article to a temperature above the softening point of the resin of said sheet, whereby said cylindrical article shrinks toward the central axis thereof and intimately contacts said male mold to form an apertured article having a flat annular portion continuous with the initial peripheral side wall,

placing a flat bottom plate onto said flat annular portion,

compression-molding under heat said apertured article together with said flat bottom plate by means of a male mold and a female mold, a pair of which molds, when clamped, defining a clearance that is less than the thickness of the initial peripheral side wall of said apertured article, and said molds having at least one annular ridge, for contacting said annular portion, continuously provided either on the inner surface of the female mold or on the outer surface of the male mold, said ridge having a height of 50–90% of the clearance spacing between said molds to thereby bond said apertured article and said flat bottom plate together and make the wall thickness thereof uniform,

pressing the lip portion of a resulting receptacle vertically by means of a rib-forming member to reduce the volume thereof to form a rib, and

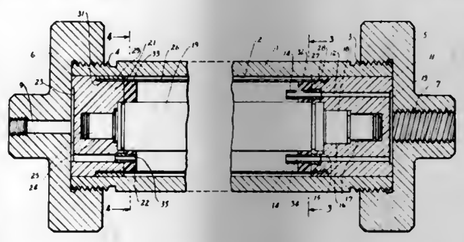
removing the resulting receptacle after cooling the molds.

4,113,825

METHOD OF SEALING THE ENDS OF AN ELASTOMERIC ROLL

Robert W. Hill, Sussex; William G. Onnen, Newton, and Lyle C. Ryder, Rockaway, all of N.J., assignors to Ames Rubber Corporation, Hamburg, N.J.

Continuation of Ser. No. 591,720, Jun. 30, 1975, abandoned.
This application Sep. 12, 1976, Ser. No. 719,696
Int. Cl.² B29D *3/02*; B29G *7/00*
U.S. Cl. 264—262 **6 Claims**



1. The method of sealing the ends of an elastomeric roll having a cylindrical metal core and a flexible outside tubular sleeve of protective material spaced therefrom, which comprises mechanically securing each end of said sleeve to an apertured roll and sleeve support member, each said support member having disposed thereagainst a preformed annular sealing ring to extend between said core and said flexible sleeve, and each said ring being made of deformable curable elastomeric fluorosilicone material, placing said support members, said sleeve and said core within a cylindrical mold having an inside diameter greater than the outside diameter of said sleeve, injecting uncured elastomeric silicone material under pressure through an aperture in said at least one sealing ring and into the space between said sleeve and said core, compressing said sleeve into contact with the cylindrical mold wall and concurrently deforming and expanding said rings and bonding their cylindrical surfaces to opposed cylindrical surfaces of the sleeve and metal core, and thereafter curing said elastomeric materials before removal of the cured sleeved roll from the cylindrical mold.

4,113,826

FLUID FLOW CONTROL VALVES

Alan Philip Jones, Cwmbran Gwent, Wales, assignor to Saunders Valve Company Limited, Gwent, Wales

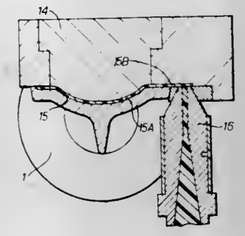
Filed Jan. 24, 1977, Ser. No. 761,900
Claims priority, application United Kingdom, Feb. 25, 1976, 7504/76
Int. Cl.² B29F *1/00*
U.S. Cl. 264—269 **6 Claims**

1. A method of forming an injection moulded lining on a valve body, said valve body having a flow passage and a pair of end flanges, said method comprising:

(1) assembling the valve body with mould members to define a cavity, the cavity comprising:

(a) a desired lining portion which when filled with injected material defines a desired lining extending over the entire surface of said flow passage and over at least part of the surface of each said end flange; and

(b) an extension portion continuous with the desired lining portion and extending outwardly from an edge of the desired lining portion, the extension portion when filled



with injected material forming a tab which extends from and is integral with the desired lining;

(2) injecting a lining material into the extension portion of the cavity until the cavity is filled with lining material; and

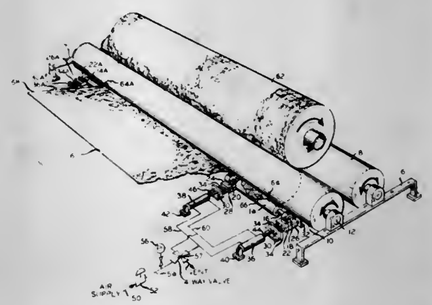
(3) stripping the valve body complete with the desired lining and the tab from the mould members whilst maintaining the tab integral with the desired lining.

4,113,827

METHOD AND APPARATUS USEFUL IN CONTROL OF EDGE UNIFORMITY IN NONWOVEN FABRICS

Frederick L. Stoller, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 15, 1976, Ser. No. 723,394
Int. Cl.² B29C *15/00*
U.S. Cl. 264—280 **8 Claims**



1. A method comprising:

passing a nonwoven fabric to a compression zone, said fabric being produced from staple fibers and having two edge portions and a middle portion wherein the edge portions are thicker portions of said fabric as compared to said middle portion, and

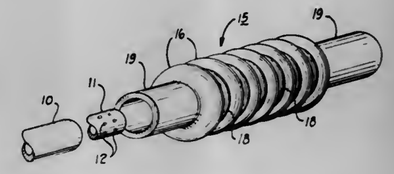
compressing only the thicker portions in the compression zone to reduce the thickness of said thicker portions approximately to the thickness of said middle portion so that a nonwoven fabric with a uniform thickness is produced.

4,113,828

METHOD FOR MAKING FLEXIBLE CORRUGATED RUBBER TUBING AND TUBING PRODUCED THEREBY

Vance M. Kramer, Sr., 402 E. Boundry Rd., Perrysburg, Ohio 43551, and Vance M. Kramer, Jr., 1913 Greendale Ave., Findlay, Ohio 45840

Division of Ser. No. 676,281, Apr. 12, 1976, Pat. No. 4,053,275.
This application Aug. 11, 1977, Ser. No. 823,837
Int. Cl.² B29D *23/00*; B29H *7/14*
U.S. Cl. 264—294 **9 Claims**



1. A method for making flexible corrugated tubing from a sleeve of uncured rubber including the steps of:

positioning said sleeve on a forming mandrel,

forming a length of corrugated, flexible and extensible tubing;

positioning said length over said sleeve;

expanding said sleeve radially into engagement with interior surfaces of said length of corrugated flexible and extensible tubing to form at least rudimentary corrugations in said sleeve,

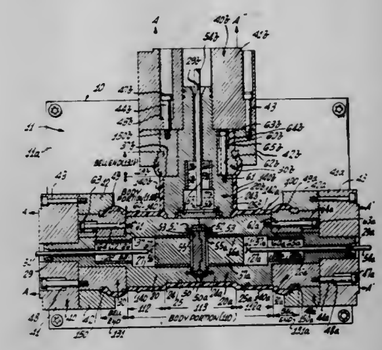
removing said length of corrugated, flexible and extensible tubing and said sleeve from said mandrel and said sleeve from said length of flexible and extensible tubing and placing said sleeve on a curing mandrel in an axially foreshortened corrugated condition for heat treating in an oven to set said corrugations.

4,113,829

METHOD OF FORMING A BELL END ON THERMOPLASTIC PIPE

Donald R. Bowker, Cerritos; Donald J. Klein, Downey, and Stephen E. Rados, Norwalk, all of Calif., assignors to Philips Industries Inc., Dayton, Ohio

Filed Feb. 9, 1976, Ser. No. 656,538
Int. Cl.² B29F *1/00*; B29C *5/00*; B29D *23/00*
U.S. Cl. 264—295 **29 Claims**



1. A method for forming a hollow thermoplastic article, having an enlarged bell end with an inner annular groove therein, and a body portion having at least a longitudinal section thereof of smaller inner diameter than the diameter of said inner annular groove of said bell end, which comprises the steps of:

introducing molten plastic into a hollow article forming mold means including a cavity means and core means which cavity and core means together, in closed position, define said bell end and said body portion, said core means being movable, with respect to said cavity means, from a closed position to at least one partially retracted position and thence to a fully retracted position clear of said cavity means and said cavity means being openable to enable said article to be ejected from said cavity means;

cooling the molten plastic of at least a first part of said body portion, while said mold means is in closed position, to a first temperature range within which said plastic forming said first part of said body portion is substantially rigid and non-deformable and,

cooling the molten plastic forming said bell end, while said mold means is in closed position, to a second temperature range in which said plastic forming said bell end remains resiliently deformable, said second temperature range being substantially higher than said first temperature range;

in sequence, partially retracting said core means to thereby remove said core means defining said bell end with some elastic deformation of said bell end while the plastic forming said bell end lies within said second higher temperature range and is still readily deformable and said first part of said body portion lies within said first lower temperature range and then, fully retracting said core means; and

ejecting said formed thermoplastic article from said cavity means before said bell end has cooled to a substantially rigid condition to allow said bell end to recover to its undeformed shape.

4,113,830

METHOD OF FABRICATING SILICON NITRIDE BODIES

Khodabakhsh S. Mazdiyasni, Xenia, and Charles M. Cooke, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 18, 1974, Ser. No. 452,038
Int. Cl.² C04B 35/58
U.S. Cl. 264—101 **10 Claims**

1. A method for fabricating a silicon nitride body which comprises compressing under a vacuum or in an inert atmosphere a mixture of (1) a silicon compound selected from the group consisting of alpha silicon nitride, amorphous silicon nitride and polymeric silicon diimide powders and (2) 0.5 to 10 weight percent, based on the weight of the silicon compound, of a sintering aid in finely divided form selected from the group consisting of compounds having the formulas M_2O_3, MH_3 and MN, where M is an element of the lanthanide series at a pressure ranging from about 4000 to 6000 psi and at a temperature ranging from 1600° to 1750° C. in a compression zone formed of graphite and lined with a sheet of graphite; and continuing the compression step until there is obtained a silicon nitride body having a density substantially equal to the theoretical density of silicon nitride.

4,113,831

RECOVERY OF SODIUM FLUORIDE AND OTHER CHEMICALS FROM SPENT CARBON LINERS

George Otto Orth, Jr., and Richard D. Orth, both of Seattle, Wash., assignors to National Fluoride and Chemical Corporation, Seattle, Wash.

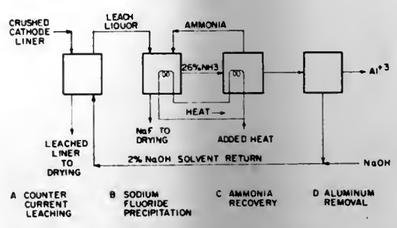
Filed Oct. 2, 1975, Ser. No. 618,958
Int. Cl.² C01F 7/04
U.S. Cl. 423—119 **7 Claims**

1. A method for recovering the fluoride and aluminum contained in used cathode carbon liner from electrolytic cells used in the refining of aluminum, comprising:

extracting crushed liner material containing fluoride and aluminum with a caustic solution in an extraction zone to yield an extraction solution containing solubilized sodium aluminate and sodium fluoride,

adding a solubility suppressant to the extraction solution containing the sodium fluoride which suppresses the solubility of the fluoride and causes precipitation of sodium fluoride,

recovering the sodium fluoride from the extraction solution,



contacting the remaining extraction solution containing the sodium aluminate with carbon dioxide to precipitate the aluminum as aluminum hydrates, leaving a residual solution containing sodium carbonate, and

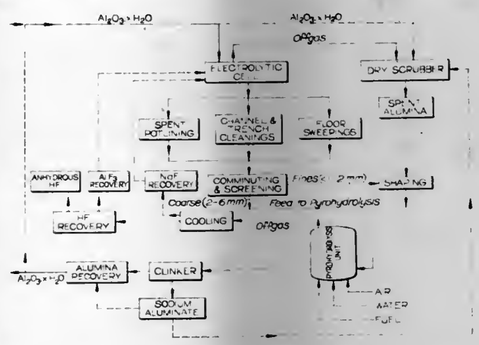
regenerating the caustic solution from the residual solution for recycle to the extraction zone by adding calcium hydroxide to the residual solution.

4,113,832

PROCESS FOR THE UTILIZATION OF WASTE MATERIALS FROM ELECTROLYTIC ALUMINUM REDUCTION SYSTEMS

Norman Bell, Livermore; John N. Andersen, Moraga, and Hung-Kei H. Lam, Walnut Creek, Ala.L OF CA, assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 28, 1977, Ser. No. 855,506
Int. Cl.² C01F 7/04; C01B 7/19
U.S. Cl. 423—119 **15 Claims**



1. An integrated process for recovering aluminum, alkali metal and fluoridic values from spent and waste materials generated in electrolytic aluminum reduction systems and containing the same which comprises:

(a) charging a feed selected from the group consisting of spent carbonaceous potlinings, channel cleanings, trench cleanings, floor sweepings, spent alumina scavenger from dry scrubbers employed for purifying aluminum reduction cell offgases, and mixtures thereof, into a furnace;

(b) subjecting the charge in the furnace to a thermal treatment at a temperature within the range of about 1100° and 1350° C. in the presence of sufficient water to provide pyrohydrolysis conditions resulting in the generation of an offgas containing volatilized fluorine values in the form of alkali fluorides and HF with the simultaneous production of a residual clinker being essentially free of volatilizable fluorine values, and containing alumina and Na_2O values;

(c) removing and cooling of the offgas to obtain the alkali fluorides in solid form, which are separated from the residual offgas stream;

(d) recovering HF from the residual, essentially alkali fluoride-free offgas;

(e) discharging the clinker from the furnace and subjecting the clinker to alkaline digestion under Bayer process conditions resulting in an alkali aluminate solution from which alumina in high purity is recovered and in a residue containing essentially all of the undesirable impurities from the spent and waste materials.

4,113,833

PROCESS FOR THE PRODUCTION OF ALUMINA FROM THE MINERAL COMPONENT OF SOLID FUELS

Nikolai Ivanovich Eremin, prospekt Elizarova, 20, kv. 28, Leningrad; Semen Alexandrovich Tager, ulitsa Dmitria Ulyanova, 4, korpus 2, kv. 361, Moscow; Vladimir Nikolaevich Kostin, Savvinskaya naberezhnaya, 3, kv. 82, Moscow; Lev Nikolaevich Bobkov, Serpukhovsky val, 5, kv. 152, Moscow; Mikhail Ivanovich Zaitsev, Melerovsky proezd, 30, kv. 11, Moscow; Nikolai Andreevich Kaluzhsky, Vasilievsky Ostrov, Sredny prospekt, 6/13, kv. 123; Nikolai Stepanovich Shmorgunenko, Vasilievsky Ostrov, 1 Linia, 28, kv. 15, both of Leningrad; Abram Zinovievich Jurovsky, ploschad Vosstania, 1, kv. 276, Moscow; Viktor Mikhailovich Kozlov, Gavanskaya ulitsa, 10, kv. 29, Leningrad; Fritiof Meerovich Yakhilevich, Krasnoarmeiskaya ulitsa, 21, kv. 181, Moscow; Mikhail Yakovlevich Shpirt, Teply Stan, 1 mikroraion, korpus 11, kv. 84, Moscow, and Vladlen Iosifovich Panin, Leninsky prospekt, 21, kv. 2, Moscow, all of U.S.S.R.

Filed Jul. 2, 1976, Ser. No. 702,208
Int. Cl.² C01F 7/18
U.S. Cl. 423—131 **3 Claims**

1. A process for the production of alumina directly from solid fuels containing aluminum, silicon and iron oxides during the burning of said fuels, comprising mixing the solid fuel with limestone with the following molar ratios of limestone and said oxides: $CaO:SiO_2 = 2.0$, $CaO:Al_2O_3 = 1.3–1.8$, $CaO:Fe_2O_3 = 1.0$; burning the resultant mixture at about 1700°–1900° C to obtain a product containing calcium compounds $2CaO.SiO_2$, $12CaO.7Al_2O_3$, $CaO.Al_2O_3$, $CaO.Fe_2O_3$ in the form of a melt; cooling the resultant melt to 1300° C at a rate of about 6° C per minute, and from 1300° C to ambient temperature to convert dicalcium silicate contained in the product from the beta-modification to the gamma-modification and leaching the cooled product with a soda solution to extract alumina, leaving a sludge consisting essentially of dicalcium silicates.

4,113,834

PROCESS FOR CONVERTING WASTE DEAD-BURNED MAGNESIUM OXIDE-CONTAINING MATERIAL INTO USEFUL PRODUCT

Roger Show, 2206 Aldo Blvd., 62301, and Robert Webb, both of Quincy, Ill.

Filed Feb. 1, 1977, Ser. No. 764,551
Int. Cl.² C01F 5/02
U.S. Cl. 423—155 **8 Claims**

6. A method for treating particles containing dead-burned magnesium oxide having essentially no activity which comprises:

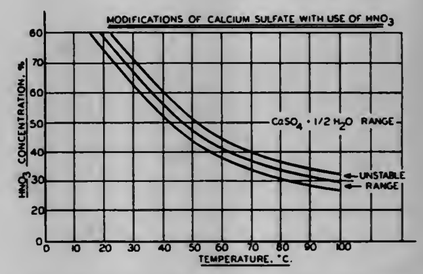
calcining the said particles at a temperature of from about 1000° to about 2000° F for a time of from about 15 to about 60 minutes, the resulting magnesium oxide having an activity which is greater than that of the uncalcined material.

4,113,835

PROCESS FOR PREPARING PURE SYNTHETIC CALCIUM SULFATE SEMIHYDRATE

Hans-Friedrich Kurandt, Lüneberg, and Dietrich Schliephake, Gladbeck, both of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Continuation of Ser. No. 374,614, Jun. 28, 1973, abandoned.
This application Nov. 10, 1976, Ser. No. 740,469
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1972, 2233189
Int. Cl.² C01F 11/46
U.S. Cl. 423—170 **5 Claims**



1. A process for the preparation of refined synthetic calcium sulfate semihydrate from impure phosphate containing wet gypsum which consists essentially of:

A. Dispersing said impure wet phosphate containing gypsum in a liquid phase containing nitric acid and stirring the resultant dispersion while maintaining the same at a temperature of 22°–100° C. while employing nitric acid in a concentration between 30 and 80 weight percent HNO_3;

B. One of said reaction conditions of temperature or nitric acid concentration being fixed in said ranges, the other being selected within the stability range of calcium sulfate semihydrate which is determined by the area located below the straight line defined by the equation:

$$100/c = 0.02853\ t + 0.7004$$

wherein c is the concentration of nitric acid in weight percent and t is the temperature in ° C, and bounded by the axis of the abscissa $100/c$ in a $(t/100/c)$ diagram with integration between the $100/c$ values corresponding to said concentrations ($100/30 = 3.33$ and $100/80 = 1.25$) and excluding the range of values for $t<22°$ and for $t<100°$ C;

C. If carrying out the process at a fixed temperature, adjusting the nitric acid concentration C_{pr} for the purification and recrystallization liquid according to the equations:

$$100/c = 0.02853\ t + 0.7004$$

$$C_{pr} = c + \Delta c \text{ weight percent } HNO_3,$$

and

$$5 \leqq \Delta c < 20 \text{ weight percent } HNO_3;$$

D. If starting from a liquid in which the nitric acic concentration C is fixed, adjusting the temperature of the acidulation mixture to a temperature t_{pr} according to the equations:

$$t = 35.05\frac{100}{c} - 24.55°\ C \qquad \text{(Equation A)}$$

$$t_{pr} = t + \Delta t°\ C \qquad \text{(Eq. B)}$$

and

$$5 \leqq \Delta t < 20°\ C$$

thereby dissolving most of the phosphate impurities in said impure gypsum;

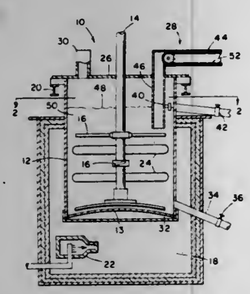
E. Recrystallizing the gypsum as calcium sulfate semihydrate, separating the recrystallized product from the liquid phase, and washing the recrystallized separated product in counter-flow with water and recovering calcium sulfate semihydrate.

4,113,836

CONTINUOUS GYPSUM CALCINATION PROCESS AND KETTLE THEREFOR

Francis J. O'Connor, Rockville Center, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Oct. 29, 1976, Ser. No. 737,152
Int. Cl.[2] C04B *11/02*
U.S. Cl. 423—171 **9 Claims**



1. Apparatus for continuously calcining finely ground gypsum comprising a gypsum calcining kettle, means for heating material in said kettle, inlet means for continuously feeding said gypsum to said kettle, and an overflow discharge opening directly from the interior through the sidewall of said kettle in the upper half thereof, said inlet means for continuously feeding said gypsum having an enclosed chute extending downwardly into said kettle and having a lowermost extent nearer the overflow discharge opening than the bottom of said kettle, with the chute having a cross-sectional area of about 1% of the total cross-sectional area of said kettle at the surface of said mass of gypsum and with the chute opening being completely below the bottom of said overflow discharge opening.

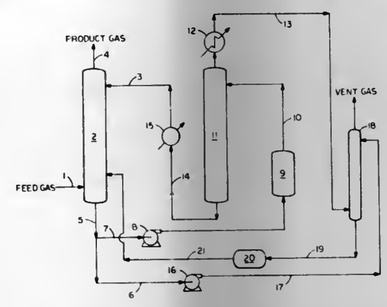
6. The process of calcining gypsum which comprises heating a mass of finely ground gypsum in a kettle to a temperature sufficient to convert said gypsum to calcium sulfate hemihydrate, maintaining a substantially continuous supply of gypsum being fed to said kettle, allowing a substantially continuous flow of calcined gypsum at the top of said mass to discharge, through an overflow outlet, from said kettle, whereby a substantially constant depth of calcining gypsum is maintained within said kettle, said supply of gypsum to said kettle being fed through an enclosed chute which extends through the kettle top and down into a zone within said mass of gypsum nearer to the top than the bottom thereof but opening completely below the top surface of said gypsum mass, said chute having a cross-sectional area of about 1% of the total cross-sectional area of said kettle at the surface of said mass of gypsum.

4,113,837

PROCESS FOR SEPARATING POLYMERIC CONTAMINANTS FROM AQUEOUS ABSORBENT SOLUTIONS USED TO TREAT ORGANIC GAS-CONTAINING GAS STREAMS

John Edward Kendall, Charleston, W. Va., and Kenneth Francis Butwell, Newburgh, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,542
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—226 **26 Claims**



2. In a process for removing acid gas from hydrocarbon-containing feed gas containing it and a polymerizable component wherein (a) said feed gas is contacted in an absorbing zone with an aqueous absorbent solution containing as an absorbent an alkanolamine, an alkali metal carbonate, an alkali metal aminoalkanoate, ammonium carbonate or ammonium hydroxide to remove acid gas from said feed gas and form a mainstream of rich aqueous absorbent solution enriched in acid gas removed from the feed gas, (b) said rich aqueous absorbent solution is moved to a stripping zone where the acid gas contained therein is removed to form a lean aqueous absorbent solution depleted in acid gas content, and (c) said lean aqueous absorbent solution is recycled and re-contacted with succeeding feed gas containing acid gas and said polymerizable component, the improvement of removing polymer which accumulates in said aqueous absorbent solution due to the presence of said polymerizable component, comprising, (1) adjusting the pH of said rich aqueous absorbent solution into the range of about 6.0 to about 8.5 and (2) removing said polymer from said rich aqueous absorbent solution having a pH of about 6.0 to about 8.5.

4,113,838

METHOD OF TREATING COMBUSTION EXHAUST GAS CONTAINING NITROGEN OXIDES

Sakae Koike; Shoichi Matsunami; Yorinobu Goto, and Yoshio Tanabe, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Dec. 30, 1976, Ser. No. 755,936
Int. Cl.[2] C01B *21/00*; B01D *53/34*
U.S. Cl. 423—235 **4 Claims**

1. A method of removing nitrogen oxides from a combustion exhaust gas containing nitrogen oxides which comprises:

a first step of reducing nitrogen oxides by treating a mixture of the exhaust gas, oxygen and ammonia in the absence of hydrogen or in the presence of hydrogen, wherein the mole ration of hydrogen to ammonia is less than 10, at a temperature from 700° C. to 1300° C. and a second step of adding hydrogen to said treated exhaust gas at a point wherein the temperature of said exhaust gas is 550° C. to 680° C. in an amount sufficient to yield a mole ratio of hydrogen to ammonia in the exhaust gas of from 10 to 50 and maintaining a residence time of from 0.2 to 10 seconds in said second step.

4,113,839

NITROGEN OXIDES REMOVAL METHOD

Masao Maki, Nabari; Yasunori Kaneko, Ando; Kunihiro Tsuruda, Yamatokoriyama, and Ikuo Kobayashi, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 27, 1977, Ser. No. 846,495
Claims priority, application Japan, Oct. 29, 1976, 51-130753
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—239 **10 Claims**

1. A method of removing nitrogen oxides from a gas which comprises contacting a gas containing nitrogen oxides therein with a formed substance at temperatures between 10° C. and 100° C., said formed substance comprising an alkali material in an amount sufficient to react with and remove the nitrogen oxides from the gas, an active carbon in the range of 2.5 to 30% by weight, a cement material in amounts sufficient to cement the various components together and a binding amount of a high molecular weight binder material selected from the group consisting of carboxymethyl cellulose, methyl cellulose, sodium alignate, starch, polyvinyl alcohol, polyester acrylate, molasses, and gelatin.

4,113,840

PROCESS FOR THE REMOVAL OF SULFUR DIOXIDE FROM EXHAUST FLUE GASES

John E. Hanway, Jr., Naperville, Ill., and Richard G. Mumford, San Francisco, Calif., assignors to Beamer/Wilkinson & Associates, Oakland, Calif.

Filed Sep. 19, 1974, Ser. No. 507,290
Int. Cl.[2] C01B *13/00, 17/72*
U.S. Cl. 423—242 **16 Claims**

1. A method for removing sulfur dioxide from exhaust gas containing the same, comprising the steps of

(a) conveying the exhaust gas and an aqueous slurry of particulate adsorbent for sulfur dioxide selected from the group consisting of natural or artificial zeolite activated carbon and coal char in the same general direction through a slurry contacting zone comprising a venturi contact zone of substantially reduced diameter in comparison to the exhaust gas flow path and accelerating the velocity of the entering mixture to a sufficient extent to break up the liquid portion of the slurry into fine droplets to promote intimate contact between the adsorbent and exhaust gas to remove sulfur dioxide from the exhaust gas by adsorption onto the adsorbent,

(b) reforming a slurry from the adsorbent and liquid droplets from step (a) and conveying the same to an oxidation zone, contacting the sulfur dioxide adsorbed adsorbent therein with oxygen for sufficient time to convert the adsorbed sulfur dioxide to sulfur trioxide, and desorbing the sulfur trioxide from the adsorbent in the oxidation zone by reaction with the slurry water to form a sulfuric acid solution, and

(c) separating at least some of the formed sulfuric acid solution from the slurry of step (b) and recycling desorbed adsorbent slurry to said contacting zone.

4,113,841

STABILIZED RED PHOSPHORUS AND PROCESS FOR MAKING IT

Horst Staendeke; Franz-Josef Dany; Joachim Kandler; Theodor Auel, and Werner Kloss, all of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 13, 1977, Ser. No. 815,160
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632296
Int. Cl.[2] C01B *25/00*; C01C *25/00*; C01D *25/00*; C01F *25/00*
U.S. Cl. 423—265 **16 Claims**

1. Pulverulent red phosphorus comprising a homogeneous blend of red phosphorus particles with a size of at most about 2 mm and the aluminum, magnesium, calcium or zinc salt of an alkyl-, cycloalkyl-, aryl- or aralkylphosphonic acid having 1 to 20 carbon atoms, the salt being present in the homogeneous blend in a proportion of about 0.5 to 5 weight %.

4,113,842

PREPARATION OF DICALCIUM PHOSPHATE FROM PHOSPHATE ROCK BY THE USE OF SULFUR DIOXIDE, WATER, AND CARBONYL COMPOUNDS

John F. McCullough; John F. Phillips, Jr., and Leslie R. Tate, all of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 730,210, Oct. 6, 1976, now Defensive Publication No. T962,001. This application Mar. 18, 1977, Ser. No. 779,038
Int. Cl.[2] C01B *15/16, 25/26*; C01F *1/00*
U.S. Cl. 423—308 **14 Claims**

1. A process for preparing dicalcium phosphate from beneficiated or unbeneficiated phosphate ore or mixtures thereof by use of sulfur dioxide, water, and an organic carbonyl compound, which comprises the steps of:

1. mixing said phosphate ore with a mixture of sulfur dioxide, water, and organic carbonyl compound while maintaining the temperature of the resulting reaction slurry below 50° C. for a period of time from about 0.5 to about 10 hours;
2. separating the solids from the liquid in said reaction slurry from step 1 supra;
3. washing said solids from step 2 supra with a wash mixture comprising sulfur dioxide, water, and organic carbonyl compound, said organic carbonyl compound selected from the group consisting of aldehydes, methyl alkyl ketones, cycloketones, and mixtures thereof to recover phosphate values;
4. recycling phosphate containing wash effluent from step 3 supra to step 1 supra;
5. heating washed solids from step 3 supra to recover organic carbonyl compound and sulfur dioxide;
6. recycling recovered organic carbonyl compound and sulfur dioxide from step 5 supra to step 1, supra;
7. distilling sulfur dioxide from the liquid separated from said reaction slurry in step 2 supra to precipitate dicalcium phosphate;
8. separating said dicalcium phosphate from liquid as product; and
9. recycling the liquid from step 8 supra to step 1 supra.

4,113,843

PROCESS FOR THE PRODUCTION OF ZEOLITES IN THE FORM OF BINDERLESS SPHERICAL GRANULES

Yakov Volfovich Mirsky, ulitsa Krasnykh frontovikov, 10, kv. 12; Akivy Zinovievich Dorogochinsky, ulitsa Krasnoznamennaya, 8; Nelli Fillipovna Meged, ulitsa Lenina, 42a, kv. 32, and Antonina Pavlovna Kosolapova, ulitsa Lenina, 27, kv. 12, all of Grozny, U.S.S.R.

Continuation of Ser. No. 485,372, Jul. 3, 1974, abandoned. This application Aug. 2, 1976, Ser. No. 710,651
Int. Cl.[2] C01B *33/28*
U.S. Cl. 423—329 **23 Claims**

1. A process for the production of binderless spherical granules of from 1 - 6 mm diameter and consisting essentially of type A or faujasite zeolites comprising the following steps:

a. mixing an aqueous solution of alkali metal silicate with a concentration of 100–200 g/l based on SiO_2 and an aqueous solution of alkali metal aluminate with a concentration of 50–100 g/l based on Al_2O_3 to form a sol consisting essentially of water, said silicate and said aluminate, said solutions being used in a ratio such that the molar ratio SiO_2:Al_2O_3 in the sol is from 4 to 10:1;
b. introducing the resulting combined sol in separate flows into an organic liquid immiscible with said sol, whereby said sol is broken into spherical drops which spontaneously change into spherical granules of gel in the medium of said organic liquid;

c. transferring said spherical granules of gel from said organic liquid into an aqueous solution of an ammonium salt in a concentration of 10–100 g/l;
d. successively treating said granules of gel with an aqueous solution of ammonium salt of a concentration of 10–100 g/l and an aqueous solution of aluminium salt of a concentration of 5–30 g/l until said gel is saturated with both ammonium and aluminium cations from said salts, and washing with water;
e. heat treating said washed granules of gel at from 80 to 800° C. to obtain granules of dehydrated amorphous aluminosilicate;
f. crystallizing the granules of dehydrated amorphous aluminosilicate in an alkaline solution of sodium aluminate with a concentration of 10–150 g/l based on Al_2O_3 at 50°–100° C. to obtain spherical granules of type A or faujasite zeolite;
g. washing said spherical granules of said zeolite with water until the pH of the waste washing water is 9–11; and
h. drying the washed granules of zeolite, thus obtaining dried spherical binderless granules of from 1 – 6 mm diameter and consisting essentially of type A or faujasite zeolite.

4,113,844

METHOD OF PRODUCING HIGH-PURITY TRANSPARENT VITREOUS SILICA BODY

Tadashi Tokimoto, Fujisawa; Kazumasa Kawaguchi, Hiratsuka; Junji Izawa, Hiratsuka, and Yoshinobu Hiraishi, Hiratsuka, Japan, assignors to Komatsu Electronci Metals, Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1976, Ser. No. 733,400
Claims priority, application Japan, Nov. 20, 1975, 50-138659
Int. Cl.² C01B *33/12*
U.S. Cl. 423—336 **1 Claim**

1. A method of producing high-purity transparent vitreous silica body by supplying to a burner, monosilane, argon, oxygen and hydrogen gases to form a flame and to effect hydrolysis of said silane within the flame to deposit a high-purity transparent vitreous silica body, said flame comprising a reduction area containing excess hydrogen, said method comprising continuously feeding said gases to said burner to deposit silica onto a growing head of said body while maintaining said head within said reduction area and continually pulling down said body, the width of the reduction area containing excess hydrogen being more than approximately 1.5 times the diameter of said growing head and the length of said reduction area being more than 2.5 times said diameter.

4,113,845

DISPROPORTIONATION OF CHLOROSILANE

Carl J. Litteral, Newport, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 152,587, Jun. 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 9,987, Dec. 17, 1970, abandoned. This application Sep. 20, 1976, Ser. No. 724,919
Int. Cl.² C01B *33/08, 33/04*
U.S. Cl. 423—342 **3 Claims**

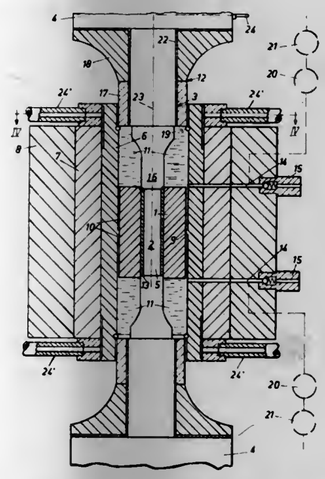
1. The cyclic continuous process for the disporportionation of one or more of trichlorosilane, dichlorosilane and monochlorosilane which comprises continually feeding such chlorosilane to a water-dried fixed bed of a divinylbenzene-styrene copolymer based macroreticulated anion exchange resin containing tertiary amino or quaternary ammonium groups thereof in the chloride ionic form, said groups being bonded to the resin through carbon, which resin is insoluble in silane, monochlorosilane, dichlorosilane, trichlorosilane and silicon tetrachloride, and is maintained at a temperature of between 0.° C. to 350° C. for a period of time whereby there is formed in the bed a silane containing less chlorine than is contained in the chlorosilane fed to the bed and there is also formed a silane containing more chlorine than the chlorosilane fed to the bed, at least a portion of said silanes formed by disproportionation in the bed are removed therefrom and at least a portion thereof are separated each from the other and each is recovered and the chlorosilane feed which is not disproportionated is recycled to the fixed bed.

4,113,846

METHOD OF PRESSURE TREATMENTS OF MATERIALS

Per Arne Sigurdsson, Askloster, Sweden, assignor to Sigurdssons Mek. Verkstad, Askloster, Sweden

Continuation of Ser. No. 504,969, Sep. 11, 1974, abandoned. This application Mar. 17, 1977, Ser. No. 778,565
Int. Cl.² C01B *31/06*
U.S. Cl. 423—446 **1 Claim**



1. The method of treating material in high-pressure chambers by increasing the pressure exerted on said material to a desired pressure level at which the volume of the material is reduced as a result of a reactional or phase conversion process and thereafter maintaining the pressure during the desired pressure phase time, said method comprising the steps of placing the material to be treated in a high-pressure container, surrounding entirely the said high pressure container by a pressure compensating medium, said medium being a liquid and of such a character to maintain its liquid characteristics at the maximum pressure experienced during said treatment, applying a force on the material and on the pressure compensating medium via a stepped piston with its end portion arranged to enter into one end of said pressure container and thereby defining said high-pressure chamber and a second portion of larger diameter than said end portion arranged to fit a cylindrical chamber containing the pressure compensating medium, whereby an increasing force causes an increase of the pressure on the material in the high-pressure chamber and on the medium in the cylindrical chamber, using valve means to regulate the volume of the pressure compensating medium during said increasing of the force as well as during the pressure phase time, applying a constant force on the piston during the pressure phase time and thereby maintaining the constant pressure on the material in the high-pressure chamber also during the phase conversion process by regulation of the volume of said pressure compensating medium, and using the pressure compensating medium surrounding the said high-pressure container as a pressure supporting medium to counteract the pressure created within the high-pressure chamber.

4,113,847

PROCESS FOR PRODUCING CARBON FIBERS

Keitaro Fukushima; Takamaro Kusunose, and Yoshinori Nosaka, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Sep. 1, 1976, Ser. No. 719,504
Claims priority, application Japan, Sep. 1, 1975, 50-106134
Int. Cl.² C01B *31/07*
U.S. Cl. 423—447.4 **15 Claims**

1. A process for producing carbon fibers, which comprises spinning a copolymer containing at least 85 mol % acrylonitrile and a carboxyl group-containing unsaturated monomer into filaments, washing the filaments with water, stretching the washed filaments in water above 80° C. maintained at a pH below 3.5, drying the stretched filaments thermally stabilizing the dried filaments, and carbonizing, or carbonizing and graphitizing, the stabilized filaments.

4,113,848

METHOD OF PRODUCING SOLUTIONS CONTAINING CUPROUS IONS

Alan James Parker; Winfield Earle Waghorne, both of Canberra; Dion Ewing Giles; John Howard Sharp, both of Sydney; Robert Alexander, and David Michael Muir, both of Canberra, all of Australia, assignors to Anumin Pty. Limited, Canberra, Australia

Division of Ser. No. 533,660, Dec. 17, 1974, Pat. No. 3,966,890, which is a division of Ser. No. 237,061, Mar. 22, 1972, Pat. No. 3,865,744. This application May 14, 1976, Ser. No. 686,496
Claims priority, application Australia, Apr. 2, 1971, PA4500; Apr. 2, 1971, PA4501; Apr. 2, 1971, PA4502; Apr. 28, 1971, PA4735; Jun. 4, 1971, PA5110; Sep. 14, 1971, PA6281; Sep. 24, 1971, PA6411; Oct. 20, 1971, PA6718; Oct. 26, 1971, PA6798; Dec. 14, 1971, PA7383; Jan. 26, 1972, PA7776
The portion of the term of this patent subsequent to Jun. 29, 1993, has been disclaimed.
Int. Cl.² C01G *3/10*; C22B *15/00, 15/08*
U.S. Cl. 423—512 A **4 Claims**

1. A method of reducing an aqueous cupric sulfate solution or an aqueous cupric ammonium complex salt solution to a solution containing cuprous sulfite, cuprous bisulfite or mixtures thereof comprising mixing said aqueous cupric sulfate solution or said aqueous cupric ammonium complex salt solution with between 8 and 30% by volume acetonitrile or 2-hydroxycyanoethane, adding an alkali metal sulfite or bisulfite and maintaining the pH of the cupric sulfate solution or cupric ammonium complex salt solution between 2 and 6 until a solution containing cuprous sulfite, cuprous bisulfite or mixtures thereof is formed.

4,113,849

RECOVERING SULFUR FROM GAS STREAMS CONTAINING HYDROGEN SULFIDE

Gilbert Richard Atwood, Briarcliff Manor, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 25, 1977, Ser. No. 781,206
Int. Cl.² C01B *17/00*
U.S. Cl. 423—574 R **2 Claims**

1. In a process for the removal of hydrogen sulfide and the recovery of sulfur from a gas stream containing hydrogen sulfide comprising the steps of:
(a) reacting a portion of the hydrogen sulfide of said gas stream with sulfur dioxide in a Claus reactor to produce sulfur, water and a second gas stream containing said sulfur, water and unreacted H_2S and SO_2;
(b) condensing sulfur from said second gas stream;
(c) thereafter oxidizing the unreacted hydrogen sulfide in said second gas stream to sulfur dioxide and water thereby forming a tail gas stream containing said sulfur dioxide;
(d) contacting said tail gas stream with a mainstream of an aqueous absorbent solution to remove sulfur dioxide from said tail gas stream and form a rich aqueous absorbent solution enriched in sulfur dioxide removed from said tail gas stream;
(e) moving a mainstream of said rich aqueous absorbent solution to a stripping zone where sulfur dioxide is removed to form a lean aqueous absorbent solution depleted in sulfur dioxide content;
(f) recirculating the sulfur dioxide removed in step (e) to step (a) for reaction with hydrogen sulfide; and
(g) recycling a mainstream of said lean aqueous absorbent solution from the stripping zone of step (e) to step (d) for re-contact with said tail gas stream; the improvement comprising
(1) carrying out the reaction of step (a) in only one Claus reactor;
(2) using an aqueous alkanolamine solution as the absorbent solution in step (d);
(3) performing the stripping of step (e) so that the residence time of the liquid alkanolamine solution in said stripping zone is from about 3 to 30 minutes and said stripping zone is operated at a reduced pressure of about 50 to about 350 mm. Hg. and a temperature of about 80° to 100° C. to thereby minimize the formation of sulfate, thiosulfate and thionate anions;
(4) separating from said mainstream of lean aqueous alkanolamine a portion of said aqueous alkanolamine solution containing said sulfate, thiosulfate and thionate anions;
(5) contacting said separated portion with an anion exchange resin having anions displaceable by said sulfate, thiosulfate and thionate anions to remove same from said portion whereby the anions of the resin are replaced by said sulfate, thiosulfate and thionate anions;
(6) returning said portion after contact with said anion exchange resin to one of said mainstreams; and
(7) regenerating said anion exchange resin by contacting it with an aqueous alkaline inorganic hydroxide to replace the sulfate, thiosulfate and thionate anions on said resin with hydroxyl anions thereby forming a waste stream containing said sulfate, thiosulfate and thionate anions.

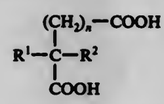
4,113,850

COMPOSITION FOR THE DIAGNOSTIC VISUALIZATION OF NEOPLASTIC TISSUES

Ivan Benes, Greifensee, Switzerland, assignor to Solco Basel AG, Basel, Switzerland

Filed Apr. 29, 1975, Ser. No. 572,701
Claims priority, application Switzerland, Apr. 30, 1974, 5885/74
Int. Cl.² A61K *29/00, 43/00*
U.S. Cl. 424—1 **8 Claims**

1. A process for producing a composition for the diagnostic visualization of neoplastic tissues, namely tumors and metastases, by means of tissue scintigraphy, consisting essentially of an injectable complex of ^{99m}Technetium with a member selected from the group consisting of a dicarboxylic or tricarboxylic acid of the general formula:



in which n is 1 or 2, R^1 and R^2 taken together are an oxo group or the >CH—COOH group or R^1 is a hydrogen atom or a hydroxyl or amino group and R^2 is a hydrogen atom or one of the following groups:

—CH_2—COOH; —CHOH—COOH; —CO—COOH

and a water-soluble salt of the same, in a sterile aqueous solution having a physiologically harmless pH value, said process consisting essentially of the steps of introducing an aqueous solution of a member selected from the group consisting of a dicarboxylic acid or tricarboxylic acid of the above formula

and a water-soluble salt of the same into ampoules, rubber-capped serum vials, carpoules or disposable syringes, removing the solvent subsequently from the solution, reacting the intermediate product obtained which is in solid, stable form immediately before its use for diagnostic purposes with an aqueous solution containing the desired radioactivity dose of a ^{99m}Technetium salt, oxygen being excluded, said injectable complex being produced such that it is in a sterile state.

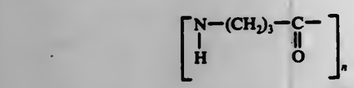
4,113,851

MICROBIOCIDAL COMPOSITION AND ARTICLES PREPARED THEREFROM

Harry H. Leveen, 800 Poly Pl., Brooklyn, N.Y. 11209, and Patrick J. Joyce, 103 Hubbard Ave., Stamford, Conn. 06905

Filed Apr. 15, 1976, Ser. No. 677,135
Int. Cl.[2] A61F *13/00*; A61K *33/18*
U.S. Cl. 424—28 **5 Claims**

1. A composition having prolonged microbiocidal activity containing free iodine and comprising a complex of polymeric polypyrrolidone of the structure:



having a molecular weight of from 1,000 to 500,000 and wherein *n* is large enough to give a polymer having an inherent viscosity of at least 0.2 deciliters per gram with a microbiocidal amount of elemental iodine and 5 to 50 percent by weight of a high molecular weight acidic activity extender having a molecular weight in excess of 10,000 up to 300,000 gram molecular weight units.

4,113,852

ANTIPERSPIRANT COMPOSITION

Divaker B. Kenkare, South Plainfield, and Durland K. Shumway, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 12, 1975, Ser. No. 557,561
The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.
Int. Cl.[2] A61K *7/38*
U.S. Cl. 424—46 **7 Claims**

1. An antiperspirant composition prepared by co-spray drying an aqueous solution of a mixture of about 78% to about 92% by weight aluminum chlorhydrate, about 6% to about 12% aluminum chloride and about 1% to about 10% urea.

4,113,853

HAPTOGLOBIN INSOLUBILIZED BY BEING FIXED IN FIBRIN

Satoshi Funakoshi, Katano, and Takao Oomura, Toyonaka, both of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jul. 6, 1977, Ser. No. 813,419
Claims priority, application Japan, Aug. 27, 1976, 51-102763
Int. Cl.[2] A61K *31/74, 35/14, 37/04*
U.S. Cl. 424—78 **28 Claims**

1. An insolubilized haptoglobin comprising fibrin and active haptoglobin insolubilized by being fixed in said fibrin, said fixing being effected by interlinking through an interposed bifunctional compound.

10. A method for preparing insolubilized haptoglobin, which comprises allowing fibrinogen, haptoglobin, thrombin, and a bifunctional compound to react with one another.

4,113,854

PROPHYLACTIC TREATMENT OF MASTITIS

Jeffrey F. Andrews, Egan; Therese A. Mullin, Minneapolis, and Raymond Senkus, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 10, 1977, Ser. No. 758,342
Int. Cl.[2] A61K *31/78, 31/74*; C08L *5/00*
U.S. Cl. 424—81 **14 Claims**

1. A method for the prophylactic treatment of mastitis comprising dipping the teats of the animal into a composition comprising a polymer latex and a water soluble polymer thickening agent in an aqueous medium, said composition having a thixotropic value of 15 to 1200 dynes/cm^2 and an upper viscosity limit of 10 poise at a shear rate of 250 sec^{-1}; and said composition forming a continuous film on the teat which is durable enough to last from milking to milking and sufficiently water sensitive to be removed by wiping with a water-moistened cloth.

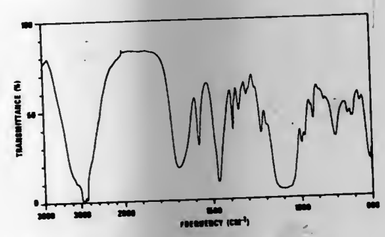
8. A nonirritating composition for the prophylactic treatment of mastitis comprising a polymer latex and a water soluble polymer thickening agent in an aqueous medium, said composition having a thixotropic value of 15 to 1200 dynes/cm^2 and an upper viscosity limit of 10 poise at a shear rate of 250 sec^{-1}; and said composition forming a continuous film on the teat which is durable enough to last from milking to milking and sufficiently water sensitive to be removed by wiping with a water-moistened cloth.

4,113,855

COMPOSITION OF MATTER AND PROCESS

Clarence DeBoer, Kalamazoo; Lester A. Dolak, Plainwell, and Durey H. Peterson, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 19, 1977, Ser. No. 834,285
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—117 **8 Claims**



1. An antibacterial composition comprising, in unit dosage form, from about 25 to about 500 mg of antibiotic 354 which in its essentially pure form is characterized as the sulfate salt having the following characteristics:

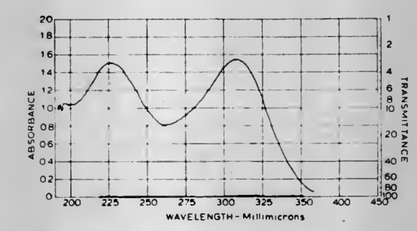
(a) molecular weight of 172 (field desorption mass. spec.);
(b) has the following elemental analysis: C, 37.08; H, 4.79; N, 12.38; Cl, 15.52; S, 7.48; O, 22.75;
(c) is soluble in water and poorly soluble in methanol, acetone, dimethylsulfoxide and dimethylformamide;
(d) has a characteristic infrared absorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings;
(e) has a characteristic ultraviolet absorption spectrum as shown in FIG. 2 of the drawings; and,
(f) has a characteristic NMR spectrum as shown in FIG. 3 of the drawings, or its pharmacologically acceptable salts as an essentially active ingredient in combination with a pharmaceutical carrier.

4,113,856

ANTIBIOTIC MM 13902

Martin Cole, Dorking; John Dick Hood, Cranleigh, and Dennis Butterworth, Redhill, all of England, assignors to Beecham Group Limited, Great Britain

Continuation-in-part of Ser. No. 559,803, Mar. 19, 1975, abandoned. This application Aug. 24, 1976, Ser. No. 717,334
Claims priority, application United Kingdom, Mar. 28, 1974, 13856/74
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—117 **10 Claims**



1. A pharmaceutically acceptable di-basic salt of MM 13902 which is at least 50% pure wherein MM 13902 is a solid carboxylic acid of the molecular formula $C_{13}H_{16}O_8N_2S_2$ which in the form of a substantially pure sodium salt has the following characteristics:

(a) in aqueous solution, it has a characteristic ultra violet spectrum with absorption maxima at about 305 nm and at about 225 nm substantially as shown in FIG. 1;
(b) when present at 0.4% w/w in a freshly prepared KBr disc, it has a characteristic infra-red spectrum which has absorption maxima at inter alia about 3450, 2950, 1750, 1620, 1510, 1400 and 1260 cm^{-1};
(c) it has a characteristic N.M.R. spectrum when taken in D_2O which spectrum possesses inter alia (i) a pair of low field doublets centered at approximately 2.85τ and 4.00τ with coupling constants of approximately 14 Hz; (ii) a doublet centered at approximately 8.55τ and (iii) a sharp singlet at approximately 8.00τ;
(d) it possesses antibacterial activity against various species including inter alia, strains of *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella aerogenes, Proteus mirabilis, Salmonella typhi* and *Pseudomonas aeruginosa;* and
(e) when mixed with ampicillin it synergizes its activity against organisms including strains of *Escherichia coli, Klebsiella aerogenes, Proteus mirabilis, Proteus morganii* and *Staphylococcus aureus Russell.*

4,113,857

PROCESS FOR THE PREPARATION OF IODOPHOR COMPOUNDS AND METHODS FOR STABILIZING IODOPHOR PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Bola Vithal Shetty, Stamford, Conn., assignor to The Purdue Frederick Company, Norwalk, Conn.

Filed May 16, 1977, Ser. No. 797,094
Int. Cl.[2] A61K *33/18*
U.S. Cl. 424—150 **14 Claims**

1. A method of producing an organic iodophor germicidal composition which is substantially free of iodide contamination and therefore non corrosive, which comprises reacting an organic iodophor-forming compound with an iodine adding agent selected from the group consisting of elemental iodine, metallic iodide salts capable of releasing iodide ion, and hydriodic acid in the presence of 0.005–1% by weight of an oxidizing stabilizer selected from the group consisting of iodate ions, bromate ions, chlorite ions, chromate ions, hypochlorite ions, nitrate ions, permanganate ions, persulfate ions, and hydrogen peroxide, whereby iodine adds to said organic iodophor-forming compound to form the corresponding organic iodophor which is free of iodide ions and therefore non-corrosive.

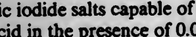
4,113,858

NOVEL COMPOUNDS, COMPOSITIONS AND METHODS OF THEIR USE

George A. Hashim, Irvington, N.Y., assignor to St. Luke's Hospital, New York, N.Y.

Continuation-in-part of Ser. No. 542,175, Jan. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 315,140, Dec. 12, 1972, Pat. No. 3,864,481. This application Jan. 12, 1976, Ser. No. 648,379
Int. Cl.[2] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 **15 Claims**

1. The method of treating a mammal for the prevention, suppression and diagnosis of multiple sclerosis, which comprises; administering parenterally to said mammal from about 0.0001 to about 25 mg. per kilogram of body weight of a synthetic compound of the formula:



wherein *x* is an integer of at least 0 and A and B each represent a divalent moiety of the formula:



wherein R_1 and R_5 are each selected from the residue of an amino acid and the residue of a polypeptide; R_2 is selected from the residue of tryptophan and tyrosine; R_3 represents the residue of an amino acid; R_4 is selected from the residue of lysine, arginine and histidine; *a* is an integer of from 0 to 4, inclusive; *b* and *c* are each integers of at least 0; *m* is an integer of from 0 to 1, inclusive; and *n* is an integer of at least 1; provided that when *x* is 0 then at least one of R_1 and R_5 is the residue of a polypeptide and when R_1 is the residue of a polypeptide *b* is 1 and when R_5 is the residue of a polypeptide, *c* is 1.

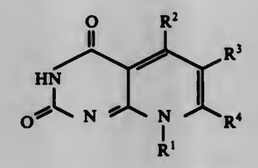
4,113,859

CERTAIN PYRIDO-PYRIMIDINES FOR TREATING MAMMALIAN AND AVIAN INFECTIONS

Hamish Christopher Swan Wood, Glasgow, and Thomas Paterson, Larkhall, both of Scotland, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 296,948, Oct. 12, 1972, abandoned. This application Feb. 23, 1973, Ser. No. 335,102
Int. Cl.[2] A61K *31/70*
U.S. Cl. 424—180 **3 Claims**

1. A method of treating an infection in a mammalian or avian host caused by E. coli which utilizes de novo synthesis of riboflavin which comprises the step of administering to a mammalian or avian host having an infection caused by *E. coli* which utilizes de novo synthesis of riboflavin a therapeutically effective treatment dose for said infection of a compound of formula B



(B)

where R^1 is alkyl or hydroxyalkyl having 1 to 6 carbon atoms, and wherein R^2, R^3 and R^4 are the same or different and each is hydrogen or alkyl of 1 to 4 carbon atoms or a pharmaceutically acceptable salt thereof.

4,113,860

O-ALKYL-O-[4-ALKYLPYRIMIDIN(2)yl]-(THIONO)-(THIOL) PHOSPHORIC (PHOSPHONIC) ACID ESTERS AND INSECTICIDAL, ACARICIDAL AND NEMATOCIDAL COMPOSITIONS CONTAINING THEM

Fritz Maurer; Hans-Jochem Riebel, both of Wuppertal; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath-Steinenbrueck; Ingeborg Hammann, Cologne, and Wilhelm Steudel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

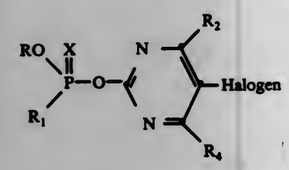
Filed Dec. 29, 1975, Ser. No. 645,128

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1975, 2501769

Int. Cl.[2] A01N *9/36;* C07F *9/65*

U.S. Cl. 424—200 10 Claims

1. An O-alkyl-O-[4-alkylpyrimdin(2)yl]-(thiono)-(thiol)phosphoric (phosphonic) acid ester of the formula



(I)

in which

R is alkyl with 1 to 9 carbon atoms,

R_1 is alkyl, alkoxy or alkylmercapto each with 1 to 6 carbon atoms, or phenyl

R_2 is alkyl with 1 to 6 carbon atoms,

R_4 is halogen, thiocyanato or alkoxy, alkylmercapto or alkoxycarbonyl with 1 to 4 carbon atoms in each alkyl radical, and

X is oxygen or sulfur.

8. An insecticidal, acaricidal or nematocidal composition containing as active ingredient an isecticidally, acaricidally or nematocidally effective amount of a compound according to claim 1 in admixture with a diluent.

9. A method of combatting insects, acarids or nematodes which comprises applying to the insects, acarids, or nematodes, or to a habitat thereof, an insecticidally, acaricidally or nematocidally effective amount of a compound according to claim 1.

4,113,861

PHOSPHONATE PHARMACEUTICAL COMPOSITION

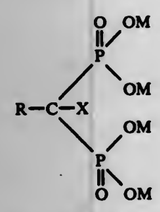
Herbert A. Fleisch, and Rolf Felix, both of Bern, Switzerland, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 2, 1977, Ser. No. 792,946

Int. Cl.[2] A61K *31/66*

U.S. Cl. 424—204 9 Claims

1. A process for treating *diabetes mellitus* in humans and lower animals, comprising administering to a human or lower animal in need of such treatment a safe and effective amount of a pharmaceutically-acceptable geminal diphosphonate of the formula



where X is H, OH or NH_2; M is H or a pharmaceutically-acceptable cation or alkyl or aryl moiety; and wherein R is a C_2 to about C_{14} hydrocarbyl group.

4,113,862

CARBOXY PHOSPHONATE PHARMACEUTICAL COMPOSITION

Herbert A. Fleisch, and Rolf Felix, both of Bern, Switzerland, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 2, 1977, Ser. No. 792,947

Int. Cl.[2] A61K *31/66*

U.S. Cl. 424—204 5 Claims

1. A process for treating *diabetes mellitus* in humans and lower animals, comprising administering to a human or lower animal in need of such treatment a safe and effective amount of a pharmaceutically acceptable carboxy phosphonate compound which is a member selected from the group consisting of carboxy vicinal phosphonates, dicarboxy monophosphonates and carboxy geminal phosphonates.

4,113,863

PROSTENOIC ACID DERIVATIVES

Manfred Baumgarth; Hans-Eckart Radunz; Dieter Orth; Reinhard Lissner; Hans-Joachim Enenkel, all of Darmstadt, Fed. Rep. of Germany, and Filippus Johannes Zeelen, Heesch, Netherlands, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

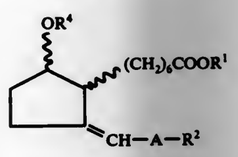
Continuation-in-part of Ser. No. 634,349, Nov. 24, 1975. This application Nov. 5, 1976, Ser. No. 739,142

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1974, 2455976

Int. Cl.[2] C07C *177/00;* A61K *31/19, 31/215*

U.S. Cl. 424—205 8 Claims

1. A prostenoic acid compound of the formula



wherein

R^1 is H or alkyl of 1–4 carbon atoms;

R^2 is alkyl of 5–9 carbon atoms;

A is CH_2D or $CH{=}C(OR^5)$;

D is carbonyl or dialkoxypolymethylene of up to 7 carbon atoms;

R^5 is alkanoyl, alkenoyl, alkynoyl, alkylsulfonyl, alkanoyl substituted by fluorine, chlorine or bromine, each of up to 4 carbon atoms, sulfo or the acyl radical of phosphoric acid;

R^4 is H or R^5; and metal or ammonium salts thereof.

4,113,864

PHOSPHOROTHIOLATE PESTICIDAL COMPOSITION

Hiroshi Tsuchiya, Ashiya; Kunio Mukai, Nishinomiya; Akio Kimura, Takarazuka; Hiroshi Taya, Minoo; Keimei Fujimoto, Kyoto; Toshiaki Ozaki; Sigeo Yamamoto, both of Toyonaka; Taizo Ogawa; Tadashi Ooishi, both of Minoo, and Yositosi Okuno, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

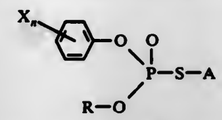
Division of Ser. No. 415,682, Nov. 14, 1973, Pat. No. 4,028,438, which is a continuation of Ser. No. 8,434, Feb. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 728,353, May 10, 1968, abandoned. This application Feb. 15, 1977, Ser. No. 768,875

Claims priority, application Japan, May 17, 1967, 42-31645; Sep. 8, 1967, 42-57677; Sep. 11, 1967, 42-58536; Sep. 12, 1967, 42-58859

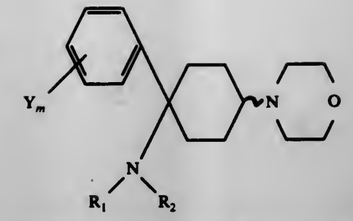
Int. Cl.[2] A01N *9/00, 9/36*

U.S. Cl. 424—225 27 Claims

1. A composition comprising an inert carrier and, as an active ingredient, an insecticidally or fungicidally effective amount of a phosphorothiolate represented by the formula,



wherein R is an alkyl having up to 5 carbon atoms, A is an alkyl having 3 or 4 carbon atoms, haloalkyl having up to 3 carbon atoms, alkenyl having up to 4 carbon atoms, alkinyl having up to 4 carbon atoms, phenylthioalkyl having up to 9 carbon atoms, or phenylsubstituted etnyl X is hydrogen, a haogen or an alkyl having up to 5 atoms; and *n* is an integer of 1 to 5.



wherein Y is halogen, hydroxy or alkanoyloxy of from 2 to 5 carbon atoms, inclusive; *m* is zero or one; and R_1 and R_2 are alkyl of from 1 to 4 carbon atoms, inclusive; or its pharmacologically acceptable acid addition salts.

4,113,865

FRUIT JUICE-SUGAR GRANULES

Gilberto Dondi, and Arnaldo Zanotti, both of Milan, Italy, assignors to Bayer Italia Societa per Azioni, Italy

Filed Nov. 22, 1976, Ser. No. 743,853

Claims priority, application Italy, Nov. 28, 1975, 29799 A/75

Int. Cl.[2] A61K *9/46, 31/375, 31/61*

U.S. Cl. 424—230 10 Claims

1. Process for the preparation of a pharmaceutical composition comprising granules of citrus fruit juice solids and sugar wherein the granules contain from about 8 to about 12% citrus fruit juice solids with the balance being predominantly sugar and no more than 0.05% water and a hydrolytically unstable pharmaceutical agent which comprises spraying fluidized powdered sugar in a fluidized bed granulator with an unconcentrated citrus fruit juice, granulating and drying the mixture at air temperatures no higher than 90° C., sieving the dried granules to a maximum grain size of 1 mm, redrying the sieved granules until the water content is no more than 0.05% and combining the sieved granules with a hydrolytically unstable pharmaceutical agent.

4,113,866

ANALGETIC COMPOUNDS, COMPOSITIONS AND PROCESS OF TREATMENT

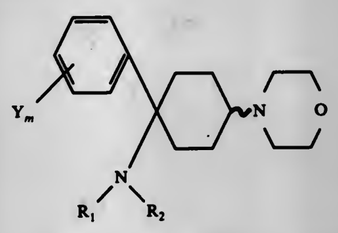
Daniel Lednicer, Evansville, Ind., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 1, 1977, Ser. No. 783,806

Int. Cl.[2] C07D *295/12;* A61K *31/535*

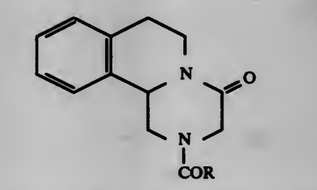
U.S. Cl. 424—248.56 16 Claims

1. A compound of the formula:



wherein Y is halogen, hydroxy or alkanoyloxy of from 2 to 5 carbon atoms, inclusive; *m* is zero or one; and R_1 and R_2 are alkyl of from 1 to 4 carbon atoms, inclusive.

12. A method for relief of pain comprising the systemic administration to a human or animal of an analgetic amount of a compound of the formula:



and the physiologically acceptable acid addition salts thereof wherein R is selected from the group consisting of pyrryl, thienyl, furyl, indolyl, benzofuryl, benzothienyl, pyridyl, α- or γ-pyranyl, α- or γ-thiopyranyl, quinolyl, isoquinolyl, carbazolyl, pyrazolyl, imidazolyl, benzpyrazolyl, benzimidazolyl, oxazolyl, benzoxazolyl, thiazolyl, benzthiazolyl, isoxazolyl, isothiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, tetrazolyl, 1,2,3- or 1,2,4-oxadiazolyl, 1,2,4-, 1,3,4- or 2,1,5-thiadiazolyl, 2,1,3-benzothiadiazolyl, acridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, phenazinyl, phenoxazinyl, phenothiazinyl, thianthrenyl, 1,2,5-, 1,2,4- or 1,2,3-triazinyl, 1,2,3,4- or 1,2,4,5-tetrazinyl, purinyl, pyrazolo[3,4-d]pyrimidinyl, pteridinyl, cinnolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, 1,5-naphthyridinyl, nalidixinyl, 1,4-dioxanyl, morpholinyl, pyrrolidinyl, tetrahydrofury tetrahydrothienyl, pyrazolidinyl, imidazolidinyl, 1,2,3,4-tetrahydropyridyl, 1,2,5,6-tetrahydropyridyl, piperidyl, tetrahydropyranyl, 1,2,3,4-tetrahydroquinolyl, 1,2,3,4-tetrahydroisoquinolyl, hexahydropyridazinyl, hexahydropyrimidinyl, piperazinyl, 1,3-dioxanyl pyrrolinyl, dihydrofuryl, pyrazolinyl, imidazolinyl, oxazolidinyl, thiazolinyl, thiazolidinyl, isoxazolidinyl, isothiazolinyl, isothiazolidinyl, 2,3-dihydrobenzthiazolyl, 1,2-dihydroquinolyl, 3,4-dihydroquinolyl, 1,2-dihydroisoquinolyl, 3,4-dihydroisoquinolyl, decahydroquinolyl, decahydroisoquinolyl, chromenyl, chromanyl, dihydropyridazinyl, tetrahydropyridazinyl, dihydropyrimidinyl, tetrahydropyrimidinyl, dihydropyrazinyl, tetrahydropyrazinyl, 1,4-thiazinyl and the corresponding moieties substituted by alkyl of up to 4 carbon atoms, aralkyl

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4,113,867

2-ACYL-4-OXO-PYRAZINO-ISOQUINOLINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Jürgen Seubert, Darmstadt; Herbert Thomas, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 533,467, Dec. 16, 1974, Pat. No. 4,001,411. This application Nov. 15, 1976, Ser. No. 742,132

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1973, 2362539

Int. Cl.[2] A61K *31/495;* C07D *471/04*

U.S. Cl. 424—250 10 Claims

1. An anthelmintically active compound of the formula

of 7 to 19 carbon atoms, halogen, hydroxy, alkoxy of up to 4 carbon atoms, acyloxy of up to 4 carbon atoms, amino, alkylamino of up to 4 carbon atoms, dialkylamino with alkyl groups each of up to 4 carbon atoms, acylamino wherein acyl is that of a saturated or unsaturated fatty acid of 1 to 18 carbon atoms, lower-alkoxy-acetyl-amino wherein the lower alkoxy group has 1 to 4 carbon atoms, nitro, alkoxycarbonyl of up to 4 carbon atoms in the alkoxy group, benzyloxycarbonyl, 3,5-dimethoxybenzyloxycarbonyl, sulfo, keto, N-oxido, S-oxido, S,S-dioxido, saturated or unsaturated aliphatic acyl of 1 to 18 carbon atoms, alkoxy-acetyl of 1 to 4 carbon atoms in the alkoxy group or acyl from a dicarboxylic acid of 4 to 8 carbon atoms.

3. A pharmaceutical composition consisting essentially of an anthelmintically effective amount per unit dosage of a compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

4,113,868

5,6-DIHYDROPYRIMIDIN-4(3H)ONE DERIVATIVES, AND ANTIEDEMA COMPOSITIONS AND METHODS EMPLOYING THEM

Gabor Bernath; Lajos Gera; György Göndös, all of Szeged; Zoltan Ecsery; Judit Hermann nee Voros, both of Budapest; Matyas Szentivanyi, and Erzsebet Janvari, nee Kanyo, both of Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

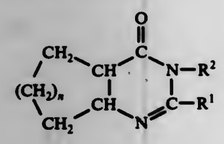
Filed Sep. 29, 1976, Ser. No. 728,459

Claims priority, application Hungary, Oct. 3, 1975, 1614

Int. Cl.² C07D *239/90, 239/91;* A61K *31/505*

U.S. Cl. 424—251 **38 Claims**

1. A compound of the formula:



wherein

(a) R^1 is methyl, cyclohexyl, phenyl, m-tolyl, p-tolyl, p-tert-butylphenyl, m-trifluoromethylphenyl, m-fluorophenyl, p-fluorophenyl, m-chlorophenyl, p-chlorophenyl, m-bromophenyl, p-bromophenyl, o-hydroxyphenyl, p-methoxyphenyl, p-nitrophenyl, benzyl, p-chlorobenzyl, m,p-dimethoxyphenyl, or o-pyridyl, R^2 is hydrogen and *n* is 2; or

(b) R^1 is phenyl, p-tert-butylphenyl, m-chlorophenyl, p-chlorophenyl, p-bromophenyl or p-nitrophenyl; R^2 is hydrogen and *n* is 3; or

(c) R^1 is phenyl or m-chlorophenyl, R^2 is hydrogen and *n* is 1; or

(d) R^1 is methyl, R^2 is p-tolyl or p-ethoxyphenyl, and *n* is 2; or

(e) R^1 is ethyl, R^2 is m-pyridyl or p-tolyl; and *n* is 2; or

(f) R^1 is phenyl, R^2 is methyl, phenyl or p-tolyl and *n* is 2.

37. An antiedema composition which comprises an effective amount of the compound defined in claim 1 with at least one pharmaceutically acceptable inert carrier or diluent.

38. A method of treating edema in animals which comprises the step of orally administering an effective amount of the compound defined in claim 1.

4,113,869

TETRAHYDROISOQUINOLINE BASIC ETHERS AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING THEM

Derek Victor Gardner, Bishop Stortford, England, assignor to Beecham Group Limited, United Kingdom

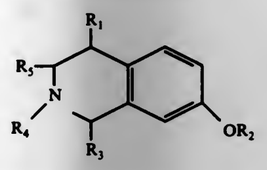
Filed Aug. 2, 1976, Ser. No. 710,446

Claims priority, application United Kingdom, Aug. 9, 1975, 33283/75

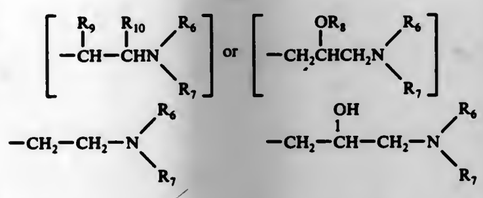
Int. Cl.² C07D *217/16;* A61K *31/47*

U.S. Cl. 424—258 **33 Claims**

1. A compound of the formula (II):



or a pharmaceutically acceptable salt or optically active isomer thereof, wherein R_1 is phenyl or naphthyl, or phenyl or naphthyl each substituted by one or two halogen atoms, trifluoromethyl, C_{1-4} alkyl, hydroxy, C_{1-4} alkoxy, nitro, amino, methylamino, dimethylamino, diethylamino, carboxy, methoxycarbonyl, ethoxycarbonyl, cyano, carboxamido, sulphonamido, trifluoromethoxy, trifluoromethylthio or acyl of 2 to 7 carbon atoms; R_2 is a group:



in which R_6 is a hydrogen or methyl, R_7 is hydrogen or methyl, ethyl or benzyl; R_3 is hydrogen or C_{1-6} alkyl or trifluoromethyl; R_4 is hydrogen or C_{1-6} alkyl, benzyl or phenyl or acyl of from 2 to 7 carbon atoms; and R_5 is hydrogen or C_{1-6} alkyl.

20. A pharmaceutical composition which comprises an antidepressantly effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

21. A pharmaceutical composition which comprises an anorexically effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

4,113,870

METHOD FOR TREATMENT OF HYPERTENSION

Toshiji Igarashi, Tokorozawa, and Yoshikage Nakajima, Tokyo, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

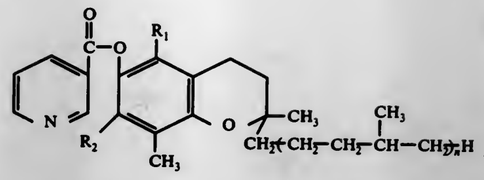
Filed Aug. 4, 1977, Ser. No. 821,910

Claims priority, application Japan, Aug. 11, 1976, 51-94948

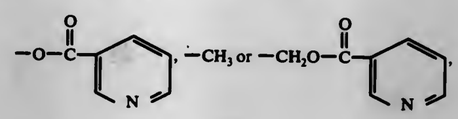
Int. Cl.² A61K *31/455*

U.S. Cl. 424—266 **8 Claims**

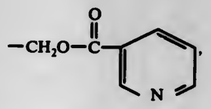
1. A method of treating hypertension which comprises administering to a hypertensive subject requiring such treatment, a therapeutically effective amount of a compound having the formula:



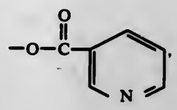
wherein *n* is an integer of from 0 to 3, R_1 is



and R_2 is $-CH_3$ or



with the proviso that when R_1 is



R_2 is $-CH_3$ and with the further proviso that R_1 and R_2 are not $-CH_3$ simultaneously.

4,113,871

HYPOGLYCEMICALLY AND HYPOLIPIDEMICALLY ACTIVE DERIVATIVES OF PHENYL-ALKANE-CARBOXYLIC ACIDS

Kurt Stach, deceased, late of Mannheim-Waldhof, Germany (by Werner Plattner, executor); Elmar Bosies, Heppenheim; Ruth Heerdt, Mannheim-Feudenheim; Hans-Frieder Kühnle, Mannheim-Neuostheim, and Felix Helmut Schmidt, Mannheim-Seckenheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

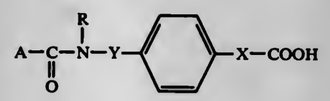
Filed Apr. 8, 1976, Ser. No. 674,993

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1975, 2517229; Feb. 6, 1976, 2604560

Int. Cl.² A61K *31/42, 31/34*

U.S. Cl. 424—272 **10 Claims**

1. A phenyl-alkane-carboxylic acid of the formula



wherein

A is isoxazolyl, benzoxazolyl, benzofuranyl or partially hydrogenated benzofuranyl optionally substituted by at least one halogen, or alkyl or alkoxy containing up to 5 carbon atoms,

Y is a valency bond or an unbranched or branched lower alkylene radical containing up to 3 carbon atoms,

X is a straight or branched, saturated or unsaturated divalent aliphatic hydrocarbon radical containing 2 to 8 carbon atoms, there being at least 2 carbon atoms between the benzene ring and the carboxyl group, and

R is a hydrogen atom or a lower alkyl radical,

or a physiologically compatible salt, ester thereof with a lower alkanol, amino alkanol or alkoxy alkanol, or amide thereof with an alkyl-amine or carboxy-substituted amine.

6. A hypoglycaemic or hypolipidaemic composition comprising a hypoglycaemically or hypolipidaemically effective amount of a compound according to claim 1 in admixture with a physiologically compatible diluent.

4,113,872

4-SUBSTITUTED PYRAZOLES

Eike Möller, Wuppertal, Germany; Karl Meng, deceased, late of Wuppertal, Germany (by Ilse Heide Frieda Meng, heiress); Egbert Wehinger, Neviges, Germany; Harald Horstmann, Wuppertal, Germany, and Friedel Seuter, Neviges, Germany, assignors to Baker Aktiengesellshaft, Germany

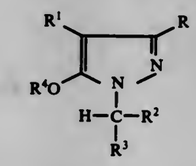
Division of Ser. No. 693,970, Jun. 8, 1976. This application Feb. 7, 1977, Ser. No. 766,235

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1975, 2526467

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 P **11 Claims**

1. A method of treating thromboses in humans and animals which comprises administering to a human or animal in need thereof an anti-thrombolitically effective amount of a compound of the formula



wherein

R is hydrogen or lower alkyl;

R^1 is haloalkylthio of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms;

R^2 is lower alkyl;

R^3 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, mono- or dialkylamino of 1 to 4 carbon atoms in each alkyl moiety, nitro, cyano, carboxamido, sulphonamido and SO_n-alkyl of 1 to 4 carbon atoms in the alkyl moiety and wherein *n* is 0 to 2; or phenyl having fused thereto a 5- to 7-membered isocyclic ring; and

R^4 is R^5CO wherein R_5 is lower alkyl, cycloalkyl of 5 to 7 carbon atoms, halo(lower alkyl), lower alkoxy, lower alkylthio, halo(lower alkoxy), halo(lower alkylthio), lower alkoxy(lower alkyl), mono- or di(lower alkylamino), phenyl substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro, cyano, carboxamido, sulphonamido, SO_n-(lower alkyl) wherein *n* is 0 to 2, and SO_n—CF_3 wherein *n* is 0 to 2; or phenyl having fused thereto a 5- to 7-membered isocyclic ring, in combination with a pharmaceutically acceptable carrier.

4,113,873

8-AZAPROSTANOIC ACID DERIVATIVES

Junichi Himizu, Urawa; Shoichi Harigaya, Kawasaki; Shigeyoshi Saijo, Urawa; Masao Wada, Warabi; Katsuyuki Noguchi, Kitamoto, and Osasi Takaiti, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co. Ltd., Osaka, Japan

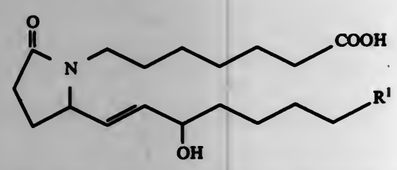
Continuation-in-part of Ser. No. 733,006, Oct. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 677,327, Apr. 15, 1976, abandoned. This application May 5, 1977, Ser. No. 793,920

Claims priority, application Japan, Apr. 26, 1975, 50-50907; Apr. 30, 1975, 50-52930; Oct. 9, 1976, 51-121698; Oct. 9, 1976, 51-121699

Int. Cl.[2] A61K *31/40;* C07D *207/26*

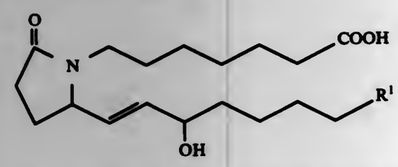
U.S. Cl. 424—274 12 Claims

1. A compound of the formula:



wherein R^1 is ethyl or n-propyl, or a pharmaceutically acceptable salt thereof.

12. A pharmaceutical composition which comprises a therapeutically effective amount of a compound of the formula:



wherein R^1 is ethyl or n-propyl, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier therefor.

4,113,874

PYRROLIDONES, PHARMACEUTICAL COMPOSITIONS THEREWITH AND PROCESSES OF USE THEREOF

Adolf Linkies, Frankfurt am Main; Dieter-Bernd Reuschling, Butzbach; Klaus Kuhlein, Kelkheim, Taunus; Gerhard Beck, Frankfurt am Main, and Josef Musil, Konigstein, Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

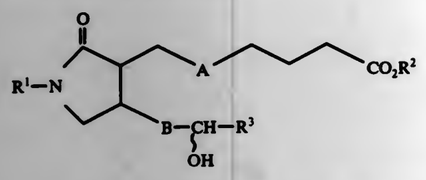
Filed Dec. 16, 1976, Ser. No. 751,173

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557335

Int. Cl.[2] C07D *207/26;* C07C *177/00*

U.S. Cl. 424—274 12 Claims

1. A compound of the formula



or a physiologically-compatible metal or amine salt of the free acid form thereof, wherein

A is $—CH_2—CH_2—$, CH=CH-(cis), or —C≡C—;

B is —CH=CH— (trans) or, when A is $—CH_2—CH_2—$, is —CH=CH— (trans) or $—CH_2—CH_2—$;

R^1 is hydrogen, hydroxymethyl, phenyl, or phenyl substituted by straight-chain or branched alkyl having 1 to 4 carbon atoms, by halogen, by —S— alkyl or O-alkyl having 1 to 4 carbon atoms, by phenoxy, by halophenoxy, or by alkyl- or haloalkyl-phenoxy having 1 to 4 carbon atoms in the alkyl;

R^2 is hydrogen, alkyl having 1 to 5 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, or phenylalkyl having 7 or 8 carbon atoms;

R^3 is straight-chain or branched alkyl having 1 to 10 carbon atoms or is such alkyl substituted by

(a) —O-alkyl or —S-alkyl having 1 to 5 carbon atoms in the alkyl;

(b) phenoxy, halophenoxy, or alkyl- or haloalkyl-phenoxy having 1 to 3 carbon atoms in the alkyl,

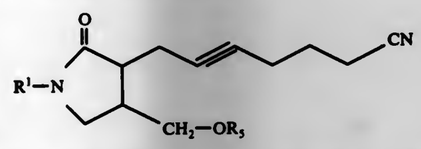
(c) —O-benzyl or —O-benzyl substituted by alkyl having 1 to 3 carbon atoms,

(d) cycloalkyl, or

(e) phenyl or alkylphenyl wherein the alkyl has 1 to 3 carbon atoms.

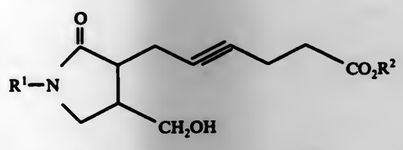
2. A pharmaceutical composition for inducing luteolysis or bronchospasmolysis, for inhibiting gastric juice secretion, or for combatting hypertension, said composition comprising a pharmaceutically-suitable carrier and a therapeutically-effective amount of a compound as in claim 1.

7. A compound of the formula



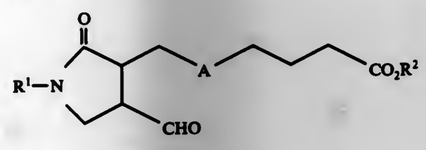
wherein R^5 is allyl, benzyl, tert. butyl, chloromethyl, or an enol ether protective group and R^1 is hydrogen, hydroxymethyl, phenyl, or phenyl substituted by straight-chain or branched alkyl having 1 to 4 carbon atoms, by halogen, by —S— alkyl or —O-alkyl having 1 to 4 carbon atoms, by phenoxy, by halophenoxy, or by alkyl- or haloalkyl-phenoxy having 1 to 4 carbon atoms in the alkyl.

8. A compound of the formula



wherein R^2 is alkyl having 1 to 5 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, or phenylalkyl having 7 or 8 carbon atoms, and R^1 is hydrogen, hydroxymethyl, phenyl, or phenyl substituted by straight-chain or branched alkyl having 1 to 4 carbon atoms, by halogen, by —S— alkyl or —O-alkyl having 1 to 4 carbon atoms, by phenoxy, by halophenoxy, or by alkyl- or haloalkyl-phenoxy having 1 to 4 carbon atoms in the alkyl.

10. A compound of the formula



wherein

A is $—CH_2—CH_2—$, —CH=CH-(cis), or —CH≡CH—,

R^2 is alkyl having 1 to 5 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, or phenylalkyl having 7 or 8 carbon atoms, and R^1 is hydrogen, hydroxymethyl, phenyl, or phenyl substituted by straight-chain or branched alkyl

having 1 to 4 carbon atoms, by halogen, by —S— alkyl or —O-alkyl having 1 to 4 carbon atoms, by phenoxy, by halophenoxy, or by alkyl- or haloalkyl-phenoxy having 1 to 4 carbon atoms in the alkyl.

4,113,875

COMPOSITIONS FOR THE TREATMENT OF DISORDERS OF THE PROSTATE GLAND

Jacques Debat, Paris, France, assignor to Institut de Recherches Chimiques et Biologiques Appliquees, France

Division of Ser. No. 557,369, Mar. 11, 1975, abandoned. This application Apr. 5, 1976, Ser. No. 673,915

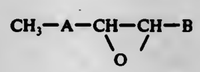
Claims priority, application United Kingdom, Mar. 11, 1974, 10683/74

Int. Cl.[2] A61K *31/335*

U.S. Cl. 424—278 10 Claims

1. A therapeutic composition suitable for use in the treatment of prostate adenoma which comprises a therapeutically active amount of at least one aliphatic epoxy compound, which is selected from the group consisting of

(a) epoxy alkanes corresponding to the general formula



(I)

in which B is H or CH_3 and A represents a hydrocarbon radical containing between 15 and 20 carbon atoms, and

(b) their geometric isomers, and a physiologically acceptable excipient.

4,113,876

SULFONIC ACID-N-METHYLAMIDO-N-SULFENYL-N-METHYL-CARBAMIC ACID ESTERS

Peter Siegle, Cologne; Engelbert Kühle, Bergisch-Gladbach; Ingeborg Hammann, Cologne; Bernhard Homeyer, Opladen, and Wolfgang Behrenz, Overath-Steinebrueck, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

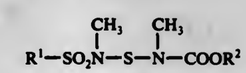
Filed Jul. 2, 1975, Ser. No. 592,860

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1974, 2434184

Int. Cl.[2] A01N *9/16;* C07D *307/86, 317/28*

U.S. Cl. 424—278 7 Claims

1. A sulfonic acid-N'-methylamido-N'-sulfenyl-N-methyl-carbamic acid ester of the formula



in which

R^1 is dialkylamino with 1–4 carbon atoms in each alkyl group, or phenyl substituted in the o-, m- or p-position by NO_2, CF_3 or CN, and

R^2 is phenyl, naphthyl, benzodioxolanyl or indanyl; phenyl, naphthyl, benzodioxolanyl or indanyl substituted one to three times by trihalogenomethyl, halogen, nitro, cyano, formamidino, dioxanyl or dioxolanyl, or by alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, alkylmercapto or alkenylmercapto having up to 4 carbon atoms, or by dialkylamino wherein each hydrocarbon portion has 1–4 carbon atoms; cycloalkyl of 5–7 carbon atoms, or, provided that R^1 is NO_2-substituted phenyl, R^2 may be 2,3-dihydrobenzofuranyl-(7) or 2,3-dihydrobenzofuranyl-(7) mono- or di-substituted in 2-position by alkyl of 1–4 carbon atoms.

5. An insecticidal, acaricidal or nematicidal composition containing as active ingredient an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,113,877

SUBSTITUTED 2-AMINOMETHYLPHENYL SULFAMATES

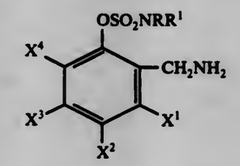
Robert L. Smith, Lansdale; Gerald E. Stokker, Gwynedd Valley, and Edward J. Cragoe, Jr., Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 16, 1977, Ser. No. 833,930

Int. Cl.[2] A61K *31/095;* C07C *141/16*

U.S. Cl. 424—303 10 Claims

10. A method for the treatment of edema and hypertension which comprises administering a unitary dosage of a compound of the formula:



wherein

R is hydrogen, straight or branched chain lower alkyl of 1–5 carbon atoms, aralkyl up to 8 carbon atoms or phenyl;

R^1 is hydrogen, straight or branched chain lower alkyl of 1 to 5 carbon atoms, aralkyl of up to 8 carbon atoms or phenyl;

X^1 is hydrogen, lower alkyl of 1 to 3 carbon atoms or lower alkoxy of 1 to 3 carbon atoms;

X^2 is halogen or straight or branched chain lower alkyl wherein the alkyl group has up to 5 carbon atoms;

X^3 is hydrogen, halogen, lower alkyl having up to 5 carbon atoms or lower alkoxy having up to 5 carbon atoms;

X^4 is halogen;

and the non-toxic pharmaceutically acceptable salts thereof.

4,113,878

CONTROL OF PATHOGENIC FUNGI WITH FLUORINATED CARBONATES

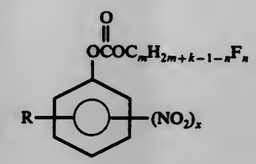
Donald E. Hardies, Wadsworth, and Jay K. Rinehart, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 505,419, Sep. 12, 1974, Pat. No. 4,022,609, which is a division of Ser. No. 299,968, Oct. 24, 1972, Pat. No. 3,852,464, which is a division of Ser. No. 76,275, Sep. 28, 1970, Pat. No. 3,742,010. This application Apr. 5, 1977, Ser. No. 784,874

Int. Cl.[2] A01N *9/20*

U.S. Cl. 424—301 38 Claims

5. A method of preventing the establishment of a pathogenic fungus population in a region free from mites which comprises applying to the region an effective amount, which prevents the establishment of said fungus, of a compound represented by the structural formula:



wherein:

x is 1, 2, or 3;

k is −2, 0, or 2;

m is an integer ranging from 1 to 15 when k is 2;

m is an integer ranging from 2 to 15 when k is 0 or −2;

n is an integer ranging from 1 to $(2m+k-1)$; and

R is hydrogen, lower alkyl, halo lower alkyl, lower alkenyl, halo lower alkenyl, lower alkylthio, halo lower alkylthio,

lower alkenylthio, halo lower alkenylthio, lower cycloalkyl, or halo lower cycloalkyl.

4,113,879

PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Geraint Jones, and David Summers Thomson, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

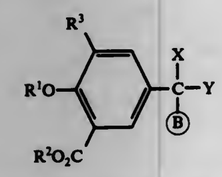
Filed Dec. 6, 1976, Ser. No. 747,995

Claims priority, application United Kingdom, Dec. 29, 1975, 52999/75

Int. Cl.² A61K *31/275*

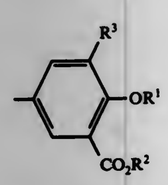
U.S. Cl. 424—304 **6 Claims**

1. A pharmaceutical composition for topical administration to an area of inflammation which comprises an effective amount of a compound of the formula:



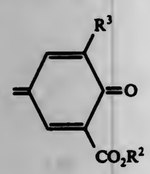
I

wherein either X is hydrogen and Y is a radical of the formula:



II

or X and Y together are a radical of the formula:



III

and wherein R^1 is hydrogen or an acetyl radical; R^2 is hydrogen, R^3 is hydrogen, a C_{1-6}alkyl radical or a halogen atom; and B is a phenyl radical which may optionally bear from 1 to 3 cyano substituents; or a pharmaceutically acceptable salt thereof; together with a pharmaceutically acceptable diluent or carrier.

4,113,880

2'-HYDROXY-3'-CARBOXY-5'-NITROOXANILATE COMPOUNDS, COMPOSITIONS, AND METHODS OF USE

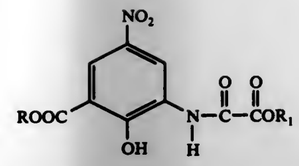
Charles M. Hall, and John B. Wright, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 17, 1976, Ser. No. 742,438

Int. Cl.² A61K *31/24*

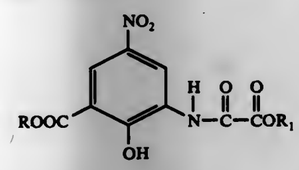
U.S. Cl. 424—309 **41 Claims**

1. A compound of the formula



wherein R is hydrogen, a physiologically acceptable metal or amine cation or alkyl of one to eight carbon atoms, inclusive; R_1 is hydrogen, a physiologically acceptable metal or amine cation, or alkyl or one to eight carbon atoms, inclusive.

20. A method for treating mammals for allergy of a reagin medicated nature which comprises prophylactically administering to said mammal an anti-allergy effective amount of a compound of the formula



wherein R is hydrogen, a physiologically acceptable metal or amine cation or alkyl of one to eight carbon atoms, inclusive; R_1 is hydrogen, a physiologically acceptable metal or amine cation, or alkyl of one to eight carbon atoms, inclusive, in association with a pharmaceutical carrier.

4,113,881

METHOD OF TREATING RHEUMATOID ARTHRITIS

Harry Weldon Diehl, 4424 Oak Hill Rd., Rockville, Md. 20853

Continuation-in-part of Ser. No. 682,540, May 3, 1976, Pat. No. 4,049,824. This application Aug. 1, 1977, Ser. No. 821,053

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.² A61K *31/23*

U.S. Cl. 424—312 **8 Claims**

1. A method of relieving and inhibiting the symptoms of inflammatory rheumatoid arthritis in mammals which comprises the oral administration to a mammal of an effective amount of cetyl myristoleate.

4,113,882

STABILIZED ORAL PROSTAGLANDIN FORMULATION AND THE PROCESS FOR THE PREPARATION THEREOF

Kiyoshi Okazaki, Kawagoe; Masuo Murakami, Tokyo; Hiroitsu Kawada, Kawagoe; Jun Sekino, Kashiwa; Hidemi Shimizu, Tokyo, and Shigemi Kawahara, Higashikurume, all of Japan, assignors to Yamanonchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 516,217, Oct. 21, 1974, Pat. No. 4,036,954. This application May 13, 1976, Ser. No. 686,154

Claims priority, application Japan, May 20, 1975, 50/60070

The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.

Int. Cl.² A61K *31/19, 31/215*

U.S. Cl. 424—317 **18 Claims**

1. A stabilized oral prostaglandin composition comprising a therapeutically effective amount of a lyophilized composition which comprises (A) a prostaglandin E group compound and (B) an effective amount of at least one member selected from the group consisting of hydroxypropyl cellulose, hydroxyethyl cellulose, carboxymethyl cellulose, a lower alkyl cellulose, a dextran, and dextrin; and a pharmaceutically acceptable carrier for oral administration.

4,113,883

ANAESTHETIC COMPOSITIONS

Robert David Bagnall, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 16, 1976, Ser. No. 677,855

Claims priority, application United Kingdom, Apr. 29, 1975, 17698/75

Int. Cl.² A61K *31/08*

U.S. Cl. 424—342 **7 Claims**

7. A method for producing anaesthesia in a warm-blooded animal which comprises administering by inhalation to said animal an anaesthetically-effective amount of 1,2,2-trifluoroethyl difluoromethyl ether together with sufficient oxygen to maintain respiration.

4,113,884

PROCESS FOR THE PREPARATION OF A CONCENTRATE FROM WASTE CHICKEN-BROTH AND PRODUCT THEREFROM

Branko Krašovec; Eli Mihelič, and Suzana Reutlinger, all of Ljubljana, Yugoslavia, assignors to HP Kolinska Ljubljana Prehrambena Industrija (n.sol.o.), Ljubljana, Yugoslavia

Filed Mar. 16, 1977, Ser. No. 778,319

Claims priority, application Yugoslavia, Nov. 25, 1976, 2883/76

Int. Cl.² A23L *1/313, 1/315, 1/40*

U.S. Cl. 426—56 **3 Claims**

1. A process of preparing a nutritional concentrate from waste chicken broth which contains dry solids as well as insoluble residues and fats, comprising the steps of heating the broth to a temperature of substantially 50°–55° C.; adding to the heated broth an acqueous suspension of anti-gelling enzyme within the range of substantially 0.4 to 0.9% by weight of the dry broth solids; stirring the broth and enzyme for substantially 20–60 minutes while at said temperature; adding an anti-foaming agent in an amount up to 1% by weight of the dry broth solids; boiling the broth with the therein admixed enzyme and anti-foaming agent for approximately 10 minutes to segregate the insoluble residues and fats from the dry solids; removing the segregated insoluble residues and fats; and concentrating the remainder of the broth.

4,113,885

METHOD OF PRODUCING CURED LOW SODIUM MEAT PRODUCTS

Thadeus B. Zyss, 7088 Browning Rd., Highland, Calif. 92346

Continuation-in-part of Ser. No. 660,110, Feb. 23, 1976, abandoned. This application Jun. 29, 1977, Ser. No. 811,165

Int. Cl.² A23B *4/02;* A23L *1/27*

U.S. Cl. 426—264 **9 Claims**

1. In a method for curing fresh primal cuts of meat intended for consumption by those on a low sodium diet which does not require the presence of phosphate, chloride, nitrate or sodium ions, the step consisting essentially of:

injecting an aqueous curing solution into a fresh primal cut in an amount corresponding to about 1.0 to about 20% of the weight of said primal cut,

said curing solution being free of (a) organic nitrites (b) phosphate, chloride, nitrate and sodium ions except for the nominal present in commercial water supplies used in making up the solution; and

said curing solution containing from about 0.005 to about 0.40% by weight of a nitrite selected from the group consisting of potassium nitrite, ammonium nitrite, nitrous acid and mixtures thereof.

4,113,886

MEMBRANE DECAFFEINATION

Saul Norman Katz, Monsey, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Sep. 28, 1977, Ser. No. 837,349

Int. Cl.² A23F *1/10*

U.S. Cl. 426—422 **7 Claims**

1. A method for decaffeinating an aqueous caffeine-containing solution comprising the steps of:

(a) contacting one side of a porous, solvent-filled membrane with an aqueous, caffeine-containing solution, said solvent being a water-immiscible, caffeine-specific solvent comprising at least 70% by weight of the filled membrane,

(b) contacting the opposite side of the membrane with a water phase,

(c) maintaining the respective contacts for a sufficient period of time to reduce the caffeine concentration of the solution by permitting caffeine to pass through the filled membrane and into the water phase.

4,113,887

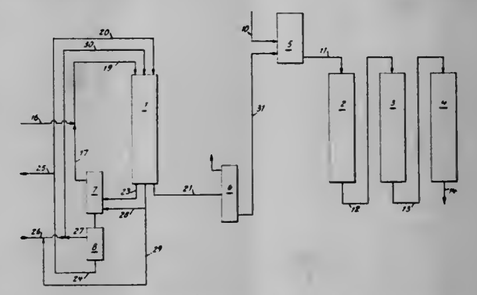
ADSORPTION PROCESS

Franklin Kramer, Briarcliff Manor; Yair Steve Henig, Pearl River; Torunn Atteraas Garin, Bronxville, and Gerald James Vogel, Ossining, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 24, 1977, Ser. No. 771,485

Int. Cl.² A23F *1/10;* B01D *15/06*

U.S. Cl. 426—422 **11 Claims**



1. A countercurrent adsorption process for separating a preferentially adsorbed component from an aqueous multi-component solution which contains additional compounds which are also adsorbed comprising the steps of:

(a) passing the multi-component solution to the most spent section of a countercurrent, multi-section adsorption system and withdrawing the solution from the least spent section of said system until a desired amount of the preferentially adsorbed component is adsorbed on the most loaded adsorbent, thereafter

(b) passing an aqueous solution of solids through said most loaded adsorbent and obtaining effluent therefrom, said solution having a higher concentration of the preferentially adsorbed component but a lower total solids concentration than present in the multi-component solution of step (a), and said solids comprising solids desorbed during prior adsorbent regeneration steps,

(c) adding fresh adsorbent to the least spent section of the countercurrent adsorption system,

(d) passing an amount of the effluent of step (b) to the most spent section of the countercurrent adsorption system together with an amount of the multi-component solution, the amount of said effluent being sufficient to effect a reflux ratio for the preferentially adsorbed component of 0.01:1 to 5:1, thereafter

(e) passing a desorbent through the adsorbent of step (b) in order to remove adsorbed solids, said solids having, on a dry basis, a relatively high level of the preferentially-adsorbed component.

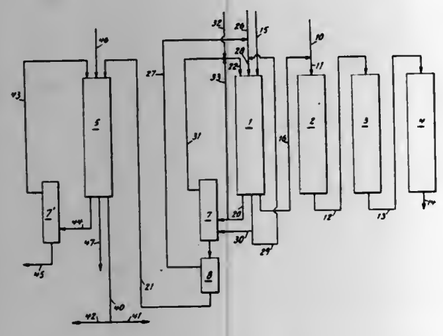
10. The process of claim 1 wherein the reflux ratio is from about 0.5:1 to 1.5:1.

4,113,888

ADSORPTION PROCESS

Yair Steve Henig, Pearl River, and Kailash S. Purohit, Spring Valley, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 24, 1977, Ser. No. 771,486
Int. Cl.[2] A23F *1/10*; B01D *15/02*
U.S. Cl. 426—422 **10 Claims**



1. A countercurrent adsorption process for separating a preferentially adsorbed component from an aqueous multi-component solution which contains additional compounds which are also adsorbed comprising the steps of:

(a) passing the multi-component solution to the most spent section of a countercurrent multi-section adsorption system until the capacity of the most loaded adsorbent for adsorbtion of the preferential adsorbed component is substantially reached and withdrawing from the least spent section of the adsorption system an aqueous solution substantially-free of the preferentially adsorbed component, thereafter

(b) adding fresh adsorbent to the least spent section of the countercurrent adsorption system and passing the multi-component solution to a new most spent section of the countercurrent adsorption system,

(c) isolating the loaded adsorbent of step (a) and passing a desorbent through this adsorbent in order to obtain an effluent containing desorbed solids, said solids having, on a dry basis, a higher level of the preferentially adsorbed component than that present in the multi-component solution of step (a),

(d) removing the desorbent from the effluent of step (c) in order to obtain an aqueous solution of desorbed solids,

(e) passing the aqueous solution of step (d) through a fresh bed of the same adsorbent used in step (a), and obtaining an effluent at least the initial portion of which is substantially-free of the preferentially adsorbed component, and thereafter

(f) passing a desorbent through the bed of step (e) in order to obtain an effluent containing desorbed solids, said solids having on a dry basis, a higher level of the preferential adsorbed component than that present in the effluent of step (c).

4,113,889

PROCESS FOR MAKING HYDRATED PEANUT PRODUCTS AND PRODUCTS MADE THEREBY

James Russell Baxley, Edenton, N.C., assignor to Peanut Research & Testing Laboratories, Inc., Edenton, N.C.

Continuation of Ser. No. 613,311, Sep. 15, 1975, abandoned. This application Mar. 18, 1977, Ser. No. 779,030
Int. Cl.[2] A23L *1/36*
U.S. Cl. 426—509 **1 Claim**

1. The method of making comminuted hydrated peanut products, comprising the sequential steps of

(a) first, mechanically blanching shelled whole peanuts at ambient temperatures and in a dry condition, whereby the skins are fully removed therefrom,

(b) then, adjusting the moisture content of the blanched nuts to 3 to 8% by weight and pressing the blanched whole nuts under pressure of 2000 to 5000 psig to remove a substantial portion of the fat therefrom without breaking the nuts,

(c) cooking said whole and partially defatted blanched peanuts in the presence of plain water in a weight ratio of at least 1 part nuts to 3 parts water at a temperature between 150° and 300° F. under pressure when at temperatures above the boiling point for a period of 10 to 60 minutes to gelatinize the starch and coagulate the proteins in said peanuts and hydrate the peanuts to a preselected moisture content whereby the nuts absorb an amount of water substantially equal to the weight of the nuts,

(d) then, draining the cooked nuts, and,

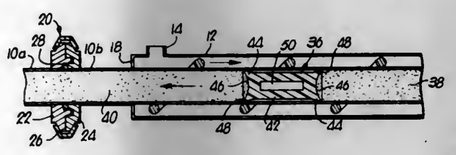
(e) then, comminuting the cooked peanuts.

4,113,890

METHOD OF COOKING A FLOWABLE FOOD PRODUCT IN A CONTINUOUS FLOW SCRAPED SURFACE HEAT EXCHANGER

Marshall Long, Leawood, Kans., assignor to Marlen Research Corporation, Overland Park, Kans.

Continuation-in-part of Ser. No. 639,659, Dec. 11, 1975, abandoned. This application Oct. 13, 1977, Ser. No. 841,890
Int. Cl.[2] A22C *11/04*; A01J *25/13*; B08B *9/04*
U.S. Cl. 426—512 **7 Claims**



1. A method of cooking a flowable food product that includes the steps of:

forcing the product under pressure through a thermally conductive tube having a substantially rigid, annular wall;

heating said wall of the tube so that the temperature of the product will be raised as the product flows through the tube,

the amount of heat supplied to the tube being sufficient to cause some of the product to adhere to the wall if such adherence is not otherwise prevented;

continuing to force the product through the tube and to expose the same to said heated wall thereof for a predetermined length of time;

maintaining a supply of individual scraping plugs outside of said tube, each of which has an external dimension substantially corresponding to the transverse, internal dimension of said tube;

continuously inserting said plugs in succession into said tube for continuous flow with the product at spaced intervals in the latter;

advancing the plugs and the product together through the tube at the same rate and with the plugs scraping said wall;

controlling the rate of product and plug flow with a first control means;

controlling the frequency of plug insertion with a second control means operating independently of said first control means so that, although the plugs and product move together through the tube at the same rate of flow, the frequency of plug insertion may be varied independently of and without affecting the flow rate of the product and plugs in accordance with the frequency of scraping needed to maintain the wall substantially free of accumulations of the product;

restricting the movement of product and plugs to advance continuously through the tube to one direction only with respect to the longitudinal axis of the tube; removing product from the tube that has been exposed to the heated wall for said predetermined length of time; and removing the plugs in succession from the tube when their movement with the product has been completed, said step of controlling the frequency of plug insertion independently of the rate of product and plug flow including obtaining portions of the cooked product of a size that corresponds to said frequency of plug insertion.

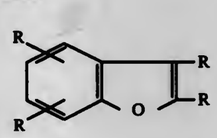
4,113,891

FLAVORING AGENTS

Max Winter, Petit-Lancy; Fritz Gautschi, Commugny; Ivon Flament; Max Stoll, both of Petit-Lancy, all of Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 482,819, Jun. 24, 1974, Pat. No. 4,038,435, which is a division of Ser. No. 243,866, Apr. 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sep. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, Apr. 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, Apr. 30, 1965, abandoned. This application Mar. 11, 1977, Ser. No. 825,111
Int. Cl.[2] A23L *1/234*
U.S. Cl. 426—536 **40 Claims**

1. A composition selected from the group consisting of foodstuff and beverages to which has been added an effective, flavor-improving amount of a benzofuran compound having the following formula:



Wherein R is hydrogen, an alkyl group having 1 or 2 carbon atoms, or an alkenyl group having 2 or 3 carbon atoms, provided the sum of the carbon atoms of the substituent groups does not exceed 3.

4,113,892

METHOD OF PROCESSING FERMENTED SOYBEANS AND FOOD PRODUCTS PREPARED THEREFROM

Junichi Shimizu; Takashi Hara; Tatsuya Iwakura, and Yoshiro Itaya, all of Tokyo, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

Filed Aug. 24, 1976, Ser. No. 717,322
Claims priority, application Japan, Aug. 28, 1975, 50-103492; Aug. 28, 1975, 50-103493; Mar. 19, 1976, 51-29223; Apr. 12, 1976, 51-40233; Jul. 7, 1976, 51-79824
Int. Cl.[2] A23D *5/00*; A21D *13/08*; A23L *1/20, 1/168*
U.S. Cl. 426—602 **24 Claims**

1. A method of processing fermented soybeans comprising freeze-drying the fermented soybeans in a vacuum and separating the dried soybeans into an outer layer portion and an inner portion.

4,113,893

RADIATION CURE OF COATING COMPOSITIONS CONTAINING DIACRYLATE MONOMER AND HIDING PIGMENT

Ernest A. Hahn, Sewickley, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 592,308, Jul. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 261,479, Jun. 9, 1972, abandoned. This application Mar. 16, 1977, Ser. No. 778,210
Int. Cl.[2] C08F *2/46, 4/00*
U.S. Cl. 427—44 **16 Claims**

1. A method comprising exposing a coating of an ionizing irradiation curable coating composition comprising:

a. diacrylate monomer which is 3-acrylyloxy-2,2-dimethylpropyl 3-acrylyloxy-2,2-dimethylpropionate, 1,3-bis(acrylyloxy-2,2-dimethylpropane or mixtures thereof and which constitutes from about 30 percent to 100 percent by weight of the binder of said coating composition;

b. hiding pigment which is titanium dioxide, zinc oxide, lithopone or mixtures thereof wherein the hiding pigment to diacrylate monomer weight ratio of said coating composition is in the range of from about 0.3:1 to about 3:1; and

c. from about 0.5 to about 10 percent triphenyl phosphine by weight of said composition

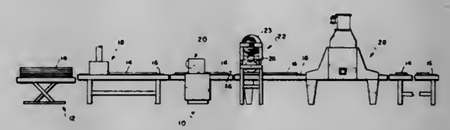
while the surface of said coating opposite the substrate upon which it is coated is in contact with a curing atmosphere containing from about 300 to about 1000 parts oxygen by volume per million parts curing atmosphere by volume, to at least about 4 megarads of ionizing irradiation of an energy equivalent to at least 100,000 electron volts to cure said coating to a hard film having a high degree of surface mar resistance.

4,113,894

RADIATION CURABLE COATING PROCESS

Robert L. Koch, II, Evansville, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.

Filed Oct. 12, 1976, Ser. No. 731,755
Int. Cl.[2] B01J *1/10*; B32B *31/28*
U.S. Cl. 427—44 **10 Claims**



1. A process of applying a predetermined surface finish to a panel comprising the steps of coating the surface of the panel with a radiation curable liquid coating material; covering the liquid coated panel surface with a radiation permeable casting film having a predetermined surface finish on its side in contact with the coated panel, rolling the film on the panel to cause the uncured coating material intimately to conform to said predetermined casting film surface finish; and then irradiating the coated panel through said casting film to cause the coating material to cure in conformance with the predetermined surface finish on said casting film.

4,113,895

METHOD FOR PRODUCING MULTILAYERED COATED SUBSTRATE

William R. Watt, Princeton Junction, N.J.; Edmund G. Astolfi, Greenwich, Conn., and Jay K. Laufer, Huntington Sta., N.Y., assignors to American Can Company, Greenwich, Conn.

Filed Nov. 19, 1976, Ser. No. 743,133
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—44 **15 Claims**

1. A method for producing a multilayer coating which comprises:

(1). applying as a first layer to a substrate a radiation-curable ink composition comprising at least one ethylenically unsaturated material polymerizable to higher molecular weight and a photosensitizer which releases an active catalyst effective to initiate curing of said material upon exposure to radiation:

(2). without drying or actively effecting curing of said first layer, applying to said first layer a radiation-curable varnish composition comprising at least one epoxide material polymerizable to higher molecular weight and a photosensitizer which initiates curing of said material upon exposure to radiation; said first layer composition being devoid of components that act to substantially inhibit or retard the action of the catalyst precursor in said second layer; and

(3). exposing the coated substrate to irradiation to produce a hardened multilayered coated substrate.

4,113,896

METHOD OF MANUFACTURING AN ELECTRICALLY CONDUCTIVE CONTACT LAYER

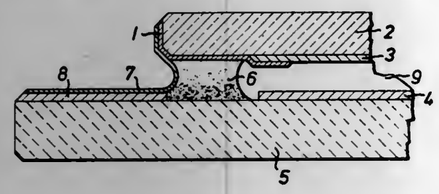
Hildegard Keiner, Ay, Iller; Emil Schmid, Oberelchingen, and Walter Richly, Ulm-Wiblingen, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 17, 1976, Ser. No. 742,688

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1975, 2552181

Int. Cl.² H01J *61/36*

U.S. Cl. 427—108 **14 Claims**



1. In a method of forming a gas discharge display device having first and second juxtaposed spaced carriers, formed from an insulating material selected from glass, quartz or ceramic, which are connected together in an air-tight manner adjacent their periphery to define a sealed chamber therebetween and which are each provided with at least one electrode which is on a surface of same within the chamber and which is connected via a conductor to the exterior of the chamber; said method including applying an electrode as a coating of electrically conductive material on a portion of the major surface of each of said carriers which will be within the chamber, connecting a conductor to each of said electrodes, and then connecting the carriers together in an air-tight manner by means of a glass solder which likewise forms an air-tight seal with said conductor; the improvement wherein said step of connecting includes forming at least one of said conductors as a conductive layer on the surface of the associated said carrier so that it contacts a portion of said electrode and extends to a portion of the surface of said associated carrier which will be outside of said chamber by:

producing a paste like mixture of from 60 to 98% by weight of silver or silver oxide, from 2 to 40% by weight of glass powder, and an effective amount of a vaporizable liquid agent:

applying the paste in layer form to the desired portion of said carrier and of said electrode coating; and

drying and baking in the paste in air at a temperature of from 350° to 550° C to cause the glass powder to fuse and form an air-tight conductor which adheres to the electrode coating material, which adheres to the material of the carrier in an air-tight manner and which forms an air-tight seal with the glass solder.

4,113,897

SMOOTH GROOVE FORMATION METHOD EMPLOYING SPIN COATING OF NEGATIVE REPLICA OF INSCRIBED DISC

Richard William Nosker, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,804

Int. Cl.² B32B *35/00*; B05D *3/12*

U.S. Cl. 427—140 **7 Claims**

1. A method of preparing a smooth groove in a disc prior to the recording of information therein comprising the steps of:

cutting a groove in a first disc, said groove having valley, wall and peak regions, said peak regions being undesirably subject to irregularities of contour as a consequence of said cutting;

forming a negative replica of said first grooved disc, said negative replica comprising a second disc having a second groove with peak and valley regions corresponding respectively to valley and peak regions of the groove in said first disc;

flowing fluid material of predetermined viscosity over the groove of said second disc while rotating said second disc in a plane about its axis at a predetermined rate, for a sufficient time to drive off the fluid material in excess of that required to provide a continuous coat over the valley, wall and peak regions of the groove of said second disc; and

drying said material to form a continuous material coating over the groove area of said second disc partially filling the valley region of said groove to a depth suitable. for topographically recording information therein, said coating having a smoothly curved surface contour in said valley region formed with substantial independence of variations in the contour of the valley region of the disc groove underlying said coating.

4,113,898

METHOD OF APPLYING POWDER COATINGS OF UNSATURATED BRANCHED HYDROXYESTER RESINS

Arno Gardziella, Witten-Rüdinghausen, and Karl Jellinek, Letmathe, both of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 482,959, Jun. 25, 1974, abandoned, which is a division of Ser. No. 274,950, Jul. 25, 1972, abandoned. This application Jan. 20, 1976, Ser. No. 650,649

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1971, 2137513

Int. Cl.² B05D *3/02*

U.S. Cl. 427—195 **13 Claims**

1. A process for forming a coating on a substrate selected from the group consisting of metal, wood and ceramic, said coating comprising a powdered enamel, said process comprising:

(a) preparing a powdered enamel comprising an unsaturated, branched hydroxyester resin having a hydroxyl number of about 30–110, said resin comprising the reaction product from the esterification of an unsaturated aliphatic or aromatic dicarboxylic acid with a mixture comprising about 75–97 mole percent of a bivalent alcohol and about 25–3 mole percent of a multifunctional alcohol having at least 3 hydroxy groups;

(b) applying said enamel to said substrate; and

(c) heating said powder enamel to its melting point so as to form a continuous coating on said substrate.

4,113,899

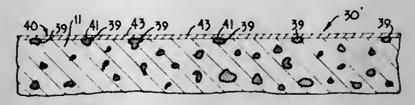
METHOD OF OBTAINING ELECTROLESS NICKEL COATED FILLED EPOXY RESIN ARTICLE

Russell Alger Henry, East Moline, and Ernest Moreland Summers, Moline, both of Ill., assignors to Wear-Cote International, Inc., Rock Island, Ill.

Filed May 23, 1977, Ser. No. 799,772

Int. Cl.² C23C *3/02*

U.S. Cl. 427—290 **7 Claims**



1. In a method for the electroless nickel coating of an article comprising, on the surface of said article, a cured epoxy resin matrix containing generally minus 60 mesh metal filler particles uniformly distributed through said matrix, said article being selected from the group consisting of foundry patterns and core boxes, which method utilizes only said metal filler particles as sites for electroless nickel deposition and does not involve activation of the resin surface and the metal filler particles with oxidation and a catalytic treatment to provide such sites, the improvement which comprises the following steps:

(a) impinging the surface of a said article with inert particles, having a Moh's scale hardness in excess of 4.5 and a U.S. Standard mesh size such that a major amount by weight of said particles will pass a 60 mesh screen, thereby increasing the number of metal filler particles at the surface of said article which are exposed to the atmosphere and free of any coating of or encapsulation with cured resin;

(b) removing any metal oxide film on the exposed surfaces of the exposed metal filler particles by contacting said exposed surfaces with nitric acid for a period of time, less than about 1 minute, sufficient to remove said metal oxide film but insufficient to oxidatively attack said cured epoxy resin matrix; and

(c) immersing the said article treated according to steps (a) and (b) in an electroless nickel plating bath maintained at a temperature ranging from about 160° to 210° F. until initial metallic nickel deposits form on the oxide-free surfaces of said exposed metal filler particles and sufficient additional metallic nickel deposits to bridge over between said initial metallic nickel deposits to form a continuous electroless nickel coating on said article, which coating has a thickness of at least about 5 microns.

4,113,900

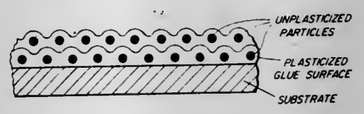
CURL-RESISTANT ADHESIVE-COATED PAPER

William R. Lawton, 6651 Jewett-Holmwood Rd., Orchard Park, N.Y. 14127

Filed Feb. 17, 1977, Ser. No. 769,703

Int. Cl.² B05D *5/10*

U.S. Cl. 427—207 R **8 Claims**



1. A method for adhering a water-remoistenable adhesive to a substrate in the absence of a binding agent, said method comprising the steps of

(a) dispersing a powdered water-remoistenable adhesive comprising a multiplicity of particles in a liquid solution, said liquid solution comprising

(1) an organic liquid comprising a mixture of a first liquid selected from the group consisting of aliphatic and aromatic hydrocarbons, and a second liquid selected from the group consisting of ketones and lower aliphatic alcohols, and

(2) a plasticizer adapted to penetrate outer surface portions of particles of a water-remoistenable adhesive, said plasticizer being selected from the group consisting of polyfunctional amines, alcohol amines, and polyhydric aliphatic alcohols,

thereby to form a binder-free dispersion of unplasticized adhesive particles having plasticized outer surface portions,

(b) coating a substrate with said binder-free dispersion, and

(c) evaporating said organic liquid, thereby forming on said substrate an adhesive coating resistant to curling accompanying changes in atmospheric humidity and comprising a multiplicity of sintered adhesive particles having plasticized outer surface portions joined directly to one another and to said substrate.

4,113,901

METHOD OF APPLYING A LAYER OF POLYURETHANE FOAM ONTO A CUT OR GROUND SURFACE OF POLYURETHANE FOAM

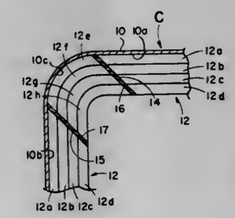
Michael H. Collins, Huxley, Nr. Chester, England, assignor to Shell Internationale Research Maatschappij, B.V., The Hague, Netherlands

Filed Jun. 4, 1976, Ser. No. 693,273

Claims priority, application United Kingdom, Sep. 22, 1975, 38779/75

Int. Cl.² B05D *7/22*; B32B *35/00*

U.S. Cl. 427—236 **1 Claim**



1. A method of manufacturing a heat-insulating polyurethane foam lining of a container having a rigid outer shell with flat inner wall surfaces that intersect to form corners of the container for transport or storage of liquified gases comprising the steps of:

covering the flat inner surfaces of the rigid outer shell of the container located at both sides of a corner of the container with polyurethane foam by spraying layers of polyurethane foam onto said flat inner surfaces and on top of each other;

cutting or grinding the end parts of the layers of polyurethane foam which are located adjacent to the corner of the intersection of two surfaces to form a gap defined by substantially flat planes adjacent to the corner;

applying a thin layer of a sealing material selected from the group consisting of (1) an epoxy resin formulation and (2) a polyurethane resin formulation, onto the flat planes of the gap and allowing the sealing material to set; and

spraying layers of polyurethane foam onto the layer of sealing material and into the gap between said flat planes and the corner part of the rigid outer shell in order to fill up the gap and to provide a strong bond between foam filling the gap and the layers n the flat surfaces.

4,113,902
FLAME RETARDANTS FOR NATURAL AND SYNTHETIC MATERIALS

Vladimir Mischutin, Union City, N.J., assignor to White Chemical Corporation, Bayonne, N.J.

Continuation of Ser. No. 579,824, May 22, 1975, abandoned, which is a continuation of Ser. No. 483,950, Jun. 28, 1974, abandoned, which is a continuation-in-part of Ser. No. 300,731, Oct. 25, 1972, Pat. No. 3,877,974, and Ser. No. 415,667, Nov. 14, 1973, Pat. No. 3,955,032. This application Dec. 17, 1976, Ser. No. 751,661

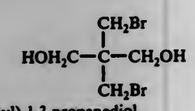
The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.

Int. Cl.² B05D *1/34;* C09K *3/28;* D06M *15/32*

U.S. Cl. 427—390 D **12 Claims**

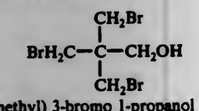
1. A method of rendering textile materials flame retardant, which comprises

wetting said materials with an aqueous dispersion of a brominated aliphatic compound selected from the group consisting of



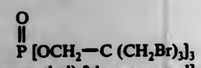
I

2,2-(bromomethyl) 1,3-propanediol (dibromoneopentyl glycol);



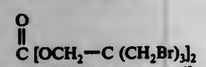
II

2,2-bis (bromomethyl) 3-bromo 1-propanol (tribromoneopentyl alcohol);



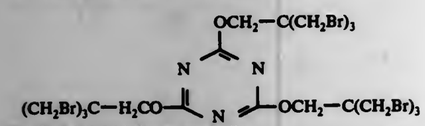
III

Tris [2,2-bis(bromonethyl) 3-bromopropyl] phosphate
Tris (tribromoneopentyl) phosphate;



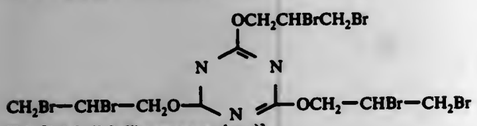
IV

Bis [2,2-bis(bromomethyl) 3-bromopropyl]carbonate
Bis (tribromoneopentyl) carbonate;



V

Tris [2,4,6-(2,2-bis(bromomethyl) 3-bromopropyloxy] 1,3,5-triazine;



VI

Tris [2,4,6- (2,3-dibromopropyloxy)] 1,3,5-triazine;

VII. A polymer obtained by reacting Compound I with phosphorus trichloride ($POCl_3$) in the presence of an acid acceptor;

VIII. A polymer obtained by reacting Compound I with phosgene



in the presence of an acid acceptor; and

IX. A polymer obtained by reacting Compound I with cyanuric chloride in the presence of an acid acceptor; said brominated aliphatic compound being solid at room temperature,

substantially insoluble in water and having an average particle size of two microns or less in diameter,

together in the same bath with a suitable adhesive polymeric binder, and drying.

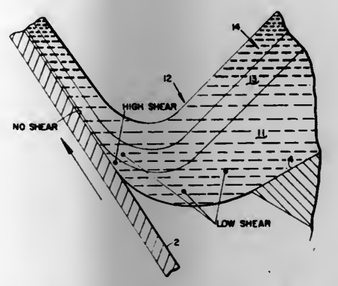
4,113,903
METHOD OF MULTILAYER COATING

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 27, 1977, Ser. No. 801,144

Int. Cl.² B05D *1/30*

U.S. Cl. 427—420 **6 Claims**



1. In the process of applying a multilayer liquid coating to a moving web as distinct superposed continuous layers that are thinned as they are drawn down on the web, the improvement which comprises applying as the layer next to the web a shear thinning carrier layer of pseudoplastic liquid having a viscosity between 20 and 200 centipoises at a shear rate of 100 sec^{-1} and a viscosity below 10 centipoises at a shear rate of 100,000 sec^{-1}.

4,113,904
FIRE RESISTANT WINDOWS

Werner Kiefer, Mainz, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

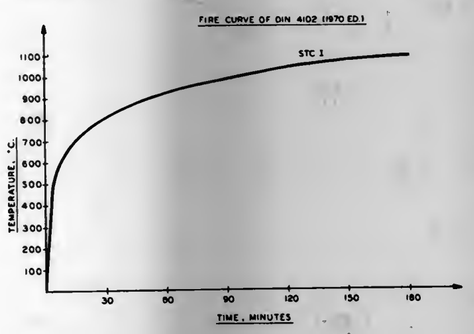
Filed Dec. 3, 1975, Ser. No. 637,424

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1974, 2456991

The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.

Int. Cl.² E06B *3/24;* B32B *17/00*

U.S. Cl. 428—34 **29 Claims**



1. A window comprising a frame and two or more panes which are mounted in the frame and disposed therein in substantially parallel relation, substantially filling the frame opening, at least one of the panes being composed of fire resistant glass which is a borosilicate or aluminosilicate glass and will

withstand heating in accordance with DIN 4102, 1970 Edition, Section 5.2.4, standard temperature curve 1 as shown in FIG. 3 of the drawings, for at least 30 minutes, and has a product of thermal expansion coefficient α and elasticity modulus E of 1 to 5 kp $\times$ cm^{-2} $\times$ $°C^{-1}$, and has a compressive prestress in the peripheral edge portion thereof.

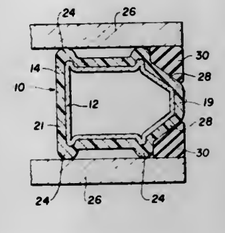
4,113,905
D.I.G. FOAM SPACER

Gerald Kessler, Box 398, Youngstown, Ohio 44501

Filed Jan. 6, 1977, Ser. No. 757,291

Int. Cl.² E06B *3/24;* B32B *5/18*

U.S. Cl. 428—34 **3 Claims**



1. In double insulated glass comprising a pair of separated glass panes, an air space therebetween, an elongated spacer between said glass panes about their periphery, and a plastomeric or elastomeric sealant bonding said spacer to said glass panes and sealing the air space therebetween, the improvement wherein:

said spacer is a hollow cast thermoset foam spacer, comprising a thick foam layer of thickness less than 150 mils cast about a very thin extruded hollow core of thickness no greater than about 10 mils, the coefficient of expansion of said spacer being approximately equal to that of glass, to reduce the stress from differential dimensional change between the glass and said spacer, and to reduce heat transfer between said glass panes through said spacer; said spacer having at least one projecting contact edge, running along the length of said spacer, located on each of the two sides of said spacer which contact the glass panes.

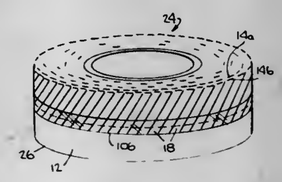
4,113,906
TAPE SPLICING DEVICE AND DISPENSER THEREFOR

Arthur Brandwein, 147-37 77 Ave., Flushing, N.Y. 11367

Filed Aug. 9, 1976, Ser. No. 712,951

Int. Cl.² G09F *3/00;* B32B *3/10, 7/06*

U.S. Cl. 428—42 **10 Claims**



1. A roll of tape splicing material comprising a plurality of individually separable adhesive tape strips disposed side-by-side with respect to each other and wound around a core to form coiled layers of said adhesive tape strips, each said tape strip having opposite end portions and a median portion intermediate said opposite end portions, each said tape strip further including an adhesive surface and a non-adhesive surface, a corresponding plurality of tab members secured to the adhesive surface of each of said tape strips from said median portion to one of the end portions of said tape strips and freely extending beyond said one end portion, said tab members including adhesive release means to permit release from said tape strips, said roll of tape splicing material further including a continuous one-piece elongated marginal sheet secured to the adhesive surface of each of said tape strips from said median portion to the other said end portion of said tape strips and extending beyond said other end portion, said marginal sheet not having any slits that extend substantially across said sheet and including adhesive release means to permit release of said tape strips from said marginal sheet, said tab members being separable from said marginal sheet, said marginal sheet being wound directly upon itself in roll form with said tape strips to form coiled layers of said marginal sheet with an underlying coiled layer of said marginal sheet in substantial surface-to-surface contact with an immediate overlying coiled layer of said marginal sheet.

4,113,907
FABRIC-REINFORCED SEALING SHEETS

Karl Haage, Troisdorf-Spich, and Dieter Scharff, Troisdorf-Sieglar, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

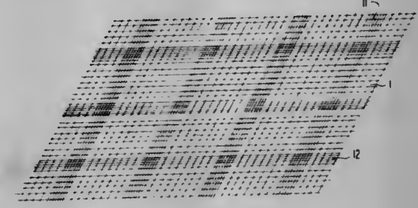
Filed Sep. 3, 1975, Ser. No. 609,944

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1974, 2442156

The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.

Int. Cl.² B32B *5/08, 3/02;* E04C *1/00*

U.S. Cl. 428—111 **18 Claims**



1. A fabric-reinforced multi-layered sealing sheet of a thermoplastic synthetic resin for large-area sealing purposes in structures within building construction, underground construction, and civil engineering construction, by use of a spot-like or strip-shaped mounting to the structures, which comprises an upper layer of thermoplastic synthetic resin, a lower layer of thermoplastic synthetic resin and a reinforcing fabric embedded therein between said layers, said fabric being provided at spaced intervals with fabric-reinforcing strips extending in one direction or in two mutually perpendicular directions, the upper layer that is to be exposed to weathering conditions containing stabilizers for said thermoplastic synthetic resin and having a higher weathering stability than the lower layer of thermoplastic synthetic resin.

4,113,908
SYNTHETIC PAPER

Toshihiko Shinomura, Yokohama, Japan, assignor to Nippon Oil Company Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 427,098, Dec. 21, 1973, abandoned. This application Dec. 9, 1975, Ser. No. 639,166

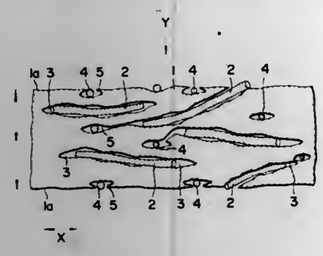
Claims priority, application Japan, Dec. 28, 1972, 48-1961

Int. Cl.² B32B *5/12*

U.S. Cl. 428—113 **9 Claims**

1. Synthetic paper comprising a film base material formed from a thermoplastic resin selected from the group consisting of polyethylene, polypropylene, polystyrene, polyvinyl chloride, copolymers using ethylene, propylene, styrene or vinyl chloride as a base material, and mixtures thereof, a number of threadlike fibrous filaments selected from the class consisting

of organic natural and synthetic fibers and having a diameter in the range of from about 1μ to 50μ and a length in the range of from about 1mm to 5cm, said fibrous filaments each having a void space therearound and being present in an amount of about 2 to 80 parts by weight per 100 parts by weight of said base material, and a substantially spherical particulate pigment



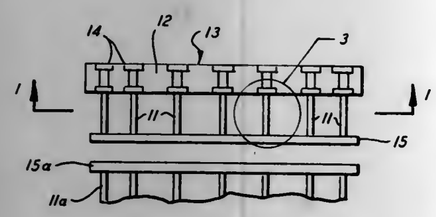
having a diameter in the range of from about 100Å to 50μ, the particles of pigment each having a void space therearound and being present in an amount of about 5 to 40 parts by weight per 100 parts by weight of said base material, therein at least some of the void spaces formed around said pigment connect with at least some of the void spaces around said fibrous filaments.

4,113,909

METHOD FOR FORMING EXPANDED PANELS FROM THERMOFORMABLE MATERIAL AND THE RESULTANT PRODUCT

Donald R. Beasley, Bronxville, N.Y., assignor to Norfield Corporation, Danbury, Conn.

Filed Jan. 27, 1977, Ser. No. 763,097
Int. Cl.[2] B29C *17/02;* B32B *3/12*
U.S. Cl. 428—116 **4 Claims**



1. In a process for expanding the cross-section of a blank of thermoformable material while in a thermoformable state by steps comprising positioning the material between two mold plates while said material in a thermoformable state and heated to a temperature at which it will adhesively bond to the mold plates, adhesively bonding the material by hot tack adhesion to each of the two mold plates, pulling the mold plates apart while the material is so bonded and in a thermoformable state and cooling the expanded material to a temperature below the heat distortion point of the material, the improvement comprising providing supports for each of the two mold plates being supported only on a plurality of elongated studs arranged in rows and columns distributed over the area of each mold plate and essentially perpendicular thereto whereby bending of said plates is avoided, the studs having a length such as to satisfy the following equation: $D = C - \sqrt{C^2 - X^2}$ where D equals one-half the maximum deviation permissible in panel thickness, C the length of the studs and X the amount of thermal expansion in one half of the mold based on the mold material used and the temperature differential to be employed.

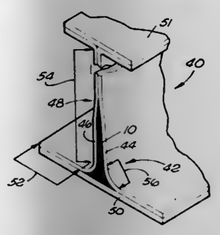
3. The product produced by the process of claim 1.

4,113,910

COMPOSITE LOAD COUPLER FOR REINFORCING COMPOSITE STRUCTURAL JOINTS

Morris S. Loyd, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 27, 1977, Ser. No. 791,360
Int. Cl.[2] B64C *1/00;* F16B *2/14*
U.S. Cl. 428—162 **29 Claims**



1. A composite reinforcement member for structural joints comprising:

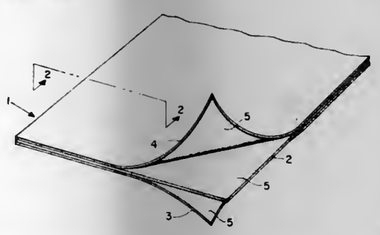
a generally wedge-shaped laminate, said laminate being defined by a shank and a base, said shank having two longitudinal sides, said shank adjoining said base, said base extending arcuately outward from said shank, said base being tapered in thickness as it extends from said shank, said laminate having a plurality of fiber composite sheets of uniform size and shape, said sheets being adhesively bonded together, said sheets being arranged such that the fibers substantially distribute a tension load on said base as a shear load along said longitudinal sides of said shank.

4,113,911

QUIET, STRONG CLOTH-LIKE TISSUE LAMINATE

Larry L. LaFitte, Memphis, Tenn., and James B. Camden, Cincinnati, Ohio, assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Continuation of Ser. No. 528,611, Dec. 2, 1974, abandoned. This application Nov. 15, 1976, Ser. No. 741,640
Int. Cl.[2] B32B *7/00*
U.S. Cl. 428—284 **9 Claims**



1. The quiet, strong clothlike tissue laminate comprising a central layer of continuous filament only lightly bonded or unbonded spunbond nonwoven material, having a basis weight of about 0.3 to about 0.8 oz. per sq. yd., wherein said central layer is impregnated with a liquid emulsion of about 50 to about 120%, based on the fibrous weight of said central layer, of soft, tacky latex binder solids having a glass transition temperature of about 10° C. to about −80° C. and a tack test of about 2 pounds to about 40 pounds, which central layer of continuous filament spunbond nonwoven material is wet combined with, and at low combining pressure joined to, with substantial penetration of said latex binder solids into, between at least two absorbent tissue facing layers each having a basis weight of about 7 to about 18 lbs. per 3000 sq. ft. and subsequently dried.

4,113,912

HYDROPHILIC POROUS STRUCTURES AND PROCESS FOR PRODUCTION THEREOF

Koichi Okita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 10, 1977, Ser. No. 823,474
Claims priority, application Japan, Aug. 10, 1976, 51/95582; Jun. 21, 1977, 52/74069
Int. Cl.[2] D04H *1/58;* B32B *27/04*
U.S. Cl. 428—290 **31 Claims**

1. A hydrophilic porous structure comprising a porous fluorocarbon resin structure with the pores of the fluorocarbon resin structure containing at least one water-isolubilized water-soluble polymer.

21. The structure of claim 1, wherein the porous fluorocarbon resin structure is a porous polytetrafluoroethylene structure.

23. The structure of claim 21, wherein the porous polytetrafluoroethylene has a microstructure containing nodes connected to one another by fibers.

4,113,913

FOAMED CEMENTITIOUS MATERIAL AND COMPOSITE

Leonard H. Smiley, Jenkintown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 13, 1976, Ser. No. 686,193
Int. Cl.[2] C04B *15/02*
U.S. Cl. 428—310 **4 Claims**

1. A cementitious composite comprising (a) a veneer of unfoamed cementitious material comprising Portland cement and, on a weight basis per part of said cement, 0.001 to 2 parts film-forming and water-resistant, and alkali-stable emulsion polymer, 0.001 to 0.4 parts pigment, 0.025 to 2.4 parts sand, and 0.025 to 2 parts water on (b) a substrate of a foamed cementitious material comprising portland cement and about 0.001 to 2 parts by weight film-forming and water-resistant, and alkali-stable emulsion polymer per part by weight portland cement.

4,113,914

PROCESS FOR APPLYING SEALANT COMPOSITION

Richard C. Doss, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 9, 1977, Ser. No. 794,893
Int. Cl.[2] C08L *91/08*
U.S. Cl. 428—355 **8 Claims**

1. A process for sealing an area between two surfaces comprising applying a composition to at least a portion of said area, said composition comprising

a. 100 parts by weight of a block copolymer selected from the group consisting of

aa. polymers of the structural formula

$$(S—D)_mY,$$

bb. polymers of the structural formula

$$(S—D')_nY, \text{ and}$$

cc. polymers of the structural formula

$$S—D'—S,$$

wherein

S is a block of polymerized styrene,

D is a block of polymerized butadiene or isoprene,

D' is a hydrogenated block of polymerized butadiene or isoprene,

Y is a residue of a polyfunctional coupling agent or of a polyfunctional initiating agent,

m is an integer of above 2,

n is an integer of 2 or more,

the block copolymer having a weight average molecular weight of

aa. 200,000 to 750,000 for polymers aa.,

bb. 50,000 to 500,000 for polymers bb. and cc.,

b. 1 to 30 parts by weight of an epoxy resin,

c. 10 to 250 parts by weight of a modifying resin,

d. 25 to 250 parts by weight of a filler.

7. An article produced in accordance with the process of claim 1.

4,113,915

GLASS BEAD PRODUCT

Charles W. Schott, 175 Carmella Dr., McKeesport, Pa. 15131

Division of Ser. No. 515,191, Oct. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 291,262, Sep. 22, 1972, Pat. No. 3,856,899, which is a continuation-in-part of Ser. No. 35,962, May 11, 1970, Pat. No. 3,694,528. This application Apr. 27, 1976, Ser. No. 680,691
Int. Cl.[2] C03B *19/10*
U.S. Cl. 428—402 **3 Claims**

1. A glass generally spherical glass particle containing non-continuous integral crystalline matrix derived elements each one being at least partially enclosed within said glassy particle.

4,113,916

SHELL SAND WITH IMPROVED THERMAL SHOCK RESISTANCE

Robert Simpson Craig, Hoffman Estates, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Continuation of Ser. No. 510,088, Sep. 27, 1974, abandoned. This application Jun. 9, 1976, Ser. No. 694,426
Int. Cl.[2] B32B *5/16*
U.S. Cl. 428—404 **11 Claims**

1. A resin coated sand comprising:

(a) particles of sand coated with from about 1 to about 8% by weight of the sand, of a phenol-formaldehyde novolak resin;

(b) a curing agent; and

(c) from about 2 to about 50%, based upon the weight of the phenol-formaldehyde novolak resin, of an epoxy and/or phenoxy resin.

4,113,917

POWDERY COATING COMPOSITION AND PROCESS FOR PREPARING THE SAME

Hideyoshi Tugukuni, Sakai, and Masafumi Kano, Nagaokakyo, both of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Division of Ser. No. 400,621, Sep. 25, 1973, Pat. No. 3,970,725. This application May 5, 1976, Ser. No. 683,508
Claims priority, application Japan, Sep. 26, 1972, 47-96541; Oct. 28, 1972, 47-108306
Int. Cl.[2] B32B *19/02, 19/04*
U.S. Cl. 428—407 **4 Claims**

1. A powdery coating composition comprising polymer particles having an average particle size within the range of 0.5 to 200μ and composed of, as a core component, a polymer having a softening point not exceeding 90° C. and selected from the group consisting of acrylic copolymers containing 5 to 60% by weight of units of a monomer whose homopolymer has a Tg lower than 0° C. and, as an outer component, a polymer having an softening point of at least 100° C. and being selected from the group consisting of ethyl cellulose and hydroxyethyl cellulose wherein the weight ratio of the core component to the outer component is within the range from 50/50 to 100/1 and said outer component covers said core component.

4,113,918

UNDERCOAT-APPLIED PLASTIC FILMS

Motoo Kogure; Mamoru Komiya; Masaharu Ōishi, and Masaru Kanbe, all of Sagamihara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

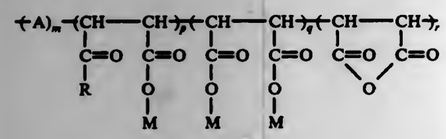
Continuation of Ser. No. 336,881, Feb. 28, 1973. This application Apr. 15, 1976, Ser. No. 677,266

Claims priority, application Japan, Mar. 3, 1972, 47-21534; Apr. 24, 1972, 47-40381

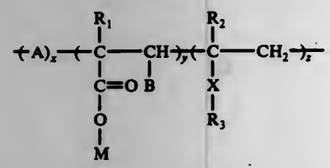
Int. Cl.[2] B32B *27/36*; G03C *1/78*

U.S. Cl. 428—412 18 Claims

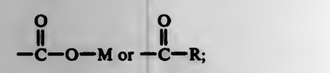
1. An undercoat-applied plastic film substrate selected from the group consisting of polyester, polyether, polycarbonate and polystyrene film substrates and an undercoat layer on at least one surface of the plastic film substrate, said undercoat layer being formed by treating the surface with a solution or dispersion containing a compound represented by the following general formula:



or



wherein A is a vinyl monomer selected from a group consisting of styrene; styrene substituted by a nitro group, fluorine, chlorine, bromine, chloromethyl or lower alkyl; vinyl methyl ether; vinyl ethyl ether; vinyl chloromethyl ether; vinyl acetate; vinyl chloroacetate; vinyl propionate; acrylic or methacrylic acids; itaconic acids; alkyl acrylates and methacrylates having 1 to 5 carbon atoms in the alkyl moiety, which alkyl group is unsubstituted or substituted by chlorine or phenyl; phenyl acrylate and phenyl methacrylate; acrylonitrile; vinyl chloride; vinylidene chloride; ehtylene, acrylamide; acrylamide substituted by an alkyl group of 1 to 5 carbon atoms, chlorine or phenyl; vinyl alcohol; glycidyl acrylate; and acrolein; B is hydrogen,



M is hydrogen, an alkali metal, or ammonium cation, at least 10% of said M's being alkali cation; R is —O—R′ or



in which R′ is alkyl, aralkyl, or aryl; and R″ is an atomic group necessary for completing a heterocyclic ring selected from the group consisting of aziridine, pyrrole, pyrrolidine, pyrazole, imidazole, imidazoline, triazole, piperidine, piperazine, oxazine, morpholine and thiazine, R_1 and R_2 are individually hydrogen or lower alkyl, X is



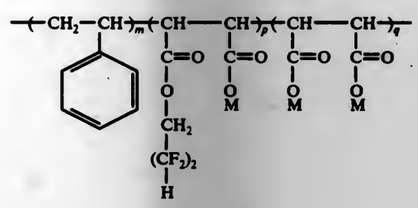
R_3 is a halogenoalkyl or halogenoalkoxyalkyl group, m is 40 to 60, p is 0 to 60, q is 0 to 50, r is 0 to 5, x is 0 to 70, y is 20 to 80 and z is 0 to 80 wherein

$$m + p + q + r = 100$$

$$x + y + z = 100$$

and a solvent or swelling agent for said plastic film substrate selected from resorcinol, orcinol, a β-resorcylic acid, pyrogallol, catechol, hydroquinone, α-naphthol, phenol, cresol, p-chlorophenol, salicylic acid, nitrobenzoic acid, toluene, acetophenone and anisole.

9. A plastic film according to claim 1 wherein said compound is



4,113,919

PROCESS FOR IN SITU FORMATION OF A TREE-DERIVED RESINOUS ADHESIVE COMPOSITION

Seymour Hartman, Mahopac, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 633,235, Nov. 19, 1975, Pat. No. 4,045,386, which is a continuation-in-part of Ser. No. 574,036, May 2, 1975, abandoned. This application Apr. 27, 1977, Ser. No. 791,565

Int. Cl.[2] B32B *21/08, 27/42*; C08L *1/02*

U.S. Cl. 428—529 4 Claims

1. A process for the in situ formation of a tree-derived resinous adhesive composition, which comprises admixing

(A) a finely-divided, alkali-treated wood bark premix, tannin and aldehyde, said alkali-treated wood bark premix being a mixture of finely divided bark particles, alkali and water, which has been neutralized with acid prior to the addition of the tannin and aldehyde to a pH in the range of approximately 5.5 to 7 pH, without an application of external heat to form an adhesive precursor admixture, applying said precursor admixture to wood members to be adhesively bonded, and subjecting said precursor composition and said wood members to temperature and pressure conditions effective to cause the formation of an alkali bark-extended tannin-aldehyde resin bond between said wood members.

4,113,920

COMPOSITE WEAR-RESISTANT ALLOY, AND TOOLS FROM SAME

Eugene L. Helton, Peoria; Preston L. Gale, Chillicothe; Lowell J. Moen, Peoria, all of Ill.; Robert C. Mueller, Mentor, Ohio; Walker L. Pierce, Jr., and Henry J. Vermillion, Jr., both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

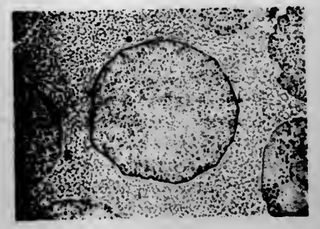
Division of Ser. No. 466,142, May 2, 1974, Pat. No. 4,011,051. This application Oct. 18, 1976, Ser. No. 733,562

Int. Cl.[2] B22F *5/00*

U.S. Cl. 428—565 6 Claims

1. A ground engaging tool having increased resistance to wear including a contact section for engaging the ground and at least a portion of said section reinforced with a wear resistant composite alloy, said wear resistant composite alloy comprising cast spheroidal particles of a first alloy embedded in a matrix of a second tough ductile alloy in which said first alloy

is soluble with difficulty, and wherein the first alloy comprises from about 25–70% by weight chromium, from about 6–12%



by weight boron, from about 0 to about 2% by weight carbon, and iron is the balance.

4,113,921

SECONDARY CELLS

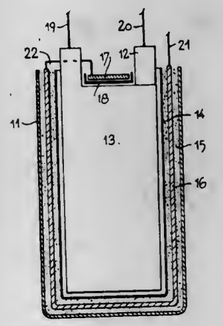
Jonathan R. Goldstein, 51 Hashachal St., and Yitzhak Klein, 1 Chatam Sofer St., both of Jerusalem, Israel

Filed Jul. 5, 1977, Ser. No. 812,672

Claims priority, application Israel, Jul. 12, 1976, 50024

Int. Cl.[2] H01M *10/34*

U.S. Cl. 429—27 11 Claims



1. A secondary cell comprising zinc electrodes and an auxiliary electrode having a surface of an electrocatalyst having a low overvoltage for hydrogen evolution which is resistant to deposition of zinc thereon, and means for connecting said auxiliary electrode to the negative electrodes during charging, said auxiliary electrode acting to take up the excessive current at the negative electrodes over that of the positive electrodes during charging thus eliminating or substantially reducing the shape-change phenomena of the negative electrodes.

4,113,922

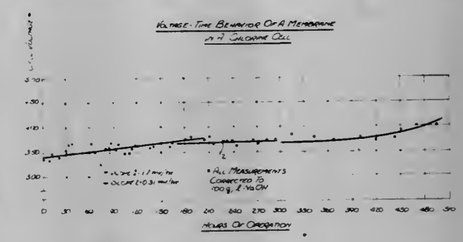
TRIFLUOROSTYRENE SULFONIC ACID MEMBRANES

Vincent F. D'Agostino, Huntington Station; Joseph Y. Lee, Lake Grove, and Edward H. Cook, Jr., Lewiston, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls and RAI Research Corporation, Hauppauge, both of, N.Y.

Division of Ser. No. 741,163, Nov. 11, 1976, which is a division of Ser. No. 535,636, Dec. 23, 1974, Pat. No. 4,012,303. This application Nov. 10, 1977, Ser. No. 850,194

Int. Cl.[2] H01M *8/10*

U.S. Cl. 429—33 5 Claims



1. In a fuel cell, the improvement comprising a separator having:

a. an inert polymeric base film; and

b. sulfonated α, β, β-trifluorostyrene irradiation grafted on said film.

4,113,923

FUEL CELL INCLUDING AT LEAST ONE IMPROVED ELEMENT

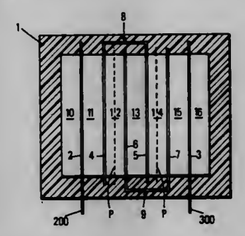
Jacques Cheron, Maisons-Lafitte, France, assignor to Institut Francais du Petrole, France

Filed Sep. 29, 1976, Ser. No. 727,804

Claims priority, application France, Oct. 9, 1975, 75 31215

Int. Cl.[2] H01M *4/70*

U.S. Cl. 429—36 16 Claims



1. A fuel cell including at least one fuel cell element comprising a fuel cell housing, two terminal electrodes within said housing provided with external electrical connection means and intermediate electrodes between said terminal electrodes, said electrodes being mounted in the walls of said housing and separated from one another, said electrodes, together with the walls of said housing delimiting electrolyte chambers, fuel chambers and chambers containing a combustion sustaining fluid, wherein said intermediate electrodes are formed by at least one pair of U- or V-shaped members electrically insulated from each other, each exposed face of said U- or V-shaped members being coated with a catalyst each member being so positioned that one of the members of said pair has one arm inserted between the opposite arms of the other member thereof, said arms constituting the intermediate electrodes and delimiting between each other a central chamber and two adjacent chambers on both sides of said central chamber, and wherein said central chamber and said adjacent chambers delimited by the terminal electrodes and the intermediate electrodes adjacent to said terminal electrodes from electrolyte chambers, each of which is located between a fuel chamber and a chamber containing the combustionsustaining fluid,

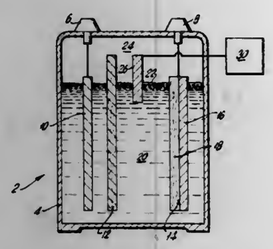
whereby each catalyst-coated face of said U- or V-shaped members is in contact with fuel or combustion sustaining fluid, respectively.

4,113,924

ZINC-HALOGEN COMPOUND ELECTROCHEMICAL CELL HAVING AN AUXILIARY ELECTRODE AND METHOD

Edward Kantner, E. Brunswick, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed May 26, 1977, Ser. No. 800,786
Int. Cl.[2] H01M *10/44*
U.S. Cl. 429—50 **18 Claims**



1. An electrochemical cell, comprising, in a sealed configuration:
(a) an anode having a zinc anode-active material;
(b) a cathode having a halogen compound cathode-active material;
(c) an acidic liquid electrolyte and a gas space above the electrolyte, wherein hydrogen gas is capable of being generated in said cell and of accumulating in said gas space; and
(d) an auxiliary electrode made of a carbon-containing hydrophobic material, and having a cathodic potential, said auxiliary electrode being positioned in said cell so as to be partially located in said liquid electrolyte and partially located in said gas space, and being capable of converting said hydrogen gas to its ionic state via the formation of an ionic compound whereby the ionic compound is dissolved in said liquid electrolyte.

10. A method of retarding pressure buildup in an electrochemical cell having an anode with a zinc anode-active material, having a cathode with a halogen compound cathode-active material, and having an acidic liquid electrolyte with a gas space above said liquid electrolyte, wherein hydrogen gas is generated in said cell and accumulated in said gas space causing a pressure buildup, comprising:
creating a cathodic potential at an auxiliary electrode so as to convert said hydrogen gas to its ionic state via the formation of an ionic compound whereby the ionic compound is dissolved in said liquid electrolyte, said auxiliary electrode being made of a carbon-containing hydrophobic material and being positioned in said cell so as to be partially located in said liquid electrolyte and partially located in said gas space.

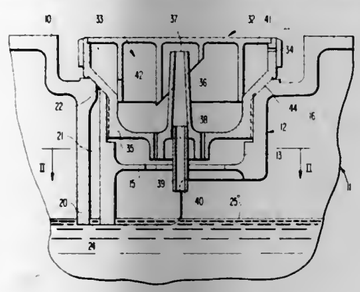
4,113,925

BATTERY FILLING AND VENTING STRUCTURE

Werner Köhler, Stuttgart; Gerhard Drücker, Neuhausen; Ulrich Kiess, Esslingen-Liebersbronn, and Manfred Stotz, Sersheim, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Aug. 25, 1976, Ser. No. 717,682
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1975, 2537848
Int. Cl.[2] H01M *2/12*
U.S. Cl. 429—78 **25 Claims**

1. A battery comprising at least one cell defining a battery interior space and at least one filler means having an opening terminating in the atmosphere for introducing electrolyte liquid into said interior space, the battery interior space being connected with the atmosphere by way of at least one filler venting connecting means having an opening terminating in the atmosphere and an opening terminating in the battery interior space which is geodetically located approximately at the height of the intended liquid level within said battery interior space, a fill-in chamber means located between the opening of said filler means terminating in the atmosphere and the interior space of the battery, and chamber connecting means connecting the fill-in chamber means with the battery interior space, said chamber connecting means including at least one opening of a narrow capillary free flow cross section terminating in the battery interior space and geodetically arranged above the intended liquid level, the free flow cross section of the at least one opening being such that a liquid said means closing off the at least one opening in a substantially gas



tight manner will form under the influence of a capillary effect and the excess pressure which will establish itself during a fill-in operation in the battery interior space above the liquid level, when the liquid has entered into the opening of the venting connecting means terminating in the battery interior space, a detachable closure means for closing off the opening of the filler means terminating in the atmosphere, the fill-in chamber means being provided with a pressure equalization opening that terminates in the battery interior space at a place geodetically above the intended liquid level, and the closure means being provided with a vent opening in continuous communication with the atmosphere, the pressure equalization opening being connected with the vent opening by a venting connection means when the closure means is in the closed position and said filler venting connecting means being positioned outside of the filler means and outside of the fill-in chamber means.

4,113,926

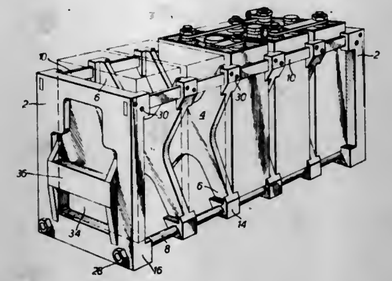
CELL RACKS

Roderick Julian McBrien, Tonbridge, England, assignor to Chloride Group Limited, London, United Kingdom

Filed Aug. 18, 1977, Ser. No. 825,718
Claims priority, application United Kingdom, Aug. 20, 1976, 34842/76
Int. Cl.[2] H01M *2/10*
U.S. Cl. 429—99 **11 Claims**

1. A rack supporting and holding together two or more rectangular electric cells side by side with their end walls coplanar and their side walls parallel, comprising two generally planar rack elements forming the ends of the rack and at least one additional generally planar intermediate rack element of spider form having radiating arms, the rack elements being arranged in spaced planes which in use will be parallel to the side walls of the cells with a cell between each neighbouring pair of rack elements, each rack element affording, in the region of each corner of each adjacent side wall, a vertical spacing surface lying flat against the side wall of each adjacent cell, and having a portion projecting beyond the side wall, each projecting portion adjacent a bottom corner affording a

horizontal supporting surface to engage the bottom of the cell, and each projecting portion adjacent an upper corner and/or a lower corner affording a vertical locating surface to engage an end wall of the cell to restrain lateral movement parallel to the



side walls, and tie members extending horizontally along the end walls, engaging the projection portions of the rack elements and arranged to connect the rack elements together to hold the cells and rack elements together in a stack.

4,113,927

BATTERY SEPARATOR HAVING COATED RIBS

Peter E. Johnson, and Bob G. Rowland, both of Corvallis, Oreg., assignors to Evans Products Company, Portland, Oreg.

Filed Aug. 13, 1975, Ser. No. 604,350
Int. Cl.[2] H01M *2/18*
U.S. Cl. 429—143 **8 Claims**

1. In a battery separator manufactured by sintering a heat-fusible resin and having ribs on at least one side thereof, the improvement comprising a coating on said ribs, said coating consisting essentially of a low-density polyethylene wax having a softening point between about 70° C. and about 130° C.

4,113,928

METHOD OF PREPARING DENSE, HIGH STRENGTH, AND ELECTRICALLY CONDUCTIVE CERAMICS CONTAINING β″-ALUMINA

Anil V. Virkar; Mark L. Miller; Ivan B. Cutler, and Ronald S. Gordon, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 658,160, Feb. 17, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,572
Claims priority, application Belgium, Feb. 17, 1977, 17952
Int. Cl.[2] H01M *6/18*
U.S. Cl. 429—193 **26 Claims**

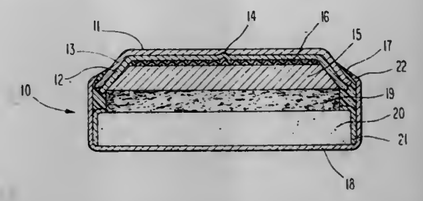
1. A method for preparing a dense, strong polycrystalline β″-alumina-containing ceramic body exhibiting (i) an electrical resistivity for sodium ion conduction at 300° C. of less than or equal to about 9 ohm-cm, and (ii) a fine, uniform microstructure and resultant fracture strength comparable to that achieved by hot pressing techniques, comprising:
(A) preparing a powder mixture comprising aluminum oxide, sodium oxide and lithium oxide in stoichiometric proportions required to produce β″-alumina upon being heated to crystal forming temperatures, said lithium oxide being present in amounts ranging from about 0.1 to about 5 weight percent of the total of said mixture and being provided by a lithium aluminate compound having the formula $Li_2O{:}nAl_2O_3$ wherein n equals at least 5;
(B) green forming said preparing mixture to the desired shape; and
(C) sintering the green formed body at a temperature above about 1500° C. until desirable conversion to β″-alumina and near theoretical density for same are achieved.

4,113,929

NON-AQUEOUS PRIMARY BATTERY HAVING A PURE SILVER CHROMATE CATHODE

Nehemiah Margalit, Levittown, Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 14, 1977, Ser. No. 851,414
Int. Cl.[2] H01M *6/14*
U.S. Cl. 429—194 **8 Claims**



1. A non-aqueous primary battery having
(a) a light metal anode selected from the group consisting of lithium, magnesium, aluminum, beryllium, calcium, sodium, and potassium;
(b) an electrolyte solution comprised of an organic solvent and a light inorganic salt dissolved therein;
(c) a separator; and
(d) a cathode consisting of silver chromate without binder or conductive additives.

4,113,930

HYDROGENATED 1,3-CYCLOHEXADIENE/1,3-BUTADIENE COPOLYMERS

George A. Moczygemba, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1976, Ser. No. 711,029
Int. Cl.[2] C08F *8/04*
U.S. Cl. 526—25 **13 Claims**

1. A hydrogenated copolymer of 1,3-cyclohexadiene having unusually high green tensile strength formed by (1) copolymerizing 1,3-cyclohexadiene and 1,3-butadiene in a weight ratio in the range of about 40/60 to about 60/40 under copolymerizing conditions in the presence of a catalyst mixture consisting of catalytic amounts of titanium tetrachloride and at least one cyclopolyolefin nickel complex of the formula

$$Ni(L)_n$$

wherein n is an integer of 1 to 4 and each ligand L is individually selected from the group consisting of cyclopolyolefin having 5 to 18 carbon atoms, 5 to 14 of which make up a cyclic ring containing at least two ethylenic groups and (2) hydrogenating at least about 98 percent of the unsaturation of the resulting copolymer under conditions sufficient to increase the green tensile strength of said copolymer.

4,113,931

PROCESS FOR THE CONTINUOUS PRODUCTION OF INDENE RESINS

Hans Spengler, Henrichenburg; Günter Bucksch, Duisburg, and Manfred Morgenstern, Castrop-Rauxel, all of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 488,092, Jul. 12, 1974, abandoned. This application Jul. 12, 1976, Ser. No. 704,600
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1973, 2335891
Int. Cl.[2] C08F *244/00*
U.S. Cl. 526—64 **33 Claims**

1. A continuous process for the production of an indene resin, said process comprising the following sequential steps:

(A) preheating an indene-containing hydrocarbon fraction to a reaction temperature of about 20° C. to about 180° C.;
(B) continuously feeding said preheated indene-containing hydrocarbon fraction and a boron trifluoride-containing catalyst into a reaction tube which is maintained at said reaction temperature, wherein said catalyst is in an amount between about 0.03 and about 0.4% by weight catalyst, related to the weight of said indene-containing fraction; and wherein said reaction tube has a length which is at least about 10^3 times greater than the major cross-sectional dimension of said reaction tube;
(C) continuously reacting said indene-containing hydrocarbon fraction and said catalyst in said reaction tube at a pressure between about 0 and about 8 atmospheres for a period of from about 3.84 min. to about 35.89 min. to form an indene resin;
(D) contacting said mixture of said resin, catalyst and unreacted hydrocarbon fraction with steam at about 0.5 to about 6 atmospheres of pressure in order to decompose said catalyst; and
(E) separating said indene resin from said decomposed catalyst and unreacted hydrocarbon fraction.

4,113,932

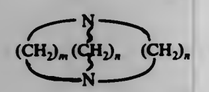
PROCESS FOR POLYMERIZING VINYL CHLORIDE MONOMER

Takeshi Sekihara; Tomoyuki Emura, and Masayuki Murashige, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 3, 1978, Ser. No. 874,748
Claims priority, application Japan, Feb. 17, 1977, 52-16834
Int. Cl.² C08F *14/06*
U.S. Cl. 526—74 **6 Claims**

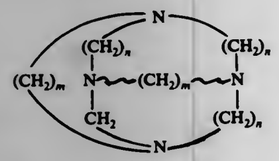
1. In a process for polymerizing vinyl chloride alone or a mixture of vinyl chloride as a main component and a monomer copolymerizable therewith in an aqueous medium, an improvement which comprises carrying out said polymerization in the presence of a polycyclic nitrogen-containing compound of the formula,

(1)



and/or

(2)



wherein *m* and *n* are each an integer of 1 to 3, the amount of said compound being 1 ppm to less than 100 ppm by weight based on said monomer or monomer mixture.

4,113,933

MANUFACTURE OF HOMOPOLYMERS AND COPOLYMERS OF α-MONOOLEFINS

Günther Schweier, Ludwigshafen; Erich Kolk, Bad Durkheim; Heinz Mueller-Tamm, Ludwigshafen; Hans Frielingsdorf, Bad Durkheim; Robert Bachl, Worms, and Wolfgang Gruber, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 27, 1977, Ser. No. 762,858
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 2603919
Int. Cl.² C08F *4/02, 10/02*
U.S. Cl. 526—124 **18 Claims**

1. A process for the manufacture of homopolymers and copolymers of α-monoolefins of 2 to 6 carbon atoms by polymerizing the monomer or monomers at from 30° to 200° C and pressures of from 0.1 to 200 bars, using a Ziegler catalyst system comprising
(1) a titanium-containing catalyst component and
(2) a metal compound of the general formula

$$Me\ A_{m-n}X_n$$

where Me is aluminum, magnesium or zinc, A is a hydrocarbon radical of 1 to 12 carbon atoms, X is chlorine, bromine, iodine or hydrogen, *m* is the valency of the metal Me and *n* is a number from 0 to *m*−1, with the proviso that the atomic ratio of titanium from catalyst component (1) to metal (Me) from catalyst component (2) is from 1 : 0.1 to 1 : 500, wherein the titanium-containing catalyst component (1) employed is the solid-phase product (VI) obtained by first
(1.1) bringing into contact
(1.1.1) a finely divided, porous, inorganic.oxidic material (I) which has a particle diameter of from 1 to 1,000 μm, a pore volume of from 0.3 to 3 cm^3/g and a surface area of from 100 to 1,000 m^2/g and which has the formula $SiO_2 . aAl_2O_3$, where *a* is a numbe from 0 to 2 and
(1.1.2) an aluminum compound (II), dissolved in an organic solvent, the compound having the general formula

$$Al\ B_{3-p}Y_p$$

where B is a hydrocarbon radical of 1 to 12 carbon atoms, Y is chlorine, bromine, iodine, hydrogen or OR, R is a hydrocarbon radical of 1 to 12 carbon atoms and *p* is a number from 0 to 3 to form a solid-phase product (III), with the proviso that the weight ratio of inorganic oxidic material (I) employed to aluminum compound (II) employed is from 1 : 0.05 to 1 : 10, and then
(1.2) bringing into contact
(1.2.1) the solid-phase product (III) obtained from stage (1.1) and
(1.2.2) a solution (IV) obtained by bringing together (IV*a*) 100 parts by weight of an alcohol of the general formula

$$Z—OH$$

where Z is a saturated hydrocarbon radical of 1 to 8 carbon atoms, (IV*b*) from 0.01 to 6 parts by weight (calculated as titanium) of a titanium trihalide, where the halogen may be chlorine and/or bromine and (IVc) from 0.01 to 4 parts by weight (calculated as magnesium) of a magnesium compound which is soluble in the alcohol (IV*a*) to form a dispersion (V), with the proviso that the weight ratio of solid-phase product (III — calculated as inorganic oxidic material I) — to titanium in the titanium trihalide (IV*b*) is from 1 : 0.01 to 1 : 0.2 and the weight ratio of solid-phase product (III — calculated as inorganic oxidic material I) — to magnesium in the magnesium compound (IVc) is from 1 : 0.01 to 1 : 0.25, and evaporating the dispersion (V) at below 200° C, and above the melting point of the alcohol (IV*a*) used, the evaporation being substantially complete in about 1 to 10 hours, until it reaches a dry consistency, i.e. until the solid-phase product (VI) is formed, any residual alcohol being left in said solid-phase product (VI).

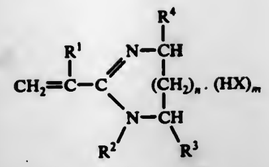
4,113,934

UNSATURATED IMIDAZOLINES

Hans Peter Panzer, Stamford; Michael Niall Desmond O'Connor, Norwalk, and Louis J. Baccei, Newington, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 467,331, May 6, 1974, Pat. No. 4,006,247. This application Jul. 16, 1976, Ser. No. 706,087
Int. Cl.² C08F *26/06*
U.S. Cl. 526—258 **7 Claims**

1. A vinyl addition copolymer of (1) a monomer having the formula



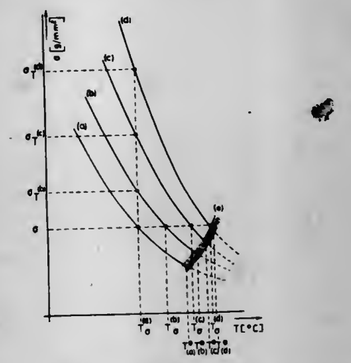
wherein *n* and *m* are, individually, 0 or 1, X is an anion, R′ is hydrogen, methyl or phenyl and R^2, R^3 and R^4 are, individually, hydrogen, alkyl (C_1–C_4), aryl (C_6–C_{10}), aralkyl (C_7–C_{11}) or alkaryl (C_7–C_{11}) and (2) at least one monoethylenically unsaturated comonomer copolymerizable with (1) at a ratio of 96:4 to 4:96, respectively, the heterocyclic component of the copolymer being free of imino, carboxyl, ester and amide groups, unreacted nitrile groups and unreacted polyamine.

4,113,935

PROCESS FOR PRODUCING LOW SHRINKAGE FILM BANDS

Heinz Schippers; Friedhelm Hensen, both of Remscheid; Gerhard Koslowski, Hückeswagen, and Dieter Czerwon, Hückeswagen-Weihagen, all of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Continuation of Ser. No. 476,052, Jun. 3, 1974, abandoned. This application Sep. 13, 1976, Ser. No. 722,558
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1973, 2328639
Int. Cl.² C08F *10/06;* B29D *7/24*
U.S. Cl. 526—351 **8 Claims**



1. A multistage stretching process for producing monoaxially stretched film bands of a thermoplastic film-forming polypropylene polymer having a residual shrinkage of less than 2% at a test temperature of 132° C., said stretching being applied to the initially extruded, amorphous polymer film divided into a plurality of said film bands, which process comprises:
monoaxially stretching said film bands in a plurality of separate stages at a temperature above room temperature but below the crystalling melting point of the polymer;
raising the stretching temperature in going from one stretching stage to the next stage;
maintaining the stretching temperature in each stage at a high maximum value T^{Θ} corresponding to that which in itself would be sufficient to accomplish a single stage stretching at the total desired stretch ratio but at the same time limiting the stretching tension to a low value σ considerably below the stretching tension required at said temperature value T^{Θ} to produce the total desired stretch ratio, with the proviso that the first stage stretching is not more than one-third the total stretching;
adjusting the raised temperature in each succeeding stage to a new maximum value T^{Θ} corresponding to the higher temperature resistance of the film bands based upon their order of crystalline orientation;
and then heat stabilizing the stretched film bands after the final stretching stage by heating them at a temperature of between about 20° C. to 30° C. below the crystalline melting point of the polymer while the bands are relaxed sufficiently to permit shrinkage.
7. The polypropylene film band product obtained by the process of claim 1 having a tensile strength of at least 5 g/denier and a residual shrinkage value below 2%.

4,113,936

CROSS-LINKING OF CELLULOSE FIBERS IN GAS SUSPENSION

Claude H. Lesas, Colmar, and Michel Pierre, Mulhouse, both of France, assignors to S. A. Beghin-Say, Thumeries, France

Filed Oct. 13, 1976, Ser. No. 731,895
Claims priority, application France, Oct. 20, 1975, 75 31965
Int. Cl.² C08B *15/10*
U.S. Cl. 536—56 **9 Claims**

1. A process for treating cellulose fibers with formaldehyde comprising the steps of -
(1) spraying of formaldehyde as a mixture with hydrochloric acid and formic acid on individualized cellulose fibers;
(2) immediately after said spraying, introduction of said fibers which have the reagents of step (1) uniformly disposed thereon in an air stream having a temperature of from 60° to 250° C. and a velocity of from 1–20 m/sec during a curing-time period ranging between 1 and 10 seconds to effect a cross-linking reaction, and
(3) separating said fibers from said air stream.

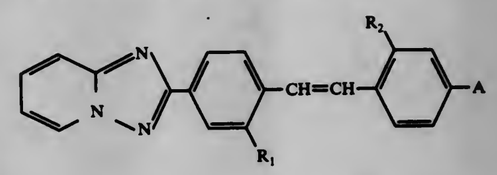
4,113,937

STILBENE COMPOUNDS

Adolf Emil Siegrist, Basel, and Jean-Paul Pauchard, Fribourg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 14, 1977, Ser. No. 850,861
Claims priority, application Luxembourg, Nov. 25, 1977, 77024
Int. Cl.² C09B *23/00*
U.S. Cl. 542—463 **9 Claims**

1. A stilbene compound of the formula



in which R_1 and R_2 independently of one another are hydrogen or chlorine and A is a mono-nuclear or poly-nuclear aromatic heterocyclic structure which contains oxygen atoms or oxygen and nitrogen atoms and is unsubstituted or substituted by non-chromophoric substituents.

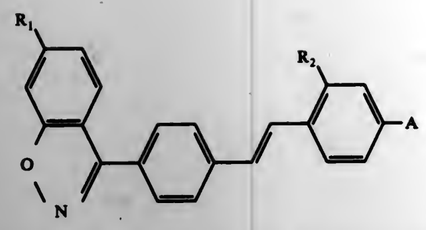
4,113,938

STILBENE COMPOUNDS

Adolf Emil Siegrist, and Bernardo de Sousa, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,040
Claims priority, application Luxembourg, Mar. 25, 1977, 77016
Int. Cl.² C09B *23/00*
U.S. Cl. 542—464 **10 Claims**

1. A stilbene compound of the formula



in which R_1 and R_2 independently of one another are hydrogen or chlorine and A is a mono-nuclear or poly-nuclear aromatic heterocyclic structure which contains oxygen atoms or oxygen and nitrogen atoms and is unsubstituted or substituted by non-chromophoric substituents.

4,113,939

N',N'-DISUBSTITUTED 2,1,3-BENZOTHIADIAZIN-(4)-ONE-2,2-DIOXIDES

Adolf Fischer, deceased, late of Mutterstadt, Fed. Rep. of Germany (by Caecilia Emma Fischer, heiress-at-law), and Gerhard Hamprecht, Mannheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

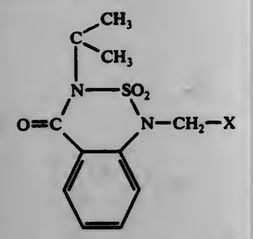
Filed Nov. 28, 1975, Ser. No. 636,162

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1974, 2458343

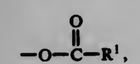
Int. Cl.² C07D *285/16*

U.S. Cl. 544—11 **9 Claims**

1. A substituted 2,1,3-benzothiadiazin-(4)-one-2,2-dioxide of the formula



where X denotes halogen or a



—O—R^2, —SR^3, or 2,4-dinitro-6-bromoanilino, o-cyanoanilino, o-nitroanilino, o-bromo-p-nitroanilino, and N-methyl-(o-bromo-p-nitroanilino), R^1 denoting alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl, cycloalkyl, aralkyl, or aryl, R^2 denoting O,O-dialkylthiophosphoro, O,S-dialkylphosphoro, S,S-dialkylphosphoro, O,O-dialkylthiophosphoro, O,S-dialkylthiophosphoro, S,S-dialkylthiophosphoro, aralkyl, aryl, or phenyl substituted by chlorine, nitro, lower alkyl, lower alkoxy, lower alkoxycarbonylamino or diloweralkylureido and R^3 having the same meanings as R^1 and additionally denoting O,O-dialkylthiophosphoro, O,S-dialkylthiophosphoro, S,S-dialkylthiophosphoro, O,O-dialkylphosphoro, O,S-dialkylphosphoro and S,S-dialkylphosphoro.

4,113,940

7-AMINO 2-LOWER ALKYL-2 OR 3-CEPHEM-4-CARBOXYLIC ACID DERIVATIVES AND PROCESSES FOR PREPARATION THEREOF

Takashi Kamiya, Suita; Tsutomu Teraji; Masashi Hashimoto, both of Toyonaka; Osamu Nakaguti, Osaka, and Teruo Oku, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

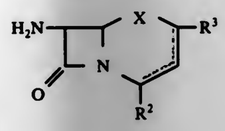
Continuation-in-part of Ser. No. 451,159, Mar. 14, 1974, abandoned. This application Dec. 15, 1975, Ser. No. 640,910

Claims priority, application Japan, Mar. 15, 1973, 48-30718; Mar. 15, 1973, 48-30719; Mar. 15, 1973, 48-30720; Aug. 2, 1973, 48-87852; Aug. 2, 1973, 48-87853; United Kingdom, Oct. 3, 1975, 40677/75

Int. Cl.² C07D *501/14, 501/16, 501/60;* A61K *31/545*

U.S. Cl. 544—16 **5 Claims**

1. A compound of the general formula:



wherein R^2 is carboxy or a protected carboxy selected from the group consisting of tri(C_1–C_6) alkylsilyl ester, (C_1–C_{16}) alkyl ester, (C_2–C_6) alkenyl ester, (C_2–C_6) alkynyl ester, (C_3–C_8) cycloalkyl ester, (C_1–C_6) alkoxy (C_1–C_6) alkyl ester, (C_1–C_6) alkylthio (C_1–C_6) alkyl ester, di(C_1–C_6) alkylamino ester, (C_1–C_6) alkylideneamino ester, (C_1–C_6) alkylsulfenyl (C_1–C_6) alkyl ester, (C_1–C_6) alkanoyloxy (C_1–C_6) alkyl ester, phenyl ester, xylyl ester, naphthyl ester, indanyl ester, dihydroanthryl ester, phenyl (C_1–C_6) alkyl ester, phenoxy (C_1–C_6) alkyl ester, phenylthio (C_1–C_6) alkyl ester, phenylsulfenyl (C_1–C_6) alkyl ester, benzoyl (C_1–C_6) alkyl ester, phthalimido ester, pyridyl ester, piperidino ester, 2-pyridon-1-yl ester, tetrahydropyranyl ester, quinolyl ester, pyrazolyl ester, heterocyclic (C_1–C_6) alkyl ester wherein said heterocyclic moiety is selected from the group consisting of pyridyl, piperidino, 2-pyridon-1-yl, tetrahydropyranyl, quinolyl and pyrazolyl, the above recited ester having from 1 to 10 of the substituents selected from the group consisting of (C_1–C_6) alkyl, (C_1–C_6) alkoxy, (C_1–C_6) alkylthio, (C_1–C_6) alkylsulfinyl, (C_1–C_6) alkanesulfonyl, phenylazo, halogen, cyano and nitro; N-(C_1–C_6) alkyl acid amide, N,N-di(C_1–C_6) alkyl acid amide and acid amide formed with pyrazole, imidazole or 4-(C_1–C_6) alkylimidazole; R^3 is (C_1–C_6) alkyl, and X is —S— or



or a pharmaceutically acceptable salt thereof.

4,113,941

PROCESS FOR PURIFYING PRODUCTS OBTAINED FROM ENZYMATIC CLEAVAGE OF BETA-LACTAM ANTIBIOTICS

Fritz Hüper, and Helmut Oberheiden, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 4, 1976, Ser. No. 692,876

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1975, 2528622

Int. Cl.² C07D *501/12*

U.S. Cl. 544—20 **15 Claims**

1. A process for purifying a liquid reaction mixture obtained from the enzymatic cleavage of amido side chains from β-lactam antibiotics, said reaction mixture including the β-lactam antibiotic freed of said side chain, which comprises contacting the reaction mixture with an anion exchange resin, and separating the purified liquid from the resin carrying the impurities.

4,113,942

4-(TETRAZOL-5-YL)-Δ³-CEPHEM COMPOUNDS

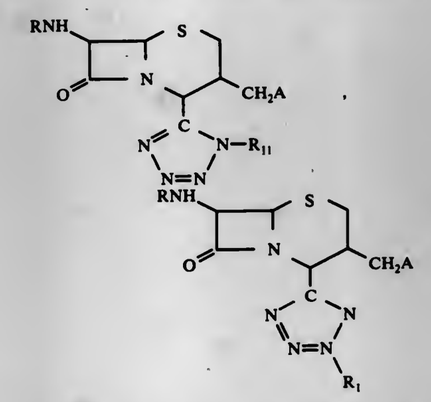
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 658,303, Feb. 17, 1976, Pat. No. 4,045,436, which is a division of Ser. No. 508,634, Sep. 23, 1974, Pat. No. 3,966,719, which is a continuation-in-part of Ser. No. 407,097, Oct. 17, 1973, abandoned. This application Apr. 27, 1977, Ser. No. 791,537

Int. Cl.² C07D *501/18, 501/36*

U.S. Cl. 544—23 **10 Claims**

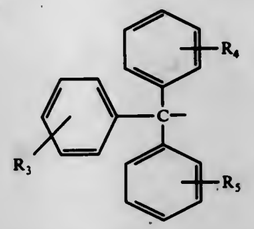
1. A compound selected from the group consisting of



I

II

and the acid addition salts thereof when R is hydrogen, said R being selected from the group consisting of hydrogen and

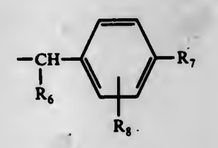


wherein R_3, R_4 and R_5 are each selected from the group consisting of hydrogen, chloro, bromo, fluoro, methyl, methoxy and phenyl;

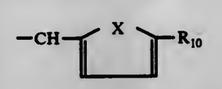
A being selected from the group consisting of 1-methyl5-tetrazolylthio and 2-methyl-1,3,4-thiadiazolyl-5-thio;

R_1 being selected from the group consisting of hydrogen, alkanoyloxymethyl having from three to six carbon atoms, 1-(alkanoyloxy)ethyl having from four to seven carbon atoms, methoxymethyl, and phthalidyl;

and R_{11} being selected from the group consisting of hydrogen, alkanoyloxymethyl having from three to six carbon atoms, 1-(alkanoyloxy)ethyl having from four to seven carbon atoms, methoxymethyl, phthalidyl,



wherein R_6 is selected from the group consisting of alkyl having from one to three carbon atoms and phenyl and R_7 is selected from the group consisting of hydroxy, methoxy, alkanoyloxy having two to four carbon atoms, and benzyloxy and R_8 is selected from the group consisting of hydrogen, hydroxy, fluoro, chloro, bromo, iodo, methyl, methoxy, alkanoyloxy having from two to four carbon atoms, phenyl and benzyloxy and



wherein R_9 and R_{10} are each selected from the group consisting of hydrogen and methyl and X is selected from the group consisting of oxygen and sulfur.

4,113,943

7β-[(2-AMINO-1,2-DIOXOETHYL)AMINO]ACYL CEPHALOSPORINS

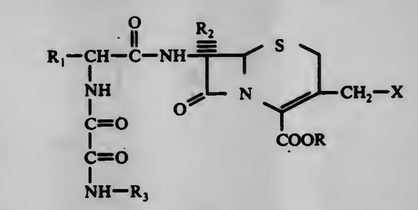
Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 10, 1977, Ser. No. 776,400

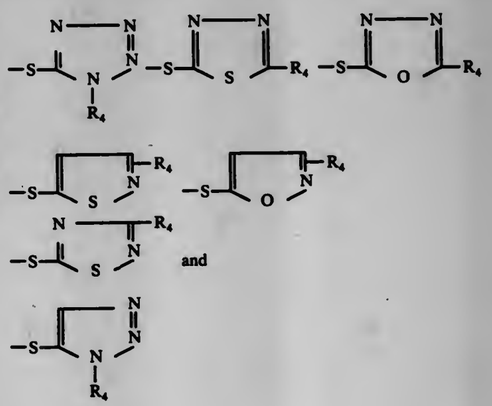
Int. Cl.² C07D *501/36*

U.S. Cl. 544—26 **12 Claims**

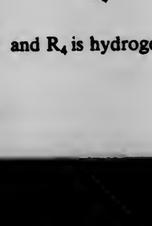
1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, diphenyl-lower alkyl, tri(lower alkyl)silyl, trihaloethyl, aluminum, alkali metal, alkaline earth metal phenyl-lower alkylamine, N-N-dibenzylethylenediamine, lower alkyl amines, triethyl amine, or N-lower alkylpiperidine; R_1 is phenyl, phenyl-lower alkyl, substituted phenyl wherein said phenyl substituent is one or two members selected from the group consisting of halogen, lower alkyl, lower alkoxy, and hydroxy, or a heterocyclic selected from the group consisting of 2-thienyl, 3-thienyl, 2-furyl and 3-furyl; R_2 is hydrogen or methoxy; R_3 is hydrogen, lower alkyl or cycloalkyl of up to 7 carbons; and X is a heterothio group selected from the group consisting of



and



and R_4 is hydrogen or lower alkyl.

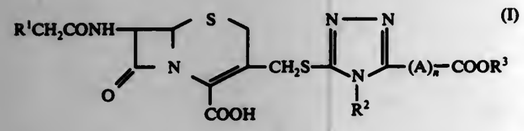
4,113,944

CEPHALOSPORIN-TYPE ANTIBIOTICS AND PROCESS FOR PRODUCING THE SAME

Fumio Kai, Fujisawa; Toshinori Saito, Yokohama; Shigeo Seki, and Toyoaki Kawasaki, both of Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Jun. 19, 1975, Ser. No. 588,555
Claims priority, application Japan, Jun. 20, 1974, 49/69641
Int. Cl.[2] C07D *501/54, 501/56;* A61K *31/545*
U.S. Cl. 544—27 **25 Claims**

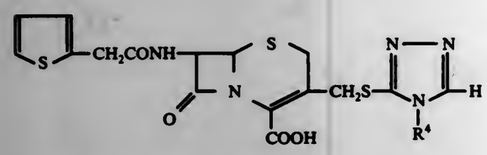
1. A cephalosporin compound represented by the formula (I)



(I)

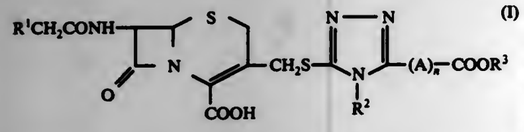
wherein R^1 represents a phenyl group, a 2-thienyl group or a phenoxy group; R^2 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms which may be substituted with a phenyl group, an alkoxy group having 1 to 4 carbon atoms or a halogen atom, or a phenyl group which may be substituted with one or two groups selected from the group consisting of a halogen atom, a nitro group, an alkyl group having 1 to 4 carbon atoms and an alkoxy group having 1 to 4 carbon atoms; R^3 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms which may be substituted with a monoalkylamino group having 1 to 4 carbon atoms in the alkyl moiety thereof, a dialkylamino group having 1 to 4 carbon atoms in each alkyl moiety thereof, a halogen atom or a phenyl group which may be substituted with one to three groups selected from the group consisting of a halogen atom, a nitro group, an alkyl group having 1 to 4 carbon atoms and an alkoxy group having 1 to 4 carbon atoms; A has up to 15 carbon atoms and represents a straight or branched chain alkylene group, a straight or branched chain alkenylene group, a straight or branched chain alkadienylene group or a phenylene group, and n is 0 or 1; or the salt thereof.

23. A process for preparing a cephalosporin compound represented by the formula (I')



(I')

wherein R^4 represents a straight or branched chain alkyl group having 1 to 4 carbon atoms, which comprises decarboxylating a cephalosporin compound represented by the formula (I), said decarboxylation being carried out (A) in a solvent selected from the group consisting of water, an organic solvent and mixtures thereof at a pH of about 1 to 6 and at a temperature ranging from room temperature to 100° C, (B) by employing an active carbon or palladium-on-active carbon catalyst or (C) by allowing the free carboxylic acid compound to stand as a solid under reduced or normal pressure,



(I)

wherein n is 0; R^1 represents a 2-thienyl group; R^2 represents an alkyl group having 1 to 4 carbon atoms; R^3 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms which may be substituted with a monoalkylamino group having 1 to 4 carbon atoms in the alkyl moiety thereof, a dialkylamino group having 1 to 4 carbon atoms in each alkyl moiety thereof, a halogen atom or a phenyl group which may be substituted with one to three groups selected from the group consisting of a halogen atom, a nitro group, an alkyl group having 1 to 4 carbon atoms and an alkoxy group having 1 to 4 carbon atoms and A represents a straight or branched chain alkylene group, a straight chain or branched chain alkenylene group, a straight chain or branched chain alkadienylene group or a phenylene group.

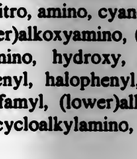
4,113,945

NOVEL CATALYST SYSTEM FOR TRIMERIZATION OF ORGANIC ISOCYANATES

William J. Kauffman, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 750,246, Dec. 13, 1976, abandoned, which is a division of Ser. No. 670,881, Mar. 26, 1976, Pat. No. 4,025,469. This application Jul. 1, 1977, Ser. No. 812,342
Int. Cl.[2] C07D *273/04*
U.S. Cl. 544—67 **1 Claim**

1. A compound of the formula:



wherein X represents $N(RNR'_2)$, R represents a C_2 to C_4 alkylene group and R' represents a C_1 to C_3 alkyl group.

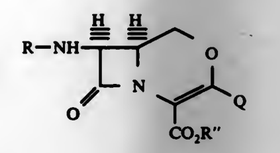
4,113,946

$\Delta^{2,3}$-1,4-MORPHOLINE-2-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

Bernard R. Belleau, Westmount, Canada; Terrence W. Doyle, Fayetteville, N.Y.; Bing Yu Luh, St. Hubert, and Terry T. Conway, Brossard, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 538,271, Jan. 2, 1975, Pat. No. 4,012,383. This application Jan. 19, 1977, Ser. No. 760,620
Int. Cl.[2] C07D *265/36, 498/02;* A01N *9/00, 9/22*
U.S. Cl. 544—105 **78 Claims**

1. A compound having the formula



I

wherein R is an acyl group of the formula

$$R^aC_nH_{2n}CO— \quad (i)$$

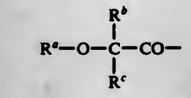
wherein R^a is (a) aryl selected from the group consisting of phenyl, 2-thienyl, 3-thienyl, furyl, 4-isoxazolyl, pyridyl, tetrazolyl, sydnone-3 or -4, imidazolyl, naphthoyl, quinoxalinyl, triazolyl, isothiazolyl, thiadiazolyl, thiazolyl, oxazolyl, oxadiazolyl, pyrazolyl, furazan, pyrazinyl, pyrimidinyl, pyridazinyl and triazinyl; (b) substituted aryl in which the aryl groups defined above under (a) are substituted by one or more chloro, bromo, iodo, fluoro, nitro, amino, cyano, (lower)alkanoyloxy, (lower)alkanoyl, (lower)alkoxyamino, (lower)alkoxy, (lower)alkyl, (lower)alkylamino, hydroxy, guanidino, (lower)alkylthio, carboxy, phenyl, halophenyl, trifluoromethyl, di(lower)alkylamino, sulfamyl, (lower)alkanoylamino, phenyl(lower)alkylamido, cycloalkylamino, allylamido, morpholinocarbonyl, pyrrolidinocarbonyl, piperidinocarbonyl, tetrahydropyridino, furfurylamido or N-alkyl-N-anilino radicals; (c) C_3–C_{12} cycloalkyl; (d) substituted C_3–C_{12} cycloalkyl in which the substituents are one or more chloro, bromo, fluoro, iodo, nitro, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkylamino, C_1–C_2 alkoxy or amino radicals; (e) C_3–C_{12} cycloalkenyl, said cycloalkenyl group having 1 or 2 double bonds; or (f) substituted C_3–C_{12} cycloalkenyl, said cycloalkenyl group having 1 or 2 double bonds and being substituted by one or more chloro, bromo, fluoro, iodo, nitro, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkylamino, C_1–C_2 alkoxy or amino radicals; and n is an integer from 1–4;

$$C_nH_{2n+1}CO— \quad (ii)$$

wherein n is an integer from 1–7, the alkyl portion of said acyl group being straight or branched and optionally interrupted by an oxygen or sulfur atom;

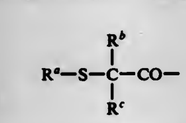
$$C_nH_{2n-1}CO— \quad (iii)$$

wherein n is an integer from 2–7, the alkenyl portion of said acyl group being straight or branched and optionally interrupted by an oxygen or sulfur atom;



(iv)

wherein R^a is as defined above under (i) and in addition may be benzyl, C_1–C_6 alkyl or (lower)alkoxy carbonyl and R^b and R^c which may be the same or different each represent hydrogen, phenyl, benzyl, phenethyl or C_1–C_6 alkyl;



(v)

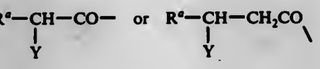
wherein R^a is as defined bove under (i) and in addition may be benzyl or C_1–C_6 alkyl and R^b and R^c are as defined under (iv);

$$R^aX(CH_2)_mCO— \quad (vi)$$

wherein R^a is as defined under (i) and in addition may be benzyl; X is oxygen or sulfur; and m is an integer of 2–5;

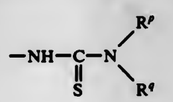
$$R^aCO— \quad (vii)$$

wherein R^a is as defined under (i);

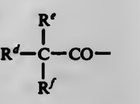


(viii)

wherein R^a is as defined under (i) and Y is hydrazino, guanidino, ureido; substituted ureido of the formula



in which R^p is hydrogen or C_1–C_8 alkyl and R^q is hydrogen, C_1–C_8 alkyl, C_2–C_8 alkenyl, phenyl, benzoyl, C_1–C_8 alkoxy-C_1–C_8 alkyl or (carbo-C_1–C_8 alkoxy)C_1–C_8 alkyl; allophanamido; 3-guanyl-1-ureido; 3-(2-furoyl)ureido; 3-(benzoyl-)ureido; cyano; cyanamino; azido; amino; a group obtained by reacting the amino group Y with acetone, formaldehyde, acetaldehyde,butyraldehyde, acetylacetone, methyl acetoacetate, benzaldehyde, salicylaldehyde, methyl ethyl ketone or ethyl acetoacetate; hydroxy; (lower)alkoxy; carboxy; 5-indanyloxycarbonyl; triazolyl; tetrazolyl; halogeno; formyloxy; (lower-)alkanoyloxy; sulfo; or sulfoamino;



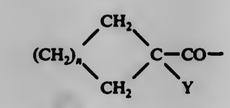
(ix)

wherein R^d, R^3 and R^f which may be the same or different may each represent C_1–C_6 alkyl, phenyl or phenyl substituted by one or more chloro, bromo, iodo, fluoro, trifluoromethyl, nitro, amino, cyano, (lower)alkanoyloxy, (lower)alkanoyl, (lower)alkoxyamino, (lower)alkoxy, (lower)alkyl, (lower)alkylamino, hydroxy, (lower)alkylthio, carboxy, di(lower)alkylamino or sulfamyl radicals;



(x)

wherein R^e is as defined under (i) and in addition may be hydrogen, C-C_6 alkyl, halogen-substituted C_1–C_6 alkyl, phenethyl, phenoxymethyl, benzyl or R^e—CO— and X is oxygen or sulfur;



(xi)

wherein Y is as defined under (viii) and n is an integer of 1–4;

$$R^gCH(NH_2)(CH_2)_nCO— \quad (xii)$$

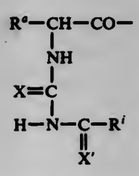
wherein n is an integer of 1–10, or

$$H_2N—C_nH_{2n}Ar(CH_2)_mCO—$$

wherein m is 0 or an integer from 1–10, and n is 0, 1 or 2; R^g is hydrogen, (lower)alkyl, phenyl, benzyl or carboxy and Ar is p-phenylene or 1,4-naphthylene;

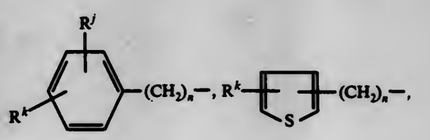
$$R^hCO.CO— \quad (xiii)$$

wherein R^h is 2-thienyl; 3-thienyl; α-naphthyl; 2-phenanthryl or a mono-, di- or tri-substituted phenyl group, the substituents being chloro, bromo, iodo, fluoro, amino, di(lower)alkylamino, (lower)alkyl, (lower)alkoxy, nitro or (lower)alkanoylamino;

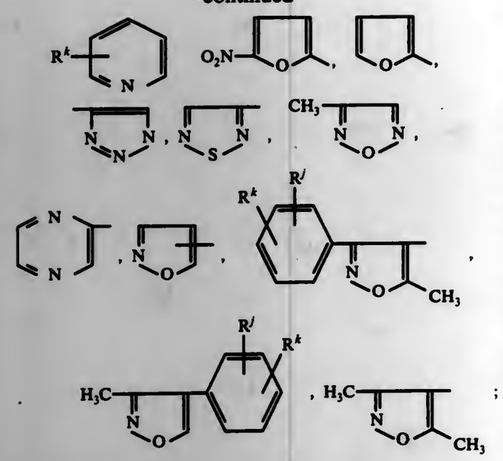


(xiv)

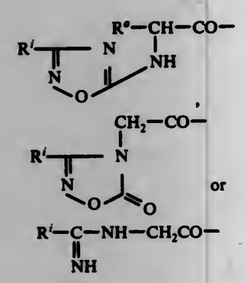
wherein R^e is as defined under (i); X is oxygen or sulfur; X' is oxygen or imino; and R^i is (lower)alyl, cycloalkyl having 4, 5, 6 or 7 carbon atoms, monohalo (lower) alkyl, dichloromethyl, trichloromethyl, (lower)alkenyl of 2–6 carbon atoms,



-continued



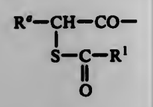
n is an integer from 0 to 3 inclusive and each of R^k and R^j is hydrogen, nitro, di(lower)alkylamino, (lower)alkanoylamino, (lower)alkanoyloxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, sulfamyl, chloro, iodo, bromo, fluoro, or trifluoromethyl;



(xv)

or

wherein R^a is as defined under (i) and R^j is as defined under (xiv); or



(xvi)

wherein R^a is as defined under (i) and R^1 is (lower)alkyl, cycloalkyl of 3–12 carbon atoms, phenyl, a monocyclic heterocyclic radical having 5 or 6 atoms exclusive of hydrogen which are C, S, N or O, no more than 2 atoms being other than C, or a substituted monocyclic heterocyclic radical as defined above having one or more halo, (lower)alkyl, (lower)alkoxy or phenyl substituents, Q is hydrogen, C_1–C_{10} alkyl, benzyl or phenethyl, and R" is hydrogen or an easily cleavable ester selected from the group consisting of benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl and acetoxymethyl, or a pharmaceutically acceptable salt thereof.

4,113,947

ADDITION PRODUCTS OF AN N-ALLYLAMINO-S-TRIAZINE AND AN ORGANOPOLYSILOXANE

Hans Deiner, Neusass; Franz Mosch, Gessertshausen, and Willy Bernheim, Diedorf, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

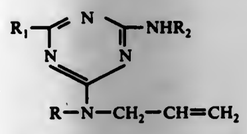
Filed Mar. 3, 1975, Ser. No. 554,819

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1974, 2411326; Dec. 13, 1974, 2459028

Int. Cl.[2] C07D *251/48, 251/70*

U.S. Cl. 544—196 **5 Claims**

1. An addition product of an N-allylaminotriazine and an organopolysiloxane containing hydrogen atoms bonded to silicon, which addition product is prepared by treatment, under substantially anhydrous conditions, of an organopolysiloxane, selected from the group consisting of methyl hydrogen polysiloxane, ethyl hydrogen polysiloxane, and phenyl hydrogen polysiloxane, wherein the ratio of silicon to silicon-bonded hydrogen is 6:1 to 16:1, and wherein the organopolysiloxane has a molecular weight of about 2800 to 16,000, with an N-methylolated N-allylaminotriazine, wherein the N-allylaminotriazine is selected from the group of the formula



where

R is hydrogen, an ethylenically unsaturated hydrocarbon radical of 3 carbon atoms, or alkyl of 1 to 10 carbon atoms,

R_1 is $—NH_2$, (straight-chain, branched or cyclic) alkyl of 1 to 6 carbon atoms, phenyl, benzyl, vinyl or hydrogen, and

R_2 is alkyl of 1 to 4 carbon atoms, phenyl, benzyl or hydrogen, provided that when R_1 is $—NH_2$, R_2 is hydrogen and R is an ethylenically unsaturated hydrocarbon radical of 3 carbon atoms or an alkyl radical of 1 to 10 carbon atoms, and provided that when R_1 is not $—NH_2$, R is not alkyl of 1 to 10 carbon atoms.

4,113,948

1-AMINO-1-PHTHALIDYL ALKANES AND A METHOD FOR PRODUCING SAME

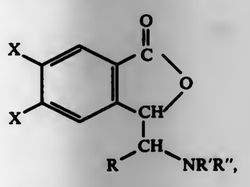
Avgust Karlovich Aren, ulitsa Slitsiema, 15/5, kv. 72, Riga; Irma Arnoldovna Berzinya, ulitsa Rezeknes, 25, kv. 2, Jurmala Latviiskoi SSR, and Ivars Petrovich Lentsbergs, ulitsa Zasulauka, 27, kv. 1, Riga, all of U.S.S.R.

Continuation of Ser. No. 443,037, Feb. 15, 1974, abandoned. This application Apr. 23, 1976, Ser. No. 679,869

Int. Cl.[2] C07D *295/00*

U.S. Cl. 544—152 **15 Claims**

1. A 1-amino-1-phthalidyl alkane of the formula:



wherein:

X = is selected from the group consisting of H, and CH_3O;

R is a radical selected from the group consisting of: CH_3, C_6H_5, p—$CH_3OC_6H_4$ and p—ClC_6H_4;

R' is a radical selected from the group consisting of: H, and C_2H_5;

R" is a radical selected from the group consisting of: H, CH_3, C_2H_5, $C_6H_5CH_2$, C_6H_5, and p—$CH_3OC_6H_4$

R' and R", when taken together, form a radical selected from the group consisting of: $—(CH_2)_4—$, $—(CH_2)_5—$; $—(CH_2)_2—O—(CH_2)_2—$; $—(CH_2)_2—N(C_6H_5)—(CH_2)_2—$; $—(CH_2)_2—N(p—CH_3O—C_6H_4—)—(CH_2)_2—$; and $—(CH_2)_2—N(o—CH_3OC_6H_4—)—(CH_2)_2—$.

4,113,949

5-FLUOROURACIL DERIVATIVES

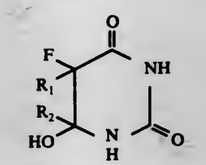
Paul D. Schuman, Hawthorne; Paul Tarrant, Gainesville; Dale A. Warner, Gainesville, and Geraldine Westmoreland, Gainesville, all of Fla., assignors to PCR, Inc.; Gainesville, Fla.

Division of Ser. No. 186,444, Oct. 4, 1971, Pat. No. 3,954,758, which is a continuation-in-part of Ser. No. 41,519, May 27, 1970, abandoned, which is a continuation of Ser. No. 709,797, Mar. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 658,645, Aug. 7, 1967, abandoned. This application Mar. 11, 1976, Ser. No. 665,865

Int. Cl.[2] C07D *239/22*

U.S. Cl. 544—303 **4 Claims**

1. Compound of the formula



wherein

R_1 is fluorine or C_1-C_6 lower alkyl, and

R_2 is hydrogen or C_1-C_6 lower alkyl; provided that at least one of R_1 and R_2 is lower alkyl.

4,113,950

PROCESS FOR PREPARING OROTIC ACID AND THIOOROTIC ACID

Paul Rambacher, Rosenheim-Mitterfeld, and Siegfried Mäke, Kirchdorf, Inn, both of Fed. Rep. of Germany, assignors to Diamalt Aktiengesellschaft, Munich, Fed. Rep. of Germany

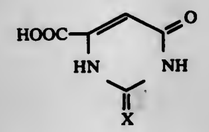
Division of Ser. No. 651,145, Jan. 21, 1976, Pat. No. 4,062,847. This application Sep. 6, 1977, Ser. No. 831,053

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1975, 2502951

Int. Cl.[2] C07D *239/54, 239/56*

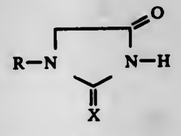
U.S. Cl. 544—314 **7 Claims**

1. A process for preparing a compound of the formula

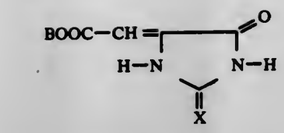


I

wherein X is oxygen or sulfur which comprises reacting a compound of the formula:



wherein R is hydrogen or an acyl group and X is as defined above, with glyoxylic acid in an alkaline medium to form a carboxymethylene intermediate of the formula:



wherein B is an inorganic or organic cation resulting from the alkaline medium and X is as defined above, converting said compound, in an alkaline medium into the salts of a compound of Formula I, above, and recovering the free acid.

4,113,951

AMINOALKOXYBENZOFURANS

Guy R. Bourgery, Colombes; Alain P. Lacour, La Varenne; Bernard M. Pourrias, Meudon la Foret, and Geneviéve C. Bregeon, Paris, all of France, assignors to Delalande S. A., Courbevoie, France

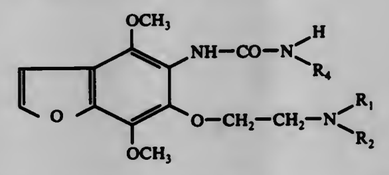
Filed Jul. 6, 1977, Ser. No. 813,357

Claims priority, application France, Jul. 12, 1976, 76 21287; Jun. 27, 1977, 77 19658

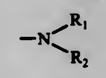
Int. Cl.[2] C07D *405/12, 405/14*

U.S. Cl. 544—360 **13 Claims**

1. A compound having the formula

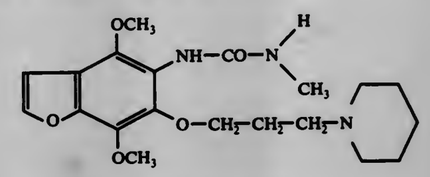


wherein R_4 is methyl or ethyl, and

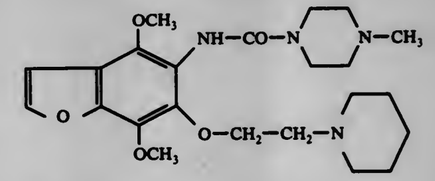


is pyrrolidino, piperidino, hexamethyleneimino, heptamethyleneimino, 4-methyl piperidino, 4-methyl piperazino, or 1,2,5,6-tetrahydropyridino.

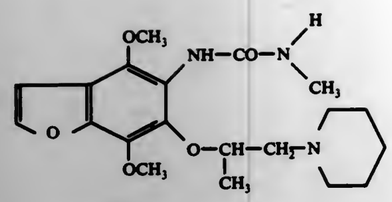
10. A compound having the formula



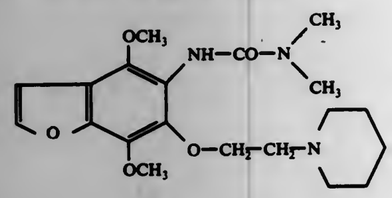
11. A compound having the formula



12. A compound having the formula



13. A compound having the formula



4,113,952

PROCESS FOR PREPARING 2-BENZIMIDAZOLONES

Duane A. Heyman, Waterville, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jul. 22, 1977, Ser. No. 818,172
Int. Cl.[2] C07D *235/26*
U.S. Cl. 548—305 19 Claims

1. A process for preparing 2-benzimidazolone which comprises reacting 2'-carbamoylphthalanilic acid in a liquid alkaline medium with a metal hypohalite selected from the class consisting of alkali metal and alkaline earth metal hypohalites at temperatures ranging up to the reflux temperature of the medium and subsequently cooling and acidifying the medium to precipitate 2-benzmimidazolone.

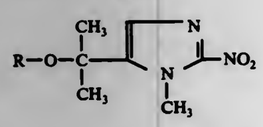
4,113,953

2-NITROIMIDAZOLE DERIVATIVES

Bruno Cavalleri, and Giancarlo Volpe, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Jan. 17, 1977, Ser. No. 759,697
Claims priority, application United Kingdom, Jan. 27, 1976, 2993/76
Int. Cl.[2] C07D *233/91*
U.S. Cl. 548—339 2 Claims

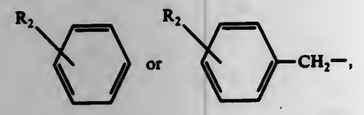
1. The compound of the formula



wherein R is benzoyl, phenylcarbamoyl or the group



wherein R_1 is straight or branched-chain C_{1-4} alkyl,



in which R_2 is hydrogen, halo, cyano, amino, C_{1-2} alkyl or C_{1-3} alkoxy and X is oxygen or sulfur.

4,113,954

PROCESS FOR THE PREPARATION OF 3-ANILINO-5-PYRAZOLONES

David J. Tracy, Lincoln Park, N.J., and Walter F. Hoffstadt, Vestal, N.Y., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 603,533, Aug. 11, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 742,058
Int. Cl.[2] C07D *231/52*
U.S. Cl. 548—365 17 Claims

1. A process for the preparation of 3-anilino-5-pyrazolones comprising the steps of:

(a) combining a lower alkyl β-lower alkoxy-β-imino-propionate salt with a primary or secondary lower alkanol and an aniline or an aniline substituted with one or more substituents selected from the group consisting of nitro, halo and alkoxy, and combination thereof in a high boiling point solvent which has a boiling point above that of the alkanol by-product of the process and forming therefrom an orthoester in situ,

(b) heating while simultaneously removing the alkanol by-product from the reaction mixture containing said orthoester thereby to form an imidic ester,

(c) filtering the reaction mixture of (b) to remove the solid ammonium halide formed during the reaction.

(d) reacting said imidic ester in the filtrate with a phenylhydrazine selected from the group consisting of phenylhydrazine and a phenylhydrazine in which the phenyl group is substituted with one or more substituents selected from the group consisting of nitro, halo, and alkoxy, and combinations thereof, to form the corresponding amidine, and,

(e) contacting said amidine with a cyclization agent to effect ring closure thereby to form said desired product.

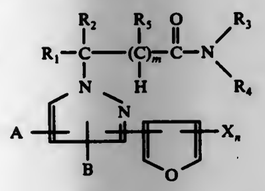
4,113,955

FURYL PYRAZOLE AMIDES

Malcolm W. Moon, and Gabriel Kornis, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 686,548, May 14, 1976, Pat. No. 4,072,498, which is a continuation-in-part of Ser. No. 524,231, Nov. 15, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,158
Int. Cl.[2] C07D *405/04, 405/14*
U.S. Cl. 548—374 7 Claims

1. A compound of the formula:



IV

where R_1 is hydrogen, alkyl of 1 to 7 carbon atoms, inclusive, haloalkyl of 1 to 7 carbon atoms, inclusive, phenyl, benzyl or cycloalkyl of 3 to 6 carbon atoms, inclusive, with the proviso that when R_1 is benzyl or cycloalkyl $m = 0$; R_2 and R_5 are the same or different and are hydrogen, halogen, alkyl of 1 to 6 carbon atoms, inclusive, haloalkyl of 1 to 6 carbon atoms, inclusive, or phenyl; R_1 and R_2 together with the attached carbon atom can be cycloalkyl of 3 to 6 carbon atoms, inclusive, when $m = 0$; m is 0 or 1 provided that when $m = 0$, R_1 is not hydrogen and when $m = 1$ at least one of R_2 or R_5 is hydrogen; R_3 is hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, phenyl or benzyl; R_4 is hydrogen or alkyl of from 1 to 6 carbon atoms, inclusive, and R_3 and R_4 can be joined together to form a heterocyclic ring selected from the group consisting of pyrrolidine, or piperidine; A and B are the same or different and are hydrogen, alkyl of from 1 to 6 carbon atoms, inclusive, phenyl, halogen, cyano, haloalkyl of 1 to 6 carbon atoms, inclusive, alkoxy or alkylthio in which the alkyl group is from 1 to 3 carbon atoms, inclusive, or trifluoromethyl and when adjacent can be joined to form a ring of from 5 to 7 carbon atoms, inclusive; where X is halogen, nitro, cyano, acetyl, dimethylcarbamoyl, alkyl, haloalkyl, alkoxy or carboalkoxy in which the alkyl group is from 1 to 3 carbon atoms, inclusive, phenyl, benzyl, 2-phenylethyl and n is 0, 1, or 2 or an acid addition salt thereof.

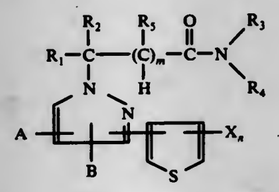
4,113,956

THIENYL PYRAZOLE AMIDES

Malcolm W. Moon, and Gabriel Kornis, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 686,548, May 14, 1976, Pat. No. 4,072,498, which is a continuation-in-part of Ser. No. 524,231, Nov. 15, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,159
Int. Cl.[2] C07D *409/04, 409/14*
U.S. Cl. 548—374 10 Claims

1. A compound of the formula:



III

where R_1 is hydrogen, alkyl of 1 to 7 carbon atoms, inclusive, haloalkyl of 1 to 7 carbon atoms, inclusive, phenyl, benzyl or cycloalkyl of 3 to 6 carbon atoms, inclusive, with the proviso that when R_1 is benzyl or cycloalkyl $m = 0$; R_2 and R_5 are the same or different and are hydrogen, halogen, alkyl of 1 to 6 carbom atoms, inclusive, haloalkyl of 1 to 6 carbon atoms, inclusive, or phenyl; R_1 and R_2 together with the attached carbon atom can be cycloalkyl of 3 to 6 carbon atoms, inclusive, when $m = 0$; m is 0 or 1 provided that when $m = 0$, R_1 is not hydrogen and when $m = 1$ at least one of R_2 or R_5 is hydrogen; R_3 is hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, phenyl or benzyl; R_4 is hydrogen or alkyl of from 1 to 6 carbon atoms, inclusive, and R_3 and R_4 can be joined together to form a heterocyclic ring selected from the group consisting of pyrrolidine, or piperidine; A and B are the same or different and are hydrogen, alkyl of from 1 to 6 carbon atoms, inclusive, phenyl, halogen, cyano, haloalkyl of 1 to 6 carbon atoms, inclusive, alkoxy or alkylthio in which the alkyl group is from 1 to 3 carbon atoms, inclusive, or trifluoromethyl and when adjacent can be joined to form a ring of from 5 to 7 carbon atoms, inclusive; where X is halogen, nitro, cyano, acetyl, dimethylcarbamoyl, alkyl, haloalkyl, alkoxy or carboalkoxy in which the alkyl group is from 1 to 3 carbon atoms, inclusive, phenyl, benzyl, 2-phenylethyl and n is 0, 1, or 2 or an acid addition salt thereof.

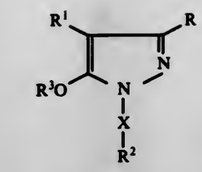
4,113,957

1-SUBSTITUTED PYRAZOLES

Eike Möller, Wuppertal, Germany; Karl-August Meng, deceased, late of Wuppertal, Germany (by Ilse Helde Frieda Meng, heir); Egbert Wehinger, Neviges, Germany; Harald Horstmann, Wuppertal, Germany, and Friedel Seuter, Neviges, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jun. 8, 1976, Ser. No. 693,971
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1975, 2526469
Int. Cl.[2] C07D *231/20*
U.S. Cl. 548—377 14 Claims

1. A compound of the formula



wherein

R is hydrogen, lower alkyl or trifluoromethyl;

R^1 is hydrogen or lower alkyl;

R^3 is R^6CO wherein

R^6 is lower alkyl; lower alkyl substituted by phenoxy; lower alkoxy; haloalkyl of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; cycloalkyl of 5 to 7 carbon atoms; lower alkylthio; haloalkoxy of 1 to 4 carbon atoms in the alkoxy moiety and 1 to 3 halo atoms; haloalkylthio of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; lower alkoxy(lower alkyl); mono- or di-lower alkylamino(lower akyl); phenyl unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro, cyano, SO_n-alkyl of 1 to 4 carbon atoms in the alkyl moiety and n is 0 to 2, SO_n-CF_3 wherein n is 0 to 2, carbonamido or sulphonamido;

X is ethylene or ethylene wherein a hydrogen atom on one or both of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, linked to R^2 via an oxygen or sulphur atom; and

R^2 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halo, trifluoromethyl, trifluoromethoxy, cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, nitro, cyano, carboxamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms, or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7- membered heterocyclic ring, sulphonamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms, or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, and SO_n-(lower alkyl) wherein n is 0 to 2; or phenyl having fused thereto a saturated or unsaturated 5- to 7-membered isocyclic ring.

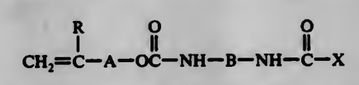
4,113,958

ETHYLENICALLY UNSATURATED BLOCKED AROMATIC DIISOCYANATES

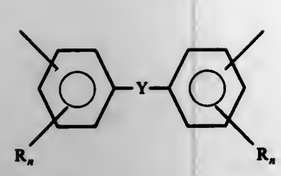
Harold A. Tucker, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 550,627, Feb. 18, 1975, Pat. No. 4,008,247, which is a division of Ser. No. 412,325, Nov. 2, 1973, abandoned. This application Oct. 22, 1976, Ser. No. 734,945
Int. Cl.[2] C07C *125/06*
U.S. Cl. 560—32 10 Claims

1. An ethylenically unsaturated blocked aromatic diisocyanate of the formula



wherein R is hydrogen or a methyl or ethyl radical; A is a carbonyloxyalkylene radical containing 2 to about 8 carbon atoms or an aralkylene radical containing 7 to about 12 carbon atoms; B is a bivalent aromatic radical selected from the group consisting of arylene, naphthalene, and the structure



where R is defined as above; Y is O, S, or $+CH_2+_n$ n = 0 to 3; and X is the radical fragment remaining after a hydrogen atom is removed from the nitrogen atom of an oxime.

4,113,959

METHOD FOR RESOLVING AMINO AND AMMONIUM COMPOUNDS

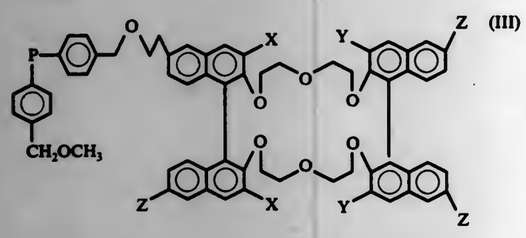
Donald J. Gram, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 672,211, Mar. 31, 1976, Pat. No. 4,043,979, which is a continuation-in-part of Ser. No. 448,333, Mar. 5, 1974, Pat. No. 4,001,279, which is a continuation-in-part of Ser. No. 346,089, Mar. 29, 1973, abandoned. This application Jun. 13, 1977, Ser. No. 806,054

Int. Cl.[2] C07C *101/02, 101/72*

U.S. Cl. 560—38 **5 Claims**

1. A method for resolving chemical enantiomers selected from the group consisting of amino carboxylic acids and their esters and the alkylammonium salts thereof which comprises passing a liquid containing the mixed enantiomers through a styrene/divinylbenzene resin-bound host compound of the formula



(III)

wherein P is the backbone of a solid styrene/divinylbenzene copolymer, each Z is H or CH_2CH_2OH, each X is either H or CH_3, each Y is either H or CH_3, and the binaphthyl groups of the macrocycle are in the (RR)- or (SS)- configurations, and recovering the separated enantiomers.

4,113,960

3-(4'-ALKOXY-BENZOYL)-1,2,2-TRIMETHYL-CYCLOPENTANE-CARBOXYLIC ACIDS, THEIR OPTICAL ISOMERS AND DRUGS CONTAINING SUCH COMPOUNDS

Henri-Ange Orzales, Montpellier, France, assignor to Societe Civile de Recherches et d'Etudes Nouvelles, Paris, France

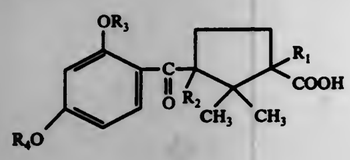
Continuation-in-part of Ser. No. 540,504, Jan. 13, 1975, Pat. No. 4,025,552. This application Jul. 15, 1976, Ser. No. 705,535

Claims priority, application France, Jul. 17, 1975, 75 22447

Int. Cl.[2] C07C *69/76*

U.S. Cl. 560—52 **13 Claims**

1. Carboxylic acids, characterized in that they have the formula III



III

in which:

R_1 denotes a methyl or ethyl radical and R_2 denotes a hydrogen atom, or R_1 is a hydrogen atom and R_2 denotes a methyl or ethyl radical; and

R_3 and R_4 denote a lower alkyl radical or a hydrogen atom, and the optical isomers and/or the alkyl esters and the salts of addition with physiologically tolerated acids.

4,113,961

3,7-INTER-M-PHENYLENE-3-OXA-4,5,6-TRINOR-13,14-DIDEHYDRO-11-DEOXY-PGE$_1$ COMPOUNDS

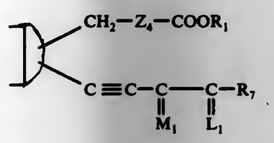
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,968

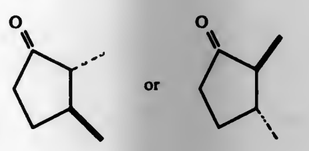
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—53 **73 Claims**

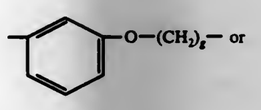
1. A prostaglandin analog of the formula

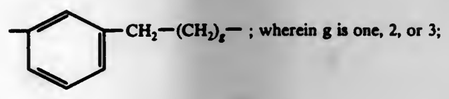


wherein D is



wherein Z_4 is





wherein *g* is one, 2, or 3;

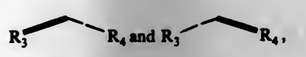
wherein R_7 is

$-(CH_2)_m-CH_3$, wherein *m* is one to 5, inclusive;

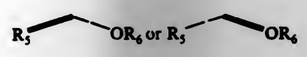
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,113,962

5-OXA-13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-18,19,20 TRINOR-PGE$_1$ COMPOUNDS

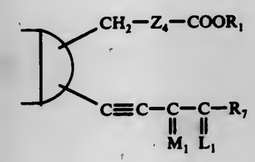
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,976

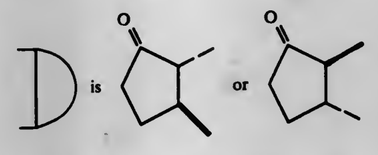
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—53 **73 Claims**

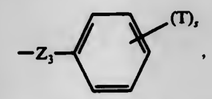
1. A prostaglandin analog of the formula



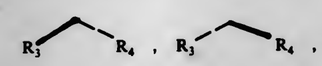
wherein



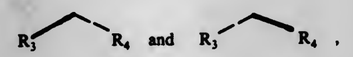
wherein Z_4 is $-CH_2-O-CH_2-(CH_2)_g-CH_2-$, $-(CH_2)-O-(CH_2)_g-CH_2-$, or $-(CH_2)_3-O-(CH_2)_g-$; wherein *g* is one, 2, or 3; wherein R_7 is



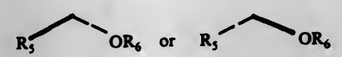
wherein Z_3 is oxa or methylene, *s* is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl; wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene; wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,113,963

13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-18,19,20-TRINOR-PGE$_1$ COMPOUNDS

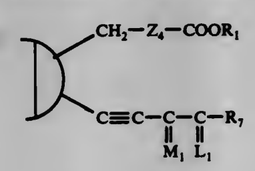
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,978

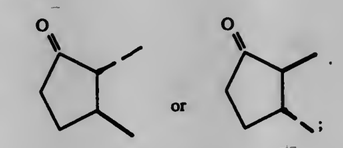
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—53 **73 Claims**

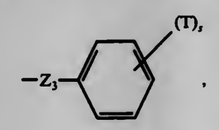
1. A prostaglandin analog of the formula



wherein D is

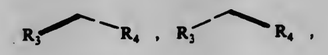


wherein Z_4 is $-(CH_2)_3-(CH_2)_g-CH_2-$ or $-(CH_2)_3-(CH_2)_g-CF_2$; wherein *g* is one, 2, or 3; wherein R_7 is

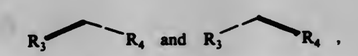


wherein Z_3 is oxa or methylene, *s* is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;

wherein L_1 is

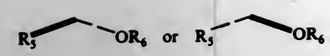


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene;

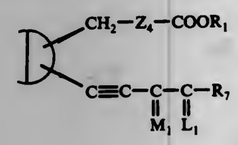
wherein M_1 is



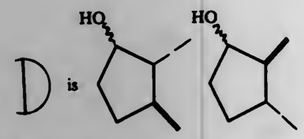
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,113,964
13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-18,19,20-TRINOR-PGF$_1\alpha$ COMPOUNDS
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,977
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—55 **73 Claims**

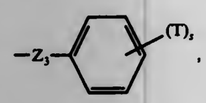
1. A prostaglandin analog of the formula



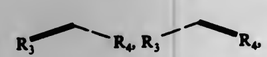
wherein



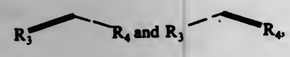
wherein Z_4 is $-(CH_2)_3-(CH_2)_g-CH_2-$ or $-(CH_2)_3-(CH_2)_g-CF_2-$; wherein g is one, 2, or 3; wherein R_7 is



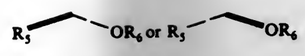
wherein Z_3 is oxa or methylene, s is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl; wherein L_1 is



or a mixture of



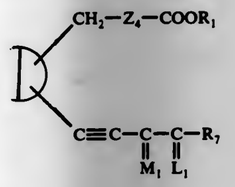
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene; wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

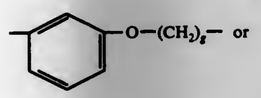
4,113,965
3,7-INTER-M-PHENYLENE-3-OXA-13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-4,5,6,18,19,20-HEXANOR-PGF$_1\alpha$ COMPOUNDS
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 821,058
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—61 **73 Claims**

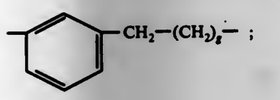
1. A prostaglandin analog of the formula



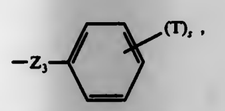
wherein D is

wherein Z_4 is





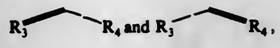
wherein g is one, 2, or 3;
wherein R_7 is



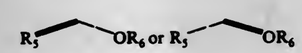
wherein Z_3 is oxa or methylene, s is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein L_1 is



or a mixture of



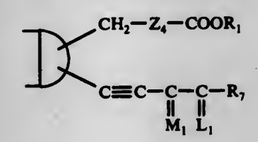
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene;
wherein M_1 is



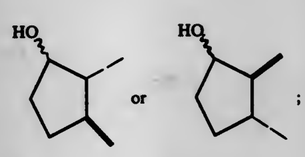
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is met-yl only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,113,966
3,7-INTER-M-PHENYLENE-3-OXA-4,5,6-TRINOR-13,14-DIDEHYDRO-11-DEOXY-PGF$_1\alpha$ COMPOUNDS
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,967
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—61 **73 Claims**

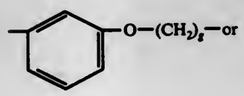
1. A prostaglandin analog of the formula



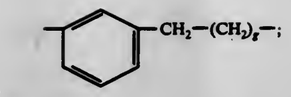
wherein D is



wherein Z_4 is

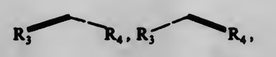


-continued



wherein g is one, 2, or 3;

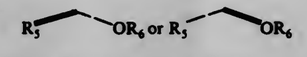
wherein g is one, 2, or 3;
wherein R_7 is
$-(CH_2)_m-CH_3$, wherein m is one to 5, inclusive;



or a mixture of



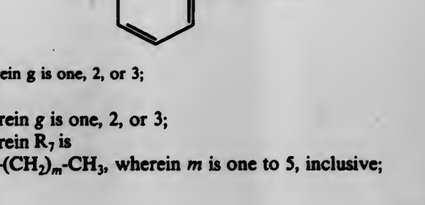
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;



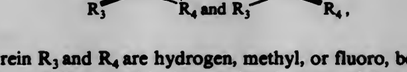
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,113,967
15,16-DIOXY PROSTENOIC ACIDS AND ESTERS
Martin Joseph Weiss, Oradell, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 663,603, Mar. 3, 1976, abandoned. This application Feb. 11, 1977, Ser. No. 767,863
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—121 **17 Claims**

1. An optically active compound of the formula:



which represents the natural (nat.) configuration or a racemic mixture of that compound and the enantiomer thereof, wherein R_1 is hydroxy or C_1–C_5 alkoxy; R_3 is methyl, ethyl or propyl; X is divalent radical



and the pharmacologically acceptable cationic salts thereof when R_1 is hydroxy.

4,113,968

PROCESS FOR PREPARATION OF SUBSTITUTED CYCLOPROPANE CARBOXYLIC ACIDS AND ESTERS THEREOF AND INTERMEDIATES OF SAID ACIDS AND ESTERS

Fumio Mori, Kurashiki; Yoshiaki Omura, Okayama; Takashi Nishida, and Kazuo Itoi, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

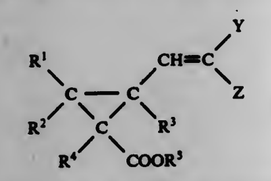
Filed Sep. 26, 1975, Ser. No. 616,998

Claims priority, application Japan, Oct. 3, 1974, 49-114116; Oct. 3, 1974, 49-114117; Dec. 28, 1974, 50-2066; Dec. 28, 1974, 50-2067; Feb. 27, 1975, 50-24239; May 23, 1975, 50-61558; May 30, 1975, 50-64962; May 30, 1975, 50-64963; May 30, 1975, 50-64964; Jun. 30, 1975, 50-80600; Aug. 28, 1975, 50-104224

Int. Cl.² C07C *67/30*

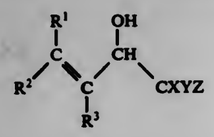
U.S. Cl. 560—124 15 Claims

1. A process for the preparation of a substituted cyclopropane-carboxylic ester of the formula



I'

wherein R^1, R^2, R^3 and R^4, which may be the same or different, each represents a hydrogen atom, an alkyl group having up to 15 carbon atoms, a cycloalkyl group having up to 8 carbon atoms, an alkenyl group having up to 15 carbon atoms, a cycloalkenyl group having up to 8 carbon atoms, an alkynyl group having up to 15 carbon atoms, an aryl group having up to 8 carbon atoms or am aralkyl group having up to 10 carbon atoms or R^1 and R^2 or R^1 and R^3 together with the carbon atoms to which they are attached form a ring; R^5 represents an alkyl group having up to 15 carbon atoms, a cycloalkyl group having up to 8 carbon atoms, an alkenyl group having up to 15 carbon atoms, a cycloalkenyl group having up to 8 carbon atoms, an aralkyl group having up to 10 carbon atoms or a hydrocarbon group containing a hetero atom selected from the group consisting of nitrogen, phosphorus, sulfur and oxygen; and Y and Z, which may be the same or different, each represents a hydrogen atom or a halogen atom selected from the group consisting of F, Cl, Br and I, which process comprises (i) reacting at a temperature of from 100° C to 200° C, a 1-halogen-3-alkene-2-ol of the formula



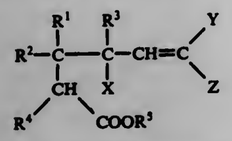
II

wherein R^1, R^2, R^3, Y and Z are as defined above, and X is a halogen atom selected from the group consisting of F, Cl, Br and I, with an ortho-carboxylic ester of the formula



III

wherein R^4 and R^5 are as defined above, the three groups R^5 being the same or different, to produce a γ-halogeno-δ-unsaturated-carboxylic acid ester of the formula



V

wherein R^1, R^2, R^3, R^4, R^5, X, Y and Z are as defined above, and (ii) treating said compound of formula V with a basic substance at a temperature of from about −80° C to about 100° C to produce said compound of formula I'.

4,113,969

PREPARATION OF 2,2-DIMETHYL-3-(2,2-DIHALOGENOVINYL)-CYCLOPROPANE-1-CARBOXYLIC ACID ESTERS

Reinhard Lantzsch, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

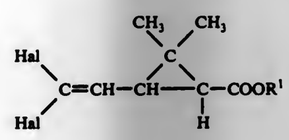
Filed May 10, 1977, Ser. No. 795,588

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623848

Int. Cl.² C07C *51/38*

U.S. Cl. 560—124 5 Claims

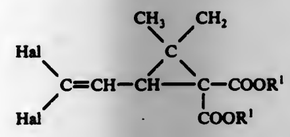
1. In the preparation of a 2,2-dimethyl-3-(2',2'-dihalogenovinyl)-cyclopropane-1-carboxylic acid ester of the formula



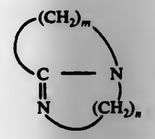
in which

Hal is halogen, and

R_1 is alkyl with 1 to 4 carbon atoms, by heating a 2,2-dimethyl-3-(2',2'-dihalogenovinyl)-cyclopropane-1,1-dicarboxylic acid ester of the formula



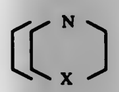
in an inert organic diluent, the improvement which comprises employing as the diluent a hydrocarbon, halogenated hydrocarbon or high-boiling ether which is liquid at the reaction temperature, and including in the diluent a base which is a bicyclic amidine of the formula



in which

m is an interger from 3 to 7, and

n is an interger from 2 to 4, or a tertiary amine of the formula



in which

X is N or CH.

4,113,970

PROCESS FOR PRODUCING 1,4-DIACYLOXYBUTENE-2

Masanori Tanabe, Kurashiki; Masanori Ikeda, and Nobuhiro Tamura, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

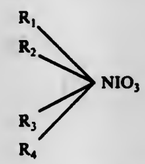
Filed Apr. 11, 1977, Ser. No. 786,325

Claims priority, application Japan, Apr. 14, 1976, 51-41421; Apr. 28, 1976, 51-47769

Int. Cl.² C07C *67/05*

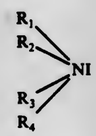
U.S. Cl. 560—244 15 Claims

1. A process for producing 1,4-diacyloxybutene-2 comprising reacting 1,3-butadiene with an aliphatic carboxylic acid having 2 to 5 carbon atoms and molecular oxygen in the presence of a catalyst which contains metallic palladium and at least one iodine-containing substance selected from the group consisting of iodine; iodic acid; alkali metal iodates; iodates of the formula (I):



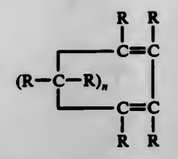
(I)

hydrogen iodide; alkali metal iodides; and iodides of the formula (II):



(II)

wherein R_1, R_2, R_3 and R_4 each independently is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an aralkyl group or an aryl group, or R_1, R_2, R_3 and the nitrogen atom together form a nitrogen-containing heterocyclic ring, the ratio in gram-atom of iodine to metallic palladium in said catalyst being 0.1 to 1.5:1.



wherein, in each formula, each R is independently selected from the group consisting of hydrogen, halogen, cyano, —COOR', and alkyl, aryl and cycloalkyl radical groups and combinations thereof, of up to 12 carbon atoms per radical group, wherein R' is selected from the group consisting of hydrogen, alkyl of up to 10 carbon atoms and aryl of up to 10 carbon atoms; and wherein *n* is an integer having a value of 1 to 12 and wherein said carboxylic acid is selected from the group consisting of monocarboxylic acids having from 2 to 18 carbon atoms per molecule represented by the general formula

R''—COOH

and dicarboxylic acids having from 2 to 18 carbon atoms per molecule represented by the general formula

$R'''(COOH)_2$

wherein R'' is selected from the group consisting of alkyl, cycloalkyl and aryl radical groups and halogen, cyano and —COOR' substituted derivatives thereof, wherein up to four of said halogen, cyano or —COOR' substituents can be present in said radical, wherein R' is selected from the group consisting of hydrogen, alkyl of up to 10 carbon atoms and aryl of up to 10 carbon atoms;

wherein R''' is selected drom the group consisting of a valence bond and alkylene, cycloalkylene and arylene radical groups and halogen, cyano and —COOR' substituted derivatives thereof wherein up to four of said halogen, cyano or —COOR' substituents can be present in said radical, wherein R' is as defined above; and

wherein said salt is employed in an amount ranging from about 0.1 to about 2 molar based on said acid and said dihalobutene is employed in an amount ranging from about 0.1 to about 10 moles per mole of said metal oxide.

4,113,971

PROCESS FOR PREPARING DIACYLOXY OLEFINS

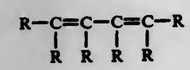
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 21, 1975, Ser. No. 551,834

Int. Cl.² C07C *67/05*

U.S. Cl. 560—246 7 Claims

1. A process for the production of unsaturated diesters which comprises reacting a conjugated diolefin with a carboxylic acid by contacting said diolefin and said acid with a catalytic amount of a catalyst consisting essentially of a Group VIB metal oxide or a Group VIB metal oxide and a catalyst adjuvant selected from the group consisting of alkali metal salts, dihalobutenes and mixtures thereof in the presence of free oxygen, wherein said conjugated diolefin is selected from the group consisting of acyclic conjugated diolefins having from 4 to 16 carbon atoms per molecule represented by the general formula



and cyclic conjugated diolefins having from 5 to 16 carbon atoms per molecule represented by the general formula

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4,113,972

ESTERS OF DERIVATIVES OF 1,1-DIPHENYL-3-AMINO-PROPAN-2-OL

Judith Ann Clark, Barrington, England, assignor to Beecham Group Limited, England

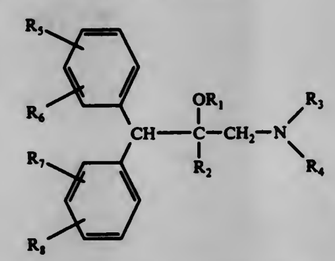
Division of Ser. No. 443,021, Feb. 15, 1974, Pat. No. 4,028,415. This application Jun. 21, 1976, Ser. No. 698,091

Claims priority, application United Kingdom, Feb. 24, 1973, 9183/73; Oct. 13, 1973, 47928/73

Int. Cl.² C07C *93/00, 93/26*

U.S. Cl. 560—250 15 Claims

1. A compound of the formula



(III)

or a pharmaceutically acceptable salt or hydrate thereof or mixtures of optical isomers of the above formula, wherein R_1 is $CO.R_9$ wherein R_9 is alkyl of 1 to 6 carbon atoms, phenyl or

benzyl; R_2 is hydrogen; R_3 is hydrogen or methyl; R_4 is methyl; R_5 is fluorine, chlorine or bromine; and R_6, R_7 and R_8 are each hydrogen.

4,113,973

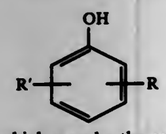
PROCESS FOR THE PREPARATION OF ANHYDROUS SOLUTIONS OF ALKALINE PHENATES IN ORGANIC SOLVENTS

Enzo Alneri; Giorgio Bottaccio; Stefano Campolmi, and Luigi Cassar, all of Novara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 19, 1977, Ser. No. 816,919
Claims priority, application Italy, Jul. 23, 1976, 25636/76
Int. Cl.² C07C *39/04*
U.S. Cl. 568—716 **6 Claims**

1. A process for the preparation of anhydrous solutions of alkaline phenates in organic solvents, comprising the steps:

(a) synthesis in water of alkaline phenates by the reaction of an alkaline sulphate selected from the class consisting of sodium sulphate and potassium sulphate, with calcium hydroxide and a phenol of the general formula:



wherein R and R', which may be the same or different from each other, are hydrogen atoms or linear alkyl groups having from 1 to 4 carbon atoms, at a temperature substantially lower than 30° C;

(b) filtering the calcium sulphate;

(c) quantitatively decalcifying the residual aqueous solution, at a temperature between 40° and 60° C, by the addition of an aqueous solution of an alkali selected from the class consisting of NaOH and KOH, until a total concentration is reached which is between 30% and 50% by weight of the total solution;

(d) filtering the precipitated calcium hydroxide and alkaline sulphate;

(e) extracting in countercurrent, at a temperature between 50° and about 90° C, the residual aqueous solution with at least one aprotic polar organic solvent selected from the class consisting of β-picoline, dimethylether of diethylene glycol, quinoline, tetrahydrofuran, dimethylsulphoxide, sulpholane and N-methyl-morpholine; and

(f) dehydrating the organic solution of the alkaline phenates.

4,113,974

PROCESS FOR PURIFYING IMPURE DIPHENOLS

Victor Mark, Evansville, and Charles Vernon Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 30, 1976, Ser. No. 755,981
Int. Cl.² C07C *37/22, 37/24*
U.S. Cl. 568—750 **12 Claims**

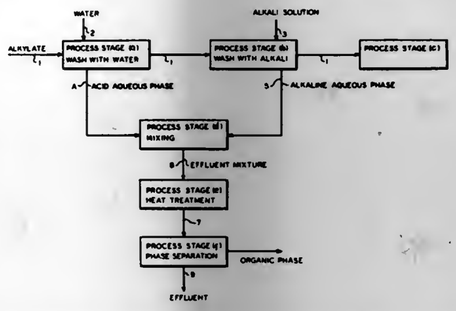
1. A process for purifying impure p,p'-diphenols which comprises dispersing the impure diphenol in water, heating the resulting slurry, adding a water soluble polar, aprotic co-solvent until the dissolution or near dissolution of the diphenol slurry results at or near the boiling point of water or the solvent system, cooling the solution to achieve the separation of the purified diphenol and recovering the purified p,p'-diphenol.

4,113,975

PROCESS FOR PURIFYING ALKYLPHENOLZ

Helmut Fiege; Josef Haydn; Johann Renner, all of Leverkusen, and Karlfried Wedemeyer, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 6, 1977, Ser. No. 757,422
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1976, 2602149
Int. Cl.² C07C *37/28*
U.S. Cl. 568—756 **16 Claims**



1. A process for removing acids and potential acid-forming agents from the alkylphenol mixture obtained by reacting phenols with alkenes in the presence of sulfuric acid or sulfonic acids, for the treating effluent thereby obtained and for removal of organics from wash water obtained in the treatment of said effluent, comprising the steps of:

(a) extracting the bulk of the acid constituents from the alkylphenol mixture by means of water;

(b) treating the alkylphenol mixture with dilute aqueous alkali solution in an amount such that the alkali is insufficient to neutralize all the acid originally present in the alkylphenol mixture;

(c) separating the alkylphenol mixture from the aqueous alkali solution;

(d) combining the aqueous phases obtained in steps (a) and (b);

(e) heating the combined aqueous phases to a temperature of 100° to 200° C;

(f) separating off the organic phase obtained in step (e) and

(g) discharging the aqueous phase.

4,113,976

METHOD OF PREPARING 2,6-DI-TERT.BUTYLPHENOL

Jury Ivanovich Michurov, prospekt Lenina, 13, kv. 4; Boris Izrailevich Pantukh, ulitsa Khudaiberdina, 162, kv. 89, both of Bashkirskaya ASSR; Valerian Mikhailovich Sobolev, Maxima Gorkogo, 48/50, kv. 185, Moscow; Grigory Iosifovich Rutman, ulitsa Revoljutsionnaya, 7, kv. 6, Bashkirskaya ASSR; Igor Jurievich Logutov, ulitsa Druzhby, 47, kv. 50, Bashkirskaya ASSR, and Vladimir Romanovich Dolidze, ulitsa Kurchatova, 30, kv. 8, Bashkirskaya ASSR, all of U.S.S.R.

Filed Apr. 18, 1977, Ser. No. 788,590
Int. Cl.² C07C *39/02*
U.S. Cl. 568—789 **1 Claim**

1. A method of preparing 2,6-di-tertbutylphenol comprising alkylation of phenol with isobutylene at a temperature of from 100° to 110° C in the presence of 0.5 to 1% by weight of phenoloxyorthotertbutylphenoxyhydroaluminum acid having the formula:

$$[(OC_6H_5)_n(\text{ortho-tert.}C_4H_9C_6H_4O)_mAl]H$$

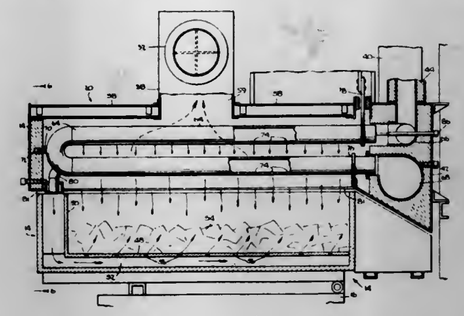
wherein $n = 1$ to 3, $m = 1$ to 3; $n+m = 4$, to form an alkylate, hydrolyzing said catalyst; vacuum rectifying the alkylate; and recovering 2,6-di-tertbutylphenol by recrystallization.

4,113,977

PREHEATING SYSTEM WITH GAS RECIRCULATION

Otto Hochstrasser, North Brunswick, and William S. Ruby, East Brunswick, both of N.J., assignors to Brown Boveri Corporation, North Brunswick, N.J.

Filed Aug. 19, 1977, Ser. No. 826,189
Int. Cl.² F27D *13/00, 17/00*
U.S. Cl. 13—2 R **23 Claims**



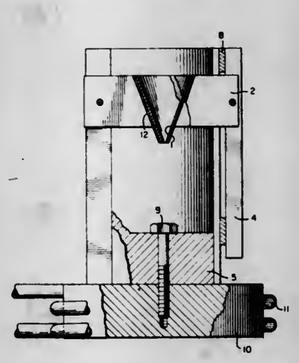
7. Apparatus for heating material which includes vaporizable combustible constituents, said apparatus comprising an enclosure for containing said material, at least one conduit extending inside said enclosure, blower means arranged to withdraw vaporized combustible constituents from said enclosure and to direct said constituents, together with combustion air, as a combustible mixture, through said conduit and electrical circuit means connected to direct electrical current through said conduit inside said enclosure to heat said conduit above the ignition temperature of said mixture contained therein.

4,113,978

EVAPORATION SOURCE FOR VACUUM DEPOSITION

Igor Melnick, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 17, 1977, Ser. No. 797,849
Claims priority, application France, May 24, 1976, 76 15684
Int. Cl.² H05B *3/10*
U.S. Cl. 13—22 **4 Claims**



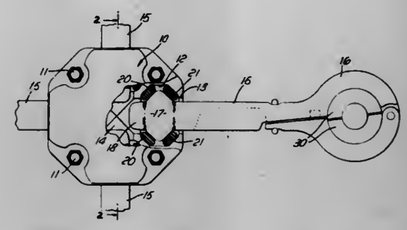
1. An evaporation source for vacuum deposition, comprising a refractory crucible provided in its outer surface with conducting members traversed by an electric current and able to raise the crucible temperature by Joule effect, wherein the said outer surface is coated, prior to fitting the conducting members, with a thin intermediate coating layer which does not react with the crucible but which is in intimate contact with the latter and wherein the crucible is beryllium oxide and the intermediate layer is selected from the group consisting of molybdenum and tungsten.

4,113,979

SPACING DEVICES FOR OVERHEAD TRANSMISSION LINES

Ralph Percival Torr, New Malden, and Miles Albert Beauchamp, Crawley, both of England, assignors to Andre Rubber Company Limited, England

Filed Feb. 3, 1977, Ser. No. 765,274
Claims priority, application United Kingdom, Feb. 6, 1976, 4746/76
Int. Cl.² H02G *7/14, 7/12*
U.S. Cl. 174—42 **13 Claims**



1. A spacing device for spacing individual conductors of an overhead transmission line, the device comprising a hub having at least two cavities therein each opening onto the hub periphery, at least two arms each having a conductor clamp at one end and being formed with a knob at or adjacent the other end, the knob being received with clearance within a respective cavity to permit limited articulation of each arm with respect to the hub; and elastomeric bush means substantially encircling the arm in the clearance gap between the knob and the cavity wall, each half of the bush means on opposing sides of a maximum diameter portion of the knob having an initial generally semicircular cross-sectional shape, deformed by compression between said knob and said cavity wall during assembly of the device such that the edges or side portions of the deformed cross-sections of said bush means include elastomeric material displaced laterally from the central portions during compression thereof.

4,113,980

VEHICLE DIAGNOSTIC HAND CONTROL

Mace Bell, Rowayton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

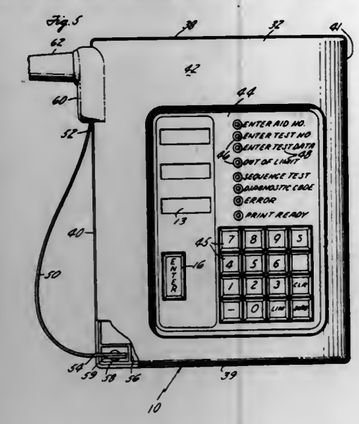
Continuation of Ser. No. 647,373, Jan. 8, 1976, abandoned, which is a division of Ser. No. 534,335, Dec. 19, 1974, abandoned. This application Jul. 28, 1977, Ser. No. 819,744
The portion of the term of this patent subsequent to Dec. 14, 1990, has been disclaimed.
Int. Cl.² G01M *15/00;* G06F *3/02*
U.S. Cl. 174—52 R **2 Claims**

1. A hand control for electrical vehicle diagnostic equipment adapted to be held in the hand of a user comprising:

a case having front and back surfaces, top and bottom edges, and right and left side edges, the distance between said front and rear surfaces being such as to permit holding of the unit by a first one of said side edges in one hand of a user, said first side edge being rounded so as to facilitate gripping in the hand;

a strap extending between the upper and lower ends of said

one side edge, said strap adapted to support the rear of the hand of the user gripping said one side edge; and



an interconnection cable including a plurality of electrical conductors entering said case at the upper end of said one side edge in a direction perpendicular thereto.

4,113,981

ELECTRICALLY CONDUCTIVE ADHESIVE CONNECTING ARRAYS OF CONDUCTORS

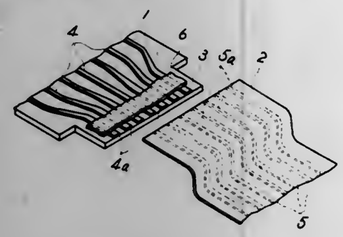
Masanori Fujita, Matsudo, and Sukenori Suzuki, Narashino, both of Japan, assignors to Kabushiki Kaisha Seikosha, Japan

Division of Ser. No. 602,446, Aug. 6, 1975, abandoned. This application Dec. 17, 1976, Ser. No. 751,730

Claims priority, application Japan, Aug. 14, 1974, 49/93080; Aug. 14, 1974, 49/93082

Int. Cl.² H02G *15/08;* H01R *5/02;* H01B *1/00*

U.S. Cl. 174—88 R **5 Claims**



1. An assembly comprising: a pair of members each having an array of electric conductors thereon, said members having respective portions thereof in superposed spaced-apart relationship such that terminal portions of the array of electric conductors on one member face respectively terminal portions of the array of electric conductors on the other member; and means adhering together said pair of members to electrically connect facing terminal portions of both arrays of electric conductors and electrically insulate adjoining terminal portions of both arrays of electric conductors, said means comprising an electrically non-conductive adhesive material adhering together said pair of members, and electrically conductive particles incorporated and mixed in said adhesive material, said particles being disposed in essentially a single layer and having a size sufficiently large with respect to the spacing distance between said members to electrically connect said facing terminal portions of both arrays of electric conductors, and said particles being spaced apart by said adhesive material distances sufficient to electrically insulate adjoining terminal portions of both arrays of electric conductors.

4,113,982

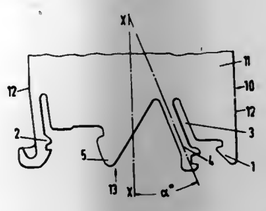
MEANS FOR MOUNTING ON CHANNEL-SECTION SUPPORTING RAILS

Gottfried Glaesel, Minusio, Switzerland, assignor to Hego Electric GmbH, Glarus, Switzerland

Filed Apr. 26, 1976, Ser. No. 680,411

Int. Cl.² H05K *7/12;* H01R *9/16, 9/22;* F16B *2/22*

U.S. Cl. 174—158 R **7 Claims**



1. A mounting foot for mounting selectively on (a) a supporting member of symmetrical channel section with outwardly directed opposite flanges of a first width, (b) a supporting member of symmetrical channel section with outwardly directed opposite flanges of a second width, and (c) a supporting member of asymmetrical channel section with inwardly directed opposite flanges, said foot comprising a row of two outer and two inner projections, said outer two projections having inwardly facing recesses for engaging said outwardly directed flanges, and said inner two projections having outwardly facing recesses for engaging said inwardly directed flanges, alternate projections being rigid and resiliently flexible, respectively, said inwardly facing recesses defining an interconnecting line, a first said inner projection being rigid and having its said recess above said line and the second said inner projection comprising a resiliently flexible finger, said recess in said second inner projection comprising a notch below said line, the spacing between said first inner projection and the immediately adjacent outer projection being substantially greater than the spacing between said second inner projection and the outer projection immediately adjacent thereto.

4,113,983

INPUT FILTERING APPARATUS FOR LOUDSPEAKERS

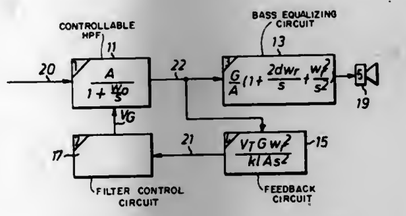
Paul Franklin Steel, Luton, England, assignor to Teledyne Acoustic Research, Norwood, Mass.

Filed Apr. 20, 1976, Ser. No. 678,461

Claims priority, application United Kingdom, Apr. 24, 1975, 16999/75

Int. Cl.² H04B *1/64*

U.S. Cl. 179—1 VL **8 Claims**



3. In a loudspeaker system, input filtering apparatus for filtering an input audio signal and supplying the filtered signal to loudspeaker means, the apparatus comprising:

(i) a variable bandwidth high-pass filter connected to filter the input audio signal and to supply the filtered signal to the loudspeaker means; and

(ii) control means, connected with said variable bandwidth high-pass filter and selectively responsive to increases and decreases in the amplitude of low audio-frequency components of the audio signal, for respectively increasing and decreasing the breakpoint frequency of said filter so as to limit the amplitude of the low audio-frequency components of the signal supplied to the loudspeaker means.

4,113,984

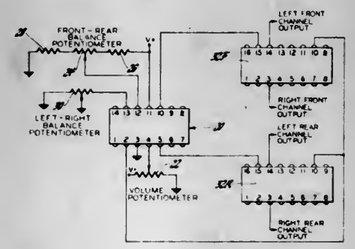
VOLTAGE TRANSLATING CIRCUIT FOR VOLUME AND BALANCE CONTROL OF A FOUR-CHANNEL AUDIO SYSTEM

William F. Gilbert, and Larry D. Lucas, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 724,747, Sep. 17, 1976, abandoned. This application Nov. 15, 1976, Ser. No. 741,805

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **5 Claims**



1. A balance control for a four channel audio system providing front left and right audio output signals and rear left and right audio output signals in response to respective audio input signals, said control comprising, first circuit means responsive to a first DC control voltage for attenuating said front left and right audio input signals, second circuit means responsive to a second DC voltage for attenuating said rear left and right audio input signals, a master volume control potentiometer means, a front-rear balance control potentiometer means, a voltage translating circuit responsive to the setting of said volume control potentiometer means and said balance control potentiometer means for developing said first and second DC control voltages, the upper limit of said first and second control voltages being established by the setting of said volume control potentiometer means, said front-rear balance potentiometer means reducing the magnitude of one of said first or second DC control voltages from said upper limit to a lower limit as said front-rear potentiometer means is moved from a balance position to one extreme unbalanced position respectively while maintaining the magnitude of the other of said first or second DC controlled voltages, said first circuit means responsive to a third DC control voltage for controlling the balance between said front left and right audio output signals by attenuating one of the front left or front right audio input signals relative to the other, said second circuit means responsive to said third DC control voltage for controlling the balance between the rear left and right audio output signals by attenuating one of the rear left or rear right audio input signals relative to the other, a single left-right balance potentiometer means for providing said third DC voltage.

4,113,985

MINE DIAL AND PAGE PHONE SYSTEM

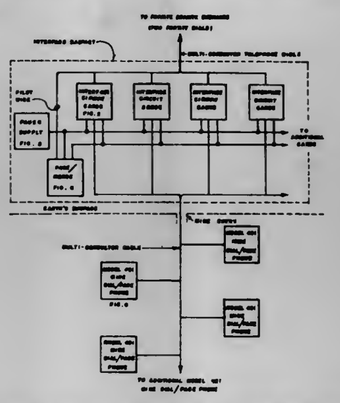
Paul B. Day, Reading, Pa., assignor to Gai-Tronics Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 585,304, Jun. 9, 1975, abandoned. This application Jan. 3, 1977, Ser. No. 756,238

Int. Cl.² H04M *1/18*

U.S. Cl. 179—2 R **8 Claims**

1. An underground telephone communication system for coal mines and other facilities that must be devoid of explosion producing sparks, comprising an above-ground dial telephone system connected to an automatic switchboard, a plurality of completely electronic interface circuit devices, devoid of components which store unsafe levels of electrical energy, connected to said switchboard and also connected to separate underground dial and page phone stations, each of said stations including a loudspeaker, to provide a separate, private line to each of a plurality of said stations to enable simultaneous, separate conversations over said private line between said stations and other underground or above-ground dial telephones, said interface circuit devices, one for each of said



private lines, including means for automatically removing the ringing voltage of said above-ground telephone system and transmitting, instead, a relatively lower bias voltage with a superimposed pulsating ringing tone to the desired loudspeaker of any one of said underground stations together with means to enable the calling party to page through said desired loudspeaker following said bias voltage with a superimposed pulsating ringing tone.

4,113,986

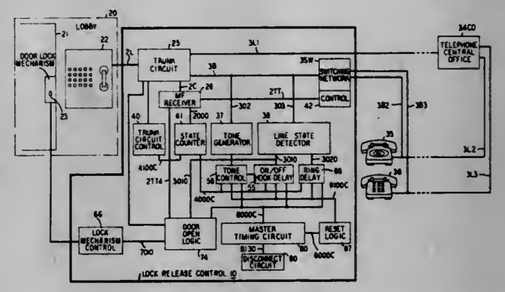
TELEPHONE CONTROLLED LOCK RELEASE ARRANGEMENT

George Frederick Clement, Naperville, Ill., and Bruno Raymond Sniegowski, Westerville, Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and Western Electric Company, New York, N.Y.

Filed Oct. 21, 1977, Ser. No. 844,377

Int. Cl.² H04M *11/00*

U.S. Cl. 179—2 A **40 Claims**



1. A lobby-apartment communication and lobby door lock control system comprising:

means for establishing a voice communication path from a lobby telephone over a communication line and a telephone central office to an apartment telephone;

lock control means, and

means responsive to a receipt of coded signals by said establishing means for providing a switched signaling path independent of said central office and between said apartment telephone and said control means; and

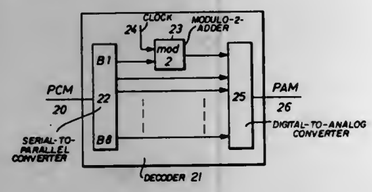
said control means comprising means responsive to a receipt of authorization signals from said apartment telephone via said switched signaling path for generating a control signal to effect an opening of a lobby door lock.

4,113,987

METHOD FOR IMPROVEMENT OF CROSSTALK ATTENUATION BETWEEN ADJACENT CHANNELS IN A TIME DIVISION MULTIPLEX SYSTEM

Kurt Anders Samuelsson, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 10, 1977, Ser. No. 757,863
Claims priority, application Sweden, Feb. 10, 1976, 7601451
Int. Cl.² H04J 3/10
U.S. Cl. 179—15 AN **2 Claims**



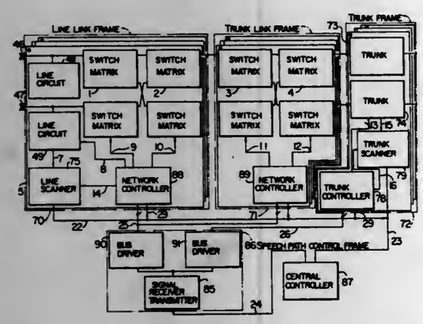
1. Method for reducing crosstalk between adjacent channels in a time division multiplex system which transmits code words each including at least one polarity bit and a plurality of amplitude-representing bits, comprising the steps of changing, on the sender side, analog signals to sets of parallel digital signals, each set having a polarity bit and a plurality of amplitude-representing bits, converting the sets of parallel digital signals to sets of serial digital signals, transmitting sequentially the sets of serial digital signals, converting, at the receiver side, the sets of serial digital signals to sets of parallel digital signals, changing the sets of parallel digital signals to analog signals, and inverting the polarity bit and maintaining the amplitude-representing bits in every other set during at least one of said converting steps.

4,113,988

SPEECH PATH PACKAGING UNIT INCLUDING CONTROLLER CONTAINING SHIFT REGISTER

Takuji Mukaemachi; Tetsuo Takeshita, both of Yokohama, and Shiroh Esami, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 8, 1977, Ser. No. 775,619
Claims priority, application Japan, Mar. 10, 1976, 51-25112
Int. Cl.² H04Q 3/54
U.S. Cl. 179—18 ES **3 Claims**



1. A speeth path apparatus for space-division type electronic exchange equipment comprising:

a plurality of speech path equipment each having controlled points, said speech path equipments being divided into packaging units;

controllers, each provided at a respective one of said packaging units, each one of said controllers including

shift register means for receiving control information sent from a central processing unit in serial form and storing said control information,

means, connected to said shift register means, for determining whether the received control information is for its own unit, and

decoder means, connected to said shift register means and controlled by the output of said determining means, for translating said control information and converting it to a parallel signal; and

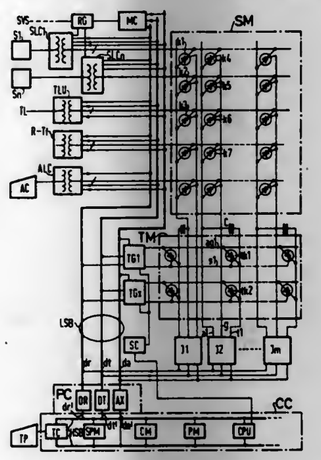
signal lines connecting said controlled points with the output of said decoder means.

4,113,989

ELECTRONIC TELEPHONE SYSTEM FEATURING SWITCHING NETWORKS HAVING THYRISTORS FOR SINGLE-WIRE SWITCHING

Carl Michael Schneider, Cinnaminson, N.J., assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 1, 1977, Ser. No. 773,318
Int. Cl.² H04Q 3/52
U.S. Cl. 179—18 GF **1 Claim**



1. In an electronic telephone switching system having peripheral units for carrying signals between subscribers, said peripheral units including a plurality of trunk and tie line circuits, at least one attendant line circuit, a plurality of signaling tone receivers and a plurality of link control circuits, having a plurality of tone generators for placing signal tones on said peripheral units, having speech path and tone switching matrices connected to and operable to interconnect said peripheral units and no interconnect said tone generators with through-connections between said peripheral units, having central control means constituted by a plurality of components including a central processing unit, a program memory connected to said central processing unit, a customer memory connected to said central processing unit, and a scratch pad memory connected to said central processing unit, having system timing means connected to said central processing unit, and having bus lines interconnecting the components of said central control means and other bus lines for connecting said peripheral units to said central control means, the improvement comprising:

said speech path and tone switching matrices being constructed utilizing, respectively, a 4×4×2 crosspoint matrix;

a plurality of electronic crosspoint switch means, each of said switch means being assigned to a respective matrix crosspoint, each of said switch means comprising a pair of thyristors, the control terminals of which are, respectively, connected to common column and common row select lines, the conducting paths of said pair of thyristors being connected, respectively, between differing row and column lines at a given crosspoint; and

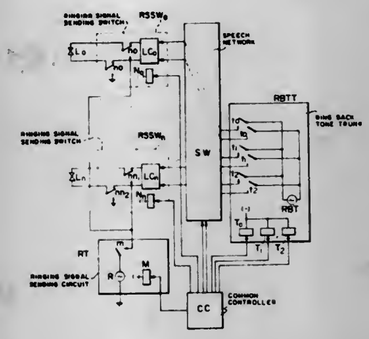
zener diodes for separate marking of each of said thyristors in said pairs thereby avoiding crosstalk between connections.

4,113,990

SIGNAL SENDING CONTROL SYSTEM

Shoji Nojiri; Hisao Kanzaki, both of Montebello, Calif.; Nobuyuki Yasoshima, Zama, Japan; Yasuo Satake, and Kenichi Ogawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 19, 1977, Ser. No. 788,971
Claims priority, application Japan, Apr. 24, 1976, 51-46899
Int. Cl.² H04M 3/04
U.S. Cl. 179—84 R **17 Claims**



1. A signal sending control system for controlling the sending of signals via a plurality of subscriber lines, each subscriber line having a corresponding telephone connected thereto, said system comprising:

a ringing signal sending circuit including a signal source for generating a continuous ringing signal, and interrupting means provided in common to said plurality of subscriber lines, for controlling transmission of the ringing signal over said each subscriber line;

switching means, one for each subscriber line, for selectively and switchably connecting said each subscriber line to a speech network of an exchange and to the ringing signal sending circuit;

a common controller for providing control information as to transmission and cessation of the ringing signal, and required timing thereof; and

control means for individually controlling the switching means of each subscriber line in accordance with said control information to transmit the ringing signal at said required timing and for controlling the interrupting means of the ringing signal sending circuit to cease the transmission of the ringing signal at the time of switching of any one of the switching means.

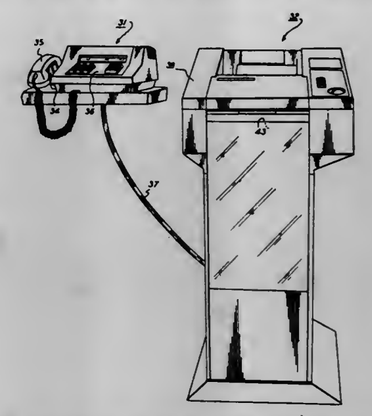
4,113,991

AUTOMATIC DIALER HAVING A SELECTIVE RETRY CAPABILITY

Michael L. Gorham, Plano, Tex., and Roger F. Norian, Norwalk, Conn., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1977, Ser. No. 793,454
Int. Cl.² H04M 1/42; H04L 11/15
U.S. Cl. 179—90 B **5 Claims**

1. In an automatic telephone dialer for placing an outgoing telephone call from a terminal having a raster input scanner in accordance with dialing instructions identified by mark sense indicia carried in a two dimensional field by an address card scanned by said scanner, the improvement comprising means



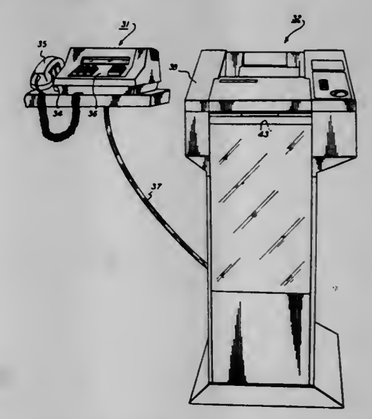
for detecting a busy back signal, means responsive to the detection of said signal for automatically attempting to replace said call after a predetermined delay, and means for at least temporally suspending further operation of said scanner pending successful placement of said call.

4,113,992

AUTOMATIC DIALER FOR FACSIMILE TERMINALS AND THE LIKE

Michael L. Gorham, Plano; Raymond F. Heckman, Richardson, and Charles S. Yole, Plano, all of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1977, Ser. No. 793,453
Int. Cl.² H04M 1/42; H04L 11/15
U.S. Cl. 179—90 B **5 Claims**



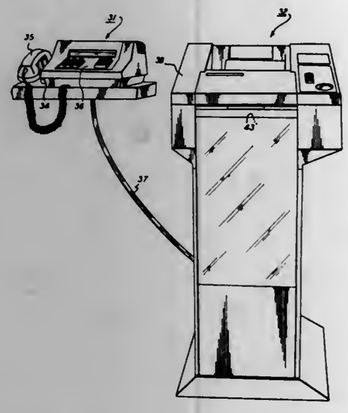
1. In combination with a telephone linked communications terminal having a raster input scanner, the improvement comprising automatic dialer means for automatically placing outgoing telephone calls from said terminal in response to dialing control instructions identified by mark sense indicia entered in a two dimensional field on address cards read by said scanner.

4,113,993

AUTOMATIC DIALER HAVING A RECALL MEMORY

Raymond F. Heckman, Richardson, and John D. Torpie, Dallas, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1977, Ser. No. 793,455
Int. Cl.² H04M *1/42;* H04L *11/15*
U.S. Cl. 179—90 B 5 Claims



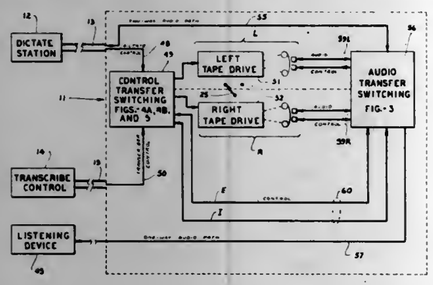
1. In combination with a telephone linked communications terminal having a raster input scanner, and an automatic dialer means for placing outgoing telephone calls from said terminal in response to dialing control instructions identified by mark sense indicia entered on address cards read by said scanner; the improvement comprising storage means for storing data identifying any jobs aborted by said automatic dialer means, and data generating means coupled between said scanner and said storage means for generating at least a part of said data in response to a video output signal supplied by said scanner whenever an address card is being scanned.

4,113,994

DICTATION RECORDING AND TRANSCRIBING SYSTEM UTILIZING SELECTABLE DUAL MESSAGE RECORD-PLAYBACK APPARATUS

Fred C. Bolick, Jr., and Theodore Titus IV, both of Atlanta, Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Filed Sep. 1, 1976, Ser. No. 719,423
Int. Cl.² H04M *11/10;* G11B *27/10*
U.S. Cl. 179—100.1 DR 15 Claims



1. Apparatus for recording and playing back dictated messages, comprising:

dictate station means including a means for producing message signals and a means for producing dictation control signals;

dictation receiving means remotely situated from said dictate station means;

signal transmission means interconnecting said dictate station and said dictation receiving means;

said dictation receiving means including first and second recording means either of which is selectably operative for recording and playing back dictated messages received along said signal transmission means from said dictate station means;

each of said recording means being operative to receive a separate message recording medium for said recorded messages;

each of said recording means being selectably operative in a dictation mode for recording dictated messages received over said signal transmission means from said dictate station and for playing back said dictated messages to said dictate station, and in a transcribe mode for playing back previously recorded messages;

transcribe control means selectably operative to produce transcribe control signals for playing back messages previously recorded by either of said recording means; and

signal transfer means associated with said dictation receiving means and selectably operative to eiter a first mode or a second mode;

said signal transfer means in said first mode operatively interconnecting said dictate station control means with said first recording means only, and operatively interconnecting said transcribe control means with said second recording means only;

said signal transfer means in said second mode operatively interconnecting said dictate station means with said second mode operatively interconnecting said dictate station means with said second recording means only and operatively interconnecting said transcribe means with said first recording means only;

each of said first and second message recording means including at least one function control means which is selectably operative to control a certain function of the corresponding message recording means;

the said function control means which control the same certain function of each corresponding message recording means being connected to receive both dictation control signals and transcribe control signals which require said same certain function;

each of said function control means being conditioned by a first kind of transfer signal to respond only to said dictation control signals and being conditioned by a second kind of transfer signal to respond only to said transcribe control signals; and

said transfer means in said first mode supplying said first kind of transfer signals to said function control means of said first message recording means and supplying said second kind of transfer signal to said function control means of said second message recording means, and in said second mode supplying said second kind of transfer signal to said function control means of said first message recording means and supplying said first kind of transfer signal to said function control means of said second message recording means.

4,113,995

TELEPHONE CRADLE ADAPTER

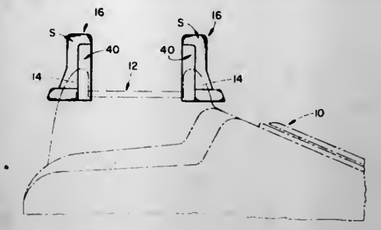
Thomas L. Marks, P.O. Box 746, Fordyce, Ark. 71742

Filed Aug. 25, 1977, Ser. No. 827,623
Int. Cl.² H04M *1/06*
U.S. Cl. 179—146 R 4 Claims

1. An adapter for attachment to the protuberance of a telephone cradle comprising:

an elastomeric sleeve defining a cavity for frictionally accepting the telephone cradle protuberance; and

a metallic cap engaging the elastomeric sleeve at opposite sides of the cavity and closing one side of the cavity to form a vertically extending pocket open at the bottom for



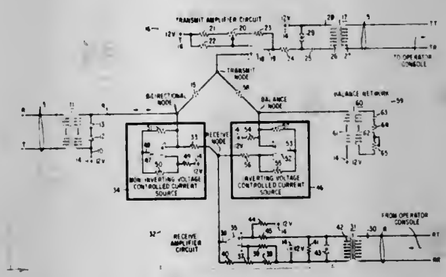
allowing the adapter to be pressed down over the telephone cradle protuberance.

4,113,996

VOLTAGE CONTROLLED CURRENT SOURCES FOR ACTIVE HYBRID CIRCUIT

Richard Barton Sanderson, Lisle, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 20, 1977, Ser. No. 798,787
Int. Cl.² H04B *1/58*
U.S. Cl. 179—170 NC 18 Claims



5. Hybrid circuitry for coupling a bidirectional path to an incoming and an outgoing path of an active hybrid circuit including:

a transmit and a receive amplifier each having at least one input and an output;

first means for connecting said output of said transmit amplifier to said outgoing path;

second means for connecting said incoming path to said at least one input of said receive amplifier;

an electrical network having a first termination communicating with said bidirectional path, a second termination connected to said output of said receive amplifier, a third termination connected to said at least one input of said transmit amplifier and being responsive to transmit signals applied to said first termination from said bidirectional path for producing said transmit signals on said outgoing path and a fourth termination for network balance;

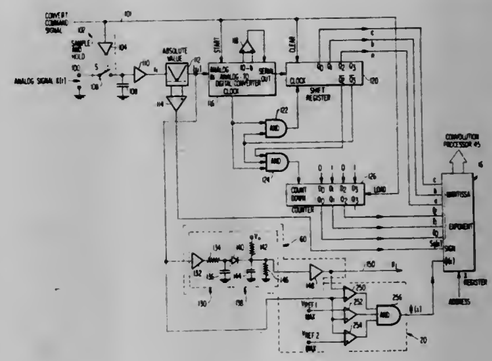
a high impedance current source means connected to said first termination and responsive to a receipt of voltage signals applied to said second termination from said output of said receive amplifier for supplying current through said first termination to produce a prescribed magnitude of the received signal on said bidirectional path; and means including said fourth termination responsive to said receipt of said voltage signals applied to said second termination for producing an inverted voltage signal at said third termination to cancel from said transmit amplifier output said signals from said receive amplifier output.

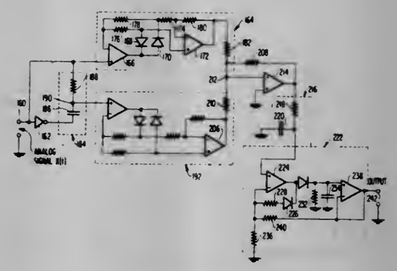
4,113,997

ANALOG TO DIGITAL SIGNAL OF LOGARITHMIC FORMAT CONVERTER AND ANALOG TO PSEUDO-RMS VALUE CONVERTER AND ECHO CANCELLER UTILIZING SAME

Otakar Anthony Horna, Bethesda, Md., assignor to Communications Satellite, Corporation, Washington, D.C.

Filed Jul. 12, 1977, Ser. No. 814,942
Int. Cl.² H04B *3/20;* G01R *1/02;* H03K *13/00*
U.S. Cl. 179—170.2 13 Claims





9. A circuit for converting a fixed number of samples $x_1, \ldots, x_p \ldots, x_n$ of a signal into a logarithmic format having sign, exponent and mantissa, said circuit comprising:

a. analog-to-digital converter means responsive to said samples $x_1, \ldots, x_p \ldots, x_n$ of said signal for digitally encoding each of said samples to a serial code arranged in order from most significant bit to least significant bit, for outputing at a first output each of said bits of each said serial code individually while also providing a control signal at a clock output corresponding to the outputing of each of said bits of each said serial code, and for providing at a second output a logical signal indicating the sign of each of said digitally encoded most recent samples;

b. shift register means connected at a first input to said first output of said analog-to-digital converter means for receiving each of said bits of each of said serial code outputed by said analog-to-digital converter means, for storing each of said received bits when a corresponding store signal is received at a clock input, for providing a plurality of non-inverting outputs, each of said non-inverting outputs being connected to one of the corresponding plurality of stages of said shift register means immediately adjacent said first input, for providing first and second inverting outputs, said first and second inverting outputs being connected to the two stages of said shift register means most remote from said first input;

c. a first logic control means responsive to said control signal at said clock output of said analog-to-digital converter means and responsive to a logical one bit at said first inverting output of said shift register means for pro-

viding said store signal to said clock input of said shift register means when said control signal and a logical one bit at said first inverting output are simultaneously present;

d. a second logic control means responsive to a logical one bit at both said first and said second inverting outputs of said shift register means and responsive to said control signal at said clock output of said analog-to-digital converter means for providing a countdown signal each time a logical one bit at said first inverting output and a logical one bit at said second inverting output and said control signal are simultaneously present;

e. counter means reponsive to said countdown signal of said second logic control means for counting down one bit from present binary value each time said countdown signal is received, said counter means being preset at the beginning of the digital encoding of each of said samples, whereby said non-inverting outputs of said shift register means provide the mantissa, said outputs of said counter means provide the exponent, and said second output of said analog-to-digital converter means provides the sign of said logarithmic format of each said digitally encoded most recent sample.

12. A pseudo-rms value circuit comprising:

a. first full-wave rectifier having an input responsive to an input signal for providing at an output a full-wave rectified signal;

b. an inverter having an input and an output, said input responsive to said input signal;

c. phase shift means having an input connected to the output of said inverter for providing at an output a signal having a phase shift of approximately ninety degrees to the lowest frequency component of said inverter;

d. second full-wave rectifier having an input connected to said output of said phase shift means for providing at an output a full-wave rectified signal;

e. summer means having a first input connected to said output of said first full-wave rectifier and having a second input connected to said output of said second full-wave rectifier for providing at an output a composite signal being the fourth harmonic of said input signal;

f. low pass filter means having an input connected to the output of said summer means and having a limiting frequency less than the minimum frequency of said input signal and having an integration time constant equal to the inverse of said limiting frequency for providing at an output a signal in which all frequencies greater than the minimum frequency of said input signal are substantially attenuated; and

g. peak detector means having an input connected to said output of said low pass filter means and having a release time constant substantially longer than said integration time constant of said low pass filter for providing at an output a signal averaging a greater value than said signal at said output of said low pass filter means, whereby the signal at said output of said peak detector means is the pseudo-rms value of the analog voltage.

4,113,998

TESTING ELECTRICALLY CONDUCTIVE LINES TO DETERMINE ELECTRICAL CHARACTERISTICS THEREOF

Glynn R. Ashdown, Hawthorn Woods; Thomas McCartney, Deerfield, both of Ill., and Bruce Holmes, Twickenman, England, assignors to Teradyne, Inc., Boston, Mass.

Filed Oct. 14, 1975, Ser. No. 622,054

Int. Cl.² H04B 3/46

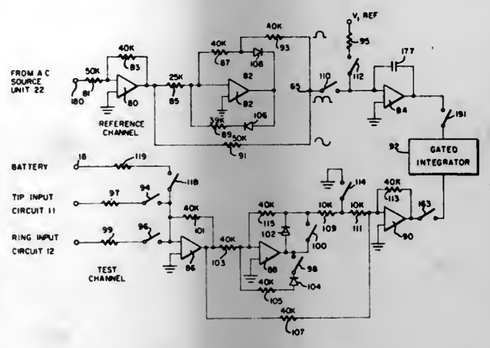
U.S. Cl. 179—175.3 R **47 Claims**

1. A method for testing two-wire lines in an environment where the predominant power distribution is at a frequency f_1, to determine the electrical characteristics thereof comprising the steps of,

(a) applying an alternating current waveform of specified frequency to one of said wires, said frequency being substantially $\frac{1}{2} f_1$, a submultiple thereof or an odd harmonic thereof no greater than 250 Hz,

(b) measuring the current on the one of said wires to which said alternating current signal has been applied,

(c) generating a signal, including a portion proportional to and of the same polarity as that of said measured current



for a period equal to an integer number of half cycles of said applied alternating current signal and equal to an integer number of full cycles of f_1,

(d) and providing an output signal proportional to the integrated value of said generated signal over said period, said period being selected to be in a known phase relationship with said applied alternating current signal.

4,113,999

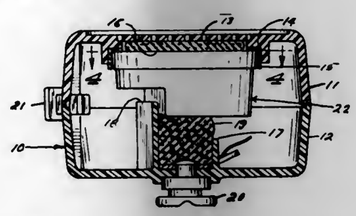
HAND HELD COMMUNICATIONS MICROPHONE

Frank Swinehart, Waseca, Minn., assignor to Warren A. Sturm, Minneapolis, Minn.

Filed Nov. 20, 1975, Ser. No. 633,870

Int. Cl.² H04R 1/02

U.S. Cl. 179—179 **1 Claim**



1. The combination in a microphone comprising:

a hollow housing, top and bottom major surfaces in said housing;

an aperture on said top surface for receiving sound energy and transmitting sound energy into said housing;

receiver means internal to said housing and in communication with said aperture comprising a case having an open top, a ceramic transducing means internal to said case, a plastic diaphragm supported in said case and connected to said transducing means, a damping element having a plurality of apertures disposed underneath said diaphragm, said plurality of apertures of said damping element covered by porous damping material;

open cellular foam plastic material disposed between said apertures and said receiver means;

a moisture impervious material loosely disposed between said open cellular material and said receiver means and means sealing said membrane over a top of said plastic diaphragm;

a stop means on said bottom surface for limiting maximum displacement of said receiver means disposed between said surfaces; and,

resilient mounting rubber gasket means disposed about said aperture surrounding a top of said receiver means and resilient mounting means opposite said aperture on said bottom surface being disposed within said stop means.

4,114,000

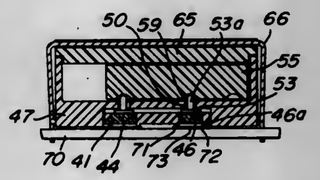
MULTI-POSITION SWITCH WITH SINGLE SLIDING ACTUATOR CAM, RECIPROCABLE CAM FOLLOWER AND COMPRESSIVE CONDUCTIVE ELASTOMER

Alvin Feder, Lauderhill, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 554,860, Mar. 3, 1975, abandoned. This application May 25, 1977, Ser. No. 800,245

Int. Cl.² H01H 15/02, 1/02

U.S. Cl. 200—16 R **21 Claims**



1. A multiple position switch for selectively interconnecting a plurality of isolated conductors, including:

a casing;

positioning means attached to said casing for positioning components with respect thereto;

a plurality of conductive means flexibly joined to said casing and located in relatively fixed predetermined positions with respect thereto by said positioning means;

mounting means coupled to said casing for positioning each of said conductive means normally adjacent to a plurality of isolated conductors for conductively contacting and electrically bridging a pair of said conductors in response to each of said conductive means being flexed in a predetermined direction; and

actuator means mechanically contacting said casing and slideably movable in first and second linear orthogonal directions into a plurality of at least three predetermined positions with respect thereto, said actuator means including a cam surface selectively coupled to said plurality of conductive means for selectively flexing a predetermined number of said conductive means in said predetermined direction in response to said actuator means being in each of said plurality of predetermined positions.

4,114,001

ELECTRICAL SWITCH HAVING INTERLOCK BETWEEN DOOR AND SWITCH

John Courtney Corfield, Waltham St. Lawrence, England, assignor to Unimax Switch Limited, Maidenhead, England

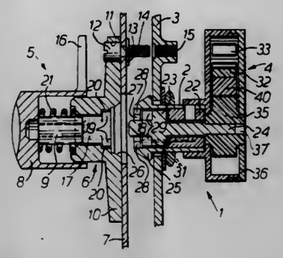
Filed Sep. 29, 1976, Ser. No. 727,849

Claims priority, application United Kingdom, Oct. 1, 1975, 40111/75

Int. Cl.² H01H 9/00

U.S. Cl. 200—50 A **27 Claims**

25. In or for a machine in which the opening or removal of a machine door, cover or guard is rendered safe, a first unit which is connected to a fixed structure of said machine and which includes electrical switching means for controlling power to said machine; a second unit which is connected to said door and which includes a control knob movable between OPEN and ON positions and which is adapted to co-operate with said first unit when the door is closed so that movement of the control knob controls operation of said switching means and connects power to the machine only when in the ON position; a releasable fastening device which is mounted on said door so that it is captive thereon; cooperating means which is mounted on said fixed structure of the machine for engagement by said releasable fastening device to lock said door closed; masking means which is mounted on said control knob and is positioned in relation to said releasable fastening device so as to cooperate therewith and prevent operation of



the releasable fastening device when the control knob is in any position other than the OPEN position; said releasable fastening device being such that it has to be operated to lock the door closed before the control knob can be operated to control said switching means.

4,114,002

ELECTRIC SWITCH

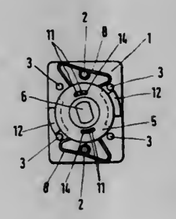
Gerhard Hochgesang, Lebenhan, Fed. Rep. of Germany, assignor to Preh-Elektrofeinmechanische Werke-Jakob Preh Nachf, Bad Neustadt, Saale, Fed. Rep. of Germany

Filed Jul. 21, 1976, Ser. No. 707,337

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 2536603

Int. Cl.² H01H 1/24

U.S. Cl. 200—67 C **12 Claims**



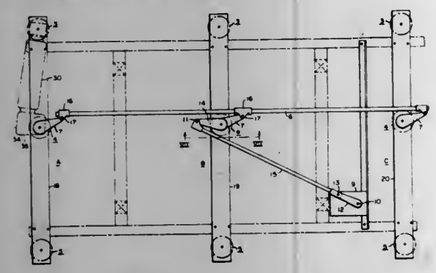
1. In an electrical switch having a single-piece contact element pivoted about a middle contact block and made of electrically-conductive material, said contact element being brought selectively into or out of contact with stationary contact blocks in two switch positions by means of an actuating element, wherein the contact element simultaneously serves to produce a snap action movement, the improvement comprising said contact element comprising a contact spring formed approximately in the shape of a triangle and open at one apex of the triangle, said contact spring having a bearing in the center of the side thereof opposite the open apex for engaging said middle contact block, a second side of the contact spring, in a first switch position, bearing under spring tension against one stationary contact block disposed on one side of the middle contact block, a third side of the contact spring, in a second switch position, bearing under spring tension against another stationary contact block disposed on another side of the middle contact block, said actuating element having a recess therein, the free ends of the second and third sides of the contact spring, at the open apex thereof, engaging in said recess.

4,114,003

QUICK-ACTING MOVABLE OPERATING-COLUMN TRIPPING DEVICE

Russell E. Frink, Pittsburgh, and Stanislaw A. Milianowicz, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 8, 1974, Ser. No. 468,332
Int. Cl.[2] H01H *33/02*
U.S. Cl. 200—144 R **22 Claims**



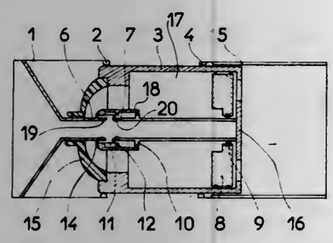
1. The combination in a circuit-breaker structure of an interrupting unit disposed at high potential and having separable contact means associated therewith, insulating means for supporting said interrupting unit up in the air an adequate distance above ground potential, operating means at high voltage disposed adjacent one end of said high-potential interrupting unit for causing the actuation of said separable contact means associated with said high-potential interrupting unit, means providing an operating mechanism at ground potential, a movable insulating column for transmitting motion from said grounded operating mechanism to the high-voltage operating means for the high-voltage separable contact means, a high-speed, spring-charged tripping device interposed between the aforesaid high-potential operating means and the aforesaid grounded operating mechanism and constituting a separate independent entity from the aforesaid two operating means, said high-speed independent spring-charged tripping device being associated with said movable insulating column to cause thereby the fast tripping motion thereof independently of the action of the relatively-slow-acting grounded operating mechanism for consequent very-fast tripping separating motion of the separable contact means within the interrupting unit.

4,114,004

GAS-BLAST ELECTRIC CUT-OUT DEVICE

Jacques Dayet, Lyon; Joseph Martin, Villeurbanne, and Charles Nicola, Meyzieu, all of France, assignors to Delle-Alsthom S.A., Villeurbanne, France

Filed Sep. 29, 1976, Ser. No. 727,750
Claims priority, application France, Oct. 9, 1975, 75 30996
Int. Cl.[2] H01H *33/88*
U.S. Cl. 200—148 A **11 Claims**



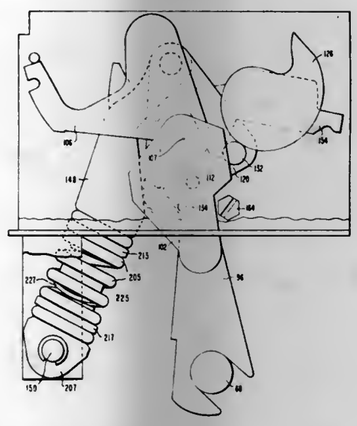
1. An electric cut-out device comprising:
a main fixed contact,
a main mobile contact,
a fixed arcing cut-out contact,
a mobile arcing cut-out contact,
means for compressing a blast gas used for extinguishing the arc which forms between the arcing contacts upon cut-out operation, said arcing cut-out contacts being tubular and being provided with nozzles opposing each other for contact therebetween and being of the same diameter,
means for maintaining said arcing cut-out contacts open when said main contacts are closed prior to cut-out device cut-out operation, and
maneuvering means for effecting when the cut-out device opens, a first movement of the mobile arcing cut-out contact, in the opposite direction to the movement of the mobile main contact and towards said fixed arcing cut-out contact, until the mobile arcing cut-out contact presses against the fixed arcing cut-out contact, then holding of the arcing cut-out contacts closed as long as the main contacts are not separated from each other, and lastly, a second movement of the mobile arcing cut-out contact, in the same direction as the mobile main contact, a short time after the separation of the main contacts.

4,114,005

CIRCUIT BREAKER SPRING ASSEMBLY

Alfred E. Maier, Chippewa; Donald D. Armstrong, Pittsburgh, and James R. Farley, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1977, Ser. No. 829,702
Int. Cl.[2] H01H *3/60*
U.S. Cl. 200—153 G **6 Claims**



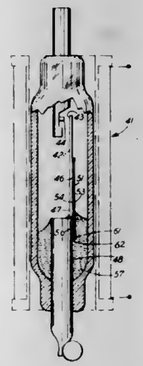
1. A circuit breaker comprising:
stationary contact means;
a movable contact operable between open and closed positions with respect to said stationary contact means;
a support;
movement effecting means for effecting relative movement of said movable contact between said open and closed positions; and
a closing spring assembly for imparting movement to said movement effecting means to move said movable contact to said closed position, said closing spring assembly capable of being in spring charged and spring discharged positions, said closing spring assembly comprising:
a first member having first and second end sections, said first member first end section being secured to said support;
a second member having first and second end sections, said second member first end section being coupled to said movement effecting means;
a helical closing spring, having a central opening therethrough, secured to said first member second end section and said second member second end section, said first member second end section and said second member second end section extending within said closing spring central opening; and
shock absorbing means disposed within said closing spring central opening intermediate said first and second member second end sections for absorbing energy released when said closing spring assembly is discharged.

4,114,006

MERCURY-WETTED SEALED CONTACT SWITCH

Anthony Tedeschi, Raytown, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed May 3, 1977, Ser. No. 793,325
Int. Cl.[2] H01H *1/08, 1/26*
U.S. Cl. 200—234 **4 Claims**



4. An electrical switch comprising: first and second terminals mounted in a sealed envelope; an elastically flexible member attached at one end to the first terminal and extending therefrom;
an armature attached at one end to the flexible member and located generally between the terminals, the other end of the armature remaining unattached to permit the armature to pivot about a center of flexure of the member into and out of electrical contact with the second terminal, the center of flexure being located substantially at the midpoint between the attachments of the flexible member to the first terminal and to the armature;
a damping member mounted on said flexible member and shaped to be substantially superimposed on and parallel to the flexible member and extending part the one end of the armature toward and past the center of the flexure, the damping member having a flat end surface located on the opposite side of the center of flexure with respect to the unattached end of the armature; and
a damping liquid located in said envelope at the first terminal, the damping member extending into the liquid to exert a force on the liquid in response to a force transmitted from the armature to the damping member.

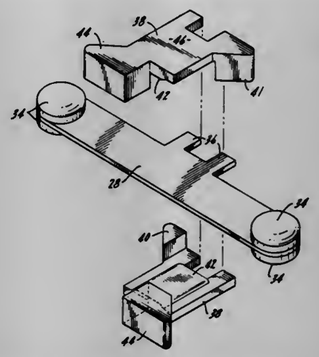
4,114,007

LOW LEVEL RELAY CONTACT BLADES

Angelo C. Desiderio, Crystal Lake, Ill., assignor to Oak Industries, Incorporated, Crystal Lake, Ill.

Filed Jan. 3, 1977, Ser. No. 756,247
Int. Cl.[2] H01H *1/24*
U.S. Cl. 200—246 **4 Claims**

1. In a relay assembly, a housing, a contact carrier yieldingly mounted in said housing, a plurality of terminals having contact portions thereon positioned in said housing, a flat flexible contact blade having contact portions thereon, a pair of spaced projections extending laterally outwardly from said blade, means for mounting said contact blade on said contact carrier in position for closing with said terminals, said mounting means including support means interposed between said carrier and blade and permitting flexing of said blade and wiping of said terminal contact portions by said blade contact portions as said blade opens and closes upon said terminals in response to movement of said carrier, said support means being interlocked with said blade and including symmetrically arranged blade support blocks, one positioned on each side of said blade, with said blocks and blade being positioned as a unit



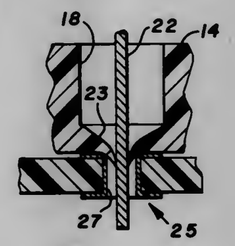
within a groove in said contact carrier, an outwardly extending ear on each block, with said ears being positioned outwardly of and adjacent a blade projection whereby said blade is held between said ears, each of said support blocks having a raised portion with the flat blade being captured between said raised portions permitting flexing movement of said blade relative to said blocks.

4,114,008

RELAY SEAL CAP

Edwin J. Luetzow, Northfield, Minn., assignor to TelTec, Incorporated, Farmington, Minn.

Filed Jun. 14, 1976, Ser. No. 695,514
Int. Cl.[2] H01R *9/04*
U.S. Cl. 29—630 B **4 Claims**



4. A method of sealing generally rigid rectangular cross-sectioned contact pins within an enclosure wall having an interior surface and an exterior surface which comprises the steps of:
(a) forming at least one contact pin receiving bore within a thermoplastic enclosure wall, said bore extending a predetermined distance into said wall from said interior surface and having a tapered end thereon terminating a second predetermined distance short of the exterior surface of said enclosure wall, there being a slit, having a transverse dimension less than the corresponding transverse dimension of the contact pin to be received therethrough, extending from the apex of said tapered end of said bore to said exterior surface of said wall;
(b) inserting a generally rigid contact pin into said bore with a portion thereof extending through said slit beyond said exterior surface of said wall, with the edges of said slit being in resilient engagement with the lateral edges of said generally rigid contact pin to form a lip seal thereabout; and
(c) heating said generally rigid contact pin extension to a

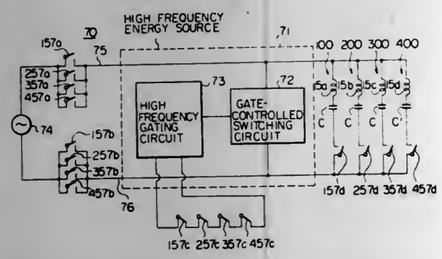
temperature sufficient to cause the material forming said thermoplastic wall to flow, thereby forming a seal about the edges of said generally rigid contact pin.

4,114,009

SWITCHING AND HEAT CONTROL MECHANISM FOR INDUCTION HEATING COOKING APPARATUS HAVING A PLURALITY OF WORK COILS

Mitsuyuki Kiuchi; Keizo Amagami, both of Kadoma; Shigeru Maeda, and Shigeharu Saegusa, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Kyokuto Electric Company, Limited, both of, Japan

Filed Feb. 2, 1977, Ser. No. 764,983
Claims priority, application Japan, Feb. 3, 1976, 51-11032
Int. Cl.² H05B 5/04
U.S. Cl. 219—10.49 R **10 Claims**



1. Induction heating cooking apparatus having a nonmetallic cook top on which cooking vessels are adapted to be placed, comprising a gate-controlled switching circuit, a high frequency gating circuit for gating on said gate-controlled switching circuit into conduction successively in opposite directions at the high frequency rate, a plurality of commutation circuits each including an induction heating coil and a capacitor connected in series, and a switching and heat control mechanism for each of said commutation circuits, the switching and heat control mechanism comprising:

(a) an elevating mechanism mounted on a chassis for carrying an associated induction heating coil at an adjustable position relative to said cook top;

(b) a switching device comprising:

(1) a rotary shaft;

(2) a control knob connected to one end of said shaft;

(3) first, second and third switch contact units, the first contact unit being arranged to connect said gate-controlled switching circuit to be responsive to power derived from a low frequency alternating voltage source in parallel with the first switch contact units of the other switching and heat control mechanisms, the second contact unit being arranged to connect an associated commutation circuit to said gate-controlled switching circuit, the third switch contact unit being connected in series with the third switch contact units of the other switching and heat control mechanisms to control the energization of said high frequency gating circuit; and

(4) first, second and third contact operating members mounted along the length of said shaft at such positions as to engage the first, second and third switch contact units respectively to allow the same to assume one of open and closed circuit conditions, the points of engagement of said first and second contact operating members with the corresponding switch contact units being axially aligned with each other and the point of engagement of said third contact operating member with the corresponding switch contact unit being angularly displaced from the points of engagement of said first and second contact operating members, wherein the points of engagement of the first, second and third contact operating members are positioned to allow the corresponding switch contact units to assume one of different combinations of open and closed circuit conditions in sequence as the shaft is rotated from a normal position in which the associated induction heating coil is inactive;

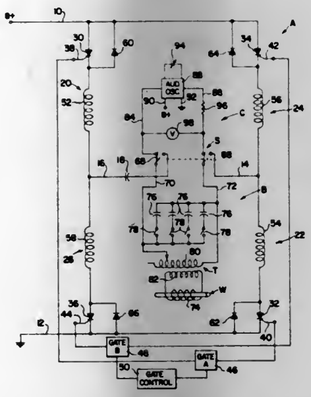
(c) means connected at one end to said shaft for translating the rotational movement of said rotary shaft into a reciprocating movement and connected at the other end to said elevating mechanism to transmit the reciprocating movement thereto to thereby cause it to move the associated induction heating coil relative to said cook top, the connection thereof to said rotary shaft being such that when said shaft is in the normal position the gap between the associated induction heating coil and the cook top is at the greatest.

4,114,010

TEST CIRCUIT AND METHOD FOR MATCHING AN INDUCTION LOAD TO A SOLID STATE POWER SUPPLY

John C. Lewis, Wentworth, Canada, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 668,952, Mar. 22, 1976, abandoned. This application Sep. 21, 1977, Ser. No. 835,157
Int. Cl.² H05B 5/04
U.S. Cl. 219—10.41 **9 Claims**



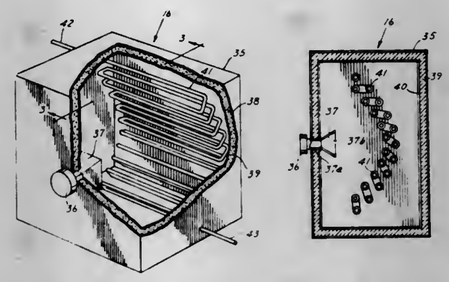
1. An auxiliary electrical test circuit for induction heating apparatus including a load circuit comprising inductor means and power factor correction means, and a solid state power supply circuit having an output connected to said load circuit and having a rated output frequency, said power supply circuit being inoperable to deliver any power through said output to said load circuit when the resonant frequency of said load circuit when loaded is outside said rated output frequency of said power supply circuit, said test circuit including audio frequency oscillator means having an output frequency adjustable between lower and upper limits respectively below and above said rated output frequency of said power supply circuit, means for selectively coupling said test circuit with said load circuit independent of said power supply circuit, said inductor means being adapted to be inductively coupled with a workpiece, and means responsive to adjustments of said output frequency of said oscillator means for indicating an oscillator output frequency corresponding to the resonant frequency of said load circuit with a workpiece inductively coupled with said inductor means whereby said resonant frequency of said load circuit with said workpiece inductively coupled therewith can be matched with said rated output frequency of said power supply circuit prior to connecting said power supply circuit output with said load circuit.

4,114,011

MICROWAVE HEATING METHOD AND APPARATUS

Elmer L. Stubbs, Colorado Springs, Colo., assignor to Thermatron, Inc., Denver, Colo.

Filed Jul. 12, 1976, Ser. No. 704,520
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 M **6 Claims**



1. Microwave heating apparatus for heating a room and the like comprising:

means for generating microwave energy having a wave guide for directing said energy;

means defining a chamber having microwave energy reflecting wall surfaces for containing the microwave energy generated by said generating means and having heat insulation; and

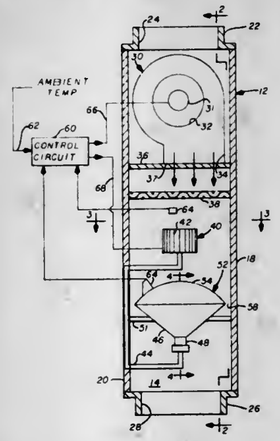
pipe means in said chamber that are permeable to microwave energy for conveying a microwave energy absorbent liquid capable of directly absorbing and being heated by said microwave energy, said pipe means being in the form of a plurality of pipe sections arranged in a generally parabolic array in said chamber with said generating means located at approximately the focal point of said array and with said wall surfaces reflecting microwave energy to said liquid to enhance the absorption of said microwave energy by said liquid to heat said liquid as said liquid is passed through said chamber.

4,114,012

MICROWAVE FURNACE

George E. Moen, 1876 Miramonte Ave., Mountain View, Calif. 94040, and Vincent P. De Vito, 3716 Atwater, Sacramento, Calif. 95825

Filed Jul. 25, 1977, Ser. No. 818,384
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 R **4 Claims**



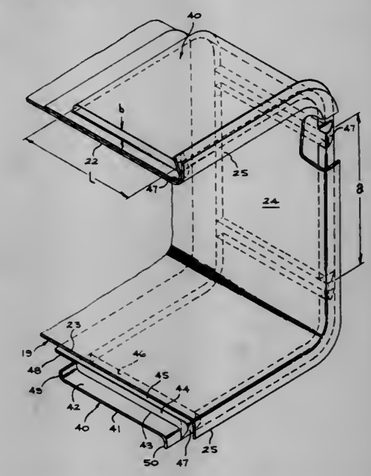
1. A furnace comprising an impervious housing having an inlet opening and an outlet opening spaced from the inlet opening, means for inducing air flow along a path through said housing from said inlet opening to said outlet opening, heat exchanger means disposed within said housing for heating the air flowing therethrough from said inlet opening to said outlet opening, said heat exchanger means including a body having a wall that is microwave lossy, a microwave source and a transmission line between said microwave source and said body for transmitting microwave energy from said source to said body to heat the body.

4,114,013

CHOKE FOR COMBINED MICROWAVE AND SELF-CLEANING OVEN

Donald J. Simon, and Louis H. Fitzmayer, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jul. 28, 1977, Ser. No. 819,789
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 D **9 Claims**



1. A combined microwave and self-cleaning oven including an oven liner having an opening, said liner having a lip surrounding the periphery of said opening, means to produce microwave energy of a selected wavelength within said liner, a door having sealing means engaging said lip when said door is in its closed position to seal said opening, a choke surrounding said liner adjacent said lip, said choke including a cavity with means to trap air therein to thermally insulate said liner adjacent said lip during pyrolytic self-cleaning of said liner, and to provide groundpoints.

4,114,014

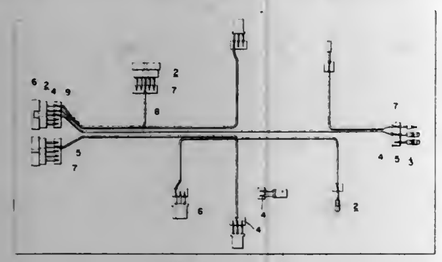
PROCESS AND APPARATUS FOR PRODUCING A WIRE-HARNESS

Iizuka Shogo; Endo Mitsuo, both of Gotenba; Watanabe Mitsugu; Iizuka Toshio, both of Numazu, and Usui Kenji, Gotenba, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 29, 1976, Ser. No. 737,025
Claims priority, application Japan, Oct. 30, 1975, 50-129829; Mar. 24, 1976, 51-031404
Int. Cl.² B23K 11/00
U.S. Cl. 219—56 **18 Claims**

1. An apparatus for producing a wire-harness comprising a working stand, X and Y shafts mounted on the working stand to cross each other, said X and Y shafts being separately rotatable on the working stand, a wire-laying head connected to said X and Y shafts and movable above the working stand by said X and Y shafts, said wire-laying head comprising a wire-inserting ram, a wire clamp and a wire guide, a wire reel station

disposed on one side of the working stand, a device for cutting a wire and removing an insulating coating from the cut end of the wire, a plurality of sets of wire clamping and supporting members, lower welding electrodes mounted on the working stand in close relation to each other, and upper welding electrodes movable toward and away from said lower welding electrodes, the wire-inserting ram being disposed on the lower end of a wire-treating member disposed in substantially parallel relation to the wire clamping and supporting members, longi-



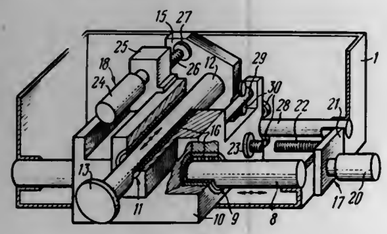
tudinal and lateral grooves in intersecting relation being formed on each wire clamping and supporting member, a wire-clamping rod being mounted on the wire-treating member to pierce the interior of the wire-treating member in a substantially vertical direction, a generally L-shaped wire-clamping pin being formed on the lower end of the wire-clamping rod, and the wire-clamping pin being rotatable and movable in a substantially vertical direction to cooperate with said intersecting grooves to effect clamping and guiding of the wire and gripping and disconnection of the wire.

4,114,015

ELECTRIC DISCHARGE MACHINE WITH A PROGRAM COPIER AND A TOOL SUPPORT HEAD CARRIED BY A LONGITUDINALLY AND TRANSVERSELY DRIVEN CARRIAGE

Vladimir Sergeevich Vasiliev, Lomonoskovsky prospekt, 18, kv. 226; Ernest Alexandrovich Annenberg, ulitsa Shukhova, 16, korpus 4, kv. 31; Abram Lazarevich Livshits, Leninsky prospekt, 11, kv. 62; Vadim Evgenievich Polotsky, Leninsky prospekt, 70/11, kv. 238, and Valery Mikhailovich Lakhtjukhov, Profsojuznaya ulitsa, 35/11, kv. 211, all of Moscow, U.S.S.R.

Continuation of Ser. No. 579,722, May 21, 1975, abandoned.
This application Mar. 23, 1977, Ser. No. 780,357
Claims priority, application U.S.S.R., May 27, 1974, 2025822
Int. Cl.² B23P *1/08*
U.S. Cl. 219—69 W **3 Claims**



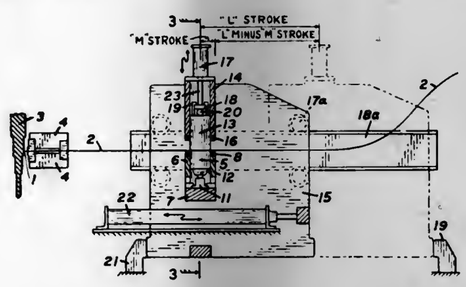
1. A metal-cutting machine comprising a base; a table mounted on said base for clamping a workpiece thereon; longitudinal ways on said base; a main carriage mounted on said longitudinal ways for longitudinal displacement thereon, said main carriage being provided with transverse ways; a cross-slide mounted in the transverse ways of said main carriage; a power head with cutting tool mounted on said cross-slide; first and second drive means for respectively driving said main carriage and cross-slide with respect to their associated ways, said second drive means being mounted on said main carriage adjacent to said main carriage; a program-copying device connected to said first and second drive means to control the same and thereby the driving of the main carriage and cross-slide, said longitudinal ways comprising a horizontal longitudinal guide-bar extending through a longitudinal passage provided in said main carriage and having ends fixed to said base, said transverse ways being constituted by a transverse passage provided in the main carriage with its axis horizontal and in a plane perpendicular to the axis of said longitudinal passage in the main carriage, said cross-slide including a horizontal cross guide-bar displaceably mounted in said transverse passage and having one end secured to said power head, a cross-arm secured to the other end of said cross guide-bar and extending perpendicularly to the axis of said cross guide-bar and means operatively coupling said cross-arm to said second drive means for the cross-slide comprising a screw-and-nut drive including a drive motor, means slidably mounting said drive motor on said main carriage for travel parallel to said cross guide-bar, a screw arranged parallel to the axis of the cross guide-bar with one of its ends drivingly connected to said drive motor, said screw being located on the main carriage on the same side of the cross-arm as the cross guide-bar, and a nut fixed in position on the cross-arm and engaged by said screw, said drive motor of the second drive means being superimposed above said cross guide-bar at an intermediate location along the length thereof and also above said longitudinal ways on said base and being confined within the outline of the carriage, said screw extending the length from the drive motor of the second drive means to said cross arm which represents only a portion of the length of said cross guide-bar.

4,114,016

WELDING MACHINE AUXILIARY TRANSFER CLAMP

Charles A. Toma, Warren, and Walter F. Haessly, Salem, both of Ohio, assignors to The Taylor-Winfield Corporation, Warren, Ohio

Filed Apr. 19, 1976, Ser. No. 678,153
Int. Cl.² B23K *11/04*
U.S. Cl. 219—97 **1 Claim**



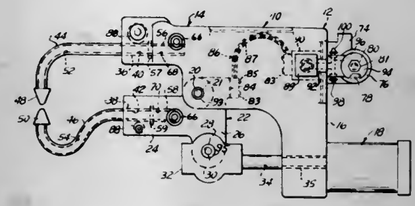
1. In a welding machine having a spacer plate against which the end of a coil, to be welded, is held; the improvement comprising a carriage on the welding machine supporting an auxiliary transfer clamp unit including a pair of clamping elements including upper and lower clamp shoes, each including a cylindrical ram operated by a fluid cylinder, a spherical ball connection intermediate each said fluid cylinders and its respective ram to allow said upper and lower rams to pivot freely only about the longitudinal axes of said rams, without lateral movement, so as to prevent the occurrence of a gap, a clamping beam which is vertically movable by fluid operated means mounted on the frame of said carriage, a wedge movable horizontally by a fluid operated cylinder mounted on said clamping beam and engageable with said ball connection of said lower ram to effect clamping movement thereof.

4,114,017

CORROSION-RESISTANT LIGHT-WEIGHT SPOT WELDING GUN

Adrian P. Smith, 51 Woodland Shore, Grosse Pointe Shores, Mich. 48236

Filed Dec. 18, 1975, Ser. No. 641,994
Int. Cl.² B23K *11/10*
U.S. Cl. 219—90 **5 Claims**



1. A corrosion-resistant light-weight spot-welding gun, comprising

an aluminum spot-welding gun body having a forward portion with a fixed jaw containing a fixed electrode socket and having a cooling water passageway communicating at its forward end with said fixed electrode socket and at its rearward end adapted to be connected to cooling water supply and discharge conduits,

a movable aluminum spot-welding gun jaw movably mounted on said body and having a forward portion with a movable jaw containing a movable electrode socket and having a coolng water passageway communicating with said movable socket and at its rearward end adapted to be connected to cooling water supply and discharge conduits,

said fixed and movable sockets being adapted to receive and hold hollow fixed and movable spot welding electrodes respectively communicating with said passageways,

sealing means interposed between said sockets and said passageways for excluding water from said sockets,

means on said body operatively connected to said movable jaw for moving said movable jaw toward and away from said fixed jaw whereby to move the welding electrodes into and out of welding engagement with a workpiece placed therebetween,

a bipolar welding cable connection on said body adapted to be connected to the terminal connectors of an electrical supply welding cable,

and means for conducting electricity of different polarities from said welding cable to said fixed and movable jaws respectively.

the internal surfaces of said cooling water passageways having nickel-plated corrosion resistant coatings thereon.

4,114,018

METHOD FOR ABLATING METAL WORKPIECES WITH LASER RADIATION

Martin Von Allmen, Ortschwaben, and Hans Peter Schwob, Uetendorf, both of Switzerland, assignors to Lasag AG, Thun, Switzerland

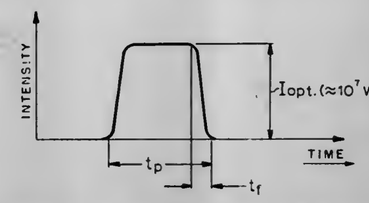
Filed Sep. 30, 1976, Ser. No. 728,403
Int. Cl.² B23K *27/00*
U.S. Cl. 219—121 LM **18 Claims**

1. A method of ablating a metal workpiece comprising:

establishing a beam of laser radiation having an intensity sufficient to cause vaporization and ejection of molten material created thereby but insufficient to create a plume or a plasma at a point of impingement on the workpiece;

impinging the beam on the metal workpiece to cause vaporization and ejection of the molten material;

maintaining a constant beam intensity while the beam impinges at the point of impingement on the workpiece; and



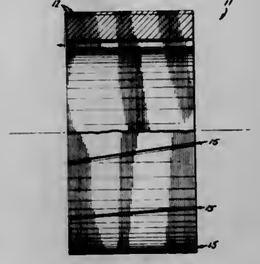
terminating the intensity of the beam at a rapid rate so that substantially no ejected molten material impinges upon the workpiece.

4,114,019

WELDING OF LAMINATIONS OF CORE-PLATED SILICON STEEL

Leslie W. Sandor, St. Paul, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed Dec. 22, 1976, Ser. No. 753,430
Int. Cl.² B23K *9/00*
U.S. Cl. 219—137 R **28 Claims**



1. A method of joining a plurality of metallic laminations each of which is core-plated for electrical insulating purposes to form a laminate structure of predetermined configuration, comprising:

(a) placing the core-plated laminations together face to face with portions of the lamination edges relatively disposed to define a welding surface;

(b) and arc welding a bead on the welding surface transverse to the lamination edges by

(1) continuously supplying to a movable welding head a microwire electrode having an effective cross sectional area equivalent to a circular area the diameter of which is no greater than about 0.050 inches;

(2) moving the welding head over the welding surface transversely to the lamination edges with the microwire electrode in close proximity to the welding surface;

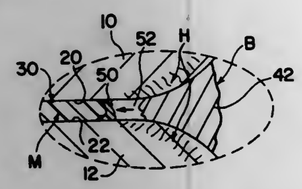
(3) and applying a voltage to the microwire electrode which results in an operating welding current of no more than about 170 amperes, whereby a substantially nonporous weld bead is deposited on the welding surface as the welding head is moved.

4,114,020

METHOD OF JOINING TWO SHEET METAL PARTS

Harry Edwin Featherstone, Wooster, and Walter Grant Sniff, Jr., Smithville, both of Ohio, assignors to Orrville Products, Inc., Orrville, Ohio

Continuation-in-part of Ser. No. 760,919, Jan. 21, 1977. This application Jun. 24, 1977, Ser. No. 809,911
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—137 R 29 Claims



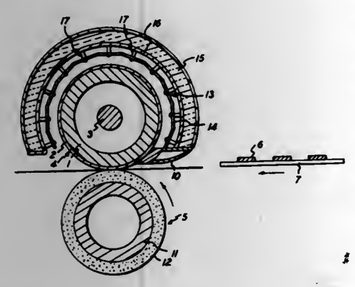
1. A method of joining first and second sheet metal parts along a common seam formed by a first surface on said first part and a second surface generally matching said first surface and on said second part, said surfaces defining therebetween random spaces of variable thickness when said surfaces are assembled in generally abutting coextensive relationship, said variable thickness being less than a known thickness, said method comprising the steps of:
(a) applying a layer of corrosion resistant material to one of said surfaces at an applied thickness substantially greater than said known thickness, said material including a suspension of a carrier, a corrosion resistant agent and a carrier solvent and being nongravity flowable at a temperature above about 400° F to 440° F and capable of forming a heat insulating, pliable, coherent gel upon burning of said solvent and being nonhardening;
(b) placing said surfaces together to jointly form said common seam with said material filling said random spaces;
(c) holding said surfaces in said placed position;
(d) welding said surfaces together along a weld line generally coextensive with said seam whereby a line of said gel of said material forms along said weld line.

4,114,021

HEAT ROLL FIXING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Hiroo Nishide, and Yasuhiro Uehara, both of Ebina, Japan, assignors to Rank Xerox, Ltd., London

Filed May 31, 1977, Ser. No. 801,678
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—216 4 Claims



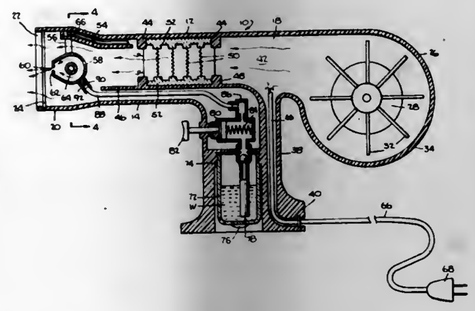
1. Fuser apparatus for fixing toner images to copy substrates, said apparatus comprising:
a first roll member;
a second roll member cooperating with said second roll member to form a nip through which said copy substrates pass with said toner images contacting said first roll member;
first heating means disposed internally of said first roll member for elevating the surface temperature thereof to a first predetermined level;
second heating means disposed externally of said first roll member and adjacent thereto, said second heating means comprising a low heat capacity element which can be elevated to a second predetermined temperature which is higher than said first predetermined temperature, said elevation of said second heating means being capable of being effected in a very short period of time whereby the surface of said first roll member can be quickly raised to its operating temperature by virtue of the thermal energy supplied by both said first and second heating means said second heating means being coextensive with more than half the surface of said first roll member.

4,114,022

COMBINED HOT AIR AND STEAM HAIR DRYER

Herbert A. Braulke, III, 7 E. 14th St., New York, N.Y. 10003

Filed Aug. 16, 1977, Ser. No. 825,185
Int. Cl.[2] H05B *1/00*; A45D *20/08*; F24H *3/04*; F22B *1/28*
U.S. Cl. 219—362 8 Claims



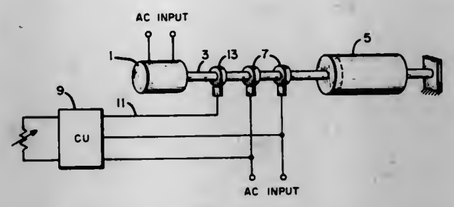
1. A combined hot air and steam hair dryer comprising a hollow housing defining an air flow chamber and provided with a support base, a fan motor disposed in the rear of the housing, a discharge aperture provided in the front of the housing, fan means driven by said motor for drawing air into the chamber through a rear air inlet of said housing and discharging the air through the front aperture, electric heating means to heat the air passing through the air chamber, a steam generating casing within the air chamber in the air flow path through said chamber downstream of said air heating means and adjacent the discharge aperture and provided with openings facing the aperture, electric heating means disposed within the casing for generating steam, a water reservoir removeably secured within the support base, a pump having an inlet communicating with the reservoir, and an outlet connected to a hollow tubing leading from the pump into the steam generating casing, means to activate the pump means to inject water from the reservoir into the casing, the electric heating means within the chamber and within the casing, and the fan motor being connected in a circuit to a lead wire engageable to an electric source, and switch means to energize the circuit, whereby hot air is discharged through the aperture and steam is selectively discharged through the aperture in a spray.

4,114,023

HEATER CONTROL FOR ROTARY MEMBERS

Richard J. Zelinka, Lino Lakes, and George K. Sutherland, White Bear, both of Minn., assignors to Sys-Tec, Inc., New Brighton, Minn.

Filed Oct. 22, 1976, Ser. No. 734,755
Int. Cl.[2] H05B *1/02*
U.S. Cl. 219—471 6 Claims



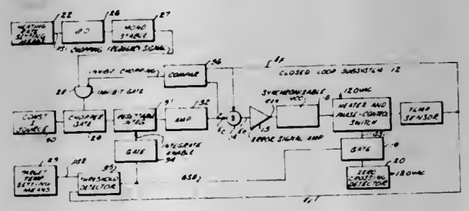
1. Control apparatus for controlling the value of a parameter within a moving enclosure comprising:
(a) a rotatable enclosure having a parameter control element therein;
(b) a current regulating circuit coupled to said parameter control element which is contained in said enclosure and rotatable therewith;
(c) an external, fixedly mounted constant current transmitter for generating a direct current control signal which represents, by means of a constant current, a desired parameter value to be maintained in said enclosure; and
(d) slip-ring means for connecting said direct current control signal to said current regulating circuit.

4,114,024

FEEDBACK-CONTROLLED RADIANT FURNACE FOR FIRING CERAMIC MATERIAL AND THE LIKE

Joseph E. Donner, Pomona, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Aug. 6, 1975, Ser. No. 602,208
Int. Cl.[2] H05B *1/02*
U.S. Cl. 219—489 8 Claims



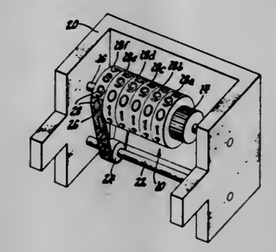
1. In a radiant furnace for firing ceramic material such as artificial teeth and the like, a precision heating system to provide for controlling the temperature of the ceramic material being fired, the heating system comprising:
a source of unregulated line supply voltage;
electrically controllable heating means for radiating heat in the furnace connected to the line supply voltage;
first manually settable means for producing a first programming signal representative of a selected rate at which the temperature of the ceramic material is to be increased during a firing operation;
second manually settable means for producing a second programming signal representative of a selected target temperature beyond which the temperature of the ceramic material is not to be raised;
first circuit means having a first mode of operation for producing a command signal varying in magnitude to define a ramp having a peak magnitude and produce a steady rise in ceramic material temperature and a second mode of operation for producing a substantially stable ceramic material temperature, the first circuit means including means responsive to the first programming signal for controlling the slope of the ramp, means responsive to the second programming signal for controlling the peak magnitude of the ramp and a comparator;
transducer means responsive to the heat radiated from the heating means for producing a feedback signal; said comparator being responsive to the second programming signal and feedback signal for producing a signal to control the mode of operation of the first circuit means;
second circuit means defining a summing junction for algebraically summing the command signal and the feedback signal continuously during system operation to produce an error signal; and
third circuit means responsive to the error signal for continuously controlling the heating means.

4,114,025

MILEAGE INDICATOR

John A. Carol, Jr., and Harold P. McAlindon, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1977, Ser. No. 845,959
Int. Cl.[2] G01C *22/00*
U.S. Cl. 235—96 2 Claims



1. In an odometer for vehicle use having an array of cylindrical coaxial number wheels interconnected to rotate stepwise in digital counting action and in sequence to indicate numerically the cumulative vehicle travel up to a predetermined total, one complete rotation of the highest-order number wheel being indicative of said predetermined total, the improvement comprising:
an idler wheel rotatably mounted so as to have its axis parallel to the axis of the highest-order number wheel a predetermined distance apart therefrom and in a co-planar relationship therewith,
an endless strip of flexible material mounted around the idler wheel and the highest-order number wheel for rotation with the latter, the endless strip having a length equal to an integral multiple of the circumference of the highest-order number wheel, and an array of spaced numerical indicia formed thereon for each rotation of the highest-order number wheel and distinctly marked for each complete revolution of the highest-order number wheel so that the indicia portrays the fact that the particular revolution of the highest-order number wheel is in progress.

4,114,026

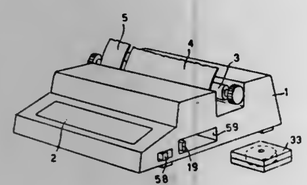
ELECTRONIC DESK-TOP ACCOUNTING MACHINE AND CALCULATOR

Giorgio Fiorenza, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Sep. 13, 1976, Ser. No. 722,506
Claims priority, application Italy, Sep. 15, 1975, 69284 A/75
Int. Cl.[2] G06K *17/00*; G01R *31/30*
U.S. Cl. 235—375 17 Claims

1. A digital accounting machine operable in a programmed

mode or in a manual mode, comprising a keyboard having data keys actuatable for entering data, operative keys actuatable for designating operative commands, and a selector switch settable in a programmed state or in a manual state for selecting the programmed or manual mode of the machine, respectively; a programming unit means for storing a program having a plurality of steps; an electronic data processing unit responsive to the commands designated by said operative keys for executing arithmetic operations in the manual mode and for executing the steps of the program in the programmed mode, respectively; a working memory means for storing data and processing results



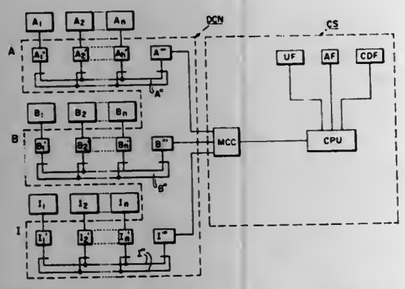
arising during execution of the program and the arithmetic operations; a preserving memory; set means, responsive to the manual state of the selector switch to interrupt the execution of the program and transfer the contents of the working memory to the preserving memory, for enabling said working memory to store data and processing results during operation in the manual mode; and reset means responsive to actuation of the selector switch in said programmed state to disable the manual mode and to retransfer the contents of the preserving memory to the working memory, to continue the execution of the program from the step present in the working memory on interruption of the execution of the program.

4,114,027

ON-LINE/OFF-LINE AUTOMATED BANKING SYSTEM

Charles E. Slater, Hamilton; Paul E. Dunn, and Lewis B. Mustain, both of Cincinnati, all of Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Sep. 13, 1976, Ser. No. 722,741
Int. Cl.² G06K *5/00*; G06F *7/00*; H04Q *9/00*
U.S. Cl. 235—419 **57 Claims**



1. In an automated banking system having a central processing unit coupled to a remote unit via a communication link, the improvement comprising:

a card with customer-identifying information encoded thereon, said customer-identifying information being unique to said customer,

a card reader associated with said remote unit and responsive to said customer-identifying information encoded on said card for reading said customer-identifying information,

request message assembly means associated with said remote unit responsive to said customer-identifying information read from said card for preparing and transmitting a request message containing said customer-identifying information to said central processing unit via said communication link,

reply message assembly means associated with said central processing unit and responsive to said request message received from said remote unit for preparing and transmitting to said remote unit a reply message containing account data associated with said identified customer, said account data including (a) account description information designating multiple different accounts of said customer and (b) account balance information for said multiple different accounts of said customer,

transaction selection means associated with said remote unit responsive to said account description information in said reply message for permitting said customer to select a series of different transactions involving said multiple different accounts, including cash withdrawal and/or fund transfer and/or deposits and/or payments,

amount selection means associated with said remote unit for customer-entry of a series of different transaction amounts corresponding, respectively, to transactions of said series of different transactions,

transaction processing means associated with said remote unit responsive to customer actuation of said transaction selection means and said amount selection means for processing independently of said central processing unit said different customer-selected transactions for said different customer-entered amounts in accordance with said account balance information in said reply message so as to determine the allowability of said series of different transactions,

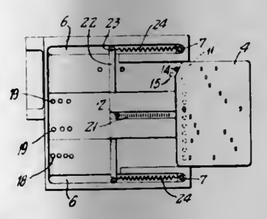
whereby a customer upon a single insertion of his card into said card reader may perform a series of different transactions involving different accounts for different amounts based upon transmission of a single request message to said central processing unit containing said customer-identifying information and receipt of a single reply message from said central processing unit containing said account data, thereby economizing utilization of said communication link and said central processing unit.

4,114,028

OPTICAL PUNCHED CARD READER

Alfred R. Baio, New Rochelle, and David L. Genovese, Spring Valley, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed May 26, 1977, Ser. No. 800,732
Int. Cl.² G06K *7/10*
U.S. Cl. 235—458 **16 Claims**



1. An apparatus for reading a punched data card having a plurality of columns and rows comprising an assembly of components including:

a base member for slidably receiving the punched card said base member having first and second opposed faces, said base member further having at one edge thereof a row of spaced data sensing apertures corresponding in number to the number of rows on the data card, said apertures being spaced approximately the same distance as the rows on the data card, said base member further including a centrally located strobe aperture;

a strobe generator for cooperating with the data card for generating intermittent light signals as the data card is inserted into the reader, said strobe generator being slidably mounted on the first face of said base member, said strobe generator including a column of spaced slots disposed perpendicular to the row of spaced data sensing apertures of said base member, said slots corresponding in number to the number of columns on the data card, said strobe generator slots being spaced approximately the same distance as the spacing between the columns of the data card, said strobe generator being disposed such that the column of slots passes over the strobe aperture of the base member as the data card which is inserted into the reader displaces the strobe generator away from the row of apertures on the base member;

a base member cover plate having substantially the same configuration as said base member, said cover plate being mounted on the first face of said base member over the strobe generator, said cover plate including a row of spaced openings aligned with the row of data apertures sensing of said base member, said cover plate further including a central opening aligned with the central aperture of the base member;

a light source mounted on the second face of said base member within each of the apertures of said base member;

light sensitive sensor mounted within each of the openings of said cover plate;

electrical means for connecting said light sources and light sensors to a read-out device and power source; and

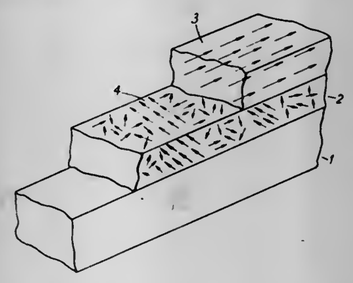
a housing for enclosing said assembly of components, whereby movement of the data card over the row of apertures of the base member along with the simultaneous movement of the strobe generator over the strobe aperture of the base member generates a combination of signals for transmitting the data on the data card to a read-out device.

4,114,029

MAGNETIC RECORDING

Cyril Arthur Lee, Maidenhead, England, assignor to E M I Limited, Hayes, England

Filed Oct. 15, 1975, Ser. No. 622,753
Claims priority, application United Kingdom, Oct. 16, 1974, 44746/74
Int. Cl.² G06K *7/08, 19/06*; G11B *25/04*
U.S. Cl. 235—449 **11 Claims**



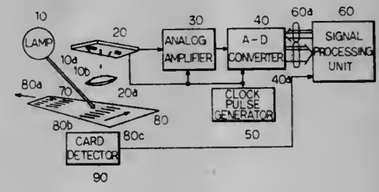
1. A secure magnetic record medium of a body of magnetically anisotropic material having overlaid distinct portions of material, a first portion having a uniform predominant alignment of an easy axis of magnetisation of the material to provide for erasable magnetic recording and a second portion of material of higher coercivity and having a detectable pattern of the variation from point to point of the portion of the permanent predominant alignment of an easy axis of magnetisation of the material to provide by said pattern secure unerasable record, the pattern being latent until made detectable by remanent magnetisation removable to leave the latent pattern, whereby an erasable recording can be made and read without interaction in the read-out signal from the latent secure record pattern.

4,114,030

METHOD AND APPARATUS TO OPTICALLY RECOGNIZE RECORDED INFORMATION

Tadao Nojiri, Kariya; Akio Sugiura, Nagoya, and Masahiro Nomura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 4, 1977, Ser. No. 756,699
Claims priority, application Japan, Jan. 28, 1976, 51-8163
Int. Cl.² G06K *7/10, 9/00*
U.S. Cl. 235—464 **8 Claims**



1. A method to optically recognize the information recorded on an object comprising the steps of:

transferring an object on which at least one bar code is recorded, said bar code having parallel bar symbols in different width and light reflecting color;

projecting a light beam onto said object to be reflected thereby;

recieving a reflected light beam from said object by a plurality of optical element aligned to transverse said parallel bar symbols;

sweeping said optical elements one by one in response to clock pulses of a fixed frequency, each of said optical elements generating an image signal, the peak signal level of which corresponds to the density of the reflected light beam;

sampling repetitively the peak signal level of the image signal in timed relationship with the clock pulses;

holding the peak signal level of the image signal sampled in said sampling step to generate an analog signal, the frequency and the signal level of which corresponds to the density of the reflected light beam;

applying the analog signal to a low pass filter having a cut-off frequency lower than one preset in accordance with the widest bar symbol; and

negatively feeding back a low frequency signal passed through said low pass filter onto the image signal, whereby a noise-excluded signal varying only with the width and the color of said bar symbols is generated from said holding step.

4,114,031

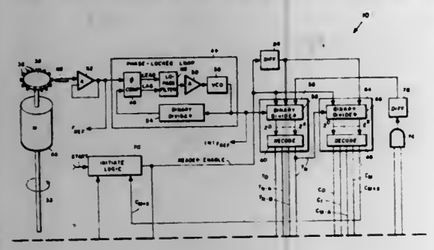
DATA CARD READER EMPLOYING SYNCHRONIZATION AND RESYNCHRONIZATION MEANS

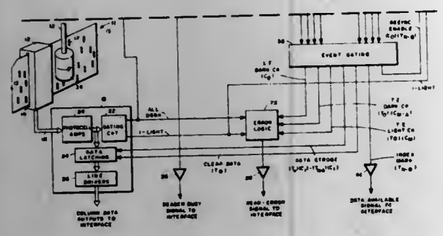
Willard T. Bushman, Palm Bay, and Robert C. Snyder, Melbourne, both of Fla., assignors to Documation Incorporated, Palm Bay, Fla.

Filed Aug. 29, 1975, Ser. No. 608,897
Int. Cl.² G06K *7/016*; H04L *15/34*; G06K *7/04*
U.S. Cl. 235—474 **23 Claims**

1. Apparatus for reading data cards of the type having columns of machine-readable information thereon, and for providing data outputs representative of said information to a device interfaced therewith, said apparatus including means for synchronizing said data outputs with the respective column of said cards, said synchronizing means comprising:

means including a rotatable shaft for driving said cards through said apparatus;
means for detecting the position of said shaft for each said column;
means for receiving an output from said detecting means and generating a train of pulses, the period of said pulse train being dependent upon the angular velocity of said shaft;





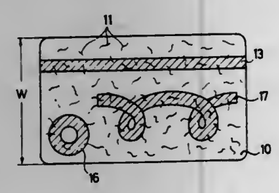
means for processing said pulse train for correlation of each said data output with the corresponding one of said columns, said processing means including first counting means for counting pulses in said pulse train and generating a first output at a predetermined pulse;
means for detecting a leading edge of each said column; and
means for restarting said first counting means responsive to an output from said column leading edge detecting means.

4,114,032

DOCUMENTS HAVING FIBERS WHICH ARE COATED WITH A MAGNETIC OR MAGNETIZABLE MATERIAL EMBEDDED THEREIN AND AN APPARATUS FOR CHECKING THE AUTHENTICITY OF THE DOCUMENTS

Jörgen Brosow, Elsenwang-Hof, Austria, and Erik Furugard, Geneva, Switzerland, assignors to Dasy Inter S.A., Geneva, Switzerland

Division of Ser. No. 469,625, May 13, 1974, abandoned. This application Jan. 9, 1976, Ser. No. 647,935
Claims priority, application Fed. Rep. of Germany, May 11, 1973, 2323897; Jun. 6, 1973, 2328880; Apr. 10, 1974, 2417564
Int. Cl.² G06K *19/06*; G06F *7/02*; G06K *7/00*
U.S. Cl. 235—493 **4 Claims**



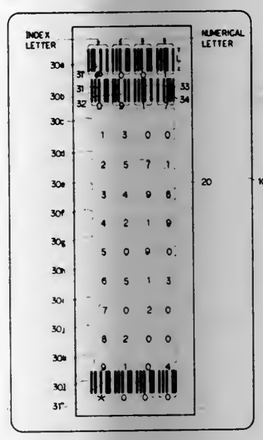
1. An apparatus for checking the authenticity of documents such as paper money, credit cards, identification cards, and the like, said apparatus comprising in combination:
a document having fibers which are coated with spaced magnetic or magnetizable particles embedded therein;
detecting means for scanning said documents to determine the number of particles present in said documents; and
means for moving said document and said detecting means relative to each other so as to provide a scanning trace, said document and said detecting means being disposed in a close relationship to each other, wherein said detecting means comprises a scanner having a rotational movement and said document is provided with a translational movement so as to obtain a circular scanning trace.

4,114,033

BAR CODE INFORMATION CARD

Atutoshi Okamoto, Toyohashi; Tadao Nojiri, and Masahiro Nomura, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 4, 1977, Ser. No. 765,753
Claims priority, application Japan, Feb. 18, 1976, 51-18043[U]
Int. Cl.² G06K *19/06*
U.S. Cl. 235—494 **9 Claims**



1. A machine readable bar code information card comprising:
a card body which substantially has a uniform width;
a plurality of bar codes aligned parallelly to each other in a direction which is orthogonal to the longitudinal direction of said card body to constitute a group bar code, each bar code in said group bar code having a plurality of bar symbols which parallelly extend in the longitudinal direction of said card body and are in uniform length in different color and width; and
a plurality of group bar codes aligned parallelly to each other to form a recorded region which extends centrally in the longitudinal direction of said card body.

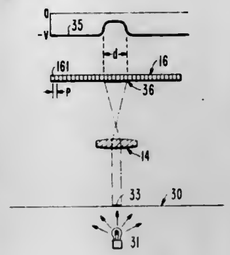
4,114,034

OPTICAL CURSOR TRACKING CORRECTION SYSTEM

George William Hunka, Bellmawr, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1977, Ser. No. 782,754
Int. Cl.² G05B *1/00*
U.S. Cl. 250—202 **8 Claims**

1. In a digitizing system including movable cursor means for tracing a function to be digitized, means responsive to said movable cursor means for supplying position signals representative of the position of the movable cursor means, and circuit means responsive to said position signals for generating coordinate signals corresponding to the position of said movable cursor means, the improvement comprising:
sensing means mounted in said movable cursor means to sense the function to be digitized for supplying digital error signals proportional to a difference of position between the function to be digitized and reference point in said movable cursor means; and



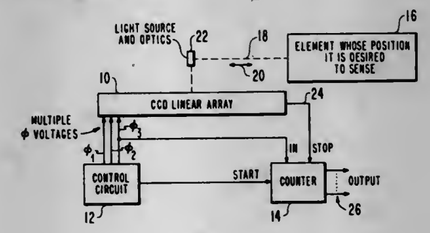
processing means responsive to digital error signals and said coordinate signals for producing corrected coordinate signals.

4,114,035

POSITION ENCODER EMPLOYING CHARGE TRANSFER CIRCUIT

Gerald Bernard Herzog, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1976, Ser. No. 700,120
Claims priority, application United Kingdom, Jan. 30, 1976, 03792/76
Int. Cl.² H01J *39/12*; H03K *13/02*
U.S. Cl. 250—211 K **3 Claims**



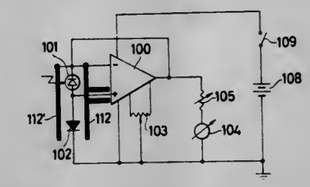
1. A system for sensing the relative position of an element comprising, in combination:
a linear charge transfer array of the type including a plurality of charge storage locations, each such location responsive to radiation for accumulating and storing charge;
a source of radiation positioned to irradiate any portion not masked of said array;
means responsive to the relative position of said element for physically controlling which portion of said array is irradiated by said radiation and thereby controlling which of said locations will accumulate and store charge, said means comprising a mask mechanically coupled to said element and positioned between said source of radiation and said array, said mask being movable in a direction substantially perpendicular to the long dimension of said array, in a plane between said source and said array, said mask being formed with an edge at an oblique angle to said long dimension and positioned to control the portion of the array receiving radiation from said source in accordance with the mask position; and
means for reading out said array comprising means for shifting out of said array the charge which has become stored in said array in response to said irradiation, the pattern of signals thereby obtained being a digital manifestation of the relative position of said element in the sense that a signal representative of substantial charge may be employed to represent one binary value and a signal representative of less than a given level of charge may be employed to represent the other binary value, and means for sensing the number of signals representing a given binary value in said pattern of signals.

4,114,036

A LEAK CURRENT SUPPRESSING PRINTED CIRCUIT BOARD

Tokuichi Tsunekawa, Yokohama, and Tetsuya Taguchi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1976, Ser. No. 703,962
Claims priority, application Japan, Jul. 24, 1975, 50-90533
Int. Cl.² H01J *39/12*
U.S. Cl. 250—214 R **5 Claims**



1. A leak current suppressing light measuring circuit for a camera comprising:
(a) a printed circuit board;
(b) a high impedance operational amplifier having inverting and non-inverting terminals, off-set voltage adjusting means and an output terminal;
(c) a first signal transfer path printed on said printed circuit board for supplying an electrical signal to one of the input terminals of said operational amplifier;
(d) a second signal transfer path printed on said printed circuit board and connected to the other input terminal of said operational amplifier to form a portion of a feedback circuit for the operational amplifier;
(e) a photoelectric converting element connected between said input terminals of the operational amplifier;
(f) a logarithmic suppression element connected between one end of said second signal transfer path and the output terminal of said operational amplifier; and
(g) guard lines which are arranged on both sides of the second signal transfer path between the point at which the logarithmic suppression element is connected to the second signal transfer path and a point at which the input terminal of the operational amplifier is connected to the second signal transfer path, one end of each guard line being connected to said first signal transfer path to make these guard lines have virtually the same potential as the first signal transfer path.

4,114,037

MULTIPLE LENS SYSTEM FOR AN OPTICAL IMAGING DEVICE

William Dickson Westwood, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 16, 1977, Ser. No. 797,509
Int. Cl.² H01J *3/14*
U.S. Cl. 250—216 **9 Claims**

1. A multiple lens system for an optical imaging device for optically dividing a linear object into sections and imaging said sections in a stacked relationship, comprising:
a plurality of lenses extending in a side-by-side arcuate array in a direction corresponding to the longitudinal axis of the linear object, a lens for each section;
a photo-detector imager having a plurality of sections attached one above the other in a direction normal to the longitudinal axis of the linear object, an imager section for each lens;

each lens having its central axis on a line extending between centre points of the related object section and imager section and tilted to position the plane of the lens normal to said line;



whereby each object section is imaged on a related imager section in a substantially 100% overlapping relationship with the other object sections.

4,114,038

PHOTOELECTRIC SENSING HEAD WITH WIPING MEANS

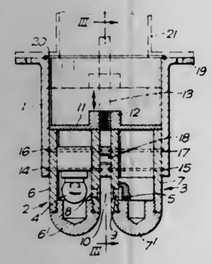
Adrian Roger Parker, St. Austell, England, assignor to Partech (Electronics) Limited, England

Filed Apr. 4, 1977, Ser. No. 784,415

Claims priority, application United Kingdom, Apr. 7, 1976, 14091/76

Int. Cl.² H01J *5/02*

U.S. Cl. 250—239 **17 Claims**



1. A photoelectric sensing head comprising a housing, a source unit and at least one photocell unit arranged side by side in the housing, each said unit having an enclosure with a light transmitting wall, wiping means within the housing which make wiping contact with the light transmitting walls of the enclosures, and means for displacing the enclosures relative to the housing to cause the wiping means to pass over external surfaces of the said light transmitting walls to clean them.

4,114,039

X-RAY APPARATUS

Chuji Tomita, Tokyo, Japan, assignor to Hitachi Medical Corporation, Tokyo, Japan

Filed Nov. 10, 1976, Ser. No. 740,720

Int. Cl.² G01N *21/00, 21/34*

U.S. Cl. 250—439 R **5 Claims**

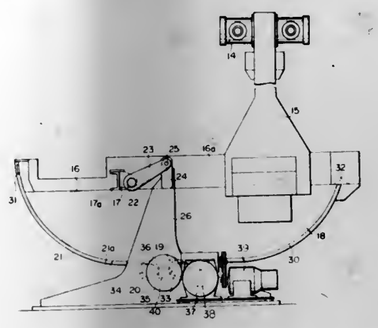
1. An X-ray apparatus comprising;

a base frame;

a roentgenographic pedestal having a patient's table thereon;

an X-ray source and an X-ray television and/or photographic unit in spaced opposed relationship with said patient's table therebetween; and

means for changing the position of said pedestal, said position changing means comprising: a supporting member extending away from the bottom side of said patent's table; a guide rail provided on the periphery of the end of said supporting member, said guide rail having a contact surface with a contour having at least one curved portion protruding in a direction away from the surface of the patient's table and a flat portion joining one end of said curved portion; at least one roller in contact with said guide rail for supporting the weight of said pedestal said roller being mounted for tilting movement transverse to



the axis of rotation thereof; and supporting means for causing the pedestal to move only along the guide rail while in contact with said roller, said supporting means having a shaft extending in a direction transverse to the direction of movement of said pedestal and being rotatably supported on the pedestal, and at least one arm extending from said shaft and pivotably supported on said base frame, whereby the position of the pedestal is changed in accordance with the contour of the guide rail.

4,114,040

RADIOGRAPHY

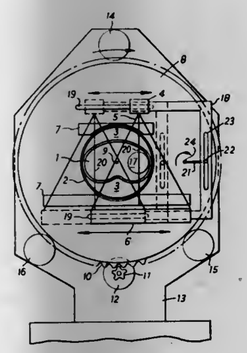
Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Limited, Hayes, England

Filed Feb. 5, 1976, Ser. No. 655,396

Claims priority, application United Kingdom, Feb. 8, 1975, 5441/75

Int. Cl.² G03B *41/16*

U.S. Cl. 250—445 T **12 Claims**



1. Scanning radiographic apparatus including a source of penetrating radiation, such as X-radiation, arranged to project a substantially planar spread of radiation, having a median line, through a body to be examined, a support for said source, means for causing said support to effect a rotational scanning movement about an axis perpendicular to the plane of said spread so that said median line assumes, in the course of said rotational scanning movement, in sequence a number of different angular orientations with respect to the body and in the plane of said spread of radiation and means for causing said median line, in at least a substantial number of its different orientations and throughout the time the median line assumes those orientations, to remain in a region of said body away from said axis and not to intersect said axis.

4,114,041

RADIOGRAPHY

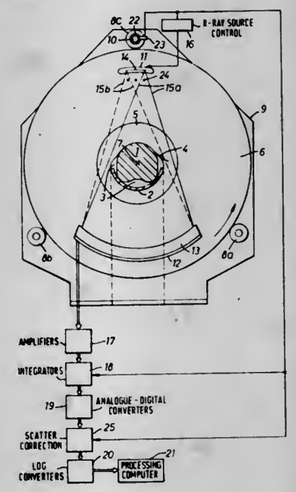
Colin Charles Oliver, Langley, Slough, England, assignor to EMI Limited, Hayes, England

Filed Feb. 3, 1977, Ser. No. 765,422

Claims priority, application United Kingdom, Feb. 5, 1976, 4546/76

Int. Cl.² G03B *41/16*

U.S. Cl. 250—445 T **15 Claims**



1. Apparatus for examining a slice of a body by means of penetrating radiation, the apparatus including a source arranged to project the radiation through a substantially planar region including the slice, detector means sensitive to the radiation and arranged to receive the radiation after passage through the region, means for causing the source to project the radiation through the region from a plurality of different positions in relation to the body, means for deriving from the detector means output signals each relating to the intensity of radiation transmitted through the region along a respective one of a plurality of beam paths to a respective position in the plane of the region, means for deriving from the same detector means further output signals each relating substantially only to radiation scattered in the region and received by the detector means at a respective one of a plurality of positions in the plane of the region and means for utilising the further output signals to reduce errors, in the first mentioned output signals, caused by radiation scattered within the region.

4,114,042

RADIOGRAPHY

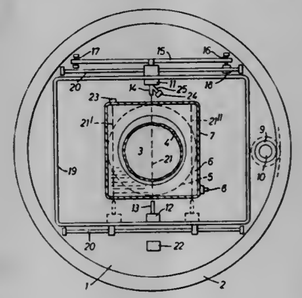
Christopher Archibald Gordon LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 609,718, Sep. 2, 1975, Pat. No. 4,038,551, which is a division of Ser. No. 462,104, Apr. 18, 1974, Pat. No. 3,924,129. This application Mar. 28, 1977, Ser. No. 781,961

Int. Cl.² G01N *21/34*

U.S. Cl. 250—445 T **1 Claim**

1. Medical radiographic apparatus including means defining a patient position, a source of penetrating radiation arranged to project said radiation through a patient in said position along at least one beam path, scanning means for scanning said radiation around said patient position to project said radiation through a thin slice of said patient along further beam paths, detector means for detecting the radiation emergent from the patient along said beam paths and for producing data signals indicative of the amount of radiation projected through the patient along said beam paths, and means for processing said data signals to produce a representation of the absorption of said radiation at each of a plurality of small elements of said slice, said processing means including means for assembling said data signals in groups, each relating to a set of beam paths distributed across said region, the different sets of beam paths being characterised by different respective orientations relative to said patient position, and means for modifying each data signal by subtracting therefrom weighted components of the other data signals in the same group as the data signal being



modified; the said other data signals being weighted by multiplication with respective weighting factors, of less than unity, of which at least those appropriate to beam paths separated from the beam path giving rise to the data signal being modified by more than a predetermined number of other beam paths in the same group conform to a substantially monotonic function decreasing in amplitude with increasing separation from said beam path giving rise to the data signal being modified, means being provided for combining the modified data signals to produce said representation; the representation for each element of the slice being the sum of the modified data signals corresponding to the beam paths intersecting the respective element in weights determined by the relative dispositions of the last recited element of the slice and the last recited beam paths.

4,114,043

CABLE-SUPPORTING ARRANGEMENT FOR X-RAY TOMOGRAPHIC SCANNER

Myles Stephen Gansfried, Trumbull, Conn., assignor to U.S. Philips Corporation, New York, N.Y.

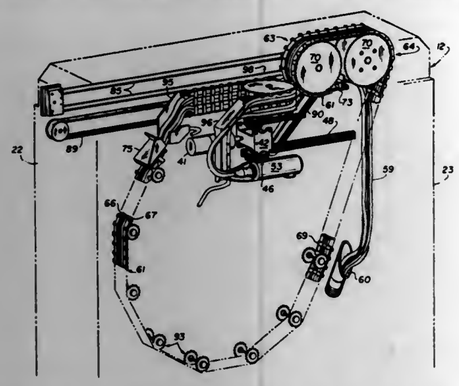
Filed May 20, 1977, Ser. No. 799,089

Int. Cl.² A61B *6/02*

U.S. Cl. 250—445 T **14 Claims**

2. An axial tomographic scanner, which comprises a fixed vertically arranged frame; a plate mounted on said frame for rotation about a horizontal axis, means for indexably rotating said plate; a yoke mounted on said plate for back-and-forth translational movement relative to said plate, means to effect back-and-forth translational movement of said yoke; a source mounted on said yoke for directing penetrating radiation through an object to be scanned, a plurality of flexible cables leading to said source; a first chain-cable assembly carrying a fixed length of said cables, first means anchoring the cable-incoming end of said first assembly to said frame, second means anchoring the other end of said first assembly to said plate; a second chain-cable assembly carrying a separate fixed length of said cables, third means anchoring one end of said second assembly to said plate, fourth means anchoring the other, cable-outgoing end of said second assembly to said yoke; a pair of vertically arranged rotary members carried by said frame for engaging said first assembly, one of said rotary members

being rotatably mounted on said frame and the other of said rotary members being rotatably mounted on a first carriage movable horizontally with respect to said frame, said plate-rotating means being adapted to rotate said other rotary member and move its carriage so as to take up the slack that would otherwise be formed in said first assembly upon indexing of said plate; a plurality of linearly spaced small rollers rotatably mounted on said frame for engagement by said first assembly;



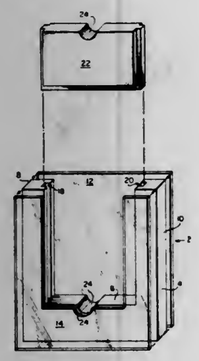
a horizontally arranged rotary member carried by said plate for engaging said second assembly, said latter rotary member being rotatably mounted on a second carriage movably parallelly with respect to said yoke, said yoke-translating means being adapted to rotate said latter rotary member and move its carriage so as to take up the slack that would otherwise be formed in said second assembly upon translation of said yoke; and means to effect indexing of said plate and back-and-forth translational movement of said yoke in the desired sequence.

4,114,044

RADIOGRAPHIC CASSETTE ADAPTER

Robert D. Chiulli, 71 Cherry St., Somerville, Mass. 02144

Filed May 9, 1977, Ser. No. 795,093
Int. Cl.² G03B *41/16*
U.S. Cl. 250—468 **10 Claims**



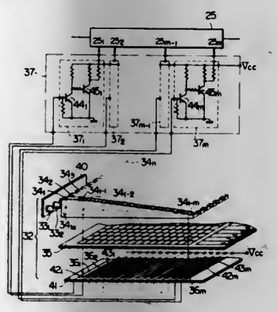
1. An adapter assembly for radiographic film cassettes comprising a frame member having a bottom portion and two upright portions extending therefrom, a back portion, and a generally U-shaped front portion, said portions providing an open-ended housing, said frame member having outside dimensions substantially equal to outside dimensions of a first size radiographic film cassette and adapted to be received and retained by holders for said first size radiographic film cassette in radiographic machines, said frame means further having an inside dimension substantially equal to an outside dimension of a smaller size radiographic film cassette and being adapted to slidingly receive and retain said smaller size radiographic film cassette for radiographic operations.

4,114,045

OPTICAL CARD READER FOR SETTING FREQUENCY DIVISION RATIO OF PROGRAMMABLE COUNTER FOR USE IN SYNTHESIZER TUNERS

Fumio Shiina, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 27, 1977, Ser. No. 763,083
Claims priority, application Japan, Jan. 30, 1976, 51-8469; Oct. 8, 1976, 51-120347
Int. Cl.² G06K *7/10*
U.S. Cl. 250—569 **5 Claims**



1. An optical card reader comprising *n* light emitting elements being successively turned on at a constant scanning rate by a scan control circuit;

n reflectors each having one incident surface formed on a side thereof and *m* gradually-stepped reflection surfaces associated with the respective light emitting elements for receiving a beam of light from the respective light emitting element through the incident surface and dividing by the reflection surface the beam into *m* reflected light fluxes which are substantially parallel with each other;

a card slidably removable with respect to the *n* reflectors and having programmable holes such that ($n \times m$) reflected light fluxes from the reflectors are transmitted through the card or interrupted thereby;

m light receiving elements disposed orthogonally with the reflectors for receiving in common reflected light fluxes which are reflected at the reflection surfaces at the same order of all the reflectors and transmitted through the card; and

m switching circuits operable to produce binary codes by the operation of the respective light receiving elements,

wherein the frequency division ratio of a programmable counter is determined by receiving the binary codes from the switching circuits.

4,114,046

ELECTRICAL GENERATOR EMPLOYING NATURAL ENERGY TO POWER SAME

Hosni Labib Yousef, Willis Ave., Mattontown, N.Y.

Continuation-in-part of Ser. No. 576,168, May 9, 1975, abandoned. This application Feb. 8, 1977, Ser. No. 766,699
Int. Cl.² H02P *9/04*
U.S. Cl. 290—55 **13 Claims**

1. Apparatus for generating electrical energy, said apparatus comprising in combination:

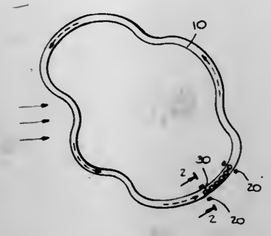
a continuous, non-circular, non-azial track including a pair of continuous, substantially parallel rails;

a plurality of electromagnets positioned at fixed locations about said track, said electromagnets having at least two magnetically opposite poles, at least one of said poles being located on each side of said pair of rails;

at least one exciting coil wound about a portion of each of said electromagnets through which is passed a D.C. current to create a magnetic flux in each of said electromagnets;

at least one power coil wound about a portion of each of said electromagnets and connected for transmission of the generated electrical energy to external collection means;

a plurality of interconnected ferromagnetic blocks adapted to pass about said non-circular track relative to and at a fixed distance between the opposite poles of said electro-



magnets to alternately maximize and minimize the flux density present in each of said electromagnets to generate an A.C. current in said power coil, said blocks including oppositely positioned rotatable wheels adapted to ride on the rails of said track and at least one turbine blade-like member to receive natural mechanical energy to effect movement of said blocks about said tracks; and

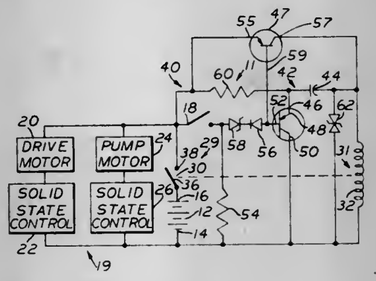
means to focus natural mechanical energy towards said apparatus to effect movement of said blocks.

4,114,047

CONTROL APPARATUS

Grant C. Melocik, Chardon, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Jul. 5, 1977, Ser. No. 813,030
Int. Cl.² H02G *3/00*
U.S. Cl. 307—9 **17 Claims**



1. Control apparatus, comprising:

a power supply having an input and an output;

a switch movable between an open position and closed position;

first means for connecting said switch to said power supply output, said first means being changeable between first and second operating conditions, power flowing from the power supply output to the switch at the first operating condition and power flow from the power supply being blocked at the second operating condition, said first means being changeable from the first operating condition to the second operating condition in response to power flow of a preselected magnitude through said first means;

second means for changing said first means from the first operating condition to the second operating condition; and

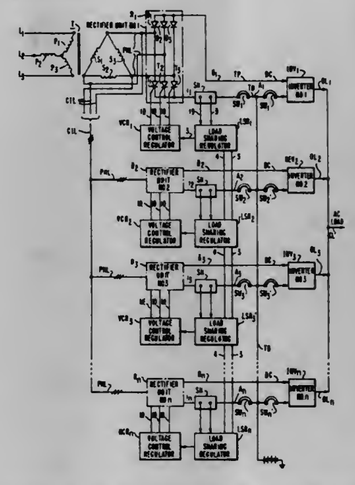
means for automatically, controllably energizing said second means and urging the first means from the first operating condition to the second operating condition only in response to said switch being in the open position.

4,114,048

LOAD BALANCING SYSTEM FOR UPS RECTIFIERS

Robert E. Hull, and Robert S. Gemp, both of Amherst, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 665,600, Mar. 10, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,556
Int. Cl.² H02J *3/38*
U.S. Cl. 307—53 **3 Claims**



1. A system for supplying a load with alternating current from a plurality of adjustable direct current voltage sources with said plurality of voltage sources including a like plurality of rectifier means supplied with alternating current from a power supply common to all voltage sources for generating a corresponding direct current voltage and the system further including a like plurality of inverter means each associated with one of said rectifier means for supplying a corresponding alternating current to said load, comprising:

means associated with one of said voltage sources for sensing direct current supplied therefrom and for deriving a signal representative of said supplied direct current;

means associated with each of said voltage sources for deriving a reference signal representative of the average of the direct currents flowing from all of said sources;

means responsive to said current representative signal and to said reference signal for generating an error signal representative of a discrepancy between said current representative signal and said reference signal; and

means responsive to said error signal for adjusting the direct current voltage of said one source to compensate for said discrepancy.

4,114,049

COUNTER PROVIDED WITH COMPLEMENTARY FIELD EFFECT TRANSISTOR INVERTERS

Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 333,145, Feb. 16, 1973, abandoned. This application Oct. 26, 1976, Ser. No. 735,133
Claims priority, application Japan, Feb. 25, 1972, 47-18864
Int. Cl.² H03K *23/08, 27/00, 19/08, 19/20*
U.S. Cl. 307—225 C **30 Claims**

1. A diode-less binary counter employing insulated gate field effect transistors each having a source-drain path and a gate, said binary counter comprising:

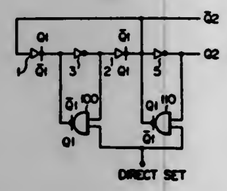
first, second and third inverters, each inverter having an input and an output and a pair of inverting transistors of

different channel types, the gates of said pair of inverting transistors of each inverter being connected to the corresponding input, the source-drain paths of said pair of inverting transistors of each inverter being connected in series between first and second power supply terminals and a circuit point between the series-connected source-drain paths of said inverting transistors being connected to the corresponding output and at least said first and third inverters being clocked inverters which operate as inverters in response to complementary input clock signals, said first and third clocked inverters each including a pair of switching transistors of different channel types, and the source-drain paths of the inverting and switching transistors of the same channel type in each said clocked inverter being connected in series between the corresponding output and the respective one of said first and second power supply terminals;

means for electrically connecting the output of said first inverter to the input of said second inverter, the output of said second inverter to the input of said third inverter and the output of said third inverter to the input of said first inverter;

means for applying complementary clock signals to the gates of switching transistors of said first and third clocked inverters so as to cause said first and third clocked inverters to operate as inverters alternately,

a first clocked NAND gate circuit including a fourth inverter of the clocked type, said fourth inverter having a first and a second input and a single output, said single



output of said fourth inverter being connected to the input of said second inverter and said first input of said fourth inverter being connected to the output of said second inverter, and said fourth inverter of said first clocked NAND gate circuit being simultaneously operable with said third clocked inverter in response to the complementary clock signals;

a fifth inverter having an output and an input, said input of said fifth inverter being connected to the output of said third clocked inverter; and

a second NAND gate circuit including a sixth inverter of the clocked type, said sixth inverter having a first and a second input and a single output, said single output of said sixth inverter being connected to the input of said fith inverter and said first input of said sixth inverter being connected to the output of said fifth inverter, and said sixth inverter of said clocked NAND gate circuit being operable simultaneously with said first clocked inverter in response to the complementary clock signals, the second input of said fourth inverter of said first clocked NAND gate circuit and that of said sixth inverter of said clocked NAND gate circuit being connected to receive a control signal;

said inverters, connecting means, NAND gate circuits and clock pulse applying means each including no diodes,

whereby an input signal and an output signal of each of said first, second and third inverters have a frequency half the frequency of said complementary input clock signals which are applied to the gates of said switching transistors of said clocked inverters.

4,114,050

INTEGRATING CIRCUIT

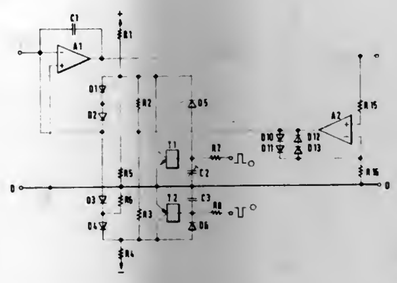
Heinz Lerche, Bremen, Germany, assignor to Varian Mat GmbH, Bremen, Germany

Filed Dec. 30, 1976, Ser. No. 755,881

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1976, 2600194

Int. Cl.² H03K *17/00*

U.S. Cl. 307—229 **9 Claims**



1. In an integrating circuit including:

an integrating amplifier having an inverting input for receiving a signal to be integrated, a non-inverting input and an output; and

a feedback capacitor connected between the output and the inverting input of said integrating amplifier; the improvement comprising:

(a) a second amplifier having an inverting input, a non-inverting input and an output;

(b) means connecting the output of said integrating amplifier to one of said inverting and non-inverting inputs of said second amplifier; and

(c) electrically controllable switching means connected to the output of said second amplifier; said switching means having a first condition in which the output of said second amplifier is connected to the inverting input of said integrating amplifier and a second condition in which the output of said second amplifier is connected to ground, said switching means comprising:

(i) two semiconductor diodes connected in series; and

(ii) means for actuating said diodes between a conductive state in which a dc connection is established between the output of said second amplifier and the inverting input of said integrating amplifier and a non-conductive state in which said dc connection is interrupted and a connection is established between the output of said second amplifier and ground.

4,114,051

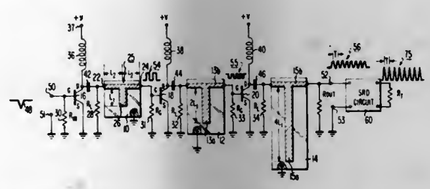
TRIGGERED BURST GENERATOR

Walter Richard Curtice, Princeton Jct., N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,418

Int. Cl.² H03K *4/00*

U.S. Cl. 307—260 **22 Claims**



1. A circuit for generating a signal consisting of a train of waveforms having a selected period from an input signal pulse, comprising:

transistor amplifier means including a transistor having input terminals and output terminals,

said transistor having an input impedance and an output impedance exhibited, respectively, across said input and output terminals,

network means including a transmission line and a stub,

impedance means coupling the output terminals of said transistor to said network means,

the characteristic impedance of said transmission line being substantially equal to the impedance of said impedance means,

whereby, in response to said input signal pulse, a train of waveforms are generated by said network,

said stub having a length to effect said desired period of said waveforms.

4,114,052

PRESETTABLE DYNAMIC DELAY FLIP-FLOP CIRCUIT

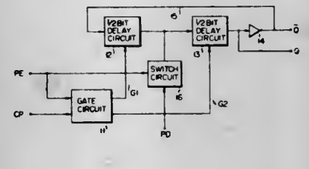
Kenshi Manabe, Yokohama, and Kouichirou Satou, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed May 27, 1977, Ser. No. 801,254

Claims priority, application Japan, May 29, 1976, 51-62769

Int. Cl.² H03K *3/286, 3/353, 21/30, 23/30*

U.S. Cl. 307—279 **7 Claims**



1. A presettable dynamic delay flip-flop circuit which comprises gate means for stopping transfer of a clock pulse at least during a data-presetting period and permitting transfer of a clock pulse on other occasions than during the data-presetting period; first delay means remaining intact during the data-presetting period and carrying out ½ bit delay in synchronism with a first output gate signal from the gate means on other occasions than during the data-presetting period; second delay means connected to the output terminal of the first delay means, and served to feedback a delayed out signal from the first delay means, be rendered conducting during the data-presetting period and carry out ½ bit delay in synchronism with a second output gate signal from the gate means on other occasions than during the data-presetting period; and switching means designed to be rendered conducting only during the data-presetting period and supply preset data to the second delay means.

4,114,053

ZERO TEMPERATURE COEFFICIENT REFERENCE CIRCUIT

Robert B. Turner, Weymouth, Mass., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 12, 1977, Ser. No. 758,629

Int. Cl.² H01V *3/00*; G05F *3/00*

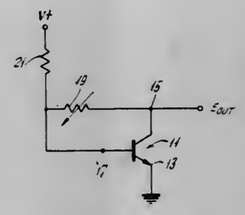
U.S. Cl. 307—310 **3 Claims**

1. A voltage regulation circuit having an input and an output and being temperature stable to provide a nominally zero temperature coefficient, for use in connection with a voltage supply to provide a temperature stable regulated voltage, comprising:

a transistor connected with its emitter to ground and its collector to the circuit output said transistor having individual and different temperature coefficients for its collector-base and base-emitter junctions;

a voltage divider being connected between said voltage supply and said collector of said transistor with its intermediate tap being connected to said base of said transistor, said voltage divider ratio establishing the overall circuit temperature coefficient at nominal zero;

wherein said voltage divider includes a first resistor connected to said voltage supply and a second resistor connected between said first resistor and said collector of said transistor, the interconnection point of said first and second resistors being connected to said base of said transistor, the relationship between the value of said second resistor and said first resistor being to provide an overall circuit temperature coefficient of nominally zero;



wherein said second resistor is a variable resistance, said first resistor being selected at a predetermined nominal value and said second resistor then being adjusted to be substantially 20% of said nominal value.

4,114,054

COUPLING CIRCUIT USING A PHOTOCOUPLER

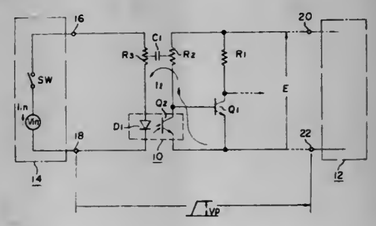
Mamoru Seo, and Akio Uenishi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1977, Ser. No. 764,177

Claims priority, application Japan, Jan. 30, 1976, 51-9011

Int. Cl.² H03K *17/00*

U.S. Cl. 307—311 **9 Claims**



1. A coupling circuit for connecting a first circuit and a second circuit comprising:

a photocoupler including a light emission element whose light emission is controlled by the first circuit and a light receiving element for driving the second circuit by receiving the light from the light emission element to be turned on;

the light emission element and the light receiving element being electrically connected through a stray capacitance arising between the first circuit and the second circuit so that a reverse breakdown of the light receiving element can be produced by a surge voltage applied through the stray capacitance to the light receiving element; and

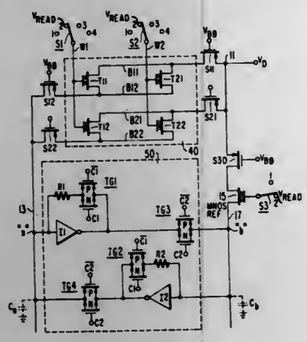
means connected in parallel to the light receiving element for blocking the reverse breakdown of the light receiving element.

4,114,055

UNBALANCED SENSE CIRCUIT

Richard James Hollingsworth, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 12, 1977, Ser. No. 796,333
Int. Cl.² H03K *5/20, 3/286;* G11C *7/00, 11/40*
U.S. Cl. 307—362 **10 Claims**



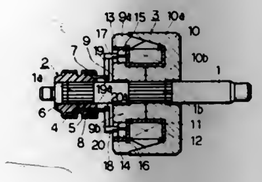
1. A sense circuit for comparing the voltage produced by a first reference signal current having a first value with the voltage produced by a second signal current having either a first level approximately equal to said first value or a second level substantially different from said first level, comprising:
first and second capacitive nodes;
first and second inverters, each inverter having an input and an output; said first inverter having a different, predetermined, quiescent point than said second inverter for the same value of input bias applied to their respective input terminals;
means connecting the input of said first inverter to said first node, and means connecting the input of said second inverter to said second node;
a first biasing means connected between the input and the output of said first inverter for, during a first time interval, selectively providing a direct current connection therebetween and biasing said first inverter and said first node at a first quiescent point;
a second biasing means connected between the input and the output of said second inverter for, during said first time interval, selectively providing a direct current connection therebetween and biasing said second inverter and said second node at a second quiescent point other than said first quiescent point whereby a predetermined voltage offset exists between the quiescent levels at said first and second nodes;
means for, during a second time interval subsequent to said first time interval, supplying said first reference current to said first node;
means for, during said second time interval, supplying said second signal current to said second node;
the difference in the quiescent points of said first and second inverters being such that the resultant voltage offset between said first and second nodes is: (a) greater in amplitude than, and opposite in direction to, a given voltage difference generated, during said second time interval, between said first and second nodes when said second current is at said first level but exceeds said first current; and (b) substantially smaller in magnitude than the voltage differential generated, during said second time interval, between said first and second nodes when said first current has said first value and said second current has said second value; and
selectively enabled cross-coupled means connected between the output of each one of said first and second inverters and the input of the other one of said first and second inverters for, during a third time interval subsequent to said second time interval, forming a flip-flop set to a first state when said first and second currents supplied to their respective nodes during said second time interval are of approximately equal value and set to its other stable state when said second signal current is at said second level and said first current has said first value.

4,114,056

ROTOR FOR ALTERNATING CURRENT GENERATOR

Takayasu Nimura, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 24, 1977, Ser. No. 781,003
Claims priority, application Japan, Mar. 30, 1976, 51-34721; Jan. 14, 1977, 52-3502
Int. Cl.² H02K *15/00*
U.S. Cl. 310—42 **5 Claims**



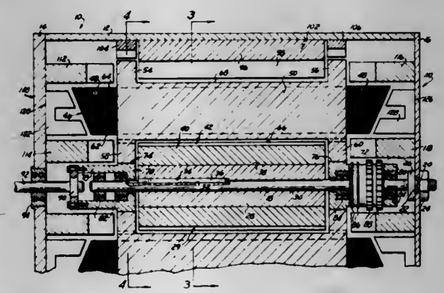
1. A rotor for an alternating current generator comprising:
a rotor shaft;
a slip-ring assembly, supported on said rotor shaft, having a pair of slip rings insulated from each other and held by an insulating body, said assembly also having a pair of terminals made of an electrically conductive flat metal strip, each inner end of said terminals being held in said insulating body and electrically connected with the respective slip rings, and each outer end thereof extending outwardly in the same direction;
a field excitation assembly supported on said rotor shaft concentrically with said slip-ring assembly, said field excitation assembly including:
a pair of rotor segments supported on said rotor shaft, each having a plurality of inwardly and axially extending pole tips at its outer periphery for forming a cavity therein, one of said rotor segments adjacent to said slip-ring assembly being formed with a pair of through holes communicating the outside of the rotor segment with said cavity;
a bobbin, made of an insulating resin, disposed in said cavity for rotation together with said rotor segments, said bobbin having a cylindrical portion and a pair of flanged portions at both ends thereof, said bobbin also having a pair of projections integrally formed with one of said flanged portions and extending outwardly therefrom;
each of said projections being formed with an axially extending groove and a radially and axially extending slit for communicating the outside of the projection with said axially extending groove over the entire axial length;
the flanged portion of said bobbin, on which said pair of projections are integrally formed with, being formed with guiding slits respectively communicating the outside of said flanged portion with said radially and axially extending slits of said projections;
a field excitation coil wound on said bobbin and having coil starting and terminating ends;
a pair of field coil terminals respectively press-fitted into said axially extending grooves of said projections;
said coil starting and terminating ends being respectively inserted into said radially and axially extending slits of said projections and respectively hung to said field coil terminals;
said projections being respectively press-fitted into said through holes of said rotor segment whereby the relative movement of said bobbin with respect to said rotor segments is prevented and each of the field coil terminals and each of the coil starting and terminating ends is rigidly held in said projections of said bobbin; and
a pair of connecting strips for respectively electrically connecting said field coil terminals held by said projections with said terminals of said slip-ring assembly, the rotor being formed by incorporating the steps of:
press-fitting the field coil terminals into said grooves prior to winding the field excitation coil; and
inserting the coil starting and terminating ends into said slits, and hanging said ends to the field coil terminals, prior to disposing the bobbin in said cavity.

4,114,057

DYNAMOELECTRIC MACHINE WITH INNER AND OUTER STATORS

Ernie B. Esters, 15915 Rutherford, Detroit, Mich. 48227

Filed Dec. 6, 1976, Ser. No. 748,091
Int. Cl.² H02K *37/00*
U.S. Cl. 310—46 **15 Claims**



1. In a dynamoelectric machine having an inner stator comprising a plurality of magnets, an outer stator comprising a plurality of magnets, a pair of end stators comprising a plurality of magnets and a rotor mounted for rotation between said stators, said rotor comprising a first plurality of flat longitudinally elongated substantially rectangular radially disposed thin magnetic cores having electrical windings wound longitudinally therearound and a second plurality of flat longitudinally elongated substantially rectangular radially oriented thin magnetic cores disposed each between consecutive wound magnetic cores, the improvement comprising each of said magnetic cores having at least at an end thereof a first extension integral with said rectangular plate projecting radially toward said outer stator and a plurality of magnets in said outer stator disposed such as to form a radially magnetic gap with said first core extension.

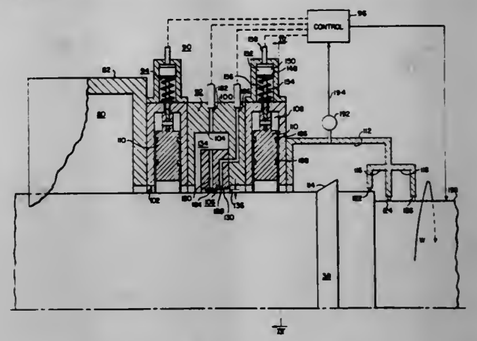
4,114,058

SEAL ARRANGEMENT FOR A DISCHARGE CHAMBER FOR WATER COOLED TURBINE GENERATOR ROTOR

Jacques E. Albaric, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 3, 1976, Ser. No. 720,331
Int. Cl.² H02K *9/00*
U.S. Cl. 310—54 **8 Claims**

1. A rotor for a dynamoelectric machine comprising:
a body portion having windings thereon, said windings having openings for the circulation of a coolant liquid therethrough,
a shaft extending from said body portion, said shaft having passages for circulation of said liquid coolant therethrough and a discharge chamber disposed thereon, said passages in said shaft including a discharge passage for discharging said liquid coolant from said shaft and into said discharge chamber, and,
a contact seal device
means for applying said contact seal device to said shaft sealing said discharge chamber when said rotor is operating in a first predetermined speed range,
means for removing said contact seal device from said shaft when said rotor is operating in a second predetermined speed range,
a gland seal device for sealing said discharge chamber when said rotor is operating in said second predetermined speed range,



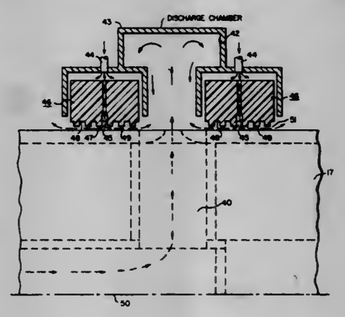
control means for activating said means for applying said contact seal device to said shaft when said rotor is operating in said first predetermined speed range and activating said means for removing said contact seal device from said shaft when said rotor is operating in said second predetermined speed range.

4,114,059

GROOVED VISCO SEAL FOR STATIONARY DISCHARGE CHAMBER OF WATER-COOLED TURBINE GENERATOR

Jacques E. Albaric; Little P. Curtis, both of Monroeville, and George F. Dailey, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 3, 1976, Ser. No. 720,332
Int. Cl.² H02K *9/00*
U.S. Cl. 310—54 **2 Claims**



1. In a dynamoelectric machine of the type including a rotor and a shaft extending from said rotor, said shaft having a passage for circulation of a liquid cooling fluid therethrough, said passage in said shaft including a discharge passage for discharging said liquid coolant from said shaft and into said discharge chamber, and further including sealing means for sealing said discharge chamber, said sealing means including a first seal device for sealing said discharge chamber during rotation of said shaft in a first speed range corresponding generally from standstill through a first predetermined speed of rotation of said shaft, said first seal device being a contact seal, and a second seal device for sealing said discharge chamber during rotation of said shaft in a second speed range corresponding generally to a speed substantially equal to said first predeter-

mined speed of rotation through a second predetermined speed of rotation greater than said first predetermined speed of rotation, said second seal device comprising a gland seal having an annular body portion disposed about said shaft, said annular body portion being spaced apart from said shaft to define an annular passage, the surface of said annular body portion confronting said shaft having a land portion extending in helical relation with respect to the axis of said shaft, said land portion defining a groove which extends in helical relation with respect to the axis of said shaft and which is in fluid communication with said annular passage, and means for introducing a sealing liquid into said annular passage between the body portion of said second seal device and said shaft.

4,114,060

ELECTRIC MOTOR

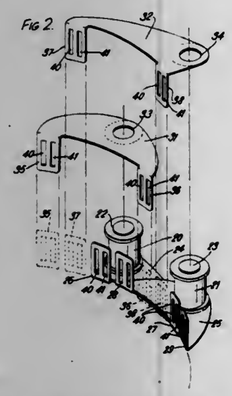
Graham Wilson McLean, Lymm, and David Holt, Stapleford, both of England, assignors to Strathearn Audio Limited, Belfast, Northern Ireland

Continuation of Ser. No. 601,438, Aug. 1, 1975, abandoned. This application May 16, 1977, Ser. No. 797,252

Claims priority, application United Kingdom, May 16, 1977, 34153/77

Int. Cl.² H02K *19/14*

U.S. Cl. 310—163 **6 Claims**



1. An electric motor for operation by an alternating current, the motor including a stator assembly and a rotor, the stator assembly including a first plurality of primary pole pieces for energisation by an in-phase current, respective pairs of the said first plurality of primary pole pieces being each constituted by a respective first metal part having an extending surface and first and second bent over portions separated from each other to each define a pole piece, a second plurality of primary pole pieces for energisation by an out-of-phase current, respective pairs of the said second plurality of primary pole pieces being each constituted by a respective second metal part having an extending surface and third and fourth bent over portions separated from each other to each define a pole piece, the separated pole pieces of the pairs of the first plurality being arranged alternately with the separated pole pieces of the pairs of the second plurality, each bent over portion defining slots extending parallel to the axis of rotation of the rotor and constituting a plurality of secondary pole pieces associated with each primary pole piece and the rotor having a plurality of further pole pieces, the pitch of the further pole pieces corresponding to the pitch of the secondary pole pieces and the arrangement of the secondary and further pole pieces being such that when the secondary pole pieces associated with the first plurality of pole pieces are opposite to respective ones of the further pole pieces the secondary pole pieces associated with the second plurality of pole pieces are displaced with respect to respective ones of the further pole pieces according to the phase angle between the in-phase and out-of-phase currents.

4,114,061

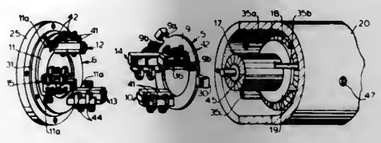
BRUSH CAGE FOR A DYNAMOELECTRIC MACHINE

Clyde M. Hayes, Lamertville, Mich., assignor to Eltra Corporation, Toledo, Ohio

Filed Mar. 7, 1977, Ser. No. 775,084

Int. Cl.² H02K *13/00*

U.S. Cl. 310—241 **5 Claims**



1. An electric motor, comprising:
a motor frame,
an armature assembly which is rotationally mounted along its axis within said frame and includes a commutator,
at least three stator windings disposed around said armature assembly and fastened to said frame, each winding including a terminal lead,
a removable motor frame plate which provides access to said commutator,
a first electrically conductive ring concentric with said armature axis and mounted on an electrically insulating pad which is mounted on said removable plate,
an electrical terminal which passes through said removable plate and is electrically connected to said first ring,
an insulating pad between said terminal and said plate,
a second electrical conductive ring,
at least two electrically insulating pads along the outer edge of said second ring for mounting said ring on said frame concentric with said armature axis,
a first set of at least three brush boxes mounted on, and in electrical contact with said first conductive ring, whereby said first set of three brush boxes are electrically interconnected, and
a second set of three brush boxes mounted on, and in electrical contact with said second conductive ring, whereby said second set of three brush boxes are electrically interconnected.

4,114,062

THICKNESS SHEAR RESONATOR FOR USE AS AN OVER-TONE QUARTZ CRYSTAL

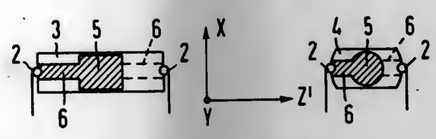
Werner Mattuschka, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sep. 2, 1977, Ser. No. 830,046

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641571

Int. Cl.² H01L *41/10*

U.S. Cl. 310—326 **6 Claims**



1. A thickness shear resonator used as an overtone quartz crystal for a quartz stabilized oscillator with an operating frequency in the MHz range that has an excitation electrode on each of its plane-parallel surfaces running in plane x, z' and in which the thickness of the vibrator in direction y' is determined by the distance of the plane-parallel surfaces from each other characterized in that the vibrator (1, 3, 4) presents a dimensional ratio between its dimension measured in the z' direction and its thickness having a value which lies in the range between $20/\sqrt{\beta}$ and $30/\sqrt{\beta}$ with a value for the thickness of the vibrator (1, 3, 4) determined by a fundamental quartz crystal frequency which has a value of $\frac{1}{3}$ of the operating frequency, and a dimensional ratio of about $12/\sqrt{\beta}$ with a value for the thickness of the vibrator determined by a fundamental quartz crystal frequency which has a value of 1/5 of the operating frequency, β being the ratio of the vibrator dimension in the x direction to that in the z' direction and having a value in the range of 0.3 to 1.0.

4,114,063

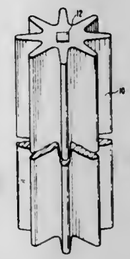
PIEZOELECTRIC SEDIMENT PARTICLE TRANSPORT DETECTOR

Arthur Nelkin, Annapolis; Dale D. Skinner, Severna Park; Donald G. Wilson, Severna Park, and Harold D. Palmer, Severna Park, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1977, Ser. No. 791,434

Int. Cl.² H01L *41/10*

U.S. Cl. 310—334 **8 Claims**



1. A sediment particle movement detector system comprising:
a. an elongated probe member of a material which will support acoustic propagation, for positioning in the path of expected sediment transport;
b. transducer means coupled to said probe member and operable to provide an output signal in response to impingement of said particles upon said probe member, each said impingement causing an acoustic emission; and
c. circuit means connected to receive said output signal of said transducer means for providing an indication of said impingement, said indication being indicative of said sediment transport past said probe member;
d. the major length of said elongated probe member, which is exposed to said sediment transport having an irregularly shaped surface to break up laminar flow around said probe;
e. said irregularly shaped surface being so shaped as to increase the impingement of said sediment particles on said probe member.

4,114,064

MULTIPLE GASEOUS DISCHARGE DISPLAY/MEMORY PANEL HAVING IMPROVED VOLTAGE CHARACTERISTICS

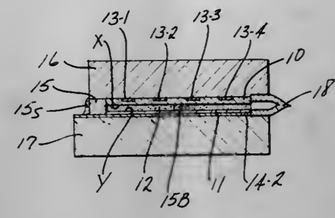
Roger E. Ernsthausen, Luckey, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 60,376, Aug. 3, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,817

Int. Cl.² H01J *61/30, 61/35*

U.S. Cl. 313—188 **3 Claims**

1. In a gaseous discharge display/memory device comprising an ionizable gaseous medium in a gas chamber formed by a pair of opposed dielectric material members backed by electrode members, the electrode members behind each dielectric material surface being transversely oriented with respect to the electrode members behind the opposing dielectric material surface so as to define a plurality of discharge units, said dielectric material surfaces serving to store charges during each half-cycle of operation, the improvement wherein each dielectric member is selectively enriched with at least one element selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, francium, beryllium, magnesium, calcium, strontium and barium in an amount sufficient to provide gas discharge device operating voltages which are substantially uniform and which do not significantly change with time after a period of aging.



4,114,065

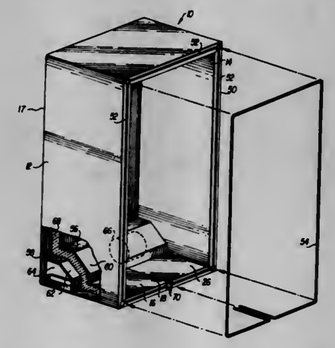
REFRIGERATOR CABINET AND METHOD OF CONSTRUCTING

Julius B. Horvay, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 9, 1976, Ser. No. 749,164

Int. Cl.² B65D *25/18;* F25D *11/00*

U.S. Cl. 312—214 **10 Claims**

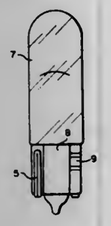


3. A refrigerator cabinet comprising:
a single sheet of metal including a plurality of first portions for forming the top, side and bottom outer walls of the cabinet;
said sheet further including a plurality of second portions for forming the top, side and bottom inner walls of the cabinet, said inner walls forming a food compartment;
said sheet further including a section disposed between said first portions and said second portions and having a plurality of perforations therein for retarding heat transfer between said first portions and said second portions;
said sheet being bent to cause said first portions and said second portions to form said top, side and bottom outer and inner walls and said section to form a surface framing the door opening of the cabinet; and
means disposed in assembled relation with said section for supplying heat thereto to reduce sweating of the outer wall of the cabinet.

4,114,066
SUBMINIATURE INCANDESCENT LAMP

Hans Wiedenmann, Heidenheim, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H., Munich, Fed. Rep. of Germany

Filed Jun. 10, 1977, Ser. No. 805,368
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1976, 7619712[U]
Int. Cl.² H01K 1/44; H01J 5/48
U.S. Cl. 313—315 1 Claim



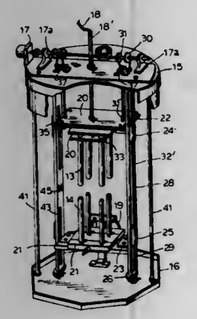
1. In combination with a subminiature lamp comprising a tubular bulb, a pair of lead-in wires spaced within said bulb by a glass bead in which said lead-in wires are sealed, and a filament supported within said bulb by said lead-in wires, a flattened press portion of said bulb effecting closure of same, and said lead-in wires sealed through said flattened press portion of said bulb, the improvement which comprises:

outer sections of said lead-in wires extending exteriorly of said bulb, re-entrant sections of each of said outer lead-in wire sections being supported in said flattened press portion to form two U-shaped loops the sides of each of which touch throughout their length, and said U-shaped loops each bent back about the lower end of said flattened press portion with said loops closely abutting opposite sides of said flattened press portion.

4,114,067
ELECTRODE OPERATING MECHANISM FOR CARBON ARC LAMP

Shigeru Suga, Yoyogi 5-20-2, Shibuya-ku, Tokyo, Japan

Filed Jun. 10, 1977, Ser. No. 805,577
Claims priority, application Japan, Dec. 14, 1976, 51-168058
Int. Cl.² H05B 31/20, 31/48
U.S. Cl. 314—134 3 Claims

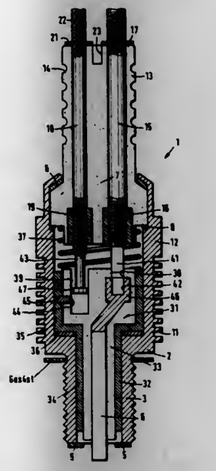


1. An improved electrode operating mechanism for control of the discharge of carbon arc lamps for light fastness testing devices, comprising an upper electrode holder means and a lower electrode holder means vertically spaced from each other, a plurality of electrodes on each holder means projecting toward each other with the ends of corresponding electrodes opposed to each other, an upper base and a lower base vertically spaced from each other with said holder means being between said bases, two vertical support means extending between said upper and lower bases, said vertical support means each having a pair of spaced parallel guide rails extending therealong, each holder means having laterally projecting arm members extending from the opposite ends thereof and between said rails, a cylindrical slide member mounted on the end of each arm member and slidably engaged in linear sliding contact with the surface of said parallel rails on the sides thereof away from the holder means, a first wire attached to the cylindrical slide member at each end of said lower electrode holder means and extending upwardly through said upper base, said cylindrical slide members on said arms on said upper base having axial bores therethrough through which said first wires freely pass, two second wires attached to said upper holder means and extending upwardly through said upper base, a horizontal shaft rotatably mounted on said upper base and having a pulley thereon for each of said wires, the first wires being wound in one direction around two of the pulleys and the second wires being wound in the opposite direction around the other pulleys, whereby when the shaft is rotated in one direction the electrodes are moved toward each other and when the shaft is rotated in the opposite direction the electrodes are moved away from each other.

4,114,068
SPARK PLUG WITH COMBUSTION PRESSURE SWITCHES

Etler-Peter Tylka, Schillerstrasse 34, D-4402 Graven-Reckenfeld, Germany

Filed May 26, 1977, Ser. No. 800,950
Claims priority, application Fed. Rep. of Germany, May 29, 1976, 2624238
Int. Cl.² H01T 13/40
U.S. Cl. 315—51 17 Claims

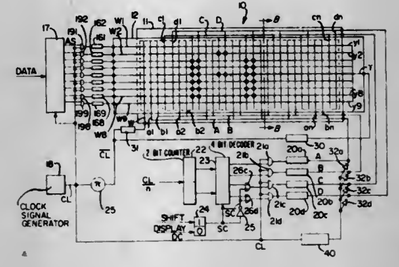


1. A spark plug for an internal combustion engine having a battery or magneto ignition system including an ignition coil, said spark plug comprising a casing or body, a center electrode and a connector pin for said center electrode, characterized by a plunger (31) adapted to be axially displaced interiorly of said spark plug (1) by the compression pressure; a first pair of contacts (41, 42; 41, 76) disposed between said connector pin (15) and said center electrode (6), which contracts are closed by movement of said plunger; a terminal (22, 84) for connection to the primary winding (54) of said ignition coil (52); and a second pair of contacts (44, 47; 79, 82, 4) arranged between ground (potential) and said terminal, which contacts are closed and opened by movement of said plunger.

4,114,069
METHOD AND APPARATUS FOR DRIVING A GAS-DISCHARGE DISPLAY PANEL

Hisashi Yamaguchi, Kakogawa; Seii Sato, Kobe; Toshiaki Iemori, Kakogawa, and Shizuo Andoh, Kobe, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 594,547, Jul. 9, 1975, abandoned. This application Feb. 11, 1977, Ser. No. 767,690
Int. Cl.² H05B 41/14; G06F 3/14
U.S. Cl. 315—169 TV 6 Claims



1. A method of driving a gas discharge display panel having a first base plate with a set of parallel common electrodes disposed thereon, a second base plate with a set of parallel shift electrodes disposed thereon, said set of parallel common electrodes being oriented to respectively traverse the set of parallel shift electrodes in intersecting fashion for defining a discharge region at each of the traversing intersections, a set of write electrodes disposed on said first and second base plates, said set of write electrodes corresponding to said set of parallel common electrodes and defining write discharge regions, and a discharge gas contained between said plates occupying said discharge regions, comprising the steps of:

(a) addressing selected ones of said set of write electrodes with a write voltage producing discharges at corresponding selected write discharge regions;

(b) applying a first shifting voltage pulse to a first shift electrode of said set of parallel shift electrodes immediately adjacent said selected write discharge regions thereby effecting a lateral shifting of said selected discharges by causing adjacently corresponding intersecting regions of said first shift electrodes to discharge;

(c) applying second and subsequent sequentially shifting voltage pulses to second and subsequent shift electrodes of said set of parallel shift electrodes immediately adjacent said second and subsequent electrodes respectively, to thereby effect lateral shifting of said selected discharges;

(d) halting lateral shifting of said selected discharges when said discharges are at a desired display location;

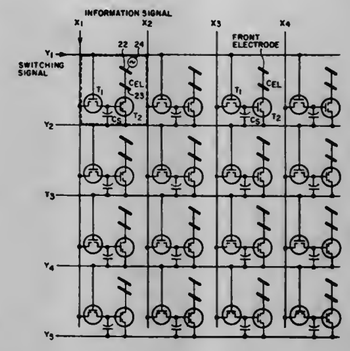
(e) applying display voltage pulses at a predetermined rate to at least two adjacent electrodes in alternate fashion at said desired display location, to thereby effect limited shifting of said selected discharges in oscillating fashion between said at least two adjacent electrodes and causing said shifted selected discharges at said desired location to be displayed at said at least two adjacent electrodes; and

(f) sequentially applying erase pulses for erasing a wall charge generated by said selected discharges following said shifting and display voltage pulses being applied and said selected discharge being shifted to an adjacent electrode.

4,114,070
DISPLAY PANEL WITH SIMPLIFIED THIN FILM INTERCONNECT SYSTEM

Juris A. Asars, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 22, 1977, Ser. No. 780,138
Int. Cl.² H05B 37/00, 39/00, 41/00
U.S. Cl. 315—169 TV 5 Claims



1. A display panel comprising an array of rows and columns of interconnected unit display cells which each comprise:

an electro-optic display medium disposed between two spaced apart electrodes, one electrode of which is light transmissive and common to all the display cells of the panel, with the other electrode being connected to thin film control circuitry consisting of, an information signal addressing transistor the gate of which is connected to a switching signal bus which is connected to a row of display cells, and the source of the information signal transistor is connected to an information signal bus which is connected to a column of display cells, with the drain of the information signal transistor connected to one side of an information signal storage capacitor, and also to the gate of a power transistor, the conductance of the power transistor is controlled as a function of the information signal applied to the power transistor gate, with the power transistor source and drain contacts connected between said other electrode for the display medium and the switching signal bus for the adjacent row of display cells, and wherein the other side of the information storage capacitor is also connected to the same adjacent row switching signal bus, which bus is connectable as a common reference and power return bus when the adjacent switching signal bus is being so used.

4,114,071
LIGHT MODULATOR SYSTEM

Herbert T. Thrower, Jr., 2612 C Park Rd., Charlotte, N.C. 28209, and Donald S. Wasness, Spartanburg, S.C., assignors to Herbert T. Thrower, Jr., Charlotte, N.C.

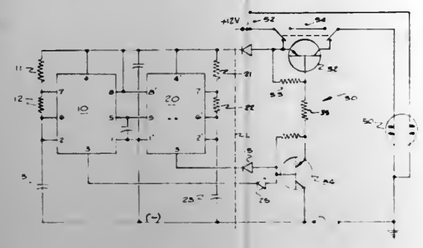
Filed Oct. 18, 1976, Ser. No. 733,321
Int. Cl.² H05B 37/02; B60Q 1/02
U.S. Cl. 315—226 14 Claims

1. A light intensity modulator system for at least one incandescent lamp comprising:

(a) first timer switch means electrically connectable to a source of power;

(b) second timer switch means connected in parallel with said first timer switch means and being operated at a faster switch cycle than said first timer switch means, said second timer switch means overriding said first timer switch means when said first timer switch means is in an off mode and operating at a switch cycle sufficiently fast to preclude complete loss of illumination of an incandescent lamp associated therewith; and

(c) power interrupter means electrically connected to said source of power, at least one incandescent lamp and the output of said first and second timer switch means, said



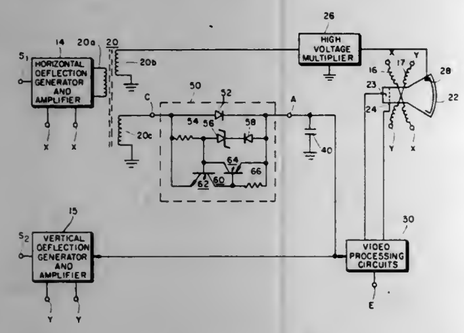
power interrupter means being operated by said first and second timer switch means to modulate power to said at least one lamp whereby the intensity of said at least one lamp changes without a complete intensity loss.

4,114,072

HIGH VOLTAGE PROTECTION CIRCUIT HAVING PREDICTABLE FIRING POINT

Donald Henry Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 26, 1977, Ser. No. 819,187
Int. Cl.[2] H01J *29/70*
U.S. Cl. 315—411 **6 Claims**



1. In a television receiver including a kinescope for generating at least one electron beam, deflection means for generating horizontal and vertical deflection signals for controlling the deflection of said electron beam, high voltage means for generating a relatively high operating potential in response to said horizontal deflection signals, and video processing means for controlling the modulation of said electron beam to provide a display, apparatus comprising:

a transformer winding coupled to said deflection means for developing an alternating voltage in response to said horizontal deflecton signal;

supply voltage means including at least a filter capacitor for developing a supply voltage for said deflection means and said video processing means; and

an integrated circuit device having a first terminal coupled to said transformer winding and a second terminal coupled to said filter capacitor, said integrated circuit device including rectifying means coupled between said first terminal and said second terminal for charging said filter capacitor in response to said alternating voltage so that said supply voltage has a sufficient amplitude for a viewable display;

switching means exhibiting the conduction characteristics of a silicon controlled rectifier coupled between said first terminal and said second terminal, said switching means including a control electrode for controlling the conduction thereof, said switching means being normally nonconductive; and

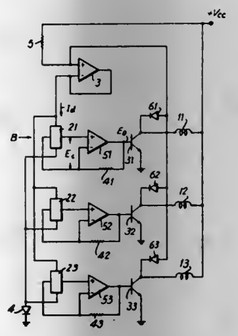
voltage reference means including a Zener diode and a diode coupled in series relationship between said first terminal and said second terminal, said Zener diode and said diode also being directly connected in series between said second terminal and said control electrode of said switching means, said voltage reference means being normally nonconductive, said voltage reference means being rendered conductive and thereby coupling a conduction control current to said switching means to render it conductive in turn when the difference between said supply voltage and said alternating voltage exceeds a predetermined voltage, said diode being poled to inhibit the flow of current through said Zener diode except when said supply voltage exceeds said alternating voltage by said predetermined voltage, said predetermined voltage corresponding to the level of said relatively high operating potential for said kinescope at which the generation of potentially harmful X-radiation is likely, the amplitude of said supply voltage falling to a level at which the display is unviewable when said switching means is conductive.

4,114,073

BRUSHLESS MOTOR DRIVING CIRCUIT

Mitsuo Uzuka, Urawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 29, 1977, Ser. No. 810,982
Claims priority, application Japan, Nov. 19, 1976, 51-139903
Int. Cl.[2] H02K *29/00*
U.S. Cl. 318—138 **16 Claims**



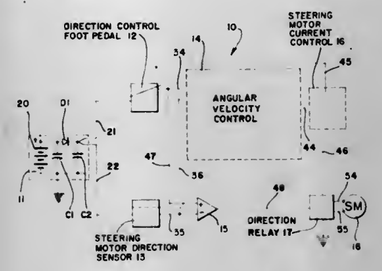
1. A driving circuit for a brushless motor of the type having a permanent magnet rotor and plural phase stator windings, said driving circuit comprising position detecting means for detecting the rotary position of said rotor; means for supplying driving currents in sequence to the plural phases of said stator windings in accordance with the position of said rotor detected by said detecting means, a portion of the driving currents flowing through at least two of said phases being overlapped when said motor is started up; and means for reducing the duration of each driving current as the motor approaches a normal speed so as to correspondingly reduce the overlapped portions of said driving currents flowing through said phases.

4,114,074

DEVICE FOR ELECTRONIC DIRECTION CONTROL OF TROLLING MOTORS

Alan Stewart, Fayetteville, and Richard Lee Majefski, Combs, both of Ark., assignors to Shakespeare of Arkansas, Inc., Fayetteville, Ark.

Filed Nov. 23, 1976, Ser. No. 744,337
Int. Cl.[2] H02P *7/28*
U.S. Cl. 318—257 **12 Claims**



1. A device for electronic direction control of trolling motors for maneuvering boats comprising:

means for altering the direction of the trolling motor thrust,

means for generating a first signal proportional to the desired direction of trolling motor thrust,

means for generating a second signal proportional to the actual direction of trolling motor thrust.

means for supplying power to said means for generating a first signal and means for generating a second signal, and

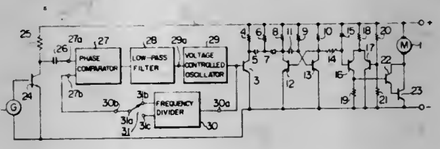
electronic processing means receiving said first signal and said second signal and providing an output signal for continuously, variably controlling the angular velocity of said means for altering the direction of the trolling motor thrust.

4,114,075

ROTATION CONTROL SYSTEM

Hiroshi Minakuchi, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 25, 1977, Ser. No. 818,842
Claims priority, application Japan, Jul. 26, 1976, 51-89440; Apr. 20, 1977, 52-46259
Int. Cl.[2] H02P *5/16*
U.S. Cl. 318—341 **5 Claims**



1. A rotation speed control system for a rotary machine comprising:

a rotation speed detector coupled to the rotary machine for generating a signal having a repetition frequency dependent on the rotation speed of the rotary machine;

a phase comparator having two input terminals, one of which is applied with the output signal of said rotation speed detector;

a voltage controlled oscillator having a control input terminal applied with the output signal of said phase comparator;

a frequency divider applied with the output signal of said voltage controlled oscillator and supplying the output signal to the other input terminal of said phase comparator; and

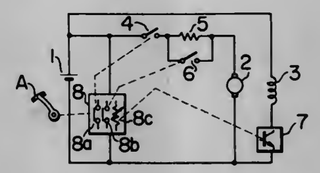
a rotation speed controlling circuit for said rotary machine, having a detection signal input terminal applied with the output signal of said voltage controlled oscillator.

4,114,076

CONTROL SYSTEM FOR A MOTOR HAVING A SHUNT FIELD WINDING

Takanori Teranishi, Aichi, and Toshihiko Nakashima, Chiryu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 18, 1977, Ser. No. 788,429
Int. Cl.[2] H02P *1/20*
U.S. Cl. 318—421 **10 Claims**



1. A control system for a motor having a shunt field winding, comprising:

power supply circuit means including a power supply for powering said motor;

motor control means for generating a control amount;

means for generating a command signal to command the amount of increase or decrease of a rotational speed of said motor in accordance with the control amount of said motor control means;

means connected to said means for generating the command signal for controlling a field current; and

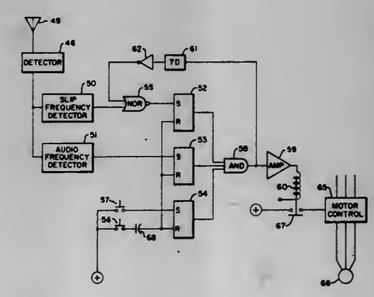
said means for generating the command signal including control signal generating means for increasing said field current independently of said power supply voltage in accordance with the control amount when positive acceleration control is effected within a predetermined control range.

4,114,077

ROTOR OVERTEMPERATURE PROTECTION FOR ELECTRIC MOTORS

Robert M. Oates, Murrysville, and Raymond W. Mackenzie, Baldwin Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 1, 1977, Ser. No. 783,525
Int. Cl.[2] H02P *1/04*
U.S. Cl. 318—473 **9 Claims**



1. In combination with an electric motor having a rotor member carrying a squirrel-cage winding, temperature sensing means on said rotor responsive to the temperature of said winding, a transmitter on the rotor controlled by said temperature sensing means to transmit a signal of predetermined characteristics when said temperature exceeds a predetermined value, transformer means on the rotor associated with the rotor

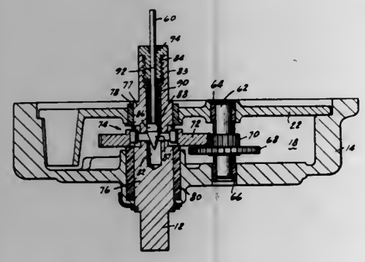
winding for supplying power to said transmitter from current flowing in the winding, and a stationary receiver adapted to receive signals from said transmitter and including means for effecting deenergization of the motor in response to a signal of said predetermined characteristics.

4,114,078

MECHANICAL TORQUE LIMIT FOR VALVE ACTUATOR

Richard F. Malinski, 200 Beech Dr., Schaumburg, Ill. 60172, and Aubrey C. Childers, 2070 Coral Ave., Aurora, Ill. 60506

Filed Jan. 24, 1977, Ser. No. 761,596
Int. Cl.[2] H02H *7/08*; H02P *3/00*
U.S. Cl. 318—475 **11 Claims**



1. A valve actuator comprising:
an output shaft for connection to a valve to be operated;
a drive motor for connection to an energy supply and which is selectively energizable to operate in alternate directions;
switch means connected in series with said drive motor and the energy supply; and
coupling means coupling said drive motor to said output shaft, including torque responsive means extending coaxially and radially through said output shaft for operating said switch means to open the connection between said drive motor and the energy supply upon the occurrence of a predetermined resistance to shaft rotation at said output shaft.

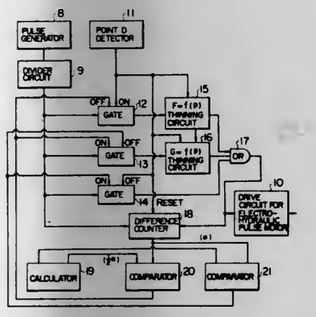
4,114,079

ROTARY CUTTER DRIVE CONTROL WITH ELECTRIC MOTOR

Hiroshi Miyakita, Toyonaka, Japan, assignor to Ichiro Miyakita, Japan

Continuation-in-part of Ser. No. 459,620, Apr. 10, 1974, Pat. No. 4,015,183. This application Dec. 7, 1976, Ser. No. 748,318
Claims priority, application Japan, Oct. 4, 1973, 48-111679; Sep. 13, 1976, 51-110513
The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.
Int. Cl.[2] G05B *19/28*
U.S. Cl. 318—601 **7 Claims**

1. An apparatus for controlling the speed of a rotary cutter driven by an electric motor for cutting to length a sheet material continuously supplied to said rotary cutter comprising:
first means for producing a first pulse train having a pulse rate in synchronism with the feed rate of said sheet material,
second means for decreasing the pulse rate of said first pulse train applied thereto thereby to produce a second pulse train and operative selectively in a first mode where the rate of decrease of the pulse rate increases progressively according to a predetermined first pattern and in a second mode where the rate of decrease of the pulse rate decreases progressively according to a predetermined second pattern,
detecting means for producing a first signal when the blades of said rotary cutter reach a predetermined position after cutting,
comparator means for producing second and third signals when the difference between the number of pulses of said first pulse train applied to said second means and that of said second pulse train produced by said second means reaches a predetermined first value and a predetermined second value, respectively,
first gate means for causing said second means to operate in said first mode during a first period from occurrence of said first signal to occurrence of said second signal and to operate in said second mode during a second period from occurrence of said second signal to occurrence of said



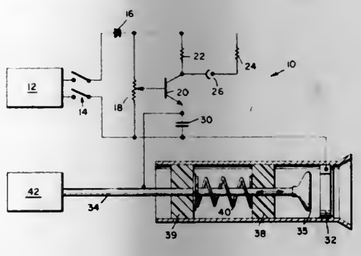
third signal thereby to apply said second pulse train produced by said second means to third means during said first and second periods,
second gate means for applying said first pulse train to said third means during a third period from occurrence of said third signal to occurrence of said first signal, and
said third means for converting the pulses applied thereto into a DC voltage whose amplitude is proportional to the pulse rate of said applied pulses, said DC voltage being applied to said electric motor for driving the same.

4,114,080

EXPLOSION SIMULATING DEVICE

Quentin E. Greenwood, 1508 Granvia Altamira, Palos Verdes Estates, Calif. 90274

Filed Apr. 5, 1977, Ser. No. 784,716
Int. Cl.[2] A63H *33/26, 33/36*; H02J *15/00*
U.S. Cl. 320—1 **10 Claims**



1. An explosion simulation device, comprising:
power input means;
charge regulation means coupled to said power input means for receiving power therefrom and providing energy to energy storage means;
energy storage means for storing energy from said power input means in response to said charge regulation means, said energy storage means having first and second electrodes;
barrel means;
first contact means being coupled to the first electrode of said energy storage means being disposed in said barrel means;
second contact means being coupled to the second electrode of said energy storage means for making electrical connection with said first contact means for rapidly discharging energy stored in said energy storage means and simulating an explosion, said second contact means being movably mounted within said barrel means; and
support means for movably mounting said second contact means within said barrel means.

4,114,081

Patent Not Issued For This Number

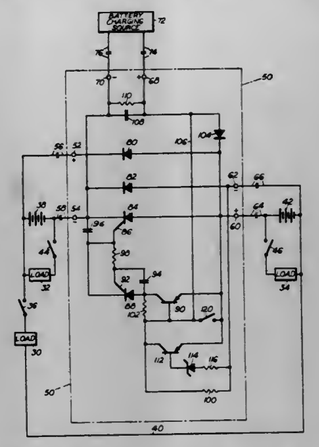
4,114,082

DUAL VOLTAGE BATTERY SYSTEM AND ELECTRONIC SWITCH THEREFOR

Ralph E. Scheidler, 7415 SE. Johnson Creek Blvd., Portland, Oreg. 97206

Filed Jul. 5, 1977, Ser. No. 812,441
Int. Cl.[2] H02J *7/04*
U.S. Cl. 320—7 **16 Claims**

1. A dual voltage battery system, comprising:
(a) first and second batteries of equal voltage rating,
(b) first rectifier means interconnecting the positive terminals of the batteries,
(c) second rectifier means interconnecting the negative terminals of the batteries,
(d) first electrically actuated switch means releasably interconnecting one terminal of the first battery and the opposite polarity terminal of the second battery for connecting the batteries together in series,
(e) first switch actuator means having an electric circuit connected to the first battery and operable by an impulse generated from an instantaneous voltage drop across said battery by connection of a load thereacross to activate the first switch means to connect the batteries together in series,
(f) one of the rectifier means being arranged to block the higher voltage output of the second battery of the series from the first battery, and the other rectifier means being arranged to isolate the positive and negative terminals of the first battery from each other, and



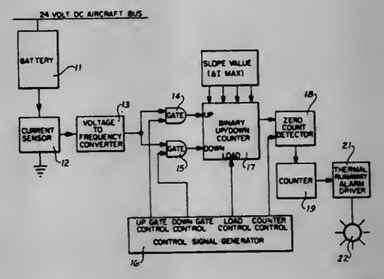
(g) electrical conductors connected across the first switch means and arranged for connection to the positive and negative output terminals of a source of battery charging voltage rated for charging one of said batteries.

4,114,083

BATTERY THERMAL RUNAWAY MONITOR

Harold L. Benham, Bedford; Steven D. Clark, Crane; Hubert L. Huffman, and Ronald J. Stovall, both of Bedford, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1977, Ser. No. 806,799
Int. Cl.[2] H02J *7/00*; H02H *3/08*
U.S. Cl. 320—39 **5 Claims**



1. A monitoring device for indicating that a thermal runaway condition exists in a nickel-cadmium battery comprising,
a current sensor connected with said battery for developing a direct current voltage proportional to charge current,
a voltage converter connected with said current sensor providing at an output terminal pulse train frequencies directly proportional to charge current,
binary counter means having input terminals for receiving a predetermined count and having an up counting terminal and a down counting terminal,
first gating means connected between said output of said voltage converter and said up counting terminal for adding for a predetermined time the output of said voltage converter to the predetermined count,
second gating means connected between said output of said voltage converter and said down counting terminal for subtracting for a predetermined time the output of said voltage converter from the two added counts, and
an output terminal on said binary counter means for provid-

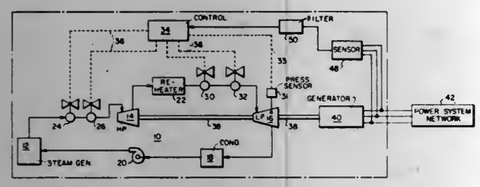
ing an output signal when the down count in said binary counter means exceeds the sum of the two added counts.

4,114,084

TURBINE-GENERATOR PROTECTION SYSTEM WITH ELECTRONIC SAMPLING FILTER

Stephen P. Glaudel, Penn Hills Township, Allegheny County, Pa., and Norman T. Chambers, Indian Harbor Beach, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 26, 1976, Ser. No. 735,718
Int. Cl.² H02H 7/06; H02P 9/04
U.S. Cl. 322—38 **11 Claims**



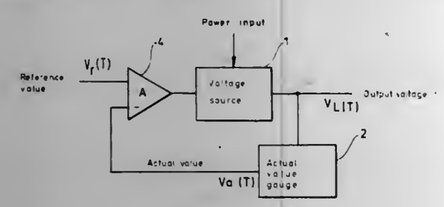
1. A turbine-generator power generation plant coupled to a power system network, said power plant including an electronic turbine-generator protection system comprising:
first means to generate an electrical signal representative of actual turbine power;
second means to generate an electrical signal representative of actual generator power, said electrical generator power signal including a periodic time varying component; and
third means responsive to said electrical generator power signal to generate a train of fixed time duration electrical signal amplitudes wherein each amplitude of said train is representative of an average of selected amplitudes of said electrical generator power signal; and
fourth means governed by said electrical turbine power signal and said train of fixed time duration electrical signal amplitudes to reduce at times said turbine power.

4,114,085

METHOD OF IMPROVING THE TEMPERATURE STABILITY OF A VOLTAGE SOURCE, AND A STABILIZED VOLTAGE SOURCE FOR CARRYING OUT THE METHOD

Erkki Ilmari Leinonen, Vantaa, and Erkki Sakari Kiuru, Espoo, both of Finland, assignors to Outokumpu Oy, Ab., Helsinki, Finland

Filed Oct. 27, 1976, Ser. No. 735,983
Claims priority, application Finland, Oct. 27, 1975, 752995
Int. Cl.² G05F 1/58
U.S. Cl. 323—17 **3 Claims**



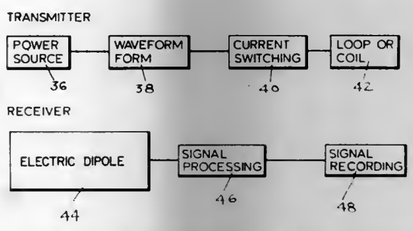
1. In a stabilized voltage source of the type having a temperature-dependent actual voltage gauge which senses the output voltage of the voltage source, a reference value circuit providing a reference value voltage, said reference value circuit comprising a temperature-stable first voltage source and a second voltage source which is strongly dependent on temperature, means for summing the voltage outputs of said first and second voltage source of said reference value circuit, and means for regulating the output voltage of at least one of said first and second voltage sources to control the reference value voltage for regulating the temperature coefficient of the reference value voltage to compensate for temperature dependence of the actual value voltage.

4,114,086

INDUCTIVE SOURCE METHOD OF INDUCED POLARIZATION PROSPECTING

Aleksander Arkadi Kaufman, Downsview, Canada, assignor to Scintrex Limited, Concord, Canada

Filed Mar. 7, 1977, Ser. No. 774,780
Int. Cl.² G01V 3/08
U.S. Cl. 324—1 **2 Claims**



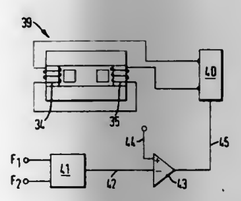
1. In a method of geophysically prospecting a polarizable medium the steps of locating an induction coil in inductive proximity to the medium and transmitting a time varying current therethrough of a magnitude capable of inducing current flow through the polarizable medium sufficient to establish a measureable induced polarization effect;
said time varying current in said induction coil having a first period where it varies unidirectionally for the first period to maintain current flow induced by the induction coil in the medium;
said time varying current in said induction coil having a second period following said first period wherein said time varying current does not vary substantially with respect to time and wherein there are substantially no currents in said medium induced to said induction coil;
said first period of time being sufficiently long in duration for induced polarization effects to build up in the medium;
said second period of time being sufficiently long in duration for the electro-magnetic effects to decay and for measurement of the induced polarization effects in the medium; and
detecting any induced polarization effects that may be present in said second period by measurement of transient electric field components.

4,114,087

MAGNETIC OR ELECTRIC MEASURING DEVICES

Michael George Joseph Fry, Old Coulsdon, England, assignor to Brentford Electric Limited, Crawley, England

Filed Oct. 18, 1976, Ser. No. 733,476
Int. Cl.² G01R 33/08
U.S. Cl. 324—0.5 E **18 Claims**



1. Apparatus for measuring magnetic field strength, comprising: two Nuclear Magnetic Resonance cells (the NMR cells) each containing material having identical gyromagnetic

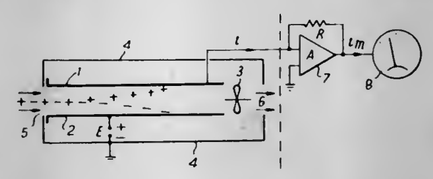
properties as the other; field generating means for applying simultaneously to both said NMR cells bias magnetic field which is parallel and of substantially equal strength at each NMR cell, such that when the NMR cells further simultaneously receive test magnetic field which is of substantially equal strength at each NMR cell, and which is parallel to, and at one NMR cell is in the same direction, and at the other NMR cell is in the opposite direction to, the bias field at said respective NMR cells, resultant magnetic fields of strengths equal to the sum and difference of the strengths of the bias and test fields will be experienced simultaneously by said one and said other NMR cell respectively; means for individually magnetically exciting each NMR cell only at its own precise Larmor precession, or resonance frequency as determined by said gyromagnetic properties and by the magnitude of the resultant magnetic field strength at that NMR cell; and means for deriving a resultant signal in accord with the difference between the Larmor frequencies of the two NMR cells, said resultant signal being representative of the magnitude of said test magnetic field.

4,114,088

ATMOSPHERIC ION DENSITY MEASUREMENT

Christopher Malcolm Laws, Old Oxted, England, assignor to Cecil Alfred Laws, England

Filed Feb. 28, 1977, Ser. No. 772,646
Int. Cl.² G01N 27/00
U.S. Cl. 324—33 **10 Claims**



1. An ion counter comprising an electrometer, a collector and a voltage source, wherein said collector comprises insulators, a flat polarizing plate, screening members and a first and a second flat collector plate, said collector plates being spaced by said insulators from and arranged either side of, so as to extend in planes which are substantially parallel to the plane of, said flat polarizing plate so as to form a first and a second air passage between the latter and a respective one of said collector plates, and said screening members are provided along the margins of the air passages with a predetermined insulation resistance between them and the collector plates, the arrangement being such that, in use of the ion counter, said voltage source is connected to maintain said screening members at the same potential as the collector plates, and whereby a substantially uniform potential gradient can be preserved across the insulators, random charges are dispersed and a substantially linear field is maintained between said polarizing plate on the one hand and said collector plates and screening members on the other hand over substantially the whole area of said passages in said planes and with substantially no field edge-effects between said collector plates and said screening members.

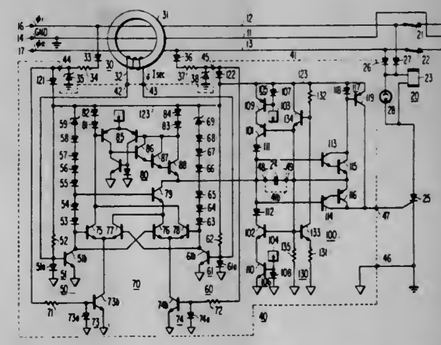
4,114,089

GROUND FAULT DETECTING APPARATUS INCLUDING CURRENT-RESPONSIVE THRESHOLD DETECTION CIRCUITRY

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 560,721, Mar. 21, 1975, Pat. No. 4,037,155, which is a division of Ser. No. 461,268, Apr. 15, 1974, Pat. No. 3,953,767. This application Dec. 17, 1976, Ser. No. 751,588
Int. Cl.² G01R 31/02, 19/16; H02H 1/04
U.S. Cl. 324—51 **9 Claims**

9. In ground-fault detection apparatus for a power distribution system with a plurality of a-c power line conductors, said apparatus including differential current sensing means for responding to total current flow through said a-c power line conductors in one direction differing from total current flow through said a-c power line conductors in the opposite direction to provide an a-c signal representative of that difference; synchronous detection means having a first input circuit to which the a-c signal provided by said differential current sensing means is applied, having a second input circuit to which the a-c potential appearing between a pair of the a-c power line conductors is applied, and having an output circuit for supplying a product signal proportional to the product of the a-c signal provided by said differential current sensing means times said a-c potential appearing between a pair of the a-c power line conductors; and means for determining whether or not said product signal has a direct component of an amplitude and duration indicative of the presence of a resistive ground fault, the improvement wherein said means for determining whether or not said product signal has a direct component of an amplitude and duration indicative of the presence of said resistive ground fault comprises:



integrating means having an input circuit to which said product signal is applied, having an output circuit, and being of a type responsive to the product signal applied to its input circuit to provide at its output circuit integrated response to rectified sinusoidal components of the product signal which components are of amplitude greater than a threshold value and of duration of at least the better part of a half cycle of a-c power line potentials, which response is of a relatively high sensitivity compared to the sensitivity of its integrated response to short-lived transient components of the product signal which have similar average power level; and
threshold detector means having an input circuit to which the output circuit of said integrating means is directly coupled, and having an output circuit exhibiting response to the signal applied to its input circuit exceeding a threshold value, for providing an indication of whether or not a resistive ground fault is present on any of the a-c power line conductors.

4,114,090

ELECTRONIC MOISTURE METER

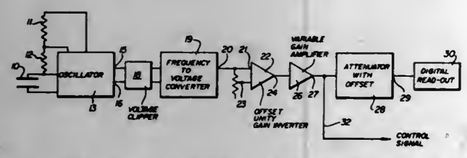
Walter Edward Poskitt, St. Basile le Grande, Quebec, Canada, assignor to IMASCO Limited, Montreal, Canada

Filed Aug. 17, 1976, Ser. No. 715,170
Int. Cl.² G01R 27/26
U.S. Cl. 324—61 QS **10 Claims**

1. A moisture detection unit comprising:
a capacitor sensor for sensing the moisture content of the material the moisture content of which is to be detected and which is positioned in the vicinity of the sensor, said capacitor sensor attaining a value of capacitance proportional to that moisture content;
at least one resistor interconnected with said capacitor sensor to form a resistance-capacitance network;

a free-running oscillator means connected to said resistance-capacitance network for producing an output signal the frequency of which is inversely proportional to the capacitance of said capacitor sensor and is from 0 to 10 KHz;

a frequency-to-voltage converter connected to said free-running oscillator means for producing a D.C. voltage proportional to the frequency of the output signal of said free-running oscillator means; and



an inverter connected to said frequency-to-voltage converter for producing an output voltage inversely proportional to the D.C. voltage of the frequency-to-voltage converter and directly proportional to the moisture content of the material.

4,114,091

APPARATUS FOR MATCHING WIRES IN MULTIPLE WIRE CONDUCTORS AND ATTENDANT METHOD

James Lynn Howard, Lancaster, S.C., assignor to Earl Cooper Phifer, Stanfield, N.C., a part interest

Continuation-in-part of Ser. No. 673,660, Apr. 5, 1976, Pat. No. 4,041,383. This application May 23, 1977, Ser. No. 799,379

Int. Cl.[2] G01R *31/02, 1/06*

U.S. Cl. 324—66 **10 Claims**

1. Apparatus for matching the corresponding opposite end portions of wires located at opposite ends of a multi-wire conductor, said apparatus being particularly suited for operation by one person, thereby avoiding the necessity of having persons at both ends of the conductor for matching and identifying the wires, said apparatus comprising, in combination, a diode assembly adapted to be connected to the respective wires at one end of the conductor and a direct current circuit tester adapted to be employed at the opposite end of the conductor to test the respective wires for a complete circuit, thus indicating a match with a particular one of the wires at the opposite end of the conductor; said diode assembly including a plurality of diodes having respective pairs of leads and electrically interconnected in series in alternating polarity, means for temporarily connecting corresponding leads of the respective series-interconnected diodes to the respective wires at one end of the conductor, and means for connecting the remaining free lead of the first diode of the series to a common ground connection; said direct current circuit tester including an elongate tubular housing of a size suited to be readily held in one hand by a person using the circuit tester and having a hollow interior portion adapted for receiving at least one battery therein, a pair of probe means and an indicator means carried by the housing and being operably interconnected for cooperating with a battery received in said housing and indicating the presence of an electrically conductive path connected between the respective probe means, reversing switch means operably associated with said probe means and carried by the housing and including a manually actuable handle portion located at one end of the housing for effecting reversing of the polarity of said probe means, and wherein the handle portion of said switch means is electrically conductive and comprises one of said probe means and the other of said probe means comprising an elongate flexible conductor lead extending from said housing.

6. A hand-held circuit tester adapted to test for the presence of an electrically conductive path between two test points, said circuit tester comprising a pair of probe means, a direct current power source, and indicator means all electrically interconnected and operable for indicating the presence of an electrically conductive path between two test points connected to the respective probe means, reversing switch means cooperating with said probe means to permit reversing the polarity of the probe means, said reversing switch means including a handle portion positioned to facilitate readily actuating the reversing switch by someone using the circuit tester, and wherein the handle portion of said switch means is electrically conductive and comprises one of said probe means.

4,114,092

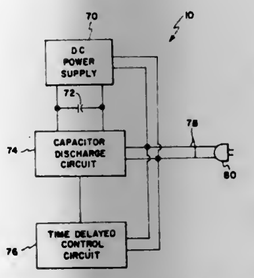
POWER CIRCUIT IDENTIFIER WHICH PRODUCES A VOLTAGE PULSE IN RESPONSE TO INTERRUPTION OF POWER

James H. Fry, Jr., P.O. Box 230, Columbia, Pa. 17512

Filed Jul. 25, 1977, Ser. No. 818,923

Int. Cl.[2] G01R *19/16*

U.S. Cl. 324—66 **11 Claims**



1. An apparatus for identifying which of several sources is the source of one power line out of a group, which comprises:

a direct curent power supply means;

a capacitor electrically connected to and charged by the power supply means; and

a switching means electronically connected to one location on the power line being identified and a common circuit return, and activated by the interruption of power on the power line, also connected to the capacitor and switching the capacitor across the power line and the common circuit return upon interruption of power on the power line whereby interruption of power at the source of the power line, remote from the location of connection of the identifying apparatus, produces a voltage pulse from the capacitor, which when detected at the source, verifies that the power line which has been interrupted is the one to which the apparatus is attached.

4,114,093

NETWORK TESTING METHOD AND APPARATUS

Lewis Frank Long, Alta Loma, Calif., assignor to Everett/-Charles, Inc., Pomona, Calif.

Filed Dec. 17, 1976, Ser. No. 751,989

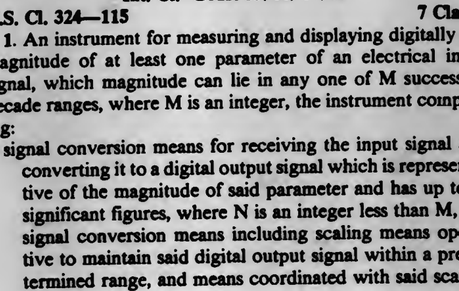
Int. Cl.[2] G01R *15/12*

U.S. Cl. 324—73 AT **11 Claims**

1. A continuity-check testing apparatus for testing a network having a plurality of network nodes, the network when conforming to its design having a predetermined node-connection pattern defining a division of the network nodes into a plurality of groups of network nodes with each network node being connected in common to all other network nodes in its group and being isolated from the network nodes in each other group, the apparatus comprising:

continuity verifying means having a first input node connectable to a presently scanned node, a second input node connectable to a present verification-tested node, and means for providing a signal specifying whether continuity exists between the first and second input nodes when they are connected to the scanned and tested nodes; and

timing and control means for connecting the first and second input nodes to selected network nodes to verify that each network node is in fact connected in conformity to the design, the timing and control means including:



first selecting means for individually selecting network nodes in a group-independent scanning sequence defining an ordering of all the network nodes, each network node at the time of its selection by the first selecting means then constituting the presently scanned node;

first switching means for connecting the presently scanned node to the first input node;

second selecting means for individually selecting network nodes by reference to their order in a group-dependent sequence progressing such that as to each group network nodes thereof are sequentially selected by the second selecting means in the same order that they are sequentially selected by the first selecting means, each network node at the time of its selection by the second selecting means then constituting the presently verification-tested node; and

second switching means for connecting the presently verification-tested node to the second input node.

4,114,094

LONG SCALE DISPLAY

John Gerald Cook, Farnborough, and Julian David Shaw, Crowthorne, both of England, assignors to The Solartron Electronic Group Ltd., Farnborough, England

Filed Sep. 8, 1975, Ser. No. 611,037

Claims priority, application United Kingdom, Sep. 20, 1974, 41008/74

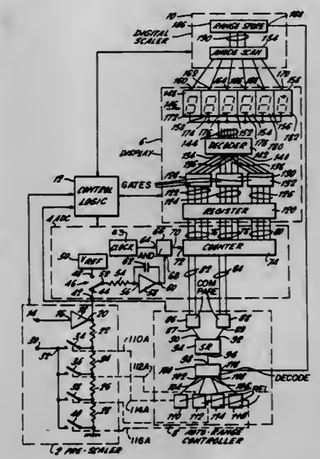
Int. Cl.[2] G01R *15/08, 17/06*

U.S. Cl. 324—115 **7 Claims**

1. An instrument for measuring and displaying digitally the magnitude of at least one parameter of an electrical input signal, which magnitude can lie in any one of M successive decade ranges, where M is an integer, the instrument comprising:

signal conversion means for receiving the input signal and converting it to a digital output signal which is representative of the magnitude of said parameter and has up to N significant figures, where N is an integer less than M, the signal conversion means including scaling means operative to maintain said digital output signal within a predetermined range, and means coordinated with said scaling means for producing a range signal indicative of the range in which the magnitude of said parameter lies;

display means having at least M decades each of which represents a fixed order of magnitude of said parameter; and



control means responsive to the range signal to direct the digital output signal to the respective group of up to N adjacent decades of the display means corresponding to the range in which the magnitude of said parameter lies, such that said display means displays the magnitude of said parameter.

4,114,095

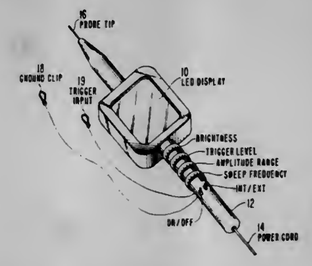
SOLID STATE OSCILLOSCOPE

Jacques Isaac Pankove, Princeton, and Frank Jerome Marlowe, Kingston, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,864

Int. Cl.[2] G01R *13/20, 13/00*; G08B *23/00*

U.S. Cl. 324—121 R **6 Claims**



1. An oscilloscope comprising, in combination:

a display comprising a plurality of columns and a plurality of rows of light affecting elements integrated onto a common sapphire substrate, each element being capable of assuming one of two optically distinguishable conditions, each element being responsive to coincident selection signals, one on a column, the other on a row, for being placed in said one condition and each remaining in its other condition in response to only one of said selection signals;

means integrated onto the same substrate as said display responsive to a test waveform for selecting particular rows of the display during successive time slots, the row selected depending upon the amplitude of said waveform during that particular time slot that the selection takes

place, and for supplying to each selected row a selection signal only during the time the row is selected; and

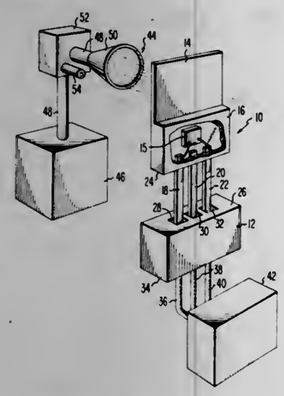
means also integrated onto the same substrate as said display for applying to said plurality of columns, a corresponding plurality of selection signals, respectively, said selection signals occurring in time sequence and being applied in succession to the successive columns, each said selection pulse applied to a row being time coincident with one of said selection pulses applied to a column.

4,114,096

METHOD OF TESTING SEMICONDUCTOR DEVICES

Jack Joseph Chinery, Raritan, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,199
Int. Cl.² G01R 31/22
U.S. Cl. 324—158 D **8 Claims**



1. A method of testing a semiconductor device which has a semiconductor chip integral therewith, at a particular test temperature which is much lower than room temperature, said chip having at least one PN junction therein, comprising the steps of:

locally directing a fluid which is at a temperature lower than said test temperature upon said device for a time long enough to reduce the temperature of said device below said test temperature;

stopping the fluid flow;

internally heating said device to said test temperature; and

performing at least one electrical test on said device at said test temperature.

4,114,097

FREQUENCY SHIFT SIGNAL RECEIVER

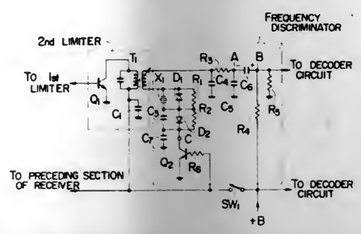
Noriyoshi Kubo; Takeshi Katano; Yoshinobu Tatsuzawa, all of Yokohama; Tadatoshi Hagihira, Sagamihara; Masahiko Yamamoto, Tokyo, and Hiromi Wasai, Kyoto, all of Japan, assignors to Nippon Telegraph and Telephone Public Corp., Tokyo and Matsushita Electric Industrial Co., Ltd., Kadoma, both of, Japan

Filed Oct. 28, 1975, Ser. No. 626,098
Claims priority, application Japan, Oct. 29, 1974, 49/125015
Int. Cl.² H04B 1/16
U.S. Cl. 325—320 **3 Claims**

1. A frequency shift receiver including a frequency discriminator for receiving a frequency shift signal comprising:

first switching means connected between a power source and a preceding section of said receiver for periodically supplying power from said power source to said preceding section, and

second switching means connected to said frequency discriminator for turning on and off an output of said frequency discriminator in synchronism with the turning on and off operation of said first switching means.

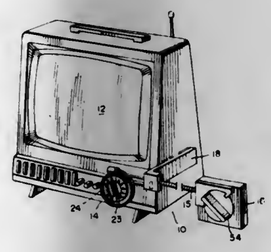


4,114,098

MECHANICAL CHANNEL SELECTOR DEVICE

Donald J. Booty, Frankfort, Ill., assignor to Feldmar Products, Inc., Skokie, Ill.

Filed Sep. 24, 1976, Ser. No. 726,479
Int. Cl.² H04B 1/06
U.S. Cl. 325—390 **8 Claims**



1. A mechanical channel selector device for the remote switching of channels of a television receiver having a housing and a receiver channel shaft, including in combination:

switching means coaxially and adjustably mounted to the television channel receiver shaft;

bracket means mounted to the television receiver housing adjacent said switching means;

cable connector means slidably mounted to the television receiver housing by said bracket means and attached to said switching means, said cable connector means including a cable member positioned within a sleeve member, said sleeve member adapted to be engaged by said bracket means to fixedly anchor said sleeve member, with said bracket means providing alignment of said connector means with said switching means to permit the axial movement of said cable member therein; and

control means operatively connected by said cable connector means to said switching means said control means being rotatable between a first at rest position to a second actuated position, said rotational movement of said control means from said first to said second position causing said cable member to axially move therewith and rotate said switching means and the television receiver channel shaft to the next television receiver channel to predeterminely index the same.

4,114,099

ULTRASONIC TELEVISION REMOTE CONTROL SYSTEM

Harry Hollander, P. O. Box 21, Braeside, Ontario, Canada

Filed Dec. 16, 1976, Ser. No. 751,181
Claims priority, application Canada, Apr. 1, 1976, 249238
Int. Cl.² H04B 7/00
U.S. Cl. 325—392 **25 Claims**

1. An ultrasonic remote control system comprising:

(a) means for receiving a pulse modulated continuous wave ultrasonic signal at a first predetermined frequency, each pulse being immediately followed by a continuous wave ultrasonic signal at a second predetermined frequency which has amplitude such as to mask echoes of the first predetermined frequency at the receiving means, the pulses being representative of transmitted data,

(b) means to determine whether the received signal is above or below the frequency of a reference frequency,

(c) means for recognizing a change in input frequency with respect to the reference frequency,

(d) means for counting said changes, determining the values of the data represented and providing a parallel coded representative of said value,

(e) in which said pulses comprise the data signal,

(f) counting means for determining the data represented by the pulses of the data signal and for providing a coded address signal representative of the values of the data represented by said pulses,

(g) means for generating clock pulses upon the reception of the data signal and for applying the clock pulses to the counting means for operating the counting means at particular times, and

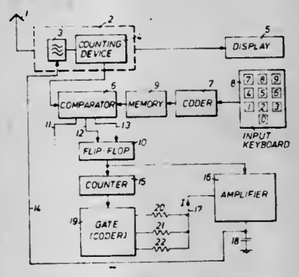
(h) means for enabling the counting means upon the reception of data.

4,114,100

RAPID TUNING CIRCUIT FOR HIGH FREQUENCY RECEIVERS

Otto Klank, Arpke, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 8, 1977, Ser. No. 814,103
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632025
Int. Cl.² H04B 1/16
U.S. Cl. 325—453 **11 Claims**



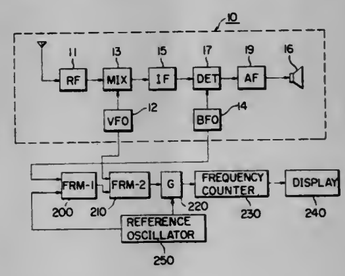
1. In a tuning circuit for a high frequency receiver, which circuit includes a voltage controllable superheterodyne oscillator arranged to receive a control voltage and to produce an oscillation whose frequency is determined by the value of the control voltage and determines the broadcast frequency to which the receiver is tuned, a counter connected to sense the frequency of the oscillations being generated by the oscillator and to produce therefrom a count state in the form of representations of the digits of a first decimal number identifying the broadcast frequency to which the receiver is currently tuned, input means for generating representations of the digits of a second decimal number identifying the broadcast frequency to which it is desired to tune the receiver, and a comparison circuit for comparing the decimal number representations being produced by the counter and the input means in order to vary the control voltage in a direction to cause those two number representations to coincide, the comparison circuit including a comparator capable of comparing the representations of one digit of each of two numbers and having two inputs connected, respectively, to the counter and to the input means, the comparator being arranged to receive, at one of its inputs, each digit representation produced by the counter, starting with the most significant digit, and, at the other of its inputs, simultaneously therewith each digit representation of corresponding significance generated by the input means, the comparator including a first output providing a signal when the digit representations at its inputs are identical, a second output providing a signal when the digit representation at its one input represents a value larger than that of the digit representation at its other input, and a third output providing a signal when the digit representation at its one input represents a value smaller than that of the digit representation at its other input, the improvement comprising: tuning voltage adjustment means connected to said comparator outputs and responsive to the number of sequences of termination of a signal at one of said second and third outputs and subsequent initiation of a signal at the other of said second and third outputs for varying the control voltage at a rate inversely proportional to such number of sequences.

4,114,101

DIGITAL FREQUENCY DISPLAY DEVICE

Tadao Sekiguchi, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1977, Ser. No. 767,832
Int. Cl.² H04B 1/26
U.S. Cl. 325—455 **9 Claims**



1. A digital frequency display device for displaying digits representative of the operating frequency of a communication apparatus comprising:

a reference frequency oscillator;

a first frequency mixer for mixing the output frequencies of a first oscillator of the communication apparatus and of said reference frequency oscillator;

a second frequency mixer for mixing the output frequency of a second oscillator of the communication apparatus and the output frequency from said first frequency mixer to produce a frequency corresponding to the frequency to be displayed but shifted by the reference frequency;

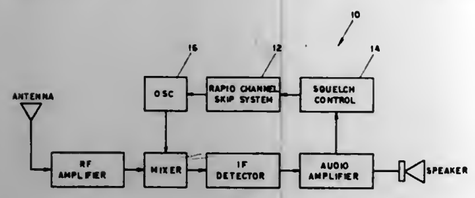
a frequency counter including correcting means for eliminating said shifted frequency component for counting the output frequency from said second frequency mixer; and

display means connected to said frequency counter for displaying digits representative of the operating frequency.

4,114,102
RADIO CHANNEL SKIP SYSTEM

Quentin S. Denzene, Waseca, Minn., assignor to E. F. Johnson Company, Waseca, Minn.

Filed Dec. 23, 1976, Ser. No. 753,684
Int. Cl.[2] H04B *1/32*
U.S. Cl. 325—470 30 Claims



1. Rapid channel skip system for use in a radio receiver and connected in said receiver between a squelch control and an oscillator comprising

(a) manual-scan means having a manual mode of operation and a scan mode of operation;

(b) clock oscillator means connected to said manual-scan means;

(c) means connecting said clock oscillator means to said squelch control of said radio receiver;

(d) counter means connected to said clock means and having a plurality of outputs, each of said outputs corresponding to an individual channel of a predetermined frequency;

(e) skip oscillator means connected to said counter means;

(f) plurality of first logic means having two inputs, one of said inputs of each of said first logic means connected to each of said plurality of outputs of said counter;

(g) channel skipping means connected between said manual-scan means and the other of said inputs of each of said first logic means;

(h) plurality of memory means having two inputs, one of said inputs of each of said memory means connected to each output of said plurality of first logic means;

(i) reset means connected to the other of said inputs of each of said memory means;

(j) plurality of second logic means having two inputs, one of said inputs of each of said second logic means connected to the output of said memory means and the other of said inputs of each of said plurality of second logic means connected to each respective output of said plurality of outputs of said counter;

(k) first plurality of diodes connected between each of the outputs of said plurality of second logic means and said skip oscillator means, and;

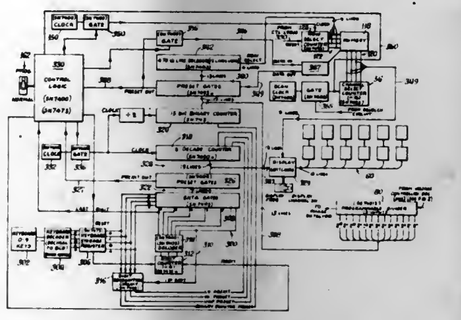
(l) second plurality of diodes respectively connected to each of said counter outputs, said one input of said first logic means, and said other input of said second logic means;

(m) plurality of crystals of predetermined frequencies, one crystal per channel, connected between each of said second plurality of diodes and said oscillator whereby said clock oscillator means drives said counter to cyclically scan and receive seriatim each of said channels in regular sequence and a voltage differential received by said connecting means stops said clock oscillator means to receive the radio frequency signal on a particular channel scanned and whereby activating said channel skipping means while receiving the signal on the particular channel generates a short pulse to set said memory means so that the channel is inhibited and skipped on subsequent scanning cycles by enabling said skip oscillator means for each scanning cycle on said inhibited channel.

4,114,103
CRYSTALLESS SCANNING RADIO RECEIVER

Peter W. Pflasterer, Oak Ridge, Tenn., assignor to Masco Corporation of Indiana, Taylor, Mich.

Continuation-in-part of Ser. No. 586,178, Jun. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 450,983, Mar. 14, 1975, Pat. No. 3,961,261. This application May 28, 1976, Ser. No. 690,881
Int. Cl.[2] H04B *1/32, 1/06*
U.S. Cl. 325—470 15 Claims



1. A receiver for scanning a plurality of channels of predetermined radio frequency channels and selecting one channel having a radio frequency signal thereon said receiver comprising:

an RF section including at least one RF amplifier and an associated mixer coupled to said amplifier;

means for generating one of a plurality of beating signals of preselected frequency for application to said mixer to tune a received channel signal and provide an intermediate signal in response to said channel signal;

said beating signal generating means comprising a phase-locked-loop frequency synthesizing means having at least one input thereto, wherein various preselected combinations of signals applied to said input produces said beating signals of preselected frequencies at the output of said generating means;

programmable memory means connected to said input for storing said various preselected combinations of signals at predetermined addresses;

means for programming said memory means, said programming means including numerical keyboard means for manually and successively entering said various preselected combinations of signals into said programming means in decimal form, conversion means for converting said various preselected combinations of signals from decimal form into binary form, storage means for entering said various preselected combinations of binary signals at predetermined addresses in said memory means;

said conversion means including resettable keyboard storage register means for sequentially storing in serial by digit fashion each of the signals of said various preselected combinations of signals, presettable decade counter means, presettable binary counter means, means for presetting said decade counter to a predetermined value corresponding to a particular frequency in a predetemined band, means for presetting said presettable binary counter to a predetermined binary value upon entry of the first of said signals within said various preselected combination of signals, means for operating said presettable binary counter means and said presettable decade counter means in parallel, means for separately determining the most significant digit contained in said decade counter means upon each successive entry of said various preselected combinations of signals into said programming means, means for comparing the value of said determined most significant digit in said presettable decade counter with the value of a corresponding signal stored in said keyboard storage register means, control means responsive to said comparing means for resetting said resettable keyboard storage register means when said compared most significant digit value equals the value of said signal stored in said keyboard storage register means, said control means terminating operation of said conversion means upon entry of the last signal within said various preselected combination of signals for retaining said preselected combination of signals in said presettable decade counter means and said presettable binary counter means;

means connected to said memory means for selectively addressing said combinations to thereby cause said selected combinations to be applied to said input;

an IF section connected to said mixer and including an IF amplifier for amplifying said intermediate signal;

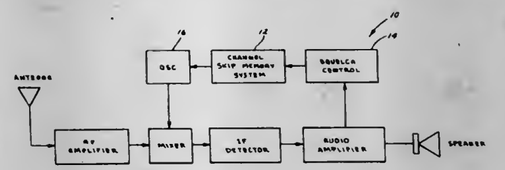
detector means for producing audio signals when said intermediate signal is being received; and,

an audio amplifier connected to said detector means for amplifying said audio signals.

4,114,104
CHANNEL SKIP MEMORY SYSTEM FOR RADIO RECEIVER

Quentin S. Denzene, Waseca, Minn., assignor to E. F. Johnson Company, Waseca, Minn.

Filed Nov. 15, 1976, Ser. No. 741,868
Int. Cl.[2] H04B *1/32*
U.S. Cl. 325—470 29 Claims



1. Channel skip memory system for use in a radio receiver and connected in said receiver between a squelch control and an oscillator comprising

(a) manual-scan means having a manual mode of operation and a scan mode of operation;

(b) clock means connected to said manual-scan means;

(c) means connecting said clock means to said squelch control of said radio receiver;

(d) counter means connected to said clock means and having a plurality of outputs, each of said outputs corresponding to an individual channel of a predetermined frequency;

(e) plurality of first logic means having two inputs, one of said inputs of each of said first logic means connected to each of said plurality of outputs of said counter;

(f) channel skipping means connected to the other of said inputs of each of said first logic means;

(g) plurality of memory means having two inputs, one of said inputs of each of said memory means connected to each output of said plurality of first logic means;

(h) reset means connected between said manual-scan means and the other of said inputs of each of said memory means;

(i) plurality of second logic means having two inputs, one of said inputs of each of said second logic means connected to the output of said memory means and the other of said inputs of each of said plurality of second logic means connected to each respective output of said plurality of outputs of said counter;

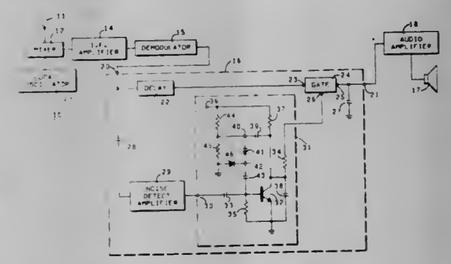
(j) plurality of diodes connected to each of the outputs of said plurality of second logic means, and;

(k) plurality of crystals of predetermined frequencies, one crystal per channel connected between each of said plurality of diodes and said oscillator whereby said clock means drives said counter to cyclically scan and receive seriatim each of said channels in regular sequence and a voltage differential received by said connecting means stops said clock means to receive the radio frequency signal on a particular channel scanned and whereby actuating said channel skipping means while receiving a signal on one of said plurality of channels generates a short pulse to reset said memory means for the particular channel being received so that the channel is skipped on subsequent scanning cycles.

4,114,105
NOISE BLANKER CIRCUIT

Herbert Alan Duncan, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 27, 1977, Ser. No. 810,215
Int. Cl.[2] H04B *1/10*
U.S. Cl. 325—480 10 Claims



1. A noise blanker circuit for elimanating noise in a received signal, comprising:

gate means for receiving a signal with noise pulses on it and selectively passing said received signal in accordance with control signals received by said gate means;

noise detector means for detecting noise pulses having variable rates on said received signal and producing output signals having variable rates in response to the detected noise pulses; and

control means including an amplifier coupled to said noise detector means and said gate means for producing said control signals in response to said output signals, said amplifier having AC negative feedback circuitry including a voltage variable impedance, said control means also including rectifier circuitry for developing a DC voltage related to the rate of said output signals, said DC voltage coupled to said voltage variable impedance for control thereof to substantially reduce the AC gain of said amplifier in response to the rate of said output signals being above a predetermined rate, whereby said gate control signals are produced for blanking noise on said received signals only when noise occurs at a rate below a predetermined rate.

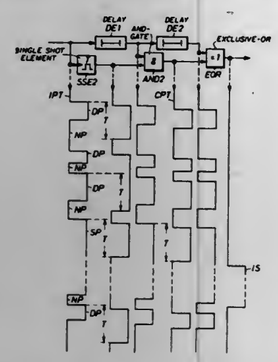
4,114,106
ARRANGEMENT TO INDICATE SIGNALS HAVING A LENGTH EXCEEDING A LIMIT VALUE

Folke Lennart Mårtensson, Huddinge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 28, 1976, Ser. No. 755,035
Claims priority, application Sweden, Jan. 23, 1976, 7600714
Int. Cl.[2] H03K *17/00*
U.S. Cl. 328—111 6 Claims

1. In a system for transmitting data as a train of input pulses including data pulses having durations greater than a given time and disturbing pulses having durations less than the given time, apparatus for indicating the reception of each data pulse and the suppression of any disturbing pulses comprising: control pulse generating means for generating a train of control pulses, said control pulse generating means including means responsive to the leading edge of an input pulse of the input pulse train to start the generation of a control pulse and means responsive to the trailing edge of said input pulse in the input pulse train to terminate the control pulse if the time between

the leading and trailing edges of said input pulse is less than said given time and otherwise terminating the control pulse said given time after the start of its generation; and sampling means coincidently responsive to the train of control pulses



and input pulses for only emitting an output pulse when at least a portion of an input pulse is present during the absence of a control pulse, each of said output pulses indicating the reception of an input pulse.

4,114,107

REMOTELY FED INTERMEDIATE AMPLIFIER FOR COMMUNICATION LINES

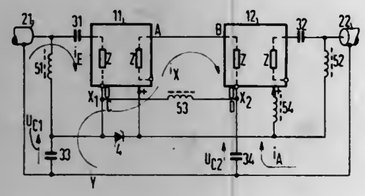
Helmut Bauch, Starnberg; Karl Heinz Möhrmann, and Frithjof Koppehele, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 11, 1977, Ser. No. 795,706

Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623412

Int. Cl.² H03F *3/60*

U.S. Cl. 330—56 **12 Claims**



1. A remotely-fed intermediate amplifier, especially for coaxial communication lines in which said amplifier is arranged between an input line and an output line which have their outer conductors electrically connected together and said intermediate amplifier, said outer conductors and a supply voltage connection have the same alternating voltage reference potential and are capacitively connected, and wherein said amplifier comprises at least two sub-partial amplifiers (11, 12), having first and second input terminals, a pair of capacitors (33, 34) each connected with one side to said outer conductors, a first one of said pair of capacitors having its other side connected to the first input terminal of a first one of said pair of partial amplifiers, a second one of said pair of capacitors having its other side connected to the first input terminal of a second one of said pair of partial amplifiers, and said first and second input terminals (0, +) of said two sub-partial amplifiers (11,12) decoupled from each other relative to high frequency currents.

4,114,108

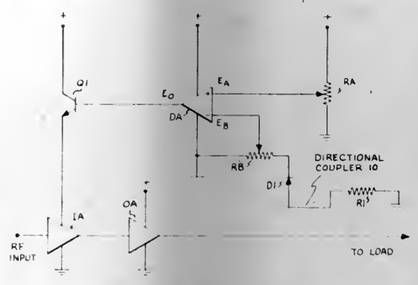
OVERDRIVE PROTECTION CIRCUIT

Wayne J. Faulkenberry, and Henry W. Riviere, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed May 19, 1977, Ser. No. 798,655

Int. Cl.² H03F *21/00*

U.S. Cl. 330—207 P **6 Claims**



1. An overdrive protection circuit for a radio transmitter or the like having a radio frequency amplifier circuit with an input, a control terminal, and an output, said protection circuit comprising:

a. means for sensing the magnitude of radio frequency power produced at said radio frequency amplifier output and producing a first voltage whose magnitude is related to the magnitude of radio frequency power;

b. means for deriving a predetermined part of said first voltage;

c. means for producing a reference voltage;

d. means for deriving a predetermined part of said reference voltage;

e. means for comparing said predetermined part of said first voltage with said predetermined part of said reference voltage and producing a control signal whose magnitude varies as a function of said compared predetermined parts within a safe predetermined range, and whose magnitude is limited to a predetermined safe value outside said safe predetermined range;

f. and means connecting said comparing means to said control terminal of said radio frequency amplifier circuit for applying said control signal to said control terminal and controlling the power produced by said radio frequency amplifier circuit as a function of the magnitude of said control signal.

4,114,109

AMPLIFYING CIRCUIT

Armando Campioni, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Rivalta (Turin), Italy

Division of Ser. No. 671,645, Mar. 29, 1976. This application May 3, 1977, Ser. No. 793,344

Claims priority, application Italy, Apr. 9, 1975, 67907 A/75; May 19, 1975, 68285 A/75

Int. Cl.² H03F *3/26*

U.S. Cl. 330—267 **6 Claims**

1. A large bandwidth amplifier capable of amplifying a signal having both a d.c. component and an a.c. component, for providing voltages for driving a user device whose impedance varies with frequency, comprising:

first and second amplifier elements, such as transistors, connected in a complementary symmetrical configuration;

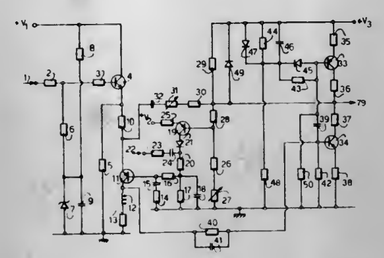
said amplifier elements each having an output electrode, a control electrode, and a common electrode;

a first constant impedance means connecting one of said common electrodes to a source of supply voltage;

a second constant impedance means connecting the other of said common electrodes to a reference potential;

means for connecting said output electrodes of said first and second amplifier elements together and to the output terminal of said large bandwidth amplifier;

means for feeding a signal having both a d.c. and an a.c. component to the amplifier directly to the control electrode of said first amplifier element;



a coupling capacitor connected to said control electrode of said first amplifier element and to said control electrode of said second amplifier element, whereby said second amplifier control electrode receives only the a.c. component of said signal; and

means connecting the control electrode of said second amplifier element to a source of constant biasing potential.

4,114,110

FREQUENCY SYNTHESIZER

Edward J. Nossen, Cherry Hill, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 1, 1977, Ser. No. 856,448

Int. Cl.² H03B *3/04*

U.S. Cl. 331—2 **10 Claims**



1. A frequency synthesizer comprising a first phase lock loop including first voltage-controlled oscillator means, first phase detector means coupled to clock means, a divide by N counter coupled between the output of the first voltage-controlled oscillator means and the first phase detector means, the value of N being used for coarse frequency selection, and first low pass filter means for coupling an output signal from the first phase detector means to control the frequency of the synthesized output signal from the first voltage-controlled oscillator means;

a second phase lock loop including a second voltage-controlled oscillator means, a phase modulator means coupled to the output of the second voltage-controlled oscillator means, second phase detector means coupled to an output of the phase modulator means and to clock means, and second low pass filter means for coupling an output signal from the second phase detector means to control the frequency of the second voltage-controlled oscillator means, said second phase lock loop further including an arithmetic synthesizer for fine frequency selection with its output supplied to said phase modulator means; and

loop coupling means for coupling a signal derived from the output of said second voltage-controlled oscillator means to the first phase detector means of the first phase lock loop.

4,114,111

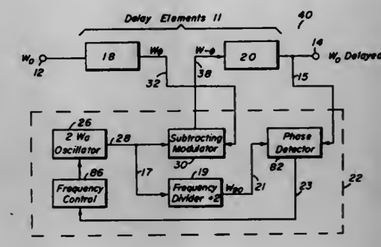
CONSTANT PHASE DELAY NETWORK HAVING A COHERENT REFERENCE

Paul N. Winters, P.O. Box 327, Trumann, Ark. 72472

Filed May 23, 1977, Ser. No. 799,445

Int. Cl.² H03B *3/04*; H04B *3/36*

U.S. Cl. 331—23 **10 Claims**



1. A method of maintaining a substantially constant phase relationship between transmitted energy at input and output terminals of an energy transmission network having energy storing delay elements producing a change in phase of the transmitted energy with respect to an input frequency thereof, including the steps of: dividing the energy storing delay elements into two separate portions respectively producing equal changes in phase of the transmitted energy; passing the transmitted energy from said input terminal through one of said divided delay portions to phase shift the transmitted energy; locking an oscillator at a reference phase angle to the input frequency, said oscillator operating at twice the input frequency; subtracting the input frequency of the transmitted energy passed through said one of the divided delay portions from the oscillator frequency at said reference phase angle to reverse the phase shift of the transmitted energy passed through said one of the divided delay portions, and passing the energy resulting from said subtracting step through the other of said divided delay portions to said output terminal whereby the phase shift effected by the said other of the divided delay portions produces a net change in phase substantially equal to zero.

4,114,112

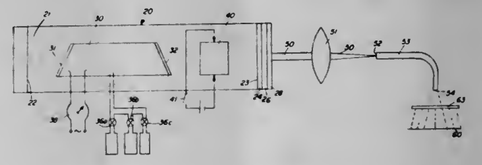
APPARATUS AND METHOD FOR EFFICIENT SYNTHESIS OF LASER LIGHT

Max Epstein, Highland Park; Michel E. Marhic, Evanston, and Samuel E. Schacham, Chicago, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Dec. 22, 1976, Ser. No. 753,292

Int. Cl.² H01S *3/10*

U.S. Cl. 331—94.5 C **17 Claims**



1. Apparatus for transmitting laser radiation characterized by three discrete wavelengths corresponding to red, blue, and green light through a conductive medium without substantial competition among said discrete wavelengths, said apparatus comprising

(a) a laser simultaneously emitting three discrete wavelengths of radiation corresponding to red, blue and green light, and including an optical resonant cavity and an optical axis,

(b) three filter means, each said filter means being differen-

tially transmissive with respect to a discrete wavelength of radiation corresponding to red, blue and green light respectively,

(c) means for successively interposing and removing each of said filter means with respect to said optical axis, thereby to generate a laser beam characterized by a succession of three discrete wavelengths, and

(d) means for focusing the laser beam generated by said laser to impinge upon said conductive medium for transmission therethrough.

4,114,113

LASER AND ITS METHOD OF OPERATION

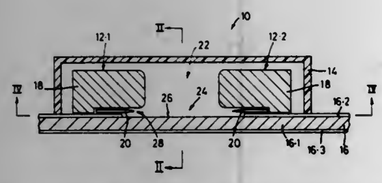
Victor Haim Hasson, and Hubertus Michael von Bergmann, both of Pretoria, South Africa, assignors to The South African Inventions Development Corporation, South Africa

Filed Jun. 2, 1976, Ser. No. 692,085

Claims priority, application South Africa, Jun. 3, 1975, 75/3563

Int. Cl.² H01S *3/00*

U.S. Cl. 331—94.5 G **24 Claims**



1. In a transversely excited gas laser which includes two main discharge electrodes that are rounded to generate a quasi-uniform electric field such that a lasing glow discharge occurs between them and are spaced apart to define between them a lasing gap; two trigger discharge electrodes, at least one of which is sharpened so that a corona discharge occurs between the two trigger discharge electrodes, the trigger discharge electrodes being in close proximity to the lasing gap and being spaced apart to define a trigger discharge gap; a means for immersing the main discharge electrodes and the trigger discharge electrodes in a gas; and connecting means for electrically connecting the main discharge electrodes and the trigger discharge electrodes to a high voltage pulse generating means; the improvements comprising:

each of the two trigger electrodes being directly electrically connected to a different one of the main discharge electrodes;

the breakdown voltage of the trigger electrodes being less than that of the main electrodes; and

the impedance between the trigger electrodes when a trigger corona discharge occurs between them being greater than the impedance between the main electrodes when a lasing glow discharge occurs between the said main discharge electrodes.

4,114,114

APPARATUS AND METHOD FOR INITIATING ELECTRICAL DISCHARGE IN A LASER

Robert J. Pressley, Cupertino, and Theodore S. Fahlen, San Jose, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Mar. 3, 1977, Ser. No. 773,826

Int. Cl.² H01S *3/097*

U.S. Cl. 331—94.5 PE **7 Claims**

1. High power gas transport laser apparatus comprising

a pair of juxtaposed sections, each section comprising

a channel defined by top and bottom walls and side walls,

a gas mixture comprising carbon dioxide in said channel,

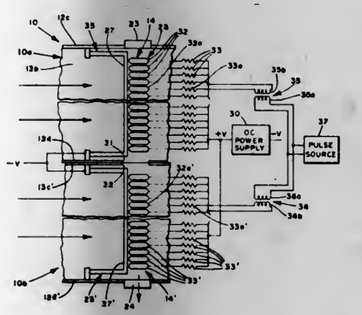
means for moving said gas mixture in one direction through said channel,

electrodes for producing an electric discharge in said gas mixture transversely of the direction of gas flow comprising

a tubular cathode between said top and bottom walls and extending in a second direction transversely of said one direction, and

an anode coextensive with said cathode and comprising a plurality of electrically conductive pads electrically insulated from each other and arranged in a row extending in said second direction, said anode being vertically spaced from said cathode and defining therebetween a discharge zone,

said sections being disposed with a side wall of one channel adjacent to a side wall of the other with the other side



walls remotely spaced apart, said rows of anode pads being in alignment,

said adjacent side walls having optical windows therein aligned with each other and with the discharge zone in each of said channels,

an optical resonant cavity comprising mirrors adjacent to said other side walls, respectively, and optically aligned with each other and with said windows for reflecting a beam of coherent light therebetween and through the windows,

a source of DC voltage connected across said anodes and cathodes, and

means for applying at least one pulse of energy simultaneously to one of said electrodes in each section while the cathode and anodes are biased by said DC source whereby to initiate said discharge simultaneously in both channels.

4,114,115

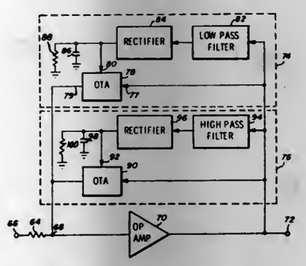
COMPANDOR APPARATUS

Thomas R. Minnis, Mountain View, Calif., assignor to California Microwave, Inc., Sunnyvale, Calif.

Filed Nov. 4, 1976, Ser. No. 738,835

Int. Cl.² H04B *1/64*

U.S. Cl. 333—14 **18 Claims**



1. Compandor apparatus comprising:

a signal transmission medium having a particular dynamic range;

compressor means coupled to one end of said medium for compressing the dynamic range of an input signal to be transmitted over said medium and including,

first gain control means for generating a first gain control signal proportional to the amplitude of said input signal over a first band of input signal frequencies, said first gain control signal having a first time constant,

second gain control means for generating a second gain control signal proportional to the amplitude of said input signal over a second band of input signal frequencies, said second gain control signal having a second time constant different than said first time constant, and

first amplifier means responsive to said first and second gain control signals and operative to compress the dynamic range of said input signal in accordance therewith to develop a compressed signal; and

expandor means coupled to the other end of said medium for expanding the dynamic range of said compressed signal and including,

third gain control means for receiving said compressed signal and for generating a third gain control signal proportional to the amplitude of said compressed signal over said first band of input signal frequencies, said third gain control signal having a third time constant substantially that of said first time constant,

fourth gain control means for receiving said compressed signal and for generating a fourth gain control signal proportional to the amplitude of said compressed signal over said second band of input signal frequencies, said fourth gain control signal having a fourth time constant substantially that of said second time constant,

second amplifier means responsive to said third and fourth gain control signals and operative to expand the dynamic range of said compressed signal to substantially that of said input signal.

4,114,116

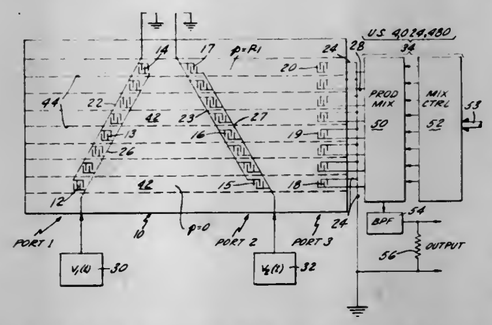
TWO-DIMENSIONAL SURFACE ACOUSTIC WAVE SIGNAL PROCESSOR

Thomas M. Reeder, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 1, 1977, Ser. No. 820,474

Int. Cl.² H03H *9/26, 9/30, 9/32*; H01L *41/10*

U.S. Cl. 333—30 R **5 Claims**



1. A surface acoustic wave signal processing module comprising:

a piezoelectric substrate having major surface; and

metallization on said major surface disposed to provide a plurality of acoustoelectrical transducers on the surface of said substrate, each of said acoustoelectric transducers being disposd in a corresponding one of a plurality of lines parallel with the preferred direction of propagation of said substrate, the transducers in each of said lines forming a related one of a corresponding plurality of processing channels, each of said channels having at least three transducers therein, said transducers also disposed in groups to provide processing ports, each port consisting of one transducer in each of the channels, the transducers of at least one of the ports being electrically independent of each other and the transducers of at least one of the ports being electrically interconnected in common with each other, the spacing of the transducers of a first one of the ports with respect to a second one of the ports being different from the spacing of the transducers of said first port with respect to a third one of the ports, each of said transducers oriented for coupling with waves traveling parallel to said preferred direction.

4,114,117

TUNABLE ELECTRICAL FILTER NETWORK

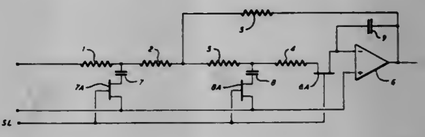
Michael Alan Ford, 7 Islet Park House, Islet Park, Maidenhead, Buckinghamshire, England

Filed Dec. 27, 1976, Ser. No. 754,643

Claims priority, application United Kingdom, Jan. 7, 1976, 00427/76

Int. Cl.² H03H *7/10*

U.S. Cl. 333—70 CR **10 Claims**



1. In a tunable electrical filter the combination of:

a. an RC network for determining the smallest value of time constant and therefore the narrowest bandwidth of the filter, said network comprising a plurality of capacitors;

b. a plurality of electronic switching means each having input means and output means, the output means of a given switching means being connected to a given capacitor to control the switching thereof in and out of the network; and

c. means for varying the ON-time to OFF-time ratio of a train of output pulses connected to the input of each switching means for providing a switching waveform thereat, whereby in operation the time constant of the filter may be varied from said smallest value upwards within a predetermined range by simultaneously switching all the capacitors in and out of the network at a selected ON-time to OFF-time ratio.

4,114,118

ELECTROMECHANICAL FILTER HAVING ENCAPSULATED INPUT AND TERMINAL CIRCUIT CAPACITORS

Güenter Krauss, Neuried, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 15, 1976, Ser. No. 741,848

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1975, 2553709

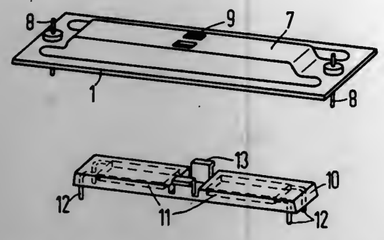
Int. Cl.² H03H *7/10, 7/30*

U.S. Cl. 333—71 **10 Claims**

1. In an electromechanical filter of the type having a metallic base plate, a plurality of mechanically coupled mechanical resonators disposed parallel to each other on the base plate, a pair of electrostrictive transducer elements each associated with a respective end mechanical resonator of the plurality of resonators and having a feeder which is constituted by an insulating bushing disposed on the base plate and a terminal extending through the insulator and connected to a respective electric LC input or output circuit each of which includes a respective capacitor, the improvement therein wherein:

said metallic base plate includes a trough-shaped recess in the area below the resonators; and

said capacitors are jointly encapsulated with insulation material into a capacitor unit, said capacitor unit shaped to



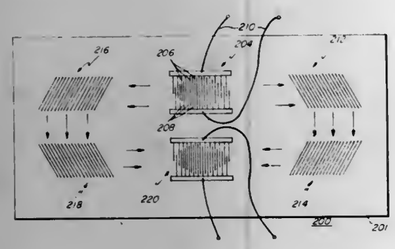
conform to the shape of the recess in the metallic base plate and form-locked mounted therein.

4,114,119

WIDE BAND LOW LOSS ACOUSTIC WAVE DEVICE

Frank Sandy, Lexington, and Manfred B. Schulz, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 24, 1976, Ser. No. 689,398
Int. Cl.² H03H *9/26, 9/02, 9/30*
U.S. Cl. 333—72 **8 Claims**



1. In combination:
means for supporting surface acoustic waves;
input transducer means coupled to said surface acoustic wave supporting means for producing surface acoustic waves in a plurality of directions;
output transducer means coupled to said surface acoustic wave supporting means, said output transducer means being positioned non-colinearly from said input transducer; and
a plurality of reflecting gratings for directing the surface acoustic waves produced at said input transducer means within a predetermined range of frequencies to said output transducer means, each of said reflecting gratings comprising a plurality of substantially parallel grooves, the width of said grooves being determined in accordance with predetermined frequency characteristics.

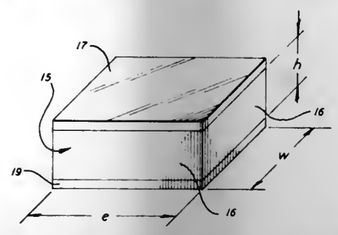
4,114,120

STRIPLINE CAPACITOR

David A. Lupfer, Metuchen, N.J., assignor to Dielectric Laboratories, Inc., Cazenovia, N.Y.

Filed Nov. 23, 1976, Ser. No. 744,237
Int. Cl.² H01P *3/00*; H01G *1/005, 1/14*
U.S. Cl. 333—84 M **21 Claims**

1. In a stripline circuit having a stripline of width *w*, an improved capacitor comprising:
a. a plane parallel dielectric body having upper and lower faces, the width of said dielectric being at least approximately equal to said width *w* of said stripline;
b. a first electrode on the lower face of said dielectric, said electrode completely covering said face and thus also having said width *w*; and



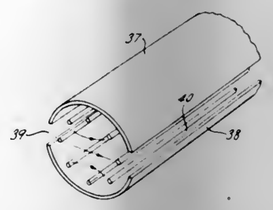
c. a similar second electrode on the upper surface of said dielectric.

4,114,121

APPARATUS AND METHODS FOR LAUNCHING AND SCREENING ELECTROMAGNETIC WAVES IN THE DIPOLE MODE

Harold Everard Monteagle Barlow, Epsom, England, assignor to National Research Development Corporation, London, England

Filed Dec. 30, 1976, Ser. No. 755,844
Claims priority, application United Kingdom, Jan. 16, 1976, 01736/76
Int. Cl.² H01P *1/16, 3/00*
U.S. Cl. 333—95 R **26 Claims**



1. Electromagnetic wave apparatus including a structure capable of supporting electromagnetic waves in the dipole mode, the structure being generally circular in cross section and comprising spaced apart conductors elongated in the general direction of propagation, and a screen of conducting material at least partially enclosing the said structure and positioned outside it in a region where the electromagnetic field is evanescent when the structure supports propagation in the dipole mode.

4,114,122

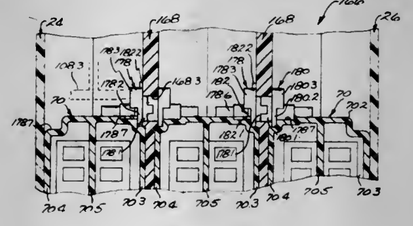
CIRCUIT BREAKER

Aime J. Grenier, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1976, Ser. No. 755,763
Int. Cl.² H01H *75/00, 77/00, 83/00*
U.S. Cl. 335—8 **9 Claims**

1. A multipole circuit breaker comprising a plurality of housing sections secured together in side-by-side relation for forming a plurality of housing chambers between respective pairs of the sections; and, in each chamber, fixed contact means, movable contact means movable between a position engaging the fixed contact means for closing a circuit and a position spaced from the fixed contact means for opening said circuit, means biasing the movable contact means to said open circuit position, an operating handle extending from the chamber to be manually moved between corresponding open and closed circuit positions, linkage means connecting the operating handle to the movable contact means, said linkage means having a tripping member pivotally movable thereon between a first position permitting the movable contact means to be

moved between said open and closed circuit positions in response to manual movement of the operating handle and a second position permitting the movable contact means to move to said open circuit position in response to said biasing means independently of the position of the operating handle, means responsive to conditions in the breaker circuit for moving the tripping member to said second position on the occurrence of selected conditions in said circuit, and at least one multipole actuator member having a cam portion thereon, said actuator member being pivotally mounted on a housing section for movement between a first and a second position, said actuator member having said cam portion disposed to be engaged when in in said first position of the actuator member by movement of said movable contact means to said open circuit position for moving the actuator member to said second position thereof, said actuator member having said cam portion disposed to engage and move the tripping member from its first position to its second position when said actuator member is moved into



said second position of the actuator member; said circuit breaker having openings in the housing sections extending between each pair of adjacent housing chambers, said circuit breaker having pairs of said multipole actuators in respective adjacent housing chambers each having a splined shaft extending into one of said openings and secured in splined engagement with corresponding shaft portion of the other actuator member of said pair in the adjacent housing chamber for mounting the actuator member for said pivotal movement and for connecting the members together for common movement with each other; whereby movement of the movable contact means in one housing chamber to open circuit position on the occurrence of said selected circuit conditions initiates pivotal movement of at least one pair of said multipole actuator members to said second positions of the members for moving the tripping member in an adjacent housing chamber to open the circuit in said adjacent housing chamber as said actuator members are moved into said second positions of the members.

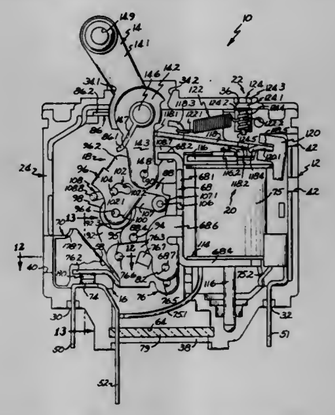
4,114,123

CIRCUIT BREAKER

Aimé J. Grenier, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1976, Ser. No. 755,516
Int. Cl.² H01H *71/74*
U.S. Cl. 335—42 **13 Claims**

1. A circuit breaker comprising a housing, contact means movable in the housing between an open circuit position and a closed circuit position, means biasing the contact means to said open circuit position, operating means extending from the housing to be manually movable between corresponding open and closed circuit positions, linkage means connecting the operating means to the contact means for moving the contact means between said open and closed circuit positions in response to manual movement of the operating means, said linkage means being adapted to be tripped for permitting the contact means to move to said open circuit position in response to said biasing means independently of the position of the operating means, an arm, pivot means mounting the arm for movement from a rest position to an actuating position for tripping the linkage means, means responsive to conditions in the breaker circuit applying a bias to the arm for moving the arm to its actuating position with a force proportional to conditions in the circuit, a calibrating member mounted on the housing for free rotation around the longitudinal axis of the member, the calibrating member having threaded portion rotatable therewith extending into the housing, and tension spring means having one end connected to the arm and having its opposite end connected to the threaded portion of the calibrating member so that the longitudinal axis of the spring means extends generally perpendicular to the longitudinal axis



of said member to apply a bias to the arm in a selected direction with a selected moment arm relative to said pivot means for holding the arm in its rest position with a selected counterforce, the tension spring means having said opposite end threadedly engaged with the threaded portion of the calibrating member to be advanced along the axis of said threaded portion in response to rotation of the calibrating member to vary the direction and moment arm with which the spring means applies its bias to the arm for varying said counterforce to calibrate the circuit breaker.

4,114,124

CONVERGENCE APPARATUS WITH VARIABLY MAGNETIZED MAGNETS

Masayoshi Aya, Ibaraki, and Kohji Hiya, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 21, 1977, Ser. No. 808,567
Claims priority, application Japan, Jun. 25, 1976, 51-75690
Int. Cl.² H01F *7/00*
U.S. Cl. 335—212 **1 Claim**



1. A convergence apparatus comprising a pair of four-pole static magnets and a pair of six-pole static magnets mounted rotatably at a neck portion of an inline color CRT having three electron guns arranged in horizontal line laterally in a single line, said pairs of static magnets being arranged in the axial direction of the neck portion, wherein a magnetization density of N poles and that of S poles of at least one of said pair of four-pole static magnets and said pair of six-pole static magnets are made to be different from each other, and in the pair of static magnets of which the magnetization density of N poles

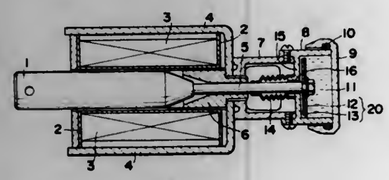
and that of S poles are made to be different from each other the magnetization density of a static magnet which lies closer to an electron beam exit of said CRT is made to be larger than the magnetization density of the other static magnet.

4,114,125

PLUNGER TYPE SOLENOID

Saburo Komatsu, Odawara, Japan, assignor to O.P.O. Giken Kabushiki Kaisha, Japan

Filed Aug. 17, 1976, Ser. No. 715,193
Claims priority, application Japan, Aug. 18, 1975, 50-099961; Nov. 29, 1975, 50-142639; Dec. 8, 1975, 50-146119
Int. Cl.² H01F *7/08*
U.S. Cl. 335—258 **11 Claims**



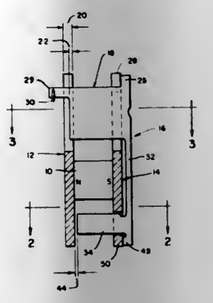
1. A plunger-type solenoid comprising:
a solenoid coil;
a plunger movably positioned within said solenoid coil, said plunger being movable in a first direction toward a first end of said solenoid upon energization of said solenoid coil, and said plunger being movable in a second direction opposite said first direction toward a second end of said solenoid coil upon deenergization of said solenoid coil;
a cylinder fixedly positioned with respect to said solenoid coil adjacent said first end thereof, said cylinder having therein a chamber containing a damping liquid;
a shaft having a first end connected to said plunger and a second end;
a piston fixedly connected to said second end of said shaft, such that said piston moves within said chamber during movement of said plunger in said first and second directions;
said piston having an outer peripheral edge which is separated from the internal surface of said chamber, thus forming an annular space therebetween, such that during movement of said piston within said chamber liquid is forced through said space in quantities inversely proportional to the degree of resistance to movement of said piston and plunger in said first and second directions; and
said piston comprising a first substantially planar disc-shaped element formed of a rigid and inflexible material, said first disc-shaped element having a first diameter, and a second substantially planar disc-shaped element formed of a flexible material in abutting contact with said first disc-shaped element, said second disc-shaped element having a second diameter greater than said first diameter, and said first disc-shaped element being positioned closer to said plunger than is said second disc-shaped element, such that upon movement of said plunger in said first direction, said second disc-shaped element is maintained in substantially planar configuration in abutment with said first disc-shaped element, and said space is defined by said second diameter, and such that upon movement of said plunger in said second direction, said second disc-shaped element is deformed by said liquid in a manner such that said annular space is enlarged and is defined by said first diameter, thereby allowing an increased flow of said liquid through said annular space and reducing the resistance to movement of said piston and said plunger in said second direction.

4,114,126

SYSTEM FOR MOUNTING AN ARMATURE

David G. Geis, Chicago, and Ingard B. Hodne, Northbrook, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Jul. 18, 1977, Ser. No. 816,823
Int. Cl.² H01F *7/08*
U.S. Cl. 335—270 **9 Claims**



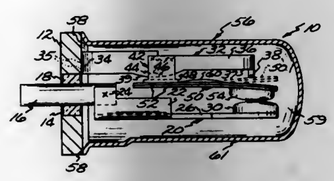
1. An improved arrangement for mounting an armature on a magnetic structure having a source of magnetomotive force with a first magnetic pole and a second magnetic pole for providing a magnetic bias for the arrangement, a first pole structure in magnetic communication with the first magnetic pole, a second pole structure in communication with the second magnetic pole, an improved unitary armature structure including an armature spring and means for biasing the armature spring, wherein the improvement comprises:
a partial overlap of the armature and the first pole structure for producing a magnetic tensile force on the armature tending to pull the armature toward the first pole structure;
a first stop limiting movement of the armature toward the first pole structure;
a magnetic gap on the armature spring biasing means, the gap producing a magnetic tensile force tending to rotate the armature with respect to the pole structures; and
a second stop limiting rotation of the armature against the magnetic tensile force acting on the armature spring biasing means.

4,114,127

CURRENT INTERRUPTING APPARATUS

Radi Pejouhy, Marshfield, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1976, Ser. No. 728,350
Int. Cl.² H01H *61/00*
U.S. Cl. 337—97 **3 Claims**



1. Current interrupting apparatus comprising a housing having an open end, a thermostatic member mounted in the housing, the thermostatic member adapted for movement between first and second positions, movable and stationary contact means mounted within the housing, the movable contact operatively connected to the thermostatic member so that the contacts will be in engagement when the thermostatic member is in the first position and will be out of engagement when the thermostatic member is in the second position, electrical terminals electrically connected to the respective movable and stationary contact means, and an electrically insulative header closing the open end of the housing and maintaining the terminals electrically separated from one another and an atmosphere within the housing essentially consisting of a mixture of argon and helium in which the mixture consists of from 80–95 parts argon and 20–5 parts helium.

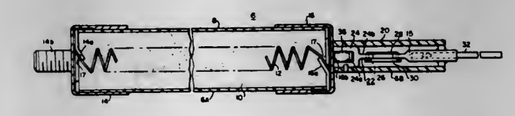
switch blade and in electrical coupling to said movable contact means; and
first and second output conductor means extending, respectively, to electrical contact with said fixed contact and with said first member.

4,114,128

COMPOSITE SECTIONALIZED PROTECTIVE INDICATING-TYPE FUSE

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 519,362, Oct. 30, 1974, abandoned, which is a continuation of Ser. No. 67,175, Aug. 26, 1970, abandoned. This application Oct. 10, 1975, Ser. No. 622,279
Int. Cl.² H01H *71/20*
U.S. Cl. 337—162 **8 Claims**



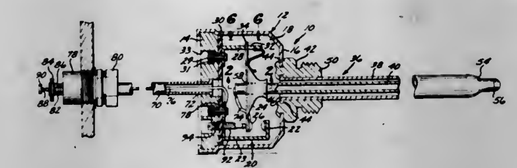
1. A composite dual-acting protective fuse comprising, in combination, means defining a high-current current-limiting completely-enclosed interrupting fuse section and a mechanically-connected low-current expulsion-type interrupting fuse section, said low-current expulsion-type interruptng fuse section including a pull-away indicating fuse-link cable which is completely pulled out of said low-current expulsion-type fuse-section following all fuse operations, whereby on low-current interruption, the low-current expulsion-type interrupting fuse section only need be replaced in a refusing operation and both the high-current and low-current fuse sections fusing simultaneously on high-current interruptions.

4,114,129

THERMALLY RESPONSIVE ACTUATOR

Bruce B. Parsons, Tokyo, Japan, and Denis G. Wolfe, Santa Ana, Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 10, 1977, Ser. No. 758,036
Int. Cl.² H01H *37/48*
U.S. Cl. 337—387 **12 Claims**



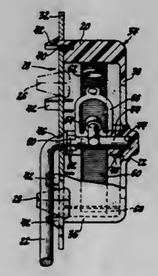
1. A thermally responsive actuator comprising:
a housing;
switch means received within said housing including stationary contact means and a switch blade movable within said housing and carrying movable contact means into and out of engagement with said stationary contact means;
temperature responsive means including first and second coextensive members of dissimilar metals exhibiting a thermoelectric effect and having different coefficients of thermal expansion, one of said members fixedly secured to said housing and distally secured to other of said members, the latter being movably received within said housing;
coupling means within said housing linking the received end of said other member in mechanical coupling to said

4,114,130

FUEL LEVEL SENDER WITH MOLDED PLASTIC CASE

Stephen J. Sutton, Fenton; J. Robert Holen, Flushing, and John E. Creager, Fenton, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1977, Ser. No. 854,711
Int. Cl.² H01L *10/14*
U.S. Cl. 338—33 **1 Claim**



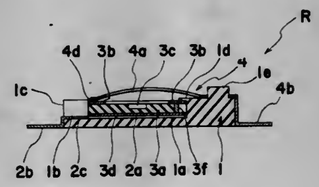
1. A fuel level sender having a float arm pivoted to a housing, the housing comprising a conductive plate and a molded plastic case secured to the conductive plate, a potentiometer within the housing including a wiper element connected to the float arm for movement therewith, a contact member on the float arm adjacent the conductive plate electrically connected with the wiper element, the case including an integrally molded resilient finger having a free end biased toward the conductive plate, a sleeve member integrally formed on the free end of said resilient finger, the said float arm being journalled in the sleeve member so that the contact member on the float arm is urged by the resilient finger into secure electrical contact with the conductive plate thereby electrically connecting the wiper element of the potentiometer with the conductive plate.

4,114,131

VARIABLE RESISTOR

Yoshiyuki Nakatsu, Osaka, and Hideo Nishizawa, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Feb. 14, 1977, Ser. No. 768,618
Claims priority, application Japan, Mar. 2, 1976, 51-22750
Int. Cl.² H01C *10/30*
U.S. Cl. 338—162 **20 Claims**



1. A variable resistor for use in electrical and electronic equipment which comprises a base plate member of electrically insulating material, at least one first stator terminal member incorporated in one surface of said base plate member, a rotor member of electrically insulating material having electrically conductive film means on one surface thereof and electrically

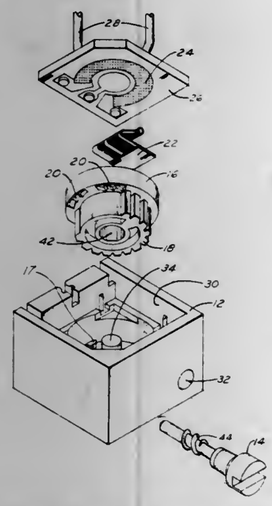
resistant film means on the other surface thereof, said rotor member being rotatably disposed on said first stator terminal member with said conductive film means contacting said first stator terminal member for sliding movement thereon, a second stator terminal member secured to said base plate member for sliding contact with said resistant film means of said rotor member, said resistant film means of said rotor member being electrically connected with said conductive film means of said rotor member.

4,114,132

WORM GEAR POTENTIOMETER RATCHET SYSTEM

Joseph Rodolph DeRouen, Banning, and Lawrence Kucharski, Jr., Sunnymead, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed May 25, 1977, Ser. No. 800,600
Int. Cl.² H01C *10/34*
U.S. Cl. 338—174 **11 Claims**



1. A worm gear actuated potentiometer mounted in a housing comprising:
- a rotatable worm screw having threads and mounted so as to be adjustable without limit in clockwise and counterclockwise directions from outside the housing of the variable potentiometer;
- a rotor having spur gear teeth on less than 360° of its circumference in drivable engagement with said worm screw;
- rack gear teeth mounted to a portion of the circumference of said rotor not occupied by said spur gear teeth;
- stop means to limit the rotation of said rotor to less than 360°; and
- wiper contact spring means for urging the rack gear teeth into engagement with the worm screw and for maintaining collector wiper contact with the resistance element of the worm gear actuated potentiometer.

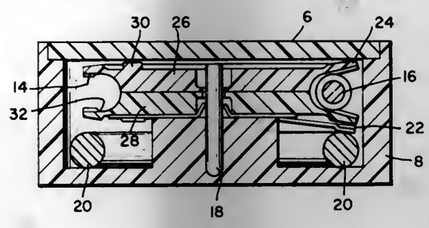
4,114,133

WORM GEAR DRIVE AND RATCHET SYSTEM

Donald Harrison Stephens, Running Springs, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Feb. 16, 1978, Ser. No. 878,191
Int. Cl.² H01C *10/34*
U.S. Cl. 338—174 **10 Claims**

1. A worm gear drive and ratchet system mounted in a housing and having a two-piece, toothed drive wheel comprising:
- identical top and bottom gear halves having at least two locator holes and a center hole in each gear half;
- at least two locator pegs on each of said top gear half and said bottom gear half to be received into said locator holes;
- gear teeth molded into each of said top gear half and said bottom gear half; and



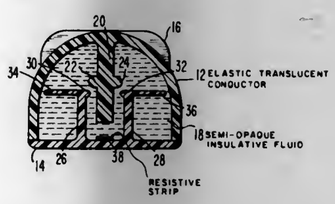
- a mechanical stop molded onto said identical top and bottom gear halves.

4,114,134

POTENTIOMETER

Victor B. Kley, 2211 Byron St., Berkeley, Calif. 94702

Filed Sep. 1, 1976, Ser. No. 719,407
Int. Cl.² H01C *1/02*
U.S. Cl. 338—231 **13 Claims**



1. A potentiometer comprising
- a base member,
- a flexible cover attached to the base member so as to form a closed receptacle therebetween,
- an insulating fluid filling the receptacle,
- a resistive member attached to one of the base member and the top cover, and
- a conductive member attached to the other of the base member and top cover, so that the conductive member and the resistive member touch when the top cover is depressed at a selected point determining the value of resistance thus connected to the conductive member,
- said fluid exerting a pressure on the cover when depressed such that contact between the resistive and conductive members at points spaced from the selected point is prevented.

4,114,135

ACOUSTIC DEVICE

Clarence J. Funk, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 20, 1975, Ser. No. 589,658
Int. Cl.² H04B *11/00*
U.S. Cl. 340—2 **9 Claims**

1. A system for self monitoring of air-water borne noise from an aircraft comprising:
- An acoustic monitoring buoy including;
  - pendent means attached to said acoustic monitoring buoy and extending downwardly therefrom,
  - a plurality of electroacoustic transducers attached to said pendent means to form a phased array to detect predetermined artifact frequencies originating from said aircraft and transmitted through the water,

- communication means effectively connected to said plurality of electroacoustic transducers for transmitting said detected artifact frequencies to said aircraft, and
- positioning means attached to said acoustic monitoring buoy for indicating to the aircraft the location of said acoustic monitoring buoy; and



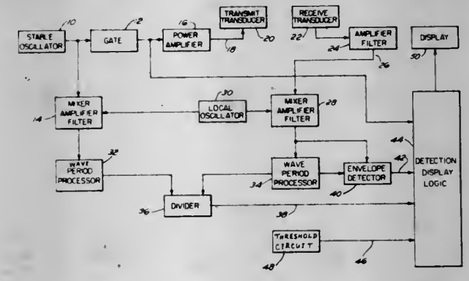
- a plurality of acoustic pinger buoys positioned about and spaced from said acoustic monitoring buoy each having a positioning means similar to that positioning means on said acoustic monitoring buoy for indicating to the aircraft the location of the individual pinger buoy to which it is attached.

4,114,136

DETERMINATION OF VARIATIONS OF WAVE CHARACTERISTICS

John M. D'Albora, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1975, Ser. No. 446,571
Int. Cl.² G01S *9/66*
U.S. Cl. 340—3 R **10 Claims**



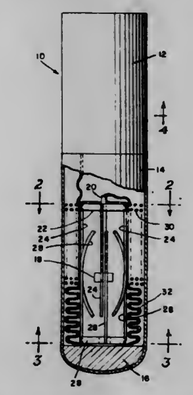
1. A processor for measurement of statistically significant variations of the time period of a volume reverberated signals in the presence of noise in a fluid, comprising:
- a first oscillator for generating signals of relatively high frequency;
- a gating means for gating the output of said first oscillator;
- a first amplifying means for amplifying the gated output of said first oscillator;
- a transmit transducer for transmitting the output of said first amplifying means as transmitted signals for volume reverberation in said fluid;
- a receive transducer for receiving said transmitted signals after being volume reverberated in said fluid;
- an amplifying and filtering means for amplifying and filtering the output of said receive transducer;
- a second oscillator for generating signals of slightly lower frequency than the frequency of the output of said first oscillator;
- a first mixing, amplifying and filtering means for heterodyning the outputs of said first oscillator and said second oscillator;
- a second mixing, amplifying and filtering means for heterodyning the outputs of said amplifying and filtering means and said second oscillator;
- a first wave period processor for measuring the time period of the output of said first mixing, amplifying and filtering means and thus the time period of the output signals of said first oscillator;
- a second wave period processor for measuring the time period of the output of said second mixing, amplifying and filtering means and thus the time period of the received signals;
- a dividing means for comparing the outputs of said first and second time period processors;
- an envelope detector for measuring the amplitude of the received volume reverberated signals, said envelope detector producing an output upon coincidence of the output of second mixing, amplifying and filtering means and the output of second wave period processor, thus measuring the amplitude and the time period of the same received volume reverberated signal;
- a detection display logic means for sorting out the outputs of said envelope detector and said dividing means while the gated output of said first oscillator providing time base reference for said detection display logic means; and
- a display means for displaying the time period variation information and amplitude variation information of said received volume reverberated signals.

4,114,137

DIRECTIONAL SONOBUOY

Russell I. Mason, Doylestown, and John R. Dale, Willow Grove, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1974, Ser. No. 535,332
Int. Cl.² G01V *1/00*
U.S. Cl. 340—85 **2 Claims**

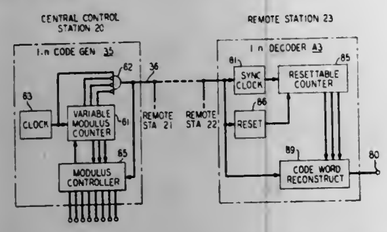


1. A deployable high drag, low noise hydrophone assembly, in combination, comprising:
- a hydro-acoustic transducer formed to be electrically connected to a signal processor;
- a non-porous inflatable globular bag transparent to acoustic energy secured to and centrally enclosing said transducer;
- spreading means opposingly connected to the upper and lower portions of said bag for urging said bag into the globular configuration; and
- filling means having a flapper valve operatively connected to the lower portion of said bag and responsive to the oscillatory motion thereof for filling said bag with water upon deployment.

4,114,138
SELECTIVE CALLING CIRCUIT

Robert Augustus Demers, Marlboro, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 23, 1976, Ser. No. 716,581
Int. Cl.[2] H04Q 9/00
U.S. Cl. 340—147 R 6 Claims



1. An asynchronous telemetry circuit comprising a 1-out-of-*n* (1:*n*) digital code generator including

a generator clock,

a variable modulus counter connected to the generator clock and arranged for counting in response to signals from the generator clock,

means connected to the variable modulus counter for varying the modulus of the variable modulus counter,

means connected to the variable modulus counter and to the generator clock and responsive to the states of the variable modulus counter and to signals from the generator clock for producing at an output of the code generator a repetitious stream of 1:*n* digital code word signals, wherein each different code word includes a different number of bits *n*;

means connected to the output of the code generator for transmitting the digital code word signals from the generator to a 1:*n* decoder; and

the 1:*n* decoder including

a decoder clock connected to an output of the transmitting means for producing decoder clock signals synchronized with received digital code words,

a resettable counter connected to the decoder clock and responsive to the decoder clock signals for stepping through predetermined states,

means connected to the output of the transmitting means responsive to the 1:*n* digital code word signals for producing a signal for resetting the resettable counter, and

means connected to the output of the transmitting means and to the output of the resettable counter and responsive to the repetitious stream of 1:*n* digital code word signals and to the state of the resettable counter for reconstructing predetermined individual digital code words.

4,114,139
SECURITY CONTROLLED INFORMATION EXCHANGE SYSTEM

William Weller Boyd; Robert Joseph Grafe, and Carl Oscar Pingry, III, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

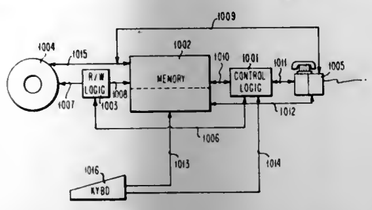
Filed Jan. 25, 1977, Ser. No. 762,376
Int. Cl.[2] H04Q 9/00
U.S. Cl. 340—147 R 13 Claims

1. A method of communicating data between terminals in a system in a selective manner comprising the steps of:

assigning an LUID to each user in said system,

transmitting the LUID of a calling user to a called terminal, and

comparing the LUID of the calling user with an RUID of the called user at the called terminal and if a compare is

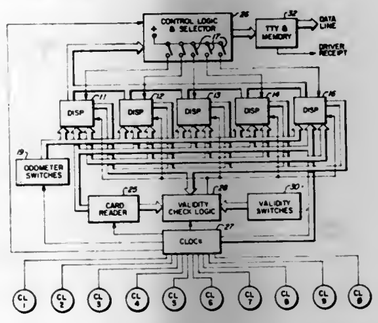


made by the control logic of the terminal, transmitting the LUID of the called user to the calling terminal.

4,114,140
VERIFICATION CHECKING SYSTEM

John Kubina, San Francisco, Calif., assignor to Engineered Systems, Inc., Tempe, Ariz.

Filed Apr. 25, 1977, Ser. No. 789,960
Int. Cl.[2] G06K 5/00; H04Q 3/02
U.S. Cl. 340—149 A 8 Claims



1. A system for providing a verification check of uniquely encoded multi-bit binary words including in combination:

read/write memory means having a plurality of address locations therein, each address location storing a single binary bit;

address control means operated in response to addressing signals and coupled to said memory means for selecting a particular address location in said memory means for writing data into and reading data from said particular address location;

read/write control means coupled to said memory means for controlling the mode of operation of said memory means;

gating circuit means having a plurality of inputs and having outputs coupled with said address control means for supplying said addressing signals thereto;

settable switch means coupled to selected inputs of said gating circuit means for supplying input signals thereto;

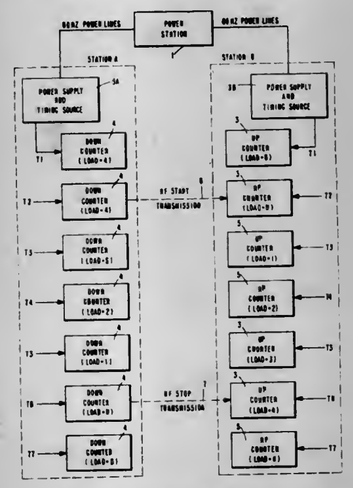
circuit means coupled to others of the inputs of said gating circuit means for supplying input signals thereto; and

selecting means coupled to said gating circuit means for causing the signals appearing on the outputs of said gating circuit means to be selected from the input signals from said settable switch means or the input signals from said circuit means.

4,114,141
DIGITAL COMMUNICATION SYSTEM FOR TRANSMITTING DIGITAL INFORMATION BETWEEN A CENTRAL STATION AND A NUMBER OF REMOTE STATIONS

Brian A. Travis, Sea Bright, N.J., assignor to Datrix Corporation, Westchester, N.Y.

Filed Jan. 14, 1977, Ser. No. 759,774
Int. Cl.[2] H04M 11/04
U.S. Cl. 340—151 62 Claims



1. A communication system having at least two stations for communicating digital information between said stations comprising:

a signal source coupled to all said stations;

reference means connected to said signal source in each of said stations for generating the same time reference signal in each of said stations;

signal generating means in each of said stations for generating a marking signal having a relationship to the time reference signal which is determined by the digital information to be transmitted, wherein the marking signal by itself does not contain the digital information but rather the relationship between the marking signal and the time reference signal identifies the digital information;

signalling means for communicating the marking signal from station to station; and

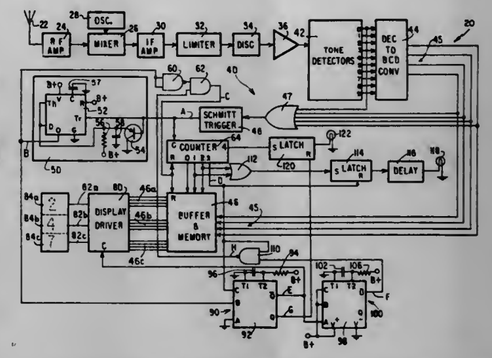
signal evaluating means in each of said stations for evaluating the relationship between the marking signal communicated from another one of said stations and the time reference signal generated in said station to determine the digital information transmitted from said another one of said stations.

4,114,142
DECODER OPERABLE ONLY ON RECEPTION OF PREDETERMINED NUMBER OF WORDS

Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850, and William H. Dittmer, Lexington, Nebr., assignors to Keith H. Wycoff, Lexington, Nebr.

Filed Jul. 24, 1975, Ser. No. 598,587
Int. Cl.[2] H04Q 5/00
U.S. Cl. 340—164 R 7 Claims

1. A decoder responsive to a code consisting of a predetermined number of words having no start and stop components, each of said words lasting for at least a predetermined duration, said decoder comprising memory means having a signal input coupled to receive the words and being operative to store signals corresponding to the words, counting means for simultaneously counting the number of words, circuit means coupled to said counting means and being responsive to the lack of a word in the predetermined duration immediately following said predetermined number of words to produce a release signal, and utilization means coupled to said memory means and to said circuit means and being operative to provide

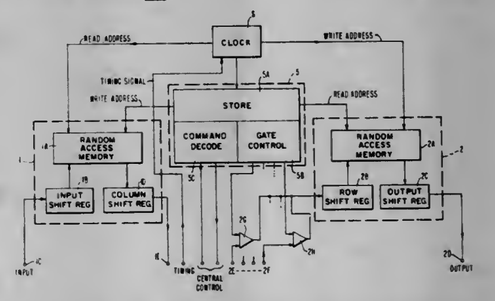


output information from said memory means corresponding to the code only upon receipt of the release signal, whereby said decoder produces output information only upon receipt of exactly the predetermined number of words.

4,114,143
MODULAR SWITCHING SYSTEM

Maurice Karnaugh, Scarborough, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1977, Ser. No. 796,296
Int. Cl.[2] H04Q 3/54; H04M 11/00
U.S. Cl. 340—166 R 10 Claims



1. In a digital switch of the type wherein time division multiplexed information arriving at one of a plurality of inputs is switched through an interconnecting matrix of rows and columns of conductors to one of a plurality of outputs, the improvement comprising:

a conductor matrix part, and

positioned thereon a single part type for each said row conductor of said interconnecting matrix,

said single part type comprising:

an input terminal connected to an input buffer, communication capability with one column of said conductor matrix part,

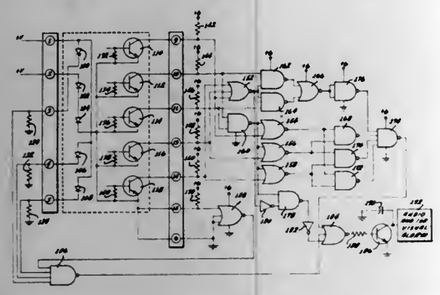
an output terminal connected to an output buffer, and means providing gated communication with all columns of said conductor matrix part and control means associated with said input buffer, said output buffer and said gated communication means to transfer information from one said input terminal to one said output terminal at a specified time.

4,114,144

AUTOMATIC AIR-IN-LINE FLUID DETECTOR

Oscar E. Hyman, Encinitas, Calif., assignor to Imed Corporation, San Diego, Calif.

Filed Aug. 12, 1976, Ser. No. 713,664
Int. Cl.² G08B 21/00
U.S. Cl. 340—632 23 Claims



9. An automatic air-in-line fluid detector for detecting air-in-line fluid detector for detecting the presence of air-in-line for a fluid line containing either a transparent or an opaque fluid, including

first means operatively coupled to the fluid line for detecting air-in-line with the fluid line containing the transparent fluid,

second means operatively coupled to the fluid line for detecting air-in-line with the fluid line containing the opaque fluid, and

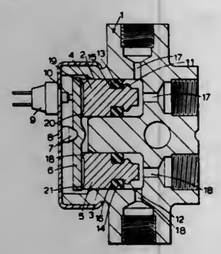
third means operatively coupled to the first and second means and responsive to the fluid line containing the transparent fluid or the opaque fluid and with the first means detecting air-in-line in the fluid line containing the transparent fluid when the third means is responsive to the fluid line containing the transparent fluid and with the second means detecting air-in-line when the third means is responsive to the fluid line containing the opaque fluid.

4,114,145

DUAL HYDRAULIC BRAKING SYSTEM FOR VEHICLES

Glyn Phillip Reginald Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

Filed Jun. 14, 1976, Ser. No. 695,467
Claims priority, application United Kingdom, Jun. 12, 1975, 25169/75; Oct. 7, 1975, 41110/75
Int. Cl.² G08B 21/00
U.S. Cl. 340—626 17 Claims



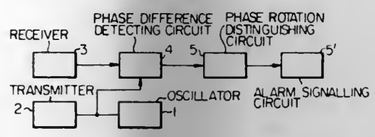
1. A pressure differential warning actuator comprising detector means for detecting when a differential between the pressures of separate brake circuits of an hydraulic braking system exceeds a predetermined value, a housing having separate bore portions and a relatively fixed pivot point therein, said detector means being positioned in said housing, said housing being also provided with ports connected to said separate brake circuits, and indicator means actuated by said detector means when said predetermined value is exceeded, said detector means comprising at least a first piston and a second piston each responsive to pressure in at least one of said brake circuits, said pistons working in respective separate bore portions of said housing, pressure from said separate brake circuits being connected through said ports to said pistons to move said pistons between a neutral position in which said indicator means is rendered inoperative when said differential pressure is less than said predetermined value, and an operative position in which said indicator means is rendered operative when said differential pressure exceeds said predetermined value, and a lever means through which said pistons act and which is adapted to restore said pistons from said operative position to said neutral position only when said differential pressure decreases to a value less than said predetermined value, said lever means comprising a lever adapted to rock about said fixed pivot point, and at least one fulcrum acting between each piston and said lever at least in said operative position and being positioned such that when said pistons are in said operative position said fulcrum on one of said pistons is spaced farther from said fixed pivot point than said fulcrum on another of said pistons.

4,114,146

ULTRASONIC WAVE WATCHING DEVICE OF MOVING OBJECT DETECTING TYPE

Hiromitsu Inoue, Kyoto; Hiroshi Ohashi, and Susumu Katayama, both of Hirakata, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 31, 1976, Ser. No. 719,159
Claims priority, application Japan, Sep. 13, 1975, 50/111114; Sep. 13, 1975, 50/111115; Dec. 15, 1975, 50/149815; Feb. 28, 1976, 51/21467
Int. Cl.² G08B 13/24
U.S. Cl. 340—558 5 Claims



1. An ultrasonic wave watching device of moving object detecting type comprising an ultrasonic wave transmitter, a high frequency oscillator for exciting said transmitter and providing a reference signal of oscillated high frequency, a receiver for receiving reflected ultrasonic wave transmitted by the transmitter and reflected from an object to generate a received wave signal, means for detecting any difference in phase between said received wave signal from said receiver and said reference signal from the oscillator, means for distinguishing a fixed directional phase rotation of said phase difference detected by said phase difference detecting means, an alarm signalling means responsive to an output from said phase rotation distinguishing means, and a correction means responsive to an output from said phase difference detecting means for adjusting at least one of mutual relations in phase and magnitude between said received wave signal and said reference signal.

4,114,147

CODE COMBINATION PROPERTY ALARM SYSTEM

John R. Hile, 115 Mulberry St., Inman, S.C. 29349

Filed Mar. 24, 1977, Ser. No. 780,841
Int. Cl.² G08B 29/00
U.S. Cl. 340—528 10 Claims

1. A property protection alarm system for protecting property against unauthorized intrusion and the like comprising:

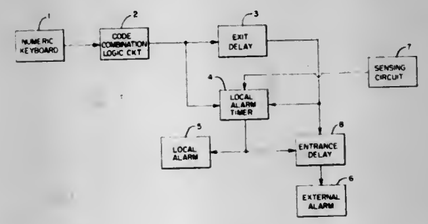
sensing means for sensing an alarm condition such as any intrusion of the property, said sensing means including means for detecting movement through normal entrance to the property;

a local audible alarm;

an external alarm;

alarm energization means responsive to said sensing means for energizing said local audible alarm for a given alarm interval upon the occurrence of any intrusion of the property including an authorized intrusion through said normal entrance and energizing said external alarm only after a predetermined entrance delay period;

arming means connected to said alarm energization means for enabling an authorized user of said alarm system to arm and disarm said alarm energization means, said arming means including a numeric keyboard having a plurality of keys and a code combination logic circuit connected thereto for arming and disarming said alarm energization means in response to a predetermined numeric code entered in said numeric keyboard by actuation of selected ones of said keys, said code combination logic circuit including code timing means responsive to the actuation of the first of said selected ones of said keys associated with the predetermined numeric code for establishing a



predetermined code interval in which all of the remaining ones of said selected ones of said keys associated with the predetermined numeric code must be actuated in order to arm or disarm said alarm energization means;

said alarm energization means including exit delay means actuated by said arming means for delaying only the arming of said alarm energization means by said arming means for a predetermined exit delay period to permit the authorized user of said alarm system to leave the property through said normal entrance without energizing either said local audible alarm or said external alarm, said alarm energization means further including entrance delay means connected to said external alarm for delaying energization of said external alarm for the predetermined entrance delay period to permit the authorized user to enter the property through said normal entrance without energizing said external alarm and disarm said alarm system by actuating said arming means, said local audible alarm being immediately energized for a given alarm interval in response to any intrusion of the property including an authorized intrusion through said normal entrance.

4,114,148

DISPLAY PANEL WITH PHOSPHORS

Thomas C. Maloney, Bernardsville, N.J., and Rudolph A. Cola, Malvern, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 12, 1976, Ser. No. 685,526
Int. Cl.² H01J 17/48
U.S. Cl. 340—343 12 Claims

1. A display panel comprising

a gas-filled envelope,

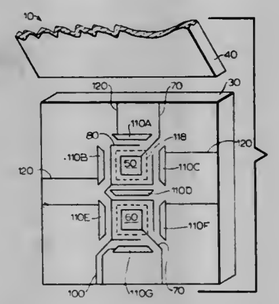
a glow cathode in said envelope,

a first anode in operative relation with said glow cathode and positioned to form a first current flow path therewith,

means for connecting said first anode and said glow cathode in said first current flow path whereby electrical potentials can be applied therebetween to cause said cathode to exhibit cathode glow,

a second anode in operative relation with said glow cathode and positioned to form a second current flow path therewith,

means for connecting said second anode and said glow cathode in said second current flow path whereby electrical potentials can be connected therebetween and current



flow can be directed preferentially between said cathode and said second anode, and

phosphor material adjacent to said second anode and generating light output when current flows between said cathode and said second anode,

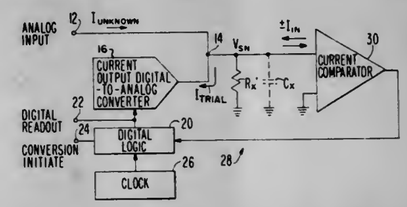
said cathode, said first anode and said second anode being generally aligned along said first and second current flow paths.

4,114,149

CURRENT COMPARATOR FOR AN IMPROVED ANALOG-TO-DIGITAL CONVERTER METHOD AND APPARATUS

Larry J. Kendall, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jul. 19, 1976, Ser. No. 706,668
Int. Cl.² H03K 13/03
U.S. Cl. 340—347 AD 2 Claims



1. An improved analog-to-digital converter of the type possessing a summing node, an analog signal input circuit for providing a to-be-measured input current to said summing node, and digital-to-analog converter circuit for providing a series of trial currents to said summing node, each trial current for a predetermined period of time and each trial current related to a digital number wherein the improvement comprises:

a sensing circuit connected to said summing node for sensing the polarity of net current at said summing node at a selected time within each said predetermined period, wherein said sensing circuit includes low impedance input circuit connected to said summing node for providing a single-ended control voltage in response to bipolar input currents at said summing node, said input means including first and second current sources each of which provides a constant current of magnitude I_1, and first and second NPN type transistors each possessing a respective emitter, collector and base, said first and second constant current sources connected respectively to said first and second

collectors, said second collector and said first and second bases connected together, said first emitter forming said single ended control voltage provided at said first collector;

a source of selected reference voltage; and

a differential amplifier circuit possessing a first input connected to said single ended control voltage, a second node connected to said reference voltage, a current feedback node connected to said summing node, and first and second low impedance differential output voltage nodes for providing an input current nulling feedback current at said summing node and a selected one of two stable differential voltage relationships at said output nodes when said input current is of one polarity and the other stable differential voltage relationship when said input current is of the other polarity, said differential amplifier including third and fourth current sources each of which provides a constant current of magnitude I_2; a fifth current source which provides a constant current of magnitude I_1; a source of selected negative supply voltage; third and fourth NPN type transistors each possessing a respective emitter, collector and base, said fifth current source connected to the interconnection of said third base, said fourth base and said fourth collector, said third and fourth emitters connected to said selected negative supply voltage; fifth and sixth PNP type transistors each possessing a respective emitter, collector and base, said third and fourth constant current sources connected respectively to said fifth and sixth emitters forming respectively said first and second low impedance differential output voltage nodes, said fifth collector connected to said third collector forming said current feedback node, said sixth collector connected to said fourth collector, said fifth and sixth bases forming respectively said first and second inputs; and

a differential current circuit connected to said first and second output nodes for clamping said selected one of two stable differential voltage relationships at said output nodes when said input current is of one polarity and said other stable differential voltage relationship when said input current is of the other polarity; wherein said differential current means includes a source of selected positive supply voltage; and seventh and eighth NPN type transistors each possessing a respective emitter, collector and base, said seventh and eighth collectors connected to said selected positive supply voltage, said seventh and eighth bases connected respectively to said first and second differential voltage output nodes, said seventh emitter cross-connected to said second output node and said eighth emitter cross-connected to said first output node.

4,114,150

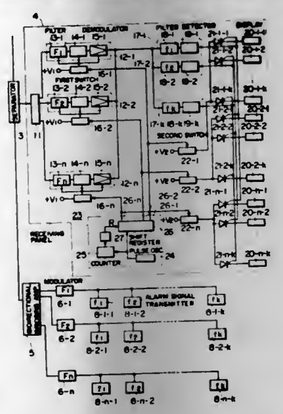
ALARM SYSTEM

Shunji Yamazaki, Yokohama, and Hajime Masuda, Tokyo, both of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Sep. 13, 1977, Ser. No. 833,072
Int. Cl.² G08B *1/08*
U.S. Cl. 340—531 **6 Claims**

1. In an alarm system for subscribers having locations in group units and utilizing a bidirectional wired television system, said alarm system comprising a plurality of alarm signal transmitters located at the subscribers locations, said signal transmitters generating low frequency signals of frequencies common to respective of said group units, said frequencies being different for respective subscribers in respective group units, each of said transmitters being provided for each said subscriber; modulators for respective of said group units for modulating the low frequency signals from said alarm signal transmitters with different high frequency carrier signals; and an alarm signal receiving panel coupled to said modulators for receiving said modulated signals, said receiving panel including a plurality of demodulators for respective of said group units for demodulating said modulated signals through frequency selection in response to said high frequency carrier signals utilized for modulation, a plurality of detectors corresponding to the subscribers in each of said group units, said detectors being adapted to receive in common the output of each of said demodulators to detect the same through frequency selection in response to said low frequency signals, and a plurality of display means connected to said detectors and responsive to the presence or absence of the output of said detectors to display the locations of the alarm signal transmitters which have generated the low frequency signals or have stopped the generation of the low frequency signals, the improvement wherein:

(a) said display means includes a plurality of display devices provided one for each of said subscribers, said display devices being formed into similar groups to correspond to said subscribers, the display devices in each of said groups being connected to one of said detectors through a plurality of semiconductor control devices to display the locations of the corresponding ones of said subscribers; and



(b) said receiving panel further includes a plurality of first switching means for switching said demodulators to energized or deenergized condition, a plurality of second switching means each thereof connected to a corresponding group of said display devices to switch the same to energized or deenergized condition, said plurality of semiconductor control devices each thereof connected to one of said detectors, one of said second switching means and one of said display devices to actuate said one display device when each of said one detector and said one second switching means generates an output, and a scanning controller for sequentially energizing said first switching means and said second switching means periodically to periodically energize said demodulators and said groups of display devices sequentially for each of said group units.

4,114,151

PASSIVE TRANSPONDER APPARATUS FOR USE IN AN INTERROGATOR-RESPONDER SYSTEM

Phillip Raymond Michael Denne, Broadstone; David Evan Naunton Davies, Hemel Hempstead, and Colin Dougal McEwen, London, all of England, assignors to Alfa-Laval Company Limited, England

Filed Sep. 14, 1976, Ser. No. 723,621
Int. Cl.² G01S *9/56*
U.S. Cl. 343—6.8 LC **12 Claims**

2. An interrogator-responder communication system for monitoring from an interrogating station information relating to a condition at a transponder station, comprising

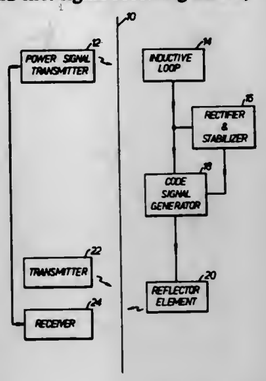
(a) first (22) and second (12) transmitters arranged at the interrogating station for directing first and second electromagnetic signals at different frequencies toward the transponder station;

(b) receiver means (24) arranged at the interrogating station; and

(c) passive transponder means arranged at the transponder station, said passive transponder means including

(1) signal receiving means including a first signal receiving element (20) for reflecting said first electromagnetic signal to said receiver means, said first signal receiving element having a variable electromagnetic signal reflective property at said first frequency;

(2) code signal generating means (18) for supplying a code signal to said first signal receiving means;



(3) power supply means for supplying direct-current operating power to said code signal generating means and to said modulating means, including

(a) second signal receiving means (14) for receiving a second electromagnetic signal having a second frequency different from said first frequency; and

(b) converter means (161) for converting said second signal to direct-current power; and

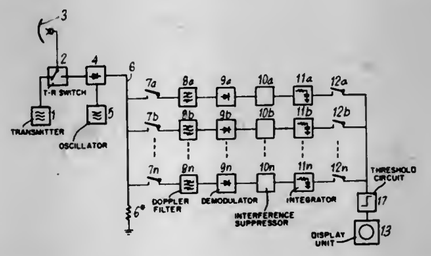
(4) modulating means responsive to said code signal for varying the signal reflection property of said first signal receiving element.

4,114,152

PULSE RADAR APPARATUS WITH INTEGRATION DEVICE

Kurt Wiedemann, Gilching, and Reinhard Seiferth, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jul. 7, 1970, Ser. No. 56,013
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1969, 1934723
Int. Cl.² G01S *9/42*
U.S. Cl. 343—7.7 **10 Claims**



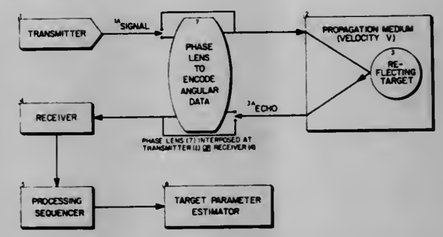
1. A Doppler pulse radar device comprising at least one range channel including a doppler filter, a demodulator connected to the output of said doppler filter, and an interference suppression circuit operable to block said radar device in response to receipt of impulse like interference signals which are of a short duration compared with the target scanning time and of great amplitude compared with target echo signals, said interference suppression circuit including an integrating device for integrating signals from said demodulator for retransmission to a display and means connected between said demodulator and said integrator for detecting the increase of an interference signal which is steep compared with the increase of a moving target echo signal and responsive thereto to prevent integration of a portion of an interference signal during the duration of such signal.

4,114,153

ECHO LOCATION SYSTEMS

Norman S. Neidell, 13054 Taylorcrest, Houston, Tex. 77024

Continuation of Ser. No. 483,202, Jun. 26, 1974, abandoned.
This application Jun. 1, 1976, Ser. No. 691,674
Int. Cl.² G01S *9/44*
U.S. Cl. 343—9 **8 Claims**



1. A method of using a transmitter member and an arrangement of receivers having at least one receiver member, all members being at locations referred to a coordinate system of fixed origin and in a medium having a known signal propagation velocity function, for ascertaining, for a field containing one or more reflecting targets, information about the targets' relfectivity strengths, positions and velocities as referred to said coordinate system, comprising the steps of:

producing a signal pattern having at least two individual member signals having preassigned time intervals, said time intervals and the durations of the member signals being short relative to a period over which velocity vectors describing motions of the transmitter, receivers and targets are approximately constants;

forming said individual member signals as a weighted sum of a design base signal pair, a pair of base signals approximately sharing a common smooth and essentially unimodel amplitude spectrum occupying a contiguous band of frequencies, said base signals being in mutual quadrature;

propagating said signal pattern with defined polarization character;

developing return signal patterns by reflection from the target field to each receiver;

processing reflected return signal patterns from each receiver by cross-correlating replicas of these return signal patterns with a detection base signal pair, thereby producing a pair of correlation component functions, said detection base signals having properties analogous to said design base signals, but with an amplitude spectrum overlapping that of the design base signal pair by an interval of frequency greater than any Doppler shift attributable to propagation toward and reflection from moving targets, the difference in phase angle between counterpart design and detection base signals at any common frequency component being described, in good approximation, mathematically by a constant and a term linear with frequency;

forming for each received return signal pattern a correlation amplitude function, formed from term-by-term sums of the absolute values of the correlation component functions raised to a like power not less than one, said sums then raised to a like power greater than zero but not greater than one;

identifying from the significant maxima of the correlation amplitude function return signal patterns corresponding to individual target reflections;

estimating for each detected target at each receiver a relative velocity component using the known signal propagation velocity function and the extension or compression of the initially preassigned time intervals between member signals in the return signal pattern for the target at the particular receiver, as determined from significant maxima of the correlation amplitude function;

estimating for each detected target at each receiver initial relative range information using an effective signal propagation velocity developed from the target's relative velocity estimate and known medium velocity function along with the elapsed signal travel time for onset of the return signal pattern identifying a target;

calculating final relative range information by introducing timing corrections to the elapsed signal travel time, such corrections representing linear elements of phase distortions arising from propagation, such corrections being dependent upon empirical tests using targets of known parameters, these corrections being catalogued according to initial range estimates, the conversion to final range information using the effective signal propagation velocity with the corrected elapsed time;

referring all estimates of target ranges and velocities to the fixed coordinate system; and

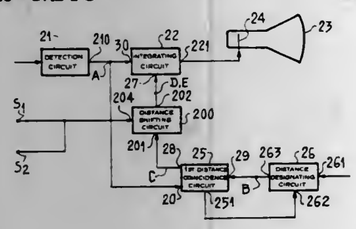
characterizing each member of the target field according to reflectivity, magnitudes being estimated from magnitudes of particular target correlation amplitude functions, accounting for losses associated with propagation and other observable and controllable signal amplitude modifications which are obtainable from empirical tests using targets of known parameters, and reflectivity polarities being determined from return signal pattern polarities as compared with the initial outgoing signal polarities.

4,114,154

ARRANGEMENT ENABLING THE CONTRAST TO BE IMPROVED BETWEEN THE MAIN ECHO VIDEO-FREQUENCY SIGNAL AND A SECONDARY ECHO VIDEO-FREQUENCY SIGNAL RECEIVED BY A PULSE COMPRESSION RADAR

Pierre Sarfati, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 22, 1977, Ser. No. 818,221
Claims priority, application France, Jul. 27, 1976, 76 22833
Int. Cl.² G01S *7/28*
U.S. Cl. 343—17.2 PC **10 Claims**



1. An arrangement which enables contrast to be improved between the main echo video-frequency signal and a secondary echo video-frequency signal of a pulse compression radar receiver, each of said main and secondary echo signals consisting of a central peak and alternating secondary lobes, wherein said arrangement comprises:

means for integrating said main and secondary video frequency signals at a predetermined instant and for a time equal to the duration of the central peak of said secondary echo;

at least one distance coincidence circuit and a distance designating circuit of said main echo connected to said distance coincidence circuit, said means for integrating said main and secondary video frequency signals being controlled by said distance coincidence circuit and said distance designating circuit; and

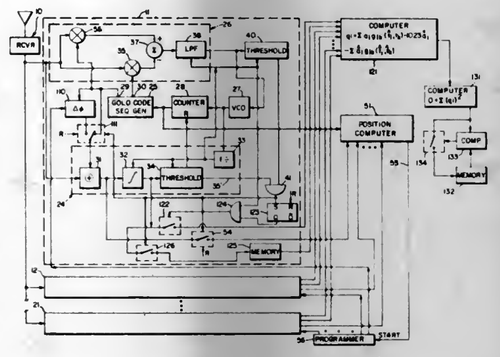
means connected to said integrating circuit for processing said main and secondary echo signal after integration.

4,114,155

POSITION DETERMINING APPARATUS AND METHOD

Frederick Herbert Raab, Burlington, Vt., assignor to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Jul. 30, 1976, Ser. No. 710,298
Int. Cl.² G01S *1/20*
U.S. Cl. 343—105 R **17 Claims**



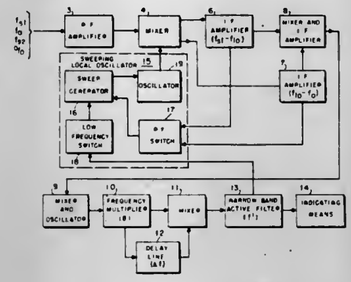
8. Apparatus for enabling the position of a receiver responsive to clear acquisition (C/A) signals derived from multiple space crafts of the Global Positioning System to be determined to an accuracy of greater than otherwise possible in response to the C/A signals, each of the C/A signals having the same carrier frequency and a different, predetermined Gold code sequence having a chipping rate of 1.023 megabits per second whose cross correlation products can prevent the position determination to be more accurate than to within 300 meters, comprising means responsive to C/A signals received at the receiver for separately detecting the C/A signal from each space craft, said detecting means including: means for locally deriving the different, predetermined Gold code sequences, means for acquiring the received sequences, said acquiring means including: means for calculating first cross correlation functions of the received and locally derived Gold code sequences over a Gold code sequence interval, and means for adjusting the phase of the locally derived Gold code sequences to achieve phase lock between each received and locally derived Gold code sequence; means responsive to the separately detected C/A signals for computing the receiver position to within 300 meters; the improvement comprising: means activated after phase lock has been achieved for individually varying the relative phase of the internally derived Gold code sequences over the interval of one chip of the sequence whereby there are derived by the calculating means signals representing second cross correlation functions of the received Gold code sequences and the locally derived Gold code sequences representing different positions within the computed 300 meter position, means for deriving signals representing third cross correlation functions of the internally derived Gold code sequences for the different positions within the computed 300 meter position, means for deriving a signal indicative of the amplitude of the signal from each space craft, and means for combining the signals representing the second and third cross correlation functions with the amplitude representing signal to enable the receiver position to be determined to an accuracy greater than 300 meters.

4,114,156

FREQUENCY SHIFT RATE DETECTOR

Robert R. Goldsborough, Sunnyvale; David R. Spencer, San Jose, and Samuel F. West, Sunnyvale, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1962, Ser. No. 176,890
Int. Cl.² G01S *11/00*
U.S. Cl. 343—112 S **3 Claims**



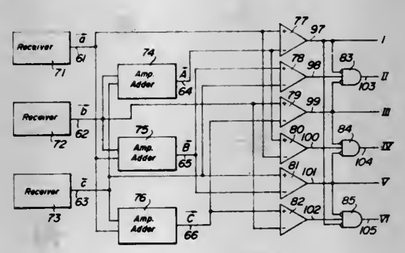
2. A doppler shift rate detector system comprising: a first mixer; input means for simultaneously applying a carrier signal and a doppler shifted sideband signal to said first mixer; first and second intermediate frequency amplifiers coupled to said first mixer; a mixer and an intermediate frequency amplifier stage coupled to said first and second intermediate frequency amplifiers; a mixer and oscillator stage coupled to said mixer and intermediate frequency amplifier stage; a frequency multiplier coupled to said mixer and oscillator stage; a second mixer coupled to said frequency multiplier; a delay line having an input coupled to said frequency multiplier and an output coupled to said second mixer, a narrow-band active filter coupled to said second mixer; an indicating means coupled to said filter; a low frequency switch coupled to said filter; a R.F. switch coupled to said first and second intermediate amplifiers; a sweep generator coupled to said R.F. switch and to said low frequency switch; and a variable frequency oscillator coupled between said sweep generator and said first mixer.

4,114,157

BEARING DETECTION SYSTEM

Toshikiyo Hirata, Samukawa, Japan, assignor to Toyo Yushinki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 25, 1977, Ser. No. 772,248
Claims priority, application Japan, Mar. 4, 1976, 51-23560
Int. Cl.² G01S *3/28*
U.S. Cl. 343—119 **5 Claims**



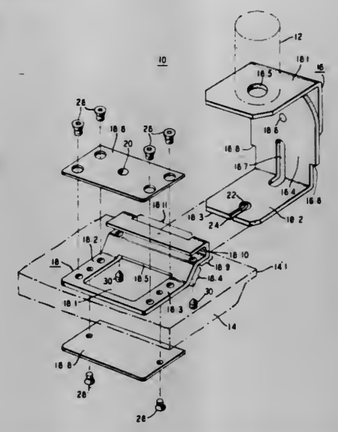
1. A bearing detection system having at its detection end a directional antenna comprising three radially extending directional antenna elements arranged at a 120° angle to each other and defining therebetween three directional antenna sectors, the detection system having means for making amplitude comparison of receiving signals received by said three directional antenna elements and forming a three bit truth table formed by the strength of the three receiving signals against six directions including the three directions of the antenna elements and the three directions of the sectors between said antenna elements, wherein in the truth table the signal values corresponding to 000 and 111 are made as undetectable.

4,114,158

MOUNT ASSEMBLY FOR ANTENNAS WITH MALE-FEMALE SECURING MEANS

Anthony J. Verini, 30 Lenox Ave., Green Brook, N.J. 08812

Filed Jun. 13, 1977, Ser. No. 805,889
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—715 **21 Claims**



1. A universal assembly for mounting an antenna on the lip of an automobile trunk lid comprising

a stepped bracket including an upper tread on which said antenna is mounted, a lower tread having a recess therein and a groove extending from said recess to a free edge of said lower tread, and a riser connecting said treads together and having a window essentially centrally located therein,

a relatively narrow elongated support member mountable along said trunk lip; said support member including a pair of spaced, parallel guides defining a channel therebetween into which said lower tread is insertable and having a width substantially equal to the width of said lower tread, a cover plate partially enclosing said channel and having a male member thereon which protrudes into said channel and which is guided by said groove into said recess when said lower tread is inserted into said channel, and an L-shaped member having a base affixed above the entrance to said channel and a leg extending above said channel so as to define a slot into which said trunk lip in insertable, said window in said riser being adapted to receive said base when said lower tread is fully inserted into said channel,

a nonabrasive sleeve on said leg of said L-shaped member, and

means for orienting said support member on said trunk lip so that said antenna can be vertically aligned.

4,114,159

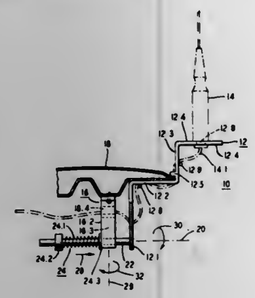
DUAL PIVOT MOUNT ASSEMBLY FOR AN AUTOMOBILE ANTENNA

Anthony J. Verini, 30 Lenox Ave., Green Brook, N.J. 08812

Filed Nov. 1, 1976, Ser. No. 737,552
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—715 **10 Claims**

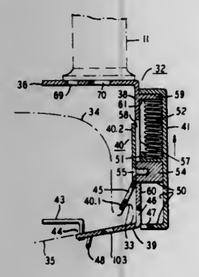
1. An assembly for mounting an antenna adjacent to the periphery of an opening in an automobile body comprising:

a support member pivotally mounted about a first axis to said body;
a support rod pivotally mounted to said support member about a second axis;
a bracket for carrying said antenna fixed to one end of said support rod;



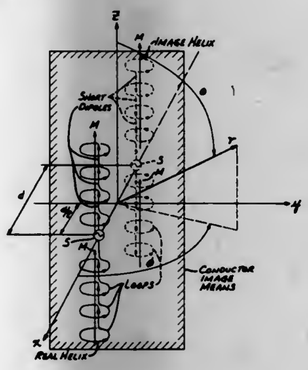
resilient means between said support member and the other end of said support rod for biasing said bracket toward said support member;
said bracket including means cooperating with said resilient means for engaging said body; and
said bracket being disengageable from said body and rotatable about said first and second axis to a position within said opening.

4,114,160
AUTOMOBILE ANTENNA MOUNTING BRACKET APPARATUS
Anthony J. Verini, 30 Lenox Ave., Green Brook, N.J. 08812
Filed Jan. 26, 1977, Ser. No. 762,442
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—715 **13 Claims**



1. A bracket for mounting an antenna to an interior portion of a motor vehicle body frame and about a barrier means which is openable to provide access to the interior of the vehicle and is closable to bar entry into the vehicle, said frame having means defining at least one aperture through a prescribed interior portion thereof and comprising
a stepped bracket having a plurality of treads and at least one step riser secured between said treads,
a first one of said treads having means for securely mounting said antenna,
securing means for a second one of said treads admittable within said at least one aperture upon an opening of said barrier means and for affixing said second one of said treads between said prescribed interior portion of said frame and said barrier means when said barrier means is closed and
said securing means comprises a plurality of hookshaped, spaced apart rod extensions on an upwardly facing surface of said second one of said treads and
said defining means comprises means providing a pair of spaced apart apertures through said prescribed interior portion of said frame and for admitting said rod extensions into said interior portion of said frame.

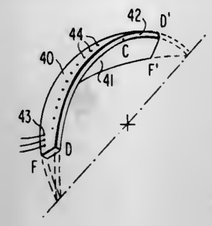
4,114,161
MAGNETIC CURRENT ANTENNA
Yoshizo Shibano, Kobe, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 364,344, May 29, 1973, abandoned, which is a continuation of Ser. No. 863,035, Sep. 30, 1969, abandoned, which is a continuation of Ser. No. 605,656, Dec. 29, 1966, abandoned, which is a continuation-in-part of Ser. No. 376,142, Jun. 18, 1964, abandoned. This application May 2, 1975, Ser. No. 573,885
Claims priority, application Japan, Jun. 21, 1963, 38-46468[U]; Jun. 21, 1963, 38-46469[U]; Jun. 21, 1963, 38-46470[U]; Jun. 21, 1963, 38-46471[U]
Int. Cl.² H01Q *9/16, 9/30, 1/48, 1/36*
U.S. Cl. 343—741 **9 Claims**

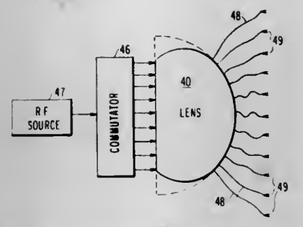


1. A magnetic current antenna comprising a plurality of helical conductors each forming a coil having its interior unobstructed with any conductive material and having one end electrically connected to a transmission signal from a signal generator, and a conductive surface adjacent to and uniformly spaced from said helical conductors and coextending in parallel with the longitudinal helical axis of each of said helical coils and extending away from each of said helical conductors in both directions transverse to each of said longitudinal helical axes at any given point therealong in a common straight line, for at least as long as the full underlying diameter span of said helical conductors, said conductive surface being spaced from said longitudinal axis of each of said helical coils a distance which is small compared to the antenna operating wave length, said helical conductors positioned adjacent and uniformly spaced from said conductive surface and symmetrically positioned with respect to a plane perpendicular to said conductive surface, said helical conductors being energized by said transmission signal to provide a radiation pattern variable by changing the phase relationship of and distance between said helical conductors.

4,114,162
GEODESIC LENS
John Paul Wild, Strathfield, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia
Filed Dec. 22, 1976, Ser. No. 753,383
Claims priority, application Australia, Dec. 24, 1975, PC4390
Int. Cl.² H01Q *19/06, 15/02, 15/24*
U.S. Cl. 343—754 **7 Claims**

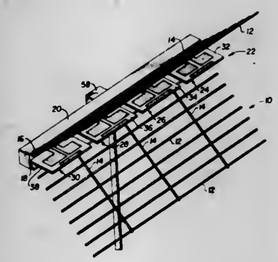
1. An RF aerial system component for use in interconnecting an arcuate array of RF coupling elements and a linear array of RF transmitting and/or receiving elements comprising a geodesic lens consisting of a parallel plate waveguide in the shape of a quarter sphere, one curved edge of the lens being adapted





to be connected to the linear array, the other curved edge of the lens containing or being adapted to be connected to the arcuate array of RF coupling elements.

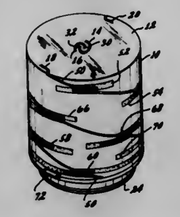
4,114,163
L-BAND RADAR ANTENNA ARRAY
John Joseph Borowick, Bricktown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 6, 1976, Ser. No. 747,765
Int. Cl.² H01Q *21/12, 9/28, 19/10*
U.S. Cl. 343—815 **9 Claims**



1. A radar antenna for monopulse radar apparatus particularly adapted for a foliage penetration mode of operation, comprising in combination:
a hinged foldable corner reflector including a grid of parallel rod type elements and a housing at the apex of said reflector, said grid including a plurality of transverse support members and longitudinal members secured to said support members, a plurality of longitudinal hinge members mounted along said housing and spaced about said apex, said transverse support members being secured to said hinge members;
flat dielectric support means positioned in line with said apex and extending from said housing;
an array of stripline dipole elements located on said support means along a common plane at said apex of said corner reflector, said reflector being foldable about opposite sides of said support means and dipole elements and extending parallel to said common plane in a folded position; and

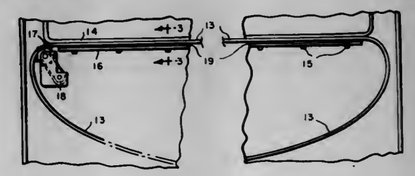
means within said housing electrically coupling said array of dipole elements to said monopulse radar apparatus.

4,114,164
BROADBAND SPIRAL ANTENNA
John W. Greiser, Marina del Rey, Calif., assignor to Transco Products, Inc., Venice, Calif.
Filed Dec. 17, 1976, Ser. No. 751,712
Int. Cl.² H01Q *1/36*
U.S. Cl. 343—895 **18 Claims**



1. A broadband spiral antenna, including,
a tubular member having a planar surface at one end,
a planar spiral antenna portion supported on the planar surface and with the spiral antenna portion spiraling outward from a central position on the planar surface to an edge position on the planar surface, and
an array of dipole elements supported on and extending around the tubular member and coupled to the planar spiral antenna portion at the edge position.

4,114,165
PRECISION TRACK FOR MOVING FACSIMILE RECORDING BLADE
Kestutis E. Bliudnikas, North Grafton, Mass., assignor to Alden Research Foundation, Westboro, Mass.
Filed Dec. 27, 1976, Ser. No. 754,904
Int. Cl.² G01D *15/06*
U.S. Cl. 346—139 C **7 Claims**



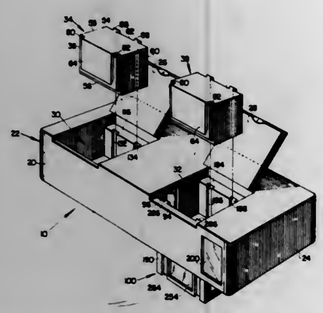
1. Apparatus for electrically recording graphic signals on a web with a moving, loop electrode comprising:
a motor for driving the electrode in a looped path including a linear portion;
a linear track including two fixed walls for receiving the electrode and guiding the electrode on the linear portion; and
spring means on the track between the walls extending along the linear portion and engaging the side of the electrode so as to urge it against one of the walls of the track through the linear portion of the electrode whereby the loop is precisely straightened in its linear portion to provide straight line markings on the web.

4,114,166

SELF-DEVELOPING CAMERA AND VIEWER

John J. Driscoll, Andover, and Richard R. Wareham, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 10, 1976, Ser. No. 749,511
Int. Cl.² G03B 29/00
U.S. Cl. 354—76 48 Claims



1. A self-developing camera for exposing, processing, viewing and storing self-developing film units of the type including an integral supply of fluid processing composition adapted to be distributed between predetermined layers of the film unit subsequent to exposure, said self-developing camera comprising:

a camera housing;

means for locating such a self-developing film unit at an exposure position within said camera housing;

means for exposing the film unit located at said exposure position;

pressure applying means for applying a compressive pressure to the film unit subsequent to exposure to effect the distribution of the fluid processing composition;

means for defining a storage chamber within said camera housing and within which the film unit is adapted to be stored subsequent to the application of said compressive pressure, said storage chamber being configured such that a film unit located for storage therein is not visually accessible to the user of said camera for viewing; and

film unit viewing means mounted on said camera housing for movement relative thereto between first and second positions for moving the film unit from a storage location in said storage chamber to a viewing position wherein the film unit is visually accessible for viewing in response to moving said film unit viewing means from said first position to said second position, for facilitating viewing of the film unit located at said viewing location, and for moving the film unit from said viewing position to a storage location in said storage chamber in response to moving said film unit viewing means from said second position to said first position.

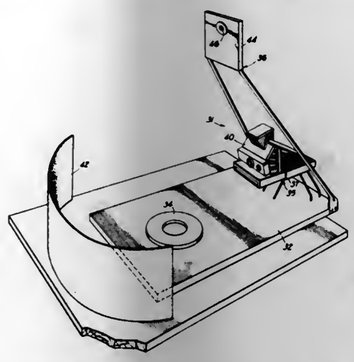
4,114,167

MINIATURIZED MODEL KITCHEN HAVING COORDINATED INTERCHANGEABLE AND INTEGRATABLE MODULES

Harry A. McKee, 6851 Roswell Rd., Atlanta, Ga. 30328

Division of Ser. No. 757,398, Jan. 6, 1977. This application May 26, 1977, Ser. No. 800,617
Int. Cl.² G03B 29/00
U.S. Cl. 354—81 4 Claims

1. A stand for assembling a miniature model kitchen or the like comprising a platform, a turntable rotatably mounted on said platform, an upper camera mount positioned on said base above said turntable for mounting a camera with line of sight directed vertically with respect to said base, a lower camera mount positioned on said base adjacent said turntable for mounting a camera with line of sight directed at a downward incline toward said base, and a floor surface resting on said turntable, whereby a miniature model kitchen or the like can be assembled on the floor surface and the floor surface rotated



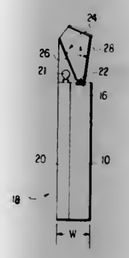
with the turntable and a camera supported on the upper or lower camera mount actuated to photograph the miniature model kitchen from various angles.

4,114,168

FILM STRIP RECORDER AND VIEWER

George J. Yevick, Leonia, N.J., assignor to Izon Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 624,253, Oct. 20, 1975, abandoned. This application Apr. 8, 1977, Ser. No. 785,039
Int. Cl.² G02B 5/14; G03B 33/00, 21/26, 27/44
U.S. Cl. 354—102 21 Claims



1. A compact optical device including,

(a) a cassette film, having a width substantially less than its length, and having its ends wound upon spools,

(b) a run of said film, between the two spools, a plurality of active lenses associated with said run, said active lenses being distributed across the width of the film and being spaced from each other longitudinally of said run such that each active lens corresponds to a portion of the width of the film, the optic axes of the lenses being at right angles to the plane of the run of film,

(c) means for illuminating and projecting portions of said run adjacent said lenses, whereby projected light in the form of cones passes through the film and through the lenses,

(d) a rear projection viewing screen for receiving an image,

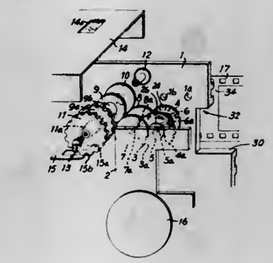
(e) means for folding said projected light cones to effectively shorten the distance between the said film and the said rear projection screen.

4,114,169

CAMERA WITH DATA-RECORDING STRUCTURE

Eiji Yamamori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Aug. 27, 1976, Ser. No. 718,414
Claims priority, application Japan, Nov. 17, 1975, 50/155231[U]
Int. Cl.² G03B 17/24
U.S. Cl. 354—106 9 Claims



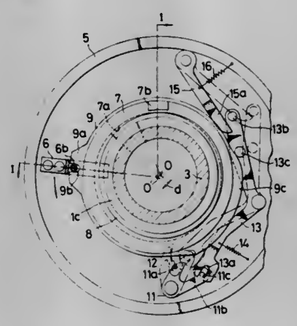
1. In a camera, film-guide means for guiding film for movement in a predetermined film plane and defining an exposure aperture through which film in the film plane is exposed, said aperture having a peripheral region situated in front of a peripheral part of an area of a film strip which is exposed through said exposure aperture, indicia-carrying means situated adjacent said film-guide means and carrying indicia to be photographically recorded on a film strip in response to light travelling through said indicia-carrying means to film in said film plane, support means supporting said indicia-carrying means for movement to a selected one of a plurality of different possible positions in which different items of indicia are respectively situated closely adjacent to said aperture in front of said peripheral region thereof, the camera including an objective means, diaphragm means, and shutter means all operative to expose film in said film plane behind said aperture while also providing during exposure of film light which travels through said indicia-carrying means for photographically recording on the film at least one selected item of indicia in accordance with the selected one of said positions of said indicia-carrying means, and positioning means operatively connected with said indicia-carrying means for positioning the latter in a selected one of said plurality of positions, whereby when film in said film plane is exposed by way of said objective means, diaphragm means, and shutter means, at least one selected item of indicia will be photographically recorded on the film strip with the same light that travels through the objective means, diaphragm means, and shutter means to expose the film in the film plane to an image of a given object which is to be photographed, said indicia-carrying means including a pair of coaxial discs supported for rotation about their common axis, respectively situated in parallel planes which are parallel to said film plane, and respectively having peripheral edge regions situated in front of said peripheral region of said aperture, one of said discs having a diameter greater than the other and having its peripheral edge region situated outwardly beyond the peripheral edge region of the other disc, while carrying one set of indicia beyond the peripheral edge region of said other disc, the latter carrying a second set of indicia to be selectively positioned in front of said peripheral region of said aperture, and said positioning means being operatively connected with said discs for turning the latter independently of each other about their common axis so that a selected item of indicia of one disc and a selected item of indicia of the other disc can be positioned to be photographically recorded on the film.

4,114,170

FLASH MECHANISM FOR CAMERA

Akio Furukawa, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 12, 1977, Ser. No. 796,072
Claims priority, application Japan, May 12, 1976, 51-60027[U]; May 12, 1976, 51-60028[U]
Int. Cl.² G03B 7/16, 15/03, 13/02
U.S. Cl. 354—149 3 Claims



1. A flash mechanism for a camera of the type comprising:

diaphragm and shutter means for opening and closing a light imaging path in said camera; and

pin means for driving said diaphragm and shutter means and movable along a predetermined path whose length is proportional to the amount of the opening of said light imaging path; said mechanism comprising:

diaphragm linkage lever means for entering said path of movement of said driving pin means when an illumination device is attached to said camera, and for retracting from the path of movement of said pin means when the illumination device is detached;

an intermediate linkage lever means for respectively moving in response to the attachment and detachment of said illumination device and cooperatively linked to said diaphragm linkage lever means for accordingly operating said diaphragm linkage lever means in response to said respective movements;

rotatable distance ring means for adjusting the focussing of said camera and having a distance cam means thereon for engaging said intermediate linkage lever means to limit the extent of its respective movement in response to the attachment of the illumination device; and

rotatable exposure correction means for setting the exposure of said camera and which supports and is relatively rotatable to said distance ring means; and wherein the center of rotation of said distance ring means on said exposure correction means is slightly displaced from the rotation center of said exposure correction means such that the position of said distance cam means is laterally displaced upon rotation of said exposure correction means.

4,114,171

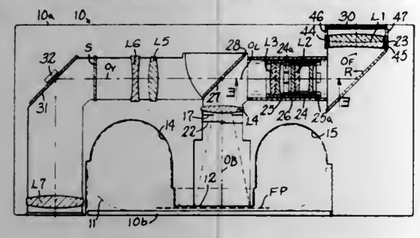
REFLEX CAMERA WITH INTERNAL ZOOM LENS

Richard M. Altman, Woodland Hills, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Apr. 6, 1976, Ser. No. 674,229
Int. Cl.² G02B 15/00; G03B 19/12, 17/04, 3/00
U.S. Cl. 354—152 24 Claims

1. A camera comprising a housing, a photographic lens in said housing on an optical axis which has first and second forward axis portions essentially perpendicular to the frame of film inserted in the camera but laterally displaced from each other, said second axis portion directed to intersect the frame of film inserted in the camera and a lateral axis portion between said first and second axis portions, said lens from the object end

to image end comprising a first objective lens group on said first forward axis portion, first reflecting means changing said first forward axis portion to said lateral axis portion, a movable lens grouping on said lateral axis portion for varying the equivalent focal length of the lens, second reflecting means changing said lateral axis portion to said second forward axis portion, a stationary second objective lens group on said second axis

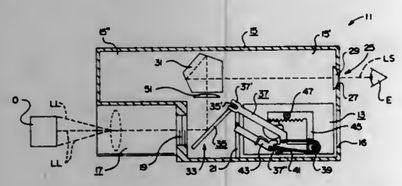


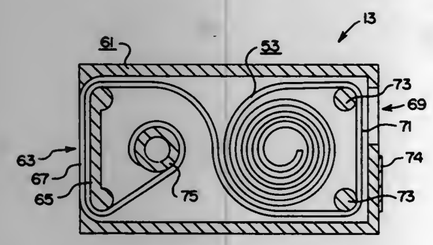
portion in front of the film frame position, means for moving said movable lens grouping to vary the equivalent focal length of the lens, means for moving said first objective to focus said lens, a viewfinder optical system in said housing, said viewfinder optical system including an optical axis which is a continuation of said lateral axis portion extending past said second reflecting means and a focusing screen and an eyepiece in said viewfinder optical system.

4,114,172
PHOTOGRAPHIC CAMERA AND FILM CARTRIDGE THEREFOR

Joe Yao, 204 Lampkin Rd., Starkville, Miss. 39762

Filed Nov. 8, 1976, Ser. No. 740,123
Int. Cl.² G03B *19/12, 17/26*
U.S. Cl. 354—153 **9 Claims**



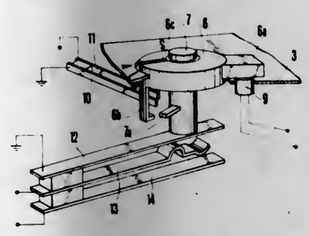


1. A photographic camera comprising: a hollow, boxlike body means; lens means attached to said body means for allowing lines of light to pass from an object being photographed into the interior of said body means; a film cartridge including a substantially nontransparent housing member, a strip of photographic film located within said housing member, an exposure window through said housing member for allowing light to enter said housing member therethrough and to expose a portion of said film, and a take-up spool for receiving said film after it has been exposed, said take-up spool being positioned behind said exposure window and in-line with the centermost rays of light passing through said exposure window, said film being positioned within said housing member with any exposed portion thereof substantially wound around said take-up spool and with any unexposed portion thereof substantially unconstrainedly located within said housing member; and means for selectively allowing said lines of light entering said interior of said body means to enter said exposure window of said film cartridge; said film cartridge being positioned within said interior of said body means with said lines of light passing between said lens means, said exposure window of said film cartridge and said portion of said film.

4,114,173
PHOTOGRAPHIC CAMERA WITH AN OPERATION MODE DISPLAY DEVICE

Nobuo Tezuka, Tokyo; Masanori Uchidoi, Yokohama; Yukio Iura, Yokosuka; Masami Shimizu, Tokyo; Ryoichi Yoshikawa, Yokohama, and Hiroshi Aizawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1977, Ser. No. 758,200
Claims priority, application Japan, Jan. 20, 1976, 51-5194
Int. Cl.² G03B *9/64, 17/00*
U.S. Cl. 354—238 **6 Claims**

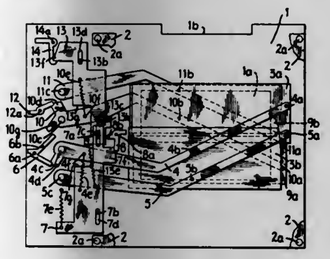


1. A photographic camera having a mode display device comprising:
a. an electric self-timer means;
b. a shutter button for operating a shutter release;
c. a self-timer operation mode display means visually recognizable from outside of the camera, said means being electrically connected to the electric self-timer means; and
d. a shielding means, said means being rotatably coaxial with the shutter button and movable between the one position at which the self-timer operation mode display means is visually recognizable and the other position at which the self-timer operation mode display means is not visually recognizable.

4,114,174
SHUTTER OPENING AND CLOSING MECHANISM FOR CAMERAS

Eiichi Onda; Masanori Watanabe; Tadashi Nakagawa; Ichiro Nemoto, and Mitsuo Koyama, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Feb. 8, 1977, Ser. No. 766,745
Claims priority, application Japan, Feb. 9, 1976, 51-12960; Feb. 9, 1976, 51-13745[U]
Int. Cl.² G03B *9/38*
U.S. Cl. 354—249 **9 Claims**



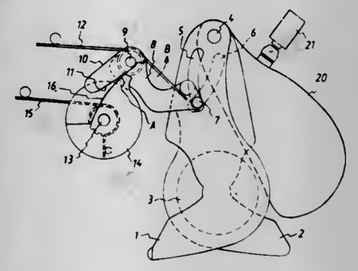
1. A camera shutter comprising an opening blade and a closing blade operated sequentially to open and close a shutter

aperture for an exposure, and blade opening and closing mechanism comprising: an opening spring normally biasing the opening blade to move from a closed position in which the opening blade covers the shutter aperture to an open position in which the opening blade uncovers the shutter aperture; a second spring normally biasing the closing blade to move from a closed position in which the closing blade covers the shutter aperture to an open position in which the closing blade uncovers the shutter aperture; a third spring normally biasing the closing blade to move from said open position to said closed position, and means controlling operation of the blades in the manner that when the shutter is in charged condition said opening blade and said closing blade are in said closed position and when the shutter is released, the closing blade is moved under the bias of said second spring from said closed position to said open position, then the opening blade is moved under the bias of said opening spring from said closed position to said open position, and thereafter said closing blade is returned under the bias of said third spring from said open position to said closed position, thereby completing the exposure.

4,114,175
SHUTTER MECHANISM

Leonhard Huber, Glonn; Helmut Kirschner, Munich, and Herbert Muller, Assling, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Jan. 28, 1977, Ser. No. 763,684
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1976, 2603657
Int. Cl.² G03B *9/08*
U.S. Cl. 354—252 **10 Claims**

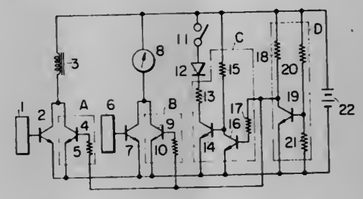


1. In a shutter mechanism, in combination, an aperture-unblocking member mounted for movement between an aperture-blocking position and an aperture-blocking position; a drive mechanism engaging said aperture-unblocking member; an inertial braking mechanism driven by said drive mechanism when said aperture-unblocking member moves from said blocking to said unblocking position and operative during such movement for applying to said drive mechanism an inertial braking force slowing the movement of said member to said unblocking position, said drive mechanism including a drive cam, said inertial braking mechanism including a driven cam, the surface of said drive cam bearing upon the surface of said driven cam and transmitting to said driven cam the drive force by means of which said drive mechanism drives said intertial braking mechanism, said cams being so configured that as said drive mechanism drives said inertial braking mechanism during said movement from aperture-blocking to aperture-unblocking position, the surface of said drive cam rolls along the surface of said driven cam with predetermined unique successive parts of the surface of the drive cam successively contacting respective predetermined unique successive parts of the surface of the driven cam.

4,114,176
WEAK CAMERA BATTERY WARNING CIRCUIT

Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1977, Ser. No. 828,689
Claims priority, application Japan, Aug. 31, 1976, 51-116553[U]
Int. Cl.² G03B *7/00, 17/00*
U.S. Cl. 354—289 **5 Claims**

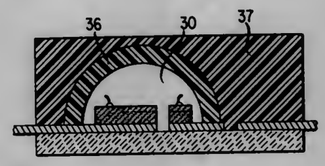


1. A circuit arrangement for warning when a camera battery supply voltage falls below a predetermined threshold level, comprising:
(a) circuit means for detecting when the battery voltage falls below the predetermined threshold level and for producing an output signal in response thereto,
(b) a first drive circuit for rendering a shutter control magnet continuously energized in response to said output signal,
(c) a second drive circuit for causing a shutter speed display element to indicate an extreme value in response to said output signal, and
(d) a third drive circuit for disabling a battery test indicator in response to said output signal.

4,114,177
OPTICALLY COUPLED DEVICE WITH DIFFUSELY REFLECTING ENCLOSURE

William Clifton King, Short Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1975, Ser. No. 573,401
Int. Cl.² H01L *31/14*
U.S. Cl. 357—19 **4 Claims**



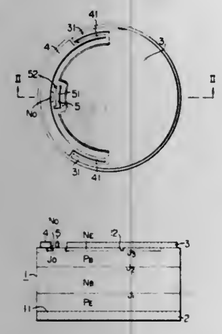
1. A device comprising at least one first semiconductor device for emitting light in response to an impressed electrical excitation, at least one second semiconductor device, for receiving the light emitted by the first semiconductor device and for producing an electrical signal in response to the light, an electrically insulating light transmitting medium for transmitting the light from the first semiconductor device to the second semiconductor device, and an enclosure CHARACTERIZED IN THAT the enclosure includes a body of reflecting material adapted for diffusely reflecting the light, wherein the reflecting material is a polymeric material including a particulate pigment which is reflective to the emitted light.

4,114,178

SEMICONDUCTOR CONTROLLED RECTIFIER HAVING AN AUXILIARY REGION WITH LOCALIZED LOW RESISTANCE PATHS TO THE CONTROL GATE

Yoshio Terasawa, Katsuta, and Shin Kimura, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 27, 1976, Ser. No. 652,662
Claims priority, application Japan, Feb. 7, 1975, 50-15404
Int. Cl.² H01L *29/74*
U.S. Cl. 357—38 **13 Claims**



3. A semiconductor controlled rectifier comprising:

a semiconductor substate having a pair of main surfaces on the opposite side of said substrate, a four layer structure between said main surfaces consisting of at least a first, a second, a third and a fourth layer of alternate p-n and n-type conductivities, one of said main surfaces being formed of the exposed surfaces of at least said first and second layers and the other main surface being formed of the exposed surface of at least said fourth layer, and an auxiliary region, having the same conductivity type as said first layer and a smaller area than said first layer, formed in said second layer with a p-n junction defined between said auxiliary region and said second layer and exposed to said one main surface;

a first main electrode kept in low resistance contact with at least said first layer on said one main surface;

a second main electrode kept in low resistance contact with at least said fourth layer on said other main surface;

a gate electrode extending along theperiphery of said auxiliary region so as to be closer to said auxiliary region than to said first layer, said gate electrode being disposed on said one main surface; and

an auxiliary electrode disposed in contact with said auxiliary region and said second layer on said one main surface and being spaced apart from said first layer and extending along the periphery of said first layer; and

wherein said gate electrode is disposed to extend along and be spaced apart from said auxiliary electrode, and the electrical resistance between a portion of said gate electrode and said auxiliary electrode is smaller than that between the remaining portion of said gate electrode and said auxiliary region.

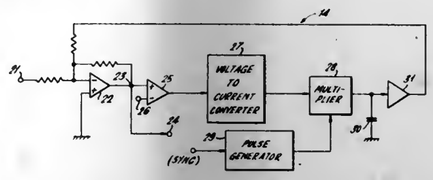
4,114,179

CLAMPING CIRCUITS FOR TELEVISION SIGNALS

Peter John Ilieve, London, England, assignor to Decca Limited, London, England

Filed Jun. 30, 1977, Ser. No. 811,877
Claims priority, application United Kingdom, Jul. 5, 1976, 27935/76
Int. Cl.² H04N *9/535, 5/18*; H03G *11/00*
U.S. Cl. 358—34 **9 Claims**

1. A method of clamping an input signal to a reference, in which method the amplification of an error signal, which represents disparity between the input signal and the reference, is greatest at the beginning of a period of clamping and diminishes during that period, and the error signal is integrated before it is applied to reduce the disparity.

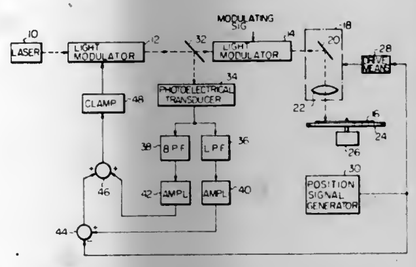


4,114,180

CLOSED LOOP LASER NOISE ELIMINATION FOR OPTOELECTRONIC RECORDING

Kanji Kayanuma, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 13, 1977, Ser. No. 832,890
Claims priority, application Japan, Sep. 14, 1976, 51-110057
Int. Cl.² G11B *7/00*; H03F *1/28, 1/30*
U.S. Cl. 358—128 **7 Claims**



1. A recording system including a light modulator receptive in use of a laser beam for modulating the intensity thereof in accordance with an intelligence signal and means for sequentially subjecting a selected portion of a light sensitive recording medium to the intensity modulated laser beam, wherein said laser beam is subject to broad-spectrum noise, comprising:

a photoelectrical transducer;

means disposed in the path of said beam for directing a portion of the beam incident to said light modulator to said photoelectrical transducer;

means for dividing the frequency spectrum of the output from said transducer into a plurality of separate frequency bands and accentuating the signal of each of said separate frequency bands such that each of said bands has an amplitude versus frequency characteristic which substantially conforms to a portion of the frequency response characteristic of said broad-spectrum noise of said laser beam incident to said photoelectrical transducer; and

a second light modulator disposed in the path of said laser beam incident to said beam directing means for modulating the intensity thereof in accordance with said accentuated signals, whereby a feedback control loop is formed for each of said divided frequency bands,

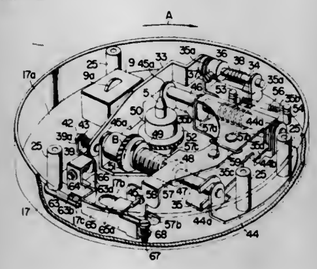
the signal in each of said divided frequency bands being accentuated such that each feedback control loop has a maximum loop gain which suppresses the noise of the corresponding portion of the noise spectrum to an acceptable level.

4,114,181

RECORDING REPRODUCER FOR MAGNETIC CARDS

Tadanao Itoh, Tokyo, Japan, assignor to Ricoh Company, Ltd. and Ricoh Educational Equipment Co., Ltd., both of Tokyo, Japan

Filed Oct. 12, 1976, Ser. No. 731,679
Claims priority, application Japan, Dec. 8, 1975, 50-146087; Dec. 16, 1975, 50-150414; Oct. 18, 1975, 50-142028[U]; Oct. 18, 1975, 50-142029[U]
Int. Cl.² G11B *25/04, 5/52*
U.S. Cl. 360—2 **6 Claims**



1. A recording reproducer for use with a card having a sound track formed on its surface, comprising:

a rotatable turntable;

transducer means disposed on said turntable for following said sound track to sense the content thereof;

support means for movably supporting the transducer means on said turntable;

feed means for driving the support means to move the transducer means radially of the turntable between a start and a terminal position;

means for engaging the feed means with the support means to move the transducer means from its start position;

means for releasing the engagement of the feed means with the support means when the transducer means has moved to its terminal position;

means for maintaining the release of the engagement until the transducer means has returned to its start position;

return means operatively connected to the support means for rapidly returning the transducer means;

a stationary shaft for supporting the rotatable turntable;

a disc member substantially integrally mounted on said stationary shaft and having a spirally extending guide groove of V-shaped cross section formed in the upper surface thereof; and

an operating lever means for operatively supporting the transducer means such that both are slidable on and rotatable with the turntable, said lever means having an edge of an acute angle which engages the guide groove, thereby moving the transducer means radially of the turntable.

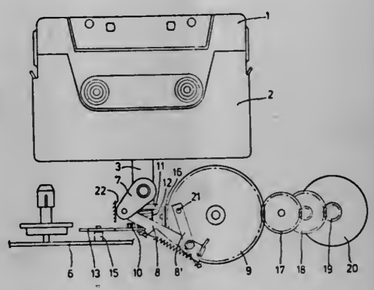
4,114,182

CASSETTE TURNING MECHANISM

Werner Zeh, and Dieter Kühnlein, both of Nuremberg, Germany, assignors to Grundig E.M.V., Fuerth, Bay, Germany

Filed Jun. 2, 1977, Ser. No. 802,714
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651489
Int. Cl.² G11B *5/00*
U.S. Cl. 360—92 **1 Claim**

1. A cassette turning mechanism operable with a tape-cassette utilized for recording and replaying of two opposing tape tracks, the cassette being insertable into a receptacle mounted on a tape recorder, and, at the end of one tape track, either automatic or manual means on the recorder, the receptacle moves the cassette out of a first position in a receiving nest in the recorder which contains the necessary tape drive and tape recording elements, the improvement comprising; a shaft centrally mounted along the edge of the receptacle opposite to the cassette receiving edge and extending substantially perpendicular therefrom, a swing axle with the shaft rotatably mounted thereon, the swing axle running parallel with respect to said opposite receptacle edge, the swing axle being rotatable around its longitudinal axis, a control drive means for rotating the swing axle around its longitudinal axis and pivoting the receptacle and cassette from the first position within the tape recorder to an extended second position, a spur gear mounted on said shaft and engaging said control drive means after the pivot movement of the receptacle to the second position so that the control drive rotates the shaft together with the receptacle by 180°; after which the receptacle is adapted to be returned to the first position and the other tape track can be transduced, the control drive including a control motor, intermediate wheels and a control wheel interconnected so that the control motor drives the control wheel by use of the intermediate wheels, a crank arm is mounted on the swing axle, a pair of links in form of a crank drive coupling the control wheel and the crank arm, the control wheel has a flat side, a face cam mounted on the side of the control wheel, and a rack including a cam follower means engaged by the face cam and being under spring tention.

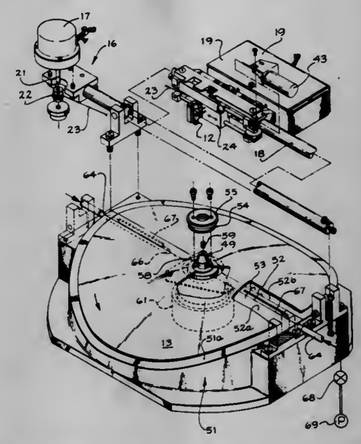


4,114,183

RECORDING SYSTEM WITH GAS SUPPORTED RECORD MEDIUM

Kingston Ganske, Auburn; Earl R. Hibbard, Berkeley; Mervin L. Falk, Sunnyvale, and Joseph P. Denk, Newark, all of Calif., assignors to Insurance Technology Company, Berkeley, Calif.

Filed Apr. 11, 1977, Ser. No. 786,234
Int. Cl.² G11B *5/60*
U.S. Cl. 360—99 **4 Claims**



1. In a recording system of a type employing a pliant recording disc and transducer means disposed to advance and retreat across the disc in cooperative relation therewith for transducing signals between the transducer and the disc, means for

moving and supporting the disc relative to the transducer comprising a base member having a surface underlying the disc, said surface including a crest region beneath the path of the transducer defined by flanking crowned surface portions sloping away from said crest region, said crest including a flat radially extending surface serving to form a reference surface beneath the disc, said flat radially extending surface including therewithin an elongate slit means for supplying gas to the underside of the disc via the slit, means for moving the disc in surface-following relation across said crest region to cause a change in direction of the plane of the recording surface as it passes across said crest to apply a smoothing force to the recording surface.

4,114,184

CONTROL SYSTEM FOR AN ELECTROMAGNET

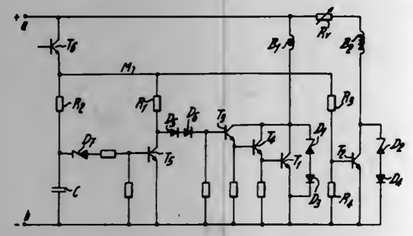
Harald Stampfli, Geneva, Switzerland, assignor to Lucifer S.A., Geneva, Switzerland

Filed Aug. 30, 1976, Ser. No. 718,545

Claims priority, application Switzerland, Sep. 5, 1975, 11569/75

Int. Cl.² H01H *47/04, 47/32*

U.S. Cl. 361—154 **3 Claims**



1. Control system for an electromagnet for furnishing a high initial current upon energizing, followed by a smaller maintenance current, containing a first semiconductor (T_1), whose conductivity is controllable, connected in a first circuit adapted to control the initial current, and a second semiconductor (T_2), whose conductivity is controllable, connected in a second circuit adapted to control the maintenance current, a control circuit (M, R_1, D_5, D_6, T_3, T_4) common to the two semiconductors, switching means (T_6) for applying to the control circuit a control voltage that will simultaneously render the two semiconductors (T_1, T_2) conductive, a power line for supplying current to the electromagnet adapted to be connected through said switching means to said control circuit, and a delay device (R_2, C, D_7, T_5) acting on the first semiconductor so as to eliminate its control voltage at a predetermined time after its application, said delay device including a resistor (R_2) directly connected to said switching means and to a condenser (C) connected to said resistor, a Zender diode (D_7) connected to a point between said resistor and said condenser, a transistor (T_5) connected to said control circuit for controlling said first semi-conductor (T_1), and a connection from said Zener diode to said last named transistor.

4,114,185

ELECTRIC FENCE CONTROLLERS

William Murray Gallagher, Hamilton, New Zealand, assignor to Gallagher Electronics Limited, Hamilton, New Zealand

Continuation of Ser. No. 568,101, Apr. 14, 1975, abandoned. This application Jan. 6, 1977, Ser. No. 757,288

Int. Cl.² H05C *1/04*

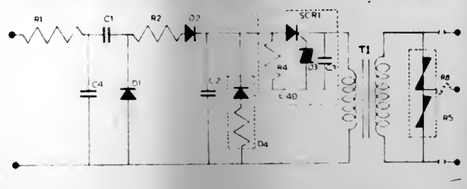
U.S. Cl. 361—232 **2 Claims**

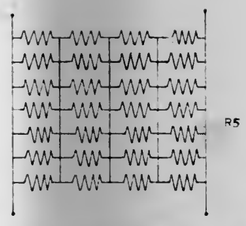
1. A device connected to a voltage source and an electric fence having a normal fence line impedance for controlling said electric fence, said device comprising:

a capacitance connected to and adapted to be charged by said voltage source to a substantially predetermined voltage;

timing means operatively connected to said capacitance for discharging said capacitance at fixed time intervals;

a transformer, the primary thereof connected across said capacitance and said timing means and the secondary thereof connected to the fence and to a ground; and





an impedance connected to said transformer, said impedance measured at the operating voltage for the secondary terminals of said transformer being less than the fence line impedance, and said impedance being comprised of a plurality of resistors connected in series parallel arrangement in such a manner that failure of less than three resistors will not materially alter the overall resistance of said resistors

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4,114,186

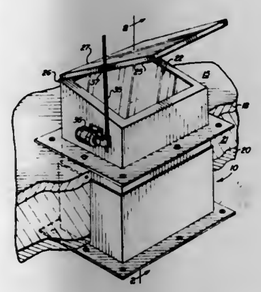
LIGHTING FIXTURE

Richard Lee Dominguez, 3835 W. Eva Ave., Phoenix, Ariz. 85021

Filed May 26, 1977, Ser. No. 800,634

Int. Cl.² F21V *21/30*

U.S. Cl. 362—35 **11 Claims**



1. A lighting fixture for use in the ceiling of a room in a building to be lighted, said building having a roof, comprising:

(a) means defining a hollow light duct extending from the roof of said building to the ceiling of the room to be lighted;

(b) a light admitting panel mounted at one end of said light duct on the roof of said building;

(c) an opaque lid hingeably secured to said light duct adjacent said light admitting panel, said lid having a light reflecting surface to direct daylight through said light admitting panel into said duct; said light reflecting surface

of said lid being positionable from nearly vertical to a closed position covering said light admitting panel when artificial light is to be used;

(d) a light diffusing panel enclosing said duct at the ceiling of said room;

(e) light transmitting, heat insulating means mounted in said duct below the level of said roof; and

(f) an artificial light source, mounted in said duct, for generating light when said daylight is insufficient to provide the desired light level in said room, light from said artificial source being transmitted through said light diffusing panel and being reflected from said reflecting surface through said light diffusing panel.

4,114,187

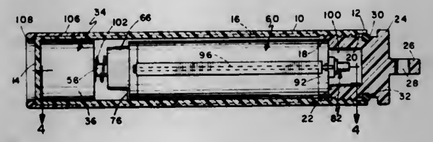
DIVER'S FLASHLIGHT

Alan Kurt Uke, 530 Couper Dr., San Luis Obispo, Calif. 93401

Filed Nov. 5, 1976, Ser. No. 739,290

Int. Cl.² F21L *11/00*

U.S. Cl. 362—158 **6 Claims**



1. A diver's flashlight comprising:

an elongated, substantially cylindrical transparent casing having an open end and a closed transparent window end,

a reflector in said casing at said window end and having a bulb mounted in focal relation therein,

battery pack means for being positioned in said casing and having contact means for circuit completing contact with said bulb,

a spring separating said battery pack from physical contact with said bulb,

said open end of the casing having screw threads therein,

threaded plug means for being engaged in said screw threads and abutting said battery pack to drive the battery pack against said spring when the plug means is screwed into the casing,

an O-ring on said plug, and

said screw threads being inset and said casing having a smooth internal hole at the open end thereof, against which said O-ring seals.

4,114,188

APPARATUS FOR INDICATING UTERINE ACTIVITY IN LABOR

Michael Charles Carter, and Philip James Steer, both of London, England, assignors to National Research Development Corporation, London, England

Filed Jan. 5, 1977, Ser. No. 757,024

Claims priority, application United Kingdom, Jun. 23, 1976, 26042/76

Int. Cl.² A61B *5/04, 5/10;* G06F *15/42*

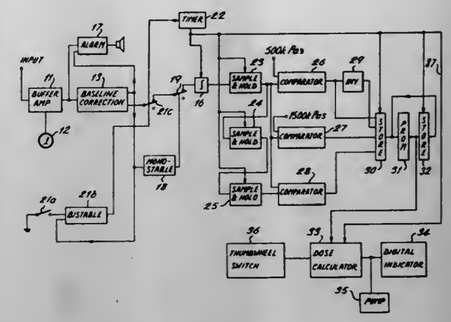
U.S. Cl. 364—415 **22 Claims**

1. Apparatus for indicating uterine activity in labour including:

means adapted to be coupled to a uterine pressure transducer for providing a first signal representative of intrauterine pressure,

means for providing a second signal which is equal to the first signal except when a contraction occurs when it takes up a value equal to that of the first signal in the absence of the contraction,

means for substracting the second signal from the first signal, to provide a third signal, and



means for integrating the third signal over intervals of at least ten but not more than thirty minutes to provide an activity signal indicative of uterine activity in labour.

4,114,189

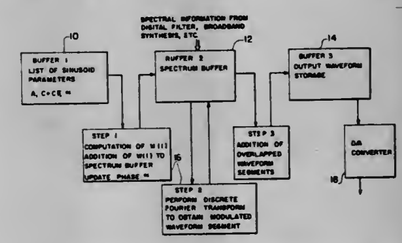
DIGITAL SIGNAL SYNTHESIS SYSTEM

Robert H. Davis, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1975, Ser. No. 639,031

Int. Cl.² G06F *15/34*

U.S. Cl. 364—718 **13 Claims**



1. A process for digital synthesis of a complex waveform having one or more sinusoidal components of arbitrary frequency, amplitude, and phase, comprising the steps of:

spectrally describing each of said sinusoidal components in the frequency domain with a spectral description formed by:

selecting for each of said sinusoidal components a set of spectral cells spaced-apart in order by a predetermined frequency, f_c, each cell potentially representing any complex value in the frequency domain;

determining for each of said spectral cells the magnitude and phase of a complex value according to a raised cosine modulation function, each value varying in dependence upon the order of the respective one of said spectral cells within its set; and,

adding each complex value to the value represented by the respective one of said spectral cells;

periodically transforming each said spectral description from the frequency domain to the time domain to provide successive samples forming segments of the respective said sinusoidal components; and,

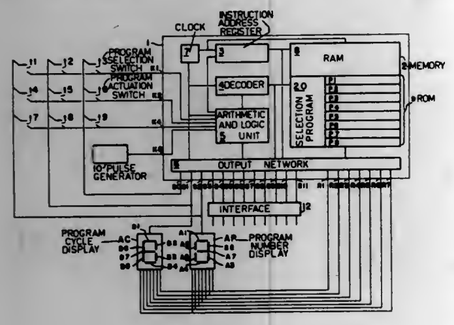
overlapping successive of said segments having an identical frequency by 50 percent of their period to provide unmodulated segments of each of the components.

4,114,190

ELECTRONIC PROGRAMMER HAVING AUTOMATIC PROGRAM SELECTION

Maurice Mazuir, Cluses, France, assignor to Etablissements Carpano & Pons, France

Filed Jan. 25, 1977, Ser. No. 762,231
Claims priority, application France, Feb. 9, 1976, 76 03800
Int. Cl.² G06F 9/06, 3/02
U.S. Cl. 364—900 **4 Claims**



1. An electronic programmer having automatic program selection, comprising:

memory means for storing a plurality of instruction programs;

selecting means responsive to an input signal for automatically successively selecting respective ones of the stored instruction programs during the duration of the input signal;

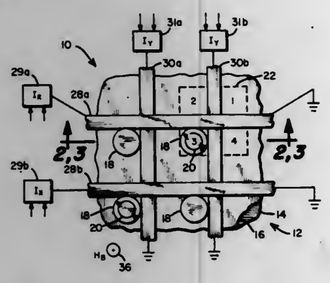
first switching means for applying an input signal to said selecting means to implement successive selection of the stored programs; read-out means responsive to an input signal and cooperative with said memory means and said selecting means for reading out the instructions comprising a selected program; second switching means for applying an input signal to said read-out means to implement read-out of the selected program; and display means cooperative with said selecting means and said read-out means for displaying which programs are successively selected during program selection and for continually displaying which of the plurality of programs has been selected after program selection has been completed and for displaying which of the program instructions is being read out.

4,114,191

BUBBLE DOMAIN STRUCTURING IN BUBBLE DOMAIN MEMORY PLANE

Roger Edward Lund, Woodbury, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,316
Int. Cl.² G11C 19/08
U.S. Cl. 365—2 **4 Claims**



2. A bubble domain memory plane, comprising:

a non-magnetic substrate;

a layer of magnetizable material formed upon said non-magnetic substrate in a matrix array of confinement areas each of which is capable of sustaining bubble domains, said confinement areas surrounded by said layer of magnetizable material which is incapable of sustaining bubble domains; and,

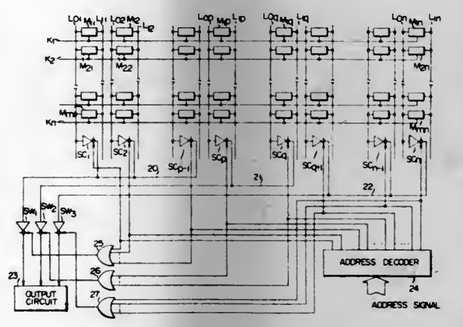
a parallel set of X drive lines and an orthogonally oriented, insulatively superposed parallel set of Y drive lines forming a memory area at each X, Y drive line intersection, each memory area having four corner oriented quadrants for positioning only one of said confinement areas in only a like oriented one of the four quadrants of each of said memory areas.

4,114,192

SEMICONDUCTOR MEMORY DEVICE TO REDUCE PARASITIC OUTPUT CAPACITANCE

Yasoji Suzuki, Ayase, and Kiyofumi Ochii, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1977, Ser. No. 777,663
Claims priority, application Japan, Mar. 16, 1976, 51-28521
Int. Cl.² G11C 7/06
U.S. Cl. 365—189 **4 Claims**



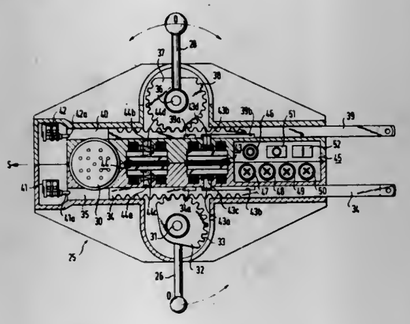
1. In a semiconductor memory device for reading data from and writing data into memory cells comprising storing means formed of a plurality of substantially identical memory cells arranged in a single matrix array with output data lines connected to the plurality of memory cells, sensing means including a plurality of first data-sensing circuits each connected to an output data line of the storing means to detect output data from the memory cells, and a master output line coupled to the output terminals of said first data-sensing circuits, the improvement comprising means for reducing parasitic capacitance affecting said master output line including the first data-sensing circuits being divided into a plurality of groups and the outputs of the first data-sensing circuits of the respective groups being connected together to permit the data detected by said first data-sensing circuits to be transferred to said master output line at a higher speed, said sensing means further including a plurality of second data-sensing circuits respectively connected between said master output line and the groups of outputs of said first data-sensing circuits, and control circuit means for selectively supplying an energizing signal to each said first data-sensing circuit one at a time and for selectively sending forth a control signal to the one second data-sensing circuit connected to that group of first data-sensing circuits to which the then selectively energized first data-sensing circuit belongs.

4,114,193

DEVICE FOR THE CONTROL OF CONCRETE MANUFACTURE IN TRUCK CONCRETE MIXERS

Gerhard Hudelmaier, Frauenstrasse 22, 7900 Ulm, Donau, Germany

Filed Apr. 23, 1976, Ser. No. 679,716
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1975, 2518084
Int. Cl.² B28C 7/02
U.S. Cl. 366—2 **27 Claims**



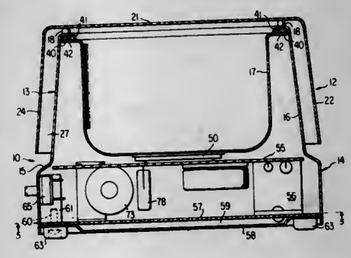
1. A system to control the production of concrete in a concrete mixer truck which is loadable at a loading station and movable to another location such as a job site, said truck being equipped with a rotating drum and drive means for said drum, characterized by a control system including a time switch means for positively keeping said drive means for the drum in operation for a certain predetermined interval of mixing time, said control system comprising a first portion which is mounted at the loading station, and a second portion which is mounted on said concrete mixer truck and coupling means for releasably coupling said first and second portions.

4,114,194

ULTRASONIC CLEANER

Henry J. Walter, Wilton, Conn., assignor to Clairol, Inc., New York, N.Y.

Continuation of Ser. No. 679,409, Apr. 22, 1976, abandoned.
This application Aug. 12, 1977, Ser. No. 824,239
Int. Cl.² B01F 11/02
U.S. Cl. 366—111 **8 Claims**



1. An ultrasonic cleaner for cleaning relatively small articles comprising:

a metallic receptacle for containing a liquid in which articles to be cleaned are immersed, said receptable having an open top periphery;

ultrasonic transducer means secured to the bottom of the receptacle and a power circuit including a relatively high power transducer driving circuit for the ultrasonic transducer means;

a lower housing portion containing the power circuit and ultrasonic transducer means;

an upper housing portion having a cross-sectional area less than that of the lower housing portion and joined to the lower housing portion by a peripherally extending shoulder, said upper housing portion extending above the lower housing portion to a height greater than the height of the receptacle, said upper housing portion containing the receptable therein and having a top rim which fits over the top periphery of the receptacle to define a top opening into the receptacle;

a cover having an open end and a cross-sectional area greater than the upper housing portion and having a depth slightly less than the height of the upper housing portion, wherein the cover slides over the upper housing portion and substantially surrounds the upper housing portion when in place;

means defining spaced projections disposed around said rim of said upper housing portion, wherein said means holds said cover in spaced relation with respect to said rim when the cover is in place over the upper housing portion;

a magnet secured to the cover adjacent the open end thereof; and

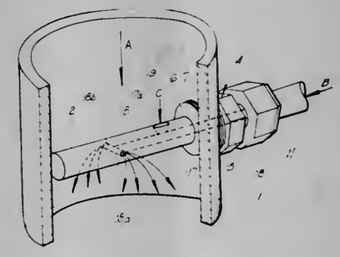
a low-power magnetic reed switch which is positioned adjacent said shoulder so that when said cover is in place over the upper housing portion, the magnet will close the magnetic reed switch and thereby allow said power circuit to energize said ultrasonic transducer means to operate the ultrasonic cleaner.

4,114,195

FLUID INJECTOR

Robert S. Dirksing, and Estel R. Todd, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

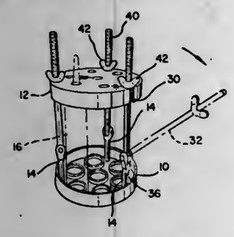
Filed Oct. 25, 1977, Ser. No. 845,064
Int. Cl.² B01F 5/12
U.S. Cl. 366—167 **12 Claims**



1. A fluid injector for the introduction, dispersion and mixing of a first fluid into a second fluid flowing through a conduit, said fluid injector comprising an elongated body mounted in fluid tight fashion through an aperture in the side of said conduit with a first portion and first end of said body located within said conduit and a second portion and second end of said body located exteriorly of said conduit, said first portion of said body extending transversely of the interior of said conduit and transversely of said flow of said second fluid therein, said injector body having a bore extending axially thereof from said second body end and connectable at said second body end to a source of said first fluid under pressure said axial bore communicating with at least one outlet bore extending transversely of said injector body and located within said conduit near the center thereof, said injector body having a transverse inlet bore within said conduit, one end of said inlet bore facing said flow of said second fluid within said conduit and the other end of said inlet bore communicating with said axial bore of said injector body ahead of said at least one outlet bore, whereby a portion of said second fluid enters said inlet bore of said injector and is conducted to said axial bore of said injector to mix therein with said first fluid, the mixture being

ejected into the flow of second fluid within the conduit through the at least one injector outlet bore.

4,114,196
METHOD FOR TINTING CAULK
Rollie Lostutter, 4340 Poplar Creek Rd., Vandalia, Ohio 45377
Division of Ser. No. 756,784, Jan. 5, 1977. This application Feb. 6, 1978, Ser. No. 875,522
Int. Cl.[2] B01F *3/10*
U.S. Cl. 366—348 **3 Claims**



1. A method of tinting caulk wherein said caulk has been prepackaged in cylindrical caulking tubes having a removable piston in one end and a fixed nozzle extending from an opposite end, wherein the steps comprise:
removing said piston from said one end of each said caulking tube;
inserting in each of said tube a predetermined amount of tint sufficient to tint all of the caulk in each said tube to the desired color;
replacing said piston in each said one end of said tubes;
mounting a plurality of said tint containing tubes on a base member having positioning means for engagement with said one end of said tubes so as to prevent lateral movement thereof relative to said base member and to maintain said tubes extending generally perpendicularly therefrom;
placing a top member over said plurality of tubes with openings defined therein in engagement with said nozzles;
securing said top member relative to said base member with removable securing means so as to rigidly hold said tubes between said top and base members;
mounting said top and base members to a reciprocating apparatus;
agitating said caulk and tint on said apparatus for a time sufficient to cause substantially complete blending thereof; and
removing said tubes from said top and base members for subsequent individual use of said tubes.

DESIGNS

SEPTEMBER 12, 1978

249,296
SHIRT OR SIMILAR ARTICLE
David Friedman, 22, Gush Etzion St., Givatayim, Israel
Filed Aug. 4, 1976, Ser. No. 711,523
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—215



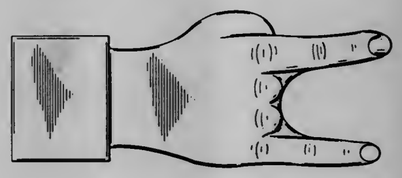
249,297
CARPENTER'S APRON
George Hillinger, Hollywood, Calif., assignor to Action Leathercraft, Inc., Calif.
Filed Nov. 29, 1976, Ser. No. 745,873
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—229



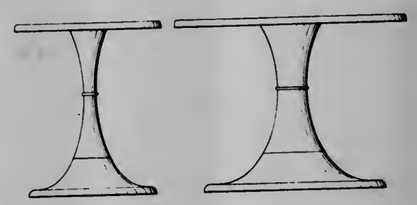
249,298
SPORT SHOE
Jonas Senter, New York, N.Y., assignor to Citc Industries, New York, N.Y.
Filed Apr. 16, 1975, Ser. No. 568,653
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



249,299
BOOT JACK
Robert D. Lindley, 4808 Maplewood, Wichita Falls, Tex. 76308
Filed Jun. 17, 1976, Ser. No. 697,022
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.2



249,300
TABLE OR SIMILAR ARTICLE
Arpad Szabo, 5150 MacDonald Ave., Montreal, Quebec, and Ludovic Perl, 781 100th Ave., Chomedey (Laval), Quebec, both of Canada
Filed Oct. 20, 1976, Ser. No. 734,260
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



249,301
DISPLAY RACK
Udell S. Ehrlich, 157 Amherst Pl., Atlanta, Ga. 30327
Filed Aug. 6, 1976, Ser. No. 712,314
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—28



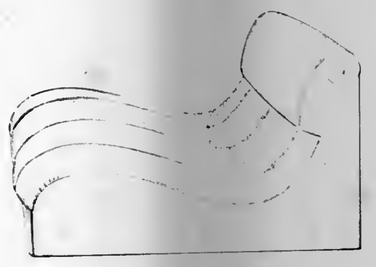
249,302
CHAIR OR SIMILAR ARTICLE
Fred Ruf, Arlesheim, Switzerland, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland
Filed Aug. 16, 1976, Ser. No. 714,955
Claims priority, application Switzerland, Mar. 25, 1976, 76/62766
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



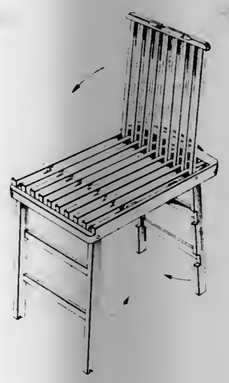
249,303
CHAIR OR SIMILAR ARTICLE
Fred Ruf, Arlesheim, Switzerland, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland
Filed Aug. 16, 1976, Ser. No. 714,956
Claims priority, application Switzerland, Mar. 23, 1976, 76/62766
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



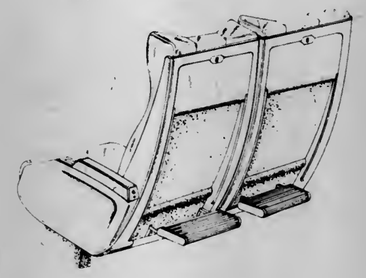
249,304
LOUNGE OR SIMILAR ARTICLE
Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Nov. 26, 1976, Ser. No. 745,350
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



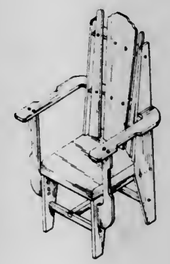
249,305
COLLAPSIBLE TABLE AND CHAIR COMBINATION
Ralph W. Henninger, 3292 Trinity St., Fortuna, Calif. 95540
Filed Sep. 10, 1976, Ser. No. 721,962
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—42



249,306
COMBINED DUAL RAILROAD PASSENGER SEAT AND LEGRESTS
Robert J. Bengtsson, Colorado Springs, Colo., assignor to AMI Industries Inc., Colorado Springs, Colo.
Filed Aug. 10, 1976, Ser. No. 713,125
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



249,307
ARM CHAIR
Thomas M. Hall, 139 W. North St., Ilion, N.Y. 13357
Filed Jul. 9, 1976, Ser. No. 690,248
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



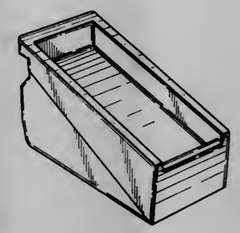
249,308
RECESSED PAPER ROLL HOLDER AND DISPENSER COMBINATION
James A. Williams, 4120 Morning Pl., Sarasota, Fla. 33581
Filed May 23, 1977, Ser. No. 799,731
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

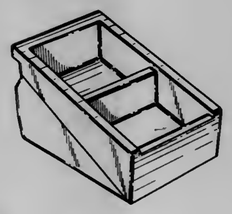


249,309
COMBINED PAPER ROLL DISPENSER AND HOLDER
James A. Williams, 4120 Morning Pl., Sarasota, Fla. 33581
Filed May 23, 1977, Ser. No. 799,732
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

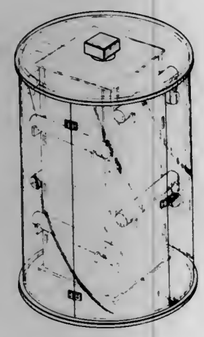


249,310
WALL MOUNTED MODULAR TRAY
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated
Filed Jan. 17, 1977, Ser. No. 760,076
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—136

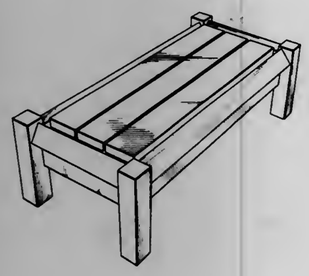




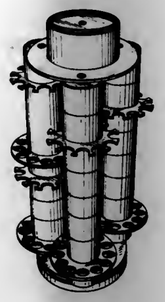
249,311
JEWELRY DISPLAY CASE
Hayden W. Coulthurst, Warwick, R.I., assignor to Sweet Manufacturing Company
Filed Aug. 15, 1977, Ser. No. 824,843
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—146



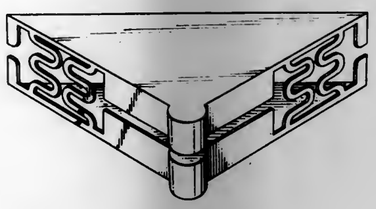
249,312
TABLE
William F. Taber, 3520 Albans, Houston, Tex. 77005
Filed Dec. 22, 1976, Ser. No. 753,457
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



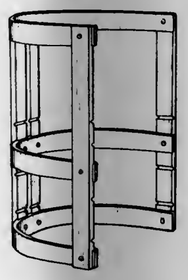
249,313
JEWELRY DISPLAY SUPPORT, OR SIMILAR ARTICLE
Victor W. Ganz, 393 Fifth Ave., New York, N.Y. 10016
Filed Sep. 30, 1977, Ser. No. 838,122
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—188



249,314
CORNER PROTECTORS
Melvyn Wilde, 21 Lime Grove, Lowton, Warrington, Cheshire, and Robert John Sutton, 50 Westbourne Rd., Birkdale, Southport, Lancashire, both of England
Filed Nov. 9, 1976, Ser. No. 740,177
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



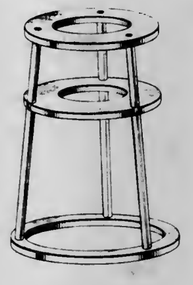
249,315
FRAME FOR A CHAIR
J. Chr. H. Daae-Qvale, Skodje, Norway, assignor to Möre Lenestolfabrikk A/S, Orsta, Norway
Filed Nov. 11, 1976, Ser. No. 741,162
Claims priority, application Norway, May 12, 1976, 7657484
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



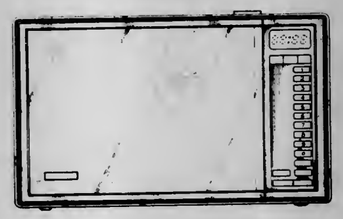
249,316
DRINKING CUP
Elizabeth Anne Tyska, 169 Bergen Ave., Ridgefield Park, N.J. 07660, and Margaret Semple Rooney, Lakeside Park, N. Windham, Me. 04062
Filed May 2, 1977, Ser. No. 793,185
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



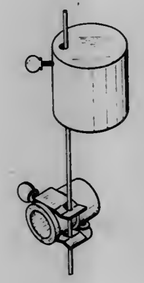
249,317
BOTTLE DRAINER STAND
F. Karl Korn, 1634 8th Ave. N., Fort Dodge, Iowa
Filed Nov. 4, 1976, Ser. No. 738,656
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70



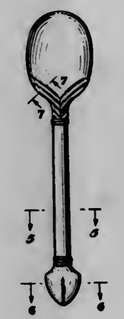
249,318
MICROWAVE OVEN
Clarence F. Graser, 2654 Charing Rd., Columbus, Ohio 43221, and Arthur F. Ludvigsen, 3201 Skyview Dr., Burnsville, Minn. 55337
Filed Jan. 31, 1977, Ser. No. 764,435
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



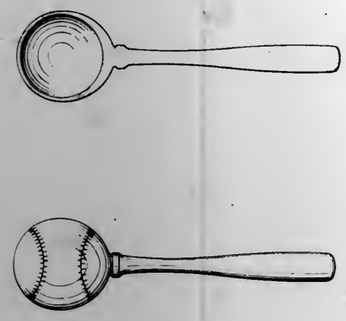
249,319
ROTISSERIE COUNTERBALANCE
Leslie G. Dutchburn, 7 De Vere Gardens, Toronto, Ontario, Canada
Filed Mar. 14, 1977, Ser. No. 777,248
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—129



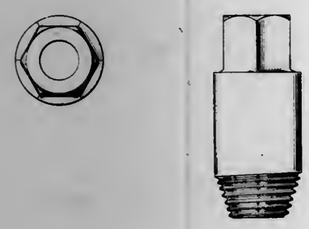
249,320
SPOON OR SIMILAR ARTICLE OF FLATWARE
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Aug. 18, 1976, Ser. No. 715,480
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



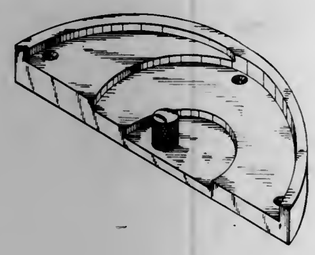
249,321
NOVELTY SPOON
Anthony J. Mancini, 893 S. Green Rd, South Euclid, Ohio 44121
Filed Oct. 26, 1976, Ser. No. 735,590
Term of patent 3 years
Int. Cl. D7—*03*
U.S. Cl. D7—143



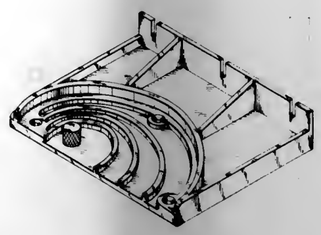
249,322
TRANSMISSION SEAL REMOVER
Walter L. Diffenderfer, Lancaster, Pa., assignor to K-D Manufacturing Company, Lancaster, Pa.
Filed Jan. 20, 1976, Ser. No. 650,606
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



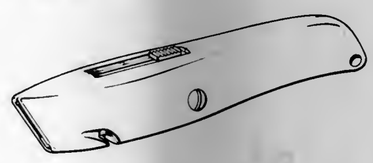
249,323
JAR OPENER
Howard A. Hutson, P.O. Box 1415, Denver, Colo. 80201
Filed Sep. 13, 1976, Ser. No. 722,633
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—37



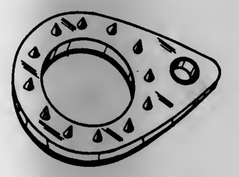
249,324
JAR OPENER
Howard A. Hutson, 779 Kinnikinnik Hill, Golden, Colo. 80401
Filed Sep. 13, 1976, Ser. No. 722,642
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—37



249,325
UTILITY KNIFE
Ernest James Rollband, Brooktondale, N.Y., assignor to The Stanley Works, New Britain, Conn.
Filed Sep. 8, 1975, Ser. No. 613,037
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99



249,326
THIMBLE FOR A ROPE
Bengt Ingemar Jöhanson, Kullavägen 7, Sjomarken, Sweden (510 41)
Filed Oct. 20, 1976, Ser. No. 734,029
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



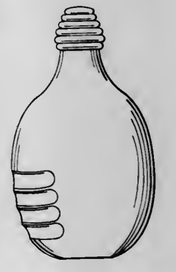
249,327
SWIVEL SWAG HOOK
Stanley Gaines, Roslyn Heights, N.Y., assignor to Allen-Stevens Corp., Woodside, N.Y.
Filed Jan. 24, 1977, Ser. No. 762,032
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



249,328
DISPENSING BOTTLE
Robert E. Fields, P.O. Box 268, Cedarhurst, N.Y. 11516
Filed Oct. 15, 1976, Ser. No. 732,680
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—30



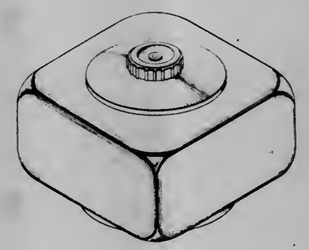
249,329
BOTTLE
Louis Schacher, and Esther Schacher, both of 4910 Fifteenth Ave., Brooklyn, N.Y. 11219
Filed Jul. 21, 1976, Ser. No. 707,227
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—45



249,330
BOTTLE
Jacques Pigeon, Chalon-sur-Saone, France, assignor to Carnaud Total Interplastic
Filed Dec. 16, 1976, Ser. No. 751,460
Claims priority, application France, Jun. 16, 1976, 76 121
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—119



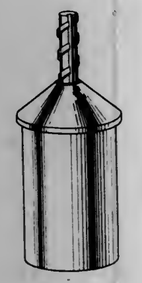
249,331
CONTAINER FOR LIQUIDS
Guy Hubert, Lasne-Chapelle Saint Lambert, and Charles Vandenhove, Vilvoorde, both of Belgium, assignors to Societe Bourguignonne d'Applications Plastiques, Chevigny-Saint-Sauveur, France
Filed Feb. 27, 1976, Ser. No. 662,087
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175



249,332
CASE FOR A DRY SHAVER
Karl Peter Gunter Hauf, Klagenfurt, Viktring, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 7, 1976, Ser. No. 693,489
Claims priority, application Benelux, Dec. 12, 1975, 5073400
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D9—186



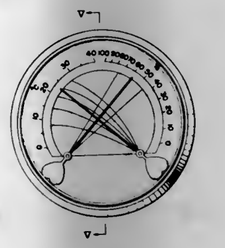
249,333
CANDY DISPENSER
Walter Stern, Wilmette, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,399
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



249,334
WALL CLOCK
James E. Watt, 41 N. Terrace Dr., Tiburon, Calif. 94920, and Richard B. Moore, 240 Bay St. Apt. No. 209, San Francisco, Calif. 94133
Filed Nov. 18, 1976, Ser. No. 742,892
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—21



249,335
COMBINED THERMOMETER AND HYGROMETER OR THE LIKE
Aijiro Kaneko, Hanyu, Japan, assignor to Kaneko Agricultural Machinery Co., Ltd., Hanyu, Japan
Filed Aug. 26, 1976, Ser. No. 718,036
Claims priority, application Japan, May 17, 1976, 51-18252
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—53



249,336
SPORTS NET HEIGHT GAUGE
Nina H. Webb, 5 Stephanie La., South, Darien, Conn. 06820
Filed Oct. 6, 1976, Ser. No. 725,921
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



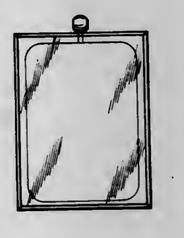
249,337
EARRING
Russell A. DiOrio, Cranston, R.I., assignor to DiOrio Enterprises, Inc.
Filed Sep. 21, 1976, Ser. No. 725,253
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—40



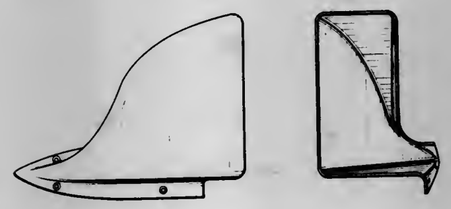
249,338
JEWELRY FINDING OR THE LIKE
Anita M. Spinelli, 9150 E. Sellarole, Tucson, Ariz. 85710
Filed Mar. 17, 1977, Ser. No. 778,447
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—54



249,339
PENDANT
Hayden William Couithurst, Warwick, R.I., assignor to McGrath-Hamin, Inc.
Filed Sep. 27, 1976, Ser. No. 727,389
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79



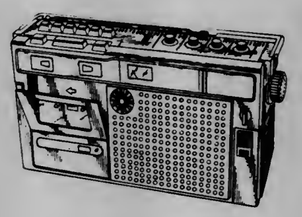
249,340
COVER FOR A VEHICLE MIRROR HOUSING
Dennis G. Braid, 5647 Oakdale Ave., Woodland Hills, Calif. 95695
Filed Sep. 13, 1976, Ser. No. 723,186
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



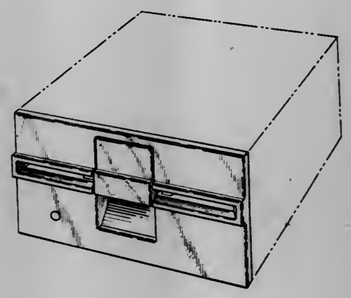
249,341
ELECTRO-MECHANICAL PULSER
William C. Mertz, Webster Groves, Mo., assignor to UMC Industries, Inc., Stamford, Conn.
Filed Nov. 11, 1976, Ser. No. 741,055
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



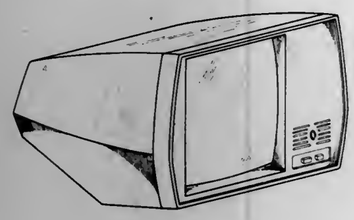
249,342
CASSETTE TAPE RECORDER
Mitsugu Ohki, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 12, 1976, Ser. No. 676,204
Claims priority, application Japan, Oct. 14, 1975, 50-41258
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



249,343
FRONT PANEL OF A FLEXIBLE DISK DRIVE
Peter A. Ronzani, Saratoga, Calif., assignor to Shugart Associates, Sunnyvale, Calif.
Filed Oct. 18, 1976, Ser. No. 733,147
Term of patent 14 years
Int. Cl. D13—*03;* D14—*02*
U.S. Cl. D14—40



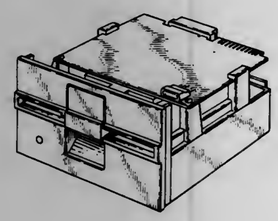
249,344
CATHODE-RAY TUBE CONSOLE
Clarence D. Zierhut, Richardson, Tex., assignor to Mohawk Data Sciences Corp.
Filed Nov. 15, 1976, Ser. No. 742,032
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—43



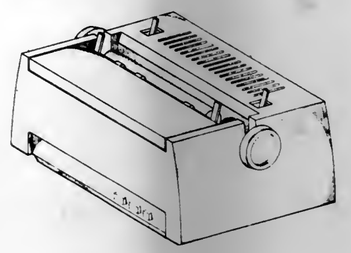
249,345
SELF-CONTAINED, PORTABLE DATA ENTRY TERMINAL OR THE LIKE
Melvin M. Oliveira, Huntington Beach, and Joseph A. Weidinger, Anaheim, both of Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.
Filed Jul. 13, 1977, Ser. No. 815,258
Term of patent 14 years
Int. Cl. D14—*02*; D18—*01*
U.S. Cl. D14—43



249,346
FLEXIBLE DISK DRIVE
Albert S. Chou, Monte Sereno; David A. Brown, Saratoga; Donald V. Daniels, Santa Cruz; Harold C. Medley, Los Gatos; Peter A. Ronzani, Saratoga, and Ray Y. Yokoyama, Sunnyvale, all of Calif., assignors to Shugart Associates, Sunnyvale, Calif.
Filed Oct. 19, 1976, Ser. No. 733,785
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—46

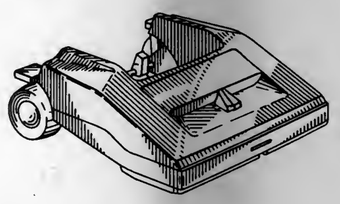


249,347
PRINTER CABINET
Clarence D. Zierhut, Richardson, Tex., assignor to Mohawk Data Sciences Corp.
Filed Dec. 16, 1976, Ser. No. 752,639
Term of patent 14 years
Int. Cl. D14—*02*; D18—*02*
U.S. Cl. D14—50

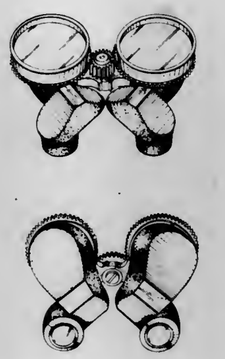


249,348
AGRICULTURAL SPRAYING IMPLEMENT
William Felix Hughes, 73 Abernathy Rd., Belmont, Western Australia, Australia (48013)
Filed May 12, 1977, Ser. No. 796,207
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—13

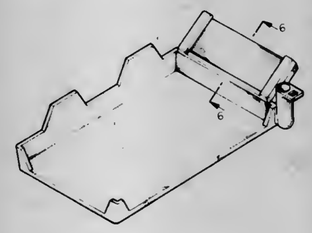
249,349
SUCTION CLEANER NOZZLE OR THE LIKE
Richard A. Wareham, 2315 Schneider Rd., NE., North Canton, Ohio 44720
Filed Jan. 3, 1977, Ser. No. 756,076
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—63



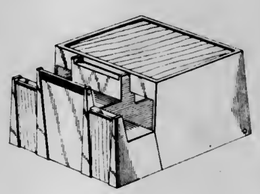
249,350
BINOCULAR
William J. Beecher, c/o The Chicago Academy of Sciences, 2001 N. Clark St., Chicago, Ill. 60614
Filed Apr. 7, 1976, Ser. No. 674,593
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59



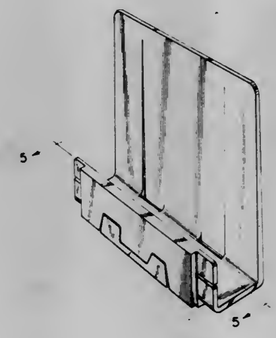
249,351
COMBINED MEMO PAD HOLDER, CALENDAR HOLDER AND PEN HOLDER, OR THE LIKE
Lawrence C. Mattera, 2828 Upshube St., #212, San Diego, Calif. 92106
Filed Feb. 11, 1977, Ser. No. 767,890
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—22



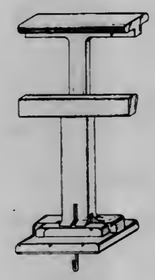
249,352
TAPE DISPENSER
Kenneth J. Kirchhoff, Vadnais Heights, Minn., assignor to Minnesota Mining & Manufacturing Company
Filed Dec. 23, 1976, Ser. No. 754,080
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—69



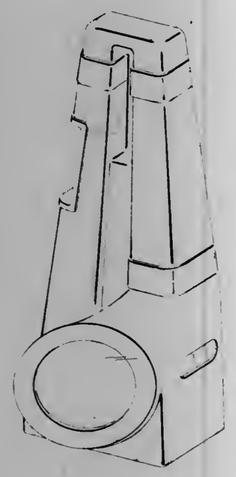
249,353
DESK TOP LETTER FILE
David A. Juergens, and Greg P. Terek, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Sep. 17, 1976, Ser. No. 724,476
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90



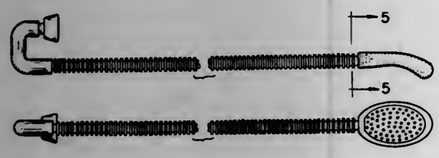
249,354
FISH HOOK REMOVER
Rayburn J. Campbell, 1715 Winnie St., Apt. 2, Galveston, Tex. 77550
Filed Feb. 26, 1976, Ser. No. 661,795
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



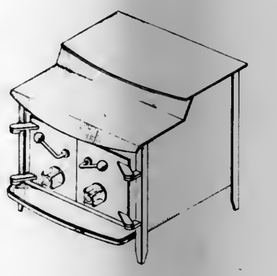
249,355
TOILET TANK CHEMICALS DISPENSER
Elliott E. Blank, San Anselmo, Calif., assignor to Shell Oil Company, Houston, Tex.
Filed Feb. 22, 1977, Ser. No. 770,979
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



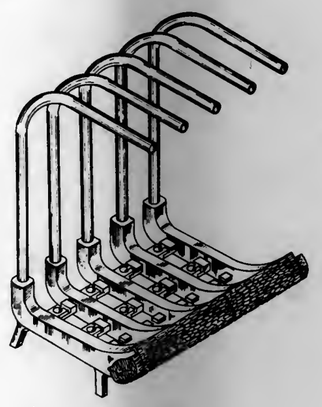
249,356
SHAMPOO UNIT FOR SINK SPOUT OR THE LIKE
Joseph Nagy, 1513 Sherwood Ct., Dearborn, Mich. 48124
Filed Nov. 1, 1976, Ser. No. 737,290
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



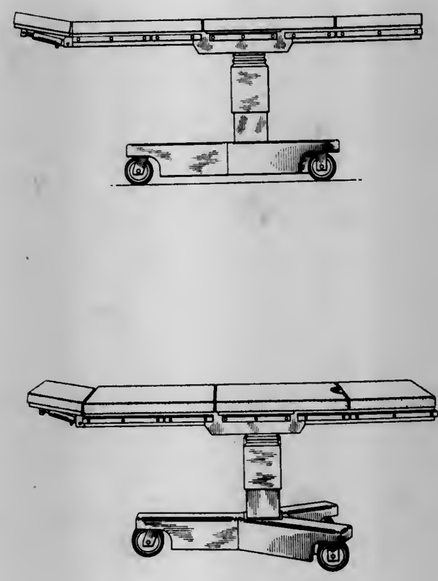
249,357
COMBINATION HEATING AND COOKING STOVE
William L. DeMarco, Cemetery Rd., Great Meadows, N.J. 07838
Filed Dec. 30, 1977, Ser. No. 866,145
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



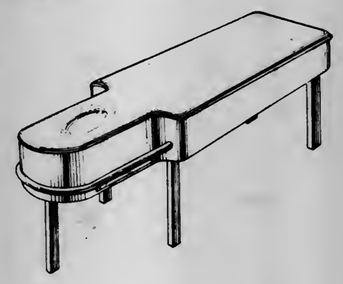
249,358
COMBINED HEAT EXCHANGER AND FIREPLACE GRATE
Richard W. Mellow, Jr., Ladue, Mo., assignor to Liberty Foundry Co., St. Louis, Mo.
Filed Nov. 18, 1976, Ser. No. 742,901
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



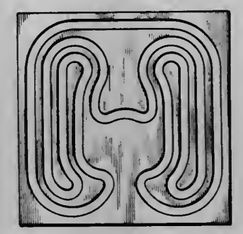
249,359
OPERATING TABLE
Michael James Forster Stott, Bromma, and Bengt Häger, Täby, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Filed May 19, 1976, Ser. No. 687,828
Claims priority, application Sweden, Nov. 24, 1975, 752330
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—3



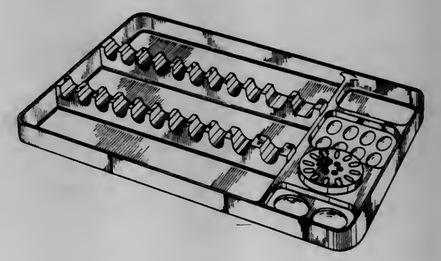
249,360
THERAPY TABLE
Frederic V. Lacock, 240 Woodland, Barrington, Ill. 60010
Filed Dec. 30, 1976, Ser. No. 755,617
Term of patent 14 years
Int. Cl. D24—*01;* D6—*03*
U.S. Cl. D24—3



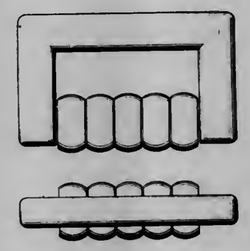
249,361
MODULAR TRACK ASSEMBLY FOR 150-UNIT BIOLOGICAL SAMPLER CHANGER
Anthony A. Mueller, Florence, Ky., assignor to Actus, Inc., Florence, Ky.
Filed Jul. 12, 1977, Ser. No. 815,008
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—7



249,362
SURGICAL INSTRUMENT TRAY
Tore Alexander Forsman, Saltsjöbaden, and Christer Odvik, Djursholm, both of Sweden, assignors to Toringe Consult AB and Christer Odvik AB
Filed Apr. 6, 1978, Ser. No. 674,277
Claims priority, application Sweden, Oct. 7, 1975, 2014/75
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—31



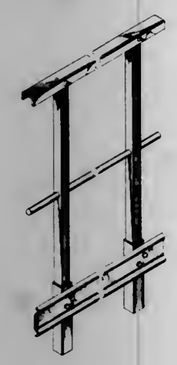
249,363
BODY TONER
Maureen Day, 45 E. Walnut St., Pasadena, Calif. 91103
Filed Oct. 26, 1976, Ser. No. 735,148
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



249,364
SURGICAL APPLICATOR SWAB
Robert P. Julius, New York, N.Y., assignor to Nice-Pak Products, Inc., Mt. Vernon, N.Y.
Filed Jul. 18, 1977, Ser. No. 816,520
Term of patent 14 years
Int. Cl. D24—*02. 04*
U.S. Cl. D24—63



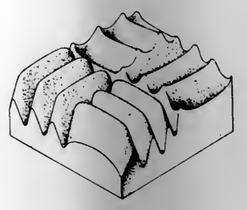
249,365
PLASTIC GUARD RAIL OR THE LIKE FOR WALKWAYS, BALCONIES, PLATFORMS AND THE LIKE
H. Frederick Lange, Hollins, Va., assignor to Structural Plastic Systems, Inc., Fincastle, Va.
Filed Oct. 22, 1976, Ser. No. 734,759
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—44



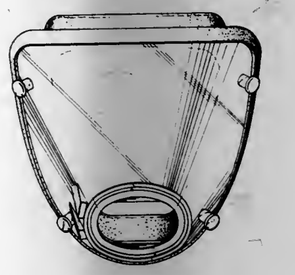
249,366
SCREEN DOOR PERIPHERAL FRAME MEMBER
Harold Rex Jury, Glynde, Australia, assignor to Ampliform Pty Limited
Filed Jul. 29, 1976, Ser. No. 709,766
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—76

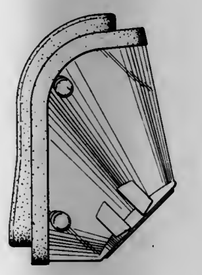


249,367
DECORATIVE ACOUSTICAL PANEL
Larrie S. Reese, Saint Paul, Minn., assignor to Charles Industries Corporation, Minneapolis, Minn.
Filed Sep. 11, 1975, Ser. No. 612,288
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—92

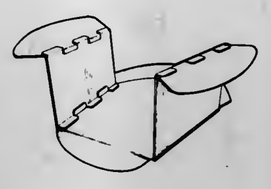


249,368
BREATHING FACE MASK
Dudley W. Watkins, Jr., Williamsville, N.Y., assignor to A-T-O Inc., Willoughby, Ohio
Filed Jul. 21, 1976, Ser. No. 707,233
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D29—9

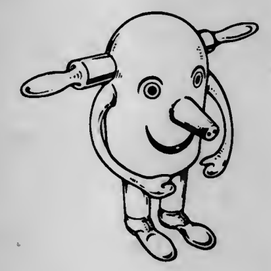




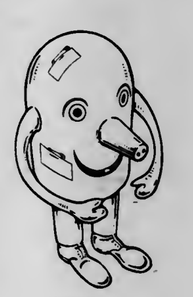
249,369
FOLDABLE ADAPTER FOR A WATER CLOSET FOR USE BY A PET ANIMAL
Jan G. L. S. Kullenbäck, c/o Johansson, Underasgatan 4, S-412 51, Göteborg, Sweden
Filed Sep. 23, 1975, Ser. No. 616,047
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



249,370
DOLL
John B. Salt, and David J. Salt, both of 237 Dickenson Rd., Longsight, Manchester M13 OYW, England
Filed Jan. 11, 1977, Ser. No. 758,411
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



249,371
DOLL
John B. Salt, and David J. Salt, both of 237 Dickenson Rd., Longsight, Manchester M13 OYW, England
Filed Jan. 11, 1977, Ser. No. 763,159
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



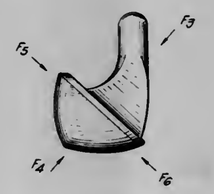
249,372
DOLL
John B. Salt, and David J. Salt, both of 237 Dickenson Rd., Longsight, Manchester M13 OYW, England
Filed Jan. 11, 1977, Ser. No. 758,413
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



249,373
GOLF CLUB HEAD
Phillipe M. R. A. J. Jeghers, 48 Blvd. Ernest Solvay, 4400 Herstal, Belgium
Filed Aug. 31, 1976, Ser. No. 719,242
Claims priority, application Belgium, Mar. 3, 1977, 50,890-01
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



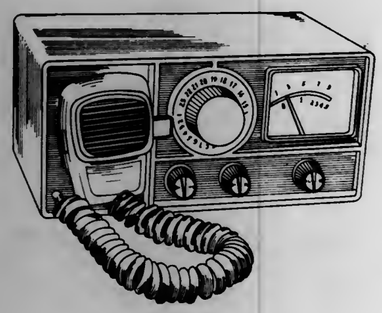
249,374
GOLF CLUB HEAD
Phillipe M. R. A. J. Jeghers, 48 Blvd. Ernest Solvay, 4400 Herstal, Belgium
Filed Aug. 31, 1976, Ser. No. 719,258
Claims priority, application Belgium, Mar. 3, 1977, 50,890-02
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



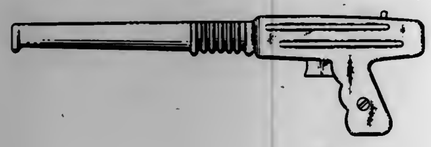
249,375
PHYSICAL EXERCISER FOR MOUNTING ON BED
Frederick W. Deppner, Jr., 9708 Lamar Ave., Overland Park, Kans. 66207
Filed Oct. 12, 1976, Ser. No. 731,751
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



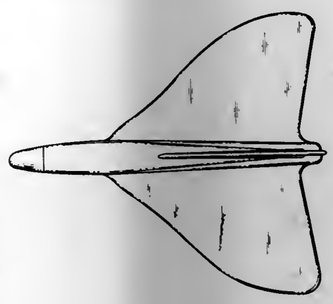
249,376
TOY CB RADIO
Beverly W. Taylor, Gasconade County, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.
Filed Jun. 14, 1976, Ser. No. 696,064
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



249,377
TOY AIRPLANE LAUNCHER
Albert T. Takahashi, 2819 Danaha St., Torrance, Calif. 90505
Filed Sep. 13, 1976, Ser. No. 722,734
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 PP



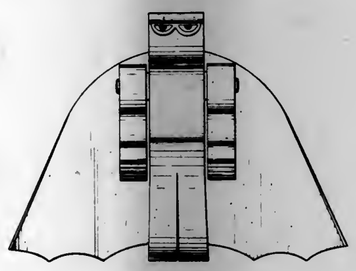
249,378
TOY AIRPLANE
Albert T. Takahashi, 2819 Danaha St., Torrance, Calif. 90505
Filed Sep. 13, 1976, Ser. No. 722,735
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



249,379
TOY KANGAROO
Catherine M. Barton, East Aurora, and James E. Slowe, South Wales, both of N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 29, 1976, Ser. No. 736,835
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



249,380
TOY FIGURE GLIDER
Joseph J. Wetherell, Bedford, N.Y., assignor to Ned Strongin Associates, Inc., New York, N.Y.
Filed Jan. 19, 1977, Ser. No. 760,282
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AD



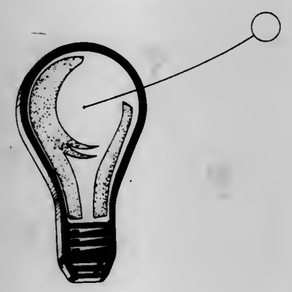
249,381
TOY ISLAND
Robert D. Wise, 1437 W. Exchange, Akron, Ohio 44313
Filed Feb. 17, 1977, Ser. No. 769,553
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



249,382
TOY ICEBERG
Robert D. Wise, 1437 W. Exchange, Akron, Ohio 44313
Filed Feb. 17, 1977, Ser. No. 769,554
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



249,383
GAME PADDLE
Anthony J. Mancini, 893 S. Green Rd., South Euclid, Ohio 44121
Filed Mar. 21, 1977, Ser. No. 779,818
Term of patent 3 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 P



249,384
COMBINED CANDLES AND CONTAINER THEREFOR
Willy H. Vanbragt, 111 Rengstorff #92, Mountain View, Calif. 94040
Filed Feb. 10, 1977, Ser. No. 767,472
Term of patent 7 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



249,385
PROTECTIVE GUARD FOR AN UNDERWATER POOL LIGHT
Dale C. Delphia, Modesto, Calif., assignor to Blue Dolphin Pools of Modesto, Modesto, Calif.
Filed Aug. 17, 1977, Ser. No. 825,269
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 B



249,386
GUITAR STRAP
Randall S. Zacuto, 913 Pico Blvd., Santa Monica, Calif. 90405
Filed Mar. 1, 1976, Ser. No. 662,506
Term of patent 14 years
Int. Cl. D17—*99*
U.S. Cl. D56—1 R



249,387
FOLDING VIOLIN
John F. Hart, 1004 W. Pawnee St., Cleveland, Okla. 74020
Filed Aug. 24, 1976, Ser. No. 717,450
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



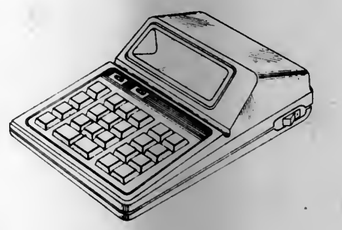
249,388
CALCULATOR CASING
Eugene Joseph Sulek, Richardson, and William James Lawrence, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Sep. 2, 1976, Ser. No. 720,166
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B



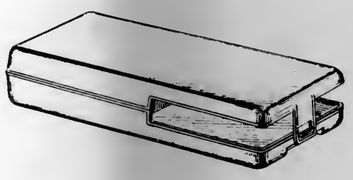
249,389
VISITING CARD HOLDER FITTING FOR A PRINTING MACHINE
Kazumasa Nagai, Hiroshima, Japan, assignor to Ryobi Ltd., Fuchu, Japan
Filed Feb. 8, 1977, Ser. No. 766,820
Claims priority, application Japan, Aug. 17, 1976, 51/32549
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R

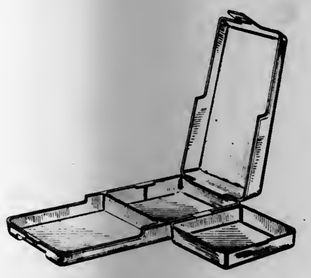


249,390
ELECTRONIC CALCULATING MACHINE
Yoshihisa Ohie, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 7, 1977, Ser. No. 804,432
Claims priority, application Japan, Dec. 16, 1976, 51-49149
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B

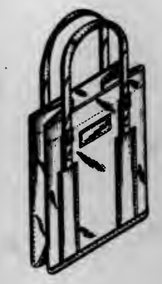


249,391
TRAVEL CASE FOR AN ELECTRIC DRY SHAVER
Jacob A. Krapowicz, Ridgefield, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.
Filed Jan. 12, 1976, Ser. No. 648,374
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R

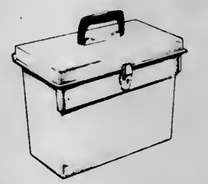


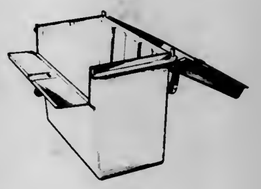


249,392
CARRYING CASE WITH ADJUSTABLE CARRYING STRAPS
Joseph Y. Pelavin, North Bergen, N.J., assignor to Lark Luggage Corporation
Filed Oct. 29, 1976, Ser. No. 737,139
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R

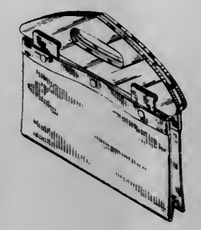


249,393
FILE BOX
Ole Winther, Helsingor, Denmark, assignor to Esselte Obergs AB, Stockholm, Sweden
Filed Oct. 27, 1976, Ser. No. 735,937
Claims priority, application Sweden, May 5, 1976, 760992
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



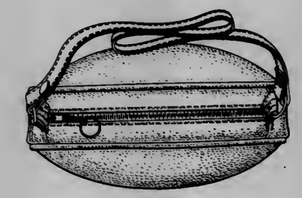


249,394
HANDBAG
Lawrence B. Schwartz, Fairfield, Conn., assignor to Acricite Company, Inc., Bridgeport, Conn.
Filed Nov. 3, 1976, Ser. No. 738,551
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



249,395
HANDBAG
Laura J. Kling, 2030 Amherst Road NE., Massillon, Ohio 44646
Filed Oct. 8, 1976, Ser. No. 730,705
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 C





LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 12TH DAY OF SEPTEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Pupp, Herwig; and Andersson, Otto Birger, B 777,940, Cl. 206-606.000.

Abair, Raymond L.; and Kulish, Stanley J., Jr., to Champion Spark Plug Company. Hand held ultrasonic nebulizer. B 784,044, Cl. 261-81.000.

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Abe, Hideo: *See—*
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Abe, Kazunobu; Rikimaru, Hiroaki; Yamazaki, Iwao; and Hasegawa, Hiroshi, to Sakai Chemical Industry Co., Ltd. Production of shaped catalysts or carriers comprising titanium oxides. B 753,323, Cl. 252-455.00R.

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Abex Corporation: *See—*
Frank, Earl E.; and Yee, Bing S., B 724,720, Cl. 210-167.000.

Abrarov, Vakif Barievich: *See—*
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Bond, John A., B 841,225, Cl. 251-328.000.
Reinhardt, James R.; and Scott, Mark P., B 833,947, Cl. 213-43.000.

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Holders for tape cassettes. B 583,756, Cl. 206-387.000.

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Craig, Robert Simpson, B 694,426, Cl. 428-404.000.

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Barbaresi, Charlotte, 4,112,991, Cl. 150-28.00A.

Adams, Elvin E.; Wells, Tom J.; Wentzek, Horst F.; Zapletal, Henry; and Zugel, Marty J., to Leggett & Platt, Incorporated. Method and apparatus for forming a row of spring coils from a continuous length of wire. 4,112,726, Cl. 72-137.000.

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Adcock, James L.: *See—*
Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., B 379,876, Cl. 422-191.000.

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Dreibelbis, Logan L., 4,112,810, Cl. 83-490.000.

Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, to Robert Bosch GmbH. Method for measuring the blood pressure of a patient. 4,112,929, Cl. 128-2.05M.

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Tsuji, Sadahiko; and Agari, Yujiro, B 857,692, Cl. 350-184.000.

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Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, B 699,341, Cl. 355-8.000.
Huber, Leonhard; Kirschner, Helmut; and Muller, Herbert, B 763,684, Cl. 354-252.000.
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Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, B 790,440, Cl. 260-123.500.

Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, to Nippondenso Co., Ltd. Temperature responsive device for internal combustion engines. 4,112,896, Cl. 123-122.00D.

Akashi, Hiromitsu: *See—*
Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, 4,112,746, Cl. 73-95.000.

Akiyama, Shinichi; and Yamamoto, Haruhisa, to Nippon Zeon Co. Ltd. Process for preparing unsaturated carboxylic acids. B 777,679, Cl. 562-532.000.

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Margen, Peter Heinrich Erwin; and Naslund, Rolf Paul, 4,112,569, Cl. 29-157.30R.

Aladdin Industries, Incorporated: *See—*
Frazier, Albert A.; and Phillips, Howard W., B 837,519, Cl. 222-131.000.

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Collins, John D.; and Jones, Trevor E., B 781,118, Cl. 260-429.700.

Alco Standard Corporation: *See—*
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Helixon, Michael L.; and Ward, Barry S., 4,112,945, Cl. 128-218.00D.

Alden Research Foundation: *See—*
Bliudnikas, Kestutis E., B 754,904, Cl. 346-139.00C.

Aldridge, Trevor John; Lock, Alan Howard; and Bell, Robert Martin Alistair, to Rolls-Royce Limited. Real-time recording of fatigue damage. 4,112,747, Cl. 73-116.000.

Alegranti, Constance Wright, to Du Pont de Nemours, E. I., and Company. Asymmetric polyimide membranes. B 677,443, Cl. 210-500.00M.

Alexander, Robert: *See—*
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Alexander, Robert H.: *See—*
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Alexandrovich, George, to Pickering & Company, Inc. Playback stylus for phonograph record stamper. B 790,391, Cl. 274-37.000.

Alfa-Laval Company Limited: *See—*
Denne, Phillip Raymond Michael; Davies, David Evan Naunton; and McEwen, Colin Dougal, B 723,621, Cl. 343-6.8LC.

All Sunpower, Inc.: *See—*
Skinner, Leon S.; and Taylor, Norman C., 4,112,922, Cl. 126-271.000.

Allen, John D. Fiberglass tank and method for making the same. 4,112,644, Cl. 52-245.000.
Allen, Richard J.: *See—*
DuBosque, Clayton, Jr.; Rudd, Wallace C.; and Allen, Richard J., 4,112,566, Cl. 29-157.30C.
Allied Chemical Corporation: *See—*
Kramer, John B., 4,112,899, Cl. 123-139.0AW.
Pieters, Wim J. M.; and Carlson, Emery J., B 791,767, Cl. 252-438.000.
Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, B 829,764, Cl. 264-210.00F.
Tanner, Lee E.; and Ray, Ranjan, B 823,080, Cl. 75-177.000.
Allis-Chalmers Corporation: *See—*
Williams, Douglas W.; and Kaiser, George E., B 750,918, Cl. 180-51.000.
Allsop, Ivor J. Shoe retaining and carrying device. B 848,098, Cl. 224-45.00S.
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, to Montedison S.p.A. Process for the preparation of anhydrous solutions of alkaline phenates in organic solvents. B 816,919, Cl. 568-716.000.
Alpern, Marvin: *See—*
Rosenthal, Arthur Lee; Alpern, Marvin; and Meisch, Charles Edward, 4,112,949, Cl. 128-278.000.
Alproco, Inc.: *See—*
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Altman, James E.; and Altman, Eston, 4,112,838, Cl. 99-546.000.
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Altman, Richard M., to Vivitar Corporation. Reflex camera with internal zoom lens. B 674,229, Cl. 354-152.000.
Amagami, Keizo: *See—*
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Andena, Paolo: *See—*
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Anderberg, Nils-Eric, to Fabriksmontering i Trelleborg AB. Canopy device. 4,112,958, Cl. 135-5.00A.
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Asahi-Dow Limited: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, B 812,737, Cl. 260-874.000.
Asahi Glass Company, Ltd.: *See—*
Nomaki, Koji; and Saoyama, Yoshihito, 4,112,868, Cl. 118-429.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; and Kobayashi, Hidehiko, B 751,778, Cl. 96-114.100.
Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, B 786,325, Cl. 560-244.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, B 802,856, Cl. 106-39.500.
Kawasaki, Masahiro, B 828,689, Cl. 354-289.000.
Yamamori, Eiji, B 718,414, Cl. 354-106.000.
Asakawa, Takeki: *See—*
Koike, Hiroshi; Suzuki, Shoji; and Asakawa, Takeki, B 778,240, Cl. 350-269.000.
Asano, Masaharu; and Kadowaki, Shunichi, to Nissan Motor Company, Limited. Method of and mixture control system for varying the mixture control point relative to a fixed reference. 4,112,880, Cl. 123-32.0EE.
Asari, Akira; and Tsuzuki, Hidehiro, to Kobe Steel, Ltd. Hydrostatic extrusion apparatus. 4,112,723, Cl. 72-60.000.
Asars, Juris A., to Westinghouse Electric Corp. Display panel with simplified thin film interconnect system. B 780,138, Cl. 315-169.0TV.
Ascani, Leonard A.: *See—*
Hamilton, C. Howard; and Ascani, Leonard A., B 736,671, Cl. 148-11.50R.
ASEA Aktiebolag: *See—*
Claesson, Harry; and Hellgren, Keijo, 4,112,724, Cl. 72-63.000.
Ashcraft, William R. Protected glassy phosphate detergent additive. B 631,026, Cl. 252-91.000.
Ashdown, Glynn R.; McCartney, Thomas; and Holmes, Bruce, to Teradyne, Inc. Testing electrically conductive lines to determine electrical characteristics thereof. B 622,054, Cl. 179-175.30R.
Ashida, Akira: *See—*
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, B 736,223, Cl. 352-194.000.
Aso, Toshio: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Aspen Laboratories: *See—*
Pike, Harold L., 4,112,950, Cl. 128-303.140.
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, to Robert Bosch GmbH. Process for the regulation of the optimum operational behavior of an internal combustion engine. 4,112,879, Cl. 123-32.0EA.
Astolfi, Edmund G.: *See—*
Watt, William R.; Astolfi, Edmund G.; and Laufer, Jay K., B 743,133, Cl. 427-44.000.
Ateliers Reunis Societe Anonyme: *See—*
Joseph, Raymond, B 815,366, Cl. 220-19.000.
Atlantic Richfield Company: *See—*
Taylor, Robert Coleman, B 711,761, Cl. 252-61.000.
Atlas Copco Aktiebolag: *See—*
Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, B 750,835, Cl. 55-97.000.
Lindblad, Lars Alfred, B 830,213, Cl. 173-1.000.
Atomic Energy Board: *See—*
Haarhoff, Pierre Cloete; and Schumann, Werner Adolf, B 819,016, Cl. 55-17.000.
Atwood, Gilbert Richard, to Union Carbide Corporation. Recovering sulfur from gas streams containing hydrogen sulfide. B 781,206, Cl. 423-574.00R.
Audesse, Emery G.: *See—*
Armstrong, Donald E.; Shaffer, John W.; Marecek, Paul M.; and Audesse, Emery G., B 724,792, Cl. 431-95.00A.
Auel, Theodor: *See—*
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, B 815,160, Cl. 423-265.000.
August Lepper, Maschinen- und Apparatebau GmbH: *See—*
Muller, Franz, 4,112,590, Cl. 34-75.000.
August Stemmann OHG: *See—*
Stemmann, Karl; and Holtmeier, Gerhard, B 688,269, Cl. 191-67.000.
Aurora Equipment Company: *See—*
Mittag, Douglas C., B 782,185, Cl. 211-191.000.
Aurora Products Corporation: *See—*
Sims, Anson; and Jones, Lawrence T., B 723,815, Cl. 273-249.000.
aus der Funten, Helmut; and Vogt, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Method of preparing phthalide. B 783,576, Cl. 260-343.30R.
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for producing large-size substrate-based semiconductor material utilizing vapor-phase deposition and subsequent resolidification. B 737,249, Cl. 148-174.000.
Automobiles M. Berliet: *See—*
Nikly, Jean, 4,112,907, Cl. 123-193.0CH.
Automotive Products Limited: *See—*
Maycock, Ian Commander, B 797,768, Cl. 192-107.00C.
Autotronic Controls, Corp.: *See—*
Chapin, Leonard Lee; and Merrick, James Walter, 4,112,901, Cl. 123-139.00E.
Avco Corporation: *See—*
Kasmarik, Joseph R., 4,112,677, Cl. 60-226.00R.
Aya, Masayoshi; and Hiya, Kohji, to Matsushita Electric Industrial Co., Ltd. Convergence apparatus with variably magnetized magnets. B 808,567, Cl. 335-212.000.
Ayers, Robert Lee; and Hamaker, Raymond Weaver, to International Business Machines Corporation. Technique for preventing forward biased epi-isolation degradation. B 736,646, Cl. 148-1.500.
AZO-Maschinenfabrik Adolf Zimmermann: *See—*
Zimmermann, Adolf, 4,112,639, Cl. 52-174.000.
B. F. Goodrich Company, The: *See—*
Tucker, Harold A., B 734,945, Cl. 560-32.000.
Baccei, Louis J.: *See—*
Panzer, Hans Peter; O'Connor, Michael Niall Desmond; and Baccei, Louis J., B 706,087, Cl. 526-258.000.
Bachl, Robert: *See—*
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, B 762,858, Cl. 526-124.000.
Bader, Hartmann, to Sulzer Brothers Limited. Loom harness. 4,112,980, Cl. 139-92.000.
Badran, Nasri W., to Badran, Nasri W. Microcrystalline 3-(alpha-acetonylbenzyl)-4-hydroxycoumarin (warfarin) and methods of making. B 496,932, Cl. 260-343.440.
Baggaley, Keith Howard, to Beecham Group Limited. 2-Substituted benzisothiazolones. B 738,000, Cl. 260-283.00S.
Bagnall, Robert David, to Imperial Chemical Industries Limited. Anaesthetic compositions. B 677,855, Cl. 424-342.000.
Baio, Alfred R.; and Genovese, David L., to Sealectro Corporation. Optical punched card reader. B 800,732, Cl. 235-458.000.
Baker Aktiengesellshaft: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 766,235, Cl. 424-273.00P.
Baker, Robert: *See—*
Grenfell, Hugh W.; Bowen, David J.; and Baker, Robert, B 792,602, Cl. 75-60.000.
Balco, Inc.: *See—*
Balzer, Claude P., 4,112,641, Cl. 52-179.000.
Balinte, Joe; and Verhaeghe, Michael. Plant puller. B 734,091, Cl. 171-61.000.
Ball, Kenneth, to Vickers-Intertek Limited. Sealing arrangements for use under water. B 771,356, Cl. 277-9.000.
Ballas, George C.; and Mitchell, Albert W., to Weed Eater, Inc. Lawn mower and method. 4,112,653, Cl. 56-12.700.
Ballentine, Earle W. Gas broiler. 4,112,912, Cl. 126-41.00R.
Balme, Maurice; and Gruffaz, Max, to Rhone-Poulenc S.A. Polyamines with imide groups. B 297,738, Cl. 260-326.260.
Balukin, Richard F., to Westinghouse Air Brake Company. Brake valve device. B 835,123, Cl. 303-54.000.
Balzer, Claude P., to Balco, Inc. Stair nosing structure. 4,112,641, Cl. 52-179.000.
Banks, Benjamin W. Liquid proportioner for pressure feed line. 4,112,964, Cl. 137-205.500.
Banyaszati Kutato Intezet: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Barbaresi, Charlotte, to Acricite Company, Inc. Convertible handbag. 4,112,991, Cl. 150-28.00A.
Bardenhagen, Dietrich; and Schubert, Bernhard, to Hauni-Werke Korber & Co. KG. Method and machine for the production of hinged-lid packs for groups of cigarettes or the like. 4,112,651, Cl. 53-449.000.
Barecki, Chester J., to American Seating Company. Wheelchair retainer mechanism. B 774,528, Cl. 280-179.00R.
Barlow, Harold Everard Monteagle, to National Research Development Corporation. Apparatus and methods for launching and screening electromagnetic waves in the dipole mode. B 755,844, Cl. 333-95.00R.
Barmag Barmer Maschinenfabrik AG: *See—*
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, B 722,558, Cl. 526-351.000.
Barnes, Richard D.: *See—*
Donnelli, Joseph W.; and Barnes, Richard D., B 821,809, Cl. 211-49.00R.
Barrington, Burchus Q.; and Williamson, Jim R., to Halliburton Company. Oil well testing safety valve. B 811,506, Cl. 166-334.000.
Barth, Wayne E., to Pfizer Inc. 4-(Tetrazol-5-yl)-Δ^3-cephem compounds. B 791,537, Cl. 544-23.000.
Barthell, Eduard: *See—*
Hubner, Wolfgang; Barthell, Eduard; and Dahmen, Kurt, B 682,543, Cl. 260-29.4UA.
Barzynski, Helmut; and Heil, Guenter, to BASF Aktiengesellschaft. Benzophenone-containing photopolymerizable binders for printing inks and coating compositions. B 834,796, Cl. 204-159.150.

BASF Aktiengesellschaft: *See—*
Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, B 494,457, Cl. 260-599.000.
Barzynski, Helmut; and Heil, Guenter, B 834,796, Cl. 204-159.150.
Dehnert, Johannes; and Dunkelmann, Guenter, B 660,985, Cl. 260-154.000.
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, B 743,517, Cl. 260-465.50A.
Fischer, Adolf, deceased; and Hamprecht, Gerhard, B 636,162, Cl. 544-11.000.
Kummer, Rudolf; Schneider, Heinz-Walter; and Schwirten, Kurt, B 780,297, Cl. 260-429.00R.
Opgenorth, Hans-Joachim; and Scheuermann, Horst, B 810,950, Cl. 260-305.000.
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, B 762,858, Cl. 526-124.000.

BASF Wyandotte Corporation: *See—*
Helfert, Herbert; Davis, Pauls; and Langdon, William Keith, B 736,959, Cl. 260-615.00B.

Baskett, Theodore N. Multiple shaft, ground-raking attachment for bucket-equipped tractors. B 747,966, Cl. 171-63.000.

Baso, Jozsef: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.

Basoms, John A.: *See—*
Rabi, Rafat T.; Murphy, Edward J.; and Basoms, John A., B 745,240, Cl. 204-181.00C.

Bassous, Ernest; and Liu, Cheng-Yih, to International Business Machines Corporation. Polycrystalline silicon etching with tetramethylammonium hydroxide. B 861,373, Cl. 156-662.000.

Bates, Jack A. Carpet cleaning machine. 4,112,538, Cl. 15-321.000.

Battigelli, Jean A.: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, B 829,515, Cl. 65-5.000.

Battiston, Giancarlo: *See—*
Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, B 734,248, Cl. 562-534.000.

Bauch, Helmut; Mohrmann, Karl Heinz; and Koppehele, Frithjof, to Siemens Aktiengesellschaft. Remotely fed intermediate amplifier for communication lines. B 795,706, Cl. 330-56.000.

Bauer, William V., to Lummus Company, The. Two-stage hydrotreating of pyrolysis gasoline to remove mercaptan sulfur and dienes. B 843,413, Cl. 208-89.000.

Baugh, Benton F. Rotational speed reduction and reversing mechanisms. 4,112,781, Cl. 74-198.000.

Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, to Merck Patent Gesellschaft mit beschrankter Haftung. Prostenoic acid derivatives. B 739,142, Cl. 424-205.000.

Baur, Guenter; and Greubel, Waldemar, to Siemens Aktiengesellschaft. Indicating device for illustrating symbols of all kinds. B 782,186, Cl. 350-285.000.

Bausch & Lomb Incorporated: *See—*
Clark, James A.; Livesey, Donald V.; and Wrue, Richard J., B 762,221, Cl. 249-105.000.

Baxley, James Russell, to Peanut Research & Testing Laboratories, Inc. Process for making hydrated peanut products and products made thereby. B 779,030, Cl. 426-509.000.

Baxter Travenol Laboratories, Inc.: *See—*
Grode, Gerald Arthur; Boggs, Daniel Roy; and Wright, James Irvin, 4,112,989, Cl. 150-1.000.
Lolachi, Houshang, B 657,187, Cl. 233-25.000.

Bayer Aktiengesellschaft: *See—*
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, B 400,980, Cl. 260-876.00R.
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, B 778,631, Cl. 260-859.00R.
Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karlfried, B 757,422, Cl. 568-756.000.
Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, B 813,311, Cl. 8-41.00R.
Huper, Fritz; and Oberheiden, Helmut, B 692,876, Cl. 544-20.000.
Kubens, Rolf; and Gebauer, Herbert, B 796,935, Cl. 166-295.000.
Lantzsch, Reinhard, B 795,588, Cl. 560-124.000.
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, B 645,128, Cl. 424-200.000.
Merz, Walter, B 640,830, Cl. 562-577.000.
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 693,971, Cl. 548-377.000.
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, B 749,455, Cl. 106-238.000.
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, B 592,860, Cl. 424-278.000.

Bayer Italia Societa per Azioni: *See—*
Dondi, Gilberto; and Zanotti, Arnaldo, B 743,853, Cl. 424-230.000.

BBC Brown Boveri & Company Limited: *See—*
Beckershoff, Wolfgang, 4,112,582, Cl. 33-181.00R.

Beamer/Wilkinson & Associates: *See—*
Hanway, John E., Jr.; and Mumford, Richard G., B 507,290, Cl. 423-242.000.

Beasley, Donald R., to Norfield Corporation. Method for forming expanded panels from thermoformable material and the resultant product. B 763,097, Cl. 428-116.000.

Beatenbough, Paul K.: *See—*
Flower, Robert J.; Snedeker, Clarke R.; and Beatenbough, Paul K., B 789,066, Cl. 165-81.000.

Beauchamp, Miles Albert: *See—*
Torr, Ralph Percival; and Beauchamp, Miles Albert, B 765,274, Cl. 174-42.000.

Bebie, Paul: *See—*
Oderbolz, Fredy; and Bebie, Paul, 4,112,983, Cl. 139-446.000.

Bechtel, Charles H.: *See—*
McHenry, Donald L.; and Bechtel, Charles H., B 746,270, Cl. 106-287.180.

Beck, Gerhard: *See—*
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, B 751,173, Cl. 424-274.000.

Beck, Johann: *See—*
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, B 699,341, Cl. 355-8.000.

Beckerman, Arthur. Wood carving kit. B 838,533, Cl. 206-575.000.

Beckershoff, Wolfgang, to BBC Brown Boveri & Company Limited. Apparatus for positioning coaxial arranged machine parts. 4,112,582, Cl. 33-181.00R.

Becton, Dickinson and Company: *See—*
Carstens, Dennis L., B 824,412, Cl. 206-365.000.

Beecham Group Limited: *See—*
Baggaley, Keith Howard, B 738,000, Cl. 260-283.00S.
Clark, Judith Ann, B 698,091, Cl. 560-250.000.
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, B 717,334, Cl. 424-117.000.
Gardner, Derek Victor, B 710,446, Cl. 424-258.000.

Beery, Peter W., to Golf Resources, Ltd. Golf club and manufacture thereof. B 803,976, Cl. 273-78.000.

Behrenz, Wolfgang: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, B 645,128, Cl. 424-200.000.
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, B 592,860, Cl. 424-278.000.

Beier, Alfred, to Volkswagenwerk Aktiengesellschaft. Exhaust gas return valve actuating rod. 4,112,783, Cl. 74-470.000.

Beile, Richard W.: *See—*
Soja, Lawrence M.; Stokes, Daniel F.; and Beile, Richard W., B 762,874, Cl. 206-602.000.

Beland, Stig Gosta Bele, to Granges Essem Aktiebolag. Device for changing the force acting on a reversibly rotatable shaft. B 765,282, Cl. 185-10.000.

Belgium Tool & Die Co.: *See—*
Cvacho, Daniel S., B 727,447, Cl. 55-319.000.

Belinkoff, Irving R., to Kidde Consumer Durables Corp. Food processor. B 790,509, Cl. 241-37.500.

Bell, Mace, to United Technologies Corporation. Vehicle diagnostic hand control. B 819,744, Cl. 174-52.00R.

Bell, Norman; Andersen, John N.; and Lam, Hung-Kei H., to Kaiser Aluminum & Chemical Corporation. Process for the utilization of waste materials from electrolytic aluminum reduction systems. B 855,506, Cl. 423-119.000.

Bell, Robert Martin Alistair: *See—*
Aldridge, Trevor John; Lock, Alan Howard; and Bell, Robert Martin Alistair, 4,112,747, Cl. 73-116.000.

Bell Telephone Laboratories, Incorporated: *See—*
Clement, George Frederick; and Sniegowski, Bruno Raymond, B 844,377, Cl. 179-2.00A.
Demers, Robert Augustus, B 716,581, Cl. 340-147.00R.
Katz, Lewis Emanuel; and Paulnack, Carl Lewis, B 853,126, Cl. 156-612.000.
King, William Clifton, B 573,401, Cl. 357-19.000.
Sanderson, Richard Barton, B 798,787, Cl. 179-170.0NC.

Bella, Frank, Jr.; and Bennett, Richard C., to Whiting Corporation. Elutriation leg and method. B 712,033, Cl. 159-27.00A.

Bellanca, Nicolo; and Furia, Thomas Edward, to Dynapol. Zoned coloration. B 799,795, Cl. 106-137.000.

Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., to Bristol-Myers Company. $\Delta^{2,3}$-1,4-Morpholine-2-carboxylic acid derivatives as antibacterial agents. B 760,620, Cl. 544-105.000.

Beloit Corporation: *See—*
Min, Tony C.; and Hergert, Richard E., 4,112,549, Cl. 19-304.000.

Belsick, James C.: *See—*
Garin, John; and Belsick, James C., B 714,220, Cl. 176-87.000.

Benac, Bernard Henri Jean; Benac, Jacques Marie Lucien; and Benac, Henri. Beater for a grape harvesting machine, as well as grape harvesting machines provided with such a beater. 4,112,657, Cl. 56-330.000.

Benac, Henri: *See—*
Benac, Bernard Henri Jean; Benac, Jacques Marie Lucien; and Benac, Henri, 4,112,657, Cl. 56-330.000.

Benac, Jacques Marie Lucien: *See—*
Benac, Bernard Henri Jean; Benac, Jacques Marie Lucien; and Benac, Henri, 4,112,657, Cl. 56-330.000.

Benes, Ivan, to Solco Basel AG. Composition for the diagnostic visualization of neoplastic tissues. B 572,701, Cl. 424-1.000.

Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., to United States of America, Navy. Battery thermal runaway monitor. B 806,799, Cl. 320-39.000.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin; and Robinson, Don, B 770,186, Cl. 273-108.000.

Bennett, Richard C.: *See—*
Bella, Frank, Jr.; and Bennett, Richard C., B 712,033, Cl. 159-27.00A.

Bennett, Robert P.; and Kober, Alfred E., to Appollo Chemical Corporation. Method of conditioning flue gas. B 792,939, Cl. 55-5.000.

Bereskin, Fred Phillip; and Borowczyk, Joseph Jerome. Grease separator. B 789,426, Cl. 210-72.000.

Bergman, Gunnar B., to Seatek Corporation. Heave stabilization of semi-submersible platforms. 4,112,864, Cl. 114-265.000.

Bergwerksverband GmbH: *See—*
Kroger, Carl; Romey, Ingo; and Kolling, Georg, B 649,920, Cl. 264-120.000.

Berkmont Industries: *See—*
McElroy, John O., Jr., B 750,330, Cl. 181-230.000.

Bernard, George G.; and Holm, LeRoy W., to Union Oil Company of California. Enhanced oil recovery process. B 774,920, Cl. 166-273.000.

Bernard, Walter J.: *See—*
Randall, John J., Jr.; and Bernard, Walter J., B 791,656, Cl. 204-33.000.

Bernardi, Carl E.: *See—*
Ross, John P.; and Bernardi, Carl E., B 776,162, Cl. 204-15.000.

Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. 5,6-Dihydropyrimidin-4(3H)one derivatives, and antiedema compositions and methods employing them. B 728,459, Cl. 424-251.000.

Bernheim, Willy: *See—*
Deiner, Hans; Mosch, Franz; and Bernheim, Willy, B 554,819, Cl. 544-196.000.

Berry, Lawrence James; and Hall, Stanley Darwin, to W. R. Grace & Co. Sealed taped bags and sealed tape bag dispenser. B 796,279, Cl. 221-1.000.

Berthet, Andre, to Cebal. Rolled edge in cans. B 757,135, Cl. 220-74.000.

Berzinya, Irma Arnoldovna: *See—*
Aren, Avgust Karlovich; Berzinya, Irma Arnoldovna; and Lentsbergs, Ivars Petrovich, B 679,869, Cl. 544-152.000.

Bess, Leon. Controlled pulse turbine engine. 4,112,683, Cl. 60-595.000.

Bessinger, Max E. Portable support. B 780,606, Cl. 182-187.000.

Bethlehem Steel Corporation: *See—*
Kreiger, John W., B 734,771, Cl. 75-256.000.

Better Agricultural Goals Corporation: *See—*
Williamson, Robert R., B 460,053, Cl. 222-105.000.

Bianchetta, Donald Louis, to Caterpillar Tractor Co. Fluid control system for multiple circuited work elements. 4,112,821, Cl. 91-6.000.

Bianchi, Valerio: *See—*
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.

Bidwell, Robert E.: *See—*
Kurtz, Leonard D.; and Bidwell, Robert E., 4,112,948, Cl. 128-276.000.

Biehler, Jean-Marie J.: *See—*
Lecolier, Serge L.; and Biehler, Jean-Marie J., B 838,460, Cl. 521-108.000.

Bierman, Francis Andrew. Anti-theft clip. B 806,374, Cl. 292-346.000.

Bigot, Lucien: *See—*
Kemper, Yves Jean; and Bigot, Lucien, 4,112,779, Cl. 74-191.000.
Kemper, Yves Jean; and Bigot, Lucien, 4,112,780, Cl. 74-191.000.

Billings, William G., to Phillips Petroleum Company. Conversion of organic sulfides to corresponding sulfoxides. B 811,426, Cl. 260-607.0AR.

Bindicator Company: *See—*
Levine, Walter E., B 777,433, Cl. 356-201.000.

Bindra, Jasjit S.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., B 854,392, Cl. 260-347.300.

Bini, Franco, to Macchine Tessili Circolari Matec S.p.A. Rocking jack safety device. 4,112,712, Cl. 66-157.000.

Binkhorst, Richard D. Sterile package. B 803,959, Cl. 206-210.000.

Biricz, Stefan, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Starter bar head arrangement. B 749,119, Cl. 164-446.000.

Birkeholm, Mogens. Method and tractor for towing aircraft. B 786,565, Cl. 180-14.00C.

Bischoff, Dieter: *See—*
Schafer, Werner; Buchwald, Holger; and Bischoff, Dieter, B 637,488, Cl. 428-220.000.

Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, to Bayer Aktiengesellschaft. Process for working up dispersions of elastic-thermoplastic or thermoplastic plastics. B 400,980, Cl. 260-876.00R.

Bissinger, Wilma. Storage bin. 4,112,634, Cl. 52-67.000.

Biven, Earl U. Sun-shield for backpackers. 4,112,957, Cl. 135-5.00C.

Blachly, Paul H. Bite block assembly adapted for adjustable mounting and holding of oral airways and method of using same. 4,112,936, Cl. 128-136.000.

Black Clawson Company, The: *See—*
Detcher, Theodore E., B 799,555, Cl. 210-409.000.

Black Clawson Fibreclaim, Inc.: *See—*
Marsh, Paul G.; and Kohlhepp, Dean H., B 804,786, Cl. 241-21.000.

Blankumsee, Howard: *See—*
Collins, Walter; and Blankumsee, Howard, B 785,834, Cl. 238-72.000.

Blasko, Jan: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.

Bleckmann, Hans W., to ITT Industries, Inc. Anti-skid electronic control system having an error detecting circuit. B 772,798, Cl. 303-92.000.

Bliss & Laughlin Industries Incorporated: *See—*
Godwin, Robert H.; and Collignon, Herbert E., B 764,371, Cl. 248-400.000.

Bliudnikas, Kestutis E., to Alden Research Foundation. Precision track for moving facsimile recording blade. B 754,904, Cl. 346-139.00C.

Blocker, William C. Connection fitting. B 783,054, Cl. 285-14.000.

Blount, David H. Process for the production of acrylic compounds and resinous products. B 804,897, Cl. 528-271.000.

Blumenfeld, Georg; and Vollkommer, Norbert, to Dynamit Nobel Aktiengesellschaft. Unsaturated polyesters derived from chloroxylylene diols. B 640,312, Cl. 528-299.000.

Bobkov, Lev Nikolaevich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.

Bochan, John, to General Electric Company. Clothes dryer variable speed drive system. 4,112,767, Cl. 74-217.00R.

Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Triisocyanates useful for the production of polyurethane resins. B 778,631, Cl. 260-859.00R.

Bodolay, William A. Hot wire packaging machine. 4,112,652, Cl. 53-211.000.

Boehm, Hans W.; Herrington, Richard A.; and Oelke, Waldemar W., to Libbey-Owens-Ford Company. Method of and apparatus for thermally severing glass. B 767,051, Cl. 225-2.000.

Boehringer Ingelheim GmbH: *See—*
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, B 812,325, Cl. 260-570.900.

Boehringer Mannheim GmbH: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, B 674,993, Cl. 424-272.000.

Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, to Banyaszati Kutato Intezet; Skotchinksy Institut Gornogo Dela; and Taurus Gumiipari Vallalat. End fitting for multichannel hose. B 787,511, Cl. 285-137.00R.

Boggs, Daniel Roy: *See—*
Grode, Gerald Arthur; Boggs, Daniel Roy; and Wright, James Irvin, 4,112,989, Cl. 150-1.000.

Bolick, Fred C., Jr.; and Titus IV, Theodore, to Lanier Business Products, Inc. Dictation recording and transcribing system utilizing selectable dual message record-playback apparatus. B 719,423, Cl. 179-100.1DR.

Bolkow Gesellschaft mit beschrankter Haftung: *See—*
Kocher, Heinz; Kitzig, Werner; and Witteveen, Piet Jozef, B 566,178, Cl. 244-3.110.

Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, B 686,327, Cl. 172-59.000.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, B 772,858, Cl. 172-59.000.

Bonazoli, Robert P.; and Morgan, William H., Jr., to GTE Sylvania Incorporated. Flashlamp assembly with tapered housing. B 812,916, Cl. 431-93.000.

Bond, John A., to ACF Industries, Incorporated. Seat structure for gate valves. B 841,225, Cl. 251-328.000.

Bonnemay, Maurice Gabriel Ernst: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, B 605,926, Cl. 204-180.00R.

Booty, Donald J., to Feldmar Products, Inc. Mechanical channel selector device. B 726,479, Cl. 325-390.000.

Borchert, Werner: *See—*
Treplin, Friedrich-Wilhelm; and Borchert, Werner, B 781,489, Cl. 165-95.000.

Boretos, John W.: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.

Borg-Warner Corporation: *See—*
Hechenbleikner, Ingenuin; and Enlow, William Palmer, B 795,461, Cl. 260-969.000.
Kountz, Kenneth John, 4,112,703, Cl. 62-211.000.

Borowczyk, Joseph Jerome: *See—*
Bereskin, Fred Phillip; and Borowczyk, Joseph Jerome, B 789,426, Cl. 210-72.000.

Borowick, John Joseph, to United States of America, Army. L-Band radar antenna array. B 747,765, Cl. 343-815.000.

Bos, Frans, to Saab-Scania AB. Winddeflector. B 760,746, Cl. 296-137.00J.

Bosies, Elmar: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, B 674,993, Cl. 424-272.000.

Bost, Pierre-Etienne; and Lartigau, Guy, to Rhone-Poulenc S.A. Preparation of ketones. B 473,267, Cl. 260-592.000.

Bottaccio, Giorgio: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, B 816,919, Cl. 568-716.000.

Boucard, Michel Jean, to Societe Industrielle et Financiere le Profil. Cold profiling machine. 4,112,722, Cl. 72-181.000.

Bouquet, Jean-Claude, to Societe d'Etudes de Machines Thermiques. Internal combustion engine fit-up device. 4,112,883, Cl. 123-52.00M.

Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., to Delalande S. A. Aminoalkoxybenzofurans. B 813,357, Cl. 544-360.000.

Bourlet, Maurice V., to Fabrique Nationale Herstal S.A. en abrege FN. Supply device for a portable firearm by means of cartridge belts or by means of rifle magazines using the same ammunition. 4,112,817, Cl. 89-33.00B.

Bourns, Inc.: *See—*
DeRouen, Joseph Rodolph; and Kucharski, Lawrence, Jr., B 800,600, Cl. 338-174.000.
Stephens, Donald Harrison, B 878,191, Cl. 338-174.000.

Bowen, David J.: *See—*
Grenfell, Hugh W.; Bowen, David J.; and Baker, Robert, B 792,602, Cl. 75-60.000.

Bower, Barton Keeley, to Hercules Incorporated. Tetra (bicycloheptyl) transition metal compounds. B 782,265, Cl. 260-429.500.

Bowker, Donald R.; Klein, Donald J.; and Rados, Stephen E., to Philips Industries Inc. Method of forming a bell end on thermoplastic pipe. B 656,538, Cl. 264-295.000.

Bowman, Frank L.: *See—*
Driscoll, Michael J.; and Bowman, Frank L., B 723,403, Cl. 176-38.000.

Boyd, William Weller; Grafe, Robert Joseph; and Pingry, Carl Oscar, III, to International Business Machines Corporation. Security controlled information exchange system. B 762,376, Cl. 340-147.00R.

Bradley, Edmund G., to Marden Manufacturing Company, Inc. Spot planter. 4,112,857, Cl. 111-3.000.

Bradley, Terrag W., to Supra Products, Inc. Key box. 4,112,717, Cl. 70-63.000.

Brager, Douglas R. Interior-exterior truck body wash. 4,112,533, Cl. 15-53.00A.

Brago, Reacelyn A. Multi-fluid wash system. B 779,151, Cl. 239-304.000.

Brainard, Edward C., II: *See—*
Kerfoot, William B.; and Brainard, Edward C., II, 4,112,741, Cl. 73-53.000.

Brana, George; and Russell, John J., to Pitney-Bowes, Inc. Carrier particles having the surface thereof treated with perfluoro sulfonic acid and method of making the same. B 840,305, Cl. 252-62.10P.

Brandestini, Marco, to Contraves AG. Method and apparatus for determining a change of the flow state of flowable substances from its static state to its flowing state or vice verse. 4,112,740, Cl. 73-53.000.

Brandt, David W.: *See—*
Brandt, Paul W., B 791,030, Cl. 214-1.0HA.

Brandt, Paul W., to Brandt, David W. Device for towing rolled bales of hay. B 791,030, Cl. 214-1.0HA.

Brandwein, Arthur. Tape splicing device and dispenser therefor. B 712,951, Cl. 428-42.000.

Braulke, Herbert A., III. Combined hot air and steam hair dryer. B 825,185, Cl. 219-362.000.

Brechbuhl, Heinz, to Maschinenfabrik Kern AG Konolfingen. Cutter apparatus for dividing a form band or the like into individual forms. 4,112,796, Cl. 83-141.000.

Breckenridge, George J.: *See—*
Kalnin, Ilmar L.; and Breckenridge, George J., B 759,927, Cl. 260-857.0TW.

Breedis, John F.: *See—*
Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., B 784,155, Cl. 75-142.000.

Bregeon, Genevieve C.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., B 813,357, Cl. 544-360.000.

Breitzke, Willi: *See—*
Koch, Karlheinz; and Breitzke, Willi, B 741,160, Cl. 252-56.00S.

Brentford Electric Limited: *See—*
Fry, Michael George Joseph, B 733,476, Cl. 324-0.50E.

Bretone, John, Jr. Method of installing plumbing. 4,112,567, Cl. 29-157.00R.

Brettschneider, Johannes: *See—*
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.

Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, B 776,400, Cl. 544-26.000.

Brewster, Franklin Crawford, to Motorola, Inc. Alternator bearing retainer plate. B 706,670, Cl. 308-26.000.

Bridgestone Tire Company Limited: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, B 730,115, Cl. 181-284.000.

Brimm, Daniel J., to Chem-tronics, Inc. Chemical milling process. B 785,168, Cl. 156-639.000.

Brister, Beryle D. Apparatus for freezing a slug of liquid in a section of a large diameter fluid transmission line. 4,112,706, Cl. 62-514.00R.

Bristol-Myers Company: *See—*
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., B 760,620, Cl. 544-105.000.

British Gas Corporation: *See—*
Smith, Trevor, B 714,984, Cl. 181-230.000.

British Petroleum Company Limited, The: *See—*
Webb, Michael Guthrie, 4,112,689, Cl. 405-63.000.

British Steel Corporation: *See—*
Grenfell, Hugh W.; Bowen, David J.; and Baker, Robert, B 792,602, Cl. 75-60.000.

Brito, Teodoro Guzman. Key ring holder. B 765,267, Cl. 224-5.00R.

Britool Limited: *See—*
Smyth, Norman Linfoot, 4,112,749, Cl. 73-139.000.

Brobeck, William M., to Electric Power Research Institute, Inc. Ring assembly for inertial energy storage rotor. 4,112,785, Cl. 74-572.000.

Brockway, Charles E., to Sybron Corporation. Headrest for dental chair. B 861,351, Cl. 297-408.000.

Brooks, Burton; and Brooks, Richard J., to Chemithon Corporation, The. Sulfonating apparatus. B 746,242, Cl. 422-193.000.

Brooks, Richard J.: *See—*
Brooks, Burton; and Brooks, Richard J., B 746,242, Cl. 422-193.000.

Brosow, Jorgen; and Furugard, Erik, to Dasy Inter S.A. Documents having fibers which are coated with a magnetic or magnetizable material embedded therein and an apparatus for checking the authenticity of the documents. B 647,935, Cl. 235-493.000.

Brouillette, Rudolph G.: *See—*
Huly, William; and Brouillette, Rudolph G., 4,112,862, Cl. 114-221.00R.

Brovedan, Antonio: *See—*
Ferrentino, Antonio; and Brovedan, Antonio, 4,112,660, Cl. 57-59.000.

Brown Boveri Corporation: *See—*
Hochstrasser, Otto; and Ruby, William S., B 826,189, Cl. 13-2.00R.

Brown, Francis Barton; and Erickson, John W., to Kobe, Inc. Gas/liquid separator. B 768,581, Cl. 55-203.000.

Brown, Jack E., Jr., to Goodyear Tire & Rubber Company, The. Reduction of lateral force variations of a tire effective in both forward and rearward senses of rotation. 4,112,630, Cl. 51-281.00R.

Brown, Marshall B. Method and apparatus for making pipe flanges. 4,112,727, Cl. 72-142.000.

Brown, Rex M. Combined fireplace hood and heating unit. 4,112,914, Cl. 126-121.000.

Brown, Robert M.; and Karliner, Rudolf R., to Valley Hydro-Luft, Inc. Dispensing gun. B 723,465, Cl. 222-324.000.

Brown & Root, Inc.: *See—*
Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., 4,112,698, Cl. 405-167.000.

Brown, William L.; and Reagan, Larry L., to SI Handling Systems, Inc. Apparatus for loading articles onto vertically spaced horizontally disposed shelves. B 767,267, Cl. 214-16.40A.

Brownawell, Darrell W.: *See—*
Lonstrup, Thorkild F.; Brownawell, Darrell W.; Goletz, Edward, Jr.; and Numair, Solomon J., B 741,032, Cl. 252-51.50A.

Brubaker, John M. Siphon tube starter. 4,112,963, Cl. 137-148.000.

Bruns, Klaus: *See—*
Conrad, Jens; and Bruns, Klaus, B 765,531, Cl. 252-522.000.

Bruton, James Isaac: *See—*
Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, B 829,764, Cl. 264-210.00F.

Buchwald, Holger: *See—*
Schafer, Werner; Buchwald, Holger; and Bischoff, Dieter, B 637,488, Cl. 428-220.000.

Buck, David Lyndon: *See—*
Mills, Anthony Mark; and Buck, David Lyndon, 4,112,994, Cl. 152-354.00R.

Buckeye Cellulose Corporation, The: *See—*
LaFitte, Larry L.; and Camden, James B., B 741,640, Cl. 428-284.000.

Bucksch, Gunter: *See—*
Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, B 704,600, Cl. 526-64.000.

Budzich, Tadeusz. Load responsive fluid control valves. 4,112,679, Cl. 60-445.000.

Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, to Nordiska Maskinfilt Aktiebolaget. Forming wire for use in papermaking, cellulose and similar machines. 4,112,982, Cl. 139-425.00A.

Buitelaar, Arnold A.: *See—*
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., B 779,645, Cl. 44-66.000.

Buker, Donald O., to AMAX Inc. Vacuum smelting process for producing ferrotungsten. B 768,386, Cl. 75-211.000.

Bunce, Roger Abraham: *See—*
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, B 712,164, Cl. 422-63.000.

Bundy, Richard P., to Standard Havens, Inc. Baghouse cleaning method. B 827,942, Cl. 55-96.000.

Bunker Ramo Corporation: *See—*
Spaulding, Tedford Hollace, B 756,497, Cl. 339-97.00R.

Bunting, Pamela M.; and Deffner, John F., to Gulf Research & Development Co. Microbicide for use with hydrocarbon fuels. B 751,256, Cl. 44-72.000.

Burns, Donald Arthur; and Fontanilles, Henry, to Technicon Instruments Corporation. Method and apparatus for solute transfer. B 749,558, Cl. 356-36.000.

Burns, Henry L., to Cavitron Corporation. Tidal volume display. 4,112,931, Cl. 128-2.080.

Burr Oak Tool & Gauge Company: *See—*
Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., 4,112,794, Cl. 82-64.000.

Burroughs Corporation: *See—*
Maloney, Thomas C.; and Cola, Rudolph A., B 685,526, Cl. 340-343.000.

Burroughs, Joe D.: *See—*
Manda, John G.; Burroughs, Joe D.; and Cairns, Donald F., B 647,937, Cl. 202-227.000.

Burroughs Wellcome Co.: *See—*
Wood, Hamish Christopher Swan; and Paterson, Thomas, B 335,102, Cl. 424-180.000.

Burton, Parsons and Company, Inc.: *See—*
Holcombe, Frank O., Jr., B 805,146, Cl. 260-29.6TA.

Burtov, Oleg Antonovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.

Bush, Austin R.; and Ferrarese, Frank L., to Worthington Pump, Inc. Support fixtures for preassembled unit or cartridge for multi-stage barrel type centrifugal pumps. B 773,778, Cl. 206-319.000.

Bush, Robert F.; and Mitchell, Joseph W., to International Business Machines Corporation. Process for producing magnetic particles by vacuum evaporation of iron with collection on a magnetized surface. B 799,034, Cl. 148-6.350.

Bushman, Willard T.; and Snyder, Robert C., to Documation Incorporated. Data card reader employing synchronization and resynchronization means. B 608,897, Cl. 235-474.000.

Butterworth, Dennis: *See—*
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, B 717,334, Cl. 424-117.000.

Buttner, Hans Hugo. Apparatus for connecting the tying means ends on tying machines. 4,112,839, Cl. 100-33.0PB.

Butwell, Kenneth Francis: *See—*
Kendall, John Edward; and Butwell, Kenneth Francis, B 836,542, Cl. 423-226.000.

C. A. Weidmuller KG: *See—*
Wiener, Hans, 4,112,791, Cl. 81-9.50A.

C. H. Heist Corporation: *See—*
Wild, Robert W.; and Keeney, Joseph G., 4,112,535, Cl. 15-98.000.

C. L. Frost & Son, Inc.: *See—*
Vander Meulen, Douglas J., B 826,758, Cl. 308-187.100.

C-Line Products, Inc.: *See—*
Anderson, Lloyd R., B 819,332, Cl. 211-43.000.

C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, B 686,327, Cl. 172-59.000.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, B 772,858, Cl. 172-59.000.

Cabot Corporation: *See—*
Rivers, Ronald D., B 748,821, Cl. 75-214.000.

Cade, Phillip J., to Electronics Corporation of America. Burner control apparatus. B 675,778, Cl. 431-78.000.

Cairns, Donald F.: *See—*
Manda, John G.; Burroughs, Joe D.; and Cairns, Donald F., B 647,937, Cl. 202-227.000.

Caknis, Nicholas. Air-conditioning. B 678,742, Cl. 236-49.000.

Caldwell, Joseph M., to Jennings Compound Bow, Inc. Compound bow. 4,112,909, Cl. 124-23.00R.

California Institute Research Foundation: *See—*
Jones, John Leslie, 4,112,849, Cl. 102-103.000.

California Microwave, Inc.: *See—*
Minnis, Thomas R., B 738,835, Cl. 333-14.000.

Call, David B. Meteorological measuring apparatus. 4,112,753, Cl. 73-170.00R.

Calmac Manufacturing Corporation: *See—*
MacCracken, Calvin Dodd, 4,112,921, Cl. 126-271.000.

Caloric Gesellschaft Fuer Apparatebau m.b.H: *See—*
von Linde, Robert; von Linde, Joachim; and Kurz, German, B 690,617, Cl. 431-352.000.

Cambio, Orlando D., Jr., to Respiratory Care, Inc. Container for sterile liquids. B 867,043, Cl. 215-1.00C.

Camden, James B.: *See—*
LaFitte, Larry L.; and Camden, James B., B 741,640, Cl. 428-284.000.

Cameron, Frank L., to Westinghouse Electric Corp. Composite sectionalized protective indicating-type fuse. B 622,279, Cl. 337-162.000.

Cameron, Gordon, to McGraw-Edison Company. Security locking system. B 777,050, Cl. 292-40.000.

Campbell, John A.: *See—*
Wagner, Wayne M.; and Campbell, John A., B 773,847, Cl. 285-322.000.

Campioni, Armando, to Indesit Industria Elettrodomestici Italiana S.p.A. Amplifying circuit. B 793,344, Cl. 330-267.000.

Campolmi, Stefano: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, B 816,919, Cl. 568-716.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Laviolette, Maurice A., 4,112,843, Cl. 102-7.600.

Canadian Patents and Development Limited: *See—*
Clarke, Michael R.; and Dolenko, Allan J., B 752,628, Cl. 260-17.500.
MacLennan, P. H. Barry; Ireland, Graham A.; and Werba, William J., 4,112,756, Cl. 73-181.000.

Canon Kabushiki Kaisha: *See—*
Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, B 806,515, Cl. 355-45.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, B 736,223, Cl. 352-194.000.
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, B 758,200, Cl. 354-238.000.
Tsuji, Sadahiko; and Agari, Yujiro, B 857,692, Cl. 350-184.000.
Tsunekawa, Tokuichi; and Taguchi, Tetsuya, B 703,962, Cl. 250-214.00R.

Cantrell, Clifford J., Jr., to John Zink Company. Waste heat boiler temperature control system. B 789,939, Cl. 165-40.000.

Carl Freudenberg, Firma: *See—*
Schafer, Werner; Buchwald, Holger; and Bischoff, Dieter, B 637,488, Cl. 428-220.000.

Carlisle, Richard S. Series filled containers. B 714,746, Cl. 229-53.000.

Carlson, David H. J., to UOP Inc. Process for treating a sour petroleum distillate with anion exchange resin and with metal phthalocyanine catalyst. B 799,825, Cl. 208-206.000.

Carlson, David L., to Renco Corporation. Ultrasonic detector with audible indication signal. 4,112,927, Cl. 128-2.00V.

Carlson, Donald E., to Mark Controls Corporation. Ejector purge hydrant. 4,112,966, Cl. 137-282.000.

Carlson, Emery J.: *See—*
Pieters, Wim J. M.; and Carlson, Emery J., B 791,767, Cl. 252-438.000.

Carlson, Roger L., to Raygo, Inc. Uniaxial variable vibratory force generator. B 807,833, Cl. 173-49.000.

Carlsson, Lars Christer, to Tetra Pak International AB. Opening arrangement for packing containers. B 808,690, Cl. 206-611.000.

Carn, Patrick. Navigation harnesses. 4,112,865, Cl. 114-270.000.

Carol, John A., Jr.; and McAlindon, Harold P., to General Motors Corporation. Mileage indicator. B 845,959, Cl. 235-96.000.

Carrera, John P.: *See—*
Fidler, Gary L.; Hill, Richard A.; and Carrera, John P., B 686,858, Cl. 176-38.000.

Carrier Corporation: *See—*
Liberman, Harvey W.; and Whitehead, James Stephen, 4,112,823, Cl. 91-36.000.

Carson, John C., Jr.; Robbins, Clarence R.; and Kenkare, Divaker B., to Colgate-Palmolive Company. Applicator. 4,112,536, Cl. 15-104.940.

Carstens, Dennis L., to Becton, Dickinson and Company. Medical instrument package. B 824,412, Cl. 206-365.000.

Carter, Ian T. Chord locater for stringed musical instruments. 4,112,805, Cl. 84-317.000.

Carter, Michael Charles; and Steer, Philip James, to National Research Development Corporation. Apparatus for indicating uterine activity in labor. B 757,024, Cl. 364-415.000.

Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, to Societe Miniere et Metallurgique de Penarroya. Flotation apparatus with mechanical agitation. B 713,371, Cl. 210-219.000.

Casio Computer Co., Ltd.: *See—*
Nakano, Harumi, B 654,725, Cl. 350-332.000.

Cassar, Luigi: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, B 816,919, Cl. 568-716.000.

Castelnuovo, Lucio: *See—*
Modena, Mario; Massardo, Pietro; and Castelnuovo, Lucio, B 695,748, Cl. 260-31.8HA.

Castilla, Antonio Jose. Gun lead sight. 4,112,583, Cl. 33-261.000.

Cataldo, Roy S., to General Motors Corporation. Variable displacement reciprocating piston machine. 4,112,826, Cl. 92-13.100.

Catallo, Frank. Method of padding and extracting a continuously advancing circular knit fabric tube. 4,112,532, Cl. 8-151.000.

Caterpillar Tractor Co.: *See—*
Bianchetta, Donald Louis, 4,112,821, Cl. 91-6.000.
Cole, Carroll Richard, B 735,245, Cl. 172-781.000.
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., B 733,562, Cl. 428-565.000.
Logsdon, John S.; and Meiner, George H., III, 4,112,718, Cl. 70-159.000.
Muntjanoff, John R., B 554,936, Cl. 214-147.00G.
Richardson, Warner G.; and Wilson, Eugene M., B 826,576, Cl. 280-154.50R.

Cavalier, Jean-Claude: *See—*
Chornet, Esteban; and Cavalier, Jean-Claude, B 811,438, Cl. 252-422.000.

Cavalleri, Bruno; and Volpe, Giancarlo, to Gruppo Lepetit S.p.A. 2-Nitroimidazole derivatives. B 759,697, Cl. 548-339.000.

Cavitron Corporation: *See—*
Burns, Henry L., 4,112,931, Cl. 128-2.080.
Cebal: *See—*
Berthet, Andre, B 757,135, Cl. 220-74.000.
Cecchini, Jack. Stringed musical instrument. 4,112,804, Cl. 84-173.000.
Celanese Corporation: *See—*
Kalnin, Ilmar L.; and Breckenridge, George J., B 759,927, Cl. 260-857.0TW.
Patella, Ralph F.; and Kuzma, Edward J., B 856,829, Cl. 156-327.000.
Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., B 568,216, Cl. 204-159.160.
Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See—*
Pirlet, Robert Alfred, 4,112,763, Cl. 73-355.00R.
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, to Snam Progetti, S.p.A. Process for the preparation of linear alpha-olefin oligomers, subsequent hydrogenation thereof and saturated products thus obtained. B 795,225, Cl. 260-683.15B.
Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, B 775,776, Cl. 260-875.000.
CF Industries, Inc.: *See—*
Loughrie, Gregory D., B 834,281, Cl. 241-15.000.
Chadwick-Helmuth Company, Inc.: *See—*
Chadwick, James R., 4,112,774, Cl. 73-455.000.
Chadwick, James R., to Chadwick-Helmuth Company, Inc. Aircraft rotor out-of-track correction method and apparatus. 4,112,774, Cl. 73-455.000.
Chambers, Norman T.: *See—*
Glaudel, Stephen P.; and Chambers, Norman T., B 735,718, Cl. 322-38.000.
Chambley, Phillip W.: *See—*
Norris, Alan H.; and Chambley, Phillip W., 4,112,561, Cl. 28-243.000.
Champion International Corporation: *See—*
Hartman, Seymour, B 791,565, Cl. 428-529.000.
Norris, Alan H.; and Chambley, Phillip W., 4,112,561, Cl. 28-243.000.
Wright, John T., B 753,647, Cl. 192-129.00B.
Champion Spark Plug Company: *See—*
Abair, Raymond L.; and Kulish, Stanley J., Jr., B 784,044, Cl. 261-81.000.
Champlin, Harry C., Jr.: *See—*
Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., B 797,921, Cl. 277-168.000.
Chandley, George D., to Hitchiner Manufacturing Co., Inc. Metal casting. 4,112,997, Cl. 164-119.000.
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., to Santa Fe International Corp. Sea sled for entrenching pipe. 4,112,695, Cl. 405-163.000.
Chapin, Leonard Lee; and Merrick, James Walter, to Autotronic Controls, Corp. Fuel system with metering pump for internal combustion engines. 4,112,901, Cl. 123-139.00E.
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., to Monsanto Company. Melt preparation of 6TA/6IA polymers with phosphorus compound to reduce ammonia formation. B 759,313, Cl. 528-313.000.
Charlson, David V.: *See—*
Anderson, Leroy E.; Charlson, David V.; and Vierkant, Mark A., 4,112,731, Cl. 72-320.000.
Chateau, Louis Jean, to Ducellier et Co. Automatic spark timing device. 4,112,887, Cl. 123-117.00D.
Chatterjee, Pallab K.: *See—*
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.
Chem-tronics, Inc.: *See—*
Brimm, Daniel J., B 785,168, Cl. 156-639.000.
Chemische Fabrik Stockhausen & Cie: *See—*
Hubner, Wolfgang; Barthell, Eduard; and Dahmen, Kurt, B 682,543, Cl. 260-29.4UA.
Chemithon Corporation, The: *See—*
Brooks, Burton; and Brooks, Richard J., B 746,242, Cl. 422-193.000.
ChemPar Corporation: *See—*
Kang, Pierson S., 4,112,827, Cl. 93-58.300.
Chen, Kon S.; and Majewski, Helmut W., to Stauffer Chemical Company. Disposal of heavy metal containing sludge wastes. B 838,510, Cl. 106-97.000.
Cheron, Jacques, to Institut Francais du Petrole. Fuel cell including at least one improved element. B 727,804, Cl. 429-36.000.
Chevron Research Company: *See—*
Kurkov, Victor P., B 750,310, Cl. 260-326.5FL.
Miller, Stephen J., B 773,995, Cl. 208-254.00R.
Mulaskey, Bernard F., B 727,488, Cl. 208-244.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., B 811,504, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., B 811,505, Cl. 148-23.000.
Tamm, Paul Whitfield, B 496,788, Cl. 252-465.000.
Wall, Robert G., B 790,366, Cl. 252-473.000.
Chiaramonte, Gasper, Jr. Dynamically illuminated footwear. 4,112,601, Cl. 36-137.000.
Chicago Fire Brick Company: *See—*
Rechter, Harold L., B 770,117, Cl. 106-67.000.
Chikamori, Kunio, to Agency of Industrial Science and Technology. Method for electrochemical machining. B 833,862, Cl. 204-129.100.
Childers, Aubrey C.: *See—*
Malinski, Richard F.; and Childers, Aubrey C., B 761,596, Cl. 318-475.000.
Children's Memorial Hospital, The: *See—*
Schulman, Jerome L.; and Kaplan, Jay, 4,112,926, Cl. 128-2.00S.
Chinery, Jack Joseph, to RCA Corporation. Method of testing semiconductor devices. B 790,199, Cl. 324-158.00D.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, B 728,459, Cl. 424-251.000.
Chiulli, Robert D. Radiographic cassette adapter. B 795,093, Cl. 250-468.000.
Chiulli, Robert D. Laparoscopic cannula. 4,112,932, Cl. 128-3.000.
Chloride Group Limited: *See—*
McBrien, Roderick Julian, B 825,718, Cl. 429-99.000.
Choay S.A.: *See—*
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., B 767,885, Cl. 264-113.000.
Choinski, Edward J., to Polaroid Corporation. Method of multilayer coating. B 801,144, Cl. 427-420.000.
Chornet, Esteban; and Cavalier, Jean-Claude, to Universite de Sherbrooke. Manufacture of a metal impregnated carbon from peat material. B 811,438, Cl. 252-422.000.
Chow, Philip Y., to Lin Offshore Engineering, Inc. Method of producing and installing offshore structures. 4,112,697, Cl. 405-209.000.
Christian, Donald K. Fabric bulking process. 4,112,558, Cl. 26-18.500.
Christy, Mark H.; and Spencer, Lloyd. Flush-drip irrigation emitter. B 708,062, Cl. 239-109.000.
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, to Vyzkumny ustav bavlnarsky. Method of and apparatus for cooling spinning units of open-end spinning machines. 4,112,663, Cl. 57-58.890.
Chulkova, Anna Davydovna: *See—*
Ivanov, Valentin Nikolaevich; and Chulkova, Anna Davydovna, B 668,185, Cl. 106-38.350.
Ciba-Geigy Corporation: *See—*
Deiner, Hans; Mosch, Franz; and Bernheim, Willy, B 554,819, Cl. 544-196.000.
Loew, Peter; and Koller, Stefan, B 676,599, Cl. 260-147.000.
Siegrist, Adolf Emil; and Pauchard, Jean-Paul, B 850,861, Cl. 542-463.000.
Siegrist, Adolf Emil; and De Sousa, Bernardo, B 851,040, Cl. 542-464.000.
Zondler, Helmut; Saladin, Emil; and Kirchmayr, Rudolf, B 806,044, Cl. 521-108.000.
Cigliano, Irving Louis, to Marine Moisture Control Co., Inc. Cam lock with vertical plunger. B 784,702, Cl. 151-54.000.
Cimarusti, Christopher M.: *See—*
Varma, Ravi K.; and Cimarusti, Christopher M., B 850,514, Cl. 260-239.55R.
Cimarusti, Christopher Michael: *See—*
Hauck, Frederic Peter; and Cimarusti, Christopher Michael, B 446,837, Cl. 544-380.000.
Cincinnati Electronics Corporation: *See—*
Raab, Frederick Herbert, B 710,298, Cl. 343-105.00R.
Cincinnati Milacron-Heald Corp.: *See—*
Uhtenwoldt, Herbert R.; and Humes, Norman S., 4,112,624, Cl. 51-5.00D.
Citizen Watch Co., Ltd.: *See—*
Kato, Yoshiaki; and Motoki, Jinro, 4,112,671, Cl. 58-23.00D.
Claesson, Harry; and Hellgren, Keijo, to ASEA Aktiebolag. Transportation units for supporting and moving plate-formed attachment member into and out of a press stand of hydraulic press. 4,112,724, Cl. 72-63.000.
Clairol, Inc.: *See—*
Walter, Henry J., B 824,239, Cl. 366-111.000.
Clapp, Porter B. Two-piece tube plug for repairing tubes in heat exchangers and the like. B 764,520, Cl. 165-76.000.
Clark, Arthur E.: *See—*
Hudson, George Elbert, III; and Clark, Arthur E., 4,112,699, Cl. 62-3.000.
Clark, George M. Drilling jar. B 788,625, Cl. 175-300.000.
Clark, James A.; Livesey, Donald V.; and Wrue, Richard J., to Bausch & Lomb Incorporated. Apparatus for forming optical lenses. B 762,221, Cl. 249-105.000.
Clark, John A.: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.
Clark, Judith Ann, to Beecham Group Limited. Esters of derivatives of 1,1-diphenyl-3-amino-propan-2-ol. B 698,091, Cl. 560-250.000.
Clark, Steven D.: *See—*
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., B 806,799, Cl. 320-39.000.
Clarke, Michael R.; and Dolenko, Allan J., to Canadian Patents and Development Limited. Methylolated kraft lignin polymer resin. B 752,628, Cl. 260-17.500.
Clelland, John J. Pre-cast insulated wall structure. 4,112,646, Cl. 52-372.000.
Clemens, George Selden: *See—*
Hulka, Jaroslav Fabian; and Clemens, George Selden, 4,112,951, Cl. 128-346.000.

Clement, Clyde H. Vehicle top loading mechanism. B 828,503, Cl. 214-450.000.
Clement, George Frederick; and Sniegowski, Bruno Raymond, to Bell Telephone Laboratories, Incorporated; and Western Electric Company. Telephone controlled lock release arrangement. B 844,377, Cl. 179-2.00A.
Climet Instruments Company: *See—*
Lepper, James M., Jr., B 725,027, Cl. 356-103.000.
Clokey, Arthur C. Reinforced articles of elastomeric material. 4,112,614, Cl. 46-151.000.
Cluett, Peabody & Co., Inc.: *See—*
Troope, Walter S.; and Lawrence, Jackson, 4,112,559, Cl. 26-18.600.
Coates, David; Gray, George William; and McDonnell, Damien Gerard, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystalline materials. B 821,146, Cl. 252-299.000.
Cohen, Choua; and Sillion, Bernard, to Institut Francais du Petrole. Alkyl-guanidino-heterocyclic compounds, their manufacture and use as additives for fuels and lubricants. B 821,054, Cl. 252-51.50A.
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, to Hoffmann-La Roche Inc. 1-(2-Aminoethyl)-3-(2,6-dihalophenyl)guanidines. B 844,570, Cl. 260-565.000.
Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of optically active vitamin E. B 797,712, Cl. 260-340.90R.
Cohu, Inc.: *See—*
Wind, Walter Jamison, B 835,242, Cl. 220-319.000.
Cola, Rudolph A.: *See—*
Maloney, Thomas C.; and Cola, Rudolph A., B 685,526, Cl. 340-343.000.
Colburn, John W., Jr.: *See—*
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, B 515,310, Cl. 299-13.000.
Colby, Donald B., to Scott Paper Company. Foldable furniture unit. 4,112,855, Cl. 108-159.000.
Cole, Carroll Richard, to Caterpillar Tractor Co. Motor grader with draw bar and circle support structure. B 735,245, Cl. 172-781.000.
Cole, Lawrence S.; Cole, Ruth J.; and Facchini, Rigo. Apparatus for successively dispensing from a can of a jellied product slices of a cross sectional area less than that of the can. 4,112,800, Cl. 83-411.00A.
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, to Beecham Group Limited. Antibiotic mm 13902. B 717,334, Cl. 424-117.000.
Cole, Ruth J.: *See—*
Cole, Lawrence S.; Cole, Ruth J.; and Facchini, Rigo, 4,112,800, Cl. 83-411.00A.
Colgate-Palmolive Company: *See—*
Carson, John C., Jr.; Robbins, Clarence R.; and Kenkare, Divaker B., 4,112,536, Cl. 15-104.940.
Kenkare, Divaker B.; and Shumway, Durland K., B 557,561, Cl. 424-46.000.
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, to International Business Machines Corporation. Combing wheel feed nip with second sheet restraint. B 788,570, Cl. 271-10.000.
Collignon, Herbert E.: *See—*
Godwin, Robert H.; and Collignon, Herbert E., B 764,371, Cl. 248-400.000.
Collin, Alvaro L.; and Patel, Gordhan M., to Kaiser Steel Corporation. Mine roof support plate. 4,112,693, Cl. 405-132.000.
Collin, Herbert S. Container for cut flowers. B 788,333, Cl. 206-423.000.
Collins, David John: *See—*
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, B 750,017, Cl. 71-92.000.
Collins, Donald L.; and Downing, Harold A., to Collins Industries, Inc. Pin release device for a wheelchair lift. B 824,533, Cl. 214-75.00R.
Collins Industries, Inc.: *See—*
Collins, Donald L.; and Downing, Harold A., B 824,533, Cl. 214-75.00R.
Collins, John D.; and Jones, Trevor E., to Albright & Wilson Ltd. Process for preparing organotin halides. B 781,118, Cl. 260-429.700.
Collins, Joseph C.: *See—*
Surrey, Alexander R.; and Collins, Joseph C., B 831,942, Cl. 260-558.00D.
Collins, Michael H., to Shell Internationale Research Maatschappij, B.V. Method of applying a layer of polyurethane foam onto a cut or ground surface of polyurethane foam. B 693,273, Cl. 427-236.000.
Collins, Walter; and Blankumsee, Howard. Composite railroad cross tie with rail support blocks. B 785,834, Cl. 238-72.000.
Combette, Marc; Dorgnon, Roger; Luthringer, Jean; and Ollivier, Jean. Fastening tool using caseless munition. B 805,663, Cl. 227-10.000.
Combette, Marc; and Ollivier, Jean. Loading device for a power actuated tool. 4,112,685, Cl. 60-634.000.
Commissariat a l'Energie Atomique: *See—*
Melnick, Igor, B 797,849, Cl. 13-22.000.
Commonwealth Scientific and Industrial Research Organization: *See—*
Wild, John Paul, B 753,383, Cl. 343-754.000.
Communications Satellite, Corporation: *See—*
Horna, Otakar Anthony, B 814,942, Cl. 179-170.200.
Con-Spec Devices Inc.: *See—*
Walski, Stanley, B 782,877, Cl. 249-216.000.
Condon, Michael Edward: *See—*
Ondetti, Miguel Angel; and Condon, Michael Edward, B 759,685, Cl. 260-112.50R.
Conger, William H.; and Gehringer, Ronald F., to Nordica International, Inc., a part interest. Tamper-proof axial tumbler type lock. 4,112,820, Cl. 70-363.000.
Conrad, Jens; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. 2,4-Dioxa-spiro(5,5)undec-8-ene perfume compositions. B 765,531, Cl. 252-522.000.
Construction Specialties, Inc.: *See—*
Reifsnyder, Howard B., 4,112,640, Cl. 52-177.000.
Contraves AG: *See—*
Brandestini, Marco, 4,112,740, Cl. 73-53.000.
Conway, Terry T.: *See—*
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., B 760,620, Cl. 544-105.000.
Cook, Edward H., Jr.: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., B 850,194, Cl. 429-33.000.
Cook, Glenn; and Larson, Paul, to Kennecott Copper Corporation. Method and apparatus for the electrolytic recovery of metal employing electrolyte convection. B 845,128, Cl. 204-105.00R.
Cook, John Gerald; and Shaw, Julian David, to Solartron Electronic Group Ltd., The. Long scale display. B 611,037, Cl. 324-115.000.
Cook, Robert E., to A. O. Smith Corporation. Flue pipe anode ring for water heater. B 789,643, Cl. 204-197.000.
Cook, William, Jr.: *See—*
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., 4,112,695, Cl. 405-163.000.
Cooke, Charles M.: *See—*
Mazdiyasni, Khodabakhsh S.; and Cooke, Charles M., B 452,038, Cl. 264-101.000.
Coons, Robert R.; Hennessey, Richard G.; and Woffenden, John, to International Harvester Company. Cooling fluid circulation in an annular disc brake. B 811,499, Cl. 188-71.600.
Corfield, John Courtney, to Unimax Switch Limited. Electrical switch having interlock between door and switch. B 727,849, Cl. 200-50.00A.
Coriden, Paul. Collapsible electronic calculator stand. B 804,782, Cl. 248-13.000.
Corning Glass Works: *See—*
Sullivan, Kevin J., 4,112,925, Cl. 128-2.00F.
Corse, Kenneth J. Open end baking pan. B 805,275, Cl. 249-169.000.
Cosack, Claus: *See—*
Hein, Wolfgang; Grundmann, Peter; and Cosack, Claus, B 783,714, Cl. 222-396.000.
Cosh, Harry Jose. Apparatus for producing motion of a workpiece. 4,112,784, Cl. 74-501.50R.
Costales, Manuel; and Hakki, Moustafa I. Compensating drive for revolving rings. 4,112,666, Cl. 57-105.000.
Cotten, Roger C.; Young, David W.; and Kandanian, Aram Y., to Southern Chemical Company. Compositions comprising polybutene EPDM and polyolefin. B 851,764, Cl. 260-897.00A.
Coulon, Wladimir A.: *See—*
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., B 767,885, Cl. 264-113.000.
Coutant, Ralph W., to Litton Systems, Inc. Keeper for idler rolls. 4,112,571, Cl. 29-243.500.
Coval, Arthur B.: *See—*
Lee, Arthur L.; and Coval, Arthur B., B 702,396, Cl. 192-4.00A.
Covington, Wayne L.; and Green, Glen R., to Ore-Ida Foods, Inc. Method and apparatus for forming torn, random size pieces of sausage meat. 4,112,545, Cl. 17-45.000.
Covini, Romano: *See—*
Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, B 734,248, Cl. 562-534.000.
Cowley, Brian Richard: *See—*
Laundon, Brian; Cowley, Brian Richard; and Humber, David Cedric, B 749,300, Cl. 204-158.0HA.
Cox, Donald E., to Coxwells, Incorporated. Swivel coupling. B 747,660, Cl. 285-174.000.
Coxwells, Incorporated: *See—*
Cox, Donald E., B 747,660, Cl. 285-174.000.
CPC International Inc.: *See—*
Leach, Harry Woods; Hebeda, Ronald Emil; and Holik, Dennis John, B 721,926, Cl. 127-29.000.
Craft, Jacob A.; and Hauser, Hans. Small transmission with brake. B 800,932, Cl. 188-72.700.
Cragoe, Edward J., Jr.: *See—*
Smith, Robert L.; Stokker, Gerald E.; and Cragoe, Edward J., Jr., B 833,930, Cl. 424-303.000.
Craig, Robert Simpson, to Acme Resin Corporation. Shell sand with improved thermal shock resistance. B 694,426, Cl. 428-404.000.
Cramer Industries, Inc.: *See—*
Wehner, Norvin J., deceased, B 801,055, Cl. 248-408.000.
Creager, John E.: *See—*
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., B 854,711, Cl. 338-33.000.
Crosby, Thomas C.: *See—*
Robinson, John William; Crosby, Thomas C.; and Howell, Stephen Louis, 4,112,802, Cl. 84-1.010.
Cross, Raymond Peter, to Pilkington Brothers Limited. Thermal treatment of glass in a fluidized bed. B 849,632, Cl. 65-114.000.
Csanady, Michael, Jr., to Westinghouse Electric Corp. Dual strainer gate arrangement for turbine oil systems. B 749,555, Cl. 210-167.000.
Csanady, Michael, Jr., to Westinghouse Electric Corp. Valving apparatus. 4,112,975, Cl. 137-625.290.
Culbertson, Harry M., to Monsanto Company. Process for preparing high ortho novolac resins. B 758,370, Cl. 528-138.000.

Curfman, Brainerd, Harris, Bell, Weigans and Depew: *See—*
Sanford, Dale J., 4,112,578, Cl. 29-700.000.
Curtice, Walter Richard, to RCA Corporation. Triggered burst generator. B 792,418, Cl. 307-260.000.
Curtis, Little P.: *See—*
Albaric, Jacques E.; Curtis, Little P.; and Dailey, George F., B 720,332, Cl. 310-54.000.
Curtis, William M.; and Hermanson, Dean E., to Youngstown Sheet and Tube Company. Pipe coupler for various size flanges. B 790,963, Cl. 285-12.000.
Custom Plastics, Inc.: *See—*
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,112,853, Cl. 108-111.000.
Cutler, Ivan B.: *See—*
Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., B 788,572, Cl. 429-193.000.
Cvacho, Daniel S., to Belgium Tool & Die Co. Coating filter, separator and collector system. B 727,447, Cl. 55-319.000.
Cycle-Kamp Inc.: *See—*
Olmstead, William Dean, B 735,429, Cl. 296-23.00H.
Cyphelly, Ivan Jaroslav. Valve arrangement for limiting torque of a hydraulic motor of a centrifuge. B 786,844, Cl. 233-7.000.
Czerwon, Dieter: *See—*
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, B 722,558, Cl. 526-351.000.
Dadurian, Aram; and Rehder, Gunther. Knee-joint prosthesis. 4,112,522, Cl. 3-1.910.
Daenen, Bernardus, to Van der Molen Machinefabriek B.V. Cutting apparatus. 4,112,799, Cl. 83-409.000.
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corp.; and RAI Research Corporation. Trifluorostyrene sulfonic acid membranes. B 850,194, Cl. 429-33.000.
Dahmen, Kurt: *See—*
Hubner, Wolfgang; Barthell, Eduard; and Dahmen, Kurt, B 682,543, Cl. 260-29.4UA.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Mori, Shigeo; and Fujita, Takeshi, B 616,722, Cl. 521-163.000.
Dai Nippon Toryo Co., Ltd.: *See—*
Tugukuni, Hideyoshi; and Kano, Masafumi, B 683,508, Cl. 428-407.000.
Daido Tokushuko Kabushiki Kaisha: *See—*
Watanabe, Kazuo; Endo, Toshio; and Kojima, Katsuhiro, 4,112,626, Cl. 51-35.000.
Daihatsu Diesel Manufacturing Co., Ltd.: *See—*
Kagiyama, Yasuo; and Miyazaki, Nobumasa, B 793,359, Cl. 236-12.00A.
Dailey, George F.: *See—*
Albaric, Jacques E.; Curtis, Little P.; and Dailey, George F., B 720,332, Cl. 310-54.000.
Daimler-Benz Aktiengesellschaft: *See—*
Hufendiek, Ernst-Wilhelm, 4,112,897, Cl. 123-139.0ST.
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, B 717,682, Cl. 429-78.000.
Dairy Systems, Inc.: *See—*
Heidecker, Robert F., 4,112,758, Cl. 73-218.000.
D'Albora, John M., to United States of America, Navy. Determination of variations of wave characteristics. B 446,571, Cl. 340-3.00R.
Dale, Glenn H., to Phillips Petroleum Company. Separation of acetone from n-butane by distillation. B 669,539, Cl. 203-62.000.
Dale, John R.: *See—*
Mason, Russell I.; and Dale, John R., B 535,332, Cl. 340-85.000.
Dalziel, David G. Airborne rescue device. B 833,170, Cl. 244-137.00P.
D'Amato, Ralph James, to RCA Corporation. Process of fabricating a cathode ray tube. 4,112,562, Cl. 29-25.140.
Dany, Franz-Josef: *See—*
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, B 815,160, Cl. 423-265.000.
D'Aragon, Paul. Insulating installation for a window frame. 4,112,642, Cl. 52-202.000.
Darby, Ronald L. Rebounding ball game. B 763,427, Cl. 273-95.00R.
Dare Pafco, Inc.: *See—*
Thurman, Paul G., B 796,478, Cl. 312-111.000.
d'Arras, Philippe, to Societe Coupax. Tenderizer for butcher's meat. 4,112,544, Cl. 17-25.000.
Das, Suryya K.: *See—*
Jozwiak, Edward L., Jr.; and Das, Suryya K., B 804,410, Cl. 204-181.00R.
Dasy Inter S.A.: *See—*
Brosow, Jorgen; and Furugard, Erik, B 647,935, Cl. 235-493.000.
Datrix Corporation: *See—*
Travis, Brian A., B 759,774, Cl. 340-151.000.
David, Gerard Andre: *See—*
Salles, Yvon; Leger, Pierre; and David, Gerard Andre, B 729,345, Cl. 156-345.000.
Davies, David Evan Naunton: *See—*
Denne, Phillip Raymond Michael; Davies, David Evan Naunton; and McEwen, Colin Dougal, B 723,621, Cl. 343-6.8LC.
Davis, Edward B. Motorized inverting exerciser with body guard permitting selection of desired stress. B 697,361, Cl. 272-93.000.
Davis, Edwin J. Window solar heating unit. 4,112,919, Cl. 126-270.000.
Davis, Gerald L.; and Scott, Timothy C., to Sundstrand Corporation. Reversing valve. 4,112,974, Cl. 137-625.290.
Davis, Harry Robert: *See—*
Stuart, Linden, Jr.; and Davis, Harry Robert, B 820,292, Cl. 156-392.000.
Davis, Pauls: *See—*
Helfert, Herbert; Davis, Pauls; and Langdon, William Keith, B 736,959, Cl. 260-615.00B.
Davis, Robert H., to United States of America, Navy. Digital signal synthesis system. B 639,031, Cl. 364-718.000.
Davoli, Velmore: *See—*
Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, B 733,709, Cl. 252-429.00C.
Day, Frederick L. Travel insert chair and method of transporting the physically handicapped. B 800,434, Cl. 297-232.000.
Day, Paul B., to Gai-Tronics Corporation. Mine dial and page phone system. B 756,238, Cl. 179-2.00R.
Dayet, Jacques; Martin, Joseph; and Nicola, Charles, to Delle-Alsthom S.A. Gas-blast electric cut-out device. B 727,750, Cl. 200-148.00A.
De Dietrich (USA), Inc.: *See—*
Schlosberg, Seymour; and Lerman, Michael J., 4,112,572, Cl. 29-401.00R.
De Alberti, Giordano: *See—*
Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, B 734,248, Cl. 562-534.000.
Debat, Jacques, to Institut de Recherches Chimiques et Biologiques Appliquees. Compositions for the treatment of disorders of the prostate gland. B 673,915, Cl. 424-278.000.
DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., to Upjohn Company, The. Composition of matter and process. B 834,285, Cl. 424-117.000.
deBrebisson, Michel, to U.S. Philips Corporation. Method of manufacturing a semiconductor device by non-selectively implanting a zone of pre-determined low resistivity. B 764,587, Cl. 148-1.500.
De Castro Basto, Arthur Jose. Apparatus for teaching or practising bridge. 4,112,592, Cl. 35-8.00B.
Decca Limited: *See—*
Ilieve, Peter John, B 811,877, Cl. 358-34.000.
Deck, Howard C.: *See—*
Feltz, Albert J.; and Deck, Howard C., B 811,913, Cl. 352-159.000.
Decker, Lloyd Burr, to Harter Corporation. Snub assembly for securing covering material to a wall panel module. 4,112,643, Cl. 52-222.000.
Deckers, Albert T.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.
de Cointet de Fillain, Paul: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, B 667,557, Cl. 260-326.160.
DeCorso, Serafino M., to Westinghouse Electric Corp. Hybrid combustor with staged injection of pre-mixed fuel. 4,112,676, Cl. 60-39.710.
DeCorso, Serafino M.: *See—*
Pillsbury, Paul W.; and DeCorso, Serafino M., 4,112,675, Cl. 60-39.060.
Deffner, John F.: *See—*
Bunting, Pamela M.; and Deffner, John F., B 751,256, Cl. 44-72.000.
Degremont: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, B 605,926, Cl. 204-180.00R.
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Color photographic developing composition. B 656,084, Cl. 96-66.00R.
DeHart, John R.; Nelson, Larry L.; and Krehl, William H., to Docutronix, Inc. Device for checking envelopes for enclosed documents. B 775,386, Cl. 209-549.000.
Dehnert, Johannes; and Dunkelmann, Guenter, to BASF Aktiengesellschaft. Disperse azo dye with diaminopyrimidine coupling component. B 660,985, Cl. 260-154.000.
Deiner, Hans; Mosch, Franz; and Bernheim, Willy, to Ciba-Geigy Corporation. Addition products of an N-allylamino-s-triazine and an organopolysiloxane. B 554,819, Cl. 544-196.000.
de Kanter, Hendrik, to DKA, Inc. Glass cylinder subdividing apparatus and method. 4,112,627, Cl. 51-79.000.
Deknatel, Inc.: *See—*
Kurtz, Leonard D.; and Bidwell, Robert E., 4,112,948, Cl. 128-276.000.
Delalande S. A.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., B 813,357, Cl. 544-360.000.
Deli, Jack M., to International Harvester Company. Torsielastic thrust bushing for track chains. 4,112,574, Cl. 29-527.100.
Delle-Alsthom S.A.: *See—*
Dayet, Jacques; Martin, Joseph; and Nicola, Charles, B 727,750, Cl. 200-148.00A.
Del Monte, Louis A., to Honeywell Inc. Microcircuit device metallization. B 809,960, Cl. 204-15.000.
DeLorenzo, Mario M. Foldable saw horse. B 763,368, Cl. 182-153.000.
Demag, A.G.: *See—*
Gudenau, H. W.; Konig, Horst; Rath, Gero; and Roth, Haye, B 771,748, Cl. 75-12.000.
Demers, Robert Augustus, to Bell Telephone Laboratories, Incorporated. Selective calling circuit. B 716,581, Cl. 340-147.00R.
Denk, Joseph P.: *See—*
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., B 786,234, Cl. 360-99.000.
Denne, Phillip Raymond Michael; Davies, David Evan Naunton; and McEwen, Colin Dougal, to Alfa-Laval Company Limited. Passive transponder apparatus for use in an interrogator-responder system. B 723,621, Cl. 343-6.8LC.
Denzene, Quentin S., to E. F. Johnson Company. Channel skip memory system for radio receiver. B 741,868, Cl. 325-470.000.
Denzene, Quentin S., to E. F. Johnson Company. Radio channel skip system. B 753,684, Cl. 325-470.000.
Denzer, Max; and Smith, Joseph A., to Sandoz, Inc. Process for the preparation of substituted isoxazolo[4,5-c]pyridin-4-(5H)-ones. B 790,896, Cl. 544-362.000.
de Putter, Warner Jan, to Wavin B.V. Process for perforating plastics tubes. 4,112,795, Cl. 83-15.000.
Derdzinski, Terrence Edmund; and Karlin, James Hilliard, to Motorola, Inc. Modular console enclosure with writing surface. B 620,987, Cl. 312-198.000.
DeRouen, Joseph Rodolph; and Kucharski, Lawrence, Jr., to Bourns, Inc. Worm gear potentiometer ratchet system. B 800,600, Cl. 338-174.000.
Derrwaldt, Philip A. Cable tension control. B 625,822, Cl. 254-175.700.
Deruelle, Jean, to Stein Industrie. Combustion of hot gases of low calorific power. B 760,140, Cl. 431-5.000.
Desai, Ardeshir R.: *See—*
Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., 4,112,698, Cl. 405-167.000.
Deshpande, Narayan V., to Xerox Corporation. Resilient lithographic masters for direct printing. 4,112,841, Cl. 101-141.000.
Desiderio, Angelo C., to Oak Industries, Incorporated. Low level relay contact blades. B 756,247, Cl. 200-246.000.
DeSimone, Robert Santora, to Polak's Frutal Works, Inc. Bleach compositions containing perfume oils. B 819,517, Cl. 252-187.00H.
DeSoto, Inc.: *See—*
Rabi, Rafat T.; Murphy, Edward J.; and Basoms, John A., B 745,240, Cl. 204-181.00C.
Sekmakas, Kazys, B 726,141, Cl. 260-850.000.
De Sousa, Bernardo: *See—*
Siegrist, Adolf Emil; and De Sousa, Bernardo, B 851,040, Cl. 542-464.000.
DeStephanis, Ralph, to RCA Corporation. Record support and alignment apparatus for a video disc player. B 801,728, Cl. 274-9.00B.
Detcher, Theodore E., to Black Clawson Company, The. Dewatering screen. B 799,555, Cl. 210-409.000.
Deutsch, Ralph, to Deutsch Research Laboratories, Ltd. Ensemble and anharmonic generation in a polyphonic tone synthesizer. 4,112,803, Cl. 84-1.240.
Deutsch Research Laboratories, Ltd.: *See—*
Deutsch, Ralph, 4,112,803, Cl. 84-1.240.
Deutsche Babcock Aktiengesellschaft: *See—*
Noack, Rolf; Schuster, Joachim; and Lohse, Udo, 4,112,728, Cl. 72-154.000.
Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, B 802,946, Cl. 260-545.00R.
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Deutsche Texaco Aktiengesellschaft: *See—*
Strehlke, Gunter; and Osterburg, Gunther, B 547,846, Cl. 260-593.00P.
De Vito, Vincent P.: *See—*
Moen, George E.; and De Vito, Vincent P., B 818,384, Cl. 219-10.55R.
DeWitt, James S.: *See—*
DeWitt, Stuart; and DeWitt, James S., 4,112,550, Cl. 24-73.0BP.
DeWitt, Stuart; and DeWitt, James S. Suspended ceiling hook. 4,112,550, Cl. 24-73.0BP.
Dey, Ervin J., to SPS Technologies, Inc. Grommet assembly. 4,112,993, Cl. 151-41.740.
Diagnostic Isotopes Incorporated: *See—*
Finn, James J., B 712,802, Cl. 206-528.000.
Diamalt Aktiengesellschaft: *See—*
Rambacher, Paul; and Make, Siegfried, B 831,053, Cl. 544-314.000.
Dickert, Yancey J.: *See—*
Miller, Stephen L.; and Dickert, Yancey J., B 754,730, Cl. 260-9.000.
Dickey-john Corporation: *See—*
Knepler, John T., 4,112,777, Cl. 73-728.000.
Diebold Incorporated: *See—*
Graef, Harry T.; Richardson, Jack M.; and Wolfarth, Robert P., B 761,288, Cl. 221-6.000.
Dieck, Ronald L.; Magnusson, Alan B.; and Quinn, Edwin J., to Armstrong Cork Company. Curable aryloxyphosphazene polymers. B 878,679, Cl. 521-95.000.
Diehl, Harry Weldon. Method of treating rheumatoid arthritis. B 821,053, Cl. 424-312.000.
Dielectric Laboratories, Inc.: *See—*
Lupfer, David A., B 744,237, Cl. 333-84.00M.
Diesch, Robert E., to Pako Corporation. Knife assembly for photographic strip cutter. 4,112,801, Cl. 83-586.000.
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., to Van Dorn Company. Tray-type processed food containers. B 744,965, Cl. 206-508.000.
Dillinger, Lester L. Apparatus for drilling or reaming. B 822,790, Cl. 408-226.000.
DiMola, Nunzio: *See—*
Winters, Giorgio; and DiMola, Nunzio, B 713,011, Cl. 260-288.0CF.

Dipsol Chemical Company, Ltd.: *See—*
Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, B 779,560, Cl. 204-55.00Y.
Director-General Agency of Industrial Science and Technology: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Dirksing, Robert S.; and Todd, Estel R., to Procter & Gamble Company, The. Fluid injector. B 845,064, Cl. 366-167.000.
Discojet Corporation: *See—*
Moller, Paul S., B 728,913, Cl. 181-231.000.
Distillers Company (Carbon Dioxide) Ltd., The: *See—*
Wheldon, Alfred G.; and Harris, Ernest D., 4,112,736, Cl. 73-23.000.
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, to BASF Aktiengesellschaft. Manufacture of N-substituted glycinonitriles. B 743,517, Cl. 260-465.50A.
Dittmer, William H.: *See—*
Wycoff, Keith H.; and Dittmer, William H., B 598,587, Cl. 340-164.00R.
Dixon, William Paul. Power source for subsea oil wells. 4,112,687, Cl. 60-641.000.
DKA, Inc.: *See—*
de Kanter, Hendrik, 4,112,627, Cl. 51-79.000.
Dobson Park Industries Limited: *See—*
Jeffrey, Ian Campbell, B 617,088, Cl. 214-141.000.
Phillips, Reginald Andrew; Hamilton, Terence; and Thompson, Arthur David, B 734,637, Cl. 299-31.000.
Dr. C. Otto & Comp. G.m.b.H.: *See—*
Pries, Erich, B 747,381, Cl. 202-139.000.
Dr. Carl Hahn G.m.b.H.: *See—*
Friese, Axel; and Simon, Stefan, B 731,954, Cl. 198-480.000.
Documation Incorporated: *See—*
Bushman, Willard T.; and Snyder, Robert C., B 608,897, Cl. 235-474.000.
Docutronix, Inc.: *See—*
DeHart, John R.; Nelson, Larry L.; and Krehl, William H., B 775,386, Cl. 209-549.000.
Doerman, Eryk Stefan: *See—*
Preston, Edward George; and Doerman, Eryk Stefan, 4,112,954, Cl. 131-21.00R.
Doggett, Neil: *See—*
Lappage, James; Doggett, Neil; and Yates, Stephen William, 4,112,662, Cl. 57-34.0AT.
Doi, Kaname, to Sumitomo Electric Industries, Ltd. Load-responsive pressure proportioning reducing valve assembly for vehicle hydraulic brake system. B 804,572, Cl. 303-24.00F.
Dolak, Lester A.: *See—*
DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., B 834,285, Cl. 424-117.000.
Dolenko, Allan J.: *See—*
Clarke, Michael R.; and Dolenko, Allan J., B 752,628, Cl. 260-17.500.
Dolidze, Vladimir Romanovich: *See—*
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, B 788,590, Cl. 568-789.000.
Dominguez, Richard Lee. Lighting fixture. B 800,634, Cl. 362-35.000.
Donaldson Company, Inc.: *See—*
Wagner, Wayne M.; and Campbell, John A., B 773,847, Cl. 285-322.000.
Dondi, Gilberto; and Zanotti, Arnaldo, to Bayer Italia Societa per Azioni. Fruit juice-sugar granules. B 743,853, Cl. 424-230.000.
Donn Products, Inc.: *See—*
Mieyal, David F., B 803,078, Cl. 248-354.00R.
Donnelli, Joseph W.; and Barnes, Richard D., to Southern Imperial, Inc. Merchandizing system for use with perforated panels or the like. B 821,809, Cl. 211-49.00R.
Donner-Hanna Coke Corporation: *See—*
Mahar, Kevin D., B 635,594, Cl. 201-39.000.
Donner, Joseph E., to Unitek Corporation. Feedback-controlled radiant furnace for firing ceramic material and the like. B 602,208, Cl. 219-489.000.
Dooley, Richard A. Apparatus for producing cams. 4,112,819, Cl. 90-13.900.
Dore, James E., to Swiss Aluminium Ltd. Apparatus for the filtration of molten metal in a crucible type furnace. B 835,649, Cl. 266-227.000.
Dorgnon, Roger: *See—*
Combette, Marc; Dorgnon, Roger; Luthringer, Jean; and Ollivier, Jean, B 805,663, Cl. 227-10.000.
Dorogochinsky, Akivy Zinovievich: *See—*
Mirsky, Yakov Volfovich; Dorogochinsky, Akivy Zinovievich; Meged, Nelli Fillipovna; and Kosolapova, Antonina Pavlovna, B 710,651, Cl. 423-329.000.
Dorsey, Geoffrey A., Jr., to Kaiser Aluminum & Chemical Corporation. Method of forming an aluminum oxide coating. B 714,157, Cl. 148-6.270.
Doss, Richard C., to Phillips Petroleum Company. Process for applying sealant composition. B 794,893, Cl. 428-355.000.
Doss, Richard C.: *See—*
Louthan, Rector P.; and Doss, Richard C., B 737,948, Cl. 528-279.000.
Douglas, Paul S.; Patellis, Anargiros Pete; and Vredenburgh, Walter

A., to Hercules Incorporated. Copolymers of alpha-methylstyrene and styrene and uses thereof. B 636,340, Cl. 260-876.00B.
Douglas, Waymon Joe; and Douglas, Wilburn Cleatus. Article handling apparatus. B 743,787, Cl. 214-8.50C.
Douglas, Wilburn Cleatus: *See*—
Douglas, Waymon Joe; and Douglas, Wilburn Cleatus, B 743,787, Cl. 214-8.50C.
Dovzhko, Fedor Evdokimovich: *See*—
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.
Dow Chemical Company, The: *See*—
Johnson, David R., B 722,851, Cl. 204-64.00R.
Langhorst, Martin A.; Sinke, Gerard C.; and Mossner, Elmer H., B 746,981, Cl. 75-101.00R.
Miller, Stephen L.; and Dickert, Yancey J., B 754,730, Cl. 260-9.000.
Pickelman, Dale M., Sr.; and Wessling, Ritchie A., B 776,167, Cl. 526-30.000.
Strojny, Edwin J.; Friedli, Hans R.; and Wing, Milton S., B 828,409, Cl. 260-346.750.
Thompson, James L., B 713,168, Cl. 252-8.55C.
Trucks, Roger O.; and Steiner, Edwin C., B 437,425, Cl. 260-338.000.
Dowa Co., Ltd.: *See*—
Miyahara, Kingo, B 800,701, Cl. 431-122.000.
Dowa Mining Co., Ltd.: *See*—
Obinata, Shiro; Hashimoto, Shigeru; and Sahara, Takeshi, B 613,928, Cl. 209-167.000.
Downing, Harold A.: *See*—
Collins, Donald L.; and Downing, Harold A., B 824,533, Cl. 214-75.00R.
Downing, James H., Jr. All-electric A.C. tractor. B 769,378, Cl. 180-65.00C.
Doyle, Terrence W.: *See*—
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., B 760,620, Cl. 544-105.000.
Dragerwerk Aktiengesellschaft: *See*—
Jeretin, Stojan, 4,112,938, Cl. 128-142.00R.
Dravo Corporation: *See*—
Pietrusza, Arthur Jacob; and Kent, Harry James, B 709,427, Cl. 435-222.000.
Dreibelbis, Logan L., to Advanced Drainage Systems, Inc. Tube slotter. 4,112,810, Cl. 83-490.000.
Driscoll, John J.; and Wareham, Richard R., to Polaroid Corporation. Self-developing camera and viewer. B 749,511, Cl. 354-76.000.
Driscoll, Michael J.; and Bowman, Frank L., to Massachusetts Institute of Technology. Core catcher for nuclear reactor core meltdown containment. B 723,403, Cl. 176-38.000.
Drossbach, Hubert, to Agro-Drip, Incorporated. Drain pipe method. B 773,766, Cl. 264-154.000.
Drucker, Gerhard: *See*—
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, B 717,682, Cl. 429-78.000.
Dubois, Leo Francis. Trash can transporter. B 790,845, Cl. 248-146.000.
DuBosque, Clayton, Jr.; Rudd, Wallace C.; and Allen, Richard J., to Thermatool Corp. Method of manufacturing heat exchange panels. 4,112,566, Cl. 29-157.30C.
Ducellier et Cie: *See*—
Habert, Roger, 4,112,895, Cl. 123-117.00R.
Ducellier et Co.: *See*—
Chateau, Louis Jean, 4,112,887, Cl. 123-117.00D.
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, to Secretary of State for Social Services, The. Liquid storage device. B 712,164, Cl. 422-63.000.
Dufour, Raymond J.: *See*—
Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., B 738,481, Cl. 165-3.000.
Duncan, Herbert Alan, to Motorola, Inc. Noise blanker circuit. B 810,215, Cl. 325-480.000.
Dunkelmann, Guenter: *See*—
Dehnert, Johannes; and Dunkelmann, Guenter, B 660,985, Cl. 260-154.000.
Dunlop Limited: *See*—
Mills, Anthony Mark; and Buck, David Lyndon, 4,112,994, Cl. 152-354.00R.
Dunn, Paul E.: *See*—
Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., B 722,741, Cl. 235-419.000.
Du Pont de Nemours, E. I., and Company: *See*—
Alegranti, Constance Wright, B 677,443, Cl. 210-500.00M.
Harmuth, Charles Moore, B 795,565, Cl. 260-28.50D.
Portnoy, Robert Charles, B 805,150, Cl. 544-408.000.
Resnick, Paul Raphael; and Grot, Walther Gustav, B 835,804, Cl. 204-98.000.
Durbin, John Alan, to Xerox Corporation. Optical system for alternatively projecting adjacent images of adjacent objects or double images of a single object. B 782,865, Cl. 353-122.000.
Dussich, Manlio V. Sunglass method and apparatus. B 820,570, Cl. 351-49.000.
Dy. Tampella AB: *See*—
Lehtinen, Jukka A., 4,112,586, Cl. 34-9.000.
Dyckerhoff & Widmann Aktiengesellschaft: *See*—
Herbst, Thomas, 4,112,637, Cl. 52-155.000.
Dynamit Nobel Aktiengesellschaft: *See*—
aus der Funten, Helmut; and Vogt, Wilhelm, B 783,576, Cl. 260-343.30R.
Blumenfeld, Georg; and Vollkommer, Norbert, B 640,312, Cl. 528-299.000.
Haage, Karl; and Scharff, Dieter, B 609,944, Cl. 428-111.000.
Helfgen, Werner; Lindner, Gerhard; Lingens, Paul; and Kaufmann, Helmut, B 702,593, Cl. 264-3.00R.
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, B 706,864, Cl. 260-448.80A.
Psencik, Erich, B 598,084, Cl. 528-75.000.
Dynapol: *See*—
Bellanca, Nicolo; and Furia, Thomas Edward, B 799,795, Cl. 106-137.000.
Dzyan, Valentin Ivanovich: *See*—
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.
E. F. Johnson Company: *See*—
Denzene, Quentin S., B 741,868, Cl. 325-470.000.
Denzene, Quentin S., B 753,684, Cl. 325-470.000.
E M I Limited: *See*—
Lee, Cyril Arthur, B 622,753, Cl. 235-449.000.
E. R. Squibb & Sons, Inc.: *See*—
Hauck, Frederic Peter; and Cimarusti, Christopher Michael, B 446,837, Cl. 544-380.000.
Ondetti, Miguel Angel; and Condon, Michael Edward, B 759,685, Cl. 260-112.50R.
Treuner, Uwe D.; and Breuer, Hermann, B 776,400, Cl. 544-26.000.
Varma, Ravi K.; and Cimarusti, Christopher M., B 850,514, Cl. 260-239.55R.
Eastman Kodak Company: *See*—
Lelental, Mark; and Light, William Andrew, B 824,136, Cl. 96-1.00R.
Sandhu, Mohammad Akram; and Tingler, Kenneth Lloyd, B 778,635, Cl. 96-67.000.
Ebeling, Martti Olavi Aladar; and Lunden, Risto Waldemar, to Kontekla Oy. Rain water roof outlet or similar for a building. 4,112,691, Cl. 405-119.000.
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Sintered apatite body. B 802,856, Cl. 106-39.500.
Ecsery, Zoltan: *See*—
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, B 728,459, Cl. 424-251.000.
Edamoto, Yoshito. Temporary sealant of a nozzle opening of sliding nozzle. B 819,707, Cl. 106-56.000.
Eguchi, Tadashi: *See*—
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, B 709,088, Cl. 23-232.00R.
Ehrhart, Leonard M.; Pratte, John R.; and Mazik, Paul E., Jr., to Pullman Incorporated. Adjustable thickness vent door assembly for cargo bodies. 4,112,621, Cl. 49-400.000.
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, to Hercules Incorporated. Iron blue pigment composition and process for its production. B 809,336, Cl. 106-304.000.
Eisai Co., Ltd.: *See*—
Igarashi, Toshiji; and Nakajima, Yoshikage, B 821,910, Cl. 424-266.000.
Electric Machinery Mfg. Company: *See*—
Sandor, Leslie W., B 753,430, Cl. 219-137.00R.
Electric Power Research Institute, Inc.: *See*—
Brobeck, William M., 4,112,785, Cl. 74-572.000.
Holman, Robert R.; and Turkall, Daniel N., B 737,761, Cl. 277-1.000.
Sisk, Francis J.; and Veyo, Stephen E., 4,112,705, Cl. 62-238.000.
Electro-Sound, Inc.: *See*—
Rehklau, George D., B 738,899, Cl. 242-56.00R.
Electronics Corporation of America: *See*—
Cade, Phillip J., B 675,778, Cl. 431-78.000.
Electronics for Medicine, Inc.: *See*—
Feldman, Charles L.; and Hubelbank, Mark, 4,112,930, Cl. 128-2.06R.
Eley, Edgar R., to Westinghouse Electric Corp. Load break bushing. B 828,467, Cl. 339-111.000.
Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., to Oxford Industries, Inc. Method of fabricating shirt cuffs. 4,112,860, Cl. 112-262.000.
Ellis, James Arthur: *See*—
Wright, Glenn Lamont; and Ellis, James Arthur, 4,112,540, Cl. 16-99.000.
Eltra Corporation: *See*—
Hayes, Clyde M., B 775,084, Cl. 310-241.000.
Lang, Roger J.; and Lang, Gary E., B 736,309, Cl. 339-29.00R.
Emerson Electric Co.: *See*—
Henderson, David L., B 663,146, Cl. 148-6.15Z.
EMI Limited: *See*—
Hounsfield, Godfrey Newbold, B 655,396, Cl. 250-445.00T.
LeMay, Christopher Archibald Gordon, B 781,961, Cl. 250-445.00T.
Oliver, Colin Charles, B 765,422, Cl. 250-445.00T.

Emmons, Marvin L. Convertible hat blocking structure. B 775,245, Cl. 223-24.000.
Empire Metal Products Corp.: *See*—
Stewart, David E., 4,112,622, Cl. 49-421.000.
Emura, Tomoyuki: *See*—
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, B 874,748, Cl. 526-74.000.
Enami, Shiroh: *See*—
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, B 775,619, Cl. 179-18.0ES.
Endo, Takaya: *See*—
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, B 656,084, Cl. 96-66.00R.
Endo, Toshio: *See*—
Watanabe, Kazuo; Endo, Toshio; and Kojima, Katsuhiro, 4,112,626, Cl. 51-35.000.
Enenkel, Hans-Joachim: *See*—
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, B 739,142, Cl. 424-205.000.
Energy Conversion Devices, Inc.: *See*—
Hallman, Robert W., B 205,861, Cl. 96-75.000.
Energy Research Inc.: *See*—
Harpman, Webster B., 4,112,889, Cl. 123-25.00B.
Engel, Lawrence J.; and Gardiner, John B., to Exxon Research & Engineering Co. Aminated polymeric additives for fuels and lubricants. B 493,328, Cl. 252-51.50R.
Engelhardt, Bernard H.; and Mintz, Marcus. Liquid level measuring apparatus. 4,112,761, Cl. 73-312.000.
Engineered Systems, Inc.: *See*—
Kubina, John, B 789,960, Cl. 340-149.00A.
Englund, Gosta Roland, to Svenska Dataregister Aktiebolag. Driving device for a print head. 4,112,840, Cl. 101-93.150.
Enlow, William Palmer: *See*—
Hechenbleikner, Ingenuin; and Enlow, William Palmer, B 795,461, Cl. 260-969.000.
Entoleter, Inc.: *See*—
Wattles, Gurdon B.; and Vecsey, Louis R., B 778,363, Cl. 241-188.00A.
Environmental Devices Corporation: *See*—
Kerfoot, William B.; and Brainard, Edward C., II, 4,112,741, Cl. 73-53.000.
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, to Agfa-Gevaert AG. Copying apparatus. B 699,341, Cl. 355-8.000.
Epstein, James Stephen, to Hewlett-Packard Company. Surveying instrument and method. B 742,941, Cl. 356-5.000.
Epstein, Max; Marhic, Michel E.; and Schacham, Samuel E., to Northwestern University. Apparatus and method for efficient synthesis of laser light. B 753,292, Cl. 331-94.50C.
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich. Process for the production of alumina from the mineral component of solid fuels. B 702,208, Cl. 423-131.000.
Erickson, John W.: *See*—
Brown, Francis Barton; and Erickson, John W., B 768,581, Cl. 55-203.000.
Eriksson, Lennart: *See*—
Schibbye, Hjalmar; and Eriksson, Lennart, 4,112,701, Cl. 62-84.000.
Erkens, Leonardus Johannes Hubertus: *See*—
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, B 809,336, Cl. 106-304.000.
Ernst, Ludwig. Disperser head for seed and fertilizer drill machines. B 762,688, Cl. 222-139.000.
Ernsthausen, Roger E., to Owens-Illinois, Inc. Multiple gaseous discharge display/memory panel having improved voltage characteristics. B 293,817, Cl. 313-188.000.
ESB Incorporated: *See*—
Margalit, Nehemiah, B 851,414, Cl. 429-194.000.
Escher Wyss Limited: *See*—
Miller, Helmut, B 744,319, Cl. 308-9.000.
ESGE-MARBY GmbH & Co.: *See*—
Niemann, Heinz, B 776,421, Cl. 224-39.000.
Establissement Valvin: *See*—
Poinsard, Elisabeth Michele; and Poinsard, Robert Gaston, 4,112,829, Cl. 99-277.000.
Estapa, Don E.: *See*—
Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., 4,112,860, Cl. 112-262.000.
Esters, Ernie B. Dynamoelectric machine with inner and outer stators. B 748,091, Cl. 310-46.000.
Estes, John H.: *See*—
Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., B 746,766, Cl. 252-442.000.
Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., B 774,099, Cl. 260-683.680.
Estes, Robert T.: *See*—
MacLean, Donald L.; and Estes, Robert T., B 699,543, Cl. 528-289.000.
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., to Choay S.A. Process for the manufacture of layered tablets incorporating controlled release microcapsules. B 767,885, Cl. 264-113.000.
Etablissements Carpano & Pons: *See*—
Mazuir, Maurice, B 762,231, Cl. 364-900.000.
Evans, David H.; and Greenwald, Richard B., to Polaroid Corporation. Conversion of N-tosylsulfoximides to sulfoximines. B 784,669, Cl. 260-327.00M.
Evans Products Company: *See*—
Johnson, Peter E.; and Rowland, Bob G., B 604,350, Cl. 429-143.000.
Evans, Robert T.; and Farley, David L., to Halliburton Company. Reclosable circulation valve for use in oil well testing. B 846,232, Cl. 166-264.000.
Everett/Charles, Inc.: *See*—
Long, Lewis Frank, B 751,989, Cl. 324-73.0AT.
Exner, Lawrence J.: *See*—
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., to Oce-van der Grinten N.V. Apparatus for developing electrostatic charge images. 4,112,870, Cl. 118-657.000.
Exxon Research & Engineering Co.: *See*—
Engel, Lawrence J.; and Gardiner, John B., B 493,328, Cl. 252-51.50R.
Gorbaty, Martin L., B 637,443, Cl. 210-40.000.
Gorbaty, Martin L.; Tao, Frank F.; and Maa, Peter S., B 693,830, Cl. 208-8.000.
Kantner, Edward, B 800,786, Cl. 429-50.000.
Lonstrup, Thorkild F.; Brownawell, Darrell W.; Goletz, Edward, Jr.; and Numair, Solomon J., B 741,032, Cl. 252-51.50A.
Palkes, Mark, 4,112,918, Cl. 126-270.000.
Riley, Kenneth L.; and Pine, Lloyd A., B 773,427, Cl. 252-439.000.
Watson, Albert T.; and Hull, Robert L., B 718,846, Cl. 260-897.00A.
Fabriksmontering i Trelleborg AB: *See*—
Anderberg, Nils-Eric, 4,112,958, Cl. 135-5.00A.
Fabrique Nationale Herstal S.A. en abrege FN: *See*—
Bourlet, Maurice V., 4,112,817, Cl. 89-33.00B.
Facchini, Rigo: *See*—
Cole, Lawrence S.; Cole, Ruth J.; and Facchini, Rigo, 4,112,800, Cl. 83-411.00A.
Fahlen, Theodore S.: *See*—
Pressley, Robert J.; and Fahlen, Theodore S., B 773,826, Cl. 331-94.5PE.
Fairchild Camera and Instrument Corporation: *See*—
Kendall, Larry J., B 706,668, Cl. 340-347.0AD.
Falk Corporation, The: *See*—
Phinney, John M., B 759,390, Cl. 192-.098.
Falk, Mervin L.: *See*—
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., B 786,234, Cl. 360-99.000.
Falk, Richard A. Molten metal dip sampler. 4,112,769, Cl. 73-425.40R.
Fallon, John Leslie: *See*—
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, B 788,570, Cl. 271-10.000.
Farley, David L.: *See*—
Evans, Robert T.; and Farley, David L., B 846,232, Cl. 166-264.000.
Farley, James R.: *See*—
Maier, Alfred E.; Armstrong, Donald D.; and Farley, James R., B 829,702, Cl. 200-153.00G.
Farr, Glyn Phillip Reginald, to Girling Limited. Dual hydraulic braking system for vehicles. B 695,467, Cl. 340-626.000.
Farr, Glyn Phillip Reginald, to Girling Limited. Brake pressure reducing control valve. B 782,938, Cl. 303-6.00C.
Fasbender, Heinz: *See*—
Hoppen, Heinz; and Fasbender, Heinz, B 787,598, Cl. 241-24.000.
Faulkenberry, Wayne J.; and Riviere, Henry W., to General Electric Company. Overdrive protection circuit. B 798,655, Cl. 330-207.00P.
Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., to Orrville Products, Inc. Method of joining two sheet metal parts. B 809,911, Cl. 219-137.00R.
Feder, Alvin, to Motorola, Inc. Multi-position switch with single sliding actuator cam, reciprocable cam follower and compressive conductive elastomer. B 800,245, Cl. 200-16.00R.
Feldman, Charles L.; and Hubelbank, Mark, to Electronics for Medicine, Inc. Apparatus and method for ECG baseline shift detecting. 4,112,930, Cl. 128-2.06R.
Feldmar Products, Inc.: *See*—
Booty, Donald J., B 726,479, Cl. 325-390.000.
Felix, Rolf: *See*—
Fleisch, Herbert A.; and Felix, Rolf, B 792,946, Cl. 424-204.000.
Fleisch, Herbert A.; and Felix, Rolf, B 792,947, Cl. 424-204.000.
Fellows, Ronald John: *See*—
Palfrey, Lesley Francis; and Fellows, Ronald John, 4,112,589, Cl. 34-48.000.
Feltz, Albert J.; and Deck, Howard C., to Singer Company, The. Automatic lower loop restorer mechanism. B 811,913, Cl. 352-159.000.
Fernandez, Maria del Carmen: *See*—
Fernandez, Santiago Julio; and Fernandez, Maria del Carmen, 4,112,595, Cl. 35-35.00E.
Fernandez, Santiago Julio; and Fernandez, Maria del Carmen. Teaching devices. 4,112,595, Cl. 35-35.00E.

Ferrara, Louis Thomas; and Roccisano, Janet. Blood collection valve. 4,112,924, Cl. 128-2.00F.
Ferrarese, Frank L.: *See—*
Bush, Austin R.; and Ferrarese, Frank L., B 773,778, Cl. 206-319.000.
Ferraris, Giuseppe: *See—*
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, B 795,225, Cl. 260-683.15B.
Ferrentino, Antonio; and Brovedan, Antonio, to Industrie Pirelli Societa per Azioni. Apparatus for laying-up together a plurality of fragile filaments. 4,112,660, Cl. 57-59.000.
Ferri, John L.; Mathers, James E.; and Yale, Ramon L., to GTE Sylvania Incorporated. Terbium-activated rare earth oxysulfide phosphors with controlled decay. B 525,589, Cl. 252-301.40S.
Fesquet, Amedee. Machinery for the mass production of pronged members or of continuous strips of pronged members. 4,112,674, Cl. 59-72.000.
Fibre Containers Company: *See—*
Scott, Donald M., B 737,600, Cl. 206-523.000.
Fidler, Gary L.; Hill, Richard A.; and Carrera, John P., to Westinghouse Electric Corp. Valve arrangement for a nuclear plant residual heat removal system. B 686,858, Cl. 176-38.000.
Fiedler, Howard C., to General Electric Company. Method of producing silicon-iron sheet material with copper as a partial substitute for sulfur, and product. B 837,504, Cl. 148-111.000.
Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for purifying alkylphenolz. B 757,422, Cl. 568-756.000.
Fields, Ernest E.; and Reineck, Lester W., to Outboard Marine Corporation. Liquid tank cap having a vent. B 823,614, Cl. 220-367.000.
Filianovich, Jevgeny Grigorievich: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Filmon Process Corp.: *See—*
Ploeger, Walter, Jr., B 578,581, Cl. 400-240.100.
Filtertek, Inc.: *See—*
Leason, Hayden L., B 798,644, Cl. 210-446.000.
Filzinger, Klaus: *See—*
Fuchs, Hermann; and Filzinger, Klaus, B 765,004, Cl. 260-149.000.
Finike Italiana Marposs Soc. in Accomandita Semplice di Mario Possati & C.: *See—*
Possati, Mario, 4,112,629, Cl. 51-165.930.
Finn, James J., to Diagnostic Isotopes Incorporated. Ampule capable of being autoclaved. B 712,802, Cl. 206-528.000.
Fiorenza, Giorgio, to Ing. C. Olivetti & C., S.p.A. Electronic desk-top accounting machine and calculator. B 722,506, Cl. 235-375.000.
Firmenich & Cie: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., B 825,111, Cl. 426-536.000.
Fischer, Adolf, deceased (by Fischer, Caecilia Emma, heiress-at-law); and Hamprecht, Gerhard, to BASF Aktiengesellschaft. N',N'-disubstituted 2,1,3-benzothiadiazin-(4)-one-2,2-dioxides. B 636,162, Cl. 544-11.000.
Fischer, Caecilia Emma, heiress-at-law: *See—*
Fischer, Adolf, deceased; and Hamprecht, Gerhard, B 636,162, Cl. 544-11.000.
Fischer & Porter Company: *See—*
Hermanns, Henry M., 4,112,960, Cl. 137-85.000.
Fischer, Robert Bowlby: *See—*
Larson, John Arden; and Fischer, Robert Bowlby, B 819,355, Cl. 148-36.000.
Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., to Swiss Aluminium Ltd. High strength aluminum extrusion alloy. B 784,155, Cl. 75-142.000.
Fitzmayer, Louis H.: *See—*
Simon, Donald J.; and Fitzmayer, Louis H., B 819,789, Cl. 219-10.55D.
Fitzsimmons, William A.; and Lawler, James E., to Fitzsimmons, William A. Device for determining angles. 4,112,580, Cl. 33-174.00S.
Flament, Ivon: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., B 825,111, Cl. 426-536.000.
Flanagan, Joseph E.: *See—*
Grant, Louis R.; and Flanagan, Joseph E., B 732,624, Cl. 260-564.00G.
Flaum, Dennis Michael; and Fleishman, Herman Lawrence. Zipper construction. 4,112,556, Cl. 24-205.10R.
Fleisch, Herbert A.; and Felix, Rolf, to Procter & Gamble Company, The. Phosphonate pharmaceutical composition. B 792,946, Cl. 424-204.000.
Fleisch, Herbert A.; and Felix, Rolf, to Procter & Gamble Company, The. Carboxy phosphonate pharmaceutical composition. B 792,947, Cl. 424-204.000.
Fleischer, Henry. Clamping device. B 819,819, Cl. 285-45.000.
Fleishman, Herman Lawrence: *See—*
Flaum, Dennis Michael; and Fleishman, Herman Lawrence, 4,112,556, Cl. 24-205.10R.
Fletcher, Samuel G.; and McCutcheon, Martin J. Pseudo palate useful for diagnosis and treatment of speech impairment. 4,112,596, Cl. 35-35.00R.
Flodman, Leif A.: *See—*
Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., B 761,209, Cl. 162-127.000.
Flower, Robert J.; Snedeker, Clarke R.; and Beatenbough, Paul K., to General Motors Corporation. Recuperator. B 789,066, Cl. 165-81.000.
FMC Corporation: *See—*
Gerow, Gordon P., B 399,238, Cl. 203-2.000.
Fohl, Artur, to Repa Feinstanzwerk GmbH. Safety device for arresting unrolling of roller blinds. 4,112,996, Cl. 160-296.000.
Fono, Andrew; and Patton, Ray F., to Royce Chemical Company. Process for dyeing cellulosic textiles with vat and sulfur dyes. B 680,198, Cl. 8-34.000.
Fontanilles, Henry: *See—*
Burns, Donald Arthur; and Fontanilles, Henry, B 749,558, Cl. 356-36.000.
Food Automation-Service Techniques, Inc.: *See—*
Koether, Bernard G.; and Shaughnessy, William J., B 790,429, Cl. 210-167.000.
Forbes, Hampton E., Jr., to Westvaco Corporation. End loaded carton with automatic header. B 842,261, Cl. 206-45.140.
Ford, John Charles, to Girling Limited. Hydraulically operated disc brakes. B 688,914, Cl. 188-72.500.
Ford, Michael Alan. Tunable electrical filter network. B 754,643, Cl. 333-70.0CR.
Ford, Michael Alan; Mould, Henry Manifold; and Kolb, Dieter. Transient suppressor network for spectrophotometers and the like. B 757,204, Cl. 356-96.000.
Forg, Wolfgang, to Linde Aktiengesellschaft. Liquefaction of natural gas. 4,112,700, Cl. 62-28.000.
Forlini, Matthew: *See—*
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, B 795,819, Cl. 350-362.000.
Forrest, William J. Livestock transport apparatus. 4,112,874, Cl. 119-158.000.
Forward, Cleve H.; and Higgins, Jerry G. Alkyl vinyl copolymer. B 655,205, Cl. 521-60.000.
Foss, Richard W., to Jos. Dyson & Sons, Inc. Lift fork construction. B 776,283, Cl. 214-750.000.
Fox, Richard C.: *See—*
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., B 811,504, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., B 811,505, Cl. 148-23.000.
Fraas, Lewis M.: *See—*
Zanio, Kenneth W.; and Fraas, Lewis M., B 735,560, Cl. 148-174.000.
Frank, Earl E.; and Yee, Bing S., to Abex Corporation. Hydraulic apparatus. B 724,720, Cl. 210-167.000.
Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., to Burr Oak Tool & Gauge Company. Tube cutter with phase changer. 4,112,794, Cl. 82-64.000.
Franson, David C.: *See—*
Hoffman, Robert K.; and Franson, David C., 4,112,968, Cl. 137-427.000.
Frantz, Virgil L., to Graham-White Sales Corp. Compressed gas filter assembly. B 804,733, Cl. 55-162.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H.: *See—*
Theurer, Josef; Praschl, Wilhelm; and Riessberger, Klaus, B 672,276, Cl. 212-28.000.
Fraser, Lawrence J.; and Liebman, Alan, to Xerox Corporation. Color development system. B 758,538, Cl. 355-4.000.
Frazier, Albert A.; and Phillips, Howard W., to Aladdin Industries, Incorporated. Vacuum bottle with air pump to pressurized bottle to effect dispensing. B 837,519, Cl. 222-131.000.
Freisler, Erhard, to Ruti Machinery Works Ltd. Device for feeding pile warp yarns for pile fabric looms. 4,112,981, Cl. 139-102.000.
Freudenschuss, Otto, to Vockenhuber, Karl; and Hauser, Raimund. Method of and system for measuring distances. B 749,333, Cl. 356-5.000.
Frey, Hans-Helmut; and Klug, Helmut, to Hoechst Aktiengesellschaft. Thermoplastic compositions comprising PVC and chlorinated polyethylene. B 849,161, Cl. 260-897.00C.
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, to Wacker-Chemie GmbH. Preparation of organopolysiloxane polymers. B 808,767, Cl. 260-448.20E.
Friedell, Morley V. Oscillation damping pressure relief valve. 4,112,970, Cl. 137-489.500.
Friedli, Hans R.: *See—*
Strojny, Edwin J.; Friedli, Hans R.; and Wing, Milton S., B 828,409, Cl. 260-346.750.
Frielingsdorf, Hans: *See—*
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, B 762,858, Cl. 526-124.000.
Friese, Axel; and Simon, Stefan, to Dr. Carl Hahn G.m.b.H. Apparatus for transferring a deformable cylindrical work piece from one work station to another. B 731,954, Cl. 198-480.000.
Frink, Russell E.; and Milianowicz, Stanislaw A., to Westinghouse Electric Corp. Quick-acting movable operating-column tripping device. B 468,332, Cl. 200-144.00R.
Frinzel, Jerry C. Intravenous pole. B 801,478, Cl. 248-412.000.
Fritsch, Robert A.; Gattu, Narahari; and Vaerk, Lembit, to Harnischfeger Corporation. Boom section for telescopic crane boom. 4,112,649, Cl. 52-731.000.

Frituz, Bela: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Fritzler, Ulrich M., to Fritzler, Ulrich M. Roof reflective polygon scanning apparatus. B 721,892, Cl. 352-105.000.
Fritzsche, Gunther: *See—*
Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, 4,112,929, Cl. 128-2.05M.
Fry, James H., Jr. Power circuit identifier which produces a voltage pulse in response to interruption of power. B 818,923, Cl. 324-66.000.
Fry, Michael George Joseph, to Brentford Electric Limited. Magnetic or electric measuring devices. B 733,476, Cl. 324-0.50E.
Frye, James A. Rotary plug valve. B 735,699, Cl. 251-159.000.
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., to Texas Instruments Incorporated. Fabrication methods for the high capacity ram cell. 4,112,575, Cl. 29-577.00C.
Fuchs, Hermann; and Filzinger, Klaus, to Hoechst Aktiengesellschaft. 1:2-Cobalt-complex azo dyestuffs having an acetoacetylamino diphenylamino coupler. B 765,004, Cl. 260-149.000.
Fudman, Israel. Device for shaving ice. B 814,448, Cl. 241-92.000.
Fuhrman, Gunther Georg; Krogmann, Uwe Jonny; and Schroth, Gerhard Wolfgang. Ash removal equipment arranged on a lifting mechanism for pulverized-coal furnaces of large-capacity steam generators. 4,112,856, Cl. 110-165.00R.
Fuji Photo Film Co., Ltd.: *See—*
Sato, Masamichi, B 694,423, Cl. 96-36.000.
Sato, Masamichi; and Fujii, Itsuo, B 785,886, Cl. 96-67.000.
Shishido, Tadao; Hara, Hiroshi; and Arai, Atsuaki, B 806,121, Cl. 96-100.00R.
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.
Yamada, Minoru; Shishido, Tadao; and Arai, Atsuaki, B 686,201, Cl. 96-56.000.
Fuji Telecasting Co., Ltd.: *See—*
Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, 4,112,746, Cl. 73-95.000.
Fujii, Itsuo: *See—*
Sato, Masamichi; and Fujii, Itsuo, B 785,886, Cl. 96-67.000.
Fujimoto, Keimei: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.
Fujimura, Syunichi: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, B 639,066, Cl. 204-159.170.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, B 640,910, Cl. 544-16.000.
Fujita, Masanori; and Suzuki, Sukenori, to Kabushiki Kaisha Seikosha. Electrically conductive adhesive connecting arrays of conductors. B 751,730, Cl. 174-88.00R.
Fujita, Takeshi: *See—*
Mori, Shigeo; and Fujita, Takeshi, B 616,722, Cl. 521-163.000.
Fujita, Tsuguto: *See—*
Harada, Masaaki; and Fujita, Tsuguto, B 816,773, Cl. 355-71.000.
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, to Mitsubishi Chemical Industries, Ltd.; and Seikagaku Kogyo Co., Ltd. Process for the renewal of an insolubilized glucose isomerase. B 780,843, Cl. 195-68.000.
Fujitsu Limited: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, B 788,971, Cl. 179-84.00R.
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andoh, Shizuo, B 767,690, Cl. 315-169.0TV.
Fujiwa Kika Kabushiki Kaisha: *See—*
Sato, Jiro, 4,112,998, Cl. 164-136.000.
Fujiwara, Katsuji. Spherical valve assembly. B 804,589, Cl. 251-174.000.
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, to Konishiroku Photo Industry Co., Ltd. Method for processing light-sensitive silver halide photographic materials. B 814,121, Cl. 96-60.00R.
Fukuda, Kazumasa: *See—*
Tokuoka, Yasumichi; and Fukuda, Kazumasa, B 744,115, Cl. 148-105.000.
Fukuda, Mataharu, to Nippon Cable Systems Inc. Flexible drive cable. 4,112,708, Cl. 64-2.00R.
Fukunaka, Shiro: *See—*
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, B 776,288, Cl. 148-12.300.
Fukushima, Keitaro; Kusunose, Takamaro; and Nosaka, Yoshinori, to Japan Exlan Company Limited. Process for producing carbon fibers. B 719,504, Cl. 423-447.400.
Fukuta, Shigemi; Izaki, Hiroshi; and Yoshino, Shoichi, to Kubota, Ltd. Chill preventing arrangement for use in centrifugal casting and method for preventing chill thereby. B 712,068, Cl. 164-286.000.
Funakoshi, Satoshi, to Green Cross Corporation, The. HBsAG Particle composed of single polypeptide subunits and the preparation procedure. B 664,983, Cl. 260-112.00R.
Funakoshi, Satoshi; and Oomura, Takao, to Green Cross Corporation, The. Haptoglobin insolubilized by being fixed in fibrin. B 813,419, Cl. 424-78.000.
Fundom, Danny L.: *See—*
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., B 744,965, Cl. 206-508.000.
Funk, Clarence J., to United States of America, Navy. Acoustic device. B 589,658, Cl. 340-2.000.
Furia, Arnold. Folding attachment for bicycles. B 774,526, Cl. 280-287.000.
Furia, Thomas Edward: *See—*
Bellanca, Nicolo; and Furia, Thomas Edward, B 799,795, Cl. 106-137.000.
Furugard, Erik: *See—*
Brosow, Jorgen; and Furugard, Erik, B 647,935, Cl. 235-493.000.
Furukawa, Akio, to Ricoh Company, Ltd. Flash mechanism for camera. B 796,072, Cl. 354-149.000.
Furukawa Electric Company Limited, The: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, B 639,066, Cl. 204-159.170.
Furuya, Nobuo: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,112,869, Cl. 118-623.000.
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, to Osaka Prefectural Office. Apparatus for hanging a board. B 761,278, Cl. 248-204.000.
G. D. Searle & Co.: *See—*
Schlatter, James M.; and Goodmonson, Owen, B 807,083, Cl. 260-112.50R.
G. Duesterloh GmbH: *See—*
Klie, Jurgen, 4,112,973, Cl. 137-625.210.
Gabler, Josef: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, to Rohm GmbH. Method of making carbonic acid esters. B 827,771, Cl. 260-463.000.
Gaertner, Waldemar, to Siemens Aktiengesellschaft. Arrangement for directional radiation of light in symbol-indicator systems. B 782,187, Cl. 350-96.240.
Gaessler, Henri Pierre: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, B 605,926, Cl. 204-180.00R.
GAF Corporation: *See—*
Tracy, David J.; and Hoffstadt, Walter F., B 742,058, Cl. 548-365.000.
Gai-Tronics Corporation: *See—*
Day, Paul B., B 756,238, Cl. 179-2.00R.
Gale, Preston L.: *See—*
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., B 733,562, Cl. 428-565.000.
Gallagher Electronics Limited: *See—*
Gallagher, William Murray, B 757,288, Cl. 361-232.000.
Gallagher, William Murray, to Gallagher Electronics Limited. Electric fence controllers. B 757,288, Cl. 361-232.000.
Gambro AG: *See—*
Riede, Gerhard, B 802,363, Cl. 210-321.00B.
Games Research Associates: *See—*
Sain, Paul E., B 769,557, Cl. 273-245.000.
Gansfried, Myles Stephen, to U.S. Philips Corporation. Cable-supporting arrangement for X-ray tomographic scanner. B 799,089, Cl. 250-445.00T.
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., to Insurance Technology Company. Recording system with gas supported record medium. B 786,234, Cl. 360-99.000.
Ganzke, Joachim: *See—*
Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, 4,112,929, Cl. 128-2.05M.
Gardiner, John B.: *See—*
Engel, Lawrence J.; and Gardiner, John B., B 493,328, Cl. 252-51.50R.
Gardner, Derek Victor, to Beecham Group Limited. Tetrahydroisoquinoline basic ethers and pharmaceutical compositions and methods employing them. B 710,446, Cl. 424-258.000.
Gardziella, Arno; and Jellinek, Karl, to Rutgerswerke Aktiengesellschaft. Method of applying powder coatings of unsaturated branched hydroxyester resins. B 650,649, Cl. 427-195.000.
Garehime, Jacob W., Jr. Surveillance and weapon system. 4,112,818, Cl. 89-41.0TV.
Garin, John; and Belsick, James C., to United States of America, Energy. Core disruptive accident margin seal. B 714,220, Cl. 176-87.000.
Garin, Torunn Atteraas: *See—*
Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, B 771,485, Cl. 426-422.000.
Garsky, Victor M.; and McGregor, William H., to American Home Products Corporation. [Des-Ala^1, Gly^2-desamino-Cys^3]somatostatin. B 538,628, Cl. 260-112.50S.
Gartner, Klaus W.: *See—*
Uyeda, Tim M., 4,112,715, Cl. 70-38.00A.
Gas Developments Corporation: *See—*
Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., B 738,481, Cl. 165-3.000.
Gasper, Stephen A., to Roberts Corporation. Conveyor control system. 4,112,999, Cl. 164-154.000.

Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, to National Research Development Corporation. Optical apparatus for determining relative positioning of two members. B 700,037, Cl. 356-110.000.

Gates, Michael. Multiple implement folding hitch. B 813,517, Cl. 280-413.000.

Gattu, Narahari: *See*—
Fritsch, Robert A.; Gattu, Narahari; and Vaerk, Lembit, 4,112,649, Cl. 52-731.000.

Gaudiani, Vincent A.: *See*—
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.

Gauron, Richard F.; and Laconte, Susana S., to Marketing Masters. Latch. B 814,330, Cl. 292-165.000.

Gautschi, Fritz: *See*—
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., B 825,111, Cl. 426-536.000.

Gauvry, Robert; and Portalier, Robert, to Societe de Vente de l'Aluminium Pechiney. Process for obtaining novel blanks for extrusion by impact. B 778,233, Cl. 75-148.000.

Gay, Guy R.; and Gay, Neil. Mail box support. B 776,123, Cl. 248-128.000.

Gay, Neil: *See*—
Gay, Guy R.; and Gay, Neil, B 776,123, Cl. 248-128.000.

GD Anker Gebirgs-Dubel-Anker GmbH & Co. KG: *See*—
Gruber, Rudolf, 4,112,694, Cl. 405-150.000.

Gebauer, Herbert: *See*—
Kubens, Rolf; and Gebauer, Herbert, B 796,935, Cl. 166-295.000.

Gehringer, Ronald F.: *See*—
Conger, William H.; and Gehringer, Ronald F., 4,112,820, Cl. 70-363.000.

Geis, David G.; and Hodne, Ingard B., to Teletype Corporation. System for mounting an armature. B 816,823, Cl. 335-270.000.

Gemp, Robert S.: *See*—
Hull, Robert E.; and Gemp, Robert S., B 816,556, Cl. 307-53.000.

General Battery Corporation: *See*—
Nees, John; and Pike, Kenneth, B 734,311, Cl. 75-166.00C.
Nees, John; and Pike, Kenneth, B 768,960, Cl. 75-166.00C.

General Binding Corporation: *See*—
Giulie, Joe D., 4,112,603, Cl. 40-2.00R.

General Electric: *See*—
Lee, Gim Fun, Jr., B 527,142, Cl. 260-876.00B.

General Electric Company: *See*—
Bochan, John, 4,112,767, Cl. 74-217.00R.
Faulkenberry, Wayne J.; and Riviere, Henry W., B 798,655, Cl. 330-207.00P.
Fiedler, Howard C., B 837,504, Cl. 148-111.000.
Horvay, Julius B., B 749,164, Cl. 312-214.000.
Lee, Gim Fun, Jr., B 671,569, Cl. 260-876.00B.
Mark, Victor, B 733,015, Cl. 260-45.80N.
Mark, Victor; and Hedges, Charles Vernon, B 755,981, Cl. 568-750.000.
Simon, Donald J.; and Fitzmayer, Louis H., B 819,789, Cl. 219-10.55D.
Wambach, Allen Dale, B 747,635, Cl. 260-40.00R.

General Foods Corporation: *See*—
Henig, Yair Steve; and Purohit, Kailash S., B 771,486, Cl. 426-422.000.
Katz, Saul Norman, B 837,349, Cl. 426-422.000.
Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, B 771,485, Cl. 426-422.000.

General Kinetics, Incorporated: *See*—
King, Charles A.; and Gutterman, Robert P., B 716,285, Cl. 209-609.000.

General Motors Corporation: *See*—
Carol, John A., Jr.; and McAlindon, Harold P., B 845,959, Cl. 235-96.000.
Cataldo, Roy S., 4,112,826, Cl. 92-13.100.
Flower, Robert J.; Snedeker, Clarke R.; and Beatenbough, Paul K., B 789,066, Cl. 165-81.000.
Gilbert, William F.; and Lucas, Larry D., B 741,805, Cl. 179-1.0GQ.
Kapanka, Harley L., B 862,954, Cl. 297-408.000.
Kibler, Roland G., 4,112,886, Cl. 123-103.00R.
Kirsch, Norbert, B 776,202, Cl. 293-96.000.
Lusa, George; and Mathues, Thomas P., B 836,140, Cl. 188-364.000.
Mann, Gamdur S., 4,112,577, Cl. 29-611.000.
Smith, Stanley E., B 829,279, Cl. 403-138.000.
Spaulding, James R., 4,112,891, Cl. 123-117.00A.
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., B 854,711, Cl. 338-33.000.
Walker, Frank H., B 798,768, Cl. 192-3.310.

Genovese, David L.: *See*—
Baio, Alfred R.; and Genovese, David L., B 800,732, Cl. 235-458.000.

Georg Fischer Aktiengesellschaft: *See*—
Hofmann, Franz; and Szatmari, Franz, B 729,979, Cl. 366-56.000.

George Koch Sons, Inc.: *See*—
Koch, Robert L., II, B 731,755, Cl. 427-44.000.

Gera, Lajos: *See*—
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, B 728,459, Cl. 424-251.000.

Gerber Garment Technology, Inc.: *See*—
Pearl, David R., 4,112,797, Cl. 83-177.000.

Gerndt, Christian, to Siemens Aktiengesellschaft. Branching arrangement for communication transmission links having optical glass fibers. B 635,366, Cl. 350-96.150.

Gerow, Gordon P., to FMC Corporation. Method of and apparatus for steam stripping immiscible materials. B 399,238, Cl. 203-2.000.

Gettert, Hans; Jeck, Arnulf; and Werner, Dietmar, to Texaco Development Corporation. Process for the partial oxidation of liquid hydrocarbonaceous fuels. B 861,744, Cl. 48-197.00R.

Geus, John W., to Stamicarbon, N.V. Process for homogeneous deposition precipitation of metal compounds on support or carrier materials. B 663,106, Cl. 252-454.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Grisebach, Hans Theodor, 4,112,680, Cl. 60-538.000.
Temme, Helmut, B 769,094, Cl. 198-731.000.

Ghetti, Giuseppe: *See*—
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, B 775,776, Cl. 260-875.000.

Gibbons, Paul J. Penetrating oil composition. B 750,735, Cl. 252-11.000.

Gibbs, David James. Exercising apparatus. B 693,965, Cl. 272-69.000.

Gibby, Mabel K. Needle. B 818,055, Cl. 223-102.000.

Gilbert, Henry L.; and Van Ordstrand, Cayrl W., to Martin Marietta Aluminum Inc. Armor-piercing incendiary projectile. 4,112,846, Cl. 102-52.000.

Gilbert, William F.; and Lucas, Larry D., to General Motors Corporation. Voltage translating circuit for volume and balance control of a four-channel audio system. B 741,805, Cl. 179-1.0GQ.

Giles, Dion Ewing: *See*—
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, B 686,496, Cl. 423-512.00A.

Gillery, F. Howard, to PPG Industries, Inc. Sputtering technique for the deposition of indium oxide. B 836,269, Cl. 204-192.00P.

Gilomen, Beat, to A. Schild S.A. Operating mechanism for mechanical watch movement. 4,112,673, Cl. 58-85.500.

Ginefra, Anthony, Sr. Clock display device. 4,112,672, Cl. 58-53.000.

Girling Limited: *See*—
Farr, Glyn Phillip Reginald, B 695,467, Cl. 340-626.000.
Farr, Glyn Phillip Reginald, B 782,938, Cl. 303-6.00C.
Ford, John Charles, B 688,914, Cl. 188-72.500.
Harries, David Anthony, 4,112,682, Cl. 60-548.000.

Giubilo, Lauro B. Temporary stopper for outlets of toilet bowls. 4,112,527, Cl. 4-295.000.

Giulie, Joe D., to Minnesota Mining and Manufacturing Company. Removable binding device. B 625,131, Cl. 402-46.000.

Giulie, Joe D., to General Binding Corporation. Luggage tag. 4,112,603, Cl. 40-2.00R.

Givaudan Corporation: *See*—
Schenk, Hanspeter, B 729,521, Cl. 252-522.000.

Glaesel, Gottfried, to Hego Electric GmbH. Means for mounting on channel-section supporting rails. B 680,411, Cl. 174-158.00R.

Glaudel, Stephen P.; and Chambers, Norman T., to Westinghouse Electric Corp. Turbine-generator protection system with electronic sampling filter. B 735,718, Cl. 322-38.000.

Glaxo Laboratories Limited: *See*—
Laundon, Brian; Cowley, Brian Richard; and Humber, David Cedric, B 749,300, Cl. 204-158.0HA.

Glazar, Arthur J., to Servo Corporation of America. Hot box detector bearing discriminator circuit. B 841,700, Cl. 246-169.00A.

Gleockler, Frederick M.; and Gleockler, Robert G. Tree ladder. B 791,465, Cl. 182-63.000.

Gleockler, Robert G.: *See*—
Gleockler, Frederick M.; and Gleockler, Robert G., B 791,465, Cl. 182-63.000.

Glover, Ernest. Film projection system. B 755,132, Cl. 352-8.000.

Glueck, Robert D. Lift for dragged implement. B 787,751, Cl. 172-178.000.

Glumac, Nick P., to Toter-Tee, Inc. Loading arrangement. B 708,400, Cl. 214-10.50R.

Glushkov, Alexandr Ivanovich; Krutov, Sergei Vasilievich; Semenov, Vladimir Ivanovich; and Gusev, Anatoly Fedorovich. Automatically adjustable cutting apparatus for purposes such as filleting fish. 4,112,547, Cl. 17-57.000.

Godwin, Robert H.; and Collignon, Herbert E., to Bliss & Laughlin Industries Incorporated. Adjustable gas cylinder chair control. B 764,371, Cl. 248-400.000.

Gohm, William G., to Westinghouse Electric Corp. Magnetic pipe cleaner. B 742,474, Cl. 209-215.000.

Goldfarb, Adolph E.; Benkoe, Erwin; and Robinson, Don, to Goldfarb, Adolph E.; and Benkoe, Erwin. Toy game for moving an object up an inclined surface. B 770,186, Cl. 273-108.000.

Goldman, Irving M.: *See*—
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., B 825,111, Cl. 426-536.000.

Goldsborough, Robert R.; Spencer, David R.; and West, Samuel F., to United States of America, Army. Frequency shift rate detector. B 176,890, Cl. 343-112.00S.

Goldstein, Jonathan R.; and Klein, Yitzhak. Secondary cells. B 812,672, Cl. 429-27.000.

Golembeck, Gerald A.; and Horwitz, Thomas L., to United States Bedding Company, The. Foundation unit for bedding. 4,112,529, Cl. 5-354.000.

Goletz, Edward, Jr.: *See*—
Lonstrup, Thorkild F.; Brownawell, Darrell W.; Goletz, Edward, Jr.; and Numair, Solomon J., B 741,032, Cl. 252-51.50A.

Golf Resources, Ltd.: *See*—
Beery, Peter W., B 803,976, Cl. 273-78.000.

Gollel, Richard M. Coin operated ultrasonic cleaning device. 4,112,955, Cl. 134-57.00R.

Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, to Ajinomoto Co., Inc. Process for preparing improved soy protein materials. B 790,440, Cl. 260-123.500.

Gondos, Gyorgy: *See*—
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, B 728,459, Cl. 424-251.000.

Goodmonson, Owen: *See*—
Schlatter, James M.; and Goodmonson, Owen, B 807,083, Cl. 260-112.50R.

Goodyear Aerospace Corporation: *See*—
Haney, James Richard, B 806,796, Cl. 303-115.000.

Goodyear Tire & Rubber Company, The: *See*—
Brown, Jack E., Jr., 4,112,630, Cl. 51-281.00R.

Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, to Atlas Copco Aktiebolag. Method and device relating to separation of liquid from liquid-containing compressed gas. B 750,835, Cl. 55-97.000.

Gorbaty, Martin L., to Exxon Research & Engineering Co. Method for obtaining substantially complete removal of phenols from waste water. B 637,443, Cl. 210-40.000.

Gorbaty, Martin L.; Tao, Frank F.; and Maa, Peter S., to Exxon Research & Engineering Co. Integrated process for the production of hydrocarbons from coal or the like in which fines from gasifier are coked with heavy hydrocarbon oil. B 693,830, Cl. 208-8.000.

Gordon, Ronald S.: *See*—
Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., B 788,572, Cl. 429-193.000.

Gorham, Michael L.; Heckman, Raymond F.; and Yole, Charles S., to Xerox Corporation. Automatic dialer for facsimile terminals and the like. B 793,453, Cl. 179-90.00B.

Gorham, Michael L.; and Norian, Roger F., to Xerox Corporation. Automatic dialer having a selective retry capability. B 793,454, Cl. 179-90.00B.

Goryachev, Vladimir Ilich; Kotelnikov, Grigory Vladimirovich; and Makurin, Pavel Semenovich. Differential scanning microcalorimeter. 4,112,734, Cl. 73-15.00B.

Gosselin, Yvon. Hydraulic log splitter implement. 4,112,985, Cl. 144-193.00A.

Goto, Kenji; and Niwa, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,112,877, Cl. 123-32.0ST.

Goto, Yorinobu: *See*—
Koike, Sakae; Matsunami, Shoichi; Goto, Yorinobu; and Tanabe, Yoshio, B 755,936, Cl. 423-235.000.

Gouldson, Eric John: *See*—
Pound, Thomas Charles; and Gouldson, Eric John, B 672,366, Cl. 156-56.000.

Graef, Harry T.; Richardson, Jack M.; and Wolfarth, Robert P., to Diebold Incorporated. Sealed tamper-indicating money dispensing containers for automatic banking systems. B 761,288, Cl. 221-6.000.

Grafe, Robert Joseph: *See*—
Boyd, William Weller; Grafe, Robert Joseph; and Pingry, Carl Oscar, III, B 762,376, Cl. 340-147.00R.

Graham-White Sales Corp.: *See*—
Frantz, Virgil L., B 804,733, Cl. 55-162.000.

Gram, Donald J., to University of California, The Regents of the. Method for resolving amino and ammonium compounds. B 806,054, Cl. 560-38.000.

Gramling, William Dwight. Casing stop for well tools and an insertion device therefore. B 788,781, Cl. 166-213.000.

Granges Essem Aktiebolag: *See*—
Beland, Stig Gosta Bele, B 765,282, Cl. 185-10.000.

Grant, John: *See*—
Syred, Nicholas; Grant, John; and Sidhu, Baldip Singh, 4,112,977, Cl. 137-812.000.

Grant, Louis R.; and Flanagan, Joseph E., to Rockwell International Corporation. Triaminoguanidinium salt of tetranitroethane. B 732,624, Cl. 260-564.00G.

Gray, George William: *See*—
Coates, David; Gray, George William; and McDonnell, Damien Gerard, B 821,146, Cl. 252-299.000.

Green Cross Corporation, The: *See*—
Funakoshi, Satoshi, B 664,983, Cl. 260-112.00R.
Funakoshi, Satoshi; and Oomura, Takao, B 813,419, Cl. 424-78.000.

Green, Glen R.: *See*—
Covington, Wayne L.; and Green, Glen R., 4,112,545, Cl. 17-45.000.

Green, Leonard O. Bicycle lock assembly. 4,112,720, Cl. 70-233.000.

Green, Russell W. Method of and means for mounting labels. B 717,232, Cl. 156-247.000.

Greene, Donald: *See*—
McGarry, Francis J.; Greene, Donald; and Otto, Jeffrey B., B 847,571, Cl. 162-123.000.

Greenfield, Frederick Dale. Porthole arrangement. 4,112,645, Cl. 52-304.000.

Greenwald, Richard B.: *See*—
Evans, David H.; and Greenwald, Richard B., B 784,669, Cl. 260-327.00M.

Greenwood, Quentin E. Explosion simulating device. B 784,716, Cl. 320-1.000.

Gregg Engineering Corp.: *See*—
Gregoire, Clyde G.; Hartman, James A.; and Gregoire, Joseph M., B 822,423, Cl. 270-21.000.

Gregoire, Clyde G.; Hartman, James A.; and Gregoire, Joseph M., to Gregg Engineering Corp. Combination web tucker and knife with web grippers and anvil. B 822,423, Cl. 270-21.000.

Gregoire, Joseph M.: *See*—
Gregoire, Clyde G.; Hartman, James A.; and Gregoire, Joseph M., B 822,423, Cl. 270-21.000.

Greiser, John W., to Transco Products, Inc. Broadband spiral antenna. B 751,712, Cl. 343-895.000.

Grenfell, Hugh W.; Bowen, David J.; and Baker, Robert, to British Steel Corporation. Refining molten metal. B 792,602, Cl. 75-60.000.

Grenier, Aime J., to Texas Instruments Incorporated. Circuit breaker. B 755,516, Cl. 335-42.000.

Grenier, Aime J., to Texas Instruments Incorporated. Circuit breaker. B 755,763, Cl. 335-8.000.

Greubel, Waldemar: *See*—
Baur, Guenter; and Greubel, Waldemar, B 782,186, Cl. 350-285.000.

Greven, Johann; and Mostert, Johann, to Schumag Schumacher Metallwerke Gesellschaft mit beschrankter Haftung. Carriage drawing machine for uniformly drawing elongated material to be drawn. 4,112,730, Cl. 72-290.000.

Griesshammer, Rudolf: *See*—
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, B 737,249, Cl. 148-174.000.

Griffin, David: *See*—
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, B 750,017, Cl. 71-92.000.

Griffin, William. Muzzle loading device. 4,112,606, Cl. 42-90.000.

Grisebach, Hans Theodor, to Gewerkschaft Eisenhutte Westfalia. Control systems and arrangements for mineral mining installations. 4,112,680, Cl. 60-538.000.

Grode, Gerald Arthur; Boggs, Daniel Roy; and Wright, James Irvin, to Baxter Travenol Laboratories, Inc. Flexible collapsible blood freezing containers. 4,112,989, Cl. 150-1.000.

Gross, Harry Robert. Method of making a switch. 4,112,576, Cl. 29-602.00R.

Grossmann, Peter. Method and apparatus for automatically making frames. B 677,541, Cl. 156-218.000.

Grot, Walther Gustav: *See*—
Resnick, Paul Raphael; and Grot, Walther Gustav, B 835,804, Cl. 204-98.000.

Grover, Martin M.: *See*—
Pastor, Stephen D.; and Grover, Martin M., B 808,101, Cl. 260-834.000.

Gruber, Rudolf, to GD Anker Gebirgs-Dubel-Anker GmbH & Co. KG. Tunnel-lagging element and system. 4,112,694, Cl. 405-150.000.

Gruber, Wolfgang: *See*—
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, B 762,858, Cl. 526-124.000.

Gruffaz, Max: *See*—
Balme, Maurice; and Gruffaz, Max, B 297,738, Cl. 260-326.260.

Grunbaum, Heinrich. Arrangement for measuring a radial force applied to a bearing. 4,112,751, Cl. 75-141.00A.

Grundig E.M.V.: *See*—
Zeh, Werner; and Kuhnlein, Dieter, B 802,714, Cl. 360-92.000.

Grundmann, Peter: *See*—
Hein, Wolfgang; Grundmann, Peter; and Cosack, Claus, B 783,714, Cl. 222-396.000.

Gruppo Lepetit S.p.A.: *See*—
Cavalleri, Bruno; and Volpe, Giancarlo, B 759,697, Cl. 548-339.000.
Winters, Giorgio; and DiMola, Nunzio, B 713,011, Cl. 260-288.0CF.

Grzina, Anthony, to Warman International Limited. High pressure internally lined pump casing. B 691,436, Cl. 415-170.00R.

GTE Sylvania Incorporated: *See*—
Armstrong, Donald E.; Shaffer, John W.; Marecek, Paul M.; and Audesse, Emery G., B 724,792, Cl. 431-95.00A.
Bonazoli, Robert P.; and Morgan, William H., Jr., B 812,916, Cl. 431-93.000.
Ferri, John L.; Mathers, James E.; and Yale, Ramon L., B 525,589, Cl. 252-301.40S.
Pressley, Robert J.; and Fahlen, Theodore S., B 773,826, Cl. 331-94.5PE.

Gudat, Wolfgang: *See*—
Ruhnau, Gerhard; Gudat, Wolfgang; Liermann, Peter; and Hesse, Karl-Heinz, B 809,886, Cl. 303-105.000.

Gudenau, H. W.; Konig, Horst; Rath, Gero; and Roth, Haye, to Demag, A.G. Continuous smelting method. B 771,748, Cl. 75-12.000.

Guenin, Andre, to La Nationale S.A. Smoker's lighter. B 704,794, Cl. 431-124.000.

Guglia, Gaston; and Lupien, Jacques. Capped fuel tank funnel. 4,112,984, Cl. 141-98.000.

Guibert, Raul. Hot air oven for food-loaded cartridges. 4,112,916, Cl. 126-261.000.

Guimarin, Henry L. Adjustable ratchet wrench. 4,112,792, Cl. 81-63.000.

Gulf Research & Development Co.: *See*—
Bunting, Pamela M.; and Deffner, John F., B 751,256, Cl. 44-72.000.

Gusev, Anatoly Fedorovich: *See—*
Glushkov, Alexandr Ivanovich; Krutov, Sergei Vasilievich; Semenov, Vladimir Ivanovich; and Gusev, Anatoly Fedorovich, 4,112,547, Cl. 17-57.000.

Gustafson, Paul R., to United States of America, Navy. Air revitalization compositions. B 790,623, Cl. 252-184.000.

Guth, Ted D.: *See—*
Schrauzer, Gerhard N.; and Guth, Ted D., B 812,478, Cl. 204-157.10R.

Gutterman, Robert P.: *See—*
King, Charles A.; and Gutterman, Robert P., B 716,285, Cl. 209-609.000.

Gysegem, Albert Peter: *See—*
Law, Gabriel H.; and Gysegem, Albert Peter, B 765,223, Cl. 260-37.0SB.

Haage, Karl; and Scharff, Dieter, to Dynamit Nobel Aktiengesellschaft. Fabric-reinforced sealing sheets. B 609,944, Cl. 428-111.000.

Haarhoff, Pierre Cloete; and Schumann, Werner Adolf, to Atomic Energy Board. Method and means for treating a fluid. B 819,016, Cl. 55-17.000.

Habert, Roger, to Ducellier et Cie. Electronic distribution and control device for the ignition of internal combustion engines, particularly for motor vehicles. 4,112,895, Cl. 123-117.00R.

Hachiga, Takasi: *See—*
Uno, Eiichi; and Hachiga, Takasi, 4,112,904, Cl. 123-148.00E.

Hackbarth, Eugene R.; and Van Rens, Russell J., to Outboard Marine Corporation. Carburetor having an automatic choke. B 780,590, Cl. 261-52.000.

Haessly, Walter F.: *See—*
Toma, Charles A.; and Haessly, Walter F., B 678,153, Cl. 219-97.000.

Hafner, Hans Wilhelm; and Pfister, Frieder, to Pfister Waagen GmbH. Apparatus for measuring several force components. 4,112,752, Cl. 73-147.000.

Hagen, Magnus F. Structural-reinforcement means for precision, telescoping, linear slide mechanisms. 4,112,539, Cl. 16-88.000.

Hager, Robert Bonner; Toukan, Sameeh Said; and Walter, Gerald Joseph, to Pennwalt Corporation. Fluorine and sulfur-containing compositions. B 459,132, Cl. 260-348.430.

Hagihira, Tadatoshi: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, B 626,098, Cl. 325-320.000.

Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, to Japan Atomic Energy Research Institute; and Furukawa Electric Company Limited, The. Process for producing molded product composed of crosslinked resin or crosslinked-resin coated material on a substrate by means of electron beam. B 639,066, Cl. 204-159.170.

Hagner, Clifford K.; and Wissel, Richard B., to Procter & Gamble Company, The. Article for conditioning fabrics. B 781,385, Cl. 252-8.600.

Hahn, Ernest A., to PPG Industries, Inc. Radiation cure of coating compositions containing diacrylate monomer and hiding pigment. B 778,210, Cl. 427-44.000.

Haines, Ernest Martin, to Telephone Cables Limited. Optical fibre waveguides. B 664,706, Cl. 350-96.290.

Hakki, Moustafa I.: *See—*
Costales, Manuel; and Hakki, Moustafa I., 4,112,666, Cl. 57-105.000.

Halcon International, Inc.: *See—*
Johnson, Richard A., B 740,147, Cl. 260-429.00R.

Hale, Robert L., to United States of America, Energy. Method of fabricating a flow device. 4,112,568, Cl. 29-157.00C.

Hall, Charles M.; and Wright, John B., to Upjohn Company, The. 2'-Hydroxy-3'-carboxy-5'-nitrooxanilate compounds, compositions, and methods of use. B 742,438, Cl. 424-309.000.

Hall, George A., III: *See—*
Meyer, Robert W.; and Hall, George A., III, B 771,458, Cl. 165-154.000.

Hall, Roy Geoffrey Noel: *See—*
Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, B 700,037, Cl. 356-110.000.

Hall, Stanley Darwin: *See—*
Berry, Lawrence James; and Hall, Stanley Darwin, B 796,279, Cl. 221-1.000.

Halle, Edward: *See—*
Snyder, John M., 4,112,542, Cl. 16-114.00R.

Halliburton Company: *See—*
Barrington, Burchus Q.; and Williamson, Jim R., B 811,506, Cl. 166-334.000.
Evans, Robert T.; and Farley, David L., B 846,232, Cl. 166-264.000.

Hallman, Robert W., to Energy Conversion Devices, Inc. Structure for producing imaged structures. B 205,861, Cl. 96-75.000.

Halpine, Joseph Charles. Seal ring for ball valves. B 819,356, Cl. 251-317.000.

Halse, Per Weien, to Moore Business Forms, Inc. Continuous business forms assembly. B 821,223, Cl. 282-11.50A.

Hamaker, Raymond Weaver: *See—*
Ayers, Robert Lee; and Hamaker, Raymond Weaver, B 736,646, Cl. 148-1.500.

Hamilton, C. Howard; and Ascani, Leonard A., to Rockwell International Corporation. Method of making a metallic structure by combined superplastic forming and forging. B 736,671, Cl. 148-11.50R.

Hamilton, Terence: *See—*
Phillips, Reginald Andrew; Hamilton, Terence; and Thompson, Arthur David, B 734,637, Cl. 299-31.000.

Hammann, Ingeborg: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, B 645,128, Cl. 424-200.000.
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, B 592,860, Cl. 424-278.000.

Hamprecht, Gerhard: *See—*
Fischer, Adolf, deceased; and Hamprecht, Gerhard, B 636,162, Cl. 544-11.000.

Hampton, Edward L., to Leggett & Platt, Incorporated. Recliner leg rest linkage assembly. B 803,955, Cl. 297-69.000.

Hamsher, James J.; and Lozanov, Merrill, to Pfizer Inc. Process for preparing 6-aminopenicillanic acid. B 745,212, Cl. 195-36.00P.

Haney, James Richard, to Goodyear Aerospace Corporation. Anti-skid power valve. B 806,796, Cl. 303-115.000.

Hanke, Georg: *See—*
Muller, Hans; and Hanke, Georg, B 746,101, Cl. 188-282.000.

Hanning, Dick M. Gas operated reciprocating cleaning agitator. 4,112,937, Cl. 134-141.000.

Hansen, Wray C., Sr. Knob spring. B 773,523, Cl. 403-329.000.

Hanson, Paul D., Sr., to Technical Plastics Corporation. Skirt mounting device for mobile homes. 4,112,638, Cl. 52-169.120.

Hanway, John E., Jr.; and Mumford, Richard G., to Beamer/Wilkinson & Associates. Process for the removal of sulfur dioxide from exhaust flue gases. B 507,290, Cl. 423-242.000.

Hara, Hikoharu: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.

Hara, Hiroshi: *See—*
Shishido, Tadao; Hara, Hiroshi; and Arai, Atsuaki, B 806,121, Cl. 96-100.00R.

Hara, Takashi: *See—*
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, B 717,322, Cl. 426-602.000.

Hara, Tsutomu: *See—*
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.

Harada, Masaaki; and Fujita, Tsuguto, to Rank Xerox, Ltd. Illumination apparatus for electronic copying machines. B 816,773, Cl. 355-71.000.

Harada, Seiki: *See—*
Saiki, Atsushi; Okubo, Toshio; and Harada, Seiki, B 695,040, Cl. 156-656.000.

Harada, Shigenori: *See—*
Okuda, Hiroji; and Harada, Shigenori, 4,112,710, Cl. 64-23.000.

Harada, Toshiro: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.

Hardies, Donald E.; and Rinehart, Jay K., to PPG Industries, Inc. Control of pathogenic fungi with fluorinated carbonates. B 784,874, Cl. 424-301.000.

Harigaya, Shoichi: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, B 793,920, Cl. 424-274.000.

Harmuth, Charles Moore, to Du Pont de Nemours, E. I., and Company. Thermoplastic polyvinyl chloride-acrylic powder coating composition. B 795,565, Cl. 260-28.50D.

Harnischfeger Corporation: *See—*
Fritsch, Robert A.; Gattu, Narahari; and Vaerk, Lembit, 4,112,649, Cl. 52-731.000.

Harpman, Webster B., to Energy Research Inc. Fuel system and vaporizer for internal combustion engines. 4,112,889, Cl. 123-25.00B.

Harries, David Anthony, to Girling Limited. Master cylinder assemblies. 4,112,682, Cl. 60-548.000.

Harrington, Douglas S. Process for recovering gold. B 770,466, Cl. 75-0.50A.

Harrington, Timothy Cardell; and Arthur, Hugh MacDonald, to Molins Limited. Cigarette paper splicing apparatus. B 744,880, Cl. 242-58.100.

Harris, Ernest D.: *See—*
Wheldon, Alfred G.; and Harris, Ernest D., 4,112,736, Cl. 73-23.000.

Harsch, Gustav. Portable water source. B 781,199, Cl. 222-181.000.

Harter Corporation: *See—*
Decker, Lloyd Burr, 4,112,643, Cl. 52-222.000.

Hartert, Erwin: *See—*
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, B 743,517, Cl. 260-465.50A.

Hartman, James A.: *See—*
Gregoire, Clyde G.; Hartman, James A.; and Gregoire, Joseph M., B 822,423, Cl. 270-21.000.

Hartman, Seymour, to Champion International Corporation. Process for in situ formation of a tree-derived resinous adhesive composition. B 791,565, Cl. 428-529.000.

Hartman, Wilbert, Jr. Lever-action lift jack. B 825,680, Cl. 254-131.000.

Hartwig, Karl: *See—*
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, B 699,341, Cl. 355-8.000.

Hasegawa, Hiroshi: *See—*
Abe, Kazunobu; Rikimaru, Hiroaki; Yamazaki, Iwao; and Hasegawa, Hiroshi, B 753,323, Cl. 252-455.00R.

Hashim, George A., to St. Luke's Hospital. Novel compounds, compositions and methods of their use. B 648,379, Cl. 424-177.000.

Hashimoto, Masashi: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, B 640,910, Cl. 544-16.000.

Hashimoto, Shigeru: *See—*
Obinata, Shiro; Hashimoto, Shigeru; and Sahara, Takeshi, B 613,928, Cl. 209-167.000.

Hasson, Victor Haim; and von Bergmann, Hubertus Michael, to South African Inventions Development Corporation, The. Laser and its method of operation. B 692,085, Cl. 331-94.50G.

Hatcher, Charles S.; and Smith, Kenneth E., to Phillips Petroleum Company. Apparatus and process suitable for twist-drawing a yarn. 4,112,667, Cl. 57-157.00S.

Hattori, Tadashi: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.

Hauck, Frederic Peter; and Cimarusti, Christopher Michael, to E. R. Squibb & Sons, Inc. Perhydrofluorenetetrol and perhydrophenanthrenetetrol derivatives. B 446,837, Cl. 544-380.000.

Hauni-Werke Korber & Co. KG.: *See—*
Bardenhagen, Dietrich; and Schubert, Bernhard, 4,112,651, Cl. 53-449.000.

Hausenblas, Helmut; and Holzforster, Hans-Erich, to Thyssen Industrie Aktiengesellschaft. Hydropneumatic spring element. B 691,978, Cl. 280-705.000.

Hauser, Hans: *See—*
Craft, Jacob A.; and Hauser, Hans, B 800,932, Cl. 188-72.700.

Hauser, Peter Jacob; and Kuhn, Hans Heinrich, to Milliken Research Corporation. Water-soluble, non-polar solvent-soluble ethyleneoxy-propyleneoxy containing fugitial tints. B 815,122, Cl. 260-178.000.

Hauser, Raimund: *See—*
Freudenschuss, Otto, B 749,333, Cl. 356-5.000.

Hawker Siddeley Dynamics Limited: *See—*
Leek, Stanley, B 770,793, Cl. 244-3.210.

Hawkins, Thomas J.: *See—*
Wurtz, Frank R.; and Hawkins, Thomas J., B 772,270, Cl. 416-17.000.

Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio. Method and apparatus for continuously manufacturing multi-layered dough materials. B 665,326, Cl. 264-173.000.

Hayashi, Torahiko. Apparatus for forming dough pieces. B 712,504, Cl. 425-335.000.

Hayashizaki, Yoshihiro: *See—*
Takiura, Mamoru; and Hayashizaki, Yoshihiro, B 773,669, Cl. 264-349.000.

Haydn, Josef: *See—*
Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karlfried, B 757,422, Cl. 568-756.000.

Hayes, Clyde M., to Eltra Corporation. Brush cage for a dynamoelectric machine. B 775,084, Cl. 310-241.000.

Hays, Joseph C. Wallboard laminating clip. 4,112,636, Cl. 52-98.000.

Hayward, Alan Thomas Joseph, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Flowrate meters. 4,112,757, Cl. 73-207.000.

Hayward, George J. Orthopedic shoes. 4,112,600, Cl. 36-91.000.

Hebeda, Ronald Emil: *See—*
Leach, Harry Woods; Hebeda, Ronald Emil; and Holik, Dennis John, B 721,926, Cl. 127-29.000.

Heberlein Maschinenfabrik AG: *See—*
Muhlegg, Kurt, 4,112,664, Cl. 57-77.400.

Hechenbleikner, Ingenuin; and Enlow, William Palmer, to Borg-Warner Corporation. Arbuzov rearrangement of triphenyl phosphite. B 795,461, Cl. 260-969.000.

Heckman, Raymond F.; and Torpie, John D., to Xerox Corporation. Automatic dialer having a recall memory. B 793,455, Cl. 179-90.00B.

Heckman, Raymond F.: *See—*
Gorham, Michael L.; Heckman, Raymond F.; and Yole, Charles S., B 793,453, Cl. 179-90.00B.

Hedges, Charles Vernon: *See—*
Mark, Victor; and Hedges, Charles Vernon, B 755,981, Cl. 568-750.000.

Heerdt, Ruth: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, B 674,993, Cl. 424-272.000.

Hego Electric GmbH: *See—*
Glaesel, Gottfried, B 680,411, Cl. 174-158.00R.

Hehl, Karl. Tamper-proof safety cover for injection molding machines. B 684,850, Cl. 425-152.000.

Heiba, El Ahmadi I.: *See—*
Stournas, Stamoulis; and Heiba, El Ahmadi I., B 770,164, Cl. 252-8.55D.

Heidecker, Robert F., to Dairy Systems, Inc. Milk monitoring method and apparatus. 4,112,758, Cl. 73-218.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Jeschke, Willi, 4,112,842, Cl. 101-183.000.

Heil, Guenter: *See—*
Barzynski, Helmut; and Heil, Guenter, B 834,796, Cl. 204-159.150.

Heilweil, Israel J.: *See—*
Nnadi, John C.; and Heilweil, Israel J., B 564,954, Cl. 544-296.000.

Hein, Wolfgang; Grundmann, Peter; and Cosack, Claus. Syringes adapted to overcome a pressure resistance. B 783,714, Cl. 222-396.000.

Heinrich Wunder KG: *See—*
Zoor, Reinhold, B 746,185, Cl. 280-626.000.

Heintzelman, Leo A. Can closure. B 852,258, Cl. 220-256.000.

Heitland, Herbert; and Renger, Udo, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine with a main combustion chamber and an auxiliary combustion chamber. 4,112,878, Cl. 123-32.0ST.

Held, Manfred; and Spies, Hans, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Releasing device with preset response sensitivity for electrical fuzes for use with mines. 4,112,844, Cl. 102-19.200.

Helfert, Herbert; Davis, Pauls; and Langdon, William Keith, to BASF Wyandotte Corporation. Polyether polyols and method of preparing same. B 736,959, Cl. 260-615.00B.

Helfgen, Werner; Lindner, Gerhard; Lingens, Paul; and Kaufmann, Helmut, to Dynamit Nobel Aktiengesellschaft. Process for the production of flexible explosive formed charges. B 702,593, Cl. 264-3.00R.

Helixon, Michael L.; and Ward, Barry S., to Alcon Laboratories, Inc. Operator means for syringe cartridges. 4,112,945, Cl. 128-218.00D.

Hellgren, Keijo: *See—*
Claesson, Harry; and Hellgren, Keijo, 4,112,724, Cl. 72-63.000.

Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., to Caterpillar Tractor Co. Composite wear-resistant alloy, and tools from same. B 733,562, Cl. 428-565.000.

Henderson, David L., to Emerson Electric Co. Method of manufacturing a corrosion resistant rotor assembly. B 663,146, Cl. 148-6.15Z.

Hendricks, Udo-Winfried: *See—*
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, B 749,455, Cl. 106-238.000.

Hendrickx, Yves. Package convertible into a display means for cut flowers. B 765,545, Cl. 206-423.000.

Henig, Yair Steve; and Purohit, Kailash S., to General Foods Corporation. Adsorption process. B 771,486, Cl. 426-422.000.

Henig, Yair Steve: *See—*
Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, B 771,485, Cl. 426-422.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Conrad, Jens; and Bruns, Klaus, B 765,531, Cl. 252-522.000.
Koch, Karlheinz; and Breitzke, Willi, B 741,160, Cl. 252-56.00S.

Hennegan Company, The: *See—*
Ott, Robert B.; and Heringer, Lawrence R., 4,112,604, Cl. 40-610.000.

Hennessey, Richard G.: *See—*
Coons, Robert R.; Hennessey, Richard G.; and Woffenden, John, B 811,499, Cl. 188-71.600.

Henning, George J.: *See—*
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., B 744,965, Cl. 206-508.000.

Henry, Hubert H. End section for a reciprocating mower. 4,112,655, Cl. 56-301.000.

Henry, Russell Alger; and Summers, Ernest Moreland, to Wear-Cote International, Inc. Method of obtaining electroless nickel coated filled epoxy resin article. B 799,772, Cl. 427-290.000.

Hensen, Friedhelm: *See—*
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, B 722,558, Cl. 526-351.000.

Hensley, William G., to Minnesota Mining and Manufacturing Company. Traverse bar and slide. B 743,463, Cl. 242-43.00R.

Herbst, Thomas, to Dyckerhoff & Widmann Aktiengesellschaft. Removable press anchor with destructible anchor body. 4,112,637, Cl. 52-155.000.

Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., to Texaco Inc. Alkylation process. B 746,766, Cl. 252-442.000.

Hercules Incorporated: *See—*
Bower, Barton Keeley, B 782,265, Cl. 260-429.500.
Douglas, Paul S.; Patellis, Anargiros Pete; and Vredenburgh, Walter A., B 636,340, Cl. 260-876.00B.
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, B 809,336, Cl. 106-304.000.
Pearson, Stephen C., B 860,423, Cl. 260-29.6PM.
Wagner, Romeo Barrick, B 789,303, Cl. 71-7.000.

Hergert, Richard E.: *See—*
Min, Tony C.; and Hergert, Richard E., 4,112,549, Cl. 19-304.000.

Heringer, Lawrence R.: *See—*
Ott, Robert B.; and Heringer, Lawrence R., 4,112,604, Cl. 40-610.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Anders, Dietmar, B 786,859, Cl. 156-431.000.

Hermann nee Voros, Judit: *See—*
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, B 728,459, Cl. 424-251.000.

Hermanns, Henry M., to Fischer & Porter Company. Variable-gradient spring sub-assembly. 4,112,960, Cl. 137-85.000.

Hermanson, Dean E.: *See—*
Curtis, William M.; and Hermanson, Dean E., B 790,963, Cl. 285-12.000.

Hermes Precisa International S.A.: *See—*
Menzi, Ulrich, B 696,864, Cl. 400-333.000.

Herrington, Richard A.: *See—*
Boehm, Hans W.; Herrington, Richard A.; and Oelke, Waldemar W., B 767,051, Cl. 225-2.000.
Herschler, Robert J. Method for the treatment of water-living animals with health modifying agents. 4,112,946, Cl. 128-253.000.
Herzog, Gerald Bernard, to RCA Corporation. Position encoder employing charge transfer circuit. B 700,120, Cl. 250-211.00K.
Hess, Hans-Jurgen E., to Pfizer Inc. Oxaprostaglandins. B 562,208, Cl. 562-503.000.
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. 15-Substituted-ω-pentanorprostaglandins. B 854,392, Cl. 260-347.300.
Hesse, Karl-Heinz: *See—*
Ruhnau, Gerhard; Gudat, Wolfgang; Liermann, Peter; and Hesse, Karl-Heinz, B 809,886, Cl. 303-105.000.
Heuck, Roger W., to M. E. Heuck Company. Grill scraper. 4,112,537, Cl. 15-105.000.
Hewlett-Packard Company: *See—*
Epstein, James Stephen, B 742,941, Cl. 356-5.000.
Heyman, Duane A., to Sherwin-Williams Company, The. Process for preparing 2-benzimidazolones. B 818,172, Cl. 548-305.000.
Hi-Shear Corporation: *See—*
Wing, George S., 4,112,992, Cl. 151-29.000.
Hibbard, Earl R.: *See—*
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., B 786,234, Cl. 360-99.000.
Hidaka, Tsuneo: *See—*
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, B 802,856, Cl. 106-39.500.
Higgins, Jerry G.: *See—*
Forward, Cleve H.; and Higgins, Jerry G., B 655,205, Cl. 521-60.000.
Higgins, Larry, to Leggett & Platt, Incorporated. Box spring assembly and small diameter single cone coil spring for use in that assembly. 4,112,528, Cl. 5-248.000.
Hijikata, Setsuo: *See—*
Ozaki, Tsutomu; and Hijikata, Setsuo, B 712,952, Cl. 177-25.000.
Hile, John R. Code combination property alarm system. B 780,841, Cl. 340-528.000.
Hill, David Arthur; and Lomnitzer, Abraham. Apparatus for the use in the construction of electric circuits. 4,112,593, Cl. 35-19.00A.
Hill, Richard A.: *See—*
Fidler, Gary L.; Hill, Richard A.; and Carrera, John P., B 686,858, Cl. 176-38.000.
Hill, Robert W.; Onnen, William G.; and Ryder, Lyle C., to Ames Rubber Corporation. Method of sealing the ends of an elastomeric roll. B 719,696, Cl. 264-262.000.
Hillman, Edwin K. Solar liquid/air heater. 4,112,920, Cl. 126-271.000.
Hilti Aktiengesellschaft: *See—*
Kuhlmann, Wolf; and Rumpp, Gerhard, 4,112,813, Cl. 85-74.000.
Lippacher, Wolfgang; and Teger, Gerhard, B 791,950, Cl. 408-241.00S.
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, to Tanabe Seiyaku Co. Ltd. 8-Azaprostanoic acid derivatives. B 793,920, Cl. 424-274.000.
Himmele, Walter: *See—*
Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, B 494,457, Cl. 260-599.000.
Hino, Isao: *See—*
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, B 761,278, Cl. 248-204.000.
Hioki, Katsuhiko: *See—*
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, B 818,761, Cl. 260-351.000.
Hiraishi, Yoshinobu: *See—*
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, B 733,400, Cl. 423-336.000.
Hirata, Toshikiyo, to Toyo Ysushinki Kabushiki Kaisha. Bearing detection system. B 772,248, Cl. 343-119.000.
Hirota, Nobuyoshi; and Shibata, Akio, to Mitsubishi Jukogyo Kabushiki Kaisha. Coating composition for leak detection in air test. B 775,328, Cl. 260-8.000.
Hisa, Yuji: *See—*
Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, B 790,440, Cl. 260-123.500.
Hishida, Tadashi: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.
Hitachi, Ltd.: *See—*
Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, B 748,762, Cl. 210-82.000.
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, B 775,619, Cl. 179-18.0ES.
Saiki, Atsushi; Okubo, Toshio; and Harada, Seiki, B 695,040, Cl. 156-656.000.
Sakanaka, Takao, 4,112,729, Cl. 72-236.000.
Shigeta, Masayuki; and Shibata, Tadashi, B 420,050, Cl. 187-1.00R.
Shiina, Fumio, B 763,083, Cl. 250-569.000.
Sugiura, Noboru; and Suda, Seiji, 4,112,903, Cl. 123-148.00E.
Terasawa, Yoshio; and Kimura, Shin, B 652,662, Cl. 357-38.000.
Yoneda, Kenji; Nakazato, Masao; and Yuminaka, Takeo, B 702,145, Cl. 187-29.00R.
Hitachi Medical Corporation: *See—*
Tomita, Chuji, B 740,720, Cl. 250-439.00R.
Hitchiner Manufacturing Co., Inc.: *See—*
Chandley, George D., 4,112,997, Cl. 164-119.000.
Hitzman, Donald O., to Phillips Petroleum Company. Hot effluent from partial oxidation of natural gas injected in oil recovery process. B 749,196, Cl. 166-303.000.
Hiya, Kohji: *See—*
Aya, Masayoshi; and Hiya, Kohji, B 808,567, Cl. 335-212.000.
Hoch, Helmut: *See—*
Rones, Josef; Moller, Siegfried; and Hoch, Helmut, B 781,820, Cl. 106-14.130.
Hochgesang, Gerhard, to Preh-Elektrofeinmechanische Werke-Jakob Preh Nachf. Electric switch. B 707,337, Cl. 200-67.00C.
Hochiki Corporation: *See—*
Yamazaki, Shunji; and Masuda, Hajime, B 833,072, Cl. 340-531.000.
Hochstrasser, Otto; and Ruby, William S., to Brown Boveri Corporation. Preheating system with gas recirculation. B 826,189, Cl. 13-2.00R.
Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen: *See—*
Schweiger, Fritz, B 674,483, Cl. 176-38.000.
Hodges, Robert J.: *See—*
Jackson, Thomas M.; and Hodges, Robert J., B 732,500, Cl. 350-96.200.
Hodne, Ingard B.: *See—*
Geis, David G.; and Hodne, Ingard B., B 816,823, Cl. 335-270.000.
Hoechst Aktiengesellschaft: *See—*
Andrascheck, Hans-Joachim; and Mucke, Rainer, B 721,276, Cl. 260-28.50D.
Frey, Hans-Helmut; and Klug, Helmut, B 849,161, Cl. 260-897.00C.
Fuchs, Hermann; and Filzinger, Klaus, B 765,004, Cl. 260-149.000.
Kruse, Hubert; and Opitz, Konrad, B 690,023, Cl. 8-90.000.
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, B 751,173, Cl. 424-274.000.
Papenfuhs, Theodor; and Volk, Heinrich, B 799,001, Cl. 260-439.00R.
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, B 815,160, Cl. 423-265.000.
Hoesch Werke Aktiengesellschaft: *See—*
Steinfeld, Horst E.; and Mathes, Dieter, B 762,347, Cl. 238-349.000.
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., to Shell Oil Company. Middle distillate fuel compositions. B 779,645, Cl. 44-66.000.
Hoffman, Robert K.; and Franson, David C., to Parker-Hannifin Corporation. Automatic drain valve for a compressed air system. 4,112,968, Cl. 137-427.000.
Hoffmann-La Roche Inc.: *See—*
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, B 844,570, Cl. 260-565.000.
Cohen, Noal; and Saucy, Gabriel, B 797,712, Cl. 260-340.90R.
Mohacsi, Ernest, B 811,233, Cl. 260-285.000.
Hoffmann, Werner: *See—*
Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, B 494,457, Cl. 260-599.000.
Hoffstadt, Walter F.: *See—*
Tracy, David J.; and Hoffstadt, Walter F., B 742,058, Cl. 548-365.000.
Hofmann, Franz; and Szatmari, Franz, to Georg Fischer Aktiengesellschaft. Drum mixer. B 729,979, Cl. 366-56.000.
Hohne, Gerd: *See—*
Manger, Hansjorg; Sohner, Gerhard; and Hohne, Gerd, 4,112,890, Cl. 123-117.00R.
Holcomb, Norman L.: *See—*
Wardwell, Charles H.; and Holcomb, Norman L., 4,112,812, Cl. 85-46.000.
Holcombe, Frank O., Jr., to Burton, Parsons and Company, Inc. Hydrophilic contact lenses and lens polymer. B 805,146, Cl. 260-29.6TA.
Holcroft & Company: *See—*
Meyer, Robert W.; and Hall, George A., III, B 771,458, Cl. 165-154.000.
Holen, J. Robert: *See—*
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., B 854,711, Cl. 338-33.000.
Holik, Dennis John: *See—*
Leach, Harry Woods; Hebeda, Ronald Emil; and Holik, Dennis John, B 721,926, Cl. 127-29.000.
Holland, Johannes; and Wagemans, Hubertus Franciscus Marie, to U.S. Philips Corporation. Device for taking a liquid sample. 4,112,768, Cl. 73-422.00R.
Hollander, Harry. Ultrasonic television remote control system. B 751,181, Cl. 325-392.000.
Hollingsworth, Richard James, to RCA Corporation. Unbalanced sense circuit. B 796,333, Cl. 307-362.000.
Holloway, Thomas C.: *See—*
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.
Hollweck, Walter, to Inter Control Hermann Kohler Elektrik GmbH & Co. KG. Expansion diaphragm-type temperature sensor. 4,112,765, Cl. 73-368.300.
Holly, Harry H., to Hollymatic Corporation. Molding apparatus. B 825,651, Cl. 425-542.000.
Hollymatic Corporation: *See—*
Holly, Harry H., B 825,651, Cl. 425-542.000.
Holm, LeRoy W.: *See—*
Bernard, George G.; and Holm, LeRoy W., B 774,920, Cl. 166-273.000.
Holman, Robert R.; and Turkall, Daniel N., to Electric Power Research

Institute, Inc. Releasable, high-pressure seal and method of forming same. B 737,761, Cl. 277-1.000.
Holmer, Donald A.: *See—*
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., B 759,313, Cl. 528-313.000.
Holmes, Bruce: *See—*
Ashdown, Glynn R.; McCartney, Thomas; and Holmes, Bruce, B 622,054, Cl. 179-175.30R.
Holt, David: *See—*
McLean, Graham Wilson; and Holt, David, B 797,252, Cl. 310-163.000.
Holtmeier, Gerhard: *See—*
Stemmann, Karl; and Holtmeier, Gerhard, B 688,269, Cl. 191-67.000.
Holtschmidt, Ulrich: *See—*
Laqua, Arnold; and Holtschmidt, Ulrich, B 793,315, Cl. 260-29.40R.
Holzforster, Hans-Erich: *See—*
Hausenblas, Helmut; and Holzforster, Hans-Erich, B 691,978, Cl. 280-705.000.
Homeyer, Bernhard: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, B 645,128, Cl. 424-200.000.
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, B 592,860, Cl. 424-278.000.
Hon Man, Luk. Safety electric receptacle and the plug. B 605,767, Cl. 339-75.00P.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.
Honeywell Inc.: *See—*
Del Monte, Louis A., B 809,960, Cl. 204-15.000.
Honig, Hans-Ludwig: *See—*
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, B 749,455, Cl. 106-238.000.
Hood, John Dick: *See—*
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, B 717,334, Cl. 424-117.000.
Hoofs, Joseph Wilhelmus Jacobus: *See—*
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, B 809,336, Cl. 106-304.000.
Hooker Chemicals & Plastics Corp.: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., B 850,194, Cl. 429-33.000.
Hoppen, Heinz; and Fasbender, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for drying and grinding. B 787,598, Cl. 241-24.000.
Horie, Eizi: *See—*
Suzuki, Hiroshige; Horie, Eizi; and Nagashima, Hideo, 4,112,648, Cl. 52-508.000.
Horna, Otakar Anthony, to Communications Satellite, Corporation. Analog to digital signal of logarithmic format converter and analog to pseudo-rms value converter and echo canceller utilizing same. B 814,942, Cl. 179-170.200.
Hornsby, Isaac W. Micrometer jig. 4,112,581, Cl. 33-174.00R.
Horowitz, Charles, to Sloan Valve Company. Electrical connector receptacle. B 799,506, Cl. 339-14.00P.
Horowitz, Charles, to Sloan Valve Company. Tractor protection valve. 4,112,961, Cl. 137-102.000.
Horstmann, Harald: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 693,971, Cl. 548-377.000.
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 766,235, Cl. 424-273.00P.
Horvay, Julius B., to General Electric Company. Refrigerator cabinet and method of constructing. B 749,164, Cl. 312-214.000.
Horwitz, Thomas L.: *See—*
Golembeck, Gerald A.; and Horwitz, Thomas L., 4,112,529, Cl. 5-354.000.
Hosoya, Katsumi: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.
Hosoya, Kazuo; and Kubota, Munetaka, to Kajima Kensetsu Kabushiki Kaisha. Method and construction of underground tank well. 4,112,690, Cl. 405-57.000.
Hotta, Hisashi; and Mori, Fumio, to Toyo Seikan Kaisha Ltd. Olefin resin-metal bonded structure. B 808,301, Cl. 156-306.000.
Hotz, Roger D.: *See—*
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., B 784,212, Cl. 71-88.000.
Hounsfield, Godfrey Newbold, to EMI Limited. Radiography. B 655,396, Cl. 250-445.00T.
Hovengen, Oyvind. Washer for nyloprint printing blocks or the like. 4,112,534, Cl. 15-77.000.
Howard, Charles S. Pill-dispensing and storage container. B 800,351, Cl. 206-540.000.
Howard, James Lynn, to Phifer, Earl Cooper, a part interest. Apparatus for matching wires in multiple wire conductors and attendant method. B 799,379, Cl. 324-66.000.
Howard, Robert N., to Minnesota Mining and Manufacturing Company. Encapsulated abrasive grains and articles made therefrom. 4,112,631, Cl. 51-295.000.
Howell, Stephen Louis: *See—*
Robinson, John William; Crosby, Thomas C.; and Howell, Stephen Louis, 4,112,802, Cl. 84-1.010.
Howmedica Inc.: *See—*
Rosenthal, Arthur Lee; Alpern, Marvin; and Meisch, Charles Edward, 4,112,949, Cl. 128-278.000.
Hoyer, Rudolf: *See—*
Stiltz, Erwin; Hoyer, Rudolf; and Lindenmayer, Heinz, B 789,680, Cl. 173-116.000.
HP Kolinska Ljubljana Prehrambena Indsutrija (n.sol.o.): *See—*
Krasovec, Branko; Mihelic, Eli; and Reutlinger, Suzana, B 778,319, Cl. 426-56.000.
Hubelbank, Mark: *See—*
Feldman, Charles L.; and Hubelbank, Mark, 4,112,930, Cl. 128-2.06R.
Huber, Leonhard; Kirschner, Helmut; and Muller, Herbert, to Agfa-Gevaert AG. Shutter mechanism. B 763,684, Cl. 354-252.000.
Huber, Wolfgang: *See—*
Tippmann, Heinrich; and Huber, Wolfgang, 4,112,787, Cl. 74-798.000.
Hubner, Wolfgang; Barthell, Eduard; and Dahmen, Kurt, to Chemische Fabrik Stockhausen & Cie. Flocculating agent comprising water-in-oil emulsion of stabilizer plus NH-active polymer carrying formaldehyde and amine radicals. B 682,543, Cl. 260-29.4UA.
Hudelmaier, Gerhard. Device for the control of concrete manufacture in truck concrete mixers. B 679,716, Cl. 366-2.000.
Hudson, George Elbert, III; and Clark, Arthur E., to United States of America, Navy. Heat transfer system using thermally-operated, heat-conducting valves. 4,112,699, Cl. 62-3.000.
Hufendiek, Ernst-Wilhelm, to Daimler-Benz Aktiengesellschaft. Rotational speed governor for an injection pump in air-compressing injection internal combustion engines. 4,112,897, Cl. 123-139.0ST.
Huff, Peter C. Integrated pneumatic logic module. 4,112,962, Cl. 137-119.000.
Huffman, Hubert L.: *See—*
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., B 806,799, Cl. 320-39.000.
Hughes Aircraft Company: *See—*
Zanio, Kenneth W.; and Fraas, Lewis M., B 735,560, Cl. 148-174.000.
Hughes, Donald Wayne Kent, to AMP Incorporated. Electrical connector having provision for circuit components. B 824,023, Cl. 339-147.00R.
Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Process for dyeing fibre materials. B 813,311, Cl. 8-41.00R.
Hulka, Jaroslav Fabian; and Clemens, George Selden, to Research Corporation. Surgical clip. 4,112,951, Cl. 128-346.000.
Hull, Robert E.; and Gemp, Robert S., to Westinghouse Electric Corp. Load balancing system for ups rectifiers. B 816,556, Cl. 307-53.000.
Hull, Robert L.: *See—*
Watson, Albert T.; and Hull, Robert L., B 718,846, Cl. 260-897.00A.
Huly, William; and Brouillette, Rudolph G., to United Technologies Corporation. Apparatus and means for permanently marking a buoyant mine which has been severed from its mooring wire during mine sweeping operations. 4,112,862, Cl. 114-221.00R.
Humber, David Cedric: *See—*
Laundon, Brian; Cowley, Brian Richard; and Humber, David Cedric, B 749,300, Cl. 204-158.0HA.
Humes, Norman S.: *See—*
Uhtenwoldt, Herbert R.; and Humes, Norman S., 4,112,624, Cl. 51-5.00D.
Humlong, Robert F.: *See—*
Pawsat, Carlton P.; and Humlong, Robert F., B 782,662, Cl. 403-22.000.
Humphrey Instruments, Inc.: *See—*
Humphrey, William E., B 790,203, Cl. 351-17.000.
Humphrey, William E., to Humphrey Instruments, Inc. Process and apparatus for astigmatic and spherical subjective testing of the eye. B 790,203, Cl. 351-17.000.
Hunka, George William, to RCA Corporation. Optical cursor tracking correction system. B 782,754, Cl. 250-202.000.
Hunsicker, Monroe T. Rural mailbox delivery signal. B 819,013, Cl. 232-35.000.
Hunts, Ronald M.: *See—*
Strange, Delbert D.; and Hunts, Ronald M., 4,112,986, Cl. 144-323.000.
Huper, Fritz; and Oberheiden, Helmut, to Bayer Aktiengesellschaft. Process for purifying products obtained from enzymatic cleavage of beta-lactam antibiotics. B 692,876, Cl. 544-20.000.
Hurst, Thomas L., to A. E. Staley Manufacturing Company. Glucose isomerization with iron ion-thiol activator ion-glucose isomerase systems. B 750,332, Cl. 195-31.00F.
Huston, Henry H., to Weird Products Ltd. Amusement device requiring concentration and coordination. B 774,372, Cl. 273-96.00R.
Hutchings, David Roy. Dual nature puzzle pieces. B 802,253, Cl. 273-160.000.
Hutkin, Irving J. Method of making a thin-copper foil-carrier composite. B 697,045, Cl. 204-13.000.
Huyck Corporation: *See—*
Lefkowitz, Leonard R.; and Krohn, W. Henrik, B 832,316, Cl. 156-148.000.

Hyman, Oscar E., to Imed Corporation. Automatic air-in-line fluid detector. B 713,664, Cl. 340-632.000.

Ichida, Toshio: *See—*
Shimanaka, Hiroshi; Ichida, Toshio; and Kobayashi, Shigeru, B 760,376, Cl. 148-113.000.

Idel, Vladimir Viktorovich. Machine for working saw teeth. 4,112,789, Cl. 76-58.000.

Ideue, Kazuo: *See—*
Mizuno, Michitaka; Ideue, Kazuo; and Oya, Masashi, 4,112,759, Cl. 73-295.000.

IDN Inventions and Development of Novelties AG: *See—*
Ackeret, Peter, B 583,756, Cl. 206-387.000.

Iemori, Toshiaki: *See—*
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andoh, Shizuo, B 767,690, Cl. 315-169.0TV.

Igarashi, Toshiji; and Nakajima, Yoshikage, to Eisai Co., Ltd. Method for treatment of hypertension. B 821,910, Cl. 424-266.000.

Ignatyev, Alexandr Dmitrievich: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.

Iida, Hideo, to Nippon Hume Pipe Company Limited. Method of manufacturing prestressed concrete pipe. B 715,493, Cl. 264-228.000.

Iida, Kazuyoshi: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, B 730,115, Cl. 181-284.000.

Iijima, Yoo: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.

Ikawa, Reiji, to Tokyo Special Wire Netting Co., Ltd. Distillation column packing. B 809,329, Cl. 261-98.000.

Ikeda, Masanori: *See—*
Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, B 786,325, Cl. 560-244.000.

Ikegai Tekko Kabushiki Kaisha: *See—*
Takiura, Mamoru; and Hayashizaki, Yoshihiro, B 773,669, Cl. 264-349.000.

Ikeguchi, Takashi: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, B 720,502, Cl. 209-1.000.

Ilieve, Peter John, to Decca Limited. Clamping circuits for television signals. B 811,877, Cl. 358-34.000.

Illinois Tool Works Inc.: *See—*
Rapata, George M., B 810,532, Cl. 339-113.00R.

Imai, Nobuo: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.

Imai, Toshihiro: *See—*
Yamasita, Nobuo; and Imai, Toshihiro, B 773,408, Cl. 350-172.000.

IMASCO Limited: *See—*
Poskitt, Walter Edward, B 715,170, Cl. 324-61.0QS.

Imed Corporation: *See—*
Hyman, Oscar E., B 713,664, Cl. 340-632.000.

Imes, Jack, Jr., to RB Toy Development Co. Target game. B 753,171, Cl. 273-95.00R.

Impastato, Leona R. Color coordinating implement. 4,112,594, Cl. 35-28.300.

Imperial Chemical Industries Limited: *See—*
Bagnall, Robert David, B 677,855, Cl. 424-342.000.
Jones, Geraint; and Thomson, David Summers, B 747,995, Cl. 424-304.000.
Parton, Brian, B 648,568, Cl. 260-146.00R.
Price, Brian George, B 580,147, Cl. 260-885.000.
Rose, John Brewster; and Staniland, Philip Anthony, B 810,355, Cl. 528-126.000.
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, B 750,017, Cl. 71-92.000.
Staniland, Philip Anthony, B 767,333, Cl. 528-481.000.

In Situ Technology, Inc.: *See—*
Terry, Ruel Carlton, B 797,536, Cl. 299-4.000.

Inagaki, Syotaro: *See—*
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, B 736,189, Cl. 355-14.000.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Campioni, Armando, B 793,344, Cl. 330-267.000.

Industrie Pirelli Societa per Azioni: *See—*
Ferrentino, Antonio; and Brovedan, Antonio, 4,112,660, Cl. 57-59.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Fiorenza, Giorgio, B 722,506, Cl. 235-375.000.

Ingersoll-Rand Company: *See—*
Larson, John Arden; and Fischer, Robert Bowlby, B 819,355, Cl. 148-36.000.

Inoue, Haruo: *See—*
Sano, Takezo; Kobayashi, Akira; and Inoue, Haruo, B 699,255, Cl. 521-29.000.

Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, to Matsushita Electric Works, Ltd. Ultrasonic wave watching device of moving object detecting type. B 719,159, Cl. 340-558.000.

Inoue, Kashirou: *See—*
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, B 709,088, Cl. 23-232.00R.

Inoue, Masahide: *See—*
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, B 802,856, Cl. 106-39.500.

Inoue, Shoji: *See—*
Lagow, Richard J.; and Inoue, Shoji, B 597,937, Cl. 562-583.000.

Inoue, Yoshiaki: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, B 751,668, Cl. 252-428.000.

Institut de Recherches Chimiques et Biologiques Appliquees: *See—*
Debat, Jacques, B 673,915, Cl. 424-278.000.

Institut Francais du Petrole: *See—*
Cheron, Jacques, B 727,804, Cl. 429-36.000.
Cohen, Choua; and Sillion, Bernard, B 821,054, Cl. 252-51.50A.

Institutul National Pentru Creatie Stiintifica Si Tehnica - Increst: *See—*
Teodorescu, Constantin, B 678,728, Cl. 181-220.000.

Instone, John C., to SGL Industries, Inc. Electrical outlet strip. B 817,849, Cl. 339-22.00R.

Insurance Technology Company: *See—*
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., B 786,234, Cl. 360-99.000.

Inter Control Hermann Kohler Elektrik GmbH & Co. KG: *See—*
Hollweck, Walter, 4,112,765, Cl. 73-368.300.

International Business Machines Corporation: *See—*
Ayers, Robert Lee; and Hamaker, Raymond Weaver, B 736,646, Cl. 148-1.500.
Bassous, Ernest; and Liu, Cheng-Yih, B 861,373, Cl. 156-662.000.
Boyd, William Weller; Grafe, Robert Joseph; and Pingry, Carl Oscar, III, B 762,376, Cl. 340-147.00R.
Bush, Robert F.; and Mitchell, Joseph W., B 799,034, Cl. 148-6.350.
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, B 788,570, Cl. 271-10.000.
Karnaugh, Maurice, B 796,296, Cl. 340-166.00R.
Pole, Robert Vladimir; and Werlich, Harald Willy, B 798,042, Cl. 350-3.710.
Rollo, Anita Hand; and Stearns, David Burrell, B 749,585, Cl. 210-22.00A.

International Harvester Company: *See—*
Coons, Robert R.; Hennessey, Richard G.; and Woffenden, John, B 811,499, Cl. 188-71.600.
Deli, Jack M., 4,112,574, Cl. 29-527.100.
Picha, Donald A., 4,112,654, Cl. 56-98.000.

International Paper Company: *See—*
Nehring, John R., 4,112,947, Cl. 128-278.000.

International Standard Electric Corporation: *See—*
Jackson, Thomas M.; and Hodges, Robert J., B 732,500, Cl. 350-96.200.

Inui, Tsuneo: *See—*
Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, B 818,099, Cl. 204-37.00T.

Ioffe, Benyamin Alexandrovich: *See—*
Ryzhov, Vladimir Dmitrievich; Litvinenko, Semen Kirillovich; Leikin, Roman Samuilovich; Kulberg, Anton Yanovich; Ioffe, Benyamin Alexandrovich; and Kalnin, Robert Karlovich, B 704,693, Cl. 221-171.000.

Iowa State University Research Foundation: *See—*
Larock, Richard C., B 798,092, Cl. 260-429.00L.

Ireland, Graham A.: *See—*
MacLennan, P. H. Barry; Ireland, Graham A.; and Werba, William J., 4,112,756, Cl. 73-181.000.

Irma Ungerer Geb. Dollinger: *See—*
Rodach, Alexander, B 779,465, Cl. 242-78.300.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,112,713, Cl. 68-5.00E.

Ishiguro, Shoji: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.

Ishikawa, Kikuichi: *See—*
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, B 776,618, Cl. 71-76.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, B 771,665, Cl. 431-1.000.
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, B 864,252, Cl. 266-137.000.
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.

Ishimoto, Zenichi, to Nikko Co., Ltd. Remote control system for a movable toy vehicle. 4,112,615, Cl. 46-254.000.

Ishiwata, Samford P., to Texaco Inc. Liquid level measuring device. 4,112,760, Cl. 73-299.000.

Ishizawa, Hideo: *See—*
Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, B 735,523, Cl. 96-38.100.

Isobe, Minoru, to Oki Electric Industry Co., Ltd. Pack for endless ink ribbon cartridge. B 691,200, Cl. 206-388.000.

Isozaki, Hiroshi: *See—*
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.

Itani, Takashi: *See—*
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, B 736,223, Cl. 352-194.000.

Itaya, Yoshiro: *See—*
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, B 717,322, Cl. 426-602.000.

Itek Corporation: *See—*
Wirtz, John Stanley, B 773,568, Cl. 355-55.000.

Itoh, Hatuhide: *See—*
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, B 748,473, Cl. 260-348.220.

Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, to Yokohama Rubber Co., Ltd., The; and Fuji Telecasting Co., Ltd. Optoelectronic tensile testing system. 4,112,746, Cl. 73-95.000.

Itoh, Tadanao, to Ricoh Company, Ltd.; and Ricoh Educational Equipment Co., Ltd. Recording reproducer for magnetic cards. B 731,679, Cl. 360-2.000.

Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, to Onoda Cement Co., Ltd. Apparatus for forming a powder layer on the surface of a metallic squeeze-out tube. 4,112,869, Cl. 118-623.000.

Itoi, Kazuo: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, B 616,998, Cl. 560-124.000.

ITT Industries, Inc.: *See—*
Bleckmann, Hans W., B 772,798, Cl. 303-92.000.
Tippmann, Heinrich; and Huber, Wolfgang, 4,112,787, Cl. 74-798.000.

ITW-Ateco G.m.b.H.: *See—*
Schenk, Bernd, B 741,187, Cl. 296-1.00C.

Iura, Yukio: *See—*
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, B 758,200, Cl. 354-238.000.

Ivanov, Valentin Nikolaevich; and Chulkova, Anna Davydovna. Suspension for making molds in disposable pattern casting. B 668,185, Cl. 106-38.350.

Iwakura, Tatsuya: *See—*
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, B 717,322, Cl. 426-602.000.

Iwano, Haruhiko: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.

Iwase, Kozi: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, B 713,793, Cl. 148-2.000.

Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Throttle valve control system for an internal combustion engine. 4,112,885, Cl. 123-98.000.

Iyeta, Motoi, to Nippon Gakki Seizo Kabushiki Kaisha. Tone pickup arm device keeping excellent dynamic lateral balance and damping effect. B 786,392, Cl. 274-23.00R.

Izaki, Hiroshi: *See—*
Fukuta, Shigemi; Izaki, Hiroshi; and Yoshino, Shoichi, B 712,068, Cl. 164-286.000.

Izawa, Junji: *See—*
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, B 733,400, Cl. 423-336.000.

Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, to Asahi-Dow Limited; and Sanko Kaihatsu Kagaku Kenkyusho. Flame-retardant polyphenylene ether resin composition. B 812,737, Cl. 260-874.000.

Izon Corporation: *See—*
Yevick, George J., B 714,215, Cl. 350-96.250.
Yevick, George J., B 785,039, Cl. 354-102.000.

J. G. Sylvester Associates, Inc.: *See—*
Sylvester, Bruce J.; and Sylvester, Roger P., 4,112,775, Cl. 73-627.000.

J. I. Case Company: *See—*
Venable, Phillip G., B 818,702, Cl. 172-667.000.

Jackson, Thomas M.; and Hodges, Robert J., to International Standard Electric Corporation. Method of making optical fiber terminations. B 732,500, Cl. 350-96.200.

Jaeger, Dennis A. Machine gun rack. B 848,012, Cl. 211-4.000.

Jaekel, Gunter R. Adjustable check valve. 4,112,959, Cl. 137-504.000.

Janome Sewing Machine Co., Ltd.: *See—*
Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, 4,112,858, Cl. 112-158.00E.

Janvari, Erzsebet, nee Kanyo: *See—*
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, B 728,459, Cl. 424-251.000.

Japan Atomic Energy Research Institute: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, B 639,066, Cl. 204-159.170.

Japan Exlan Company Limited: *See—*
Fukushima, Keitaro; Kusunose, Takamaro; and Nosaka, Yoshinori, B 719,504, Cl. 423-447.400.

Jeck, Arnulf: *See—*
Gettert, Hans; Jeck, Arnulf; and Werner, Dietmar, B 861,744, Cl. 48-197.00R.

Jeffrey, Ian Campbell, to Dobson Park Industries Limited. Vehicle or carriage mounted materials transporting machine. B 617,088, Cl. 214-141.000.

Jellinek, Karl: *See—*
Gardziella, Arno; and Jellinek, Karl, B 650,649, Cl. 427-195.000.

Jenaer Glaswerk Schott & Gen.: *See—*
Kiefer, Werner, B 637,424, Cl. 428-34.000.

Jennings Compound Bow, Inc.: *See—*
Caldwell, Joseph M., 4,112,909, Cl. 124-23.00R.

Jeretin, Stojan, to Dragerwerk Aktiengesellschaft. Device for controlling the respiration in respirators. 4,112,938, Cl. 128-142.00R.

Jeschke, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Drive for sheet-fed rotary printing presses with at least two tandem-mounted printing units. 4,112,842, Cl. 101-183.000.

Johansson, Hans A. Shower-bath tub. 4,112,524, Cl. 4-148.000.

Johansson, Ingvar, to Svenska Traforskningsinstitutet. Method of joining wood products. B 822,517, Cl. 156-335.000.

John, Peter: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, B 808,767, Cl. 260-448.20E.

John Zink Company: *See—*
Cantrell, Clifford J., Jr., B 789,939, Cl. 165-40.000.

Johnson, David R., to Dow Chemical Company, The. Method to produce multivalent metals from fused bath and metal electrowinning feed cathode apparatus. B 722,851, Cl. 204-64.00R.

Johnson, David W.; and Johnson, Gary C. Rotating magnus tubes. B 729,195, Cl. 296-1.00S.

Johnson, Gary C.: *See—*
Johnson, David W.; and Johnson, Gary C., B 729,195, Cl. 296-1.00S.

Johnson & Johnson: *See—*
Turner, Robert B., B 758,629, Cl. 307-310.000.
Turner, Robert B., 4,112,764, Cl. 73-362.0AR.
Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., 4,112,762, Cl. 73-343.00R.

Johnson, Michael R.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., B 854,392, Cl. 260-347.300.

Johnson, Peter E.; and Rowland, Bob G., to Evans Products Company. Battery separator having coated ribs. B 604,350, Cl. 429-143.000.

Johnson, Richard A., to Halcon International, Inc. Conversion of mono-valent thallium to tri-valent thallium. B 740,147, Cl. 260-429.00R.

Jones, Alan Philip, to Saunders Valve Company Limited. Fluid flow control valves. B 761,900, Cl. 264-269.000.

Jones, Geraint; and Thomson, David Summers, to Imperial Chemical Industries Limited. Pharmaceutical compositions and method of use. B 747,995, Cl. 424-304.000.

Jones, John Leslie, to California Institute Research Foundation. Smokeless slow burning cast propellant. 4,112,849, Cl. 102-103.000.

Jones, Lawrence T.: *See—*
Sims, Anson; and Jones, Lawrence T., B 723,815, Cl. 273-249.000.

Jones, Robert D., to United States of America, Energy. Apparatus for controlling coolant level in a liquid-metal-cooled nuclear reactor. B 789,154, Cl. 176-40.000.

Jones, Thornton K.: *See—*
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., B 811,504, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., B 811,505, Cl. 148-23.000.

Jones, Trevor E.: *See—*
Collins, John D.; and Jones, Trevor E., B 781,118, Cl. 260-429.700.

Jordan, Edgar R. Reinforced aperture in molded plastic article. B 720,107, Cl. 403-267.000.

Joseph, Adrian: *See—*
Severdia, Anton; and Joseph, Adrian, 4,112,832, Cl. 99-421.0HH.

Jos. Dyson & Sons, Inc.: *See—*
Foss, Richard W., B 776,283, Cl. 214-750.000.

Joseph, Raymond, to Ateliers Reunis Societe Anonyme. Wire-netting baskets, basket heightening devices and the like. B 815,366, Cl. 220-19.000.

Joseph, Robert. Jewelry article with radiometer therein. 4,112,707, Cl. 63-31.000.

Joyce, Patrick J.: *See—*
Leveen, Harry H.; and Joyce, Patrick J., B 677,135, Cl. 424-28.000.

Jozwiak, Edward L., Jr.; and Das, Suryya K., to PPG Industries, Inc. Method for electrodeposition. B 804,410, Cl. 204-181.00R.

Juichi, Imamura; Masahiko, Takehara; and Kazuhiro, Kizawa, to Agency of Industrial Science and Technology. Process for the preparation of formylated phenoxy compounds. B 657,887, Cl. 260-600.00R.

Julius Blum Gesellschaft M.B.H.: *See—*
Rock, Erich; and Mages, Bernhard, 4,112,543, Cl. 16-164.000.

Jurovsky, Abram Zinovievich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.

Jutte, Hans; and Weber, Helmut. Drive shield. 4,112,696, Cl. 405-145.000.

Juusela, Jyrki Tapani: *See—*
Aaltonen, Olavi August; and Juusela, Jyrki Tapani, B 647,506, Cl. 75-74.000.

Kabs, Klaus: *See—*
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, B 827,771, Cl. 260-463.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kaneko, Noboru, 4,112,669, Cl. 58-4.00A.

Kabushiki Kaisha Saginomiya Seisakusho: *See—*
Kaneko, Moriwo, 4,112,704, Cl. 62-217.000.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, B 750,845, Cl. 156-384.000.

Kabushiki Kaisha Seikosha: *See—*
Fujita, Masanori; and Suzuki, Sukenori, B 751,730, Cl. 174-88.00R.

Kabushiki Kaisha Suwa Seikosha: *See—*
Minowa, Masahiro, B 736,046, Cl. 400-120.000.
Morozumi, Shinji, 4,112,670, Cl. 58-23.00A.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.

Kabushiki Kaisha Yachiyo Kogyo Kenkyusho: *See—*
Yoshio, Hashimoto, B 805,840, Cl. 214-1.0BB.

Kadoma, Masaaki: *See—*
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, B 748,473, Cl. 260-348.220.

Kadowaki, Shunichi: *See—*
Asano, Masaharu; and Kadowaki, Shunichi, 4,112,880, Cl. 123-32.0EE.

Kaeding, Warren W.; and Young, Lewis Brewster, to Mobil Oil Corporation. Selective production of para-xylene. B 793,470, Cl. 260-673.000.

Kaes, Richard W. Fish manure removal method. B 818,946, Cl. 210-67.000.

Kageyama, Minoru: *See—*
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, B 665,326, Cl. 264-173.000.

Kagiyama, Yasuo; and Miyazaki, Nobumasa, to Daihatsu Diesel Manufacturing Co., Ltd. Temperature controlled valve assembly. B 793,359, Cl. 236-12.00A.

Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, to Meiji Seika Kaisha, Ltd. Cephalosporin-type antibiotics and process for producing the same. B 588,555, Cl. 544-27.000.

Kaimori, Kenichiro: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, B 798,313, Cl. 274-15.00R.

Kaiser Aluminum & Chemical Corporation: *See—*
Bell, Norman; Andersen, John N.; and Lam, Hung-Kei H., B 855,506, Cl. 423-119.000.
Dorsey, Geoffrey A., Jr., B 714,157, Cl. 148-6.270.

Kaiser, George E.: *See—*
Williams, Douglas W.; and Kaiser, George E., B 750,918, Cl. 180-51.000.

Kaiser Steel Corporation: *See—*
Collin, Alvaro L.; and Patel, Gordhan M., 4,112,693, Cl. 405-132.000.

Kajima Kensetsu Kabushiki Kaisha: *See—*
Hosoya, Kazuo; and Kubota, Munetaka, 4,112,690, Cl. 405-57.000.

Kajiura, Masaru: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.

Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, to Janome Sewing Machine Co., Ltd. Sewing machine with a pattern generating device. 4,112,858, Cl. 112-158.00E.

Kakizaki, Yukio, to Nippon Kogaku K. K. Cross-movable carriage. B 768,608, Cl. 248-430.000.

Kalchgruber, Gerhard: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, B 808,767, Cl. 260-448.20E.

Kalnin, Ilmar L.; and Breckenridge, George J., to Celanese Corporation. Production of high temperature resistant polymer compositions capable of forming superior fiber reinforced composite articles. B 759,927, Cl. 260-857.0TW.

Kalnin, Robert Karlovich: *See—*
Ryzhov, Vladimir Dmitrievich; Litvinenko, Semen Kirillovich; Leikin, Roman Samuilovich; Kulberg, Anton Yanovich; Ioffe, Benyamin Alexandrovich; and Kalnin, Robert Karlovich, B 704,693, Cl. 221-171.000.

Kaluzhsky, Nikolai Andreevich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.

Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, to Taisho Pharmaceutical Co., Ltd. Method for preparing 17 α-ester-21-halo pregnanes. B 671,693, Cl. 260-397.450.

Kamata, Akira: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.

Kamimura, Yoshiharu: *See—*
Sakurai, Toshio; Shimada, Shoji; and Kamimura, Yoshiharu, B 710,312, Cl. 252-49.600.

Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Co., Ltd. 7-Amino 2-lower alkyl-2 or 3-chephem-4-carboxylic acid derivatives and processes for preparation thereof. B 640,910, Cl. 544-16.000.

Kanbe, Masaru: *See—*
Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, B 677,266, Cl. 428-412.000.

Kandanian, Aram Y.: *See—*
Cotten, Roger C.; Young, David W.; and Kandanian, Aram Y., B 851,764, Cl. 260-897.00A.

Kandler, Joachim: *See—*
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, B 815,160, Cl. 423-265.000.

Kaneko, Moriwo, to Kabushiki Kaisha Saginomiya Seisakusho. Pilot valve-type evaporating pressure-regulating valve used in refrigerators. 4,112,704, Cl. 62-217.000.

Kaneko, Noboru, to Kabushiki Kaisha Daini Seikosha. Digital electronic timepiece. 4,112,669, Cl. 58-4.00A.

Kaneko, Yasunori: *See—*
Maki, Masao; Kaneko, Yasunori; Tsuruda, Kunihiro; and Kobayashi, Ikuo, B 846,495, Cl. 423-239.000.

Kaneko, Yutaka: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, B 814,121, Cl. 96-60.00R.

Kang, Pierson S., to ChemPar Corporation. Method of making cutting, scoring and embossing die set. 4,112,827, Cl. 93-58.300.

Kankaanpaa, Matti, to Valmet Oy. Paper machine with twin-wire former. B 787,321, Cl. 162-272.000.

Kankaanpaa, Matti, to Valmet Oy. Paper manufacturing structure particularly for detaching a web from a wire. B 787,334, Cl. 162-301.000.

Kano, Masafumi: *See—*
Tugukuni, Hideyoshi; and Kano, Masafumi, B 683,508, Cl. 428-407.000.

Kantner, Edward, to Exxon Research & Engineering Co. Zinc-halogen compound electrochemical cell having an auxiliary electrode and method. B 800,786, Cl. 429-50.000.

Kanzaki, Hisao: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, B 788,971, Cl. 179-84.00R.

Kapanka, Harley L., to General Motors Corporation. Headrest for vehicles. B 862,954, Cl. 297-408.000.

Kaplan, Jay: *See—*
Schulman, Jerome L.; and Kaplan, Jay, 4,112,926, Cl. 128-2.00S.

Karlin, James Hilliard: *See—*
Derdzinski, Terrence Edmund; and Karlin, James Hilliard, B 620,987, Cl. 312-198.000.

Karliner, Rudolf R.: *See—*
Brown, Robert M.; and Karliner, Rudolf R., B 723,465, Cl. 222-324.000.

Karnaugh, Maurice, to International Business Machines Corporation. Modular switching system. B 796,296, Cl. 340-166.00R.

Kasai, Kazumi, to Yoshida Kogyo K.K. Separable slide fastener with an automatically locking slider. 4,112,554, Cl. 24-205.11R.

Kasmarik, Joseph R., to Avco Corporation. Thrust spoiler for turbofan engine. 4,112,677, Cl. 60-226.00R.

Kasparek, Karel: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.

Katano, Takeshi: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, B 626,098, Cl. 325-320.000.

Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Rotary burner. B 771,665, Cl. 431-1.000.

Katayama, Susumu: *See—*
Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, B 719,159, Cl. 340-558.000.

Kato, Hisao; and Sakamoto, Yohei. Apparatus for collecting shellfish and the like. 4,112,602, Cl. 37-55.000.

Kato, Yoshiaki; and Motoki, Jinro, to Citizen Watch Co., Ltd. Pulse motor driving system for use in a timepiece. 4,112,671, Cl. 58-23.00D.

Katz, George, to RCA Corporation. Method of assembling components on printed circuit boards. B 771,679, Cl. 148-23.000.

Katz, Lewis Emanuel; and Paulnack, Carl Lewis, to Bell Telephone Laboratories, Incorporated. Formation of epitaxial layers on substrate wafers utilizing an inert heat radiation ring to promote uniform heating. B 853,126, Cl. 156-612.000.

Katz, Saul Norman, to General Foods Corporation. Membrane decaffeination. B 837,349, Cl. 426-422.000.

Kauffman, Robert N.: *See—*
Smith, James D. B.; and Kauffman, Robert N., B 773,875, Cl. 260-830.0TW.

Kauffman, William J., to Armstrong Cork Company. Novel catalyst system for trimerization of organic isocyanates. B 812,342, Cl. 544-67.000.

Kaufman, Aleksander Arkadi, to Scintrex Limited. Inductive source method of induced polarization prospecting. B 774,780, Cl. 324-1.000.

Kaufmann, Helmut: *See—*
Helfgen, Werner; Lindner, Gerhard; Lingens, Paul; and Kaufmann, Helmut, B 702,593, Cl. 264-3.00R.

Kaveloski, Robert J. Prefabricated disposable fly trap blank. 4,112,609, Cl. 43-118.000.

Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, to Osaka Soda Co., Ltd. Process for continuous production of epichlorohydrin. B 748,473, Cl. 260-348.220.

Kawada, Hiroitsu: *See—*
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, B 686,154, Cl. 424-317.000.

Kawaguchi, Kazumasa: *See—*
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, B 733,400, Cl. 423-336.000.

Kawahara, Shigemi: *See—*
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, B 686,154, Cl. 424-317.000.

Kawakami, Isao: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.

Kawamura, Hiroaki: *See—*
Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, B 818,099, Cl. 204-37.00T.

Kawamura, Yuzo. Method for manufacturing composition including fine particles dispersed therein. B 688,639, Cl. 264-101.000.

Kawasaki Kasei Chemicals Ltd.: *See—*
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, B 818,761, Cl. 260-351.000.

Kawasaki, Kazuhiko: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, B 798,313, Cl. 274-15.00R.

Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Weak camera battery warning circuit. B 828,689, Cl. 354-289.000.

Kawasaki, Mikio: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, B 814,121, Cl. 96-60.00R.

Kawasaki Steel Corporation: *See—*
Shimanaka, Hiroshi; Ichida, Toshio; and Kobayashi, Shigeru, B 760,376, Cl. 148-113.000.

Kawasaki, Toyoaki: *See—*
Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, B 588,555, Cl. 544-27.000.

Kay, Peter Dunlop, to Tioxide Group Limited. Titanium compounds. B 774,140, Cl. 260-429.500.

Kaya, Hisao: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, B 771,665, Cl. 431-1.000.

Kayabakogyokabushikikaisha: *See—*
Murata, Hikaru, 4,112,822, Cl. 91-29.000.
Murata, Hikaru, 4,112,825, Cl. 91-447.000.

Kayanuma, Kanji, to Victor Company of Japan, Limited. Closed loop laser noise elimination for optoelectronic recording. B 832,890, Cl. 358-128.000.

Kaye, Morton. Optical measurement system. B 678,059, Cl. 356-164.000.

Kaye, Morton. Opto-mechanical measuring system. 4,112,579, Cl. 33-174.00L.

Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, to Agency of Industrial Science and Technology. Apparatus for separating non-magnetic materials of different densities. B 720,502, Cl. 209-1.000.

Kazuhiro, Kizawa: *See—*
Juichi, Imamura; Masahiko, Takehara; and Kazuhiro, Kizawa, B 657,887, Cl. 260-600.00R.

Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, to Boehringer Ingelheim GmbH. 2- or 4-Hydroxy-3,5-dihalo-benzylamines and salts thereof. B 812,325, Cl. 260-570.900.

Keeney, Joseph G.: *See—*
Wild, Robert W.; and Keeney, Joseph G., 4,112,535, Cl. 15-98.000.

Keiner, Hildegard; Schmid, Emil; and Richly, Walter, to Licentia Patent-Verwaltungs-G.m.b.H. Method of manufacturing an electrically conductive contact layer. B 742,688, Cl. 427-108.000.

Keiper K. G.: *See—*
Werner, Paul; Wirtz, Egon; and Lehmann, Gerhard, B 786,815, Cl. 297-362.000.

Keiper Trainingsysteme GmbH & Co.: *See—*
Putsch, Peter Ulrich, 4,112,928, Cl. 128-2.05R.

Kemper, Yves Jean; and Bigot, Lucien, to Vadetec Corporation. Variable speed transmission device. 4,112,779, Cl. 74-191.000.

Kemper, Yves Jean; and Bigot, Lucien, to Vadetec Corporation. Variable speed transmission device. 4,112,780, Cl. 74-191.000.

Kendall, John Edward; and Butwell, Kenneth Francis, to Union Carbide Corporation. Process for separating polymeric contaminants from aqueous absorbent solutions used to treat organic gas-containing gas streams. B 836,542, Cl. 423-226.000.

Kendall, Larry J., to Fairchild Camera and Instrument Corporation. Current comparator for an improved analog-to-digital converter method and apparatus. B 706,668, Cl. 340-347.0AD.

Kenji, Usui: *See—*
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, B 737,025, Cl. 219-56.000.

Kenkare, Divaker B.; and Shumway, Durland K., to Colgate-Palmolive Company. Antiperspirant composition. B 557,561, Cl. 424-46.000.

Kenkare, Divaker B.: *See—*
Carson, John C., Jr.; Robbins, Clarence R.; and Kenkare, Divaker B., 4,112,536, Cl. 15-104.940.

Kennecott Copper Corporation: *See—*
Cook, Glenn; and Larson, Paul, B 845,128, Cl. 204-105.00R.
Smith, Richard D., B 769,723, Cl. 75-159.000.

Kennedy, Harold, Jr., to United States Pipe and Foundry Company. Hanger for pipe. B 856,384, Cl. 285-61.000.

Kennedy, John Hamilton: *See—*
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, B 712,164, Cl. 422-63.000.

KeNova AB: *See—*
Nilson, Billy N., 4,112,971, Cl. 137-508.000.

Kent, Harry James: *See—*
Pietrusza, Arthur Jacob; and Kent, Harry James, B 709,427, Cl. 435-222.000.

Kerfoot, William B.; and Brainard, Edward C., II, to Environmental Devices Corporation. Scanning apparatus for septic effluents. 4,112,741, Cl. 73-53.000.

Kernell, Samuel H. Twirling toy device. 4,112,611, Cl. 46-47.000.

Kessler, Gerald. D.I.G. Foam spacer. B 757,291, Cl. 428-34.000.

Ketterer, Richard J. Device for cleaning and revitalizing wound strings for musical instruments. 4,112,808, Cl. 84-453.000.

Keuffel & Esser Company: *See—*
Kooi, J. Peter E.; and Vagyoczky, Stephen, 4,112,584, Cl. 33-292.000.

Khare, Gyaneshwar Prasad. Radioimmunoassay of hormones and metabolites in blood serum and plasma. B 640,841, Cl. 23-230.600.

Kibler, Roland G., to General Motors Corporation. Engine speed governor. 4,112,886, Cl. 123-103.00R.

Kidde Consumer Durables Corp.: *See—*
Belinkoff, Irving R., B 790,509, Cl. 241-37.500.

Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, to Siemens Aktiengesellschaft. Apparatus for measuring caster and camber in motor vehicles. B 783,407, Cl. 356-155.000.

Kiefer, Werner, to Jenaer Glaswerk Schott & Gen. Fire resistant windows. B 637,424, Cl. 428-34.000.

Kierstead, Richard Wightman: *See—*
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, B 844,570, Cl. 260-565.000.

Kiess, Ulrich: *See—*
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, B 717,682, Cl. 429-78.000.

Kikuchi, Shoji: *See—*
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, B 656,084, Cl. 96-66.00R.

Kikuchi, Tatsuo: *See—*
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 801,640, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 802,487, Cl. 204-39.000.

Kimball International, Inc.: *See—*
Robinson, John William; Crosby, Thomas C.; and Howell, Stephen Louis, 4,112,802, Cl. 84-1.010.

Kimura, Akio: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.

Kimura, Katsuhiko; and Nishikawa, Masaji, to Olympus Optical Co., Ltd. Photosensitive screen drum for electrographic apparatuses. B 752,839, Cl. 355-3.0SC.

Kimura, Shin: *See—*
Terasawa, Yoshio; and Kimura, Shin, B 652,662, Cl. 357-38.000.

King, Charles A.; and Gutterman, Robert P., to General Kinetics, Incorporated. Magnetic can sorter. B 716,285, Cl. 209-609.000.

King, John Olmsted. Self-dimpling fastener pin. 4,112,811, Cl. 85-7.000.

King, William Clifton, to Bell Telephone Laboratories, Incorporated. Optically coupled device with diffusely reflecting enclosure. B 573,401, Cl. 357-19.000.

Kirchmayr, Rudolf: *See—*
Zondler, Helmut; Saladin, Emil; and Kirchmayr, Rudolf, B 806,044, Cl. 521-108.000.

Kirsch, Bernhard. Ski binding automatically releasable by overstress. B 756,469, Cl. 280-616.000.

Kirsch, Norbert, to General Motors Corporation. Bumpers on motor vehicles. B 776,202, Cl. 293-96.000.

Kirschner, Helmut: *See—*
Huber, Leonhard; Kirschner, Helmut; and Muller, Herbert, B 763,684, Cl. 354-252.000.

Kitamura, Masanao: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, B 771,665, Cl. 431-1.000.

Kitrell, John V. Safety reflector device for bicycles or the like. B 730,695, Cl. 350-99.000.

Kitzig, Werner: *See—*
Kocher, Heinz; Kitzig, Werner; and Witteveen, Piet Jozef, B 566,178, Cl. 244-3.110.

Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, to Matsushita Electric Industrial Co., Ltd.; and Kyokuto Electric Company, Limited. Switching and heat control mechanism for induction heating cooking apparatus having a plurality of work coils. B 764,983, Cl. 219-10.49R.

Kiuru, Erkki Sakari: *See—*
Leinonen, Erkki Ilmari; and Kiuru, Erkki Sakari, B 735,983, Cl. 323-17.000.

Klaasen, Dirk, to Stamicarbon, B.V. Apparatus for producing polymers having a wide molecular weight distribution. B 709,080, Cl. 422-132.000.

Klank, Otto, to Licentia Patent-Verwaltungs-G.m.b.H. Rapid tuning circuit for high frequency receivers. B 814,103, Cl. 325-453.000.

Kleiman, Moisha Gershovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.

Klein, Donald J.: *See—*
Bowker, Donald R.; Klein, Donald J.; and Rados, Stephen E., B 656,538, Cl. 264-295.000.

Klein, Gerhart P., to P. R. Mallory & Co. Inc. Continuous open-ended sintering furnace system. B 769,369, Cl. 266-252.000.

Klein, Yitzhak: *See—*
Goldstein, Jonathan R.; and Klein, Yitzhak, B 812,672, Cl. 429-27.000.

Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Process for the production of benzoyl cyanide (I). B 802,946, Cl. 260-545.00R.

Kley, Victor B. Potentiometer. B 719,407, Cl. 338-231.000.

Klie, Jurgen, to G. Duesterloh GmbH. Control arrangement for a hydrostatic axial or radial piston machine. 4,112,973, Cl. 137-625.210.

Klinger AG: *See—*
Kruschik, Julius, 4,112,965, Cl. 137-219.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Hoppen, Heinz; and Fasbender, Heinz, B 787,598, Cl. 241-24.000.
Tholen, Paul, 4,112,684, Cl. 60-606.000.

Kloss, Werner: *See—*
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, B 815,160, Cl. 423-265.000.

Klug, Helmut: *See—*
Frey, Hans-Helmut; and Klug, Helmut, B 849,161, Cl. 260-897.00C.

Knapp, Heinrich: *See—*
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, 4,112,900, Cl. 123-139.0AW.

Knepler, John T., to Dickey-john Corporation. Air pressure monitor. 4,112,777, Cl. 73-728.000.

Kobayashi, Akira: *See—*
Sano, Takezo; Kobayashi, Akira; and Inoue, Haruo, B 699,255, Cl. 521-29.000.

Kobayashi, Hidehiko: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; and Kobayashi, Hidehiko, B 751,778, Cl. 96-114.100.

Kobayashi, Ikuo: *See—*
Maki, Masao; Kaneko, Yasunori; Tsuruda, Kunihiro; and Kobayashi, Ikuo, B 846,495, Cl. 423-239.000.

Kobayashi, Shigeru: *See—*
Shimanaka, Hiroshi; Ichida, Toshio; and Kobayashi, Shigeru, B 760,376, Cl. 148-113.000.

Kobe, Inc.: *See—*
Brown, Francis Barton; and Erickson, John W., B 768,581, Cl. 55-203.000.

Kobe Steel, Ltd.: *See—*
Asari, Akira; and Tsuzuki, Hidehiro, 4,112,723, Cl. 72-60.000.

Kober, Alfred E.: *See—*
Bennett, Robert P.; and Kober, Alfred E., B 792,939, Cl. 55-5.000.

Kobosh, Harry J. Portable seat for hunters. B 564,744, Cl. 182-187.000.

Koch, Hans W., to Roller Bearing Company of America. Combination seal and thrust washer for anti-friction bearings. B 755,445, Cl. 308-187.100.

Koch, Karlheinz; and Breitzke, Willi, to Henkel Kommanditgesellschaft auf Aktien. High viscosity neutral polyester lubricants. B 741,160, Cl. 252-56.00S.

Koch, Robert L., II, to George Koch Sons, Inc. Radiation curable coating process. B 731,755, Cl. 427-44.000.

Kocher, Heinz; Kitzig, Werner; and Witteveen, Piet Jozef, to Bolkow Gesellschaft mit beschrankter Haftung. Method and apparatus for thrust vector control of spin stabilized flying bodies by means of a single jet rudder. B 566,178, Cl. 244-3.110.

Koether, Bernard G.; and Shaughnessy, William J., to Food Automation-Service Techniques, Inc. Filter apparatus. B 790,429, Cl. 210-167.000.

Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, to Konishiroku Photo Industry Co., Ltd. Undercoat-applied plastic films. B 677,266, Cl. 428-412.000.

Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, to Daimler-Benz Aktiengesellschaft. Battery filling and venting structure. B 717,682, Cl. 429-78.000.

Kohlhepp, Dean H.: *See—*
Marsh, Paul G.; and Kohlhepp, Dean H., B 804,786, Cl. 241-21.000.

Kohlstette, Werner: *See—*
Pautsch, Gunthard; and Kohlstette, Werner, B 811,421, Cl. 233-11.000.

Koike, Hiroshi; Suzuki, Shoji; and Asakawa, Takeki. Automatic diaphragm assembly. B 778,240, Cl. 350-269.000.

Koike, Sakae; Matsunami, Shoichi; Goto, Yorinobu; and Tanabe, Yoshio, to Mitsubishi Chemical Industries, Ltd. Method of treating combustion exhaust gas containing nitrogen oxides. B 755,936, Cl. 423-235.000.

Kojima, Katsuhiro: *See—*
Watanabe, Kazuo; Endo, Toshio; and Kojima, Katsuhiro, 4,112,626, Cl. 51-35.000.

Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, to Sumitomo Chemical Company, Limited. Method for producing special pipes having longitudinally extending diaphragm partitions. B 723,977, Cl. 264-89.000.

Koketsu, Sotoichi. Spectacles' frame with vertically adjustable nose pads. B 688,480, Cl. 351-128.000.

Kolb, Dieter: *See—*
Ford, Michael Alan; Mould, Henry Manifold; and Kolb, Dieter, B 757,204, Cl. 356-96.000.

Kolb, Gunter: *See—*
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, B 749,455, Cl. 106-238.000.

Kolk, Erich: *See—*
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, B 762,858, Cl. 526-124.000.

Kollar, Ernest Paul: *See—*
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, B 788,570, Cl. 271-10.000.

Koller, Stefan: *See—*
Loew, Peter; and Koller, Stefan, B 676,599, Cl. 260-147.000.

Kolling, Georg: *See—*
Kroger, Carl; Romey, Ingo; and Kolling, Georg, B 649,920, Cl. 264-120.000.

Kolyshenko, Mikhail Vasilievich: *See—*
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, B 679,437, Cl. 169-12.000.

Komatsu Electronci Metals, Co., Ltd.: *See—*
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, B 733,400, Cl. 423-336.000.

Komatsu, Saburo, to O.P.O. Giken Kabushiki Kaisha. Plunger type solenoid. B 715,193, Cl. 335-258.000.

Komatsu, Toshio: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, B 751,668, Cl. 252-428.000.

Komiya, Mamoru: *See—*
Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, B 677,266, Cl. 428-412.000.

Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust system means for automobiles. B 781,408, Cl. 228-176.000.

Kondo, Katsumi: *See—*
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, B 781,408, Cl. 228-176.000.

Kondo, Yoshikazu: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, B 730,115, Cl. 181-284.000.

Konig, Horst: *See—*
Gudenau, H. W.; Konig, Horst; Rath, Gero; and Roth, Haye, B 771,748, Cl. 75-12.000.

Konishi, Hiroyuki: *See—*
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, B 776,618, Cl. 71-76.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, B 656,084, Cl. 96-66.00R.
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, B 814,121, Cl. 96-60.00R.
Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, B 677,266, Cl. 428-412.000.

Kono, Tateomi: *See—*
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, B 736,189, Cl. 355-14.000.

Kontekla Oy.: *See—*
Ebeling, Martti Olavi Aladar; and Lunden, Risto Waldemar, 4,112,691, Cl. 405-119.000.

Kooi, Else; and vanLierop, Joseph Gijsbertus, to U.S. Philips Corporation. Semiconductor manufacturing method using buried nitride formed by a nitridation treatment in the presence of active nitrogen. B 671,419, Cl. 148-1.500.

Kooi, J. Peter E.; and Vagyoczky, Stephen, to Keuffel & Esser Company. Telescope level adjusting means. 4,112,584, Cl. 33-292.000.

Kopp, Valentine T., to Merrill Brothers. Lifting clamp and spring therefor. B 710,736, Cl. 294-104.000.

Koppehele, Frithjof: *See—*
Bauch, Helmut; Mohrmann, Karl Heinz; and Koppehele, Frithjof, B 795,706, Cl. 330-56.000.

Koppl, Franz: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, B 737,249, Cl. 148-174.000.

Koranda, Clarence J. Railway hopper car labyrinth gate seal. 4,112,852, Cl. 105-282.00A.

Korbuly, Jozsef: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.

Kores S.p.A.: *See—*
Muthenthaller, Gustav, B 823,963, Cl. 227-124.000.

Kornis, Gabriel: *See—*
Moon, Malcolm W.; and Kornis, Gabriel, B 846,158, Cl. 548-374.000.
Moon, Malcolm W.; and Kornis, Gabriel, B 846,159, Cl. 548-374.000.

Korosue, Akira. Variable speed power transmission. 4,112,778, Cl. 74-117.000.

Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, to Hitachi, Ltd. Method of and apparatus for solid-liquid separation. B 748,762, Cl. 210-82.000.

Koslowski, Gerhard: *See—*
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, B 722,558, Cl. 526-351.000.

Kosolapova, Antonina Pavlovna: *See—*
Mirsky, Yakov Volfovich; Dorogochinsky, Akivy Zinovievich; Meged, Nelli Fillipovna; and Kosolapova, Antonina Pavlovna, B 710,651, Cl. 423-329.000.

Kostin, Vladimir Nikolaevich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.

Kotelnikov, Grigory Vladimirovich: *See—*
Goryachev, Vladimir Ilich; Kotelnikov, Grigory Vladimirovich; and Makurin, Pavel Semenovich, 4,112,734, Cl. 73-15.00B.

Kountz, Kenneth John, to Borg-Warner Corporation. Refrigeration control system. 4,112,703, Cl. 62-211.000.

Koutroulos, Jean: *See—*
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, B 768,494, Cl. 96-1.0PC.

Kowitz, Friedrich: *See—*
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, B 400,980, Cl. 260-876.00R.

Koyama, Mitsuo: *See—*
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, B 766,745, Cl. 354-249.000.

Koyama, Mototsugu: *See—*
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, B 781,408, Cl. 228-176.000.

Koyo Seiko Company Limited: *See—*
Okuda, Hiroji; and Harada, Shigenori, 4,112,710, Cl. 64-23.000.

Kozljuk, Anatoly Ivanovich: *See—*
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, B 679,437, Cl. 169-12.000.

Kozlov, Viktor Mikhailovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Rohr, Karl, B 742,195, Cl. 308-9.000.

Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, to General Foods Corporation. Adsorption process. B 771,485, Cl. 426-422.000.

Kramer, John B., to Allied Chemical Corporation. Pressurizing fuel ram air charger. 4,112,899, Cl. 123-139.0AW.

Kramer, Vance M., Jr.: *See—*
Kramer, Vance M., Sr.; and Kramer, Vance M., Jr., B 823,837, Cl. 264-294.000.

Kramer, Vance M., Sr.; and Kramer, Vance M., Jr. Method for making flexible corrugated rubber tubing and tubing produced thereby. B 823,837, Cl. 264-294.000.

Krasovec, Branko; Mihelic, Eli; and Reutlinger, Suzana, to HP Kolinska Ljubljana Prehrambena Indsutrija (n.sol.o.). Process for the preparation of a concentrate from waste chicken-broth and product therefrom. B 778,319, Cl. 426-56.000.

Krause, Alois, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Double-hydraulic actuator. 4,112,824, Cl. 91-413.000.

Krauss, Guenter, to Siemens Aktiengesellschaft. Electromechanical filter having encapsulated input and terminal circuit capacitors. B 741,848, Cl. 333-71.000.

Krawza, Walter G.: *See—*
Savanick, George A.; and Krawza, Walter G., B 809,881, Cl. 299-4.000.

Krehl, William H.: *See—*
DeHart, John R.; Nelson, Larry L.; and Krehl, William H., B 775,386, Cl. 209-549.000.

Kreiger, John W., to Bethlehem Steel Corporation. Green balls formed by agglomerating wet-collected fume produced in metallurgical furnaces. B 734,771, Cl. 75-256.000.

Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, to Dynamit Nobel Aktiengesellschaft. Method of preparing orthosilicic acid alkyl esters. B 706,864, Cl. 260-448.80A.

Krippelz, Jacob. Method of cushioning and ventilating a foot, and footwear including disposable slippers and insoles for practicing such method. 4,112,599, Cl. 36-11.500.

Kroger, Carl; Romey, Ingo; and Kolling, Georg, to Bergwerksverband GmbH. Coal-containing shaped bodies and process for making the same. B 649,920, Cl. 264-120.000.

Krogmann, Uwe Jonny: *See—*
Fuhrman, Gunther Georg; Krogmann, Uwe Jonny; and Schroth, Gerhard Wolfgang, 4,112,856, Cl. 110-165.00R.

Krohn, W. Henrik: *See—*
Lefkowitz, Leonard R.; and Krohn, W. Henrik, B 832,316, Cl. 156-148.000.

Kronfeld, Mervin B., to Nortronics Company, Inc. Dispenser package for magnetic tape splicing tabs. B 734,363, Cl. 221-70.000.

Krude, Werner, to Uni-Cardan AG. Double universal joint. 4,112,709, Cl. 64-21.000.

Kruger, Gerd: *See—*
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, B 812,325, Cl. 260-570.900.

Kruger, Hans, to Schering AG. Process for making 5-amino-1,2,3-thiadiazoles. B 823,526, Cl. 260-306.80D.

Kruschik, Julius, to Klinger AG. Shutoff element. 4,112,965, Cl. 137-219.000.

Kruse, Hubert; and Opitz, Konrad, to Hoechst Aktiengesellschaft. Preparation of a disperse dyestuff containing a phosphoric acid ester, having improved safety properties and higher dyestuff yield when dyed on synthetic materials. B 690,023, Cl. 8-90.000.

Krutov, Sergei Vasilievich: *See—*
Glushkov, Alexandr Ivanovich; Krutov, Sergei Vasilievich; Semenov, Vladimir Ivanovich; and Gusev, Anatoly Fedorovich, 4,112,547, Cl. 17-57.000.

Kubens, Rolf; and Gebauer, Herbert, to Bayer Aktiengesellschaft. Process for reinforcing geological formations. B 796,935, Cl. 166-295.000.

Kubina, John, to Engineered Systems, Inc. Verification checking system. B 789,960, Cl. 340-149.00A.

Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, to Nippon Telegraph and Telephone Public Corp.; and Matsushita Electric Industrial Co., Ltd. Frequency shift signal receiver. B 626,098, Cl. 325-320.000.

Kubota, Ltd.: *See—*
Fukuta, Shigemi; Izaki, Hiroshi; and Yoshino, Shoichi, B 712,068, Cl. 164-286.000.
Ozaki, Tsutomu; and Hijikata, Setsuo, B 712,952, Cl. 177-25.000.

Kubota, Masayoshi: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, B 720,502, Cl. 209-1.000.

Kubota, Munetaka: *See—*
Hosoya, Kazuo; and Kubota, Munetaka, 4,112,690, Cl. 405-57.000.

Kubotera, Haruo: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, B 713,793, Cl. 148-2.000.

Kucharski, Lawrence, Jr.: *See—*
DeRouen, Joseph Rodolph; and Kucharski, Lawrence, Jr., B 800,600, Cl. 338-174.000.

Kuhle, Engelbert: *See—*
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, B 592,860, Cl. 424-278.000.

Kuhlein, Klaus: *See—*
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, B 751,173, Cl. 424-274.000.

Kuhlmann, Wolf; and Rumpp, Gerhard, to Hilti Aktiengesellschaft. Expansion anchor assembly including a yielding member. 4,112,813, Cl. 85-74.000.

Kuhn, Hans Heinrich: *See—*
Hauser, Peter Jacob; and Kuhn, Hans Heinrich, B 815,122, Cl. 260-178.000.

Kuhnle, Hans-Frieder: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, B 674,993, Cl. 424-272.000.

Kuhnlein, Dieter: *See—*
Zeh, Werner; and Kuhnlein, Dieter, B 802,714, Cl. 360-92.000.

Kuitunen, Robert. Fuel system modification. 4,112,908, Cl. 123-198.00F.

Kukhno, Viktor Ivanovich: *See—*
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, B 679,437, Cl. 169-12.000.

Kulberg, Anton Yanovich: *See—*
Ryzhov, Vladimir Dmitrievich; Litvinenko, Semen Kirillovich; Leikin, Roman Samuilovich; Kulberg, Anton Yanovich; Ioffe, Benyamin Alexandrovich; and Kalnin, Robert Karlovich, B 704,693, Cl. 221-171.000.

Kulish, Stanley J., Jr.: *See—*
Abair, Raymond L.; and Kulish, Stanley J., Jr., B 784,044, Cl. 261-81.000.

Kumamoto, Yoshito: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, B 771,665, Cl. 431-1.000.

Kumar, Atul: *See—*
Ledoux, Will A.; Schoen, William; and Kumar, Atul, B 738,494, Cl. 166-275.000.

Kume, Toshiaki: *See—*
Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, 4,112,858, Cl. 112-158.00E.

Kummer, Rudolf; Schneider, Heinz-Walter; and Schwirten, Kurt, to BASF Aktiengesellschaft. Isolation and regeneration of rhodium-containing catalysts from distillation residues of hydroformylation reactions. B 780,297, Cl. 260-429.00R.

Kuno, Masaya: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.

Kurandt, Hans-Friedrich; and Schliephake, Dietrich, to Veba-Chemie Aktiengesellschaft. Process for preparing pure synthetic calcium sulfate semihydrate. B 740,469, Cl. 423-170.000.

Kuraray Co., Ltd.: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, B 616,998, Cl. 560-124.000.

Kurata, Kenichi: *See—*
Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, B 735,523, Cl. 96-38.100.

Kurihara, Takao: *See—*
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, B 776,288, Cl. 148-12.300.

Kuriyama, Masao: *See—*
Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, B 661,825, Cl. 8-120.000.

Kurkov, Victor P., to Chevron Research Company. Process for the production of N-acetyl-2-pyrrolidone. B 750,310, Cl. 260-326.5FL.

Kurtz, Leonard D.; and Bidwell, Robert E., to Deknatel, Inc. Surgical drainage system with pressure indicator and enclosed source of liquid. 4,112,948, Cl. 128-276.000.

Kurz, German: *See—*
von Linde, Robert; von Linde, Joachim; and Kurz, German, B 690,617, Cl. 431-352.000.

Kusunose, Takamaro: *See—*
Fukushima, Keitaro; Kusunose, Takamaro; and Nosaka, Yoshinori, B 719,504, Cl. 423-447.400.

Kuzma, Edward J.: *See—*
Patella, Ralph F.; and Kuzma, Edward J., B 856,829, Cl. 156-327.000.

Kyokuto Electric Company, Limited: *See—*
Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, B 764,983, Cl. 219-10.49R.

La Nationale S.A.: *See—*
Guenin, Andre, B 704,794, Cl. 431-124.000.

Labogiken Co., Ltd.: *See—*
Osanai, Shinichi, B 838,059, Cl. 242-1.000.

Laconte, Susana S.: *See—*
Gauron, Richard F.; and Laconte, Susana S., B 814,330, Cl. 292-165.000.

Lacour, Alain P.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., B 813,357, Cl. 544-360.000.

Laenen, Rene Johannes: *See—*
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, B 809,336, Cl. 106-304.000.

LaFitte, Larry L.; and Camden, James B., to Buckeye Cellulose Corporation, The. Quiet, strong cloth-like tissue laminate. B 741,640, Cl. 428-284.000.

Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., to Massachusetts Institute of Technology. Cryogenically controlled direct fluorination apparatus. B 379,876, Cl. 422-191.000.

Lagow, Richard J.; and Inoue, Shoji. Method for producing perfluoroether oligomers having terminal carboxylic acid groups. B 597,937, Cl. 562-583.000.

Lajeuness, John B. Waste water reclamation apparatus. 4,112,972, Cl. 137-597.000.

Lakhtjukhov, Valery Mikhailovich: *See—*
Vasiliev, Vladimir Sergeevich; Annenberg, Ernest Alexandrovich; Livshits, Abram Lazarevich; Polotsky, Vadim Evgenievich; and Lakhtjukhov, Valery Mikhailovich, B 780,357, Cl. 219-69.00W.

Lallinger, Georg, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Warhead construction. 4,112,848, Cl. 102-69.000.

Lam, Hung-Kei H.: *See—*
Bell, Norman; Andersen, John N.; and Lam, Hung-Kei H., B 855,506, Cl. 423-119.000.

Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., to Brown & Root, Inc. Articulated stinger. 4,112,698, Cl. 405-167.000.

Lampert, Murray Alfred: *See—*
Pankove, Jacques Isaac; and Lampert, Murray Alfred, B 869,641, Cl. 148-1.500.

Lang, Gary E.: *See—*
Lang, Roger J.; and Lang, Gary E., B 736,309, Cl. 339-29.00R.

Lang, Karl: *See—*
Werder, Roger Daniel; Meier, Linus; and Lang, Karl, B 551,517, Cl. 422-65.000.

Lang, Roger. Solar-ray heating apparatus. 4,112,917, Cl. 126-270.000.

Lang, Roger J.; and Lang, Gary E., to Eltra Corporation. Re-formable multi-conductor flat cable. B 736,309, Cl. 339-29.00R.

Lang, Winfried: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, B 737,249, Cl. 148-174.000.

Langdon, William Keith: *See—*
Helfert, Herbert; Davis, Pauls; and Langdon, William Keith, B 736,959, Cl. 260-615.00B.

Lange, Daniel J., to P. D. George Company, The. Aromatic imino acids and resins derived therefrom. B 823,732, Cl. 528-289.000.

Langhorst, Martin A.; Sinke, Gerard C.; and Mossner, Elmer H., to Dow Chemical Company, The. Extraction of non-ferrous metal values from dolomitic oxide ores. B 746,981, Cl. 75-101.00R.

Lanier Business Products, Inc.: *See—*
Bolick, Fred C., Jr.; and Titus IV, Theodore, B 719,423, Cl. 179-100.1DR.

Lantzsch, Reinhard, to Bayer Aktiengesellschaft. Preparation of 2,2-dimethyl-3-(2,2-dihalogenovinyl)-cyclopropane-1-carboxylic acid esters. B 795,588, Cl. 560-124.000.

Lappage, James; Doggett, Neil; and Yates, Stephen William, to Platt Saco Lowell Limited. Winding machines. 4,112,662, Cl. 57-34.0AT.

Laqua, Arnold; and Holtschmidt, Ulrich, to Th. Goldschmidt AG. Method for the preparation of hardenable urea formaldehyde resins. B 793,315, Cl. 260-29.40R.

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Von Allmen, Martin; and Schwob, Hans Peter, B 728,403, Cl. 219-121.0LM.

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Forg, Wolfgang, 4,112,700, Cl. 62-28.000.

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Coutant, Ralph W., 4,112,571, Cl. 29-243.500.

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Bassous, Ernest; and Liu, Cheng-Yih, B 861,373, Cl. 156-662.000.

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Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., B 797,921, Cl. 277-168.000.

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Aldridge, Trevor John; Lock, Alan Howard; and Bell, Robert Martin Alistair, 4,112,747, Cl. 73-116.000.

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Peaster, Bertram Anthony, B 759,756, Cl. 184-41.000.

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Talbott, John W.; and Logan, James D., B 747,391, Cl. 264-24.000.

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Lolachi, Houshang, to Baxter Travenol Laboratories, Inc. Centrifugal liquid processing apparatus. B 657,187, Cl. 233-25.000.

Lomnitzer, Abraham: *See—*
Hill, David Arthur; and Lomnitzer, Abraham, 4,112,593, Cl. 35-19.00A.

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Long, Marshall, to Marlen Research Corporation. Method of cooking a flowable food product in a continuous flow scraped surface heat exchanger. B 841,890, Cl. 426-512.000.

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Louthan, Rector P.; and Doss, Richard C., to Phillips Petroleum Company. Poly(oxyalkylene)-polyester-poly(sulfide)-polythiol prepared by ester interchange. B 737,948, Cl. 528-279.000.

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Hamsher, James J.; and Lozanov, Merrill, B 745,212, Cl. 195-36.00P.

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Tassano, Peter Francis, 4,112,744, Cl. 73-61.10R.

Lucas, Larry D.: *See—*
Gilbert, William F.; and Lucas, Larry D., B 741,805, Cl. 179-1.0GQ.

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Matteoli, Mario; and Luciani, Luciano, B 755,503, Cl. 260-878.00B.

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Stampfli, Harald, B 718,545, Cl. 361-154.000.

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Treplin, Friedrich-Wilhelm; and Borchert, Werner, B 781,489, Cl. 165-95.000.

Luetzow, Edwin J., to TelTec, Incorporated. Relay seal cap. B 695,514, Cl. 29-630.00B.

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Lund, Roger Edward, to Sperry Rand Corporation. Bubble domain structuring in bubble domain memory plane. B 786,316, Cl. 365-2.000.

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Lupien, Jacques: *See—*
Guglia, Gaston; and Lupien, Jacques, 4,112,984, Cl. 141-98.000.

Lusa, George; and Mathues, Thomas P., to General Motors Corporation. Wheel cylinder. B 836,140, Cl. 188-364.000.

Lussling, Theodor: *See—*
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Lutz, David Edward. Loading and unloading apparatus for vehicles. B 784,405, Cl. 214-82.000.

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Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.

Mages, Bernhard: *See—*
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Magnecorp, Inc.: *See—*
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Dieck, Ronald L.; Magnusson, Alan B.; and Quinn, Edwin J., B 878,679, Cl. 521-95.000.

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Maierhofer, Alfred: *See—*
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, B 802,946, Cl. 260-545.00R.

Majefski, Richard Lee: *See—*
Stewart, Alan; and Majefski, Richard Lee, B 744,337, Cl. 318-257.000.

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Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, B 679,437, Cl. 169-12.000.

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Malinski, Richard F.; and Childers, Aubrey C. Mechanical torque limit for valve actuator. B 761,596, Cl. 318-475.000.

Maloney, Thomas C.; and Cola, Rudolph A., to Burroughs Corporation. Display panel with phosphors. B 685,526, Cl. 340-343.000.

Malpass, Dennis B.; and Yeargin, G. Scott, to Texas Alkyls, Inc. Reduction of triphenylphosphine oxide to triphenylphosphine. B 805,194, Cl. 260-606.50P.

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Anderson, Leroy E.; Charlson, David V.; and Vierkant, Mark A., 4,112,731, Cl. 72-320.000.

Manufacturing Approaches & Total Concepts, Inc.: *See—*
Strange, Delbert D.; and Hunts, Ronald M., 4,112,986, Cl. 144-323.000.

Manuszak, Edward J. Combination carrying case and step unit. B 801,730, Cl. 224-46.00R.

Maraschin, Norma J.: *See—*
Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., B 379,876, Cl. 422-191.000.

Marcade, Roque Denis, to Whirlpool Corporation. Drier appliance control. 4,112,588, Cl. 34-45.000.

Marchetti, Silvano. Device for monitoring absolute velocity of points of driven piles during impact. 4,112,733, Cl. 73-12.000.

Marden Manufacturing Company, Inc.: *See—*
Bradley, Edmund G., 4,112,857, Cl. 111-3.000.

Marder, William Z., to Zevco Enterprises, Inc. Knife sharpener. 4,112,790, Cl. 76-87.000.

Marecek, Paul M.: *See—*
Armstrong, Donald E.; Shaffer, John W.; Marecek, Paul M.; and Audesse, Emery G., B 724,792, Cl. 431-95.00A.

Mares, Fred Ralph: *See—*
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, B 788,570, Cl. 271-10.000.

Margalit, Nehemiah, to ESB Incorporated. Non-aqueous primary battery having a pure silver chromate cathode. B 851,414, Cl. 429-194.000.

Margen, Peter Heinrich Erwin; and Naslund, Rolf Paul, to Aktiebolaget Atomenergi. Method of manufacturing a heat exchanger. 4,112,569, Cl. 29-157.30R.

Marhic, Michel E.: *See—*
Epstein, Max; Marhic, Michel E.; and Schacham, Samuel E., B 753,292, Cl. 331-94.50C.

Marine Moisture Control Co., Inc.: *See—*
Cigliano, Irving Louis, B 784,702, Cl. 151-54.000.

Marino, Angelo. Tape reel holder. B 805,587, Cl. 242-106.000.

Mark Controls Corporation: *See—*
Carlson, Donald E., 4,112,966, Cl. 137-282.000.

Mark, Victor, to General Electric Company. Non-opaque flame-retardant polycarbonate composition. B 733,015, Cl. 260-45.80N.

Mark, Victor; and Hedges, Charles Vernon, to General Electric Company. Process for purifying impure diphenols. B 755,981, Cl. 568-750.000.

Marketing Masters: *See—*
Gauron, Richard F.; and Laconte, Susana S., B 814,330, Cl. 292-165.000.

Markovski, Ognian. Hand held device for packing grease into wheel bearings. B 774,324, Cl. 184-1.00D.

Marks, Thomas L. Telephone cradle adapter. B 827,623, Cl. 179-146.00R.

Marlen Research Corporation: *See—*
Long, Marshall, B 841,890, Cl. 426-512.000.

Marlowe, Frank Jerome: *See—*
Pankove, Jacques Isaac; and Marlowe, Frank Jerome, B 775,864, Cl. 324-121.00R.

Marsh, Charles W. Hair dryer. 4,112,591, Cl. 34-99.000.

Marsh, Paul G.; and Kohlhepp, Dean H., to Black Clawson Fibreclaim, Inc. Process for producing fuel from solid waste. B 804,786, Cl. 241-21.000.

Martensson, Folke Lennart, to Telefonaktiebolaget L M Ericsson. Arrangement to indicate signals having a length exceeding a limit value. B 755,035, Cl. 328-111.000.

Martin, Joseph: *See—*
Dayet, Jacques; Martin, Joseph; and Nicola, Charles, B 727,750, Cl. 200-148.00A.

Martin Marietta Aluminum Inc.: *See—*
Gilbert, Henry L.; and Van Ordstrand, Cayrl W., 4,112,846, Cl. 102-52.000.

Masahiko, Takehara: *See—*
Juichi, Imamura; Masahiko, Takehara; and Kazuhiro, Kizawa, B 657,887, Cl. 260-600.00R.

Maschinenfabrik Kern AG Konolfingen: *See—*
Brechbuhl, Heinz, 4,112,796, Cl. 83-141.000.

Maschinenfabrik Zuckermann Komm. Ges.: *See—*
Schmidt, Erich, 4,112,628, Cl. 51-140.000.

Masco Corporation of Indiana: *See—*
Pflasterer, Peter W., B 690,881, Cl. 325-470.000.

Maselli, Vincent M. Process for making photo-mechanical drop-out mask. B 802,798, Cl. 96-5.000.

Mason, Russell I.; and Dale, John R., to United States of America, Navy. Directional sonobuoy. B 535,332, Cl. 340-85.000.

Masri, Merle S.; Randall, Virginia G.; and Stanley, William L., to United States of America, Agriculture. Insolubilization of enzymes on modified phenolic polymers. B 827,659, Cl. 195-63.000.

Massachusetts Institute of Technology: *See—*
Driscoll, Michael J.; and Bowman, Frank L., B 723,403, Cl. 176-38.000.
Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., B 379,876, Cl. 422-191.000.
Modell, Michael; Reid, Robert C.; and Amin, Sanjay I., B 742,712, Cl. 48-202.000.

Massardo, Pietro: *See—*
Modena, Mario; Massardo, Pietro; and Castelnuovo, Lucio, B 695,748, Cl. 260-31.8HA.

Massey-Ferguson Services N.V.: *See—*
Sala, Angelo, 4,112,976, Cl. 137-636.200.

Masuda, Bunpei: *See—*
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.

Masuda, Hajime: *See—*
Yamazaki, Shunji; and Masuda, Hajime, B 833,072, Cl. 340-531.000.

Masukawa, Toyoaki: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, B 814,121, Cl. 96-60.00R.

Mathers, James E.: *See—*
Ferri, John L.; Mathers, James E.; and Yale, Ramon L., B 525,589, Cl. 252-301.40S.

Mathes, Dieter: *See—*
Steinfeld, Horst E.; and Mathes, Dieter, B 762,347, Cl. 238-349.000.

Mathues, Thomas P.: *See—*
Lusa, George; and Mathues, Thomas P., B 836,140, Cl. 188-364.000.

Matsubara, Masaki, to Olympus Optical Co., Ltd. Zoom lens system with high zooming ratio. B 788,961, Cl. 350-186.000.

Matsui, Takashi; Sugimura, Sadao; and Noo, Kunio, to Sekisui Kaseikin Kogyo Kabushiki Kaisha. Process for producing receptacles from a thermoplastic resin foam sheet. B 703,421, Cl. 264-230.000.

Matsumoto, Akiyoshi: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.

Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, to Bridgestone Tire Company Limited. Sound absorbing body. B 730,115, Cl. 181-284.000.

Matsumura, Shiunzi: *See—*
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, B 776,618, Cl. 71-76.000.

Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, to Toppan Printing Co., Ltd. Method for manufacture of expanded articles having an embossed surface. B 735,523, Cl. 96-38.100.

Matsunami, Shoichi: *See—*
Koike, Sakae; Matsunami, Shoichi; Goto, Yorinobu; and Tanabe, Yoshio, B 755,936, Cl. 423-235.000.

Matsuo, Syunji: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, B 814,121, Cl. 96-60.00R.

Matsuoka, Shingo: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, B 639,066, Cl. 204-159.170.

Matsushita, Akira. Information processing optical device. B 746,830, Cl. 350-171.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Aya, Masayoshi; and Hiya, Kohji, B 808,567, Cl. 335-212.000.
Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, B 764,983, Cl. 219-10.49R.
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, B 626,098, Cl. 325-320.000.
Maki, Masao; Kaneko, Yasunori; Tsuruda, Kunihiro; and Kobayashi, Ikuo, B 846,495, Cl. 423-239.000.
Minakuchi, Hiroshi, B 818,842, Cl. 318-341.000.
Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, B 721,545, Cl. 422-177.000.

Matsushita Electric Works, Ltd.: *See—*
Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, B 719,159, Cl. 340-558.000.

Matsushita Electronics Corporation: *See—*
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, B 763,679, Cl. 148-187.000.

Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, to Kawasaki Kasei Chemicals Ltd. Process for producing anthrone. B 818,761, Cl. 260-351.000.

Matteoli, Mario; and Luciani, Luciano, to Montedison S.p.A. Process for preparing polypropylene compositions having high impact strength at low temperatures. B 755,503, Cl. 260-878.00B.

Mattmuller, Rene, to Saint-Gobain Industries. Method and apparatus for melting mineral materials. B 767,441, Cl. 65-135.000.

Mattuschka, Werner, to Siemens Aktiengesellschaft. Thickness shear resonator for use as an over-tone quartz crystal. B 830,046, Cl. 310-326.000.

Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. O-alkyl-O-[4-alkylpyrimidin(2)yl]-(thiono)-(thiol) phosphoric (phosphonic) acid esters and insecticidal, acaricidal and nematocidal compositions containing them. B 645,128, Cl. 424-200.000.

Maycock, Ian Commander, to Automotive Products Limited. Driven plates for friction clutches. B 797,768, Cl. 192-107.00C.

Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, to Montecatini Edison S.p.A. Catalysts for the polymerization of olefins. B 733,709, Cl. 252-429.00C.

Mazdiyasni, Khodabakhsh S.; and Cooke, Charles M., to United States of America, Air Force, Method of fabricating silicon nitride bodies. B 452,038, Cl. 264-101.000.

Mazik, Paul E., Jr.: *See—*
Ehrhart, Leonard M.; Pratte, John R.; and Mazik, Paul E., Jr., 4,112,621, Cl. 49-400.000.

Mazuir, Maurice, to Etablissements Carpano & Pons. Electronic programmer having automatic program selection. B 762,231, Cl. 364-900.000.

McAlindon, Harold P.: *See—*
Carol, John A., Jr.; and McAlindon, Harold P., B 845,959, Cl. 235-96.000.

McBrien, Roderick Julian, to Chloride Group Limited. Cell racks. B 825,718, Cl. 429-99.000.

McCabe, Barkman C.; and Zajac, Edward, to Westinghouse Electric

Corp. High temperature geothermal energy system. 4,112,745, Cl. 60-641.000.
McCabe, Francis J. Smoke, fire and air control damper with stamped blade. B 729,831, Cl. 251-305.000.
McCabe, Francis J. Rotating blade fire damper. B 770,831, Cl. 251-305.000.
McCartney, Thomas: *See—*
Ashdown, Glynn R.; McCartney, Thomas; and Holmes, Bruce, B 622,054, Cl. 179-175.30R.
McCool, John B., 3rd: *See—*
Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, B 601,628, Cl. 252-363.500.
McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., to Tennessee Valley Authority. Preparation of dicalcium phosphate from phosphate rock by the use of sulfur dioxide, water, and carbonyl compounds. B 779,038, Cl. 423-308.000.
McCutcheon, Martin J.: *See—*
Fletcher, Samuel G.; and McCutcheon, Martin J., 4,112,596, Cl. 35-35.00R.
McDevitt, Robert F. Molten metal sampler. 4,112,770, Cl. 73-425.40R.
McDevitt, Robert F. Device for receiving a sample of molten metal. 4,112,771, Cl. 73-425.40R.
McDevitt, Robert F. Device and method for obtaining a sample of liquid. 4,112,772, Cl. 73-425.40R.
McDonald, Charles H. Method of pavement repair. B 784,615, Cl. 404-75.000.
McDonnell, Damien Gerard: *See—*
Coates, David; Gray, George William; and McDonnell, Damien Gerard, B 821,146, Cl. 252-299.000.
McDonnell Douglas Corporation: *See—*
Lazenby, Webber W.; and Pulliam, Daniel N., B 820,930, Cl. 220-5.00A.
McElroy, John O., Jr., to Berkmont Industries. Unitary elastic muffler assembly for a pneumatic device. B 750,330, Cl. 181-230.000.
McEwen, Colin Dougal: *See—*
Denne, Phillip Raymond Michael; Davies, David Evan Naunton; and McEwen, Colin Dougal, B 723,621, Cl. 343-6.8LC.
McGahee, Welbourne D. Method and apparatus for fabricating fishing lures etc. 4,112,608, Cl. 43-42.090.
McGarry, Francis J.; Greene, Donald; and Otto, Jeffrey B., to Rogers Corporation. Method of manufacturing insulating board. B 847,571, Cl. 162-123.000.
McGraw-Edison Company: *See—*
Cameron, Gordon, B 777,050, Cl. 292-40.000.
McGregor, William H.: *See—*
Garsky, Victor M.; and McGregor, William H., B 538,628, Cl. 260-112.50S.
McHenry, Donald L.; and Bechtel, Charles H., to PPG Industries, Inc. Method of preparing a solution for making electroconductive tin oxide films. B 746,270, Cl. 106-287.180.
McKay, Tom W.: *See—*
Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., B 807,738, Cl. 562-568.000.
McKee, Harry A. Miniaturized model kitchen having coordinated interchangeable and integratable modules. B 800,617, Cl. 354-81.000.
McKee, William H., to TRW Inc. Connector constructions and mounting means and hoods therefor. B 736,895, Cl. 339-91.00R.
McKee, William H., to TRW Inc. Connector constructions and attaching means therefor. B 736,942, Cl. 339-91.00R.
McKinney, Lynn B.: *See—*
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., B 744,965, Cl. 206-508.000.
McKnight, James Alan, to United Kingdom Atomic Energy Authority. Detection of bubbles in a liquid. 4,112,735, Cl. 73-19.000.
McLean, Graham Wilson; and Holt, David, to Strathearn Audio Limited. Electric motor. B 797,252, Cl. 310-163.000.
McMaster, James David. Secret compartment case. B 843,566, Cl. 312-204.000.
McPherson, Neil Soden. Meeting rail for sliding windows. 4,112,623, Cl. 49-488.000.
Mead Corporation, The: *See—*
Spatz, Sydney Martin; and Shackle, Dale Richard, B 767,543, Cl. 282-27.500.
Medcor, Inc.: *See—*
Shanker, Irvin Paul; and Tryciecky, Teodozij, 4,112,953, Cl. 128-419.00P.
Meged, Nelli Fillipovna: *See—*
Mirsky, Yakov Volfovich; Dorogochinsky, Akivy Zinovievich; Meged, Nelli Fillipovna; and Kosolapova, Antonina Pavlovna, B 710,651, Cl. 423-329.000.
Meier, Linus: *See—*
Werder, Roger Daniel; Meier, Linus; and Lang, Karl, B 551,517, Cl. 422-65.000.
Meiji Seika Kaisha, Ltd.: *See—*
Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, B 588,555, Cl. 544-27.000.
Meijs, Franciscus H., to Shell Oil Company. Process for treating wells with viscous epoxy-resin-forming solutions. B 852,175, Cl. 166-295.000.
Meiner, George H., III: *See—*
Logsdon, John S.; and Meiner, George H., III, 4,112,718, Cl. 70-159.000.
Meisch, Charles Edward: *See—*
Rosenthal, Arthur Lee; Alpern, Marvin; and Meisch, Charles Edward, 4,112,949, Cl. 128-278.000.
Melnick, Igor, to Commissariat a l'Energie Atomique. Evaporation source for vacuum deposition. B 797,849, Cl. 13-22.000.
Melocik, Grant C., to Towmotor Corporation. Control apparatus. B 813,030, Cl. 307-9.000.
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, to Southwest Research Institute. Combustion apparatus for generating repetitive explosions. B 515,310, Cl. 299-13.000.
Meng, Ilse Heide Frieda, heir: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 693,971, Cl. 548-377.000.
Meng, Ilse Heide Frieda, heiress: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 766,235, Cl. 424-273.00P.
Meng, Karl, deceased: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 766,235, Cl. 424-273.00P.
Meng, Karl-August, deceased: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 693,971, Cl. 548-377.000.
Mentschel, Hellmuth, to Siemens Aktiengesellschaft. Method and apparatus for starting up a gas generator for converting hydrocarbons into a fuel gas, and an internal combustion engine to be supplied with the fuel gas. 4,112,876, Cl. 123-3.000.
Menzi, Ulrich, to Hermes Precisa International S.A. Mechanism for actuating a member of a typewriter. B 696,864, Cl. 400-333.000.
Menzin, Marvin: *See—*
Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., 4,112,762, Cl. 73-343.00R.
Merck & Co., Inc.: *See—*
Smith, Robert L.; Stokker, Gerald E.; and Cragoe, Edward J., Jr., B 833,930, Cl. 424-303.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, B 739,142, Cl. 424-205.000.
Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, B 742,132, Cl. 424-250.000.
Merkulov, Alexandr Nikolaevich: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Merrick, James Walter: *See—*
Chapin, Leonard Lee; and Merrick, James Walter, 4,112,901, Cl. 123-139.00E.
Merrill Brothers: *See—*
Kopp, Valentine T., B 710,736, Cl. 294-104.000.
Merz, Walter, to Bayer Aktiengesellschaft. Process for the preparation of alkali metal salts of 3,3-dimethyl-2-oxo-butyric acid. B 640,830, Cl. 562-577.000.
Meshberg, Philip. Dispensing unit for liquid and method of dispensing. B 633,799, Cl. 222-1.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung: *See—*
Held, Manfred; and Spies, Hans, 4,112,844, Cl. 102-19.200.
Krause, Alois, 4,112,824, Cl. 91-413.000.
Lallinger, Georg, 4,112,848, Cl. 102-69.000.
Rossmanith, Otto, B 764,022, Cl. 417-477.000.
Thomanek, Franz Rudolf, 4,112,847, Cl. 102-67.000.
Meteor AG: *See—*
Ott, Hans, B 835,032, Cl. 228-36.000.
Mettler Instrumente AG: *See—*
Werder, Roger Daniel; Meier, Linus; and Lang, Karl, B 551,517, Cl. 422-65.000.
Meyer, Robert W.; and Hall, George A., III, to Holcroft & Company. Heat exchanger core for recuperator. B 771,458, Cl. 165-154.000.
Meyers, George Leroy, to American Can Company. Tamperproof reclosable carton. B 805,096, Cl. 206-626.000.
Michalko, Edward, to UOP Inc. Catalytic composite and method of manufacture. B 786,527, Cl. 252-455.00Z.
Michishita, Kazuhiko: *See—*
Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, B 671,693, Cl. 260-397.450.
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich. Method of preparing 2,6-di-tert.butylphenol. B 788,590, Cl. 568-789.000.
Mickelson, Grant A., to Union Oil Company of California. Catalytic hydrofining process. B 846,419, Cl. 208-216.000.
Midana, Fiorenzo. Golfer's club swing and stance training device. B 764,816, Cl. 273-186.00C.
Mieyal, David F., to Donn Products, Inc. Adjustable pedestal for elevated floors. B 803,078, Cl. 248-354.00R.
Mihelic, Eli: *See—*
Krasovec, Branko; Mihelic, Eli; and Reutlinger, Suzana, B 778,319, Cl. 426-56.000.
Miida, Eishiro, to Tsukamoto Seiki Co., Ltd. Pressure tight joint for a large diameter casing. B 835,012, Cl. 285-334.000.
Mikes, Sandor: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Milianowicz, Stanislaw A.: *See—*
Frink, Russell E.; and Milianowicz, Stanislaw A., B 468,332, Cl. 200-144.00R.
Miller, Helmut, to Escher Wyss Limited. Supporting device. B 744,319, Cl. 308-9.000.
Miller, Mark L.: *See—*
Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., B 788,572, Cl. 429-193.000.
Miller, Stephen J., to Chevron Research Company. Denitrification process for hydrogenated distillate oils. B 773,995, Cl. 208-254.00R.
Miller, Stephen L.; and Dickert, Yancey J., to Dow Chemical Company, The. Poly-2-alkyl-2-oxazoline modified regenerated cellulosics. B 754,730, Cl. 260-9.000.
Milliken Research Corporation: *See—*
Hauser, Peter Jacob; and Kuhn, Hans Heinrich, B 815,122, Cl. 260-178.000.
Otto, Wolfgang K. F., B 799,620, Cl. 8-125.000.
Otto, Wolfgang K. F., B 799,623, Cl. 8-115.500.
Willbanks, Charles E., 4,112,560, Cl. 28-160.000.
Mills, Anthony Mark; and Buck, David Lyndon, to Dunlop Limited. Pneumatic tires having low aspect ratio. 4,112,994, Cl. 152-354.00R.
Min, Tony C.; and Hergert, Richard E., to Beloit Corporation. Apparatus for deflocculating fibrous wad and uniformly distributing the disintegrated fibrous material on a dry fiber layer forming surface. 4,112,549, Cl. 19-304.000.
Minagawa, Motonobu; Ohzeki, Toshio; and Sekiguchi, Tetsuo, to Argus Chemical Corporation. Tin sulfide stabilizer for styrene polymer. B 806,521, Cl. 260-23.70M.
Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Rotation control system. B 818,842, Cl. 318-341.000.
Minnesota Mining and Manufacturing Company: *See—*
Andrews, Jeffrey F.; Mullin, Therese A.; and Senkus, Raymond, B 758,342, Cl. 424-81.000.
Giulie, Joe D., B 625,131, Cl. 402-46.000.
Hensley, William G., B 743,463, Cl. 242-43.00R.
Howard, Robert N., 4,112,631, Cl. 51-295.000.
Larimore, Frank C., 4,112,941, Cl. 128-2.06E.
Minnis, Thomas R., to California Microwave, Inc. Compandor apparatus. B 738,835, Cl. 333-14.000.
Minolta Camera Kabushiki Kaisha: *See—*
Murata, Tomoji; and Shibazaki, Kenji, B 740,725, Cl. 355-14.000.
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, B 736,189, Cl. 355-14.000.
Minowa, Masahiro, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Method for controlling voltage and providing temperature compensation in a thermal printer. B 736,046, Cl. 400-120.000.
Mintz, Marcus: *See—*
Engelhardt, Bernard H.; and Mintz, Marcus, 4,112,761, Cl. 73-312.000.
Mirsky, Yakov Volfovich; Dorogochinsky, Akivy Zinovievich; Meged, Nelli Fillipovna; and Kosolapova, Antonina Pavlovna. Process for the production of zeolites in the form of binderless spherical granules. B 710,651, Cl. 423-329.000.
Mischutin, Vladimir, to White Chemical Corporation. Flame retardants for natural and synthetic materials. B 751,661, Cl. 427-390.00D.
Mitchell, Albert W.: *See—*
Ballas, George C.; and Mitchell, Albert W., 4,112,653, Cl. 56-12.700.
Mitchell, Frank L. Protective workman and equipment covers. 4,112,633, Cl. 52-66.000.
Mitchell, Joseph W.: *See—*
Bush, Robert F.; and Mitchell, Joseph W., B 799,034, Cl. 148-6.350.
Mitchell, William O.: *See—*
Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., 4,112,860, Cl. 112-262.000.
Mitsubishi Chemical Industries, Ltd.: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.
Koike, Sakae; Matsunami, Shoichi; Goto, Yorinobu; and Tanabe, Yoshio, B 755,936, Cl. 423-235.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Seo, Mamoru; and Uenishi, Akio, B 764,177, Cl. 307-311.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, B 751,668, Cl. 252-428.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Hirota, Nobuyoshi; and Shibata, Akio, B 775,328, Cl. 260-8.000.
Mizuno, Michitaka; Ideue, Kazuo; and Oya, Masashi, 4,112,759, Cl. 73-295.000.
Mitsugu, Watanabe: *See—*
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, B 737,025, Cl. 219-56.000.
Mitsuhashi, Kenhachi: *See—*
Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, 4,112,746, Cl. 73-95.000.
Mitsuo, Endo: *See—*
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, B 737,025, Cl. 219-56.000.
Mittag, Douglas C., to Aurora Equipment Company. Pallet rack and post protector assembly. B 782,185, Cl. 211-191.000.
Mitter, Mathias. Method of printing webs. 4,112,531, Cl. 8-149.000.

Miyachi, Isao: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.
Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. System for introducing secondary air into an internal combustion engine. 4,112,678, Cl. 60-276.000.
Miyahara, Kingo, to Dowa Co., Ltd. Gasified liquid fuel burner. B 800,701, Cl. 431-122.000.
Miyakita, Hiroshi, to Miyakita, Ichiro. Rotary cutter drive control with electric motor. B 748,318, Cl. 318-601.000.
Miyakita, Ichiro: *See—*
Miyakita, Hiroshi, B 748,318, Cl. 318-601.000.
Miyasugi, Takeshi: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Miyazaki, Nobumasa: *See—*
Kagiyama, Yasuo; and Miyazaki, Nobumasa, B 793,359, Cl. 236-12.00A.
Mizuguchi, Ryuzo: *See—*
Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, B 699,025, Cl. 260-29.4UA.
Mizuno, Michitaka; Ideue, Kazuo; and Oya, Masashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Device for detecting the surface level of molten metal in a mold. 4,112,759, Cl. 73-295.000.
Mizutani, Koichi: *See—*
Takimoto, Masatami; and Mizutani, Koichi, 4,112,898, Cl. 123-136.000.
Mo Och Domsjo Aktiebolag: *See—*
Samuelson, Hans Olof, B 763,203, Cl. 162-34.000.
Mobil Oil Corporation: *See—*
Kaeding, Warren W.; and Young, Lewis Brewster, B 793,470, Cl. 260-673.000.
Nnadi, John C.; and Heilweil, Israel J., B 564,954, Cl. 544-296.000.
Stournas, Stamoulis; and Heiba, El Ahmadi I., B 770,164, Cl. 252-8.55D.
Mobile Aerial Towers, Inc.: *See—*
Myers, Lester L., B 783,938, Cl. 182-2.000.
Moczygemba, George A., to Phillips Petroleum Company. Hydrogenated 1,3-cyclohexadiene/1,3-butadiene copolymers. B 711,029, Cl. 526-25.000.
Modell, Michael; Reid, Robert C.; and Amin, Sanjay I., to Massachusetts Institute of Technology. Gasification process. B 742,712, Cl. 48-202.000.
Modena, Mario; Massardo, Pietro; and Castelnuovo, Lucio, to Montedison S.p.A. Halogenated esters of polycarboxylic acids and plasticizers for chloro-vinyl polymers based on said esters. B 695,748, Cl. 260-31.8HA.
Moen, George E.; and De Vito, Vincent P. Microwave furnace. B 818,384, Cl. 219-10.55R.
Moen, Lowell J.: *See—*
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., B 733,562, Cl. 428-565.000.
Moertel, George B., to Textron Inc. Slide fastener. 4,112,555, Cl. 24-205.13C.
Moffatt, Clinton D. Golf practice device. B 732,318, Cl. 273-185.00C.
Mohacsi, Ernest, to Hoffmann-La Roche Inc. 3-Phenoxymorphinans and derivatives thereof. B 811,233, Cl. 260-285.000.
Mohrmann, Karl Heinz: *See—*
Bauch, Helmut; Mohrmann, Karl Heinz; and Koppehele, Frithjof, B 795,706, Cl. 330-56.000.
Mojonnier Bros. Co.: *See—*
Mojonnier, Harry G.; and Skoli, Sigmund P., 4,112,828, Cl. 99-275.000.
Mojonnier, Harry G.; and Skoli, Sigmund P., to Mojonnier Bros. Co. Reflux deaeration system. 4,112,828, Cl. 99-275.000.
Moles, Jacques Claude Antoine: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, B 605,926, Cl. 204-180.00R.
Molins Limited: *See—*
Harrington, Timothy Cardell; and Arthur, Hugh MacDonald, B 744,880, Cl. 242-58.100.
Preston, Edward George; and Doerman, Eryk Stefan, 4,112,954, Cl. 131-21.00R.
Moller, Eike; Meng, Karl-August, deceased (by Meng, Ilse Heide Frieda, heir); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Bayer Aktiengesellschaft. 1-Substituted pyrazoles. B 693,971, Cl. 548-377.000.
Moller, Eike; Meng, Karl, deceased (by Meng, Ilse Heide Frieda, heiress); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Baker Aktiengesellshaft. 4-Substituted pyrazoles. B 766,235, Cl. 424-273.00P.
Moller, Paul S., to Discojet Corporation. Engine muffler and spark arrester. B 728,213, Cl. 181-231.000.
Moller, Siegfried: *See—*
Rones, Josef; Moller, Siegfried; and Hoch, Helmut, B 781,820, Cl. 106-14.130.
Mongiello, Angelo. Cheese processing system. 4,112,835, Cl. 99-455.000.

Monroe Auto Equipment Company: *See—*
Palmer, Dale A., B 829,954, Cl. 188-282.000.
Monsanto Company: *See—*
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., B 759,313, Cl. 528-313.000.
Culbertson, Harry M., B 758,370, Cl. 528-138.000.
MacLean, Donald L.; and Estes, Robert T., B 699,543, Cl. 528-289.000.
Moran, James R., B 612,614, Cl. 260-876.00R.
Schumacher, Ignatius; and White, James E., B 734,893, Cl. 203-8.000.
Monsanto Company, St. Louis, Missouri: *See—*
Spiller, Herbert A., 4,112,668, Cl. 57-157.00S.
Montecatini Edison S.p.A.: *See—*
Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, B 733,709, Cl. 252-429.00C.
Montedison S.p.A.: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, B 816,919, Cl. 568-716.000.
Matteoli, Mario; and Luciani, Luciano, B 755,503, Cl. 260-878.00B.
Modena, Mario; Massardo, Pietro; and Castelnuovo, Lucio, B 695,748, Cl. 260-31.8HA.
Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, B 734,248, Cl. 562-534.000.
Moon, Malcolm W.; and Kornis, Gabriel, to Upjohn Company, The. Furyl pyrazole amides. B 846,158, Cl. 548-374.000.
Moon, Malcolm W.; and Kornis, Gabriel, to Upjohn Company, The. Thienyl pyrazole amides. B 846,159, Cl. 548-374.000.
Moore Business Forms, Inc.: *See—*
Halse, Per Weien, B 821,223, Cl. 282-11.50A.
Moran, James R., to Monsanto Company. Transparent ABS polyblends. B 612,614, Cl. 260-876.00R.
Morcom, Paul J. Plastic collapsible article carrier. B 667,679, Cl. 206-174.000.
Morgan, James E., to Morgan Schaffer Corporation. Transformer fault detection. 4,112,737, Cl. 73-23.000.
Morgan Schaffer Corporation: *See—*
Morgan, James E., 4,112,737, Cl. 73-23.000.
Morgan, William H., Jr.: *See—*
Bonazoli, Robert P.; and Morgan, William H., Jr., B 812,916, Cl. 431-93.000.
Morgenstern, Manfred: *See—*
Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, B 704,600, Cl. 526-64.000.
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, to Kuraray Co., Ltd. Process for preparation of substituted cyclopropane carboxylic acids and esters thereof and intermediates of said acids and esters. B 616,998, Cl. 560-124.000.
Mori, Fumio: *See—*
Hotta, Hisashi; and Mori, Fumio, B 808,301, Cl. 156-306.000.
Mori, Kouichi: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.
Mori, Mamoru: *See—*
Arai, Hiroshi; and Mori, Mamoru, B 765,392, Cl. 280-747.000.
Mori, Shigeo; and Fujita, Takeshi, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Flame resistant polyurethane foam and process for producing the same. B 616,722, Cl. 521-163.000.
Mori, Toshio: *See—*
Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, B 723,977, Cl. 264-89.000.
Morihashi, Toshihumi, to Murata Kikai Kabushiki Kaisha. Spinning apparatus for spun yarn. 4,112,658, Cl. 57-51.000.
Morikawa, Michio: *See—*
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, B 665,326, Cl. 264-173.000.
Morozumi, Shinji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 4,112,670, Cl. 58-23.00A.
Morsani, Rosemary; and Nelson, Edwin G. Grow-pot. 4,112,619, Cl. 47-66.000.
Mortimer, George A.: *See—*
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., B 759,313, Cl. 528-313.000.
Morton-Norwich Products. Inc.: *See—*
Schwan, Thomas J., B 783,811, Cl. 260-345.500.
Mosch, Franz: *See—*
Deiner, Hans; Mosch, Franz; and Bernheim, Willy, B 554,819, Cl. 544-196.000.
Moses, John A. Laryngoscope of the straight blade type. 4,112,933, Cl. 128-11.000.
Mosler Safe Company, The: *See—*
Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., B 722,741, Cl. 235-419.000.
Mossner, Elmer H.: *See—*
Langhorst, Martin A.; Sinke, Gerard C.; and Mossner, Elmer H., B 746,981, Cl. 75-101.00R.
Mostert, Johann: *See—*
Greven, Johann; and Mostert, Johann, 4,112,730, Cl. 72-290.000.
Motoki, Jinro: *See—*
Kato, Yoshiaki; and Motoki, Jinro, 4,112,671, Cl. 58-23.00D.
Motorola, Inc.: *See—*
Brewster, Franklin Crawford, B 706,670, Cl. 308-26.000.
Derdzinski, Terrence Edmund; and Karlin, James Hilliard, B 620,987, Cl. 312-198.000.
Duncan, Herbert Alan, B 810,215, Cl. 325-480.000.
Feder, Alvin, B 800,245, Cl. 200-16.00R.
Schafft, Hugo Willy, B 756,216, Cl. 350-150.000.
Motte, Raymond: *See—*
Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, B 713,371, Cl. 210-219.000.
Mould, Henry Manifold: *See—*
Ford, Michael Alan; Mould, Henry Manifold; and Kolb, Dieter, B 757,204, Cl. 356-96.000.
Mowery, Richard A., Jr., to Phillips Petroleum Company. Step-wise gradient carrier for liquid chromatography. 4,112,743, Cl. 73-61.10C.
Moye, Helen Ione. Method of forming an animal-figure decoration. 4,112,573, Cl. 29-428.000.
Mucke, Rainer: *See—*
Andrascheck, Hans-Joachim; and Mucke, Rainer, B 721,276, Cl. 260-28.50D.
Mueller, David Charles, to American Can Company. Score line configuration for ice cream cartons and the like. B 840,739, Cl. 206-611.000.
Mueller, Loren H. Agricultural sorting and packing apparatus. B 736,560, Cl. 209-705.000.
Mueller, Robert C.: *See—*
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., B 733,562, Cl. 428-565.000.
Mueller-Tamm, Heinz: *See—*
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, B 762,858, Cl. 526-124.000.
Muhlegg, Kurt, to Heberlein Maschinenfabrik AG. Friction false-twist device. 4,112,664, Cl. 57-77.400.
Muir, David Michael: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, B 686,496, Cl. 423-512.00A.
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, to Hitachi, Ltd. Speech path packaging unit including controller containing shift register. B 775,619, Cl. 179-18.0ES.
Mukai, Kiyohisa: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Mukai, Kunio: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.
Mulaskey, Bernard F., to Chevron Research Company. Method of removing sulfur-containing impurities from hydrocarbons. B 727,488, Cl. 208-244.000.
Muller, Franz, to August Lepper, Maschinen- und Apparatebau GmbH. Combined drum washer and drying arrangement. 4,112,590, Cl. 34-75.000.
Muller, Friedhelm: *See—*
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, B 749,455, Cl. 106-238.000.
Muller, Hans; and Hanke, Georg, to Volkswagenwerk Aktiengesellschaft. Stay. B 746,101, Cl. 188-282.000.
Muller, Herbert: *See—*
Huber, Leonhard; Kirschner, Helmut; and Muller, Herbert, B 763,684, Cl. 354-252.000.
Muller, Johann, to Albert Handtmann, Firma. Method of and apparatus for making link sausages. 4,112,546, Cl. 17-49.000.
Muller, Lothar: *See—*
Raasch, Hans; and Muller, Lothar, B 633,707, Cl. 242-18.00R.
Muller, Wolf-Rudiger: *See—*
Sekoulov, Ivan; and Muller, Wolf-Rudiger, B 771,958, Cl. 210-17.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, B 771,959, Cl. 210-17.000.
Mullin, Therese A.: *See—*
Andrews, Jeffrey F.; Mullin, Therese A.; and Senkus, Raymond, B 758,342, Cl. 424-81.000.
Mullins, Max. Compatible gear system. 4,112,782, Cl. 74-462.000.
Mullritter, Ludwig: *See—*
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, B 699,341, Cl. 355-8.000.
Mumford, Richard G.: *See—*
Hanway, John E., Jr.; and Mumford, Richard G., B 507,290, Cl. 423-242.000.
Muntjanoff, John R., to Caterpillar Tractor Co. Movable arch structure for skidder vehicle. B 554,936, Cl. 214-147.00G.
Murakami, Kazuyoshi: *See—*
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, B 748,473, Cl. 260-348.220.
Murakami, Masuo: *See—*
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, B 686,154, Cl. 424-317.000.
Murakami, Ryoichi: *See—*
Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, B 791,470, Cl. 148-6.15R.
Murakami, Sakae, to Nippon Hoist Co., Ltd. Hook device. 4,112,750, Cl. 73-141.0AB.

Muramori, Kiyoshi: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, B 720,502, Cl. 209-1.000.
Murashige, Masayuki: *See—*
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, B 874,748, Cl. 526-74.000.
Murata, Hikaru, to Kayabakogyokabushikikaisha. Pressure responsive sequencing device. 4,112,822, Cl. 91-29.000.
Murata, Hikaru, to Kayabakogyokabushikikaisha. Pressure-reducing device. 4,112,825, Cl. 91-447.000.
Murata Kikai Kabushiki Kaisha: *See—*
Morihashi, Toshihumi, 4,112,658, Cl. 57-51.000.
Murata Manufacturing Co., Ltd.: *See—*
Nakatsu, Yoshiyuki; and Nishizawa, Hideo, B 768,618, Cl. 338-162.000.
Murata, Tomoji; and Shibazaki, Kenji, to Minolta Camera Kabushiki Kaisha. Power regulating device for controlling exposing means and fixing means in electrophotographic copying apparatus. B 740,725, Cl. 355-14.000.
Murata, Tomoji: *See—*
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, B 736,189, Cl. 355-14.000.
Murphy, Edward J.: *See—*
Rabi, Rafat T.; Murphy, Edward J.; and Basoms, John A., B 745,240, Cl. 204-181.00C.
Musikindustriell Forskning MIFO AB: *See—*
Sjostrand, Gunnar; and Sjostrand, Staffan, 4,112,809, Cl. 84-465.000.
Musil, Josef: *See—*
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, B 751,173, Cl. 424-274.000.
Muskus, Meryl L., to Raymond Lee Organization, Inc., The, a part interest. Method of making a cord hammock. 4,112,816, Cl. 87-12.000.
Mustain, Lewis B.: *See—*
Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., B 722,741, Cl. 235-419.000.
Muthenthaller, Gustav, to Kores S.p.A. Stapler. B 823,963, Cl. 227-124.000.
Mutt, Viktor: *See—*
Said, Sami I.; and Mutt, Viktor, B 649,968, Cl. 260-112.00R.
Myers, Lester L., to Mobile Aerial Towers, Inc. Fluid control system for mobile aerial towers. B 783,938, Cl. 182-2.000.
Nagaoka, Kazuya: *See—*
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, B 818,761, Cl. 260-351.000.
Nagaoka, Masaaki: *See—*
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, B 781,408, Cl. 228-176.000.
Nagashima, Hideo: *See—*
Suzuki, Hiroshige; Horie, Eizi; and Nagashima, Hideo, 4,112,648, Cl. 52-508.000.
Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Coating composition containing resin having tertiary aliphatic group and reactive hydroxyl group, process for its preparation and article coated with the composition. B 699,025, Cl. 260-29.4UA.
Nagy, Sandor: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Sumitomo Metal Industries, Ltd. Apparatus for cooling slag. B 864,252, Cl. 266-137.000.
Nakagawa, Jihei, to Olympus Optical Co., Ltd. Retrofocus type wide-angle photographic lens system. B 629,606, Cl. 350-216.000.
Nakagawa, Tadashi: *See—*
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, B 766,745, Cl. 354-249.000.
Nakaguti, Osamu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, B 640,910, Cl. 544-16.000.
Nakaji, Hideki: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.
Nakajima, Yoshikage: *See—*
Igarashi, Toshiji; and Nakajima, Yoshikage, B 821,910, Cl. 424-266.000.
Nakamura, Kantaro: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Nakamura, Soichi, to Nippon Kogaku K. K. Telephoto lens system. B 638,708, Cl. 350-212.000.
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus. B 736,189, Cl. 355-14.000.
Nakanishi, Atsuo: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, B 812,737, Cl. 260-874.000.
Nakano, Harumi, to Casio Computer Co., Ltd. Liquid crystal display device. B 654,725, Cl. 350-332.000.
Nakaoka, Azuma: *See—*
Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, B 748,762, Cl. 210-82.000.
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, to Nippon Kokan Kabushiki Kaisha. Method of making cold-reduced Al-killed steel strip for press-forming by continuous casting and continuous annealing process. B 713,793, Cl. 148-2.000.
Nakashima, Toshihiko: *See—*
Teranishi, Takanori; and Nakashima, Toshihiko, B 788,429, Cl. 318-421.000.
Nakatani, Shuichi: *See—*
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, B 818,761, Cl. 260-351.000.
Nakatsu, Yoshiyuki; and Nishizawa, Hideo, to Murata Manufacturing Co., Ltd. Variable resistor. B 768,618, Cl. 338-162.000.
Nakazato, Masao: *See—*
Yoneda, Kenji; Nakazato, Masao; and Yuminaka, Takeo, B 702,145, Cl. 187-29.00R.
Nanthavong, Souli: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, B 667,557, Cl. 260-326.160.
Narita, Hirosi: *See—*
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, B 776,288, Cl. 148-12.300.
Naslund, Rolf Paul: *See—*
Margen, Peter Heinrich Erwin; and Naslund, Rolf Paul, 4,112,569, Cl. 29-157.30R.
National Fluoride and Chemical Corporation: *See—*
Orth, George Otto, Jr.; and Orth, Richard D., B 618,958, Cl. 423-119.000.
National Gypsum Company: *See—*
O'Connor, Francis J., B 737,152, Cl. 423-171.000.
National Research Development Corporation: *See—*
Barlow, Harold Everard Monteagle, B 755,844, Cl. 333-95.00R.
Carter, Michael Charles; and Steer, Philip James, B 757,024, Cl. 364-415.000.
Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, B 700,037, Cl. 356-110.000.
National Semiconductor Corporation: *See—*
Ross, John P.; and Bernardi, Carl E., B 776,162, Cl. 204-15.000.
National Starch and Chemical Corporation: *See—*
Pastor, Stephen D.; and Grover, Martin M., B 808,101, Cl. 260-834.000.
National Steel Corporation: *See—*
Manda, John G.; Burroughs, Joe D.; and Cairns, Donald F., B 647,937, Cl. 202-227.000.
Naylor Brothers (Clayware) Limited: *See—*
Widdicombe, Derek Gordon, 4,112,979, Cl. 138-89.000.
Nees, John; and Pike, Kenneth, to General Battery Corporation. Method of treating low antimony alloy battery grid material with phosphorus. B 734,311, Cl. 75-166.00C.
Nees, John; and Pike, Kenneth, to General Battery Corporation. Method of treating low antimony alloy battery grid material with phosphorus. B 768,960, Cl. 75-166.00C.
Negishi, Masaaki: *See—*
Watanabe, Haruo; and Negishi, Masaaki, B 697,192, Cl. 260-424.000.
Nehring, John R., to International Paper Company. Combined irrigator and evacuator for closed wounds. 4,112,947, Cl. 128-278.000.
Neidell, Norman S. Echo location systems. B 691,674, Cl. 343-9.000.
Neinast, Gary S., to Suntech, Inc. Pulling tool apparatus. B 714,208, Cl. 254-134.500.
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., to Westinghouse Electric Corp. Piezoelectric sediment particle transport detector. B 791,434, Cl. 310-334.000.
Nelson, Christian E. Barge-supported crane with hydraulically actuated ram corner lift means. 4,112,863, Cl. 114-264.000.
Nelson, Edwin G.: *See—*
Morsani, Rosemary; and Nelson, Edwin G., 4,112,619, Cl. 47-66.000.
Nelson, Karl L. Fastener holding attachment for a tool. 4,112,988, Cl. 145-50.00D.
Nelson, Larry L.: *See—*
DeHart, John R.; Nelson, Larry L.; and Krehl, William H., B 775,386, Cl. 209-549.000.
Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxy-methyl-ω-phenoxy-PGE analogs. B 822,305, Cl. 260-590.00C.
Nemoto, Ichiro: *See—*
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, B 766,745, Cl. 354-249.000.
Neste Oy: *See—*
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, B 768,494, Cl. 96-1.0PC.
New Concepts, Inc.: *See—*
Still, Robert C., 4,112,969, Cl. 137-454.200.
New Rochelle Manufacturing Co., Inc.: *See—*
Newman, Philip, 4,112,871, Cl. 119-18.000.
Newman, Philip, to New Rochelle Manufacturing Co., Inc. Bird cage feeder. 4,112,871, Cl. 119-18.000.

NHK Spring Co., Ltd.: *See—*
Takase, Hirobumi; and Utsunomiya, Yutaka, 4,112,721, Cl. 72-12.000.

Nicola, Charles: *See—*
Dayet, Jacques; Martin, Joseph; and Nicola, Charles, B 727,750, Cl. 200-148.00A.

Niederst, Kenneth W., to PPG Industries, Inc. Aqueous dispersions of esters stabilized with carbodiimides. B 801,673, Cl. 260-22.00T.

Niemann, Heinz, to ESGE-MARBY GmbH & Co. Luggage carrier for two-wheel vehicles, such as bicycles. B 776,421, Cl. 224-39.000.

Nifco Inc.: *See—*
Tanaka, Toshie, 4,112,815, Cl. 85-80.000.

Nikko Co., Ltd.: *See—*
Ishimoto, Zenichi, 4,112,615, Cl. 46-254.000.

Nikly, Jean, to Automobiles M. Berliet. Method and device for ensuring the tightness of a cylinderhead on the cylinder block of a thermal engine, in particular, a diesel engine. 4,112,907, Cl. 123-193.0CH.

Niksa, Gregory J.: *See—*
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.

Nilson, Billy N., to KeNova AB. Safety valve. 4,112,971, Cl. 137-508.000.

Nimura, Takayasu, to Nippondenso Co., Ltd. Rotor for alternating current generator. B 781,003, Cl. 310-42.000.

Nippon Cable Systems Inc.: *See—*
Fukuda, Mataharu, 4,112,708, Cl. 64-2.00R.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Iyeta, Motoi, B 786,392, Cl. 274-23.00R.

Nippon Hoist Co., Ltd.: *See—*
Murakami, Sakae, 4,112,750, Cl. 73-141.0AB.

Nippon Hume Pipe Company Limited: *See—*
Iida, Hideo, B 715,493, Cl. 264-228.000.

Nippon Kogaku K. K.: *See—*
Kakizaki, Yukio, B 768,608, Cl. 248-430.000.
Nakamura, Soichi, B 638,708, Cl. 350-212.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, B 713,793, Cl. 148-2.000.
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, B 776,288, Cl. 148-12.300.

Nippon Oil Company Ltd.: *See—*
Shinomura, Toshihiko, B 639,166, Cl. 428-113.000.

Nippon Paint Co., Ltd.: *See—*
Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, B 699,025, Cl. 260-29.4UA.
Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, B 791,470, Cl. 148-6.15R.

Nippon Soken, Inc.: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.

Nippon Steel Corporation: *See—*
Sakurai, Toshio; Shimada, Shoji; and Kamimura, Yoshiharu, B 710,312, Cl. 252-49.600.

Nippon Telegraph and Telephone Public Corp.: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, B 626,098, Cl. 325-320.000.

Nippon Zeon Co. Ltd.: *See—*
Akiyama, Shinichi; and Yamamoto, Haruhisa, B 777,679, Cl. 562-532.000.

Nippondenso Co., Ltd.: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.
Nimura, Takayasu, B 781,003, Cl. 310-42.000.
Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, B 756,699, Cl. 235-464.000.
Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, B 765,753, Cl. 235-494.000.
Teranishi, Takanori; and Nakashima, Toshihiko, B 788,429, Cl. 318-421.000.
Uno, Eiichi; and Hachiga, Takasi, 4,112,904, Cl. 123-148.00E.

Nishida, Takashi: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, B 616,998, Cl. 560-124.000.

Nishide, Hiroo; and Uehara, Yasuhiro, to Rank Xerox, Ltd. Heat roll fixing device for electrophotographic copying machine. B 801,678, Cl. 219-216.000.

Nishikawa, Masaji: *See—*
Kimura, Katsuhiko; and Nishikawa, Masaji, B 752,839, Cl. 355-3.0SC.

Nishimoto, Akihiko: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, B 713,793, Cl. 148-2.000.

Nishimura, Sanji: *See—*
Watanabe, Morio; and Nishimura, Sanji, B 773,657, Cl. 204-151.000.

Nishino, Atsushi: *See—*
Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, B 721,545, Cl. 422-177.000.

Nishizawa, Hideo: *See—*
Nakatsu, Yoshiyuki; and Nishizawa, Hideo, B 768,618, Cl. 338-162.000.

Nissan Motor Company, Limited: *See—*
Anzai, Makoto, 4,112,893, Cl. 123-119.0EC.
Asano, Masaharu; and Kadowaki, Shunichi, 4,112,880, Cl. 123-32.0EE.

Niwa, Takao: *See—*
Goto, Kenji; and Niwa, Takao, 4,112,877, Cl. 123-32.0ST.

Nnadi, John C.; and Heilweil, Israel J., to Mobil Oil Corporation. Multifunctional additives. B 564,954, Cl. 544-296.000.

Noack, Rolf; Schuster, Joachim; and Lohse, Udo, to Deutsche Babcock Aktiengesellschaft. Device for bending pipes. 4,112,728, Cl. 72-154.000.

Nogita, Shunsuke: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, B 720,502, Cl. 209-1.000.

Noguchi, Katsuyuki: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, B 793,920, Cl. 424-274.000.

Nohira, Hidetaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for recirculating exhaust gases. 4,112,894, Cl. 123-119.00A.

Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, to Fujitsu Limited. Signal sending control system. B 788,971, Cl. 179-84.00R.

Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, to Nippondenso Co., Ltd. Method and apparatus to optically recognize recorded information. B 756,699, Cl. 235-464.000.

Nojiri, Tadao: *See—*
Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, B 765,753, Cl. 235-494.000.

Nolan, John T., Jr.: *See—*
Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., B 774,099, Cl. 260-683.680.

Noll, Klaus-Reinhold: *See—*
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, B 812,325, Cl. 260-570.900.

Nomaki, Koji; and Saoyama, Yoshihito, to Asahi Glass Company, Ltd. Soldering apparatus. 4,112,868, Cl. 118-429.000.

Nomura, Masahiro: *See—*
Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, B 756,699, Cl. 235-464.000.
Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, B 765,753, Cl. 235-494.000.

Nonoyama, Takao: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.

Noo, Kunio: *See—*
Matsui, Takashi; Sugimura, Sadao; and Noo, Kunio, B 703,421, Cl. 264-230.000.

Nordica International, Inc.: *See—*
Conger, William H.; and Gehringer, Ronald F., 4,112,820, Cl. 70-363.000.

Nordin, Soren B.: *See—*
Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., B 761,209, Cl. 162-127.000.

Nordiska Maskinfilt Aktiebolaget: *See—*
Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, 4,112,982, Cl. 139-425.00A.

Norfield Corporation: *See—*
Beasley, Donald R., B 763,097, Cl. 428-116.000.

Norian, Roger F.: *See—*
Gorham, Michael L.; and Norian, Roger F., B 793,454, Cl. 179-90.00B.

Norris, Alan H.; and Chambley, Phillip W., to Champion International Corporation. Apparatus for manufacturing filaments of varying denier and actuating means therefor. 4,112,561, Cl. 28-243.000.

Nortec Inc.: *See—*
Sherwin, William Claude, B 731,558, Cl. 280-615.000.

North, Bernard: *See—*
Lumby, Roland John; North, Bernard; and Taylor, Alfred James, B 802,172, Cl. 106-73.400.

Northern Telecom Limited: *See—*
Pound, Thomas Charles; and Gouldson, Eric John, B 672,366, Cl. 156-56.000.
Westwood, William Dickson, B 797,509, Cl. 250-216.000.

Northwestern University: *See—*
Epstein, Max; Marhic, Michel E.; and Schacham, Samuel E., B 753,292, Cl. 331-94.50C.

Norton, Richard V., to Suntech, Inc. Process for cyanohydrin esters. B 776,452, Cl. 260-465.00D.

Nortronics Company, Inc.: *See—*
Kronfeld, Mervin B., B 734,363, Cl. 221-70.000.

Nosaka, Yoshinori: *See—*
Fukushima, Keitaro; Kusunose, Takamaro; and Nosaka, Yoshinori, B 719,504, Cl. 423-447.400.

Nosker, Richard William, to RCA Corporation. Smooth groove formation method employing spin coating of negative replica of inscribed disc. B 327,804, Cl. 427-140.000.

Nossen, Edward J., to United States of America, Army. Frequency synthesizer. B 856,448, Cl. 331-2.000.

Numair, Solomon J.: *See—*
Lonstrup, Thorkild F.; Brownawell, Darrell W.; Goletz, Edward, Jr.; and Numair, Solomon J., B 741,032, Cl. 252-51.50A.

Nyberg, David Dolph, to Raychem Corporation. Poly(tetramethyleneterephthalate) crosslinked by irradiation. B 856,500, Cl. 204-159.150.

Nygards, Nils. Water distiller of boiler-condenser type. B 661,252, Cl. 202-176.000.

Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., to Svenska Traforskningsinstitutet. Hard board or medium density board, process for production thereof and means for practicizing the process. B 761,209, Cl. 162-127.000.

O.P.O. Giken Kabushiki Kaisha: *See—*
Komatsu, Saburo, B 715,193, Cl. 335-258.000.

Oak Industries, Incorporated: *See—*
Desiderio, Angelo C., B 756,247, Cl. 200-246.000.

Oates, Robert M.; and Mackenzie, Raymond W., to Westinghouse Electric Corp. Rotor overtemperature protection for electric motors. B 783,525, Cl. 318-473.000.

Oberheiden, Helmut: *See—*
Huper, Fritz; and Oberheiden, Helmut, B 692,876, Cl. 544-20.000.

Obinata, Shiro; Hashimoto, Shigeru; and Sahara, Takeshi, to Dowa Mining Co., Ltd. Process of tin flotation. B 613,928, Cl. 209-167.000.

Oce-van der Grinten N.V.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.

Ochii, Kiyofumi: *See—*
Suzuki, Yasoji; and Ochii, Kiyofumi, B 777,663, Cl. 365-189.000.

Ockers, Gerhardus: *See—*
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., B 779,645, Cl. 44-66.000.

O'Connell, Joseph J., to Scientific Dimensions, Inc. Apparatus for removably mounting equipment to a vehicle. B 785,326, Cl. 248-221.300.

O'Connor, Francis J., to National Gypsum Company. Continuous gypsum calcination process and kettle therefor. B 737,152, Cl. 423-171.000.

O'Connor, Michael Niall Desmond: *See—*
Panzer, Hans Peter; O'Connor, Michael Niall Desmond; and Baccei, Louis J., B 706,087, Cl. 526-258.000.

Oda, Lorraine K.: *See—*
Oda, Roy N.; and Oda, Lorraine K., 4,112,833, Cl. 99-425.000.

Oda, Roy N.; and Oda, Lorraine K. Microwave cooking device. 4,112,833, Cl. 99-425.000.

Oderbolz, Fredy; and Bebie, Paul, to Ruti Machinery Works Ltd. Picking bands and drive arrangement for gripper weaving machine. 4,112,983, Cl. 139-446.000.

Oelke, Waldemar W.: *See—*
Boehm, Hans W.; Herrington, Richard A.; and Oelke, Waldemar W., B 767,051, Cl. 225-2.000.

Offermanns, Heribert: *See—*
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, B 802,946, Cl. 260-545.00R.

Ogawa, Kenichi: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, B 788,971, Cl. 179-84.00R.

Ogawa, Taizo: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.

Ogisu, Kenji: *See—*
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 801,640, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 802,487, Cl. 204-39.000.

Ohashi, Hiroshi: *See—*
Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, B 719,159, Cl. 340-558.000.

Ohuchi, Kenji: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,112,869, Cl. 118-623.000.

Ohzeki, Toshio: *See—*
Minagawa, Motonobu; Ohzeki, Toshio; and Sekiguchi, Tetsuo, B 806,521, Cl. 260-23.70M.

Oishi, Masaharu: *See—*
Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, B 677,266, Cl. 428-412.000.

Oka, Shohei: *See—*
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, B 761,278, Cl. 248-204.000.

Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, to Nippon Paint Co., Ltd. Phosphating of metallic substrate with electrolytic reduction of nitrate ions. B 791,470, Cl. 148-6.15R.

Okabayashi, Keiichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing controller for a gasoline engine. 4,112,888, Cl. 123-117.00A.

Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, to Nippondenso Co., Ltd. Bar code information card. B 765,753, Cl. 235-494.000.

Okano, Masao, to Toyo Valve Company, Ltd. Copper alloys of excellent corrosion resistance, moldability and workability. B 698,800, Cl. 75-156.500.

Okazaki, Hiroshi: *See—*
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, B 763,679, Cl. 148-187.000.

Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, to Yamanouchi Pharmaceutical Co., Ltd. Stabilized oral prostaglandin formulation and the process for the preparation thereof. B 686,154, Cl. 424-317.000.

Oki Electric Industry Co., Ltd.: *See—*
Isobe, Minoru, B 691,200, Cl. 206-388.000.

Okita, Koichi, to Sumitomo Electric Industries, Ltd. Hydrophilic porous structures and process for production thereof. B 823,474, Cl. 428-290.000.

Oku, Teruo: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, B 640,910, Cl. 544-16.000.

Okubo, Hiroyuki: *See—*
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.

Okubo, Toshio: *See—*
Saiki, Atsushi; Okubo, Toshio; and Harada, Seiki, B 695,040, Cl. 156-656.000.

Okuda, Hiroji; and Harada, Shigenori, to Koyo Seiko Company Limited. Drive shaft for rolling mills and the like. 4,112,710, Cl. 64-23.000.

Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, to Matsushita Electronics Corporation. Method of making a MOS device. B 763,679, Cl. 148-187.000.

Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for shaping integrally-shaped type brake disks for cars. 4,112,732, Cl. 72-334.000.

Okuno, Yositosi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.

Okutsu, Eiichi: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.

Olbrich, Gottfried; and Weigert, Wilhelm, to Robert Bosch GmbH. Valve for an opening of a pressure vessel. 4,112,978, Cl. 138-30.000.

Olin Corporation: *See—*
Turley, Richard J.; and Ozolins, Alexandre, B 807,456, Cl. 156-330.000.

Oliver, Colin Charles, to EMI Limited. Radiography. B 765,422, Cl. 250-445.00T.

Ollivier, Jean: *See—*
Combette, Marc; Dorgnon, Roger; Luthringer, Jean; and Ollivier, Jean, B 805,663, Cl. 227-10.000.
Combette, Marc; and Ollivier, Jean, 4,112,685, Cl. 60-634.000.

Olmstead, John Aaron: *See—*
Ponczak, Samuel; and Olmstead, John Aaron, B 763,721, Cl. 148-1.500.

Olmstead, William Dean, to Cycle-Kamp Inc. Compact tent-type camping trailer. B 735,429, Cl. 296-23.00H.

Olsson, Erik A. Method of and apparatus for converting molten metal into solidified products. B 700,080, Cl. 228-170.000.

Olympus Optical Co., Ltd.: *See—*
Kimura, Katsuhiko; and Nishikawa, Masaji, B 752,839, Cl. 355-3.0SC.
Matsubara, Masaki, B 788,961, Cl. 350-186.000.
Nakagawa, Jihei, B 629,606, Cl. 350-216.000.
Yamasita, Nobuo; and Imai, Toshihiro, B 773,408, Cl. 350-172.000.

Omura, Yoshiaki: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, B 616,998, Cl. 560-124.000.

Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, to Seiko Koki Kabushiki Kaisha. Shutter opening and closing mechanism for cameras. B 766,745, Cl. 354-249.000.

Ondetti, Miguel Angel; and Condon, Michael Edward, to E. R. Squibb & Sons, Inc. Amino acid derivatives. B 759,685, Cl. 260-112.50R.

Onnen, William G.: *See—*
Hill, Robert W.; Onnen, William G.; and Ryder, Lyle C., B 719,696, Cl. 264-262.000.

Onoda Cement Co., Ltd.: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,112,869, Cl. 118-623.000.

Ooishi, Tadashi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.

Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, to Matsushita Electric Industrial Co., Ltd. Cooking apparatus employing a purging device. B 721,545, Cl. 422-177.000.

Oomura, Takao: *See—*
Funakoshi, Satoshi; and Oomura, Takao, B 813,419, Cl. 424-78.000.

Ootsubo, Suminobu: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.

Opgenorth, Hans-Joachim; and Scheuermann, Horst, to BASF Aktiengesellschaft. Manufacture of benzothiazoles. B 810,950, Cl. 260-305.000.

Opitz, Konrad: *See—*
Kruse, Hubert; and Opitz, Konrad, B 690,023, Cl. 8-90.000.

Ore-Ida Foods, Inc.: *See—*
Covington, Wayne L.; and Green, Glen R., 4,112,545, Cl. 17-45.000.

Orrville Products, Inc.: *See—*
Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., B 809,911, Cl. 219-137.00R.

Orth, Dieter: *See*—
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, B 739,142, Cl. 424-205.000.

Orth, George Otto, Jr.; and Orth, Richard D., to National Fluoride and Chemical Corporation. Recovery of sodium fluoride and other chemicals from spent carbon liners. B 618,958, Cl. 423-119.000.

Orth, Richard D.: *See*—
Orth, George Otto, Jr.; and Orth, Richard D., B 618,958, Cl. 423-119.000.

Orzales, Henri-Ange, to Societe Civile de Recherches et d'Etudes Nouvelles. 3-(4'-Alkoxy-benzoyl)-1,2,2-trimethyl-cyclopentane-carboxylic acids, their optical isomers and drugs containing such compounds. B 705,535, Cl. 560-52.000.

Osaka Prefectural Office: *See*—
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, B 761,278, Cl. 248-204.000.

Osaka Soda Co., Ltd.: *See*—
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, B 748,473, Cl. 260-348.220.

Osanai, Shinichi, to Labogiken Co., Ltd. Apparatus for withdrawing the tongue of a film incorporated in a cartridge. B 838,059, Cl. 242-1.000.

Osawa, Mitsuo: *See*—
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, B 798,313, Cl. 274-15.00R.

Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, to Dipsol Chemical Company, Ltd. Method for brightening the electrodeposits of zinc from alkaline zinc electroplating baths. B 779,560, Cl. 204-55.00Y.

Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, to Sumitomo Chemical Company, Limited. Method for controlling the growth of plants. B 776,618, Cl. 71-76.000.

Osterburg, Gunther: *See*—
Strehlke, Gunter; and Osterburg, Gunther, B 547,846, Cl. 260-593.00P.

Ostergaard, Steen. Dispenser for ground coffee and other powdered products. B 754,696, Cl. 222-243.000.

O'Toole, Jerome M.; and Paquette, Edmund T., to Wright Line Inc. Holder for documentation cartridge. B 832,729, Cl. 312-184.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See*—
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, B 717,322, Cl. 426-602.000.

Otsuka Nutrition Research Institute Inc.: *See*—
Ando, Sumio, B 661,077, Cl. 417-502.000.

Ott, Hans, to Meteor AG. Soldering apparatus. B 835,032, Cl. 228-36.000.

Ott, Karl-Heinz: *See*—
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, B 400,980, Cl. 260-876.00R.

Ott, Robert B.; and Heringer, Lawrence R., to Hennegan Company, The. Display panel assembly. 4,112,604, Cl. 40-610.000.

Otto, Jeffrey B.: *See*—
McGarry, Francis J.; Greene, Donald; and Otto, Jeffrey B., B 847,571, Cl. 162-123.000.

Otto, Wolfgang K. F., to Milliken Research Corporation. Method for modifying fibers of a fabric and the products so produced. B 799,620, Cl. 8-125.000.

Otto, Wolfgang K. F., to Milliken Research Corporation. Method for modifying fibers of a fabric and the products so produced. B 799,623, Cl. 8-115.500.

Oude Alink, Bernardus A., to Petrolite Corporation. Preparation of octahydrophenanthridines. B 812,888, Cl. 260-286.00A.

Ouellette, Joseph Fernand; and Poeling, David L., to Quellette Machinery Systems, Inc. Earthquake simulator. 4,112,776, Cl. 73-665.000.

Outboard Marine Corporation: *See*—
Fields, Ernest E.; and Reineck, Lester W., B 823,614, Cl. 220-367.000.
Hackbarth, Eugene R.; and Van Rens, Russell J., B 780,590, Cl. 261-52.000.

Outokumpu Oy: *See*—
Aaltonen, Olavi August; and Juusela, Jyrki Tapani, B 647,506, Cl. 75-74.000.

Outokumpu Oy, Ab.: *See*—
Leinonen, Erkki Ilmari; and Kiuru, Erkki Sakari, B 735,983, Cl. 323-17.000.

Owen, Wickersham & Erickson: *See*—
Lindberg, John E., 4,112,892, Cl. 123-119.00A.

Owens-Corning Fiberglas Corporation: *See*—
Stalego, Charles J., B 758,109, Cl. 65-11.00R.

Owens-Illinois, Inc.: *See*—
Ernsthausen, Roger E., B 293,817, Cl. 313-188.000.

Oxford Industries, Inc.: *See*—
Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., 4,112,860, Cl. 112-262.000.

Oxy Metal Industries Corporation: *See*—
Rones, Josef; Moller, Siegfried; and Hoch, Helmut, B 781,820, Cl. 106-14.130.

Oya, Masashi: *See*—
Mizuno, Michitaka; Ideue, Kazuo; and Oya, Masashi, 4,112,759, Cl. 73-295.000.

Ozaki, Masaru: *See*—
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; and Kobayashi, Hidehiko, B 751,778, Cl. 96-114.100.

Ozaki, Toshiaki: *See*—
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.

Ozaki, Tsutomu; and Hijikata, Setsuo, to Kubota, Ltd. Body weight measuring apparatus. B 712,952, Cl. 177-25.000.

Ozolins, Alexandre: *See*—
Turley, Richard J.; and Ozolins, Alexandre, B 807,456, Cl. 156-330.000.

P. D. George Company, The: *See*—
Lange, Daniel J., B 823,732, Cl. 528-289.000.

P. R. Mallory & Co. Inc.: *See*—
Klein, Gerhart P., B 769,369, Cl. 266-252.000.

Pachnik, Ben E. Radius router guide. 4,112,987, Cl. 144-323.000.

Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, to Montedison S.p.A. Process for preparing unsaturated carboxylic acids by gas phase catalytic oxidation of the corresponding aldehydes. B 734,248, Cl. 562-534.000.

Paginton, Philip Norman, to Westinghouse Brake & Signal Co. Ltd. Brake actuator. B 816,133, Cl. 188-196.00F.

Pako Corporation: *See*—
Diesch, Robert E., 4,112,801, Cl. 83-586.000.

Palfrey, Lesley Francis; and Fellows, Ronald John, to Thorn Domestic Appliances (Electrical) Ltd. Control system for drier. 4,112,589, Cl. 34-48.000.

Palkes, Mark, to Exxon Research & Engineering Co. Solar energy collector. 4,112,918, Cl. 126-270.000.

Palmer, Dale A., to Monroe Auto Equipment Company. Piston valve assembly for a shock absorber. B 829,954, Cl. 188-282.000.

Palmer, Harold D.: *See*—
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., B 791,434, Cl. 310-334.000.

Palmer, Jack P. Apparatus for driving wheeled vehicles. B 721,154, Cl. 180-33.00A.

Panetta, Anthony. Fire safety Christmas ornament. B 749,608, Cl. 169-26.000.

Panin, Vladlen Iosifovich: *See*—
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.

Pankove, Jacques Isaac; and Marlowe, Frank Jerome, to RCA Corporation. Solid state oscilloscope. B 775,864, Cl. 324-121.00R.

Pankove, Jacques Isaac; and Lampert, Murray Alfred, to RCA Corporation. Method of passivating a semiconductor device by treatment with atomic hydrogen. B 869,641, Cl. 148-1.500.

Pantukh, Boris Izrailevich: *See*—
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, B 788,590, Cl. 568-789.000.

Panzer, Hans Peter; O'Connor, Michael Niall Desmond; and Baccei, Louis J., to American Cyanamid Company. Unsaturated imidazolines. B 706,087, Cl. 526-258.000.

Pap, Zsolt: *See*—
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.

Papenfuhs, Theodor; and Volk, Heinrich, to Hoechst Aktiengesellschaft. Metal-containing disazomethine compounds, process for preparing them and their use as colorants. B 799,001, Cl. 260-439.00R.

Paquette, Edmund T.: *See*—
O'Toole, Jerome M.; and Paquette, Edmund T., B 832,729, Cl. 312-184.000.

Paquette, Rolland. Adjustable door latch striker. B 778,693, Cl. 292-341.180.

Park-Ohio Industries, Inc.: *See*—
Lewis, John C., B 835,157, Cl. 219-10.410.

Parker, Adrian Roger, to Partech (Electronics) Limited. Photoelectric sensing head with wiping means. B 784,415, Cl. 250-239.000.

Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, to Anumin Pty. Limited. Method of producing solutions containing cuprous ions. B 686,496, Cl. 423-512.00A.

Parker-Hannifin Corporation: *See*—
Hoffman, Robert K.; and Franson, David C., 4,112,968, Cl. 137-427.000.

Parkes, Alvin E., to Raymond Lee Organization, Inc., The, a part interest. Scavenging valve device. 4,112,940, Cl. 128-188.000.

Parkhitko, Vladimir Mikhailovich: *See*—
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.

Parks-Cramer Company: *See*—
Werst, Lyman L., 4,112,665, Cl. 57-81.000.

Parsons, Bruce B.; and Wolfe, Denis G., to Robertshaw Controls Company. Thermally responsive actuator. B 758,036, Cl. 337-387.000.

Partech (Electronics) Limited: *See*—
Parker, Adrian Roger, B 784,415, Cl. 250-239.000.

Parton, Brian, to Imperial Chemical Industries Limited. Quaternized azo dyestuffs. B 648,568, Cl. 260-146.00R.

Pasinski, Ralph R. Multiple operation traverse apparatus and methods of constructing and utilizing same. 4,112,995, Cl. 160-126.000.

Pastor, Stephen D.; and Grover, Martin M., to National Starch and Chemical Corporation. Pressure sensitive adhesive compositions. B 808,101, Cl. 260-834.000.

Patel, Gordhan M.: *See*—
Collin, Alvaro L.; and Patel, Gordhan M., 4,112,693, Cl. 405-132.000.

Patella, Ralph F.; and Kuzma, Edward J., to Celanese Corporation. Use of multifunctional monomers in the preparations of emulsions to be used in adhesives. B 856,829, Cl. 156-327.000.

Patellis, Anargiros Pete: *See*—
Douglas, Paul S.; Patellis, Anargiros Pete; and Vredenburgh, Walter A., B 636,340, Cl. 260-876.00B.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H.: *See*—
Wiedenmann, Hans, B 805,368, Cl. 313-315.000.

Paterson, Thomas: *See*—
Wood, Hamish Christopher Swan; and Paterson, Thomas, B 335,102, Cl. 424-180.000.

Patterson, George: *See*—
Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, B 601,628, Cl. 252-363.500.

Patterson, James A. Water level controller for swimming pool gutter. 4,112,526, Cl. 4-172.170.

Patton, Ray F.: *See*—
Fono, Andrew; and Patton, Ray F., B 680,198, Cl. 8-34.000.

Pauchard, Jean-Paul: *See*—
Siegrist, Adolf Emil; and Pauchard, Jean-Paul, B 850,861, Cl. 542-463.000.

Paulnack, Carl Lewis: *See*—
Katz, Lewis Emanuel; and Paulnack, Carl Lewis, B 853,126, Cl. 156-612.000.

Pautsch, Gunthard; and Kohlstette, Werner, to Westfalia Separator Aktiengesellschaft. Centrifuge whose drum casing is continuously cooled by a coolant circulated within an insert disposed in the solids chamber. B 811,421, Cl. 233-11.000.

Pawsat, Carlton P.; and Humlong, Robert F., to Wald Manufacturing Company, Inc. Bicycle stem and fork tube assembly. B 782,662, Cl. 403-22.000.

PCR, Inc.: *See*—
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, B 665,865, Cl. 544-303.000.

Peanut Research & Testing Laboratories, Inc.: *See*—
Baxley, James Russell, B 779,030, Cl. 426-509.000.

Pearl, David R., to Gerber Garment Technology, Inc. Fluid jet cutting apparatus. 4,112,797, Cl. 83-177.000.

Pearson, Stephen C., to Hercules Incorporated. Process for rapidly dissolving gels of water-soluble polymers by extrusion, cutting and then slurrying under high shearing forces. B 860,423, Cl. 260-29.6PM.

Pease, William Thomas, to Alproco, Inc. Level indicating instrument. 4,112,585, Cl. 33-388.000.

Peaster, Bertram Anthony, to Lockheed Corporation. Automatic lubricator. B 759,756, Cl. 184-41.000.

Pedain, Josef: *See*—
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, B 778,631, Cl. 260-859.00R.

Pejouhy, Radi, to Texas Instruments Incorporated. Current interrupting apparatus. B 728,350, Cl. 337-97.000.

Penberthy, H. Larry. Molten glass homogenizer. B 798,879, Cl. 65-178.000.

Pennwalt Corporation: *See*—
Hager, Robert Bonner; Toukan, Sameeh Said; and Walter, Gerald Joseph, B 459,132, Cl. 260-348.430.

Percy, Donald W., to Prelube Corporation. Pre-lube device. 4,112,910, Cl. 123-196.00S.

Perry, James E.: *See*—
Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., 4,112,794, Cl. 82-64.000.

Peterkin, Melvin E.: *See*—
Lauer, James L.; and Peterkin, Melvin E., B 791,089, Cl. 356-70.000.

Peters, Klaus-Jurgen: *See*—
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, 4,112,900, Cl. 123-139.0AW.

Peterson, Durey H.: *See*—
DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., B 834,285, Cl. 424-117.000.

Petrellis, Nicolas C.: *See*—
Sabol, Albert R.; and Petrellis, Nicolas C., B 773,346, Cl. 252-32.70E.

Petrick, Paul J., Sr., to Shooting Star Tennis. Ball collector and projector apparatus. 4,112,911, Cl. 124-56.000.

Petrie, Edward M., to Westinghouse Electric Corp. Low temperature cure epoxy-amine adhesive compositions. B 749,592, Cl. 260-29.2EP.

Petrolite Corporation: *See*—
Oude Alink, Bernardus A., B 812,888, Cl. 260-286.00A.
Quinlan, Patrick M., B 713,666, Cl. 424-78.000.

Pfaff Industriemaschinen GmbH: *See*—
Willenbacher, Erich, 4,112,859, Cl. 112-217.100.

PFD/Penn Color, Inc.: *See*—
Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, B 601,628, Cl. 252-363.500.

Pfister, Frieder: *See*—
Hafner, Hans Wilhelm; and Pfister, Frieder, 4,112,752, Cl. 73-147.000.

Pfister Waagen GmbH: *See*—
Hafner, Hans Wilhelm; and Pfister, Frieder, 4,112,752, Cl. 73-147.000.

Pfizer Inc.: *See*—
Barth, Wayne E., B 791,537, Cl. 544-23.000.
Hamsher, James J.; and Lozanov, Merrill, B 745,212, Cl. 195-36.00P.
Hess, Hans-Jurgen E., B 562,208, Cl. 562-503.000.
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., B 854,392, Cl. 260-347.300.

Pflasterer, Peter W., to Masco Corporation of Indiana. Crystalless scanning radio receiver. B 690,881, Cl. 325-470.000.

Phifer, Earl Cooper: *See*—
Howard, James Lynn, B 799,379, Cl. 324-66.000.

Philips Industries Inc.: *See*—
Bowker, Donald R.; Klein, Donald J.; and Rados, Stephen E., B 656,538, Cl. 264-295.000.

Phillips, Edwin R., to Sperry Rand Corporation. Edge vacuum guide for flexible members. B 486,245, Cl. 271-264.000.

Phillips, Howard W.: *See*—
Frazier, Albert A.; and Phillips, Howard W., B 837,519, Cl. 222-131.000.

Phillips, John F., Jr.: *See*—
McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., B 779,038, Cl. 423-308.000.

Phillips Petroleum Company: *See*—
Billings, William G., B 811,426, Cl. 260-607.0AR.
Dale, Glenn H., B 669,539, Cl. 203-62.000.
Doss, Richard C., B 794,893, Cl. 428-355.000.
Hatcher, Charles S.; and Smith, Kenneth E., 4,112,667, Cl. 57-157.00S.
Hitzman, Donald O., B 749,196, Cl. 166-303.000.
Louthan, Rector P.; and Doss, Richard C., B 737,948, Cl. 528-279.000.
Moczygemba, George A., B 711,029, Cl. 526-25.000.
Mowery, Richard A., Jr., 4,112,743, Cl. 73-61.10C.
Ragains, Wilbur G., 4,112,766, Cl. 73-422.0GC.
Stapp, Paul R., B 551,834, Cl. 560-246.000.
Stoller, Frederick L., B 723,394, Cl. 264-280.000.

Phillips, Reginald Andrew; Hamilton, Terence; and Thompson, Arthur David, to Dobson Park Industries Limited. Funneling machine with inclined advancing rams. B 734,637, Cl. 299-31.000.

Phinney, John M., to Falk Corporation, The. Marine propulsion control system with engine idle boost. B 759,390, Cl. 192-.098.

Picha, Donald A., to International Harvester Company. Rotary knife adjuster assembly. 4,112,654, Cl. 56-98.000.

Pickelman, Dale M., Sr.; and Wessling, Ritchie A., to Dow Chemical Company, The. Process for preparing substantially linear water-soluble interpolymeric interfacially spreading polyelectrolytes. B 776,167, Cl. 526-30.000.

Pickering & Company, Inc.: *See*—
Alexandrovich, George, B 790,391, Cl. 274-37.000.
Wittenberg, Roland C., B 790,397, Cl. 274-37.000.

Pickrell, John W. Container handling and transporting apparatus. B 770,398, Cl. 214-38.00D.

Pielkenrood, Jacob, to Pielkenrood-Vinitex B.V. Separation device provided with a coalescence apparatus. B 662,838, Cl. 210-522.000.

Pielkenrood-Vinitex B.V.: *See*—
Pielkenrood, Jacob, B 662,838, Cl. 210-522.000.

Pieper, Helmut: *See*—
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, B 812,325, Cl. 260-570.900.

Pierce, Donald, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Flexible aerofoils. B 781,866, Cl. 244-219.000.

Pierce, Donald Cameron. Device for cutting ovals in mats or glass sheets. 4,112,793, Cl. 82-1.300.

Pierce, Walker L., Jr.: *See*—
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., B 733,562, Cl. 428-565.000.

Pierre, Michel: *See*—
Lesas, Claude H.; and Pierre, Michel, B 731,895, Cl. 536-56.000.

Pieters, Wim J. M.; and Carlson, Emery J., to Allied Chemical Corporation. Catalyst of chlorination and combined chlorination/fluorination based on copper/calcium/fluoride. B 791,767, Cl. 252-438.000.

Pietrusza, Arthur Jacob; and Kent, Harry James, to Dravo Corporation. Rotary scraper in a rotary drum assembly. B 709,427, Cl. 435-222.000.

Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, to S. A. Labaz. 2-Phenyl-indole derivatives. B 667,557, Cl. 260-326.160.

Pike, Harold L., to Aspen Laboratories. Medical electronic apparatus and components. 4,112,950, Cl. 128-303.140.

Pike, Kenneth: *See*—
Nees, John; and Pike, Kenneth, B 734,311, Cl. 75-166.00C.

Nees, John; and Pike, Kenneth, B 768,960, Cl. 75-166.00C.
Pilkington Brothers Limited: *See—*
Cross, Raymond Peter, B 849,632, Cl. 65-114.000.
Pillar, Walter O., to Arco Polymers, Inc. Molding expandable styrene polymer particles. B 848,972, Cl. 521-60.000.
Pillsbury, Paul W.; and DeCorso, Serafino M., to Westinghouse Electric Corp. Apparatus and method for starting a large gas turbine having a catalytic combustor. 4,112,675, Cl. 60-39.060.
Pine, Lloyd A.: *See—*
Riley, Kenneth L.; and Pine, Lloyd A., B 773,427, Cl. 252-439.000.
Pingry, Carl Oscar, III: *See—*
Boyd, William Weller; Grafe, Robert Joseph; and Pingry, Carl Oscar, III, B 672,376, Cl. 340-147.00R.
Pirlet, Robert Alfred, to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie. Inspecting the interior of an enclosure. 4,112,763, Cl. 73-355.00R.
Pitchford, Peter R. Metal pallet. 4,112,854, Cl. 108-56.100.
Pitfield, Adrian: *See—*
Thompson, John; and Pitfield, Adrian, B 662,266, Cl. 252-90.000.
Pitney-Bowes, Inc.: *See—*
Brana, George; and Russell, John J., B 840,305, Cl. 252-62.10P.
Storace, Anthony, B 807,393, Cl. 177-211.000.
Pittoors, Jan Gustaaf: *See—*
Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, B 750,835, Cl. 55-97.000.
Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, B 829,515, Cl. 65-5.000.
Plasteco, Inc.: *See—*
Sandow, Kiyoshi, 4,112,620, Cl. 49-8.000.
Platt Saco Lowell Limited: *See—*
Lappage, James; Doggett, Neil; and Yates, Stephen William, 4,112,662, Cl. 57-34.0AT.
Plattner, Werner, executor: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, B 674,993, Cl. 424-272.000.
Ploeger, Walter, Jr., to Filmon Process Corp. Printing ribbon. B 578,581, Cl. 400-240.100.
Poeling, David L.: *See—*
Ouellette, Joseph Fernand; and Poeling, David L., 4,112,776, Cl. 73-665.000.
Poinsard, Elisabeth Michele; and Poinsard, Robert Gaston, to Establissement Valvin. Apparatus for purifying carbon dioxide vapors of fermenting liquids. 4,112,829, Cl. 99-277.000.
Poinsard, Robert Gaston: *See—*
Poinsard, Elisabeth Michele; and Poinsard, Robert Gaston, 4,112,829, Cl. 99-277.000.
Poisson, Bernard, to Regie Nationale des Usines Renault. Self-cleaning ejector-filter. B 787,514, Cl. 164-227.000.
Polak's Frutal Works, Inc.: *See—*
DeSimone, Robert Santora, B 819,517, Cl. 252-187.00H.
Polaroid Corporation: *See—*
Choinski, Edward J., B 801,144, Cl. 427-420.000.
Driscoll, John J.; and Wareham, Richard R., B 749,511, Cl. 354-76.000.
Evans, David H.; and Greenwald, Richard B., B 784,669, Cl. 260-327.00M.
Pole, Robert Vladimir; and Werlich, Harald Willy, to International Business Machines Corporation. Holographic opaque document scanner. B 798,042, Cl. 350-3.710.
Polotsky, Vadim Evgenievich: *See—*
Vasiliev, Vladimir Sergeevich; Annenberg, Ernest Alexandrovich; Livshits, Abram Lazarevich; Polotsky, Vadim Evgenievich; and Lakhtjukhov, Valery Mikhailovich, B 780,357, Cl. 219-69.00W.
Ponczak, Samuel; and Olmstead, John Aaron, to RCA Corporation. Method of forming a curved implanted region in a semiconductor body. B 763,721, Cl. 148-1.500.
Ponomarenko, Jury Filippovich: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Portalier, Robert: *See—*
Gauvry, Robert; and Portalier, Robert, B 778,233, Cl. 75-148.000.
Portnoy, Robert Charles, to Du Pont de Nemours, E. I., and Company. Arylthiodicyanopyrazines as plant disease control agents. B 805,150, Cl. 544-408.000.
Posi-Seal International, Inc.: *See—*
Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., B 797,921, Cl. 277-168.000.
Poskitt, Walter Edward, to IMASCO Limited. Electronic moisture meter. B 715,170, Cl. 324-61.0QS.
Possati, Mario, to Finike Italiana Marposs Soc. in Accomandita Semplice di Mario Possati & C. Measuring and control apparatus for internal grinding machines. 4,112,629, Cl. 51-165.930.
Pound, Thomas Charles; and Gouldson, Eric John, to Northern Telecom Limited. Paper pulp insulated cable and method of manufacture. B 672,366, Cl. 156-56.000.
Pounds, William J. Method and apparatus for railroad car shunting. B 777,032, Cl. 213-75.00R.
Pourrias, Bernard M.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., B 813,357, Cl. 544-360.000.
PPG Industries, Inc.: *See—*
Gillery, F. Howard, B 836,269, Cl. 204-192.00P.
Hahn, Ernest A., B 778,210, Cl. 427-44.000.
Hardies, Donald E.; and Rinehart, Jay K., B 784,874, Cl. 424-301.000.
Jozwiak, Edward L., Jr.; and Das, Suryya K., B 804,410, Cl. 204-181.00R.
McHenry, Donald L.; and Bechtel, Charles H., B 746,270, Cl. 106-287.180.
Niederst, Kenneth W., B 801,673, Cl. 260-22.00T.
Praschl, Wilhelm: *See—*
Theurer, Josef; Praschl, Wilhelm; and Riessberger, Klaus, B 672,276, Cl. 212-28.000.
Pratte, John R.: *See—*
Ehrhart, Leonard M.; Pratte, John R.; and Mazik, Paul E., Jr., 4,112,621, Cl. 49-400.000.
Preh-Elektrofeinmechanische Werke-Jakob Preh Nachf: *See—*
Hochgesang, Gerhard, B 707,337, Cl. 200-67.00C.
Prelube Corporation: *See—*
Percy, Donald W., 4,112,910, Cl. 123-196.00S.
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft; and Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Process for the preparation of propylene oxide. B 678,822, Cl. 260-348.250.
Pressley, Robert J.; and Fahlen, Theodore S., to GTE Sylvania Incorporated. Apparatus and method for initiating electrical discharge in a laser. B 773,826, Cl. 331-94.5PE.
Preston, Edward George; and Doerman, Eryk Stefan, to Molins Limited. Testing of cigarettes. 4,112,954, Cl. 131-21.00R.
Price, Brian George, to Imperial Chemical Industries Limited. Acrylic sheet having improved thermoshaping properties. B 580,147, Cl. 260-885.000.
Pries, Erich, to Dr. C. Otto & Comp. G.m.b.H. Rich-gas burner arrangement in heating flues for coke oven chambers. B 747,381, Cl. 202-139.000.
Priola, Aldo: *See—*
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, B 795,225, Cl. 260-683.15B.
Procter & Gamble Company, The: *See—*
Dirksing, Robert S.; and Todd, Estel R., B 845,064, Cl. 366-167.000.
Fleisch, Herbert A.; and Felix, Rolf, B 792,946, Cl. 424-204.000.
Fleisch, Herbert A.; and Felix, Rolf, B 792,947, Cl. 424-204.000.
Hagner, Clifford K.; and Wissel, Richard B., B 781,385, Cl. 252-8.600.
Protective Treatments, Inc.: *See—*
Wenrick, Brian A., B 753,449, Cl. 293-71.00R.
Pryor, Michael J.: *See—*
Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., B 784,155, Cl. 75-142.000.
Psencik, Erich, to Dynamit Nobel Aktiengesellschaft. Method of preparing polyester varnish resins of low viscosity. B 598,084, Cl. 528-75.000.
Pulliam, Daniel N.: *See—*
Lazenby, Webber W.; and Pulliam, Daniel N., B 820,930, Cl. 220-5.00A.
Pullman Incorporated: *See—*
Ehrhart, Leonard M.; Pratte, John R.; and Mazik, Paul E., Jr., 4,112,621, Cl. 49-400.000.
Rousseau, George L.; and Snyder, Richard C., 4,112,851, Cl. 105-199.00C.
Pupp, Herwig; and Andersson, Otto Birger, to AB Ziristor. Opening arrangement for packing containers. B 777,940, Cl. 206-606.000.
Purdue Frederick Company, The: *See—*
Shetty, Bola Vithal, B 797,094, Cl. 424-150.000.
Purohit, Kailash S.: *See—*
Henig, Yair Steve; and Purohit, Kailash S., B 771,486, Cl. 426-422.000.
Purviance, Billy Joe. Device for injecting a liquid into the trunk of a tree. 4,112,617, Cl. 47-57.500.
Puschmann, Sigfrid: *See—*
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, B 812,325, Cl. 260-570.900.
Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, to PFD/Penn Color, Inc. Producing dispersant compositions compatible with many resin systems. B 601,628, Cl. 252-363.500.
Putsch, Peter Ulrich, to Keiper Trainingsysteme GmbH & Co. Ergometer. 4,112,928, Cl. 128-2.05R.
Quellette Machinery Systems, Inc.: *See—*
Ouellette, Joseph Fernand; and Poeling, David L., 4,112,776, Cl. 73-665.000.
Quibell, Peter R., to Raymond Lee Organization, Inc., The, a part interest. Conga drum set. 4,112,807, Cl. 84-411.00R.
Quinlan, Patrick M., to Petrolite Corporation. Polyquaternary polythiazines. B 713,666, Cl. 424-78.000.
Quinn, Edwin J.: *See—*
Dieck, Ronald L.; Magnusson, Alan B.; and Quinn, Edwin J., B 878,679, Cl. 521-95.000.
Quinn, Jack Edward. Device for inserting and removing contact lens. B 858,436, Cl. 294-1.0CA.
Raab, Frederick Herbert, to Cincinnati Electronics Corporation. Position determining apparatus and method. B 710,298, Cl. 343-105.00R.
Raasch, Hans; and Muller, Lothar, to W. Schlafhorst & Co. Method and apparatus for winding conical coils or cheeses at constant thread-feeding velocity. B 633,707, Cl. 242-18.00R.
Rabet, Farroch: *See—*
Lehmkuhl, Herbert; and Rabet, Farroch, B 711,742, Cl. 252-363.500.
Rabi, Rafat T.; Murphy, Edward J.; and Basoms, John A., to DeSoto, Inc. Cathodic electrodeposition of polyamine resins using carbonic acid neutralization. B 745,240, Cl. 204-181.00C.
Rados, Stephen E.: *See—*
Bowker, Donald R.; Klein, Donald J.; and Rados, Stephen E., B 656,538, Cl. 264-295.000.
Radunz, Hans-Eckart: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, B 739,142, Cl. 424-205.000.
Ragains, Wilbur G., to Phillips Petroleum Company. Fluid actuated valve. 4,112,766, Cl. 73-422.0GC.
RAI Research Corporation: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., B 850,194, Cl. 429-33.000.
Rambacher, Paul; and Make, Siegfried, to Diamalt Aktiengesellschaft. Process for preparing orotic acid and thioorotic acid. B 831,053, Cl. 544-314.000.
Ramsower, Vernon. Quick latch for farm tool bar. B 769,433, Cl. 172-272.000.
Randall, John J., Jr.; and Bernard, Walter J., to Sprague Electric Company. Process for producing an aluminum electrolytic capacitor having a stable oxide film. B 791,656, Cl. 204-33.000.
Randall, Virginia G.: *See—*
Masri, Merle S.; Randall, Virginia G.; and Stanley, William L., B 827,659, Cl. 195-63.000.
Rank Xerox, Ltd.: *See—*
Harada, Masaaki; and Fujita, Tsuguto, B 816,773, Cl. 355-71.000.
Nishide, Hiroo; and Uehara, Yasuhiro, B 801,678, Cl. 219-216.000.
Ranko, Frederick E.: *See—*
Ranko, Jerry; and Ranko, Frederick E., 4,112,656, Cl. 56-320.100.
Ranko, Jerry; and Ranko, Frederick E. Lawn mowing brush cutter. 4,112,656, Cl. 56-320.100.
Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., to Texaco Inc. Hydroisomerization of normal paraffin with a catalyst of noble metal, alumina support and chlorine. B 774,099, Cl. 260-683.680.
Rapata, George M., to Illinois Tool Works Inc. Protective electrical device. B 810,532, Cl. 339-113.00R.
Rath, Gero: *See—*
Gudenau, H. W.; Konig, Horst; Rath, Gero; and Roth, Haye, B 771,748, Cl. 75-12.000.
Rath, Heinz-Jorg: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, B 737,249, Cl. 148-174.000.
Rau, G.: *See—*
Stockel, Dieter; and Schneider, Friedrich, 4,112,905, Cl. 123-169.0EL.
Raupach, Gerhard: *See—*
Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, 4,112,929, Cl. 128-2.05M.
Ray, Louis F. Constant balance crane. B 714,228, Cl. 212-71.000.
Ray, Ranjan: *See—*
Tanner, Lee E.; and Ray, Ranjan, B 823,080, Cl. 75-177.000.
Raychem Corporation: *See—*
Nyberg, David Dolph, B 856,500, Cl. 204-159.150.
Raygo, Inc.: *See—*
Carlson, Roger L., B 807,833, Cl. 173-49.000.
Raymond Lee Organization, Inc., The: *See—*
Muskus, Meryl L., 4,112,816, Cl. 87-12.000.
Parkes, Alvin E., 4,112,940, Cl. 128-188.000.
Quibell, Peter R., 4,112,807, Cl. 84-411.00R.
Raytheon Company: *See—*
Sandy, Frank; and Schulz, Manfred B., B 689,398, Cl. 333-72.000.
Razuvaev, Nikolai Ivanovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.
RB Toy Development Co.: *See—*
Imes, Jack, Jr., B 753,171, Cl. 273-95.00R.
RCA Corporation: *See—*
Ahmed, Adel Abdel Aziz, B 751,588, Cl. 324-51.000.
Chinery, Jack Joseph, B 790,199, Cl. 324-158.00D.
Curtice, Walter Richard, B 792,418, Cl. 307-260.000.
D'Amato, Ralph James, 4,112,562, Cl. 29-25.140.
DeStephanis, Ralph, B 801,728, Cl. 274-9.00B.
Herzog, Gerald Bernard, B 700,120, Cl. 250-211.00K.
Hollingsworth, Richard James, B 796,333, Cl. 307-362.000.
Hunka, George William, B 782,754, Cl. 250-202.000.
Katz, George, B 771,679, Cl. 148-23.000.
Nosker, Richard William, B 327,804, Cl. 427-140.000.
Pankove, Jacques Isaac; and Marlowe, Frank Jerome, B 775,864, Cl. 324-121.00R.
Pankove, Jacques Isaac; and Lampert, Murray Alfred, B 869,641, Cl. 148-1.500.
Ponczak, Samuel; and Olmstead, John Aaron, B 763,721, Cl. 148-1.500.
Willis, Donald Henry, B 819,187, Cl. 315-411.000.
Reagan, Larry L.: *See—*
Brown, William L.; and Reagan, Larry L., B 767,267, Cl. 214-16.40A.
Rechter, Harold L., to Chicago Fire Brick Company. Aluminous refractory composition. B 770,117, Cl. 106-67.000.
Reckitt & Colman Products Limited: *See—*
Scaife, Colin, 4,112,942, Cl. 128-225.000.
Rector, Charles B. Anti-pollution device for industrial stacks. B 811,129, Cl. 55-263.000.
Reeder, Thomas M., to United Technologies Corporation. Two-dimensional surface acoustic wave signal processor. B 820,474, Cl. 333-30.00R.
Regie Nationale des Usines Renault: *See—*
Poisson, Bernard, B 787,514, Cl. 164-227.000.
Rehder, Gunther: *See—*
Dadurian, Aram; and Rehder, Gunther, 4,112,522, Cl. 3-1.910.
Rehklau, George D., to Electro-Sound, Inc. Magnetic tape cartridge loading apparatus. B 738,899, Cl. 242-56.00R.
Reibetanz, Wilbert: *See—*
Wanner, Karl; and Reibetanz, Wilbert, B 749,034, Cl. 175-207.000.
Reid, Robert C.: *See—*
Modell, Michael; Reid, Robert C.; and Amin, Sanjay I., B 742,712, Cl. 48-202.000.
Reida, William D., to AMI Industries, Inc. Single pivot connection for a legrest. B 818,805, Cl. 297-433.000.
Reifsnyder, Howard B., to Construction Specialties, Inc. Foot grille. 4,112,640, Cl. 52-177.000.
Reineck, Lester W.: *See—*
Fields, Ernest E.; and Reineck, Lester W., B 823,614, Cl. 220-367.000.
Reinhardt, James R.; and Scott, Mark P., to ACF Industries, Incorporated. Valve closure for railway car cushioning device. B 833,947, Cl. 213-43.000.
Remkes, Elmer R.: *See—*
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., 4,112,695, Cl. 405-163.000.
Renco Corporation: *See—*
Carlson, David L., 4,112,927, Cl. 128-2.00V.
Renger, Udo: *See—*
Heitland, Herbert; and Renger, Udo, 4,112,878, Cl. 123-32.0ST.
Renner, Johann: *See—*
Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karlfried, B 757,422, Cl. 568-756.000.
Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,112,996, Cl. 160-296.000.
Research Corporation: *See—*
Hulka, Jaroslav Fabian; and Clemens, George Selden, 4,112,951, Cl. 128-346.000.
Research Engineering & Manufacturing, Inc.: *See—*
Wardwell, Charles H.; and Holcomb, Norman L., 4,112,812, Cl. 85-46.000.
Research Frontiers Incorporated: *See—*
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, B 795,819, Cl. 350-362.000.
Research Machine & Development, Inc.: *See—*
Wippich, Joachim, 4,112,716, Cl. 70-38.00C.
Resnick, Paul Raphael; and Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Method and apparatus for electrolysis of alkali or alkaline earth metal halide. B 835,804, Cl. 204-98.000.
Respiratory Care, Inc.: *See—*
Cambio, Orlando D., Jr., B 867,043, Cl. 215-1.00C.
Reuschling, Dieter-Bernd: *See—*
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, B 751,173, Cl. 424-274.000.
Reutlinger, Suzana: *See—*
Krasovec, Branko; Mihelic, Eli; and Reutlinger, Suzana, B 778,319, Cl. 426-56.000.
Reynolds Metals Company: *See—*
Weston, David, B 736,466, Cl. 75-2.000.
Reynolds, Rollin K.: *See—*
United States of America, National Aeronautics and Space Administration; Laumann, Eugene A.; and Reynolds, Rollin K., 4,112,875, Cl. 123-1.00A.
Rhode Island Hospital: *See—*
Abts, Leigh Roy, 4,112,773, Cl. 73-642.000.
Rhone-Poulenc S.A.: *See—*
Balme, Maurice; and Gruffaz, Max, B 297,738, Cl. 260-326.260.
Bost, Pierre-Etienne; and Lartigau, Guy, B 473,267, Cl. 260-592.000.
Richard, Gerard Yves, to Societe d'Applications de Procedes Industriels et Chimiques S.A.P.I.C. Process for regenerating foundry sand. B 730,829, Cl. 134-2.000.
Richard, Yves Robert: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, B 605,926, Cl. 204-180.00R.
Richardson, Eugene E.; and Sidorowicz, Frank, to Standard Oil Company (Indiana). Continuous process for sulfonating alkyl aromatics. B 741,842, Cl. 260-505.00S.
Richardson, Jack M.: *See—*
Graef, Harry T.; Richardson, Jack M.; and Wolfarth, Robert P., B 761,288, Cl. 221-6.000.
Richardson, Warner G.; and Wilson, Eugene M., to Caterpillar Tractor Co. Fender. B 826,576, Cl. 280-154.50R.

Richly, Walter: *See—*
Keiner, Hildegard; Schmid, Emil; and Richly, Walter, B 742,688, Cl. 427-108.000.
Richmond, Donald Louis, to Air Preheater Company, Inc., The. Bag tensioning arrangement. B 862,894, Cl. 55-378.000.
Richter, Sidney B.: *See—*
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., B 784,212, Cl. 71-88.000.
Ricoh Company, Ltd.: *See—*
Furukawa, Akio, B 796,072, Cl. 354-149.000.
Itoh, Tadanao, B 731,679, Cl. 360-2.000.
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, 4,112,867, Cl. 118-7.000.
Ricoh Educational Equipment Co., Ltd.: *See—*
Itoh, Tadanao, B 731,679, Cl. 360-2.000.
Riebel, Hans-Jochem: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, B 645,128, Cl. 424-200.000.
Riede, Gerhard, to Gambro AG. Diffusion device. B 802,363, Cl. 210-321.00B.
Riedle, Rudolf: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, B 808,767, Cl. 260-448.20E.
Riel, Klaus: *See—*
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, 4,112,900, Cl. 123-139.0AW.
Riessberger, Klaus: *See—*
Theurer, Josef; Praschl, Wilhelm; and Riessberger, Klaus, B 672,276, Cl. 212-28.000.
Rikimaru, Hiroaki: *See—*
Abe, Kazunobu; Rikimaru, Hiroaki; Yamazaki, Iwao; and Hasegawa, Hiroshi, B 753,323, Cl. 252-455.00R.
Riley, Kenneth L.; and Pine, Lloyd A., to Exxon Research & Engineering Co. Hydrotreating catalyst and process utilizing the same. B 773,427, Cl. 252-439.000.
Rinehart, Jay K.: *See—*
Hardies, Donald E.; and Rinehart, Jay K., B 784,874, Cl. 424-301.000.
Rissberger, C. Glen. Accessory kit and method for providing supplemental anti-sway control for automotive vehicles. B 797,740, Cl. 280-689.000.
Rivers, Ronald D., to Cabot Corporation. Method of injection molding powder metal parts. B 748,821, Cl. 75-214.000.
Riviere, Henry W.: *See—*
Faulkenberry, Wayne J.; and Riviere, Henry W., B 798,655, Cl. 330-207.00P.
Rizk, Samy F. Combination alveolar ridge protector and anesthetic administration aid. 4,112,934, Cl. 128-12.000.
Robbins, Clarence R.: *See—*
Carson, John C., Jr.; Robbins, Clarence R.; and Kenkare, Divaker B., 4,112,536, Cl. 15-104.940.
Robbins & Myers, Inc.: *See—*
Thomas, Richard J., 4,112,786, Cl. 74-606.00R.
Robert Bosch GmbH: *See—*
Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, 4,112,929, Cl. 128-2.05M.
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.
Manger, Hansjorg; Sohner, Gerhard; and Hohne, Gerd, 4,112,890, Cl. 123-117.00R.
Olbrich, Gottfried; and Weigert, Wilhelm, 4,112,978, Cl. 138-30.000.
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, 4,112,900, Cl. 123-139.0AW.
Wanner, Karl; and Reibetanz, Wilbert, B 749,034, Cl. 175-207.000.
Roberts Corporation: *See—*
Gasper, Stephen A., 4,112,999, Cl. 164-154.000.
Roberts, Jack C. Drying rack assembly for bathing compartments. 4,112,525, Cl. 4-154.000.
Robertshaw Controls Company: *See—*
Parsons, Bruce B.; and Wolfe, Denis G., B 758,036, Cl. 337-387.000.
Robinson, Don: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin; and Robinson, Don, B 770,186, Cl. 273-108.000.
Robinson, Hugh A.: *See—*
Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., 4,112,762, Cl. 73-343.00R.
Robinson, John William; Crosby, Thomas C.; and Howell, Stephen Louis, to Kimball International, Inc. Organ circuitry for providing fill notes and method of operating the organ. 4,112,802, Cl. 84-1.010.
Roccisano, Janet: *See—*
Ferrara, Louis Thomas; and Roccisano, Janet, 4,112,924, Cl. 128-2.00F.
Roces, Rafael Tuti. Hydraulic coupling and speed multiplying mechanism. 4,112,681, Cl. 60-539.000.
Rock, Erich; and Mages, Bernhard, to Julius Blum Gesellschaft M.B.H. Furniture hinge. 4,112,543, Cl. 16-164.000.
Rocket Research Corp.: *See—*
Van Ornum, Joel V.; and Stang, Peter L., B 595,351, Cl. 260-876.00B.
Rockwell International Corporation: *See—*
Grant, Louis R.; and Flanagan, Joseph E., B 732,624, Cl. 260-564.00G.
Hamilton, C. Howard; and Ascani, Leonard A., B 736,671, Cl. 148-11.50R.
Loyd, Morris S., B 791,360, Cl. 428-162.000.
Shutt, Sidney G., B 768,511, Cl. 356-106.0LR.
Thackston, Clyde David; and Alexander, Robert H., B 811,423, Cl. 192-150.000.
Rodach, Alexander, to Irma Ungerer Geb. Dollinger. Reel for coiling strip. B 779,465, Cl. 242-78.300.
Rodda, John C., to Xerox Corporation. Cleaning apparatus for reproducing machine. B 800,581, Cl. 355-15.000.
Rodgers, Lewis. Rotating kite. B 840,979, Cl. 244-153.00A.
Rogers Corporation: *See—*
McGarry, Francis J.; Greene, Donald; and Otto, Jeffrey B., B 847,571, Cl. 162-123.000.
Rogers, Ronald D., to Alco Standard Corporation. Method for circulating a heat treating gas. B 781,113, Cl. 432-25.000.
Rogler, Walter: *See—*
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, B 706,864, Cl. 260-448.80A.
Rohm GmbH: *See—*
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, B 827,771, Cl. 260-463.000.
Rohm and Haas Company: *See—*
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.
Smiley, Leonard H., B 686,193, Cl. 428-310.000.
Rohr, Harry: *See—*
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, B 400,980, Cl. 260-876.00R.
Rohr, Karl, to Kraftwerk Union Aktiengesellschaft. Auxiliary bearing for determining radial and axial play of turbine shafts. B 742,195, Cl. 308-9.000.
Roller Bearing Company of America: *See—*
Koch, Hans W., B 755,445, Cl. 308-187.100.
Rollo, Anita Hand; and Stearns, David Burrell, to International Business Machines Corporation. Automated hemodialysis treatment systems. B 749,585, Cl. 210-22.00A.
Rolls-Royce Limited: *See—*
Aldridge, Trevor John; Lock, Alan Howard; and Bell, Robert Martin Alistair, 4,112,747, Cl. 73-116.000.
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, to Neste Oy. Photosensitive material containing di-iodopropyl cellulose, process for its manufacture and the use of this material. B 768,494, Cl. 96-1.0PC.
Romey, Ingo: *See—*
Kroger, Carl; Romey, Ingo; and Kolling, Georg, B 649,920, Cl. 264-120.000.
Rones, Josef; Moller, Siegfried; and Hoch, Helmut, to Oxy Metal Industries Corporation. Corrosion inhibitor for metal surfaces. B 781,820, Cl. 106-14.130.
Rose, John Brewster; and Staniland, Philip Anthony, to Imperial Chemical Industries Limited. Production of aromatic polymers. B 810,355, Cl. 528-126.000.
Rosenthal, Arthur Lee; Alpern, Marvin; and Meisch, Charles Edward, to Howmedica Inc. Apparatus for collecting body fluid. 4,112,949, Cl. 128-278.000.
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., to Rohm and Haas Company. Asymmetric skein dyeing. 4,112,714, Cl. 68-206.000.
Ross, Ian Norman: *See—*
Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, B 700,037, Cl. 356-110.000.
Ross, John P.; and Bernardi, Carl E., to National Semiconductor Corporation. Method for plating semiconductor chip headers. B 776,162, Cl. 204-15.000.
Rossmanith, Otto, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Hose pump with friction drive of hollow, resilient roller means. B 764,022, Cl. 417-477.000.
Roth, Haye: *See—*
Gudenau, H. W.; Konig, Horst; Rath, Gero; and Roth, Haye, B 771,748, Cl. 75-12.000.
Rousseau, George L.; and Snyder, Richard C., to Pullman Incorporated. Resilient constant contact center bearing assembly. 4,112,851, Cl. 105-199.00C.
Rowland, Bob G.: *See—*
Johnson, Peter E.; and Rowland, Bob G., B 604,350, Cl. 429-143.000.
Royce Chemical Company: *See—*
Fono, Andrew; and Patton, Ray F., B 680,198, Cl. 8-34.000.
Royon, Jean Paul: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, B 605,926, Cl. 204-180.00R.
Ruby, William S.: *See—*
Hochstrasser, Otto; and Ruby, William S., B 826,189, Cl. 13-2.00R.
Ruckel, Erwin Richard; and Wang, Long Shyong, to Arizona Chemical Company. Polymerization of α-pinene. B 814,527, Cl. 252-429.00B.
Rudd, Wallace C.: *See—*
DuBosque, Clayton, Jr.; Rudd, Wallace C.; and Allen, Richard J., 4,112,566, Cl. 29-157.30C.
Ruenzi, Kurt. Apparatus for automatically feeding individual sheets from a stack through an office machine. B 779,755, Cl. 271-4.000.
Ruhnau, Gerhard; Gudat, Wolfgang; Liermann, Peter; and Hesse, Karl-Heinz, to WABCO Westinghouse GmbH. Digital control circuit for producing acceleration and deceleration control signals in an antiskid control system. B 809,886, Cl. 303-105.000.
Rumpp, Gerhard: *See—*
Kuhlmann, Wolf; and Rumpp, Gerhard, 4,112,813, Cl. 85-74.000.
Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., to Gas Developments Corporation. Air conditioning process. B 738,481, Cl. 165-3.000.
Russell, John J.: *See—*
Brana, George; and Russell, John J., B 840,305, Cl. 252-62.10P.
Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, to Allied Chemical Corporation. Process for preparing high strength polyamide and polyester filamentary yarn. B 829,764, Cl. 264-210.00F.
Rutgerswerke Aktiengesellschaft: *See—*
Gardziella, Arno; and Jellinek, Karl, B 650,649, Cl. 427-195.000.
Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, B 704,600, Cl. 526-64.000.
Ruti Machinery Works Ltd.: *See—*
Freisler, Erhard, 4,112,981, Cl. 139-102.000.
Ruti Machinery Works Ltd: *See—*
Oderbolz, Fredy; and Bebie, Paul, 4,112,983, Cl. 139-446.000.
Rutman, Grigory Iosifovich: *See—*
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, B 788,590, Cl. 568-789.000.
Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., to Celanese Corporation. Trihalogenated hydrocarbons as co-photoinitiators. B 568,216, Cl. 204-159.160.
Ryder, Lyle C.: *See—*
Hill, Robert W.; Onnen, William G.; and Ryder, Lyle C., B 719,696, Cl. 264-262.000.
Rylander, DeMaris C. Child's playhouse type collapsible structure. 4,112,635, Cl. 52-69.000.
Ryzhov, Vladimir Dmitrievich; Litvinenko, Semen Kirillovich; Leikin, Roman Samuilovich; Kulberg, Anton Yanovich; Ioffe, Benyamin Alexandrovich; and Kalnin, Robert Karlovich. Device for contactless separation of individual ferromagnetic components from a flow of components. B 704,693, Cl. 221-171.000.
S. A. Beghin-Say: *See—*
Lesas, Claude H.; and Pierre, Michel, B 731,895, Cl. 536-56.000.
S. A. Labaz: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, B 667,557, Cl. 260-326.160.
Saab-Scania AB: *See—*
Bos, Frans, B 760,746, Cl. 296-137.00J.
Sabol, Albert R.; and Petrellis, Nicolas C., to Standard Oil Company (Indiana). Metal aryl dithiophosphates and their manufacture. B 773,346, Cl. 252-32.70E.
Sachetto, Jean-Pierre: *See—*
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, B 768,494, Cl. 96-1.0PC.
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, to Bayer Aktiengesellschaft. Emulsions of resinic acid isocyanates as sizing agents for paper. B 749,455, Cl. 106-238.000.
Saegusa, Shigeharu: *See—*
Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, B 764,983, Cl. 219-10.49R.
Sahara, Takeshi: *See—*
Obinata, Shiro; Hashimoto, Shigeru; and Sahara, Takeshi, B 613,928, Cl. 209-167.000.
Said, Sami I.; and Mutt, Viktor. Vasoactive lung polypeptides. B 649,968, Cl. 260-112.00R.
Saijo, Shigeyoshi: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, B 793,920, Cl. 424-274.000.
Saiki, Atsushi; Okubo, Toshio; and Harada, Seiki, to Hitachi, Ltd. Method for fabricating semiconductor device and etchant for polymer resin. B 695,040, Cl. 156-656.000.
Sailas, Vaino, to Valmet Oy. Method of making strip-covered roll. 4,112,565, Cl. 29-148.40D.
Sain, Paul E., to Games Research Associates. Simulated golf game and materials therefor. B 769,557, Cl. 273-245.000.
Saint-Gobain Industries: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, B 829,515, Cl. 65-5.000.
Mattmuller, Rene, B 767,441, Cl. 65-135.000.
St. Luke's Hospital: *See—*
Hashim, George A., B 648,379, Cl. 424-177.000.
Saito, Isamu. Extracting black tea and coffee and closed extractor therefor. 4,112,830, Cl. 99-300.000.
Saito, Toranosuke: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, B 812,737, Cl. 260-874.000.
Saito, Toshinori: *See—*
Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, B 588,555, Cl. 544-27.000.
Sakai Chemical Industry Co., Ltd.: *See—*
Abe, Kazunobu; Rikimaru, Hiroaki; Yamazaki, Iwao; and Hasegawa, Hiroshi, B 753,323, Cl. 252-455.00R.
Sakai, Masaaki: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, B 798,313, Cl. 274-15.00R.
Sakamoto, Yohei: *See—*
Kato, Hisao; and Sakamoto, Yohei, 4,112,602, Cl. 37-55.000.
Sakanaka, Takao, to Hitachi, Ltd. Coupling device of oil feeding pipe for rolling mill. 4,112,729, Cl. 72-236.000.
Sakurai, Toshio; Shimada, Shoji; and Kamimura, Yoshiharu, to Nippon Steel Corporation. Rust-proof lubricant compositions. B 710,312, Cl. 252-49.600.
Sala, Angelo, to Massey-Ferguson Services N.V. Controls for hydraulic valves. 4,112,976, Cl. 137-636.200.
Saladin, Emil: *See—*
Zondler, Helmut; Saladin, Emil; and Kirchmayr, Rudolf, B 806,044, Cl. 521-108.000.
Sales, Buenaventura Z. Draw strings puller and fastener. 4,112,551, Cl. 24-117.000.
Salles, Yvon; Leger, Pierre; and David, Gerard Andre, to U.S. Philips Corporation. Apparatus for etching the edges of semiconductor plates. B 729,345, Cl. 156-345.000.
Salomon, Georges Pierre Joseph, to S.A. des Etablissements Francois Salomon & Fils. Devices for fastening ski boots. 4,112,557, Cl. 24-69.0SK.
Samuelson, Hans Olof, to Mo Och Domsjo Aktiebolag. Sodium sulfide pulping with hydrogen sulfide generation. B 763,203, Cl. 162-34.000.
Samuelsson, Kurt Anders, to Telefonaktiebolaget L M Ericsson. Method for improvement of crosstalk attenuation between adjacent channels in a time division multiplex system. B 757,863, Cl. 179-15.0AN.
Sanderson, Richard Barton, to Bell Telephone Laboratories, Incorporated. Voltage controlled current sources for active hybrid circuit. B 798,787, Cl. 179-170.0NC.
Sandhu, Mohammad Akram; and Tingler, Kenneth Lloyd, to Eastman Kodak Company. Amorphous polyester adhesives for photographic materials. B 778,635, Cl. 96-67.000.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,112,713, Cl. 68-5.00E.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Selvage curling prevention apparatus for a knitted cloth. 4,112,713, Cl. 68-5.00E.
Sandor, Leslie W., to Electric Machinery Mfg. Company. Welding of laminations of core-plated silicon steel. B 753,430, Cl. 219-137.00R.
Sandow, Kiyoshi, to Plasteco, Inc. Smoke and heat vent. 4,112,620, Cl. 49-8.000.
Sandoz, Inc.: *See—*
Denzer, Max; and Smith, Joseph A., B 790,896, Cl. 544-362.000.
Sands, Terry Michael. Board game apparatus with water ejecting device. B 745,614, Cl. 273-241.000.
Sandy, Frank; and Schulz, Manfred B., to Raytheon Company. Wide band low loss acoustic wave device. B 689,398, Cl. 333-72.000.
Sanford, Dale J., to Curfman, Brainerd, Harris, Bell, Weigans and Depew. Apparatus for disassembling pallets. 4,112,578, Cl. 29-700.000.
Sangamo Weston, Inc.: *See—*
Andreaggi, Joseph R., B 840,854, Cl. 339-176.0MP.
Sanko Kaihatsu Kagaku Kenkyusho: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, B 812,737, Cl. 260-874.000.
Sano, Hiroshi, to Tomy Kogyo Co., Inc. Toy garage. 4,112,610, Cl. 46-12.000.
Sano, Takezo; Kobayashi, Akira; and Inoue, Haruo, to Sumitomo Chemical Company, Limited. Method for producing strong-acid cation exchange fiber by treating fibrous polyethylene with gaseous sulfur trioxide. B 699,255, Cl. 521-29.000.
Santa Fe International Corp.: *See—*
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., 4,112,695, Cl. 405-163.000.
Sanyo-Kokusaku Pulp Co., Ltd.: *See—*
Shirakawa, Kiyoshi, B 803,932, Cl. 229-37.00R.
Saoyama, Yoshihito: *See—*
Nomaki, Koji; and Saoyama, Yoshihito, 4,112,868, Cl. 118-429.000.
Sarfati, Pierre, to Thomson-CSF. Arrangement enabling the contrast to be improved between the main echo video-frequency signal and a secondary echo video-frequency signal received by a pulse compression radar. B 818,221, Cl. 343-17.2PC.
Sargent, Donald E.: *See—*
Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., B 568,216, Cl. 204-159.160.
Satake, Yasuo: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, B 788,971, Cl. 179-84.00R.
Sato, Hideaki: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.
Sato, Jiro, to Fujiwa Kika Kabushiki Kaisha. Pouring method and apparatus therefor. 4,112,998, Cl. 164-136.000.
Sato, Masamichi, to Fuji Photo Film Co., Ltd. Method for producing a photomask. B 694,423, Cl. 96-36.000.
Sato, Masamichi; and Fujii, Itsuo, to Fuji Photo Film Co., Ltd. Spin coating process. B 785,886, Cl. 96-67.000.
Sato, Seii: *See—*
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andóh, Shizuo, B 767,690, Cl. 315-169.0TV.

Sato, Takami: *See*—
Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, B 723,977, Cl. 264-89.000.
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, to Sony Corporation. Phonograph record player. B 798,313, Cl. 274-15.00R.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Portable label printing and applying machine. B 750,845, Cl. 156-384.000.
Satoh, Isao: *See*—
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, B 720,502, Cl. 209-1.000.
Satoh, Shui: *See*—
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, B 656,084, Cl. 96-66.00R.
Satou, Kouichirou: *See*—
Manabe, Kenshi; and Satou, Kouichirou, B 801,254, Cl. 307-279.000.
Saucy, Gabriel: *See*—
Cohen, Noal; and Saucy, Gabriel, B 797,712, Cl. 260-340.90R.
Saunders Valve Company Limited: *See*—
Jones, Alan Philip, B 761,900, Cl. 264-269.000.
Sauvage, Joseph. Drafting machine. 4,112,548, Cl. 19-243.000.
Savage, Bobbie O. Method and apparatus for selectively preventing or permitting sap flow to control bud formation. 4,112,616, Cl. 47-1.00R.
Savage, Bobbie O. Method and apparatus for selectively preventing or permitting systemic sap flow to control bud formation. 4,112,618, Cl. 47-58.000.
Savanick, George A.; and Krawza, Walter G., to United States of America, Interior. Well perforating method for solution well mining. B 809,881, Cl. 299-4.000.
Savitt, Jacob, to United States of America, Navy. Apparatus for detonating across a gap. 4,112,845, Cl. 102-27.00R.
Sawada, Takamasa: *See*—
Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, B 806,515, Cl. 355-45.000.
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, to Research Frontiers Incorporated. Light valve, light valve suspension materials and suspension therefor. B 795,819, Cl. 350-362.000.
Scaife, Colin, to Reckitt & Colman Products Limited. Method of preparing and administering a foam enema. 4,112,942, Cl. 128-225.000.
Schaaf, Thomas K.: *See*—
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., B 854,392, Cl. 260-347.300.
Schacham, Samuel E.: *See*—
Epstein, Max; Marhic, Michel E.; and Schacham, Samuel E., B 753,292, Cl. 331-94.50C.
Schafer, Werner; Buchwald, Holger; and Bischoff, Dieter, to Carl Freudenberg, Firma. Heat resistant nonwoven fabric and method of manufacturing same. B 637,488, Cl. 428-220.000.
Schafers, Heinrich Bernhard. Dowels and process for anchoring dowels. 4,112,814, Cl. 85-75.000.
Schafft, Hugo Willy, to Motorola, Inc. Electro-optic matrix display. B 756,216, Cl. 350-150.000.
Scharff, Dieter: *See*—
Haage, Karl; and Scharff, Dieter, B 609,944, Cl. 428-111.000.
Scheid, Lloyd J. Movable partition wall system. 4,112,647, Cl. 52-481.000.
Scheidler, Ralph E. Dual voltage battery system and electronic switch therefor. B 812,441, Cl. 320-7.000.
Schenk, Bernd, to ITW-Ateco G.m.b.H. Filler connection for vehicles driven by internal combustion engines. B 741,187, Cl. 296-1.00C.
Schenk, Hanspeter, to Givaudan Corporation. 2-Ethyl-6,6-dimethyl-2-cyclohexene-1-carboxylic acid ethyl ester perfume compositions. B 729,521, Cl. 252-522.000.
Scher, Bernard B. Fishing pole holding apparatus. 4,112,607, Cl. 43-17.000.
Scherenberg, Dieter: *See*—
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.
Schering AG: *See*—
Kruger, Hans, B 823,526, Cl. 260-306.80D.
Schering Aktiengesellschaft: *See*—
Arnold, Hanfried, B 751,676, Cl. 260-397.400.
Scheuermann, Horst: *See*—
Opgenorth, Hans-Joachim; and Scheuermann, Horst, B 810,950, Cl. 260-305.000.
Schibbye, Hjalmar; and Eriksson, Lennart, to Svenska Rotor Maskiner Aktiebolag. Method and means for cooling the oil in a system including a compressor with oil supply, as well as such systems. 4,112,701, Cl. 62-84.000.
Schiller, Rolf. Refuse collecting system and a vehicle and container for use therein. B 752,845, Cl. 214-302.000.
Schillinger, John D. Precision grader. B 822,747, Cl. 404-91.000.
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, to Barmag Barmer Maschinenfabrik AG. Process for producing low shrinkage film bands. B 722,558, Cl. 526-351.000.
Schlatter, James M.; and Goodmonson, Owen, to G. D. Searle & Co. Method for cleaving the peptide-resin bond in solid phase peptide synthesis by hydrogenolysis. B 807,083, Cl. 260-112.50R.
Schlecht, Helmut: *See*—
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, B 743,517, Cl. 260-465.50A.
Schlesinger, Sheldon I., to American Can Company. Compositions with organohalogen compound and diazonium salts as photoinitiators of epoxy compounds in photo-polymerization. B 658,207, Cl. 96-115.00P.
Schliephake, Dietrich: *See*—
Kurandt, Hans-Friedrich; and Schliephake, Dietrich, B 740,469, Cl. 423-170.000.
Schlosberg, Seymour; and Lerman, Michael J., to De Dietrich (USA), Inc. Method for repairing protectively lined reactor vessels. 4,112,572, Cl. 29-401.00R.
Schmid, Emil: *See*—
Keiner, Hildegard; Schmid, Emil; and Richly, Walter, B 742,688, Cl. 427-108.000.
Schmidt, Erich, to Maschinenfabrik Zuckermann Komm. Ges. Duplicating grinding machine. 4,112,628, Cl. 51-140.000.
Schmidt, Felix Helmut: *See*—
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, B 674,993, Cl. 424-272.000.
Schmidt, Robert W. Adhesive dispensing device. B 777,022, Cl. 222-485.000.
Schnall, Gunther: *See*—
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, B 699,341, Cl. 355-8.000.
Schneider, Carl Michael, to Siemens Aktiengesellschaft. Electronic telephone system featuring switching networks having thyristors for single-wire switching. B 773,318, Cl. 179-18.0GF.
Schneider, Friedrich: *See*—
Stockel, Dieter; and Schneider, Friedrich, 4,112,905, Cl. 123-169.0EL.
Schneider, Heinz-Walter: *See*—
Kummer, Rudolf; Schneider, Heinz-Walter; and Schwirten, Kurt, B 780,297, Cl. 260-429.00R.
Schoen, William: *See*—
Ledoux, Will A.; Schoen, William; and Kumar, Atul, B 738,494, Cl. 166-275.000.
Schott, Charles W. Glass bead product. B 680,691, Cl. 428-402.000.
Schrauzer, Gerhard N.; and Guth, Ted D., to University of California, The Regents of the. Photoreduction of nitrogen. B 812,478, Cl. 204-157.10R.
Schreyer, Gerd: *See*—
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Schroeder, Guenter: *See*—
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, B 827,771, Cl. 260-463.000.
Schroth, Gerhard Wolfgang: *See*—
Fuhrman, Gunther Georg; Krogmann, Uwe Jonny; and Schroth, Gerhard Wolfgang, 4,112,856, Cl. 110-165.00R.
Schubert, Bernhard: *See*—
Bardenhagen, Dietrich; and Schubert, Bernhard, 4,112,651, Cl. 53-449.000.
Schulman, Jerome L.; and Kaplan, Jay, to Children's Memorial Hospital, The. Method and apparatus for measuring and treating hyperactivity in human beings. 4,112,926, Cl. 128-2.00S.
Schulz, Friedrich Wilhelm: *See*—
Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, B 783,407, Cl. 356-155.000.
Schulz, Manfred B.: *See*—
Sandy, Frank; and Schulz, Manfred B., B 689,398, Cl. 333-72.000.
Schulze, Heinz; and Waddill, Harold G., to Texaco Development Corporation. Polyether diamide epoxy additives. B 743,818, Cl. 528-94.000.
Schumacher, Ignatius; and White, James E., to Monsanto Company. Acrylic polymerization inhibition. B 734,893, Cl. 203-8.000.
SCHUMAG Schumacher Metallwerke Gesellschaft mit beschankter Haftung: *See*—
Wetzels, Walter, 4,112,625, Cl. 51-33.00W.
Schumag Schumacher Metallwerke Gesellschaft mit beschrankter Haftung: *See*—
Greven, Johann; and Mostert, Johann, 4,112,730, Cl. 72-290.000.
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, to PCR, Inc. 5-Fluorouracil derivatives. B 665,865, Cl. 544-303.000.
Schumann, Werner Adolf: *See*—
Haarhoff, Pierre Cloete; and Schumann, Werner Adolf, B 819,016, Cl. 55-17.000.
Schundehutte, Karl Heinz: *See*—
Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, B 813,311, Cl. 8-41.00R.
Schuster, Herbert: *See*—
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, B 400,980, Cl. 260-876.00R.
Schuster, Joachim: *See*—
Noack, Rolf; Schuster, Joachim; and Lohse, Udo, 4,112,728, Cl. 72-154.000.
Schwan, Thomas J., to Morton-Norwich Products. Inc. 2-[[6-Methoxy-(3,4-dihydro-2H-1-benzopyranyl)]amino]-1-phenylpropanol hydrochloride. B 783,811, Cl. 260-345.500.
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, to Robert Bosch GmbH. Fuel injection system. 4,112,900, Cl. 123-139.0AW.
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, to BASF Aktiengesellschaft. Manufacture of homopolymers and copolymers of α-monoolefins. B 762,858, Cl. 526-124.000.
Schweiger, Fritz, to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen. Method of removing the decay heat of radioactive fission products. B 674,483, Cl. 176-38.000.
Schwerdtel, Wulf: *See*—
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Schwirten, Kurt: *See*—
Kummer, Rudolf; Schneider, Heinz-Walter; and Schwirten, Kurt, B 780,297, Cl. 260-429.00R.
Schwob, Hans Peter: *See*—
Von Allmen, Martin; and Schwob, Hans Peter, B 728,403, Cl. 219-121.0LM.
Scientific Dimensions, Inc.: *See*—
O'Connell, Joseph J., B 785,326, Cl. 248-221.300.
Scintrex Limited: *See*—
Kaufman, Aleksander Arkadi, B 774,780, Cl. 324-1.000.
Scott, Donald M., to Fibre Containers Company. Packing box for china. B 737,600, Cl. 206-523.000.
Scott, Herman B. Coffee blenders. 4,112,831, Cl. 99-306.000.
Scott, Mark P.: *See*—
Reinhardt, James R.; and Scott, Mark P., B 833,947, Cl. 213-43.000.
Scott Paper Company: *See*—
Colby, Donald B., 4,112,855, Cl. 108-159.000.
Scott, Timothy C.: *See*—
Davis, Gerald L.; and Scott, Timothy C., 4,112,974, Cl. 137-625.290.
Sealectro Corporation: *See*—
Baio, Alfred R.; and Genovese, David L., B 800,732, Cl. 235-458.000.
Seatek Corporation: *See*—
Bergman, Gunnar B., 4,112,864, Cl. 114-265.000.
Seaver, William H. Apparatus for enabling the motion of a scriber to be reproduced. 4,112,597, Cl. 35-36.000.
Sebby, Carl M. Tow bar with towed vehicle suspension feature. B 812,896, Cl. 280-402.000.
Seco Tools Aktiebolag: *See*—
Loqvist, Kaj-Ragnar, 4,112,564, Cl. 29-148.40D.
Secretary of State for Social Services, The: *See*—
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, B 712,164, Cl. 422-63.000.
Seifert, Hermann: *See*—
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Seiferth, Reinhard: *See*—
Wiedemann, Kurt; and Seiferth, Reinhard, B 056,013, Cl. 343-7.700.
Seikagaku Kogyo Co., Ltd.: *See*—
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, B 780,843, Cl. 195-68.000.
Seiko Koki Kabushiki Kaisha: *See*—
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, B 766,745, Cl. 354-249.000.
Seki, Shigeo: *See*—
Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, B 588,555, Cl. 544-27.000.
Seki, Teruya: *See*—
Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, B 671,693, Cl. 260-397.450.
Sekiguchi, Tadao, to Trio Kabushiki Kaisha. Digital frequency display device. B 767,832, Cl. 325-455.000.
Sekiguchi, Tetsuo: *See*—
Minagawa, Motonobu; Ohzeki, Toshio; and Sekiguchi, Tetsuo, B 806,521, Cl. 260-23.70M.
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, to Sumitomo Chemical Company, Limited. Process for polymerizing vinyl chloride monomer. B 874,748, Cl. 526-74.000.
Sekino, Jun: *See*—
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, B 686,154, Cl. 424-317.000.
Sekisui Kaseikin Kogyo Kabushiki Kaisha: *See*—
Matsui, Takashi; Sugimura, Sadao; and Noo, Kunio, B 703,421, Cl. 264-230.000.
Sekmakas, Kazys, to DeSoto, Inc. Rapid curing high solids thermosetting coatings. B 726,141, Cl. 260-850.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, to Sulzer Brothers Limited. Method of improving the operation of backwashable fixed beds formed of granular materials. B 771,958, Cl. 210-17.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, to Sulzer Brothers Limited. Method of improving the backwashing of fixed beds formed of granular materials. B 771,959, Cl. 210-17.000.
Semenov, Vladimir Ivanovich: *See*—
Glushkov, Alexandr Ivanovich; Krutov, Sergei Vasilievich; Semenov, Vladimir Ivanovich; and Gusev, Anatoly Fedorovich, 4,112,547, Cl. 17-57.000.
Senkus, Raymond: *See*—
Andrews, Jeffrey F.; Mullin, Therese A.; and Senkus, Raymond, B 758,342, Cl. 424-81.000.
Seo, Mamoru; and Uenishi, Akio, to Mitsubishi Denki Kabushiki Kaisha. Coupling circuit using a photocoupler. B 764,177, Cl. 307-311.000.
Servo Corporation of America: *See*—
Glazar, Arthur J., B 841,700, Cl. 246-169.00A.
Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, to Merck Patent Gesellschaft mit Beschrankter Haftung. 2-Acyl-4-oxo-pyrazino-isoquinoline derivatives and process for the preparation thereof. B 742,132, Cl. 424-250.000.
Seuter, Friedel: *See*—
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 693,971, Cl. 548-377.000.
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 766,235, Cl. 424-273.00P.
Severdia, Anton; and Joseph, Adrian. Rotisserie and clockwork motor therefor. 4,112,832, Cl. 99-421.0HH.
Sfredda, Albert Patrick. Torque transmission device. 4,112,788, Cl. 74-804.000.
SGL Industries, Inc.: *See*—
Instone, John C., B 817,849, Cl. 339-22.00R.
Shackle, Dale Richard: *See*—
Spatz, Sydney Martin; and Shackle, Dale Richard, B 767,543, Cl. 282-27.500.
Shaffer, John W.: *See*—
Armstrong, Donald E.; Shaffer, John W.; Marecek, Paul M.; and Audesse, Emery G., B 724,792, Cl. 431-95.00A.
Shah, Champak C.: *See*—
Svedas, Stanley; and Shah, Champak C., B 649,078, Cl. 260-23.00R.
Shakespeare of Arkansas, Inc.: *See*—
Stewart, Alan; and Majefski, Richard Lee, B 744,337, Cl. 318-257.000.
Shanker, Irvin Paul; and Tryciecky, Teodozij, to Medcor, Inc. Pacer stimulator with improved lead connector. 4,112,953, Cl. 128-419.00P.
Sharp, John Howard: *See*—
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, B 686,496, Cl. 423-512.00A.
Shaughnessy, William J.: *See*—
Koether, Bernard G.; and Shaughnessy, William J., B 790,429, Cl. 210-167.000.
Shaw, Harry, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Aerodynamic lifting mechanisms. B 804,237, Cl. 244-20.000.
Shaw, John B. Positive displacement gas expansion engine with low temperature differential. 4,112,688, Cl. 60-669.000.
Shaw, Julian David: *See*—
Cook, John Gerald; and Shaw, Julian David, B 611,037, Cl. 324-115.000.
Sheets, Kerney T. High rise sprinklers. B 758,648, Cl. 239-206.000.
Shein, Jury Gheorghievich: *See*—
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Shell Internationale Research Maatschappij, B.V.: *See*—
Collins, Michael H., B 693,273, Cl. 427-236.000.
Shell Oil Company: *See*—
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., B 779,645, Cl. 44-66.000.
Meijs, Franciscus H., B 852,175, Cl. 166-295.000.
Wulfers, Thomas F., B 852,395, Cl. 252-51.50A.
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, to Imperial Chemical Industries Limited. Herbicidal formulations. B 750,017, Cl. 71-92.000.
Sherwin, William Claude, to Nortec Inc. Ski boot heel restraining apparatus. B 731,558, Cl. 280-615.000.
Sherwin-Williams Company, The: *See*—
Heyman, Duane A., B 818,172, Cl. 548-305.000.
Shetty, Bola Vithal, to Purdue Frederick Company, The. Process for the preparation of iodophor compounds and methods for stabilizing iodophor pharmaceutical compositions containing the same. B 797,094, Cl. 424-150.000.
Shibano, Yoshizo, to Sumitomo Electric Industries, Ltd. Magnetic current antenna. B 573,885, Cl. 343-741.000.
Shibata, Akio: *See*—
Hirota, Nobuyoshi; and Shibata, Akio, B 775,328, Cl. 260-8.000.
Shibata, Tadashi: *See*—
Shigeta, Masayuki; and Shibata, Tadashi, B 420,050, Cl. 187-1.00R.
Shibazaki, Kenji: *See*—
Murata, Tomoji; and Shibazaki, Kenji, B 740,725, Cl. 355-14.000.
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, B 736,189, Cl. 355-14.000.
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Dry image forming material. B 751,778, Cl. 96-114.100.
Shigeta, Masayuki; and Shibata, Tadashi, to Hitachi, Ltd. Elevator car mounting. B 420,050, Cl. 187-1.00R.
Shiina, Fumio, to Hitachi, Ltd. Optical card reader for setting frequency division ratio of programmable counter for use in synthesizer tuners. B 763,083, Cl. 250-569.000.
Shikibo Limited: *See*—
Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, B 661,825, Cl. 8-120.000.
Shimada, Shoji: *See*—
Sakurai, Toshio; Shimada, Shoji; and Kamimura, Yoshiharu, B 710,312, Cl. 252-49.600.
Shimanaka, Hiroshi; Ichida, Toshio; and Kobayashi, Shigeru, to Kawa-

saki Steel Corporation. Method for forming a heat-resistant insulating film on a grain oriented silicon steel sheet. B 760,376, Cl. 148-113.000.
Shimek, Daniel C.: *See—*
Shimek, Ronald J.; and Shimek, Daniel C., 4,112,913, Cl. 126-120.000.
Shimek, Ronald J.; and Shimek, Daniel C. Free standing heating unit. 4,112,913, Cl. 126-120.000.
Shimizu, Hidemi: *See—*
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, B 686,154, Cl. 424-317.000.
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Method of processing fermented soybeans and food products prepared therefrom. B 717,322, Cl. 426-602.000.
Shimizu, Makoto: *See—*
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, B 864,252, Cl. 266-137.000.
Shimizu, Masami: *See—*
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, B 758,200, Cl. 354-238.000.
Shinomura, Toshihiko, to Nippon Oil Company Ltd. Synthetic paper. B 639,166, Cl. 428-113.000.
Shinshu Seiki Kabushiki Kaisha: *See—*
Minowa, Masahiro, B 736,046, Cl. 400-120.000.
Shirai, Masanari: *See—*
Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, B 806,515, Cl. 355-45.000.
Shirakawa, Kiyoshi, to Sanyo-Kokusaku Pulp Co., Ltd. Bottom structure of cardboard type liquid packing container. B 803,932, Cl. 229-37.00R.
Shishido, Tadao; Hara, Hiroshi; and Arai, Atsuaki, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material capable of providing stable color images. B 806,121, Cl. 96-100.00R.
Shishido, Tadao: *See—*
Yamada, Minoru; Shishido, Tadao; and Arai, Atsuaki, B 686,201, Cl. 96-56.000.
Shmorgunenko, Nikolai Stepanovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.
Shoemaker, Arthur H., to American Optical Corporation. Microscope illuminator for both transmitted and vertical microscopy. B 607,842, Cl. 350-87.000.
Shoemaker, Robert H.; and Wood, William G. Liquid additions to fused chemical baths. B 759,763, Cl. 134-10.000.
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, to Yazaki Corporation. Process and apparatus for producing a wire-harness. B 737,025, Cl. 219-56.000.
Shooting Star Tennis: *See—*
Petrick, Paul J., Sr., 4,112,911, Cl. 124-56.000.
Shotwell, Allen M. Boat loader and unloader construction. B 826,266, Cl. 214-450.000.
Show, Roger; and Webb, Robert. Process for converting waste deadburned magnesium oxide-containing material into useful product. B 764,551, Cl. 423-155.000.
Showa Sangyo Kabushiki Kaisha: *See—*
Watanabe, Haruo; and Negishi, Masaaki, B 697,192, Cl. 260-424.000.
Shpirt, Mikhail Yakovlevich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.
Shumway, Durland K.: *See—*
Kenkare, Divaker B.; and Shumway, Durland K., B 557,561, Cl. 424-46.000.
Shutt, Sidney G., to Rockwell International Corporation. Dual mode laser optics control for ring laser gyro. B 768,511, Cl. 356-106.0LR.
SI Handling Systems, Inc.: *See—*
Brown, William L.; and Reagan, Larry L., B 767,267, Cl. 214-16.40A.
Sidhu, Baldip Singh: *See—*
Syred, Nicholas; Grant, John; and Sidhu, Baldip Singh, 4,112,977, Cl. 137-812.000.
Sidley, Manfred: *See—*
Theunissen, Eos Lee, B 744,544, Cl. 242-55.300.
Sidorowicz, Frank: *See—*
Richardson, Eugene E.; and Sidorowicz, Frank, B 741,842, Cl. 260-505.00S.
Siegel, Hardo: *See—*
Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, B 494,457, Cl. 260-599.000.
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Sulfonic acid-N-methylamido-N-sulfenyl-N-methyl-carbamic acid esters. B 592,860, Cl. 424-278.000.
Siegrist, Adolf Emil; and Pauchard, Jean-Paul, to Ciba-Geigy Corporation. Stilbene compounds. B 850,861, Cl. 542-463.000.
Siegrist, Adolf Emil; and De Sousa, Bernardo, to Ciba-Geigy Corporation. Stilbene compounds. B 851,040, Cl. 542-464.000.
Siemens Aktiengesellschaft: *See—*
Bauch, Helmut; Mohrmann, Karl Heinz; and Koppehele, Frithjof, B 795,706, Cl. 330-56.000.
Baur, Guenter; and Greubel, Waldemar, B 782,186, Cl. 350-285.000.
Gaertner, Waldemar, B 782,187, Cl. 350-96.240.
Gerndt, Christian, B 635,366, Cl. 350-96.150.
Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, B 783,407, Cl. 356-155.000.
Krauss, Guenter, B 741,848, Cl. 333-71.000.
Mattuschka, Werner, B 830,046, Cl. 310-326.000.
Mentschel, Hellmuth, 4,112,876, Cl. 123-3.000.
Schneider, Carl Michael, B 773,318, Cl. 179-18.0GF.
Wiedemann, Kurt; and Seiferth, Reinhard, B 056,013, Cl. 343-7.700.
Sigel-Gfeller, Alwin. Conveyor apparatus for the interior of pipelines. 4,112,850, Cl. 104-138.00G.
Sigmund, Hermann. Process for the production of silicon layers. B 795,844, Cl. 156-622.000.
Sigurdsson, Per Arne, to Sigurdssons Mek. Verkstad. Method of pressure treatments of materials. B 778,565, Cl. 423-446.000.
Sigurdssons Mek. Verkstad: *See—*
Sigurdsson, Per Arne, B 778,565, Cl. 423-446.000.
Sikli, Bert J., to Staines, Robert. Scissors lift. B 781,545, Cl. 187-18.000.
Sillion, Bernard: *See—*
Cohen, Choua; and Sillion, Bernard, B 821,054, Cl. 252-51.50A.
Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., to Posi-Seal International, Inc. Extended temperature range valve seal. B 797,921, Cl. 277-168.000.
Simmons, William D.: *See—*
Anderson, Lowell M.; and Simmons, William D., 4,112,692, Cl. 405-271.000.
Simon, Donald J.; and Fitzmayer, Louis H., to General Electric Company. Choke for combined microwave and self-cleaning oven. B 819,789, Cl. 219-10.55D.
Simon, Pierre, to Union Chimique Continentale-U.C.C. Process for the preparation of alpha-pyrones. B 695,751, Cl. 260-343.500.
Simon, Stefan: *See—*
Friese, Axel; and Simon, Stefan, B 731,954, Cl. 198-480.000.
Simpson, Dayton M.: *See—*
Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., 4,112,698, Cl. 405-167.000.
Simpson, Harold G., to Star Manufacturing Company of Oklahoma. Prefabricated watertight structural system. 4,112,632, Cl. 52-11.000.
Sims, Anson; and Jones, Lawrence T., to Aurora Products Corporation. Jaw breaker game. B 723,815, Cl. 273-249.000.
Sinclair, Clive Marles. Battery replacement device for continuous operation. B 757,197, Cl. 320-2.000.
Singer Company, The: *See—*
Feltz, Albert J.; and Deck, Howard C., B 811,913, Cl. 352-159.000.
Sinke, Gerard C.: *See—*
Langhorst, Martin A.; Sinke, Gerard C.; and Mossner, Elmer H., B 746,981, Cl. 75-101.00R.
Sintef: *See—*
Ugelstad, John, B 825,136, Cl. 260-29.6XA.
Sirtl, Erhard: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, B 737,249, Cl. 148-174.000.
Sisk, Francis J.; and Veyo, Stephen E., to Electric Power Research Institute, Inc. Fuel fired supplementary heater for heat pump. 4,112,705, Cl. 62-238.000.
Sjostrand, Gunnar; and Sjostrand, Staffan, to Musikindustriell Forskning MIFO AB. Stringed instrument for play training. 4,112,809, Cl. 84-465.000.
Sjostrand, Staffan: *See—*
Sjostrand, Gunnar; and Sjostrand, Staffan, 4,112,809, Cl. 84-465.000.
Skalka, Gerald P., to Victor Stanley, Inc. Bench. B 873,976, Cl. 297-454.000.
Skinner, Dale D.: *See—*
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., B 791,434, Cl. 310-334.000.
Skinner, Leon S.; and Taylor, Norman C., to All Sunpower, Inc. Solar energy collector. 4,112,922, Cl. 126-271.000.
Skoli, Sigmund P.: *See—*
Mojonnier, Harry G.; and Skoli, Sigmund P., 4,112,828, Cl. 99-275.000.
Skotchinksy Institut Gornogo Dela: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., to Mosler Safe Company, The. On-line/off-line automated banking system. B 722,741, Cl. 235-419.000.
Slavik, John W. Fireplace enclosure with heat exchanger. 4,112,915, Cl. 126-121.000.
Sloan Valve Company: *See—*
Horowitz, Charles, B 799,506, Cl. 339-14.00P.

Horowitz, Charles, 4,112,961, Cl. 137-102.000.
Small, William H. Shelter construction and method of assembling same. 4,112,956, Cl. 135-1.00D.
Smeets, Lambertus R. J. M.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.
Smets, Georges Joseph; and Vandensavel, Jean Marie, to Agfa-Gevaert, N.V. Masked isocyanates. B 406,350, Cl. 260-308.00D.
Smiley, Leonard H., to Rohm and Haas Company. Foamed cementitious material and composite. B 686,193, Cl. 428-310.000.
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich. Freeze desalination and concentration apparatus. 4,112,702, Cl. 62-123.000.
Smith, Adrian P. Corrosion-resistant light-weight spot welding gun. B 641,994, Cl. 219-90.000.
Smith, George William, to USM Corporation. Tire grinding system. B 760,264, Cl. 241-24.000.
Smith, Herman W., to Upjohn Company, The. 3,7-Inter-m-phenylene-3-oxa-4,5,6-trinor-13,14-didehydro-11-deoxy-PGF$_1\alpha$ compounds. B 820,967, Cl. 560-61.000.
Smith, Herman W., to Upjohn Company, The. 3,7-Inter-m-phenylene-3-oxa-4,5,6-trinor-13,14-didehydro-11-deoxy-PGE$_1$ compounds. B 820,968, Cl. 560-53.000.
Smith, Herman W., to Upjohn Company, The. 5-Oxa-13,14-didehydro-11-deoxy-17-phenyl-18,19,20 trinor-PGE$_1$ compounds. B 820,976, Cl. 560-53.000.
Smith, Herman W., to Upjohn Company, The. 13,14-Didehydro-11-deoxy-17-phenyl-18,19,20-trinor-PGF$_1\alpha$ compounds. B 820,977, Cl. 560-55.000.
Smith, Herman W., to Upjohn Company, The. 13,14-Didehydro-11-deoxy-17-phenyl-18,19,20-trinor-PGE$_1$ compounds. B 820,978, Cl. 560-53.000.
Smith, Herman W., to Upjohn Company, The. 3,7-Inter-m-phenylene-3-oxa-13,14-didehydro-11-deoxy-17-phenyl-4,5,6,18,19,20-hexanor-PGF$_1\alpha$ compounds. B 821,058, Cl. 560-61.000.
Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Fluid solventless epoxy-anhydride compositions containing metal acetylacetonate accelerators and organic carboxylic acid co-accelerators. B 773,875, Cl. 260-830.0TW.
Smith, Joseph A.: *See—*
Denzer, Max; and Smith, Joseph A., B 790,896, Cl. 544-362.000.
Smith, Kenneth E.: *See—*
Hatcher, Charles S.; and Smith, Kenneth E., 4,112,667, Cl. 57-157.00S.
Smith, Richard D., to Kennecott Copper Corporation. Tarnish resistant copper alloy. B 769,723, Cl. 75-159.000.
Smith, Robert L.; Stokker, Gerald E.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. Substituted 2-aminomethylphenyl sulfamates. B 833,930, Cl. 424-303.000.
Smith, Rodney I. Impact resistant tongue-and-groove coupling for highway traffic barricades. B 788,691, Cl. 404-6.000.
Smith, Roy B. Drive shaft "U" joint lubricator. B 807,984, Cl. 184-6.000.
Smith, Stanley E., to General Motors Corporation. Ball joint with slotted spring biased stud. B 829,279, Cl. 403-138.000.
Smith, Trevor, to British Gas Corporation. Fluid-flow noise reduction systems. B 714,984, Cl. 181-230.000.
Smyth, Norman Linfoot, to Britool Limited. Wrenches and other hand tools. 4,112,749, Cl. 73-139.000.
Snam Progetti, S.p.A.: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, B 775,776, Cl. 260-875.000.
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, B 795,225, Cl. 260-683.15B.
Snedeker, Clarke R.: *See—*
Flower, Robert J.; Snedeker, Clarke R.; and Beatenbough, Paul K., B 789,066, Cl. 165-81.000.
Sniegowski, Bruno Raymond: *See—*
Clement, George Frederick; and Sniegowski, Bruno Raymond, B 844,377, Cl. 179-2.00A.
Sniff, Walter Grant, Jr.: *See—*
Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., B 809,911, Cl. 219-137.00R.
Snyder, Francis H. Pinless resilient coupling. B 668,542, Cl. 403-154.000.
Snyder, John M., to Snyder, John M.; Steinberg, Bernard J.; and Halle, Edward. Auxiliary handle for plurality of carrying handles. 4,112,542, Cl. 16-114.00R.
Snyder, Richard C.: *See—*
Rousseau, George L.; and Snyder, Richard C., 4,112,851, Cl. 105-199.00C.
Snyder, Robert C.: *See—*
Bushman, Willard T.; and Snyder, Robert C., B 608,897, Cl. 235-474.000.
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich. Inert gas generator based on air jet engine. B 679,437, Cl. 169-12.000.
Sobolev, Valerian Mikhailovich: *See—*
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, B 788,590, Cl. 568-789.000.
S.A. des Etablissements Francois Salomon & Fils: *See—*
Salomon, Georges Pierre Joseph, 4,112,557, Cl. 24-69.0SK.
Societe Civile de Recherches et d'Etudes Nouvelles: *See—*
Orzales, Henri-Ange, B 705,535, Cl. 560-52.000.
Societe Coupax: *See—*
d'Arras, Philippe, 4,112,544, Cl. 17-25.000.
Societe d'Applications de Procedes Industriels et Chimiques S.A.P.I.C.: *See—*
Richard, Gerard Yves, B 730,829, Cl. 134-2.000.
Societe de Vente de l'Aluminium Pechiney: *See—*
Gauvry, Robert; and Portalier, Robert, B 778,233, Cl. 75-148.000.
Societe d'Etudes de Machines Thermiques: *See—*
Bouquet, Jean-Claude, 4,112,883, Cl. 123-52.00M.
Societe Industrielle et Financiere le Profil: *See—*
Boucard, Michel Jean, 4,112,722, Cl. 72-181.000.
Societe Miniere et Metallurgique de Penarroya: *See—*
Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, B 713,371, Cl. 210-219.000.
Societe Nationale des Poudres et Explosifs: *See—*
Lecolier, Serge L.; and Biehler, Jean-Marie J., B 838,460, Cl. 521-108.000.
Soeda, Takahiko: *See—*
Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, B 790,440, Cl. 260-123.500.
Sohner, Gerhard: *See—*
Manger, Hansjorg; Sohner, Gerhard; and Hohne, Gerd, 4,112,890, Cl. 123-117.00R.
Soja, Lawrence M.; Stokes, Daniel F.; and Beile, Richard W., to Stone Container Corporation. Display carton. B 762,874, Cl. 206-602.000.
Solartron Electronic Group Ltd., The: *See—*
Cook, John Gerald; and Shaw, Julian David, B 611,037, Cl. 324-115.000.
Solco Basel AG: *See—*
Benes, Ivan, B 572,701, Cl. 424-1.000.
Solex Research Corporation of Japan: *See—*
Watanabe, Morio; and Nishimura, Sanji, B 773,657, Cl. 204-151.000.
Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, to Canon Kabushiki Kaisha. Reader-printer. B 806,515, Cl. 355-45.000.
Sony Corporation: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, B 798,313, Cl. 274-15.00R.
Takizawa, Kazuyuki, B 740,306, Cl. 274-15.00R.
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 801,640, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 802,487, Cl. 204-39.000.
Uzuka, Mitsuo, B 810,982, Cl. 318-138.000.
South African Inventions Development Corporation, The: *See—*
Hasson, Victor Haim; and von Bergmann, Hubertus Michael, B 692,085, Cl. 331-94.50G.
Southern Chemical Company: *See—*
Cotten, Roger C.; Young, David W.; and Kandanian, Aram Y., B 851,764, Cl. 260-897.00A.
Southern Imperial, Inc.: *See—*
Donnelli, Joseph W.; and Barnes, Richard D., B 821,809, Cl. 211-49.00R.
Southwest Research Institute: *See—*
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, B 515,310, Cl. 299-13.000.
Soxil S.p.A.: *See—*
Visconti, Matteo, 4,112,939, Cl. 128-186.000.
Spagnola, Raymond J., Jr. Bingo chip dispenser. B 773,782, Cl. 221-267.000.
Spatz, Sydney Martin; and Shackle, Dale Richard, to Mead Corporation, The. Pressure-sensitive carbonless copy system and transfer sheet for use therein. B 767,543, Cl. 282-27.500.
Spaulding, James R., to General Motors Corporation. Temperature compensated internal combustion engine ignition spark vacuum advance system. 4,112,891, Cl. 123-117.00A.
Spaulding, Tedford Hollace, to Bunker Ramo Corporation. Insulation-piercing contact. B 756,497, Cl. 339-97.00R.
Spence, J. Ronald, to Standard Oil Company (Indiana). Antistatic additives. B 810,291, Cl. 44-72.000.
Spencer, Boyd La Russell, to Spencer Heads, Inc. Firing deck insert for internal combustion engines. 4,112,906, Cl. 123-191.00A.
Spencer, David R.: *See—*
Goldsborough, Robert R.; Spencer, David R.; and West, Samuel F., B 176,890, Cl. 343-112.00S.
Spencer Heads, Inc.: *See—*
Spencer, Boyd La Russell, 4,112,906, Cl. 123-191.00A.
Spencer, Lloyd: *See—*
Christy, Mark H.; and Spencer, Lloyd, B 708,062, Cl. 239-109.000.
Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, to Rutgerswerke Aktiengesellschaft. Process for the continuous production of indene resins. B 704,600, Cl. 526-64.000.
Sperry Rand Corporation: *See—*
Lund, Roger Edward, B 786,316, Cl. 365-2.000.
Phillips, Edwin R., B 486,245, Cl. 271-264.000.
Spiers, Dennis D. Sheet sling. B 759,078, Cl. 224-45.00R.
Spies, Hans: *See—*
Held, Manfred; and Spies, Hans, 4,112,844, Cl. 102-19.200.

Spiller, Herbert A., to Monsanto Company, St. Louis, Missouri. Method for treating polyester filaments. 4,112,668, Cl. 57-157.00S.
Spirig, Ernst. Water decomposing apparatus. B 765,677, Cl. 204-230.000.
Spork, Helmut: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, B 808,767, Cl. 260-448.20E.
Sprague Electric Company: *See—*
Randall, John J., Jr.; and Bernard, Walter J., B 791,656, Cl. 204-33.000.
SPS Technologies, Inc.: *See—*
Dey, Ervin J., 4,112,993, Cl. 151-41.740.
Stach, Kurt, deceased (by Plattner, Werner, executor); Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, to Boehringer Mannheim GmbH. Hypoglycemically and hypolipidemically active derivatives of phenyl-alkane-carboxylic acids. B 674,993, Cl. 424-272.000.
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., to Velsicol Chemical Company. Dioxolane substituted amides. B 784,212, Cl. 71-88.000.
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, to Hoechst Aktiengesellschaft. Stabilized red phosphorus and process for making it. B 815,160, Cl. 423-265.000.
Stahlecker, Fritz; and Stahlecker, Hans. Open end spinning unit with a braking device. 4,112,659, Cl. 57-58.890.
Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 4,112,659, Cl. 57-58.890.
Staines, Robert: *See—*
Sikli, Bert J., B 781,545, Cl. 187-18.000.
Stalego, Charles J., to Owens-Corning Fiberglas Corporation. Apparatus for supplying glass bodies to glass melters. B 758,109, Cl. 65-11.00R.
Stamicarbon, B.V.: *See—*
Klaasen, Dirk, B 709,080, Cl. 422-132.000.
Stamicarbon, N.V.: *See—*
Geus, John W., B 663,106, Cl. 252-454.000.
Stampfli, Harald, to Lucifer S.A. Control system for an electromagnet. B 718,545, Cl. 361-154.000.
Standard Havens, Inc.: *See—*
Bundy, Richard P., B 827,942, Cl. 55-96.000.
Standard Oil Company, The: *See—*
White, James F.; and Applequist, Michael D., B 748,081, Cl. 562-535.000.
Standard Oil Company (Indiana): *See—*
Richardson, Eugene E.; and Sidorowicz, Frank, B 741,842, Cl. 260-505.00S.
Sabol, Albert R.; and Petrellis, Nicolas C., B 773,346, Cl. 252-32.70E.
Spence, J. Ronald, B 810,291, Cl. 44-72.000.
Stang, Peter L.: *See—*
Van Ornum, Joel V.; and Stang, Peter L., B 595,351, Cl. 260-876.00B.
Staniland, Philip Anthony, to Imperial Chemical Industries Limited. Aromatic polymer production. B 767,333, Cl. 528-481.000.
Staniland, Philip Anthony: *See—*
Rose, John Brewster; and Staniland, Philip Anthony, B 810,355, Cl. 528-126.000.
Stanley, William L.: *See—*
Masri, Merle S.; Randall, Virginia G.; and Stanley, William L., B 827,659, Cl. 195-63.000.
Stapleton, Harold Reginald, to W. Vinten Limited. Tilt mounting heads. B 757,933, Cl. 248-183.000.
Stapp, Paul R., to Phillips Petroleum Company. Process for preparing diacyloxy olefins. B 551,834, Cl. 560-246.000.
Star Manufacturing Company of Oklahoma: *See—*
Simpson, Harold G., 4,112,632, Cl. 52-11.000.
Staub, John W. Gun recoil reducer. 4,112,605, Cl. 42-1.00V.
Stauffer Chemical Company: *See—*
Chen, Kon S.; and Majewski, Helmut W., B 838,510, Cl. 106-97.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., to Chevron Research Company. Carboxylic acid-containing wax fluxes. B 811,504, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., to Chevron Research Company. Wax flux compositions. B 811,505, Cl. 148-23.000.
Stearns, David Burrell: *See—*
Rollo, Anita Hand; and Stearns, David Burrell, B 749,585, Cl. 210-22.00A.
Stearns, Richard S.: *See—*
Thompson, Robert M.; and Stearns, Richard S., B 777,999, Cl. 260-857.0TW.
Steel, Paul Franklin, to Teledyne Acoustic Research. Input filtering apparatus for loudspeakers. B 678,461, Cl. 179-1.0VL.
Steer, Philip James: *See—*
Carter, Michael Charles; and Steer, Philip James, B 757,024, Cl. 364-415.000.
Stein Industrie: *See—*
Deruelle, Jean, B 760,140, Cl. 431-5.000.
Steinberg, Bernard J.: *See—*
Snyder, John M., 4,112,542, Cl. 16-114.00R.
Steiner, Edwin C.: *See—*
Trucks, Roger O.; and Steiner, Edwin C., B 437,425, Cl. 260-338.000.
Steiner, H. Karl. Torch igniter. B 761,667, Cl. 431-128.000.
Steiner, John E., to United States Steel Corporation. Wire-wrapped cylindrical prestressed structures. B 710,952, Cl. 220-71.000.
Steinfeld, Horst E.; and Mathes, Dieter, to Hoesch Werke Aktiengesellschaft. Resilient rail connection. B 762,347, Cl. 238-349.000.
Stemmann, Karl; and Holtmeier, Gerhard, to August Stemmann OHG. Method of and apparatus for regulating the brush contact pressure of pantograph assemblies. B 688,269, Cl. 191-67.000.
Stendel, Wilhelm: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, B 645,128, Cl. 424-200.000.
Stephens, Donald Harrison, to Bourns, Inc. Worm gear drive and ratchet system. B 878,191, Cl. 338-174.000.
Sterling Drug Inc.: *See—*
Surrey, Alexander R.; and Collins, Joseph C., B 831,942, Cl. 260-558.00D.
Stevens, Richard Frederick: *See—*
Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, B 700,037, Cl. 356-110.000.
Stewart, Alan; and Majefski, Richard Lee, to Shakespeare of Arkansas, Inc. Device for electronic direction control of trolling motors. B 744,337, Cl. 318-257.000.
Stewart, David E., to Empire Metal Products Corp. Roller assembly for sliding screen door, and the like. 4,112,622, Cl. 49-421.000.
Stiles, Kenneth M., to Air Logistics Corporation. Fiber reinforced optical fiber cable. B 600,202, Cl. 350-96.230.
Still, Robert C., to New Concepts, Inc. Replaceable one piece liner for a gate valve. 4,112,969, Cl. 137-454.200.
Stiltz, Erwin; Hoyer, Rudolf; and Lindenmayer, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Hammer drill with drive and percussion elements accommodated in a cylinder. B 789,680, Cl. 173-116.000.
Stockel, Dieter; and Schneider, Friedrich, to Rau, G. Spark plugs for internal combustion engines. 4,112,905, Cl. 123-169.0EL.
Stokes, Daniel F.: *See—*
Soja, Lawrence M.; Stokes, Daniel F.; and Beile, Richard W., B 762,874, Cl. 206-602.000.
Stokker, Gerald E.: *See—*
Smith, Robert L.; Stokker, Gerald E.; and Cragoe, Edward J., Jr., B 833,930, Cl. 424-303.000.
Stoll, Max: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., B 825,111, Cl. 426-536.000.
Stoller, Frederick L., to Phillips Petroleum Company. Method and apparatus useful in control of edge uniformity in nonwoven fabrics. B 723,394, Cl. 264-280.000.
Stone, Alan J.: *See—*
Tertinek, Christian T.; and Stone, Alan J., B 829,581, Cl. 404-113.000.
Stone Construction Equipment Inc.: *See—*
Tertinek, Christian T.; and Stone, Alan J., B 829,581, Cl. 404-113.000.
Stone Container Corporation: *See—*
Soja, Lawrence M.; Stokes, Daniel F.; and Beile, Richard W., B 762,874, Cl. 206-602.000.
Stoneberg, William A.: *See—*
Maass, Edward A.; and Stoneberg, William A., 4,112,598, Cl. 35-53.000.
Storace, Anthony, to Pitney-Bowes, Inc. Null transducer for an analytical balance. B 807,393, Cl. 177-211.000.
Stork Amsterdam B.V.: *See—*
Witte, Johan Frederik, 4,112,836, Cl. 99-483.000.
Stotz, Manfred: *See—*
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, B 717,682, Cl. 429-78.000.
Stournas, Stamoulis; and Heiba, El Ahmadi I., to Mobil Oil Corporation. Oil recovery by surfactant waterflooding. B 770,164, Cl. 252-8.55D.
Stout, Daniel W. Laser drilling method and system of fossil fuel recovery. B 675,582, Cl. 175-11.000.
Stovall, Ronald J.: *See—*
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., B 806,799, Cl. 320-39.000.
Strandly, Ingvald: *See—*
Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, 4,112,982, Cl. 139-425.00A.
Strange, Delbert D.; and Hunts, Ronald M., to Manufacturing Approaches & Total Concepts, Inc. Automatic dadoing machine. 4,112,986, Cl. 144-323.000.
Strathearn Audio Limited: *See—*
McLean, Graham Wilson; and Holt, David, B 797,252, Cl. 310-163.000.
Strehlke, Gunter; and Osterburg, Gunther, to Deutsche Texaco Aktiengesellschaft. Extractive distillation of acetone. B 547,846, Cl. 260-593.00P.
Strojny, Edwin J.; Friedli, Hans R.; and Wing, Milton S., to Dow Chemical Company, The. Catalyst for and method of producing maleic anhydride. B 828,409, Cl. 260-346.750.
Stroup, Steven L.: *See—*
Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., 4,112,794, Cl. 82-64.000.
Stuart, Fred E., Sr. Nozzle for rotary filter pipe. B 736,475, Cl. 239-533.130.
Stuart, Linden, Jr.; and Davis, Harry Robert, to Stuart Steel Protection Corporation. Pipe joint wrapping machine. B 820,292, Cl. 156-392.000.
Stuart Steel Protection Corporation: *See—*
Stuart, Linden, Jr.; and Davis, Harry Robert, B 820,292, Cl. 156-392.000.
Stubbs, Elmer L., to Thermatron, Inc. Microwave heating method and apparatus. B 704,520, Cl. 219-10.55M.
Studiengesellschaft Kohle mbH: *See—*
Lehmkuhl, Herbert; and Rabet, Farroch, B 711,742, Cl. 252-363.500.
Sturm, Michael R. Hood for glass furnace gathering hole. B 833,264, Cl. 65-324.000.
Sturm, Warren A.: *See—*
Swinehart, Frank, B 633,870, Cl. 179-179.000.
Suda, Seiji: *See—*
Sugiura, Noboru; and Suda, Seiji, 4,112,903, Cl. 123-148.00E.
Sueyoshi, Akiko: *See—*
Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, B 791,470, Cl. 148-6.15R.
Suga, Shigeru. Electrode operating mechanism for carbon arc lamp. B 805,577, Cl. 314-134.000.
Sugavanam, Balsubramanyan: *See—*
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, B 750,017, Cl. 71-92.000.
Sugimura, Sadao: *See—*
Matsui, Takashi; Sugimura, Sadao; and Noo, Kunio, B 703,421, Cl. 264-230.000.
Sugiura, Akio: *See—*
Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, B 756,699, Cl. 235-464.000.
Sugiura, Katuaki: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.
Sugiura, Noboru; and Suda, Seiji, to Hitachi, Ltd. Ignition system for an internal combustion engine. 4,112,903, Cl. 123-148.00E.
Sugiyama, Jun: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, B 812,737, Cl. 260-874.000.
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, to Fuji Photo Film Co., Ltd. Method of forming photographic line and half-tone images. B 231,001, Cl. 96-60.00R.
Sugiyama, Nobuo: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, B 231,001, Cl. 96-60.00R.
Sullivan, Gerald Leslie. "Strapdown" induction compass transmitter with means to compensate for heading errors during turns and during dives and climbs due to the vertical component of the Earth's magnetic field and due to two cycle error. 4,112,755, Cl. 73-178.00R.
Sullivan, Kevin J., to Corning Glass Works. Blood sample container having an anticoagulant coating of polyvinyl pyrrolidone and a salt of ethylene diamine tetracetate. 4,112,925, Cl. 128-2.00F.
Sullivan, Thomas A. Roller-colloid mill. B 793,733, Cl. 241-43.000.
Sulzer Brothers Limited: *See—*
Bader, Hartmann, 4,112,980, Cl. 139-92.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, B 771,958, Cl. 210-17.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, B 771,959, Cl. 210-17.000.
Suminsby, John. Pendulous induction compass transmitter including means external to the transmitter to compensate for heading errors in turns due to the vertical component of the Earth's magnetic field and due to two cycle error. 4,112,754, Cl. 73-178.00R.
Sumitomo Chemical Company, Limited: *See—*
Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, B 723,977, Cl. 264-89.000.
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, B 776,618, Cl. 71-76.000.
Sano, Takezo; Kobayashi, Akira; and Inoue, Haruo, B 699,255, Cl. 521-29.000.
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, B 874,748, Cl. 526-74.000.
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.
Sumitomo Electric Industries, Ltd.: *See—*
Doi, Kaname, B 804,572, Cl. 303-24.00F.
Okita, Koichi, B 823,474, Cl. 428-290.000.
Shibano, Yoshizo, B 573,885, Cl. 343-741.000.
Yamaguchi, Yasuo, 4,112,725, Cl. 72-128.000.
Sumitomo Metal Industries, Ltd.: *See—*
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, B 864,252, Cl. 266-137.000.
Summers, Ernest Moreland: *See—*
Henry, Russell Alger; and Summers, Ernest Moreland, B 799,772, Cl. 427-290.000.
Sun Ventures, Inc.: *See—*
Thompson, Robert M.; and Stearns, Richard S., B 777,999, Cl. 260-857.0TW.
Sundman, Frey Viking, to A. Ahlstrom Osakeyhtio. Method and means for drying a fibre material containing cellulose. 4,112,587, Cl. 34-12.000.
Sundstrand Corporation: *See—*
Davis, Gerald L.; and Scott, Timothy C., 4,112,974, Cl. 137-625.290.
Suntech, Inc.: *See—*
Lauer, James L.; and Peterkin, Melvin E., B 791,089, Cl. 356-70.000.
Neinast, Gary S., B 714,208, Cl. 254-134.500.
Norton, Richard V., B 776,452, Cl. 260-465.00D.
Supra Products, Inc.: *See—*
Bradley, Terrag W., 4,112,717, Cl. 70-63.000.
Surrey, Alexander R.; and Collins, Joseph C., to Sterling Drug Inc. N-(Dichloroacetyl) diamine compounds and process of preparing same. B 831,942, Cl. 260-558.00D.
Susa, Ermanno: *See—*
Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, B 733,709, Cl. 252-429.00C.
Sutherland, George K.: *See—*
Zelinka, Richard J.; and Sutherland, George K., B 734,755, Cl. 219-471.000.
Sutton, James Alton, Jr. Ventilation system for poultry or livestock house. B 716,158, Cl. 236-46.00A.
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., to General Motors Corporation. Fuel level sender with molded plastic case. B 854,711, Cl. 338-33.000.
Suwa, Hiroyuki: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Motion picture projector. B 736,223, Cl. 352-194.000.
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, to Director-General Agency of Industrial Science and Technology. Steam reforming reactor. B 775,373, Cl. 422-197.000.
Suzuki, Hiroshige; Horie, Eizi; and Nagashima, Hideo, to Agency of Industrial Science and Technology, The President of the. Wall structure of hot fluid chamber. 4,112,648, Cl. 52-508.000.
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, to Ricoh Company, Ltd. Apparatus for controlling the toner concentration of a developer used in a dry type developing system. 4,112,867, Cl. 118-7.000.
Suzuki, Minoru: *See—*
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, 4,112,867, Cl. 118-7.000.
Suzuki, Osamu: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.
Suzuki, Shigeru: *See—*
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, 4,112,867, Cl. 118-7.000.
Suzuki, Shoji: *See—*
Koike, Hiroshi; Suzuki, Shoji; and Asakawa, Takeki, B 778,240, Cl. 350-269.000.
Suzuki, Shosuke: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, B 730,115, Cl. 181-284.000.
Suzuki, Sukenori: *See—*
Fujita, Masanori; and Suzuki, Sukenori, B 751,730, Cl. 174-88.00R.
Suzuki, Tadashi: *See—*
Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, B 721,545, Cl. 422-177.000.
Suzuki, Toshihisa: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Counter provided with complementary field effect transistor inverters. B 735,133, Cl. 307-225.00C.
Suzuki, Yasoji; and Ochii, Kiyofumi, to Tokyo Shibaura Electric Co., Ltd. Semiconductor memory device to reduce parasitic output capacitance. B 777,663, Cl. 365-189.000.
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Open-end spinning machine and a method of stopping the same. 4,112,661, Cl. 57-34.00R.
Svedas, Stanley; and Shah, Champak C., to Turtle Wax, Inc. Polished composition containing microcrystalline wax. B 649,078, Cl. 260-23.00R.
Svenska Dataregister Aktiebolag: *See—*
Englund, Gosta Roland, 4,112,840, Cl. 101-93.150.
Svenska Rotor Maskiner Aktiebolag: *See—*
Schibbye, Hjalmar; and Eriksson, Lennart, 4,112,701, Cl. 62-84.000.
Svenska Traforskningsinstitutet: *See—*
Johansson, Ingvar, B 822,517, Cl. 156-335.000.
Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., B 761,209, Cl. 162-127.000.
Svensson, Einar Gustav-Vilhelm, to Wallbergs Fabriks AB. Apparatus for forming a joint for wire cloth. 4,112,570, Cl. 29-241.000.
Swanberg, Carl Olof: *See—*
Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, 4,112,982, Cl. 139-425.00A.

Swinehart, Frank, to Sturm, Warren A. Hand held communications microphone. B 633,870, Cl. 179-179.000.
Swiss Aluminium Ltd.: *See—*
Dore, James E., B 835,649, Cl. 266-227.000.
Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., B 784,155, Cl. 75-142.000.
Swodenk, Wolfgang: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
SWS Silicones Corporation: *See—*
Lewis, Richard Newton, B 769,062, Cl. 260-37.0SB.
Sybron Corporation: *See—*
Brockway, Charles E., B 861,351, Cl. 297-408.000.
Sylvester, Bruce J.; and Sylvester, Roger P., to J. G. Sylvester Associates, Inc. Fillet weld inspection system. 4,112,775, Cl. 73-627.000.
Sylvester, Roger P.: *See—*
Sylvester, Bruce J.; and Sylvester, Roger P., 4,112,775, Cl. 73-627.000.
Syracuse, Donald C.: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.
Syred, Nicholas; Grant, John; and Sidhu, Baldip Singh. Vortex diodes. 4,112,977, Cl. 137-812.000.
Sys-Tec, Inc.: *See—*
Zelinka, Richard J.; and Sutherland, George K., B 734,755, Cl. 219-471.000.
Systems, Science and Software: *See—*
Turner, Philip L., 4,112,738, Cl. 73-32.00R.
Szatmari, Franz: *See—*
Hofmann, Franz; and Szatmari, Franz, B 729,979, Cl. 366-56.000.
Szema, Li C.: *See—*
Lee, Richard M.; and Szema, Li C., B 742,739, Cl. 415-115.000.
Szentivanyi, Matyas: *See—*
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, B 728,459, Cl. 424-251.000.
Tager, Semen Alexandrovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.
Taguchi, Tetsuya: *See—*
Tsunekawa, Tokuichi; and Taguchi, Tetsuya, B 703,962, Cl. 250-214.00R.
Taisho Pharmaceutical Co., Ltd.: *See—*
Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, B 671,693, Cl. 260-397.450.
Takahashi, Akio: *See—*
Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, B 779,560, Cl. 204-55.00Y.
Takahashi, Kiyoshi: *See—*
Suzuki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, B 736,223, Cl. 352-194.000.
Takahashi, Sankichi: *See—*
Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, B 748,762, Cl. 210-82.000.
Takaiti, Osasi: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, B 793,920, Cl. 424-274.000.
Takasaki, Haruyuki: *See—*
Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, B 779,560, Cl. 204-55.00Y.
Takase, Hirobumi; and Utsunomiya, Yutaka, to NHK Spring Co., Ltd. NC Coil spring manufacturing apparatus. 4,112,721, Cl. 72-12.000.
Takemura, Katsuaki: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Takenoya, Hideaki: *See—*
Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, 4,112,858, Cl. 112-158.00E.
Takeshita, Tetsuo: *See—*
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, B 775,619, Cl. 179-18.0ES.
Takimoto, Hiroyuki: *See—*
Suzuki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, B 736,223, Cl. 352-194.000.
Takimoto, Masatami; and Mizutani, Koichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with charcoal canister. 4,112,898, Cl. 123-136.000.
Takiura, Mamoru; and Hayashizaki, Yoshihiro, to Ikegai Tekko Kabushiki Kaisha. Method of dispersing inorganic additives within extruder. B 773,669, Cl. 264-349.000.
Takizawa, Kazuyuki, to Sony Corporation. Phonograph record player. B 740,306, Cl. 274-15.00R.
Talbott, John W.; and Logan, James D., to Washington State University Research Foundation. Method of forming a composite mat of directionally oriented lignocellulosic fibrous material. B 747,391, Cl. 264-24.000.
Talleres Diesel, S.A.: *See—*
Torralba, Jose Esteban, 4,112,902, Cl. 123-140.0FG.
Tamborini, Ariberto; and Tamborini, Giancarlo. Process of the making of extruded thermoplastic bodies and device for the carrying out of the said process. B 674,566, Cl. 264-173.000.
Tamborini, Giancarlo: *See—*
Tamborini, Ariberto; and Tamborini, Giancarlo, B 674,566, Cl. 264-173.000.
Tamm, Paul Whitfield, to Chevron Research Company. Method for preparing a hydrodesulfurization catalyst. B 496,788, Cl. 252-465.000.
Tamura, Nobuhiro: *See—*
Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, B 786,325, Cl. 560-244.000.
Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing 1,4-diacyloxybutene-2. B 786,325, Cl. 560-244.000.
Tanabe Seiyaku Co. Ltd.: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, B 793,920, Cl. 424-274.000.
Tanabe, Yoshio: *See—*
Koike, Sakae; Matsunami, Shoichi; Goto, Yorinobu; and Tanabe, Yoshio, B 755,936, Cl. 423-235.000.
Tanaka, Akira, to American Safety Equipment Corporation. Safety belt retractor with conjugate return spring means. B 701,504, Cl. 242-107.000.
Tanaka, Eiji: *See—*
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 801,640, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 802,487, Cl. 204-39.000.
Tanaka, Ichiro: *See—*
Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, B 671,693, Cl. 260-397.450.
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, to Yanagimoto Seisakusho Co., Ltd. Method and apparatus for collectively sampling a plurality of gaseous phases in desired proportions for gas analysis or other purposes. B 709,088, Cl. 23-232.00R.
Tanaka, Toshie, to Nifco Inc. Plastic fixing device. 4,112,815, Cl. 85-80.000.
Tanaka, Tsutomu: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, B 812,737, Cl. 260-874.000.
Tanner, Lee E.; and Ray, Ranjan, to Allied Chemical Corporation. Zirconium alloys containing transition metal elements. B 823,080, Cl. 75-177.000.
Tao, Frank F.: *See—*
Gorbaty, Martin L.; Tao, Frank F.; and Maa, Peter S., B 693,830, Cl. 208-8.000.
Tarrant, Paul: *See—*
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, B 665,865, Cl. 544-303.000.
Tasch, Al F., Jr.: *See—*
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.
Tashiro, Ichiro: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.
Tassano, Peter Francis, to Lucas Industries Limited. Apparatus for detecting water in oil. 4,112,744, Cl. 73-61.10R.
Tate, Leslie R.: *See—*
McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., B 779,038, Cl. 423-308.000.
Tatsuzawa, Yoshinobu: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, B 626,098, Cl. 325-320.000.
Taurus Gumiipari Vallalat: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, B 787,511, Cl. 285-137.00R.
Taya, Hiroshi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.
Taylor, Alfred James: *See—*
Lumby, Roland John; North, Bernard; and Taylor, Alfred James, B 802,172, Cl. 106-73.400.
Taylor, Norman C.: *See—*
Skinner, Leon S.; and Taylor, Norman C., 4,112,922, Cl. 126-271.000.
Taylor, Robert Coleman, to Atlantic Richfield Company. Frothing composition for gypsum dispersions. B 711,761, Cl. 252-61.000.
Taylor-Winfield Corporation, The: *See—*
Toma, Charles A.; and Haessly, Walter F., B 678,153, Cl. 219-97.000.

TDK Electronics Co., Ltd.: *See—*
Tokuoka, Yasumichi; and Fukuda, Kazumasa, B 744,115, Cl. 148-105.000.
Technical Plastics Corporation: *See—*
Hanson, Paul D., Sr., 4,112,638, Cl. 52-169.120.
Technicon Instruments Corporation: *See—*
Burns, Donald Arthur; and Fontanilles, Henry, B 749,558, Cl. 356-36.000.
Tedeschi, Anthony, to Western Electric Co., Inc. Mercury-wetted sealed contact switch. B 793,325, Cl. 200-234.000.
Teger, Gerhard: *See—*
Lippacher, Wolfgang; and Teger, Gerhard, B 791,950, Cl. 408-241.00S.
Teil, Yves: *See—*
Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, B 713,371, Cl. 210-219.000.
Teledyne Acoustic Research: *See—*
Steel, Paul Franklin, B 678,461, Cl. 179-1.0VL.
Telefonaktiebolaget L M Ericsson: *See—*
Martensson, Folke Lennart, B 755,035, Cl. 328-111.000.
Samuelsson, Kurt Anders, B 757,863, Cl. 179-15.0AN.
Telephone Cables Limited: *See—*
Haines, Ernest Martin, B 664,706, Cl. 350-96.290.
Teletype Corporation: *See—*
Geis, David G.; and Hodne, Ingard B., B 816,823, Cl. 335-270.000.
TelTec, Incorporated: *See—*
Luetzow, Edwin J., B 695,514, Cl. 29-630.00B.
Temme, Helmut, to Gewerkschaft Eisenhutte Westfalia. Scraper chain assemblies. B 769,094, Cl. 198-731.000.
Tennessee Valley Authority: *See—*
McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., B 779,038, Cl. 423-308.000.
Teodorescu, Constantin, to Institutul National Pentru Creatie Stiintifica Si Tehnica - Increst. Method of and device for attenuating the noise radiated by gas jets. B 678,728, Cl. 181-220.000.
Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, to Shikibo Limited. Method for dyeing cellulose fibers by disperse dyes. B 661,825, Cl. 8-120.000.
Teradyne, Inc.: *See—*
Ashdown, Glynn R.; McCartney, Thomas; and Holmes, Bruce, B 622,054, Cl. 179-175.30R.
Teraji, Tsutomu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, B 640,910, Cl. 544-16.000.
Teranishi, Takanori; and Nakashima, Toshihiko, to Nippondenso Co., Ltd. Control system for a motor having a shunt field winding. B 788,429, Cl. 318-421.000.
Terasawa, Yoshio; and Kimura, Shin, to Hitachi, Ltd. Semiconductor controlled rectifier having an auxiliary region with localized low resistance paths to the control gate. B 652,662, Cl. 357-38.000.
Terragni, Marco. Extruder and sizer apparatus for hollow plastic sections. B 680,269, Cl. 425-325.000.
Terry, Ruel Carlton, to In Situ Technology, Inc. Recovering uranium from coal in situ. B 797,536, Cl. 299-4.000.
Tertinek, Christian T.; and Stone, Alan J., to Stone Construction Equipment Inc. Plate type compactor. B 829,581, Cl. 404-113.000.
Tetra Pak International AB: *See—*
Carlsson, Lars Christer, B 808,690, Cl. 206-611.000.
Tetradis, Constantinos. Handle for bags particularly of net or plastic material. 4,112,541, Cl. 16-114.00R.
Tews, Jan Henryk. Two-cycle engine and piston. 4,112,882, Cl. 123-47.00A.
Texaco Development Corporation: *See—*
Gettert, Hans; Jeck, Arnulf; and Werner, Dietmar, B 861,744, Cl. 48-197.00R.
Schulze, Heinz; and Waddill, Harold G., B 743,818, Cl. 528-94.000.
Texaco Inc.: *See—*
Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., B 746,766, Cl. 252-442.000.
Ishiwata, Samford P., 4,112,760, Cl. 73-299.000.
Ledoux, Will A.; Schoen, William; and Kumar, Atul, B 738,494, Cl. 166-275.000.
Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., B 774,099, Cl. 260-683.680.
Texas Alkyls, Inc.: *See—*
Malpass, Dennis B.; and Yeargin, G. Scott, B 805,194, Cl. 260-606.50P.
Texas Instruments Incorporated: *See—*
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.
Grenier, Aime J., B 755,516, Cl. 335-42.000.
Grenier, Aime J., B 755,763, Cl. 335-8.000.
Pejouhy, Radi, B 728,350, Cl. 337-97.000.
Textron Inc.: *See—*
Moertel, George B., 4,112,555, Cl. 24-205.13C.
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Photographic camera with an operation mode display device. B 758,200, Cl. 354-238.000.
Th. Goldschmidt AG: *See—*
Laqua, Arnold; and Holtschmidt, Ulrich, B 793,315, Cl. 260-29.40R.
Thackston, Clyde David; and Alexander, Robert H., to Rockwell International Corporation. Torque wrench air shut-off. B 811,423, Cl. 192-150.000.
Thayer, Orla E. Axial flow valve. 4,112,806, Cl. 84-390.000.
Thely, Maurice H.: *See—*
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., B 767,885, Cl. 264-113.000.
Thermatool Corp.: *See—*
DuBosque, Clayton, Jr.; Rudd, Wallace C.; and Allen, Richard J., 4,112,566, Cl. 29-157.30C.
Thermatron, Inc.: *See—*
Stubbs, Elmer L., B 704,520, Cl. 219-10.55M.
Theunissen, Eos Lee, to Sidley, Manfred. Dispensing device for web material in roll form. B 744,544, Cl. 242-55.300.
Theurer, Josef; Praschl, Wilhelm; and Riessberger, Klaus, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H. Load handling vehicle with hydraulic torsion transmitting devices. B 672,276, Cl. 212-28.000.
Thiry, Geza A. Food processing apparatus. 4,112,834, Cl. 99-450.100.
Tholen, Paul, to Klockner-Humboldt-Deutz Aktiengesellschaft. Multiple working chamber forming combustion machine with exhaust turbo charger. 4,112,684, Cl. 60-606.000.
Thomanek, Franz Rudolf, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Warhead with a disintegrating jacket to house several projectiles. 4,112,847, Cl. 102-67.000.
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., to United States of America, Health, Education and Welfare. Electrode for artificial pacemaker. 4,112,952, Cl. 128-418.000.
Thomas, Herbert: *See—*
Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, B 742,132, Cl. 424-250.000.
Thomas, Richard J., to Robbins & Myers, Inc. Boltless housing for gear heads and the like. 4,112,786, Cl. 74-606.00R.
Thompson, Arthur David: *See—*
Phillips, Reginald Andrew; Hamilton, Terence; and Thompson, Arthur David, B 734,637, Cl. 299-31.000.
Thompson, James L., to Dow Chemical Company, The. Foaming and silt suspending agent. B 713,168, Cl. 252-8.55C.
Thompson, John; and Pitfield, Adrian, to Wilkinson Sword Limited. Aerosol foams. B 662,266, Cl. 252-90.000.
Thompson, Robert I.: *See—*
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, B 795,819, Cl. 350-362.000.
Thompson, Robert M.; and Stearns, Richard S., to Sun Ventures, Inc. Copolymer of blocks of random poly(dioxa-amide) and polyamide. B 777,999, Cl. 260-857.0TW.
Thomsen, Eigild S. Pulp press having a planar dewatering disc below an annular press chamber. B 735,906, Cl. 210-152.000.
Thomson-CSF: *See—*
Sarfati, Pierre, B 818,221, Cl. 343-17.2PC.
Thomson, David Summers: *See—*
Jones, Geraint; and Thomson, David Summers, B 747,995, Cl. 424-304.000.
Thorn Domestic Appliances (Electrical) Ltd.: *See—*
Palfrey, Lesley Francis; and Fellows, Ronald John, 4,112,589, Cl. 34-48.000.
Thrower, Herbert T., Jr.; and Wasness, Donald S., to Thrower, Herbert T., Jr. Light modulator system. B 733,321, Cl. 315-226.000.
Thurman, Paul G., to Dare Pafco, Inc. Multi-tray basket. B 796,478, Cl. 312-111.000.
Thyssen Industrie Aktiengesellschaft: *See—*
Hausenblas, Helmut; and Holzforster, Hans-Erich, B 691,978, Cl. 280-705.000.
Tilley, Jefferson Wright: *See—*
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, B 844,570, Cl. 260-565.000.
Timin, Mitchell E., to Airco, Inc. Apparatus and method for storing and transporting substrates in a batch-type vacuum process. B 686,778, Cl. 198-339.000.
Tingler, Kenneth Lloyd: *See—*
Sandhu, Mohammad Akram; and Tingler, Kenneth Lloyd, B 778,635, Cl. 96-67.000.
Tioxide Group Limited: *See—*
Kay, Peter Dunlop, B 774,140, Cl. 260-429.500.
Tippmann, Heinrich; and Huber, Wolfgang, to ITT Industries, Inc. Epicyclic friction transmission with torque-dependent pressure-exerting device. 4,112,787, Cl. 74-798.000.
Tisbo, Cosmo N.; and Tisbo, Thomas A., to Custom Plastics, Inc. Shelving apparatus. 4,112,853, Cl. 108-111.000.
Tisbo, Thomas A.: *See—*
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,112,853, Cl. 108-111.000.
Titus IV, Theodore: *See—*
Bolick, Fred C., Jr.; and Titus IV, Theodore, B 719,423, Cl. 179-100.1DR.
Tobin, Joseph M., to Westinghouse Electric Corp. Fuel arrangement for high temperature gas cooled reactor. B 646,812, Cl. 176-84.000.
Todd, Estel R.: *See—*
Dirksing, Robert S.; and Todd, Estel R., B 845,064, Cl. 366-167.000.
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, to Komatsu Electronci Metals, Co., Ltd. Method of producing high-purity transparent vitreous silica body. B 733,400, Cl. 423-336.000.
Tokumitsu, Shunji: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, B 798,313, Cl. 274-15.00R.
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and

Tsumori, Toshiro, to Sony Corporation. Electrodeposition process. B 801,640, Cl. 204-39.000.

Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, to Sony Corporation. Method of adjusting a fused salt electrolytic bath. B 802,487, Cl. 204-39.000.

Tokuoka, Yasumichi; and Fukuda, Kazumasa, to TDK Electronics Co., Ltd. Method of preventing deterioration of characteristics of ferromagnetic metal or alloy particles. B 744,115, Cl. 148-105.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Manabe, Kenshi; and Satou, Kouichirou, B 801,254, Cl. 307-279.000.
Suzuki, Yasoji, B 735,133, Cl. 307-225.00C.
Suzuki, Yasoji; and Ochii, Kiyofumi, B 777,663, Cl. 365-189.000.

Tokyo Special Wire Netting Co., Ltd.: *See—*
Ikawa, Reiji, B 809,329, Cl. 261-98.000.

Toma, Charles A.; and Haessly, Walter F., to Taylor-Winfield Corporation, The. Welding machine auxiliary transfer clamp. B 678,153, Cl. 219-97.000.

Tomecek, Jerry J. Antonomic transcutaneous affect device. 4,112,923, Cl. 128-1.300.

Tominaga, Akira, to Toyota Jidosha Kogyo Kabushiki Kaisha. Valve lifter for internal combustion engine. 4,112,884, Cl. 123-90.480.

Tomita, Chuji, to Hitachi Medical Corporation. X-ray apparatus. B 740,720, Cl. 250-439.00R.

Tomy Kogyo Co., Inc.: *See—*
Sano, Hiroshi, 4,112,610, Cl. 46-12.000.

Toplak, Steve. Spinning toy. 4,112,613, Cl. 46-83.000.

Toppan Printing Co., Ltd.: *See—*
Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, B 735,523, Cl. 96-38.100.

Torpie, John D.: *See—*
Heckman, Raymond F.; and Torpie, John D., B 793,455, Cl. 179-90.00B.

Torr, Ralph Percival; and Beauchamp, Miles Albert, to Andre Rubber Company Limited. Spacing devices for overhead transmission lines. B 765,274, Cl. 174-42.000.

Torralba, Jose Esteban, to Talleres Diesel, S.A. Hydraulic speed control systems for internal combustion engines. 4,112,902, Cl. 123-140.0FG.

Toshio, Iizuka: *See—*
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, B 737,025, Cl. 219-56.000.

Toter-Tee, Inc.: *See—*
Glumac, Nick P., B 708,400, Cl. 214-10.50R.

Totten, George Edward: *See—*
Williams, Thomas Charles; and Totten, George Edward, B 810,785, Cl. 260-448.20B.

Toukan, Sameeh Said: *See—*
Hager, Robert Bonner; Toukan, Sameeh Said; and Walter, Gerald Joseph, B 459,132, Cl. 260-348.430.

Towmotor Corporation: *See—*
Melocik, Grant C., B 813,030, Cl. 307-9.000.

Townsend Engineering Company: *See—*
Townsend, Ray T., 4,112,881, Cl. 123-32.00B.

Townsend, Ray T., to Townsend Engineering Company. Rotary internal combustion engine employing compression ignition. 4,112,881, Cl. 123-32.00B.

Toyo Kohan Co., Ltd.: *See—*
Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, B 818,099, Cl. 204-37.00T.

Toyo Seikan Kaisha Ltd.: *See—*
Hotta, Hisashi; and Mori, Fumio, B 808,301, Cl. 156-306.000.

Toyo Valve Company, Ltd.: *See—*
Okano, Masao, B 698,800, Cl. 75-156.500.

Toyo Ysushinki Kabushiki Kaisha: *See—*
Hirata, Toshikiyo, B 772,248, Cl. 343-119.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Arai, Hiroshi; and Mori, Mamoru, B 765,392, Cl. 280-747.000.
Goto, Kenji; and Niwa, Takao, 4,112,877, Cl. 123-32.0ST.
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, B 781,408, Cl. 228-176.000.
Miyagi, Hideo, 4,112,678, Cl. 60-276.000.
Nohira, Hidetaka, 4,112,894, Cl. 123-119.00A.
Okabayashi, Keiichi, 4,112,888, Cl. 123-117.00A.
Takimoto, Masatami; and Mizutani, Koichi, 4,112,898, Cl. 123-136.000.
Tominaga, Akira, 4,112,884, Cl. 123-90.480.

Tracy, David J.; and Hoffstadt, Walter F., to GAF Corporation. Process for the preparation of 3-anilino-5-pyrazolones. B 742,058, Cl. 548-365.000.

Transco Products, Inc.: *See—*
Greiser, John W., B 751,712, Cl. 343-895.000.

Trautner, Kersten: *See—*
Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, B 813,311, Cl. 8-41.00R.

Travis, Brian A., to Datrix Corporation. Digital communication system for transmitting digital information between a central station and a number of remote stations. B 759,774, Cl. 340-151.000.

Trebellas, John C.: *See—*
Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., B 568,216, Cl. 204-159.160.

Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, to Degremont. Method of measuring the mobility of colloids in an electrical field. B 605,926, Cl. 204-180.00R.

Treplin, Friedrich-Wilhelm; and Borchert, Werner, to Ludwig Taprogge, Reinigungsanlagen fur Rohren-Warmeaustauscher. Apparatus for separating cleaning elements from a fluid. B 781,489, Cl. 165-95.000.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. 7β-[(2-Amino-1,2-dioxoethyl)amino]acyl cephalosporins. B 776,400, Cl. 544-26.000.

Trio Kabushiki Kaisha: *See—*
Sekiguchi, Tadao, B 767,832, Cl. 325-455.000.

Tripp, Luther W. Direct-from-skein yarn feeder. 4,112,711, Cl. 66-1.00A.

Troope, Walter S.; and Lawrence, Jackson, to Cluett, Peabody & Co., Inc. Apparatus for compressively shrinking textile fabrics at high speed. 4,112,559, Cl. 26-18.600.

Trott, Donald E. Casing perforation method and apparatus. B 836,758, Cl. 166-297.000.

Trotta, Robert. Method and apparatus for harnessing the power of moving water. 4,112,686, Cl. 60-639.000.

Troy, M. Frank, to Vapor Corporation. Mechanical stored energy positioning actuator. B 748,058, Cl. 185-40.00R.

Trucks, Roger O.; and Steiner, Edwin C., to Dow Chemical Company, The. Process for preparation of (poly)cyclic polyethers. B 437,425, Cl. 260-338.000.

TRW Inc.: *See—*
McKee, William H., B 736,895, Cl. 339-91.00R.
McKee, William H., B 736,942, Cl. 339-91.00R.

Tryciecky, Teodozij: *See—*
Shanker, Irvin Paul; and Tryciecky, Teodozij, 4,112,953, Cl. 128-419.00P.

Tsao, Utah, to Lummus Company, The. Hydrogen chloride recovery. B 673,095, Cl. 260-659.00A.

Tsubamoto, Shinichi: *See—*
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, B 709,088, Cl. 23-232.00R.

Tsuchitani, Akira: *See—*
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, B 763,679, Cl. 148-187.000.

Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, to Sumitomo Chemical Company, Limited. Phosphorothiolate pesticidal composition. B 768,875, Cl. 424-225.000.

Tsuji, Sadahiko; and Agari, Yujiro, to Canon Kabushiki Kaisha. Macro zoom lens. B 857,692, Cl. 350-184.000.

Tsukamoto Seiki Co., Ltd.: *See—*
Miida, Eishiro, B 835,012, Cl. 285-334.000.

Tsumori, Toshiro: *See—*
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 801,640, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, B 802,487, Cl. 204-39.000.

Tsunekawa, Tokuichi; and Taguchi, Tetsuya, to Canon Kabushiki Kaisha. A leak current suppressing printed circuit board. B 703,962, Cl. 250-214.00R.

Tsuruda, Kunihiro: *See—*
Maki, Masao; Kaneko, Yasunori; Tsuruda, Kunihiro; and Kobayashi, Ikuo, B 846,495, Cl. 423-239.000.

Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, to Toyo Kohan Co., Ltd. Steel sheet useful in forming foodstuff and beverage cans. B 818,099, Cl. 204-37.00T.

Tsuzuki, Hidehiro: *See—*
Asari, Akira; and Tsuzuki, Hidehiro, 4,112,723, Cl. 72-60.000.

Tucker, Harold A., to B. F. Goodrich Company, The. Ethylenically unsaturated blocked aromatic diisocyanates. B 734,945, Cl. 560-32.000.

Tucker, Hubert J. Method of preventing contamination of beverage containers. 4,112,650, Cl. 53-412.000.

Tugukuni, Hideyoshi; and Kano, Masafumi, to Dai Nippon Toryo Co., Ltd. Powdery coating composition and process for preparing the same. B 683,508, Cl. 428-407.000.

Tuma, Frantisek: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.

Turkall, Daniel N.: *See—*
Holman, Robert R.; and Turkall, Daniel N., B 737,761, Cl. 277-1.000.

Turley, Richard J.; and Ozolins, Alexandre, to Olin Corporation. Method of bonding using an improved epoxy composition containing chlorine containing polyols. B 807,456, Cl. 156-330.000.

Turner, Albert W. Lever assemblies for augmenting prime mover power. B 794,971, Cl. 180-65.00D.

Turner, Philip L., to Systems, Science and Software. Method and apparatus for determining the volume of a condensed material sample. 4,112,738, Cl. 73-32.00R.

Turner, Robert B., to Johnson & Johnson. Zero temperature coefficient reference circuit. B 758,629, Cl. 307-310.000.

Turner, Robert B., to Johnson & Johnson. Automatic on/off digitally timed electronic switch. 4,112,764, Cl. 73-362.0AR.

Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., to Johnson & Johnson. Probe cover grip and release device. 4,112,762, Cl. 73-343.00R.

Turtle Wax, Inc.: *See—*
Svedas, Stanley; and Shah, Champak C., B 649,078, Cl. 260-23.00R.

Twilley, Ian Charles: *See—*
Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, B 829,764, Cl. 264-210.00F.

Tylka, Etler-Peter. Spark plug with combustion pressure switches. B 800,950, Cl. 315-51.000.

Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, to Nippon Kokan Kabushiki Kaisha. Process of making high tension cold-reduced Al-killed steel excellent in accelerated aging property. B 776,288, Cl. 148-12.300.

Uchida, Tsuneo: *See—*
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, B 781,408, Cl. 228-176.000.

Uchida, Yoshiro: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.

Uchidoi, Masanori: *See—*
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, B 758,200, Cl. 354-238.000.

Ueda, Seiji: *See—*
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, B 763,679, Cl. 148-187.000.

Uehara, Yasuhiro: *See—*
Nishide, Hiroo; and Uehara, Yasuhiro, B 801,678, Cl. 219-216.000.

Uenishi, Akio: *See—*
Seo, Mamoru; and Uenishi, Akio, B 764,177, Cl. 307-311.000.

Ueno, Eijiro, to Ueno Kohgyo Limited. Air-borne transportation system conveying truck. B 785,600, Cl. 243-33.000.

Ueno Kohgyo Limited: *See—*
Ueno, Eijiro, B 785,600, Cl. 243-33.000.

Uerdingen, Walter: *See—*
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, B 778,631, Cl. 260-859.00R.

Ugelstad, John, to Sintef. Process for preparing latex. B 825,136, Cl. 260-29.6XA.

Uhtenwoldt, Herbert R.; and Humes, Norman S., to Cincinnati Milacron-Heald Corp. Grinding machine. 4,112,624, Cl. 51-5.00D.

Uke, Alan K. Quick adjust strap for diver's face mask. 4,112,521, Cl. 2-452.000.

Uke, Alan Kurt. Diver's flashlight. B 739,290, Cl. 362-158.000.

Uni-Cardan AG: *See—*
Krude, Werner, 4,112,709, Cl. 64-21.000.

Unimax Switch Limited: *See—*
Corfield, John Courtney, B 727,849, Cl. 200-50.00A.

Union Carbide Corporation: *See—*
Atwood, Gilbert Richard, B 781,206, Cl. 423-574.00R.
Kendall, John Edward; and Butwell, Kenneth Francis, B 836,542, Cl. 423-226.000.
Litteral, Carl J., B 724,919, Cl. 423-342.000.
Ward, Robert James, B 773,776, Cl. 260-37.0EP.
Williams, Thomas Charles; and Totten, George Edward, B 810,785, Cl. 260-448.20B.

Union Chimique Continentale-U.C.C.: *See—*
Simon, Pierre, B 695,751, Cl. 260-343.500.

Union Oil Company of California: *See—*
Bernard, George G.; and Holm, LeRoy W., B 774,920, Cl. 166-273.000.
Mickelson, Grant A., B 846,419, Cl. 208-216.000.

United Kingdom Atomic Energy Authority: *See—*
McKnight, James Alan, 4,112,735, Cl. 73-19.000.
Williams, Raymond, B 751,948, Cl. 206-408.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Coates, David; Gray, George William; and McDonnell, Damien Gerard, B 821,146, Cl. 252-299.000.
Pierce, Donald, B 781,866, Cl. 244-219.000.
Shaw, Harry, B 804,237, Cl. 244-20.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See—*
Hayward, Alan Thomas Joseph, 4,112,757, Cl. 73-207.000.

United States Bedding Company, The: *See—*
Golembeck, Gerald A.; and Horwitz, Thomas L., 4,112,529, Cl. 5-354.000.

U.S. Industries, Inc.: *See—*
Van Huis, Robert L., 4,112,872, Cl. 119-22.000.

United States of America
Agriculture: *See—*
Masri, Merle S.; Randall, Virginia G.; and Stanley, William L., B 827,659, Cl. 195-63.000.
Air Force: *See—*
Mazdiyasni, Khodabakhsh S.; and Cooke, Charles M., B 452,038, Cl. 264-101.000.
Army: *See—*
Borowick, John Joseph, B 747,765, Cl. 343-815.000.
Goldsborough, Robert R.; Spencer, David R.; and West, Samuel F., B 176,890, Cl. 343-112.00S.
Nossen, Edward J., B 856,448, Cl. 331-2.000.
Energy: *See—*
Garin, John; and Belsick, James C., B 714,220, Cl. 176-87.000.
Hale, Robert L., 4,112,568, Cl. 29-157.00C.
Jones, Robert D., B 789,154, Cl. 176-40.000.
Health, Education and Welfare: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.
Interior: *See—*
Savanick, George A.; and Krawza, Walter G., B 809,881, Cl. 299-4.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Laumann, Eugene A.; and Reynolds, Rollin K. Hydrogen-fueled engine. 4,112,875, Cl. 123-1.00A.
Navy: *See—*
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., B 806,799, Cl. 320-39.000.
D'Albora, John M., B 446,571, Cl. 340-3.00R.
Davis, Robert H., B 639,031, Cl. 364-718.000.
Funk, Clarence J., B 589,658, Cl. 340-2.000.
Gustafson, Paul R., B 790,623, Cl. 252-184.000.
Hudson, George Elbert, III; and Clark, Arthur E., 4,112,699, Cl. 62-3.000.
Mason, Russell I.; and Dale, John R., B 535,332, Cl. 340-85.000.
Savitt, Jacob, 4,112,845, Cl. 102-27.00R.

U.S. Philips Corporation: *See—*
deBrebisson, Michel, B 764,587, Cl. 148-1.500.
Gansfried, Myles Stephen, B 799,089, Cl. 250-445.00T.
Holland, Johannes; and Wagemans, Hubertus Franciscus Marie, 4,112,768, Cl. 73-422.00R.
Kooi, Else; and vanLierop, Joseph Gijsbertus, B 671,419, Cl. 148-1.500.
Salles, Yvon; Leger, Pierre; and David, Gerard Andre, B 729,345, Cl. 156-345.000.
Van Esdonk, Johannes, 4,112,563, Cl. 29-25.140.

United States Pipe and Foundry Company: *See—*
Kennedy, Harold, Jr., B 856,384, Cl. 285-61.000.

United States Steel Corporation: *See—*
Steiner, John E., B 710,952, Cl. 220-71.000.

United Technologies Corporation: *See—*
Bell, Mace, B 819,744, Cl. 174-52.00R.
Huly, William; and Brouillette, Rudolph G., 4,112,862, Cl. 114-221.00R.
Reeder, Thomas M., B 820,474, Cl. 333-30.00R.

Unitek Corporation: *See—*
Donner, Joseph E., B 602,208, Cl. 219-489.000.

Universite de Sherbrooke: *See—*
Chornet, Esteban; and Cavalier, Jean-Claude, B 811,438, Cl. 252-422.000.

University of California, The Regents of the: *See—*
Gram, Donald J., B 806,054, Cl. 560-38.000.
Schrauzer, Gerhard N.; and Guth, Ted D., B 812,478, Cl. 204-157.10R.

University of Utah: *See—*
Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., B 788,572, Cl. 429-193.000.

Uno, Eiichi; and Hachiga, Takasi, to Nippondenso Co., Ltd. Electromagnetic type contactless ignition apparatus for internal combustion engine. 4,112,904, Cl. 123-148.00E.

UOP Inc.: *See—*
Carlson, David H. J., B 799,825, Cl. 208-206.000.
Michalko, Edward, B 786,527, Cl. 252-455.00Z.
Ward, Dennis J., B 758,092, Cl. 260-669.00R.

Upjohn Company, The: *See—*
DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., B 834,285, Cl. 424-117.000.
Hall, Charles M.; and Wright, John B., B 742,438, Cl. 424-309.000.
Lednicer, Daniel, B 783,806, Cl. 424-248.560.
Moon, Malcolm W.; and Kornis, Gabriel, B 846,158, Cl. 548-374.000.
Moon, Malcolm W.; and Kornis, Gabriel, B 846,159, Cl. 548-374.000.
Nelson, Norman A., B 822,305, Cl. 260-590.00C.
Smith, Herman W., B 820,967, Cl. 560-61.000.
Smith, Herman W., B 820,968, Cl. 560-53.000.
Smith, Herman W., B 820,976, Cl. 560-53.000.
Smith, Herman W., B 820,977, Cl. 560-55.000.
Smith, Herman W., B 820,978, Cl. 560-53.000.
Smith, Herman W., B 821,058, Cl. 560-61.000.

USM Corporation: *See—*
Smith, George William, B 760,264, Cl. 241-24.000.

Utsunomiya, Yutaka: *See—*
Takase, Hirobumi; and Utsunomiya, Yutaka, 4,112,721, Cl. 72-12.000.

Uyeda, Tim M., to Gartner, Klaus W. Padlock. 4,112,715, Cl. 70-38.00A.

Uzuka, Mitsuo, to Sony Corporation. Brushless motor driving circuit. B 810,982, Cl. 318-138.000.

Vadetec Corporation: *See—*
Kemper, Yves Jean; and Bigot, Lucien, 4,112,779, Cl. 74-191.000.
Kemper, Yves Jean; and Bigot, Lucien, 4,112,780, Cl. 74-191.000.

Vaerk, Lembit: *See—*
Fritsch, Robert A.; Gattu, Narahari; and Vaerk, Lembit, 4,112,649, Cl. 52-731.000.

Vagyoczky, Stephen: *See—*
Kooi, J. Peter E.; and Vagyoczky, Stephen, 4,112,584, Cl. 33-292.000.

Vahrenkamp, Oscar Oswald. Pneumatic lift for single axle trailer. B 743,607, Cl. 280-475.000.

Vaill, Ronald E., to Westinghouse Electric Corp. Manual control handle for electric vehicle. B 737,366, Cl. 180-19.00H.
Vajna, Eugenio: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, B 775,776, Cl. 260-875.000.
Valley Hydro-Luft, Inc.: *See—*
Brown, Robert M.; and Karliner, Rudolf R., B 723,465, Cl. 222-324.000.
Valmet Oy: *See—*
Kankaanpaa, Matti, B 787,321, Cl. 162-272.000.
Kankaanpaa, Matti, B 787,334, Cl. 162-301.000.
Sailas, Vaino, 4,112,565, Cl. 29-148.40D.
Van der Molen Machinefabriek B.V.: *See—*
Daenen, Bernardus, 4,112,799, Cl. 83-409.000.
Van Dorn Company: *See—*
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., B 744,965, Cl. 206-508.000.
Van Bavel, Adrianus W. M.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.
Van De Kraats, Eduard J.: *See—*
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., B 779,645, Cl. 44-66.000.
Vandensavel, Jean Marie: *See—*
Smets, Georges Joseph; and Vandensavel, Jean Marie, B 406,350, Cl. 260-308.00D.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, to C. van der Lely N.V. Soil cultivating implements. B 686,327, Cl. 172-59.000.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, to C. van der Lely N.V. Soil cultivating implements. B 772,858, Cl. 172-59.000.
van der Lely, Cornelis. Soil cultivating implements. B 672,036, Cl. 172-70.000.
van der Lely, Cornelis. Soil cultivating implements. B 716,768, Cl. 172-59.000.
Vander Meulen, Douglas J., to C. L. Frost & Son, Inc. Wheel bearing assembly with plastic bearing seals. B 826,758, Cl. 308-187.100.
Van Esdonk, Johannes, to U.S. Philips Corporation. Color display tube and method of manufacturing same. 4,112,563, Cl. 29-25.140.
Van Huis, Robert L., to U.S. Industries, Inc. Poultry cage system with poultry removal. 4,112,872, Cl. 119-22.000.
vanLierop, Joseph Gijsbertus: *See—*
Kooi, Else; and vanLierop, Joseph Gijsbertus, B 671,419, Cl. 148-1.500.
Van Lieshout, Jacobus J.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.
van Oorschot, Gosewinus Franciscus: *See—*
Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, B 750,835, Cl. 55-97.000.
Van Ordstrand, Cayrl W.: *See—*
Gilbert, Henry L.; and Van Ordstrand, Cayrl W., 4,112,846, Cl. 102-52.000.
Van Ornum, Joel V.; and Stang, Peter L., to Rocket Research Corp. Elastomeric sealant composition. B 595,351, Cl. 260-876.00B.
Van Rens, Russell J.: *See—*
Hackbarth, Eugene R.; and Van Rens, Russell J., B 780,590, Cl. 261-52.000.
Van Zandt, Robert D. Animal climbing structure kit. 4,112,873, Cl. 119-29.000.
Vapor Corporation: *See—*
Troy, M. Frank, B 748,058, Cl. 185-40.00R.
Varian Mat GmbH: *See—*
Lerche, Heinz, B 755,881, Cl. 307-229.000.
Varma, Ravi K.; and Cimarusti, Christopher M., to E. R. Squibb & Sons, Inc. Steroidal[16α,17-b]benzodioxins. B 850,514, Cl. 260-239.55R.
Vasilenko, Valentin Vasilievich: *See—*
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, B 679,437, Cl. 169-12.000.
Vasiliev, Vladimir Sergeevich; Annenberg, Ernest Alexandrovich; Livshits, Abram Lazarevich; Polotsky, Vadim Evgenievich; and Lakhtjukhov, Valery Mikhailovich. Electric discharge machine with a program copier and a tool support head carried by a longitudinally and transversely driven carriage. B 780,357, Cl. 219-69.00W.
Veba-Chemie Aktiengesellschaft: *See—*
Kurandt, Hans-Friedrich; and Schliephake, Dietrich, B 740,469, Cl. 423-170.000.
Vecsey, Louis R.: *See—*
Wattles, Gurdon B.; and Vecsey, Louis R., B 778,363, Cl. 241-188.00A.
Velsicol Chemical Company: *See—*
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., B 784,212, Cl. 71-88.000.
Venable, Phillip G., to J. I. Case Company. Power shift mechanism for earth working implements. B 818,702, Cl. 172-667.000.
Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Biricz, Stefan, B 749,119, Cl. 164-446.000.
Verhaeghe, Michael: *See—*
Balinte, Joe; and Verhaeghe, Michael, B 734,091, Cl. 171-61.000.
Verini, Anthony J. Dual pivot mount assembly for an automobile antenna. B 737,552, Cl. 343-715.000.
Verini, Anthony J. Automobile antenna mounting bracket apparatus. B 762,442, Cl. 343-715.000.
Verini, Anthony J. Mount assembly for antennas with male-female securing means. B 805,889, Cl. 343-715.000.
Vermillion, Henry J., Jr.: *See—*
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., B 733,562, Cl. 428-565.000.
Versapak International Limited: *See—*
Anderson, Michael Denny, 4,112,990, Cl. 150-3.000.
Veyo, Stephen E.: *See—*
Sisk, Francis J.; and Veyo, Stephen E., 4,112,705, Cl. 62-238.000.
Vickers-Intertek Limited: *See—*
Ball, Kenneth, B 771,356, Cl. 277-9.000.
Victor Company of Japan, Limited: *See—*
Kayanuma, Kanji, B 832,890, Cl. 358-128.000.
Victor Stanley, Inc.: *See—*
Skalka, Gerald P., B 873,976, Cl. 297-454.000.
Vierkant, Mark A.: *See—*
Anderson, Leroy E.; Charlson, David V.; and Vierkant, Mark A., 4,112,731, Cl. 72-320.000.
Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., to University of Utah. Method of preparing dense, high strength, and electrically conductive ceramics containing β″-alumina. B 788,572, Cl. 429-193.000.
Visconti, Matteo, to Soxil S.p.A. Evaporating mixer for volatile anaesthetics. 4,112,939, Cl. 128-186.000.
Vishnevsky, Leonid Denisovich: *See—*
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, B 679,437, Cl. 169-12.000.
Vita, Anthony J.: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.
Vivitar Corporation: *See—*
Altman, Richard M., B 674,229, Cl. 354-152.000.
Vockenhuber, Karl: *See—*
Freudenschuss, Otto, B 749,333, Cl. 356-5.000.
Vogel, Gerald James: *See—*
Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, B 771,485, Cl. 426-422.000.
Vogt, Wilhelm: *See—*
aus der Funten, Helmut; and Vogt, Wilhelm, B 783,576, Cl. 260-343.30R.
Volk, Heinrich: *See—*
Papenfuhs, Theodor; and Volk, Heinrich, B 799,001, Cl. 260-439.00R.
Volkswagenwerk Aktiengesellschaft: *See—*
Beier, Alfred, 4,112,783, Cl. 74-470.000.
Heitland, Herbert; and Renger, Udo, 4,112,878, Cl. 123-32.0ST.
Muller, Hans; and Hanke, Georg, B 746,101, Cl. 188-282.000.
Vollkommer, Norbert: *See—*
Blumenfeld, Georg; and Vollkommer, Norbert, B 640,312, Cl. 528-299.000.
Volpe, Giancarlo: *See—*
Cavalleri, Bruno; and Volpe, Giancarlo, B 759,697, Cl. 548-339.000.
Von Allmen, Martin; and Schwob, Hans Peter, to Lasag AG. Method for ablating metal workpieces with laser radiation. B 728,403, Cl. 219-121.0LM.
von Bergmann, Hubertus Michael: *See—*
Hasson, Victor Haim; and von Bergmann, Hubertus Michael, B 692,085, Cl. 331-94.50G.
von Linde, Joachim: *See—*
von Linde, Robert; von Linde, Joachim; and Kurz, German, B 690,617, Cl. 431-352.000.
von Linde, Robert; von Linde, Joachim; and Kurz, German, to Caloric Gesellschaft Fuer Apparatebau m.b.H. Burner for fluid fuels. B 690,617, Cl. 431-352.000.
von Loeben, Wolf: *See—*
Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, B 783,407, Cl. 356-155.000.
von Wimmersperg, Heinrich F. Convertible child restraint. B 786,078, Cl. 297-216.000.
Vredenburgh, Walter A.: *See—*
Douglas, Paul S.; Patellis, Anargiros Pete; and Vredenburgh, Walter A., B 636,340, Cl. 260-876.00B.
Vyzkumny ustav bavlnarsky: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.
W. R. Grace & Co.: *See—*
Berry, Lawrence James; and Hall, Stanley Darwin, B 796,279, Cl. 221-1.000.
W. Schlafhorst & Co.: *See—*
Raasch, Hans; and Muller, Lothar, B 633,707, Cl. 242-18.00R.
W. Vinten Limited: *See—*
Stapleton, Harold Reginald, B 757,933, Cl. 248-183.000.
WABCO Westinghouse GmbH: *See—*
Ruhnau, Gerhard; Gudat, Wolfgang; Liermann, Peter; and Hesse, Karl-Heinz, B 809,886, Cl. 303-105.000.
Wacker-Chemie GmbH: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, B 808,767, Cl. 260-448.20E.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, B 737,249, Cl. 148-174.000.
Wada, Hajime: *See—*
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, B 656,084, Cl. 96-66.00R.
Wada, Masao: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, B 793,920, Cl. 424-274.000.
Waddill, Harold G.: *See—*
Schulze, Heinz; and Waddill, Harold G., B 743,818, Cl. 528-94.000.
Wade, Elman E., to Westinghouse Electric Corp. Nuclear fuel handling grapple carriage with self-lubricating bearing. B 748,352, Cl. 176-30.000.
Wagemans, Hubertus Franciscus Marie: *See—*
Holland, Johannes; and Wagemans, Hubertus Franciscus Marie, 4,112,768, Cl. 73-422.00R.
Waghorne, Winfield Earle: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, B 686,496, Cl. 423-512.00A.
Wagner, Hans: *See—*
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, B 802,946, Cl. 260-545.00R.
Wagner, Romeo Barrick, to Hercules Incorporated. Promotion of plant growth with compositions containing a dithiocarbamic acid derivative. B 789,303, Cl. 71-7.000.
Wagner, Wayne M.; and Campbell, John A., to Donaldson Company, Inc. Exhaust system and muffler lap joint. B 773,847, Cl. 285-322.000.
Wald Manufacturing Company, Inc.: *See—*
Pawsat, Carlton P.; and Humlong, Robert F., B 782,662, Cl. 403-22.000.
Waldmann, Helmut: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Walker, Frank H., to General Motors Corporation. Centrifugal lock-up clutch and torque converter. B 798,768, Cl. 192-3.310.
Walker, Harold G. Two-way scraper for ground tillage discs. B 758,655, Cl. 172-566.000.
Wall, Robert G., to Chevron Research Company. Catalyst for ester hydrogenation. B 790,366, Cl. 252-473.000.
Wallbergs Fabriks AB: *See—*
Svensson, Einar Gustav-Vilhelm, 4,112,570, Cl. 29-241.000.
Walley, Richard J. Automatic portable solid state voltage regulator tester. 4,112,748, Cl. 73-118.000.
Walski, Stanley, to Con-Spec Devices Inc. Apparatus to adjust and maintain the distance between wall forms. B 782,877, Cl. 249-216.000.
Walter, Gerald Joseph: *See—*
Hager, Robert Bonner; Toukan, Sameeh Said; and Walter, Gerald Joseph, B 459,132, Cl. 260-348.430.
Walter, Henry J., to Clairol, Inc. Ultrasonic cleaner. B 824,239, Cl. 366-111.000.
Walter, Karl, to Agfa-Gevaert AG. Feeding and electrostatic holding originals in a copying machine. B 828,971, Cl. 355-75.000.
Wambach, Allen Dale, to General Electric Company. Reinforced thermoplastic compositions of polyester resins and a polycarbonate resin. B 747,635, Cl. 260-40.00R.
Wang, Long Shyong: *See—*
Ruckel, Erwin Richard; and Wang, Long Shyong, B 814,527, Cl. 252-429.00B.
Wanner, Karl; and Reibetanz, Wilbert, to Robert Bosch GmbH. Rock drill. B 749,034, Cl. 175-207.000.
Ward, Barry S.: *See—*
Helixon, Michael L.; and Ward, Barry S., 4,112,945, Cl. 128-218.00D.
Ward, Dennis J., to UOP Inc. Aromatic hydrocarbon dehydrogenation process. B 758,092, Cl. 260-669.00R.
Ward, Robert James, to Union Carbide Corporation. Polymeric organosilicon compounds. B 773,776, Cl. 260-37.0EP.
Wardwell, Charles H.; and Holcomb, Norman L., to Research Engineering & Manufacturing, Inc. Heat-treated article. 4,112,812, Cl. 85-46.000.
Wareham, Richard R.: *See—*
Driscoll, John J.; and Wareham, Richard R., B 749,511, Cl. 354-76.000.
Warman International Limited: *See—*
Grzina, Anthony, B 691,436, Cl. 415-170.00R.
Warner, Dale A.: *See—*
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, B 665,865, Cl. 544-303.000.
Wasai, Hiromi: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, B 626,098, Cl. 325-320.000.
Washington State University Research Foundation: *See—*
Talbott, John W.; and Logan, James D., B 747,391, Cl. 264-24.000.
Wasness, Donald S.: *See—*
Thrower, Herbert T., Jr.; and Wasness, Donald S., B 733,321, Cl. 315-226.000.
Watanabe, Haruo; and Negishi, Masaaki, to Showa Sangyo Kabushiki Kaisha. Method for refining of palm oils. B 697,192, Cl. 260-424.000.
Watanabe, Haruo: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, B 771,665, Cl. 431-1.000.
Watanabe, Kazuo; Endo, Toshio; and Kojima, Katsuhiro, to Daido Tokushuko Kabushiki Kaisha. Automatic deseaming apparatus for elongate block of metallic material. 4,112,626, Cl. 51-35.000.
Watanabe, Kazuo: *See—*
Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, 4,112,858, Cl. 112-158.00E.
Watanabe, Masanori: *See—*
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, B 766,745, Cl. 354-249.000.
Watanabe, Morio; and Nishimura, Sanji, to Solex Research Corporation of Japan. Process for recovery of waste H_2SO_4 and HCl. B 773,657, Cl. 204-151.000.
Watson, Albert T.; and Hull, Robert L., to Exxon Research & Engineering Co. Polypropylene impact blends having improved optical properties. B 718,846, Cl. 260-897.00A.
Watt, William R.; Astolfi, Edmund G.; and Laufer, Jay K., to American Can Company. Method for producing multilayered coated substrate. B 743,133, Cl. 427-44.000.
Wattles, Gurdon B.; and Vecsey, Louis R., to Entoleter, Inc. Laminated rotor processing apparatus. B 778,363, Cl. 241-188.00A.
Wavin B.V.: *See—*
de Putter, Warner Jan, 4,112,795, Cl. 83-15.000.
Wear-Cote International, Inc.: *See—*
Henry, Russell Alger; and Summers, Ernest Moreland, B 799,772, Cl. 427-290.000.
Webasto-Werk W. Baier GmbH & Co.: *See—*
Leiter, Robert, B 863,709, Cl. 296-137.00G.
Webb, Allen N.: *See—*
Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., B 746,766, Cl. 252-442.000.
Webb, Michael Guthrie, to British Petroleum Company Limited, The. Oil boom. 4,112,689, Cl. 405-63.000.
Webb, Robert: *See—*
Show, Roger; and Webb, Robert, B 764,551, Cl. 423-155.000.
Weber, Helmut: *See—*
Jutte, Hans; and Weber, Helmut, 4,112,696, Cl. 405-145.000.
Wedemeyer, Karlfried: *See—*
Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karlfried, B 757,422, Cl. 568-756.000.
Weed Eater, Inc.: *See—*
Ballas, George C.; and Mitchell, Albert W., 4,112,653, Cl. 56-12.700.
Wehinger, Egbert: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 693,971, Cl. 548-377.000.
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, B 766,235, Cl. 424-273.00P.
Wehner, Norvin J., deceased (by Wehner, Virginia L., surviving spouse), to Cramer Industries, Inc. Locking device. B 801,055, Cl. 248-408.000.
Wehner, Virginia L., surviving spouse: *See—*
Wehner, Norvin J., deceased, B 801,055, Cl. 248-408.000.
Weiberg, Otto: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Weigert, Wilhelm: *See—*
Olbrich, Gottfried; and Weigert, Wilhelm, 4,112,978, Cl. 138-30.000.
Weird Products Ltd.: *See—*
Huston, Henry H., B 774,372, Cl. 273-96.00R.
Weiss, Martin Joseph, to American Cyanamid Company. 15,16-Dioxy prostenoic acids and esters. B 767,863, Cl. 560-121.000.
Weiss, Warren I.: *See—*
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.
Weitzel, Hans: *See—*
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, B 400,980, Cl. 260-876.00R.
Weitzner, Jonas. Slide fastener bottom ends. 4,112,553, Cl. 24-205.11R.
Wellman, James H. Gas pump nozzle. B 792,463, Cl. 222-571.000.
Wells, John B., to Xerox Corporation. Migration imaging method involving color change. B 735,344, Cl. 96-1.0PS.
Wells, Tom J.: *See—*
Adams, Elvin E.; Wells, Tom J.; Wentzek, Horst F.; Zapletal, Henry; and Zugel, Marty J., 4,112,726, Cl. 72-137.000.
Wenrick, Brian A., to Protective Treatments, Inc. Longitudinally curved impact resistant trim strips. B 753,449, Cl. 293-71.00R.
Wentzek, Horst F.: *See—*
Adams, Elvin E.; Wells, Tom J.; Wentzek, Horst F.; Zapletal, Henry; and Zugel, Marty J., 4,112,726, Cl. 72-137.000.
Werba, William J.: *See—*
MacLennan, P. H. Barry; Ireland, Graham A.; and Werba, William J., 4,112,756, Cl. 73-181.000.
Werder, Roger Daniel; Meier, Linus; and Lang, Karl, to Mettler Instrumente AG. Automatic analysis apparatus. B 551,517, Cl. 422-65.000.

Werlich, Harald Willy: *See—*
Pole, Robert Vladimir; and Werlich, Harald Willy, B 798,042, Cl. 350-3.710.
Werner, Clements M. Fire extinguishant dispensing nozzles. B 769,425, Cl. 169-37.000.
Werner, Dietmar: *See—*
Gettert, Hans; Jeck, Arnulf; and Werner, Dietmar, B 861,744, Cl. 48-197.00R.
Werner, Paul; Wirtz, Egon; and Lehmann, Gerhard, to Keiper K. G. Tiltable seat. B 786,815, Cl. 297-362.000.
Werst, Lyman L., to Parks-Cramer Company. Plural sensor ends down detecting apparatus. 4,112,665, Cl. 57-81.000.
Wessling, Ritchie A.: *See—*
Pickelman, Dale M., Sr.; and Wessling, Ritchie A., B 776,167, Cl. 526-30.000.
West, Samuel F.: *See—*
Goldsborough, Robert R.; Spencer, David R.; and West, Samuel F., B 176,890, Cl. 343-112.00S.
Western Electric Company: *See—*
Clement, George Frederick; and Sniegowski, Bruno Raymond, B 844,377, Cl. 179-2.00A.
Western Electric Co., Inc.: *See—*
Tedeschi, Anthony, B 793,325, Cl. 200-234.000.
Westfalia Separator Aktiengesellschaft: *See—*
Pautsch, Gunthard; and Kohlstette, Werner, B 811,421, Cl. 233-11.000.
Westinghouse Air Brake Company: *See—*
Balukin, Richard F., B 835,123, Cl. 303-54.000.
Zoric, Michael T., B 749,288, Cl. 303-37.000.
Westinghouse Brake & Signal Co. Ltd.: *See—*
Paginton, Philip Norman, B 816,133, Cl. 188-196.00F.
Westinghouse Electric Corp.: *See—*
Albaric, Jacques E., B 720,331, Cl. 310-54.000.
Albaric, Jacques E.; Curtis, Little P.; and Dailey, George F., B 720,332, Cl. 310-54.000.
Asars, Juris A., B 780,138, Cl. 315-169.0TV.
Cameron, Frank L., B 622,279, Cl. 337-162.000.
Csanady, Michael, Jr., B 749,555, Cl. 210-167.000.
Csanady, Michael, Jr., 4,112,975, Cl. 137-625.290.
DeCorso, Serafino M., 4,112,676, Cl. 60-39.710.
Eley, Edgar R., B 828,467, Cl. 339-111.000.
Fidler, Gary L.; Hill, Richard A.; and Carrera, John P., B 686,858, Cl. 176-38.000.
Frink, Russell E.; and Milianowicz, Stanislaw A., B 468,332, Cl. 200-144.00R.
Glaudel, Stephen P.; and Chambers, Norman T., B 735,718, Cl. 322-38.000.
Gohm, William G., B 742,474, Cl. 209-215.000.
Hull, Robert E.; and Gemp, Robert S., B 816,556, Cl. 307-53.000.
Lee, Richard M.; and Szema, Li C., B 742,739, Cl. 415-115.000.
Maier, Alfred E.; Armstrong, Donald D.; and Farley, James R., B 829,702, Cl. 200-153.00G.
McCabe, Barkman C.; and Zajac, Edward, 4,112,745, Cl. 60-641.000.
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., B 791,434, Cl. 310-334.000.
Oates, Robert M.; and Mackenzie, Raymond W., B 783,525, Cl. 318-473.000.
Petrie, Edward M., B 749,592, Cl. 260-29.2EP.
Pillsbury, Paul W.; and DeCorso, Serafino M., 4,112,675, Cl. 60-39.060.
Smith, James D. B.; and Kauffman, Robert N., B 773,875, Cl. 260-830.0TW.
Tobin, Joseph M., B 646,812, Cl. 176-84.000.
Vaill, Ronald E., B 737,366, Cl. 180-19.00H.
Wade, Elman E., B 748,352, Cl. 176-30.000.
Westmoreland, Geraldine: *See—*
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, B 665,865, Cl. 544-303.000.
Weston, David, to Reynolds Metals Company. Concentration of hydrated aluminum oxide minerals by flotation. B 736,466, Cl. 75-2.000.
Westvaco Corporation: *See—*
Forbes, Hampton E., Jr., B 842,261, Cl. 206-45.140.
Westwood, William Dickson, to Northern Telecom Limited. Multiple lens system for an optical imaging device. B 797,509, Cl. 250-216.000.
Wetzels, Walter, to SCHUMAG Schumacher Metallwerke Gesellschaft mit beschankter Haftung. Device for grinding elongated cylindrical workpieces. 4,112,625, Cl. 51-33.00W.
Wheeler, David C. Lighter-than-air apparatus and method of utilizing same. B 797,290, Cl. 244-31.000.
Wheldon, Alfred G.; and Harris, Ernest D., to Distillers Company (Carbon Dioxide) Ltd., The. Gas detector. 4,112,736, Cl. 73-23.000.
Whirlpool Corporation: *See—*
Marcade, Roque Denis, 4,112,588, Cl. 34-45.000.
White Chemical Corporation: *See—*
Mischutin, Vladimir, B 751,661, Cl. 427-390.00D.
White, James E.: *See—*
Schumacher, Ignatius; and White, James E., B 734,893, Cl. 203-8.000.
White, James F.; and Applequist, Michael D., to Standard Oil Company, The. Preparation of acrylic or methacrylic acid from acrolein or methacrolein. B 748,081, Cl. 562-535.000.
Whitehead, James Stephen: *See—*
Liberman, Harvey W.; and Whitehead, James Stephen, 4,112,823, Cl. 91-36.000.
Whiting Corporation: *See—*
Bella, Frank, Jr.; and Bennett, Richard C., B 712,033, Cl. 159-27.00A.
Widdicombe, Derek Gordon, to Naylor Brothers (Clayware) Limited. End cap for pipes. 4,112,979, Cl. 138-89.000.
Wiedemann, Kurt; and Seiferth, Reinhard, to Siemens Aktiengesellschaft. Pulse radar apparatus with integration device. B 056,013, Cl. 343-7.700.
Wiedenmann, Hans, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H. Subminiature incandescent lamp. B 805,368, Cl. 313-315.000.
Wiegand, Karl E.: *See—*
Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., B 807,738, Cl. 562-568.000.
Wiener, Hans, to C. A. Weidmuller KG. Cable-stripping tool. 4,112,791, Cl. 81-9.50A.
Wild, John Paul, to Commonwealth Scientific and Industrial Research Organization. Geodesic lens. B 753,383, Cl. 343-754.000.
Wild, Robert W.; and Keeney, Joseph G., to C. H. Heist Corporation. High pressure jet wall cleaner apparatus. 4,112,535, Cl. 15-98.000.
Wilkinson Sword Limited: *See—*
Thompson, John; and Pitfield, Adrian, B 662,266, Cl. 252-90.000.
Willbanks, Charles E., to Milliken Research Corporation. Method for sculpturing pile fabrics. 4,112,560, Cl. 28-160.000.
Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Auxiliary sewing machine support table for use with a sewing machine table. 4,112,859, Cl. 112-217.100.
Williams, Douglas W.; and Kaiser, George E., to Allis-Chalmers Corporation. Articulated steering differential lock release. B 750,918, Cl. 180-51.000.
Williams, Gayland M. Tube clamp and piercing device. 4,112,944, Cl. 128-214.00R.
Williams, Geoffrey N. Sanitary disposal unit. 4,112,523, Cl. 4-111.300.
Williams, Raymond, to United Kingdom Atomic Energy Authority. Packaging. B 751,948, Cl. 206-408.000.
Williams, Thomas Charles; and Totten, George Edward, to Union Carbide Corporation. Polysulfide silicon compounds. B 810,785, Cl. 260-448.20B.
Williams, Thomas S.: *See—*
Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., 4,112,762, Cl. 73-343.00R.
Williamson, Jim R.: *See—*
Barrington, Burchus Q.; and Williamson, Jim R., B 811,506, Cl. 166-334.000.
Williamson, Robert R., to Better Agricultural Goals Corporation. Disposable container for bulk materials. B 460,053, Cl. 222-105.000.
Willis, Donald Henry, to RCA Corporation. High voltage protection circuit having predictable firing point. B 819,187, Cl. 315-411.000.
Wilson, Clyde E., to Wilson-Tek Corporation. Method of preparing and belling thermoplastic pipe with thickened walls. B 790,303, Cl. 264-25.000.
Wilson, Donald G.: *See—*
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., B 791,434, Cl. 310-334.000.
Wilson, Eugene M.: *See—*
Richardson, Warner G.; and Wilson, Eugene M., B 826,576, Cl. 280-154.50R.
Wilson-Tek Corporation: *See—*
Wilson, Clyde E., B 790,303, Cl. 264-25.000.
Wimer, Scotty: *See—*
Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, B 601,628, Cl. 252-363.500.
Wind, Walter Jamison, to Cohu, Inc. Camera housing optical sealing method and device. B 835,242, Cl. 220-319.000.
Wing, George S., to Hi-Shear Corporation. Safety bolt. 4,112,992, Cl. 151-29.000.
Wing, Milton S.: *See—*
Strojny, Edwin J.; Friedli, Hans R.; and Wing, Milton S., B 828,409, Cl. 260-346.750.
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., to Firmenich & Cie. Flavoring agents. B 825,111, Cl. 426-536.000.
Winters, Giorgio; and DiMola, Nunzio, to Gruppo Lepetit S.p.A. Fused isoquinoline derivatives. B 713,011, Cl. 260-288.0CF.
Winters, Paul N. Constant phase delay network having a coherent reference. B 799,445, Cl. 331-23.000.
Wippich, Joachim, to Research Machine & Development, Inc. Padlock device. 4,112,716, Cl. 70-38.00C.
Wirthwein, Rolf: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 678,822, Cl. 260-348.250.
Wirtz, Egon: *See—*
Werner, Paul; Wirtz, Egon; and Lehmann, Gerhard, B 786,815, Cl. 297-362.000.
Wirtz, John Stanley, to Itek Corporation. Linear exposure control system. B 773,568, Cl. 355-55.000.
Wissel, Richard B.: *See—*
Hagner, Clifford K.; and Wissel, Richard B., B 781,385, Cl. 252-8.600.
Withem, Ronald. Weatherproof insulated valve cover. 4,112,967, Cl. 137-375.000.
Witte, Johan Frederik, to Stork Amsterdam B.V. Apparatus for treating oil containing vegetable raw materials. 4,112,836, Cl. 99-483.000.
Wittenberg, Roland C., to Pickering & Company, Inc. Double stylus assembly for phonograph record stamper playback. B 790,397, Cl. 274-37.000.
Witteveen, Piet Jozef: *See—*
Kocher, Heinz; Kitzig, Werner; and Witteveen, Piet Jozef, B 566,178, Cl. 244-3.110.
Woffenden, John: *See—*
Coons, Robert R.; Hennessey, Richard G.; and Woffenden, John, B 811,499, Cl. 188-71.600.
Wolf, Tobin. Game with toy having rotating and straight-line movement. B 767,970, Cl. 273-108.000.
Wolfarth, Robert P.: *See—*
Graef, Harry T.; Richardson, Jack M.; and Wolfarth, Robert P., B 761,288, Cl. 221-6.000.
Wolfe, Denis G.: *See—*
Parsons, Bruce B.; and Wolfe, Denis G., B 758,036, Cl. 337-387.000.
Wolfrum, Gerhard: *See—*
Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, B 813,311, Cl. 8-41.00R.
Wood, Charles D., III: *See—*
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, B 515,310, Cl. 299-13.000.
Wood, Hamish Christopher Swan; and Paterson, Thomas, to Burroughs Wellcome Co. Certain pyrido-pyrimidines for treating mammalian and avian infections. B 335,102, Cl. 424-180.000.
Wood, William G.: *See—*
Shoemaker, Robert H.; and Wood, William G., B 759,763, Cl. 134-10.000.
Woodbury, Dean F. Compartmented receptacle. B 664,585, Cl. 224-26.00E.
Woods, William W. Convertible aerial projectile toy. 4,112,612, Cl. 46-74.00D.
Workman, John. Mould clamping and positioning system. B 744,095, Cl. 164-255.000.
Worthington, Paul Anthony: *See—*
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, B 750,017, Cl. 71-92.000.
Worthington Pump, Inc.: *See—*
Bush, Austin R.; and Ferrarese, Frank L., B 773,778, Cl. 206-319.000.
Wride, Donald Charles. Hydraulic jacks. B 841,723, Cl. 254-108.000.
Wright, Glenn Lamont; and Ellis, James Arthur, to Youngstown Steel Door Company, The. Elevating and shifting railway car sliding door mechanism. 4,112,540, Cl. 16-99.000.
Wright, James Irvin: *See—*
Grode, Gerald Arthur; Boggs, Daniel Roy; and Wright, James Irvin, 4,112,989, Cl. 150-1.000.
Wright, John B.: *See—*
Hall, Charles M.; and Wright, John B., B 742,438, Cl. 424-309.000.
Wright, John T., to Champion International Corporation. Press brake control circuit. B 753,647, Cl. 192-129.00B.
Wright Line Inc.: *See—*
O'Toole, Jerome M.; and Paquette, Edmund T., B 832,729, Cl. 312-184.000.
Wrue, Richard J.: *See—*
Clark, James A.; Livesey, Donald V.; and Wrue, Richard J., B 762,221, Cl. 249-105.000.
Wucik, Joseph A., Jr.: *See—*
Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., B 797,921, Cl. 277-168.000.
Wulfers, Thomas F., to Shell Oil Company. Triazine-urea grease thickeners. B 852,395, Cl. 252-51.50A.
Wurm, Jaroslav: *See—*
Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., B 738,481, Cl. 165-3.000.
Wurtz, Frank R.; and Hawkins, Thomas J., to Wurtz, Frank R. Wind generator system. B 772,270, Cl. 416-17.000.
Wust, Manfred: *See—*
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, B 768,494, Cl. 96-1.0PC.
Wycoff, Keith H.; and Dittmer, William H., to Wycoff, Keith H. Decoder operable only on reception of predetermined number of words. B 598,587, Cl. 340-164.00R.
Xerox Corporation: *See—*
Deshpande, Narayan V., 4,112,841, Cl. 101-141.000.
Durbin, John Alan, B 782,865, Cl. 353-122.000.
Fraser, Lawrence J.; and Liebman, Alan, B 758,538, Cl. 355-4.000.
Gorham, Michael L.; Heckman, Raymond F.; and Yole, Charles S., B 793,453, Cl. 179-90.00B.
Gorham, Michael L.; and Norian, Roger F., B 793,454, Cl. 179-90.00B.
Heckman, Raymond F.; and Torpie, John D., B 793,455, Cl. 179-90.00B.
Rodda, John C., B 800,581, Cl. 355-15.000.
Wells, John B., B 735,344, Cl. 96-1.0PS.
Yagi, Hiroshi: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Yajima, Toshio: *See—*
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, B 761,278, Cl. 248-204.000.
Yakhilevich, Fritiof Meerovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.
Yale, Ramon L.: *See—*
Ferri, John L.; Mathers, James E.; and Yale, Ramon L., B 525,589, Cl. 252-301.40S.
Yamada, Minoru; Shishido, Tadao; and Arai, Atsuaki, to Fuji Photo Film Co., Ltd. Method for improving the light fastness of color photographic dye images. B 686,201, Cl. 96-56.000.
Yamada, Tateo: *See—*
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, B 736,223, Cl. 352-194.000.
Yamaguchi, Akihide: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andoh, Shizuo, to Fujitsu Limited. Method and apparatus for driving a gas-discharge display panel. B 767,690, Cl. 315-169.0TV.
Yamaguchi, Yasuo, to Sumitomo Electric Industries, Ltd. Method and apparatus for continuously hot-stretching a steel cable. 4,112,725, Cl. 72-128.000.
Yamamori, Eiji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera with data-recording structure. B 718,414, Cl. 354-106.000.
Yamamoto, Haruhisa: *See—*
Akiyama, Shinichi; and Yamamoto, Haruhisa, B 777,679, Cl. 562-532.000.
Yamamoto, Masahiko: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, B 626,098, Cl. 325-320.000.
Yamamoto, Sigeo: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, B 768,875, Cl. 424-225.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, B 686,154, Cl. 424-317.000.
Yamashita, Koichi: *See—*
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, B 709,088, Cl. 23-232.00R.
Yamasita, Nobuo; and Imai, Toshihiro, to Olympus Optical Co., Ltd. Single-lens reflex optical system for an endoscope. B 773,408, Cl. 350-172.000.
Yamazaki, Iwao: *See—*
Abe, Kazunobu; Rikimaru, Hiroaki; Yamazaki, Iwao; and Hasegawa, Hiroshi, B 753,323, Cl. 252-455.00R.
Yamazaki, Shunji; and Masuda, Hajime, to Hochiki Corporation. Alarm system. B 833,072, Cl. 340-531.000.
Yamazaki, Takamitsu. Drinking cup cover. B 803,587, Cl. 220-268.000.
Yanagimoto Seisakusho Co., Ltd.: *See—*
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, B 709,088, Cl. 23-232.00R.
Yanagioka, Seiichi, to Aikoh Co., Ltd. Baseball bat made of light alloy. B 684,351, Cl. 273-72.00A.
Yano, Shigeru: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, B 771,665, Cl. 431-1.000.
Yao, Joe. Photographic camera and film cartridge therefor. B 740,123, Cl. 354-153.000.
Yasoshima, Nobuyuki: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, B 788,971, Cl. 179-84.00R.
Yasuda, Jun: *See—*
Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, B 661,825, Cl. 8-120.000.
Yates, Stephen William: *See—*
Lappage, James; Doggett, Neil; and Yates, Stephen William, 4,112,662, Cl. 57-34.0AT.
Yazaki Corporation: *See—*
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, B 737,025, Cl. 219-56.000.
Yeargin, G. Scott: *See—*
Malpass, Dennis B.; and Yeargin, G. Scott, B 805,194, Cl. 260-606.50P.
Yee, Bing S.: *See—*
Frank, Earl E.; and Yee, Bing S., B 724,720, Cl. 210-167.000.
Yench, Charles G. Roof structure for an automobile. B 786,039, Cl. 296-137.00B.
Yevick, George J., to Izon Corporation. Channel illumination sheets. B 714,215, Cl. 350-96.250.
Yevick, George J., to Izon Corporation. Film strip recorder and viewer. B 785,039, Cl. 354-102.000.
Yokohama Rubber Co., Ltd., The: *See—*
Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, 4,112,746, Cl. 73-95.000.
Yokokawa, Junji: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi;

Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Yole, Charles S.: *See—*
Gorham, Michael L.; Heckman, Raymond F.; and Yole, Charles S., B 793,453, Cl. 179-90.00B.
Yoneda, Kenji; Nakazato, Masao; and Yuminaka, Takeo, to Hitachi, Ltd. Elevator control apparatus having a novel hall call allotting device. B 702,145, Cl. 187-29.00R.
Yoneyama, Eiichi: *See—*
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, B 776,618, Cl. 71-76.000.
Yoshida, Kazumichi: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, B 775,373, Cl. 422-197.000.
Yoshida Kogyo K.K.: *See—*
Kasai, Kazumi, 4,112,554, Cl. 24-205.11R.
Yoshikawa, Ryoichi: *See—*
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, B 758,200, Cl. 354-238.000.
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, to Mitsubishi Gas Chemical Company, Inc. Oxygen absorbent. B 751,668, Cl. 252-428.000.
Yoshinaga, Mayumi: *See—*
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, B 864,252, Cl. 266-137.000.
Yoshino, Shoichi: *See—*
Fukuta, Shigemi; Izaki, Hiroshi; and Yoshino, Shoichi, B 712,068, Cl. 164-286.000.
Yoshio, Hashimoto, to Kabushiki Kaisha Yachiyo Kogyo Kenkyusho. Manipulator. B 805,840, Cl. 214-1.0BB.
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Drum type flying shear. 4,112,798, Cl. 83-344.000.
Young, David W.: *See—*
Cotten, Roger C.; Young, David W.; and Kandanian, Aram Y., B 851,764, Cl. 260-897.00A.
Young, Lewis Brewster: *See—*
Kaeding, Warren W.; and Young, Lewis Brewster, B 793,470, Cl. 260-673.000.
Young, Maurice G.: *See—*
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.
Youngstown Sheet and Tube Company: *See—*
Curtis, William M.; and Hermanson, Dean E., B 790,963, Cl. 285-12.000.
Youngstown Steel Door Company, The: *See—*
Wright, Glenn Lamont; and Ellis, James Arthur, 4,112,540, Cl. 16-99.000.
Yousef, Hosni Labib. Electrical generator employing natural energy to power same. B 766,699, Cl. 290-55.000.
Yuminaka, Takeo: *See—*
Yoneda, Kenji; Nakazato, Masao; and Yuminaka, Takeo, B 702,145, Cl. 187-29.00R.
Yuyama, Megumu: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, B 751,668, Cl. 252-428.000.
Zahn, Edward A. Instrument for measuring the consistency of high-consistency materials. 4,112,742, Cl. 73-54.000.
Zaitsev, Mikhail Ivanovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, B 702,208, Cl. 423-131.000.
Zajac, Edward: *See—*
McCabe, Barkman C.; and Zajac, Edward, 4,112,745, Cl. 60-641.000.
Zanio, Kenneth W.; and Fraas, Lewis M., to Hughes Aircraft Company. Process for fabricating polycrystalline InP-CdS solar cells. B 735,560, Cl. 148-174.000.
Zanotti, Arnaldo: *See—*
Dondi, Gilberto; and Zanotti, Arnaldo, B 743,853, Cl. 424-230.000.
Zapletal, Henry: *See—*
Adams, Elvin E.; Wells, Tom J.; Wentzek, Horst F.; Zapletal, Henry; and Zugel, Marty J., 4,112,726, Cl. 72-137.000.
Zeelen, Filippus Johannes: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, B 739,142, Cl. 424-205.000.
Zeh, Werner; and Kuhnlein, Dieter, to Grundig E.M.V. Cassette turning mechanism. B 802,714, Cl. 360-92.000.
Zelinka, Richard J.; and Sutherland, George K., to Sys-Tec, Inc. Heater control for rotary members. B 734,755, Cl. 219-471.000.
Zevco Enterprises, Inc.: *See—*
Marder, William Z., 4,112,790, Cl. 76-87.000.
Zimmermann, Adolf, to AZO-Maschinenfabrik Adolf Zimmermann. Shell silo. 4,112,639, Cl. 52-174.000.
Ziv, Avraham, to American Safety Equipment Corporation. Extended low tension range dual tension safety belt retractor. B 791,477, Cl. 242-107.000.
Zondler, Helmut; Saladin, Emil; and Kirchmayr, Rudolf, to Ciba-Geigy Corporation. Polymers flameproofed with 1,2-oxaphospholanes. B 806,044, Cl. 521-108.000.
Zoor, Reinhold, to Heinrich Wunder KG. Safety ski binding. B 746,185, Cl. 280-626.000.
Zoric, Michael T., to Westinghouse Air Brake Company. Emergency portion for a brake control valve. B 749,288, Cl. 303-37.000.
Zugel, Marty J.: *See—*
Adams, Elvin E.; Wells, Tom J.; Wentzek, Horst F.; Zapletal, Henry; and Zugel, Marty J., 4,112,726, Cl. 72-137.000.
Zverkhovsky, Valentin Ivanovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.
Zyss, Thadeus B. Method of producing cured low sodium meat products. B 811,165, Cl. 426-264.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF SEPTEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Becker, Otto Alfred. Process for welding sheet metal coated with layers. Re. 29,762, Cl. 219-92.000.
Brown, Paul L.; and Hyde, James Franklin, to Dow Corning Corporation. Polyfunctional alkoxy endblocked polysiloxanes and their cured compositions. Re. 29,760, Cl. 528-41.000.
Cluett, Peabody & Co., Inc.: *See—*
Rockerath, John L.; and Schreck, Harold J., Re. 29,758, Cl. 112-141.000.
Dow Corning Corporation: *See—*
Brown, Paul L.; and Hyde, James Franklin, Re. 29,760, Cl. 528-41.000.
Durant, Graham John; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Guanidino, thioureido and isothioureido derivatives containing imidazole groups. Re. 29,761, Cl. 424-273.00R.
Eastman Kodak Company: *See—*
Stoneham, Jeffrey R., Re. 29,764, Cl. 354-145.000.
Ganellin, Charon Robin: *See—*
Durant, Graham John; and Ganellin, Charon Robin, Re. 29,761, Cl. 424-273.00R.
Helfet, Arthur Jacob. Replacements for bicondylar joints in human limbs. Re. 29,757, Cl. 3-1.910.
Hyde, James Franklin: *See—*
Brown, Paul L.; and Hyde, James Franklin, Re. 29,760, Cl. 528-41.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Kawai, Masanori, Re. 29,763, Cl. 310-344.000.
Kawai, Masanori, to Kabushiki Kaisha Suwa Seikosha. Crystal vibrator mounting. Re. 29,763, Cl. 310-344.000.
Rockerath, John L.; and Schreck, Harold J., to Cluett, Peabody & Co., Inc. Reinforced hem forming device. Re. 29,758, Cl. 112-141.000.
Schreck, Harold J.: *See—*
Rockerath, John L.; and Schreck, Harold J., Re. 29,758, Cl. 112-141.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; and Ganellin, Charon Robin, Re. 29,761, Cl. 424-273.00R.
Stoneham, Jeffrey R., to Eastman Kodak Company. Electronic flash unit having an adjustable mounting mechanism and movable electrical plug. Re. 29,764, Cl. 354-145.000.
Toyo Kogyo Co., Ltd.: *See—*
Yamamoto, Kenichi, Re. 29,759, Cl. 123-205.000.
Yamamoto, Kenichi, to Toyo Kogyo Co., Ltd. Fuel injection type rotary piston engine. Re. 29,759, Cl. 123-205.000.

LIST OF PLANT PATENTEES

Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 4,301, 9-12-78, Cl. 15.000.
Armstrong Nurseries, Inc.: *See—*
Armstrong, David L., 4,301, Cl. 15.000.
Duffett, William E.: *See—*
Jessel, Walter H., Jr.; and Duffett, William E., 4,299, Cl. 74.000.
Hope, Claude, to Mikkelsens, Inc. Kalanchoe plant. 4,298, 9-12-78, Cl. 68.000.
Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,299, 9-12-78, Cl. 74.000.
Mikkelsens, Inc.: *See—*
Hope, Claude, 4,298, Cl. 68.000.
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79	4,112,627
140	4,112,628
165.93	4,112,629
281 R	4,112,630
295	4,112,631

CLASS 52

11	4,112,632
66	4,112,633
67	4,112,634
69	4,112,635
98	4,112,636
155	4,112,637
169.12	4,112,638
174	4,112,639
177	4,112,640
179	4,112,641
202	4,112,642
222	4,112,643
245	4,112,644
304	4,112,645
372	4,112,646
481	4,112,647
508	4,112,648
731	4,112,649

CLASS 53

211	4,112,652
412	4,112,650
449	4,112,651

CLASS 55

5	4,113,447
17	4,113,448
96	4,113,449
97	4,113,450
162	4,113,451
203	4,113,452
263	4,113,453
319	4,113,454
378	4,113,455

CLASS 56

12.7	4,112,653
98	4,112,654
301	4,112,655
320.1	4,112,656
330	4,112,657

CLASS 57

34 AT	4,112,662
34 R	4,112,661
51	4,112,658
58.89	4,112,659
	4,112,663
59	4,112,660
77.4	4,112,664
81	4,112,665
105	4,112,666
157 S	4,112,667
	4,112,668

CLASS 58

4 A	4,112,669
23 A	4,112,670
23 D	4,112,671
53	4,112,672
85.5	4,112,673

CLASS 59

72	4,112,674

CLASS 60

39.06	4,112,675
39.71	4,112,676
226 P	4,112,677
276	4,112,678
445	4,112,679
538	4,112,680
539	4,112,681
548	4,112,682
595	4,112,683
606	4,112,684
634	4,112,685
639	4,112,686
641	4,112,687
	4,112,745
669	4,112,688

CLASS 62

3	4,112,699
28	4,112,700
84	4,112,701
123	4,112,702
211	4,112,703
217	4,112,704
238	4,112,705
514 R	4,112,706

CLASS 63

31	4,112,707

CLASS 64

2 R	4,112,708
21	4,112,709
23	4,112,710

CLASS 65

5	4,113,456
11 R	4,113,457
114	4,113,458
135	4,113,459
178	4,113,460
324	4,113,461

CLASS 66

1 A	4,112,711
157	4,112,712

CLASS 68

5 E	4,112,713
206	4,112,714

CLASS 70

38 A	4,112,715
38 C	4,112,716
63	4,112,717
159	4,112,718
233	4,112,720
363	4,112,820

CLASS 71

7	4,113,462
76	4,113,463
88	4,113,464
92	4,113,465

CLASS 72

12	4,112,721
60	4,112,723
63	4,112,724
128	4,112,725
137	4,112,726
142	4,112,727
154	4,112,728
181	4,112,722
236	4,112,729
290	4,112,730
320	4,112,731
334	4,112,732

CLASS 73

12	4,112,733
15 B	4,112,734
19	4,112,735
23	4,112,736
	4,112,737
32 R	4,112,738
38	4,112,739
53	4,112,740
	4,112,741
54	4,112,742
61.1 C	4,112,743
61.1 R	4,112,744
95	4,112,746
116	4,112,747
118	4,112,748
139	4,112,749
141 AB	4,112,750
147	4,112,752
170 R	4,112,753
178 R	4,112,754
	4,112,755
181	4,112,756
207	4,112,757
218	4,112,758
295	4,112,759
299	4,112,760
312	4,112,761
343 R	4,112,762
355 R	4,112,763
362 AR	4,112,764
368.3	4,112,765
422 GC	4,112,766
422 R	4,112,768
425.4 R	4,112,769
	4,112,770
	4,112,771
	4,112,772
455	4,112,774
627	4,112,775
642	4,112,773
665	4,112,776
728	4,112,777

CLASS 74

117	4,112,778
191	4,112,779
	4,112,780
198	4,112,781
217 R	4,112,767
462	4,112,782
470	4,112,783
501.5 R	4,112,784
572	4,112,785
606 R	4,112,786
798	4,112,787
804	4,112,788

CLASS 75

0.5 A	4,113,467
2	4,113,466
12	4,113,468
60	4,113,469
74	4,113,470
101 R	4,113,471
141 A	4,112,751
142	4,113,472
148	4,113,473
156.5	4,113,474
159	4,113,475
166 C	4,113,476
	4,113,477
177	4,113,478
211	4,113,479
214	4,113,480
256	4,113,481

CLASS 76

58	4,112,789
87	4,112,790

CLASS 81

9.5 A	4,112,791
63	4,112,792

CLASS 82

1.3	4,112,793
64	4,112,794

CLASS 83

15	4,112,795
141	4,112,796
177	4,112,797
344	4,112,798
409	4,112,799
411 A	4,112,800
490	4,112,810
586	4,112,801

CLASS 84

1.01	4,112,802
1.24	4,112,803
173	4,112,804
317	4,112,805
390	4,112,806
411 R	4,112,807
453	4,112,808
465	4,112,809

CLASS 85

7	4,112,811
46	4,112,812
74	4,112,813
75	4,112,814
80	4,112,815

CLASS 87

12	4,112,816

CLASS 89

33 B	4,112,817
41 TV	4,112,818

CLASS 90

13.9	4,112,819

CLASS 91

6	4,112,821
29	4,112,822
36	4,112,823
413	4,112,824
447	4,112,825

CLASS 92

13.1	4,112,826

CLASS 93

58.3	4,112,827

CLASS 96

1 PC	4,113,483
1 PS	4,113,482
1 R	4,113,484
5	4,113,485
36	4,113,486
38.1	4,113,487
56	4,113,488
60 R	4,113,489
	4,113,490
66 R	4,113,491
67	4,113,492
	4,113,493
75	4,113,494
100 R	4,113,495
114.1	4,113,496
115 P	4,113,497

CLASS 99

275	4,112,828
277	4,112,829
300	4,112,830
306	4,112,831
421 HH	4,112,832
425	4,112,833
450.1	4,112,834
455	4,112,835
483	4,112,836
537	4,112,837
546	4,112,838

CLASS 100

33 PB	4,112,839

CLASS 101

93.15	4,112,840
141	4,112,841
183	4,112,842

CLASS 102

7.6	4,112,843
19.2	4,112,844
27 R	4,112,845
52	4,112,846
67	4,112,847
69	4,112,848
103	4,112,849

CLASS 104

138 G	4,112,850

CLASS 105

199 C	4,112,851
282 A	4,112,852

CLASS 106

14.13	4,113,498
38.35	4,113,499
39.5	4,113,500
56	4,113,501
67	4,113,502
73.4	4,113,503
97	4,113,504
137	4,113,505
238	4,113,506
287.18	4,113,507
304	4,113,508

CLASS 108

56.1	4,112,854
111	4,112,853
159	4,112,855

CLASS 110

165 R	4,112,856

CLASS 111

3	4,112,857

CLASS 112

141	Re.29,758
158 E	4,112,858
217.1	4,112,859
262	4,112,860

CLASS 114

91	4,112,861
221 R	4,112,862
264	4,112,863
265	4,112,864
270	4,112,865

CLASS 115

34 R	4,112,866

CLASS 118

7 4,112,867
429 4,112,868
623 4,112,869
657 4,112,870

CLASS 119

18 4,112,871
22 4,112,872
29 4,112,873
158 4,112,874

CLASS 123

1 A 4,112,875
3 4,112,876
25 B 4,112,889
32 B 4,112,881
32 EA 4,112,879
32 EE 4,112,880
32 ST 4,112,877
4,112,878
47 A 4,112,882
52 M 4,112,883
90.48 4,112,884
98 4,112,885
103 R 4,112,886
117 A 4,112,888
4,112,891
117 D 4,112,887
117 R 4,112,890
4,112,895
119 A 4,112,892
4,112,894
119 EC 4,112,893
122 D 4,112,896
136 4,112,898
139 AW 4,112,899
4,112,900
139 E 4,112,901
139 ST 4,112,897
140 FG 4,112,902
148 E 4,112,903
4,112,904
169 EL 4,112,905
191 A 4,112,906
193 CH 4,112,907
196 S 4,112,910
198 F 4,112,908
205 Re.29,759

CLASS 124

23 R 4,112,909
56 4,112,911

CLASS 126

41 R 4,112,912
120 4,112,913
121 4,112,914
4,112,915
261 4,112,916
270 4,112,917
4,112,918
4,112,919
271 4,112,920
4,112,921
4,112,922

CLASS 127

29 4,113,509

CLASS 128

1.3 4,112,923
2 F 4,112,924
4,112,925
2 S 4,112,926
2 V 4,112,927
2.05 M 4,112,929
2.05 R 4,112,928
2.06 E 4,112,941
2.06 R 4,112,930
2.08 4,112,931
3 4,112,932
11 4,112,933
12 4,112,934
24.1 4,112,943
69 4,112,935
136 4,112,936
142 R 4,112,938
186 4,112,939
188 4,112,940
214 R 4,112,944
218 D 4,112,945
225 4,112,942
253 4,112,946
276 4,112,948
278 4,112,947
4,112,949
303.14 4,112,950
346 4,112,951
418 4,112,952
419 P 4,112,953

CLASS 131

21 R 4,112,954

CLASS 134

2 4,113,510
10 4,113,511
57 R 4,112,955
141 4,112,937

CLASS 135

1 D 4,112,956
5 A 4,112,958
5 C 4,112,957

CLASS 137

85 4,112,960
102 4,112,961
119 4,112,962
148 4,112,963
205.5 4,112,964
219 4,112,965
282 4,112,966
375 4,112,967
427 4,112,968
454.2 4,112,969
489.5 4,112,970
504 4,112,959
508 4,112,971
597 4,112,972
625.21 4,112,973
625.29 4,112,974
4,112,975
636.2 4,112,976
812 4,112,977

CLASS 138

30 4,112,978
89 4,112,979

CLASS 139

92 4,112,980
102 4,112,981
425 A 4,112,982
446 4,112,983

CLASS 141

98 4,112,984

CLASS 144

193 A 4,112,985
323 4,112,986
4,112,987

CLASS 145

50 D 4,112,988

CLASS 148

1.5 4,113,512
4,113,513
4,113,514
4,113,515
4,113,516
2 4,113,517
6.15 R 4,113,519
6.15 Z 4,113,518
6.27 4,113,520
6.35 4,113,521
11.5 R 4,113,522
12.3 4,113,523
23 4,113,524
4,113,525
4,113,526
36 4,113,527
105 4,113,528
111 4,113,529
113 4,113,530
174 4,113,531
4,113,532
187 4,113,533

CLASS 150

1 4,112,989
3 4,112,990
28 A 4,112,991

CLASS 151

29 4,112,992
41.74 4,112,993
54 4,113,227

CLASS 152

354 R 4,112,994

CLASS 156

56 4,113,534
148 4,113,535
218 4,113,536
247 4,113,538
306 4,113,539
327 4,113,540
330 4,113,541
335 4,113,542
345 4,113,543
384 4,113,544
392 4,113,545
431 4,113,546
612 4,113,547
622 4,113,548
639 4,113,549
656 4,113,550
662 4,113,551

CLASS 159

27 A 4,113,552

CLASS 160

126 4,112,995
296 4,112,996

CLASS 162

34 4,113,553
123 4,113,554
127 4,113,555
272 4,113,556
301 4,113,557

CLASS 164

119 4,112,997
136 4,112,998
154 4,112,999
227 4,113,000
255 4,113,001
286 4,113,002
446 4,113,003

CLASS 165

3 4,113,004
40 4,113,005
76 4,113,006
81 4,113,007
95 4,113,008
154 4,113,009

CLASS 166

213 4,113,010
264 4,113,012
273 4,113,011
275 4,113,013
295 4,113,014
4,113,015
297 4,113,016
303 4,113,017
334 4,113,018

CLASS 169

12 4,113,019
26 4,113,020
37 4,113,021

CLASS 171

61 4,113,022
63 4,113,023

CLASS 172

59 4,113,024
4,113,025
4,113,026
70 4,113,027
178 4,113,028
272 4,113,029
566 4,113,030
667 4,113,031
781 4,113,032

CLASS 173

1 4,113,033
49 4,113,034
116 4,113,035

CLASS 174

42 4,113,979
52 R 4,113,980
88 R 4,113,981
158 R 4,113,982

CLASS 175

11 4,113,036
207 4,113,037
300 4,113,038

CLASS 176

30 4,113,558
38 4,113,559
4,113,560
4,113,561
40 4,113,562
84 4,113,563
87 4,113,564

CLASS 177

25 4,113,039
211 4,113,040

CLASS 179

1 GQ 4,113,984
1 VL 4,113,983
2 A 4,113,986
2 R 4,113,985
15 AN 4,113,987
18 ES 4,113,988
18 GF 4,113,989
84 R 4,113,990
90 B 4,113,991
4,113,992
4,113,993
100.1 DR 4,113,994
146 R 4,113,995
170 NC 4,113,996
170.2 4,113,997
175.3 R 4,113,998
179 4,113,999

CLASS 180

14 C 4,113,041
19 H 4,113,042
33 A 4,113,043
51 4,113,044
65 C 4,113,045
65 D 4,113,047
105 E 4,113,046

CLASS 181

220 4,113,048
230 4,113,049
4,113,050
4,113,052
231 4,113,051
284 4,113,053

CLASS 182

2 4,113,054
63 4,113,055
153 4,113,056
187 4,113,057
4,113,058

CLASS 184

1 D 4,113,059
6 4,113,060
41 4,113,061

CLASS 185

10 4,113,062
40 R 4,113,063

CLASS 187

1 R 4,113,064
18 4,113,065
29 R 4,113,066

CLASS 188

71.6 4,113,067
72.5 4,113,068
72.7 4,113,069
196 F 4,113,070
282 4,113,071
4,113,072
364 4,113,073

CLASS 191

67 4,113,074

CLASS 192

3.31 4,113,075
4 A 4,113,076
098 4,113,077
107 C 4,113,078
129 B 4,113,079
150 4,113,080

CLASS 195

31 F 4,113,565
36 P 4,113,566
63 4,113,567
68 4,113,568

CLASS 198

339 4,113,082
480 4,113,083
731 4,113,084

CLASS 200

16 R 4,114,000
50 A 4,114,001
67 C 4,114,002
144 R 4,114,003
148 A 4,114,004
153 G 4,114,005
234 4,114,006
246 4,114,007

CLASS 201

39 4,113,569

CLASS 202

139 4,113,570
176 4,113,571
227 4,113,572

CLASS 203

2 4,113,573
8 4,113,574
62 4,113,575

CLASS 204

13 4,113,576
15 4,113,577
4,113,578
33 4,113,579
37 T 4,113,580
39 4,113,581
4,113,582
55 Y 4,113,583
64 R 4,113,584
98 4,113,585
105 R 4,113,586
129.1 4,113,587
151 4,113,588
157.1 R 4,113,589
4,113,590
158 HA 4,113,591
159.15 4,113,593
4,113,594
159.16 4,113,592
159.17 4,113,595
180 R 4,113,596
181 C 4,113,597
181 R 4,113,598
192 P 4,113,599
197 4,113,600
230 4,113,601

CLASS 206

45.14 4,113,086
174 4,113,087
210 4,113,088
319 4,113,089
365 4,113,090
387 4,113,091
388 4,113,750
408 4,113,092
423 4,113,093
4,113,094
508 4,113,095
523 4,113,096
528 4,113,097
540 4,113,098
575 4,113,099
602 4,113,100
606 4,113,101
611 4,113,102
4,113,103
626 4,113,104

CLASS 208

8 4,113,602
89 4,113,603
206 4,113,604
216 4,113,605
244 4,113,606
254 R 4,113,607

CLASS 209

1 4,113,608
167 4,113,106
215 4,113,611
549 4,113,105
609 4,113,609
705 4,113,610

CLASS 210

17 4,113,612
4,113,613
22 A 4,113,614
40 4,113,615
67 4,113,616
72 4,113,617
82 4,113,618
96 R 4,113,619
152 4,113,620
167 4,113,621
4,113,622
4,113,623
219 4,113,624
321 B 4,113,625
409 4,113,626
446 4,113,627
500 M 4,113,628
522 4,113,629

CLASS 211

4 4,113,107
43 4,113,108
49 R 4,113,109
191 4,113,110

CLASS 212

28 4,113,111
71 4,113,112

CLASS 213

43 4,113,113
75 R 4,113,114

CLASS 214

1 BB 4,113,115
1 HA 4,113,116
8.5 C 4,113,117
10.5 R 4,113,118
16.4 A 4,113,119
38 D 4,113,120
75 R 4,113,121
82 4,113,122
141 4,113,123
147 G 4,113,124
302 4,113,125
450 4,113,126
4,113,127
750 4,113,128

CLASS 215

1 C 4,113,129

CLASS 219

10.41 4,114,010
10.49 R 4,114,009
10.55 D 4,114,013
10.55 M 4,114,011
10.55 R 4,114,012
56 4,114,014
69 W 4,114,015
90 4,114,017
92 Re.29,762
97 4,114,016
121 LM 4,114,018
137 R 4,114,019
4,114,020
216 4,114,021
362 4,114,022
471 4,114,023
489 4,114,024

CLASS 220

5 A 4,113,130
19 4,113,131
71 4,113,132
74 4,113,133
256 4,113,134
268 4,113,135
276 4,113,136
319 4,113,137
367 4,113,138

CLASS 221

1 4,113,139
6 4,113,140
70 4,113,141
171 4,113,142
267 4,113,143

CLASS 222

1 4,113,145
105 4,113,146
131 4,113,147
139 4,113,148
181 4,113,149
243 4,113,150
324 4,113,151
396 4,113,144
485 4,113,152
571 4,113,153

CLASS 223

24 4,113,154
102 4,113,155

CLASS 224

5 R 4,113,156
26 E 4,113,157
39 4,113,158
45 R 4,113,160
45 S 4,113,159
46 R 4,113,161

CLASS 225

2 4,113,162

CLASS 227

10 4,113,163
124 4,113,164

CLASS 228

36 4,113,165
170 4,113,166
176 4,113,167

CLASS 229

37 R 4,113,168
53 4,113,169

CLASS 232

35 4,113,170

CLASS 233

7 4,113,171
11 4,113,172
25 4,113,173

CLASS 235

96 4,114,025
375 4,114,026
419 4,114,027
449 4,114,029
458 4,114,028
464 4,114,030
474 4,114,031
493 4,114,032
494 4,114,033

CLASS 236

12 A 4,113,174
46 A 4,113,175
49 4,113,176

CLASS 238

72 4,113,177
349 4,113,178

CLASS 239

109 4,113,180
206 4,113,181
304 4,113,182
533.13 4,113,183

CLASS 241

15 4,113,184
21 4,113,185
24 4,113,186
4,113,187
37.5 4,113,188
43 4,113,189
92 4,113,190
188 A 4,113,191

CLASS 242

1 4,113,192
18 R 4,113,193
43 R 4,113,194
55.3 4,113,195
56 R 4,113,196
58.1 4,113,197
78.3 4,113,198
106 4,113,199
107 4,113,200
4,113,201

CLASS 243

33 4,113,202

CLASS 244

3.11 4,113,203
3.21 4,113,204
20 4,113,205
31 4,113,206
137 P 4,113,207
139 4,113,208
153 A 4,113,209
219 4,113,210

CLASS 246

169 A 4,113,211

CLASS 248

13 4,113,212
128 4,113,213
146 4,113,214
183 4,113,215
204 4,113,216
221.3 4,113,217
291 4,113,218
354 R 4,113,219
400 4,113,220
408 4,113,221
412 4,113,222
430 4,113,223

CLASS 249

105 4,113,224
169 4,113,225
216 4,113,226

CLASS 250

202 4,114,034
211 K 4,114,035
214 R 4,114,036
216 4,114,037
239 4,114,038
439 R 4,114,039
445 T 4,114,040
4,114,041
4,114,042
4,114,043
468 4,114,044
569 4,114,045

CLASS 251

159 4,113,228
174 4,113,229
305 4,113,230
4,113,232
317 4,113,231
328 4,113,233

CLASS 252

8.55 C 4,113,631
8.55 D 4,113,632
8.6 4,113,630
11 4,113,633
32.7 E 4,113,634
49.6 4,113,635
51.5 A 4,113,637
4,113,639
4,113,640
51.5 R 4,113,636
56 S 4,113,642
61 4,113,638
62.1 P 4,113,641
90 4,113,643
91 4,113,644
184 4,113,646
187 H 4,113,645
299 4,113,647
301.4 S 4,113,648
363.5 4,113,649
4,113,650
422 4,113,651
428 4,113,652
429 B 4,113,653
429 C 4,113,654
438 4,113,655
439 4,113,656
442 4,113,657
454 4,113,658
455 R 4,113,660
455 Z 4,113,659
465 4,113,661
473 4,113,662
522 4,113,663
4,113,664

CLASS 254

108 4,113,234
131 4,113,235
134.5 4,113,236
175.7 4,113,237

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8 4,113,673
9 4,113,674
17.5 4,113,675
22 T 4,113,676
23 R 4,113,677
23.7 M 4,113,678
28.5 D 4,113,679
4,113,681
29.2 EP 4,113,684
29.4 R 4,113,701
29.4 UA 4,113,682
4,113,685
29.6 PM 4,113,688
29.6 TA 4,113,686
29.6 XA 4,113,687
31.8 HA 4,113,689
37 EP 4,113,691
37 SB 4,113,665
4,113,690
40 R 4,113,692
45.8 N 4,113,695
112 R 4,113,711
4,113,712
112.5 R 4,113,713
4,113,715
112.5 S 4,113,714
123.5 4,113,716
146 R 4,113,717
147 4,113,718
149 4,113,719
154 4,113,720
178 4,113,721
239.55 R 4,113,722
283 S 4,113,728
285 4,113,729
286 A 4,113,730
288 CF 4,113,731
305 4,113,732
306.8 D 4,113,733
308 D 4,113,734
326.16 4,113,736
326.26 4,113,737
326.5 FL 4,113,735
327 M 4,113,738
338 4,113,739
340.9 R 4,113,740
343.3 R 4,113,741
343.44 4,113,744
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345.5 4,113,743
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347.3 4,113,723
348.22 4,113,746
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348.43 4,113,748
351 4,113,749
397.4 4,113,751
397.45 4,113,680
424 4,113,752
429 L 4,113,755
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429.5 4,113,753
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429.7 4,113,758
439 R 4,113,759
448.2 B 4,113,696
448.2 E 4,113,760
448.8 A 4,113,761
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465 D 4,113,763
465.5 A 4,113,764
505 S 4,113,765
545 R 4,113,773
558 D 4,113,774
564 G 4,113,775
565 4,113,776
570.9 4,113,777
590 C 4,113,778
592 4,113,779
593 P 4,113,780
599 4,113,781
600 R 4,113,782
606.5 P 4,113,783
607 AR 4,113,784
615 B 4,113,785
659 A 4,113,786
669 R 4,113,787
673 4,113,788
683.15 B 4,113,790
683.68 4,113,789
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834 4,113,792
850 4,113,793
857 TW 4,113,794
859 R 4,113,795
874 4,113,796
875 4,113,694
876 B 4,113,797
4,113,799
4,113,800
4,113,801
876 R 4,113,796
4,113,798
878 B 4,113,802
885 4,113,803
897 A 4,113,804
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897 C 4,113,805
969 4,113,807

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24 4,113,812
25 4,113,813
89 4,113,814
101 4,113,815
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113 4,113,816
120 4,113,817
154 4,113,818
173 4,113,819
4,113,820
210 F 4,113,821
228 4,113,823
230 4,113,824
262 4,113,825
269 4,113,826
280 4,113,827
294 4,113,828
295 4,113,829
349 4,113,822

CLASS 266

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227 4,113,241
252 4,113,240

CLASS 270

21 4,113,243

CLASS 271

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10 4,113,245
264 4,113,247

CLASS 272

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93 4,113,250

CLASS 273

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96 R 4,113,253
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186 C 4,113,258
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245 4,113,260
249 4,113,261

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15 R 4,113,263
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23 R 4,113,265
37 4,113,266
4,113,267

CLASS 277

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9 4,113,085
168 4,113,268

CLASS 280

154.5 R 4,113,269
179 R 4,113,270
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402 4,113,272
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616 4,113,276
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705 4,113,279
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27.5 4,113,282

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14 4,113,284
45 4,113,285
61 4,113,286
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174 4,113,288
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CLASS 292

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346 4,113,294

CLASS 293

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96 4,113,296

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1 CA 4,113,297
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1 C 4,113,300
1 S 4,113,299
23 H 4,113,301
137 B 4,113,303
137 G 4,113,304
137 J 4,113,302

CLASS 297

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232 4,113,307
362 4,113,308
408 4,113,309
4,113,310
433 4,113,311
454 4,113,312

CLASS 299

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13 4,113,315
31 4,113,316

CLASS 303

6 C 4,113,317
24 F 4,113,318
37 4,113,319
54 4,113,320
92 4,113,321
105 4,113,322
115 4,113,323

CLASS 307

9 4,114,047
53 4,114,048
225 C 4,114,049
229 4,114,050
260 4,114,051
279 4,114,052
310 4,114,053
311 4,114,054
362 4,114,055

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9 4,113,324
4,113,325
26 4,113,326
187.1 4,113,327
4,113,328

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42 4,114,056
46 4,114,057
54 4,114,058
4,114,059
163 4,114,060
241 4,114,061
326 4,114,062
334 4,114,063
344 Re.29,763

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111 4,113,329
184 4,113,330
198 4,113,331
204 4,113,332
214 4,114,065

CLASS 313

188 4,114,064
315 4,114,066

CLASS 314

134 4,114,067

CLASS 315

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169 TV 4,114,069
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226 4,114,071
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341 4,114,075
421 4,114,076
473 4,114,077
475 4,114,078
601 4,114,079

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1 4,114,080
2 4,114,081
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39 4,114,083

CLASS 322

38 4,114,084

CLASS 323

17 4,114,085

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121 R 4,114,095
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151 4,114,141
164 R 4,114,142
166 R 4,114,143
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347 AD 4,114,149
528 4,114,147
531 4,114,150
558 4,114,146
626 4,114,145
632 4,114,144

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6.8 LC 4,114,151
7.7 4,114,152
9 4,114,153
17.2 PC 4,114,154
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112 S 4,114,156
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754 4,114,162
815 4,114,163
895 4,114,164

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96.15 4,113,345
96.20 4,113,346
96.23 4,113,349
96.24 4,113,347
96.25 4,113,348
96.29 4,113,350
99 4,113,351
150 4,113,352
171 4,113,353
172 4,113,354
184 4,113,355
186 4,113,356
212 4,113,357
216 4,113,358
269 4,113,359
285 4,113,360
332 4,113,361
362 4,113,362

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17 4,113,363
49 4,113,364
128 4,113,365

CLASS 352

8 4,113,366
105 4,113,367
159 4,113,368
194 4,113,369

CLASS 353

122 4,113,370

CLASS 354

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81 4,114,167
102 4,114,168
106 4,114,169
145 Re.29,764
149 4,114,170
152 4,114,171
153 4,114,172
238 4,114,173
249 4,114,174
252 4,114,175
289 4,114,176

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3 SC 4,113,372
4 4,113,371
8 4,113,373
14 4,113,374
4,113,375
15 4,113,376
45 4,113,377
55 4,113,378
71 4,113,379
75 4,113,380

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5 4,113,381
4,113,382
36 4,113,383
70 4,113,384
96 4,113,385
103 4,113,386
106 LR 4,113,387
110 4,113,388

155 4,113,393
164 4,113,389
201 4,113,390

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19 4,114,177
38 4,114,178

CLASS 358
34 4,114,179
128 4,114,180

CLASS 360
2 4,114,181
92 4,114,182
99 4,114,183

CLASS 361
154 4,114,184
232 4,114,185

CLASS 362
35 4,114,186
158 4,114,187

CLASS 364
415 4,114,188
718 4,114,189
900 4,114,190

CLASS 365
2 4,114,191
189 4,114,192

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2 4,114,193
56 4,113,238
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348 4,114,196

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120 4,113,391
240.1 4,113,392
333 4,113,081

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46 4,113,394

CLASS 403
22 4,113,395
138 4,113,396
154 4,113,397
267 4,113,398
329 4,113,399

CLASS 404
6 4,113,400
75 4,113,401
91 4,113,402
113 4,113,403

CLASS 405
57 4,112,690
63 4,112,689
119 4,112,691
132 4,112,693
145 4,112,696
150 4,112,694
163 4,112,695
167 4,112,698
209 4,112,697
271 4,112,692

CLASS 408
226 4,113,405
241 S 4,113,404

CLASS 415
115 4,113,406
170 R 4,113,407

CLASS 416
17 4,113,408

CLASS 417
477 4,113,409
502 4,113,410

CLASS 422
63 4,113,437
65 4,113,436
132 4,113,440
177 4,113,439
191 4,113,435
193 4,113,438
197 4,113,441

CLASS 423
119 4,113,831
4,113,832
131 4,113,833
155 4,113,834
170 4,113,835
171 4,113,836
226 4,113,837
235 4,113,838
239 4,113,839
242 4,113,840
265 4,113,841
308 4,113,842
329 4,113,843
336 4,113,844
342 4,113,845
446 4,113,846
447.4 4,113,847
512 A 4,113,848
574 R 4,113,849

CLASS 424
1 4,113,850
28 4,113,851
46 4,113,852
78 4,113,709
4,113,853
81 4,113,854
117 4,113,855
4,113,856
150 4,113,857
177 4,113,858
180 4,113,859
200 4,113,860
204 4,113,861
4,113,862
205 4,113,863
225 4,113,864
230 4,113,865
248.56 4,113,866
250 4,113,867
251 4,113,868
258 4,113,869
266 4,113,870
272 4,113,871
273 P 4,113,872
273 R Re.29,761
274 4,113,873
4,113,874
278 4,113,875
4,113,876
301 4,113,878
303 4,113,877
304 4,113,879
309 4,113,880
312 4,113,881
317 4,113,882
342 4,113,883

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152 4,113,414
325 4,113,411
335 4,113,412
542 4,113,415

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56 4,113,884
264 4,113,885
422 4,113,886
4,113,887
4,113,888
509 4,113,889
512 4,113,890
536 4,113,891
602 4,113,892

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44 4,113,893
4,113,894
4,113,895
108 4,113,896
140 4,113,897
195 4,113,898
207 R 4,113,900
236 4,113,901
290 4,113,899
390 D 4,113,902
420 4,113,903

CLASS 428
34 4,113,904
4,113,905
42 4,113,906
111 4,113,907
113 4,113,908
116 4,113,909
162 4,113,910
220 4,113,537
284 4,113,911
290 4,113,912
310 4,113,913
355 4,113,914
402 4,113,915
404 4,113,916
407 4,113,917
412 4,113,918
529 4,113,919
565 4,113,920

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27 4,113,921
33 4,113,922
36 4,113,923
50 4,113,924
78 4,113,925
99 4,113,926
143 4,113,927
193 4,113,928
194 4,113,929

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1 4,113,416
5 4,113,417
12 4,113,418
78 4,113,419
93 4,113,420
95 A 4,113,424
122 4,113,421
124 4,113,422
128 4,113,423
352 4,113,425

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25 4,113,426

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222 4,113,413

CLASS 521
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29 4,113,668
60 4,113,672
4,113,670
95 4,113,669
108 4,113,671
4,113,667
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25 4,113,930
30 4,113,710
64 4,113,931
74 4,113,932
124 4,113,933
258 4,113,934
351 4,113,935

CLASS 528
Re.29,760
41 4,113,702
75 4,113,697
94 4,113,699
126 4,113,700
138 4,113,693
271 4,113,707
279 4,113,704
289 4,113,706
4,113,703
299 4,113,708
313 4,113,698
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56 4,113,936

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463 4,113,937
464 4,113,938

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11 4,113,939
16 4,113,940
20 4,113,941
23 4,113,942
26 4,113,943
27 4,113,944
67 4,113,945
105 4,113,946
152 4,113,948
196 4,113,947
296 4,113,725
303 4,113,949
314 4,113,950
360 4,113,951
362 4,113,727
380 4,113,726
408 4,113,724

CLASS 548
305 4,113,952
339 4,113,953
365 4,113,954
374 4,113,955
4,113,956
377 4,113,957

CLASS 560
32 4,113,958
38 4,113,959
52 4,113,960
53 4,113,961
4,113,962
4,113,963
55 4,113,964
61 4,113,965
4,113,966
121 4,113,967
124 4,113,968
4,113,969
244 4,113,970
246 4,113,971
250 4,113,972

CLASS 562
503 4,113,766
532 4,113,770
534 4,113,769
535 4,113,768
568 4,113,771
577 4,113,767
583 4,113,772

CLASS 568
716 4,113,973
750 4,113,974
756 4,113,975
789 4,113,976

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D2—	215	249,296		188	249,313		119	249,330		50	249,347
	229	249,297		191	249,314		175	249,331	D15—	13	249,348
	310	249,298			249,315		186	249,332		63	249,349
	378.2	249,299	D7—	9	249,316		193	249,333	D16—	59	249,350
D6—	27	249,300		70	249,317	D10—	21	249,334	D19—	22	249,351
	28	249,301		128	249,318		53	249,335		69	249,352
	31	249,302		129	249,319		70	249,336		90	249,353
		249,303		137	249,320	D11—	40	249,337	D22—	31	249,354
	37	249,304		143	249,321		54	249,338	D23—	3	249,355
	42	249,305	D8—	14	249,322		79	249,339		03	249,357
	48	249,306		37	249,323	D12—	187	249,340		35	249,356
	73	249,307			249,324	D13—	32	249,341		93	249,358
	97	249,308		99	249,325	D14—	6	249,342	D24—	3	249,359
		249,309		367	249,326		40	249,343			249,360
	136	249,310			249,327		43	249,344		7	249,361
	146	249,311	D9—	30	249,328			249,345		31	249,362
	177	249,312		45	249,329		46	249,346		36	249,363

	63	249,364		15 P	249,383						
D25—	44	249,365		15 PP	249,377						
	76	249,366		15 R	249,381						
	92	249,367			249,382						
D29—	9	249,368	D48—	2	249,384						
D30—	99	249,369		16 B	249,385						
D34—	4 R	249,370	D56—	1 A	249,387						
		249,371		1 R	249,386						
		249,372	D64—	11 B	249,388						
	5 GH	249,373			249,390						
		249,374		11 R	249,389						
	5 K	249,375	D87—	1 R	249,391						
	15 AD	249,380			249,392						
	15 B	249,379			249,393						
	15 C	249,376		3 C	249,395						
	15 HH	249,378		3 F	249,394						

CLASSIFICATION OF PLANTS

P.—	15	4,301		51	4,300		68	4,298		74	4,299

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,112,596		4,113,255		4,113,807		4,113,665		4,112,727		4,112,989
	4,112,692		4,113,261		4,113,857		4,113,832		4,112,742		4,113,004
4 :	4,112,688		4,113,288		4,113,934		4,113,885		4,112,782		4,113,031
	4,112,969		4,113,299		4,113,980		4,113,910		4,112,861		4,113,032
5 :	4,112,668		4,113,301		4,114,194		4,113,959		4,112,922		4,113,047
6 :	4,112,521		4,113,303	01 :	4,113,286		4,113,990		4,113,036		4,113,063
	4,112,539		4,113,337		4,113,842		4,114,024		4,113,105		4,113,067
	4,112,551		4,113,349	04 :	4,112,920		4,114,080		4,113,114		4,113,100
	4,112,581		4,113,363		4,113,120		4,114,093		4,113,155		4,113,109
	4,112,591		4,113,387		4,113,127		4,114,114		4,113,183		4,113,110
	4,112,603		4,113,405		4,113,401		4,114,115		4,113,184		4,113,124
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

Reinstatement of Patent Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office

Any person whose name has been removed from the Register of Attorneys or the Register of Agents pursuant to 37 CFR 1.347 may request reinstatement on the appropriate register. However, where the long lapse of time since removal or other circumstances indicate that the person may no longer be qualified for registration, the Committee on Enrollment may require the person to again show that he or she satisfies the requirements of 37 CFR 1.341(c) and that registration would be appropriate before reinstatement is granted.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Aug. 21, 1978.

Filing of Copies of Patent Applications

Beginning on October 1, 1978, the Office will accord a filing date to facsimile or other reproduced copies of United States national patent applications meeting the requirement of 35 U.S.C. 111, *provided:*

(1) the application was properly executed by the inventor(s) prior to transmission of the copy.
(2) the copy filed is a complete copy and bears a reproduction of applicant's signature, and
(3) the originally signed application is filed no later than two months after the facsimile or other reproduced copy is filed.

Authority for this practice is found in 35 U.S.C. 26 as interpreted by the District Court decisions *Neergaard* v. *Dann*, Civil Action No. 76–536, December 20, 1976 (D.D.C.) and *Dietzel et al.* v. *Commissioner of Patents and Trademarks*, Civil Action No. 75–0298, December 22, 1976 (D.D.C.).

In order to ensure prompt association with the copy of the application initially filed it is strongly recommended that the subsequently filed original application be accompanied by a cover letter signed by the applicant or the attorney or agent averring it is the original of the earlier filed facsimile application, identifying the application by applicant's name, title of invention, date of initial filing and serial number, if known.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be used routinely for filing applications.

The above procedure does not apply to international applications filed under the Patent Cooperation Treaty since procedures to cover unsigned international applications are already provided for in PCT Article 14(1)(a)(i) and (b) and PCT Rule 26.2.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Aug. 28, 1978.

Availability of Patent Copies

Copies of patents, granted September 12, 1978 and subsequent thereto, may be available before *copies of patents* which were granted on Issue Dates *during the months of July* and August, and the Issue Date *of September 5, 1978.*

Beginning with the September *12, 1978* Issue *Date, the new*

The Patent and Trademark Office is still experiencing difficulties in obtaining patent copies from the former supplier for Issue Dates prior to to September 12, 1978, and it is anticipated that these delays will continue through the month of October, 1978.

BRADFORD R. HUTHER,
Deputy Assistant Commissioner for Administration.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,518,492, Re. S.N. 918,295, Filed Jun. 21, 1978, Cl. 361/128, TRIGGERING CIRCUIT FOR SPARK GAP ASSEMBLIES, Stanley A. Miske, Jr., et al., Owner of Record: *General Electric Company, Pittsfield, Mass.*, Attorney or Agent: Francis X. Doyle, et al., Ex. Gp.: 212

3,634,105, Re. S.N. 925,650, Filed Jul. 17, 1978, Cl. 426/549, DEHYDRATED POTATO PROCESSES AND PRODUCTS, Roderick Gerald Beck, et al., Owner of Record: *American Potato Company, Blackfoot, Idaho,* Attorney or Agent: John C. Altmiller, Ex. Gp.: 172

3,814,889, Re. S.N. 929,668, Filed Jul. 31, 1978, Cl. 219/10.55, HEAT TREATMENT OF HEAT-SENSITIVE PRODUCTS, Lennart Arvid Stenstrom, Owner of Record: *Alfa-Laval AB, Tumba, Sweden,* Attorney or Agent: Cyrus S. Hapgood, et al., Ex. Gp.: 213

3,831,763, Re. S.N. 923,625, Filed Jul. 11, 1978, Cl. 210/321, SEPARATION APPARATUS, Jacques Breysse, et al., Owner of Record: *Rhone-Poulenc S.A., Paris, France,* Attorney or Agent: Ellsworth H. Mosher, Ex. Gp.: 176

3,856,273, Re. S.N. 914,990, Filed Jun. 12, 1978, Cl. 366/261, WING TYPE AGITATOR, Billy Leon Born, Owner of Record: *Stoelting Brothers Company, Kiel, Wis.*, Attorney or Agent: Gerrit D. Foster, et al., Ex. Gp.: 242

3,931,963, Re. S.N. 926,151, Filed Jul. 19, 1978, Cl. 270/61, FOLDING MACHINES, Elmer E. Bewersdorf, Owner of Record: *McCain Manufacturing Corporation, Chicago, Ill.*, Attorney or Agent: James B. Kinzer, et al., Ex. Gp.: 337

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3,969,003, Re. S.N. 923,468, Filed Jul. 10, 1978, Cl. 303/113, ANTI-SKID CONTROL DEVICE AND SYSTEM, Walter H. Morse, et al., Owner of Record: *The Jacobs Manufacturing Company, West Hartford, Conn.*, Attorney or Agent: Ronald A. Schapira, Ex. Gp.: 315

3,998,916, Re. S.N. 929,680, Filed Jul. 31, 1978, Cl. 264/22, METHOD FOR THE MANUFACTURE OF AN ELECTRET FIBROUS FILTER, Jan Van Turnhout, Owner of Record: *N. V. Kinto, Rotterdam, Netherlands*, At-

4,007,282, Re. S.N. 924,811, Filed Jul. 14, 1978, Cl. 424/308, LOWERING LIPID AND SUGAR LEVELS IN THE BLOOD WITH A BIS (4-HYDROXYPHENYL) ALKANOIC ACID OR ESTER THEREOF, Otto Mauz, et al., Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt am Main, Germany,* Attorney or Agent: Henry W. Koster, Ex. Gp.: 125

4,011,525, Re. S.N. 928,042, Filed Jul. 25, 1978, Cl. 331/94.5 PE, GAS LASER GENERATOR, Bruno Godard, Owner of Record: *Compagnie Generale d'Electricite, Paris, France,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 254

4,015,869, Re. S.N. 926,888, Filed Jul. 21, 1978, Cl. 292/341.16, CATCH MECHANISM, Stephen Horvath, Owner of Record: *Access Control Systems Pty. Ltd., Melbourne, Australia,* Attorney or Agent: Lawrence B. Biebel, et al., Ex. Gp.: 351

4,036,802, Re. S.N. 925,886, Filed Jul. 18, 1978, Cl. 260/296 F, TETRAFLUOROETHYLENE COPOLYMER FINE POWDER RESIN, Robert Victor Poirier, Owner of Record: *E. I. du Pont de Nemours and Company, Wilmington, Del.*, Attorney or Agent: Gary A. Samuels, Ex. Gp.: 121

4,041,344, Re. S.N. 927,571, Filed Jul. 24, 1978, Cl. 313/113, ELLIPSOIDAL REFLECTOR LAMP, Frank F. Lagiusa, Owner of Record: *General Electric Company, New York, N.Y.*, Attorney or Agent: Paul F. Wille, et al., Ex. Gp.: 252

4,051,784, Re. S.N. 926,161, Filed Jul. 19, 1978, Cl. 105/131, FLEXIBLE ROTARY COUPLING, Donald L. Ries, Owner of Record: *Rockwell International Corporation, Pittsburgh, Pa.*, Attorney or Agent: Ronald F. Naughton, et al., Ex. Gp.: 314

4,064,900, Re. S.N. 929,678, Filed Jul. 31, 1978, Cl. 137/315, NON-RISE FAUCET ASSEMBLY, William C. Schmitt, Owner of Record: *Milwaukee Faucets, Inc., Milwaukee, Wis.*, Attorney or Agent: Nathan N. Kraus, et al., Ex. Gp.: 341

4,076,779, Re. S.N. 928,290, Filed Jul. 26, 1978, Cl. 264/39, METHOD OF MAINTAINING THE FLUID PERMEABILITY OF A USED CERAMIC FLUID-RELEASE MOLD, Rudolph A. Skriletz, Owner of Record: *Wallace-Murray Corporation, New York, N.Y.*, Attorney or Agent: William E. Schuyler, Jr., et al., Ex. Gp.: 147

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LUTRELLE F. PARKER,
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In order to ensure prompt association with the copy of the application initially filed it is strongly recommended that the subsequently filed original application be accompanied by a cover letter signed by the applicant or the attorney or agent averring it is the original of the earlier filed facsimile application, identifying the application by applicant's name, title of invention, date of initial filing and serial number, if known.

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DONALD W. BANNER,
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Availability of Patent Copies

Copies of patents, granted September 12, 1978 and subsequent thereto, may be available before copies of patents which were granted on Issue Dates during the months of July and August, and the Issue Date of September 5, 1978.

Beginning with the September 12, 1978 Issue Date, the new supplier furnishing these services has indicated that deliveries of patent copies are expected to be on schedule.

The Patent and Trademark Office is still experiencing difficulties in obtaining patent copies from the former supplier for Issue Dates prior to to September 12, 1978, and it is anticipated that these delays will continue through the month of October, 1978.

BRADFORD R. HUTHER,
Deputy Assistant Commissioner for Administration.

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3,634,105, Re. S.N. 925,650, Filed Jul. 17, 1978, Cl. 426/549, DEHYDRATED POTATO PROCESSES AND PRODUCTS, Roderick Gerald Beck, et al., Owner of Record: *American Potato Company, Blackfoot, Idaho,* Attorney or Agent: John C. Altmiller, Ex. Gp.: 172

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PATENT NOTICES

Certificates of Correction for the Week of Sept. 19, 1978

Re.29,600	4,065,577	4,081,277	4,086,343
3,911,191	4,066,760	4,081,278	4,086,563
3,919,173	4,067,228	4,081,413	4,087,005
3,958,827	4,068,211	4,081,790	4,087,032
3,986,057	4,068,493	4,081,791	4,087,320
4,022,958	4,069,774	4,082,020	4,087,450
4,026,085	4,069,983	4,082,145	4,087,463
4,029,213	4,072,553	4,082,146	4,087,564
4,029,909	4,074,600	4,082,343	4,087,638
4,031,012	4,075,725	4,082,759	4,087,693
4,033,411	4,075,866	4,082,935	4,087,715
4,034,093	4,076,792	4,083,523	4,087,788
4,034,302	4,077,367	4,083,789	4,087,809
4,034,505	4,077,663	4,084,326	4,087,907
4,035,710	4,077,842	4,084,408	4,088,045
4,036,765	4,077,927	4,084,490	4,088,154
4,036,954	4,077,966	4,084,576	4,088,324
4,038,256	4,078,281	4,085,012	4,088,419
4,038,324	4,078,553	4,085,073	4,088,502
4,040,885	4,078,938	4,085,074	4,088,506
4,041,251	4,078,996	4,085,123	4,088,883
4,047,027	4,079,069	4,085,178	4,089,102
4,049,645	4,079,534	4,085,193	4,089,176
4,051,066	4,079,944	4,085,388	4,089,285
4,052,298	4,080,086	4,085,391	4,089,360
4,052,365	4,080,175	4,085,438	4,089,409
4,052,991	4,080,283	4,085,854	4,089,503
4,056,619	4,080,341	4,085,962	4,089,773
4,057,431	4,080,496	4,086,046	4,089,954
4,058,621	4,080,547	4,086,030	4,090,208
4,058,657	4,080,661	4,086,065	4,090,317
4,060,550	4,080,939	4,086,071	4,090,328
4,061,739	4,081,004	4,086,109	4,090,612
4,065,439	4,081,019	4,086,142	4,091,144
4,065,493	4,081,275	4,086,173	

Simultaneous Issue of Patents

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP–2, Room 5C26

The request must contain the following information about *each* allowed application for which simultaneous issue is requested:

(1) serial number
(2) filing date
(3) name(s) of inventor(s)
(4) title of invention
(5) date of allowance

Separate copies of the request must accompany *each* Issue Fee Transmittal (PTO–85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557–3794.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

Aug. 25, 1978.

Disclaimers

3,928,855.—*Edward F. Helinski,* Johnson City, and *Ho C. Lee,* Endicott, and *Jack L. Zable,* Vestal, N.Y. METHOD AND APPARATUS FOR CONTROLLING SATELLITES IN AN INK JET PRINTING SYSTEM. Patent dated Dec. 23, 1975. Disclaimer filed July 3, 1978, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 17 of said patent.

3,939,261.—*Jordan B. Barth,* East Brunswick, N.J. FLAVORED DENTIFRICE. Patent dated Feb. 17, 1976. Disclaimer filed Aug. 2, 1978, by the assignee, *Colgate-Palmolive Company.*

Hereby enters this disclaimer to claim 15 of said patent.

4,088,855.—*William Boyd Emery,* Kirkland Wash. KEYBOARD ELECTRO-MECHANICAL SWITCH WITH COIL SPRING CONTACT. Patent dated May 9, 1978. Disclaimer filed July 27, 1978, by the assignee, *Korry Manufacturing Co.*

Hereby enters this disclaimer to claim 11 of said patent.

Dedication

3,995,114.—*Richard E Marschinke,* St. Paul, Minn. ULTRA LOW CURRENT AMPLIFIER. Patent dated Nov. 30, 1976. Dedication filed July 24, 1978, by the assignee, *Dahlberg Electronics, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimer and Dedication

3,937,956.—*Richard K. Lyon,* Fanwood, N.J. ISOTOPE SEPARATION PROCESS. Patent dated Feb. 10, 1976. Disclaimer and dedication filed July 24, 1978, by the assignee, *Exxon Research and Engineering Company.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 769,124. Thorium Doped Tridium Alloy for Radioisotope Heat Sources. Filed Feb. 16, 1977.

Patent application 776,383. Nuclear Waste Storage Container with Metal Matrix. Filed Mar. 10, 1977.

Patent application 782,873. Method for Selectively Reducing Plutonium Values by a Photochemical Process. Filed Mar. 30, 1977.

Patent 4,042,876. Eddy Current Gauge for Monitoring Displacement Using Printed Circuit Coil. Filed Apr. 19, 1976. Patented Aug. 16, 1977. Not available NTIS.

Patent 4,045,289. Nuclear Reactor Containment Structure with Continuous Ring Tunnel at Grade. Filed Oct. 22, 1976. Patented Aug. 30, 1977. Not available NTIS.

Patent 4,046,169. Pipe Support for Use in a Nuclear System. Filed July 9, 1975. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,046,690. Filtering Coal-Derived Oil Through a Filter Media Precoated with Particles Partially Solubilized by Said Oil. Filed Apr. 1, 1976. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,049,864. Penetration Resistant Barrier. Filed Feb. 12, 1976. Patented Sept. 20, 1977. Not available NTIS.

Patent 4,055,247. Explosion Containment Device. Filed Oct. 22, 1976. Patented Oct. 25, 1977. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St., SW., Washington, D.C. 20590

Patent application 903,518. Automatic Base Gate Positioning Circuit. Filed May 16, 1978.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent application 817,094. Intermediates for Total Steroid Synthesis from the Condensation Product of Dimethyl 3-Ketoglutarate and Glyoxal Useful as Precursors for the Total Synthesis of Steroids. Filed July 19, 1977.

Patent 4,069,241. Steroidal Intermediates from the Condensation Product of Dimethyl-3-Ketoglutarate and Glyoxal. Filed May 26, 1976. Patented Jan. 17, 1978. Not available NTIS.

Patent 4,073,885. Anodynin, an Endogenous Opiate Analgesic from Human Blood, and Process for Recovering Same. Filed Sept. 10, 1976. Patented Feb. 14, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., Washington, D.C. 20240

Patent 4,053,377. Electrodeposition of Copper. Filed Feb. 13, 1976. Patented Oct. 11, 1977. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters,
NASA Code GP–2, Washington, D.C. 20546

Patent application 862,878. System and Method for Refurbishing and Processing Parachutes. Filed Dec. 21, 1977.

Patent application 876,432. Dielectric-Loaded Waveguide Circulator for Cryogenically Cooled and Cascaded Maser Waveguide Structures. Filed Feb. 9, 1978.

Patent Application 885,065. Apparatus for Measuring an Aircraft's Speed and Height. Filed Mar. 9, 1978.

Patent application 888,432. System for Forming a Quadrifid Image Comprising Angularly Related Fields of View of a Three Dimensional Object. Filed Mar. 20, 1978.

Patent application 889,670. Fatigue Failure Load Indicator. Filed Mar. 24, 1978.

Patent application 891,245. Process for Curing Epoxides with Diamines, Filed Mar. 29, 1978.

Patent application 891,356. Distributed-Switch Dicke Radiometer. Filed Mar. 29, 1978.

Patent application 891,370. Closed Loop Solar Array-Ion Thruster System with Power Control Circuitry. Filed Mar. 29, 1978.

Patent application 891,372. A Retractable Environmental Seal. Filed Mar. 29, 1978.

Patent application 893,383. Structural Members, Method and Apparatus. Filed Apr. 4, 1978.

Patent application 893,865. Improved Tire/Wheel Concept. Filed Apr. 6, 1978.

Patent application 897,829. In situ Self Cross-Linking of Polyvinyl Alcohol Battery Separators. Filed Apr. 19, 1978.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 3,987,003. Thermally Stable Dioxo and Dithio-Benzisoquinoline Compositions and Process of Synthesizing Same. Filed June 6, 1975. Patented Oct. 19, 1976.

Patent 3,992,995. Speed Controlled Second Event Launcher. Filed Sept. 4, 1975. Patented Nov. 23, 1976.

Patent 3,993,269. Toroidal Tail Structure for Tethered Aeroform Balloon. Filed Dec. 18, 1975. Patented Nov. 23, 1976.

Patent 3,993,890. Combinatorial Digital Filter. Filed Sept. 29, 1975. Patented Nov. 23, 1976.

Patent 3,993,962. Low Noise Parametric Varactor Diode Crystal Oscillator. Filed Aug. 18, 1975. Patented Nov. 23, 1976.

Patent 3,993,976. Method and Apparatus for Pattern Analysis. Filed May 13, 1974. Patented Nov. 23, 1976.

Patent 3,993,994. Adaptive Clutter Cancellation for Synthetic Aperture AMTI Radar. Filed June 27, 1975. Patented Nov. 23, 1976.

Patent 3,994,165. Mass Flowmeter Starting System. Filed Nov. 25, 1975. Patented Nov. 30, 1976.

Patent 3,994,861. Long Chain-Perfluoroalkylene Ether Bibenzoxazole Polymers. Filed Sept. 4, 1975. Patented Nov. 30, 1976.

Patent 3,995,213. Surface Impedance Tester. Filed Oct. 2, 1975. Patented Nov. 30, 1976.

Patent 3,995,229. High Slew Rate Operational Amplifier Circuit. Filed May 27, 1975. Patented Nov. 30, 1976.

Patent 3,995,271. Adaptive Clutter Cancellation and Interference Rejection System for AMTI Radar. Filed Aug. 20, 1975. Patented Nov. 30, 1976.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,974,457. Time and Frequency Control Unit. Filed Sept. 19, 1975. Patented Aug. 10, 1976.

Patent 3,976,274. Permanent Attachment for Suction Cups. Filed May 27, 1975. Patented Aug. 24, 1976.

Patent 3,976,962. Dual Threshold Magnetic Proximity Switch. Filed Apr. 25, 1975. Patented Aug. 24, 1976.

Patent 3,976,968. Underwater Target Detection Apparatus. Filed Nov. 19, 1954. Patented Aug. 24, 1976.

Patent 3,977,149. Multipurpose Construction Panel. Filed Mar. 28, 1975. Patented Aug. 31, 1976.

Patent 3,978,488. Offset Fed Electric Microstrip Dipole Antenna. Filed Apr. 24, 1975. Patented Aug. 31, 1976.

Patent 3,980,905. Apparatus and Method for Tuning a Broad Bandwidth Transducer Array. Filed Oct. 19, 1973. Patented Sept. 14, 1976.

Patent 3,982,810. Directional Radiation by Asymmetrical Dielectric Gratings. Filed July 9, 1975. Patented Sept. 28, 1976.

Patent 3,983,750. Fluid Level Sensing Device. Filed Sept. 29, 1975. Patented Oct. 5, 1976.

Patent 3,984,673. External Lighting System for Hypobaric and Hyperbaric Chambers. Filed June 30, 1975. Patented Oct. 5, 1976.

Patent 3,984,834. Diagonally Fed Electric Microstrip Dipole Antenna. Filed Apr. 24, 1975. Patented Oct. 5, 1976.

Patent 3,986,745. Grabber. Filed Aug. 25, 1975. Patented Oct. 19, 1976.

Patent 3,987,741. Remote Unmanned Work System (RUWS) Matching Latch. Filed Jan. 12, 1976. Patented Oct. 26, 1976.

Patent 3,988,732. 3-Channel Selectable Polarization, Target Discrimination Antenna. Filed Dec. 22, 1965. Patented Oct. 26, 1976.

Patent 3,989,475. Composite Superconductors. Filed May 30, 1975. Patented Nov. 2, 1976.

Patent 3,990,344. Underwater Expendable Explosive Link. Filed Jan. 13, 1975. Patented Nov. 9, 1976.

Patent 3,990,811. Circulation Controlled Rotary Wing Aircraft and Control System Therefor. Filed Feb. 26, 1975. Patented Nov. 9, 1976.

Patent 3,991,372. Circuit for Reversing Doppler Signal Modifying a Carrier. Filed Sept. 24, 1975. Patented Nov. 9, 1976.

Patent 3,994,187. Epicyclic Transmission. Filed Feb. 14, 1975. Patented Nov. 30, 1976.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA
Code GP–2, Washington, D.C. 20546

Patent 3,987,630. Mechanical Thermal Motor. Patented Oct. 26, 1976.

Patent 3,988,677. Space Communication System for Compressed Data with a Concatenated Reed-Solomon-Viterbi Coding Channel. Patented Oct. 26, 1976.

Patent 3,988,716. Computer Interface System. Patented Oct. 26, 1976.

Patent 3,988,729. Differential Pulse Code Modulation. Patented Oct. 26, 1976.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
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New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 12, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-12-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-17-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-17-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-6-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-28-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-11-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-23-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	11-24-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	5-24-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-8-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

REISSUES

SEPTEMBER 19, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

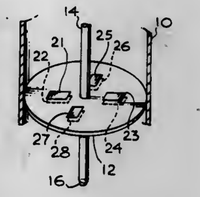
Re. 29,765
STRAIN GAUGE TRANSDUCER SYSTEM

Hewitt D. Crane, Portola Valley; Jon C. Taenzer, Palo Alto, and Gerry B. Andeen, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Original No. 3,915,015, dated Oct. 28, 1975, Ser. No. 451,846, Mar. 18, 1974. Application for reissue Oct. 21, 1977, Ser. No. 844,276

Int. Cl.[2] G01L *5/16*

U.S. Cl. 73—432 R 9 Claims



9. Apparatus for generating signals representative of the force on and direction of motion of a writing instrument used for writing, comprising

a shaft having writing means at one end thereof,

flexible diaphragm means,

means for coupling said shaft to said flexible diaphragm means at a location spaced from said one end to cause strains within said diaphragm responsive to pressure on and motion of said writing means,

supporting means for supporting said flexible diaphragm means with said writing means spaced from said supporting means,

a plurality of strain gauge means attached to at least one surface of said flexible diaphragm means and disposed at locations on said flexible diaphragm to which said shaft is coupled for generating signals representative of the strains within said diaphragm, and

circuit means for combining said strain gauge means signals for producing signals representative of the force on and direction of motion of said writing means.

Re. 29,766
METHOD OF AND MEANS FOR TREATING BURN VICTIMS

Ronald H. Wideman, Menasha, Wis., assignor to Poly-Wide, Inc., Menasha, Wis.

Original No. 3,985,130, dated Oct. 12, 1976, Ser. No. 575,413, May 7, 1975. Application for reissue Mar. 30, 1977, Ser. No. 782,720

Int. Cl.[2] A61B *19/06*

U.S. Cl. 128—132 D 27 Claims

1. A method of treating and providing custodial care for burn and decubitus patients comprising interposing between a patient and a surface on which he is supported a generally nonadhering disposable laminated fabric having outer layers of nonwoven non-migrating fibrous material and an inner layer of foam material therebetween fastened by an adhesive to the outer layers over their entire extent.

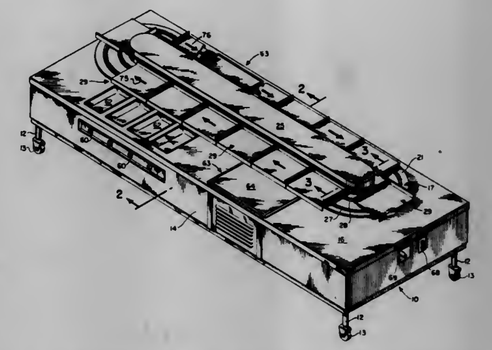
Re. 29,767
APPARATUS AND METHOD FOR USE IN ASSEMBLING FOOD ON TRAYS

Max Gerald Futch, 332 Wilton Dr., Baton Rouge, La. 70815

Original No. 3,926,489, dated Dec. 16, 1975, Ser. No. 512,001, Oct. 4, 1974. Application for reissue Apr. 4, 1977, Ser. No. 783,986

Int. Cl.[2] B65C *15/00;* A47B *91/00*

U.S. Cl. 186—1 D 17 Claims



1. A device for use in making up serving trays with food portions comprising:

a. a cabinet assembly having two spaced apart, longitudinally extending, generally flat top counter surfaces;

b. a hollow, narrow, elongated, serving tray conveyer assembly centrally and longitudinally fixedly positioned between said two top surfaces and extending upwardly a substantial distance therefrom,

i. said tray conveyer assembly having end and sidewalls extending upwardly from said top surface, a continuous shelf projecting outwardly from said end and sidewalls adjacent their upper ends, a plurality of tray support means supported by said shelf for movement thereover, and means located in the upper portion of said tray conveyer assembly for moving said plurality of tray support means around a closed path; and

c. each of said two top surfaces of said cabinet providing means for accommodating a plurality of bulk or individually portioned food containers for placement of individual portions on each of said serving trays by an attendant.

Re. 29,768
BLOW-MOLDING APPARATUS

Johannes S. Mehnert, Ernststrasse 11, 5205 St. Augustin-Menden, Fed. Rep. of Germany

Original No. 3,884,610, dated May 20, 1975, Ser. No. 334,134, Feb. 20, 1973. Application for reissue May 20, 1977, Ser. No. 798,909

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1972, 2208165

Int. Cl.[2] B29C *5/06*

U.S. Cl. 425—535 6 Claims

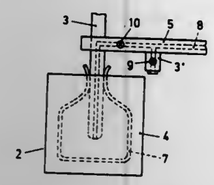
1. Blow-molding apparatus for the fabrication of a hollow body of thermoplastic material within a blow mold, the body being subsequently released from the mold, comprising:

a. a conventional blow pipe (3) capable of providing a first stream of gas,

b. a guide (5) for selectively implanting the blow pipe into

the mold and extracting the blow pipe from the mold before the body is released from the mold,

c. a gas-supplying member of simple construction (3') [mounted on the guide and] separate from the blow pipe, the member being capable of supplying a second stream of gas to the mold after the removal of the blow pipe,



[the guiding serving to move] the said member *being movable* into and out of the mold, and

d. a valve system (9,10) for selectively directing gas to the blow pipe (3) and the member (3'), the blow pipe expanding the body of thermoplastic within the mold and the gas-supplying member maintaining a positive gas pressure within the body while it is allowed to cool.

Re. 29,769

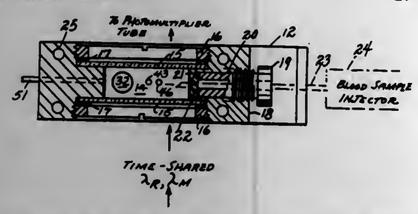
METHOD AND APPARATUS FOR DERIVING OXYGEN ASSOCIATION RATE CURVES FOR BLOOD SAMPLES

Lutz A. Kiesow, Bethesda, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Original No. 3,854,878, dated Dec. 17, 1974, Ser. No. 351,014, Apr. 13, 1973. Application for reissue Dec. 14, 1976, Ser. No. 750,503

Int. Cl.² G01N *21/24, 33/16*

U.S. Cl. 23—230 B **17 Claims**



6. A method of deriving oxygen association curve information for a blood sample, said method comprising disposing a blood sample within a treatment cell, introducing available oxygen into said cell in a first concentration, varying said first concentration of oxygen within said cell over a period of time to provide exposure of said blood sample to varying concentrations of oxygen, passing first and second light beams through said sample during said time period, said first light beam having a wavelength such that there is substantially no difference in absorbance of said wavelength by said blood sample in the oxygenated and deoxygenated states, respectively, of said blood, said second light beam having a wavelength such that there is a relatively large difference in absorbance of said wavelength by said blood sample in the oxygenated and deoxygenated states, respectively, of said blood, and determining the changes in oxygen association of said blood with respect to the changes in oxygen concentration within said cell by sensing the differences in the respective degrees of absorption of said first and second beams by said blood as said oxygen concentration is changed.

Re. 29,770

MANUFACTURE OF FIBERBOARD ACCORDING TO THE WET METHOD WITH CLOSED BACKWATER SYSTEM

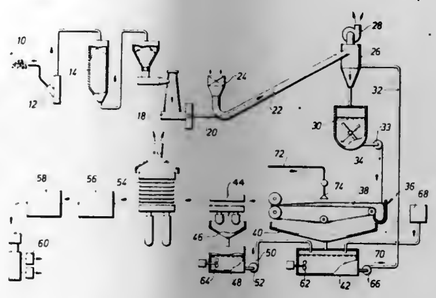
Stig Daniel Selander, 5 Fredrikshovsgatan, 115 22 Stockholm, Sweden; Bernard Marechal, Casteljaloux, and Corrado D'Andrea, Arpajon, both of France, assignors to Isorel S.A., Puteaux, France and Stig Daniel Selander, Stockholm, Sweden

Original No. 3,966,540, dated Jun. 29, 1976, Ser. No. 504,739, Sep. 10, 1974. Application for reissue Aug. 15, 1977, Ser. No. 824,853

Claims priority, application Sweden, Sep. 14, 1973, 7312580

Int. Cl.² D21C *3/00*

U.S. Cl. 162—13 **4 Claims**



1. In the method of manufacturing wood fibreboard according to the wet system with closed white water system including defibrating lignocellulose material, diluting the defibrated material in water serving as the transporting medium, forming wet sheets from the diluted pulp, mechanically separating white water obtained from the formation of wet sheets and recirculating it to the dilution stage and final drying by evaporation of water from the wet sheets, the production of fibreboard having enhanced appearance while maintaining a closed white water system with reduced discharge of pollutants to the environment including drying the incoming lignocellulose material, prior to the dilution step, to a [dry content from 60 percent to 75 percent] *dryness* which is higher than the dryness of the wet sheet prior to the time it enters the final drying stage, the improvement comprising adding formaldehyde to the white water, homogenizing the white water containing said formaldehyde to a degree such that occurring precipitations are atomized prior to using it for dilution of incoming fibre material.

Re. 29,771

FLUE GAS DESULFURIZATION SORBENT

Neville L. Cull, Baker, and Warren M. Smith, Baton Rouge, both of La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Original No. 4,039,478, dated Aug. 2, 1977, Ser. No. 540,225, Jan. 10, 1975. Division of Ser. No. 315,590, Dec. 15, 1972, abandoned. Application for reissue Sep. 19, 1977, Ser. No. 834,528

Int. Cl.² B01J *29/06, 23/08*

U.S. Cl. 252—455 R **19 Claims**

13. A porous non-acidic solid sorbent for flue gas desulfurization comprising:

a. a porous alumina base;

b. a coating of *up to about 5% by weight, based on said alumina, of silica, said silica being formed in situ by hydrolysis and subsequent calcination of a hydrolyzable silicon compound or a coating of* about 2% to about 20% by weight, based on said alumina, of a refractory oxide, said oxide being formed in situ by hydrolysis *and subsequent calcination* of a hydrolyzable organic compound *of a metal selected from the group consisting of Group IIIB, IVB and VB metals*, the coated alumina base being non-acidic; and

c. a material active for the selective removal of sulfur oxides from gas mixtures, said active material being a metal or metal oxide.

19. A composition according to claim 13 in which the active material is copper oxide.

Re. 29,772

URETHANE ELASTOMER WITH ACTIVE HYDROGEN CONTAINING MONOETHYLENICALLY UNSATURATED MONOMER

Warren D. Niederhauser, Meadowbrook; William Bauer, Jr., Huntingdon Valley; Constance A. Lane, Philadelphia, all of Pa., and Hector Belmares-Sarabia, Villa de Guadalupe, Mexico, assignors to Rohm and Haas Company, Philadelphia, Pa.

Original No. 3,641,199, dated Feb. 8, 1972, Ser. No. 839,655, Jul. 7, 1969. Application for reissue Nov. 20, 1972, Ser. No. 308,078

Int. Cl.² C08L *75/00*

U.S. Cl. 260—859 R **28 Claims**

1. As a composition of matter, a condensation product

(A) a reaction product of

(1) diisocyanate selected exclusively from aliphatic and cycloaliphatic diisocyanate,

(2) a linear condensation polymer containing terminal hydroxyl groups and

(3) a polyol having at least two hydroxyl groups, the ratio [n] of (1) to the total of (2) and (3) being in the range of 1.001 to 2.0 equivalents of (1) per equivalent of the total of (2) and (3) and sufficient to provide in the reaction product an equivalent weight as determined by isocyanate titration of at least 4,000, the amount of (3) relative to (2) on an equivalent basis being between 0.1:0.9 and 0.9:0.1, with

(B) a reactive hydrogen-containing monoethylenically insaturated monomer in which the reactive hydrogen is in a hydroxyl or amine group,

an excess of (B) being used to effect reaction of all the isocyanate groups in (A).

Re. 29,773

PROCESS FOR PRODUCING POTATO CHIPS

Lawrence W. Wisdom, and Barney W. Hilton, both of Dallas, Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Original No. 3,835,222, dated Sep. 10, 1974, Ser. No. 760,736, Sep. 18, 1968. Application for reissue Jun. 9, 1976, Ser. No. 694,310

Int. Cl.² A23L *1/12*

U.S. Cl. 426—49 **20 Claims**

7. A process for the production of a fried potato product from potatoes containing in excess of 0.2 percent by weight of reducing sugars which comprises forming a *potato* dough comprising said potatoes, *water* and yeast, said yeast being present in an amount sufficient to ferment said reducing sugars, allowing said dough to ferment for a time sufficient to lower the reducing sugar content *to* below about 0.2 percent by weight [of] *based on* said potatoes, forming the dough into shaped bodies and frying said shaped bodies.

Re. 29,774

ELONGATED TEXTILE PRODUCT

Roger Vidal, Champagne, and Raymond Gourmandy, Lyons, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

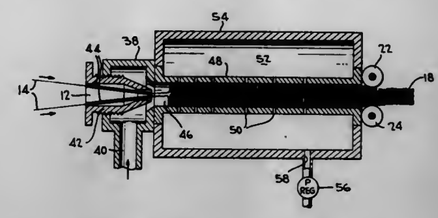
Original No. 3,946,133, dated Mar. 23, 1976, Ser. No. 427,344, Dec. 21, 1973. Division of Ser. No. 188,775, Oct. 13, 1971, Pat. No. 3,827,113. Application for reissue Oct. 18, 1977, Ser. No. 843,350

Claims priority, application France, Oct. 15, 1970, 70.38079; Oct. 15, 1970, 70.38080; Jun. 22, 1971, 71.22959

Int. Cl.² D02G *1/20, 3/02;* D04H *17/00*

U.S. Cl. 428—400 **2 Claims**

1. A textile product formed of a plurality of texturized, continuous filament, polyamide yarns each having a titre of less than 200 dtex, which are configured into a cylindrical pack having a substantially smooth, continuous peripheral surface, said cylindrical pack having sufficient cohesion to resist rupture until stressed by a weight in excess of a predetermined weight, said predetermined weight being at least the weight of



one meter of the pack when the pack has a specific weight greater than 0.3 grams per cubic centimeter and wherein said yarns composing said pack separate into parallel strands, when said pack is stressed with a force in excess of said predetermined weight but less than a force required to break the yarns.

Re. 29,775

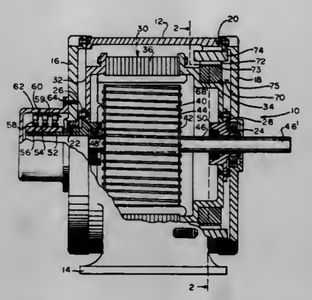
CONTROLLED ROTOR MOTOR

Robert Helmer, Setauket, N.Y., assignor to The Enercon Corporation, Setauket, N.Y.

Original No. 3,885,205, dated May 20, 1975, Ser. No. 307,013, Nov. 16, 1972. Application for reissue Apr. 11, 1977, Ser. No. 786,371

Int. Cl.² H02K *17/00*

U.S. Cl. 318—302 **7 Claims**



1. An electric motor for driving a mechanical load comprising: a stationary housing; a first rotatable means [wholly comprising the secondary of said motor] extending axially of said housing and being rotatable in a selected direction for driving said load; a second rotatable means [having slotted laminations and field coil windings therein] surrounding said first rotatable means and extending axially in said housing for magnetically rotating said first rotatable means in one direction when said first rotatable means coupled to said load, a hardened high hysteresis steel ring being mounted on said second rotatable means for rotation therewith; said second rotatable means being rotatable in a direction opposite to that of said first rotatable means; control means comprising a plurality of electromagnets mounted on said stationary housing *in juxtaposition to said steel ring* for retarding the rotation of said second rotatable means to vary the speed of rotation of said first rotatable means in said selected direction [.], *while maintaining substantial constant driving torque to said load at all rotational speeds of said first rotatable means.*

Re. 29,776

EXPOSURE CONTROL DEVICE

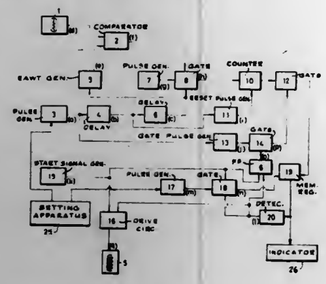
Yutaka Kohtani, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Original No. 3,742,826, dated Jul. 3, 1973, Ser. No. 103,108, Dec. 31, 1970. Application for reissue Jun. 26, 1975, Ser. No. 590,690

Claims priority, application Japan, Jan. 7, 1970, 45-2456

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—23 D 27 Claims



11. A photographic camera system, comprising;

photo-electric means for converting a brightness of the object to be photographed into a first electrical signal having a value corresponding to the brightness;

(b) a pulse generator;

(c) memory means connected to said pulse generator, said memory means counting the pulses from the pulse generator and memorizing the pulses from the pulse generator;

(d) means for generating an electrical comparison signal;

(e) comparator means connected to said photo-electric means and said comparison signal generating means, said comparator means comparing the first electrical signal of said photo-electric means with the electrical comparison signal of said comparison signal generating means and producing a control signal when the difference between two signals reach a predetermined value;

(f) gate means coupling said pulse generator to said memory means and connected to said comparator means for preventing transmission of the pulses from said pulse generator to said memory means in response to a control signal from comparator, whereby the counted pulses are memorized in said memory means;

(g) an electrically controlled exposure defining device; and

(h) control means connected to said memory means for controlling an exposure on the basis of the number of the pulses memorized in said memory means.

PLANT PATENTS

GRANTED SEPTEMBER 19, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,302

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Nov. 18, 1976, Ser. No. 743,150

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name Pennsylvania and particularly characterized as to novelty by the combined characteristics of relatively large star-shaped flowers having a red-purple flower color; shiny foliage; fast and vigorous growth; very strong and upright stems; long blooming period and non-dropping flowers.

4,303

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Apr. 12, 1977, Ser. No. 786,853

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name California and particularly characterized as to uniqueness by the combined characteristics of upright, strong flower stems each of which carries up to ten generally purple flowers; vigorous growth habit, upright, strong peduncle, medium green foliage, long blooming period, strong and robust flowerhead, and by its saleability after the first flash of flowers.

4,304

ALMOND TREE

Chris Floyd Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Sep. 6, 1977, Ser. No. 831,099

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—30 1 Claim

1. A new and distinct variety of almond tree, as shown and described, characterized by the tree being of medium size and vigor, medium upright in growth, having a heavy set of bloom, blooming a few days before Mission, and a heavy and regular bearer of medium size nuts, which are well distributed along the branches and are easy to harvest and hull; the variety being self-fertile and harvesting with Nonpareil.

4,305

MINIATURE ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed Apr. 27, 1977, Ser. No. 791,637

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, essentially as illustrated and described, characterized by buds and flowers resembling the miniature rose 'Over The Rainbow' in size and color effect, but the present variety being more brilliantly orange color on top side of petals and the reverse side of petals being light yellow to near white; and further characterized by flowers of symmetrical form with excellent lasting quality both on the plant and as cut flowers; the variety is also characterized by a vigorous, healthy plant, easily propagated from cuttings, which flowers almost continuously during the growing season.

PATENTS

GRANTED SEP. 19, 1978

ERRATA

For CLASS	See PATENT NO.
405–094	4,114,381
405–282	4,114,383
405–260	4,114,384
405–298	4,114,385
405–150	4,114,386
405–293	4,114,387
405–216	4,114,388
405–186	4,114,389
405–163	4,114,390
405–176	4,114,391
405–207	4,114,392
114–264	4,114,393
405–025	4,114,394
072–122	4,114,431
072–135	4,114,432
180–155	4,114,724
400–279	4,114,750
400–249	4,114,751
229–044 CB	4,114,777
220–408	4,114,784
224–455	4,114,838
408–014	4,115,017
408–239 A	4,115,018
422–133	4,115,066
422–056	4,115,067
422–056	4,115,068
422–112	4,115,069
422–142	4,115,070
422–179	4,115,071
422–207	4,115,072
250–527	4,115,280
528–090	4,115,295
528–092	4,115,296
521–032	4,115,297
521–170	4,115,299
521–171	4,115,300
521–155	4,115,301
521–115	4,115,302
521–053	4,115,303
521–167	4,115,304
260–002.3	4,115,298
260–006	4,115,305
528–018	4,115,356
528–294	4,115,357
528–196	4,115,358
528–170	4,115,359

ERRATA—Continued

528–094	4,115,360
528–111	4,115,361
528–190	4,115,362
528–294	4,115,363
528–132	4,115,365
528–131	4,115,366
528–210	4,115,367
528–229	4,115,368
526–065	4,115,369
528–279	4,115,371
528–073	4,115,372
528–048	4,115,373
252–432	4,115,424
562–498	4,115,438
562–402	4,115,439
562–533	4,115,440
562–534	4,115,441
562–548	4,115,442
562–402	4,115,443
568–847	4,115,458
340–147 CV	4,115,849

PATENTS

GRANTED SEPTEMBER 19, 1978

GENERAL AND MECHANICAL

4,114,197

INTER-LINER FOR A SAFETY HELMET AND METHOD OF ASSEMBLY

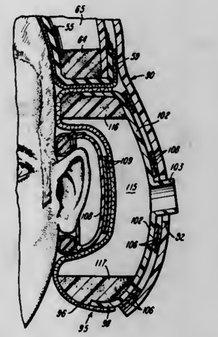
William G. Morton, Box 841, Hopewell, Va. 23860

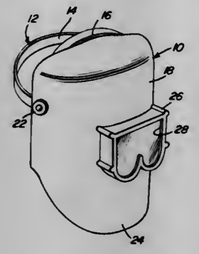
Continuation-in-part of Ser. No. 721,871, Sep. 9, 1976, Pat. No. 4,044,399, which is a continuation-in-part of Ser. No. 570,712, Apr. 23, 1975, Pat. No. 3,992,721, which is a continuation-in-part of Ser. No. 360,950, May 16, 1973, Pat. No. 3,882,546, which is a continuation-in-part of Ser. No. 323,195, Jan. 12, 1973, abandoned. This application Aug. 17, 1977, Ser. No. 825,405

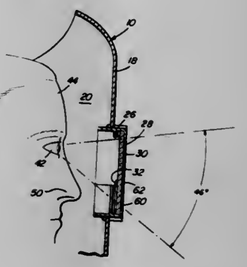
Int. Cl.² A42B *1/08*

U.S. Cl. 2—423

11 Claims







1. A helmet assembly comprising a dome-shaped outer shell of substantially rigid material, a headpiece liner unit within said outer shell and including a dome-shaped inner shell of generally uniform thickness, a deformable cap-like headpiece positioned within said inner shell to define a dome-shaped cavity between said headpiece and said inner shell, said headpiece being effective to contact the wearer's head and to conform to the contour of the wearer's head over the entire area covered by said headpiece, means for securing the lower edge portion of the headpiece to the corresponding lower edge portion of the inner shell, means for introducing an expandable foam material into the cavity of said headpiece liner unit, a pair of earpiece liner units disposed within said outer shell below said headpiece liner unit, each said earpiece liner unit including a deformable earpiece material connected to a base member to define a cavity therebetween, and means for introducing an expandable foam material into the cavity of each said earpiece liner unit.

4,114,198

WELDER'S HELMET LENS

Jessie E. Sands, 1719 Maple St., Russell, Kans. 67665

Filed Mar. 25, 1977, Ser. No. 781,527

Int. Cl.² A61F *9/06*

U.S. Cl. 2—8

3 Claims

1. A protective guard for welders, said guard including a support frame for placement over and support from the upper portion of a welder's head, said frame including opposite side portions, a rearwardly opening upstanding shield, means pivotally supporting said shield from said opposite side portions for angular displacement relative to said frame about a horizontal transverse axis and with at least the forward portion of said frame disposed within said rearwardly opening shield, said shield being oscillatable relative to said frame between an upstanding position and a rearwardly and upwardly inclined position with the upper portion of said shield swung rearwardly and upwardly and the lower portion of said frame swung forwardly and upwardly, said shield including aperture defining means defining a viewing aperture therein below the level of said axis when said shield is in said upstanding position and to be disposed forwardly of the wearer's face and in horizontal registry with the eyes of the wearer of said frame when said shield is in said upstanding position, the upper margin of said viewing aperture being at an elevation to be at least horizontally aligned with straight forward vision of the eyes of said wearer, the portion of said aperture defining means defining the lower margin of said viewing aperture including opposite side portions depressed downwardly sufficiently to provide unobstructed vision of said wearer when the latter is viewing through the lower portions of bifocal glasses and a central portion upwardly displaced relative to said depressed opposite side portions to be positioned above the nostril level of said wearer as well as forward of the nose of the wearer, and a light filtering panel closing said aperture, said aperture defining means being mounted from said shield for positioning forwardly of the face of the user to facilitate free circulation of air within said shield adjacent the nose and eyes of the wearer.

4,114,199

DISPOSABLE BIB TRAY

Mabel Malan, 420 College Park Dr., Lynchburg, Va. 24502

Filed Mar. 30, 1977, Ser. No. 782,700

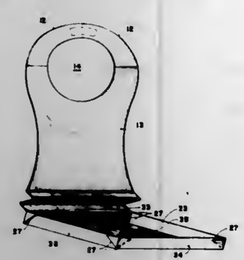
Int. Cl.² A41B *13/10*

U.S. Cl. 2—49 A

7 Claims

1. A bib-tray for use during the feeding of an infant, fabricated of suitably stiff and tear resistant thin sheet material cut and folded so as to comprise a bib portion having neck-fastening means at its uppermost end which enclose an opening of adjustable size, and an apron portion, a series of parallel accordian folds positioned at the bottom of said bib portion as a continuous extension thereof, said accordian folds being formed by folding said sheet material along at least five parallel lines, and a tray portion originating as a continuous integral extension of the lowermost accordian fold and containing two side borders and an outer border adapted to fold upwardly to form retaining walls which define a serving surface, said retaining walls being held upright by tab appendages of said borders adapted to fold onto and adhesively bond to the next contigu-

ous retaining wall, whereby said tray portion may be disposed at an essentially right angle with respect to said bib portion and



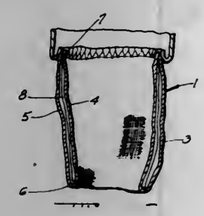
adjustably positionable in both vertical and horizontal directions.

4,114,200

LIQUID IMPERVIOUS CUFF FOR A DISPOSABLE SURGICAL GOWN AND METHOD OF ATTACHMENT OF THE CUFF THERETO

Linda Hebert Smith, Knoxville, and Robert C. Johnson, Memphis, both of Tenn., assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Jan. 17, 1977, Ser. No. 759,631
Int. Cl.² A41D *13/00*; A41B *7/12*
U.S. Cl. 2—51 **35 Claims**



17. A disposable surgical gown having a body-covering portion and sleeves, said body-covering portion and sleeves being made of a liquid strike-through resistant material, each of said sleeves terminating at its free end in a sleeve opening, a liquid impervious cuff assembly attached to each sleeve at said opening thereof, said cuff assembly comprising a cylinder of cloth-like material folded back upon itself to form a double-walled, substantially cylindrical cuff envelope folded at its forward end, open at its rearward end and having inner and outer cuff envelope walls, a layer of liquid impervious material located between said inner and outer cuff envelope walls and extending from said rearward end of said envelope toward said forward end, said inner and outer cuff envelope walls and said layer of liquid impervious material at said rearward end of said cuff envelope being attached to said surgical gown sleeve at said opening thereof.

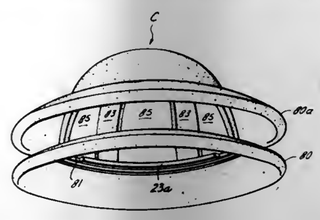
4,114,201

VENTILATED HEAD COVER

Harold K. Garrison, 1010 Grove Blvd. Apt #105, Austin, Tex. 78741

Filed May 12, 1977, Ser. No. 796,313
Int. Cl.² A42B *5/04*
U.S. Cl. 2—209.7 **8 Claims**

1. A ventilated head cover, comprising:
(a) a head cover having a crown portion for surrounding and covering a person's head;
(b) a plurality of ventilation openings in the sides and front and back of the crown to allow air to freely circulate around and across the head through such crown, such openings being positioned on opposite sides of the crown so as to provide a substantially straight through-flow path for the circulation of air into the crown from one side and out of the crown on the opposite side or from front to back; and
(c) sweatband means secured to the crown for positioning the head cover on a wearer's head, such sweatband means including a plurality of circumferentially spaced ventila-



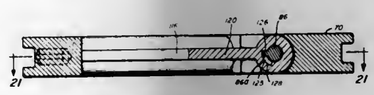
tion passages for permitting the flow of air between the wearer's head and the crown to further facilitate the flow of air up, into and out of the crown, wherein the crown is provided with a pair of outwardly and downwardly projecting bills positioned above and below the front opening for shading the opening and the face of the wearer, respectively.

4,114,202

PROSTHETIC VALVE ASSEMBLY FOR USE IN CARDIOVASCULAR SURGERY

Henry A. Roy, 1817 Market St., Warren, Pa. 16365, and George J. D'Angelo, R.D. #1, Box 156, Fairview, Pa. 16415

Filed Jan. 28, 1977, Ser. No. 763,565
Int. Cl.² A61F *1/22*
U.S. Cl. 3—1.5 **5 Claims**



1. A prosthetic valve structure for use in cardiovascular surgery, said valve structure comprising a ring body having a fluid passageway formed centrally therethrough, the outer peripheral surface of the ring body being formed with a groove extending therearound, means in the groove for attaching the ring body within a fluid conduit of a patient's body, inner parts of the ring body being removed to form spaced apart bearing portions, each of said bearing portions presenting converging sides which extend radially inwardly in intersecting relationship, portions of the ring body lying between the said bearing portions being recessed to form concaved bearing apertures, bearing pin elements fixed in the bearing portions and extending chordally through the bearing apertures, a plurality of triangular valve flaps, said triangular valve flaps having cylindrical hinge sections rotatably mounted in the concaved bearing apertures on the respective pin elements and being movable in response to flow of blood to open and close the said flood passageway of the ring body, and elongated key means formed on each of the bearing pin elements in radially inwardly extending relationship for limiting the arcs of rotation through which the cylindrical hinge sections may be moved.

4,114,203

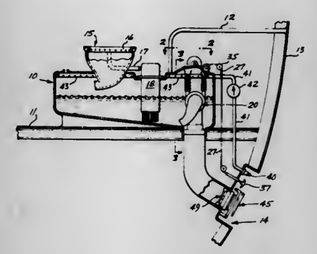
WATER CLOSET TANK DRAIN VALVE

Raymond Jerome Carolan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 22, 1977, Ser. No, 818,027
Int. Cl.² E03D *1/00, 3/00, 5/00*
U.S. Cl. 4—317 **6 Claims**

1. Waste Drain valve mechanism for a water closet waste holding tank, comprising: an inverted U-shaped tubular member mounted within the tank and having one end affixed to and projecting out from the bottom of the tank, the other end being movable at the bend of the U-shape and having an intake nozzle opening; means for positioning said intake nozzle opening at the bottom of the tank for the operative waste removal position; apparatus under the control of an operator for removing waste under partial vacuum pressure through said intake nozzle opening; and means for positioning said intake nozzle opening to a raised position whereat the intake nozzle opening is at the top of the tank for preventing the removal of waste from the tank.

2. Waste drain valve mechanism for periodically draining the contents of a water closet waste holding tank, comprising:



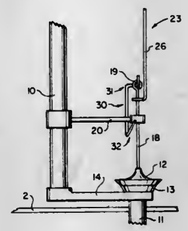
an inverted U-shaped tube mounted within the tank and being separated at the bend thereof into a first and a second part; a movable juncture formed between said first and second parts at their bend separation, for relative movement therebetween; said first part being affixed to the tank with its non-joined end projecting out from the bottom of the tank and forming a tank drainage opening; said second part being movable with respect of said first part and having an intake nozzle opening at its non-joined end; and means for moving said second part from an operative waste removal position whereat the intake nozzle opening is adjacent to the bottom of the tank, to a raised position whereat the intake nozzle opening is at a closed abutment position at the top of the tank for preventing the removal of waste from the tank.

4,114,204

WATER-FLOW CONTROL DEVICE AND METHOD

James P. Blach, 1563 Begen Ave., Mountain View, Calif. 94040

Filed Jul. 7, 1977, Ser. No. 813,758
Int. Cl.² E03D *1/34*
U.S. Cl. 4—324 **9 Claims**



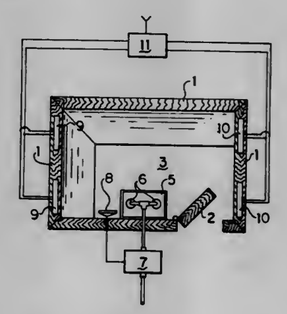
7. A water-flow control device for use in a toilet flushing apparatus using a valve member which is coupled to a lift wire having an upper free end with a lift wire eyelet formed therein, a lift wire guide for guiding the vertical travel of said lift wire and a flushing arm and handle assembly coupled thereto for lifting the valve member when the flushing arm and handle assembly is operated comprising:
a wire member having an L-shaped section for engaging said lift wire eyelet;
a *j*-shaped section for engaging said lift wire guide; and
a straight section between said L-shaped and said *j*-shaped sections which has a length which is proportional to the distance between said lift wire eyelet and the lower edge of said lift wire guide as measured when said valve member is in a closed position.

4,114,205

SAUNA

Gunter Müller, Bergstrasse 52, Bissendorf 2, Fed. Rep. of Germany (4501)

Filed Apr. 6, 1977, Ser. No. 785,269
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1976, 2615294
Int. Cl.² A61H *33/06*
U.S. Cl. 4—160 **4 Claims**



1. A sauna comprising:
a wooden housing, having a floor, a ceiling, upstanding sidewalls joining said floor and ceiling, and a closable entryway;
a heating device disposed in said housing and including a temperature control element for regulating the heat emitted by said heating device at a temperature of approximately 35° C.,
a humidifier including at least one water jet nozzle, which is disposed above said heating device, to spray water in fine droplets above said heating device disposed in said housing and including a humidity control element for regulating the water vapor produced by said humidifier at an air moisture content of approximately 60 to 70 percent;
at least one pair of spaced-apart electrodes, disposed opposite one another in said housing, for creating an electric field within the inner space of said housing;
at least one irradiation lamp, disposed in said housing for creating light within the total visible spectrum of light, and UV and IR irradiation; and
a plurality of filters in all spectral colors, disposed adjacent said irradiation lamp, each of which comprises a glass or plastic disc bearing a different spectral color, said filters being slidably mounted on tracks so as to be displaceable in front of said irradiation lamp.

4,114,206

AUTOMATIC SWIMMING POOL CLEANING SYSTEM

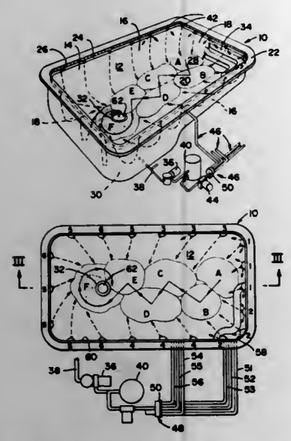
Eugene K. Franc, P.O. Box 332, San Rafael, Calif. 94901

Filed Nov. 11, 1976, Ser. No. 740,910
Int. Cl.² E04H *3/16, 3/18*
U.S. Cl. 4—172 **8 Claims**

1. In a pool cleaning system,
a pool structure having an inner surface,
a plurality of jet means on said inner surface disposed for directing fluid to said inner surface thereby moving any debris and sediment,
a source of fluid under pressure, and,
control system means for directing fluid from said source of fluid under pressure selectively to alternate ones of said

plurality of jet means so as to sweep said debris and sediment toward and into said drain opening under the action of said plurality of jet means, further including

larger debris collection means for preventing larger debris such as leaves from entering said drain opening, said larger debris collection means permitting periodic re-

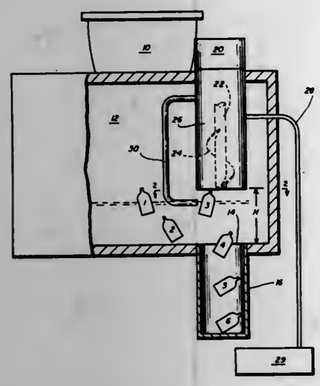


moval of larger debris collected therein, wherein said larger debris collection means comprises a selectively closeable container positionable over said drain opening and having means for receiving debris and returning larger debris therein while allowing smaller debris and sediment to pass therethrough.

4,114,207
TOILET

Robert C. Iwans, Farmington, Conn., assignor to Koehler-Dayton, Inc., New Britain, Conn.

Filed Jul. 18, 1977, Ser. No. 816,585
Int. Cl.² E03D 9/10; B01D 21/00
U.S. Cl. 4—319 **2 Claims**



1. A toilet system comprising

a collecting tank,

a pump extending downwardly into the collecting tank and having an inlet of sufficient size to permit entry of bottles thereinto,

a continuously open opening in the bottom surface of said collecting tank directly beneath said pump inlet and having a size sufficient to receive large glass objects therein, the pump and bottom surface being sufficiently spaced to permit passage of bottles between the pump and bottom surface of the collecting tank,

a normally closed drain conduit extending downwardly from said opening,

said pump including discharge and recirculating conduits,

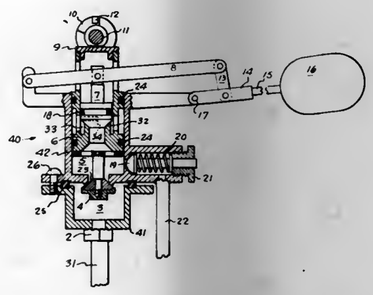
said pump conjointly delivering pressurized liquid to said drain and recirculating conduits,

said recirculating conduit being selectively positioned and having a selected size for discharging pumped liquid across the pump inlet whereby bottles which are being drawn upwardly into the pump opening will be deflected downwardly through said drain opening into said drain conduit.

4,114,208
WATER CLOSET FLUSH VALVE

Carl E. Imler, 213 W. Kirwin, Salina, Kans. 67401

Filed Jun. 1, 1977, Ser. No. 802,432
Int. Cl.² E03D 1/36, 1/06
U.S. Cl. 4—366 **7 Claims**



1. A ballcock flush valve comprising a water inlet connected to a lower housing provided with an outlet, and sealing means to close said outlet, an upper body portion communicating with said outlet having a piston means slidably disposed therein which rests on said sealing means, means on said piston disposed at an extremity remote from said sealing means to provide downward displacement of said piston and therefore said sealing means, valve stem means sequentially disposed on said piston means and displaceable in the same sense as said piston means, means connected to said valve stem means remote from said piston means to provide displacement of said valve stem means relative to said piston means, passage means disposed between said piston means and said valve stem means to provide a fluid passage when said piston means or said valve stem means moves relative to each other, syphon tube means communicating with said fluid passage to carry away the fluid which passes therethrough, and plunger means communicating with said upper body portion through a channel which serves to fill a tank reservoir when said sealing means is displaced allowing incoming water to enter into said upper portion.

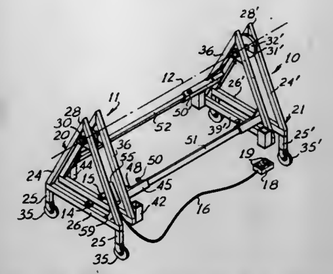
4,114,209
TILTING ATTACHMENT FOR A BED

Joseph P. Sandlin, Rte. 1, Box 550, Williston, Fla. 32696

Filed May 31, 1977, Ser. No. 801,475
Int. Cl.² A61G 7/06
U.S. Cl. 5—62 **6 Claims**

1. An attachment, for a bed having feet to support said bed and a mattress for supporting a person on said bed, said attachment including a base frame, said base frame comprising a pair of spaced stanchions, and a pair of journal means carried by said stanchions, a receiving frame carried by said base frame for receiving said bed, said receiving frame comprising a first stirrup having a base, an apex above said base and generally centrally thereof, said first stirrup being adjacent to one stanchion of said pair of stanchions, a first axle fixed to said apex and extending towards said one stanchion, said axle being journaled in one of said journal means, a second stirrup having

a second base, a second apex above said second base and generally centrally thereof, said second stirrup being adjacent to the other stanchion of said pair of stanchions, a second axle fixed to said second apex and extending towards said other stanchion, said second axle being journaled in the other of said journal means, a plurality of securing means carried by said first base and said second base for holding said feet of said bed above a support surface, said first axle and said second axle being lo-

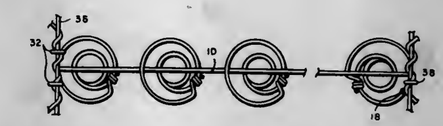


cated along and coaxial with an axis, said axis being located so as to extend generally along the upper surface of said mattress and longitudinally thereof so that said axis is generally coincident with the center line of said person, means for selectively fixing said first stirrup with respect to said second stirrup for simultaneous movement, and tilt control means for rotating said receiving frame with respect to said base frame about said axis.

4,114,210
SPRING ASSEMBLY WITH REINFORCEMENT

Alexander M. Levine, Boston, and Henry R. Ramsey, Dudley, both of Mass., assignors to Webster Spring Co. Inc., Oxford, Mass.

Filed Jun. 10, 1977, Ser. No. 805,513
Int. Cl.² A47C 23/04
U.S. Cl. 5—260 **1 Claim**

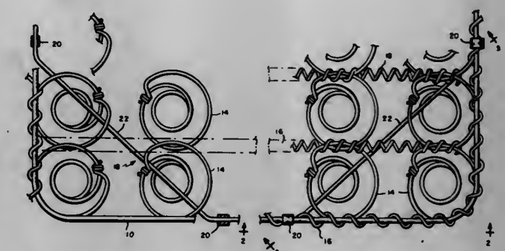


1. In a spring assembly including upper and lower border wires of rectangular configuration and a plurality of longitudinally-spaced, transversely-extending rows of coils, said coils being connected at their upper and lower ends to the border wires and to each other; pairs of elongate stiffening elements disposed transversely of the assembly along the top and bottom ends of the coils in a row of coils, said stiffening elements each comprising an inextensible wire strand of such stiffness as to afford appreciable resistance to bending, a hook at one end and means at the other end resistant to compression in a plane perpendicular to the strand, said hook comprising a first part at right angles to the strand and a second part at right angles to the first part, parallel to the strand extending toward the opposite end and said means resistant to compression comprising a loop at said end, the plane of which is perpendicular to the strand, said loop comprising a top part parallel to the first part at the opposite end of the strand, a bottom part spaced from and parallel thereto and spaced V-shaped side parts, each comprising a single loop of wire at the apex and a pair of sloping arms connected to the top and bottom parts, said V-shaped side parts being disposed with their arms sloping toward each other and with the loops situated midway between the top and bottom parts and laterally of the ends of the top and bottom parts, said elements being comprised of a single length of wire and being adapted to be applied one at the top side and the other at the bottom side of the assembly from opposite sides thereof by weaving of the strands alternately above and below the upper and lower ends of the coils and to be anchored at the opposite ends by clamp rings which clamp, respectively, the hooks at one end to the border wires and the loops at the other ends to the border wires.

4,114,211
CORNER STIFFENER

Alexander M. Levine, Boston; Henry R. Ramsey, and Robert T. Martin, both of Dudley, all of Mass., assignors to Webster Spring Co. Inc., Oxford, Mass.

Filed May 6, 1977, Ser. No. 794,355
Int. Cl.² A47C 23/053
U.S. Cl. 5—261 **3 Claims**



1. A corner stiffener element for an innerspring mattress assembly, wherein coil springs are arranged in a rectangular pattern in longitudinal and transverse rows so that their end coils collectively define spaced, parallel supporting surfaces and wherein there is a border wire frame having horizontal edge and end portions extending along the outer edges of the end coils of the coil springs; one at each of the corners of the assembly in longitudinal and transverse spaced relation so that each is effective independently of every other within the locale of the corner within which it is associated, each element comprising spaced, parallel wires resistant to extension, the distance between which is substantially the distance between the border wires of the assembly, attaching portions at each end of the wires bent at an angle thereto such that an extension of the bent ends would intersect at right angles and compression-resistant means situated between the bent ends and connecting said bent ends which resist displacement of the parallel wires toward each other, comprising coil spring means situated between the bent ends in the planes of the bent ends.

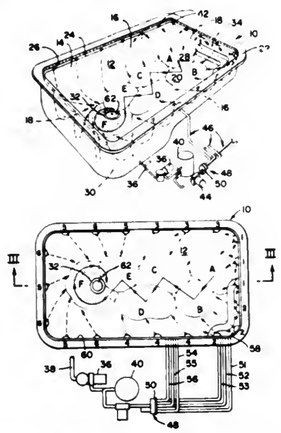
4,114,212
BED SPRING UNIT AND METHOD

Edwin G. Krakauer, Roslyn Heights, N.Y., assignor to Kay Manufacturing Corp., Syosset, N.Y.

Filed Feb. 22, 1977, Ser. No. 771,038
Int. Cl.² E04C 02/42; A47C 23/04
U.S. Cl. 5—267 **16 Claims**

1. In a bed spring unit, the assembly of a wire grid, a multiplicity of spring coils each terminating in a top ring having a circumferential perimeter and wire means connecting the grid to two opposite points of each ring, said grid comprising two sets of substantially straight wires, one set of said substantially straight wires consisting of a plurality of spaced substantially parallel upper first wires, the other set of said substantially straight wires being second wires substantially parallel to each other and substantially perpendicular to the said first wires and welded to the under sides of the said first wires at the intersections of the said respective first and second wires, said wire means having a first wire and two second wires connected together within the circumferential perimeter of each top ring and resisting movement of the said top ring relatively to the said wire grid, said wire means having a wire clip arranged at each of two diametrically opposite points of said top ring, each

... of said plurality of jet means, further including larger debris collection means for preventing larger debris such as leaves from entering said drain opening, said larger debris collection means permitting periodic re-



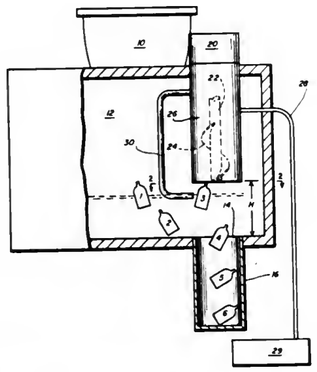
moval of larger debris collected therein, wherein said larger debris collection means comprises a selectively closeable container positionable over said drain opening and having means for receiving debris and returning larger debris therein while allowing smaller debris and sediment to pass therethrough.

4,114,207

TOILET

Robert C. Iwans, Farmington, Conn., assignor to Koehler-Dayton, Inc., New Britain, Conn.

Filed Jul. 18, 1977, Ser. No. 816,585
Int. Cl.² E03D *9/10*; B01D *21/00*
U.S. Cl. 4—319 **2 Claims**



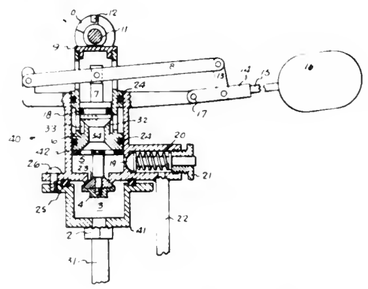
1. A toilet system comprising
a collecting tank,
a pump extending downwardly into the collecting tank and having an inlet of sufficient size to permit entry of bottles thereinto,
a continuously open opening in the bottom surface of said collecting tank directly beneath said pump inlet and having a size sufficient to receive large glass objects therein, the pump and bottom surface being sufficiently spaced to permit passage of bottles between the pump and bottom surface of the collecting tank,
said pump including discharge and recirculating conduits,
said pump conjointly delivering pressurized liquid to said drain and recirculating conduits,
said recirculating conduit being selectively positioned and having a selected size for discharging pumped liquid across the pump inlet whereby bottles which are being drawn upwardly into the pump opening will be deflected downwardly through said drain opening into said drain conduit.

4,114,208

WATER CLOSET FLUSH VALVE

Carl E. Imler, 213 W. Kirwin, Salina, Kans. 67401

Filed Jun. 1, 1977, Ser. No. 802,432
Int. Cl.² E03D *1/36, 1/06*
U.S. Cl. 4—366 **7 Claims**



1. A ballcock flush valve comprising a water inlet connected to a lower housing provided with an outlet, and sealing means to close said outlet, an upper body portion communicating with said outlet having a piston means slidably disposed therein which rests on said sealing means, means on said piston disposed at an extremity remote from said sealing means to provide downward displacement of said piston and therefore said sealing means, valve stem means sequentially disposed on said piston means and displaceable in the same sense as said piston means, means connected to said valve stem means remote from said piston means to provide displacement of said valve stem means relative to said piston means, passage means disposed between said piston means and said valve stem means to provide a fluid passage when said piston means or said valve stem means moves relative to each other, syphon tube means communicating with said fluid passage to carry away the fluid which passes therethrough, and plunger means communicating with said upper body portion through a channel which serves to fill a tank reservoir when said sealing means is displaced allowing incoming water to enter into said upper portion.

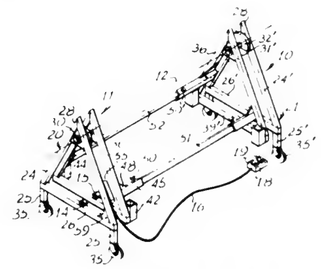
4,114,209

TILTING ATTACHMENT FOR A BED

Joseph P. Sandlin, Rte. 1, Box 550, Williston, Fla. 32696

Filed May 31, 1977, Ser. No. 801,475
Int. Cl.² A61G *7/06*
U.S. Cl. 5—62 **6 Claims**

1. An attachment, for a bed having feet to support said bed and a mattress for supporting a person on said bed, said attachment including a base frame, said base frame comprising a pair of spaced stanchions, and a pair of journal means carried by said stanchions, a receiving frame carried by said base frame for receiving said bed, said receiving frame comprising a first stirrup having a base, an apex above said base and generally centrally thereof, said first stirrup being adjacent to one stanchion of said pair of stanchions, a first axle fixed to said apex and extending towards said one stanchion, said axle being journaled in one of said journal means, a second stirrup having said second apex and extending towards said other stanchion, said second axle being journaled in the other of said journal means, a plurality of securing means carried by said first base and said second base for holding said feet of said bed above a support surface, said first axle and said second axle being lo-



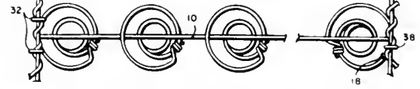
cated along and coaxial with an axis, said axis being located so as to extend generally along the upper surface of said mattress and longitudinally thereof so that said axis is generally coincident with the center line of said person, means for selectively fixing said first stirrup with respect to said second stirrup for simultaneous movement, and tilt control means for rotating said receiving frame with respect to said base frame about said axis.

4,114,210

SPRING ASSEMBLY WITH REINFORCEMENT

Alexander M. Levine, Boston, and Henry R. Ramsey, Dudley, both of Mass., assignors to Webster Spring Co. Inc., Oxford, Mass.

Filed Jun. 10, 1977, Ser. No. 805,513
Int. Cl.² A47C *23/04*
U.S. Cl. 5—260 **1 Claim**



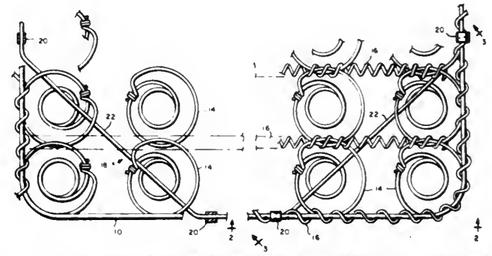
1. In a spring assembly including upper and lower border wires of rectangular configuration and a plurality of longitudinally-spaced, transversely-extending rows of coils, said coils being connected at their upper and lower ends to the border wires and to each other; pairs of elongate stiffening elements disposed transversely of the assembly along the top and bottom ends of the coils in a row of coils, said stiffening elements each comprising an inextensible wire strand of such stiffness as to afford appreciable resistance to bending, a hook at one end and means at the other end resistant to compression in a plane perpendicular to the strand, said hook comprising a first part at right angles to the strand and a second part at right angles to the first part, parallel to the strand extending toward the opposite end and said means resistant to compression comprising a loop at said end, the plane of which is perpendicular to the strand, said loop comprising a top part parallel to the first part at the opposite end of the strand, a bottom part spaced from and parallel thereto and spaced V-shaped side parts, each comprising a single loop of wire at the apex and a pair of sloping arms connected to the top and bottom parts, said V-shaped side parts being disposed with their arms sloping toward each other and with the loops situated midway between the top and bottom parts and laterally of the ends of the top and bottom parts, said elements being comprised of a single length of wire and being adapted to be applied one at the top side and the other at the bottom side of the assembly from the opposite sides of the assembly, the hooks at one end to the border wires and the loops at the other ends to the border wires.

4,114,211

CORNER STIFFENER

Alexander M. Levine, Boston; Henry R. Ramsey, and Robert T. Martin, both of Dudley, all of Mass., assignors to Webster Spring Co. Inc., Oxford, Mass.

Filed May 6, 1977, Ser. No. 794,355
Int. Cl.² A47C *23/053*
U.S. Cl. 5—261 **3 Claims**



1. A corner stiffener element for an innerspring mattress assembly, wherein coil springs are arranged in a rectangular pattern in longitudinal and transverse rows so that their end coils collectively define spaced, parallel supporting surfaces and wherein there is a border wire frame having horizontal edge and end portions extending along the outer edges of the end coils of the coil springs; one at each of the corners of the assembly in longitudinal and transverse spaced relation so that each is effective independently of every other within the locale of the corner within which it is associated, each element comprising spaced, parallel wires resistant to extension, the distance between which is substantially the distance between the border wires of the assembly, attaching portions at each end of the wires bent at an angle thereto such that an extension of the bent ends would intersect at right angles and compression-resistant means situated between the bent ends and connecting said bent ends which resist displacement of the parallel wires toward each other, comprising coil spring means situated between the bent ends in the planes of the bent ends.

4,114,212

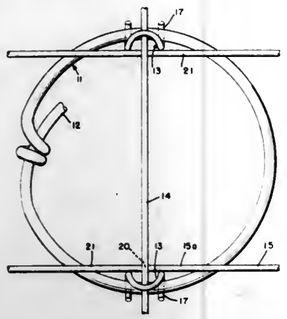
BED SPRING UNIT AND METHOD

Edwin G. Krakauer, Roslyn Heights, N.Y., assignor to Kay Manufacturing Corp., Syosset, N.Y.

Filed Feb. 22, 1977, Ser. No. 771,038
Int. Cl.² E04C *02/42*; A47C *23/04*
U.S. Cl. 5—267 **16 Claims**

1. In a bed spring unit, the assembly of a wire grid, a multiplicity of spring coils each terminating in a top ring having a circumferential perimeter and wire means connecting the grid to two opposite points of each ring, said grid comprising two sets of substantially straight wires, one set of said substantially straight wires consisting of a plurality of spaced substantially parallel upper first wires, the other set of said substantially straight wires being second wires substantially parallel to each other and substantially perpendicular to the said first wires and welded to the under sides of the said first wires at the intersections of the said respective first and second wires, said wire means having a first wire and two second wires connected together within the circumferential perimeter of each top ring and resisting movement of the said top ring relatively to the said wire grid, said wire means having a wire clip arranged at each of two diametrically opposite points of said top ring, each

said wire clip having two spaced apart legs joined integrally at the respective upper ends thereof by an arcuate portion, each of said first wires of the assembly crossing a top ring at two diametrically opposite points thereon and being in pressed contact with the top of the ring, two of said second wires also



crossing and being in pressed contact with the top of the ring and each said second wire in part forming a chord portion of said ring top, at least one of said clip legs passing through the space between the said chord portion and the adjacent circumferential perimeter of the ring top and at least one of the legs being wrapped to a selected extend around the ring top.

4,114,213

METHOD FOR MANUFACTURING ESSENTIALLY WRINKLE-FREE FOAMED ARTICLES WITH AN UPHOLSTERY MATERIAL ADHERING THERETO AND RESULTANT ARTICLE

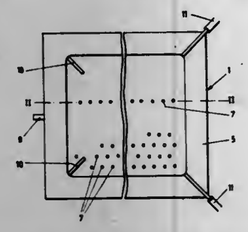
Andre M. H. J. Beernaerts, Gembloux, Belgium, and Hendrik J. K. Eskes, Apeldoorn, Netherlands, assignors to International B. F. Goodrich-Europe B.V., The Hague, Netherlands

Filed Jul. 28, 1975, Ser. No. 599,480

The portion of the term of this patent subsequent to Jun. 19, 1995, has been disclaimed.

Int. Cl.² A47C *7/18*; B29D *27/04*

U.S. Cl. 5—345 R **9 Claims**



1. In a method of manufacturing foam-padded upholstered articles with an integral stretchable upholstery material adhering to the foam, in a female mold part and an opposing part, in which said female mold part is divided by separating wall means into a cavity in the shape of the article and into a vacuum chamber, said cavity and said chamber in communication with each other by holes in said separating wall means, said opposing part forming a closure of said femal mold part, comprising the steps of

positioning a sheet of stretchable upholstery material in the cavity of said female mold part with the ends of said upholstery material resting on the outer edge of said female mold part;

exhausting said vacuum chamber to form at least a partial vacuum therein and produce sliding of the upholstery material on said outer edge toward the periphery of said mold cavity and into engagement with said separating wall means in said cavity whereby wrinkles may be formed in undesired locations in said upholstery material;

introducing a foamable material into said cavity;

foaming said foamable material;

and taking the finished product out of the mold;

and the improvement which comprises the step of

forming one or more folds in said upholstery material in one or more predetermined locations by pressing inwardly on siad upholstery material into said cavity with a plate in said cavity at said one or more predetermined locations to form said one or more folds of said upholstery material in said foamable material before said foamable material is hardened, and thereby straighten out the wrinkles formed in undesired locations.

7. A foam padded article manufactured by the method of claim 1 and having an integral stretchable upholstery adhering to the foam

characterized in that the article has at least one fold in the upholstery material formed at a predetermined location on the article.

4,114,214

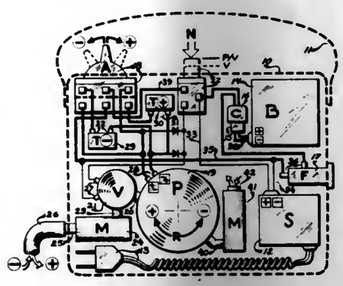
SUPER-CONFORMING SEATING SYSTEM

Robert VonHeck, 3910 Hicock St., San Diego, Calif. 92110

Filed Jun. 21, 1976, Ser. No. 698,719

Int. Cl.² A47C *27/00*

U.S. Cl. 5—367 **10 Claims**



1. Cushioning of the variable-contour body-molding type comprising a resilient imperforate casement containing a myraid quantity of deformable micro-bearings, as characterized in the following improved conditions of operation

(A.) floative-mode, an expansive state created by selective means inducing a positive fluidic pressure-differential serving to bouyantly counterpoise occupant thereupon, enhancing subsequent conformability by eliminating excessive micro-bearing frictional resistance to an otherwise propensity toward flowing to points of least bodily resistance, preparing an advanced state of conformability heretofore unknown;

(B.) neutral-mode, a semi-formable state created by selective means inducing ambient fluidic pressure to neutralize either differential effect, wherein a substantially spherical micro-bearing shape is represent but achieving a retarded rolling propensity due to friction impossed by weight of occupant thereupon, thereby exhibiting mild compliance as an interim mode of operation;

(C.) conform-mode, a compressive state created by selective means inducing a negative fluidic pressure-differential serving to impose a substantially polyhedral micro-bearing shape, resulting in high frictional interlocking of micro-bearing surfaces which en masse resist further cushion surface change, hence, fixing an instant body mold of the occupant.

4,114,215

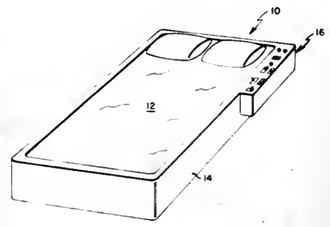
UNITARY ACCESSORY CONTROL FOR A WATERBED

Philip J. Santo, 130 Larkspur La., Rochester, N.Y. 14622

Filed Jul. 11, 1977, Ser. No. 814,205

Int. Cl.² A47C *21/08, 27/08*

U.S. Cl. 5—370 **7 Claims**



1. In combination with a frame for supporting the perimeter of a fluid containing flexible bladder of a waterbed, a unitary accessory control comprising: a housing attached to said frame, a series of chambers in said housing, first accessory means located in a first of said series of chambers for producing sound, second accessory means located in a second of said series of chambers for regulating the environment surrounding said waterbed, third accessory means located in a third of said series of chambers for regulating the physical properties of said waterbed, and control means accessible from the exterior of said housing for controlling said first, second and third accessory means.

4,114,216

COMBINATION TOOL

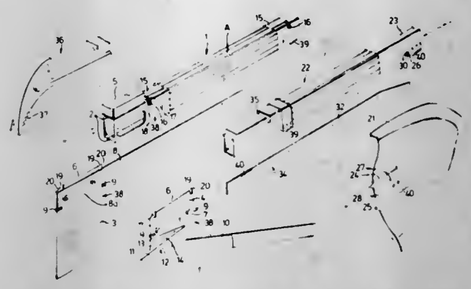
Sven-Olof Gatby, Strandgatan 3, 794 00 Orsa, Sweden

Filed Feb. 9, 1977, Ser. No. 767,194

Claims priority, application Sweden, Feb. 10, 1976, 7601403

Int. Cl.² B25F *1/04*

U.S. Cl. 7—116 **6 Claims**



1. In a combination tool comprising an elongated tubular handle, and a plurality of tool members each adapted to be inserted into at least one end of said handle, a locking means for releasably connecting said tool members to said handle comprising:

two opposite slots at at least one end of said handle;

a support block fixed to the outer surface of said handle and covering one of said slots;

stop means fixed to at least one side of each tool member for engagement with the inner surface of the handle opposite to the slot covered by the support block;

a leaf spring fixed to the outer surface of the handle;

a transverse locking pin fixed to at least one end of said leaf spring and mounted for movement in a direction parallel to its axis;

at least one transverse aperture in said handle for receiving said locking pin which is resiliently biased by said leaf spring into said transverse aperture;

and at least one groove in the back edge of said tool member, said groove having a shape complementary to that of the locking pin;

whereby said locking pin engages the groove in the tool member thereby to securely lock the tool member to said handle.

4,114,217

DIE ASSEMBLY

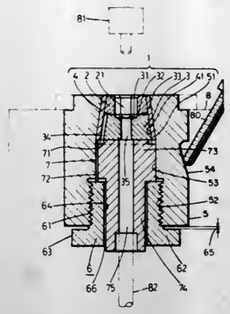
Motoji Akamatsu, Hirakata, Japan, assignor to Akamatsu Alloy Tool Co., Ltd., Hirakata, Japan

Filed Sep. 19, 1977, Ser. No. 834,387

Claims priority, application Japan, Sep. 21, 1976, 51-128120[U]

Int. Cl.² B21J *13/02*

U.S. Cl. 10—85 **4 Claims**



1. In a die assembly including a reinforcement case, an upwardly tapered forming die fitting in said case, and a pushing-up member screwed into the lower portion of said reinforcement case to push up said forming die into intimate fitting contact with said reinforcement case, the improvement comprising said pushing-up member threaded into a threaded bore in the lower portion of said reinforcement case and having a center bore extending therethrough, a stock die provided between said forming die and said pushing-up member and having a center bore extending therethrough, a stock die provided between said forming die and said pushing-up member and having an upper surface supporting said forming die in contact with its bottom, said stock die having at its lower portion a guide stem of smaller diameter than said center bore freely movably fitting in the center bore of said pushing-up member, said pushing-up member supporting said stock die and pressing said stock die into intimate fitting contact with said forming die by screw-thread engagement with said reinforcement case.

4,114,218

METHOD OF FORMING FLAT FOUR-SIDED FASTENER PARTS HAVING AN OPENING THEREIN

Larry Stuart Pendell, Rte. 8, Box 489, Elkhart, Ind. 46514

Filed May 23, 1977, Ser. No. 799,705

The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.

Int. Cl.² B21D *53/20, 53/24*

U.S. Cl. 10—86 R **4 Claims**

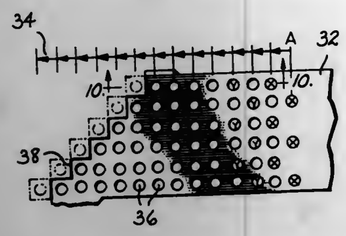
1. A method of forming flat, square-shaped individual fastener parts each having an opening therein from an elongated strip of sheet material having a width exceeding the width of each such fastener, comprising the steps of:

(a) causing said material to pass progressively through a work station;

(b) first forming a series of longitudinally spaced openings in

the material as it passes through said work station; and then

(c) periodically severing said material as the material passes through the work station from one side edge to the other side edge of the material in one cutting operation along an



irregular cutting line defining contiguous multiple sides of adjacent fastener parts to separate individual fastener parts from said adjacent parts, at least one of said individual fastener parts being separated along said cutting line from such adjacent parts along two of its adjoining sides.

4,114,219

LONGITUDINALLY DISPLACEABLE CONNECTION FOR CANTILEVERED BEAM-TYPE STRUCTURAL PARTS

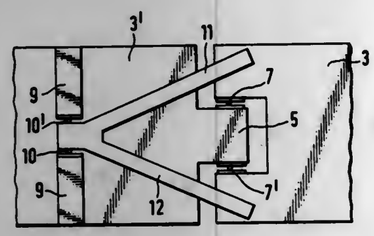
Herbert Schambeck, Frieding b. Herrsching, Germany, assignor to Dyckerhoff & Widmann AG, Munich, Germany

Filed Jul. 20, 1977, Ser. No. 817,504

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1976, 2633668

Int. Cl.² E01D *19/06*

U.S. Cl. 14—16.1 **9 Claims**



1. A longitudinally displaceable connection comprising a pair of generally horizontally arranged longitudinally extending cantilevered beam-type structural members with structural members disposed in longitudinal alignment and each having a cantilevered end with said cantilevered ends disposed in juxtaposed relation, a horizontally arranged projecting part secured to and extending outwardly from the cantilevered end of one of said structural members into the cantilevered end of the other one of said structural members, a first horizontally displaceable bearing in the cantilevered end of the other one of said structural members and said first bearing supporting said projecting parts, said projecting part and said first bearing arranged for the transmission of shear forces, wherein the improvement comprises a reinforcing part separate from said projecting part and rigidly connected to one of said structural members and extending outwardly in the longitudinal direction thereof from the cantilevered end thereof into the cantilevered end of the other one of said structural members, and at least one second horizontally displaceable bearing separate from said projecting part and said first bearing and said second bearing located in the other one of said structural members into which said reinforcing part extends and affording a bearing support for said reinforcing part spaced longitudinally from said first bearing and said second bearing being suitable for the transmission of shearing forces.

4,114,220

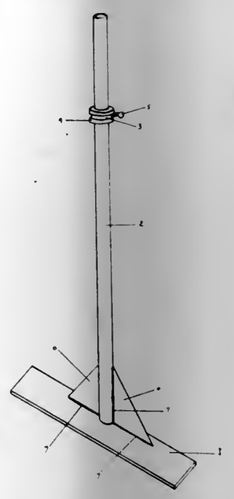
COMBINATION LEVELING AND GRADE CHECKING TOOL

Barry Lee Pfister, 2259 Ellington, Walled Lake, Mich. 48088

Filed Mar. 14, 1977, Ser. No. 777,340

Int. Cl.² E01C *19/12*; G01C *15/06*

U.S. Cl. 15—105 **6 Claims**



1. A hand tool for raking and leveling concrete and for establishing a grade level comprising: a base plate; a handle mounted substantially perpendicular and centrally on said base plate and fixed thereto for performing the raking and leveling function; a sight collar slidably mounted on said handle and having a sight portion to provide for an accurate alignment of grade level from a remote sighting device, said sight portion comprising a sight groove circumferentially extending about said collar and located substantially equidistant between the top and bottom edges of said sight collar and a bright colored material in said sight groove for facilitating alignment.

4,114,221

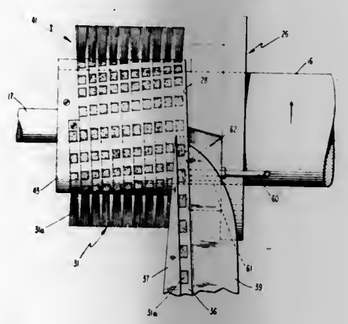
HELICALLY WOUND BRUSH

Harvard W. K. Enchelmaier, 4 E. Greenbrook Rd., North Caldwell, N.J. 07006

Filed Sep. 17, 1976, Ser. No. 724,410

Int. Cl.² A46B *3/08*

U.S. Cl. 15—182 **10 Claims**



1. In a wound brush having bristle tufts bound to a brush core by a helically wound strip having longitudinally spaced edge notches therein, the bristle tufts projecting through the notches in the strip, the roots of the bristles and the strip being bonded to the brush core by a cured adhesive, the improved bristle binding strip having an edge notched main part which lies in a helix spaced from and concentric with the brush core, and a plurality of strip spacing and supporting tabs integral with the main part of the strip and extending radially inwardly therefrom, the inner free ends of the tabs engaging the core.

4,114,222

HAIRBRUSH

Vladislaus Serediuk, Schusterstr. 1, 7800 Freiburg i. Br., Fed. Rep. of Germany

Filed Nov. 5, 1976, Ser. No. 739,341

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1975, 2550265

Int. Cl.² A46B *9/08*

U.S. Cl. 15—186 **28 Claims**



1. A hairbrush, comprising a substantially rigid body member having an inner hollow and a plurality of apertures communicating with said inner hollow; a plurality of substantially rigid elongated pins each extending through one of said apertures and mounted in said body member, each of said pins having a shaft part and a head part; and mounting means for mounting said pins in said body member including a front portion formed in each of said apertures adjacent to and open at an outer surface of said body member and dimensioned to receive said shaft portion of a respective one of said pins with radial play, an enlarged rear portion formed in each of said apertures and open at an inner surface of said body member facing toward said hollow and dimensioned to completely receive said head part of a respective one of said pins with clearance, and an elastic insert located in said hollow of said body member and adjacent to said enlarged rear portions of said apertures so as to abut against said head parts of said pins when said head parts are received in said enlarged rear portions of said apertures, so that said pins are elastically urged toward said outer surface of said body member under the action of said elastic insert upon said head parts of said pins, whereas at the same time said pins can be displaced in the direction of elongation thereof through said apertures relative to said body member and can also be pivoted, while being simultaneously guided during their displacement by the location of said head parts of said pins in said enlarged rear portions of said apertures.

4,114,223

MOP HAVING A REMOVABLE COVER

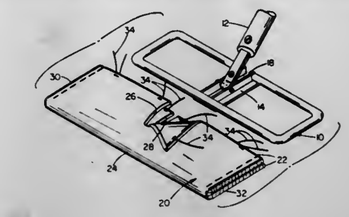
Ritchie Buchanan, P.O. Box 221, Seabrook, N.H. 03874

Filed May 9, 1977, Ser. No. 795,191

Int. Cl.² A47L *13/24*

U.S. Cl. 15—228 **2 Claims**

2. A mop cover adapted for removable mounting on a frame having a handle pivotally mounted centrally thereof and adapted for movement from one side to the other side of said frame, said cover comprising a generally rectangular envelope having cleaning surfaces on both sides thereof, said cover open along one edge to permit insertion of said frame therein, said cover surfaces joined on the edge opposite said one edge and comprising an integral fold of cover material, said cover surfaces permanently secured together at their side edges extending between said fold and said one edge, said cover surfaces each provided with a slot extending centrally therefrom to said cover one edge to permit said mop handle to extend through said slots when said handle is rotated from one side of said



frame to the other side thereof; and closure means provided at said one edge adjacent said slots for closing said cover about said frame.

4,114,224

MOP COMPRISING BONDED NONWOVEN FABRIC ABSORPTIVE ELEMENTS

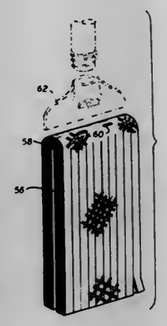
Eberhard Disko, Munich, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Jan. 17, 1977, Ser. No. 760,209

Claims priority, application Spain, Apr. 13, 1976, 14166; Apr. 13, 1976, 220296[U]; Apr. 13, 1976, 220294[U]; Apr. 13, 1976, 220295[U]; Fed. Rep. of Germany, Aug. 12, 1976, 7625260

Int. Cl.² A47L *13/20*

U.S. Cl. 15—229 A **2 Claims**



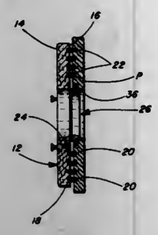
1. In a mop comprising a plurality of absorptive elements, a handle and means joining said elements to said handle, the improvement wherein said absorptive elements comprise a plurality of superposed flat layers of bonded non-woven fabric of about 1 to 2mm thickness and said non-woven fabric comprises a fibrous web and a binder, the fibrous web comprising at least about 50% by weight of hydrophilic fibers, the binder being present in about 25 to 100% by weight of the fibers, in about 50 to 400 grams per square meter, being printed onto said fabric in a pattern and being present in greater amount adjacent the surfaces than in the interior of said fabric, the layers being joined along a medial spine along which they are adapted to be commonly joined to the handle, the layers each being slit from said spine in both directions to the extremities thereof to form parallel flat strips ranging in width from about 15 to 40mm and in length from about 20 to 60 cm.

4,114,225

BRUSH-LIKE MOUNTING DEVICE

Terrance J. Malish, Willoughby Hills, and Martin J. Hulin, Euclid, both of Ohio, assignors to Malish Brush & Specialty Company, Willoughby, Ohio

Filed Jul. 11, 1977, Ser. No. 814,491
Int. Cl.[2] A46B *9/02, 13/02;* A47L *11/14*
U.S. Cl. 15—230.17 **7 Claims**



1. A mounting device detachably mounting a fiber pad-like element having a central bore for assembly with a machine, such as for use in cleaning, stripping, scrubbing, polishing or the like, and of the type for rotating the mounting device about a vertical axis and in a generally horizontal plane substantially parallel to the work surface, said mounting device comprising,

a generally circular body member of substantially flat construction defining an outer endless peripheral edge,

said body member having a centrally disposed bore adapted to receive a drive spindle for detachable connection to said machine,

first retention means including a multiplicity of resilient filament elements extending outwardly from one face of said body member adapted for supporting and mechanically gripping the fibrous material of said pad-like element,

said filament elements being made of a high-strength polymeric material and disposed in a generally concentric circle with respect to the bore in said body member,

second retention means including an annular collar member attached to said body member on the side remote from said machine,

said collar member disposed in generally concentric relation around the bore in said body member, and

a multiplicity of resilient filament elements made of polymeric material extending around the periphery and outwardly from said collar member,

said last mentioned filament elements extending generally at right angles to said collar member and being spaced axially outwardly from said body member, the filament elements of said second retention means being disposed so as to be generally in the plane defined by the terminal ends of the filament elements of said first retention means, and

the filaments in said body and collar members being angularly disposed with respect to one another so as to frictionally and mechanically grip said pad-like element on angularly disposed surfaces to prevent rotational and/or lateral shifting movement of the same relative to said body member during operation of said machine.

4,114,226

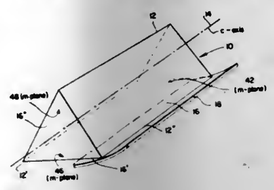
WEAR RESISTANT ALPHA ALUMINA ARTICLE USEFUL TO CLEAN MAGNETIC TAPE AND THE PROCESS OF PRODUCING SAID

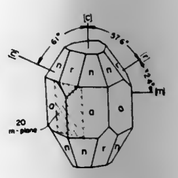
Peter Carter Warren, El Cajon, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 1, 1977, Ser. No. 773,223
Int. Cl.[2] B28D *5/00*
U.S. Cl. 15—236 R **3 Claims**

1. As an article of manufacture for use as a wearing edge in the cleaning of magnetic tape and similar applications, a body formed of unicrystalline alpha alumina having a wearing edge substantially parallel to the C-axis of the unicrystalline alpha alumina body and having ground and polished planar surfaces intersecting at said wearing edge, each of said planar surfaces being aligned with an m-plane of said unicrystalline alpha alumina body.

3. A method for making a wearing edge on a body of unicrystalline alpha alumina which comprises (i) providing a rod of unicrystalline alpha alumina having its longitudinal axis





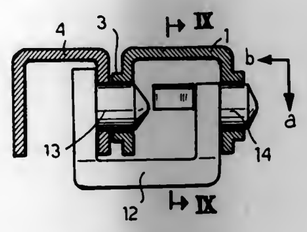
parallel to the C-axis of said unicrystalline alpha alumina (ii) mounting said rod length-wise on a grinding plate (iii) grinding a first length-wise portion of said rod to provide a first planar surface therein parallel to an m-plane of said rod (iv) grinding a second length-wise portion of said rod to provide a second planar surface which intersects said first planar surface at an angle of 60°.

4,114,227

CONNECTION BETWEEN A WINDSHIELD WIPER BLADE AND THE OSCILLATING ARM CARRYING IT

Ronald Blackman, Druento (Turin), Italy, assignor to Arman S.p.A., Druento (Turin), Italy

Filed Jun. 6, 1977, Ser. No. 803,502
Claims priority, application Italy, Jun. 8, 1976, 68385 A/76
Int. Cl.[2] B60S *1/40*
U.S. Cl. 15—250.32 **8 Claims**



1. A windshield wiper assembly comprising:

(a) an oscillatable arm terminating at one end in a head having two spaced apart and axially aligned hollow cylindrical seats,

(b) a wiper blade having a main elongated rod,

(c) a U-shaped bracket fixed to said main rod and projecting laterally therefrom in a direction parallel to the windshield,

(d) means carried by said bracket for engaging said seats to pivotally join said oscillatable arm and said wiper blade, and

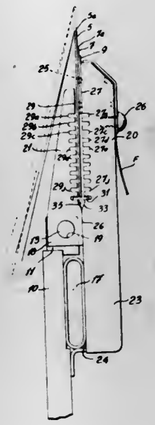
(e) means for limiting relative lateral movement between said assembled arm head and bracket to prevent accidental separation of said head and bracket.

4,114,228

CREPING DOCTOR DEVICE

Jack Frederick Brown, Pierrefonds, Canada, assignor to James Ross Limited, Lachine, Canada

Continuation-in-part of Ser. No. 614,831, Sep. 18, 1975, abandoned. This application Jun. 8, 1976, Ser. No. 693,831
The portion of the term of this patent subsequent to Jan. 14, 1992, has been disclaimed.
Int. Cl.[2] D21G *3/00*
U.S. Cl. 15—256.51 **15 Claims**



1. A pressure finger for a doctor blade pressure blade assembly, comprising:

a bearing part permitting the finger to be pivotably mounted;

first and second jaws extending forwardly of the bearing part, each jaw comprising an inner surface, the inner surface of said first jaw being spaced from but facing the inner surface of said second jaw, the surfaces defining therebetween a mounting slot for receiving the doctor blade;

wherein said inner surfaces have mounting means for adjustably mounting a doctor blade stop extending across said mounting slot, said mounting means including each said inner surfaces having a plurality of transverse parallel grooves spacing longitudinally of said mounting slot;

respective ones of said grooves in one of said surfaces being aligned transversely of said mounting slot with respective ones of said grooves in the other one of said surfaces;

and further comprising a tongue extending rearwardly of said bearing part and in a direction opposite to the direction of said jaws, said tongue comprising a bearing surface contacting a pressure means acting to urge the finger, about the bearing part, in a doctoring direction.

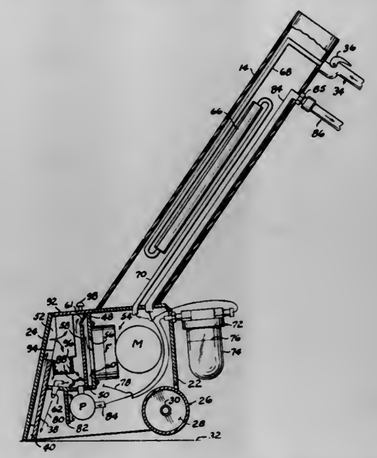
4,114,229

SURFACE CLEANING APPAKATUS

Terry H. Jones, Norman, Okla., and John J. Oakes, Garland, Tex., assignors to Clarke-Gravely Corporation, Muskegon, Mich.

Continuation of Ser. No. 158,357, Jun. 30, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,623
Int. Cl.[2] A47L *5/34*
U.S. Cl. 15—320 **12 Claims**

1. A portable apparatus for cleaning a floor surface, comprising: a downwardly open rectangular housing having a forward wall and a rearward wall; upwardly and rearwardly directed handle means connected with said housing; a first partition transversely dividing said housing and forming a suction nozzle in cooperation with said forward wall; a second partition transversely dividing said housing and forming a used cleaning fluid receiving chamber communicating with said suction nozzle; said second partition including an aperture therethrough; blower means mounted within said housing generally behind said second partition and generally adjacent said aperture and communicating with said aperture for rapid air evacuation of said chamber and causing a large volume of air and used cleaing fluid to be drawn through said suction nozzle; a shield disposed generally in front of said aperture within said chamber, said shield being spaced from said second partition and generally covering said aperture; said shield including an opening at the top of said shield whereby air is drawn from said chamber by said blower through the opening at the top of said shield and then through said aperture; a liquid pump within said housing and having an intake port communicating with said chamber for evacuating used cleaning fluid, said liquid pump having an outlet port; elongated discharge tubing connected, at one end, with said outlet port and communicating, at its other end, with a remote source of disposal; sprayer means supported within said housing for spraying a cleaning fluid on a portion of a floor surface to be cleaned adjacent and ahead of said suction nozzle as the suction nozzle is moved across a floor; elongated supply tubing connected, at one end, with said spraying means and connected, at its other end, with a remote constant source of fluid.

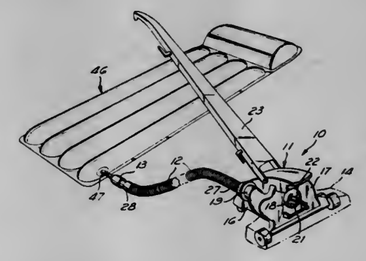


4,114,230

DEFLATOR-INFLATOR ATTACHMENT

Charles H. MacFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

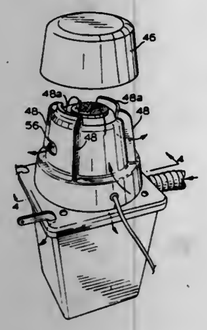
Filed Dec. 20, 1976, Ser. No. 752,399
Int. Cl.[2] A47L *5/14*
U.S. Cl. 15—330 **8 Claims**



1. An assembly for inflating and deflating objects comprising a residential type vacuum cleaner power plant, including a motor, a housing having an air inlet and an air outlet, a fan in the housing driven by the motor, a flexible air hose, coupling means on one end of the hose to alternately connect the hose to the air outlet or the air inlet, the other end of the hose having

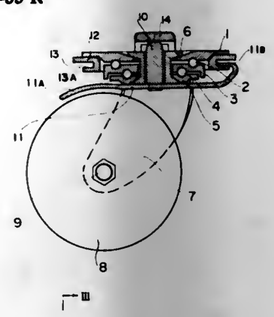
a substantially circular cross section, a nozzle adapted to be releasably connected to the circular other end of the hose, said nozzle having a hose end engaging portion of a diameter generally equal to the diameter of the other hose end, a forward end of said nozzle including a circular tip portion of a diameter substantially reduced from the diameter of the hose engaging portion, said nozzle having a transition portion intermediate said hose engaging portion and said tip portion, said transition portion including first and second frustum sections, said first frustum section being adjacent said circular tip portion and flaring radially outwardly in a direction away from said circular tip portion at a relatively shallow angle, said second frustum section being adjacent said hose engaging portion and flaring radially outwardly in a direction away from said first frustum section at a rate substantially greater than the rate of flare of said first frustum secton, said first frustum section of said transition portion being adapted to seal the mouth of an inflation valve when said circular tip portion is fully inserted within the body of the inflation valve, said second frustum section of said transition portion being adapted to seal the mouth of an inflation valve relatively larger than said first mentioned inflation valve when said circular tip portion and said first frustum section are fully inserted within the body of said relatively larger inflation valve.

4,114,231
MOTOR VENTILATION SYSTEM FOR WET/DRY VACUUM CLEANER
Jelle G. Nauta, R.R. #4, Stouffville, Ontario, Canada
Filed Mar. 4, 1977, Ser. No. 774,317
Int. Cl.² A47L *5/00*
U.S. Cl. 15—413 **4 Claims**



1. A housing assembly for a vacuum cleaner motor-vacuum pump assembly comprising a substantially bulbous housing containing said motor-vacuum pump assembly, said housing assembly having a series of inlet ports in the top surface thereof, a matching cap for said bulbous housing, said cap fitting over and being spaced from said housing by a ribbed structure assembly, said cap and housing having a plurality of openings formed by said cap and said housing at the base of said cap, said openings forming separated inlet and discharge openings for cooling air for the motor of said motor-vacuum pump assembly, said ribbed structure serving to form air flow passages for air flowing in the space between said cap and said housing, said ribbed structure serving to form a plurality of isolated inlet and discharge passages therein so that air flowing into any inlet passage must flow upwardly a substantial distance between said housing and said cap before entering said housing through said inlet ports, said motor-vacuum pump assembly having a fan for moving cooling air through said motor and housing, said air passing through the motor of said motor-vacuum pump assembly to remove heat therefrom, said cooling air passing from said motor into a discharge passage in the space between said cap and said housing and thence to atmosphere through said discharge openings.

4,114,232
CASTER WITH BRAKING MECHANISM
Katsuhiko Umeda, Kodaira, Japan, assignor to Shin Nihon Koku Seibi K.K., Tokyo, Japan
Filed Dec. 1, 1977, Ser. No. 856,817
Int. Cl.² B60B *33/00*
U.S. Cl. 16—35 R **7 Claims**



1. A caster comprising a rotary thrust bearing provided with an upper base member and a lower rotary member, said rotary member being rotatable about an axis with respect to the upper member, means on said base member providing a nonrotatable annular surface concentric with said axis, a two-leg fork rigidly attached to said rotary member, and a wheel rotatable supported at the lower end of said fork between the legs thereof, a vertical pin concentric with said axis, a brake member extending between the legs of the fork under said pin and above said wheel, said brake member having one end portion movable from a retracted position to an engaged position in frictional contact with the wheel, said brake member having another end portion movable from a retracted position into an engaged position in contact with said annualr surface, and a lever arm pivotally supported on the base and havng an outer end extending outwardly beyond the base and an inner end located directly above the pin, said lever arm being movable to depress said pin whereby said pin moves said brake member to shift said end portions to said engaged positions.

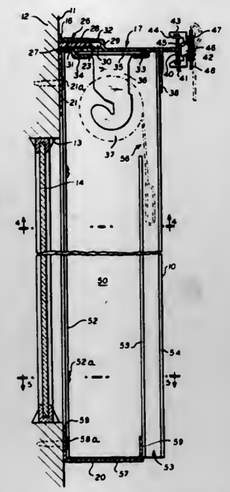
4,114,233
WINDOW TRIM ASSEMBLY
Gerald A. Hamilton, Skillman, N.J., assignor to Val-Trac Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 730,411, Oct. 7, 1976, abandoned. This application Mar. 31, 1977, Ser. No. 783,236
Int. Cl.² A47H *1/04*
U.S. Cl. 16—95 R **19 Claims**

1. Window head trim assembly comprising a mounting base member and a front head trim member attachable thereto, said mounting base member having a base portion positionable vertically for mounting against a window frame head or wall, said front head trim member having a generally flat main body panel portion positioned, when attached, in a horizontal plane and adapted to support at least one of valance, shade or curtain mounting elements, and means for attaching the trim member to the base member, with its base portion vertically disposed, in response to only horizontal movement of the trim member with its main body portion horizontally disposed, said means for attaching comprising

(i) a single, substantially flat mounting rib portion having a series of ridges along the length thereof, said rib portion being integral with the base portion of the base member and projecting horizontally outwardly therefrom; and

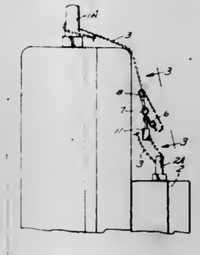
(ii) a rearwardly opening, horizontally disposed, U-shaped

channel integral with the trim member having a corresponding series of ridges along the interior length thereof



for gripping the mounting rib portion of the mounting base portion in interlocked relation when inserted therein.

4,114,234
LOCKABLE ATTACHMENT MEANS FOR LUGGAGE
Lavernon S. Hogenson, Box 66, Hingham, Mont. 59528
Filed May 20, 1977, Ser. No. 798,894
Int. Cl.² A45C *13/20*; A45F *5/10*
U.S. Cl. 16—114 R **1 Claim**



1. An attachment for temporarily interconnecting the handles of two pieces of luggage to enable convenient carrying of both pieces with one hand yet allowing both pieces to also rest on the ground without risk of tipping over, said attachment comprising,

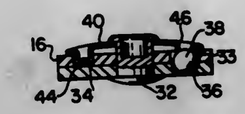
a length of chain for looped passage through the luggage handles,

a lock including a shackle,

double eyelets disposed one each at opposite ends of said chain and adapted when an eyelet of one is registered with an eyelet of the remaining double eyelet to receive the lock shackle through the registered eyelets to secure the chain ends to one another to form a locked chain loop passing through the luggage handles, and

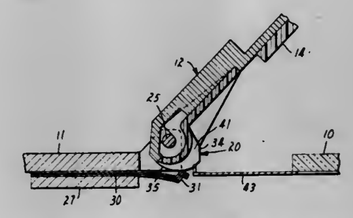
a snap fitting with swivel attached to a remaining eyelet of one of said double eyelets and engageable with a selected link of the chain to permit the removal of slack from the chain loop to achieve a desired relationship between the pieces of luggage regardless of varying size relationships between any two pieces of luggage to be carried

4,114,235
STAY FOR HINGED MEMBERS
Richard Charles Remington, Pompton Plains, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.
Filed Jun. 14, 1977, Ser. No. 806,482
Int. Cl.² E05D *11/10*
U.S. Cl. 16—139 **10 Claims**



1. A stay for hinged members comprising a pair of arms each having one end adapted to be connected to a hinged member and each having another end with a hole therethrough, said other ends of said arms being overlapped with said holes aligned, a spring plate superposed with said overlapped ends of said arms ad having a hole therethrough aligned with said holes through said arms, means including a pivot pin extending through said holes for joining said arms and said spring plate and for permitting said arms to turn relatively about said pivot pin, and means coupling said spring plate to one of said arms for turning movement therewith relative to the other arm, said other arm having a detent projection at its said other end which turns with said other arm relative to said one arm, and said spring plate having a detent recess for receiving said projection when said arms are turned relatively to a predetermined position.

4,114,236
HINGE STRUCTURE FOR PLATEN COVERS
John D. Vandervort, Cottage Grove, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Jul. 28, 1977, Ser. No. 819,764
Int. Cl.² E05D *11/10*
U.S. Cl. 16—142 **5 Claims**



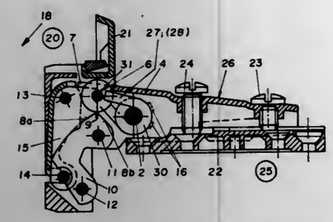
1. In a copy machine having a platen for supporting an original document for the purpose of exposing the same to impart an image to a photosensitive member and having a cover pivotally mounted along one edge thereof to cover and hold the original in place on the platen, the improvement comprising a latching spring in the form of a wide leaf spring positioned along said one edge of the cover, a cam secured to the cover and extending axially the width of the leaf spring and engaging the leaf spring along its length, said cam having a substantially planar locking surface portion which, when engaged by said leaf spring, will apply a torque to the cover forcing the same about the pivot axis of the cover toward said platen, and an arcuate transition surface portion described by an arc eccentric to the pivot axis of said cover which transition surface portion engages said spring and provides a torque on the cover as said cover is moved from said platen, the torsional force of which is sufficient to counterbalance the weight of the cover and hold the cover in a fixed position when the cover is raised from the platen to an angle of between about 20 and 90°.

4,114,237

DOOR HINGE

Alfred Grass, Konsumstrasse 492, A-6973 Hochst/Vlbg., Austria

Filed Nov. 3, 1976, Ser. No. 738,619
Claims priority, application Austria, Nov. 7, 1975, 8517/75
Int. Cl.[2] E05D *11/10*
U.S. Cl. 16—145 11 Claims



1. In an articulated hinge for a door including outer and inner link members each connecting between the door and the stationary frame by axially spaced pivot pins, the improvement comprising a resilient member interposed between the stationary frame and the innermost of said links, characterized in that said resilient member comprises:

a coiled spring member having an intermediate U-shaped extension projecting from oppositely wound co-axial convolutions, said convolutions terminating in outer free legs that extend toward and at an oblique angle to said U-shaped extension;

means supporting said coiled spring member on said stationary frame with said U-shaped extension contacting said innermost lever at a portion between its pivoted ends and thereby urging said innermost lever to a closed position of said door; and

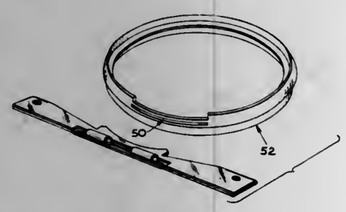
means supporting said free legs whereby said coil spring is biased with said U-shaped extension urged against said portion of said inner link member toward the closed position of said door.

4,114,238

HINGE FOR JEWELRY AND THE LIKE

Robert George Powell, Warley, Great Britain, assignor to Harman Brother Limited, Birmingham, England

Filed Apr. 13, 1977, Ser. No. 786,992
Claims priority, application United Kingdom, May 12, 1976, 19509/76
Int. Cl.[2] E05D *5/02*
U.S. Cl. 16—157 7 Claims



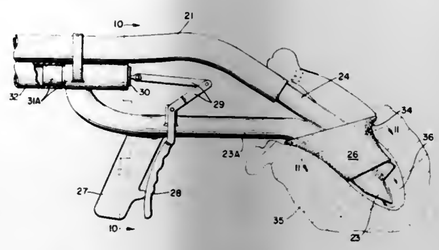
1. A hinge comprising two leaves one provided with at least one hinge knuckle and the other provided with a plurality of hinge knuckles, each leaf comprising two juxtaposed flat laminations reinforcing each other, a lamination of one leaf being provided with said at least one knuckle and a lamination of the other leaf being provided with said plurality of knuckles, and the other laminations each forming an abutment contacting one another edge on edge when the hinge is open.

4,114,239

METHOD AND APPARATUS FOR QUIETING A FOWL EVISCERATING DEVICE

Keener D. McClelland, 110 Southampton Rd., Hattiesburg, Miss. 39401

Filed Mar. 4, 1977, Ser. No. 774,478
Int. Cl.[2] A22C *21/00*
U.S. Cl. 17—45 8 Claims



1. The method of reducing the noise level surrounding the work area where lungs and/or trachea are removed by vacuum from a previously eviscerated fowl having a vent end opening comprising:

a. subjecting the fowl evisceral cavity to a vacuum while simultaneously providing for replacement air to flow into the cavity to both replace the air moved by the vacuum and to fill the void left by suction removal of the lungs and trachea, and

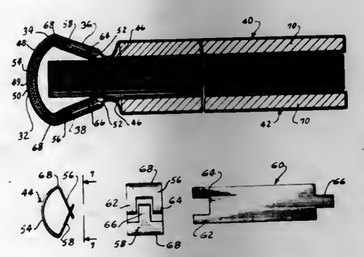
b. maintaining a seal, between the vacuum and replacement air introducing instrumentality, and the perimeter of the vent opening in the carcass of the fowl to retain the noise of high velocity turbulent air flow within the cavity within the eviscerated carcass.

4,114,240

ROUND BACK SPRING BINDER

Joel J. Nackenson, Valley Stream, N.Y., assignor to J.J. Lester & Co., Inc., Valley Stream, N.Y.

Filed Aug. 22, 1977, Ser. No. 826,925
Int. Cl.[2] B42F *1/00*
U.S. Cl. 24—67.11 7 Claims



1. A round back spring binder comprising:

(a) a back member having a curved back section, a pair of side sections extending therefrom, and a pair of stiffener strips on said side sections,

(b) a pair of cover panels hingedly connected to said side sections, and

(c) spring clamp elements mounted on said back member and operating between its back and side sections,

(d) said spring clamp elements comprising a curved spring yoke and a pair of arms extending integrally therefrom, said arms being secured to said stiffener strips,

(e) said integral arms of the spring clamp elements having laterally offset end portions and said spring yoke of the spring clamp elements being bowed to bias said integral arms toward each other such that their offset end portions are normally held in intersecting relationship,

(f) said integral arms of the spring clamp elements, when secured to the stiffener strips, being spread apart against the tension in the bowed spring yoke,

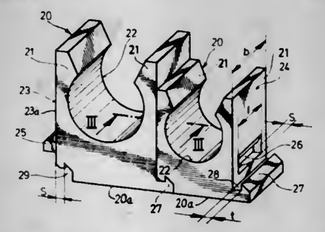
(g) thereby imparting a spring bias in the back member of the binder sufficient to hold its side sections in tensioned engagement with each other prior to placement of insert material between them, and sufficient to enable said side sections to tensionally engage and hold insert material placed between them.

4,114,241

INTERLOCKING CLAMPS FOR PIPING AND CABLE

Heinz Bisping, Munich, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 20, 1977, Ser. No. 798,937
Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624333
Int. Cl.[2] F16L *3/22*
U.S. Cl. 24—81 CC 13 Claims



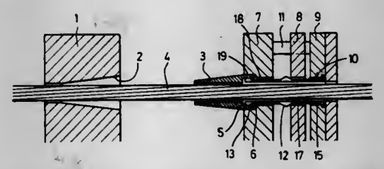
1. A clamp for holding pipe, cable and the like, said clamp comprising a pair of side walls each having an outwardly facing surface directed in the opposite direction to the outwardly facing surface of the other side wall and an inwardly facing surface directed toward the inwardly facing surface of the other said side wall, and a base interconnecting said side walls, each said side wall having a pair of spaced edges extending upwardly from said base, the inwardly facing surfaces of said side walls and said base forming an opening for holding pipe, cable and the like and the opening having an axis extending generally in the direction from one upright edge to the other upright edge of one of said side walls, wherein the improvement comprises that one said side wall having a detent extending outwardly from the outwardly facing surface thereof and the other said side wall having an opening in the outwardly facing surface thereof for receiving a corresponding said detent so that said clamp can be interlocked with other said clamps by inserting said detent in a direction perpendicular to said side wall into a corresponding said opening on another said clamp and by inserting said detent on still another said clamp into the opening on said clamp.

4,114,242

CABLE GRIP GRIPPING APPARATUS

Kurt Luthi, Gwatt bei Thun, Switzerland, assignor to Losinger AG, Bern, Switzerland

Filed Mar. 30, 1977, Ser. No. 782,834
Claims priority, application Switzerland, Feb. 11, 1977, 1731/77
Int. Cl.[2] F16G *11/00*
U.S. Cl. 24—115 R 8 Claims



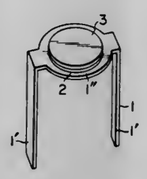
1. In an apparatus for gripping one or more tapered segmented grips seated at the ends of conical passageways through an anchor block by means of which one or more cables consisting of wires or strands are anchored under tension in said anchor block, said apparatus being disposed between said anchor block and a tensioning jack so as to be movable along said cables passing therethrough for detensioning the tensioned said cable or cables, characterized in that it comprises a number of axially split cylindrical gripping means disposed in axial alignment with the respective number of said cables, each of said gripping means being introduceable in the respective segmented grip in the anchor block to grip said segmented grip, means engaging said gripping means to move the same axially and unseat said segmented grip from its seat and to displace it axially away from said anchor block, and means for engaging and radially compressing said gripping means.

4,114,243

PROCESS FOR PRODUCING CATHODE FOR CATHODE RAY TUBE OF DIRECTLY HEATING TYPE

Ko Soeno; Toshio Doi, both of Hitachi; Tomio Iizuka, Ibaraki; Hiroshi Sakamoto; Hisashi Ando, both of Hitachi; Tetsuo Oyama, Takahagi, and Akira Misumi, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 8, 1977, Ser. No. 775,618
Claims priority, application Japan, Mar. 9, 1976, 51-24680
Int. Cl.[2] H01J *9/04*
U.S. Cl. 29—25.14 24 Claims



1. A process for producing a cathode for a cathode ray tube of directly heating type, which comprises:

(a) preparing a compound plate of predetermined thickness comprising a heat-resistant and electroconductive flat metal plate and a thin metal layer having an affinity to the flat metal plate, the thin metal layer being diffusion bonded to the flat metal plate,

(b) shaping said compound plate into a cathode substrate body having two leg pieces extended in the same direction and a flat part being connected to one end of each leg piece and having said metal layer on an outer surface of said flat part,

(c) forming a bonding layer, for bonding a thermionic emission layer, by diffusion bonding powders of a thermally diffusible metal having an affinity to said metal layer to the outer surface of the flat part, and

(d) forming the thermionic emission layer on the surface of the bonding layer.

4,114,244

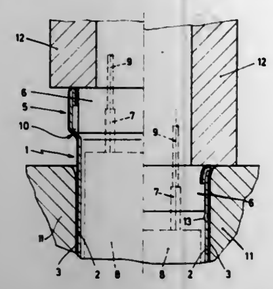
METHOD FOR MOUNTING OF ELECTRICAL COMPONENTS, IN PARTICULAR ELECTROLYTE CAPACITORS

Rudolf Klaschka, Tannenweg 9, 7896 Wutoschingen, Fed. Rep. of Germany

Filed Mar. 28, 1977, Ser. No. 781,676
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614497
Int. Cl.[2] H01G *7/00*
U.S. Cl. 29—25.41 10 Claims

1. A method for encapsulating an electrical or electronic component in a housing, wherein said housing has an opening sealed by a resilient plug, said method comprising providing said housing opening with a widened neck rim portion, insert-

ing said component into said housing, disposing said plug in said widened neck portion, and reducing the width of said neck



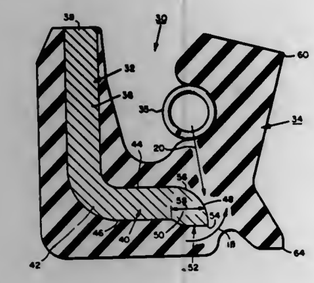
portion by pushing said housing into a crimping die for holding said plug under compression at the opening of said housing.

4,114,245

PRESSURE SHAFT SEAL METHOD

Dean R. Bainard, Clover, S.C., assignor to Garlock Inc., Rochester, N.Y.

Division of Ser. No. 622,876, Oct. 16, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 752,724
Int. Cl.[2] B23P *15/00*; B29G *1/00*
U.S. Cl. 29—156.4 R **6 Claims**



1. A method for reducing bonding cement bond breakage in pressure shaft seals of the type including a reinforcing shell having a cylindrical portion and a radially inwardly extending flange and an elastomeric sealing member supported by the radial flange and including portions of elastomer of said member bonded by bonding cement to both axially inner and outer sidewalls and to an endwall of the radial flange, comprising steps of forming an axially extending offset on the outer sidewall of said radial flange adjacent the endwall thereof, said offset having a size and shape effective to disturb the flow of elastomer at said endwall, and molding said elastomeric member onto said reinforcing shell such that the elastomer flows axially inwardly over said offset and then toward said endwall such that said flow tends not to wipe said bonding cement off of said endwall during said molding step.

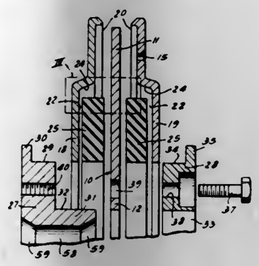
4,114,246

METHOD OF AND MEANS FOR MAKING TUNED VISCOUS TORSIONAL VIBRATION DAMPERS

Gordon W. Kamman, Elma, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,256
Int. Cl.[2] F16F *15/16*
U.S. Cl. 29—451 **15 Claims**

1. A method of making a tuned viscous torsional vibration damper assembly of the type having supporting disk means with a radially outwardly extending circular body and a radially inner hub portion adapted to be secured to a rotary member such as a crankshaft subject to vibrations to be damped by the damper, said body being received concentrically within a radially inwardly opening annular working chamber of an annular inertia mass, a viscous damping medium in said chamber between shear film spaced working surfaces of said body and said inertia mass, and said inertia mass having concentric annular grooves at opposite sides of and facing axially toward said body contiguous to the opening from said chamber, with elastic tuning spring, spacing and sealing rings coupling opposing surface areas of said inertia mass in said grooves and opposing surface areas on said body, comprising:



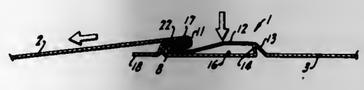
assembling said rings in said grooves;
placing concentricity maintaining shoulder means across radially inner open sides of said grooves and in engagement with radially inner diameter of the rings whereby to assure concentricity of said rings within the grooves;
effecting bonding of the rings to said opposing surface areas of said inertia mass and of said body;
and after said bonding removing said concentricity maintaining shoulder means.

4,114,247

METHOD OF ASSEMBLING A PANEL ASSEMBLY STRUCTURE

Andrew J. Toti, 311 W. River Rd., Modesto, Calif. 95351

Division of Ser. No. 358,950, May 10, 1973, Pat. No. 4,063,393.
This application Jul. 5, 1977, Ser. No. 812,766
Int. Cl.[2] B23P *11/02*
U.S. Cl. 29—453 **9 Claims**



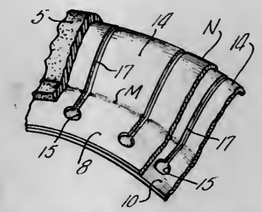
1. A method of assembling a panel assembly structure, comprising: providing a preformed panel member which includes a fully preformed marginal portion which is defined by an integral hook section extending transversely thereof, and a generally flat deformable tongue section projecting from said hook section and terminating in an edge portion; providing another preformed member which includes a fully preformed marginal slotted section which includes a hook portion extending transversely thereof, and a generally rigid and unyielding abutment shoulder spaced from said hook portion and integrally connected therewith by a base portion; interfitting said hook portion of said panel member beneath said hook portion of said other member with said tongue section of said panel member overlying but spaced from said base portion of said other member; urging said hook portion of said panel member laterally into secure contact with said hook portion of said other member; and depressing said tongue section of said panel member downwardly into contact with said base portion of said other member to bring said edge portion of said tongue section into wedging engagement with said abutment shoulder of said other member without deforming or otherwise distorting said abutment shoulder and without permanently distorting or altering the configuration of either of said preformed members.

4,114,248

METHOD OF MAKING RESILIENTLY COATED METALLIC FINGER SEALS

William E. Smith, and Roy G. Nelson, both of Lake Park, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 535,645, Dec. 23, 1974, Pat. No. 4,022,948.
This application Sep. 21, 1976, Ser. No. 725,059
Int. Cl.[2] B23P *3/00, 19/04*
U.S. Cl. 29—460 **6 Claims**



1. A method of forming a seal means for use between a stationary member and a movable member comprising
(1) forming two metallic members of a desired shape so that its forward end will coact with the stationary member and its rearward end will coact with a movable member,
(2) forming the rear part of said members having fingers with slots therebetween,
(3) fixing the two metallic members together in an offset manner so that the slots of each metallic member are positioned between the fingers of the other metallic member with their mating surfaces therebetween being in intimate contact,
(4) cleaning the exposed surfaces of the two metallic members where a resilient coating is to be placed,
(5) applying a thin layer of a primer to the two metallic members where a resilient coating is to be placed, said primer preventing the formation of oxides on the surfaces where it is desired to have a bonded resilient coating,
(6) placing an uncured resilient coating material around the fingers of said members of said metallic members to a point adjacent the closed ends of the slots leaving the ends of the slots exposed,
(7) placing an uncured resilient coating material in the exposed ends of the slots,
(8) shaping the resilient coating material to its desired shape for use as a seal,
(9) curing the resilient coating material.

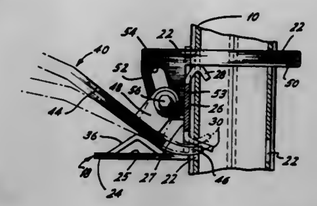
4,114,249

METHOD OF ASSEMBLING STORAGE SYSTEM

Leonard R. Clark, Roslyn, and David W. Meehl, Hatboro, both of Pa., assignors to Standard Pressed Steel Co., Philadelphia, Pa.

Division of Ser. No. 668,371, Mar. 19, 1976, Pat. No. 4,042,097.
This application May 26, 1977, Ser. No. 800,770
Int. Cl.[2] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—513 **2 Claims**

1. A method of assembling a storage system including the steps of:
providing support posts having aligned slots extending along at least one face thereof;
erecting said support posts in a generally vertical position whereby said slots extend along a generally vertical line and face in the same direction;
providing a support member having a first leg providing a track surface along which storage containers can slide and on which storage containers can be supported, and having a second leg providing a guide surface for guiding storage containers sliding along said track surface, said second leg being provided with first connecting means at one end and second connecting means at the other end, said connecting means including a hook member and a tab member each of said tab members forming an angle greater than 90° with the surface portion of said second leg located between said hook member and said tab member;
inserting said hook members into aligned slots on said support posts so that said hook members underlie the outer surface of said post members, and rotating said support member to insert said tab members into other aligned slots on said support posts; and,
thereafter applying a bending force to said tab members to bend said tab members toward said hook members until said tab members form an angle less than 90° with the surface portion between said hook members and said tab members whereby said tab members underlie the outer surface of said support post members.

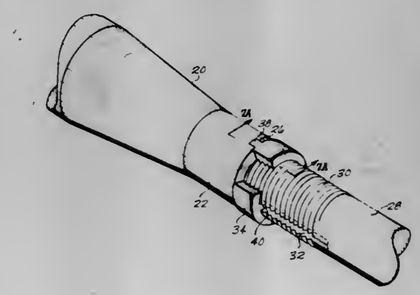


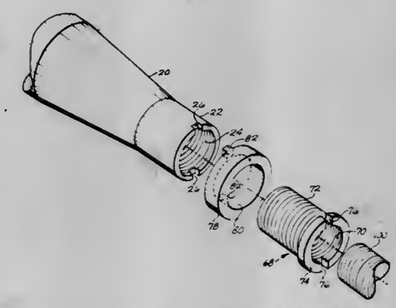
4,114,250

METHOD OF FIXING A THREADED TUBE TO A THREADED SHANK OR NIPPLE

Robert K. Dent, 17765 Beach Dr. N. E., Seattle, Wash. 98155

Filed Aug. 16, 1976, Ser. No. 714,600
Int. Cl.[2] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—517 **15 Claims**





15. The process of rigidly connecting a tube, having an end

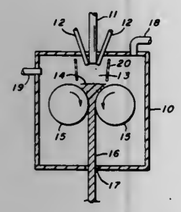
wall and having an internally threaded bore, to an externally threaded member, comprising, providing slots in the end wall of the tube; providing a sleeve on the externally threaded member and with the sleeve abutting the end wall of the tube; and cold pressing said sleeve and providing for metallic flow thereof into the slots in the end wall of the tube and into the threads of the externally threaded member.

4,114,251

PROCESS FOR PRODUCING ELONGATED METAL ARTICLES

Raymond L. Southern, Lower Burrell, and Harry L. Bishop, Pittsburgh, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Sep. 22, 1975, Ser. No. 615,330
Int. Cl.² B22D *11/126*
U.S. Cl. 29—527.7 **1 Claim**



1. A process for producing an elongated metal article comprising:
A. maintaining a supply of molten metal;
B. providing a stream of molten metal from said supply of molten metal;
C. atomizing said molten metal by blasting said stream of molten metal with an inert atomizing gas to produce a downwardly flowing stream of molten metal particles at the melting temperature of said metal;
D. removing heat from said downwardly flowing particles while in an inert atmosphere to remove at least some heat of solidification but to maintain the particles at a temperature such that the particles are in a plastic condition;
E. directing the resultant downwardly flowing particles directly into the bite of a pair of rotating rolls arranged with their axes substantially horizontal and in substantially the same horizontal plane as to provide a bed of said heated particles in an inert atmosphere;
F. continuing directing said downwardly flowing heated particles onto said bed of said heated particles and continuing rotation of said rolls to consolidate said particles as they pass between said rolls and form said elongated metal article;
G. said atomizing, cooling and consolidating steps being carried out in a closed chamber containing an inert gas.

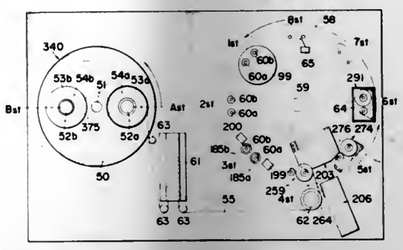
4,114,252

MANUFACTURING APPARATUS FOR TAPE CASSETTE

Tsuneyoshi Kon, Kawasaki; Hiroshi Toi, Yokohama; Tamiaki Matsuura; Kiyohiko Akanuma, both of Tokyo; Toru Takamiya, Yokohama, and Motosuke Usui, Matsudo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 26, 1977, Ser. No. 800,921
Claims priority, application Japan, May 28, 1976, 51-62700
Int. Cl.² B23Q *7/00*; B23P *23/00*; B65H *19/20*
U.S. Cl. 29—563 **7 Claims**

1. A manufacturing apparatus for a tape cassette comprising:
a rotary table having at least one pair of hub holding means for demountably holding a pair of hubs supplied to said rotary table and being movable along a predetermined transport path upon rotation of said table;
means for clamping an initial end of a supplied tape to one of said hubs held by said hub holding means;
tape winding means for winding a predetermined length of said supplied tape onto said one hub;
cutting means for cutting a trailing portion of said tape wound on said one hub;
means for clamping the terminal end of said cut tape to the other of said hubs;



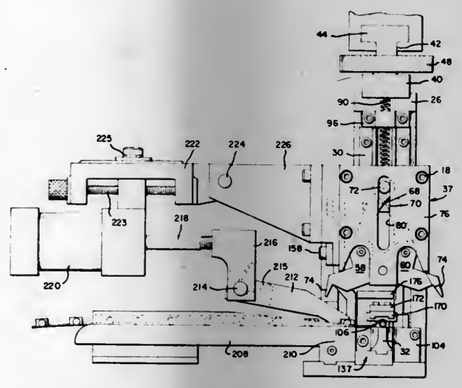
assembling means for mounting a cassette half, transporting said hubs to which the ends of said tape are clamped and on which said tape is wound, to a position adjacent to a mounted cassette half, demounting said hubs from said hub holding means and assembling said hubs into said mounted cassette half; and means for intermittently rotating said table to position said hub holding means at each of the other above-mentioned means.

4,114,253

APPLICATION FOR TERMINALS IN STRIP FORM

Phillip Eugene Loomis; Paul Elwood Martz, and Howard Charles Phillips, all of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 11, 1977, Ser. No. 795,825
Int. Cl.² B23P *23/00*
U.S. Cl. 29—566.2 **7 Claims**



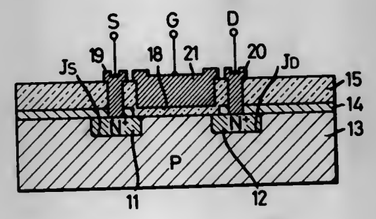
1. An applicator for crimping terminals onto the ends of wires, said applicator being intended to be mounted in a bench press or the like, said applicator comprising:
frame means, a crimping site in said frame means, a ram in said frame means, crimping die means on said ram, said ram being reciprocable along a first path towards and away from said crimping site, an anvil in said frame means, said anvil being receiprocable along a second path towards and away from said crimping site, said second path extending transversely of said first path,
actuating means for moving said anvil and said ram along said paths, said actuating means having timing means for ensuring arrival of said anvil at said crimping site prior to arrival of said crimping die at said crimping site,
terminal strip feeding means for feeding a strip of said terminals to said anvil and positioning the leading terminal of said strip on said anvil when said anvil is remote from said crimping site, and shearing means for shearing said leading terminal from said strip prior to movement of said anvil towards said crimping site whereby, upon positioning the end portion of a wire at said crimping site with the axis of said wire extending in the same direction as said second path, and upon positioning a terminal on said anvil, and upon provoking said actuating means, said terminal and anvil are moved to said crimping site and said wire is positioned in said terminal, and said terminal is thereafter crimped onto said wire upon arrival of said crimping die means at said crimping site.

4,114,254

METHOD FOR MANUFACTURE OF A SEMICONDUCTOR DEVICE

Teruaki Aoki, Tokyo, and Motoaki Abe, Hiratsuka, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 22, 1976, Ser. No. 669,326
Claims priority, application Japan, Apr. 17, 1975, 50-46698
Int. Cl.² B01J *17/00*
U.S. Cl. 29—571 **10 Claims**



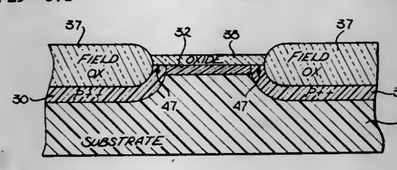
1. A method for the manufacture of a semiconductor device comprising:
a. forming a polycrystalline silicon layer containing 2 to 45 atomic percent of oxygen atoms on a semiconductive single crystal substrate,
b. forming a masking layer on said polycrystalline silicon layer,
c. removing partially said masking layer in predetermined areas to provide windows through said masking layer to said polycrystalline layer,
d. oxidizing the exposed portions of said polycrystalline silicon layer, and
e. forming an electrode on the oxidized portion below one of the windows.

4,114,255

FLOATING GATE STORAGE DEVICE AND METHOD OF FABRICATION

Phillip J. Salsbury, Sunnyvale; George Perlegos, Santa Clara, and William L. Morgan, Cupertino, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 714,879, Aug. 16, 1976, abandoned. This application May 2, 1977, Ser. No. 792,496
Int. Cl.² B01J *17/00*
U.S. Cl. 29—571 **9 Claims**



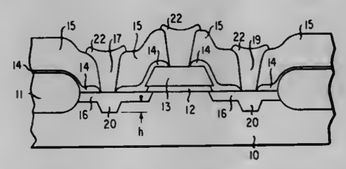
1. In a process for fabricating a floating gate memory device on a silicon substrate of a first conductivity type, the steps of:
defining a channel area on said substrate with a masking means which includes silicon nitride;
subjecting said substrate to a dopant of said first conductivity type so as to form first doped regions adjacent to first opposite sides of said channel area;
forming an oxide layer on said substrate abutting said masking means;
removing said masking means;
forming a floating gate insulated from said substrate above said channel area;
forming a source and drain region of a second conductivity type at second opposite sides of said channel area;
whereby regions along said first sides of said gate are doped, thereby permitting charge to be more easily injected into said floating gate.

4,114,256

RELIABLE METAL-TO-JUNCTION CONTACTS IN LARGE-SCALE-INTEGRATED DEVICES

Louis Robert Thibault, Piscataway, and Leopoldo Dy Yau, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 24, 1977, Ser. No. 809,667
Int. Cl.² B01J *17/00*
U.S. Cl. 29—571 **1 Claim**



1. A method for making reliable low-resistance electrical connections to shallow-junction regions of an LSI device, said method comprising the steps of
forming a relatively thick insulating layer on the front surface of said device overlying said shallow-junction regions
forming contact window openings in said insulating layer respectively overlying only central portions of said shallow junction regions,
in a single gettering step, gettering damage sites from both the front and back surfaces of said device and, during said single gettering step, introducing an impurity into said device via said contact window openings to form relatively deep junction portions in the central portions only of said shallow-junction regions in direct alignment with said openings,
and forming a conductive pattern on said insulating layer and in said contact window openings directly overlying said relatively deep junction portions to establish electrical connections to said regions.

4,114,257

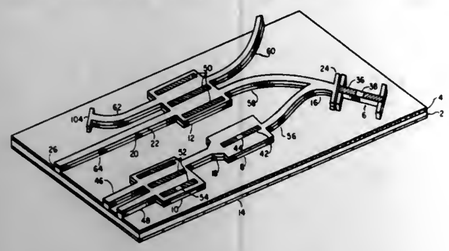
METHOD OF FABRICATION OF A MONOLITHIC INTEGRATED OPTICAL CIRCUIT

David Walter Bellavance, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 23, 1976, Ser. No. 726,092
Int. Cl.² B01J *17/00*
U.S. Cl. 29—572 **3 Claims**

1. A method of fabricating a monolithic integrated optical circuit comprising:
fabricating a multi-layer continuous waveguide structure on the planar surface of a semiconductor substrate, said waveguide structure having planar open areas for the subsequent fabrication of electro-optic devices therefrom, one of said layers capable of propagating light therethrough;

fabricating a light emitting device on at least one of the above listed members in such a relationship to the waveguide structure so as to transmit light thereto;



depositing contact means upon the opposite parallel face to said planar surface of said semiconductor substrate and upon a portion of said light emitting device; and

fabricating said electro-optic devices by depositing metal patterns on top of said planar open areas.

4,114,258

METHOD OF MAKING A STATOR ASSEMBLY

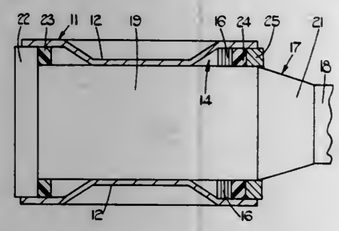
Keith James William Beech, Walsall, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 19, 1977, Ser. No. 798,347

Claims priority, application United Kingdom, May 28, 1976, 22379/76

Int. Cl.² H02K *15/06*

U.S. Cl. 29—596 **3 Claims**



1. A method of manufacturing a dynamo electric machine stator assembly wherein the stator assembly comprises a hollow cylindrical yoke having therein a plurality of angularly spaced axially extending radially inwardly projecting poles, and a sinusoidal field winding engaging the poles, the winding including a plurality of axially portions each engaged between a respective pair of circumferentially adjacent poles, and a plurality of curved end portions each curved end portion extending around an end of a respective pole and interconnecting an adjacent pair of axial portions, circumferentially adjacent curved end portions of the winding being disposed at opposite axial ends of the winding respectively, the method comprising the steps of axially inserting a reduced diameter sinusoidal field winding into the yoke with the axial portions of the winding aligned with the spaces between respective pairs of poles, expanding the winding radially to engage the axial portions of the winding between their respective pairs of poles, and, securing the expanded wiring in position in the yoke by subjecting the winding to a compressive loading in an axial direction while holding the winding against radially inward collapse, the magnitude of the axial loading applied to the winding being sufficient to cause initial elastic deformation of the winding into contact with the poles and the inner surface of the yoke and subsequent plastic deformation of the winding whereby upon release of axial loading the winding remains in its deformed configuration engaging the poles and the inner surface of the yoke and so gripping the poles and the yoke so as to retain itself in position in the yoke.

4,114,259

METHOD OF MAKING A HIGH DENSITY MULTITRACK MAGNETIC HEAD

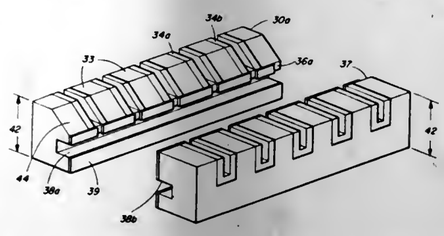
Jelmer Dorreboom, Olivenhain, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Division of Ser. No. 735,729, Oct. 26, 1976, Pat. No. 4,084,199.

This application Sep. 26, 1977, Ser. No. 836,862

Int. Cl.² G11B *5/42*

U.S. Cl. 29—603 **4 Claims**



1. In the method of forming the front face of a multitrack magnetic head, the steps of:

(a) cutting a number of widthwise slots into a bar of ferrite,

(b) bonding ceramic pieces in said slots,

(c) slotting through said ceramic pieces,

(d) longitudinally cutting said bar through said ceramic pieces, thereby to form bar pieces,

(e) placing gap defining non-magnetic means along at least one of the opposing surfaces resulting from the cutting of said bar of ferrite,

(f) chamfering at least one of said bar pieces to define a depth for said gap defining means,

(g) placing said bar pieces within a ceramic surround that has a depth greater than the depth of said bar,

(h) placing magnetic shields within the slotted ceramic pieces,

(i) placing glass over the bar pieces and within said surround, and

(j) heating said surround with its contents to cause said glass to melt and create a unitary lattice of glass filling the chamfer and bonding all parts, including the surround, together.

4,114,260

INDUSTRIAL BATTERY STACK, AND APPARATUS AND METHOD FOR STACKING, ALIGNING AND BURNING SAME

Hector L. DiGiacomo, Lafayette Hill, and John A. Sacco, Wernersville, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Division of Ser. No. 652,715, Jan. 27, 1976, abandoned. This application Apr. 1, 1977, Ser. No. 783,959

Int. Cl.² H01M *10/14*

U.S. Cl. 29—623.1 **1 Claim**

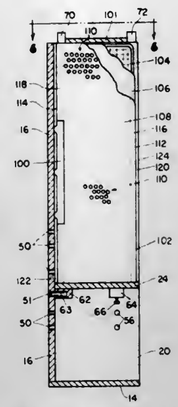
1. A method of stacking wrapped battery plates with respect to adjacent and discrete overlapping battery separators comprising the steps of:

(a) providing at least one substantially planar surface against which said battery plates are to be stacked;

(b) providing a plurality of wrapped battery plates to be stacked;

(c) applying over the wrapping of each of said wrapped plates at least one spacing member having a substantially U-shaped cross section for engaging at least one vertical wrapped edge of each of said wrapped battery plates, said spacing member having projections protruding therefrom a distance sufficient to provide the desired overlap of said separators beyond said plates; and

(d) positioning said wrapped battery plates and separators against said surface to thereby produce a properly aligned



battery stack wherein said separators uniformly overlap said battery plates.

4,114,261

METHOD OF MANUFACTURE OF A XEROGRAPHIC MICROFIELD DONOR

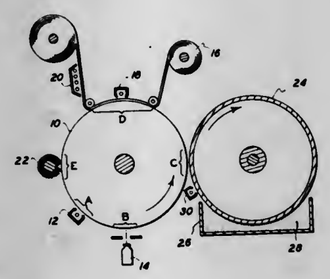
Ernest A. H. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 546,589, Feb. 3, 1975, Pat. No. 3,998,185.

This application May 24, 1976, Ser. No. 689,282

Int. Cl.² G03G *15/08*

U.S. Cl. 29—624 **11 Claims**



1. The method of manufacture of a xerographic microfield donor for toner transportation comprising the steps of

forming an electrically conductive toner support member,

establishing a plurality of pairs of adjacent electrical microfields on the surface of said support member, and

continuously reversing the direction of the established microfields.

4,114,262

CABLE CONNECTOR

Bent Franck, Bagsvaerd, Denmark, assignor to Dansk Signal Industri A/S, Hvidovre, Denmark

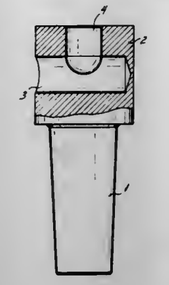
Continuation of Ser. No. 603,985, Aug. 12, 1975, abandoned. This application Nov. 18, 1976, Ser. No. 742,928

Claims priority, application Denmark, Aug. 14, 1974, 4328/74

Int. Cl.² H01H *69/00*

U.S. Cl. 29—628 **1 Claim**

1. A method of connecting an electrical cable connector to another electrically conductive object in which other object a hole is provided for receiving part of a connector element which connector element provides a first pin dimensioned for being driven into the hole, a head having a first bore extending radially relative to a second bore which extends coaxially with the axis of the first pin and intersecting the first bore and dimensioned for receiving a second pin dimensioned for being driven into the second bore and tightly engaging a cable received in the first bore, said method comprising inserting the



cable in the first bore placing the first pin within the hole of the object and placing the second pin within the second bore and applying force upon the second pin to drive the same into the second bore to engage the cable and at the same time to drive the first pin into the hole.

4,114,263

METHOD OF MANUFACTURING MEDICAL ELECTRODES

Roman Szpur, 2685 Culver Ave., Dayton, Ohio 45429

Filed Mar. 14, 1977, Ser. No. 777,313

Int. Cl.² A61B *5/04*; H01R *9/02*

U.S. Cl. 29—630 R **4 Claims**



1. A method of producing a medical electrode adapted to be attached to the skin of an individual, comprising the steps of adhesively attaching a retaining sheet of flexible material to a carrier sheet of adhesive releasing material, cutting through the retaining sheet to only the carrier sheet to form a pad defining an opening confining a separate segment of the retaining sheet, removing the segment of the retaining sheet from the carrier sheet, forming a hub member from a flexible material and with the hub member defining a chamber surrounded by a flange portion, mounting an electrical conductor on the hub member with the conductor extending through to the chamber, locating within the chamber an electrically conductive resilient patch, inserting the hub member and the patch within the opening in the pad, and attaching the flange portion of the hub member to the pad around the opening.

4,114,264

CLIPPER MECHANISM

Alexis Emmanuel Buchholz, Hauterive, Switzerland, assignor to The Gillette Company, Boston, Mass.

Filed Jun. 24, 1977, Ser. No. 809,686

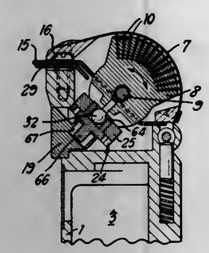
Claims priority, application United Kingdom, Jun. 29, 1976, 27109/76

Int. Cl.² B26B *19/10*

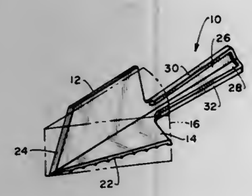
U.S. Cl. 30—34.1 **9 Claims**

1. An electric dry shaver comprising a cutter, means for mounting said cutter for arcuate oscillation about an axis to effect a shaving action, a driver having an end secured to said cutter and an opposite free end terminated by a ball and

adapted to arcuately oscillate about said axis, a trimmer element, means mounting said trimmer element for linear reciprocation parallel to said cutter axis to effect a hair trimming action, and a coupling mechanism including a lever provided with an opening, means defining a pivot axis for said lever and means operably connecting said lever to said trimmer element, whereby oscillation of said lever about said pivot axis effects said linear reciprocation of said trimmer element, and an intermediate member operably interposed between said driver and said trimmer element, said ball end extending into said opening in said lever, said opening having a dimension greater than the arcuate travel of said arcuately oscillating ball end in said opening, said intermediate member being selectively movable into and from said opening to be selectively operatively engageable and disengageable with said ball end of said driver respectively to establish and to break a driving connection between said driver and said trimmer element.

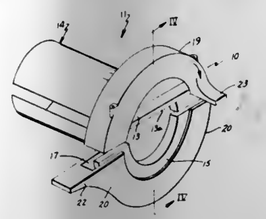


4,114,265
CAKE CUTTER AND SERVER
Robert L. Bailey, 3039-½ Eighth Ave., Los Angeles, Calif. 90018
Continuation-in-part of Ser. No. 772,557, Feb. 28, 1977, abandoned. This application Nov. 4, 1977, Ser. No. 848,540
Int. Cl.² B26B *11/00*
U.S. Cl. 30—122 **9 Claims**



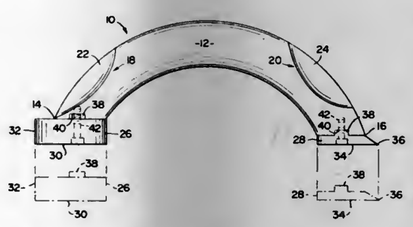
1. A pastry cutter and server comprising:
a body section being divided into a first section and a second section, said first section being pivotally connected by hinge means to said second section;
a first handle section attached to said first section;
a second handle section attached to said second section, said first and second handle sections cooperating together to form a single handle structure;
said second section having a sharpened edge on the free edge thereof, whereby said sharpened edge may be used to cut through pastry when the first section is in alignment with the second section;
said hinge means permitting said first and second sections to be rotated right or left until said first and second sections are located at substantially right angles to one another whereby said cutter may now be employed as a left or righthanded server.

4,114,266
APPARATUS AND METHOD FOR ROTARY CUTTING OF ROLLED WINDOW SHADES AND THE LIKE
Paul J. Erpenbeck, Muskegon, Mich., assignor to Breneman, Inc., Cincinnati, Ohio
Filed Mar. 2, 1977, Ser. No. 773,439
Int. Cl.² B25F *3/00*; B26B *14/00, 27/00*; B26D *3/00*
U.S. Cl. 30—123 **14 Claims**



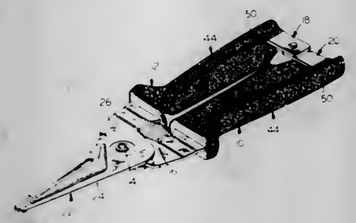
1. A manual window shade cutter assembly for cutting a generally cylindrical rolled shade including:
a longitudinally slotted shade holder having a handle portion of a size and shape to be gripped by the human hand and with longitudinally-extending slot-like separations dividing at least parts of said handle portion into component portions, said slotted shade holder having a longitudinal internal opening shaped to support a rolled shade during cutting and having an integral cutting guide oriented transversely of said internal opening and defining a generally annular wall portion;
a generally annular blade holder having a hinge and a separation dividing said blade holder into at least two relatively moveable hinged members; each of said members having a circularly curved follower portion whose radii converge toward the center of said blade holder; one of said blade holder members having a blade-supporting slot aligned parallel to said curved follower portion; said curved follower portion of said blade holder shaped to complement and to slideably clamp around said cutting guide of said shade holder to longitudinally position said blade holder for guided relative rotational movement around said shade holder; and
a blade within said blade slot and having a cutting edge aligned perpendicular to the longitudinal axis of said blade holder.

4,114,267
PRICE LABEL REMOVER
John P. Marchio, 2945 Denham Rd., and Hector Figueredo, 2960 Denham Rd., both of Cocoa, Fla. 32922
Filed Aug. 8, 1977, Ser. No. 822,534
Int. Cl.² A47L *25/00*
U.S. Cl. 30—172 **5 Claims**



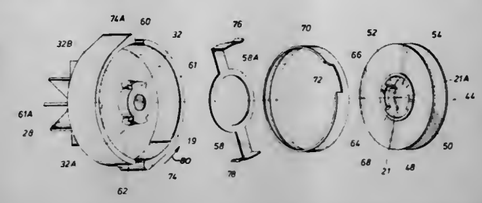
1. A label removing device of the type primarily intended for use in removing adhesive labels from a substrate, said device comprising: handle means comprising a body having first and second end portions; first scraper means operatively disposed on said first end portion, said first scraper means comprising a block including a scraping edge formed thereon, whereby adhesive labels may be removed from a relatively hard substrate, said block further including a substantially planar bottom portion for contacting said substrate, said scraping edge defining a plane which is substantially perpendicular to said bottom portion; and second scraper means operatively disposed on said second end portion, said second scraper means comprising a blade including a sharpened edge formed thereon, whereby adhesive labels may be removed from a relatively soft substrate, said blade further including a substantially planar base for contacting said substrate, said sharpened edge being formed on said base so as to extend outwardly from said second end portion in substantially parallel relation thereto.

4,114,268
SHEARS WITH IMPROVED LATCH FOR HANDLES
William J. Hildebrandt, West Simsbury, and Richard H. Rathbun, Oakdale, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Nov. 2, 1977, Ser. No. 847,698
Int. Cl.² B26B *13/16*
U.S. Cl. 30—262 **9 Claims**



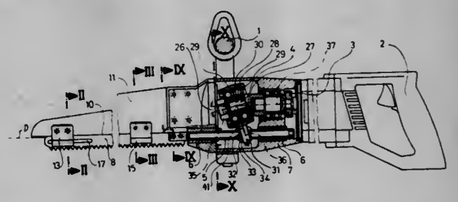
1. A hand tool comprising:
A. a pair of operating members each having jaw portions at one end thereof;
B. pivot means pivotably assembling said operating members for pivotal movement of said jaw portions towards each other into a closed position and away from each other into an open position;
C. synthetic resin handle members affixed to the other end of said operating member for gripping by a user to effect said pivotal movement thereof;
D. spring means operatively connected between said operating members and biasing said operating members into the open position thereof; and
E. releasable latch means integrally formed on said handle members to maintain said operating members in said closed position, said latch means comprising opposed arm members adjacent the outer ends of said handle members extending generally perpendicularly to the longitudinal axis of said handle members into overlying relationship, one arm member having a latch aperture therethrough spaced inwardly from the free end thereof and the other of said arm members having a latch post projecting from the surface thereof adjacent said one arm member and into said latch aperture thereof, either one of said arm members having an integral hinge portion adjacent the body of the handle member thereof permitting pivotal movement of the outer end portion thereof towards and away from the other one of said arm members for insertion and removal of said latch post from said latch aperture, said latch post having a laterally extending shoulder spaced inwardly from the outer end thereof engaged with a cooperating shoulder surface of said one arm member about said latch aperture, said biasing pressure of said spring means operating to maintan said cooperating shoulders in engagement in the closed position of said operating members.

4,114,269
ROTARY CUTTING ASSEMBLY
George Charles Ballas, Sr., Houston, Tex., assignor to Weed Eater, Inc., Houston, Tex.
Filed Dec. 3, 1976, Ser. No. 747,318
Int. Cl.² A01D *35/26*; A01G *3/06*
U.S. Cl. 30—276 **24 Claims**



1. Apparatus for cutting vegetation and the like, comprising:
head means rotatable about a rotational axis in a cutting plane and having a concentrically located open-end storage portion for a spool means and a peripherally located support portion having a solid curvilinear bearing surface,
said curvilinear bearing surface of said head means including a teardrop-shaped section extending outwardly with respect to the periphery of said head means,
driving means for rotating said head means in said cutting plane,
a flexible non-metallic line member having a coiled portion in said storage portion of said head means and further having an uncoiled portion extending from said coiled portion into said cutting plane to and across said bearing surface and further continuing radially outwardly from the periphery of said head means,
spool means insertable in said storage portion of said head means through the open end and holding said coiled portion of said line member in said head means, said spool means including a keyway associated therewith,
tab means on said head means in said storage portion, said keyway and tab means provided by semi-cylindrical flange members coaxial with said rotational axis and said semi-cylindrical flange members adapted to be axially interfitted and rotationally interlocked whereby an axially and radially secure interconnection is provided between said spool means and head means.

4,114,270
BUTCHER'S MEAT SAW
Rottger Jansen-Herfeld, Remscheid, and Stefan Elmer, Oetisheim, both of Fed. Rep. of Germany, assignors to Schmid & Wezel, Maulbronn, Fed. Rep. of Germany
Filed Jun. 24, 1977, Ser. No. 809,516
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1976, 2657665
Int. Cl.² G01C *15/10*; B27B *17/00*
U.S. Cl. 30—394 **16 Claims**



1. A reciprocating saw, comprising a housing; a guide element secured to said housing and having an edge defining a direction; an elongated blade element having a longitudinal succession of cutting teeth, a rear end, and an edge extending along and slidable on said edge of said guide element, one of said edges being V-shaped; a first plurality of tabs and a second

plurality of tabs transversely spaced from one another on another of said edges so as to define a V-shaped groove therebetween in which said one V-shaped edge is slidably received, said tabs of each of said first and second pluralities being longitudinally spaced from one another so as to define a first plurality of notches and a second plurality of notches therebetween, respectively, the tabs of said first plurality being longitudinally offset relative to the tabs of said second plurality so that said first plurality of notches is longitudinally offset relative to said second plurality of notches, and said notches alternatingly communicate with said V-shaped groove on respective lateral sides thereof, whereby successive longitudinal increments of said one edge are fully exposed on one and on the other lateral side of said other edges, respectively, so that said one edge is laterally accessible over its entire length; and drive means in said housing connected to said rear end for reciprocating said blade element in said direction wherein said tabs have faces defining said grooves and lying at an angle of between 30° and 90° to each other, and said faces overlap transversely of said direction.

4,114,271

VIBRATORY DENTAL TOOL

Scott P. Howa, Salt Lake City, Utah, assignor to Vibrabrush, Inc., Salt Lake City, Utah

Continuation of Ser. No. 574,864, May 6, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,946
Int. Cl.² A61C *13/00*
U.S. Cl. 32—2 **4 Claims**



1. A method for creating dental prosthetic appliances comprising the steps of:

-adhering a pre-determined amount of dental prosthetic-forming material to the vibrating brush means of a vibrating dental tool;

-applying said dental prosthetic-forming material to a substrate with said dental tool; and

-shaping said material into said substrate to form a dental prosthetic appliance with said vibrating brush means.

4,114,272

PROCESS FOR THE MANUFACTURE OF DENTAL PROSTHESES

Albert Saragossi, 10, rue du Four, Paris, France (75006)

Filed May 5, 1976, Ser. No. 683,573
Int. Cl.² A61C *5/08*; B05D *1/08*
U.S. Cl. 32—8 **2 Claims**

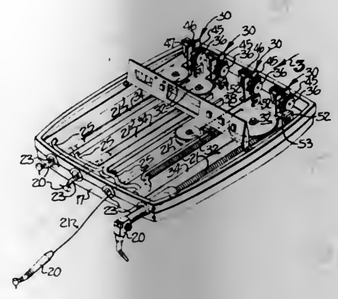
1. A process for the manufacture of dental prosthesis comprising a metallic alloy substructure consisting of by weight 87.5% nickel, 5% chromium, 1.25% boron, 4% silicon, 2% iron and 0.25% carabon and various layers of dental ceramic, said process comprising (a) preheating said metallic alloy substructure with a flame to a temperature of 900° C.–1200° C., (b) projecting a metal alloy powder having a particle size of 50 microns and consisting of 50.8% cobalt, 17.0% nickel, 19% chromium, 0.8% boron, 8.0% silicon, 4.0% tungsten and 0.4% carbon by weight through said flame and onto said preheated metallic alloy substructure, (c) terminating the projecting step when a coating having a maximum thickness of about 1/10th of a millimeter has been deposited on said substrate, and then applying to said coating various layers of dental ceramic.

4,114,273

HANDPIECE INSTRUMENT CONSOLE APPARATUS HAVING IMPROVED MECHANISMS FOR EXTENDING AND RETRACTING OPERATING FLEXIBLE HOSE

George Vernon McGaha, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed Nov. 12, 1976, Ser. No. 741,384
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **9 Claims**



8. Stop devices, such as for use with extending and retracting mechanisms for flexible hose connected to dental or medical treatment instruments, comprising:

ratchet wheel means mounted for rotation in one direction, for example upon extension of the flexible hose, and for rotation in the other direction, for example upon retraction of the flexible hose;

means biasing said ratchet wheel for rotation in the other direction;

pawl means mounted for pivotal movement by gravity into engagement with said ratchet wheel means for preventing rotation of said ratchet wheel means in the other direction under the influence of said biasing means, said pawl means being held in engagement with said ratchet wheel means by frictional contact therebetween under the bias of said ratchet wheel biasing means; and

selectively actuatable means associated with said pawl means for biasing and holding said pawl means against gravity out of engagement with said ratchet wheel when actuated and for allowing said pawl means to move by gravity into engagement with said ratchet wheel when deactuated, said selectively actuatable means being responsive to rotation of said ratchet wheel in the one direction for a predetermined timed period for deactuation therof for a predetermined timed period and for actuation thereof after the predetermined timed period;

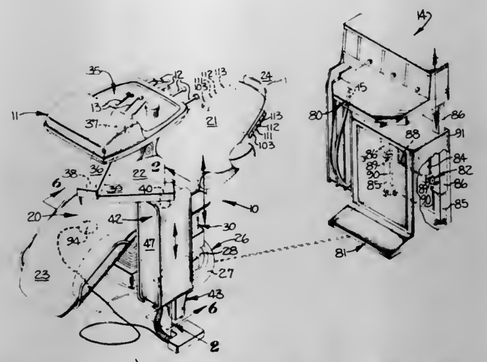
whereby, said pawl means will drop into engagement with said ratchet wheel for a predetermined timed period upon rotation of said ratchet wheel in the one direction and will be held by friction in engagement therewith against the bias of said pawl biasing means if rotation of the ratchet wheel in the one direction is relased during such predetermined timed period, such as for example to lock the flexible hose in a desired extended position upon release of the hose in a desired extended position, and said pawl means will be moved out of engagement with said ratchet wheel means by said pawl biasing and holding means upon failure to release rotation of said ratchet wheel means in the one direction during the predetermined timed period or upon a slight movement of said ratchet wheel means in the one direction to break the frictional engagement of said pawl means and said ratchet wheel means, such as for example to allow retraction of the flexible hose.

4,114,274

MOVABLE POWER-OPERATED INSTRUMENT CONSOLE AND TREATMENT CHAIR APPARATUS

Arthur Lee Jones, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed Nov. 12, 1976, Ser. No. 741,381
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **13 Claims**



1. Movable, power-operated, instrument console and treatment chair apparatus characterized by being selectively individually or simultaneously movable to desired positions for patient treatment; said apparatus comprising:

a treatment chair having an occupant supporting assembly, a base assembly, and an elevator assembly connected to and between said occupant supporting assembly and said base assembly for raising and lowering said occupant supporting assembly;

drive means connected with said treatment chair elevator assembly for operating same;

an instrument console having a tray assembly for carrying instruments and the like, a base assembly, and an elevator assembly connected to and between said tray assembly and said base assembly for raising and lowering said tray assembly;

drive means connected with said instrument console elevator assembly for operating same; and

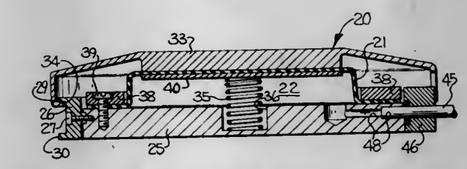
control means connected with said chair drive means and said console drive means for selectively (1) simultaneously operating both of said drive means for simultaneous raising or lowering of said treatment chair occupant supporting assembly and said instrument console tray assembly, or (2) independently operating each of said drive means for independent raising or lowering of said treatment chair occupant supporting assembly and said instrument console tray assembly.

4,114,275

FOOT CONTROLLER APPARATUS FOR AIR DRIVEN DENTAL HANDPIECES OR THE LIKE

Arthur Lee Jones, and Dennis Frank Leffler, both of Charlotte, N.C., assignors to Pelton & Crane Company, Charlotte, N.C.

Filed Nov. 12, 1976, Ser. No. 741,383
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **9 Claims**



1. Foot controller apparatus for manually controlling the flow through a supply line to a dental handpiece or the like and being characterized by a construction providing for remote foot control by a minimum size foot pedal device of the flow through the supply line to a handpiece without the necessity of bulky compressed air lines passing through the foot pedal device or the incorporation of complicated electrical or mechanical mechanisms in the foot pedal device; said foot controller apparatus comprising:

a foot pedal device of minimum size for easy contact by the foot of an operator of the dental handpiece and comprising a base member having a lower surface portion for resting on a floor, an upper member of generally shallow inverted cup-shaped configuration for being positioned over and around said base member for forming with said base member a hollow cavity within said foot pedal device, retaining means for retaining said upper member on said base member while allowing upward and downward movement of said upper member relative to said base member, biasing means positioned between said upper member and said base member for biasing said base member upwardly while allowing depression of said upper member relative to said base member, and a diaphragm member secured around its periphery to said base member and being attached to said upper member for movement therewith and extending over and closing said cavity within said foot pedal device to form a fluid sealed chamber which reduces in volume upon depression of said foot pedal device;

an elongate tube of small cross-sectional dimensions being connected at one end thereof with said foot pedal device and communicating with said fluid sealed chamber for conveying a flow of fluid therethrough resulting from operation of said foot pedal device; and

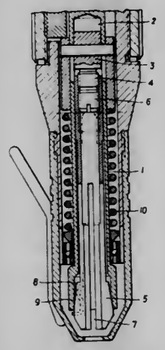
fluid-responsive means for being positioned away from said foot pedal device to avoid interference with the operator of the dental handpiece and operatively connected with the supply line and with the other end of said fluid tube for being operated by the flow of fluid through said fluid tube resulting from foot operation of said foot pedal device for controlling the flow through the supply line to the dental handpiece.

4,114,276

DENTAL TOOL HANDPIECE ASSEMBLY WITH REMOVABLE SPACER MEMBER

Peter Malata, and Josef Buchsteiner, both of Bürmoos, Austria, assignors to Dentalwerk Bürmoos Gesellschaft m.b.H., Bürmoos, Austria

Filed May 5, 1977, Ser. No. 794,332
Claims priority, application Austria, May 6, 1976, 3328/76
Int. Cl.² A61C *1/14*
U.S. Cl. 32—26 **8 Claims**



1. A dental tool handpiece assembly comprising a collet defining a bore into which a tool member is inserted, said collet

being formed with longitudinal slots adapting said collet to grip said tool for operative engagement within said handpiece assembly, said bore being defined with a predetermined depth terminating interioraly of said assembly at a tool abutment surface located to be engaged by the inner end of a tool inserted into said bore, and a removable spacer member inserted into said bore to provide a substitute tool abutment surface thereby to adapt said handpiece assembly to receive a tool having a length which does not reach to said tool abutment surface when said tool is in operative engagement within said bore, said removable spacer member including a handle portion located to extend outwardly of said bore and to within one of said collet slots when said spacer member is in place within said bore.

4,114,277

METHOD OF FITTING A GARMENT

Betty B. Chalker, 3650 Sulene Dr., College Park, Ga. 30349

Filed Aug. 12, 1976, Ser. No. 713,677
Int. Cl.[2] A41H *3/00*
U.S. Cl. 33—14 **2 Claims**



1. The method of fitting a garment to a particular person wherein said garment includes a contoured portion having a maximum perimeter and said person includes a contoured portion having a maximum perimeter substantially of such size as to receive said contoured portion of said garment, said garment being a pair of pants having a crotch seam, said method including the steps of defining a first reference line on said person at the waist of said person, defining a second reference line on said person at said maximum perimeter, said second reference line being generally on the hips of said person, determining the distance between said first reference line and said second reference line to determine the hip length, and selecting an inset for extending said crotch seam based on said hip length, the step of extending said crotch seam based on said hip length comprising the steps of providing an inset by measuring the length of half the back of said person at said second reference line, and making said inset with a crotch seam extension equal to 40% of said length of half the back.

4,114,278

TRACER APPARATUS

Arthur Ernest Laws, St. Albans, England, assignor to Trubenised (Sales) Limited, England

Filed Feb. 9, 1977, Ser. No. 767,210
Int. Cl.[2] B23Q *35/28;* H02P *7/38*
U.S. Cl. 33—23 K **6 Claims**

1. Tracer apparatus for tracing the periphery of a template pattern, comprising

(a) a base (B);

(b) a template (1) containing a template pattern;

(c) template mounting means (3) supporting said template for coplanar displacement relative to said base;

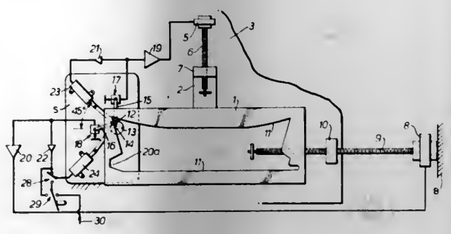
(d) stylus means (12) movably connected with said base for engagement with the periphery (11) of the template pattern, said stylus means normally having a first position relative to said base;

(e) means for displacing one end of said stylus means along a circular search path concentrically arranged about said first stylus position, said stylus displacing means including

(1) at least two solenoid devices (23,24) connected between said base and said stylus means, said solenoid devices being angularly arranged relative to said stylus means;

(2) at least two stylus position sensing means (17,18) for sensing the instantaneous position of said stylus means relative to said first position; and

(3) circuit means connecting said stylus position sensing means with said solenoid devices, respectively, for



controlling the operation of said solenoid devices to apply to said stylus means a force having a component perpendicular to the direction of displacement of said stylus means from said first stylus position; and

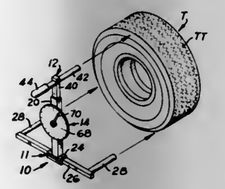
(f) means operable by said sensing means when said stylus is in engagement with a given location on the periphery of the template pattern for displacing said template mounting means in a direction parallel with the line extending between said given pattern location and said normal first stylus position, whereby said template is displaced to cause the stylus to trace the entire periphery of the template pattern.

4,114,279

TIRE CORRECTION SYSTEM

Winston O. Johnson, 3379 Aztec Rd., 22D, Doraville, Ga. 30084, and Jerry A. Crabb, 320 White Oak Dr., Buford, Ga. 30518

Filed Oct. 29, 1976, Ser. No. 737,018
Int. Cl.[2] G01B *5/08;* G01M *17/02*
U.S. Cl. 33—178 R **7 Claims**



1. A device for measuring inflated vehicular tires to provide a reading indicative of tire tread diameter and/or circumference length comprising:

contact means for contacting the tire tread at three circumferentially spaced points on the tire tread;

loading means for applying a load per unit area to the tire tread through said contact means which is approximately the actual load per unit area to which the tire is subjected during actual use; and,

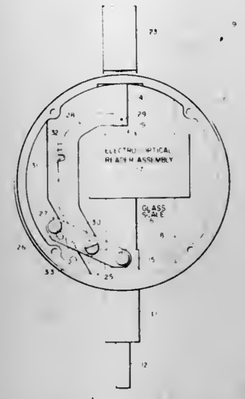
indicator means for indicating the distance between some point on a line joining two of said spaced points and the other of said spaced points.

4,114,280

DIGITAL ELECTRONIC INDICATOR

David W. Rucinski, Rochester, N.Y., assignor to Quality Measurement Systems, Inc., Penfield, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,506
Int. Cl.[2] G01B *5/20;* H01J *3/38*
U.S. Cl. 33—172 E **8 Claims**



1. An indicator having a spindle with a substantial travel of at least about ½ inch and having a generally cylindrical housing meeting current Americal Gauge Design dimension requirements for diameter, spindle bushing, and back mounting plate, said indicator comprising:

a. a coupling secured to the inner end of said spindle within said housing to be movable directly with said spindle;

b. a ruled glass scale secured to said coupling for direct movement with said spindle in a region within said housing axially offset from the region of movement of said spindle;

c. a reader assembly mounted in said housing so that said scale is movable relative to said reader assembly to produce moire fringes that are electro-optically detected by said reader assembly;

d. a digital display cooperatively responsive to said reader assembly for indicating positions of said spindle relative to said housing;

e. a connecting arm secured to said coupling for movement in a region spaced from said movement region of said scale;

f. a lifter rod arranged diametrically opposite said spindle and coaxial with said spindle in a position spaced from said movement region of said scale;

g. a lifter arm connected to said lifter rod and to a midregion of said connecting arm and movable in a region spaced from said movement region of said scale so that movement of said lifter rod is transmitted through said lifter arm and said connecting arm to amplify movement of said spindle; and

h. a spring arranged for biasing said spindle outward from said housing.

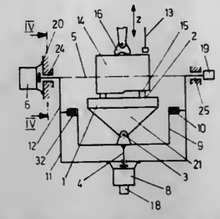
4,114,281

METHOD OF AND DEVICE FOR CLAMPING A WORKPIECE

Rudolf Pavlovsky, Schaffhausen, and Heinz Wüest, Sonnenberg, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Feb. 25, 1977, Ser. No. 771,948
Claims priority, application Switzerland, Mar. 2, 1976, 2600/76
Int. Cl.[2] G01B *5/00*
U.S. Cl. 33—180 R **15 Claims**

1. Method of locating a workpiece in position to be worked, especially for the mechanical working of a workpiece in the form of a rough or undressed casting, comprising the steps of mounting a movably displaceable support surface for pivotal movement about three separate spaced axes, clamping the workpiece on the movably displaceable support surface, measuring the deviation of a surface on the workpiece from a



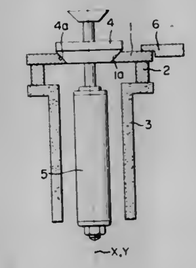
nominal position in at least two spaced locations, and adjusting the support surface based on the measured deviations for eliminating the deviations of the surface on the workpiece from the nominal position by rotatably moving the support surface together with the clamped workpiece about at least one of its three separate spaced axes.

4,114,282

VERTICAL CENTERING METHOD AND JIG FOR PLATING

Yoshio Hane, Kawasaki; Nobuo Chino, Komae; Katsuhiro Murata, and Akira Harayama, both of Okaya, all of Japan, assignors to Taisei Kensetsu Kabushiki Kaisha and Teikoku Piston Ring Co., Ltd., both of, Japan

Filed Mar. 22, 1976, Ser. No. 669,453
Claims priority, application Japan, Apr. 14, 1975, 50-44233
Int. Cl.[2] G01B *3/30*
U.S. Cl. 33—180 R **4 Claims**



1. A method for centering a cylindrical member to be plated within a hollow vertically arranged cylindrical plating electrode so that the longitudinal axis of the cylindrical member to be plated is aligned with the vertical axis of the cylindrical plating electrode, which method comprises:

securing on the top of the vertical plating electrode a horizontal jig receiving member having a circular hole therein, said hole being defined by a surface tapering downwardly and inwardly toward the vertical axis of the cylindrical plating electrode, arranging said hole so that the geometric center is aligned with a longitudinal axis within said electrode;

securing on one end of the cylindrical member to be plated a disc-shaped jig member having a tapering peripheral surface engagable in tight mating fit with the circular hole-defining surface; with said disc-shaped jig member being perpendicular to the longitudinal axis of the cylindrical member to be plated, said hole-defining surface and said tapering peripheral surface having a shape for fixing the disc-shaped jig member horizontally in said jig receiving member when said surfaces are in tight mating fit;

inserting said cylindrical member to be plated into the hol-

low interior of the cylindrical plating electrode with said jig member gravitationally suspending said cylindrical member within said electrode in such a manner that the peripheral surface of said jig member is brought into provisional imperfect engagement with the hole-defining surface of the jig receiving member; and

vibrating said jig receiving member and vibrating said jig member through the jig receiving member to bring the peripheral surface of said jig member into said tight mating engagement with the hole-defining surface of said jig receiving member through the effect of said gravitational suspension.

4,114,283

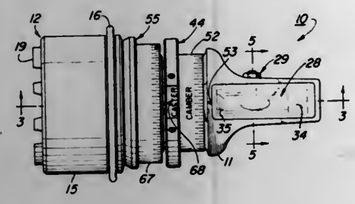
CASTER CAMBER GAUGE

Phillip A. Spainhour, Waukegan; Robert S. Hampton, Jr., Skokie, and Leonard A. Morrison, Chicago, all of Ill., assignors to Ammco Tools, Inc., North Chicago, Ill.

Continuation of Ser. No. 619,512, Oct. 3, 1975, abandoned. This application Feb. 3, 1977, Ser. No. 765,226

Int. Cl.[2] G01B *5/255, 13/195*

U.S. Cl. 33—337 **5 Claims**



1. An instrument for measuring the camber and caster angles of a steerable wheel, comprising

a carrier for attachment to said steerable wheel,

a spirit level mounted to said carrier for pivotal movement about a horizontal axis,

a camber indicating wheel rotatably carried by said carrier for pivotally adjusting said level and for indicating the angle of incidence between the axis of said steerable wheel and the horizontal,

a caster indicating wheel carried by said carrier for coaxial rotation with said camber indicating wheel for indicating the caster of said steerable wheel,

first indicating wheel interlockable means carried at a fixed position on said camber indicating wheel,

second indicating wheel interlockable means carried at a fixed position on said caster indicating wheel, and

said first and second interlockable means being movable into mutual interlocking relationship only when said indicating wheels are in one relative angular position wherein said fixed positions are mutually adjacent.

4,114,284

SACHETS PARTICULARLY FOR USE IN CLOTHES DRIERS

Rudolf Weber, Dusseldorf-Holthausen; Winfried Pochandke, Dusseldorf-Garath, and Karl Schwadtke, Opladen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

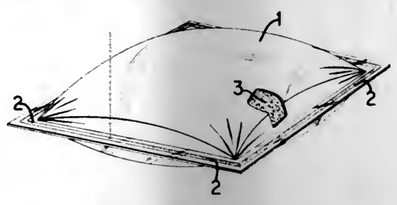
Filed Jan. 25, 1977, Ser. No. 762,254

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1976, 2603823

Int. Cl.[2] F26B *7/00*

U.S. Cl. 34—12 **9 Claims**

1. The method of drying and scenting damp washed laundry consisting of mechanically tumbling the same in an enclosed zone while passing hot air therethrough at a temperature of from 35° C. to 100° C. for a time sufficient to dry the same in the presence of a sachet consisting of a closed packet of a semi-permeable-to-gas polyethylene film having a greater permeability to gas at temperatures in the range of 35° C. to 100° C., than lower temperatures, containing an odor-producing composition of a fragrant nature absorbed on an inert absorbent carrier, and thereafter cooling said hot dry and scented laundry.



4,114,285

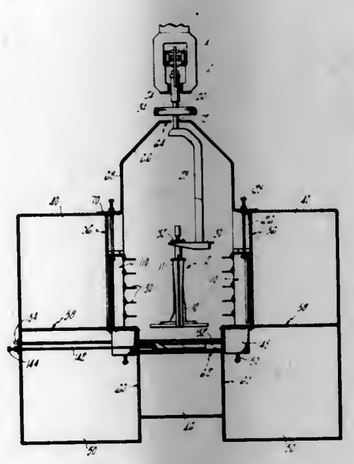
METHOD AND APPARATUS FOR DRYING INVESTMENT CASTING MOLDS

Carlton E. Cruff, Manchester, Conn., and William E. Harrison, Royal Oak, Mich., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 9, 1976, Ser. No. 713,025

Int. Cl.[2] F26B *3/04*

U.S. Cl. 34—29 **13 Claims**



1. In the formation of investment casting molds, a method for drying a layer of ceramic slurry which has been applied to patterns of the article to be cast comprising the steps of:

(a) conveying the coated patterns through a series of individual drying stations;

(b) directing drying air of controlled quality, including controlled wet bulb temperature, dry bulb temperature and velocity, across the patterns at a sufficient number of stations to effect drying including:

(1) initially employing drying air of a quality especially suited to effect rapid removal of a majority of the moisture from the slurry layer, said drying air having a wet bulb temperature about equal to the initial pattern temperature, a dry bulb temperature at least 10° above the wet bulb temperature and a velocity across the patterns of at least 400 feet per minute, said drying air being employed until harmful increases in pattern temperature are likely to occur as a result of a reduction in the kinetics of moisture removal from the slurry layer; (2) then employing drying air of a different quality to remove the remaining moisture from the layer, the quality of said air being specially adapted to prevent harmful increases in pattern temperature due to the reduced moisture removal kinetics of the layer and differing from that used in initial drying by having, singly or in combination, a reduced wet bulb temperature, reduced dry bulb temperature and increased velocity;

(c) exhausting the drying air in the vicinity of each drying station after said air passes over the coated patterns and before said air adversely affects drying air of controlled quality at other stations.

4,114,286

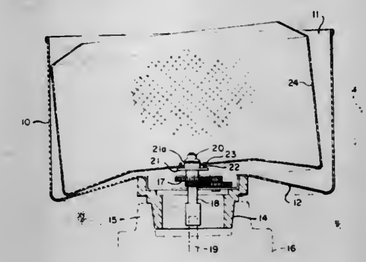
DRYERS FOR LETTUCE AND LIKE SALAD COMPONENTS

Lowell Bingham, 130 Laurelwood Dr., Pittsburgh, Pa. 15237

Filed Mar. 31, 1976, Ser. No. 672,422

Int. Cl.[2] A47J *43/04*; F26B *11/08*

U.S. Cl. 34—58 **5 Claims**



1. In combination a lettuce and like dryer consisting essentially of a conventional blender apparatus having a vertical shaft, an outer imperforate basket having a top opening and a bottom with a generally annular peripheral reservoir collecting moisture discharged from said lettuce, and an axial opening engaging means at the bottom opening engaging the housing of said conventional blender, an inner axial stub shaft connected to gear drive means mounted in said bottom opening, said drive means engaging the drive shaft of said conventional blender and perforate basket means coaxial within said outer basket and freely removable through the top opening adapted to receive lettuce and the like to be dried and to hold the same spaced from moisture collected in the annular reservoir, said perforate basket freely pivotably, and removably engaging said stub shaft to be driven thereby, said stub shaft being provided with a spider having upwardly extending vertical fingers freely engaging openings in the bottom of the perforate inner basket means permitting the basket to tilt relative to said fingers in response to load imbalance to provide a visual imbalance indicator.

4,114,287

ACID RESISTANT FREEZE DRYING TRAP

Douglas S. Fraser, New Paltz, N.Y., assignor to FTS Systems, Inc., Stone Ridge, N.Y.

Filed Jan. 24, 1977, Ser. No. 761,471

Int. Cl.[2] F26B *13/30*; B01D *5/00*

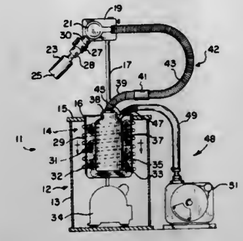
U.S. Cl. 34—92 **11 Claims**

9. For use in a freeze drying system, a vacuum condenser including:

a pot;

a condensing trap having a condensing surface, said condensing trap being removably disposed within said pot; and,

a plurality of randomly disposed surfaces of a highly thermally conductive material formed in a mesh for transferring thermal energy between said pot and said condensing surface.



4,114,288

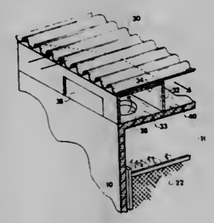
BULK CURE TOBACCO BARN WITH IMPROVEMENTS IN CONSTRUCTION FOR OPTIMIZING HEATING EFFICIENCY

Joe W. Fowler, Iron Works Rd., Rte. 2, Box 39, Reidsville, N.C. 27320

Filed Oct. 14, 1976, Ser. No. 732,481

Int. Cl.[2] F26B *19/00*

U.S. Cl. 34—93 **12 Claims**



1. An apparatus for the bulk curing of tobacco by means of hot air which is circulated through the tobacco leaves to remove the moisture therefrom comprising:

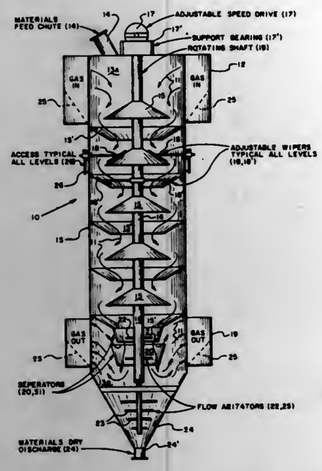
(a) a substantially air tight, insulated curing chamber having a furnace chamber positioned separate from, but adjacent one end thereof, a furnace therein, and a heated air ingress from said furnace chamber to said curing chamber, said furnace chamber being otherwise isolated from said curing chamber, and a means for supporting the tobacco in said curing chamber with an air space above and below;

(b) outlet means for said curing chamber through which a portion of the air from inside said chamber is exhausted;

(c) a fresh air inlet means communicating with said furnace through which fresh, generally drier air is brought for treatment by said furnace before introduction as a replacement for the air exhausted from said chamber; and

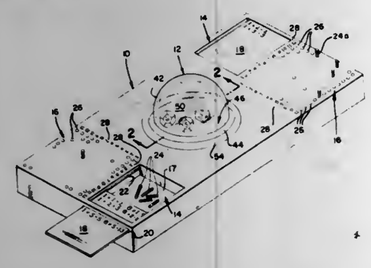
(d) heat exchange means connecting said fresh air inlet and said furnace, and including a first air passage between said fresh air inlet means and said furnace and at least one second air passage between said outlet means and the atmosphere through which said exhaust air passes, said first and second air passages lying adjacent each other and separated by a heat conducting material having substantially high heat transfer properties.

4,114,289
DRYER SYSTEM
William Paul Boulet, 4945 St. Roch Ave., New Orleans, La. 70122
Division of Ser. No. 549,945, Feb. 14, 1975, Pat. No. 3,976,018. This application Jun. 29, 1976, Ser. No. 700,809
Int. Cl.[2] F26B *17/12*
U.S. Cl. 34—173 **8 Claims**



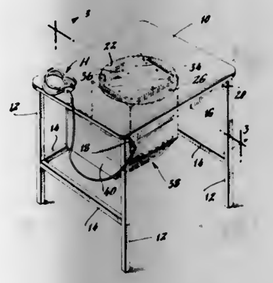
1. A vertical dryer system for solid materials comprising:
an elongated, at least generally vertically disposed, hot gas/materials interaction drying chamber;
a gas inlet at one end of said chamber and a gas outlet at the other end of said chamber, structural conduction means for conducting the hot gases being conducted through the length of said chamber from said gas inlet to said gas outlet in at least generally uniform, evenly distributed, non-vortex flow; and
a solid "wet" materials inlet at the top of said chamber and a solid "dry" materials outlet at the bottom of said chamber, said solid materials falling through said chamber at least partially under the influence of gravity from said materials inlet to said materials outlet, said hot gases and said solid materials intermixing together in said chamber, drying said solid materials.

4,114,290
ARITHMETIC DICE GAME
James B. Cooper, 627 Main, Apt. A, Vallejo, Calif. 94590
Filed Jul. 26, 1976, Ser. No. 708,841
Int. Cl.[2] G09B *19/02*
U.S. Cl. 35—31 R **4 Claims**



1. An improved game device for aiding in the learning of certain arithmetic tables comprising:
a. a game board having at least two dice with faces having numeric indicia on said faces, and an additional die having at least one arithmetic operant from the group of add, subtract and multiply,
b. means mounted on said game board for containing and reorienting said dice comprising a transparent hemispherical shell, a leaf spring over which said shell is mounted, the shell and leaf spring defining an enclosure within which said dice are contained, said leaf spring being abruptly deformable by pressing and releasing said shell, wherein the orientation of said dice on said support surface are changed,
c. a plurality of holes in a portion of said game board uniformly arranged in a defined scoring field wherein said holes are arranged in rows and columns, said rows and columns each being identified by sequential numerical indicia,
d. a plurality of associated pegs, said pegs being constructed for placement in said holes for scoring indicia, and,
e. receptacle means on said game board for storing said plurality of associated pegs.

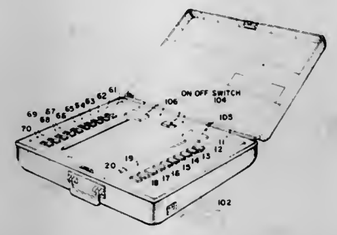
4,114,291
TABLE WITH INTEGRAL PROJECTOR
Herman P. Taub, Westport, Conn., assignor to Mediax, Inc., Westport, Conn.
Filed Apr. 6, 1977, Ser. No. 785,199
Int. Cl.[2] G09B *11/00*
U.S. Cl. 35—36 **8 Claims**



1. In a table for use in teaching motor skills including a top and supporting legs, the improvement which comprises: a disk insert in said top rotatable relative thereto about an axis normal to said top, said insert having a translucent portion therein; means mounted below said top for supporting an optical projector positioned to direct an image onto said translucent portion, said projector support means being rotatable with said disk insert relative to said top; and means for retaining a worksheet on the upper surface of said translucent portion in registry with said image.

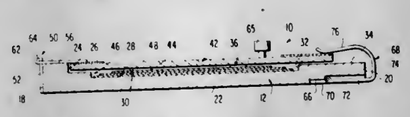
4,114,292
MATCH UP GAME
Stanley E. Smith, Gladwin, Mich., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 26, 1977, Ser. No. 827,863
Int. Cl.[2] G09B *7/10*
U.S. Cl. 35—9 B **1 Claim**

1. A match up game for answering questions from multiple choice answers and indicating the correctness and incorrectness of the answers, said match up game comprising
a list of questions and multiple choice answers for each of the questions, the questions being numbered to distinguish them from each other and the answers being numbered to distinguish them from each other;
a plurality of rotary switches each having a plurality of electrical contacts and a rotary switch arm, each of the rotary switches being set with its switch arm in electrical contact with a selected one of its electrical contacts in accordance with the correct answer to a corresponding question;
a plurality of question switches numbered in correspondence with the question, each switch having a first contact electrically connected to one of the electrical contacts of each of the rotary switches and a second contact;
a plurality of answer switches numbered in correspondence with the answers each having a first center electrical contact electrically connected to the rotary switch arm of a corresponding one of the rotary switches, a first electrical contact and a second electrical contact;
a source of electrical energy having a first polarity terminal electrically connected in common to the second contacts of the question switches and a second polarity terminal;



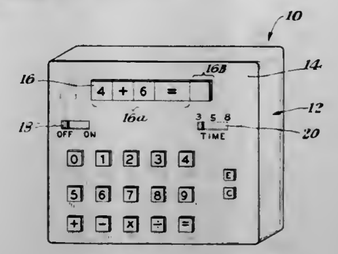
a green lamp having one terminal electrically connected to the second polarity terminal of the source of electrical energy and another terminal electrically connected in common to the second contacts of the answer switches; and
a red lamp having one terminal electrically connected to the second polarity terminal of the source of electrical energy and another terminal electrically connected in common to the first contacts of the answer switches whereby when the correct answer is selected via the corresponding answer switch the green light is energized and when an incorrect answer is selected the red light is energized.

4,114,293
FRAME FOR FACIAL IDENTIFICATION SYSTEM WITH COMPONENT RESERVOIR
William T. Quinn, III, 681 Park Ave., Freehold, N.J. 07728
Filed Sep. 9, 1977, Ser. No. 832,045
Int. Cl.[2] G09B *1/30*
U.S. Cl. 35—28 **3 Claims**



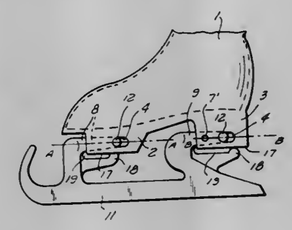
1. In a facial identification system comprising a composite of facial features interrelated to form a representation of a subject, the composite being made up of changeable individual feature component segments which partially overlap one another in irregular layered fashion, a holder for the assembled, partially overlapped segments comprising:
a base member having a planar lower surface, side edges, top and bottom edges, and upper surfaces;
said upper surfaces of said base member including an elevated hinge ledge adjacent one of said side edges, a depressed reservoir surface of a depth and extent to accommodate said assembled, partially overlapped segments, and a cover rim support surface of a height intermediate that of the hinge ledge and the reservoir;
a transparent cover plate moveably mounted for disposition over the central holder surface, and bearing against the cover rim support surface; and
releasable clamp means for maintaining said cover plate in position.

4,114,294
ARITHMETIC TEACHING DEVICE
Melvin Marmer, 10531 NW. 24th Ct., Sunrise, Fla. 33322
Filed Apr. 7, 1975, Ser. No. 565,669
Int. Cl.[2] G09B *9/00, 19/02*
U.S. Cl. 35—31 C **1 Claim**



1. A teaching device for teaching the solution to arithmetic problems comprising:
an electronic arithmetic calculating means;
a keyboard having a plurality of numerical keys and operatives connected to said arithmetic calculating means for formulating arithmetical problems;
a numerical indicia display panel having a first display portion and a second display portion, said first display portion being connected to and actuated by said keyboard for displaying particular numerals and the operative of a particular arithmetic problem, said second display portion disposed adjacent said first display portion;
means for actuating said arithmetic calculating means for solving arithmetic problems coupled to said keyboard; and
an adjustable, numerical indicia time delay circuit connected between said arithmetic calculating means and said second display portion for delaying the display of the second display portion representative of an answer received from the arithmetic calculating means.

4,114,295
CONVERTIBLE SPORTS SHOE
Hans-Joachim Schaefer, Gymnasiumstr. 7, D-6380 Bad Homburg, Fed. Rep. of Germany
Filed May 5, 1977, Ser. No. 793,840
Int. Cl.[2] A43B *3/24, 5/04*
U.S. Cl. 36—100 **18 Claims**



1. A shoe sport arrangement, comprising a shoe body having a sole integrally connected to said show body; a plurality of different sports devices, each adapted for use in a different sport, and means for interchangeable mounting a selected one of said devices on said sole, including cooperating projections and recesses provided on each of said devices and said sole, respectively, for detachably connecting a selected one of said sport devices to said shoe body, and elongated bores in com-

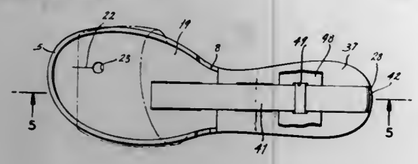
munication with said recesses and each extending transversely of said recesses, said projections being partly extendable into said bores so as to permit dislodging of the sports devices by urging the projections lengthwise of the respective recesses by applying pressure on the recesses through the bores and in direction lengthwise of the sole.

4,114,296

INTERCHANGEABLE SANDAL

Gardner M. Smith, 9027 Eager Rd., St. Louis County, Mo. 63144

Filed Jun. 6, 1977, Ser. No. 803,658
Int. Cl.² A43B *3/24, 13/08, 13/38, 3/12*
U.S. Cl. 36—101 **11 Claims**



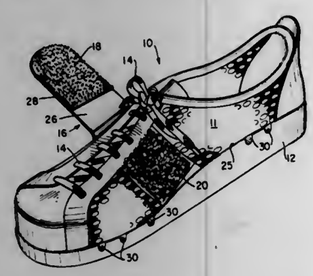
1. An article of footwear comprising an outsole of unitary molded construction having a forward portion and a rearward heel portion, there being a transversely extending, upwardly opening depression between said forward and rearward outsole portions constituting a zone of flexure, said depression comprising transversely extending first and second inclined surfaces, and upper-defining means detachably mounted on said outsole.

4,114,297

CINCHING CLOSURE

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,551
Int. Cl.² A43B *11/00*
U.S. Cl. 36—50 **1 Claim**



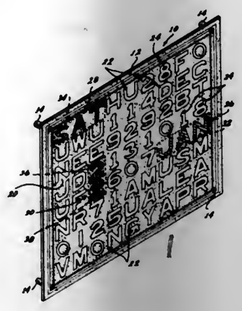
1. Athletic footwear with an improved closure, comprising
(a) a unit bottom;
(b) an upper adhered to said unit bottom, said upper having a laceable closing portion;
(c) a closure cinching strap having one end connected to said upper and a first fastening tape means secured to its free end;
(d) said connected end of said cinching strap extending from instep portions of said upper;
(e) said cinching strap being sandwiched between said upper and said bottom in the area of the arch;
(f) said cinching strap being stitched directly to said upper adjacent the arch;
(g) anchoring fastening tape means on said upper at the side opposite to said connected end;
(h) said first fastening tape means and said anchoring fastening means being hooked and looped "Velcro"-type strips.

4,114,298

PERPETUAL CALENDAR

Robert L. Sandelman, 2112 E. Hillhaven Dr., Brea, Calif. 92621

Filed May 2, 1977, Ser. No. 792,855
Int. Cl.² G09D *3/00*
U.S. Cl. 40—110 **9 Claims**



1. A perpetual calendar comprising:
a sheet of substantially opaque material having a predetermined matrix arrangement of transparent letters and numerals thereon for predetermined random horizontal and vertical display of abbreviations for each month of the year and the name of each day of the week defined within the matrix by successive groups of said letters and each numerical day of the month from one to thirty-one being defined within the matrix by a single numeral or two successive numerals;
a first piece of substantially opaque material of a color contrasting to said opaque sheet and having means whereby it can be affixed to said sheet, and sized to overlie a successive group of letters within the matrix on said sheet defining an abbreviation for a month of the year;
a second piece of substantially opaque material of a color contrasting to said opaque sheet and having means whereby it can be affixed to said sheet, and sized to overlie a successive group of letters within the matrix of said sheet defining an abbreviation for the name of a day of the week;
at least a third piece of substantially opaque material of a color contrastive to said opaque sheet and having means whereby it can be affixed to said sheet, and sized to overlie at least one numeral within the matrix on said sheet; and
wherein at least a portion of the abbreviations for months of the year within the matrix share a letter in the matrix with another abbreviation for a month of the year, at least a portion of the abbreviations for the names of the days of the week share a letter in the matrix with another abbreviation for the name of a day of the week, and at least a portion of the numerals between 10 and 31 share one numeral in the matrix with another numeral between 10 and 31.

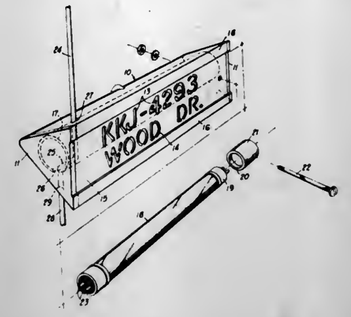
4,114,299

RADIATION POWERED ILLUMINATED DISPLAY

Theodore Brownlee, Apt. K-4, 2200 Godby Rd., College Park, Ga. 30349

Filed Jun. 10, 1976, Ser. No. 694,702
Int. Cl.² G09F *13/00*
U.S. Cl. 40—545 **20 Claims**

1. An illuminating display for an automobile for indicating when a radio transmitter is being used, comprising: an upstanding transmitting antenna, a housing having an indicia display panel, a light source disposed within said housing, means on said housing for securing said housing to said antenna intermediate the ends of said antenna, said housing being supported by said antenna, said housing projecting sidewise from said antenna, said light source being of the type which is energized and lighted by radio frequency radiation, one end of said light source being disposed adjacent to antenna and the other end thereof being spaced from said antenna so that said antenna constitutes the sole means by which said light source is lighted.



4,114,300

PHOTO ALBUM COVER WITH FRAMED INSERTS

Sheldon Holson, Norwalk, N.Y., assignor to The Holson Co., Wilton, Conn.

Filed Feb. 16, 1977, Ser. No. 768,992
Int. Cl.² G09F *1/12*
U.S. Cl. 40—152 **5 Claims**

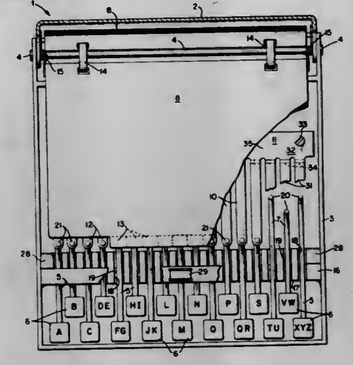
1. In a combination photo album cover and frame engaged therewith, said cover having a principal plane and comprising a plurality of laminated layers, said cover having a through opening extending perpendicular to the plane thereof of given size and configuration, and having outer and inner planar surfaces, the improvement comprising: said frame element including first and second mating frame elements inserted into said opening from first and second sides thereof to mutually engage and present further axial movement thereof with respect to said opening; each of said first and second frame elements having a peripherally disposed inwardly facing surface forming part of a clamping means cooperating with the corresponding surface on the other of said frame elements; whereby upon the positioning of a correspondingly configured photograph within said through opening, and the insertion and engagement of said first and second frame elements, said photograph may be clamped against movement at the peripheral areas thereof between said inwardly facing planar surfaces.

4,114,301

INDEXING DEVICE

Chuzo Mori, Tateishi, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1976, Ser. No. 736,949
Claims priority, application Japan, Oct. 31, 1975, 50-131919
Int. Cl.² B42F *13/00*
U.S. Cl. 40—389 **10 Claims**



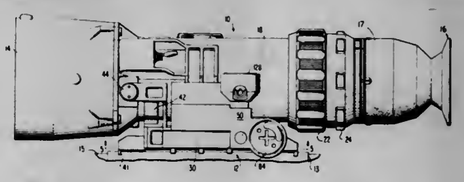
1. An indexing device comprising:
(a) a base,
(b) a lid pivoted to the base,
(c) a plurality of cards pivotally mounted between the lid and the base for selective movement with the lid, each card having a lug at a front edge thereof, the plurality of cards being arranged such that the lugs are serially positioned at specific intervals in step-wise fashion,
(d) a like plurality of levers pivoted to the base at corresponding specific intervals, a first end of each lever having a push-button fixed thereto for downward digital manipulation and the opposite end of each lever extending under the front edge of the cards for upward movement to select a desired number of cards to pivot upward with the lid, and
(e) a plurality of intermediate arms, one intermediate arm positioned between each of the levers and each of the corresponding lugs on the cards for amplifying the motion of the levers, one end of each intermediate arm being fixed to the base, the other end of each intermediate arm being positioned under a selected one of said lugs, and said opposite end of each lever contacting the underside of a corresponding intermediate arm approximately midway between its ends.

4,114,302

MOUNTING ARRANGEMENT FOR A RIFLE SCOPE

Alan Litman, Pittsburgh, Pa., assignor to Smith & Wesson Chemical Company, Inc., Pittsburgh, Pa.

Filed Jun. 13, 1977, Ser. No. 806,248
Int. Cl.² F41G *1/38*
U.S. Cl. 42—1 ST **13 Claims**



1. An arrangement for mounting a rifle scope having a cylindrical body portion on a rifle barrel comprising:

a base including first and second substantially side-by-side coplanar plates, means for pivotally securing said plates one to the other for movement of said first plate relative to said second plate in a generally horizontal direction about a first axis generally normal to the plane containing said plates;

means for moving said first plate relative to said second plate for adjusting the angular relation between said plates;

an elongated mounting foot carried by said second plate on the side thereof remote from said first plate for mounting the scope on top of the rifle barrel, said mounting foot lying substantially centrally below the scope and substantially in the plane of said first and second plates;

a saddle upstanding from said first plate and having an arcuate portion generally concentric with the cylindrical body portion of the scope and located along its underside;

means at the opposite ends of said arcuate portion for pivotally mounting the scope relative to said base for movement about a second axis normal to said first axis and generally parallel to the plane of said base; and

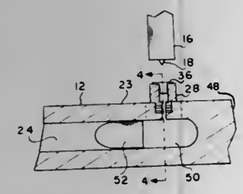
means carried by said first plate for pivoting the scope about said second axis to adjust the scope in elevation relative to said base, said elevation adjustment means being located laterally of the scope and above said base.

4,114,303

MUZZLE LOADING FIREARM

James C. Vaughn, Rte. 4, Box 348-D, Madison, Ala. 35758

Filed Aug. 12, 1977, Ser. No. 823,996
Int. Cl.[2] F41C *27/00*
U.S. Cl. 42—51 **2 Claims**



1. A muzzle loading firearm comprising:

a firearm barrel having a breech region through which there is an opening running from exterior to interior of the barrel, and the interior wall of at least an outer end region of said opening being threaded;

an elongated tube having;

an opening extending longitudinally through said tube, said opening being circular and enlarged in diameter in a first end region when compared with the inner diameter of the opposite, or second, end region of said opening,

said tube terminating in a plane surface at one end adjacent to said first end region, which plane surface lies generally normal to the direction of said opening, and

the outside region adjacent to the opposite, or second, end of said tube being of smaller diameter than said first-named end of said tube, and having an external thread adapted to mate with said interior threaded opening in said barrel;

a shot shell primer comprising:

a tubular body having an outer diameter corresponding to the inner diameter of said first end region of said elongated tube,

an explosive charge contained within said tubular body,

a generally flat, circular end member closing one end of said tubular body and extending radially outward from said tubular body to form a flange, and said end member including a central membrane adapted to communicate a firing force to said explosive charge when struck, and

said tubular body is positioned within said first end region of said elongated tube with said flange resting against said plane surface of said elongated tube; and

spring loaded hammer means supported by said barrel, and including a protrusion for applying a small area force to said central membrane of said shot shell primer;

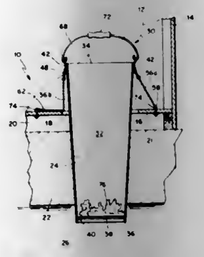
whereby, when operated, said hammer means provides a force which is communicated through said membrane to ignite said explosive charge within said elongated tube, which tube in turn effectively provides a single exit path for the ignited explosive to the interior of the breech of the barrel, enabling a projectile propellant therein to be reliably fired.

4,114,304

DEVICE FOR PREVENTING ICE FISHING HOLES FROM FREEZING CLOSED

Richard C. Hedlund, 142-17th Ave., NE., (Apt. 4), Minneapolis, Minn. 55413

Filed Jan. 27, 1977, Ser. No. 762,976
Int. Cl.[2] A01K *97/00*
U.S. Cl. 43—4 **7 Claims**



1. A device for preventing ice fishing holes from freezing closed comprising a tapered tubular casing of sheet metal having an open upper end enabling combustible materials to be introduced into the interior of said casing and having a slightly smaller lower end by reason of the taper imparted to said casing, a disc integrally secured to the smaller lower end of said casing to form a closed bottom for the casing, a flexible chain attached at one end to said casing adjacent the upper end thereof for maintaining said closed end submerged beneath the surface of a body of water and said open end above the surface of said body of water so that ice forming around the outer surface of said casing intermediate its upper and lower ends assumes the taper of said casing, and a fastening element carried at the other end of said chain, whereby the igniting of combustible material introduced into the interior of said tubular casing produces heat causing thermal expansion of said casing with the consequence that said tubular casing is urged upwardly.

4,114,305

ILLUMINATED FISHING LURE

Andrew M. Wohlert, St. Charles, and James Haruch, Clarendon Hills, both of Ill., assignors to Riverbank Laboratories, Inc., Geneva, Ill.

Filed Nov. 10, 1976, Ser. No. 740,425
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—17.6 **6 Claims**

1. A fish lure, comprising

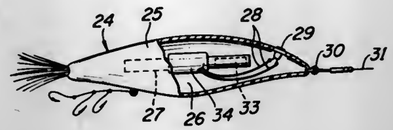
a body,

a pulse generator hermetically sealed within said body,

said pulse generator including a non-magnetic tube closed at both ends, a coil of insulated, conductive wire wound on an intermediate section of said tube, and an elongated, axially polarized, permanent magnet slidably disposed in said tube,

an electric lamp mounted to said body in a position to be visible from the exterior of said body

conductive means electrically connecting said lamp across said coil, and



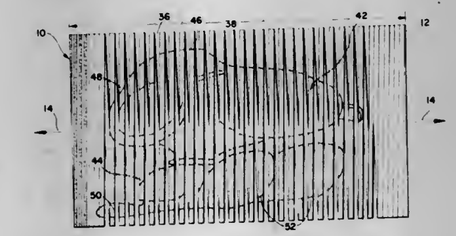
means for attaching a fishing line to said body so that a longitudinal jerk of said line causes said magnet to move through said coil to generate a pulse of current which causes said lamp to emit a flash of light.

4,114,306

SPRING TOY

Lester V. Molenaar, Box 777, West Highway 40, Willmar, Minn. 56201

Filed Oct. 18, 1976, Ser. No. 733,199
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—1 R **43 Claims**



41. A spring toy comprising: an elongated flexible band having an outside edge surface extended generally parallel in direction of the band thickness, said band including first and second portions of contrasting colors, each portion spanning the length and width of the band the spanning part of the band thickness, said band disposed about a central axis to form a coil having a plurality of repetitive turns substantially equal in size and aligned with one another, wherein the outside edge surface is parallel to the central axis, and the visual means on portions of the outside edge surfaces of at least some of the turns to provide a normal visual configuration, said configuration being distorted with respect to its normal configuration by selectively bending the band.

4,114,307

ADJUSTABLE CONFIGURATION TOY

Arthur S. Liebeskind, 5905 Bonnie View Dr., Baltimore, Md. 21219

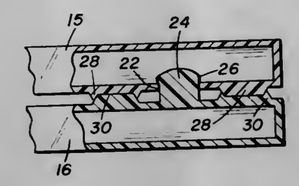
Filed Feb. 4, 1977, Ser. No. 765,835
Int. Cl.[2] A63H *33/10*
U.S. Cl. 46—1 R **2 Claims**

1. An adjustable configuration toy, having a plurality of identical module units that are movably and removably coupled to each other sequentially, one after the other, in a manner so that each module unit is rotatable about the point of coupling with the next sequential unit, and capable of being disassembled into the individual identical module units, and comprising:

a plurality of identical module units, each sequentially coupled to each other at the interface of the side of one unit with the side of the next sequential unit, said coupling being near the end of the interfacing sides;

a plurality of apertures, one said aperture in each said identical module unit, said aperture located at the center of the point of coupling of one unit to the next sequential module unit, said aperture serving as the female element of said coupling;

a plurality of pins, one said pin in each said identical module unit, said pin being integral with side of each said identical module unit and located at the center of the point of coupling of one module unit to the next sequential module unit, said pin serving as the male element of said coupling and at assembly being opposite said female element of coupling of next adjacent sequential module unit as the sides of two sequential module units interface, said male element and said female element of coupling of each identical module unit being located at opposite ends and on opposite side faces of said identical module unit;



a plurality of spaced detent ridges radially surrounding the periphery of each said female element and each said male element of said coupling, said detent ridges being integral with the identical module unit on which they occur, the number of spaced detent ridges radially surrounding each said female element and each said male element of said coupling being equal and the same, said detent ridges of said female element engaging said detent ridges of said male element at assembly and when an identical module unit is rotated about the center of coupling;

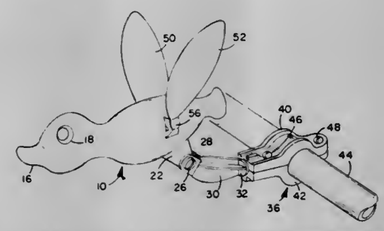
a locking lip on the outboard end of each said pin that is the male element of said coupling to secure the module units together when the male element of the coupling is inserted in the female element of the coupling for assembly of the identical module units in a sequential manner, said locking lip being capable of withdrawal for disassembly of the adjustable configuration toy.

4,114,308

AERODYNAMICALLY DRIVEN TOY

Charles K. Grieder, 727 S. Lyon #107, Santa Ana, Calif. 92705

Filed Jul. 27, 1977, Ser. No. 819,351
Int. Cl.[2] A63H *33/40*
U.S. Cl. 46—53 **6 Claims**



1. A bird having a body and moving wings attached thereto which can be driven by relative wind passing over said bird comprising:

a bird body;

means attached to said body for mounting it to a vehicle;

wings adapted for connection to said body having appendages that are pivotally mounted to said body to provide upward and downward flapping movement with ex-

panded openings at said pivotal mounting in said wings to allow the wings to rotate about their axes; and,

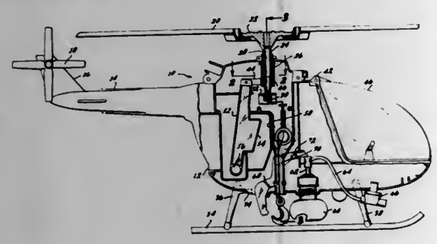
lever means in attached cooperative relationship with said appendages for providing a canting movement of said wing after it moves through its path of movement in one direction to allow relative wind to move the wing in the other direction by virtue of the canting action turning the element to allow for it to be driven by the relative wind for opposite movement from the path of moevement it has moved through.

4,114,309

TOY HELICOPTER

Derek John Gay, Rancho Palos Verdes, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 13, 1976, Ser. No. 749,737
Int. Cl.[2] A63H *27/12*
U.S. Cl. 46—75 **6 Claims**



1. In a toy helicopter, the combination comprising:

a hollow body member configured to simulate a helicopter and having a main body portion and a tail section extending outwardly therefrom along a given line;

a shaft having simulated helicopter rotor blades secured to one end thereof;

bearing means including a first bearing extending through an aperature in the upper surface of said main body portion and a second bearing within said main body portion for rotatably receiving said shaft for rotation about an axis transverse to said given line;

a reel portion on said shaft intermediate said first and second bearings;

a spring clutch including a flat constant torque coil spring encircling said reel portion, the surface of said coil spring adjacent said reel portion being adapted to frictionally engage said reel portion only during unwinding of said coil spring, said coil spring having a free end;

an elongate generally bar-shaped trigger member pivotally mounted at one end thereof within said main body portion, the other end thereof being secured to the free end of said coil spring, said trigger member having an enlarged trigger portion; and

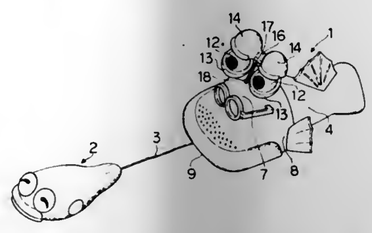
a pair of aligned openings in said main body portion, said openings and the surface of the main body portion immediately beneath the tail section being so configured and so positioned to form a pistol grip to permit access to and actuation of said trigger member by holding the toy by the pistol grip so formed, manual pivoting of said trigger member in a first direction to unwind said coil spring causing said spring to frictionally engage said reel portion to thereby rotate said rotor blades in a given direction, said trigger member being pivoted in the opposite direction under the force of said coil spring rewinding.

4,114,310

SELF-POWERED TOY ANIMAL WITH OPENABLE AND CLOSABLE EYES

Shigeru Saitoh, No. 6-4, 2-chome, Kuramae, Taito-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 706,525, Jul. 19, 1976, Pat. No. 4,068,401. This application Aug. 18, 1976, Ser. No. 715,323
Int. Cl.[2] A63H *11/00*
U.S. Cl. 46—104 **7 Claims**



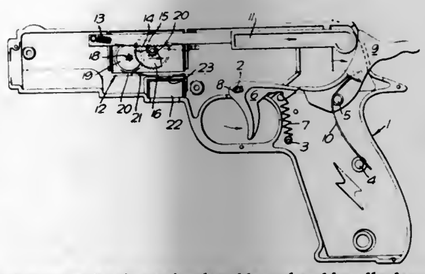
1. A toy comprising a relatively large toy animal having a hollow body part, a face part movable on said body part and defining therewith a mouth movable between open and shut positions, and at least one eye having a lid displaceable between an open position exposing said eye and a closed position covering said eye; a relatively small toy animal fittable into the interior of said body part; a tether passing through said mouth and having one end attached to one of said animals and an opposite end, drive means in the other of said animals attached to said opposite end for winding up said tether and thereby pulling said small animal into said large animal through said mouth and including a displacement element for travel of said other animal, during winding up of said tether, whereby said large animal appears to pursue and catch said small animal as said tether is wound up; and means in said large animal connected to said lid and operative for displacing said lid into said closed position in response to movement of said mouth to said open position thereof.

4,114,311

TOY GUNS

Thomas Chow, Kowloon, Hong Kong, assignor to Arco Industries Ltd., Hong Kong

Filed Mar. 29, 1977, Ser. No. 782,363
Claims priority, application United Kingdom, Aug. 27, 1976, 35778/76
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—192 **7 Claims**



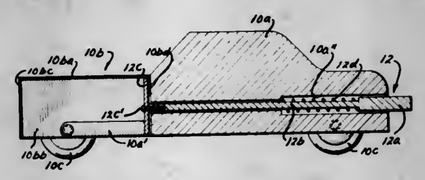
1. A toy gun having a simulated barrel and handle depending from one end thereof, a trigger pivotally supported beneath said barrel adjacent the handle and movable between forward and rearward positions, a spring connected to said handle and normally urging said trigger to its forward position, a hammer pivotally supported by said one end of said barrel and having an inner end engageable releasably by said trigger to actuate said hammer rearwardly, and a tensioning spring engaging said hammer and normally urging the same toward the forward end of said barrel, in combination with a sound-producing means mounted within said barrel and resembling the sound of a ricocheting bullet and means to actuate the same comprising an elongated slide supported within said barrel for longitudinal movement therein between and engageable with said hammer and sound-producing means, and a tension spring engaging said elongated slide and normally urging the same rearwardly, whereby when said trigger is pulled rearwardly it initially moves said hammer rearwardly against the tension of said hammer tensioning spring while said tension spring for said slide moves said slide rearwardly and said trigger subsequently disengages said hammer to release it for forward movement by said hammer tensioning spring and thereby moves said slide forwardly to actuate said sound-producing means.

4,114,312

TOY VEHICLE

David V. Hendry, R.R. #1, Box 109, Cochise, Ariz. 85606

Continuation of Ser. No. 543,262, Jan. 23, 1975, abandoned. This application Oct. 18, 1976, Ser. No. 733,293
Int. Cl.[2] A63H *17/26*
U.S. Cl. 46—223 **3 Claims**



1. A toy vehicle comprising a wheel-mounted body, a removable engine hood adapted to be mounted on said body, a spring-urged linearly movable release member mounted within said body for movement in a direction longitudinally of said body, and a positioning plate mounted at one end of said release member, said positioning plate disposed within said removable engine hood and engaging an inner wall thereof to normally clamp said removable engine hood between said positioning plate and said body, and wherein the other end of said release member extends from said body and serves as a manual control for the selective release of said engine hood.

4,114,313

COMBINATION DOLL AND ACCESSORY ARTICLES

Benjamin G. Guerrero, Los Angeles; Gerard K. Leistikow, San Pedro, and Norman E. Sindlinger, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 21, 1977, Ser. No. 761,124
Int. Cl.[2] A63H *13/18*
U.S. Cl. 46—264 **13 Claims**



1. In a toy, the combination comprising:

a doll having a generally hollow head and a body having a neck portion with a neck opening, the outer periphery of said neck portion having a spherically contoured surface for engaging a matingly configured opening in said head to provide a swivel connection;

a weighted mass fixedly mounted within said head;

means mounted in said body adjacent said neck opening for mounting said weighted mass for rotation relative to said neck opening;

means within at least one of said body and head operatively coupled to said mounting means for rotating said head in an orbital path with respect to said body; and

an article adapted to be moved to and fro with respect to a support therefor in response to a shifting weight on said article, said article including means configured for receiving the body of said doll and maintaining it with the head thereof spaced from surfaces of said article for permitting orbital movement of said head for moving said article to and fro in response to said orbital movement.

4,114,314

PROCESS FOR THE PRODUCTION OF THEBAINE

Ali Shafiee; Iraj Lalezari, and Narges Yassa, all of Tehran, Iran, assignors to The Ministry of Science & Higher Education, Tehran, Iran

Filed Feb. 22, 1977, Ser. No. 770,307
Int. Cl.[2] A01G *1/00*
U.S. Cl. 47—85 **7 Claims**

1. A process for the production of thebaine which comprises the steps of:

(i) sterilising the surface of seed heads from Papaver bracteatum Lindl:population Arya II;

(ii) establishing aseptically callus tissue cultures of said seed heads in nutrient media;

(iii) growing said callus tissue cultures in said nutrient media;

(iv) subculturing said callus tissue cultures under aseptic conditions to form subcultures in fresh nutrient media;

(v) growing said subcultures;

(vi) subculturing said subcultures and growing further subcultures therefrom;

(vii) incubating and harvesting said further subcultures;

(viii) extracting the contents of cells grown in said further subcultures and media;

(ix) separating said contents from tissues and media;

(x) bringing said contents into contact with a non-aqueous solvent to form a solvent extract; and

(xi) isolating a thebaine-containing fraction of said solvent extract by chromatographic fractionation.

4,114,315

PROCESS FOR GROWING ALFALFA SPROUTS FROM SEED AND APPARATUS THEREFOR

Pamela A. Rinella, Box 682, Mt. Lemmon, Ariz. 85619

Filed Oct. 5, 1977, Ser. No. 839,409
Int. Cl.[2] A01G *31/02*
U.S. Cl. 47—61 **9 Claims**

1. A process for growing alfalfa sprouts from seed, said process comprising the steps of:

I. germinating the seeds, said step of germinating comprising the steps of:

a. soaking the seeds in a solution of water and bleach;

b. rinsing the soaked seeds;

c. storing the rinsed seeds at a first temperature range;

d. rinsing and draining the stored seeds;

e. storing the rinsed and drained seeds at a second temperature range lower than the first temperature range;

II. growing the alfalfa sprouts from the germinated seeds, said step of growing comprising the steps of:

a. spreading the alfalfa sprouts upon a supporting surface;

b. wetting the spread alfalfa sprouts;

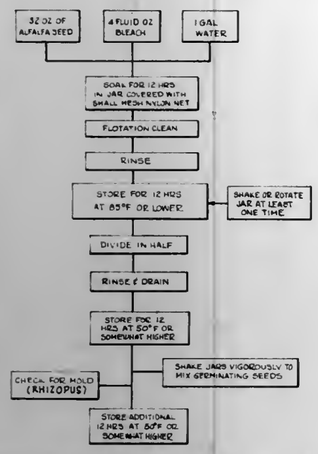
c. covering the wetted alfalfa sprouts to shield them against light without inhibiting a flow of air around and about the covered alfalfa sprouts;

d. storing the alfalfa sprouts at the second temperature range;

e. periodically wetting the stored alfalfa sprouts during said storing step;

f. recovering the stored alfalfa sprouts with light penetrable cover;

g. cyclically transferring the recovered alfalfa sprouts from a dark environment at the second temperature



range to an environment at the first temperature range and having a source of light;

h. periodically wetting the recovered alfalfa sprouts during said step of transferring; and

i. harvesting the alfalfa sprouts.

4,114,316

GROWING PLANTS IN AN AQUARIUM

Merrill Cohen, 3418 Edcrest Rd., Baltimore, Md. 21207

Continuation-in-part of Ser. No. 697,028, Jun. 7, 1976, Pat. No. 4,074,997. This application Nov. 11, 1977, Ser. No. 850,645

Int. Cl.² A01G *31/02*; A01K *63/00*

U.S. Cl. 47—64 **6 Claims**

1. A process which comprises rooting an aquatic plant in integral, non-floating, plant-food-enriched, growth supporting and plant-holding solid substrate submerged in water and wherein the substrate comprises a water-cured hydrophilic-polyurethane-prepolymer foam composition having sufficient filler means to render the composition denser than water and in which components are substantially-permanently bonded together by the water-cured foam even when the solid substrate is submerged in water over an extended period of time.

4,114,317

WINDOW AND DOOR CONSTRUCTION

Richard K. Crawley, Box 29, North Star Rte., Dover, Ark. 72837

Filed Dec. 20, 1976, Ser. No. 752,106

Int. Cl.² E05D *15/10*

U.S. Cl. 49—209 **28 Claims**

1. In a window and door construction, an improvement comprising:

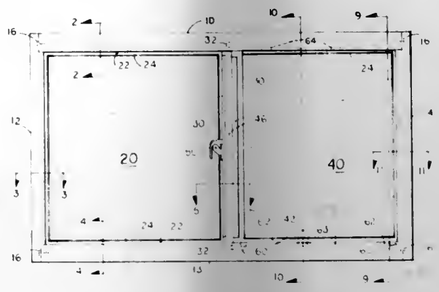
(a) an outside frame structure having upper head and lower sill horizontal members, and vertical end jamb members, said outside frame structure defining adjacent first and second interior peripheral channels therein;

(b) a vertical central mullion interlocker member located within the head and sill horizontal members first interior peripheral channel intermediate the end jamb members defining a first and second opening in said outside frame structure, said mullion interlocker having adjacent first and second lengthwise channels therein;

(c) a fixed window panel interior to said outside frame structure first opening, said fixed window panel in air and watertight sealed relationship to said first interior peripheral channel and said mullion interlocker first lengthwise channel;

(d) a vent window panel interiorly to said outside frame structure second interior peripheral channel, said vent window panel movable upon sill track means attached to said sill horizontal member;

(e) sealing means attached, in part, to said outside frame structure and said vertical mullion interlocker member, said sealing means engaging and forcibly urging said movable vent window panel against said outside frame structure second interior peripheral channel wall and said mullion interlocker in an airtight and watertight configuration when said panel is in position closing said outside frame structure second opening; and



(f) vent window seal actuating latch means interposed said movable vent window panel and said vertical mullion interlocker member, said latch means forcibly urging said movable vent window panel to a final closed sealed position, locking said vent window panel, and forcibly unsealing and opening said vent window panel.

4,114,318

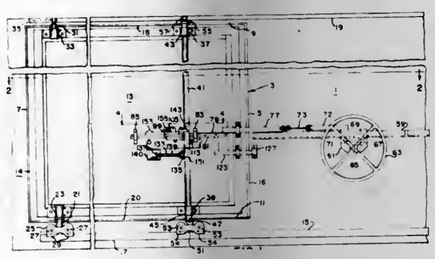
PLUG DOOR OPERATING AND MOVING MECHANISM

Dale L. Brindle, Chambersburg, PA, assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Aug. 26, 1977, Ser. No. 827,850

Int. Cl.² E05D *15/10*; E05F *11/00*

U.S. Cl. 49—215 **18 Claims**



1. In combination, a wall having a door opening, a plug door for said opening, means mounting said door for movement transversely of the wall between positions within and outside of said opening and longitudinally of the wall out of and into longitudinal registry with said opening, said mounting means including a track mounted on the wall generally in parallel relation therewith, a carriage riding on said track structure fixed against movement longitudinally of said door including an upright shaft rotatably journaled on the door and having a crank pivotally mounted on said carriage and rotatable by said shaft between a door closed position angular and a door open position generally parallel with respect to said wall, means for selectively rotating said shaft between door open and door closed positions, and resilient rotation-resisting means mounted on said door and engaging said shaft for maintaining said shaft in the selected door-closed and door-open rotational positions.

4,114,319

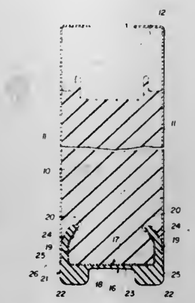
BOTTOM SWEEP AND RAIL UNIT FOR FOAM-FILLED DOORS

Bernard C. Governale, Duluth, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

Filed Dec. 23, 1977, Ser. No. 863,908

Int. Cl.² E06B *7/16*

U.S. Cl. 49—488 **5 Claims**



1. A unitized prefabricated bottom rail and bottom sweep assembly for foam-filled doors having metal skins thereon, said assembly comprising a channel cross section sheet metal bottom rail of lesser width than the thickness of a door between the metal skins which receive said assembly, and a bottom sweep of elastic material molded on the exterior surfaces only of the channel cross section sheet metal bottom rail in permanently bonded relation thereto, said unitized assembly adapted for snug insertion in the bottom of a foam-filled door between the metal skins thereof in lieu of the customary wood bottom rail and separately attached sweep, the entire interior surface of the sheet metal bottom rail being exposed for direct contact with foam material in said door between the metal skins of the door.

4,114,320

DOOR SEALS

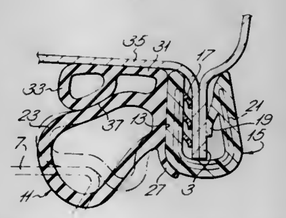
Ronald Ernest Pullan, Leeds, England, assignor to Schlegel(UK) Limited, Leeds, England

Filed Aug. 3, 1977, Ser. No. 821,526

Claims priority, application United Kingdom, Aug. 31, 1976, 36061/76

Int. Cl.² E06B *7/16*

U.S. Cl. 49—491 **10 Claims**



1. A seal for sealing the gap between a door frame and edge of a door on a motor vehicle, said seal being extruded from resiliently deformable plastics or rubber material and comprising a tubular portion, one face portion of which is adapted to be connected to said door frame, and another face portion remote from said one face portion which, in use, is abutted by and deformed by the edge of said door when the latter is closed, and a deforming member having one end portion connected to said tubular portion, and its opposite free end portion normally spaced from said tubular portion and extending toward said door frame when said seal is in position to be mounted on said door frame, said deforming member further having means for engaging said door frame when said seal is mounted on said door frame whereby said free end portion is deflected by said door frame into engagement with a part of said tubular portion to deform the latter and change its cross-section, thereby altering its sealing characteristics.

4,114,321

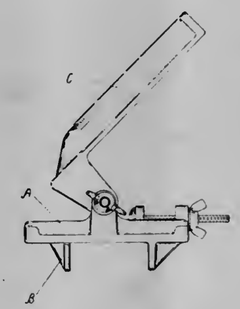
POOL HAND CLEANING DEVICE HOLDER

Clarence W. Jarvis, 6429 Walnut Ave., Orangevale, Calif. 95662, and Richard A. Wenrich, 3036 Q St., North Highlands, Calif. 95660

Filed Jul. 28, 1977, Ser. No. 819,949

Int. Cl.² A46B *17/02*; E04H *3/20*

U.S. Cl. 51—205 R **1 Claim**



1. A pool cleaning device holder comprising a combination of a rectangular base means, a slide clamp means, and a pole adapter means wherein the rectangular base means consists of two side bar means with a guide means transversing the length of the inside surfaces, and an end bar means at one end, and a guide flange means at the other end, whereby the side bar means and the end bar and guide flange form a rectangular opening in the center of the rectangular base means serving to receive the slide clamp means, which means is inserted therein, and whereby a clamp jaw means protruded downward from one end of the slide clamp means, with the top surfaces of the ends of the clamp jaw means abutting the bottom surface of the guide means which is incorporated in the side bar means of the rectangular base means, and four lug means protruding outward, two from each side of the top surface of the slide clamp means, whereby said lug means rest on the top surface of the guide means, allowing the slide clamp means to slide back and forth on the guide means and within the said rectangular opening formed by the side bar means and the ends of the rectangular base means, which rectangular base means has incorporated at one end thereof a second and stationary clamp jaw means protruding downward therefrom, said latter means opposing the clamp jaw means protruding downward from the slide clamp means, allowing the combination of the two said clamp jaw means to firmly hold a rectangular object of various sizes between them, a bolt and nut means, for moving the two jaw means towards each other, that runs through two guide flange means, with holes therein, of which one guide flange means protrudes upward from the clamp jaw means end of the rectangular base means, and the other guide flange means protrudes upward on the end of the slide clamp means which is opposite the end containing its clamp jaw means, and where further, the rectangular base means containing the slide clamp means being attached to a pole adapter means through the use of two attachment flange means with holes therein, which means protrude upward from the center of the side bar means of the rectangular base means, and two additional attachment flange means with holes therein protrude downward from a rectangu-

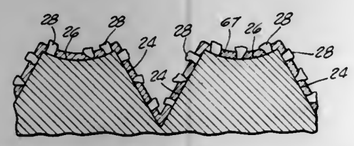
lar plate means at one end of the pole adapter means, said combination of attachment flange means being held together through the use of bolt and nut means extended therethrough, whereby the rectangular base means is held firmly in place on the pole adapter means and further, can be set at various angles thereto and held firmly in place at the proper angle for use thereon, and whereby extending outward from the rectangular plate means and forming the remainder of the pole adapter means is an elongated concave holding arm containing a concave inside surface which allows the holding arm, and thereby the pole adapter means, to be attached to a one and one-quarter inch commercial swimming pool service pole, and where said holding arm has therein and transversing the length thereof, a slot which is adapted to receive attachment bolts which are a part of the said commercial swimming pool service pole, whereby the complete assembly of the rectangular base means containing the slide clamp means with both means attached to the pole adapter means, are all able to be firmly held in place on the said commercial swimming pool service pole.

4,114,322

ABRASIVE MEMBER

Harold Jack Greenspan, 5334 Holt Ave., Los Angeles, Calif. 90056

Filed Aug. 2, 1977, Ser. No. 821,232
Int. Cl.² B24D *5/02, 7/02*
U.S. Cl. 51—206 R **8 Claims**



1. An abrasive member comprising:
(a) a rotatable wheel-shaped base member having a rim and a hub, said member being adapted to rotate about a transversely extending axis;
(b) a wearable working surface provided on said rim, said working surface comprising a multiplicity of ridges extending thereacross at an acute angle of about 30° with respect to a line parallel to the axis of rotation of said base member; said ridges having sloping side walls terminating in a concave upper surface, and;
(c) a multiplicity of diamond particles bonded to said side walls and upper surfaces of said ridges so that at least portions thereof extend outwardly therefrom.

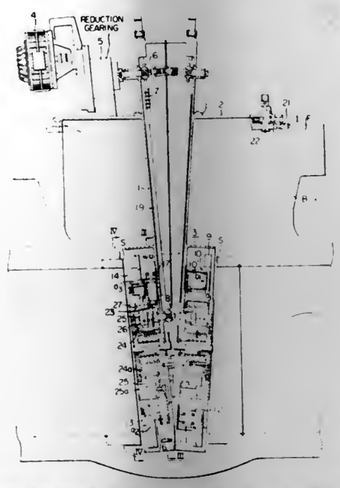
4,114,323

DEVICE FOR AUTOMATICALLY LAPPING WEDGE-GATE VALVE SEAT

Masami Okano, and Shozo Yoshitomi, both of Kita-kyushu, Japan, assignors to Okano Valve Seizo Kabushiki Kaisha, Kita-kyushu, Japan

Filed Oct. 4, 1976, Ser. No. 729,603
Claims priority, application Japan, Oct. 13, 1975, 50-122419
Int. Cl.² B24B *19/00*
U.S. Cl. 51—241 VS **2 Claims**

1. A device for automatically lapping a wedge-shaped gate valve seat, comprising, in combination, a main frame having a flange for attaching the lapping device to a valve body of a gate valve having wedge-shaped inlet and outlet valve seats, and a guiding unit extending into the valve body for positioning between and opposed to said pair of valve seats, at least one lapping plate disposed within said guiding unit, driving means within said guiding unit for driving said lapping plate in a combined rotating and eccentric movement relative to the axis of rotation of said lapping plate in said rotating movement, means within said guiding unit for moving said lapping plate in the axial direction of said rotating movement for urging said lapping plate against one of said valve seats, lapping agent feeders in said guiding unit and having operating means for moving said feeders radially and coating a lapping agent on said one valve seat, cleaning wipers in said guiding unit each having a rotatable wiping member and wiping member moving means for interposing said wiping member between said lapping plate and said valve seat, leakage sensors in said guiding



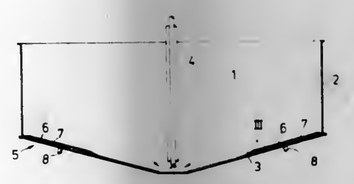
unit and leakage sensor moving means for moving said leakage sensors into compressive contact with said valve seat for automatically sensing whether said one valve seat has been satisfactorily lapped by the utilization of a fluid pressure, and a periscope type observation glass extending through said guiding unit and having an extremity extending to a position adjacent said one valve seat.

4,114,324

SILO FOR BULK MATERIALS WITH FLUIDIZING MEANS

Otmar Link, Büchen-Gotzingen, and Gerhard Nied, Rosenberg, both of Fed. Rep. of Germany, assignors to AZO-Maschinenfabrik Adolf Zimmermann, Fed. Rep. of Germany

Filed Mar. 8, 1977, Ser. No. 775,527
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1976, 2612258
Int. Cl.² E04B *1/345;* E04H *7/22*
U.S. Cl. 52—2 **8 Claims**



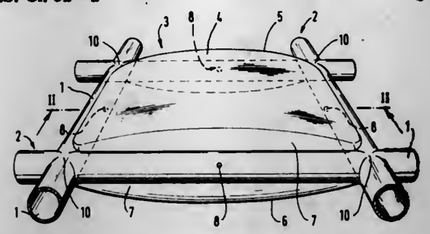
1. Silos for bulk materials, comprising a rigid base and a fluidizing means which comprises an air-pervious floor of a resilient fabric or mesh of natural or artificial fibres arranged above the rigid base, a support surface means holding the said floor in spaced relation relatively to the rigid base and at least one compressed air supply duct opening into the intermediate space between the rigid base and the mesh floor, the support surface means being constituted by a helical wire laid on the rigid base.

4,114,325

INFLATABLE STRUCTURE

Alfred Hochstein, Viersener Strasse 50, Krefeld 1, Fed. Rep. of Germany (4150)

Filed Jul. 21, 1977, Ser. No. 817,732
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 7623114[U]
Int. Cl.² E04B *1/34*
U.S. Cl. 52—2 **8 Claims**



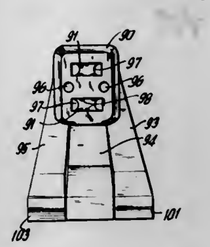
1. An inflatable structure having a plurality of inflatable interconnected unit cells, each unit cell comprising:
at least three hollow inflatable framework tubes lying in the same plane, said hollow inflatable framework tubes integrally connected to each other such that two of said hollow inflatable framework tubes interconnect at each of the corners of said unit cell forming a continuous pathway within the framework tube of each unit cell and each framework tube serving as a framework tube between two adjacent unit cells,
a hollow inflatable cushion fitting within the area defined by the framework tube of each unit cell,
said inflatable cushion abutting against said framework tube, and partially wrapping around the framework tube such that that portion of said inflatable cushion which abuts against said framework tube forms a concave surface which mates against a portion of said framework tube.

4,114,326

FIXTURE HANGING ASSEMBLY

Henry J. Macuga, and Bernard F. Deschamps, both of Ware, Mass., assignors to Eclipse Mfg. Inc., Ware, Mass.

Continuation-in-part of Ser. No. 455,575, Mar. 28, 1974, abandoned. This application Aug. 19, 1976, Ser. No. 715,822
Int. Cl.² E04F *19/00*
U.S. Cl. 52—28 **15 Claims**



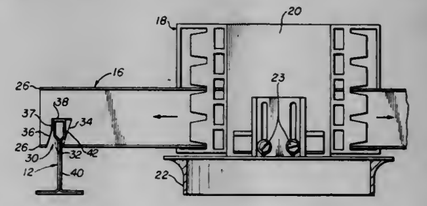
1. In combination with an open grid type suspended ceiling frame construction incorporating ceiling blocks supported by pairs of spaced interconnected inverted T-bars, a fixture hanging support for bridging the space between a pair of adjacent T-bars and including:
(i) an elongated flat hanger strap having free opposite distal end portions; and
(ii) a pair of clips or mounts, each engageable with one of the distal end portions of the hanger strap, said clips or mounts being constructed of flame-resistant plastic and comprising a horizontally extending component in communication with a trio of spaced resilient legs with the pair of outside legs adapted to embrace one side of the T-bar and the intermediate leg being adapted to embrace the opposite side of the T-bar wherein each of the legs terminates at its bottom end in a tapered portion whereby forcing the clip into engagement with the top of the T-bar cooperates with each said tapered portion to automatically urge the legs apart and into proper engaging alignment, wherein said horizontally extending component is provided with a plurality of open-ended pockets adapted to receive said free distal end portion of said hanger strap and wherein each of said pockets is provided with ribs extending lengthwise in the pocket to insure a snug friction fit when said free distal end portion of said flat hanger strap is received.

4,114,327

LIGHT FIXTURE SUPPORT

Arthur C. Williams, 21711 Glenbranch, Spring, Tex. 77373

Filed May 13, 1977, Ser. No. 796,725
Int. Cl.² H05B *33/02;* E04F *19/00*
U.S. Cl. 52—28 **12 Claims**



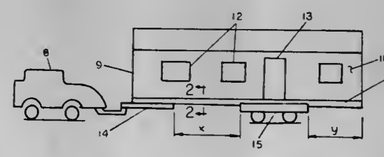
1. A light fixture support for a suspended ceiling, having inverted "T" ceiling members with upstanding portions having an enlarged extremity comprising
at least one support having an integral locking section carrying a slot having an angled entrance portion for angularly receiving the upstanding enlarged portion of said "T" member and a vertical shoulder portion for engaging one side of said "T" member while a first edge of said angled entrance portion of said slot engages the other side of the upstanding enlarged portion of said "T" member for retaining said "T" member within said slot,
said angled entrance portion being further defined by said first edge intersecting an edge of said light fixture support member at an oblique angle and a second edge parallel to said first edge and spaced apart therefrom to admit said enlarged portion of said "T" member and intersecting said verticle shoulder portion, and
means for engaging a light fixture.

4,114,328

PREFABRICATED TRANSPORTABLE BUILDING WITHOUT CONTINUOUS STEEL CHASSIS

Robert Raymond Lawrence, 205 W. Fifth St., Alturas, Calif. 96101

Filed Sep. 13, 1976, Ser. No. 722,882
Int. Cl.² E04B *1/343*
U.S. Cl. 52—79.1 **5 Claims**



1. A prefabricated building comprising an elongated horizontally disposed planar floor structure and vertical exterior

walls extending above said floor a predetermined distance to support a roof structure said roof structure comprising a multitude of parallel roof trusses forming an inclined plane with their top chords and a horizontal plane with their bottom chords, said floor structure comprising a multitude of parallel floor joist or floor trusses covered on their top edges with floor decking said floor structure having a vertical thickness substantially equal to the depth of said floor trusses or floor joist, further comprising,

a. at least one exterior side wall lying parallel to the longitudinal axis of said prefabricated building comprising,

a frame composed of a multitude of vertical elongated studs parallel to each other and lying in a vertical plane said studs connecting to a top plate at their upper ends and to a bottom plate at their lower ends,

sheathing comprising substantially shear resistive material attached to a side of said frame,

means for resisting loads when transporting said prefabricated building, which is devoid of presently customary continuous steel chassis, over the road without over stress of said side wall said means being generally by providing said side wall as a deep girder in a simple span between a building carrier position between afront and rear of said building and a towing "A" frame toward the front of said building and a cantilever span between said building carrier and the rear extremity of said building,

said building carrier being positioned in a fore-aft direction to prevent over stress of said side wall functioning as a deep girder when supporting contributary over the road loading of said side wall and including increasing the length of the building carrier in a fore-aft direction and adjusting its location in a fore-aft direction until neither cantilever span nor simple support spans induce over stress in said side wall girder,

door means positioned in said said wall so that side wall will act as a girder when supporting over the road loading of said side wall and is not structurally weakened, said door means being positioned directly over or as near to directly over, said low level building carrier as practicable,

window means provided in said side wall so that side wall acting as girder when supporting over the road loading is not structurally weakened, said window means being provided by reinforcing and/or minimizing size of said opening as necessary and locating said openings in regions of low shear stress of said side wall functioning as a girder,

said sheathing of said side wall being connected to a rim joist said sheathing being substantially shear resistive,

b. an exterior front end wall of said building said end wall lying perpendicular to the longitudinal axis of said building, comprising,

a frame composed of a multitude of vertical elongated studs parallel to each other and lying in a vertical plane said studs connecting to a top plate at their upper ends and to a bottom plate at their lower ends,

exterior sheathing comprising substantially shear resistive material attached to the exterior side of said frame,

end wall reinforcing means reinforcing said end wall to resist load reactions produced by said towing "A" frame said means being generally by providing said end wall as a deep girder in a span between side extremities of said building,

window means provided in said end wall said window means being provided by developing portion of said wall below window sill and above bottom extremity of said floor structure as a girder by lapping said shear stress resistive exterior sheathing over a front attachment member which underlies the front wall and attaching thereto by adhesive and/or mechanical fasteners such as staples, nails or screws,

said end wall reinforcing means including transferring concentrated load reactions of towing "A" frame into said end wall without overstress said reinforcing means including a steel load distributing member which is a part of said towing "A" frame and bolting or lag screwing said steel load distributing member to said shear resistive sheathing and to said front attachment member underlying said front end wall,

said front attachment member being minimum two inch nominal wood or plywood and, in effect, substituting for the individual floor truss or floor joist occurring at this point,

c. said rim joist comprising two longitudinally elongated rim joist members to which said floor trusses or floor joist are connected, lying in a vertical plane and parallel to each other at either side extremity of said floor structure comprising wood or plywood pieces joined and spliced together by staples and adhesive or the equivalent in such a manner that no weakening or cross section results at splices, said splices being individually reinforced by scabs placed between floor trusses or floor joist and attached by means of adhesive and staples or the equivalent, said rim joinst being connected to said floor trusses or floor joist by mechanical fasteners such as screws, staples or nails extending through said rim joist and into end post of floor trusses or into end grain of floor joist, said rim joist members being connected to said steel load distributing members which are a part of said building carrier and said towing "A" frame, respectively, by placing portions of said steel load distributing members flat against said rim joist and connecting thereto with mechanical fasteners such as lag bolts or bolts,

d. a ridge beam lying in a vertical plane and vertically above the marriage line of said building, having a length substantially equal to the length of said building and a width substantially equal to the height of said roof trusses and being attached thereto, comprising either an open web truss type or a solid web girder type, ridge beam reinforcing means resisting loads when transporting said prefabricated building, which is devoid of presently customary continuous steel chassis, over the road without over stress of said ridge beam, said ridge beam reinforcing means being generally by providing said ridge beam as a girder in a cantilever span between a marriage wall rear extremity and rear extremity of said prefabricated building and in simple span between a front extremity of said marriage wall and said towing "A" frame, said ridge beam being supported by said end walls at each end of said ridge beam and said marriage wall lying between said end walls and directly under said ridge beam, said building carrier being positioned to prevent over stress of said ridge beam when supporting contributary over the road loading of said ridge beam and including increasing the length of said building carrier in fore-aft direction and by positioning said low level building carrier in fore-aft direction such that neither cantilever span nor simple support span of said ridge beam produce over stress of said ridge beam, said ridge beam being connected to said end walls and said marriage wall, said means being by providing steel straps placed flat against said ridge beam and said walls and attaching said straps with mechanical fasteners such as staples, nails or screws,

e. said marriage wall lying parallel to the longitudinal axis of said prefabricated building comprising,

a frame composed of a multitude of vertical elongated studs lying parallel to each other and in a vertical plane, said studs connecting to a top plate at their upper ends and to a bottom plate at their lower end,

exterior sheathing comprising substantially shear resistive material attached to exterior side of said studs,

said marriage wall being positioned to support said ridge beam and being placed directly over, or as nearly so as practicable, said low level building carrier.

4,114,329

ANCHORING ARRANGEMENT KIT

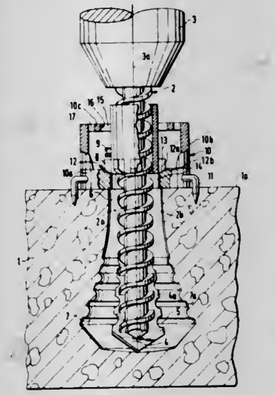
Artur Fischer, Weinhalde 34, 7241 Tumlingen, Fed. Rep. of Germany, and Klaus Fischer, Tumlingen, Fed. Rep. of Germany, assignors to Artur Fischer, Tumlingen-Waldachtal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 725,138, Sep. 17, 1976, Pat. No. 4,050,202, Ser. No. 719,146, Aug. 31, 1976, and Ser. No. 631,153, Nov. 11, 1975, Pat. No. 4,044,512, said Ser. No. 725,138, is a continuation-in-part of Ser. No. 631,153,. This application May 5, 1977, Ser. No. 794,238

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1975, 2525452; Jun. 14, 1975, 2526744; Jun. 21, 1975, 2527773; Nov. 14, 1974, 2453957; May 26, 1975, 2523198; Jun. 6, 1975, 2525220; Sep. 19, 1975, 2541762; Sep. 5, 1975, 2539521; Oct. 4, 1975, 2544468; Oct. 23, 1975, 2547412; Nov. 3, 1975, 2549057

Int. Cl.² E21B *17/10*; E04B *1/41*

U.S. Cl. 52—173 R **26 Claims**



1. A kit for use with a drive in establishing arrangements for securing objects to support structures, comprising a drilling tool for drilling anchoring holes in support structures, having a free end provided with cutting edges and another end adapted to be engaged by the drive for rotating said tool about an axis; means for supporting said tool at an exposed surface of a respective support structure, including a collar member adapted to be mounted on said tool intermediate said ends thereof for joint rotation therewith, and an abutment member adapted to surround said tool and contact said exposed surface, said members having respective concave and convex contact surfaces which, upon slidingly contacting one another, constitute a bearing for movement of said tool between a plurality of positions in which said axis encloses different angles with said exposed surface to thereby increase transverse dimensions of a respective hole in direction away from an open end thereof that opens onto said exposed surface; a plurality of anchoring elements each having a leading end portion of transverse dimensions smaller than, and a trailing end portion of transverse dimensions substantially corresponding to, those of said open end so that said trailing end portion supports said element in said open end with a clearance around said leading end portion and closes said open end upon insertion of said element into said hole; and means for introducing hardenable material into said clearance to form a hardened body around said leading end portion of said element to anchor the latter in said hole upon hardening of said material, including an internal passage bounded by an internal surface and extending through said element between said end portions of the same, at least one opening communicating said passage with said clearance at said leading end portion of said element, and shielding means for guiding said material through said passage toward said opening and for separating such material from a region of said internal surface which is located upstream of said opening.

4,114,330

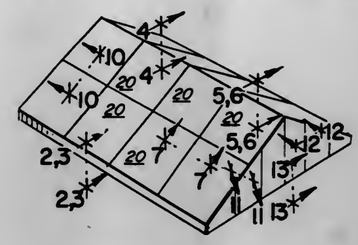
SKYLIGHT SYSTEM

Ronald D. Sukolics, Elkhart, Ind., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Nov. 4, 1976, Ser. No. 738,944

Int. Cl.² E04B *7/18*

U.S. Cl. 52—200 **54 Claims**



1. A skylight comprising:

a sill for supporting a lower edge of at least one panel frame mounted thereon, and

at least one pre-assembled panel frame including a lower edge member for interlocking attachment on said sill and a pair of upwardly sloping side frame members secured to said lower edge member,

said members, each including an elongated glazing pocket for receiving an edge portion of a glazing panel, and at least one of said sloping members including gutter means for collecting liquid from said glazing panel carried thereby,

said gutter means arranged to discharge into gutter means formed by said lower edge member,

said sill including a pair of upstanding walls and a bottom wall forming sill gutter means for receiving liquid collected in said gutter means of said members of said panel frame,

said side frame members each including means for interlocking connection with a side frame member of an adjacent panel frame.

4,114,331

EXTERIOR WINDOW UNIT

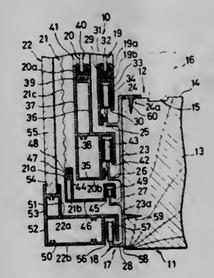
Yukio Yamamoto, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Feb. 2, 1977, Ser. No. 764,978

Claims priority, application Japan, Feb. 7, 1976, 51-132510

Int. Cl.² E06B *3/26*

U.S. Cl. 52—202 **5 Claims**



1. An exterior window unit for covering an opening in a building wall, said opening having at its lower edge a first sill, said exterior window unit comprising:

(a) a frame having a second sill for extending along the length of said first sill below the lower edge of said opening, said second sill having a vertical mounting portion with a mounting surface having means by which it may be

mated flatwise with and secured to a vertical exterior surface of the first sill below said opening;

(b) a plurality of rail portions of L-shaped cross-section, each having a horizontal leg individually secured independently of each other directly to a vertical exterior surface of said vertical mounting portion at vertically spaced points opposite to said mounting surface, and each having a vertical leg directed as an upwardly extending vertical flange section each being the nearest horizontally adjacent element to said vertical mounting portion, said rail portions extending along the length of said vertical mounting portion and all said vertical legs being spaced vertically along the height of said vertical mounting portion; and

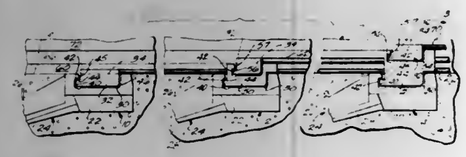
(c) a plurality of sashes mounted within said frame in parallel closely spaced relationship, said plurality of sashes corresponding in number to said plurality of rail portions, said sashes having engaging means at their lower edges, respectively, engaging the upper edges of said flange portions of supporting said sashes from below and for guiding the horizontal movement of said sashes therealong.

4,114,332

ANCHORING SYSTEM FOR PRESTRESSED CONCRETE PIPE

Harry H. Robertson, San Pedro, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Apr. 27, 1977, Ser. No. 791,296
Int. Cl.² F16L *9/00*
U.S. Cl. 52—224 **6 Claims**



1. An anchor system for wire, the system comprising:

an embedment anchor having a recess in it,

an insert block disposed in the embedment anchor recess and projecting from the embedment anchor, the insert block having a recess in it, and

an anchor block disposed in the insert block recess, the anchor block having a recess in it for receiving the wire to be anchored, and the insert block having a groove in it to receive another wire which is secured by a different anchoring system.

4,114,333

WALL PANEL UNIT

Harold E. Jones, 4901 Minneapolis Ave., Mound, Minn. 55364, and Donald T. Ottenweller, 4285 Circle Dr., Wayzata, Minn. 55391

Filed Apr. 5, 1977, Ser. No. 784,690
Int. Cl.² E04B *2/04*; E04C *2/24, 2/36*
U.S. Cl. 52—265 **24 Claims**

1. A plurality of engageable load bearing panel units for a wall, each panel unit comprising:

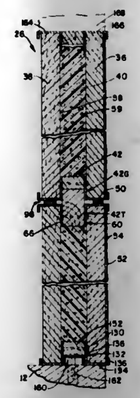
co-extensive inner and outer panels, each panel comprising chemically treated wood fibers which have been mixed with cement and bound together under pressure then cured and kiln dried;

a core of urethane foam connecting said panels together;

groove edge fastening means located on first peripheral edges of said panels;

tongue fastening means located on second peripheral edges of said panels; and

additional groove fastening means located on a third peripheral edge of said panels, and additional tongue fastening means located on a fourth peripheral edge of said panels so that each panel unit is engageable with another panel unit to form a stacked configuration, said fastening means each including a pair of J-shaped channel members each having



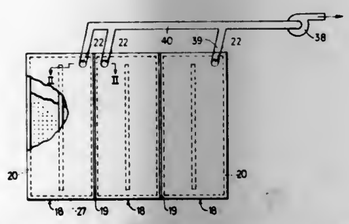
a long side and a short side, with the long sides of the J-shaped members being located between the short sides of said J-shaped members.

4,114,334

BUILDING COMPONENT

Torgny A. Thoren, Nämndemansvägen 23, 191 70 Sollentuna, Sweden

Filed Jun. 20, 1977, Ser. No. 808,178
Claims priority, application Sweden, Jun. 24, 1976, 7607287
Int. Cl.² E04B *1/78*
U.S. Cl. 52—303 **10 Claims**



1. A panel assembly for use as a component of an insulated building wall, comprising:

(a) a frame defining an opening;

(b) a rigid first layer secured to one side of said frame and covering said opening, said first layer being impermeable to the flow of any air;

(c) a second layer adapted to be disposed against the insulation of the building wall, and having limited permeability to airflow therethrough substantially over its entire area and being secured to the opposite side of said frame, said second layer covering said opening and being spaced from said first layer and defining therewith an airspace; and

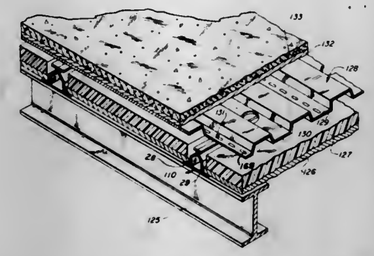
(d) connection means comprising an opening in said impermeable first layer and adapted to be connected to an airflow system to pass air between said airspace and the airflow system, said airspace being sealed in air-tight fashion except through said second layer and said connection means, whereby air flowing through the insulation can flow simultaneously into an out of said space only through said second layer and said connection means.

4,114,335

SHEET METAL STRUCTURAL SHAPE AND USE IN BUILDING STRUCTURES

Frank E. Carroll, Barrington, Ill., assignor to Carroll Research, Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 648,500, Jan. 12, 1976, Pat. No. 4,048,777, which is a continuation-in-part of Ser. No. 457,996, Apr. 4, 1974, Pat. No. 3,965,641. This application Jan. 25, 1977, Ser. No. 762,778
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.² E04B *1/16, 5/10*
U.S. Cl. 52—336 **9 Claims**



1. In an insulated metal deck structure the components comprising:

a spaced series of parallel sheet metal structural shapes which are symmetrical about a bisecting plane through a central web having a central web, two diagonal legs projecting downwardly from one end of said web forming an included angle of about 30° to about 90° between said legs and having its vertex at the bottom of the web, said diagonal legs having a vertical height of about 1½ to about 10 inches, each diagonal leg having a leg projecting downward at its extremity in a plane substantially parallel to said web, said legs being substantially parallel, each of said parallel legs having flanges extending outwardly at their extremity, a closure side extending between the extremities of said flanges enclosing the area formed by said diagonal sides, said parallel sides and said closure side, and a stiffening member at the other end of said web;

insulation resting on said flanges and extending between adjacent structural shapes; and

corrugated metal decking above and fastened to the stiffening member of said structural shape.

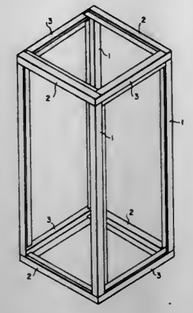
4,114,336

ELECTRICAL SWITCHBOARD FRAMEWORK

Henri L. J. Bechet, Hermalle, Argenteau, and José J. A. Vertongen, Herstal, both of Belgium, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 27, 1976, Ser. No. 735,921
Claims priority, application Belgium, Nov. 19, 1975, 835699
Int. Cl.² H02B *1/02*
U.S. Cl. 52—280 **8 Claims**

1. A metal electrical switchgear framework comprising structural members including angled uprights and top and bottom angled crossbars, said structural members having the same cross section, the cross section of said structural members being formed of a strip of sheet metal folded into four parts, the first part being contiguous with and perpendicular to the second part having the same width as said first part, and the third part being appreciably narrower than said first part and which is contiguous with and perpendicular to said second part, said third part being also contiguous with and perpendicular to the fourth part, said first and third parts being located on the same



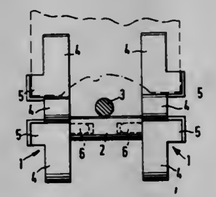
side of said second part while said second and fourth parts are located on opposite sides of said third part.

4,114,337

WASTED SPACER MEMBER FOR WALL ELEMENTS, ESPECIALLY FOR GLASS BRICKS

Walther C. Neuhardt, Lerchenfelderstrasse 130/7, Vienna, Austria (1080)

Filed Dec. 6, 1976, Ser. No. 747,874
Claims priority, application Austria, Dec. 15, 1975, 9490/75
Int. Cl.² E04B *2/00*
U.S. Cl. 52—442 **22 Claims**



11. In a wall construction including a plurality of glass bricks or the like arranged in layers to lie above each other with space between the top and bottom surfaces and the end surfaces of adjacent bricks for receiving mortar, the mating surfaces of said bricks each having a pair of supporting surfaces thereon extending along and adjacent to their front and rear edges, a wasted spacer member receivable between the corners of said bricks for mounting the bricks in correctly spaced relationship to receive mortar, said spacer member including: a pair of elements each carrying vertical and horizontal arms lying in a common plane, said elements being arranged parallel to each other in spaced relationship with the intersecting points of the arms of both elements lying on a common axis perpendicular to the planes of the elements; at least one web extending between and connecting said pair of arm-carrying elements, so that the distance between the outer surfaces of said elements is smaller than the thickness of said bricks to be spaced thereby but substantially greater than the minimum distance between the pairs of said supporting surfaces associated therewith, said vertical and horizontal arms of said elements having a thickness such that the bricks to be spaced thereby are in proper relationship to receive mortar when the side surfaces of said arms are in engagement with the confronting surfaces of said bricks; and outwardly projecting, removable vane means carried by each of said arm-carrying elements for enclosing the corners of the bricks, each vane means including at least one surface spaced from and extending parallel to its associated arm-carrying member, the distance between the vane means

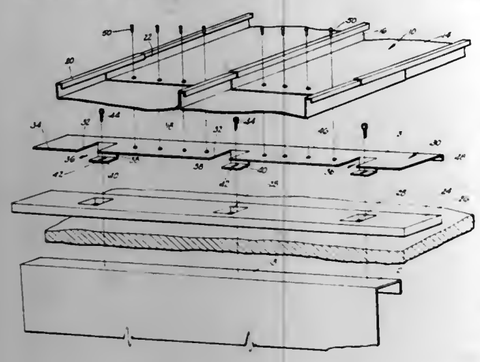
surfaces on opposite sides of the spacer member corresponding to the thickness of the bricks.

4,114,338

REINFORCING PLATE FOR OVERLAPPED JOINTS

David E. Beck, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed May 9, 1977, Ser. No. 795,083
Int. Cl.² E04B 7/00
U.S. Cl. 52—478 **6 Claims**



1. In a roof structure, the combination of a plurality of spaced purlins, a series of pairs of relatively stiff and rigid interlocked roof panels of channel configuration and selfsupporting capacity affixed to and enclosing the space between said spaced purlins, said panels being lapped and sealed, a thermal spacer sandwiched between each of said spaced purlins and said panels at the lapped joints thereof, said thermal spacer having apertures therein, a reinforcing backing plate overlying said thermal spacer for providing auxiliary backing support to said lapped and spaced panels to insure uniform compression of sealants, to keep the lapped joints tight under intermittent loading and to permit movement of said panels independent of said purlins, said backing plate comprising an elongated, rectangular planar member having pairs of parallel cuts evenly spaced along its length extending transversely from one long edge thereof, the material between each of said pairs of cuts being bent into a down turned mounting flange of L-shaped cross section, a first portion of said mounting flange extending downwardly from said planar member and a second portion of each mounting flange extending from said first portion so as to be substantially parallel to said planar member, said down turned mounting flanges extending through said apertures in said thermal spacer such that said second portion thereof is contiguous with said underlying purlin, each of said second portions having an aperture therein for the passage therethrough of fastening means, whereby said planar member is attached to said purlin.

4,114,339

STRUCTURE FOR COMBINING TWO BODIES AND SHEETING

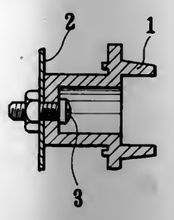
Keizo Ito, Ichinomiya, Japan, assignor to Toyoda Gosei Co., Ltd., Japan

Filed Apr. 28, 1977, Ser. No. 792,014
Claims priority, application Japan, Apr. 30, 1976, 51-50624; Apr. 30, 1976, 51-55972[U]; Feb. 28, 1977, 52-21007
Int. Cl.² E04B 1/38
U.S. Cl. 52—507 **7 Claims**

1. A device for combining two bodies, one of said bodies having an attaching hole therein, said device comprising:

(a) an engaging body attached to the other of said bodies, said engaging body including a first base portion, an engaging hole at the center of said first base portion, an engaging portion, and a pair of supporting plates projecting from said first base portion; and

(b) a clip, said clip including a second base portion, head means extending from said second base portion, said head means being insertable between said supporting plates, engaging concave means adjacent said head, and at least one arm means projecting from said second base portion



in a direction opposite to said head means, said arm means having a nail means for engaging said engaging portion of said engaging body;

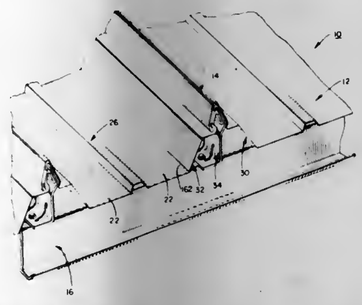
wherein when said bodies are attached, said concave means are held in said attaching hole, thereby attaching one of said bodies to said clip and said clip is held in said engaging body by the engagement of said nail means and said engaging portion.

4,114,340

SELF-INTERLOCKING STANDING SEAM FOR A BUILDING PANEL

Charles Wallace Dean, Fort Myers; Gary Eugene Cummings, Cape Coral, and Gary Lee Harvey, Fort Myers, all of Fla., assignors to Dean Steel Buildings, Inc., Fort Myers, Fla.

Continuation-in-part of Ser. No. 786,826, Apr. 12, 1977. This application Jul. 11, 1977, Ser. No. 814,721
Int. Cl.² E04D 1/34, 3/363
U.S. Cl. 52—520 **9 Claims**



1. A pair of elongate roof panel members comprising:

a male element on a longitudinal side edge of one member, said male element including a "V" shaped extension member which opens toward a roof on which said one member is mounted and has one leg thereof being connected to the one member, and the other leg thereof having an edge defining portion thereon and being connected to said one leg by an apex forming corner;

a female element on an opposing edge of said other panel member including a first channel defining portion on one longitudinal side edge thereof defining a part of a channel which opens toward a roof on which said other panel member is mounted, said other member further including a double wall skirt member having one wall thereof connected to said first channel defining portion so that said skirt extends outwardly of said first channel defining portion and toward the roof on which said other panel

member is mounted, said skirt having an end portion with the other wall thereof connected to said one wall at said end portion, said other member further including first and second planar portions and an arcuate corner connecting said planar portions together, one of said first and second planar portions being connected to the one wall of said double wall skirt member, the other member further including a third planar portion attached at one edge thereof to the other wall of said skirt member at a location remote from said skirt end portion and a fourth planar portion attached to another edge of said third planar portion to extend toward said skirt so that said third and fourth planar portions define a hook edge located between said skirt and said first planar portion adjacent said arcuate corner with said skirt covering said third planar portion and said hook edge;

said male "V" shaped extension member being wedged between said skirt and said hook edge with said edge defining portion being captured by said hook edge with said male element extension member other leg being located adjacent said third planar portion to lock the panel members together; and

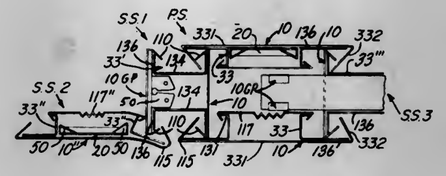
a gripping element attached to a building and having a gripping element planar section located between said first and said third planar portions and a hooking element attached to said gripping element planar section and receiving said third planar portion skirt attaching edge therein.

4,114,341

COMPOSITE STRUCTURE CONSTITUTED STANDARDIZED ELEMENTS

Rene Vincens, 82 A, Route de Geneve, 1028 Preverenges, Switzerland, assignor to Societe Anonyme pour l'Etude et la Promotion des Entreprises and Rene Vincens, both of, Switzerland, part interest to each

Filed Mar. 17, 1975, Ser. No. 559,230
Claims priority, application France, Mar. 20, 1974, 74 09394; Sep. 6, 1974, 74 30362; Mar. 13, 1975, 75 07902
Int. Cl.² E04C 2/40
U.S. Cl. 52—580 **12 Claims**



1. A composite structure for use in the construction of buildings and of fixtures and appurtenances thereof, comprising, primary and secondary subassemblies interconnected with one another to provide a composite structure, each subassembly having;

a pair of walls each having a cross-sectional shape of a type selected from the shape of an L, a C, a U, and an Omega, each wall comprising, a wall web having two mutually opposite longitudinal edges, and a wall flange on each of the two longitudinal edges, said wall flanges extending transversely of the wall web to strengthen the wall and in effect to extend one of the walls of the other subassembly in the composite structure;

a pair of sleeves each having a generally C-shaped cross-sectional shape with one side thereof open toward the corresponding side of another one of the sleeves, each sleeve comprising a sleeve web having two mutually opposite longitudinal edges and each sleeve having a sleeve flange on each of the longitudinal edges of the sleeve web, each sleeve flange extending transversely of the sleeve at an acute angle to the sleeve web, while extending along and slidably edgewise engaging one of the mutually opposite wall flanges of the respective subassembly so as to enable the sleeves of each pair of sleeves to act as mutually opposite wall-tying members to interconnect walls of the primary and secondary subassemblies and thereby to effet the extending of the walls in the composite structure; and

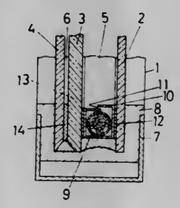
bridge means disposed in the subassembly between the respective pair of walls and the respective mutually opposite wall-tying members of the pair of sleeves for rigidly bracing the subassembly against loads compressive of the bridge means to strengthen the composite structure.

4,114,342

THERMALLY AND ACOUSTICALLY INSULATING STRUCTURE

Taro Okawa, Tokyo, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,420
Claims priority, application Japan, Mar. 26, 1977, 52-36898[U]
Int. Cl.² E06B 7/12, 5/20
U.S. Cl. 52—790 **8 Claims**



1. A thermally and acoustically insulative structure comprising:

a glazing frame;

a first sheet of glass sealed around all sides into said glazing frame;

a second sheet of glass sealed along all sides into said glazng frame parallel to and spaced from said first sheet, the space between said first and second sheets defining a first air-tight space;

a third sheet of glass sealed along all of its edges into said glazing frame parallel to and spaced from said second sheet, the space between said second and third sheets defining a second air space;

said second air space being a micro-air space defined by a very small distance between said second and third sheets;

said first air space being substantially wider than said second micro air space;

communication means in said second sheet open to said first and second air spaces for communicating said first and second air spaces with each other; and

contact-preventing means extending between and spaced from said second and third sheets in said second micro air space for preventing said second and third sheets from contacting each other due to wind deformation and for preventing the formation of Newton's Rings.

4,114,343

STACKING RACKS

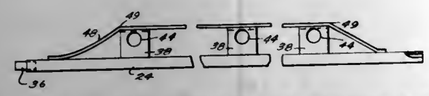
Badger R. Bazen, Rte. #1, Box 163, Johnsonville, S.C. 29555

Filed Jun. 17, 1977, Ser. No. 807,688
Int. Cl.² E04C 3/32
U.S. Cl. 52—665 **4 Claims**

1. A protective frame for the wall of a structure of the type having a plurality of generally vertically extending beams for supporting the wall of the structure, said protective frame comprising a plurality of vertical posts extending from the floor of the structure and spaced apart between adjacent beams thereof with said posts being spaced a selected distance from the wall,

a plurality of generally horizontally extending cross members spaced apart vertically along said vertical posts and with said vertical posts being disposed between said cross members and the wall of the structure, each said cross member having one end secured to one of the adjacent beams and its other end secured to the other of the adjacent beams such that said posts and cross members define a grid structure of intersecting posts and cross members between the adjacent beams,

each of said cross members having reinforcing means includ-



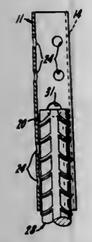
ing means connecting each said cross member to a said vertical post at each intersection of a said post and a said cross member, said reinforcing means including a plurality of bracket members welded to each said cross member and evenly spaced therealong a distance corresponding to the distance between said vertical posts and a rod member having one end welded to said cross member adjacent one end thereof and its other end welded to said cross member adjacent to the other end thereof with said rod member in engagement with each of said bracket members located between the ends of said cross member.

4,114,344

CONCRETE REINFORCEMENT SPLICE WITH LOCATION TAB

Edward E. Heasman, Epping, Australia, assignor to Imoco-Gateway Corporation, Chicago, Ill.

Filed Apr. 21, 1976, Ser. No. 679,068
Int. Cl.² E04C 3/30; E04G 21/00; E04H 12/16
U.S. Cl. 52—741 **9 Claims**



1. The method of forming a rebar joint in a vertical column, wall, or like reinforced concrete body, comprising the following steps:

fabricating a clamp comprising a contractable metal sleeve having an unstressed internal diameter just large enough to receive a dowel rebar of given size and contraction means for contracting the sleeve, including the sub-step of forming a location tab, integral with the sleeve, having a free edge projecting upwardly and inwardly from the central portion of the sleeve at an acute angle;

sliding the metal sleeve onto the upper end of a lower dowel rebar until the tab engages the upper edge of the dowel rebar;

driving the metal sleeve further onto the upper end of the dowel rebar to bend the upper end of the location tab outwardly toward the sleeve until the free edge of the tab firmly engages the dowel rebar just below the upper edge of the rebar;

inserting an upper extension rebar into the sleeve until its lower end engages the upper end of the lower dowel rebar;

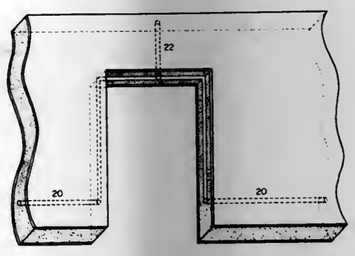
and contracting the sleeve, by means of the contraction means, to grip both the rebars tightly and thereby complete the rebar joint.

4,114,345

METHOD FOR THE PRODUCTION OF HOUSES

Walter Nilsen, Reistad, Norway, assignor to Den Norske Gipsplatefabrikk A/S, Toerkop p.a. Drammen, Norway

Continuation of Ser. No. 541,917, Jan. 17, 1975, abandoned, which is a continuation of Ser. No. 349,597, Apr. 9, 1973, abandoned, which is a continuation of Ser. No. 145,459, May 20, 1971, abandoned. This application Apr. 8, 1977, Ser. No. 785,904
Claims priority, application Norway, May 28, 1970, 2061/70
Int. Cl.² E04B 1/12; E04G 21/14
U.S. Cl. 52—745 **3 Claims**



1. A method of producing a house comprising forming a continuous web of a layer of foam plastic thermal insulation sandwiched between layers of gypsum board and in that forming process disposing longitudinally extending channels in said insulation and between said gypsum board layers, said channels being for the reception of conduits and, on a building site providing a plurality of rectangular panels of said web cut to form a first group of panels, securing nailing strips to edges of said panels, assembling said panels, in edge to edge relationship with said channels of adjacent panels registering with one another to form a continuous channel through said assembly, said panels when so assembled forming the walls of said house without door or window openings and uniting said walls by means of said nailing strips, with the panels of said first group having dimensions corresponding to separate said walls, then supporting a ceiling of a second group of said panels on top of said walls to form a closed box, whereby said closed box comprises a support structure of said house and is formed without framing, and then cutting door and window openings in said panels and in the process of forming said door openings breaching said channels, then grooving edges of said panels defining said door openings from a terminal portion of said channel at one side of the opening to a terminal portion of said channel at the other side of said opening to provide interconnections between said terminal portions of said channel at opposite sides of said door openings and then disposing conductor means within said channels and grooves formed in said edges of said door openings.

4,114,346

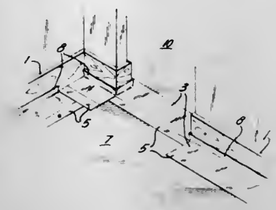
METHOD AND PRODUCT FOR INSTALLATION OF SHEET FLOORING

Edward G. Kelly, Allentown, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Sep. 28, 1977, Ser. No. 837,391
Int. Cl.² E04F 13/20
U.S. Cl. 52—746 **1 Claim**

1. A method of installing a sheet flooring comprising the steps of:

1. affixing to a floor to be covered with a sheet flooring material, a flexible sheet that follows the periphery of a floor and overlays adjacent walls of a room,
2. cutting the flexible sheet so that its outer edges match the outer dimensions of the room,
3. laying a sheet of flooring upon the flexible sheet,
4. removing an adhesive protective strip located on the flexible sheet and exposing an adhesive strip by picking up sections of the flooring, removing the adhesive protective strip and relaying that portion of the flooring until all the adhesive protective strip is removed,



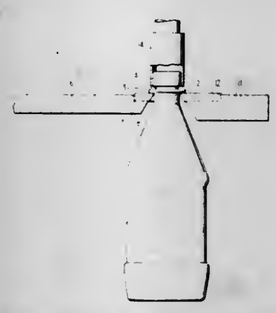
5. picking up the sheet flooring with the flexible sheet attached and cutting the flooring along the outer edges of the flexible sheet in order that the flooring is an exact match to the room,
6. relaying the flooring after removal of the flexible sheet.

4,114,347

CAPPING APPARATUS HAVING MEANS FOR CONVEYING CONTAINERS WHILE SUSPENDED BY A FLANGE

Frank R. Morris, Yardley, and Alfred C. Alberghini, Langhorne, both of Pa., assignors to Pepsico, Inc., Purchase, N.Y.

Filed May 9, 1977, Ser. No. 795,280
Int. Cl.² B65B 7/28
U.S. Cl. 53—300 **7 Claims**



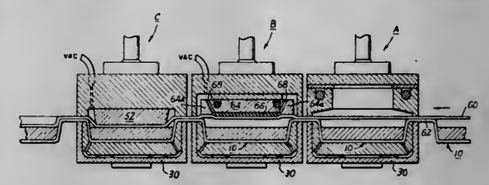
1. An apparatus for capping containers having a capping portion with a horizontally-enlarged flange, by the application of axial force to the capping portion of the containers, which comprises rotatable means having a plurality of container holding means positioned on the periphery of said rotatable means, said holding means having an outwardly facing open portion for receiving the containers, and providing first supporting means for supporting the underside of an inwardly positioned portion of the enlarged flange of the containers with a portion of the flange extending outwardly of said first supporting means, means for feeding the containers sequentially into said holding means so that the horizontally-enlarged flange on the capping portion of the containers is above said first supporting means, second stationary supporting means positioned outwardly of said rotatable means with a space therebetween, said rotatable means being suitable for transporting the containers on said first supporting means to said second stationary supporting means, means for supporting the lower portion of the containers as they move from said feeding means into the space between said rotatable means and said second supporting means, said first and second supporting means serving to suspend said containers by said flange and between said first and second supporting means, said second supporting means being spaced outwardly of said rotatable means opposite a substantial portion of the periphery of the rotatable means sufficient to permit capping of the containers while they are supported on and suspended from said first and second supporting means, said spacing being sufficient to permit movement of the containers between said rotatable means and said second supporting means as the containers are capped, means for capping said containers by the application of axial force when the containers are supported on and suspended from said first and second supporting means, said first and second supporting means being spaced relative to one another for engaging said flange to receive substantially all of said axial force applied by said means for capping said containers while simultaneously permitting said movement of said containers therebetween, and means for removing capped containers from said holding means before said holding means return to the container-feeding position.

4,114,348

PACKAGING TECHNIQUES FOR SEMI-RIGID PACKAGES

Reid A. Mahaffy, Montclair, and Joel A. Hamilton, Englewood, both of N.J., assignors to Mahaffy & Harder Engineering Co., Totowa, N.J.

Continuation of Ser. No. 683,256, May 5, 1976, abandoned, which is a division of Ser. No. 384,717, Aug. 1, 1973, Pat. No. 3,972,155, which is a division of Ser. No. 860,590, Sep. 24, 1969, Pat. No. 3,792,181. This application Sep. 19, 1977, Ser. No. 834,429
Int. Cl.² B65B 31/02
U.S. Cl. 53—433 **19 Claims**



1. The method of packaging food products and the like, comprising the steps of:

forming a first sheet of semi-rigid plastic material so as to develop a generally cup-shaped receptacle having a flange around the mouth thereof;

placing in the formed receptacle cup a product having less depth than the cup, thereby providing at least a moderate amount of space between the top of the product and the mouth of the cup;

advancing a second sheet of semi-rigid plastic material to said receptacle to provide a top therefor, said second sheet comprising material presenting a sealing surface to lie against said flange;

heating at least a selected part of said second sheet interiorly of said sealing surface to forming temperature;

applying pressure to said second sheet while still hot so as to stretch the heated part of the plastic material to form an inwardly-extending semi-rigid portion which in the completed package will engage the packaged product and hold it pressed against the bottom of the cup; and

subsequent to said application of pressure to said heated part, evacuating the interior of said receptacle and hermetically sealing said top to said receptacle so as to develop an evacuated package;

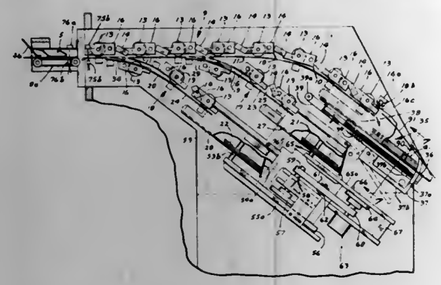
the semi-rigid characteristic of said inwardly-extending portion maintaining a firm pressure on the product after the plastic has cooled.

4,114,349

AUTOMATIC SORTING, CONVEYING AND PACKING MECHANISM FOR PHOTOGRAPHIC PRINTS

Gerald A. Jensen, Wayzata; Louis A. Larson, Minneapolis, and Robert E. Diesch, Rogers, all of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Apr. 11, 1977, Ser. No. 786,184
Int. Cl.² B65B *57/14*
U.S. Cl. 53—54 **16 Claims**



1. A sorting, conveying, and packing mechanism particularly adapted for use with photographic print processing equipment, the mechanism comprising:
- a cutting mechanism for cutting individual prints from a continuous roll of processed photographic prints;
- a main conveyor line defining a main flow path for individual prints cut by the cutting mechanism;
- means for feeding the individual prints into the main conveyor line;
- a branch conveyor line defining a secondary flow path and having an entrance communicating with an intermediate portion of the main conveyor line to receive prints diverted from said main flow path;
- first conveying means for engaging and transporting prints along the main flow path;
- diverting means positioned in the main flow path to normally close the entrance to the branch conveyor line and normally permit the prints being transported along the main flow path to pass the entrance to the branch conveyor line but being movable into the main flow path to obstruct the main flow path and open the entrance of the secondary flow path and divert certain of the prints from the main flow path into the secondary flow path;
- means for scanning classification indicia associated with the main flow path ahead of the entrance to the branch conveyor line;
- actuating means for moving the diverting means into diverting position in response to a signal from the scanning means;
- an accumulating station at a discharge end of the main conveyor line for collecting the prints which pass the entrance without being diverted;
- means for positively engaging and ejecting the collected prints from the accumulating station into a packaging envelope; and
- means for discharging from the branch conveyor line the prints diverted from the main conveyor line.

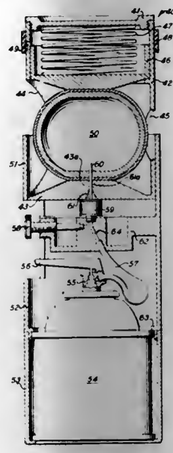
4,114,350

METHOD AND APPARATUS FOR ADJUSTING THE RESILIENCE OF A HOLLOW BALL HAVING AN INTERNAL PRESSURE

J. Gerald Snyder, 5911 Sherborne La., Springfield, Va. 22152

Filed Jun. 18, 1976, Ser. No. 697,460
Int. Cl.² A63B *41/12, 47/00*; G01N *3/12, 3/14*
U.S. Cl. 53—79 **19 Claims**

1. An apparatus for adjusting the resilience of a tennis ball having variable deflection characteristics, said apparatus comprising:
- (a) means for holding said tennis ball in a confined position,
- (b) aerosol container means for storing a mixture of an inflating medium and a sealant material,
- (c) means for injecting said mixture from the aerosol container into said tennis ball,



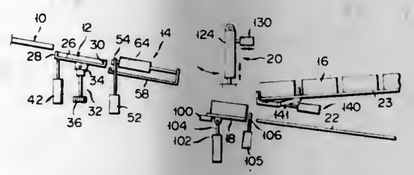
- (d) said holding means including means for maintaining the ball in a compressed condition under a compressive force directed against the ball to cause structural deflection of the ball in said confined position, and
- (e) gauge means responsive to said deflection for indicating the deflection characteristics of said compressed tennis ball when maintained under said compressive force.

4,114,351

ENCASING APPARATUS

Toshiki Morimoto, Kawasaki, and Sumisaburo Hori, Akishima, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1977, Ser. No. 791,864
Int. Cl.² B65B *5/10, 35/56*
U.S. Cl. 53—157 **15 Claims**



1. An encasing apparatus for delivering and packing products or articles, hereafter referred to as articles, in a packing box or the like, comprising:
- a feed mechanism to feed products or articles to be packed;
- a turnabout mechanism located on the forward side in the feed direction of said feed mechanism for making a first alignment of said articles by locating a prescribed number of said articles successively in layers with said articles oriented in a first direction and for delivering said articles, kept subject to said first alignment, in a second direction perpendicular to said first direction after turning said articles through a predetermined angle, said turnabout mechanism including:
- a tray having a rising wall along at least one edge thereof;
- a vertical rotary shaft;
- means for inclinably attaching said tray to the end of said vertical rotary shaft so that said tray turns with said rotary shaft;
- means for selectively inclining said tray; and

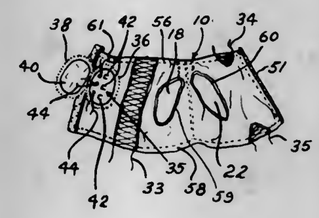
- means for driving said rotary shaft to rotate said tray and said articles through said predetermined angle;
- a slide mechanism located at the outlet of said turnabout mechanism for receiving said articles and for making a second alignment of said articles to true up the ends of said articles in said second direction of said articles delivered from said turnabout mechanism, said slide mechanism including means for supporting said articles at said ends thereof and exit means for then delivering said articles in said second direction into a packing box; and
- a packing box support means located adjacent said slide mechanism for supporting a packing box while it is receiving articles from said slide mechanism.

4,114,352

PROTECTIVE JACKET FOR CHRONICALLY INSTRUMENTED DOGS

Michael L. Horton, Greene County, Ohio, and Alan M. Harris, Aurora, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 19, 1976, Ser. No. 706,316
Int. Cl.² B68C *5/00*; A01K *27/00, 29/00*
U.S. Cl. 54—79 **2 Claims**



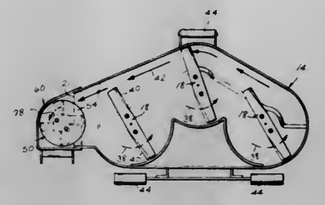
1. A protective jacket for a test animal comprising: a body member adapted to fit around the front part of the test animal; said body member having two holes adapted to receive the front legs of the test animal; fastener means for holding the jacket on the animal; means, on said jacket for adjusting the jacket for different animal body sizes; means on said jacket for adjusting the jacket for different animal body contours; a pouch on said jacket adapted to be positioned adjacent the withers of the test animal; means in said pouch for providing a passage for animal instrumentation leads into said pouch; means for securing instruments and instrumentation leads within said pouch; said pouch having a tear resistant cover; means for closing the cover on said pouch; said means for adjusting the jacket for different animal body sizes includes means for supporting a first row of eyelets on the outside of the jacket, extending from the front to the back of the jacket; means for supporting a second row of eyelets on the outside of the jacket substantially parallel to said first row, said second row of eyelets being spaced from first row of eyelets; means, passing through said eyelets for drawing said first row of eyelets toward said second row of eyelets to thereby reduce the size of the jacket; said means for adjusting the jacket for different animal body contours includes means for supporting a first group of eyelets in a V-shaped pattern at the forward portion of the jacket; means for supporting a second group of eyelets in a V-shaped pattern at rearward portion of the jacket; means, passing through said eyelet for drawing one side of each V-shaped pattern toward the other side of the corresponding V-shaped pattern to thereby adjust the jacket to the body contour of the animal.

4,114,353

TERRAIN TRAVERSING DEVICE HAVING IMPELLER MEANS FOR PROPELLING GRASS CLIPPINGS AND LEAVES INTO A RECEPTACLE

Donald I. Ansbaugh, Granger, and Glenn A. Heilman, Mishawaka, both of Ind., assignors to Heilman Enterprises, Inc., Mishawaka, Ind.

Filed Feb. 24, 1975, Ser. No. 552,537
Int. Cl.² A01D *35/22*
U.S. Cl. 56—13.3 **7 Claims**



1. In a device which includes a frame supported by wheels for movement over the terrain, a cutter blade housing carried by said frame and including a discharge opening, rotating cutter means within said housing and positioned adjacent said terrain for cutting grass or picking up leaves and causing the clippings of said grass or said leaves to be collected within said housing and ejected therefrom through said housing discharge opening, means for rotating said cutter means, the improvement wherein said device includes receptacle means for collecting said clippings or leaves as they are ejected from said cutter housing, conduit means extending between said housing discharge opening and receptacle means defining in conjunction with said housing a path from said cutter means into the interior of said receptacle means, impeller means located within said path and adjacent said cutter means for contacting and propelling said discharged clippings or leaves along the remainder of said path into the interior of said receptacle means, means for rotating said impeller means, said housing including a top and side wall joining said conduit means, said housing supporting said impeller means at the discharge opening therein and adjacent said housing side wall, vertically oriented shaft means supporting each cutter means and said impeller means for rotation in a plane generally paralleling said terrain, said impeller means including a disk-shaped wall part carried by said shaft means, said wall part lying in substantially the same plane as the plane of rotation of said cutter means, said impeller means wall part positioned adjacent said housing side wall and conduit means and defining a substantially continuous lower wall means from said housing discharge opening to said conduit means for conducting said discharged clippings or leaves into said conduit means, said impeller means wall part including an upper surface, a plurality of blade parts carried upon said upper surface and extending generally radially outwardly from said wall part supporting shaft means to contact and propel said discharged clippings or leaves through said conduit means and into said receptacle means.

4,114,354

LAWN MOWER BLADE MOUNTING

Richard L. Morris, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 5, 1976, Ser. No. 739,322
Int. Cl.² A01D *55/18*
U.S. Cl. 56—295 **24 Claims**

1. A lawn mower comprising a blade housing, a member adapted for rotation within said blade housing and having a peripheral edge, a blade movably secured to said member for movement between a retracted position wherein said blade is positioned inwardly of said peripheral edge, and an extended

position wherein said blade extends outwardly beyond said peripheral edge, and means for biasing said blade to said re-



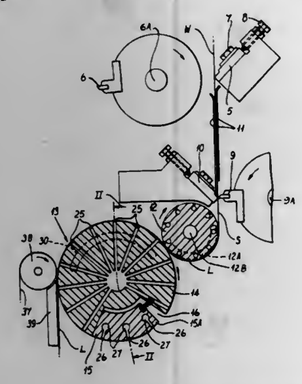
tracted position in the absence of rotation of said member above a predetermined speed.

4,114,355

APPARATUS FOR THE PRODUCTION OF WRAPPERS

Robert William Davies, and Barry George Applegate, both of London, England, assignors to Molins Limited, London, England

Filed Feb. 7, 1977, Ser. No. 766,153
Claims priority, application United Kingdom, Feb. 5, 1976, 4480/76
Int. Cl.[2] B65B *41/06, 41/16;* B26D *7/06*
U.S. Cl. 53—389 10 Claims



1. Apparatus for producing two-piece wrappers wherein said pieces are of unequal length, for wrapping articles such as groups of cigarettes, said apparatus comprising:

(a) means for continuously feeding a web of wrapper material along a single path,

(b) a pair of cutters spaced along said path,

(c) conveyor means along said path spaced downstream from said cutters, and movable at the speed at which said feeding means feeds said web, for sequentially receiving and conveying cut wrapper pieces, and

(d) means for operating said cutters in timed relationship with the speed of said conveyor means such that said cutters alternately cut said web into pieces of unequal length and each newly cut end of said web is engaged by said conveyor means prior to the next cutter cutting the next piece from said web,

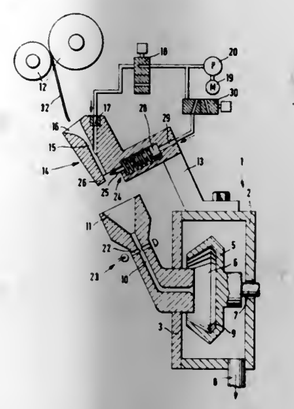
(e) said conveyor means comprising a suction roller having means for applying suction thereto from the point at which said newly cut end of the web is engaged by said roller.

4,114,356

OPEN-END SPINNING APPARATUS

Friedrich Eckhardt, Salach, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Aug. 5, 1976, Ser. No. 711,721
Int. Cl.[2] D01H *15/00, 1/12*
U.S. Cl. 57—34 R 3 Claims



1. In an open-end spinning machine which includes at least one spinning chamber and rotatably mounted therein a spinning rotor, means for producing suction in said chamber, apertured means for receiving a thread in said chamber and transport means for transporting a thread to and from said spinning chamber, the improvement comprising:

thread guide means with an exit orifice for compressed air and having a terminus and a first bore, the axis of said first bore being directed to a draw-off channel in said apertured means; and

an injection aperture comprising a second bore arranged to obliquely intersect said first named bore and thread cutting means supported relative to said first bore, said cutting means being movable to intersect said thread as it is emitted from said exit orifice.

4,114,357

THREAD-WETTING ARRANGEMENT FOR YARN-TWISTING APPARATUS

Aloys Greive, Munster, Germany, assignor to Hamel GmbH Zwirnmaschinen, Munster, Germany

Filed Jun. 17, 1977, Ser. No. 807,649
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627268
Int. Cl.[2] D01H *13/30, 7/86*
U.S. Cl. 57—35 11 Claims

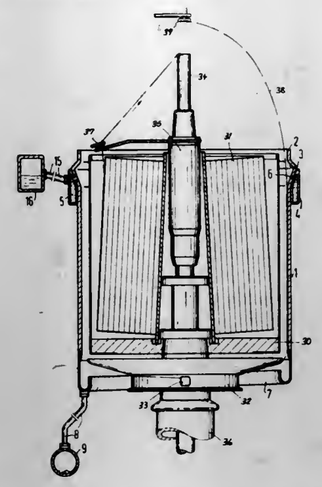
1. A yarn-twisting apparatus comprising:

a stationary support for a yarn package centered on an upright axis;

a thread-guiding structure rotatable about said axis including a hollow spindle traversing said support and terminating in an open top for receiving a thread drawn upwardly from said yarn package, said structure further including a payoff disk on said spindle below said support having a generally radial outlet for said thread;

a balloon-limiting cylinder surrounding said structure and said support, said cylinder having an inner wall surface positioned to surround said yarn package with clearance for the upward guidance of the thread exiting from said outlet and revolving with said structure;

conduit means communicating with a supply of treatment liquid and opening onto said inner wall surface at an elevated zone close to the top of said cylinder periodically swept by the revolving thread for saturating same with said liquid; and



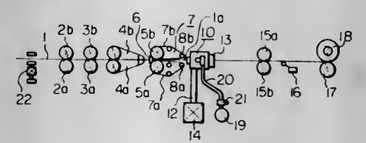
a receptacle for excess liquid extending inwardly of said inner wall surface over the entire periphery of said cylinder at the bottom thereof.

4,114,358

METHOD AND APPARATUS FOR COMMENCING THE YARN FORMING OPERATION OF A FASCIATED YARN

Nobuo Tsuchida; Tadashi Kohara, both of Otsu; Syozo Morishita, Kyoto; Seiichi Yamagata, and Masaaki Sakai, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 6, 1977, Ser. No. 794,545
Int. Cl.[2] D01H *5/28*
U.S. Cl. 57—51 17 Claims



1. Method for commencing a yarn forming operation of a fasciated yarn comprising a twistless core bundle of staple fibers and outside fibers wrapped around said core bundle of fibers by an apparatus provided with a mechanism for supplying a bundle of fibers, a mechanism for forming said yarn from a bundle of fibers supplied thereinto from said supply mechanism and a mechanism for taking up said yarn from said yarn forming mechanism, said supply mechanism being provided with at least a nip point for stably controlling said bundle of fibers at a position facing said yarn forming mechanism, said yarn forming mechanism being provided with a fluid nozzle for creating an eddy current fluid stream therein so that false twists are imparted to said core bundle fibers delivered from said supply mechanism at a position between said nip point and said fluid nozzle, and a suction means for controlling said outside fibers in united condition with said false twisted fiber bundle while said bundle of fibers is introducing into said fluid nozzle, said fluid nozzle being provided with a fluid conduit for receiving compressed fluid thereinto; an improvement comprising, commencing a yarn forming operation in a condition wherein a distance between said nip point of said supply mechanism and a most upstream position in said fluid nozzle where said compressed fluid is ejected thereinto is shortened to a predetermined length which is shorter than a normal distance for carrying out a normal yarn forming operation by displacing said fluid nozzle, carrying out an initial yarn forming operation for a short time in a condition of said shortened distance and, thereafter carrying out said yarn forming operation in a condition wherein said distance is said normal distance.

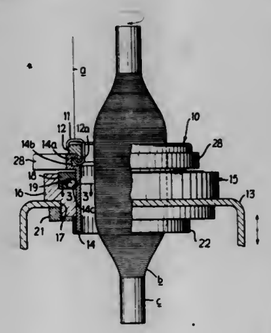
5. In an apparatus for manufacturing a fasciated yarn comprising a twistless core bundle of staple fibers and outside fibers wrapped around said core bundle fibers, provided with a mechanism for supplying a bundle of fibers and a mechanism for forming said yarn from said bundle of fibers supplied from said fiber supply mechanism, said supply mechanism being provided with a nip point where said bundle of fibers can be stably controlled when a normal yarn forming operation is carried out, means for taking up said yarn from said yarn forming mechanism, said yarn forming mechanism comprising a fluid nozzle for creating an eddy current fluid stream therein so that false twists are imparted to said core bundle fibers delivered from said supply mechanism at a position between said nip point and said fluid nozzle, and a suction means for controlling said outside fibers in united condition with said false twisted fiber bundle while said bundle of fibers is introducing into said fluid nozzle, said fluid nozzle being provided with a fluid conduit for receiving compressed fluid thereinto; an improvement comprising, means for holding said fluid nozzle in a condition wherein said means is capable of displacing said fluid nozzle towards said fiber bundle supply mechanism at the time when the initial yarn forming operation is carried out and means for stably positioning said fluid nozzle at a position where a normal yarn forming operation is carried out.

4,114,359

DRIVEN SPINNING RING DEVICE FOR YARN MACHINES

Rufino Creus, Sabadell, Spain, assignor to Spurmach Espana S. L., Sabadell, Spain

Filed Mar. 2, 1976, Ser. No. 663,121
Claims priority, application Spain, Mar. 15, 1975, 435.657
Int. Cl.[2] D01H *7/58*
U.S. Cl. 57—124 10 Claims



1. A spinning ring device for a yarn machine comprising a traveler for guiding yarn in a winding operation about a winding axis, a support ring for the traveler for guiding it in a circular path around the winding axis under the influence of the yarn, a mounting for supporting the ring on the winding axis, a ring holder rotatably mounted in said mounting to enable the ring to rotate in the same direction as the traveler to decrease the relative movement between the ring and the traveler, a stationary bearing support accommodated by the mounting and receiving the ring holder rotatably therein, bearing means interposed between said stationary bearing support and said ring holder to permit the ring holder to rotate within said bearing support, a pair of drive transmitting surfaces formed on the ring holder, driving means in engagement with one of said surfaces for driving the ring holder and driven

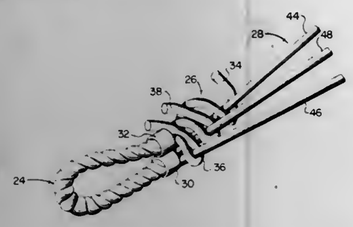
means in engagement with the other of said surfaces for transmitting drive from the ring holder to at least one other ring holder.

4,114,360

PIGGING STRING AND METHOD OF MANUFACTURE

Johnny Dale Emmons, Rte. 3, Box 97-A-4, Mansfield, Tex. 76063

Filed May 9, 1977, Ser. No. 794,939
Int. Cl.² D02G 3/44; B65H 69/06
U.S. Cl. 57—142 **11 Claims**



1. An improved pigging string of the type including a plurality of core filaments twisted into an elongated rope section of fixed length with a loop secured at one end thereof wherein said improvement comprises:

a first length of core filaments tautly twisted into an intermediate loop section and being reversed upon itself;

said loop section being intermediate of second and third core filament sections;

said second core filament section being substantially shorter than said third core filament section and each of said second core filaments being looped around a single associated one of said third core filaments and folded back upon itself;

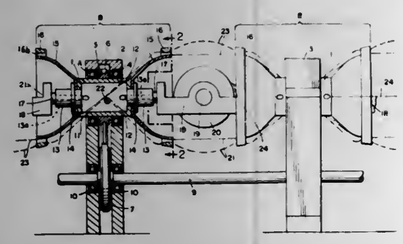
said third core filament section being tautly twisted adjacent said loop section for securing said untwisted, looped and folded core filaments of said second core filament section securely thereagainst.

4,114,361

TWISTING MACHINE PROCESS FOR STRANDING WIRES

Dietrich Berges, Marienheide; Bodo Damzog, Remscheid, and Ulrich Saam, Gummersbach, all of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Wuppertal, Germany

Division of Ser. No. 542,198, Jan. 20, 1975, Pat. No. 4,002,015.
This application Jan. 10, 1977, Ser. No. 757,882
The portion of the term of this patent subsequent to Jan. 11, 1994, has been disclaimed.
Int. Cl.² D01H 7/90; D07B 3/02
U.S. Cl. 57—156 **2 Claims**



1. A process for twist stranding a plurality of wires in a high-speed stranding machine which comprises:

withdrawing said wires from a corresponding plurality of feed spools arranged at spaced intervals on a common stranding axis;

guiding the wire from each of said feed spools first to a deflection point located on said common stranding axis in front of each spool position;

directing each said wire in the same take-off direction from said deflection point in a balloon pattern at the same rotational speed around the adjacent spool and each succeeding spool in the take-off direction;

further guiding each wire as it is directed through its rotating balloon pattern by means of a first curved guide surface extending a short distance between said deflection point and the adjacent spool and also by means of a second curved guide surface being located at an axially spaced interval opposite said first curved guide surface and extending a short distance between the preceding spool and the next adjacent point where the balloon crosses the stranding axis, each of said curved guide surfaces conforming approximately to the free path generated by the rotating balloon around each spool during the twist stranding process, thereby gently deflecting the wire from within each balloon as tension on the wire is increased;

further guiding each wire by an outer retaining ring surface located at a radially outwardly spaced position around each of said first and second curved guide surfaces at their outermost opposed edges conforming to the freely rotating balloon, thereby contacting and lightly deflecting the wire at a point along the outside of each balloon as the tension on the wire is decreased; and

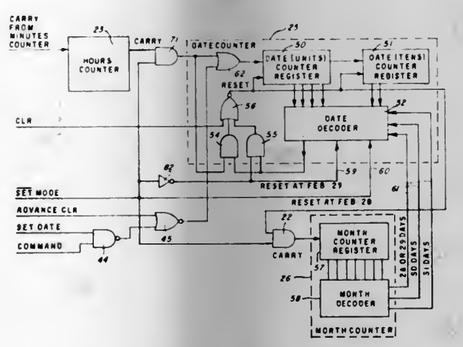
conducting said wires in said balloon pattern free of peripheral limitation or restricted movement aside from said first and second curved guide surfaces and said retaining ring surfaces.

4,114,362

ELECTRONIC TIMEPIECE

John E. Frederiksen, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 14, 1977, Ser. No. 777,382
Int. Cl.² G04B 19/24; G04C 3/00
U.S. Cl. 58—4 A **10 Claims**



1. An electronic timepiece having a timekeeping mode, in which said timepiece is in its normal operating mode for indicating time, and a timesetting mode, in which said timepiece is manually settable to a selected indication of time, said electronic timepiece comprising:

(a) means for indicating a plurality of time-related functions including the month and date; and

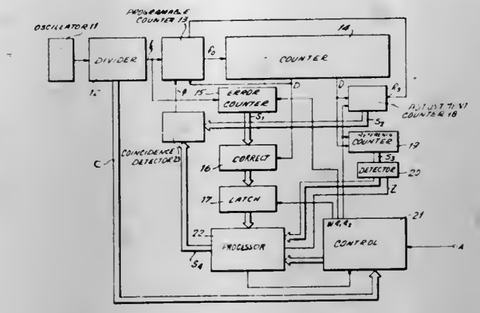
(b) means for advancing said indicating means from February 28 to March 1 when the electronic timepiece is in said timekeeping mode and for allowing said indicating means to be manually advanced from February 28 to February 29 when the electronic timepiece is in the timesetting mode.

4,114,363

ELECTRONIC TIMEPIECE

Yoichi Imamura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jun. 18, 1976, Ser. No. 697,593
Claims priority, application Japan, Jun. 18, 1975, 50-73945
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 R **9 Claims**



1. In an electric timepiece having timing rate circuit means including oscillator means for producing a high frequency time standard signal and divider means for producing a low frequency timekeeping signal, said divider means including a plurality of series-connected divider stages, each said divider stage being adapted to produce an intermediate frequency signal, and counter means for receiving said low frequency timekeeping signal and in response thereto being adapted to produce elapsed time signals representative of the time counted thereby, the improvement comprising error counting means coupled to one of said divider stages for receiving an intermediate frequency signal produced thereby over a randomly selected reference period, a reference counter coupled to said counter means for receiving one of said elapsed time signals produced thereby for said randomly selected reference period and in response thereto being adapted to produce a reference count signal, adjustment counter means adapted to receive one of said elapsed time signals produced by said counter means and in response thereto produce an adjustment count signal and processing means for comparing said error signal and said reference count signal and in response thereto, said processing circuit being adapted to produce a rate adjustment signal, said processing means further including coincidence means for detecting coincidence between said adjustment count signal and said rate adjustment signal and in response to said coincidence therebetween apply a frequency adjusting signal to said timing rate circuit means to regulate the timing rate of said low frequency timekeeping signal produced thereby.

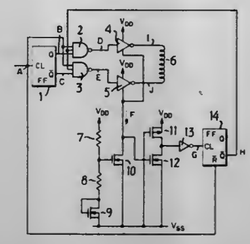
4,114,364

DRIVING PULSE WIDTH CONTROLLING CIRCUIT FOR A TRANSDUCER OF AN ELECTRONIC TIMEPIECE

Norio Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Jan. 28, 1977, Ser. No. 763,714
Claims priority, application Japan, Jan. 29, 1976, 51-8631
Int. Cl.² G04C 3/00; H02P 7/00
U.S. Cl. 58—23 D **4 Claims**

1. In an analogue electronic timepiece, the combination of a transducer comprising a rotor, a stator and a driving coil, means including a power source for periodically supplying to said driving coil electric pulses of a selected width to drive the rotor and means for automatically controlling the pulse width according to the load of the transducer and thereby reduce power comsumption, said pulse supplying means comprising two transducer driving inverters of which the outputs are connected respectively to opposite terminals of said driving coil, means supplying a clock signal, a first flip-flop having Q, Q and CL terminals, a second flip-flop having Q, CL and R terminals, a first NAND circuit having output terminal connected with one of said transducer driving inverters and three inputs connected respectively with said clock signal supply means, the Q terminal of said second flip-flop and the Q terminal of said first flip-flop, and a second NAND circuit having an output connected to the other transducer driving inverter and three inputs connected respectively with said clock signal supply means, said Q terminal of said second flip-flop and the Q terminal of said first flip-flop.

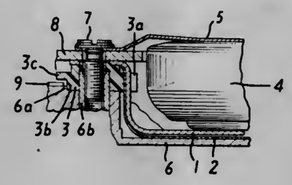


4,114,365

BATTERY LEAD PLATE MEMBER FOR AN ELECTRONIC WRIST WATCH

Eiichi Matsuura; Keikichi Takahashi; Nobuo Tsukada, and Yoshio Tatsumi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Dec. 3, 1976, Ser. No. 747,188
Claims priority, application Japan, Dec. 5, 1975, 50-165096[U]
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 BA **3 Claims**

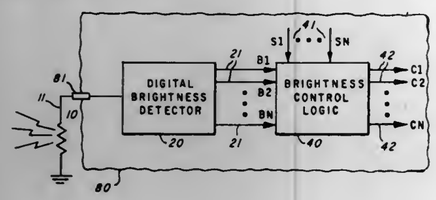


1. A battery lead plate assembly comprised of a one-piece integral structure for use in an electronic timepiece for connecting together a circuit block and a battery: said assembly comprising a casing composed of electrically insulative material and having means for connecting said casing to the circuit block and having a slotted arm portion; a lead plate element composed of electrically conductive material and having an end portion thereof inserted into the slot defined by said slotted arm portion and being configured so as to contact and make electrical connection between the circuit block and battery; and an insulating plate composed of electrically insulative material and having an end portion thereof inserted into said slot defined by said slotted arm portion and being configured so as to extend along the side of said lead plate element opposite the battery to thereby electrically insulate said lead plate element from other parts of the timepiece; said casing, lead plate element and insulating plate being integrally bonded into a one-piece structure to facilitate incorporation into and assembly of the timepiece.

4,114,366
DIGITAL BRIGHTNESS CONTROL SYSTEM

Karl H. Renner, Dallas, and Clark Russell Williams, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1976, Ser. No. 710,524
Int. Cl.² G04B *19/30*; G04C *3/00*; H05B *37/02, 39/04*
U.S. Cl. 58—50 R **19 Claims**

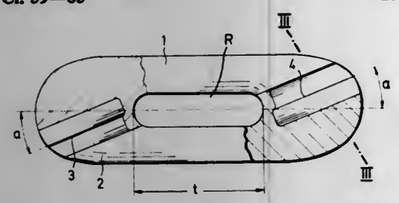


1. An electronic digital timekeeping device comprising:
(a) time display means;
(b) timekeeping circuitry means coupled to said display means for generating time signals for display by said display means;
(c) light sensor means;
(d) digital brightness detector means coupled to said light sensor means, said detector means including:
(i) a current source means, and
(ii) a plurality of semiconductor voltage level detector means with each of said voltage level detector means having an analog input coupled to said current source means, a unique switching threshold, and a digital output representative of the quantum of light detected by said light sensor means; and
(e) brightness control logic means coupled to said detector means for controlling the brightness of said display according to the digital outputs of said plurality of voltage level detector means.

4,114,367
LOCKING ELEMENT FOR CONNECTING CHAIN LINKS

Egon Verse, Iserlohn, Germany, assignor to Fa. August Thiele, Iserlohn-Kalthof, Germany

Filed Jul. 29, 1977, Ser. No. 820,127
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 2638443
Int. Cl.² F16G *15/04*
U.S. Cl. 59—85 **13 Claims**

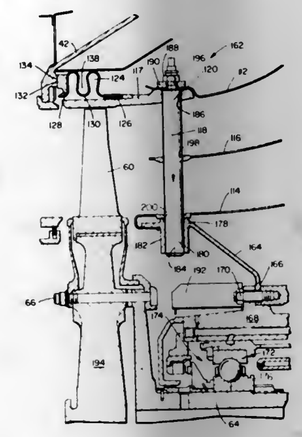


1. A locking element for connecting two chain links with one another, comprising two elongated locking members each having a recess and one and another end portion which are spaced from each other, the one end portion of one of said locking members being slidably and releasably engageable with the other end portion of the other locking member, and vice versa, in one and another plane which are parallel to one another and are inclined lengthwise of but in an oblique direction relative to the elongation of said locking members, said locking members being slidably movable relative to one another in said oblique direction between an engaged position in which the one end portion of one of said locking members engages the other end portion of the other of said locking members, and vice versa, in said one and other plane, respectively, and the recesses of said locking members together form an inner circumferentially closed recess in which the chain links can move, and a disengaged position in which the respective end portions of the locking members are disengaged from each other so that the chain links can be withdrawn from said inner recess, said one and said other plane being so offset relative to one another that during sliding movement of said locking members between said positions chain links received in the respective recesses thereof are moved in planes substantially parallel to said one and said other plane.

4,114,368
SUPPORT FOR CONCENTRIC TURBINE BLADE SHROUD

Warren W. Davis, Dunlap, and David E. Keedy, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 630,476, Nov. 10, 1975, Pat. No. 4,030,288. This application Oct. 1, 1976, Ser. No. 728,670
Int. Cl.² F02C *7/20*
U.S. Cl. 60—39.16 R **7 Claims**

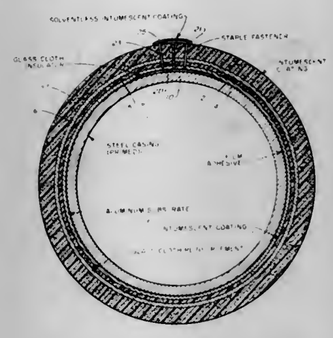


1. In a gas turbine engine which comprises a gasifier module within a case, a power output module fixedly attachable to said case in position to receive exhaust gases exiting a combustor and passing via a gasifier turbine portion of said gasifier module to drive a power turbine having a turbine shroud about a plurality of blades of said turbine and thereby to drive a shaft of said power output module an improved turbine shroud support assembly, comprising;
a plurality of struts radially extending outwardly adjacent said power turbine, said struts supporting at a plurality of outer ends thereof said turbine shroud in fixed closely spaced concentric relation about said plurality of turbine blades, said struts supporting at said outer ends thereof an outer shroud which is positioned to direct the flow of said exhaust gases away from said blades of said power turbine;
a stationary bearing carrier surrounding and supporting an outer race of a bearing, an inner race of said bearing contacting said power turbine shaft;
inner support means fixed to said bearing carrier;
a plurality of sleeves, each having an axis generally radially extending from said shaft supported by said inner support means, said inner ends of each of said struts fitting in tight but slidable relation within a respective one of said sleeves, said turbine shroud including a plurality of holes therethrough in one-to-one relation with said plurality of struts, each of said struts fitting in a respective one of said holes in tight but slidable relation; and
a plurality of fastening means in one-to-one relation with said plurality of struts, each of said fastening means fastening said turbine shroud to a respective one of said struts, each of said struts being movable radially inwardly toward said shaft and out of the respective holes when the respective fastening means is detached to allow removal of said turbine shroud without removal of a turbine rotor which supports said blades and is driven by said shaft.

4,114,369
COOK-OFF COATING

Donald P. Crowley, Lowell, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1977, Ser. No. 794,165
Int. Cl.² F02K *1/00*
U.S. Cl. 60—200 A **23 Claims**

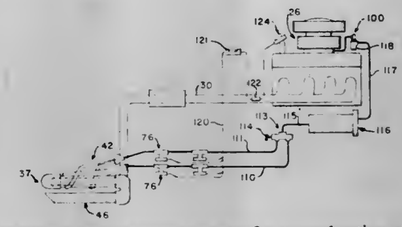


1. An ablative and flexible high strength insulative cook-off coating composite-sheet for providing a heat transfer inhibiting barrier as protection against fire and high temperatures, comprising:
a. a metal foil substrate having one surface thereof operable to be affixed to a device to be protected from excess heat;
b. a first layer of intumescent composition material adjacent to and affixed to the other surface of said metal foil substrate;
c. a glass cloth reinforcement layer having one side thereof affixed to the surface of said first layer of intumescent material;
d. a second layer of intumescent material affixed to the other side of said glass cloth; said second layer of intumescent material being of greater thickness than said first layer;
e. said glass cloth reinforcement layer being embedded between said first and second layers of intumescent material; said glass cloth reinforcement layer being operable to strengthen said flexible composite-sheet and prevent fissuring of the intumescent material layers upon charring of the intumescent material and prevent char failure of said composite-sheet due to flame and high temperatures produced by combustion of rocket propellants and the like;
f. said composite layers of aluminum foil, intumescent composition material and glass cloth being flexible and providing an ablative insulating covering which inhibits heat transfer and provides insulation for safety purposes over a desired period of time; said period of time operable to be varied by varying the overall thickness of the composite-sheet, particularly the overall thickness of said first and second intumescent material layers.

4,114,370
EXHAUST GAS RECIRCULATION MEANS

Claude A. Woods, Fairacres, N. Mex., assignor to Woods Enterprises, Inc., Las Cruces, N. Mex.

Continuation of Ser. No. 689,805, May 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 557,882, Mar. 12, 1975, abandoned. This application Jan. 6, 1977, Ser. No. 757,244
Int. Cl.² F02M *25/06*; F02B *75/10*; F01N *3/02*; B01D *45/18*
U.S. Cl. 60—279 **9 Claims**

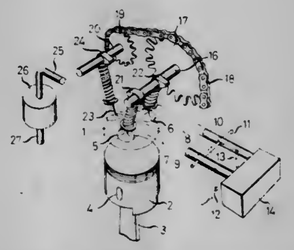


4. An exhaust gas treatment system for a combustion chamber, comprising
an exhaust conduit from a combustion chamber,
a gas sampler for removing selected gases from the flow of gas from the combustion chamber and returning them to the combustion chamber, while allowing passage of other gas therethrough, said gas sampler including a solid wall tubular member having solid wall tubular passageways extending therefrom for returning removed selected gases to the combustion chamber,
a static structure connected between said conduit and said sampler, and consisting of a first pipe section; a second pipe section disposed at substantially 90° with respect to said first pipe section and forming a square elbow therewith; and a third pipe section substantially parallel to said first pipe section and disposed at substantially 90° with respect to said second pipe section and forming a square elbow therewith; said first and third pipe sections disposed in a substantially common plane that is between horizontal and about ± 10° from horizontal, and
said static structure being directly connected between said conduit and said sampler, a linear connection being provided between said static structure third pipe section and said sampler, and in fluid-communicating relationship with both said conduit and said sampler.

4,114,371
INTERNAL COMBUSTION ENGINE

Munekazu Matsuda, Nishinomiya, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Mar. 31, 1976, Ser. No. 672,333
Claims priority, application Japan, Apr. 22, 1975, 50-49501
Int. Cl.² F02M *13/02*; F02B *75/10*
U.S. Cl. 60—282 **6 Claims**



1. An internal combustion engine comprising a cylinder, rich fuel-air mixture supply means for supplying rich fuel-air mixture to said cylinder, lean fuel-air mixture supply means for supplying lean fuel-air mixture to said cylinder, a rich fuel-air

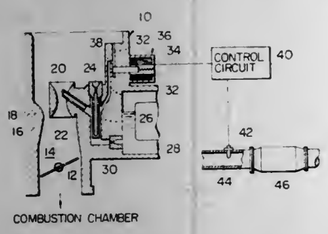
mixture inlet valve mounted on said cylinder and communicating with said rich fuel-air mixture supply means, a lean fuel-air mixture inlet valve mounted on said cylinder and communicating with said lean fuel-air mixture supply means, an exhaust valve mounted on said cylinder, an exhaust gas thermal reactor communicating with said exhaust valve, means for actuating said inlet valves, and means for actuating said exhaust valve, said rich fuel-air mixture inlet valve and said lean fuel-air inlet valve being actuated alternately whereby rich mixture and lean mixtures can be alternately supplied to the cylinder, said means for actuating said inlet valves comprising an inlet valve cam shaft, and two cams supported by said inlet valve cam shaft, said two cams being disposed such that they are displaced from each other by 180° whereby said rich fuel-air mixture inlet valve and said lean fuel-air inlet valve can be alternately actuated.

4,114,372

INTERNAL COMBUSTION ENGINE WITH AIR-FUEL RATIO CONTROL DEVICE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jun. 11, 1976, Ser. No. 694,970
Claims priority, application Japan, Jun. 13, 1975, 50-81026[U]
Int. Cl.² F02B *75/10*; F02D *35/00*
U.S. Cl. 60—276 **6 Claims**



1. An internal combustion engine having a cylinder in which a combustion chamber is defined by a cylinder head and a piston crown, comprising:

a carburetor including a throttle valve, a venturi portion upstream of the throttle valve, a main discharge nozzle opening to the venturi portion, a float bowl, a main jet, a main well communicating with the main discharge nozzle opening to the venturi portion disposed upstream of the throttle valve of said carburetor, the main well being communicating through the main jet with the float bowl of said carburetor, means defining a main air bleed orifice connected to said main well for communicating between the atmosphere and said main well, means defining a first additional air passage connected to said main well, a diaphragm defining an atmospheric chamber into which said first additional air passage opens, means defining a second additional air passage communicating between said atmospheric chamber and the atmosphere, means defining an air induction passage connecting a portion of said first additional air passage and a portion of said second additional air passage, means defining an orifice disposed within said air induction passage, a valve seat disposed at a portion where said first additional air passage opens to said atmospheric chamber, a valve member secured to said diaphragm to open and close the opening formed through said valve seat, the opening communicating with said first additional air passage, said valve member having a portion which is magnetically affected, an electromagnet disposed opposite of said valve seat with respect to said diaphragm and having a core which attracts said valve member in the direction to detach from said valve seat to establish communication between said first and second additional air passages when said electromagnet is energized, and a spring member disposed to urge said valve member in the direction to contact with said valve seat for blocking the communication between said first and second additional air passages when said electromagnet is de-energized; and

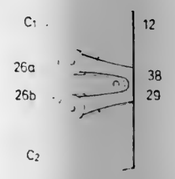
control means to place said electromagnet into a first state wherein the energizing time rate of said electromagnet is increased to a rate greater than a predetermined rate to make leaner the air-fuel ratio of the air-fuel mixture fed into the combustion chamber toward a predetermined level when the exhaust gases of the engine have a first composition representing that the combustion chamber is fed with an air-fuel mixture of the air-fuel ratio richer than the predetermined level, and into a second state wherein the energizing time rate is decreased to a rate less than the predetermined rate to make richer the air-fuel ratio of the air-fuel mixture fed into the combustion chamber toward the predetermined level when the exhaust gases of the engine have a second composition representing that the combustion chamber is fed with the air-fuel mixture of the air-fuel ratio lean than the predetermined level.

4,114,373

INTERNAL COMBUSTION ENGINE HAVING SIAMESED EXHAUST PORTS AND AN AFTERCOMBUSTION CHAMBER

Yasuo Sakai, Yokohama; Yasuhiko Nakagawa, Kamakura, and Yasuo Nakajima, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 14, 1976, Ser. No. 676,664
Claims priority, application Japan, Apr. 15, 1975, 50/45554
Int. Cl.² F01N *3/10*
U.S. Cl. 60—282 **11 Claims**



1. An internal combustion engine comprising:

a cylinder block;

a cylinder head positioned atop said cylinder block to define therebetween two combustion chambers which are respectively communicable with two exhaust port passages opening to the atmosphere at one side of said cylinder head, said exhaust port passages being arranged to neighbour each other;

a bolt member fastening said cylinder head to said cylinder block by passing through a bolt hole which is formed in said cylinder head at a position between said two exhaust port passages near one side of said cylinder head;

exhaust port liner means covering the surface of each exhaust port passage for preventing temperature drop of the exhaust gases passing therethrough;

an exhaust manifold having inlet and outlet openings which are fluidly communicated with an aftercombustion chamber formed in said manifold, said inlet opening being connected to both of said two exhaust port passages so as to introduce the exhaust gases emitted from said combustion chambers into said aftercombustion chamber for re-combustion of the same; and

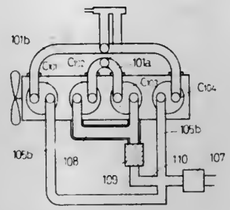
an exhaust manifold liner covering the inner surface of said exhaust manifold for preventing temperature drop of the exhaust gases passing therethrough.

4,114,374

INTERNAL COMBUSTION ENGINE

Toshio Tanahashi, Toyoda, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 20, 1976, Ser. No. 678,647
Claims priority, application Japan, Nov. 14, 1975, 50/137423
Int. Cl.² F02B *75/10*; F02M *13/06*; F02D *9/00*
U.S. Cl. 60—302 **10 Claims**



1. An internal combustion engine for an automobile comprising:

a plurality of cylinders;

a primary intake system communicating with at least one of said cylinders and having a primary carburetor and a primary throttle valve connected to an accelerator pedal;

a secondary intake system communicating with the remainder of said cylinders and having a secondary carburetor and a secondary throttle valve, said secondary carburetor having a main fuel passage therein;

a device for controlling said secondary throttle valve adapted for maintaining said secondary throttle valve in the vicinity of its idling position when said primary throttle valve is in the vicinity of its idling position, while allowing said secondary throttle valve to fully open after said primary throttle valve is considerably turned away from its idling position; and,

a fuel supply controlling device adapted to close said main fuel passage in said secondary carburetor when said primary throttle valve is open to an extent narrower than a predetermined level, but open said main fuel passage upon further opening of said primary throttle valve to at least said predetermined level, said fuel supply controlling device comprising a diaphragm valve provided in said main fuel passage and having two negative pressure chambers and a pair of passages, one of which connects one of said negative pressure chambers with an intake manifold in said primary intake system, while the other passage connects the other negative pressure chamber with an intake manifold in said secondary intake system.

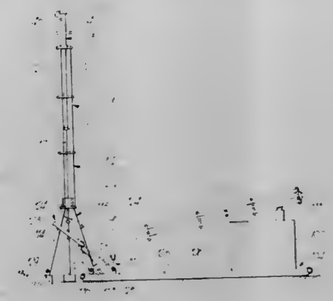
4,114,375

PUMP JACK DEVICE

Minoru Saruwatari, Calgary, Canada, assignor to Canadian Foremost Ltd., Calgary, Canada

Continuation-in-part of Ser. No. 699,134, Jun. 23, 1976, Pat. No. 4,047,384. This application Sep. 9, 1977, Ser. No. 832,046
Claims priority, application Canada, Apr. 9, 1976, 249962
Int. Cl.² F15B *9/02*
U.S. Cl. 60—372 **9 Claims**

1. A pump jack comprising a double acting equal displacement, through rod type piston and cylinder motor; means for connecting a piston rod of said motor to a polished rod in a well head; said motor being arranged to be mounted above said well head and coaxial with said polished rod; a variable displacement type hydraulic pump having a pair of output ports; a pair of hydraulic conduits each placing one of said output ports in communication with an opposite end of said motor and forming a closed hydraulic loop with said motor and pump; drive means for said pump; a pump control means for controlling the direction and volume of flow in said loop to thereby determine the length and position of the stroke and the velocity of said piston rod; a compressible fluid counterbalance means for accumulation of energy during a down stroke of said piston rod and returning said energy to said piston rod during an up stroke of said piston rod; said counterbalance means including a cylinder having a piston with means connecting the piston thereof to the piston of said motor for drive therewith, said cylinder and piston forming a chamber containing a gaseous charge disposed to be compressed by the piston of said counterbalance means during the downward stroke of said



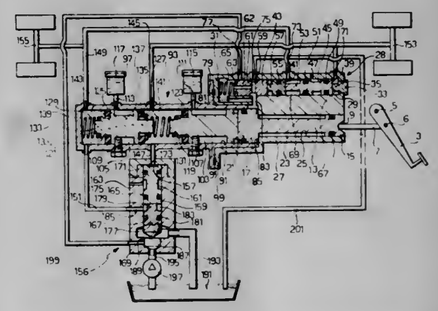
polished rod, said counterbalance means including an additional closed chamber means in communication with said chamber formed by said cylinder and piston, and the cylinder of said counterbalance means being coaxially mounted with said motor, said piston of said counterbalance means being directly connected to a second piston rod formed by the through rod of said motor.

4,114,376

SERVO-ASSISTED HYDRAULIC BRAKING SYSTEM

Maurizio Cattaneo, Turin, and Antonino Bertone, Sant'Antonino (Vercelli), both of Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed Sep. 24, 1976, Ser. No. 726,322
Claims priority, application Italy, Oct. 10, 1975, 69529 A/75
Int. Cl.² B60T *13/12*
U.S. Cl. 60—548 **5 Claims**



1. A servo-assisted hydraulic braking system having:

a master cylinder closed at one end by an end wall,

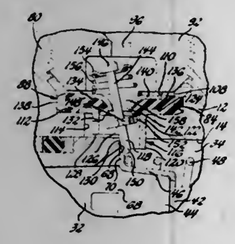
first and second master cylinder plungers within said master cylinder, said master cylinder plungers defining between them a first master cylinder chamber, one of said master cylinder plungers defining a second master cylinder chamber between itself and said end wall of said master cylinder,

a driving piston slidable along said master cylinder and displaceable by the brake pedal of said braking system, such displacement also causing displacement of said first and second master cylinder plungers to control the pressure in said first and second master cylinder chambers,

means defining a driving piston chamber within said master

cylinder, said driving piston forming at least one wall of said driving piston chamber,
a distributor device,
a pressure generator,
means fluidly connecting said distributor device to said pressure generator,
means fluidly connected said distributor device to said driving piston chamber,
means fluidly connecting said first and second master cylinder chambers to said distributor device whereby to control said distributor device to feed pressure from said pressure generator to said driving piston chamber to reinforce the force applied to said driving piston by said brake pedal,
said distributor device comprising:
a distributor body,
means defining a cylindrical bore in said distributor body,
first and second end walls defining opposite ends of said cylindrical bore,
at least one control plunger sliding in said cylindrical bore said control plunger defining a control chamber between itself and said first end wall of said cylindrical bore of said distributor body,
said means for fluidly connecting said first and second master cylinder chambers to said distributor device include means fluidly connecting said control chamber of said distributor to one of said first and second master cylinder chambers,
a distribution plunger sliding in said cylindrical bore in said distributor body between first and second end positions, said distribution plunger defining a distribution chamber between itself and said second end wall of said cylindrical bore of said distributor body,
means defining a transverse passage in said distribution plunger, said transverse passage permitting communication between said pressure generating device and said distribution chamber of said distributor when said distribution plunger is in said second position thereof and preventing such communication when said distribution plunger is in said first position thereof, displacement of said distribution plunger between said first and second positions being controlled by the pressure in said control chamber of said distributor.

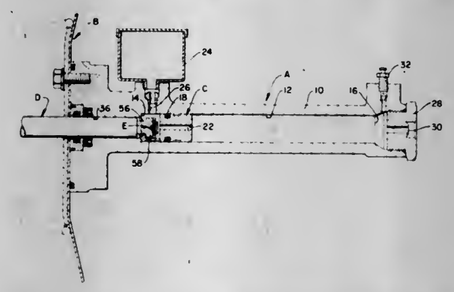
4,114,377
MASTER CYLINDER ASSEMBLY
Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 11, 1976, Ser. No. 741,158
Int. Cl.² B60T *11/20*
U.S. Cl. 60—589 **2 Claims**



1. A master cylinder assembly comprising:
a housing having an axially extending bore therein, said bore having an axis;
piston means reciprocably movable in said housing bore in an axial direction along said bore axis and defining therewith hydraulic fluid pressurizing chamber means;
reservoir means for hydraulic fluid;
compensating passage means in said housing for selectively communicating hydraulic fluid between said reservoir means and said pressurizing chamber means and having a side wall and annular shoulder means formed therein;
compensating means including flanged valve seat means and tilt valve means continually urged toward seating engagement with said valve seat means, said compensating means being mounted in said passage means with a portion of said flanged valve seat means engaging and extending through said annular shoulder means, and said tilt valve means extending through said annular shoulder means and into said bore, said flanged valve seat means having an annular rubber-like valve seat formed with the inner periphery thereof providing the valve seat engageable by said tilt valve means, said valve seat being formed with resilient flutes on the outer periphery thereof, said resilient flutes having radially outward portions engaging said compensating passage means side wall and tending to centrally position said compensating means radially in said passage means, said tilt valve means being adapted to be operatively engageable by said piston means to open said compensating passage means with said piston means in the retracted non-pressurizing position and operatively disengageable by said piston means to close said compensating passage means upon predetermined movement of said piston means in a fluid pressurizing direction in said bore after completion of assembly of the master cylinder assembly;
said compensating passage means having a portion intermediate said annular shoulder means and said housing bore being of greater dimension at least in the housing bore axial directions than the similar dimension of the portion of said compensating means extending through said annular shoulder means, the difference in said dimensions permitting limited adjustment movement of said compensating means in directions parallel to the axis of said housing bore during assembly of the master cylinder assembly by radial compression of at least some of said resilient flutes;
and holding means during master cylinder assembly initially retaining said compensating means while permitting the aforesaid adjustment movement with said compensating means being set in axial bore position relation by the movement of said piston means from a pressurizing position to the retracted non-pressurizing position engaging said compensating means, said holding means being adapted upon completion of assembly to then further act to secure said compensating means against further movement in housing bore axial directions relative to said housing.

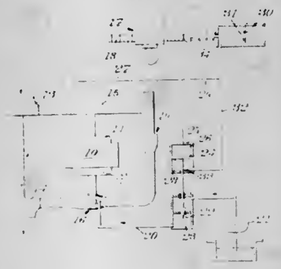
4,114,378
ROD AND PISTON CONNECTION FOR HYDRAULIC DEVICES
Dennis M. Stanuszek, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Oct. 20, 1976, Ser. No. 734,035
Int. Cl.² F15B *7/08*
U.S. Cl. 60—589 **1 Claim**

1. In a hydraulic device including a cylinder reciprocatingly receiving a piston separating said cylinder into first and second chambers, an axially extending passage through said piston for establishing communication between said chambers, a hydraulic fluid supply port communicating with said first chamber between one end of said cylinder and said piston, a push rod extending through said one end of said cylinder and being connected with said piston by lost motion connecting means for providing limited axial movement of said rod relative to said piston, said connecting means having no moving parts or fasteners separate from said rod and piston and including cooperating separable coupling parts formed integrally on said rod and piston for connecting and disconnecting said rod and piston by relative lateral movement therebetween, said coupling parts being formed integrally on said rod and piston in the sense of being unitary and whole therewith as opposed to being made separately therefrom and then secured thereto, said coupling part on said rod comprising an enlargement defined on one end portion thereof between a terminal rod end facing said piston and a circumferential groove spaced from said rod end, said coupling part on said piston including a laterally open arcuate first pocket for closely receiving said enlargement and a laterally open arcuate second pocket axially aligned with said first pocket for closely receiving said groove, said pockets being separated by a radially extending shoulder, said first pocket having an axial length slightly greater than said enlargement and said second pocket having a length less than said groove so that said enlargement moves axially relative to said first pocket between said shoulder and one end of said piston,



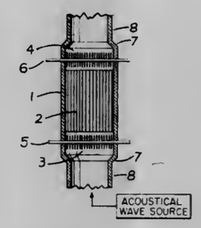
said rod end facing said piston having a bore therein with an entrance opening of smaller diameter than the diameter of said bore inwardly of said rod end, an elastomeric valve seal received in said bore and having a seal projection extending through said entrance opening outwardly of said rod end, said cylinder having a cylinder bore communicating with one end thereof, said rod being closely guided in said cylinder bore so that said separable coupling parts cannot be connected or disconnected while said piston is in said cylinder, said cylinder having a predetermined length and a removable plug at the opposite end thereof from said cylinder bore, and said rod having a length greater than said predetermined length for location of said separable coupling parts on said piston and rod outside of said cylinder beyond said opposite end thereof to connect or disconnect said coupling.

4,114,379
POWER UNIT
Jean Melchior, and Thierry Andre', both of Paris, France, assignors to Etat Francais, Paris, France
Filed Sep. 8, 1975, Ser. No. 611,010
Claims priority, application France, Sep. 10, 1974, 74 30519
Int. Cl.² F02B *33/44*
U.S. Cl. 60—606 **20 Claims**



1. A supercharging system for a power unit of the type comprising an internal combustion engine having combustion chamber means of the expansible chamber type, a turbine-compressor unit for supercharging the engine and having at least one compressor and at least one turbine receiving the exhaust gases from the engine and driving the compressor, a bypass pipe through which all the air from the compressor which is not absorbed by the engine flows toward the turbine, an auxiliary combustion chamber disposed upstream of the turbine and receiving the air flowing in the bypass pipe and a fuel control system for supplying fuel to the auxiliary combustion chamber, said system comprising engine throttle means for varying the fuel supplied to said engine so as to vary the quantity of fuel injected into the combustion chamber means of said engine to thereby vary the torque developed by said engine as desired within the operating limits of said engine, and regulating means for operating said fuel control system to supply just enough fuel to the auxiliary combustion chamber such that the energy derived by the turbine from the auxiliary combustion chamber plus the energy derived by the turbine from the engine exhaust gases operates said turbine-compressor unit at an output flow rate just sufficient to prevent the ratio of fuel-to-air delivered to said engine combustion chamber means from exceeding a predetermined acceptable value, said engine throttle means comprising a fuel injection system of the positive metering type having a movable mechanical control element operable through a range of positions to vary the quantity of fuel injected per cycle into the engine combustion chamber means, and wherein said regulating means includes means sensing the engine supercharging pressure produced by said compressor and operable to correlate the value of the engine supercharging pressure thus derived with the position of said mechanical control element such that the supercharging pressure is maintained at a set value sufficient to insure that said fuel-to-air ratio does not exceed said predetermined acceptable value.

4,114,380
TRAVELING WAVE HEAT ENGINE
Peter Hutson Ceperley, 4803 Clemons Ct., Annandale, Va. 22003
Filed Mar. 3, 1977, Ser. No. 774,063
Int. Cl.² F03G *7/00*
U.S. Cl. 60—721 **7 Claims**



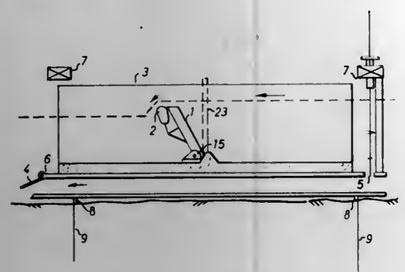
1. A heat engine comprising:
a. a compressible fluid capable of supporting propagation of an acoustical traveling wave,
b. a means for adding thermal energy to the fluid in one region of space (region A),
c. a means for extracting thermal energy from the fluid in another region of space (region B),
d. at least one stationary object in and/or between the two regions, in approximate thermal equilibrium with the fluid there, for the purpose of causing the temperature gradient which can exist in the fluid there to remain essentially stationary in the presence of wave induced fluid motion through the gradient, and
e. a means for causing an acoustical traveling wave to propagate on a path through the fluid from region B, through the region of stationary temperature gradient, into region A, in such a manner that the wave moves fluid back and forth through the stationary temperature gradient and so causes the fluid there to be heated and/or cooled in conjunction with the compression and expansion of the wave, for the purpose of transforming energy between the thermal form of the temperature gradient and the acoustical form of the traveling wave.

4,114,381

POSITIVE FLOW ESTUARY STRUCTURE

Roy W. Lundh, Glendora, Calif., assignor to Poseidon Marketing and Development Co., Arcadia, Calif.

Filed Mar. 18, 1977, Ser. No. 779,174
Int. Cl.² E02B *7/20, 7/44*
U.S. Cl. 405—94 **3 Claims**



1. A water stream barrier structure comprising a pair of horizontally spaced sidewalls, a floor structure interconnecting the side walls, horizontally aligned water gate panel means pivotally mounted at its lower ends between the side walls and the upper side of the floor structure, stop means on the upstream side of the side walls for holding the water gate means in an upright closed position, whereby the gate panel means is in a closed position when the water level on the downstream side is above the water level on the upstream side and the gate panel means will open when the upstream water level is above the downstream water level.

4,114,382

PROCESS FOR THE CONSOLIDATION OF GEOLOGICAL FORMATIONS AND LOOSENED ROCK AND EARTH MASSES

Rolf Kubens, Odenthal-Hahnenberg, and Frank Meyer, Essen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 598,108, Jul. 22, 1975, abandoned. This application May 6, 1977, Ser. No. 794,593
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1974, 2436029
Int. Cl.² E02D *3/12*; C08G *18/65*; E21D *11/00*
U.S. Cl. 405—264 **17 Claims**

1. A process for consolidating geological formations comprising applying an at least two-component reactive polyisocyanate/polyol mixture to the material to be consolidated wherein said reactive polyisocyanate/polyol mixture comprises:

(a) a polyisocyanate, and

(b) a polyol mixture comprising

(i) about 5–50% by weight of a polyether polyol having an OH number under 100 produced by the reaction between a compound having more than one reactive hydrogen atom per molecule and a molar excess of 1,2-alkylene oxide, and

(ii) about 95–50% by weight of a polyol selected from the group consisting of a polyhydroxyalkane having 2 to 4 hydroxy groups with a molecular weight of about 62 to 200 and a polyether polyol having an OH number of about 200 to 1056 with a molecular weight of about 106 to 1,000,

and wherein said reactive polyisocyanate/polyol mixture undergoes an isocyanate polyaddition reaction in the material to be consolidated.

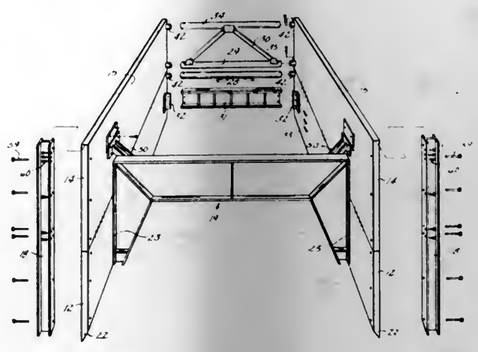
14. The process of claim 1 wherein the mixture is applied by pouring the components before they harden into a downwardly sloping drill hole in the material to be consolidated and then sealing the drill hole.

4,114,383

PORTAL FRAME FOR TRENCH BOX STACK

Allen J. Nieber, Northville, Mich., assignor to Efficiency Production, Inc., Okemos, Mich.

Division of Ser. No. 731,131, Oct. 12, 1976, Pat. No. 4,090,365. This application Jan. 16, 1978, Ser. No. 869,677
Int. Cl.² E21D *5/12*
U.S. Cl. 405—282 **2 Claims**



1. A portal frame for securing trench boxes in plural stacked relation comprising:

a pair of vertical structural column elements in spaced-apart relation, each having a pair of spaced-apart flanges with plural pierced openings and a connecting web;

a plurality of thrust pads each having an opening therethrough and secured fixedly to said web and to said flanges at selected intervals over the length of said columns in register with selected of said pierced openings in said flanges;

a truss-like structural arch connected between the innermost of the flanges of said columns and having fastener openings therethrough in registry with said pierced openings in said flanges; and

fastener means through said openings and said thrust pads and sandwiching plural panels of said trench boxes between said flanges in stacked aligned relation.

4,114,384

METHOD OF SECURING FIXING ELEMENTS IN ROCK

Henry Kinny Kennedy-Skipton, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 20, 1976, Ser. No. 734,355
Claims priority, application United Kingdom, Nov. 5, 1975, 45925/75
Int. Cl.² E21D *11/00*
U.S. Cl. 405—260 **8 Claims**

1. A method of securing a fixing element in a drillhole in a rock mass comprising grouting the element by pumping into the drillhole a plaster composition based on calcium sulphate hemihydrate comprising α-gypsum gauged with an aqueous solution containing 0.01 to 3% w/v of water-soluble salt of carboxy methyl cellulose (CMC), the grouting composition containing sufficient water to render the composition pumpable.

4,114,385

ROOF SUPPORT

Alfred Alphonse Marie Valantin, Clermont, France, assignor to Charbonnages de France, Paris, France

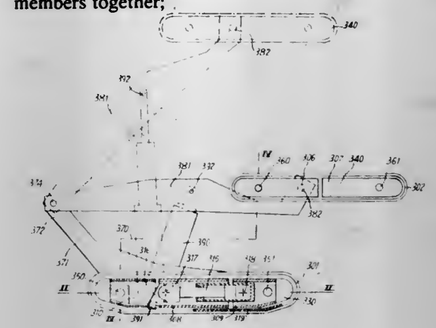
Filed Dec. 6, 1977, Ser. No. 858,064
Claims priority, application France, Dec. 7, 1976, 76 36769
Int. Cl.² E21D *15/44*
U.S. Cl. 405—298 **21 Claims**

1. A roof support which is capable of being moved by its own drive mechanism whilst under permanent load, comprising:

at least two lower carriages;

two cross members connecting the lower carriages together, which cross members are connected to the lower carriages by pivotal joints having at least two axes of rotation;

a lower longitudinal member connecting said two cross members together;



an arm articulated to one end of said lower longitudinal member, which arm swings above said longitudinal member;

a carriage support carried by the free end of said arm;

at least one upper carriage carried by said support and oriented parallel to the lower carriages; and

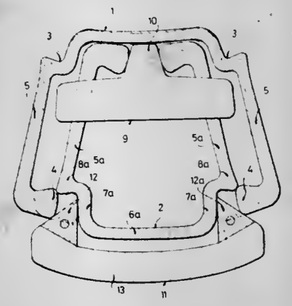
jack means connected between said lower longitudinal member and said arm and operable to vary the separation between said carriage support and the lower carriages.

4,114,386

METHOD AND DEVICE FOR REMOVING RESILIENT GALLERY LINING FRAMES IN MINING AND TUNNELLING WHICH CONSIST OF A NUMBER OF SECTION SEGMENTS INSERTED ONE INTO ANOTHER IN A DISSIMILAR MANNER

Gerd Radner, Herne, and Christoph Zillessen, Recklinghausen, both of Germany, assignors to Ruhrkohle, A.G., Germany

Filed May 9, 1977, Ser. No. 795,347
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623909
Int. Cl.² E21D *11/22*
U.S. Cl. 405—150 **12 Claims**



1. A method for removing gallery lining frames formed of at least inner and outer deformable frame segments, each of said segments having a generally C-shaped cross section with a pair of arms joined by an intermediate connection member having an exterior flange, the ends of said segments being slid into one another with the C-sections of the segments opening in opposite directions to form a closed tube in a region of overlap, said method comprising the steps of:

releasing any forces applied to said segments parallel to the plane of the cross sections and urging the overlapping segment ends into contact;

forcing the arms of the outer segment apart at the end thereof an amount sufficient to permit release of the end of the inner member; and

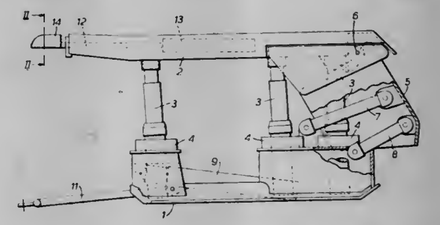
moving the end of the inner member substantially normal to the opening between the arms of the outer member to release the overlapping segments from one another and recover the lining frame.

4,114,387

MINE ROOF SUPPORT

Dennis Franklin Rutherford, Bishops Cleeve, England, assignor to Dowty Mining Equipment Limited, Tewkesbury, England

Filed Jul. 5, 1977, Ser. No. 812,696
Claims priority, application United Kingdom, Jul. 7, 1976, 28175/76
Int. Cl.² E21D *15/44*
U.S. Cl. 405—293 **10 Claims**



1. A mine roof support having a roof-engageable means which includes a roof-engageable pad, at least one lever by which said pad is connected to the remainder of the roof-engageable means, and ram means which is disposed within the profile in plan of said pad and which is operably connected to the pad, said pad being so shaped in plan that its maximum dimension in the fore-and-aft direction of the support (as herein defined) is substantially less than the maximum dimension thereof at right-angles to that direction, and said ram means being operative in a direction at right-angles to, or substantially at right-angles to, said fore-and-aft direction of the support to move said lever to adjust the height of the pad with respect to the remainder of the roof-engageable means.

4,114,388

PILE PROTECTION DEVICE

Erik K. Straub, Carroll Rd., Monkton, Md. 21111

Filed Apr. 20, 1977, Ser. No. 789,431
Int. Cl.² E02D *5/60*
U.S. Cl. 405—216 **7 Claims**

1. A pile protection device for preventing an ice formation from collecting on and subsequently extracting a pile as a result of variation of tide level, which comprises:

guard means concentrically mounted to and axially extending along said pile, said guard means being tapered such that the diameter of said guard means decreases in an upward direction to thereby allow said ice formation to be vertically displaced relative to said guard means during said tide level variation whereby said ice formation is prevented from extracting said pile during said tide level variation;

means for firmly securing said guard means to said pile; and

stiffening means connected to said guard means at a plurality of points along the length of said guard means and located between and interconnecting said guard means and said pile wherein said stiffening means comprises;

a plurality of sidewall stiffening rings disposed adjacent said guard means;

vertical fin members connected to said side wall stiffening rings; and

a plurality of horizontal stiffening rings connected to said sidewall stiffening rings operatively associated with said



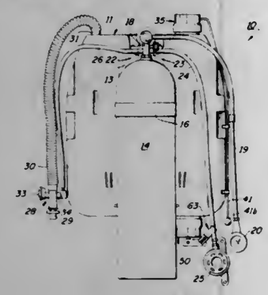
pile to thereby allow said guard means to firmly engage said pile and resist deformation due to interaction with said ice formation and wherein said plurality of horizontal stiffening rings are interconnected by said vertical fin members.

4,114,389

CONSTANT VOLUME BUOYANCY COMPENSATOR

Jack L. Bohmrich; William A. Bowden, Jr., both of Glenview, and Vernon G. Pedersen, Chicago, all of Ill., assignors to Dacor Corporation, Northfield, Ill.

Filed Jul. 1, 1977, Ser. No. 812,139
Int. Cl.² B63C *11/02*
U.S. Cl. 405—186 **10 Claims**



1. An underwater buoyancy compensator for use by divers, comprising

a buoyancy tank adapted to be carried by a diver and having therein a sealable chamber of constant volume,

gas inlet valve means connected between said chamber and a source of gas under pressure,

first pressure relief valve means mounted at the top of said tank for connecting the top of said chamber to the ambient when the pressure across said first valve means exceeds a predetermined amount,

second pressure relief valve means mounted at the bottom of said tank for connecting the bottom of said chamber to the ambient when the pressure across said second valve means exceeds a predetermined amount,

first manually operable means connected to said first pressure relief valve means for enabling the diver to manually open said first valve means, and

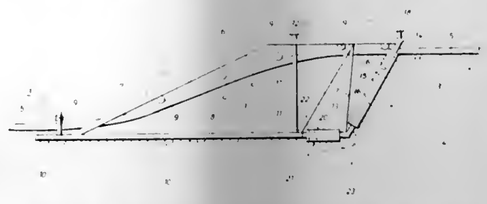
second manually operable means connected to said second pressure relief valve means for enabling the diver to manually open said second valve means.

4,114,390

BURYING A CONDUIT IN THE BOTTOM OF A BODY OF WATER

Johannes Van Steveninck, Rijswijk, and Jan Lincklaen Arriens, The Hague, both of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 13, 1977, Ser. No. 806,128
Claims priority, application United Kingdom, Jun. 28, 1976, 28803/76
Int. Cl.² E02F *5/02*
U.S. Cl. 405—163 **9 Claims**



1. A method of burying a conduit in the earth at the bottom of a body of water comprising the steps of:

a. displacing a fluidization device along the conduit,

b. via fluidization nozzles of the fluidization device injecting fluid at low velocity and at low pressure into non-cohesive bottom material adjacent to the conduit so that the non-cohesive bottom material is fluidized,

c. allowing the conduit, together with the fluidization device, to sink into the fluidized bottom material,

d. eroding cohesive bottom material by injecting fluid at high velocity and at high pressure into the cohesive bottom material via fluidization nozzles on the front of the fluidization device,

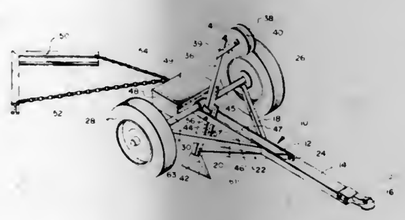
e. moving the fluidization nozzles on the front of the fluidization device in a direction other than the direction of displacement of the fluidization device, so that a wide opening is formed in the cohesive bottom material by the fluid jets issuing from the nozzles.

4,114,391

TAPE LAYING TRENCHING APPARATUS

Vance F. Kahley, Sr., 3231 S. Eldredge, Salt Lake City, Utah 84115

Filed Mar. 24, 1977, Ser. No. 780,898
Int. Cl.² E02F *5/12*
U.S. Cl. 405—176 **6 Claims**



1. An apparatus for continuously depositing a tape below the surface of the earth comprising in combination:

a wheel-mounted drawbar, the drawbar accommodating attachment to a vehicle, the vehicle pulling the apparatus forwardly over the earthen surface;

a vertically oriented column demountably attachable to the drawbar in a plurality of vertically adjustable positions;

a trenching blade on the lower end of the column

a plurality of attachment sites on the column for releasably attaching the column to the drawbar at a plurality of vertically adjustable positions relative to the drawbar, the lowermost position supporting the trenching blade above the earthen surface;

the first lower, strut attachment site adjacent the lower end of the column;

a second, upper, strut attachment site adjacent the upper end of the column;

a strut selectively interconnectable between the drawbar and the column, the strut being selectively interconnected to said lower, strut attachment site thereby supporting the column in a first, trenching position with the trenching blade pulled through the earth an incremental distance below the earth's surface, said lower, strut attachment site thereby serving as a connection point for the strut when the column is lowered into said first, trenching position and the column is secured to the drawbar at one of the plurality of attachment sites, and a second, travel position wherein the column and, more particularly, the trenching blade is carried above the level of the earth's surface by selectively interconnecting the strut to the column at the upper, strut attachment site and the column to the drawbar at the lowermost position of the plurality of attachment sites; and

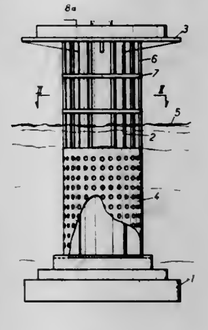
a tape dispenser mounted adjacent the column to accommodate feeding the tape downwardly along at least a portion of the column to a position adjacent the trenching blade.

4,114,392

PLATFORM STRUCTURE FOR MARITIME INSTALLATIONS

Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C. G. Doris," Paris, France

Filed Jun. 24, 1977, Ser. No. 809,897
Claims priority, application France, Jun. 24, 1976, 76 19227
Int. Cl.² E02B *17/00*
U.S. Cl. 405—207 **4 Claims**



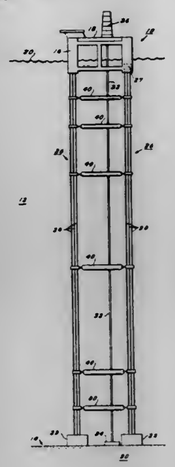
1. An off-shore gravity type platform for supporting a processing installation above the surface of a body of water and for housing processing components, comprising a coffered base structure for resting upon the bed of the body of water; a pressure-resisting watertight hollow shaft integrally connected to the base structure to be supported by the same and extending therefrom up to above said water surface a protective wall around a foot portion of the shaft, integrally connected to the base structure to be supported by the same and having a height substantially less than the depth of said body of water; a plurality of hollow pillars supported by the protective wall and extending therefrom up to above said water surface; a bridge supported on the upper ends of said hollow shafts and said hollow pillars; and means for filling the pillars with concrete; said base structure and said hollow shaft being so sized that the platform in an unballasted condition has a positive buoyancy.

4,114,393

LATERAL SUPPORT MEMBERS FOR A TENSION LEG PLATFORM

Donald D. Engle, Jr., Brea, and Michael E. Utt, Placentia, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Jun. 20, 1977, Ser. No. 807,905
Int. Cl.² E02B *17/00*
U.S. Cl. 114—264 **13 Claims**



1. A platform for operations in a body of water at an offshore location, which comprises:

a working deck;

a buoyant structure for supporting said working deck above the body of water;

a plurality of anchors on the floor of the body of water;

a plurality of tension legs, each of said legs being comprised of one or more cables and being attached at one end to one of said anchors and at the other end to said buoyant structure;

tensioning means for applying tension to said cables and thereby drawing down said buoyant structure to a working position in the body of water; and

one or more rigid, fixed-dimensioned support members interconnecting said legs and each of said cables, each of said support members being vertically positioned along the length of said cables between the buoyant structure and the anchors to reduce the unsupported length thereof such that the fundamental frequency of the unsupported sections of said cables is higher than the highest flutter frequencies likely to be encountered.

4,114,394

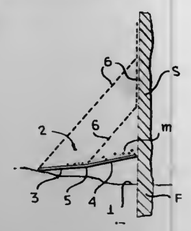
APPARATUS FOR PREVENTING EROSION OF THE SEABED IN FRONT OF HYDRAULIC STRUCTURES

Ole Fjord Larsen, 62 Fasanvaenget P. O. Box 604, DK 6700 Esbjerg, Denmark

Continuation of Ser. No. 604,836, Aug. 14, 1975, abandoned. This application Mar. 8, 1977, Ser. No. 775,606
Int. Cl.² E02B *3/04*
U.S. Cl. 405—25 **20 Claims**

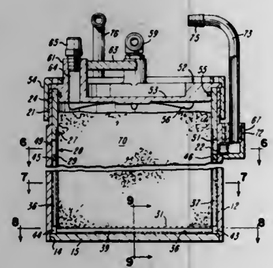
1. The combination of a marine structure having a foot disposed in the bed of a body of water and first means for reducing and preventing scours of the bed at the foot of the marine structure with the foot in place, second means mounting said first means for general vertical sliding movement along said foot, said first means having opposite first and second end portions, said first end portion being more remotely spaced from said foot than said second end portion in a first in-place operative position of said first means, said second

means including vertical channel guiding means carried by said foot to which is slidably guidably interconnected said second end portion for guided vertical movement of said second end



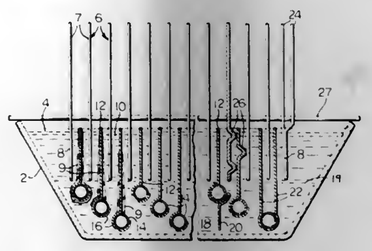
portion and said first means relative to and along said foot, and cable means connected to said first means for slidably moving said first means relative to and along said vertical guiding means.

4,114,395
INTEGRATED REFRIGERANT STORAGE CANISTER AND HEAT EXCHANGER
Carl E. Simmons, Oxford, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Dec. 23, 1976, Ser. No. 753,738
Int. Cl.[2] B67D *5/62*
U.S. Cl. 62—386 **10 Claims**



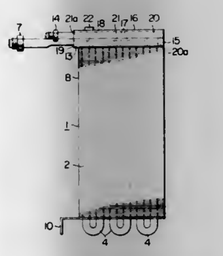
1. An integrated refrigerant storage canister and heat exchanger, especially a device which in use occupies a generally upright position including
a. an assembly comprising nested inner and outer containers, the former being adapted to contain a solid state refrigerant sublimated by a transfer of heat through defining wall portions of said inner container into the refrigerant,
b. said inner container having a closed bottom wall portion in supporting relation to a contained refrigerant material,
c. means for conducting released gas from said inner container,
d. means for conducting a circulating fluid absorbing heat at a relatively remote source to and from said assembly,
e. and means for conducting the circulating fluid through said assembly by way of a path requiring it to pass between said containers in heat transfer relation to said bottom wall portion of said inner container,
f. side and bottom wall portions of said inner and outer containers being in a spaced relation to one another,
g. separators positioning longitudinally within the space between side wall portions and defining vertical flow passes interconnected at their lower ends by a space between bottom wall portions defining a horizontal flow pass,
h. there being connections to and from upper ends of respective vertical flow passes for inflow and outflow of said fluid,
i. and said connections and said separators cooperating to require a path of flow for said fluid taking it downward in one of said vertical flow passes, transversely through said horizontal flow pass and upwardly in the other of said vertical flow passes.

4,114,396
REFRIGERATION EVAPORATOR COIL WITH NON-FROSTING FINS
Glenn E. Rickert, Community Bank Building, Huntington, Ind. 46750
Continuation-in-part of Ser. No. 716,789, Aug. 23, 1976. This application Jan. 31, 1977, Ser. No. 763,874
Int. Cl.[2] F25D *17/04, 11/00, 3/10*; F28D *13/00*
U.S. Cl. 62—406 **7 Claims**



1. In a heat absorption system, the improvement for temperature stabilizing heat load absorbing surfaces comprising: heat absorption means, a first series of heat exchange surfaces in good heat transfer relationship with said heat absorption means, a second series of heat exchange surfaces in good heat transfer relationship with a heat load, heat storage means including phase change material, said first series of heat exchange surfaces and said second series of heat exchange surfaces disposed generally parallel to one another and interspersed in close proximity to provide a good connection for heat transfer therebetween through said phase change material, said first series of heat exchange surfaces, said second series of heat exchange surfaces, and said phase change material adapted to permit said phase change material to transfer heat from said second series of surfaces to said first series of surfaces so that said second series of heat exchange surfaces can be maintained near the phase change temperature of said material by said heat absorption means during various heat load conditions.

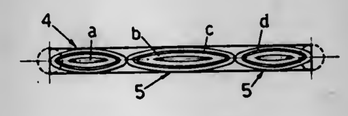
4,114,397
EVAPORATOR
Reijiro Takahashi; Masanori Musoh, both of Katsuta, and Tosikazu Ito, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Nov. 19, 1976, Ser. No. 743,492
Claims priority, application Japan, Nov. 21, 1975, 50-139297
Int. Cl.[2] F25B *39/02*
U.S. Cl. 62—516 **12 Claims**



1. An evaporator comprising:
a tube plate,

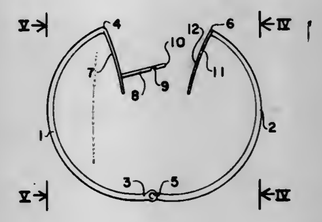
a first cover plate secured to said tube plate to form connecting passage means and refrigerant-collecting passage means between said tube plate and said first cover plate,
a second cover plate secured to said first cover plate to form refrigerant-introducing passage means between said first cover plate and said second cover plate,
constriction means communicated with said refrigerant-introducing passage means,
expansion valve means disposed between said first cover plate and said second cover plate and directly communicated with said refrigerant-collecting passage means and said refrigerant-introducing passage means,
and control means for controlling said expansion valve means.

4,114,398
PROCESS FOR PRODUCING ARTICLES OF JEWELRY, TRINKETRY AND THE LIKE, MADE OF METALS OF DIFFERENT COLORS
Orlando Paladino Orlandini, Arezzo, Italy, assignor to Gori & Zucchi S.p.A., Italy
Filed Feb. 10, 1977, Ser. No. 767,617
Claims priority, application Italy, May 31, 1976, 49729 A/76
Int. Cl.[2] A44C *5/00*; B23P *13/00*
U.S. Cl. 63—3 **25 Claims**



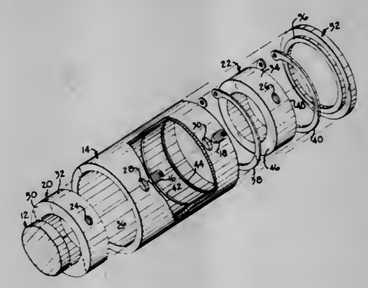
1. A method of making jewelry from a plurality of elongated metallic elements having progressively smaller cross-sections, at least each of said elements other than the one having the smallest cross-section being hollow and having an interior opening sufficiently large to accommodate the element having the next-smaller cross-section, which comprises the steps of: inserting said elements one inside the other to form a composite elongated element; drawing said composite elongated element; cutting said composite elongated element into sections; shaping said sections into jewelry configuration; and removing material from portions of said composite elongated element to expose at least one interior elongated element.

4,114,399
EARRING FOR PIERCED EAR
Walter J. Zur, Blairmore, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Apr. 20, 1977, Ser. No. 789,143
Int. Cl.[2] A44C *7/00*
U.S. Cl. 63—12 **1 Claim**



1. An earring for a pierced ear, said earring comprising first and second substantially semiannular parts having mutually spaced first and second ends, the first end of each being pivotally affixed to the first end of the other whereby when closed said parts form a substantially annular member;
a first arm extending inwardly from the second end of the first part at approximately 60° therewith, said first arm having a pin extending therefrom substantially perpendicularly thereto toward the second part and a notch formed in the pin in the area of the free end thereof; and
a second arm extending inwardly from the second end of the second part at approximately 60° therewith, the first and second arms being in spaced substantially parallel relation when the earring is closed, said second arm having a bore therein for accommodating the pin whereby when the pin is passed through a pierced ear lobe and into the bore of the second arm said pin is releasably locked to said second arm via the notch of said pin thereby releasably locking the first and second parts together to form a substantially annular member which may be opened by downward pressure on said second end of said second part.

4,114,400
SAFETY SLEEVE
H. Oscar Schlenker, Aberdeen, S. Dak., assignor to Safeguard Automotive Corporation, Aberdeen, S. Dak.
Filed Mar. 11, 1977, Ser. No. 776,729
Int. Cl.[2] F16C *1/06*
U.S. Cl. 64—3 **9 Claims**



1. A safety sleeve for exposed rotating shafts comprising:
(a) an enclosure member that substantially encloses said rotating shaft, said enclosure member having inner and outer surfaces;
(b) an annular collar having an outer and an inner surface, said outer surface in direct contact and frictional engagement with said inner surface of said enclosure member, said inner surface of said collar in direct contact with the outer surface of an exposed rotating shaft, said annular collar having a threaded aperture therein;
(c) screw means received within said threaded aperture for securing said annular collar to said shaft for rotation therewith; and
(d) whereby said enclosure member is normally driven by said annular collar to rotate in connection with said shaft and upon contact with said outer surface of said enclosure member said enclosure member is released from driving engagement with said annular collar and said enclosure member remains stationary while said annular collar rotates with said rotating shaft and in sliding contact with said enclosure member.

4,114,401
UNIVERSAL JOINT EMBODYING OSCILLATING DRIVE PIN
William E. Van Hoose, 4117 Brompton Ave., Bell, Calif. 90201
Filed Jan. 24, 1977, Ser. No. 761,532
Int. Cl.[2] F16D *3/10*
U.S. Cl. 64—7 **7 Claims**

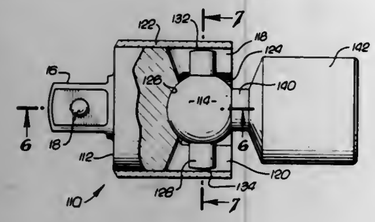
1. A heavy duty universal joint usable for tools in which the

two ends of the tool may be misaligned, said universal joint comprising:

a socket having a ball receiving bore, a socket ball engaged in the socket bore, a pair of diametrically opposing slots in the socket wall outwardly of the bore.

a pin extending through a bore in the ball and having its ends therebeyond extending into said respective slots and being adapted to oscillate therein,

said ball forming a large substantially solid mass around the pin so as to provide great strength in the pin and ball engagement.



means on said pin adjacent and generally within the external surface of said ball to positively retain said pin within the socket in the axial direction of the pin, and

means associated with said ball and socket to retain the ball in the socket.

said pin having two parallel flat sides adjacent each end,

said slots having flat sides on which said flat sides on said pin slide as they oscillate.

said flat sides of said pin being fitted in said flat sides of said slots so as to not be rotatable therein.

4,114,402

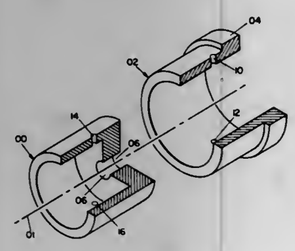
FLEXURE HINGE ASSEMBLY

Robert J. C. Craig, Malibu, and Clifton T. Council, Woodland Hills, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Apr. 5, 1976, Ser. No. 673,746

Int. Cl. F16d *3/52*

U.S. Cl. 64—15 B **16 Claims**



1. A flexure hinge assembly comprising:

a pair of inner and outer concentric tubular members secured to one another, each of said tubular members having a plurality of pairs of adjacent apertures extending through the wall thereof and each of said pairs of apertures forming a flexure blade defining a first plane of flexure including therein a radial flexure axis and a longitudinal axis perpendicular to said flexure axis the plane of flexure of each blade in said inner tubular member being oriented substantially perpendicular to the plane of flexure of a flexure blade in said outer tubular member, a pair of mutually adjacent flexure blades with substantially perpendicularly oriented flexure planes defining a common flexure axis to form a flexure hinge;

said inner tubular member having a driven element portion, a gimbal element portion, and a driven element portion, connected to a pair of inner flexure blades, said outer tubular member having a driving element portion, a gimbal element portion and a driven element portion, each said inner gimbal element portion connected to said driving element portion and to said inner driven element portion by a pair of juxtaposed flexure blades, respectively, each said outer gimbal element portion connected to said outer driving element portion and to said outer driven element portion by a pair of juxtaposed flexure blades, respectively; and

said inner driving element portion and said inner driven element portion being axially displaced in the same direction from their respective flexure axes, said outer driving element portion and said outer driven element portion being axially displaced in the same direction from their respective flexure axes.

4,114,403

COUPLINGS

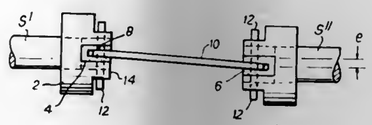
John Constantine Grey, Osterley, England, assignor to Thorpenco (Sales & Service Ltd.), England

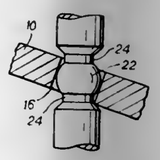
Filed Jan. 6, 1977, Ser. No. 757,243

Claims priority, application United Kingdom, Jan. 7, 1976, 442/76; Mar. 25, 1976, 11940/76

Int. Cl.² F16D *3/14, 3/52*

U.S. Cl. 64—15 B **8 Claims**





1. A flexible rotary coupling for connecting together a pair of shafts in a state of misalignment, comprising respective end members for attachment rigidly to the respective shafts and an intermediate substantially rigid torque-transmitting member extending between the end members, resiliently yieldable elements being disposed between the intermediate member and the end members, said yieldable elements providing transversely extending seatings opening towards each other and into which respective ends of the intermediate member are transversely inserted and are transversely withdrawable, said yieldable elements comprising opposed bearing surfaces for yieldably supporting the respective inserted ends of the intermediate member and for permitting articulation of the intermediate member with respect to each shaft, said elements transmitting a torque load by resilient compression between their respective end members and the intermediate member, relative pitching movements between the intermediate member and each end member about an axis extending in said transverse direction also being accommodated by resilient compression of said elements between their respective end members and the intermediate member.

4,114,404

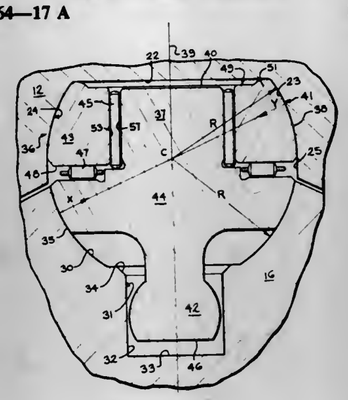
UNIVERSAL JOINT

Orville E. Phelps, Sylvania, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed May 2, 1977, Ser. No. 793,206

Int. Cl.² F16D *3/30, 3/28*

U.S. Cl. 64—17 A **11 Claims**



1. In a universal joint comprising first and second rotatable members, each of said members having an axis of rotation, said rotatable members adapted to be disposed in a cooperative relationship in which said axes of rotation intersect at an angle,

said first rotatable member having a torque element receiving means and said second rotatable member having a pilot receiving means disposed in a cooperative paired relationship with said torque element receiving means,

a torque transmitting mechanism having a generally longitudinal axis, said mechanism comprising a torque element disposed at one end of said axis, said torque element disposed at least partially within said torque element receiving means and adapted for movement within said torque element receiving means, and a pilot disposed at another end of said axis, said pilot disposed at least partially within said pilot receiving means and adapted for pivotal engagement with said pilot receiving means,

the improvement wherein said torque transmitting mechanism comprises a bearing assembly having a bearing race disposed at least partially within said torque element receiving means and drivingly engaged with said torque element receiving means, said bearing race at least partially containing said torque element.

4,114,405

CONTROL UNIT FOR A HAND KNITTER

Manfred Bartels, Cologne, Fed. Rep. of Germany, assignor to Empisal Knitmaster Luxembourg S.A., Luxembourg, Luxembourg

Filed Oct. 6, 1977, Ser. No. 839,931

Int. Cl.² D04B *7/00, 15/66*

U.S. Cl. 66—75.2 **23 Claims**

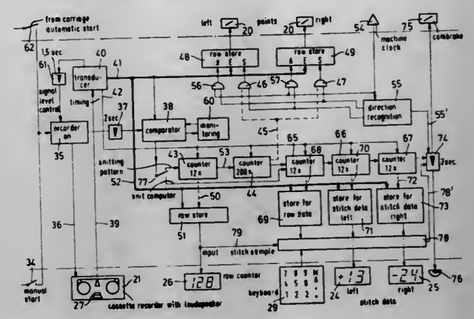
1. A control unit for a hand knitter of the type having a needle bed containing a plurality of needles and on which there is mounted a movable carriage means for adjusting the position of needles individually in accordance with a proposed knitting pattern and thereby performing the knitting operation, said carriage means being displaceable transversely to the needles, characterized in that shaping data concerning the outline contour of the knitting is presented to the user, said control unit comprising:

a data source (21) for the shaping data of the knitting, said source containing knitting row numbers and stitch data concerning how many stitches are to be added to or reduced from the rows of the knitting identified by said knitting row numbers,

a store (71,73) for the stitch data,

a store (51) for row data,

said data source (21) supplying the stitch data to said store (71,73) for the stitch data and the number for the corresponding row to said store (69) for row data,



an indicating device (24,25), and

a row store means (51), containing the number of a row to be knitted, for causing said stitch data to be supplied to said indicating device (24, 25) if the contents correspond to a number contained in the store for row data.

4,114,406

WASHING MACHINE

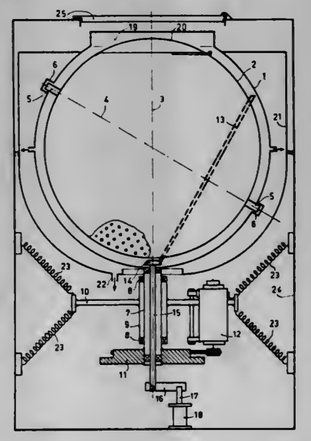
Alexandre Horowitz; Georg Rudolph Wolter Kymmell; Johannes Krijne, all of Eindhoven, Netherlands; Bernard Joseph Beusink, deceased, late of Oerle, Netherlands, by Friedrich Jacobus De Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 8, 1977, Ser. No. 786,046

Claims priority, application Netherlands, Apr. 12, 1976, 7603833

Int. Cl.² D06F *23/06*

U.S. Cl. 68—24 **5 Claims**



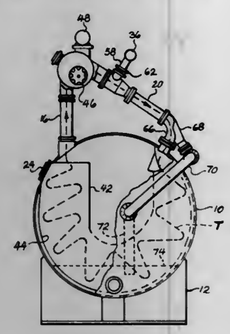
1. A laundry washing machine which comprises a substantially spherical washing liquid container, means to mount said container on a first shaft for rotation about a first diametrical axis, first means to rotate said container about said first axis, a substantially spherical laundry holder having a wall permeable to washing liquid, means to mount said holder within said container for rotation about a second diametrical axis, and second means to rotate said holder about said second axis, the two axes of rotation intersecting each other.

4,114,407

SOFT FLOW JET DYEING MACHINE

James Keith Turner, Lincolnton, and William Cleere Sturkey, Charlotte, both of N.C., assignors to Gaston County Dyeing Machine Company, Mount Holly, N.C.

Continuation of Ser. No. 690,574, May 27, 1976, abandoned.
This application Apr. 29, 1977, Ser. No. 792,460
Int. Cl.[2] D06B *3/24, 3/28*
U.S. Cl. 68—178 **5 Claims**



1. In apparatus for wet processing textile material in endless strand form in which a vessel is provided for containing the treating liquor employed for the wet processing and through which liquor the textile material is circulated to and from a plaited accumulation thereof within said vessel, the improvement which comprises:

(a) a rotatable lifter roll disposed above said vessel and driven for vertically elevating said textile material progressively from said plaited accumulation and said treating liquor;

(b) a downwardly extending treating liquor tube;

(c) a downwardly inclined textile material directing tube disposed adjacent said lifter roll for receiving textile material therefrom, said directing tube having a downwardly extending cylindrical end portion concentrically enclosed within an intermediate cylindrical portion of said treating liquor tube, said intermediate portion being free of internal restriction and extending downwardly beyond said directing tube end portion;

(d) a discharge tube portion of said treating liquor tube free of internal restriction and extending from said intermediate tube portion downwardly for discharge into said vessel, the remaining portion of said directing tube being surrounded by an enlarged plenum chamber communicating with said intermediate portion of said treating liquor tube; and

(e) means for continuously circulating treating liquor from said vessel to said plenum chamber for delivery to said treating liquor tube and return therethrough to said vessel while also effecting active treating liquor penetration of said textile material and facilitating the return of said material to said plaited accumulation.

4,114,408

GATE LOCK AND LATCH

Victor L. Gee, 1511-12th St. W., Billing, Mont. 59102

Filed Apr. 4, 1977, Ser. No. 784,170
Int. Cl.[2] E05C *5/02*; E05B *37/12*
U.S. Cl. 70—128 **4 Claims**

1. In a lock:

an elongated housing including end closures and a lateral wall;

a bolt extending through said end closures and carried thereby for rotation in first and second opposite senses about a longitudinal axis, and for linear displacement in first and second opposite directions aligned with said axis;

means carried by one end of said bolt outside said housing for manually causing the displacement and rotation of said bolt, and for engaging one of said end closures, and thus limiting the linear movement of said bolt in a first direction, to define an operative position for said bolt in which the other end of said bolt extends outwardly beyond the opposite end closure;

at least one pin projecting transversely from said bolt within said housing;

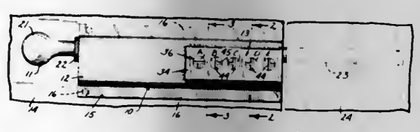
means in said housing for engaging said pin to limit the rotation of said bolt in said first sense;

means in said housing for engaging said pin in said operative position of said bolt to enable limited rotation of said bolt in said second sense and simultaneously prevent displacement of said bolt in either direction;

and a control unit including at least one locking member carried by said housing and transversely aligned with said pin for actuation into and out of a position in which it interferes with said pin to prevent rotation of said bolt in said first sense;

said locking member extending through the wall of said housing and being rotatable with respect thereto about a locking axis orthogonal with the axis of rotation of said bolt and longitudinally aligned with the pin location when said bolt is in said operative position thereof;

the outer end of said locking member including means for causing rotation thereof in said housing, and bearing indicia identifying the rotated relation of said member with respect to said housing, and the inner end of said locking member being configured to enable passage of said pin, in a first rotated relation of said member with respect to said housing, and to prevent passage of said pin in other rotated relations of said member with respect to said housing.



4. A lock control unit comprising a mounting plate having a plurality of aligned cylindrical bores formed therein with their axes parallel;

a plurality of locking members having outer cylindrical portions for rotation in said bores, inner portions, and intermediate annular grooves of smaller diameter than said outer and inner portions;

a holding member for securing said locking members to said mounting plate, including a slot to snugly receive said grooves of said members, so that when the holding member is secured against a face of said mounting plate with said outer ends of said members in said bores and said grooves in the slot of said holding means, the members are rotatable but not translatable with respect to said plate;

axial cylindrical bores in said inner ends of said outer portions of said locking members;

cross bores extending outwardly from said cylindrical bores at predetermined angular spacings therearound, and at the same axial location therealong;

said inner portions including bodies rotatable in said axial bores, ball detents in said bodies and aligned longitudinally with said cross bores, and enlarged heads extending beyond said bores;

release ramps formed in said heads of said inner portions in known positional relation to the directions of said ball detents;

secantal guide openings in said heads of said inner portions arranged to be coaxial when said inner portions are simultaneously in predetermined angular positions about the axes of said bores, so that a common member passing through said openings may hold all said inner portions against rotation about said axes;

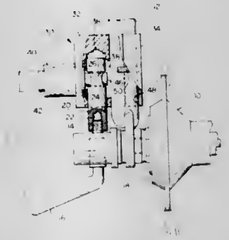
and means carried by the outer ends of said locking members for causing rotation thereof in said bores.

4,114,409

LOCK ASSEMBLY FOR BICYCLE WHEEL QUICK RELEASE MECHANISM

Joseph S. Scire, 526 Beacon St., Boston, Mass. 02215

Filed Apr. 27, 1977, Ser. No. 791,486
Int. Cl.[2] B62H *5/00*
U.S. Cl. 70—225 **5 Claims**



1. A lock assembly for a bicycle wheel quick release mechanism having a shaft extending therethrough transversely of the wheel axle, said shaft adapted, when turned in one direction, to release the wheel for mounting or removal on the fork of a bicycle and, when turned in the other direction to secure said wheel on a bicycle wheel fork, characterized in that the lock assembly comprises:

a shaft extension adapted at one end for connection to said shaft and having a shoulder spaced from and facing said one end; and

a housing adapted for connection to a bicycle wheel fork and adapted to receive said shoulder of said shaft extension, said housing comprising two parts, a first part having a bore for removeably receiving said shaft extension with said shaft extension connected to a shaft and having a lock pin mounted therein selectively moveable to engage and disengage said shoulder and having a lock connected to said lock pin adapted to lock said pin in a shoulder engaging position, and a second part adapted for connection to said first part, defining with said first part a through bore between said first and second parts for receiving said bicycle wheel fork therein.

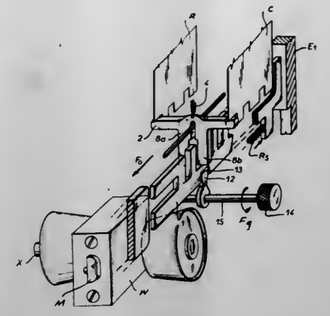
4,114,410

LOCKING DEVICE AND MEANS FOR ACTUATING THIS DEVICE

Pierre Jean Baptiste Astier, 76 Rue de Crimée, 75019 Paris, France

Filed Sep. 26, 1977, Ser. No. 836,546
Claims priority, application France, Oct. 20, 1976, 7631629
Int. Cl.[2] E05B *25/00*
U.S. Cl. 70—339 **12 Claims**

1. An improved device which can be adapted to an existing lock to allow the actuation thereof, the device being characterized by the fact that it consists of a movable plunger provided with slots which mesh with at least two rocking components meant to engage in the said slots when they are biased by insertion into this device of a notched reference component to prevent movement of said plunger, said rocking components being adapted to be disengaged from said slots and freeing said plunger by the insertion into this device of a second notched component identical to said reference component, to permit direct actuation of the mechanism of the lock.

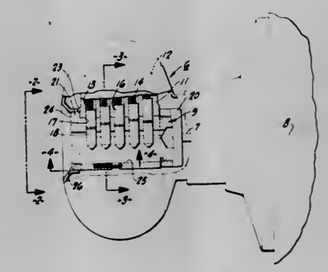


4,114,411

AUGMENTED KEY AND CYLINDER LOCK

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Mar. 7, 1977, Ser. No. 774,784
Int. Cl.[2] E05B *9/04, 19/04*
U.S. Cl. 70—421 **2 Claims**



1. An augmented key and cylinder lock comprising a housing having a bore therein concentric with an axis, a plug in said bore and rotatable around said axis, a flange extending radially outwardly on one end of said plug and overlapping said housing, pin tumbler mechanism in said housing and in said plug, means defining a keyway in said plug extending along said axis and disposed in communication with said pin tumbler mechanism and with said bore, means defining a notch through said flange disposed radially outwardly of said keyway and in communication therewith, a detent on said housing and axially movable between a first position projecting into said notch alongside said keyway and a second position clear of said notch, means for moving said detent to said second position, said moving means comprising a key having a shank movable axially into said keyway and also having a bow and an augmented shoulder merging with said shank and said bow and axially movable into said notch as said shank is fully moved into said keyway.

4,114,412

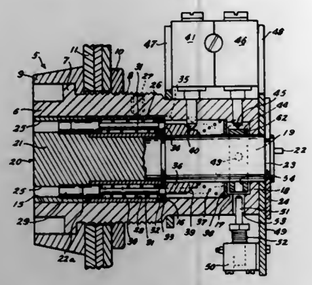
TUMBLER LOCK ALARM CONSTRUCTION

Willi Braatz, 8885 Appleknoll La., Cincinnati, Ohio 45236

Filed Feb. 24, 1977, Ser. No. 771,536
Int. Cl.[2] E05B *17/00*
U.S. Cl. 70—441 **5 Claims**

1. In a tumbler lock alarm construction the combination of a lock case, a barrel rotatable in the case, tumblers movable in

the case and the barrel, a lock tampering sensor responsive to the initial axial movement of any one of the tumblers, a time delay means energized by the sensor and set to provide a normal predetermined time limit for authorized operation of



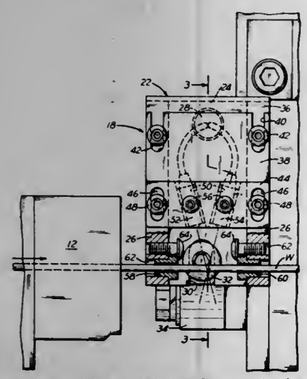
the lock, means responsive to the full rotation of the barrel adapted to deenergize the time delay means, and an alarm means triggered by the time delay means after the lapse of the set predetermined time limit of said time delay means.

4,114,413

BROKEN WIRE SWITCH APPARATUS

Paul W. Huddleston, Tallmadge, Ohio, assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Sep. 2, 1977, Ser. No. 830,290
Int. Cl.² B21C *1/12*
U.S. Cl. 72—5 **1 Claim**



1. In combination with a machine for producing a continuous flow of material having an energy reflective characteristic, such as wire produced by a wire drawing machine,

a switch for interrupting operation of the machine and hence the flow of wire wherein the wire flows in a generally predetermined path of travel for at least a portion of its travel through the machine,

an energy emitting means,

means for maintaining said energy emitting means so that its energy is directed to intercept said path of travel of said wire,

an energy receiving means,

means for mounting said energy receiving means on the same side of the path of travel as said energy emitting means so that it receives energy reflected by said wire from said energy emitting means,

said energy receiving means including means sensitive to the presence and absence of reflected energy from said energy emitting means,

guide means made up of high wear-resistant material, each having openings for receiving said wire immediately before and after passing through said point of interception,

for maintaining said wire in said predetermined path of travel,

each said guiding means including a reduced portion for receipt thereof into different openings formed in said mounting means,

said openings being arranged concentric with said path of travel of said wire,

said guiding means each having opposed enlarged portions on the side most adjacent said point of interception, and

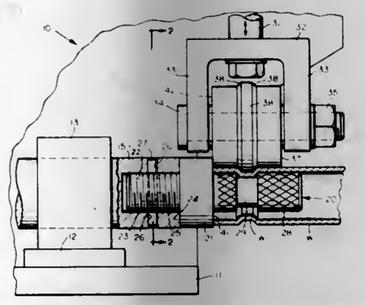
holding means for each guiding means carried by said mounting means and arranged to engage said enlarged portions of said guiding means for securing said guiding means to said mounting means.

4,114,414

BACKUP ROLL FOR THIN WALLED PIPE GROOVING DEVICE

James M. Goodman, East Rochester, N.Y., assignor to E.G. Sprinkler Corporation, East Rochester, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,249
Int. Cl.² B21D *17/04*
U.S. Cl. 72—105 **5 Claims**



1. In apparatus for roll grooving metal pipe and the like, and having a drive shaft and a grooving roll mounted for rotation about an axis parallel to said shaft, and for reciprocation radially of said shaft between operative and inoperative positions, the improvement comprising

a solid, cylindrical backup roll releasably secured to one end of said drive shaft coaxially thereof, and having a reduced-diameter operating section extending transverse to the path of reciprocation of said grooving roll, and adapted to project into one end of the pipe that is to be grooved,

said backup roll having a first transverse, work-engaging surface formed thereon at the inner end of said operating section to engage the terminal end of the pipe that is to be grooved, thereby properly to position the pipe on said operating section,

one of said rolls having thereon a circumferential boss, and the other of said rolls having therein a circumferential groove,

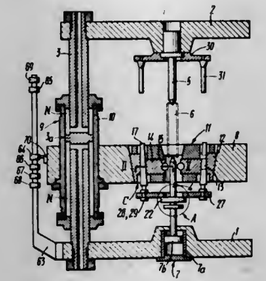
said backup roll having thereon a second transverse surface rearwardly of said first transverse surface engageable with said one end of said drive shaft when said groove in said other roll is disposed in registry with said boss on said one roll, whereby when one end of a piece of pipe is inserted over said operating section of the backup roll and against said work-engaging surface, and said grooving tool is moved radially to its operative position and said shaft is rotated, said circumferential boss will have rolling engagement with said pipe and will force a circumferential portion of said pipe into the registering groove in said other roll.

4,114,415

PROFILE PLANO-TYPE KNURLING MACHINE

Jury Mikhailovich Vodopyanov, ulitsa Depovskaya, 13, kv. 51; Nikolai Emelyanovich Klimkin, ulitsa P. Guschina, 75, kv. 27; Ivan Ivanovich Savvateev, ulitsa Molodezhnaya, 70, kv. 92; Vladimir Sergeevich Strelchenko, prospekt Lenina, 87, kv. 57; Alexandr Pavlovich Kuris, ulitsa Dekabristov, 6, kv. 7, and Sergei Ivanovich Koltsov, ulitsa Pobednaya, 78, all of Barnaul, U.S.S.R.

Filed Nov. 1, 1976, Ser. No. 737,775
Int. Cl.² B21B *17/00*
U.S. Cl. 72—214 **14 Claims**



1. An improved profile planotype knurling machine of the type having fixed support members; movable and fixed centers for placing a work piece, mounted on said fixed support members; ways rigidly coupling said fixed support members; a movable support member mounted between said fixed support members on said ways with a possibility for reciprocations along said ways; a knurling head with knurl rollers, mounted in said movable support member coaxially to said centers; the improvement comprising: means for moving said knurl rollers radially relative to said centers; a plurality of tapered elements mounted in said knurling head for providing adjustment motions axially relative to said centers said tapered members being associated kinematically with said knurl rollers; a unitary disc-shaped pressure member for providing the radial feed of said knurl rollers, and being mounted on one of said fixed support members facing the butt end of said tapered elements coaxially to said centers and adapted for contacting said actuating means during one motion of said reciprocations whereby said unitary disc-shaped pressure member and said actuating means cooperate to actuate simultaneously all said tapered elements; a plurality of return pressure members being mounted on one of said fixed support members opposite said unitary disc-shaped pressure member for returning said tapered elements to the starting position and said actuating means being located between said unitary disc-shaped pressure member and the bases of the tapered elements.

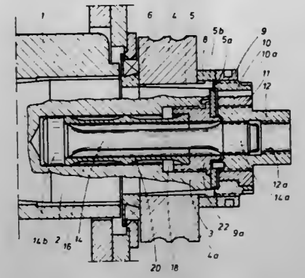
4,114,416

ROLLING DISC ATTACHMENT

Albert Bier, and Herbert Vogelgesang, both of St. Ingbert, Saar, Fed. Rep. of Germany, assignors to Moeller & Neumann GmbH, St. Ingbert, Saar, Fed. Rep. of Germany

Filed Aug. 31, 1977, Ser. No. 829,219
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1976, 2639543
Int. Cl.² B21B *31/08*
U.S. Cl. 72—238 **1 Claim**

1. Apparatus for clamping an overhung rolling disc on a hollow drive shaft by compressive stress between plane parallel surfaces thereof, comprising a hydraulically expansible tie-rod insertable in the hollow drive shaft for producing the compressive stress, a tightening nut located opposite an outer end face of the rolling disc for transmitting the compressive stress, said tightening nut being seated on a bayonet ring provided with an external screw-thread, the bayonet ring with the tightening nut being supported by a bayonet nut, said bayonet nut being in turn screwed on a threaded end of the tie-rod and a taper sleeve being inserted between the rolling disc and drive



shaft, the free outer end face of said taper sleeve being located opposite an end face of the bayonet ring and being constructed for the attachment of extraction claws.

4,114,417

METHOD AND APPARATUS FOR MAKING METAL PARTS

Leon F. LaVene, Durand, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Jun. 27, 1977, Ser. No. 810,306
Int. Cl.² B21D *31/00*
U.S. Cl. 72—379 **13 Claims**



1. The method of making a bracket adaptor on the wall of a housing in which the adaptor is a generally rectangular cup protruding from a wall and is characterized by a peripheral groove on the exterior of said cup, the steps of forming a cup-shaped portion in the workpiece by applying a force in opposite direction on opposed surfaces of said workpieces with mating dies, said cup having a closed end with opposed pairs of parallel walls defining a rectilinear cross-section, holding walls of said cup adjacent to the surface of said workpiece against displacement in a direction parallel to the surface of said workpiece, and applying a force on the end wall of said cup to form oppositely extending flanges on opposed walls to form a continuous groove around the periphery of said cup adapted to receive a bracket therein, said holding of said walls being accomplished by holding members movable towards each other in response to movement of said dies towards each other.

4,114,418

MATERIAL HANDLING MEANS

David J. Jarman, P.O. Box 181, R.R. 3, Aurora, Ind. 47001

Filed Dec. 9, 1976, Ser. No. 748,937
Int. Cl.² B21D *43/00*
U.S. Cl. 72—386 **15 Claims**

1. In a combination with a mechanical press having a movable die and a fixed die, said movable die and said fixed die meeting at a bending axis, material handling means,

said material handling means comprising:

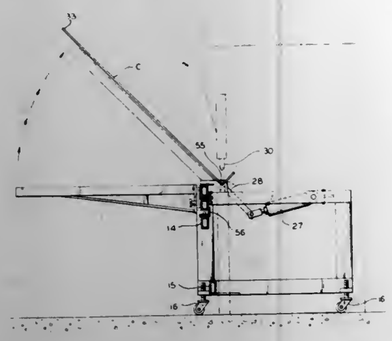
a base frame;

a lift frame;

said lift frame being pivoted to said base frame along a pivot axis,

said base frame and said lift frame positioning said pivot axis co-linearly with said bending axis; and

means to support material to be processed by said press brake,



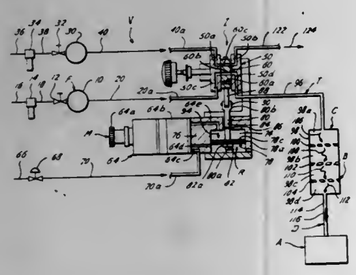
said material support means being laterally adjustably mounted to said lift frame.

4,114,419

METHOD OF TESTING AN ANALYZER TO DETERMINE THE ACCURACY THEREOF AND A VOLUMETRIC PRIMARY STANDARD APPARATUS FOR DOING SAME

Charles L. Kimbell, P.O. Box 40052, Houston, Tex. 77041

Filed Jun. 6, 1977, Ser. No. 803,675
Int. Cl.² G01N *31/00*
U.S. Cl. 73—1 G **14 Claims**



8. A method of testing an analyzer to determine the accuracy thereof, comprising the steps of:

flowing a carrier gas stream at a known flow rate;

periodically injecting a measured quantity of sample gas at selected intervals into the carrier gas stream as the carrier gas is flowing;

homogeneously mixing the carrier gas and the sample gas therewith in a mixing chamber for providing a homogeneous mixture of the sample gas and carrier gas at a substantially constant concentration, and,

flowing the homogeneous mixture into an analyzer whose accuracy is to be tested.

4,114,420

ENVIRONMENTAL TEST CHAMBER SYSTEM

Charles E. Browning, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 12, 1977, Ser. No. 832,708
Int. Cl.² G01N *3/18*
U.S. Cl. 73—15.6 **2 Claims**

1. A test apparatus for determining the ability of a polymeric material to perform under load in various environments at high temperatures over given periods of time which comprises a top end-cap composed of a flange attached to a downwardly extending cylindrical member, the flange having holes formed therein around it periphery and the cylindrical member having a first groove formed in and extending around its inner wall; a first O-ring positioned in the first groove; a fastener attached to the lower surface of the flange at a location in the center of the circle formed by the intersection of the flange with the cylindrical member; a bottom end-cap composed of a flange attached to an upwardly extending cylindrical member, the flange having holes formed therein around its periphery and the cylindrical member having a second groove formed therein and extending around its inner wall; a second O-ring positioned in the second groove; an elongated, heat-resistant glass tube vertically disposed and having one of its ends positioned in the cylindrical member of the top end-cap so that its upper edge is in contact with the lower surface of the flange of the top end-cap and its surface is in contact with the first O-ring and



having the other of its ends positioned in the cylindrical member of the bottom end-cap so that its lower edge is in contact with the upper surface of the flange of the bottom end-cap and its surface is in contact with the second O-ring; a first wire having one of its ends attached to the fastener and vertically disposed in the tube; one end of a test specimen attached to the other end of the first wire and suspended above the level of water present in the tube; a second wire having one of its ends attached to the other end of the test specimen; a weight attached to the other end of the second wire; inlet and outlet ports formed in the flange of the top end-cap and leading into the chamber formed by the tube and the top and bottom end-caps; tie rods having threaded ends extending through corresponding, vertically aligned holes of the flanges; and nuts threaded onto the ends of the tie rods and tightened against the flange surfaces.

4,114,421

APPARATUS FOR MEASURING THE CONCENTRATION OF IMPURITIES WITHIN A SUBSTANCE

William R. Beall, Glendale, Calif., assignor to Baker International Corporation, Orange, Calif.

Filed Mar. 8, 1977, Ser. No. 775,526
Int. Cl.² G01N *25/06*
U.S. Cl. 73—17 R **4 Claims**

1. An apparatus for measuring the concentration of impurities within a substance by the measurement of the reduction in freezing point of the substance, comprising in combination:

container means for receiving the substance;

said container means including a cell having an input and an output conduit for receiving and discharging the substance with a conduit valve means controlling the flow of the substance through said conduits;

temperature variation means established for changing the temperature of the substance within said container means;

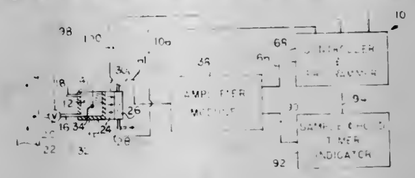
said temperature variation means including a thermoelectric device interposed between said container means and heat sink means for transferring heat from the substance in said container means to said heat sink means;

temperature sensor means mounted in thermal contact with the substance for providing a change in electrical characteristic in relation to a change in the temperature of the substance;

first amplifier means connected to said temperature sensor means for providing a first amplifier means output in accordance with the change in electrical characteristic of said temperature sensor means;

said first amplifier means being established for isolating said first amplifier means output from said first amplifier means input:

second amplifier means connected for receiving said first amplifier means output to provide a second amplifier



means output corresponding to the temperature variation of the substance;

control means connected for receiving said second amplifier means output to control said temperature variation means in accordance with a preselected standard;

third amplifier means comprising a differential amplifier having plural differential inputs and a third amplifier means output;

means connecting said first amplifier means output to one of said plural differential inputs of said third amplifier means;

a voltage source connected to the other of said plural differential inputs for biasing said third amplifier means to be sensitive to only a given magnitude of signal of said first amplifier means outputs; and

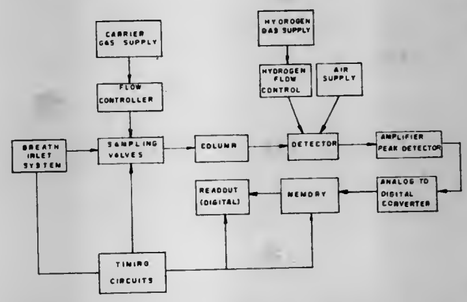
said third amplifier means output being amplified relative to the output of said second amplifier means and corresponding to only a portion of the output of said second amplifier means for providing a precision indication of the reduction in freezing point of the substance to indicate the associated impurities contained therein.

4,114,422

METHOD OF MONITORING DIET

Donald G. Hutson, 101 W. Nevin, Richmond, Calif. 94804

Filed Jan. 2, 1975, Ser. No. 537,911
Int. Cl.² G01N *31/08*
U.S. Cl. 73—23.1 **1 Claim**



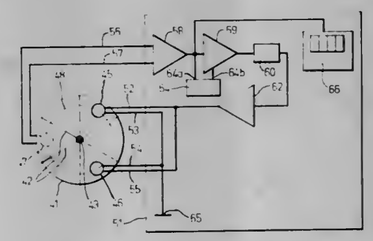
1. The method of determining total body fat of a human subject comprising introducing a sample of alveolar air from said subject into a device capable of measuring both acetone and alcohol quantitatively in amounts at least as small as 1 microgram per liter and measuring the amount of alcohol and acetone in said sample to establish a base measure; introducing into said subject exactly known and predetermined amounts of alcohol and acetone, permitting said alcohol and acetone to be distributed through the water and fat of said subject, introducing another sample of alveolar air from said subject into said measuring device, measuring the amount of alcohol and acetone in said sample, determining the ratio of alcohol to acetone attributable to said introduced amounts of alcohol and acetone in the said alveolar air, and computing therefrom the total body fat of said subject.

4,114,423

DEVICE FOR MEASURING THE DENSITY OF LIQUID AND GASEOUS SUBSTANCES AND METHOD FOR OPERATING THE DEVICE

Alfred Wenger, Langenbruck, Switzerland, assignor to Institut Dr. Ing. Reinhard Straumann AG, Switzerland

Filed Mar. 30, 1977, Ser. No. 782,703
Claims priority, application Switzerland, Mar. 30, 1976, 3935/76
Int. Cl.² G01N *9/00*
U.S. Cl. 73—30 **16 Claims**



1. In a device for measuring the density of liquid and gaseous substances, and of the type including a plate to be introduced into the substance to be measured, at least one holder holding the plate at a holding point, an electronic unit, at least one vibration exciter connected to the electronic unit and operable to vibrate the plate, and at least one vibration detector connected to the electonic unit and operable to detect vibrations of the plate, the improvement comprising, in combination, a plate to be introduced into the substance to be measured; a holder holding said plate at only a single holding point; an electronic unit; at least one vibration exciter connected to said electronic unit and operable to vibrate said plate; and a vibration detector connected to said electronic unit and operable to detect vibrations of said plate; each vibration exciter being so positioned relative to said plate and so energized by said electronic unit acting, in conjunction with said exciters and said detector, as an oscillator, as to vibrate said plate in a manner such that two nodal lines intersect in the range of said single holding point.

4,114,424

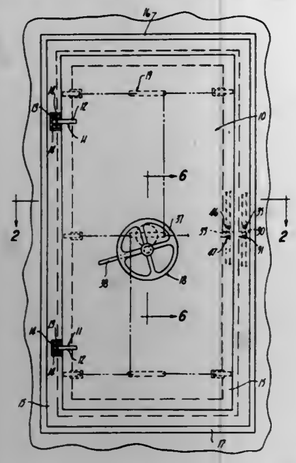
GAS-FLUID-SOUND ISOLATION DOOR ASSEMBLY WITH INTEGRAL TESTING MEANS

Andrew P. Johnson, 1620 Kensington Rd., Bloomfield Hills, Mich. 48013

Filed Aug. 3, 1976, Ser. No. 711,219
Int. Cl.² G01M *3/32*
U.S. Cl. 73—40 **26 Claims**

1. An isolation door assembly including in combination a door frame, a door coaming adapted to be attached to said door frame in a flat plane, means to attach said door coaming to said door frame in said flat plane in such a manner as to provide a continuous sealed coaming annulus therebetween,

closeable means to admit pressure into said coaming annulus, a door hingedly mounted to said coaming, a sealing surface mounted about the periphery of said door, a complimentary sealing surface provided on said door coaming and adapted to



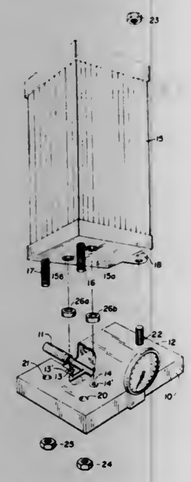
provide a continuous sealed door annulus, closable means to admit a test pressure into said door annulus, a door locking assembly operatively mounted to said door having at least one shaft penetrating said door, means to seal said shaft, and means to test said shaft seal.

4,114,425

OIL COOLER TESTER

Albert Edward Hicks, 10 Whitman Ct., San Carlos, Calif. 94070

Filed Jul. 29, 1977, Ser. No. 820,185
Int. Cl.² G01M *3/32*
U.S. Cl. 73—40 **6 Claims**



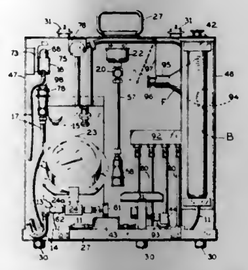
1. A device for testing for leakage in an oil cooler having oil inlet and outlet ports comprising: a block defining a fluid conduit therein; pressure measuring means connected to said conduit; said conduit having an entrance for introducing pressurized fluid; first and second ports on said block in fluid communication with said conduit; said first and second ports being spaced apart relative to the inlet and outlet ports of the oil cooler to be tested for sealable engagement therewith; and means on said block for removably attaching an oil cooler in sealed engagement between its oil inlet and outlet ports and said first and second ports.

4,114,426

LIQUID VOLUMETRIC LINE LEAK TESTING APPARATUS

F. Ronald McLean, 333 N. Ocean Blvd., Deerfield Beach, Fla. 33441

Filed Oct. 25, 1977, Ser. No. 845,443
Int. Cl.² G01M *3/08*
U.S. Cl. 73—40.5 R **30 Claims**



1. In an apparatus for detecting a leak in a gasoline line extending from an above-ground gasoline dispensing apparatus down to an underground gasoline storage tank provided with a check valve for preventing return flow of gasoline back down into the tank, the combination of:

a carrying case having a cover which may be opened to expose the interior of the case;

a burette extending vertically inside said case;

a person-operated pump in said case having its inlet connected to the lower end of said burette to receive makeup gasoline therefrom;

pressure gauge means in said case operatively connected to the outlet of said pump to display the latter's output pressure;

an air bleed device in said case having means therein for separating air from liquid;

a first long flexible hose in said case operatively connected between the outlet of said pump and said air bleed device;

a second long flexible hose in said case connected to said air bleed device and in liquid communication thereat with said first hose;

coupling means in said case for connecting the opposite end of said second hose to said gasoline line at said dispensing apparatus;

an air bleed hose in said case operatively connected at one end to said air bleed device to receive air and entrained liquid therefrom;

and a bleed valve in said case operatively connected between said air bleed hose and the top of the burette to control the flow of air and entrained liquid from said air bleed device through said air bleed hose to the top of the burette.

4,114,427

APPARATUS FOR ACCURATELY MEASURING THE FREENESS OF PAPER STOCK FLOWING IN A FEED PIPE

Yoshio Iguchi, Shizuoka; Chuichi Honma; Takesi Itoh, both of Tokyo, and Kazutaka Hosokawa, Odawara, all of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1976, Ser. No. 664,358
Claims priority, application Japan, Apr. 18, 1975, 50-46513
Int. Cl.² G01N *11/06*; D21F *1/08*
U.S. Cl. 73—63 **5 Claims**

1. An apparatus for measuring freeness of fibrous material in paper stock flowing in a feed pipe, said apparatus comprising:

a closed dilution and agitation tank connected to said feed pipe, said tank having a quantifying portion connecting the interior of said pipe to the interior of said tank;

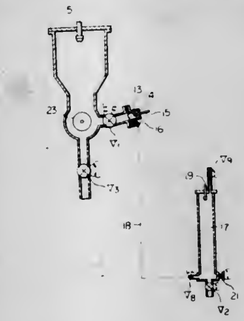
pumping means movably fitted through said tank and quantifying portion thereof into said feed pipe for removing a predetermined amount of stock from said feed pipe to said tank, said pump means comprising:

a plunger movably fitted through said tank, through said quantifying portion and into said feed pipe, said plunger having two spaced discs thereon slidably engaging said quantify portion, said discs spaced from each other a distance less than the length of said quantifying portion and at least one of said discs always engaging said quantifying portion; and

moving means for moving said plunger and said discs back and forth from said feed pipe to said tank through said quantifying portion, whereby moving said plunger back and forth causes the stock in said feed pipe to fill the space between said discs and be quantified during the movement of said space from a position in said feed pipe to a position in said tank through said quantifying portion;

water supply means connected to said tank for supplying water thereto;

first air supply means connected to said tank for injecting pressurized air into said tank and agitating the fluid in said tank from said water supply means and said feed pipe;



conduit means connected to said tank for withdrawing said water and paper stock from said tank;

screening means positioned within said conduit means for screening the fibrous material of said paper stock flowing through said conduit;

measuring means connected to said conduit means on the downstream side of said screening means for measuring the quantity of liquid passing through said screening means;

first and second draining means in said tank and said measuring means respectively for draining the fluids contained within said tank and said measuring means;

first cleaning means in said tank for supplying water thereinto to flush said tank;

second cleaning means positioned in said conduit means on the downstream side of said screening means and directed toward said screening means for supplying a stream of water against said screening means and forcing the fibrous material collected thereon away therefrom toward said tank;

third cleaning means in said measuring means for supplying water thereinto to flush said measuring means;

exhaust means through said dilution and agitation tank for opening the inside of said tank to the atmosphere; and

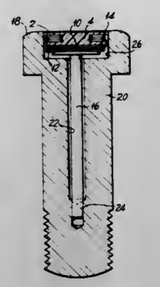
second air supply means for providing a pressure within said tank during the draining of the fluid suspension through said conduit means.

4,114,428

RADIO-FREQUENCY TUNED-CIRCUIT MICRODISPLACEMENT TRANSDUCER

Charles H. Popenoe, 6307 Wiscasset Rd., Bethesda, Md. 20016

Filed Sep. 24, 1976, Ser. No. 726,140
Int. Cl.² G01L *5/00*
U.S. Cl. 73—88 F **8 Claims**



1. In a strain-stress detecting system comprising:

an elongated integral fastener member subject to elastic deformation when stressed wherein one portion thereof moves relative to another portion;

a resonant circuit assembly carried by said member, said assembly comprising a body of electrical insulating material on said member;

an electrical coil on one surface of said body;

a first capacitor plate on an opposite surface of said body and first means electrically connecting said capacitor plate to one end of said coil;

a second capacitor plate adjacent and movable toward and from said first plate and second means electrically connecting said second plate to the other end of said coil whereby said coil and plates define a resonant circuit; and

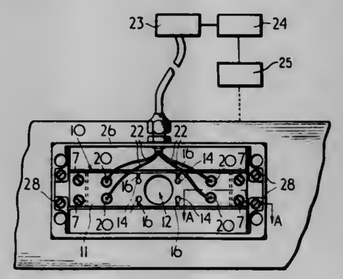
one of said plates being fixed relative to one of said portions of said member and the other plate being fixed relative to the other portion whereby elastic deformation of said member will vary the resonant frequency of said circuit.

4,114,429

METHOD OF AND APPARATUS FOR SENSING STRAIN IN STRAINED MEMBERS

John Campbell Clark, Newport, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Sep. 13, 1976, Ser. No. 722,605
Claims priority, application United Kingdom, Oct. 28, 1975, 44324/75
Int. Cl.² G01B *7/16*
U.S. Cl. 73—88.5 R **4 Claims**



1. A method of sensing strain in a strained member comprising accurately spacing mounting block means, removably securing the spaced mounting block means to a template, rigidly holding the mounting block means in accurately spaced desired positions on a member in which strain is to be sensed,

fixedly securing the mounting block means including the removable template to the member in which strain is to be sensed prior to the member being strained, removing the template from the mounting block means which are fixedly secured to the member in which strain is to be sensed, and securing a strain sensitive device to the spaced mounting block means for deriving a signal indicative of any subsequent strain existing in the member.

4,114,430

BRAKE SYSTEM TESTER

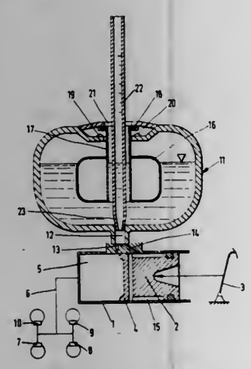
Hans-Henning Luepertz, Darmstadt, and Bernhard Fischenich, Kronberg, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 25, 1977, Ser. No. 800,379

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623912

Int. Cl.² G01M *17/00*

U.S. Cl. 73—121 **3 Claims**



1. A method for locating defects in a hydraulic brake system with a master cylinder communicating with an outlet port of a compensating reservoir, characterized by sealingly placing a burette on the outlet port in order to respectively measure and ascertain the volume of brake fluid that flows from the master cylinder to the compensating reservoir after the brake has been applied.

4,114,431

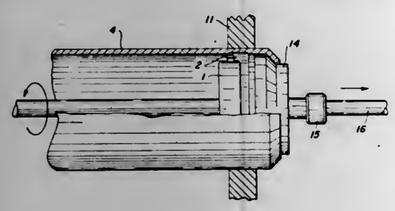
METHOD OF FORMING TUBULAR METAL PRODUCTS

Edwin R. Monkelbaan, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1976, Ser. No. 652,934

Int. Cl.² B21D *3/02*

U.S. Cl. 72—122 **6 Claims**



1. A method of fabricating seamless tubes of malleable metal including the following steps:

preparing an annular work piece of greater wall thickness than the required thickness of the completed tube;

supporting the work piece within a die ring in encircling engagement with its outer surface;

applying an axial pull to one end of said work piece to draw it axially through said die ring and simultaneously centrifugally rolling the rollers of a forming tool against the interior surface of said work piece, while said work piece is encircled by said die ring, with solely centrifugal force sufficient to enlarge by deformation its internal diameter and axially lengthen the work piece, said centrifugal rolling being accomplished by spinning said tool at a high rotational speed.

4,114,432

COIL WINDING APPARATUS

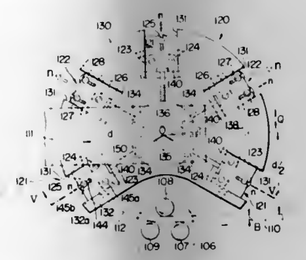
Yoshio Miura; Kazuhiro Kobayashi, and Koue Yusa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed May 17, 1977, Ser. No. 797,691

Claims priority, application Japan, May 24, 1976, 51-59151

Int. Cl.² B21F *3/02*

U.S. Cl. 72—135 **10 Claims**



1. A coil winding apparatus for producing a coil from a linear, elongated object, comprising:

a bending roller assembly for imparting a bending moment to the elongated object to form the coil; and

a leveling device for correcting the diameter of the coil, said leveling device including a plurality of leveling roller assemblies arranged in spaced relation circumferentially of the coil, one of at least two adjacent leveling roller assemblies imparting a bending mement to the coil in the direction opposite to the direction of a bending moment imparted by the other adjacent leveling roller assembly to the coil, sliders associated one with each of said leveling roller assemblies for supporting the same, each of said sliders having at one end thereof a threaded shaft, and a rotational driving source for rotating said shafts to simultaneously radially slide said sliders.

4,114,433

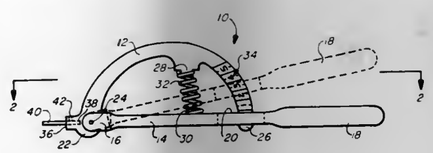
TURNBUCKLE WRENCH FOR TENSIONING SAILBOAT MAST STAYS

Charles E. Bowen, 2701 Fairway Dr., Greensboro, N.C. 27408

Filed Sep. 12, 1977, Ser. No. 832,326

Int. Cl.² G01L *5/06*

U.S. Cl. 73—143 **10 Claims**



1. A turnbuckle wrench for imparting desired tension to a mast stay connected to a sailboat by an elongate turnbuckle rotatable about its longitudinal axis and having an opening extending laterally therethrough, said wrench comprising:

first and second elongate lever members each having a forward end and a rearward end;

means pivotally innerconnecting said lever members adjacent said forward ends thereof;

spring means innerconnecting said lever members intermediate the lengths thereof for resiliently maintaining a predetermined pivotal positional relationship between said lever members while yieldingly permitting pivotal movement of said lever members relative to each other;

an elongate pin-like element carried by and projecting forwardly from said first lever member for reception during use of said wrench within said opening of said turnbuckle;

said second lever member having a handle portion adjacent said rearward end thereof for receiving thereon during use of said whench a manually-applied force adapted to impart stay-tensioning rotative movement to said turnbuckle; said force being transmitted from said second lever member to said pin-like element through said first lever member and through said spring means innerconnecting said lever members, and increasing magnitude of said force causing resilient yielding of said spring means and proportionally increasing pivotal movement of said lever members relative to each other;

and indicia means upon at least one of said lever members for indicating the magnitude of the relative pivotal movement undergone by said lever members as stay-tensioning rotative movement is imparted by said wrench to said turnbuckle, and for thereby indicating the magnitude of the tension imparted to said stay.

4,114,434

DEVICE FOR MEASURING THE ADHESION FORCES IN A CLOSURE SEAL FOR A CONTAINER AND A METHOD OF OPERATING THIS DEVICE

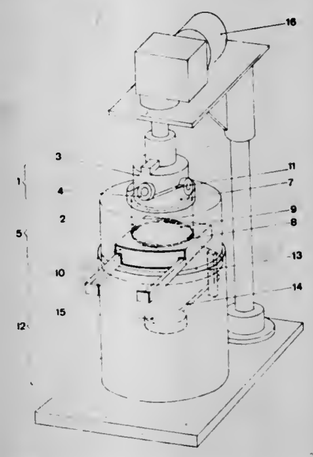
Ivo Hauser, White Plains, N.Y., assignor to Societe d'Assistance Technique pour Produits Nestle, S.A., La Tour-de-Peilz, Switzerland

Filed May 9, 1977, Ser. No. 795,031

Claims priority, application Switzerland, May 19, 1976, 6239/70

Int. Cl.² G01N *19/04*

U.S. Cl. 73—150 R **7 Claims**



1. A device for measuring the adhesion forces in a closure seal of a container, the seal being formed by a membrane adhering to the neck of a container and by a pad retained at the base of the cover of the container, adhering together, said device comprising a plunger with an adhesive end equipped with lateral guides, a skirt encircling said plunger and having an upper edge in the form of inclined planes adapted to receive the lateral guides of the plunger, and a shoe having a base which is provided with means for retaining the pad, rotation of said plunger about a fixed axis causing said plunger to move axially and thereby effect separation of said membrane from said pad, the shoe being connected to a dynamometer whereby the force required to effect such separation is transmitted to said dynamometer.

4,114,435

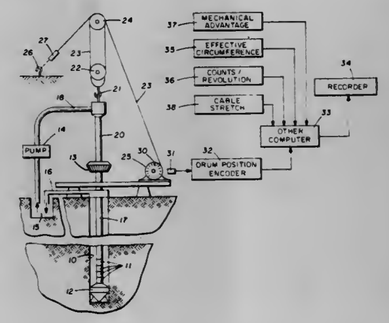
WELL DRILLING SYSTEM

Bobbie J. Patton, Dallas; James H. Sexton, Duncanville; Wilton Gravley, Carrollton, and C. Mackay Foster, Jr., Denton, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 1, 1977, Ser. No. 847,647

Int. Cl.² E21B *47/00*

U.S. Cl. 73—151.5 **4 Claims**



1. In a method for drilling a well with a drill bit fixed to the lower end of a drill string suspended from a traveling block moving in response to movement of a cable extending from a drawworks drum and arranged over one or more sheaves mounted in a crown block, the steps comprising:

(a) lowering the traveling block to its lowest position,

(b) measuring the distance from said lowest position of the traveling block to a selected reference point,

(c) determining the rotational position of the drum for said lowest position of the traveling block,

(d) raising the traveling block to a second position at which one full layering of cable is wound onto the drum,

(e) measuring the distance from said position of the traveling block to said reference point,

(f) determining the rotational position of the drum for said second position of the traveling block,

(g) repeating steps (d) – (f) for each full layering n of cable wound onto the drum before the traveling block reaches its maximum distance above said reference point, and

(h) thereafter determining the position of the traveling block at any given time during drilling operations for any cable layering in accordance with the following expression:

$$X' = X - (T_n - T_0) + \left(\frac{T_n - T_{n-1}}{C_{n-1} - C_n}\right)(C' - C_n)$$

wherein,

X = the value of X' when the traveling block is in its lowest position,

T_n = distance from the traveling block to said selected reference point for n layers of cable wound onto the drum,

T_O = distance from the lowest position of the traveling block to said selected reference point,

C_n = rotational position of the drum for n layers of cable wound onto the drum, and

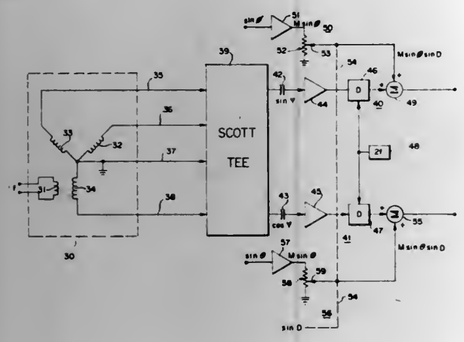
C' = rotational position of the drum at any given time.

4,114,436

"STRAPDOWN" INDUCTION COMPASS TRANSMITTER WITH COMPENSATION FOR HEADING ERRORS DUE TO THE VERTICAL COMPONENT OF THE EARTH'S MAGNETIC FIELD AND DUE TO TWO CYCLE ERROR DURING TURNS AND DURING CLIMBING AND DIVING MANEUVERS

John Edward Suminsby, 65 Arbor St., Wenham, Mass. 01984

Filed Dec. 20, 1976, Ser. No. 752,264
Int. Cl.² G01C 21/00
U.S. Cl. 73—178 R 5 Claims



1. In a strapdown induction compass transmitter compensated for errors due to the Earth's vertical field during turns and during climbing and diving maneuvers, comprising:

(a) magnetic sensing means for producing modulated signals proportional to the strength of the Earth's magnetic field along the fore/aft and athwartships axes,

(b) means to demodulate the modulated signal representative of the sensed fore/aft field to produce a varying DC signal which is proportional to the sensed Earth's field and thus to the cosine of the magnetic heading angle ψ,

(c) means to demodulate the modulated signal representative of the sensed athwartships field to produce a varying DC signal which is proportional to the sensed Earth's field and thus to the sine of the magnetic angle ψ,

(d) means to compensate said demodulated signals for errors due to the Earth's vertical field during turns, including;

(1) means to generate a first DC correction signal proportional to the product of the Earth's magnetic field M, the sine of the magnetic dip angle D, and the sine of the bank angle ϕ,

(2) means to generate a second DC correction signal proportional to the product of the Earth's magnetic field M, the sine of the magnetic dip angle D, and the sine of the pitch angle θ,

(3) means to add said first correction signal algebraically to the demodulated DC signal representing the product of the Earth's magnetic field and the sine of the magnetic heading angle ψ, and

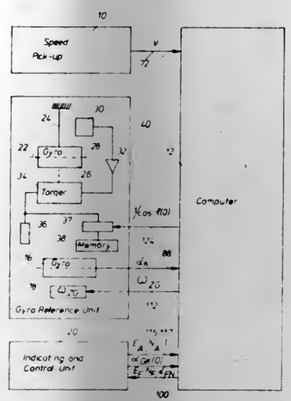
(4) means to add said second DC correction signal algebraically to the demodulated DC signal representing the product of the Earth's magnetic field and the cosine of the magnetic heading angle ψ, to cancel the signal component due to the Earth's vertical field sensed along the athwartships axis during turns and along the fore-/aft axis during climbing and diving maneuvers.

4,114,437

NAVIGATION INSTRUMENT FOR THE NAVIGATION OF LAND VEHICLES

Uwe Krogmann, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk, Bodensee, Fed. Rep. of Germany

Filed Jul. 22, 1977, Ser. No. 818,153
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659094
Int. Cl.² G01C 21/00
U.S. Cl. 73—178 R 9 Claims



1. A navigation instrument for the navigation of land vehicles in a grid coordinate system having a north direction which does not necessarily coincide with geographic north but may differ therefrom by a grid convergence angle, said instrument being characterized by:

(a) movement pick-up means for generating a signal representing the magnitude of longitudinal movement of the vehicle;

(b) a gyro reference device including

free gyro means whose spin axis establishes a reference axis and which determines the angle α_K between the reference axis and the longitudinal axis of the vehicle,

means for determining geographic north and, if said reference axis initially is offset from geographic north, for subsequently producing signals representing the angles between said reference axis and geographic north;

(c) a computer device for receiving said signals and said grid convergence angle and for generating output signals indicative of the vehicle position in said grid coordinate system; and

(d) means forming a part of at least one of said devices for correcting for the influence of the rotation of the earth on the spin axis and said free gyro means.

4,114,438

DEVICES FOR MEASURING THE FLOW SPEED OF A FLUID

Jean-Max Muraz; Michel Payre, and Pierre Rampin, all of Valence, France, assignors to Crouzet, Paris, France

Filed Dec. 8, 1976, Ser. No. 748,495
Claims priority, application France, May 22, 1978, 78 37893
Int. Cl.² G01F 1/66
U.S. Cl. 73—194 A 2 Claims

1. A device for measuring the flow speed of a fluid, comprising at least a pair of electro-acoustic transducers placed in the fluid, means generating a pulse train for triggering said transducers, each operating as a transmitting probe, to transmit simultaneously a succession of acoustic waves during a time interval shorter than the time interval taken by the acoustic waves to travel between said transducers, transforming means for processing respectively the received electric signals delivered by each of said transducers operating as receiving probes, in order to get information representing the phase difference between the received signals delivered by one of said receiving probes and the received signals delivered by the other receiving probe, said transforming means comprising:

a first integrator which integrates a reference voltage between moments 0, corresponding to the beginning of the transmission time interval, and t_1, or t_2 if $t_2 < t_1$, t_1 and t_2 representing the propagation times of the acoustic waves from one probe to the other in both directions, said reference voltage being switched to the input of said first integrator by an analog switch;

a second integrator which integrates the output voltage of said first integrator switched to the input of said second integrator by analog switches between 0 and t_1, or t_2 if $t_2 < t_1$, with a time constant $\tau/2$, and between t_1 and t_2, or t_2 and t_1 if $t_2 < t_1$, with a time constant τ;

a third integrator which integrates the output voltage of said second integrator switched to the input of said third integrator by analog switches between 0 and t_1, or t_2 if $t_2 < t_1$, with a time constant τ_1, between t_1 and t_2, or t_2 and t_1 if $t_2 < t_1$, with a time constant τ_2, and until moment θ with a time constant τ_3, where moment θ is determined by the comparison of the output voltage of said third integrator

with a reference voltage by a comparator, the time constants τ_1, τ_2, τ_3, being chosen so as to cancel at the output of said third integrator the terms in t_1^3 and $t_1t_2^2$, or t_2^3 and $t_2t_1^2$ if $t_2 < t_1$, and to keep the terms in $t_1t_2\theta$;

a trigger circuit for developing a square wave pulse of life time $0 - \theta$;

a fourth integrator which integrates a reference voltage between moments 0 and θ and develops an output voltage proportional to K/t_1t_2;

a memory unit for storing the output of said fourth integrator after a time lag greater than the maximum duration of $0 - \theta$;

a fifth integrator which receives square wave pulses modulated in amplitude by the output of said fourth integrator stored in said memory unit and in width by $\Delta t = t_2 - t_1$, or $t_1 - t_2$ if $t_2 < t_1$, and which supplies an output voltage proportioned to the product $K\,\Delta t/t_1\,t_2$

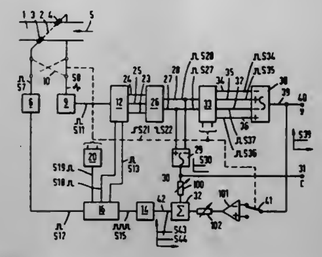
an amplifier responsive to the output from said fifth integrator for performing a scaling operation which, after a time greater than the maximum propagation time, is sampled and stored on an output corresponding to a measuring channel for one of said transducer pairs.

4,114,439

APPARATUS FOR ULTRASONICALLY MEASURING PHYSICAL PARAMETERS OF FLOWING MEDIA

Willy Julius Fick, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Aug. 18, 1977, Ser. No. 825,647
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636737
Int. Cl.² G01F 1/66
U.S. Cl. 73—194 A 4 Claims



1. Apparatus for ultrasonically measuring physical parameters of flowing media, comprising, a measuring path provided with two ultrasonic converters, transmitting and receiving devices connected to said converters, said path having at least one component in the direction of flow and over which ultrasonic signals are sent alternately upstream and downstream, control means for applying a starting signal to said transmitting device, switch means operated by said control means for alternately connecting said transmitter and receiver to opposite ones of said converters, comparator means connected to said receiving device and having an input for a reference signal from said control means applied thereto at a predetermined time after the time of said transmitter starting signal, said comparator means generating early or late signals when arrival signals from said receiving device come in earlier or later than said reference signal, a first signal level generator connected to said comparator means for producing a first main signal related to the velocity of sound in said media, a logic circuit connected to said comparator means and said control means, a second signal level generator connected to said logic circuit for producing a second auxiliary signal related to the flow velocity of said media, a summating circuit having inputs connected to said first and second generators, a time generator having an input connected to said summating circuit and an output connected to said control means, switch and reversing amplifier means between said summating circuit and said second signal level generator controlled by said control means for alternately adding and subtracting said auxiliary flow velocity signal to and from said summating circuit to provide sum and difference outputs for said summating circuit, first variable resistor means between said summating circuit and said first signal generator for adjustably varying said main signal, and second variable resistor means between said summating circuit and said second signal generator for varying said auxiliary signal.

4,114,440

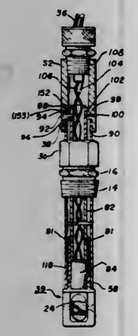
TURBINE-TYPE FLOW RESPONSIVE DEVICE

W. Mead Stapler, One Dey Lane, Riverdale, N.J. 07457

Filed Oct. 19, 1977, Ser. No. 843,527
Int. Cl.² G01F 1/115
U.S. Cl. 73—231 R 10 Claims

1. A turbine-type flow responsive device characterized in that the turbine is of molded plastic and has molded therein a magnetic attraction means disposed to cause an electrical pulse to be actuated when said turbine is rotated and the enclosed magnetic means is passed by a magnetic pickup, said flow responsive device disposed for mounting in a hydraulic connection to a through fluid passageway of determined size such

as a pipe, said flow responsive device reading the flow rate in said passageway and including: (a) a tubular stem portion which is at least two inches greater in length than the hydraulic connection in which it is to be mounted, said stem having a diameter which is less than the inner diameter of the hydraulic connection in which it is mounted; (b) means for mounting said stem portion in the hydraulic connection and in and through the wall of the fluid conductor and means for orienting and securing said stem in said hydraulic connection so that fluid is prevented from leaking past the mounted stem portion; (c) a U-shaped turbine mount removably secured to and extending from the inner end of the tubular stem; (d) a shaft supported and retained by said U-shaped turbine mount; (e) a turbine of small size whose diameter of rotation is less than the diameter of the fluid passageway in the hydraulic connection which is mounted on the tubular stem, said turbine rotatably supported on the shaft at substantially right angles to the axis of the stem so that the turbine may freely rotate in response to the flow of fluid past the turbine, the diameter of rotation of the turbine being such a small size in relation to the fluid passageway in which it is mounted that the confining walls of the fluid passageway and the resulting distance of the walls to the turbine negate a shroud effect of the walls on the fluid flow read by the



turbine, the turbine hub carrying a permanent magnetic device in a manner to provide a balanced turbine, said U-shaped turbine mount assembly and the bladed turbine in mounted condition thereby providing forward, rear and below protection of the turbine with the below connection extending beyond the sweep of the turbine to act as a guard against accidental engagement of the turbine with an interior wall of the fluid conducting passageway and to insure that the turbine blades are a determined spacing from the wall of this passageway; (f) a magnetic pickup carried within and near the end of the tubular stem and adapted to be actuated by the rotation of the turbine; (g) a conductive means attached to the pickup and from this pickup carried within and extending from the stem portion outside the fluid conductor so as to carry from this stem portion pulse signals to an external computing and display means so that when and as the turbine is positioned in the passageway of the fluid conductor with the axis of the turbine and the passageway substantially in coincidence the turbine is caused to be rotated in response to and in relation to the rate of flow of fluid along the passageway, and (h) an O-ring seal carried by the turbine mount and an outer tubular member portion of the stem to provide a fluid-tight seal of the removable mount in the end of the stem.

4,114,441

METHOD AND APPARATUS FOR MEASURING THE HEIGHT OF FILLING MATERIAL ON A SURFACE, SUCH AS WITHIN A CONTAINER

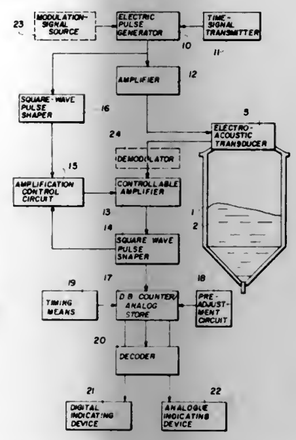
Antonio Magri, Milan, Italy, assignor to G. H. Endress & Co., Switzerland

Filed May 23, 1977, Ser. No. 799,517

Claims priority, application Switzerland, Jun. 9, 1976, 7228/76

Int. Cl.² G01F *23/28*

U.S. Cl. 73—290 V **13 Claims**



1. A method of measuring the level of filling material on a surface, comprising transmitting a sound pulse toward the filling material level, the sound pulse having a duration equal to at least the time it would take the sound pulse to travel to the lowermost level of the material on the surface, recording the echo of the sound pulse coming from the actual material filling level, and measuring, as a measure of the filling level, the time interval between the end of the transmitted pulse and the end of the echo pulse.

4,114,442

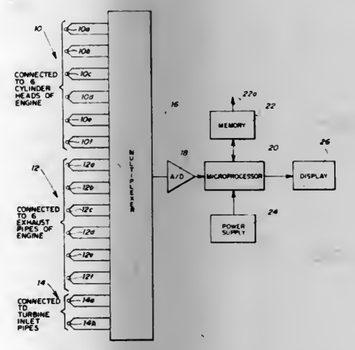
TEMPERATURE MONITORING SYSTEM

Wayne L. Pratt, Richardson, Tex., assignor to Avicon Development Group, Richardson, Tex.

Filed Sep. 3, 1976, Ser. No. 720,406

Int. Cl.² G01K *7/04, 7/14*

U.S. Cl. 73—341 **24 Claims**



1. A monitoring device for monitoring thermal operating characteristics of an engine including turbine and piston engines comprising:

a first plurality of thermocouples located in first temperature monitoring zones within the engine for measuring the temperature of said first temperature monitoring zones and for generating corresponding first temperature output signals;

a second plurality of thermocouples located in second temperature monitoring zones within the engine for measuring the temperature of said second temperature monitoring zones and for generating corresponding second temperature output signals;

a third plurality of thermocouples located in third temperature monitoring zones within the engine for measuring the temperature of said third temperature monitoring zones and for generating corresponding third temperature output signals;

a multiplexing circuit for automatically and sequentially scanning and detecting said first, second and third temperature output signals;

means for converting said scanned temperature output signals to digital information;

an electronic processor for continuously generating a first temperature difference signal representing the temperature difference between the hottest and coldest zone of said first temperature monitoring zones, a second temperature difference signal representing the temperature difference between the hottest and coldest zone within said second temperature monitoring zones and a third temperature difference signal representing the temperature difference between the hottest and coldest zone within said third temperature monitoring zones;

means for storing said digital information and said first, second and third temperature difference signals;

first display means for alternately displaying the number of the temperature monitoring zone within said first, second and third temperature monitoring zones having the hottest temperature;

second display means for alternately displaying said first, second and third temperature difference signals; and

third display means for alternately displaying the temperature of the hottest zone within said first, second and third temperature monitoring zones.

4,114,443

FREEZE THAW INDICATOR

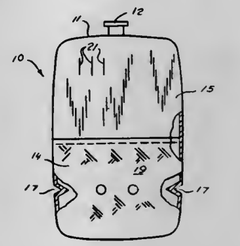
Trevor Percival Clark, 3650 Sunnycrest Dr, North Vancouver, B.C., Canada (V7R 3C6)

Filed Jun. 21, 1976, Ser. No. 697,716

Claims priority, application United Kingdom, Jun. 26, 1975, 27054/75

Int. Cl.² G01K *11/06*

U.S. Cl. 73—358 **4 Claims**



1. A freeze thaw indicator for evidencing thawing conditions in a food storage compartment of a freezer comprising:

(a) a container having an upper transparent portion and a lower opaque portion adapted to be partially filled with a coloured liquid within only the opaque portion having substantially the same thawing temperature as water,

(b) a plurality of projections extending inwardly from side walls of the opaque portion of the container for inhibiting movement of frozen liquid into the transparent portion of the container but permitting movement of melted liquid into the transparent portion when the container is placed in a horizontal position.

4,114,444

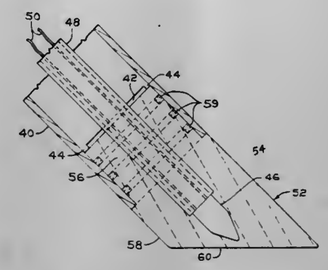
MEASURING GLASS SURFACE TEMPERATURE DURING ANNEALING

Ernest N. Schwenninger, and Ronald L. Schwenninger, both of Cumberland, Md., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 5, 1977, Ser. No. 757,122

Int. Cl.² G01K *7/02*

U.S. Cl. 73—359 R **5 Claims**



1. Apparatus for determining the temperature at a fixed position within a glass annealing lehr of a main portion of a moving glass ribbon to be cut into blanks of commercially acceptable glass having acceptable optical properties, when said portion passes said fixed position, comprising a temperature sensing element, a plug of boron nitride of generally cylindrical configuration having a lower portion including a surface adapted for sliding contact with said moving glass ribbon at said fixed position, a recess spaced a predetermined distance substantially greater than four microns from said exposed surface of said plug, and an upper portion, a temperature sensing element carried by said plug within said recess, said temperature sensing element comprising wires that spoil the optical properties of a moving glass ribbon on relative sliding contact therewith, said plug of boron nitride providing a thermal conductive path from the contacted surface of the moving glass ribbon to said temperature sensing element while providing electrical insulation between the temperature sensing element and the glass surface and protection for the ribbon from sliding contact with said wires of said temperature sensing element, and tube means surrounding said upper portion of said plug, said lower portion of said plug having a slightly larger radius than its said upper portion, whereby said exposed surface of said plug is the only portion of said apparatus adapted to make sliding contact with said main portion of said moving glass ribbon.

4,114,445

ELECTRICAL THERMOSTAT CONTROL APPARATUS

Marvin D. Nelson, St. Louis Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 18, 1977, Ser. No. 798,214

Int. Cl.² G01K *7/14*

U.S. Cl. 73—360 **8 Claims**

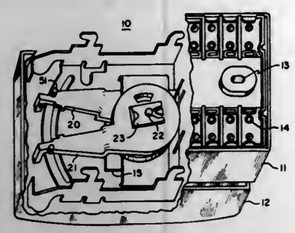
1. In a temperature sensing unit adapted for use in an electrical control system for temperature conditioning apparatus comprising;

a base member (adapted to be mounted on a surface.)

an electrical circuit having a plurality of circuit components associated with a temperature responsive means for changing the operation of the temperature conditioning apparatus, said circuit components being mounted on said base,

a first selector member movably mounted on said base for

movement in a plane parallel to said base and cooperating with one of said plurality of components, said selector member having an open portion laying over a second of said plurality of circuit components, and



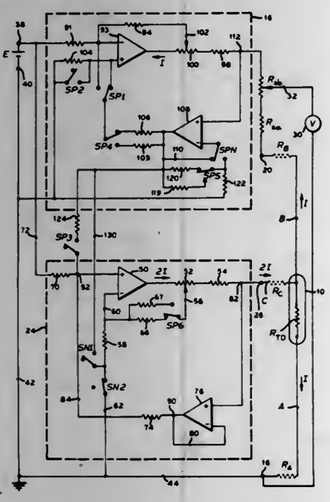
second selector member movably mounted on said base for movement in a second plane parallel to and adjacent said first selector member and cooperating with said second plurality of circuit components through said open portion to provide a compact selector member assembly.

4,114,446

TEMPERATURE MEASUREMENT WITH THREE LEAD RESISTANCE THERMOMETERS

Thomas Joseph Walsh, Hatboro, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Dec. 13, 1976, Ser. No. 750,075
Int. Cl.² G01K 7/24
U.S. Cl. 73—362 AR **6 Claims**



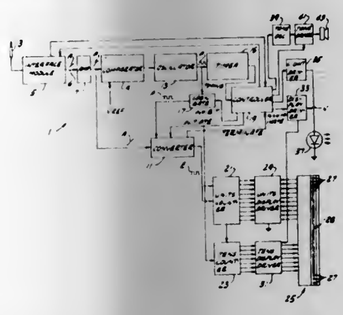
1. Apparatus for producing a constant current through a load resistor from a constant potential source having one terminal common with a terminal of said load resistor, comprising:
a calibrating resistor,
a first operational amplifier,
means connecting the output circuit of said first amplifier to said load resistor through said calibrating resistor,
a first circuit resistor,
means connecting the inverting input of said first operational amplifier to one terminal of said constant potential source through said first circuit resistor,
a second circuit resistor having a value with a predetermined relationship to that of said first resistor,
means connecting the output of said first amplifier through said second circuit resistor to said inverting input to form with said first circuit resistor a feedback circuit for said first amplifier,
a third circuit resistor,
means connecting the non-inverting input of said first amplifier to the other terminal of said constant potential source through said third circuit resistor,
a fourth resistor having a value with a predetermined relationship to the value of said third resistor which corresponds to the relationship of said first resistor to said second resistor,
a second operational amplifier having its output terminal connected by a feedback circuit to its inverting input,
means for connecting the non-inverting input of said second amplifier to the other terminal of said calibrating resistor, and
means connecting said fourth resistor between the output terminal of said second amplifier and the non-inverting input of said first amplifier.

4,114,447

TEMPERATURE INDICATING APPARATUS

Wally E. Creach, Tulsa, Okla., assignor to La Barge, Inc., St. Louis, Mo.

Filed Feb. 9, 1976, Ser. No. 656,428
Int. Cl.² G01K 7/24
U.S. Cl. 73—362 AR **9 Claims**



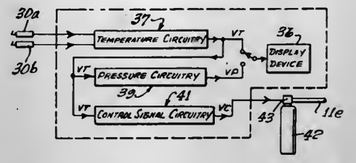
1. In temperature indicating apparatus having means for sensing the temperature in a region having a temperature to be measured and for supplying an analog signal whose amplitude is a function of the temperature therein, means for comparing the analog signal amplitude with a reference level which represents a preselected temperature level and for supplying a signal when the analog signal amplitude reaches the reference level, means responsive to the signal from the comparing means for supplying pulses at a predetermined rate, timing means responsive to the pulses for counting from zero to a preselected value and for supplying an enabling signal when the preselected value is reached, the time required for the timing means to count from zero to the preselected value being a predetermined timing interval, conversion means responsive to the enabling signal supplied by the timing means at the end of the predetermined timing interval to convert the analog signal to a digital signal representative of the temperature in the region, and display means responsive to the digital signal for providing a visual indication of the temperature in the region being measured, the improvement comprising:
controller means for controlling the supplying of pulses from the pulse supply means to the conversion means and for controlling the initiation of the conversion of the analog signal to the digital signal, said controller means including means responsive to the enabling signal supplied by the timing means at the completion of the predetermined interval for supplying an initiate signal to the conversion means, said conversion means being responsive to said initiate signal to initiate the conversion of the analog signal, whereby the conversion means starts production of the digital signal representative of the temperature in the region only at the end of the predetermined timing interval.

4,114,448

SERVICING APPARATUS

Joseph E. Merritt, 8061 8th St., Buena Park, Calif. 90621

Filed Sep. 13, 1976, Ser. No. 722,777
Int. Cl.² G01K 7/22; G01L 9/00
U.S. Cl. 73—362 AR **8 Claims**



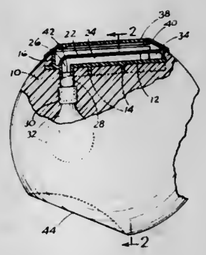
1. The combination comprising:
temperature-sensitive means, comprising a positionable probe, for producing a probe-signal corresponding to the temperature of the probe-environment having a known pressure/temperature relationship;
means for transposing said probe-signal to a temperature-signal;
means for transforming said temperature-signal to a temperature readout corresponding to the temperature at said probe-environment;
alternative means for electronically converting said temperature-signal to a pressure readout corresponding to the pressure at said probe-environment;
said converting means comprising means for synthesizing a pressure/temperature curve corresponding to said pressure/temperature relationship;
said synthesizing means comprising a set of generator means for synthesizing said pressure/temperature curve.

4,114,449

SQUEEZE TYPE EXERCISER DEVICE WITH FORCE MEASURING GAUGE

Forrest L. Dikeman, 2925 NE. 77th Ave., Portland, Oreg. 97213, and Robert C. Wilkinson, 11855 SW. 91st St., Tigard, Oreg. 97223

Continuation of Ser. No. 715,436, Aug. 18, 1976, abandoned, which is a continuation of Ser. No. 576,674, May 12, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 849,496
Int. Cl.² A63B 21/30; G01L 5/02
U.S. Cl. 73—379 **2 Claims**



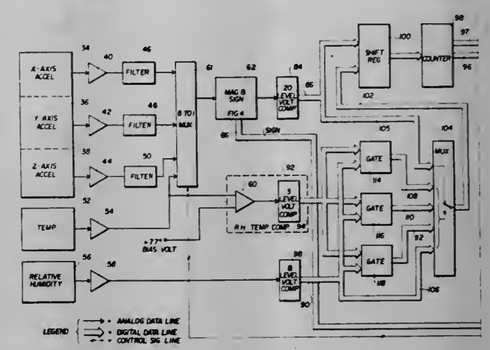
1. A body exerciser device, comprising:
a. an elastic compression body, and
b. a gauge integral with and confined within the periphery of the elastic compression body throughout the operating range of the gauge, the gauge comprising:
1. a resiliently deformable fluid reservoir confined within and surrounded by the elastic compression body, the reservoir being encapsulated within the body with substantially the entire external surface of the reservoir bonded to and in direct contact with said body,
2. compression indicating means communicating within the reservoir and bonded integrally to the body and confined within the periphery of the elastic compression body throughout its operating range, the indicating means being visible at the periphery of the body, and
3. indicating fluid contained within the reservoir and operable upon compression of the elastic body to compress the reservoir and register said compression on the visible indicating means.

4,114,450

ELECTRONIC RECORDING ACCELEROMETER

Lawrence M. Shulman, East Patchoque, and Norman Weingart, Syosset, both of N.Y., assignors to Systems Consultants, Inc., Washington, D.C.

Filed Oct. 31, 1977, Ser. No. 846,975
Int. Cl.² G01D 1/14, 21/02; G01P 15/00
U.S. Cl. 73—489 **15 Claims**



1. Apparatus for sensing and recording, for subsequent retrieval, environmental data such as shock, temperature and relative humidity, comprising, in combination:
a substantially ruggedized case for housing said apparatus in the form of a simulated parcel and including a power source therein for operating said apparatus over a predetermined period of time such as the time required for shipping said case from one destination to another;
a plurality of environmental data sensors located in said case and being operable to be responsive at least to shocks encountered bidirectionally along three mutually perpendicular axes and providing respective analog output signals having amplitudes which are a measure of the magnitude of the respective shocks encountered;
analog signal multiplexer circuit means coupled to said plurality of data sensors and being operable to provide a repetitive multiplexed sequence of data signal samples of said analog output signals;
electrical circuit means coupled to said signal samples and being responsive thereto to classify each of said data signal samples by means of voltage comparator circuit means into amplitude windows of predetermined increments and including encoding means for generating a multi-bit digital code word corresponding to the largest amplitude window reached by each data signal sample;
a statistical digital memory coupled to said electrical circuit means and having a respective addressible memory location for each digital code word and being operable to statistically count and store in binary format at each memory location the number of respective digital code words generated over a predetermined sampling period;
a time tagged digital memory coupled to said electrical circuit means and having time dependent addressible memory locations for a predetermined number of sampling periods and being operable in one mode to selectively store in binary format the largest value of a code word occurring within at least one sampling period and in another mode to store in binary format the number of time periods wherein code words of less than a minimum amplitude window are generated; and

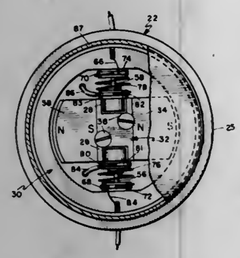
means coupled to said digital memory for selectively reading out on demand the binary formats of said memory locations for generating statistical and time histories of the data stored therein.

4,114,451

MOVING COIL MINIATURE ANGULAR RATE SENSOR

Jack H. Crittenden, Ontario, and Joseph W. Bitson, Chino, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Aug. 11, 1977, Ser. No. 823,580
Int. Cl.² G01P 9/02
U.S. Cl. 73—504 **17 Claims**



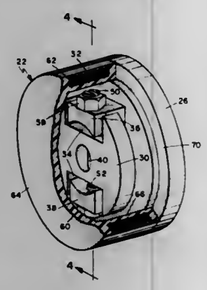
1. A steering rate sensing device adapted for use on a rotating body comprising:
a base member including pivot support means fixed thereto for attachment directly to a rotating body for rotation therewith about a rotary axis, said pivot support means defining a pivot axis extending at an angle to said rotary axis,
magnetic means fixed to said base member for rotation therewith, and
a pickoff coil pivotally mounted on said pivot support means on said base member for rotation therewith, and for movement about said pivot axis relative to said magnetic means by gyroscopic precession in response to change in orientation of said rotary axis during rotation thereof for generating a signal.

4,114,452

MOVING MAGNET MINIATURE ANGULAR RATE SENSOR

Joseph W. Bitson, Chino, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Aug. 11, 1977, Ser. No. 823,817
Int. Cl.² G01P 9/02
U.S. Cl. 73—504 **15 Claims**



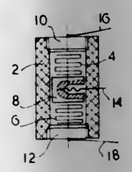
1. A steering rate sensing device for a rotating body comprising:
a base member adapted to be mounted on and rotated with a rotating body about a rotary axis,
magnetic means pivotally mounted about a pivot axis on pivot means fixed to said base member for rotation therewith about said rotary axis, and
a sensing coil mounted on said base member for rotation therewith,
said magnetic means and said sensing coil being mounted for relative angular movement therebetween about said pivot axis transverse to the rotary axis of said base member and operative to generate a signal in response thereto.

4,114,453

ACCELEROMETER SENSOR

Benzion Sandler, Beersheba, Israel, assignor to Ben Gurion University of the Negev Research & Development Authority, Beersheba, Israel

Filed Jun. 13, 1977, Ser. No. 806,265
Claims priority, application Israel, Jun. 13, 1976, 49777
Int. Cl.² G01P 15/12
U.S. Cl. 73—517 R **10 Claims**



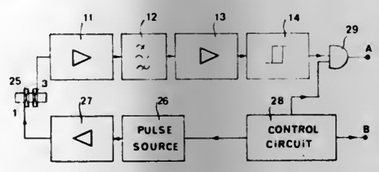
1. An acceleration sensor, comprising:
a housing;
an electrical resistor body disposed within the housing and including compacted interleavings of insulating sheet material carrying electrically-conductive particles imparting to said body a high electrical resistivity in the axial direction, which resistivity decreases with the further compaction of said body in the axial direction;
a mass movable within the housing in response to acceleration and effective to apply pressure to the resistor body in the axial direction to further compact same and thereby to decrease its axial resistivity;
and electrical contacts connected to the opposite ends of said resistor body to enable the axial resistivity thereof to be measured.

4,114,454

METHOD OF MEASURING THE RESONANCE FREQUENCY OF MECHANICAL RESONATORS

Herbert Ernyei, and Etienne Langlois, both of Paris, France, assignors to Societe Telegraphiques et Telephoniques, Paris, France

Filed Jun. 27, 1977, Ser. No. 810,405
Claims priority, application France, Jun. 29, 1976, 76 19676; Apr. 25, 1977, 77 12409
Int. Cl.² G01M 7/00
U.S. Cl. 73—579 **9 Claims**



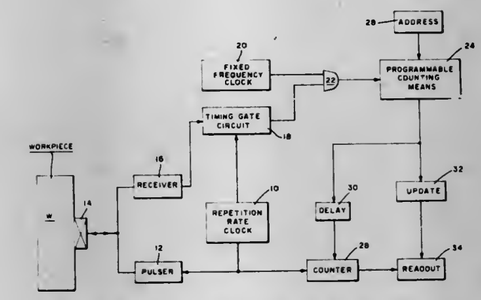
1. A method of measuring the resonant frequency of a mechanical resonator oscillating in a given mode, the steps comprising:
positioning the resonator within a solenoid;
establishing a magnetic field along the axis of said solenoid;
shock exciting said resonator into oscillation in the desired mode at an initial time to induce a voltage in said solenoid having a component, the frequency of which is proportional to the resonant frequency of the resonator; and
amplifying, filtering, and shaping said induced voltage to energize a visual display of the resonant frequency of the resonator under test.

4,114,455

ULTRASONIC VELOCITY MEASURING METHOD AND APPARATUS

Philip A. Walker, Trumbull, Conn., assignor to Krautkramer-Branson, Incorporated, Stratford, Conn.

Filed Oct. 7, 1977, Ser. No. 840,592
Int. Cl.² G01N 29/00
U.S. Cl. 73—597 **22 Claims**



1. An apparatus for measuring the acoustic velocity of a workpiece which includes means for providing trigger pulses, circuit means for transmitting responsive to said trigger pulses an ultrasonic search pulse into the workpiece and subsequently receiving an echo pulse responsive to the transmitting of the search pulse and such search pulse intercepting an acoustic impedance change, means coupled to said circuit means for providing counts commensurate with the transit time of the search pulse traversing the workpiece dimension as determined by a first signal responsive to the transmitting of said search pulse and a second signal responsive to the receipt of the echo pulse, the improvement comprising:
first counting means coupled to said means coupled to said circuit means for counting and accumulating said counts until a predetermined quantity of counts, which quantity is commensurate with the thickness of the workpiece, is accumulated and providing an output signal when such accumulated count is obtained, and
second counting means coupled for receiving said trigger pulses and said output signal and counting the quantity of trigger pulses and providing a signal commensurate with the acoustic velocity of the workpiece responsive to receipt of said output signal.

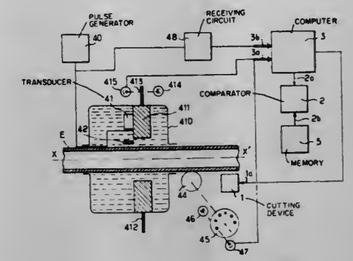
4,114,456

ULTRASONIC DEVICE FOR CUTTING SECTIONS OF CONSTANT WEIGHT FROM A TUBULAR BLANK

Jacques Dory, Meaux, France, assignor to CGR Ultrasonic, France

Filed May 19, 1977, Ser. No. 798,550
Claims priority, application France, May 21, 1976, 76 15376
Int. Cl.² G01N 29/00
U.S. Cl. 73—622 **4 Claims**

1. An apparatus for the accurate determination of the increase in volume of a longitudinally moving tubular body in relation to a straight section reference plane, said apparatus comprising a single transducer adjusted to emit and receive ultrasonic pulses along a path directed towards the axis of the tubular body, means for exciting this transducer at a specific pulse period, means for rotating the transducer around the axis of the tubular body at a specific rotation period, a reflector integral with the rotation of the transducer and adjusted partly to reflect the ultrasonic pulses on said path, means for generating digital signals representing the relative angular position and longitudinal position of the tubular body and the transducer, pulse receiver circuit means connected to said transducer and calculating means connected to said means for generating digital signals and to said pulse receiver circuit means, said pulse receiver circuit means comprising means for generating first, second and third gating signals whose durations are in proportion to the propagation times of the said ultrasonic pulses from the transducer to the reflector and to the outer and



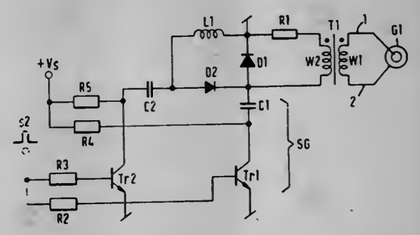
inner surfaces of the tubular body respectively and means for generating, from the said first, second and third gating signals, first and second further digital signals representing the distance from the reflector to the said outer surface and to the thickness of the tubular body, respectively; the calculating means being adapted to calculate, from the said first and second further digital signals, the elementary area of the angular portion of the straight section of the tubular body which is swept by the said path during the said pulse period and the sum of the said elementary areas during the said rotation period.

4,114,457

APPARATUS FOR ULTRASONIC MEASUREMENT

Niels Thun, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jun. 23, 1977, Ser. No. 809,172
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629562
Int. Cl.² G01N 29/00
U.S. Cl. 73—632 **8 Claims**



1. An ultrasonic measurement circuit, comprising a transmission line having source and load ends and first and second conductors, an ultrasonic transducer effectively between said conductors at said load end of said line, said transducer serving as a transmitter, signal generator means in said first conductor at said source end of said line having conductive and nonconductive states, impedance matching resistance means in said second conductor at said load end of said line, one way switching means shunting said conductors between the output side of said signal generator means and the upstream side of said resistance means, said one way switching means being poled towards said resistance means, and current generating means for effecting a current through said one way switching means during said nonconductive state of said signal generator means

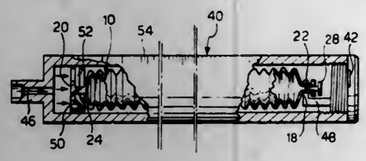
to make said impedance matching resistance means effective during said nonconductive state.

4,114,458

FLUID PRESSURE TRANSDUCER AND PRESSURE MEASURING INSTRUMENT INCLUDING THE TRANSDUCER

Carlo Alinari, Corso Vittorio Emanuele 200, Turin, Italy

Filed Jun. 28, 1977, Ser. No. 810,830
Claims priority, application Italy, Jul. 2, 1976, 68644 A/76
Int. Cl.² G01L *7/06, 7/10*
U.S. Cl. 73—729 **35 Claims**



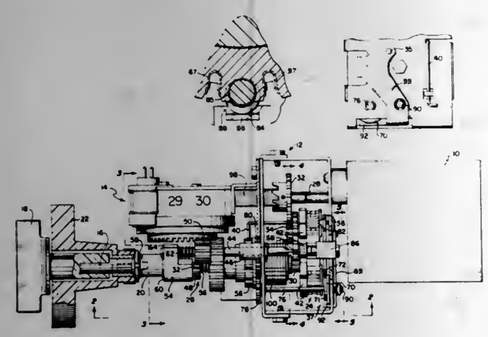
1. A pressure transducer for fluids, of the type comprising a watertight capsule which in use of the transducer is surrounded by fluid, said capsule having a peripheral bellows wall and a pair of opposite end walls, means for the attachment of one end wall to a support, an indicator device, and means for the connection of the other end wall to said indicator device, which provides an indication of changes in length of the capsule resulting from variations in the pressure of said fluid surrounding the capsule to afford an indication of said pressure, wherein the improvement consists in the capsule having a thin below wall of flexible plastics material, which capsule is partly filled with gas such as air and also contains an incompressible liquid which is substantially immiscible with said gas, the elasticity of said bellows wall being negligible compared with that of the gas contained within the capsule.

4,114,459

DETENT UHF TUNER WITH MEMORY TYPE INDEPENDENT FINE TUNING

Alarico A. Valdettaro, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Division of Ser. No. 500,450, Aug. 26, 1974, Pat. No. 3,972,240.
This application Apr. 21, 1976, Ser. No. 678,975
Int. Cl.² F16H *35/18*; H03J *1/02*
U.S. Cl. 74—10.41 **10 Claims**



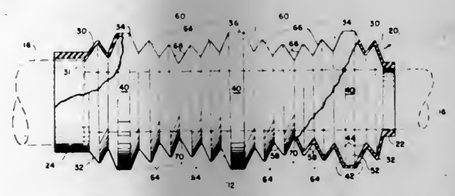
1. A tuning system including in combination:
a tuner having a continuously variable main tuning shaft, rotation of which is effective to tune said tuner over a continuous band of frequencies;
a selector shaft;
means mechanically coupled to said selector shaft for establishing a plurality of detent positions for said selector shaft;
a rotatable turret having a plurality of adjusting members mounted thereon;
a fine tuning shaft;
means responsive to said fine tuning shaft for selectively engaging and rotating a first predetermined single one of said adjusting members when said main tuning shaft is positioned in a first predetermined position;
means interconnecting said selector shaft, said main tuning shaft and said turret, said interconnecting means including means for adjusting said tuning shaft upon rotation of said selector shaft and for advancing said turret a single predetermined increment corresponding to the spacing between two adjacent adjusting members in a single movement in response to the rotation of said selector shaft a predetermined number greater than one of successive detent positions to bring a second one of said adjusting members into position for selective engagement by said engaging means;
cam follower means operatively coupled to the one of said adjusting members positioned for engagement by said engaging means; and
a mechanically tunable variable impedance element electrically coupled to said tuner and operable independently of said main tuning shaft for fine tuning said tuner, said variable impedance element being mechanically coupled to said cam follower means and adjustable by the one of said adjusting members positioned for engagement by said engaging means.

4,114,460

PROTECTIVE BOOT

Takao R. Oto, Fresno, Calif., assignor to Roto Manufacturing Co., Inc., Fresno, Calif.

Filed Feb. 24, 1977, Ser. No. 771,688
Int. Cl.² F16J *15/50*
U.S. Cl. 74—18.2 **2 Claims**



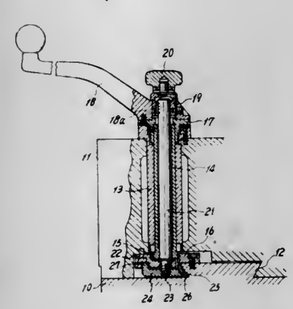
1. In combination with a shaft of a shock absorber, an axially collapsible boot segment having a configuration conforming to a pair of coaxially aligned, commonly dimensioned truncated cones, joined at the planes of truncation thereof, comprising:
A. at least one pair of commonly dimensioned annular convolutions of a first configuration disposed in axially spaced, coaxial alignment, each convolution of said pair being characterized by a peripheral wall of a substantially cylindrical configuration and a pair of substantially radially extended annular walls intersecting said peripheral wall and having inside diameters of a common dimension; and
B. a plurality of at least three juxtaposed annular convolutions of a second configuration interposed in juxtaposition between the pair of annular convolutions of said first configuration, each convolution of said plurality being characterized by a pair of substantially radially extended annular walls intersecting to define an acuminate periphery, the outside diameter of each convolution of the second configuration adjacently related to a convolution of said first configuration being less than the internal diameter of the peripheral wall thereof and greater than the outside diameter of the juxtaposed convolution of the second configuration, whereby a nesting of the convolutions characterized by a lesser outside diameter within the convolutions characterized by a greater outside diameter is facilitated.

4,114,461

LEVER-OPERATED FEED DEVICE

Ikuo Otsu, Toyota, and Akiyoshi Onishi, Hazu, both of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Japan

Filed Apr. 21, 1977, Ser. No. 789,735
Claims priority, application Japan, May 27, 1976, 51-67804
Int. Cl.² F16H *19/04*
U.S. Cl. 74—29 **6 Claims**



1. A lever-operated feed device for moving a slide block slidably guided upon a base, comprising in combination:
a stationary toothed member extending in the direction of the slide movement of said slide block;
a rotational sleeve rotatably supported by said slide block;
a rotational toothed member provided upon said rotational sleeve and meshingly engaged with said stationary toothed member for sliding said slide block when rotated;
a lever handle provided at one end of said rotational sleeve for rotating the same together with said rotational toothed member;
a rod extending through said rotational sleeve, being rotatable therein and being in co-axial alignment therewith;
a clamp handle provided at one end of said rod for rotating the same; and
means connected with said rod for clamping said slide block upon said base when said clamp handle is rotated in one direction and for unclamping said slide block therefrom when said clamp handle is rotated in the other direction.

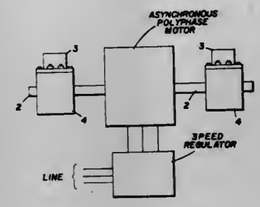
4,114,462

UNBALANCED VIBRATOR FOR AN OSCILLATING CONVEYOR OR A VIBRATING SCREEN

Klaus Jürgen Grimmer, Alpenstrasse 39, Steiermark, A-8707 Leoben-Goss, Austria

Division of Ser. No. 258,986, Jun. 2, 1972, Pat. No. 3,822,604.
This application May 24, 1974, Ser. No. 473,061
Int. Cl.² F16H *33/00*
U.S. Cl. 74—61 **7 Claims**

1. A vibratory power unit for use on AC current, in which the vibratory action may be controlled solely by adjustment of the applied AC voltage over a limited range, particularly for use as a power unit for vibrating conveyors, and screens, comprising an asynchronous polyphase motor having a useable speed range, in dependence upon applied voltage, of from normal design rated maximum speed at normal supply voltage to a minimum useable speed of approximately 80% thereof, at an intermediate reduced voltage, at least one centrifugal assembly, disposed on the shaft of said motor, comprising a pair of cooperable masses, the first mass of which is rigidly fastened to said shaft, and the other of which is mounted for radial movement outwardly from an inner operative position, at which the assembly has a minimum unbalance, to an outer operative position of maximum unbalance, at which maximum vibratory action is produced, and spring means biasing said second mass in a direction toward said inner position, said spring means having such physical and operating parameters, and being so prestressed that the pressure applied to said second mass is greater than centrifugal forces on said mass opposing said spring pressure, at motor speeds below said minimum useable speed, and thus operative to maintain said mass in its inner position until such minimum speed is exceeded, but is insufficient to restrict outward movement of said mass to said outer



operative position at maximum motor speed, whereby as the motor speed is progressively increased from said minimum to said maximum said second mass will progressively move outward in respective relative positions in correspondence to the instant motor speed, whereby the vibratory forces producible by said mass may be progressively increased from an operative minimum condition to an operative maximum condition, merely by adjustment of the motor supply voltage within said relatively limited range varying the rotational motor speed from said minimum value to said maximum value, operative to provide a control of such conveyor or screen operation over the normal operational range of the latter.

4,114,463

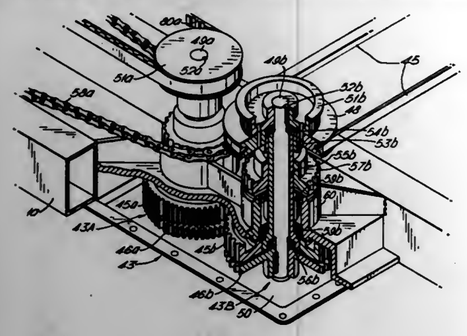
DRIVE MEANS AND HARVESTING APPARATUS INCORPORATING SAME

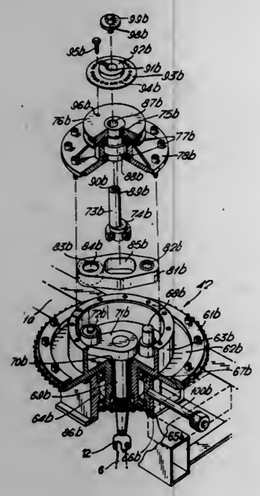
Graham Miller Garden, and Richard James Harwood, both of Christchurch, New Zealand, assignors to New Zealand Inventions Development Authority, New Zealand

Filed Jul. 9, 1975, Ser. No. 594,566
Int. Cl.² F16H *33/00*
U.S. Cl. 74—61 **6 Claims**

1. A drive means for a pair of tined shaker members, which comprises a single high speed prime mover; two vibrating head assemblies; means effecting a synchronized driving connection between said high speed prime mover and an input of each of said vibrating head assemblies to transmit a synchronised high speed rotation from said prime mover to said inputs but in contra-rotation one to the other; and in which said assemblies each include a housing rotatably mounted in a casing, an input member rotatably mounted in said housing, an output member rotatably mounted in each housing and in driving connection with one of said shaker members and linked to the housing for rotary movement therewith, and means between said input and output member producing a high speed torsional or rotary vibration in said output member; and in which said housings are linked for synchronised rotational movement in opposed rotary directions, the arrangement being such that a synchronised rotary motion be effected by said output members in opposed directions together with said torsional or rotary vibration produced in synchronisation in said output members in the same rotary direction such that opposed tines provided on the

shaker members and which engage in an object passing therebetween as the shaker members rotate in contra-rotation simultaneously effect a shake of maximum intensity on opposed sides of said object.





4,114,464

ARTIFICIAL HAND AND DRIVE APPARATUS FOR SUCH HAND

Klaus-Peter Schubert, Feldkirchen; Hartmut Keller, Weyarn, and Jürgen J. Hildebrandt, Brunnthal, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

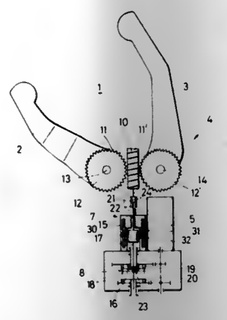
Filed Feb. 11, 1977, Ser. No. 767,678

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607499

Int. Cl.² F16H *27/02*

U.S. Cl. 74—89.14 **9 Claims**

1. An artificial hand comprising frame means constituting the hand proper, a thumb, first journal means operatively connecting the thumb to said frame means, finger means, second journal means operatively connecting said finger means to said frame means, first gear means secured to said thumb for rotating the thumb about the first journal means, second gear means secured to said finger means for rotating the finger means about said second journal means, said thumb and finger means being arranged opposite each other to form gripping tongues, worm gear means operatively interposed between said first and second gear means in such a position that both gear means mesh with said worm gear means simultaneously, motor means secured to said frame means, and reversible gear drive means supported by said frame means and operatively interposed between said worm gear means and said motor means for rotating said worm gear means, whereby said gripping tongues may be opened by the rotation of said worm gear means in one direction and closed by the rotation of said worm gear means in the opposite direction.



4,114,465

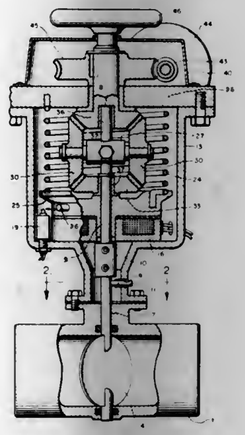
MODULATING FAILSAFE VALVE ACTUATOR USING DIFFERENTIAL GEARING

M. Frank Troy, Hinsdale, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Dec. 6, 1976, Ser. No. 749,195

Int. Cl.² F16H *27/02*

U.S. Cl. 74—89.17 **13 Claims**



1. A valve actuator comprising;
a reversible drive motor;
means multiplying motor torque;
a housing having upper and lower ends;
a differential drive unit in said housing, having an input and output, and intermediate gears rotating on a shaft, said input connected to said multiplier;
a valve operating shaft rotatably contained in said input and output gears, and fixed to said intermediate gear shaft;
a helical coil spring in said housing having first and second ends, said first spring end fixed in said housing upper end;
a spring retainer in said housing fixed to said spring lower end and said differential output;
means signaling position of said retainer relative said housing and reversing said motor;
an electromagnetic clutch responsive to said signal means, in said housing, intermediate said retainer and housing lower end, and adjacent said operating shaft, for releasably limiting motion relative said operating shaft and spring retainer;
a stop, for selectively limiting rotation of said operating shaft relative said housing;
wherein said drive motor and torque multipler rotate said retainer through said differential drive, said rotation relative said retainer and housing, compressing said spring; and,
after a predetermined amount of rotation, actuating said clutch, and reversing said motor, providing normal valve operation;
whereby loss of clutch power and drive torque will return said shaft to said stop.

4,114,466

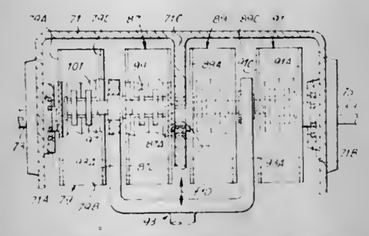
SPEED CONVERTORS FOR PROVIDING VARIABLE DRIVE RATIOS

Amleto Meucci, Via Giuseppe Cei 99, I-56021 Cascina, Pisa, Italy

Continuation of Ser. No. 537,712, Dec. 31, 1974, abandoned. This application Jan. 6, 1977, Ser. No. 757,141

Int. Cl.² F16H *29/04*

U.S. Cl. 74—117 **5 Claims**



1. A first group of shafts including an input and an output shaft, all of said first group of shafts having parallel rotational axes that are fixed with respect to each other;
a plurality of first rotary bodies having toothed rims, each of said first rotary bodies being attached to, and rotatable about an axis defined by one of said first group of shafts;
first support means connecting said first group of shafts;
a second group of shafts;
a plurality of second rotary bodies, each of said second rotary bodies being attached to, and rotatable about an axis defined by one of said second group of shafts, each of said plurality of second rotary bodies being arranged within one of said first plurality of rotary bodies to form one of a plurality of drive units;
second support means connecting said second group of shafts;
a plurality of oscillatory arms mounted on each of said second bodies, each of said oscillatory arms having a first end attached to said second body and a free end, said free ends of the oscillatory arms being at different distances from the second shaft which is attached to said second body;
unidirectional means attached to the free ends of each of said oscillatory arms, said unidirectional means cooperating with the toothed rim of said first rotational body of each drive unit during a predetermined portion of each rotation of said second body to effect drive transmission between said first and second bodies of each drive unit;
first means, including said plurality of oscillatory arms, which are operative to vary the distance between said first and second shafts of each drive unit to obtain a variable eccentricity of the first and second rotational bodies of each drive unit, which eccentricity determines the drive ratio of each drive unit; and
second means to move one of said first and second support means relative to the other to vary the eccentricity of said second group of shafts with respect to said first group of shafts and thereby vary the drive ratio of all of said plurality of drive units.

4,114,467

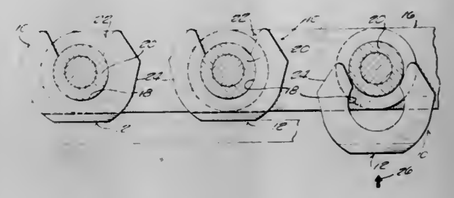
SNAP-ON WEAR PAD

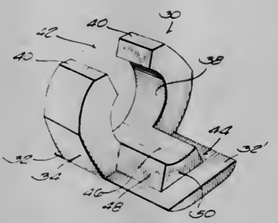
Victor D. Petershack, Elm Grove, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Dec. 2, 1976, Ser. No. 746,762

Int. Cl.² F16G *13/02, 15/00*

U.S. Cl. 74—255 R **12 Claims**





1. A snap-on wear pad adapted to be used on a conveyor chain, said wear pad:
(a) having a main body portion which is in axial length approximately equal to the distance between the side bars of the conveyor chain on which the wear pad is to be used;
(b) having an axial hole clear through the main body portion which is more than semi-circular but less than circular in cross-section and which is sized and shaped to fit snugly around a chain bushing, roller, or pin of the conveyor chain on which the wear pad is to be used;
(c) having an at least generally radial entrance slot which leads from the outer surface of the main body portion of the wear pad to the axial through hole, which extends the axial length of the main body portion, and which is somewhat less wide than the diameter of the chain bushing, roller, or pin which is to fit into the axial hole;
(d) having a tab portion connected to the main body portion opposite to the entrance slot and extending axially outwardly therefrom at a distance beneath the center line of the axial hole not more than the thickness of the side bar, whereby the tab portion prevents the wear pad from rotating about the chain bushing, roller, or pin;
(e) being resilient about a plane passing through the entrance slot and the tab portion, whereby the wear pad can be forced onto and releasably held on the chain bushing, roller, or pin; and
(f) being wear-resistant on the side opposite to the entrance slot, whereby the portion extending beyond the side bars of the chain during use acts as a wear surface.

2. A snap-on wear pad as recited in claim 1 wherein at least a portion of the radial surface of the wear pad is shaped to engage the teeth of a sprocket over which the conveyor chain is passed.

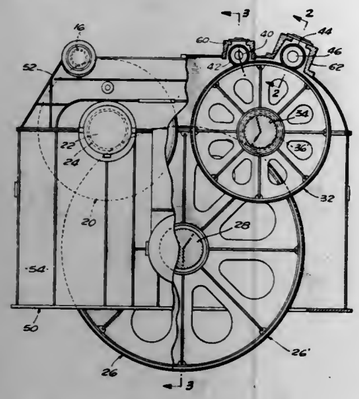
3. A snap-on wear pad as recited in claim 1, wherein the entrance slot is flared outwardly to facilitate snapping the wear pad onto the chain bushing, roller, or pin.

4. A snap-on wear pad as recited in claim 1 which is made from a single piece of plastic.

5. A snap-on wear pad as recited in claim 1 which comprises

two such tabs, one of which projects from each axial side of the main body portion.

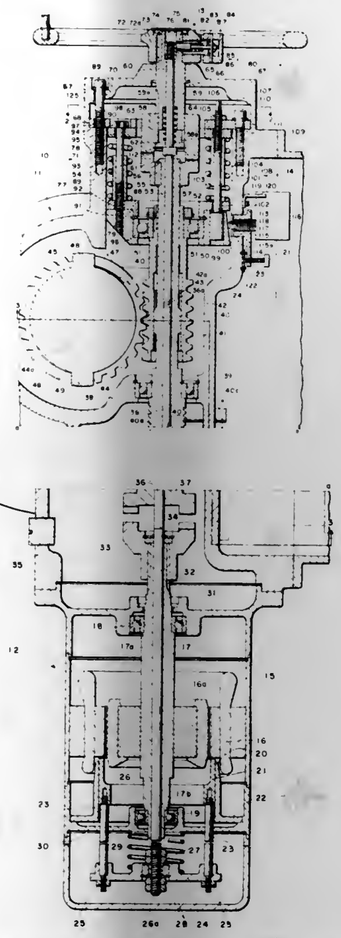
4,114,468
DRIVE MEANS FOR ELECTRIC GENERATORS PARTICULARLY ADAPTED IN FLOATING POWER PLANT
Theodore Carpentier, Los Angeles, Calif., assignor to Universal Power Corporation, Fresno, Calif.
Continuation of Ser. No. 333,288, Feb. 16, 1973, abandoned.
This application Jun. 23, 1976, Ser. No. 698,822
Int. Cl.² F16H *57/00*
U.S. Cl. 74—410 **6 Claims**



1. A gear train assembly for interconnecting the shaft of a prime mover in driving relationship with a second shaft, comprising:
a bull gear, said bull gear being relatively large and massive with respect to all other gears in said gear train assembly;
first gear means connecting said prime mover shaft in driving relationship with said bull gear, said first gear means being a speed reducer operable to drive said bull gear at a rate of rotation lower than the rate of rotation of said prime mover shaft; and
second gear means connecting said bull gear in driving relationship with said second shaft, said second gear means being a speed increaser operable to drive said second shaft at a rate of rotation higher than the rate of rotation of said bull gear, said bull gear having substantially greater inertia than the other gears sufficient to operate as a flywheel to stabilize the speed and to have the capability of providing torsional vibration damping to isolate such vibration from the second shaft,
said prime mover shaft is the output shaft of a steam turbine;
said bull gear is a ship's bull gear of the type used in driving a ship's propeller; and
said second shaft is the input shaft of a generator, having a stabilized output frequency.

4,114,469
VALVE ACTUATOR
Andrew Stratienko, Philadelphia, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 4, 1977, Ser. No. 784,386
Int. Cl.² F16H *1/16*
U.S. Cl. 74—424.8 VA **13 Claims**

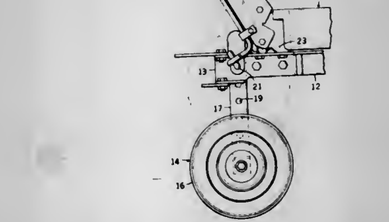
1. Valve actuator means comprising:
primary drive means;
worm gear means operably connected to said drive means by first disconnectable means;
manual operator means operably connectable to said worm gear means by second disconnectable means; and,
means longitudinally movably mounted within said worm gear means and operably engageable with said first disconnectable means and said second disconnectable means



for preventing simultaneous engagement of said first and second disconnectable means.

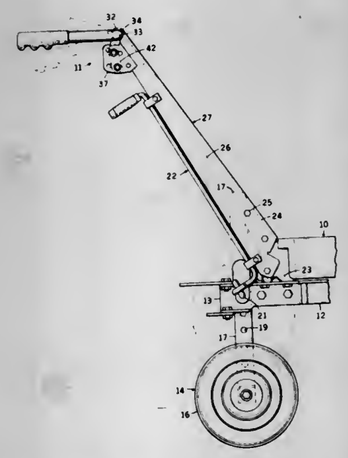
4,114,470
RELATING TO PRESSURE FLUID OPERATED ACTUATORS
Charles William Scott Sharpe, Inchtue, Great Britain, assignor to Perenco Limited, Perth, Great Britain
Filed Jan. 14, 1977, Ser. No. 759,537
Claims priority, application United Kingdom, Jan. 16, 1976, 1677/76
Int. Cl.² G01H *9/00*
U.S. Cl. 74—441 **6 Claims**

1. A rotary actuator comprising
an enclosure having an internal rectilineal slideway along which a slide member is movable, said slide member being formed by a hollow body extending longitudinally of the slideway,
first means for moving the slide member along the slideway, second means restraining the slide member from rotating during movement along the slideway,
a shaft extending into the enclosure and being rotatable relative to the enclosure, the shaft axis extending longitudinally of the slideway,
a worm screw carried within the enclosure by the shaft and a screw-threaded nut assembly carried by said slide member, said nut assembly and worm screw being arranged mutually to interact so that the shaft rotates when the slide member moves along the slideway, and wherein
said second means comprising one of the slide member body and enclosure wall including a protrusion projecting therefrom and the other including a groove extending longitudinally relative to the slideway for receiving and cooperating with the protrusion,
said nut assembly is releasably mounted within said hollow



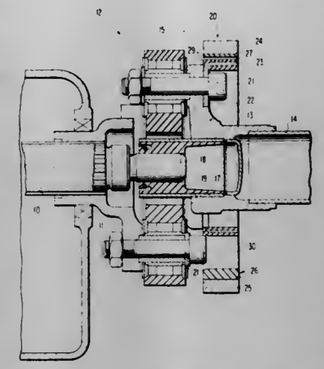
body, means for constraining the nut assembly against rotational movement,
said nut assembly comprising first and second nut elements each threadedly mounted on said worm screw, at least one of the nut elements having limited axial movement relative to the worm gear and to the other nut element, and means for urging at least one of the nut elements in a direction axially opposite the other nut element for minimizing rotational backlash between the worm screw and the nut assembly.

4,114,471
ADJUSTABLE HANDLE BAR ASSEMBLY FOR ROTARY TILLER
Kenneth W. White, Bridgeton, Mo., assignor to Atlas Tool & Manufacturing Co., St. Louis, Mo.
Filed Nov. 8, 1976, Ser. No. 739,707
Int. Cl.² B62K *21/16*
U.S. Cl. 74—551.6 **7 Claims**



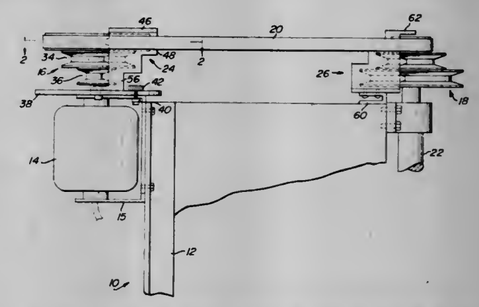
1. An adjustable handle bar assembly for an implement, comprising:
(a) a handle panel including a web and side flanges, the panel web having a curvilinear end, and the side flanges having recesses adjacent the curvilinear panel web end, to provide a handle bar socket,
(b) a handle bar rotatively mounted in the handle bar socket and extending laterally beyond the side flanges, and
(c) an adjustable connection between the handle bar and side flanges to adjust selectively the angular disposition of the handle bar in its socket.

4,114,472
INSTALLATION FOR VIBRATION DAMPING IN DRIVE CONNECTION OF MOTOR VEHICLES
Rudolf Hörnig, Esslingen; Bruno Beeskow, Bietigheim, and Günter Wörner, Rommelshausen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed Jul. 30, 1976, Ser. No. 710,160
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1975, 2534684
Int. Cl.² F16D *13/78, 3/58*
U.S. Cl. 74—574 **21 Claims**



1. An installation for damping vibrations in a drive connection of vehicles with the aid of a vibration absorber means whose absorber mass is constructed as an annular member, the absorber mass being connected by way of elastic means with a driving part of the drive connection consisting at least of a transmission means having an output shaft and of a universal joint shaft means having an input, characterized in that the connection between the transmission output shaft and the universal joint shaft means comprises an elastic coupling means which is sufficiently radially yielding to effect a separation of the vibrational system of the drive connection, and in that the vibration absorber means is coordinated to the universal joint shaft input.

4,114,473
GUARD FOR BELT PULLEY
Henry M. Pollak, 823 Brookside Rd., Pottstown, Pa. 19464
Filed Dec. 1, 1976, Ser. No. 746,366
Int. Cl.² F16P *1/00*
U.S. Cl. 74—611 **4 Claims**



1. A pulley guard mounted within an endless belt adjacent a pulley which has three grooves each of a different diameter, the guard including a top wall for overlying a portion of the pulley side face between the nips of said belt and said pulley, a

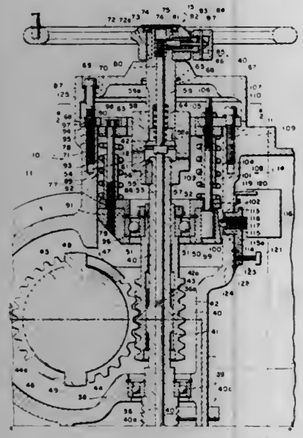
side wall connected to said top wall and extending generally at right angles therefrom, said guard having three projections on said side wall with each projection terminating in an arcuate end face juxtaposed to the inner diameter of one of said pulley grooves, each arcuate end face on said projections having a center of curvature corresponding to the axis of rotation of said pulley, mounting means connected to one of said walls for mounting said walls in a position so that each of said projections enters one of said pulley grooves and one projection occupies substantially all its pulley groove which is unoccupied by the belt, said mounting means including a mounting plate having a hole for accomodating the drive shaft of a motor, said drive shaft being connected to said pulley, and an adjustable clamp associated with said mounting plate for securing the mounting plate to a support which is stationary with respect to said pulley.

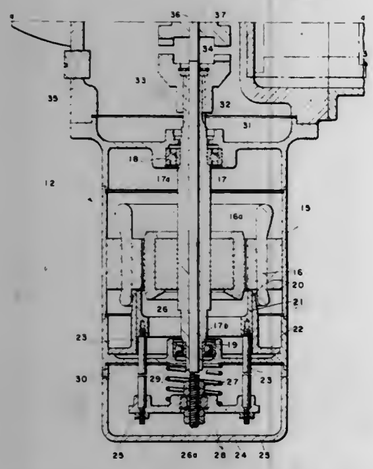
4,114,474

GEAR SHAFT ASSEMBLY

Andrew Stratienko, Philadelphia, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 4, 1977, Ser. No. 784,387
Int. Cl.² F16H *33/00*
U.S. Cl. 74—625 **5 Claims**





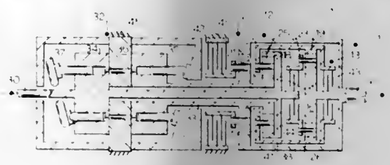
1. A motorized gear-drive assembly comprising:
motor means comprising an electric motor having an output shaft;
a first clutch slidably located on said output shaft near the end thereof;
a hollow gear-drive shaft coaxially aligned with said output shaft and having a second clutch engageable with said first clutch, and a third clutch at the opposite end thereof;
manual operating means having an output shaft coaxially aligned with said gear-drive shaft and having a fourth clutch slidable on said manual output shaft engageable with said third clutch; and,
sliding rod means passing through said hollow shaft and arranged to prevent simultaneous engagement of said four clutches by abutment with said first and fourth clutches.

4,114,475

HYDROMECHANICAL TRANSMISSION WITH THREE SIMPLE PLANETARY ASSEMBLIES, ONE SUN GEAR BEING MOUNTED ON THE OUTPUT SHAFT AND THE OTHER TWO ON A COMMON SHAFT CONNECTED TO AN INPUT-DRIVEN HYDRAULIC MODULE

Elias Orshansky, Jr., deceased, late of San Francisco, Calif. (by Betty Bacon Orshansky, executrix), and William E. Weseloh, San Diego, Calif., assignors to Orshansky Transmission Corporation, New York, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,766
Int. Cl.² F16H *47/04, 37/06, 47/00, 51/10*
U.S. Cl. 74—687 **6 Claims**



1. A power transmission comprising:
a stationary frame,
input means,
output means,
first, second, and third planetary assemblies each having a sun gear, a ring gear, and a carrier with planet gears, the sun gears of said first and second planetary assemblies, being rigidly connected together, the ring gear of said first planetary assembly and the sun gear of the third planetary assembly being rigidly connected to said output means, the ring gear of said second planetary assembly being rigidly connected to said input means, and the carrier of said second planetary assembly being connected to the ring gear of said third planetary assembly,
a reversible speed-varying module connecting said input means to said sun gears of said first and second planetary assemblies,
braking means for releasably connecting said carrier of said first planetary assembly to said frame, whereby when said braking means is engaged, said output means is driven hydrostatically from said input means through said speed-varying module and said first planetary assembly,
first releasable clutching means for connecting said carrier of said third planetary assembly with said input means, and
second releasable clutching means connecting said ring gear of said third planetary assembly to said output means.

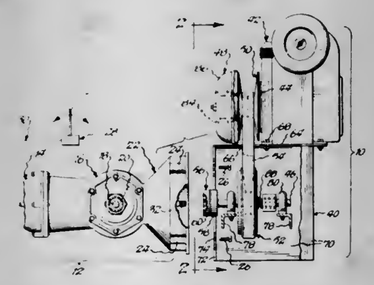
4,114,476

AUTOMATIC TORQUE STICK TRANSMISSION

Anthony W. Fini, Jr., 4273 Mundy St., Blasdell, N.Y. 14219

Filed Jul. 15, 1976, Ser. No. 705,395
Int. Cl.² F16H *3/02;* B60K *1/00, 9/00*
U.S. Cl. 74—745 **4 Claims**

1. A variable speed transmission system, comprising:
a manually shiftable gear box having a plurality of synchronized forward speed gear ratios, said gear box having an input shaft;
an overrunning clutch mounted on said input shaft for disengaging said input shaft from a vehicle engine upon deceleration of such vehicle engine;
a second shaft connected to said overrunning clutch;
a torque converter connecting said second shaft to a drive shaft of a vehicle engine, said torque converter including a drive pulley mounted on such vehicle engine drive shaft to be driven thereby and having a movable wall which moves to contract and open said drive pulley and centrifugal weights connected to said movable wall controlling movement of said movable wall and exerting force on said drive pulley movable wall for contracting said drive pulley as such vehicle engine speed is increased from an idling speed to maximum engine speed, said torque converter further including a driven pulley mounted on said second shaft for driving said second shaft and having a movable wall which moves to contract and open said driven pulley, and a spring mounted on said second shaft and connected to said driven pulley movable wall, said spring biasing said driven pulley movable wall in a direction to contract said driven pulley, and a V-belt connecting said drive and driven pulleys, said pulleys having walls shaped to correspond to the shape of said V-belt;
said V-belt being mounted in said driving and driven pulleys to be selectively engaged by said drive pulley and so force



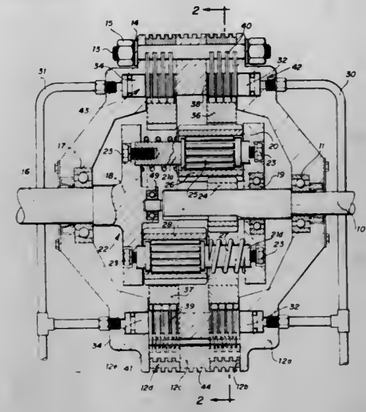
said driven pulley into an open configuration against said spring bias as said drive pulley is contracted by said weights as such vehicle engine speed is increased from idling speed, said spring bias being matched to the force exerted on said drive pulley movable wall by said weights so that said drive pulley and said driven pulley movable walls move synchronously and so that the drive pulley is fully contracted and said driven pulley is fully open at maximum engine speed, and vice versa at engine idling speed;
said overrunning clutch being interposed between said gear box input shaft and said second shaft so that at each gear change upon deceleration of such vehicle engine, said second shaft is disengaged from said gear box input shaft with said weights relaxing the force exerted on said drive pulley movable wall and said spring bias moving said driven pulley movable wall to fully close said driven pulley, said belt forcing said drive pulley fully open whereby after each gear change said drive pulley is fully open and said driven pulley is fully contracted so that torque transmitted to said gear box from an engine via said torque converter is maximized, said pulley movable walls moving synchronously as such engine accelerates and decelerates with said drive pulley being fully open when said driven pulley is fully contracted and vice versa whereby full use is made of available torque output from a vehicle engine in each forward speed gear of said gear box.

4,114,477

REVERSIBLE POWER TRANSMISSION

Roger A. Iverson, 8469 Everett Way "A", Arvada, Colo. 80005

Filed Oct. 18, 1976, Ser. No. 733,480
Int. Cl.² F16H *57/10;* F16D *7/02*
U.S. Cl. 74—768 **10 Claims**



1. A reversible power transmission comprising:
(a) a cylindrical housing having a pair of axially spaced brakes each including a set of stator disks and a set of rotor disks with hydraulic means for selectively actuating said brakes,
(b) two ring gears each having gear teeth on inner and outer surfaces thereof with the outer teeth enmeshed with inner teeth on said rotor disks,
(c) an axial input shaft extending into one side of said housing carrying a driving sun gear,
(d) an output shaft aligned with said input shaft extending from said housing on the other side thereof,
(e) a cage carried by said output shaft, and
(f) two arrays of idler pinion gears journaled in said cage with a first of said arrays driven by said sun gear and driving the second of said arrays and with each pinion of said first of said arrays enmeshed with teeth on the inside of one of said ring gears and with each pinion of the second of said arrays enmeshed with teeth on the inside of the other of said ring gears.

4,114,478

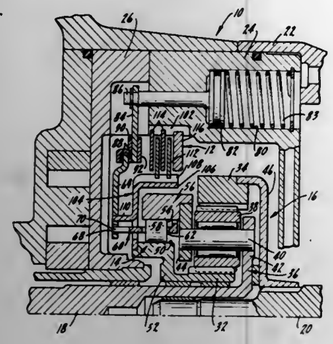
PLANETARY TRANSMISSION MECHANISM

Julius Alphonse Clauss, Birmingham, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 3, 1977, Ser. No. 756,316
Int. Cl.² F16H *57/10, 3/44*
U.S. Cl. 74—781 R **5 Claims**

1. A transmission mechanism comprising a planetary gear set having a plurality of relatively rotatable elements, a brake mechanism for one of said elements engagable to hold said element stationary and establish a high-speed drive ratio through said transmission, a roller clutch mechanism mounted between two of said elements, a cage for said roller clutch mechanism, a controller for said cage comprising a plate member engageable with said cage and operative when actuated to hold said cage wherein no direct driving relationship can be established between said two elements in one direction of relative rotation and having a position in which said cage is released whereby a two-way one-to-one drive through said gear set is established by said roller clutch when said cage and

said brake are released, a piston for said brake mechanism, and said controller being connected to said piston whereby said



brake cannot be engaged until said controller is in a position holding said cage.

4,114,479

EPICYCLIC GEARING

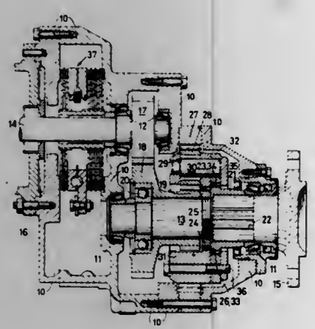
Herbert Edward Ashfield, Huddersfield, England, assignor to David Brown Tractors Limited, Huddersfield, England

Filed Jun. 20, 1977, Ser. No. 807,855

Claims priority, application United Kingdom, Jun. 24, 1976, 26301/76

Int. Cl.² F16H *1/28*

U.S. Cl. 74—801 **8 Claims**



1. Epicyclic gearing comprising a sun gear journalled on a shaft; a sleeve rigidly secured on the shaft and having a ring of external gear teeth; a lock-nut, for the sleeve, which engages with a screw thread formed on the shaft and has a ring of external gear teeth; an annular gear fixed against rotation; a plurality of planet pinions driveably interconnecting said sun gear and said annular gear; and a floating planet carrier driveably connected to the sleeve and comprising an annular body in which there are disposed spindles on which the respective planet pinions are journalled, the body having a ring of internal gear teeth which mesh with the teeth on the lock-nut with substantial backlash, an annular back-plate whose internal diameter is less than the tip diameter of the teeth on the sleeve, an annular disc having a ring of internal gear teeth whose tip diameter is greater than the tip diameter of the teeth on the lock-nut and which mesh with the teeth on the sleeve with substantial backlash, and means for clamping the disc between the body and the back-plate, the teeth on the sleeve being of such axial length that they fit with axial clearance between the body and the back-plate.

4,114,480

CONTROL DEVICES FOR TRANSMISSIONS OF AUTOMOTIVE VEHICLE ENGINES

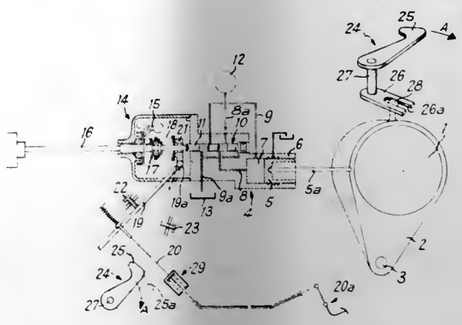
André Estaque, Bagneux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Jan. 12, 1977, Ser. No. 758,771

Claims priority, application France, Jan. 13, 1976, 76 00710

Int. Cl.² B60K *41/18*

U.S. Cl. 74—865 **4 Claims**



1. In a change-speed transmission for an automotive vehicle engine,

means for controlling the operation of the transmission, including

a hydraulic sensor incorporating

a movable member and

a control member of the transmission connected to the movable member of the sensor,

a pressure fluid source,

a reservoir,

distributing valve means arranged to place the sensor selectively in communication with the fluid pressure source and the reservoir, said valve means incorporating

slide means

a centrifugal governor,

a resilient member and

a pivotal lever arranged to interconnect the resilient member and an accelerator control member of the automotive vehicle, the slide means being connected to the centrifugal governor and to the resilient member so that the forces exerted are opposed to one another, and

a movable abutment connected to the control member of the transmission and disposed opposite the pivotal lever to limit its pivotal motion due to the acceleration control member to a value which varies as a function of the position of the control member of the transmission.

4,114,481

OIL FILTER WRENCH WITH RATCHET DRIVE

Adolph J. Kowalczyk, Minneapolis, Minn., assignor to J-Mark Quality Products, Inc., Minneapolis, Minn.

Filed Jul. 22, 1977, Ser. No. 817,930

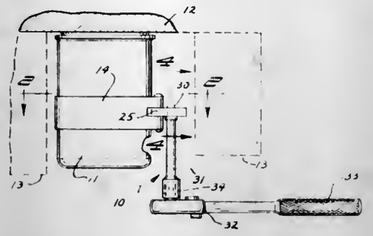
Int. Cl.² B25B *13/52*

U.S. Cl. 81—64 **4 Claims**

1. An oil filter wrench to be driven by the detented drive lug of a ratchet wrench, comprising

a looped band to embrace an oil filter and having lapped and proximate ends on adjacent pivots, one end being spaced outwardly of the other end, and

a drive fitting connecting and retaining said pivots together and swingable relative to both ends of the band to draw the band together in close fitting and gripping relation on the filter, the drive fitting including a pair of rigid connector panels confronting each other in spaced relation and both lying normal to the pivot axes, the connector panels having aligned socket openings to receive the drive lug of a ratchet wrench and retain the detent of the lug in the space between the panels to thereby maintain the fitting



on the lug while resisting movement of the fitting endwise along the lug, and the connector panels also having means maintaining the panels in spaced relation to each other.

4,114,482

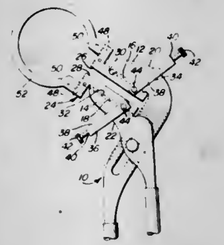
MULTIPLE USE ADAPTERS FOR PLIERS

Donald D. Houdeshell, RR #2, Republic, Ohio 44867

Filed Jun. 27, 1977, Ser. No. 810,386

Int. Cl.² B25B *7/02*

U.S. Cl. 81—421 **7 Claims**



1. In combination, a pair of jaw members relatively supported for movement toward and away from each other and including opposing serrated clamping surfaces and remote oppositely facing surfaces, a pair of jaw adapter members having serrated remote faces, said adapter members being removably abutted against said clamping surfaces with the serrations thereof meshed with the serrations of said remote faces, a pair of bail members each including a pair of generally parallel legs having first and second pairs of corresponding ends and a bight portion extending between and interconnecting said first pair of corresponding ends, the second pair of ends of each bail member embracingly receiving a corresponding adapter member therebetween and being pivotally anchored thereto for angular displacement about an axis extending between said second pair of ends, said legs also receiving the corresponding jaw member therebetween and each of said bight portions including a set screw threadedly secured therethrough and clamped against the corresponding surface of said remote surfaces, each of said adapter members having a work engaging member engaged therewith.

4,114,483

PORTABLE BORING TOOL FOR BALL VALVES

Ernest E. Grimsley, 4533 Wake Forest Dr., Portsmouth, Va. 23703

Filed Apr. 8, 1977, Ser. No. 785,996

Int. Cl.² B23B *41/00*

U.S. Cl. 82—1.2 **13 Claims**

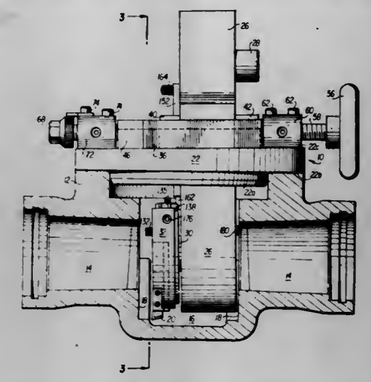
1. A boring tool for boring and the seating surface for a seal ring in a ball valve, said ball valve having a planar top surface surrounding an opening into a valve chamber, and a seating surface for a seal ring in said chamber disposed in a plane that intersects the plane of said top surface at an angle less than 90°, said boring tool comprising:

a base plate having a bottom surface adapted to mate with the planar top surface of a valve, said base plate having an opening therein which communicates with the chamber of a valve on which it is mounted;

support means movably mounted on said base plate;

an input drive shaft supported by said support means above said base plate;

a cutter head drive shaft supported by said support means below said base plate whereby said cutter head assembly



drive shaft is located in the valve chamber when the base plate is mounted on the top planar surface of a valve;

means supported by said support means for transmitting rotary motion from said input drive shaft to said cutter head assembly drive shaft;

a cutter head assembly mounted on said cutter head drive shaft and including a tool bit rotating in a circular path about an axis other than its own, said axis being normal to the seal ring seating surface; and,

means for linearly moving said support means and said tool bit along an axis which is normal to the plane of the seal ring seating surface.

4,114,484

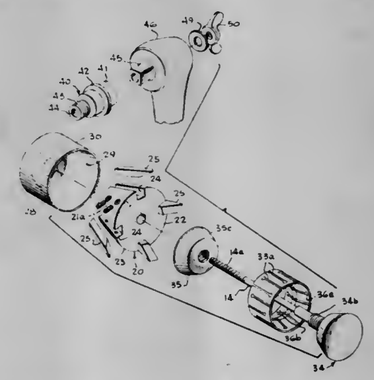
PIPE CUTTING OR END PREPPING APPARATUS

William C. Feamster, III, 4013 Nina Dr., Chesapeake, Va. 23321

Filed Nov. 16, 1976, Ser. No. 742,354

Int. Cl.² B23B *5/16*

U.S. Cl. 82—4 C **15 Claims**



1. A pipe cutting or end prepping apparatus capable of use in severely restricted spaces to be mounted on a stationary hollow pipe in supported relation thereby gripping a cylindrical surface of the pipe and cut through or shape for welding a hollow cylindrical wall of the pipe at a cutting site along the

pipe, comprising a rotatable tool bit support to be positioned immediately adjacent an end of the pipe to be cut and located in concentric relation with the center axis of the pipe to advance a cutting bit through adjacent portions of the pipe wall, the tool bit support having a front working end and a rear drive end spaced from the front end and having a tool bit carried by the tool bit support adjacent the working end in a predetermined cutting attitude directed outwardly relative to the pipe axis to position a cutting tip thereof to engage and cut into the pipe wall at the cutting site, a drive motor for the tool bit support to be located outwardly adjacent the pipe end and having a rotatable drive spindle to be aligned with the pipe center axis and project toward the tool bit support, a rotatable drive coupler releasably coupled to said tool bit support at the rear drive end thereof and to said drive spindle for rotation about and concentric with the pipe center axis, an anchor forming assembly for supporting the tool bit support from the pipe wall comprising a radially expandable and contractable annular collet defining a cylindrical pipe gripping surface to engage and be forced into tightly gripping relation with a cylindrical surface portion of the pipe wall adjacent the cutting site, a collet adjusting nut and a collet abutting member intercoupled with each other by a threaded coupling and having collet-forcing surfaces engageable with coactive surface portions of the collet to deform the collet into tight gripping engagement with the confronting pipe wall surface upon relative rotary movement of the adjusting nut relative to the collet abutting member, said anchor forming assembly providing a stationary anchor station adjacent the cutting site disposed at a location along the pipe axis spaced beyond the cutting site in a forward direction opposite the direction of the drive coupler from the cutting site, and a feed control assembly coupled to said anchor forming assembly having a manually adjustable threaded member and including means for supplying advancing force to said drive coupler and tool bit support for pulling the drive coupler and tool bit support at a precisely controlled feed rate toward the anchor station to advance the cutting tip into the pipe wall portion to be cut in predetermined relation to rotation of the threaded member of the feed control assembly for precisely controlling the depth and speed of cut made by the tool bit, said tool bit support and said drive spindle and drive coupler having center apertures aligned along the center axis of the tool bit support, and said collet abutting member having a rigid feed-guide rod fixed thereto and projecting therefrom through the collet and through said aligned center apertures for guiding the drive coupler and tool bit support therealong and having a threaded portion extending rearwardly beyond the drive spindle, and said manually adjustable threaded member being a feed nut threaded onto the threaded portion of said feedguide rod rearwardly of said drive spindle for applying a forward pushing force to the drive spindle upon relative rotation of the feed nut while the drive spindle is rotating to drive the tool bit support and thereby pull the drive spindle and drive coupler and tool bit support in abutment with each other toward the anchor station established by the anchor forming assembly to control cutting action of the tool bit against the pipe wall portion to be cut.

9. A pipe and prepping apparatus capable of use in severely restricted spaces to be mounted on a hollow pipe in supported relation thereby gripping a cylindrical surface of the pipe, and form a predetermined bevel shape defining a truncated conical pipe and configuration to prepare the pipe for welding, comprising a rotatable tool bit carriage to be positioned immediately adjacent an end of the pipe to be prepped and located in concentric relation with the center axis of the pipe, the tool bit carriage having a front working end and a rear drive end spaced toward the pipe end from the front end and having a plurality of tool bit sockets for receiving elongated tool bits therein projecting along axes lying in a conical path diverging outwardly from the center axis of the carriage progressively from the rear to the front end thereof, the tool bits being located in a pair of mutually perpendicular diametric planes containing the axis of the tool carriage in a predetermined cutting attitude disposing cutting tips thereof in a truncated conical path corresponding to the bevel shape to be formed on the pipe end to engage and cut into the pipe end upon advancing movement of the carriage, a drive motor for the tool bit carriage to be located outwardly adjacent the pipe end and having a rotatable drive spindle to be aligned with the center axis of the pipe and project toward the tool bit carriage, a rotatable drive coupler releasably coupled to said tool bit carriage at the rear drive end thereof and to said drive spindle for rotation about the pipe center axis, an anchor forming assembly for supporting the tool bit carriage from the pipe comprising a radially expandable and contractable annular collet defining a cylindrical pipe gripping surface to engage and be forced into tightly gripping relation with a cylindrical surface portion of the pipe wall spaced inwardly along the pipe from the end to be cut, a collet adjusting nut and a collet abutting member intercoupled with each other by a threaded connection and having shaped surfaces engageable with coactive confronting surface portions of the collet to deform the collet into tight gripping engagement with the confronting pipe wall surface upon relative rotary movement of the adjusting nut relative to the abutting member, said anchor forming assembly providing a stationary anchor station forwardly adjacent and beyond the portion to be cut spaced along the pipe axis in a direction opposite the direction of the drive coupler from the pipe end, and a feed control assembly coupled to said anchor forming assembly having a manually adjustable threaded member and including means for supplying advancing force to said drive coupler and tool bit carriage for moving the drive coupler and tool bit carriage at a precisely controlled feed rate in relation to the anchor station and advance the cutting tips into the pipe wall to be cut in predetermined relation to rotation of the threaded member of the feed control assembly for precisely controlling the depth and speed of cut made by the tool bits, said tool bit carriage being a truncated conical body having grooves in the periphery of a cross section corresponding to the cross section of the tool bits to receive the tool bits therein with their radially outermost surfaces flush with the conical outer periphery of the tool bit carriage and the cutting end portions of the tool bits projecting forwardly from the front working end of said carriage, and a tool bit retainer of generally cylindrical configuration having a truncated conical well conforming to the major portion of the truncated conical carriage and tool bits supported therein to receive the carriage and tool bits in nested relation within said well, and said drive coupler having a threaded neck portion projecting through the tool bit retainer and into a threaded socket in said tool bit carriage to assemble the same together.

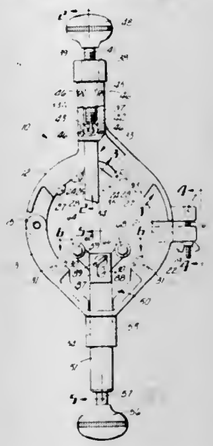
4,114,485

PIPE CUTTER AND BEVELER

Sanford E. Coblitz, Ashtabula, Ohio, and Bengt G. Bjalme, Erie, Pa., assignors to Wheeler Manufacturing Corporation, Ashtabula, Ohio

Filed Dec. 23, 1976, Ser. No. 754,081
Int. Cl.[2] B23B *3/22, 3/04;* B23D *21/06*
U.S. Cl. 82—4 C **13 Claims**

1. Apparatus for cutting and beveling plastic pipe including in combination a closed frame comprising first and second frame members, each said first and second frame members having first and second end portions and having a semicircular configuration, pivot means pivotally connecting said first end portions of said first and second frame members together whereby said frame members may be swung between open and closed positions, said frame members in said closed position forming a generally circular configuration, adjustable latching means for connecting said second end portaions of said first and second frame members together in said closed position, said adjustable latching means providing a means for adjusting the proximity of said second end portions of said frame members in their said closed position and thereby adjusting the circumferential extent of said generally circular configuration, cutting blade means including a cutting edge and a beveling edge, means mounting the cutting blade means on said first frame member for radial movement of said cutting blade means between a retracted position and a cutting position, a first pair of rollers rotatably mounted on said first frame member, said first pair of rollers positioned one on either side of said cutting blade means, roller slide means including a second, third and fourth pair of rollers rotatably mounted on said roller slide means, means mounting the roller slide means on said second frame member for radial movement of said roller slide means between a retracted position and a supporting position, said rollers on said roller slide means and said rollers on said first



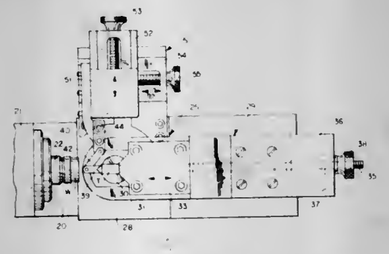
frame member supporting a pipe in said supporting position of said roller slide means and said closed position of said first and second frame members, said rollers of said second pair of rollers being mounted at opposed portions of said roller slide, said rollers of said third pair of rollers being mounted respectively at opposed ends of one of said rollers of said second pair of rollers, and said rollers of said fourth pair of rollers being mounted respectively at opposed ends of the other of said rollers of said second pair of rollers.

4,114,486

LATHE FOR GENERATING SPHERICAL OR ASPHERICAL SURFACES ON WORKPIECES, METHOD FOR GENERATING ASPHERICAL SURFACES ON WORKPIECES AND WORKPIECE HAVING ASPHERICAL SURFACE

Derrell C. Hooker, Lancaster, Ohio, assignor to Aspheric Associates, Ltd., Lancaster, Ohio

Continuation-in-part of Ser. No. 568,718, Apr. 16, 1975, Pat. No. 3,977,279. This application Aug. 30, 1976, Ser. No. 718,583
Int. Cl.[2] B23B *5/40*
U.S. Cl. 82—12 **13 Claims**



1. A machine for generating a surface on a workpiece comprising

a spindle support unit supporting a spindle member carrying a workpiece for rotation about an axis extending through the workpiece,

means for rotating said spindle,

a tool-supporting unit for supporting a tool member in operative relationship with a face of the workpiece,

one of said units including a support therefor having a support pivot located along said axis for enabling relative swinging movement of the tool member across the face of the workpiece to generate a surface thereon, said support including

floating means carried thereon for floating movement relative to said pivot so that the member carried thereby may be advanced or retracted relative to the pivot and the member of the other unit, and

a mechanical linkage for controlling the movement of the member carried by said floating means, said linkage including a link having a first pivot secured to the unit carrying said floating means, in predetermined relationship to said support pivot and a second pivot connected to said floating means.

4,114,487

Patent Not Issued For This Number

4,114,488

APPARATUS FOR FEEDING AND CHECKING SEPARATED LONGITUDINAL SUBJECTS

Karl-Ulrich Vornfett, Barsbuttel, Fed. Rep. of Germany, assignor to Friederich Justus & Co., Hamburg, Fed. Rep. of Germany

Filed Jan. 21, 1977, Ser. No. 761,330
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1976, 7602165[U]
Int. Cl.[2] B26D *3/20*
U.S. Cl. 83—198 **8 Claims**

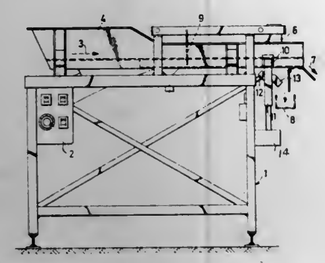
1. A device for removing discolored portions from elongated objects comprising:

feeding means for feeding elongated objects along a predetermined path, said feeding means including a portion

adapted for movement between a first position where said movable portion forms a part of said feeding means aligned with said path, and a second position where said movable portion is moved out of said path,

sensing means for sensing discolored portions within the elongated object and for producing a signal in response thereto,

moving means operatively connected to said sensing means for moving the movable portion of said feeding means between said first and second positions in response to said signal,



cutting means operatively connected to the movable portion of said feeding means and movable therewith so that when the movable portion of said feeding means is in its first position said cutting means is maintained out of the path of said elongated object and when said movable portion is moved to its second position said cutting means cuts through said elongated object so as to sever the discolored portion therefrom and removal means for removing segments cut out of said elongated objects from said cutting means.

4,114,489

DIVIDING MEANS CONTROL DEVICE

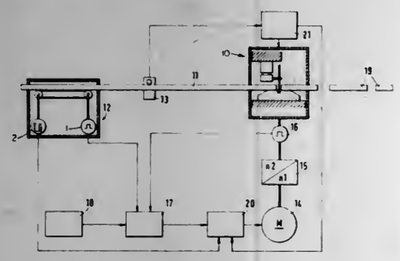
Franz Schneider; Helmut Braitinger, both of Göppingen, and Burkhard Schumann, Ottenbach, all of Germany, assignors to L. Schuler GmbH, Germany

Filed Aug. 26, 1977, Ser. No. 828,095

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 2638360

Int. Cl.² B26D *1/56, 5/32, 5/34*

U.S. Cl. 83—298 **12 Claims**



1. A control arrangement for a variable thickness continuously fed strip stock dividing apparatus, the dividing apparatus including a drive means for driving a cutting means in a horizontal and a vertical direction, and means for effecting a vertical height adjustment of the cutting means, the control arrangement comprising: means for measuring a thickness of the variable thickness continuously fed strip stock and for providing an output signal indicative of a measured thickness of the strip stock, said measuring means being arranged in the dividing apparatus at a position upstream of the cutting means, as viewed in a feed direction of the strip stock, means operatively connected with said measuring means for controlling a speed of the driving means in response to a predetermined output signal from said measuring means, and means operatively connected with said measuring means for adjusting a height of the cutting means in response to a predetermined output signal from said measuring means whereby said measuring means correlates the speed of the driving means and height of the cutting means between minimum and maximum values in correspondence with the measured thickness of the strip stock.

4,114,490

STRIP MATERIAL DIVIDING DEVICE

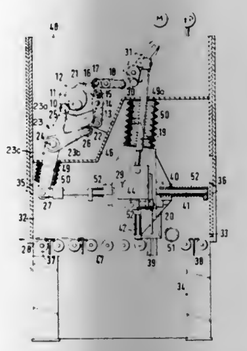
Hans Braun, Weilheim, Teck; Günter Cieslok, and Franz Wolf, both of Göppingen, all of Germany, assignors to L. Schuler GmbH, Germany

Filed Aug. 15, 1977, Ser. No. 824,741

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636738

Int. Cl.² B26D *1/28, 1/56*

U.S. Cl. 83—303 **24 Claims**



1. A dividing apparatus for dividing or cutting a continuously running strip material, the apparatus including an articulated drive for a stroke movement of a cutting unit, the articulated drive being fashioned as a quadrangular linkage including a driven crank and a rocker lever pivotally connected to the driven crank through a coupling member, characterized in that the rocker lever includes an extension portion extending beyond a pivotal connection of the coupling member with the rocker lever, a secondary drive lever, a link member having a first end pivotally connected with said secondary drive lever and a second end pivotally connected with a free end of the extension portion, a transmission link means is provided for moving the cutting unit, means are provided for adjustably connecting said transmission link means with said secondary drive lever, in that the rocker lever, extension portion and link member assume an extended position over a first approximately 180° displacement of the driven crank and, over a second approximately 180° displacement of the driven crank, the rocker lever, extension portion and link member are deflected from the extended position, and in that during a total circular displacement of the driven crank, the rocker lever, extension portion, link member and secondary drive lever are moved out of a range of an extended position.

4,114,491

FULL ROTATION TYPE PAPER WEB CUTTING DEVICE

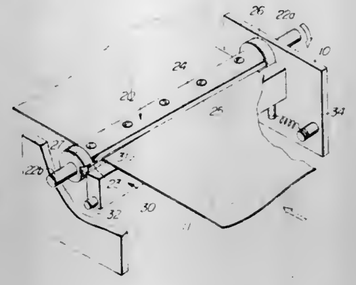
Yoshitoshi Hashimoto; Takajiro Kondo, both of Yasugi, and Toshitaka Asamoto, Matsue, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Division of Ser. No. 613,499, Sep. 15, 1975, abandoned. This application Jan. 17, 1978, Ser. No. 870,071

Claims priority, application Japan, Sep. 24, 1974, 49-108754; Aug. 20, 1975, 50-113801

Int. Cl.² B26D *1/56;* B23D *25/08*

U.S. Cl. 83—341 **1 Claim**



1. A device for cutting a moving web of paper which comprises: a shank having rotary shafts at both ends, a rotary blade affixed to said shank with its edge formed inclined circumferentially relative to the common axis of said shafts, a guide ring located adjacent to the cutting starting end of said blade and having a radius of rotation equal to that of said edge, a second guide member located adjacent to the cutting terminating end of said blade and having a volute configuration with its radius of rotation gradually decreased from the initial value equal to the radius of rotation of said edge, a stationary cutter having a straight edge and supported in place by pivot pins at both ends, said cutter being disposed in such a manner that, at the cutting terminating end, it is inclined to interfere with said rotary blade radially relative to the common axis of said shafts of said rotary blade, and a spring for forcing said edge of said stationary cutter to bear against said rotary blade.

4,114,492

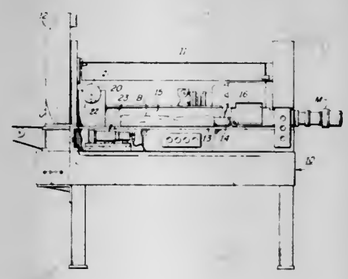
METHOD AND MACHINE FOR SLICING MATERIALS

Lawrence M. Skidmore, Phoenix, Ariz., assignor to Armour and Company, Phoenix, Ariz.

Filed Jan. 31, 1977, Ser. No. 763,994

Int. Cl.² B26D *4/24, 5/32*

U.S. Cl. 83—367 **6 Claims**



1. In a slicing machine which includes a slicing blade, a path along which material to be sliced may be moved toward said blade, radiation means positioned to direct gamma particles toward said material as it moves along said path whereby some of the gamma particles so directed are absorbed in said material and some pass through said material, the improvement comprising means for detecting individual particles which pass through said material and for converting energy of said particles which are so detected into an electrical signal in which the energy from each particle so detected is represented as an electrical pulse, means for digitally counting said pulses as said material moves along said path and means responsive to the count of said pulses for advancing said material along said path and toward said blade at a speed which is inversely proportional to the number of pulses so counted.

4,114,493

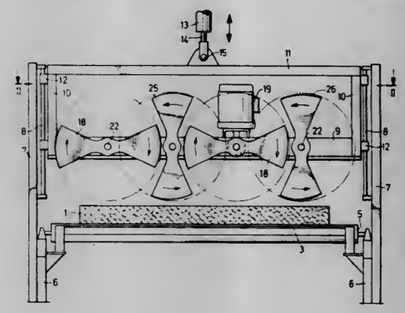
CUTTING DEVICE WITH ROTATING CUTTERS

Helmut Paulus, Herzogenrath, Fed. Rep. of Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Mar. 16, 1977, Ser. No. 778,259

Int. Cl.² B27B *3/04*

U.S. Cl. 83—488 **10 Claims**



1. Cutting apparatus comprising

a support means,

a plurality of rotatable cutting tools,

means mounting the cutting tools on the support means for rotation in a common plane,

each cutting tool having a plurality of segments, each segment carrying a cutting edge including saw teeth, the distance of each cutting edge from the axis of rotation of an associated cutting tool increasing from the leading edge of each segment to the trailing edge of the segment,

the cutting tools being arranged with segments of adjacent cutting tools being angularly displaced with respect to each other and in intermeshing relationship wherein cutting edges of adjacent cutting tools pass through a common zone,

and drive means for synchronously driving the cutting tools to prevent contact of adjacent cutting tools.

4,114,494

NOISE-CONTROLLED CIRCULAR SAW BLADE

Robert L. Budke, 10542 - 12th Ave. NW., Seattle, Wash. 98177, and Lowell C. Freeborn, 6040 Redwing St., Seattle, Wash. 98118

Continuation of Ser. No. 657,361, Feb. 12, 1976, abandoned. This application Jan. 3, 1978, Ser. No. 866,636

Int. Cl.² B27B *33/08*

U.S. Cl. 83—835 **2 Claims**

1. A rotary saw blade having reduced saw plate vibration and air noise when spinning comprising:

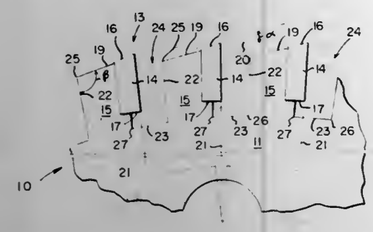
a circular saw plate having a central opening with respect to its axis and a predetermined direction of operational rotation,

cutting teeth disposed about the periphery of the saw plate,

gullets circumferentially distributed about the periphery of the saw plate between the cutting teeth, each of the gullets having (1) spaced apart first and second straight edges forming, respectively, the rearward and forward edges of the gullet relative to the direction of saw rotation and extending inwardly toward the axis of the saw plate a depth adequate for cutting action, (2) a third straight edge

forming the base edge of each gullet intersecting the rearward edge at its inward end at essentially a right angle and the forward edge thereof at its inward end at an obtuse angle having distinct vertex,

a terminal edge of the saw plate extending rearwardly of each cutting tooth at an acute angle substantially less than 90° measured with respect to a plane connecting the outer terminating edges of the cutting teeth and perpendicular to a radial line projected from the axis of the saw plate, the terminal edge intersecting the forward edge of each gullet



at its upper end rearward of the cutting tooth at an obtuse angle having a distinct vertex, the intersecting edges of the terminal edge and forward edge forming a heel portion of the saw plate giving support for the preceding cutting tooth, and

cutting tips adhered to each cutting tooth, each cutting tip extending inwardly along the rearward straight edge of the gullet less than the depth of the gullet having lateral cutting edges protruding beyond each of the opposite faces of the saw plate and a top cutting edge extending beyond the terminating edge of the saw plate.

4,114,495

CHANNEL PROCESSOR

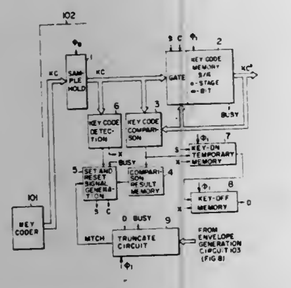
Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 13, 1976, Ser. No. 714,084

Claims priority, application Japan, Aug. 20, 1975, 50-100878; Aug. 20, 1975, 50-100879; Aug. 20, 1975, 50-100880; Aug. 21, 1975, 50-101598

Int. Cl.² G10H *1/02*; G08C *15/00*

U.S. Cl. 84—1.01 **14 Claims**



1. For use in combination with a key coder producing key codes representing key switches in operation and also producing a start code every time detection of all key switches in operation has been completed at least one time;

a channel processor comprising:

a main memory circuit including a plurality of channels for storing the key codes provided by the key coder;

a key-on temporary memory circuit having a plurality of storage locations each corresponding to a respective one of said plurality of channels in which the key codes are stored in said main memory circuit, said key-on temporary memory circuit storing, when the key code provided by the key coder coincides with a key code already stored in said main memory circuit, a key-on signal in the storage location corresponding to the channel containing said already stored key code;

a memory reset circuit for compulsorily resetting all contents stored in said key-on temporary memory circuit upon each application to said reset circuit of said start code; and

a detection circuit for detecting cease of the operation of a key switch by sensing, at the end of a period between two consecutive start codes, the absence of a key-on signal in a temporary memory circuit storage location corresponding to a channel in which the main memory circuit still contains a key code.

4,114,496

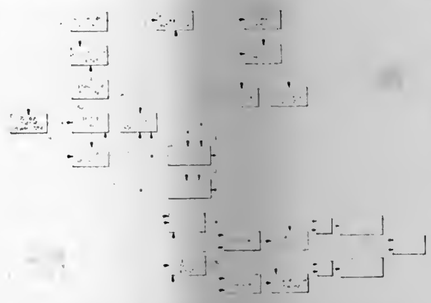
NOTE FREQUENCY GENERATOR FOR A POLYPHONIC TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jan. 10, 1977, Ser. No. 758,010

Int. Cl.² G10H *1/02, 5/02*

U.S. Cl. 84—1.1 **7 Claims**



1. Apparatus for generating an audio signal having a waveform determined by a predetermined first set of digitally coded values corresponding to the relative amplitudes of a set of points on one cycle of the waveform and having a fundamental frequency determined by a selected one of a second set of digitally coded values corresponding to the fundamental frequencies of musical notes in a diatonic scale comprising:

a first register storing said first set of values, a digital-to-analog converter, means coupling the digitally coded values shifted out of the register to the converter, a shift pulse source connected to the first register for shifting said stored values from the first register to the converter in timed sequence, said source including an adder-accumulator, means incrementing the adder-accumulator periodically at a fixed clock rate by a selected value from said second set, the accumulator generating an overflow pulse whenever the accumulated value exceeds the capacity of the accumulator, and means connecting the overflow pulses to the first register for shifting the first set of values successively from the register to the converter.

4,114,497

ELECTRONIC MUSICAL INSTRUMENT HAVING A COUPLER EFFECT

Teruo Hiyoshi; Akira Nakada; Shigeru Yamada, all of Hamamatsu; Kiyoshi Ichikawa, Hamakita, and Sigeki Isii, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 29, 1976, Ser. No. 727,790

Claims priority, application Japan, Sep. 29, 1975, 50-117431

Int. Cl.² G10H *3/06*

U.S. Cl. 84—1.17 **6 Claims**

1. In an electronic musical instrument of a type having at least two keyboards, means for generating, in response to depression of a key in any one of said keyboards, a multibit key code containing certain note information bits identifying the musical note associated with the depressed key and having other keyboard information bits identifying the specific keyboard which contains the depressed key, and tone production means for producing a musical tone according to said key code and including note production circuitry for producing a musical note having a note frequency established by said certain note information bits, and tone color control circuitry, connected to the output of said note production circuitry, for controlling the tonal quality of the produced musical tone depending on the keyboard designated by said information bits, the improvement for providing a coupler effect comprising:



conversion means, responsive to only the keyboard information bits of the key code generated in response to depression of a key, for producing both an unconverted signal representing the keyboard designated by the keyboard information bits of said generated key code and a converted signal representing a different keyboard, said tone color control circuitry receiving and being responsive to both the unconverted signal and to the converted signal so as to produce simultaneously a combined musical tone having a note frequency established by the certain note information bits and combined tonal quality related both to the keyboard to which the depressed key belongs and to a different keyboard.

4,114,498

ELECTRONIC MUSICAL INSTRUMENT HAVING AN ELECTRONIC FILTER WITH TIME VARIANT SLOPE

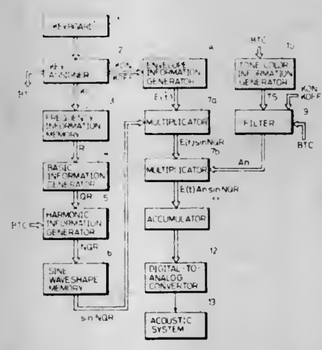
Masanobu Chibana; Tsuyoshi Futamase, and Hideo Yamada, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 21, 1976, Ser. No. 734,664

Claims priority, application Japan, Oct. 23, 1975, 50-127820

Int. Cl.² G10H *1/00*

U.S. Cl. 84—1.19 **5 Claims**



1. An electronic musical instrument of a type wherein amplitudes of frequency components constituting a musical tone are individually set in accordance with a desired filter characteristic comprising means for changing a slope portion of the filter characteristic, said means comprising:

a filter slope information generation circuit for generating a filter slope variation function $a(t)$ which changes with time;

a cut-off frequency information generation circuit for generating cut-off frequency information COF which also changes with time;

a memory for storing frequency logarithm information log N of frequencies of respective harmonic orders;

a subtractor for conducting subtraction log N − COF on the basis of the cut-off frequency information COF and the frequency logarithm information log N; and

a multiplicator for multiplying the filter slope variation function $a(t)$ with a value (log N- COF).

4,114,499

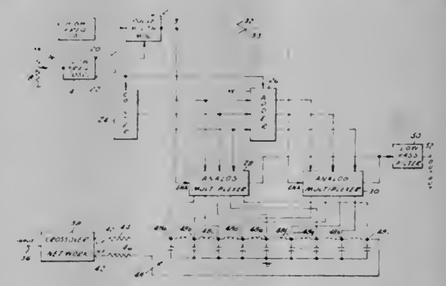
METHOD AND APPARATUS FOR SECURING VIBRATO AND TREMOLO EFFECTS

Eric von Valtier, 521 Leicester, Plymouth, Mich. 48179

Filed Jan. 27, 1977, Ser. No. 763,021

Int. Cl.² G10H *1/04*

U.S. Cl. 84—1.25 **41 Claims**



1. In a method for producing vibrato and tremolo effects in electrical signals which includes the steps of receiving an input signal, injecting said signal into a multiple-segment delay line and scanning said delay line to produce an output signal, the improvement comprising the steps of separating said input signal into high and low frequency components and injecting said components into opposite ends of said delay line, randomness of signals scanned in said delay line being increased by varying delay and phase shift imparted to said frequency components by segments of said delay line.

4,114,500

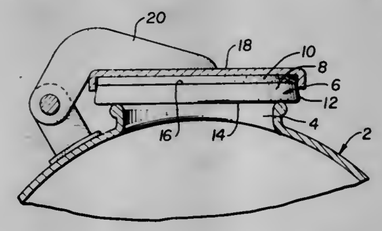
PAD FOR WOODWIND MUSICAL INSTRUMENT

Edwin Norbeck, Iowa City, Iowa, assignor to The University of Iowa Research Foundation, Iowa City, Iowa

Filed May 20, 1976, Ser. No. 688,503

Int. Cl.² G10D *9/04*

U.S. Cl. 84—385 P **6 Claims**



1. A valve pad for a musical instrument, said pad comprising an elastomer disc formed of silicone rubber which has a Shore

A durometer of about 20 to 60 and a compression set no greater than about 5%, said compression set being determined after applying for 22 hours at about 23° C. a force which compresses the composition about 25% and measuring the thickness 30 minutes after said force is released, said compression set being equal to

$$(t_o - t_i)/(t_o - t_s) \times 100$$

where

t_o is the original thickness of the specimen,

t_i is the final thickness of the specimen and

t_s is the thickness of the specimen when compressed by said force.

4,114,501

MUSICAL TOY

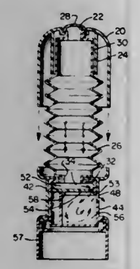
Atsuo Tanaka, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Oct. 14, 1976, Ser. No. 732,406

Claims priority, application Japan, Oct. 20, 1975, 50-143001[U]

Int. Cl.² G10D *9/00*

U.S. Cl. 84—330 **6 Claims**



1. A toy, comprising a plurality of sound producing mechanisms for producing different musical notes, each of said sound producing mechanisms having an upper portion with a bellows-like mechanism, a lower housing having an external wall with an opening therethrough and at least one internal wall surface, an upper housing complementary in configuration to said external wall of said lower housing and slidably mounted thereon, said bellows-like mechanism extending into said upper housing, a disc positioned between said upper and lower housings, said disc having a slit therethrough and at least one ridge on the bottom thereof located to abut said internal wall surface to define an air chamber in said lower housing, said plurality of sound producing mechanisms having the same size bellows-like mechanism, upper housing, lower housing and disc, the size of said slit and the location of said ridge and internal wall surface being selected to produce the particular note of each of sound producing mechanisms whereby each of said sound producing mechanisms may be manufactured by assembling all elements except said disc and lower housing from a common stock pile of parts, said disc and lower housing being individually selected for the note desired.

4,114,502

CYMBAL

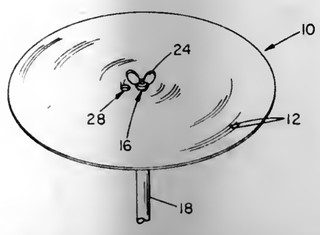
Armand A. Zildjian, Hingham, Mass., assignor to Avedis Zildjian Company, Norwell, Mass.

Filed Jun. 9, 1977, Ser. No. 804,921

Int. Cl.² G10D *13/06*

U.S. Cl. 84—402 **3 Claims**

1. A cymbal of annular disc form provided with surface tonal grooves and adapted to be centrally suspended from a support device for playing, having a first mounting aperture generally centered on the cymbal and a second mounting aperture laterally offset from said first mounting aperture, the center of said second aperture being spaced within two inches from the center of said first aperture, said cymbal having different characteristic tones when mounted to a support stand by said respective apertures.



4,114,503

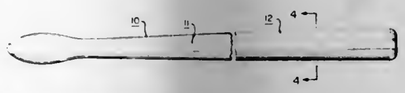
DRUMSTICK

Phillip J. Petillo, Ocean, N.J., assignor to Ambico Inc., Lynbrook, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,494

Int. Cl.² G10D *13/02*

U.S. Cl. 84—422 S **13 Claims**



1. An elongated drumstick comprising:

a core having extending arms when viewed in cross-section, said arms extending along at least a substantial portion of the length of the drumstick; and

an outer sheath filling in the voids between adjacent ones of said arms and extending to the outer surface of the drumstick;

said core being made of a material having a tensile and shear strength greater than that of said sheath and said sheath being bonded to said core and being made of a material compatible with the hand of a user and adapted to cooperate with a drumhead so as to set up appropriate vibrations therein when the two are percussively engaged.

4,114,504

DEMOISTURIZER FOR WIND MUSICAL INSTRUMENTS

George Koregelos, 470 Mountain Ave., Piedmont, Calif. 94611

Filed Jul. 25, 1977, Ser. No. 818,553

Int. Cl.² G10G *7/00*

U.S. Cl. 84—453 **9 Claims**



1. A device for demoisturizing the inside walls and valve pads of a wind musical instrument having valve openings comprising:

a. an elongated semi-rigid member having a length selected to span a substantial portion of the sectional length of said instrument;

b. a plurality of filaments attached along a substantial portion of the length of said semi-rigid member and extending outwardly therefrom and having a length dimensioned to touch the inside walls of said instrument and to extend through the valve openings and touch said valve pads.

4,114,505

COATINGS AND METHODS OF APPLICATION

William J. Loeser, 4911 Valkeith, Houston, Tex. 77096, and Julius A. Loeser, 5828 County Rd. 910, Houston, Tex. 77037

Filed Jan. 31, 1977, Ser. No. 763,725

Int. Cl.² F16B *33/06*; C25D *5/48*

U.S. Cl. 85—1 C **7 Claims**

1. A method of preparing a metallic nut and bolt type fastener such that the fastener is operable after exposure in and to a deleterious environment, comprising the steps of

applying to the fastener a protective coating of another different metal anodic to the metallic fastner,

thereafter enhancing the cohesion characteristics of said protective coating by immersing said object in a metallic phosphate bath to form a chemical reaction film on the exterior surface of said protective coating on the fastener, and

thereafter applying a lubricious coating of flurocarbon polymer resin to said chemical reaction film on said protective coating for providing the fastener with an external lubricious surface which enhances fastener operability after exposure of the fastener in and to the deleterious environment.

4,114,506

SELF-TAPPING WING NUT

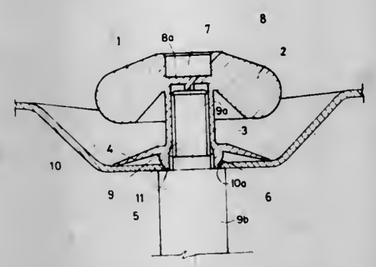
Michele Aimar, Turin, Italy, assignor to ITW Fastex Italia, S.p.A., Turin, Italy

Continuation of Ser. No. 648,833, Jan. 14, 1976, abandoned. This application Feb. 28, 1977, Ser. No. 773,093

Claims priority, application Italy, Jan. 14, 1975, 19240/75

Int. Cl.² F16B *37/14*

U.S. Cl. 85—32 W **3 Claims**



3. A wing nut in combination with a multiple diameter stud having a threaded free end portion for fastening a cover to the air filter of motor vehicles, characterized in that the wing nut is formed from plastic material and is provided with a resilient tubular shank portion the inner surface of which is self-tapping when the wing nut is axially forced onto said free end threaded portion of said stud projecting through an aperture in the cover of said filter, a resilient sealing washer-like collar portion intended to abut on the cover wall, said shank portion including a plurality of axially extending resilient hook-like portions for locking said shank portion to the filter cover, said stud including a pair of enlarged diameter portions each being successively greater than the threaded free end portion, the first of which is positioned adjacent said threaded portion forcing said hook portions laterally into locked engagement with said cover and said second enlarged diameter portion forming a shoulder against which said hook-like portions abut to prevent overdriving of said nut.

4,114,507

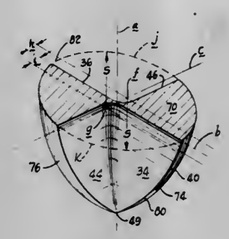
DRILL SCREW

Donald A. Fischer, Strongsville; Edwin M. Lipowski, North Olmsted, and William E. Kalt, Bay Village, all of Ohio, assignors to The Kalt Manufacturing Company, North Ridgeville, Ohio

Filed Nov. 17, 1976, Ser. No. 742,631

Int. Cl.² F16B *25/00*

U.S. Cl. 85—41 **2 Claims**



1. A drill and thread forming threaded fastener having a roll threaded shank constructed at one end for selective engagement with a driving tool, a forged drill point including jagged flash parts at the other end of said shank, and a pair of diametrically opposed flutes having longitudinally extending generally planar surfaces located substantially in a diametric plane containing the axis of the fastener, said flutes forming in said drill point diametrically opposed quadrants the termini of the leading radial sides of which quadrants referring to the direction the fastener is rotated during driving form cutting edges, the improvement wherein said flash parts are spaced circumferentially from said cutting edges.

4,114,508

SELF-DRILLING SCREW

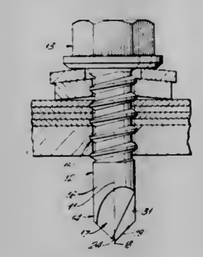
Harvey Philip Jeal, Stevenage, England, assignor to Aerpat A.G., Zug, Switzerland

Filed Jan. 10, 1977, Ser. No. 758,450

Claims priority, application United Kingdom, Jan. 9, 1976, 780/76

Int. Cl.² F16B *25/00*

U.S. Cl. 85—41 **1 Claim**



1. A self-drilling and self-tapping screw comprising a shank having a self-tapping thread thereon and a head at one end, the shank being rotatable about a longitudinal axis and including an entering end portion at its opposite end, the entering end portion comprising:

a single sharp pointed tip lying substantially on the longitudinal axis of the shank;

a first cutting edge inclined to the longitudinal axis of the shank and extending from the tip at the leading end of the

first cutting edge to the periphery of the entering end portion;

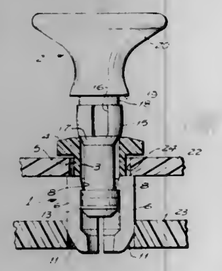
and a second cutting edge inclined to the longitudinal axis of the shank substantially identically to the first cutting edge and on the side thereof opposite to the first cutting edge and extending from a leading end to the periphery of the entering end portion, the leading end being offset from the tip both radially outwardly of and rearwardly longitudinally along the longitudinal axis of the shank, the length the second cutting edge being greater than one half of the length of the first cutting edge the leading end of the second cutting edge inclined to the longitudinal axis being defined by a second sharp pointed tip.

4,114,509

FASTENER PLUNGER ENTRY RESISTANCE MEANS

L. Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Filed Jun. 22, 1977, Ser. No. 808,817
Int. Cl.² F16B *13/06*
U.S. Cl. 85—84 **2 Claims**



1. A fastener adapted to be secured in a perforated member, the fastener comprising:

a. a grommet having a sleeve portion with an entry end and a set of fingers continuing from its other end;

b. A plunger having an expander portion slidable through the sleeve portion to engage inwardly inclined surfaces on said fingers and expand the fingers, and a radially contractable ring of normally greater diameter than the inside of said sleeve and spaced from said expander portion a distance no greater than the distance from said entry end to said inclined surfaces and thereby being engageable with the sleeve portion prior to expansion of the fingers by the expander portion, whereby the friction between the sleeve and ring increases the total force required to spread the fingers.

4,114,510

MUZZLE CLAMP ASSEMBLY

Ronald E. Prince, Winooski, and Rene W. Bonnette, Burlington, both of Vt., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

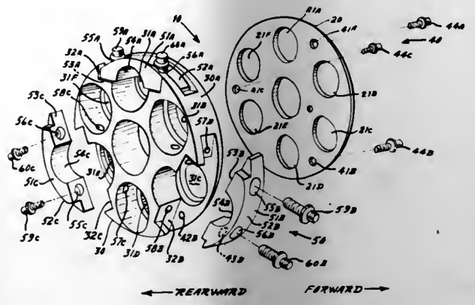
Filed Apr. 28, 1977, Ser. No. 791,753
Int. Cl.² F41D *7/04*
U.S. Cl. 89—12 **7 Claims**

1. A muzzle clamp assembly, adapted for use with a multi-barrel gun, wherein each barrel has a muzzle end, comprising:

a. a front plate having a first plurality of openings therein and therethrough, one opening for each barrel of said multi-barrel gun, with each opening so dimensioned and configurated to accept, snugly fit on, and surround said muzzle end of its respective barrel, wherein said openings are located at preselected positions on and in said front plate;

b. a clamp member, disposed rearward of said front plate, having a first plurality of openings therein and therethrough, one opening for each of said first plurality of front plate openings, with each said clamp member opening of said first plurality and in eccentric geometric relationship with and to its respective front plate opening;

c. means for releasably connecting said front plate to said clamp member;



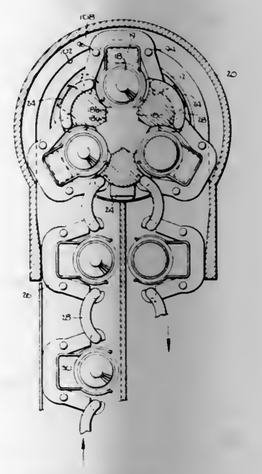
d. and, means for removably attaching said front plate, said clamp member, and said releasable front plate-to-clamp member connecting means, to said multi-barrel gun at the muzzle end of said barrels of said gun.

4,114,511

ENDLESS CONVEYOR MECHANISM

Raymond Arthur Patenaude, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed May 25, 1977, Ser. No. 800,510
Int. Cl.² F42B *39/08*
U.S. Cl. 89—33 CA **12 Claims**



1. A conveyor system comprising:

a plurality of rigid, substantially U-shaped conveyor elements disposed in a series;

a like plurality of resilient means, each resilient means secured to a respective conveyor element, for releasably retaining an article to said conveyor element; and

a plurality of rigid links, each link respectively disposed between and intercoupling two adjacent conveyor elements;

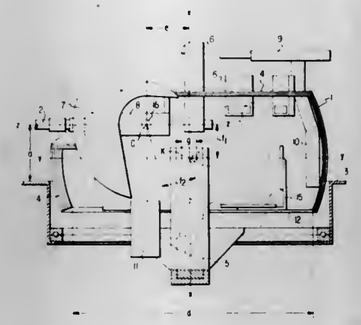
each of said resilient means also serving to releasably capture the respective two intercoupling links to the respective conveyor element.

4,114,512

STABILIZED TURRET

Lutz Schwendt, Vellmar, Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Germany

Filed Mar. 15, 1971, Ser. No. 124,428
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1970, 2014389
Int. Cl.² F41H *5/20*
U.S. Cl. 89—36 K **8 Claims**



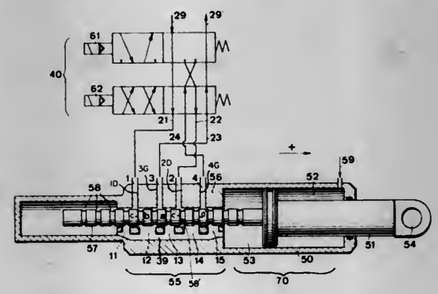
1. In an armored turret for light weapons, and in particular automatic weapons, said turret being mounted within a well in the roof of an armored vehicle so that it is movable about a plurality of mutually perpendicular axes one of which is a horizontal elevation axis, and having a primary weapon mounted in the front thereof, the improvement wherein: said turret is mounted in said well so that its cardanic suspension point is vertically disposed between said roof of said vehicle and the plane of the bore axis of said primary weapon when it is horizontally aligned and at a height between 30% and 70% of the vertical distance between the bore axis of the horizontally aligned primary weapon and said vehicle roof; the side wall of the outer shell of said turret is substantially spherical with respect to said cardanic suspension point; and said turret is open to said well along its entire lower end.

4,114,513

STEP-BY-STEP CONTROLLED SERVOMECHANISM

Philippe Maurice Henri Debrus, Paris, France, assignor to D.B.A., Clichy, France

Filed Apr. 26, 1976, Ser. No. 680,599
Claims priority, application France, May 2, 1975, 75 13850
Int. Cl.² F15B *15/17, 9/02*
U.S. Cl. 91—19 **4 Claims**



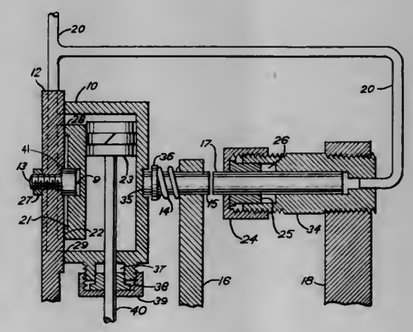
1. A step-by-step controlled servomechanism of the type comprising, a driving element (51, 57) movable in a case (50) which it divides into two chambers (52, 53) and provided with a plurality of receiver ports (58), a high pressure supply (59) continuously applied to one of said chambers (52), a high pressure source (29) and a low pressure source (29'), and, an upstream distributor means (40, 56) adapted to be connected to said high pressure source (29) and to said low pressure source (29') and to supply said receiver ports (58) and having a number of transmitter ports (1, 2, 3, 4) which are independent of the number of receiver ports (58), said transmitter ports (1, 2, 3, 4) being capable of being connected, in pairs, respectively to said low pressure source (29') and to said high pressure source (29), a downstream distributor means (39, 41) having a plurality of manifold ports (11, 12, 13 . . .) capable of communicating with the other of said chambers (53), all of said receiver ports (58) being capable of being made to open in succession into one of said manifold ports (11, 12, 13 . . .), said upstream distributor means (40) including selecting means (61, 62) capable of effecting the connection, in succession by permutation and simultaneously, at least one pair (1, 3) of transmitter ports to said high pressure source (29) and to said low pressure source (29'), respectively, said downstream distributor means (39, 41) being capable of effecting the connection of at least one manifold (port (11, 12, . . .) to said other chamber (53), the distances between said transmitter ports (1, 2, 3, 4) and their lengths, firstly, the distances between said receiver ports (58) and their lengths, secondly and the distances between said manifold ports (11, 12, 13 . . .) and their lengths, thirdly, being such that, by a step-by-step displacement in one direction of said drive element (51, 57) it is possible to bring each time said element to a position in which there is no communication between said transmitter ports (1, 3) of said pair, respectively connected to said high pressure source (29) and to said low pressure source (29'), and said manifold port (12) connected to said other chamber (53), but that any displacement in one direction or the other of said drive element (51, 57) ensures the communication of said manifold port (12) with one or the other of said transmitter ports (1, 3) to resist an external force on said drive elements (51, 57), and, that one of the ports of a following pair of transmitter ports (2, 4) to be connected respectively to said high pressure source (29) and to said low pressure source (29') communicates with at least one of the following manifold ports to be connected to said other chamber (53).

4,114,514

OSCILLATING STEAM ENGINES

Howard J. Lettine, and Anthony Lettine, both of R.D. 4, Box 352, Middletown, N.Y. 10940

Filed May 26, 1976, Ser. No. 690,171
Int. Cl.² F01B *15/06*
U.S. Cl. 91—211 **2 Claims**



1. In an oscillating engine comprising: a cylinder capable of oscillating, a first rigid trunnion mounted on a stationary valve plate and supporting one side of said cylinder, fluid supply and exhaust passages connected to said valve plate, said side including a portion slidable on said valve plate and forming therewith valve means, said one side including a recess which opens toward said valve plate, a second trunnion slidable mounted in a support plate and bearing on a side of said cylinder opposite said one side, a coil spring encircling said second

trunnion, one end of said spring bearing on a shoulder of said second trunnion and another end of said spring bearing on the support plate, a stationary cylinder connected to said supply passage and having a plunger slidably mounted therein, said plunger extending through one end of said stationary cylinder into engagement with the second trunnion as a result of fluid supplied through said stationary cylinder from said supply passage.

4,114,515

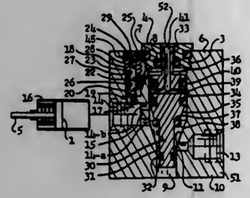
ADJUSTABLE SELF-RECIPROCATING OPERATOR

Richard S. Paulikonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Continuation-in-part of Ser. No. 600,515, Jul. 30, 1975. This application Jul. 1, 1976, Ser. No. 701,616

Int. Cl.² F01L *25/06*

U.S. Cl. 91—284 **5 Claims**



1. An adjustable self-reciprocating valve comprising:

a valve housing including a central shuttle valve means therein and a slave valve means housed alongside thereof, a differential valve member having small and large fluid responsive surfaces in opposition to each other in said shuttle valve means, said differential valve member also having a cycle frequency control means including an adjustable biasing force means for regulating and adjusting said slave valve means, a working fluid supply and first exhaust means in said valve housing, said slave valve means further including a pressurized cavity fluid delivered by said working fluid for said shuttle valve means, a second separate exhaust means for said cavity fluid from said slave valve means, said slave valve means triggering and controlling an automatic reciprocation of said shuttle valve means when subjected to fluid pressure, at least a pair of side ports in said valve housing entering said shuttle valve means and a first of said ports supplying working fluid thereto comprising said working fluid supply means while a second of said ports leading to a receiver thereof, a perpendicular opening inside said second side port to feed said slave valve means with said cavity fluid when said receiver pressure builds up to a value sufficient to perform useful work therein and also to trip said slave valve means in order to initiate operation of said shuttle valve automatically, means for fluid communication between fluid supply source and said receiver such as a power cylinder provided with a piston including means for piston return requiring the supply and exhaust of the working fluid in a sequence in order to sustain a specific cycle frequency of said piston within the desired operational limitations such as a few cycles per minute including a few thousands cycles per minute, and a sequential fluid exhaust from said receiver via said first fluid exhaust means to facilitate subsequent exhaust of said cavity fluid from said slave valve means at the end of each piston cycle.

4,114,516

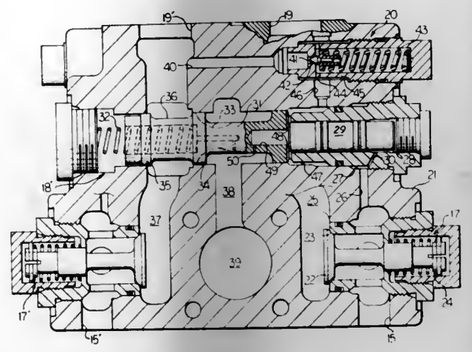
ANTI-CAVITATION AND PRESSURE MODULATING RELIEF VALVE FOR CONTROLLING HYDRAULIC CYLINDERS

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 15, 1976, Ser. No. 732,558

Int. Cl.² F15B *11/08, 13/02*

U.S. Cl. 91—420 **13 Claims**



1. A control circuit comprising

a double-acting cylinder means having a rod end and a head end,

a pressurized fluid source, including a reservoir,

directional control valve means connected between said fluid source and said cylinder means for communicating pressurized fluid to one of the rod and head ends of said cylinder means upon selective actuation of said directional control valve means,

modulating valve means directly responsive to pressurized fluid communicated to said cylinder means exceeding a predetermined level for simultaneously modulating exhaust of fluid from the other one of the rod and head ends of said cylinder means to said reservoir directly upon said selective actuation of said directional control valve means, said modulating valve means comprising a spool reciprocally mounted in a housing and having a plurality of normally closed metering slots formed thereon and adapted to open upon movement of said spool for modulating exhaust of fluid from said other one of the rod and head ends of said cylinder means to said reservoir,

check valve means connected between said pressurized fluid source and said cylinder means for communicating pressurized fluid to one of the rod and head ends of said cylinder means and for preventing fluid flow thereby upon exhaust of the other one of the rod and head ends of said cylinder means, and

means responsive to fluid pressure in said cylinder means including pilot relief valve means interconnected between said directional control valve means and said other one of the rod and head ends of said cylinder means and opening to permit fluid flow to act on said modulating valve means for moving said spool to open said slots for exhausting fluid pressure from said cylinder means and to said reservoir when such fluid pressure exceeds a predetermined level.

4,114,517

DOUBLE ACTING ACTUATOR

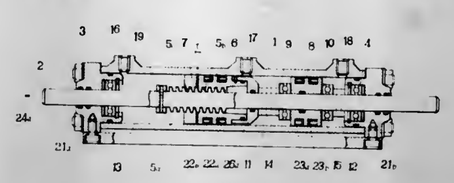
Hiroshi Teramachi, 2-34-8 Higashi-tamagawa Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 655,446, Feb. 5, 1976, abandoned. This application Feb. 24, 1977, Ser. No. 771,667

Claims priority, application Japan, Jun. 24, 1975, 50-078463; Oct. 16, 1975, 50-124565

Int. Cl.² F01B *21/02*

U.S. Cl. 92—2 **4 Claims**



1. An actuator, operated by hydraulic fluid under pressure, comprising, in combination, a cylinder having a non-circular cross-section and having a center axis; end walls closing the opposite ends of said cylinder; first, second and third non-circular pistons conformingly engaged in said cylinder dividing the cylinder interior into first and second end chambers and an intermediate chamber, with said first and second pistons having a small axial spacing therebetween; said first end chamber being defined axially by one end wall and said second piston, said second end chamber being defined axially by the other end wall and said third piston, and said intermediate chamber being defined axially by said first and third pistons; a piston rod, extending through said pistons and said end walls, having at least one male spiral thread with a predetermined helical angle at a predetermined pitch, said piston rod extending along said center axis of said cylinder, said first piston being provided with at least one female spiral thread engaged with said male spiral thread of said piston rod; said third piston and said piston rod being relatively rotatable; abutment means on opposite sides of said third piston locking said third piston against axial displacement along said piston rod; limit means on said piston rod engageable with said one end wall, to limit movement of said piston rod outwardly through said one end wall, and engageable by said second piston; and three ports each opening to a respective one of said three chambers, and through which hydraulic fluid is selectively supplied into and exhausted from said three chambers, said actuator having an initial position in which said abutment means engage said other end wall and said first piston, and said limit means is spaced axially from said second piston and said one end wall; said third piston, responsive to supply of pressure fluid to either side thereof with the other side thereof connected to exhaust, effecting only rectilinear movement of said piston rod and said first and second pistons as limited by engagement of said limit means and said abutment means with the associated end walls, without rotation of said piston rod; said first and second pistons, with said third piston remaining stationary, due to equal pressure on its opposite sides, and restraining rectilinear movement of said piston rod, conjointly moving axially of said piston rod, to rotate the latter in respective opposite directions while maintaining said small axial spacing therebetween, responsive to supply of pressure fluid to one of said first end intermediate chambers with the other of said first end and intermediate chambers connected to exhaust, respectively; said first piston, upon engagement of said second piston with said limit means, exerting a torque on said second piston, tending to decrease said small axial spacing, firmly engaging said second piston with the interior surface of said cylinder at two circumferentially spaced first points with the reaction torque firmly engaging said first piston with the interior surface of said cylinder at two circumferentially spaced second points, with such action occurring, in the opposite sense of rotation, when said first piston engages said abutment means; whereby said piston rod is firmly locked at each of its limits of rotation.

4,114,518

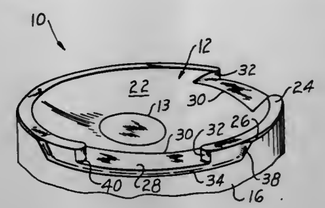
PISTON VALVE POCKET RELIEF

Glen A. Glover, Jr., Washington, and Robert B. Cambron, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 7, 1977, Ser. No. 785,630

Int. Cl.² F16J *1/00*

U.S. Cl. 92—208 **3 Claims**



1. In a piston including a cylindrical sidewall and a top face having a concave portion substantially concentric with the sidewall, the improvement comprising:

a plurality of pockets formed in the top face and having an opening terminating at a first circumferential width through the sidewall interconnecting the concave portion and the sidewall, said pockets extending downwardly from the top face terminating at a first depth along the sidewall; and

an arcuate relief associated with each pocket, each relief being formed in and concentric with the sidewall overlapping the opening of an associated pocket, terminating at a second width about two times greater than the first width and extending downwardly from the top face to a second depth greater than said first depth.

4,114,519

PISTONS

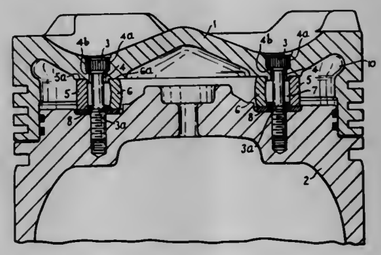
David Clement Speaight, Lymington, England, assignor to Wellworthy Limited, Lymington, England

Filed Oct. 4, 1976, Ser. No. 729,098

Claims priority, application United Kingdom, Oct. 8, 1975, 41338/75

Int. Cl.² F16J *1/00*

U.S. Cl. 92—221 **7 Claims**



1. An internal combustion engine piston comprising:

a piston body,

a separate crown,

a plurality of bolts for attaching said crown to said body,

two heat resistant metallic concentric ring members each disposed in abutting engagement between the adjacent faces of said crown and said body inwardly of the periphery thereof and so as to define an annular gap between said ring members, said bolts passing through said annular gap,

one of said ring members being relatively rigid, and the other of said ring members being resilient, said ring members cooperating to permit variation in the alignment of said

two adjacent faces resulting from thermal conditions arising during the operation of said piston and to support said crown to withstand gas pressures during operation of said piston.

4,114,520

APPARATUS FOR MAKING BAGS FROM A CONTINUOUSLY FED THERMOPLASTIC TUBULAR WEB OF FILM

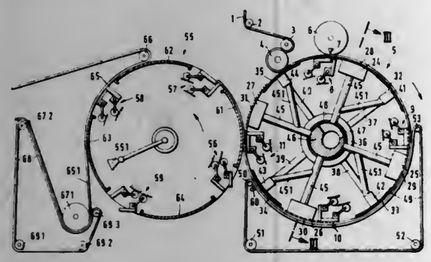
Fritz Achelpohl, and Friedhelm Brinkmeier, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 7, 1977, Ser. No. 785,697

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616574

Int. Cl.² B31B *23/60*

U.S. Cl. 93—33 H **5 Claims**



1. Apparatus adapted for connection to a source of suction air for making bags from a continuously fed thermoplastic tubular or semi-tubular web of film comprising:

a first transverse welding cylinder having a surface for receiving a tubular web of film;

means for rotating said first transverse welding cylinder so that the peripheral speed of its surface is higher than the speed of the continuously fed web of film;

transverse severing means for severing tubular sections having first and second ends from the received tubular web of film, said transverse severing means comprising a rotary knife cylinder positioned adjacent the surface of said first transverse welding cylinder and having a heated knife acting on the surface of said first transverse welding cylinder;

first controlled welding tongs carried by said first welding cylinder for gripping and welding second ends of severed tubular sections, one of said first controlled welding tongs including a resilient portion located on the surface of said first transverse welding cylinder in a position to be acted on by said heated knife;

air suction boxes positioned on the surface of said first transverse welding cylinder for holding the received tubular web of film;

pressure belts disposed adjacent and partially enveloping said welding cylinder for holding severed tubular sections on said welding cylinder;

control means for controlling supply of suction air from the source of suction air to said air suction boxes so that only the air suction boxes positioned between the position where the tubular web of film is received and the start of the pressure belts receive suction air;

a second transverse welding cylinder positioned adjacent said first transverse welding cylinder for receiving severed tubular sections from said first transverse welding cylinder;

second controlled welding tongs carried by said second transverse welding cylinder for gripping first ends of the received tubular sections;

blow nozzle means for directing first ends of the received tubular sections away from said first transverse welding cylinder and for directing the first ends towards said second transverse welding cylinder, said blow nozzle means being located beneath and radially directed toward the surface of said first transverse welding cylinder; and

means for rotating said second transverse welding cylinder, said means being operatively associated with said means for rotating said first transverse welding cylinder so that the phase position of the rotary movements of said first and said second transverse welding cylinders is adjustable to accommodate different widths of severed tubular sections.

4,114,521

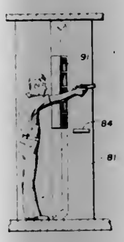
VENTILATION METHOD AND SYSTEM FOR PROTECTING SHOOTERS FROM POLLUTANTS

Theodore N. Busch, Minneapolis, Minn., assignor to Caswell Equipment Co., Minneapolis, Minn.

Continuation-in-part of Ser. No. 706,582, Jul. 19, 1976, abandoned. This application Sep. 8, 1977, Ser. No. 831,487

Int. Cl.² F24F *9/00*

U.S. Cl. 98—36 **10 Claims**



1. A shooting stall for shooting ranges having a target area at one end of the same at which a weapon is to be fired and having a normal air flow substantially from the shooting stall toward the target area comprising: at least a pair of spaced and parallel side walls adapted to be mounted in a shooting range remote from the target area, said walls defining a shooter position; and an air discharge structure positioned in each of the side walls of the shooting stall, said air discharge structure being adapted to be connected to a source of air under pressure and being oriented in the shooting stall for directing a stream of air generally transverse to the normal air flow toward the target area intermediate a shooter in the shooting stall and toward the discharge portion of the weapon held by the shooter when the shooter fires from a shooting position, said stream of air having a rate of flow at least in the ratio of 2 to 1 with the normal air flow toward the target area to direct contaminants away from the shooter.

10. The method of reducing the hazard of a shooter absorbing the pollutants resulting from the discharge of his weapon in an indoor shooting range having shooting stalls, a target area at which a weapon is fired and a normal air flow substantially from the shooting stalls toward the target area comprising, providing air jet means in said stall positioned for interjecting streams of air from opposite sides of the stall intermediate the shooter's face and the discharge part of his weapon when being fired, and blowing a stream of fresh air through said jets generally transverse to the airflow toward the target area at a rate at least twice that of the normal air flow.

4,114,522

METHOD AND APPARATUS FOR AUTOMATICALLY DETECTING AND CONTROLLING THE DEGREE OF CARAMELIZATION OF CANDIES

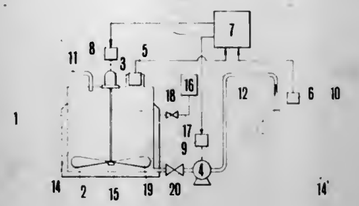
Kazuaki Nagamine, Mishima, Japan, assignor to Morinaga & Co., Ltd., Japan

Filed Jun. 28, 1977, Ser. No. 811,132

Claims priority, application Japan, Jul. 19, 1976, 51-85790

Int. Cl.² A47J *37/10*

U.S. Cl. 99—348 **5 Claims**



4. An apparatus for controlling the degree of caramelization of candy comprising; cooker means for preparing a boiled-down caramelizing liquid, a caramelizing tank connected to receive said boiled-down liquid from said cooker, a stirrer in said caramelizing tank for stirring said boiled-down liquid to effect caramelization thereof, a variable speed motor connected to said stirrer to rotate said stirrer at selected speeds, control means for controlling the speed of said motor, a cooling tank connected to said caramelizing tank, means for pumping caramelizing liquid from said caramelizing tank to said cooling tank, means for measuring the level of liquid in said caramelizing tank, a caramelizing detector disposed adjacent said cooling tank in a position for detecting the caramelized liquid passed from said caramelizing tank to said cooling tank and connected to said means for pumping caramelized liquid from said caramelizing tank to said cooling tank for varying the speed of pumping thereof in accordance with the caramelization of the liquid.

4,114,523

OSCILLATORY DRIVE MEANS FOR A ROTISSERIE SPIT

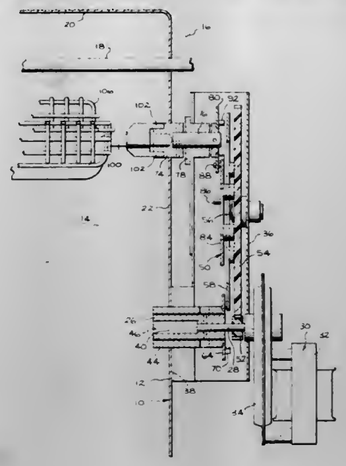
Christian A. Eff, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 5, 1976, Ser. No. 683,685

Int. Cl.² A47J *37/04*

U.S. Cl. 99—393 **5 Claims**

1. A roasting oven comprising walls defining an oven cooking cavity, radiant heating means located adjacent the top wall of the oven cooking cavity, removable support means within the oven, a pair of spaced posts attached to the support means, a rotisserie spit supported adjacent its opposite ends from the said posts for pivotal movement with respect thereto, one vertical wall of the oven cooking cavity supporting a motor-drive mechanism having a chuck disposed closely adjacent the underside of the radiant heating means and adapted to be coupled with one end of the spit, said motor-drive mechanism having means causing the chuck to oscillate approximately 180°, a food-supporting basket fixed to the spit adjacent one side edge of the basket, the distance between said spit when coupled with said chuck and said underside of said radiant heating means being less than the radial distance from said spit to the side edge of said basket most remote from said spit, said basket being capable of swinging back and forth from a first horizontal position closely adjacent a portion of the radiant heating means, down and over to a second horizontal position closely adjacent another portion of said heating means so as to be able to broil both sides of the food supported in the basket in alternate steps until the food is cooked.



4,114,524

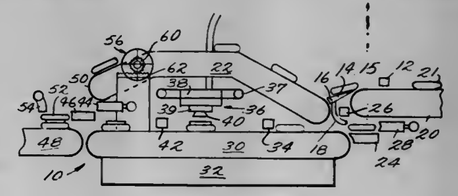
FILLER CAPPER MACHINE

Gray Gurney Welch, Winston-Salem, N.C., assignor to Royal Cake Company, Winston-Salem, N.C.

Filed Aug. 22, 1975, Ser. No. 606,931

Int. Cl.² A21C *15/00; B65G 57/00*

U.S. Cl. 99—450.4 **8 Claims**



1. A sandwich making machine for receiving rows of cookie halves off of an infeed conveyor transporting the cookie halves away from a cookie oven and automatically making soft cookie sandwiches having filling material located between the two cookie halves comprising two conveyor means positioned one above the other to form a top conveyor means and a bottom conveyor means, a moveable bridge means comprising a moveable member positioned adjacent said top conveyor means adapted to be selectively moved in a plurality of alternating positions, one of said positions permitting the bridge means to move out of contact with a first row of cookies into an open position and another alternate position permitting said bridge means to receive the following row of cookie halves from said infeed conveyor and allow continuous movement of each subsequent alternate row of cookie halves to said top conveyor means from said infeed conveyor across said bridge means by utilizing the momentum of the cookie halves as they are discharged from the infeed conveyor, a cookie inverter means comprising a curved member positioned below said bridge member which said bottom conveyor means being positioned below said cookie inverter means, said top conveyor means being positioned substantially said bridge means, said bottom conveyor means providing transportion for rows of said inverted cookie halves through said machine, a cookie aligning means positioned adjacent said bottom conveyor means, said cookie aligning means being adapted to receive cookie halves

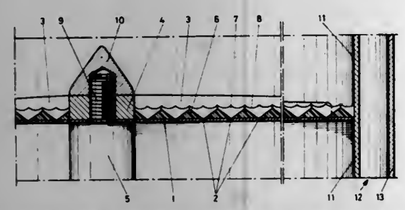
transported and inverted by said cookie inverter means when said bridge means is in the open position and feed said inverted cookie halves in aligned rows onto said bottom conveyor, filling applicator means located above said bottom conveyor means parallel to the path of travel of the said bottom conveyor means for applying topping to rows of cookie halves carried by said bottom conveyor means, said top conveyor means being located above said bottom conveyor means for transporting alternate rows of cookie halves and depositing said cookie halves at a sandwich location downstream from said filling applicator means and a second cookie aligning means for receiving rows of cookie halves from said top conveyor means and aligning said top row of cookie halves onto said bottom cookie halves at said sandwich station, said second cookie aligning means comprising a deadplate positioned downstream from said top conveyor means, said deadplate serving to receive cookie halves carried by said top conveyor and pusher plate means adjacent to said deadplate, said pusher plate when activated engaging and depositing said cookie halves onto topped cookie halves to form a cookie sandwich.

4,114,525

DEVICE FOR GENERATING SHEARING FORCES IN TREATING YOGURT AND OTHER VISCOUS LIQUIDS OR GELS

Frans M. Driessen, Bennekom; Jacob Ubbels, Ede, and Jacobus J. Stadhouders, Bennekom, all of Netherlands, assignors to Stichting Bedrijven Van Het Nederlands Instituut Voor Zuivelonderzoek, Ede, Netherlands

Filed Jan. 28, 1977, Ser. No. 763,549
Int. Cl.² A01J *11/00*
U.S. Cl. 99—465 **7 Claims**



1. A device for generating shearing forces in yogurt and other viscous liquids or gels being treated comprising:

a container for material being treated; and

a plate positioned in and movable with respect to said container and having an axis, a first end face, a second end face, and passageways defined therein and extending axially between said first and said second end faces, each of said passageways having a divergent end and a diverging portion extending over at least part of the length of the passageway and terminating at said divergent end, the divergent ends of each of said passageways intersecting with the divergent ends of adjacent passageways, said first end face being defined substantially by the intersecting divergent ends of said passageways.

4,114,526

APPARATUS FOR DENATURING FOOD PRODUCTS NOT INTENDED FOR HUMAN CONSUMPTION

Robert L. Soran, Modesto, Calif., assignor to Pet Foods, Modesto, Calif.

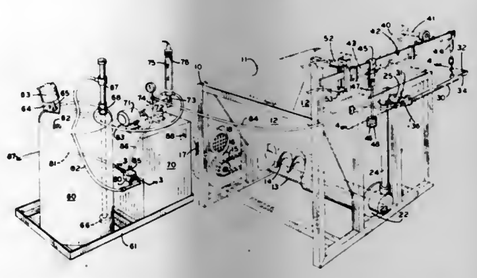
Filed Mar. 5, 1976, Ser. No. 664,149
Int. Cl.² A23L *1/275*
U.S. Cl. 99—533 **4 Claims**

2. An apparatus for denaturing comminuted flowable meat comprising:

(A) an elongated substantially straight tubular injector having opposite end portions;

(B) means connected to an end portion of the injector mounting the injector in a substantially horizontal position for elevational pivotal movement of the opposite end portion of the injector;

(C) scales connected to the injector intermediate tthe end portions thereof in resiliently supporting relation to said opposite end portion, said opposite end portion being supported in cantilever extension from the scales slidably to receive a sack in predetermined position in pendantly supported relation thereon with said opposite end portion of the injector within the sack, the opposite end portion of the injector having a closed pointed end to guide a sack slid thereon and a downwardly disposed port adjacent to the pointed end within the sack when the sack is in said predetermined position thereon;



(D) means for delivering comminuted flowable meat under pressure to the mounted end portion of the injector for extrusion therethrough into the sack;

(E) a duct having an outlet in fixed position within the injector adjacent to the port disposed in the direction of the extrusion of comminuted meat therepast;

(F) means for delivering dye under pressure to the duct, said injector being adapted to pivot downwardly against the supporting action of the scales when the sack and its contents reach a predetermined weight; and

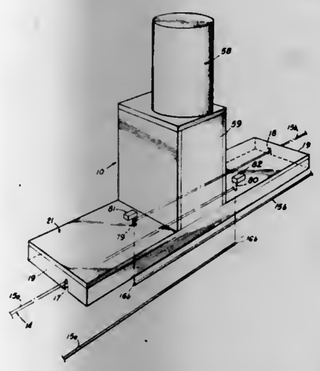
(G) means responsive to downward pivotal movement of the injector for interrupting operation of the meat delivering means and the dye delivering means when the injector pivots downwardly.

4,114,527

BALE TYING DEVICE AND KNOT PRODUCED THEREBY

Robert S. O'Neill, 7423 Sea View Pl., El Cerrito, Calif. 94530

Filed Sep. 9, 1977, Ser. No. 831,788
Int. Cl.² B65B *13/38*
U.S. Cl. 100—2 **13 Claims**



10. A method of forming a wire knot about a bale of material, comprising the steps of:

(a) passing wire about the exterior surface of said bale;

(b) aligning the distal portions of said wire in spaced, parallel relationship so that one of said distal portions extends past said other distal portion in the opposite direction;

(c) bending a section of each of said distal portions inwardly about a point adjacent the distal end of each of said portions towards the unbent distal portions, said distal ends passing beneath and through the vertical plane of said unbent wire portions, with the angle formed by each of the bent distal sections and its unbent distal portion being less than 90°; and

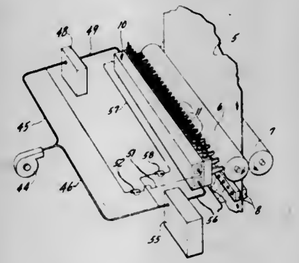
(d) folding inwardly of itself each of said distal sections which extends through each of said vertical planes about each unbent distal portion less than 360° but greater than 180° to form a knot having each of said distal ends angled downwardly and in engagement with said bale.

4,114,528

APPARATUS FOR WEB CALIPER CONTROL

Peter J. Walker, Pointe Claire, Canada, assignor to Midland-Ross Corporation, Cleveland, Mich.

Filed Mar. 2, 1976, Ser. No. 663,159
Int. Cl.² B30B *15/34, 3/04*
U.S. Cl. 100—47 **10 Claims**



1. Apparatus in combination with a plural-roll calender for adjusting the thickness of a web passing through the calender comprising:

separate header and source means for hot and cold fluids, and means for maintaining said fluids under uniform pressure and at predetermined respective hot and cold temperatures in respective header means;

a plurality of nozzle means in communication with the header means and spaced along a roll of the calender and oriented toward said roll to direct a mixture of said fluids against longitudinally spaced portions of the roll; and

separate valve means associated with each of the nozzle means for proportioning the flow of fluids from the headers for passage through the nozzles, each of the valve means including means which are movable, in unison, for increasing, by a certain amount, the volume of fluid flowing from one of the headers to an associated nozzle means while simultaneously decreasing, by the same amount, the volume of fluid flowing from the other of said headers to said associated nozzle means, so that the volume of fluid flowing from said nozzle means remains constant as the temperature of the fluid is varied.

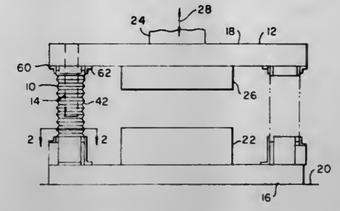
4,114,529

SAFETY STRUCTURE

Walter V. Furmaga, 14123 Barbara, Livonia, Mich. 48154

Filed Jan. 2, 1976, Ser. No. 646,143
Int. Cl.² F16P *1/00*
U.S. Cl. 100—53 **12 Claims**

1. In combination, a die set including an upper and lower platen, guide means on the upper and lower platen capable of damaging anything positioned therebetween on closing of the die set, and a guard sleeve including an elongated, accordion shaped, flexible plastic cylinder open to atmospheric pressure, and resilient means for laterally reinforcing the cylinder secured to the cylinder, positioned over the guide means, means securing one end of the sleeve to one platen of the die set and



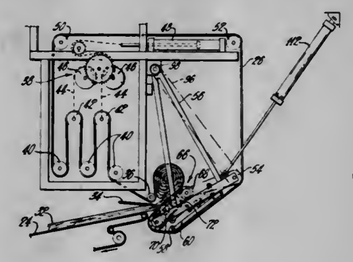
means securing the other end of the sleeve to the other platen of the die set whereby placement of objects between portions of the guide means with the die set open is guarded against.

4,114,530

APPARATUS FOR PACKAGING COMPRESSIBLE STRIPS

Ward B. Miller, Waterville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 23, 1977, Ser. No. 809,214
Int. Cl.² B30B *5/04*; B65H *17/14*; B65B *63/04*
U.S. Cl. 100—87 **10 Claims**



1. Apparatus for rolling and compressing a strip comprising a main endless belt, a portion of said belt defining a loop, means for placing said belt under tension to place the strip in compression as it is rolled in the loop, means for supporting a lower portion of said loop as the strip is rolled therein, said supporting means comprising a tail roll located below the loop, a drive roll spaced from said tail roll, and a plurality of supporting belts extending around said tail roll and said drive roll and having an upper run positioned to engage the lower portion of the loop, pinch roll means adjacent said tail roll for (1) pinching the main belt therebetween and (2) placing the upper run of the supporting belt in tension, said supporting belt being a timing belt with teeth on the inner surface thereof for engagement with correspondingly spaced grooves in said drive roll.

4,114,531

COMPACTING APPARATUS

Werner P. B. Plaut, Forest Hills, N.Y., assignor to Flexowall Corporation, Clinton, Conn.

Filed Jun. 2, 1976, Ser. No. 692,098
Int. Cl.² B30B *9/00, 9/24*
U.S. Cl. 100—90 **3 Claims**

1. Apparatus for compacting a flocculent solid material comprising:

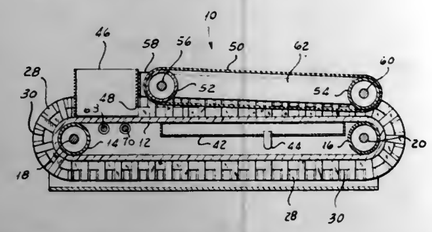
an air-pervious lower conveyor belt;

a relatively air-impervious upper belt;

means for supporting said upper belt above said lower conveyor belt to form a convergent compacting zone having a convergent end and a divergent end, said supporting means including a first roller supporting said upper belt at the convergent end of said zone, a second roller support-

ing said upper belt at the divergent end of said zone, means mounting said first roller for vertical movement in the direction of said lower belt, and means mounting said second roller at a substantially fixed vertical position above said lower belt;

means for supplying said material to said lower belt at the divergent end of said compacting zone;



means for moving the opposing portions of said belts toward the convergent end of said compacting zone; and

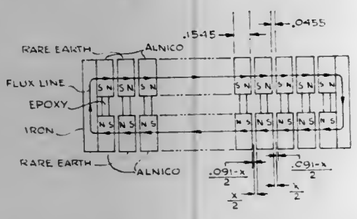
means including a suction device for withdrawing air from the compacting zone solely through the air-pervious lower belt.

4,114,532

IMPACT PRINTER MAGNET ASSEMBLY

Aram Sarkis Arzoumanian, Encino, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Oct. 12, 1976, Ser. No. 731,694
Int. Cl.² B41J *9/02*
U.S. Cl. 101—93.48 **9 Claims**



1. A magnet assembly comprising:

a plurality of substantially uniformly dimensioned magnetic members each having first and second pole faces and each being formed of substantially homogeneous material, said plurality of members being comprised of at least first and second groups having differing magnetic characteristics, said magnetic members of said first group comprising permanent magnets formed of a rare earth material and characterized by a maximum energy product in excess of 12 million gauss oersted;

said magnetic members of said second group being formed of soft iron; and

means supporting said members in alignment with members of said first and second groups interleaved and uniformly spaced from one another to define a gap between each pair of opposed pole faces for receiving a flat movable coil.

4,114,533

AUTOMATIC POSTAGE METER DATE SETTER

Lloyd G. Kittredge, Trumbull, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 11, 1977, Ser. No. 786,602
Int. Cl.² B41J *1/54*
U.S. Cl. 101—99 **6 Claims**

1. An apparatus for automatically setting the date of a postage meter, which meter has a gear that is part of a drive train for the postage meter print wheels and date indicator wheels, the combination comprising:

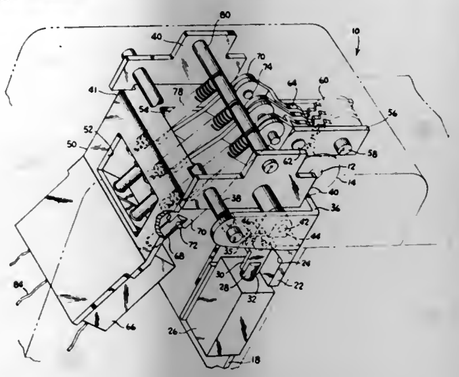
a housing:

first and second solenoid means received within said housing;

a frame member pivotably supported by said housing;

first linkage means supported within said housing and engaged by said first solenoid means;

gear means rotatably supported by said frame member and spaced relative to the drive train gear of the postage meter, said gear means being rotatably engaged by said linkage means;



means for periodically supplying an enabling pulse to said first solenoid means whereby said first linkage means is actuated to rotate said gear means;

second linkage means mechanically connected between said second solenoid means and said frame member to pivot said frame member upon the enabling of said second solenoid means; and

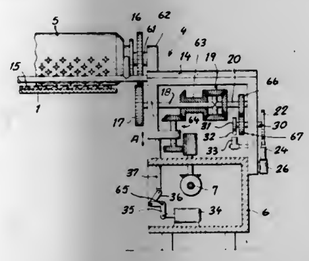
means for periodically supplying an enabling pulse to said second solenoid means whereby said gear means is placed into and out of engagement with the drive train gear.

4,114,534

CONTROL SYSTEM FOR ROTARY PRINTING SCREENS

Hans Kudlich, Kufstein, and Karl Schweitzer, Oberlangkampfen, both of, assignors to Maschinenfabrik Peter Zimmer Aktiengesellschaft, Kufstein, Austria

Filed Oct. 6, 1976, Ser. No. 730,139
Claims priority, application Australia, Oct. 6, 1975, 7646/75
Int. Cl.² B41F *15/10, 13/38*
U.S. Cl. 101—115 **14 Claims**



1. In a machine for printing a recurrent composite pattern on a substrate, comprising transport means for continuously advancing said substrate along a predetermined path and a set of cascaded printing units with rotary screens overlying said path, said set being divided into several groups for the printing of complementary portions of said pattern, each group including a plurality of printing units for the printing of different color components of the respective pattern portion, each printing unit being provided with a drive member for rotating the screen thereof at a peripheral velocity identical for all said printing units and with an elevatable mounting having lifting means for raising said screen off said substrate during an idling phase of a printing cycle following a working phase, the combination therewith of:

transmission means linking said transport means with each drive member for correlating the substrate speed with said peripheral velocity, said transmission means including a speed changer adjustable to vary the ratio of said peripheral velocity to said substrate speed, said speed changer having an input shaft coupled with said transport means and an output shaft operatively connected with the drive members of all said printing units;

stop means individual to each printing unit for deactivating the drive member thereof to arrest the respective screen in said idling phase in a predetermined rotational position;

a first pulse generator coupled with said input shaft for producing a first pulse train having a cadence proportional to said substrate speed;

a second pulse generator coupled with said output shaft for producing a second pulse train having a cadence proportional to said peripheral velocity;

programming means connected to said second pulse generator and including a recording medium stepped by said second pulse train for operating said lifting means and said stop means of each printing unit in a predetermined sequence defining a printing cycle by periodically reading out command signals stored on said recording medium; and

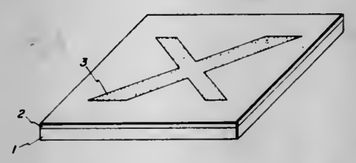
timing means for distributing said command signals to the several printing units of each group at intervals determined by said substrate speed, said timing means including shift-register means provided with data inputs connected to said programming means for receiving said command signals therefrom and with stepping inputs connected to said first pulse generator for energization by said first pulse train, said shift-register means having different outputs respectively connected to all printing units following a first one of said printing units.

4,114,535

RESILIENT LITHOGRAPHIC MASTERS FOR DIRECT PRINTING

Narayan V. Deshpande, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 601,005, Aug. 1, 1975, abandoned. This application Jan. 7, 1977, Ser. No. 757,715
Int. Cl.² B41F *7/00, 13/08;* B41L *17/02*
U.S. Cl. 101—141 **2 Claims**



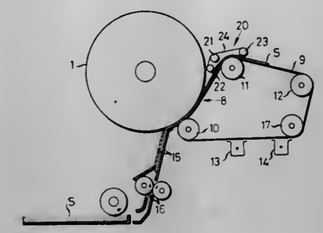
1. In a direct printing process of transferring an inked image directly from the printing master to a receiver sheet, the improvement comprising employing a master consisting essentially of a suitable supporting substrate, and a resilient surface layer between 25 and 200 microns said surface layer having a Shore A durometer of between 30 and 80 and an image layer of up to 2.5 microns and supporting the receiver sheet by a resilient blanket having a Shore A durometer between about 70 and 90.

4,114,536

METHOD OF AND APPARATUS FOR TRANSFER PRINTING A TONER IMAGE

Yutaka Kaneko, and Tsutomu Ishida, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Japan

Filed Aug. 26, 1977, Ser. No. 828,220
Claims priority, application Japan, Aug. 26, 1976, 51-101983; Feb. 7, 1977, 52-11594; Mar. 23, 1977, 52-31853; Mar. 29, 1977, 52-35047
Int. Cl.² G03G *13/14*
U.S. Cl. 101—426 **6 Claims**



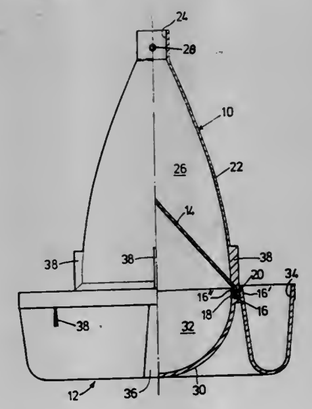
1. A toner image transfer printing method comprising the steps of feeding a recording sheet into intimate contact with a moving image-forming surface, carrying a toner particle image formed by developing an electrostatic latent image with a powder developer, for movement of the recording sheet with the image-forming surface; thereafter progressively engaging the outer surface of that portion of the recording sheet engaged with the moving image-forming surface with a transfer printing member having, on its recording sheet engaging surface, a dielectric layer electrically charged to the same polarity as the electrostatic latent image; utilizing the transfer printing member to progressively press the recording sheet against the moving image-forming surface with a low pressure; and progressively disengaging the recording sheet, together with the transfer printing member, from the image-forming surface with the toner particles on the image-forming surface being attracted to the recording sheet by the electrostatic force of the charged dielectric layer of the transfer printing member.

4,114,537

EXPLOSIVE DEVICE

Andrew James Brown, Five Oaks, Street Hey La., Willaston, Cheshire, England

Filed Oct. 18, 1976, Ser. No. 729,007
Int. Cl.² F42B *3/08*
U.S. Cl. 102—24 HC **19 Claims**



1. A trenching case comprising:

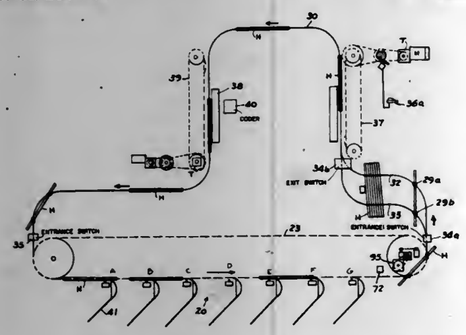
a. an outer casing; the outer casing comprising an upper casing part and a lower casing part;
b. a hollow cone fitting within the upper casing part, and
c. interengageable fastening means to enable the upper casing part and the lower casing part to be joined together to form the outer casing with the cone mounted between the upper and lower parts thereof to lie with the apex of the cone within the upper part of the casing to divide the interior of the casing into two separate compartments, a single piece annular ballast trough structure integrally formed with said lower casing part and surrounding the lower casing part, the lower casing part comprising a wall located to depend below the lower edge of the cone, when joined together with the outer casing, to support the case against a surface to be excavated so as to stand-off the lower edge of the cone from that surface.

4,114,538

HANGING GOODS SORTER

Robert N. Nicodemus, Jr., Walkersville; James W. Bosler, Frederick, and Marvin R. Kershner, Hagerstown, all of Md., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.

Continuation of Ser. No. 630,193, Nov. 10, 1975, abandoned.
This application Feb. 25, 1977, Ser. No. 772,341
Int. Cl.² B61B *10/00*; B65G *17/32*
U.S. Cl. 104—88 **25 Claims**



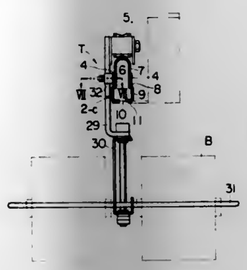
1. In a hanging goods sorter, the combination comprising
a power and free conveyor system including a power track,
a power conveyor movable along said track,
and a free track movable along a portion of said power track,
a gravity track connected at one end to said free track and at the other end to a spaced portion of said free track,
a loading station along said gravity track,
a coding station along said gravity track,
a plurality of delivery stations along said portion of said free track which is along said power track,
and a plurality of carriers,
each said carrier having a plurality of longitudinally spaced supporting hooks thereon,
means on each said carrier for individually actuating said hooks between a position for carrying hanging goods to a position for releasing hanging goods,
and means at fixed points adjacent said delivery stations for actuating said last-mentioned means to release said hanging goods on individual hooks at predetermined delivery stations,
coding means at said coding station,
a computer,
said computer having memory means for receiving a signal from said coding means,
and program means associated with said computer such that upon application of a coding signal, said computer will record said signal and, in turn, produce an appropriate release signal at the predetermined station to release the hanging goods from said carrier.

4,114,539

MEANS FOR TRANSFERRING, COLLECTING AND DISTRIBUTING TROLLEYS IN CONVEYER SYSTEM

Kohji Deno, Takatsukishi, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyotoshi, Japan

Filed Sep. 13, 1976, Ser. No. 723,018
Claims priority, application Japan, Dec. 11, 1975, 50-148023
Int. Cl.² B61B *12/02*
U.S. Cl. 104—165 **10 Claims**



1. Means for transferring, collecting and distributing trolleys in a conveyer system comprising a horizontal running rail which supports trolleys and on which trolleys run having a cross section having an upper downwardly opening U-shaped portion including a semi-circular connecting part and straight leg parts, portions extending away from each other connected to the free ends of the leg parts of the U-shaped portion of the rail cross section, then downwardly and then inwardly toward each other terminating in spaced apart relation, a running belt extending along one side of the running rail positioned adjacent the lower portion of one of the leg parts of the U-shaped portion of the running rail cross section and the portions extending away from each other connected thereto, means for driving the running belt and at least one trolley positioned on the running rail including an L-shaped arm, a roller and means for supporting the roller in engagement with the top of the running rail from the top of the L-shaped member, a pressing piece secured to the L-shaped member centrally thereof and in engagement with the running belt adapted to frictionally engage the running belt and press it against the running rail under pressure from a load positioned on the trolley, and including resilient means urging the pressing member toward the running belt, and load supporting structure secured to the lower portion of the L-shaped member.

4,114,540

RAILWAY TRUCK BOLSTER

Ronald T. Strugielski, Evanston, Ill., and Harry William Mulcahy, Griffith, Ind., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed May 31, 1977, Ser. No. 801,599
Int. Cl.² B61F *1/12, 5/16, 5/50*; F16C *17/04*
U.S. Cl. 105—226 **5 Claims**



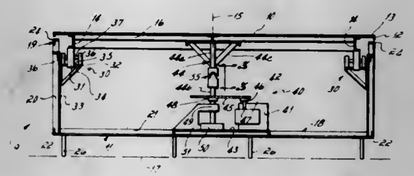
1. A truck bolster for a railway car truck having an elongated hollow compartmentalized body comprising,
a substantially rectilinear-shaped center cavity defined only by a substantially horizontal top member having a center plate formed on an upper surface thereof, a horizontal center portion of a bottom member spaced from said top member, and two spaced upwardly converging laterally positioned ribs connecting said top and bottom members with an upper end of each of said ribs joining said top member beneath an outer rim of said center plate so as to provide clear passage through said center cavity below said center plate of said truck bolster.

4,114,541

ROTATING CAFETERIA TYPE FOOD SERVICE COUNTER WITH IMPROVED DRIVE SYSTEM

Elmer R. Weddendorf, Cincinnati, Ohio, assignor to B/W Metals Company, Inc., Fairfield, Ohio

Filed Jun. 23, 1977, Ser. No. 809,288
Int. Cl.² B01D *33/00*
U.S. Cl. 108—20 **3 Claims**



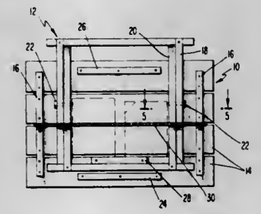
1. A cafeteria type food service counter comprising
a generally circular counter top,
an immobile support frame having a plurality of idler rollers mounted thereon, said idler rollers being adapted to cooperate with said counter top to support said counter top for rotation relative to said support frame,
a primary drive shaft having an upper section and a lower section, said upper section being fixed to the underside of said counter top in coaxial fashion relative to the rotation axis of said counter top,
drive means connected with said lower section of said primary drive shaft, and
a universal joint connecting said upper section and said lower section of said primary drive shaft, said universal joint serving to transmit rotation from said primary drive shaft's lower section to said primary drive shaft's upper section for rotating said counter top, said universal joint also serving to permit limited tilting or flexing of said counter top relative to the horizontal, and said universal joint cooperating with said idler roller support of said counter top for minimizing significant vibration of the counter top during rotation thereof by allowing said counter top to flex or tilt slightly if required relative to its rotation axis to maintain supportive contact with said idler rollers.

4,114,542

PORTABLE, COLLAPSIBLE FURNITURE

D. G. Fentress, P.O. Box 6102, Clearwater, Fla. 33518

Filed May 25, 1977, Ser. No. 800,396
Int. Cl.² A47B *3/06*
U.S. Cl. 108—157 **10 Claims**



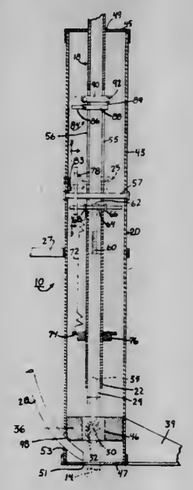
1. A portable, collapsible piece of furniture, said furniture comprising:
(a) an at least generally planar support surface;
(b) a legs subassembly;
(b_1) said support surface comprising at least two pairs of spaced braces mounted on the underside of said support surface, said pairs of braces being substantially perpendicular to each other and also serving as stops limiting the movement of said legs subassembly in both its opened and collapsed positions, said legs subassembly lying substantially between said pairs of braces and parallel thereto in said collapsed position;
(c) means for releasably attaching said legs subassembly when in its opened position to said support surface; and
(d) means for releasably attaching said legs subassembly when in its collapsed position to said support surface such that said subassembly can function conveniently as a handle for carrying said piece of furniture.

4,114,543

SEED PLANTING DEVICE WITH AUTOMATIC SEED COVERING

Roderick A. Mitchell, 5042 N. Winthrop, Chicago, Ill. 60640

Filed Jul. 2, 1976, Ser. No. 702,241
Int. Cl.² A01C *5/02, 7/02*
U.S. Cl. 111—96 **7 Claims**



1. A device for planting seeds, comprising:
an elongated tubular housing having a hollow interior and having openings in the top and bottom ends of said housing;
a concentrically-disposed axially-aligned elongated rigid member reciprocably mounted within the hollow interior of said housing;
a tubular socket connected to the end portion of said member for extending through the opening in the bottom end of said housing to dig into the soil to be planted and to withdraw a soil plug to leave a soil hole in the soil;
a handle portion connected to said member for extending through the opening in the top end of said housing to enable said member to be moved axially relative to said housing toward its bottom end so that said socket can be forced into digging engagement with the soil and then the member retracted in said housing whereby a seed can be dropped in the soil hole;
backfilling means for moving soil into the soil hole for covering the seed therein, said backfilling means including a slidably mounted ejector rod having a bottom end portion for moving into said socket for ejecting the soil plug from said socket into the soil hole to cover over the seed;
spring means stretched between said rod and said elongated rigid member for propelling said rod into said socket to discharge the soil plug therefrom;

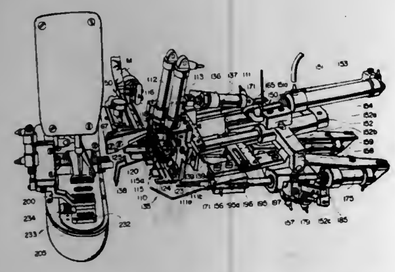
means defining an elongated slot in said rigid member;
rod means connected fixedly to said ejector rod and extending transversely therefrom and through said slot terminating at its outer distal end within the interior of said housing;
a latch mounted within said housing for engaging releasably said rod means of said ejector rod as said rigid member moves toward the bottom end of said housing to stretch said spring means between said rigid member and said ejector rod, said latch having at its lower end portion hooking means for holding said rod means and thereby said ejector rod and having at its upper end portion camming means;
releasing means mounted on said rigid member and having a pivotally mounted pin means extending transversely from said rigid member to engage said camming means during the downward movement of said rigid member and to pivot rearwardly away from said camming member to enable said pin means to move forwardly to a position below said camming means, said releasing means further including rigid means for limiting the forward pivotal movement of said pin means so that, when said rigid member commences its rearward upper movement to carry said pin means from said position below said camming means, said pin means engages and moves said camming means to cause said latch to free said rod means during rearward movement thereof to permit said spring means to propel said ejector rod forwardly into said socket for discharging the soil plug from said socket into the soil hole;
seed delivery means having an outlet near said bottom opening for guiding seeds thereto to enable them to fall under the force of gravity through the bottom opening into the hole after said socket is retracted into said housing; and
a seed hopper disposed rearwardly of said bottom end portion storing a supply of seeds having an outlet supplying a seed feeding mechanism.

4,114,544

APPARATUS FOR FORMING LOOPS ON A GARMENT

Nobuji Miyachi, Kyoto; Akira Ogawa, Uji; Keniti Miyake, and Isao Onishi, both of Kyoto, all of Japan, assignors to Miyachi Sewing Machine Co., Ltd., Kyoto, Japan

Filed Apr. 11, 1977, Ser. No. 786,141
Claims priority, application Japan, Apr. 20, 1976, 51-45262; May 20, 1976, 51-58815; Aug. 3, 1976, 51-104136[U]; Nov. 19, 1976, 51-139897
Int. Cl.² D05B *3/12*
U.S. Cl. 112—104 **10 Claims**



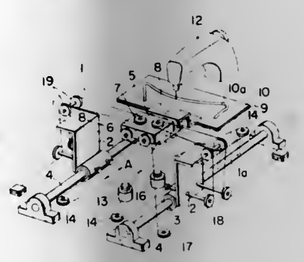
1. An apparatus for forming loops on a garment comprising:
delivery means for sending out an elongated material, said delivery means being provided with means for detecting a seam portion and means for removing a cut piece including a seam portion in response to a signal from the detecting means,
means for fastening the sent out material on at least one receiving plate,
two clamp means provided on the opposite sides of the receiving plate respectively for clamping the fastened material at its opposite ends,
a cutter for cutting the fastened material,
a cycle sewing machine, and
transfer means for simultaneously moving the two clamp means toward and away from the cycle sewing machine, each of the clamp means having two fingers for folding an end portion of the material in nipping engagement therewith and clamping the same,
the cycle sewing machine having a front presser foot, a rear presser foot and a cloth retaining presser plate formed with openings opposed to the presser feet respectively, the presser feet and the presser plate being movable, whereby after one folded end portion of a cut piece of the material is stitched to the garment, the presser feet and the presser plate are moved with the cut piece and the garment held therebetween to bring the other folded end portion of the cut piece to a stitching position and thereafter stitch the end portion to the garment.

4,114,545

AUTOMATIC SEWING MACHINES

Takao Manabe, Shizuoka, and Sigetugu Matunaga, Numazu, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1977, Ser. No. 786,035
Claims priority, application Japan, Apr. 15, 1976, 51-42652
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.15 **2 Claims**



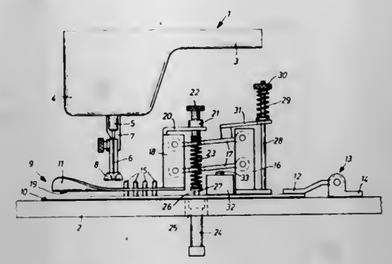
1. An automatic sewing machine comprising a sewing machine table, a first hollow table mounted above said sewing machine table and provided with an opening at the bottom thereof and pulleys on the opposite ends thereof, a second table contained in said first table and movable in the axial direction thereof said second table being provided with pulleys on the upper surface thereof, clamping plates for clamping pieces of cloth to be sewed, a supporting member for supporting said clamping plates and connected to said second table through said opening, said sewing machine table being provided with a pair of slits extending in a direction perpendicular to the axis of said first hollow table, a pair of guide rails disposed beneath said sewing machine table in parallel with said slits, a pair of arms depending from said first table to be received by said slits, sliding members supported by said arms and guided by said guide rails, a pair of motors mounted on a stationary portion of said sewing machine table, and belts passing about said pulleys of said first and second tables for driving said first and second tables, respectively by said motors.

4,114,546

SEWING MACHINE WITH A WORKPIECE GUIDE MECHANISM

Otto Kirch, Mehlingen, and Erich Willenbacher, Rheinstetten, both of Germany, assignors to Pfaff Industriemaschinen GmbH, Germany

Filed Oct. 31, 1977, Ser. No. 846,991
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 7713701
Int. Cl.² D05B *35/10*
U.S. Cl. 112—153 **2 Claims**



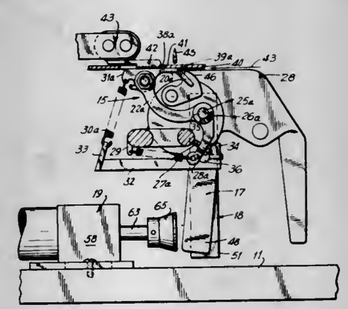
1. A sewing machine for producing edge parallel seams in workpieces of any contour, wherein the sewing machine includes a needle which is reciprocable in a stitch forming area, comprising a workpiece ruler guide extending laterally of the stitch forming area and at an angle to a line passing through the needle axis, a workpiece guide mechanism including upper and lower guide plates forming a workpiece passage space therebetween disposed alongside said ruler, means mounting said upper plate over said lower plate for upward and downward movement relative to said lower plate, a pressure spring having one end acting on said upper plate and having an opposite spring end, a tension member engageable with said opposite spring end, means for moving said tension member in one direction to stretch said pressure spring and increase the tension acting on said spring and to lower said upper plate against the workpiece to produce a braking effect on the workpiece, said tension member being movable in an opposite direction to a rest position to decrease the tension on said pressure spring, and a lifting spring acting on said upper plate producing an upward lifting force thereon of a magnitude to lift the said upper plate when said tension member is in a rest position and the tension on said pressure spring is reduced.

4,114,547

STITCH SHORTENING AND TACKING ASSEMBLY

Richard Russell, Tappan, N.Y., assignor to U.S. Blind Stitch Machine Corp., Plainview, N.Y.

Filed Sep. 23, 1977, Ser. No. 836,253
Int. Cl.² D05B *1/24, 27/22*
U.S. Cl. 112—178 **16 Claims**



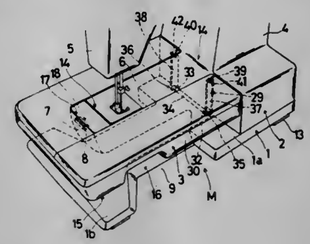
1. A variable stitching assembly for use with a sewing machine including a platen disposed in a first position for supporting a fabric during a sewing operation, a feeder constructed and arranged to be reciprocated through a feeding stroke, said feeder being adapted to engage said fabric against said platen when said platen is in said first position and said feeder is reciprocated through a feeding stroke to thereby advance said fabric through a first predetermined distance, needle means synchronized with respect to said feeder for stitching the fabric at the completion of each feeding stroke of said feeder, the improvement comprising a rib for lifting and selectively feeding arranged to be reciprocated in synchronism with said needle means through a lift stroke that is shorter than the feed stroke of said feeder, said rib being arranged to lift said web during said lift stroke, and first platen displacement means coupled to said platen for displacing same from said first position to a stitch shortening position out of engagement with said feeder during said feed stroke thereof so that said fabric is advanced by said rib during said lift stroke thereof a shorter distance than said first predetermined distance, thereby shortening the length of the stitch effected by said sewing operation.

4,114,548

SEWING MACHINE WITH BASE EXTENSION

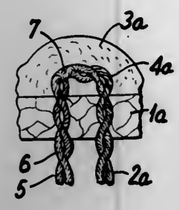
Takahiko Kasahara; Shigeharu Shichi, both of Anjo; Hideo Banno, Nagoya; Senji Suito, Kariya, and Masayuki Kato, Owariasahi, all of Japan, assignors to Aisin Seiki Company, Limited, Japan

Filed Jun. 20, 1977, Ser. No. 808,088
Claims priority, application Japan, Jun. 25, 1976, 51-84184[U]
Int. Cl.² D05B *73/06*
U.S. Cl. 112—258 **5 Claims**



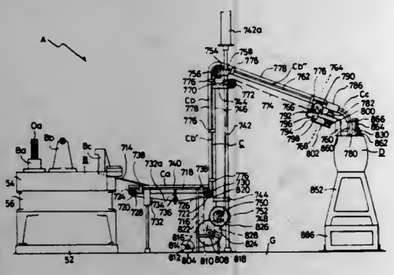
1. A sewing machine comprising:
a base plate substantially of H-shape and having a concavity at the central transverse bar portion thereof;
a standard vertically supported upon one side bar portion of said H-shaped base plate;
a cylindrical base extending horizontally from said standard, the under surface of said base facing said transverse bar portion of said base plate;
a base extension substantially of C-shape and hinged to said cylindrical base;
said base extension being movable between a first position where the upper surface thereof is coplanar with that of said cylindrical base and a second position where the under surface thereof is coplanar with that of said H-shaped base plate;
a locking means normally maintaining said base extension at said first position including an inward projection provided on an inner wall at an end of said base extension and a groove member provided on a side wall of a free end of said cylindrical base such that said inward projection is lockably engageable with said groove member
said cylindrical base being received in a central recess of said C-shaped base extension at said first position thereof; and
said base extension having a recess at the underside thereof for accommodating the other side bar portion of said H-shaped base plate at the second position of said base extension.

4,114,549
PILE FABRIC
Phillip W. Chambley, and Alan H. Norris, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.
Filed Jun. 7, 1977, Ser. No. 804,307
Int. Cl.[2] D02G 3/26; D05C 17/02
U.S. Cl. 112—410 9 Claims



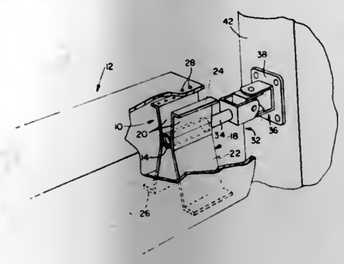
1. A pile fabric comprising a backing and a plurality of tufts protruding from said backing, a selected proportion of said tufts consisting of self-twist plied yarn, said self-twist plied yarn consisting of a plurality of false twisted singles yarns, each singles yarn having a repeating pattern along its length of S twist and Z twist and nodes therebetween, said singled yarns being fastened together at said nodes and having the same direction of twist between said nodes, said self-twisted plied yarn being self-twisted in opposite directions to said singles yarns, and the remainder of said tufts consisting of substantially untwisted singles yarn in unplied yarn.

4,114,550
APPARATUS FOR USE IN AN AUTOMATIC AND CONTINUOUS MANUFACTURE LINE FOR MANUFACTURING THE OUTER CYLINDRICAL CASES OF DRY CELLS
Kozo Ohkawa, Kawasaki, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan
Filed Mar. 14, 1977, Ser. No. 777,182
Int. Cl.[2] B21D 51/20
U.S. Cl. 113—7 R 23 Claims



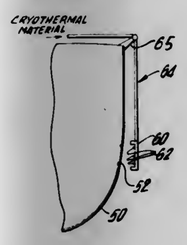
1. Apparatus for use in an automatic and continuous manufacture line for manufacturing the outer cylindrical cases of dry cells from blanks comprising a stacking station having stacking means for stacking said blanks, a pre-forming station having a pre-curling means for forming an arc-shaped pre-curl on said blanks, a first carrying means for receiving the blanks from the stacking means and moving the blanks through said pre-curling means, a forming station having forming means for forming the pre-curled blanks into cylindrical bodies, a second carrying means for moving the blanks to the forming station, line conveyors conveying the formed cylindrical bodies from the forming station, a rotary flanger means to which the formed cylindrical bodies are conveyed by the line conveyors, and pressing means on said rotary flanger for pressing both ends of the cylindrical bodies in such a manner that only one longitudinal end of the cylindrical body is inwardly bent to form a flange.

4,114,551
GOOSE-NECK FITTING
Eric R. D. Hall, Marion, Mass., assignor to Schaefer Marine Products, New Bedford, Mass.
Filed Jan. 6, 1978, Ser. No. 867,384
Int. Cl.[2] B63H 9/04
U.S. Cl. 114—98 5 Claims



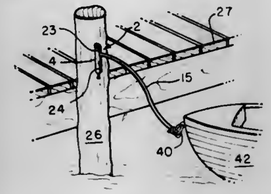
1. A goose-neck connector assembly for removably connecting the end of an elongated member to a boat mast comprising
A. an elongated connector member positioned inside the hollow end of the elongated member with its axis parallel to that of the elongated member;
B. a pair of struts positioned in the elongated member on opposite sides of the connector member and extending between opposite walls of the elongated member said connector member and struts in section having the general shape of the letter H;
C. means for securing said struts to said connector member; and
D. means for securing the ends of said struts adjacent said walls to said walls so that the connector member and struts form a stiffening truss at the end of the elongated member.

4,114,552
CRYOTHERMAL MANIPULATION OF PETROLEUM
Sigmund Lance Ross, 1280 E. 53rd St., Brooklyn, N.Y. 11234; Oscar Shuffman, deceased, late of Scarsdale, N.Y., and by Rose Shuffman, executrix, 1 Cornell, Scarsdale, N.Y. 10583
Division of Ser. No. 246,960, Apr. 24, 1972, Pat. No. 4,031,707.
This application Jan. 26, 1977, Ser. No. 762,659
Int. Cl.[2] B63B 43/16; F25D 3/00
U.S. Cl. 114—227 4 Claims



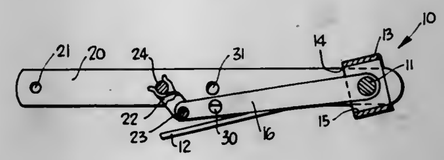
1. A method for stopping the leakage of a body of petroleum through a crack above the water-line in the hull of a vessel containing said body of petroleum comprising the steps of:
providing a mass of material at a cryothermal temperature corresponding to the freezing point of water at sea level or lower, which cryothermal temperature is lower than the temperature of said body of petroleum; and
positioning said mass of material adjacent said crack in the vessel for direct contact with petroleum seeping through said crack and with the ship hull immediately adjacent said crack so as to increase the surface tension of petroleum seeping through said crack and ultimately solidify said petroleum seeping through said crack thereby forming a plug for preventing the leakage of petroleum through said crack.

4,114,553
MOORING DEVICE AND CLEAT
Charles E. Zidek, 9851 Robin Rd., Niles, Ill. 60648
Filed Jul. 18, 1977, Ser. No. 816,349
Int. Cl.[2] B63B 21/04
U.S. Cl. 114—230 8 Claims



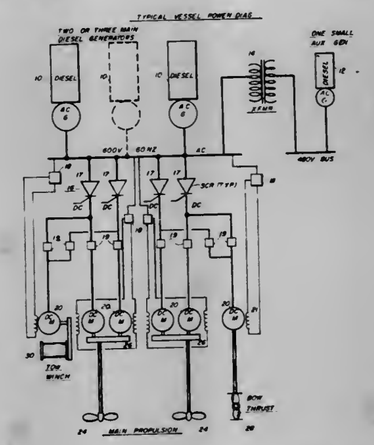
1. A mooring device comprising a tubular member having a bore and at least one open end,
means for securing the device to an associated support,
means providing a keyhole slot open at one end through said one end of said tube for admitting a mooring cable therethrough, said cable having an enlargement at its free end for preventing endwise movement of the cable out of the slot, and said tube having an edge at said one end extending diagonally of the axis of the bore away from the support and providing an enlarged open end for the bore to facilitate entry of said cable enlargement into the bore.

4,114,554
ANCHOR HAVING BUILT-IN TRIP DEVICE
Frank Miller, 23 King George Av., Brighton North, South Australia, Australia
Filed Apr. 22, 1977, Ser. No. 789,868
Int. Cl.[2] B63B 21/44
U.S. Cl. 114—298 4 Claims



1. An anchor having a cross-bar, abutment plates on the cross-bar having abutment surfaces, a primary arm, pivot means pivoting the primary arm for pivotal movement with respect to the cross-bar to be movable between and engageable against said abutment surfaces, a secondary arm, pivot means also pivoting the secondary arm at one of its ends for pivotal movement with respect to the cross-bar, said secondary arm not being engageable against said abutment plates, anchor cable attachment means at the other end of the secondary arm, anchor flukes on the cross-bar, and pressure releasable latch means between the primary and secondary arms, said latch means comprising:
a link, a pivot pin joining one end of the link to the swinging end of the primary arm, the other end of the link being bifurcate and comprising a pair of spaced resilient arms, and a pin in the secondary arm engaged by the resilient arms of the link but releasable therefrom on the application of force separating the primary and secondary arms.

4,114,555
APPARATUS FOR AND METHOD OF INTERCONNECTING AND CONTROLLING UNITS OF A POWER TRAIN FOR MAXIMUM FLEXIBILITY AND ECONOMY IN OPERATING AUXILLIARY MARINE VESSELS
Harry W. O'Brien, Jr., 203 Carondelet St., New Orleans, La. 70130
Filed Mar. 14, 1977, Ser. No. 777,184
Int. Cl.[2] B63H 21/12
U.S. Cl. 115—76 5 Claims



1. Apparatus for interconnecting and controlling units of a power train for maximum flexibility and economy in the operation of auxiliary marine vessels having propellers and propeller shafts driven thereby, and comprising in combination:
a. a plurality of power producing unit means connected in parallel, and each comprisng electrical generating means for producing a constant voltage and frequency AC, and diesel engine means for producing maximum torque and brake horsepower at maximum rated rpms and minimum fuel consumption per brake horsepower hour for driving said electrical generating means;
b. a plurality of power control unit means connected in parallel with each other and respectively in series with said power producing unit means and comprising a plurality of silicon control rectifier means for rectifying and voltage controlling a constant voltage and frequency AC output of said electrical generating means into variable voltage DC, and a plurality of electrical current control means connected in parallel with each other and in series with said electrical generating means for rectifying and varying the current; and
c. a plurality of power using unit means comprising a plurality of shunt wound DC motor means having rotor coils and field coils, said rotor coils for connecting together in parallel, and to the silicon control rectifier means in series combination with said power producing unit means for activation and control of varying speeds of said DC motor means below 100% and less of base rpms thereof, said field coils being connected in series through said electrical current control means with said electrical generating means and in parallel with each other for activating said DC motor means in combination with said silicon control rectifier means and controlling said varying speeds above said 100% of base rpms of said DC motor means.

4,114,556

RIGID MOORING ARM HOOK-UP SYSTEM

James A. Orndorff, Jr., Glen Ellyn; Robert S. Wozniak, Elmhurst, and John S. Andrepont, Lisle, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jun. 13, 1977, Ser. No. 805,652
Int. Cl.² B63B *21/00*
U.S. Cl. 114—230 **4 Claims**





1. A "quick-disconnect" mooring system for connecting a floating vessel to a buoyant mooring tower comprising:

an elongated tower yoke having one end adapted to be connected to said tower in a manner which permits said yoke to rotate about vertical and horizontal axes passing through the point of attachment to said tower, the other end of said tower yoke being provided with a first element of a two-element mechanical locking system;

a ship yoke having a pair of spaced arms, one end of each of which is adapted to be attached to opposite sides of the bow of a vessel for rotation about a horizontal axis, and a base interconnecting the other ends of said arms, said base having attached thereto the second element of said locking system;

said first and second locking elements being engageable to provide a rigid interconnection therebetween;

means on said vessel for controlling the elevation of the base of said ship yoke;

an elongated flexible cable having one end attached to said first locking element and the other end operatively attached to a take-up system located on said vessel;

means on said ship yoke engaging said cable for aligning said cable and said yoke when said cable is taut;

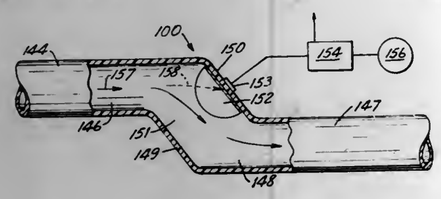
whereby the two elements of said locking assembly can be brought into aligned operative engaging relationship by taking up said cable in a taut condition.

4,114,557

PARTICLE MONITORING SYSTEM

Robert J. De Brey, 1830 E. 42nd St., Minneapolis, Minn.

Division of Ser. No. 268,020, Jun. 30, 1972, Pat. No. 3,989,311, which is a continuation-in-part of Ser. No. 37,157, May 14, 1970, Pat. No. 3,674,316. This application Oct. 28, 1976, Ser. No. 736,467
Int. Cl.² G08B *21/00*
U.S. Cl. 116—67 R **10 Claims**



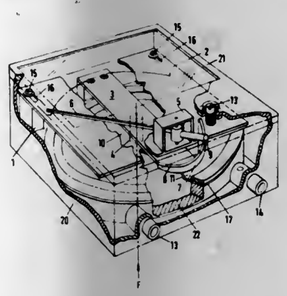
1. A particle monitoring apparatus for sensing particles in a flowing fluid comprising: first means having a first passage for carrying air and particles, second means having a second passage for carrying air and particles, said second passage being substantially parallel to and offset from the first passage, a housing connecting the first means with the second means, said housing having a chamber in communication with the first passage and second passage and a wall facing the chamber, said wall connecting the first means with the second means and having an angled portion located in general alignment with the longitudinal axis of the first passage, said chamber having a cross sectional area larger than the cross sectional area of either the first or second passage, a particle sensor mounted on said angled portion of said wall, said sensor located in alignment with the first passage so that the particles moving from the first passage are directed toward the sensor, said sensor operable to detect particles that strike the sensor and establish electrical signals related to the number of particles that strike the sensor, said sensor comprising a piezoelectric crystal having a surface exposed to the chamber upon which the particles impinge, said crystal being mounted on the angled portion of said wall and having a shape that conforms to the general shape of the inside of the wall whereby the crystal has a minimum extension into the chamber, an electronic circuit connected to the crystal to sense said electrical signals, and an output device operatively coupled to said circuit whereby said electrical signals are transformed to readable information related to the number of particles that strike the crystal.

4,114,558

MEASURING INSTRUMENT INDICATING MECHANISM

Peter Edward Bagley, Bix. Nr. Henley-on-Thames, England, assignor to Airflow Developments Limited, England

Filed May 10, 1977, Ser. No. 795,608
Claims priority, application United Kingdom, Apr. 26, 1977, 17387/77
Int. Cl.² G01D *13/00*; G01L *19/10*
U.S. Cl. 116—114 PV **9 Claims**



1. A measuring instrument comprising an axially movable input member responsive to pressure acting to deflect a cantilever mounted spring, a movable indicator pivotally mounted adjacent the free end of the spring for angular motion in the plane substantially perpendicular to the plane of deflection of the spring by the input member, and co-operating means which are continually held in contact by magnetic attraction, respectively mounted on the indicator and the free end of the spring for converting deflection motion of the spring into the pivoted motion of the indicator.

4,114,559

TEMPERATURE MONITORING

Neil E. Rogen, Upper Saddle River, N.J., assignor to Nicoa Corporation, Waltham, Mass.

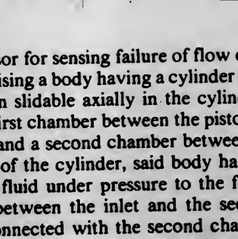
Continuation-in-part of Ser. No. 508,224, Sep. 23, 1974, abandoned. This application Aug. 28, 1975, Ser. No. 608,505
Int. Cl.² G01K *11/00*
U.S. Cl. 116—114.5 **11 Claims**

1. Temperature monitoring device indicating thermal history comprising,

means defining opposing first and second relatively fixed and movable subassemblies, respectively,

means defining a material having a first configuration above a transition temperature which is formable into a second configuration below said temperature and having the capability of changing sharply from said second configuration to said first configuration at the transition temperature,

said material being connected between said first and second subassemblies for working from said first configuration to said second configuration by relative movement of said subassemblies,



means defining an indicator of working said material from said first to said second configuration and means for locking said indicator in position, and

means defining an indicator of return of said material from its second configuration to its first configuration if the transition temperature is reached, and

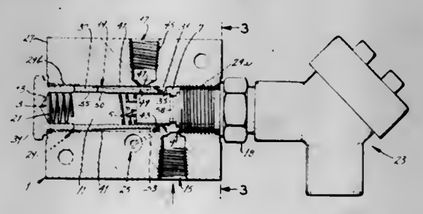
wherein the fixed subassembly is bondable to an item whose thermal history is to be monitored and comprises fixed position markers therein and said movable subassembly comprises window means alignable with said markers to constitute said indicator of working said material.

4,114,560

FLOW SENSOR

Jerome B. Wegmann, St. Louis, Mo., assignor to McNeil Corporation, Akron, Ohio

Filed May 18, 1977, Ser. No. 797,932
Int. Cl.² F16N *29/00*; G01F *15/06*
U.S. Cl. 116—117 R **10 Claims**



1. A flow sensor for sensing failure of flow of a fluid such as lubricant comprising a body having a cylinder therein closed at its ends, a piston slidable axially in the cylinder dividing the cylinder into a first chamber between the piston and a first end of the cylinder and a second chamber between the piston and the second end of the cylinder, said body having an inlet for delivery of the fluid under pressure to the first chamber, an outlet located between the inlet and the second end of the cylinder interconnected with the second chamber, the piston being movable away from a no-flow position adjacent the first end of the cylinder wherein it blocks the outlet from the inlet to a flow-through position wherein it unblocks the outlet from the inlet for flow of the fluid from the inlet to and out through the outlet, spring means biasing the piston to its no-flow position, the piston being movable against the bias by the pressure of the fluid in the first chamber to its flow-through position, and means for signalling when the piston is in its no-flow position, wherein the improvement comprises the provision in said body of an adjustable bleed passage means interconnecting the first and the second chambers for passage of fluid from the first chamber to the second chamber at a controlled rate when flow ceases and the spring means moves the piston to its no-flow position to retard the movement of the piston.

4,114,561

AVALANCHE RESCUE MARKER SYSTEM

Vito F. Asaro, 600 B St., #600, San Diego, Calif. 92101

Filed Oct. 15, 1975, Ser. No. 622,473
Int. Cl.² B64B *1/52*
U.S. Cl. 116—124 B **2 Claims**



1. A rescue marker system comprising:

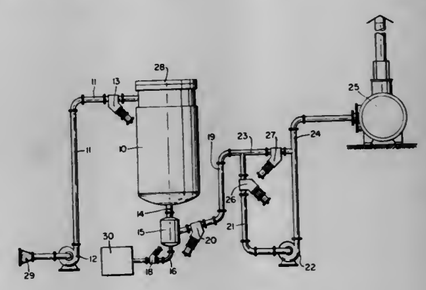
An instantly openable pack assembly being carried on the back of an outer garment of a user, said openable pack assembly including an inflatable marker balloon, and a tether coupled to a neck portion of said marker balloon on one end thereof and to the openable pack assembly on another end thereof; an inflation assembly being carried on an upper front portion of said user's outer garment, said inflation assembly including a gas cylinder having compressed lighter-than-air gas therein, and a manually operated lever for activating puncturing means which means is operable for instant, one movement puncturing of said gas cartridge and inflation of said balloon; release means for automatically and instantly releasing said marker balloon after inflation thereof; and sealing means for sealing the lighter-than-air gas into said balloon upon release thereof.

4,114,562

IMPREGNATION FURNACES FOR CARBON ARTICLES

Luciano Ubaldi, Rome, and Osvaldo Buccella, Terni, both of Italy, assignors to Elettrocarbonium S.p.A., Milan, Italy

Filed Apr. 7, 1977, Ser. No. 785,560
Claims priority, application Italy, Apr. 14, 1976, 49036 A/76
Int. Cl.² B05C *3/09, 9/08*
U.S. Cl. 118—50 **2 Claims**



1. In combination with an impregnation furnace for carbon articles making use of impregnants, comprising an autoclave in

which the impregnation process takes place, the autoclave being closed by a cover, an apparatus for completely drawing the smoke developed during the impregnation process including: fan means adapted to draw atmospheric air and connected to the upper portion of said autoclave by means of a first pipe; first valve means controlling said first pipe; a drop separating means connected to the bottom of said autoclave through a short length of tube, and to the impregnant supplying source through a second pipe, controlled by a second valve means, said drop separating means being provided with a third pipe which is controlled by a third valve means; drawing means provided with an inlet pipe, controlled by a fourth valve means and connected to said third pipe and a fourth pipe connected to said third pipe, through a tube controlled by fifth valve means and directly connected to a smoke eliminating device; these parts being so arranged as, once the impregnation process under pressure has been performed in the autoclave, owing to said impregnant being heated to the temperature of maximum fluidity, said impregnant is removed through said second pipe, said second valve means being opened and, while maintaining the autoclave closed by said cover, said first, third and fifth valve means are opened and said fan means is operated, which blows a flow of relatively cold and clean atmospheric air into the upper portion of the autoclave and then onto the impregnated articles in said autoclave, in relative heat exchange relationship, said air flow charging with most of the smoke developed during the impregnation process; air flow being then fed to said smoke eliminating device, having left the largest particles inside said drop separating means; after a suitable time, said fan means is stopped, said first and fifth valve means are closed and said fourth valve means is opened, while operating said drawing means and, simultaneously, slowly removing said autoclave cover, while the residual smoke is drawn towards the autoclave bottom through the drop separating means and then sent to said smoke eliminating device as well.

4,114,563

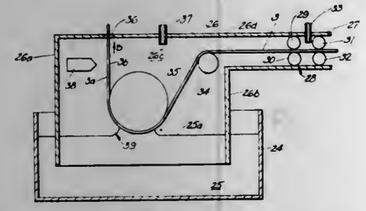
APPARATUS FOR CONTINUOUSLY CONTACT-COATING ONE SIDE ONLY OF A FERROUS BASE METAL STRIP WITH MOLTEN COATING METAL

Paul E. Schnedler, Middletown; Marvin B. Pierson, Franklin; Hart F. Graff, Middletown; Thomas A. Compton, Middletown, and William R. Leasure, Middletown, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 668,241, Mar. 18, 1976, Pat. No. 4,082,868. This application Jan. 3, 1977, Ser. No. 756,333

Int. Cl.² B05C *3/18, 11/06*

U.S. Cl. 118—63 **37 Claims**



1. Coating apparatus for continuously contact-coating with a molten coating metal one side only of a ferrous base metal strip which has traveled through strip preparation means to bring said ferrous base metal strip to proper coating temperature and to render at least said strip side to be coated clean and oxide free, said coating apparatus comprising a coating pot containing a molten bath of said coating metal, means to conduct said strip to a position above the upper surface of said bath such that the surface tension and wetting characteristics of said molten coating metal will permit the formation of a meniscus at said upper surface of said bath which will continuously contact and coat that one side only of said strip facing said bath, finishing means to remove excess coating metal from said coated side of said strip while said coating metal is still molten thereon and means to maintain said strip in a protective, non-oxidizing atmosphere from said strip preparation apparatus at least until said one side of said strip has been initially contacted by said meniscus, said last mentioned means comprising a coating hood connected to said strip preparation means, said coating hood having a top and front, rear and side walls surrounding said strip conducting means, said coating hood walls extending downwardly into said bath, said coating hood having an exit for said ferrous base metal strip, means for introducing said protective, non-oxidizing atmosphere into said coating hood at a positive pressure sufficient to prevent entrance of ambient atmosphere into said coating hood through said exit.

4,114,564

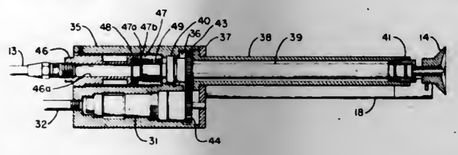
ELECTROSTATIC COATING APPARATUS

Richard O. Probst, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Continuation of Ser. No. 534,942, Feb. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 287,638, Jun. 13, 1963, abandoned. This application Nov. 19, 1968, Ser. No. 778,362

Int. Cl.² B05B *5/04*

U.S. Cl. 118—626 **4 Claims**



2. Electrostatic coating apparatus comprising, in combination,

a store of solid pulverulent coating material,

a rotary discharge member having a sharp peripheral edge supported adjacent the work to be coated,

means defining a feed passage open to the atmosphere and leading from said store to a point spaced from said discharge member for feeding the pulverulent coating material thereto, said dicharge member including an open, unobstructed surface facing the feed passage for receiving the mass of material therefrom,

means for rotating said discharge member at a speed sufficient to shape the mass of material being fed to said surface into a thin pulverulent sheet of substantially uniform thickness and to permit the free discharge and dispersion of said sheet by cenrifugal force from said peripheral edge,

a source of high D.C. potential, and

means connected to said source and operatively associated with said peripheral edge for electrically charging the particles of material from said sheet as they are discharged from said member, to thereby produce an electrostatic attraction between said particles and the surface being coated.

4,114,565

MILKING SYSTEM AND A VALVE THEREFOR

Peter Francis Dodé, Bramley Nr. Basingstoke, and Michael Francis Hawkins, Reading, both of England, assignors to Gascoigne Gush & Dent (Agricultural) Limited, Reading, England

Filed Aug. 17, 1976, Ser. No. 715,216

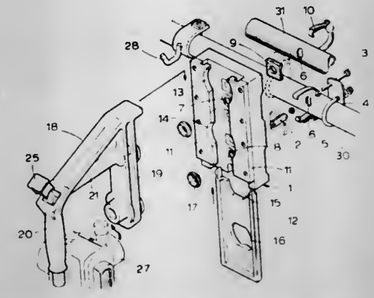
Claims priority, application United Kingdom, Mar. 25, 1976, 12016/76

Int. Cl.² A01J *7/00*; F16L *37/28*

U.S. Cl. 119—14.01 **9 Claims**

1. A milk system for milking animals for use with a milking device for connection to the udder of an animal to be milked, comprising a vacuum line for connection to a source of vacuum, a milk conveying line for connection to a milk receiver,

a plurality of valve assembly units each connected to and in flow communication with both the vacuum line and the milk conveying line at a corresponding plurality of spaced locations, each valve assembly unit comprising a body having separate milk and vacuum passages communicating respectively with the vacuum line and themmilk conveying line, and means connected thereto for opening and for closing said milk and vacuum passages, and a plurality of connector members adapted for ready connection to and disconnection from a selected one of the valve assembly units, each connector member having a first passage providing communication between the milk passage of the selected valve assembly unit and an inlet passage for milk from a milking device for connection to



the udder of an animal to be milked, and having a second passage providing communication between the vacuum passage and an outlet passage for vacuum to pass to the milking device connected to the udder of the animal to be milked wherein said means connected thereto with each valve assembly unit is provided with a plate which has two openings therein, the plate being movable between a first position in which one opening communicates with the milk passage in the valve and the other opening communicates with the vacuum passage in the valve upon engagement of a connector member with a valve assembly unit, and a second position in which the plate closes both passages upon disconnection of a connector member from a valve assembly unit.

4,114,566

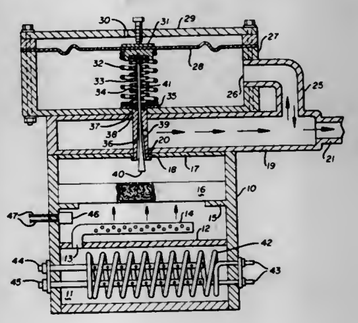
HOT FUEL GAS GENERATOR

Webster B. Harpman, Poland, Ohio, and Fred G. Mahoney, Pittsburgh, Pa., assignors to Econo Fuel Systems, Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 710,195, Jul. 30, 1976, Pat. No. 4,023,538, which is a continuation-in-part of Ser. No. 625,565, Oct. 24, 1975, Pat. No. 4,050,419. This application Apr. 27, 1977, Ser. No. 791,407

Int. Cl.² F02D *19/00*

U.S. Cl. 123—25 B **9 Claims**



1. A generator for producing superheated fuel gas for an internal combustion engine having an intake manifold, comprising, a closed pressure vessel having partitions dividing said vessel into first, second and third chambers in side by side relation, electric resistance heating means in said first chamber, means for energizing said heating means to generate and maintain temperatures between 800° F. and 2000° F. therein, separate means for simutaneously continuously injecting predetermined amounts of gasoline and water into said first chamber against said heating means so as to simultaneously change said gasoline to a gas and said water to steam, means for controlling the energization of said heating means and the amounts of water and gasoline injected for maintaining a desirable working pressure and volume of the superheated fuel gas in said first chamber, whereby the molecules of the superheated fuel gas in its heated pressurized gaseous condition are caused to be spaced apart a sufficient degree to support substantially complete combustion in said engine, a pressure responsive device comprising an apertured tubular member positioned through said second chamber and having its ends communicating with the first and third chambers, respectively, a valve element movable relative to the end of said tubular member communicating with said first chamber, a diaphragm positioned across said third chamber, means interconnecting said valve element and said diaphragm, and means located between said diaphragm and said tubular member balancing said diaphragm and said valve element so as to permit said diaphragm to move responsive to pressure changes in said third chamber, and outlets in said second and third chambers communicating with one another and with said inlet manifold.

4,114,567

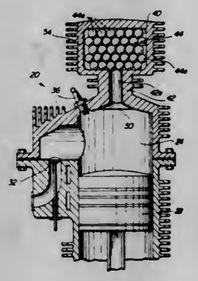
IGNITION ENHANCEMENT CHAMBER FOR INTERNAL COMBUSTION ENGINE

Ralph Ashby Burton, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Mar. 7, 1977, Ser. No. 775,250

Int. Cl.² F02P *23/02*

U.S. Cl. 123—30 A **10 Claims**



1. In an internal combustion engine including a combustion chamber and piston means for cyclically compressing a gaseous fuel mixture in said combustion chamber,

the improvement comprising

control means to regulate ignition firing of a combustible fuel and air mixture in said combustion chamber, and particularly adapted to regulate ignition of a mixture in which the ratio of fuel-to-air is less than stoichiometric, said control means including:

an enclosed substantially fluid tight auxiliary chamber of lesser internal volume than said combustion chamber but at least 5% of the volume thereof,

said auxiliary chamber being in gas-flow communication with said combustion chamber but spaced therefrom,

isolator means defining restricted fluid passage means interposed between said combustion chamber and said auxiliary chamber to obviate ignition-induced flashback from said auxiliary chamber to said combustion chamber,

said isolator means also being operative partially to insulate

said combustion chamber from said auxiliary chamber thermally,

packing means of heat retentive material dispersed interiorly of and distributed throughout said auxiliary chamber to provide a high surface area-to-volume ratio within said auxiliary chamber, thereby to enhance heat transfer and distribution,

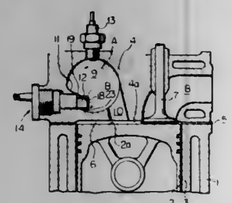
said surface area to volume ratio within said auxiliary chamber being at least 10:1.

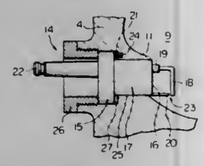
4,114,568

INTERNAL COMBUSTION ENGINE WITH AN AUXILIARY CHAMBER

Hiromichi Yanagihara, and Nobuo Habu, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 24, 1977, Ser. No. 799,919
Claims priority, application Japan, Apr. 6, 1977, 52-38491
Int. Cl.² F02B *19/08, 17/00*
U.S. Cl. 123—30 D **7 Claims**





1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a cylinder head having a cavity therein and mounted on said cylinder block, said cavity having an inner wall which defines an auxiliary chamber with an axis;

a piston reciprocally movable in said cylinder bore, said piston and said cylinder head forming a main chamber therebetween;

an intake valve movably mounted on said cylinder head for leading gas into said main chamber;

an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;

a connecting passage communicating said main chamber with said auxiliary chamber and arranged to be tangentially connected to the inner wall of said auxiliary chamber for creating a strong swirl motion of the gas in said auxiliary chamber at the time of the compression stroke, the inner wall of said auxiliary chamber having a recess at a position located opposite to the inner wall to which said connecting passage is tangentially connected with respect to the axis of said auxiliary chamber;

a fuel injector having an injecting nozzle disposed in said auxiliary chamber and directed to said recess for forming a rich air mixture therein and for forming a lean air-fuel mixture in said auxiliary chamber, and;

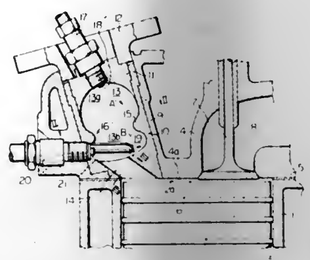
a spark plug having a central electrode and an earthing electrode which define a spark gap therebetween located in said auxiliary chamber, said central electrode having a mounting end covered by an insulator which is arranged to be directly exposed to the swirling stream of a lean air-fuel mixture created in said auxiliary chamber, while the spark gap of said spark plug is located in said recess in which a rich air-fuel mixture is formed.

4,114,569

INTERNAL COMBUSTION ENGINE WITH AN AUXILIARY COMBUSTION CHAMBER

Yoshio Yamakawa, Toyota; Hiromichi Yanagihara, and Nobuhiro Miura, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 2, 1977, Ser. No. 802,909
Claims priority, application Japan, Apr. 6, 1977, 52-38492
Int. Cl.² F02B *19/08, 17/00*
U.S. Cl. 123—30 D **5 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a cylinder head having a cavity therein and mounted on said cylinder block, said cavity having an inner wall which defines an auxiliary chamber with an axis;

a piston reciprocally movable in said cylinder bore, said piston and said cylinder head forming a main chamber therebetween;

an intake valve movably mounted on said cylinder head for leading gas into said main chamber;

an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;

an annular raised portion formed on the inner wall of said auxiliary chamber and defining a restricted opening of an approximately circular shape, said annular raised portion dividing said auxiliary chamber into a first chamber of approximately spherical shape and a second chamber of an ellipsoid shape which are arranged in tandem along the axis of said auxiliary chamber, and forming a recess in said second chamber beneath said annular raised portion, the volume of said second chamber being in the range of 20 through 40 percent relative to the volume of the first chamber;

a connecting passage formed in said cylinder head and communicating said main chamber with said auxiliary chamber, said connecting passage being arranged to be tangentially connected to the inner wall of said second chamber for creating a swirl motion of the gas at the time of the compression stroke;

a fuel injector having an injecting nozzle disposed in said auxiliary chamber and directed to said recess located opposite to the inner wall to which said connecting passage is tangentially connected with respect to the axis of said auxiliary chamber for forming a rich air-fuel mixture in said recess, and;

a spark plug having a spark gap located in said recess for igniting the rich air-fuel mixture therein.

4,114,570

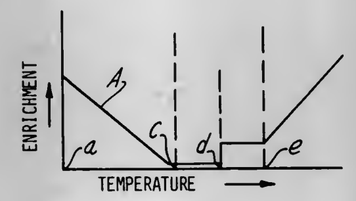
START ENRICHMENT CIRCUIT FOR INTERNAL COMBUSTION ENGINE FUEL CONTROL SYSTEM

Roman O. Marchak, Northville, and Glen J. Drellishak, Rochester, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 20, 1976, Ser. No. 752,376
Int. Cl.² F02B *3/02;* F02M *7/00*
U.S. Cl. 123—32 EG **14 Claims**

1. In combination with an electronic fuel control system for an internal combustion engine wherein said internal combustion engine has an electrically energized starter including a starter switch generating a start signal operative to energize the starter and the electronic fuel control system includes sensors generating signals indicative of the engine's operating parameters including a temperature sensor generating a signal indicative of the engine's temperature, a fuel control computer generating output signals indicative of the engine's fuel requirements in response to input signals including the signals generated by the sensors, and a fuel delivery means controlling the amount of fuel delivered to the engine in response to the output signals generated by the fuel control computer, a start enrichment circuit comprising:

means for generating a start enrichment signal in response to the temperature signal and the start signal, said enrichment signal having a first initial value which is an inverse



function of the engine temperature below a first predetermined temperature and a second initial value which is a direct function of engine temperature above a second predetermined temperature, a third initial value between said first predetermined temperature and a third predetermined temperature, said third predetermined temperature intermediate said first and second predetermined temperatures, and a fourth initial value different from said third initial value between said second and third predetermined temperatures, said start enrichment signal maintaining its first, second, third, and fourth initial values during the presence of said start signal and decaying to zero after the termination of said start signal in a time determined by said initial values wherein said fuel control computer generates signals indicative of an increased fuel delivery to the engine in response to said start enrichment signal.

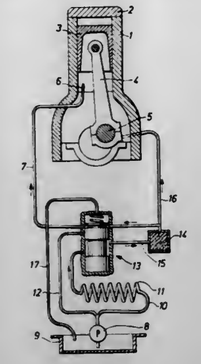
4,114,571

MEANS FOR CONTROLLING THE OIL COOLING OF THE PISTON OF A PISTON ENGINE

Max Ruf, Römerstrasse 11, Obereisesheim, Fed. Rep. of Germany

Filed Oct. 7, 1976, Ser. No. 730,298
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1975, 2546273
Int. Cl.² F01M *1/02;* F01D *3/06;* F16N *13/22*
U.S. Cl. 123—41.35 **7 Claims**

1. An arrangement for controlling the oil flow in an internal combustion engine having bearings connected to a lubricating oil circuit and a piston cooled by a cooling oil circuit which is branched off said lubricating oil circuit, said lubricating oil circuit comprising a pump, a cooler connected on one hand to said pump and on the other hand to a lubricating oil pipe, a bypass pipe bypassing said cooler, and control means responding to the oil temperature and having a first position below a certain oil temperature for connecting said lubricating oil pipe to said bypass pipe and simultaneously disconnecting said lubricating oil pipe from said cooler, and a second position at and above said temperature for disconnecting said lubrication oil pipe from said bypass pipe and simultaneously connecting said lubricating oil pipe to said cooler, said control means being interposed also in said cooling oil circuit for cutting off and



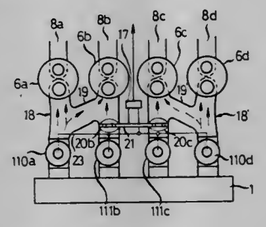
opening, respectively, said cooling oil circuit in the first position and second position, respectively, of the control means.

4,114,572

FUEL-AIR MIXTURE FEED DEVICE OF THE MULTIPLE CYLINDER AND MULTIPLE CARBURETOR TYPE FOR AN INTERNAL COMBUSTION ENGINE

Munekazu Matsuda, Nishinomiya, and Yoshiaki Sakaue, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Sep. 30, 1976, Ser. No. 728,205
Claims priority, application Japan, Oct. 4, 1975, 50/120195
Int. Cl.² F02M *13/04*
U.S. Cl. 123—59 PC **1 Claim**



1. A fuel-air mixture induction system for use with a multiple cylinder internal combustion engine, each of said cylinders having an intake port and an exhaust port, the improvement comprising a plurality of carburetors wherein the number of carburetors is equal to the number of cylinders of said engine, each of said carburetors having a variable throat, a main intake conduit interconnecting said variable throat of one carburetor with the intake port of one of said cylinders, a branch conduit coupling at least a pair of said main conduits into communication, means operatively connected to said carburetors for rendering said carburetors operative for feeding a fuel air mixture to their respective corresponding cylinders during both high and low load operation of said engine, and means for directing the fuel air mixture to said branch connected main conduits during low load operation only, and an operating means coupled to said last two mentioned means for simultaneously and proportionally controlling the operation of said respective last two mentioned means whereby the optimum fuel-air mixture is introduced into the respective cylinders in accordance to the operating load imposed on the engine so that during high load operation, the fuel-air mixture is supplied directly through the main conduits interconnected between the respective carburetors and corresponding connected cylinders, and during low load operation, the fuel-air mixture is supplied through the carburetors supplying said branch connected main

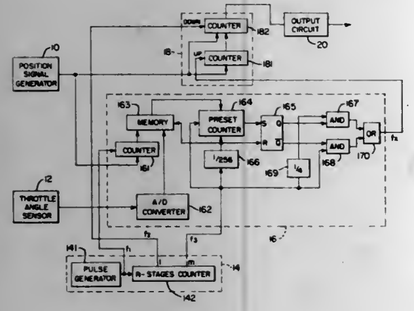
conduits, said first-mentioned means being operatively connected to each of said carburetors for varying the throat thereof a corresponding amount, sand said second means comprising a valve means disposed in certain of said main conduits, and said operating means being connected to said first means and said valve means for proportionally controlling said first means and valve means so that said first means is rendered operative during both low and high engine loads and said valve means is closed at low engine loads.

4,114,573

ELECTRONIC IGNITION TIMING CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

Yasunori Mori, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 28, 1977, Ser. No. 763,695
Claims priority, application Japan, Jan. 28, 1976, 51-7505
Int. Cl.[2] F02P 5/04
U.S. Cl. 123—117 D **9 Claims**



1. An ignition timing control device for generating an ignition timing signal for an internal combustion engine, comprising position signal generator means for generating position pulses corresponding to predetermined angular positions of the crankshaft of the engine, first pulse generating means for generating a first pulse train, second pulse generating means for generating a second pulse train, at least one of said first and second pulse trains being composed of consecutive time portions each made up of at least first and second pulse groups of different frequency, means for selectively regulating the relative time durations of said first and second pulse groups in each time portion of said at least one pulse train in accordance with an operating condition required of the engine, first counting means for counting said first pulse train from said first pulse generating means and being reset upon receipt of each position pulse from said position signal generator means, second counting means which is preset to the count of said first counting means by each position pulse prior to reset of said first counting means for decrementing the count thereof in response to said second pulse train from said second pulse generating means, and output means for generating said ignition timing signal each time the count of said second counting means is reduced to a predetermined value.

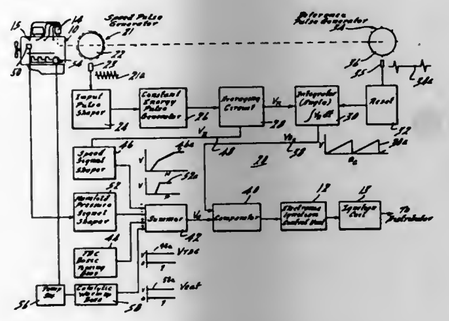
7. An ignition timing control device for generating an ignition timing signal for an internal combustion engine, comprising position signal generator means for generating a position signal related to the angular position of the crankshaft of the engine, first pulse generating means for generating a first pulse train divided into consecutive time portions each made up of at least first and second pulse groups of different frequency, means for selectively regulating the relative time durations of said first and second pulse groups in each time portion in accordance with an operating condition required of the engine, second pulse generating means for generating a second pulse train, first counting means for counting one of said first and second pulse trains for a period whose duration corresponds to a predetermined angular rotation of said crankshaft as determined from said position signal, second counting means for decrementing the maximum count of said first counting means in response to the other of said first and second pulse trains, and output means for generating said ignition timing signal each time the count of said second counting means is reduced to a predetermined value.

4,114,574

ELECTRONIC SPARK TIMING ADVANCE CONTROLLER

George E. Platzer, Jr., Southfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 322,577, Jan. 10, 1973, abandoned. This application Mar. 4, 1976, Ser. No. 663,895
Int. Cl.[2] F02P 5/04
U.S. Cl. 123—117 R **10 Claims**



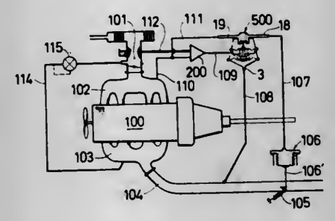
1. An electronic spark timing advance ignition system for an internal combustion engine comprising:
means for generating a first electrical signal quantity whose amplitude varies with engine speed and for deriving from said first electrical signal quantity a cyclically repeating second electrical signal quantity whose amplitude varies independently of engine speed as a function of the angular rotational position of the engine crankshaft and reaches the same peak amplitude each cycle of repetition thereof, said means including
an electrical signal pulse generator having a predetermined angular positional setting relative to the engine crankshaft and driven thereby for producing a train of pulses having a repetition rate related to engine speed and
integrator means having an integrating input terminal coupled to receive said first signal quantity and a reset input terminal coupled to said signal pulse generator to be electrically reset by each and every signal pulse therefrom at said predetermined angular positional setting thereof relative to the engine crankshaft for producing said second electrical signal quantity from said first electrical signal quantity;
means for producing a reference electrical signal quantity of a predetermined fixed amplitude value independent of the engine speed related first signal quantity and the engine crankshaft position related second signal quantity, said refernce signal quantity corresponding to the amplitude value of said second electrical signal quantity at a predetermined initial angular position of the crankshaft at which it is desired to fire the engine;
comparing means having an input terminal coupled to receive said second electrical signal quantity and another input terminal coupled to receive said reference electrical signal quantity for comparing said signal quantities to produce an ignition trigger signal at said predetermined initial angular position of the engine crankshaft; and
means for modifying the occurrence of said ignition trigger signal in accordance with said first electrical signal quantity including means for algebraically combining said first electrical signal quantity with said reference electrical signal quantity and applying the combined electrical signal therefrom to said comparing means for comparison with said second electrical signal quantity.
said combining means connected between the integrating input terminal of said integrator means and the said another input terminal of said comparing means.

4,114,575

EXHAUST PRESSURE REGULATING SYSTEM

Hidetaka Nohira, and Masaaki Tanaka, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 30, 1975, Ser. No. 627,351
Claims priority, application Japan, Jul. 1, 1975, 50-80513
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A **14 Claims**



1. An exhaust pressure regulating system in combination with an internal combustion engine having a carburetor in which a venturi vacuum pressure is created by air taken into the engine therethrough, an intake manifold and an exhaust comprising:
pressure-sensitive valve means including an exhaust valve in the exhaust for directly adjusting the back pressure in the exhaust;
a pressure-signal passage for applying the vacuum pressure in the intake manifold directly to said pressure-sensitive valve means;
a pressure-comparing valve including first and second interlocked diaphragms for modulating the vacuum pressure in said pressure-signal passage;
means for applying the venturi vacuum pressure created by the quantity of air taken into the engine through the carburetor to said first diaphragm;
means for applying the adjusted back pressure in the exhaust to said second diaphragm; and
wherein said pressure-comparing valve includes a valve member in said pressure-signal passage for bleeding off pressure therein, said valve member tending to be opened by pressure against said second diaphragm in opposition to the vacuum pressure applied to said first diaphragm.

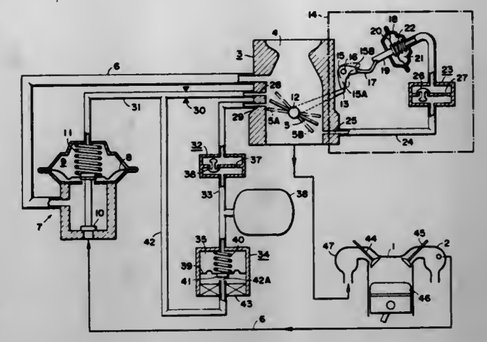
4,114,576

EXHAUST GAS RECIRCULATING CONTROL SYSTEM

Mikio Goto; Mitsunori Sasano, both of Toyota; Koichi Oosawa, Susono, and Mitsuya Yoshihara, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Kogyo Kabushiki Kaisha, both of, Japan

Filed Dec. 13, 1976, Ser. No. 750,185
Claims priority, application Japan, Jun. 9, 1976, 51-75632[U]
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A **5 Claims**

1. An exhaust gas recirculating control system for an internal combustion engine comprising:
a means for recirculating exhaust gas from an exhaust manifold to an air intake of said internal combustion engine whenever a vacuum exists in said air intake;
a means for applying air pressure to said recirculating means instead of a vacuum whenever a vacuum exists in said air intake of a predetermined magnitude; and
a means for delaying operation of said air pressure applying means for a predetermined time interval whereby exhaust gas recirculation is allowed for some predetermined time after acceleration of said internal combustion engine occurs.

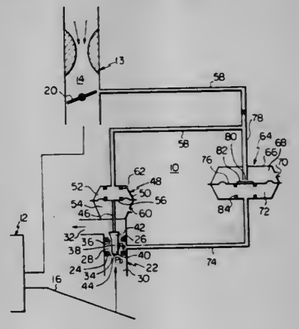


4,114,577

EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Syunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 13, 1977, Ser. No. 787,161
Claims priority, application Japan, Apr. 16, 1976, 51-43263
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A **9 Claims**



1. An exhaust gas recirculation (EGR) control system in combination with an internal combustion engine including
an intake passage providing communication between the atmosphere and the engine, and
an exhaust gas passageway providing communication between the engine and the atmosphere, said EGR control system comprising
an EGR passageway providing communication between the exhaust gas passageway and the intake passageway for recirculating thereinto exhaust gas emitted from the engine, said EGR passageway/having provided therein
a restriction for restricting said EGR passageway;
an EGR control valve which is disposed in said EGR passageway downstream of said restriction for controlling the flow of recirculated exhaust gas and defines a first chamber interposed between said restriction and said EGR control valve, and
first control means for increasing and reducing the degree of opening of said EGR control valve in accordance with increases and decreases in the pressure in said first cham-

ber due to variations in a suction vacuum in the intake passageway, respectively, in which said EGR control valve comprises

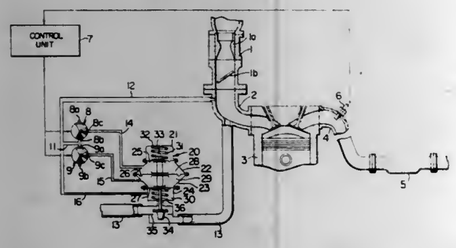
an extension fixedly connected to said EGR control valve and projecting toward said restriction, said extension being located in said first chamber when the pressure in said first chamber is above a predetermined value and being inserted into said restriction to reduce the effective cross sectional area thereof and therefore an EGR ratio of the recirculated exhaust gas flow to the flow of air taken by the engine when the pressure in said first chamber is reduced below said predetermined value.

4,114,578

AIR-TO-FUEL RATIO CONTROL SYSTEM

Tadashi Hattori, Okazaki; Takamichi Nakase, Gamagori, and Tokio Kohama, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 12, 1977, Ser. No. 796,225
Claims priority, application Japan, May 28, 1976, 51-62543
Int. Cl.² F02M *23/04, 7/12*
U.S. Cl. 123—124 R **3 Claims**



1. An air-to-fuel ratio control system for internal combustion engines for adjusting the air-to-fuel ratio of a mixture by controlling the amount of additional air supplied through an additional air passage to an intake port of an engine, comprising:

gas detector means mounted in an exhaust manifold for detecting the composition of the exhaust gas and generating a detection signal indicative of the air-to-fuel ratio of a mixture;

control unit means for generating a control signal in response to said detection signal;

main drive means for driving an adjustment valve mounted in said additional air passage to adjust a passage area thereof, said driving means having first and second pressure chambers divided by a main diaphragm connected to said adjustment valve by means of a rod;

means for introducing vacuum in the intake port into at least one of said first and second pressure chambers in response to said control signal thereby to produce a pressure difference between said pressure chambers to drive said adjustment valve to increase or decrease the passage area;

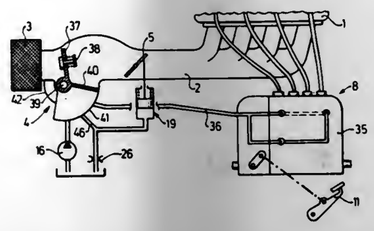
auxillary drive means having a third pressure chamber and an auxiliary diaphragm connected to said rod for biasing the movement of said adjustment valve in a direction to decrease the passage area due to the intake port vacuum being introduced into said third pressure chamber, thereby to prevent the amount of additional air supplied to the engine being affected by variations in the intake port vacuum.

4,114,579

FUEL-AIR-MIXTURES CONTROLLER FOR INTERNAL COMBUSTION ENGINES

Gerhard Stumpp, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 551,498, Feb. 20, 1975, Pat. No. 4,015,571.
This application Nov. 30, 1976, Ser. No. 746,045
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AW **11 Claims**



1. A fuel-air ratio regulator for an internal combustion engine that includes an air induction tube, a fuel injection pump and a primary fuel pump, comprising:

(a) an air quantity measuring member, disposed in said air induction tube;

(b) first fuel control means, disposed in the fuel line between said primary fuel pump and said fuel injection pump, and actuated by said air quantity measuring member; and

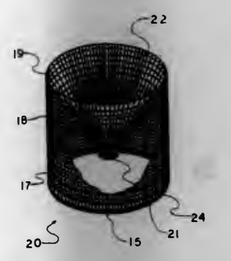
(c) air flow control means, disposed in the induction tube and connected to the first fuel control means for actuation by said first fuel control means; whereby the air quantity aspirated by the engine is compared to the allotted fuel quantity and a desired fuel-air ratio is maintained automatically.

4,114,580

DISTRIBUTION RECTIFIER FOR INLET MANIFOLD SYSTEMS

Ronald Galen Coats, Box 595 Rte. #1, Lexington, Ind. 47138

Filed Jun. 20, 1977, Ser. No. 808,054
Int. Cl.² F02M *29/04*
U.S. Cl. 123—141 **8 Claims**



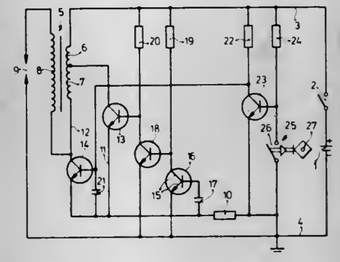
1. In a carburetor system for internal combustion engines which includes a carburetor for supplying a mixture of fluid fuel and air and an intake manifold, a distribution rectifier situated after said carburetor and in direct contact with the intake manifold, said distribution rectifier comprising a foraminous cylindrical member having an opening at the upstream end thereof, the bottom portion of said foraminous cylindrical member in direct contact with the intake manifold and closing the bottom portion of the downstream end thereof, a foraminous curved member attached along its peripheral edge to said cylindrical member at the upstream end thereof, said curved member having a major orifice coextensive with the opening of the upstream end of said cylindrical member, and a minor orifice defined at the apex of said curved member, said minor orifice being situated axially within and substantially at an intermediate portion of said cylindrical member.

4,114,581

PULSE-SUPPLIED IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Bert Wurst, Möglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 12, 1976, Ser. No. 704,564
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1975, 2531302
Int. Cl.² F02P *3/04*
U.S. Cl. 123—148 E **10 Claims**



1. Ignition system for an internal combustion engine having an ignition coil (5) with a tapped primary winding to provide a first partial primary (6) and a second partial primary (7), serially connected with the first partial primary (6);

a first switchable control circuit (11, 13) connected to the tap point of the primary winding, in series with the first partial primary (6) and comprising a first controlled switch (13);

a second switchable control circuit (12) comprising the second partial primary (7) and a second controlled switch (14);

and means (25, 22, 23, 21) controlling connection of the controlled switches (13, 14) to energize the coil

a sensing resistor (10) connected in circuit with said first control circuit (11) and sensing when current through the first partial primary (6) has reached a predetermined value,

a control capacitor (21) connected in series with said sensing resistor (10) to have its charge current controlled by current flow through the sensing resistor (10), the control capacitor being connected to the control terminal of the second controlled switch (14) of the second control circuit,

a control circuit (15; 16, 17; 16, 28, 29; 31, 28, 29, 30) connected to and controlled by current flow through said sensing resistor (10) and controlling the switching state of said first controlled switch (13) to control current flow through said first controlled switch (13) and hence through said first partial primary and provide for rapid rise in stored energy in the coil (5) and, when the current flow through said first partial primary and the sensing resistor (10) has reached the predetermined value, to control said first controlled switch (13) to open and provide for current flow through said first and second partial primaries (6, 7) at a low value whereby said sensing resistor (10) will control change-of-state of said first controlled switch (13),

said series circuit of the resistor (10) and the control capacitor (21) controlling the second controlled switch to be in conductive state when the first controlled switch (13) opens to permit continued current flow through both the first partial primary (6) and the second partial primary (7) of the primary winding of the ignition coil;

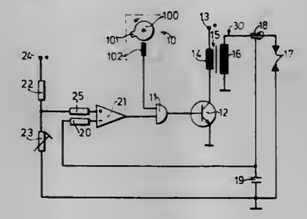
and an ignition control switching means (25) connected to supply charging current for said control capacitor (21) upon closing of said ignition control switching means to current supplying state.

4,114,582

VOLTAGE LIMITED IGNITION SYSTEM, PARTICULARLY FOR AN INTERNAL COMBUSTION ENGINE

Friedrich Rabus, Schwieberdingen; Josef Wahl, Stuttgart, and Günter Gräther, Pinache, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1977, Ser. No. 776,739
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614780
Int. Cl.² F02P *11/00, 1/00*
U.S. Cl. 123—148 E **10 Claims**



1. Voltage limited ignition system to provide an ignition pulse to a spark gap (17), particularly the spark plug of an externally ignited internal combustion engine having

an ignition coil (15), the secondary (16) of which is connected to the spark gap (17);

a controlled switch (12) serially connected to the primary (14) of the coil;

ignition control means (10) controlling opening and closing of the switch (12) to control flow through the coil and hence generation of ignition voltage at the secondary thereof;

and comprising, in accordance with the invention, a voltage sensing circuit (18, 19) including a threshold stage (21) connected to the secondary (16) of the coil (15) and sensing the secondary voltage, the threshold stage providing an output signal when a predetermined secondary voltage is exceeded;

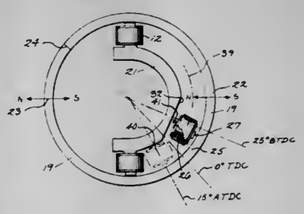
and blocking means (11) controlled by the output signal from the threshold stage (21) and connected to block supply of power to the spark gap when the threshold level of the threshold stage has been exceeded.

4,114,583

TRIGGERED IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH ANTI-REVERSERUNNING CONTROL

Richard L. Sleder, Fond du Lac, and Robert C. Schmiedel, Oshkosh, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 6, 1975, Ser. No. 619,784
Int. Cl.² F02P *5/08*
U.S. Cl. 123—148 CC **14 Claims**



1. A signal generator generating a signal proportional to

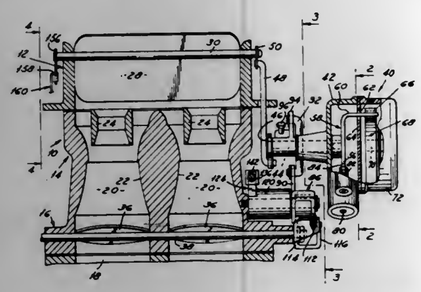
speed, comprising a rotor having an input adapted to be coupled to a drive means and rotated about an axis, a stator coupled to said rotor, and including core means with a first stator core member and a second stator core member mounted in a close spaced relation, said second core member having a circular construction and mounted concentrically of said axis, said first stator core member being mounted for adjustable positioning about said axis and therefore relative to said second stator core member and changing of the working air gap between said first and second stator core members, a trigger coil means wound on said first core member to control the timing in accordance with the angular positioning of the first core member and simultaneously varying the output level of the coil means in accordance with the air gap, a speed control means providing increasing and decreasing speed setting, and ajustable means coupled to the speed control means and to said first core member to adjust the operative coupling of the setting of said first core member and thereby reduce the output level of said generator with the increasing speed of the speed control means.

4,114,584

CARBURETOR CHOKE POSITIVE CLOSURE MECHANISM

Jerry B. Rogerson, Northville, and Robert S. Harrison, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 26, 1977, Ser. No. 763,254
Int. Cl.² F02M *1/10*
U.S. Cl. 123—179 G **2 Claims**



1. A choke valve positioner for use in a carburetor having an air/fuel induction passage open at one end and adapted to be connected to an engine intake manifold at the other end for subjecting the passage to varying manifold vacuum,

an unbalance mounted, air movable choke valve mounted for a variable rotative movement across the passage in response to airflow thereagainst from a closed position towards a wide open position to control air flow through the passage,

thermostatic spring means operably connected to the choke valve urging the choke valve towards a first nearly closed but still open cold engine running position with a force increasing as a function of decreases in the temperature of the spring means from a predetermined level,

power means operatively connected to the choke valve and operable at times to move the choke valve to a closed position beyond the nearly closed position attained by the spring means,

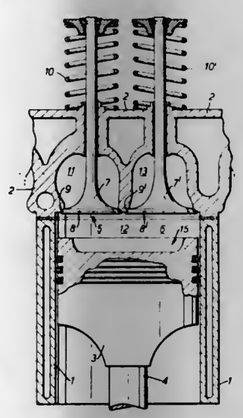
and means to render the power means operative and inoperative to move the choke valve to a closed position at times in opposition to the flow of air against the choke valve urging the choke valve in an opening direction, including first means operatively engageable at times with the choke valve moving the choke valve to a closed position when the power means is operative and including second means moving the first means out of engagement with the choke valve when the power means is inoperative to thereby permit the opening of the choke valve when the power means is inoperative to thereby permit the opening of the choke valve by the flow of air thereagainst, and other means connecting the power means to the engine ignition system to render the power means operative during engine cranking conditions and inoperable during other engine operating conditions, the other means includes movable lever means operatively engageable at times with the choke valve, first spring means biasing the lever means out of engagement with the choke valve to permit free rotation of the choke valve, and normally inoperable second spring means engageable with the power means and lever means and operable in response to operativeness of the power means to bias the lever means into operative engagement with the choke valve moving the same to its closed position.

4,114,585

INTERNAL-COMBUSTION ENGINES

Terence Brian Dawkins, Fakenham, England, assignor to Terrytune Developments Limited, London, England

Continuation-in-part of Ser. No. 290,756, Sep. 20, 1972, abandoned. This application Aug. 30, 1974, Ser. No. 502,196
Claims priority, application United Kingdom, Sep. 28, 1971, 45238/71
Int. Cl.² F02B *23/00*
U.S. Cl. 123—191 M **7 Claims**



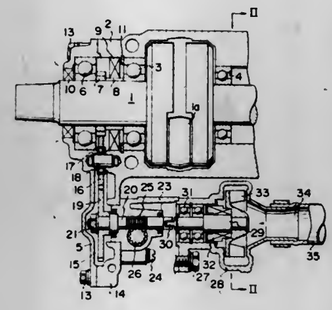
1. A normally aspirated high-speed spark-ignition internal-combustion engine, for powering a motor vehicle, of the kind having a plurality of cylinders, each of which has a piston fitted therein and is provided with two and only two poppet valves, mounted separately from one another and constituting respectively a single inlet valve and a single exhaust valve, each of said poppet valves comprising a closure member mounted in a cylinder-head of the engine for movement into and out of closing engagement with one and only one valve seat therefor, and operable in accordance with a four-stroke cycle in which each piston is driven in its cylinder by expansion of gases heated by combustion of a gasoline-air mixture delivered to a combustion chamber at one end of the cylinder by way of the inlet valve of the cylinder, the combustion products being expelled from each cylinder, by way of its exhaust valve, to an exhaust manifold of the engine, and the compression ratio of the engine being less than 11:1, characterised in that the area ($\pi D^2/4$) of the exhaust valve of each cylinder is at least seven percent greater than that of the inlet valve.

4,114,586

ACCESSORY MOUNTING MEANS FOR INTERNAL COMBUSTION ENGINES

Tetsuzo Fujikawa, Kobe, and Kichiji Misawa, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 623,119, Oct. 16, 1976, abandoned. This application May 18, 1977, Ser. No. 798,126
Claims priority, application Japan, Oct. 17, 1974, 49-125943
Int. Cl.² F02F *7/00*; F16H *1/20*
U.S. Cl. 123—195 A **1 Claim**



1. An internal combustion engine including a crankcase, a crankshaft mounted in the crankcase for rotation about a first axis, an oil pump including a first casing mounted on the crankcase externally thereof, a first accessory drive shaft mounted in the first casing for rotation about a second axis extending parallel with the first axis, one end of the first accessory drive shaft being interconnected with and driven by the crankshaft, means for driving the oil pump from the first accessory drive shaft, first bearing means in the first casing supporting said one end of the first drive shaft, a second casing mounted on the crankcase externally thereof, a second accessory shaft rotatably mounted in the second casing, said second shaft axially aligned with and drivingly connected with the other end of the first accessory drive shaft, a water pump element mounted for rotation with the second accessory shaft, second bearing means in the second casing providing the sole bearing support for said other end of the first drive shaft, said second casing being releasably supported on said first casing, water passage means in the crankcase, and water port means in the second casing directly connected with said water passage means in the crankcase.

4,114,587

FAIL-SAFE OIL FEED CONTROL LINKAGE FOR TWO CYCLE INTERNAL COMBUSTION ENGINE

Toshio Amano, and Hidetoshi Kaku, both of Akashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 14, 1976, Ser. No. 750,316
Claims priority, application Japan, Dec. 16, 1975, 50-170290[U]
Int. Cl.² F01M *1/00*
U.S. Cl. 123—196 S **3 Claims**

1. A fail-safe lubricating oil supply control linkage for a two cycle internal combustion engine, comprising:

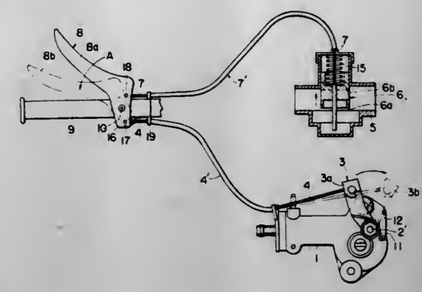
(a) an oil pump housing,

(b) an oil supply control lever pivotally mounted on the housing for rotation about a control axis between a closed, minimum oil supply position and a fully open, maximum oil supply position,

(c) a throttle lever rotatable about a pivot axis,

(d) a throttle control wire connected to the throttle lever on one side of the pivot axis,

(e) an oil supply control wire having one end connected to the oil supply control lever and the other end connected to the throttle lever on the other, opposite side of the pivot axis, and



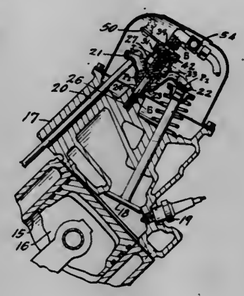
(f) first spring means biasing the oil supply control lever toward the fully open, maximum supply position.

4,114,588

VALVE DEACTUATOR FOR INTERNAL COMBUSTION ENGINES

Edgar R. Jordan, 32260 W. 12 Mile Rd., Farmington, Mich. 48024

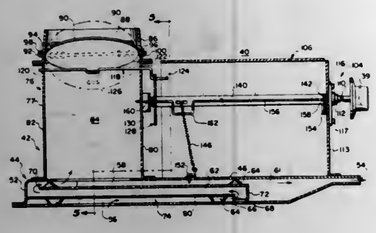
Filed Jun. 24, 1976, Ser. No. 699,612
Int. Cl.² F02D *13/06*
U.S. Cl. 123—198 F **19 Claims**



1. An internal combustion engine having a valve movable between open and closed positions to control an intake or exhaust port, valve biasing means urging said valve to it closed position, movable input means, an elongated support member having one end mounted between said valve and input means, a slotted rocker arm slidably receiving said support member and engaging said input means and valve on opposite sides of said support member, a fulcrum member slidably mounted on said support member and seated against said rocker arm on the side thereof opposite said one end, and hydraulic valve deactivating means having (1) an active condition in which said fulcrum member is held in a fixed position on said support member to cause said rocker arm to pivot about said fulcrum member in response to movement of said input member to cause opening and closing movement of said valve, and (2) an inactive condition in which said fulcrum member reciprocates on said support member and said rocker arm pivots about its engagement with said valve in response to movement of said input means such that the pivoting action of said rocker arm transmits no movement to said valve; said valve deactivating means including a rocker arm fulcrum control unit mounted on said support member between the other end of said support member and said fulcrum member, said fulcrum control unit being extendable to a position to engage and hold said fulcrum member in its fixed position and retractable to a position to permit the fulcrum member to reciprocate along said support

member, said fulcrum control unit having a chamber that expands and contracts when fluid is, respectively, admitted to and exhausted from said chamber to cause extension and retraction, respectively, of said control unit; and said deactivating means further including flow control means for selectively controlling the flow of fluid into and out of said chamber.

4,114,589
OPTIONAL DISCHARGE OVEN VENT
Lee Berlik, Cleveland, and James E. Hurley, Chattanooga, both of Tenn., assignors to McGraw-Edison Company, Elgin, Ill.
Filed Apr. 18, 1977, Ser. No. 788,692
Int. Cl.[2] F24C *15/32*
U.S. Cl. 126—21 R **9 Claims**



1. A venting system for expelling heated air from a food-processing oven or the like cooking appliance selectively to one of the exterior and interior of the household in which the oven is installed, said venting system including:

a duct assembly comprising a substantially enclosed housing, said housing defining an inlet and first and second outlets, said inlet being in communication within an exhaust outlet of said oven, said first outlet being in communication with one of said household interior and exterior and the second outlet being in communication with the other of said household interior and exterior, duct means having a predetermined cross sectional dimension defined in said housing between one of said first and second outlets and said inlet, a damper plate dimensioned similarly to the cross sectional dimension of said duct means, mounted in the latter for controlling the passage of the heated oven air expelled from said oven to said first and second outlets, said plate being movable between a first position across the flow of air through said duct means for blocking the latter and a second position, generally in the direction of the flow of air through said duct means for unblocking the latter, means for biasing said damper plate to the second, unblocking position, and damper plate actuator means mounted adjacent the damper plate, said damper plate actuator means being operable to a first position to move said damper plate to said first, blocking position and being operable to a second position to permit said damper plate to be biased to said second, unblocking position.

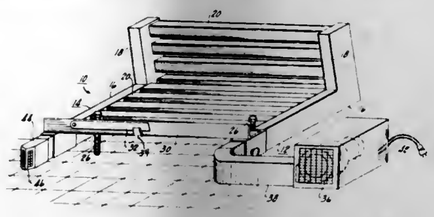
4,114,590
AIR FEED FIREPLACE GRATE
Harlan C. Frahm, Burlington, Wis., assignor to Frahm Fireplace Grate Co., Inc., Burlington, Wis.
Filed Oct. 13, 1976, Ser. No. 731,962
Int. Cl.[2] F24B *7/00*
U.S. Cl. 126—121 **16 Claims**

1. A grate suitable for positioning in a fireplace opening into a room, said grate receiving combustible material and comprising:

a pair of spaced, hollow side frames lying generally perpendicular to the opening of the fireplace, each of said frames comprising a generally horizontal hollow arm member of generally rectangular cross section, said arm member having an opening at a first end located adjacent the opening of the fireplace and a second end joined to the lower end of an upstanding hollow support member having the cross section configuration of said arm member, said arm member and said upstanding support member lying in a generally vertical plane and forming a hollow conduit;

a first plurality of hollow flues extending laterally between, and communicating with the interior of, said arm members of said side frames, said first plurality of flues being spaced from each other in a generally horizontal plane and capable of receiving and supporting combustible material;

a second plurality of hollow flues extending laterally between, and communicating with the interior of, said upstanding support members of said side frames for retaining said combustible material on said first plurality of hollow flues, each of said second plurality of flues being spaced

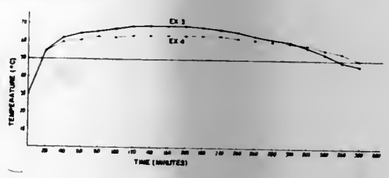


from those above or below it, the burning of the combustible material heating the flues of said first plurality a greater amount than said second plurality;

means coupled to the first end of said arm member of one of said side frames for providing an air flow into one of said side frames, through said flues, and out the first end of said arm member of the other of said side frames for discharge into the room, the upper ends of said upstanding members being closed; and

connection means associated with said flues and side frames establishing differing amounts of communication and flow through different ones of said flues and controlling the air flow through said respective flues to increase the air flow through the first flues relative to the air flow through the second flues.

4,114,591
EXOTHERMIC METALLIC COMPOSITION
Hiroshi Nakagawa, Oeda 89-8-25, Kasukabe-shi, Saitama, Japan
Filed Jan. 10, 1977, Ser. No. 757,890
Int. Cl.[2] F24J *1/02*
U.S. Cl. 126—263 **7 Claims**



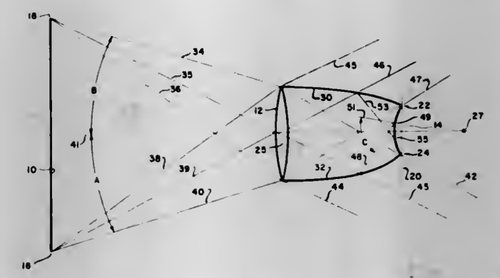
1. A body warmer comprising: an exothermic composition which comprises a principal metallic member selected from the group consisting of iron, aluminum and magnesium in particulate form; and an oxidation agent in an amount stoichiometrically equal to said principal metallic member comprising water of 20 - 50 parts by weight; sodium chloride of 5 - 10 parts by weight; an oxide member selected from the group consisting of ferrosoferric oxide, trimanganese tetraoxide, manganese dioxide and mixtures thereof in particulate form of 10 - 60 parts by weight; and active carbon in particulate form of 20 - 50 parts by weight;

a first container containing said principal metallic member;

a second container containing said oxidation agent; and

a porous bag means for containing the mixture of the contents of said first container and said second container, said first and second containers being kept separate and apart from each other until it is desired to mix the contents of the same in said porous bag means.

4,114,592
CYLINDRICAL RADIANT ENERGY DIRECTION DEVICE WITH REFRACTIVE MEDIUM
Roland Winston, Chicago, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Aug. 16, 1976, Ser. No. 714,863
Int. Cl.[2] F24J *3/02; G02B 5/10, 5/14*
U.S. Cl. 126—270 **15 Claims**



1. A device for collecting and concentrating solar energy incident on an entrance onto the surface of an energy absorber where said absorber surface is of less area than said entrance surface, the entrance surface being on a first side of a first reference axis, the absorber surface having a cross section bounded by and which is convex with respect to the first reference axis on said first side of said first reference axis, the absorber surface having a second reference axis extending therethrough perpendicular to said first reference axis, the perimeter of the cross section of the absorber surface extending from a first edge point along the first reference axis to a second edge point along the first reference axis, comprising:

a refractive element and a first reflective boundary, said boundary and said element being positioned on said first side of said first reference axis between the absorber and entrance surface such that extremal rays from a source of solar energy incident on the entrance surface at an angle with respect to said second reference axis equal to or less than a predetermined value are refracted unequally by said refractive element, said first reflective boundary being of such contour that the slope of any point along said contour is the maximum slope consistent with achieving reflection of any extremal ray of energy incident on said entrance surface and then refracted and incident on said point of said boundary along a line which intersects the perimeter of the cross section of the absorber surface at an angle not exceeding a particular value C where C is less than or equal to 90°, said reflective boundary extending from said first edge point of said absorber to no further than an intersection with said entrance surface, said boundary and said absorber being parallel to a third reference axis perpendicular to said first and second reference axis to form a trough-shaped device.

4,114,593
SOLAR HEATING SYSTEM
Emile Guertin, Wheeler Rd., Marstons Mills, Mass. 02648
Filed Feb. 23, 1976, Ser. No. 660,505
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **9 Claims**

1. A solar heating system comprising;

a box means having a bottom wall and a plurality of side walls and including insulating means in the box means for holding generated heat inside the box means,

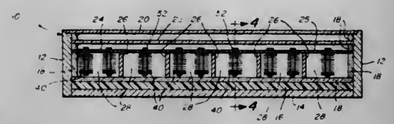
at least one translucent panel covering the box means and positioned to receive rays from the sun,

a heat-conductive plate disposed in the box means,

separate walls in the box means for at least partially supporting the heat-conductive plate and defining a serpentine duct comprised of a series of interconnected duct sections,

a plurality of heat dissipators wherein each heat dissipator comprises a plurality of dissipator plates,

means for mounting the heat dissipators to the heat-conductive plate with a series of the dissipators extending along each duct section,



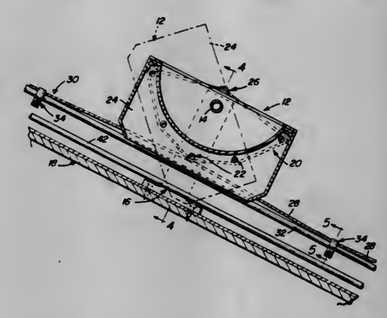
wherein said means for mounting mounts the dissipator plates in parallel to each other and in parallel to the heat-conductive plate,

blower means coupled to the duct for forcing air therethrough,

and exit means from the duct from which the heated air departs,

said means for mounting comprising a heat-conductive sleeve, and a plurality of conductive spacers disposed between the dissipator plates for suitably spacing the dissipator plates one from the next.

4,114,594
DEVICE FOR SYNCHRONOUSLY ROTATING SOLAR COLLECTORS
Warren A. Meyer, 612 Comanche St., NE., Albuquerque, N. Mex. 87107
Filed Oct. 22, 1976, Ser. No. 735,067
Int. Cl.[2] F24J *3/02; F16H 27/02*
U.S. Cl. 126—270 **10 Claims**



1. A device for synchronously rotating solar collectors, comprising, in combination:

(a) pulley means connected to a rectangular collector for rotating same;

(b) reciprocating means movably mounted for rotating the pulley means; and

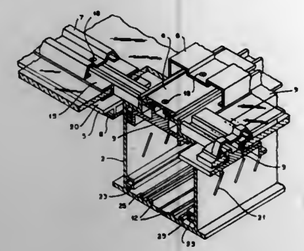
(c) flexible means connected to the pulley means and reciprocating means for rotating the pulley means in response to movement of the reciprocating means, the pulley means including a track disposed eccentrically with respect to an axis about which the associated solar collector rotates, and the pulley means being provided with clamp means mounted on the pulley means at a point on the track closest to the axis of rotation for securing the flexible means to the pulley means.

4,114,595

SOLAR ENERGY COLLECTOR AND GLAZING SYSTEM

Harold Reed Barker, 805 29th St. #252, Pittsboro, N.C. 80303

Filed Jul. 6, 1977, Ser. No. 813,289
Int. Cl.[2] F24J *3/02*; E04D *1/36*
U.S. Cl. 126—270 6 Claims



1. Framing apparatus for glazing solar energy collector panels, comprising:

a first elongated channel shaped glazing support member having, in a transverse cross section thereof, two partial top walls, two side walls and a bottom wall, said walls being connected to one another and having first and second pairs of parallel support surfaces formed on said side walls and top walls, respectively, said pairs of support surfaces being disposed on opposite sides of the longitudinal center of said member and in co-planar relationship with each other;

a second elongated glazing support member having two parallel support surfaces formed thereon, said member being equal in transverse cross section to that of one-half of said first member divided symmetrically at its longitudinal center line;

a third elongated glazing support member having two parallel support surfaces formed thereon, said member being equal to a transverse cross section of said first member divided longitudinally along the line to the inner edge of said support surface in said partial top wall;

a fourth member, said member being equal in longitudinal cross section to a segment of said bottom wall of said first member, said segment lying between said dividing lines defining said third member on said first member;

a fifth elongated glazing support member, said member having in a longitudinal cross section thereof, two co-planar support surfaces and two pairs of parallel gaging surfaces arranged perpendicular to said two co-planar support surfaces, said pairs of perpendicular gaging surfaces being disposed on opposite sides of said plane of said support surfaces;

a sixth elongated member, said member having, in transverse cross section thereof, a top wall, two side walls approximately perpendicular to said top wall, and two partial bottom walls attached to said walls and perpendicular thereto;

a seventh elongated member, said member having in transverse cross section thereof, a top wall, two sides walls generally inclined at an acute angle to said top wall, and two partial bottom walls attached to said side walls and parallel to said top wall;

said first through seventh members being connected together in a glazing framework in which longitudinally abutted pairs of said second members are gaged in abutment with one of said pairs of parallel gaging surfaces on a transverse segment of said fifth member and are fastened together by a transverse segment of said fourth member, said fourth and fifth member segments being connected to one another to form a combined gaging and clamping means for said abutted pairs of said second members;

said fourth member segment being an exterior gage and said pair of parallel gaging surfaces on said fifth member segment being an interior gage as spaced with said assembled pair of second members to form, in combined transverse cross section, a cross section equal to said first member;

and elongated segments of said fifth member being connected in regular array to transverse segments of said first, second or third members, said other pair of perpendicular gaging surfaces of said fifth member resting on said first parallel support surfaces of said members by engaging the height of said co-planar support surfaces of said fifth member such that said support surface of said fifth member is in a co-planar relationship with said second co-planar support surface of said first, second, or third members, respectively; and

segments of said sixth member being arranged parallel to said segments of said first member or to abutted segments of said second member or to segments of said third member in said regular array with said partial bottom walls of said sixth member overlying said second support surfaces from said first, second or third members; and

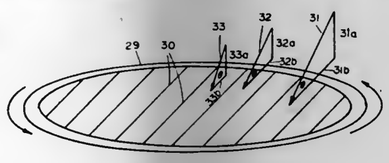
segments of said seventh member being arranged parallel to said segments of said fifth member in a completed frame array with said partial bottom walls of said seventh member overlying said co-planar support surfaces of said fifth member segments.

4,114,596

METHOD AND APPARATUS FOR TRACKING THE SUN FOR USE IN A SOLAR COLLECTOR WITH LINEAR FOCUSING MEANS

Wei-Yi Chang, and Chen-Yen Cheng, both of 9605 La Playa St, NE., Albuquerque, N. Mex. 87111

Filed Mar. 16, 1976, Ser. No. 667,408
Int. Cl.[2] F24J *3/02*; G02B *5/10*
U.S. Cl. 126—270 4 Claims



1. A method of tracking the sun for use in a solar collector having a linear focusing means and a linear focal region, the linear focusing means being so constructed that sun's rays that fall on the solar collector in the direction that is perpendicular to a front reference plane are directed toward the linear focal region, comprising rotating the solar collector around an axis that is perpendicular to the front reference plane and adjusting the angle of rotation so that a sun's ray incident on the solar collector has a first component perpendicular to the front reference plane and a second component parallel to the front reference plane, the second component being substantially parallel to the direction of the linear focal region.

4,114,597

UNITARY SOLAR COLLECTOR

Robert Allan Erb, Valley Forge, Pa., assignor to The Franklin Institute, Philadelphia, Pa.

Filed Dec. 31, 1975, Ser. No. 645,648
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 68 Claims

1. A unitary solar thermal collector panel highly effective in absorbing and transferring thermal energy and having resistance to thermal distortion, the panel being constituted of a coextruded, self-supporting synthetic thermoplastic integral unit and being adapted to collect and transfer solar energy which comprises

(a) a first section defining a first region, the first region being adapted to allow the passage of solar radiation, the first region being divided into a plurality of first channels of which adjacent first channels are defined by first common ribs; and

(b) a second section defining a second region juxtaposed from the first region, the second region being capable of absorbing solar radiation and transferring it to a fluid, the second region being divided into a plurality of second channels of which adjacent second channels are defined by second common ribs; and

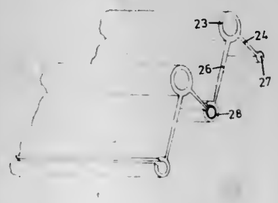
the first and second regions being defined one from the other by a common divider.

4,114,598

SOLAR HEATER AND ELEMENT THEREFOR

Egon Van Leeuwen, 35 Richmond St., Blackburn, Victoria, Australia (3130)

Filed Apr. 28, 1976, Ser. No. 681,289
Claims priority, application Australia, Apr. 30, 1975, PC1410
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 15 Claims



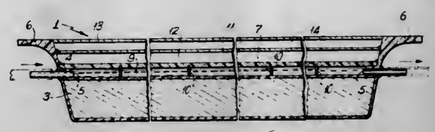
1. A solar fluid heater including a plurality of elongated solar heating elements formed by extrusion and positioned in a sealed tray for exposure to the sun; each of said heating elements comprising a tube for receiving and passing the fluid to be heated, a pair of fins of similar dimensions integrally formed with said tube and extending in a generally radial direction from the exterior of the tube to subtend a predetermined angle therebetween, said fins having a dimension in the generally radial direction sufficient to support the element on the bottom of the tray while spacing said tube from the bottom of the tray, complementary formation connection means carried by the free ends of said fins for connecting adjacent elements together in a generally parallel unitary configuration, said complementary formation connection means comprising a rod mounted at the free edge of one of said fins and running parallel to said fluid passage tube, and a second tube mounted at the free edge of the other of said fins and running parallel to said fluid passage tube for embracing the rod of an adjacent element, said second tube having a peripheral portion cut away for receiving the one of said fins of said adjacent element when the rod thereof lies in said second tube, and manifold means connecting the ends of said tubes for passing fluids down said tubes.

4,114,599

SOLAR COLLECTOR

James W. Stephens, 1681 Tilling Way, Stone Mountain, Ga. 30082

Filed Jan. 13, 1977, Ser. No. 759,019
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 6 Claims



1. Solar energy collection means, comprising

(a) energy absorber plate means including

(1) a relatively thin sheet formed or a heat conducting metal;

(2) a layer of solar-energy-absorbing pigment material coated upon at least one face of said metal sheet;

(3) a layer of transparent synthetic resinous plastic material completely encapsulating said coated metal sheet; and

(4) a plurality of flow plates each formed of a heat conductive material; said flow plates being in-heat transmitting engagement at one end with said heat conductive sheet, said flow plates extending completely through and protruding at their other end beyond said layer of transparent material; and

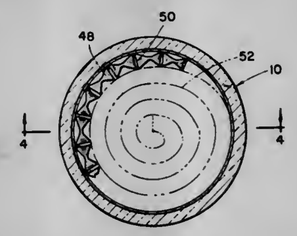
(b) means for directing a heat-exchange fluid in contact with the protruding end portions of said flow plates, respectively, whereby when the coated surface of said sheet is arranged to face a source of solar energy, the rays of solar energy are transmitted to said solar-energy-absorbing layer to heat the sheet, and the heat is then transmitted to said heat exchange fluid via said flow plates.

4,114,600

THERMAL STORAGE AND HEAT TRANSFER SYSTEM AND METHOD

Alwin B. Newton, York, Pa., assignor to Solation Products, Inc., York, Pa.

Filed Oct. 6, 1976, Ser. No. 730,212
Int. Cl.[2] F28D *21/00*; F24J *3/02*
U.S. Cl. 126—271 17 Claims



1. A thermal storage and heat transfer system to utilize solar energy as the source of heat comprising in combination:

(a) a tank having first and second sets of inlet and discharge ports adjacent opposite ends of said tank,

(b) a plurality of heat storage cells of irregular shape formed from heat-sealable flexible thermoplastic tubular material transversely sealed at longitudinally spaced locations along said tube sequentially along transverse lines at right angles to each other to provide external passages in all directions therearound when said cells are compactly positioned immediately adjacent each other within said tank due to the irregular shapes thereof,

(c) heat storage medium sealed within said cells and com-

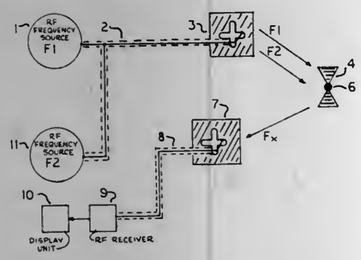
prising a chemical capable of changing between liquid and solid state to develop latent heat of fusion temperature,
(d) a first set of fluid conduits connected respectively to said ports of said first set in said tank and adapted to be connected to a solar heat collector to receive heat therefrom,
(e) a pump connected in one of said conduits,
(f) a liquid heat transfer medium contained in said tank and adapted to be circulated by said pump through said passages between said heat storage cells to transfer heat thereto from the heat storage medium in said cells, and
(g) a second set of conduits attachable to said second set of inlet and discharge ports in said tank to distribute said liquid heat transfer medium to space heating or cooling systems.

4,114,601

MEDICAL AND SURGICAL IMPLEMENT DETECTION SYSTEM

Michael Allen Abels, Miami, Fla., assignor to Micro Tec Instrumentation, Inc., Miami, Fla.

Filed Aug. 9, 1976, Ser. No. 712,883
Int. Cl.² A61B *19/00*
U.S. Cl. 128—1 R **1 Claim**



1. A method of detecting surgical and therapeutic articles or materials within the human body comprising: constructing at least a portion of said articles or materials as a transponder capable of non-linearly mixing two or more radio frequency signals impinging thereon, to thereby generate and reradiate a higher order product frequency; directing two or more radio frequency signals toward the portion of the human body to be investigated; placing a receiving means in the vicinity of said investigated portion to detect and visually or audibly indicate the presence of and reradiated higher order product frequency signal emanating from the investigated area; the existence of said reradiated signal indicating that said surgical or therapeutic article or material is within the human body.

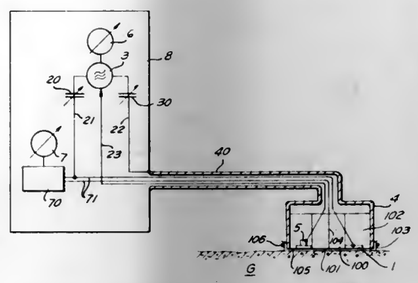
4,114,602

PROCESS AND ARRANGEMENT FOR DETERMINING THE PERFUSION FACTOR OF A GAS IN A SAMPLE

Albert Huch, Marbach, Marburg, and Dietrich Werner Lubbers, Dortmund, both of Fed. Rep. of Germany, assignors to L. Eschweiler & Co., Kiel, Fed. Rep. of Germany

Filed Jul. 12, 1976, Ser. No. 704,295
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1975, 2530834
Int. Cl.² A61B *5/00*
U.S. Cl. 128—2 E **9 Claims**

1. A device for determining the perfusion factor of a gas carried in blood perfused in animal tissue, the device comprising, in combination, a sensor unit adapted to be placed against the animal tissue, the sensor unit including a metallic reference electrode having a flat surface adapted to be placed against the animal tissue and defining a measuring surface, a sensor electrode located at said measuring surface, means including an electrolyte establishing electrolytic contact between the metallic reference electrode and the sensor electrode, and a metallic diathermy electrode structure including a portion located at said measuring surface; polarographic measuring means connected across the reference and sensor electrodes and operative for establishing a potential difference thereacross and performing a polarographic measurement and indication of the concentration of the gas of interest; a controllable-output-power high-frequency voltage sources means having one output terminal electrically connected to the metallic reference electrode and another output terminal electrically connected to the metallic diathermy electrode structure and operative for establishing between the reference electrode and the diathermy electrode structure a high-frequency dielectric heating field operative for diathermally generating heat within dielectric constituents of the tissue against which the sensor unit is placed; means operative for sensing the temperature of the metallic reference electrode in order to detect transfer of heat from the diathermally heated tissue to the reference electrode, and in dependence upon the sensed temperature electrode, and in dependence upon the sensed temperature of the reference electrode automatically adjusting the high-frequency voltage source means to maintain the temperature of the reference electrode constant at a predetermined value; and means for indicating the heating power supplied by the high-frequency voltage source means.

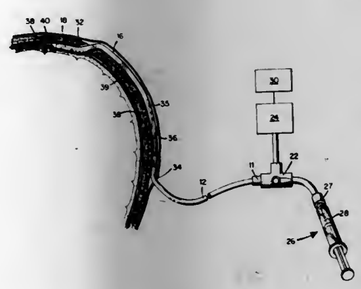


4,114,603

INTRACRANIAL PRESSURE MONITORING CATHETER

Harold A. Wilkinson, 330 Brookline Ave., Boston, Mass. 02215

Filed Aug. 6, 1976, Ser. No. 712,132
Int. Cl.² A61B *5/00*
U.S. Cl. 128—2 R **7 Claims**



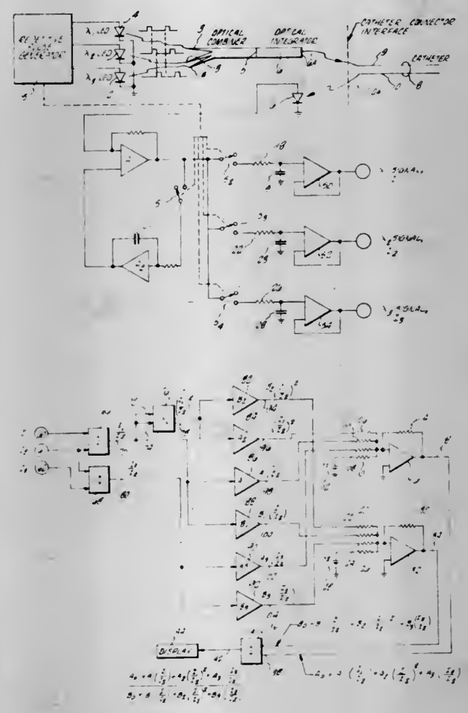
4. An intracranial pressure monitoring catheter comprising:
a flexible distal portion having flat front and back surfaces;
a cup-like recess open at said front surface;
a sealing surface defined by said flat front surface about said recess; and
a lumen in said distal portion in communication with said recess for providing a fluid couple to a pressure measuring device;
said catheter being operable to be placed in the patient's subdural space with the patient's dura mater in contact with said back surface and with said sealing surface in contact with the patient's arachnoid membrane, whereby the arachnoid membrane functions as a pressure sensing diaphragm and a fluid couple may be maintained between the patient's arachnoid membrane and a pressure measuring device.

4,114,604

CATHETER OXIMETER APPARATUS AND METHOD

Robert F. Shaw, 135 Willowbrook Dr., Portola Valley, Calif. 94025, and John M. Sperinde, 6582 Canterbery Ct., San Jose, Calif. 95129

Filed Oct. 18, 1976, Ser. No. 733,278
Int. Cl.² G01N *33/16*
U.S. Cl. 128—2 L **19 Claims**



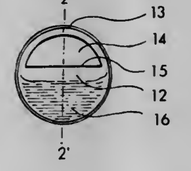
1. Apparatus for determining oxygen saturation of blood comprising:
source means for producing electro-magnetic radiation at first, second and third radiation wavelengths;
means coupled to the source means for supplying the radiation therefrom to blood under test with incident intensities at the respective wavelengths;
detector means disposed to receive radiation from the blood under test altered from the incident intensities of the respective wavelengths by the optical properties of the blood under test for producing signals representative of the intensities of the radiation received thereby at the respective wavelengths;
circuit means coupled to the detector means for producing a first output representative of the ratio of a first pair of the signals from said detector means, and for producing a second output representative of the ratio of a second pair of the signals from said detector means, the wavelengths of the radiation from said source means being such that the first ratio is independent of physiological changes of the sample blood other than oxygen saturation at a first oxygen saturation level and the second ratio is independent of physiological changes other than oxygen saturation at a second oxygen saturation level; and
first means coupled to the circuit means for receiving the first and second outputs of said circuit means and applying selected coefficients thereto to minimize the effect of varying physiological characteristics of the blood under test other than oxygen saturation, said first means producing an output representative of the algebraic combination of selectively weighted first and second outputs of said circuit means; and
second means coupled to the circuit means for receiving the first and second outputs of said circuit means and applying selected coefficients thereto to minimize the effect of varying physiological characteristics of the blood under test other than oxygen saturation, said second means producing an output representative of the algebraic combination of selectively weighted first and second outputs of said circuit means; and
means coupled to the first and second means for receiving the outputs therefrom and producing an output manifestation of the ratio of the outputs from the first and second means.

4,114,605

INTRAORAL CUP FOR COLLECTING SALIVA AND METHOD OF USING THE SAME

Jerry R. McGhee, Birmingham, Ala., and Milton E. Schaefer, Pasadena, Calif., assignors to University of Alabama in Birmingham, Birmingham, Ala.

Filed Nov. 2, 1976, Ser. No. 738,042
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 F **3 Claims**



2. An intraoral cup for collecting the secretion of the parotid gland which comprises
a flat side having an aperture in it substantially offset from its center and
a saucer shaped resilient side without an orifice, sealed on its periphery to the periphery of the flat side, its resilence providing means for sustaining negative pressure within the cup when the cup is placed against the inside of a subject's cheek with the aperture over Stenson's duct and the cup is compressed momentarily and released, said cup being of a size to fit comfortably inside a person's cheek.

4,114,606

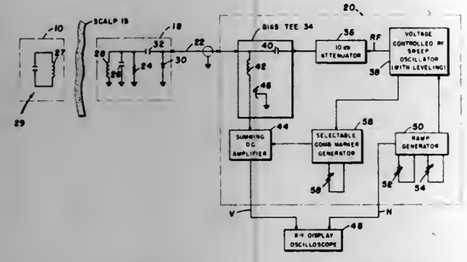
MONITORING APPARATUS FOR RESONANT CIRCUIT INTRACRANIAL PRESSURE IMPLANTS

George R. Seylar, Clarksville, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Nov. 12, 1976, Ser. No. 741,231
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 E **6 Claims**

1. Apparatus for monitoring an implanted circuit means whose resonant frequency provides indication of a selected physiological activity, comprising:
an RF sweep frequency generator means for generating an output RF signal whose frequency varies in a predetermined manner throughout an operating frequency range encompassing the resonant frequency of said implanted circuit means,

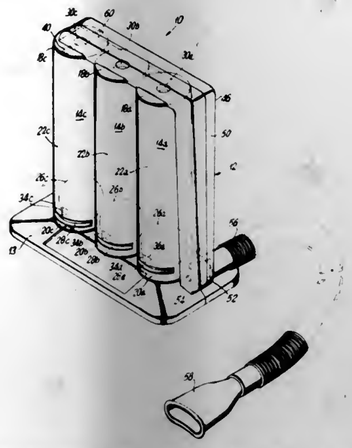
a transmission line having one input end connected to receive the RF signal from said sweep frequency generator means, said transmission line having a predetermined characteristic impedance,
a resistance means connected across the opposite output end of said transmission line and having a resistance value matching the characteristic impedance of said transmission line to minimize the standing wave ration of said transmission line,
a parallel resonant inductor-capacitor circuit connected across the output end of said transmission line in parallel with said resistance means and adapted to be brought into coupling relationship to said implanted circuit means,
said parallel connected resistance means and resonant circuit producing a constant broadband response throughout the operating range of said RF sweep frequency generator



and a constant value RF voltage across said parallel resonant circuit when not coupled to said implanted circuit means,
a maximum energy transfer occurring between said parallel resonant circuit and said implanted circuit means, when coupled, when the output signal generated by said RF sweep frequency generator corresponds to the resonant frequency of said implanted circuit means, said maximum energy transfer resulting in a minimum value RF voltage being produced across said parallel resonant circuit denoting the resonant frequency of said implanted circuit means,
detector means for converting the RF voltage appearing across said parallel resonant circuit to a corresponding DC voltage, and
indicator means responsive to the value of said DC voltage.

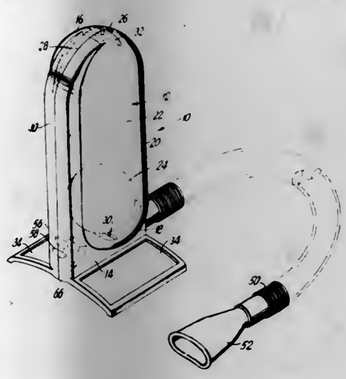
4,114,607
INHALATION DEVICE
Ronald D. Russo, Hamden, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.
Continuation-in-part of Ser. No. 657,242, Feb. 11, 1976, Pat. No. 4,060,074. This application Dec. 23, 1976, Ser. No. 753,839
Int. Cl.² A61M *16/00*
U.S. Cl. 128—2.08 **15 Claims**

1. An incentive inhalation device for inducing respiratory exercise, comprising:
a container having a plurality of see-through compartments therein, in each of which is a chamber,
flow rate indicator means in each chamber which normally rests in the lower portion thereof and having a clearance between each indicator means and its chamber wall which allows free movement of the indicator means but restricts air flow thereabout to cause said indicator means to rise towards the top of its chamber when the inhalation effort by a patient reaches a precalibrated rate of air flow,
an opening in the lower portion of each chamber connecting the chamber, to the surrounding atmosphere for lifting the flow indicator means therein,
an opening in the top portion of each chamber,
means associated with at least one member selected from the group consisting of said flow rate indicator means, said chambers and said openings to provide a precalibrated rate of flow for lifting said indicating means in said chambers which is different for at least two of said chambers,
a passageway connected to each chamber through said opening in the top portion of each chamber, and



outlet means connected to said passageway to allow a person to withdraw air from each chamber and to cause air to be drawn into each chamber through said opening therein for lifting said flow indicator means to the top of each chamber when the inhalation effort is at least the precalibrated rate of air flow for each chamber.

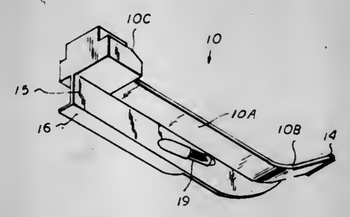
4,114,608
INHALATION DEVICE
Ronald D. Russo, Hamden, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.
Continuation-in-part of Ser. No. 657,241, Feb. 11, 1976, Pat. No. 4,086,918. This application Dec. 23, 1976, Ser. No. 753,840
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **15 Claims**



1. A self-supporting incentive inhalation device for inducing respiratory exercises comprising:
a container, having a front and back portion, a top wall and a bottom wall and an intermediate see-through wall forming a chamber within said container which extends between said top and bottom walls,
a light-weight article in said chamber normally at the bottom thereof, but which, upon inhalation by the user at a precalibrated flow rate, will rise towards the top thereof,
an opening extending through the upper portion of said container and into said chamber wherein air flows through said opening from the upper portion of said chamber upon inhalation,

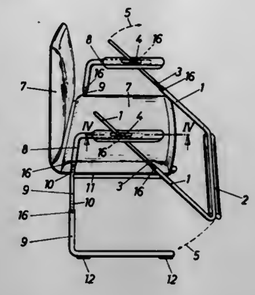
an opening extending through the lower portion of said container and into said chamber to open said chamber to atmosphere, and wherein air flows from atmosphere through said opening into the lower portion of said chamber for lifting said article upon inhalation,
an inhalation passageway integral with said device wherein said passageway extends from the front and bottom of said container and up along the back of said container and being formed by the surface of said walls adjacent said passageway and a channel integral therewith, and, where at its upper end, said passageway is connected to said upper opening, and
means connected to said passageway at the front and bottom of said container to allow a person to withdraw air from said chamber to cause atmospheric air to flow into the chamber through said lower opening, through said chamber and into said upper opening and passageway, which causes said article therein to rise to and be maintained at the top of said chamber when the user reaches and maintains an inhalation effort that is at least at the precalibrated flow rate,
said passageway and last said means leaving a clear view of said chamber within said container so that said article in said chamber easily can be seen and followed by the user.

4,114,609
LARYNGOSCOPE
John A. Moses, 30 Kalan Cir., Fairfield, Conn. 06430
Continuation-in-part of Ser. No. 596,356, Jul. 16, 1975, abandoned. This application Mar. 17, 1977, Ser. No. 778,427
Int. Cl.² A61B *1/06*
U.S. Cl. 128—11 **3 Claims**



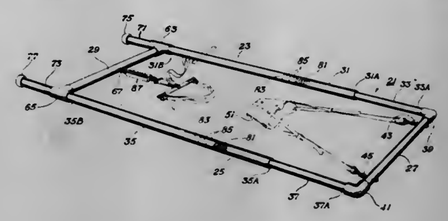
1. A laryngoscope blade comprising:
a straight blade portion,
said straight blade portion terminating in an inner end portion which angles out of the plane of said straight blade portion in a Y axis of the blade a distance ranging between 1.5 to 2 cms.,
said inner end portion extending along the X axis of the blade a distance ranging between 3 to 5 cms., whereby said inner end portion can be inserted into a vallecular groove so as to cause anterior movement of the hyoid bone in the operative position of said laryngoscope blade to effect anterior displacement of the epiglottis to expose the inlet of the larynx,
said straight blade portion compressing the tongue whereby the co-action between said straight portion and angled inner end acting on said tongue and hyoid bone and connected epiglottis respectfully defines a straight wide angle line of sight directly into the larynx,
a lateral wall connected along one edge of said straight blade portion,
a lateral shelf connected to the other end of said lateral wall,
said lateral shelf extending in a direction opposite to said straight blade portion whereby said straight blade portion and shelf portion are disposed in substantially spaced apart parallel planes.

4,114,610
KNEE BENDING DEVICE
Guido Koch, Andreasstrasse 15, 6580 Idar-Oberstein, Germany
Filed Jan. 21, 1977, Ser. No. 761,201
Int. Cl.² A61H *1/02*
U.S. Cl. 128—25 R **8 Claims**



1. A knee bending device comprising a chair including a back support and arm rests, and a U-shaped stirrup including two substantially parallel limbs and a connecting central bar, said parallel limbs being swingable about pivots which are adjustably mounted in said arm rests, said pivots on the parallel limbs being between the ends thereof such that extensions of said limbs above the arm rests comprise hand-actuated lever arms, whereby a patient seated in said chair can exert knee bending pressure on his feet and/or legs by pressing the lever arms forward and thereby forcing the central bar downwardly.

4,114,611
TRACTION DEVICE
Judge M. Lyle, 3901 Westcliff Rd. South, Fort Worth, Tex. 76109, and Jon W. Eberle, 7715 Rolling Acres, Dallas, Tex. 75248
Filed May 9, 1977, Ser. No. 795,326
Int. Cl.² A61H *1/02*
U.S. Cl. 128—75 **2 Claims**



1. A traction device for patients comprising:
a portable frame adapted to be fitted about a patient while lying down,
said frame comprising two side members and two end members,
each side member comprising a tubular member having a second member slideably located therein and extending out of a first end thereof,
each of said second members of said side members having an end connected to one of said end members,
each of said tubular members having a second end opposite said first end thereof connected to the other of said end members,
each of said end members having connecting means adapted to be coupled to the patient's body at two different positions respectively when said frame is fitted about the patient,
removable means located in each of said tubular members,
said removable means in each tubular member having a first

end spaced from said second member and a second end adapted to engage said second end of said tubular member,

biasing means located in each of said tubular members between its second member and its removable means for biasing its second member and its removable member in opposite directions for biasing said two end members in opposite directions for applying tension to the patient's body between said two portions to which said connecting means are coupled,

one of said connecting means comprising an upper body connecting means coupled to one of said end members and adapted to be coupled to the upper portion of the patient's body,

said upper body connecting means comprising:

a scale for measuring the tension applied to the patient's body, and

a strap adapted to be coupled between said one end member and the upper portion of the patient's body by way of a quick releaseable clip adapted to be operated by the patient to allow the patient to readily disconnect the upper portion of the patient's body from said one end member to release the tension.

4,114,612

TENSION RELIEVING DEVICE

Ben E. Benjamin, 910 W. End Ave. at 105th St., Apt. 15F, New York, N.Y. 10025

Filed Oct. 26, 1976, Ser. No. 735,370

Int. Cl.[2] A61F *5/01*

U.S. Cl. 128—76 R **5 Claims**



1. A device for releasing muscular tension in the head-neck area of a user comprising first pressure applying means projecting in a first direction and having an elongated free edge, the periphery of said edge being arcuate and of a first diameter, second pressure applying means projecting in a direction displaced 120° from said first pressure applying means, said second pressure applying means having an elongated free edge, the periphery of which is arcuate and of a second diameter, said second diameter being smaller than said first diameter, third pressure applying means projecting in a direction displaced 120° from said second pressure applying means and said first pressure applying means, said third pressure applying means having an elongated free edge, the periphery of which is of a third diameter, said third diameter being smaller than said second diameter, each of said pressure applying means including an edge disposed opposite to its free edge being disposed adjacent to one another, said pressure applying means being secured to one another by a pair of end members, said end members being of triangular shape, said device being adapted to be supported in position such that the free edge of either the first, second or third pressure applying means is in contact with the occipital area of the user to apply concentrated pressure to the muscles at said contact area to effect the relaxation of tension from said muscles.

4,114,613

FOOT REST

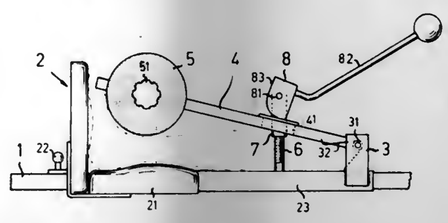
Margrit Kuhn, Bannholzstrasse 12, Vaduz, Liechtenstein (FL-9490)

Filed Jan. 13, 1977, Ser. No. 758,842

Claims priority, application Switzerland, Nov. 17, 1976, 14462/76

Int. Cl.[2] A61F *5/00*

U.S. Cl. 128—80 R **11 Claims**



1. A foot rest comprising:

a frame; foot support means attached to said frame; an arm having two ends and positioned approximately parallel to said frame, one of said ends being in juxtaposition to said foot support means and the other of said ends being pivotally connected to said frame at a location remote from said foot support whereby said one is movable toward and away from said foot support means; pressure pad means attached to said arm adjacent said one end and movable with said arm toward and away from said foot support means; pressing means interconnecting said frame and said arm for selectively urging the arm and pressure pad means to pivot towards the foot support means; and spring means bearing against the frame and against the arm for biasing the arm for pivotal movement away from the frame.

4,114,614

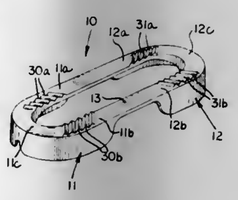
ATHLETIC MOUTHGUARD

Peter C. Kesling, Green Acres, LaPorte, Ind. 46350

Filed Nov. 19, 1976, Ser. No. 743,303

Int. Cl.[2] A61F *5/56*

U.S. Cl. 128—136 **2 Claims**



1. A one-piece athletic mouthguard of resilient material for protecting the mouth of a wearer comprising, a pair of allochiral arch-shaped members, hinge means interconnecting said members at the distal ends thereof in end-to-end relation, each said arch-shaped member including a base portion having an inside surface adapted to be engaged by the occlusal surfaces of the teeth of a wearer and an outside surface adapted to face and/or engage the outside surface of the other arch-shaped member when the mouthguard is in position in the mouth of a wearer, each base portion including a front section and opposed substantially parallel side sections, means on the outside surfaces of the side sections of said base portions coacting during engagement of said outside surfaces to transmit forces between said members and to interlock said members against relative sliding movement therebetween, said means including a plurality of parallel ridges on the side sections extending about 45° to said side sections, the ridges on one side section of a base portion extending in a direction opposite to the ridges on the other side section thereof, an upstanding portion at the labiobuccal edge of said base portion for overlying the labiobuccal surfaces of the teeth and any appliances mounted thereon, and an upstanding guide flange at the lingual edge of the base portion in the area of the anterior teeth.

4,114,615

AEROSOL INHALATION DEVICE

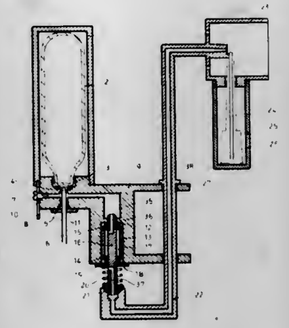
Kjell Ingvar Leopold Wetterlin, Sandby, Sweden, assignor to Aktiebolaget Draco, Sweden

Filed Dec. 10, 1976, Ser. No. 749,327

Claims priority, application Sweden, Dec. 12, 1975, 7514066

Int. Cl.[2] A61M *15/00*

U.S. Cl. 128—173 R **7 Claims**



1. An aerosol inhalation device for dispensing unit dosages of medication, comprising:

a housing;

a propellant container mounted to said housing;

a protective case mounted to said housing and enclosing said propellant container;

a first passage in said housing having one end connected to said propellant container;

an opening in said housing connecting said first passageway to the outer surrounding;

a locking plate retaining said protective cover in position on said housing;

a screw holding said locking plate and sealing said opening between said first passage and the outer surrounding;

an inhalation outlet;

a second passage having one end opening in said inhalation outlet;

a valve connected between the outer ends of said first and second passages and including a metering chamber means for alternately connecting said metering chamber with said first and second passages on operation of said valve;

and a medication container for holding a unit dose of said medication having an outlet an communication with said one end of said second passage to cause propellant flowing through said second passage to propel said medication into said inhalation outlet.

4,114,616

POSITIVE REINFORCEMENT RESPIRATORY INHALATION DEVICE

Peter Nelson Brawn, 1711 26th Ave., Seattle, Wash. 98112

Continuation of Ser. No. 684,424, Jun. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 542,795, Jan. 21, 1975, Pat. No. 3,972,326, which is a continuation-in-part of Ser. No. 435,877, Jan. 23, 1974, abandoned. This application Sep. 16, 1977, Ser. No. 833,960

Int. Cl.[2] A61M *15/00*

U.S. Cl. 128—210 **14 Claims**

1. A positive reinforcement respiratory inhalation device, including provision for controlled ingestion of liquid into the mouth of a user, comprising in combination:

a container having a side wall portion and a bottom wall portion for holding said liquid, said container having an upper part thereof open to ambient pressure;

a tube assembly including a lower tube having one end affixed at the bottom wall portion of said container and the other end extending to the approximate height of said container and an upper tube having one end slideably coupled to and concentric with said lower tube other end and the other end of said upper tube extending exteriorly of said container, said upper and lower tubes, in concentric relationship including an unobstructed passage therethrough;

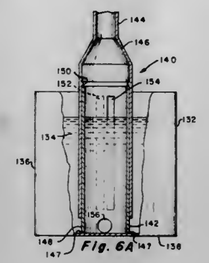


Fig. 6A

said tube assembly being provided with an opening in a wall portion thereof adjacent said one end of said lower tube; and

at least one of said upper and lower tubes being provided with at least one opening in a side wall portion thereof at least adjacent the height of said side wall whose aperture is adjustable by slideably moving said upper tube relative to said lower tube.

4,114,617

APPARATUS FOR INFUSION OF A MEASURED VOLUME OF BLOOD

Thomas D. Turner, 1120 Warm Springs Ave., Boise, Id. 83702, and Alan R. Benson, 3465 Minuteman Way, Boise, Id. 83706

Filed Feb. 28, 1977, Ser. No. 772,686

Int. Cl.[2] A61M *5/14*

U.S. Cl. 128—214 R **5 Claims**



1. In a system for administering two parenteral fluids including a first solution container and a second fluid container, apparatus for dispensing accurately measured amounts of solution from the first container, comprising:

a first check valve connected at its proximal end to the first solution container;

a calibrated syringe and plunger;

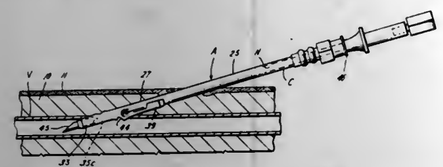
a first Y-connector having a first and second inlet conduit and a common outlet conduit, said first inlet conduit connected to the distal end of said first check valve, said second inlet conduit connected to said syringe;

a force operative check valve connected at its proximal end to said common outlet conduit of said first Y-connector;

a second check valve connected at its proximal end to the second fluid container;

a second Y-connector having a first and second inlet conduit and a common outlet conduit, said first inlet conduit connected to the distal end of said force operative check valve, said second inlet conduit connected to the distal end of said second check valve and said common outlet adapted to communicate with a needle.

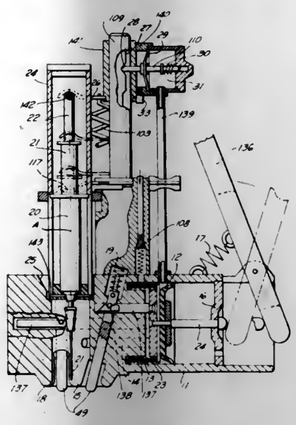
4,114,618
CATHETER ASSEMBLY
Jorge J. Vargas, 9106 Bonhomme Rd., Houston, Tex. 77074
Filed Dec. 15, 1976, Ser. No. 750,740
Int. Cl.² A61M *5/00*
U.S. Cl. 128—214.4 **9 Claims**



1. A catheter assembly for insertion into a blood vessel for intravenous injection of medicinal fluid, comprising:
an introducing needle having a point on a first end thereof for insertion into a blood vessel;
a hollow catheter tubular unit slidably mounted over said introducing needle for insertion into such blood vessel with said introducing needle, said hollow catheter tubular unit including a main, flexible hollow body section having a main bore therethrough, said main, hollow body section terminating in an insertable end portion at one end for insertion into said blood vessel and in a connector at the other end thereof for connection to an intravenous fluid supply after removal of said introducing needle;
said insertable end portion including flow means insertable into said blood vessel for delivering medicinal fluid from said main bore into such blood vessel while allowing for substantially uninterrupted flow of blood through such blood vessel, said insertable flow means including:
said end portion including a first end section having an end in fluid communication with said bore of said main body section and terminating in a first opening at the end thereof and having a second opening spaced from the first opening; and
a foldable flow section being movable between a folded position in which said end portion with said foldable flow section is inserted into such blood vessel and an open position in such blood vessel in which said flow section allows blood and intravenous fluid flow through said second opening and said first opening.

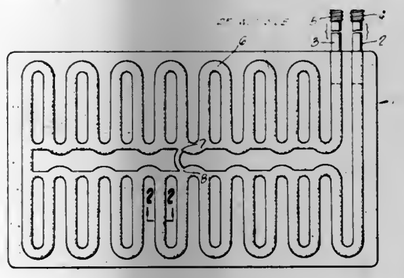
4,114,619
AUTOMATIC INJECTING APPARATUS
Wolfgang Wagner, Exerzierstrasse 1, 1 Berlin 65, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 634,741, Nov. 21, 1975, abandoned. This application May 5, 1977, Ser. No. 793,951
Int. Cl.² A61M *5/00*
U.S. Cl. 128—215 **12 Claims**

1. An injecting apparatus comprising
a housing formed with a recess having an annular rim engageable with the skin of a person to be injected to form therewith a substantially closed injecting compartment;
a hypodermic syringe on said housing having a needle tip in said recess and means including an actuation element displacement to eject a liquid from said tip;
means on said housing including at least one aspiration member displaceable for aspirating air from said recess, whereby when said rim is in firm contact with the skin of a person to be injected such aspiration pulls such skin into said recess into piercing contact with said needle tip; and
means for detecting when said rim is generally completely in firm contact with an object for displacing said actuation element and said aspiration member only when said rim is



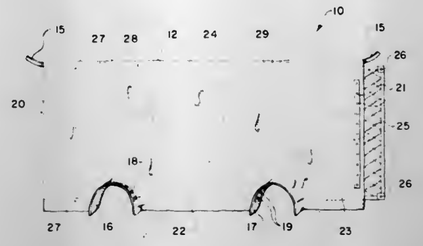
generally in firm contact with an object, whereby when said rim is in firm contact with the skin of a person to be injected said means for detecting operates said aspiration member to pull said skin into piercing contact with said needle tip and operates said actuation element to eject said liquid from said tip into said skin.

4,114,620
PATIENT TREATMENT PAD FOR HOT OR COLD USE
Francis Claudell Moore, and Leon Raymond Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.
Filed Mar. 2, 1977, Ser. No. 773,673
Int. Cl.² A61F *7/00*
U.S. Cl. 128—254 **13 Claims**



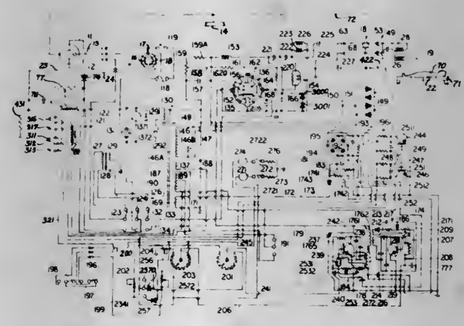
1. A patient treating pad for wet or dry use comprising: a pair of superimposed film panels with inner surfaces joined together at selected locations to define a fluid circulating path between the film panels; a patient contact panel secured at a surface to surface bond to one of the film panels; and said patient contact panel has an outer patient contact surface of exposed elongated liquid absorptive means selected from the group consisting of fibers and filaments that extend into a central portion of the patient contact panel and are anchored to the film panel at the surface to surface bond.

4,114,621
COMBINATION INCONTINENT GARMENT AND LINER
Carl C. Mims, Jr., 311 Brainard Ave., Fayetteville, N.C. 28301
Filed Dec. 7, 1976, Ser. No. 748,319
Int. Cl.² A61F *13/16*
U.S. Cl. 128—288 **6 Claims**



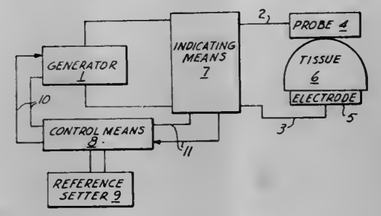
1. A combination incontinent garment and liner comprising: a generally rectangular shaped basic garment; a pair of space arcuate shaped open portions in one end of said garment; means for releasably securing said arcuate portions together when said garment is wearingly wrapped about a wearer thereof; means for releasably fastening together the opposed edges of said garment which are perpendicular to the edge incorporating said arcuate portions; a generally 8-shaped absorbent garment liner to give a greater absorbent area on either side of the crotch with a reduced amount of material being provided in such crotch area; said liner including a generally moisture impervious backing layer, at least one absorbent layer, and a moisture transfer layer; said backing and said absorbent layers being folded into at least one tuck so as to form a moisture retaining reservoir with the moisture transfer layer being unfoldingly disposed thereover whereby a smooth surface is presented to the body of the wearer.

4,114,622
ELECTROSURGICAL DEVICE
Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research and Development Corporation, Milford, Del.
Division of Ser. No. 592,480, Jul. 2, 1975, Pat. No. 3,987,796, which is a division of Ser. No. 461,983, Apr. 18, 1974, Pat. No. 3,905,373. This application Jun. 1, 1976, Ser. No. 691,631
The portion of the term of this patent subsequent to Sep. 16, 1992, has been disclaimed.
Int. Cl.² A61B *17/36*; A61N *3/02*
U.S. Cl. 128—303.14 **3 Claims**



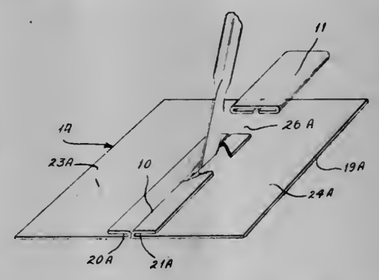
1. In combination with a radio-frequency electrosurgical device which includes a radio-frequency generator, circuit means connected to the radio-frequency generator for performing electrosurgery on a patient, said circuit means establishing a primary current return for substantially all the current passing from the patient to the radio-frequency generator when connected to the patient, means for establishing an alternate current return for at least part of said primary current return from the patient to the radiofrequency generator, and a monitoring system means connected to the alternate current return for sensing radiofrequency current passing in said alternate current return.

4,114,623
CUTTING AND COAGULATION APPARATUS FOR SURGERY
Hans Heinrich Meinke, Gauting; Gerhard Flachenecker, Ottobrunn; Karl Fastenmeier; Friedrich Landstorfer, both of Munich, and Heinz Lindenmeier, Planegg, all of Fed. Rep. of Germany, assignors to Karl Storz Endoscopy-America, Inc., Los Angeles, Calif.
Filed Jul. 29, 1976, Ser. No. 709,610
Int. Cl.² A61B *17/36*; A61N *3/02*
U.S. Cl. 128—303.14 **17 Claims**



1. A method of regulating the current applied to a high-frequency current tissue-cutting device having a thin probe acting as one electrode, a second electrode, and a generator of high-frequency current applying said current to said electrodes, while cutting tissue which tissue has the property of steaming off when heated to high temperature, said method comprising: applying current and voltage of the generator to the electrodes to cause an arc to ignite and burn at the probe, detecting the existence of the arc and measuring its volume, and adjusting the current to the probe to maintain the arc at a predetermined volume.

4,114,624
SKIN CLOSURE MEANS
Charles B. Haverstock, 44 Frederick La., Glendale, Mo. 63122
Continuation-in-part of Ser. No. 442,784, Feb. 15, 1974, Pat. No. 3,933,158. This application Oct. 31, 1975, Ser. No. 627,832
Int. Cl.² A61B *17/08*
U.S. Cl. 128—335 **31 Claims**



29. Means for guiding the edge of an instrument comprising a relatively flexible sheet-like member having opposite surfaces, means forming an adhesive layer on one of said opposite surfaces, a pair of elongated uncovered, substantially continuous flange portions integral with and projecting from the other of said opposite surfaces, each of said flange portions having a surface which abuts a corresponding surface of said other flange portion, said abutting flange surfaces defining a substantially closed slit-like passageway extending therebetween, said

passageway extending completely through said sheet-like member along the length of the flange portions, said flange portions being of sufficient rigidity to receive and guide an instrument inserted between said flange portions.

4,114,625
ANTI-VOMITING, ANTI-ASPIRATING ORAL-NASAL GASTRIC TUBE
Mustafa V. Onat, Box 7, Saint George, Me. 04857
Filed Dec. 2, 1976, Ser. No. 746,778
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—348 **4 Claims**



1. A flexible oral nasal gastric tube adaptable for insertion into the stomach of a patient through the esophagus comprising first and second independent parallel passages disposed within said tube and extending the entire length thereof, aperture means disposed only adjacent the end of the tube adapted to be inserted into the stomach for communicating the first and second passages with the stomach cavity, single annular inflatable means disposed about the periphery of said tube at a location spaced a substantial distance from said aperture means in said tube disposed in communication with the interior of said inflatable means; said inflatable means being spaced from said aperture means a substantial distance so that when said annular inflatable means is inflated within the stomach and disposed in sealing contact with the area of the stomach surrounding the entrance of the esophagus into the stomach to prevent regurgitation, the end of the tube having the aperture means will be disposed in the bottom of the stomach, each of said passages being connected to separate individual tubes adjacent the end of the tube opposite the end having the aperture means whereby the tube connected to the third passage can be connected to a fluid source for the selective inflation and deflation of said inflatable means, the tube connected to the first passage can be connected to suitable suction means for removing the contents of the stomach and the tube connected to the second passage can be disposed in communication with the atmosphere.

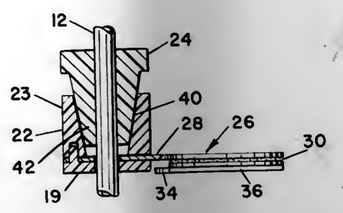
4,114,626
INTUBATION SET
Anthony V. Beran, 3802 Teakwood St., Santa Ana, Calif. 92707
Continuation of Ser. No. 545,434, Jan. 30, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 759,181
Int. Cl.[2] A61M *25/02*
U.S. Cl. 128—348 **12 Claims**

1. For use in holding an apparatus in position in front of a subject's body opening:

fastening means in the form of a fastening element for holding said apparatus;

adhesive means in the form of a patch of flexible sheet material attached at one of its edges to said fastening means and being capable of adhering to an area of the subject's skin arcund that opening; and

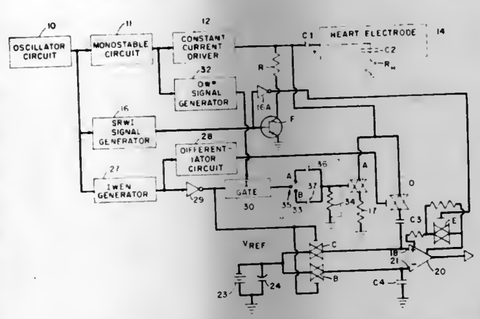
a tube carried by said fastening means and having internal resilience biasing the tube toward arcuate shape along its length;



said fastening means being effective to hold said tube such that it extends through the plane of said patch;

said fastening means comprising a sleeve formed with a bore through which said tube extends, and in which said patch extends sidewardly from one end of said sleeve and has a flexible connection to said sleeve whereby the patch can bend from a position in the plane perpendicular to the axis of said bore to tilted positions above and below said plane.

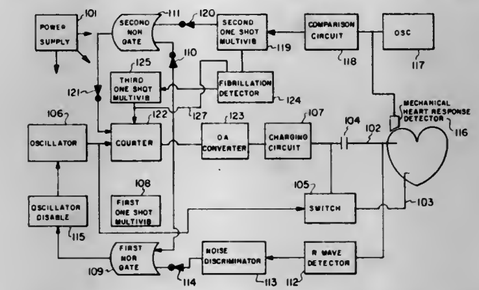
4,114,627
CARDIAC PACER SYSTEM AND METHOD WITH CAPTURE VERIFICATION SIGNAL
Lanny Louis Lewyn, Laguna Beach, and Glen David Simpson, Huntington Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 14, 1976, Ser. No. 750,574
Int. Cl.[2] H01N *1/36*
U.S. Cl. 128—419 PT **16 Claims**



1. In a cardiac pacer system including a stimulating electrode contacting a person's heart, said electrode exhibiting capacitance; stimulating circuit means for generating electrical pulses of a first interval for stimulating the heart; and an output coupling capacitor for coupling said pulses to the heart; improved capture verification circuit means for detecting whether the heart has responded to a stimulating pulse comprising: amplifier means adapted to be coupled to said electrode through said output coupling capacitor for sensing a stimulated heart signal and generating a signal in response thereto; clamping circuit means including timing circuit means and first switching circuit means for connecting said output coupling capacitor to said clamping circuit means for a predetermined second time interval after said stimulating pulse has terminated and before said stimulated heart signal is to be sensed; and second switching circuit means for disconnecting

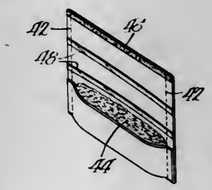
said amplifier means from said coupling capacitor when said stimulating pulse is generated and for reconnecting said amplifier means to said coupling capacitor after said predetermined second time interval and before a time period during which said stimulated heart signal is expected to be sensed.

4,114,628
DEMAND PACEMAKER WITH SELF-ADJUSTING THRESHOLD AND DEFIBRILLATING FEATURE
Nabil I. Rizk, 518 S. Graham St., Apt. 2, Pittsburgh, Pa. 15232
Filed May 31, 1977, Ser. No. 801,803
Int. Cl.[2] S61N *1/36*
U.S. Cl. 128—419 PG **8 Claims**



1. An implantable, external electrical cardiac pacer circuit comprising output means for delivering a stimulating pulse, oscillator means for triggering the output means, means responsive to electrical signals resulting naturally from a heart beat for disabling the oscillator means, means for detecting mechanical heart response in a refractory period following said stimulating pulse, and adjusting means responsive to the detected mechanical response for controlling the intensity of the next stimulating pulse to provide a desire mechanical response.

4,114,629
CIGARETTE ROLLING PAPER WITH INTEGRAL POUCH
Bruce Sedlacek, 4364 Wagman, Oak Forest, Ill. 60452, and Gus Stevens, Jr., 5707 S. Monitor, Chicago, Ill. 60638
Filed May 17, 1976, Ser. No. 687,047
Int. Cl.[2] A24D *1/02*
U.S. Cl. 131—15 R **10 Claims**

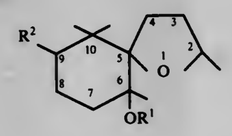


4. A cigarette rolling paper with a pouch comprising:

a thin, substantially rectangular sheet of cigarette paper and a separate pouch, said rectangular sheet having two sheet side edges and two sheet end edges, said pouch having two walls defining a pouch opening therebetween, a pouch bottom edge, and two pouch end edges, said pouch being superposed upon said sheet, a portion of said rectangular sheet extending beyond the pouch opening and defining a closure means for retaining a smoking substance within said pouch when said portion of said rectangular sheet is wrapped in a substantially cylindrical shape around said pouch to form a cigarette.

4,114,630
SPIRANE DERIVATIVES, THEIR USE AND PROCESS FOR PREPARING SAME
Walter Renold, Onex, Ge; Werner Skorianetz, Geneva; Karl-Heinrich Schulte-Elte, Onex, Ge, and Gunther Ohloff, Bernex, Ge, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland
Division of Ser. No. 625,452, Oct. 23, 1975, Pat. No. 4,014,905, which is a continuation-in-part of Ser. No. 542,072, Jan. 17, 1975, abandoned. This application Oct. 21, 1976, Ser. No. 734,672
Claims priority, application Switzerland, Feb. 4, 1974, 1488/74; Jun. 7, 1974, 7776/74; Jul. 30, 1975, 9920/75
Int. Cl.[2] A24B *3/12*
U.S. Cl. 131—17 R **2 Claims**

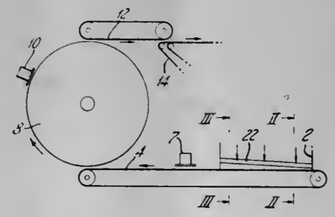
1. A process for improving, enhancing or modifying the organoleptic properties of tobacco products which comprises adding thereto a spirane derivative of formula



(II)

wherein the symbol R^1 repersents a hydrogen atom or an acyl radical containing from 1 to 6 carbon atoms and R^2 represents a hydrogen atom or a methyl radical.

4,114,631
CIGARETTE-MAKING MACHINES
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, and Ivan Yehudi Hirsh, London, England, assignors to Molins Limited, London, England
Filed Feb. 17, 1971, Ser. No. 115,952
Claims priority, application United Kingdom, Feb. 17, 1970, 7625/70
Int. Cl.[2] A24C *5/18*
U.S. Cl. 131—84 C **13 Claims**



10. Apparatus for forming a cigarette filler stream, comprising:

a. a substantially horizontal air-pervious conveyor band,

b. fixed elongated trough walls mounted above and along

opposite sides of the band and having substantially parallel inner surfaces extending perpendicularly from the band to a height which increases linearly at successive positions spaced along the band in the direction of movement of the band,

c. fixed chute walls extending upwards from the tops of the trough walls and diverging upwardly,

d. means defining a suction chamber below the band, and

e. means for delivering tobacco downwards on to and along the length of the band and towards the space between said trough walls at a rate sufficient to substantially fill the space between the trough walls at each position along the moving band, substantially directly in accordance with the increasing height of the tobacco stream as it builds up on the band during movement thereof.

4,114,632

METHOD OF SELECTIVELY ALTERING HAIR COLOR

Shila Morganroth, 1225 Waterbury Rd., Highland, Mich. 48031

Continuation-in-part of Ser. No. 481,695, Jun. 14, 1974. This application May 19, 1975, Ser. No. 579,012

Int. Cl.[2] A45D *7/04;* A61K *7/13, 7/135*

U.S. Cl. 132—7 **13 Claims**

4. A method of obtaining variegated colors in a head of human hair of medium brown or ligher which comprises parting the hair as it will be worn, forming at least one strand of hair by a polygonal parting at the scalp starting at the part line, applying liquid to each such strand capable of lightening the hair and leaving it in contact with the hair long enough to lighten it to the desired shade and then washing the excess lightening liquid from the hair.

7. The method of producing highlights in hair of medium brown or lighter color which comprises forming by parting a strand of hair of generally rectangular shape extending from the hair line at the face at least about one fourth of the way to the crown of the head and having a width within the range of about one half to one and one half inch, applying viscous spreadable off-the-scalp type bleach material through the strand from a starting position far enough from the scalp to prevent contact of the bleach material with the scalp to develop the desired highlight color in the strand, removing the said bleach material from the hair at such time and thereafter applying to said strand less viscous on-the-scalp type of bleach material from said starting position to the scalp to lighten it.

4,114,633

CAMPING TENT FOR MOTORCYCLES AND CYCLISTS

Francois Herbez, 15, rue Turgot, 78100 Saint Germain en Laye, France

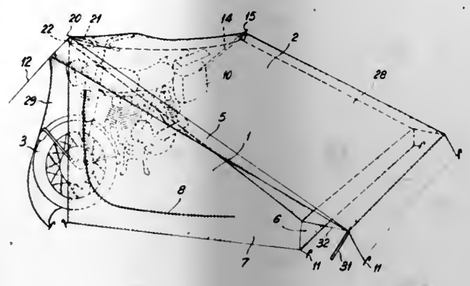
Filed Nov. 15, 1976, Ser. No. 742,124

Claims priority, application France, Nov. 20, 1975, 75 35514

Int. Cl.[2] A45F *1/00*

U.S. Cl. 135—1 A **12 Claims**

1. The camping tent to be associated with a vehicle, comprising an inner portion having and inner first roof section and a wall section and adapted to form, in an erected position of the tent, a closed first shelter for a user with said wall extending in an upright direction; an outer roof portion connected with said wall section and including a second roof section which extends in said erected position, from one side of said upright wall section in a first direction and above said first roof section of said inner portion so as to cover said inner portion from above and thereby to protect said first shelter for a user, and a third roof section which extends in said erected position from the opposite side of said upright wall section in a second direction which is opposite to said first direction and defines therewith a second shelter adapted to accommodate the vehicle and located outside of said first shelter for a user, said wall section and said inner portion each having a top edge extending in a third direction which is transverse to said first and second directions and having two end portions spaced from one another in said third direction; and mounting means in at least one of said top edges, arranged for mounting the tent on the vehicle so that the tent assumes its erected position in which it is supported by the vehicle so that said first shelter for the user is separated from said second shelter for the vehicle by said upright wall section, and the vehicle cannot be withdrawn from the tent by an unauthorized person without collapsing the tent, said mounting means including first and second mounting means which are spaced from one another in said third direction and arranged to support said first and second end portions of said one top edge, respectively, and to tension the tent in said third direction which is transverse to said first and second directions.



4,114,634

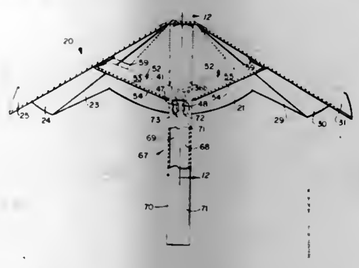
DISPOSABLE RAIN AND WEATHER PROTECTOR

Terry Hermanson, New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 699,638, Jun. 24, 1976, Pat. No. 4,062,369. This application Sep. 22, 1977, Ser. No. 835,752

Int. Cl.[2] A45B *19/00*

U.S. Cl. 135—19.5 **7 Claims**



1. A disposable umbrella comprising a foldable canopy, foldable canopy support structure, and a collapsible canopy pole or column,

said canopy including

a pair of opposed major sections and

a pair of opposed minor sections

each major section being of relatively rigid sheet material having an inner face and an outer face and in the general shape of a sector of a circle from which a segment has been removed near the projected junction of two radii,

each minor section including at least two portions each of which is generally in the shape of a sector of a circle and inwardly foldably connected to each other,

each major section being foldably connected on each of two sides to a side of a minor section,

the chords of the portions of each minor section being of less than one-half of the dimension of the chord of each major section

whereby, when the umbrella is folded, the canopy support structure and the canopy pole or column lie between the inward margins of folded minor sections and between the inner faces of the opposed major sections.

4,114,635

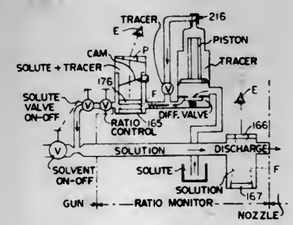
METHOD OF MONITORING RATIO OF FLOWING MIXTURE

Valentine Hechler, IV, 26 Meadow View Rd., Northfield, Ill. 60093

Division of Ser. No. 482,353, Jun. 24, 1974, Pat. No. 3,938,550. This application Jan. 26, 1976, Ser. No. 652,379

Int. Cl.[2] G01N *21/06*

U.S. Cl. 137—3 **1 Claim**



1. The method of mixing three fluids to determine the mixture ratio of two of them comprising,

homogenously mixing a primary mixture of a solute and a color tracer and flowing the mixture successively

(a) between the closer spaced set of two contiguous sets of portable parallel spaced transparent windows,

(b) mixing said primary mixture with a flowing solvent to provide a final mixture and conducting it between the other set of spaced parallel windows for comparison of its translucency color with the color translucency between the first set of parallel spaced windows,

(c) varying the amount of tracer in the primary mixture to optimize the comparison level,

(d) adjusting the spacing between one set of windows with respect to the spacing between the other set of windows to match the relative light transmissivities of the liquid mixtures disposed between the pairs of windows of the respective sets, and

indicating the mixture ratio of the solute and solvent in the final mixture by the adjusted ratio of the adjusted spacings between the respective sets of spaced windows.

4,114,636

BOTTOM OPERABLE AIR INLET AND OUTLET VALVE

Gunter R. Behle, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

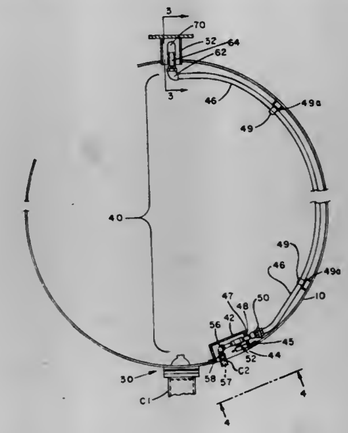
Filed Sep. 30, 1976, Ser. No. 728,343

Int. Cl.[2] F16K *17/36*

U.S. Cl. 137—43 **8 Claims**

1. A bottom operable air inlet and air outlet valve assembly located in a railway tank car for loading and unloading the car comprising:

a conduit extending within the car between the bottom of the tank and the top of the tank; a conduit bottom opening located in the conduit at the bottom portion of the tank; said conduit having air inlet and outlet valve means located at the bottom portion of the tank for opening and closing said bottom opening; a stilling well mounted inside the top of the tank, in fluid communication with said conduit; a ball made of light material mounted in the stilling well and located above the level in the tank corresponding to the fully loaded position of the lading in the tank; said stilling well including a seat for said ball, and openings allowing air and vapors to leave the tank through said conduit during loading of the tank to the fully loaded position when said ball is in an unseated position; and allowing air to enter said tank through said conduit and said openings during unloading of the tank when said ball is in said unseated position; said ball being movable into a seated position in the stilling well which blocks fluid communication between said conduit and the inside of the tank, under impacts to the tank and when the car is traveling on an incline, and prevents lading from entering the conduit, whereby said seated ball prevents lading going down through the conduit to said air inlet and outlet valve means and discharging from the conduit when the operator opens said air inlet and outlet valve means, and whereby after the impact and/or traveling on an incline, said ball returns to an unseated position adapted for unloading even under full load and whereby it is unnecessary for the operator to climb to the top of the car to open said air inlet and outlet valve.



4,114,637

VARIABLE DIFFERENTIAL PRESSURE UNLOADING VALVE APPARATUS

Charles E. Johnson, Santa Ana, Calif., assignor to Double A Products Company, Manchester, Mich.

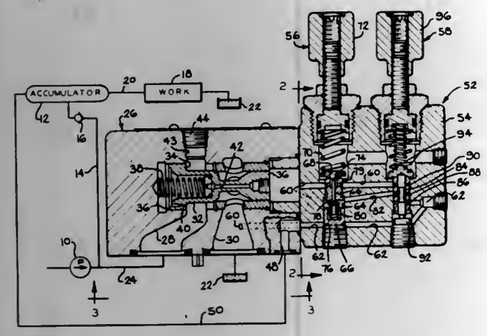
Filed Dec. 20, 1976, Ser. No. 752,103

Int. Cl.[2] G05D *16/10*

U.S. Cl. 137—116 **6 Claims**

1. Differential pressure unloading valve apparatus comprising a normally-closed valve means having a primary port adapted to be connected to a supply source of hydraulic fluid, a secondary port adapted to be connected to tank, and a poppet for blocking flow from the primary port to the secondary port until a pre-established pressure differential across a high pressure side and a lower pressure side of the poppet acts to move the poppet to a position to open communication between the primary and secondary ports; a normally closed upper limit differential pressure valve means having communication with said secondary port and the lower pressure side of said poppet, a valve member spring-actuated to a normal position for blocking communication from said lower pressure side to said secondary port and movable in response to a preselected pressure against the spring-action to an open position to allow communication from said lower pressure side to said secondary port

for venting said lower pressure side so as to allow said poppet to move to its open position, and a movable balancing piston operatively connected to said valve member and responsive to a differential pressure acting on one of its opposite ends to move said valve member against said spring action to its open piston, the other end of said piston being in communication with a pilot port adapted to be connected to an external source of hydraulic fluid under pressure such as to an accumulator connected to said supply source; and a lower limit differential pressure valve means having communication with (1) said lower pressure side of said poppet, (2) said pilot port and (3) the other end of said piston, and a spool spring actuated to a normal position for blocking communication with said lower pressure side while allowing communication between said pilot



port and said other end so that the pressures acting on said piston are balanced, and movable in response to a preselected pressure from said pilot port against the spool spring-action to a position for blocking communication with said pilot port and allowing communication between said lower pressure side and said other end so that the pressure on said other end is reduced when said lower pressure side is vented thereby to allow said piston to urge said valve member open; the spring characteristics of the spring-actuated valve member and the spring-actuated spool being such so that said valve member will open when the upper allowable limit of pressure from the supply source is reached and so that said spool will return to its normal position when the lower allowable limit of pressure from said external source is reached.

4,114,638

SAFETY CONNECTION DEVICE FOR INTERCONNECTING TWO PIPING ELEMENTS

Pierre Fournier, Noisy le Sec; Andre Jules Legleye, Vernouillet; Pierre Collé, Ozoir la Ferriere; Claude Michaut, Mennecy, all of France; Boris Petrovich Timofeev, Moscow, U.S.S.R.; Adolf Moritsovich Alexandrov, Moscow, U.S.S.R.; Ruben Dzhangirovich Balaian, Moscow, U.S.S.R.; Leonid Ozerovich Patik, Moscow, U.S.S.R.; Victor Leontjevich Berezovsky, Moscow, U.S.S.R., and Leonid Arkadjevich Matzkin, Moscow, U.S.S.R., assignors to Compagnie des Terminaux Marins Coterm, Paris, France and Spetsialnoe Konstruktorskoe Bjuro "Transnefteavtomatika", Moscow, U.S.S.R.

Filed Sep. 3, 1975, Ser. No. 609,903

Claims priority, application France, Sep. 3, 1974, 74 29915

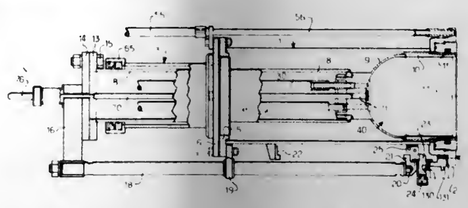
Int. Cl.² F16L *29/00, 37/28*

U.S. Cl. 137—242 **16 Claims**

1. Safety connection apparatus for coupling two piping elements together, the apparatus including a first piping element having a first cylindrical conduit with a front end and a rear end, a first connecting means at the front end of the first conduit, and a second conduit opening into the first conduit; a second cylindrical piping element having a second connecting means at one end adapted to sealingly assemble to the first connecting means; means for sealingly assemblying the second connecting means coaxially to the first connecting means; obdurating means mounted in one of the piping elements; and control means operable for moving the obdurating means selectively to open and shut a passage in said one element, wherein the improvement comprises:

said obdurating means being mounted in the first piping element and comprising a slidably movable piston having a front end and a rear end, the piston sealingly engaging the interior surface of the first cylindrical conduit;

said control means being mounted on the second piping element; and



operating means attached to the rear of the obdurating piston and extending through the rear end of the first cylindrical conduit, the control means being adapted to engage the operating means externally of the first piping element for moving the obdurating means in the first conduit selectively from an obdurating position in front of the opening of the second conduit to an open position to the rear of the opening of the second conduit when the two piping elements are assembled together.

4,114,639

LUBRICATED ROTARY VALVE WITH CONCENTRIC SEALING RINGS

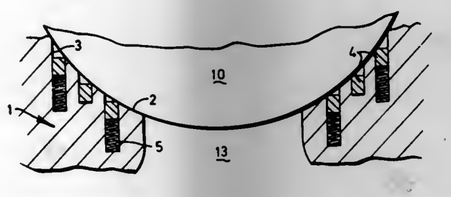
Michael Ellison Cross, and Albert Edward Coles, both of Bath, England, assignors to Cross Manufacturing Company (1938) Ltd., Bath, England

Continuation-in-part of Ser. No. 504,688, Sep. 6, 1974, Pat. No. 4,022,178. This application Dec. 27, 1976, Ser. No. 754,442

Claims priority, application United Kingdom, Sep. 7, 1973, 42105

Int. Cl.² F16K *5/06, 5/22*

U.S. Cl. 137—246.22 **6 Claims**



1. A rotary valve for controlling the flow of gases which rotary valve comprises a stationary valve housing defining an opening in the face thereof, leading to a combustion chamber and a movable member mounted for rotation in a bore defined by the said housing, said valve member having a face slidable over the face of the said housing and defining a port located in a part of the said face having a spherical conformation, which port is arranged to come into and out of communication with the said opening, means to supply lubricant between the two said faces, sealing means disposed to reduce the oil film thickness between the two said faces in the region of the port and opening when in communication to be in the region of from 40 to 50 μ-inches, the said sealing means comprising sealing rings each located in one of a series of grooves of successively decreasing diameter concentrically arranged about the opening in the face of the valve housing which grooves are formed substantially parallel to the axis of the said opening and means

to urge the sealing rings resiliently against the face of the movable valve member.

4,114,640

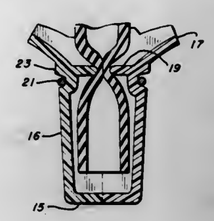
DRAIN VALVE

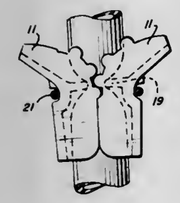
Hugh M. Forman, Waukesha, Wis., assignor to Will Ross Inc., Milwaukee, Wis.

Filed Jan. 10, 1977, Ser. No. 758,114

Int. Cl.² F16K *7/06*

U.S. Cl. 137—381 **12 Claims**





1. A valve assembly for use on the end of a resilient tube to control fluid flow within the tube comprising:

a pair of opposed, trough-like members, each member closed at a first end thereof and substantially open at a second end thereof and having an upstanding projection intermediate said first and second ends, said members being adapted to receive the end of said resilient tube therebetween and said projections being adapted to engage the wall of said resilient tube and collapse said tube, said members being movable from a closed position preventing flow through said tube to an open position permitting flow through said tube, said closed ends of said members coacting to enclose the end of said tube when said members are in said closed position; and

means for hingedly connecting said members in an opposed relationship, said hinging means being movable from a first position below said projections when said members are in said closed position preventing flow of fluid through said tube to a second position above said projections when said members are in said open position permitting flow of fluid through said tube, whereby the force on said projections by said tube biases said members to said closed position when said hinging means is at said first position and biases said members to said open position when said hinging means is at said second position to provide bistable operation of said valve assembly.

4,114,641

SEWAGE RELIEF VALVE

Howard Keith Robinson, 3220 Isabella Dr., Oceanside, Calif. 92054, and Larry Keith Robinson, 1361 Caren Rd., Vista, Calif. 92083

Filed Jul. 23, 1976, Ser. No. 708,202

Int. Cl.² F16K *31/20*

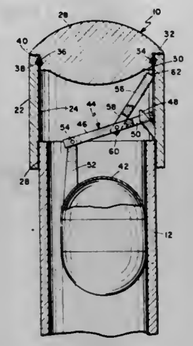
U.S. Cl. 137—430 **6 Claims**

1. A sewage relief valve, comprising:

a valve body having a generally cylindrical through-bore for mounting on an upwardly extending riser connected to a sewer line,

a cover sealingly detachably mounted on the upper end of said housing defining a valve member for sealing the upper end of said cylindrical through-bore,

lift linkage means including a unidirectional lift rod for engaging and lifting said cover from the end of said housing only in the opening, said lift rod disengaging from the cover in the closing direction,



float means disposed below said housing connected to said lift linkage means and responsive to a predetermined rise in liquid level toward said cover for actuating said lift linkage means into engagement with said cover for lifting said cover from said housing and unsealing said bore, and

said lift linkage means being unidirectionally supported in said housing so that said float and said lift linkage is carried upward through said bore and out of said housing in response to a rise in liquid level through said housing.

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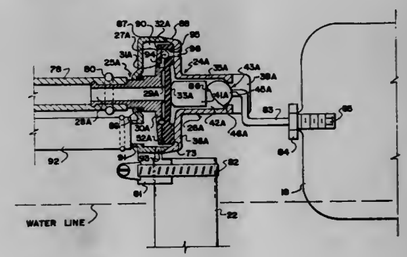
WATER CLOSET VALVE ASSEMBLY

Robert Ralph Robbins, 62 Thatcher Dr., Winnipeg, Manitoba, Canada

Continuation-in-part of Ser. No. 561,839, Mar. 25, 1975, abandoned. This application Feb. 2, 1977, Ser. No. 764,812

Int. Cl.² F16K *31/24*

U.S. Cl. 137—436 **26 Claims**



1. In a water closet tank which includes a float, connecting means extending from said float, an overflow tube in said tank and a water supply connection through the wall of said tank; the improvement comprising a float operated valve assembly in said tank, said valve assembly including a body, a valve seat in said body, means operatively connecting said water supply connection to said valve seat, outlet means in said body operatively connected with the interior of said tank, a valve action having an open position and a closed position, situated within said body and controlling the flow of water past said valve seat and into said tank, said valve action including a flexible disphragm mounted in said body and spanning said valve seat and engaging said valve seat when said valve action is in the closed

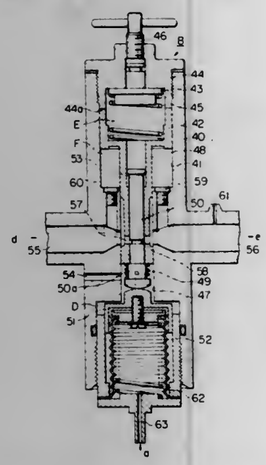
position, means operatively connected to said connecting means to permit opening of and to close said valve action relative to said valve seat, said last mentioned means including mechanical means for moving said diaphragm and holding same onto said valve seat when said valve action is in the closed position and means to control the pressure of water on both sides of said diaphragm when said diaphragm is moved away from said valve seat thereby reducing the effective hydraulic pressure holding said diaphragm away from said seat and reducing the mechanical pressure from said mechanical means, required to move said diaphragm towards said valve seat, said last mentioned means including first means communicating between the space bounded by said diaphragm on the side thereof facing said valve seat and said outlet means, second means communicating between said space and the space on the opposite side of said diaphragm and said first and second means being positioned on the downstream side of the valve seat and both communicating with the outlet means.

4,114,643

VALVE OPERATING MECHANISM OF INTERNAL COMBUSTION ENGINE

Syuniti Aoyama; Yoshimasa Hayashi, both of Yokohama, and Yasuo Nakajima, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Division of Ser. No. 702,073, Jul. 2, 1976. This application Apr. 27, 1977, Ser. No. 791,243
Int. Cl.² F16K *21/14*
U.S. Cl. 137—495 **5 Claims**



1. A pressure regulator for regulating the pressure of a fluid to a predetermined level in response to a control pressure, comprising:

a body having a fluid inlet, a fluid outlet, a first operating chamber which is supplied with the fluid pressure of said fluid outlet, a second operating chamber which is supplied with the control pressure, and a passage means for communicable between said fluid inlet and said fluid outlet;

a first responding means for being operated in response to the fluid pressure within the first operating chamber;

a first control member which is movably disposed at said passage means and arranged to move with said first responding means;

a second responding means for being operated in response to the fluid pressure within said second operating chamber;

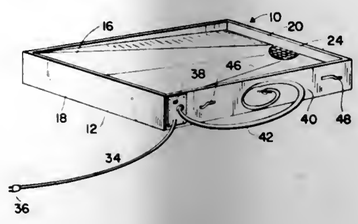
a second control member which cooperates with said first control member to form a variable orifice in said passage means, said second control member being arranged to move with said second responding means.

4,114,644

RECYCLING DRAIN PAN

Eldon L. Piper, 1525 West La., Billings, Mont. 59101

Filed Feb. 8, 1977, Ser. No. 766,720
Int. Cl.² F04F *11/00*
U.S. Cl. 137—565 **6 Claims**



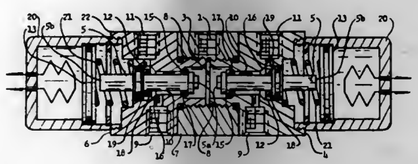
1. A self-contained recycling drain unit comprising: a hollow enclosure having relatively narrow top, bottom and side walls, and a front wall extending between said walls which slopes downwardly from said bottom wall towards said top wall, a drain opening in said front wall adjacent said top wall, pump means forming an integral part of said unit having an outlet adjacent said bottom wall, and a flexible hose having one end connected to the outlet of said pump means and a free end for recycling fluid accumulated within said enclosure.

4,114,645

DIRECTIONAL VALVES WITH THERMO-ELECTRIC OPERATORS

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Aug. 27, 1976, Ser. No. 718,343
Int. Cl.² F15B *13/044*
U.S. Cl. 137—596.17 **5 Claims**



1. A directional poppet valve comprising:

a valve housing having a first and a second ends interconnected by an axially extending bore passing therethrough, said bore including valve seats therein and a plurality of perpendicular fluid ports communicating therewith, said bore further including a slidably received and axially movable stem held therein by detachable poppet members which also act as cushions during the position change of said stem in valve operation controlling the directional flow therethrough, including fluid communication between said fluid ports when said stem is shifted between a first and a second positions quietly, means for shifting said stem inside said housing bore within positions controlled by said cushioning poppet members acting as valve seals inside said valve seats, in cooperation with fluid pressure force exerting an end thrust over stem surfaces exposed thereto, and for maintaining said stem in at least one of said positions by said end thrust fluid pressure induced thereupon, said means for shifting said stem including an electrically energized thermal operator capable of exerting a push force in a direction opposite the direction said fluid pressure induced said end thrust thereupon until said position change occurs, and subsequently for maintaining said position until said electrically energized operator is de-energized to result in automatic position change of said stem and return to the original position which maintains

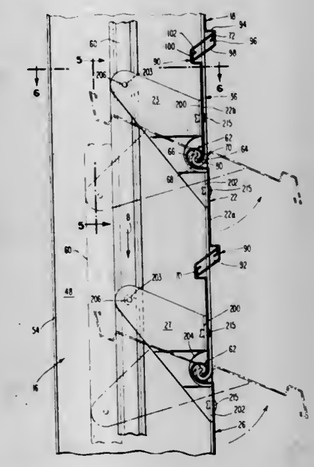
fluid supply means normally closed for as long as said electrically energized operator is de-energized due to said end thrust constantly prevailing over said surfaces of said stem, energization of said operator electrically allowing new supply of fluid through said valve when said push force urges said stem to be shifted therein, said thermal operator disposed coaxially with said stem including an electric heating element inside a chamber of said operator to create instant pressure increase of a refrigerant housed therein exerting high vapor pressure over a slidingly movable coaxial operator-end-closure abutting said stem during the shifting thereof while when said thermo-electric operator is deenergized electrically, said operator end thrust force disappears allowing said fluid pressure force to dominate over said stem surfaces exposed thereto urging said return of said stem to the original position automatically by said fluid pressure force prevailing therein, said slidingly movable coaxial operator-end-closure maintained a distance away from said stem end by a compression spring when said operator is de-energized, said spring acting as a biasing force means for said vapor pressure force refrigerant exerts therein.

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ROTATING BLADE FIRE DAMPER

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173. This application Feb. 2, 1977, Ser. No. 764,774
Int. Cl.² F24F *13/14*; F16K *1/22*
U.S. Cl. 137—601 **3 Claims**



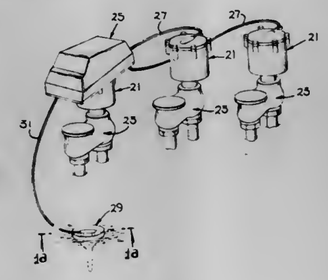
1. In a fire and air control damper having a frame, a plurality of blades and rotation means for allowing selective rotational displacement of said blades with respect to said frame between open and closed positions, the improvement wherein said frame comprises an inwardly depending flange disposed within a plane which is parallel to the plane of said blades in the closed position and wherein first and second substantially parallel blade sections sealingly engage first and second opposing sides of said inwardly depending flange when said blades are in the closed position, the longitudinal edges of adjacent blades being configured to form opposing hook-shaped portions, said hook-shaped portions each comprising a transverse portion extending generally away from the plane of said blade and a tip portion spaced apart from said transverse portion to form the leading edge of said blade upon the rotation of said blade, said tip portion of each hook-shaped portion being configured to engage an interior surface of the hook-shaped portion of each adjacent blade in the closed position and to cooperate with a surface of the transverse portion to slidingly engage said surface through a predetermined arc of blade rotation as the blades are moved from the closed towards the open position, whereby a double seal is maintained in the closed position and through said predetermined arc of blade rotation.

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FLUID CONTROL SYSTEM AND CONTROLLER AND MOISTURE SENSOR THEREFOR

Oded E. Sturman, and Benjamin Grill, both of Northridge, Calif., assignors to Clifton J. Burwell, Northridge, Calif., a part interest

Filed Mar. 1, 1976, Ser. No. 662,682
Int. Cl.² A01G *25/16*
U.S. Cl. 137—624.2 **15 Claims**



1. A sprinkler system comprising:

a plurality of valves, each of said valves having means responsive to electrical drive control pulses to open and close the valves;

a controller having first and second controls, said controller being a means for repetitively providing a train of drive control pulses on a plurality of controller terminals, at intervals determined by said first control in accordance with a desired watering frequency, said drive control pulses in each pulse train being separated in time as determined by said second control in accordance with a desired watering time; and

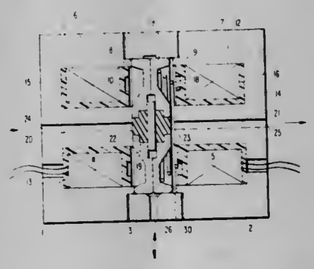
means for coupling said controller terminals to said plurality of valves.

4,114,648

DOUBLE ACTING ELECTROMAGNETIC VALVE

Hiroyuki Nakajima, Ashiya, and Takashi Hosokawa, Osaka, both of Japan, assignors to Konan Electric Co., Ltd., Nishinomiya, Japan

Filed Dec. 29, 1975, Ser. No. 645,135
Claims priority, application Japan, Dec. 25, 1974, 48-2573
Int. Cl.² F16K *11/00*
U.S. Cl. 137—625.5 **3 Claims**



1. A double acting electromagnetic valve comprising a hollow main body having internally a space acting as a valve chamber, a pair of magnetic cores each having a concentric polar arrangement and an E-shaped axial cross section, secured respectively to two lateral surfaces of said main body such that

the end of the central leg of each magnetic core and at least one part of the annular end surface of the outer leg of each said core are disposed directly within said valve chamber, a movable magnetic member positioned in said valve chamber so as to be shiftable axially therein between said pair of cores to bring the magnetic member into tight contact with said end of the central leg and said one part of the annular end surface of the outer leg of either one of said magnetic cores when the member is moved to an extremity of said chamber, two coils each encased in a coil-receiving recess formed between the central leg and the outer leg of the magnetic cores, respectively, said coils being adapted to be energized to magnetize the respective magnetic core to bring said magnetic member into said tight contact positions, respectively, said magnetic cores being made of high carbon steel constituting a magnetic material which is not a permanent magnet but has sufficient residual magnetism to retain said movable member in its respective tight contact position following deenergization of said respective coils, a fluid passage formed through the central leg of each one of the magnetic cores and in said main body, a valve seat formed at the end of each core fluid passage exposed to said valve chamber, valve members provided on said shiftable magnetic member to abut against the valve seats, and said valve members being united into a single valve member made of a rubberlike material and exposed to both sides of said magnetic member.

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LEAD DOSING VALVE

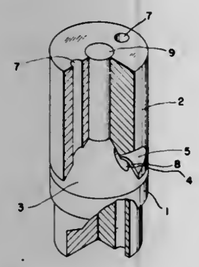
Hans-Georg Lindenberg, Hannover-Stöcken; Joachim Illmann, Stelingen, and Hans-Joachim Golz, Hannover, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 25, 1976, Ser. No. 699,674

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1975, 2530102

Int. Cl.² F16K *11/083*

U.S. Cl. 137—625.19 **9 Claims**



1. A valve for metering doses of liquid from a reservoir comprising

a valve body provided with a plurality of outlet ducts which are adapted to be positioned with their inlet openings below the surface of the liquid in the reservoir,

a valve head having a plurality of recesses corresponding to the number of outlet ducts in the valve body and adapted to close said inlet openings,

a plurality of open ended passages in the valve head, positioned for alignment with respective outlet ducts when the valve is closed, and

means for rotating the valve head relative to the valve body to alternately align the recesses in the valve head and the open-ended passages with the outlet ducts,

each recess being so dimensioned that, when it is aligned with the inlet opening, it frees a cross-sectional area which is smaller than the inlet opening, and

the liquid being molten lead for the production of storage battery parts.

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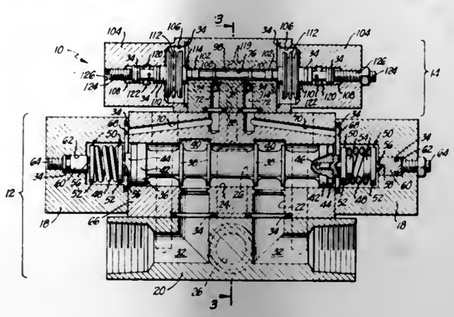
VALVE STRUCTURE

Carroll G. Gordon, 3 William Ct., Menlo Park, Calif. 94025

Filed Oct. 6, 1976, Ser. No. 730,225

Int. Cl.² F15B *13/042*

U.S. Cl. 137—625.63 **4 Claims**



1. A valve structure which comprises:

a principal valve and a pilot valve,

said principal valve having a valve body including a pressure port, a return port, two service ports and a bore located within said body, said ports intersecting said bore, said principal valve also having a valve spool movably mounted within said bore so as to be capable of being moved to regulate flow between said ports in said principal valve,

said pilot valve having a valve body including a pressure port, two service ports, and a bore within said body, said ports intersecting said bore, said pilot valve also having a valve spool movably mounted within said bore so as to be capable of being moved to regulate flow between said ports in said pilot valve,

a first passage for connecting said pressure ports of said pilot valve and said principal valve with a source of fluid under pressure,

said principal valve also including actuation means for moving said valve spool in said principal valve in response to applied pressure,

said actuation means comprising two pistons, said pistons being located at opposite ends of said valve spool in said principal valve,

second and third passages, said second passage connecting one of said service ports of said pilot valve with one of said pistons, said third passage connecting the other of said service ports of said pilot valve with the other of said pistons,

said pilot valve also including two pistons, said pistons being located at opposite ends of said valve spool in said pilot valve so as to be positioned adjacent to the extremities in said bore in said pilot valve,

control means for moving said valve spool in said pilot valve,

said control means including two cavities in said valve body of said pilot valve and two bellows,

said cavities being located at opposite extremities of said bore in said pilot valve,

each of said bellows being located within one of said cavities, each of said bellows having an immovable end mounted on said body of said pilot valve and having a movable end located adjacent to said valve spool in said pilot valve,

interfitting means connecting said bellows and said pilot valve spool for holding said movable ends on said bellows in alignment with said pilot valve spool,

said bellows being capable of exerting pressure against said valve spool in said pilot valve so as to move said valve spool in said pilot valve in accordance with the internal pressures within said bellows,

two separate port means in said valve body of said pilot valve for conveying fluid to the interiors of said bellows so as to move the free ends thereof.

4,114,651

COMBINED STOP AND CONTROL VALVE

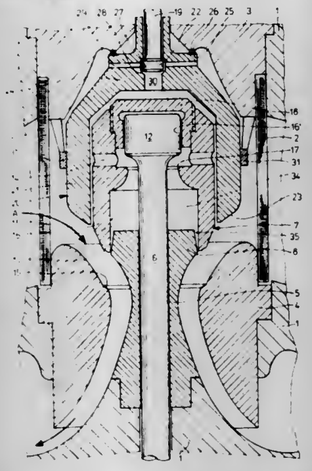
Arthur Oberle, Ennetbaden, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 22, 1976, Ser. No. 679,463

Claims priority, application Switzerland, Apr. 30, 1975, 5563/75

Int. Cl.² F16K *1/00*

U.S. Cl. 137—630.14 **3 Claims**



1. A combined stop and control valve for mounting in a pipe carrying the working medium of a turbo machine, of which the stop valve body and control valve body are arranged independently of each other in a common valve housing and with the stop valve body being located upstream of the control valve body when viewed in the direction of flow of the working medium through the combined valve, said stop and control valve bodies being provided with coaxial valve seats located next to each other and immediately adjacent a flow opening, said stop valve body being in the form of a bell into the hollow cavity of which said control valve body is inserted, pilot valves provided respectively for said stop and control valve bodies, at least one axial guide for the movement of said stop valve body, and axially spaced guides for said control valve body one of which is established by its pilot valve for providing sliding engagement for said control valve body throughout its valving movement.

4,114,652

COMBINED STOP AND CONTROL VALVE

Arthur Oberle, Ennetbaden, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

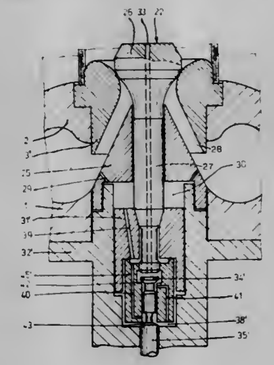
Filed Apr. 29, 1976, Ser. No. 681,728

Claims priority, application Switzerland, Apr. 30, 1975, 5565/75

Int. Cl.² F16K *1/00*

U.S. Cl. 137—630.14 **1 Claim**

1. A combined stop and control valve for the working medium in turbine installations and in particular for steam turbine installations, wherein the bodies of the stop and control valves are arranged co-axially to one another in a common housing and are independently controllable respectively by means of associated pilot valves for controlling flow of the working medium from a valve chamber out of the valve housing, wherein the body of said stop valve has a bell-shaped configuration terminating in a seating surface for closing off flow of the working medium through the valve, and a servo-piston component controlled by its pilot valve and actuated by the working medium, and wherein the body of said control valve has a bulb-shaped head provided with a seating surface for regulating flow of the working medium through the valve, and which is enterable into said bell-shaped stop valve body, said head being located at one end of a spindle slidable in a lead-through bushing, and the other end of said spindle terminating in a servo-piston operating in a cylinder, said spindle including a longitudinal bore therethrough for flow of the working medium from said valve chamber into one end of said servo-piston cylinder when the pilot valve for said contol valve is actuated, said bushing being provided with a passageway placing the other end of said servo-piston cylinder in communication with the outlet side of said valve, the improvement wherein said pilot valve correlated to operation of said control



valve body comprises a subsidiary spindle provided with two longitudinally displaced seating surfaces thereon cooperable with corresponding seating surfaces located on an assembly part mounted for movement together with said spindle of said control valve and servo-piston, said assembly part being provided with one bore extending from a location in said pilot valve adjacent one seating surface on said assembly part through a bore in said servo-piston to that end of said servo-piston cylinder which is connected by way of said passageway in said bushing with the outlet side of said valve, and said assembly part being provided also with a second bore extending from the opposite end of said servo-piston cylinder to a location in said pilot valve adjacent the other seating surface on said assembly part for connection with the bore in said control valve spindle.

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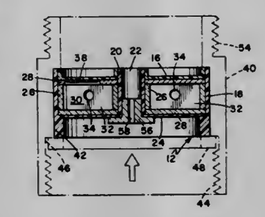
RUPTURABLE FLOW RETARDING DISK FOR FIRE HOSES

Jack M. Carlin, R.F.D. Box 135, Del Mar, Calif. 92014

Filed Sep. 13, 1976, Ser. No. 722,709

Int. Cl.² F15D *1/04*; F16K *17/40*

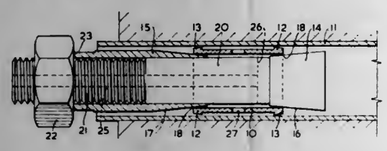
U.S. Cl. 138—45 **11 Claims**



1. A delayed release device for installation in a liquid passageway temporarily restricting liquid flow therein comprising:

(a) a substantially impervious capsule having a casing which defines an enclosure;
(b) said capsule having at least one liquid-restraining wall and including support structure disposed in said enclosure to reinforce said restraining wall against collapse by external fluid pressure;
(c) said support structure being liquid-permeable and subject to rapid and drastic weakening when immersed in a liquid;
(d) at least a portion of the casing of said capsule being rupturable upon the occurence of a pre-determined level of external fluid pressure to admit liquid into said enclosure, whereupon said support structure is weakened and said restraining wall is subject to collapse to release liquid in said passageway.

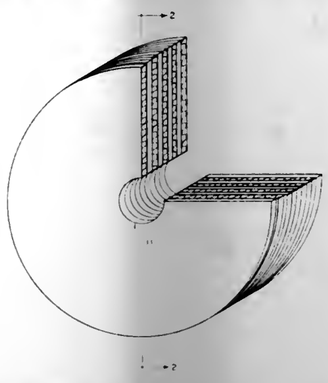
4,114,654
TUBE PLUG
Arthur William Richardson, Kendal, England, assignor to Furmanite International Limited, Cumbria, England
Filed Oct. 20, 1976, Ser. No. 733,985
Claims priority, application United Kingdom, Feb. 19, 1976, 6692/76
Int. Cl.² F16L *55/18*
U.S. Cl. 138—89 **10 Claims**



1. A bore plug comprising:
(i) a deformable sleeve to fit inside a bored structure, such as a tube, to be plugged
(ii) two tapered members interfitting with said sleeve to engage opposite ends thereof,
(iii) a structure carrying said tapered members and permitting relative movement of said members axially of the sleeve, said structure including parts relatively movable axially of the sleeve and each coacting with a respective one of the tapered members such that by relative movement of said parts said tapered members may be drawn together axially of the sleeve to deform permanently axially-spaced portions of the sleeve into circumferential engagement with the bore, an annular chamber being then bounded by the sleeve and the bore between said circumferentially-engaged portions, said sleeve having an aperture at a position axially between said circumferentially-engaged portions, and said structure including a passageway opening within said sleeve through said aperture and communicating with said chamber way for introduction to said chamber of a flowable sealant.

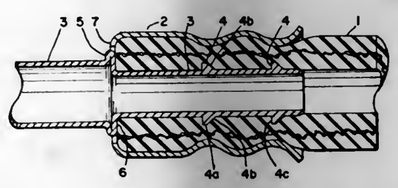
4,114,655
PROTECTIVE PLUG FOR THE ENDS OF TUBULAR CORES
Richard T. Bloker, 8224 Ammonett Dr., Richmond, Va. 23235
Filed Jun. 18, 1976, Ser. No. 697,619
Int. Cl.² F16L *55/10*
U.S. Cl. 138—89 **4 Claims**

1. A cylindrical plug bounded by flat leading and trailing faces and fabricated of interadhered layers of annular sheets of corrugated paperboard wherein the direction of the corrugations of each layer is aligned so as to cross at an angle of 30° to 90° with the direction of the corrugations of each contiguous layer, said plug being provided with an axial cylindrical hole the ratio of the diameter of said hole to the diameter of said plug being between 0.2 and 0.3, the layer which constitutes said leading face having a smaller diameter than the diameters



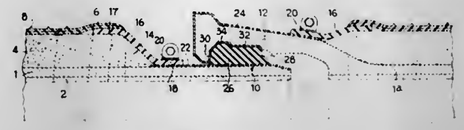
of subsequent layers, and the entire external surface of said plug containing a water-impervious coating.

4,114,656
HOSE ASSEMBLY
Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.
Filed Jun. 20, 1977, Ser. No. 808,123
Int. Cl.² F16L *13/14*
U.S. Cl. 138—109 **1 Claim**



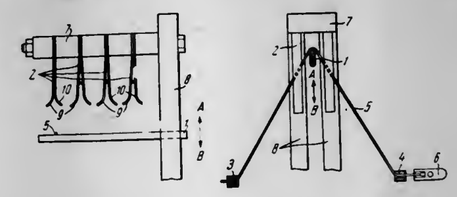
1. A hose assembly comprising a metallic tube or nipple having an annular radially outwardly extending bead spaced from one end of the nipple and providing a shoulder or stop disposed in a plane perpendicular to the axis of the tube or nipple, a non-metallic hose frictionally secured to said tube nipple and having an end in abutment with said shoulder or stop, whereby to pre-position said hose in predetermined axial relationship with said tube or nipple, and a metallic shell having a generally cylindrical body secured to said hose and having an inturned flange at one end engaging said end of said hose; and wherein said bead and said inturned flange are substantially co-planar; and wherein said tube or nipple is provided at axially spaced points with barbs extending outwardly from the outer surface of the tube or nipple and into the inner wall of said hose, and the body of said shell is provided at points spaced axially to correspond substantially with the spacing of said barbs with crimps extending into the outer wall of said hose, whereby said barbs and crimps are disposed in substantially the same diametric planes; and wherein said crimps are separated by circumferentially spaced webs; and wherein each barb has a surface which is concentric with the outer surface of the tube or nipple, a conical surface which extends from one end of said first-named surface to the outer surface of the tube or nipple and is disposed at that side of the rib which is remote from said stop or shoulder, and an annular flat surface which is substantially perpendicular to the axis of the tube and extends from the other end of said first-named surface to the outer surface of the tube.

4,114,657
LARGE-DIAMETER INSULATED PIPE
Michel Langenfeld, Vandoeuvre, France, assignor to Pont-A-Mousson S.A., Nancy, France
Filed Sep. 27, 1977, Ser. No. 837,326
Claims priority, application France, Sep. 5, 1977, 77 26877
Int. Cl.² F16L *11/08*
U.S. Cl. 138—109 **18 Claims**



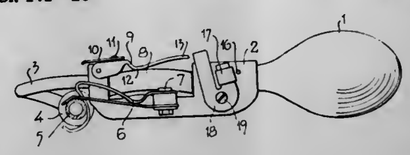
1. A large-diameter insulated pipe for conveying fluids at high temperature comprising an inner pipe, an outer protective layer, a foam of thermally insulating plastics material which is interposed between the inner pipe and outer layer and adheres to the inner pipe and to the outer layer and which covers a major part of the inner pipe but terminates at a distance from each of the ends of the inner pipe in a portion having an inclined surface of substantially frustoconical shape, said outer layer comprising a cover which is relatively rigid and terminates before reaching each frustoconical surface and a protective case for each of the frustoconical surfaces of the foam which case is at one end fixed to the cover and at the other end directly integral with the inner pipe, said case having sufficient elasticity to allow the foam to follow the expansion of the inner pipe while the cover remains immobilized.

4,114,658
MECHANISM FOR COMPENSATING THE LENGTH OF A WEFT THREAD FOR A LOOM
Vladimir Fomich Trubin, ulitsa Entuziastov, 5/1, kv. 28, and Alexei Alexandrovich Redin, ulitsa Egerskaya, 25, kv. 42, both of Cheboxary, U.S.S.R.
Filed Feb. 14, 1977, Ser. No. 768,493
Claims priority, application U.S.S.R., Mar. 1, 1976, 2329877
Int. Cl.² D03D *47/34*
U.S. Cl. 139—452 **4 Claims**



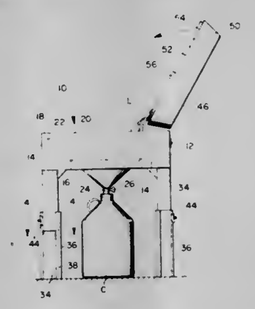
1. A mechanism for compensating the length of a weft thread for a stationary weft supply loom, comprising: a pair of thread guides fo guiding a weft thread which is about to be introduced into a shed, said thread guides defining between themselves a space along which a weft thread initially extends along a substantially straight line; a movable means movable across said straight line through and beyond said space for engaging a weft thread guided by said thread guides and extending the weft thread from said guides while displacing the weft thread along a predetermined path and forming a loop from the weft thread; and a releasable gripping means situated along said path for receiving said loop and for releasably retaining the formed loop of the weft thread, said releasable gripping means including at least one stationary plate-type grip of a converging configuration at an end provided for entrance of the loop of weft thread.

4,114,659
PIPETTE FILLING AND LIQUID DISPENSING DEVICE
Moshe Goldberg, Tel Aviv, Israel, and Eitan Goldberg, 9 Akiva Eger St., Tel Aviv, Israel, assignors to Eitan Goldberg, Tel Aviv, Israel
Continuation of Ser. No. 652,094, Jan. 26, 1976, abandoned. This application Jun. 7, 1977, Ser. No. 804,278
Claims priority, application Israel, Jun. 18, 1975, 47510
Int. Cl.² B65B *3/10*
U.S. Cl. 141—26 **5 Claims**



1. A pipette filling and liquid dispensing device which comprises in combination: a conduit including a first section and a second section each having a first end and a second end, said second section having means at said first end thereof for attachment to a pipette; a resiliently compressible bulb connected to said first end of said first section of said conduit; an aperture provided in the said conduit; means for alternatingly closing and opening said aperture to establish connection of said conduit with the atmosphere or seal said conduit off against the atmosphere; a removable valve unit inserted between said second ends of said first and second sections of said conduit, said valve unit including a resilient tubular member having its two ends releasably connected respectively to said second ends and a valve body within said member, said valve unit being easily released and removed from said conduit; and
a presser member separate from said valve unit and which is movable into contact with said resilient tubular member to, said presser member including means for distorting said resilient tubular member to effect an opening of said valve unit and further including means for holding said valve unit in place.

4,114,660
AUTOMOBILE OIL CHANGING DEVICE
Michael Arruda, 144 Pleasant St., Rehoboth, Mass. 02769
Filed Apr. 18, 1977, Ser. No. 788,604
Int. Cl.² B65B *39/00*; B67C *11/04*
U.S. Cl. 141—98 **6 Claims**



1. A device for the convenient collection and disposal of liquids such as automobile waste oil comprising a generally rectangular receptacle having a bottom wall and peripheral side walls, a downwardly inwardly extending funnel-shaped central wall for receipt of liquid thereon, said central wall having an open top and projecting through said bottom wall and terminating in a downwardly extending conduit for directing said liquid from said central wall outwardly of said receptacle as to containers adapted for placement therebeneath, said side walls, said bottom wall and said central wall cooperatively

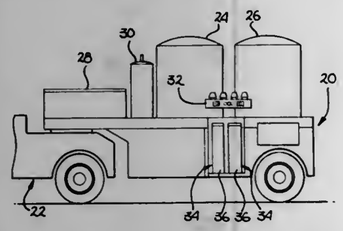
forming a hollow enclosed storage chamber surrounding said central wall and disposed within said receptacle, means opening through one of said side walls providing access to said chamber, said conduit including valve means for controlling the flow of said liquid through said conduit, said receptacle further including a detachable cover positioned over and adapted to close said open top, said cover contacting upper portions of said central wall in liquid sealing relationship thereto so that liquid may be temporarily transported in said receptacle and means for positioning said receptacle for receipt of containers beneath said conduit, said positioning means including vertically adjustable legs downwardly extending from said bottom wall, said conduit terminating above the uppermost possible position of said legs such that said conduit is displaced from a supporting surface for said legs, said legs each having a removable extension attached thereto, said legs and extensions slidably nested and means for maintaining the relative positioning of said legs and said extensions.

4,114,661

MOBILE FLUID TREATMENT TANK SERVICING APPARATUS

James A. Harris, 11608 Modoc, Ventura, Calif. 93003

Continuation of Ser. No. 570,830, Apr. 23, 1975, abandoned, and a continuation-in-part of Ser. No. 382,672, Jul. 26, 1973, Pat. No. 3,880,212. This application Dec. 10, 1976, Ser. No. 749,328
Int. Cl.² B65B *3/04*
U.S. Cl. 141—231 **33 Claims**



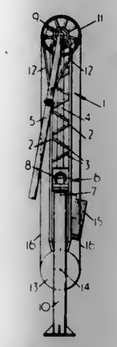
1. Water conditioning tank service apparatus for removing a granular water conditioning material of a first characteristic from a service tank having at least one service tank connection and refilling the service tank with a granular water conditioning material of a second characteristic comprising:
engaging means for engaging at least one service tank connection on a service tank for delivering granular material to and from the service tank;
first tank means for retaining granular material of a first characteristic;
second tank means for retaining granular material of a second characteristic;
first flow means coupled between said first tank means and said engaging means for delivering said granular material from said engaging means to said first tank means;
drive means for encouraging flow in said first flow means of sufficient velocity to remove substantially all of the granular material from a service tank; and
second flow means coupled between said second tank means and said engaging means for delivering sid granular material from said second tank means to said engaging means to fill the service tank with granular material from said second tank means.

4,114,662

ARTICULATED ARMS

John Purefoy Goodacre, Woodford; Colin Potter, Stockport, and Peter Ball, Sheffield, all of England, assignors to National Supply Company (U.K.) Limited, Stockport, England

Filed Dec. 14, 1976, Ser. No. 750,314
Claims priority, application United Kingdom, Dec. 18, 1975, 51992/75
Int. Cl.² B65G *67/00*
U.S. Cl. 141—387 **9 Claims**



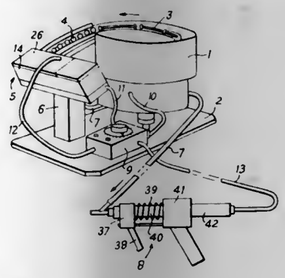
1. In an articulated arm for connecting a fixed product conduit to a marine tanker, the improvement comprising:
a. a product tube including an inboard limb pivotally connected to said fixed product conduit so as to be pivotal relative thereto about fixed axes of said product conduit and an outboard limb pivotally connected to said inboard limb,
b. a product tube support frame, a bearing assembly pivotally mounting said support frame for pivotal movement about substantially the same axes as said inboard limb,
c. support means connecting the outboard end of said product tube support frame to said outboard limb of said product tube, said support means allowing relative movement between said outboard end of said product tube support frame and said outboard limb of said product tube, and
d. a counterweight mounted on said product tube support frame, said counterweight balancing the weight of said product tube support frame and said product tube during the pivotal movement thereof.

4,114,663

AUTOMATIC SCREWDRIVER

Brynley Emberley Viner, 1 Wallace Rd., Broadstone, Dorset, England

Filed Dec. 13, 1976, Ser. No. 749,673
Int. Cl.² B25B *23/00*
U.S. Cl. 144—32 R **6 Claims**



1. An automatic screw-driving and feeding apparatus comprising:

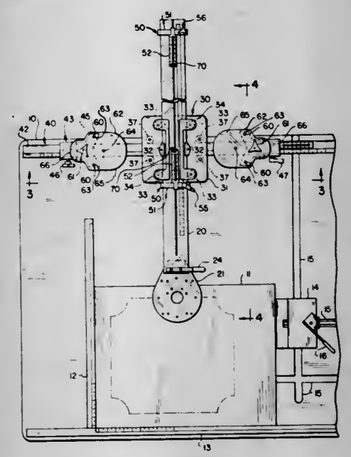
(i) a screwdriver body including a tubular housing axially movable with respect to the remainder of the body;
(ii) a plurality of screw holding elements mounted in said tubular housing;
(iii) means for resiliently biasing said screw holding elements inwardly such that they may hold a screw in axially disengageable manner;
(iv) drive means in the screwdriver body adapted, upon axial inwards movement of the tubular housing, the engage with the screw and apply rotary drive thereto;
(v) a feed tube merging with the housing at an acute angle rearwardly of the holding elements;
(vi) feed means which supply screws one at a time to said feed tube, said feed means including:
(a) a feed housing, and a block reciprocable therein, the block having a recess of a size to receive a screw therein and reciprocable between a first position in which the recess can receive a screw from screw supply means, and a second position in which the screw can pass from the recess into the feed tube, and the feed housing having a portion of its side wall cut away so that screws supplied along a track and hanging by their heads therefrom can pass through the cut away in the wall of the housing and enter said recess one at a time when the slide block is in said first position;
(b) support means extending into said recess, such support means being removed from the recess when the slide block moves into its second position, the support means supporting the tip of the screw in a desired position when the block is in its first position but not obstructing exit of the head of the screw axially from the recess when the block moves to its second position.

4,114,664

APPARATUS FOR ROUTING DESIGNS IN PANELS

Lawrence M. Cotton, New Bern, N.C., assignor to The Stanley Works, New Britain, Conn.

Filed Nov. 24, 1976, Ser. No. 744,528
Int. Cl.² B27C *5/10, 5/00*
U.S. Cl. 144—134 D **19 Claims**



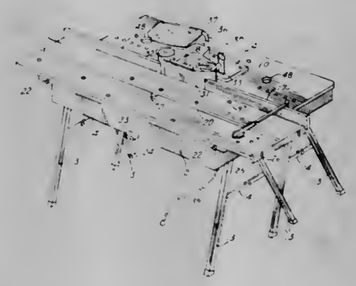
1. An apparatus for use with a router for routing designs in panels comprising:
a. means providing a work surface;
b. means to secure a panel in predetermined position on the work surtace;
c. a rail extending parallel to one edge of a panel secured in said predetermined position;
d. a carriage mounted on the rail for sliding movement longitudinally of the rail;
e. a bar mounted on the carriage for longitudinal reciprocating movement thereon at right angles to the rail
i. said bar having an outer end adapted to extend over the panel to be routed;
f. means on said outer end of the bar for mounting a router;
g. adjustable stop means for determining the limits of movement of the carriage and the bar.

4,114,665

WOODWORKING BENCH FOR PORTABLE MOTOR DRIVEN HAND TOOLS

Henry P. Decker, 2233 S. Alton Way, Denver, Colo. 80231

Filed May 6, 1976, Ser. No. 683,911
Int. Cl.² B25H *1/02*
U.S. Cl. 144—286 R **13 Claims**



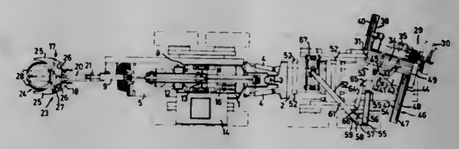
1. A woodworking bench for utilizing a portable motor driven belt sander for the precision finishing of wooden workpieces, said bench comprising a top wall having a flat top surface and an upright wall rigidly attached to said top wall, said upright wall comprising two portions having an opening therebetween and having parallel flat front surfaces normal to said top surface, means providing a seat for receiving a portable sander of the type having a flat working face and for holding the working face in a position parallel to and in alignment with the face of one of said sections of said upright wall, and in advance of the face of the other of said sections, and means for securely holding the sander to said bench in said position of alignment.

4,114,666

METHOD OF FOREST HARVESTING AND A MACHINE FOR PERFORMING SAID METHOD

Lars Öjvind Bruun, Filipstad, Sweden, assignor to Volvo BM AB, Eskilstuna, Sweden

Filed Jun. 14, 1976, Ser. No. 695,570
Claims priority, application Sweden, Jun. 27, 1975, 7507407
Int. Cl.² A01G *23/08*
U.S. Cl. 144—309 AC **9 Claims**



1. A method for felling standing trees and cutting portions from the felled trees, utilizing a vehicle having a front end and a rear end and an extendable and retractable boom which has means for gripping, cutting and lowering standing trees, the vehicle further having a delimbing device at the rear end thereof, the boom being rotatable independently of the delimbing device around a substantially vertical axis at the vehicle front end, the method comprising driving the vehicle forward up to a stand of trees, extending the boom substantially over

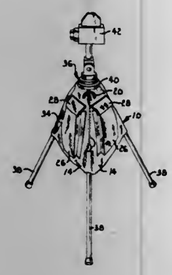
the front end of the vehicle toward a tree, gripping the tree with the boom, cutting the tree, then retracting the boom and swinging the boom around its substantially vertical axis, with the severed tree stem held substantially vertically, to a position where the boom is pointing substantially over the rear end of the vehicle, then lowering the tree substantially in the longitudinal direction of the boom with the tree top directed backward away from the vehicle, introducing the root end of the tree into the delimbing device, and delimbing the tree while advancing the tree from the rear end of the vehicle toward the front end thereof, and during a first phase in which the delimbing device assumes a first position at an angle to the longitudinal axis of the rear vehicle section, feeding delimibed logs out in cut or whole lengths over one side of the vehicle, then swinging the device so that its delivery end is directed to a hopper located between the delimbing device and the vehicle front end, and then feeding cut logs to the hopper during a second phase.

4,114,667

CARRYING PACK FOR PHOTOGRAPHY EQUIPMENT

Alfred Belson, 1111 S. Coast Dr., #E102, Costa Mesa, Calif. 92626

Filed Nov. 14, 1977, Ser. No. 851,369
Int. Cl.² B65D *29/00*
U.S. Cl. 150—1 **20 Claims**



1. A device adapted for use to carry a tripod having a head and legs extending therefrom which are movable between a spread position and a collapsed position, said device comprising:
- a neck portion presenting an opening adapted to receive the head of the tripod therethrough;
- intercoupled sides extending downwardly from said neck portion, said sides being adapted to extend along each of the tripod legs;
- means for securing said sides to each of the tripod legs with said legs in the spread position; and
- means on one of said sides adapted for use to carry the tripod.

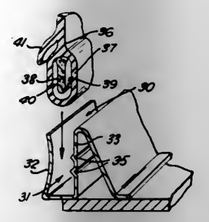
4,114,668

CONTAINERS HAVING FLUID-TIGHT SEALING MEANS

Christopher Daniel Dowling Hickey, 5 Heathside, Hinchley Wood, Esher, Surrey, England

Filed Dec. 1, 1976, Ser. No. 746,614
Claims priority, application United Kingdom, Dec. 4, 1975, 49890/75; Jun. 2, 1976, 22758/76
Int. Cl.² B65D *51/16*
U.S. Cl. 150—0.5 **5 Claims**

1. A container comprising a flexible sheet of impermeable material having a flexible inflatable tube around its periphery and a rigid or semi-rigid impermeable base member having an endless slot or groove to receive said tube, the slot or groove being shaped to hold the tube when the latter is inflated, whereby the tube may be retained in the slot or groove after insertion therein by inflation of the tube wherein the tube is provided with resilient means inside the tube and extending along the whole length of the tube and deformable to permit the tube being passed into the slot or groove, said resilient means urging the walls of the tube apart to engage the side walls of the slot or groove, the resilient means being of sponge material secured to the inside surface of the tube over a limited part of the cross-sectional periphery of the tube to leave a



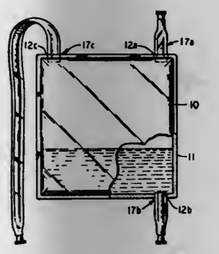
region between the resilient means and the inside surface of the tube forming a duct extending continuously along the length of the tube for inflation of the tube, whereby the tube, when uninflated, has to be deformed to force it into or out of the slot or groove, so ensuring a seal between the base and the cover, said container furthermore having valve means to permit the interior of the container to be pressurized or evacuated of air.

4,114,669

STERILE PORT STRUCTURE

Marilyn Bishop, One N. 341 Indian Knoll Rd., West Chicago, Ill. 60185

Division of Ser. No. 479,755, Jun. 17, 1974, Pat. No. 3,968,195.
This application Feb. 9, 1976, Ser. No. 656,470
Int. Cl.² F16L *55/10*
U.S. Cl. 150—8 **5 Claims**



1. A port structure for use with fluid passage means comprising:
- a flexible sleeve having an inner surface, and an outer surface having greater thermoplastic properties than said inner surface; and
- a rigid tube secured to said sleeve having a free end extending beyond said sleeve, whereby said outer surface of said sleeve can be heat sealed to said fluid passage means without sealing off said inner surface.

4,114,670

METHOD FOR SECURING SCREW MEANS ONTO METAL PLATE AND METAL PLATE HAVING SCREW MEANS SECURED

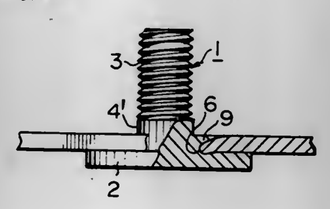
Tetsuya Akashi, and Akio Nikawa, both of Hatano, Japan, assignors to Topura Co., Ltd. (Kabushiki Kaisha Tohpura), Japan

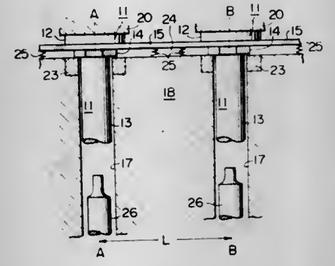
Filed Jul. 19, 1976, Ser. No. 706,430
Claims priority, application Japan, Apr. 7, 1976, 51/37275
Int. Cl.² F16B *39/28;* B21D *39/00;* B23P *11/02*
U.S. Cl. 151—41.72 **15 Claims**

1. A method for fastening a screw having a polygonally shaped stepped neck formed between a shaped screw head having a bearing surface and an elongated screw body to a metal plate having a polygonally shaped opening corresponding to said polygonally shaped stepped neck comprising the steps of

inserting said stepped neck into said opening so that said bearing surface is disposed in flush contact with said metal plate;

inserting said elongated screw body in a receiving means having an elongated hole bored therein, said elongated hole having an outer diameter radially dimensioned slightly larger than the outer diameter of said elongated screw body; and





applying a force to said receiving means to thereby affect an upsetting operation by applying force to said stepped neck to press said stepped neck and said receiving means against each other, so that the outer wall of said stepped neck is radially enlarged to form a radially extending flange and said opening in said metal plate is deformed plastically whereby the outer surface of the flange is substantially flush with the surface of said plate to thereby securely clamp said metal plate between said flanges and said screw head.

10. A metal plate having at least one screw fastened thereto formed by the method as defined in claim 35.

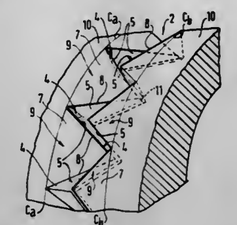
4,114,671

PNEUMATIC TIRE FOR VEHICLES HAVING IMPROVED HANDLING AND ROAD GRIPPING

Luigi Maiocchi, Vernate-Frazione Moncucco (Milan), and Luigi Silva, Muggio (Milan), both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Jan. 11, 1977, Ser. No. 758,487
Claims priority, application Italy, Jan. 26, 1976, 19567 A/76
Int. Cl.² B60C *11/06, 11/12*
U.S. Cl. 152—209 R **6 Claims**

1. A tire for vehicle wheels having a tread provided with at least one groove of zig-zag configuration with respect to the circumferential direction of the tire, each groove occupying a portion of tread defined by a pair of parallel planes perpendicular to the axis of said tire, wherein contiguous pairs of groove lengths alternatively meet at an apex causing said tread portion to appear to be divided into blocks, each block being defined by said contiguous pairs of groove lengths and by that portion of the tread surface between said parallel planes facing said apex and wherein the radially external surface of said blocks is inclined towards the axis of said tire and proceeds in the axial direction from the plane wherein a block is terminated towards the facing plane to form in a new tire a tread pattern, whose tread portion constitutes the contact area of said tire, comprising a circumferential rectilinear groove having the same width as the distance between said parallel planes and which will



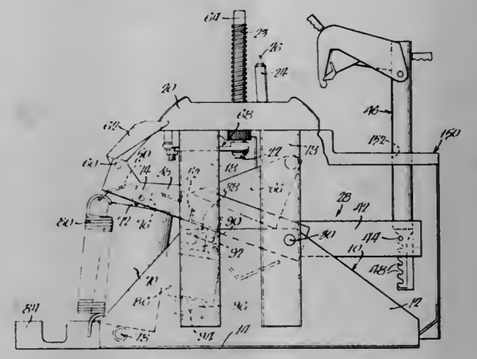
cause, with tread usage, an increase in the radially external surface portion of said blocks which contact the ground and will cause a modification in said tread pattern that progressively annuls the circumferential rectilinear grooves while at the same time emphasizing the zig-zag grooves.

4,114,672

TIRE CHANGING APPARATUS

Jimmie L. Holladay, and Ray A. Scott, both of Nashville, Tenn., assignors to The Coats Company, Inc., LaVergne, Tenn.

Filed May 9, 1977, Ser. No. 795,015
Int. Cl.² B60C *25/12*
U.S. Cl. 157—1.24 **7 Claims**



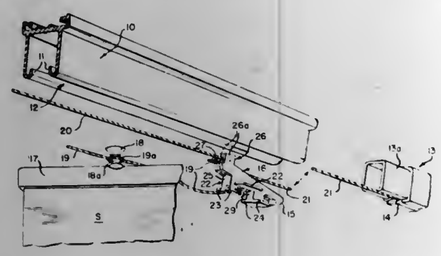
1. In a tire changing apparatus, the combination of:
- a base;
- an upwardly extending frame structure mounted on said base;
- a tire receiving table mounted on said frame structure;
- an elongated rocker arm pivoted at a pivot point intermediate its ends to said frame structure with its opposite ends extending to opposite sides of said table;
- upper and lower bead loosener assemblies associated with respective ends of said arm;
- a rotatable post mounted on said table top;
- means interconnecting said arm and said post for rotating said post in response to pivotal movement of said arm;
- a first cylinder connected between said arm and said apparatus in substantial alignment with one of said bead loosener assemblies for effectively directly operating said one bead loosener assembly and concurrently pivoting said arm in at least one direction; and
- a second cylinder connected to said arm at a location spaced from the point of connection of said first cylinder to said arm and to said apparatus for pivoting said arm in at least said one direction in concert with said first cylinder and with a force applied to said one bead loosener assembly less than the force developed by said second cylinder.

4,114,673

LOCKING MECHANISM FOR VERTICAL SLAT BLIND

Hendrik de Wit, Rotterdam, and Kurt Heinz Frentzel, Zevenhoven, both of Netherlands, assignors to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Filed Mar. 29, 1977, Ser. No. 782,316
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613750
Int. Cl.² E06B 9/26
U.S. Cl. 160—166 A 8 Claims



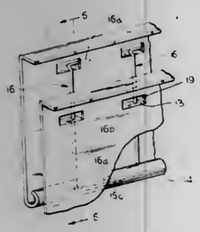
1. In a slatted blind having a plurality of vertical slats, a top rail, opposed guide flanges on said top rail defining a track groove and slat supports supported by said guide flanges in said track groove for supporting said vertical slats, the improvement comprising a locking means, means connecting said slats to each other, said connecting means also connecting the locking means to the last slat of said blind, a hook extending from said locking means in one direction away from said last slat, a stop fixed to the top rail, said locking means being engaged in said track for movement therealong, said locking means also being tiltable with respect to said top rail, tension means engaged with said locking means for moving said locking means along said track in either direction, said locking means upon movement by said tension means in said one direction bringing the hook of said locking means into contact with said stop on said top rail and upon continued movement in said one direction said locking means tilting to lockingly engage said hook in said stop of the top rail, and said connecting means when said hook is lockingly engaged in said stop biasing said locking means in a direction to maintain said locking engagement whereby the slats of said blind are maintained in their spaced relationship.

4,114,674

EXPANDABLE DOOR

Frank F. Gabry, 9841 N. Elms Ter., Des Plaines, Ill. 60016

Continuation-in-part of Ser. No. 689,537, May 24, 1976, abandoned. This application Dec. 23, 1976, Ser. No. 753,592
Int. Cl.² E06B 9/00, 3/12
U.S. Cl. 160—222 4 Claims



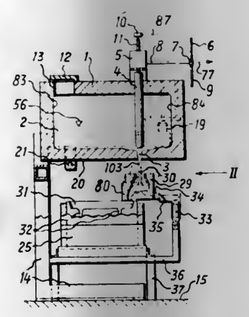
1. A vertically expandable door closure, comprising:
a plurality of door sections,
means to suspend said sections one from the other when said door closure is in a closed position,
each said section having a base and at least one leg depending therefrom;
said suspension means including a channel formed on each said section,
said channel extending along the lowermost edge of each said leg;
said suspension means further including at least one guide hook formed on each said section,
each said guide hook extending from one said leg intermediate said channel and said base,
each said guide hook shaped, sized, and positioned to engage the channel of an immediately suprajacent section,
each said guide hook having a guide aperture formed therethrough;
a plurality of flexible wire struts,
at least one of said struts being respectively mounted to each of said sections,
each said strut including a first substantially horizontal segment,
said first segment engaging the leg of said section,
a second segment continuous with and depending from said first segment,
said second segment being offset from said first segment,
said second segment passing through one said guide hook aperture on an immediately subjacent section,
a third segment continuous with said second segment and extending horizontally therefrom,
said third segment engaging said channel along said lowermost edge of said section when said first segment engages said leg,
each said wire strut directing said guide hook along said second segment to positively engage said guide hook with the channel of an immediately suprajacent section during closing of said door closure.

4,114,675

METHOD AND APPARATUS FOR POURING A MOLD WITH A SELECTABLE AMOUNT OF CASTING MATERIAL

Erwin Buhrer, Vogelingasschen 40, Schaffhausen, Switzerland

Filed Mar. 11, 1977, Ser. No. 776,912
Claims priority, application Switzerland, Mar. 15, 1976, 3169/76
Int. Cl.² B22C 19/04
U.S. Cl. 164—4 13 Claims



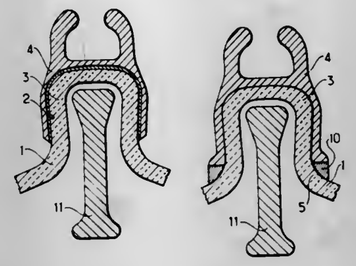
1. A method for pouring a mold with liquid metal to form a casting comprising the steps of locating over said mold a liquid metal receptacle having pouring means at the bottom thereof through which said liquid metal may be poured into said mold, continuously sensing the pressure head of said liquid metal in said receptacle during pouring of said mold, numerically integrating into a constant value the product of the multiplication of a function of the pressure head and time, and controlling the pouring means to terminate pouring of said mold when said value reaches a predetermined set value.

4,114,676

METHOD FOR FIXING A METALLIC ARMATURE ON A NON-METALLIC PART

Michel Willem, Cusset, France, assignor to Ceraver S.A., Paris, France

Continuation-in-part of Ser. No. 423,825, Dec. 11, 1973, Pat. No. 3,964,536. This application Mar. 9, 1976, Ser. No. 665,219
Claims priority, application France, Dec. 12, 1972, 72 44170
Int. Cl.² B22D 19/12
U.S. Cl. 164—108 1 Claim



1. A method of fixing a metallic connecting cap of an electrical insulator of the rod-and-cap type on a non-metallic dielectric part, said metallic connecting cap comprising a lower part to be fitted around the non-metallic dielectric part and an upper part containing a cavity for receiving the lower part of a rod, said method comprising the steps of:
(1) closely applying a first thin metallic part to at least a part of the outer surface of said non-metallic dielectric part on which said lower part of a first metallic connecting cap is to be fixed wherein said first metallic part provides good conduction of heat; then
(2) molding said first metallic connecting cap on said first thin metallic part while the material of which said metallic connecting cap is to be composed is in the melted state, whereby said first metallic part reduces thermal shock to said non-metallic dielectric part by maintaining a moderate temperature gradient across said non-metallic dielectric part; while simultaneously
(3) molding a second thin metallic part in the form of a ring; then
(4) separating said second thin metallic part from said first metallic connecting cap; and then
(5) closely applying said second thin metallic part to at least a part of the outer surface of a second non-metallic dielectric part on which a lower part of a second metallic connecting gap is to be fixed.

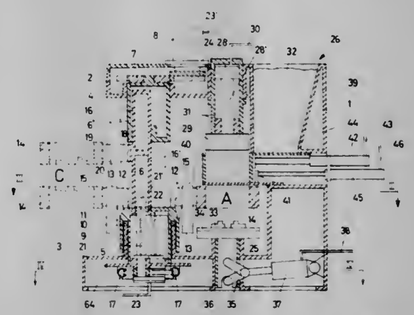
4,114,677

MOLDING MACHINE FOR PRODUCING CASTING MOLDS

Max Wernli, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Sep. 29, 1976, Ser. No. 727,939
Claims priority, application Switzerland, Oct. 3, 1975, 12825/75
Int. Cl.² B22C 11/04, 11/10
U.S. Cl. 164—168 9 Claims

1. Molding machine for producing casting molds and having several stations angularly spaced apart from one another and including a first station, a compressing unit located at said first station, a pattern carrier for replaceable pattern plates aligned with said compressing unit in said first station, said compressing unit including a compressing member movable toward said pattern carrier for compressing molding material located therebetween, and a device for feeding molding material located at said first station laterally from said compressing unit for supplying the molding material to a position between said compressing member and said pattern carrier, a swivel unit having a plurality of swivel arms connected thereto, a first box frame attached to one said swivel arm and a second box frame attached to another said swivel arm, each said first and second box frame arranged to form one-half of a casting mold, said swivel unit having an axis and being rotatable about the axis for moving said swivel arms into successive stations so that said first and second box frames can, in turn be positioned in said first station between said compressing unit and said pattern carrier for receiving molding material from said device for feeding molding material and then compressing the molding material within said box frames by the movement of said compressing unit toward said pattern carrier, at least one said first and second box frames being rotatable through 180° by said swivel arm to which it is attached for inverting one of said first and second box frames, said swivel arms being positionable so that said first and second box frames are alignable one opposite the other for forming a complete casting mold, a conveyor device spaced laterally from said stations, and means for removing a complete casting mold from one of said stations and



for delivering it to said conveyor device, wherein the improvement comprises that said swivel unit includes a main column having an axis located centrally of said stations, means connected to said main column for rotating said main column about the axis thereof, the one said swivel arm mounted on and extending outwardly from said main column transversely of the column axis thereof, and a turning mechanism included in said swivel arm with said first box frame connected to said swivel arm for inverting said box frame connected thereto, at least one swivel column mounted within and extending in the axial direction of said main column, said swivel column having an axis disposed in parallel relation with the axis of said main column, means connected to said main column for rotating said swivel column about the column axis thereof relative to said main column, the another said swivel arm mounted on and extending outwardly from said swivel column transversely of the column axis thereof, and means connected to said main column for moving said swivel column in the axial direction thereof.

4,114,678

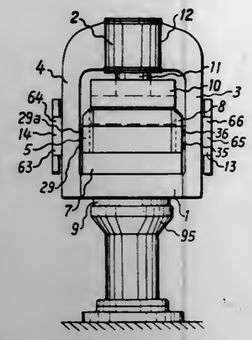
MOLD FORMING APPARATUS WITH MOLD FLASK BRACER MEANS

Erwin Bührer, Vögelingässchen 40, 8200 Schaffhausen, Switzerland

Filed Feb. 2, 1977, Ser. No. 764,953
Claims priority, application Switzerland, Sep. 14, 1976, 11636/76
Int. Cl.² B22C 15/02
U.S. Cl. 164—207 11 Claims

1. In a mold forming apparatus for the production of casting molds in molding flasks operating to compress mold forming material contained within said mold flask, the improvement comprising bracer means including bracer elements acting in opposed relationship to each other to brace said mold flask and structural means located to be fixed in position relative to said mold flasks during compression of said mold forming material,

said bracer means operating to brace said mold flasks against said fixed structural means, said bracer elements comprising bracer bolts arranged to be adjusted with relation to said mold



flasks, said apparatus further comprising wedges which are mounted in slidable engagement relative to said fixed structural means in order to thereby operate to adjust the position of said bracer bolts against said mold flasks.

4,114,679

ARRANGEMENT FOR INTRODUCING A FLEXIBLE STARTER BAR INTO A CONTINUOUS CASTING PLANT

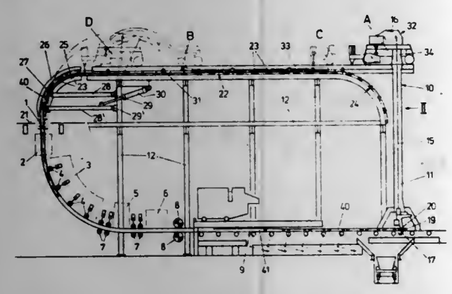
Lorenz Loibl, Baden, and Werner Scheurecker, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Feb. 16, 1977, Ser. No. 769,153

Claims priority, application Austria, Feb. 26, 1976, 1415/76; Mar. 26, 1976, 2216/76

Int. Cl.² B22D *11/08*

U.S. Cl. 164—426 **26 Claims**



1. In an arrangement for introducing a flexible starter bar, having a foot end, a head end and a starter bar head, into a continuous casting plant system of the type including a stationary supporting structure, a casting platform with a mould located on the structure, a strand guide arranged below the mould, a lifting means provided on the structure for gripping and lifting the starter bar, and a displacement means designed as a car traveling on the supporting structure and arranged to transport the starter bar and to introduce it into the continuous casting plant system, the improvement comprising a conveying means forming a conveying path whose center is stationary, which conveying means is arranged on the stationary supporting structure extending from the lifting means to the strand guide, the starter bar being guided on the conveying path by the displacement means, the conveying means having an arcuate front end part and an arcuate rear end part, and the arcuate front end part of the conveying means being pivotable into and out of an introduction position.

4,114,680

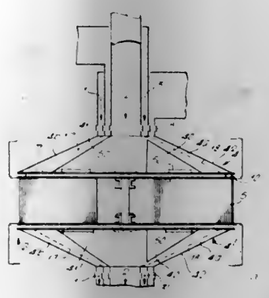
REGENERATIVE AIR PREHEATER FOR SEPARATE PREHEATING OF TWO OR MORE AIR-OR GAS STREAMS

Gerhard Kritzler, Freudenberg, and Paul Eckert, Wenden, both of Fed. Rep. of Germany, assignors to Apparatebau Rothemuhle Brandt & Kritzler, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,241

Int. Cl.² F28D *17/00*

U.S. Cl. 165—4 **10 Claims**



1. Rotary regenerative air preheater having

(a) a stationary regenerative heat-exchange mass having a central axis

(b) axial end faces of said mass

(c) first stationary ducting for conducting exhaust gas to and from said mass

(d) second stationary ducting for conducting air to and from said mass and comprising a plurality of separate ducts beyond each end face of the mass and within the first stationary ducting

(e) the said plurality of separate ducts comprising concentrically arranged ducts disposed coaxially with the mass

(f) a cowl at each axial end face of the mass for conducting air to or from the respective end face and the concentrically arranged ducts

(g) each cowl being rotatable to sweep the respective end face of the mass, in synchronism with the other cowl

(h) each cowl comprising a plurality of hoods, the cowl being rotationally symmetrically arranged with respect to the axis of the mass and each hood comprising radially extending and arcuately extending bounding walls

(j) each hood being sub-divided internally by dividing means including at least one radially extending dividing wall whereby each hood is sub-divided into a plurality of compartments having the same radial extent as the mass

(k) corresponding compartments of the hoods at each axial end face of the mass being of corresponding angular extent and being at all times opposed to said corresponding compartments across the mass whereby to form a plurality of distinct air paths through the mass between the said compartments

(l) the dividing means including means for conducting flow of air to or from a given one only of the plurality of concentrically arranged ducts to or from given corresponding compartments only of the hoods at both axial end faces of the mass.

4,114,681

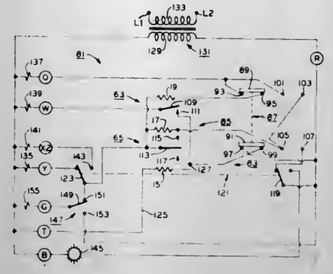
THERMOSTAT, METHOD OF OPERATING SUCH ELECTRICAL CIRCUIT AND METHOD OF HEATING A TEMPERATURE SENSING MEANS

Dann W. Denny, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 13, 1976, Ser. No. 750,280

Int. Cl.² G05D *23/30*

U.S. Cl. 165—26 **30 Claims**



1. A thermostat for regulating the temperature of a space in which the thermostat may be located comprising:

(a) a heating circuit;

(b) a cooling circuit;

(c) a post rotatably mounted in the thermostat;

(d) a bimetal element movable between selected positions in the thermostat and operable for sensing the temperature of the space, said bimetal element having a generally spiral configuration with a pair of radially inner and outer ends, said inner end being mounted to said post so that said bimetal element is conjointly rotatable with said post;

(e) a pair of switches, one of said switches being connected in both said cooling circuit and said heating circuit and adapted for switching operation therein at a pair of predetermined switch points and the other of said switches being connected in said heating circuit and adapted for switching operation therein at a predetermined switch point different than the switch points of said one switch;

(f) a bracket mounted to said bimetal element adjacent said outer end so as to be conjointly movable with said bimetal element and for supporting said switches, said bracket including means for establishing the predetermined switch points of said switches;

(g) a temperature selector manually movable within a predetermined range of temperature settings so as to set a preselected temperature of the space and drivingly associated with said post, said post being rotated so as to conjointly move said bimetal element to a respective one of its selected positions upon the manual movement of said temperature selector to set the preselected temperature;

(h) means manually operable for selectively enabling said heating circuit and said cooling circuit;

(i) a first resistor in said cooling circuit connected in shunt circuit relation with said one switch and energized when said cooling circuit is selectively enabled by said enabling means, said bimetal element in its respective one selected position being responsive to the sensed temperature and the anticipation heat supplied by said first resistor upon its energization to actuate said one switch to one of its predetermined switch points thereby to complete said cooling circuit and shunt said first resistor effecting its deenergization in the cooling circuit;

(j) a second resistor connected in said heating circuit and adapted for energization to supply anticipation heat to said bimetal element, said bimetal element in its respective one selected position being initially responsive to the sensed temperature to actuate said one switch to the other of its predetermined switch points thereby to complete said heating circuit and effect the energization of said second resistor to supply its anticipation heat to said bimetal element when said heating circuit is selectively enabled by said enabling means; and

(k) a third resistor connected in said heating circuit and adapted for energization to supply biasing heat to said bimetal element upon the enablement of said heating circuit by said enabling means.

4,114,682

APPARATUS FOR HEATING, COOLING OR AIR-CONDITIONING A ROOM

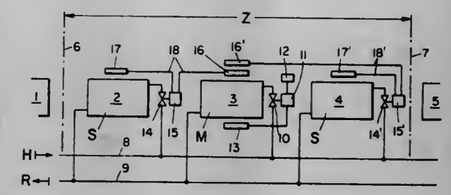
Vagn Valbjorn Knud, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 28, 1977, Ser. No. 781,576

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614432

Int. Cl.² B60H *1/00*

U.S. Cl. 165—39 **4 Claims**



1. Apparatus for controlling the temperature of a room comprising at least two heat exchangers with one being a guide unit and all others being follower units, individual control means for each of said heat exchangers, room temperature sensor and setting means for controlling said individual control means of said guide unit, a pair of temperature sensors for jointly controlling said individual control means of each said follower unit to dependingly relate the temperature of the outgoing airstream of the associated follower unit to the temperature of the outgoing airstream of said guide unit, one sensor of said pair being in the outflowing air stream of said guide unit and the other sensor of said pair being in the outflowing air stream of the associated follower unit.

4,114,683

FLEXIBLE TUBE TYPE FLUID-FLUID HEAT EXCHANGER

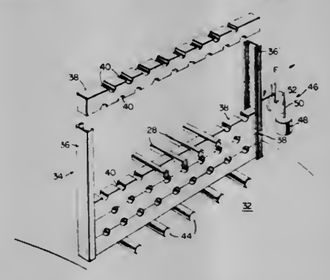
Michel Francois Emile Jacques Verlinden, Brussels, Belgium, assignor to Hamon Sobelco S.A., Brussels, Belgium

Filed Jan. 19, 1977, Ser. No. 760,690

Claims priority, application France, Aug. 18, 1976, 76 25059

Int. Cl.² F28F *9/00*

U.S. Cl. 165—78 **12 Claims**



1. A fluid-fluid heat exchanger comprising a pair of headers, a plurality of flexible synthetic tubes, each of said plurality of tubes extending in a curved path between said pair of headers with the ends of each tube being in fluid communication with said pair of headers to provide a flow path between the headers

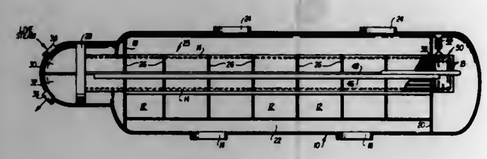
for one of the heat exchange fluids, said plurality of tubes being further arranged in a plurality of spaced superimposed layers with the spaces therebetween providing a flow path for the other of the heat exchange fluids, a plurality of spaced generally radially disposed spacers engaging and maintaining the flexible tubes in their spaced superimposed layers and in their generally curved path, wherein each spacer has a generally plate shape disposed radially with respect to the curvature of said wall and each spacer having individual apertures for reception of the tubes of the exchanger, further wherein each spacer comprises an assembly of superimposed strips having on two opposed longitudinal sides rounded notches the radius of which is equal to, or greater than, the radius of a cross-section of said tubes, the notches of adjacent strips defining said individual apertures, and wherein said strips are maintained at their ends by U-section members disposed in the plane of the spacer element.

4,114,684

TUBE SUPPORT SYSTEM FOR HEAT EXCHANGER

Donald S. Jenis, Cape Elizabeth; Thomas A. Kuczkowski, Scarborough; Jack S. Mazer, South Portland, and Douglas F. Westerkamp, Cape Elizabeth, all of Me., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,611
Int. Cl.² F28F *7/00*
U.S. Cl. 165—82 **16 Claims**



1. In a heat exchange apparatus including a cylindrical shell, a perforated tube sheet located within one end of the shell, and a bundle of elongated, U-shaped tubes transiting the length of the interior of the shell, said tubes having legs terminating in the perforations of the tube sheet and having U-bends located in the opposite end of the shell, a tube support system comprising:

(a) a fixed frame mounted in the shell adjacent the tube sheet and extending along the majority of the length of the bundle, said frame including a plurality of tube support plates positioned at spaced intervals along the tube legs, said plates having oversized perforations through which the tube legs pass; and

(b) a floating frame mounted on the tube legs adjacent the U-bends and free to move relative to the fixed frame, said floating frame including a plurality of spaced tube support plates having oversized perforations through which the tube legs pass.

4,114,685

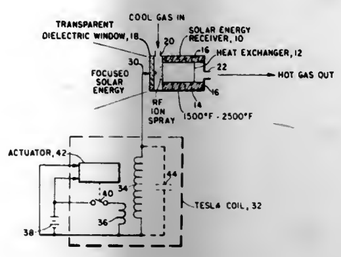
METHOD AND APPARATUS FOR INCREASING HEAT TRANSFER EFFICIENCY

Jacob Schwartz, Arlington, Mass., and Victor A. Misek, Hudson, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Jan. 8, 1976, Ser. No. 647,377
Int. Cl.² F28F *13/02, 13/16*
U.S. Cl. 165—96 **24 Claims**

1. Apparatus for enhancing the efficiency of a heat exchanger having a fluid conducting and confining surface and a fluid flowing in a pre-determined direction therein, comprising:

means for establishing an RF field within said fluid such that no stationary oscillating field is set up within the fluid and



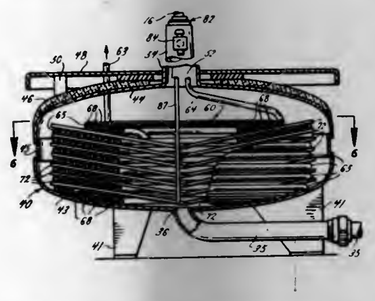
for establishing a net ion propagation in said pre-determined direction.

4,114,686

HOT WATER SYSTEM

Paul Mueller, and Ray A. Prine, both of Springfield, Mo., assignors to Paul Mueller Company, Springfield, Mo.

Division of Ser. No. 671,579, Mar. 29, 1976, Pat. No. 4,041,726.
This application Jun. 27, 1977, Ser. No. 810,026
Int. Cl.² B22D *19/00;* B22C *13/14*
U.S. Cl. 165—110 **10 Claims**



1. A condenser comprising a housing having a water inlet and a water outlet, a vertical riser tube, means connecting the lower end of the vertical riser tube to the water outlet of the housing, a coil within the housing defining a refrigerant passage therethrough, said coil having multiple coil layers, said layers being separated to provide water passages therebetween, at least some of the layers having multiple windings, the layers being connected to form a continuous condenser coil with a refrigerant passage inlet at one end and a refrigerant passage outlet at the other.

4,114,687

SYSTEMS FOR PRODUCING BITUMEN FROM TAR SANDS

Joy T. Payton, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 14, 1977, Ser. No. 842,123
Int. Cl.² E21B *43/04, 43/08, 43/24*
U.S. Cl. 166—51 **8 Claims**

1. A system for forming a cavity in unconsolidated petroliferous formation sands for producing bitumen from a subterranean reservoir of tar sands as the unconsolidated petroliferous formation sands from an open well extending down in to the unconsolidated petroliferous sand formation comprising,

(a) screen means positioned in the well large enough to pass a majority of the formation sand and small enough to retain a gravel packing material,

(b) high pressure fluid lateral nozzle means releasable re-

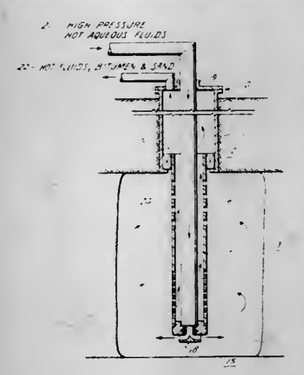
tractably secured for protrudance below said screen means, and

(c) wash pipe means annularly releasably internally mounted within said screen means and connected to said high pressure fluid lateral nozzle means for washing out a cavity in the sand formation.

3. A system for producing bitumen from a subterranean reservoir of tar sands as unconsolidated petroliferous formation sands from an open walled well segment extending down in to the unconsolidated petroliferous sand formation comprising,

(a) screen means positioned in the well segment large enough to pass a majority of the formation sand and small enough to retain a gravel packing material,

(b) high pressure fluid lateral nozzle means releasably mounted on and protruding below said screen means,



(c) high pressure fluid wash pipe means releasably removably annularly mounted in said screen means and connectable to said nozzle means for washing out a cavity in the sand formation,

(d) said high pressure fluid wash pipe means being replaceable with a production tube means,

(e) said production tube means being packable intermediate the ends of the screen for forming an annulus means in the well and screen means, and

(f) said production tube means comprises means for ejecting a consolidating gravel packing material from the screen means upper portion above the packer into the cavity for forming the consolidated gravel pack around the screen means lower portion for improved production of bitumen from the consolidated petroliferous formation sands.

4,114,688

MINIMIZING ENVIRONMENTAL EFFECTS IN PRODUCTION AND USE OF COAL

Ruel C. Terry, Denver, Colo., assignor to In Situ Technology Inc., Denver, Colo.

Filed Dec. 5, 1977, Ser. No. 857,102
Int. Cl.² E21B *43/24, 43/26;* E21C *43/00*
U.S. Cl. 166—246 **14 Claims**

1. A method of gasifying coal in situ in concert with gasifying coal in aboveground facilities comprising the steps of:

establishing fluid injection and fluid removal passages connecting an underground coal deposit to a surface location,

establishing a communication passage through the said underground coal interconnected to the said fluid injection and fluid removal passages,

establishing an aboveground coal gasification means,

igniting the underground coal in the said communication passage,

igniting the coal in the said aboveground coal gasification means,

injecting an oxidizer in the said fluid injection passage,

injecting an oxidizer in the said aboveground coal gasification means,

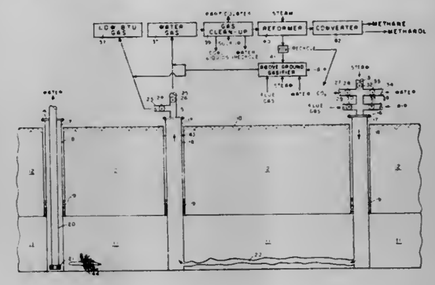
gasifying the said underground coal into flue gas,

gasifying the coal in the said aboveground gasification means,

terminating the said injection of an oxidizer in the said aboveground coal gasification means,

injecting the said flue gas into the said aboveground coal gasification means, and

capturing the produced gases from the said aboveground coal gasification means.



14. A method of destroying contaminants in the underground water adjacent to the reaction zone of an in situ coal gasification project comprising the steps of

drilling a water interceptor well from the surface of the earth into the water bearing formation containing contaminated water,

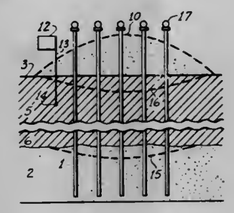
injecting microorganisms through the water interceptor well into the said contaminated water, the said microorganisms having the capability of destroying the contaminants in the underground water.

4,114,689

RECOVERY OF PETROLEUM

Newton Bradford Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Filed May 25, 1977, Ser. No. 800,218
Int. Cl.² E21B *43/00, 43/01*
U.S. Cl. 166—249 **30 Claims**



1. The method of recovering petroleum substance from an underground accumulation in earth strata comprising:

(a) drilling a first well into said strata,

(b) placing a substantial mass above said accumulation to compact said earth strata and reduce the porosity thereof, and

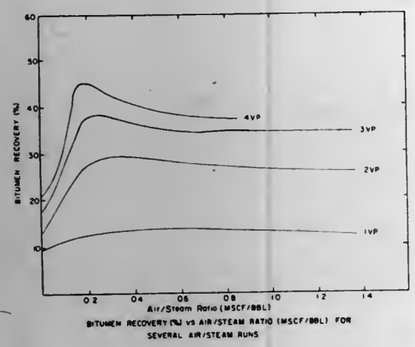
(c) expelling said petroleum substance into said first well.

4,114,690

LOW-TEMPERATURE OXIDATION METHOD FOR THE RECOVERY OF HEAVY OILS AND BITUMEN

Phillip J. Cram, Calgary, and David A. Redford, Fort Saskatchewan, both of Canada, assignors to Texaco Exploration Canada Ltd., Calgary, Canada

Filed Jun. 6, 1977, Ser. No. 804,129
Int. Cl.² E21B *43/24*
U.S. Cl. 166—261 **15 Claims**



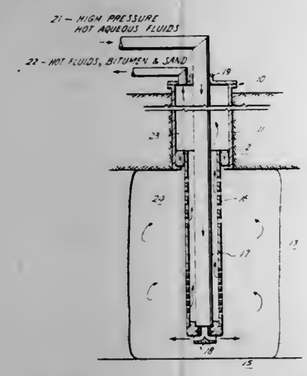
1. In a method for the recovery of hydrocarbons from a subterranean tar sand formation traversed by at least one injection well and at least one production well, and having fluid communication therebetween, wherein a mixture of steam having a quality less than 100% and an oxygen-containing gas is injected via said injection well, said mixture being at the temperature correpsonding to the temperature of saturated steam at the pressure of said formation, and fluids are produced via said production well, the improvement comprising maintaining the ratio of the free oxygen in the oxygen-containing gas to the steam in the range of about 0.03 to 0.130 MSCF of oxygen per barrel of steam, measured as water.

4,114,691

METHOD FOR CONTROLLING SAND IN THERMAL RECOVERY OF OIL FROM TAR SANDS

Joy T. Payton, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 14, 1977, Ser. No. 842,124
Int. Cl.² E21B *43/04, 43/08, 43/24*
U.S. Cl. 166—276 **11 Claims**



1. A method of sand control in an open hole type of completion extending into a subterranean reservoir to tar sands as unconsolidated petroliferous formation sands comprising the steps of,
(a) drilling a well to the top of the petroliferous formation and setting a casing therein,
(b) drilling an open hole section of the well to the bottom of the petroliferous formation,
(c) setting a screen in the open hole and packing it off against the casing, the screen being large enough to pass a majority of the formation sand and small enough to retain a packing material,
(d) running a wash pipe down into the screen for connecting to a nozzle at the bottom of the screen,
(e) circulating hot aqueous fluids through the wash pipe and from the lower end thereof for melting the oil or tar for forming a cavity of a predetermined size around the screen and open hole,
(f) removing the nozzle from the wash pipe,
(g) without stopping the flow of fluids into the well, ejecting a consolidating gravel packing material out the bottom of the wash pipe into the cavity for forming a consolidated gravel pack around the screen, and
(h) removing the wash pipe and circulating hot fluids out the screen bottom for secondary recovery production of sand-free oil and melted tar from the petroliferous formation.

7. A method of said control in an open hole type of completion extending into a subterranean reservoir of tar sands as unconsolidated petroliferous formation sands comprising the steps of,
(a) drilling a well to the top of the petroliferous formation and setting a casing therein,
(b) drilling an open hole section of the well to the bottom of the petroliferous formation,
(c) setting a screen in the open hole and packing it off against the casing, the screen being large enough to pass a majority of the formation sand and small enough to retain a packing material,
(d) running a wash pipe down into the screen for connecting to a nozzle at the bottom of the screen,
(e) circulating hot aqueous fluids through the wash pipe and from the lower end thereof for melting the oil or tar for forming a cavity of a predetermined size around the screen and open hole,
(f) removing the nozzle from the wash pipe,
(g) packing a tube midway down into the screen, and
(h) in a continuous uninterrupted sequence ejecting a consolidating gravel packing material from the upper screen portion above the packer into the cavity to form a consolidated gravel pack around the lower screen portion for improved sand control when producing sand-free crude oil from the unconsolidated petroliferous formation.

4,114,692

METHOD FOR CEMENTING HIGH TEMPERATURE WELLS

Julius P. Gallus, Anaheim, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 700,387, Jun. 28, 1976, Pat. No. 4,069,870. This application Oct. 25, 1977, Ser. No. 845,028
Int. Cl.² E21B *33/14*
U.S. Cl. 166—293 **11 Claims**

1. A method for placing a hardened cement mass having improved resistance to degradation of its ultimate permeability and compressive strength when exposed to high temperatures, in a confined space in fluid communication with a well, comprising:
forming a hardenable slurry comprised of a cement system and a water-containing liquid vehicle, said cement system comprising an oil well cement and a carbon-containing cement additive having between about 1 and 15 weight percent of volatile material, and said cement additive being present in an amount, up to 20 weight percent of said cement system, effective to improve the resistance to degradation of the ultimate permeability and compressive strength of said cement mass; and

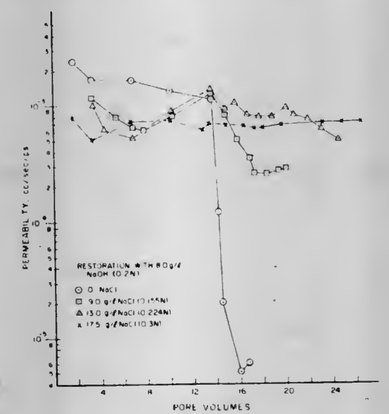
introducing said hardenable slurry through said well and into said confined space wherein said slurry hardens to form said cement mass.

4,114,693

METHOD OF TREATING FORMATION TO REMOVE AMMONIUM IONS WITHOUT DECREASING PERMEABILITY

William R. Foster, Dallas, and Earl S. Snavely, Jr., Arlington, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 15, 1977, Ser. No. 824,686
Int. Cl.² E21B *43/27, 43/28*
U.S. Cl. 166—305 R **8 Claims**



1. A method of treating a subterranean clay-containing formation having ammonium ions absorbed in the clay, the method comprising:
flushing said formation with an alkaline solution comprising:
an aqueous solution of a strong, soluble, alkaline compound capable of converting the ammonium ions to ammonia; and
a monovalent metal salt capable of preventing the swelling of said clay; and
removing said ammonia from said formation.

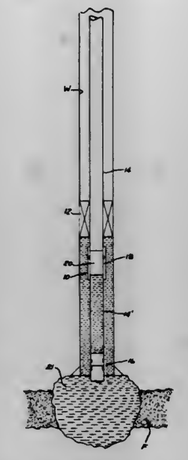
4,114,694

NO-SHOCK PRESSURE PLUG APPARATUS

Robert W. Dinning, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed May 16, 1977, Ser. No. 797,328
Int. Cl.² E21B *23/06*
U.S. Cl. 166—318 **10 Claims**

1. Releasable closure apparatus, for selectively closing a passage, comprising:
(a) generally tubular housing means, including a passage therethrough and pressure chamber means for receiving fluid pressure from said passage;
(b) seal means for selectively closing said passage when said seal means is in sealing configuration;
(c) releasable anchoring means, moveable between an anchoring configuration for maintaining said seal means in said sealing configuration, and a release configuration for releasing said seal means to move out of said sealing configuration;
(d) piston means moveable in a first direction relative to said housing means, propelled by fluid pressure so received by said pressure chamber means, and moveable in a second direction generally opposite said first direction, propelled by spring means;
(e) restraining means for selectively confining said anchoring means in said anchoring configuration, and moveable, by said piston means operating thereon when so moved in said second direction, to release said anchoring means to move out of said anchoring configuration to said release configuration; and
(f) releasable lock means for preventing motion of said piston means relative to said housing means, which lock means



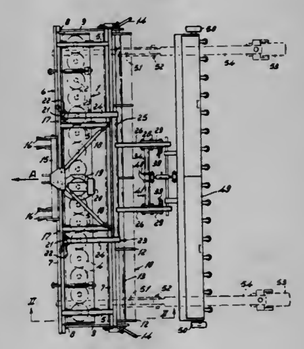
may be released by fluid pressure being received by said pressure chamber means to propel said piston means in said first direction whereby said piston means is then released to be so moved in said second direction to so operate on said restraining means to thereby permit said anchoring means to release said seal means.

4,114,695

ROTARY HARROW WITH PIVOTABLE COUPLING ASSEMBLY

Ary van der Lely, Maasland, Netherlands, assignor to C. van der Lely N.V., Maasland, Netherlands

Filed Aug. 31, 1976, Ser. No. 719,279
Claims priority, application Netherlands, Sep. 2, 1975, 7510308
Int. Cl.² A01B *49/06, 33/06*
U.S. Cl. 172—47 **15 Claims**



1. A rotary harrow having a row of rotatable soil working members on a frame and drive means connected to rotate said soil working members about upwardly extending axes defined by upwardly extending shafts journalled in an elongated portion of the frame, said frame including a forward beam spaced apart from a rear beam and these two beams being substantially horizontal, said forward beam having coupling means for connection to a prime mover and a coupling assembly positioned to the rear of said elongated frame portion, said assem-

bly comprising two spaced apart coupling points and a third coupling point that is positioned between the two coupling points when viewed in plan, the two coupling points and said third point being mounted on common support means, said support means forming part of said assembly, said assembly being interconnected by beam members to said forward beam by pivots which define an axis about which the assembly is pivotable and said axis extending transverse to the direction of travel of the implement, said beam members extending generally parallel to the direction of travel and positioned above said rear beam, said members bearing on the rear beam which limits the downward pivotal movements of said assembly about said pivots during operation and transport.

4,114,696

CULTIVATORS

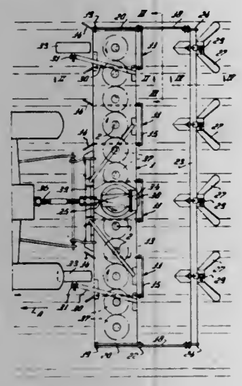
Ary van der Lely, Maasland, and Cornelis Johannes Gerardus Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Division of Ser. No. 617,419, Sep. 29, 1975, Pat. No. 4,046,202, which is a continuation of Ser. No. 473,572, May 28, 1974, abandoned. This application Jun. 15, 1977, Ser. No. 806,930

Claims priority, application Netherlands, May 28, 1973, 7307376

Int. Cl.² A01B *33/06*

U.S. Cl. 172—59 **8 Claims**



1. A soil cultivating implement comprising a frame and a plurality of rotatable soil working members mounted on an elongated portion of said frame, said frame portion extending transverse to the direction of implement travel, elongated support means extending transverse to the direction of travel and positioned to the rear of said frame portion, said support means carrying further soil working means that extends across at least part of the working width of the soil working members, adjustment means including arms and at least one pivot on each arm adjacent said support means interconnecting the latter to the frame portion, the horizontal working level of said further soil working means relative to said frame portion and rotatable soil working members being regulated with said adjustment means, said support means being angularly adjustable about a substantially horizontal axis defined by said pivot, means retaining said support means and further soil working means in a chosen angular setting, said arm having a second pivot that connects that arm to the frame portion and locking means fixing said arm in position relative to the frame portion.

4,114,697

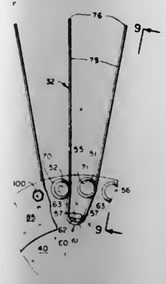
FINGER WHEEL

James J. Carlucci, 716 Monroe Ave., Los Banos, Calif. 93635

Filed Apr. 18, 1977, Ser. No. 788,263

Int. Cl.² A01B *21/04, 35/26*

U.S. Cl. 172—543 **7 Claims**



4. A finger wheel comprising:

A. a substantially circular backing plate;

B. a plurality of pairs of substantially identical substantially cylindrical bosses integral with the backing plate having axes substantially parallel to the axis of the backing plate and projecting ends disposed in a plane substantially parallel to the backing plate and axially spaced therefrom, said bosses being disposed in a circle substantially concentric to the backing plate and adjacent to the periphery thereof;

C. a plurality of substantially identical bifurcated finger elements individually related to each of said pairs, each finger element being of a continuous length of resilient wire material and each having

(1) a pair of helical coils individually wound in circumscribing relation on the bosses of its respective pair of bosses,

(2) a portion interconnecting the coils, and

(3) a pair of fingers individually continuous with the coils and extended outwardly from the backing plate; and

D. a clamping plate releasably mounted on the backing plate in facing engagement with the projecting ends of the bosses to capture the coils on the respective bosses about which they are wound.

4,114,698

METHOD AND APPARATUS FOR TUNNELING UPWARDLY

Daniel R. Webb, Santa Ana; John R. Steinke, Fountain Valley; Robert W. Berry, Brea, and Stanard R. Funsten, San Marino, all of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Feb. 20, 1975, Ser. No. 551,083

Int. Cl.² E21B *7/00*

U.S. Cl. 173—1 **6 Claims**

1. A vertical thrust boring machine comprising:

a drill string including a series of threadedly connected drill stem sections, the lowermost section having a spline connection on its lower end;

a rotary table above which said drill string extends in an upwardly direction;

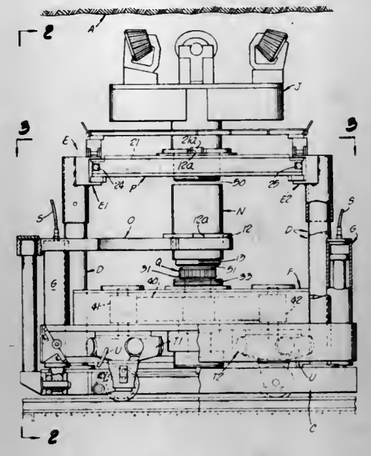
a drive coupling ring attached to said rotary table to move therewith, said drive coupling ring having a spline connection adapted to matingly engage the spline connection of said lowermost drill stem section;

power driven means for selectively rotating said table;

power driven means for selectively raising or lowering said table;

holding means selectively operable for grasping the drill string above the elevation of said lowermost drill stem section, so as to fix the vertical position of the string while said lowermost section is being attached or detached; and

a clamp assembly encircling and rotatably supported from said drive coupling ring, said clamp assembly including means for selectively threadedly engaging a male thread formed on the lower end of said lowermost drill stem section.



4,114,699

PNEUMATIC ROTARY HAMMER DEVICE

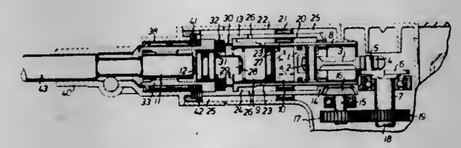
Otto Wolf, Kirchheim, Teck, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Jan. 19, 1977, Ser. No. 760,656

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1976, 2602239; Jan. 22, 1976, 7601636

Int. Cl.² B25D *9/00*

U.S. Cl. 173—109 **5 Claims**



1. In a hammer drill having a housing; a drive means supported in the housing; a cylinder supported in the housing; a drive piston received for reciprocation in the cylinder and being connected to the drive means for actuation by the drive means; a percussion body received for reciprocation in the cylinder; means defining an air cushion in the cylinder between the drive piston and the percussion body for driving the percussion body by the drive piston by the intermediary of the air cushion; and a tool holder supported in the housing and exposed to the impacting effect of the percussion body; the improvement comprising

(a) means for stationarily affixing said cylinder to said housing;

(b) a hollow drive shaft rotatably supported in said housing and surrounding said cylinder and being connected to said tool holder;

(c) said drive means including

(1) an intermediate shaft rotatably supported in said housing;

(2) a drive gear affixed to said intermediate shaft;

(3) a driven gear affixed to said hollow drive shaft; said drive gear meshing with said driven gear for continuously rotating said hollow drive shaft during actuation of said drive piston by said drive means;

(d) means defining air equalization ports in said hollow shaft;

(e) means defining air ports in said cylinder in the zone of said air cushion; said air ports cooperating with said air equalization ports; and

(f) a safety coupling connecting said hollow shaft with said tool holder.

4,114,700

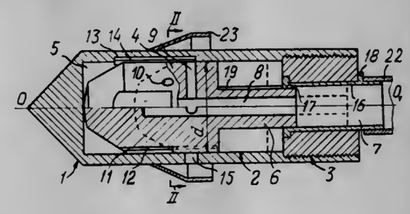
PNEUMATIC APPARATUS OF THE PERCUSSIVE TYPE

Khaim Berkovich Tkach, ulitsa Gogolya, 17, kv. 49; Alexandr Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 44; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 13; Boris Nikolaevich Smolyanitsky, ulitsa O.Dundicha, 27, kv. 18; Vladimir Dmitrievich Plavskikh, ulitsa Gogolya, 233/1, kv. 34, and Vladimir Petrovich Boginsky, ulitsa Lenina, 59, kv. 58, all of Novosibirsk, U.S.S.R.

Filed Mar. 28, 1977, Ser. No. 782,100

Int. Cl.² E21B *11/02*

U.S. Cl. 175—19 **6 Claims**



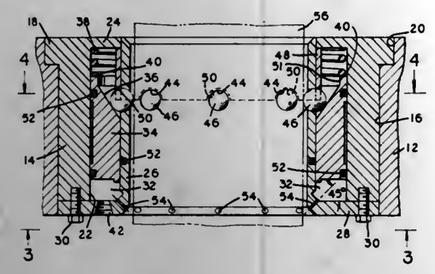
1. A pneumatic apparatus of the percussive type for driving holes in the ground by compacting same comprising a pointed-nose hollow cylindrical body closed at the back and provided with grooves in the inner surface of its forward portion; a stepped striker disposed in said body so as to enable reciprocation by the action of compressed air, a forward working chamber being defined by said body and said striker, said forward working chamber recurrently connecting to a source of compressed air and to the atmosphere for discharging air, a rear working chamber defined by said body and said striker, said rear working chamber being permanently connected to the source of compressed air, a space defined by a rear end face of a large step of said striker, a cylindrical surface of the small step of said striker and said body, said striker being provided with a central passage connected to the rear working chamber and with at least two radial passages which open into said central passage and onto an outer cylindrical surface of the large step of said striker, the radial passages being displaced relative to each other circumferentially and longitudinally along the axis of said body, said striker being disposed in said body so as to enable rotation about the axis of said body and so as to be set into either of two locked positions relative to said body wherein rotation about the axis of said body is prevented, the locked positions corresponding to forward and backward movement of said apparatus, passages for introducing compressed air into said forward working chamber being defined by the outer cylindrical surface of the larger step of said striker and by grooves in said body, ports provided in the side wall of said body at its rear end between the radial passages of said striker for the discharge of air from said forward working chamber; a means of performing the control rotation of said striker in said body about the axis thereof and of locking the striker in either of the two said locking positions, in each of said locked positions one of the radial passages of said striker is connected to the passages defined by the outer cylindrical surface of the large step of said striker and the grooves in said body for admitting compressed air into the forward working chamber.

4,114,701

DRILL ROD TABLE BUSHING ARRANGEMENT

Edward J. Bouplon, Streetsboro, Ohio, assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,246
Int. Cl.[2] E21B *41/00*
U.S. Cl. 175—84 **5 Claims**



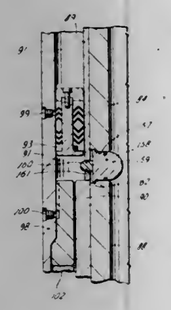
1. A drill rod table bushing arrangement comprising a bushing cylinder, a bearing housing arranged within the bushing cylinder, a piston cavity defined between the bushing cylinder and the bearing housing, a piston slidably arranged in the piston cavity, means to admit pressurized medium into the cavity to move the piston, a plurality of ball means movable inwardly of the bearing housing when the piston is moved by the pressurized medium, and a plurality of passageways arranged in the bearing housing to jet pressurized medium from the piston cavity to the interior of the bearing housing to restrict flow of drill cuttings between the bearing housing and a drill rod surrounded by the bearing housing when the bushing arrangement is being utilized.

4,114,702

WELL DRILLING TOOL WITH LUBRICANT LEVEL INDICATOR

William C. Maurer; William J. McDonald, Jr., and Charles E. Ward, all of Harris County, Tex., assignors to Maurer Engineering Inc., Houston, Tex.

Filed Nov. 9, 1977, Ser. No. 849,976
Int. Cl.[2] E21B *1/06*
U.S. Cl. 175—107 **11 Claims**



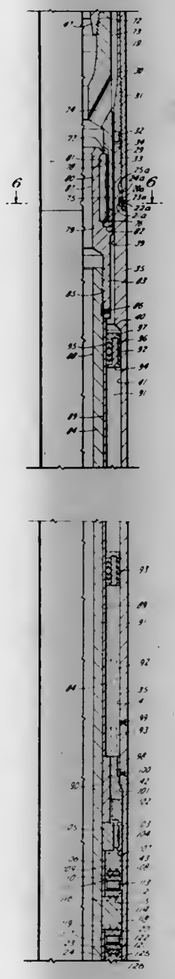
1. A down hole well drilling tool adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby, said drilling tool comprising tubular housing means and rotary shaft means supported therein and extending therefrom and adapted to support a drill bit, motor means in said housing means actuated by flow of drilling fluid therethrough and operable to rotate said shaft means, bearing means in said housing means supporting said rotary shaft means, lubricant fluid filling the space between said housing means and said shaft means around said bearing means and for a predetermined distance above said bearing means, piston means sealing the space between said shaft means and said housing means above said lubricant fluid and moveable longitudinally of said housing means, said piston means being operable by pressure of drilling fluid to maintain said lubricant fluid under pressure to lubricate said bearing means, and means actuated by predetermined downward movement of said piston means to effect a change in pressure or flow rate of drilling fluid to indicate at the well surface the loss of lubricant from said tool.

4,114,703

WELL DRILLING TOOL HAVING SEALED LUBRICATION SYSTEM

Lawrence Wayne Matson, Jr., League City; Jeddy Darr Nixon, Jr., and Larry Joseph Remont, both of Houston, all of Tex., assignors to Maurer Engineering Inc., Houston, Tex.

Filed Nov. 9, 1977, Ser. No. 849,977
Int. Cl.[2] E21B *1/06*
U.S. Cl. 175—107 **10 Claims**



1. A downhole well drilling tool adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby, the drilling tool comprising tubular housing means and rotary shaft means supported therein and extending therefrom and adapted to support a drill bit, motor means in said housing means actuated by flow of drilling fluid therethrough and operable to rotate said shaft

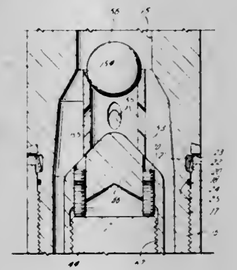
means, bearing means in said housing means comprising a plurality of bearing members spaced longitudinally of and supporting said rotary shaft means against radial and longitudinal thrust loads, lubricant fluid filling the space between said housing means and said shaft around said bearing means and for a predetermined distance above the uppermost of said bearing members, piston means sealing the space between said shaft means and said housing means above said lubricant fluid and moveable longitudinally of said housing means, said piston means being operable by pressure of drilling fluid to maintain said lubricant fluid under pressure to lubricate said bearing means, rotary sealing means positioned above and spaced from said piston means to prevent contact of drilling fluid therewith, and hydraulic means applying pressure from drilling fluid above said sealing means to said piston means.

4,114,704

DOWN HOLE WELL DRILLING TOOL WITH REVERSIBLE THRUST BEARINGS

William Casper Maurer; Albert Richard Sinclair, and William Jesse McDonald, Jr., all of Harris County, Tex., assignors to Maurer Engineering Inc., Houston, Tex.

Filed Nov. 9, 1977, Ser. No. 849,988
Int. Cl.[2] E21B *1/06*
U.S. Cl. 175—107 **12 Claims**



1. A downhole well drilling tool comprising housing means adapted to be connected to a drill string, a rotary shaft in said housing means and extending downward therefrom and adapted to support a drill bit, means to rotate said shaft, upper and lower thrust bearings positioned around said shaft within said housing to support said shaft against oppositely directed vertically extending forces, said upper thrust bearings supporting said shaft against upward thrust during drilling operation, said lower thrust bearings supporting downward thrust of said shaft when lifted out of drilling operation, and means operable to shift the relationship of said lower thrust bearings and said shaft to cause said shaft to be supported on said lower thrust bearings during drilling operation.

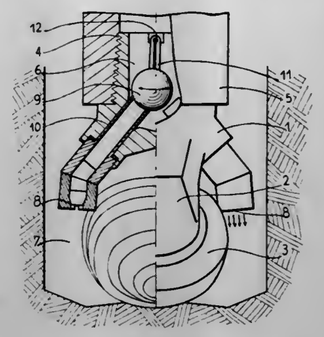
4,114,705

ROCK DRILLING TOOL HAVING PULSED JETS

Daniel Milan, Grenoble, France, assignor to Societe B.V.S., Grenoble, France

Filed Apr. 13, 1977, Ser. No. 787,264
Claims priority, application France, May 26, 1976, 76 15976
Int. Cl.[2] E21B *9/08*
U.S. Cl. 175—340 **6 Claims**

1. A drilling tool for causing mechanical destruction of rock in a drill hole and for circulating pressurized drilling fluid to remove rock debris from the drilling hole, said tool comprising a body, means mounted on the body for mechanically breaking up rock, said body having a distribution chamber in communication with an inlet conduit for drilling fluid and with two outlet ducts, each of said outlet ducts having one end projecting into said distribution chamber and an opposite end, a respective calibrated nozzle connected to each of said opposite ends of said outlet ducts and which, when the tool is in use, is directed towards a cutting face at the bottom of the drill hole, said nozzles being directed towards opposite points on the hole bottom, a ball in said distribution chamber which, in the absence of any external force, occupies an equilibrium position in which said one ends of said outlet ducts are open, and which is movable between two end positions in each of which the ball closes off one end of a respective one of said outlet ducts, said ball being arranged to be unstable when said inlet conduit



receives drilling fluid at the normal operating pressure and flow rate, said ball being then subjected to a combination of hydraulic and mechanical forces which causes the ball to oscillate between its said two end positions so that the drilling fluid is directed onto the bottom of the drill hole in the form of two pulsed jets, the rate in each jet varying between zero and a maximum value as the jets produce opposed flows of mud.

4,114,706

ELECTRICAL WEIGHING APPARATUS

Enrico Realini, Uster, and Werner Langenegger, Volketswil, both of Switzerland, assignors to Mettler Instrumente AG, Zurich, Switzerland

Filed May 11, 1977, Ser. No. 796,043
Claims priority, application Switzerland, Jun. 1, 1976, 6851/76
Int. Cl.[2] G01G *19/22, 13/14*
U.S. Cl. 177—70 **11 Claims**

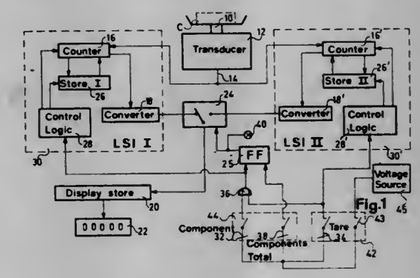


Fig. 1

1. Electrical weighing apparatus, comprising
(a) load receiver means for receiving a load to be weighed;
(b) transducer means for producing a number of pulses corresponding to the instantaneous weight of one or more components placed on said load receiver means;
(c) pulse counter means for continuously counting the number of pulses produced by said transducer means;
(d) display means for displaying the instantaneous count of said counter means;
(e) first and second storage means selectively operable to store instantaneous counts of said counter means, respectively; and
(f) control means for selectively operating said first and second storage means to store certain counts of said

counter means, respectively, and to subsequently subtract the stored counts from subsequent pulse counts, respectively, said control means including

(1) tare switch means (**34, 34'**) operable when the load receiver means is empty for transferring to at least one of said first and second storage means from said counter means a count corresponding to the deadload weight of said load receiver means, said tare switch means also being operable when an empty container is placed on said load receiver means to transfer to at least one of said first and second storage means a count that corresponds with the container tare weight, said storage means being operable after a first component is subsquently introduced into the container to subtract from the counter count a count corresponding to the sum of the deadload and tare weights, whereby the displayed count of said counter means corresponds with the weight of the first component;

(2) component switch means (**32, 32'**) operable after a first component has been introduced into the container for storing in at least one of said first and second storage means a count corresponding to the weight of the first component, said storage means being operable after a second component is added to the container to subtract from the counter count a count corresponding to the sum of the deadload, tare and first component weights, whereby the displayed count of said counter means corresponds with the weight of the second component; and

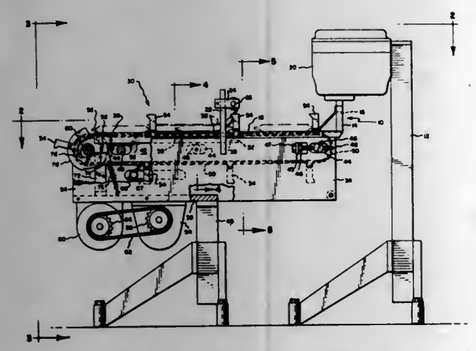
(3) components total switch means (**38, 38'**) for subtracting from the count of said counter means after the addition of the second component to the container a count corresponding to the deadload and tare weights, whereby the displayed count of said counter means is a function of the total weight of the two components.

4,114,707

WEIGHING AND TRANSPORTING SYSTEM

Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed Jan. 13, 1977, Ser. No. 758,918
Int. Cl.² G01G *19/00*
U.S. Cl. 177—145 **13 Claims**



1. An apparatus for transporting weighed articles rapidly away from a weighing station, including a scale, to a precisely located predetermined lateral position with the center of the article positioned at said lateral position, while clearing the weighing station in preparation for receiving the next article to be weighed, wherein said apparatus comprising:

a. a weigh-platform operatively connected to said scale;

b. independent support means which may be positioned adjacent to said weigh-platform for receiving and supporting weighed articles placed thereon after discharge from said weigh-plaform;

c. means adjacent to said weigh-platform for engaging and discharging weighed articles from said weigh-platform to said independent support means and for moving said weighed articles away from said weigh-plaform, said means including a pushing means which follows a closed continuous non-reversing path;

d. detecting means mounted so as to be positionally adjustable along the path of said pushing means for detecting the position of said pushing means and for generating a control signal indicative thereof; and

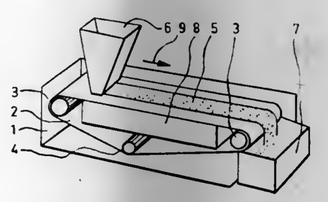
e. means responsive to said control signal and operatively connected to said article engaging and moving means for intermittently driving said article engaging and moving means in a non-reversing, start-stop manner so that a succession of weighed articles may be intermittently discharged from said weigh-platform and whereby the stationary position of said pushing means may be adjustably regulated by adjustably positioning said detecting means.

4,114,708

CONVEYOR TYPE SCALE

Kaspar Saner, Dubendorf, Switzerland, assignor to K-Tron Soder AG, Niederlenz, Switzerland

Filed Jun. 13, 1977, Ser. No. 806,212
Claims priority, application Switzerland, Jun. 16, 1976, 7773/76
Int. Cl.² G01G *11/00*
U.S. Cl. 177—145 **7 Claims**



1. A conveyor type scale comprising:

a stand;

a carrier attached to the stand;

a conveyor belt resting upon said carrier;

means for measuring a load;

transmitting means for placing the carrier in operational contact with the measuring means;

said carrier including two tables;

first link means connecting said two tables to one another and second link means connecting each table to said stand;

each link means including at least one link spring.

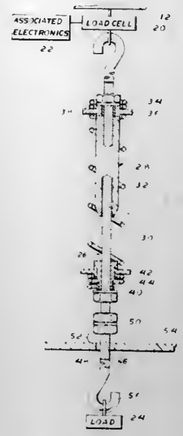
4,114,709

ELECTRONIC SCALE LOAD CELL PROTECTOR

Maxwell E. Jacobs, Brooklyn, and Eric R. Aaldenberg, Bayside, both of N.Y., assignors to Detecto Scales, Inc., Brooklyn, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,314
Int. Cl.² G01G *23/02*
U.S. Cl. 177—156 **5 Claims**

1. An electronic weighing device comprising: a frame; a load cell secured to said frame; weight receiving means; a first weight transmission linkage affixed to said cell; a second weight transmission linkage affixed to said weight receiving means; a preloaded coil spring extending between and connecting said linkages and adapted to move integrally therewith, said spring being preloaded by a force slightly less than the maximum force to which said load cell can safely be subjected; and a stop member affixed to one of said linkages to engage portions of the frame if said spring preload force is exeeded,



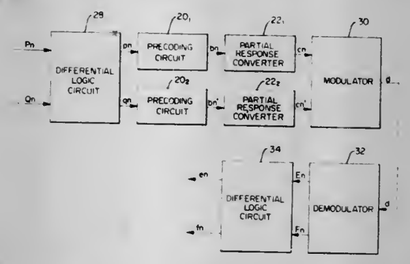
said frame portions being in the path of movement of said one linkage when a weight is applied to said receiving means.

4,114,710

CARRIER REGENERATION CIRCUIT

Tadayoshi Katoh, and Eiji Itaya, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 20, 1976, Ser. No. 716,183
Claims priority, application Japan, Aug. 20, 1975, 50-100762
Int. Cl.² H04L *27/24*
U.S. Cl. 178—67 **7 Claims**



1. A carrier regeneration circuit for regenerating a carrier from a QAM signal produced by a quadrature partial response modulation system which amplitude modulates quadrature-related carriers of a common frequency with respective ones of two parallel series of signals subjected to partial response conversion, said carrier regeneration circuit comprising:

probability decision means for making a decision as to the received data code in accordance with respective probabilities of generation of specified, demodulated data code combinations, and for generating a predetermined output corresponding to said decided, received data code; and

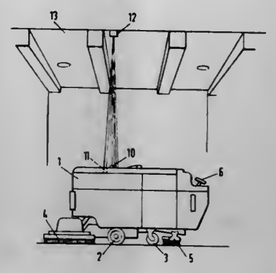
means for regenerating said carrier, said regenerated carrier having a phase ambiguity, and for maintaining the phase ambiguity of the regenerated carrier at a multiple of 90° by selectively shifting the phase of the regenerated carrier by 45° in response to said predetermined output of said probability decision means.

4,114,711

FLOOR TREATING MACHINES

John Thomas Wilkins, Bushey Heath, England, assignor to R. G. Dixon & Company Limited, Wembley, England

Continuation-in-part of Ser. No. 647,719, Jan. 9, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 833,727
Claims priority, application United Kingdom, Jan. 10, 1975, 1154/75
Int. Cl.² B62D *11/04*
U.S. Cl. 180—6.5 **4 Claims**



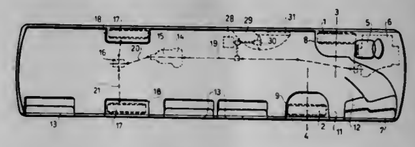
1. In a floor treating machine comprising laterally spaced drive wheels, separate traction motors drivably connected to the wheels and electronic control means to provide separate trains of pulses to operate the motors conjointly for straight line motion and differentially for steering motion, means for recording the trains of pulses to the traction motors for recording the path followed by the machine and means for replaying the record to reproduce the trains of pulses which are fed to the motors whereby the machine will reproduce the original path followed by the machine: the improvement of a distance check device for comparing the distance run in operation with the distance run during replaying of the record to see if path discrepancies exist, and overrider control means responsive to the output of the distance check comparison to sense a lag or lead and correspondingly increase or decrease the power fed to the motors to effect speed correction that will correct the path discrepancy.

4,114,712

MOTOR VEHICLE WITH SPECIAL ARRANGEMENT OF FRONT WHEELS, FRONT DOOR, DRIVER'S CABIN AND ENGINE

László Finta, 1/D, Széchenyi utca, 1054 Budapest, Hungary

Filed Oct. 28, 1976, Ser. No. 736,303
Int. Cl.² B62D *31/02*
U.S. Cl. 180—21 **6 Claims**



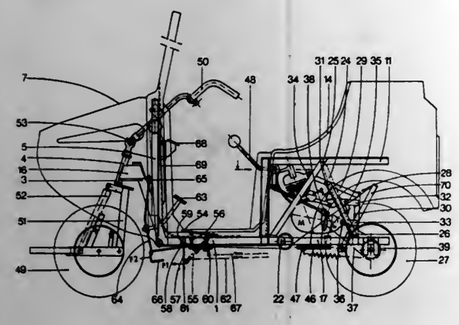
1. A motor vehicle having right and left front steered wheels, the axes of the right and left front steered wheels being spaced a substantial horizontal distance apart in a direction lengthwise of the vehicle, a driver's cabin in front of the left front wheel, a driving engine for the vehicle below the driver's cabin, and a passenger door on the right front side of the vehicle, the right front wheel and the passenger door being arranged one in front of the other.

4,114,713

MOTORIZED THREE WHEEL VEHICLE

Pierre Mery, 11 Impasse Gaston, Cugnec 34500-Beziers, France

Filed Dec. 17, 1976, Ser. No. 751,965
Claims priority, application France, Dec. 18, 1975, 75 38786
Int. Cl.[2] B62D *61/08*; B62K *5/06*
U.S. Cl. 180—27 **4 Claims**



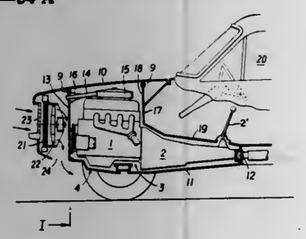
1. A relatively small articulated three wheeled vehicle comprising a chassis including a front frame and an articulated rear frame, a directing wheel mounted on said front frame, means for steering said directing wheel to control the direction of movement of the vehicle, a pivotal coupling connecting said rear frame to said front frame, shock absorbing means connecting a portion of said front frame to a portion of said rear frame in spaced relationship to said pivotal coupling, said rear frame including a pair of generally parallel, longitudinal side struts connected by a pair of generally parallel, transverse cross pieces, at least one drive wheel rotatably mounted on said movable frame, a power plant carriage slidably mounted on said rear frame, said carriage including a plurality of power plant support members, means for mounting a power plant on said support members, means drivingly connecting said power plant and said drive wheel, means for selectively moving said power plant carriage relative to said rear frame to adjust said driving connecting means, and clampable plates for securing said carriage in fixed adjusted position on said rear frame.

4,114,714

MOTOR VEHICLE HAVING SOUND-SUPPRESSING ENGINE ENCLOSURE

Heinz Fachbach; Gerhard Thien, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Jun. 7, 1976, Ser. No. 693,517
Claims priority, application Austria, Jun. 13, 1975, 4553/75
Int. Cl.[2] B60P *4/09*; G10K *4/00*
U.S. Cl. 180—54 A **7 Claims**



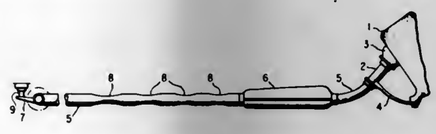
1. A motor vehicle comprising a water cooled internal combustion engine and a gearbox, said gearbox being connected to the engine to form an engine-gearbox unit, a fan-cooled water radiator, a chassis frame with two subframe beams, said engine-gearbox unit being supported on the two subframe beams via elastic bearing elements, a vehicle body connected to said chassis frame and having an engine compartment and a passenger compartment, two wheel arches forming lateral walls of the engine compartment and being connected to said subframe beams, an engine hood forming an upper wall of the engine compartment, a partition separating the engine compartment from the passenger compartment and forming a rear end wall of the engine compartment, a frontal end wall extending transversal relative to the longitudinal axis of the vehicle between the said two wheel arches, two upright lateral walls, each of them extending from one of the wheel arches upwards to the engine hood, said rear and frontal end walls being connected to said lateral walls, a bottom cover plate forming a bottom end wall of the engine compartment, said cover plate being connected to the subframe beams and the frontal end wall, said wheel arches, upright lateral walls, frontal and rear endwalls, and the bottom end wall forming together with the two subframe beams and the engine hood an all around fully closed soundproof encapsulation, the engine-gearbox unit being arranged within said encapsulation, said water radiator and its fan being located outside and in front of the said soundproof encapsulation.

4,114,715

PIPE, IN PARTICULAR AN EXHAUST PIPE FOR MOTOR VEHICLES

Didier Theron, Argenteuil, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 1, 1976, Ser. No. 691,481
Claims priority, application France, Jun. 3, 1975, 75 17236
Int. Cl.[2] B60K *13/04*
U.S. Cl. 180—64 A **3 Claims**



1. In an exhaust system of an automotive vehicle, wherein an exhaust pipe is connected at one end to an engine of said vehicle which vibrates during operation and at its other end is flexibly supported by the frame of said vehicle, the improvement comprising:

means reinforcing the rigidity of the area of the connection of said exhaust to said engine; and

said exhaust pipe including an elongate axial portion of substantially circular section and having therein a series of localized indentations of said circular section, which are produced by flattenings of the circular section of the pipe into an elipsoidal section progressively connected to the circular section, providing a reduced moment of inertia in its center area, whereby the torsional stresses undergone by said exhaust pipe at its fixed extremity are, in a limited way, absorbed and distributed therein.

4,114,716

HOUSING APPARATUS

Julian V. Sanders, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 27, 1977, Ser. No. 810,549
Int. Cl.[2] B60K *11/04*
U.S. Cl. 180—68 R **7 Claims**

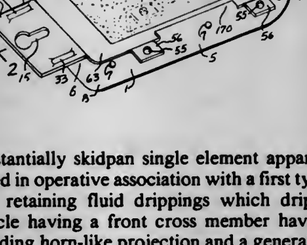
1. An apparatus comprising:

a frame having an axis, first and second generally parallel sides which are generally perpendicular to said axis and third and fourth generally parallel sides which are generally parallel to said axis and connected to said second side;

an engine housing having side portions and being connected to said frame and generally centered over said axis and positioned along said first side;

a unitary radiator housing connected to said frame adjacent said engine housing and being generally centered over said axis and extending between the third and fourth sides to locations beyond said engine housing side portions;

a pair of wheel guards connected to said frame on opposed sides of said axis and spaced from said radiator housing, said radiator housing being positioned between said wheel guards and said engine housing and connected to said second side; and



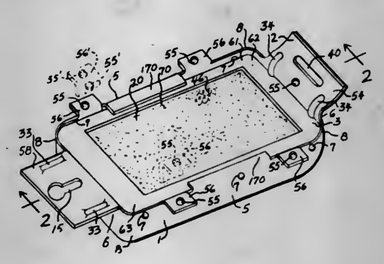
an operator compartment having top and side portions and being generally positioned between said wheel guards and said radiator housing and generally centered over said axis.

4,114,717

MOTOR VEHICLE OIL DRIP PAN APPARATUS DEVICE FOR AT LEAST INDIRECTLY SAVING LIVES AND ACCIDENTS ON A HIGHWAY

Peter Andrews, 190 Gebhardt Rd., Penfield, N.Y. 14526

Continuation-in-part of Ser. No. 467,719, May 7, 1974, Pat. No. 3,980,153, which is a continuation-in-part of Ser. No. 315,174, Dec. 14, 1972, Pat. No. 3,809,175, which is a continuation-in-part of Ser. No. 94,793, Dec. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 532,831, Feb. 21, 1966, Pat. No. 3,669,204, and Ser. No. 750,094, Aug. 5, 1968, Pat. No. 3,590,937, said Ser. No. 750,094, is a continuation-in-part of Ser. No. 508,625, Oct. 21, 1965, Pat. No. 3,396,810, which is a division of Ser. No. 288,159, Jun. 17, 1963, abandoned. This application Sep. 13, 1976, Ser. No. 722,887
The portion of the term of this patent subsequent to Sep. 14, 1993, has been disclaimed.
Int. Cl.[2] B62D *25/20*
U.S. Cl. 180—69.1 **49 Claims**



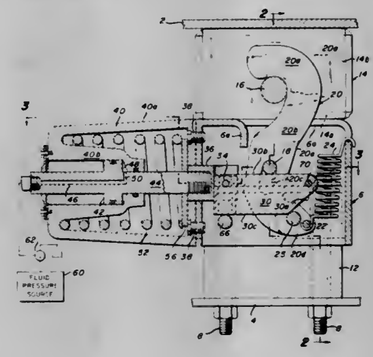
1. A substantially skidpan single element apparatus device which is used in operative association with a first type of motor vehicle for retaining fluid drippings which drip from said motor vehicle having a front cross member having an integrally extending horn-like projection and a generally centrally located cross member comprising: a substantially skidpan fluid retaining and fluid impermeable receptacle having two outwardly formed integral side ear members with one of said side ear members generally extending at an angle from each of two upper substantially rectilinear side wall portions thereof and also having one integrally outwardly formed large bracket member having an opening and extending outwardly from one upper integral rectilinear end wall portion of said receptacle so that when said apparatus device is to be removably secured to said motor vehicle said side ear members are removably secured to said centrally located cross member by a removable securing means while said bracket member is hooked over and onto said horn-like projection by use of said opening in said bracket member for also suspendingly and hookingly disposing said receptacle under at least one portion of said vehicle and for receiving and substantially retaining fluid drippings which dripped substantially into said receptacle from at least one underpart portion of said vehicle; said receptacle having a bottom wall and two integral substantially rectilinear side wall portions and two integral substantially rectilinear end wall portions that merge integrally at four corner portions and having said side ear members and said bracket member extending integrally from said side wall portions and said end wall portion respectively.

4,114,718

LOCKING HOOK AND PIN APPARATUS FOR LOCKING TOGETHER A PAIR OF COMPONENTS

Eugene C. Lipshield, Moberly, Mo., assignor to Orscheln Brake Lever Mfg. Company, Moberly, Mo.

Filed Jan. 17, 1977, Ser. No. 758,914
Int. Cl.[2] B62D *27/06*
U.S. Cl. 180—89.14 **16 Claims**



1. Apparatus for locking together a pair of components, such as the tilt cab chassis components of a motor vehicle, comprising

(a) a pin housing adapted for connection with one of said components;

(b) a hook housing adapted for connection with the other of said components, said pin and hook housings including adjacent parallel walls which are in abutting engagement when the components are positioned for connection, said pin housing containing a stationary transverse locking pin parallel with said housing walls, said hook housing containing a stationary pivot pin parallel with said locking pin;

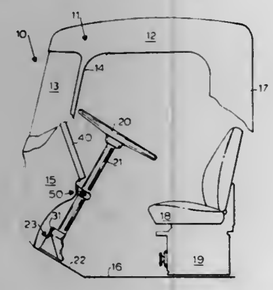
(c) a hook member mounted for both axial and pivotal displacement on said pivot pin, said hook member including at one end a hook portion adapted for locking engagement with said locking pin, said hook member being axially displaceable from a normal locking position in which said hook portion is in engagement with said locking pin toward a safety position in which said hook portion is opposite and spaced from said locking pin, said hook member being pivotably displaceable from said safety position to a fully released position relative to said locking pin, thereby to permit separation of the components;

(d) means including first spring means connected between said hook member and said hook housing for pivotally biasing said hook member in the hook-locking direction relative to said locking pin;

(e) cam means including a cam member operable between locking, safety and releasing positions relative to said

hook housing for operating said hook member between its locked, safety and released positions, respectively;
(f) second spring means biasing said cam member toward the locking position; and
(g) linearly operable cam operating means for displacing said cam member from the locking position successively toward the safety and releasing positions against the biasing force of said second spring means.

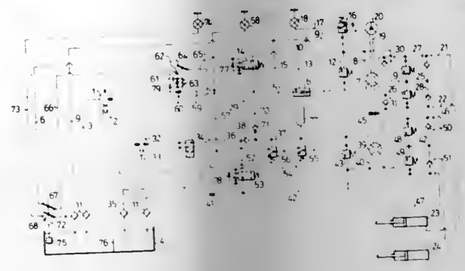
4,114,719
DASH CONSOLE ACCESS ENABLING TILTING STEERING COLUMN
James Warren Saunders, Milpitas, Calif., assignor to Paccar Inc., Bellevue, Wash.
Filed Jan. 31, 1977, Ser. No. 764,084
Int. Cl.² B62D *1/18*
U.S. Cl. 180—90 **6 Claims**



1. In a motor vehicle having a driver's compartment enclosed in the front by a windshield and by a front wall below the windshield, said compartment having a floor and other wall structure and containing a floor-mounted steering column with a steering wheel at its upper end, a driver's seat behind said steering column and a dash console lying below said windshield and with a lower edge lying close to and in front of said steering column, said console having a plurality of indicators, controls, and the like mounted therein so as to be viewable and operable by a driver occupying said seat, the combination therewith of:
said bottom edge of said dash console being hinged to said front wall along a generally horizontal axis, said dash console thereby being rotatable along said axis from a closed upright operating position to an open access-enabling position, the amount of opening being limited by the console coming against said steering column or said steering wheel,
a pivot joint securing said steering wheel column pivotally to said floor, and
a readily openable locking clamp secured to said front wall below said console for securing said steering column in an upright operating position adjacent to said console,
whereby said clamp may be opened, and said column may then be tilted downwardly and rearwardly, relative to said console, thereby enabling said console to be moved to a backside-upward fully open generally horizontal access-enabling position.

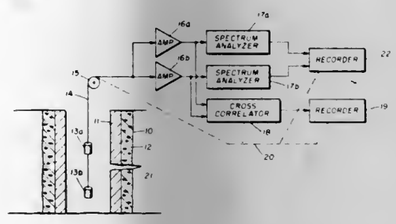
4,114,720
DUAL STEERING SYSTEM FOR VEHICLES
Hans Göran Ericson, and Bo Sanfrid Emanuel Steneriis, both of Eskilstuna, Sweden, assignors to Volvo BM AB, Eskilstuna, Sweden
Filed Feb. 22, 1977, Ser. No. 770,748
Claims priority, application Sweden, Feb. 27, 1976, 7602701
Int. Cl.² B62D *5/06*
U.S. Cl. 180—133 **4 Claims**

1. In a hydraulic steering system for vehicles comprising two double-acting steering cylinders (23,24) and two steering circuits (1,5,7,21,22 and 32,37,38,46,47), each of which has a pressure medium pump (1;32) and a steering unit (7;39) which can be influenced by the steering wheel (20) of the vehicle, to each unit a supply line (5;37) carrying pressure medium from their respective pumps, each having a return flow line (8,9;40,42) and each having a pair of steering lines (21,22;47,46), each steering line of the pair of steering lines is connected to one of the steering cylinders (23,24), said steering unit (7;39), when the steering wheel is turned, metering out a pressure medium flow, the magnitude of which is dependent on the magnitude of the movement of the steering wheel, to its respective steering cylinder line (21 or 22 and 47 or 46); the improvement in which the steering cylinder lines (21,22) in one



of the steering circuits (1,5,7) are connected to the rear cylinder spaces of the cylinders (23,24) while the steering cylinder lines (46,47) in the remaining steering circuit (32,37,39) are connected to the forward cylinder spaces of the cylinders (24,23), a pressure detecting means (56) for detecting pressure of the pressure medium and a coupling valve (14), which is also connected (13) to the first steering circuit (1,5,7) and arranged to be influenced by the pressure detecting means (56) when it detects pressure lying below a given minimum level so as to connect the steering circuits so that pressure medium is supplied to said remaining steering circuit from the first steering circuit, being connected to the supply line (37) of said remaining steering circuit (32,37,39).

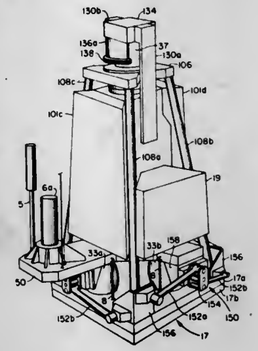
4,114,721
METHOD AND SYSTEM FOR ACOUSTIC NOISE LOGGING
Edwin E. Glenn, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Feb. 28, 1977, Ser. No. 772,405
Int. Cl.² G01V *1/40*
U.S. Cl. 181—105 **4 Claims**



1. A method of logging a borehole for noise sources within a well, comprising the steps of:
(a) traversing the borehole with a logging tool having at least two axially spaced acoustic noise detectors for monitoring the acoustic noise within the borehole,
(b) recording a pair of first signals representative of both coherent and incoherent acoustic noise monitored by said detectors in correlation with depth to obtain a reconnaissance log,

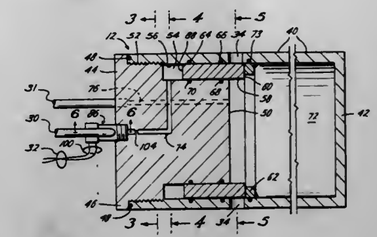
(c) measuring the harmonic content of each of the signals from the acoustic detectors,
(d) determining the coherence of said measured harmonic contents as a function of depth of the logging tool within the borehole, coherence over some portion of the frequency spectrum indicating that the noise detected by the acoustic detectors at the depth associated with said coherence is coherent noise produced primarily by a casing leak,
(e) locating said logging tool at one or more depths within the borehole identified in step (d),
(f) monitoring the acoustic noise at said one or more depths with said detectors for a desired time interval,
(g) crosscorrelating a pair of second signals representative of the acoustic noise monitored by said detectors at said one or more depths to determine the time shift between said pair of second signals, each time shift so determined being representative of the time differential between the travel-time of coherent acoustic noise from a casing leak to said detectors, and
(h) identifying the location of said casing leak with respect to said detectors based upon the amount and direction of said time shift.

4,114,722
BROADBAND SEISMIC ENERGY SOURCE
Richard Martin Weber, and John William Bedenbender, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 24, 1976, Ser. No. 717,730
Int. Cl.² G01V *1/14*
U.S. Cl. 181—114 **11 Claims**



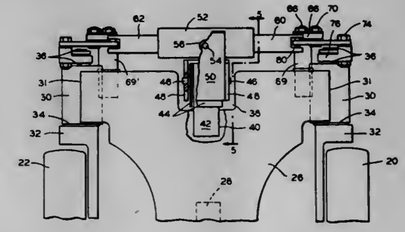
5. A seismic energy source transported by a vehicle and comprising:
(a) a baseplate for coupling seismic energy to the ground,
(b) at least one hold-down plate and support means for applying at least a portion of the weight of said vehicle to said hold-down plate,
(c) means for coupling substantially vertical forces from said hold-down plate to said baseplate, and
(d) stabilizing means for limiting translation of said hold-down plate relative to said baseplate, said stabilizing means further comprising:
(i) a center link pivotally coupled to said baseplate,
(ii) a first stabilizing rod rotatably coupled at one end to a point on said center link above the level of its pivot and at the other end to a first point of said hold-down plate, and
(iii) a second stabilizing rod rotatably coupled at one end to a point on said center link below the level of its pivot and at the other end to a second point of said hold-down plate.

4,114,723
PNEUMATIC SEISMIC SIGNAL GENERATOR WITH INDEPENDENT FIRING CONTROL PRESSURE
John Lloyd Paitson, Galveston, and Marion Lonnie Parker, Houston, both of Tex., assignors to Western Geophysical Co. of America, Houston, Tex.
Filed Dec. 10, 1976, Ser. No. 749,548
Int. Cl.² G01V *1/38*
U.S. Cl. 181—120 **5 Claims**



1. An air gun for generating a seismic acoustic pulse in a body of water comprising:
a casing closed at both ends and having at least one exhaust port;
valve means, having two end faces, slidable within said casing, for dividing said casing into a control chamber and a firing chamber and for releasably closing said exhaust port, the end face exposed to the control chamber having a larger area than the end face exposed to the firing chamber when said valve is closed;
means for sealing the control chamber from fluid communication with the firing chamber;
means for supplying control air under a first relatively low pressure to said control chamber to cause said valve means to close said exhaust port, and separate means for supplying air under a second higher pressure to said firing chamber;
means for dumping a metered volume of the air from said control chamber to allow said valve means to open said exhaust port thereby to allow the air in said firing chamber to escape impulsively into the water; and
controllably resilient means in said control chamber for absorbing the momentum of said valve means.

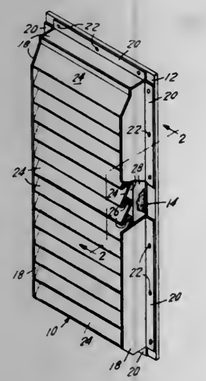
4,114,724
STEERING MECHANISM
Mac R. Doolittle, Charlotte, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Division of Ser. No. 707,961, Jul. 23, 1976, Pat. No. 4,064,967.
This application May 25, 1977, Ser. No. 800,265
Int. Cl.² B62D *5/10*
U.S. Cl. 180—155 **10 Claims**



1. A steering mechanism for wheeled vehicles having right and left steer wheels comprising a transverse steer axle, a generally inverted U-shaped steering assembly surrounding

said steer axle and connected to the steer wheels on opposite sides thereof, said steering assembly including steering arm and king post means operatively connected to each steer wheel at each side of the steer axle and tie rod means operatively connected at each opposite end to a said steering arm and king post means, said tie rod means including an hydraulic actuator, said steer axle being supported from said king post means, said tie rod means extending above said steer axle and operatively connected to said steer axle with said actuator being mounted for pivotal movements about a vertical axis and about a transverse horizontal axis.

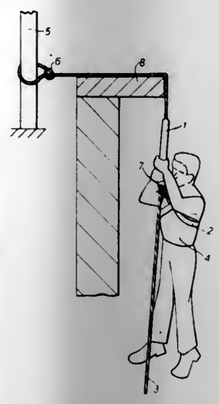
4,114,725
SHIELD AND ACOUSTICAL ASSEMBLY
William H. Croasdale, Morris Plains, N.J., assignor to American Can Company, Greenwich, Conn.
Filed Oct. 21, 1976, Ser. No. 734,665
Int. Cl.[2] E04H *17/00*; G10K *11/00*
U.S. Cl. 181—205 **16 Claims**



1. A shield for an assembly, comprised of a member of generally corrugated construction adapted for mounting in a generally vertical position, each corrugation of said member consisting of a forward element and a rearward element joined at a common forward edge, adjacent corrugations of said member being joined at common rearward edges, with said common rearward edges of said corrugations being disposed on a common plane, said forward elements being substantially imperforate, and said rearward elements thereof having perforations formed therein to permit sound waves to pass there-through to the rearward side of said shield, said rearward element of each corrugation forming an obtuse included angle with said common plane, to dispose said rearward element of said corrugation therebehind, thereby screening said rearward element from contact by matter impinging upon said shield in a direction generally normal to said plane, and preventing liquid, descending over said shield, in the normal generally vertical position thereof, from entering said perforations.

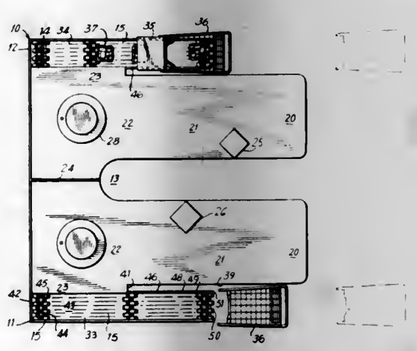
4,114,726
FIRE ESCAPE DEVICES
Victor Edward Sentinella, 68, Dome Hill, Caterham, England (CR36EB)
Filed Oct. 26, 1976, Ser. No. 735,779
Claims priority, application United Kingdom, Oct. 29, 1975, 44545/75
Int. Cl.[2] A62B *1/16*
U.S. Cl. 182—5 **4 Claims**

1. A fire escape device comprising a pair of arms mounted for movement between an open position and a closed position, a first means on one arm defining at least a part of a passage, a second means on the other arm defining at least a part of a passage, and fastener means for fastening the arms together in the closed position, the first means cooperating with the second means, when the arms are in the closed position, to define a tortuous passage for an elongate body, for example a cable, the tortuosity of the passage being such that movement of an elongate body, for example a cable, along the passage is retarded, said arms being pivotally connected together at respec-



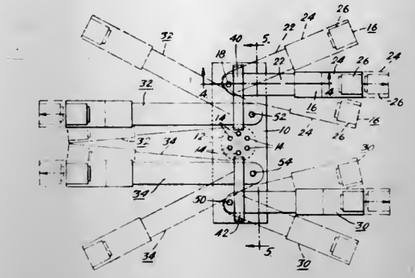
tive ends, said fastener means comprising distal end portions of said arms, one end portion being formed with a hole for receiving a fastener, and one end portion being formed with a slot for allowing limited pivotal movement of the arms in the closed portion.

4,114,727
SUPERMARKET COUNTER CONSTRUCTION AND METHOD OF USING SAME
Stanley Joseloff, 185 S. Atlantic Ave., Cocoa Beach, Fla. 32931
Filed Sep. 23, 1977, Ser. No. 836,031
Int. Cl.[2] A47F *10/00*
U.S. Cl. 186—1 AC **6 Claims**



1. Check-out counter construction comprising: first and second generally elongated counters disposed in parallel relation, each of said counters having an upstream end and a checking area including a tallying device in mutually spaced relation to define an elongated bay therebetween for accommodating a single person between said checking areas; said counters each including juxtaposed downstream areas for the temporary storage of tallied articles, and a bag loading area including a conveyor element having an axis of movement substantially parallel to the principal axis of said counter element; said loading areas each including extensions forming a loading dock accommodating one end of a shopping cart, said dock including camming means for moving a pivotally mounted wall on said shopping cart from vertical to substantially horizontal position to define an opening in said shopping cart through which loaded bags may pass.

4,114,728
VEHICLE-LIFT SUPERSTRUCTURE
John Alexander Jones, 6312 Fairfield Dr., Flourtown, Pa. 19031
Filed Sep. 6, 1977, Ser. No. 829,635
Int. Cl.[2] B66F *7/28*
U.S. Cl. 187—8.75 **5 Claims**



1. In a vehicle-lift superstructure comprising a bolster mountable on a lift piston and a plurality of horizontally-pivotable swing arms mounted on the top side of said bolster and extending therefrom for supporting a vehicle, the improvement wherein

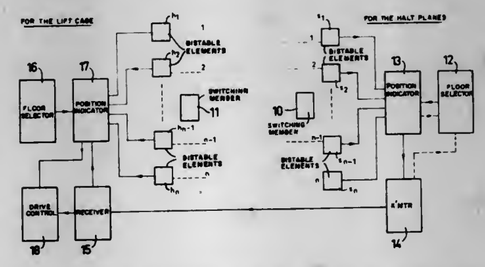
a first and a second of said arms extend outward from one side edge of said bolster and are pivotable horizontally about respective first and second vertical axes, which axes:

(a) are spaced apart from each other along a predetermined dimension of said bolster, and

(b) pass through that half of said top of said bolster more remote from said one side edge; and

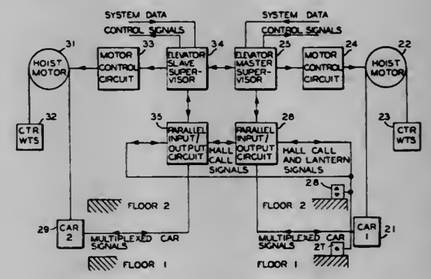
at least another of said arms extends outward from the opposite side edge of said bolster and is pivotable about a third vertical axis extending through that half of said top of said bolster more remote from said opposite side edge and intermediate said first and second axes along a direction parallel to said dimension, whereby the end portion of said third swing arm adjacent said third axis is positioned between the corresponding end portions of said first and second arms.

4,114,729
HALT SELECTOR SYSTEM
Ulf Köhler, Skellefteå, Sweden, assignor to Linden-Alimak AB, Skellefteå, Sweden
Filed Oct. 18, 1976, Ser. No. 733,582
Claims priority, application Sweden, Oct. 17, 1975, 7511669
Int. Cl.[2] B66B *1/40*
U.S. Cl. 187—29 R **6 Claims**



1. A halt selector system for a vehicle movable along a defined path, comprising at least one switching circuit positioned remotely from the drive machinery of the vehicle for selecting a halt position for said vehicle, said switching circuit including means operative to sense the position of the vehicle with respect to a selected halt position and, in response to the position of the vehicle with respect to said selected halt position, to control a transmitter to emit first and second different frequency signals to a receiver which is positioned adjacent the drive machinery of the vehicle and which is connected to an operating unit for said drive machinery, said first signal being operative to effect activation of a control circuit in said operating unit to indicate that the vehicle is to be driven in one direction, and said second signal being operative to effect activation of said control circuit in said operating unit to indicate that the vehicle is to be driven in the opposite direction, said transmitter also being operative to emit to said receiver a third signal, distinguishable from each of said first and second signals, for deactivating said control circuit to cause said vehicle to be stopped at the nearest halt position in the travel direction of the vehicle, said switching circuit including, for each halt position, at least one bistable unit which is adapted to assume one state when the vehicle is located at one side of the halt position and to assume its other state when the vehicle is located at the other side of said halt position, a switch-over device for switching the state of said bistable unit when said vehicle is moving along said path and is at a predetermined distance from a halt position such that said vehicle can be stopped at said halt position, and control means responsive to the state of said bistable unit for activating the transmitter to emit said first signal if the vehicle is located at one side of the halt position or to emit said second signal if the vehicle is located at the other side of the halt position, said control means being operative, when the vehicle has arrived at a halt position at which it is to stop, to activate the transmitter to emit said third signal in response to the switching of the state of said bistable unit.

4,114,730
TRANSPORTATION SYSTEM WITH INDIVIDUAL PROGRAMMABLE VEHICLE PROCESSORS
David K. Means, Palo Alto, Calif., and Clyde A. Boenke, Ann Arbor, Mich., assignors to Reliance Electric Company, Cleveland, Ohio
Filed Sep. 7, 1976, Ser. No. 721,062
Int. Cl.[2] B66B *1/18*
U.S. Cl. 187—29 R **53 Claims**



1. In an elevator system including an elevator car movable along an elevator hatchway for serving at least two floors having landings, control means for controlling the elevator car in response to control signals, a source of data signals characteristic of service conditions for the system and an elevator supervisor responsive to the service condition signals for generating the control signals, the elevator supervisor comprising:

a bus means having a plurality of signal transmission lines;

at least one supervisor interface circuit connecting the service condition signals source and the control means to said bus means signal transmission lines; and

a processing means connected to said bus means signal transmission lines for reading the service condition signals and for generating the control signals in response thereto through said supervisor interface circuit and said bus means wherein said one supervisor interface circuit is a position-velocity circuit and the service condition signals

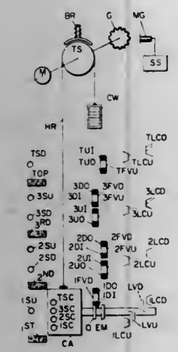
source includes a source of car position signals and car velocity signals connected to said position-velocity circuit whereby said processing means reads said car position signals and said car velocity signals through said position-velocity circuit and said bus means.

4,114,731

ELEVATOR SAFETY ARRANGEMENT

John Joseph Faup, Oradell, and David Harvey Wolf, Ringwood, both of N.J., assignors to Otis Elevator Company, New York, N.Y.

Filed Apr. 8, 1976, Ser. No. 675,021
Int. Cl.[2] B66B 5/02
U.S. Cl. 187—29 R **5 Claims**



1. In an elevator system having control apparatus by which an elevator car is moved automatically between a plurality of landings and is stopped automatically at any one of said plurality of landings upon initiation of a stopping operation for each respective landing, a safety arrangement comprising:

velocity sensing means producing at least a low and high speed signal in response to the speed of the car being less than or in excess of a predetermined velocity, respectively;

distance sensing means operating to produce a distance signal in response to each initiation of a stopping operation for each of said landings upon the car being located within a predetermined distance of the landing at which the stop is to be made; and

disabling means including memory means having first and second state and being operable from said first state to said second state in response to said high speed signal, and remaining in said second state after said high speed signal ceases, and logic means actuated in response to the production of said distance signal and said memory means being in said first state, said disabling means rendering said control apparatus inoperable if during automatic movement between landings said velocity sensing means does not produce a high speed signal.

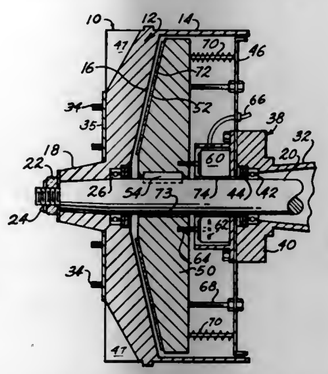
4,114,732

DISC BRAKE

Robert C. Dunn, 8477 Dorris Rd., Douglasville, Ga. 30134

Continuation of Ser. No. 639,453, Dec. 10, 1976, abandoned.
This application Jul. 5, 1977, Ser. No. 812,529
Int. Cl.[2] F16D 55/10, 65/09
U.S. Cl. 188—73.2 **4 Claims**

1. In a brake assembly for a vehicle or the like comprising a nonrotatable shaft and a hub defining a central opening therein and internal bearing means in said opening, said hub being rotatably mounted on said shaft with said bearing means engaging said shaft, said hub including a plurality of lug studs extending in a circular arrangement about said opening from the outer face thereof for mounting a wheel thereon, and a concave conical surface formed in said hub on the back face thereof opposite to said lug studs, said concave conical surface having its central axis aligned with the axis of said shaft and extending from immediately adjacent said bearing means and said opening from a radius substantially smaller than the radius of the circular arrangement of said lug studs radially outwardly to the peripheral portion of said hub to a radius substantially greater than the radius of the circular arrangement of said lug studs, a disc block defining an opening therein, said shaft extending through the opening of said disc block with said disc block movable along the length of said shaft, a key and slot assembly connecting together said disc block and said shaft so that said disc block is movable along the length of said shaft and is nonrotatably held on said shaft, said disc block including



a convex conical surface having its central axis aligned with the axis of said shaft and being of a size and shape corresponding to the size and shape of the concave conical surface of said hub so that the convex conical surface of said disc block is movable with said disc block along said shaft toward and away from the concave conical surface of said hub into engagement with substantially the entire concave conical surface of said hub, an annular hydraulic cylinder extending about said shaft and including means extending therefrom at positions closely adjacent said shaft and inwardly of the convex conical surface of said disc block for urging said disc block toward engagement with said hub, and spring means positioned adjacent the peripheral portions of said disc block and said hub for urging said disc block away from said hub.

4,114,733

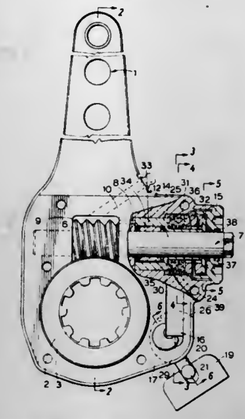
AUTOMATIC SLACK ADJUSTERS FOR VEHICLE BRAKE LINKAGES

Peter Charles Knight, Edgbaston, England, assignor to Girling Limited, Birmingham, England

Filed Jul. 11, 1977, Ser. No. 814,725
Claims priority, application United Kingdom, May 12, 1977, 19932/77
Int. Cl.[2] F16D 65/56
U.S. Cl. 188—196 BA **2 Claims**

1. An automatic slack adjuster for a vehicle brake applying linkage of the type comprising a shaft mounted for rotation about its longitudinal axis for applying or releasing the brake, and a housing which constitutes a lever in the linkage and is mounted for rocking movement about said axis of said shaft and with respect to a relatively stationary part, wherein said adjuster comprises a worm wheel mounted on and secured against rotation relative to said shaft, a worm mounted in said housing and meshing with said worm wheel to transmit angular movement of said lever to said shaft, and automatic worm driving means for rotating said worm with respect to said housing to compensate for slack in said linkage in response to relative movement between said lever and said relatively stationary part, said automatic worm driving means incorporating a connection having a degree of lost-motion equivalent to a desired braking clearance, said connection including a clutch

of the multi-plate type comprising a plurality of primary clutch plates coupled to said worm a plurality of secondary clutch plates interposed alternately between said primary clutch plates and resilient means for urging said second clutch plates normally into driving engagement with said first clutch plates, and a linearly slidable pawl acting between said second clutch plates and said stationary part to effect rotation of said second-



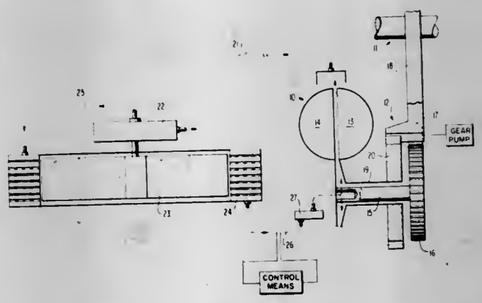
ary clutch plates after relative movement between said lever and said stationary part has exceeded a value equivalent to said degree of lost-motion, each secondary plate being provided with a tooth, and said pawl being provided with a notch in which all said teeth are received, said notch being of greater length than the circumferential length of said tooth to define said lost-motion.

4,114,734

RETARDER FOR VEHICLES, ESPECIALLY HEAVY TRUCKS

Friedrich Bultmann, Winnenden, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 24, 1973, Ser. No. 326,564
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1972, 2203319
Int. Cl.[2] F16D 57/04
U.S. Cl. 188—274 **14 Claims**



1. A continuous brake system for vehicles comprising, in combination,

a hydrodynamic coupling means for providing braking forces to a vehicle, said hydrodynamic coupling means operating to provide said braking forces exclusively by action of a fluid coupling,

an annular cooler means for providing a large cooling surface area,

a radial fan means for providing cooling air to said annular cooler means, said annular cooler means being arranged circumferentially about said radial fan means, such that said annular cooler means and said radial fan means are provided in a relatively flat structure,

radial turbine means for driving said radial fan means, and

circulatory means for circulating operating fluid from said hydrodynamic coupling means to said radial turbine means through said annular cooler means and back to said hydrodynamic coupling means, wherein said hydrodynamic coupling means pumps said operating fluid through said circulatory means, thereby cooling said operating fluid in a separate system

characterized in that the hydrodynamic coupling means includes two rotors driven in opposite directions of rotation, wherein the two rotors of the hydrodynamic coupling means are driven at speeds whose absolute rotational speeds are at least approximately identical, and wherein the two rotors of the hydrodynamic coupling means are operatively connected with intermediate gear means of approximately identical diameter, of which one intermediate gear means engages directly with a gear wheel connected with a driving shaft while the other intermediate gear means engages with the gear wheel connected with the driving shaft by way of a reversing gear,

characterized in that said gear wheel is of double width, and in that the reversing gear serves in its turn, for the drive of a pump for lubricating purposes or the like,

characterized in that the hydrodynamic coupling means serving as a retarder together with its drive is combined into a structural unit within a common housing means, and

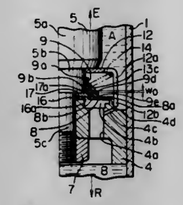
characterized in that the gear wheel operatively connected with the driving shaft is extended with its hub as far as possible into the plane of the hydrodynamic coupling means and its wheel body is constructed conically and carries at its outer circumference toothed means of a ring gear.

4,114,735

HYDRAULIC DAMPER AND VALVE STRUCTURE

Tetuo Kato, Yokohama, Japan, assignor to Tokico Ltd., Japan

Filed Mar. 7, 1977, Ser. No. 775,644
Claims priority, application Japan, Mar. 15, 1976, 51-27979; Apr. 20, 1976, 51-49580[U]
Int. Cl.[2] F16F 9/348
U.S. Cl. 188—282 **7 Claims**



1. A hydraulic damper having an oil chamber partitioning member such as a piston or a bottom member or the like and having a passage therein connecting two oil chambers partitioned by said partitioning member, and a damping force generating device disposed in said partitioning member, said damping force generating device comprising a flexible valve disc means adapted to open or close said passage for generating a damping force against the oil flowing across the device in opposite directions, a fixed outer periphery supporting valve seat on said partitioning member for engaging with the outer periphery of said valve disc means on one face of said valve disc means, a fixed inner periphery supporting valve seat on said partitioning member for engaging with the inner periphery of the valve disc means on the other face of said valve disc means, and a movable spring loaded valve seat sealingly engaged between said other face of said valve disc means around the entire periphery thereof and said partitioning member for

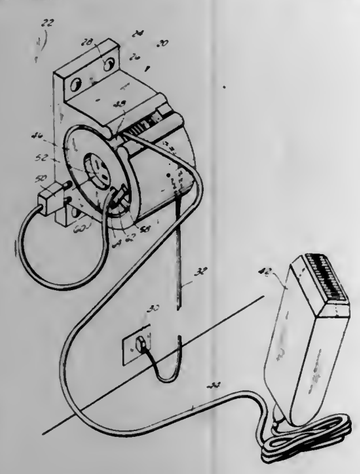
restricting the effective pressure receiving area of said valve disc means and movably mounted on said partitioning member for limited movement in the direction of movement of said valve disc means while remaining in sealing engagement with said valve disc means when the valve disc means deflects in one direction under the spring loading thereof for delaying the opening of said passage and movable with the valve disc means against the spring loading thereof when the valve disc means deflects in the other direction.

4,114,736

CORD RETRACTOR FOR RETRACTING CORD OF ELECTRICAL APPLIANCES

Volker Scherenberg, 11 Meadow La., Saddle River, N.J. 07458

Filed Jul. 5, 1977, Ser. No. 812,507
Int. Cl.² H02G *11/02*
U.S. Cl. 191—12.4 **15 Claims**



13. A cord retractor for retracting a cord of an electrical appliance comprising:
a housing adapted to be mounted to a supporting structure;
a drum rotatably mounted in the housing;
electrical connection means for connecting the cord retractor to a source of electricity;
access means on the housing and drum to introduce a cord of an electrical appliance into the housing to be reeled onto the drum and connected to the electrical connection means to supply electricity to the appliance; and
electrical connection means for connecting the cord retractor to the cord of an electrical appliance.

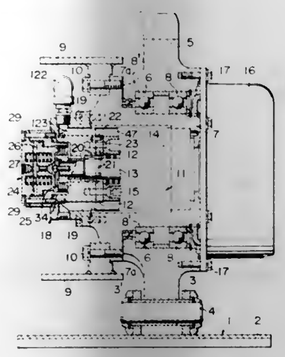
4,114,737

DRIVE CONTROLLING MECHANISM

Kiyozumi Fukui, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan

Filed Dec. 14, 1976, Ser. No. 750,537
Claims priority, application Japan, Dec. 18, 1975, 50-171224[U]
Int. Cl.² B60T *17/04;* B60K *3/02;* F01B *13/06*
U.S. Cl. 192—3 N **3 Claims**

1. A drive controlling mechanism comprising in combination:
an hydraulic motor including a cylinder block and a rotary shaft extending axially of and positioned within said cylinder block to be engaged with said cylinder block for rotation therewith,
a motor housing for accommodating therein said hydraulic motor,
a control block securely connected with said motor housing and rotatably receiving one end portion of said rotary shaft, said control block having an axially outer end face and an outer peripheral face,
a parking brake means detachably received within the axially outer half of said control block for braking said rotary shaft,
a parking brake inlet-outlet conduit formed in said control block for introducing and discharging fluid under pressure to and from said parking brake means for actuating and de-actuating said parking brake means,



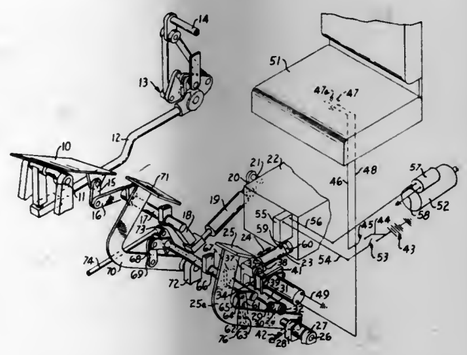
a control valve means detachably mounted on the outer peripheral face of said control block in fluid communication with said parking brake means through a radial bore formed in said control block, said radial bore being in fluid communication with said parking brake inlet-outlet conduit, so that the running of said hydraulic motor will be controlled by said control valve means, and
a pair of inlet-outlet conduits for introducing and discharging said pressure fluid to and from said control valve means.

4,114,738

BRAKE AND CREEPER CONTROL SYSTEM

Vaikai K. Brown, Thompson, and Richard N. Fatur, Eastlake, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 17, 1977, Ser. No. 760,065
Int. Cl.² B60K *41/24*
U.S. Cl. 192—4 A **10 Claims**



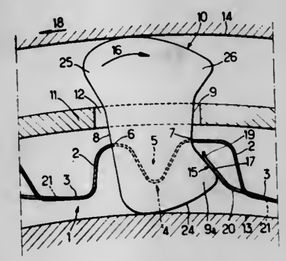
1. A combined brake and transmission override control system comprising:
brake actuating linkage;
a first pedal mounted for pivotal movement about a first axis;
a second pedal mounted for pivotal movement about a second axis;
lost motion linkage means for connecting said second pedal to said brake actuating linkage for operation of said brake linkage after a predetermined range of movement of said second pedal, said lost motion linkage means comprising a rotatable shaft mounted for pivotal movement on a third axis, said third axis being radially offset from said first and second axes, said shaft extending between said first and second pedals; and
a transmission control element; and,
transmission linkage means connecting said second pedal to said transmission control element so that said second pedal operates said transmission element over said predetermined range of movement and operates said brake linkage over a further range of movement after said predetermined range of movement.

4,114,739

SPRING FOR FREE-WHEELING DEVICE

Jérôme Colonna, Bobigny; Jean-Michel Monville, Paris, and Francois Munoz, Marseille, all of France, assignors to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed Feb. 14, 1977, Ser. No. 768,564
Claims priority, application France, Feb. 24, 1976, 76 05070
Int. Cl.² F16D *41/07*
U.S. Cl. 192—41 A **13 Claims**



1. A spring structure for a free-wheeling device comprising a formed and cut out metallic strip having means defining a series of principal undulations separated by substantially cylindrical portions, each of said principal undulations having near its outer summit portion a window for receiving a wedging cam and which is gripped between opposite edges of said window, and a secondary undulation in the material of the strip on each side of the window for improving the elasticity of the cam gripping, means defining a series of cam swinging tongues, one adjacent each such window, each tongue being bent outwardly and having a substantially flat base portion integral with and in substantial alignment with a cylindrical portion of said strip adjacent each such window, said tongue including a central portion engagable with a corresponding portion of a wedging cam for swinging the cam in a direction improving wedging.

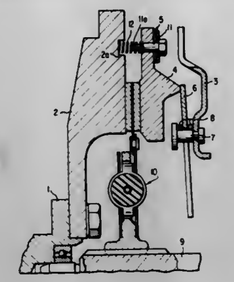
4,114,740

DEVICE FOR PREVENTING VIBRATION OF A PRESSURE PLATE OF A FRICTION CLUTCH OF A VEHICLE

Teruo Sugiura, Toyota; Hiromitsu Tsubouchi, Nagoya; Nobuyasu Ishida, Tokai, and Kiyonori Kobayashi, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Apr. 22, 1977, Ser. No. 789,926
Claims priority, application Japan, Apr. 23, 1976, 51/46998
Int. Cl.² F16D *13/56*
U.S. Cl. 192—70.18 **7 Claims**

1. A friction clutch for transmitting torque from a crankshaft to an input shaft of a transmission, which comprises:
a flywheel connected to said crankshaft;
a rotatable entrainer disc, adjacent to and operatively associated with said flywheel for transmitting torque from said flywheel to said input shaft;
a cover attached to said flywheel;
a pressure plate disposed between said entrainer disc and said cover;
means for securing said pressure plate to said cover whereby said pressure plate is axially displaceable with respect to said cover;
a clutch plate spring attached to said cover for axially displacing said pressure plate to engage said entrainer disc during said torque transmission; and;
means for dampening vibration of said pressure plate upon



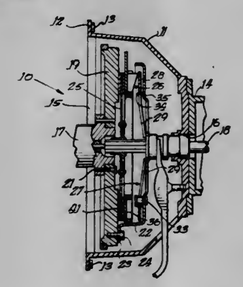
disengagement from said entrainer disc, positioned between said flywheel and said pressure plate, and operatively secured to said securing means wherein said securing means comprises a connecting member with first and second end portions extending from a side of said pressure plate adjacent said flywheel and from a side of said pressure plate adjacent said cover, respectively,
at least one resilient member interconnecting said second connecting member end portion and said cover, and
wherein said vibration dampening means is connected to said first connecting member end portion.

4,114,741

FABRICATED PRESSURE PLATE

Terry Kent Lindquist, Troy, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 27, 1976, Ser. No. 754,383
Int. Cl.² F16D *13/70, 13/72*
U.S. Cl. 192—89 B **24 Claims**

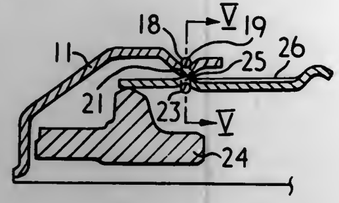


1. A fabricated clutch pressure plate comprising an annular generally U-shaped member having inner and outer peripheral flanges joined by a base portion and at least one stiffening member secured within the flanges to provide a discontinuous fulcrum surface.

4,114,742
FRICTION CLUTCH COVER ASSEMBLIES

Dennis George Rawlings, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Feb. 15, 1977, Ser. No. 768,769
Claims priority, application United Kingdom, Feb. 17, 1976, 06087/76
Int. Cl.² F16D *13/54*
U.S. Cl. 192—89 B 6 Claims

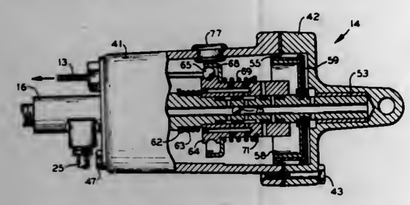


1. A clutch cover assembly comprising a clutch cover of a generally annular configuration; a plurality of holes circumferentially arranged in the cover; a diaphragm spring attached to the cover and having an annular frusto-conical portion and a plurality of inwardly spaced projecting spring fingers integral therewith; a pressure plate secured to the cover so that the diaphragm spring is interposed between the pressure plate and the cover; a pluraity of individual wire members each of which consists of a length of wire formed into a substantially closed rectangular ring and passes through adjacent holes in the cover so as to tightly embrace and axially clamp together one finger of the diaphragm spring and a portion of the cover between said adjacent holes and a portion of said ring lies against the side of the finger away from the cover so as to provide a fulcrum for the movement of the finger relative to the cover.

4,114,743
FLUID ACTUATED OPERATOR AND CLUTCH LINKAGE

William H. Sink, Auburn, and Russel L. Mitchener, Pleasant Lake, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed May 3, 1976, Ser. No. 682,364
Int. Cl.² F16D *25/00*
U.S. Cl. 192—91 R 9 Claims



1. In a clutch operating apparatus for a vehicle having a clutch connected to a clutch operating linkage, a clutch pedal connected to a clutch pedal linkage, a source of pressure fluid, and a fluid actuated operator connected thereto, wherein the fluid actuated operator comprises:

a housing;

a sleeve internal of said housing and connected to the clutch pedal linkage, said sleeve having an axial bore and a first fluid passage means with both ends axially spaced apart and in fluid communication with said axial bore;

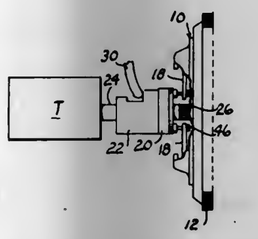
an operator rod having one end connected to the clutch operating linkage and the other end extending through the wall of said housing and the axial bore of said sleeve, said operator rod having a first fluid passage having one end communicating with the source of pressure fluid and the other end in communication with the exterior of said operator rod internal of said housing, and a second fluid passage having one end communicating with the exterior of said operator rod and axially spaced from the other end of said first fluid passage of said operator rod internal of said housing and the other end in communication with the exterior of said operator rod internal of said housing; and

means responsive to pressure fluid for moving said operator rod in an axial direction, said pressure fluid responsive means internal of said housing and attached to said operator rod and to said housing to form a first cavity in fluid communication with the other end of said second fluid passage of said operator rod whereby actuation of the clutch pedal in a first direction moves said sleeve to position each end of the first fluid passage of said sleeve in registry with a corresponding one of the axially spaced ends of said first and second fluid passages in fluid communications with the exterior of said operator rod to connect the source of pressure fluid to said first cavity.

4,114,744
CLUTCH THROW-OUT BEARING PLATE

Tommey J. Blaylock, 2448 N.W. 3, Oklahoma City, Okla. 73107

Filed May 23, 1977, Ser. No. 799,448
Int. Cl.² F16D *23/14*
U.S. Cl. 192—98 1 Claim



1. In a vehicle clutch assembly having a flywheel and a clutch pressure plate movable toward and away from the flywheel by a plurality of radially inwardly projecting clutch release fingers, a transmission input shaft connecting the clutch pressure plate with a transmission and having a clutch throw-out bearing coaxially mounted on the shaft and movable toward and away from the inwardly directed end portions of said clutch release fingers, the improvement comprising:

a bearing plate comprising a flat ring-like plate coaxially surrounding said transmission input shaft and interposed between said throw-out bearing and the inwardly directed end portions of said clutch release fingers; and,

a plurality of connector means connecting said bearing plate means with said fingers permitting limited movement of said clutch release fingers in a radial direction with respect to said bearing plate when said throw-out bearing plate and said clutch release fingers are moved toward and away from said clutch pressure plate,

each said connector means comprising a stud bolt having its shank threadedly engaged with the respective said finger and having a head portion disposed adjacent said bearing plate, and,

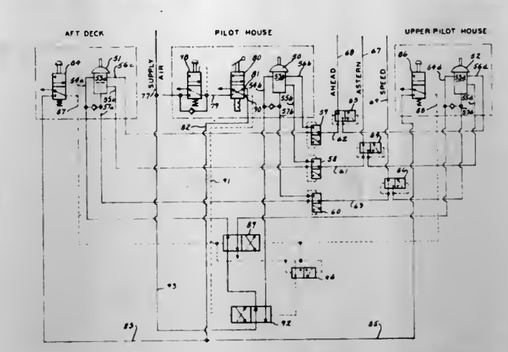
a generally cylindrical housing loosely surrounding said stud bolt head portion and connected with one face surface of said ring-like plate,

said housing having a slot transversely surrounding said stud bolt shank adjacent said stud bolt head portion with the longitudinal axis of the slot extending in a radial direction with respect to said bearing plate.

4,114,745
MARINE PROPULSION CONTROL TRANSFER SYSTEM

John M. Phinney, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Mar. 18, 1977, Ser. No. 779,024
Int. Cl.² B60K *41/00*
U.S. Cl. 192—0.098 4 Claims



1. A control transfer system for a pneumatic marine propulsion control supplied by a source of air under pressure and responsive to pressure signals including a pair of alternative pressure signals indicative of the desired direction of travel and a third pressure signal whose magnitude is proportional to the desired engine speed, comprising:

a master control station including a manually actuatable throttle valve connected to said source and adapted to provide a first set of said pressure signals;

a secondary control station remote from said master station and including a manually actuatable throttle valve capable of providing a second set of said pressure signals after connection to said source;

a transfer valve at said master station for connecting said source to said secondary station;

a tertiary control station remote from said master station and said secondary station, said tertiary station including a manually actuatable throttle valve capable of providing a third set of said pressure signals after connection to said source;

a pilot operated selector valve connected to receive air under pressure from said source and to alternatively connect such air under pressure to the throttle valves of said secondary and tertiary stations;

a manually actuatable attendance valve at said tertiary station adapted when actuated to pilot said selector valve to connect air under pressure from said source to said tertiary station throttle valve;

manually actuatable transfer and attendance valves at said secondary station, said secondary station attendance valve adapted when actuated to connect said source to said secondary station transfer valve, said secondary station transfer valve being adapted to pilot said selector valve to connect air under pressure to said secondary station throttle valve and alternatively to connect said source to said tertiary station attendance valve;

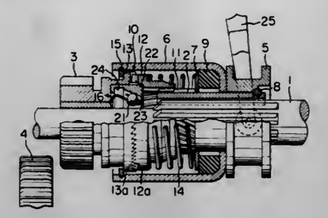
a first bank of shuttle valves each connected to receive one of said pressure signals of said first set and a corresponding one of said pressure signals of another set and to connect to said control the respective signals which are at the higher pressure; and

a second bank of shuttle valves each connected to receive one of said pressure signals of said second set and a corresponding one of said pressure signals of said third set and to connect to said first bank of shuttle valves the respective signals which are at the higher pressure.

4,114,746
OVERRUNNING CLUTCH DEVICE FOR ENGINE STARTING UNIT

Kazuhisa Usui, Fukaya, and Osamu Muto, Nitta, both of Japan, assignors to Sawafuji Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1977, Ser. No. 783,442
Claims priority, application Japan, May 18, 1976, 51-56126
Int. Cl.² F16D *23/10*
U.S. Cl. 192—104 R 4 Claims



1. In an engine starter including a starter motor and a drive pinion slidably mounted on the output shaft of said starter motor for meshing engagement with the ring gear of the associated engine, an overrunning clutch device comprising:

a one-way clutch including a driven clutch member associated integrally with the drive pinion, a driving clutch member slidably mounted on the output shaft of the starter motor for driving engagement with said driven clutch member and disengagement therefrom, and a clutch spring arranged normally to urge said driving clutch member into driving engagement with said driven clutch member;

an annular weight retainer formed around the outer periphery thereof with a plurality of radially flexible resilient arms and secured to said driven clutch member coaxially therewith;

a plurality of spherical-shaped centrifugal weights each rotatably mounted on the respective one of said resilient arms of said weight retainer; and

a thrust ring connected with said driving clutch member and held in sliding engagement with said centrifugal weights so as to force said driving clutch member out of driving engagement with said driven clutch member against the urge of said clutch spring under the thrust of said centrifugal weights when the latter are subjected to a centrifugal force of a magnitude exceeding a predetermined value.

4,114,747
SWITCHING BEARING ASSEMBLY FOR A MOTOR-DRIVEN SPINDLE

Fritz Eller, Hellweg 36, 4300 Essen 14, Germany

Filed Mar. 17, 1977, Ser. No. 778,462
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2611211
Int. Cl.² F16D *71/00, 63/00*
U.S. Cl. 192—150 9 Claims

1. A switch-bearing assembly for a motor-driven spindle having a screw operatively connected to a driven member for axially displacing same upon rotation of the screw, said assembly comprising a bearing housing surrounding said spindle and provided with a pair of shoulder ball bearings axially engaging said spindle in opposite directions;

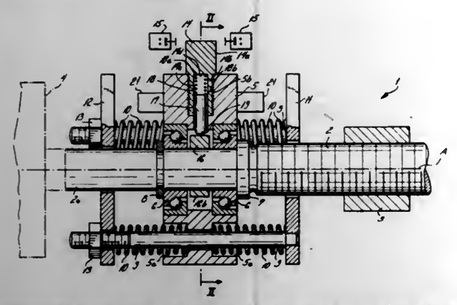
a pair of axially fixed pressure plates flanking said housing and spaced therefrom;

respective guide rods bridging said pressure plates;

respective compression springs surrounding said guide rods and seated against each of said pressure plates while bearing upon said housing to yieldably resist axial displacement thereof relative to said pressure plates;

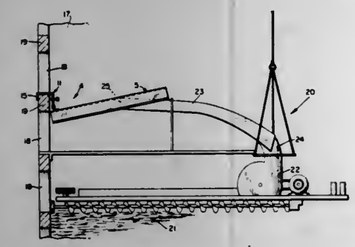
a pair of switches connectable for deenergizing said motor and engageable upon axial displacement of said housing in opposite directions;

an eccentric carried by said spindle and rotatable therewith;
a pressure pin radially displaceable in said housing and engaging said eccentric; and



a compression spring bearing upon said pin for urging same against said eccentric to resist rotation of said spindle relative to said housing beyond a predetermined extent upon deenergization of said motor.

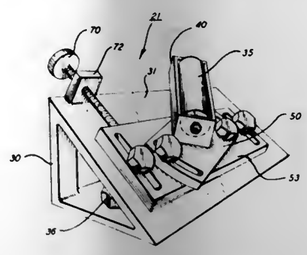
4,114,748
SILAGE DOOR GUIDE
Theodore B. Schulte, R.R., Dorchester, Iowa 52140
Filed Sep. 7, 1977, Ser. No. 831,231
Int. Cl.² B65G *11/18*
U.S. Cl. 193—33 **6 Claims**



1. For use in a silo having a plurality of vertically spaced openings separated by wall portions, a silage unloader having a discharge spout operatively associated therewith, an elongated inverted channel-shaped member having an intermediate portion resting on the discharge end of the spout to enable free sliding and pivoting movement of said member relative to the spout, said member having an outer end spaced outwardly from the discharge spout, and a hanger connected to and extending upwardly from said member, outwardly of said intermediate portion, and detachably engaging over one of said wall portions for supporting said outer end of the member adjacent to and in alignment with one of said openings of the silo, said hanger and spout providing the sole support from said member.

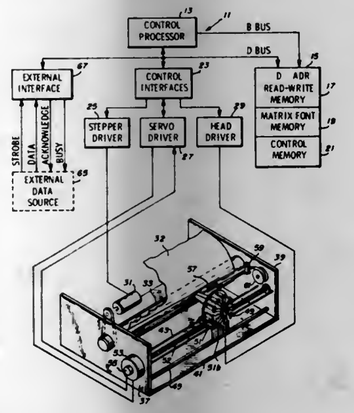
4,114,749
ROLL CONVEYOR FOR A MACHINE TOOL
John C. Carroll, 766 Thompson Rd., N. Syracuse, N.Y. 13212, and John M. Carroll, 239 Esther St., Minoa, N.Y. 13116
Filed Aug. 25, 1977, Ser. No. 827,474
Int. Cl.² B65G *13/12*
U.S. Cl. 193—35 C **5 Claims**

1. A conveyor for conducting cylindrical work elements toward and away from a machine tool which imparts a spiral motion to the work and wherein the work is coaxially aligned with the working centerline of the machine including
a frame having a planar horizontally aligned bed,
a series of brackets movably mounted upon said bed to move toward and away from the work along a path of travel normal to the working centerline of the machine, each bracket having an inclined surface facing the work that is parallel with the centerline of the machine and angularly disposed with respect to the bed,
means to adjustably position the brackets upon the bed,
a support plate slidably supported upon the inclined surface of each bracket so that the plates are movable up and down said surfaces,



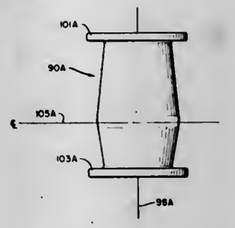
means to adjustably position the support plates upon the inclined surface,
a housing pivotably supported upon each of the support plates having a conveyor roll rotatably supported therein for contacting and transporting the work, and
means to pivotably position each of said housings upon said support plates so as to angularly position the rolls in respect to the work.

4,114,750
PRINTER SYSTEM HAVING LOCAL CONTROL FOR DYNAMICALLY ALTERABLE PRINTING
Henry S. Baeck, Campbell; William C. Bennett, Menlo Park; David C. Condon, Monte Sereno; Harold R. Gillette, Los Altos, and Donald G. Herbert, San Ramon, all of Calif., assignors to Hydra Corporation, Mountain View, Calif.
Filed Aug. 6, 1975, Ser. No. 602,303
Int. Cl.² B41J *5/30*; G05B *19/40*
U.S. Cl. 400—279 **6 Claims**



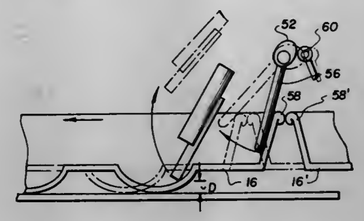
1. Printing apparatus for developing a printout of character print data contained within a data stream received from a remote source, comprising:
print medium transport means including tractor means responsive to first signals and operative to move a print medium in a first direction;
print head means responsive to second signals and operative to cause communicative characters to be developed on said print medium;
carriage means responsive to third signals and operative to alternatively move said print head means in second and third opposite directions transverse to said first direction, said carriage means being further operative to develop position feedback signals;
input means responsive to a stream of input data including character print data, character position data and format data and operative to develop command signals;
look ahead scan means for scanning said print command signals and for determining the distances between the last print position to be assumed by said print head means during a current print line and the respective opposite extreme print positions to be assumed by said print head means during the next succeeding print line and for developing a motion signal indicating which of said extreme print positions is closest to said last print position;
control means responsive to said motion signals, said feedback signals and said command signals and operative to develop said first signals, said second signals and said third signals such that said print head means and said print medium are relatively positioned to effect printout of the first line of print characters, and thereafter upon completion of the printing of the last character on the first and each succeeding print line, said print medium is advanced and said carriage means is caused to move said print head means directly from its last print position of each print line to the nearest one of said opposite extreme print positions of the next succeeding print line without first returning to a fixed reference position and is thereafter caused to move toward the other extreme print position as printout of said next succeeding print line is effected.

4,114,751
PRINTING MACHINE WITH AUTOMATIC OFF-CENTER CROWN ROLLER RIBBON-WEAR COMPENSATION
Robert W. Nordin, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Oct. 22, 1976, Ser. No. 734,779
Int. Cl.² B41J *35/04*
U.S. Cl. 400—248 **3 Claims**



1. An improved printing machine wherein an inked ribbon is passed between a record medium and type dies for squeezing the inked ribbon between the record medium and the type dies, thereby wearing and stretching the ribbon wherever the ribbon is so squeezed, means for drawing the ribbon lengthwise past the type dies, at least one crown roller for turning the direction of the ribbon and for guiding the ribbon in its width dimension, the crown roller having a generally barrel shape with two ends, a major diameter, and a minor diameter, wherein the improvement comprises:
the two ends of the crown roller spaced apart by a distance substantially greater than the width of the ribbon;
the major diameter of the crown roller being located closer to a near end than a far end of the crown roller;
the major diameter of the crown roller positioned to locate a new ribbon so as to squeeze the new ribbon principally nearer a first ribbon edge closer to the far end of the crown roller, whereby the ribbon nearer the first edge of the ribbon is stretched; and
sufficient space between the first edge of the ribbon and the far end of the crown roller to accommodate the ribbon as through wear and stretching the ribbon migrates on the crown roller to bring a second edge of the ribbon, opposite the first edge of the ribbon, toward the major diameter of the crown roller, thereby locating a worn ribbon so as to squeeze the worn ribbon principally less near the first edge of the ribbon.

4,114,752
ALL PURPOSE INDEXING DEVICE
Robert J. Schiek, 15 River Rd., Brunswick, Me. 04011
Filed Feb. 9, 1977, Ser. No. 766,873
Int. Cl.² B65G *47/22*
U.S. Cl. 198—491 **5 Claims**

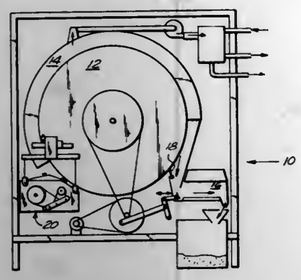


1. An all purpose indexing device for use with a conveyor having a moving conveyor belt and a fixed frame, and for interrupting the motion of baking pans having space rows of dough-receiving indentations on the conveyor belt comprising:
an indexing bar means disposed across a conveyor belt pivotally mounted to the frame;
indexing finger means adjacent the mid-portion of said indexing bar means for engaging the indentations of the baking pans when said indexing bar is pivoted downwardly toward the conveyor belt;
reciprocating means connected between said indexing bar means and the conveyor frame adjacent lateral ends of said indexing bar means for reciprocally moving said indexing bar means from an upper position whereby said indexing finger means are clear of the baking trays and downwardly to a position at which said indexing finger means are in engagement with the indentations of the baking pans;
sensing means disposed across the conveyor for sensing the passage of a leading and trailing edge of the baking pans on the conveyor; and
switching means engagable with said sensing means for varying the speed of the conveyor belt from a first slower feed speed to a second faster, tray-conveying speed.

4,114,753
SLUDGE FILM CONVEYING DEVICE
Gote Herbert Egard Bjermo, and Paul Einar Tresjo, both of Vasteras, Sweden, assignors to System AB Infotenik, Vasteras, Sweden
Continuation-in-part of Ser. No. 651,250, Jan. 22, 1976, abandoned, which is a division of Ser. No. 519,559, Oct. 31, 1974, Pat. No. 3,960,725. This application Aug. 4, 1977, Ser. No. 821,726
Claims priority, application Sweden, Nov. 5, 1973, 731496
Int. Cl.² B65G *37/00*; B01D *1/22*
U.S. Cl. 198—608 **8 Claims**

1. A sludge film applicating device for applying a film onto a carrier, comprising: a frame; means supporting said frame for longitudinal and pivotal adjustment relative to the carrier; a first roller rotatably mounted in said frame; a second roller also rotatably mounted in said frame near said first roller, said first and second rollers being so mounted as to define therebetween a narrow gap into which the sludge to be treated is directed; a third roller rotatably mounted above said first roller and in contact therewith so that said first and third rollers rotate oppositely to each other; means for mounting said third roller above said first roller, said mounting means having force-

adjusting means thereon for adjusting the force which said third roller exerts on said first roller; and means above said second roller for supplying sludge to said second roller where-



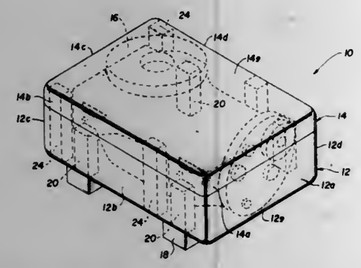
upon said second roller transports said sludge to said narrow gap where it is picked up by said first roller and conveyed to said third roller where the sludge is accumulated to contact the carrier.

4,114,754

CONTAINER INTEGRATED WORK STAND

Carl Lee Aley, Claymont, Del., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 29, 1976, Ser. No. 745,713
Int. Cl.² B65D *85/68*
U.S. Cl. 206—319 **8 Claims**



1. A container and integrated work stand in combination, for shipping a component and supporting a like component to be replaced at a replacement location, comprising:

a. a body portion having front, rear, side and bottom walls joined together to form an enclosure defining corresponding front, rear, side and bottom walls of the container;

b. a plurality of mounting means attached to the body portion at selected locations within the enclosure and associated securing means for securing a replacement component to the mounting means, in a desired position, within the enclosure;

c. a lid portion forming at least a top wall of the container and a base of the work stand;

d. a like plurality of support means attached at selected locations to the lid portion for supporting, in a desired position, a like component to be replaced at the replacement location, said lid portion and support means forming the work stand; and

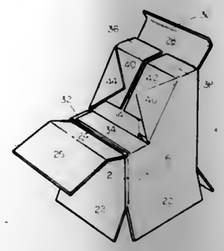
e. fastening means for fastening the body portion to the lid portion, wherein each of said mounting means is spaced adjacent to a corresponding one of said support means within the enclosure defined by the assembled combination of the container.

4,114,755

REINFORCED FORM-FITTING SHIPPING CONTAINER

John J. Aust, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 6, 1978, Ser. No. 867,400
Int. Cl.² B65D *85/00, 5/00*
U.S. Cl. 206—326 **7 Claims**



1. A blank of substantially rectangular outline defined by spaced upper and lower longitudinal edges and spaced transverse side edges, adapted to be formed into a stepped container having a reinforced inclined upper front wall, comprising

a series of rectangular blank sections including a front wall section, two side wall sections, and a rear wall section, arranged in side-by-side relation;

said front wall section comprising, in the order named, a lower front wall panel extending upwardly from said lower edge of said blank, an intermediate horizontal wall panel and an upper front wall panel, foldably joined to each other along spaced first and second longitudinal fold lines, respectively;

said rear wall section comprising a rear wall panel extending upwardly from said lower edge of said blank and having a transverse dimension substantially greater than that of said lower front wall panel, and a top wall panel joined to said rear wall panel along an upper longitudinal fold line;

each of said side wall sections comprising a side wall panel having a stepped upper edge defined by

a short lower score line aligned with said first fold line and having a length corresponding to the spacing of said first and second fold lines;

a short upper score line aligned with said upper fold line and having a length corresponding to the transverse dimension of said top wall panel;

a diagonal score line interconnecting said lower and upper score lines;

said side wall sections each including:

a first reinforcing flap foldably joined to said lower score line and defined by slots extending from the ends of said lower score line to the upper edge of said blank,

a second reinforcing flap foldably joined to said upper score line and defined by a slot extending from one end of said upper score line to the upper edge of the blank and by a perpendicular score line extending from the other end of the upper score line to the free edge of the blank,

a stabilizing flap hingedly attached to said second reinforcing flap, and

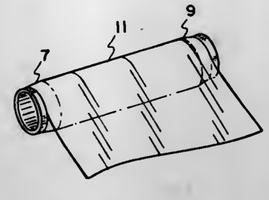
a reinforcing panel foldably joined to said side wall panels along said diagonal score line and being separated from said stabilizing flap along a cut means extending from said perpendicular score line to a free edge of said stabilizing flap.

4,114,756

WINDING CORE FOR HEAT SHRINKABLE FILM MATERIAL

Raymond B. Dacey, Simpsonville, and Frederick David Stringer, Greenville, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Filed Dec. 13, 1976, Ser. No. 749,945
Int. Cl.² B65D *85/67;* B65H *77/02*
U.S. Cl. 206—389 **10 Claims**



1. A roll of heat shrinkable thermoplastic film, comprising:

a generally cylindrical core having a central portion and terminal end portions, said end portions having a gradually lesser outer diameter than said central portion of said core; and

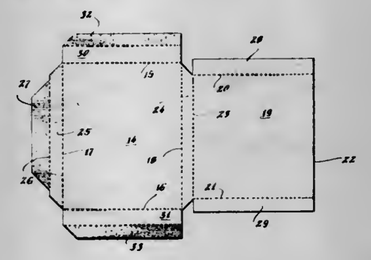
convolutions of said film about said core, each of said convolutions comprising edge areas which would otherwise tend to shrink in an axial direction and thus elongate circumferentially after winding and during storage, said areas which tend to elongate overlying and contacting said terminal end portions of less outer diameter after storage.

4,114,757

BOOK CARTON

William G. Sieffert, Joliet, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 11, 1977, Ser. No. 840,559
Int. Cl.² B65D *85/30*
U.S. Cl. 206—424 **2 Claims**



1. A blank made of foldable paperboard or similar sheetlike material adapted to be erected into a book carton, comprising:

a rectangular bottom panel having horizontal top and bottom edges and vertical lateral side edges, said top and bottom edges defining a lengthwise dimension in the carton to be erected, said length being greater than the corresponding dimension of the book to be contained in said carton;

a first end wall panel connected by a vertical fold line along a first lateral edge of said bottom panel;

a second end wall panel connected by a vertical fold line along a second lateral edge of said bottom panel;

a rectangular top panel having horizontal top and bottom edges and vertical lateral side edges, said top and bottom edges of said top panel defining a lengthwise dimension less than the length of said bottom panel but at least as great as the length of the book to be contained in the carton, said top and bottom edges of said top panel being spaced inwardly from said top and bottom edges of said botton panel a predetermined distance;

said end walls having top and bottom edges angled away from the lateral ends of said top and bottom edges of said bottom panel and terminating at the level of said top and bottom edges of said top panel;

said top and bottom edges of said top and bottom panels each having side wall flaps hingedly connected thereto;

a first manufacturer's glue flap hingedly connected along one lateral edge of said blank, the top and bottom edges of said first glue flap tapering from said second end wall to the free edges of said first glue flap; and

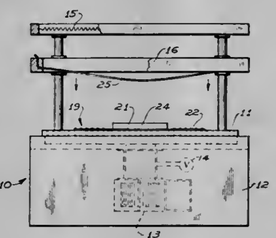
second and third manufacturer's glue flaps connected along opposite horizontal edges of said blank adjacent said first glue flap.

4,114,758

PACKAGE AND METHOD OF MAKING

Eugene W. Coleman, Richmond Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Continuation of Ser. No. 542,510, Jan. 20, 1975, which is a division of Ser. No. 331,701, Feb. 12, 1973, Pat. No. 3,861,529, which is a continuation of Ser. No. 83,891, Oct. 26, 1970, abandoned. This application Sep. 1, 1977, Ser. No. 829,978
Int. Cl.² B65D *73/00;* B65B *31/00*
U.S. Cl. 206—471 **23 Claims**



1. The process of forming a skin package with a skin packaging machine comprising the steps of:

(a) positioning a plastic film on the platen of a skin packaging machine;

(b) heat softening the film;

(c) first positioning inserts on the platen and then applying a pressure differential to the film to force portions of the film into apertures in the platen thereby forming projections on the film only in selected areas;

(d) inverting the film and positioning the film as a base sheet on a skin packaging machine platen;

(e) positioning a product on the base sheet and then forcing a heat softened plastic covering film into engagement with the base sheet by establishing a pressure differential on the covering film.

4,114,759

PROTECTIVE PACKAGE

James Francis Maloney, Jr., Industry, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

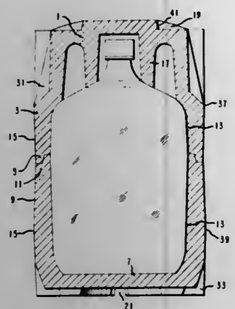
Filed Mar. 7, 1977, Ser. No. 775,281
Int. Cl.² B65D *81/16*
U.S. Cl. 206—523 **12 Claims**

1. A package for protecting an object enclosed therein from mechanical shock comprising an upper section having a top endwall from which extends a unitary substantially vertical sidewall terminating in a lower edge; and a lower section comprising a bottom endwall on which the object rests when the package is in an upright position and from which extends a unitary substantially vertical sidewall terminating in an upper edge matching the lower edge of the upper section,

(1) the sections of approximately equal height being molded

from resiliently compressible material by means of a two-part mold, the parting line of the male and female components of which is located at about the midpoint of the outer wall of each section, said outer surface of each section tapering inward to the extent of the mold relief angle from the parting line toward the edge of each section and toward the endwall of each section, and

(2) the contour of the inner sidewall surface of the sections being adapted to conform substantially to the contour of the outer sidewall surface of the enclosed object, said inner sidewall surface of each section from the level of



parting line to the edge thereof is cored in such manner as to form a plurality of inner longitudinal channels which are matching when the edges of the upper and lower sections are placed in alined and abutting relationship and the outer sidewall surface of each section between the parting line and the edge thereof is cored in such manner as to form a longitudinal groove and wall on each side of the inner longitudinal channels, the walls being deformable when a force is applied to the inner shoulder thereof, and the grooves matching when the edges of the upper and lower sections are placed in aligned and abutting relationship.

4,114,760

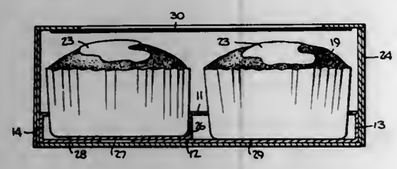
BAKING AND PACKAGING SYSTEM

Charles E. Entenmann, Bayshore, N.Y., assignor to Entenmann's Bakery, Inc., Bayshore, N.Y.

Division of Ser. No. 525,958, Nov. 21, 1974, Pat. No. 4,002,773. This application Jul. 15, 1976, Ser. No. 705,433

Int. Cl.[2] B65D *57/00, 85/00, 5/48*

U.S. Cl. 206—562 **1 Claim**



1. A system for packaging bakery items comprising:

a shallow tray of heat resistant paperboard including

an upper planar portion having a plurality of spaced openings of predetermined size and shape, said upper planar portion constituting the uppermost portion of the tray,

a lower planar portion extending under the openings in the upper planar portion, and

integral means for connecting the upper planar portion in spaced relation above the lower planar portion;

a plurality of pleated paper baking liners fitting within the openings in the upper tray, one liner in each opening with the bottom of the liner being supported by the lower planar portion of the tray and the side wall of the liner being supported against bulging outward when filled with batter by the edges of the corresponding opening in the upper planar portion of the tray engaging the side wall of the liner in substantially the central portion thereof; and

a covering for the tray and liners to seal the contents of the liners from contamination during delivery and display of the bakery items, the covering comprising a rectangular paperboard carton having a top, four sides, and a bottom, the size of the tray being predetermined to fit snugly within the four sides of the carton to prevent shifting of the contents of the liners with possible damage to said contents.

4,114,761

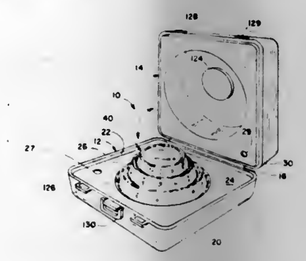
SHOCK ABSORBING DEVICE AND CONTAINER

Wayne E. Kleiner, Roanoke Rapids, N.C., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 612,142, Sep. 10, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,221

Int. Cl.[2] B65D *81/16*

U.S. Cl. 206—591 **6 Claims**



1. A container having mating body and cover parts for housing an object therebetween, said parts being joined by a hinge and at least one of said parts being of hollow double wall construction comprising integral inner and outer shells with said inner shell comprising a shock absorbing and retaining means which comprises a wall having an inner article contacting portion and an outer portion connected by at least one resilient flexible intermediate portion, said resilient flexible intermediate portion extending with a generally V-shaped sinusoidal cross section between said inner article contacting portion and said outer portion, said inner article contacting portion being positioned toward the other mating part to a greater extent than said flexible resilient intermediate portion such that said inner article contacting portion is above said intermediate portion when said container is positioned with said shock absorbing and retaining means facing upwardly, whereby said inner article contacting portion is positioned to contact an object in said container when said body part and said cover part are in a mating relationship and to deform said resilient flexible intermediate portion thereby causing said intermediate portion to resiliently urge said inner article contacting portion toward said object, whereby said object is resiliently and immovably housed within said container.

4,114,762

WORM HARVESTING

Steven G. Beal; Arthur Ceballos, and Dolores D. Ceballos, all of 508 Sonoma St., Carson City, Nev. 89701

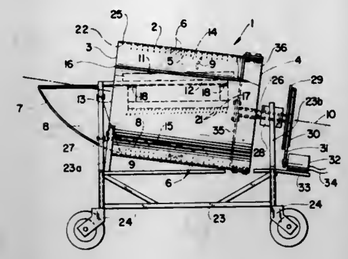
Filed Nov. 1, 1976, Ser. No. 737,754

Int. Cl.[2] B07C *9/00*

U.S. Cl. 209—78 **16 Claims**

1. Worm harvesting method which comprises

subjecting soil from which worms are to be harvested to rotation about a substantially horizontal axis in a peripherally confined rotating path which has a plurality of correspondingly rotating and inwardly projecting worm gathering projections operatively distributed in spaced apart relation thereon and which includes a lower path portion containing the soil and an upper path portion containing a gravity release zone extending in intersecting relation to the vertical plane of such horizontal axis, cascading the soil upon itself and gathering worms therefrom by the projections in the lower path portion and carrying such



worms by the projections to the gravity release zone in the upper path portion during the rotation, and

collecting the gathered worms by depositing such worms by gravity upon gravity release thereof from the projections at the gravity release zone.

4,114,763

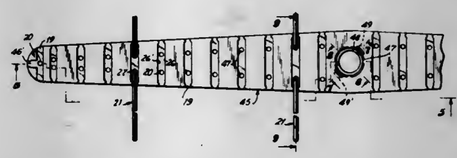
COMPOSITE UNITS FOR DISPLAYING MERCHANDISE

Arthur Hochman, Union City, N.J., assignor to Art-Phyl Creations, Newark, N.J.

Continuation-in-part of Ser. No. 480,344, Jun. 18, 1974, Pat. No. 3,939,985. This application Feb. 24, 1976, Ser. No. 660,757

Int. Cl.[2] A47F *5/04, 7/00*

U.S. Cl. 211—57.1 **4 Claims**



1. A display assembly comprising a rack, a hook member having a free end mounted to said rack, said rack including a plurality of transverse overcut notches therein, each notch having a pair of holes therein for receiving therein a pair of said hook members, said hook members being oppositely oriented, a safety bumper guard connected to said rack and extending beyond the free ends of said hook members to prevent puncture wounds caused by an encounter with said hook members, said rack having a longitudinal overcut notch located at each end of said rack, each said longitudinal notch having a hole therein for receiving therein said safety bumper guard, a sleeve, said sleeve having at least one laterally extending nub, a collar disposed on said rack, said collar being mounted on said sleeve for slidably mounting said rack on said sleeve, said collar having a bottom surface and having at least one lower slot corresponding to said nub formed therein, said nub being registrable in said slot when said collar is mounted on said sleeve and said collar having a top surface having at least one upper slot formed therein for thereby nesting a second sleeve into said collar until the laterally extending nub thereof nests with said upper slot.

4,114,764

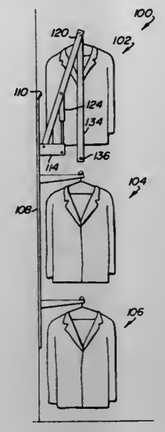
HANGER

Walter Rich, 1911 Spruce St., Philadelphia, Pa. 19103

Continuation-in-part of Ser. No. 564,236, Apr. 2, 1975, Pat. No. 4,006,826. This application Sep. 15, 1976, Ser. No. 723,377

Int. Cl.[2] A47F *5/08*

U.S. Cl. 211—100 **6 Claims**



1. A hanger comprising structure attachable to a wall for supporting mounting brackets, a pair of mounting brackets for projecting in spaced parallel cantilever relation from said structure for supporting a hanger device, a hanger device including a hanger rail coupled to said brackets by a pair of arms, each arm having an upper end connected to said hanger rail and the lower end pivotably connected to one of said brackets, a pull-down bar pivotably connected to said hanger device between said arms for pivoting said arms about a horizontal axis to thereby lower the elevation of said hanger rail while bringing said hanger rail forward of said horizontal axis, compression means pivotably connected at a first end to at least one of said arms at a first point thereon and pivotably connected at a second end to at least one of said brackets at a second point thereon forward of said horizontal axis and below the elevation of said horizontal axis for maintaining said hanger rail in an upper position when said compression means is substantially fully extended and limit means secured to at least one of said brackets above said second point for maintaining said hanger rail in a lower position at which said hanger rail is accessible and at which said compression means is substantially fully compressed and below the elevation of said horizontal axis.

4,114,765

APPARATUS FOR ROTATING HEAVY OBJECTS

Yoichi Kojima, Tokyo, Japan, assignor to Planning Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1976, Ser. No. 745,815

Int. Cl.[2] B65G *17/48*

U.S. Cl. 214—1 QC **3 Claims**

1. An apparatus for rotating a heavy object, said apparatus comprising:

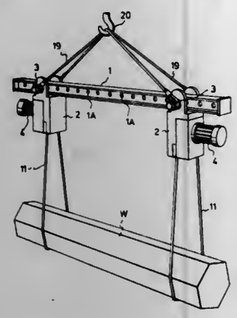
a horizontal beam, said beam having a plurality of longitudinally spaced openings formed along its length,

a pair of endless cord revolving units,

means for selectively and longitudinally adjustably attaching each revolving unit to said beam, said last mentioned means comprising a pair of pins, wherein each pin is insertable through registering apertures formed in a respective revolving unit and through one of said openings formed in said beam whereby said revolving units are secured to and longitudinally spaced along said beam,

means for holding said beam in an elevated position, said

holding means comprising hook means supported above said beam and at least one elongated flexible member, said flexible member secured at one end to one pin and at its other end to the other pin, wherein said flexible member is secured substantially at its midpoint by said hook means to thereby maintain said beam in an elevated and horizontal position; and

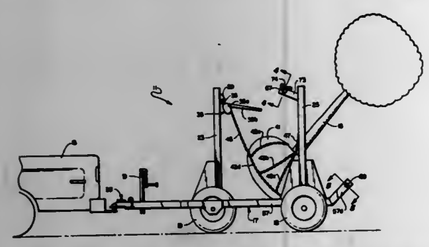


means for detachably connecting said object to said endless cord revolving units wherein said last mentioned means comprises endless cords actuated by said units and forming loops, said object being positioned within the loops formed by said endless cords whereby actuation of said units produces rotation of said object.

4,114,766
TREE CADDY

Bernard J. Decker, 3415 E. Livingston, Columbus, Ohio 43227, and Frederick J. Schmitt, 5184 Blair Ave., Canal Winchester, Ohio 43110

Filed Feb. 17, 1977, Ser. No. 769,381
Int. Cl.² A01G *23/04*
U.S. Cl. 214—3 **9 Claims**

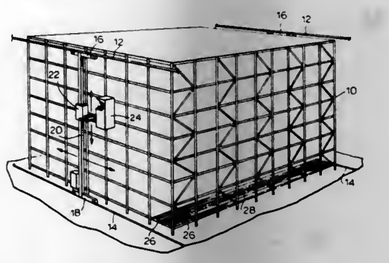


1. A machine for use in transplanting trees comprising:
(1) means, including a frame having a plurality of upright members secured to said machine for lifting a tree, after the tree has been severed from the earth, the roots of the tree and the soil embracing said roots has been balled and encircled with a tensile constituent;
(2) means of transporting said tree to any selected site where a hole has been made for receipt of said tree; and
(3) means of lowering the tree so that the tree and balled roots thereof are positioned correctly in said hole, wherein there is provided an undercarriage having a plurality of wheels by which the machine is supported; the frame consisting of a plurality of normally substantially horizontal members secured to and supported by said wheels; three upright members secured to the horizontal members and extending substantially vertically upwards and substantially parallel with each other and wherein a pair of said upright members are laterally spaced opposite to each other and wherein the third upright member is displaced longitudinally forward of said pair of laterally spaced upright members and is positioned laterally between said pair of upright members;
hangers supported by the upper ends of each of the upright members;
winches secured to each of the hangers;
a plurality of tensile components capable of being secured to the tensile constituent of the balled roots and operably assembled with said winches so that the operation of each of the winches will increase or decrease the effective length of the associated tensile component to raise said tree while in an upright attitude, then to tilt, transport, and lower said tree.

4,114,767
APPARATUS FOR THE STORAGE AND RETRIEVAL OF ITEMS

Nick Fur, 252 Camelot Drive, Burlington, Ontario, Canada (L7L 2G7)

Continuation of Ser. No. 690,003, May 26, 1976, abandoned. This application Apr. 21, 1977, Ser. No. 789,701
Int. Cl.² B65G *1/06*
U.S. Cl. 214—16.4 A **16 Claims**

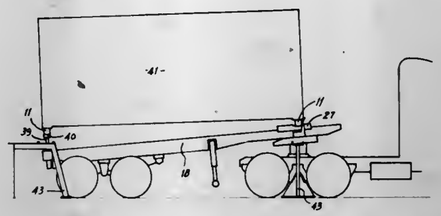


1. An advancing member for an item storage and retrieval system comprising at least one storage path having therealong a plurality of spaced successive stations each adapted to receive an item, the member comprising:
(a) an elongated support member extending over a plurality of stations and mountable for reciprocating movement in the path parallel to the direction of movement of items therein;
(b) a plurality of pendulous item engaging and driving members each pivotally mounted on the support member to move through a respective item station upon the said reciprocating movement of the support member and to normally pivot under gravity into a driving position in which it can engage an item at the station to drive the engaged item to the next succeeding station in the path;
(c) a locking member for each engaging and driving member engageable therewith to lock the member in said driving position during advancing movement of the advancing member, while permitting movement of the driving member to an inoperative position during reverse movement of the advancing member;
(d) a plurality of pendulous item detector members each pivotally mounted on the support member at or adjacent to a respective station to normally pivot under gravity into an item engaging position; and
(e) connecting means each connected between a respective item detector and the locking member of the immediately preceding driving member and movable longitudinally of the support member, whereby upon the presence of an item in the said immediately succeeding station the item detector moves the said locking member by the said longitudinally movable connecting means to unlock the respective driving member so that it will move to an inoperative position during advancing movement of the advancing member.

4,114,768
CONTAINER COMPANION PLATE

Donald Keir Robertson, 128 Lawrence Street, Bedford Park, Perth, Western Australia, Australia (6052)

Filed Jun. 29, 1977, Ser. No. 811,397
Int. Cl.² B60P *1/64*
U.S. Cl. 214—152 **3 Claims**

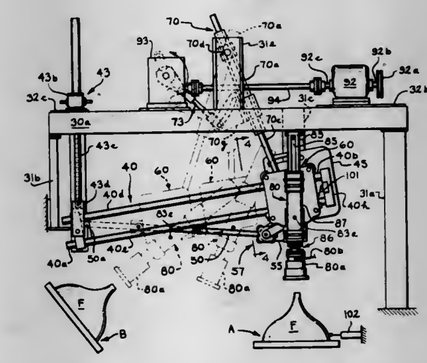


1. A method of loading a front and rear supported elevated container onto the tray or chassis of a vehicle including; inclining said chassis downwardly towards the rear, providing a skate member on its upper surface, said skate member being adapted to travel along the chassis or on longitudinal tracks provided on the tray of the vehicle, reversing said vehicle under the elevated container until a container companion plate mounted to the leading underside of the container engages with the skate member, the continual reversal and incline of the vehicle tray lifts the container clear of the front supports, the skate member and leading companion plate travel along the longitudinal tracks provided and positively engage with locking means at the forward end of the tray, providing hydraulic jacks at the rear portion of the tray, lifting a second container companion plate attached to the trailing underside of the container free of the rear supports and lowering it into a locked position on the rear of the vehicle tray.

4,114,769
ARTICLE TRANSFER METHOD

Mario Cuniberti, Columbus, Ohio, and Edwin C. Pinsenschaum, Phoenix, Ariz., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 662,054, Feb. 27, 1976, Pat. No. 4,018,342. This application Jan. 13, 1977, Ser. No. 759,216
Int. Cl.² B65G *47/91*
U.S. Cl. 214—152 **4 Claims**

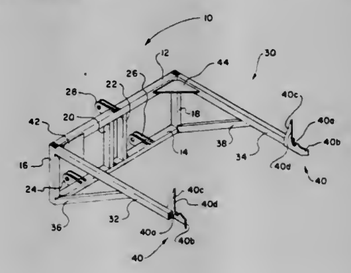


1. A method for the transport of a generally frusto-conically shaped article having a vertical axis passing through the center of both ends of said article from an article loading station to an article unloading station which comprises the steps of:
grasping said frusto-conically shaped article at said article loading station;
rectilinearly transporting said frusto-conically shaped article from said article loading station to said article unloading station;
simultaneously with said transporting, tilting said frusto-conically shaped article to achieve a positional orientation corresponding to the axis of orientation of said article unloading station;
simultaneously with said transporting and tilting, rotating said frusto-conically shaped article about its vertical axis to achieve rotational alignment with said article unloading station;
ceasing said transporting at said article unloading station; and
releasing said frusto-conically shaped article at said article unloading station while still in the tilted and rotated orientation achieved during said transporting.

4,114,770
IMPLEMENT FOR HANDLING A BULK TOBACCO CONTAINER

Bertram Lee Jordan, and John Davis Mitchell, both of Lewiston, N.C., assignors to Harrington Manufacturing Company, Lewiston, N.C.

Filed Oct. 15, 1976, Ser. No. 732,798
Int. Cl.² A24B *1/02*
U.S. Cl. 214—130 R **4 Claims**



1. A tractor carried bulk tobacco container handling implement adapted to be connected to a three-point hitching mechanism of a farm tractor for supporting and handling a bulk tobacco container of the type having outwardly extending support means extending from the sides thereof, said bulk tobacco container handling implement comprising: a rectangular hitching frame adapted to be operatively connected to the three-point hitching mechanism of a farm tractor, said hitching frame including an upper transverse member, a lower transverse member normally spaced below said upper transverse member, a pair of laterally spaced end connecting members connected between respective ends of said upper and lower transverse members such that a rectangular frame is formed by said upper and lower transverse member and said end connecting members; three-point hitch connecting means secured to said rectangular hitching frame for operatively connecting said implement to the three-point hitching mechanism of said farm tractor; a pair of laterally spaced support arms secured to said rectangular hitching frame and extending generally rearwardly therefrom when attached to said tractor; a pair of diagonal braces secured between said hitching frame means and said laterally spaced rearwardly extending support arms, each diagonal brace secured about one end to a lower portion of said hitching frame means and extending upwardly therefrom where the other end thereof joins a respective support arm intermediately the respective ends thereof; container support means disposed about the ends of each of said support arms about the rearward ends thereof opposite said hitching frame for engaging and supporting the outwardly extending support means of said bulk tobacco container, said container support means including a single one piece support member disposed about the rearward end of each support arm about the inner side thereof and wherein each support member comprises a generally arcuately shaped seat area defined for supporting

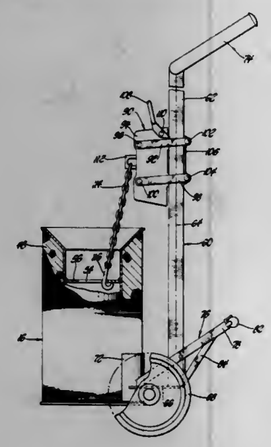
said outwardly extending support means extending from said bulk tobacco container, an outwardly flanged guide portion integrally formed in said single one piece support member rearwardly of said seat area for guiding and aligning said bulk tobacco container handling implement with a bulk tobacco container to be engaged by said implement, and an elevated back disposed immediately adjacent said seat area opposite said flanged guide portion and extending above the area of said defined seat area for appropriately engaging said outwardly extending support means extending from the sides of said bulk container when said implement is being positioned and maneuvered to pick up a particular bulk tobacco container; and insert means insertable between each respective support arm and each single one piece support member for varying the effective width between said two support members of said bulk tobacco container handling implement.

4,114,771

BULK WIRE STORAGE AND TRANSPORT SYSTEM

Carl C. Heuckroth, 101 Hemlock Dr., Lodi, Ohio 44254

Filed Jun. 14, 1977, Ser. No. 806,413
Int. Cl.² B62B *1/06*
U.S. Cl. 214—384 **2 Claims**



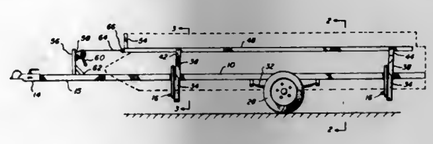
1. A wire storage and moving system comprising a spool, said spool including a normally upright hollow cylindrical portion with open ends, said cylindrical portion having a height substantially greater than its diameter, said cylindrical portion including frusto-conical flange portions formed at the respective ends thereof and upon either of which flanges said spool is adapted to be supported in an upright manner, a multi-layered coil of wire wrapped about said cylindrical spool portion and confined between said spool flange portions, a radially inwardly projecting annular flange formed internally of said hollow cylindrical portion and axially inwardly spaced from said flange portions; and a wheeled device adapted to disconnectably coact with said spool, said device including a generally upright beam element, a transverse beam fixed to the lower end of said upright beam element, a pair of spaced wheel members coaxially mounted at the ends of said transverse beam, a handlebar element secured to the upper end of said upright beam and extending rearwardly and upwardly thereof, an arcuate cradle fixed to said transverse beam intermediate said wheel members and projecting forwardly of the transverse beam, a slide member supported upon said upright beam for movement along the length thereof, said slide member including a locking element for adjustably fixing the position of said slide member along the length of said upright beam so as to be positioned vertically above the uppermost of said spool flanges; an elongate connector element fixed at one end to said slide element and including another end freehanging relative to said slide member, a hook element connected to the free end of the connector element, said wheel device being movable to a position in which said arcuate cradle is disposed circumferentially proximate the lower portion of said multi-layered coil of wire, the free end of said elongate element being adapted to extend within the hollow portion of said spool to enable the hook element to connectably engage with said annular flange, a foot engaging bracket element projecting from said transverse beam and extending rearwardly and upwardly thereof whereby forces may be applied to the foot engaging bracket element and the handlebar element to rotate said upright beam about the wheel axis causing the elongate connector element to lift the spool into nesting engagement with the arcuate cradle, the elongated configuration of said spool in conjunction with the lifting action of said elongate connector and hook elements internally of said spool facilitating engagement and movement of the spool into a transport position on said wheeled device in a stable manner.

4,114,772

PONTOON BOAT TRAILER

Ralph E. Beelow, 4243 - 13th Ave. South, Minneapolis, Minn. 55404

Filed Aug. 15, 1977, Ser. No. 824,538
Int. Cl.² B60P *3/10*
U.S. Cl. 214—512 **3 Claims**



1. A trailer especially suited for transporting and launching pontoon type boats of the type including a generally planar, rectangular, deck surface with first and second elongated floatation members affixed to the underside of said deck proximate opposed side edges thereof, comprising:

(a) a trailer bed mounted on wheels, the width of said bed being less than the spacing between said floatation members;

(b) a plurality of linkage members pivotally coupled at one end thereof to said trailer bed at spaced apart locations along the length and at either side thereof;

(c) a movable frame member having opposed sides thereof pivotally secured to the other ends of said plurality of linkage members, the opposed sides of said frame being spaced apart by a distance which is less than the spacing between said floatation members on the pontoon boat to be transported; and

(d) A plurality of roller assemblies affixed to the sides of said trailer bed and adjustably extendable outwardly therefrom for abutting the floatation members on a pontoon boat being transported to prevent lateral movement of said boat with respect to said trailer bed, the arrangement being such that when a longitudinal force is applied to said movable frame member, said frame member is translated in a vertical direction.

4,114,773

FEEDING DEVICE OF A CONCRETE BLOCK SPLITTING APPARATUS

Yoji Sekiguchi, Maebashi, Japan, assignor to Katsura Machine Co., Ltd., Maebashi, Japan

Filed Aug. 5, 1977, Ser. No. 822,323
Claims priority, application Japan, Aug. 12, 1976, 51-108112[U]
Int. Cl.² B65G *25/04*
U.S. Cl. 214—623 **8 Claims**

1. A feeding device of a concrete block splitting apparatus, comprising:

a frame structure;

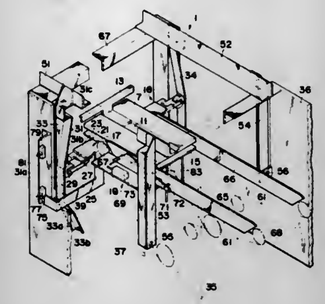
a table for lifting a concrete block up to a predetermined position;

said table having upwardly pivotable arms extending in the opposite direction, said arms each having a roller at the end thereof;

means for moving said table in the vertical direction;

legs outwardly pivotably connected to said frame structure at the opposite sides with respect to said table;

said legs each having a spring at the lower portion thereof to maintain the legs in a vertical posture, an inclined



portion and a port for securing rollers of the arms at the position above said inclined portion, and

receiving members for supporting the concrete block at the predetermined position;

said receiving member being connected to the upper portion of said legs,

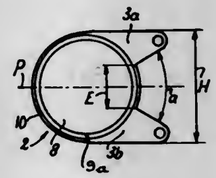
whereby as said table with the concrete block placed thereon is moved upward together with said arms and rollers, said legs are pivoted outwardly and retracted to the original position to receive the concrete block.

4,114,774

CLOSURE CAP

Albert Scheidegger, 30 rue Caporal Morange, 69100 Villeurbanne, France

Filed Dec. 21, 1977, Ser. No. 862,915
Claims priority, application France, Dec. 23, 1976, 76 39882
Int. Cl.² B65D *41/42*
U.S. Cl. 215—250 **3 Claims**



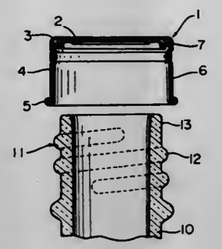
1. A closure cap for bottles and the like comprising a generally circular disc having an annular depending skirt, two tear tab portions extending rearwardly at an angle to each other from said skirt and forming a V-shaped space between them, with the legs of the V being spaced apart at their junction with said skirt a distance E, the outer edges of said tab portions being in substantially parallel planes spaced apart a distance equal to the diameter of said cap for guiding contact with the side walls of feeding equipment, the angle between said tab portions being such that the tab portions will both be tangent to a circle having a diameter equal to that of said cap to permit an identical cap to enter between the tab portions and to abut said cap without riding up on the tab portions.

4,114,775

CAP WITH SEALING LINER

Tokujiro Shinozaki, Nagoya, Japan, assignor to Japan Crown Cork Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1977, Ser. No. 774,143
Claims priority, application Japan, Mar. 11, 1976, 51-25538; Nov. 18, 1976, 51-137773
Int. Cl.² B65D *53/00*
U.S. Cl. 215—324 **9 Claims**



1. A cap for use in sealing a container of the type including an opening portion having therein an opening surrounded by a sealing surface including an upper rim and inner and outer peripheral surfaces, with an exterior thread provided below the sealing surface, said cap comprising:

a metallic cap shell having a circular top and a skirt extending downwardly from the peripheral edge of said top, said skirt having a thread forming portion which is deformable along the exterior thread of a container on which the cap is to be used; and

a flexible liner provided inwardly of said top of said cap shell, said liner comprising:

an outer annular protrusion extending downwardly from said top, said outer annular protrusion having an inner diameter substantially equal to, or slightly larger than, the outer diameter of the sealing surface of the container on which the cap is to be used, said outer annular protrusion having a radially inner wall extending substantially perpendicular to said top, said inner wall of said outer annular protrusion forming means for intimately sealing against the outer peripheral surface of the container on which the cap is to be used, said outer annular protrusion having an upright radially outer wall which is spaced radially inwardly from the inner circumferential surface of said skirt; and

an inner annular protrusion extending downwardly from said top at a position radially inwardly of said outer annular protrusion, said inner annular protrusion having a substantially triangular cross-sectional configuration, said inner annular protrusion having an inner diameter substantially equal to, or slightly smaller than, the inner diameter of the sealing surface of the container on which the cap is to be used, said inner annular protrusion including inner and outer walls which converge downwardly at an apex angle of 30° to 50°, said outer wall being inclined upwardly and radially outwardly and forming means for abutting against the inner circumferential edge of the upper rim of the sealing surface of the container on which the cap is to be used.

4,114,776

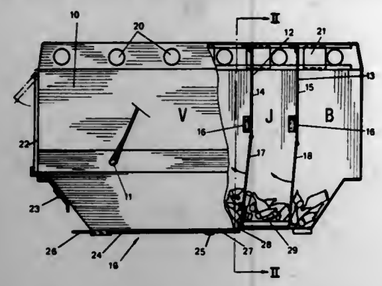
CONTAINER, PARTICULARLY FOR COLLECTING PRODUCTS TO BE RECYCLED

Ernest Pluss, 115, route de Peney, 1214 Vernier, Switzerland

Filed Dec. 20, 1976, Ser. No. 752,553
Claims priority, application Switzerland, Dec. 22, 1975, 16652/75
Int. Cl.² B65D *85/00, 25/04*
U.S. Cl. 220—22 **3 Claims**

1. A container, particularly for products recuperated for

recycling, comprising a body of generally rectangular shape in plan having long side walls joined by narrow end walls and a bottom and having a greater height than width, means defining a plurality of discrete openings spaced along the top of the container body for the introduction of refuse products, transverse partitions dividing the container body into a plurality of



discrete compartments each associated with at least one said opening, each partition being formed by a fixed vertical upper panel spaced above the bottom of the container and a lower flap hinged to a lower edge of the panel, and means for locking the flaps in a closed position and for individually unlocking the flaps to allow the contents of the different compartments to be successively removed through said outlet means.

4,114,777

FOLDED CIGARETTE BOX

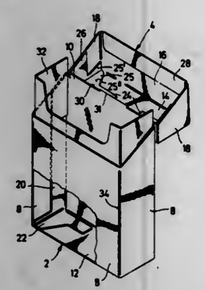
Hans-Joachim Fröhling, Hamburg, and Werner Rothe, Rellingen, both of Fed. Rep. of Germany, assignors to H. F. & Ph. F. Reemtsma, Hamburg, Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,830

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650195; Dec. 4, 1976, 2655113

Int. Cl.² B65D *5/66*

U.S. Cl. 229—44 CB **6 Claims**



1. A container having a body and a hinged lid for cigarettes or similar articles, said body being formed from a blank having a front wall, a bottom wall, a rear wall and a lid having a rear wall integrally hinged to the rear wall of the body, a lid front wall and a lid top wall, with folding edges between adjacent walls, some of said walls having side flaps projecting therefrom along associated folding edges and having a width dimension corrsponding to the full width of the completed container, others of said walls having side flaps having a width dimension that is reduced relative to said full width dimension and which extend from others of said walls such that said reduced width flaps are located on the interior of said completed container, said container being held together by adhesive bonding between said full width flaps and said reduced width flaps,

at least one pair of said reduced width side flaps being provided with extending portions each having outer edges lying along a line that extends through the outer edges of said full width flaps.

4,114,778

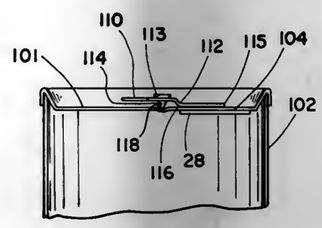
SANITARY DRINKING SPOUT FOR LIQUID CONTAINER WITH TEAR TAB

Chester L. O'Neal, 101 S. Locust, Greencastle, Ind. 46135

Continuation-in-part of Ser. No. 616,568, Sep. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 513,762, Oct. 10, 1974, Pat. No. 3,951,316. This application Jan. 6, 1977, Ser. No. 757,354

Int. Cl.² B65D *41/32*

U.S. Cl. 220—267 **7 Claims**



1. A container comprising:

a main body including a rim and a top wall with an aperture in said top wall sealingly closed by a tear tab, said tear tab having a pair of opposite edges joined to said top wall along a pair of score lines, said tear tab further having a first end with a pull tab attached thereto and with said score lines meeting at said first end adjacent said pull tab, said tear tab having a second end opposite said first end with said second end positioned adjacent said rim, said pull tab having a handle portion and an elongated main body portion with at least a portion of said main body portion fixedly attached to said tear tab along its length; and

means, including a pierce button having a pointed end and extending through and beneath the unattached portion of said pull tab to a point on said tear tab adjacent said first end thereof, for piercing said top wall and for initiating tearing along said score lines adjacent said first end when said pierce button is depressed.

4,114,779

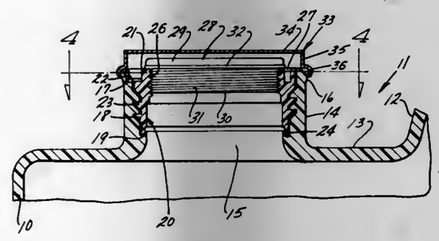
BUNG HOLE ASSEMBLY

Andrew Joseph Stoll, III, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 10, 1977, Ser. No. 767,596

Int. Cl.² B65D *41/04, 51/18, 39/00*

U.S. Cl. 220—288 **12 Claims**



1. A bung hole closure assembly for a plastic drum comprising:

a tubular projection formed on said drum having internal threads and including an annular internal sealing surface, a bushing inserted into said tubular projection having external threads threadably engaging said internal threads of said projection and including internal threads, annular sealing means adjacent said bushing sealingly engaging said sealing surface, releasable interengaging means respectively disposed internally on said tubular projection and externally on said bushing allowing slipping engagement when said bushing is rotated in a tightening direction and locking engagement upon rotation in an opposite direction, said interengaging means being accessible from the exterior of said closure assembly whereby said bushing can be rotated in said opposite direction, said tubular projection and said bushing defining an opening in said drum, said threadably engaged threads of said projection and bushing being of a larger thread form than said internal threads of said bushing.

4,114,780

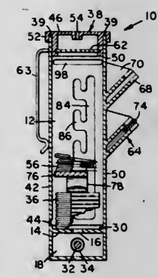
COMBINATION INDUSTRIAL RAZOR BLADE DISPENSER AND USED BLADE RECEIVER

Shaul Sharon, 935 Bay Dr. #8, Miami Beach, Fla. 33141

Filed Dec. 2, 1976, Ser. No. 746,874

Int. Cl.² B65D *83/10*

U.S. Cl. 221—101 **8 Claims**



1. A combination industrial single edge razor blade dispenser and used blade receiver comprising a boxlike vertical container (10) of comparatively rigid material having a vertical blade container single compartment (12), a blade supporting floor (14) at the bottom of said compartment (12) to receive and support a stack of blades (36) thereon, a new blade ejecting slot (30) in one side wall (28) of said compartment (12) adjacent said bottom blade supporting floor (14) thereof, a subcompartment (18) beneath said blade supporting floor (14), a manually operable spring (34) resisted plunger (20) in said subcompartment (18), a blade ejector finger (26) mounted on said plunger (20) and extending up through a slot (16) in said blade supporting floor (14) and normally located against the end of the bottom blade (36) remote from said blade ejecting slot (34) on said blade compartment floor (14), a used blade inserting slot (98) in said blade receiving compartment (12) adjacent the top thereof for receiving used blades (56) in said container (10) as new blades (36) are used up, means (63) for maintaining said blade container (10) in vertical position in operative use, said vertical maintaining means comprising clothing attaching means (63) on an exterior wall (40) of said container for holding said container (10) in verticle position on the clothing of a user, and aligned slot means (84 or 90) in two opposite walls (24, 28 or 88) of said container (10), a new blade and used blade divider (76 or 92) in said compartment (12), said divider having manually manipulatable protrusions (80 or 96) extending through said opposite aligned positioning slots (84 or 90) for positioning said blade divider in said compartment (12).

4,114,781

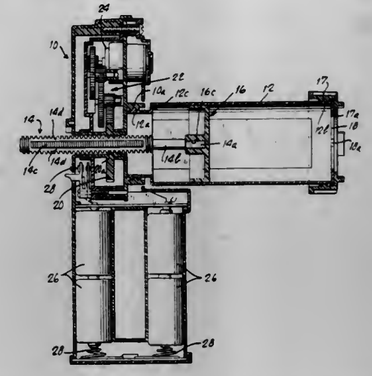
HAND-HELD, BATTERY-OPERATED DECORATIVE EXTRUDER FOR COOKIE DOUGH AND SIMILAR FOOD SUBSTANCES

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Jun. 6, 1977, Ser. No. 803,856

Int. Cl.² B67D *5/46*

U.S. Cl. 222—326 **2 Claims**



1. A hand-held, battery-operated decorative extruder for dough or another cream- or paste-like food substance for making cookies, food decorations and the like comprising:

a tube having a front end and a back end spaced apart along the tube axis, a pusher closely fitting inside the tube and moveable along the tube axis and a drive screw detachably secured to the pusher and extending back from the pusher along the tube axis, said tube and pusher having cooperating means for substantially preventing relative rotation between them about the tube axis and said drive screw and pusher similarly having cooperating means for substantially preventing relative rotation between them about the tube axis;

a housing and cooperating means at the housing and the tube for detachably securing the back end of the tube to the housing, a gear wheel having an internally threaded central opening and mounted in the housing, coaxially with the tube axis, for rotation about said axis, said housing and back end of the tube having apertures to permit the drive screw to extend therethrough and through the threaded central aperture of the gear wheel, and said drive screw having an externally threaded back portion meshing with the internal thread of the gear wheel and a reduced diameter front portion which passes through the central opening of the gear wheel without engaging the threads thereof, said reduced diameter front portion of the drive screw being longer than the minimum distance between the back end of the gear wheel thread and the pusher, said drive screw having no portion which cannot pass through the internally threaded aperture of the gear wheel, and the distance between the front end of the pusher and the back end of the threaded portion of the drive screw being less than the distance between the maximum forward position of the front end of the pusher and the front end of the internal thread of the gear wheel;

an electrical motor, at least one battery, switch means for energizing the motor by connecting the at least one battery thereto and means connecting the motor to the gear wheel to rotate the gear wheel about the tube axis when the motor is energized so as to move the drive screw forwardly, all mounted in the housing; and

means at the front end of the sleeve having a selected extruding aperture;

whereby the pusher is moved back to its minimum distance from the gear wheel, the tube ahead of the pusher is filled with the food substance to be extruded, the front portion of the drive screw is inserted nonrotatably through the

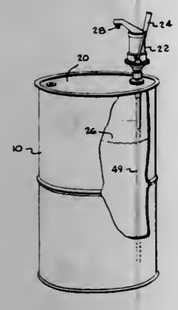
internally threaded aperture of the gear wheel and secured detachably to the pusher, the motor is energized to rotate the gear wheel and the drive screw is pushed forwardly to mesh its external thread with the internal thread of the gear wheel, the rotating gear wheel drives the nonrotating drive screw forwardly along the tube axis to move the pusher forwardly and thus extrude the substance through the extruding opening at the front end of the tube, and the gear wheel drives the entire threaded portion of the drive screw forwardly of its internal thread when the pusher is at its maximum forward position so that the tube can be detached from the housing together with the drive screw after the substance filling the sleeve has been so extruded.

4,114,782

PUMP COUPLING SYSTEM FOR ATTACHMENT TO DRUM

Harry E. Berry, 3510 SW. 32nd Ave., Hollywood, Fla. 33023

Filed Apr. 11, 1977, Ser. No. 786,350
Int. Cl.[2] B67D *5/42*; B65D *47/34*
U.S. Cl. 222—382 4 Claims



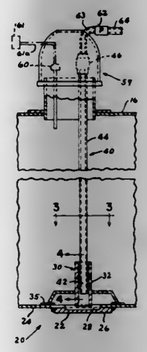
1. A liquid dispensing system comprising drum means, said drum means having an upper end wall, a female coupling means essentially permanently mounted in said upper end wall, suction tube means extending from said female coupling means downwardly adjacent the lower end of said drum, a male connector member having a mating portion insertable in sealing relationship to said female coupling means, rotary retaining means on said male connector member effective for maintaining said male connector member in coupled relation to said female coupling means, selectively operable pump means connected to said male coupling member to communicate with said suction tube when said male connector member is mounted in said female coupling whereby operation of said pump means when said male connecting member is coupled to said female connecting member results in the dicharge of liquid from the interior of the drum, wherein said female coupling member comprises an elongated tubular fitting including a central passageway communicating with said suction tube, an upper radial flange, a threaded external cylindrical surface on said tubular fitting positioned beneath said upper radial flange dimensioned to be threadably connected to a threaded opening in the upper end wall of said drum means and said central passageway extending through said head flange and being dimensioned to receive said male connector member, said central passageway including an inner radially extending arcuate groove beneath said head flange and wherein said head flange additionally includes radially outwardly extending groove slots on opposite sides of the upper end of said central passageway in said head flange and wherein said male connector member includes radially outwardly extending lugs having outer dimensions slightly less than the dimensions of said groove slots and being of a vertical thickness slightly less than the thickness of said inner radially extending arcuate groove of said tubular fitting whereby said lugs can be moved downwardly through said groove slots and subsequently rotated to position said lugs in said arcuate groove for maintaining said male connector member in coupled connection to said female connector member and wherein said male connector member comprises a unitary tubular member comprising a reduced diameter bottom portion, an upper coupling head portion having an internal threaded surface threaded onto said pump, an internal passageway extending the length of said unitary tubular member, a check valve in the lower end of said internal passageway for preventing flow from said internal passageway and seal means on said reduced diameter bottom portion engageable with said central passageway when said male connector member is mounted in said female coupling means to define a continuous flow path from said suction tube to said pump.

4,114,783

EDUCTION PIPE WITH GUIDE SLEEVE AND SEAL TO DRAW LIQUID FROM THE BOTTOM AND ALLOW TELESCOPING WHEN TANK TOP MOVES DOWN UNDER IMPACT

Richard J. Wempe, and Richard B. Polley, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 24, 1977, Ser. No. 827,129
Int. Cl.[2] B61D *5/00*; B65D *83/14*
U.S. Cl. 222—398 13 Claims



1. A sump and eduction arrangement for a railway tank car comprising:

a low profile sump located in an opening in the bottom of the tank and extending a short distance below the outside of said tank bottom; said sump including a sump hollow portion to collect lading for unloading;

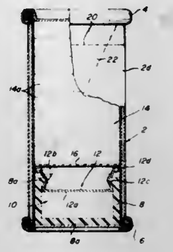
an eduction pipe located above said sump including a fixed eduction pipe portion supported on said tank bottom including a hollow tube extending into said sump hollow portion, and a movable eduction pipe portion including a lower tubular portion telescopicly engaging said fixed eduction pipe portion and vertically movable relative to said fixed eduction pipe portion and an upper tubular portion extending to the upper portion of the tank; valve means for opening and closing communication between said eduction pipe and the outside of the tank; means for providing a pressure differential between said valve means and said sump whereby lading passes into said sump and then upwardly through said fixed eduction pipe portion and said movable eduction pipe portion and out of said tank, and whereby when the upper portion of said tank moves downwardly relative to the tank bottom said movable eduction pipe portion and said fixed eduction pipe portion telescope relative to one another during such downward movement.

4,114,784

COMPARTMENTED COMPOSITE CONTAINER INCLUDING A SNAP-FIT SEPARATOR MEMBER

Robert J. Hough, Ballwin, and John E. Bacon, St. Charles, both of Mo., assignors to Boise Cascade Corporation, Boise, Id.

Filed Apr. 1, 1977, Ser. No. 783,788
Int. Cl.[2] B65D *25/04, 85/36*
U.S. Cl. 220—408 3 Claims



1. A compartmented composite container, comprising

(a) a composite tubular body wall including a fibrous body wall layer and an impervious inner liner layer, the inner cylindrical circumferential surface of said body wall being uniform throughout its length;

(b) an end closure member connected to close one end of said body wall;

(c) a cylindrical open-ended synthetic plastic cup member arranged concentrically within said body wall with the bottom of said cup member seated on said end closure member, the outer diameter of said cup member corresponding generally with the inner diameter of said tubular body wall, thereby to permit said cup member to be slidably inserted within said tubular body wall, the open top end of said cup member including an upper end surface spaced from the other end of said tubular body wall;

(d) a rigid metal separator member closing the upper end of said cup member, whereby said cup member and the space between said separator member and the other end of said tubular body member are adapted to contain first and second products, respectively, separated by said separator member, said separator member including

(1) a central circular disk-shaped portion arranged transversely within the open top end portion of said cup member,

(2) a cylindrical neck portion which extends longitudinally upwardly through the open upper end of said cup member; and

(3) a generally outwardly extending annular flange portion,

(4) said flange portion terminating at its outer peripheral edge in a reversely curled portion; and

(e) means defining a snap-fit connection between said separator neck portion and the upper end of said cup member, thereby to define a first pair of abutting sealing surfaces for separating the container products;

(f) the outer diameter of said separator flange portion corresponding with the inner diameter of the tubular body wall to effect frictional engagement between said flange portion and said body wall inner surface, thereby to define a second pair of abutting sealing surfaces for separating the container products;

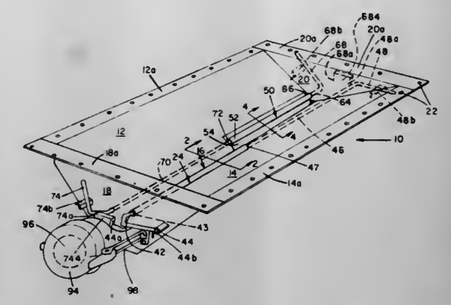
(g) the reversely curled separator portion being in contiguous engagement with the upper end surface of said cup member, thereby to define a third pair of abutting sealing surfaces for separating the container products.

4,114,785

CONTROL VALVE FOR BOTTOM DISCHARGE OUTLET

Richard H. Dugge, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,892
Int. Cl.[2] B61D *7/02*; B65G *53/40*
U.S. Cl. 222—545 38 Claims



3. A container outlet for use on railway cars, overland hopper trucks and/or intermodel containers comprising:

at least one wall having an opening in the lower portion thereof defining an outlet discharge opening; a control valve rotatably mounted within said discharge opening; said control valve including a body portion having a body portion longitudinal axis of rotation and a body portion edge which in closed position engages, or is closely adjacent to, a body portion valve seat located on a first side of said discharge opening to substantially prevent lading discharge; said control valve further including a moment portion extending transversely and eccentrically from said body portion, said moment portion having a moment portion edge which in closed position engages or is closely adjacent to, a moment portion valve seat located on a second side of said discharge opening to substantially prevent lading discharge; said control valve moment portion extending eccentrically from said body portion a distance sufficient to define a moment portion moment arm about said body portion axis; said body portion being contoured such that lading forces due to gravity acting on the body portion on either side of said axis are generally balanced, resulting in little tendency to rotate the control valve in either direction; the combination of said moment portion moment arm and the force of gravity acting on the lading to be unloaded applied upon said moment portion creating a moment about said body portion axis; said moment tending to reduce the torque required to rotate said control valve into said open position; said control valve being rotatably movable between said closed position and an open position wherein lading may pass out of said outlet through said discharge opening during unloading.

4,114,786

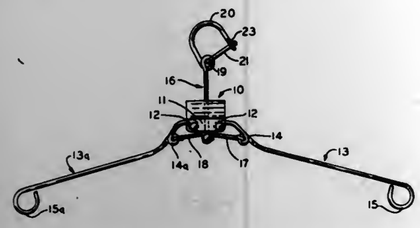
GARMENT HANGER

Harold Wiese, North Highland, Box 236, Madison, S. Dak. 57042

Filed Aug. 3, 1977, Ser. No. 821,513
Int. Cl.[2] A47J *51/11*
U.S. Cl. 223—94 9 Claims

1. A garment hanger comprising a body member, a pair of arms each of which is pivotally attached at its one end to said body member, one of said arms extending to one side of said member and the other of said arms extending to the other side of said member, a vertical stem extending downwardly and being slideably engaged with said member, a pair of links one of which is pivotally attached at its one end with one of said arms at a point spaced from the pivoted end of said one arm and having its other end pivotally attached to the lower end of

said stem and the other of said pair of links having its one end pivotally attached to the other of said arms at a point spaced from the pivoted end of said other arm and having its other end pivotally attached to the lower end of said stem, whereby when said stem is moved downwardly of said member said links operate to bring said arms downwardly and toward each other and when said stem is moved upwardly of said member said arms are moved upwardly away from each other, said stem being movable upwardly of said member beyond a



straight line between the points of pivotal attachment of said links with said arms, and stop means for limiting further upward movement of the lower end of said stem after said stem has been moved upwardly to a predetermined position above said line, whereby when said stem is in said predetermined position, said arms are locked against downward movement about their pivots, one of said links having its shank rearward of said stem and the other of said links having its shank forward of said stem.

4,114,787

SHEATH FOR KNIFE WITH DEAD BLADE

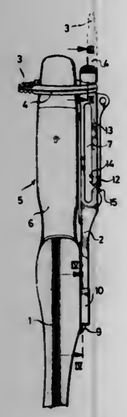
Siegfried Rosenkaimer, Solingen, Fed. Rep. of Germany, assignor to Ruko of Canada Ltd., Mississauga, Canada

Filed Oct. 21, 1977, Ser. No. 844,161

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 7633910

Int. Cl.[2] B26B *29/02*; F41B *13/04*

U.S. Cl. 224—2 D **2 Claims**



1. A sheath for a kinfe with a dead blade such as a hunting knife, a Bowie knife or the like, comprising:

(a) a quiver for retaining the blade of a knife,

(b) an elongated suspender secured to said quiver and arranged for attachment to a body belt, and

(c) an annular retainer pivotally secured to said suspender and adapted to be pushed over the handle of said knife to secure said knife in said quiver,

(d) said quiver including a U-shaped bridge at the rear side thereof,

(e) said suspender being bevelled at one end thereof and including a recessed area extending across the width thereof adjacent said bevelled end whereby said suspender may be inserted between said U-shaped bridge and the rear side of said quiver and locked in position with said U-shaped bridge passing over said recessed area of said suspender.

(f) said suspender defining a notch therein adjacent the opposite end thereof for resiliently and pivotally securing said annular retainer, and

(g) said suspender further including means defining an elongated slot between said recessed area and said notch for receiving said body belt, said means comprising an upper arm projecting downwardly substantially parallel to and spaced from said suspender and a lower arm projecting upwardly substantially parallel to and spaced from said suspender to define therebetween said slot.

4,114,788

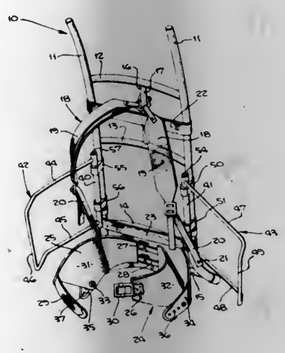
FRONT LOAD CARRYING APPARATUS FOR BACKPACKS

Anthony C. Zufich, P.O. Box 333, Bodfish, Calif. 93205

Continuation-in-part of Ser. No. 690,068, May 26, 1976. This application Aug. 1, 1977, Ser. No. 820,741

Int. Cl.[2] A45F *3/10*

U.S. Cl. 224—25 A **9 Claims**



1. A backpack and frame apparatus including a pair of frame members for supporting a rear load comprising:

(a) hip belt means for encircling the waist of the user, said hip belt means including downwardly depending panels adapted to lie along the hips of the user, each of said panels including coupling means for attachment thereto;

(b) means for coupling said downwardly extending panels of said hip belt means to the backpack and frame;

(c) a pair of front support load arms each comprising first and second parallel legs being integrally joined at one end thereof, said first and second legs being uniformly curved toward the joined end of said support load arm;

(d) locking means for supporting a frontal, auxiliary load coupled to said front support arms;

(e) first and second shafts having parallel apertures disposed therethrough, the first and second legs of each of said front support load arms being disposed through a pair of apertures of one of said shafts;

(f) means for securing the legs of each of said front support load arms within one of said shafts respectively; and

(g) means for pivotally coupling each of said first and second shafts to a lateral frame member whereby the joined ends of said first and second front support arms can be pivoted adjacent one another.

4,114,789

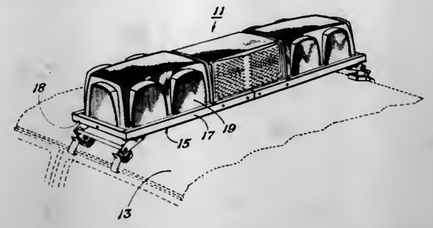
MOUNTING APPARATUS FOR VEHICLE EMERGENCY WARNING SIGNAL

Arnold O. Blaylock; Robert P. Falconer, and Charles M. Campbell, all of Fort Worth, Tex., assignors to Lectric Lites Company, Fort Worth, Tex.

Filed Apr. 14, 1977, Ser. No. 787,552

Int. Cl.[2] B60N *11/00*

U.S. Cl. 224—42.1 E **3 Claims**



1. In a warning signal apparatus for mounting on the roof of a vehicle of the type having a frame including a metal rim, and signal light means mounted on opposite sides of the frame, an improved means for mounting the warning signal apparatus to the vehicle, comprising:

a pair of spaced apart brackets attached to the rim on each side of the warning signal apparatus, each bracket having an outer end portion extending below the rim and outward with an aperture therethrough;

a rod extending between the outer ends of the bracket on either side, the rod having threaded holes in its ends adapted to align with the apertures in the bracket outer ends;

a resilient pad with an upstanding metal flange having an aperture therethrough that is adapted to align with the aperture in the outer end of each bracket, the rod, brackets, and flanges being coupled together by a screw threaded into the ends of each rod, whereby loosening the screw allows the pad to be pivoted for selectively seating the pad on a sloping portion of the vehicle roof;

a clip having catch means for engaging the edge of the roof of the vehicle; and

adjusting means linking the clip with the bracket for varying the distance between the bracket and the clip to tighten the frame to the roof.

4,114,790

DEVICE FOR CAPTURING AND REMOVING TEXTILE YARNS, BY SUCTION AND PNEUMATIC ENTRAINING

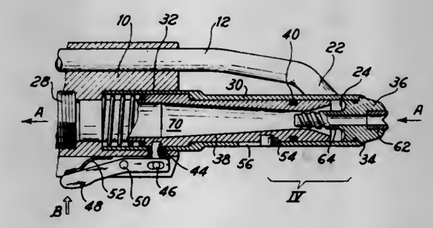
Pierluigi Sighieri, Scarperia, and Gianfranco Colleoni, Castelmonte, both of Italy, assignors to UTITA S.p.A. Officine e Fonderie di Este, Milan, Italy

Filed Apr. 18, 1977, Ser. No. 788,636

Claims priority, application Italy, Apr. 23, 1976, 22592 A/76

Int. Cl.[2] B65H *17/32*

U.S. Cl. 226—91 **12 Claims**



1. A device for initially picking up and then removing textile yarns, said device comprising:

a hollow casing having first and second ends;

a nozzle head fixedly attached to said first end of said casing;

an outlet tube in communication with said second end of said casing;

a movable sleeve slidably positioned within the interior of said casing, said sleeve being axially slidable within said casing between a foremost first position relatively adjacent said nozzle head and a rearmost second position relatively spaced from said nozzle head, said sleeve having an axial passage therethrough, said axial passage including a first portion relatively adjacent said nozzle head and a second portion relatively spaced from said nozzle head, said first portion being defined by a first frusto-conical surface which sharply converges in a direction toward said second portion, said second portion being defined by a second frusto-conical surface which diverges in a direction away from said first portion;

said nozzle head having a fixed tube-like extension extending into the interior of said casing, said nozzle head and said extension having extending therethrough a bore opening into said interior of said casing, said extension having an outer surface including a cylindrical portion adjacent said nozzle head and a frusto-conical portion connected to said cylindrical portion and converging radially inwardly in a direction away therefrom, said frusto-conical portion ending in a nozzle outlet;

said extension extending into said passage of said sleeve and defining therewith an annular passage;

said nozzle head and the adjacent end of said sleeve defining therebetween a chamber, said chamber coaxially surrounding said extension and communicating with said annular passage;

said sleeve, when in said first position thereof, cooperating with said extension such that said annular passage comprises an initial convergent segment and a final divergent segment, said initial convergent segment being defined by said cylindrical surface of said extension and said first frusto-conical surface of said sleeve, and said final divergent segment being defined by said frusto-conical portion of said extension and said second frusto-conical surface of said sleeve;

said sleeve, when in said second position thereof, cooperating with said extension such that said nozzle outlet is located at a position between the opposite axial ends of said first frusto-conical surface of said sleeve, and such that said annular passage is completely convergent and is defined by said frusto-conical portion of said extension and said first frusto-conical surface of said sleeve; and

means for supplying pressurized gas into said chamber, such that when said sleeve is in said first position thereof a relatively small quantity of gas passes from said chamber through said annular passage at a relatively high pressure, thus creating a reduced pressure in said bore so that a yarn may be picked up and drawn therethrough, and such that when said sleeve is in said second position thereof a relatively greater quantity of gas passes from said chamber through said annular passage at a relatively lower pressure, thus pulling the picked up yarn through said passage of said sleeve and into said outlet tube, while substantially avoiding the creation of a reduced pressure in said bore.

4,114,791

FEEDING MECHANISM

Georg Schneider, Ludwigkai 27, Wuerzburg, Fed. Rep. of Germany (D-8700)

Filed Aug. 19, 1977, Ser. No. 826,215

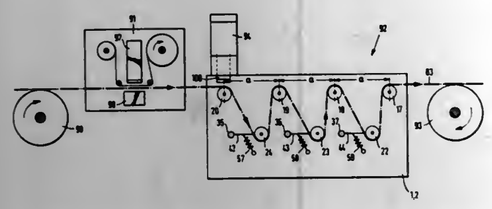
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1976, 2637248

Int. Cl.[2] B65H *17/42*

U.S. Cl. 226—91 **4 Claims**

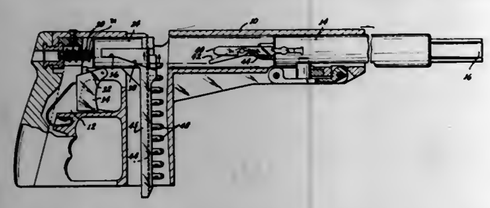
1. A feeding mechanism for continuously feeding a printed carrier material from an intermittently operating printer to a continuously operating processing or storage mechanism, said feeding mechanism comprising:

an upper horizontal row of guide cylinders secured at their ends to spaced side panels;
a movable carriage carried by guide pieces secured to said side panels;
a lower row of rotatable cylinders each said rotatable cylinder secured to a first end of a spring loaded arm, each of said arms pivotably secured at a point intermediate its ends to spaced side portions of said carriage, second ends



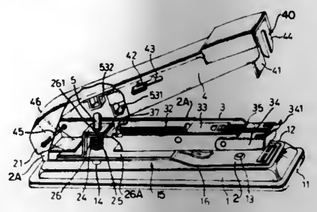
of said arms being guided in guide slots in said side panels; and
means to raise said carriage to position said rotatable cylinders above said guide cylinders during threading of said carrier material through said feeding mechanism and to lower said carriage to position said rotatable cylinders below said guide cylinders during feeding of said carrier material through said feeding mechanism.

4,114,792
POWDER ACTUATED TOOL
Raymond V. Pomeroy, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Jul. 20, 1977, Ser. No. 817,386
Int. Cl.² B25C *1/14*
U.S. Cl. 227—8 **4 Claims**



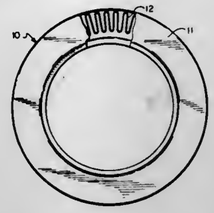
1. A tool for explosively driving elongated fasteners into work surfaces comprising; a housing, a barrel slideable in the housing between a forward and rearward position and being normally biased in its forward position and projected from the housing for engagement with a work surface, a breech block in the housing rearward of the barrel and cooperative with said barrel to form a cartridge receiving chamber, a camming ramp provided in the breech block, and a trigger mechanism including safety means that renders the trigger operable only when the barrel is forced into its rearward position, a finger member extended rearwardly of the barrel that is pivotally movable between first and second positions, and biasing means biasing the finger member into the first position and in said first position adapted to be engaged by the camming ramp to be cammed by the ramp into the second position as the barrel is forced into its rearward position, the breech block having a passage as an extension of its forward face and in cooperation with the rearward end of the barrel with the barrel in its forward position, which passage is adapted to receive a strip of cartridges, and finger member being adapted to engage the strip of cartridges and thereby move successive cartridges carried by the strip into position between the rear end of the barrel and the forward face of the breech block.

4,114,793
MULTI-PURPOSE STAPLER
Sheau-Po Hsu, Hu Wei Town, Taiwan, assignor to EIC International Corporation, Taipei, Taiwan
Filed Jun. 1, 1977, Ser. No. 802,447
Int. Cl.² B25C *11/00*
U.S. Cl. 227—63 **3 Claims**



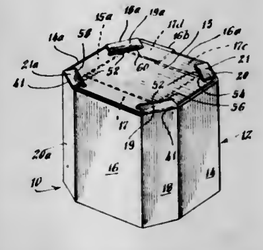
1. A multi-purpose stapler of the type having one mode of operation wherein hole-punching and staple-removing functions are afforded and another mode of operation wherein a stapling function is afforded, said stapler comprising:
a base including a punch-receiving aperture at one end and a staple clinching die at another end,
supporting bracket including a front portion fixedly mounted on said base, and a rear portion spaced from said base to define a clearance for reception of material to be punched, said rear portion including a hole aligned with said aperture,
a staple magazine pivotably mounted to a rear portion of said bracket,
a press handle pivotally mounted to a rear portion of said bracket and including longitudinal slots at the middle thereof,
a pair of buttons slidably mounted in said slots,
a punching actuator connected to said buttons and disposed within said handle for movement between first and second positions,
stop means positioned on said magazine to be operably engageable with said actuator when said actuator is in said first position to limit downward movement of said handle to a first level and nonengageable with said actuator when said actuator is in said second position to allow downward movement of said handle beyond said first level to a second level,
a bearing plate mounted on a rear portion of said bracket and including a hole aligned with said aperture and said hole in said bracket,
a punch rod slidably received in said holes and biased away from said aperture,
said punch rod positioned for being depressed downwardly beyond said aperture by a contact portion of said actuator only when said actuator is in said second position, so that hole punching may occur only when actuator is in said second position,
a vertical stapling blade mounted at a front end of said press handle above a forwardmost staple in said magazine, the length of said blade being such that the blade acts downwardly against said forwardmost staple and drives it from said magazine only when said handle is moved downwardly to said second level, so that stapling occurs only when said actuator is in said second position,
an upper jaw depending from a front end of said press handle forwardly of said stapling blade,
a lower jaw comprising a U-shaped member including legs fixedly mounted to a front end of said staple magazine and a middle portion projecting upwardly,
said upper jaw and middle portion being oriented to merge together and remove a staple when said press handle is lowered to said first level, so that staple removing occurs when said actuator is in said first position.

4,114,794
METHOD OF AUTOGENOUSLY BONDING FILTER ASSEMBLIES
Ronald L. Storms, Hamburg, N.J., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jan. 10, 1977, Ser. No. 758,130
Int. Cl.² B23K *31/02*; B01D *29/20*
U.S. Cl. 228—182 **10 Claims**



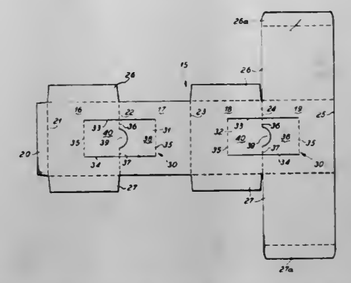
1. A method of joining porous metallic filter media and a metal filter housing to form a filter assembly which comprises the steps of:
forming a diffusion bonding porous membrane, said membrane comprising a web of small diameter fibrils having metallurgical compatibility with both the filter media and the housing;
placing said porous membrane between and in contact with the filter media and housing to form an assembly; and
sintering said assembly at a temperature below the melting point of the membrane, filter media and housing and for a time sufficient to form a strong, leak-free autogenous bond between the filter media and the housing.

4,114,795
CORNER LOCK BULK BIN
Terence J. Mulroy, Sioux City, Iowa, assignor to Champion International Corporation, Stamford, Conn.
Filed Dec. 7, 1977, Ser. No. 858,109
Int. Cl.² B65D *13/04, 5/12*
U.S. Cl. 229—23 R **5 Claims**



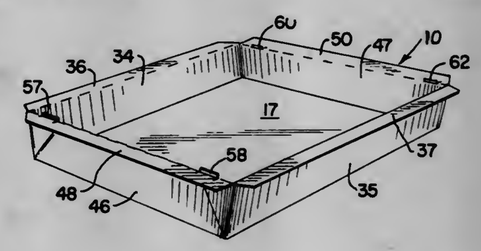
1. An octagonal-shaped paperboard bulk bin comprising:
a side wall formed from opposed pairs of substantially rectangular, upstanding side panels and opposed pairs of substantially rectangular, upstanding corner panels that are alternatively, foldably connected,
each corner panel including a horizontally disposed, substantially rectangular flap foldably connected to the bottom edge thereof,
each side panel including a horizontally disposed, substantially rectangular flap foldably connected to the bottom edge thereof, and
an octagonal planar sheet disposed between said opposed pairs of side panel flaps and corner panel flaps to form a bottom for said bin, said sheet including interior slots adjacent the corners thereof receiving a free end of each of said corner panel flaps therethrough to lock said side wall to said sheet.

4,114,796
CONTAINER HAVING BRACED PARTITIONS
Fred Paul Voges, Park Ridge, Ill., assignor to Consolidated Packaging, Inc., Chicago, Ill.
Filed Oct. 26, 1976, Ser. No. 735,259
Int. Cl.² B65D *5/48, 5/02*
U.S. Cl. 229—27 **8 Claims**



1. A multi-celled, erectable, partitioned carton formed from a sheet-form blank, the carton comprising:
two pairs of opposite side walls connected together at parallel side fold lines;
at least one pair of partition bands severed from said side walls along upper and lower cut lines extending generally transversely to said side fold lines and each one of each said pair of bands being joined to different ones of said side walls at each opposite end of said band at band end fold lines which extend parallel to said side fold lines, each said band thereby spanning one of said side fold lines; and
each band of each pair of bands having at least one attachment zone formed on a face thereof, each of the corresponding attachment zones of the bands of each pair being spaced equidistantly from each side fold line between the ends of the bands.

4,114,797
TRAY TYPE CONTAINER
Guelfo A. Manizza, Blauvelt, N.Y., assignor to Federal Paper Board Co., Inc., Montvale, N.J.
Filed Sep. 26, 1977, Ser. No. 836,309
Int. Cl.² B65D *5/24*; F65D *5/22*
U.S. Cl. 229—31 R **2 Claims**



1. A tray type container comprising a bottom wall forming panel, upstanding sidewall forming panels integrally hinged to the peripheral edges of the bottom wall forming panel and integral connecting corner web members joining adjacent ends of adjoining sidewall forming panels, said sidewall forming panels having narrow top flange forming panel members extending adjacent the ends of the adjoining sidewall forming panels which are adapted to be hinged into a plane generally normal to the plane of an associated sidewall forming panel, said corner connecting web members being folded so as to lie in engagement with the end marginal portions of an associated sidewall forming panel and having a locking tab extending outwardly of the outermost edge thereof which is engaged in

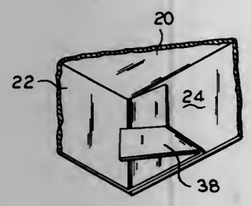
a cooperating locking aperture disposed adjacent the hinge connection of said associated sidewall forming panel and the top flange forming member which is hinged thereto, said corner connecting web members being divided into two hingedly connected generally triangular panel portions which are folded so as to be positioned in overlying relation and disposed along the outermost face of said associated sidewall forming panel, and said locking tab of each corner connecting web member bridging the fold line of said triangular panel portions of said web member.

4,114,798

INTERLOCKING COVER AND TRAY

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 28, 1977, Ser. No. 846,334
Int. Cl.² B65D *5/42, 5/64*
U.S. Cl. 229—43 **1 Claim**



1. In a collapsible, interlocking cover arrangement for a two-piece telescoping container, the combination of:

(a) a tray member including a bottom wall and opposed pairs of side walls foldably joined to each other and to said bottom wall and upstanding from the latter to form a box-like structure open at the top;

(b) certain of said tray member side walls including outer flange elements presenting downwardly facing abutments;

(c) a cover member including a top wall and opposed pairs of first and second side walls foldably joined to each other and to said top wall and depending from the latter to form a box-like structure open at the bottom;

(d) each of said cover member first side walls having triangular end portions at opposite ends thereof which are joined to the remaining portion along upwardly diverging fold lines;

(e) each of said second side walls having foldably joined to opposite ends thereof corner connecting flaps for connecting said second side walls to adjacent ends of related first side walls and which each comprise:

(i) a generally triangular first portion folded to lie against and be adhesively secured to the inner side of an adjacent triangular portion of a related first side wall to permit said cover to be collapsed by folding said triangular end portions of said first side walls along said diverging fold lines;

(ii) a portion projecting upwardly from said triangular section and being free from attachment to said first side wall for engagement with the underside of said top wall when said cover is in erected condition;

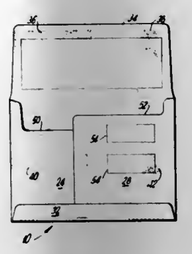
(iii) a locking tab foldably joined to a lower edge of said triangular portion and being optionally foldable on to the inner side thereof for presenting an upwardly facing abutment for engagement with a corresponding downwardly facing abutment on said tray member to provide an optional interlocking connection between said members.

4,114,799

SOLICITATION ENVELOPE CARRIER

William A. Brown, Omaha, Nebr., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 8, 1977, Ser. No. 813,836
Int. Cl.² B65D *27/08*
U.S. Cl. 229—72 **4 Claims**



1. A solicitation envelope carrier suitable for simulataneously carrying empty and filled bulky envelopes comprising:

a front panel of generally rectangular shape having top, bottom, and side edges;

a first end panel hingedly connected to one side edge of the front panel and being less than one-half the width of said front panel, said first end panel being bonded along its edge opposite to said hingedly connected edge to the face of said front panel;

a second end panel hingedly connected to the opposite side edge of the front panel and being greater than one-half the width of the front panel, said second end panel overlapping and being bonded to said first end panel;

a bottom panel hingedly connected to said bottom edge of the front panel and overlapping and being bonded to said first and second edge panels so as to define with said front panel and said first and second end panels a small pocket and a large pocket for accomodating empty and filled bulk envelopes respectively; and

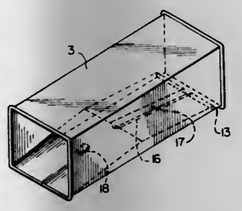
a top panel forming a flap that is hingedly connected to the top edge of the front panel.

4,114,800

NEWSPAPER SUPPORT FOR A NEWSPAPER DELIVERY TUBE

Joel W. Hodge, 208 Riverview Ct., Elizabethton, Tenn. 37643

Filed Sep. 7, 1977, Ser. No. 831,178
Int. Cl.² B65D *91/00*
U.S. Cl. 232—1 C **3 Claims**



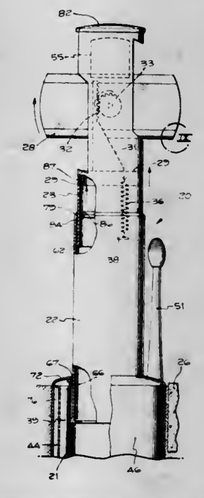
1. A newspaper support for a newspaper delivery tube of one piece, elongated, hollow body construction open at one end and closed at the other, which support comprises a surface having generally the shape of an inverted V and having a length greater than one-half the length of the tube, the upper edge of the inverted V portion of the surface being no more than about one-half the height of the tube and positioned from the open end of the tube a distance of no more than one-half the delivery tube's length, the front edge of the surface of the support being positioned from the open end of the delivery tube a distance of no more than one-quarter of the delivery tube's length, wherein a V-shaped trough is provided along the longitudinal center of at least one side of the "V" of the inverted V-shaped surface of the support.

4,114,801

RETRACTABLE MAILBOX

John J. Van Orden, 527 Santa Ana Ave., Newport Beach, Calif. 92660

Continuation of Ser. No. 632,246, Nov. 17, 1975, abandoned, which is a continuation of Ser. No. 505,595, Sep. 12, 1974, abandoned. This application Jan. 24, 1977, Ser. No. 761,709
Int. Cl.² B65D *91/00*
U.S. Cl. 232—17 **14 Claims**



1. A retractable mailbox assembly comprising:

a hollow open ended housing recessed in the ground with the open end thereof substantially flush with the surrounding surface;

a plurality of telescopic members positioned within said housing with one of said members having a mail receiving receptacle mounted at the top thereof;

displacing means responsive to a pneumatic force for raising at least the innermost of said telescopic members a linear height to thereby enable mail to be deposited or withdrawn from said receptacle; and

retracting means for effectuating the retraction of said displacing means from said linear height, comprising a compressor operatively mounted within said mailbox assembly for compressing air within said mailbox assembly.

4,114,802

CENTRIFUGAL APPARATUS WITH BIAXIAL CONNECTOR

Richard I. Brown, Northbrook, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 29, 1977, Ser. No. 828,476
Int. Cl.² B04B *9/00, 5/02*
U.S. Cl. 233—26 **11 Claims**

1. Centrifugal processing apparatus, which comprises:

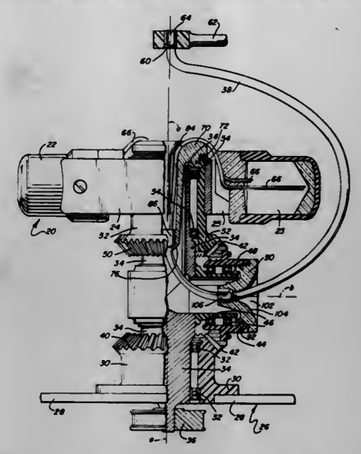
a stationary base;

a processing chamber rotatably mounted with respect to said base for rotation about a predetermined axis;

a flexible umbilical cable segment for establishing communication with said processing chamber, one end of said cable segment being fixed with respect to said base substantially along said axis at one side of the processing chamber, the other end of the cable segment being attached substantially on said axis in rotationally locked engagement to the processing chamber;

a connection member for supporting the cable segment and for minimizing stress on the cable segment;

means fastening said cable to said connection member; and



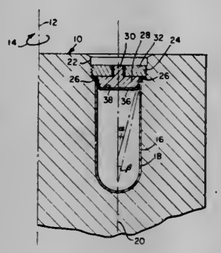
means for rotating said connection member about said predetermined axis and for rotating said connection member about another axis which is angled with respect to said predetermined axis.

4,114,803

CENTRIFUGE TUBE ENCLOSURE

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1976, Ser. No. 751,382
Int. Cl.² B04B *5/02*
U.S. Cl. 233—26 **15 Claims**



1. In a centrifuge rotor for centrifuging a sample in a resilient sample container having an open end, said rotor having a rotational axis and a radially spaced cavity with an open end and an axis through said open end generally parallel to said rotational axis for receiving said container, said open cavity end being flared, a first tapered plug, and a retainer secured to said open cavity end for wedging the walls of the open end of said container between said plug taper and said flare, the improvement of:

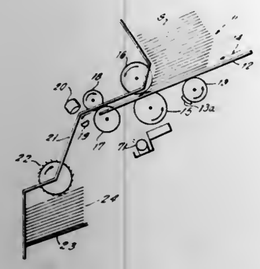
a resilient shell-like cap interposed between said plug and said container, said cap having a resiliency equal to or greater than that of either said plug or said container.

4,114,804

COUNTERFEIT DETECTION MEANS FOR PAPER COUNTING

Alan P. Jones, Levittown, Pa., and William Sherman, Willingboro, N.J., assignors to Brandt-Pra, Inc., Cornwells Heights, Pa.

Filed Aug. 4, 1976, Ser. No. 711,436
Int. Cl.[2] G06K *13/16, 7/10;* G06F *7/02;* G07F *1/02*
U.S. Cl. 235—476 **23 Claims**



1. Apparatus for handling documents such as bills and currency at high speed and for simultaneously examining the currency to determine whether the currency is genuine or is suspect comprising:

a feed tray for receiving a stack of documents to be counted and tested;

first means cooperating with the feed tray for advancing each document from the feed tray in a one-at-a-time fashion from the stack thereby advancing the documents in a forward feed direction said first means operating continuously during a normal document handling operation;

second means for receiving documents delivered from said first means to provide a gap of predetermined minimum length between adjacent edges of successive documents, said gap length being measured in the feed direction;

third means responsive to the forward edge of each bill for generating a count signal, said signal having an interval equal to the time required for the bill to pass said third means;

means for stacking the bills delivered thereto by said second means;

a light source for illuminating bills as they pass the light source;

fluorescence detection means for examining said documents as they pass through said first means and adapted to generate a suspect signal when the bill being examined fluoresces under the influence of the light source;

feed control means responsive to said suspect signal and to said count signal for abruptly halting said first means once the fluorescing bill is engaged by said second means to prevent further counting and testing of documents which may yet be in the feed tray and to assure that the suspect bill will be the last bill fed to the stacking means to thereby facilitate simple, rapid removal of the suspect bill for further examination.

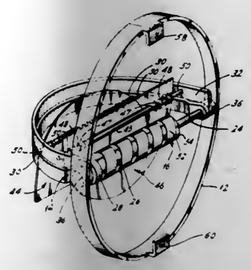
4,114,805

THERMAL DAMPER ASSEMBLY

Wesley G. Humphreys, 1070 Randolph Rd., Meadowbrook, Pa. 19046, and Edward Camillo, 20 South Michigan Ave., Atlantic City, N.J. 08401

Filed Feb. 9, 1977, Ser. No. 767,065
Int. Cl.[2] G05D *23/12*
U.S. Cl. 236—1 G **21 Claims**

1. A damper assembly for conserving fuel consumption in a furnace comprising baffle means and support means in which said baffle means is located, said support means being arranged to be connected to an outlet flue communicating with the furnace such that the baffle means is located within the flow path of combustion gases through the flue, said baffle means being pivotally mounted to said support means for movement between an open position wherein the flow path through the flue is generally unimpeded and a closed position wherein a restricted flow path through the flue is provided, control means responsive to the temperature of the gases in the flue for moving said baffle means to the open position at a relatively low temperature indicating that the furnace is not operating



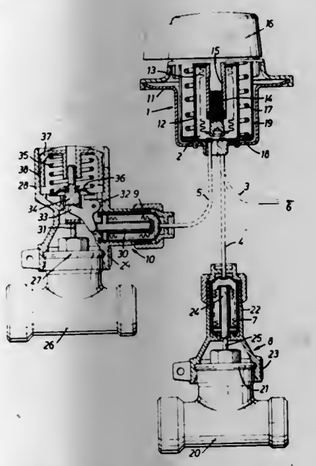
and to its closed position at a relatively high temperature indicating that the furnace is operating whereby heat is retained in the furnace because of the restricted flow path, said baffle means including a pair of yoke members mounted for movement between the open and closed positions and louvre means pivotally carried by each of said yoke means.

4,114,806

THERMOSTATICALLY ACTUATED REGULATOR FOR A 4-LEAD AIR CONDITIONING PLANT

Niels Peter Grand Graversen, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Apr. 27, 1977, Ser. No. 791,480
Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619413
Int. Cl.[2] G05D *23/12*
U.S. Cl. 236—1 C **6 Claims**



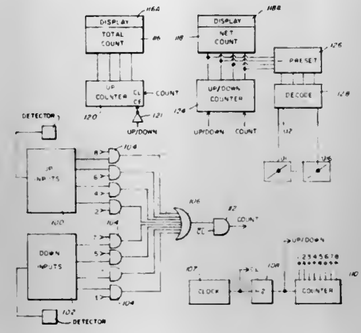
1. A thermostatic control system for cooling and heating, comprising, a cooling valve, a heating valve, a fluid pressure controlled operating element for each of said valves, common sensor means and common variable chamber setting means for said system, capillary tube means connecting said operating elements to said sensor means and said setting means, an expansion fluid in said system, and resilient means biasing at least one of said valves in a closing direction to provide an operationally dormat dead zone.

4,114,807

CONTROL SYSTEM

Melvin L. Naseck, Peabody, and Mark R. Hickman, Somerville, both of Mass., assignors to Conservation Controls Corp., Boston, Mass.

Filed Mar. 23, 1976, Ser. No. 669,647
Int. Cl.[2] F24F *11/00*
U.S. Cl. 236—1 E **15 Claims**



1. A method of controlling the operation of a plurality of controllable devices that are each thermostatically controlled and include means for initiating a demand and means for operating each device, said method comprising;

storing an indication of each device that is demanding,

operating only a predetermined number of devices less than the plurality of demanding devices,

storing an indication of each device that has demanded but is inhibited from operation,

sensing an operating device being satisfied and terminating operation of the device,

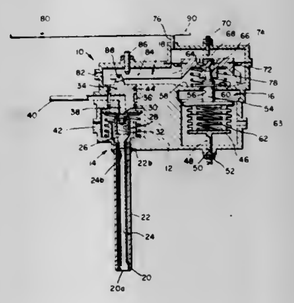
and terminating operation of the longest running device when a unit indicated as being inhibited has been in the inhibited state a preselected period of time.

4,114,808

PRESSURE BIASED PNEUMATIC THERMOSTAT

B. Franklin Saylor, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 13, 1976, Ser. No. 704,895
Int. Cl.[2] G05D *23/08*
U.S. Cl. 236—87 **2 Claims**



1. A sensor for varying a pneumatic signal in response to variations in temperature beyond a threshold value variable in response to changes in ambient pressure, said sensor comprising:

movable seat means having a passage communicating with a source of pressurized fluid;

ball means for engaging an end of said passage for maintaining pressure therein;

thermostat means responsive to variations in temperature for moving said ball means relative to said seat means;

aneroid bellows means responsive to variations in ambient pressure for moving said seat means relative to said ball means;

lever means having one end portion operably coupled to said movable seat means and another end portion mounted in a diaphragm to define a pressure-retaining chamber;

spring means engaging said other end portion for opposing the pressure in said chamber;

valve means in said other end portion engaging said aneroid bellows; and

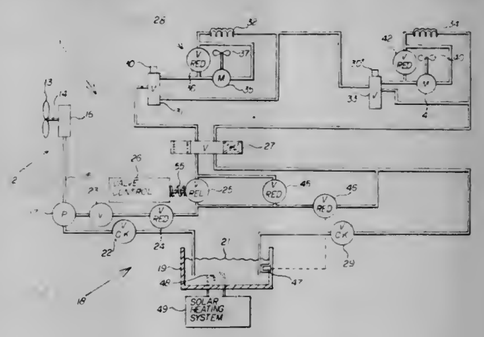
means in said aneroid bellows responsive to a change in pressure stimulus for moving said valve means to release pressure from said chamber.

4,114,809

WIND POWERED HYDRAULIC HEATING SYSTEM

Arthur R. Sampson, 4 Grandview Dr., Franklin, Mass. 02038

Filed Jun. 9, 1977, Ser. No. 804,949
Int. Cl.[2] F24J *3/02;* F24C *9/00*
U.S. Cl. 237—1 A **11 Claims**



1. Wind powered heating apparatus comprising:

a circulation system for hydraulic fluid;

a pump for pumping the fluid through said circulation system;

windmill means for driving said pump means;

an adjustable pressure responsive relief valve for restricting the flow of hydraulic fluid in said circulation system, said relief valve establishing an adjustable reduction of the hydraulic pressure in said circulation system;

sensing means responsive to the wind velocity encountered by said windmill means;

valve control means responsive to said sensing means for automatically adjusting said relief valve so as to establish the level of said fluid pressure reduction in dependence upon said wind velocity; and

heat exchange means for removing heat from the hydraulic fluid.

4,114,810

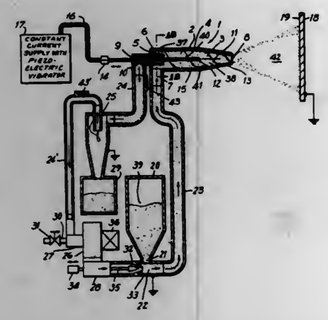
ELECTROSTATIC POWDER PAINTING APPARATUS

Senichi Masuda, No. 605, 1-40-10, Nishigahara, Kita-ku, Tokyo, Japan

Filed Oct. 1, 1976, Ser. No. 728,711
Claims priority, application Japan, Oct. 3, 1975, 50-119577
Int. Cl.[2] B05B *5/02*
U.S. Cl. 239—15 **52 Claims**

1. An electrostatic powder painting apparatus, comprising cyclone means for directing powder paint toward a surface which is to be painted, said cyclone means including a feed cyclinder having an open outlet where in a conventional cyclone separated solid particles would be collected and through which instead powder paint is adapted to be fed toward said surface and, spaced from said outlet, an inlet for receiving air

and powder paint suspended therein, said cyclone means including a whirling means operatively connected to said feed cylinder for providing for the air travelling along the interior thereof from the inlet toward the outlet a rotary whirling motion for feeding powder paint suspended in the air centrifugally along the inner surface of said feed cylinder from said inlet toward and through said outlet thereof, said cyclone means also including an exhaust cylinder of a diameter smaller than said feed cylinder communicating coaxially with the interior of said feed cylinder so that air spaced from the inner surface of said feed cylinder can flow out of the interior thereof through said exhaust cylinder, whereby the powder paint issuing from said open outlet travels therefrom toward the surface which is to be painted without the air which flows out through said exhaust cylinder, conduit means communicating with said inlet for conveying thereto air with powder paint suspended therein, air supply means communicating with said



conduit means distant from said inlet for supplying to the interior of said conduit means air to flow therethrough to said inlet and into said feed cylinder, powder paint supply means communicating with said conduit means between said air supply means and said inlet for supplying to the interior of said conduit means powder paint to be suspended in air flowing along the interior of said conduit means, so that the portion of said conduit means extending from said powder paint supply means to said inlet and said feed cylinder provides for the powder paint a path of flow extending along the interior of said conduit means from said powder paint supply means to said inlet and from said inlet through the interior of said feed cylinder through and at least slightly beyond said outlet of said feed cylinder, and charging means situated at the region of said path of flow for electrostatically charging the powder paint travelling along said path of flow with unipolar ions for driving the charged powder paint electrostatically toward the surface to be painted so as to become deposited thereon.

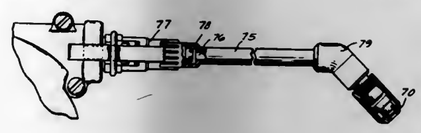
4,114,811
SPRAY DISPENSER WITH EASILY ACTUABLE MOUTHPIECE
Herbert H. Loeffler, Arlington, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Apr. 12, 1977, Ser. No. 786,945
Int. Cl.[2] A61M *15/00*; B05B *1/28*
U.S. Cl. 239—288.5 **3 Claims**

1. In combination, a dispenser for dispensing a spray of a liquid material and having a cylindrical container with a nozzle adjacent one end thereof directed generally at a right angle to the longitudinal axis of the container, and an actuator on the container for actuating the dispenser for dispensing the spray through the nozzle, and a mouthpiece of a resilient material and having a cylindrical portion having an inner cross-sectional shape the same as the external cross-sectional shape of the container and having a slit therein parallel to the longitudinal axis thereof and a loop across one end thereof extending transversely to a diametral line from the slit to the other side of said cylindrical portion, pivot means connected between the point on said cylindrical portion of said mouthpiece at the opposite end of said diametral line and the end structure of the container at the end adjacent which said nozzle is located and



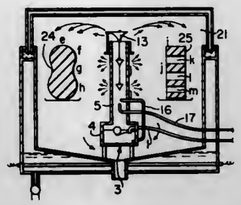
on a line parallel to the longitudinal axis of the container through said nozzle, the nozzle being located inwardly along the container from the position of said pivot means a distance substantially half the diameter of the cylindrical portion.

4,114,812
SPRAY NOZZLE
Forrest L. Austin, Brooklyn Center, and Richard T. Cornelius, Minnetonka, Minn., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Division of Ser. No. 629,757, Nov. 11, 1975, Pat. No. 4,070,725.
This application Dec. 16, 1976, Ser. No. 751,207
Int. Cl.[2] B05B *11/00*
U.S. Cl. 239—492 **3 Claims**



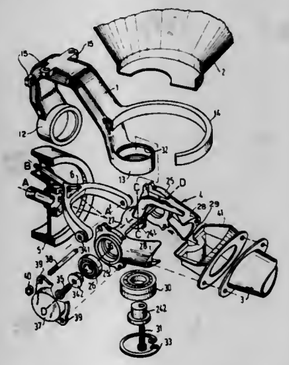
1. A nozzle assembly, comprising:
(a) a nozzle body with a bore therein, open at one end to be coupled to a source of pressurized liquid, and closed at the other end, said nozzle body having external threads, having a diametral aperture near said closed end intersecting said bore, and having peripheral sealing means at said threads, said nozzle body having a cup-like discharge chamber on the outside of said other end which is radially apertured;
(b) a nozzle cap threaded onto said nozzle body and coacting with said seal, and having an opening, and an annular seat surrounding said opening and selectably engaging said other end of said nozzle body around said discharge chamber; and
(c) a one-piece extension tube selectably disposed directly between said nozzle body and said nozzle cap, one end of said extension tube being internally threaded to be interchangeable with said nozzle cap, there being an internal clearance for preventing engagement with said other end of said nozzle body, the other end of said extension tube being a further body portion corresponding in structure to that of said nozzle body for carrying said nozzle cap.

4,114,813
THREE-DIMENSIONAL ATOMIZING SPRAY TOWER
Shigeru Suga, Yoyogi 5-20-2, Shibuya-ku, Tokyo, Japan
Filed Jun. 16, 1977, Ser. No. 807,325
Int. Cl.[2] G01N *17/00*; B05B *1/00*
U.S. Cl. 239—500 **25 Claims**



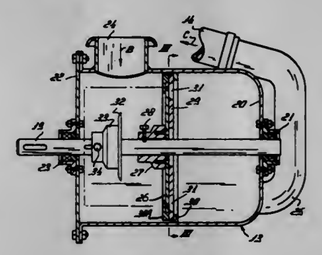
1. A spray tower for use in spraying a liquid material, said spray tower comprising:
a vertically extending cylinder having an open upper end;
means for injecting a liquid into said cylinder adjacent a lower portion thereof;
means for atomizing said liquid injected into said cylinder and for passing the thus atomized liquid upwardly through said cylinder toward said open upper end thereof;
said cylinder having ports extending therethrough in at least one position intermediate said open upper end and said atomizing means;
deflector means, mounted above said open upper end of said cylinder, for deflecting outwardly atomized liquid exiting from said open upper end; and
directing means, mounted within said cylinder adjacent said ports, for directing a portion of the atomized liquid passing upwardly through said cylinder outwardly through said ports.

4,114,814
AGRICULTURAL IMPLEMENT
Pieter Adriaan Oosterling, Nieuw-Vennep, and Antoine Marinus Rene Baecke, Hoofddorp, both of Netherlands, assignors to Multinorm, B.V., Nieuw-Vennep, Netherlands
Division of Ser. No. 582,978, Jun. 2, 1975, Pat. No. 4,083,257.
This application Feb. 10, 1977, Ser. No. 767,455
Claims priority, application Netherlands, Jun. 4, 1974, 7407517; Jun. 4, 1974, 7407518; Jun. 4, 1974, 7407516
Int. Cl.[2] A01C *3/06*
U.S. Cl. 239—689 **16 Claims**



1. An agricultural implement comprising a distributor for fertilizer and the like, comprising in combination:
a frame adapted to be attached to a powered vehicle and a hopper on said frame, said hopper having a bottom opening and said frame including support means located below and to one side of said opening;
a tool support journalled in said support means about a generally vertical axis and a spreading pipe having an inner end portion disposed in horizontally spaced relation from said axis toward said bottom opening of the hopper and extending therefrom generally horizontally away from said axis to terminate in an outer end portion from which fertilizer and the like is discharged, said inner end portion of the spreading pipe defining an upwardly facing material-receiving opening immediately below said bottom opening of said hopper; and
drive means for rapidly oscillating said tool support relative to said frame about said axis whereby to whip said outer end portion of the spreading pipe back and forth to broadcast material over the ground surface;
both said bottom opening and said material-receiving opening as well as said inner end portion of the spreading pipe being located in spaced relation to and to the same side of said axis whereby all material passing through said bottom opening and said material-receiving opening into said material-receiving portion is subjected to centrifugal force which causes such material to be discharged outwardly through said outer end of the spreading pipe.

4,114,815
APPARATUS FOR CONNINUTING SOLIDS IN LIQUIDS
Roelof Gijsbers, Rozendaal, Netherlands, assignor to C. van der Lely N.V., Maasland, Netherlands
Filed Sep. 29, 1976, Ser. No. 727,808
Claims priority, application Netherlands, Sep. 29, 1975, 7511421
Int. Cl.[2] B02C *23/38*
U.S. Cl. 241—45 **27 Claims**



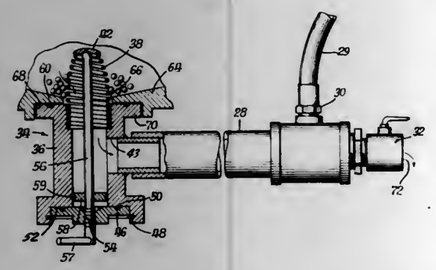
1. An implement of the kind set forth for treating the solid constituents of a manure slurry to be distributed on or into the soil which comprises a cutting mechanism, said mechanism being at least partially enclosed by a casing of substantially right circular cylindrical configuration and comprising a cutter arranged to cooperate movably with an apertured counter blade mounted in said casing, said movable cutter extending from a fastening means therefor to a location proximate the inner surface of said casing and cooperating throughout at least a greater part of its length between said fastening means and said location with the apertures provided in said counter blade, said movable cutter being arranged to rotate about an axis substantially coincident with the axis of said casing during operation of the implement, said counter blade occupying a fixed position in said casing and being disposed downstream of said movable cutter with respect to the intended direction of flow of said slurry through said casing when the implement is in operation, said movable cutter being a blade of elongate configuration and comprising two operative portions which are located at opposite sides of its axis of rotation, each of said operative portions extending to a said location proximate the inner surface of said casing whereby said locations and said axis of rotation of said movable cutter are disposed in relative positions whereby they are interconnected by a single straight line, a locking element being arranged proximate said inner

surface of said casing which functions to maintain said movable cutter at substantially a predetermined distance measured lengthwise along its axis of rotation relative to said casing, an inlet and an outlet for said slurry provided in said casing with said cutter and said counter blade arranged between said inlet and said outlet whereby all slurry passing through said casing is subjected to the operation of said cutting mechanism, distributing means for distributing said slurry producing a pressure difference between said inlet and said outlet of said casing when the implement is in operation.

4,114,816
APPARATUS FOR DISPERSING FINELY DIVIDED SOLID PARTICLES IN A LIQUID VEHICLE

George R. Schold, 7909 2nd St. North, St. Petersburg, Fla. 33702

Filed Mar. 29, 1976, Ser. No. 671,617
Int. Cl.² B02C *23/36*
U.S. Cl. 241—46.11 **13 Claims**



1. Apparatus for deagglomerating and dispersing solid particles held in agglomerated form and carried in suspension in a liquid vehicle by the action of a dispersing media on the solids comprising:

a mixing vessel in which provision is made for the particles to be subjected to the action of a dispersing media while being forced to flow through the interior of said vessel;

a fluid inlet at the lower end of said vessel;

a valve disposed in said inlet, said valve comprising,

a valve body having an inlet adapted to be connected to means for introducing a fluid mixture into said inlet under pressure;

means defining a bore in said valve body, one end of which defines an outlet from said valve body, and said valve body inlet communicating with said bore;

a compression coil spring, with coils tightly positioned adjacent each other, disposed in said valve body outlet, said coil spring being openable in response to liquid pressure acting on plate means attached to and closing the outer end of said coil spring; and

an actuating pin mounted in said valve body for longitudinal movement along its axis in said bore and

adapted to be urged against said plate means for expanding said spring to permit liquid mixture to drain from said vessel through said coil spring.

4,114,817
GRANULATOR

Fred A. Harris, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed May 16, 1977, Ser. No. 797,163
Int. Cl.² B02C *13/13*
U.S. Cl. 241—73 **3 Claims**

1. In a granulator having:

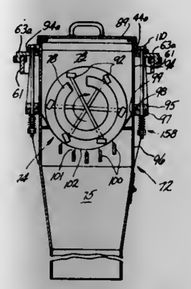
a. a housing means, having an entrance and an exit, for defining a granulation zone therewithin;

b. screen means, adapted to be attached to said housing, for dividing said granulation zone into an inlet region and an outlet region;

c. contactor means for repeatedly moving within said inlet zone and toward said screen means so as to contact a portion of any material within said inlet region and exert a force on said portion so as to tend to move said portion through said screen means and into said outlet region, and

d. retractor means, attached to said housing means, for moving said screen means away from said contactor means responsive to said force reaching a predetermined magnitude,

the improvement in said retractor means wherein:



a. said housing means includes an upper housing and a lower housing;

b. said contactor means is supported by said upper housing independently of said lower housing;

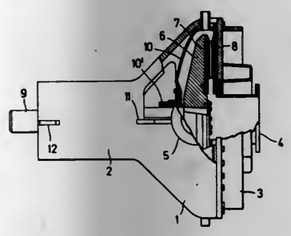
c. said screen means is supported by said lower housing; and

d. said retractor means includes spring means, lying between parts of said upper and lower housings, for yieldably biasing said lower and upper housings toward one another and allowing limited separation of said upper housing from said lower housing when said force reaches said magnitude and for automatically rejoining said upper and lower housings when said force falls below said magnitude.

4,114,818
DISK REFINER

Ilmari Paakkinen, Nojanmaa; Seppo Häkkinen, and Jouni Matula, both of Savonlinna, all of Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Apr. 14, 1977, Ser. No. 787,436
Claims priority, application Finland, Apr. 15, 1976, 761050
Int. Cl.² B02C *7/11*
U.S. Cl. 241—244 **4 Claims**



1. A disk refiner adapted to be supported on a mounting base, comprising:

a first rigid frame part, a deformable resilient housing which is adapted to withstand pressure and deform in response to pressure variations in order to distribute pressure therein, said deformable housing being attached at its periphery to said first frame part;

a rotatable shaft extending into said deformable housing;

a disk having refiner plates thereon attached to one end of the shaft within said deformable housing;

an end plate secured to said first frame part adjacent said deformable housing and having plates thereon serving as stationary counter plates for said refiner plates on said disk;

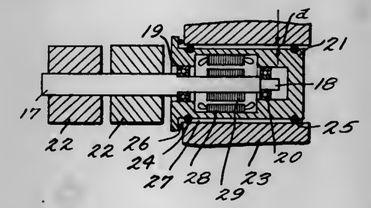
sleeve means mounted on the shaft and connected to said housing for forming a gasket between the shaft and deformable housing; and

a second rigid frame part including bearing means for supporting the shaft therein, said first and second frame parts constituting for the refiner a uniform uninterrupted frame having the shape of a hollow body of revolution and serving as a guide and support for the refiner shaft and said bearing means, said uninterrupted frame having fixation points thereon located symmetrically about the frame with respect to the shaft for supporting the refiner on its base.

4,114,819
APPARATUS FOR SUPPORTING A BOBBIN HOLDER SHAFT IN A HIGH SPEED WINDER

Hiroshi Kanki, Kakogawa; Kazuyoshi Yasuda, and Hisashi Tatsuke, both of Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1976, Ser. No. 723,052
Claims priority, application Japan, Sep. 25, 1975, 50-114918
Int. Cl.² B65H *54/44*
U.S. Cl. 242—18 R **2 Claims**



1. For a bobbin holder having a bobbin holder shaft extending axially at one end thereof, apparatus for supporting the bobbin holder with respect to a stationary frame during high speed winding to provide a wound yarn ball on a bobbin on said bobbin holder, said supporting apparatus comprising:

a bobbin holder shaft support interposed between the bobbin holder shaft and the frame, and including bearing means for journalling the bobbin holder shaft, when supported thereby, for rotation about the longitudinal axis of the bobbin holder;

the elastic bushing means for engaging between the bobbin holder support and the frame, so that as a yarn ball is being wound on a bobbin on the bobbin holder, the yarn ball, bobbin, bobbin holder and bobbin holder shaft support are elastically movable relative to the frame;

the sum of the weights of the bobbin holder shaft support, bobbin holder shaft, bearing means and motor being greater than the sum of the weights of the bobbin holder, wound yarn ball and bobbin;

means for rotating the bobbin holder, bobbin holder shaft, bobbin and yarn ball being wound, about the longitudinal axis thereof for winding a yarn ball at an operating rotational speed, and

said bobbin holder and bobbin holder shaft, including the bobbin and yarn being wound thereon, having a primary and secondary critical rotational speed which is less than said operating rotational speed;

the frame including means defining a socket therein, the bobbin holder shaft support being coaxially received in the socket, and

the elastic bushing means comprising a plurality of axially spaced elastomeric O-rings interposed coaxially between the resiliently engaging both the bobbin holder shaft support and the frame in said socket;

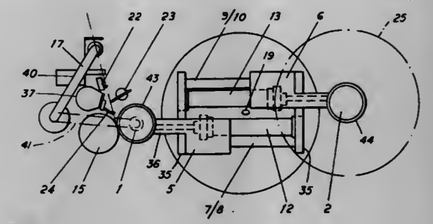
the O-rings defining axially between them, and the bobbin holder shaft support and socket defining radially between them, a reservoir;

said reservoir being filled with a viscous oil.

4,114,820
YARN WINDING APPARATUS

Andre Lafeber, Oestringen, Fed. Rep. of Germany, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 578,813, May 9, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 762,152
Claims priority, application United Kingdom, May 28, 1974, 23508/74
Int. Cl.² B65H *67/04*
U.S. Cl. 242—18 A **1 Claim**



1. A yarn winding apparatus of the type for winding yarn on cores comprising a drive roll; a rotatable head carrying on one side thereof two chuck carriers and chucks for holding cores, projecting from the rotatable head at right angles, the axis of the rotatable head being offset from the axis of the drive roll such that the carriers and chucks are wholly disposed on one side of the drive roll and the rotatable head being carried on a shaft which extends only from the side of the head opposite the carriers and chucks, the chuck carriers being carried on guide rails mounted on said head, the guide rail for one chuck carrier being laterally spaced to one side of the head axis, and in a plane perpendicular to the head axis, while the guide rail for the other chuck carrier is laterally spaced to the other side of the head axis, also in a place perpendicular to the head axis, the guide rails being long enough to allow the chuck carriers to pass over and under the rotatable head axis and to pass each other, to allow the maximum package diameter to be greater than the distance between the axis of the rotatable head and the nearest surface of the drive roll; means for moving and controlling the position of the chuck carriers on the guide rails; and yarn handling means for transferring and cutting the yarn when required.

4,114,821
METHOD AND APPARATUS FOR WINDING RAPIDLY RUNNING THREAD

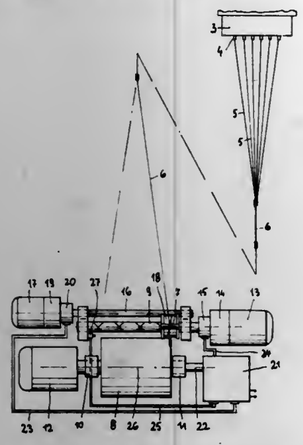
Georg Thoma, Leitershofen, and Hans Müller, Memmingen, both of Fed. Rep. of Germany, assignors to Maschienefabrik Memmingen KG. Ing. Theodor Otto, Bavaria, Fed. Rep. of Germany

Filed Aug. 4, 1976, Ser. No. 711,568
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1975, 2536021
Int. Cl.² B65H *54/28*
U.S. Cl. 242—43 R **6 Claims**

1. In method of winding fast running thread on a winding bobbin, by means of a thread guide to which a plurality of different components of movement in the axial direction of the winding bobbin are applied, the improvement comprises the steps of: applying to the thread guide short, rapid oscillating movements of a length less than the length of the bobbin; moving the thread guide stepwise slowly from one end of the bobbin to the other; and after this stepwise traverse of the

length of the bobbin subjecting the thread guide to a rapid passing movement over the length of the bobbin.

5. Apparatus for the winding of fast running thread on a winding bobbin comprising: a bobbin with an axis; a slotted drum rotatably mounted adjacent to and movable in the axial direction of said bobbin; a thread guide engaged in the slot in



said slotted drum; means for driving said slotted drum and forcing said thread guide to follow a reciprocating axial movement having a length of movement less than said bobbin; a shifting device engaged with said slotted drum for stepwise moving said drum in an axial direction; and means for operating said shifting device at variable speeds.

4,114,822

THREAD DELIVERY DEVICE FOR TEXTILE MACHINES

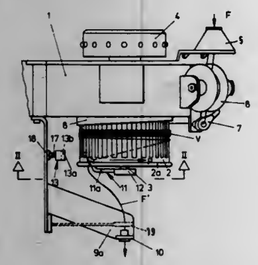
Kurt Arne Gunnar Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Aug. 18, 1977, Ser. No. 825,765

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637120

Int. Cl.² B65H *51/20*

U.S. Cl. 242—47.01 **10 Claims**



1. In a thread delivery device for textile machines, including a thread drum which can be driven for rotation about its longitudinal axis and on which a thread which is supplied from a storage bobbin can be wound tangentially for forming an intermediate thread storage and from which the thread can be withdrawn endwise over a withdrawal edge of the drum, a thread control element arranged in the area of the withdrawal edge for engaging the withdrawn thread, and a stationarily arranged withdrawal guide for engaging the withdrawn thread after it passes over the thread control element, comprising the improvement wherein the thread control element is constructed as an eyelet which is closed at least opposite the direction of rotation of the offrunning thread relative to the drum and is arranged approximately at the height of the withdrawal edge of the durm, the eyelet being mounted on an arm, bearing means coacting between the arm and the drum for rotatably supporting the arm on the drum for relative rotation therebetween about said longitudinal axis, said arm being stopped relative to the drum due to friction in said bearing means such that the arm is rotated along with the drum only when the actual tension in the withdrawn thread falls below a desired thread tension, the actual tension in the withdrawn thread when equal to said desired thread tension overcoming the friction in said bearing means so that said drum rotates relative to said arm, and a stop for limiting the rotative movement of the thread control element opposite the direction of rotation of the drum.

4,114,823

YARN DELIVERY APPARATUS FOR USE WITH TEXTILE MACHINES

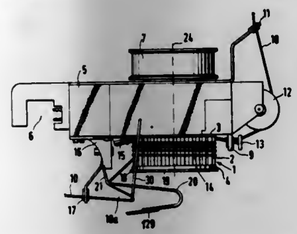
Josef Fecker, Bisingen-Steinhofen, and Gustav Memminger, Freudenstadt, both of Fed. Rep. of Germany, assignors to Gustav Memminger, Freudenstadt, Fed. Rep. of Germany

Filed Aug. 26, 1977, Ser. No. 827,966

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1976, 2642183

Int. Cl.² B65H *51/20*

U.S. Cl. 242—47.01 **21 Claims**



1. Yarn delivery apparatus for use in textile machines comprising

a storage drum (1) having a lower edge (18), on which at least one loop of yarn is wound to form a storage winding supply (14);

supply guiding means (9, 11, 12, 13) to guide yarn (10) to be supplied to a drum (1);

removal guiding means (17) to guide yarn being removed from the storage windings on the drum (1) and located laterally with respect to the axis of rotation (24) of the drum,

and including,

an intermediate yarn guide element (20, 120) located between the lower edge (18) of the drum (1) and said yarn removal guide means (17), said intermediate guide element (20, 120) being formed with at least one yarn guide edge (25) located adjacent the path of the yarn from the storage winding to the removal guide means (17) and laterally with respect to the axis of rotation (24) of the drum and with an elongated narrow guide slot (23) extending from adjacent said guide edge toward the axis of rotation (24) of the drum;

and a movable yarn sensing element (30) located in a position between said yarn guide edge (25) and the yarn removal guide means (17), said yarn sensing element being biased for movement toward the axis of rotation (24) of the drum absent tension of yarn passing thereover from the storage windings of the drum toward the yarn removal guide means (17).

4,114,824

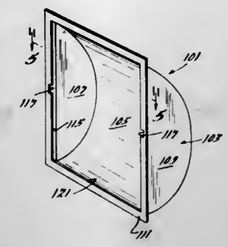
PAPER HOLDER

Joseph H. Danielak, 2762 Poland St., Hamtramck, Mich. 48212

Filed Sep. 13, 1976, Ser. No. 722,994

Int. Cl.² A47K *10/22*

U.S. Cl. 242—55.53 **1 Claim**



1. A holder for an annular roll of toilet paper having a core and comprising a body having a back portion and a front portion, one of said portions being adapted to engage a vertical surface on which the holder is to be mounted, said front portion including parallel vertically extending tracks at opposite sides thereof, a spindle with a body to extend through said core and having pins of much smaller diameter than the spindle projecting outwardly at opposite ends to ride in said tracks, said spindle body being of less length than the space between the tracks, said tracks having means providing openings therein to receive spindle pins, said holder having a bottom portion engageable with the outside of a roll and extending to substantially within a spindle radius of the bottom ends of said tracks to serve as means to prevent the spindle from falling by gravity out of said tracks when all paper has been removed from the roll, said front portion comprising a rectangular frame adapted to engage a vertical surface and defining a substantially rectangular opening, said vertical tracks being a part of said frame, said back portion and bottom portion being combined into a substantially semi-cylindrical rearwardly extending portion extending from the top to the bottom of the front portion, said holder including sidewalls between said combined back and bottom portion and said front portion, said sidewalls having vertical channels formed therein adjacent their front edges and providing said tracks, the front of the tracks and the vertical sides of the frame each having an opening at substantially its vertical midpoint to permit insertion of said spindle pins into said channel tracks, said holder being symmetrical with respect to a line through said spindle receiving openings.

4,114,825

FISHING REEL WITH A LINE SPREADING DEVICE

Åke Eugen Murvall, Svängsta, Sweden, assignor to ABU Aktiebolag, Svängsta, Sweden

Filed Jul. 1, 1976, Ser. No. 701,964

Claims priority, application Sweden, Jul. 3, 1975, 7507630

Int. Cl.² A01K *89/01*

U.S. Cl. 242—84.21 R **7 Claims**

1. A fishing reel comprising

a line spool which is axially reciprocably supported,

a winding mechanism located for winding a line on said spool,

a line spreading device for spreading the line on said spool by reciprocation of said spool when the line is wound thereon,

transmission means to rotate said winding mechanism and reciprocate said line spool,

a hand crank supported on a shaft, said transmission means connected to said shaft,

said transmission means including

a face gear means having a main gear wheel mounted on said crank supporting shaft,

said line spreading device including

a reciprocably mounted shaft supporting said spool,

a drive means cooperating with said transmission means for reciprocating said reciprocably mounted shaft and said spool to spread the line on said spool during winding,

an independently rotatable cam member supported for free rotation on an axis which is parallel with the longitudinal axis of said crank supporting shaft and the axis of said main gear wheel and connected to be rotated by said transmission means,

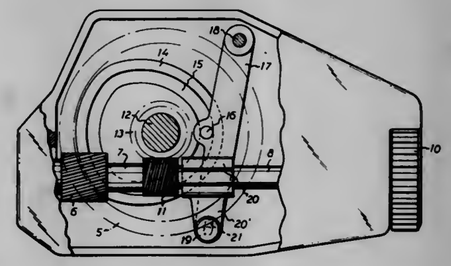
a cam profile on said cam member,

a drive mechanism connected to be driven by said cam profile and to reciprocate said reciprocably mounted shaft,

said drive mechanism including

a cam follower,

a pivotally mounted arm connected to said cam follower for pivoting by said cam follower, and



a dog mounted on said reciprocably mounted shaft and pivotally connected to said arm, the pivot axis between said arm and said dog being spaced from the pivot axis of said pivotally mounted arm,

said cam follower supported by said arm at a point between said axes

said rotatable cam member including a cam disc having said cam profile in the form of a groove on said cam disc,

said cam follower being a pin supported by said arm and engaging said groove on said cam disc,

said face gear means further including

a worm screw having the form of a worm wheel carried on said reciprocably mounted shaft and driven by said main gear wheel,

and a screw gear including both

a screw,

and a gear wheel mounted coaxially with said main gear wheel, which is driven by said screw and adapted to drive said cam member.

4,114,826

CABLE DRUM WITH ROTATABLE POSITIONING

Helmut Diebolder, Hauptstrasse 5, 7919 Osterberg, Fed. Rep. of Germany

Filed Mar. 4, 1977, Ser. No. 774,417

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1976, 2609572

Int. Cl.² B65H *17/46*

U.S. Cl. 242—85 **6 Claims**

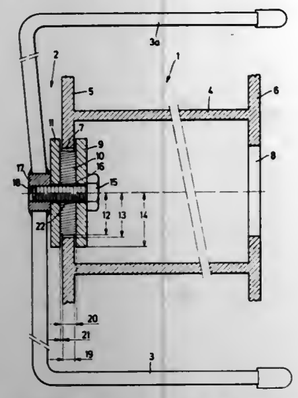
1. A cable drum comprising:

a frame member unilaterally supporting a bearing bolt having a distal head member;

a reel member having a central hub with an interior bearing flange defining a central recess encompassing and spaced from said bearing bolt; and

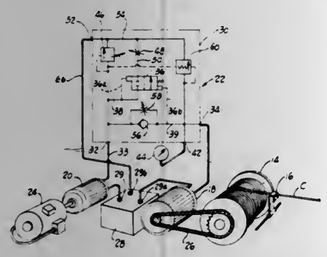
a bearing member within said recess encompassing said bearing bolt and retained by said head member;

said bearing member defining an outer circumferential groove that extends in annular spaced bearing relationship



with said internal bearing flange as the rotational support for said reel member.

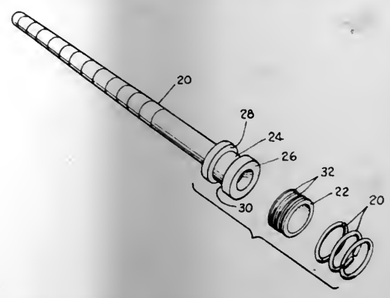
4,114,827
CABLE REEL VALVE AND SYSTEM
Albin Maier, Edinboro, Pa., assignor to Snap-Tite, Inc., Union City, Pa.
Filed Jun. 13, 1977, Ser. No. 805,835
Int. Cl.² B65H *75/42*
U.S. Cl. 242—86.51 **12 Claims**



1. A regulator valve for use with a cable reel mechanism to control the operation of a fluid powered motor unit that drives the cable reel, said valve including a housing, having a port adapted for coupling to a source of pressurized fluid, such as a constant output hydraulic pump, and a motor port adapted for coupling to the motor unit for the reel, and a reservoir port adapted for coupling to a fluid reservoir, and a pressure operated bypass valve in said housing communicating with said pump, reservoir and motor ports, and being operable to automatically sense the pressure differential across said pump and motor ports, so as to supply full pump pressure to the motor port when the reel is reeling in the cable and for bypassing the pump pressure from the pump port to reservoir when the reel is reeling out the cable and when the reel motor is stalled.

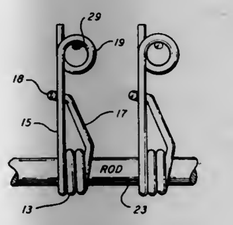
4,114,828
BOBBIN
Bernhard Hank Schneider, Greenville, S.C., assignor to Steel Heddle Manufacturing Company, Greenville, S.C.
Filed May 23, 1977, Ser. No. 799,372
Int. Cl.² B65H *75/10*
U.S. Cl. 242—118.3 **5 Claims**

1. A bobbin for use in a shuttle having a shuttle spring provided with grooves therein for receiving the rings of a bobbin for securing the bobbin therein, said bobbin comprising:
an elongated shank portion,
an enlarged diameter cylindrical butt end integral with one end of said shank portion,
a reduced diameter intermediate cylindrical portion provided on said butt end of said bobbin,
a resilient sleeve carried on said reduced diameter portion of said butt end, and
a plurality of longitudinally spaced metal rings carried on



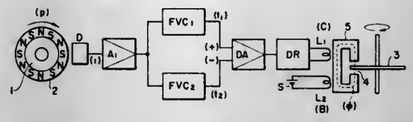
said resilient sleeve, said rings being separated and independent from each other, and
means for retaining said rings on said sleeve so when said rings of said bobbin are inserted in said grooves of said shuttle spring movement between said rings and grooves of said shuttle spring are minimized by said resilient sleeve absorbing shocks and minor deflections of said shank portion.

4,114,829
GUIDE FOR FILAMENTARY MATERIAL
William L. Boehler, Summerville, S.C., assignor to The Partnership of W. L. Boehler and A. G. Whaley Co., Inc., Andrews, S.C.
Filed Jun. 21, 1977, Ser. No. 808,528
Int. Cl.² B65H *57/08, 57/26*
U.S. Cl. 242—157 R **9 Claims**



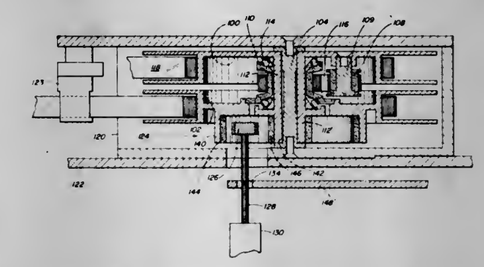
1. A guide for guiding a filamentary material comprising
(a) a piece of spring steel wire having a coiled portion forming a spring of essentially circular cross-section with first and second lengths of wire extending therefrom, generally parallel to each other, said first length being longer than said second length;
(b) means for holding said two lengths together; and
(c) means on the end of said first length for guiding filamentary material, whereby said coiled portion may be slid over a rod of diameter slightly smaller than the diameter of said coiled portion and said two lengths brought and held together thereby clamping said guide onto said rod.

4,114,830
ROTATION CONTROL SYSTEM
Juro Hoshi, Hamamatsu, and Makoto Watanabe, Tokyo, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed May 31, 1977, Ser. No. 801,995
Claims priority, application Japan, Jun. 2, 1976, 51/63551
Int. Cl.² B65H *59/38;* G03B *1/02*
U.S. Cl. 242—191 **9 Claims**



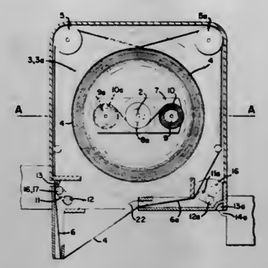
1. A rotation control system for a rotating member, comprising: detection means for generating a pulse signal having a frequency corresponding to the rotation speed of said rotating member;
a plurality of frequency-voltage converters responsive to said pulse signal, for generating a signal representing the rate of change of said rotation speed; and
braking means, responsive to said signal representing the rate of change of said rotation speed, for controllably effecting braking of said rotating member.

4,114,831
CONCENTRIC REEL DRIVE FOR A TAPE CASSETTE
Robert B. Johnson, Scottsville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 3, 1976, Ser. No. 720,288
Int. Cl.² G11B *15/32, 23/10*
U.S. Cl. 242—194 **4 Claims**



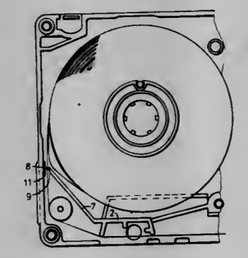
2. In a coaxial reel tape cassette provided for use with a tape player of the type having a drive member for cooperating with rotatable elements in the cassette, the cassette including first and second reels coaxially mounted for rotation therein, the improvement wherein the rotational elements comprise:
a first annular flange member associated with the first reel for rotating the first reel at a first velocity;
a second annular flange member associated with the second reel for rotating the second reel at a second velocity, said second annular flange member disposed concentrically with respect to said first annular flange member; and
said first and second concentric annular flange members together forming means defining an annular recess therebetween, said means defining said annular recess further adapted to receive the drive member freely therein for selective cooperation with said first and second annular flange members whereby said first and second reels are rotated at said first and second velocities, respectively, when corresponding said first and second flange members are selectively engaged by the drive member.

4,114,832
CARTRIDGE FOR TAPE-, RIBBON-, OR FILAMENT-LIKE INFORMATION STORAGE MEDIA
Wolfgang G. Tauscher, Wilh.-Meister-Str.3, D-638 Bad Homburg, Fed. Rep. of Germany
Filed Dec. 15, 1976, Ser. No. 750,823
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1975, 2556872
Int. Cl.² G03B *1/04;* G11B *15/32*
U.S. Cl. 242—194 **9 Claims**



1. A cartridge for at least one tape or filament type information carrier, for use with an apparatus for recordal or transmission, which comprises a housing, openings in the housing for access to the information carrier, flaps covering said openings, a shaft fastened to the housing, two reels rotating around said shaft, one reel being the supply reel and the other reel being a take-up reel, the information carrier being guided between said reels, at least two spring constant torque mechanisms respectively comprising a Negator spring coiled in a supply roll and a working roll counter to its inherent pre-curvature and extending between a supply roll and a working roll, the direction of twisting of each spring band being directed counter to that of the other spring band, each one of the working rolls belonging to each of said spring mechanisms being coaxially mounted onto each reel, and arranged in the hollow hub in each reel, said reels having oppositely directed torques which generate a spring differential compensating drive to hold the information carrier in tension and the supply rolls are mounted on a common support which is loosely rotatable with the working rolls and the reels about said shaft.

4,114,833
MAGNETIC TAPE CASSETTE
August Liepold, Munich, Germany, assignor to AGFA-Gevaert AG, Leverkusen, Germany
Filed Apr. 19, 1977, Ser. No. 788,772
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1976, 2618069
Int. Cl.² G03B *1/04;* G11B *15/32*
U.S. Cl. 242—199 **6 Claims**



1. A magnetic tape cassette for recording and reproduction instruments, having two winding cores placed side by side, a magnetic tape adapted to be wound on and off the cores idler rollers to guide the tape between the cores, and an obliquely

extending rib between the core and an adjacent idler roller, the height of which rib is equal to the internal height of the cassette and the rib ends in close vicinity of the internal side wall of the cassette to leave a narrow gap for the passage of the magnetic tape travel, and the rib being tapered at the said free end in the form of a wedge.

4,114,834

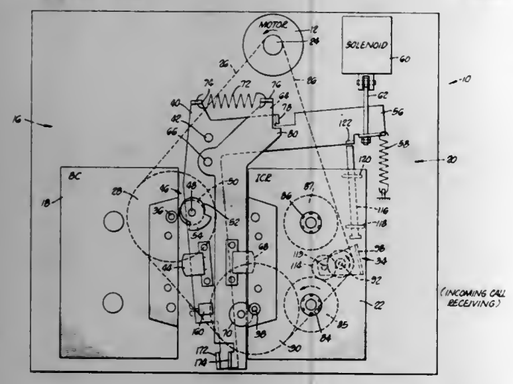
TAPE DRIVE SYSTEM AND ONE-WAY CLUTCH MECHANISM

Robert Haake, Torrance, Calif., assignor to Phone-mate, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 618,128, Sep. 30, 1975, abandoned. This application Jan. 29, 1976, Ser. No. 653,505

Int. Cl.² G03B *1/04*; G11B *15/32*

U.S. Cl. 242—200 **7 Claims**



1. A tape drive system for a recording mechanism, comprising:

a reversible motor;

a first drive capstan connected to the reversible motor for driving a first recording tape in a first direction when said reversible motor is operating in a first direction;

a second drive capstan connected to the reversible motor for driving a second recording tape in a first direction when said reversible motor is operating in a first direction;

a first pinch roller adapted to engage said first drive capstan when said reversible motor is rotating in a first direction to cooperate with said first drive capstan to drive a first recording tape in a first direction;

a second pinch roller adapted to engage said second drive capstan to cooperate with said second drive capstan to drive a second recording tape in a first direction;

disengaging means for disengaging said first pinch roller from said first drive capstan when said second pinch roller is in engagement with said second drive capstan and for disengaging said second pinch roller from said second drive capstan when said first pinch roller is in engagement with said first drive capstan; and

means for rotating said first drive capstan in a second direction when said reversible motor is rotating in a second direction;

said disengaging means including an eccentric disc member associated with said first pinch roller for moving said first pinch roller out of engagement with said first drive capstan when said reversible motor is driving said first drive capstan in a second direction; and a spring member connecting said eccentric disc member to said first pinch roller; said spring member providing relatively slight frictional engagement between said first pinch roller and said eccentric disc member.

4,114,835

CARRIER FOR THE PNEUMATIC CONVEYING OF LOADS OVER A PIPELINE

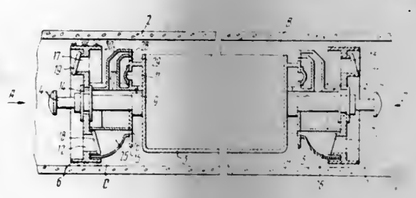
Adolf Moritsovich Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8; Vladimir Efimovich Aglitsky, Zatsepsky val, 6/13, kv. 61; Vladimir Nikolaevich Gvozdev, Ryazansky prospekt, 68, korpus 1, kv. 267; Dmitry Evgenievich Geints, Flotskaya ulitsa, 16, kv. 116, all of Moscow; Dmitry Rudolfovich Gun, Komsomolskaya ulitsa, 7, kv. 29, Ljubertsy Moskovskoi oblasti; Viktor Alexeevich Dokin, ulitsa Obrucheva, 57, kv. 58, Moscow; Evgeny Mikhailovich Dubner, Volgogradsky prospekt, 120, korpus 2, kv. 39, Moscow; Ilya Solomonovich Kantor, Teply Stan, mikroraion 8a, korpus 10ab, kv. 98, Moscow; Evgeny Alexandrovich Lachinov, Tashkentskaya ulitsa, 14, korpus 1, kv. 27, Moscow; Jury Arnoldovich Topolyansky, Matveevskaya ulitsa, 10, korpus 4, kv. 233, Moscow; Jury Abramovich Tsimbler, Sojuzny prospekt, 10, kv. 261, Moscow, and Alexei Vadimovich Chernikin, Leninsky prospekt, 67, kv. 132, Moscow, all of U.S.S.R.

Filed Jun. 24, 1977, Ser. No. 809,654

Claims priority, application U.S.S.R., Jun. 24, 1976, 2376874

Int. Cl.² B65G *51/04*

U.S. Cl. 243—32 **4 Claims**



1. A carrier for the pneumatic conveying of loads over a pipeline comprising a body having end faces and sides; a forward trunnion and a rearward trunnion attached to respective end faces of said body; longitudinal seals fitted at the sides of said body and displaceable relative to said body in the vertical direction; a forward transverse seal adapted to extend over the entire cross section of the pipeline and attached to said forward trunnion and displaceable relative to said forward trunnion in the vertical direction; a rearward transverse seal adapted to extend over the entire cross section of the pipeline and attached to the rearward trunnion and displaceable relative to said rearward trunnion in the vertical direction; a first space defined below said body by the pipeline, said longitudinal seals and said forward and said rearward transverse seals when said carrier is positioned in the pipeline; a second space defined above said body by the pipeline, said longitudinal seals and said forward and said rearward transverse seals when said carrier is positioned in the pipeline; at least one first opening provided in said rearward transverse seal for placing said first space below said body in communication with a space in the pipeline behind a travelling carrier; at least one first opening provided in said forward transverse seal for placing said second space in communication with a space in the pipeline before the travelling carrier; a gate attached to said body at its end which faces said rearward transverse seal for closing said opening in said rearward transverse seal either partially or in full as a result of differential pressure existing at said longitudinal seals so as to control a lifting force which acts on said body of the carrier; at least one through opening formed in one of the longitudinal seals placing the space below the body in communication with the space above the body; and a gate attached to the body for closing said through opening either partially or in full depending on the differential pressure existing at the longitudinal seals.

4,114,836

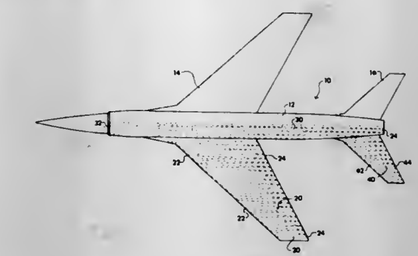
AIRPLANE CONFIGURATION DESIGNED FOR THE SIMULTANEOUS REDUCTION OF DRAG AND SONIC BOOM

Blair M. Graham, Rte. 1, Union Hall, Va. 24176, and Harry C. Hamrick, Arlington, both of Va., assignors to Blair M. Graham, Goldsboro, N.C.

Filed Mar. 9, 1977, Ser. No. 775,729

Int. Cl.² B64C *21/02, 1/40*

U.S. Cl. 244—1 N **6 Claims**



6. A method for reducing parasite drag and substantially eliminating sonic boom in an aircraft having an airfoil having a leading edge, a trailing edge, and flying at speeds approaching and exceeding the speed of sound comprising the steps of:

(a) providing a plurality of linear air flow paths through said airfoil extending along longitudinal axes substantially parallel to the flight path of said airfoil and extending from said leading edge to said trailing edge, said air flow paths diverging on either side of said longitudinal axes from said leading edge to said trailing edge;

(b) providing openings in the leading edge of said airfoil through which said air flow enters said airfoil of such size and number as to reduce the effective surface area of said leading edge by at least 10%;

(c) providing openings in said trailing edge through which said air flow is discharged from said air flow paths;

(d) alternately opening said leading edge openings as the speed of sound is approached and closing said leading edge openings as the airfoil slows to speeds below the speed of sound;

(e) whereby said air flow paths spoil the partial vacuum which forms behind said trailing edge at sonic and supersonic speeds.

4,114,837

AIR TRANSPORT AND LIFTING VEHICLE

Vladimir H. Pavlecka, Newport Beach, Calif., and David G. McIntyre, Mount Vernon, Wash., assignors to Skagit Corporation, Sedro Woolley, Wash.

Filed Mar. 24, 1977, Ser. No. 780,933

Int. Cl.² B64B *1/34*

U.S. Cl. 244—26 **14 Claims**

1. A lifting air vehicle comprising in combination:

rotor means,

power means connected to drive said rotor means,

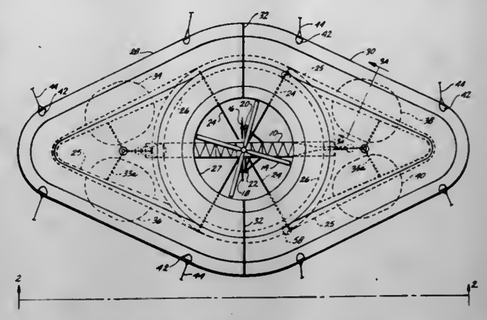
a keel structure including a circular truss coaxial with said rotor means and additional truss members forming triangular sections forward and aft of said circular truss,

a frame and radial truss arms fastening said frame to said keel structure, said frame carrying and supporting a pilot's cabin, auxiliary power means, said power means for driving said rotor means and propeller means for providing torque compensation to said rotor means and for yaw control,

port and starboard forward driving propellers attached to said frame driven by said auxiliary power means,

landing gear means carried on said radial truss arms and an inflatable pad attached to said frame for supporting said vehicle when on the ground,

and an inflatable envelope structure including first and second generally triangular members secured to said keel structure at the front and back of said vehicle, said members being fastened together at the center of the vehicle to define a large center opening above said rotor means.



4,114,838

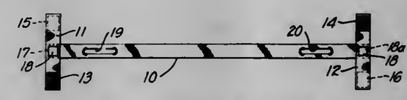
CARRIER FOR SKIS AND SKI POLES

James E. Knauf, 4425 E. 4th St., Long Beach, Calif. 90814

Filed Nov. 22, 1976, Ser. No. 743,927

Int. Cl.² A45C *71/00*

U.S. Cl. 224—45 S **4 Claims**



1. A carrier for skis comprising an elongated main strap, an end strap extending transversely to said main strap adjacent to each end thereof, the midportions of said end straps being secured to the opposite ends of said main strap, a Velcro patch carried by the inside of one end of each of said end straps, a complementarily formed Velcro patch carried by the outside of the opposite end of each of said end straps, said Velcro patches adapted to engage each other to secure said end straps around said skis, each of said end straps being adapted to extend around one end of a pair of skis, said end straps adapted to be tightened by sliding movement from the end of said skis toward the midportion of said skis, said end straps in use being disposed adjacent to and on opposite sides of the bindings of said skis, and a pair of elongated slots formed in said main strap adjacent to the opposite ends thereof, said slots being adapted to hold the opposite ends of a pair of ski poles when said carrier is in use, said end and said main strap being foldable and then folding into a substantially thin compact package not substantially larger in either transverse direction than the width of said main straps and adapted to be held in such folded position by engagement between the Velcro patches of the other of said end straps.

4,114,839

AERIAL PHOTOGRAPHY CAMERA MOUNT ASSEMBLY

Clarence E. Sibley, HQ 26 TRW, Box 1331, APO New York, N.Y. 09860, and Francisco C. Sablan, 13 Woodland Dr., Mary Esther, Fla. 32569

Filed Aug. 19, 1977, Ser. No. 826,085

Int. Cl.² B64D *47/08*

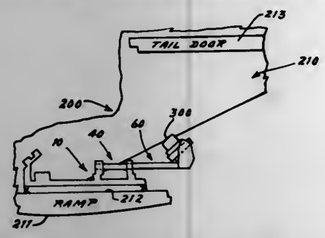
U.S. Cl. 244—118 R **10 Claims**

1. An aerial photography camera mount assembly, adapted for use with an aircraft having a tail, a downwardly and outwardly opening tail ramp, an internal surface on said tail ramp, a plurality of cargo tiedown rings affixed to said internal surface, and an upwardly and inwardly opening tail door comple-

mentary to said tail ramp, wherein said tail ramp and said tail door can be opened and closed during aerial flight of said aircraft, comprising:

a. a lower member subassembly removably attached to said internal surface of said tail ramp;

b. a plurality of upper member subassemblies detachably connected to, and slidably movable horizontally above, said lower member subassembly, with at least one of said upper member subassemblies structured, configurated, and dimensioned to accept, support, and releasably hold an aerial photography camera in a vertical position, and with at least one other of said upper member subassemblies structured, configurated, and dimensioned to accept,



support, and releasably hold another aerial photography camera in an oblique position;

c. means, connected to said plurality of upper member subassemblies, for locking said subassemblies in an extended, and in a retracted, preselected position;

d. and, means, releasably connected to said lower member subassembly and to said plurality of upper member subassemblies, for preventing the inadvertant over-extension, and the inadvertant over-retraction, of said plurality of upper member subassemblies when said plurality of upper member subassemblies are not locked, respectively, in a preselected extended position, and in a preselected retracted position.

4,114,840

PARACHUTE CANOPY DEPLOYMENT CONTROL APPARATUS

Herbert R. Brown, Monroe County, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 21, 1977, Ser. No. 844,163
Int. Cl.² B64D *17/36*
U.S. Cl. 244—152 **3 Claims**



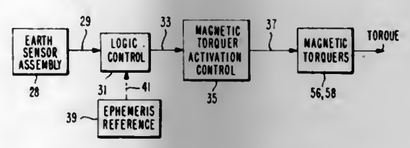
1. In combination with a parachute system having a parachute canopy with a skirt band around the bottom thereof and a plurality of radial seams with a parachute suspension line secured to each of said radial seams, comprising: a first reinforcement ribbon secured to said canopy a predetermined distance from the bottom edge of the canopy; a second reinforcement ribbon secured to the canopy a distance from the first ribbon substantially equal to the distance between the first ribbon and the edge of the canopy; an anti-inversion netting secured to the outer surface of said parachute canopy along the first reinforcement ribbon; a reefing line; means for securing the reefing line to said second reinforcement ribbon internally of said canopy adjacent each radial seam; means for securing the lower edge of said canopy to said reefing line; means for securing said anti-inversion netting to said reefing line and to the parachute suspension lines at alternate radial seams and means for connecting the anti-inversion netting to the parachute suspension lines at the radial seams between said alternate radial seams.

4,114,841

MAGNETIC TORQUING SYSTEM FOR CHANGING THE SPIN RATE OF AN ORBITING SATELLITE

Ludwig Muhlfelder, Livingston, and Robert Benson Hogan, Cinnaminson, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,504
Int. Cl.² B64G *1/00*
U.S. Cl. 244—166 **18 Claims**



1. A magnetic torquing system in a closed-loop system in a spacecraft orbiting a celestial body for automatically changing the spacecraft angular momentum about the spin axis to thereby control the spin rate of the spacecraft, said celestial body having an ambient magnetic field, comprising:

a. magnetic torquing means oriented in said spacecraft to produce when energized a magnetic dipole substantially transverse to the spin axis of said spacecraft;

b. celestial body sensor means mounted on said spacecraft for sensing the celestial body including means for orienting said spin axis substantially colinear with the line of sight axis of said sensor means for symmetrical scanning of said celestial body, said sensor means generating in response to the detection of the celestial body an output signal;

c. logic means coupled to said sensor means for generating in response to said sensor output signal a logic output signal, said logic output signal representing a selected desired magnetic dipole configuration; and

d. energizing means coupled to said logic means for generating in response to said logic output signal a signal for energizing said magnetic torquing means such that the magnetic dipole generated therefrom reacts with the magnetic field of the celestial body to produce a magnetic torque along the spin axis of said spacecraft to change the spacecraft angular momentum and thereby the spin rate of said spacecraft.

10. A method for magnetically torquing in a closed-loop system a spacecraft orbiting a celestial body to automatically change the spacecraft angular momentum about the spin axis to thereby control the spin rate of the spacecraft, said celestial body having an ambient magnetic field, comprising the steps of:

a. sensing said celestial body by sensor means oriented on said spacecraft such that said spin axis is substantially colinear with the line of sight axis of said sensor means, said sensor means generating in response to the detection of the celestial body an output signal;

b. generating in response to said sensor output signal a logic output signal by logic means coupled to said sensor means, said logic output signal representing a selected desired magnetic dipole configuration;

c. generating in response to said logic output signal a signal for energizing magnetic torquing means by energizing means coupled to said logic means; and

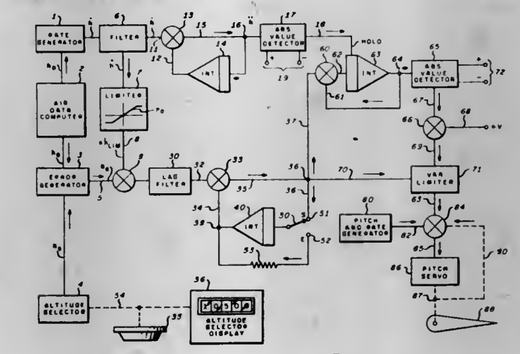
d. magnetically torquing said spacecraft by energizing said torquing means to produce a magnetic dipole to react with the magnetic field of said celestial body to generate a torque along the spin axis of the spacecraft to change the spacecraft angular momentum and thereby the spin rate of said spacecraft.

4,114,842

ACCELERATION LIMITED PRESELECT ALTITUDE CAPTURE AND CONTROL

Henry E. Hofferber, and Robert H. Parker, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 782,153
Int. Cl.² G05D *1/08*
U.S. Cl. 244—180 **15 Claims**



4. In a craft flight control system, apparatus for controlling craft flight from a first altitude to a second altitude and the capture of said second altitude comprising:

sensor means for sensing said first altitude,

selector means for selecting said second altitude,

combining means responsive to said sensor means and to said selector means for generating a difference signal,

variable limiter means responsive to said difference signal, and

servo means for controlling said craft with respect to the pitch axis thereof in response to motion of said craft about said pitch axis and in addition in response to said variable limiter means,

said variable limiter means having limits adjustable in magnitude in response to said difference signal.

4,114,843

CONTROL STICK ASSEMBLY

Frank D. Robinson, Rancho Palos Verdes, Calif., assignor to Robinson Helicopter Co., Torrance, Calif.

Filed Oct. 4, 1976, Ser. No. 729,161
Int. Cl.² B64C *13/12*
U.S. Cl. 244—84 **10 Claims**

1. In a dual control aircraft movable in a lateral and longitudinal direction and having airfoil surfaces to effect lateral and longitudinal orientation of the aircraft, and wherein the aircraft is provided with side-by-side pilot and copilot seats arranged on each side of the center axis of the aircraft, the improvement comprising

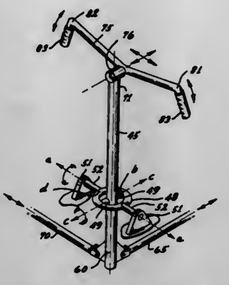
a single non-rotatable control stick for lateral and longitudinal orientation of the aircraft,

said stick being located generally on the center axis of the aircraft,

means forming a joint for mounting said stick for pivotal movement in a lateral and longitudinal direction,

crossbar means hingedly mounted on said stick vertically above said joint whereby said crossbar is tiltable freely in a vertical plane without effecting aircraft orientation,

means connected to said stick to effect movement of said airfoil surfaces for lateral and longitudinal orientation of the aircraft in response to lateral and longitudinal movement of said control stick, and



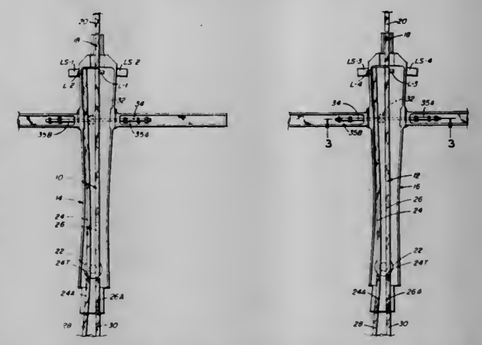
spaced grip means mounted on said crossbar and, in a centered position of said control stick, being located forward of and generally centered in front of each of said seats whereby either the pilot or copilot may control lateral and longitudinal orientation of the aircraft through movement of said single control stick.

4,114,844

TONGUE SWITCH FOR RAIL INSTALLATIONS

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Jan. 18, 1978, Ser. No. 870,357
Int. Cl.² B61L *5/10*
U.S. Cl. 246—162 **3 Claims**



1. In a track installation where pivotal tongue switches are interposed between the main track and the tangent track to govern traffic: a system to indicate the position of the tongues and comprising two limit switches positionable on opposite sides of each tongue and having actuators separated by the included angle of tongue movement between the home position of each tongue, each limit switch at one tongue being paired to a limit switch at the other tongue corresponding to a home position; the limit switches thus paired each having two pairs of normally closed contacts arranged in parallel to one another which open only when the tongues are in home position, the two pairs of parallel contacts of one limit switch being joined in series to the two pairs of parallel contacts of the other limit switch and the respective pairs being series-connected to a time delay relay which thereby starts to time out as the tongues are in transit, and said time delay relay having normally open contacts series-connected to an indicator which is energized by closure of the time delay relay contacts if the tongues are too long in transit.

4,114,845

SUPPORT APPARATUS BEING ADJUSTABLE AS TO HEIGHT AND INSULATING VIBRATIONS FOR MACHINES AND THE LIKE

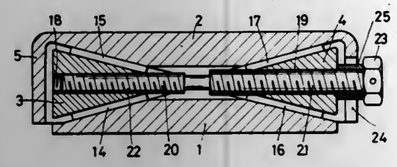
Gottfried Weisenberger, Mainz, Germany, assignor to Effbe-Werk Fritz Brumme & Co. K.G., Raunheim, Germany

Filed Apr. 27, 1977, Ser. No. 791,490

Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620162

Int. Cl.² F16M *13/00*

U.S. Cl. 248—24 **8 Claims**



1. An adjustable height support unit, comprising, a casted base member having unmachined surfaces meeting to form an apex and extending downwardly therefrom in a longitudinal direction, a casted support member having unmachined surfaces meeting to form an apex and extending upwardly therefrom in a longitudinal direction, a pair of casted wedge members between said members and having surfaces in respective juxtaposition and parallel relation to said base member and support member unmachined surfaces, resilient elements respectively between juxtapositioned pairs of said surfaces, one side of which is attached to one surface of each of said pairs and the other side of which is slidably resting on the other surface of each of said pairs, and motive means for forcibly moving said wedge members in opposite direction in unison to raise and lower said support member relative to said base member.

4,114,846

CABLE CLAMP

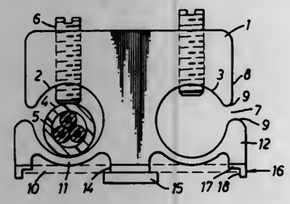
Poul Petersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 483,093, Jun. 26, 1974, abandoned. This application Oct. 14, 1975, Ser. No. 622,074

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1973, 2335209

Int. Cl.² F16L *3/22*

U.S. Cl. 248—68 CB **1 Claim**



1. A clamp assembly comprising a body member having two slotted openings formed in part by two flexible wall portions, a foot element between said wall portions connected thereto with a reduced neck formed by grooves, downwardly extending projections respectively on the other sides of said wall portions, a base plate having an apertured slot for receiving said neck, said base plate having two edges on opposite sides thereof, two recesses formed respectively therein in said edges which are spaced from said apertured slot for receiving said projections, said projections and said edges being cooperable during assembly to resiliently stress and displace said flexible wall portions prior to said projections reaching and being received in said recesses after which said flexible wall portions resiliently bias said projections in locking engagement with said recesses to prevent dislodgment of said body member by any external force applied to any part thereof.

4,114,847

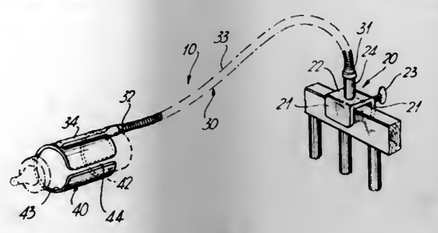
FEEDING BOTTLE HOLDER

Joseph Bogensberger, Box 208, Sundridge, Ontario, Canada (POA 1Zo)

Continuation of Ser. No. 651,314, Jan. 22, 1976, abandoned. This application Apr. 13, 1977, Ser. No. 787,127

Int. Cl.² A47D *15/00*

U.S. Cl. 248—104 **5 Claims**



1. A feeding bottle holder comprising

(a) a base clamp,

(b) a fixed length, self-sustaining, position sustaining, flexible arm rigidly secured at its distal end thereof to said clamp; and

(c) a bottle gripper for grippingly engaging a bottle, said bottle gripper comprising an open cylindrical member having a longitudinal slit therein, said cylindrical member being of substantially the same length as the bottle to be gripped, whereby the cylinder may open to receive and grippingly engage a bottle and provide a protective enclosure for said bottle, said bottle gripper being rigidly secured to the proximal end of said arm, by means including an integral longitudinal securement spline extending along substantially the entire longitudinal length of said open cylindrical member adjacent said longitudinal slit, said spline terminating in an integral longitudinally extending cylindrical coupling overhanging the adjacent rim of the open cylindrical member and rigidly secured to said flexible arm, with the longitudinal axes of said spline, said cylindrical coupling and the coupled end of said flexible arm being coextensive, said longitudinal securement spline and said flexible arm combining to provide positive retention action which minimizes the movement of the bottle caused by motion of the liquid contained therein.

4,114,848

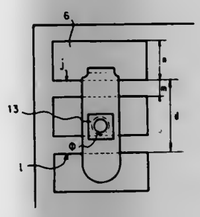
MOUNTING PLATE

Pierre Jean Bernard, Versailles, France, assignor to La Telemecanique Electrique, France

Continuation of Ser. No. 538,387, Jan. 3, 1975. This application Nov. 5, 1976, Ser. No. 740,621

Int. Cl.² A47B *91/00*

U.S. Cl. 248—346 **5 Claims**



1. A mounting plate for use in conjunction with

(a) devices to be attached to said mounting plate, said devices including openings to receive fastening screws, the centre-to-centre distances of said openings being whole multiples of a predetermined modulus *e*

(b) fastening screws for attaching said devices to said mounting plate, said screws having a predetermined diameter ϕ; said mounting plate including a plurality of rectangular holes each of the same dimensions and defining cross-members between neighbouring holes, the spacing (p) of neighbouring rectangular holes being the smallest value which satisfies all of the conditions that:

(i) (p) is the product of modulus *e* and an odd number not less than 3;

(ii) (p) is greater than the sum of modulus *e* and one-and-a-half times the diameter ϕ of the screws; and

(iii) (p) is such that the width of each cross member is not less than half the diameter ϕ of the screws.

4,114,849

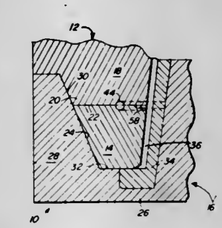
PIVOT MOLD ASSEMBLY

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Filed Mar. 28, 1977, Ser. No. 781,631

Int. Cl.² B29C *1/14*

U.S. Cl. 249—58 **7 Claims**



1. A mold assembly for forming a retaining portion on a freely rotatable pail handle extending through a passage formed in one wall of the retaining portion to a position intermediate said one wall and an annular wall of the pail, formed by a pair of ring members with said annular wall spaced from said one wall and integrally interconnected with said one wall by a pair of spaced side walls and a top wall at a plurality of positions spaced circumferentially of said handle, the improvement comprising:

a pair of slide members extended between said one wall and said annular wall and into engaging relationship in response to axial movement in one direction of one of said ring members to define a mold cavity for forming said retaining portion on said rotatable handle;

and means operatively associated with said slide members, for disengaging said slide members and for guiding said slide members axially of said annular wall to disengage said slide members from between said one wall and annular wall in response to axial movement of said one ring member in the opposite direction.

4,114,850

MODULATING PLUG VALVE

Leo Alamprese, Wood Dale, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 12, 1976, Ser. No. 704,198

Int. Cl.² F16K *1/48, 1/54*

U.S. Cl. 251—86 **13 Claims**

1. A valve comprising:

a housing having inlet and outlet openings;

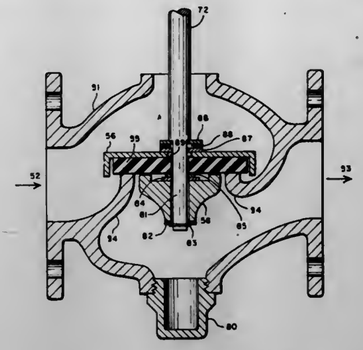
a valve seat within said housing for permitting a flow of fluid from said inlet opening to said outlet opening;

a valve stem extending through said housing;

disc means mounted on, and for angular movement with respect to, said valve stem for seating against said valve seat to cut off said flow when said stem moves said disc means against said valve seat;

plug means; and,

mounting means for mounting said plug means on said valve stem for permitting lateral and angular motion of said plug means with respect to said valve stem and said disc means;



said plug means for modulating said flow when said disc means is moved away from said valve seat by said valve stem.

4,114,851

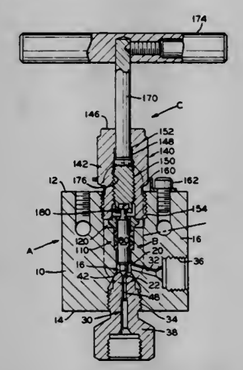
HIGH PRESSURE VALVE

Robert A. Shivak, Parma, and David J. Johnston, Sagamore Hills, both of Ohio, assignors to Sno-Trik Company, Solon, Ohio

Filed May 10, 1976, Ser. No. 684,629

Int. Cl.² F16K *25/00*

U.S. Cl. 251—88 **15 Claims**

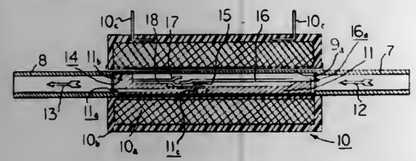


11. A valve of the type having a body with a valve chamber which receives a valve needle selectively reciprocal therein between engaging and non-engaging relationships with a valve seat for controlling fluid flow between inlet and outlet passages; compressible sealing means disposed in an enlarged passage adjacent one end and coaxial with said valve chamber for sealing said valve needle; an alignment bushing received over said valve needle for compressing said sealing means into the desired sealing condition with said valve needle; and, a packing nut threadedly received in said valve body generally coaxial with said valve chamber with the lowermost end thereof acting upon said alignment bushing, the improvement comprising:

said alignment bushing having opposed first and second end faces, said alignment bushing being dimensioned for free reception of said first end face in said enlarged passage to apply a compressive force against said sealing means generally axially of said enlarged passage, said second end face including a circumferential groove closely receiving

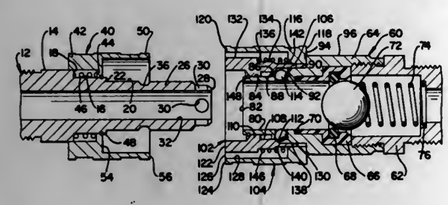
at least a portion of the lowermost end of said packing nut, said groove and nut having cooperating driving surface engaged generally axially of said valve needle to compress said sealing means and having cooperating alignment surfaces engageable generally radially of the longitudinal axis of said valve needle to axially align said bushing with said packing nut and automatically align said bushing in said enlarged passage to automatically align said valve needle in said valve chamber.

4,114,852
MINIATURE REED-TYPE VALVE
Yves J. Fournier, 49 Thornberry Rd., Winchester, Mass. 01890
Filed May 20, 1977, Ser. No. 798,797
Int. Cl.² F16K *31/06*
U.S. Cl. 251—138 **14 Claims**



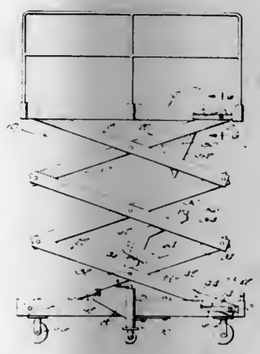
1. A fluid valve arrangement comprising a hollow member of nonmagnetic material having upstream and downstream portions which are to be valved in relation to one another, a body including nonmagnetic material fitted within said hollow member and sealed with the interior thereof about its outer periphery at a position therealong, said body having a valve seat and a passageway extending therethrough from one side of said position to said valve seat on the opposite side of said position, a valve member, flexible means supporting said valve member on said body for movements between two limits at which said valve member is in seated closing engagement with said valve seat and is out of said engagement and opens said seat, respectively, mechanical stop means fixed with said body and flexible means and disposed for mechanical engagement which limits said movements when said valve member opens said seat, said flexible means normally resiliently urging said valve member to and holding said valve member at one of said limits, said flexible means having material operatively associated therewith which interacts magnetically with magnetic field flux impressed from outside said hollow member to force said valve member to the other of said limits, and means outside said hollow member for impressing said magnetic field flux and thereby actuating said valve arrangement.

4,114,853
QUICK CONNECT COUPLING
Richard J. Medvick, Bedford, Ohio, assignor to Swagelok Company, Hudson, Ohio
Filed Oct. 8, 1976, Ser. No. 730,941
Int. Cl.² F16L *29/00, 37/28*
U.S. Cl. 251—149.6 **19 Claims**



1. A quick connect coupling member having inner and outer sleeves including outer terminal ends located adjacent one another, said sleeves being radially spaced from one another at said outer terminal ends and over at least a portion of their length inwardly from said outer terminal ends to define an axially extending recess opening outwardly between said outer terminal ends, locking detents carried by said coupling member for movement relative thereto between coupling and releasing positions, said inner sleeve cooperating with said locking detents and being axially movable relative to said coupling member and to said outer sleeve between locking and unlocking positions for respectively locking said detents in said coupling position and providing movement of said detents to said releasing position, and yieldable biasing means for normally biasing said inner sleeve to one of said positions.

4,114,854
SCISSORS LIFT WORK PLATFORM
Albert L. Clark, West Bend, Wis., assignor to Pac-Craft Products, Inc., West Bend, Wis.
Filed Jun. 10, 1977, Ser. No. 805,262
Int. Cl.² B60P *1/02*
U.S. Cl. 254—122 **3 Claims**

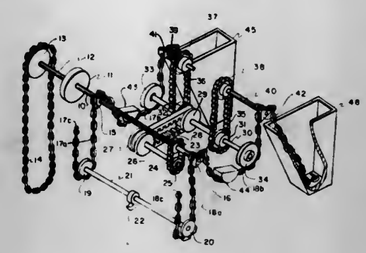


1. In a scissors lift supported on a base and having a work platform and a scissors linkage having two spaced sets of links connecting said base and said platform for elevating said platform above said base to a working position, each of said sets of links having first and second lower links pivotally connected together, with said first links being pivotally connected to said frame by a fixed pivot and said second links being provided with a roller at the end of said second links, and tracks on said base for confining and providing guided movement of said roller during raising and lowering of said linkage, the improvement comprising an arm, means for pivotally connecting said arm to one of said links, said arm having a free end, a cam surface on another of said links, an abutment on one of said links, and power cylinder means having one end pivotally connected to said arm intermediate its length and said cylinder having another end directly pivotally connected to said second links between said connection of said second links and said roller on said second links to swing said arm about its pivotal connection through a first arc portion in which said free end is engaged with and bears against said cam surface to cause unfolding of said linkage to a partially extended position and to cause further movement of said arm through a second arc portion when said arm bears against said abutment to raise said linkage from the partially extended position to the fully extended position.

4,114,855
COLLECTOR FOR HOIST CHAIN
James R. Adamson, Jr., Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 28, 1977, Ser. No. 810,821
Int. Cl.² B66D *1/76*
U.S. Cl. 254—175.5 **3 Claims**

1. In a chain hoist including a shaft connected to drive a chain sprocket; a chain reeved around said sprocket, and having a load end and a tail end, whereby said load end of said chain may be hauled in and paid out by said sprocket, the improvement comprising:

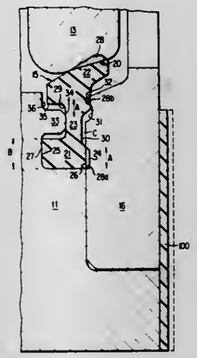
a chain collector for said tail end of said chain, said collector including: a drive pulley affixed to said shaft; a driven shaft having at least a chain storage sprocket around which said tail end of said chain is reeved and a driven pulley affixed to said driven shaft; drive means between said pulleys; and a chain storage bin adjacent said chain storage sprocket whereby said tail end of said chain is



deposited in said bin by said chain storage sprocket as said load end of said chain is hauled in, and whereby said tail end of said chain is fed from said bin as said load end of said chain is paid out, wherein said drive means includes:

an intermediate shaft having two intermediate pulleys affixed thereto and a first torque conveyer between one of said intermediate pulleys and said drive pulley; an idler shaft having at least two idler pulleys affixed thereto; a second torque conveyer between the other one of said intermediate pulleys and a first one of said idler pulleys; and a third torque conveyer between said driven pulley and the other of said idler pulleys.

4,114,856
VALVE SEAT INSERT
Jerry D. MacAfee, Northboro, and Ronald J. Collette, Spencer, both of Mass., assignors to Jamesbury Corp., Worcester, Mass.
Filed Mar. 7, 1977, Ser. No. 775,311
Int. Cl.² F16K *1/22*
U.S. Cl. 251—306 **3 Claims**



1. A butterfly valve comprising:

a valve housing with a fluid flow channel passing therethrough;

a disc mounted in said valve housing for rotation about an axis substantially perpendicular to the flow axis of said fluid flow channel, and having a sealing surface on its edge;

annular seat means in said valve housing disposed to cooperate with said sealing surface to interrupt flow through said valve when said closure member is rotated into the closed position;

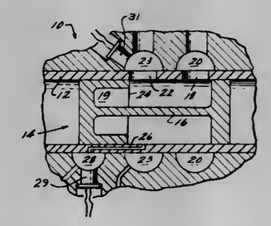
an insert disposed adjacent to said annular seat means;

said insert having locking ridge means positioned on the radially inward edge of said insert, a zone of interference with said seat positioned radially outward of said locking ridge means, and means providing a clearance between said insert and said seat positioned between said locking ridge means and said zone of interference;

said seat and said insert having an interference fit when said valve is assembled which is limited to the outer periphery of said seat ring at said zone of interference, and to the site of said locking ridge means but with said clearance accommodating seat material displaced by said interference fit,

whereby undesirable radially inward movement of said seat of a magnitude that would undesirably increase the operating torque of the valve is prevented.

4,114,857
SPOOL TYPE METERING VALVE
Pasquale Columbo Bondi, Revere, Mass., assignor to General Electric Company, Lynn, Mass.
Filed Oct. 28, 1976, Ser. No. 736,481
Int. Cl.² F16K *3/26*
U.S. Cl. 251—324 **2 Claims**



1. In combination with a metering valve of the type comprising a hollow cylindrical casing disposed within a valve housing, said casing including an axially extending bore and axially spaced apart fluid inlet and outlet ports disposed in said casing in fluid communication with each other through said bore, a spool disposed in said base and having circumferentially relieved areas cooperating with said bore to define therewith an axially restricted flow path between said inlet and outlet ports, said spool including a land area adapted to overlap at least a portion of said outlet port so as to restrict the flow of fluid through said outlet port, the improvement comprising:

a tube extending through said casing, one end of said tube in fluid communication with said axially restricted flow path at a point immediately upstream of said outlet port and the other end thereof said tube disposed at a point external to the casing;

a first cavity surrounding said other end of said tube and formed integrally with said housing, said cavity providing a first annulus from which the internal pressure at said point immediately upstream of said outlet port may be measured;

a second cavity surrounding said outlet port at a point immediately downstream of said outlet port to provide a second annulus from which the pressure at said point immediately downstream of said outlet port may be measured;

a first pressure transducer operatively connected to said first annulus for measuring the pressure at said upstream point; and

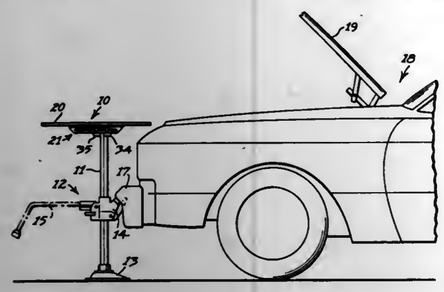
a second pressure transducer operatively connected to said second annulus for measuring the pressure at said downstream point.

4,114,858

TABLE TOP ASSEMBLY FOR VEHICLE BUMPER JACK

Thomas J. Greeson, 245 Graeme Dr., Nashville, Tenn. 37214

Filed Nov. 25, 1977, Ser. No. 854,713
Int. Cl.[2] B66F *11/00*
U.S. Cl. 254—1 8 Claims



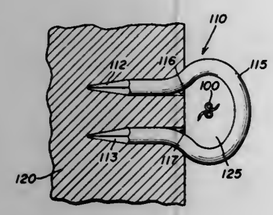
1. A table top assembly for a vehicle bumper jack having an elongated column of predetermined cross-section and a bumper hook longitudinally movable on said column, comprising:
(a) a table support member,
(b) a table top,
(c) means securing said table top to said table support member,
(d) a pair of jaws having opposing gripping surfaces contoured to fit the opposing surfaces of the column of said bumper jack,
(e) means securing said jaws to said support member for adjustable movement of at least one of said jaws toward and away from the other of said jaws in a longitudinal path relative to said table support member, for gripping the column of a vehicle bumper jack to support said table top on top of said column.

4,114,859

FENCE STAPLE

Stanley E. Stenson, R.R. 1, Box 30, Covington, Mich. 49919

Filed Feb. 3, 1977, Ser. No. 765,248
Int. Cl.[2] B21F *27/00*
U.S. Cl. 256—48 1 Claim



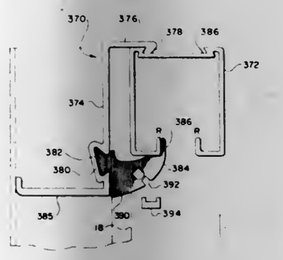
1. A fastener mounted on each of a plurality of wooden posts to hold barbed wire, a pair of straight substantially parallel spaced-apart shanks each sharpened at one end thereof and driven into said wooden post in a plane parallel to the post and straddling said wire, each of said shanks being integral at the other end thereof with a curved shoulder portion extending laterally outwardly in a direction away from the other one of said shanks, each shoulder portion including a first portion having a large radius of curvature centered outside the associated leg and a second portion having a small radius of curvature centered inside the associated leg, and an arcuate bight portion integral with and interconnecting said second portions of said curved shoulder portions and having a large radius of curvature centered between said legs for defining with the post an enlarged substantially elliptical opening having its minimum dimension in said plane greater than the lateral distance between said shanks and proportioned for accommodating free movement of two strand, four barbed wire therethrough, while said curved shoulder portions limit the distance that said shanks can be driven into the associated post for maintaining the uniformity of said enlarged opening whereby mounting of said fastener on the associated post provides support for said barbed wire passing therethrough yet permits free movement of the barbs as the wire is moved between a taut and a slack condition.

4,114,860

FENCE SYSTEM

Rudolph E. Parisien, 891 Rainbow St., Ottawa, Canada

Continuation of Ser. No. 523,129, Nov. 12, 1974, which is a continuation-in-part of Ser. No. 382,116, Jul. 24, 1973, abandoned. This application Nov. 19, 1976, Ser. No. 743,474
Claims priority, application Canada, Jun. 14, 1973, 174105; Nov. 19, 1973, 186172; Feb. 21, 1974, 193180
Int. Cl.[2] E04H *17/14*
U.S. Cl. 256—65 7 Claims



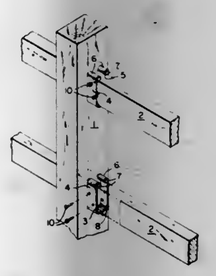
1. In a fence including line posts and top rails in the form of channel members, a top rail bracket for use on an upper end of said line post for securing said top rail to the side of the post, said bracket having a side wall adapted to be received in an open upper end of said line post, a top wall one edge of which terminates in a downwardly extending flange adapted to engage said top rail and a projection on said side wall adapted to extend through an opening in said channel type post to support said top rail and terminating in an upwardly extending projection extending into a channel in the underside of said top rail.

4,114,861

FENCE RAIL CONNECTOR

Clyde A. Long, 7106 Pony Tail La., Hyattsville, Md. 20782

Filed Sep. 16, 1977, Ser. No. 833,951
Int. Cl.[2] E04H *17/14*
U.S. Cl. 256—67 3 Claims



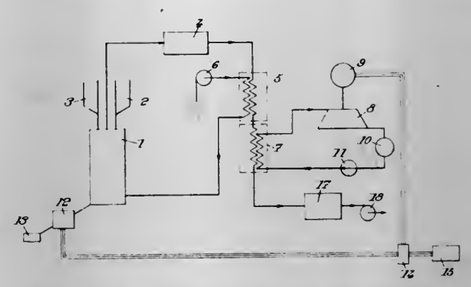
1. In a post and rail fence, rail supporting brackets consisting of a single strip of metal bent at right angles to form a horizontal base with two parallel walls extending upwardly an equal distance, the upper horizontal edges being curved inwardly to retain a nail driven horizontally into the post, the center of the base being curved downwardly in a semicylinder extending horizontally parallel to the upper curved edges and of a sufficient depth so that a nail driven along it would be below the horizontal plane of the base, whereby said bracket is attached to the post solely through its sides and bottom.

4,114,862

PROCESSES AND INSTALLATIONS FOR MELTING PIG-IRON IN A CUPOLA FURNACE

René Denjean, Pavillon-sous-Bois, France, assignor to Air Industrie, France

Filed May 23, 1977, Ser. No. 799,284
Claims priority, application France, May 26, 1976, 76 16075
Int. Cl.[2] F27B *1/22*
U.S. Cl. 266—44 5 Claims



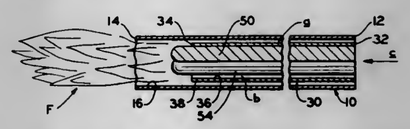
1. In a process for melting pig-iron for subsequent casting in an installation comprising a cupola furnace the improvement comprising:
subjecting the waste gases from said cupola furnace to combustion to form flue gases;
recovering at least a portion of the heat from said flue gases in a thermodynamic circuit;
utilizing said thermodynamic circuit to generate electricity by means of at least one rotary machine coupled to at least one electric generator;
adjusting the proportion of coke in the charge to the cupola furnace to regulate the superheating temperature of the pig-iron leaving the cupola furnace at a valve between the melting temperature of the pig-iron and the temperature compatible with said casting; and
supplying a portion of said electricity to a superheating furnace between said cupola furnace and the casting operation to complete heating said pig-iron leaving the cupola furnace to the temperature compatible with the casting operation.

4,114,863

THERMAL TORCH AND METHOD

Patsie Carmen Campana, 2614 Sherwood Dr., Lorain, Ohio 44053

Filed Mar. 11, 1977, Ser. No. 776,582
Int. Cl.[2] B23K *27/00*
U.S. Cl. 266—48 10 Claims



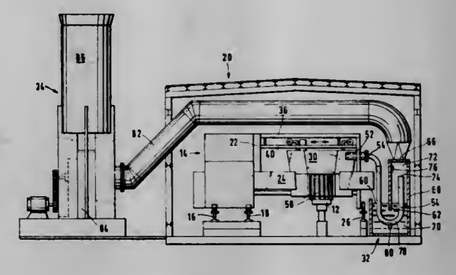
5. In a thermal torch of the type employed for boring, cutting, burning and the like of hard base materials wherein said torch includes a first smooth outer walled elongated hollow casing having inlet and discharge ends and at least one burning rod member extending therethrough generally coextensive therewith between said inlet and discharge ends with at least one first gas flow passage provided between said at least one rod and first casing longitudinally over the coextensive lengths thereof and wherein a gas flow is selectively introduced under pressure into said first gas flow passage at least adjacent said first casing inlet end for promoting a thermic action for said lance in said at least one rod and first casing at said first casing discharge end, the improvement comprising:
a second smooth inner walled elongated hollow casing having inlet and discharge ends received over said first casing in a surrounding relationship therewith, said second casing including means for fixedly mounting it relative to said first casing such that the inlet and discharge ends of said casings are generally coextensive with each other, said second casing further having an inner cross-sectional dimension greater than the outer cross-sectional dimension of said first casing such that a second gas flow passage is defined therebetween generally longitudinally over the cooperative lengths thereof and which second gas flow passage at least substantially surrounds said first casing in a continuous manner, said second gas flow passage being operably connected to said gas flow for generating a gas curtain flowing axially outward of said lance at said first and second casing discharge ends to substantially surround the first casing discharge end in a continuous manner for confining and intensifying the thermic action of said lance at said one rod and first casing discharge end.

4,114,864

DEVICE FOR REMOVAL OF SMOKE GASES, DUST AND THE LIKE

Albert Jäger, Rommelhausen; Alfred Lucht, Bickenbach, and Gerhard Münch, Frankfurt am Main, all of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Oct. 20, 1976, Ser. No. 733,993
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1975, 2548078
Int. Cl.[2] B23K *7/06*
U.S. Cl. 266—51 11 Claims



1. In a movable scarfing device for scarfing workpieces such as slabs, blocks and the like, having a scarfing machine with a scarfing torch movable in a longitudinal scarfing direction for movement over the workpiece being scarfed and with a suction hood being mounted in front of the torch with respect to the scarfing direction and movably therewith for removing smoke gases, dust and the like during the scarfing operation, the improvement being a frame movable mounted across said scarfing direction perpendicular thereto, said suction hood being mounted to said frame for movement perpendicular to said scarfing direction, an elongate trough mounted in said scarfing direction for being besides and parallel to the workpiece, said trough being divided into an inlet opening and a closed chamber communicating therewith, a sealing liquid in said trough, a U-shaped duct extending from said suction hood through said inlet opening and said U-shaped duct being opened into said closed chamber, a second duct connected at one end to the interior of said closed chamber, said second duct having its opposite end as a free end, said free end having a

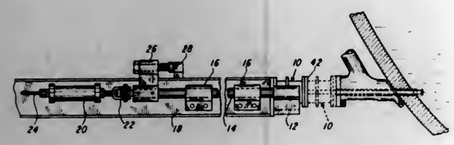
filter apparatus therein and being vented to the atmosphere, and at least one chain curtain which reaches to the workpiece being scarfed being mounted inside said suction hood.

4,114,865

SILENCER FOR USE ON TUYERE PUNCHERS

George C. McKerrow, Toronto; Albert Pelletier, and Peter L. Fowler, both of Noranda, all of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Jul. 7, 1977, Ser. No. 813,528
Claims priority, application Canada, Mar. 10, 1977, 273691
Int. Cl.[2] F27B *7/36*
U.S. Cl. 266—136 8 Claims



1. A silencer for use with a tuyere puncher comprising:
(a) a chamber having a front face and a rear face provided with a central opening for passing of a punch bar operated by said puncher;
(b) a plurality of closure members adjacent the rear face of the chamber and mounted for movement toward and away from the longitudinal axis of the chamber and including means for forcing the closure member against the periphery of the punch bar so as to form a seal between the closure members and the punch bar;
(c) a seal secured to the front face of the chamber for engaging the tuyere to seal the tuyere before penetration of the punch bar through the tuyere;
(d) a mobile table slidably mounted on the puncher for supporting said chamber; and
(e) operating means mounted on the puncher for pushing the mobile table in a straight forward direction to press the chamber against the tuyere before penetration of the punch bar into the tuyere and for withdrawing the chamber after the punch bar is retracted from the tuyere.

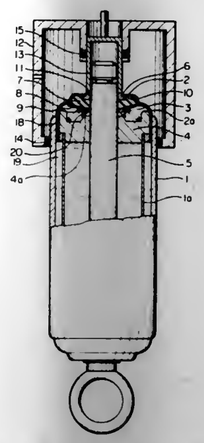
4,114,866

GAS FILLING ARRANGEMENT FOR A TELESCOPIC SUSPENSION UNIT

Tetuo Kato, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Jun. 10, 1977, Ser. No. 805,575
Claims priority, application Japan, Jun. 19, 1976, 51-72511
Int. Cl.[2] F16F *9/43*
U.S. Cl. 267—64 R 5 Claims

1. A telescopic suspension unit comprising a cylindrical container for containing a fluid under pressure, a rod projecting from the upper end thereof, a seal member normally abutting against the inner surface of the upper end of the container and in sealing and sliding engagement around said rod, a spring directly engaging the seal member for urging the seal member against said inner surface of the upper end of the container, the upper end of the container having an opening therein through which said rod extends and having a size for leaving a clearance around the periphery of said rod for allowing insertion of a pressing tool between the periphery of said rod and the edge of said opening for displacing the seal member downwardly against the spring force of the spring to move it away from the upper end of said container to form a gas filling passage between said inner surface of the upper end of the container and the upper surface of the seal member, and a washer attached to



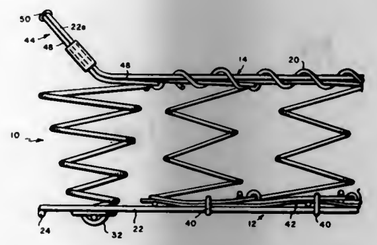
the upper surface of the seal member around said rod for transmitting the force of the pressing tool to the seal member.

4,114,867

COIL SPRING ASSEMBLY

Hamlin Andrus Pakradooni, Webster, Mass., assignor to Webster Spring Co. Inc., Oxford, Mass.

Continuation of Ser. No. 725,037, Sep. 20, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 862,725
Int. Cl.[2] F16F *3/04*
U.S. Cl. 267—97 1 Claim



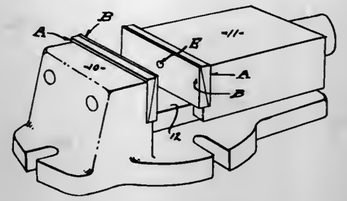
1. An upholstery spring comprising a base, a superimposed spaced parallel border wire, a plurality of equal length upright helical coil springs disposed in transverse rows between the base and border wire parallel to the front and back of the assembly, said border wire at the line of centers of the front row of coils at opposite ends of the front row of coils being bent upwardly at angles greater than the angle of inclination of the helical angles of the coils, and the top loops of said coils of the first row of coils having rear and forward portions bent relative to each other such that there are portions rearwardly of the line of centers of the front row of coils bent at substantially the angle of the helix of the coils which form with the loops at the upper ends of the coils rearwardly thereof a substantial part of the cushion-supporting surface and portions forwardly thereof bent upwardly at angles to the rear portions corresponding to the angles of inclination of the bent up portions of the border wire at the opposite ends of the first row, which collectively define an upwardly inclined shoulder rising from the planar surface of the center line of the centers of the front row of coils for constraining forward movement of the cushion relative to said planar surface and means connecting the upper ends of said upwardly bent portions of the loops of the first row of coils to the border wire.

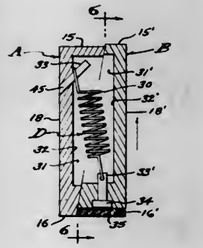
4,114,868

WORK ALIGNING VISE JAW

Daniel Wm. Smith, 1518 Enclid St., Santa Monica, Calif. 90404

Filed Jan. 9, 1978, Ser. No. 868,065
Int. Cl.[2] B23Q *3/02*
U.S. Cl. 269—136 16 Claims





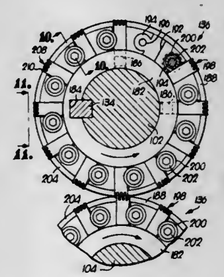
1. A work aligning jaw for a machine vise, including; a mounting member with means for securement to the vise, and a floating member carried on the mounting member and slideably engaged therewith at a plane downwardly and outwardly inclined with respect to a work piece to be clamped in said vise, at least one chamber opening into one of said jaw members and spaced within the boundaries of the slideably engageable inclined plane thereof, bias means confined within the chamber and yieldingly urging the floating member together and upward with respect to the mounting member, and stop means limiting said upward movement of the floating member, whereby the work piece being clamped by the floating member is drawn downward to the vise.

4,114,869

MECHANISM FOR EFFECTING INTERLOCK OF MULTIPLE SHEET CONTINUOUS BUSINESS FORMS

Dean E. Gladow, and Kenneth C. Clifton, both of Emporia, Kans., assignors to Didde-Glaser, Inc., Emporia, Kans.

Filed Mar. 28, 1977, Ser. No. 781,669
Int. Cl.[2] B41L *43/12*
U.S. Cl. 270—37 21 Claims



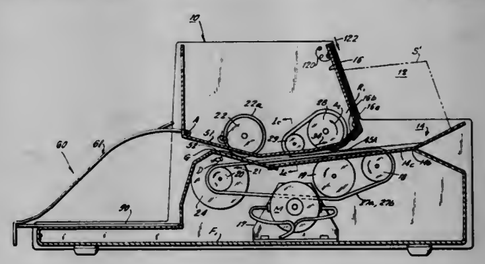
11. Apparatus for interlocking the plies of a multiple-ply web moving along a path of travel, said apparatus comprising:
at least one pair of opposed interlock dies respectively disposed adjacent the opposite faces of said web,
each of said dies including a blade set having a plurality of spaced, side-by-side, web-shearing and displacing blades each having an elongated outer end extending between narrow side margins;
means for supporting said dies with the blades thereof with the elongated direction generally transversely oriented relative to the direction of travel of said web; and
each of said blades having a paper penetrating outer web shearing and displacement section which projects above said side margins of the respective blade;
means for shifting at least one of the dies for causing the blades of said pair of dies to engage, shear-penetrate and deform said web with at least partial interfitting of the blades of the dies during said web penetration and deformation, the blades of said opposed die sets being of a height to provide substantially equal support for the web with only said outer shearing and displacement sections thereof penetrating the web in order to create a series of shear-cut interlocking strips which are connected at opposed ends to the web, with adjacent strips extending substantially an equal distance in opposite directions from the major plane of the web.

4,114,870

DOCUMENT HANDLING AND COUNTING DEVICE HAVING GUIDE FINGERS FOR FACILITATING THE FEEDING OF CURLED, FOLDED AND CREASED DOCUMENTS AND FURTHER HAVING IMPROVED OUTFEED STACKER MEANS FOR FACILITATING THE NEAT STACKING OF DOCUMENTS OF THE AFOREMENTIONED TYPE

John A. Di Blasio, Pennsauken, N.J., assignor to Brandt-Pra, Inc., Cornwells Heights, Pa.

Filed Jul. 12, 1976, Ser. No. 704,467
Int. Cl.[2] B65H *3/04*
U.S. Cl. 271—35 24 Claims



1. Guide means for use in a document handling device adapted to separate a stack of documents presented to the device and to restack the documents after separation thereof, said device comprising:
an infeed hopper for supporting a plurality of sheets generally arranged in a stack;
said hopper having an outfeed passageway at one end thereof through which at least the bottom sheet may pass;
the base of said infeed hopper including continuously moving closed loop conveying means having an elongated upper run positioned to one side of the outfeed passageway such that the upstream portion of said upper run protrudes at least partially through said opening for advancing at least the bottom sheet of said stack toward and through said outfeed passageway;
continuously movable closed-loop stripper means including a pair of closely spaced stripper surfaces being arranged adjacent to and to the opposite side of said outfeed passageway and having an elongated lower run positioed adjacent to an intermediate portion of the upper run of said conveying means, said lower run being moved in a

direction opposite the upper run of said conveyor means and engaging passing sheets for permitting only a single sheet passing between said stripper means and said conveyor means to be advanced toward said outfeed location;

said closed loop stripper means and said closed loop conveying means cooperating to impose a corrugated shape to the sheets to permit only that sheet which makes sliding engagement with the upper run of said conveying means to be fed towards the outfeed location and in the event of multiple sheets being fed therebetween, enabling only the bottom-most sheet to move beyond the downstream end of said stripper means in moving toward the outfeed location;

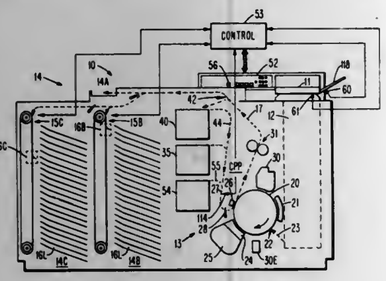
guide means comprising a resilient assembly including a guide member positioned in front of said stripper means and having an inclined surface positioned above the upper run of said conveying means for engaging the downstream edge of documents before they engage the stripper means, to fan the documents as they move towards said stripper means and having a free end positioned between the stripper surfaces for urging the downstream edges towards the upper run of said conveying means to facilitate separation and counting, said inclined surface portion being adapted to yield to prevent documents from being jammed between the guide means and the conveying means.

4,114,871

COLLATION CONTROLS

Anthony Joseph Botte, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1977, Ser. No. 794,327
Int. Cl.² B65H *39/10*
U.S. Cl. 271—173 **10 Claims**



1. A copy production machine having an original document transport for positioning an original document in an imaging position, a cyclable copy production portion for producing copies of an original document in said imaging position, an output portion including a collator having relatively movable copy distributor and collator bins whereby relative movement therebetween effects a collation of copies produced by said copy production portion and having a home position and constructed to normally collate in an away from home direction, the improvement including in combination:

means in one of said portions indicating end of a copy producing run,

means detecting an original document to be transported by said original document transport for indicating an immediate new copy run, and

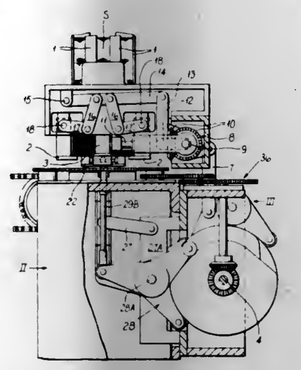
collator control means including a first means jointly responsive to said end of run indication to actuate said collator to relatively move said distributor and bins to said home position and a second means responsive to said immediate new run indication to override said first means actuation for actuating said collator to collate in a going home direction.

4,114,872

BLANK FEEDING

Robert William Davies, and Peter Ernest Willett, both of London, England, assignors to Molins Limited, London, England

Filed May 25, 1977, Ser. No. 800,495
Claims priority, application United Kingdom, May 28, 1976, 22253/76; Dec. 10, 1976, 51612/76
Int. Cl.² B65H *3/40*
U.S. Cl. 271—91 **6 Claims**



1. Apparatus for feeding blanks from a stack, each blank being of substantially rectangular elongate shape and having a pair of short edge portions and a pair of long edge portions, comprising a plurality of retaining means at the exit of the stack engageable with edge portions of the lowermost blank at said exit, a plunger device movable into contact with the lowermost blank in a direction substantially perpendicular to the plane thereof, said plunger device having at least two tiltably inter-connected sections each of which has means for gripping an end part of the blank, and drive means operable to tilt one section relative to another so that opposed edge portions of said lowermost blanks are progressively released from the remaining blanks in the stack, and operable then to withdraw said plunger device so as to separate said lowermost blank fully from the stack, said plurality of retaining means comprising a first pair of pivotal claws disposed at opposite sides of said stack for engagement with said short edge portions of said lowermost blank, a second pair of pivotal claws disposed at opposite sides of said stack for engagement with said long edge portions of said lowermost blank, means for pivoting said first pair of claws out of engagement with said short edge portions prior to tilting of said sections of said plunger device by said drive means and for simultaneously pivoting said second pair of claws into engagement with said long edge portions, so that at any time only one of said first and second pairs of claws is in an engaged position.

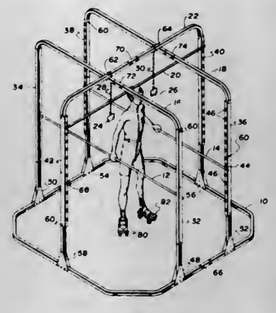
4,114,873

SKATE EXERCISE DEVICE

William C. Jones, 902 - 26th Ave. North, St. Cloud, Minn. 56301

Filed Aug. 10, 1976, Ser. No. 713,150
Int. Cl.² A63B *3/00, 23/02*
U.S. Cl. 272—61 **8 Claims**

1. An exercise device comprising first and second spaced-apart support frame means; first and second hand-hold means for supporting and balancing a person using the exercise device; first vertical adjustment means for supporting said first and second hand-hold means on respectively associated ones of said first and second support frame means in predetermined adjustable vertical positions, the selected height adjustment operable to cause exercise of differing muscles of the user; third support frame means arranged transverse to said first and second support frame means; third hand-hold means for supporting and balancing a person using the exercise device; second vertical adjustment means for supporting said third hand-hold means on said third support frame means in predetermined vertical positions above the head of the user; first coupling means for coupling said first and second spaced apart support frame means to said third support frame means for providing structural rigidity; a base member including at least first and second side means for supporting associated parts of said first and second spaced-apart support frame means and said third support frame means, said base member arranged for permitting unrestricted extension of the legs of the user in all directions; second coupling means for coupling said first, second and third support frame means to said base member for providing structural rigidity; and a pair of skate means for supporting the feet of a person using the exercise device, each



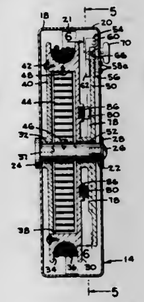
of said skate means including rotatable means for permitting said skate means to be moved in any direction on the supporting surface without lifting said skate means out of contact with said surface, and permitting the user to move the legs in any direction for exercising various parts of the body depending upon the motion of the legs and the level of vertical adjustment of said first and second vertical adjustment means; first adjustable coupling means in cooperation with said base member and second adjustable coupling means in cooperation with said third support frame means, said first and second adjustable coupling means for adjusting and determining the distance between said first and second spaced-apart support frame means for adjusting to the arm span of the user.

4,114,874

APPLIANCE FOR SWIMMERS

Alvin J. Mattila, 2 Beaver St., San Francisco, Calif. 94114

Filed Jun. 27, 1977, Ser. No. 810,686
Int. Cl.² A63B *69/12*
U.S. Cl. 272—71 **1 Claim**



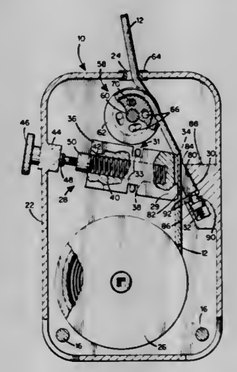
1. An appliance for swimmers comprising a housing, means for fixing said housing adjacent a body of water, a shaft mounted in said housing, a spool disposed in said housing and supported for rotation on said shaft, said spool having a side surface substantially normal to said shaft, a flexible tension member wound on said spool and having a proximal end fixed to said spool and a distal end exterior of said housing, means for securing said distal end to the body of a swimmer in a body of water, means in said housing for rotatively biasing said spool in a first direction for winding said tension member thereon, a friction disc supported within said housing for rotation on said shaft, said disc having a first surface parallelly confronting said side surface and a second surface parallelly spaced from said first surface, decoupling means operatively connecting said spool side surface to said first disc surface so that said spool rotates independently of said disc in said first direction of rotation and engages said disc for rotation therewith in the opposite rotative direction, a brake assembly secured to said housing in flanking relation to the outer peripheral margin of said disc, said brake having first and second relatively movable surface defining portions for frictionally engaging respective said disc surfaces, said second surface defining portion of said brake being rigid with said housing, and means for adjustably compressing said surface portions toward one another and into frictional engagement with said disc surfaces so as to afford an adjustable force of friction between said brake assembly and said disc for retarding spool rotation in a direction opposite said first direction, said decoupling means including at least one pawl pivotally mounted to said side surface of said spool radially inward of said peripheral margin and disposed at an acute angle to said surface, means for biasing said pawl toward said first disc surface, said first disc surface defining a plurality of radially extending teeth projecting therefrom toward said side surface for cooperation with said pawl to engage said pawl in a direction opposite said first direction and rotate independently of said pawl in said first direction, said teeth being uniformly spaced around said friction disc and terminating radially inward of said peripheral margin.

4,114,875

FRICTION TYPE EXERCISING DEVICE

Michael E. Deluty, 37 Addington Rd., Brookline, Mass. 02146

Filed Mar. 29, 1977, Ser. No. 782,468
Int. Cl.² A63B *21/00*
U.S. Cl. 272—133 **5 Claims**



1. In an exercising device including:

(a) a housing having a hollow interior and a cord opening;

(b) a cord retractor reel mounted for rotation within said housing;

(c) rewind means for continuously urging said retractor reel in the rewind direction;

(d) a flexible deformable cord fixed to and wrapped around said retractor reel, said cord running from said reel out of said housing through said cord opening; and

(e) manually adjustable variable resistance friction nip means mounted within said housing between said cord retractor reel and said cord opening for applying frictional force to said cord, said friction nip means including a support member contacting one side of said cord, wedging means mounted on the other side of said cord, first resilient means for continuously urging the wedging means against the other side of said cord to frictionally wedge said cord between said support member and said wedging means as

said cord is pulled out of said housing, said wedging means retracting to unwedge said cord as said cord is retracted into said housing;

(f) said rewind means and said variable resistance friction nip means both cooperating to apply force to said cord to oppose an exteriorly applied manual force pulling said cord in the unwind direction, said friction nip means releasing force on said cord, and said rewind means retracting said cord in the rewind direction in the absence of an exteriorly applied manual force on said cord; and

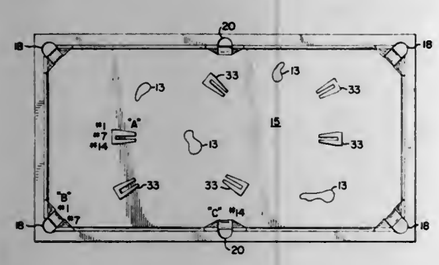
(g) an improvement to said nip means comprising:

(i) said support member having only a straight cord-contacting surface, said cord only contacting said straight surface over its entire length, and stop means for limiting the travel of said support member in directions towards and away from said cord;

(ii) said wedging means including a wedge member having a substantially smooth and toothless leading portion contacting and frictionally wedging said cord between said wedge member and said straight cord-contacting surface of said support member, said wedge member leading portion engaging and deforming said cord and thereby frictionally retarding the unwinding movement of said cord; and

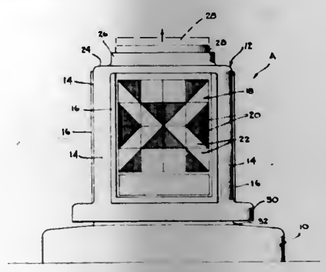
(iii) said wedging means further including guide means for permitting said wedge member to longitudinally reciprocate along a straight path which intersects with said straight cord-contacting surface of said support member at an angle less than 90°, said guide means including means for limiting and positively halting wedge member travel towards said cord.

4,114,876
POOL TABLE GOLF GAME
John E. Maruszak, 1247 Home Ave., Berwyn, Ill. 60402
Filed Jul. 28, 1977, Ser. No. 819,673
Int. Cl.² A63F 7/06
U.S. Cl. 273—87 B **5 Claims**



1. A simulated golf game apparatus, in combination with a pool table having a playing surface, cushions and pockets, said apparatus comprising a plurality of material sections formed of polyurethane or structural foam, each being positionable adjacent a pocket of said table to form the golf greens of said game with the pockets simulating golf cups, penants attaching to poles formed with a base to simulate golf flags placeable within respective pockets for identifying the pockets as successive golf holes, a plurality of hazard areas randomly disposed on the playing surface simulating bunkers and traps as on the fairways of natural golf courses, a cue ball and object ball, a plurality of tee areas having a shaped cut out section along a portion of the length of said tee forming a bight end and an open end of said cut out, said cue ball placeable at said bight end and said object ball at said open end, said cut out section defining a particular path for travel of said cue ball to strike said object ball for initiating play of said game, whereby players utilizing a conventional pool cue stick propel said cue ball into contact with said object ball from a designated tee area along the path defined by said cut out section, said object ball being directed around said playing surface by said cue ball as in the game of pool for simulating play along the fairways of a natural golf course while avoiding said hazards as in the play of the game of golf, said object ball being moved from a tee area to a correspondingly designated pocket for propelling said object ball into said pocket in the fewest number of shots as possible.

4,114,877
MEMORY SKILL GAME
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316
Filed Jan. 31, 1977, Ser. No. 764,203
Int. Cl.² A63F 9/00
U.S. Cl. 273—1 R **31 Claims**



1. A competitive game for matching designs by players with playing pieces having design portions thereon, said toy game comprising:

(a) a device comprised of

(1) a rotatable member, with a plurality of exterior walls thereon,

(2) means to provide a design of known geometrical shapes arranged to generate certain geometrical patterns on each of the exterior walls of said rotatable member, and

(3) motive means for rotating said member,

(b) a plurality of playing pieces capable of being manipulated by each of the players to recreate a design shown on the rotatable member with said playing pieces, said playing pieces having design portions thereon in the form of known geometrical shapes generally corresponding to the geometrical shapes on the exterior walls of said rotatable member, said designs on said playing pieces also capable of being arranged in certain geometrical patterns so that a design shown on the rotatable member can be recreated, the design portion on said playing pieces capable of presenting design patterns in more than one orientation such that the design portions on said playing pieces will create a geometrical pattern in one orientation and a different geometrical pattern in another orientation, and where for said designs shown on the member not all of said orientations of certain of said playing pieces are proper in relationship to a next adjacent playing piece in that the playing pieces must be selected for the proper design portions and properly oriented relative to other playing pieces to recreate a design of the geometric patterns shown on the rotatable member.

21. A method of playing a competitive toy game, said method comprising:

(a) locating a plurality of substrates on a rotatable member with each substrate having at least one design thereon, each of said substrates having an encoded section thereon and where the encoded section for one player is different than the encoded section for any other player,

(b) assigning each player a particular design and an associated encoded section,

(c) causing said rotatable member to rotate said design into and out of view of at least two competing players located around the rotatable member,

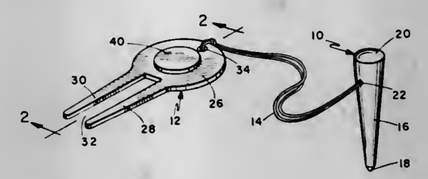
(d) providing each player with an encoded member with the encoded member for each player being associated with the use of the playing pieces by each of the players, the encoded member for each player being different from the encoded member for each other player and also conforming to the encoded section assigned to each player, and

(e) having the players race with each other in selecting and utilizing three-dimensional playing pieces in order to be the first to recreate his assigned design associated with his assigned encoded section, said playing pieces having design portions on the exterior surfaces thereof, at least two of said surfaces on each playing piece lying in planes which are not parallel to one another, the design portions on some of the surfaces being different than the design portions on other of the surfaces and the playing pieces being orientable in more than one position to create different design patterns, said step of utilizing the playing pieces comprising:

(i) selecting the proper exterior surfaces of selected playing pieces,

(ii) and orienting the selected exterior surfaces relative to adjacent surfaces in order to recreate the desired design.

4,114,878
ANCHORED GOLF TEE
Robert Louis Hammond, 1051 S. Santa Fe Ave., Vista, Calif. 92083
Filed Jul. 5, 1977, Ser. No. 812,905
Int. Cl.² A63B 69/36, 57/00
U.S. Cl. 273—32 A **7 Claims**



1. The combination of a golf tee and anchor comprising:

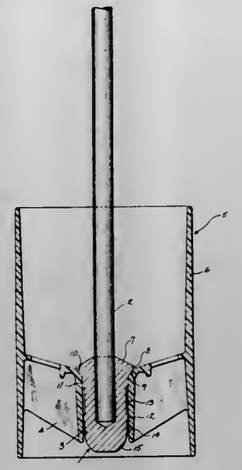
a golf tee,

inertial anchor means comprising a green groomer having a mass exceeding that of the tee, wherein said groomer includes a disc shaped body, and a pair of prongs extending from said disc shaped body in the plane thereof,

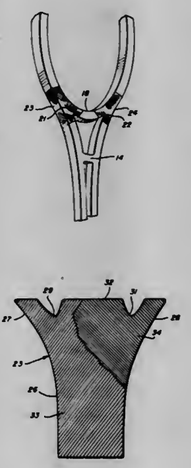
and a high tensile flexible cord connecting said tee to said anchor.

4,114,879
GOLD PUTTING CUP AND FLAGSTICK HOLDING ASSEMBLY
Willard E. Oiler, Winter Haven, Fla., assignor to Menasha Corporation, Neenah, Wis.
Filed Oct. 4, 1976, Ser. No. 729,490
Int. Cl.² A63B 57/00
U.S. Cl. 273—34 R **3 Claims**

1. In combination, a cup to be set into a golf green and having an outer cylindrical wall and a base, said base having a cylindrical central bore and an upwardly and outwardly diverging beveled surface at the upper end of the central bore, and a flagstick assembly including a flagstick and a one-piece ferrule secured to the lower end of the flagstick and adapted to be received within the bore, said ferrule having a downwardly and inwardly converging beveled annular surface disposed in mating engagement with the beveled surface at the upper end of the bore, said ferrule also having an upper annular collar located beneath said beveled annular surface and having a lower annular collar spaced vertically beneath said upper collar, said collars having generally cylindrical outer surface with the outer surface of the upper collar disposed in engagement with the wall of the bore and the cylindrical surface of the lower collar being spaced radially inward of the wall of the bore, said ferrule also including a central cylindrical surface extending between said upper and lower collars, said first and second collars providing a bracing effect against the bore to maintain the flagstick in the vertical attitude under heavy wind conditions, said central cylindrical surface having a smaller diameter than said collars to provide a clearance between the central cylindrical surface and said wall of the bore for foreign material.



4,114,880
TENNIS RACKET ASSEMBLY
Andrew M. Cecka, Thousand Oaks, Calif., assignor to Fansteel, Inc., North Chicago, Ill.
Filed Oct. 13, 1977, Ser. No. 841,939
Int. Cl.² A63B 49/10
U.S. Cl. 273—73 G **9 Claims**



1. In a tennis racket frame having a substantially rectilinear cross section with opposite faces and having a handle and an ellipsoid head attached to one end of said handle and a grip element at the opposite end of said handle, in which said frame comprises an assembly of a long structural member and a short structural member, each of said members comprising a core of an expanded porous resinous material and a shell comprising at least one layer of resin coated unidirectionally oriented graph-

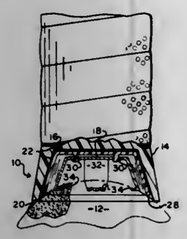
ite fibers with said shell completely encasing said core at any cross section transverse to the length of said member, in which frame said long member extends from one end thereof at the grip end of said handle, up one side of said handle, around a major portion of the head of said frame and down the other side of said handle to the opposite end of said member at the grip end of said handle, and said short member extends across a minor portion of the head to complete its ellipsoid shape and is attached at its ends to junction points in said long member in the head portion thereof, the improvement comprising a yoke piece at each of said junction points, each yoke piece having the external shape of the letter "Y" and having a trunk portion and at least two branch portions meeting at a fork point, the trunk portion of each yoke member being at least partially wrapped around said long member in said major portion of said head, a first branch portion of each yoke piece overlying a surface of an end portion of said short member, and a second branch portion of each yoke piece overlying an opposite surface of said end portion of said short member.

8. A yoke piece for reinforcement of a tennis racket frame comprising a thin, flexible member having the external shape of the letter "Y" with a trunk portion, with two symmetrical branch portions meeting at a fork point and with a third branch portion between said symmetrical branch portions as an extension of said trunk portion beyond said fork point, said trunk portion and said third branch portions being wider than said symmetrical branch portions, and said member comprising at least two layers of resin coated unidirectionally oriented graphite fibers with the direction of the fibers in one of said layers differing from the direction of the fibers in another of said layers.

4,114,881
BALL RETRIEVER

David A. Norton, 1328 S. Michigan Ave., Clearwater, Fla. 33516

Filed Feb. 22, 1977, Ser. No. 770,992
Int. Cl.[2] A63B *69/38*
U.S. Cl. 273—73 R 5 Claims

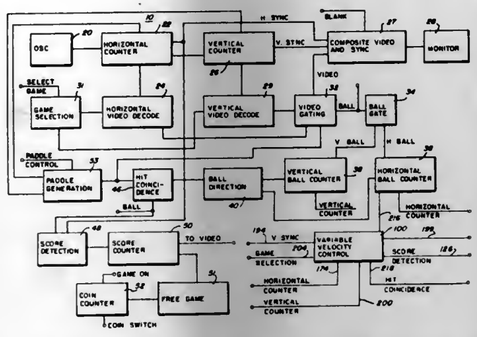


1. A ball retriever primarily intended for use in picking up tennis balls, said retriever comprising: handle means; base means attached to one end of said handle means; and clip means attached to said base means, predetermined portions of said clip means being in engaging relation to corresponding portions of the surface of the tennis ball to be picked up, wherein said base means is defined by a frustrum of a right cone, the smaller side of said frustrum being closed and attached to said one end of said handle means and the larger side of said frustrum being open, said base means further comprising a plurality of tip means formed on the interior of said smaller frustrum side and a corresponding plurality of clip apertures being formed in said clip means whereby said clip means is attached to said base means by inserting each one of said tip means through a corresponding one of said clip apertures, said clip means further comprising a plurality of radially extending arms, the free ends of said arms extending toward said open larger side and having formed thereon said predetermined portions a plurality of hook means disposed in nap-engaging relation to said corresponding portions of said tennis ball surface.

4,114,882
VARIABLE VELOCITY CONTROL FOR PLAYING IMAGES FOR A MANUALLY CONTROLLED ELECTRONIC VIDEO DISPLAY GAME

Theodore A. Mau, Chicago, Ill., assignor to Robert Ralph Runte, Palatine, Ill.

Filed Oct. 29, 1976, Ser. No. 736,951
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—85 G 13 Claims

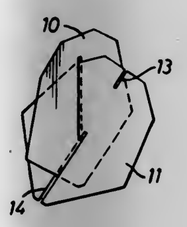


1. A variable velocity control circuit for playing images for use with a manually controlled electronic video game comprising: a play condition sensing circuit, said play condition sensing circuit being adapted to receive playing condition signals from a play condition indicating circuit of the electronic video game indicative of a particular play condition, said play condition sensing circuit producing play condition output signals; a velocity control circuit connected to the play condition sensing circuit, said velocity control circuit being responsive to said play condition output signals received from the play condition sensing circuit to thereby impress a change in velocity on a playing image in response to said play condition output signal; said play condition sensing circuit including a counter, said counter being adapted to receive said play condition signals from the play condition circuit; said velocity control circuit including logic means responsive to the output of said counter for generating said play condition output signals indicative of a plurality of speed ranges of the playing image; and said velocity control circuit including means responsive to said play condition output signals for generating control signals at different rates of speeds corresponding to said play condition output signals.

4,114,883
DART FLIGHTS

Roy Fuscone, 3D Holland Park, London W.11, England

Filed Sep. 12, 1975, Ser. No. 613,014
Claims priority, application United Kingdom, Sep. 12, 1974, 37998/74
Int. Cl.[2] A63B *65/02*
U.S. Cl. 273—106.5 C 11 Claims



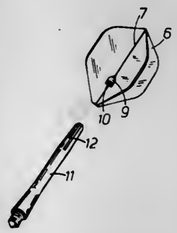
8. A dart provided with a dart flight comprising first and second interengaged planar pieces, a dart flight comprising

first and second interengageable planar pieces each providing two wings of the flight when erected and each being symmetrical about a longitudinal axis, a slot defined along the longitudinal axis of the first piece intermediate its ends, two slots defined along the longitudinal axis of the second piece each opening at a respective end of said axis and having an inner, closed, end, said slot in said first piece having substantially the same length as the distance between said inner, closed ends of said slots in said second piece, said pieces being engaged with said second piece passing through the slot in said first piece.

4,114,884
DARTS

Leonard Alfred Tunnicliffe, Walsall, England, assignor to L.A. & E.W. Tunnicliffe Limited, England

Filed Feb. 15, 1977, Ser. No. 768,721
Claims priority, application United Kingdom, Aug. 24, 1976, 35098/76
Int. Cl.[2] A63B *65/02*
U.S. Cl. 273—106.5 C 6 Claims

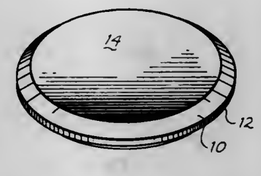


1. A dart having a shaft which is slit at the tail end, a flight of which the wings are directly interconnected at the spine being received in the slits and a pointed metal cap received in openings in the wings and slidably engaging and fitting closely over the slit tail end of the shaft, urging the prongs formed between the slits toward each other and against the flight, the openings having spaced, substantially U-shaped inner and outer edges, the outer edges of the openings being of arched shape substantially conforming to the outer surface of the metal cap, and the inner edges of the openings defining around the spine a tongue which projects into the interior of the cap to locate it positively co-axially with the spine of the flight even when the flight is separated from said shaft.

4,114,885
THROWING DISC

Larry N. Morrow, 10616 Ravenscroft, Dallas, Tex. 75230

Filed Dec. 10, 1976, Ser. No. 749,471
Int. Cl.[2] A63H *27/00*; A63B *65/10*
U.S. Cl. 273—106 B 14 Claims

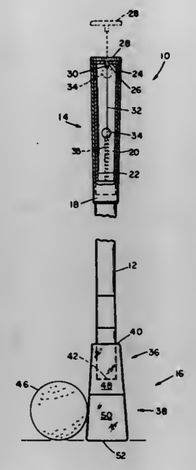


1. A throwing disc comprising:
a. a circular resilient disc of uniform thickness and density,
b. the diameter being about six times the thickness, and
c. the density being about 20 grams per liter.

4,114,886
GOLF CLUB

Bernard C. Koch, 2107 Brandywood Dr., Wilmington, Del. 19810

Filed Sep. 30, 1976, Ser. No. 728,305
Int. Cl.[2] A63B *53/00*
U.S. Cl. 273—162 B 5 Claims

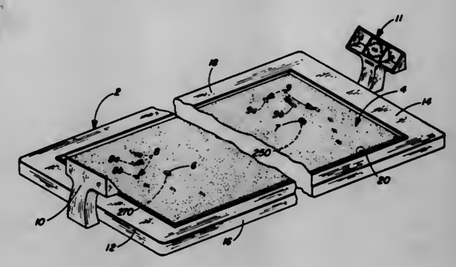


1. Golf club comprising a shaft, a handle means affixed to one end of said shaft, an equally balanced and geometrically shaped club head affixed to the other end of said shaft, and said club head comprising a small trapezoid top portion affixed to said shaft and a large trapezoid bottom portion affixed to said small trapezoid top portion and ends of said large trapezoid bottom portion equally spaced outwardly of ends of said small trapezoid top portion whereby said small trapezoid top portion is symmetrically and equally positioned on top of said large trapezoid bottom portion and faces of said small trapezoid top portion and said large trapezoid bottom portion align to form coplanar continuous ball striking faces providing equal weight distribution of said club head means over the entire length of and circumferentially around said shaft.

4,114,887
GOLF PUTTING GAME APPARATUS

Americo DelRaso, 21858 River Oaks Dr., Rocky River, Ohio 44116

Filed Oct. 1, 1976, Ser. No. 728,526
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 FA 5 Claims



1. A miniature golf apparatus comprising,
a base member,
a putting surface mounted on said base member,
at least one hole provided in said putting surface,
a plurality of light means operably associated with said

putting surface for indicating the location of commencement of a putt in a direction toward said hole, and

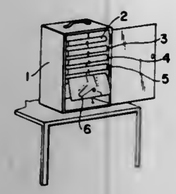
light selection means which, when actuated, automatically illuminates one of said light means at random to provide for random indication of the location of commencement of a putt in a direction toward said hole.

4,114,888

GOLF TOUR GAME

Wayne L. Roseboom, Morris, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 8, 1977, Ser. No. 785,735
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 L **1 Claim**



1. A golf tour game, comprising

a carrying case;

a plurality of distinctly different 18 hole golf tournament maps stored in rolled condition in the carrying case on separate rollers whereby a golfer may select and unroll a particular golf course to be played;

a golf ball driving unit for simulating how far a driven golf ball will travel, said golf ball driving unit comprising a housing having an upright shaft rotatably mounted therein, an arm extending substantially perpendicularly from the shaft and having a free end extending in spaced relation with the housing, said arm being freely rotatable with said shaft in a plane substantially perpendicular to the shaft, a golf ball affixed to the free end of the arm, and counting means in the housing coupled to said shaft for counting the revolutions of said shaft and indicating the number of revolutions on a distance scale thereby indicating to a user driving the golf ball with a golf club how far the driven ball travels to a selected hole on a selected one of the maps; and

a marking device for indicating the distance of a drive on a selected map.

4,114,889

GOLF GAME APPARATUS

Fiorenzo Midana, Corso Giovanni Agnelli 48, Turin, Italy

Filed Apr. 11, 1977, Ser. No. 786,100
Claims priority, application Italy, Mar. 2, 1977, 52972/77[U]
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 F **3 Claims**

1. A golf teaching device for use at a location remote from a golf course comprising in combination:

an elongated carpet having a first plurality of parallel spaced reference markings adjacent one end portion thereof and a second plurality of parallel spaced reference markings adjacent the other end portion thereof, the reference markings of said first and second plurality of markings being in longitudinal alignment;

a target device attachable releasably to said other end of said carpet for receiving a golf ball therein, said target device comprising a semi-circular plate having a straight downwardly inclined front edge, the arcuate periphery of said plate being defined by an upstanding wall engageable by and for stopping a golf ball entering the target device, said target device also including a rearwardly extending straightsided projection the sides of which are parallel and spaced apart a distance not greater than the spacing between adjacent ones of said second plurality of reference markings;

and a foot positioning member including a first section presenting a first pair of spaced edges engageable respectively by the insteps of a golfer's left and right feet and a second pair of edges extending substantially perpendicularly of at least one of said first pair of edges engageable by the toes of the golfer's feet, said foot positioning member having a second section including a plurality of parallel reference lines defining a series of golf club swing paths for selection



by the golfer and alignable with corresponding ones of the reference markings of said first and second plurality of reference markings;

whereby a golfer may position said foot positioning member on said carpet in selected relation to said first plurality of reference markings, place a golf ball on one of the reference lines thereon, position the target device so as to be in correct selected alignment with said selected first and second reference markings and thereby properly address the ball with respect to the target device.

4,114,890

REPRODUCTION APPARATUS FOR A GAME

Hiroshi Yamamoto, Kawasaki, and Shigetada Fukuoka, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 14, 1976, Ser. No. 705,125
Claims priority, application Japan, Jul. 15, 1975, 50-85792
Int. Cl.[2] A63F *3/02*; G09B *19/22*
U.S. Cl. 273—237 **3 Claims**

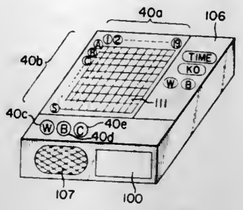
1. An apparatus for reproducing a game having two kinds of pieces, comprising:

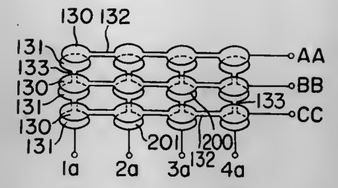
a recording medium on which there is recorded information as to the kind and position of game pieces;

pick-up means for picking up the information from the recording medium and producing an output;

a display board having a plurality of electro-optic display elements arranged over the surface of the board and each capable of displaying a piece of one kind or the other kind, each of the electro-optic display elements comprising concentric circular areas including a central disc area and an annular area forming a border for the disc area, each area being capable of changing from the first appearance to a contrasting second appearance, and electrode means responsive to electrical signals for causing the change in appearance; and

driving means for selectively applying electrical signals to electrode means of selected electro-optic display elements according to the output of the pick-up means to cause selected electro-optic display elements to display a piece of one kind and to cause selected electro-optic display elements to display a piece of the other kind, the electro-optic display elements for pieces of the one kind having only their annular area assume the second appearance, and the electro-optic display elements for the pieces of the other kind having at least their disc area assume the second appearance.



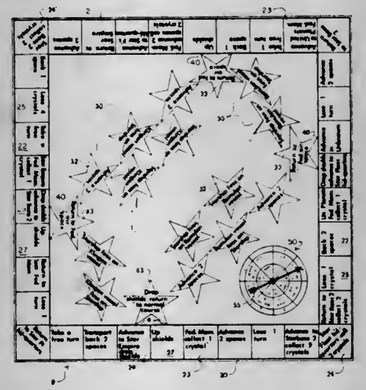


4,114,891

HAZARDOUS TRAVEL SIMULATING GAME

William T. Lawrimore, P.O. Box 15, North Wilkesboro, N.C. 28659

Filed Aug. 1, 1977, Ser. No. 820,574
Int. Cl.[2] A63F *3/04*
U.S. Cl. 273—250 **3 Claims**



1. A chance controlled game apparatus simulating travel through friendly, known territories and hostile, unknown territories, each having various perils, occurrences and events which determine the speed and success of the travel, said game apparatus comprising:

(A) a game board having a substantially planar upper playing surface, a plurality of player pieces manually movable along said playing surface, and a random selection means;

(B) said game board including:

(i) a first circuitous path of player movement delineated along the outer perimeter of said upper playing surface, said first path including a singular starting/finishing point and a plurality of individual, successive, player landing sites therealong having directions printed therein, anticipated occurrences which may alter the normal path of travel, routes, and supplies of critical materials;

(ii) a second circuitous path of player movement including a plurality of individual, successive, player landing sites therealong, each of said secondary landing sites having indicia printed thereon indicative of more unexpected occurrences which may alter the supply of the critical material necessary for continuance of the travel;

(iii) a selected plurality of spaced landing areas in said second path, each of which lies immediately adjacent one of a first group of sapced landing areas in said first path, movement of a player's piece into said second path being determined by the piece coming to rest on one of said first group of landing areas;

(iv) selected ones of the individual landing sites within said first and second paths forming a second group of landing sites including indicia thereon indicative of altered player piece movement along the prescribed paths of travel;

(v) selected others of the landing sites in said first path forming a third group of landing sites having indicia printed indicative of a gain or loss of said critical material for continuance of the simulated travel;

(vi) selected others of the landing sites in said second path forming a fourth group of landing sites having indicia printed thereon indicative of either an attack being launched by or against the player piece;

(C) said random selection means comprising a plurality of separate instructional fields:

(i) a first of said fields further divided into a plurality of instructional segments containing instructional indicia to regulate a prescribed number of areas a player piece moves along one of said first or second paths of movement;

(ii) a second of said fields divided into a plurality of instructional segments regulating the outcome in an attack launched by the player piece as a result of landing on one type of said fourth group of landing areas;

(iii) a third of said fields being divided into a plurality of instructional segments regulating the outcome of an attack launched against one of the player pieces as a result of landing on the other type of said fourth group of landing areas;

(iv) a random outcome means for randomly and simultaneously selecting one of said instructional segments in each of said first, second and third fields to be used during a turn of play in the game; wherein participants travel along a prescribed path of movement determined by instructional indicia on said individual landing sites combined with chance instructional indicia from prescribed ones of said fields randomly selected by said random outcome means.

4,114,892

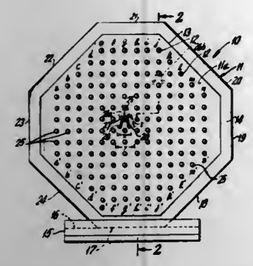
PEG GAME

Frank S. Csoka, Sea Cliff, N.Y., assignor to Fun Things, Inc., New York, N.Y.

Filed Feb. 3, 1977, Ser. No. 765,202
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—265 **15 Claims**

1. A game comprising, a board, means to support the board in a vertical manner, said board being opaque and being formed with a plurality of holes, a plurality of pegs insertable in said holes so as to extend outwardly on opposite sides of said board, and a member being formed so as to rest on a peg inserted in one hole, at one side of the board, and not visible from the other side, said member being formed with a central portion to be disposed on the peg, and flange portions joined to the central portion and having flange ends extending away from the central portion, so that the ends are spaced from each other, and being dimensioned to permit free fall of the member and said member being so dimensioned and the spacing be-

tween said holes being so dimensioned such that when said holes have pegs therein with the central portion of said member disposed on one of said pegs, said member is freely rotatable and whereby the withdrawal of the peg with the member thereon from the other side of the board causes the member to



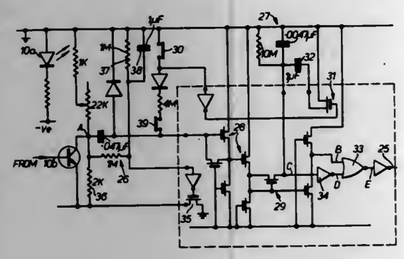
fall from the withdrawn peg, and wherein the holes are disposed in a row so that one hole is disposed below another, and wherein another inserted peg is disposed below the aforesaid inserted peg with member so that upon removal of the first said peg, the member drops freely unto the second peg so that the central portion is then disposed on said second peg.

4,114,893

GRAMOPHONE EQUIPMENT

Leslie Alan Leach, Newton of Falkland; Henry Jamieson Riddoch, Leslie, and Neil David Duffy, Glenrothes, all of Scotland, assignors to Pico Electronics Limited, Scotland

Filed Mar. 25, 1976, Ser. No. 670,421
Claims priority, application United Kingdom, Mar. 27, 1975, 13084/75
Int. Cl.² G11B *3/06*
U.S. Cl. 274—9 RA **52 Claims**



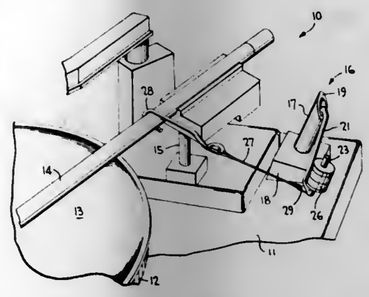
1. Gramophone equipment comprising a turntable for supporting a phonograph record of the kind having recorded tracks with a relatively high groove density and bands with a relatively low groove density between, preceding and following said tracks, a movable tone arm for supporting a gramophone pick-up, drive means for the turntable and for displacing the tone arm across the turntable from a rest position and also for displacing the tone arm towards and away from the turntable, and control means for controlling the drive means to select recorded tracks of a record in dependence upon the reflectivity of the record, the control means comprising: photoelectric scanning means movable across the turntable for scanning such a record when on said turntable and comprising a source of light to illuminate the record and a photodetector to produce a signal which varies in dependence upon the amount of said light reflected from the scanned portions of such a record, so that the signal comprises signal portions indicative of respective ones of said bands; counter means coupled to said photodetector for counting said signal portions; a signal generator responsive to the position of the scanning means to produce an edge signal when the scanning means reaches a given position corresponding to the edge of a record; and means connected to receive said edge signal for inhibiting the count in the counter from exceeding a count greater than that corresponding to the first of the bands until a time has elapsed after the production of the edge signal which is sufficient for the scanning means to have scanned beyond the first, edge, band into the first recorded track.

4,114,894

DEVICE FOR CANCELLING INSIDE FORCE OF PICKUP ARM OF RECORD PLAYER

Lenny M. Pelifian, 5 Marie St., Massena, N.Y. 13662

Filed Jun. 6, 1977, Ser. No. 803,644
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **2 Claims**



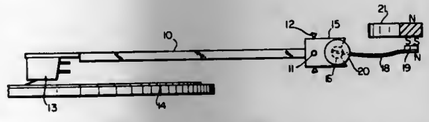
1. In a record player having an upper surface, a turntable mounted on said surface, a pickup arm mounted on a vertical rotatable rod extending upwardly from said surface, the pickup arm being moveable about the axis of the rod toward and away from the center of the turntable, a device for counteracting the inside force produced on the pickup arm during playback of a record, comprising, a hollow shaft having an upper end and being mountable on said upper surface, a swing arm in pivotal engagement with said upper end, means for interconnecting said arms to effect a following pivotal movement of said swing arm in one direction as said pickup arm moves toward the turntable center, cam means on said upper end for causing pivotal movement of said swing arm in a direction opposite said one direction during pickup movement away from the turntable center, said cam means comprising a downwardly sloping cam surface, and weight means mounted on said swing arm for counterbalancing the inside force produced by the pickup arm during movement thereof toward the turntable center.

4,114,895

PHONOGRAPH TONEARM PICKUP COUNTERBALANCE

Lewis Eckhart, P.O. Box 2558, Tallahassee, Fla. 32304

Filed Jul. 26, 1977, Ser. No. 819,201
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **11 Claims**



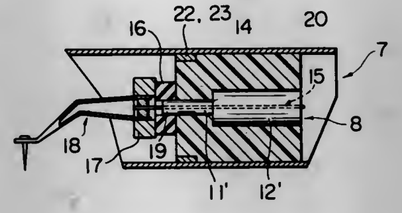
1. In a record player turntable having a base, a record carrier movably mounted on the base, a pickup arm means, means on the base for mounting the pickup arm means for horizontal and vertical movement relative to the base, a pickup device mounted adjacent one end of the pickup arm means remote from the mounting means, the improvement comprising, first magnetic means, means for resiliently mounting said first magnetic means adjacent the other end of the pickup arm means, second magnetic means mounted on the base, said first magnetic means being movable relative to said second magnetic means and being vertically spaced relative thereto, each of said first and second magnetic means having opposed face portions of like polarity, whereby the relative polarity of said first and second magnetic means exerts a force on said other end of the pickup arm means.

4,114,896

PHONOGRAPHIC PICK-UP CARTRIDGE

Keniti Okura, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 1, 1977, Ser. No. 764,619
Claims priority, application Japan, Feb. 2, 1976, 51-10138
Int. Cl.² G11B *3/02*; H04R *1/16*; H01S *4/00*
U.S. Cl. 274—37 **12 Claims**



1. In a phonographic pick-up cartridge sub-assembly including a stylus support member having a generally cylindrical cavity therethrough; an elongated, generally cylindrical sleeve member disposed within the cavity; a stylus support wire axially disposed within the sleeve member, one end of the wire extending out of the sleeve member and being secured to one end of a cantilevered stylus arm, and the other end of the wire being secured within the sleeve member; a magnetic circuit element coaxially mounted to said one end of the stylus arm; and, resilient vibrational damping element disposed between the magnetic circuit element and the support member and adapted to be compressively stressed by tensioning the wire, the improvements characterized by:

(a) the support member being separable along a plane substantially parallel to the axis of said cylindrical cavity to expose said cavity therein, to thereby enable the insertion of the sleeve member into the cavity during assembly,

(b) the support member defining abutment means in the cavity, and

(c) the sleeve member defining abutment means thereon configured to mate with the support member abutment means, whereby the mating abutment means axially fix the inserted sleeve member within the support member so that for a predetermined wire length and damping element thickness, a desired wire tension and damping element compression may be maintained.

4,114,897

METHOD FOR INSTALLING SEAL OVER SPLINED SHAFT

Dean R. Bainard, Bethel Township, York County, S.C., assignor to Garlock Inc., Rochester, N.Y.

Division of Ser. No. 689,038, May 24, 1976. This application Jan. 3, 1977, Ser. No. 756,382
Int. Cl.² F16J *15/32*
U.S. Cl. 277—1 **10 Claims**

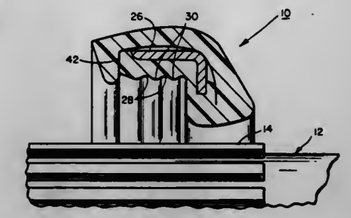
1. A method for installing a seal having a sealing lip over a first portion of a shaft for sealing against a second portion of said shaft, whereby said lip is prevented from contacting said first portion, comprising the steps of:

(a) providing an annular seal having a mounting portion and a sealing lip portion having said sealing lip;

(b) installing said seal over said first portion of said shaft including moving said sealing lip to a non-sealing configuration in which said sealing lip is out of contact with said shaft;

(c) maintaining said sealing lip in said non-sealing configuration and out of contact with said first portion of said shaft during said installing step;

(d) moving said sealing lip from said non-sealing configuration to its normal, sealing configuration in contact with said second portion of said shaft, after said seal has passed



over said first portion and is over said second portion of said shaft,

(e) wherein said seal is made of elastomeric material and wherein said step of moving said sealing lip to said non-sealing configuration includes stretching said sealing lip to a larger diameter than that of said first portion, and

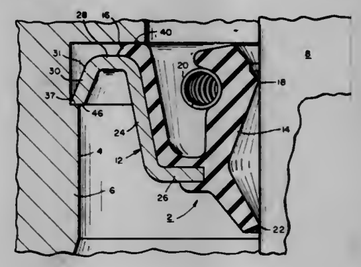
(f) wherein said stretching step includes folding said sealing lip portion over said mounting portion and locking said sealing lip portion to said mounting portion.

4,114,898

OIL SEAL WITH PERMANENTLY DEFORMABLE LOCKING MEMBER

Dean R. Bainard, Bethel Township, York County, S.C., and Roger W. Wright, Kings Mountain, N.C., assignors to Garlock Inc., Rochester, N.Y.

Continuation of Ser. No. 669,669, Mar. 23, 1976, abandoned. This application Nov. 3, 1977, Ser. No. 848,291
Int. Cl.² F16J *15/32*
U.S. Cl. 277—9 **21 Claims**



1. An annular shaft seal of the type having a slip fit in a housing bore comprising:

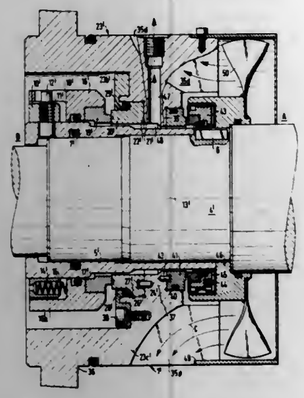
(a) an annular shell including means for positively retaining the seal in a bore, said retaining means including a substantially cylindrical, substantially straight, axially elongated O.D. locking member extending axially outwardly and having a free distal end terminating in an axially outwardly facing locking surface, said locking member being permanently deformable radially outwardly, after said seal has been inserted into a housing bore, from a smaller O.D. to a larger O.D. such that it can be moved radially outwardly into a locking groove of a bore to positively retain the seal in a bore; and

(b) an elastomeric sealing element bonded to said shell and including an annular face gasket extending axially inwardly, said gasket being located axially inwardly from said locking member such that it can provide an O.D. seal for said annular shaft seal.

4,114,899
COOLED MECHANICAL SEAL

Friedhelm Külzer, D-6520 Worms 26, and Ehrhard Mayer, D-8191 Eurasburg, both of Fed. Rep. of Germany

Filed Feb. 13, 1975, Ser. No. 549,550
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1974, 2408660
Int. Cl.² F16J 15/34
U.S. Cl. 277—22 4 Claims



1. A cooled mechanical seal assembly for a shaft passing from the free atmosphere through an opening in a housing wall, comprising,

means defining a primary seal slide ring with a front working surface rotating together with the shaft,

means defining a primary seal counter ring and a sealing housing with said counter ring being mounted in said sealing housing, the sealing housing containing a medium to be sealed and wherein the counter ring is exposed to the medium to be sealed and is fastened so as to be axially non-displaceable and prevented from rotation in the sealing housing and essentially has a front face and peripheral and rear outer faces,

means for spring-forcing a front working surface of the slide ring against said counter ring front face, and further comprising,

means defining a mounting block portion of said sealing housing supporting said counter ring and comprising extension of its outer peripheral surfaces open to ambient air and enlarging it in available surface area accessible to the ambient air by cooling ribs therealong, said mounting block having at least a primary inner surface in direct butting metal to metal contact against peripheral and rear outer faces of the primary seal counter ring,

the primary seal counter ring having an annular shoulder defined by a front step thereof,

the mounting block including a clamping flange portion with a collar end projecting regularly inwardly in annular form and resting via an O-ring gasket against said annular shoulder to seal off the annular shoulder,

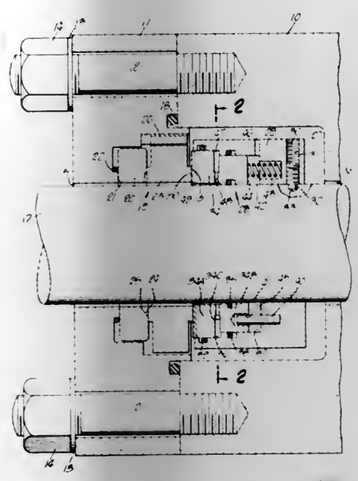
and wherein at least the counter ring is made of a material with high mechanical strength, whose heat transfer coefficient is greater than 50 Kcal/m h C.°

means defining a secondary seal with a slide ring and counter ring on the atmosphere side of the above said primary seal and wherein said mounting block has an inner portion with back to back seats separated by an inwardly extending portion of the mounting block so that the counter rings of the primary and secondary seals are mounted immovably and face in opposite directions, the secondary seal having said slide ring secured to the shaft for rotation therewith.

4,114,900
BALANCED MECHANICAL SEAL WITH FLOW CONTROL

Winfred John Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 615,278, Sep. 22, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,036
Int. Cl.² F16J 15/34, 15/48
U.S. Cl. 277—27 15 Claims



1. A balanced mechanical seal assembly comprising:

a housing having a shaft opening;

said housing being exposed at one location to a relatively high fluid pressure and at another location to a fluid pressure less than said relatively high fluid pressure;

a shaft rotatable in said opening;

relatively rotatable mechanical seal means for sealing said opening comprising a first annular seal ring connected to said housing and a second annular seal ring connected to said shaft; one of said seal rings being longitudinally movable;

said annular seal rings having transverse engaging seal faces, the area of one of said faces being greater than that of the other of said faces such that the area free of engagement with the other face is exposed to said location of relatively high fluid pressure;

said seal ring having said greater area seal face being longitudinally movable and having another transverse surface longitudinally spaced from its seal face, said another surface being opposed to and having an area smaller than the area of said one of said faces and being exposed to said location of relatively high fluid pressure, said another surface having an effective area smaller than the bearing area between said engaging seal faces, and the outer diameter of said area free of engagement being greater than the outer diameter of said another transverse surface;

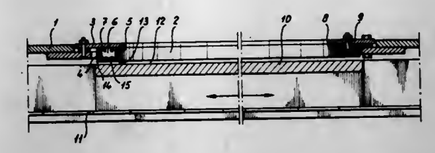
said seal ring having said greater area seal face having yet another transverse surface disposed intermediate its seal face and said another transverse surface and opposed to said area free of engagement, and means communicating said yet another surface with a zone of fluid pressure less than said relatively high fluid pressure;

whereby the pressure differential of the fluid pressures on said yet another surface and on said area free of engagement displaces said yet another surface and said area free of engagement in a direction away from said other of said faces.

4,114,901
SEAL FOR UNLOADING HATCH OF HOPPER BARGE OR SIMILAR VESSEL

Hendrik Pot, Alblasserdam, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Aug. 19, 1977, Ser. No. 826,182
Claims priority, application Netherlands, Sep. 1, 1976, 7609734
Int. Cl.² E06B 7/22, 7/18; F16J 15/46
U.S. Cl. 277—34.3 3 Claims

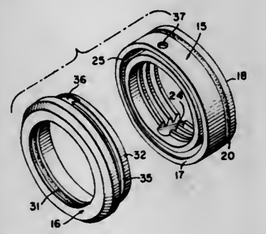


1. In a hopper barge having an unloading opening and a slide movable parallel to the plane of the opening to open and close the opening and an elastic seal surrounding the opening to seal against the slide in the closed position of the slide; the improvement in which the sealing member is inflatable, means to inflate the inflatable sealing member, a channel of rectangular cross-section that surrounds said opening and opens toward said slide, and means mounting said slide for sliding movement in one plane only, with the slide spaced a substantially constant distance from said channel.

4,114,902
SEALING RINGS

David Chester Orlowski, Rock Island, Ill., assignor to Inpro, Inc., Rock Island, Ill.

Filed Oct. 7, 1977, Ser. No. 840,374
Int. Cl.² F16J 15/44
U.S. Cl. 277—53 7 Claims



1. Sealing rings comprising:

(a) a first ring member;

(b) a second ring member;

(c) said first ring member having a first radially extending face and a second radially extending face;

(d) said second radially extending face having an annular axially extending recess having parallel inner and outer walls;

(e) said second ring member having an axially extending annular flange having an outwardly facing portion and an inwardly facing portion adapted and constructed to be complementary with said recess;

(f) said flange having at least one annular groove along the outwardly facing portion;

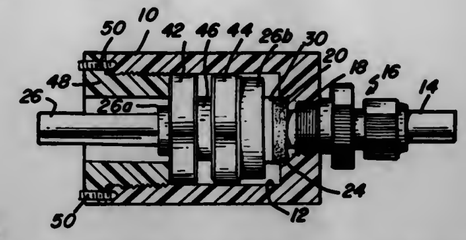
(g) said outer wall of said recess having at least one annular groove; and

(h) an opening from said groove of said outer wall communicating radially and externally of said first ring member.

4,114,903
ROTARY SEAL FOR VACUUM AND PRESSURE SYSTEMS

Robert J. Bovio, Lowell, and Renaldo Mercaldi, Beverly, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 644,376, Dec. 29, 1975, abandoned. This application Aug. 15, 1977, Ser. No. 824,420
Int. Cl.² F16J 15/34
U.S. Cl. 277—81 R 11 Claims



1. A rotary seal device for vacuum and pressure systems comprising:

housing means having a hollow interior;

first and second pipe means respectively entering opposite ends of said housing means and connected thereto, at least one of said pipe means being rotatably mounted within said housing means, the ends of said first and second pipe means within said housing means being axially aligned and spaced apart with one of said pipe means not located within the other;

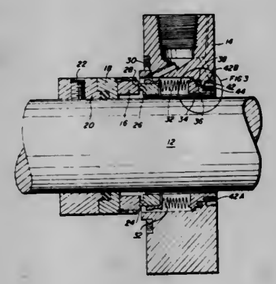
a ceramic disc-like member having a orifice therethrough and secured adjacent to the end of said first pipe means within said housing means in coaxial alignment therewith; and

an annular member secured adjacent to the end of said second pipe means within said housing means in coaxial alignment therewith and having a spring loaded carbon face portion biased toward said first pipe means, said housing means retaining said annular member coaxially aligned with said ceramic member with said carbon face portion pressed against said ceramic member to provide a rotary seal between said ends of said first and second pipe means, whereby the path through said first and second pipe means is sealed from the hollow interior of said housing means.

4,114,904
BELLOWS-TYPE MECHANICAL SEAL

Robert S. Wentworth, Jr., Temecula, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 4, 1977, Ser. No. 839,475
Int. Cl.² F16J 15/36
U.S. Cl. 277—88 7 Claims



1. In a bellows-type mechanical seal assembly comprising a

bellows supported by a support ring axially movable with respect to a housing flange and being sealed thereto by a gasket with means to axially move the support ring relative to the housing flange to compress the gasket, the improvement which comprises:

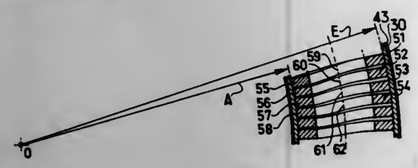
a threaded set screw for bearing against a portion of said housing flange and received in a substantially circular opening partially in said support ring and partially in said housing flange, one of said partial openings being threaded to be engaged by the threads of said set screw and the other of said partial openings being free of threads to constrain radial movement of said set screw.

4,114,905

SEAL RING COMPRISING A HOLLOW DEFORMABLE METAL ELEMENT

Bernard Mercier, Houilles, France, assignor to Le Joint Francais, Paris, France

Filed Jun. 10, 1975, Ser. No. 585,531
Claims priority, application France, Jun. 26, 1974, 74 22250; Jul. 23, 1974, 74 25463; Feb. 4, 1975, 75 03399
Int. Cl.² F16J *15/00*
U.S. Cl. 277—164 **4 Claims**



1. In a seal ring comprising a hollow deformable metal element intended to be clamped between two surfaces to be applied against each other in a fluid-tight manner and an internal web in the form of at least one spiral spring inside the hollow deformable metal element and flexibly resisting the deformations of the other, the improvement wherein said internal web comprises at least two springs, interwoven with each other and having contiguous turns, with an outside diameter of the winding slightly less than the inside diameter of the hollow deformable metal element, the developed length of the set of spiral springs being a little greater than that of the hollow metal element, so that at the time of shaping, the turns of at least one of the springs move away radially from those of the other, and outwardly thereof, and that after clamping between the surfaces to be applied against each other, the pressure zone of the hollow deformable metal element on the turns of the springs bear on flats formed from a practically continuous line in the upper and lower polar zones of the turns of each of the springs under the effect of clamping to avoid creeping of the deformable metal of the hollow element between the turns of the interwoven spiral springs in the zones of contact of the deformable metal element and the surfaces to be sealed.

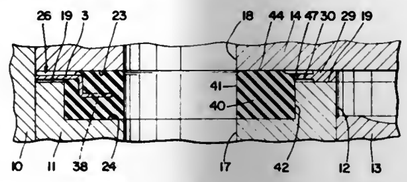
4,114,906

SEALED JOINT AND GASKET THEREFOR

Jerry G. Jelinek, La Habra, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 724,955, Sep. 20, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 867,253
Int. Cl.² F16J *15/12*
U.S. Cl. 277—166 **9 Claims**

1. A gasket comprising a metal plate having a first opening therethrough in which fluid at high temperature may be received and having a second opening therethrough in which fluid at a lower temperature may be received, a sealing member of resilient material in said second opening, said metal plate surrounding said sealing member and being fixedly secured thereto throughout a first portion only of the periphery of said sealing member, the remaining portion of said periphery being unattached to said plate, said unattached portion having no metallic member therein and being located between said openings whereby heat in said first opening is less readily transfer-



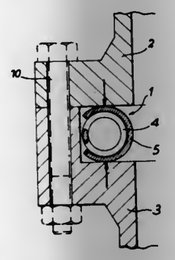
able through the plate to said sealing member at said remaining portion than at said first portion.

4,114,907

RESILIENT METAL GASKET

Claude Abbes, Saint Etienne; André Gournier, Saint Priest En Jarez; Christian Rouaud, Bourg Saint Andeol, and Raymond de Villepoix, Donzere, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 2, 1977, Ser. No. 830,194
Claims priority, application France, Sep. 9, 1976, 76 27178
Int. Cl.² F16J *15/02*
U.S. Cl. 277—206 R **3 Claims**



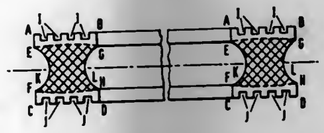
1. A resilient metal gasket comprising a central core formed by a helical spring of metal wire with continguous coils closed on itself and in the inoperative state being a continuous ring, at least one envelope surrounding said central core and having in the inoperative state a cross-section formed by a curve including a gap, said internal helical spring comprising at least one continuous wire whose cross-section is a circular segment having an angle at the centre at least equal to 180° and less than 360°, a chord of said segment producing an outer surface of said spring.

4,114,908

METAL SEALS OR GASKETS

Terence Peter Nicholson, Calf Hall, Muggleswick, Derwentside, Durham, England

Filed Apr. 27, 1977, Ser. No. 791,250
Int. Cl.² F16J *15/06*
U.S. Cl. 277—211 **8 Claims**



1. An annular metal gasket for making a fluid-tight sealed joint between axially opposed parallel surfaces, said gasket having a radially inner face formed with a peripheral groove, a radially outward face formed with a peripheral groove and

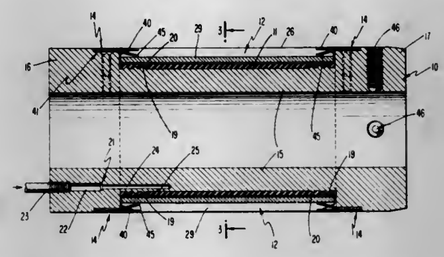
axial end faces intended respectively to engage said opposed parallel surfaces, at least one of said end faces being formed with concentric annular grooves, each of said grooves having a substantially rectangular profile taken in a radial plane.

4,114,909

CORE LOCKING DEVICE

Charles M. Taitel, Parsippany, and Ralph L. Ryan, Lake Parsippany, both of N.J., assignors to JRC Products, Inc., Boonton, N.J.

Filed Mar. 22, 1976, Ser. No. 669,218
Int. Cl.² B23B *31/40*
U.S. Cl. 279—1 Q **7 Claims**



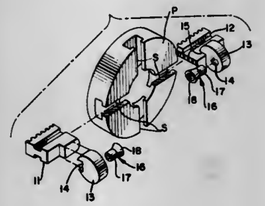
1. An expandable device for locking a bored member to a shaft element comprising in combination a body member having an annular surface adapted to be positioned within the bore, said body having enlarged diameter portions at each end of said annular surface, an annular single-wall expandable bladder covering said annular surface, means for sealing the ends of said bladder to said surface, a plurality of core-engaging bars extending axially along said bladder between said enlarged body portions and positioned side to side around the circumference of said bladder, said bars having longitudinally extending edges, means for introducing fluid medium under pressure between said bladder and said surface to force said core engaging members against the inner surface of the bore, means for locking the core-engaging members against relative rotational movement with respect to said body, and members positioned between said bladder and said bars linking the edges of said bars to limit movement of said bars away from each other in response to inflation of said bladder, said bars being provided with axial grooves adjacent each longitudinal edge on the inner surface thereof and said linking members engage said grooves and extend between adjacent bars.

4,114,910

LATHE CHUCK ASSEMBLY FOR HOLDING UNIVERSAL JOINTS

Marion F. Reeder, 2235 N.W. 41st St., Miami, Fla. 33142

Filed Apr. 19, 1977, Ser. No. 788,912
Int. Cl.² B23B *31/10*
U.S. Cl. 279—123 **6 Claims**



1. An assembly for positioning and holding a universal joint journal cross on a lathe comprising:

a lathe face plate, having a working surface and being circular, said face plate being attached at the center thereof to a lathe turning shaft;

a pair of jaw members mounted on said face plate to be radially movable thereon and to extend outwardly from said face plate;

a pair of base members each attached to one of said jaw members to be disposed at right angles with said face plate working surface and oreinted to be in spaced parallelism with each other, said base members each having an elongate precision bore defined therein to have a longitudinal axis and to be spaced from and radially disposed with respect to said face plate, said precision bore having the longitudinal axes thereof aligned with each other and parallel with a diameter of said face plate;

a pair of universal joint journal cross member supports, each support including an elongate stub shaft received in one of said precision bores and removably secured therein to one of said base members to mount said each support on said one base member, and a pair of hollow conical frustum members each including a longitudinal axis and having the smaller base thereof integral with one end of one of said stub shafts, said frustum members having the longitudinal axes thereof aligned with the longitudinal axes of said stub shafts so that said frustum members are in longitudinal axial alignment with each other, each frustum member being disposed with the hollow portion thereof opening toward the other frustum member with the larger bases thereof being located between the smaller bases thereof;

said stub shafts being received in said precision bores and snugly supported therein to remain in axial alignment with each other thereby retaining said frustum members in longitudinal axial alignment with each other so that said pair of frustum members are oriented to receive trunnions of a universal joint journal cross in a manner which retains a central axis of the cross diametrically oriented with respect to said face plate and thereby retains such central axis diametrically oriented with respect to the turning axis of a lathe turning shaft so that the center of the cross can be aligned and retained in alignment with the turning axis of such lathe shaft.

4,114,911

SKI POLE

Richard Alan Laird, The Lantern House, Chiselhurst, Kent, and Geoffrey Desmond Burnham, 50 Hill View Rd., Orpington, Kent, both of England

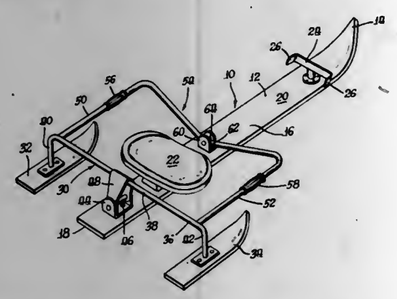
Filed Mar. 17, 1977, Ser. No. 778,386
Claims priority, application United Kingdom, Mar. 1, 1977, 8582/77
Int. Cl.² A63C *11/22*
U.S. Cl. 280—11.37 F **1 Claim**



1. A ski-pole comprising an upper tubular section and a lower tubular section adapted to telescope into one another from an extended to a retracted mode, and each of said sections having a free end, a handgrip at the free end of the upper tubular section, a wrist strap associated with the handgrip, a basket mounted on the lower tubular section adjacent the free

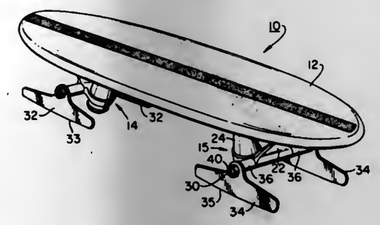
end thereof, and releasable securing means between the upper and the lower tubular sections so that by manipulation of said releasable securing means the upper and lower tubular sections may be telescoped relative to one another to reduce the length of the ski-pole, the handgrip at the free end of the upper tubular section including two separable parts, releasable connecting means between the said two parts to retain the two parts in a first position in which the two parts abut one another and are substantially aligned with said upper and lower tubular sections, pivot means associated with each of the two separable parts whereby the parts may be separated from one another by pivotal movement about said pivot means, and an abutment shoulder associated with each separable part for limiting the pivotal movement of the respective separable part, the abutment shoulders defining a second position in which the two parts are substantially in alignment with one another and perpendicular to said upper and lower tubular sections, the arrangement being such that the ski-pole may be used for skiing in the extended mode and as a seat in the retracted mode by unfolding the two separable parts from said first position to said second position respectively.

4,114,912
SLED APPARATUS
James E. Sweeney, 78 Crescent Dr., Mundelein, Ill. 60060
Filed Oct. 27, 1977, Ser. No. 845,817
Int. Cl.² B62B *13/12*
U.S. Cl. 280—12 KL **6 Claims**



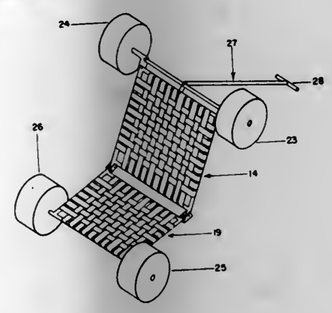
1. An improved sled apparatus for carrying a rider over a snow-covered ground surface, said sled apparatus comprising:
a main ski having an upwardly curving main ski tip and a main ski body extending longitudinally rearward thereof, said main ski body having an under surface adapted for contacting the snow-covered ground surface and an upper surface;
a seat carried by the main ski body on the upper surface thereof;
foot retainer means carried by the main ski body on the upper surface thereof and disposed between the main ski tip and the seat for resting and holding the feet of the rider; and
a stabilizer assembly comprising:
outrigger auxiliary skis, at least one of which is disposed on each side transversely of the main ski body;
a stabilizer bar having an upwardly disposed central portion and two downwardly disposed end portions, said stabilizer bar attached at each downwardly disposed end portion to an auxiliary ski;
pivot means for yokably mounting the central portion of said stabilizer bar on said main ski body and for pivoting said stabilizer bar about an axis longitudinal of said main ski body; and
handlebar means attached to said stabilizer bar substantially near the downwardly disposed end portions thereof and extending forwardly thereof and generally longitudinal of said main ski body for transmitting a selectively applied directional force to the stabilizer bar about said pivot means whereby the direction of travel of said sled apparatus may be controlled.

4,114,913
SKATE BOARD
William K. Newell, 2 N. 715 Morton Rd., and Elizabeth C. Tomson, 3 N. 743 Morton Rd., both of West Chicago, Ill. 60185
Filed May 2, 1977, Ser. No. 792,656
Int. Cl.² A63C *1/36, 17/18*
U.S. Cl. 280—12 H **9 Claims**



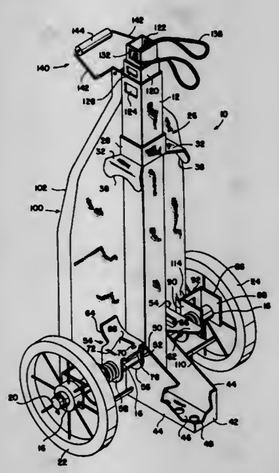
1. A skate board for use on ice surfaces, comprising
an elongated platform,
a first pair of runner blades having substantially identical ice engaging edges,
first means pivotally mounting said first pair of runner blades to said platform near one end thereof with said blades lying in mutually parallel relationship with the longitudinal axis of said platform,
a second pair of runner blades having substantially identical ice engaging edges,
second means pivotally mounting said second pair of runner blades to said platform near the other end thereof with said blades lying in mutually parallel relationship with the longitudinal axis of said platform, the configuration of said ice engaging edges of said first pair of runner blades providing a greater resistance to lateral movement on an ice surface than that provided by the configuration of said ice engaging edges of said second pair of runner blades.

4,114,914
FOLDABLE MULTI-PURPOSE CART
Teddy Cohen, 1493 Crown St., Wantagh, N.Y. 11793
Filed Aug. 31, 1977, Ser. No. 829,399
Int. Cl.² B62B *11/00*
U.S. Cl. 280—30 **5 Claims**



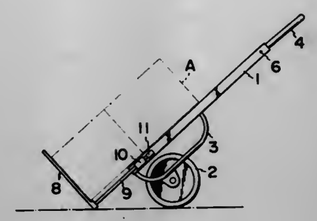
1. A foldable multi-purpose cart comprising elongated members forming a pair of rectangular frames, webbing supported by each of the frames to define respective substantially planar support surfaces bounded by the respective frames, lockable hinge means hingedly connecting the respective frames together, the hinge means including means for locking the hinge means when the cart is fully open with the frames being angularly displaced from each other by about 180°, two respective pairs of wheels rotatably mounted at the corners of the respective frames remote from the hinged connection of the frames, entirely outside the respective perimeters of the respective frames and extending beyond the respective planes of the respective frames, one of the frames being sufficiently smaller than the other in the dimension normal to the hinging axis to permit the frames to be folded together, without mutual interference of the respective pairs of wheels and without interference of the wheels on each frame with the other frame, into superimposed abutting relationship by relative rotation of the frames in a direction of said extension of the wheels toward each other by about 180° around the hinging axis from the locked, fully open configuration, a shaft and handle for pulling the cart, and means hingedly operatively connecting the shaft to one of the frames at a point between the pair of wheels mounted on the frame, the hinged connection means including means forming a pivotal axis for the shaft substantially parallel to the axis of the wheels for permitting the shaft to be pivoted into superposed relationship with the frame to which it is connected for compact storage of the cart or to be pivoted so that the shaft and handle extend beyond the frame for convenient pulling of the cart.

4,114,915
SKI CADDY
Diane L. Lello, 2517 Dunks Ferry Rd. Apt. A-309, Cornwell Heights, Pa. 19020, and Barry S. Diamond, 1901 Warick Bldg. 3850 Woodhaven Rd., Philadelphia, Pa. 19154
Filed Sep. 17, 1976, Ser. No. 724,169
Int. Cl.² B62B *1/06*
U.S. Cl. 280—47.19 **16 Claims**



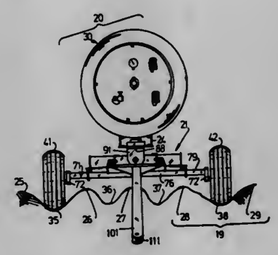
1. A caddy comprising a framework; said framework including an elongated member, said elongated member comprising a plurality of telescopically interconnected elements which are slidably interconnected to each other, and means for retaining said elements in their extended position; a plurality of wheels, said framework including means for rotatably mounting said wheels in spaced relation to each other to one end of said elongated member to enable said caddy to roll over a clear terrain, means connected to said framework for supporting at least one ski boot; a snow support, means for connecting said snow support to said framework so that it lies adjacent to said wheels, said wheels and said snow support being proportioned so that said caddy is supported by said wheels in shallow snow and by said snow support in deep snow; a cup, said cup being connected to one end of said elongated member with its opening in generally facing relation to said interconnected elements so that the heels of skis which are carried thereby are supported by said cup as they lie along the interconnected elements when they are extended.

4,114,916
HAND TRUCK
Shoji Oyama, Chikushino, Japan, assignor to Kuniko Saita, Fukuoka, Japan
Filed May 25, 1977, Ser. No. 800,250
Int. Cl.² B62B *1/02*
U.S. Cl. 280—47.29 **5 Claims**



1. A hand truck comprising:
a main frame for supporting a load thereon;
a handle member releasably secured to one end of said main frame;
a pair of wheels mounted on said main frame in longitudinally spaced relation to said handle member for movably supporting said main frame;
a temporary load supporting section carried slidably by said main frame adjacent the end thereof remote from said handle member and having a portion thereof extending substantially perpendicular to the loading surface of said main frame;
a pair of parallel spaced-apart slide bars disposed respectively at opposed sides of said main frame connected at the ends thereof to said temporary load supporting section, each of said slide bars being slidably carried by a support sleeve which is fixedly secured to said main frame; and
a stopper member at the free end of such slide bars for limiting the slide length of said temporary load supporting section relative to said main frame.

4,114,917
TANK TRAILER
Thomas C. Jones, 3603 Westlawn, Amarillo, Tex. 79102
Filed Jan. 16, 1978, Ser. No. 869,717
Int. Cl.² B62D *1/02*
U.S. Cl. 280—116 **7 Claims**



1. In a tank trailer having
A. a longitudinally extending frame member and
B. a rear wheel assembly with rear wheels supported on an axle extending transversely to the longitudinal member and a front wheel assembly rotatably connected to said longitudinal member
the improvement which comprises that:
C. said front wheel assembly comprises a first pivotal sup-

port assembly, a second pivotal support assembly and a wheel and frame assembly,

(1) said first pivotal support assembly comprising a first pair of pivotal connectors and a first pivotal support frame,

(a) said first pair of pivotal connectors comprising a first, upper, pivotal connector and a second, lower, pivotal connector,

(i) said first, upper pivotal connector comprising a first stationary bearing surface support and a first movable bearing surface support adjacent to each other and rotatable about a first, vertical axis of rotation for said connectors,

(ii) said second, lower, pivotal connector comprising a second stationary bearing surface support and a second movable bearing support adjacent to each other and rotatable about an axis of rotation coaxial with said first axis of rotation, said second, lower, pivotal connector being located below, and spaced away from, said first, upper, pivotal connector, and

(b) said first pivotal support frame comprising a first rigid post attached to and extending downward from said longitudinal member and a second member attached firmly to said post and extending forward from said post to said second stationary bearing surface support,

(2) said second pivotal support assembly comprising a second pivotal support means and a second pivot support frame;

(a)

(i) said second pivotal support frame having a first, upper, and second, lower, rigid part, each extending in a direction transverse to said first axis of rotation and vertically spaced from each other,

(ii) and a third part extending in a direction parallel to said first axis of rotation and comprising a rigid bar connected to one end of each of said first and second parts,

(iii) and a fourth rigid part extending in a direction parallel to said first axis of rotation and connected to an end of said first part spaced away from said one end of said first part

(iv) said first, upper, part being connected to said upper pivotal connector and

(v) said second, lower, part connected to said lower pivotal connector,

(b) said second pivotal support means comprising

(i) an outer rigid tube and an inner rigid shaft within said tube and resilient members therebetween and extending parallel thereto, said shaft connected to said first and fourth parts of said second pivotal support frame,

(ii) said tube being pivotally movable relative to said shaft along a second axis of rotation, said second axis being transverse to said first axis of rotation,

(3) said wheel and frame assembly comprising a pair of wheels, said wheels rotatably mounted on axles, said axles attached to a rigid cross-bar, said cross-bar extending parallel to said axles of said wheels, said cross-bar firmly attached to said longitudinally extending frame member.

4,114,918

SUSPENSION SYSTEM FOR WHEEL OF A MOTOR BIKE

Peter M. Lutz, Rochester, N.Y., assignor to Parlec, Inc., Fairport, N.Y.

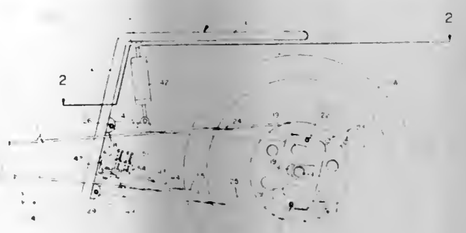
Filed Mar. 18, 1977, Ser. No. 778,847
Int. Cl.² B62K *25/04*
U.S. Cl. 280—284 **7 Claims**

1. A suspension system for the wheel of a cycle having a frame and at least one forward and one rear wheel, comprising two pairs of spaced, parallel suspension bars pivoted to the frame adjacent opposite sides, respectively, of the cycle to pivot about a first pair of spaced, parallel axes disposed generally horizontally one above the other when the cycle is in use,

a pair of spaced, parallel plates removably secured adjacent opposite ends thereof to said suspension bars at opposite sides of the cycle for pivotal movement upwardly and downwardly with said bars about said axes,

an axle for one of said forward and rear wheels, respectively, rotatably journaled adjacent opposite ends thereof in said plates to support its associated wheel for rotation about an axis parallel to said first pair of axes, and

first and second means interposed between said frame and



said suspension bars for resisting pivotal movement of said bars about said axes,

one of said means comprising a pair of leaf spring assemblies secured to said frame adjacent opposite sides, respectively, of said cycle,

each of said assemblies having at least one leaf spring fixed at one end and having a free end connected with one of said suspension bars at the adjacent side of the cycle to resist pivotal movement of the last-named bar upwardly relative to said frame, and

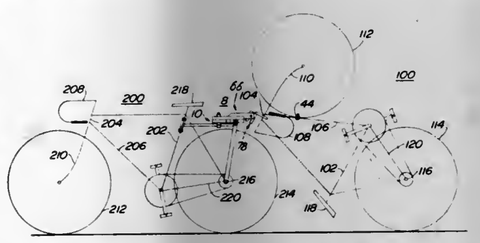
means for manually adjusting the forces with which the free ends of each of said one leaf springs resists pivotal movement of its associated suspension bar.

4,114,919

TOWING APPARATUS

Alan Andrews Stowe, 5415 Winchester Ave., Ventnor, N.J. 08406

Continuation of Ser. No. 786,203, Apr. 11, 1977, abandoned. This application Dec. 15, 1977, Ser. No. 860,800
Int. Cl.² B60D *1/04*
U.S. Cl. 280—292 **27 Claims**



1. A device for towing a first vehicle having at least two wheels by a second vehicle having only one rear wheel, said first vehicle having a frame stem for mounting one of said at least two wheels, said second vehicle having a frame, said rear wheel having an axle by which said rear wheel is attached to said frame of said second vehicle, comprising:

a platform member on said second vehicle, disposed over said rear wheel and attached to said axle and said frame;

a hitch member attached to said frame stem of said first vehicle, disposed above said one of said at least two wheels;

an intermediate member for connecting said hitch member to said platform member, adapted to slideably rest on said platform member;

first means for pivotally and detachably connecting said platform member and said intermediate member; and,

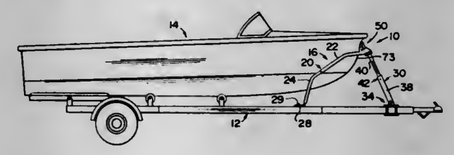
second means for pivotally and detachably connecting said hitch member and said intermediate member, such that said hitch member is disposed below said one of said at least two wheels, thereby causing said first vehicle to be towed in an inverted position.

4,114,920

BOAT FASTENING MEANS

Edward G. Boettcher, 254 Corbett St., Clearwater, Fla. 33516

Continuation-in-part of Ser. No. 654,651, Feb. 2, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,613
Int. Cl.² B60P *3/10*
U.S. Cl. 280—414 R **12 Claims**



1. A boat fastening assembly of the type primarily designed for use with a boat support, said fastening assembly comprising: cradle means mounted on the boat support, suspension means interconnected between the boat support and the cradle means in at least partially supporting relation thereon, connecting means disposed adjacent the interconnection of said cradle means and said suspension means and in position to lockingly engage a predetermined portion of a boat, biasing means connected to said suspension means and disposed to normally bias said suspension means in supportive movable relation to said cradle means and the boat mounted thereon, orienting means mounted in predetermined relation to said connection means, whereby movable engagement with the boat and said orienting means serves to properly position the boat relative to said connection means; said cradle means comprising at least two arm means; each of said arm means having one end connected to the boat support and having the other end connected to said suspension means; and said two arm means disposed in convergent relationship to one another enabling said cradle means to extend on opposite side of the bow of the boat to supportingly engage the boat being fastened.

4,114,921

VEHICLE HITCH

Rook O. Thorell, and Roger R. Ring, both of Loomis, Nebr. 68958

Filed Sep. 22, 1976, Ser. No. 725,588
Int. Cl.² B60D *7/00*
U.S. Cl. 280—478 B **3 Claims**

1. In combination with a vehicle bumper having rearward and forward ends, and a bottom portion,

a horizontally disposed hollow housing having a forward end, an open rearward end, top and bottom portions,

a horizontally disposed tongue member having rearward and forward end, said tongue member having a quadrilateral cross-section,

said tongue member having its forward end selectively movable received by the open rearward end of said housing and being selectively movable from a towing position, wherein the forward end of said tongue member is positioned adjacent the forward end of said housing, to a hitching position wherein the forward end of said tongue member is positioned rearwardly of the forward end of said housing,

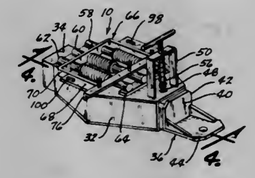
said housing having a horizontal width intermediate its rearward and forward end which is greater than the width of said tongue member to permit the horizontal swinging movement of said tongue member, relative to said housing, when in its hitching position,

means for selectively maintaining said tongue member in said towing position,

a first support rigidly secured to the top portion of said housing and having rearward and forward ends,

a second support longitudinally movably mounted on said first support between said rearward and forward ends,

a spring means interconnecting said first and second supports for yieldably resisting the relative longitudinal movement of said first and second supports,



and means for securing said second support to said bumper,

said housing having a pair of spaced-apart rear side wall portions extending forwardly and outwardly from its open rearward end,

said housing having a pair of spaced-apart forward side wall portions extending forwardly and inwardly from the forward ends of said rear side wall portions,

and a hollow tubular member extending forwardly from the forward ends of said forward side wall portion for receiving the forward end of said tongue member when said tongue member is in its hitching postition,

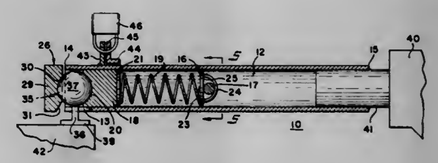
said hollow tubular member having a quadrilateral cross-section for closely embracing said forward end of said tongue member to prevent lateral swinging of said tongue member when said tongue member is positioned within said hollow tubular member.

4,114,922

VEHICLE HITCH DEVICE

James E. F. Holbrook, 555 Ward St., Urbana, Ohio 43078

Continuation of Ser. No. 641,153, Dec. 15, 1975. This application May 4, 1977, Ser. No. 793,715
Int. Cl. B60d *11/06*
U.S. Cl. 280—512 **9 Claims**



1. A vehicle hitch device comprising, a draft body having a hollow therein and a notch through said draft body into an opening into said hollow to enable the head of a stemmed head member to be inserted into said hollow through said opening and the stem of said stemmed head member to be inserted into said notch, engagable means of said draft body having an aperture therein for said engagable means of said draft body to be engaged; and means for resiliently pressing and releasably engaging said head of said stemmed head member, the latter said means including, presser and biasing means comprising, rectilinearly movable presser means in said hollow and having

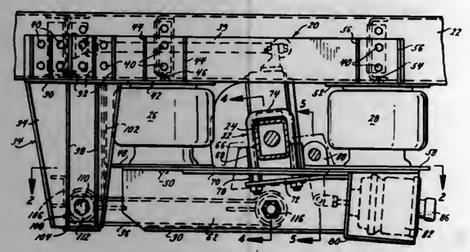
contact structure wherein there is a recess, and means for biasing said presser means to contact said head of said stemmed head member in said recess in said contact structure of said presser means when said head projects outwardly from said hollow through said opening and said stemmed head member is unhitched and is to be hitchingly engaged; and draft thrust transmission means comprising draft head means having contact structure, first and second leg means interconnected by said draft head means having said draft body disposed intermediately of said first and second leg means, and a pin extending through said draft body and connected with said first and second leg means for connecting said draft thrust transmission means to be moved to have said contact structure of said draft head means encounter said head of said stemmed head member with said head of said stemmed head means projecting outside said opening from said hollow during pivotal movement of said draft thrust transmission means under conditions of said head of said stemmed head member being in contact with said contact structure of said presser means in said recess in said contact structure of said presser means with said presser means being thrust inwardly into said hollow against bias of said biasing means while said stem of said stemmed head member is in said notch, and said draft thrust transmission means having a recess in said contact structure thereof for said head of said stemmed head member, by outward movement of said stemmed head member with said head pressed by said presser means in said recess in said contact structure of said presser means under bias of said biasing means, to be in said recess in said contact structure of said draft thrust transmission means outside said opening from said hollow when said draft thrust transmission means is in hitching position, and for said head of said stemmed head member to be retracted from said recess in said contact structure of said draft thrust transmission means by inward movement of said stemmed head member and said presser means against bias of said biasing means, thus enabling pivotal movement of said draft thrust transmission means away from said opening to an unhitching position relative to said stemmed head member, and said draft thrust transmission means further including engagable means forming an aperture and bridging said first and second leg means for said apertures in said engagable means of said draft body and said engagable means of said draft thrust transmission means to receive fastener means when said draft thrust transmission means is in said hitching position.

4,114,923

AIR SPRING AND BEAM SUSPENSION

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Filed Oct. 1, 1976, Ser. No. 728,867
Int. Cl.² B60G *11/26*
U.S. Cl. 280—711 9 Claims



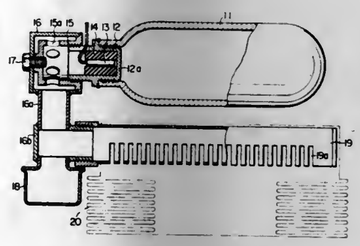
1. A suspension assembly for supporting a vehicle chassis on a vehicle axle comprising a hanger depending from the chassis and rigidly supported thereto to form a member thereof, a beam extending in the generally fore and aft direction located rearwardly of the hanger, means for rigidly mounting the vehicle axle to said beam to define an axle and beam assembly, said beam having spaced apart side walls defining a longitudinal recess extending in the generally fore and aft direction, spring means located rearwardly of said hanger and mounted between said beam and chassis for resiliently resisting movement of the axle and beam assembly during loading and unloading of the axle, and parallelogram means mounted between said chassis and said axle and beam assembly maintaining the pitch of the axle and beam assembly constant during loading and unloading of the axle, said parallelogram means further comprising at least one rod having its forward end pivotally mounted to said hanger and its rearward end pivotally mounted to said axle and beam assembly between said side walls, said rod being received within the longitudinal recess defined between the side walls of the beam to allow unobstructed pivotal movement of the rod upon loading and unloading of the axle, and said beam further having a compartment therein located rearwardly of the rearward pivotal mount of the rod for housing an air brake cylinder.

4,114,924

INFLATABLE BAG APPARATUS FOR PROTECTING OCCUPANTS IN VEHICLES

Takao Kasagi, Okazaki; Satoshi Kuwakado, Nishio, and Toshihiro Takei, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 2, 1976, Ser. No. 702,135
Claims priority, application Japan, Jul. 11, 1975, 50-85668
Int. Cl.² B60R *21/08*
U.S. Cl. 280—740 6 Claims



1. An inflatable bag apparatus for protecting occupants in a vehicle comprising:

a container for pressurized gas having an opening therein, a gas sealing member for closing said opening in a gas fluid-tight sealing manner,

an ignitor disposed adjacent to said gas sealing member for exploding and breaking said gas sealing member into pieces upon a vehicle collision,

a nozzle member having a plurality of apertures for passing the pressurized gas discharged from said container, said nozzle member being connected to said opening adjacent to said ignitor so as to trap relatively large-size fragments produced when said ignitor explodes said gas sealing member,

a first conduit having one end thereof connected to said nozzle member for receiving pressurized gas discharged from said container,

a trapping chamber connected to the other end of said first conduit, having a cross-section larger than that of said first conduit thereby positively trapping therein small sized fragments produced when said ignitor explodes said gas sealing member,

a second conduit having one end connected to said first conduit intermediate the said ends of said first conduit so that the pressurized gas passing through said first conduit is deflected from said first conduit to said second conduit thereby separating from the pressurized gas small sized fragments produced when said ignitor explodes said gas sealing member, and

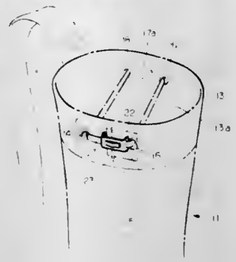
an inflatable bag connected to the other end of said second conduit to receive the pressurized gas discharged from said second conduit.

4,114,925

HOLDER DEVICE

Howard Mathew Burns, 344 E. Hardin, Apt. 8, Findlay, Ohio 45840

Filed Jun. 22, 1977, Ser. No. 808,810
Int. Cl.² B42D *17/00*
U.S. Cl. 281—45 10 Claims



1. A carrier for a pencil and score card or the like adapted for releasable attachment to a golf club bag and particularly to the upper collar region thereof, said collar including a plurality of eyelets and a peripheral strap extending through said eyelets,

said carrier comprising a one-piece member composed of a principal generally rectangular panel,

said panel including a deflectable central portion defined by a generally U-shaped cut extending through said principal panel, said central portion being deflected slightly upwards from the plane of said panel to define a card-retaining means at the juncture of said central portion with said panel and having a transverse upwardly distorted region spaced from the terminal edge of said central portion to compressingly accommodate a pencil beneath it and the surrounding panel, and

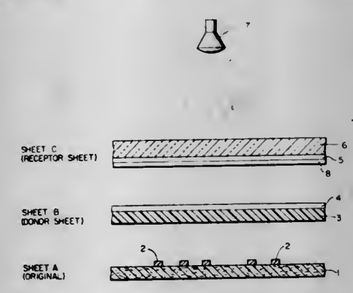
means integral with said carrier for releasable securement to said elongate strap.

4,114,926

BARRIER COAT FOR USE IN THERMOGRAPHIC IMAGING ASSEMBLY

David P. Habib, East Greenwich, and Morgan E. Gager, Warwick, both of R.I., assignors to Trans World Technology Laboratories, Inc., Fiskeville, R.I.

Filed Apr. 19, 1976, Ser. No. 678,455
Int. Cl.² B41M *5/00*
U.S. Cl. 282—27.5 16 Claims



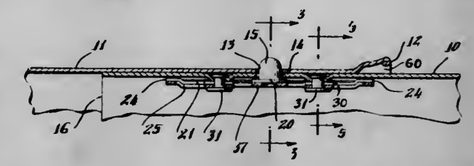
1. An infrared radiation transmitting assembly for use in a thermographic process for producing an imaged transparency corresponding to an imaged original sheet, which comprises an acid donor sheet, a receptor sheet which is receptive to the acid in said donor sheet and reactive therewith to form colored images corresponding to the images on the original sheet, and a substantially infrared transparent, acid-resistant thermoplastic polymeric barrier layer disposed between said donor sheet and said receptor sheet, said barrier layer having a permeability coefficient to water of less than 150 at about 25° C. and permitting diffusion of said volatilizable organic acid into the receptor sheet at thermal imaging temperatures, said acid donor sheet comprising an infrared-transmitting substrate sheet material carrying a layer comprising an organic acid which is volatilizable at the temperature of thermographic imaging and a polymeric binder for said organic acid, and said receptor sheet comprising a clear, infrared-transmitting plastic film carrying a coating comprising a substantially colorless acid-sensitive dye precursor which develops an intense color upon reaction with said acid.

4,114,927

TUBE COUPLING FOR VACUUM CLEANERS

Norman P. Butcher, 702 Sheridan Rd., Normal, Ill. 61761

Filed Jul. 7, 1977, Ser. No. 813,443
Int. Cl.² F16L *37/08*
U.S. Cl. 285—7 9 Claims



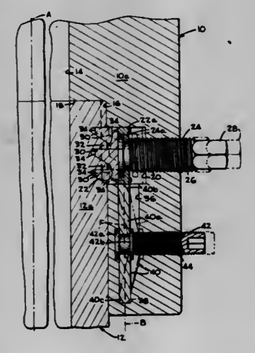
1. A coupling comprising a first rigid tubular member having an open end, a second rigid tubular member having an outer diameter at one end slidably fitting within said open end of said first tubular member, and means for releasably locking said tubular members together comprising first and second alignable holes in said first and second tubular members respectively, a button extending through said first and second holes, and spring means within said second tubular member, said spring means comprising a flat resilient member affixed within said second tubular member at two positions longitudinally spaced in opposite directions from said hole, and having a central portion held to said button, said resilient member having apertures extending therethrough in regions directly between each of said two positions and said second hole, whereby said button is resiliently biased radially outwardly with respect to said second tubular member.

4,114,928

HIGH FORCE CONNECTING MECHANISM

Glen E. Lochte, Cypress, Tex., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 10, 1977, Ser. No. 758,225
Int. Cl.² F16L *21/08*
U.S. Cl. 285—18 14 Claims



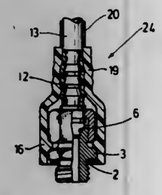
1. Clamping mechanism comprising a first member having

two spaced apart abutment surfaces, a second member in overlapping relationship with said first member, a shiftable locking member having a locking position in bridging relationship with said first and second members to hold said members together, said second member and said locking member having teeth for engagement to lock said members together when said locking member is in said locking position, a toggle member mounted in said first member operable when expanded to exert a clamping force from one of said abutment surfaces to the other abutment surface through said locking member and said second member, and means to expand said toggle member.

4,114,929
PLASTIC PIPE OR HOSE CONNECTION FOR FUEL CONDUITS

Heinrich Knapp, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 685,802, May 12, 1976, abandoned.
This application Sep. 13, 1977, Ser. No. 832,859
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1975, 2536017
Int. Cl.² F16L *11/12*
U.S. Cl. 285—45 **6 Claims**

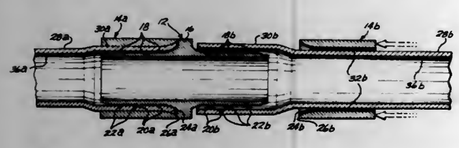


1. In a coupling for plastic tubes or hoses intended for use in fuel conduits of motor vehicles, especially the fuel lines of a fuel injection system, including: a tube engaging nipple; a further nipple; and connecting means for connecting the two nipples, the improvement comprising:
a pipe-like protective rubber sleeve surrounding at least part of the tube engaging nipple and the further nipple and the connecting means, said sleeve having spaced apart sealing means, on either side of the connection of the two nipples, wherein the connecting means and the further nipple together define a sealing space, wherein one of the sealing means comprises an annular protuberance which is received within the sealing space and engages therein the connecting means and the further nipple, and wherein the other sealing means comprises an inwardly elastic tensioning portion of the sleeve adjacent the tube engaging nipple which is capable of adapting to the contour of the surface to which it is affixed.

4,114,930
SWAGED TUBE COUPLING

Donald Leroy Perkins, Kent, and Bruce Lindsay Streckenbach, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 28, 1976, Ser. No. 700,677
Int. Cl.² F16L *13/14*
U.S. Cl. 285—334.5 **2 Claims**

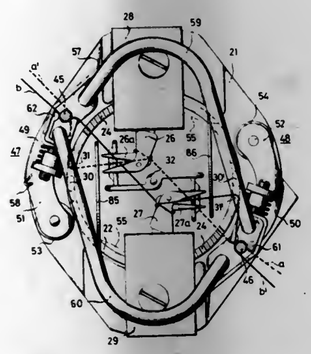


1. An apparatus for joining to an end of tubing comprising: tubing expanded to a larger diameter for a distance back from the end; a tubular insert having an outer periphery with a flange, a series of serrations and a surface tapering downward from the flange to the first serration and with the serrations having a side nearest the flange extending radially and the side away from the flange inclined toward the flange to meet on a sharp cutting edge and sized to provide a non-interference fit into the expanded end of tubing; and a sleeve having a gradually decreasing internal diameter to extend part way inward from an end facing the flange, and an internal diameter sized to slide over the unexpanded tubing and to swage and firmly hold the tubing, which is of a hardness less than the sleeve and insert, between the sleeve and the insert with the end portion of the tubing flared radially outward and engaging the tapered surface on the insert and the decreasing internal diameter portion of the sleeve, and with the tubing penetrated part way through by the sharp edge of the serrations when the sleeve is pressed toward the flange.

4,114,931
KNOTTING DEVICE

Ivica Romic, München-Gladbach, Germany, assignor to W. Schlafhorst & Co., München-Gladbach, Germany

Filed Dec. 5, 1977, Ser. No. 857,704
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655042
Int. Cl.² B65H *69/04*
U.S. Cl. 289—2 **7 Claims**

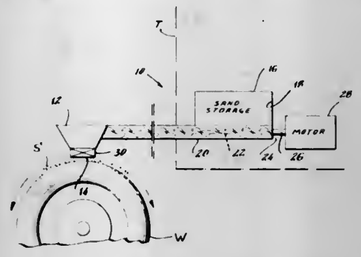


1. In a tying device for knotting together respective ends of two threads extending in opposite directions and having two tying jaws rotatable in opposite directions and disposed mutually opposing and laterally offset from one another, a cup wheel toothed at a rim thereof and meshing with drive pinions of the tying jaws, the cup wheel having entrainers disposed at varying levels for introducing and guiding the thread ends, and serving for driving the tying jaws, a longitudinally shiftable stripper for the knotted thread disposed in the center of the cup wheel, and two thread clamping devices disposed outside the cup wheel, each of the thread clamping devices being controllable and having multiple looping clamps formed with threading contours, a device for equalizing and limiting bearing pressure at looping locations thereof, and a control device comprising a pivotally mounted, controllable two-armed lever having a longer and a shorter lever arm, said longer arm carrying said multiple looping clamps at a free end thereof, and means for transmitting control movements to said shorter arm.

4,114,932
MOTOR VEHICLE WHEEL TRACK SANDING DEVICE

Fred Freeberg, P.O. Box 34391, Omaha, Nebr. 68134

Filed Jul. 5, 1977, Ser. No. 812,914
Int. Cl.² B60B *39/06, 39/10*
U.S. Cl. 291—33 **1 Claim**



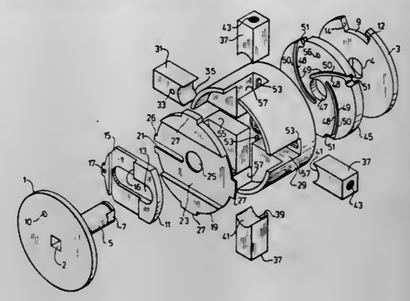
1. A motor vehicle wheel track sanding device comprising:
a sand storage tank forming a storage chamber therein for sand;
at least one hopper mounted over a wheel of said motor vehicle;
a pipe connecting the interior of said hopper with said storage chamber;
auger means rotatably disposed within said pipe, the rotation of said auger means transporting sand disposed within said storage chamber to said hopper;
means for rotating said auger;
said hopper having a sand discharge opening disposed above said wheel and generally longitudinally centered relative to the wheel whereby sand is discharged from said opening onto said wheel and is directed forwardly or rearwardly of the wheel depending on the direction of rotation of said wheel;
valve means on said discharge opening for selectively releasing sand from said hopper;
valve control means remotely situated relative to said hopper and operatively connected to said valve means for opening and closing said discharge opening;
electrical circuit means for activating said rotating means and said valve means simultaneously; and
said electrical circuit means being operative for deactivating said rotating means and said valve means simultaneously, said valve means being closed upon deactivation and said rotating means and auger being slowed to a stop by friction upon deactivation of said rotating means whereby, subsequent to deactivation, a supply of sand is formed at said discharge opening which is closed by said valve means.

4,114,933
LOCK STRUCTURE

Eliezer Jankelewitz, 775 Lawrence Ave. West, Apt. 10, Toronto, Ontario, Canada (M6A 1C2), and John Pinhas Benedict, 7026 Kelder St. Coute St. Luke, Montreal, Quebec, Canada

Filed Aug. 29, 1977, Ser. No. 828,288
Int. Cl.² E05C *1/06*
U.S. Cl. 292—37 **17 Claims**

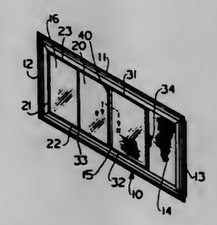
1. A lock provided with first locking means, second locking means and rotatable operating means for operating said first and second locking means, and operating means being rotatable in both directions from a first position in which said first locking means is spring loaded to remain in a locking position and said second locking means is spring loaded to remain in an unlocking position, the arrangement being such that when said operating means is rotated in one direction from said first position, said first locking means is moved to an unlocking position without disturbing said second locking means and also being such that when said operating means is rotated in the opposite direction from said first position, said first locking means is maintained in its locking position and said second locking means is moved to a locking position.



4,114,934
HANDLE FOR SLIDING WINDOW

Donald V. Kelly, 15903 Candor Ridge Rd., Canyon Country, Calif. 91351

Division of Ser. No. 513,296, Oct. 9, 1974, Pat. No. 4,004,629.
This application Apr. 23, 1976, Ser. No. 679,798
Int. Cl.² E05C *3/04*
U.S. Cl. 292—87 **3 Claims**



1. A handle for moving and locking a moving member with respect to a frame comprising;
(a) a unitary body defining
(b) a handle portion;
(c) a pair of leg portions depending from said handle portion;
(d) the first of said pair of leg portions including a first foot, the underside of said first foot constituting the mounting surface of said handle on the said moving member;
(e) the second of said pair of leg portions including a second foot, said second of said pair of leg portions being spaced from said first of said pair of leg portions at least in the region of said feet;
(f) said second foot including an integral catch for engaging the said frame;
(g) said first and second feet defining a throat region for receiving said frame;
(h) at least one of said leg portions being distortable to allow the engagement and disengagement of said catch with said frame by distortion of said leg portion.

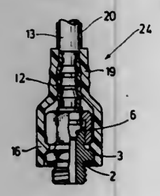
two spaced apart abutment surfaces, a second member in overlapping relationship with said first member, a shiftable locking member having a locking position in bridging relationship with said first and second members to hold said members together, said second member and said locking member having teeth for engagement to lock said members together when said locking member is in said locking position, a toggle member mounted in said first member operable when expanded to exert a clamping force from one of said abutment surfaces to the other abutment surface through said locking member and said second member, and means to expand said toggle member.

4,114,929

PLASTIC PIPE OR HOSE CONNECTION FOR FUEL CONDUITS

Heinrich Knapp, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 685,802, May 12, 1976, abandoned.
This application Sep. 13, 1977, Ser. No. 832,859
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1975, 2536017
Int. Cl.² F16L *11/12*
U.S. Cl. 285—45 **6 Claims**



1. In a coupling for plastic tubes or hoses intended for use in fuel conduits of motor vehicles, especially the fuel lines of a fuel injection system, including: a tube engaging nipple; a further nipple; and connecting means for connecting the two nipples, the improvement comprising:

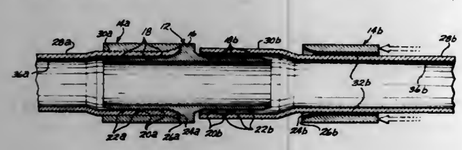
a pipe-like protective rubber sleeve surrounding at least part of the tube engaging nipple and the further nipple and the connecting means, said sleeve having spaced apart sealing means, on either side of the connection of the two nipples, wherein the connecting means and the further nipple together define a sealing space, wherein one of the sealing means comprises an annular protuberance which is received within the sealing space and engages therein the connecting means and the further nipple, and wherein the other sealing means comprises an inwardly elastic tensioning portion of the sleeve adjacent the tube engaging nipple which is capable of adapting to the contour of the surface to which it is affixed.

4,114,930

SWAGED TUBE COUPLING

Donald Leroy Perkins, Kent, and Bruce Lindsay Streckenbach, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 28, 1976, Ser. No. 700,677
Int. Cl.² F16L *13/14*
U.S. Cl. 285—334.5 **2 Claims**



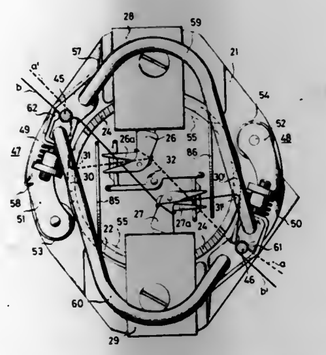
1. An apparatus for joining to an end of tubing comprising: tubing expanded to a larger diameter for a distance back from the end; a tubular insert having an outer periphery with a flange, a series of serrations and a surface tapering downward from the flange to the first serration and with the serrations having a side nearest the flange extending radially and the side away from the flange inclined toward the flange to meet on a sharp cutting edge and sized to provide a non-interference fit into the expanded end of tubing; and a sleeve having a gradually decreasing internal diameter to extend part way inward from an end facing the flange, and an internal diameter sized to slide over the unexpanded tubing and to swage and firmly hold the tubing, which is of a hardness less than the sleeve and insert, between the sleeve and the insert with the end portion of the tubing flared radially outward and engaging the tapered surface on the insert and the decreasing internal diameter portion of the sleeve, and with the tubing penetrated part way through by the sharp edge of the serrations when the sleeve is pressed toward the flange.

4,114,931

KNOTTING DEVICE

Ivica Romic, Mönchen-Gladbach, Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Germany

Filed Dec. 5, 1977, Ser. No. 857,704
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655042
Int. Cl.² B65H *69/04*
U.S. Cl. 289—2 **7 Claims**



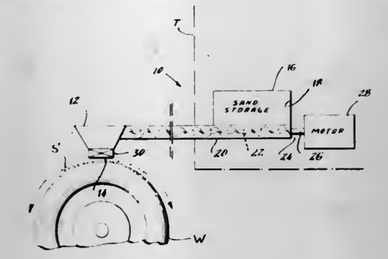
1. In a tying device for knotting together respective ends of two threads extending in opposite directions and having two tying jaws rotatable in opposite directions and disposed mutually opposing and laterally offset from one another, a cup wheel toothed at a rim thereof and meshing with drive pinions of the tying jaws, the cup wheel having entrainers disposed at varying levels for introducing and guiding the thread ends, and serving for driving the tying jaws, a longitudinally shiftable stripper for the knotted thread disposed in the center of the cup wheel, and two thread clamping devices disposed outside the cup wheel, each of the thread clamping devices being controllable and having multiple looping clamps formed with threading contours, a device for equalizing and limiting bearing pressure at looping locations thereof, and a control device comprising a pivotally mounted, controllable two-armed lever having a longer and a shorter lever arm, said longer arm carrying said multiple looping clamps at a free end thereof, and means for transmitting control movements to said shorter arm.

4,114,932

MOTOR VEHICLE WHEEL TRACK SANDING DEVICE

Fred Freeberg, P.O. Box 34391, Omaha, Nebr. 68134

Filed Jul. 5, 1977, Ser. No. 812,914
Int. Cl.² B60B *39/06, 39/10*
U.S. Cl. 291—33 **1 Claim**



1. A motor vehicle wheel track sanding device comprising:

a sand storage tank forming a storage chamber therein for sand;

at least one hopper mounted over a wheel of said motor vehicle;

a pipe connecting the interior of said hopper with said storage chamber;

auger means rotatably disposed within said pipe, the rotation of said auger means transporting sand disposed within said storage chamber to said hopper;

means for rotating said auger;

said hopper having a sand discharge opening disposed above said wheel and generally longitudinally centered relative to the wheel whereby sand is discharged from said opening onto said wheel and is directed forwardly or rearwardly of the wheel depending on the direction of rotation of said wheel;

valve means on said discharge opening for selectively releasing sand from said hopper;

valve control means remotely situated relative to said hopper and operatively connected to said valve means for opening and closing said discharge opening;

electrical circuit means for activating said rotating means and said valve means simultaneously; and

said electrical circuit means being operative for deactivating said rotating means and said valve means simultaneously, said valve means being closed upon deactivation and said rotating means and auger being slowed to a stop by friction upon deactivation of said rotating means whereby, subsequent to deactivation, a supply of sand is formed at said discharge opening which is closed by said valve means.

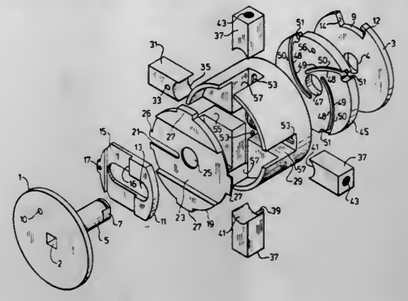
4,114,933

LOCK STRUCTURE

Eliezer Jankelewitz, 775 Lawrence Ave. West, Apt. 10, Toronto, Ontario, Canada (M6A 1C2), and John Pinhas Benedict, 7026 Kelder St. Coute St. Luke, Montreal, Quebec, Canada

Filed Aug. 29, 1977, Ser. No. 828,288
Int. Cl.² E05C *1/06*
U.S. Cl. 292—37 **17 Claims**

1. A lock provided with first locking means, second locking means and rotatable operating means for operating said first and second locking means, and operating means being rotatable in both directions from a first position in which said first locking means is spring loaded to remain in a locking position and said second locking means is spring loaded to remain in an unlocking position, the arrangement being such that when said operating means is rotated in one direction from said first position, said first locking means is moved to an unlocking position without disturbing said second locking means and also being such that when said operating means is rotated in the opposite direction from said first position, said first locking means is maintained in its locking position and said second locking means is moved to a locking position.

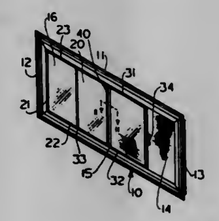


4,114,934

HANDLE FOR SLIDING WINDOW

Donald V. Kelly, 15903 Candor Ridge Rd., Canyon Country, Calif. 91351

Division of Ser. No. 513,296, Oct. 9, 1974, Pat. No. 4,004,629.
This application Apr. 23, 1976, Ser. No. 679,798
Int. Cl.² E05C *3/04*
U.S. Cl. 292—87 **3 Claims**



1. A handle for moving and locking a moving member with respect to a frame comprising;

(a) a unitary body defining

(b) a handle portion;

(c) a pair of leg portions depending from said handle portion;

(d) the first of said pair of leg portions including a first foot, the underside of said first foot constituting the mounting surface of said handle on the said moving member;

(e) the second of said pair of leg portions including a second foot, said second of said pair of leg portions being spaced from said first of said pair of leg portions at least in the region of said feet;

(f) said second foot including an integral catch for engaging the said frame;

(g) said first and second feet defining a throat region for receiving said frame;

(h) at least one of said leg portions being distortable to allow the engagement and disengagement of said catch with said frame by distortion of said leg portion.

4,114,935

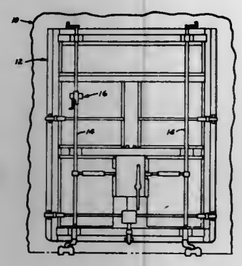
BOX CAR ANTI-PILFERAGE DEVICE

Lowell L. Malo, St. Peters, MO, assignor to ACF Industries, Incorporated, New York, N.Y.

Division of Ser. No. 636,350, Nov. 28, 1975, which is a division of Ser. No. 468,855, May 10, 1974, Pat. No. 3,978,618. This application Nov. 26, 1976, Ser. No. 745,038

Int. Cl.² E05C *13/02*

U.S. Cl. 292—104 **5 Claims**



1. A box car anti-pilferage device adapted to be mounted on a railway box car having a sliding door a sufficient distance above the rail whereby the device is usually beyond the reach of thieves standing on the ground adjacent the rail comprising: a door post having a transverse extension including a portion adapted to be engaged by a box car sliding door in closed position; a hasp locking member pivotable mounted about a generally horizontal axis upon one of said box car sliding door and said door post extension; a tripped position plate mounted upon said one of said box car sliding door, and said door post extension; a locking plate mounted on the other of said sliding door and said door post extension; said hasp locking member in locked position engaging said locking plate; said hasp locking member including a cam surface, at least a portion of which is inclined with respect to the vertical; said hasp locking member being manually movable from said locked position to an open position out of engagement with said locking plate; stop means located above said locking plate comprising an outwardly extending stop member made of flexible material mounted upon the other of said sliding door and said door post extension; said member being displaced as said hasp locking member assumes said open position; said stop member maintaining said hasp locking member in said open position during initial movement of said sliding door from a door closed position toward a door open position; means for moving said locking member automatically from the open position to a tripped position engaging said tripped position plate after said sliding door has moved a predetermined distance toward open position; said locking member cam surface effective to cause said locking member to automatically assume a locked position from said tripped position engaging said locking plate without additional adjustment of the anti-pilferage device by the operator when said box car sliding door assumes the door closed position.

4,114,936

IDENTIFICATION OF GEMSTONES BY RELATIVE REFLECTANCE MEASUREMENTS COUPLED WITH A SCALE CALIBRATED IN GEM NAMES

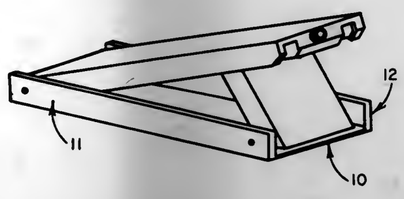
Edward Dominguez, 503 Park Ave., San Jose, Calif. 95110

Filed May 5, 1977, Ser. No. 794,040

Int. Cl.² E05C *19/00*

U.S. Cl. 292—342 **2 Claims**

1. A device for limiting the unauthorized opening of a door comprising the combination of an elongated channel shape member having a bottom portion and upstanding side walls; means attaching said member adjacent to the door so that said door must swing over said member when said door is opened, and second elongated channel member having a top portion and depending side walls, pivot means pivotally attaching the side walls of said second member to the side walls of said first mentioned members so that said second member is adapted to be tilted with respect to said first mentioned member whereby said members form a wedge adjacent to said door to limit the unauthorized opening of said door, a third member; second pivot means pivotally attaching one end of said third member to said first mentioned member spaced from said first mentioned pivot means so that said third member may be erected



with respect to said first mentioned member under said second member to hold said second member in said tilted position; said second member having a threaded hole in one end portion thereof; a screw adjustable in said threaded hole, said screw extending to the upper end portion of said third member when said third member is in erect position, said screw gripping said third member and holding said third member in said erect position until released by withdrawal of said screw.

4,114,937

BUMPER ATTACHMENT

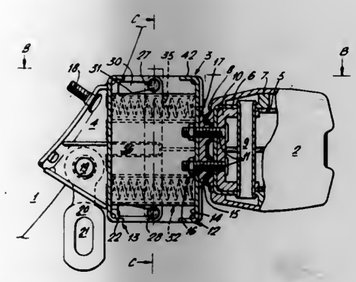
Stig Ivar Norlin, Trollhattan, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Dec. 16, 1976, Ser. No. 751,369

Claims priority, application Sweden, Dec. 22, 1975, 7514504

Int. Cl.² B60R *19/02*

U.S. Cl. 293—85 **3 Claims**



1. In an arrangement for connecting a bumper unit to a vehicle by means of at least one energy-absorbing, pivotable connecting device, the improvement wherein:

(a) said connecting device comprises two hinge-halves which are pivotally mounted relative to one another about at least one pivot shaft, said hinge-halves comprising base plates (i) securely connected to said vehicle and said bumper unit, and (ii) being arranged to adopt a substantially parallel position relative to one another,

(b) said bumper unit is attached to one of said hinge-halves, whilst the other hinge-half is attached to said vehicle, and

(c) energy-absorbing elements comprising at least one resilient cellular block defining therein elongated cells open at at least one end thereof and arranged between said two hinge-halves, said energy-absorbing elements being arranged so as to permit, by compression, said base plates of said hinge-halves to approach each other both with and without simultaneous pivotal movement to a position in which said base plates are not parallel, said pivotal movement occurring when said bumper unit is subjected to an impact above or beneath its horizontal central plane.

4,114,938

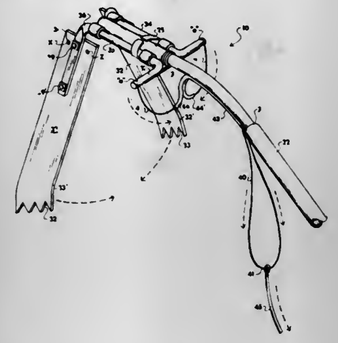
GUTTER CLEANING DEVICE

M. Lane Strader, 910 Hern St., Greensboro, N.C. 27405

Filed Aug. 25, 1977, Ser. No. 827,798

Int. Cl.² B25J *1/00*; E04D *13/06*

U.S. Cl. 294—19 R **5 Claims**



1. A device for removing leaves and debris from gutters from a ground position, said device comprising:

a. an elongated extension pole including means for selectively extending said pole to one of a plurality of extended positions;

b. a gripping means mounted at the upper end of said extension pole, said gripping means including:

i. a pair of activating bails each having a primary segment rotatably attached in juxtaposed relation to the upper end of said extension pole, a mounting segment extending substantially perpendicularly from the forward end thereof, and a control segment extending substantially perpendicularly from the rearward end of each of said primary segments;

ii. a pair of gripping blades substantially rectangular in shape, one of said gripping blades being mounted on each of said mounting segments in such a manner that said blades depend downwardly from said extension pole at an angle generally less than 90°;

iii. means for adjusting the angle at which said gripping blades depend from said extension pole;

iv. control means for selectively moving said gripping blades from a first, open position to a second, closed position.

4,114,939

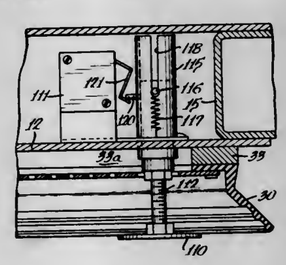
VACUUM PICKUP HEAD

Harold S. Burt, Mendota, Ill., assignor to Conco Inc., Mendota, Ill.

Filed Sep. 13, 1976, Ser. No. 723,027

Int. Cl.² B66C *1/02*

U.S. Cl. 294—64 R **10 Claims**



1. A pickup head for vacuum holding of a container comprising, a casing with an interior vacuum chamber and a depending container-engaging seal element to seal the space between said casing and a container, a bottom wall of said casing having a passage to connect said space with said vacuum chamber, valve means for controlling communication between said chamber and said space including a two position valve plate movable toward and away from said bottom wall between passage open and passage closed positions, and fluid-powered motor means for moving said valve plate.

4,114,940

SAFETY HOOK

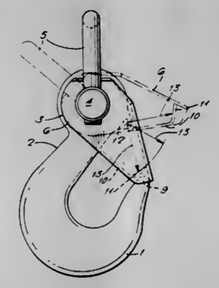
Jan Jørgen Brynemo, and Tor William Spilhaug, both of Helle, Norway, assignors to A/S Kjaettingfabriken, Helle, Norway

Filed Oct. 29, 1976, Ser. No. 737,030

Claims priority, application Norway, Oct. 29, 1975, 753640

Int. Cl.² B66C *1/36*

U.S. Cl. 294—82 R **6 Claims**



1. A load carrying safety hook comprising a hook portion, a body portion provided with a transverse eye, a pin received in said eye for attachment to a shackle member, a latch adapted to close the gap of the hook and having a substantially U-shaped cross section and mounted on said pin for pivotable movement outwardly of the hook gap for opening and closing the same, a compressible spring inserted in said latch to extend from a transverse wall adjacent the free end of said latch to said hook body at a point whereby said spring in the closed position of said latch extends at an angle to a straight line extending through the axis of said pin to the point on said transverse wall of the latch at which one end of said spring is secured.

4,114,941

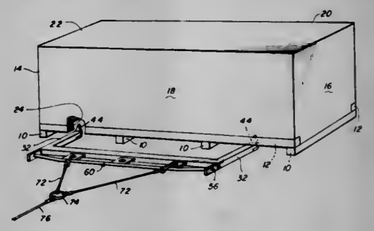
CARGO HANDLING DEVICE

Michael H. Heaton, Thurston Rd., Gloucester, Mass. 01930

Filed Jun. 20, 1977, Ser. No. 808,108

Int. Cl.² B66C *1/22*

U.S. Cl. 294—86 R **4 Claims**



1. A crate grappling device comprising

a generally U-shaped frame including a pair of coplanar arms and a cross member interconnecting the arms at one end thereof,

a pair of hook-like members, one secured to the other end of each of the arms and extending in the same direction from the plane of the arms,

a plurality of line anchors spaced along the cross member enabling the user to selectively secure a line to the device,

and a curved skid secured to the ends of each of the arms on the sides opposite the hook-like members,

said skids and hook-like members being formed as an integral unit with the skids defining a radius at the end of each arm, whose center of curvature is parallel to said cross-member.

4,114,942

EXPANDABLE HOUSE TRAILER STRUCTURE

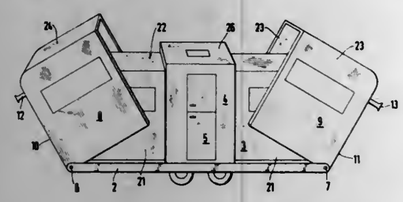
Karl Walter Greiner, Steigstr. 48, D-7321 Aichelberg, Germany

Filed Oct. 20, 1976, Ser. No. 733,984

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1975, 2546959

Int. Cl.² B60P *3/32*

U.S. Cl. 296—23 G **5 Claims**



1. A housing structure convertible between smaller and larger living areas comprising:

a base support frame;

a cabin having a floor, ceiling and side walls secured to said base support frame and having a U-shaped member contacting and overlying the ceiling and adjoining side walls defining a flat shoulder or abutment facing one edge of said cabin;

a four sided shell member pivotally mounted to said frame adjacent one end of said cabin or an axis transverse to a longitudinal axis of said cabin, said shell in closed position enclosing said one end, ceiling and side walls of said cabin with its edges remote from the pivot point engaging said flat shoulder and defining therewith a smooth uninterrupted exterior surface, said shell in an open position rotated 90° from its closed position forming an extension of the living area in said cabin; and

a separable roof member positionable to form a roof over said shell in its open position.

4,114,943

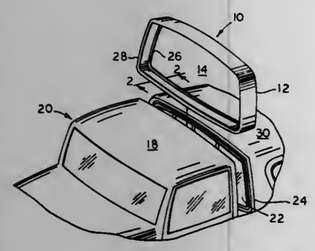
WINDOW BOOT

Thomas Engelhard, 4325 Colfax Ave., South Minneapolis, Minn. 55409

Filed Nov. 2, 1976, Ser. No. 738,313

Int. Cl.² B60D *3/32*

U.S. Cl. 296—23 MC **3 Claims**



1. A combination including a boot and frame windows of a cab/camper assembly of the type having a rear frame window in the cab and a corresponding front frame window in the forward wall of the camper, said boot comprising a frame including a continuous resiliently deformable side wall, said side wall defining an aperture corresponding respectively to said windows in said cab and said camper, said side wall terminating in respective opposite ends, said respective opposite ends each including a thickened resilient continuous lip, each of said lips being adapted to be snap-fit into a corresponding window frame for thereby mounting said boot between said cab and camper, each of said window frames including an exteriorly extending substantially U-shaped channel in which a respective lip of said boot is grippingly receivable whereby said boot may be easily mounted and dismounted.

4,114,944

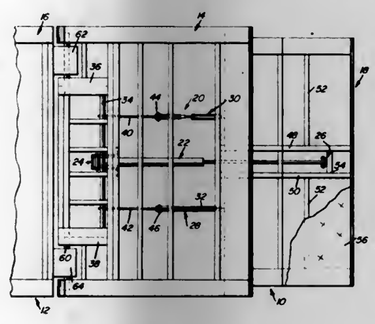
TELESCOPIC TAILGATE EXTENSION

Gerald E. Joynt, Sergeant Bluff, and Michael R. Mayhew, Sioux City, both of Iowa, assignors to Multech Corp., Sioux City, Iowa

Filed Mar. 4, 1977, Ser. No. 774,645

Int. Cl.² B62D *33/00*

U.S. Cl. 296—50 **10 Claims**



1. An extendible tailgate assembly for a load carrying vehicle, comprising, in combination:

(a) a tailgate connected to a main frame of a load carrying vehicle;

(b) an extendible member mounted on the tailgate for reciprocating movement relative to the tailgate and varying the extent of the tailgate assembly; and

(c) actuator means mounted on the tailgate and connected to the extendible member for moving same relative to the tailgate, the actuator means including, in combination:

(1) motor means connected to the tailgate and to the extendible member for extending and retracting the extendible member out of and into the tailgate, the latter forming a socket for receiving the extendible member; and

(2) guide means connected to the tailgate and to the extendible member for guiding the extendible member while same is extended and retracted, the guide means including a linkage comprising a pair of spaced, substantially parallel linkage arms pivotally attached to the extendible member, and a torque member extending laterally of the tailgate and pivotally mounted thereon, cranks affixed to the torque member and pivotally attached to the linkage arms, the torque member forcing the linkage arms to operate simultaneously and keep the extendible member on a parallel motion relative to the tailgate.

4,114,945

GUIDE SHOES

Alfons Lutz, Emmering, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Nov. 29, 1976, Ser. No. 745,977

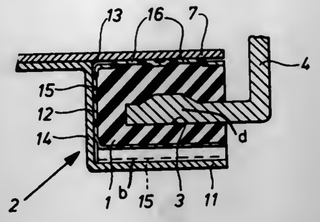
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1975, 2553549

Int. Cl. B60j *7/10*

U.S. Cl. 296—137 E **8 Claims**

1. A sliding roof assembly of a vehicle comprising a rail

having three surfaces defining a U-shaped cross-section within which is guided a guide shoe, said guide shoe being connected with a slidable part of the vehicle roof, and wherein the guide shoe is formed by an elastically deformable body for resiliently



engaging the three surfaces and has a friction-reducing covering on its surfaces for sliding contact with the rail, whereby tolerances in the horizontal as well as vertical directions may be compensated for.

4,114,946

MEDICAL TREATMENT CHAIR

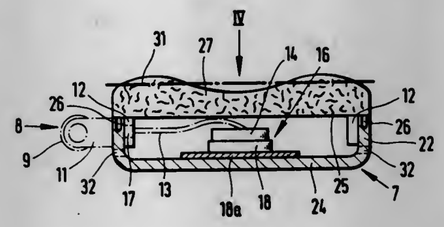
Jurgen Hoffmeister, Biberach, and Martin Saupe, Mittelbiberach, both of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Germany

Filed May 23, 1977, Ser. No. 799,692

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 7617191

Int. Cl.² A47C *7/62, 1/02*

U.S. Cl. 297—191 **10 Claims**



1. A medical treatment chair having a seat portion and a back portion and comprising:

switch housings releasably mounted on said back portion;

manually operated switches provided on said housings for electrically controlling the operation of respective parts of or associated with the chair;

mounting locations provided on said back portion and releasably mounting said switch housings;

a respective connecting cable connected at one end to each of said housings;

a respective plug connector connected to an end of each cable remote from said one end;

a respective socket provided within the back portion for engagement by each of said plug connectors;

an access opening in the back portion to permit manual manipulation of said plug connectors and said sockets within said back portion; and removable closure means mounted on said back portion for closing said access opening.

4,114,947

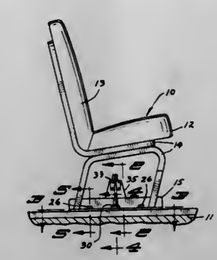
DETACHABLE SEAT MOUNTING FOR BUSES

Eldrid W. Nelson, Minneapolis, Minn., assignor to Chas. Olson & Sons and Wheel Service Co., Inc., both of St. Paul, Minn.

Filed Nov. 18, 1977, Ser. No. 852,924

Int. Cl.² A47C *1/02*

U.S. Cl. 297—344 **10 Claims**



1. A detachable mounting for securing the frame of a seating device to the floor of a passenger bus, comprising

an elongate anchoring track to be affixed on the floor of the bus, and a base means to be affixed to the seat frame and to overlie the track and having supporting feet and a locking pin thereon to engage the track,

the anchoring track having a rigid bottom and a longitudinally extending open guideway and also having a pair of rigid retainer flanges overlying the guideway and arranged in spaced edge to edge relation to each other and defining an elongate keyway therebetween, the flanges having a plurality of pairs of recesses in the edges thereof at regularly spaced intervals along the track, each pair of recesses being located directly opposite each other and cooperatively defining an enlarged access opening into the guideway,

the supporting feet having enlarged heads in the guideway and in confronting relation with the flanges and also having narrow necks extending through the keyway to the base means, the spacing between the feet equaling the center to center spacing between a pair of such access openings, and the heads being smaller than said openings to pass therethrough, the heads being slidable in the guideway to shift into alignment with openings for removal therethrough, and

the locking pin being removably inserted into one of the access openings of the guideway to prevent sliding of the feet along the track and to maintain the heads in confronting relation with the track flanges, the pin engaging the bearing firmly against the bottom of the track, and pressure means on the base means and applying significant pressure on the locking pin and toward the track and thereby drawing the heads of the feet firmly against the track flanges.

4,114,948

AUTO HEADREST

R. V. Otis Perkey, 1310 SE. 30th Ave., Ocala, Fla. 32670

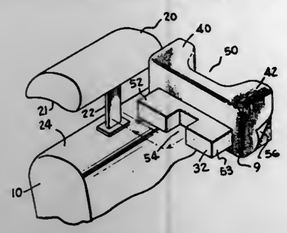
Filed Aug. 3, 1977, Ser. No. 821,582

Int. Cl.² A47C *1/10*

U.S. Cl. 297—397 **7 Claims**

1. An auxiliary headrest for an automobile seat of the type having a built-in headrest supported by a generally vertically extending standard extending upwardly from the top of the back of the automobile seat, said auxiliary headrest comprising a U-shaped cushion body of relatively soft material including a back cushion portion extending across the rear width of the cushion body and side cushion portions extending forwardly of the ends of the back cushion portion and spaced apart to permit the back of a user's head to be positioned therebetween and a rearwardly extending support member extending rearwardly of said back cushion portion to be positioned between the

built-in headrest and the top of the back of the automobile seat for positioning and maintaining said auxiliary headrest forwardly of the built-in headrest, wherein said support member includes a slot dimensioned to snugly fit around said generally



vertically extending standard and side portions on opposite sides of said slot and having an upper surface engaged with the lower end of said headrest and a lower surface resting on the upper end surface of the automobile seat.

4,114,949

SEATING ARRANGEMENT

Roland A. Benoit, Danielson, Conn., assignor to InterRoyal Corporation, New York, N.Y.

Filed May 13, 1977, Ser. No. 796,799
Int. Cl.² A47C *1/12*
U.S. Cl. 297—445 **13 Claims**



1. Free floating chair comprising

a pair of side by side and laterally spaced apart upright end support truss members having corresponding forward, rearward, top and bottom portions and adapted to support a load with the bottom portions thereof resting on a support surface,

a substantially horizontally extending linear structural load bearing seat accommodating suspension rod correspondingly mounted in suspension at its end portions on the forward portions of the end support members at a level intermediate the top and bottom portions thereof,

a substantially horizontally extending linear structural load bearing backrest accommodating suspension rod correspondingly mounted in suspension at its end portions on the rearward portions of the end support members at a level in the vicinity of the top portions thereof,

at least one unitary composite seat and back portion defining a substantially horizontal seat area and a substantially upright backrest area and disposed at an angle with respect thereto,

the rearward back portion and the forward seat portion being interconnected rigidly with each other and, in turn, the forward seat portion being disposed downwardly against and connected to the seat accommodating rod in load transmitting contact therewith and the rearward back portion being disposed rearwardly against and connected to the backrest accommodating rod in load transmitting contact therewith,

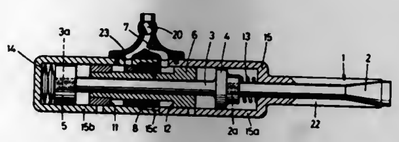
whereby to provide a free floating chair capable of transmitting the load of the user in forward and rearward distributed balance correspondingly via the seat portion and backrest portion to the seat accommodating suspension rod and backrest accommodating suspension rod and in turn in laterally distributed balance correspondingly via the suspension rods to the end support truss members.

4,114,950

METHOD AND APPARATUS FOR BREAKING A HARD COMPACT MATERIAL SUCH AS ROCK OR CONCRETE

George Anthony Cooper, Gollion, Switzerland, assignor to Institut Cerac SA., Ecublens, Switzerland

Filed May 9, 1977, Ser. No. 795,176
Claims priority, application Switzerland, May 25, 1976, 6575/76
Int. Cl.² E21C *37/02, 37/04*
U.S. Cl. 299—15 **12 Claims**



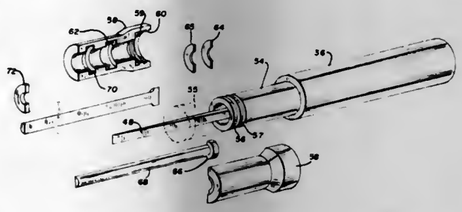
1. In a method for breaking a hard compact material such as rock or concrete including drilling a hole into the material to be broken, gripping a region of the wall of the hole by applying a radially outwardly directed force thereto, and applying an axially outwardly directed tractive force to the gripping region in a direction axially outwardly of the hole and toward the mouth of the hole, said forces being of sufficient magnitude so as to cause cracks to arise in the wall of the hole, the improvement comprising generating at least one of said forces by sequentially repeated axially outwardly directed tractive impacts which are directed axially outwardly of the hole and toward the mouth of the hole.

4,114,951

HYDRAULICALLY ACTUATED TOOL FOR MECHANICALLY SPLITTING ROCK-LIKE MATERIAL

Edward R. Langfield, Glen Rock; James L. Hile, Montville, and David L. Hird, Pompton Lakes, all of N.J., assignors to Edward R. Langfield, Glen Rock, N.J.

Filed May 9, 1977, Ser. No. 795,074
Int. Cl.² E21C *37/04*
U.S. Cl. 299—22 **35 Claims**



1. Apparatus for mechanically splitting rock and the like by a sliding wedge which moves between like opposed feathers to move them apart, the wedge and feathers inserted into predrilled holes and the wedge moved by a hydraulic piston, the movement of said wedge being translated into a substantially like sideways movement of the opposed feathers, said apparatus including: (a) a housing apparatus including a hydraulic cylinder having a piston and a piston rod extending from and through one closing end of the cylinder; (b) means for controlling a flow of pressurized fluid selectively to either side of the piston while returning that fluid on the other side of the piston at that instant to a recovery supply; (c) a slider wedge removably mountable and secured to the rod end of the piston and movable with the rod end as it is moved by the piston, the

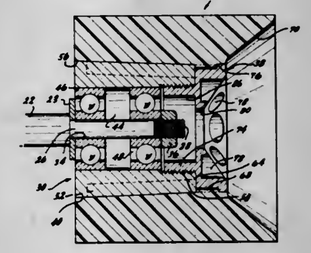
wedge having opposed faces formed with tapered sliding surfaces; (d) a mounting and positioning means formed and provided on the lower end of the housing apparatus from which end the rod end extends and moves; (e) a pair of feathers each having an enlarged upper end retaining means formed thereon, each feather having a finished inner face adapted to mate with and present a sliding surface to the wedge when passed therebetween with the increasing taper of the wedge urging the feathers apart; (f) a split clamp shell having means for removably securing said clamp shell to the mounting and retaining means of the lower housing, the clamp shell having a recess formed to retain the upper ends of the feathers against the mating surfaces of the wedge when the clamp shell is secured in position and is in a closed condition, and in an open position the wedge and feathers can be easily inspected for damage, wear and the like, the split clamp shell housing including complementary formed inner and outer surfaces in the mating members so that the split clamp shell housing when closed in place is a snug fit on the outer lower surface of the housing apparatus and the positioning means includes a groove formed in one of the mating members and a ring portion in the other member, the ring portion sized to mate with and seat in said groove, and (g) a clamp means for securing and maintaining the split clamp in a closed and secured position on the lower end of the housing apparatus, this clamp means being readily manipulable to close and open the split clamp.

4,114,952

WHEEL ASSEMBLY FOR A SKATEBOARD OR THE LIKE

Steven Donald Kimmell, Granada Hills, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 5, 1976, Ser. No. 739,073
Int. Cl.² A63C *17/22*
U.S. Cl. 301—5.7 **4 Claims**



1. In a wheel assembly for a skateboard or the like, the combination comprising:

a hub having a central aperture with a bearing receiving end and an internally threaded end, the outer surface of said hub being provided with a plurality of spaced longitudinally extending ribs and a flange adjacent said bearing receiving end;

a tire of a generally flexible material having a central aperture with a main portion and an enlarged recess, said main portion having grooves slidably engaging the ribs on the outer surface of said hub to prevent relative rotation therebetween; and

a hub cap having a threaded portion and a cap portion having generally the same diameter as said recess, said threaded portion engaging the threaded end of said hub, said recess being provided with radially inwardly extending integral detent means about the periphery thereof and said cap portion being provided with radially projecting ridge means of a length to engage and resiliently distort said detent means when rotating said threaded portion relative to said threaded end whereby to secure said tire to said hub and prevent loosening of said hub cap.

4,114,953

MOTOR VEHICLE WHEEL

Heinrich Baumgartner, Schenkenzell, Fed. Rep. of Germany, assignor to BBS-Kraftfahrzeugtechnik GmbH & Co. KG, Schiltach, Fed. Rep. of Germany

Filed Jan. 24, 1977, Ser. No. 762,100
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1976, 2602710
Int. Cl.² B60B *1/10*
U.S. Cl. 301—63 DD **9 Claims**



1. A vehicle wheel having a rim bed, said wheel comprising two substantially identical, contiguous light metal pressings mounted on a hub member, each pressing forming a half of the rim bed, wherein:

(a) the hub member has cylindrical centering surfaces for the pressings,

(b) the two pressings are provided on their opposing inside surfaces with a layer of solderable material and are soldered both to the hub member and to one another at their contiguous surfaces,

(c) the two contiguous pressings form a spoke wheel center having spokes constituted of closed hollow sections and

(d) the spokes comprise substantially tangential main spokes and short radial auxiliary spokes, the main spokes extending inwardly from the rim bed in a direction approximately tangentially relative to the hub member and, at their innermost locations relative to the hub member, intersecting another main spoke, and the auxiliary spokes connecting radially the main spokes, at the innermost locations of the main spokes, to the hub member.

4,114,954

HYDRAULIC HOISTING

Arnold Roy Pasieka, Don Mills; John Corner Wilson, Falconbridge, and George Alexander Moruzi, Sudbury, all of Canada, assignors to Falconbridge Nickel Mines Limited', Toronto, Canada

Filed May 23, 1977, Ser. No. 799,593
Int. Cl.² B65G *53/30*
U.S. Cl. 302—14 **7 Claims**

1. A method for hydraulically hoisting mineral solids, in batch mode, from one level to a higher level of a mine, comprising:

i. providing a continuous fluid flow path between the levels and circulating water, continuously under pressure, therethrough;

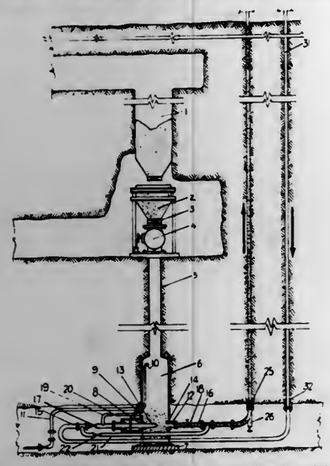
ii. providing a pressure vessel having fluid inlet and outlet means in opposed sidewalls thereof at the one level in the mine for selective communication with and isolation from the fluid flow path;

iii. periodically charging mineral solids to the pressure vessel and mixing with water therein, at atmospheric pressure, and isolated from the flow path;

iv. pressurizing the pressure vessel and selectively incorporating the vessel into the flow path to thereby discharge the mixture into the flow path;

v. conveying the mixture upwardly, under pressure, along a hoist conduit of the flow path, to the higher level;

vi. dewatering the mineral solids at the higher level and returning the water along a return conduit of the flow path to the one level for mixing with further mineral solids in the pressure vessel; wherein the return conduit is connected to the inlet means and is provided with nozzle means in the pressure vessel, slidable between a first position in which the pressure vessel is incorporated in the fluid flow path, and a second position in sealing engagement with the outlet means thereby isolating the pressure vessel from the continuous fluid flow path.



4,114,955

METHOD AND APPARATUS FOR TRANSFERRING MATERIAL WITH THE USE OF A FLUID

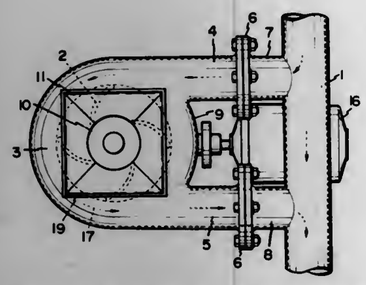
Toshinobu Araoka, Kitakyushu, Japan, assignor to Toyo Denki Kogyosho Co., Ltd., Fukuoka, Japan

Filed Jun. 7, 1977, Ser. No. 804,472

Claims priority, application Japan, Sep. 17, 1976, 51-112284

Int. Cl.[2] B65G *53/30*

U.S. Cl. 302—15 **14 Claims**



1. A method of continuously introducing a material containing solid matter into a continuously flowing pressurized stream of liquid disposed in a discharge pipe utilizing a motor driven impeller operable in a casing, comprising the steps of conducting said liquid along an inlet liquid path extending from a first location of said flowing pressurized stream to said casing, conducting said liquid along an outlet liquid path extending from said casing to a second location of said flowing pressurized stream, said second location being disposed downstream of said first location along a through section of said flowing pressurized stream, centrifugally increasing the pressure of said liquid in said casing by rotating said impeller about a vertical axis, causing the liquid to flow generally horizontally from said inlet liquid path to said outlet liquid path while effecting said pressure increase in said casing, charging said material to be transferred generally vertically through an opening in an upper side of said casing, mixing said vertically charged material with said liquid in said casing, conducting said liquid and material from said casing along said outlet liquid path at a pressure greater than the pressure of said flowing pressurized stream in said discharge pipe to discharge said liquid and material into said flowing pressurized stream at said second location, and continuously maintaining the pressure in said outlet path higher than the pressure of said flowing pressurized stream and higher than the pressure in said inlet liquid path such that the liquid passes through said casing from said inlet liquid path to said outlet liquid path without any fluid loss through said opening in said casing during said charging of said material into said casing.

4,114,956

TRANSPORTING IRON ORE SLURRIES

Harley Y. Jennings, Jr., Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 282,622, Aug. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 51,383, Jun. 30, 1970, abandoned. This application Feb. 5, 1976, Ser. No. 655,355

Int. Cl.[2] B65G *53/04*

U.S. Cl. 302—66 **8 Claims**

1. A method of pipelining iron ore comprising forming an aqueous slurry of iron ore particles of from 20 to 45 percent by volume, from 0.02 to 0.4 percent by weight based on iron ore content of the slurry of an ionic dispersant to contact the iron ore particles to impart negative charges thereon and from 0.01 to 0.2 percent by weight based on water content of the slurry of a nonionic organic polymer to increase the carrying capacity of the slurry for coarse iron ore particles, moving said slurry through a pipeline and recovering the iron ore particles from the slurry at a downline location.

4,114,957

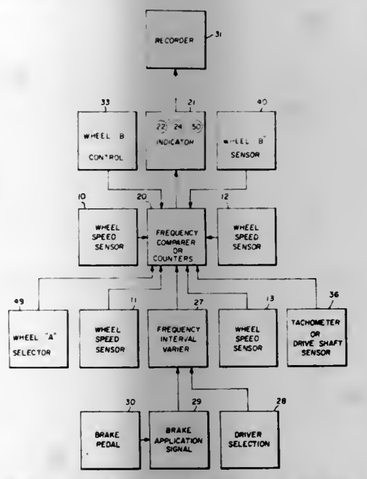
METHOD AND APPARATUS FOR CONTROLLING THE WHEEL BRAKES TO PREVENT SKID

Gustav E. Eichhorst, 7361 Valentown Rd., Victor, N.Y. 14564

Continuation of Ser. No. 508,553, Sep. 23, 1974, abandoned, which is a continuation of Ser. No. 352,267, Apr. 18, 1973, abandoned. This application Jun. 11, 1976, Ser. No. 695,101

Int. Cl.[2] B60T *8/10*

U.S. Cl. 303—96 **13 Claims**



13. A vehicle brake control system for first and second wheels of a vehicle equipped with brakes comprising:

means for detecting the prebraking and braking speeds of rotation of said first and second wheels;

means responsive to said detecting means for generating first and second pulse trains of energy respectively of varied frequency in said prebraking and braking modes of operation;

comparer means for receiving said first and second pulse trains respectively and generating active and reference output pulse signals during prebraking and braking modes of operation;

voltage control circuit means for receiving said active and reference output pulse signals during prebraking and braking modes of operation and generating active and reference voltage signals respectively of a predetermined rotational speed ratio in the prebraking and braking modes of operation; and

brake means including valves for receiving said active and reference voltage signals in the braking mode of operation and in response thereto for continuously adjusting the brakes on said first and second wheels in an effort to maintain the braking rotational speed ratio of said first and second wheels substantially equal to the prebraking rotational speed ratio.

4,114,958

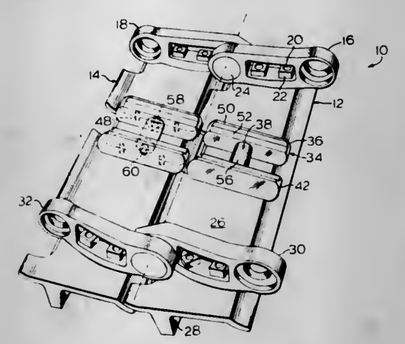
REPLACEABLE WEAR MEMBERS FOR AN ENDLESS TRACK

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 28, 1977, Ser. No. 781,821

Int. Cl.[2] G62D *55/20*

U.S. Cl. 305—56 **9 Claims**



1. A track shoe wear assembly for endless track-type vehicles comprising:

a track shoe;

hinge members mounted on the track shoe in spaced apart relationship;

at least one keyed rail support member releasably connected to the shoe between the hinge members and having a rail surface extending longitudinally thereon; and

a separate keyed lug drive member releasably connected to the keyed rail support member.

4,114,959

HYDROSTATIC SUPPORTING DEVICE INCLUDING BEARING SHOE

Alfred Christ, Zurich, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

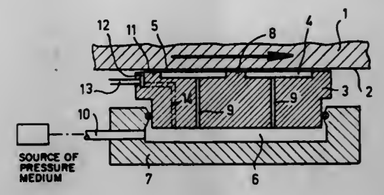
Filed Jul. 7, 1977, Ser. No. 813,550

Claims priority, application Switzerland, Jul. 14, 1976, 009005/76

Int. Cl.[2] F16C *17/00*

U.S. Cl. 308—3.5 **5 Claims**

1. In hydrostatic supporting apparatus for supporting a mobile part which moves relatively to a foundation and which comprises a bearing shoe mounted in the foundation and having a supporting surface which faces a sliding surface of the mobile part and defines therewith a bearing gap, a hydraulic servomotor arranged to urge the shoe toward the mobile part, a bearing pocket formed in the supporting surface of the shoe and which is confined by a ledge, and means for delivering pressure medium to the servomotor and the bearing pocket, and wherein the shoe has front and rear ledge portions at its opposite sides in the direction of movement of the mobile part,



the improvement which comprises means defining a channel at the front ledge portion which opens towards the sliding surface; and means for delivering pressure medium to the channel, the channel serving to direct pressure medium into the region of the bearing gap located between the sliding surface and the front ledge portion.

4,114,960

RADIAL DISPLACEMENT DETECTOR DEVICE FOR A MAGNETIC BEARING

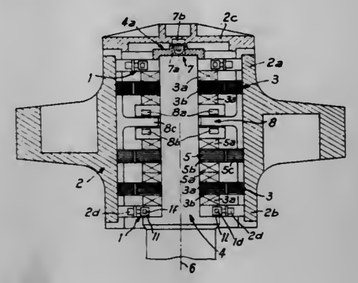
Helmut Habermann, Vernon; Maurice Brunet, and Jacques LeClére, both of Forét de Vernon, all of France, assignors to Societe Europeenne de Propulsion, France

Continuation of Ser. No. 582,880, Jun. 2, 1975, abandoned, which is a continuation of Ser. No. 433,791, Jan. 16, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 764,523

Claims priority, application France, Jan. 18, 1973, 73 01786

Int. Cl.[2] F16C *39/00*

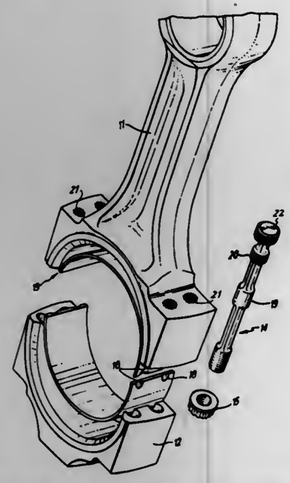
U.S. Cl. 308—10 **8 Claims**



1. A device for detecting radial displacement of a rotor relative to a stator and for creating a diametral restoring force for correcting the positioning of the rotor comprising a rotor; a stator; means for generating a control force on the rotor along a diametral plane of the stator; means controlling said force; and means for detecting the position of the rotor and for transmitting an error signal to said force controlling means; said detecting means comprising a plurality of pairs of detectors fixed to the stator and symmetrically arranged about said diametral plane, each pair consisting of two detectors placed diametrically opposite one another relative to the axis of rotation of the rotor; the detectors being connected together so that the two detectors of each pair of detectors have their signals algebraically subtracted one from the other and the two detectors of each couple of detectors consisting of two detectors symmetrically arranged about said diametral plane of the stator have their signals algebraically added; said pairs of detectors being arranged to constitute at least a first and a second detecting unit each including the same number of pairs

of detectors; the pairs of detectors constituting the first and second detecting units being symmetrically arranged about a first and a second diametral axis of symmetry respectively and said first and second diametral axes of symmetry being places symmetrically with respect to said diametral plane and being each angularly displaced therefrom by an angle of 30°, where the term diametral axis of symmetry of a detecting unit denotes that one of the two diametral axes of symmetry of this unit bisects the smaller sector embracing one detector of each pair of detectors constituting this unit whereby odd harmonics are eliminated as well as all of the even harmonics.

4,114,961
BEARINGS
Donald Roy Pithie, Shrewsbury, England, assignor to Rolls-Royce Motors Limited, London, England
Filed Nov. 23, 1976, Ser. No. 744,417
Int. Cl.² F16C *33/04*; B21D *53/10*
U.S. Cl. 308—237 R **10 Claims**

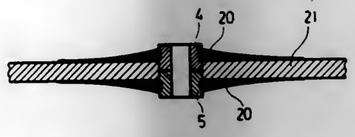


1. A shaft bearing comprising: two complementary parts providing an internal cylindrical surface, two arcuate bearing shells having exterior surfaces complementary to said internal cylindrical surface of said complementary parts, said two bearing shells being disposed within said parts and supported in contiguous relationship on the cylindrical surface thereof, said bearing shells having recesses formed in the external surface part way through said shells, and a first pair of connecting bolts and a second pair of connecting bolts, said first and second pairs of connecting bolts being disposed on diametrically opposite sides of said internal cylindrical surface of said parts for connecting said parts together, and said bolts extending through bolt holes in said parts and into said recesses on the external surface of said bearing shells to thereby locate said bearing shells axially of said parts and prevent rotation of the same relative said parts.

4,114,962
CONNECTING ELEMENT FOR INTRODUCING FORCES INTO A STRUCTURAL PART
Rudolf König, Ottobrunn, and Klaus Brunsch, Weidach, both of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Germany
Filed Oct. 8, 1976, Ser. No. 730,972
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1975, 2545929
Int. Cl.² F16C *33/00*; B31C *13/00*
U.S. Cl. 308—238 **30 Claims**

15. A structural member comprising a structural part having an opening therethrough, a bush having a central axis, said bush being inserted for a portion of the axial length thereof into the opening in said structural part, said bush having a circumferential outer surface extending in the direction of its central axis, a multiplicity of roving sections impregnated with synthetic resin each contacting the circumferential outer surface of said bush and extending chordally outwardly from opposite sides of said bush and terminating at spaced points along an endless boundary line spaced outwardly from and extending around said bush, the oppositely extending sections of each said roving being angularly disposed relative to one another.

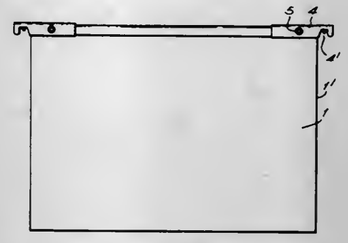
16. A connecting element formed by the method comprising inserting bushes into the opposite sides of a rotating disk having an arcuate circumferential periphery with the axis of the bushes being coaxial with the axis of rotation of the disk and with each of the bushes projecting outwardly from a different one of the opposite sides of the disk, removing a roving from a source of supply, passing the roving through a synthetic resin bath and guiding the roving into holding engagement with the circumferential periphery of the disk so that it remains in stationary contact with the circumferential periphery and passes over one side of the disk while rotating the disk for a selected angular distance so that the roving extends inwardly



from the point of holding engagement with the circumferential periphery of the disk into contact with the circumferential periphery of the bush located on one side of disk, when the disk has completed its rotation through the selected angular distance, moving the roving being fed to the disk at a location spaced outwardly from the circumferential periphery of the disk in the axial direction of the bushes so that it contacts the circumferential periphery of the disk in holding engagement therewith at the selected angular distance of rotation from the immediately preceding point of holding engagement with the circumferential periphery of the disk and passes over the other side of the disk while rotating the disk through the selected angular distance so that the roving extends inwardly from the point of holding engagement with the circumferential periphery of the disk into contact with the circumferential periphery of the bush located on the other side of the disk and repeating the steps until the desired winding of the roving on the disk has been completed, when the winding has been completed cutting the roving around the circumferential periphery of the disk to form two connecting elements each comprising one bush and the sections of the rovings located on the same side of the disk with the one bush, and removing the connecting elements from each side of the disk.

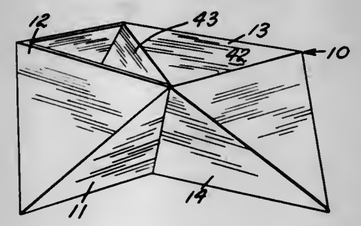
4,114,963
SUSPENDED FILES
Salomon Menahem, Hadera-Karkur, Israel, assignor to Superfile, Ltd., Hadera-Karkur, Israel
Filed Mar. 22, 1977, Ser. No. 780,182
Claims priority, application Israel, Apr. 5, 1976, 49347; Dec. 14, 1976, 51101
Int. Cl.² A47B *63/00*
U.S. Cl. 312—184 **2 Claims**

1. A suspended file comprising: a file with longitudinal edges; reinforcing channels for the longitudinal edges of said file; suspension elements having separate parts from said reinforcing elements and being longitudinally movable relative to said reinforcing channels; said suspension elements comprising short channels mounted on top of said reinforcing channels; said reinforcing channels having through-going longitudinally extending elongated slots; said files having a registering slot for alignment with said elongated slots; said suspension elements having means extending into said slot to limit sliding movement., said suspension elements having hook-shaped ends with a cutout on the underside thereof, said suspension element comprising channel means riding on top of said reinforcing



channels and having a rivet extending through said slot, the movement of said rivet and said suspension elements being limited by said slot, said suspension elements projecting from transverse edges of said file.

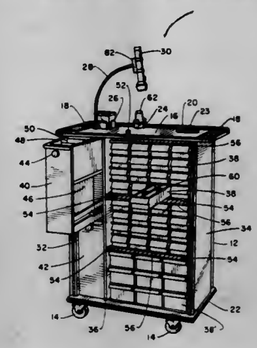
4,114,964
MODULE FOR FORMING ARTICLES OF FURNITURE
Charles S. Coster, Main St., Stockbridge, Mass. 01262
Filed May 18, 1977, Ser. No. 798,000
Int. Cl.² A47B *53/00*
U.S. Cl. 312—198 **1 Claim**



1. An improved module for forming articles of furniture comprising: a plurality of hollow quadrilateral pyramidally shaped elements, each element having a square base wall and three equilateral triangular side walls converging to an apex from three sides of said base to define a triangularly-shaped opening affording access to the interior of said element from a fourth side of said base wall; said elements each being foldably interconnected along an edge of said base wall thereof to permit relative pivotal movement wherein a base wall or a triangular wall of each of said elements may be selectively placed in abutted relation relative to a corresponding wall of an adjacent interconnected element to form a desired configuration in which at least one of said triangularly shaped openings is exposed whereby articles may be stored, when one surface of said configuration is supported upon a horizontally disposed floor.

4,114,965
MEDICATION DISPENSING CART
Lloyd J. Oye, Rancho Palos Verdes, and Barry Ogden, Rolling Hills Estates, both of Calif., assignors to Trans-Aid Corporation, Carson, Calif.
Filed Nov. 4, 1976, Ser. No. 738,802
Int. Cl.² A47B *81/00*
U.S. Cl. 312—209 **4 Claims**

1. A portable medicine dispensing cart comprising:
a cabinet having a hollow interior enclosed by four sides, a bottom and a flat top working surface;
hinged door means on one side providing access to said hollow interior;
a plurality of medication storage bins slidably supported in removable wire rack cassettes in said hollow interior accessible behind said hinged door means;
a pair of lockable, slidably extendable, vertically oriented drawers, one above the other, adjacent to said plurality of medicated storage bins;
said vertical drawers being divided into a plurality of compartments with a compartment accessible from the top and a bottom compartment accessible from a side adjacent to said medication bins, whereby said vertical drawers and medication storage bins may be simultaneously accessible;
a cart wall locking security system comprising;
a wall bracket having a pair of horizontally aligned keyhole slots,
a pair of socket balls secured to the rear wall of said cabinet

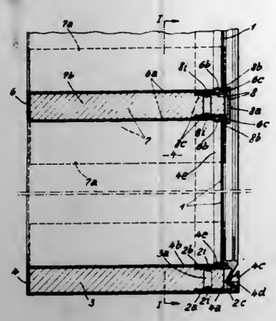


adapted to engage said horizontal keyhole slots of said bracket,
a hole in said wall bracket,
a spring-loaded pin extending out of the rear wall of said cabinet and adapted to engage the hole in said wall bracket when said socket balls are fully engaged in said keyhole slots,
holding means for holding said pin in an extended position when said cart is secured,
an adjustable size cup dispenser accessible through a circular aperture in said top surface comprising:
retaining means circumjacent said circular aperture in said top surface for retaining said cups; and
resilient means for adjusting said retaining means for different size cups.

4,114,966
BATHROOM CABINET
Walter Schneider, 54 Wildenbühlstrasse, Langnau am Albis, Switzerland
Filed Jan. 24, 1977, Ser. No. 761,820
Claims priority, application Switzerland, Jan. 31, 1976, 1207/76
Int. Cl.² A47B *67/02*; F16B *12/00*
U.S. Cl. 312—245 **12 Claims**

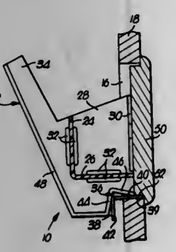
1. A container for use as a cabinet, in particular as a bathroom cabinet, comprising:
(a) a framework;
(b) a back wall in the form of at least one plate supported by the framework; and
(c) side walls supported by the framework, wherein the framework is formed by a plurality of U-section bars, each having sides projecting at right angles to the back wall, and a plurality of corner angle pieces formed of hard foamed plastic slipped in between said sides of said U-section bars and positively connected thereto, said corner angle pieces having bores extending beyond said U-section bars and said side walls being in the form of U-section

covering panels fitted over said corner angle pieces, the positive connection between the corner angle pieces and



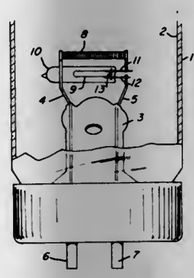
the sides being effected through creases in the area of said bores recessed in the corner angle pieces.

4,114,967
DRAWER
Jon L. Weekly, 2722 Rawhide La., Lawrence, Kans. 66044
Filed Sep. 2, 1977, Ser. No. 830,061
Int. Cl.² A47B *88/18*
U.S. Cl. 312—328 **4 Claims**



1. For attachment to a cabinet and a panel member ordinarily covering an opening in the wall of said cabinet wherein one edge of said wall defining said opening presents a ledge for supporting a drawer thereon, said panel being of a type having a rabbeted margin overlying said wall portions and extending partially into said opening, a drawer assembly comprising:
structure adapted to be attached to one side of said panel member whereby the latter provides a front wall for said structure,
said structure including a rear wall, sidewalls, and a bottom wall connected together and forming, in combination with said panel member, an article receptacle area normally disposed within said cabinet when said drawer is in a closed position,
said structure further including surface portions adjacent said bottom wall, for frictionally engaging said cabinet ledge and cooperating with said panel member to provide a hinge means for retaining and pivotally supporting said drawer on said cabinet within said opening of the latter for swinging movement of said drawer between said closed position and an open position,
said structure also being provided with a surface area adapted to engage said cabinet wall during swinging movement of said drawer, for limiting the travel of said structure away from said cabinet,
said hinge means being generally disposed below said article receptacle area and said surface portions including a first straight stretch having the longitudinal axis thereof inclined with respect to the plane of said cabinet wall and frictionally engaging an inner edge of said ledge upon swinging movement of said drawer,
a surface portion of said panel margin being disposed in spaced, opposed relationship to said first straight stretch and frictionally engaging an outer edge of said ledge upon swinging movement of said drawer; and
a generally L-shaped hinge plate having a short leg and a long leg, for pivotally supporting said surface portions of said ledge,
said plate being secured to said cabinet and extending essentially through said opening,
at least one extremity of one of said legs being in slidable contact with said first straight stretch,
said long leg of said hinge plate extending essentially through said opening,
one extremity of said long leg being in slidable contact with said first straight stretch,
the opposite extremity of said long leg being in slidable contact with said rabbeted margin of said panel member.

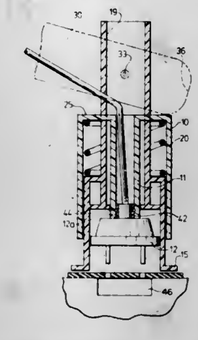
4,114,968
METHOD OF PROCESSING FLUORESCENT LAMP
Frank M. Latassa, Magnolia, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.
Filed Apr. 5, 1976, Ser. No. 673,823
Int. Cl.² H01J *9/12*
U.S. Cl. 316—1 **5 Claims**



1. In the manufacture of a rapid start fluorescent lamp comprising a sealed envelope with an electrode at each end thereof and having a heater current disconnect switch within the envelope proximate to, and in series with, a lamp electrode, the switch being normally closed at room temperature but open at or above a predetermined elevated temperature and wherein the electrode contains a cathode coating that must be heated to a predetermined elevated temperature in order to activate said coating, the process which comprises providing a shorting fuse within the envelope and in parallel with said switch, heating said electrode to the predetermined temperature which activates said coating and which opens said switch as a result of direct heat transfer from the electrode to the switch, and then melting the fuse, while the switch is open, by applying thereto a pulse of electrical current.

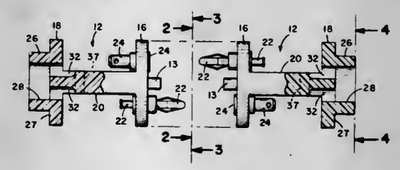
4,114,969
PLUG RELEASE MECHANISM
John P. Borg, 10 Poplar Heights Dr., Islington, Ontario, Canada
Filed Sep. 29, 1977, Ser. No. 837,924
Int. Cl.² H01R *13/62*
U.S. Cl. 339—45 R **5 Claims**

1. A plug release mechanism comprising:
(i) a reciprocatable member having an open end and an end wall closing the opposite end, said member being movable between a locked position and a released position;
(ii) a tubular member in the reciprocatable member and coaxial therewith, the inside end of the tubular member being adapted to have mounted thereon an electric plug having terminal prongs thereon and said inner member being mounted for movement with the reciprocatable member between said locked and released positions;
(iii) a stationary member mounted within the reciprocatable member and coaxial therewith, said stationary member being positioned between the inner member and the reciprocatable member, said stationary member having an elongated extension projecting outwardly through an orifice formed through the end wall of the reciprocatable member;
(iv) a spring acting between the reciprocatable member and the stationary member; and



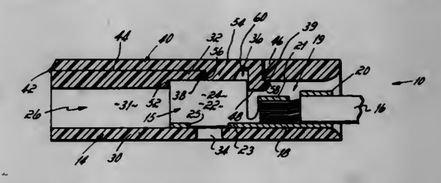
(v) a lever pivotally mounted on the extension, the fulcrum of the lever being located between the end wall and the projecting end of the extension whereby, with the lever coaxial with the reciprocatable member, one end of the lever engages the end wall and holds the inner member in a locked position with the spring under compression so that when the lever is released from the locked position, the inner member is actuated to the released position with the terminal prongs being moved to a position within the stationary member.

4,114,970
ELECTRICAL MARINE CONNECTOR
Ernest M. Hall, Jr., Houston, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.
Filed Sep. 8, 1977, Ser. No. 831,590
Int. Cl.² H01R *13/52, 25/02*
U.S. Cl. 339—49 R **4 Claims**



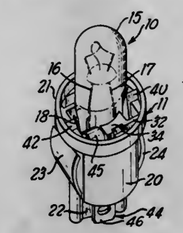
1. An electrical cable connector, comprising:
a. a pair of connector units each attachable to a cable-end for electrically interconnecting the same;
b. each connector unit formed of rigid insulating material defined by longitudinally-spaced front and rear circular end walls connected by an axial transverse partition wall;
c. male and female electrical contact elements mounted on the front end wall of each connector unit on opposite sides of said partition wall and being aligned for telescopic connection with one another in response to axial endwise movement of said units toward each other;
d. an axial opening in said rear end wall to receive a cable-end and communicating with a pair of spaced-apart openings leading to opposite sides of said partition wall;
e. passages extending transversely through said partition wall in spaced relation to said spaced apart openings for separately receiving the lead ends of electrical conductors projecting from said cable-end extending through said spaced-apart openings and said passages to said opposite sides of said partition wall; and
f. means electrically connecting said lead ends to the related contact elements including solder balls each greater in transverse dimension than its related passage for anchoring said lead ends to said partition wall.

4,114,971
CLUSTER ASSEMBLY AND BLOCK THEREFOR
Henry H. Heimbrock, Cincinnati, Ohio, assignor to Van Products, a Division of Standex International Corporation, Andover, Mass.
Filed Sep. 30, 1976, Ser. No. 728,386
Int. Cl.² H01R *13/42*
U.S. Cl. 339—59 R **20 Claims**



1. A block for a cluster assembly, comprising,
an insulative housing having at least one longitudinal clip-receiving passageway,
a transverse pin-receiving hole and a transverse detent-receiving opening extending from the outer surface of said housing to said passageway, and
a cap having an integral detent depending from a surface thereof and adapted to project through said detent-receiving opening to prevent rearward longitudinal removal of a clip from said passageway, said detent including a locking lip adapted to project into said passageway to lock said cap to said housing, a surface of said detent-receiving opening being rearward of said detent and forming means to limit rearward flexing of said detent after said detent is received in said opening.

4,114,972
WEDGE BASE BULB SOCKET
Willibald Kraus, and Bodo Arthur Greulich, both of Kaiserslautern, Fed. Rep. of Germany, assignors to TRW Inc., Cleveland, Ohio
Filed Jun. 23, 1977, Ser. No. 809,221
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628127
Int. Cl.² H01R *33/06*
U.S. Cl. 339—65 **6 Claims**



1. A socket for a wedge base capless bulb having contact wires comprising a body of insulating material, a cavity in the socket body to receive the base of the bulb, the cavity being defined by end walls and side walls and the side walls having resilient side wall portions adapted to grip the base of the bulb, resilient contact elements adapted to grip opposite sides of the base of the bulb in contact with the contact wires of the bulb, each end wall of the cavity having an inclined guide surface,

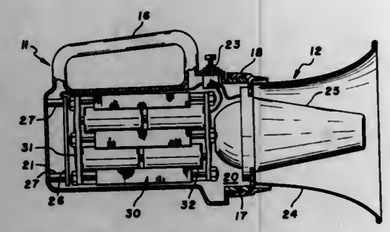
each of which guide surfaces faces a side wall and is inclined from the mouth of the cavity outwardly and towards the facing side wall, the guide surfaces being adapted to guide the contact wires of the bulb into substantially parallel contacting relationship with the contact elements as the base of the bulb is inserted into the cavity.

4,114,973

POWER SUPPLY FOR TRANSPORTABLE DEVICES

Paul Franklin Stiller, 23675 Smithtown Rd., Shorewood, Minn.

Filed Mar. 3, 1977, Ser. No. 774,197
Int. Cl.² H01M 2/10; H01R 13/54
U.S. Cl. 339—92 M **2 Claims**



1. A packaging and containing structure for combining a plurality of power sources to provide a power supply, said structure including:

a. a first, deformable plate member having a power source contact on one side thereof;

b. a second, deformable plate member having a power source contact on one side thereof;

c. a plurality of longitudinally adjustable connecting means being arcuately positioned on each of said plates and extending therebetween for connection thereof and providing a defined ring of said spaced connecting means for retaining a plurality of power sources in side by side relation therein;

d. means for longitudinally adjusting the connective length of said adjustable connecting means to electrically clamp a power source between sid plates;

e. one of said longitudinally adjustable connecting means being electrically conductive and being connected to said power source contacts; and,

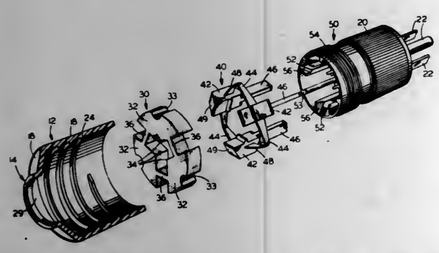
f. electrical conductive means provided respectively on each of said plates whereby said energy providing structure may be utilized in an electrical circuit.

4,114,974

DUST SHIELD FOR CAP AND CONNECTOR

George J. Lawrence, North Kingston, R.I., assignor to General Electric Company, New York, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,580
Int. Cl.² H01R 13/58
U.S. Cl. 339—103 C **7 Claims**



1. A closure for a cable entrance to a connector comprising, an annual ring of resilient material,

said ring being made up of a plurality of wedge-shaped sectors,

said sectors being interconnected by a plurality of webs formed integrally with said wedge-shaped sectors,

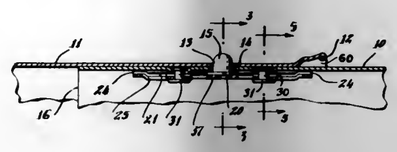
the inner extent of the sectors being oriented generally toward the center of the annual ring.

4,114,975

DISPLATION TYPE ELECTRICAL CONNECTOR

Charles Harry Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 20, 1977, Ser. No. 817,406
Int. Cl.² H01R 13/50
U.S. Cl. 339—176 M **9 Claims**



1. A pre-loaded electrical connector comprising:

an insulating housing having a wire-receiving face and having a contact receiving cavity extending into said wire-receiving face,

a sheet metal contact terminal in said cavity, said terminal having a wire connecting portion which is proximate to said wire-receiving face, said wire connecting portion comprising an elongated metal strip having a reversely formed portion in said cavity and having a wire-receiving opening therein which is adjacent to said wire-receiving face, said strip having a free end which is generally opposite to said wire-receiving opening, said free end being spaced from an intermediate portion of said terminal, a wire-receiving slot extending inwardly from said free end through portions of said strip,

said wire connecting portion being deformable inwardly of said cavity with concomitant movement of said free end past an inserted wire and transversely of the axis of an inserted wire whereby,

upon insertion of a wire through said wire-receiving opening and into said cavity so that an end portion of said wire is between said free end of said terminal and said intermediate portion of said terminal, and upon applying a deforming force to said wire connecting portion of said terminal, said free end of said strip moves past said end portion of said wire and said slot receives said wire whereby edge portions of said slot establish electrical contact with said wire.

4,114,976

ELECTRICAL CONNECTOR ASSEMBLY

Gerald Joseph Selvin, Birmingham, Mich.; Leland Wayne Oliver, Santa Ana, Calif.; Stephen Kazuo Yamamoto, Los Angeles, Calif., and Clarence Vaughn Hogan, Sun Valley, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

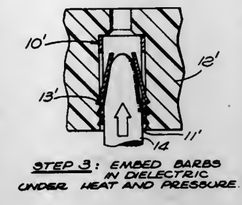
Continuation-in-part of Ser. No. 679,342, Apr. 22, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,315
Int. Cl.² H01R 13/42
U.S. Cl. 339—217 S **9 Claims**

1. An electrical connector assembly, said assembly comprising:

an insulator body having a cavity therein;

a longitudinally slit, hollow, resilient contact retention clip in said cavity, said clip having a forwardly and inwardly extending spring tine and a plurality of discontinuities therearound spaced from said tine;

said clip being expanded from an initial configuration while



in said cavity to snugly fit the outer surface thereof against the wall of said cavity; and

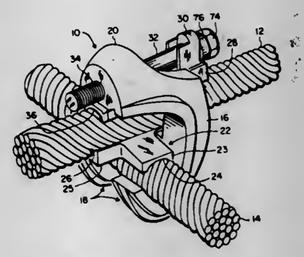
said insulator body being thermally deformed at the locations of said discontinuities so as to seize upon said clip thereat and to prevent axial movement of said clip in said cavity.

4,114,977

SINGLE WEDGE-TYPE GRID WIRE CONNECTOR

Mario Polidori, Pennsauken, N.J., assignor to UTM Power Products, Inc., Westmont, Ill.

Filed May 9, 1977, Ser. No. 795,178
Int. Cl.² H01R 7/06
U.S. Cl. 339—270 R **12 Claims**



1. A connector for joining two conductors extending transversely one another, comprising:

(a) a body member including a pair of fingers openly spaced apart at one end for straddling a first conductor extending in a given direction between said fingers and having seating surfaces at said one end suitably shaped for grasping a second conductor at spaced locations therealong extending transversely of said first conductor, and a yoke section joining said fingers at the other end thereof;

(b) a nesting member formed with at least two opposing seating surfaces extending transversely of one another and adapted to be positioned between said conductors so that a lower one of said seating surfaces cooperates with said fingers to grip said second conductor therebetween and the upper one of said seating surfaces forms a seat for said first conductor;

(c) an elongated wedge member adapted to be positioned beneath said yoke section between said fingers, and over a portion of the length of said first conductor, and provided with a suitably shaped undersurface which cooperates with the upper seating of said nesting member to grip said first conductor therebetween; and

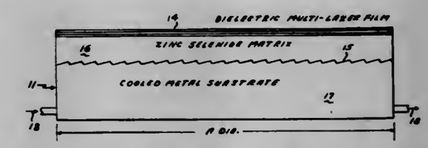
(d) means for coupling said wedge member to said yoke section for relative movement therebetween, such that when said first conductor is positioned between the upper seating surface of said nesting member and the undersurface of said wedge member, and said second conductor is positioned between the fingers of said body member and the lower seating surface of said nesting member, said wedge member can be driven in the space between said yoke section and said first conductor so as to secure both said conductors in nested relation.

4,114,978

BURIED GRATING SHARED APERTURE DEVICE

Hoyt A. Bostick, Irvine; Paul M. Sutton, Newport Beach, and Chester L. Richards, Irvine, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 1, 1977, Ser. No. 812,304
Int. Cl.² G02B 5/18
U.S. Cl. 350—1.7 **3 Claims**



1. A buried grating shared aperture device for separating a high energy laser beam and a low frequency infrared beam both sharing a common aperture, comprising:

a. a cooled metal substrate having a flat surface;

b. a blazed diffraction grating fabricated in the said flat surface of the substrate;

c. A thin imbedding matrix positioned in contacting relationship over the said grating and providing an optically flat surface; and

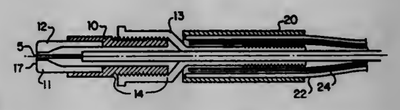
d. a multi-layer, dielectric, dichroic coating positioned on the said flat surface.

4,114,979

FIBER OPTIC CONNECTOR

Earl R. Heldt, Monta Vista, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 731,068, Oct. 8, 1976, abandoned. This application Apr. 29, 1977, Ser. No. 792,375
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.21 **7 Claims**



1. A fiber optic connector for end-to-end connection of individual optical fiber cables having an optical fiber, a fiber jacket and a cover, said connector comprising:

a ferrule, including two half shells and a retainer sleeve having a portion of its outside diameter threaded, for retaining the optical fiber and fiber jacket;

a sleeve for retaining the cover; and

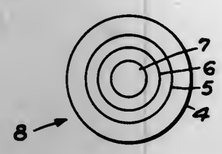
an adjustment sleeve having male threads for coupling to the inside surface of the optical fiber cover and female threads for coupling to the threaded portion of the retainer sleeve, said adjustment sleeve being effective for adjusting the end of the optical fiber flush with the end face of the ferrule after the cover is crimped thereto.

4,114,980

LOW LOSS MULTILAYER OPTICAL FIBER

Adolf R. Asam, Daleville, and Mokhtar S. Maklad, Roanoke, both of Va., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 10, 1976, Ser. No. 685,198
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.33 **8 Claims**



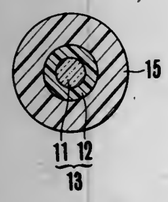
1. A low loss high numerical aperture optical communications fiber comprising:
- a core member consisting of a high refractive index material deposited in the absence of hydrogen;
- a cladding layer consisting of a lower index of refraction material deposited in the absence of hydrogen, said cladding layer surrounding said core member;
- a hydroxyl barrier layer surrounding said cladding layer to prevent hydroxyl ions from diffusing into said core and cladding; and an outer silica layer enclosing said barrier layer for providing structural support to the fiber.

4,114,981

OPTICAL FIBER FOR COMMUNICATION

Yukinori Ishida, Mito; Moriaki Kojima, Yachiyo; Toshiaki Kobayashi, Chiba, and Yasuyuki Sugawara, Sakura, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and The Fujikura Cable Works, Ltd., both of, Japan

Filed May 16, 1977, Ser. No. 797,389
Claims priority, application Japan, May 26, 1976, 51-61017
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.33 **4 Claims**



1. An optical fiber for communication comprising an optical fiber covered with a coating of a high-molecular elastomer having a flexural modulus of not less than 200 kg/cm² at room temperature, the difference between the flexural moduli of said elastomer at room temperature and about −50° C. being not more than 1000 kg/cm².

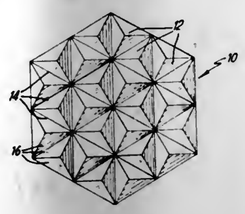
4,114,982

SCREENS SUITABLE FOR USE IN PHOTO-ENGRAVING AND PHOTO-LITHOGRAPHIC PROCESSES AND IN COLOR TELEVISION

Raymond Buckley, 13 Church St., Wood Ln., Bignall, Stoke-on-Trent, Staffordshire, England

Filed Apr. 15, 1976, Ser. No. 677,154
Int. Cl.² G03B *21/60*
U.S. Cl. 350—127 **13 Claims**

1. A stationary light-transmitting screen comprising a piece of transparent material having one face and a plurality of pointed formations formed on said one face and defining a contoured surface, such that light incident on said contoured surface is refracted as it passes through the screen and any image being transmitted is broken up into a pattern of dots by



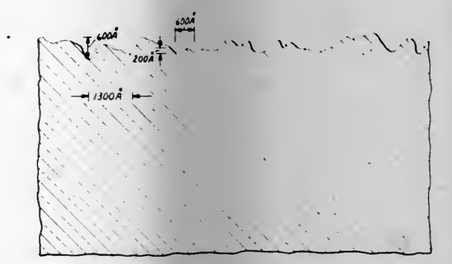
said formations, said formations adjoining one another such that said one face is free of interstices.

4,114,983

POLYMERIC OPTICAL ELEMENT HAVING ANTIREFLECTING SURFACE

Kent N. Maffitt, Minneapolis; Hubert U. Brueckner, White Bear Lake, and Dean R. Lowrey, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 18, 1977, Ser. No. 770,044
Int. Cl.² G02B *1/10*
U.S. Cl. 350—164 **4 Claims**



1. An optical element comprising a polymeric material having a surface containing a plurality of randomly positioned peaks, a predominant number of which range in amplitude approximately between 20 and 160 nm, the separation of adjacent peaks being not greater than three times the maximum amplitude of said peaks, wherein the total reflectance of visible light incident normal to said surface is less than two percent and the intensity of visible light transmitted in one direction is at least 10^3 greater than the intensity of transmitted visible light measured 5° off said one direction.

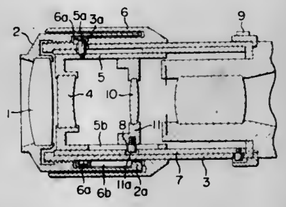
4,114,984

ZOOM LENS BARREL CAPABLE OF MACRO-PHOTOGRAPHY

Takeshi Muryoi, Chigasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 5, 1976, Ser. No. 739,307
Claims priority, application Japan, Nov. 7, 1975, 50-150721[U]
Int. Cl.² G02B *15/00*
U.S. Cl. 350—187 **4 Claims**

1. A zoom lens barrel having a focusing lens system and a magnification lens system including first and second movable lens groups, in which zooming is effected by moving both the first and second lens groups and focusing for macro-photography is effected by moving the first movable lens group with the second movable lens group fixed at the position for the macro-photography, the zoom lens barrel comprising:
- a fixed tube provided with a first cam groove;
- an operation ring mounted for rotation and sliding movement relatively to the fixed tube;
- means for moving the focusing lens system in association with the rotation of the operating ring;
- a driving cylinder holding the first movable lens group and provided rotatably and slidably with respect to the fixed tube, the driving cylinder being provided with a second cam groove;
- means for moving the driving cylinder in association with the sliding movement of the operating ring;
- a driven cylinder holding the second movable lens group and being slidably fitted on the driving cylinder;
- a switch cylinder disposed for rotation within a predetermined angle with respect to the fixed tube, the switch cylinder being provided with a third cam groove;



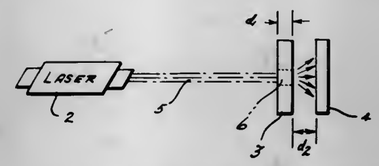
- a first connecting member for connecting the driving cylinder to the first cam groove;
- a second connecting member for connecting the driven cylinder to the second cam groove and the third cam groove; and
- the third cam groove including a zooming portion in which the driven cylinder is movable in the optical axial direction when the driving cylinder is rotated and a macro portion in which the movement of the driving cylinder is prevented the zooming portion being continuous to the macro portion, and the switch cylinder being operable so that the second connecting member may be located in either the zooming portion or the macro portion.

4,114,985

SHIELD FOR HIGH POWER INFRARED LASER BEAM

Jerome D. Friedman, 15 Lake St., Lexington, Mass. 02173

Filed Mar. 28, 1974, Ser. No. 457,674
Int. Cl.² G05D *25/00*; G21F *5/04*
U.S. Cl. 350—266 **3 Claims**



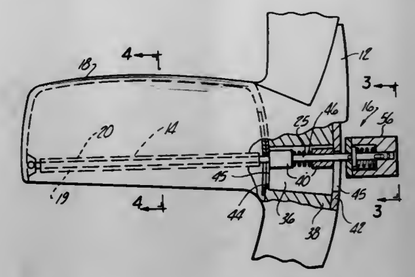
1. A shield for terminating the beam of a high power infrared laser source comprising
- first and second spaced, juxtaposed, opaque, clay base, ceramic sheet members, said first sheet member intercepting said beam and having a sheet thickness to beam power density relationship that allows opaque to translucent conversion of said first sheet member by said beam and said second sheet member being spaced from said first sheet member a distance that permits Raleigh scattering and effective heat transfer of laser energy transmitted through said first sheet member.

4,114,986

REVERSIBLE SIDE MOUNT MIRROR

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Aug. 16, 1977, Ser. No. 825,097
Int. Cl.² G02B *17/00*
U.S. Cl. 350—282 **12 Claims**



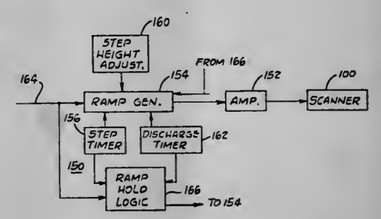
1. A reversible rearview mirror for vehicles comprising; a support member adapted for mounting on the exterior of a vehicle, a shaft mounted relative to said vehicle with one end disposed exteriorly of the vehicle and the other end within the passenger compartment of the vehicle, means supporting said shaft for rotation about its longitudinal axis and for pivotal movement about a vertical axis, a mirror member having oppositely facing mirror surfaces for day and night use on opposed surfaces thereof, said mirror member being mounted on said shaft for rotation of a selected one of said mirror surfaces to a viewing position and rotation 180° to present the other of said surfaces in said viewing position, said mirror member being mounted for pivotal movement therewith for adjustment to an angular position relative to said vehicle.

4,114,987

DEFLECTOR CONTROL CIRCUIT

Robert J. Vagi, 8532 Avery St., Broadview Heights, Ohio 44147

Filed Mar. 5, 1976, Ser. No. 664,167
Int. Cl.² G05D *25/00*
U.S. Cl. 350—285 **26 Claims**



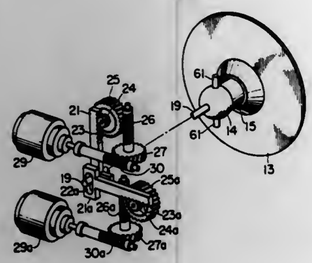
1. A control circuit for an optical deflector having a movable beam-directing element and an input circuit for moving the beam-deflecting element as a function of an electrical potential applied to the input circuit, the control circuit comprising:
- (a) a generator for impressing a voltage waveform on the input circuit having a portion inducing sweep motion and a portion inducing retrace motion of the beam directing element; and,
- (b) circuitry for causing an abrupt variation in the retrace waveform portion to compensate for harmonic vibrations in the retrace motion caused by a transition between the sweep and retrace motion.

4,114,988

MIRROR ANGLE ADJUSTING DEVICE, WITH CONSECUTIVELY DRIVEN WORMS IN REMOTELY CONTROLLED REAR-VIEW MIRROR APPARATUS

Masao Enomoto, Ischara, Japan, assignor to Ichikoh Industries, Limited, Tokyo, Japan

Filed Sep. 20, 1977, Ser. No. 835,284
Claims priority, application Japan, Oct. 21, 1976, 51-25519
Int. Cl.² G02B 7/18
U.S. Cl. 350—289 **7 Claims**



1. A mirror angle adjusting device in a remotely controlled rear view mirror apparatus for automobile, comprising:
a frame;
a mirror attachment plate;
a ball to which said mirror attachment plate is secured;
a ball-and-socket joint for rotatably holding said ball on said frame;
a shaft extending from the ball at a site different from the site at which the mirror attachment plate is secured to the ball;
slidable members crossing each other and movably held on said frame;
slots provided in said slidable members to cross each other at right angle and having said shaft of the ball passing through the point of cross of these slots; and
driving mechanisms provided on said frame for moving said respective slidable members independently of each other;
said driving mechanisms comprising:
electric motors;
racks provided on said slidable members;
pinion gears engaging said racks;
first worm wheels rotatable with said pinion gears;
first worms engaging these first worm wheels;
second worm wheels rotatable with said first worms; and
second worms secured to the shafts of said electric motors and engaging said second worm wheels,
said worm gears respectively having teeth constituting automatic one-way motion function,
said pinion gears being coupled to said first worm wheels via slip mechanisms.

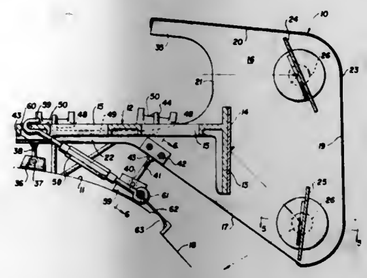
4,114,989

OVERHEAD ROOF-MOUNTED REAR VIEW MIRROR

Charles G. Badgley, St. Petersburg, Fla., assignor to Richard B. Badgley, St. Petersburg, Fla.

Filed Jun. 6, 1977, Ser. No. 803,851
Int. Cl.² G02B 5/08
U.S. Cl. 350—302 **9 Claims**

1. An overhead rear view mirror for mounting on the roof of an automotive vehicle in a fixed relationship to the windshield of such vehicle and in alignment with the eyes of the vehicle driver, said overhead rear view mirror comprising a substantially horizontal frame section having plural adjustable mounting feet depending therefrom and being engageable with an automobile roof, said horizontal frame section including a substantially vertical web at its forward end near and above the windshield of a vehicle on which the device is mounted, a stationary substantially vertical mirror section on said vertical web, a pair of substantially vertical side panels fixedly attached to opposite sides of the horizontal frame section and extending above, below and forwardly of said vertical web and stationary mirror section, a shroud spanning the space between said vertical side panels and connected thereto and forming with the side panels a mirror enclosure, an upper and a lower mirror section in said enclosure forwardly of the stationary mirror section and above and below the latter, respectively, means mounting said upper and lower mirror sections rotatably on horizontal transverse axes in said enclosure including rotary



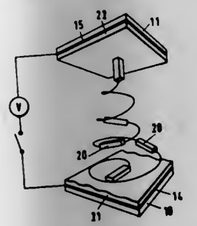
shaft means connected with at least one of said vertical side panels whereby the reflective angles of said upper and lower mirror sections may be adjusted, and adjustable cable harness means connected with said horizontal frame section and adapted to releasably engage a structural part of a vehicle on which the device is mounted for securing the device to the vehicle.

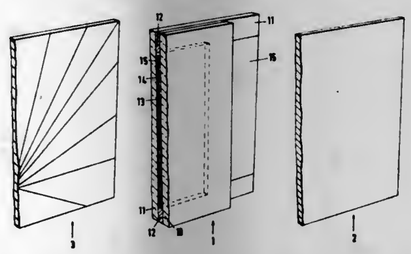
4,114,990

LIQUID CRYSTAL ROTATOR

Derek H. Mash; William A. Crossland, both of Harlow, and Joseph H. Morrissy, Dunmow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 4, 1977, Ser. No. 793,684
Claims priority, application United Kingdom, May 4, 1976, 18155/76
Int. Cl.² G02F 1/13
U.S. Cl. 350—337 **8 Claims**





1. A liquid crystal cell including a layer of cholesteric material having a pitch longer than the quotient of the wavelength of light divided by the birefringence, but not longer than four times the layer thickness, which layer is sandwiched between two transparent electroded plates one having surface treatment

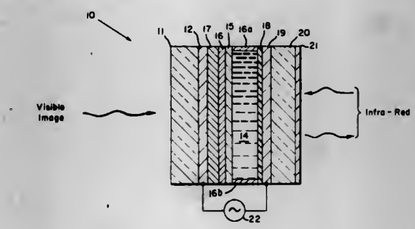
providing, in the absence of the electric field across the layer, homeotropic alignment of the liquid crystal molecules adjacent said one plate, while other plate has a surface treatment providing, in the absence of an electric field across the layer, homogeneous parallel alignment of the liquid crystal molecules adjacent said other plate.

4,114,991

VISIBLE-TO-INFRARED CONVERTER LIGHT VALVE

William P. Bleha, Jr., Carlsbad, and Jan Grinberg, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 22, 1976, Ser. No. 753,253
Int. Cl.² G02F 1/13
U.S. Cl. 350—338 **8 Claims**



1. Liquid crystal light valve means for converting a visible wavelength dynamic image to an infrared wavelength dynamic image, said light valve means comprising:
(a) a first faceplate of visible wavelength transmissive material having one side thereof positioned to receive a visible wavelength image;
(b) a dichroic conductive electrode film on the other side of said faceplate, said film being transmissive in the visible wavelength region but reflective in the infrared wavelength region;
(c) a second faceplate of infrared wavelength transmissive material positioned in spaced opposed relationship to said first faceplate;
(d) a layer of liquid crystal material and means for confining said layer between said first and second faceplates;
(e) means to apply a voltage across said liquid crystal layer;
(f) variable impedance photosensor means for modulating said voltage spatially and temporally responsively to incidence thereon of said visible wavelength image, said photosensor means being positioned to receive said visible wavelength image transmitted through said film; and
(g) said photosensor means being transparent to infrared radiation and said liquid crystal being responsive to variation of the voltage applied across it to vary the polarization of infrared radiation transmitted through it whereby infrared radiation transmitted through said second faceplate, said liquid crystal layer, and said photosensor is reflected from said dichroic film back through said photosensor, said liquid crystal layer and said second faceplate and is polarization modulated responsively to the voltage across said liquid crystal layer in both of its transits therethrough.

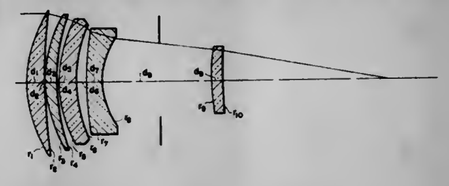
4,114,992

VARIANT ERNOSTAR TYPE LONG FOCUS LENS SYSTEM

Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1976, Ser. No. 754,635
Claims priority, application Japan, Dec. 29, 1975, 51-157983
Int. Cl.² G02B 11/30
U.S. Cl. 350—216 **4 Claims**

1. A variant Ernostar type long focus lens system comprising a first positive meniscus lens component, a second positive meniscus lens component, a third positive meniscus lens component, a fourth negative meniscus lens component and a fifth lens component, and said lens system satisfying the following conditions:
(1) $1.3f < r_2$
(2) $0.3f < r_3 < 0.36f$
(3) $0.45f < r_4 < 0.58f$
(4) $0.3f < r_5 < 0.36f$
(5) $0.38f < r_6 < 0.46f$
(6) $0.8f < r_7 < f$
(7) $0.18f < r_8 < 0.2f$
(8) $0.5f < r_9$
(9) $f < r_{10}$
(10) $0.15f < d_1 + d_2 + d_3 + d_4 + d_5 + d_6 < 0.17f$
(11) $0.05f < d_5 < 0.07f$
(12) $0.01f < d_6 < 0.03f$
(13) $0.03f < d_7 < 0.05f$
(14) $0.28f < d_8$
(15) $1.62 < (n_1 + n_2 + n_3)/3$
(16) $1.76 < n_4$
wherein the reference symbols r_1 through r_{10} represent radii of curvature on the surfaces of the respective lens components, the reference symbols d_1 through d_9 designate the thicknesses of the respective lens components and airspaces therebetween, the reference symbols n_1 through n_5 denote the refractive indi-



ces of the respective lens components and reference symbol f represents the focal length of the lens system as a whole, said system
having the following numerical data:
$r_1 = 35.690$; $d_1 = 4.539$; $n_1 = 1.66672$; $\nu_1 = 48.32$;
$r_2 = 133.290$ $d_2 = 0.069$;
$r_3 = 34.416$; $d_3 = 3.191$; $n_2 = 1.62299$; $\nu_2 = 58.14$;
$r_4 = 52.578$; $d_4 = 0.056$;
$r_5 = 30.924$; $d_5 = 5.152$; $n_3 = 1.60311$; $\nu_3 = 60.70$;
$r_6 = 38.925$; $d_6 = 2.500$;
$r_7 = 84.143$; $d_7 = 3.827$; $n_4 = 1.78472$; $\nu_4 = 25.71$;
$r_8 = 18.793$; $d_8 = 28.747$;
$r_9 = 52.057$; $d_9 = 3.039$; $n_5 = 1.76182$; $\nu_5 = 26.55$;
$r_{10} = 114.604$; $f = 100.0$; F 2.8; $f_B = 42.713$; $\Sigma d = 51.120$;
wherein the reference symbols r_1 through r_{10} represent the radii of curvature on the surfaces of the respective lens components, the reference symbols d_1 through d_9 designate the thicknesses of the respective lens components and airspaces therebetween, the reference symbols n_1 through n_5 denote refractive indices of the respective lens components, the reference symbols ν_1 through ν_5 represent Abbe's numbers of the respective lens components, the reference symbol f designates the focal length of the lens system as a whole and the reference symbol f_B denotes the back focal length of the lens system as a whole.

4,114,993

FINISHED SILICONE CONTACT LENSES

Edward A. Travnicek, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 650,997, Jan. 21, 1976, abandoned. This application Jan. 27, 1977, Ser. No. 763,179
Int. Cl.² G02C 7/04
U.S. Cl. 351—160 **2 Claims**

1. A silicone contact lens comprising a cured, filled, silicone substrate having machined surfaces and an evenly distributed, unfilled, subsequently cured silicone coating on the substrate, wherein the substrate comprises 80 to 95% by weight of
a. a copolymer comprising

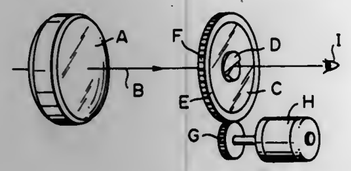
i. dimethyl siloxane,
ii. diphenyl siloxane, or phenylmethyl siloxane or mixtures thereof, and
iii. vinyl siloxane;
b. a copolymer comprising
i. dimethyl siloxane
ii. diphenyl siloxane or phenylmethyl siloxane or mixtures thereof, and
iii. siloxane having $(R)_2HSiO-$ or $-O-SiHR-O-$ groups, or both, wherein R is methyl or ethyl; with the proviso that each of fractions (a) and (b) has 6 to 16 mole percent phenyl and each contains no Part (iii) of the other;
c. 5 to 20% of a silica filler, the refractive index of said copolymer being substantially the same as the index of refraction of (c) and the coating liquid consists of a vulcanized mixture of (a) and (b).

4,114,994

FOCUS DETECTING SYSTEM

Toshihiro Kondo, 2-14-3, Kamiishihara, Chofu-shi, Tokyo, Japan, assignor to Toshihiro Kondo, Chofu and Fuji Photo Film Co., Ltd., Minami-ashigara, both of Japan

Filed Dec. 13, 1976, Ser. No. 750,005
Claims priority, application Japan, Dec. 11, 1975, 50-148021; Aug. 3, 1976, 51-92472
Int. Cl.² G03B *3/00*
U.S. Cl. 352—139 **2 Claims**



1. A device for detecting focus in a motion picture camera which has an objective comprising a light refracting optical element located substantially on a focal plane of the objective of the optical instrument, said light refracting optical element having different parts effecting refraction of light in different directions, a transparent disc having disposed therein at the center thereof said light refracting element, means for rotating said transparent disc and said optical element in a plane parallel to the focal plane so that said different parts of said optical element are periodically brought to a point on said plane parallel to the focal plane, and viewing means for viewing an image focused by said objective from a side of the light refracting optical element opposite to the objective, said viewing means having an optical axis where said optical element rotates about said optical axis to effect ready viewing through said viewing means and where the image surrounding said light refracting optical element is viewed in focus through the transparent disc surrounding the light refracting element to facilitate focusing of the camera, a shutter mechanism, and a motor for driving said shutter mechanism and said means for rotating the camera.

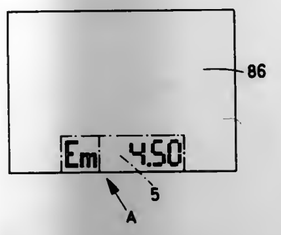
4,114,995

DIGITAL DISPLAY OF PHOTOGRAPHIC DATA

Albert Stieringer, Weil der Stadt, and Gerhard Börner, Waldenburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 25, 1977, Ser. No. 781,459
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613154
Int. Cl.² G03D *1/60*
U.S. Cl. 352—171 **15 Claims**

1. In a photographic apparatus of the type comprised of a plurality of adjustable units, in combination, a common digital display means; and information-transmitting means interconnecting the adjustable units and the common display means and operative for causing the common display means to effect a display of the setting of any selected one of the adjustable units, including selector means operative for selecting the unit whose setting is to be displayed on the common display means, the



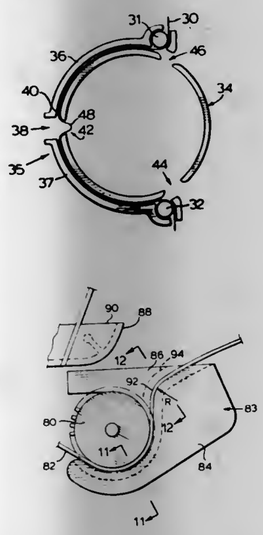
selector means comprising a plurality of display-select switch means each associated with a respective one of the adjustable units and operative when activated by the user for connecting to the common digital display means a respective one of the plurality of adjustable units.

4,114,996

INLET GUIDE STRUCTURE FOR ROLLING LOOP FILM TRANSPORT MECHANISM

William C. Shaw, Streetsville, Canada, assignor to Imax Entertainment Limited, Cambridge, Canada

Filed Mar. 8, 1977, Ser. No. 775,485
Claims priority, application Canada, Apr. 2, 1976, 249505
Int. Cl.² G03B *1/00*
U.S. Cl. 352—184 **2 Claims**



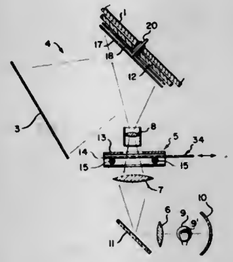
1. An inlet guide structure having complementary outer and inner guides for receiving photographic film from a drive sprocket of a rolling loop film transport mechanism and for guiding the film inwardly towards a path defined between the stator and the rotor of such a mechanism, the outer and inner guides having respective pairs of co-operating side faces for guiding side portions of the film, the side faces of the outer guide defining a rounded nose portion intermediate ends of these side faces, and the side faces of the inner guide defining a depression corresponding to the nose portion so that when in use the guides combine to form a passage which guides the film by contact between the side faces and the side portions of the film, said nose portion combining with the depression to cause the passing film to define a transverse curve about the nose portion, said passage restraining the film to leave the passage at an acute angle to said path between the stator and the rotor so that on impact by the rotor, a loop will start to grow and any tendency for creation of a rigidifying longitudinal bend will be limited because the film is rigidified transversely by the transverse curve about said nose portion.

4,114,997

NAVIGATIONAL DEVICE

Donald M. Lunetta, 64 Pinecliff Rd., Chappaqua, N.Y. 10514

Filed Feb. 17, 1976, Ser. No. 658,683
Int. Cl.² G03B *21/22, 21/28*
U.S. Cl. 353—11 **7 Claims**



1. In a navigational film projection device having a screen, a light source, a lens and mirror system having at least one mirror, a film holder for holding a transparent film chart relative to said light source and lens and mirror system whereby an image of the chart is projected onto said mirror and from there onto said screen, a pair of primary course line indicators for showing course line on the image projected onto the screen and means for translating the chart and course lines relative to each other along two directions extending perpendicular to each other; the improvement comprising:
(a) means for mounting the course line indicators immediately in front of said mirror for rotation independently of each other;
(b) control means disposed remotely of the front of the mirror and connected to said course line indicators for controlling independent rotation thereof;
(c) a pair of secondary course line indicators also disposed remotely of the front of the mirror and connected to said control means for rotation therewith in full view of the user of the device, each of said secondary course line indicators being aligned in parallel relation with one of the primary course line indicators and fixed for rotation therewith; and
(d) a compass showing magnetic north and disposed in operative relation with the secondary pair of course line indicators and in view of the user.

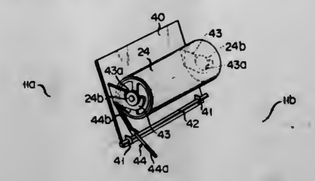
4,114,998

COPYING MACHINE WITH REMOVABLE PHOTOSENSITIVE DRUM

Wataru Shimizu, Chigasaki, and Eiji Sawaoka, Zama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kasawaki, Japan

Filed Jan. 14, 1977, Ser. No. 759,554
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 DR **5 Claims**

1. An electrophotographic copying machine comprising:
a housing with a top wall having an opening;
a photosensitive rotary drum accommodated in said housing;
copying means for effecting copying operation in cooperation with said drum;
covering means mounted to said top wall to close the opening therein and movable to open said housing
means for attaching the covering means to said top wall of the housing so as to be pivotable around one side of the covering means; and
supporting means mounted on said covering means and supporting said drum to shift the drum outside of said housing through the opening by moving said covering means to open said housing, including a pair of supporting members projected from both sides of said drum, and a pair of supporting arms each having one end fixed on said covering means and the other end supporting said supporting member, said supporting members each including a circular body and said supporting arms each including a cut-away portion at one side having a curved surface so as to support a circular body in said housing and while outside said housing.



4,114,999

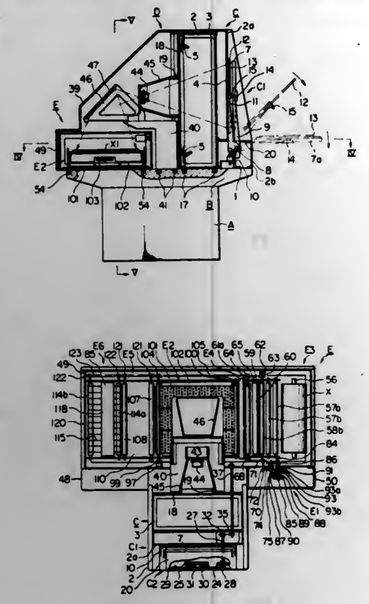
APPARATUS FOR MAKING PLATES FOR PRINTING

Masahiro Kogiso, Kokubunji; Minehiro Sakata, Hachioji; Hatsuo Oda, and Tamio Iwamoto, both of Hino, all of, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Claims priority, application Japan, Nov. 14, 1975, 50-13745; Mar. 26, 1976, 51-37098 [u]; Mar. 26, 1976, 51-37099[u]
Filed Nov. 9, 1976, Ser. No. 740,086
Int. Cl.² G03G *15/10*
U.S. Cl. 355—10 **25 Claims**

1. An electro-fax type of apparatus for making a plate for offset printing, comprising:
a manuscript table section comprising a first housing having a vertical exposure window formed in the front thereof, a manuscript table unit mounted on the front side of said first housing and adapted to cover said exposure window and to be laid down on the front side of said exposure window so that a manuscript is placed face upward thereon and, then, set face backward at said exposure window and lamp means accommodated in said first housing for illuminating said exposure window;
an optical system section comprising a second housing, a projection lens accommodated in said second housing and located in the rear of said exposure window to project the picture of the manuscript in the backward direction, and a mirror accommodated in said second housing and located in the rear of said projection lens to reflect the projected picture in the downward direction, and;
a master paper processing system section comprising a third housing and a system accommodated in said third housing for processing a master paper to be made into said plate, said master paper-processing system comprising a plurality of components including a paper feeding mechanism, an electrically charging device, an exposure station located directly under said mirror, a wet developing device and a drying and discharging device, said components being so arranged that said master paper is forwarded

along a substantially straight path extending in a horizontal plane and in a lateral direction to the apparatus which



is perpendicular to the direction of the optical axis of said projection lens.

4,115,000

APPARATUS FOR NOTCHING OF WEBS

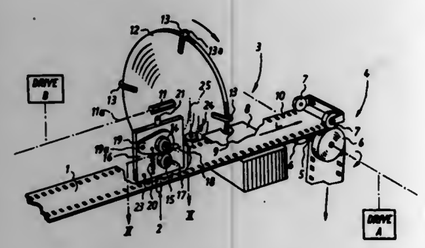
Klaus Mischo, Munich, and Traugott Liermann, Unterhaching, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,595

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619375

Int. Cl.² G03B *29/00*; B26D *1/12*

U.S. Cl. 355—29 **12 Claims**



1. In an apparatus for notching an edge of an elongated web, particularly of a strip of photographic film, a combination comprising means for advancing an elongated web in a path; and means for notching a longitudinal edge of the web, including a wheel mounted for rotation adjacent said path, at least one punching die on said wheel adjacent the periphery thereof and having a punching portion bounded by a first severing edge shaped to correspond to a notch to be formed, and a stationary counterpunch provided with a cutout shaped to matingly receive said punching portion and being bounded by a second severing edge which cooperates with said first severing edge to punch notches into the web during rotation of the wheel.

4,115,001

WEB MARKING APPARATUS

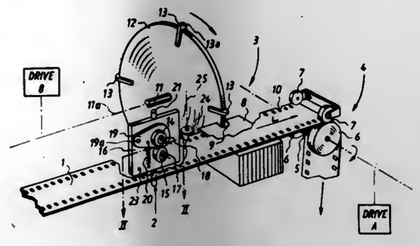
Klaus Mischo, Munich; Traugott Liermann, Unterhaching, and Karel Pustka, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,596

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619374

Int. Cl.² G03B *29/00*; B65H *25/26*

U.S. Cl. 355—29 **13 Claims**



1. In a web-marking apparatus for marking an edge of an elongated web, particularly of a strip of photographic film, a combination comprising a web marking station; advancing means for advancing an elongated web in a predetermined path towards and through said web marking station; and guide means adjacent said path for guiding said web so that the same travels in a predetermined orientation through said station, said guide means comprising a pair of rollers defining a nip through which a longitudinal edge portion of the web passes, and means mounting said rollers for rotation about a pair of axes which are permanently parallel with one another and which include with the direction of web travel an angle that opens in said direction and towards said longitudinal edge.

4,115,002

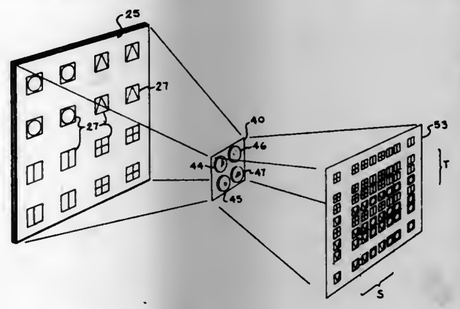
METHOD AND APPARATUS FOR PHOTOGRAPHIC RECORDATION OF MULTIPLE IMAGES

Thomas D. Clark, 4232 River Rd., Toledo, Ohio 43614

Filed May 2, 1977, Ser. No. 792,687

Int. Cl.² G03B *27/44, 27/62, 27/32*

U.S. Cl. 355—54 **13 Claims**



5. An apparatus for reproducing separate and non-related graphic originals as a group of high information density images of a selected reproduction ratio comprising a frame having means for retaining the originals in a first widely spaced relationship and in a first arrangement as a first group, a lens support, and a focal plane defining a central traget area on said plane, means for locating said lens support between said frame and said focal plane, and a plurality of lens units positioned on said lens support whereby each of said lens units projects a selected and discrete segment image of said first group on said central target area and whereby a cumulative image from all of said lens units in said target area comprises separate images of the originals in a second more closely spaced relationahip and a second arrangement as a second group distinct from said first group.

4,115,003

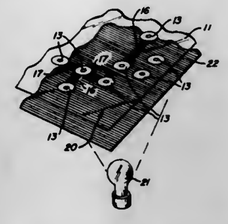
GRAPHIC AID AND METHOD AND SYSTEM OF MAKING REPRODUCTIONS THEREFROM

Robert W. Nachtrieb, Villa Park, Ill., assignor to Fotel Inc., Villa Park, Ill.

Filed Jul. 6, 1976, Ser. No. 702,419

Int. Cl.² G03B *27/02, 27/32*

U.S. Cl. 355—133 **20 Claims**



1. A graphic aid for reproducing a first graphic pattern and a second graphic pattern in registry therewith comprising;

a diaphanous sheet,

a first pattern of effectively light absorptive material on said sheet, defining portions of said first graphic pattern,

a second pattern of opaque and effectively light reflective material on said sheet, in registry with said first pattern and defining simultaneously, portions of said first graphic pattern and said second graphic pattern, and

removable means selectively underlying said diaphanous sheet to render said sheet effectively light absorptive whereby said diaphanous sheet simultaneously includes thereon said pattern-defining material for each of said patterns and said second pattern has a contrasting light reflective characteristic relative to said first pattern and said sheet and underlying means such that light may be reflected from said second pattern to define a separately distinguishable second graphic pattern.

4,115,004

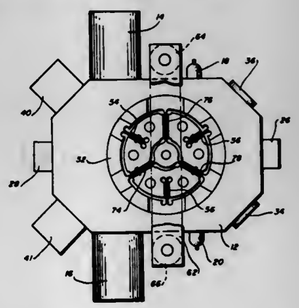
COUNTERBALANCED OSCILLATING RING LASER GYRO

Thomas J. Hutchings, Thousand Oaks, and Virgil E. Sanders, Newbury Park, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Nov. 15, 1976, Ser. No. 741,619

Int. Cl.² G01B *9/02*; G01P *9/00*

U.S. Cl. 356—106 LR **9 Claims**



1. A compact laser gyro assembly of improved resolution comprising:

a ring laser structure including apertures and mirrors which define a rectangular ring laser path;

a case housing said laser structure; and

electrical motor driving means mounted within the area bounded by the ring laser path in said laser structure for mechanically oscillating said laser structure with respect to said case.

4,115,005

METHOD FOR OPTICALLY MEASURING A ROUGHNESS PROFILE OF SURFACE

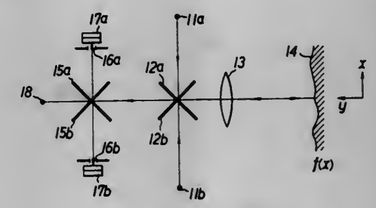
Ryoji Murata, Higashiyamato, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 20, 1975, Ser. No. 560,189

Claims priority, application Japan, May 20, 1974, 49-56274

Int. Cl.² G01B *11/30*

U.S. Cl. 356—120 **6 Claims**



1. A method for optically measuring a roughness profile of a surface, comprising:

projecting through a converging optical system at least two discrete light rays from two light sources on a surface to be measured, one of said light rays being focused before and the other behind said surface;

receiving reflections of said light rays by photoelectric means to produce two different electric signals related to the respective intensity of the reflections of said light rays, said reflections being strongest when said light rays are in focus at said surface and decreasing in intensity when said light rays are out of focus with said surface;

detecting a roughness profile of said surface on the basis of the difference of said electric signals; and

moving said light rays along said surface to obtain a continuous roughness profile of said surface.

4,115,006

ARRANGEMENT FOR DETECTING LIGHT SOURCES

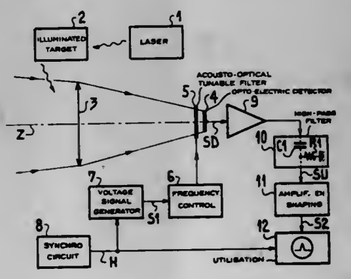
Jean-Claude Reymond, and Alain Bellissant, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 9, 1977, Ser. No. 767,187

Claims priority, application France, Feb. 13, 1976, 76 04078

Int. Cl.² G01B *11/26*; H01J *39/20, 3/14*

U.S. Cl. 356—152 **8 Claims**



1. An arrangement for detecting a light source having a known expected radiation spectrum in an observed field, com-

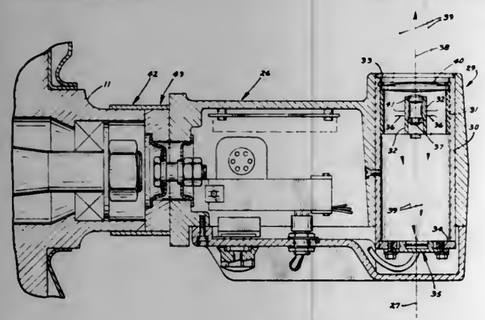
prising: optical receiving means for focusing incident light radiation originating from said field and consisting of ambient interference radiation and said expected radiation; optical filtering means comprising an acousto-optical tunable filter controlled by a control device to scan periodically and according to a predetermined law of change in frequency with time the frequency of the filter through an operating band which corresponds substantially to that of the said expected spectrum so as successively to filter the various received wavelengths therein; opto-electrical detection means for detecting said filtered and focused incident radiation; and a processing circuit for processing the detected signals and comprising a high-pass filter of predetermined cut-off frequency to eliminate the D.C. component due to the ambient interference radiation and to provide a periodic useful signal due to radiation from said source.

4,115,007

VEHICLE WHEEL ALIGNMENT SYSTEM

Carl L. Thiele, Pasadena, and Haskell Shapiro, Corona del Mar, both of Calif., assignors to Royal Industries, Inc., Osseo, Minn.

Filed Jan. 14, 1976, Ser. No. 648,890
Int. Cl.[2] G01B *11/275*
U.S. Cl. 356—155 **29 Claims**



1. In apparatus of the class above described, the combination comprising:

a. a level work surface for receiving a vehicle, components of which are to be aligned with respect to an axis of said vehicle;

b. energy reflecting means positioned in a predetermined attitude to an axis of said vehicle;

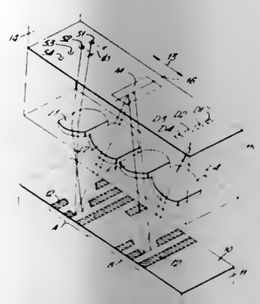
c. means, including a source of radiant energy and energy detecting means, said means adjustably disposed on a component of said vehicle, having an axis of which is to be positioned in predetermined relationship to an axis of said vehicle, said means having an optical axis to be adjustably disposed in predetermined relationship with the axis of said component and including an element which attaches to said vehicle component, a cylindrical outer tube disposed in said element and a lens means disposed adjacent to one end of said cylindrical outer tube to focus radiant energy returning from said energy reflecting means onto said energy detecting means disposed adjacent to the other end of said cylindrical outer tube and a coaxially disposed cylindrical inner tube disposed in said cylindrical outer tube carrying said source of radiant energy and said lens means also disposed adjacent to one end of said cylindrical inner tube to diverge a beam of radiant energy from said source of radiant energy located in said cylindrical inner tube whereby the energy radiated toward said energy reflecting means will be detected by said energy detecting means in a predetermined manner when the optical axis of said means is in a predetermined attitude with respect to the plane of said energy reflecting means, said source of radiant energy and said energy detecting means having coaxially effective axes of operation coincident with said optical axis.

4,115,008

DISPLACEMENT MEASURING APPARATUS

Alexander Turnbull Shepherd, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed May 6, 1977, Ser. No. 794,523
Claims priority, application United Kingdom, May 8, 1976, 19049/76
Int. Cl.[2] G01B *11/26, 9/02;* G02B *27/38*
U.S. Cl. 356—172 **4 Claims**



1. Apparatus for measuring the extent and sense of the relative movement of a first object in one of two opposite directions with respect to a second object, which includes a reflecting grating carried by one of the two relatively movable objects with the grating lines substantially at right angles to the direction of relative movement, and an optical system carried by the other of the two relatively movable objects and comprising a light source arranged to produce at least three light beams equally spaced in a direction substantially parallel to the grating lines, a first lens having the light source located in its focal plane and arranged to project the light beams onto an area of the grating for reflection thereby, a second lens through which the reflected light beams pass, a mirror located in the focal plane of the second lens and having a uniform twist about an axis substantially parallel to the grating lines such as to displace each light beam from the next in a plane normal to the grating lines by a distance measured at the grating surface equal to one quarter of the grating pitch, a third lens having the mirror located substantially in its focal plane and arranged to project the light beams reflected by the mirror onto a different area of the grating for further reflection thereby, a fourth lens through which the light beams pass after said further reflection from the grating, and at least three light-sensitive devices located in the focal plane of the fourth lens so that each detector receives a separate one of the light beams.

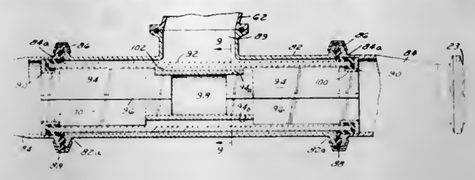
4,115,009

OPTICAL SIGHT TUBE FOR FLOWING FLUID MATERIALS

Lawrence C. Zepp, Claremont, and Marston D. Mosteller, Alhambra, both of Calif., assignors to Bindicator Company, Port Huron, Mich.

Filed Mar. 14, 1977, Ser. No. 777,075
Int. Cl.[2] G01N *21/26*
U.S. Cl. 356—201 **11 Claims**

1. Apparatus for optically measuring a preselected characteristic of fluids flowing in a confined path comprising a cylindrical conduit disposed to define at least a portion of said confined fluid path, means providing an optical window in a wall of said conduit, means for optically detecting said material characteristic through said window, reflective means providing an arcuate reflective surface adjacent said window and defining a test material flow path between said surface and said window, said reflective means being mounted within said conduit by means engaging an inside cylindrical wall of said conduit, and means for selectively adjusting the spacing between said window and said reflective surface including means for selectively disengaging said mounting means from said



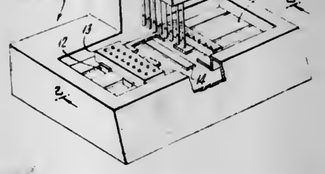
conduit wall, said mounting means being rotatable coaxially within said conduit when disengaged from said conduit wall thereby to vary said spacing, said reflective means being adapted to reflect measurement optical beams incident upon said surface through said window and test material back through test material and said window.

4,115,010

AUTOMATED PLATE READER

William J. McAleer, Ambler, and William M. Hurni, North Wales, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 3, 1976, Ser. No. 655,318
Int. Cl.[2] G01N *21/22*
U.S. Cl. 356—201 **9 Claims**



1. Apparatus adapted to carry out one or more viral assays simultaneously comprising

carrier means including a plurality of test wells for holding and transporting a dry cell sheet which has been stained after undergoing viral attack, the concentration of virus in each well of an individual assay being different from that of every other well so as to provide a serial titration of virus concentration,

a light source disposed beneath the virus growth carrier means,

a plurality of photo sensors disposed above the virus growth carrier means, each sensor being energized when the light from the light source passes through the test well below that sensor,

means for lowering the photo sensors into the test wells and measuring light transmittance of the dry, stained cell sheet when the photo sensors are in lowered position, and for raising the photo sensors therefrom,

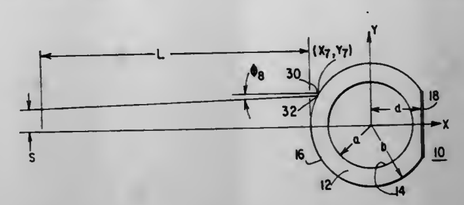
and digital computer means for recording the light transmittance measurements of the photo sensors.

4,115,011

CUVETTE CONFIGURED FOR PHOTOANALYSIS USE

Albert Brunsting, Miramar, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 7, 1976, Ser. No. 730,577
Int. Cl.[2] G01N *1/10*
U.S. Cl. 356—246 **15 Claims**



1. An afocal cuvette for containing a fluid to be analyzed by passage of light therethrough, said cuvette adapted to be positioned at a predetermined distance L from a light receptor, said cuvette comprising:

a hollow cylindrical structure having a structural axis and an axis of symmetry defined by an XYZ cartesian coordinate system wherein the structural axis lies along the Z axis and the plane of symmetry lies along the XY axis, said cylindrical structure having a circular wall and a flat portion formed on the exterior surface of said circular wall extending in a plane parallel to the structural axis, at least said circular wall being optically transparent, said circular wall having a circular inner surface at a radius *a* about the structural axis for defining a compartment to contain the fluid and a circulr outer surface having a radius *b*, said flat portion being positioned a predetermined radial distance *d* from said structural axis, said cuvette capable of receiving incident light along an incident light path defined as an incident beam formed of a plurality of rays from a light source which is located at a distance spaced from the cuvette and the beam having a first optical axis, the beam continuing through said cuvette wall and the compartment to the said flat portion and at least a portion of the beam being reflected back from said first portion as a reflected beam also formed as a plurality of reflected rays, the beam having a second optical axis and lying along an exiting light path defined as leading to the light receptor which is located spaced offset from the optical axis of the incident light beam and from the light source, the first and second optical axes being on opposite sides of said plane of symmetry, the indices of refraction of the media intercepted by said incident and exiting light beams being related to said radii and predetermined distance whereby to effect definition of the rays forming said incident and exiting light beams into and out from said cuvette as substantially parallel within their respective beams.

4,115,012

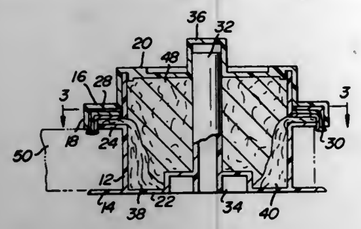
PRINTING RIBBON SPOOL

Walter Ploeger, Jr., and Jeanne M. Ploeger, both of North Bellmore, N.Y. 11710

Filed Jan. 10, 1977, Ser. No. 758,279
Int. Cl.[2] B41J *31/16*
U.S. Cl. 400—202.1 **8 Claims**

1. A spool for replenishing ink in a printing ribbon comprising an annular spool body having a hub and a pair of spaced radially outwardly directed flanges, said flanges being spaced apart so as to accommodate a ribbon therebetween, an annular pad of deformable material selected from the group consisting of woven and knitted material supported by said body in a position so that an outer peripheral edge portion of the pad can have contact with the side edge of at least a portion of the ribbon disposed between the flanges, a reservoir supported by said body, a wick of deformable material including at least one

layer of fabric selected from the group consisting of woven fabric and knitted fabric, said wick extending between the reservoir and pad for transferring ink from the reservoir to the pad by capillary action, said wick including two layers of nylon fabric bonded only at their side edges to a layer of ink



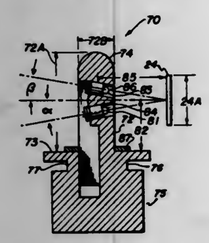
impervious polymeric plastic film disposed between the layers of the fabric, means defining at least one access opening to the reservoir and through which said wick extends, said opening being substantially smaller in transverse dimensions than the transverse dimensions of the wick, and said body including means to provide a hermetic seal for said reservoir.

4,115,013

END-OF-RIBBON SENSOR DEVICE

Jerry W. Hedstrom, Plano, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1977, Ser. No. 782,794
Int. Cl.[2] B41J *35/36*
U.S. Cl. 400—249 **7 Claims**



1. In a serial printer having a platen, a laterally movable carriage for traversing a print line, a ribbon cartridge having a supply of ribbon therein and mounted on a support means, printhead means and said ribbon cartridge and ribbon cartridge support means supported on said carriage, an improved end-of-ribbon sensor comprising:

a mounting means;

a housing extending transverse to and a predetermined distance from a plane formed by said mounting means;

a radiation source positioned within said housing; and

a radiation responsive device positioned within said housing;

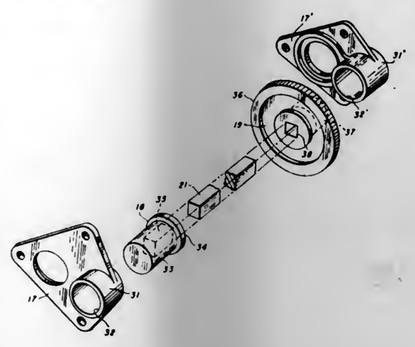
said mounting means attached to said ribbon cartridge support means such that said housing is positioned within the interior volume of the ribbon cartridge, in such proximity to the ribbon that the ribbon is illuminated by radiation from said radiation source and said radiation responsive device provides a first output proportional to the radiation reflected thereto from said ribbon, said radiation responsive device provides a second output, greater in magnitude than said first output, when receiving radiation reflected from a reflective marker positioned on the ribbon at a predetermined distance from the end of the ribbon to indicate the presence of an end portion of the ribbon.

4,115,014

IMPACT PRINTER DRIVESHAFT GEAR AND BEARING ASSEMBLY

James Carlos Wood, Houston, and Frances Adolph Felcman, Richmond, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 4, 1977, Ser. No. 793,570
Int. Cl.[2] B41J *11/30*
U.S. Cl. 400—611 **9 Claims**



1. An impact printer having a frame with a first and second sidewall, and a rotatable drive shaft with a polygon cross section for actuating web feed means mounted thereon, positioned between the first and second sidewalls, the improvement comprising:

(a) a first bracket assembly, including a hub with a journal bearing formed therethrough, mounted on the first sidewall;

(b) a second bracket assembly, including a hub with a journal bearing formed therethrough, mounted on the second sidewall;

(c) a bushing assembly having an outer circular bearing surface at one end and a raised shoulder at the other end, and having a socket with a polygon cross section formed from the shoulder end for receiving one end of the drive shaft, such that the one end terminates within the bushing socket near the interior end wall thereof, the outer circular bearing surface engaging the journal bearing of the first bracket assembly and the shoulder abutting one end of the hub of the first bracket; and

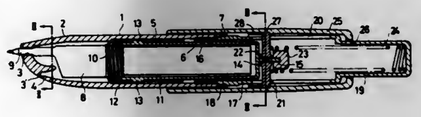
(d) a gear and hub assembly, having a socket with a polygon cross section formed therein from the gear end, for receiving the other end of the drive shaft such that the other end terminates within the gear and hub socket near the interior end wall thereof, the hub portion of the gear and hub assembly engaging the journal bearing of the second bracket assembly and the gear portion of the gear and hub assembly abutting the hub of the second bracket assembly.

4,115,015

RETRACTABLE PEN WITH INTERNAL TIP SEATING

Osamu Torii, Kyoto, Japan, assignor to Ancos Co., Ltd., Osaka, Japan

Filed Apr. 11, 1977, Ser. No. 786,743
Int. Cl.[2] B43K *5/16, 7/12, 24/08*
U.S. Cl. 401—110 **5 Claims**



1. A retractable pen, comprising:

(a) a body cylinder,

(b) a slide member slidably but non-rotatably disposed within the body cylinder and extending outwardly from both ends thereof, the front end of the slide member defining an axially offset open hole and an axially offset internal blind hole,

(c) spring means biasing the slide member toward a retracted position within the body cylinder,

(d) ink cartridge means having an axially offset writing tip disposed within the slide member,

(e) means rotatably but non-slidably coupling the cartridge means to the body cylinder,

(f) a cam wall and a cam ring disposed on the inside of the slide member or the outside of the cartridge means, the cam wall defining a pair of axially elongated, angularly spaced grooves joined at their one ends by configured edges, and the cam ring defining a configured edge generally matched to that of the cam wall but spaced therefrom, and

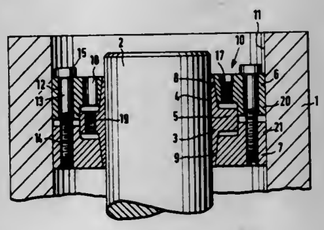
(g) cam follower means disposed on the outside of the cartridge means or the inside of the slide member, respectively, and operatively engaged in the path defined by and between the cam wall and the cam ring, whereby the depression and release of the slide member sequentially effects the extension thereof, the rotation of the cartridge means and tip, and the retraction of the slide member, to thereby transfer the tip between a writing position whereat it extends through the open hole in the slide member and a retracted position whereat it is protectively seated in the internal blind hole.

4,115,016

SHAFT FASTENING ASSEMBLY

Ralph Muellenberg, Nelkenstrasse 6, Huelchrath, Fed. Rep. of Germany

Filed Nov. 18, 1977, Ser. No. 852,674
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 7637344[U]
Int. Cl.[2] F16D *1/06*
U.S. Cl. 403—16 **6 Claims**



1. A shaft fastening assembly comprising:

a double tapered ring having a cylindrical circumferential surface, and two opposing conical surfaces on opposite sides of a radially extending protrusion, said double tapered ring substantially surrounding a shaft;

two secondary tapered rings each having a cylindrical circumferential surface, and a conical surface cooperating with a different conical surface of said double tapered ring, and a circumferential shoulder portion on at least one of said secondary tapered rings overlapping said radially extending protrusion on said double tapered ring;

a plurality of tension bolts for tightening together said conical surfaces of said double tapered ring and said secondary tapered ring arranged in a first pitch circle surrounding said shaft; and

a plurality of release bolts for releasing said conical surfaces of said double tapered ring and said secondary tapered rings arranged in a second pitch circle surrounding said shaft;

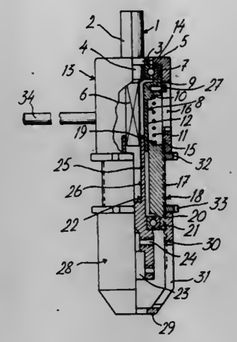
said first and second pitch circles being located at different radial distances from said shaft.

4,115,017

DEVICE FOR DRILLING HOLE OF PREDETERMINED DEPTH

Wilhelm H. Wilhelmsson, Fack 94, 572 00 Oskarshamn, Sweden

Filed May 13, 1976, Ser. No. 686,443
Claims priority, application Sweden, Mar. 17, 1976, 7603336
Int. Cl.[2] B23B *47/18*
U.S. Cl. 408—14 **1 Claim**



1. A device, for incorporation between an axially movable drill spindle and a drill bit, comprising:

(i) a driving member for connection to the drill spindle so as to move axially and rotationally with said drill spindle

(ii) a guiding member disposed about said driving member and mounted thereon by bearing means which permit relative rotation but prevent relative axial movement

(iii) a drill holding member, to receive the drill bit, engaged with said driving member so as to be relatively axially slidable but keyed against relative rotation, said drill holding member including a portion which is slidable axially between the drill holding member and the guiding member,

(iv) an assembly of a housing and a sleeve, the sleeve being externally threaded and the housing being internally threaded and engaged by its threading on an end of the sleeve so as to be adjustable axially, said assembly being positioned about the driving member, the guiding member and the drill holding member, the sleeve being coupled to the drill holding member by an axial thrust bearing, the guiding member being axially slidable in the housing but keyed against relative rotation,

(v) compression spring means positioned between the guiding member and the sleeve for transmitting from the driving member to the drill holding member an axial thrust which is adjustable by axial adjustment of the housing on the sleeve,

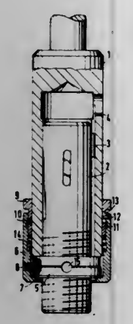
(vi) an abutment member which is internally threaded and is engaged on the other end of the sleeve, said abutment member being positioned about and extending axially beyond the drill holding member to abut a workpiece, axial adjustment of the abutment member with respect to the sleeve serving to adjust the extent to which the drill holding member may approach the workpiece and thereby adjusting the depth to which the drill bit may enter the workpiece,

(vii) stop means coupled to the housing, the sleeve, and the abutment means for preventing rotation thereof when the driving member rotates.

4,115,018
SLEEVE PLUG FOR ATTACHMENT TO A SPINDLE HEAD

Gustav Siegler, Kirchheimer Strasse 34, D 7317 Wendlingen, and Eberhard Jahn, Schlosserweg 10, D 7300 Esslingen-Wiflingshausen, both of Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,447
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 7632247[U]
Int. Cl.² B23B *31/10, 5/22*
U.S. Cl. 408—239 A 6 Claims



1. A sleeve-plug assembly attachable to a spindle head of the type having a generally cylindrical body and a bore extending axially into one end thereof, the assembly including the combination of

an adjusting nut;

an adjustable adapter insertable into said bore, said adapter having a threaded end protruding from the spindle head to threadedly receive said adjusting nut;

a sleeve assembly slidable onto the end portion of the spindle head over said nut, said sleeve assembly comprising

an axially shiftable carrying bushing having aperture means for receiving a plurality of locking balls annularly disposed around said bushing, the portion of said bushing adjacent said balls having a radial thickness smaller than the ball diameters,

a locking bushing having an end portion surrounding said nut and a sleeve portion generally surrounding the portion of said carrying bushing including said balls, said sleeve portion having means defining an inwardly facing conical surface with the larger diameter thereof being toward said nut, and

spring means extending between said locking and carrying bushings for urging said carrying bushing away from said nut.

4,115,019
METAL COUPLING OR OTHER METAL ATTACHMENT AND METHOD FOR WELDING IT TO A METAL TUBE OR OTHER METAL SUPPORT

Calvin C. Swisher, Sr., Genesee Depot, Wis., assignor to Wisconsin Centrifugal, Inc., Waukesha, Wis.

Filed Mar. 18, 1977, Ser. No. 779,286
Int. Cl.² B25G *3/34*
U.S. Cl. 403—270 8 Claims

1. A metallic attachment adapted to be welded to the external surface of a metal pipe or tube comprising:

(a) a generally cylindrical metallic body including

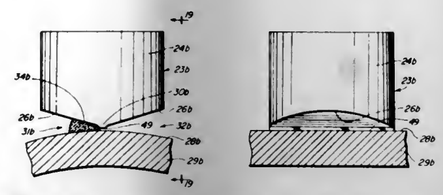
(1) a base having

a. a beveled bottom surface defining a weld surface area adapted to be welded to the said external surface of the said metal pipe or tube and having

b. a divider portion in the form of a keel or land extending downwardly from and generally diametrically across the said beveled bottom surface of the said base centrally thereof and dividing the said weld surface area of the said base into two substantially coequal component weld surface areas on opposite sides of the said divider portion;

(2) the said keel or land having opposite generally parallel sides;

(3) the said generally cylindrical body of the said metallic attachment having an outer peripheral wall surface; and

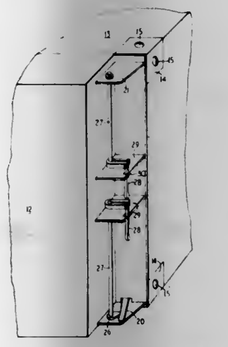


(4) each of said substantially coequal component weld surface areas of the said base being defined by one side of the said keel or land, the outer peripheral wall surface of the said generally cylindrical body of the said metallic attachment, the said beveled bottom surface thereof, and a portion of the adjacent external peripheral wall surface of the said metal pipe or tube.

4,115,020
CLAMP

Stephen Walter Langsford, Picnic Point, Australia, assignor to Overseas Containers Australia Pty Limited, Australia

Filed Oct. 14, 1976, Ser. No. 732,334
Claims priority, application Australia, Oct. 15, 1975, PC3581
Int. Cl.² B25G *3/18;* A44B *21/00*
U.S. Cl. 403—322 7 Claims

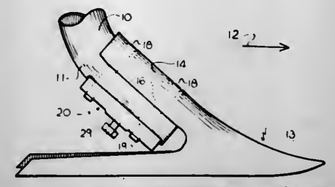


1. A clamping arrangement comprising support means, at least one elongated clamping arm pivoted intermediate its opposed ends to said support means for turning movement with respect thereto between clamping and unclamping positions, said arm having on one side of its pivotal connection to said support means a clamping portion and on the other side of its pivotal connection to said support means an elongated operating portion, torsion spring means pivotally connected to said support means and spaced from said operating portion of said clamping arm, and cam means fixed to said torsion spring means to be turned thereby and engaging said operating portion of said clamping arm for turning the latter from a non-clamping to a clamping position where displacement of said clamping arm from said clamping to said non-clamping position is resisted by said torsion spring means.

4,115,021
IMPLEMENT ATTACHMENT TO SHANK

George N. Loch, Box 14, Glendon, Canada (TOA 1PO)

Filed Apr. 19, 1977, Ser. No. 788,734
Claims priority, application Canada, Apr. 26, 1976, 251283
Int. Cl.² B25G *3/00*
U.S. Cl. 403—353 12 Claims

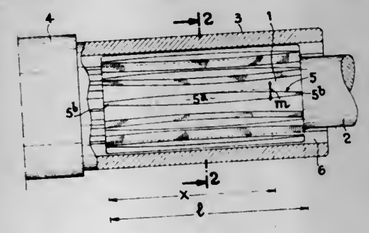


1. Means for detachably securing an implement such as a cultivator tooth, shovel or the like, to the lower end of a cultivator shank in which said implement is supported against the lower end portion of the shank in offset relationship, said implement and said shank being apertured, the apertures being in axial alignment when said implement is supported against said shank as aforesaid; said means comprising in combination at least two connecting bolts one each engaging through sets of aligned apertures in the associated implement and shank, head means on one end of each of said bolts, limiting the endwise movement of said bolts through said apertures, a locking plate having keyhole shaped slots formed therein and engageable over the other ends of said bolts, means adjacent said other ends of said bolts engaging through said keyhole slots in sliding locking relationship therewith, and a set screw screw threadably engaging through said locking plate and bearing against said shank to clamp said implement and said locking plate to said shank when said set screw is tightened.

4,115,022
COUPLINGS HAVING SLIDING SPLINES

Michel A. Orain, Conflans-Sainte Honorine, France, assignor to Glaenzer Spicer

Filed May 10, 1977, Ser. No. 795,556
Claims priority, application France, May 17, 1976, 76 14813
Int. Cl.² F16D *1/10*
U.S. Cl. 403—359 7 Claims

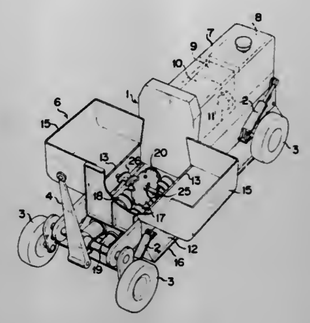


1. A coupling device comprising a male splined member and a female splined member having the splines thereof interengaged, the splines of at least one of said members being modified and having a thickness which is maximum in an intermediate part of the splines and progressively decreases to ends of the splines, the profile of the splines of said one of said members being such that, upon application of a given torgue, the pressure produced in the zones of contact between the interengaged splines is substantially constant throughout the interengaged length of the splines.

4,115,023
PAVING MATERIAL AGITATION APPARATUS FOR USE IN WATER CHANNEL FORMING MACHINE

Mitsuyoshi Wada, Yamato-Takada; Hideyuki Shimada, and Koji Ohta, both of Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 8, 1978, Ser. No. 876,147
Int. Cl.² E01C *11/28*
U.S. Cl. 404—98 4 Claims



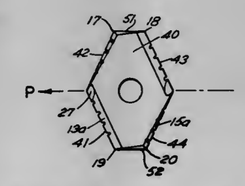
1. A paving material agitation apparatus for use in water channel forming machines comprising hopper means adapted to accommodate therein paving materials to be laid,

a plurality of first screw means spaced apart with each other, each of said screw means being extended in a direction parallel to a direction of the water channel forming machine to be advanced, a plurality of rotary drive means each being secured to one end of said first screw means, respectively, agitation impeller means rotatably engaged with one of said first screw means, rotary shaft means rotatably supported by said hopper means, said agitation impeller means being fixedly secured to said rotary shaft means so as to be rotated therewith, and second screw means formed on said rotary shaft means.

4,115,024
SPADE DRILL BLADE

Reiner W. Süssmuth, Neu Isenburg, Germany, assignor to Amtel, Inc., Providence, R.I.

Filed Mar. 4, 1977, Ser. No. 774,511
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608808
Int. Cl.² B26D *1/00*
U.S. Cl. 407—114 5 Claims



1. A double edge spade drill blade comprising a block having parallel top and bottom plane faces, a first pointed cutting end formed on one edge of the block with a pair of cutting edges effected to drill a hole in the workpiece when the blade is rotated and fed axially against a workpiece, a second pointed cutting end located on an opposite edge of the block with a pair of cutting edges, said pointed ends located on and defining a rotational axis parallel to the plane faces, said blade having parallel side faces being formed to guide the blade into the drilled hole, said cutting edges extending from the pointed

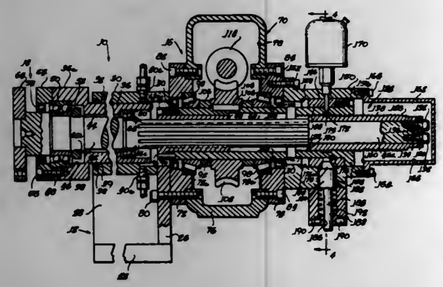
ends outwardly to the side faces, said side faces having a shape of raised form and narrow cross section to bear against the inner wall of the workpiece bore substantially adjacent said cutting edges in a lateral surface region which extends in a diagonal plane extending substantially through the central axis of rotation of the blade and intersecting the ends of the cutting edges at the side faces wherein said side faces bear against said workpiece bore at spaced points along said raised form at the intersection of said side faces and said ends of the cutting edges.

4,115,025

LEAD SCREW TAPPING UNIT

Robert J. Petroff, 1703 S. Main St., Lombard, Ill. 60148

Filed Apr. 4, 1977, Ser. No. 784,576
Int. Cl.² B23G *1/16*; B23B *47/27*
U.S. Cl. 408—6 **9 Claims**



1. In a lead screw tapping unit, the combination comprising housing means, a spindle supported by said housing means for longitudinal movement, said spindle being adapted to support a thread forming tool thereon for selective engagement with a workpiece, reversible rotary drive means, means connecting said drive means to said spindle for effecting rotation of said spindle upon energizing said drive means, lead nut means supported by said housing means and having a threaded bore extending longitudinally therethrough, said lead nut means being longitudinally movable relative to said housing means, biasing means supported by said housing means and operatively associated with said lead nut means to bias said lead nut means to a predetermined position relative to said housing means, lead screw means cooperative with said spindle for rotation and longitudinal movement therewith, said lead screw means being threadedly cooperative with said threaded bore in said lead nut means such that rotation of said lead screw means relative to said lead nut means effects longitudinal movement of said spindle relative to said lead nut means, and control means operatively associated with said drive means and adapted to selectively energize said drive means to advance said spindle toward a workpiece, retract said spindle from the workpiece to its initial position, and deenergize said drive means after a predetermined retract movement, said baising means being movable in response to said spindle undergoing a predetermined thrust overload, said control means including safety switch means responsive to movement of said biasing means to deenergize said drive means.

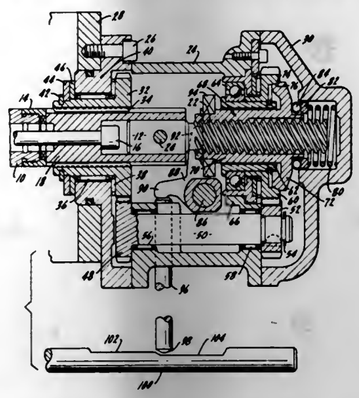
4,115,026

LEAD SCREW TAPPING ARRANGEMENT FOR USE WITH SELF-OPENING DIE HEADS AND COLLAPSIBLE TAPS

Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Continuation-in-part of Ser. No. 602,188, Aug. 6, 1975, abandoned. This application Jul. 6, 1976, Ser. No. 702,946
Int. Cl.² B23G *1/18*
U.S. Cl. 408—10 **16 Claims**

1. Means for controlling the advance of a thread forming member including a unidirectionally constant speed spindle, a thread forming member on said spindle, a lead screw and a nut threadedly mounted thereon, said lead screw and nut thread having a helix angle such that the nut is freely rotatable relative thereto in response to axial movement of the lead screw, one of



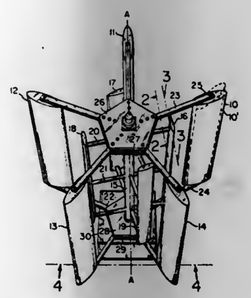
the nut and lead screw being attached to the spindle, and means for independently controlling rotation of the other of said nut and lead screw through a clutch member which member is driven by the unidirectional constant rotation of said spindle to thereby control axial movement of said spindle.

4,115,027

VERTICAL WINDMILL

Robert Nason Thomas, 80 Lincoln Dr., Ventura, Calif. 93003

Continuation-in-part of Ser. No. 649,827, Jan. 16, 1976, abandoned. This application Jan. 7, 1977, Ser. No. 758,022
Int. Cl.² F03D *7/06*
U.S. Cl. 415—2 **8 Claims**



1. A windmill for producing power in a moving body of air, comprising

a support frame;

a shaft rotatably mounted to said support frame about a vertical axis;

a plurality of elongate airfoils mounted to said shaft and each having a cross-section designed to provide aerodynamic lift when experiencing relative motion to a body of air; and

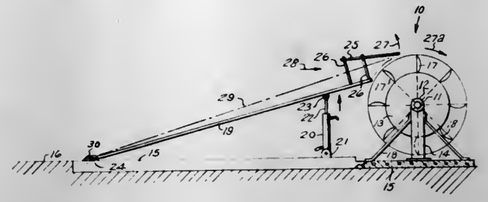
a plurality of elongate stators mounted to said support frames and standing vertically, outwardly from said airfoils, each said elongate stator being spaced circumferentially about said vertical axis and each said elongate stator having an elongate cross-section with the major dimension of said elongate cross-section extending substantially radially from said vertical axis.

4,115,028

WIND POWERED CYLINDER

Anton E. Hintze, 103 Margaret La., Grass Valley, Calif. 95945

Filed Jun. 30, 1977, Ser. No. 811,544
Int. Cl.² F03B *3/18*
U.S. Cl. 415—2 **2 Claims**



1. A wind powered cylinder, comprising a longitudinal shaft having radially and equally spaced-apart vanes secured therein for being driven by natural wind force, support bracket means secured to the cylinder for mounting it in a low horizontal profile to a base, stationary on a ground surface, a panel pivotally and elevatably secured to said base, with parallel, spaced-apart and sidewardly movable, flexible vertical vanes thereon, for directing a wind to said cylinder, a plate secured to said panel, providing air compression means for air directed to the cylinder, and a means for elevating and lowering said panel and said plate with respect to the outer periphery of said cylinder; said radially and equally spaced-apart vanes of said cylinder being fixedly secured to said longitudinal shaft, and said shaft being journaled within bearings secured within said support bracket means, said support bracket means being fixedly secured to said base, said panel being hinged to a top of said base at one end, and being freely elevatable at its opposite end which is in close proximity with the outer periphery of said cylinder, hydraulic cylinders pivotally secured in brackets fixedly secured on said base, piston rods of said hydraulic cylinders being pivotally mounted within bracket means secured fixedly to the underside of said panel, said vertical vanes upon said panel being arcuately movable thereupon by outward ends of said vertical vanes being secured to a horizontally slideable bar so that said outward ends of said vertical vanes are movable respective to a wind direction and wind to enter between said vertical vanes, and said plate being angularly disposed and overhanging an end of said panel in the outer peripheral area of said cylinder.

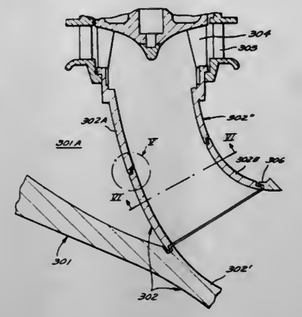
4,115,029

CENTRIFUGAL PUMP

Dusan Florjancic, Winterthur, Switzerland, and Heinz-Bernd Matthias, Frankenthal, Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 436,689, Jan. 25, 1974, abandoned. This application Oct. 14, 1975, Ser. No. 622,017
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1973, 2303718
Int. Cl.² F01D *1/02*
U.S. Cl. 415—211 **10 Claims**

1. In a centrifugal pump, particularly in a primary recirculating pump for use in pressurized-water and boiling-water reactors, a combination comprising a substantially spherical hollow pump housing having a circumferential wall provided with an inlet opening, a sealable opening substantially opposite said inlet opening and an outlet opening intermediate said sealable opening and said inlet opening and being at least close to the plane of the latter; an impeller rotatable in said housing inwardly adjacent said sealable opening and spaced from said inlet opening; and an inlet structure having an outer section which is rigid with said housing and inclined with respect to the axis of said impeller and which communicates with the said inlet opening at the outer side of said housing and a discrete inner section installed in said housing in communication with said inlet opening and extending from said wall towards said impeller to convey incoming fluid into the range of the same, said inner section comprising a plurality of separate tubular



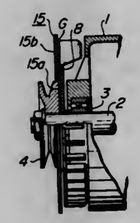
portions and having a flow passage which at least in part converges in direction towards said impeller, and said inner section and impeller being removable from said housing by way of said sealable opening.

4,115,030

ELECTRIC MOTOR OR GENERATOR INCLUDING CENTRIFUGAL COOLING FAN

Mitsuo Inagaki; Hideaki Sasaya, and Takashi Kurahashi, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 17, 1977, Ser. No. 769,782
Claims priority, application Japan, Feb. 20, 1976, 51-18228
Int. Cl.² F01D *5/00*
U.S. Cl. 416—93 R **7 Claims**



1. A rotary electric machine comprising:

a housing having end wall means formed therein with a plurality of air vents for providing communication between an interior and an exterior of said housing;

a rotary shaft rotatably supported by said housing;

a cooling fan securely fitted on said rotary shaft for rotation therewith;

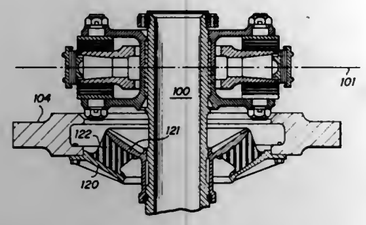
said cooling fan having on its periphery means providing a plurality of fan blades, notches between said fan blades, and a backing disc-plate having a portion covering said notches and fixed at the back side of said cooling fan for rotation therewith, with a clearance defined between said disc-plate and said cooling fan for preventing vibratory contact between said disc-plate and said cooling fan, said clearance being selected within the range in which turbulence air flows are not produced.

4,115,031

HUB SPRING MOMENT ISOLATION IN UNDERSLUNG TWO-BLADED TEETERING ROTOR

Jan M. Drees, Dallas; Walter G. O. Sonneborn, Fort Worth, and Jing G. Yen, Arlington, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Apr. 12, 1974, Ser. No. 460,353
Int. Cl.[2] B64C *11/12*
U.S. Cl. 416—134 A 9 Claims



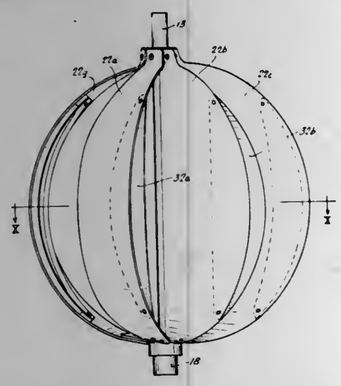
1. In a two-blade teetering rotor helicopter having control power in zero-g flight through a pylon having
a coupling connected to pivot on a teeter axis transverse to said pylon and to undersling said rotor a predetermined distance below said teeter axis
with a hub spring connected between said pylon and said rotor to resist flapping of said rotor about said teeter axis thereby to assure control power to said helicopter, the improvement comprising:
each said blade structured to have a cantilevered in-plane natural frequency when said blade is rotating at the normal r.p.m. of said rotor related to the amount of underslinging and the spring rate of said hub spring to isolate by dynamic absorption two cycles per revolution vibration produced in said pylon by moments due to said hub spring.

4,115,032

WINDMILL ROTOR

Heinz Lange, P.O. Box 1374, Merritt, Canada (V0K 3B0)

Filed Mar. 7, 1977, Ser. No. 775,181
Int. Cl.[2] F03D *3/06*
U.S. Cl. 416—227 A 12 Claims



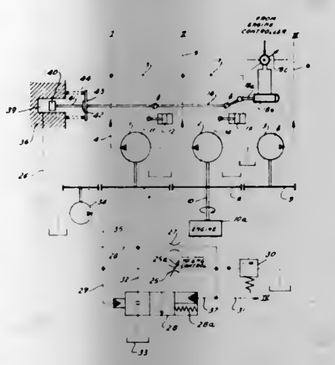
1. A windmill rotor comprising
(a) a vertically extending shaft;
(b) a plurality of at least three identical, plate-like, main blades arranged symmetrically around said shaft, each having a narrow upper end and a narrow lower end;
(c) means securing the upper ends of the blades to the shaft at a common upper location and means securing the lower ends of the blades to the shaft at a common lower location, each blade bowing outwardly between its ends whereby collectively the blades define a generally sphere-like chamber;
(d) each blade having a leading edge lying in a generally vertical plane and a convex trailing edge curving outwardly to define a central blade portion wider than said blade ends, at which central portions the trailing edges are spaced further from the shaft than the leading edges whereby each blade forms a scoop;
(e) the low end of each blade being sted to form a deflecting portion inclined upwardly from its trailing to its leading edge whereby to generate an upward movement of air within said chamber;
(f) a similar number of identical plate-like, secondary blades each smaller than and associated with a respective main blade and each having a narrow upper end, a narrow lower end and a wider central portion therebetween; and
(g) means securing the upper and lower ends of the secondary blades to their respective main blades at similar upper and lower locations thereon with a trailing edge of each secondary blade projecting beyond the trailing edge of its associated main blade and with a gap between the central portion of each secondary blade and the central portion of its associated main blade.

4,115,033

CONTROL DEVICE FOR A HYDRAULIC SYSTEM HAVING AT LEAST TWO PUMPS

Gustav Kleineisel, Mainaschaff; Dietrich Kuchenbecker, Aschaffenburg, and Gerd Ahrens, Laufach, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Jan. 24, 1977, Ser. No. 762,173
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1976, 2603563
Int. Cl.[2] F04B *49/00*
U.S. Cl. 417—216 11 Claims



1. A control device for a hydraulic system comprising at least one first pump having a variable output per revolution as determined by the position of a control member and connected to a first hydraulic network, at least one second pump having a predetermined output per revolution, an energy source having an output shaft connected to said pumps for driving same, and a setting piston shiftable in a respective cylinder and operatively connected to said member for varying the displacement per revolution of said first pump, said control device comprising, in combination:
a control line connecting the output side of said first pump with said cylinder;
a control-pressure pump connected to said shaft and having an output determined by the speed of said shaft;
a spring action on said member in a direction opposite to that at which pressure in said cylinder acts upon said member;
a control piston acting upon a seat of said spring for varying the degree to which said spring tends to allow displacement of said control member;

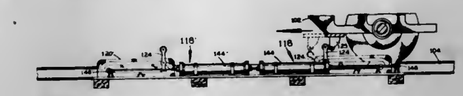
a control cylinder slidably receiving said piston;
a control valve responsive to the output of said control pressure pump; and
means for applying the output of said control pressure pump as controlled by said valve to said control cylinder.

4,115,034

VEHICLE-ACTUATED AIR COMPRESSOR AND SYSTEM THEREFOR

Roland L. Smith, 4600 U.S. Hwy. 19 North, Palm Harbor, Fla. 33563

Filed Jul. 11, 1977, Ser. No. 814,685
Int. Cl.[2] F04B *17/06, 35/06*
U.S. Cl. 417—231 8 Claims



1. A vehicle-actuated air compressor comprising:
actuator means operatively arranged for actuation in response to motion of a vehicle;
a cylinder;
a piston having forward and reverse strokes in said cylinder and operatively coupled to said actuator means for movement in response to actuation of said actuator means by vehicle motion for compressing air in said cylinder;
first valve-controlled vent means for said cylinder communicating with one side of said piston for introducing air into said cylinder behind said piston during a forward stroke of said piston;
second valve-controlled vent means for said cylinder communicating with the other side of said piston for introducing air into said cylinder on the other side of said piston during a reverse stroke thereof;
first valve-controlled outlet means communicating with said other side of said piston for supplying air compressed by said piston during a forward stroke thereof to a utilization device;
and second valve-controlled outlet means communicating with said one side of said piston for supplying air compressed by said piston during a reverse stroke thereof to said utilization device;
said actuator means comprising:
a body with a first slot therein extending longitudinally of the direction of vehicle motion;
a lever slidable along said slot and projecting beyond said body for actuation by the vehicle to cause the lever to slide along said slot;
and a flexible cable operatively connected between said lever and said piston to cause movement of said piston in response to movement of said lever;
said slot having an offset at each end extending transverse to its length to permit movement of the lever out of the way of the vehicle as the latter moves past the air compressor.

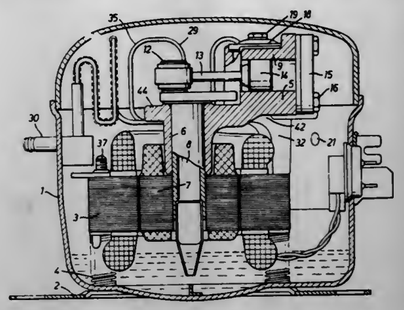
4,115,035

MOTOR COMPRESSOR

Hans Jürgen Tankred, Sonderborg, and Per Johan Madsen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 11, 1977, Ser. No. 786,508
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1976, 2617370
Int. Cl.[2] F04B *17/00*
U.S. Cl. 417—312 7 Claims

1. A motor compressor assembly for refrigerators, comprising a casing, a motor including a rotor and a stator resiliently mounted in said casing for rotation about a vertical axis, said stator including a stack of laminations, a vertically extending motor shaft having a crank at the upper end thereof spaced from said rotor, a bearing member for said shaft disposed between said crank and said rotor, a beam member attached to and extending laterally from said bearing member, a cylinder member at the radially outer end of said beam member, a piston for said cylinder member, a connecting rod connecting said piston to said crank, support means extending downwardly from said radially outer end of said beam member and engaging the top of said stack of laminations, and fastening means for attaching said support means to said laminations.

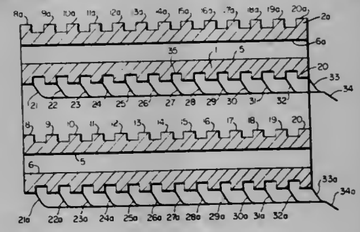


4,115,036

PUMP FOR PUMPING LIQUID IN A PULSE-FREE FLOW

David Paterson, Copthorne, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 765,936
Claims priority, application United Kingdom, Mar. 1, 1976, 8049/76
Int. Cl.[2] F04B *17/04, 43/12*
U.S. Cl. 417—322 20 Claims



1. A substantially pulse free, cylindrical pump which operates in a peristaltic manner on a cylinder to give a continuous flow of relatively small quantities of a liquid from an inlet port to an outlet port of the pump, which pump comprises two concentric cylinders in which at least one cylinder is formed from a piezoelectric ceramic material polarized in the radial direction and divided in the axial direction into at least three piezoelectric elements, each of which elements include at least one circumferential ring, separated by circumferential grooves on the surface of the cylinder remote from an annular space between the two cylinders; an electrical power supply in separate electrical contact with each ring and a switching device which completes an electrical circuit between the electrical power supply and each ring; wherein each element in seccession when energized electrically expands, radially in progressive sequence to fill the adjacent part of the annular space between the two cylinders and forms a moving seal which moves progressively from the inlet port of the outlet port to expel a first quantity of liquid therefrom.

4,115,037
OPPOSED PISTON INTERNAL COMBUSTION ENGINE-DRIVEN PUMP

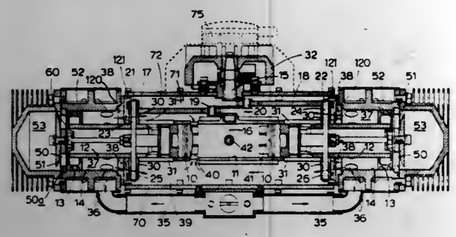
Stanley Milton Butler, Hassocks, England, assignor to Direct Power Limited, London, England

Filed Dec. 23, 1975, Ser. No. 643,857

Claims priority, application United Kingdom, Jan. 3, 1975, 193/75

Int. Cl.² F04B *17/00, 35/00;* F02B *25/08, 75/28*

U.S. Cl. 417—341 **19 Claims**



1. A hand-portable power unit comprising:
(a) an internal combustion engine, and
(b) first and second engine power utilization devices,
(c) said engine including a common engine cylinder and first and second opposed engine pistons arranged to reciprocate in opposition in said common engine cylinder,
(d) said first and second engine power utilization devices being of substantially similar power absorbing characteristics to one another and each having a driven member,
(e) first connecting means substantially rigidly connecting each said driven member to a respective one of said first and second opposed engine pistons so that said driven members reciprocate rectilinearly in a cycle of movement,
(f) a crankshaft having first and second throws,
(g) means mounting said crankshaft for rotation about an axis extending perpendicular to the engine cylinder axis, and
(h) second connecting means substantially directly connecting each piston/device pair to a respective said throw of said crankshaft, whereby said crankshaft rotates once for each said cycle of movement to convert reciprocating motion into continuous rotating motion,
(i) said second connecting means being effective to synchronize the movement of each said piston/device pair with respect to each other and the rotating crankshaft,
(j) said second connecting means being further effective to transmit less than the full power developed by said engine to rotate said crankshaft.

4,115,038
MOTOR DRIVEN PUMP

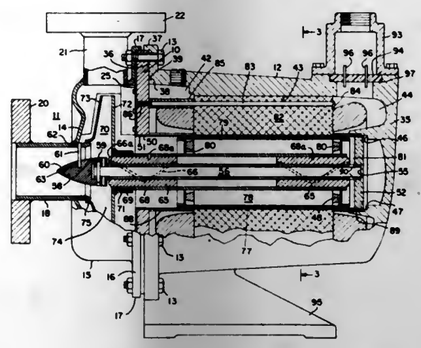
David P. Litzenberg, 1528 Bryant La., Meadowbrook, Pa. 19046

Continuation-in-part of Ser. No. 541,491, Jan. 27, 1975, Pat. No. 3,967,915. This application Oct. 12, 1976, Ser. No. 731,302

Int. Cl.² F04B *17/00*

U.S. Cl. 417—357 **13 Claims**

1. In combination
a rigid post member comprising a disc,
an impeller housing mounted on said post member on one side thereof and positioned thereby and having a fluid inlet connection and a fluid delivery connection communicating with the interior thereof,
a unitary motor housing mounted on and positioned at one end thereof by said post member on the other side thereof and having a bore at the other end positioned by the mounting of said housing on said post member,
said motor housing having a motor stator winding therein mounted on and positioned by said post member,
said post member having a motor stator isolating sleeve positioned thereby and extending therefrom and into said bore in said motor housing interiorly of said motor stator and having an end closure,
a mandrel fixedly carried at one end in said end closure and at the other end in said impeller housing,
a shaft rotatably carried on said mandrel,



a motor rotor carried on said shaft interiorly of said motor stator winding and of said sleeve, and
a pump impeller in said impeller housing and connected to said shaft in driven relation.

4,115,039
RESILIENT PRESSURE TUBE

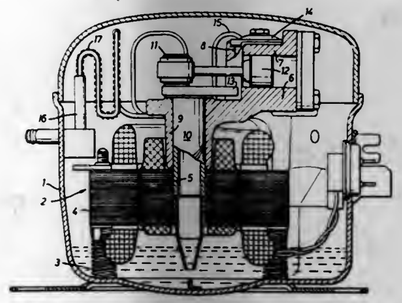
Ole Mikel Schjelde, and Ebbe Larsen, both of Sonderborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 11, 1977, Ser. No. 786,423

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1976, 2617387

Int. Cl.² F14B *39/12;* F16F *15/02*

U.S. Cl. 417—363 **4 Claims**



1. Refrigeration apparatus comprising a housing having a refrigerant outlet port, a motor and a compressor forming a unit, said unit being resiliently mounted in said housing with the axis of said motor being vertically disposed, a resilient pressure tube extending from said compressor to said outlet port, said tube having at least two adjacent convolutions in intersecting planes which are generally vertically disposed at substantially right angles to each other, said convolutions being substantially rectangular with mostly rectilinear tube sections.

4,115,040
PERMANENT MAGNET TYPE PUMP

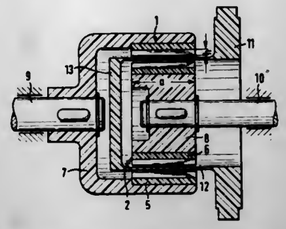
Manfred Knorr, Bochum-Wattenscheid, Germany, assignor to Franz Klaus-Union, Germany

Filed May 25, 1977, Ser. No. 800,219

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2624058

Int. Cl.² F04B *17/00*

U.S. Cl. 417—420 **8 Claims**



1. A light-weight permanent magnet type pump having a pump impeller shaft and a permanent magnet drive means therefor, said drive means comprising an interior rotor fixed to the pump impeller shaft, an exterior rotor mounted for rotation closely adjacent the interior rotor with an air gap therebetween, said interior rotor being adapted to receive a drive torque of at least 1 m·kg transmitted in synchronism by said exterior rotor, said pump impeller shaft and said interior rotor being housed and supported in a single sealed chamber, a partition of non-magnetizable material extending through said air gap and closing said chamber, a closed ring on each of the opposed surfaces of said interior and exterior rotors, each of said closed rings being formed by the same even number of permanent magnets of alternating polarity and embedded in a non-magnetizable material in side-by-side contiguous array, each of said magnets being a relatively thin magnetic plate formed of a magnetic material containing alloys of cobalt and rare earths and magnetized in the direction of the thickness of said air gap, said magnets each having a magnet length, extending in the direction of thickness of said air gap, which is somewhat larger than the air gap thickness, each of said magnets having a magnet width, extending in the direction of rotation, which is larger than said magnet length.

4,115,041
PUMPS

Peter Richard Selwood, deceased, late of Southampton, England; by Timothy John Selwood, executor, Minstead, Near Cadnam, England; by Martin John Shelley Axtell, executor, Lymington, England, and John David Burton, St. Mary Bourne, Near Andover, England, assignors to William R. Selwood Limited, Eastleigh, England

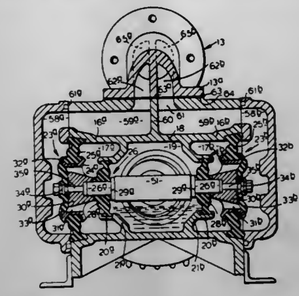
Filed Apr. 14, 1976, Ser. No. 676,882

Claims priority, application United Kingdom, Apr. 15, 1975, 15366/75

Int. Cl.² F04B *23/10, 43/08*

U.S. Cl. 417—440 **11 Claims**

1. A pump comprising a body having at least one pumping chamber communicating at opposite ends respectively with a pump inlet and a pump outlet, an actuator in the pumping chamber reciprocable longitudinally thereof by drive means and having a relatively rigid main central portion and a peripherally extending elastic sealing ring retained in a clearance space and in non-sliding fluid-tight engagement between said central portion and a lateral wall of said pumping chamber, valve means controlling the flow of fluid through said pumping chamber from said inlet to said outlet, and fluid inductance means and fluid capacitance means operative between said pump inlet and outlet for controlling the operational characteristic of the pump, the latter including the improvement wherein:
a. said valve means controlling flow of fluid through said pumping chamber is mounted exclusively on said actuator,
b. said body defines a flow path from said inlet to said outlet of a configuration to afford flow in a pressure relief mode internally of said body cyclically from and to said pumping chamber when delivery from said outlet is shut off,
c. said fluid capacitance means comprises fluid capacitance means operative throughout the pumping cycle and in continuous communication with said pumping chamber downstream of said actuator.



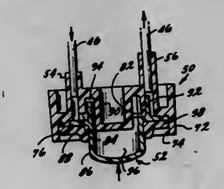
4,115,042
SINGLE FLOW DIRECTION MINIATURE PUMP

Robert Frederich Schroeder, Long Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 21, 1977, Ser. No. 761,122

Int. Cl.² F04B *43/00, 21/02*

U.S. Cl. 417—479 **4 Claims**

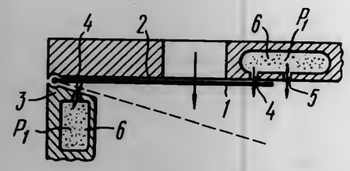


1. In a pump, the combination comprising:
a body member having a circular recess formed therein;
an annular groove formed in the surface of said recess;
an arcuate groove formed in the surface of said recess, said arcuate groove being spaced radially outwardly from and coaxial with said annular groove;
an inlet aperture in fluid communication with said annular groove;
an outlet aperture in fluid communication with said arcuate groove;
fluid passage means interconnecting said annular groove and said arcuate groove;
a flexible diaphragm member having a flange portion configured for securing within said recess and having a deformable dome-shaped portion extending outwardly therefrom to form a fluid receiving chamber, said diaphragm member having an integral skirt portion extending into said annular groove in spaced relation with the surface thereof, said skirt portion having a cutaway portion adjacent said fluid passage means, said diaphragm member also having an integral arcuately configured tongue portion extending into said arcuate groove in normally sealing relation with said fluid passage means, said tongue portion being displaced outwardly upon depression of said dome-shaped portion to pass fluid from within said chamber through said fluid passage means and through said outlet aperture, said skirt portion being configured for sealing said inlet aperture from fluid communication with said chamber only upon depression of said dome-shaped portion, said skirt portion and said tongue portion acting as check valves during operation of said pump.

4,115,043
SUCTION VALVE OF THE PISTON COMPRESSOR

Alexandr Vasilievich Bykov, ulitsa Vavilova, 52, korpus 4, kv. 324; Igor Martynovich Kalnin, ulitsa Kropotkinskaya, 26, kv. 13; Vsevolod Sergeevich Scherbakov, ulitsa Vvedenskogo, 24, kv. 120, and Igor Andreevich Gruzintsev, Malaya Schukinskaya ulitsa, 5, korpus 2, kv. 14, all of Moscow, U.S.S.R.

Filed Nov. 24, 1976, Ser. No. 744,760
Claims priority, application U.S.S.R., Dec. 2, 1975, 2195813
Int. Cl.² F04B *21/02*
U.S. Cl. 417—559 6 Claims

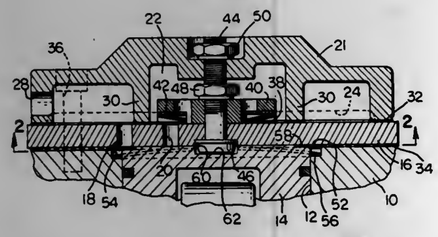


1. A suction valve for use in a piston compressor for compressing a gaseous fluid comprising, a valve body member defining at least one mean pressure accumulating chamber disposed in use in communication with the interior of a compressor cylinder thereby to be in communication with the effect of suction and pressure strokes of a piston in the compressor cylinder, said valve body member defining at least one admission chamber separate from the mean pressure accumulating chamber and communicable in use with a gaseous fluid to be compressed in said cylinder, said body valve member defining a space defined between said mean pressure accumulating chamber and said admission chamber, said mean pressure accumulating chamber and said admission chamber each having a metering orifice in communication with the interior of the corresponding chamber and with said space, a valve plate in said space having at least a portion freely movable under control solely of the gaseous fluid pressure in said accumulating chamber and of itself for moving from a seated position closing the metering orifice to said admission chamber to an unseated position opening the last-mentioned metering orifice to establish communication between the admission chamber and said mean pressure accumulating chamber through said space, means defining a seat in said valve body member on which said valve plate is seated in said space and means for defining a stop in said valve body member for stopping and limiting the movement of said valve plate in opening the metering orifice to said admission chamber.

4,115,044
VALVE ARRANGEMENT FOR COMPRESSOR

Edwin L. Gannaway, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Oct. 4, 1976, Ser. No. 729,374
Int. Cl.² F04B *39/10*
U.S. Cl. 417—564 3 Claims

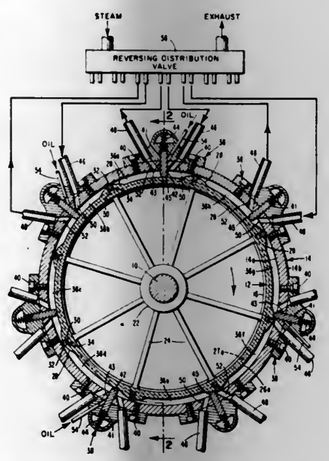


1. A compressor comprising: a cylinder block having a cylinder bore therein, a valve plate having one side the major portion of which is a substantially flat planar surface, said valve plate one side overlying said block and closing one end of said cylinder bore, said block being counterbored concentrically with said cylinder bore at the closed end thereof, a piston reciprocably received in said cylinder bore, inlet ports in said valve plate distributed in a circumferential ring about the axis of said cylinder bore, said inlet ports at least partially overlying said counterbore, valve means for controlling said inlet ports comprising a valve ring having a first side overlying said valve plate and said inlet ports from within said cylinder bore and a second side opposite said first side facing away from said inlet ports, said valve ring extending at least partially into said counterbore, spring means in the form of a wave washer resiliently biasing said valve ring against said valve plate flat surface into closing relationship with said inlet ports, said wave washer being received in said counterbore and resiliently contacting said valve ring at a plurality of points directly opposite said ring of inlet ports, a plurality of outlet ports formed in said valve plate in circumferentially distributed relation radially inward from said inlet ports, valve means on the side of said valve plate which faces away from said cylinder bore for controlling said outlet ports, a head mounted on the side of said valve plate which faces away from said cylinder bore and having first channel means communicating with said inlet ports and second channel means communicating with said outlet ports and rib means between and supporting said channel means, gasket means between said head and said valve plate, a bolt connecting said head to said cylinder block, and bolt means disposed substantially coaxially with said cylinder bore for rigidly connecting said head and said valve plate.

4,115,045
ROTARY MOTOR

James C. Wyman, 2002 Westridge Rd., Carlsbad, N. Mex. 88220

Continuation of Ser. No. 419,284, Nov. 27, 1973, abandoned.
This application Apr. 26, 1977, Ser. No. 790,859
Int. Cl.² F01C *1/00, 19/04, 21/04*
U.S. Cl. 418—97 2 Claims



1. A rotary engine capable of being driven by a fluid such as steam and the like comprising a peripheral cylindrical casing, a rotor having a circular peripheral rim spaced from the inner periphery of said casing and adapted to rotate within said casing, and a pair of side walls disposed between said casing and said rim thereby defining an annular enclosed space:

a. said rotor comprising on the outer periphery of said rim a plurality of equally spaced transverse lobes, each lobe containing a transverse slot at its peak and transverse spring-biased seal means disposed within said slot adapted to engage the inner periphery of said casing, said lobe, slot and seal means extending between and to said side walls;

b. a plurality of equally spaced, vane guide members disposed on the outer periphery of said casing, each guide member containing a transverse slot aligned with a transverse slot in said casing, a spring-biased transverse vane means comprising rounded convex ends disposed within said guide member transverse slot means and said casing transverse slot means, said vane means convex ends adapted to engage the outer periphery of said rim and said lobes, said vane means and slot means extending between and to said side walls;

c. each of said vane guide members comprising a fluid inlet and a fluid exhaust means adapted to be aligned with respective inlet and exhaust port means in said casing, said inlet port means adapted to be disposed on one side and said exhaust port means disposed on the other side and in close proximity to said casing slot means;

d. said fluid inlet and fluid exhaust means communicating with manifold means for introducing live fluid and exhausting exhausted fluid;

e. said rotor containing at least eight total number of lobes and said casing containing one less total number of vanes than the total number of lobes;

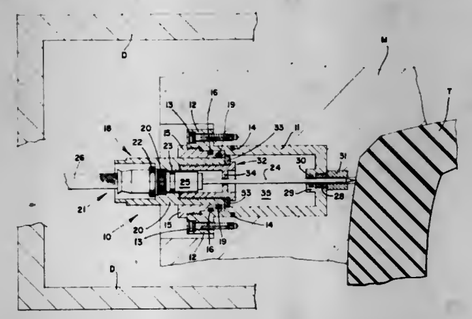
f. said rim comprising peripheral transverse flange means extending on each said from the outer peripheral surface of said rim and adapted to fit and turn within respective circumferential grooves contained in said side walls;

g. oil inlet means disposed through said vane guide members communicating with one side of said vane and said casing slot means; whereby adjacent lobes and respective seals, the inner periphery of said casing, and the outer periphery of said rim define the same number of individual chambers in said annular enclosed space as there are number of lobes, wherein during rotation of said rotor each chamber is adapted to communicate with succeeding vane means and respective fluid inlet and exhaust port means; and wherein expansion of continuously introduced live fluid into said chambers from said inlet ports against said vane means imparts rotary motion to said rotor, and simultaneously exhausted fluid is continuously removed from said chambers through said exhaust ports by the sweeping action of said vane means, and wherein during rotation the maximum amount of force obtained by expansion of introduced fluid in each successive chamber is progressively staggered to impart uniform rotary motion to said rotor.

4,115,046
PROBE INJECTION SYSTEM FOR A TIRE CURING PROCESS

Thomas W. Smith, Fort Myers Beach, Fla., and Jeffrey N. Bibbee, Mogadore, Ohio, assignors to McNeil Corporation, Akron, Ohio

Filed Sep. 22, 1977, Ser. No. 835,646
Int. Cl.² B29H *5/02*
U.S. Cl. 425—29 11 Claims

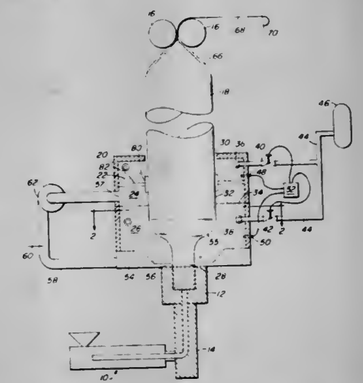


1. Apparatus for injecting a temperature sensitive probe into the rubber compound of a tire to be vulcanized in a mold, the mold being heated at least in part by pressurized steam in a cavity adjacent the mold comprising, a housing mounted in the mold, a probe assembly including the temperature sensitive probe, movable means in the housing and carrying said probe assembly, and an enclosed chamber within said housing to receive fluid under pressure therein acting on said movable means to maintain the probe out of the tire, said movable means communicating with the cavity so that steam introduced into the cavity acts on said movable means to extend the probe into the tire.

4,115,047
APPARATUS FOR QUENCHING BLOWN FILMS

Joseph J. Stelmack, 22 Elmwood Ter., Wayne, N.J. 07470

Filed Sep. 7, 1976, Ser. No. 720,929
Int. Cl.² B29D *23/04*
U.S. Cl. 425—72 R 2 Claims



1. An improved apparatus for quenching blown films produced by an extruder through an orifice of a die attached thereto by an adapter such that a heat plastified polymeric film enters into a cooling chamber housing, wherein the improvement comprises;

said cooling chamber housing being a substantially cylindrical structure with an opening at the top to permit the passage of quench blown films therethrough;

said cooling chamber housing being secured at its base to said extruder immediately above the orifice of said die;

a cryogenic flash chamber defined by said cooling chamber housing and having two zones, an upper cryogenic flash chamber and a lower cryogenic flash chamber;

a first spray manifold located at a point near the middle of said cryogenic flash chamber and in the lower zone thereof but above the frost line for spraying a cryogenic coolant fluid into said cryogenic flash chamber so that the fluid vaporizes to cool such a film passing through the cryogenic flash chamber such that said film is sprayed after it has already started to solidify;

means to recirculate said vapors of said cryogenic coolant comprising:

an outlet near the top of said cryogenic flash chamber;

an air ring encircling the base of said cooling chamber housing;

piping from said outlet to said air ring near the orifice of said die;

a blower and adjustable baffles within said piping to draw an even, controlled flow of coolant vapors from said upper cryogenic flash chamber through said air ring onto molten polymer exiting from said die;

means to control the temperature of the vapor in said cryogenic flash chamber comprising:

a thermocouple through said housing;

a temperature control device connected to said thermocouple;

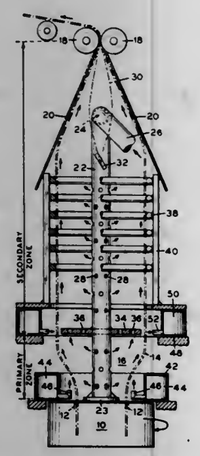
a flow control valve in said piping between said first spray manifold and said cryogenic fluid supply means;
said flow control valve being controlled by said temperature control unit;
a supply tank and piping means operatively associated with said spray manifold to supply cryogenic coolant fluid to said spray first manifold;
a second spray manifold located in said upper cryogenic flash chamber;
a piping connecting said second spray manifold to said cryogenic fluid supply means;
a second thermocouple through said housing;
a second temperature control device connected to said thermocouple;
a second flow control valve in said piping between said second spray manifold and said cryogenic fluid supply means;
said second flow control valve being controlled by said second temperature control unit.

4,115,048

APPARATUS FOR INTERNALLY COOLING A PLASTIC TUBULAR FILM BUBBLE

Richard Bernhard Alderfer, Glastonbury, Conn., and Gerald Harry Scheibner, Downers Grove, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,529
Int. Cl.² B29D *23/04*
U.S. Cl. 425—72 R **37 Claims**



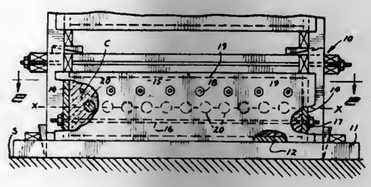
1. An apparatus for manufacturing film from thermoplastic resinous film forming materials which comprises in cooperating combination:
(a) a tube die adapted to extrude a film tube;
(b) flattening means positioned a distance from the die for flattening the extruded tube;
(c) a diffuser disposed on the discharge side of the die in the space enveloped by the extruded film tube, said diffuser having a gaseous coolant inlet disposed in the inlet portion of the diffuser, and said diffuser further having means to deliver from its peripheral surface a gaseous coolant to the interior surface of the extruded film tube;
(d) film slitting means disposed between said inlet portion of said diffuser and said tube die for continuously slitting the extruded film to provide at least one slitted opening in the extruded film;
(e) restrictor means associated with the diffuser defining a primary zone and a secondary zone of the extruded film and being adapted to maintain a pressure differential between the primary and secondary zone; and
(f) means operatively associated with said gaseous coolant inlet for communicating gaseous coolant through the slitted opening to the gaseous coolant inlet whereby gaseous coolant introduced to the diffuser through the gaseous coolant inlet continuously passes through the diffuser into the primary and secondary zones and into contact with the interior surface of the tube and is continuously withdrawn through said slitted opening.

4,115,049

MEANS FOR FORMING AND SPLITTING PRESTRESSED CONCRETE ELEMENTS

Donald G. Grubb, 7129 17th Ave. South, Minneapolis, Minn. 55423

Filed Jun. 2, 1977, Ser. No. 802,777
Int. Cl.² B28B *23/04*
U.S. Cl. 425—111 **2 Claims**



1. In a form for making concrete building panels,
(a) a flat generally rectangular bottom wall,
(b) two upright opposing pairs of side walls with one side wall extending along each side of the bottom wall,
(c) a top wall lying on a plane parallel to the bottom wall and connecting the upper edges of the side walls to form a boxlike enclosed form for holding concrete,
(d) a plurality of elongated insert members extending between one pair of side walls and spaced in parallelism along a common plane midway between the top and bottom walls and extending transversely from adjacent one to adjacent the other of the other pair of side walls,
(e) a first set of prestressed rods extending between one pair of side walls intermediate the insert members and the bottom wall,
(f) a second set of prestressed rods extending between the other pair of side walls intermediate the insert members and the top wall,
(g) each of said sets of rods lying in planes parallel to said common plane, and
(h) said first and second sets of rods extending perpendicular to each other.

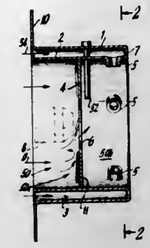
4,115,050

BURNER CONSTRUCTION AND METHOD FOR BURNING LIQUID AND/OR GASEOUS FUEL

Reinhard Gerwin, Stuttgart, Germany, assignor to J. Eberspacher, Germany

Filed Sep. 13, 1976, Ser. No. 722,576
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1975, 2545234
Int. Cl.² F23D *15/02;* F23Q *3/00*
U.S. Cl. 431—352 **8 Claims**

1. A burner construction comprising inner and outer tubular combustion walls which are radially spaced apart and have a space therebetween and with a combustion chamber being defined within the inner wall, said inner wall having at least one flow passage from the intermediate space between said inner and outer walls to said combustion chamber, a baffle plate extending across the combustion chamber and having a central flow aperture therethrough, fuel supply means for directing fuel centrally into said combustion chamber on one side of said baffle plate to direct the fuel through the opening of said baffle plate, first fuel air supply means for directing combustion air into said combustion chamber around said fuel supply means and against said baffle plate and through the aperture, and second combustion air supply means for directing air through the space between the walls in a concentrated stream radially inwardly into the combustion chamber downstream of the baffle plate, said second air supply means including a plurality of tubular socket members formed in said inner wall at spaced circumferential locations therearound and terminating at an inwardly directed nozzle, said baffle plate having a plurality of radially extending slots disposed around the aperture thereof equal to the number of said nozzles.

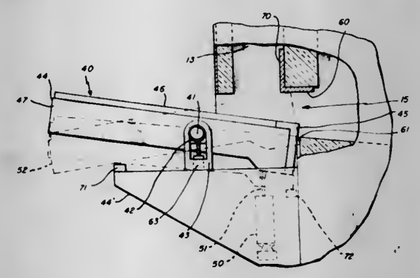


4,115,051

RADIATION REFLECTING DOOR FOR PROCESS FURNACE

John W. Bjerklie, Cape Elizabeth, Me., assignor to Hague International, So. Portland, Me.

Filed Nov. 29, 1976, Ser. No. 745,803
Int. Cl.² F27D *1/18;* F23M *7/00*
U.S. Cl. 432—3 **8 Claims**



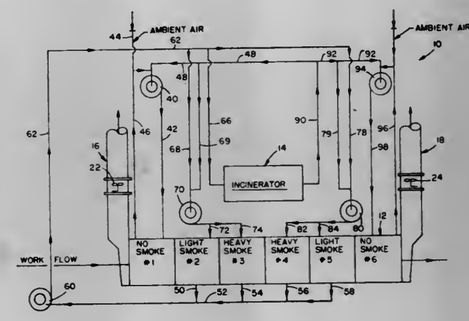
8. A method of opening and closing a horizontal slot of a metal processing slot furnace by,
mounting a door in a substantially horizontal plane about a pivotal axis parallel to an elongated axis of said slot,
pivoting said door through angles of from ±9-½° from a horizontal plane to open and close said door and using a portion of said door as a work holding platform when said door is opened and when it is closed, with another portion of said door acting to open or close said slot as may be desired.

4,115,052

WEB STOCK TREATING OVEN

Charles S. Flynn, Muskegon, Mich., assignor to Blu-Surf, Inc., Muskegon, Mich.

Filed Jun. 30, 1977, Ser. No. 811,584
Int. Cl.² F23J *5/04*
U.S. Cl. 432—72 **8 Claims**



1. A multiple section oven apparatus for heat treating web stock to drive off volatilizable and combustible residual materials thereon, including an entry oven section, an exit oven section, and at least one intermediate oven section, with said sections forming an oven chamber;
means for conveyance of web stock through said oven by passage into and through said entry oven section, through said intermediate oven sections, and through and out said exit oven section;
incineration burner means outside said oven chamber;
discharge duct means from said intermediate oven sections and gas propelling means for withdrawing laden gases from said intermediate oven sections through said discharge duct means; said discharge duct means having parallel flow branches for flow of one gaseous portion to said incineration burner means and flow of another gaseous portion back to said intermediate sections;
ducting flow means from said incineration burner means to at least one of said entry oven and exit oven sections for conducting hot combustion gases to such whereby gases in said oven tend to flow toward said intermediate sections for continuous recirculation and combustion.

4,115,053

DRY HEAT PROCESS FOR DYEING AND PRINTING ORGANIC MATERIAL

Peter Aeschlimann, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

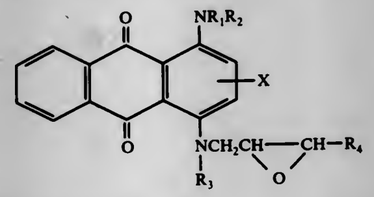
Filed Sep. 9, 1976, Ser. No. 722,003

Claims priority, application Switzerland, Sep. 15, 1975, 11934/75; Sep. 15, 1975, 11935/75

Int. Cl.[2] D06P *5/00;* C09D *11/00*

U.S. Cl. 8—2.5 A **13 Claims**

1. In a dry heat process for the dyeing or printing of organic textile material selected from the group consisting of polyvinyl chloride, polyamides, polyurethanes, polyesters, polymers and copolymers of acrylonitrile, and polymers and copolymers of dicyanoethylene which comprises bringing the textile material to be dyed or printed into contact with a treated transfer carrier bearing on at least a portion of at least one surface thereof at least one heat transferable organic disperse dyestuff, heating the said carrier while in contact with the said textile material at a temperature and for a time period sufficient to effect transfer of dyestuff from the carrier to the textile material, and separating the dyed or printed textile material from the carrier, the improvement wherein the transfer carrier carries at least one reactive disperse dyestuff of the formula



wherein

R_1 represents hydrogen or alkyl,

R_2 represents hydrogen, alkyl, cycloalkyl, aralkyl or substituted or unsubstituted phenyl, or R_1 and R_2 together with the nitrogen atom to which they are attached can also form a 5- to 7-membered heterocyclic ring,

R_3 represents hydrogen or alkyl,

R_4 represents hydrogen or alkyl of 1 to 2 carbon atoms,

X represents hydrogen, chlorine, bromine, cyano or $COOR_5$, and

R_5 represents alkyl.

4,115,054

PROCESS FOR THE RAPID, CONTINUOUS AND WATERLESS DYEING AND TEXTURIZING AND HEAT-SETTING TEXTILE AND PLASTIC MATERIALS

Julius Hermes, Martinsville, Va., assignor to Martin Processing, Inc., Martinsville, Va.

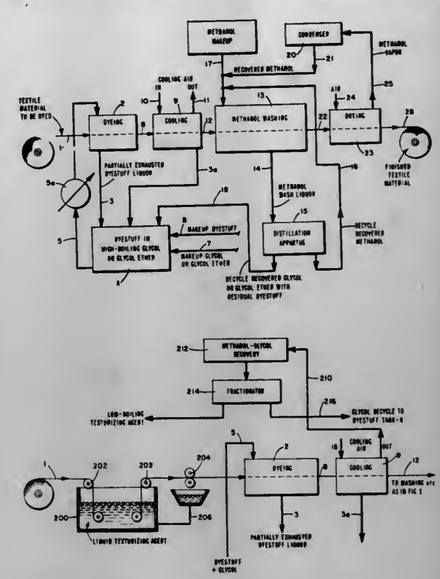
Continuation-in-part of Ser. No. 647,775, Jan. 9, 1976, Pat. No. 4,047,889. This application Dec. 15, 1976, Ser. No. 750,910

The portion of the term of this patent subsequent to Sep. 13, 1994 has been disclaimed

Int. Cl.[2] C09B *67/00;* D02G *1/00;* D06P *1/64*

U.S. Cl. 8—17 **22 Claims**

1. A process for texturizing and heat-setting textile material containing a low boiling texturizing agent in liquid phase in an amount sufficient to cause flashing of the low boiling texturizing agent upon contact of the thus-treated textile material with a high boiling organic liquid at a relatively high temperature, comprising contacting textile material impregnated with the low boiling liquid texturizing agent with the high boiling organic liquid at a high temperature thus texturizing and heat-setting the textile material, cooling the texturized textile material and washing same with a low boiling organic liquid which is free or substantially free of water, followed by drying the texturized textile material, the washing and drying steps being carried out in an essentially closed system, with the separation and recovery of the low boiling organic wash liquid, low boiling organic wash liquid thus recovered being recycled to the washing step and with the low boiling organic wash liquid vaporized from the textile material during the drying step being recovered, and with the low boiling texturizing agent



that is evaporated during the texturizing and heat-setting being removed from the high temperature textile material contacting zone as a mixture thereof with vapor of the high boiling organic liquid.

4,115,055

MIXTURE OF WATER-INSOLUBLE MONOAZO DYESTUFFS FOR COLORING TEXTILE MATERIALS CONSISTING AT LEAST PARTLY OF LINEAR, AROMATIC POLYESTERS

Hans Dieter Kirner, Pratteln; Albert Bitterlin, Birsfelden, and Ekkehard Walter Müller, Pratteln, all of Switzerland, assignors to Rohner AG Pratteln, Pratteln, Switzerland

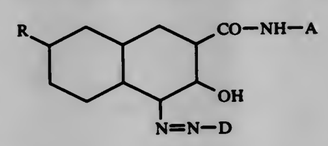
Filed Mar. 25, 1976, Ser. No. 670,548

Claims priority, application Switzerland, Mar. 26, 1975, 3901/75

Int. Cl.[2] C09B *27/00*

U.S. Cl. 8—26 **17 Claims**

1. A composition for coloring textile materials consisting at least partly of linear, aromatic polyesters, comprising a mixture having a melting point below 200° C and containing at least two water-insoluble monoazo dyestuffs of the formula



(I)

wherein

R is hydrogen, halogen or an alkoxy group,

A is an aromatic radical substituted with 0 to 1 halogen and 0 to 2 alkyl and alkoxy groups, and

D is the residue of a diazonium compound of the benzene series free from sulphonic acid and carboxyl groups which may be substituted with halogen and one or more alkyl, alkoxy, alkoxyalkyl, acyloxy and alkoxycarbonyl groups.

4,115,056

METHODS FOR DYEING OR PRINTING USING AMINO-ANTHRAQUINONE REACTIVE DISPERSE DYES

Stefan Koller, Ramlinsburg; Urs Karlen, Magden; Werner Kneubühler, Bukten, and Raymond Défago, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

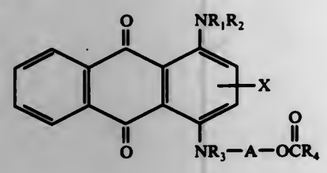
Division of Ser. No. 773,403, Mar. 1, 1977, which is a division of Ser. No. 689,985, May 26, 1976, Pat. No. 4,044,029. This application Oct. 28, 1977, Ser. No. 847,062

Claims priority, application Switzerland, May 26, 1975, 6716/75; May 26, 1975, 6717/75

Int. Cl.[2] C09B *1/00, 1/16, 1/40*

U.S. Cl. 8—39 B 12 Claims

1. In a method for the dyeing or printing of organic fiber material selected from the group of synthetic polyamide, natural polyamide and mixtures thereof which comprises contacting the said fiber with a dyestuff therefor, the improvement according to which the dyestuff is a reactive disperse dye of the formula



wherein

R_1 and R_2 together with the nitrogen atom to which they are attached form a 5- to 7-membered heterocyclic ring

R_3 represents hydrogen or alkyl,

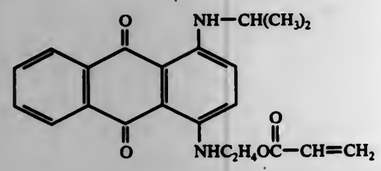
R_4 represents an alkyl radical of 1 to 6 carbon atoms which is substituted in α-position, or in α- and β-position, by halogen, or represents an α,β-unsaturated alkene radical which can be substituted in α- or β-position by halogen,

A represents an alkylene or cycloalkylene radical which optionally contains oxygen or sulphur,

X represents hydrogen, chlorine, bromine, cyano or $COOR_5$, and

R_5 represents alkyl.

2. In a dry heat transfer dyeing or printing process which comprises bringing an organic fiber material selected from the group of synthetic polyamide, natural polyamide and mixtures thereof into contact with the treated face of a carrier sheet containing at least one sublimable dyestuff, subjecting the material and carrier while in contact to a heat treatment to effect dyestuff transfer, and separating the material from the carrier sheet, the improvement according to which at least one sublimable dyestuff is a reactive disperse dye of the formula



wherein

R_1 and R_2 together with the nitrogen atom to which they are attached form a 5- to 7-membered heterocyclic ring,

R_3 represents hydrogen or alkyl,

R_4 represents an alkyl radical of 1 to 6 carbon atoms which is substituted in α-position, or in α- and β-position, by halogen, or represents an α,β-unsaturated alkene radical which can be substituted in α- or β-position by halogen,

A represents an alkylene or cycloalkylene radical which optionally contains oxygen or sulphur,

X represents hydrogen, chlorine, bromine, cyano or $COOR_5$, and

R_5 represents alkyl.

4,115,057

PROCESS FOR THE DYEING OF FIBROUS MATERIALS CONTAINING BASIC FUNCTIONS IN DYEING BATHS BASED ON ORGANIC SOLVENTS

Francesco DeFeo; Vincenzo Gemini, both of Milan, and Luigi Floridia, Florence, all of Italy, assignors to Montedison S.p.A., Milan, Italy

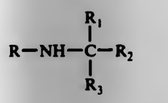
Filed Oct. 28, 1976, Ser. No. 736,511

Claims priority, application Italy, Oct. 30, 1975, 28832 A/75

Int. Cl.[2] D06P *3/06, 3/24, 1/39, 5/00*

U.S. Cl. 8—54 6 Claims

1. A process for the dyeing of fibrous materials having basic functions which comprises dyeing said fibrous materials in a dye bath comprising an organic solvent, an acid dye, water, and emulsifying substance, an organic acid and an aliphatic amine having the general formula:



wherein:

R is hydrogen or a saturated or unsaturated aliphatic hydrocarbon radical with a linear or branched chain; and where

R_1, R_2, and R_3 are saturated or unsaturated aliphatic hydrocarbon radicals with either a linear or branched chain, and the sum of the carbon atoms of radicals R, R_1, R_2, and R_3 is a whole number in the range from 11 to 29.

4,115,058

AROMATIC SULFONIC ANHYDRIDES AS PEROXYGEN ACTIVATORS

John H. Blumbergs, Highland Park; Joseph H. Finley, Metuchen, and Burton M. Baum, Princeton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1977, Ser. No. 838,849

Int. Cl.[2] D06L *3/02, 3/04*

U.S. Cl. 8—111 15 Claims

1. A process for the low temperature bleaching of stained and/or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of an aromatic sulfonic anhydride having the formula:

$$RSO_2—O—SO_2R$$

wherein each R is an aromatic ring system selected from the class consisting of a phenyl group, taken together an o-phenylene group, a naphthyl group, taken together an o-naphthylene group and a heterocyclic group having 1 ring or 2 fused rings, said ring or rings containing 5 to 6 members of which 1 to 2 are heteroatoms selected from the class consisting of nitrogen, oxygen and sulfur, said groups optionally bearing 1 to 3 substituents selected from the class consisting of nitro, alkyl of 1 to 16 carbon atoms, alkoxy of 1 to 16 carbon atoms, aliphatic carboxamido of 1 to 16 carbon atoms, benzamido, chlorine and bromine.

4,115,059

AROMATIC SULFONYL FLUORIDES AS PEROXYGEN ACTIVATORS

John H. Blumbergs, Highland Park, and Fred R. Scholer, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1977, Ser. No. 839,066

Int. Cl.[2] D06L *3/02, 3/04*

U.S. Cl. 8—111 14 Claims

1. A process for the low temperature bleaching of stained and/or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of an aromatic sulfonyl fluoride of the formula $ArSO_2F$ wherein Ar is an aromatic ring system selected from the class consisting of a phenyl group, a naphthyl group, and a heterocyclic group having 1 to 2 rings, each containing 5 to 6 members of which 1 to 2 are heteroatoms selected from the class consisting of nitrogen, oxygen and sulfur, said groups optionally bearing substituents selected from the class consisting of nitro, alkyl of 1 to 16 carbon atoms, alkoxy of 1 to 16 carbon atoms, aliphatic carboxamido of 1 to 16 carbon atoms, aliphatic acyl of 1 to 16 carbon atoms, benzamido, benzoyl, chlorine and bromine.

4,115,060

N-SULFONYLIMIDAZOLES AS PEROXYGEN ACTIVATORS

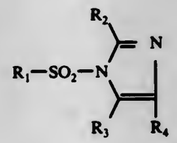
Joseph H. Finley, Metuchen; Gaylen R. Brubaker, Lawrenceville, and Burton M. Baum, Princeton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1977, Ser. No. 839,067

Int. Cl.[2] D06L *3/02, 3/04*

U.S. Cl. 8—111 15 Claims

1. A process for the low temperature bleaching of stained and/or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of an N-sulfonylimidazole having the formula:



wherein R_2, R_3 and R_4 are each selected from the class consisting of hydrogen, halogen, alkoxy of 1 to 16 carbon atoms, carbonylmethoxy, nitro, an aliphatic hydrocarbon radical of 1 to 16 carbon atoms, a cycloaliphatic hydrocarbon radical of 3 to 7 carbon atoms, an aromatic hydrocarbon radical of the benzene and naphthalene series and a heterocyclic radical of 1 to 2 rings each containing 5 to 6 members of which 1 to 2 are heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur while taken together R_3 and R_4 can complete a benzene ring and R_1 is a hydrocarbon or heterocyclic radical as above defined for R_2, R_3 and R_4.

4,115,061

COMBINATION METHOD FOR CLEANING GREATLY SOILED TEXTILES

Werner Grünewälder, Haan, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

Filed Jan. 26, 1977, Ser. No. 762,502

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1976, 2603802

Int. Cl.[2] D06L *1/08, 1/22*

U.S. Cl. 8—137 12 Claims

1. A method for cleaning greatly soiled textiles with organic solvents and aqueous detergent solutions consisting essentially of (1) contacting greatly soiled textiles with a cleaning liquor consisting of (A) a customary water-immiscible, organic dry-cleaning solvent and (B) an aqueous solution of a detergent composition containing from 3.5 to 35% by weight of said solution of an anionic surfaceactive compound with a low solubility in said organic dry-cleaning solvent, wherein from 0.5 to 10 gm of said detergent composition are present per liter of said cleaning liquor, for a time sufficient to clean said soiled textiles and to have said textiles substantially absorb said aqueous solution of a detergent composition, (2) removing the soiled organic dry-cleaning solvent from said textiles containing said absorbed aqueous solution of a detergent composition, (3) contacting said textiles containing said absorbed aqueous solution of a detergent composition with sufficient water at a temperature and for a time sufficient to completely wash said textiles, (4) rinsing said textiles with water, and (5) recovering said cleaned textiles,

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4,115,062

CANCER DETECTION BY SERUM ANALYSIS OF GLYCOLIPIDS

D. James Morre, West Lafayette; Thomas M. Kloppel, Lafayette, and Thomas W. Keenan, West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Jun. 13, 1977, Ser. No. 805,691

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B 11 Claims

1. A method for detection of cancer comprising the steps of:

extracting a viable organic matter sample taken from a test subject with an organic solvent to recover a reproducible fraction of lipid associated sialic acid;

concentrating the extract obtained by the preceding step using conditions that minimize destruction of sialic acid;

adding sufficient chloroform-methanol to form a single phase;

adjusting the ionic strength and pH of the sample to remove glyco-proteins, proteolipids and other related materials by precipitation;

removing the precipitates that resulted from the preceding step;

drying the soluble phase of the sample whereby organic solvents are removed;

hydrolyzing the dried soluble phase of the sample to free the bound sialic acid;

determining the free sialic acid of the sample;

correcting the determination of the preceding step empirically for unspecific absorbance due to residual lipids and other related materials; and

comparing the sialic acid content per unit of the starting sample with comparable values for cancer free subjects whereby a predetermined elevation in sialic acid indicates cancer.

4,115,063

METHOD FOR DETERMINING THE INORGANIC AND METALLO-ORGANIC SALT CONTENT IN AN ORGANIC SOLVENT

Donald R. Demers, Nashua, N.H., assignor to Baird-Atomic, Inc., Bedford, Mass.

Filed Apr. 11, 1977, Ser. No. 786,663

Int. Cl.[2] G01N *33/22, 21/58*

U.S. Cl. 23—230 M 14 Claims

1. A method for determining inorganic and metallo-organic salt content in an organic solvent comprising the steps of:

(a) adding a polar first solvent to a sample of an organic second solvent to be analyzed, said polar first solvent being substantially free of the inorganic salt to be measured;

(b) mixing said polar first solvent and said organic second solvent to form an intermediate, two phase solution;

(c) mixing and dissolving said intermediate solution in a third

solvent to form a final, single phase solution, said first and second solvents being mutually soluble in said third solvent; and

(d) measuring said inorganic salt content of said final solution by a flame atomic spectroscopy technique.

4,115,064

METHOD FOR BILIRUBIN DETERMINATION

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Continuation of Ser. No. 765,960, Feb. 7, 1977, abandoned. This application Nov. 18, 1977, Ser. No. 852,718

Int. Cl.² G01N *33/16*

U.S. Cl. 23—230 B **9 Claims**

1. In the method for determining bilirubin glucuronide in a sample containing both free bilirubin and bilirubin glucuronide comprising reacting the bilirubin glucuronide with diazotized sulfanilic acid to form a complex at a pH where said free bilirubin does not react with said acid, destroying any residual diazotized sulfanilic acid, and raising the pH so that colorimetric or spectrophotometric measurement of the complex can be achieved with minimization of interference from natural colorants; the improvement wherein there is used for the purpose of destroying the residual diazotized sulfanilic acid a combination of hydrazine and hydrazide.

4,115,065

SATURATION ANALYSIS OF FOLATE COMPOUND WITH SELENIUM-75 LABELED FOLATE

Russell James Bayly; Virginia Edith May Chambers, and Reginald Monks, all of Amersham, England, assignors to The Radiochemical Centre Limited, England

Filed Dec. 11, 1974, Ser. No. 531,748

Claims priority, application United Kingdom, Dec. 11, 1973, 57433/73

Int. Cl.² G01N *33/16*; A61K *43/00*

U.S. Cl. 23—230.6 **2 Claims**

1. A method of performing a saturation analysis of a folate compound by causing the compound which is to be analysed and a radioactively labelled version of the said compound to compete for reaction with a binding reagent for the said compound, which is present in an amount insufficient to combine with all of said compounds and the labelled version thereof, separating the bound compound from the unbound compound and measuring the radioactive concentration of one or both of the bound and the unbound compound,

wherein the improvement comprises selecting a selenium-75 labeled version of said folate to compete for reaction with said binding reagent.

4,115,066

HIGH PRESSURE MIXING HEAD

Dietrich Muhle, Kressbronn, Fed. Rep. of Germany, assignor to The Upjohn Company, Kalamazoo, Mich.

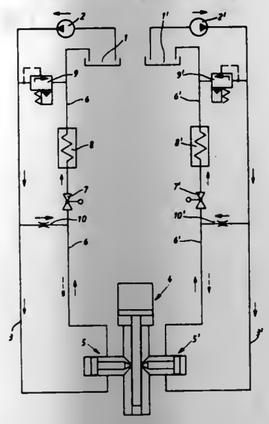
Filed Nov. 18, 1976, Ser. No. 742,906

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1975, 2555156

Int. Cl.² B01F *15/02, 5/10*

U.S. Cl. 422—133 **5 Claims**

1. A high pressure mixing head for mixing at least two different plastic material components, comprising a casing having an axially elongated cylindrical mixing chamber having an open outlet at one end, separate inlet valve chambers and feed channels in respective flow-communication therewith in said head for each of said plastic material components and separate inlet ports respectively connecting said valve chambers to said mixing chamber at a point intermediate the axial extent thereof in said casing, an inlet valve located in each of said valve chambers and movable into and out of closing position in the respective inlet ports at the upstream side thereof, separate return flow channels in said casing respectively communicating with said chambers, an expulsion piston whose surface is free of return grooves and makes a lapped fit in said mixing chamber, said piston being movable axially towards a retracted position in said mixing chamber during which said inlet ports are simultaneously uncovered and, alternatively, toward an



extended position during which said inlet ports are simultaneously covered by said piston and the face of said piston becomes substantially flush with said mixing chamber outlet, and means for reciprocating said piston.

4,115,067

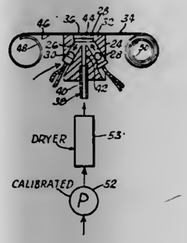
POLLUTION MONITORING APPARATUS

Norman A. Lyshkow, Chicago, Ill., assignor to Combustion Equipment Associates Inc., Stanford, Conn.

Division of Ser. No. 617,855, Sep. 29, 1975, Pat. No. 4,032,297, which is a continuation of Ser. No. 479,227, Jun. 14, 1974, abandoned. This application Feb. 25, 1977, Ser. No. 772,301

Int. Cl.² G01N *21/14, 21/30, 21/48*

U.S. Cl. 422—56 **4 Claims**



1. A pollutant gas-sensitive substrate which is light reflective comprising a tape formed of a flexible material and a light reflective coating on the tape, with silica having been impregnated with a composition selected from the group consisting of:

(1) a mixture of sulfanilic acid and N-(1-naphthyl)/ethylenediamine dihydrochloride;

(2) a mixture of iodine and 4,4'-methylenebis-(N,N'-dimethylanaline);

(3) lead acetate; and

(4) palladium chloride.

4,115,068

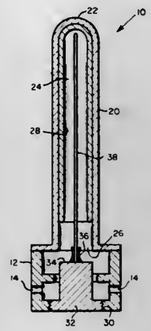
AIR DETECTING DEVICE FOR STEAM OR GAS STERILIZERS

Larry James Joslyn, Walworth, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 6, 1977, Ser. No. 785,093

Int. Cl.² A61L *3/02*; G01N *25/00, 31/22*

U.S. Cl. 422—56 **10 Claims**



1. An air detecting device for sterilizers and the like comprising:

(a) an upright tube of heat insulating material, said tube having a closed top and an open bottom and defining an elongated chamber, said tube being adapted to be placed within a sterilizer so as to put said chamber in communication with the environment within the sterilizer through the open bottom of said upright tube;

(b) a heat sink within said chamber for condensing at least part of any steam entering said chamber through the open bottom of said tube, the steam in said chamber condensed by said heat sink falling by gravity back through said tube while any air entrained with the steam entering said chamber becomes entrapped in and provides a heat insulator in said chamber adjacent the closed top of said tube thereby establishing a lower temperature adjacent the top of said tube than adjacent the bottom of said tube;

(c) a thermal indicator strip in said chamber spaced from said heat sink;

(d) means for supporting said thermal indicator strip whereby said strip extends from the open bottom to the closed top of said tube so that said strip extends substantially the full height of said chamber; and

(e) said thermal indicator strip being temperature sensitive so as to undergo a permanent color change responsive to the temperature within said chamber to provide a record of the temperature from the top to the bottom of said chamber, said temperature being directly correlated to the amount of air entrapped adjacent the top of said chamber.

4,115,069

SEQUENTIAL IGNITION SYSTEM FOR OXYGEN GENERATION ELEMENTS

Frank Eugene Martin, Chester, and Edward Larmour Rich, III, Arnold, both of Md., assignors to Midori Anzen Company, Ltd., Tokyo, Japan

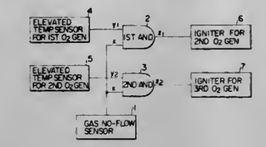
Filed Jun. 10, 1977, Ser. No. 805,580

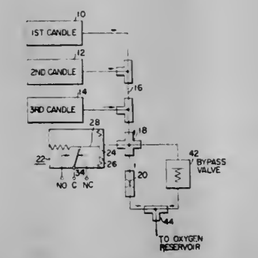
Claims priority, application Japan, Jun. 18, 1976, 51-71013

Int. Cl.² B01J *7/00*

U.S. Cl. 422—112 **4 Claims**

1. A sequential ignition system for an oxygen generation device comprising a plurality of chemical oxygen generation elements each burning to generate oxygen, a common feed conduit connected to all said chemical oxygen generation elements to cause said oxygen from each of said oxygen generation elements to flow therethrough, gas flow sensor means connected to said feed conduit downstream of the most downstream oxygen generation element to provide a first control signal in response to a flow rate less than a predetermined minimum magnitude of said oxygen flowing through said feed conduit, manually operated igniter means for igniting a first one of said chemical oxgen generation elements, a plurality of igniter means for said chemical oxygen generation elements except the first one, a plurality of temperature sensor means operatively coupled to said chemical oxygen generation elements respectively except for the chemical oxygen generation element to be last ignited, each of said temperature sensor





means being responsive to the burnt heated state of the associated chemical oxygen generation element to provide a second control signal, and an AND gate including one input connected to said gas flow sensor means, the other input connected to said temperature sensor means for each of said chemical oxygen generation elements, and an output connected to said igniter means for the next succeeding oxygen generation element, each of said AND gates responding to both said first and second control signals applied thereto to provide an output to actuate the associated igniter means to ignite the oxygen generation element operatively coupled thereto.

4,115,070

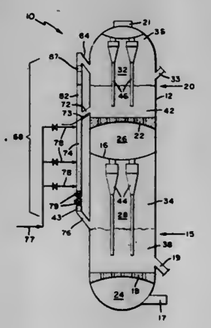
TRANSFER PIPE SYSTEM

Walfred Wilhelm Jukkola, Westport, Conn., and Giorgio Tomasicchio, Milan, Italy, assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jun. 1, 1977, Ser. No. 802,414

Int. Cl.² B01J *8/28*

U.S. Cl. 422—142 **7 Claims**



1. A transfer pipe system for moving particulate bed material from the reaction chamber of a relatively low pressure fluid

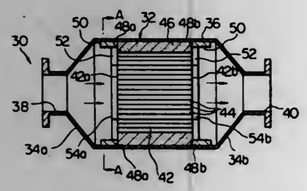
bed unit at a first elevation to a relatively high pressure secondary reaction chamber at a lower elevation, comprising an inclined discharge pipe extending downwardly from the fluidized bed region of said reaction chamber, a substantially vertical transfer pipe connected to said discharge pipe and having gravity feed connection to said secondary reaction chamber, gas injection means spaced along said vertical transfer pipe to introduce fluidizing gas into said transfer pipe, so that a substantial quantity of the particulate material therein is maintained in a fluidized state, valve control means positioned in said transfer pipe system to control the flow of particulate material under the influence of gravity from said vertical transfer pipe into said gravity feed connection for delivery to said secondary reaction chamber; a vertical standpipe extending upwardly from the junction of said discharge pipe with said vertical transfer pipe to an elevation above the bed level in said fluid bed unit and a vent pipe connecting said standpipe with the freeboard region of said fluid bed unit thereby routing most of the fluidizing gas provided to said transfer pipe system directly to said freeboard region rather than through said discharge pipe so that flow of particulate material through said discharge pipe is not impeded by gas flow from said vertical transfer pipe.

4,115,071

CATALYTIC CONVERTER HAVING IMPROVED SUPPORTING MEMBERS FOR MONOLITHIC CATALYST

Tetsuzo Masuda, Hachioji; Tomiyasu Tagawa; Hachiro Yoshioka, both of Yokohama, and Takashi Akahoshi, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Nov. 9, 1976, Ser. No. 740,225
Claims priority, application Japan, Nov. 14, 1975, 50/154694[U]
Int. Cl.² F01N *3/15*
U.S. Cl. 422—179 **5 Claims**



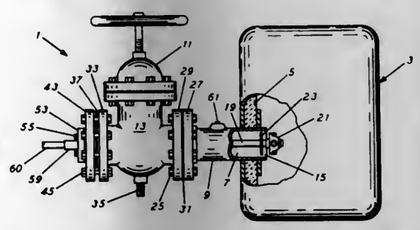
1. A catalytic converter for purifying exhaust gases emitted from an automotive internal combustion engine, comprising:
- a cylindrical catalytic casing defining an enclosed cylindrical space, and having a gas inlet and a gas outlet;
- a cylindrical catalytic element of lesser diameter than the enclosed space and positioned within said casing, said catalytic element being of a unitary, solid monolithic structure having a plurality of gas flow channels therethrough, and a catalytic material on the surface of the channels, said catalytic element having first and second parallel circular planes, the first circular plane facing the gas inlet of said casing for introducing the gases in said casing therethrough into gas flow channels of said catalytic element, the second circular plane facing the gas outlet of said casing for feeding the gases from the gas flow channels of said catalytic element therethrough into the gas outlet of said casing;
- a radial supporting member disposed between the inner surface of said casing and the outer surface of said catalytic element for supporting said catalytic element radially and concentrically with said casing;
- a first supporting member for supporting said catalytic element to prevent said catalytic element from axial movement, said first supporting member including an annular flange portion whose outer periphery is directly secured to the inner surface of said casing, and a radial annular disc portion integral with the annular flange portion and radially concentrical with said casing, said radial annular disc portion being contactable with the peripheral portion of the first circular plane of said catalytic element;
- means defining a plurality of slits in the radial annular disc portion of said first supporting member, the slits radially extending from the inner periphery of the radial annular disc portion to the outer periphery of the same;
- a second supporting member for supporting said catalytic element to prevent said catalytic element from axial movement, said supporting member including an annular flange portion whose outer periphery is directly secured to the inner surface of said casing and a radial annular disc portion with an annular flange portion and radially concentrical with said casing, said radial annular disc portion being contactable with the peripheral portion of the second circular plane of said catalytic element; and
- means defining a plurality of slits in the radial annular disc portion of said second supporting member, the slits radially extending from the inner periphery of the radial annular disc portion to the outer periphery of the same.

4,115,072

RETRACTABLE FLUIDS SPRAYING ASSEMBLY

William C. Nielsen, Aiea, Hi., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 7, 1977, Ser. No. 785,721
Int. Cl.² B01J *3/02*; B01L *1/00*; B05B *1/00*
U.S. Cl. 422—207 **3 Claims**



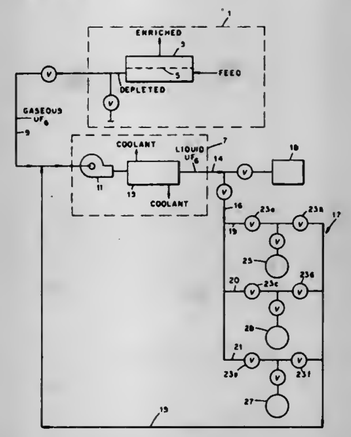
1. An assembly for spraying a fluid into the interior of a walled vessel enclosing gas at superatmospheric pressure, comprising in combination:
- a retractable, rigid, substantially straight conduit with a spraying head at one end thereof;
- housing means connected to an opening in a wall of a vessel and defining a passage therethrough, said passage having a first opening at an inner end which is connected to and communicates with the interior of the vessel and a second opening at an outer opposite end of said passage, exterior to the vessel, said passage being shaped to permit insertion and retraction of said conduit and spraying head therethrough for positioning said spraying head adjacent said first opening;
- means rigidly defining an orifice removably positioned across said passage and adjacent said second opening thereof, said orifice being sized to permit sliding said conduit therethrough with the perimeter of said orifice closely spaced around conduit to minimize escape of gas from said vessel through said orifice;
- means releasably fixed to said passage for selectively closing off said passage between said orifice and said first opening with said spraying head positioned adjacent said orifice within said passage for removal of said orifice to permit inspecting said spraying head with said passage closed off; and
- means releasably fixed to said outer end of said passage for selectively closing off said passage to prevent the escape of gases through said passage and said orifice with said conduit positioned extending through said orifice.

4,115,073

PROCESS GAS SOLIDIFICATION SYSTEM

William G. S. Fort, and William W. Lee, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 21, 1977, Ser. No. 808,860
Int. Cl.² G21F *9/02*; C01G *43/06*
U.S. Cl. 23—293 R **10 Claims**



1. In a process wherein gaseous UF_6 is withdrawn from a first system and directed into a second system for converting the gas to liquid UF_6 at an elevated temperature, the improved method for withdrawing the resulting liquid UF_6 from the second system and storing it as a solid in a plurality of storage vessels, said method comprising the steps of:
- (a) directing an increment of liquid UF_6 from the second system into a first closed storage vessel;
- (b) flash-evaporating UF_6 from the first vessel into one of the first system and second system to cool and solidify UF_6 in the first vessel while directing an increment of liquid UF_6 from the second system into a second closed storage vessel;
- (c) flash-evaporating UF_6 from the second vessel into one of the first system and second system to cool and solidify UF_6 in the second vessel while directing another increment of liquid UF_6 from the second system into the first vessel; and
- (d) flash-evaporating UF_6 from the first vessel into one of the first system and second system to cool and solidify additional UF_6 in the first vessel.

4,115,074

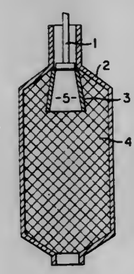
GASIFICATION PROCESS

Kenji Yoshida, Fujisawa; Kazuyoshi Isogaya; Tadayoshi Tomita, both of Yokohama; Katsutoshi Kikuchi, Fujisawa, and Hisaharu Kuboyama, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc. and Toyo Engineering Corporation, both of Tokyo, Japan

Filed Dec. 16, 1976, Ser. No. 751,168
Claims priority, application Japan, Dec. 26, 1975, 50-155111
Int. Cl.² C10J *1/06*
U.S. Cl. 48—95 **8 Claims**

1. In an apparatus for the catalytic partial oxidation of heavy residual oil-containing hydrocarbons to give a gas mixture, said apparatus comprising a reaction vessel containing an atomization nozzle and a fixed catalyst bed spaced from said atomization nozzle, the improvement which comprises: means defining a catalyst-free atomizing zone extending from said atomization nozzle and projecting into said fixed catalyst bed, said atomizing zone having a cylindrical or frustoconical shape; the inside diameter of the end of said atomizing zone adjacent said atomization nozzle having a diameter within twice as large as the diameter of said nozzle; the angle of the sidewall of said atomizing zone being smaller than the atomization angle of the streams from said nozzle; and all the inside wall of said atomizing zone being visible from the center of the nozzle.

2. In a gasification process for forming a gas mixture containing hydrogen by atomizing in nozzle means a hydrocarbon containing a heavy residual oil with a mixture of an oxygen-containing gas and steam, mixing same in an atomizing zone to form a uniform mixture containing atomized liquid hydrocarbon and contacting said mixture containing the atomized liquid hydrocarbon with a fixed catalyst bed, the improvement comprising:



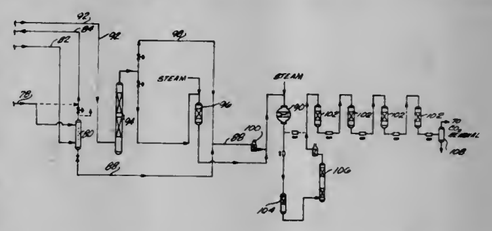
directing one or more jet streams of atomized hydrocarbon, oxygen-containing gas and steam from said nozzle means into said atomizing zone at a velocity of from 100 m/sec to sonic velocity at the nozzle outlet, and after mixing same in said atomizing zone introducing said mixture to the catalyst bed while maintaining the residence time of said hydrocarbon in said atomizing zone in the range of from 0.05 to 5 seconds, substantially without forming eddy current, and carrying out the reaction at a temperature of from 850° C. to 1200° C. to form said gas mixture while avoiding deposition of solid carbon on said catalyst bed.

4,115,075

PROCESS FOR THE PRODUCTION OF FUEL VALUES FROM CARBONACEOUS MATERIALS

Gerald P. McNamee, Santa Ana; Theodore R. Roszkowski, Malibu; David W. Stanbridge, Pacific Palisades, and Gerald A. White, Los Angeles, all of Calif., assignors to The Ralph M. Parsons Company, Pasedena, Calif.

Continuation-in-part of Ser. No. 707,004, Jul. 20, 1976, Pat. No. 4,050,908. This application Mar. 21, 1977, Ser. No. 779,922
The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.
Int. Cl.² C10J *3/16*; C10K *3/04*
U.S. Cl. 48—197 R **42 Claims**



36. In a process for the recovery of hydrocarbon values from solid carbonaceous materials where there is formed a reformable liquid hydrocarbon and a vapor stream comprising hydro-

carbons, carbon monoxide, carbon dioxide and hydrogen, an improvement for the production of methane from the reformable liquid hydrocarbon and the vapor stream which comprises:

(a) methanating a portion of vapor stream in the presence of steam and a high temperature methane forming alumina based catalyst containing from about 5 to about 50% by weight of at least one metal of the third period of Group VIII of the Periodic Table on a temperature stable alumina support in a first methanation zone having an inlet temperature of at least about 800° F., and an exit temperature up to about 1500° F.;

(b) combining, with steam, the effluent of the methanation zone, the balance of the vapor stream and the liquid hydrocarbon in a catalytic reforming stage where, at a temperature from about 1200° to about 1500° F. maintained by the effluent of the methanation stage, hydrocarbons are reformed to yield an effluent gas stream comprising steam, hydrogen, carbon monoxide, carbon dioxide and methane; and

(c) passing the efflunet gas stream from the reforming stage to at least one additional methanation stage where the hydrogen and carbon monoxide react to form additional methane in the presence of a high temperature methane forming alumina based catalyst containing from about 5 to about 50% by weight of at least one metal from the third period of Group VIII of the Periodic Table on a temperature stable alumina support, the inlet temperature to said methanation stage being at least about 700° F. and the exit temperature being up to about 1500° F.

4,115,076

ABRASIVE MATERIAL SUITABLE FOR MANUALLY BLAST CLEANING FERROUS METALS PRIOR TO PAINTING

Henry W. Hitzrot, Jr., Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 24, 1977, Ser. No. 800,108
Int. Cl.² C21D *7/06;* B24C *1/10*
U.S. Cl. 51—295 9 Claims



1. An abrasive material used to manually blast clean the surface of metals in situ, comprising scarfer spittings having particles which have a size of −6 mesh characterized by having a iron containing core surrounded by a shell of iron oxides, a specific gravity of 5 to 6 and a bulk density of not less than 180 pounds per cubic foot (2.88 grams per cubic centimeter).

4,115,077

METHOD OF CONTINUOUSLY PRODUCING RESINOID ABRASIVE WHEELS FOR CUTTING HARD MATERIALS

Heijiro Fukuda, No. 123, 3-chome, Umegaoka, Nagaokakyo, Japan (617)

Filed Jul. 1, 1977, Ser. No. 812,297
Claims priority, application Japan, Feb. 28, 1977, 52-21803
The portion of the term of this patent subsequent to Apr. 13, 1993, has been disclaimed.
Int. Cl.² C09K *3/14;* B24D *3/32*
U.S. Cl. 51—296 13 Claims



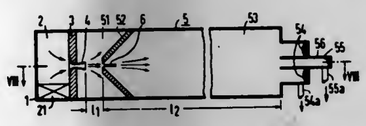
1. A method of continuously producing a resinoid abrasive wheel for cutting hard materials comprising the steps of preparing pore forming granules having predetermined mechanical strength and containing a substance thermally decomposable at a baking temperature for the production of the resinoid wheel, kneading the pore forming granules with abrasive grains and a thermosetting synthetic resin binder to prepare an abrasive composition, molding the abrasive composition into a block, heating the block by a high frequency heater, rolling the heated block containing the pore forming granules into a sheet by a multiplicity of pairs of rolls, blanking out a circular piece from the rolled sheet, and baking the circular piece to cure the binder and form pores in the resulting abrasive wheel by the decomposition of at least part of the thermally decomposable substance contained in the granules.

4,115,078

SEPARATION OF GASEOUS MIXTURES OF MATTER

Karl Janner, Erlangen, and Klaus Gregorius, Neunkirchen am Brand, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Ruhr, Fed. Rep. of Germany

Filed May 21, 1975, Ser. No. 579,544
Int. Cl.² B03C *3/38*
U.S. Cl. 55—2 12 Claims



8. A method for physically separating components of a gaseous mixture, said mixture containing at least two components having different resonance frequencies comprising the steps of:

a. establishing a flow of said gaseous mixture by creating a differential pressure in an elongated chamber having a central axis, the chamber having an inlet and a pair of spaced outlets on opposite sides thereof, said inlet opening into said chamber essentially transversely to the axis thereof;

b. passing at least one polarized electromagnetic wave beam, having electric and magnetic fields oscillating substantially in phase as in a normally progressing wave, through the mixture with the phase of the dipole moment of the molecules of the components of the mixture to be deflected being shifted by said beam so that said dipole moment lags by an angle approximately between the limits of 45° and 135°, in the direction of the axis of the elongated chamber, said beam having a frequency which causes the at least two components of said mixture to be differentially influenced in regard to their dipole behavior whereby said beam will act thereupon to cause deflection of the components of the mixture in different directions; and

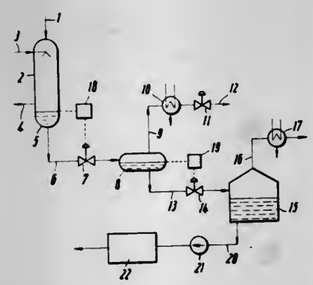
c. collecting said components after deflection.

4,115,079

REMOVING POLLUTANTS FROM AQUEOUS LIQUOR USED TO SCRUB FUEL GASIFICATION PRODUCT

Günter Pockrandt, Bad Homburg, and Helmut Fellner, Frankfurt am Main, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 20, 1977, Ser. No. 789,302
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1976, 2617648
Int. Cl.² B01D *19/00*
U.S. Cl. 55—43 BN 5 Claims



1. A proces of treating scrubbing water which has been used to scrub a hot raw gas produced by the gasification of a solid, liquid or gaseous fuel, which scrubbing water has dissolved therein hydrogen sulfide and additional gaseous pollutants, comprising flashing the used scrubbing water from a temperature of at least 100° C and a pressure of at least about 5 bars in at least one preliminary flashing stage to an intermediate pressure in the range of about 1.1 to 4 bars, separating the flashed-off gases containing the bulk of the hydrogen sulfide and pollutants from the residual scrubbing water, then flashing off the residual scrubbing water in a final flashing stage to atmospheric pressure, separating water vapor containing flashed-off gases from said final flashing stage, and treating said flashed-off gases from said final flashing stage separately from said gases from said preliminary flashing stage.

4,115,080

SEPARATION PROCESS

Michael J. Clark, and Howard L. Rohrmoser, both of Ludington, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 7, 1976, Ser. No. 721,019
Int. Cl.² B01D *47/02*
U.S. Cl. 55—54 15 Claims

1. A method for separating contaminants from steam comprising:

(a) conveying water at a temperature corresponding to the temperature at which the contaminated steam is saturated with water at the pressure of the contaminated steam into an enclosed treatment scrubber containing a plurality of baffles;

(b) continuously passing the water through the baffles at a predetermined rate;

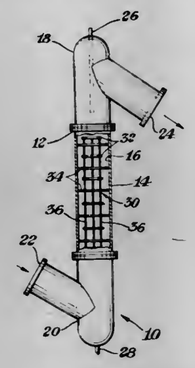
(c) countercurrently passing the contaminated steam upward through the baffles to contact the contaminants with the water, and thereby remove at least a portion of the contaminants from the steam;

(d) recovering water and contaminants therein from the scrubber;

(e) recovering steam and water entrained therein from the scrubber.

15. A method for removing entrained contaminants including at least one member selected from the group consisting of calcium chloride, calcium carbonate and calcium sulfate from steam comprising:

(a) introducing condensed steam at a temperature corresponding to the temperature at which contaminated steam is saturated with water at the pressure of the contaminated steam into an enclosed treatment scrubber containing a plurality of baffles in the interior thereof;



(b) passing the water through the scrubber at a rate sufficient to form a cascading film of water on the surface of the baffles;

(c) countercurrently passing contaminated steam generated during the evaporation of an aqueous solution of calcium chloride through the scrubber;

(d) recovering water and contaminants entrained therein from the bottom of the scrubber;

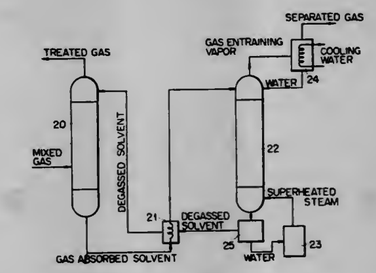
(e) recovering steam and water entrained therein from the top of the scrubber.

4,115,081

PROCESS FOR SEPARATION OF A MIXED GAS

Masayoshi Ohno, Yokohama; Akio Kakuta, Kawasaki, both of Japan; Terukatsu Miyauchi, 75 Kashiwaba, Naka-ku, Yokohama-shi, Japan, and Tatsuji Kikuchi, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Yokohama and Terukatsu Miyauchi, Kawasaki, both of, Japan

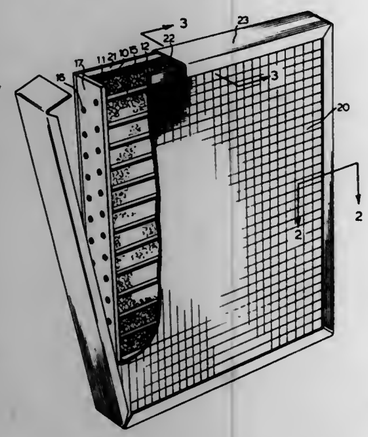
Filed Nov. 8, 1976, Ser. No. 739,951
Claims priority, application Japan, Nov. 18, 1975, 50-138303
Int. Cl.² B01D *53/14*
U.S. Cl. 55—64 6 Claims



5. A process for the separation of a mixed gas which comprises at least two gases selected from the group consisting of H_2, N_2, O_2, He, Ar, Kr, Xe, CO_2, NO, N_2O, NO_2, SO_2, H_2S, CS_2, CH_4, C_2H_2, C_2H_6, C_2H_3Cl, and CH_2CHCN, comprising the step of passing said gas through a solvent to separate said mixed gas by utilizing the differences in solubility of the constituent gases thereof in said solvent, wherein the improvement

comprises employing methylphenyl silicone oil as said solvent in order to separate said mixed gas.

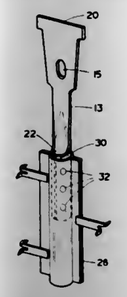
4,115,082
AIR CLEANER ASSEMBLY
John Henry Newell, Ancaster, Canada, assignor to Newtron Co. (Ancaster) Ltd., Ancaster, Canada
Continuation of Ser. No. 691,517, Jun. 1, 1976, abandoned. This application Mar. 9, 1977, Ser. No. 775,688
Claims priority, application Canada, Mar. 16, 1976, 248135
Int. Cl.² B03C *3/30*
U.S. Cl. 55—103 **6 Claims**



1. An air cleaner assembly of the flow-through type comprising:
a central element comprising two sheets of rubbery synthetic open cell foam polyurethane disposed mutually parallel and adjacent to one another;
first and second series of rods of acrylic plastic, the first and second series of rods sandwiching the central element therebetween, and contacting outer surfaces of respective ones of the two sheets of foam comprising the central element, and extending from side to side across the outer surfaces thereof;
first and second air permeable outer sheet elements of interwoven fibres of polypropylene, said elements being disposed outwardly of the respective first and second series of rods;
thermoplastic side frame members to which the acrylic rods are secured at their edges;
means for assembling said outer sheet elements with said side frame members.

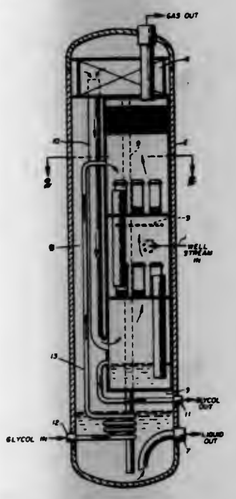
4,115,083
ELECTRODE HANGER
Xaver Johann Huppi, Zurich, Switzerland, assignor to Elex A.G., Zurich, Switzerland
Filed May 31, 1977, Ser. No. 802,264
Int. Cl.² B03C *3/40*
U.S. Cl. 55—148 **3 Claims**

1. An electrode hanger and discharge electrode assembly for an electrostatic precipitator having a current carrying support member, comprising:
(a) an elongated discharge electrode having one end formed with a hollow portion; and,
(b) a unitary electrode hanger having an upper end with means thereon engageable with the current carrying support member and a lower end with generally outwardly extending wing portions configured and positioned in



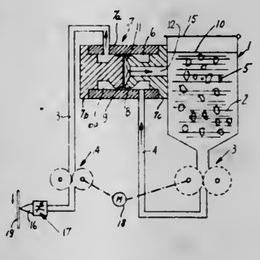
mating relationship into said hollow end portion of said discharge electrode.

4,115,084
COMBINED SEPARATOR VESSEL AND GAS ABSORBER VESSEL
Robert Wayne Coggins, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Aug. 22, 1977, Ser. No. 826,285
Int. Cl.² B01D *19/00*
U.S. Cl. 55—176 **2 Claims**



1. A separation and dehydration system for a mixture of gas and liquid including,
a vertically extended cylindrical separator shell,
the vertically extended cylindrical absorber tower of a liquid dessicant system mounted within the separator shell with its vertical axis horizontally displaced from the axis of the separator,
a conduit connected through the separator shell to conduct a mixture of gas and liquid from a source and to direct the mixture into impact upon the external wall of the tower to initiate separation of the gas and liquid,
a first path for the separated gas extended between the impact area and the upper volume within the separator shell,
a second path for the separated liquid extended from the impact area to the lower volume within the separator shell,
a body of liquid in the lower volume within the separator shell arranged at the end of the second path to receive the separated liquid from the second path,
a conduit extended from the upper volume within the separator shell to the lower volume within the absorber tower for the separated gas,
a source of hot lean liquid dessicant connected to the upper volume within the absorber tower,
whereby the absorber tower functions as a source of heat within the separator to control hydrate formation and paraffin solidification within fluids flowing through the separator in which separated gas is contacted directly by the dessicant to dehydrate the gas.

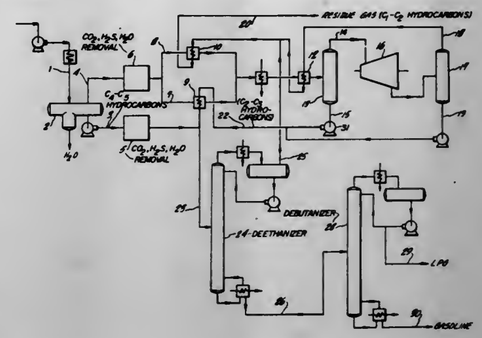
4,115,085
APPARATUS FOR EXPELLING GASES FROM LIQUID ADHESIVES
Karl-Heinz Barbe, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. Kg., Fed. Rep. of Germany
Filed Jun. 7, 1977, Ser. No. 804,336
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634548
Int. Cl.² B01D *19/00*
U.S. Cl. 55—193 **10 Claims**



1. Apparatus for expelling gases from a liquid adhesive supplied to the applicator of a machine which produces and/or processes smokers' products and wherein the adhesive is applied to a running web of wrapping material or the like, comprising a vessel arranged to store a supply of gas-containing adhesive; conduit means connecting said vessel with said applicator; a gas removing device installed in said conduit means and including an annular channel having a flow restricting portion, said device further having a gas-evacuating gap communicating with said portion of said channel; and means for conveying adhesive in said conduit means from said vessel, through said channel and to said applicator, including means for maintaining the adhesive at a higher pressure upstream and at a lower pressure downstream of said device.

4,115,086
RECOVERY OF LIGHT HYDROCARBONS FROM REFINERY GAS
Charles H. Jordan, Houston, Tex., and Ajit Sampat, London, England, assignors to Fluor Corporation, Los Angeles, Calif.
Filed Dec. 22, 1975, Ser. No. 642,902
Int. Cl.² F25J *3/02*
U.S. Cl. 62—28 **6 Claims**

1. A process for the recovery of light hydrocarbons from a feed stream of refinery gas comprised of methane and said light hydrocarbons comprising:
(a) compressing and cooling the stream to liquify substantially all C_5 and higher hydrocarbons and a major portion of the C_4 hydrocarbons present in the stream;
(b) separating as a vapor phase the unliquified portion of the stream from the liquid portion;
(c) cooling the vapor phase to liquify a major portion of the C_2 hydrocarbons present in the vapor phase;
(d) separating the vapor from the liquid portion and expansively cooling the vapor to at least about −120° F;
(e) separating any liquid formed by the expansion from the vapor;
(f) combining the liquified portions of the feed stream;
(g) separating the methane from said combined liquid portion as a vapor and adding said methane vapor to said vapor phase prior to expansively cooling said vapor phase;



(h) separating the C_2 hydrocarbons from said combined liquid portions at a pressure above that of said vapor phase; and
(i) distilling the remainder of said combined liquid portions to separate light hydrocarbon fractions.

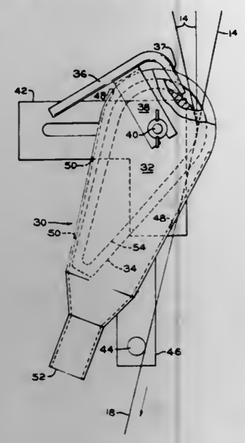
4,115,087
OPTICAL FIBRES
David Joseph Martin, London, England, assignor to BICC Limited, London, England
Filed Apr. 5, 1977, Ser. No. 784,732
Claims priority, application United Kingdom, Apr. 7, 1976, 14108/76
Int. Cl.² B05D *1/40*; G02B *5/14, 1/10*
U.S. Cl. 65—3 C **8 Claims**

1. A method of applying a continuous coating of hardenable material to an advancing optical fibre which comprises causing an optical fibre advancing in the direction of its length to pass between two continuously moving endless surfaces which are positioned on opposite sides of the advancing fibre and each of which carries a layer of hardenable material in a liquefied state in such a way that the advancing optical fibre is at least partially immersed in each of said layers, the distance that each endless surface is spaced from the advancing optical fibre and the thickness of the layer of hardenable material on each endless surface being such that opposite parts of the advancing fibre pass through said layers of hardenable material with substantially no physical contact taking place between the fibre and the endless surfaces themselves, and driving the endless surfaces in such a direction and at such a speed having regard to the direction and speed of the advancing optical fibre that hardenable material in a liquefied state is transferred from the moving endless surfaces to the advancing fibre to form on the fibre continuous coating of substantially uniform thickness.

4,115,088
BINDER APPLICATOR FOR GLASS FIBERS
Marvin E. Walker, Lawndale, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 31, 1977, Ser. No. 846,961
Int. Cl.² C03B *37/02*
U.S. Cl. 65—11 W **10 Claims**

1. An applicator for applying binder and/or size to glass filaments comprising a gathering element to combine said filaments into a strand, means for supplying binder and/or size to said gathering element, a housing containing said gathering element, said housing having an opening through which said strand passes, said opening being arranged to permit downward airflow along the path of said strand, a strand guide means and means for positioning said applicator in a glass fiber

forming apparatus, said gathering element and said housing each having a generally inverted teardrop shape in longitudinal section and said positioning means being arranged to guide said strand across a downward airstream associated with for-



mation of said strand to thereby remove excess binder and/or size from said strand with said air stream and recover said excess binder and/or size in said housing without diverting said downward airstream from its normal path.

4,115,089

PROCESS AND APPARATUS FOR MAKING EXPANDED SLAG

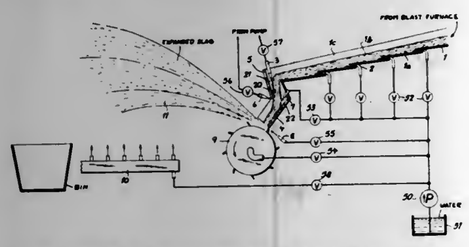
Paul Metz, Luxembourg; Robert Schockmel, Esch, Alzette; Desire Nick, Differdange, and Paul Pfeiffer, Esch, Alzette, all of Luxembourg, assignors to Acieries Reunies de Burbach-Eich-Dudelange S.A. Arbed, Luxembourg, Luxembourg

Filed Oct. 21, 1976, Ser. No. 734,553

Claims priority, application Luxembourg, Oct. 21, 1975, 73623

Int. Cl.² C03B *19/10*

U.S. Cl. 65—19 **3 Claims**



3. A process for producing an expanded slag which comprises the steps of:

(a) passing molten slag downwardly along an inclined channel while supplying water between the slag and the floor of said channel to preexpand said slag;

(b) cascading a stream of slag from the lower end of said channel downwardly;

(c) intercepting the cascade of slag with a surface of a plate inclined to the horizontal, and wetting said surface to further expand said slag;

(d) generating a water curtain in the form of a mist across a space between arrays of atomizing nozzles between said surface and a slag-collecting bin;

(e) disintegrating the streams of further expanded slag by depositing same upon a rotating drum to disperse the further expanded slag as particles adjacent said surface;

(f) hurling said particles of slag projected from said drum through said mist of water and into said collecting bin;

(g) directing water against a surface of the cascade of slag opposite said plate;

(h) directing water against said drum along a line upon which said slag impinges upon said drum;

(i) confining said cascade between said surface of said plate and an oppositely inclined surface of a second plate juxtaposed with said cascade and forming a gap with the first plate traversed by the said cascade, said second plate forming a gap converging in the direction of flow of said slag toward said slag; and

(j) introducing water into the last-mentioned gap.

4,115,090

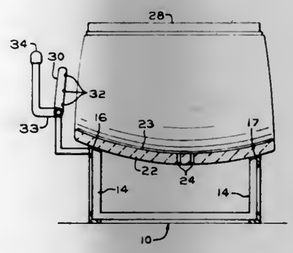
SHAPING GLASS SHEETS BY GRAVITY SAGGING ON SOLID MOLDS

John A. Comperatore, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1977, Ser. No. 819,783

Int. Cl.² C03B *23/02*

U.S. Cl. 65—25 A **8 Claims**



1. In the method of bending a glass sheet by gravity sagging in a gas fired kiln comprising supporting said glass sheet in bending relation above a substantialy continuous upwardly facing shaping surface of a bending mold having a permanent shape conforming to that desired for the sheet after shaping, inserting said mold supporting said sheet within said gas fired kiln, heating said sheet within said kiln to an elevated temperature sufficient to soften said glass sheet whereby said glass sheet sags a predetermined sag distance toward said upward facing shaping surface until it conforms to said permanent shape and wherein the presence of particles on said shaping surface when said heat-softened sheet comes into contact with said shaping surface causes optical defects in the shaped glass sheet, the improvement comprising applying gas under pressure to said upwardly facing shaping surface at a force sufficient to remove said particles from said shaping surface after said glass sheet has started to sag toward said shaping surface and while said glass sheet is spaced less than half of said sag distance from said shaping surface, said gas being initially applied at a temperature approximating the temperature within the kiln and subsequently at a lower temperature for sufficient time to harden the skin of the sagging glass sheet at its bottom surface without significantly affecting the temperature throughout the rest of the thickness of the glass sheet, and removing said applied gas from between said sagging glass sheet and said shaping surface while said glass sheet sags into conformity with said shaping surface.

4,115,091

METHOD AND APPARATUS FOR MANUFACTURING GLASS RIBBON ON A FLOAT BATH

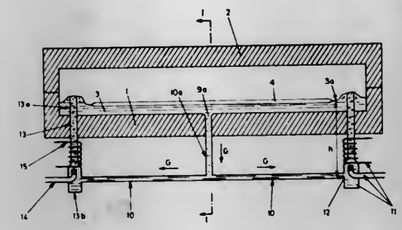
Robert Bourggraff, Cologne, Fed. Rep. of Germany, and Jean-Claude Coulon, Chalon sur Saone, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed May 13, 1977, Ser. No. 796,810

Claims priority, application France, May 20, 1976, 76 15202

Int. Cl.² C03B *18/02*

U.S. Cl. 65—99 A **23 Claims**



1. In a method for manufacturing a glass ribbon wherein molten glass is directed onto a bath of molten metal within a protective atmosphere, the molten glass being advanced along the molten metal bath so as to form a congealed glass ribbon, the improvement which comprises,

(a) withdrawing a portion of the molten metal from the molten metal bath, underneath the molten glass, upstream from the location at which the molten glass forms a congealed glass ribbon;

(b) entraining a reducing gas within the withdrawn molten metal;

(c) heating the withdrawn molten metal; and

(d) recycling the withdrawn heated molten metal and reducing gas into the molten metal bath above the surface level of the bath and generally between the location of entry of the molten glass onto the bath and a side region of the bath.

8. In an apparatus for manufacturing a glass ribbon having a tank disposed within a protective atmosphere for containing a bath of molten metal with means for directing molten glass onto the molten metal bath at an upstream location of the tank and means for advancing the molten glass along the tank to form a congealed glass ribbon at a downstream location of the tank and for removing the glass ribbon therefrom, the improvement which comprises,

(a) means for conducting at least a portion of the molten metal from the upstream portion of the tank underneath the molten glass to a side region of the upstream portion of the tank;

(b) means connected to the conducting means for entraining a reducing gas within said conducted molten metal;

(c) means for heating said conducted molten metal,

(d) said conducting means comprises a first conduit having a first end passing through a first aperture in the upstream portion of the tank located underneath the molten glass and a second end passing through a second aperture located toward the side of the upstream portion of the tank, said first end terminating below the surface of the molten metal bath; and

(e) wherein the second end of said first conduit terminates above the surface of the molten metal bath.

4,115,092

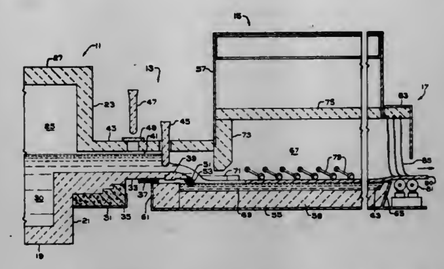
METHOD AND APPARATUS FOR PREVENTING BUBBLE NUCLEATION AND GROWTH IN A MOLTEN GLASS DELIVERY FACILITY

James Edwin Neely, Jr., Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 19, 1977, Ser. No. 834,747

Int. Cl.² C03B *18/02*

U.S. Cl. 65—99 A **7 Claims**



1. In an apparatus for delivering molten glass onto a pool of molten tin-containing metal for forming into flat glass which includes a glass-supporting, silica-containing refractory member for supporting molten glass immediately prior to its delivery onto the molten metal which member is contacted by glass and tin, the improvement comprising

a semi-adherent glaze of glass which behaves as a viscous liquid at molten glass delivery temperatures disposed on glass and tin-contacting surfaces of the silica-containing refractory member wherein said glass is disposed on such surfaces prior to first contact by molten glass being delivered thereover.

3. In a method of preparing a flat glassmaking apparatus for use in the manufacture of flat glass by delivering molten glass over a glass-supporting, silica-containing refractory member to a forming chamber onto a glass-supporting surface of a pool of molten tin-containing metal and thereafter cooling and forming the glass into a continuous sheet of glass, wherein the glass-supporting refractory is mounted in place, the forming chamber and refractory are heated to a temperature within range sufficient to provide a pool of the metal in a molten state and for receiving molten glass, providing a protective atmosphere in the forming chamber and initiating the flow of molten glass over the glass-supporting refractory and onto the pool of molten metal; the improvement comprising

establishing on glass and tin-contacting surfaces of the glass-supporting refractory a glaze of glass which becomes viscous at the temperature to which the refractory is heated prior to initiation of molten glass flow; and

maintaining the temperature of the glass-supporting refractory sufficient during initial molten glass flow to permit a portion of the glaze to slough off from the glass-supporting refractory and be removed by adherence to the molten glass.

4,115,093

CERTAIN OXIMINYL ALLOPHANATES AND THEIR USE AS HERBICIDES

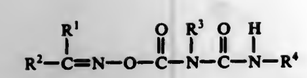
Peter Anthony Bukowick, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 626,524, Oct. 28, 1975, Pat. No. 4,030,912, which is a continuation of Ser. No. 350,218, Apr. 11, 1973, Pat. No. 3,957,867. This application Feb. 3, 1977, Ser. No. 765,176

Int. Cl.² A01N *9/00*

U.S. Cl. 71—88 **6 Claims**

1. A herbicidal composition comprising (1) application aid material and (2) an effective quantity of phytotoxic material comprising a compound of the formula:



in which when R^1 and R^2 are taken separately, R^1 is selected independently from the group consisting of hydrogen and C_1–C_7 alkyl and R^2 is 2-furanyl; R^3 is selected from the group consisting of C_1–C_7 alkyl, allyl, phenyl, 3-halophenyl and 3,4-dihalophenyl; and R^4 is selected from the group consisting of C_1–C_7 alkyl, allyl, cyclohexyl, phenyl, halophenyl, tolyl, anisolyl, nitrophenyl, 3,4-dihalophenyl, 1-naphthyl, p-toluene sulfonyl, trihalomethylphenyl and 2,6-dinitro-4-trihalomethylphenyl.

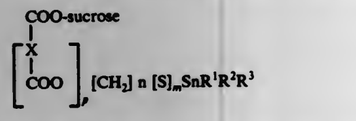
4,115,094

ORGANOTIN SUCROSE COMPOUNDS AND METHOD OF USE

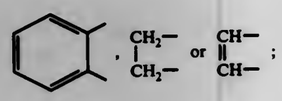
Robert Clive Poller, and Ann Parkin, both of London, England, assignors to Research Corporation, New York, N.Y.

Filed Mar. 22, 1977, Ser. No. 780,053
Int. Cl.² A01N *9/00*; C07H *23/00*
U.S. Cl. 71—88 **27 Claims**

1. An organo-tin sucrose compound of the formula:



in which the tetravalent tin atom has only three tin-carbon bonds and wherein X is:



m is 0 or 1;
p is 0 when *m* is 1 and *p* is 1 when *m* is 0;
n is 0 or an integer from 1 to 6 with the proviso that, when *m* is 1, *n* is an integer from 1 to 6; and
at least two of R^1, R^2 and R^3 are each alkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 8 carbon atoms or hydrocarbon aryl or aralkyl of 6 to 10 ring carbon atoms;
when *m* is 1 or when *m* and *n* are both 0, one of R^1, R^2 and R^3 is the acyl radical of an inorganic mineral acid or of a hydrocarbon carboxylic or sulfonic acid of 1–15 carbon atoms; and
when *m* is 0 or when *m* is 1 and *n* is said integer, all of R^1, R^2 and R^3 have the above-indicated values.

23. A method of inhibiting the growth of plant pests which comprises contacting them with a lethal amount of a compound according to claim **1**.

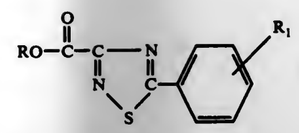
4,115,095

5-ARYL-1,2,4-THIADIAZOLE-3-CARBOXYLATES AND AGRICULTURAL METHODS

John E. Franz, Crestwood, and Robert K. Howe, Bridgeton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

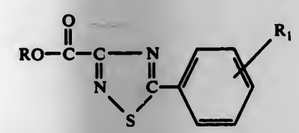
Filed May 23, 1977, Ser. No. 799,811
Int. Cl.² A01N *5/00, 9/12, 21/02*; C07D *285/10*
U.S. Cl. 71—90 **11 Claims**

1. A compound having the formula



wherein R is hydrogen, lower alkyl or agriculturally acceptable cations; R_1 is hydrogen, halogen, trifluoromethyl, cyano, lower alkyl or COOR.

6. A method for reducing or preventing phytotoxic injury by a pre-emergent acetanilide herbicide to desirable plants or crop plants which comprises applying to the desirable plant or crop seed or to the soil in which the seed is planted, a substantially non-phytotoxic safening amount of a compound having the formula



wherein R is hydrogen, lower alkyl or agriculturally acceptable cations; R_1 is hydrogen, halogen, trifluoromethyl, cyano, lower alkyl or COOR.

4,115,096

DIHYDROPYRAZOLONE HERBICIDE

Robert Earl Sticker, Middleport, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 685,741, May 13, 1976, abandoned. This application Nov. 4, 1977, Ser. No. 848,632
Int. Cl.² A01N *9/22*; C07D *231/16*
U.S. Cl. 71—92 **3 Claims**

1. 2-Cyclohexyl-4-iodo-1,5-dimethyl-1,2-dihydro-3H-pyrazol-3-one.

3. A method of controlling undesired plant growth which comprises applying to the locus where control is desired an herbicidally effective amount of the compound of claim **1**.

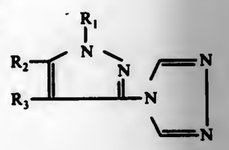
4,115,097

PYRAZOLYLTRIAZOLE HERBICIDES

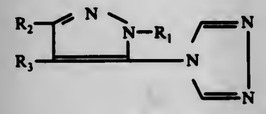
Stanley Albert Lang, Jr., Pomona, N.Y., and Bryant Leonidas Walworth, Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 619,982, Oct. 6, 1975. This application Apr. 27, 1977, Ser. No. 791,460
Int. Cl.² A01N *9/22*; C07D *55/06*
U.S. Cl. 71—92 **5 Claims**

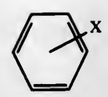
1. A method for the control of undesirable plant species, comprising contacting the undesirable plant species, seeds or propagules thereof, with a herbicidally effective amount of a compound of the formula:



or



wherein R_1 is hydrogen, alkyl (C_1–C_3), benzyl, acyl RCO wherein R is C_1–C_3 alkyl or N-alkyl (C_1–C_3) carboxamido; R_2 is hydrogen, methyl or phenyl; R_3 is methyl of



wherein X is hydrogen, halogen, alkyl (C_1–C_3) or CF_3, and the acid addition salt of the compound wherein the acid is HCl, HBr, HI, HNO_3, H_2SO_4, HSO_4^-, $CH_3OSO_2O^-$, H_3PO_4, $HClO_3$, alkanoic (C_2–C_4) acid, benzene sulfonic acid, or p-toluene sulfonic acid.

4,115,098

PEST CONTROL COMPOSITION AND METHOD

Emerson B. Stull, San Antonio, Tex., assignor to Stull Chemical Company, San Antonio, Tex.

Filed May 25, 1977, Ser. No. 800,423
Int. Cl.² A01N *9/36, 9/22, 17/00, 17/10*
U.S. Cl. 71—93 **12 Claims**

1. A pest control composition comprising water having suspended therein substantially uniform droplets of from about 50 to 200 microns in diameter of an invert emulsion comprising an external oil system, an internal system comprising water or an oil-in-water emulsion, and at least one pest control agent present in an amount sufficient to control pests, said agent being contained in at least one of said external or internal systems.

4,115,099

ANTIDOTE COMPOSITIONS AND METHOD OF USE WITH HERBICIDES

Duane R. Arneklev, Sunnyvale, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 742,488, Nov. 17, 1976, which is a continuation of Ser. No. 612,976, Sep. 12, 1975, abandoned, which is a continuation of Ser. No. 460,661, Apr. 12, 1975, abandoned, which is a division of Ser. No. 100,770, Dec. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 68,529, Aug. 31, 1970, abandoned. This application Apr. 6, 1977, Ser. No. 785,262
Int. Cl.² A01N *9/22*
U.S. Cl. 71—93 **1 Claim**

1. In the method of controlling weeds wherein an effective herbicidal mixture of a thiolcarbamate herbicide and a triazine herbicide is added to the habitat thereof the improvement comprising adding to the habitat thereof from about 0.01 to about 15 parts by weight for each part by weight of the herbicide an antidote compound represented by the formula

$$Br—CH_2CH_2—O—SO_2—CH_3.$$

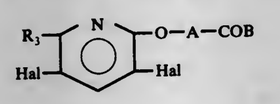
4,115,100

SELECTIVE HERBICIDAL COMPOSITION CONTAINING 2-PYRIDINOL COMPOUNDS

Rolf Schurter; Hermann Rempfler, both of Binningen, and Werner Föry, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,796
Claims priority, application Switzerland, Mar. 5, 1976, 2780/76
Int. Cl.² A01N *9/22*; C07D *213/64*
U.S. Cl. 71—94 **12 Claims**

1. A 2-Pyridinol compound of the formula I



(I)

wherein
A represents an alkylene bridge member having 1–9 C atoms, which can be branched-chain or straight-chain and which can be substituted by halogen;
B represents a group $—OR_1$ or $—SR_2$ in which
R_1 represents hydrogen; C_1–C_8 alkyl which is unsubstituted or substituted by halogen, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkoxycarbonyl, C_3–C_{12} cycloalkyl, phenyl which is unsubstituted or mono- or polysubstituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, cyano or nitro; C_3–C_{12} cycloalkyl; C_3–C_8 alkenyl which is unsubstituted or substituted by halogen; C_3–C_8 alkynyl; phenyl which is unsubstituted or mono- or poly-substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, cyano or nitro; an ion equivalent of an alkali metal atom; or a quaternary C_1–C_4 alkylammonium group or C_1–C_4 hydroxyalkyl-ammonium group; and
R_2 represents C_1–C_8 alkyl, a phenyl or benzyl group which can be unsubstituted or substituted by halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy;
R_3 represents C_1–C_4 alkyl or phenyl; and Hal independently represent a chlorine or bromine atom.

11. A herbicidal composition for the selective control of weeds and wild grasses in crops of useful plants, which composition contains as active substance a herbicidally effective amount of a 2-pyridinol compound corresponding to the formula I, claim **1**, together with a suitable carrier therefor.

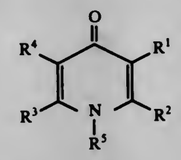
4,115,101

1-ARYL-4-PYRIDONES

Glenn R. Carlson, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 689,219, May 24, 1976, Pat. No. 4,051,142. This application Jul. 15, 1977, Ser. No. 815,971
Int. Cl.² A01N *9/22*; C07D *213/55, 213/56, 213/57*
U.S. Cl. 71—94 **13 Claims**

1. A method of inducing male sterility in a cereal grain plant which comprises treating the plant prior to meiosis with an amount effective to produce male sterility in the plant of a compound of the formula



wherein
R^1 is a carboxy group or an agronomically-acceptable salt thereof, a carb(C_1–C_4)alkoxy group, a carbamoyl group, a (C_1–C_4)alkyl or di(C_1–C_4)alkyl carbamoyl group, or a cyano group,
R^2 is a (C_1–C_4)alkyl group,
R^3 is a hydrogen atom or a (C_1–C_4)alkyl group,
R^4 is a hydrogen atom, a (C_1–C_4)alkyl group, or a halogen atom, and
R^5 is an unsubstituted phenyl group or a substituted phenyl group having up to three substituents having a total of up to 6 carbon atoms.

4,115,102
PYRIDYL COMPOUND, HERBICIDAL COMPOSITION CONTAINING THE SAME AND METHOD OF USE THEREOF

Ryohei Takahashi, Kusatsu; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Yasuhiro Tsujii, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

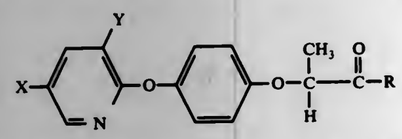
Division of Ser. No. 623,517, Oct. 17, 1975, Pat. No. 4,046,553. This application Jun. 10, 1977, Ser. No. 805,387

Claims priority, application Japan, Oct. 17, 1974, 49-118676; Mar. 13, 1975, 50-29556

Int. Cl.[2] C07D *213/64;* A01N *9/22*

U.S. Cl. 71—94 **8 Claims**

1. A compound having the formula:



where X is a halogen atom, Y is a hydrogen atom, a halogen atom or a methyl group, and R is a (C_1–C_4) alkylthio group in which the alkyl moiety thereof may be straight or branched chain, or a phenylthio group in which the aryl moiety thereof may be substituted with one or more of a halogen atom or a methyl group.

4,115,103
GERMICIDAL HERBICIDE FOR AGRICULTURE AND HORTICULTURE

Yukio Sugimura, Wakayama; Norioki Miyamoto, Sakura; Tetsuji Iwasaki, Wakayama; Kyozaburo Tachibana, Sakura, and Tsuneyuki Takeno, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

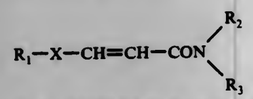
Filed Jun. 16, 1977, Ser. No. 807,148

Claims priority, application Japan, Jun. 30, 1976, 51-77195; Jun. 30, 1976, 51-77196

Int. Cl.[2] A01N *9/12, 9/14*

U.S. Cl. 71—98 **6 Claims**

1. A method of inhibiting the growth of noxious weeds which comprises applying a herbidically effective amount of at least one compound of the formula:



wherein R_1 represents an alkyl or alkenyl group having 1 to 20 carbon atoms, X represents S, SO or SO_2, and R_2 and R_3 which may be the same or different represent hydrogen, an alkyl group having 1 to 20 carbon atoms, an oxyalkylene group having 1 to 20 units of ethylene oxide or propylene oxide, 2-sulfoethyl or a salt thereof, or 2-carboxyethyl group to plants.

4,115,104
DICYANOVINYLHYDRAZONOMALONONITRILES AND THE HERBICIDAL USE THEREOF

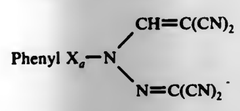
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 14, 1977, Ser. No. 768,137

Int. Cl.[2] C07C *120/00, 121/82, 121/78;* A01N *9/20*

U.S. Cl. 71—105 **59 Claims**

41. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a dicyanovinylhydrazonomalononitrile of the formula



wherein each X is a substituent on said Phenyl selected from halogen, alkyl of 1 to 8 carbon atoms, alkoxy or alkylthio or haloalkyl of 1 to 8 carbon atoms, cyano and nitro and wherein *a* is an integer from 0 to 5.

4,115,105
L-2-AMINO-4-(2-AMINOETHOXY)-BUTANOIC ACID

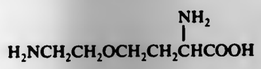
James Parnell Scannell, North Caldwell, and Arthur Stempel, Teaneck, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 629,425, Nov. 6, 1975, abandoned, which is a continuation of Ser. No. 430,373, Jan. 2, 1974, abandoned. This application Aug. 29, 1977, Ser. No. 828,389

Int. Cl.[2] A01N *9/24;* C07C *101/24*

U.S. Cl. 71—113 **5 Claims**

1. The L -antipode of the compound of the formula



and the pharmaceutically acceptable acid addition salts thereof.

4. A method of increasing the ripening of fruit which comprises the application to said fruit of an effective ethylene enhancing amount of an abscission agent selected from the group consisting of the L-antipode of the compound of the formula



and the pharmaceutically acceptable acid addition salts thereof.

4,115,106
METHOD FOR PRODUCING METALLIC OXIDE COMPOUNDS

Cloyd A. Snavely, Niles, Mich., and John A. Smith, Mishawaka, Ind., assignors to National Standard Company, Niles, Mich.

Filed Oct. 20, 1976, Ser. No. 734,124

Int. Cl.[2] C01G *49/08*

U.S. Cl. 75—0.5 AA **18 Claims**

1. A method for producing fine metallic oxides of spinel-type structure comprising the step of reacting beta FeOOH with an aqueous solution of a salt of a substitution-effective metallic cation to yield a ferrite product exhibiting a spinel crystal habitat, wherein the conversion of the beta FeOOH to the ferrite product is substantially complete within less than approximately 40 minutes.

4,115,107
METHOD OF PRODUCING METAL FLAKE

Albert David Booz, New Kensington, and Thomas J. Kondis, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

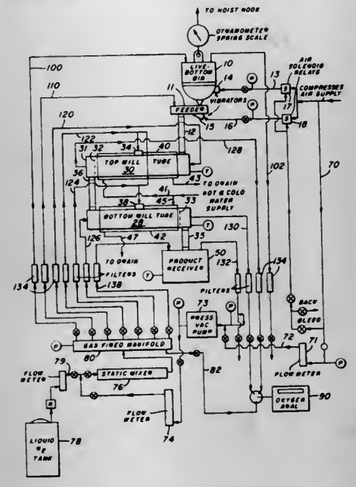
Filed Dec. 14, 1976, Ser. No. 750,504

Int. Cl.[2] B22F *9/00*

U.S. Cl. 75—0.5 R **23 Claims**

1. A continuous method of making metal flake in a ball mill comprising the steps of:

(a) feeding a charge of metal particles substantially continuously to a vibratory mill containing milling material;
(b) supplying a controlled amount of lubricant to the mill to avoid formation of agglomerations in amounts which would hinder metal particle flow;
(c) feeding a supply of gas to the mill, the gas feeding being controlled to a rate which avoids substantial interference with metal particle flow through the mill;



(d) milling the metal particles in the presence of the gas to form metal flake, the milling being controlled so as to substantially eliminate welding of the metal particles;
(e) moving the particles through the mill by use of the vibratory milling action; and
(f) removing metal flake and gas from the mill at a rate substantially commensurate with feed rate.

4,115,108
MATTE SMELTING

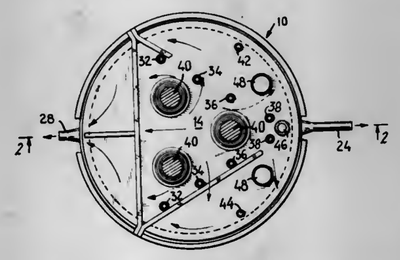
Birger Leif Ydstie, Blommenholm, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Filed Dec. 3, 1976, Ser. No. 747,216

Claims priority, application Norway, Dec. 4, 1975, 754091

Int. Cl.[2] C21C *5/52*

U.S. Cl. 75—11 **5 Claims**



1. A matte smelting process for the separation of iron from one or more other metal values said process comprising:
(a) forming a matte phase and a slag phase in the furnace pot of an electric arc furnace, said furnace pot being circular and having a sidewall and a bottom, said bottom being substantially concave and a substantial portion of the concave bottom having a radius of curvature no greater than about the diameter of the furnace pot; and
(b) controlling the operation of the furnace so that the matte phase covers no more than about one-half of the surface of the concave bottom of the circular furnace pot.

4,115,109
SECONDARY LEAD SMELTING PROCESS

Karl David Libsch, Hightstown, and Mannige Vikram Rao, Princeton Junction, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Continuation of Ser. No. 678,954, Apr. 21, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,983

Int. Cl.[2] C22B *13/02*

U.S. Cl. 75—77 **4 Claims**

1. In a process for producing lead in a secondary lead smelter which comprises charging said smelter with lead bearing material, carbonaceous material, iron, and fluxes; passing air through said smelter to react with said carbonaceous material to produce carbon monoxide and thereby melt and reduce said lead bearing materials and form molten lead; and removing said molten lead from said smelter, wherein the improvement comprises adding from about 1% to 8% moisture by weight and from about 0.5% to 5% oxygen by weight to said air prior to passing said air through said smelter.

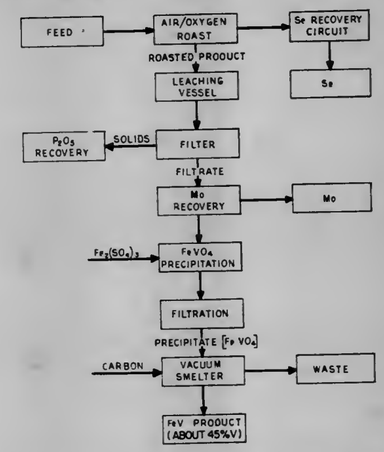
4,115,110
VANADIUM RECOVERY PROCESS

Roman Z. Pyrih, and Robert S. Rickard, both of Golden, Colo., assignors to Earth Sciences, Inc., Golden, Colo.

Filed Apr. 8, 1977, Ser. No. 786,026

Int. Cl.[2] C22B *34/22;* C22C *38/24;* C01G *31/00*

U.S. Cl. 75—101 R **11 Claims**



1. A process for recovering vanadium values from vanadium ore and vanadium scrap such as vanadium bearing catalyst which comprises:
(a) roasting the vanadium ore or vanadium scrap in air at a temperature not in excess of 600° C for a sufficient time to remove substantially all of the carbonaceous material present in the ore or scrap;
(b) roasting the calcine from step (a) in a pure oxygen atmosphere at a temperature of at least about 750° C for a period sufficient to convert substantially all of the vanadium in the calcine to a soluble state;
(c) leaching the calcine from step (b) to a pH from neutral to about 2 in water or a dilute solution of an acid selected from the group consisting of sulfuric, hydrochloric and nitric acids to solubize vanadium values and leave substantially all impurities undissolved;
(d) performing a luquid-solids separation on the leach slurry of Step (c);
(e) precipitating substantially all of the vanadium values

from the filtrate from step (d) with an inorganic iron salt at an acidity no stronger than about pH 1; and

(f) recovering the precipitated vanadium values from step (e) by liquid-solids separation.

9. The process of claim 1 in which the precipitate of step (f) is reduced to produce a ferro-vanadium product.

4,115,111

FREE-CUTTING STRUCTURAL STEEL FOR MACHINES

Tetsuro Itoh, Tokai; Tetsuo Takahashi, Nagoya; Atsuyoshi Kimura, Aichi, and Seiichi Yamano, Tokai, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 523,446, Nov. 13, 1974, abandoned. This application Jan. 24, 1977, Ser. No. 761,954

Claims priority, application Japan, Nov. 13, 1973, 48/127478

Int. Cl.[2] C22C *38/60*

U.S. Cl. 75—128 P 5 Claims

1. Free-cutting structural steel consisting essentially of 0.05–0.65% carbon, 0.10–0.40% silicon, 0.25–1.70% manganese, 0–4.50% nickel, 0–3.50% chromium, 0–1.0% molybdenum, 0.0002–0.0010% calcium and

at least one element selected from the group consisting of 0.03–0.30% lead and 0.04–0.10% sulfur by weight,

the balance being iron and impurities, together with

30–100 grams of oxide inclusions per ton of steel, said inclusions comprising 40–60% SiO_2, 5–30% CaO and 25–40% Al_2O_3, with less than 20% of other oxides, said inclusions having a melting point of 1,200°–1,600° C.

4,115,112

COBALT-BASE ALLOY AND ARTICLE

Russell W. Smashey, Albuquerque, N. Mex.; Elmer L. Frey, Cincinnati, Ohio; George V. Cash, Melrose, and George S. Irons, Marblehead, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 21, 1977, Ser. No. 817,638

Int. Cl.[2] C22C *19/07*

U.S. Cl. 75—171 5 Claims

1. In a cobalt-base alloy consisting essentially, by weight, of at least about 0.2% C, about 24 - 27% Cr, about 9 - 12% Ni, about 7 - 8% W, up to about 2% Fe, up to about 0.3% Zr, up to about 0.1% B, up to about 1% Si, up to about 1% Mn, with the balance essentially Co, and incidental impurities which can include up to about 0.4% Al, the improvement comprising the inclusion of Al in the composition in the range of about 0.7 up to about 2 wt. %.

4,115,113

PROCESS FOR THE PREPARATION OF MOLYBDENUM BASED ALLOYS BY SINTERING

Geraud Fustier, Bonneville; Jean-Paul Langeron, Malabry; Joseph de la Bastie, and Jean Carlizza, both of Le Fayet, all of France, assignors to Cime Bocuze, Paris, France

Filed Apr. 23, 1976, Ser. No. 679,852

Claims priority, application France, Apr. 23, 1975, 75 13488

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.[2] B22F *1/100*

U.S. Cl. 75—206 4 Claims

1. A process for the preparation of molybdenum based alloys containing titanium and zirconium as reinforcing elements, comprising

(a) introducing isopropyl titanate and zirconyl nitrate, as addition compounds, in solution form, at least one of which is dissolved in an organic solvent, into molybdenum used in the form of metallic molybdenum or ammonium decamolybdate,

(b) reducing the mixture of isopropyl titanate, zirconyl nitrate and metallic molybdenum or ammonium decamolybdate with hydrogen, whereby the ammonium decamolybdate is reduced to the metallic state of molybdenum, and the isopropyl titanate and zirconyl nitrate are converted to TiO_2 and ZrO_2, respectively,

(c) adding and mixing carbon in sufficient quantity and at a temperature at which said carbon partially reduces the addition compound,

(d) compressing the so-reduced mixture into briquettes, under a pressure of about 1000 bars, and

(e) sintering, whereby the titanium is dissolved and the zirconium appears as a finely dispersed phase.

4,115,114

ELECTROSTATIC CHARGE IMAGE TRANSFER

Pham Kim Quang, Dieppe, and Jean-Claude Marckmann, Arques La Bataille, both of France, assignors to La Cellophane, Paris, France

Filed Sep. 14, 1973, Ser. No. 397,360

Claims priority, application France, Sep. 21, 1972, 72 33401

Int. Cl.[2] G03G *13/044*

U.S. Cl. 96—1.4 5 Claims

1. A method for electrostatic reproduction comprising

establishing a charge image on a carrier surface,

associating said imaged carrier surface adjacent and spaced from a receiving surface a distance not exceeding 250 microns to induce a charge image on said receiving surface by the sole influence of the charge image on said carrier surface,

presenting a charged developer between said associated spaced surfaces to pigment said images,

maintaining a spaced relationship of said carrier and receiving surfaces, and

thereafter fixing one of said images.

4,115,115

CRYSTALLIZATION OF SELENIUM IN POLYMER MATRICES VIA IN SITU GENERATION OF ORGANIC CRYSTALLINE NUCLEATION SITES

Dana G. Marsh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 23, 1977, Ser. No. 836,166

Int. Cl.[2] G03G *5/04*

U.S. Cl. 96—1.5 R 7 Claims

1. A method of forming a layer of particulate trigonal selenium dispersed in a polymer matrix which comprises:

(a) forming a solution containing:

i. dibenzoyl peroxide,

ii. an organo selenium compound which interacts with dibenzoyl peroxide to form zero valent selenium, and

iii. a matrix polymer which is substantially non-reactive with dibenzoyl peroxide and the organo selenium compound,

in a volatile solvent;

(b) applying the solution to a substrate in the form of a thin film;

(c) allowing the dibenzoyl peroxide and organo selenium compound to react thereby forming amorphous zero valent selenium particles dispersed in the matrix polymer; and

(d) heating the matrix polymer/zero valent selenium combination to a temperature and for a time sufficient to convert the amorphous zero valent selenium to its crystalline, trigonal form.

4,115,116

IMAGING MEMBER HAVING A POLYCARBONATE-BIPHENYL DIAMINE CHARGE TRANSPORT LAYER

Milan Stolka; Damodar M. Pai, both of Fairport, and John F. Yanus, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 673,237, Apr. 2, 1976, abandoned. This application May 4, 1977, Ser. No. 793,666

Int. Cl.[2] G03G *5/06, 5/04, 5/14*

U.S. Cl. 96—1.5 R 6 Claims

1. An imaging member comprising a charge generation layer comprising a layer of photoconductive material and a contiguous charge transport layer of a polycarbonate resin having dispersed therein from about 15 to about 75 percent by weight of a material selected from the group consisting of N,N'-diphenyl-N,N'-bis(phenylmethyl)-[1,1'-biphenyl]-4,4'-diamine, said photoconductive layer exhibiting the capability of photogeneration of holes and injection of said holes and said charge transport layer being substantially non-absorbing in the spectral region at which the photoconductive layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said photoconductive layer and transporting said holes through said charge transport layer.

4,115,117

COLOR DIFFUSION TRANSFER PROCESS EMPLOYING PHOSPHORAMIDES

Jiro Takahashi; Akihiko Miyamoto; Tooru Aoki; Naoshi Kunieda, and Kuniaki Tanisawa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

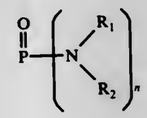
Filed Nov. 5, 1976, Ser. No. 739,302

Claims priority, application Japan, Nov. 7, 1975, 50-134569; Apr. 16, 1976, 51-43213

Int. Cl.[2] G03C *7/00, 5/54, 1/40*

U.S. Cl. 96—29 D 12 Claims

1. In a process for forming a dye image in an image-receiving layer of a film unit containing a light-sensitive element and an image-receiving element, the light-sensitive element having a silver halide emulsion layer in combination with a diffusible dye image forming substance, an intermediate layer and a protective layer, the image-receiving element containing an image-receiving layer, wherein the light-sensitive element is exposed to light and then subjected to an alkaline processing solution and a silver halide developing agent whereby a diffusible dye is formed in the light-sensitive element, said diffusible dye then being diffusion transfered from the light-sensitive element to the image-receiving layer superposed thereon to form the dye image in the image-receiving layer, the improvement comprising providing at least one member selected from the group consisting of the silver halide emulsion layer, the intermediate layer, the protective layer, the image-receiving layer and the alkaline processing solution with a compound represented by the formula;



wherein R_1 and R_2 individually represent lower alkyl, and n is 3.

4,115,118

PROCESS FOR PRODUCTION OF PRINTING PLATE

Kikuo Kubotera; Akira Kashiwabara, and Kotaro Sato, all of Osaka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation of Ser. No. 546,173, Jan. 31, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,495

Claims priority, application Japan, Jan. 31, 1974, 49-13211

Int. Cl.[2] G03F *7/02*

U.S. Cl. 96—33 7 Claims

1. A sequential process for producing a printing plate which comprises imagewise exposing a light-sensitive material comprising a support with a hydrophilic surface and having thereon an unhardened silver halide emulsion layer on said support, then developing said light-sensitive material with a non-tanning developer, then fogging the remaining silver halide which did not receive said imagewise exposure by exposing said remaining silver halide to radiation, then developing said remaining silver halide with a tanning developer and, at the same time, hardening said emulsion layer at said remaining silver halide areas, and then removing the unhardened emulsion layer with hot water, whereby an oleophilic hardened relief image is formed.

4,115,119

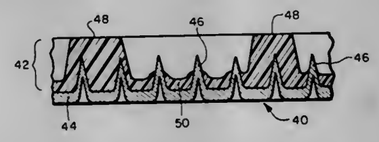
SHALLOW RELIEF PHOTOPOLYMER PRINTING PLATE AND METHODS

Sakuo Okai, Kyoto, and Shozo Tsuchida, Osaka, both of Japan, assignors to Napp Systems (USA), Inc., San Marcos, Calif.

Division of Ser. No. 695,941, Jun. 14, 1976, abandoned. This application Jan. 24, 1977, Ser. No. 761,974

Int. Cl.[2] G03C *5/00*

U.S. Cl. 96—35.1 5 Claims



1. In the development of a shallow relief water-developable photopolymer printing plate containing a water-developable photopolymer layer having a thickness less than about 0.020 inch wherein said plate is subjected to a primary imagewise exposure to actinic light, thereafter washed to remove soluble photopolymer and dried, an improved method of generating a controlled array of protrudent dots in the recessed background areas of said plate comprising:

exposing said plate to actinic light through a screen dot negative prior to said washing step in a manner to polymerize a controlled array of small, discreet portions of the photopolymer throughout the entire area of said plate, thereby providing upon subsequent development of the plate a plurality of spaced protrudent dots in the background areas of said plate which would otherwise be removed in said washing step, said array of protrudent dots having a density in the range of about 50 to 2000 dots per square centimeter, transverse dimensions in the range of about 0.001 to 0.006 inch per dot and a height about 0.004 inch less than the height of the relief image areas of said developed plate.

4,115,120
METHOD OF FORMING THIN FILM PATTERNS BY DIFFERENTIAL PRE-BAKING OF RESIST

Donald R. Dyer, Wappingers Falls; Claude Johnson, Jr., Yorktown Heights, and Robert R. Wilbarg, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,675
Int. Cl.² G03C *5/00*
U.S. Cl. 96—36.2 **6 Claims**

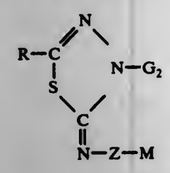
1. A method of depositing patterned thin films on a substrate comprising:
- forming a layer of positive photoresist material on said substrate,
- heating to partially cure said photoresist while maintaining the surface of said photoresist layer interfacing with said substrate at a lower temperature than the opposite surface of said layer,
- exposing said photoresist layer to a selected pattern of light,
- applying developer for said photoresist material to said layer to thereby form an aperture pattern through said layer corresponding to said light pattern wherein said apertures are respectively narrower at said opposite surface than at said interface, and
- depositing said thin films onto said substrate through said apertures using said photoresist mask as a deposition mask.

4,115,121
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING YELLOW COUPLER

Graham Evans, Chelmsford, England; Mario Fryberg, Praroman-le-Mouret; Thomas Stauner, Maryl, both of Switzerland; Paul Tschopp, Dudingen, and David G. Leppard, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Mar. 30, 1977, Ser. No. 782,798
Claims priority, application Switzerland, Apr. 14, 1976, 4751/76
Int. Cl.² G03C *7/00, 1/40*
U.S. Cl. 96—56.3 **11 Claims**

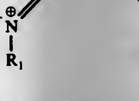
1. Colour photographic material which comprises at least one silver halide emulsion layer containing, as the yellow coupler, a compound of the formula



in which G_2 is a benzoylacetanilide or pivaloylacetanilide radical which is bonded to the heterocyclic ring by means of the active methylene group, Z is —CO— or $—SO_2—$, M is alkyl with 1 to 18 carbon atoms, optionally substituted by halogen, hydroxyl, nitro, cyano, alkoxy, aryloxy or amino; aralkyl, cycloalkyl with 1 to 4 cycloalkyl rings, phenyl, optionally substituted by lower alkyl or lower alkoxy, halogen, acylamino, sulphonic acid groups, sulphonic acid amide groups, carboxylic acid groups, carboxylic acid amide groups, carboxylic acid ester groups, hydroxyl, nitro, cyano, amino, mercapto, alkylmercapto or $—SO_2W$ or —COW, in which W is alkyl with 1 to 18 carbon atoms, optionally substituted by halogen, nitro, cyano, amino or alkoxy with 1 to 18 carbon atoms; cycloalkyl, aryl, pyridyl, pyrimidyl, furyl or thienyl; M is also pyridyl, furyl, thienyl or perfluoroalkyl, acyl or dialkylamino with, in each case, up to 5 carbon atoms in the alkyl part; alkoxy with 1 to 18 carbon atoms or phenoxy; 1) M is further hydrogen, when Z is —CO—, and R is hydrogen or alkyl with 1 to 18 carbon atoms, aralkyl, aryl, pyridyl, pyrimidyl, furyl, thienyl, cycloalkyl, alkoxy with 1 to 18 carbon atoms, aryloxy, alkylmercapto with 1 to 18 carbon atoms, arylmercapto, halogen, acyl, acyloxyalkyl, trifluoromethyl, cyano, a primary amino group, a mono- or di-alkylamino group, in which the alkyl radicals each contain 1 to 18 carbon atoms, or one of the groups M—Z—HN—, W—CO—,



$W—SO_2—$, $—SO_2NH_2$,



W—CO—O— or W—O—CO—, in which E is alkyl with 1 to 5 carbon atoms, E′ is hydrogen or alkyl with 1 to 5 carbon atoms and M, W and Z have the indicated meanings.

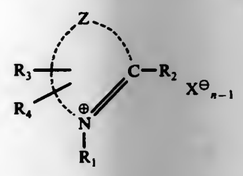
11. Process for the production of a yellow image, wherein material for colour photography which contains on a support at least one layer of silver halide emulsion containing as the yellow coupler at least one compound according to claim 1, is exposed and the exposed material is treated with an aqueous alkaline solution which contains an aromatic amine as the developer.

4,115,122
INTERNAL LATENT IMAGE SILVER HALIDE EMULSION CONTAINING A HETEROCYCLIC QUATERNARY SALT HAVING A PROPARGYL OR A BUTYRYL CONTAINING SUBSTITUENT

Keiichi Adachi; Tadashi Ikeda, and Nobuyuki Tsujino, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed Dec. 9, 1976, Ser. No. 748,858
Claims priority, application Japan, Dec. 9, 1975, 50-146569
Int. Cl.² G03C *1/48, 1/06*
U.S. Cl. 96—76 R **24 Claims**

1. A direct positive silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer of the internal latent image type which is capable of forming a direct positive image, in which at least one hydrophilic colloid layer thereof contains at least one heterocyclic quaternary salt compound represented by the following general formula (I)



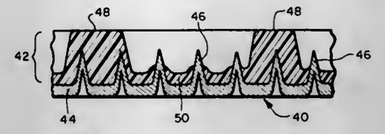
(I)

wherein Z represent an atomic group necessary for forming a thiazole nucleus, a benzothiazole nucleus, a naphthothiazole nucleus, a benzoselenazole nucleus, an oxazole nucleus, a benzoxazole nucleus, a naphthoxazole nucelus, a benzimidazole nucleus, a pyridine nucleus, a quinoline nucleus or an indolenine nucelus, R_1 represents an aliphatic hydrocarbon group, R_2 represents a hydrogen atom or an aliphatic hydrocarbon group, R_3 and R_4, which are the same or different, each represents a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an alkoxy group, a hydroxy group or an aromatic hydrocarbon group, and at least one of R_1, R_2, R_3 and R_4 represents a propargyl group, a butynyl group, a propargyloxymethyl group, a propargyloxyethyl group or a propargyloxy group, $X^{\ominus}$ represents an anion, and n is 1 or 2, with n being 1 when the compound forms an inner salt; in such an amount as to exert a fogging effect on the silver halide emulsion of the internal latent image type during development.

4,115,123
SHALLOW RELIEF PHOTOPOLYMER PRINTING PLATE AND METHODS

Sakuo Okai, Kyoto, and Shozo Tsuchida, Osaka, both of Japan, assignors to Napp Systems (USA), Inc., San Marcos, Calif.

Division of Ser. No. 695,941, Jun. 14, 1976, abandoned. This application Jan. 24, 1977, Ser. No. 761,975
Int. Cl.² G03C *1/68*
U.S. Cl. 96—79 **16 Claims**



1. A photopolymerizable element comprising a laminate of photosensitive composition supported on a substrate; said laminate including a first photopolymerizable layer adjacent said substrate and a second photopolymerizable layer disposed over said first layer; and said first layer including an array of preopolymerized portions distributed throughout substantially its entire area sufficient upon subsequent exposure and development of said photopolymeriable element to create a corresponding array of protrudent dots in the recessed background areas of the developed element, said protrudent dots having a height less than the height of the raised image areas of the developed element and a density sufficient to reduce the amount of bottoming in the developed element.

8. A photopolymerizable element comprising a laminate of photosensitive composition having a thickness less than about 0.020 inch and supported on a substrate; said laminate including a first photopoymerizable layer adjacent to said substrate and a second photopolymerizable layer disposed over said first layer; and said first layer including an array of prepolymerized portions throughout substantially its entire area, said array having a density in the range of from about 100 to about 2000 per square centimeter and being sufficient upon subsequent exposure and development of said photopolymerizable element to create a corresponding array of protrudent dots in the recessed background areas of the developed element, each of said protrudent dots having a transverse dimension less than about 0.008 inch and a height about 0.004 inch less than the height of the raised image areas of the developed element.

4,115,124
METHOD OF IMMOBILIZING OPTICAL BRIGHTENERS

Lewis R. Hamilton, and Richard C. Sutton, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 6, 1974, Ser. No. 503,816
Int. Cl.² G03C *1/92, 1/94*
U.S. Cl. 96—82 **25 Claims**

1. A photographic element comprising a support, at least one light sensitive emulsion layer, at least one layer containing an anionic water-soluble fluorescent optical brightener and a layer containing a polymer containing at least 80% by weight of poly(vinyl imidazole) or poly(vinyl imidazole) substituted with alkyl or aryl.

4,115,125
POLYMERIC FILMS PEELABLY ADHERED TO A PRESSURE-SENSITIVE ADHESIVE PHOTOGRAPHIC ELEMENT

Doyle O. Etter, and Irvin H. Crawford, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 9, 1977, Ser. No. 794,857
Int. Cl.² G03C *1/86*
U.S. Cl. 96—83 **8 Claims**

1. A photographic element comprising a paper support, an imaging layer on one surface of said support, a pressure-sensitive adhesive layer bonded to the opposite surface of said support, and a layer of an ethylene polymer peelably adhered to said adhesive layer, said polymer layer having been formed by extruding molten ethylene polymer having a melt index in the range from about 3 to 14 and a temperature above 450° F onto said adhesive layer on said support, the bond strength between said polymer layer and said pressure-sensitive adhesive layer being such that a force not exceeding 400 grams will peel a strip of said polymer layer ½ inches wide and at least 10 inches long from said adhesive layer at room temperature at a rate of 10 inches per minute after said element is room temperature aged for at least 15 days after extrusion.

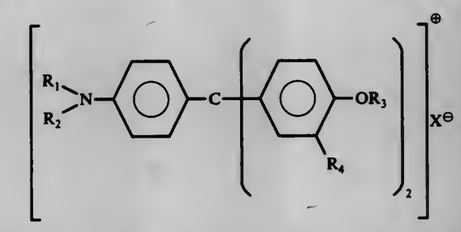
2. A photographic element as described in claim 1 wherein said temperature is in the range from about 490° to 600° F.

4,115,126
MAGENTA TRIPHENYLMETHANE ANTIHALATION DYES FOR PHOTOGRAPHIC ELEMENTS

George Crosier Whitney, III, Fair Haven, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 27, 1977, Ser. No. 766,421
Int. Cl.² G03C *1/84;* C09B *11/14*
U.S. Cl. 96—84 R **7 Claims**

1. A magenta dye of the formula



where R_1 and R_2 are each C_1 to C_5 alkyl, 2-cyanoethyl, or 2-chloro-ethyl;

wherein R_3 is a C_1-C_4 alkyl group or $—(CH_2)n—CO_2H$; and R_4 is hydrogen when R_3 is $—(CH_2)_n—CO_2H$, and is $—(CH_2)_n—CO_2H$ when R_3 is C_1-C_4 alkyl;

n is an integer from 1–4;

and X^- is a salt-forming anion selected from the group consisting of Cl, Br, NO_3, and SO_4.

4. A photographic element comprising a support, a photosensitive silver halide layer, and an antihalation layer composed of an organic binder and the magenta dye of claim 1.

7. The photographic element of claim 4 wherein the photosensitive silver halide layer is affixed to one side of the support, and the antihalation layer is positioned between the support and the silver halide layer.

4,115,127
PROCESSING-FREE TYPE LITHOGRAPHIC PRINTING PLATE MATERIAL

Tomoaki Ikeda; Yuzo Mizobuchi; Akira Nahara; Yasuo Washizawa; Yoshihiro Ono, and Takeshi Tomotsu, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 562,385, Mar. 26, 1975, abandoned. This application Mar. 11, 1977, Ser. No. 776,699
Claims priority, application Japan, Mar. 26, 1974, 49-33790
Int. Cl.² G03C *1/86, 1/78;* G03F *7/02;* G03C *5/00*
U.S. Cl. 96—85 **18 Claims**

1. A processing-free lithographic printing plate, which comprises a support having deposited thereon a composition containing germanium and sulfur and at least one of a metal or a metal compound other than germanium in a physically mixed state, the term "physically mixed state" meaning the state where both ingredients do not form complete films or layers on said support in a superposed disposition but the microscopic condition in which there are areas where the surface of the

support is uncovered, areas of the composition containing germanium and sulfur, areas of a metal or a metal compound, and areas where the composition containing germanium and sulfur and a metal or metal compound are super-imposedly deposited, on the surface of the support.

4,115,128

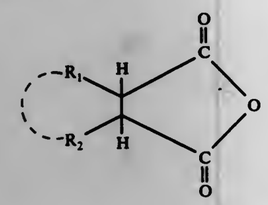
POSITIVE IMAGE FORMING RADIATION SENSITIVE COMPOSITIONS CONTAINING DIAZIDE COMPOUND AND ORGANIC CYCLIC ANHYDRIDE

Nobuyuki Kita, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

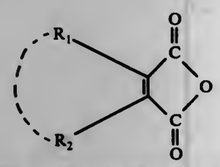
Filed Dec. 17, 1976, Ser. No. 751,875
Claims priority, application Japan, Dec. 26, 1975, 51-156662
Int. Cl.² G03C *1/60*
U.S. Cl. 96—91 D **6 Claims**

1. A radiation-sensitive composition capable of producing a positive image upon exposure to actinic radiation and subsequent treatment with a basic solution which consists essentially of, by weight based on weight of the total composition, (a) 10 to 50 weight percent of an o-naphthoquinone diazide compound, (b) 45 to 79 weight percent of an alkali soluble film-forming phenolic resin and (c) 1 to 15 weight percent of an organic acid cyclic anhydride represented by the following formulae (II) or (III)

(II)



(III)



wherein R_1 and R_2 each represents a hydrogen atom, a halogen atom, an unsubstituted or substituted alkyl group, or an unsubstituted or substituted aryl group, and R_1 and R_2 may combine together to form a cyclic ring.

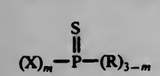
4,115,129

ORGANOPHOSPHINE SULFIDES AS PHOTOGRAPHIC SENSITIZERS

John Howard Bigelow, Rochester, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

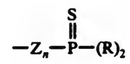
Continuation of Ser. No. 618,694, Oct. 1, 1975, abandoned. This application Oct. 28, 1977, Ser. No. 847,006
Int. Cl.² G03C *1/28*
U.S. Cl. 96—107 **35 Claims**

1. A photographic silver halide emulsion sensitized by digestion at a pH of at least 7 with an organophosphine sulfide added before or during digestion and having the formula



wherein

(A) R is individually selected from hydrogen and a monovalent organic radical; *m* is 0, 1 or 2, and not more than one of said R's is hydrogen when *m* is 0; and X represents a group having the formula:



where Z is a divalent organic radical, and *n* is 0 or 1, or

(B) $(x)_m$ and $(R)_{3-m}$ together comprise a single trivalent heterocyclic radical.

4,115,130

BIOCIDAL COMPOSITIONS

Ronald Alfred Crump, Horsham, and Colin Christopher McCain, Horley, both of England, assignors to The British Petroleum Company Limited, Sunbury-on-Thames, England

Filed Mar. 9, 1977, Ser. No. 775,895
Claims priority, application United Kingdom, Mar. 15, 1976, 10244/76
Int. Cl.² C09D *5/16*
U.S. Cl. 106—15 R **9 Claims**

1. A biocidal composition, suitable for use in marine antifouling coatings, comprising particles of a water-insoluble mineral having an internal pore structure and, included within the pores, a biocidal compound effective against marine growth, said water-insoluble mineral selected from the group consisting of zeolites and silicas, said silicas having an average pore diameter of from 10 to 250Å and said biocidal compound being an organo-tin compound of general formula

$$R_3SnX$$

where *R* is a hydrocarbyl group with from 1 to 10 carbon atoms and *X* is an anion.

4,115,131

OPTICAL GLASS

Kazufumi Ishibashi, Sagamihara, and Takeo Ichimura, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 27, 1977, Ser. No. 791,182
Claims priority, application Japan, Apr. 30, 1976, 51-48474
Int. Cl.² C03C *3/16, 3/14*
U.S. Cl. 106—47 Q **11 Claims**

1. An optical glass composition having a refractive index from 1.57 to 1.98 and Abbe number from 18 to 46, said composition consisting essentially of, by weight, 1 to 25% B_2O_3, 20 to 50% P_2O_5, and 22 to 70% Nb_2O_5.

4,115,132

SEALING COMPOSITION

Yoshiro Suzuki; Yoshinori Kokubu, both of Tokyo; Jiro Chiba, Yokohama; Morihisa Hara, Tokyo; Shigehiro Nagahara, and Koichi Yamamoto, both of Funabashi, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 2, 1977, Ser. No. 847,928
Claims priority, application Japan, Nov. 9, 1976, 51-133822
Int. Cl.² C03C *3/12*
U.S. Cl. 106—53 **4 Claims**

1. A sealing composition consisting essentially of, in weight %:

low melting devitrifiable glass powder	86.5 – 95
lead titanate powder	5 – 15
Zircon powder	0 – 0.5

wherein said low melting devitrifiable glass powder has a composition consisting essentially of, in weight %:

PbO	77 – 83
B_2O_3	7 – 10
ZnO	7 – 12

-continued

SiO_2	1 – 3

and wherein said sealing composition can achieve a seal of matched expansion type to a material having a thermal expansion coefficient of 95–105 × 10^{-7}° C.$^{-1}$ (0°–300° C.) at a devitrified state by a heat-treatment at a temperature not higher than 420° C. within a period of 60 minutes.

3. A sealing composition consisting essentially of, in weight %:

low melting devitrifiable glass powder	69.5 – 85
lead titanate	15 – 30
Zircon powder	0 – 0.5

wherein said low low melting devitrifiable glass powder has a composition consisting essentially of, in weight %:

PbO	77 – 83
B_2O_3	7 – 10
ZnO	7 – 12
SiO_2	1 – 3

and wherein said sealing composition can achieve a seal of non-matched expansion type to a material having a thermal expansion coefficient of 95–105 × 10^{-7}° C.$^{-1}$ (0°–300° C.) at a devitrified state by a heat-treatment at a temperature not higher than 420° C. within a period of 60 minutes.

4,115,133

UNBURNT REFRACTORY MASSES OR BRICKS FOR METALLURGICAL VESSELS BASED ON CHROME-ORE AND CARBON-CONTAINING BINDER

Rudolf Kunkele, Mulheim, and Hans-Peter Engelhardt, Krefeld, both of Germany, assignors to Magnesital-Feuerfest GmbH, Germany

Filed Aug. 24, 1977, Ser. No. 827,407
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 2638458
Int. Cl.² C04B *35/52, 35/12, 35/42*
U.S. Cl. 106—56 **8 Claims**

1. An unburnt refractory mass consisting essentially of:

75 to 85% by weight of chrome ore having a Cr_2O_3 content of at least 33 weight percent;

10 to 19% by weight of sintered magnesia poor in iron content;

2 to 7 weight percent hard pitch combined with 1.5 to 5 weight percent carbon to provide a residual carbon of 3 to 6%.

4,115,134

TRANSPARENT YTTRIA CERAMICS AND METHOD FOR PRODUCING SAME

William H. Rhodes, Lexington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 11, 1977, Ser. No. 814,341
Int. Cl.² C04B *35/50*
U.S. Cl. 106—73.2 **2 Claims**

1. An article of manufacture comprising a substantially transparent, high density polycrystalline yttria-based body which is thermodynamically more stable in the environment of a high-pressure sodium vapor lamp than yttria doped with +4 valence ions, consisting essentially of yttria and from about 6 to 14 mole percent lanthana.

4,115,135

COMPOSITION AND METHOD FOR PRODUCING GLASS REINFORCED CEMENT PRODUCTS

Friedrich Goeman, Stone Mountain, Ga., assignor to W. R. Bonsal Company, Lilesville, N.C.

Continuation-in-part of Ser. No. 705,884, Jul. 16, 1976. This application Sep. 9, 1977, Ser. No. 832,013
Int. Cl.² C04B *7/02*
U.S. Cl. 106—99 **13 Claims**

13. A cement mix suitable for mixing with water to form a glass reinforced cementitious material for use in high tensile strength applications such as surface bonding of concrete blocks or the like or in the formation of concrete products, and characterized by providing a resistance to degradation of the glass reinforcement by the alkaline environment of the cementitious material, said cement mix consisting essentially of:

	parts by weight
Portland cement	100
hydrated lime	13–22
fine sand aggregate	100–160
chopped glass fiber reinforcement	4–7
admixtures	1–20
water soluble salt selected from the group consisting of barium chloride, lithium carbonate and zinc acetate	.5–3

4,115,136

METHOD OF HEAT TREATING RAW MATERIALS AND ROTARY KILN PLANT THEREFOR

Dan S. Hansen, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Apr. 5, 1976, Ser. No. 673,807
Claims priority, application United Kingdom, Apr. 4, 1975, 13889/75
Int. Cl.² C04B *7/44*
U.S. Cl. 106—100 **4 Claims**

1. A method of burning cement raw meal containing alkaline substances in a rotary kiln plant wherein the kiln exhaust gases contain dust particles and alkali vapours, comprising:

(a) introducing the cement raw meal into the material inlet end portion of the rotary kiln;

(b) burning the cement raw meal in the kiln;

(c) directing the kiln exhaust gases into a generally circular chamber communicating directly with the material inlet end portion of the kiln;

(d) introducing relatively cold atmospheric air generally tangentially into the chamber in a manner to produce a circulating stream of relatively cold air generally about the stream of exhaust gases passing therethrough from the kiln whereby at least portions of the exhaust gases are cooled and alkali vapours are condensed out of the gases and onto dust particles entrained therein; and

(e) permitting the alkali coated dust particles to be discharged from the chamber.

4,115,137

METHOD OF PRODUCING CEMENT CLINKER FROM CHLORINE-CONTAINING RAW MIXTURE

Boris Izrailovich Nudelman, Chilanzar, kvartal 8, 27, kv. 48; Valentina Petrovna Sharova, Chilanzar, kvartal 11, 18, kv. 53; Grant Leonidovich Ter-Aganov, Kara-Kamysh, 2/4, 12, kv. 22; Lev Matveevich Sosenko, Chilanzar, kvartal 23, 69, kv. 4; Marsel Yanovich Bikbau, Junus-Abad B-2, 21, kv. 58, all of Tashkent; Vadim Alexandrovich Kulabukhov, Otkrytoe shosse, ulitsa 4 Armii, 29, korpus 11, kv. 46, Moscow; Valentin Vasilievich Sheludko, ulitsa 43 Armii, 7, kv. 68, Podolsk Moskovskoi oblasti; Ida Timofeevna Uvarova-Nistratova, ulitsa Vrevskaya, proezd 2, 11, Tashkent; Albert Pavlovich Simon, ulitsa Taneeva, 33, kv. 29, Tashkent; Boris Abramovich Perlin, Khamzinsky raion, ulitsa Koldirgach, 5, Tashkent; Mikhail Gavrilovich Chepkalenko, Tashavtomash, 2,22, kv. 24, Tashkent; Alevtina Anatolievna Gasanova, Chilanzar, kvartal 22, 1, kv. 24, Tashkent; Guzal Abdulkhaevna Galimova, Volgogradskaya ulitsa, 1, kv. 10, Tashkent; Rashida Gafievna Bodyagina, ulitsa Sh.Rustaveli, 43, kv. 52, Tashkent; Arnold Arnoldovich Kevvai, ulitsa Kara-Kamysh, 1/3, 51, kv. 42, Tashkent; Boris Samuilovich Albats, prospekt Vernadskogo, 117, kv. 28, Moscow, and Gennady Andreevich Babin, ulitsa Vasilievskaya, 3, kv. 37, Moscow, all of U.S.S.R.

Filed May 13, 1977, Ser. No. 796,666
Int. Cl.² C04B *7/48*
U.S. Cl. 106—100 **24 Claims**

1. In a method of producing cement clinker from a chlorine-containing raw mixture, wherein a cement clinker raw mixture including chlorine containing compounds is introduced into a kiln and is sintered in said kiln forming a sinter layer and thereafter producing said clinker, the steps comprising

after sintering said raw mixture introducing a steam-gas-and-air mixture into said kiln into contact with said sinter layer, at such a rate as to suspend said sinter layer in said steam-gas-and-air mixture and to remove chlorine-containing compounds from said sinter by thermal decomposition,

regenerating said chlorine-containing compounds by spraying the raw mixture used to produce said clinker prior to sintering in a stream of chlorine-containing flue gases and

after treatment with said steam-gas-and-air mixture, cooling the resultant clinker.

4,115,138

RAW MIXTURE FOR THE PRODUCTION OF CEMENT

Boris Izrailovich Nudelman, Chilanzar, kvartal 8, 27, kv. 48; Alexandr Sergeevich Sventsitsky, Severo-Vostok, 50, kv. 64; Marsel Yanovich Bikbau, Massiv Junus-Abad B-2, 21, kv. 58; Isaak Mozesovich Bun, Chilanzar, kvartal 8, 6a, kv. 19, and Arnold Arnoldovich Kevvai, Massiv Kara-Kamysh 1/3, 51, kv. 42, all of Tashkent, U.S.S.R.

Filed May 23, 1977, Ser. No. 799,767
Int. Cl.² C04B *7/02*
U.S. Cl. 106—100 **5 Claims**

1. A raw mixture for the production of cement consisting of calcareous, silicaceous, aluminous, ferrous and magnesium-containing components and calcium chloride contained in the raw mixture in the following proportions, percent by weight:

calcareous component calulated per CaO	30 to 42.3
silicaceous component calculated for SiO_2	12.5 to 17.5
aluminous component calculated for Al_2O_3	1.6 to 12.4
ferrous component calculated for Fe_2O_3	0.6 to 4.4
magnesium-containing component calculated for MgO	1.5 to 8
calcium chloride	6 to 20
losses at calcination	the balance.

4,115,139

PRODUCTION OF RAW MIX CEMENT SLURRIES HAVING REDUCED WATER CONTENT

Richard L. Every, Barrington, and Jose T. Jacob, Lake Zurich, both of Ill., assignors to Chemed Corporation, Cincinnati, Ohio

Filed Jan. 16, 1978, Ser. No. 869,993
Int. Cl.² C04B *7/38*
U.S. Cl. 106—100 **5 Claims**

1. A process for the production of a raw mix cement slurry which comprises adding thereto an effective amount of lignin carboxylic acid of average molecular weight 1000–80,000 and having the formula

$$\text{Lignin - } (0)_n - (CH_2)_x COOR$$

in which $n = 0$–1, x is 1–4 and R is selected from the group consisting of H, methyl, ethyl, Na, and K; thereby to reduce the water content of the slurry and to conserve the amount of fuel required to evaporate water from the slurry during burning; said effective amount being within the range of about 100–10,000 ppm based on the total weight of the slurry.

4,115,140

LIME SILICIC ACID MIXTURES AND METHODS OF MAKING BUILDING MATERIALS THEREFROM

Dieter Hums, Schrobenhausen; Friedrich Hergeth, and Werner Wetzig, both of Messel, all of Germany, assignors to Intong AB, Fack, Sweden

Filed Jan. 17, 1977, Ser. No. 759,731
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601683
Int. Cl.² C04B *7/34*
U.S. Cl. 106—120 **7 Claims**

1. In a cellular concrete manufactured from a mixture comprising water, at least one SiO_2-containing component as a base material, at least one CaO-containing component as a binding agent, and small quantities of an expanding agent for providing pores in a mass formed when said water, said SiO_2-containing and CaO-containing components are mixed together, the weight ratio of SiO_2-components to CaO-components being between 90 to 10 and 65 to 35, said mass being steam-cured at elevated temperature and pressure in order to grant final strength to the cellular concrete, the improvement comprising including in said mixture about 0.5 to 10% by weight, based on the total weight of said substances, a silicic acid additive comprising chemically precipitated silicic acid containing about 1 to 8% by weight, hydrated AlF_3 as an impurity.

4,115,141

PROCESS FOR THE PREPARATION OF PIGMENTARY BRIGHT PRIMROSE YELLOW BISMUTH VANADATE

Douglas Howard Piltingsrud, Waverly, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 698,694, Jun. 22, 1976, abandoned. This application May 9, 1977, Ser. No. 794,392
Int. Cl.² C09C *1/00*
U.S. Cl. 106—288 B **24 Claims**

1. A process for preparing a pigmentary bright primrose yellow monoclinic bismuth vanadate comprising:

A. mixing a solution of $Bi(NO_3)_3.5H_2O$ in nitric acid with a solution of alkali vanadate in an aqueous base selected from sodium hydroxide and potassium hydroxide, to precipitate a bismuth vanadate gel suspended in a solution containing dissolved alkali nitrate, wherein the molar ratio of Bi^{3+} to VO_4^{3-} is from about 0.90:1.00 to 1.10:1.00, and wherein the normalities of the acid and base solutions are adjusted prior to mixing so that the pH of the mixture will be from about 1.0 to 11.0;

B. adjusting the pH of the suspension to about 2.2–6.0 with an aqueous base selected from sodium hydroxide and potassium hydroxide if the pH is less than about 2.2, or with an acid selected from nitric acid or sulfuric acid if the pH is greater than about 6.0;

C. removing the gel from the suspension;

D. washing the gel with water until it contains about 10 percent or less alkali nitrate, based on the theoretical yield of bismuth vanadate;

E. heating the gel in water at about 60°–200° C. for at least about 0.2 hour adjusting the pH of the suspension, if necessary, to about 2.2–6.0 with an aqueous base selected from sodium hydroxide and potassium hydroxide if the pH is less than about 2.2, or with an acid selected from nitric acid, hydrochloric acid, hydrobromic acid, sulfuric acid, or phosphoric acid if the pH is greater than 6.0 to convert it to monoclinic bismuth vanadate pigment;

F. adjusting the pH of the suspension to 8.0 to 9.5 with an aqueous base selected from sodium hydroxide or potassium hydroxide and holding at this pH at a temperature of 50°–100° C for fifteen to thirty minutes; and

G. filtering, washing and drying the pigment.

4,115,142

PIGMENTARY BRIGHT PRIMROSE YELLOW MONOCLINIC BISMUTH VANADATE AND PROCESSES FOR THE PREPARATION THEREOF

Richard William Hess, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 698,692, Jun. 22, 1976, abandoned. This application May 9, 1977, Ser. No. 794,391
Int. Cl.² C09C *1/00*
U.S. Cl. 106—288 B **18 Claims**

1. A pigmentary bright primrose yellow monoclinic bismuth vanadate.

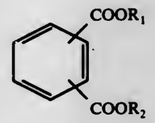
4,115,143

DUST-FREE THERMALLY STABLE LEAD CHROMATE PIGMENT COMPOSITION AND PROCESS OF PREPARATION

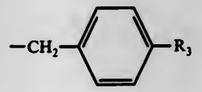
Kenneth Batzar, Piscataway, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 690,937, May 28, 1976, abandoned. This application Jun. 22, 1977, Ser. No. 808,995
Int. Cl.² C09C *1/20*
U.S. Cl. 106—298 **8 Claims**

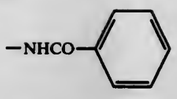
1. Lead chromate pigment composition consisting essentially of from 75 to 98% by weight of lead chromate pigment, based on the weight of the composition, and from 2 to 25% by weight, based on the weight of the composition, of at least one organic ester selected from esters of phthalic and terephthalic acid of the formula



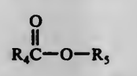
where R_1 and R_2 are each independently selected from alkyl of 3 to 20 carbon atoms, benzyl of the formula



where R_3 is selected from —H, —SO_3H, and



and esters of fatty acids of the formula



where R_4 is alkyl of 5 to 20 carbon atoms and R_5 is an alkyl of 2 to 10 carbon atoms.

4,115,144

METHOD OF PREPARING METAL OXIDE SLURRIES

Hubert Harold Chambers, Waltham, and Brian John Tear, Grimsby, both of England, assignors to Laporte Industries Limited, London, England

Filed Dec. 2, 1976, Ser. No. 746,674
Claims priority, application United Kingdom, Dec. 23, 1975, 52512/75
Int. Cl.² C09C *1/36*
U.S. Cl. 106—300 **13 Claims**

1. A process for the production of an alkaline aqueous slurry having a negative charge and a solids content of at least 60% by weight, of a coated pigmentary titanium dioxide, which comprises;

(a) providing an aqueous dispersion of pigmentary particles of titanium dioxide;

(b) forming a coating on said particles by simultaneously precipitating in the dispersion at an alkaline pH, at least two different metal oxides, at least one of said metal oxides being selected from those giving an isoelectric point at a pH below 7 and at least one of said metal oxides being selected from those giving an isoelectric point at a pH above 7, under conditions such that a filterable, washable slurry is obtained;

(c) filtering and washing the coated particles in the slurry to obtain a washed filter cake;

(d) raising the concentration of the washed filter cake to at least 60% by weight of coated particles;

(e) redispersing the particles of the raised concentration filter cake; and

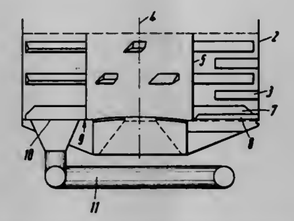
(f) maintaining the filtered, washed, coated particles at a temperature of from 40° C to 100° C for a duration of at least 20 minutes.

4,115,145

DIFFUSION TOWER FOR SUGAR BEET COSSETTES

Walter Dietzel, Braunschweig, and Martin Athenstedt, Sehnde, both of Fed. Rep. of Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Fed. Rep. of Germany

Filed Jul. 5, 1977, Ser. No. 812,618
Int. Cl.² C13D *1/12*
U.S. Cl. 127—5 **13 Claims**



1. A diffusion tower for sugar beet cossettes comprising a housing constructed as an upright hollow cylinder having a

top and bottom, conveyor shaft means coaxially and concentrically supported for rotation in said cylinder housing, wing means secured to the outer surface of said conveyor shaft means, cossettes distributing means secured to the lower end of said conveyor shaft means, feed means for supplying a mixture of cossettes and juice into the tower at the lower end thereof, juice discharging means operatively connected to the lower tower end, pulp discharging means and extraction liquid supply means operatively connected to the upper end of said tower housing, said feed means comprising feed slot means arranged in said tower bottom between the conveyor shaft means and the housing, and feed conduit means operatively connected to the slot means.

4,115,146

PROCESS FOR THE DEPOLYMERIZATION OF STARCH BY IRRADIATION AND PRODUCTS SO OBTAINED

Louis Saint-Lébe, Aix-en-Provence; Gérard Berger, Maisons-Alfort; Jean-Pierre Michel, Aix-en-Provence; Michel Huchette, and Guy Fléche, both of Lestrem, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Roquette Freres, Lestrem, both of, France

Filed Oct. 27, 1976, Ser. No. 736,208
Claims priority, application France, Oct. 30, 1975, 75 33245
Int. Cl.² C13K *1/06*; C13L *1/08*; C08L *3/00*; B01J *1/10*
U.S. Cl. 127—38 **14 Claims**

1. Process for depolymerising starch by irradiation characterised by the fact that granular starch, whose water content is at the most about 23%, is subjected, in the presence of an acid which is neutralised at the end of the treatment, to a dose of radiation less than 3 Mrad.

4,115,147

PROCESS FOR PRODUCING NUTRITIVE SUGAR FROM CANE JUICE

Junichi Shimizu, Yokohama, and Kyosuke Hashizume, Chiba, both of Japan, assignors to Mitsui Sugar Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1977, Ser. No. 779,279
Claims priority, application Japan, Apr. 1, 1976, 51-36357
Int. Cl.² C13D *3/16*; C13F *3/00*
U.S. Cl. 127—54 **3 Claims**

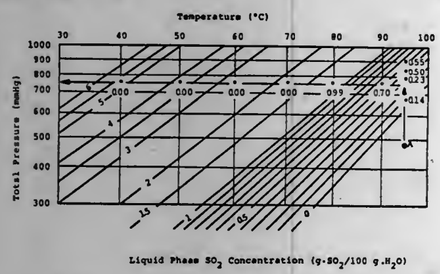
3. A process for producing a nutritive brown sugar from cane juice, which comprises; processing the juice through an ultrafiltration means; and evaporating the permeate to obtain a non-centrifugal, nutritive brown sugar.

4,115,148

METHOD FOR PREVENTING CORROSION OF A SULFUR DIOXIDE REGENERATING APPARATUS

Masao Okubo; Masayoshi Miki, both of Niihama, and Takeshi Ueda, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 15, 1976, Ser. No. 733,282
Int. Cl.² B08B *7/04*
U.S. Cl. 134—21 **2 Claims**



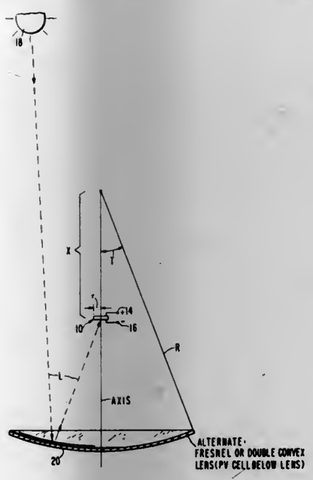
1. In a method of cleaning an apparatus of stainless steel wherein an SO_2-containing absorption solution has been heated under subatmospheric pressure in said apparatus to release gaseous SO_2 from said solution, which comprises the steps of elevating the pressure in the apparatus to atmospheric pressure, lowering the temperature in the apparatus to room temperature, removing the absorption solution from the apparatus and washing the apparatus with water, the improvement which comprises preventing corrosion of the apparatus by effecting the elevation of the pressure to the atmospheric pressure by introducing an inert gas into the apparatus to produce an air concentration of not more than 5% by volume therein and by effecting the lowering of the temperature to room temperature while maintaining said air concentration in the apparatus.

4,115,149

CONCENTRATOR ARRANGEMENT FOR PHOTOVOLTAIC CELL

Ronald L. Bell, Woodside, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 666,273, Mar. 12, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 807,937
Int. Cl.² H01L *31/04*
U.S. Cl. 136—89 PC **24 Claims**



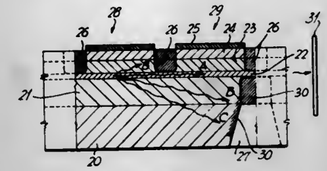
1. In a solar energy conversion unit:
an optical concentrator,
a photovoltaic cell comprising; a front surface for receiving electromagnetic energy, a p-n junction, a back surface opposite said front surface, a first conductive contact on said back surface, a second contact comprising a conductor covering a minor part of said front surface, and
means for mutually positioning said concentrator and said cell;
said concentrator and said cell being shaped and mutually positioned such that, in operation, when said unit is aimed at the sun, essentially all the solar radiation emanating from said concentrator falls on said front surface, said radiation covers essentially all of said front surface, and in a region on said front surface near said conductor the radiation intensity is at least 25% greater than the average intensity over said front surface.

4,115,150

METHOD OF PRODUCING OPTOELECTRONIC DEVICES WITH CONTROL OF LIGHT PROPAGATION

John Cameron Dyment, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 694,333, Jun. 9, 1976, Pat. No. 4,080,617. This application Feb. 7, 1977, Ser. No. 765,900
Int. Cl.² H01L *33/00*
U.S. Cl. 148—1.5 **2 Claims**



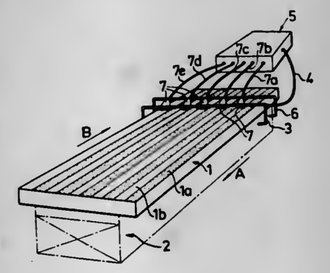
1. A method of producing an optoelectronic device having a light propagating path along an axis thereof; comprising:
forming a first confining layer of semiconductor material on a substrate of semiconductor material, said confining layer and said substrate of the same conductivity type;
forming an active layer of semiconducting material on said first confining layer and forming a second confining layer on said active layer, said second confining layer of opposite conductivity type to said first confining layer and said active layer of the same conductivity type as one of said confining layers;
forming a masking layer over said second confining layer;
removing part of said masking layer to define at least one area extending transversely of said light propagating path;
proton bombarding said area to form a photon absorbing barrier beneath said area, extending into but not beyond said second confining layer, said photon absorbing barrier extending transversely of said light propagation path, whereby light can propagate freely in said active layer along said path and is absorbed at said photon absorbing barrier in said second confining layer.

4,115,151

METHOD AND APPARATUS FOR WORKPIECE SURFACE TREATMENT

Bengt Johansson, Göteborg, Sweden, assignor to Centro-Maskin Goteborg AB, Goteborg, Sweden

Filed May 25, 1977, Ser. No. 800,410
Claims priority, application Sweden, Jun. 4, 1976, 7606357
Int. Cl.² B23K *7/06*
U.S. Cl. 148—9.5 **5 Claims**



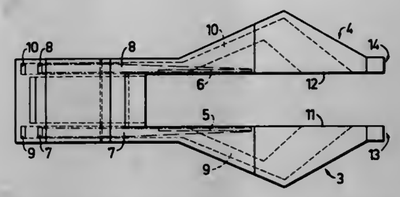
1. A method of surface treating a workpiece by spot planing during relative movement between the workpiece and a plurality of planing devices, characterized in that the planing begins by a flying start and is accomplished during at least two feed steps with at least two laterally arranged planing devices in such a way that a strip of the workpiece between each planing device is left unworked during the first feed step, which strip, after a relative movement, transverse to the feed direction between the planing devices and the workpiece, will be worked during a subsequent feeding step.

4,115,152

METHOD AND DEVICE FOR GAS PLANING A WORKPIECE SURFACE TO REMOVE SURFACE DEFECTS

Bengt Johansson, Göteborg, Sweden, assignor to Centro-Maskin Goteborg AB, Goteborg, Sweden

Filed Jul. 13, 1977, Ser. No. 815,272
Claims priority, application Sweden, Jul. 19, 1976, 7608208
Int. Cl.² B23K *7/00, 7/06*
U.S. Cl. 148—9.5 **5 Claims**



1. A method of gas planing with at least one planing device, wherein the gas flowing out of the device is confined laterally in relation to the working direction, characterized in that gas streams are directed substantially perpendicularly onto the workpiece from both sides of the gas flowing out of the planing device for applying a lateral retaining effect on the melt being formed, and gas streams simultaneously are directed to the forward portion of the melt for applying a lifting and removing effect thereon.

4,115,153

METHOD AT GAS PLANING

Bengt Johansson, Göteborg, Sweden, assignor to Centro-Maskin Goteborg AB, Goteborg, Sweden

Filed Jul. 13, 1977, Ser. No. 815,373
Claims priority, application Sweden, Jul. 19, 1976, 7608209
Int. Cl.² B23K *7/00, 7/06*
U.S. Cl. 148—9.5 **2 Claims**

1. An improvement in gas planing or scarfing undertaken to remove surface defects on a workpiece, wherein an oxidizing gas is supplied to the workpiece by a planing device, the oxidizing gas being directed onto the workpiece in a manner such that in addition to oxidizing the workpiece, the molten material is also removed from the surface of the workpiece, the improvement consisting of substituting air for the oxidizing gas at the termination of the scarfing process, the air thus supplied carrying away the melt material in the same manner as the oxidizing gas, before the melt has hardened, thus leaving a clean surface free from deposits.

4,115,154

METHOD AND APPARATUS FOR PRODUCING A POST-MIXED, STABILIZED SCARFING PRE-HEATING FLAME

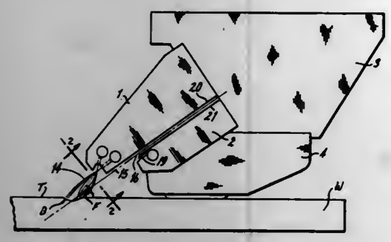
Ronald Elmer Fuhrhop, Suffern, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,512
Int. Cl.² B23K *7/04, 7/08*
U.S. Cl. 148—9.5 **19 Claims**

1. A process for thermochemically scarfing a metal workpiece comprising:
(1) preheating a spot on the surface of the workpiece where the scarfing reaction is to begin by directing a post-mixed preheating flame at said spot, said preheating flame being formed by:

(a) discharging at least one stream of preheat oxidizing gas and at least one stream of preheat fuel gas from separate ports in such a manner that said streams impinge external to their discharge ports, above the work surface and in such manner that the axes of said streams form an acute included angle between them, and

(b) stabilizing said preheating flame by discharging a low-intensity stream of oxidizing gas, the direction of said stabilizing stream being in the same general direction as the direction of said flame and proximate to the



impingement of said preheat oxidizing gas and preheat fuel gas streams, and

(c) continuing steps (a) and (b) until said spot reaches its oxidizing gas ignition temperature, and thereafter

(2) directing a stream of scarfing oxidizing gas at an acute angle to the work surface at said preheated spot, while simultaneously

(3) causing relative movement between said scarfing oxidizing gas stream and said work surface, thereby producing a scarfing cut.

4,115,155

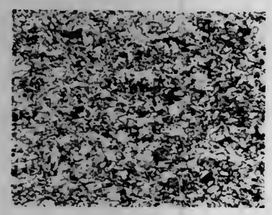
LOW CARBON HIGH YIELD AND TENSILE STRENGTH STEEL AND METHOD OF MANUFACTURE

Gerald J. Roe, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 651,662, Jan. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 466,760, May 3, 1974, abandoned. This application Feb. 7, 1977, Ser. No. 766,838

Int. Cl.² C21D *7/14*

U.S. Cl. 148—12 F **6 Claims**



1. A process for producing low carbon high yield strength steel alloy plate characterized in the as-rolled condition by an unbanded microstructure of ferrite, pearlite, and lower transformation products and a minimum yield strength of 75,000 psi., comprising the steps of:

(a) providing a slab consisting essentially by weight of:

	Percent, about
Carbon	.04–.07
Manganese	1.00–1.60
Sulfur	.015 max.
Columbium	.10 max.
Boron	.0005–.004
Silicon	.40 max.
Aluminum	.02 min.

and the balance iron with residual impurities;

(b) austenitizing said slab at a temperature between 2200° F. and 2300° F.;

(c) rolling said slab to an intermediate section before the temperature of said intermediate section reaches about 1650° F.;

(d) commencing rolling said intermediate section to final gage while the temperature of said intermediate section is below about 1650° F.;

(e) continuing rolling said intermediate section in the Ar_3–Ar_1 temperature range in a plurality of small reduction passes while maintaining conditions such that substantially complete recrystallization of deformed grains takes place after each said reduction pass;

(f) continuing rolling said intermediate section below the Ar_1 temperature with a maximum reduction of about 15% and a finishing temperature between 1150° F. and 1100° F.;

(g) providing a minimum total reduction of said intermediate section below 1650° F. of about 50%; and

(h) cooling said steel plate to room temperature after completion of the rolling.

4,115,156

METHOD OF MANUFACTURING A BEARING PART

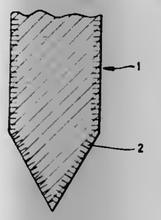
Fritz Straumann, Waldenburg, Switzerland, assignor to Institut Dr. Ing. Reinhard Straumann AG, Switzerland

Filed Feb. 10, 1976, Ser. No. 656,851

Claims priority, application Switzerland, Feb. 10, 1975, 1587/75

Int. Cl.² C22F *1/02*

U.S. Cl. 148—12.7 N **3 Claims**



1. A method of manufacturing a bearing part comprising forming a ductile age-hardening alloy of cobalt into a bearing part and aging it by heat treatment, and diffusing boron during the same heat treatment to form a boride layer at and into the bearing surface portion of the bearing part at a temperature of from 550°–900° C. wherein said cobalt alloy consists essentially of from 18–50% cobalt, 13–65% nickel, 1–10% Mo, 10–20% chromium, up to 10% W and up to 20% Fe and up to 4% of Ti and Be.

4,115,157

ORGANIC WELDING FLAX COMPOSITION

Marvin Packer, Broomall, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 24, 1977, Ser. No. 771,680

Int. Cl.² B23K *35/34*

U.S. Cl. 148—23 **7 Claims**

1. A non-flowing, water soluble composition comprising a mixture of a solid polyalkylene glycol which contains 0 up to about 50% by weight of a polyhydroxyalkane, from 1 to 20 parts by weight of a surface active agent per 100 parts of the polyalkylene glycol component and from about 70 to about 100 parts by weight of a starch filler per 100 parts of the polyalkylene glycol component.

4,115,158

PROCESS FOR PRODUCING SOFT MAGNETIC MATERIAL

Orville W. Reen, New Kensington, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Oct. 3, 1977, Ser. No. 839,086

Int. Cl.² C04B *35/00*; H01F *1/04, 1/14*

U.S. Cl. 148—31.55 **5 Claims**

1. In a process for producing a phosphorus-bearing soft magnetic material, which process includes the step of: blending iron powder and ferro-phosphorus powder into a mixture containing from 0.4 to 1.25% phosphorus; pressing said blended mixture into a compact; and sintering said compact in a non-oxidizing atmosphere; the improvement comprising the step of blending ferro-phosphorus powder having no more than 0.2% calcium with iron powder having no more than 0.02% calcium, said ferro-phosphorus powder having from 12 to 30% phosphorus.

4,115,159

METHOD OF INCREASING THE COERCIVE FORCE OF PULVERIZED RARE EARTH-COBALT ALLOYS

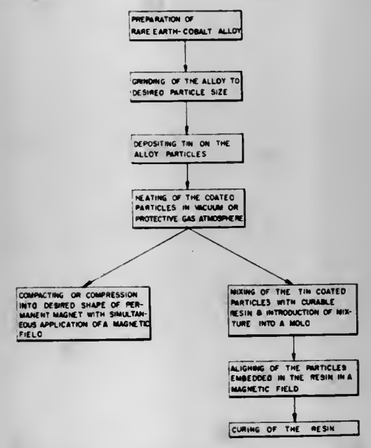
Ekkehard Greinacher; Klaus Reinhardt, both of Essen, Germany, and Karl Strnat, Fairborn, Ohio, assignors to TH. Goldschmidt AG, Essen, Germany

Division of Ser. No. 116,533, Feb. 18, 1971, Pat. No. 4,063,971, which is a continuation-in-part of Ser. No. 62,005, Aug. 7, 1970, abandoned. This application Aug. 2, 1977, Ser. No. 821,153

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1969, 1940464

Int. Cl.² H01F *1/06*

U.S. Cl. 148—105 **3 Claims**



1. A method of maintaining the coercive force of particulate rare earth-cobalt alloys at least at its initial value, said rare earth-cobalt alloy consisting essentially of a first rare earth component being composed of one or several of Y, Sc, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu and a second component consisting essentially of cobalt alone or cobalt in mixture with at least one of Mn, Fe, Ni, or Cu, the ratio of the rare earth component to the second component being about 10–25 atomic percent to 75–90 atomic percent, which comprises depositing tin on the surface of the alloy particles from a tin salt solution containing said particulate rare earth-cobalt alloy to envelop substantially each particle with a substantially continuous layer of tin and then heating the enveloped alloy particles to a temperature sufficiently high so as to cause diffusion of tin into the particle structure.

4,115,160

ELECTROMAGNETIC SILICON STEEL FROM THIN CASTINGS

James G. Benford, and Harry L. Bishop, Jr., both of Pittsburgh, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Jun. 16, 1977, Ser. No. 807,092

Int. Cl.² H01F *1/04*

U.S. Cl. 148—111 **8 Claims**

1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation, which process includes the steps of: preparing a melt of silicon steel containing, by weight, up to 0.07% carbon, from 0.015 to 0.24% manganese, from 0.01 to 0.09% of material from the group consisting of sulfur and selenium, up to 0.0080% boron, up to 0.05% aluminum, up to 0.0200% nitrogen, up to 1.0% copper and from 2.5 to 4.0% silicon; casting said steel; hot rolling said steel; cold rolling said steel to a final gage no greater than 0.020 inch, said steel being cold rolled with no more than two cold rolling passes being separated by an intervening anneal; decarburizing said steel; and final texture annealing said steel; the improvement comprising the step of casting said steel as a strip having a thickness of from 0.15 to 1.0 inch.

4,115,161

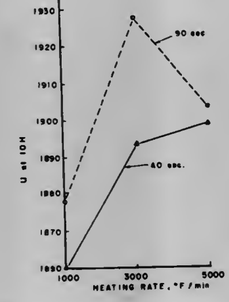
PROCESSING FOR CUBE-ON-EDGE ORIENTED SILICON STEEL

Amitava Datta, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Oct. 12, 1977, Ser. No. 841,402

Int. Cl.² H01F *1/04*

U.S. Cl. 148—111 **14 Claims**



1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation and a permeability of at least 1870 (G/Oe) at 10 oersteds, which process includes the steps of: preparing a melt of silicon steel containing from 0.02 to 0.06% carbon, from 0.0006 to 0.0080% boron, up to 0.0100% nitrogen, no more than 0.008% aluminum and from 2.5 to 4.0% silicon; casting said steel; hot rolling said steel; cold rolling said steel to a thickness no greater than 0.020 inch; recrystallizing the cold rolled steel at a temperature between 1300° and 1550° F. in a hydrogen-bearing atmosphere having a dew point of from +50° to +150° F.; decarburizing said steel to a carbon level below 0.005%; applying a refractory oxide base coating to said steel; and final texture annealing said steel; the improvement comprising the steps of heating said steel to said temperature range of between 1300° and 1550° F. at a heating rate of at least 1500° F. per minute; and holding said steel within said temperature range for a period of at least 30 seconds.

4,115,162
PROCESS FOR THE PRODUCTION OF EPITAXIAL LAYERS ON MONOCRYSTALLINE SUBSTRATES BY LIQUID-PHASE-SLIDE EPITAXY

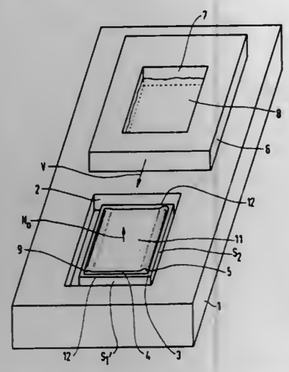
Dieter Pawlik, Munich, and Karl-Heinz Zschauer, Grafing, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sep. 14, 1977, Ser. No. 833,052

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1976, 2641347

Int. Cl.² H01L *21/208*

U.S. Cl. 148—171 **12 Claims**



1. In a method for the production of epitaxial layers on monocrystalline substrates by a liquid-phase-slide epitaxy process, said method including providing a monocrystalline substrate having a surface, shifting a slide in one direction to move a melt onto said surface, depositing a monocrystalline, epitaxial layer of material from the melt onto the surface of the substrate, and subsequently moving the slide in said one direction to remove the remaining portion of the melt from the substrate and layer deposited thereon, the improvement comprising the step of providing a substrate provides a crystal having a surface with at least two boundary edges which are parallel to one another and in which no preferred edge growth occurs in a direction N_1, N_1' running at right angles to the boundary edges, and pointing outward from the interior of the substrate crystal, and wherein the step of moving the slide moves the slide in a direction relative to the boundary edges so that the melt moves across said boundary edges as it is being applied to and removed from the surface of the crystal.

4,115,163
METHOD OF GROWING EPITAXIAL SEMICONDUCTOR FILMS UTILIZING RADIANT HEATING

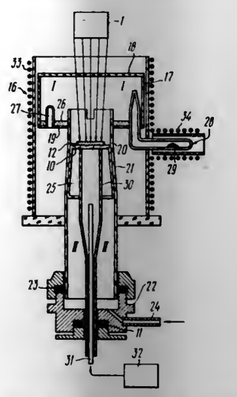
Yulia Ivanovna Gorina, Polyarnaya ulitsa, 8, kv. 100; Galina Alexandrovna Kaljuzhnaya, Universitetsky prospekt 6, kor. 2, kv. 102; Andrei Vasilievich Kuznetsov, ulitsa Vavilova, 45, kv. 24; Sergei Nikolaevich Maximovsky, Leningradskoe shosse, 118, kv. 63; Mikhail Borisovich Nikiforov, ulitsa Vavilova, 72, kv. 12; Bentsion Moiseevich Vul, ulitsa Vavilova 44, kor. 4, kv. 139; Galina Evgenievna Ivannikova, Okskaya ulitsa 12, kor. 1, kv. 75, all of Moscow; Vintsentas Ionovich Denis, ulitsa Suvalku, 8, kv. 3, Vilnjus; Mikolas Mikolo Yarmalis, ulitsa Mintes, 5, kv. 34, Vilnjus, and Vitautas Ionovich Repshis, ulitsa Dzerzhinskogo, 48/2, kv. 4, Vilnjus, all of U.S.S.R.

Filed Jan. 8, 1976, Ser. No. 647,327

Int. Cl.² H01L *21/205*

U.S. Cl. 148—175 **5 Claims**

1. A vapor phase method for growing epitaxial semiconductor films, in an enclosed chamber, of silicon and the type selected from the group consisting of monocrystalline, A_2B_6 and A_4B_6 on a substrate with a support which does not absorb radiant heat comprising: heating a working surface of said substrate in an inert atmosphere to a critical epitaxy temperature by means of radiant light having a luminous flux intensity from about 10^1 to 10^4 watts per square centimeter of substrate surface, said critical temperature sufficient to enable epitaxial growth on the working surface of said substrate; introducing a gaseous source material capable of forming a film on the working surface of said substrate exposed to the radiant light, while simultaneously force cooling the opposite side of the working surface of the substrate to a temperature gradient sufficient to prevent mutual diffusion between the film being deposited on the working surface of the substrate, and the substrate components.



4,115,164
METHOD OF EPITAXIAL DEPOSITION OF AN A_{III} B_V-SEMICONDUCTOR LAYER ON A GERMANIUM SUBSTRATE

Hans Jager, Bad Homburg, and Emil Seipp, Eschborn, both of Germany, assignors to Metallurgie Hoboken-Overpelt, Belgium

Filed Jan. 10, 1977, Ser. No. 757,935

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601652

Int. Cl.² H01L *21/20, 29/26*

U.S. Cl. 148—175 **18 Claims**

1. A method of epitaxial depostion of an $A_{III}B_V$-semiconductor layer on a germanium substrate having a (100) orientation, said method comprising the steps of: depositing a resist layer, selected from the group consisting of phosphosilica glass (PSG) and Si_3N_4, on the backside of the Ge substrate to passivate the backside to an extent such that it becomes thermally and chemically stable and does not release any Ge to the ambient atmosphere; chemo-mechanically polishing the front side of the Ge substrate to microsmoothness; immediately before the epitaxial deposition, subjecting the polished front side to very weak chemical etching to a removal depth of 500 A without eliminating the polish or microsmoothness of the front side; thereupon heating the substrate, in a high-purity hydrogen atmosphere, to a temperature between about 680° C and 720° C, and depositing a GaAs layer on said front side; thereafter increasing the temperature and depositing, on the GaAs layer, a ternary $A_{III}B_V$ compound including a third, additive component whose proportion increases in the direction away from the GaAs layer and which is selected from the group consisting of A_{III} elements and B_V elements; continuing the increase in concentration of said third, additive component to a predetermined final value determined by one of the band gap and corresponding wavelength of the emitted light; and, as a final step, depositing a relatively thick layer of said ternary $A_{III}B_V$ compound whose composition is maintained constant at said predetermined final value of the second layer.

4,115,165
HYDROPHOBIC ALUMINUM SENSITIZING AGENTS FOR EXPLOSIVES

Oldrich Machacek, Allentown, Pa., assignor to Atlas Powder Company, Tamaqua, Pa.

Filed Jun. 23, 1977, Ser. No. 809,203

Int. Cl.² C06B *45/30*

U.S. Cl. 149—5 **14 Claims**

1. A sensitizing agent for explosive compositions comprising coarse grade particulate aluminum substantially coated with finely divided hydrophobic fumed silica.

4,115,166
COATED AMMONIUM PERCHLORATE

Edwin L. Lista, Roseville; Richard B. Hartupee, West Covina; Ralph K. Manfred, Carmichael, and Paul L. O'Neil, Sacramento, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Jan. 12, 1970, Ser. No. 3,548

Int. Cl.² C06B *45/34*

U.S. Cl. 149—7 **8 Claims**

1. The novel solid rocket propellant containing as the oxidizer ammonium perchlorate particles containing thereon a coating agent comprising an alkylene imine adduct of divinylbenzene selected from the group consisting of the ethylene, propylene or butylene adducts thereof.

4,115,167
CASTABLE BINDER FOR CAST PLASTIC-BONDED EXPLOSIVES

Dino A. Sbrocca, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 11, 1974, Ser. No. 522,674

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.5 **3 Claims**

1. In a cast plastic bonded explosive wherein high explosive filler material is bound in a matrix of binder material, the improvement residing in utilizing a mixture of (1) 42 parts by weight of a composition made up of styrene and an unsaturated polyester resin derived from propylene glycol, maleic anhydride and phthalic anhydride wherein the ratio of maleic anhydride to phthalic anhydride is relatively low and (2) 30 parts by weight of a composition made up of styrene and an unsaturated polyester resin based upon diethylene glycol, maleic anhydride and adipic acid to which (3) 28 additional parts of styrene have been added to form a binder material.

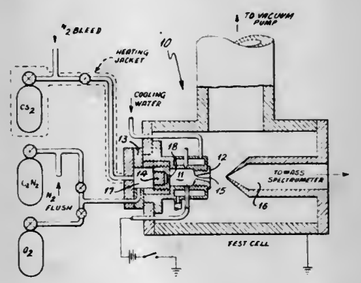
4,115,168
CARBON MONOSULFIDE GENERATING PROCESS

Victor R. Buonadonna; Ralph J. Richardson; Richard L. Rasmussen, and William Q. Jeffers, all of St. Louis County, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 20, 1975, Ser. No. 623,662

Int. Cl.² C06B *23/00*

U.S. Cl. 149—109.6 **7 Claims**



1. A method of producing CS as an entity comprising the steps of heating CS_2 with a fuel-oxidizer flame in a system containing a fuel, an oxidizer and CS_2 to a temperature of at least 2400 K to produce a mixture of CS and CS_2, recovering the mixture from the system in a form in which the ratio of CS/CS_2 is at least 2 by passing the gases produced by the system through a nozzle in a supersonic expansion thereby to preserve the CS as an entity in the mixture for a predetermined period of time by means of said supersonic expansion, and employing said mixture to utilize said CS entity within said predetermined period of time.

4,115,169
POLYFUNCTIONAL ESTER KETIMINES, ADHESIVES DERIVED THEREFROM AND METHOD FOR ADHERING MATERIALS

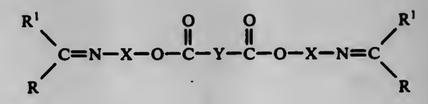
William D. Emmons; Samuel S. Kim, both of Huntingdon Valley, and Donald A. Winey, Warminster, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 6, 1977, Ser. No. 757,264

Int. Cl.² E04B *2/00*; C09J *5/00*

U.S. Cl. 156—71 **21 Claims**

1. A compound of the formula:



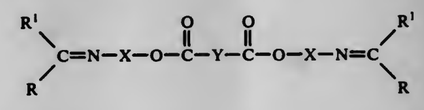
wherein

R and R^1 are independently straight chain, branched chain, or cyclic alkyl groups having up to 18 carbon atoms, or R and R^1 joined together form a cyclic alkyl group having 4 to 11 carbon atoms;

X is a divalent alkylene radical having 2 to 10 carbon atoms or an oxyalkylene chain having 2 to 5 repeating units of the structure $—OCHR^2CHR^2—$ where R^2 is hydrogen or methyl; and

Y is the non-carboxyl moiety of a saturated, or aromatic dicarboxylic acid, or acid terminated polyester chain thereof with ethylene glycol, propylene glycol or isobutylene glycol.

6. A moisture-curable adhesive and coating composition comprised of a mixture of (A) one part by weight of a bisketimino ester of the formula:



wherein

R and R^1 are independently straight chain, branched chain, or cyclic alkyl groups having up to 18 carbon atoms, or R and R^1 joined together form a cyclic alkyl group having 4 to 11 carbon atoms;

X is a divalent alkylene radical having 2 to 10 carbon atoms or an oxyalkylene chain having 2 to 5 repeating units of the structure $—OCHR^2CHR^2—$ where R^2 is hydrogen or methyl; and

Y is the non-carboxyl moiety of a saturated, or aromatic dicarboxylic acid, or acid terminated polyester chain thereof with ethylene glycol, 1,4-butanediol, propylene glycol or isobutylene glycol; and

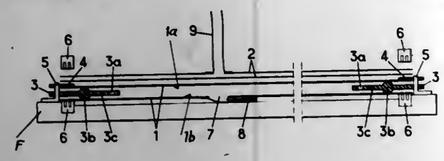
(B) from about one to about ten parts by weight of organic acid polyanhydride.

12. A method of gluing down carpet which comprises applying the composition of claim 6 as the adhesive therefor and allowing the adhesive to cure in the presence of moisture.

4,115,170
CUSHION OR SEAT STRUCTURE OF PLASTIC FOAM WITH INTEGRATED COVER AND INCORPORATED REINFORCING GRID OR SKELETON, AND METHOD OF MAKING SAME

Joseph F. Sanson, Beaugency, France, assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 11, 1977, Ser. No. 786,126
Claims priority, application France, Feb. 22, 1976, 76 11950
Int. Cl.[2] A47C *7/18*
U.S. Cl. 156—79 **12 Claims**



1. A method of making integrated cushion structures having opposed pliable congruent cover sheet members and at least one partitioning sheet means coextensive with said cover sheets, all of said sheets being joined peripherally to define an enclosing envelope having a plurality of coextensive interior compartments, and plastic foam filling at least some of said compartments, said method comprising:

forming an assemblage of said pliable congruent cover sheet members and partitioning sheet means;

bonding said assemblage together peripherally to form said envelope;

forming an aperture in an exposed sheet of said envelope, said aperture being suitably sized and located to enable remaining portions of the envelope to be inverted therethrough;

drawing the remaining portions of said envelope through said aperture and thereby turn said envelope inside-out to dispose cover sheet members externally and partitioning sheet means internally of said inverted envelope, said partitioning sheet means dividing the interior of said envelope into at least two coextensive interior compartments; and

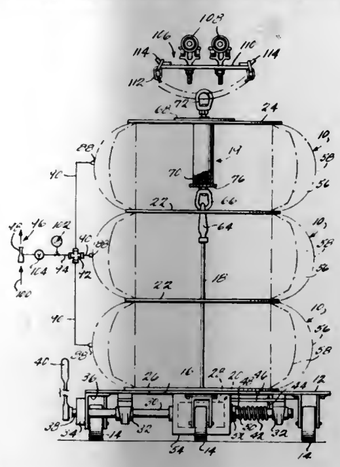
placing said envelope into a forming mold and introducing a foamable plastic mix into at least one of said interior compartments, and allowing said mix to expand and become integrally bonded on polymerization to the surface of the respective sheets defining said compartments while in said mold.

4,115,171
RETREADING STACKED TIRES

Michael J. Dundon, Muscatine, Iowa, assignor to Bandag Incorporated, Muscatine, Iowa

Filed Sep. 20, 1976, Ser. No. 724,766
Int. Cl.[2] B29H *17/00*
U.S. Cl. 156—96 **8 Claims**

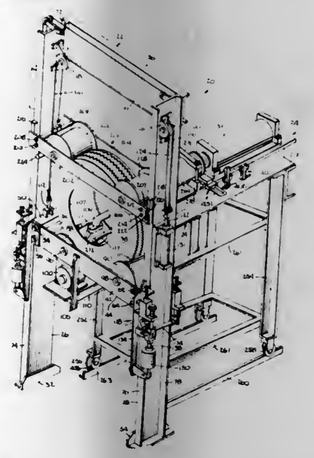
1. A method of preparing tires for retreading comprising: applying to the periphery of each tire a pre-cured tread strip with a vulcanizable bonding medium disposed between the tire periphery and the tread strip; applying an annular U-shaped envelope to the periphery of each tire so that the edge portions of the envelope overlie the rim or shoulder portion of the tire; stacking the tires vertically on a support with a plate disposed between each two adjacent tires, the plates engaging the edge portion of the envelopes; placing a top plate on the upper surface of the uppermost tire; connecting a tensioning device between the top plate and the support to compress the stack thereby sealing each tire to the edge portions of its respective envelope; while the stack is compressed, applying suction to the space between each tire and the inner surface of its respective envelope, to remove air from said space; and thereafter placing the assembly of stacked tires and plates in an autoclave.



4,115,172
APPARATUS AND METHOD FOR APPLYING PUNCTURE SEALANT MATERIAL TO A TIRE

Leon Ian Baboff, Bethany; Daniel Shichman, Trumbull, and Lawrence Paul Reed, Newtown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Apr. 4, 1977, Ser. No. 784,477
Int. Cl.[2] B60C *21/08*
U.S. Cl. 156—115 **22 Claims**

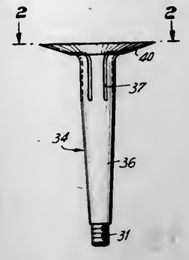


21. A method of applying tire puncture sealant material to the liner of a cured tire comprising, orienting the tire with the equatorial plane in a substantially vertical position, spreading the beads of the tire a predetermined amount to furnish the tire with a predetermined profile in the area of the spread beads, rotating the tire at a predetermined speed, applying sealant material to the liner of the tire under the tread region while the tire is rotating, using an applicator having a cross-sectional profile corresponding to the predetermined cross-sectional profile of the tire in the area of the spread beads by engaging the applicator head with the tire liner and forcing sealant material out of the applicator at a predetermined fixed rate of discharge to provide a uniform layer of sealant.

4,115,173
VALVE BASE ROUGHENING PROCESS

Christian H. Qualey, Altavista, Va., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,307
Int. Cl.[2] B29H *15/00*; B29C *27/00*
U.S. Cl. 156—120 **5 Claims**

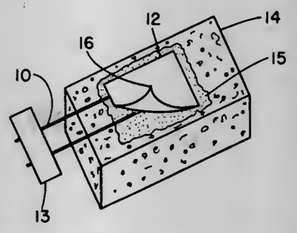


1. In a method for bonding a base on flange of a molded rubber valve device to a rubber pneumatic tube, said method including molding a sleeve, which includes said base, around the valve device, said base having its outer surface formed by a contacting surface of a mold plunger: and roughening said outer surface of said base which is to contact extensively the rubber tube surface and vulcanizing said base to said tube; the improvement comprising: performing said roughening step by shaping said outer surface into a cross-hatched or knurled pattern with said mold plunger.

4,115,174
METHOD OF APPLYING MINIATURIZED HIGH-TEMPERATURE FREE-GRID STRAIN GAUGES

Heinrich Franz Bauer; Anton Eichinger, both of Eichenau, and Ernst Feitzelmayer, Munich, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 14, 1977, Ser. No. 787,613
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1976, 2630475
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—155 **7 Claims**



1. A method of applying a miniaturized high-temperature free-grid strain gauge of foil construction, or a similar high-temperature probe, supported on a backing foil to a test location, comprising the steps of:

(a) connecting long web means to the strain gauge while the gauge still has its backing foil on;

(b) connecting an auxiliary carrier to the web means at a distance from said gauge;

(c) adhering said gauge to a porous backing with the open grid side thereof facing downwardly through a readily soluble adhesive;

(d) peeling off the backing foil;

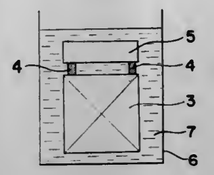
(e) chemically dissolving the adhesive; and

(f) applying the prepared gauge to the test location.

4,115,175
METHOD FOR MANUFACTURING SYNTHETIC RESIN PACKED PRODUCT ASSEMBLY

Kazuo Yamashita, Kawanishi; Yoshikazu Yokose, Ikeda; Masatake Akao; Koichi Hirakawa, both of Kawanishi; Katsuhiko Iho, Hirakata, and Takashi Shibano, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 13, 1977, Ser. No. 832,915
Int. Cl.[2] B29C *13/00*; B29G *7/00*
U.S. Cl. 156—172 **14 Claims**



1. A method for manufacturing a synthetic resin packed product assembly comprising

(a) providing around an element to be packed with hardened resin a high strength fibrous material which is provided in a continuous form, said high strength fibrous material being wound around said element in spiral form in a number of turns to interlock the wound fibrous material with an interlocking degree between the crossing fibers being arranged within a range of 5°–90°;

(b) impregnating said element, provided therearound with said fibrous material, with thermosetting resin in the liquid state to form a resin packed element;

(c) immersing said resin packed element into a hot-melt material in the liquid state which is substantially incompatible with said thermosetting resin, said hot-melt material having a melting point at a temperature higher than the initial hardening temperature of said thermosetting resin, the solubility parameter difference between said hot-melt material and said thermosetting resin being above 0.75;

(d) hardening said hot-melt material by decrease of temperature to cover said resin packed element in an air tight condition for preventing said impregnated thermosetting resin in liquid form from leaking out from said hardened hot-melt material;

(e) hardening said thermosetting resin at a temperature below said melting point; and

(f) removing said hardened hot-melt material from said element by increase of temperature, thereby obtaining said synthetic resin packed product assembly.

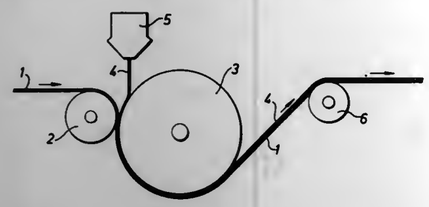
4,115,176
LAMINATED PAPER PRODUCT AND A METHOD FOR MANUFACTURING SAID PRODUCT

Stig Ekstrand, Lund, Sweden, assignor to AB Akerlund & Rausing, Lund, Sweden

Filed Oct. 17, 1974, Ser. No. 515,521
Claims priority, application Sweden, Oct. 24, 1973, 7314397
Int. Cl.[2] B32B *27/10, 31/08, 31/20, 31/30*
U.S. Cl. 156—244.25 **10 Claims**

1. A method of producing a laminate of a web of porous paper and a layer of thermoplastic material in which the web of porous paper and layer of plastic material are joined at spaced areas to form a soft folding laminate comprising extruding a thermoplastic material in web form onto a smooth, rotating, cool roller, passing a web of porous paper onto the extruded layer of thermoplastic material on the cool roller at a point spaced from the point of contact of said layer of plastic material with the cool roller in the direction of rotation of the roller, passing the web of porous paper and layer of plastic material between the cool roller and a rotating profiled roller for press-

ing the web of porous paper and a layer of plastic material together at spaced areas determined by the profiled roller, the layer of extruded plastic material being cooled by the cool roller sufficiently to prevent substantial quantities of the plastic



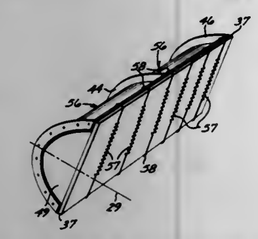
material of the layer from migrating entirely through the web of paper at the spaced areas while permitting partial penetration of the extruded plastic layer into the paper web to join the web of paper and layer of plastic material together at spaced areas.

4,115,177

MANUFACTURE OF SOLAR REFLECTORS

David H. Nelson, Twentynine Palms, Calif., assignor to Homer Van Dyke; Dave Van Dyke; Mark Dorian and George Lerg, part interest to each

Filed Nov. 22, 1976, Ser. No. 744,149
Int. Cl.² F24J *3/02*; H01Q *15/14*
U.S. Cl. 156—245 **11 Claims**



1. A method of making a reflector specular to infra-red solar radiation for a solar energy collector system using a female mold having therein a longitudinally extending parabolic recess with a structurally reinforced mirror finished surface, and constructing a male mold from said female mold, the steps comprising

(a) spraying a thin, tough, epoxy polyamid gelcoat onto said mirror finished surface;

(b) applying fiberglass resin mixed with chopped roving onto said coated mirror finished surface in thin layers to prevent exotherm warpage;

(c) structurally supporting said applied layers to stabilize a convex parabolic configuration on the convex surface thereof;

(d) applying a fiberglass retainer layer over said structurally supported layers of fiberglass resin mixed with chopped roving;

(e) at least partially curing said structure and removing it from said female mold;

(f) attaching transversely extending adjustable spacing means between opposing portions of said convex parabolic configuration at locations remote from the directrix thereof;

(g) adjusting said spacing means to correct for minor distortions in said parabolic configuration;

(h) bending a smooth, mirror finished planar film free of surface irregularities across said parabolic configuration and securing it thereto to form a longitudinally extending smooth rigid convex surface of precise parabolic cross section throughout, thereby completing said male mold, and thereafter:

(i) spraying said rigid convex surface with a resin release agent;

(j) spraying thereover in an uncured state and in a plurality of different operations a plurality of layers of thermosetting resin to form a reflector support structure;

(k) removing the longitudinally extending parabolic trough reflector support structure so formed from said convex surface;

(l) vacuum depositing aluminum onto the exposed concave surface of said reflector support structure to a thickness opaque to infra-red solar radiation and no greater than 0.001 inches; and

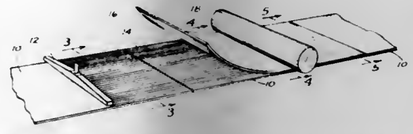
(m) closing the ends of said reflector support structure with structure utilizing planar end pieces oriented normal to the concave surface formed in the reflector support structure.

4,115,178

METHOD OF MAKING GLUED, LAMINATED ASSEMBLIES IN PREPRESSED AND FINAL PRESSED STAGES

Charles N. Cone, Portland, and Julius M. Steinberg, Hillsboro, both of Oreg., assignors to Pacific Adhesives, Inc., Hillsboro, Oreg.

Continuation of Ser. No. 624,383, Oct. 21, 1975, abandoned, which is a continuation of Ser. No. 345,107, Mar. 26, 1973, abandoned. This application May 19, 1977, Ser. No. 798,581
Int. Cl.² B32B *7/14, 31/00*; C09J *5/00*
U.S. Cl. 156—291 **10 Claims**



1. The method of making plywood which comprises:

(a) extruding on a surface of a first wood veneer a plywood glue comprising a member of the class consisting of the thermosetting phenol-formaldehyde resin glues, the resorcinol-formaldehyde resin glues, the cresol-formaldehyde resin glues, and the urea-formaldehyde resin glues,

(b) superimposing a second veneer on the glue-spread surface of the first veneer,

(c) the glue being extruded on the first veneer in the form of spaced filaments of foamed liquid glue having a density of from 0.1 to 0.5,

(d) the veneer surface between the filaments being substantially unwetted by the glue,

(e) the spacing of the filaments and the glue usage being predetermined to insure substantially complete coverage and wetting of both veneers with foamed liquid glue upon the application of prepressing pressure,

(f) promptly prepressing the assembled veneers at a pressure and for a time only substantially sufficient to spread the filaments and wet the veneers with a veneer-separating layer of unset glue still in foamed condition, thereby tacking the veneers together for preliminary handling, and

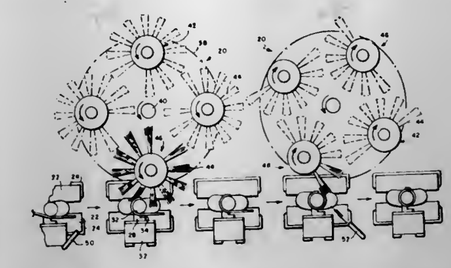
(g) thereafter further pressing the assembled and prepressed veneers at a temperature and for a time sufficient to break the foam structure of the foamed thermosetting glue, to press the veneers together, and to set the glue to its final bonding condition.

4,115,179

WRAP NECK LABEL MECHANISM

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio

Continuation of Ser. No. 748,060, Dec. 6, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,223
Int. Cl.² B65C *9/28*
U.S. Cl. 156—444 **9 Claims**



1. Apparatus for applying labels to bottle necks comprising a conveyor defining a support for moving bottles continuously rectilinearly along a horizontal path, means located at one side of the conveyor for pressing a label into tangential engagement with the neck of a bottle traveling along said path, and wiping means beyond the place where the label is pressed into tangential engagement with the neck for successively wrapping first one end portion and then the other end portion of the label about the neck, said latter means comprising at the other side of the conveyor a stationary support spaced from the conveyor, longitudinally spaced rotors fixedly mounted on the stationary support for turning about longitudinally spaced axes perpendicular to the path of movement of the conveyor and spaced therefrom, rotary wipers mounted at equal peripheral distances about the rotors for rotation about axes spaced from and parallel to the axes of the rotors, means for rotating the rotors in a direction such that as the wipers travel around the axes of the rotors, they approach and leave the path of movement of the conveyor means along circular paths in the direction of travel of the conveyor, means on the rotary wipers which extend from the wipers into the path of movement of the conveyor, and means for rotating the rotary wipers on the respective rotors in opposite directions.

5. Apparatus according to claim 1 wherein said means at the one side of the path of travel further comprises jets spaced longitudinally of the path of travel operable successively to deflect the trailing and leading ends of the label transversely across the path of movement about the rear and forward sides of the bottle into the path of the wiping mans.

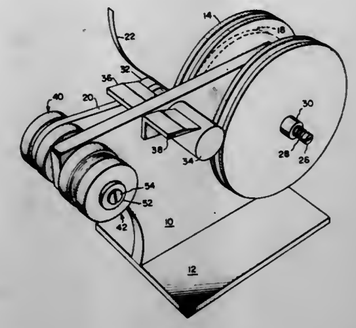
4,115,180

DISPENSER AND APPLICATOR APPARATUS FOR EDGE WRAPPING OF STAINED GLASS CHIPS AND THE LIKE WITH FOIL

Peter F. Scalia, 123 W. Chestnut St., East Rochester, N.Y. 14445

Filed Aug. 15, 1977, Ser. No. 824,363
Int. Cl.² B32B *31/20*
U.S. Cl. 156—446 **9 Claims**

1. Apparatus for dispensing and wrapping foil about the edges of glass chips and the like, said apparatus comprising a frame, means mounted on said frame for supporting a roll of self-adhering foil with the roll being rotatable as the foil is withdrawn therefrom, and a wrapping roller for receiving said foil from said roll with the self adhering face of said foil facing upwardly, said roller having a peripheral groove, said groove having steps on opposite sides thereof with the groove having a first portion thereof above the step wider than a second portion thereof below the step, one of said portions having a width narrower than the width of the foil, means mounted on said frame for supporting said roller with said roller being free to rotate as one of said chips is received within said groove within at least one of said portions and presses to said foil against the sides of said one of said portions within which it is



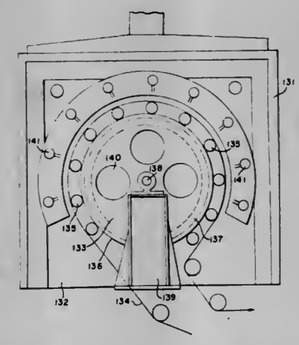
received and one of the bottom of said groove and said steps while turning said chip to simultaneously withdraw said tape from said roll and wrap said foil about the edges of said chip.

4,115,181

APPARATUS FOR PREPARING MULTI-LAMINATED SHEET

Hideo Fujii, Yokohama; Tokio Fujiki, Yamato; Masaru Uemura, Tokyo, and Masakazu Sakura, Yokohama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Jan. 28, 1977, Ser. No. 763,628
Claims priority, application Japan, Feb. 6, 1976, 51-011306; Oct. 22, 1976, 51-126278; Oct. 22, 1976, 51-126284
Int. Cl.² B29D *7/02*; B32B *31/26*
U.S. Cl. 156—497 **4 Claims**



1. An apparatus for preparing a multi-laminated sheet which comprises:

a first sheet feeding unit, a drying unit operably associated with said first feeding unit, a second sheet feeding unit, a superposing unit operably associated with said second feeding unit and said drying unit, a molten film extruding unit, a press-bonding unit operably associated with said film extruding unit and take-up winding unit operably associated with said press-bonding unit, said units being selectively rearrangeable;

wherein said drying unit comprises a rotary drum, a plurality of hot air nozzles for facing an adhesive coated surface of the first sheet displaced circumferentially adjacent to said rotary drum and means for cooling said rotary drum and wherein;

said drying unit further comprises a plurality of rotary guide

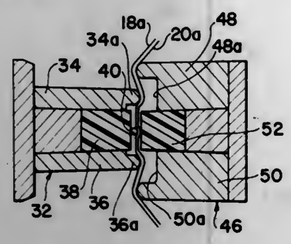
rollers and a coolant recycling mechanism for each of said rotary guide rollers.

4,115,182

SEALING MEANS

Martin Michael Wildmoser, Staten Island, N.Y., assignor to Arenco Machine Company, Teterboro, N.J.

Filed Jun. 29, 1977, Ser. No. 810,965
Int. Cl.[2] B32B *31/00*; B30B *15/34*
U.S. Cl. 156—515 **8 Claims**



1. Improved sealing apparatus for cutting and heat sealing thermoplastic sheets which are drawn under tension through sealing jaws, comprising:

first and second sealing jaws movable between an open and closed position and each including a sealing section integrally formed with and recessed relative to first and second spaced-apart clamping sections,

the sealing section of at least one of said sealing jaws being deformable upon closing of said jaws,

heat-applying and cutting means adjacent at least one of said sealing sections for applying heat to cut and heat seal said thermoplastic sheets, and

one of said first and second spaced-apart clamping sections including means for preventing said thermoplastic sheets from engaging said heat-applying means while said sealing jaws are open and said thermoplastic sheets are being drawn under tension through said sealing jaws,

said first and second spaced-apart clamping sections on each of said sealing jaws including means for coacting with each other to simultaneously apply a clamping force to spaced-apart portions of said thermoplastic sheets when said jaws are closed to overcome the tension on said thermoplastic sheets and to thereby prevent slippage of said thermoplastic sheets relative to said sealing jaws, and

said recessed sealing sections being constructed and arranged to simultaneously move with said clamping sections to engage and seal said thermoplastic sheets after said thermoplastic sheets are clamped by said clamping sections.

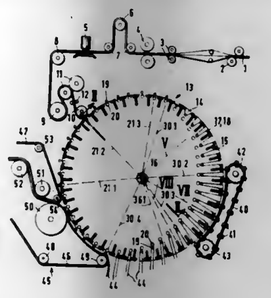
4,115,183

APPARATUS FOR MAKING BAGS FROM A TWO-PLY WEB OF THERMOPLASTIC MATERIAL

Fritz Achelpohl, and Friedhelm Mundus, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 15, 1977, Ser. No. 816,033
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1976, 2632853
Int. Cl.[2] B32B *31/00*; B30B *15/34*
U.S. Cl. 156—515 **14 Claims**

1. Apparatus for making bags or tube sections from a continuously supplied two-ply web of heat-sealable or weldable material, comprising a rotary cylinder mounted for rotation about an axis; supporting bars (19) for supporting the continuously supplied web positioned at spaced intervals on said rotary cylinder, said supporting bars being radially spaced from the axis of said rotary cylinder, movable towards and away from the periphery of said rotary cylinder, movable towards and away from the periphery of said rotary cylinder, and axially movable between an open position and a blocking position, the supplied web being positionable radially inward of said supporting bars when said supporting bars are in said open position, said supporting bars being movable to said blocking position to retain said supplied web in said radially inward position; transverse welding and separating means for welding the web and for separating the welded web to form bags and comprising backing bars (15) and welding bars (41) cooperating therewith, said backing bars being positioned on said rotary cylinder between said supporting bars and being displaceable towards and away from said welding bars, the supplied web being positionable radially outward of said backing bars, said supporting and backing bars being movable away



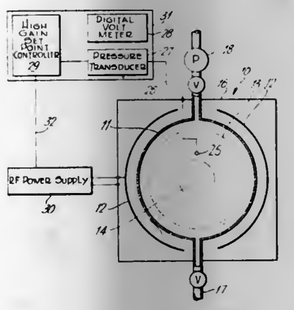
from each other so that the supplied web follows a zig-zag path; and means for taking away the bags formed by the transverse welding and separating means, a first region being defined adjacent said rotary cylinder by a sector defined by radius vectors (30.2, 30.3) of the rotary cylinder, said supporting bars being moved away from the backing bars and the web being welded during rotation of said rotary cylinder through said first region, a first cylinder enveloping surface being described by the rotation of said backing bars through said first region, said welding bars being positioned in said first region adjacent said rotary cylinder, being guided to be concentric with the first cylinder enveloping surface, and being adapted to be moved at the same rotational speed as the backing bars.

4,115,184

METHOD OF PLASMA ETCHING

Robert Gordon Poulsen, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 29, 1975, Ser. No. 644,911
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—626 **5 Claims**



1. A method of plasma etching in a reaction chamber, comprising:

positioning at least one article in the reaction chamber;

reducing the pressure in the chamber to a predetermined pressure;

switching on the RF power to the reaction chamber;

feeding a preheat gas into the chamber to start the plasma;

measuring the gas temperature in the vicinity of the article and applying a signal, indicative of the variation of said temperature from a predetermined datum, to the RF power supply;

varying the RF power to the chamber in accordance with said signal to bring said temperature to, and maintain said temperature at, said datum;

feeding an etchant gas into said reaction chamber at a predetermined flow rate and pressure for a predetermined time to etch said at least one article while varying the RF power to the chamber in accordance with signals indicative of any variation of said temperature from said datum, to return said temperature to and maintain said temperature at said datum;

switching off the RF power to the reaction chamber after said predetermined time; and

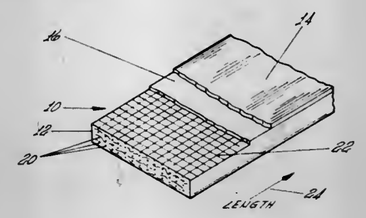
unloading said article.

4,115,185

METHOD OF THERMALLY DIMENSIONALLY STABILIZING A PRINTED CIRCUIT BOARD

Carl S. Carlson, Costa Mesa; Lawrence M. Kinsella, Irvine, and Daniel L. Pixley, Mira Loma, all of Calif., assignors to Diceon Electronics, Inc., Santa Ana, Calif.

Filed Aug. 5, 1977, Ser. No. 822,141
Int. Cl.[2] C23F *1/02*
U.S. Cl. 156—634 **13 Claims**



1. A method of thermally dimensionally stabilizing a printed circuit board wherein the printed circuit board has an epoxy fiberglass insulating base and a metal conducting layer bonded to at least one side of the insulating base comprising

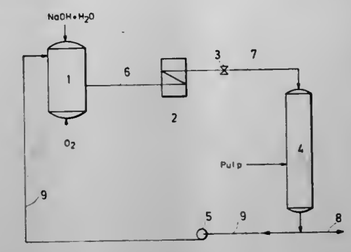
prior to drilling and forming the conductive metal layer into conductive metal path by selective removal thereof, transporting the printed circuit board thru a thermal shocking intense heat source having a temperature of about 425° F to about 450° F for a period of time at least equal to that required to stress relieve the epoxy fiberglass base and promote dimensional movement between the epoxy, fiberglass and metal conducting layer which the printed circuit board would otherwise experience during the subsequent process steps including the shear displacement between the insulating base and conductive metal layer which would otherwise occur after the selective removal of the conductive metal layer to form conductive metal paths and less than the time required for the bonded conductive metal layer to separate from the insulating base, said thermal shocking fluid having a boiling point temperature in excess of 450° F.

4,115,186

PROCESS FOR BLEACHING CELLULOSE PULP WITH MOLECULAR OXYGEN

Frey Viking Sundman, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Finland

Filed May 8, 1974, Ser. No. 468,185
Claims priority, application Finland, May 30, 1973, 1766/73
Int. Cl.[2] D21C *9/10*
U.S. Cl. 162—65 **4 Claims**



1. A process for bleaching cellulose pulp with molecular oxygen in an alkaline medium which comprises the steps of:

(1) dispersing oxygen gas into an alkaline solution under a pressure of up to 50 atmospheres and at a temperature between 0° and 100° C. whereby an oxygen-rich alkali solution is obtained;

(2) heating the oxygen-rich alkaline solution at a temperature between 80° and 130° C., the temperature being so selected within said range, that it is higher than the temperature in step (1);

(3) lowering the pressure of the hot, oxygen-containing, alkaline bleaching solution to a pressure between 0 and 8 atmospheres, said pressure being so selected within said range that it is lower than the pressure in step (1) so as to release oxygen from said alkaline solution;

(4) introducing the hot, oxygen-containing, alkaline solution into a bleaching reactor into contact with the cellulose pulp at a temperature of 80°–130° C. and at a pressure of 0–8 atmospheres to bleach the pulp with the oxygen gas being released from said solution.

4,115,187

AGGLOMERATED FILLERS USED IN PAPER

Richard Robertson Davidson, Cambridge, England, assignor to Welwyn Hall Research Association, England

Continuation-in-part of Ser. No. 379,470, Jul. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 130,507, Apr. 1, 1971, abandoned. This application Feb. 23, 1976, Ser. No. 660,516
Int. Cl.[2] D21H *3/66*
U.S. Cl. 162—168 R **29 Claims**

1. A method of making paper using an acid reactive mineral filler which permits the use of an acid pH, which method comprises:

(a) forming an aqueous dispersion containing at least 30%, by weight, of said reactive mineral filler, wherein the interparticulate water of said dispersion has dispersd therein at least one hydrophilic organic polymer selected from the group consisting of polysaccharides, proteinacious compounds, hydroxylated polymers and alkali solubilized latices, said at least one polymer being capable of being rendered water-insoluble by a chemical isolubilization agent;

(b) treating said dispersion with at least sufficient of said insolubilization agent to form insolubilized polymer and to produce a suspension containing stable agglomerates of filler particles, said particles being held together by said insolubilized polymer to form said agglomerates:

(c) intimately blending a filler amount of said suspension

with a papermaking stock to form a blend having an acid pH; and

(d) forming a paper from said blend and recovering said paper.

4,115,188

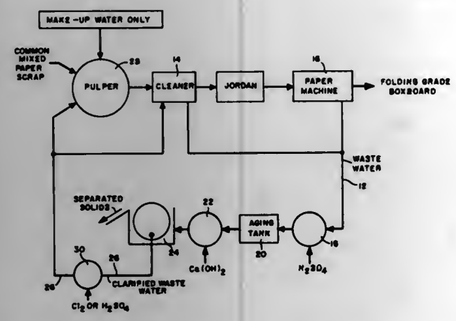
METHOD FOR RECYCLING PAPER MILL WASTE WATER

Richard C. O'Brien, deceased, late of Dayton, Ohio, and by Elva R. O'Brien, executrix, 983 Patrilt Sq., Dayton, Ohio 45459

Continuation-in-part of Ser. No. 612,567, Sep. 11, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 696,940

Int. Cl.[2] D21F *1/66*

U.S. Cl. 162—190 **10 Claims**



1. In a paper-making process a method for treating paper mill waste water to remove the suspended material therein so that the clarified waste water may be reused in the paper-making process, comprising the steps of:

(a) adding a sufficient amount of sulfuric acid to reduce the pH of the waste water to less than 4.0,

(b) mixing thoroughly, then,

(c) adding a sufficient amount of calcium hydroxide to rapidly drive the pH of the acidified waste water to above 10 and cause coagulation of the solid matter in said waste water,

(d) separating the coagulated solid material from the waste water to clarify it, and

(e) treating the clarified waste water to return the pH to approximately neutral.

4,115,189

PAPER MACHINE DRAW ROLL

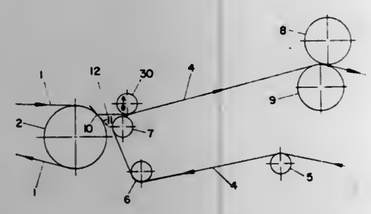
Roland O. Cyrenne, 1570 Lachance St., Sherbrooke, Quebec, Canada (J1J 1B3)

Filed Feb. 16, 1977, Ser. No. 769,351

Claims priority, application Canada, Feb. 20, 1976, 246216

Int. Cl.[2] D21F *1/40, 2/00*

U.S. Cl. 162—305 **2 Claims**



1. In a paper machine having a wet web forming section including a fourdrinier wire entrained about a couch roll, a press section including a continuous felt entrained about a corner roll adjacent said couch roll, the improvement in means for feeding an unsupported wet web of paper from said wire to said felt comprising a draw roll positioned above said corner roll slightly downstream of said corner roll relative to said couch roll, said draw roll having a plurality of axially spaced circumferential grooves in the outer surface thereof, said draw roll being adapted to contact said wet web on said felt.

4,115,190

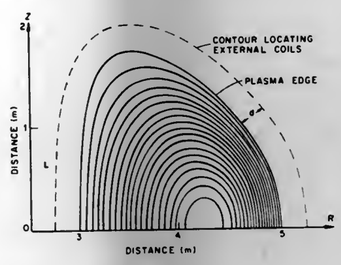
HIGH BETA PLASMA OPERATION IN A TOROIDAL PLASMA PRODUCING DEVICE

John F. Clarke, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 24, 1976, Ser. No. 744,473

Int. Cl.[2] G21B *1/00*

U.S. Cl. 176—3 **1 Claim**



1. In a method for producing a plasma in a device of toroidal configuration having poloidal and toroidal magnetic fields provided by respective field windings for confining a toroidal plasma column with a plasma current induced therein along a circular equilibrium axis in a torus vacuum cavity by means of primary ohmic heating windings, and further heating said plasma column by auxiliary heating after the ohmic heating thereof, the improvement comprising the steps of measuring the average plasma pressure, p; determining the magnetic safety factor, q; determining a magnetic flux conserving equilibria by means of the equation:

$$\Delta^{*}\Psi = -4\pi(R^2p' + FF'),$$

Where R is the major radius of said device, p' is the derivative of the plasma pressure with respect to magnetic flux, and the F function is related to the safety factor, q, as determined by the equation:

$$F = \frac{4\pi^2 q(\psi)}{V' \langle R^{-2} \rangle},$$

where V' is the specific volume between two flux surfaces, and $\langle R^{-2} \rangle$ is the average major radius of the flux surfaces; determining the poloidal magentic field as a function of said equilibria by means of the equation:

$$B_p = i_\phi \times \nabla\Psi/R,$$

where i_ϕ is a vector in the toroidal direction; utilizing said volume and said determined poloidal magnetic field for determining the total current I_w flowing in said plasma based on the relationship:

$$I_w = \frac{V' \langle B_p^2 \rangle}{8\pi},$$

where $\langle B_p^2 \rangle$ is a flux surface average of the poloidal field at the plasma surface; and finally controlling the respective current flow to respective ones of said poloidal field windings such that the total current flow to said poloidal field windings is equal and opposite to said total plasma current I_w, the distribution of the current to the poloidal field windings being determined by the expression;

$$K = \frac{n \times B_p}{4\pi},$$

where K is the current density per unit length on the surface containing the poloidal field windings and n is a unit vector normal to this surface; and repeating all of the above steps for each measured value of said pressure which increases during the heating of said plasma by means of said auxiliary heating whereby a magnetic flux conserving equilibrium is maintained during all stages of operation of said method and the beta which is directly related to said pressure will ultimately reach a high value, thus ultimately providing a substantially high neutron production rate which is a function of the square of the beta.

4,115,191

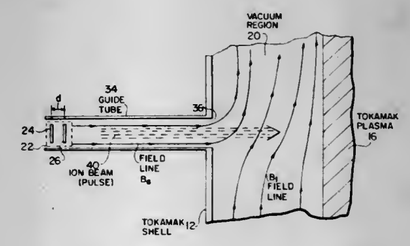
TOKAMAK PLASMA HEATING WITH INTENSE, PULSED, ION BEAMS

Edward Ott, Ithaca, N.Y., and Wallace M. Manheimer, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1977, Ser. No. 806,382

Int. Cl.[2] G21B *1/00*

U.S. Cl. 176—3 **3 Claims**



1. Apparatus for heating a plasma, said plasma being confined in an apparatus of the type wherein said plasma is confined in a vacuum chamber by a magnetic field and a vacuum region is formed surrounding said plasma, which comprises:

means for producing a space-charge-neutralized, pulsed, ion beam; and

means for directing said ion beam into the magnetic field, said ion beam being formed so that

the square of the ion frequency of said beam is very much larger than the square of the gyrofrequency of said beam in the magnetic field, thereby producing a polarization electric field in said beam when it enters the magnetic field, said polarization field enabling said beam to propagate across the vacuum region,

the velocity of said beam is greater than the Alfven speed of said beam in the magnetic field so that said beam will penetrate said plasma,

and the velocity of said beam is less than $2\sqrt{2}$ times the Alfven speed of said beam in the magnetic field so that said beam will deposit its energy in the interior of said plasma.

4,115,192

FAST NEUTRON NUCLEAR REACTOR

Patrick Jogand, Aix en Provence, France, assignor to Commissariat a l'Energie Atomique, Paris, France

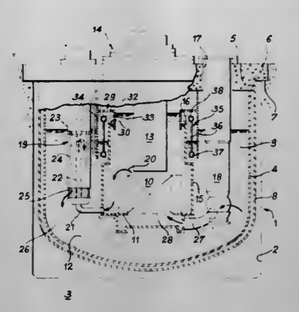
Filed Jul. 6, 1977, Ser. No. 813,324

Claims priority, application France, Jul. 6, 1976, 76 20652

Int. Cl.[2] G21C *15/18*

U.S. Cl. 176—40 **3 Claims**

1. A fast neutron nuclear reactor comprising on the inside a main vessel having a vertical axis suspended by its upper open part on a thick protective slab which seals a cavity surrounding said vessel, a volume of a liquid cooling metal and also positioned within said main vessel an inner vessel having a cylindrical wall containing the core of the reactor submerged beneath the liquid metal level, the intermediate space between the main vessel and the inner vessel having heat exchangers and pumps which pass below the level of the liquid metal, wherein the upper end of the inner vessel is covered by an inverted annular bell cap and is placed under the internal pressure of a neutral



gas in order to prevent in normal operation direct communication between the hot liquid metal within the inner vessel and the cold liquid metal in the annular space between the main vessel and the inner vessel, said bell cap covering an auxiliary exchanger which externally surrounds the inner vessel in such a way that if there is a fault in the reactor and after reducing the neutral gas pressure beneath the bell cap as a result of natural convection a circulation of the liquid metal takes place beneath the bell cap of the inner vessel towards the annular space and passes through the auxiliary exchanger.

4,115,193

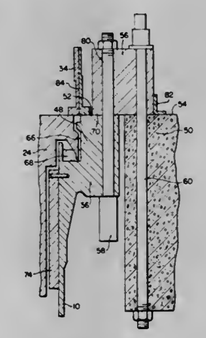
NUCLEAR REACTOR PRESSURE VESSEL SUPPORT SYSTEM

George R. Sepelak, McMurray, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 571,836, Apr. 25, 1975, abandoned. This application Aug. 17, 1976, Ser. No. 715,255

Int. Cl.[2] G21C *13/06*

U.S. Cl. 176—87 **4 Claims**



1. A nuclear reactor pressure vessel support system comprising:

a generally cylindrical nuclear reactor pressure vessel having a fluid contained therein;

a pressure vessel flange around the upper periphery of said pressure vessel, said flange having an annular vertical

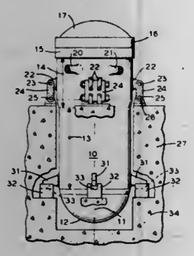
extension formed integral therewith, said vertical extension having width less than the radial width of said flange;
a containment well radially surrounding said pressure vessel, said well having a containment support ledge thereon adjacent said flange extension;
a support ring located on the upper surface of, and secured to, said flange vertical extension and said containment support ledge;
a rotatable plug positioned within said pressure vessel, said rotatable plug having a radial extension formed integral therewith around the outer periphery thereof, said plug radial extension being located adjacent said flange vertical extension, said plug radial extension and said flange vertical extension forming a first annular space therebetween;
an annular plug riser secured to the upper surface of said plug radial extension and the upper surface of said flange vertical extension, said flange vertical extension rotatably supporting said plug through said plug riser, said plug riser comprising two riser elements having a second annular space therebetween, said second annular space being in fluid communication with said first annular space; and
sealing means for preventing the escape of contained fluids through said second annular space disposed within said first annular space adjacent said flange vertical extension, said sealing means preventing the escape of contained fluids through the joint formed by said flange vertical extension and said support ring.

4,115,194

REACTOR PRESSURE VESSEL SUPPORT

James Paul Butti, Wadsworth, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,965
Int. Cl.[2] G21C *13/00*
U.S. Cl. 176—87 3 Claims



1. The combination comprising a generally cylindrical nuclear reactor pressure vessel having a longitudinal axis, a plurality of radially projecting lugs attached to and spaced circumferentially about said pressure vessel, a support foundation, a plurality of base plates attached to said foundation, and a plurality of links disposed parallel to the longitudinal axis and a plurality of pins disposed laterally to the longitudinal axis, said links and pins being arranged at circumferentially spaced intervals so that one of said pins pivotably connects one end of a link to one of said lugs and another of said pins pivotably connects said link at its other end to a base plate forming link and pin supporting arrangements at circumferentially spaced intervals such that the pressure vessel is longitudinally supported and restrained from longitudinal, lateral and rotary movement by said link and pin supporting arrangements.

4,115,195

RABIES VACCINE PREPARATION

Rudolph Barth, Marburg, Lahn, and Oskar Jaeger, Niederwetter, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Lahn, Fed. Rep. of Germany

Filed Apr. 12, 1977, Ser. No. 786,766
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616407
Int. Cl.[2] C12K *7/00;* A61K *39/28;* C12K *5/00*
U.S. Cl. 195—1.3 4 Claims

1. In a process for preparing a rabies vaccine, the improvement wherein the rabies virus is first adapted to chick-embryo fibroblast cell cultures using a suspension containing the rabies virus in progressing dilutions from 10^{-1} to 10^{-5} for the inoculation of the cell culture passages and then inoculating growth cultures with a suspension containing the adapted rabies virus in a dilution from 10^{-2} to 10^{-5} for multiplication of the virus.

4,115,196

Patent Not Issued For This Number

4,115,197

PROCEDURE FOR OBTAINING PENICILLIUM SPECIES MUTANTS WITH IMPROVED ABILITY TO SYNTHESIZE MYCOPHENOLIC ACID

Stephen W. Queener, Indianapolis, Ind., and Claude H. Nash, III, Audubon, Pa., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 779,670, Mar. 21, 1977, abandoned. This application Aug. 29, 1977, Ser. No. 828,392
Int. Cl.[2] C12D *9/06, 9/10;* C12K *1/02*
U.S. Cl. 195—36 R 8 Claims

1. A method for efficiently obtaining higher mycophenolic-acid-producing strains of Penicillium, which consists of mutating a mycophenolic-acid-producing Penicillium strain, exposing the mutated population to a polyene antibiotic and screening the polyene-antibiotic-resistant strains for mycophenolic acid production.

4,115,198

METHOD OF IMMOBILIZATION OF BIOLOGICALLY ACTIVE ORGANIC SUBSTANCES INCLUDING ENZYMES

Robert W. Coughlin, 49 Storrs, Heights Rd., Conn. 06268; Marvin Charles, 622 N. 29 St., Allentown, Pa. 18104, and Billy R. Allen, 2034 Dublin-Granville Rd., Columbus, Ohio 43229

Continuation-in-part of Ser. No. 441,572, Feb. 11, 1974, abandoned. This application Jul. 8, 1976, Ser. No. 703,670
Int. Cl.[2] C07G *7/02*
U.S. Cl. 195—63 9 Claims

1. A method of preparing water-insoluble enzymes comprising the steps:
(a) precipitating a hydrous metal oxide from a solution of a salt of said metal in the presence of an insoluble support material so as to form a coating of the said oxide on the said support,
(b) washing the composite support material resulting from step *a*,
(c) contacting the composite support material resulting from step *b* with a solution of an enzyme so as to immobilize said enzyme on said support material.

4,115,199

PREPARATION OF CULTURE CONCENTRATES FOR DIRECT VAT SET CHEESE PRODUCTION

Randolph S. Porubcan, West Allis, and Robert L. Sellars, Waukesha, both of Wis., assignors to Chr. Hansen's Laboratory, Inc., Milwaukee, Wis.

Filed May 4, 1977, Ser. No. 793,483
Int. Cl.[2] C12K *3/00;* C12B *1/26;* A23C *19/02, 23/00*
U.S. Cl. 195—96 11 Claims

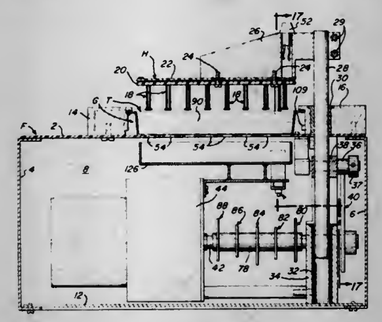
1. The method of preparing concentrated bacterial cultures for direct vat inoculation of milk batches in which harmless lactic acid-producing bacteria are cultured in an aqueous medium including fermentation nutrients to obtain a fermented aqueous culture of the bacteria cells together with residual nutrients including casein, wherein the improvement comprises recovering and concentrating said cells by subjecting said culture to centrifugation while having dissolved therein from 0.25 to 5.0% based on the weight of the culture of water-soluble food-acceptable polyphosphate salt selected from the class consisting of tripolyphosphate and hexametaphosphate containing from 4 to 22 phosphate groups per molecule, said centrifugation producing a cell concentrate of said bacteria having in excess of 50×10^9 CFU per gram.

4,115,200

INOCULATOR

Joseph A. Anderson, Denver, Colo., assignor to Benny F. Mertens, Denver, Colo., a part interest

Filed Aug. 9, 1976, Ser. No. 712,685
Int. Cl.[2] C12K *1/04*
U.S. Cl. 195—127 9 Claims



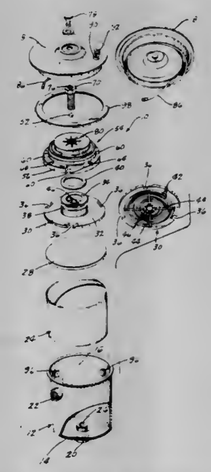
1. An inoculator for placing discrete amounts of inoculum into each of a plurality of wells in an antibiotic plate, said inoculator comprising:
a support for alternatively holding a tray containing a quantity of inoculum therein and an antibiotic plate having wells therein, wherein each well contains broth and/or antibiotics, said support having a plurality of spaced openings therein;
means for positioning either the inoculum tray or the antibiotic plate on said support;
a head mounted above said support for reciprocal movement toward and away from said support;
a plurality of transfer loops depending from one side of said head and aligned with said opening in said support for being dipped selectively in the inoculum tray and in the respective wells of the antibiotic plate when said head is moved toward said support; to cause inoculum on said transfer loops to be placed in the wells of the antibiotic plate in discrete amounts.
means for causing said head to reciprocally move from a first position spaced from said support to a second position wherein said transfer loops are selectively dipped in the inoculum tray and in the respective wells of the antibiotic plate and a third position wherein said transfer loops extend through said spaced openings in said support for sterilization of said transfer loops; and
means for causing inoculum on said transfer loops to be placed in the wells of the antibiotic plate in discrete amounts; and
tray means located below said support in which said rows of transfer loops are simultaneously sterilized by resistance heating while said head is in said third position with said transfer loops extending through said openings in said support.

4,115,201

OIL RECLAIMER

Jerry P. Malec, 10524 E. Pine, Tulsa, Okla. 74116

Filed Jun. 25, 1976, Ser. No. 699,938
Int. Cl.[2] B01D *3/28, 35/18;* C10G *7/00*
U.S. Cl. 196—46.1 8 Claims



1. An apparatus for removing impurities from lubricating oil, comprising,
a container having upper and lower ends,
said container having an oil inlet opening formed in its lower end for receiving the oil,
a filter material in the lower end of said container,
a redistribution plate means within said container above said filter material,
an evaporator plate means within said container above said redistribution plate means and having a diameter substantially equal to the diameter of said container to define a vaporization chamber thereabove, said evaporator plate means having upper and lower ends,
said redistribution plate means having oil redistribution means on the lower end for causing the oil adjacent thereto to be moved towards the center of said redistribution plate means, and thence upwardly through a central opening formed therein,
said evaporator plate means having a central opening formed therein extending between its upper and lower ends whereby the oil moved to the center of the lower end of said redistribution plate means will pass upwardly through said central opening of said evaporator plate means,
said evaporator plate means having a plurality of annular concentric tiers provided on its upper end whereby the oil passing through the upper end of said central opening of

said evaporator plate means will flow downwardly and outwardly over said concentric tiers,

a ring-shaped heating element positioned in said container and extending around the upper end of said evaporator plate means at the periphery thereof for heating the oil passing downwardly over said concentric tiers,

a cover means extending over the upper end of said container,

and means for conducting oil from the upper ends of said container,

said oil redistribution means comprising a plurality of concentric grooves formed in the lower end of said redistribution plate means and a plurality of radially extending grooves formed in the lower end of said redistribution plate means which communicate with said concentric grooves and which extend from the outermost concentric groove to the center of said redistribution plate means for communication with said central opening in said redistribution plate means.

4,115,202

APPARATUS FOR PRODUCING NON-ABRASIVE COKE FORMS FROM BROWN-COAL BRIQUETS

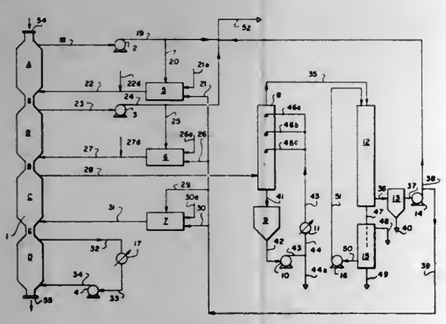
Kurt Lorenz, Hattingen; Horst Dungs, Herne; Peter Speich, Cologne, and Roman Kurtz, Frechen, all of Fed. Rep. of Germany, assignors to Firma Carl Still and Rheinische Braunkohlenwerke Aktiengesellschaft, both of, Fed. Rep. of Germany

Continuation of Ser. No. 706,542, Jul. 19, 1976, abandoned, which is a division of Ser. No. 660,153, Feb. 23, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,645

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1975, 2507735; Aug. 21, 1975, 2537191

Int. Cl.² C10B *1/04, 3/02, 21/02*

U.S. Cl. 202—99 **4 Claims**



1. In apparatus for producing non-abrasive coke forms from brown coal briquettes, of the type in which the brown coal briquettes are preheated, dehydrated or dried, carbonized and subsequently cooled in an oven in at least three respective stages, and including gas recirculating circuits for recirculating gas consisting essentially of combustion lean gas obtained from carbonization of the brown coal briquettes, with the gas in the recirculating circuits for the carbonization being heated and the gas in the recirculating circuits for the cooling being cooled, the improvement wherein said oven comprises four oven chambers arranged in superposed aligned relation and including a preheating chamber, a dehydrating chamber, a carbonization chamber and a cooling chamber; each chamber having conically converging upper and lower ends; means interconnecting the conically converging ends of adjacent chambers, said interconnecting means and said conically converging ends defining transition zones between said oven chambers, the cross-sectional area of each of said transition zones decreasing from one chamber toward the next subjacent chamber to approximately one-half the cross-sectional area of the superjacent chamber and then increasing to the full cross-sectional area of the subjacent oven chamber; respective gas inlets for each oven chamber provided around the entire periphery of the conically converging lower end thereof; respective gas outlets for each oven chamber provided around the entire periphery of the conically converging upper end thereof; respective means connecting the gas outlet of each chamber to the gas inlet thereof to provide, for each chamber, a primary gas recirculating circuit respective to only that chamber and separate from the primary gas recirculating circuits respective to the other chambers; respective combustion chambers, supplied with such combustion lean gas and with air, connected in the primary gas recirculating circuits of said pre-heating and dehydrating chambers for separately heating the respective gases recirculating therein; and respective dust settling receptacles provided immediately adjacent the gas outlets of said oven chambers and surrounding the transition zones interconnecting said oven chambers; said dust settling receptacles effecting separate dedusting of the recirculating gases of the respective oven chambers while reducing the flow velocity of the respective recirculating gases to substantially 0.2 to 2.0 m/sec.

4,115,203

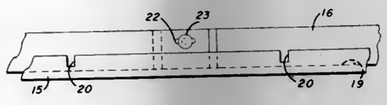
SEAL FOR COKE OVEN DOORS

Roy Naevestad, Fanwood, N.J., assignor to Wilputte Corporation, New Providence, N.J.

Filed Jan. 6, 1977, Ser. No. 757,378

Int. Cl.² C10B *25/06, 25/18*

U.S. Cl. 202—248 **9 Claims**



1. In a coke oven door sealing means comprising a knife edge member and a retainer member having a groove in which said knife edge member snugly seats for relative movement with respect to said retainer member, the improvement wherein said knife edge member comprises a continuous element having transverse slots at intervals therein extending from the inner edge thereof part way toward the outer sealing edge thereof to provide edgewise bending flexibility thereof and wherein said retainer member comprises a continuous element having slots therein at intervals transversely intersecting said groove to provide bending flexibility thereof, the slots in said members being displaced whereby one of said members provides a seal against gas leakage via the slots in the other member.

4,115,204

SEPARATION OF PHENOL-, CYCLOHEXANONE-, AND CYCLOHEXYLBENZENE-CONTAINING MIXTURES EMPLOYING AN N,N-DISUBSTITUTED AMIDE

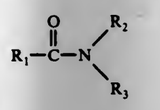
Timothy P. Murtha, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 21, 1977, Ser. No. 817,764

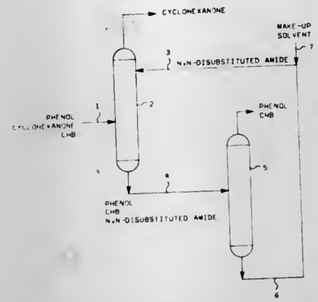
Int. Cl.² B01D *3/40;* **C07C** *39/04, 45/24*

U.S. Cl. 203—60 **3 Claims**

1. An extractive distillation of a mixture containing phenol and cyclohexanone, which mixture may also contain cyclohexylbenzene, which comprises distilling said mixture in the presence of a solvent comprising at least one N,N-disubstituted amide which contains up to 30 carbon atoms and can be represented by the following general formula



wherein R_1, R_2, and R_3 are each selected from the group consisting of alkyl radicals containing 1 to 20 carbon atoms, cycloalkyl radicals containing 5 to 20 carbon atoms, aryl or substituted aryl radicals containing 6 to 12 carbon atoms with the



substituent groups being one or more or a mixture of alkyl, alkoxy, cycloalkyl, halogen, or the like, and aralkyl radicals containing 7 to 12 carbon atoms, the N,N-disubstituted amide solvent selected has a boiling point above the boiling point of phenol (812° C. at atmospheric pressure), and mixtures thereof.

4,115,205

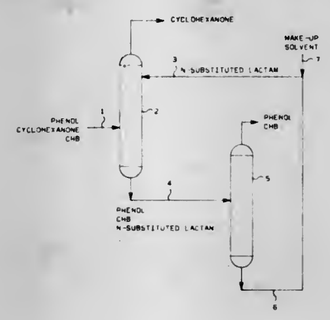
SEPARATION OF PHENOL-, CYCLOHEXANONE-, AND CYCLOHEXYLBENZENE-CONTAINING MIXTURES EMPLOYING AN N-SUBSTITUTED LACTAM

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 21, 1977, Ser. No. 817,768

Int. Cl.² B01D *3/40;* **C07C** *39/04, 45/24*

U.S. Cl. 203—60 **4 Claims**



1. An extractive distillation of a mixture containing phenol and cyclohexanone, which mixture may contain cyclohexylbenzene, which comprises distilling said mixture in the presence of a solvent comprising at least one N-substituted lactam.

4,115,206

SEPARATION OF PHENOL-, CYCLOHEXANONE-, AND CYCLOHEXYLBENZENE-CONTAINING MIXTURES EMPLOYING AN ORGANIC CARBONATE

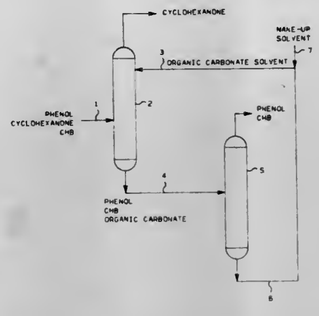
Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 21, 1977, Ser. No. 817,883

Int. Cl.² B01D *3/40;* **C07C** *39/04, 45/24*

U.S. Cl. 203—60 **4 Claims**

1. An extractive distillation of a mixture containing phenol and cyclohexanone, which mixture may contain cyclohexylbenzene, which comprises distilling said mixture in the presence of a solvent comprising an organic carbonate containing up to 30 carbon atoms.



4,115,207

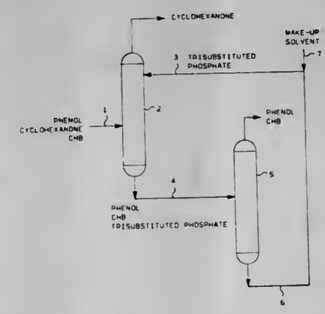
SEPARATION OF PHENOL-, CYCLOHEXANONE-, AND CYCLOHEXYLBENZENE-CONTAINING MIXTURES EMPLOYING A TRISUBSTITUTED PHOSPHATE

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 27, 1977, Ser. No. 819,422

Int. Cl.² B01D *3/40;* **C07C** *39/04, 45/24*

U.S. Cl. 203—60 **4 Claims**



1. An extractive distillation of a mixture containing phenol and cyclohexanone, which mixture may contain cyclohexylbenzene, which comprises distilling said mixture in the presence of a solvent comprising a trisubstituted phosphate boiling above phenol and containing up to 30 carbon atoms.

4,115,208

RECOVERY OF STYRENE FROM CRACKED HYDROCARBON FRACTIONS

Johannes D. M. Verstegen, Sittard, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 716,355, Aug. 20, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 838,883

Claims priority, application Netherlands, Aug. 25, 1975, 7509991

Int. Cl.² B01D *3/14;* **C07C** *15/10;* **G10G** *9/44*

U.S. Cl. 203—81 **6 Claims**

1. In a process for recovering styrene from the reaction products of the thermal cracking of hydrocarbons wherein hydrocarbons mixed with steam are directly heated and cracked, which process comprises the steps of,

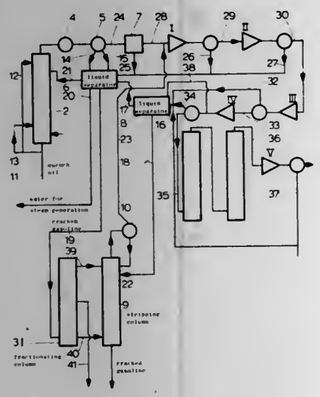
(1) quenching and fractionating the reaction products into a liquid bottom fraction comprises predominantly of hydro-

carbons with nine or more carbon atoms and a vaporous top fraction comprised predominantly of hydrocarbons with less than 9 carbon atoms and water vapor,

(2) cooling said vaporous top fraction to form a condensed portion comprised of water/hydrocarbon condensate, and an uncondensed portion comprised of water/hydrocarbon vapor mixture,

(3) subjecting the said vapor mixture to a multistage compression, wherein immediately after each compression stage the compressed products are cooled and in part condensed to form a plurality of second water/hydrocarbon condensates and a plurality of second uncondensed water/hydrocarbon vapor mixtures, said last mentioned vapor mixtures are respectively separated from said second condensate and subjected to the subsequent sequential compression stages,

(4) separating the water from the plurality of said second water/hydrocarbon condensates obtained in step (3) to form a plurality of dehydrated hydrocarbon condensates and passing said dehydrated hydrocarbon condensates to a stripping column,



(5) removing the water from the water/hydrocarbon condensate of step (2) to form a dehydrated hydrocarbon condensate,

(6) passing said dehydrated hydrocarbon condensate of step (5) to the stripping column of step (4), and

(7) stripping said dehydrated hydrocarbon condensates of steps (4) and (5) in said stripping column, the improvement consisting essentially of the combination of the additional steps prior to any introduction of said dehydrated hydrocarbon condensate obtained in step (5)

(A) passing said dehydrated hydrocarbon condensate of step (5) to a fractionating column and fractionating said dehydrated hydrocarbon condensate of step (5), whereby there is separately obtained:

(i) a first fraction having 8-carbon-atom hydrocarbons,

(ii) a second fraction having less-than-8-carbon-atom hydrocarbons, and

(iii) a third fraction having more-than-8-carbon atom hydrocarbons,

(B) thereafter recovering styrene from said first (i) fraction.

4,115,209

METHOD OF DETERMINING ION ACTIVITY USING COATED ION SELECTIVE ELECTRODES

Henry Freiser, Tucson, Ariz.; Helen J. James, Ogden, Utah; Gary Carmack, Tuscon, Ariz.; Robert W. Cattrall, Victoria, Australia, and Barbara M. Kneebone, Tucson, Ariz., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 519,297, Oct. 30, 1974, abandoned, which is a continuation-in-part of Ser. No. 219,119, Jan. 19, 1972, abandoned. This application Oct. 20, 1977, Ser. No. 844,146

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—1 T **7 Claims**

1. In a process for measuring the potentiometric responses caused by ion activity changes in solution, the improvement which comprises:

using an electrode formed by coating an ion exchange material which is molecularly dispersed throughout an insoluble film-forming polymeric matrix directly onto a conductive substrate such that an oxidation-reduction mechanism is not operative in the response of said electrode to the activity of ions in said solutions.

4,115,210

METHOD OF ELECTROLYTICALLY PREPARING A METAL IN PULVERULENT FORM

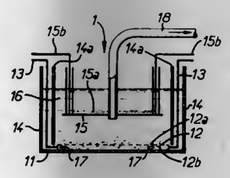
Roger Dekeister; Gilbert Lemaire, and Daniel Marzys, all of Auby-lez-Douai, France, assignors to Compagnie Royale Asturienne des Mines, Paris, France

Division of Ser. No. 566,111, Apr. 8, 1975, Pat. No. 4,064,033. This application Jun. 6, 1977, Ser. No. 804,152

Claims priority, application France, Apr. 12, 1974, 74 12912; May 29, 1974, 74 18539

Int. Cl.[2] C25C *5/00, 5/02*

U.S. Cl. 204—10 **1 Claim**



1. A process for electrolytically precipitating a pulverulent metal from a compound of the metal in an ionized solution, comprising establishing said ionized solution in an electrolytic cell using as a cathode for said cell a bed of powder of said metal, the grain size of said powder being substantially that of the particles to precipitate out of said ionized solution, passing the electrical current through said cathode and an anode immersed in said solution while said bed lies quiescent thereby to cause particles of said metal to precipitate electrolytically and to collect onto said bed of powder, intermittently agitating said bed to suspend said bed in said solution, and intermittently withdrawing a portion only of said suspended particles from said cell, the remainder of said particles then settling to the bottom of said cell to constitute again said cathode.

4,115,211

PROCESS FOR METAL PLATING ON ALUMINUM AND ALUMINUM ALLOYS

Takeo Tsukamoto; Miyoshi Okamura, and Toshio Kutami, all of Tokyo, Japan, assignors to Nihon Kagaku Sangyo Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,555

Claims priority, application Japan, Dec. 26, 1975, 50-154818

Int. Cl.[2] C25D *5/44, 5/50*

U.S. Cl. 204—37 R **14 Claims**

1. A process for the electrodeposition of metal on an aluminum or aluminum alloy substrate comprising:

(a) electrolyzing aluminum or an aluminum alloy by A.C. or superimposed A.C. and D.C., the aluminum or aluminum alloy being connected as the anode with respect to the D.C. component superimposed on the A.C., in an electrolytic solution comprising an aqueous solution containing a water-soluble acid and a water-soluble salt of a heavy metal, at a temperature of about 20° C for about from 5 to 30 minutes, thereby to produce an anodic oxide coating of said heavy metal onto the surface of the aluminum or aluminum alloy so as to impart good adhesion properties to the aluminum or aluminum alloy and render it suitable as a substrate for the electrodeposition of additional metal thereon;

(b) electrodepositing at least one additional metal on the thus-electrolyzed aluminum or aluminum alloy substrate; and

(c) heating the resulting aluminum or aluminum alloy substrate carrying the electrodeposited additional metal thereon to enhance the adhesion between the substrate and the additional metal.

4,115,212

ELECTROLYTIC COLORING PROCESS FOR NON ANODIZED ALUMINUM AND ITS ALLOYS

Jos Patrie, Grenoble, and Gabriel Colombier, Saint Egreve, both of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Filed Feb. 9, 1978, Ser. No. 876,356

Claims priority, application France, Feb. 11, 1977, 77 04639

Int. Cl.[2] C25D *5/30, 5/48*

U.S. Cl. 204—38 E **14 Claims**

1. A process for electrolytic coloring of objects of aluminum and alloys of aluminum comprising subjecting the objects, without previous anodization, to alternating current, at a voltage below the anodization voltage of the aluminum, while immersed in an aqueous bath having a pH less than 2 and containing boric acid, at least one acid from the group consisting of sulfuric acid, sulfamic acid and mixtures thereof, and at least one salt of a metal selected from the group consisting of copper, tin, silver, nickel and gold, the anion of which is selected from the group consisting of sulfate, sulfamate and chloride, and then coating the colored surface of the object with a colorless varnish.

4,115,213

ELECTRODEPOSITION PROCESS & APPARATUS

Kenji Ogisu, and Masahisa Enomoto, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1977, Ser. No. 860,884

Claims priority, application Japan, Dec. 17, 1976, 51/152744

Int. Cl.[2] C25D *3/66;* C25C *3/00*

U.S. Cl. 204—39 **20 Claims**

1. An electrodeposition process comprising the steps of:

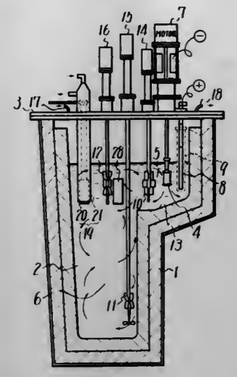
(a) preparing a fused salt electrolytic bath containing a salt of a metal to be electrodeposited or of constituent metals of an alloy to be electrodeposited;

(b) providing cathode and anode electrodes within said electrolytic bath;

(c) providing a cooling drum within said electrolytic bath for deposition of solid particles of said salt thereon;

(d) scraping the solid salt particles deposited on the surface of said cooling drum off said cooling drum;

(e) dispersing said salt particles scraped off said cooling drum throughout said electrolytic bath; and



(f) electrodepositing the desired metal or alloy on said cathode electrode from said electrolytic bath containing dispersed said salt particles therein.

4,115,214

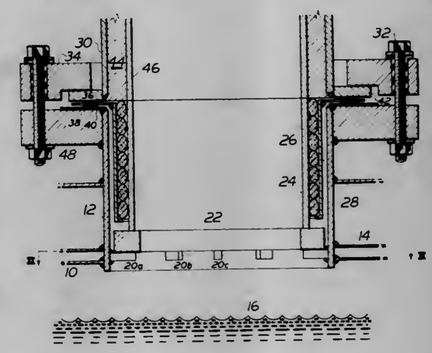
FUSED BATH CELL LID HAVING CORROSION PROTECTION MEANS AND METHOD OF USING SAME

Robert L. Hargis, Palestine, Tex., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 20, 1977, Ser. No. 807,963

Int. Cl.[2] C25C *3/00*

U.S. Cl. 204—64 R **5 Claims**



1. A method for exhausting a substance through a port in a lid of a chamber, comprising conducting the substance through a tube within the port, the substance being at a temperature such that it would corrode the port but for the containment of the substance within the tube, the tube being more resistant to corrosion bythe substance than is the port, supporting the tube on a support means extending into the interior of the port, the substance being able to corrode the support means at said temperature, and cooling at least a tube-supporting minimum of said support means sufficiently below said temperature such that said minimum remains uncorroded for supporting said tube.

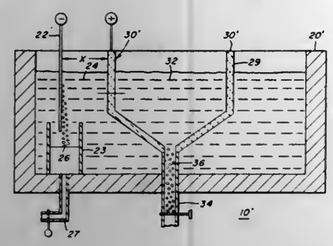
4,115,215
ALUMINUM PURIFICATION

Subodh K. Das, Natrona Heights; C. Norman Cochran, Oakmont; Richard A. Milito, Natrona; Robert M. Mazgaj, and Walter W. Hill, both of Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 725,482, Sep. 22, 1976, abandoned. This application Feb. 23, 1977, Ser. No. 771,100

Int. Cl.[2] C25C *3/06*

U.S. Cl. 204—67 **11 Claims**



1. A process for purifying aluminum alloy comprising:

(a) providing the aluminum alloy in a molten state in a container having a porous membrane therein, said porous membrane being capable of containing molten aluminum in the container and being permeable by a molten electrolyte; and

(b) electrolytically transferring aluminum through said porous membrane to a cathode in the presence of the electrolyte, the transferring effected at a current density of greater than 200 amps/ft^2 and characterized by depositing substantially all of the aluminum transferred through the porous membrane at the cathode, thereby substantially purifying said aluminum by separating it from its alloying constituents.

4,115,216
PROCESS FOR THE ELECTROCHEMICAL DIHYDROGENATION OF NAPHTHYL ETHERS

Detlev Herbert Skaletz, Mainz, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 790,671, Apr. 25, 1977. This application Nov. 28, 1977, Ser. No. 855,355

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743762

Int. Cl.[2] C25B *3/04, 11/04, 11/12*

U.S. Cl. 204—73 R **9 Claims**

1. A process for the electrochemical dihydrogenation of naphthyl ethers which comprises subjecting naphthyl ethers having at least one ether group in a solvent consisting essentially of an alkanol having from 1 to 3 carbon atoms, optionally in admixture with a small amount of a cosolvent, and containing no more than about 5 % by volume of water and at least one supporting electrolyte selected from the group consisting of

tetramethylammonium salt
tetraethylammonium salt
tetramethylammonium hydroxide
tetraethylammonium hydroxide
tetramethylphosphonium salt
tetraethylphosphonium salt
tetramethylphosphonium hydroxide and
tetraethylphosphonium hydroxide as a catholyte to electrolysis in a continuous flow diaphragm cell using a solid cathode having a more cathodic hydrogen overvoltage than that of Cu, and the usual solids an anode material, at temperatures of from −20° to +120° C, and at a pH of at least about 8.

4,115,217
PROCESS FOR ELECTROLYTIC PREPARATION OF CHLORITES

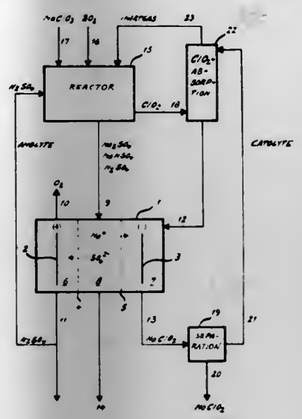
Karl-Georg Larsson, Trollhättan, and Maria Norell, Ljungaverk, both of Sweden, assignors to Kemanord AB, Stockholm 11, Sweden; Kemanord AB, Stockholm 11, Sweden and Kemanord AB, Stockholm, Sweden

Filed May 6, 1977, Ser. No. 794,698

Claims priority, application Sweden, May 11, 1976, 7605373

Int. Cl.[2] C25B *1/36;* **C01B** *11/10*

U.S. Cl. 204—95 **7 Claims**



1. The process which comprises

(a) reacting an alkali or alkali earth metal chlorate with a reducing agent under acid conditions in a reaction zone to thereby form chlorine dioxide and a residual aqueous solution containing alkali or alkali earth metal ions,

(b) providing an electrolytic cell comprising an anode, a cathode and a cation selective membrane positioned between said anode and said cathode, said electrolytic cell being separate from said reaction zone,

(c) withdrawing said residual solution from said reaction zone and introducing it into said electrolytic cell on the anode side of said cation selective membrane,

(d) withdrawing the chlorine dioxide formed in said reaction zone and feeding this chlorine dioxide to the cathode side of the cation selective membrane of the cell,

(e) electrolytically producing hydrogen ions at said anode,

(f) withdrawing from the anode side of said cation selective membrane of said cell a solution which has, in relation to said residual solution, a decreased concentration of alkali or alkali earth metal ions,

(g) feeding at least a part of the solution withdrawn from the cell according to step (f) to said reaction zone,

(h) electrolytically reducing the chlorine dioxide to chlorite at said cathode, and

(i) withdrawing alkali or alkali metal chlorite from the cathode side of said cation selective membrane of said cell.

4,115,218
METHOD OF ELECTROLYZING BRINE

Michael Krumpelt, Riverview, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 22, 1976, Ser. No. 735,115

Int. Cl.[2] C25B *1/16, 1/26, 13/08, 15/08*

U.S. Cl. 204—98 **8 Claims**

1. A process for electrolyzing sodium chloride brine in an electrolytic cell having a dimensionally stable anode, a cathode, and between said anode and said cathode a membrane of copolymerized tetrafluoroethylene and perfluorovinylether sulfonylfluoride having an equivalent weight number of approximately 1000 to 1500 and a thickness of approximately 0.1 to 0.5 millimeters,

said process involving the electrolysis of brine containing a membrane obstructing proportion of calcium not exceeding 6 parts per million of calcium,

said process including the use at intervals of approximately once per month or less frequently of a voltage-reduction action,

said voltage-reduction action comprising reducing the current through said electrolytic cell for a period of 0.5 to 90 minutes to a value of less than 20 percent of the current normally used.

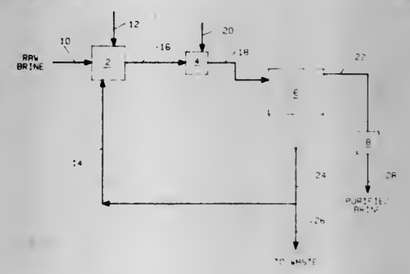
4,115,219
BRINE PURIFICATION PROCESS

Alan B. Gancy, and Chester J. Kaminski, both of Syracuse, N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 653,874, Jan. 30, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,016

Int. Cl.[2] C25B *1/36*

U.S. Cl. 204—99 **11 Claims**



1. In a brine treatment process for removing dissolved strontium, calcium and magnesium impurities from a raw sodium chloride brine containing the same wherein the raw brine is contacted with sodium carbonate for formation of strontium carbonate and calcium carbonate solids, the brine containing the carbonate solids is contacted with sodium hydroxide for formation of magnesium hydroxide solids, and at least a major portion of said strontium carbonate, calcium carbonate and magnesium hydroxide solids is removed from the brine to produce a purified brine, and the brine is thereafter subjected to electrolysis in an electrolytic mercury cell, the improvement which comprises recycling said removed solids, in an amount of from about 25 to 1000% of the solids produced, for admixture with said raw brine and sodium carbonate.

4,115,220
PROCESS FOR THE PREPARATION OF HIGH PURITY ANTIMONY

Günter Bartels, Wildemann; Horst Immenroth, Langelsheim, and Günter Heyer, Goslar, all of Fed. Rep. of Germany, assignors to Preussag Aktiengesellschaft Metall, Goslar, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,836

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1977, 2715150

Int. Cl.[2] C25C *1/22*

U.S. Cl. 204—105 R **6 Claims**

1. A process for the preparation of high purity antimony comprising:

(a) hydrolyzing antimony(III) chloride with ammonium hydroxide to produce a precipitate of antimony(III) oxide;

(b) dissolving the antimony(III) oxide precipitate in an aqueous solution of d-sorbitol and a base; and

(c) subjecting the solution from step (b) to electrolysis using an insoluble anode.

4,115,221
ACID FERRIC SULFATE LEACHING OF COPPER SULFIDE CONCENTRATES

Milton E. Wadsworth, 3437 S. 13th E.; Jan D. Miller, 1886 Atkin Ave., both of Salt Lake City, Utah 84106; John A. Herbst, 640 Parkview, Park City, Utah 84060; John L. Kolbe, Clarksville, Md. 21029, and Howard Wayne Hayden, Columbia, Md. 21043

Filed Feb. 28, 1977, Ser. No. 772,944

Int. Cl.[2] C25C *1/12*

U.S. Cl. 204—108 **9 Claims**

1. A process for removing copper from copper sulfide bearing materials comprising the steps of:

fine-grinding copper sulfide-bearing materials to a particle size of at most one micron;

leaching said finely-ground copper sulfide-bearing material in an acidic solution containing a stoichiometric amount of ferric ions to oxidize the copper ions contained in the copper sulfide-bearing material and form a pregnant leach solution containing said copper ions and ferrous ions;

separating said copper ion-bearing pregnant leach solution from any remaining solid materials;

crystallizing iron salts in the pregnant leach solution;

electrolyzing the pregnant leach solution and ferrous sulfate to produce elemental copper and ferrous ion in solution; and

introducing oxygen and sulfuric acid to the ferrous ion-bearing solution to oxidize the ferrous to ferric ions.

4,115,222
METHOD FOR ELECTROLYTIC WINNING OF LEAD

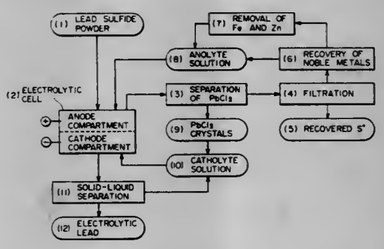
Hiroshi Kametani, Tokyo, and Aiko Aoki, Chofu, both of Japan, assignors to National Research Institute For Metals, Tokyo, Japan

Filed Oct. 18, 1977, Ser. No. 843,282

Claims priority, application Japan, Oct. 25, 1976, 51-127162

Int. Cl.[2] C25C *1/18*

U.S. Cl. 204—117 **11 Claims**

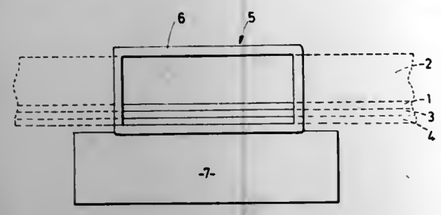


1. A method for winning lead from a powdery material consisting of a lead sulfide concentrate or a powdery material containing lead sulfide by passing an electric current across the anode and the cathode of an electrolytic cell partitioned into an anode compartment and a cathode compartment by a diaphragm; which comprises filling the anode compartment with a suspension of the aforesaid powdery material in an aqueous solution of a water-soluble chloride, electrolytically forming the crystalline particles of lead chloride by the anodic oxidation of the suspended particles, separating and refining the crystalline particles of lead chloride from the aqueous solution of the water-soluble chloride, and filling the cathode compartment with a solution of the separated and refined crystalline particles of lead chloride dissolved in an aqueous solution of a water-soluble chloride thereby to deposit lead electrolytically on the cathode.

4,115,223
GALLIUM ARSENIDE PHOTOCATHODES

Edward John Thrush, Stansted Mountfitchet, England, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 641,123, Dec. 15, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 822,580
Int. Cl.[2] C25F *3/02, 3/14;* H01L *27/12, 21/36*
U.S. Cl. 204—129.6 16 Claims



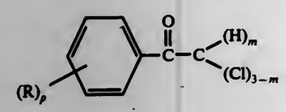
1. A method of making a transmission type active layer, III-V semiconductor photocathode including the steps of:
providing a semiconductive body containing a layer which is to form the active layer of the photocathode;
preparing a billet of glass having a coefficient of expansion matched with said semiconductive body;
placing a surface of the billet in contact with a surface of the semiconductive body to form an assembly of said billet and body;
applying pressure between the body and the billet;
heating the billet and body assembly by a susceptor arrangement of an induction heater to preferentially heat the semiconductive body to a temperature above the softening point of the glass while leaving the bulk of the billet at a temperature beneath said softening point;
reducing the temperature of the assembly once the surface of the billet in contact with the semiconductive body has begun to flow;
annealing the assembly at a reduced temperature;
depositing an anti-reflection coating on an optical input face of said billet opposite said body; and
removing a porton of said body to expose said active layer.

4,115,224
RADIATION ACID CURABLE RESIN COMPOSITIONS AND PROCESS FOR CURING THEM

Reginoldus Havinga, Schalkhaar, and Pieter Dirk Swaters, Lochem, both of Netherlands, assignors to Akzo NV, Arnhem, Netherlands

Division of Ser. No. 347,563, Apr. 3, 1973, Pat. No. 3,850,989. This application Jul. 5, 1974, Ser. No. 486,097
Claims priority, application Netherlands, Apr. 21, 1972, 7205384
Int. Cl.[2] C08F *8/18, 8/34*
U.S. Cl. 204—159.18 7 Claims

1. In a process for curing an acid-curable resin containing a phenol, urea or melamine resin by irradiation with ultraviolet light, the improvement comprising
incorporating therein a photocatalyst having the formula

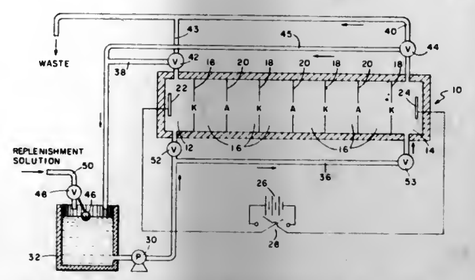


wherein $m = 0$, 1 or 2 and p is an integer from 1 to 5 and wherein, when p is 1, R represents an alkyl or alkoxy group having at least 4 C-atoms, and when $p > 1$, R represents alkyl or alkoxy groups having together at least 4 C-atoms.

4,115,225
ELECTRODIALYSIS CELL ELECTRODE REVERSAL AND ANOLYTE RECIRCULATION SYSTEM

Edgardo J. Parsi, Lexington, Mass., assignor to Ionics, Inc., Watertown, Mass.

Filed Jul. 22, 1977, Ser. No. 818,041
Int. Cl.[2] B01D *13/02*
U.S. Cl. 204—180 P 7 Claims



1. In an electrodialysis cell having an anode, an anode chamber, a cathode, a cathode chamber and at least one fluid treatment chamber, positioned between said anode and cathode chambers, said chambers separated by permselective membranes, the improvement which comprises:
a. a direct current source connected to said anode and cathode;
b. an anolyte storage tank;
c. first anolyte pipe means connecting the output of said anolyte tank to the input of said anode chamber;
d. second anolyte pipe means connecting the output of said anolyte tank to the input of said cathode chamber;
e. third anolyte pipe means connecting the output of said anode chamber to the input of said anolyte tank;
f. fourth anolyte pipe means connecting the output of said cathode chamber to the input of said anolyte tank;
g. first waste pipe means connected to the output of said anode chamber;
h. second waste pipe means connected to the output of said cathode chamber;
i. pump means for simultaneously circulating anolyte through said anode and cathode chambers;
j. first switching valve means for alternatively directing the output of said anode chamber through said third anolyte pipe and said first waste pipe;
k. second switching valve means for alternatively directing the output of said cathode chamber through said fourth anolyte pipe and said second waste pipe; and
l. reversing switch means for reversing the polarity of said direct current source, for activating said first valve switching means for directing the output of said anode chamber through said first waste pipe, and for activating said second switching valve means for directing the output of said cathode chamber through said fourth anolyte pipe.

4,115,226
CATAPHORETIC ELECTRODEPOSITION BATHS CONTAINING WATER-SOLUBLE LEAD SALTS

Robert R. Zwack, New Kensington, and Robert D. Jerabek, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 6, 1977, Ser. No. 785,154
Int. Cl.[2] C25D *13/06, 13/10*
U.S. Cl. 204—181 C 6 Claims

1. An improved method of electrocoating an electrically conductive article serving as a cathode in an electrical circuit comprising an anode, said cathode and an electrodeposition bath comprising an aqueous dispersion of a cationic electrodepositable resin, the improvement comprising the addition to said electrodeposition bath of 50 to 3000 parts per million based on total bath weight of a water-soluble lead compound in an amount sufficient such that it will improve the corrosion resistance of a ferrous metal article which is cathodically electrocoated in said electrodeposition bath, the lead compound being soluble to the extent of at least one percent by weight in water having a pH of 7.

4,115,227
CATHODIC ELECTRODEPOSITION OF PAINTS

Isidor Hazan, Clementon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

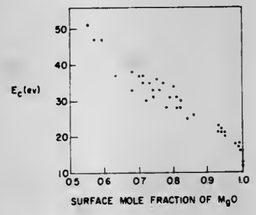
Continuation-in-part of Ser. No. 746,298, Dec. 1, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 845,891
Int. Cl.[2] C25D *13/06*
U.S. Cl. 204—181 C 19 Claims

1. In a process for electrocoating with a coating composition a negatively-charged substrate immersed in a coating bath containing an aqueous dispersion of said coating composition, said bath having a cathode zone containing said substrate and an anode zone containing a charged anode, said substrate and said anode constituting oppositely-charged electrodes, the charged electrodes being maintained in electrical contact with each other by means of said bath, wherein said bath comprises a cationic film-forming polymer, an acidic ionizing agent, and a crosslinking agent, the improvement which comprises:
employing phosphoric acid as an acidic ionizing agent;
employing as a cationic film-forming polymer a graft copolymer having a backbone portion containing secondary and/or tertiary amine functionality, said graft copolymer being stabilized in the aqueous dispersion by a phosphate salt of the amine functionality, said backbone portion being graft polymerized with hydrophobic copolymer derived from epoxy esters, said hydrophobic copolymer having a high enough concentration in the graft copolymer that the coating deposited on the substrate has at least about 83% solids content and so that the phosphoric acid concentration in the deposited coating composition is no more than about 17.5% of the phosphoric acid concentration in the bath; and
employing as the crosslinking agent a composition which is nonreactive in the bath but reactive with said film-forming polymer at elevated temperatures.

4,115,228
METHOD OF MAKING SECONDARY-ELECTRON EMITTERS

Victor E. Henrich, Newton, and John C. C. Fan, Chestnut Hill, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 604,390, Aug. 13, 1975, Pat. No. 4,038,216, which is a continuation-in-part of Ser. No. 482,109, Jun. 24, 1974, abandoned. This application May 31, 1977, Ser. No. 802,203
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 EC 2 Claims

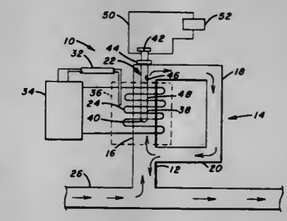


1. A method of making a secondary-electron emitter comprising:
combining a secondary-electron emitter material and a metallic material to provide a fine-grained cermet layer of said materials,
removing said electrically conductive material from the surface of said layer to change the ratio of said materials on said surface,
wherein said steps of combining said emitter material and said conductive material comprises sputtering said materials to transfer them to form a film on a substrate, and
said step of removing said electrically conductive material comprises sputter etching said film to remove both the emitter and conductive material but at different rates to leave a surface layer richer in said emitter material than existed prior to sputter etching.

4,115,229
APPARATUS FOR SAMPLING A GASEOUS STREAM

David M. Capone, Oakmont, Pa., assignor to Thermo-Lab Instruments, Inc., Pittsburgh, Pa.

Filed Nov. 8, 1976, Ser. No. 739,724
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S 5 Claims



1. Apparatus for sampling a gaseous stream flowing in a main passageway comprising,
a main passageway with a gaseous stream flowing therethrough,
a closed loop conduit having an inlet portion, an intermediate portion and an outlet portion,
a junction conduit in fluid communication with said main passageway and said closed loop conduit arranged to convey a sample of said gaseous stream from said main passageway to said closed loop conduit inlet portion and a portion of the analyzed sample from said closed loop conduit outlet portion to said main passageway,
said junction conduit positioned in fluid flow communication with said inlet and outlet portions of said loop conduit and providing a common ingress for said sample to said closed loop conduit and egress for a portion of said analyzed sample from said closed loop conduit causing the recirculation of a portion of said analyzed sample in said closed loop conduit,
convection means operatively associated with said loop conduit to maintain a temperature differential between said inlet portion and said outlet portion to induce a convective continuous flow of sample gas through said junction conduit and said closed loop conduit, and
sensing means in the flow path through said loop conduit for sensing the condition of sample gas.

4,115,230
PARTIAL OXYGEN MEASUREMENT SYSTEM

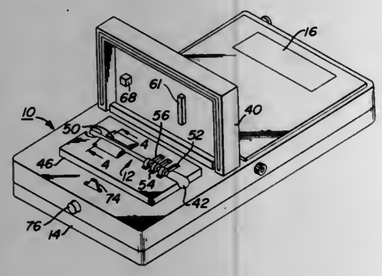
Paul Beckman, 944 Henrietta Ave., Huntingdon Valley, Pa. 10096

Filed Jan. 6, 1977, Ser. No. 757,207
Int. Cl.[2] G01N *27/28, 27/46;* H05B *3/58*
U.S. Cl. 204—195 R 55 Claims

1. A fluid measuring system for quantitating the amount of particular constituents contained in a fluid, comprising:
(a) sensor means having a chamber adapted to contain said fluid, said sensor means having anode electrode means extending internal said chamber within said sensor means,

and, cathode electrode means extending internal said chamber and said anode electrode means;
(b) housing means for insert of said sensor means in predetermined positional relationship therewith;
(c) thermostatic control means within said housing means for heating and maintaining said fluid within said chamber at a predetermined temperature; and,
(d) means for applying current to said sensor means and said thermostatic control means for measurement of the amount of said particular constituents contained in said fluid.

32. A fluid measuring sensor comprising:
(a) an enclosed glass tubular housing extending in a longitudinal direction forming an internal chamber adapted to contain a fluid; said housing including a resilient bulb element mounted to one end of said housing for drawing fluid internal said chamber;
(b) anode electrode means extending internal said housing in said longitudinal direction; and,



(c) cathode electrode means extending in said longitudinal direction internal said housing and said anode electrode means.

52. A fluid measuring thermostatic control assembly adapted to heat and maintain a fluid contained within a fluid measuring sensor to a predetermined temperature, comprising:
(a) heater mounting means adapted to receive said fluid measuring sensor; said heater mounting means including a flexible foil member having an inverted Omega contour deformable into contiguous relation with a predetermined segmental surface area of a stem portion of said fluid measuring sensor, said flexible foil member having heater elements contained therein passing in an undulating manner when taken with respect to a longitudinal extension of said foil member and
(b) electrical circuit means coupled to said heater mounting means for heating and maintaining said predetermined temperature of said fluid within said sensor.

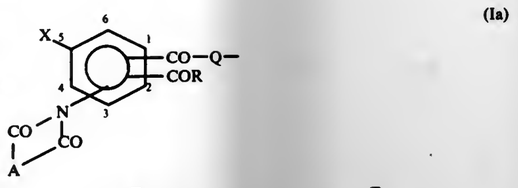
4,115,231

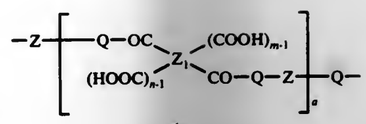
CROSSLINKABLE MIXTURES OF OLIGOMERS OR POLYMERS AND DIAMINES

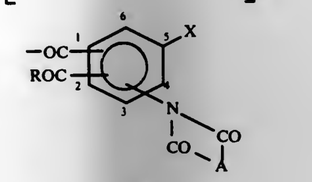
Roland Darms, Therwil; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 6, 1976, Ser. No. 748,016
Claims priority, application Switzerland, Dec. 19, 1975, 16512/75
Int. Cl.² C08G *73/12*
U.S. Cl. 204—159.22 **11 Claims**

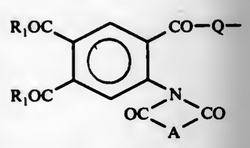
1. A crosslinkable mixture, essentially unpolymerized and stable at temperatures up to about 100° C., consisting of at least one oligomer or polymer of the formula Ia or Ib

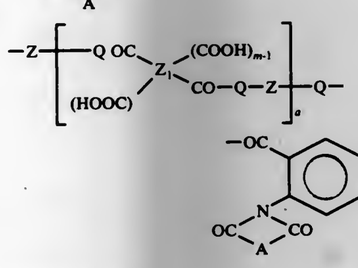

(Ia)

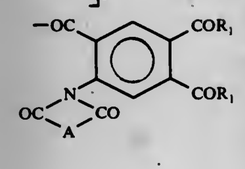




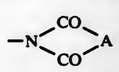
or


(Ib)





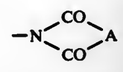
where in formula Ia the



groups independently of each other are linked to the benzene rings in the 3- or 4- position; and a carbonyl of the —COQZ$_e$QOC— moiety and a —COR group are attached in pairs to adjacent carbon atoms at the 1- and 2- positions of the benzene rings, whereby on each benzene ring one of said carbonyl and —COR groups can be in the 1-position and the other in the 2- position; or of a corresponding cyclised derivative, and of at least one diamine of the formula II

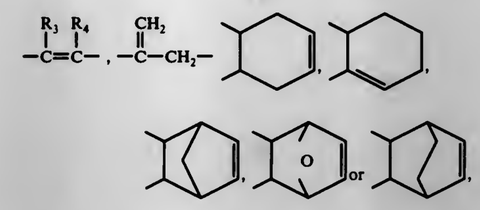
$$HQ - Z_2 - QH \quad (II)$$

whereby the molar ratio of oligomer or polymer of the formula Ia and/or Ib, or of a corresponding cyclised derivative, to diamine of the formula II is between about 1.2:1 and 50:1, and wherein the X's independently of one another represent hydrogen or, if the radical

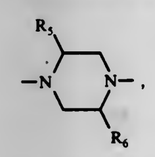


is in the 4-position of the benzene ring, also —COR$_2$,
the R's and R$_2$'s independently of one another represent a hydroxyl group, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one

alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; alkoxy of 1 to 18 carbon atoms or an O^-M^+ group,
the R$_1$'s independently of one another represent a hydroxyl group, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; alkoxy of 1 to 18 carbon atoms or an O^-M^+ group, or two adjacent R$_1$'s together represent the —O— grouping, the A s independently of one another represent a radical of the formula



R$_3$ and R$_4$ independently of one another represent hydrogen, chlorine, bromine or methyl,
M^+ represents an alkali metal cation, a trialkylammonium cation having 3-24 carbon atoms, or a quaternary ammonium cation,
a represents a number from 1-100,
m and *n* independently of one another represent the number 1 or 2,
the Z's and Z$_2$'s independently of one another represent an aliphatic radical having at least 2 carbon atoms, a cycloaliphatic, carbocylic-aromatic or heterocyclic-aromatic radical,
the Q's represent —NH—, or —Q—Z—Q— or —Q—Z-$_2$—Q— represent the grouping



the Z$_1$'s represent an aliphatic radical having at least two carbon atoms, or a cycloaliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, in which the carbon-amide groups and carboxyl groups are bound to different carbon atoms, and the carboxyl groups, if Z$_1$ represents a cyclic radical and at least one of *m* and *n* represetns the number 2, are each in the ortho-position with respect to a carbonamide group, and
R$_5$ and R$_6$ independently of one another represent hydrogen, methyl or phenyl.

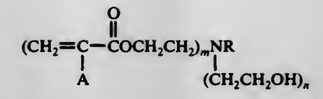
4,115,232

CURING PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING N-SUBSTITUTED ACRYLOYLOXYETHYL AMINES

Kayson Nyi, Sellersville, and Sandra I. Graham, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 466,353, May 2, 1974, Pat. No. 4,001,304. This application Dec. 10, 1975, Ser. No. 639,332
Int. Cl.² C08F *2/46, 4/00*
U.S. Cl. 204—159.23 **17 Claims**

1. In a process of curing a composition by actinic radiation energy the improvement of applying such energy to a radiation curable composition comprising
(1) from about 5% to about 80% by weight of a cure accelerator compound of the formula



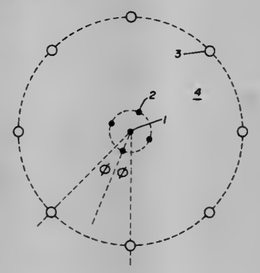
wherein A is hydrogen or methyl; R is alkyl, cycloalkyl or a radical of the formula —CH$_2$CH$_2$X wherein X is cyano, carbamoyl or a radical of the formula —CO$_2$R^1, COR^1, CONHR^1 or CONR$^1_2$ wherein R^1 is alkyl; *m* is a number having a value in the range of 1 to 2 and *n* is a number having a value in the range of 0 to 1, and
(2) from about 20% to about 95% by weight of a photopolymerizable polyfunctional ethylenically unsaturated compound, thereby curing the composition.

4,115,233

TREATMENT OF AQUEOUS DISPERSIONS

Edward J. Griffith, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1976, Ser. No. 755,117
Int. Cl.² B01D *13/02*
U.S. Cl. 204—180 R **11 Claims**



1. A process for removing water from an aqueous dispersion of solids which have a negative electrical charge in relation to ground zero via electroendosmosis comprising:
mounting a first cathode means in said aqueous dispersions,
mounting an anode means in said aqueous dispersion separated from said first cathode means,
mounting a second cathode means in said aqueous dispersion intermediate said first cathode means and said anode means and closer to said first cathode means than said anode means,
establishing a direct current electrical potential between said first and second cathode means and said anode means wherein the water in said aqueous dispersion of solids is moved toward said first and second cathode means whereby said water may be removed and said solids remain.

4,115,234

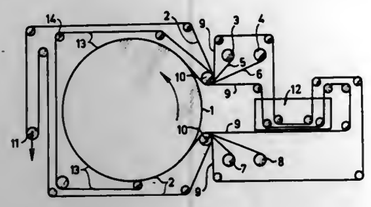
ELECTROPHORETIC TRANSFER PROCESS

Lodewijk Anselrode, St. Anthonis, Netherlands, assignor to Stork Brabant B.V., Boxmeer, Netherlands

Filed Apr. 1, 1976, Ser. No. 672,678
Claims priority, application Netherlands, Apr. 17, 1975, 7504599
Int. Cl.² C25D *1/12*
U.S. Cl. 204—180 R **10 Claims**

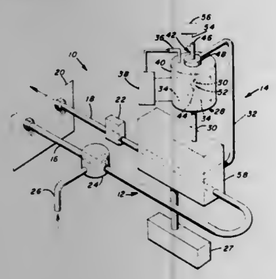
1. An electrophoretic transfer process, comprising the steps of:
impregnating a receiving material with a thickening agent having a molecular weight exceeding 1×10^6;
drying the receiving material;
contacting a carrier material containing the substance to be

transferred with a receiving material in the presence of a moist environment; and



applying an electric field across said carrier material and said receiving material.

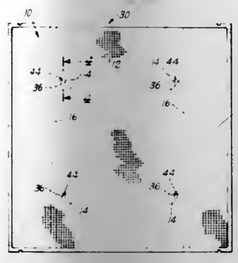
4,115,235
APPARATUS FOR CONVEYING A GAS SAMPLE THROUGH AN ANALYZER CHAMBER
David M. Capone, Oakmont, Pa., assignor to Thermo-Lab Instruments, Inc., Pittsburgh, Pa.
Filed Nov. 8, 1976, Ser. No. 739,712
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S **17 Claims**



1. Apparatus for sampling a gaseous fluid comprising,
a first loop type conduit having an inlet leg and an outlet leg disposed in spaced, lateral relation to each other,
an eductor device positioned at a location along the length of said loop conduit,
a second loop type conduit having an inlet leg and an outlet leg joined to said first loop conduit at a location upstream of said eductor device,
said second loop conduit inlet and outlet legs joined to said first loop conduit at substantially the same location along the length thereof, and
an electrochemical cell sensing element in the flow path through said second loop conduit.

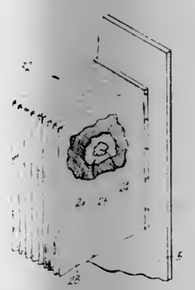
4,115,236
CELL CONNECTOR FOR BIPOLAR ELECTROLYZER
B. Bernard Smura, Marcellus, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Dec. 1, 1977, Ser. No. 856,382
Int. Cl.[2] C25B *1/24, 9/02*
U.S. Cl. 204—254 **10 Claims**

1. A cell connector adapted for insuring direct electrical communication and mechanical connection with a cell in a bipolar permselective membrane electrolyzer while precluding fluid and gaseous flow therefrom, comprising:
(a) an electrically non-conductive cell web;
(b) an electrically conductive insert having a bore therein disposed in an aperture in said web;
(c) an electrode boss bearing a cell electrode on a first face thereof and disposed adjacent said insert at a second face thereof defining an electrode interface, said boss including engaging means proximate said bore;
(d) electrically conductive fastening means disposed through said bore and received in mating cooperation with said engaging means, said fastening means provided an axial compressive force at said interface; and



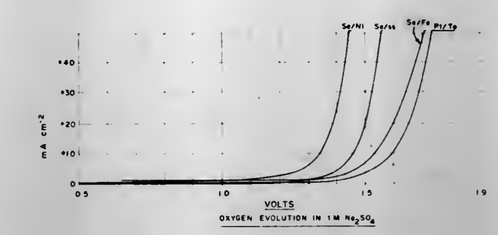
(e) biasing means in operative engagement with said fastening means for providing force in opposition to said axial compressive force.

4,115,237
ELECTROLYTIC CELL HAVING MEMBRANE ENCLOSED ANODES
Kenneth E. Woodard, Jr., and Steven J. Specht, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.
Filed Jan. 3, 1977, Ser. No. 756,313
Int. Cl.[2] C25B *1/16, 1/26, 11/03, 13/02*
U.S. Cl. 204—258 **12 Claims**



1. A membrane cell for the electrolysis of alkali metal chloride brines which comprises:
(a) an anode section having a plurality of self-contained anode compartments positioned in parallel and spaced apart from each other, said anode compartments comprising a foraminous metal anode, said anode having an electrocatalytically coated portion, an ion permeable membrane enclosing said anode, and spacing means interposed between said electrocatalytically coated portion of said anode and said ion permeable membrane;
(b) a cathode section comprising a plurality of foraminous metal cathodes, said cathodes being interleaved between adjacent anodes, said cathodes being spaced apart from said ion permeable membranes;
(c) means for introducing said alkali metal chloride brines into said anode compartments and means for removing chlorine gas and spent alkali metal chloride brines from said anode compartments;
(d) a cell body for housing said anode section and said cathode section, and
(e) means for removing hydrogen gas and alkali metal hydroxide solutions from said cell body.

4,115,238
SELENIUM- AND TELLURIUM-COATED METAL ELECTRODES
Divna Cipris, Morristown, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Apr. 11, 1977, Ser. No. 786,703
Int. Cl.[2] C25B *11/04*
U.S. Cl. 204—290 R **8 Claims**



1. An electrode for use in electrochemical processes comprising a metallic base comprising a metal selected from the group consisting of iron, cobalt, nickel, manganese, chromium and alloys thereof with each other, having deposited thereon and in direct contact therewith a surface coating of selenium, tellurium or mixtures thereof, each in oxidized form.

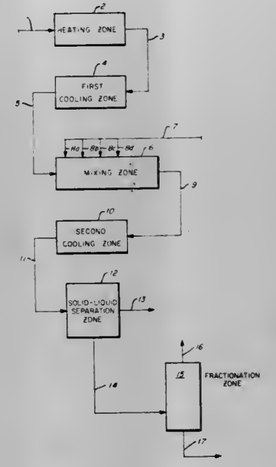
4,115,239
COATED ANODE
Pierre Bouy, Enghien-les-Bains, and Dominique Ravier, Paris, both of France, assignors to Rhone-Poulenc Industries, Paris, France
Filed Oct. 20, 1977, Ser. No. 843,858
Claims priority, application France, Nov. 4, 1976, 76 33217
Int. Cl.[2] C25B *11/10, 1/34*
U.S. Cl. 204—290 F **7 Claims**

1. An anode for an electrolytic cell having a coating, which coating comprises a composition of cobalt oxide and an alkali-metal titanium bronze.

4,115,240
METHOD OF REGENERATING ELECTROCHEMICAL PROPERTIES OF CATION EXCHANGE MEMBRANE OF FLUORINATED POLYMER
Tatsuro Asawa, and Tomoki Gunjima, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Filed Nov. 2, 1977, Ser. No. 847,909
Int. Cl.[2] C25B *13/08*
U.S. Cl. 204—296 **12 Claims**

1. In a method of regenerating the electrochemical properties of cation exchange membrane of a carboxylic acid type fluorinated polymer having ion exchange groups of $-(COO)_mM$ wherein M represents an alkali metal or an alkaline earth metal; and m represents a valence of M, an improvement which comprises converting the ion exchange groups of $-(COO)_mM$ to the corresponding acid or ester groups of —COOR wherein R represents hydorgen or a C_1–C_5 alkyl group and heat-treating the fluorinated polymer having said —COOR groups at a temperature greater than that at which said fluorinated polymer has a volumetric melt flow rate of 0.1 mm^3/sec and below the thermal decomposition temperature of said fluorinated polymer.

4,115,241
SOLVENT DEWAXING PROCESS
Charles W. Harrison, Nederland, Tex., and Paul P. Bozeman, Jr., deceased, late of Groves, Tex. (by Arlene Bozeman, executrix), assignors to Texaco Inc., New York, N.Y.
Filed Jul. 5, 1977, Ser. No. 813,140
Int. Cl.[2] C10G *43/08*
U.S. Cl. 208—33 **5 Claims**

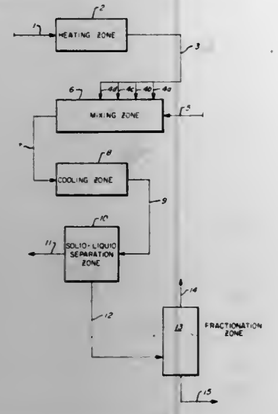


1. In a continuous process for separating wax from a waxy distillate oil stock having an initial boiling point in the range of 600° to 625° F. and an end point in the range of about 1050° to 1100° F., wherein said waxy oil stock is treated with dewaxing solvent in a solvent to oil volume ratio of from about 1:1 to about 5:1, wherein said oil-solvent mixture is cooled to a selected separation temperature for crystallizing wax from said mixture, wherein solid wax is separated, in a solid-liquid separation zone, from the solvent-oil mixture, and wherein said separated solvent-oil mixture is fractionated, in a fractionation zone, into a solvent fraction and a dewaxed oil fraction; the improvement which comprises:
(a) heating, in a heating zone, said waxy oil stock, undiluted by dewaxing solvents, to a temperature at which all wax is in solution;
(b) cooling, in a first cooling zone, said heated waxy oil by indirect heat exchange with refrigerant fluids under conditions of plug flow radial mixing to a temperature about 0°–15° F. below the waxy oil cloud point temperature;
(c) mixing, in a mixing zone, said cooled waxy oil from step (b) with dewaxing solvent, having a temperature about 25°–40° F. above said separation temperature, in a volume ratio of solvent to oil from about 1:1 to about 5:1, under conditions of plug flow radial mixing, for precipitating wax and forming a wax/oil/solvent mixture;
(d) cooling, in a second cooling zone said wax/oil/solvent mixture from step (c) at a rate of about 1°–8° F. per minute, to said separation temperature for crystallizing wax from said solvent-oil mixture; and
(e) flowing the wax/solvent/oil mixture from step (d) to said solid-liquid separation zone at said separation temperature.

4,115,242
SOLVENT DEWAXING PROCESS

Avilino Sequeira, Port Arthur; Herbert J. Pitman, Nederland; Charles W. Harrison, Nederland, and Jerry E. Quasny, Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,142
Int. Cl.² C10G *43/08*
U.S. Cl. 208—33 **10 Claims**



1. In a continuous solvent dewaxing process wherein a light waxy distillate petroleum oil stock is heated, in a heating zone, to a temperature wherein all wax is dissolved, wherein said heated oil stock is treated with solvent in a solvent to oil volume ratio of 1:1 to 5:1 to form an oil-solvent mixture, and wherein said oil-solvent mixture is cooled, in a cooling zone, at a cooling rate of 1°–8° F./min, to a selected separation temperature in the range of about +25° to −40° F. for precipitating wax from said oil-solvent mixture; where said precipitated wax is separated, in a solid-liquid separation zone, from said oil-solvent mixture to yield slack wax and a free oil-solvent mixture is fractionated, in a fractionation zone, to yield a solvent fraction and a dewaxed oil fraction; the improvement which comprises:

(a) continuously flowing a liquid stream of dewaxing solvent, having a selected temperature in the range of about 40°–80° F., into the inlet of a plug flow radial mixing zone;

(b) injecting said heated waxy oil stock into said dewaxing solvent flowing within said plug flow radial mixing zone via a plurality of injection nozzles spaced along the length of said mixing zone;

(c) mixing, in said plug flow radial mixing zone each injected portion of heated waxy oil stock intimately with said flowing solvent before injection of the next following portion of heated waxy oil stock, for producing an oil-solvent mixture exiting said mixing zone having a temperature below the depressed cloud point;

(d) cooling, in a cooling zone, said oil-solvent mixture to a selected separation temperature in the range of about +25° F. to −40° F., for precipitating wax and forming a wax/oil/solvent mixture; and

(e) flowing said wax/oil/solvent mixture from said cooling zone to said solid-liquid separation zone.

4,115,243
SOLVENT DEWAXING PROCESS

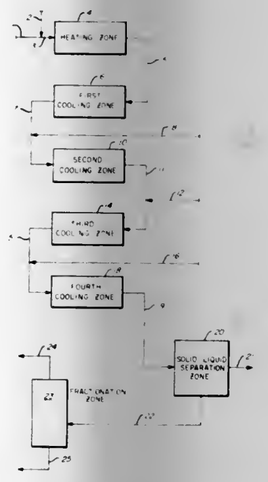
Charles W. Harrison; Herbert J. Pitman, both of Nederland, and Avilino Sequeira, Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,143
Int. Cl.² C10G *43/08*
U.S. Cl. 208—33 **9 Claims**

1. In a continuous solvent dewaxing process wherein a heavy waxy petroleum oil charge selected from distillate or residual oil stocks, is diluted with solvent to form an oil-solvent mixture having all wax dissolved therein, wherein the oil-solvent mixture is cooled to a selected separation temperature for precipitating wax crystals and forming a wax/oil/solvent mixture, wherein wax is separated from such wax/oil/solvent mixture in a solid-liquid separation zone, forming a solid wax cake and a wax free oil-solvent mixture, and wherein the wax free oil-solvent mixture is fractionated, in a fractionation zone to yield a solvent stream and a dewaxed oil product stream; the improvement which comprises:

(a) cooling, in a first elongated tubular cooling zone, a liquid mixture of waxy oil stock prediluted with dewaxing solvent, said liquid mixture having a volume ratio of solvent to oil in the range of 1:1 to 2.5:1 and an initial temperature in the range of 130° to 180° F., at a cooling rate of about 1°–8° F./min. to a temperature about 0°–10° F. below the depressed cloud point of the oil/solvent mixture, under conditions of plug flow radial mixing, for precipitating wax and forming a first wax crystal/oil/solvent mixture;

(b) cooling, in a second elongated tubular cooling zone, said first wax/oil/solvent mixture and a first portion of dilution solvent equivalent to about 0.3 to 0.7 volumes of waxy oil



charge, at a cooling rate of 1°–8° F./min, to a temperature in the range of about 50°–100° F. for precipitating additional wax and forming a second wax crystal/oil/solvent mixture;

(c) cooling, in a third elongated tubular cooling zone, said second wax/oil/solvent mixture and a second portion of dilution solvent equivalent to about 0.3 to 0.7 volumes of waxy oil charge, at a cooling rate of 1°–8° F./min, to a temperature in the range of about 10°–75° F. for precipitating additional wax and forming a third wax crystal/oil/solvent mixture;

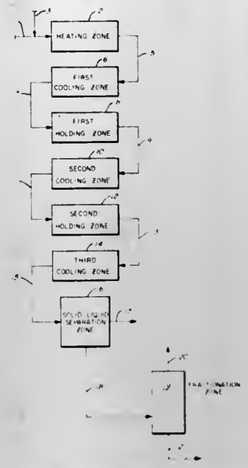
(d) cooling, in a fourth elongated tubular cooling zone, said third wax/oil/solvent mixture and a third portion of dilution solvent equivalent to about 0.3 to 1.5 volumes of waxy oil charge, at a cooling rate of about 1°–8° F./min, under conditions of plug flow radial mixing to a selected separation temperature in the range of about +15° F. to about −15° F. for precipitating additional wax and forming a fourth wax crystal/oil/solvent mixture;

(e) flowing said fourth wax crystal/oil/solvent mixture from said fourth cooling zone to said solid-liquid separation zone.

4,115,244
SOLVENT DEWAXING PROCESS

Herbert J. Pitman; Charles W. Harrison, both of Nederland, and Avilino Sequeira, Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,144
Int. Cl.² C10G *43/08*
U.S. Cl. 208—33 **7 Claims**



1. In a solvent dewaxing process for separating solid-wax from a waxy petroleum distillate oil stock, wherein said waxy oil stock, heated to a first temperature sufficient to dissolve all wax therein, is treated with dewaxing solvent in a volume ratio of solvent to oil stock in the range of 1:1 to 5:1 respectively, wherein said mixture of oil and solvent is cooled at a rate of about 1°–8° F /min. to a selected separation temperature in the range of +1[illegible] F. to −40° F. for forming a mixture of wax crystals in oil-[illegible]lvent solution, wherein said wax/oil/solvent mixture is sepa[illegible]ted, in a solid-liquid separation zone, into a wax-free oil-sol[illegible]nt [illegible]olution and slack wax, and wherein said wax-free oil-solvent [illegible]olution is fractionated, in a fractionation zone, to yield a solvent fraction and a dewaxed oil fraction; the improvement which comprises:

a. cooling, in a first c[illegible]oling zone, a mixture comprising waxy oil stock and dewa[illegible]ing solvent in a solvent to oil volume ratio of about 1:1 to 5:1, at a cooling rate of about 1°–8° F.min. to a second temperature about 40°–50° F. above a selected separation temperature for crystallizing wax from said waxy oil-solvent mixture and forming a wax/oil/solvent mixture;

b. mixing, in a first holding zone, said wax/oil/solvent mixture from said first cooling zone, at about said second temperature, under conditions of plug flow radial mixing, with substantially no heat exchange, for a period of about 30 seconds to about 2 minutes;

c. cooling, in a second cooling zone, said wax/oil/solvent mixture from said first holding zone at a rate of about 1°–8° F.min. under conditions of plug flow radial mixing, to a third temperature about 15°–20° F. above said selected separation temperature for crystallizing additional wax;

d. mixing, in a second holding zone, said wax/oil/solvent mixture, from said second cooling zone, at about said third temperature, under conditions of plug flow radial mixing, with substantially no heat exchange, for a period of about 30 seconds to about 2 minutes;

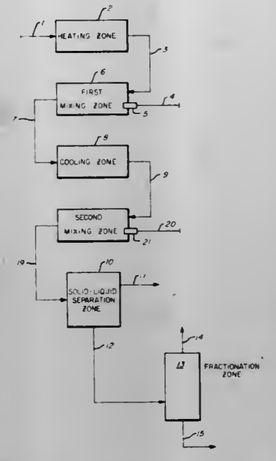
e. cooling, in a third cooling zone, the wax/oil/solvent mixture from said second holding zone, at a rate of about 1°–8° F.min. to said selected separation temperature for crystallization of additional wax; and

f. flowing said wax/oil/solvent mixture from said third cooling zone to said solid-liquid separation zone.

4,115,245
SOLVENT DEWAXING PROCESS

Charles W. Harrison, and Leonard R. Watts, both of Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,145
Int. Cl.² C10G *43/08*
U.S. Cl. 208—33 **4 Claims**



1. In a continuous process for separating wax from an intermediate waxy distillate oil stock wherein said waxy oil stock is treated with dewaxing solvent, in a solvent to oil ratio of about 1:1 to about 5:1, and is cooled to a selected separation temperature for crystallizing wax from said waxy oil, and forming a wax/oil/solvent mixture, wherein said wax/oil/solvent mixture is separated, in a solid-liquid separation zone into solid wax and a wax free oil solvent mixture, and wherein said wax free oil-solvent mixture is fractionated, in a fractionation zone, for producing a solvent fraction and a dewaxed oil fraction; the improvement which comprises:

(a) heating, in a heating zone, said waxy oil charge to a temperature sufficient to melt all wax therein;

(b) mixing, in a first mixing zone, said heated waxy oil with a first stream of dewaxing solvent having a temperature of 60°–80° F, in a solvent to oil ratio of from about 1:1 to about 4:1 under conditions of plug flow radial mixing sufficient to provide a homogeneous mixture of oil and solvent at a temperature below the depressed cloud point;

(c) cooling, in a cooling zone, said solvent-oil mixture at a rate of 1°–8° F per minute to said selected separation temperature, for crystallizing wax and forming a first wax/oil/solvent mixture;

(d) mixing, in a second mixing zone, said first wax/oil/solvent mixture with a second stream of solvent in an amount equivalent to about 1–2 volumes of waxy oil charge, at about the selected separation temperature, for crystallizing additional wax and forming a second wax/oil/solvent mixture; and

(e) flowing said second wax/oil/solvent mixture, at said selected separation temperature to said solid-liquid separation zone.

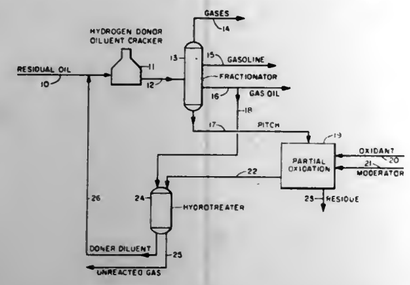
4,115,246
OIL CONVERSION PROCESS

Glenn A. Sweany, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 31, 1977, Ser. No. 764,123
Int. Cl.² C10G *13/00*
U.S. Cl. 208—56 **8 Claims**

1. In a hydrogen donor diluent cracking process wherein heavy liquid hydrocarbon oil is charged to a thermal cracker and thermally cracked in the presence of a hydrogenated

donor solvent, the thermally cracked material is fractionated to produce fractions comprising light ends, intermediate distillates, gas oil material and a pitch product boiling above 500° C., and wherein at least a part of the product gas oil material is hydrogenated and recycled to the thermal cracking step as hydrogen donor solvent, the improvement comprising:



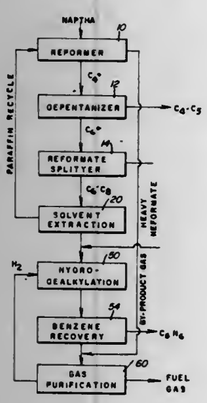
subjecting a portion of the fresh hydrocarbon oil feed to the process and said pitch product after fractionation to a partial oxidation process thereby producing a product gas stream containing hydrogen, and utilizing said hydrogen to hydrogenate said hydrogen donor solvent for recycle to said thermal cracking step.

4,115,247

BENZENE PRODUCTION BY SOLVENT EXTRACTION AND HYDRODEALKYLATION

Leon M. Lehman, Miami Beach, and Glen I. Lambert, Miami, both of Fla., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Jul. 16, 1976, Ser. No. 706,026
Int. Cl.² C10G *35/18;* C07C *3/58*
U.S. Cl. 208—62 **11 Claims**



1. A process for converting a naphtha feedstock to a pure benzene comprising:

(a) reforming the naphtha;

(b) removing a major fraction of C_4 - C_5 and heavy reformate components to obtain a reformate containing a major portion of C_6 - C_8 aromatic hydrocarbons and a minor paraffinic portion;

(c) extracting the aromatic hydrocarbons from the reformate countercurrently with a selective hydrophilic solvent having high solubility aromatic hydrocarbons and low solubility for paraffinic hydrocarbons to obtain an extract stream rich in C_6 - C_8 aromatic hydrocarbons and a raffinate stream rich in paraffinic hydrocarbons;

(d) recovering the selective solvent from the extract stream to obtain an aromatic component comprising about 80 to 96 wt. % C_6 - C_8 aromatic hydrocarbons and about 3 to 18 wt. % paraffinic hydrocarbons;

(e) hydrodealkylating the aromatic component; and

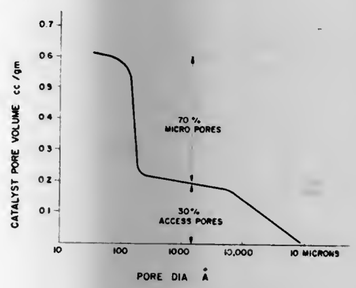
(f) recovering substantially pure benzene.

4,115,248

HYDROCARBON HYDROCONVERSION WITH A CATALYST HAVING INTERCONNECTED MACROPORES

Bernard F. Mulaskey, Fairfax, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 708,804, Jul. 26, 1976. This application Oct. 13, 1977, Ser. No. 841,856
Int. Cl.² C10G *13/06;* B01J *35/10*
U.S. Cl. 208—112 **10 Claims**



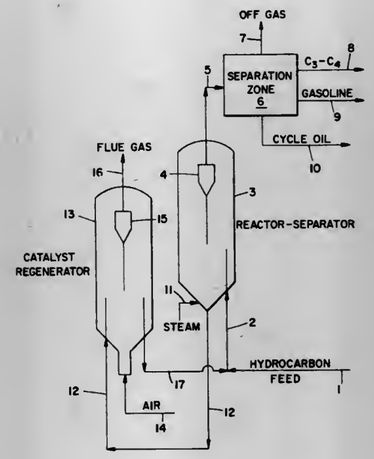
1. A process for treating a hydrocarbon feedstock containing at least an appreciable amount of a high-molecular-weight hydrocarbon component, which comprises (I) contacting in a reaction zone a mixture containing said feedstock and hydrogen gas with a hydrotreating catalyst, said contacting including (1) a temperature in the range from about 200° to 540° C, (2) a total pressure in the range from about 1 to 300 atmospheres, (3) a hydrogen partial pressure in the range from about 0 to 200 atmospheres, (4) a hydrogen rate in the range from about 0 to 9000 standard cubic liters of hydrogen per liter of feedstock, and (5) a liquid hourly space velocity in the range from about 0.1 to 25, said catalyst comprising a rigidly interconnected pack of irregularly shaped particles of which (1) less than 5 weight percent thereof have average diameters in the range 0.15 to 1.3 mm, (2) at least 10 weight percent thereof have average diameters in the range above 0.1 micron and (3) the remainder thereof have average diameters in the range below 0.15 mm, said pack having a pore volume of at least 0.065 cc per cc of the pack and having access channels among said particles throughout the pack, said channels comprising interconnected macropores having diameters as measured by mercury porosimetry in the range 0.1 to 15 microns, and said macropores contributing a fraction of said pore volume, which is in the range from about 3 to 45 percent of said pore volume; said particles comprising pulverable materials selected from the group consisting of at least one refractory oxide component and at least one hydrogenating component, said refractory oxide component being further selected from the group consisting of the oxides of the metals of Groups II, III and IV, said hydrogenating component being further selected from the group consisting of the metals, oxides and sulfides of the metallic elements of Groups VIB and VIII; and said composition containing, in parts by weight, for each 100 parts of said refractory oxide component an amount of said hydrogenating component, calculated as metal, in the range from about 0.1 to 50 parts; and (II) withdrawing the resulting treated product from said reaction zone.

4,115,249

PROCESS FOR REMOVING SULFUR FROM A GAS

William A. Blanton, Jr., and Robert L. Flanders, both of San Anselmo, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 666,115, Mar. 11, 1976, Pat. No. 4,071,436. This application Dec. 17, 1976, Ser. No. 751,640
Int. Cl.² C10G *11/02;* B01J *21/28;* C01B *17/00*
U.S. Cl. 208—120 **6 Claims**



1. In a process for cracking a hydrocarbon in the absence of added hydrogen including the steps of (a) cycling a particulate cracking catalyst between a cracking zone and a catalyst regeneration zone in a catalytic cracking system; (b) contacting a sulfur-containing hydrocarbon feed with said catalyst in said cracking zone at cracking conditions, forming sulfur-containing coke on said catalyst, and recovering from said cracking zone fluid products including a liquid hydrocarbon fraction; and (c) forming a sulfur oxides-containing flue gas by burning coke off said catalyst in said regeneration zone; the method for decreasing the amount of sulfur in said flue gas which comprises the steps of:

(a) heating particles of a cracking catalyst consisting essentially of an amorphous silica-alumina matrix and a crystalline aluminosilicate zeolite to a temperature between 800° and 1500° F;

(b) impregnating the resulting catalyst particles with an amount of an aluminum compound sufficient to add from 0.1 to 25 weight percent aluminum, calculated on an elemental metal basis, to said catalyst particles;

(c) cycling the resulting impregnated catalyst particles between said cracking zone and said regeneration zone in said catalytic cracking system;

(d) reacting sulfur oxides in said flue gas with the added aluminum in said catalyst particles to form a sulfur-containing solid in said catalyst particles in said regeneration zone; and

(e) forming hydrogen sulfide in said cracking zone by contacting said hydrocarbon feed with said sulfur-containing solid in said catalyst particles and removing the resulting hydrogen sulfide from said cracking zone with said fluid products.

4,115,250

METHOD FOR REMOVING POLLUTANTS FROM CATALYST REGENERATOR FLUE GAS

Robert L. Flanders, and William A. Blanton, Jr., both of San Anselmo, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 666,115, Mar. 11, 1976, Pat. No. 4,071,436. This application Apr. 11, 1977, Ser. No. 786,723
The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.
Int. Cl.² C10G *11/02*
U.S. Cl. 208—120 **4 Claims**

1. In a process for cracking hydrocarbons in the absence of added hydrogen wherein a particulate cracking catalyst comprising a crystalline aluminosilicate zeolite associated with a porous refractory matrix is cycled between a cracking zone and a catalyst regeneration zone, a sulfur-containing hydrocarbon stream is cracked in contact with said catalyst in said cracking zone, and a sulfur-containing flue gas is formed in said regeneration zone by burning sulfur-containing coke off said catalyst with an oxygen-containing gas, the method for reducing the amount of carbon monoxide and sulfur oxides in said flue gas which comprises:

(a) reacting carbon monoxide and oxygen to form carbon dioxide in said regeneration zone in contact with a carbon monoxide oxidation promoter comprising a metal, or compound of a metal, selected from platinum, palladium, iridium, rhodium, osmium, ruthenium, copper and chromium, associated with a particular solid other than said particulate catalyst, said particulate solid being physically admixed with said catalyst;

(b) introducing sufficient molecular oxygen into said regeneration zone to provide an atmosphere therein having a molecular oxygen concentration of at least 0.5 volume percent;

(c) removing sufficient coke from said catalyst in said regeneration zone to provide an average carbon content of less than 0.2 weight percent in catalyst passed from said regeneration zone to said cracking zone;

(d) including in said particulate catalyst a substantially silica-free alumina phase, said alumina phase including about 50 to 5000 parts per million of reactive alumina, said particulate catalyst being substantially free from said metal or compound of said metal;

(e) forming a sulfur- and aluminum-containing solid in said particulate catalyst in said regeneration zone by reacting sulfur trioxide with alumina present in said alumina phase in said catalyst;

(f) removing sulfur from said particulate catalyst and forming hydrogen sulfide in said cracking zone by contacting said sulfur- and aluminum-containing solid with said hydrocarbon stream.

4,115,251

PROCESS FOR REMOVING POLLUTANTS FROM CATALYST REGENERATOR FLUE GAS

Robert L. Flanders, and William A. Blanton, Jr., both of San Anselmo, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 666,115, Mar. 11, 1976, Pat. No. 4,071,436. This application Apr. 11, 1977, Ser. No. 786,724
The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.
Int. Cl.² C10G *11/02;* B01J *21/28;* C01B *17/00*
U.S. Cl. 208—120 **10 Claims**

1. In a process for cracking hydrocarbons in the absence of added hydrogen wherein a particulate cracking catalyst comprising a crystalline aluminosilicate zeolite associated with an amorphous matrix is cycled between a cracking zone and a catalyst regeneration zone, a sulfur-containing hydrocarbon stream is cracked in contact with said catalyst in said cracking zone, and a sulfur-containing flue gs is formed in said regeneration zone by burning sulfur-containing coke off said catalyst

with an oxygen-containing gas, the method for reducing the amount of carbon monoxide and sulfur oxides in said flue gas which comprises:

(a) reacting carbon monoxide and oxygen to form carbon dioxide in said regeneration zone in contact with a carbon monoxide oxidation promoter comprising a metal or comound of a metal selected from platinum, palladium, iridium, rhodium, osmium, ruthenium, copper and chromium:

(b) forming a sulfur- and aluminum-containing solid in said regeneration zone by reacting sulfur trioxide with alumina, said alumina having a surface area of at least 50 square meters per gram and containing 0.1–100% reactive alumina and being included in a particulate solid other than said particulate catalyst, said particulate solid being physically admixed with said particulate catalyst, said particulate solid being substantially free from said metal or metal compound; and

(c) removing sulfur from said particulate solid and forming hydrogen sulfide in said cracking zone by contacting said sulfur- and aluminum-containing solid with said hydrocarbon stream.

4,115,252

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 22, 1976, Ser. No. 744,061
Int. Cl.² C10G *35/08*
U.S. Cl. 208—139 **21 Claims**

1. In a process for converting a hydrocarbon which comprises contacting said hydrocarbon in a substantially water-free environment at hydrocarbon conversion conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt.% platinum group metal, about 0.05 to about 5 wt.% cobalt and about 0.1 to about 3.5 wt.% halogen; wherein the platinum group metal and catalytically available cobalt are uniformly dispersed throughout said porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state and said catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under said hydrocarbon conversion conditions or in a mixture of these states, the improvement which comprises the addition to the composite of about 0.01 to about 5 wt.% zinc uniformly throughout said porous carrier material.

4,115,253

HYDROCARBON CONVERSION WITH A SELECTIVELY SULFIDED ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

Frank H. Adams, La Grange Park, and H. Peter G. Knapik, Brookfield, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 638,798, Dec. 8, 1975, Pat. No. 4,032,475. This application Jun. 20, 1977, Ser. No. 808,411
Int. Cl.² C10G *35/08*
U.S. Cl. 208—139 **8 Claims**

1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon in a reaction zone with a sulfided acidic catalyst composite comprising a porous carrier containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.1 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % tin, about 0.01 to about 2 wt. % rhenium, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available cobalt, tin, and rhenium are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the tin is present in the form of tin oxide; wherein substantially all of the catalytically available cobalt is present in a sulfided state and wherein substantially all of the rhenium is present in a sulfided state or in an elemental metallic state or in a mixture of these states.

4,115,254

DEHYDROCYCLIZATION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 724,892, Sep. 20, 1976, Pat. No. 4,036,743. This application Jul. 11, 1977, Ser. No. 814,255
The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.
Int. Cl.² C01G *35/08*; C07C *5/22*
U.S. Cl. 208—139 **28 Claims**

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at dehydrocyclization conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % nickel, about 0.01 to about 5 wt. % bismuth and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available nickel and bismuth are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; and wherein substantially all of the catalytically available nickel is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrocyclization conditions or in a mixture of these states.

4,115,255

PROCESS FOR HYDROGENATING A COKE-FORMING HYDROCARBON DISTILLATE

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 765,177, Feb. 3, 1977, Pat. No. 4,079,092, which is a continuation-in-part of Ser. No. 687,135, May 17, 1976, Pat. No. 4,018,669, which is a continuation-in-part of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,960,710. This application Oct. 31, 1977, Ser. No. 846,858
Int. Cl.² C10G *23/04*
U.S. Cl. 208—143 **10 Claims**

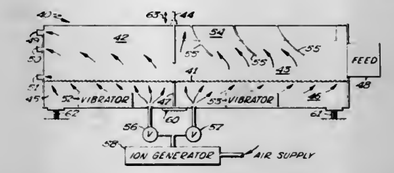
1. A process for hydrogenating a coke-forming hydrocarbon distillate containing di-olefinic and mono-olefinic hydrocarbons, and aromatics, which process comprises reacting said distillate with hydrogen, at a temperature below about 500° F., in contact with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.05 to about 5 wt. % cobalt and about 0.1 to about 3.5 wt. % halogen; wherein the platinum or palladium, rhodium, catalytically available cobalt are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum or palladium and rhodium are present in the elemental metallic state; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states, and an alkali metal component, and recovering an aromatic/mono-olefinic hydrocarbon concentrate substantially free from conjugated di-olefinic hydrocarbons.

4,115,256

APPARATUS AND METHOD FOR PARTICLE SEPARATION AND GRADING

Hotze Jan de Zeeuw, Suite 143, 9300 Cedar Ave., Minneapolis, Minn. 55420

Continuation of Ser. No. 479,644, Jun. 17, 1974, abandoned. This application Jul. 21, 1976, Ser. No. 707,446
Int. Cl.² B03B *1/00*
U.S. Cl. 209—3 **18 Claims**



6. A particle grading method comprising the steps of:

introducing the particles into a first chamber, at least the floor of the first chamber having a downward slope from the particle introduction point;

suspending the particles in a generally uniform upward flow of air through the first chamber floor at levels established by particle size and weight;

removing from said first chamber, at a point spaced from the particle introduction point, those particles which are smaller than a predetermined size;

introducing those particles which remain after said removing step into a second chamber, at least the floor of said second chamber having a downward slope from the particle introduction point;

suspending the particles in a generally uniform upward flow of air through the second chamber floor at levels established by particle size and weight, the second chamber flow of air being independent of the first chamber flow of air;

collecting the particles at a plurality of levels in the second chamber flow of air at a point spaced from the second chamber particle introduction point; and

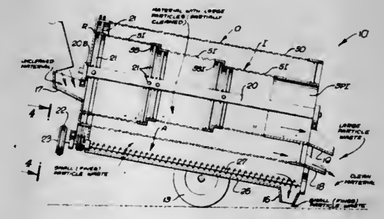
ionizing at least one of said first and second chamber upward flows of air.

4,115,257

GRAIN CLEANER

Leon B. Mugler, Clay Center, Kans., assignor to Royal Industries, Inc., Pasadena, Calif.

Filed Oct. 3, 1977, Ser. No. 838,831
Int. Cl.² B07B *1/22*
U.S. Cl. 209—291 **13 Claims**



1. A cleaner for grain or the like comprising

a normally inclined cylindrical cleaning drum having open ends and a plurality of sections of decreasing diameter from the upper end of the drum to the opposite end of the drum, the drum having preselected cylindrical surfaces defined with perforations from the upper end thereof to a preselected distance from the opposite end, the apertures of the perforated surfaces being selected and defined relative to the grain or the like to be cleaned for permitting the grain to readily pass through the apertures while preventing large foreign particles from passing therethrough,

another cylindrical cleaning drum having open ends and a diameter larger than the first-mentioned drum and arranged outside of said first drum in a concentric relationship therewith,

means for coupling the drums together for rotation in unison,

said another cleaning drum having a perforated surface from one end thereof to the opposite end, the apertures of the surface being selected and defined relative to the grain or the like to be cleaned for preventing the grain or the like from readily passing through the apertures while permitting relatively small foreign particles to pass therethrough,

means for rotating the cleaning drums in unison at a preselected speed,

means for charging the grain or the like to be cleaned into the inner cleaning drum at the larger diameter end thereof,

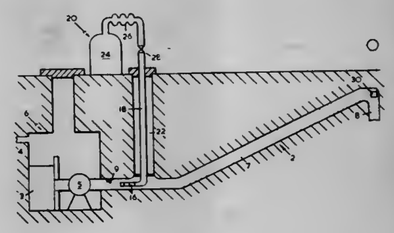
and means for discharging the cleaned grain or the like from the outer cleaning drum adjacent the opposite end from which it was charged into the inner cleaning drum.

4,115,258

TREATMENT OF SEWAGE

Kenneth Cecil Smith, Lunga House, Epping Rd., Roydon, Essex, and Michael Ernest Garrett, 9 Sandy Rd., Addlestone, Surrey, both of England

Continuation of Ser. No. 429,744, Jan. 2, 1974, abandoned. This application Jun. 22, 1976, Ser. No. 698,758
Claims priority, application United Kingdom, Jan. 8, 1973, 1028/73; Mar. 1, 1973, 10080/73; Aug. 17, 1973, 38910/73
Int. Cl.² C02C *1/02*
U.S. Cl. 210—15 **10 Claims**



1. A process of treating sewage in a pumped sewer to maintain aerobic metabolism prior to subjecting the sewage to primary treatment which comprises the steps of:

a. sumping sewage to be treated at an inlet end of the pumped sewer;

b. pumping the sewage upwardly through the pumped sewer in a manner to maintain the sewer in a flooded condition;

c. injecting under pressure into the sewage in the pumped sewer, an oxygen-rich gas which contains at least 90% by volume of oxygen in a manner wherein substantially all the gas introduced is dissolved in the sewage being pumped without formation of a discrete gas phase in the pumped sewer such as can cause vapor locks; and

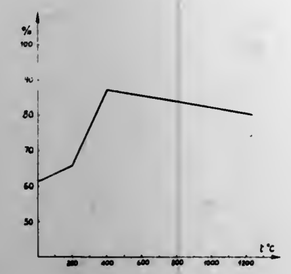
d. providing sufficient oxygen as in (c) to insure that aerobic metabolism is maintained throughout the length of the pumped sewer during residence of the sewage therein.

4,115,259

METHOD FOR REGENERATING DIALYSING LIQUIDS IN HEMODIALYSIS SYSTEMS

Leonardo Bigi, Via S. Giovanni, 15, Mirandola (Modena), Italy

Filed May 10, 1976, Ser. No. 685,024
Int. Cl.² B01D *13/00*
U.S. Cl. 210—22 A **7 Claims**



1. A method for removing phosphate ions particularly from dialysing liquids used in hemodialysis processes, consisting of bringing the dialysing liquid into contact with a mixture having a major proportion of aluminium oxide and a minor proportion of silicon oxide wherein said mixture is free from gel-type alumina and is activated by roasting at a temperature in the range of from 300° to 800° C, and separating said dialysing liquid substantially free from phosphate ions.

4,115,260

SELECTIVE REMOVAL OF IRON CYANIDE ANIONS FROM FLUIDS CONTAINING THIOCYANATES

Noyes L. Avery, Oreland, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 7, 1977, Ser. No. 785,475
Int. Cl.² B01D *15/06*
U.S. Cl. 210—34 **10 Claims**

1. A process for separating iron cyanide complex anions from an aqueous fluid comprising thiocyanate anions and anions of at least one iron cyanide complex selected from the group consisting of ferrocyanide and ferricyanide, said iron cyanide complex anions being present at a concentration of at least about 100 parts per billion parts of said fluid, and said thiocyanate anions being present at a concentration of at least five weight percent of the iron cyanide complex anion concentration, said process comprising: (a) contacting said fluid with an acrylic, strongly basic anion exchange resin having the ability to adsorb the iron cyanide complex anions preferentially over the thiocyanate anions, and (b) separating said fluid from said resin.

6. The process according to claim 1 wherein at least a portion of sodium chloride solution which has been used to regenerate said exhausted resin is re-used without further treatment for resin regeneration.

4,115,261

PROCESS FOR TREATING DRINKING WATER AND SEWAGE

Herbert Corte, Opladen; Harold Heller, Cologne; Michael Lange, and Otto Netz, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 623,785, Oct. 20, 1975, Pat. No. 4,025,705, which is a continuation of Ser. No. 480,563, Jun. 18, 1974, abandoned. This application Dec. 29, 1976, Ser. No. 755,225
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1973, 2332103
Int. Cl.² C02B *1/14*
U.S. Cl. 210—40 **15 Claims**

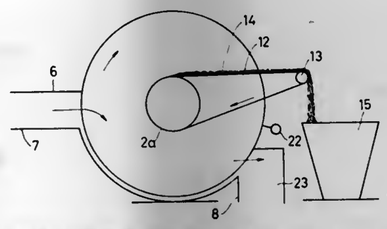
1. A process for removing oleophilic odour- and taste-producing substances from water wherein the water is treated with an insoluble macroporous adsorber resin comprising a matrix based on a crosslinked organic polymer containing aromatic nuclei substitued by substituents consisting essentially of (1) chloromethyl substituents or (2) chloromethyl substituents partially aminated by reacting some of the chlorine atoms thereof with a member selected from the group consisting of ammonia, primary amines and secondary amines.

4,115,262

MAGNETIC SEPARATOR

Rolf Gustavsson, and Per Hedvall, both of Vasteras, Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Jun. 6, 1977, Ser. No. 803,645
Claims priority, application Sweden, Jun. 9, 1976, 7606425
Int. Cl.² B01D *35/06*
U.S. Cl. 210—42 S **8 Claims**



1. A magnetic separator including a horizontally disposed rotatable shaft, a plurality of substantially parallel filter discs attached along said shaft and located in planes perpendicular thereto with gaps between said discs for the passage of a liquid medium to be cleaned, said medium which enters the separator containing ferromagnetic particulate material, said discs containing permanent magnets spaced inwardly of the peripheral edges thereof for producing local magnetic field gradients in the gaps, said discs having a non-magnetic portion in an area outwardly of said magnets along the periphery of said discs, the separator being provided with scraper means for the particulate material which adheres to said discs when the medium passes the gaps, said scraper means entering the gaps between said discs and extending outwardly thereof, a tank for containing the liquid medium to be cleaned, said tank having a liquid inlet and a liquid outlet, said shaft being rotatably mounted on opposing side walls of said tank for immersing said discs in the liquid medium during rotation of said shaft, means disposed below said scraper means, above said outlet and outwardly of said periphery of said discs for generating jets of a fluid, said generating means being directed toward an inner portion of said discs for impacting said non-magnetic portion with the fluid, whereby any particulate material remaining on said non-magnetic portion below said scraper means during the rotation of said shaft is moved to said inner portion of said discs so as to adhere to said magnets to thereby avoid being flushed away by the liquid medium which exits through said liquid outlet.

4,115,263

PERIODIC CHLORINATION AND SUPERCHLORINATION OF RECIRCULATING SWIMMING POOL WATER

Robert Frederic James, Thornhill, Canada, assignor to Auto-Chlor Inc., Mississauga, Canada

Filed Oct. 20, 1976, Ser. No. 734,350
Int. Cl.² B01D *11/02*; C01B *3/06*
U.S. Cl. 210—60 **4 Claims**

1. A method for maintaining a body of swimming pool water, of known volume fit for human use, comprising continuously repeating a cycle consisting of

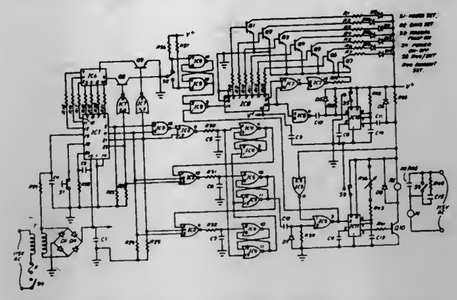
(a) the step of introducing into said body of water a selected amount of free chlorine yielding compound adapted to immediately raise the free chlroine concentration to a value within the established effective range of the order of between 0.5 to 10 ppm and

(b) the step of recirculating said body of water for a selected timed interval measured from the commencement of said introduction step during which interval the free chlorine concentration diminishes to a point approaching the lower limit of said established effective range,

(c) repeating said introduction step of said selected amount of said compound and said recirculation step for said selected timed interval successively, several times, immediately upon the elapse of the preceding timed interval of said recirculation step,

(d) then immediately upon cessation of said several repeated introduction steps and recirculation steps introducing approximately twice the selected amount of said compound so as to immediately raise the free chlorine concentration substantially above said first mentioned value, and

(e) finally recirculating said body of water over the same timed interval corresponding to said first mentioned timed interval measured from the commencement of the last mentioned introduction of said compound.

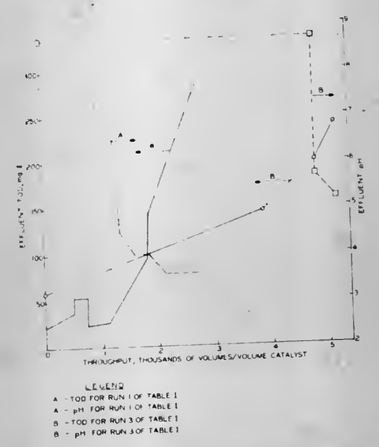


4,115,264

METHOD OF PURIFYING POLLUTED WATER

William C. McCarthy, and Robert O. Dunn, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 572,044, Apr. 28, 1975, abandoned. This application Aug. 2, 1976, Ser. No. 711,033
Int. Cl.² C02B *1/34*
U.S. Cl. 210—63 R **22 Claims**



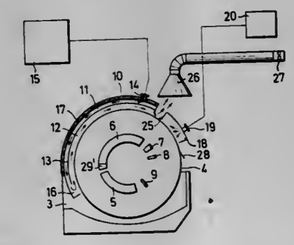
1. In the liquid phase catalytic oxidation of organically polluted water, containing no more than about 1 part of alkali metal ions per million parts of polluted water, to reduce the total oxygen demand of said polluted water by contacting said polluted water with an oxygen-containing gas and a catalyst effective to promote such liquid phase oxidation comprising zinc aluminate promoted with at least one metal active for initiating oxidative reactions, the method of increasing the catalyst life comprising adding a sufficient amount of alkali metal ion to the organically polluted water prior to the catalytic oxidation to increase the throughput that can occur before the pH breakthrough occurs.

4,115,265

METHOD AND APPARATUS FOR DEHYDRATING SUSPENSION

Wilhelm Otte, Bochum; Günther Bergmann, Dinslaken, and Kar-Heinz Kubitza, Essen-Heisingen, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Dec. 16, 1976, Ser. No. 751,206
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558794
Int. Cl.² B01D *33/10*
U.S. Cl. 210—68 **14 Claims**



1. A method for the dehydration of an aqueous suspension which comprises applying said suspension to the surface of a vacuum filter, directing steam along an imperforate partition means parallel to said surface in one direction, thereafter passing said steam in the opposite direction into contact with the filter cake on said surface whereby substantially the entire effective area of said filter cake is acted upon by steam of uniformly high temperature, and eliminating condensation of said steam on said filter cake by said partition means.

4,115,266

METHOD FOR SEPARATING FOREIGN SUBSTANCES BY MEANS OF A FILTER FORMING A FLOATING LAYER

Katsutoshi Ohshima, 2-31-1, Tokiwadai, Itabashiku, Tokyo, Japan

Filed Oct. 28, 1976, Ser. No. 736,689
Claims priority, application Japan, Jul. 14, 1976, 51-82896
Int. Cl.² B01D *23/24*
U.S. Cl. 210—80 **6 Claims**

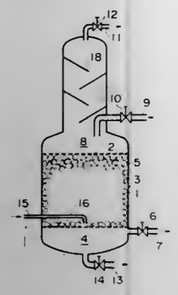
1. A method for continuously separating foreign substances from a liquid containing same by filtration, which comprises:

(a) passing a liquid containing foreign substance through a filtration zone that is filled with a floating mass of particulate filter material having a specific gravity equal to or lower than that of said liquid and being disposed in an unfixed position in said floating mass so that they may move with respect to each other within said floating mass,

(b) continuing the passage of said liquid through said floating mass until said foreign substances (1) adhere onto the surfaces of said filter particles, and (2) slowly grow into aggregates of foreign substances that are peeled from the filter particles by the contacting motion of said filter particles with each other in said floating mass brought about by the flow of said liquid therethrough, and

(c) allowing resulting aggregates of foreign substances peeled from said filter particles to separate from said floating mass, and

(d) removing separated aggregates of foreign substances by causing them to move outwardly through said floating



mass countercurrently to the liquid passing through said floating mass,

whereby the surfaces of said filter particles are always kept clean and filtration can be continuously carried out without clogging of the space between filter particles.

4,115,267

APPARATUS FOR TREATING AND DEGERMINATING BATH WATER, PARTICULARLY BATH WATER CONTAMINATED BY THE GERM BACT. *PSEUDOMONAS PYOCANEA*, IN MEDICAL TUB-BATHS AND UNDERWATER MASSAGE BATHS

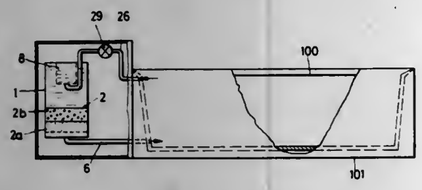
Bruno Bachhofer Säntisstrasse 85, 7981 Bavendorf; Anton Locher, Bergstrasse 6, 7981 Torkenweiler; Gerhard Skirde, Trelder Dorfstrasse 4, 2110 Buchholz-Trelde, and Hansjörg Quistorff, Babendiekstrasse 17, 2000 Hamburg-Blankenese, all of Germany

Division of Ser. No. 666,485, Mar. 12, 1976, Pat. No. 4,053,403. This application Feb. 11, 1977, Ser. No. 767,738

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1975, 2511499; Feb. 20, 1976, 2606838

Int. Cl.[2] C02B *1/38, 3/08*

U.S. Cl. 210—136 **9 Claims**



1. A bath-tub assembly adapted particularly for medical bath applications comprising a bath water treating and degerminating assembly adapted particularly to remove the germ bact. pseudomonas pyocyanea from bath water; a cabinet in which is mounted a bath-tub body and a filter assembly; the filter assembly including a filter housing; a two-layer filtering medium within the filter housing, the filtering medium being charged with bromine or hydrobromic acid, a first inferior layer of said filtering medium consisting of a mixture of filter gravel and mineralized charcoal, and a second superior layer of said filtering medium consisting of fine grain activated charcoal; a feed line connecting a lower portion of the filter housing with the bath tub; a return line connecting an upper region of the filter housing with the bath-tub; a circulating pump connected in said return line; an ozonizer within said filter housing above said filtering medium so that the bath water circulated through said filter housing contacts the outer surface of the ozonizer and cools this outer surface; an air supply source for the ozonizer, and a mixing assembly with a nozzle head mounted on the ozonizer and connected to said water feed line;

said ozonizer comprising a plurality of outer electrodes in the form of solid cup-shaped annular discs of a heat conductive material, a plurality of annular discs of a ceramic material serving as dielectrics and a plurality of inner electrodes in the form of sheet metal discs, outer and inner electrodes and the dielectric discs being stacked in a rigid compound, a plurality of discharge spaces defined between the ceramic discs and the inner electrodes, the discharge spaces permitting air flow in opposite radial directions alternately inwardly and outwardly, said inner electrodes being spaced from said ceramic discs by a plurality of intermediate small spacer members made of a resilient material and disposed in the space defined between adjacent facing surfaces of said electrodes and said ceramic discs, said inner electrodes being centered by centrally arranged plug-and-socket type mating members; a high voltage bushing insulator having a gas inlet conduit and a gas line connector arranged at one end of the ozonizer, and the nozzle head being arranged at the opposite end of the ozonizer.

4,115,268

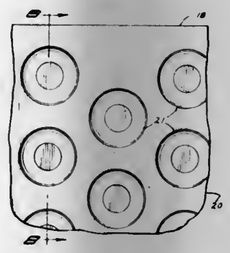
WASTE WATER TREATMENT ROTOR

Christopher P. Thissen, 305 - 2nd Ave. SW., Austin, Minn. 55912

Filed May 16, 1977, Ser. No. 796,874

Int. Cl.[2] C02C *1/02*

U.S. Cl. 210—150 **8 Claims**



1. A rotor for a waste water biological treatment system, comprising

a rotatable shaft, and

a waste water treating module affixed on the shaft and including a convolute of stiff sheet plastic with a multiplicity of turns in the convolute, each turn of the sheet plastic having a pattern of cup shaped irregularities embossed on one face thereof, each of the cup shaped irregularities having an annular wall and a bottom portion welded to the next adjacent turn in the convolute.

4,115,269

RANDOM PACKING MATERIALS

John Reginald Bennett, Lingfield, and Kent R. Greer, Marple Bridge, both of England, assignors to Acalor International Ltd., Sussex, England

Filed Apr. 11, 1977, Ser. No. 786,671

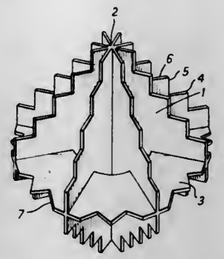
Claims priority, application United Kingdom, Apr. 15, 1976, 15758/76

Int. Cl.[2] C02C *1/04*

U.S. Cl. 210—150 **13 Claims**

1. A bed for the treatment of fluids comprising a plurality of packing units characterized in that each packing unit consists essentially of a plurality of fins disposed around an axis lying substantially in the plane of each of the fins, and at least one generally part annular reinforcing member between each angularly adjacent pair of fins in a plane substantially perpendicular to the axis, holding said fins in spaced relationship to one another, the outward-facing edges of the fins being serrated, the packing units being so shaped that they take up a random configuration in the bed, with contact between adjacent units being predominantly along the edges of the fins and the reinforcing members, whereby fluid applied to the bed is distributed substantially evenly therethrough.

7. A bed for the treatment of fluids comprising a plurality of packing units characterized in that each packing unit consists essentially of a hollow tube having a longitudinal axis, a plurality of fins radiating from the outer surface of the tube substan-



tially in the same plane as the axis of the tube, and at least one generally part annular reinforcing member between each angularly adjacent pair of fins in a plane substantially perpendicular to the axis of the tube, holding said fins in spaced relationship to one another, the outward-facing edges of the fins being serrated, the packing units being so shaped that they take up a random configuration in the bed, with contact between adjacent units being predominantly along the edges of the fins and the reinforcing members, whereby fluid applied to the bed is distributed substantially evenly therethrough.

4,115,270

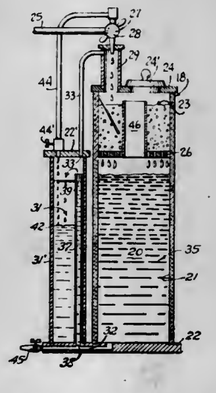
CHLORINATOR FOR SWIMMING POOLS

Ash S. Phillips, 1944 Park Ave., San Jose, Calif. 95126

Continuation-in-part of Ser. No. 667,262, Mar. 16, 1976, Pat. No. 4,067,808. This application Oct. 31, 1977, Ser. No. 846,764

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **5 Claims**



1. A chlorinator for a swimming pool having a pool water recirculating system in which a drain line at the base of the pool is connected to a pump and a return line leading back into the pool, a bypass sytem comprising:

(1) a vertically arranged container located above the return line adapted to hold a supply of chlorine concentrate solution;

(2) a steeping chamber arranged in the upper end of said vertically arranged container;

(3) said steeping chamber having a perforated bottom;

(4) a supply of dry chlorine containing material located in said steeping chamber on said perforated bottom;

(5) a pool water supply conduit having one end connected to an upstream zone of the return line and its opposite end disposed above said steeping chamber;

(6) a regulating valve in said pool water supply conduit for metering the flow of pool water therefrom and for discharging the pool water in a measured rate into the upper region of said steeping chamber to dissolve said chlorine containing material; the lower portion of said vertically arranged container collecting a supply of aqueous chlorine concentrate therein;

(7) a chlorine concentrate supply tube arranged vertically adjacent said container with its upper end disposed just below the level of said perforated bottom and having its lower end communicating with the lower end of said container for receiving chlorine concentrate solution therefrom;

(8) a mixing chamber arranged vertically adjacent said container in a position to receive chlorine concentrate solution from the open upper end of said chlorine concentrate supply tube as it overflows therefrom due to the added weight of pool water at rest upon the supply of aqueous chlorine concentrate in said vertically arranged chamber, said mixing chamber being a tubular member parallel to and circumscribing said chlorine concentrate supply tube and having its lower end closed except for its communication with the downstream zone of the return line;

(9) said steeping chamber and said mixing chamber having their upper ends closed;

(10) conduit means for communicating theupper ends of said steeping chamber with the upper end of said tubular member of the mixing chamber for equalizing the pressure therein to allow the chlorine concentrate solution transferred from the container to rise within said chlorine concentrate supply tube dependent upon the measured rate of discharge of pool water into the upper region of said steeping chamber and container;

(11) a feeder member for communicating the lower end of said mixing chamber with a downstream zone of the return line for discharging a metered quantity of chlorine concentrate solution into the return line and the pool water therein as it returns to the swimming pool and,

(12) a pool water supply conduit having one end connected to the upper end of said mixing chamber for discharging water at a measured rate into said mixing chamber.

4,115,271

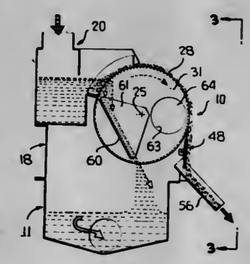
ROTARY DRUM SCREEN

William H. Holt, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Sep. 29, 1976, Ser. No. 727,704

Int. Cl.[2] B01D *33/36*

U.S. Cl. 210—247 **8 Claims**



1. A structure for removing entrained solids from a liquid, said structure comprising a generally cylindrical screen, means for effecting rotation of said screen about an axis in a selected direction, supply means for directing flowing liquid and solids onto said screen throughout a preselected portion of its rota-

tion with the liquid passing into the interior of said screen primarily only in an upper quadrant of the rotation of said screen wherein said screen is moving upwardly and screened-out solids remaining on the exterior of said screen, doctor means displaced from said supply means in the direction of rotation of said screen for removing solids from the exterior of said screen, and single flow directing means located within the interior of said screen for directing essentially all of the liquid passing into the interior of said screen through the interior of the screen and out through a lower portion of said screen between said doctor means and said supply means in the form of a concentrated flowing stream, said flow directing means being in the form of a downwardly sloping stream supporting and defining baffle fixedly mounted within said screen, said sloping baffle having an upper portion underlying said preselected portion of said screen rotation and a lower end terminating adjacent the interior of said screen.

4,115,272

APPARATUS FOR SEPARATION OF CHEMICAL COMPOUNDS AND PRODUCTION OF STERILE SOLUTIONS

Rashid Mustafievich Mukhamedyarov, ulitsa Kasatkina,3; Boris Andreevich Smirnov, ulitsa Borisa Galushkina, 17, kv. 26; Stanislav Vasilievich Sery, ulitsa Malaya Schukinskaya, 10a, kv. 42; Tatyana Dmitrievna Titkova, ulitsa Festivalnaya, 22, korpus 4, kv. 490, and Anatoly Ivanovich Lokalov, ulitsa Gamalei, 19, korpus 2, kv. 81, all of Moscow, U.S.S.R.

Filed Dec. 27, 1976, Ser. No. 754,563

Claims priority, application U.S.S.R., Dec. 31, 1975, 2306714

Int. Cl.² B01J *1/06*

U.S. Cl. 210—266 **2 Claims**



1. An apparatus for the separation of chemical substances and the production of sterile solutions which comprises a column, an ion exchange agent placed into said column; at least one filter in said column; plugs closing said column at the ends thereof; the body of each plug containing a piercing duct having an inner expansion chamber; a resilient stopper placed in each of said expansion chambers whose free extended length exceeds the length of said expansion chamber, and where each resilient stopper has longitudinal notches on its external surface extending over the stopper end facing said column so that said longitudinal notches communicate with the piercing duct; a closing cone on each stopper provided on an end opposite to its notched end engaging the edges of the end portion of said piercing duct of the plug; said cone being located in said expansion chamber in a direction away from said column thus ensuring a tight seal for the piercing duct; a cover for each plug adapted for attachment to a vessel containing chemical substances; an internal hollow pressure rod for each of said covers, having a transverse portion at the end thereof; said rod passing through the end portion of the piercing duct of the plug and engaging with its transverse portion, the closing cone of the stopper so that upon attachment of the cover to said plug, the stopper can be compressed by said pressure rod, thereby allowing communication with the piercing duct and the vessel containing said chemical substances.

4,115,273

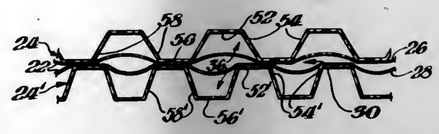
WAVE PATTERNED SUPPORT FOR DIALYZER MEMBRANE

Thomas W. Winstead, Baltimore, Md., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Nov. 15, 1976, Ser. No. 742,359

Int. Cl.² B01D *31/00*

U.S. Cl. 210—321 A **10 Claims**



1. Membrane support means for use in a mass transfer device of the type having first and second sections of flexible membrane positioned to provide between their inner faces a flattened passage for one fluid with membrane support means contacting the outer faces of the membrane to define the passage for the one fluid and also to provide passage for another fluid to wash against the outer faces of the sections of membrane, the membrane support means consisting of a continuous sheet of contoured, substantially uniform thickness material sufficiently rigid to provide spaced apart generally parallel membrane support surfaces, one on each side of the sheet, the support surface on one side being defined by a series of spaced apart summits of hollow protrusions extending outwardly toward the one support surface and the support surface on the other side being defined by another series of spaced apart summits of hollow protrusions extending outwardly toward the other support surface, the spacing apart between the summits which define the support surface on one side being sufficiently small with respect to the space between the two support surfaces to insure that under operating pressures the membrane contacts only the summits and does not flex inwardly between the summits toward the support surface on the other side to the extent that passage for the other fluid becomes occluded, the membrane support means being characterized in that the summits which define the support surface on one side of the sheet are arranged with respect to each other, and also with respect to the summits which define the support surface on the other side of the sheet, in a predetermined pattern dimensioned and arranged such that, when an elongated length of the sheet is formed into a roll having a predetermined inner peripheral dimension and a predetermined outer peripheral dimension, the pattern will never be directly superimposed upon itself thereby avoiding the tendency of corresponding hollow protrusions to interdigitate.

4,115,274

APPARATUS FOR DESALINATING WATER BY REVERSE OSMOSIS

Karl Böddeker, Hamburg, and Walter Hilgendorff, Tespe, both of Fed. Rep. of Germany, assignors to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH., Fed. Rep. of Germany

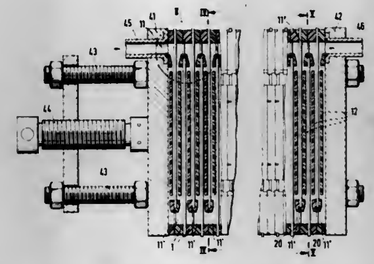
Filed Dec. 13, 1976, Ser. No. 750,156

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556210

Int. Cl.² B01D *13/00;* **C02B** *1/82*

U.S. Cl. 210—321 R **14 Claims**

1. An apparatus for desalinating water by reverse osmosis, which includes a first pressure plate having inlet means for the water to be desalinated, a second pressure plate arranged opposite and in spaced relationship to said first pressure plate and provided with outlet means for the brine of the desalinated water, a stack of substantially identical module plates arranged between said first and second pressure plates but with each two adjacent module plates arranged so as to complement each other, a plurality of porous disc means covered on opposite sides with membranes and each having a peripheral outlet section forming an outlet for desalinated water, said disc means being clamped between respective adjacent module plates in such a way that every two adjacent porous disc means have their peripheral outlet sections angularly offset about a common axis, clamping means operatively connected to said pressure plates for clamping said module plates therebetween and thereby said disc means between module plates, said disc



means together with adjacent module plates defining equal pressure and equal flow-geometric water chambers for receiving water to be desalinated, said chambers being arranged in series with regard to each other and fluid conveying means establishing communication with said inlet and outlet means, said porous disc means being sandwiched with said fluid conveying means so as to force fluid passing from said inlet means to said outlet means to flow around said porous disc means alternately in opposite direction, those surfaces of the module plate dividing walls which define the regions of the floor of said water chambers having a roof-shaped profile, the ridge portion of said roof-shaped profile being located transversely and centrally between said inlet and outlet means.

4,115,275

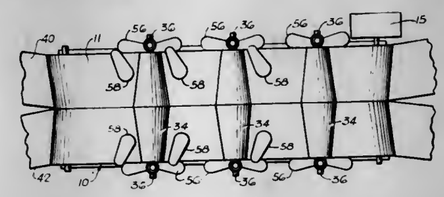
SLUDGE DEWATERING APPARATUS

William E. Morris, 1831 N. Douglas, Appleton, Wis. 54911

Filed Apr. 14, 1977, Ser. No. 787,338

Int. Cl.² B01D *33/04*

U.S. Cl. 210—386 **37 Claims**



1. Apparatus for dewatering sludge comprising a primary dewatering section and a secondary dewatering section which immediately follows the primary dewatering section, said primary dewatering section having an endless filter means sloped inwardly to form a central trough along the top run on which the sludge is carried through the primary dewatering section for drainage of water through the filter means, pressure rollers extending crosswise of and longitudinally spaced above the top run of the filter means and operative to apply pressure onto the sludge during passage through the primary dewatering section, and means for feeding the sludge onto the head end portion of the endless filter means, said secondary dewatering section having an endless non-filtering means contoured to slope downwardly towards the side along the top run for drainage of water over the sides of the endless member on which the sludge is supported during travel through the secondary dewatering section, pressure rollers extending crosswise and longitudinally spaced above the top run of the non-filtering member and operative to apply pressure to the sludge during passage through the secondary dewatering section, means for conveying the sludge from the primary dewatering section to the head end portion of the non-filtering member, and means for driving the endless filter means and endless non-filtering member in the primary and secondary dewatering sections respectively.

4,115,276

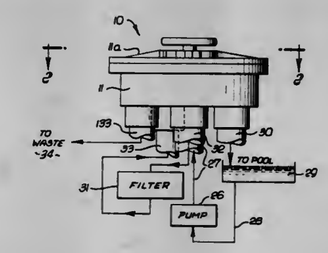
MULTI-PORT BACKWASH VALVE

Virgil M. Kelly, Los Angeles, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Apr. 4, 1977, Ser. No. 783,978

Int. Cl.² B01D *35/22*

U.S. Cl. 210—425 **19 Claims**



1. In a multi-ported backwash valve for a swimming pool and filter, the combination comprising

(a) a valve rotor and a body having five ports communicating with the rotor, said ports including

(i) a pool water inlet port,

(ii) a first outlet port for water delivery to the pool,

(iii) a second outlet port for water delivery forwardly through the filter,

(iv) a third outlet port for water delivery reversely through the filter, and

(v) a fourth outlet port for water delivery to waste,

(b) the rotor having water flow directing chamber structure characterized in that when the rotor is in a FILTER position the second outlet port is placed in communication with the water inlet port via the chamber structure, and the third and first ports are placed in communication through the rotor chamber structure, and

(c) when the rotor is placed in a BACKWASH position, the third port is placed in communication with the water inlet port via the rotor chamber structure, and the second and fourth ports are placed in communication through the rotor chamber structure,

(d) there being a plug carried by the rotor for rotation therewith and to plug the fourth port when the rotor is in said FILTER position, and to plug the first outlet port when the rotor is in said BACKWASH position.

4,115,277

BLOOD FILTERING APPARATUS OF GRADUATED FIBER DENSITY

Roy L. Swank, Portland, Oreg., assignor to Pioneer Filters, Inc., Beaverton, Oreg.

Filed Jun. 17, 1977, Ser. No. 807,378

Int. Cl.² B01D *23/20*

U.S. Cl. 210—436 **8 Claims**

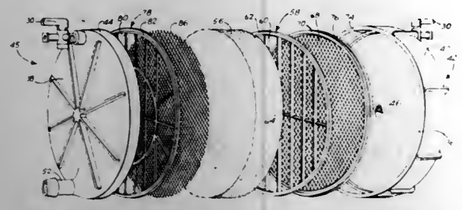
1. A high volume, continuous filter for debris-containing blood, comprising:

(a) a blood flow chamber having a blood inlet port at one end and a blood outlet port at the opposite end,

(b) a filter mat of fibrous material extending longitudinally in

the chamber and interposed between the inlet and outlet ports, and

(c) a plurality of laterally spaced mat-indenting members in the chamber engaging the upstream end of the mat and indenting the mat through a portion of its longitudinal



thickness in the areas of said indenting members for causing the fibrous material to fluff out in the spaces between the indenting members and thereby form regions of decreasing mat density progressively outward from said indenting members.

4,115,278

CONICAL FILTER BASKET FOR A CONTINUOUSLY OPERATING CENTRIFUGE

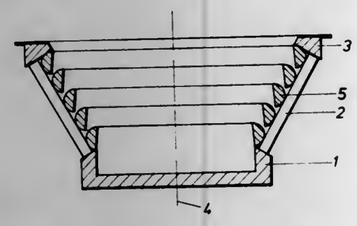
Willi Fritsch, Grunweg 26, Rommerskirchen, Fed. Rep. of Germany (4049)

Filed Mar. 30, 1977, Ser. No. 782,712

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614922

Int. Cl.² B01B *25/16*

U.S. Cl. 210—488 **9 Claims**



1. A filter basket having a frusto-conically shaped lateral sieve surface for a continuously operating centrifuge for the separation of solids from a solids-liquid mixture, said basket having an axis of rotation and including a base extending transversely of the axis of rotation, an end ring extending transversely of the axis of rotation and spaced from said base, the sieve extending around the axis of rotation between said base and said end ring and said sieve surface comprising at least one bar-like member of uniform cross section forming a plurality of ring-like turns arranged about the axis of rotation, wherein the improvement comprises that said ring-like turns are equally spaced apart and arranged in a step-like formation with each said turn closer to said end ring than an adjacent said turn and being spaced radially outwardly from the adjacent said turn, said bar-like member having a first surface extending in the direction between said base and said end ring and having a circumferential edge closer to said end ring extending inwardly toward the axis of rotation and a second surface facing in the opposite direction from said first surface, said ring-like turns being disposed in overlapping relation in the direction of the axis of rotation of said basket and in a pair of adjacent ring-like turns said first surface of said turn closer to said end ring and the second surface of said turn closer to said base forming a pocket having an inlet opening to the interior of said basket and an outlet opening toward the exterior of said basket and said first and second surfaces forming said basket being disposed in converging relation from the inlet toward the outlet of said pocket.

4,115,279

APPARATUS FOR SEPARATION OF OIL FROM OIL AND WATER MIXTURES

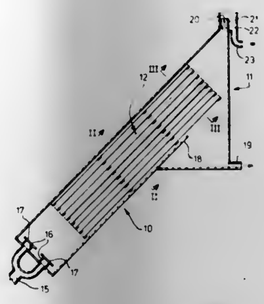
Kenneth Herman Toft, Stoke-on-Trent, England, assignor to Simon-Hartley Limited, England

Continuation of Ser. No. 556,958, Mar. 10, 1975, abandoned. This application Sep. 20, 1976, Ser. No. 724,642

Claims priority, application United Kingdom, Mar. 26, 1974, 13480/74

Int. Cl.² B01D *12/00*

U.S. Cl. 210—521 **10 Claims**



1. Apparatus for separating oil from a mixture of oil and water, comprising a receptacle having a lower region provided with a bottom inlet for introduction of a mixture to be separated and an upper region provided with an outlet for removing separated oil, means supporting within said receptacle an assembly comprised by a plurality of upwardly inclined laminar flow control members of inverted channel shape from end-to-end arranged in laterally spaced apart side-by-side relation in each of a plurality of spaced vertical levels, the lower ends of said members being disposed within said lower region and spaced above the floor or said receptacle for receiving the introduced mixture at the bottom of said assembly for upward flow therethrough for separation of the oil by contact with the under-surfaces of said members, and the upper ends of said members being disposed within said upper region for discharge of the oil, thus constrained, from the assembly at the upper ends of said members, means constraining said mixture for inclined upward flow in said assembly between the lower and upper regions, means in said upper region whereby the separated remainder of the mixture falls downwardly out of the assembly through spaces between the members prior to reaching the upper ends of the members, while upwardly flowing oil is confined within the said flow control members until it reaches the upper ends of said members, whereby the downwardly falling remainder of said mixture is prevented from counter flow contact with the upwardly flowing oil, and means for withdrawing the separated remainder of the mixture from the upper region of said receptacle.

4,115,280

APPARATUS FOR ALTERING THE BIOLOGICAL AND CHEMICAL ACTIVITY OF MOLECULAR SPECIES

George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

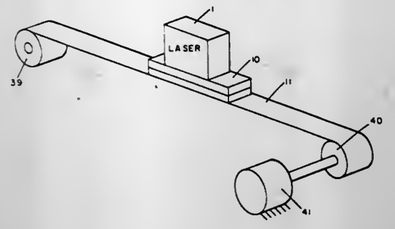
Division of Ser. No. 88,528, Nov. 12, 1970, Pat. No. 3,941,670. This application Jul. 31, 1975, Ser. No. 601,122

Int. Cl.² B01K *1/00*

U.S. Cl. 250—527 **56 Claims**

1. Apparatus for altering by irradiation the biological activity of macromolecular species on a surface which moves relative to the incident radiation, that comprises, in combination, means for generating laser radiation, means for frequency selection, tuning, and/or modulation of the radiation to produce radiation which directly excites vibrational and rotational and, potentially, electronic states of the irradiated species, said radiation being in the infrared region of the electromagnetic

spectrum, means for directing the beam of laser radiation upon the surface, means for effecting relative movement between the surface and the irradiating beam in any combination of longitudinal and transverse directions so that each part of the



surface that is irradiated by the beam is irradiated for only a fraction of a second, and means for spreading the characteristically small cross-dimensional laser beam to enlarge the portion of the surface irradiated as the surface passes across the beam.

4,115,281

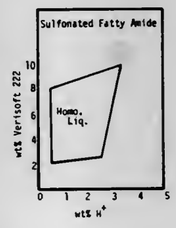
COMPOSITIONS FOR SOURING AND SOFTENING LAUNDERED TEXTILE MATERIALS, METHOD OF PREPARING THE SAME, AND STOCK SOLUTIONS PREPARED THEREFROM

John D. Ciko, Allen Park; John J. Cramer, and Geoffrey A. Jamieson, both of Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 545,382, Jan. 30, 1975, Pat. No. 4,053,423. This application Jan. 26, 1976, Ser. No. 652,558

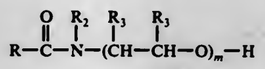
Int. Cl.² D06M *13/38*

U.S. Cl. 252—8.8 **54 Claims**

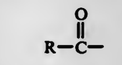


1. A stable homogeneous liquid composition for souring laundered textile materials and imparting softness thereto consisting essentially of:

I. About 0.5–25% by weight of a softening agent for textile materials, the said softening agent consisting of a fatty amide corresponding to the structural formula



wherein R is selected from the group consisting of monovalent alkyl radicals and sulfonated monovalent alkyl radicals containing about 8–22 carbon atoms, R_2 is selected from the group consisting of hydrogen and



wherein R is as defined above, R_3 is selected from the group consisting of hydrogen and monovalent alkyl radicals containing 1–2 carbon atoms, and m is 2–6;

II. About 3–50% by weight of an acidic souring agent for laundered textile materials selected from the group consisting of hydrofluorosilicic acid, ammonium silicofluoride, zinc silicofluoride, ammonium acid fluoride, potassium acid fluoride and orthophosphoric acid; and

III. About 25–96.5% by weight of water;

the said ingredients I, II and III being present in amounts whereby a stable homogeneous liquid composition is produced.

4,115,282

BIODEGRADABLE GREASE COMPOSITION

Hans Dieter Grasshoff, Hamburg, Fed. Rep. of Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Nov. 24, 1976, Ser. No. 744,579

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1975, 2554077

Int. Cl.² C10M *3/18, 5/14, 7/20, 7/24*

U.S. Cl. 252—18 **14 Claims**

1. A grease composition comprising from 10 to 95 weight percent water, from 0.2 to 10 weight percent of a water-soluble, vegetable-derived thickening agent selected from the group consisting of ammonium and alkali metal salts of alginic acid and the methyl-, ehtyl- and carboxymethyl derivatives of cellulose, from about 1 to 50 weight percent of an animal or vegetable fat, oil or corresponding glyceride and from about 0.05 to 5 weight percent of an emulsifying agent selected from the group consisting of sodium and potassium oleate and stearate, sorbitol monooleate, glycerol monostearate and polyioxyethylene sorbitol monooleate.

4,115,283

ANTIFRICTION COMPOSITION

Donald G. Needham, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 640,089, Dec. 12, 1975, abandoned. This application Dec. 15, 1977, Ser. No. 861,078

Int. Cl.² C10M *5/00, 7/00;* F16C *00/00;* F16D *69/00*

U.S. Cl. 252—12.4 **49 Claims**

1. A self-lubricating composition comprising (a) heat-treated poly(arylene sulfide) in the range of about 30 to 50 weight percent, (b) at least one solid lubricating component in the range of about 15 to 25 weight percent, (c) at least one reinforcing material in the range of about 15 to 25 weight percent, and (d) at least one filler in the range of about 10 to 20 weight percent, based on the total weight of said composition,

wherein said (b) solid lubricating component is molybdenum disulfide, molybdenum diselenide, tungsten disulfide, tungsten diselenide, graphite, polytetrafluoroethylene, or mixture,

wherein said (c) reinforcing material is glass fibers, asbestos fibers, carbon fibers, boron fibers, ceramic fibers, or mixture,

wherein said (d) filler is calcium carbonate, titanium dioxide, barium sulfate, hydrated aluminum silicates, carbon black, red iron oxides, diatomaceous earth, admixtures thereof, or admixtures with antimony trioxide.

4,115,284

BRAKE GREASE COMPOSITIONS

Hirotugu Kinoshita, Yokohama; Makoto Sekiya, and Nobuo Makino, both of Kawasaki, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1977, Ser. No. 807,691

Claims priority, application Japan, Jun. 21, 1976, 51-72269

Int. Cl.² C10M *1/10, 3/02*

U.S. Cl. 252—29 **7 Claims**

1. A brake grease composition comprising:

(A) a polyoxypropylene glycol monoether as the lubricating base oil, having a pour point of not higher than −20° C., a flash point not lower than 200° C. and a viscosity of not lower than 8 cSt at 98.9° C. and

(B) a gelling agent as the thickening agent, consisting of at

least one diurea compound represented by the general formula



wherein R_1 is a divalent aromatic hydrocarbon radical, and R_2 and R_3 are each of cyclohexyl, a cyclohexyl derivative group having 7–12 carbon atoms or an alkyl group having 8–20 carbon atoms; and wherein the gelling agent has a cyclohexyl or cyclohexyl derivative group content of at least 20% as calculated from the formula

$$\frac{\text{No. of cyclohexyl or cyclohexyl derivative group}}{\text{No. of cyclohexyl or cyclohexyl derivative group} + \text{No. of alkyl group}} \times 100\%.$$

4. A brake grease composition according to claim 1, further comprising at least one solid lubricant selected from the group consisting of molybdenum disulfide, graphite, zinc oxide and polytetrafluoroethylenes.

4,115,285

CUTTING OIL ADDITIVES

Jan Willem van Hesden, Baulkham Hills, Australia, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 13, 1977, Ser. No. 805,670
Int. Cl.² C10M *1/44, 3/38, 7/24;* C05B *11/16*
U.S. Cl. 252—32.5 **5 Claims**

1. A fluid composition adapted for use as a cutting oil comprising a hydrocarbon oil and from about 0.1 to about 3 wt.% of a partially neutralized aluminum acid alkylorthophosphate.

4,115,286

LUBRICANT ANTIWEAR ADDITIVES CONTAINING SULFUR AND BORON

Bernard A. Baldwin; Ralph P. Williams, both of Bartlesville, Okla., and Raymond Rohde, Sun City, Ariz., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 31, 1977, Ser. No. 802,082
Int. Cl.² C10M *1/54, 3/48, 5/28, 7/52*
U.S. Cl. 252—46.3 **25 Claims**

1. A lubricating composition comprising a major amount of an oil based lubricant and a minor antiwear improving amount of at least one mercapto-substituted boron-containing compound selected from the group consisting of 2-hydroxy-4-(mercaptohydrocarbyl)-1,3,2-dioxaborolanes and alkylammonium bis[(mercaptohydrocarbyl)ethylenedioxy]borates.

5. As a novel composition of matter a 2-hydroxy-4-(mercaptohydrocarbyl)-1,3,2-dioxaborolane.

7. As a novel composition of matter an alkylammonium bis[(mercaptohydrocarbyl)ethylenedioxy]borate.

9. As a novel composition of matter a hydrogen bis[(mercaptohydrocarbyl) ethylenedioxy]borate.

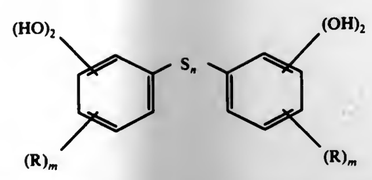
4,115,287

LUBRICATING COMPOSITIONS

Terence Colclough, and Brian Swinney, both of Oxford, England, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 18, 1977, Ser. No. 779,060
Claims priority, application United Kingdom, Apr. 22, 1976, 16360/76
Int. Cl.² C10M *1/38, 3/32, 5/28, 7/36*
U.S. Cl. 252—48.2 **11 Claims**

1. A lubricating oil composition comprising a major amount of a lubricating oil and from 0.01 to 10% by weight of a sulfurized alkyl dihydroxy benzene of the general formula:



where *n* is an integer from 1 to 4, *m* is an integer from 1 to 3, R represents an alkyl group with the restriction that at least one of said alkyl groups on each aromatic nucleus contains at least 7 carbon atoms, said % by weight based on the total weight of said composition.

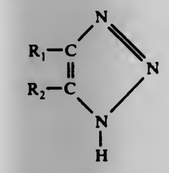
4,115,288

LUBRICANTS CONTAINING SUBSTITUTED TRIAZOLES AS ANTIWEAR AGENTS

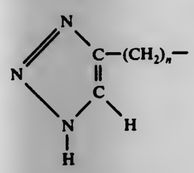
Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 10, 1977, Ser. No. 758,113
Int. Cl.² C10M *1/32, 3/26, 5/20, 7/30*
U.S. Cl. 252—50 **8 Claims**

1. A lubricant composition comprising a major amount of a lubricant base constituting an oil of lubricating viscosity or greases thereof and a minor amount sufficient to impart improved antiwear properties to the lubricant composition of a 1,2,3-substituted triazole characterized by the formula:



where R_1 and R_2 are individually selected from the group consisting of an alkyl group containing from 1 to 18 carbon atoms; an aryl group; hydrogen; and



and wherein at least one of R_1 and R_2 is other than hydrogen and where *n* is an integer from 5 to 15.

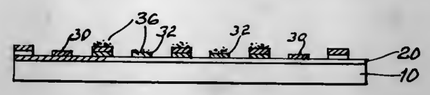
4,115,289

DRY POWDERED OR LIQUID DEVELOPER COMPOSITIONS

Frederick O. Bach, Costa Mesa, Calif.; Leo N. Chapin, Park Ridge, and Robert Freed, Lincolnwood, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Continuation-in-part of Ser. No. 385,101, Aug. 2, 1973, abandoned, which is a continuation of Ser. No. 156,982, Jun. 25, 1971, abandoned, which is a division of Ser. No. 836,415, Jun. 25, 1969, Pat. No. 3,630,729. This application Mar. 15, 1976, Ser. No. 666,872
Int. Cl.² G03G *9/10, 9/12*
U.S. Cl. 252—62.1 P **5 Claims**

1. A developer composition for color development of latent electrostatic imaged portions of an electrophotographic sheet having interspersed photoconductive sections sensitized in latent electrostatic imaged portions to different segments of the visible light spectrum and containing colorless dispersed solubilizable dye particles which produce color when reduced to the solubilized state corresponding to the portions of the visible light spectrum other than that for which the particular section is sensitized, said developer composition consisting of a substantially colorless finely divided developer compound having a particle size within the range of 2 to 30 microns and which is capable of acquiring a charge within the triboelectric series for attraction to the electrostatically sensitized segments



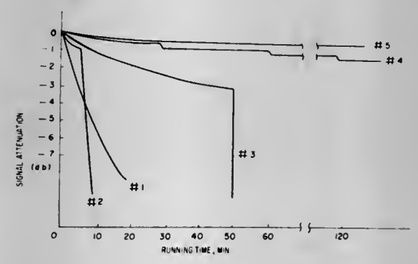
of the receptor sheets, and which, when activated by heat, solvent or solvent vapors, is a solvent for the dye components in the receptor sheet, and the remainder of the developer composition consists of a carrier for the finely divided compound, in which the developer compound is present in an amount within the range of 2–100% by weight when in the form of a dry powdered developer composition and 0.2–20% by weight when the developer composition is liquid.

4,115,290

MAGNETIC RECORDING MEDIUM

Yuichi Kubota, and Norifumi Kajimoto, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1977, Ser. No. 790,914
Int. Cl.² H01F *1/00;* B23B *15/00*
U.S. Cl. 252—62.54 **12 Claims**



1. A magnetic recording medium which comprises: a magnetic coating on a substrate, said magnetic coating comprising a magnetic powder in a binder of nitrocellulose in which the isopropyl alcohol originally present has been replaced by a resin selected from the group consisting of polyurethane resins, polybutadiene resins, butadiene-acrylonitrile copolymers, vinyl chloride-vinyl acetate-vinyl alcohol copolymers, vinyl chloride-vinyl acetate copolymers, vinyl chloride-vinylidene chloride copolymers, vinylidene chloride-acrylonitrile copolymers, vinyl acetate resins, epoxy resins, phenoxy resins, polyvinylbutyral resins, polyvinyl formal resins and polyester resins, and which is cross-linked by reactive isocyanate groups in a polyurethane material blended with said alcohol free nitrocellulose binder.

4,115,291

LIQUID COMPOSITIONS BASED ON POLYGLYCOLETHERS HAVING A HIGH BOILING POINT

Sergio Gritti, Genthod-Geneve, Switzerland, assignor to Montedison S.p.A., Milan, Italy

Division of Ser. No. 167,035, Jul. 28, 1971, Pat. No. 3,991,122. This application Feb. 28, 1974, Ser. No. 446,790
Claims priority, application Italy, Jul. 31, 1970, 28130 A/70
Int. Cl.² C10M *3/16, 3/14*
U.S. Cl. 252—73 **7 Claims**

1. A process for the preparation of monoalkylethers of polyoxyalkyleneglycols, having a maximum viscosity of 1800 cSt at −40° c, an average molecular weight between 270 and 300, and a boiling point of from 290° to 310° C, wherein a mixture of ethylene oxide and propylene oxide in a weight ratio between 30:70 and 45:55 is reacted at 120°–150° C and under a pressure of from 3 to 10 atmospheres, and in an anhydrous alkaline medium catalyst, with a monoalkylether of diethylene glycol containing ethylene glycol, in a weight ratio: alkylene oxide/glycol-ether between 1.5 and 1.8 and thereafter diluting the product of the polyaddition with an alkoxy-triglycol, the alkoxy group of which has 1–4 carbon atoms, until the desired viscosity is obtained.

4. A liquid composition suited for use as an hydraulic brake fluid, having a boiling point between 290° and 310° C., a maximum viscosity of 1800 cSt. at −40° C., and consisting essentially of:

(a) 80–100% by weight of the monoalkylether of polyoxyalkylene glycol with an average molecular weight between 270 and 300 obtained by reacting a mixture of ethylene oxide and propylene oxide in a weight ratio between 30:70 and 45:55, with a monoalkylether of diethylene glycol, in a weight ratio of alkylene oxides/glycol ether between 1.2 and 1.8 in the presence of an alkaline catalyst, at 120°–150° C. under a pressure of from 3 to 10 atmospheres, and

(b) 0–20% by weight of an alkoxy-triglycol, the alkoxy group having from 1 – 4 carbon atoms.

4,115,292

ENZYME-CONTAINING DETERGENT ARTICLES

David L. Richardson, Forest Park, and Frank J. Mueller, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 20, 1977, Ser. No. 789,325
Int. Cl.² C11D *17/04*
U.S. Cl. 252—90 **34 Claims**

1. A unit dosage amount of a detergent composition, contained within an outer water-soluble film packet, comprising:

(a) at least about 0.5% by weight of a surface-active agent; and

(b) an effective amount of an enzyme enclosed within an inner water-soluble film having one dimension at least about 5 millimeters in size and a thickness of not more than about 50 mils.

4,115,293

DENTURE CLEANSER

Daniel Schoenholz, Basking Ridge, N.J., and Martin M. Perl, Brooklyn, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 620,102, Oct. 6, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,576
Int. Cl.² C11D *3/395, 7/54*
U.S. Cl. 252—102 **12 Claims**

1. A thermogenic denture cleansing composition in powder or granular form comprising

(a) 60 to 85 wt % of an approximately stoichiometric mixture of

(1) an oxidizing agent selected from the group consisting of alkali metal percarbonate, perborate, persulfate, perpyrophosphate and monopersulfate, and

(2) a reducing agent selected from alkali metal sulfite, thiosulfite or metabisulfite; thiourea; and ascorbic acid,

(b) 5 to 15 wt % of a bleaching agent selected from the group consisting of alkali metal monopersulfates, said 5 to 15 wt % of alkali metal monopersulfates being in addition to any alkali metal monopersulfate used as an oxidizing agent,

(c) 0.01% to 5.0 wt % of a wetting agent selected from alkali metal salts of long chain alkyl sulfates, alkali metal salts of alkyl benzene sulfonates and nonionic surfactants that are stable to oxidants at a pH of 7 to 10,

(d) 0.01% to 0.5 wt % of a sequestering agent selected from alkali metal salts of aminocarboxylic acids, and

(e) sufficient pH adjusting agent to give the composition, when in aqueous solution, a pH of 7–10.

4,115,294

BACTERICIDAL SOAP BAR

Charles Fearnley, Romiley; Glenda Helen Fordham, Glossop, and Frank Lee, Bolton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,805

Claims priority, application United Kingdom, Jan. 10, 1976, 940/76; Feb. 24, 1976, 7153/76

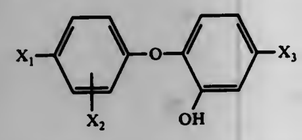
Int. Cl.² C11D *9/50*

U.S. Cl. 252—106 **5 Claims**

1. A bactericidal soap bar consisting essentially of

(a) 0.1 to 3 percent by weight, based on the total weight of the soap bar, of a bactericidal compound of the formula

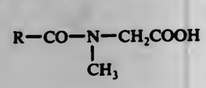
(I)



wherein each of X_1 and X_3 independently represents a halogen atom which is the same or different and X_2 represents a hydrogen or halogen atom, and

(b) 0.1 to 10 percent by weight, based on the total weight of the soap bar, of a compound of the formula

(II)



wherein R represents an alkyl or alkenyl group of 8 to 17 carbon atoms.

4,115,295

POLYMERIZABLE COMPOSITIONS CONTAINING HIGHLY FLUORINATED ALIPHATIC SULFONYL PROTONIC ACID CATALYST

Janis Robins, St. Paul; James E. Kropp, Maplewood, and Chung I. Young, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 26, 1976, Ser. No. 679,940

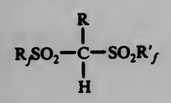
Int. Cl.² C08G *59/68*

U.S. Cl. 528—90 **24 Claims**

1. A manufacture comprising in separate containers:

(A) a first organic material having epoxide functionality greater than 1; and

(B) a second organic material having hydroxyl functionality of at least 1, wherein a catalyst of the formula:



where R_f and R_f' are independently a highly fluorinated or perfluorinated alkyl and R is selected from H, Br, Cl, I, alkyl having 1 to 20 carbon atoms, alkenyl having 3 to 4 carbon atoms, aryl and alkaryl radicals, or a compound capable of liberating such catalyst is contained therein in an amount of at least 0.01% by weight; whereby polymerization occurs upon mixture of A and B in amounts sufficient to provide a ratio of equivalents of hydroxyl-containing material to equivalents of epoxide in the range of about 0.3/1 to 1.5/1.

4,115,296

POLYHALOCARBOXYLIC ACID SALTS AS ACCELERATORS FOR CURING EPOXIDE RESINS

Christopher Michael Andrews, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 16, 1976, Ser. No. 751,227

Claims priority, application United Kingdom, Dec. 30, 1975, 53103/75

Int. Cl.² C08G *59/40*

U.S. Cl. 528—92 **13 Claims**

1. A composition comprising

a. a curing agent for epoxide resins, which is a polyamine, a polyaminoamide, a polycarboxylic acid, or a polycarboxylic anhydride, and

b. a lithium, sodium, calcium, zinc, barium, copper, cobalt, nickel, manganese, vanadyl vanadium, chromic chromium, or magnesium salt of an aliphatic or araliphatic monocarboxylic acid of 2 to 8 carbon atoms, bearing on the carbon atom adjacent to the carboxyl group at least two halogen atoms chosen from fluorine and chlorine atoms.

4,115,297

THERMALLY REGENERABLE AMPHOTERIC ION EXCHANGERS PREPARED BY SEQUENTIAL TREATMENT OF POLYMERIC BEADS WITH TWO REAGENTS OF OPPOSING ACID BASE CHARACTER

Brian Alfred Bolto, Mitcham, and Kurt Hermann Eppinger, East Bentleigh, both of Australia, assignors to ICI Australia Limited and Commonwealth Scientific and Industrial Research Organization, both of, Australia

Filed Apr. 12, 1976, Ser. No. 676,345

Claims priority, application Australia, May 12, 1975, PC1560

Int. Cl.² B01J *1/08;* C08F *28/00*

U.S. Cl. 521—32 **6 Claims**

1. A process of manufacturing an amphoteric resin wherein the ratio of acidic groups to basic groups can be controlled, which process comprises treating polymeric beads sequentially with two reagents of opposing acid base character, wherein said beads comprise polymers and copolymers selected from the group consisting of chloromethylated polystyrene, polyvinyl chloride, polyvinylidene chloride, chlorinated polyethylene, chlorinated rubbers, polyvinyl alcohol and polysaccharides, and wherein said reagents are reactable with said beads and are selected from the group consisting of thioglycolic, acid, thiolactic acid, thiomalic acid, thiosalicylic acid, and their analogous hydroxy acids, chloroacetic acid, 2-chloropropionic acid, 3-chlorobutyric acid, and their analogous bromo acids, and primary and secondary amines of the alkyl and aralkyl type, polyamines and derivatives thereof in which one amino group is in the primary and secondary form, with the others in primary, secondary or tertiary form, analogous cyclic diamines, 2-aminoethanethiol, 2-alkylaminoethanethiol, 2-dialkylaminoethanethiol, 2-aminoethylchloride, 2-alkylaminoethyl chloride, 2-dialkylaminoethyl chlorides, and α-ω-amino acids.

4,115,298

PROCESS FOR SPLITTING UP POLYURETHANE WASTE INTO ACTIVATED POLYHYDROXYL COMPOUNDS

Gottfried Schneider; Kuno Wagner, both of Leverkusen, and Heinz Wolfgang Patzelt, Memmingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 16, 1976, Ser. No. 723,872

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1975, 2542022

Int. Cl.² C08G *18/82, 18/32*

U.S. Cl. 260—2.3 **13 Claims**

1. A process for splitting up cellular and non-cellular polyurethanes into liquid reusable polyhydroxyl compounds for an isocyanate polyaddition process comprising reacting the polyurethanes at 150 ° to 250° C., with lactam melts or equilibrium

associates of lactams and water or organic materials containing at least two Zerewitinoff-active hydrogen atoms.

4,115,299

FROTHING METHOD AND AN APPARATUS FOR CARRYING OUT THE METHOD

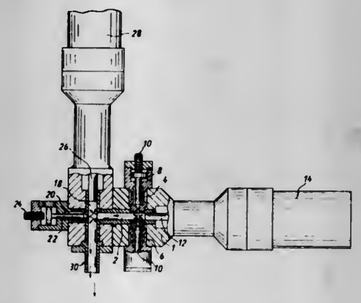
Dietrich Mühle, Kressbronn, Fed. Rep. of Germany, assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 4, 1976, Ser. No. 663,865

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1975, 2513492

Int. Cl.² C08J *9/06*

U.S. Cl. 521—170 **12 Claims**



1. In a frothing method for mixing a liquid propellant having a low boiling point with further components for production of foamed material, the steps which comprise

separately injecting said further components under high pressure into a first cylindrical mixing chamber closed at one end and open at the other, to produce a first-stage, reactive mix in said first chamber;

advancing said first-stage mix through the open end of said first chamber to a second cylindrical mixing chamber, larger than the first and intersected by the first at the open end of the latter, said second chamber being closed at an axial end adjacent said intersection but open at its opposite axial end;

introducing said liquidified propellant into said first-stage mix through a port in said second chamber at said intersection of said chambers, whereby to provide a second-stage mix in said second chamber; and

then discharging said second-stage mix from said open end of said second chamber to allow said mix to expand and form said foamed material.

4,115,300

STABILIZED POLYOL COMPOSITIONS AND POLYURETHANE FOAMS

Dimitri A. Chakirof, San Pedro, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 25, 1977, Ser. No. 800,216

Int. Cl.² C08G *41/00;* C09K *3/28*

U.S. Cl. 521—171 **10 Claims**

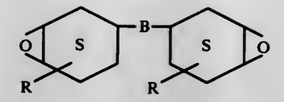
1. A stabilized polyol blend comprising,

(i) a halogenated polyol;

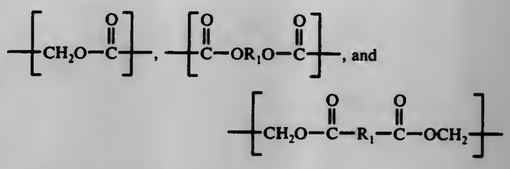
(ii) a tertiary amine urethane catalyst; and

(iii) a stabilizing amount of a diepoxide selected from the group consisting of

(a)

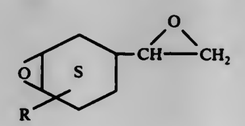


wherein R in each ring is independently selected from the group consisting of hydrogen and alkyl from 1 to 8 carbon atoms and B represents a divalent radical selected from the group consisting of



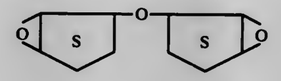
wherein R_1 is alkylene from 1 to 8 carbon atoms;

(b)



wherein R is defined as above; and

(c)



4,115,301

CROSS-LINKER FOR FLEXIBLE AND SEMI-FLEXIBLE POLYURETHANE FOAMS

William Alvis Kennedy, Houston, Tex., assignor to Texaco Development Corp., New York, N.Y.

Division of Ser. No. 546,460, Feb. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 398,179, Sep. 17, 1973, abandoned. This application Jan. 6, 1977, Ser. No. 757,254

Int. Cl.² C08G *18/32;* C08J *9/06*

U.S. Cl. 521—155 **5 Claims**

1. A polyurethane foam composition consisting essentially of:

a polyether polyol which has been reacted with an organic polyisocyanate in the presence of blowing agent and from about 0.8 parts to about 2.5 parts by weight per 100 parts by weight of said polyether polyol of a polymethylene polyphenyl amine mixture having an average functionality of from about 2.2 to about 2.9 wherein the methylene dianiline portion of said amine mixture has an isomeric distribution of from about 10 to 70 weight percent 2,4'-isomer, from about 1 to 20 weight percent 2,2'-isomer, with the remaining methylene dianiline being the 4,4'-isomer.

4,115,302

SUBSTITUTED MORPHOLINE CATALYST FOR POLYURETHANE FOAM

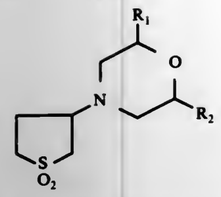
Chung-Ling Mao, Sandy Hook, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jul. 13, 1977, Ser. No. 815,328

Int. Cl.² C07D *295/00;* C08G *18/16*

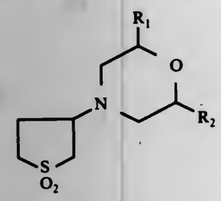
U.S. Cl. 521—115 **4 Claims**

1. A compound of the formula



wherein R_1 and R_2 are alkyl radicals having 1 to 4 carbon atoms.

3. In a method of making a polyurethane foam wherein a polyurethane-forming long chain polyol and a polyurethane-forming organic polyisocyanate are reacted in the presence of a catalyst and a blowing agent for the polyurethane foam, the improvement comprising using as the catalyst, at least in part, an effective amount of a compound of the formula



wherein R_1 and R_2 are alkyl radicals having 1 to 4 carbon atoms.

4,115,303

METHOD OF FABRICATION OF POROUS MACROMOLECULAR MATERIALS HAVING AN INTERNAL LINING AND MATERIALS OBTAINED BY MEANS OF SAID METHOD

Joseph Marchand, Choisy-le-Roi, and Jean-René Puig, Sevres, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 349,490, Apr. 9, 1976, abandoned. This application May 24, 1976, Ser. No. 689,207
Claims priority, application France, Apr. 21, 1972, 7214293
Int. Cl.² C08J 9/00; C08F 2/46
U.S. Cl. 521—53 **17 Claims**

1. A method for producing porous macromolecular material from a polymer consisting of a polyolefin, comprising

irradiating the polyolefin with heavy nuclear particles, whereby the polyolefin is modified in the region along the path of the nuclear particles to make it more reactive to attack in the region along the path by a chemical attacking agent selected from the group consisting of strong oxidizers and strong bases, and additionally to make it more reactive towards monomers having at least one ethylene double bond;

reacting said modified polyolefin with said chemical attacking agent, whereby a portion of the modified polyolefin is removed forming a pore structure in and through said polyolefin; and

reacting the polyolefin at the modified portion, with a monomer having at least one ethylene double bond, whereby the monomer is fixed to at least a portion of the modified polyolefin.

4,115,304

HYDROXYL CONTAINING MATERIALS FROM DISTILLATION RESIDUE OBTAINED BY DISTILLING HEXAMETHYLENE DIAMINE FROM A MIXTURE THEREOF WITH BY-PRODUCTS OBTAINED IN THE HYDROGENATION OF ADIPONITRILE TO PRODUCE HEXAMETHYLENE DIAMINE

David H. Chadwick, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 14, 1977, Ser. No. 833,114
Int. Cl.² C08J 9/00; C08G 63/12, 18/02; C07C 93/04
U.S. Cl. 521—167 **17 Claims**

11. In a process for the production of a polyurethane resin by reacting an organic polyisocyanate, an organic hydroxyl group containing material, a chain extender, and optionally catalysts and blowing agents, the improvements wherein said chain extender comprises a hydroxyl containing composition comprising the alkoxylated product of a distillation residue obtained by distilling hexamethylene diamine from a mixture thereof with by-products obtained in the hydrogenation of adiponitrile to produce hexamethylene diamine.

4,115,305

SUPPORT MATRIX FOR CARRYING BIOLOGICALLY ACTIVE MATERIALS AND PROCESS FOR THE PREPARATION THEREOF

William Edward Hornby, Dairsie, Scotland, and David Lindsey Morris, Guildford, England, assignors to National Research Development Corporation, London, England

Filed Jun. 2, 1976, Ser. No. 692,036
Claims priority, application United Kingdom, Jun. 4, 1975, 24125/75
Int. Cl.² C08L 89/00
U.S. Cl. 260—6 **25 Claims**

1. A biologically active matrix comprising a support and a biologically active material which is bound thereto, said support comprising an organic polymer incorporating amidine groups the carbon atoms of which are bound to side chains each of which includes a functional group capable of linkage to the biologically active material, and a carbonyl group or an enol form thereof which is spaced from the carbon atom of an amidine group by the backbone dependent nitrogen atom thereof and at most by one other nitrogen atom in the side chain.

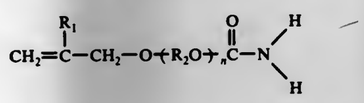
4,115,306

VINYL ESTER AQUEOUS ADHESIVE EMULSIONS INCLUDING ALLYL CARBAMATE

Martin K. Lindemann, Greenville, S.C., assignor to Chas. S. Tanner Co., Greenville, S.C.

Filed Nov. 25, 1977, Ser. No. 853,993
Int. Cl.² C09J 3/12
U.S. Cl. 260—17 A **10 Claims**

1. An aqueous adhesive emulsion which develops water resistance through cure, the water of said emulsion having emulsified therein an aqueous emulsion copolymer of monoethylenic monomers, at least 40 up to 99.5% of the copolymer being vinyl ester of a saturated aliphatic monocarboxylic acid having up to 18 carbon atoms and from 0.5–15% by weight of the copolymer of an allyl carbamate being the formula:



in which R_1 is hydrogen or methyl, and R_2 is an alkylidene group containing from 2–4 carbon atoms, and n is an integer from 0–10, any balance of said copolymer consisting essentially of monoethylenic monomers copolymerizable with said vinyl ester and nonreactive with hydroxy during emulsion copolymerization, the monomers of said copolymer being emulsified during copolymerization by from 0.5 to 10% of an hydroxy functional protective colloid selected from the group consisting of polyvinyl alcohol and hydroxy ethyl cellulose and said adhesive emulsion being acidic to about neutral.

4,115,307

PHOSPHATE COMPOSITION

James D. McGilvery, Etobicoke, Canada, assignor to Erco Industries Limited, Islington, Canada

Continuation-in-part of Ser. No. 640,741, Dec. 15, 1975, abandoned. This application Jun. 13, 1977, Ser. No. 806,197
Claims priority, application United Kingdom, Dec. 13, 1974, 53900/74
Int. Cl.² A61K 7/50; C02B 5/04; C11D 7/14, 11/00
U.S. Cl. 252—135 **13 Claims**

1. A dry, free-flowing, granular composition comprising granules formed from

about 45 to about 85% by weight of a hydratable alkali metal phosphate selected from the group consisting of sodium tripolyphosphate, tetrasodium pyrophosphate, tetrapotassium pyrophosphate, tripotassium phosphate and dipotassium phosphate;

about 9 to about 30% by weight of polyphosphoric acid having a P_2O_5 content of about 75 to about 85%;

about 1.5 to about 23% by weight of sodium carbonate and/or sodium bicarbonate; and

about 4 to about 17% by weight of water,

said granules having a bulk density of about 0.5 to about 0.8 g/cc and an oil absorbency of about 50 to about 80%;

said alkali metal phosphate, said polyphosphoric acid and said sodium carbonate and/or sodium bicarbonate being present in amounts to provide an aqueous solution of pH of about 7 to about 8 upon dissolving the composition in water.

7. A method of forming a low density, dry, free-flowing, granular phosphate composition, which comprises:

forming a dry, free-flowing mixture of (1) a hydratable alkali metal phosphate selected from the group consisting of sodium tripolyphosphate, tetrasodium pyrophosphate, tetrapotassium pyrophosphate, tripotassium phosphate and dipotassium phosphate, (2) a polyphosphoric acid having a P_2O_5 content of about 75 to about 85%, and (3) sodium carbonate and/or sodium bicarbonate, the relative quantities of said alkali metal phosphate, polyphosphoric acid and sodium carbonate and/or sodium bicarbonate being such that the mixture, if dissolved in water, would result in a solution having a pH of about 7 to 8, and

granulating said mixture with water to cause reaction between diluted polyphosphoric acid and part of said sodium carbonate and/or sodium bicarbonate to evolve carbon dioxide and form an expanded dry, free-flowing, granular phosphate composition having a bulk density of about 0.5 to about 0.8 g/cc and an oil absorbency in the range of about 50 to about 80%,

the overall quantities of the components of the composition being:

about 45 to about 85% by weight of said hydratable alkali metal phosphate,

about 9 to about 30% by weight of said polyphosphoric acid,

about 1.5 to about 23% by weight of said sodium carbonate and/or sodium bicarbonate, and

about 4 to about 17% by weight of water.

4,115,308

HIGH-SHEAR PROCESS FOR PREPARING SILICATE-CONTAINING PASTE-FORM DETERGENT COMPOSITIONS

Raymond Ellwood Guerry, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 27, 1976, Ser. No. 754,656
Int. Cl.² C11D 11/00, 3/08, 13/10, 17/00
U.S. Cl. 252—135 **11 Claims**

1. A process for the production of alkaline, silicate-containing, paste-form detergent compositions, comprising from about 30 to about 80% of solid inorganic components selected from the group consisting of silicates, phosphates, polyphosphates, carbonates, bicarbonates, borates, sulfates, and mixtures thereof; and containing at least about 0.5% of an alkoxylated nonionic surfactant, wherein the alkoxy moiety is selected from the group consisting of ethylene oxide, propylene oxide, and mixtures thereof; wherein the amount of water-soluble alkali metal silicate in the final composition is from about 10 to about 40%; and wherein the final composition contains from about 10 to about 50% of a detergency builder selected from the group consisting of polyphosphates, carbonates, bicarbonates, organic builders and mixtures thereof; comprising the steps of:

(a) high-shear mixing the solid and liquid components of said composition, such that the temperature of the mixture exceeds about 80° F; the ratio by weight, of said solid components to said liquid components being from about 4:1 to about 1:2; followed by

(b) simultaneously mixing and cooling said mixture to a temperature of less than about 80° F when a temperature of about 120° F is exceeded in step (a).

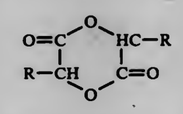
4,115,309

COMPOSITIONS AND METHOD FOR ACTIVATING OXYGEN UTILIZING CYCLIC ESTER-ANHYDRIDES OF α-HYDROXYCARBOXYLIC ACIDS

Horst-Jürgen Krause, Dusseldorf-Holthausen; Christian Hase, Erkrath-Unterbach, and Helmut Bloching, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 29, 1977, Ser. No. 782,335
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614521
Int. Cl.² C11D 7/54
U.S. Cl. 252—186 **16 Claims**

1. The method of activating aqueous solutions of percompounds selected from the group consisting of hydrogen peroxide and water-soluble inorganic peroxyhydrates containing from 20 mg to 500 mg per liter of active oxygen, said solution having a pH of 4 to 12 and a temperature of from 10° to 70° C which consists essentially of adding to said aqueous solution at least one hexacyclic ester-anhydride having the formula



wherein R is a member selected from the group consisting of hydrogen, alkyl having 1 to 18 carbon atoms and $-(CH_2)_n-(-CHOH)_m-COOY$, where n is an integer from 1 to 3, m is an integer from 0 to 1 and Y is a member selected from the group consisting of hydrogen, alkali metal, ammonium, lower alkanolammonium, and N-lower-alkyl-piperidinium, as an activator, in an amount sufficient to activate said percompound.

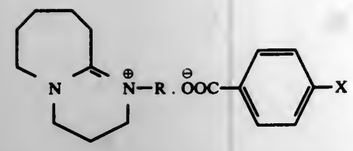
4,115,310

LIQUID CRYSTALLINE COMPOSITION

Hisato Sato, Tokyo; Masayuki Tazume, Urawa; Takasi Yamaki, Tokyo; Yutaka Fujita, Yokohama, and Yoshi Arai, Oyama, all of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo and Kawamura Institute of Chemical Research, both of Japan

Filed Oct. 13, 1976, Ser. No. 731,645
Claims priority, application Japan, Oct. 15, 1975, 50-124199
Int. Cl.² C09K 3/34; G02F 1/13
U.S. Cl. 252—299 **8 Claims**

1. A liquid crystalline composition comprising a nematic liquid crystalline substance having negative dielectric anisotropy and as an additive, at least one compound of the general formula



wherein X is an amino group, a nitro group, a chlorine atom, a hydrogen atom, or a straight-chain alkyl group containing 1 to 6 carbon atoms, and R is a straight-chain alkyl group containing 10 to 20 carbon atoms with the proviso that when X is a hydrogen atom or a straight-chain alkyl group containing 1 to 6 carbon atoms, R is a straight-chain alkyl group containing 14 to 20 carbon atoms,

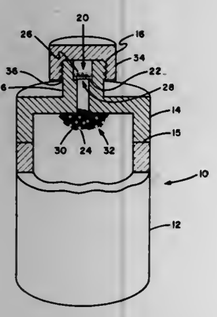
and said additive being used in the range of 0.05 to 0.5% by weight of the nematic liquid crystalline substance.

4,115,311

NUCLEAR WASTE STORAGE CONTAINER WITH METAL MATRIX

Kenneth R. Sump, Kennewick, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 10, 1977, Ser. No. 776,383
Int. Cl.² G21F *9/34*
U.S. Cl. 252—301.1 W **8 Claims**



1. A method of encapsulating a high-level radioactive waste within a metal powder matrix in a storage container having a maximum length of about 15 ft. and maximum inner diameter of about 2 ft. wherein said matrix is not formed by molten metal, consisting essentially of disposing high-level radioactive waste particles within said storage container, said high-level waste particles having a diameter of from about 0.5 to about 25 mm, interspersing a metal powder having a particle size of from about 0.05 to 2.0 mm into said waste to permeate between and around said high-level waste particles, disposing a cover member on said storage chamber to close and seal said storage chamber, and heating said storage chamber containing said metal matrix powder and said high-level waste particulate material to a sintering temperature for a sufficient length of time to sinter said metal powder and effect a metal powder matrix about said high-level waste particles, said high-level waste particles occupying from about 50 to about 70 volume percent of said storage container and said metal powder matrix occupying from about 35 to about 65 volume percent of theoretical of the remaining volume of said storage container, said metal powder matrix providing impact strength to said storage container and increasing heat transfer from said storage container interior to said storage container exterior to prevent undesirably high center line temperatures.

4,115,312

X-RAY FLUORESCENT LUMINESCENT CADMIUM TUNGSTATE COMPOSITIONS

Gerhard Engel, and Manfred Eckle, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 5, 1977, Ser. No. 794,204
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621696
Int. Cl.² C09K *11/38, 11/10*
U.S. Cl. 252—301.5 **8 Claims**

1. In a process for producing x-ray fluorescent luminescent cadmium tungstate material by precipitation of cadmium tungstate from an aqueous solution of an alkali metal tungstate by the addition of an aqueous solution of a cadmium salt and separation, washing, drying and calcining of the resulting precipitate, the improvement wherein

(a) each of the alkali metal tungstate and cadmium salt solutions is at least 1N,

(b) mixing of the two solutions is done over 0.1 to 4 hours,

(c) approximately equivalent amounts of both solutions are mixed,

(d) mixing is done at a temperature of 0° C the boiling point of the mixture

(e) the precipitate is activated by calcination at a temperature between 400° and 1200° C. for up to 6 hours, and

(f) the thus-activated precipitate is reslurried in water, washed and dried.

4,115,313

BILE ACID EMULSIONS

Irving Lyon, and Harriette Lyon, both of 415 N. Orange Grove Ave., Apt. 10, Los Angeles, Calif. 90036

Continuation-in-part of Ser. No. 513,069, Oct. 8, 1974, abandoned. This application Feb. 11, 1976, Ser. No. 657,225
Int. Cl.² B01J *13/00*
U.S. Cl. 252—309 **9 Claims**

1. An emulsion composition consisting essentially of:

(1) bile acid member selected from the class consisting of bile acids, bile acid conjugates, lower alcohol esters of bile acids or bile acid conjugates, salts of bile acids or bile acid conjugates, and mixtures thereof;

(2) water to effect solution of said bile acid member; and

(3) at least one component selected from the class consisting of:

(a) glycerides of fatty acids having about 12–22 carbon atoms;

(b) phospholipids selected from the group consisting of (i) glycerol esters containing alpha or beta phosphoric acid and (ii) a hydroxy-containing compound combined in an ester link with a phosphate group;

(c) fatty acids, amino fatty acids, or fatty acid amides, where said fatty acids have about 12–22 carbon atoms and said amino fatty acids and said fatty acid amides are derivable from fatty acids having about 12–22 carbon atoms; and

(d) steroids selected from the group consisting of (i) animal sterols and (ii) vegetable sterols, where said bile acid member and each of said (a), (b), (c) and (d) units of said component (3), when present, is present in said emulsion composition in an amount between about 10 and 250 millimoles per liter of said bile acid member-water solution, and where the molar proportion of each of said components *3a, 3b, 3c* and *3d*, when present, lies in the range of about 0.3–3 moles per mole of said component (1) present.

4,115,314

PRODUCTION OF WATER-IN-OIL EMULSIONS

Knut Oppenländer, Ludwigshafen; Karl Seib, Weinheim, and Heinz Krapf, Hessheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland, Pflaz, Fed. Rep. of Germany

Division of Ser. No. 630,635, Nov. 10, 1975, abandoned. This application Dec. 29, 1976, Ser. No. 755,582
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1974, 2455287; Aug. 16, 1975, 2536597
Int. Cl.² B01J *13/00*
U.S. Cl. 252—309 **3 Claims**

1. In a process for the production of water-in-oil emulsions at a temperature of about 70° to 75° C wherein water is added to an oily or fatty phase containing an emulsifier in small portions, said added water having a temperature of about 2° C higher than the temperature of said oily or fatty phase, the improvement which comprises using as the emulsifier a reaction product obtained by the following steps:

(a) reacting saturated or unsaturated fatty alcohols of 16 to 20 carbon atoms, which alcohols are selected from the group consisting of oleyl alcohol, stearyl alcohol, myristyl alcohol, linolenyl alcohol, tallow fat alcohol, ALFOLS of 16 to 18 carbon atoms, oxo alcohols of 17 to 19 carbon atoms and mixtures thereof, with epichlorohydrin in the presence of an acid catalyst, and eliminating hydrogen chloride from the chlorohydrin by means of solid powdered alkali metal hydroxide, the molar ratio of alcohol to epichlorohydrin being from 1:0.5 to 1:1.5; and

(b) reacting the glycidyl ethers produced in step (a) with polyhydric alcohols of 2 to 6 carbon atoms and containing from 2 to 6 hydroxyl groups, said polyhydric alcohols being selected from the group consisting of ethylene glycol, dipropylene glycol, 1,4-butanediol, 1,2,4-butanetriol, glycerol, trimethylolpropane sorbitol, neopentyl glycol, and pentaerythritol, or with monoethers of said alcohols with fatty alcohols of 10 to 22 carbon atoms per fatty alcohol radicals, in a molar ratio of glycidyl ether to polyhydric alcohol or ether of from 1:1.5 to 1:6.0, the reaction of the glycidyl ether with the polyhydric alcohol or ether being carried out in the presence of Lewis acids selected from the group consisting of boron fluoride etherate, boron fluoride/phosphoric acid, boron fluoride/acetic acid, boron fluoride hydrate, boron fluoride alkylglycol etherate, tin tetrachloride, zinc chloride, titanium tetrachloride and aluminum chloride and sulfuric acid or in the presence of alkaline catalysts selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, the corresponding oxides, carbonates, alcoholates of 1 to 4 carbon atoms per alcohol radical, tertiary amines and the corresponding quaternary ammonium hydroxides.

4,115,315

PEARLESCENT CAPSULES AND PROCESS FOR THEIR PREPARATION

Nicola Marinelli, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 16, 1977, Ser. No. 769,296
Int. Cl.² B01J *13/02*
U.S. Cl. 252—316 **9 Claims**

1. A process for preparing oil-containing pearlescent capsules, en masse, in an aqueous manufacturing vehicle, comprising the steps of:

(a) providing a dispersion of inorganic pearlescent particles comprising mica coated with titanium dioxide in an oily intended capsule core material substantially insoluble in the aqueous manufacturing vehicle,

(b) adding said dispersion to an agitating aqueous manufacturing vehicle system capable of coacervation and comprising water and at least one film-forming hydrophilic colloid material, whereby said pearlescent particles flush out into the aqueous coacervation phase, and

(c) causing coacervation of said system, whereby the film-forming hydrophilic colloid material deposits and enwraps droplets of the oily capsule core material to form said oil-containing capsules, said pearlescent particles being embedded in and becoming an integral part of the resultant capsular wall material.

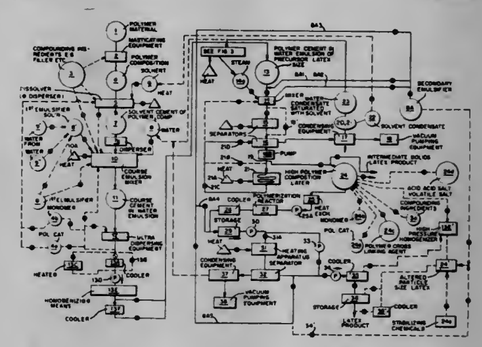
9. Oil-containing pearlescent capsules produced in accordance with the process of claim 1.

4,115,316

EMULSIFYING AND SEPARATING LATEX AND SOLVENT

Oliver W. Burke, Jr., Fort Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 484,340, Jun. 28, 1974, Pat. No. 3,968,067, which is a continuation-in-part of Ser. No. 226,419, Feb. 15, 1972, which is a continuation-in-part of Ser. No. 817,494, Apr. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 621,997, Mar. 7, 1967, Pat. No. 3,503,917. This application Jun. 28, 1976, Ser. No. 700,295
Int. Cl.² B01J *13/00*
U.S. Cl. 252—359 A **3 Claims**



1. An improved apparatus for the formation of a latex from an organic solvent dispersion of a composition of an organic solvent soluble or dispersible, water insoluble, macromolecular substance, said apparatus being of the type which comprises:

(1) means for providing a dispersion of the said composition in essentially water-immiscible volatile solvent which itself or as an azeotrope with water has a boiling point lower than that of water at atmospheric pressure,

(2) means for adding water and emulsifier to said dispersion in proportions to form an emulsion having water as its continuum and emulsifying the same so that the discontinuous phase thereof is in particles at least principally of precursor latex particle size,

(3) a separating means for stripping the solvent from the emulsion to form a latex, and

(4) means for separately delivering latex and vapors from said separating means,

and wherein

(5) said separating means comprises

(a) conduit means for providing a moving flow of gas comprising steam as an initial continuous phase,

(b) vaporizing means for dispersing the said emulsion into said flow of gas comprising steam as the initial continuous phase for vaporizing solvent from the dispersed droplets and forming a flow of latex droplet and vapors therein,

(c) means for establishing a separating zone and for maintaining the same at a lower pressure than that in said vaporizing means, and means connected to said separating zone for establishing a flow of latex and water vapor into said separating zone,

(d) means connecting said vaporizing means and said separating zone for introducing into said separating zone the latex droplets and vapor produced in said

vaporizing means and impinging said droplets upon the flow of latex therein,

(e) a conduit leading from said separating zone for withdrawing vapors from said separating zone, and

(f) a conduit leading from said separating zone for withdrawing latex from said separating zone.

the improvement comprising, in combination in the apparatus:

(6) means connected to said conduit (*e*) for cooling and condensing the vapors withdrawn therethrough to form a mixture of said solvent in liquid form and water containing some solvent,

(7) separator means connected to said condensing means for affecting separation of the liquid solvent from said solvent-containing water, and

(8) an indirect contact heat exchanger connected for receiving from said separator means, and vaporizing, a quantity of said solvent-containing water sufficient to form at least a substantial part of said flow of gas comprising steam, and connected to said conduit member (*a*) to deliver the vaporized solvent-containing water thereto to provide the flow of gas in said conduit (*a*) at least in part.

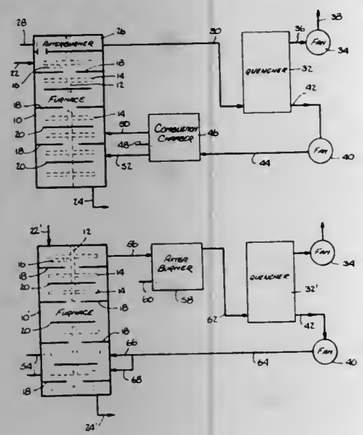
4,115,317
METHOD AND APPARATUS FOR REGENERATING AND MANUFACTURING ACTIVATED CARBON

Stuart S. Spater, Livingston, N.J., assignor to Nichols Engineering & Research Corporation, Belle Mead, N.J.

Continuation-in-part of Ser. No. 609,630, Sep. 2, 1975, abandoned. This application Mar. 31, 1977, Ser. No. 783,381

Int. Cl.[2] B01J *21/18;* **C01B** *31/10*

U.S. Cl. 252—418 **8 Claims**



1. In a system for regenerating or manufacturing activated carbon, having a multiple hearth furnace and gas cooling means, a method comprising, in combination, the steps of introducing into the upper portion of said furnace granular activated carbon having a carbon content from about 45% to about 95%, progressively passing said granular activated carbon material downwardly through said furnace over said hearths and through a series of vertically disposed burning zones for burning undesired material therefrom, discharging the finished product from a lower portion of said furnace, passing the exhaust gases and vapors from an upper portion of said furnace through an auxiliary burning zone to complete the combustion process, conducting said exhaust gases and vapors from said auxiliary burning zone to said cooling means for adiabatic cooling of same to saturation, withdrawing clean gases from said cooling means, withdrawing a slip stream of water saturated gases from said cooling means conducting them to a lower hearth portion of said furnace, thereby providing a method of recycling gases wherein the water vapor from said gas cooling means is substantially the sole source of water vapor used for reaction with the carbon in the furnace.

2. A method of regenerating or manufacturing activated carbon according to claim 1, further comprising the steps of firing said furnace by an external combustion chamber, and wherein said step of withdrawing a slip stream of water saturated gases from said cooling means and conducting them to a lower hearth portion of said furnace includes the steps of conducting said gases to said combustion chamber and then passing a mixture of the gaseous products of fuel combustion and said slip stream of water saturated gases into the lower hearth portion of said furnace.

5. A method of regenerating or manufacturing activated carbon according to claim 1, wherein said regenerating or manufacturing system includes an afterburner mounted on the top of said furnace, and said exhaust gases and vapors from the upper portion of said furnace are first passed to said afterburner prior to being passed to said cooling means.

6. A method of regenerating or manufacturing activated carbon according to claim 1, wherein an external afterburner is disposed between said furnace and said cooling means and said method comprises the steps of passing the exhaust gases and vapors from said furnace to said afterburner, and completing the combustion process of said gases in said afterburner, and passing the exhaust gases and vapors from said afterburner to said cooling means.

4,115,318
OLEFIN POLYMERIZATION CATALYST

Anthony N. Speca, Cincinnati, Ohio, assignor to National Petro Chemicals Corporation, New York, N.Y.

Filed Jun. 9, 1977, Ser. No. 805,191

Int. Cl.[2] C08F *4/78*

U.S. Cl. 252—428 **16 Claims**

1. A process for the preparation of an olefin polymerization catalyst which comprises:

(a) depositing at least one polymeric chromium (III) compound upon an inorganic support material, said polymeric chromium (III) compound being at least one member of the group consisting of a poly(di-μ-dihydrocarbylphosphinatohydroxyaquochromium (III)) compound and the corresponding anhydrous compound, said polymeric chromium (III) compound containing from 2 to about 350 monomeric units; and

(b) heating said support material having the polymeric chromium (III) compound deposited thereon in a non-reducing atmosphere above 300° C. up to the decomposition temperature of the support material.

4,115,319
CATALYSTS AND CATALYST COMPONENTS FOR POLYMERIZING OLEFINS

Umberto Scatà; Luciano Luciani, and Pier Camillo Barbé, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Sep. 17, 1976, Ser. No. 724,361

Claims priority, application Italy, Sep. 19, 1975, 27438 A/75

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—429 B **11 Claims**

1. Solid catalyst-forming components for use in preparing a catalyst for polymerizing ethylene and/or alphaolefins, comprising compounds containing Ti, Mg and halogens, in which the halogen/Mg atomic ratio is at least 1, said component being prepared by reacting a tetravalent Ti compound selected from the group consisting of Ti tetrahalides, Ti tetraalcoholates, Ti haloalcoholates, and Ti tetraamides, with the solid halogenation product containing halogen atoms bonded to Mg atoms obtained by reaction of a halogenating agent, different from the halogenated Ti compounds, with a Mg compound selected from the group consisting of

(a) organic oxygenated Mg compounds of the formula

XMgOR

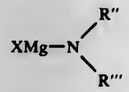
in which R is an alkyl, aryl, cycloalkyl or acyl radical containing from 1 to 20 carbon atoms or —OR forms an enolate radical containing from 1 to 20 carbon atoms, and X is OR, halogen, $(SO_4)_{\frac{1}{2}}$, — OH, $(CO_3)_{\frac{1}{2}}$, $(PO_4)_{\frac{1}{3}}$, carboxylate or an alkyl, aryl, or cycloalkyl radical containing from 1 to 20 carbon atoms

(b) organometallic compounds of the formula

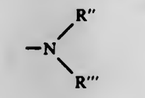
YMgR′

in which R′ is an alkyl, aryl, or cycloalkyl radical containing from 1 to 20 carbon atoms, and Y is halogen or R′; and

(c) Mg organic compounds of the formula



in which R″ and R‴ are hydrogen or alkyl or aryl radicals containing from 1 to 20 carbon atoms; and X is



or has the same significance as in (a); said catalyst component being further characterized in that it contains an electron-donor in a quantity greater than 0.1 but not greater than 1.0 mole per g-atom of Mg.

4,115,320
CATALYSTS FOR ISOCYANATE POLYADDITION REACTIONS

Holger Meyborg, Odenthal-Gloebusch, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 7, 1977, Ser. No. 757,720

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1976, 2601082

Int. Cl.[2] B01J *31/12;* **C08G** *18/00*

U.S. Cl. 252—431 C **5 Claims**

1. Catalyst combinations comprising:

(A) 1 mol of a metal compound corresponding to the following formula:

$Me\ X_n\ Y_m$,

wherein

Me represents a metal having a valency of $(n+m)$,

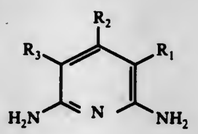
X represents an aliphatic hydrocarbon group having from 1 to 18 carbon atoms, an aromatic hydrocarbon group having from 6 to 10 carbon atoms, or an araliphatic hydrocarbon group having from 7 to 15 carbon atoms,

Y represents an enolate group having from 5 to 18 carbon atoms or an aliphatic carboxylate group having from 2 to 18 carbon atoms,

n represents an integer of from 0 to 2 and

m represents an integer of from 0 to 4 such that the sum of $(n + m)$ is from 2 to 4, and

(B) from about 0.5 to about 5 mols of a primary amine corresponding to the following general formula:



wherein

R_1, R_2, and R_3, which may be the same or different, each represent a hydrogen atom, an aliphatic hydrocarbon group having from 1 to 6 carbon atoms, an aromatic group having from 6 to 12 carbon atoms, or two of the groups R_1 to R_3 represent a condensed aromatic ring.

4,115,321
CATALYST SYSTEMS CONTAINING N,N-DIMETHYLAMINOALKOXYPROPIONITRILES FOR POLYURETHANE FOAM FORMULATION

Michael Ray Sandner, Chappaqua, and Bela Prokai, Mahopac, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

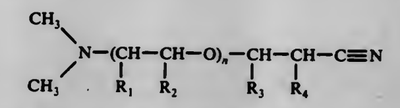
Division of Ser. No. 699,459, Jun. 24, 1976, Pat. No. 4,033,911. This application Apr. 4, 1977, Ser. No. 784,418

Int. Cl.[2] B01J *31/04, 31/02, 27/22;* **C08G** *18/14*

U.S. Cl. 252—431 C **11 Claims**

1. A catalyst combination for cellular urethane formation which comprises:

(1) a total of from about 5 to about 95 weight percent of at least one dimethylamino ether propionitrile having the formula:



wherein *n* has an average value of at least one and no more than about five, and each of R_1,R_2,R_3, and R_4 represents hydrogen, methyl or ethyl with the proviso that, R_1 and R_2 cumulatively and R_3 and R_4 cumulatively, have no more than two carbon atoms;

(2) a total of from about 5 to about 95 weight percent of at least one other tertiary-amine component selected from the group consisting of bis[2-(N,N-dimethylamino)]ethyl]ether, 3-dimethylamino-N,N-dimethylpropionamide, N,N-dimethylcyclohexylamine, and triethylenediamine; and

(3) zero or up to 15 weight percent of an organic compound of tin; said weight percentages being based on the combined total weight on components (1), (2) and (3).

6. A catalyst blend for cellular urethane formation which comprises:

(1) a total of from about 10 to about 90 weight percent of 3-(2-dimethylaminoethoxy)propionitrile, 3-[2-(2-dimethylaminoethoxy)ethoxy]propionitrile or a combination thereof;

(2) a total of from about 10 to about 90 weight percent of at least one other tertiary-amine component selected from the group consisting of triethylenediamine, N,N,N′,N′-tetramethylethylenediamine, N,N,N′,N′-tetramethyl-1,3-butanediamine, bis[2-(N,N-dimethylamino)ethyl]ether, 1,1,4,7,7-pentamethyldiethylenetriamine,3-dimethylamino-N,N-dimethylpropionamide and N,N-dimethylcyclohexylamine; and

(3) zero or up to 10 weight percent of an organic compound of tin; said weight percentages being based on the combined total weight of components (1), (2) and (3) contained in the blend.

4,115,322
METHOD FOR OBTAINING HIGH ACTIVITY ELECTROCATALYSTS ON PYROLYTIC GRAPHITE

Ikram Morcos, Longueuil, Canada, assignor to Hydro-Quebec, Montreal, Canada

Continuation-in-part of Ser. No. 646,994, Jan. 7, 1976, abandoned. This application Jun. 8, 1977, Ser. No. 804,729

Int. Cl.[2] B01J *21/18, 23/40, 23/50, 23/52*

U.S. Cl. 252—447 **14 Claims**

1. A method of producing an electrochemical catalyst consisting of a thin film of a metal selected from the group consisting of Ni, noble metals, and alloys thereof, deposited onto a non-porous pyrolytic graphite support wherein the improve-

ment comprises electrolytically depositing said thin film of metal onto said non-porous pyrolytic graphite support in a simple electrochemical cell from an aqueous solution containing said Ni, noble metals, or alloys thereof in a complex salt form.

4,115,323

CATALYST AND PROCESS FOR PRODUCTION OF VCM

Michael F. Lemanski, Euclid; Frederick C. Leitert, North Madison, and Carl G. Vinson, Jr., Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Oct. 19, 1977, Ser. No. 843,721
Int. Cl.[2] B01J *23/80, 23/60*
U.S. Cl. 252—455 R 7 Claims

1. A catalyst for production of VCM comprising from about 0.01 to about 6% by weight of a salt of a metal selected from the group consisting of rhodium and platinum, from about 0.01 to about 15% of a salt of a metal selected from the group consisting of iron and copper, and from about 1.0 to about 25% of a salt of zinc; impregnated on a support selected from the group consisting of alumina, titania, zirconia, silica, and silica alumina; said percentages expressing the metal content of each component as a function of the total weight of the catalyst.

4,115,324

CATALYST FOR TREATING HEAVY OILS

Hiromi Ozaki, Urawa; Mamoru Yamane, Kiyose; Yoshihito Satomi, Ageo; Teruo Suzuka, Kawaguchi; Toshinobu Miyake, Urawa, and Mizuho Hirato, Hitachi, all of Japan, assignors to Nippon Mining Co., Ltd and Hitachi, Ltd., both of Tokyo, Japan

Filed Jun. 10, 1977, Ser. No. 805,355
Int. Cl.[2] B01J *29/10, 29/20, 23/40, 23/74*
U.S. Cl. 252—459 4 Claims

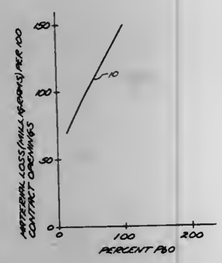
1. A catalyst applicable to the cracking treatments for heavy oils, which is obtained by grinding nickel-containing ore selected from the group consisting of garnierite and laterite, forming the ground ore through pelletization and baking the formed ore in an oxidizing atmosphere at a temperature in the range of about 850° C to above 1200° C.

4,115,325

ELECTRICAL CONTACT MATERIAL

Teuvo J. Santala, and Hans G. Hirsbrunner, both of Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1977, Ser. No. 801,700
Int. Cl.[2] H01B *1/02*
U.S. Cl. 252—514 5 Claims



1. An electrical contact material comprising from 85 to 87.5 percent silver, by weight and from 0.01 to 0.10 percent cobalt oxide, by weight, and from 10.73 to 12.82 percent cadmium oxide, from 1.6 to 2.0 percent zinc oxide and from 0.15 to 1.0 percent lead oxide by weight, internally oxidized in situ in the contact material in an oxygen enriched atmosphere.

4,115,326

PERFUMING OF COMPOSITION USING 3-(10-UNDECENYLOXY)PROPRIONITRILE

Marcel Plattier, Antibes, and Paul Jose Teisseire, Grasse, both of France, assignors to Societe Anonyme Roure Bertrand Dupont, Paris, France

Filed Aug. 24, 1976, Ser. No. 717,281
Claims priority, application Switzerland, Sep. 4, 1975, 11436/75
Int. Cl.[2] C07C *121/34;* A61K *7/46*
U.S. Cl. 252—522 2 Claims

1. A process for perfuming compositions wherein 3-(10-undecenyloxy) propionitrile having the formula

$$CH_2=CH-(CH_2)_9-O-(CH_2)_2CN$$

is added to the compositions in proportions of from 0.1 to 30%, by weight, of said compositions.

4,115,327

PHENOLIC RESIN COLOR DEVELOPING COMPOSITIONS FOR COPYING PAPERS AND METHODS OF PREPARATION

Toyoji Kikuga, and Koji Hirai, both of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 654,243, Jan. 2, 1976, abandoned. This application Jun. 21, 1977, Ser. No. 808,581
Claims priority, application Japan, Feb. 13, 1975, 50-17513
Int. Cl.[2] C08L *3/02*
U.S. Cl. 260—17.2 11 Claims

1. A method of preparing color developing emulsion compositions for copying papers without dry pulverization consisting essentially of:

(a) condensing a reaction mixture consisting essentially of an aldehyde and at least one phenol to provide a phenolaldehyde novolac precondensate having an average of from 2 to 6 phenolic nuclei per molecule,

(b) with agitation means directly emulsifying the resin precondensate of (a) while in a liquid state with the addition of from 1 to 10% by weight of an emulsifier to provide resin particles having a diameter of under about 7 microns, and

(c) adjusting the size of the emulsified particles by treatment of the emulsion with wet pulverizing means; said emulsion composition having a solids content range of phenolic resin from about 20 to about 80 percent by weight.

4,115,328

PROCESS FOR MAKING STABLE SOLVENT-FREE, AQUEOUS EPOXY RESIN DISPERSIONS

Edward G. Bozzi, Yorktown Heights, and Robert C. Nelson, Central Valley, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,530
Int. Cl.[2] C09D *3/40, 3/52, 3/56, 3/58*
U.S. Cl. 260—24 28 Claims

1. An improved process for preparing a stable aqueous dispersion having no particles large in size than 5 microns or an aqueous, low organic solvent fine particle emulsion of an epoxy resin having a molecular weight from about 4,000 to about 100,000 useful in forming water-dilutable, heat-curable coating compositions with aminoplast or phenoplast curing systems, which comprises

dissolving said epoxy resin in an organic solvent to prepare a 40 to 80% by weight solution, said organic solvent containing from 1 to 25% by weight based on the epoxy resin of a nonionic surfactant and said organic solvent having a boiling point below 160° C. and being selected from the group consisting of aromatic hydrocarbons, esters, ethers, alcohols, ketones, halogenated aromatic hydrocarbons and mixtures thereof,

adding with stirring sufficient water to give a mixture containing from 30 to 50% by weight water,

subjecting the resulting mixture to homogenizing action using a colloid mill, homogenizer or other high speed, high shear mixer,

removing essentially all the organic solvent present by vacuum distillation at a temperature under 40° C. and with a pressure of about 5 to 100 mm Hg to give an essentially solvent free aqueous dispersion having from about 40 to 65 weight percent epoxy resin, from about 0.5 to 13 weight percent nonionic surfactant and from about 35 to 60 weight percent water; or

removing from 40 to 70 percent of the organic solvent by vacuum distillation under 40° C. and with a pressure of about 5 to 100 mm Hg to give a low organic solvent aqueous emulsion having about 35 to 65 weight percent epoxy resin, from about 0.5 to 13 weight percent nonionic surfactant, from about 8 to 20 weight percent organic solvent and from about 35 to 60 weight percent water, wherein the improvement comprises

using as the nonionic surfactant a dispersing agent selected from the group consisting of the polyoxyethylene esters of fatty, rosin and tall oil acids having 8 to 20 carbon atoms in the acid moiety and having from 5 to 50 moles of poly-(ethylene oxide) per acid molecule.

4,115,329

PRINTING INK COMPOSITIONS

Atsumi Noshiro, Chiba, and Yoshio Inoue, Annaka, both of Japan, assignors to Dai Nippon Printing Co., Ltd. and Shin-Etsu Chemical Co., Ltd., both of, Japan, part interest to each

Filed Nov. 8, 1976, Ser. No. 740,056
Claims priority, application Japan, Nov. 12, 1975, 50-135907
Int. Cl.[2] C08L *93/00*
U.S. Cl. 260—25 5 Claims

1. A printing ink composition comprising an ink vehicle of which from about 1 to 70% by weight is a silicone-modified phenolic resin prepared by reacting an oil-soluble solid phenolic resin with an amino group-containing organopolysiloxane having in a molecule, at least one organosiloxane unit represented by the general formula

$$(ZR^1)(R^2)_a(X)_bSiO_{\frac{3-a-b}{2}}$$

where Z is a group selected from the class consisting of $-NH_2$, $-HC_2H_4NH_2$ and $-OR^3NH_2$, R^3 being a divalent hydrocarbon group having 2 to 5 carbon atoms, R^1 is a divalent hydrocarbon group having 1 to 6 carbon atoms, R^2 is a monovalent hydrocarbon group having 1 to 3 carbon atoms, X is a hydroxy group or an alkoxy group having 1 to 6 carbon atoms, a is 0, 1 or 2 and b is 0, 1 or 2 with the proviso that $a+b$ is 0, 1 or 2, and at least one component selected from the group consisting of high-boiling petroleum solvents, synthetic drying oils, resins, copals, dammars, shellacs, bardened rosins, rosin esters, phenolic resins, phenolic resins modified with rosins, maleic acid resins, alkyd resins, petroleum resins, vinylic resins, polyamid resins, epoxy resins, aminoalkyd resins, polyurethane resins, aminoplast resins, nitrocellulose, ethylcellulose, chlorinated rubbers, cyclic rubbers, casein, dextrin and zein is present in said ink vehicle in addition to said silicone-modified phenolic resin.

5. The printing ink composition as claimed in claim 1, wherein a phenolic resin modified with rosin and a high-boiling petroleum solvent are present in said ink vehicle in addition to said silicne-modified phenolic resin.

4,115,330

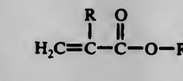
NOVEL COATING COMPOSITIONS

Nelson E. Lawson, Trenton, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Division of Ser. No. 604,488, Aug. 14, 1975, Pat. No. 4,035,320, which is a continuation-in-part of Ser. No. 274,409, Jul. 24, 1972, abandoned, and Ser. No. 434,440, Jan. 18, 1974, abandoned. This application Dec. 22, 1976, Ser. No. 753,613
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.
Int. Cl.[2] C09D *3/40*
U.S. Cl. 260—26 6 Claims

1. The polyacrylate reaction product of

(a) an equivalent excess of an acrylic compound of the formula:



wherein R is selected from hydrogen and methyl; R′ is selected from hydrogen, methyl and ethyl; and

(b) a polyester polyol obtained by the condensation of

(i) an aliphatic polycarboxylic acid having a molecular weight of at least 325 and at least 19 carbon atoms, inclusive, said acid being a fumarated resin acid, said resin acid having 16 to 22 carbon atoms, inclusive; with

(ii) an equivalent excess of an aliphatic polyol having at least two hydroxyl groups and a molecular weight of between about 60 to about 250; said reaction of (a) and (b) being under conditions wherein said acrylic compound does not polymerize.

4,115,331

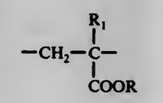
SURFACE SIZING COMPOSITIONS FOR PAPER

Yoichi Tominaga, and Yasuo Shibahara, both of Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

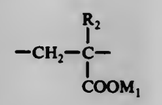
Division of Ser. No. 474,544, May 30, 1974, Pat. No. 4,030,970. This application Jan. 11, 1977, Ser. No. 758,480
Claims priority, application Japan, May 31, 1973, 48-61503
The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.
Int. Cl.[2] C08L *1/28, 3/10, 5/04, 29/04*
U.S. Cl. 260—17.4 CL 10 Claims

1. A surface sizing composition for paper which forms substantially no scum in a surface sizing press operation even after 8 hours, which comprises in admixture

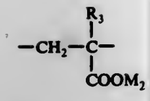
(I) a copolymer consisting essentially of copolymerized acrylic or methacrylic ester units (A) of the forumla (1):


(1)

wherein R_1 is H or methyl, and R is a hydrocarbon radical having 1–18 carbon atoms, copolymerized acrylic or methacrylic acid alkali metal salts units (B) of the forumla (2):


(2)

wherein R_2 is H or methyl and M_1 is an alkali metal and copolymerized acrylic or methacrylic acid salt units or acid units (C) of the formula (3):



(3)

wherein R_3 is H or methyl, and M_2 is ammonium, or a combination of ammonium with a lower alkyl amine cation and/or H, wherein said copolymer has a carboxylic equivalent of 90–500 in the free carboxylic form, a molar ratio of units (A) to units (B) and (C) 1–83:99–17, and a molar ratio of units (B) to (C) of 5–50:95–50, with

(II) a sizing modifier for said copolymer which is selected from the group consisting of modified starch, polyvinyl alcohol, sodium alginate, carboxy methyl cellulose, rosin and petroleum resin, wherein the weight ratio of said copolymer to said sizing modifier is 0.1–50:99.9–50.

4,115,332

WATER-ABSORBENT STARCH COPOLYMERIZATES

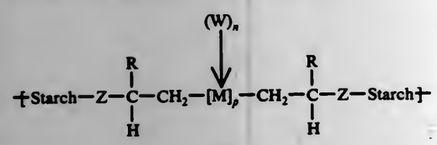
Austin H. Young, and Frank Verbanac, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 680,549, Apr. 27, 1976, Pat. No. 4,079,025. This application Jun. 20, 1977, Ser. No. 808,482

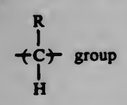
Int. Cl.² C08L *3/00*

U.S. Cl. 260—17.4 GC **31 Claims**

1. A water-absorbent starch copolymerizate which is capable of absorbing several times its own weight in water, said starch copolymerizate comprising the copolymerizate product of ethylenically unsaturated starch molecules and ethylenically unsaturated monomers with said ethylenically unsaturated monomers forming a connective polymeric linkage between said copolymerized starch molecules to provide a non-linear lattice of a plurality of starch chains linked together by polymeric linkages represented by the formula:



wherein Starch represents a starch chain of D-glucose units, Z represents an organo group which links the



group

to the carbon atom of the starch chain by a sulfur atom or an oxygen atom, R is a member selected from the group consisting of hydrogen and a monovalent organic radical, M represents a plurality of copolymerized ethylenically unsaturated monomers with "*p*" representing the number of copolymerized monomeric units in said linkage, (W) is a water-attractant group linked to the polymeric linkage and "*n*" represents the number of (W) moieties contained within the polymeric linkage of said copolymerized monomers with the number of (W) moieties being sufficient to impart water-absorbency properties to said copolymerizate.

4,115,333

WARP-RESISTANT REINFORCED THERMOPLASTIC COMPOSITIONS COMPRISING POLYESTER RESINS AND ZINC STEARATE

Donald Lee Phipps, Jr., Mount Vernon, and Allen Dale Wambach, Evansville, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 18, 1977, Ser. No. 778,945

Int. Cl.² C08G *63/02, 63/62*

U.S. Cl. 260—22 R **16 Claims**

1. A thermoplastic molding composition which, after molding, has increased resistance to warpage in comparison with glass fiber reinforced poly(1,4-butylene terehthalate), the composition consisting essentially of, in intimate admixture:

(a) a poly(1,4-butylene terephthalate) resin;

(b) a second resin selected from:

(i) a poly(ethylene terephthalate);

(ii) a polycarbonate; or

(iii) a mixture of (i) and (ii);

(c) a reinforcing agent comprising glass fibers alone or in admixture with a mineral filler in an amount at least sufficient to provide reinforcement; and

(d) a small effective warp resistance improving amount of zinc stearate.

4,115,334

ANTISTATIC VINYLIDENE CHLORIDE COATING COMPOSITION, AND FILM COATED THEREWITH

Clare William Gerow, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 714,268, Aug. 13, 1976, abandoned. This application May 20, 1977, Ser. No. 799,123

Int. Cl.² C08K *3/22, 3/30*

U.S. Cl. 260—28.5 D **56 Claims**

1. A coating composition comprising

(a) a copolymer of vinylidene chloride and at least one other ethylenically unsaturated monomer copolymerizable therewith, said copolymer containing at least 80% by weight of vinylidene chloride,

(b) about 0.5 to 5% by weight, based on said vinylidene chloride copolymer, of a fatty acid mono- or diglyceride,

(c) about 0.5 to 5% by weight, based on said vinylidene choloride copolymer, of sulfuric acid or a polybasic acid of phosphorus, or mixtures thereof, and

(d) an antisticking agent.

4,115,335

ASPHALT AND RUBBER COMPRISING COMPOSITION

Robert E. Reusser; Lew T. Gray, and Oren L. Marrs, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 14, 1977, Ser. No. 777,216

Int. Cl.² C08L *91/00*

U.S. Cl. 260—28.5 AS **16 Claims**

1. A composition of matter consisting essentially of

a. about 50 to 70 wt. % of a mineral aggregate,

b. about 15 to 35 wt. % of a finely divided mineral filler,

c. about 5 to 20 wt. % of asphalt,

d. about 0.05 to 7 wt. % of a rubbery radial teleblock copolymer,

e. about 0 to 7 wt. % of oil,

f. about 0 to 0.5 wt. % of a fibrous material.

4,115,336

STABLE AQUEOUS POLYESTER-MONOMER EMULSIONS

Pierre Albert Crouzet, 20 Romney Way, Parkwood, Western Australia, Australia

Continuation-in-part of Ser. No. 711,182, Aug. 3, 1976, abandoned. This application Feb. 28, 1977, Ser. No. 773,097

Claims priority, application Australia, Aug. 7, 1975, 2687/75; Apr. 27, 1976, 13401/76

Int. Cl.² C08J *3/06, 9/28;* C08L *67/06*

U.S. Cl. 260—29.6 NR **15 Claims**

1. A water in resin emulsion formed by mixing

a. water with

b. a mixture consisting essentially of

i. an unsaturated polyester resin having a molecular weight from about 3,100 to 3,600 formed by a condensation polymerization reaction, which is allowed to proceed until the polyester has an acid number of no more than about 25, between polyhydric and polycarboxylic compounds or derivatives thereof, said polyhydric compounds being present in an excess over stoichiometric requirements, at least one of said compounds being unsaturated, the remainder being saturated; and

ii. an unsaturated monomer,

the mixture b) containing no more than about 30% by weight of the unsaturated monomer ii),

wherein said emulsion is so stable that demulsification does not occur when a setting agent of a kind which sets by hydration thereof is added thereto.

4,115,337

PROCESS FOR MANUFACTURING ENAMELS OF POLYESTER-POLYIMIDE RESINS, PARTICULARLY FOR COATING ELECTRIC CONDUCTORS

Ezio Cancilleri, Verdellino (Bergamo), Italy, assignor to Cean S.p.A., Italy

Filed Jan. 8, 1976, Ser. No. 647,604

Claims priority, application Italy, Jan. 15, 1975, 19280 A/75; Dec. 22, 1975, 30621 A/75

Int. Cl.² C08J *3/10, 3/12*

U.S. Cl. 260—29.2 N **17 Claims**

1. A process for obtaining enamels based on aqueous solutions of polyester-polyimide resin in which said resin is obtained by a polycondensation reaction and has a number of reactive free carboxyl groups such as to confer to said resin a free acid number N in excess of 30, said process comprising the steps of:

cooling said resin; then

granulating said resin;

adding said granulated resin to a water bath in a ratio of between 20 and 50 parts to 100 parts of water by weight;

heating the resin-containing bath thus obtained to a temperature within the range of from 30° C. to 70° C.;

adding to said bath comprising said resin, while maintaining said temperature, an aminic salifying agent selected from the group comprising aminoalcohols and tertiary amines for said free carboxyl groups;

adding a catalyst selected from the group of titanium-alkyl compounds; and

stirring said bath while maintaining the above temperature to complete dissolution.

4,115,338

METALLIC TONE COATING COMPOSITION

Sadao Kobayashi, Yokohama, and Yasuo Okita, Oiso, both of Japan, assignors to Mitsui Toatsu Kagaku Kabushiki Kaisha (Mitsui Toatsu Chem., Inc.), Tokyo, Japan

Continuation-in-part of Ser. No. 488,583, Jul. 12, 1974, abandoned. This application Mar. 19, 1976, Ser. No. 668,728

Claims priority, application Japan, Jul. 16, 1973, 48-80056

Int. Cl.² C08J *3/20;* C08K *3/00, 3/08, 5/00*

U.S. Cl. 260—29.4 UA **3 Claims**

1. A metallic tone resin coating composition comprising

a. a coating resin selected from the group consisting of an acrylic resin, alkyd resin, vinyl chloride resin, urethane resin, unsaturated polyester resin, melamine resin, urea resin, epoxy resin or a combination thereof;

b. for each about 100 parts by dry weight of said coating resin about 0.1–50 parts by weight of particles of a polymer-encapsulated metal powder obtained by activating a metallic powder by treatment with 1) an organic or mineral acid followed by neutralization of the thus-treated powder with an alkali, or 2) an aqueous solution of phosphoric acid or a phosphoric acid ester of an acrylate; and subjecting the thus-activated metallic powder to in situ polymerization in an aqueous medium of at least one vinyl monomer in the presence of a radical polymerization initiator, the amount of such vinyl monomer being such as to form about 0.2–20 parts by weight of said encapsulating polymer per 100 parts of said metallic powder, said metallic powder being at least one of aluminum, brass, bronze, stainless steel, or copper; and

c. a solvent or dispersion medium of the group consisting of toluene, xylene, solvent naphtha, methanol, ethanol, isopropanol, n-butanol, ethyl acetate, butyl acetate, methyl ethyl ketone, methyl isobutyl ketone, trichloroethylene, ethyleneglycol monobutyl ether acetate, water or a combination thereof.

4,115,339

HIGH MOLECULAR-WEIGHT, WATER-SOLUBLE VINYL POLYMERS

Alfred J. Restaino, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

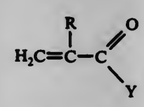
Division of Ser. No. 200,195, Nov. 18, 1978, Pat. No. 3,926,756, which is a continuation of Ser. No. 781,975, Dec. 6, 1968, abandoned. This application Aug. 7, 1975, Ser. No. 602,954

The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.

Int. Cl.² C08F *13/00, 1/16, 3/44*

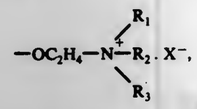
U.S. Cl. 260—29.6 HN **16 Claims**

1. A water-soluble copolymer having an intrinsic viscosity in 2N sodium chloride solution of from about 6 deciliters per gram to about 30 deciliters per gram at 25° C., said copolymer being prepared by a process comprising (a) irradiating with high energy ionizing radiation at an intensity of from 250 rads to 200,000 rads per hour to a dose of from 1,000 to 200,000 rads, an ammonia free aqueous solution having a pH from about 3 to about 13 and containing from 10% to 45% concentration by weight of (1) at least two monomers conforming to the formula



(2) a mixture of at least one of said monomers with at least one of acrylic acid, vinyl sulfonic acid, water-soluble salt of acrylic acid, or water-soluble salt of vinyl sulfonic acid, said mixture containing at least 15% by weight of said monomer; (3) a mixture of at least one of said monomers with up to 25% of its own weight of acrylonitrile; or (4) a mixture of at least one of said monomers, acrylic acid, or a water-soluble salt thereof, and acrylonitrile containing at least 15% by weight of said

monomer and no more than 25% by weight of acrylonitrile, wherein Y is $-NH_2$ or



wherein R is hydrogen or methyl, R_1, R_2, and R_3 are 1 to 4 carbon alkyl radicals and X^- is an anion, to form an aqueous gel of a water-soluble, high molecular weight copolymer having an intrinsic viscosity of from about 6 deciliters per gram to about 30 deciliters per gram in 2 normal sodium chloride solutions at 25.5° C., and (b) recovering said copolymer from the aqueous copolymer gel.

4,115,340

INVERSION OF WATER-IN-OIL EMULSIONS OF POLYACRYLAMIDE IN HARD WATER

Richard Earl Ellwanger, Tucson, Ariz., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 11, 1977, Ser. No. 795,993
Int. Cl.² C08F *6/14*
U.S. Cl. 260—29.6 HN **6 Claims**

1. A process for inverting an anionic water-in-oil emulsion containing from about 5 to 75 weight percent of a polyacrylamide in hard water as the continuous phase of the inverted emulsion, which process comprises diluting said emulsion with a quantity of hard water which is insufficient to break said emulsion but sufficient to effect inversion to an oil-in-water emulsion, agitating the diluted emulsion to effect inversion, and thereafter diluting the oil-in-water emulsion formed with additional hard water.

4,115,341

POLYETHERAMIDE-ACID-IMIDE SOLUTION AND PROCESS FOR PREPARATION THEREOF

Edith M. Boldebuck, Schenectady, and Eugene G. Banucci, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

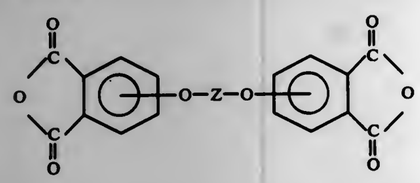
Filed Jan. 24, 1977, Ser. No. 761,946
Int. Cl.² C08K *5/06*
U.S. Cl. 260—33.2 R **3 Claims**

1. A polyether amide-acid-imide solution consisting essentially of

(1) as a liquid solvent, 2-(2-methoxyethoxy)ethanol, and dissolved in said liquid solvent

(2) a polyetheramide-acid-imide having an imide content no greater than the maximum imide content at which the polyetheramide-acid-imide is soluble in the solvent at 20° C. and prepared by reacting

(i) at least one aromatic bis(ether anhydride) having the formula

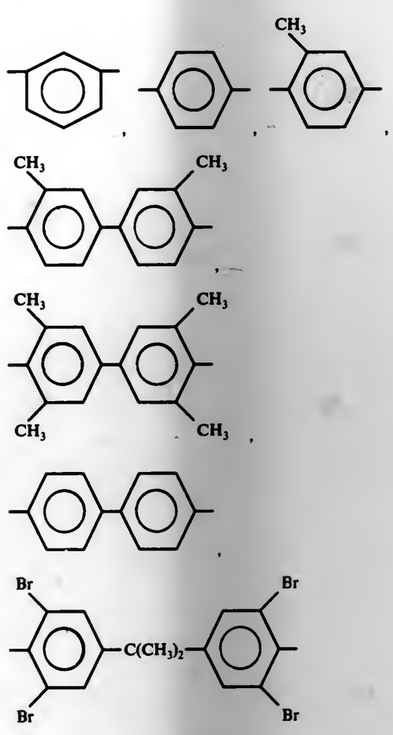


with

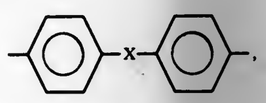
(ii) at least one organic diamine having the formula

$N_2N-R-NH_2$

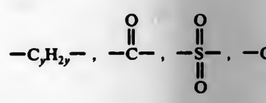
at a temperature and for a time effective to form said polyetheramide-acid-imide, where Z is a member selected from the class consisting of (A) divalent organic radicals having the following formulas



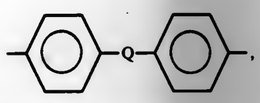
and (B) divalent organic radicals of the general formula



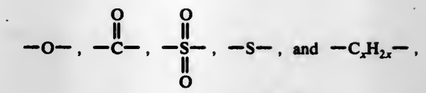
where X is a member selected from the class consisting of divalent radicals of the formulas



where y is an integer from 1 to 5; and R is a divalent organic radical selected from the class consisting of aromatic hydrocarbon radicals having from 6 to about 20 carbon atoms and halogenated derivatives thereof, alkylene radicals having from 2 to about 20 carbon atoms, cycloalkylene radicals having from 3 to about 20 carbon atoms, from C_2 to about C_8 alkylene terminated polydiorganosiloxane, and divalent radicals of the general formula



where Q is a member selected from the class consisting of



and x is an integer from 1 to 5.

4,115,342

WIRE ENAMEL WITH LOW SOLDERING TEMPERATURE

Thomas A. Shelby, and Shelby W. Gallien, both of Fort Wayne, Ind., assignors to Rea Magnet Wire Co., Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 564,851, Apr. 3, 1975, Pat. No. 3,988,283. This application Sep. 13, 1976, Ser. No. 722,824
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.
Int. Cl.² C08K *5/01, 5/13;* C08L *79/08;* H01B *3/22*
U.S. Cl. 260—33.4 P **8 Claims**

1. A wire enamel coating composition capable of forming an insulative coating on a wire characterized by a solderability of less than 1 second at a temperature of about 285°–315° C and a thermoplastic flow temperature of at least 230° C and comprising:

(a) 1 part by weight of a coating composition of a resin mixture containing:

(i) 1 part by weight of an imidized polyester resin containing 4–10% by weight free hydroxyl content, and

(ii) 1.7–2.5 parts by weight of a blocked isocyanate;

(b) about 3 parts by weight of the coating composition of an aromatic solvent capable of dissolving said resin and said blocked isocyanate and containing at least 45% by weight of cresylic acid, with the balance of the solvent having a boiling point of less than 200° C; and

(c) about 0.1 to 10.0% by weight of said resin mixture of a catalyst to promote the reaction of the imidized polyester with the blocked isocyanate.

4,115,343

HOMOGENEOUS DISPERSIONS OF DIORGANOPOLYSILOXANE COMPOSITIONS IN MINERAL OILS

Andre Guillaume, Lyon, and Ferenc Sagi, Bron, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 7, 1976, Ser. No. 693,687
Claims priority, application France, Jun. 6, 1975, 75 17714
Int. Cl.² C08K *5/01*
U.S. Cl. 260—33.6 SB **7 Claims**

1. A storage stable dispersion comprising:

(A) from about 4 to 40 weight percent of an organosiloxane polymer composition comprising

(1) from about 80 to 100 weight percent of an organosiloxane polymer of the formula



wherein R which can be identical or different is an alkyl group of 1 to 3 atoms and x is a number between 30 to 2,000,

(2) from about 0 to 20 weight of silica having a specific surface area greater than 50 m^2/g,

(B) from about 55 to 95 weight percent of mineral oil,

(C) from about 1 to 12 weight percent of an ethylene/vinyl acetate copolymer having a vinyl acetate content from about 15 to 40 weight percent and a melt index of from about 2 to 600 grams per 10 minutes.

4,115,344

MOLD CORROSION INHIBITION IN POLY(ARYLENE) SULFIDE PROCESSING

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesvile, Okla.

Filed Jul. 5, 1977, Ser. No. 813,061
Int. Cl.² C08K *5/34, 5/22, 5/24, 5/21, 5/16*
U.S. Cl. 260—37 R **24 Claims**

1. A composition of matter comprising poly(arylenesulfide) resin and a corrosion inhibiting amount of at least one ammonia precursor having 0 to 8 carbon atoms and being selected from the group consisting of urea, monohydrocarbyl-substituted ureas, hydrazine, monohydrocarbyl-substituted hydrazines, dicarboxamides, carbamate esters, amino acids, melamine, biuret, and guanidine.

4,115,345

PROCESS FOR TREATING ZIRCON-CONTAINING FOUNDRY SAND

William Raymond Bushey, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 10, 1976, Ser. No. 740,491
Int. Cl.² C08K *9/02*
U.S. Cl. 260—38 **6 Claims**

1. A process for treating zircon-containing foundry sand to improve the bonding strength of thermosetting resins in molds made therefrom by

(i) intimately contacting zircon sand with an aqueous solution containing at least 0.1 g/liter of an alkali metal silicate, and

(ii) isolating the silicate-treated zircon sand from the aqueous solution containing at least 0.1 g/liter of an alkali metal silicate.

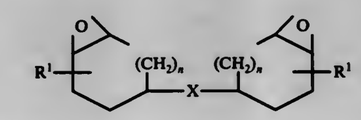
4,115,346

HYDROXY GROUP CONTAINING DIESTERS OF ACRYLIC ACIDS AND THEIR USE IN DENTAL MATERIAL

Albert Gross, Frankfurt am Main, and Roland Schaefer, Friedrichsdorf, Taunus, both of Germany, assignors to Kulzer & Co. GmbH, Bad Homburg von der Hohe, Germany

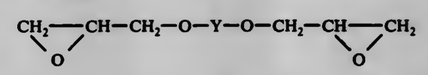
Division of Ser. No. 544,532, Jan. 27, 1975, Pat. No. 4,002,669. This application Jun. 22, 1976, Ser. No. 698,560
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1974, 2406557
Int. Cl.² C08K *3/00, 3/36*
U.S. Cl. 260—42.15 **12 Claims**

1. A monomeric binding agent in dental material, especially in dental filling material, comprising between 30 and 80% by weight of a finely divided filler and a diacrylate prepared by reacting 3-(3,4-epoxycyclohexyl)-8,9-epoxy-2,4-dioxaspiro (5,5) undecane or a bis-epoxide of formula (A)



(A)

or a bis-epoxide of formula (B)



(B)

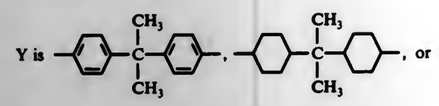
with a hydroxyalkylacrylate or hydroxyalkylmethacrylate containing 2 to 10 carbon atoms in the alkyl portion, n being 0 to 1 in formula (A) with the proviso that if

n is 0, X is –0– and R^1 is –H; and that if

n is 1, X is selected from the group of alkylene with 1 to 10 carbon atoms, C_{1-3}-alkyl substituted alkylene with 1 to 10 carbon atoms, $-0-(CH_2)_m-0-$where m is 1 to 10,

$-CH_2-OCO-(CH_2)_p-COO-CH_2$ where p is 1 to 6, and $-CH_2-OCO-$, and R^1 is $-H$ or $-CH_3$,

and in formula (B)

Y is  , or

or

tricyclo-[5,2,1,$0^{2,6}$]-decylene.

4,115,347

POLYOLEFIN COMPOSITIONS

Jean-Philippe Pied, Verneuil en Halatte, France, assignor to Societe des Plastiques de Carmaux Scasar, France

Filed Sep. 9, 1975, Ser. No. 611,815
Int. Cl.[2] C08K *3/34*
U.S. Cl. 260—42.46 **11 Claims**

1. A polyolefin composition comprising a polyolefin and from about 1 to 15% based on the weight of the polyolefin of an essentially dehydrated kaolinite containing from 51 to 57% by weight silica, from 40 to 46% by weight alumina and less than 3% impurities.

4,115,348

MULTICHROMOPHORIC ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

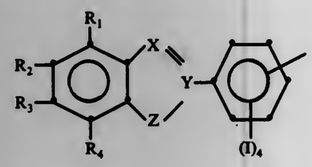
Richard H. S. Wang, and Joseph S. Zannucci, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 502,330, Sep. 3, 1974, abandoned. This application Aug. 2, 1976, Ser. No. 711,045
Int. Cl.[2] C08K *5/15*
U.S. Cl. 260—45.8 NZ **17 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of at least one novel multichromophoric compound having the formula:

A-B-C

wherein A is a group having the structure



wherein

X is a nitrogen atom;

Y is a carbon atom;

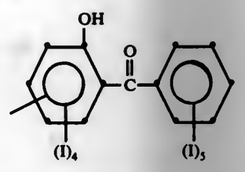
Z is an oxygen atom;

R_1, R_2, R_3 and R_4 are hydrogen, hydroxyl, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, substituted amino, cyano, carboxy and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the Y substituent and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, said B connecting group is attached to the benzenoid ring in the ortho, meta or para positions from the carbon atom connected to the Y substituent, said I substituents can all be the same substituent listed above or different listed substituents;

B is a linking group connecting A and C and can be alkylene, arylene, oxycarbonylalkyleneoxy, alkyleneoxycarbonyloxy, oxyalkylenecarbonyl, oxycarbonyloxy, alkyleneoxyalkyleneoxy, thio, thioalkyleneoxy, sulfinyldioxy, oxy(alkoxy)-phosphinooxy, alkyloxyphoxphinylidene, aryloxyphosphinylidene, oxy(alkyl)phosphinyloxy, aminocarbonyl, N-alkylaminocarbonyl, N-arylaminocarbonyl, aminocarbonylalkyleneoxy, N-alkylaminocarbonylalkyleneoxy, N-arylaminocarbonylalkyleneoxy, aminocarbonylamino, N-alkylaminocarbonylamino, N,N-dialkylaminocarbonyl, N-arylaminocarbonyl, N-alkylaminocarbonyl, N,N-diarylaminocarbonyl, amino, N-alkylamino, N-arylamino, N-alkylaminoalkyleneoxy, N-arylaminoalkyleneoxy, oxyalkyleneoxy, oxyaryleneoxy, alkyleneaminoalkylene, aryleneaminoarylene, aryleneaminoalkylene, and alkyleneaminoarylene; and

wherein C is a hydroxybenzophenone group having the formula



where I is the same substituent as listed above and is present in all positions of the benzenoid rings except the carbon atom attached to the B group connecting the A and C moieties, said B connecting group is attached to the benzenoid ring in the ortho, meta or para position from the keto group of the benzophenone, and said I substituents can all be one of the substituents listed above or different listed substituents.

4,115,349

TRIPHENYLPHOSPHINE OXIDE AS A PROMOTER FOR PHOSPHORUS-CONTAINING FLAME RETARDANT

Howard W. Bost, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1977, Ser. No. 821,375
Int. Cl.[2] C08K *5/34, 5/51, 5/53*
U.S. Cl. 260—45.8 NT **24 Claims**

1. A flame-resistant synthetic resin composition comprising (1) at least one synthetic resin, (2) a phosphorus-containing flame retardant comprising the reaction product of (a) at least one phosphorus oxide compound of the formula $(P_2O_5)_{0.5-1.0}(-H_2O)_{0.0-1.5}$, (b) melamine, and (c) at least one saturated open-chain polyol containing from 5 to 15 carbon atoms and from 4 to 8 hydroxyl groups per molecule, which reaction product has been heated prior to incorporation into said synthetic resin composition under such conditions that said reaction product will not cause significant foaming of said synthetic resin composition when said synthetic resin composition is subjected to molding conditions; and (3) triphenylphosphine oxide, wherein said phosphorus-containing flame retardant is present in an amount that alone would be insufficient to impart to said synthetic resin composition a flame resistance rating of V-O according to the modified U.L.-94 test and wherein said triphenylphosphine oxide is present in an amount which enhances the flame resistance provided by the phosphorus-containing flame retardant.

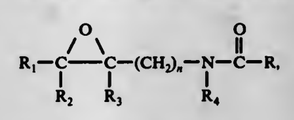
4,115,350

PRODUCTION OF THERMALLY STABILIZED POLYESTER

Stanley David Lazarus, Petersburg, and Kalidas Chakravarti, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

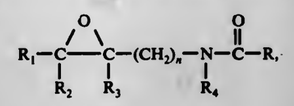
Filed Jul. 27, 1977, Ser. No. 819,654
Int. Cl.[2] C08K *5/04;* C08G *63/70, 63/76*
U.S. Cl. 260—45.8 A **11 Claims**

1. A thermally stabilized high molecular weight linear terephthalate condensation polyester having incorporated therein a thermally stabilizing amount of a stabilizer consisting of an epoxy compound having 5 to 25 carbon atoms in the molecule and selected from the group having the formula



where R represents the radical remaining after removal of the carboxyl group from a monocarboxylic acid, R_1, R_2, R_3 and R_4 represent hydrogen or hydrocarbon radicals, and n is an integer that can be 0 to 3, said thermally stabilized polyester having a free carboxyl concentration of less than 15 gram equivalents of carboxyl groups per 10^6 grams of polyester.

6. In a process for the preparation of a high molecular weight linear terephthalate condensation polyester wherein terephthalic acid is reacted with a glycol containing 2 to 10 carbon atoms per molecule under esterification conditions and the resulting esterification product is polycondensed, the improvement which comprises providing a reduction in the free carboxyl content of the polyester to a carboxyl concentration of less than 15 gram equivalents per 10^6 grams of polyester by adding to the polyester after final polycondensation of the polyester a thermally stabilizing amount of a stabilizer comprising an epoxy compound having 5 to 25 carbon atoms in the molecule and selected from the group having the formula



where R represents the radical remaining after removal of the carboxyl group from a monocarboxylic acid, R_1, R_2, R_3 and R_4 represent hydrogen or hydrocarbon radicals, and n is an integer from 0 to 3.

4,115,351

FLAME RETARDANT COMPOSITION

Yasushi Joh, Osaka, Japan

Continuation of Ser. No. 414,793, Nov. 12, 1973, abandoned. This application Jun. 9, 1975, Ser. No. 585,053
Int. Cl.[2] C08K *5/52*
U.S. Cl. 260—45.9 NP **5 Claims**

1. A synthetic fiber containing in the form of finely powdered crystals coated with an inactive material at least one inorganic compound in an amount up to 10% based on the total weight of the fiber, said inactive material being selected from higher paraffin, aliphatic or aromatic hydrocarbon having more than 10 carbon atoms, petrolatam, paraffin jelly, liquid paraffin, mineral oil and vegetable oil, said inorganic compound comprising an ammonium salt of an acid selected from the group consisting of phosphoric acid and metaphosphoric acid, said synthetic fiber being made of polyvinyl alcohol or a copolymer of acrylonitrile.

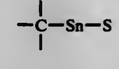
4,115,352

HEAT STABILIZER COMPOSITION FOR HALOGENATED RESINS

Joseph Michael Bohen, King of Prussia, and Sameeh Said Tonkan, Phoenixville, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 23, 1977, Ser. No. 799,862
Int. Cl.[2] C08K *5/59, 5/58, 5/36*
U.S. Cl. 260—45.75 B **18 Claims**

1. A composition of matter comprising a mixture of (a) an alkali or alkaline earth metal salt of a mercaptan or mercapto acid and (b) a sulfur-containing organotin compound having a



group, or a sulfur-containing antimony compound having a Sb—S group, said mixture having a weight ratio of (a) to (b) ranging between about 0.05:1 and about 3:1.

10. The composition of claim 1 dispersed in a halogen containing vinyl or vinylidene resin in which the halogen is attached directly to at least one carbon atom, said composition dispersed in said resin in an amount sufficient to improve the heat stability thereof.

4,115,353

NITROGENOUS POLYMER COMPOSITION EMITTING REDUCED AMOUNTS OF HYDROGEN CYANIDE ON COMBUSTION

Gary L. Deets, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 22, 1977, Ser. No. 817,941
Int. Cl.[2] C08K *3/26*
U.S. Cl. 260—45.75 C **5 Claims**

1. A polymer composition comprising a styrene/acrylonitrile copolymer comprising from 10 to 90 percent of acrylonitrile and from 1 to 10 percent by weight, based on the polymer weight, of an alkali metal carbonate selected from the group consisting of sodium carbonate and potassium carbonate and from 1 to 10 percent by weight of cupric oxide.

4,115,354

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, and Thomas J. Hoogebroom, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 429,643, Dec. 28, 1973, Pat. No. 3,933,734. This application Jan. 20, 1976, Ser. No. 650,654
Int. Cl.[2] C08K *5/42*
U.S. Cl. 260—45.7 S **4 Claims**

1. A flame retardant carbonate polymer composition comprising in admixture an aromatic carbonate polymer and 0.01 to about 10 weight percent based on the weight of the aromatic carbonate polymer composition of an additive which is the metal salt of a polymeric aromatic sulfonate or mixtures thereof, or a mixture of the metal salt of a polymeric aromatic sulfonate and the metal salt of a monomeric aromatic sulfonate, wherein said metal salts thereof are selected from the group consisting of the alkali metal salts and the alkali earth metal salts and mixtures thereof.

4,115,355

NOVEL DERIVATIVES USEFUL AS ADDITIVES FOR INHIBITING THE DETERIORATION OF DEGRADABLE SUBSTANCES

Kuniaki Goto, Tokyo, and Kazumi Kodama, Yokohama, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Dec. 8, 1976, Ser. No. 748,648
Claims priority, application Japan, Dec. 18, 1975, 50-151078
Int. Cl.² C07C *39/16*; C01M *1/54*
U.S. Cl. 260—45.95 H **8 Claims**

1. A stabilized composition of a degradable oily or polymeric substance comprising an oily or polymeric degradable substance and an amount effective for inhibiting the deterioration of the degradable substance of 2,2'-methylene-bis(4-methyl-cyclopentyl phenol) as an active ingredient.

7. 2,2'-Methylene-bis(4-methyl-cyclopentyl phenol).

4,115,356

SELF ADHERING ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMERS

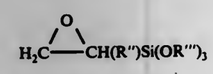
John R. Hilliard, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 18, 1977, Ser. No. 816,787
Int. Cl.² C08L *83/04*
U.S. Cl. 528—18 **16 Claims**

1. A composition storage stable in the absence of moisture which vulcanizes at room temperature on exposure to moisture comprising a product resulting from mixing (A) 100 parts by weight of polydiorganosiloxane consisting essentially of repeating units of the formula R_2SiO having a viscosity of at least 0.10 Pa.s at 25° C in which each R represents a monovalent hydrocarbon or halogenated monovalent hydrocarbon radical of from 1 to 18 inclusive carbon atoms, said siloxane having an average of from 1.5 to about 2 silicon-bonded hydroxyl radicals per molecule, (B) from 0.5 to 15 parts of an organotriacetoxysilane of the formula



in which R' represents a monovalent radical selected from the group consisting of lower alkyl, fluorinated lower alkyl, alkenyl, and aryl radicals, there being at least one organotriacetoxysilane molecule per hydroxyl radical of polyorganosiloxane (A), and (C) from 0.1 to 2.5 parts of a compound of the formula



in which R'' is a radical attached to silicon by a carbon to silicon bond and selected from the group consisting of divalent hydrocarbon radicals of from 1 to 10 carbon atoms and divalent radicals of less than 10 carbon atoms which are composed of carbon, hydrogen, and oxygen atoms, the last being in the form of ether linkages, not as an atom of a ring, and R''' is selected from the group consisting of aliphatic hydrocarbon radicals of less than 5 carbon atoms.

4,115,357

POLYESTERS OF 1,2-BIS(HYDROXYPHENYL)ETHANES AND AROMATIC DICARBOXYLIC ACIDS

Oliver D. Deex, Clayton, Mo., and Virgil W. Weiss, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1976, Ser. No. 754,199
The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.
Int. Cl.² C08G *63/18*
U.S. Cl. 528—294 **19 Claims**

1. A linear polyarylene ester consisting essentially of the condensation product of an aromatic dicarboxylic acid and a diphenol wherein the aromatic dicarboxylic acid comprises at least one acid selected from the group consisting of isophthalic acid, terephthalic acid, bis(4-carboxyphenyl)ether, bis(4-carboxyphenyl)sulfone, bis(4-carboxyphenyl)methane, and 1,2-bis(4-carboxyphenyl)ethane and wherein the diphenol comprises from about 75 to 96 mole percent 1,2-bis(4-hydroxyphenyl)ethane, from about 4 to 20 mole percent of a bis(hydroxyphenyl)sulfide and from about 21 to 0 mole percent of at least one diphenol selected from the group consisting of 1,2-bis(3-hydroxyphenyl)ethane, 1-(3-hydroxyphenyl)-2-(4-hydroxyphenyl)ethane, bis(4-hydroxyphenyl)propane, bis(4-hydroxyphenyl)ether, and bis(4-hydroxyphenyl)sulfone.

4,115,358

PROCESS FOR PREPARING AROMATIC CARBONATE POLYMERS

Jorgen H. Vestergaard, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 302,103, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 28,055, Apr. 13, 1970, abandoned. This application Sep. 3, 1976, Ser. No. 720,127
Int. Cl.² C08G *63/62*
U.S. Cl. 528—196 **5 Claims**

1. A process of preparing a carbonate polymer having improved resistance to thermal degradation and improved impact resistance, which process consists of (a) mixing 2,2 bis(4-hydroxyphenyl) propane in an aqueous medium with a solvent for the carbonate polymer, a molecular weight regulator and a catalyst, (b) adding 70–95 weight percent of the stoichiometric quantity of a carbonate precursor with the 2,2 bis(4-hydroxyphenyl) propane while adding, simultaneously with the carbonate precursor, sufficient alkali metal hydroxide to maintain a pH of 6.0 to about 10.0 and (c) adding sufficient alkali metal hydroxide solution to raise the pH to at least 11.0 and (d) maintaining said pH while reacting the remaining amount of the stoichiometric quantity of the carbonate precursor.

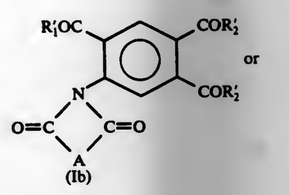
4,115,359

CROSSLINKABLE POLYMERS PREPARED FROM MALEIMIDYL SUBSTITUTED TRIMELLITIC ACID COMPOUNDS

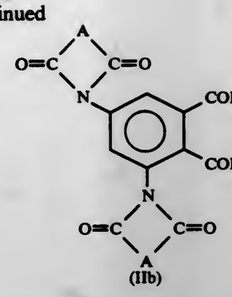
Roland Darms; Josef Pfeifer, both of Therwil, and Vratislav Kvita, Muttenz, all of Switzerland, assignors to CIBA-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 15, 1976, Ser. No. 696,350
Claims priority, application Switzerland, Jun. 18, 1975, 7955/75
Int. Cl.² C08G *73/12*
U.S. Cl. 528—170 **8 Claims**

1. A crosslinkable polymer which has an average molecular weight of at least 1,200, or the corresponding cyclized imide derivative, which is manufactured by reacting at a temperature between about −50° and 300° C. in the melt or in an inert organic solvent or solvent mixture 0.5 to 100 mol % of a compound of the formula Ib or IIb

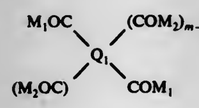


-continued



(IIb)

and 0 to 99.5 mol % of a compound of the formula IV

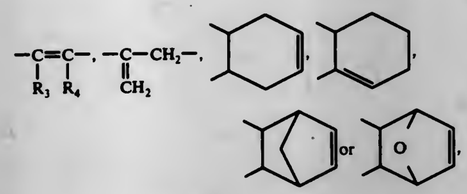


(IV)

with substantially stoichiometric amounts of a compound of the formula V

$$HY - Q - XH \qquad (V)$$

in which formulae *m* and *n* independently of one another represent the number 1 or 2, A represents a radical of the formula



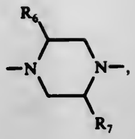
R_2' represents phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; alkoxy with 1 to 18 carbon atoms or the two R_2''s conjointly represent the —O— grouping,

R_1' represents a chlorine atom, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; or alkoxy of 1 to 18 carbon atoms,

M^+ represents an alkali metal cation, a trialkylammonium cation with 3–24 carbon atoms or a quaternary ammonium cation, R_3 and R_4 independently of one another represent hydrogen, chlorine or bromine, X and Y independently of one another represent



and R_5 = hydrogen, alkyl with 1–4 carbon atoms or phenyl, Q represents an aliphatic radical with at least 2 carbon atoms or a cycloaliphatic, araliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, or —Y—Q—X represents the grouping



R_6 and R_7 independently of one another represent hydrogen, methyl or phenyl and Q_1 represents an aliphatic radical or a cycloaliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, in which the carbonyl and carboxyl groups are bonded to different carbon atoms and the carboxyl groups are each in the ortho-position relative to a carbonyl group,

M_1 represents a chlorine atom, a hydroxyl group, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; or alkoxy with 1 to 18 carbon atoms, or when *m* or *n* is 2, M_1, conjointly with M_2, forms the —O— grouping

and the groups $—COM_1$ and $—COM_2$ are bonded to different carbon atoms and the $—COM_1$ groups are each in the ortho-position relative to a $—COM_2$ group.

4,115,360

POLYETHER UREA EPOXY ADDITIVES

Heinz Schulze, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Development Corp., New York, N.Y.

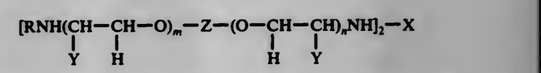
Filed Nov. 22, 1976, Ser. No. 743,815
Int. Cl.² C08G *59/50*
U.S. Cl. 528—94 **22 Claims**

1. An epoxy resin composition having superior adhesion properties and being the cured product of a curable admixture which comprises:

a vicinal polyepoxide having an epoxide equivalency of greater than 1.8;

a curing amount of a polyamine curing agent having at least 3 reactive amino hydrogens; and,

an effective amount of an additive consisting essentially of a polyether ureylene of the formula:



wherein X is a C═O radical or a radical derived from a diisocyanate; Z is a hydrocarbon alkylene radical having 2 to 5 carbon atoms; Y is hydrogen, a methyl radical or an ethyl radical; and *m* and *n* are numbers selected such that the molecule has a molecular weight of from about 4000 to about 4500; R is hydrogen; or, a branched or straight chain alkyl radical of from 1 to about 10 carbon atoms; or, a monocyclic aryl, alkaryl or aralkyl radical having from 6 to about 12 carbon atoms or, are branched or straight chain alkenyl or alkadienyl radical of from 2 to about 10 carbon atoms; or, an amino alkyl amine radical of the formula:

$$—NH(CH_2)_pNH_2$$

wherein *p* is 2 or 3.

4,115,361

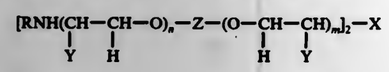
POLYETHER UREA EPOXY ADDITIVES

Heinz Schulze, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Development Corp., New York, N.Y.

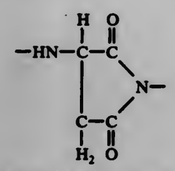
Filed Nov. 22, 1976, Ser. No. 743,878
Int. Cl.² C08G *59/50*
U.S. Cl. 260—47 EN **23 Claims**

1. An epoxy resin composition having superior adhesion properties and being the cured product of a curable admixture which comprises;

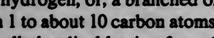
a vicinal polyepoxide having an epoxide equivalency of greater than 1.8;
a curing amount of a polyamine curing agent having at least 3 reactive amino hydrogens; and,
an effective amount of an additive consisting essentially of a polyether succinimide of the formula:



wherein X is a



radical; Z is a hydrocarbon alkylene radical having 2 to 5 carbon atoms; Y is hydrogen, a methyl radical or an ethyl radical; and *m* and *n* are numbers selected such that the molecule has a molecular weight of from about 4000 to about 4500; R is hydrogen, or, a branched or straight chain alkyl radical of from 1 to about 10 carbon atoms; or, a monocyclic aryl, alkaryl or aralkyl radical having from 6 to about 12 carbon atoms; or, are branched or straight chain alkenyl or alkadienyl radical of from 2 to about 10 carbon atoms; or, an amino alkyl amine radical of the formula:



wherein *p* is 2 or 3.

4,115,362

PROCESS FOR PREPARING POLYESTERS

Hiroo Inata, and Shoji Kawase, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 619,495, Oct. 3, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,628
Int. Cl.[2] C08G *63/18, 63/22*
U.S. Cl. 528—190 **9 Claims**

1. A process for preparing polyesters which comprises
1. a first step of reacting (A) a difunctional carboxylic acid containing at least 60 mole% of an aromatic dicarboxylic acid, (B) 0 to 80 mole%, based on component (A), of an aliphatic diol and (C) an aromatic monohydroxy compound selected from the group consisting of phenol, cresol and naphthol, the total amount of components (B) and (C) used in the first step being at least 210 mole% based on component (A), the reaction being carried out in the presence of a catalyst and at a temperature of 200° to 350° C. until the degree of esterification reaches 80 to 98%, and
2. subsequent to the first step, a second step of adding to the reaction product of the first step 0 to 80 mole%, based on component (A), of component (B), and (D) an aromatic dihydroxy compound, the total amount of components (B) and (D) used in the second step being 95 to 130 mole% based on component (A), and reacting the resultant mixture at a temperature of 200° to 350° C., the total amount of component (B) used in the first and second steps being 0 to 80 mole% based on component (A).

4,115,363

LINEAR COPOLYESTERS OF ISOPHTHALIC ACID 4,4'-SULFONYLDIBENZOIC ACID, BIS(4-BETA-HYDROXYETHOXYPHENYL) SULFONE AND ETHYLENE GLYCOL

Santos W. Go, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 27, 1976, Ser. No. 690,482
Int. Cl.[2] C08G *63/18, 63/66, 63/68*
U.S. Cl. 528—294 **11 Claims**

1. A linear copolyester suitable for use in the packaging of comestibles, said polyester being the polymeric reaction product of reactants consisting essentially of
(A) isophthalic acid and 4,4'-sulfonyldibenzoic acid, and
(B) bis(4-beta-hydroxyethoxyphenyl) sulfone and ethylene glycol.

4,115,364

PROCESS FOR PRODUCING MODIFIED PHENOLIC NOVOLAK FIBERS

Isao Kimura, Suita, and Sizukuni Yata, Settsu, both of Japan, assignors to Nippon Kynol Incorporated, Osaka, Japan

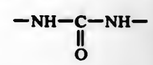
Continuation of Ser. No. 370,776, Jun. 18, 1973, abandoned. This application Sep. 13, 1976, Ser. No. 722,589
Claims priority, application Japan, Jun. 19, 1972, 47-61623; Sep. 7, 1972, 47-89777; Dec. 19, 1972, 47-128032; Feb. 24, 1973, 48-22478
Int. Cl.[2] C08G *14/08*
U.S. Cl. 260—841 **24 Claims**

1. A process for producing non-flammable, anti-fusing novolak resin filament having improved heat resistance and bending properties which comprises melt-spinning a fiber-forming novolak resin which contains a fiber-forming thermoplastic synthetic polyamide resin selected from the group consisting of nylon 6, nylon 11, nylon 12, nylon 66, nylon 610, nylon 611, and nylon 612 in an amount less than 40% by weight based on the total filament weight, and curing the resulting filament with an aldehyde in the presence of a basic or acid catalyst to a final curing degree of 3 to 30%, and applying a urea compound of the formula (A)



(A)

wherein R_1, R_2, R_3 and R_4, which may be the same or different, represent a hydrogen atom, lower hydroxyalkyl group or lower alkoxyalkyl group, to said novolak resin to provide the novolak resin filament which contains in its fiberous structure a bond of the formula



in the amount of 0.5 to 25% by weight based on the weight of the filament.

4,115,365

PROCESS FOR PREPARING AMINOMETHYL DIARYL COMPOUND RESINS

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 802,690, Jun. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 662,392, Mar. 1, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,443
Int. Cl.[2] C08G *12/42, 14/06*
U.S. Cl. 528—132 **8 Claims**

1. A method for the preparation of aminomethyl diaryl

compound resins in the absence of halomethylation or halomethylated materials which method consists of:
(a) heating at a temperature of from about 75° C. to about reflux, a mixture consisting of an aldehyde, a diaryl compound, a saturated monocarboxylic acid having from about 1 to about 10 carbon atoms and a strong acid catalyst wherein the molar ratio of the diaryl compound:aldehyde ranges from about 1:1 to about 1:10, the molar ratio of diaryl compound:monocarboxylic acid ranges from about 1:1 to about 1:9, and the catalyst is employed in a molar ratio of the diaryl compound:catalyst from about 1:0.001 to about 1:0.3 to form an aldehyde-diaryl resin, having a molecular weight between about 1000 and 3000,
(b) stripping off the excess monocarboxylic acid under vacuum, and then
(c) adding at least about 1 mole of a primary or secondary amine containing at least one additional nontertiary amino group per reactive group on the aldehyde-diaryl resin to form a soluble, fusible resin.

4,115,366

PHENOLIC RESIN-MELAMINE COMPOSITION

Jerome C. Kellner, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Continuation-in-part of Ser. No. 748,675, Dec. 8, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 868,029
Int. Cl.[2] C08G *14/10, 14/12*
U.S. Cl. 528—131 **8 Claims**

1. A thermosettable molding composition comprising:
(a) a water-insoluble phenol-aldehyde resin consisting essentially of an acid-catalyzed phenol-aldehyde resin having 0.5–0.9 moles of aldehyde per mole of phenol reacted to a water-insoluble stage;
(b) 10–33 parts of hexamethylenetetramine per 100 parts of said phenol-aldehyde resin; and
(c) 30–60 parts by weight of melamine per 100 parts by weight of said phenol-aldehyde resin.

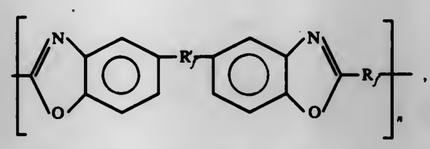
4,115,367

PERFLUOROALKYLENE ETHER BIBENZOXAZOLE POLYMERS

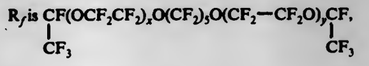
Robert C. Evers, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 21, 1977, Ser. No. 817,658
Int. Cl.[2] C08G *73/22*
U.S. Cl. 528—210 **7 Claims**

1. A perfluoroalkylene ether bibenzoxazole polymer consisting essentially of recurring units having the following formula:



wherein R_f' is $(CF_2)_2O(CF_2)_2O(CF_2)_2$, $(CF_2)_2O(CF_2)_5O(CF_2)_2$ or $(CF_2)_2O(CF_2)_5O(CF_2)_2O(CF_2)_2O(CF_2)_2$;



where $(x+y)$ equals 5 or 6, or



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and *n* is an integer equal to at least 2.

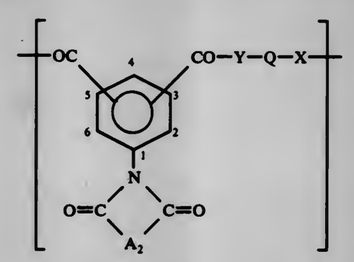
4,115,368

CROSSLINKABLE POLYMERS OF COMPOUNDS CONTAINING 5-MALEIMIDYL-ISOPHTHALIC ACID DERIVATIVES

Martin Roth, Basel; Roland Darms, and Josef Pfeifer, both of Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

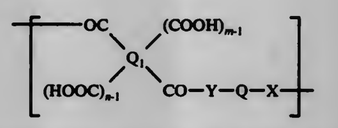
Filed Jun. 15, 1976, Ser. No. 696,349
Claims priority, application Switzerland, Jun. 18, 1975, 7954/75
Int. Cl.[2] C08G *73/12*
U.S. Cl. 528—229 **12 Claims**

1. A crosslinkable polymer with an average molecular weight of at least 1000, which is characterized in that it consists of 0.5 to 100 mol % of recurring structural elements of the formula III



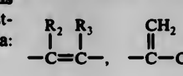
(III)

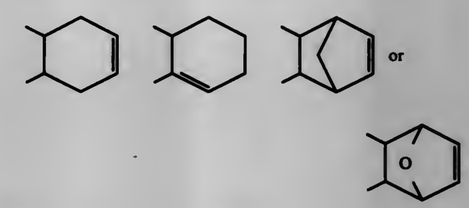
and 0 to 99.5 mol % of recurring structural elements of the formula IV



(IV)

and contain at least three structural elements of the formula III, and the —CO— groups in formula III are bonded to the benzene ring in the 2,3-, 3,4- or 2,3-position, *m* and *n* independently of one another represent the number 1 or 2, A_2 represents a radical of the formula



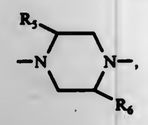


R_2 and R_3 independently of one another represent hydrogen, chlorine or bromine, X and Y independently of one another represent



where R_4 is hydrogen, alkyl with 1 to 4 carbon atoms or phenyl, Q represents an aliphatic radical with at least 2 carbon atoms or a cycloaliphatic, araliphatic, carbocyclic-aromatic or

heterocyclic-aromatic radical, or —Y—Q—X— represents the grouping



R_5 and R_6 independently of one another represent hydrogen, methyl or phenyl and Q_1 represents an aliphatic radical or represents a cycloaliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical in which the carbonyl and carboxyl groups are bonded to different carbon atoms and the carboxyl groups are each in the ortho-position relative to a carbonyl group, or the corresponding cyclized imide derivative.

4,115,369

PROCESS FOR CONTINUOUS PRODUCTION OF OXYMETHYLENE POLYMERS

Akitoshi Sugio, Ohmiya; Tomotaka Furusawa, Matsudo; Katsumasa Tanaka, Tokyo; Toshikazu Umemura, Tokyo, and Hiroyuki Urabe, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 29, 1977, Ser. No. 855,905

Claims priority, application Japan, Nov. 29, 1976, 51-142324

Int. Cl.² C08G 2/10

U.S. Cl. 526—65 **7 Claims**

1. A process for continuously producing an oxymethylene polymer by continuously polymerizing a starting monomer containing at least 50 mole% of trioxane in bulk in the presence of a catalyst, which comprises feeding the starting monomer into a first-stage polymerization reactor having a self-cleaning action to perform a first-stage polymerization reaction until the conversion reaches 40 to 70%, withdrawing the reaction mixture as a powder from the outlet of the first-stage polymerization reactor, feeding the reaction mixture into a second-stage polymerization reactor having a stirring action to perform a second-stage polymerization reaction until the conversion reaches 95 to 100%, and then withdrawing the polymerization product as a powder from the outlet of the second-stage polymerization reactor.

4,115,370

UNSATURATED POLYESTERAMIDES, METHOD FOR THEIR PRODUCTION AND HARDENABLE RESINS PRODUCED FROM THE SAID POLYESTERAMIDES

Giovanni Corrado, Rome, Italy, assignor to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Filed Feb. 11, 1976, Ser. No. 657,268

Claims priority, application Italy, Feb. 21, 1975, 20489 A/75

Int. Cl.² C08G 63/68

U.S. Cl. 260—22 CQ **31 Claims**

1. Unsaturated polyesteramide composition which comprises an unsaturated linear polymer having ester bonds and unsaturations, and radicals of a COOH-terminated saturated polyamide in its linear chain, said ester bonds being located between the amide bonds of the polyamide radical and the unsaturations and in the chain wherein ester bonds are present, said ester bonds are located between the amide bonds and the unsaturations.

4,115,371

STABILIZATION OF POLYCONDENSATES OF POLYETHYLENE TEREPHTHALATE

Peter Bier, and Rudolf Binsack, both of Krefeld, Germany, assignors to Bayer Aktienfesellschaft, Leverkusen, Germany

Filed Jun. 2, 1977, Ser. No. 802,858

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1976, 2626827

Int. Cl.² C08G 63/34, 63/32

U.S. Cl. 528—279 **16 Claims**

1. A process for the preparation of a high-molecular weight light colored polyethylene terephthalate which has an intrinsic viscosity of greater than about 0.7 dl/g measured at 25° C. in 1:1 phenol tetrachloroethane and a yellow shade *b* value by the Gardner method of less than about 6 comprising

A. esterification or transesterification at a temperature of between about 150 and 250° C. in the presence of an appropriate catalyst of

(1) a dicarboxylic component comprising at least 90 mol % of terephthalic acid and terephthalic acid dialkyl ester, and

(2) about 1.05 to 5 mols per mol of acid component of a diol component comprising at least 90 mol % of ethyleneglycol, until a conversion of greater than about 95% is achieved, and then

B. polycondensation at a temperature between about 200° and 270° C. under reduced pressure in the presence of

(1) about 3×10^{-2} to 5×10^{-5} mol %, based on mols of said acid component, of titanium tetrabutylate, and

(2) about 0.02 to 2 mol %, based on mols of said acid component, of metaphosphoric acid or its alkali or alkaline earth metal salts.

4,115,372

NOVEL COPOLYAMIDEIMIDES

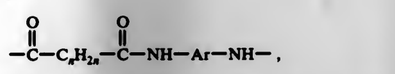
Kemal B. Onder, North Haven, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 21, 1977, Ser. No. 761,428

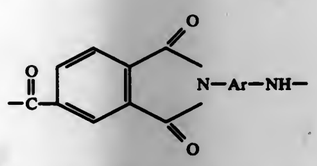
Int. Cl.² C08G 73/14

U.S. Cl. 528—73 **6 Claims**

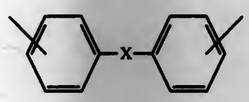
1. A copolyamideimide characterized by solvent solubility, injection moldability, and an inherent viscosity of at least 0.5 measured at 30° C. using a 0.5 weight percent solution of said copolyamideimide dissolved in N-methylpyrrolidone or m-cresol and further characterized by having from about 30 percent to about 70 percent of the recurring units of the formula:



and the remaining 30 percent to 70 percent of the recurring units of the formula:



wherein C_nH_{2n} represents alkylene from 7 to 12 carbon atoms, inclusive, and Ar is the divalent radical



wherein X is selected from the group consisting of $—SO_2—$, —CO—, —O—, and alkylene from 1 to 4 carbon atoms, inclusive.

4,115,373

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS

Gerhard Henes, Leverkusen; Hans Jürgen Müller, Cologne; Pramod Gupta, Bedburg-Erft, and Joachim Zirner, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 1, 1976, Ser. No. 737,747

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1975, 2551634

Int. Cl.² C07D 251/12; C08G 18/18, 18/77, 18/82

U.S. Cl. 528—48 **10 Claims**

1. A process for the production of polyisocyanates containing isocyanurate groups and having a monomeric diisocyanate content, based on solids, of at most 0.7%, by weight, comprising (1) partially trimerizing the isocyanate groups in organic diisocyanates in the presence of catalysts which accelerate the trimerizing reaction of isocyanate groups and (2) terminating the trimerizing reaction at the desired degree of trimerization by thermally decomposing the catalyst used or by deactivating the catalyst used by adding a catalyst poison, wherein

(a) Mannich bases are used as catalysts and

(b) the trimerizing reaction is carried out in the presence of inert solvents at a temperature below 60° C.

4,115,374

SUBSTRATES FOR ANGIOTENSIN CONVERTING ENZYME

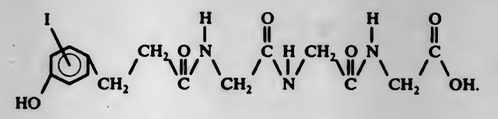
James Walter Ryan, 3420 Pionciana Ave., Miami, Fla. 33133, and Alfred Chung, 8781 SW 87th St., Miami, Fla. 33173

Filed May 10, 1977, Ser. No. 795,497

Int. Cl.² C07C 103/52

U.S. Cl. 260—112.5 R **6 Claims**

1. A composition of matter consisting essentially of



4,115,375

METHOD OF ISOLATION AND RECOVERY OF PROTEIN HORMONES, DERIVING FROM PITUITARY TISSUES USING POLYETHYLENE GLYCOL

Erik Pedersen, Ølstykke, Denmark, assignor to Nordisk Insulinlaboratorium, Gentofte, Denmark

Filed Jul. 25, 1977, Ser. No. 819,019

Claims priority, application Denmark, Jul. 30, 1976, 3468/76

Int. Cl.² A61K 35/46; C07G 7/026

U.S. Cl. 260—112 R **3 Claims**

1. A method of isolating and recovering the growth hormone and a fraction containing the hormones FSH ad LH from pituitary tissues, comprising the steps of

(a) extracting tissues from pituitary glands with an aqueous alkaline buffer,

(b) admixing the extract with an aqueous solution of polyethylene glycol (PEG) in an amount corresponding to 10–14% PEG by weight per volume before or after adjusting the pH to from 4.5 to 5.0,

(c) isolating the precipitated growth hormone,

(d) admixing the supernatant from the previous step with an aqueous solution of polyethylene glycol and

(e) isolating a mixture of the hormones FSH and LH precipitated in step d).

4,115,376

BLAND NEUTRALIZED CASEIN

Steven B. Zavagli, Elmwood Park, and Robert L. Kasik, Berwyn, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Continuation of Ser. No. 455,511, Mar. 27, 1974, abandoned.

This application Feb. 18, 1976, Ser. No. 658,906

Int. Cl.² A23J 3/02

U.S. Cl. 260—120 **14 Claims**

1. A process for producing a bland neutralized milk casein comprising mixing milk acid casein granules with a magnesium or potassium salt solution and maintaining the mixture at a temperature of at least 150° F. until a coagulum of the casein is formed; separating the coagulum from the resulting mother liquid; forming an aqueous slurry of the coagulum and holding the temperature of the slurry at between about 100° F. and about 210° F., adding to the slurry a non-toxic, water-soluble magnesium or potassium base in an amount sufficient to neutralize the salt-treated acid casein to a pH of between 6.0 to 8.0, and separating the neutralized casein from the slurry to produce a white, bland, neutralized casein.

4,115,377

RUBINE MIXED STRONTIUM-CADMIUM SALTS OF 3-CHLORO-4-METHYL-6-SULFOPHENYLAZO-HYDROXYNAPHTHOIC ACID

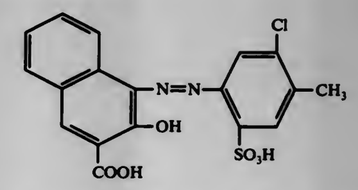
Richard Knight Putney, Hudson Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 31, 1977, Ser. No. 764,322

Int. Cl.² C09D 45/12, 45/22; D06P 1/46, 3/79

U.S. Cl. 260—151 **3 Claims**

1. A water-insoluble strontium-cadmium salt of the azo dyestuff of the formula



said salt having a gram atom ratio of strontium to cadmium ranging from 1:1 to 5:1.

4,115,378

WATER SOLUBLE REACTIVE AZODYESTUFFS CONTAINING A FLUOROTRIAZINYL GROUP ATTACHED VIA A NITROGEN BRIDGE TO THE DYESTUFF MOLECULE

Hans-Samuel Bien, Burscheid; Erich Klauke, Odenthal-Hahnenberg, and Klaus Wunderlich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 721,180, Apr. 15, 1968, abandoned.

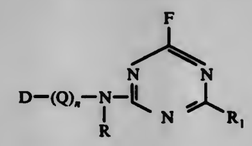
This application Jun. 8, 1971, Ser. No. 151,149

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1967, 52,178

Int. Cl.² C09B 62/04, 62/06, 62/08, 62/10

U.S. Cl. 260—146 T **24 Claims**

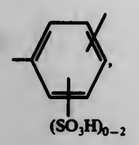
1. A reactive dyestuff of the formula

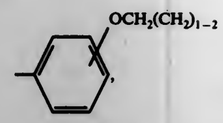


wherein

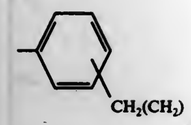
D stands for the radical of a water-soluble sulfonic acid containing azo dyestuff;

R stands for hydrogen or lower alkyl;
Q stands for CO, SO_2, CH_2, CH_2CO,





and



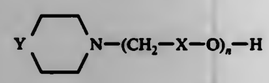
n stands for 0 or 1, —(Q)$_n$—N(R) being linked with a nuclear aromatic carbon atom of D; R_1 stands for NH_2, hydroxy; mercapto; methyl; trichloromethyl; phenyl; methylphenyl; chlorophenyl; sulfophenyl; hydroxyphenyl; morpholino; piperidino; hydrazino; N-methylhydrazino; N—(R_{10})—R'; wherein R_{10} stands for lower alkyl, cyano lower alkyl, hydroxy lower alkyl, phenyl or phenyl substituted by a member selected from the class consisting of chlorine, bromine, lower alkyl, lower alkoxy, sulfo, and carboxy; and R' stands for hydrogen, lower alkyl, hydroxy lower alkyl, cyano lower alkyl or benzyl; OR_{11} wherein R_{11} stands for phenyl, sulfophenyl, lower alkyl or lower alkoxy substituted lower alkyl; or SR_{12} wherein R_{12} stands for lower alkyl, hydroxy lower alkyl, phenyl, chlorophenyl, sulfophenyl; and F is fluoro.

4,115,379
DYESTUFF SALTS

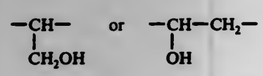
Hermann Perrey, Krefeld; Karlheinz Wolf, Leverkusen; Erich Eimers, Krefeld; Konrad Nonn, Leverkusen, and Reinhold Hörnle, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1976, Ser. No. 711,143
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1975, 2534830
Int. Cl.² C09B *29/22*
U.S. Cl. 260—163 **3 Claims**

1. Salts of anionic dyestuffs which contain, as the cation an ammonium ion of a polyhydroxy-amine of the formula



wherein
Y denotes O, NH, NCH_3 or CH_2 and
n denotes a number from 1–5 and
X denotes

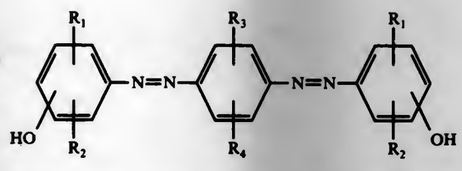


4,115,380
PROCESS FOR THE PREPARATION OF DIHYDROXYPHENYLAZOPHENYLAZOPHENYL DYESTUFFS

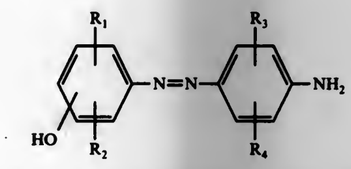
Hans Jakob Schladetsch, Frankfurt am Main, and Günther Schroth, Muhlheim, Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 19, 1977, Ser. No. 788,763
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1976, 2617302
Int. Cl.² C09B *31/06;* D06P *1/04, 3/42, 3/54*
U.S. Cl. 260—186 **6 Claims**

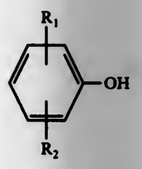
1. Process for the manufacture of a disazo dyestuff of the formula



in which R_1 and R_2 each stand for hydrogen, chlorine, bromine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, R_3 and R_4 each stand for hydrogen, chlorine, bromine, nitro, trifluoromethyl, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and the hydroxyl groups each stand in 2- or 4-position to the azo groups, which comprises diazotizing a 2- or 4-hydroxy-4'- aminoazobenzene of the formula



in which R_1, R_2, R_3 and R_4 are defined as above, with an alkali metal nitrite in an aqueous mineral acid, the normality of which being about 10^{-2} to 5, in the presence of a phenol capable of being coupled of the formula



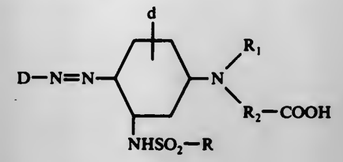
in which R_1 and R_2 are defined as above and subsequently reacting the diazonium salt obtained with the said phenol by raising the pH to a value between about 3 and 11.

4,115,381
AZO DYESTUFFS HAVING A CARBOXYL GROUP AND AN IMINOSULFONAMIDO, IMINOSULFONYLALKYL OR IMINOSULFONYLARYL GROUP IN THE COUPLING COMPONENT

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 485,054, Jul. 1, 1974, abandoned, which is a continuation of Ser. No. 243,469, Apr. 12, 1972, abandoned. This application Sep. 14, 1976, Ser. No. 723,120
Claims priority, application Switzerland, May 3, 1971, 6468/71
Int. Cl.² C09B *29/00, 29/08, 29/26;* D06P *3/52*
U.S. Cl. 260—207.1 **3 Claims**

1. A dyestuff of the formula



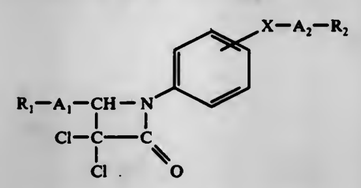
in which
D is phenyl, or phenyl substituted by chloro, bromo, nitro, trifluoromethyl, cyano, methoxy, methyl, sulfonamide, carbomethoxy, N-methylsulfonamide, or methylsulphonyl,
d is hydrogen, methoxy, ethoxy, chloro or methyl,
R_1 is hydrogen, methyl, ethyl, cyanoethyl, hydroxyethyl, acetoxyethyl, methoxyethyl, benzyl, phenylethyl or butyl,
R_2 is methylene, ethylene, propylene, isopropylene or phenylene,
R is methyl, ethyl, propyl, butyl, phenyl, toluyl, dimethylamino or chloromethyl.

4,115,382
3,3-DICHLORO-2-AZETIDINONE DERIVATIVES HAVING BASIC SUBSTITUENTS

John Krapcho, Somerset, and Chester F. Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 6, 1977, Ser. No. 803,827
Int. Cl.² C07D *205/08;* A61K *31/395*
U.S. Cl. 260—239 A **8 Claims**

1. A compound having the formula



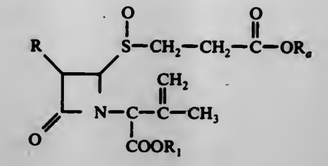
or a pharmaceutically acceptable acid-addition salt thereof, wherein X is oxygen or sulfur; R_1 is alkyl, cycloalkyl or aryl; R_2 is dialkylamino[, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl or 4-alkyl-1-piperazinyl]; A_1 is a saturated bond or an alkylene group having 1 to 4 carbon atoms; and A_2 is an alkylene group having 2 to 5 carbon atoms; wherein aryl is phenyl or phenyl substituted with a halogen, alkyl, alkoxy, trifluoromethyl, or nitro group; alkyl and alkoxy are groups having 1 to 6 carbon atoms; and cycloalkyl is a group having 3 to 7 carbon atoms.

4,115,383
ALKOXYCARBONYL-ETHYLTHIO-AZETIDINONES AND PROCESS FOR THEIR PREPARATION

Robin D. G. Cooper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 660,209, Feb. 23, 1976, abandoned. This application Mar. 24, 1976, Ser. No. 669,938
Int. Cl.² C07D *705/08;* A01N *31/395*
U.S. Cl. 260—239 A **4 Claims**

1. A compound of the formula



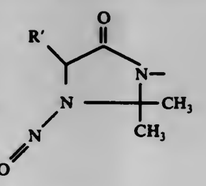
in which R_a is C_1–C_4 alkyl;
R_1 is hydrogen or a carboxy protecting group; and
R is
(a) phthalimido;
(b) an amido group of the formula



in which R_2 is
(1) hydrogen, C_1–C_3 alkyl, halomethyl, thienyl2-methyl, 4-protected-amino-4-protected carboxybutyl, benzyloxy, 4-nitrobenzyloxy, t-butyloxy, 2,2,2-trichloroethoxy, 4-methoxybenzyloxy;
(2) a group of the formula R'-(0)$_m$-CH_2— in which m is 0 or 1, and R' is phenyl or phenyl substituted with 1 or 2 halogens, protected hydroxy, nitro, cyano, trifluoromethyl, C_3–C_4 alkyl, or C_1–C_2 alkoxy;
(3) a group of the formula



in which R' is as defined above and W is protected hydroxy, protected carboxy, or protected amino; or
(c) an imidazolidinyl group of the formula



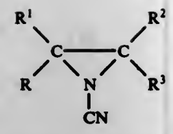
in which R' is as defined above.

4,115,384
N-CYANOAZIRIDINES

Frank Dennis Marsh, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 501,457, Aug. 28, 1974, division of Ser. No. 832,423, Jun. 11, 1969, Pat. No. 3,849,465, which is a division of Ser. No. 383,233, Jul. 16, 1964, Pat. No. 3,510,474. This application May 17, 1976, Ser. No. 687,176
Int. Cl.² C07D *203/26, 203/02, 203/12*
U.S. Cl. 260—239 E **10 Claims**

1. An N-cyanozairidine of the formula



the R's taken individually are hydrogen or alkyl having up to 18 carbons, and any two of the R groups can be joined together to form an alkylene or cycloalkylene group of up to 14 carbons or one of the R's is trimethylsilyl.

4,115,385

ANTIBACTERIAL 3-(5-TETRAZOLYL) PENAM COMPOUNDS

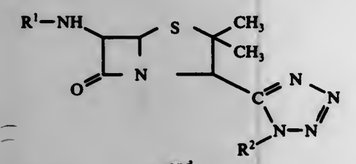
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 561,147, Mar. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 491,510, Jul. 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 450,435, Mar. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 407,097, Oct. 17, 1973, abandoned. This application Apr. 12, 1977, Ser. No. 786,952

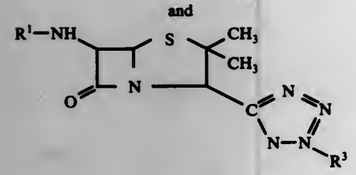
Int. Cl.² C07D *499/28*

U.S. Cl. 260—239.1 **45 Claims**

1. A compound having antibacterial activity selected from the group consisting of:



and



and the salts thereof;

wherein R^1 is an acyl group of an organic carboxylic acid or the acyl group of an acyl derivative selected from the group consisting of esters, amides and chlorides of organic carboxylic acids;

R^3 is selected from the group consisting of hydrogen, trialkylsilyl having from one to four carbon atoms in each of said alkyl groups, alkanoyloxymethyl having from three to eight carbon atoms, 1-(alkanoyloxy)ethyl having from four to nine carbon atoms and 3-phthalidyl;

and R^2 is selected from the group consisting of hydrogen, trialkylsilyl having from one to four carbon atoms in each of said alkyl groups, alkanoyloxymethyl having from three to eight carbon atoms, 1-(alkanoyloxy)ethyl having from four to nine carbon atoms and 3-phthalidyl.

4,115,386

PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID DIIMIDE PIGMENT, ITS MANUFACTURE AND ITS USE

Ludwig Gall, Frankenthal, and Wolfgang Fabian, Wilhelmsfeld, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 22, 1976, Ser. No. 725,394

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1975, 2545701

Int. Cl.² D06P *1/649*; C07D *471/06*

U.S. Cl. 260—281 P **2 Claims**

1. A particulate perylene-3,4,9,10-tetracarboxylic acid diimide pigment of the formula



which has a specific surface area (measured by the BET method) of from 10 to 35 m^2/g and particle length distribution range in which a maximum value is reached at from about 0.1 to 0.5 μm, the proportion of particles between these limits being at least about 50% of the total distribution, and the mean ratio of length to width of the particles is from about 3:1 to 1:1.

4,115,387

3-METHYL-4-PHENYL-1,2,3,4-TETRAHYDROBENZ [H]ISOQUINOLINE HYDROBROMIDE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,550

Int. Cl.² C07D *217/02*

U.S. Cl. 260—286 R **1 Claim**

1. The compound 3-methyl-4-phenyl-1,2,3,4-tetrahydrobenz[H]-isoquinoline hydrobromide.

4,115,388

3'-OXYGENATED DERIVATIVES OF 4'-DEOXY VLB "A" AND "B" AND RELATED 1-FORMYL COMPOUNDS

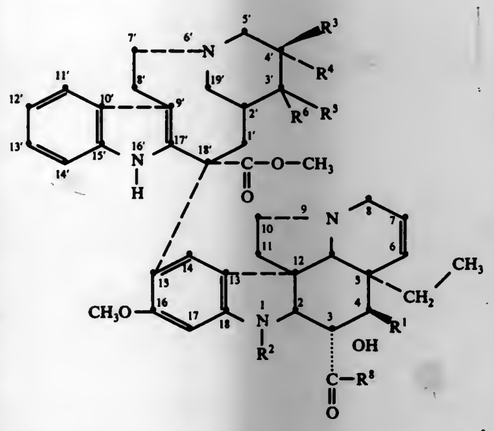
Gerald L. Thompson, and Gloria C. Paschal, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 30, 1977, Ser. No. 782,644

Int. Cl.² C07D *519/04*

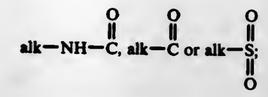
U.S. Cl. 260—287 B **8 Claims**

1. A compound of the formula:



wherein R^1 is OH or acetoxy; R^2 is CH_3 or CHO, one of R^3 and R^4 is hydrogen and the other is ethyl; when taken singly, one of R^5 and R^6 is a β-hydrogen and the other is an α- OR^7 group

and, when taken together, are oxygen; wherein R^7 is hydrogen or



R^8 is OCH_3, NH_2, $NH—CH_3$, $NH—NH_2$, N_3, $NH—CH_2—CH_2—OH$, $NH—CH_2—CH_2—Oalk$, $NH—CH_2—CH_2—SH$ or $NH—CH_2—CH_2—S—alk$; and wherein alk is (C_1-C_3) alkyl such that, when R^1 is acetoxy, R^8 is OCH_3, NH_2, $NH—CH_3$, $NH—CH_2—CH_2—Oalk$ or $NH—CH_2—CH_2—S—alk$, and pharmaceutically acceptable acid addition salts thereof.

4,115,389

PROCESS OF N-DEMETHYLATING (−)-1-(P-METHOXYBENZYL)-2-METHYL-1,2,3,4,5,6,7,8-OCTAHYDROISOQUINOLINE

Ivo Monkovic, Candiac, Canada, assignor to Bristol-Myers Company, New York, N.Y.

Filed May 2, 1977, Ser. No. 793,203

Int. Cl.² C07D *217/20*

U.S. Cl. 260—289 D **3 Claims**

1. The process of N-demethylating (−)-1-(p-methoxybenzyl)-2-methyl-1,2,3,4,5,6,7,8-octahydroisoquinoline which comprises the consecutive steps conducted in one vessel at a temperature in the range of −30° to 50° C. of reacting each mole of said compound in a chlorinated organic solvent selected from the group consisting of methylene chloride, chloroform, carbon tetrachloride, ethylidene chloride and ethylene dichloride with at least one mole of m-chloroperbenzoic acid and then reacting the resulting mixture without isolation of the product therein with 0.01 to 1.0 mole of aqueous ferrous chloride to produce (+)-1-(p-methoxybenzyl)-1,2,3,4,5,6,7,8-octahydroisoquinoline with substantially the same optical purity as that of the starting compound.

4,115,390

METHOD FOR THE PREPARATION OF 1-ALKYL PYRIDINIUM CHLORIDES

John C. Nardi, 3398 Tyler Dr., Brunswick, Ohio 44212; Charles L. Hussey, Quarters 6402H, USAF Academy, Colo. 80840; Lowell A. King, 460 Winters Cir. N., Colorado Springs, Colo. 80919, and Ronald A. Carpio, 21 N. Garland Ave., Colorado Springs, Colo. 80909

Filed Aug. 19, 1977, Ser. No. 826,222

Int. Cl.² C07D *213/04*

U.S. Cl. 260—290 HL **5 Claims**

1. A method for synthesizing 1-alkyl pyridinium chloride which comprises the steps of (1) effecting a reaction within a closed reaction vessel between (A) a liquified alkyl chloride selected from the group consisting of methyl chloride, ethyl chloride, 1-propyl chloride and 1-butyl chloride wherein said alkyl chloride was previously liquified in a cold trap of acetone and (B) 10 percent stoichiometric excess pyridine; (2) continuing said reaction under pressure at a temperature of from room temperature to about 120° C. and for a period of time sufficient to produce said alkyl pyridinium chloride; and (3) washing the product of step (2) in ether, followed by filtering and vacuum drying.

4,115,391

BRIDGEHEAD NITROGEN ANALOGS OF POLY-CHLORINATED CYCLIC HYDROCARBON INSECTICIDES

John Lui Wong, Louisville, Ky., assignor to Research Corporation, New York, N.Y.

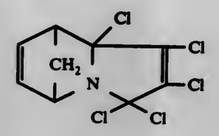
Division of Ser. No. 672,322, Mar. 21, 1976, Pat. No. 4,081,448, which is a continuation-in-part of Ser. No. 454,576, Mar. 25, 1974, abandoned. This application Mar. 16, 1977, Ser. No. 778,114

Int. Cl.² C07D *471/08*

U.S. Cl. 260—290 HL **4 Claims**

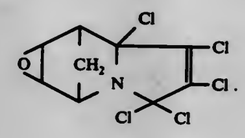
1. A compound having a structural formula selected from the group consisting of:

a)



and hydrogenated. chlorinated and brominated derivatives thereof; and,

b)



4,115,392

MONOFUMARATE SALT OF 3-PYRIDYLMETHYL NICOTINATE

Hideo Kato; Eiichi Koshinaka; Sakae Kurata, and Ikuo Uesaka, all of Fukui, Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Fukui, Japan

Filed Oct. 20, 1976, Ser. No. 734,312

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1975, 2551283

Int. Cl.² C07D *213/55*

U.S. Cl. 260—295.5 R **1 Claim**

1. Monofumarate of 3-pyridylmethyl nicotinate.

4,115,393

PYRIDYL ALKYL ESTERS OF SUBSTITUTED PHENOXY ALKANOIC ACIDS HAVING THE ABILITY TO REDUCE THE LEVEL OF FATTY SUBSTANCES IN THE BLOOD

Kurt Thiele, Zofingen; Quazi Ahmed, Strengelbach; Rudolf Adrian, Vordemwald, and Ulrich Jahn, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

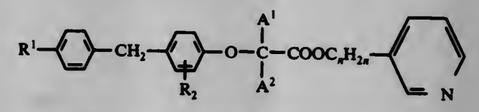
Continuation-in-part of Ser. No. 536,120, Dec. 24, 1974, abandoned. This application Mar. 1, 1977, Ser. No. 773,145

Claims priority, application Switzerland, Mar. 28, 1974, 4355/74; Nov. 18, 1974, 15329/74

Int. Cl.² C07D *213/55*

U.S. Cl. 260—295.5 R **8 Claims**

1. A compound of the general formula



wherein R^1 and R^2 are hydrogen, halogen, hydroxy or alkyl or alkoxy containing from 1 to 4 carbon atoms;

A^1 and A^2 which can be the same or different are hydrogen or alkyl radical containing up to 10 carbon atoms such that

the total number of carbon atoms in A^1 and A^2 is not more than 10; and

n is an integer of from 1 to 3, and pharmacologically acceptable salts thereof.

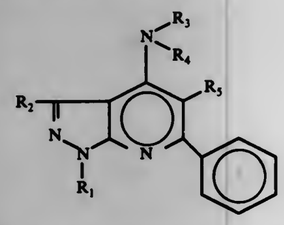
4,115,394

AMINO DERIVATIVES OF 6-PHENYLPYRAZOLO[3,4-b]PYRIDINES

Hans Hoehn, Tegernheim, and Ernst Schulze, Regensburg, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 6, 1974, Ser. No. 467,048
Int. Cl.² C07D *471/04*
U.S. Cl. 260—296 H **8 Claims**

1. A compound having the formula



wherein R_1, R_2, R_3 and R_4 each is lower alkyl and R_5 is hydrogen.

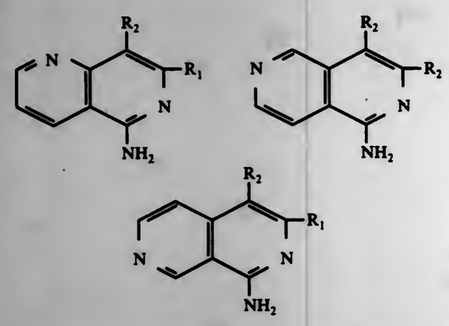
4,115,395

1-AMINONAPHTHYRIDINES

Joseph Mayer, New York, N.Y., and Margaret H. Sherlock, Bloomfield, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 631,010, Nov. 12, 1975, Pat. No. 4,017,500, which is a division of Ser. No. 379,525, Jul. 16, 1973, Pat. No. 3,928,367, which is a continuation-in-part of Ser. No. 119,377, Feb. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 816,075, Apr. 14, 1969, abandoned. This application Jan. 26, 1977, Ser. No. 762,605
Int. Cl.² C07D *487/02*; A01N *9/22*
U.S. Cl. 260—296 N **5 Claims**

1. Compounds of the formulae:



and the pharmaceutically acceptable acid addition salts thereof, wherein R_1 is selected from the group consisting of lower alkyl, phenyl, benzyl, phenethyl, and pyridyl, R is selected from the group consisting of hydrogen, lower alkyl, phenyl, benzyl, phenethyl and pyridyl.

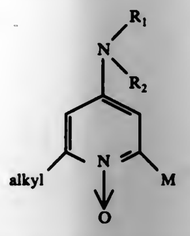
4,115,396

PYRIDINE N-OXIDES

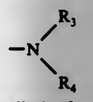
Joseph J. Ursprung, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 588,749, Jun. 20, 1975, Pat. No. 4,067,874, which is a continuation of Ser. No. 165,723, Jul. 23, 1971, abandoned. This application Sep. 9, 1977, Ser. No. 831,753
Int. Cl.² C07D *401/04*
U.S. Cl. 260—296 R **7 Claims**

1. A compound of the formula



wherein alkyl is from one to six carbon atoms, inclusive; M is alkyl from one to six carbon atoms, inclusive; $—NH_2$ or



wherein R_3 is hydrogen, alkyl of one to six carbon atoms, inclusive, or alkenyl of from three to six carbon atoms, inclusive, and R_4 is alkyl of one to six carbon atoms, inclusive, or alkenyl of three to six carbon atoms, inclusive, and R_3 and R_4 taken together are alkylene of five to seven carbon atoms, inclusive, said alkylene unsubstituted or substituted with one or more alkyl groups having one to six carbon atoms, inclusive, the total number of carbon atoms in the ring and alkyl groups not to exceed 15, morpholino, thiamorpholino and N-alkyl piperazino, said alkyl having one to three carbon atoms, inclusive; R_1 is hydrogen, alkyl of one to six carbon atoms, inclusive, or alkenyl of three to six carbon atoms, inclusive; R_2 is alkyl of one to six carbon atoms, inclusive, alkenyl of three to six carbon atoms, inclusive; or an acid addition salt thereof.

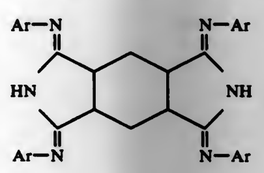
4,115,397

METAL CHELATING LIGANDS

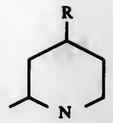
Walter O. Siegl, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 793,587, May 4, 1977. This application Jun. 9, 1977, Ser. No. 805,054
Int. Cl.² C07D *487/04*
U.S. Cl. 260—296 T **3 Claims**

1. A bis-chelating ligand corresponding to the formula:



wherein each Ar is:



and each R is independently hydrogen or straight or branched chain alkyl of up to about 20 carbon atoms, providing that (a) the sum of the carbon atoms in all R's is at least 8 and (b) no more than one R has a tertiary carbon atom connected to the heterocycle.

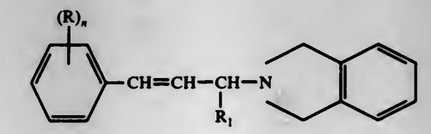
4,115,398

ISOINDOLINE DERIVATIVES AND THE ACID ADDITION SALTS THEREOF AND PROCESS FOR THE PREPARATION OF SAME

Koji Nakamura, Kodaira; Haruo Otaki, Fuji; Yutaka Yamamoto, Higashimurayama; Noboru Shimizu, Higashimurayama; Kiyoshi Kawamura, Higashimurayama, and Seiichi Sato, Higashimurayama, all of Japan, assignors to Kowa Company Ltd., Nagoya, Japan

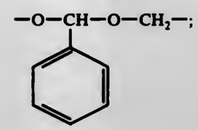
Filed Jan. 5, 1977, Ser. No. 757,028
Int. Cl.² C07D *209/44*
U.S. Cl. 260—326.1 **8 Claims**

1. Isoindoline derivatives of the formula



(I)

and the pharmaceutically acceptable acid addition salts thereof, wherein R represents a moiety selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, nitro, hydroxy and hydroxy lower alkyl, and *n* is a positive number from 1 to 3, which R's may be the same or different when *n* is 2 or 3, and when *n* is 2, the two R's may be joined to two vicinal carbon atoms in the phenyl ring to which the two R's are joined and may taken together form a lower alkylenedioxy group or the group



and R_1 is a member of the group consisting of hydrogen and lower alkyl.

4,115,399

PREPARATION OF CATALYST FOR THE POLYMERIZATION OF 2-PYRROLIDONE

Byron E. Anshus, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 22, 1976, Ser. No. 668,888
Int. Cl.² C07D *207/26*
U.S. Cl. 260—326.5 FN **3 Claims**

1. The process for the production of a mixture of 2-pyrrolidone and a 2-pyrrolidonate salt serving as a catalyst for the anionic polymerization of 2-pyrrolidone, comprising the steps of:

contacting in a reaction zone a hydroxide and excess 2-pyrrolidone to produce a solution of 2-pyrrolidonate and water in 2-pyrrolidone, conducting said solution through an evaporative dehydration zone comprising a thin-film evaporator;

dehydrating said solution under stripping conditions at a temperature of about 75°–150° C. and pressure of about 1–30 mm by flowing a dry inert gas stream countercurrently to the flow of said solution through said thin-film evaporator; and

collecting a bottoms product from said thin-film evaporator containing less than about 0.2 weight percent water, without appreciable loss of 2-pyrrolidone.

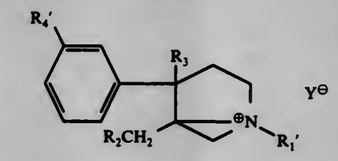
4,115,400

1-AZONIABICYCLO[3.1.0]HEXANES

Dennis M. Zimmerman, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 690,767, May 27, 1976, Pat. No. 4,081,450, which is a continuation of Ser. No. 503,581, Sep. 6, 1974, abandoned. This application Nov. 17, 1977, Ser. No. 852,252
Int. Cl.² C07D *209/52*
U.S. Cl. 260—326.5 B **10 Claims**

1. A compound of the formula



wherein:

R_1' is C_1–C_8 alkyl, C_4–C_8 (cycloalkyl)alkyl, or benzyl;

R_2 is hydrogen, C_1–C_4 alkyl, or C_2–C_6 alkenyl;

R_3 is C_1–C_4 alkyl or C_2–C_6 alkenyl;

R_4' is hydrogen, hydroxy, or C_1–C_3 alkoxy; and

Y^- is a non-nucleophilic anion.

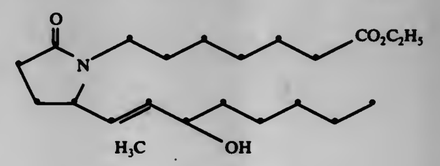
4,115,401

PROSTAGLANDIN DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Souli Nanthavong, Grenoble; Charles Pigerol, Saint-Quen; Pierre Eymard, Fontaine, and Jacques Simiand, Noyarey, all of France, assignors to Labaz, Paris, France

Filed Mar. 31, 1977, Ser. No. 783,284
Claims priority, application Israel, Mar. 31, 1976, 49325
Int. Cl.² C07D *207/12*
U.S. Cl. 260—326.43 **14 Claims**

1. DL-1-hexyl-5-(3'-hydroxy-3'-methyl-1'-octen-(E)-yl)-2-pyrrolidinone of the formula:



in the form of a racemic mixture or the D isomer or L isomer.

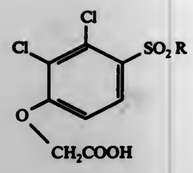
4,115,402

2,3-DICHLORO-4-[(SUBSTITUTED-SULFONYL)-PHENOXY]-ACETIC ACIDS

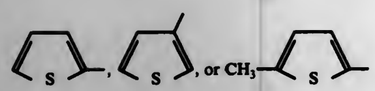
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 17, 1977, Ser. No. 807,478
Int. Cl.² C07D *333/24*; A01N *9/00*
U.S. Cl. 260—332.2 A **4 Claims**

1. A compound of the formula:



where R is



and the non-toxic pharmacologically acceptable acid addition salts, ester and amide derivatives thereof.

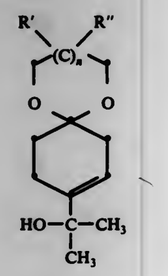
4,115,403

PREPARATION OF CIS-1-HYDROXY-3-SUBSTITUTED-6,6-DIMETHYL-6,6A,7,8,10,10A-HEXAHYDRO-9H-DIBENZO [b,d]PYRAN-9-ONES AND INTERMEDIATES THEREFOR

William B. Blanchard, and Charles W. Ryan, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 702,804, Jul. 6, 1976, Pat. No. 4,054,581. This application Jul. 12, 1977, Ser. No. 814,817
Int. Cl.² C07D *317/72*
U.S. Cl. 260—340.9 R **2 Claims**

1. A ketal of 4-(1-hydroxy-1-methylethyl)-3-cyclohexen-1-one of the general formula



wherein:

n is 0, and

R′ and R″ independently are hydrogen, methyl or ethyl.

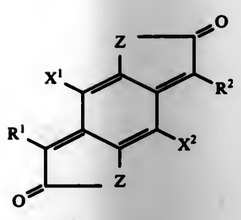
4,115,404

BENZODIFURAN DYESTUFFS

Colin William Greenhalgh; John Laurence Carey, and David Francis Newton, all of Blackley, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 1, 1977, Ser. No. 773,229
Claims priority, application United Kingdom, Oct. 3, 1976, 9513/76
Int. Cl.² C07D *487/04, 493/04;* D06P *1/62, 1/651*
U.S. Cl. 260—343.3 R **1 Claim**

1. A dyestuff which contains a chromophoric system of the formula:



wherein each Z is oxygen;

R^1 and R^2 each independently represent a radical selected from the class consisting of naphthyl, unsubstituted phenyl and phenyl having at least one substituent selected from the class consisting of sulphonic acid, sulphonyl chloride, phenylaminosulphonyl, nitro, lower alkyl, lower alkoxy, halogeno, lower alkoxyphenyl, lower alkoxycarbonyl, amino, lower alkylamino and acetylamino; and

X^1 and X^2 each independently represent a hydrogen atom or a substituent selected from the class consisting of chlorine and bromine atoms and lower alkyl groups.

4,115,405

6-NITRO-OR AMINO-4-CHROMANONE OXIME

George C. Wright, and Marvin M. Goldenberg, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,107
Int. Cl.² C07D *311/02;* A61K *31/35*
U.S. Cl. 260—345.2 **1 Claim**

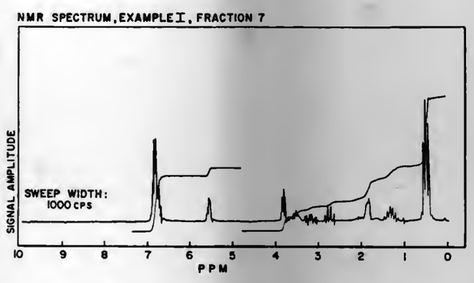
1. The compound 6-amino-4-chromanone oxime.

4,115,406

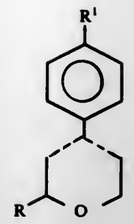
2-ALKYL-4-PHENYL-DIHYDROPYRANS AND PROCESSES FOR AUGMENTING THE ORGANOLEPTIC PROPERTIES OF FOODSTUFFS AND TOBACCO USING ONE OR MORE OF SAID PYRANS

Joaquin Francisco Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn, N.Y.; Denis E. Hruza, Sr., Brick Town, N.J.; John B. Hall, Rumson, N.J., and Manfred Hugo Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

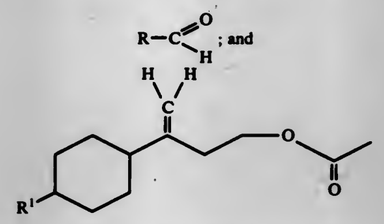
Division of Ser. No. 780,684, Mar. 23, 1977, Pat. No. 4,071,535, which is a division of Ser. No. 676,389, Apr. 12, 1976, Pat. No. 4,071,034. This application Oct. 31, 1977, Ser. No. 847,094
Int. Cl.² C07D *309/04*
U.S. Cl. 260—345.1 **1 Claim**



1. A process for preparing one or more chemical compounds having the generic structure:



wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond and R is one of C_2–C_4 alkyl and R^1 is one of C_1–C_3 alkyl comprising admixing in the presence of a protonic acid catalyst at a temperature in the range of from about 60° C. up to about 120° C. the compounds having the structures:



wherein R is one of C_2–C_4 alkyl and R^1 is one of C_1–C_3 alkyl.

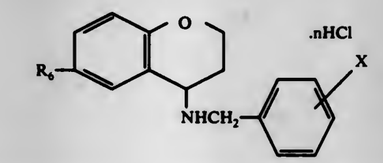
4,115,407

N-BENZYL-4-CHROMANAMINES

George C. Wright, and Marvin M. Goldenberg, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,123
Int. Cl.² C07D *311/02;* A61K *31/35*
U.S. Cl. 260—345.2 **4 Claims**

1. A compound of the formula:



wherein R_6 *is hydrogen or methoxy,* X represents 3-amino, 4-amino or 2-amino-4,5-dimethoxy; and *n* is 0 or 2.

4,115,408

CONVERSION OF POLY(TETRAMETHYLENE ETHER) GLYCOL IN AQUEOUS EFFLUENT STREAM TO TETRAHYDROFURAN

Melvin Charles Baker, Youngstown, N.Y., assignor to E.I. Du-Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 5, 1977, Ser. No. 822,271
Int. Cl.² C07D *307/08*
U.S. Cl. 260—346.11 **5 Claims**

1. A process for removing poly(tetramethylene ether) glycol from dilute aqueous acidic streams thereof comprising the sequential steps of

(a) maintaining the stream in the liquid phase at a temperature above about 150° C for a period of at least about 15 minutes and

(b) separating tetrahydrofuran therefrom.

4,115,409

ALKANOLAMINE DERIVATIVES

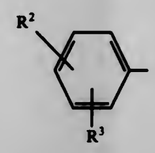
Michael Stewart Large, and Leslie Harold Smith, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 26, 1976, Ser. No. 745,162
Claims priority, application United Kingdom, Dec. 5, 1975, 50039/75
Int. Cl.² C07D *307/54, 333/24*
U.S. Cl. 260—347.3 **6 Claims**

1. An alkanolamine derivative selected from the group consisting of a compound of the formula:

$$R—OCH_2.CHOH.CH_2NH—A—CO—NH—Y—R^1$$

wherein A is alkylene of up to 12 carbon atoms; wherein Y is a direct link, or alkylene of up to 6 carbon atoms or alkyleneoxy of from 2 to 6 carbon atoms; wherein R is aryl of the formula:



wherein R^2 and R^3, may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro, or cyano, alkyl, hydroxyalkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms, or aryl, aryloxy or dialkylamino each of up to 12 carbon atoms; or wherein R^2 and R^3 together form trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,7,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl; and wherein R^1 is furyl or thienyl; and a non-toxic pharmaceutically-acceptable acid-addition salt thereof.

4,115,410

PROCESS FOR MAKING PEROXYCARBOXYLIC ACID

Herbert L. Watts, Brandenburg, Ky., assignor to Olin Corporation, New Haven, Conn.

Filed Sep. 15, 1977, Ser. No. 833,417
Int. Cl.² C07D *301/14;* C07C *179/12*
U.S. Cl. 260—348.25 **18 Claims**

1. In a method of preparing a peroxycarboxylic acid-containing reaction mixture comprising reacting a carboxylic acid with hydrogen peroxide in the presence of an acid catalyst, the improvement characterized by:

eliminating the acid catalyst present in the peroxycarboxylic acid reaction mixture by adding ammonia to said reaction mixture in an amount sufficient to neutralize said catalyst and form an insoluble precipitate in the reaction mixture, and removing said precipitate from the reaction mixture prior to subsequent use of the peroxycarboxylic acid as an oxidant by introducing an underlying aqueous phase beneath said reaction mixture subsequent to introduction of an interface organic solvent barrier layer effective to separate said reaction mixture from said aqueous phase and allowing said precipitate to settle from said reaction mixture through the interface organic solvent barrier layer into the aqueous layer.

16. In a method of preparing an alkylene oxide using a peroxycarboxylic method of indirect oxidation of an alkylene compound comprising reacting a carboxylic acid with hydrogen peroxide in the presence of an acid catalyst to produce a peroxycarboxylic acid reaction mixture and subsequently reacting this reactiion mixture with an unsubstituted, mono-olefinically bonded, lower alkylene to produce an alkylene oxide, the improvement characterized by:

eliminating the acid catalyst present in the peroxycarboxylic acid reaction mixture according to claim 1 by adding ammonia to said reaction mixture in an amount sufficient to neutralize said catalyst and form an insoluble precipitate in the reaction mixture, and removing said precipitate from the reaction mixture, prior to reacting said reaction mixture with the lower alkylene to produce the corresponding alkylene oxide.

4,115,411

CONTINUOUS PROCESS FOR EPOXIDIZING ORGANIC COMPOUNDS CONTAINING OLEFINIC DOUBLE BONDS

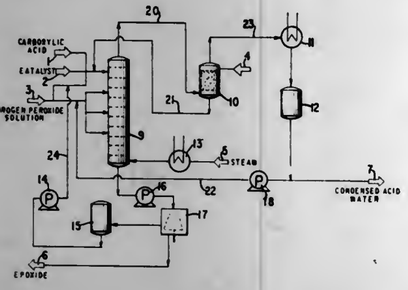
Gerhard Dieckelmann, Hilden; Lutz Jeromin, Düsseldorf-Holthausen, and Günther Tollkötter, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, both of Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,683

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619091

Int. Cl.² C07D *301/16*

U.S. Cl. 260—348.26 **9 Claims**



1. A continuous process for the production of epoxidized olefins which consists essentially of the steps of continuously reacting a mixture consisting of:

(a) an olefinic compound containing at least one olefinic double bond, said compound having at most 30 carbon atoms per double bond and a boiling point at normal pressure of at least 50° C.,

(b) from 0.1 to 1 mol per mol of double bond of said olefinic compound of a carboxylic acid having 1 to 6 carbon atoms and being free of olefinic double bonds,

(c) from 0.001 to 0.01 mol per mol of double bond of said olefinic compound of a water-soluble strong inorganic acid,

(d) from 5 to 7 mols per mol of double bond of said olefinic compound of water, and

(e) sufficient hydrogen peroxide to give during the reaction a peracid content of from 2% to 20% by weight of the aqueous reaction phase,

in a multitray column at a predetermined temperature of from 50° C. to 120° C. and pressures of from 0.1 to 1.1 bar whereby the desired temperature is maintained by water evaporation, wherein said aqueous reaction phase and the gaseous reaction phase are in counterflow, continuously withdrawing the steam from evaporation, continuously withdrawing an aqueous reaction product, separating the epoxidized olefin from the aqueous acid solution, recovering said epoxidized olefin, and continuously recycling said aqueous solution to said reaction, whereby said water content is maintained.

4,115,412

PROCESS FOR DYEING TEXTILES

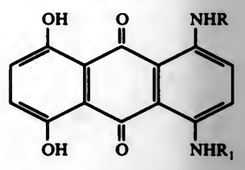
Walter Hohmann, Leverkusen, and Werner Kuhnel, Leverkusen-Steinbuchel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 308,726, Nov. 22, 1972, abandoned. This application Jan. 26, 1977, Ser. No. 762,479

Int. Cl.² C09B *1/50*

U.S. Cl. 260—380 **1 Claim**

1. Anthraquinone disperse dyestuff of the formula:



wherein

R is isopropyl, isobutyl, or isopentyl; and

R_1 is H or R.

4,115,413

TRIARYL-METHANE DYESTUFFS

Roderich Raue, Leverkusen; Willi Eifler, Cologne-Stammheim, Ferdinand Dengel, Wilhelmsfeld, Fed Rep. of Germany, assignor to Knoll AG., Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Nov. 21, 1969, Ser. No. 878,952

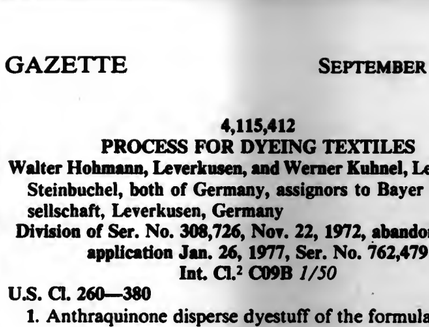
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1968, 1811652; Nov. 28, 1968, 1811336; Nov. 28, 1968, 1811338; Nov. 28, 1968, 1811337

Int. Cl.² C07C *93/14*

U.S. Cl. 260—390 **15 Claims**

1. Triaryl methane dyestuff which is free from sulphonic acid and carboxylic acid groups and is selected from the group consisting of dyestuffs having one of the following four formulae:

I.

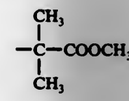


wherein

R is a lower alkyl of 1 to 4 carbon atoms, phenyl or cyclohexyl;

R_1 is hydrogen, a lower alkyl of 1 to 4 carbon atoms, hydroxyethyl, hydroxypropyl, methoxyethyl, chloroethyl or benzyl;

R_2 is a lower alkyl of 1 to 4 carbon atoms, hydroxyethyl, hydroxypropyl, methoxyethyl, chloroethyl, cyanoethyl, dimethylaminoethyl,



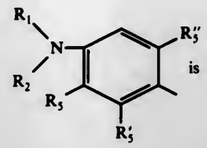
phenyl, ethoxyphenyl, benzyl, or cyclohexyl;

R_1 and R_2, additionally when joined together with the nitrogen atom are

morpholinyl,

3-methylpyrazolinyl,

3-phenylpyrazolinyl; or the radical



1,2,3,3-tetramethyleneindolinyl, 2-methyl-2,3-dihydroindolyl or tetrahydroquinolinyl;

R_3 is hydrogen, phenoxy, chlorine, lower alkyl of 1 to 4 carbon atoms, or cyclohexyl;

R_4 is hydrogen, methyl, ethyl, isopropyl, chlorine, bromine, or methoxy;

R_4' is hydrogen, methyl, ethyl, chlorine, or methoxy;

R_4'' is hydrogen, methyl, isopropyl, or chlorine;

R_5 is hydrogen, methyl, ethyl, methoxy, ethoxy, hydroxy, or methoxycarbonyl;

R_5' is hydrogen, methyl, methoxy, ethoxy, hydroxy, chlorine, or nitro;

R_5'' is hydrogen, methyl, methoxy, or hydroxy;

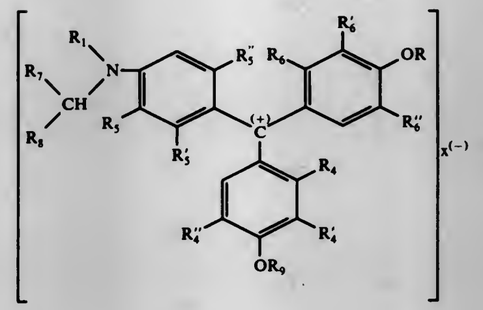
R_6 is hydrogen, methyl, methoxy, or chlorine;

R_6' is hydrogen, methyl, ethyl, isopropyl, methoxy, chlorine, or bromine;

R_6'' is hydrogen, methyl, isopropyl, methoxy, or chlorine;

R_4 together with R_4' or R_5 together with R_5', additionally are benzene; and X is the radical of an anion;

II.



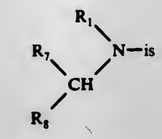
wherein

R is a lower alkyl of 1 to 4 carbon atoms or cyclohexyl;

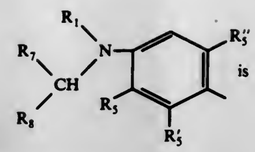
R_1, R_4, R_4', R_4'', R_5, R_5'', R_6, R_6', R_6'', and X have the above mentioned meaning;

R_7 is hydrogen, methyl, or ethyl;

R_8 is methyl, ethyl, n-propyl, phenyl, or methyl substituted by hydroxy, methoxy, chlorine, cyano, dimethylamino; the radical



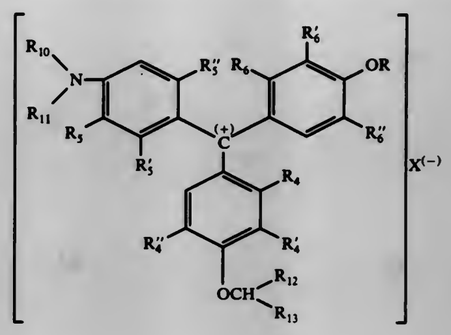
is morpholinyl, 3-methylpyrazolinyl or 3-phenylpyrazolinyl; or the radical



1,2,3,3-tetramethylindolinyl;

R_9 is a lower alkyl of 1 to 4 carbon atoms or cyclohexyl;

III.



wherein

R_4, R_4', R_4'', R_5, R_5', R_5'', R_6, R_6', R_6'', and X have the above mentioned meaning;

R is a lower alkyl of 1 to 4 carbon atoms or cyclohexyl;

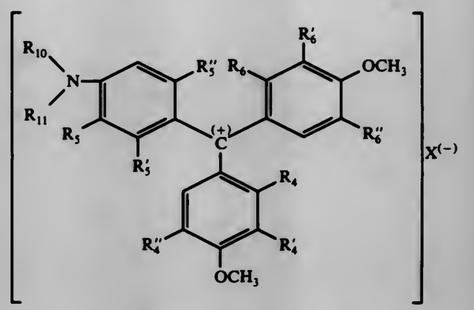
R_{10} is hydrogen or methyl;

R_{11} is methyl, phenyl, ethoxyphenyl, or cyclohexyl;

R_{12} is hydrogen, lower alkyl of 1 to 4 carbon atoms or cyclohexyl;

R_{13} is hydrogen or lower alkyl of 1 to 4 carbon atoms;

IV.



wherein

R_{10}, R_{11}, R_4, R_4', R_4'', R_5, R_5', R_5'', R_6, R_6', R_6'' and X, have the above mentioned meaning and wherein at least one of the radicals R_4, R_4', R_5, R_5', R_6 or R_6' is other than hydrogen.

4,115,414

ESTRAMUSTINE PHOSPHATE ALCOHOL COMPLEXES, THEIR PREPARATION, AND THEIR USE AS INTERMEDIATES IN PURIFICATION OF SAID COMPOUND AND SALTS THEREOF

Sten Krister Kristensson, and Anders Robert Stamvik, both of Helsingborg, Sweden, assignors to Aktiebolaget Leo, Sweden

Filed Mar. 3, 1977, Ser. No. 773,911

Claims priority, application United Kingdom, Mar. 10, 1976, 9451/76

Int. Cl.² C07J *1/00*

U.S. Cl. 260—397.5 **23 Claims**

1. In a process for the purification of Estramustine Phos-

phate or a salt thereof, the step of forming an alcohol complex thereof by dissolving Estramustine Phosphate in the presence of an alcohol having at least three carbon atoms selected from the group consisting of alkanols and cycloalkanols in liquid phase and precipitating the Estramustine Phosphate alcohol complex from solution.

4,115,415

PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOL ETHER ESTER OF ORGANIC CARBOXYLIC ACID

Hiroshi Yoshihara, Yokkaichi; Takashi Tobita, Ichihara; Ryoichi Tomizawa, Ichihara, and Kunio Ishikawa, Chiba, all of Japan, assignors to Nisso Petrochemical Industries Co., Ltd., Tokyo, Japan

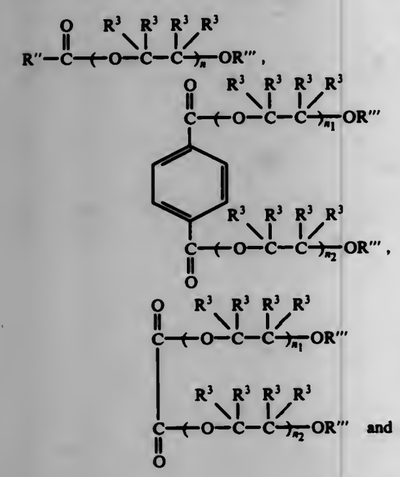
Continuation-in-part of Ser. No. 524,156, Nov. 15, 1974, Pat. No. 4,022,808. This application Oct. 22, 1976, Ser. No. 734,717

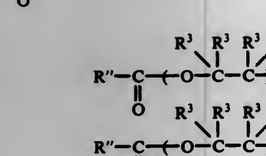
Claims priority, application Japan, Nov. 19, 1973, 48/129937; Nov. 19, 1973, 48/129938; Nov. 6, 1974, 49/127052

Int. Cl.[2] C09F *5/08;* C11C *3/00*

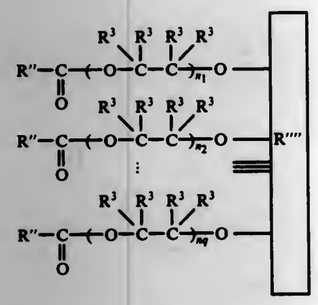
U.S. Cl. 260—410 **1 Claim**

1. A process for the production of an alkylene glycol mono alkyl ester of an organic acid having the general formula selected from the group consisting of:

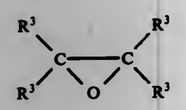




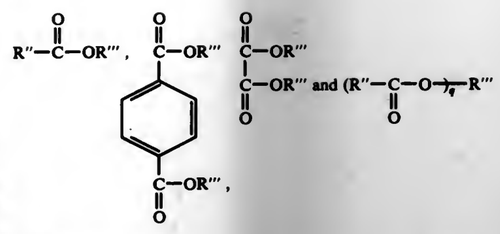
and



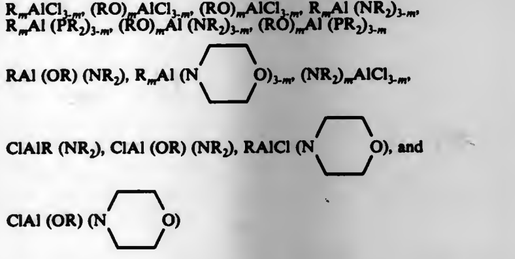
which comprises the step of reacting an alkylene oxide having a general formula



with an ester of an organic carboxylic acid having the general formula selected from the group consisting of



in the presence of from 0.1 to 5 weight percent of a catalyst having the general formula selected from the group consisting of



based on the weight of the ester of organic carboxylic acid, wherein

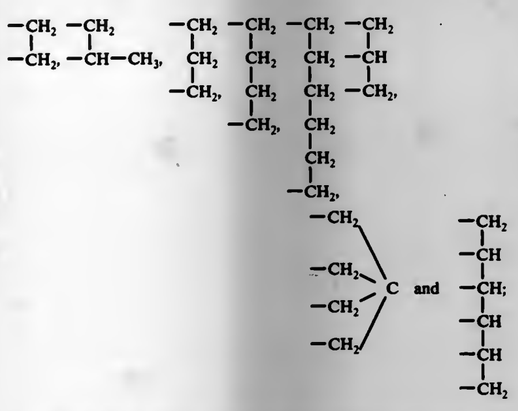
R″ is an unsubstituted hydrocarbon having 1 to 20 carbon atoms or a hydrogen atom;

R^3 is an unsubstituted hydrocarbon having 1 to 10 carbon atoms or a hydrogen atom;

n, n_1, n_2, . . . n_q are positive integer; m is 1 or 2;

R‴ is an unsubstituted hydrocarbon having 1 to 20 carbon atoms;

R⁗ is a hydrocarbon selected from the group consisting of



and R is the same or different unsubstituted hydrocarbon having 1 to 20 carbon atoms or a hydrogen atom.

4,115,416

PROCESS FOR THE MANUFACTURE OF NEW CARBOXYLIC ACIDS

Alberto Rossi, Oberwil, and Christian Egli, Magden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

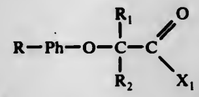
Continuation-in-part of Ser. No. 153,804, Jun. 16, 1971, and Ser. No. 576,397, May 9, 1975, which is a continuation-in-part of Ser. No. 153,804, , which is a continuation-in-part of Ser. No. 98,116, Dec. 14, 1970, abandoned. This application Sep. 9, 1976, Ser. No. 721,737

Claims priority, application Switzerland, May 17, 1974, 6786/74; Oct. 28, 1974, 14402/74

Int. Cl.[2] C07C *69/76;* C11C *1/00*

U.S. Cl. 260—413 **15 Claims**

1. A member selected from the group consisting of compounds of the formula



in which X_1 stands for a member selected from the group consisting of hydroxyl, lower alkoxy and phenyl-lower alkoxy, Ph stands for a member selected from the group consisting of para-phenylene and para-phenylene substituted by a member selected from the group consisting of lower alkyl, halogen and trifluoromethyl, R stands for 1-cycloalkenyl having 6–8 ring carbon atoms R_2 stands for hydrogen and R_1 stands for C_{5-12}-alkyl with straight-chain.

4,115,417

ASYMMETRIC HYDROGENATION CATALYZED BY RHODIUM COMPLEXES OF CHIRAL TERTIARY PHOSPHINES

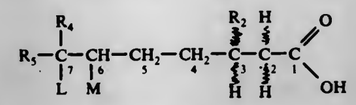
Donald Herman Valentine, Jr., Westfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 623,140, Oct. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 519,442, Oct. 31, 1974, abandoned. This application Aug. 10, 1977, Ser. No. 823,247

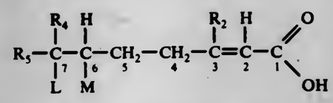
Int. Cl.[2] C11C *3/12;* C07F *9/50;* C07B *1/00*

U.S. Cl. 260—413 **9 Claims**

1. A process for the preparation of optically active alkanoic monocarboxylic acids, having an asymmetric carbon atom at the 3position, of the formula:



wherein R_2 is lower alkyl and R_4 is hydrogen or lower alkyl; R_5 is lower alkyl or lower alkenyl; L and M are hydrogen or may be taken together to form a carbon to carbon double bond and the substituents about said asymmetric carbon atom of alkanoic acid are predominately of the R- or S-configuration; by the enantioselective asymmetric hydrogenation of aliphatic acrylic acids having the formula:



wherein R_2, R_4, R_5, L and M are as defined above, and the double bond at the 2-position of the preceding formula is predominately either cis or trans; said process comprising hydrogenating said acrylic acid in the presence of

(a) a hydrogenation catalyst, wherein said catalyst is a soluble coordination complex of

(i) a rhodium compound selected from the group consisting of μ,μ-dichloro-bis-[cyclooctadiene-rhodium (I)], rhodium trichloride hydrate, rhodium tribromide hydrate, chloro(1,5-hexadiene)rhodium dimer and chloro(bicyclo[2.2.1]hepta-2,5-diene)rhodium dimer; and

(ii) chiral 2-phenyl-2-methoxyethyl-diaryl phosphine, wherein the molar ratio of said phosphine to said rhodium is from about 2:1 to about 10:1;

(b) a solvent selected from the group consisting of lower alkanols and lower alkanols in combination with aromatic hydrocarbons; and

(c) a base selected from the group consisting of alkali metal hydroxides, alkali metal lower alkoxides, lower alkyl amines and cyclic amines.

4. A process according to claim 1 wherein sodium perchlorate is employed as a catalyst stabilizer.

8. A process according to claim 1 wherein said acrylic acid derivative is 3,7,11-trimethyldodeca-2,6,10-trienoic acid.

9. A process according to claim 1 wherein said acrylic acid is 3,7,11-trimethyldodec-2-enoic acid.

4,115,418

1,2-DIAMINOCYCLOHEXANE PLATINUM (II) COMPLEXES HAVING ANTINEOPLASTIC ACTIVITY

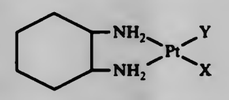
Glen Roy Gale, and Sandra Jan Meischen, both of Charleston, S.C., assignors to Government of the United States of America, Washington, D.C.

Filed Sep. 2, 1976, Ser. No. 719,689

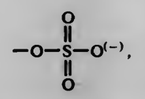
Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R **5 Claims**

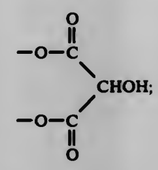
1. An organoplatinum complex having the formula



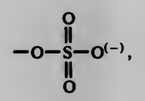
wherein X is a monodentate anionic ligand selected from the group consisting of — ONO_2 and



or together with Y a bidentate anionic ligand of the formula



when X is — ONO_2, Y is — ONO_2 or — OH; and when X is



Y is — $OH_2^{(+)}$.

4,115,419

PROCESS FOR CONVERTING THALLIUM (I) TO THALLIUM (III)

Anthony N. Naglieri, Pine Brook, and Nabil Rizkalla, River Vale, both of N.J., assignors to Halcon International, Inc., New York, N.Y.

Filed Apr. 21, 1977, Ser. No. 789,052
Int. Cl.[2] C01F 5/00
U.S. Cl. 260—429 R 10 Claims

1. In a process for converting a thallium (I) compound to a thallium (III) compound in which the thallium (I) compound is reacted with an organic hydroperoxide in the presence of a Group VIII noble metal, the improvement which comprises effecting said reaction in the presence of a promotor comprising a member selected from the group consisting of heterocyclic tertiary amines, and compounds of metals of Group IA of the Period Table.

4,115,420

CATALYTIC CONVERSION OF THALLIUM (I) TO THALLIUM (III)

William F. Brill, Skillman, N.J., assignor to Halcon International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 740,143, Nov. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 691,115, May 28, 1976, abandoned. This application Apr. 21, 1977, Ser. No. 789,053
Int. Cl.[2] C07F 5/00
U.S. Cl. 260—429 R 13 Claims

1. A process for converting a thallium (I) compound to a thallium (III) compound which comprises reacting the thallium (I) compound with molecular oxygen in a liquid medium having a pH of at least about 1 and in the presence of a Group VIII noble metal.

4,115,421

PROCESS FOR CONVERTING THALLIUM (I) TO THALLIUM (III)

William F. Brill, Skillman, N.J., assignor to Halcon International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 691,114, May 28, 1976, abandoned. This application Nov. 8, 1976, Ser. No. 740,144
Int. Cl.[2] C07F 5/00
U.S. Cl. 260—429 R 6 Claims

1. A process for converting a thallium (I) compound to a thallium (III) compound which comprises reacting the thallium (I) compound with an organic hydroperoxide in a liquid medium in the presence of a Group VIII noble metal.

4,115,422

ANTIBACTERIAL TEXTILE FINISHES UTILIZING ZIRCONYL ACETATE COMPLEXES OF INORGANIC PEROXIDES

Clark M. Welch, Metairie; Gary F. Danna, New Orleans, both of La., and Tyrone L. Vigo, Knoxville, Tenn., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 12, 1977, Ser. No. 787,177
Int. Cl.[2] C07F 7/00
U.S. Cl. 260—429.3 10 Claims

1. A process for the preparation of water-insoluble bacteriostatic complexes of zirconyl acetate with hydrogen peroxide, which process comprises:

(a) mixing an aqueous solution containing about from 10% to 30% hydrogen peroxide with a second aqueous solution containing about from 1% to 40% zirconyl acetate, at a mole ratio of about from 0.1 to 3.0 moles of zirconyl acetate per mole of hydrogen peroxide and a temperature of about from 10° C. to 50° C., to cause water-insoluble complexes to precipitate,

(b) filtering the insoluble complexes free of any excess liquid,

(c) washing the insoluble complexes with water to remove excess reagents,

(d) filtering the insoluble complexes, and

(e) drying the insoluble complexes.

4,115,423

PROCESS FOR PRODUCING METAL HALIDE-AMIDE REACTION PRODUCT

Walter T. Bulson; Peter A. Christie, and James R. Jones, all of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sep. 14, 1976, Ser. No. 723,266
Int. Cl.[2] C07F 7/28
U.S. Cl. 260—429.5 18 Claims

1. A process for the preparation of a metal halide-amide reaction product which comprises

(1) reacting in a water-immiscible inert liquid medium a halide of titanium, zirconium or hafnium with at least one amide having at least two replaceable hydrogen atoms selected from the group consisting of urea, a mono- or di-substituted urea, thiourea, guanidine or semicarbazide, to obtain a reaction product therebetween;

(2) hydrolyzing the reaction product obtained in step (1) above with water to form an aqueous solution of said reaction product;

(3) partially neutralizing the aqueous solution of said reaction product obtained in step (2) with a biacarbonate; and

(4) recovering the metal halide-amide reaction product obtained.

4,115,424

ZEOLITE CATALYST

Mark L. Unland, and George E. Barker, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1976, Ser. No. 753,041
Int. Cl.[2] B01J 21/02, 27/34, 29/06
U.S. Cl. 252—432 12 Claims

1. A catalyst comprising a crystalline aluminosilicate zeolite of the faugasite structure with SiO_2/Al_2O_3 mole ratio in the range of about 2 to about 8 and including potassium, rubidium or cesium cations or combinations thereof, and containing boron or phosphorus or combinations thereof.

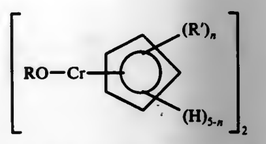
4,115,425

CYCLOPENTADIENYL CHROMIUM OXIDES

Frederick John Karol, Belle Mead, N.J.; Chisung Wu, Beaconsfield, Canada; Walter Thomas Reichle, Warren, and Norma Jean Maraschin, South Bound Brook, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 21, 1977, Ser. No. 779,690
Int. Cl.[2] C07F 11/00
U.S. Cl. 260—438.5 R 8 Claims

1. Cyclopentadienyl chromium alkyl/aryl oxides or siloxides having the formula:



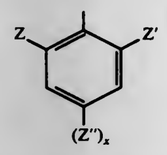
wherein n is an integer having values of 0 to 5, R' is alkyl having 1 to 10 carbons and R is a monovalent sterically hindered radical selected from the group consisting of:



wherein each of Y, Y' and Y'' is alkyl having 1 to 18 carbons or aryl having 6 to 12 carbons,



wherein Y, Y' and Y'' are as defined above, and



wherein Z and Z' are secondary or tertiary alkyls containing 3 to 5 carbon atoms, Z'' is an alkyl group containing 1 to 6 carbon atoms and x is an integer having values of 0 to 1.

4,115,426

METHOD FOR THE PREPARATION OF DIALKYLCHLOROSILANES

Takeshi Hiiro; Hideki Sakurai, both of Sendai, and Fumihiko Kondo, Kawagoe, all of Japan, assignors to Kawaken Fine Chemicals Co., Ltd. and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Jan. 24, 1978, Ser. No. 871,848
Claims priority, application Japan, Feb. 2, 1977, 52/10373
Int. Cl.[2] C07F 7/12
U.S. Cl. 260—448.2 E 8 Claims

1. A method for the preparation of a dialkylchlorosilane which comprises reducing a dialkyldichlorosilane with sodium borohydride in a solvent capable of dissolving sodium borohydride.

4,115,427

METHOD OF PREPARING SILICON-NITROGEN COMPOUNDS

Hans-Joachim Kotzsch; Rudiger Draese, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Aug. 29, 1977, Ser. No. 828,804
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639286
Int. Cl.[2] C07F 7/10
U.S. Cl. 260—448.2 E 18 Claims

1. A process for preparing a silicon-nitrogen compound of the formula

$(R_3Si)_nNR'_{3-n}$ or

$R_2Si(NR'_2)_2$ or RS: $(NR'_2)_3$ or

cyclic $—R_2SiNR'—_x$

wherein

n is 1 or 2 or 3,

R' is a hydrogen atom, an alkyl moiety of 1 to 8 carbon atoms or an aryl moiety,

R is an alkyl moiety of 1 to 20 carbon atoms or an aryl moiety,

x is 3 or 4

which comprises contacting a hydrogen silane of the formula

$R_{4-y}SiH_y$

(1) wherein y is 1 or 2 or 3 and R has the above described meaning with ammonia or an amine of the formula

$NR'_{3-n}H_n$

wherein R' and n have the above-described meanings in the presence of a catalyst under conditions wherein hydrogen is split-off.

(2)

4,115,428

CATALYST AND PROCESS FOR PRODUCING POLYHYDRIC ALCOHOLS AND DERIVATIVES

José Luis Vidal, Charleston, W. Va.; Zoltan Csaba Mester, North Tonawanda, N.Y., and Wellington Epler Walker, Sissonville, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 29, 1977, Ser. No. 838,016
Int. Cl.[2] C07C 27/06, 29/16
U.S. Cl. 260—449 L 14 Claims

1. The process of making an alkane polyol (s) which comprises reacting in a homogeneous liquid phase a mixture of hydrogen and oxides of carbon in the presence of a rhodium carbonyl carbido cluster at a pressure between about 4000 to about 16,000 pounds per square inch absolute and at a temperature of between about 240° C. and about 280° C. sufficient to form such alkane polyol.

4,115,429

LOW-TEMPERATURE STORAGE STABLE LIQUID DIPHENYLMETHANE DIISOCYANATES

Helmut F. Reiff, and Richard S. Pantone, both of New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1977, Ser. No. 778,896
Int. Cl.[2] C07C 119/048
U.S. Cl. 260—453 SP 18 Claims

1. A diisocyanate compound which is both stable and liquid at −5° C for at least 48 hours, comprising the reaction product of:

(a) a diphenylmethane diisocyanate containing at least 20 percent by weight of the 2,4'-isomer, and

(b) a polyoxyethylene glycol having a molecular weight of from 150 to 1500.

4,115,430

2-METHYL-3-NITROBENZOIC ACID (2'-CYANOETHYL) ESTER

Otto Rohr, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 594,471, Jul. 9, 1975, Pat. No. 4,048,217. This application Jun. 29, 1977, Ser. No. 811,344
Claims priority, application Switzerland, Jul. 15, 1974, 9702/74
Int. Cl.[2] C07C 121/66
U.S. Cl. 260—465 D 1 Claim

1. 2-Methyl-3-nitrobenzoic acid (2'-cyanoethyl) ester.

4,115,431

SUBSTITUTED DIMETHYL DIHYDROXY BENZENE AND CYCLOHEXADIENE COMPOUNDS AND USES THEREOF FOR AUGMENTING OR ENHANCING THE TASTE AND/OR AROMA OF CONSUMABLE MATERIALS INCLUDING TOBACCOS, PERFUMES AND PERFUMED ARTICLES

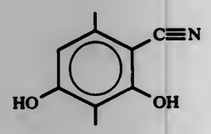
John B. Hall, Rumson; Mark A. Sprecker, Sea Bright, both of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Frederick Louis Schmitt, Holmdel, and Joaquin F. Vinals, Red Bank, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 26, 1977, Ser. No. 800,889

Int. Cl.[2] C07C *121/52*

U.S. Cl. 260—465 F **1 Claim**

1. A nitrile compound having the structure:



4,115,432

METHOD FOR MAKING BASICALLY-SUBSTITUTED PHENYLACETONITRILES

Ferdinand Dengel, Wilhelmsfeld, Fed. Rep. of Germany, assignor to Knoll AG., Ludwigshafen am Rhein, Fed. Rep. of Germany

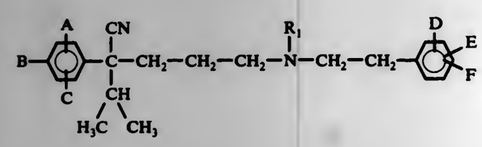
Filed Jul. 5, 1977, Ser. No. 812,898

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631222

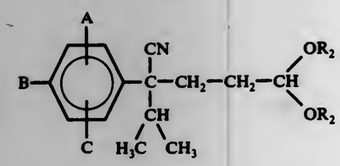
Int. Cl.[2] C07C *121/78*

U.S. Cl. 260—465 E **2 Claims**

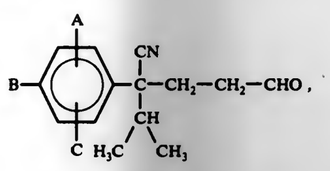
1. A method for making a basically-substituted phenylacetonitrile of the formula



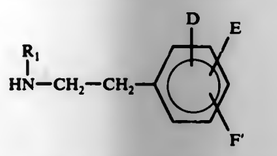
wherein A, C, D, E, F are hydrogen, halogen, or lower alkoxy, B is halogen or lower alkoxy, and R_1 is lower alkyl, which method comprises hydrolyzing a nitriloaldehyde acetal of the formula



wherein A, B and C have their aforementioned meanings and R_2 is lower alkyl, with aqueous acid to obtain a nitriloaldehyde of the formula



and then subjecting said nitriloaldehyde to a hydrogenating condensation with an amine of the formula



wherein D, E, F and R_1 have their aforementioned meanings.

4,115,433

CATALYST AND PROCESS FOR PRODUCING POLYHYDRIC ALCOHOLS AND DERIVATIVES

Lowell Alan Cosby; Rocco Anthony Fiato, and Jose Luis Vidal, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 840,866

Int. Cl.[2] C07C *27/06, 29/16*

U.S. Cl. 260—449 L **17 Claims**

1. The process of making an alkane polyol(s) which comprises reacting in a homogeneous liquid phase a mixture of hydrogen and oxides of carbon in the presence of a rhodium carbonyl sulfur cluster compound at a pressure between about 1,000 to about 50,000 pounds per square inch absolute and at a temperature of between about 210° C. and about 320° C. sufficient to form such alkane polyol(s).

4,115,434

CATALYSTS AND PROCESSES FOR PREPARING UNSATURATED NITRILES

Jacques Marion, and Christian Pralus, both of Lyons, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Apr. 22, 1977, Ser. No. 789,869

Int. Cl.[2] B01J *23/84;* C07C *120/02*

U.S. Cl. 260—465.3 **14 Claims**

1. A catalyst for the production of unsaturated nitriles by ammoxidation of olefins, the catalyst consisting essentially of a combination of the oxides of antimony, tin, zirconium, copper, and tungsten according to the formula:

$$Sb_a Sn_b Zr_c Cu_d W_e O_f$$

where a is from 1 to 10, b is from 1 to 10, c is 1, d is from 0.01 to 5, e is from 0.01 to 0.05, and f is the number of oxygen atoms in combination with the oxygenated compounds.

6. A process for the ammoxidation of olefins to produce the corresponding nitriles, which process comprises contacting a gaseous mixture of the olefin, an oxygen-containing gas, and ammonia with the catalyst of claim 1 to convert the olefin to the nitrile, and recovering the nitrile so produced.

4,115,435

BISULFITE TERMINATED OLIGOMERS AS DISPERSING AGENTS

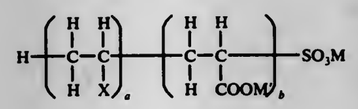
John T. O'Brien, Cheshire, and Woodrow W. White, Oxford, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 493,382, Jul. 31, 1974, Pat. No. 4,004,939, which is a continuation-in-part of Ser. No. 456,397, Mar. 29, 1974, abandoned. This application Sep. 23, 1976, Ser. No. 726,034

Int. Cl.[2] C07C *121/38, 143/12, 143/02*

U.S. Cl. 260—465.4 **2 Claims**

1. A dispersing agent for solid particulate matter in an aqueous system consisting of an oligomer having the general formula



wherein M is a sodium cation; X is selected from the group consisting of —CN and —$COOCH_3$; M' is a sodium cation; $a + b$ is about 4 to about 250 and $a/a+b$ is 0.0.

4,115,436

PROCESS FOR PRODUCING AMMONIUM P-STYRENESULFONATE

Kanzi Katsuragawa; Tatsuo Hattori; Keiichi Kihara, and Hanzo Tamabayashi, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 608,701, Aug. 28, 1975, Pat. No. 4,061,669. This application Jul. 8, 1977, Ser. No. 813,846

The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

Int. Cl.[2] C07C *143/24*

U.S. Cl. 260—505 N **4 Claims**

1. A process for producing ammonium p-styrenesulfonate which comprises reacting an amine having more than 7 carbon atoms and less than 600 MW, and a mineral acid or a mineral acid salt of an amine having more than 7 carbon atoms and less than 600 MW with an alkali metal p-styrenesulfonate in an aqueous or an aqueous organic solvent to produce an amine salt of p-styrenesulfonic acid as a precipitate in said aqueous solvent or a solution in said aqueous organic solvent and then reacting ammonia with said amine salt as the precipitate or the solution.

4,115,437

SULFONATED PRODUCT OF BUTADIENE OR ISOPRENE OLIGOMER AND THE PRODUCTION THEREFOR

Yoshinobu Matsuda, Ibaraki; Yukio Suzuki, Toyonaka, and Seimei Yasui, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

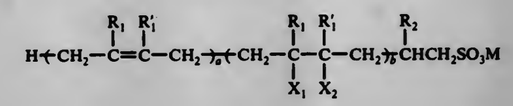
Filed Sep. 15, 1977, Ser. No. 833,654

Claims priority, application Japan, Oct. 28, 1976, 51-130135; Nov. 11, 1976, 51-135934

Int. Cl.[2] C07C *143/16;* C11D *1/14*

U.S. Cl. 260—513 R **8 Claims**

1. A compound of the formula:



wherein one of R_1 and R_1' is hydrogen or methyl and another one is hydrogen; R_2 is hydrogen or methyl; one of X_1 and X_2 is —SO_3M and another one is hydrogen; a and b are each an integer satisfying the conditions: $n = a + b$, $2 \leqq n \leqq 40$ and $0 \leqq b$; M is hydrogen, Na, K, Li or —$NR_3R_4R_5R_6$; and R_3, R_4, R_5 and R_6 are each hydrogen or an alkyl having 1 to 6 carbon atoms.

4,115,438

BICYCLOALKYL DERIVATIVES OF PROSTAGLANDINS 11-DEOXY-PGE_2 ACIDS AND ESTERS

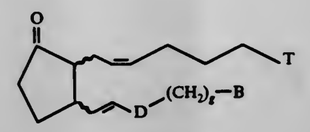
Warren Dexter Woessner; Charles John Sih; Harold Clinton Kluender; Henry Clifford Arndt, and William Gerard Biddlecom, all of Madison, Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 657,221, Feb. 11, 1976, Pat. No. 4,073,463. This application Jul. 21, 1977, Ser. No. 817,622

Int. Cl.[2] C07C *177/00*

U.S. Cl. 562—498 **7 Claims**

1. A compound having the formula



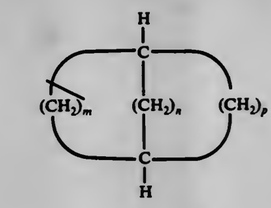
wherein:

g is an integer having a value of from 0 to 10;

D is a R-hydroxymethylene or S-hydroxymethylene radical;

T is an alkoxycarbonyl having from 1 to 3 carbon atoms inclusive in the alkyl chain, carboxyl or pharmacologically acceptable nontoxic carboxy salts; and

B is a bicycloalkyl radical of the formula



where m and p are integers having a value of from 1 to 4; n is an integer having a value of from 0 to 4 such that n is not 1 when m and p are both 2; and the sum of m, n and p is greater

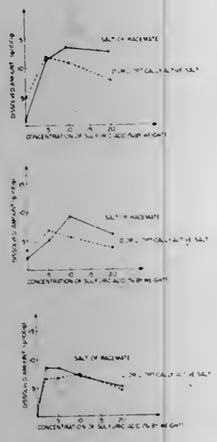
than or equal to 3 and where the point of attachment of the alkyl chain $(CH_2)_g$ to the bicycloalkyl radical is in the $(CH_2)_m$ bridge or bridgehead position.

4,115,439

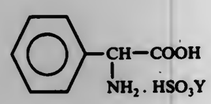
PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE α-PHENYLGLYCINE AND INTERMEDIATES THEREOF

Shigeru Aoki, Tokyo; Yasuhisa Tashiro, Yokohama; Yuzo Aboshi, Tokyo; Toshiro Narita, Shima, and Tadashi Shirai, Musashino, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1976, Ser. No. 670,420
Claims priority, application Japan, Mar. 27, 1975, 50-36070
Int. Cl.² C07C *101/04, 143/26*
U.S. Cl. 562—402 **3 Claims**



1. A process for producing optically active α-phenylglycine which comprises dissolving a DL-α-phenylglycine sulfonate having the general formula:



wherein Y represents a member selected from the group consisting of phenyl, p-ethylphenyl and m-xylyl in a 1 wt % to 50 wt % sulfuric acid solution to form a supersaturated solution thereof, adding at least 0.1% of seed crystals of an optically active D- or L-α-phenylglycine sulfonate to selectively crystallize the corresponding salt of the optically active isomer, separating the crystallized salt at o° -50° C, and liberating the sulfonic acid portion from the salt to obtain the optically active isomer.

4,115,440

SELENIUM CATALYZED DECOMPOSITION OF PEROXIDE INTERMEDIATES RESULTING FROM THE AUTOXIDATION OF ACROLEIN AND METHACROLEIN

Ming Nan Sheng, and Jar-lin Kao, both of Cherry Hill, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 19, 1977, Ser. No. 788,722
Int. Cl.² C07C *51/32, 57/04*
U.S. Cl. 562—533 **17 Claims**

1. A process for the preparation of acrylic acid or methacrylic acid which comprises catalytically decomposing at a temperature in the range of from about 0° C. to about 100° C. in the presence of a selenium catalyst selected from the group consisting of elemental selenium, selenium dioxide, trioxide, sulfide, disulfide, chloride, oxychloride and bromide, selenious acid, selenic acid, aluminum selenide, sodium selenide, sodium selenite, sodium selenate, diethylselenite, diethyldiselenide, dioctylselenide, dioctyldiselenide, diphenylselenide, diphenyldiselenide and phenylseleninic acid, or mixtures thereof, the corresponding peracrylic acid and acrolein monoperacrylate or permethacrylic acid and methacrolein monopermethacrylate intermediate peroxide compounds formed during the liquid phase autoxidation of acrolein or methacrolein, or contained in an oxidate solution derived from and after said liquid phase autoxidation, and recovering the acrylic or methacrylic acid.

4,115,441

CATALYST COMPOSITIONS ESPECIALLY USEFUL FOR PREPARATION OF UNSATURATED ACIDS

Wilfrid G. Shaw, Lyndhurst, and David B. Terrill, Bedford, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 686,352, May 14, 1976. This application Dec. 30, 1976, Ser. No. 755,708
Int. Cl.² C07C *57/04*
U.S. Cl. 562—534 **8 Claims**

1. The process for the production of acrylic acid or methacrylic acid from acrolein and methacrolein, respectively, with molecular oxygen optionally in the presence of steam at a temperature of about 200° to about 500° C employing a catalyst having the empirical formula:

$$Mo_aV_bGe_cX_dY_eO_f$$

wherein X can be one or more of the elements selected from the group consisting of iron, nickel, thallium, phosphorus, indium, bismuth, and the rare earths; and

Y can be one or more of the elements of the group consisting of copper, tin, chromium, manganese, magnesium, aluminum, titanium, arsenic, niobium, tantalum, potassium, rubidium, cesium, tungsten, uranium, cobalt, silver, gallium, antimony, and zinc; and

wherein the number of atoms of each element present is represented by *a* through *f*,

wherein

a is a number from 6 to 18;

b is a number from 0.1 to 10;

c is a number from 0.1 to 6;

d is a number from 0.01 to 5;

e is a number from 0 to 5;

f is a number that satisfies the valence requirements of the other elements present.

4,115,442

OXIDATION OF BUTENE

William E. Slinkard, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 10, 1977, Ser. No. 823,353
Int. Cl.² C07C *51/32*
U.S. Cl. 562—548 **10 Claims**

1. A process for the production of acetic acid by vapor phase oxidation of a butene comprising reacting, in the vapor phase and at elevated temperatures, said butene with molecular oxygen in the presence of a catalyst consisting essentially of a composition of the empirical formula:

$$V_aCe_bMe_cO_d$$

in which formula V is vanadium, Ce is cerium, O is oxygen, and Me is at least one member selected from the group consisting of bismuth, zinc, tin and titanium, and wherein the atomic ratio of the elements in said composition is such that when *a* is 10, *b* is from about 2 to 15, *c* is from about 2 to 15, *d* is a number of at least 20 such that the valence requirements of V, Ce and Me are satisfied, and the sum of *b* and *c* does not exceed about 20.

4,115,443

PROCESS OF MAKING D,L-LITHIUM PANTOATE AND RESOLVING THE RACEMIC MIXTURE INTO ITS OPTICALLY ACTIVE ISOMERS

Joachim Schmidt; Christian Welgelt; Wolfgang Bamberg, and Wolfgang Schneider, all of Jena, Democratic Rep. of Germany, assignors to Veb Jenapharm, Jena, Democratic Rep. of Germany

Continuation of Ser. No. 540,249, Jan. 10, 1975, abandoned, which is a division of Ser. No. 407,254, Oct. 17, 1973, abandoned. This application Mar. 25, 1976, Ser. No. 670,437
Int. Cl.² C07C *59/04*
U.S. Cl. 562—402 **4 Claims**

1. Optically active D-lithium pantoate.

4,115,444

PROCESS FOR PREPARING CARBOXYLIC ACID ANHYDRIDES

Nabil Rizkalla, River Vale, N.J., assignor to Halcon International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 556,750, Mar. 10, 1975. This application Feb. 5, 1976, Ser. No. 654,661
Int. Cl.² C07C *53/12, 53/26, 63/04*
U.S. Cl. 260—549 **26 Claims**

1. In a process for the preparation of an anhydride of a monocarboxylic acid by reacting carbon monoxide, a halide which is an iodide or bromide and a compound selected from the group consisting of a carboxylate ester and a hydrocarbyl ether, under substantially anhydrous conditions in the presence of a Group VIII noble metal catalyst the improvement which comprises carrying out the reaction in the presence of a multiple promoter comprising (1) at least one metal of Group VIB or a non-noble metal of Group VIII and (2) an organo-nitrogen compound or an organo-phosphorus compound wherein the nitrogen and the phosphorus are trivalent.

4,115,445

PROCESS FOR THE PREPARATION OF TRISUBSTITUTED UREAS

Colin John Hearsey, Surbiton, England, assignor to Quimco GmbH, Zurich, Switzerland

Division of Ser. No. 346,480, Mar. 30, 1973, Pat. No. 3,911,006. This application Feb. 12, 1975, Ser. No. 549,146
Claims priority, application United Kingdom, Apr. 5, 1972, 15677/72; Apr. 18, 1972, 17872/72; May 5, 1972, 21063/72
Int. Cl.² C07C *127/15*
U.S. Cl. 260—553 A **4 Claims**

1. A one-step process for preparing a trisubstituted urea of the formula

$$R(NHCONR'R'')_n$$

which comprises reacting a compound having the formula

which comprises reacting a compound having the formula

$$R(NO_2)_n$$

with a secondary amine of the formula

$$R'R''NH$$

and carbon monoxide and sulfur or carbonyl sulfide at super atmospheric pressure in an inert solvent at a temperature within the range 80°-200° C., wherein R is an unsubstituted mono, di- or polyvalent aromatic radical or is substituted only with groups which are non-reactive under the reaction conditions, R' and R'' are monovalent aliphatic radicals or R' and R'' together represent a divalent aliphatic radical, and *n* is an integer.

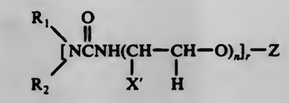
4,115,446

POLYETHER POLYUREIDES

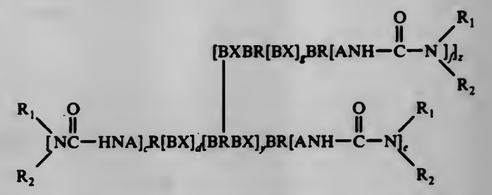
Heinz Schulze, Austin, Tex., assignor to Texaco Development Corp., New York, N.Y.

Filed Nov. 22, 1976, Ser. No. 743,879
Int. Cl.² C07C *127/15;* C08G *65/32*
U.S. Cl. 260—553 R **15 Claims**

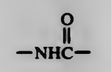
1. A polyether polyureide comprising a substituted ureido-terminated polyoxyalkylene selected from the group consisting of a compound of the formula:



wherein R_1 and R_2 are, independently, hydrogen or an aliphatic or aromatic monovalent hydrocarbon radical, provided at least one R_1 or R_2 is not hydrogen; X' is hydrogen, a methyl radical or an ethyl radical; Z is a hydrocarbon radical having 2 to 5 carbon atoms forming from 2 to 4 external ether linkages; *n* is a number from 1 to about 20; and, *r* is a number from 2 to 4; and a compound of the formula:



wherein R_1 and R_2 are as defined above; A is a polyoxyalkylene radical containing from about 1 to 17 oxyalkylene groups; B is a polyoxyalkylene amino radical containing from about 1 to 17 oxyalkylene groups; R is a hydrocarbon radical having from 2 to 5 carbon atoms and forming from 2 to 4 oxycarbon linkages with A and B; X is a C=O radical, a C=S radical or a radical derived from a difunctional isocyanate having two



groups; *c* and *d* are from 1 to 3 chosen such that their sum is from 1 to 4; *e* is a number from 1 to 3, *f* is a number from 1 to 3, *g* is a number from 1 to 3, *y* is a number from 0 to about 5, and *z* is a number from 0 to 2.

4,115,447

CARBAMYLGUANIDINE ANTIMICROBIAL COMPOUNDS

Julius Diamond, Morris Plains, N.J., assignor to Cooper Laboratories, Inc., Parsippany, N.J.

Division of Ser. No. 546,549, Feb. 3, 1975, Pat. No. 4,022,962. This application Jan. 7, 1977, Ser. No. 757,577
Int. Cl.² C07C *127/15;* A61K *31/17*
U.S. Cl. 260—553 R **14 Claims**

1. A compound having the formula Z—B—Y—B'—Z .nHA wherein Y is a bivalent organic radical selected from the group consisting of C_2–C_{12} alkylene, C_5–C_{12} cycloalkylene, C_5–C_{12} cycloalkylenebis(loweralkyl), C_6–C_{12} arylene and loweralkylarylene, C_7–C_{12} aryleneloweralkyl, and C_8–C_{12} arylenebis(-loweralkyl); B is a carbamylguanidino group; B' is B; and Z is selected from the group consisting of C_1–C_{12} alkyl; C_3–C_{12} alkenyl; C_3–C_{12} alkynyl; C_3–C_{12} cycloalkyl, C_4–C_{12} cycloalkylalkyl; and pharmacologically acceptable addition salts of these compounds with acids represented by nHA wherein $n=0, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}$, 1, and 2 and HA is an inorganic or organic acid.

4,115,448
CARBAMYLGUANIDINE ANTIMICROBIAL COMPOUNDS

Julius Diamond, Morris Plains, N.J., assignor to Cooper Laboratories, Inc., Parsippany, N.J.

Division of Ser. No. 546,549, Feb. 3, 1975, Pat. No. 4,022,962. This application Jan. 7, 1977, Ser. No. 757,600

Int. Cl.² C07C *127/19;* A61K *31/35*

U.S. Cl. 260—553 A **10 Claims**

1. A compound having the formula Z—B—Y—B'—Z .*n*HA wherein Y is a bivalent organic radical selected from the group consisting of C_5–C_{12} cycloalkylene, C_5–C_{12} cycloalkylenebis (loweralkyl), C_6–C_{12} arylene and loweralkylarylene, C_7–C_{12} arylenebis (loweralkyl), and C_8–C_{12} arylenebis (loweralkyl); B is a carbamylguanidino group; B' is B; and Z is selected from the group consisting of C_6–C_{14} aryl; C_7–C_{14} aralkyl and C_6–C_{14} aryl and aralkyl substituted with one or more radicals selected from the group consisting of loweralkyl, trifluoromethyl, loweralkoxy, trifluoromethoxy, loweralkylthio, halo, loweralkylsulfonyl, fluorosulfonyl and alkylsulfinyl; and pharmacologically acceptable addition salts of these compounds with acids represented by nHA wherein n=0, ½, ⅓, ¼, 1, and 2 and HA is an inorganic or organic acid.

4,115,449
PROCESS FOR PREPARING A UREA SOLUTION FROM AMMONIA AND CARBON DIOXIDE

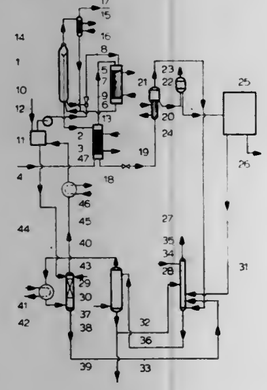
Andreas J. Biermans, Urmond, and Kees Jonckers, Born, both of Netherlands, assignors to Unie Van Kunstmestfabrieken, B.V., Utrecht, Netherlands

Filed Nov. 1, 1977, Ser. No. 847,653

Claims priority, application Netherlands, Nov. 3, 1976, 7612162

Int. Cl.² C07C *126/02*

U.S. Cl. 260—555 A **6 Claims**



1. In a process for the preparation of urea from ammonia and carbon dioxide in a urea synthesis zone at an elevated temperature and pressure, having at least one ammonium carbamate decomposition zone wherein a urea containing liquid process stream, also containing unconverted ammonium carbamate, is expanded to a pressure of between about 1 and 25 kg/cm² absolute and heated thereby decomposing at least a portion of said ammonium carbamate and yielding a gas mixture containing ammonia, carbon dioxide and water vapor, the improvement comprising the steps of

introducing said gas mixture into a carbon dioxide separation column, along with sufficient diluting water to form, in the bottom of said column, a first residual liquid phase containing ammonia, carbon dioxide and between about 65 and 96 percent by weight water, and separately removing therefrom a first off-gas of carbon dioxide substantially free of ammonia, and said first residual liquid phase, introducing said first residual liquid phase into a desorption column and separately removing therefrom a second off-gas containing ammonia, carbon dioxide and water vapor, and a second residual liquid phase containing water substantially free of ammonia and carbon dioxide,

introducing said second off-gas into an ammonia separation column and separately removing therefrom a third off-gas of ammonia substantially free of carbon dioxide and water vapor and a third residual liquid phase containing ammonia, carbon dioxide and water, and

recycling said third off-gas to said urea synthesis zone, and introducing said third residual liquid phase into said carbon dioxide separation column, the water content of such third residual liquid phase constituting a portion of said diluting water,

wherein said ammonia separation column, desorption column and carbon dioxide separation column are all operated at substantially the same pressure of between about 1 and 25 kg/cm² absolute.

4,115,450
BIS-AMINOARYLETHANE AMIDE COMPOUNDS

Robert Garner, Bury, England, and Jean Claude Petitpierre, Kaiseraugst, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 651,107, Jan. 21, 1976, abandoned. This application Mar. 3, 1977, Ser. No. 773,988

Claims priority, application Switzerland, Jan. 27, 1975, 950/75

Int. Cl.² C07C *103/28, 103/76*

U.S. Cl. 260—558 A **5 Claims**

1. A bis-aminoarylethane compound of the formula

(1)

wherein

R_1 and R_2, which can be the same or different, represent hydrogen, alkyl of at most 12 carbon atoms which is unsubstituted or substituted by halogen, alkoxyalkyl of 2 to 8 carbon atoms, benzyl or phenyl,

R_3 represents hydrogen, halogen, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

each of X and Y independently represents carboxy anilide groups whose benzene nuclei are unsubstituted or substituted by halogen, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and

Y is also alkyl of 1 to 4 carbon atoms, acyl of 2 to 8 carbon atoms or phenyl.

4,115,451
BENZENE-1,3,5-TRIS-ACETOXIME AND THE PROCESS FOR MAKING PHLOROGLUCINOL THEREWITH

Hans Zengel, Kleinwallstradt, and Manfred Bergfeld, Erlenbach, Main, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 796,109, May 12, 1977, Pat. No. 4,071,555. This application Aug. 11, 1977, Ser. No. 823,789

Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621431

Int. Cl.² C07C *131/00*

U.S. Cl. 260—566 A **2 Claims**

1. A process for making benzene-1,3,5-tris-acetoxime comprising reacting s-triacetyl benzene with hydroxylamine hydrochloride at a molar ratio of the hydrochloride to s-triacetyl benzene of about 3 to 1, in the presence of a metal hydroxide selected from the group consisting of alkali metal hydroxides and alkaline earth hydroxides, the metal hydroxide being present at a molar ratio of said hydroxide to s-triacetyl benzene of about 3 to 1, in a solvent selected from the group consisting of ethylene glycol, diethylene glycol, butanediol-1,4, propane diol and glycerin, and at a temperature of from about 70° to about 170° C, for a length of time sufficient to form a substantial amount of benzene-1,3,5-tris-acetoxime.

4,115,452
4,5, SUBSTITUTED CYCLOPENTANE-1,3-DIOLS

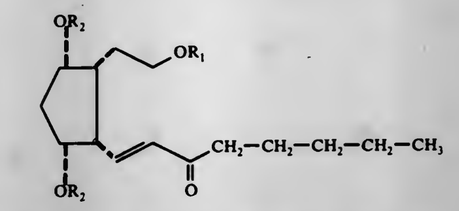
Naresh Kumar Chadha, Nutley; John Joseph Partridge, Jr., and Milan Radoje Uskokovic, both of Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 623,205, Oct. 16, 1975, abandoned, which is a division of Ser. No. 434,539, Jan. 18, 1974, Pat. No. 3,933,382, which is a division of Ser. No. 331,931, Feb. 12, 1973, abandoned. This application Sep. 19, 1977, Ser. No. 834,732

Int. Cl.² C07C *177/00*

U.S. Cl. 260—586 R **2 Claims**

1. An optically active compound of the formula



wherein $-OR_1$ forms a conventional hydrolyzable ether protecting group convertible to hydroxy by hydrolysis and $-OR_2$ forms hydroxy or hydroxy protected by a conventional ester group convertible to hydroxy by hydrolysis

or its optically active antipode.

4,115,453
BICYCLOALKYL DERIVATIVES OF PROSTAGLANDINS PGE_1 ALCOHOLS

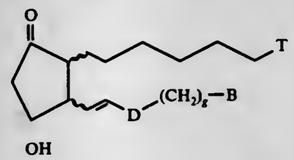
Warren Dexter Woessner; Charles John Sih; Harold Clinton Kluender; Henry Clifford Arndt, and William Gerard Biddlecom, all of Madison, Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 657,221, Feb. 11, 1976, Pat. No. 4,074,063. This application Jul. 22, 1977, Ser. No. 818,057

Int. Cl.² C07C *49/46*

U.S. Cl. 260—586 G **5 Claims**

1. A compound having the formula



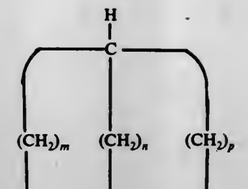
wherein

g is an integer having a value of from 0 to 10;

D is a R-hydroxymethylene or S-hydroxymethylene radical;

T is a hydroxymethyl radical; and

B is a bicycloalkyl radical of the formula



where *m* and *p* are integers having a value of from 1 to 4; *n* is an integer having a value of from 0 to 4 such that n is not 1 when *m* and *p* are both 2; and the sum of m, n and p is greater than or equal to 3 and where the point of attachment of the alkyl chain $(CH_2)_g$ to the bicycloalkyl radical is in the $(CH_2)_m$ bridge or bridgehead position.

4,115,454
2-DECARBOXY-2-HYDROXY-METHYL-5-OXA-ω-PHENYL-PGD_1 COMPOUNDS

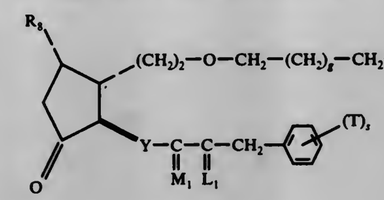
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,357, Jan. 8, 1976, Pat. No. 4,055,602. This application Aug. 5, 1977, Ser. No. 822,024

Int. Cl.² C07C *49/84*

U.S. Cl. 260—590 C **39 Claims**

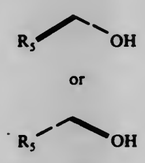
1. A prostaglandin analog of the formula



wherein R_8 is hydrogen or hydroxy;

wherein Y is trans-CH=CH-;

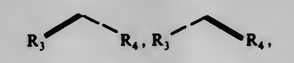
wherein M_1 is



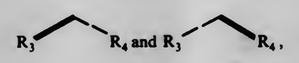
or

wherein R_5 is hydrogen or methyl;

wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;

wherein *g* is one, 2, or 3; and

wherein *s* is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's

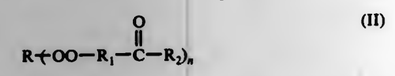
being the same or different, with the proviso that not more than two T's are other than alkyl.

4,115,455
REDUCTION OF CARBONYL-CONTAINING DIALKYL PEROXIDES TO HYDROXY-CONTAINING DIALKYL PEROXIDES

Wilbur H. McKellin, Deerfield, Ill., and William A. Swarts, Dover, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

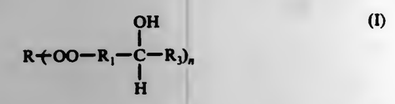
Filed Sep. 15, 1976, Ser. No. 723,415
Int. Cl.² C07C *179/06*
U.S. Cl. 260—610 R **13 Claims**

1. A process of reducing carbonyl-containing dialkyl peroxide of the formula



(II)

to the corresponding hydroxy-containing dialkyl peroxide of the formula



(I)

which comprises reacting II in the temperature range of −20° to 100° C and a pressure range of 0–200 psig with a member selected from the group consisting of (A) hydrogen gas in the presence of a promoter and a catalyst selected from the group consisting of (i) platinum, palladium, rhodium or ruthenium on a carrier, (ii) platinum oxide and (iii) Raney nickel wherein the concentration of said catalyst is in the range of 0.5–30% on the carrier and 0.1–3% without the carrier and (B) a hydride selected from the group consisting of an alkali metal aluminum hydride and an alkali metal borohydride wherein the hydride to peroxide ratio is in the range of 1 mole to 0.5–4 moles, wherein:

n is 1 to 3 with provisos (a) through (n) below:

a. when *n* is 1, R is selected from the group consisting of tertiary alkyl of 4–10 carbons, tertiary bicycloalkyl of 8–10 carbons, tertiary cycloalkyl of 6–10 carbons and tertiary aralkyl of 9 carbons;

b. when *n* is 2, R is selected from the group consisting of ditertiary alkylene diradical of 8–20 carbons, ditertiary alkynylene diradical of 8–20 carbons, and ditertiary aralkylene diradical of 12 carbons;

c. when *n* is 3, R is selected from the group consisting of tri-tertiary alkyl triradical of 10–21 carbons and tri-tertiary-aralkyl triradical of 15 carbons;

d. R_1 is a tertiary alkyl or cycloalkyl diradical of 3–15 carbons having the tertiary carbon attached to the peroxy oxygen;

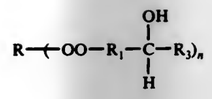
e. R_2 and R_3 are selected from the group consisting of —R_1—OO—R, alkyl of 1–15 carbons, cycloalkyl of 3–15 carbons, and hydrogen; R_2 can also be selected from the group consisting of a hydroxyl and lower alkoxy of 1–5 carbons;

f. R_1 can be linked with R_2 or R_3 to form a cycloalkyl triradical of 3–10 carbons;

g. when *n* is 1, R can be linked to R_1 to form an alkyl triradical of 6–20 carbons; and

h. when *n* is 1, R can be linked to R_2 or R_3 to form an alkyl diradical of 3–10 carbons.

9. Hydroxy-containing dialkyl peroxide compound of the formula:



wherein:

n is 1 to 3 with provisos (a) through (d) recited below,

a. when *n* is 1, R is selected from the group consisting of tertiary alkyl radical of 4–10 carbons, tertiary bicycloalkyl radical of 8–10 carbons, tertiary cycloalkyl radical of 6–8 carbons and tertiary aralkyl radical of 9 carbons and R_3 is selected from —R_1—OO—R; and R_1 and R_3 can join to form a cycloaliphatic triradical of 3–10 carbons;

b. when *n* is 2, R is selected from the group consisting of ditertiary alkylene diradical of 8–20 carbons, ditertiary alkynylene diradical of 8–20 carbons and ditertiary aralkylene diradical of 12 carbons and R_3 is selected from the group consisting of hydrogen, alkyl of 1–15 carbons, cycloalkyl of 3–15 carbons;

c. when *n* is 3, R is selected from the group consisting of tri-tertiaryalkyl triradical of 10–21 carbons and tri-tertiary-aralkyl triradical of 15 carbons and R_3 is selected from hydrogen, alkyl of 1–15 carbons, and cycloalkyl of 3–15 carbons; and

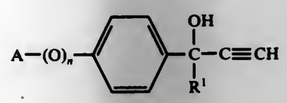
d. R_1 is a tertiary alkyl or cycloalkyl diradical of 3–15 carbons having a tertiary carbon attached to the peroxy oxygen.

4,115,456
ALKYNE COMPOUNDS AND METHOD OF USE

Joachim Gante; Hans-Adolf Kurmeier; Dieter Orth; Erich Schacht, and Albrecht Wild, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 18, 1976, Ser. No. 697,579
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1975, 2527352
Int. Cl.² C07C *43/20*
U.S. Cl. 260—613 R **24 Claims**

1. A compound of the formula



wherein R^1 is alkyl of up to 4 carbon atoms; A is monohaloor dihalophenyl wherein halo is F, Cl or Br and *n* is 0 or 1, and physiologically acceptable metal salts thereof.

4,115,457
POLYGLYCOL ETHER DERIVATIVES

Achim Wiedemann, Weil am Rhein, Germany, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 703,257, Jul. 7, 1976, abandoned, which is a continuation of Ser. No. 594,199, Jul. 9, 1975, abandoned, which is a continuation of Ser. No. 382,718, Jul. 26, 1973, abandoned, which is a continuation of Ser. No. 191,352, Oct. 21, 1971, abandoned. This application Apr. 7, 1977, Ser. No. 785,532
Int. Cl.² C07C *43/02, 41/02*
U.S. Cl. 260—615 B **8 Claims**

1. A polyglycol ether of formula

$$R—C_2H_4O)_x—C_3H_6O)_y—C_2H_4O)_z—H$$

in which

R is secondary alkoxy of 8 to 24 carbon atoms,

x has a value of 9 to 10,

y has a value of 12 to 17,

and

z has a value of 8 to 12.

4,115,458
MIXED POLYHALOGENATED-1,4-BUTANEDIOLS

Eugene V. Hort, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 679,747, Apr. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 551,642, Feb. 21, 1975, abandoned, which is a continuation of Ser. No. 295,102, Oct. 5, 1972, abandoned. This application Jul. 29, 1977, Ser. No. 820,544
Int. Cl.² C07C *31/34;* C08J *9/00*
U.S. Cl. 568—847 **3 Claims**

1. 2-Chloro-2,3,3-tribromo-1,4-butanediol.

4,115,459
PREPARATION OF FLUOROTRINITROMETHANE

Louis R. Grant, Jr., Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 9, 1974, Ser. No. 513,630
Int. Cl.² C07C *79/12*
U.S. Cl. 260—644 **7 Claims**

1. A process for preparing fluorotrinitromethane which comprises reacting tetranitromethane with a complex having the following formula:

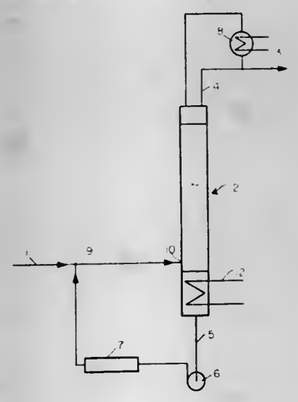
$$MOCF(CF_{3-x}Cl_x)_2,$$

wherein M is an alkali metal and *x* is 0 to 2, inclusive, the reaction being conducted in an aprotic solvent.

4,115,460
METHOD FOR PRODUCING HEXACHLOROCYCLOBUTENE

Wolfgang Müller, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Feb. 28, 1977, Ser. No. 772,904
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 2618557
Int. Cl.² C07C *23/06*
U.S. Cl. 260—648 R **5 Claims**



1. Method for producing hexachlorocyclobutene from hexachlorobutadiene, comprising;

(a) rectifying in a rectification column technical hexachlorobutadiene at a pressure of about 2–100 mm Hg with a reflux ration of about 300–600, and removing a head product and a sump stream of substance;

(b) heat treating said sump stream of substance at a temperature of about 150°–200° C to cyclize hexachorobutadiene to hexachlorocyclobutene enriched hexachlorobutadiene; and

(c) recycling said enriched hexachorobutadiene into said rectifying together with fresh, technical hexachlorobutadiene.

4,115,461
STABILIZED 1,1,1-TRICHLOROETHANE COMPOSITION

David R. Spencer, and Wesley L. Archer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 712,996, Aug. 9, 1976, abandoned. This application Sep. 21, 1977, Ser. No. 835,474
Int. Cl.² C07C *17/42*
U.S. Cl. 260—652.5 R **2 Claims**

1. 1,1,1-Trichloroethane containing as the essential stabilizers from about 3.6 to about 7.6 volume percent based on the total composition volume of a mixture derived from:

1 to 3 volume percent 1,4-dioxane

1 to 3 volume percent t-amyl alcohol

0.5 to 1 volume percent 1,2-butylene oxide, and

0.2 to 0.6 volume percent of a nitroalkane

selected from the group consisting of nitromethane or a mixture of nitromethane and nitroethane containing up to 75 volume percent nitroethane.

4,115,462
GAS PHASE AROMATIC HYDROGENATION USING PALLADIUM LITHIUM ALUMINUM SPINEL CATALYST

Hermann Thelen, Krefeld; Kurt Halcour; Wulf Schwerdtel, both of Leverkusen, and Wolfgang Swodenk, Odenthal-Gloebusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 586,838, Jun. 13, 1975, abandoned. This application Apr. 19, 1977, Ser. No. 788,868
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1974, 2430478
Int. Cl.² C07C *5/10*
U.S. Cl. 260—667 **10 Claims**

1. In the process for the preparation of cycloaliphatic hydrocarbon by gas phase hydrogenation of the corresponding aromatic hydrocarbon by contacting the same with hydrogen and a catalyst consisting essentially of palladium, the improvement wherein said palladium is disposed on a support consisting essentially of aluminum oxide at least 20% by weight of which, based on weight of said support, is in the form of lithium aluminum spinel and the process is carried out at atmospheric pressure employing catalyst bed temperature of 200° to 350° C.

4,115,463
PRODUCTION OF CYCLOALKYLAROMATICS

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 28, 1975, Ser. No. 608,597
Int. Cl.² C07C *15/00*
U.S. Cl. 260—668 B **10 Claims**

1. A process for producing cycloalkylaromatics and alkyl-substituted cycloalkylaromatics which comprises contacting a monocyclic aromatic hydrocarbon or alkyl-substituted monocyclic aromatic hydrocarbon with hydrogen in the presence of a catalyst consisting essentially of from about 0.01 to 0.3 weight percent ruthenium, from about 0.03 to 1.0 weight percent nickel and a support material selected from the group consisting of active clay and silica-alumina in a weight ratio of ruthenium to nickel in the approximate range of 0.01:1 to 0.3:1, wherein said nickel is introduced into said support material as nickel bromide, wherein said contacting is effected at a temperature in the range of about 100° to about 275° C at a hydrogen pressure in the range of about 100 to about 2000 psig and an LHSV in the range of 20 to 35.

4,115,464
PROCESS FOR PREPARING DIARYLETHYLENES

Joseph P. Bartek, University Hts.; Serge R. Dolhyj, Parma; Louis J. Velenyi, Lyndhurst, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed May 2, 1977, Ser. No. 792,638
Int. Cl. C07c *5/42*
U.S. Cl. 260—668 C **13 Claims**

1. A process for the dehydrogenation of diarylethanes to the corresponding diarylethylenes wherein said diarylethane is selected from the class consisting of 1,1-diphenylethane, 1,2-diphenylethane, and their methyl nuclear-substituted derivatives, the process comprising passing a gaseous mixture of the diarylethane, molecular oxygen and optionally a diluent gas, over a catalyst at a temperature of from about 250° to 650° C, said catalyst having the compositon represented by the empirical formula:

$$M_aM^1_bP_xO_y$$

wherein

M is at least one element selected from the group consisting of bismuth, antimony, iron, nickel, cobalt, chromium, lanthanum, cerium, uranium, tin, calcium or magnesium;

M^1 is one or more elements of the group germanium, lead, molybdenum, tungsten, strontium, barium, arsenic, manganese, rhenium, thorium, the rare earths, except lanthanum and cerium, the metals of Groups 1A, 1B, IIB, IIIA, or VB of the Periodic Classificaton of elements;

P is phosphorus; and

wherein

a is a number from 0.1 to 10;

b is a number from 0 to 10;

x is a number from 0.5 to 10; and

y is the number of oxygens required to satisfy the valence requirements of the other elements present.

4,115,465
SEPARATION OF AROMATIC HYDROCARBONS FROM MIXTURES, USING POLYURETHANE MEMBRANES

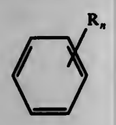
Klaus Elfert; Hans Jürgen Rosenkranz, and Hans Rudolf, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 26, 1977, Ser. No. 800,812
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1976, 2627629
Int. Cl.² C07C *7/01*
U.S. Cl. 260—674 R **26 Claims**

1. In a process for separating a first component from a mixture of the same with other components wherein the mixture is disposed on one side of a membrane and a higher pressure is established on the mixture side of the membrane than on the opposed side, said first component is withdrawn through said membrane to said opposed side and at least a partial vacuum is applied to the opposed side of membrane and said first membrane is withdrawn from said membrane in a vapor state, the improvement wherein:

A. the membrane is (of) an aromatic selective polyurethane membrane;

B. the first component has the formula



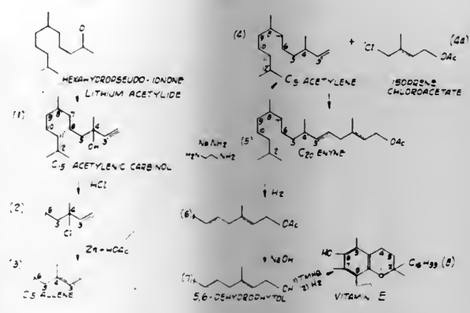
wherein R represents an alkyl group having 1 to 3 carbon atoms and *n* is 0, 1, 2 or 3; and

C. said first component is in admixture with one or more aliphatic hydrocarbon, cycloaliphatic hydrocarbon, alcohol, ether, ketone or carboxylic acid ester.

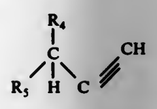
4,115,466
SYNTHESIS OF ACETYLENIC COMPOUNDS USEFUL IN PREPARING DEHYDROPHYTOLS AND VITAMIN E

Ralph E. Close, Jacksonville, Fla., and William Oroshnik, Plainfield, N.J., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 622,972, Oct. 16, 1975, abandoned, which is a division of Ser. No. 560,550, Mar. 20, 1975, Pat. No. 4,055,575. This application Oct. 6, 1977, Ser. No. 839,962
Int. Cl.² C07C *11/28, 11/22, 5/22*
U.S. Cl. 260—678 **9 Claims**



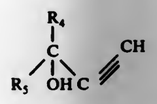
1. A process for the synthesis of an acetylenic compound having the formula



(1)

wherein R_4 and R_5 are hydrogen, alkyl, aralkyl, alkenyl, alkadienyl, alkatrienyl, phenyl and substituted phenyl, comprising the steps of

reacting an acetylenic carbinol having the formula



(2)

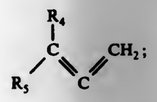
with a reagent capable of replacing the hydroxyl group with a radical X to produce a propargylic compound having the formula



(3)

X being halogen, alkyl sulfonate, or aryl sulfonate;

reductively removing said radical forming an allene having the formula



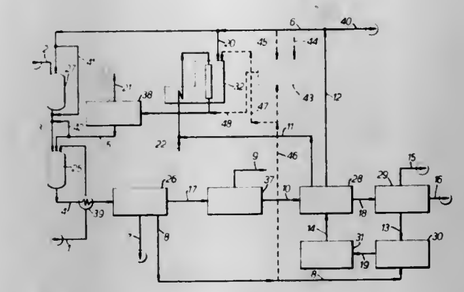
(4)

isomerizing said allene in the presence of a strong base to the acetylene of equation (1).

4,115,467
HYDROCARBON CONVERSION PROCESS

Ray Fowler, Amersham, England, assignor to Davy Powergas Limited, London, England

Filed Aug. 13, 1976, Ser. No. 714,260
Claims priority, application United Kingdom, Aug. 14, 1975, 33928/75
Int. Cl.² C07C *11/04*
U.S. Cl. 260—683 R **8 Claims**



1. A process for producing ethylene which comprises:

(a) feeding a carbonaceous fuel and an oxygen-containing gas to a combustion zone;

(b) maintaining the fuel to oxygen ratio in the combustion zone at a ratio such that the fuel is partially combusted to form a hot gaseous carbon monoxide-containing combustion product gas;

(c) Supplying hydrogen and a hydrocarbon feedstock at a predetermined ratio to a non-catalytic vapour phase hydrogenation zone, the hydrocarbon feedstock being selected from C_3 and higher hydrocarbons and mixtures thereof, and the predetermined ratio being chosen to favour formation of ethylene and ethane in the hydrogenation zone at the expense of formation of methane, and the predetermined ratio further being such that the hydrogenation reaction is liable to self-quenching;

(d) maintaining the temperature in the hydrogenation zone above the threshold temperature for the hydrogenation reaction at the chosen predetermined hydrogen to hydrocarbon feedstock ratio by admitting thereto hot combustion product gas from step (b) thereby preventing the hydrogenation reaction from self-quenching;

(e) recovering from the hydrogenation zone a reaction product stream;

(f) separating an ethane fraction from the reaction product stream;

(g) separating a light gas fraction containing carbon monoxide from the reaction product stream;

(h) passing ethane fraction from step (f) to an ethane pyrolysis zone maintained under ethane pyrolysis condition to convert ethane to ethylene;

(i) recovering ethylene from step (h);

(j) submitting carbon monoxide of the light gas fraction from step (g) to a water gas shift conversion step in a shift conversion zone for conversion of carbon monoxide to carbon dioxide and concurrent generation of hydrogen;

(k) recovering from this shift conversion zone a shifted gas product containing carbon dioxide and hydrogen;

(l) removing carbon dioxide from resulting shifted gas product; and

(m) recycling resulting hydrogen containing gas to the non-catalytic vapour phase hydrogenation zone.

4,115,468
METHOD FOR DIMERIZATION OF OLEFINS

Andrei Alexandrovich Antonov, Profsojuznaya ulitsa 87, korpus 3, kv. 85; Viktor Alexandrovich Kabanov, Lomonosovsky prospekt 14, kv. 108; Marina Alexandrovna Martynova, ulitsa Stasovoi 4, kv. 34; Nikolai Sergeevich Nametkin, Leninsky prospekt 13, kv. 11; Stanislav Konstantinovich Pluzhnov, pereulok Yazykovsky 5, kv. 104, and Vladimir Ivanovich Smetanjuk, ulitsa Stasovoi 4, kv. 34, all of Moscow, U.S.S.R.

Filed Mar. 18, 1977, Ser. No. 779,084
Int. Cl.² C07C *3/10*
U.S. Cl. 260—683.15 D **9 Claims**

1. A method for dimerization of olefins having up to 10 carbon atoms, which comprises: intermixing at least one of said olefins with a two-component catalyst in a medium of solvents selected from the group consisting of hydrocarbon solvents and halogenated hydrocarbon solvents at a temperature ranging from −20° to +100° C at a pressure of from 1 to 45 atmospheres, said two-component catalyst consisting of an organoaluminum compound of the formula R_nAlX_{3-n}, wherein R is an alkyl having up to eight carbon atoms, X is a halogen, i n equals 1 or 2; and a graft-copolymer swellable in said solvents, of a rubber selected from the group consisting of natural, synthetic carbo-chain and vinyl-containing siloxane rubbers, with vinylpyridine; said copolymer containing 0.5 to 40% by weight of polyvinylpyridine fragments complexed with a nickel salt; the molar ratio between said organometallic compound and said nickel salt ranging from 1:1 to 100:1.

4,115,469
METHOD OF DIMERIZATION OF OLEFINS

Jury Nikolaevich Bocharov, ulitsa Dokukina 3, korpus 1, kv. 13; Andrei Alexandrovich Antonov, Profsojuznaya ulitsa 87, korpus 3, kv. 85; Viktor Alexandrovich Kabanov, Lomonosovsky prospekt 14, kv. 108; Marina Alexandrovna Martynova, ulitsa Stasovoi 4, kv. 34; Stanislav Konstantinovich Pluzhnov, pereulok Yazykovsky 5, kv. 104, and Vladimir Ivanovich Smetanjuk, ulitsa Stasovoi 4, kv. 34, all of Moscow, U.S.S.R.

Filed Mar. 18, 1977, Ser. No. 779,262
Int. Cl.² C07C *3/10*
U.S. Cl. 260—683.15 D **3 Claims**

1. A method of dimerization of olefins having from 2 to 4 carbon atoms, consisting in that at least one of said olefins is mixed with a gel-like catalyst in a medium of solvents selected from the group consisting of hydrocarbon and halocarbon solvents, at a temperature of from 0° to 100° C and a pressure of from 1 to 40 atmospheres, said catalyst being a graft-copolymer of rubber, selected from the group consisting of natural and synthetic carbon-chain rubber, with vinylpyridine, said copolymer swelling in said solvents, and containing from 0.5 to 40 per cent by weight of fragments of polyvinylpyridine that are complexed with a salt of nickel, and also contains from 2 to 50 mole per cent of —AlRX- units, where R is an alkyl having not more than 8 carbon atoms, and X is a halogen, the aluminum atom being connected with the main chain of the copolymer through the carbon atom; the atom ratio of Al/Ni is from 1 to 20.

4,115,470
ORGANOPHOSPHORUS NICKEL COMPLEXES AND USE THEREOF

Darryl R. Fahey, and John E. Mahan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 684,350, May 7, 1976. This application Dec. 8, 1977, Ser. No. 858,760
Int. Cl.² C07C *3/10*
U.S. Cl. 260—683.15 D **6 Claims**

1. A process for oligomerizing monoolefins comprising contacting under suitable reaction conditions at least one said monoolefin with a catalyzing amount of a catalyst system

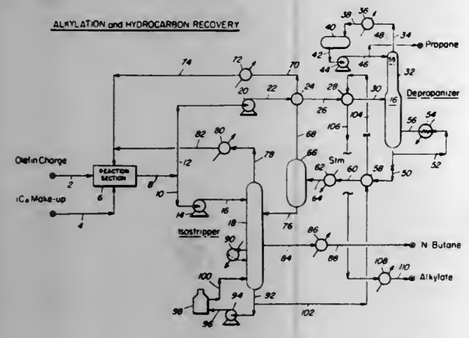
comprising at least one organoaluminum compound R_nAlX_{3-n} wherein each R is a hydrocarbyl radical having from 1 to 20 carbon atoms, each X is a halogen, and n is 1, 1.5, or 2; and bis(μ-diphenylphosphido)tris(triethylphosphine)-dinickel wherein the mole ratio of said organoaluminum compound to said dinickel complex is in the range of about 0.5:1 to about 20:1.

4,115,471

METHOD FOR SEPARATING THE PRODUCT EFFLUENT OF AN ALKYLATION PROCESS

Michael G. Kesler, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,747
Int. Cl.² C07C 3/54
U.S. Cl. 260—683.43 **7 Claims**



1. In a process for alkylating isoparaffins and olefins with an acid catalyst, the improved method for separating the hydrocarbon effluent of the alkylation process which comprises,

separating the hydrocarbon effluent of an alkylation process into first and second separate hydrocarbon effluent streams of the same composition,

passing the first of said hydrocarbon effluent streams to a stripping zone maintained under temperature and pressure conditions providing the recovery of an isoparaffin rich stream from the upper portion thereof and a product alkylate stream from a bottom portion thereof,

passing the second of said hydrocarbon effluent streams after cooling to a depropanizer separation zone, recovering propane and lower boiling components from said depropanizer zone separate from higher boiling alkylate effluent material,

passing separated higher boiling alkylate effluent material from said depropanizer zone to a flash zone maintained under temperature and pressure conditions providing an isoparaffin rich stream separate from a higher boiling alkylate product stream, recycling the isoparaffin rich stream separated in said flash zone after cooling thereof to said alkylation zone, and

passing the higher boiling alkylate product stream separated in said flash zone to said stripping zone.

4,115,472

URETHANE COATING COMPOSITIONS

Samuel Porter, Jr., Tarentum, and Bruce N. McBane, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 559,957, Mar. 19, 1975, abandoned. This application Jun. 13, 1977, Ser. No. 805,753
Int. Cl.² C08L 63/10, 75/04
U.S. Cl. 260—836 **15 Claims**

1. In a polyurethane coating composition comprising an ungelled hydroxyl-containing urethane reaction product of an organic polyisocyanate and a polyhydric material having a hydroxyl value of at least 10, the improvement which comprises the presence therein of from about 2 percent to about 50 percent by weight, based on said coating composition, of insoluble crosslinked acrylic polymer microparticles formed by the free radical addition copolymerization of from about 0.5 percent to about 15 percent of alpha, beta-ethylenically unsaturated monocarboxylic acid, at least one other copolymerizable monoethylenically unsaturated monomer, and from about 0.5 percent to about 15 percent of crosslinking monomer selected from the group consisting of (1) epoxy group-containing compound and (2) a mixture of alkylenimine and organoalkoxysilane, wherein:

a. said epoxy group-containing compound is monoepoxide compound which additionally contains ethylenic unsaturation,

b. said organoalkoxysilane is selected from the group consisting of acrylatoalkoxysilane, methacrylatoalkoxysilane and vinylalkoxysilane, and

c. said monomer percentages are based on the weight of monomers used in the copolymerization process,

in the presence of hydrocarbon dispersing liquid which is a solvent for the polymerizable monomers but a non-solvent for the resultant polymer, and polymeric dispersion stabilizer containing at least two segments of which one segment is solvated by said dispersing liquid and a second segment is of different polarity than said first segment and is relatively insoluble in said dispersing liquid, wherein the reaction is carried out at elevated temperature such that the dispersion polymer first forms and then is crosslinked.

4,115,473

POLYOL INTERMEDIATE, POLYESTERS MADE THEREFROM, AND POLYESTER COATING COMPOSITIONS

John D. Downs, Bradley, Ill., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 632,757, Nov. 17, 1975, abandoned. This application Feb. 16, 1977, Ser. No. 769,249
Int. Cl.² C08L 67/02
U.S. Cl. 260—850 **5 Claims**

1. A coating composition comprising the polyester resin which consists essentially of, by weight of the total solids charged, 35–40 percent of a polyol intermediate that is the reaction product of neopentyl glycol with dimethyl glutarate in a molar ratio of 2 moles neopentyl glycol per mole dimethyl glutarate and at a temperature of between about 120° C. and about 210° C., until at least about 90 weight percent of theoretical methanol of reaction has been removed, 15–23 percent neopentyl glycol, and 40–45 percent phthalic acid reactant; said resin having an Acid Number between about 1 and about 20, and an aminoplast, using a weight ratio of polyester/aminoplast of about 90/10 to about 70/30, dissolved in an aromatic hydrocarbon solvent to a total solids content of between about 60 and about 75 weight percent.

2. The coating composition of claim 1, wherein said phthalic acid reactant is a mixture of phthalic anhydride and isophthalic acid and said aminoplast is hexamethoxymethylmelamine.

4,115,474

GRAFTED, POLYMERIC MICROCAPSULAR SYSTEM

Anthony E. Vassiliades, Deerfield; David N. Vincent, Glenview, both of Ill., and Shrenik Shroff, Bombay, India, assignors to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 235,008, Mar. 15, 1972, Pat. No. 3,844,816, which is a continuation-in-part of Ser. No. 142,772, May 12, 1971, Pat. No. 3,824,114. This application May 21, 1974, Ser. No. 471,885
Int. Cl.² C08F 261/04, 261/02
U.S. Cl. 260—855 **6 Claims**

1. Discrete, substantially spherical non-pressure rupturable microcapsules having a solid, polymeric shell and a core, which consists essentially of a solid, non-tacky polymeric material, said polymeric core material being at least partially grafted to said polymeric shell, said solid, non-tacky polymeric core and said polymeric shell being formed of different polymers, said solid, polymeric shell consisting essentially of an hydroxylated polymer, a formaldehyde condensation product, polyvinyl chloride or gelatin.

4,115,475

METHOD TO PREPARE COPOLYESTERAMIDES FOR MOULDING

Paul Foy, Paris, and René Kern, Savigny-sur-Orge, both of France, assignors to Ato Chimie, Courbevoie, France

Filed Jul. 13, 1976, Ser. No. 704,815
Claims priority, application France, Jul. 17, 1975, 75 22365
Int. Cl.² C08L 77/00
U.S. Cl. 260—857 PE **11 Claims**

1. A process for synthesizing sequence linear aliphatic copolyesteramides having not less than 60% by weight polyamide groups for use in making rigid or semi-rigid moulded or extruded articles with a Vicat point higher than 140° C. and a torsional rigidity modulus G, measured by the Clash and Berg method, of 500 to 4,000 kg/cm2 at 20° C., said process comprising reacting a linear aliphatic copolyesteramide with hydroxyl end-groups, with a molecular weight of 1,000 to 10,000, and containing about 50% polyamide groups, with a linear aliphatic polyamide with carboxyl end-groups, having a molecular weight of 2,000 to 15,000, at temperatures of 200° to 300° C., in an 0.1 to 2 mm Hg vacuum, and in the presence of 1×10^{-4} to 2% weight of an esterification catalyst.

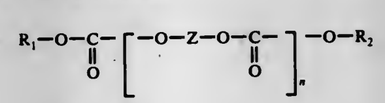
4,115,476

2,2,6,6-TETRAMETHYL-4-PIPERIDYL CARBONIC ACID ESTERS OF DIHYDRIC ALCOHOLS AND PHENOLS AS STABILIZERS FOR SYNTHETIC POLYMERS

Motonobu Minagawa, Kosigaya; Naohiro Kubota, and Toshihiro Shibata, both of Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed May 5, 1977, Ser. No. 794,172
Claims priority, application Japan, May 20, 1976, 51-58221
Int. Cl.² C07D 401/12; C08K 5/34, 5/35
U.S. Cl. 260—880 R **33 Claims**

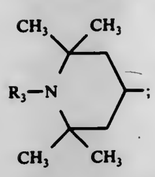
1. A 2,2,6,6-tetramethyl-4-piperidyl carbonic acid ester having the general formula:



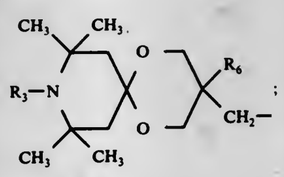
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wherein:

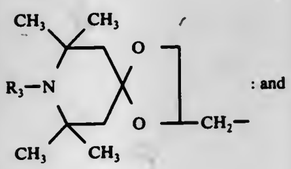
R_1 and R_2 are selected from the group consisting of



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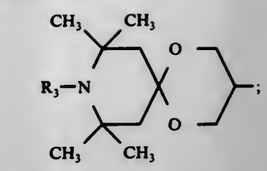


;



: and

-continued



;

the R_1 and R_2 groups can be the same or different;

R_3 is selected from the group consisting of hydrogen and O^-;

R_6 is lower alkyl;

n is selected from the group consisting of 1, 2, 3, 4 and 5; and Z of—O—Z—O—is selected from the group consisting of bivalent aliphatic, cycloaliphatic, aromatic, mixed aliphatic-aromatic, aliphatic-cycloaliphatic and cycloaliphatic-aromatic radicals, and oxyalkylene radicals including ether —O— and thioalkylene radicals including thioether —S— linking groups between alkylene groups, having from one to about five oxy or thio groups and from two to about six alkylene groups having from two to about six carbon atoms.

30. An acrylonitrile-butadiene-styrene polymer having its resistance to deterioration when heated at 300° F. and above enhanced by a compound in accordance with claim 1.

4,115,477

PROCESS FOR RECOVERING GRAFT COPOLYMERS LATEX SOLIDS WHEREIN A FINES FRACTION IS RECYCLED AND INCORPORATED IN SAID SOLIDS

Alonzo E. Morris, Cincinnati, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 16, 1977, Ser. No. 833,836
Int. Cl.² C08F 279/06
U.S. Cl. 260—880 R **22 Claims**

1. In a process for recovering solids with a reduced fines-fraction from an aqueous polymeric latex comprising a grafted conjugated diene polymer wherein said diene polymer is a substrate grafted with a superstrate polymer of a monomer formulation comprising a monovinylidene aromatic and an acrylic monomer, wherein said process comprises: (a) mixing said latex with an aqueous electrolyte solution until a homogeneous form-sustaining paste is obtained, (b) forming said paste into at least one shaped unit, (c) heating said shaped paste unit in an aqueous medium maintained at a temperature at least as high as the heat distortion temperature of the superstrate polymer to synerize and harden said paste units into polymeric particles, (d) removing said polymer particles from said aqueous medium, and (e) drying said particles, the improvement which comprises:

(f) separating a portion of said polymer particles as a fines-fraction in step (d) and

(g) dispersing said fines-fraction into at least a portion of said latex at a location prior to step (a), maintaining the rate of dispersion in step (g) at a rate sufficient to recycle a predetermined amount of said fines-fraction separated in step (f).

4,115,478

HIGH IMPACT POLYMER AND PROCESS FOR ITS PRODUCTION

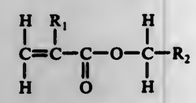
Henry Alsberg, Northbrook; Dale W. Skalla, Oak Park, and Michael R. Tirpak, Maywood, all of Ill., assignors to Richardson Corporation, Des Plaines, Ill.

Continuation of Ser. No. 520,838, Nov. 4, 1974, abandoned, which is a continuation of Ser. No. 335,347, Feb. 23, 1973, abandoned. This application Sep. 17, 1976, Ser. No. 721,742
Int. Cl.² C08F 279/06
U.S. Cl. 260—880 R **9 Claims**

1. A suspension polymerization process for producing transparent, high impact resistant copolymers which comprises:

(A) a first suspension polymerization step, at primary poly-

merization conditions in the presence of a suspending agent dissolved in water, said first step reacting an aqueous suspension of a block styrene-butadiene elastomeric copolymer, an acrylic monomer material, and styrene, said monomer material having the following formula:



wherein R_1 is hydrogen or an alkyl group having from 1 to 3 carbon atoms, and R_2 is hydrogen or an alkyl group having 1 to 15 carbon atoms, to form an intermediate bead prepolymer, said intermediate bead prepolymer containing said acrylic monomer and said styrene grafted onto the backbone of the elastomeric polymer; and

(B) a second suspension polymerization step, at secondary polymerization conditions without adding further suspending agent, said second step reacting additional quantities of reactants consisting essentially of styrene and said acrylic monomer with said intermediate bead prepolymer while same is still suspended in the aqueous medium, the additional styrene and acrylic monomer thereby permeating said intermediate bead prepolymer for in situ reaction formulation of a final beaded polymer product blend of styrene and said acrylic monomer grafted onto said elastomeric polymer and a random copolymer of styrene and said acrylic monomer; said acrylic monomer and styrene together making up about 70 to 95 percent of the total charge of reactants in the entire process, about ⅛ to about ⅜ by weight of the total quantity of said acrylic monomer and styrene used in the entire process being added in said first polymerization reaction step with the remaining quantities of acrylic monomer and styrene being added in said second polymerization reaction step.

4,115,479

CASTING RESINS BY POLYMERIZING LIQUID MONOMER IN MIXTURE OF PARTICULATED VINYL HALIDE RESINS

Philip Daidone, Matawan, N.J., assignor to Vynacron Dental Co., Matawan, N.J.

Filed Aug. 11, 1976, Ser. No. 713,364
Int. Cl.² C08L *27/06*
U.S. Cl. 260—884 **11 Claims**

1. A casting resin wherein the finished casting has a combined vinyl resin content of from 20 to 65% prepared by polymerizing a liquid monomer selected from the group consisting of methyl methacrylate, ethyl methacrylate, butylmethacrylate, i-butyl methacrylate, i-propyl methacrylate, the corresponding acrylates, hydroxyacrylates and hydroxy methacrylates and their mixtures; diethylene glycol dimethacrylate, triethylene glycol dimethacrylate and tetraethylene glycol dimethacrylate and their mixtures in the presence of (A) vinyl halide resin having a particle size within the range of 0.2 to 5 μ and (B) vinyl halide resin having a particle size within the range of 15 to 150 μ wherein said liquid monomer is a non-solvent at room temperature for said vinyl halide resins A and B and wherein said vinyl halide resins A and B are present in a ratio of A:B of 1–5:5–1.

4,115,480

METHOD OF PRODUCTION OF ACRYLIC RESIN FOR FILM USE AND AN ACRYLIC RESIN OBTAINED THEREFROM

Yoshikiyo Kinoshita, Suita; Takashi Aoi, Akashi; Yoshihiro Kimura, Settsu, and Yumiko Amisaki, Toyonaka, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 603,330, Aug. 11, 1975, abandoned.
This application Dec. 12, 1977, Ser. No. 859,917
Claims priority, application Japan, Aug. 23, 1974, 49-97276
Int. Cl.² C08L *31/02*
U.S. Cl. 260—885 **16 Claims**

1. An acrylic resin for film use having less tendency to stress whitening, produced by the method consisting essentially of the following two steps:

(A) copolymerizing a monomer having cross-linking ability with a mixture of monomers consisting essentially of
100 to 70 weight percent-acrylic acid alkyl ester containing 1 to 8 carbon atoms in the alkyl group,
0 to 30 weight percent methacrylic acid alkyl ester containing 1 to 4 carbon atoms in the alkyl group, and
0 to 20 weight percent unsaturated monomer of the ethylene series copolymerizable with said monomers of this step, thereby to produce a cross-linked elastomer having a gel content of more than 60%, a degree of swelling of less than 15 and mean particle size of 500 to 2000 A; and

(B) graft copolymerizing in an emulsion, 90 to 50 parts by weight of a resin component, in the presence of 10 to 50 parts by weight of said cross-linked elastomer obtained in step (A) without further addition of an emulsifier to effect degree of grafting of said resin component onto said elastomer of 43 percent or more by means of no addition of a molecular weight regulating agent, wherein said resin component consists essentially of 100 to 60 weight percent methacrylic acid alkyl ester containing 1 to 4 carbon atoms in the alkyl group, 0 to 30 weight percent acrylic acid alkyl ester containing 1 to 8 carbon atoms in the alkyl group and 0 to 10 weight percent of an unsaturated monomer of the ethylene series copolymerizable with said monomers of this step.

4,115,481

FLUOROELASTOMER BLEND COMPOSITION

Joseph Burton Finlay, and Hisanori Omura, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 16, 1977, Ser. No. 834,055
Int. Cl.² C08L *27/16, 27/10*
U.S. Cl. 260—900 **6 Claims**

1. A fluoroelastomer blend comprising:

(a) 5–90 weight percent of a non-crosslinked fluoroelastomer comprising a copolymer of vinylidene fluoride and at least one other fluoroolefin, and

(b) 10–95 weight percent of a partially crosslinked fluoroelastomer comprising vinylidene fluoride, at least one other fluoroolefin and about 0.5–3.0 mole percent of bromotrifluoroethylene.

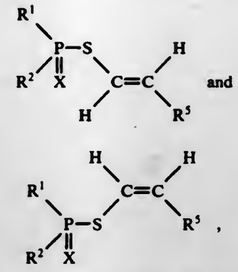
4,115,482

STEREOSPECIFIC CIS- AND TRANS-VINYLIC PHOSPHORUS ESTERS

Alexis A. Oswald, Mountainside, N.J., and Joseph H. Lesser, Woodside, N.Y., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 371,811, Jun. 20, 1973, abandoned, which is a continuation of Ser. No. 846,244, Jul. 30, 1969, abandoned. This application Apr. 6, 1977, Ser. No. 785,034
Int. Cl.² C07F *9/165*; A01N *9/36*
U.S. Cl. 260—957 **11 Claims**

1. A composition comprising an isomeric mixture of compounds having at least 70% of the trans-isomer of compounds having the general formula:



wherein R^1 and R^2 are C_1 to C_{30} hydrocarbyloxy radicals, R^5 is a C_1 to C_{30} hydrocarbyl radical, and X is O or S.

4,115,483

PROCESS FOR PREPARING MONO-ALKYL ACID PHOSPHATES HAVING HIGH MONO-CONTENT AND LIGHT COLOR

Gershon Jerry Davis, White Plains, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 23, 1977, Ser. No. 827,192
Int. Cl.² C07F *9/09*
U.S. Cl. 260—980 **5 Claims**

1. A process for preparing mono-alkyl acid phosphates having the formula:



wherein R is straight or branched alkyl having from 1 to about 25 carbon atoms, comprising the steps of (1) first contacting an alcohol having the formula:

ROH

wherein R is as defined above, with tetrasodium pyrophosphate in an amount from about 0.1 percent to about 0.5 percent by weight of said alcohol at a temperature from about 20° C. to about 180° C.; (2) followed by contacting an approximately stoichiometric amount of P_2O_5 with the alcohol-tetrasodium pyrophosphate mixture at a temperature from about 20° to about 180° C. and mixing; (3) followed by contacting water and hydrogen peroxide, P_2O_5 in stoichiometric excess, and alcohol to the mixture of step (2) at a temperature from about 40° to about 200° C.; and (4) mixing at a temperature from about 40° to about 200° C. until the reaction is complete and then finally adding hydrogen peroxide to the reaction mixture followed by additional mixing.

4,115,484

COOLING TOWER FILL ASSEMBLY

Forest Jackson Saxton, Calistoga, Calif., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Sep. 16, 1977, Ser. No. 834,012
Int. Cl.² B01F *3/04*
U.S. Cl. 261—111 **27 Claims**

1. In a cooling tower in which air flows through splash fill within the tower in cooling relationship with a liquid falling through said fill, an improved splash fill assembly comprising:

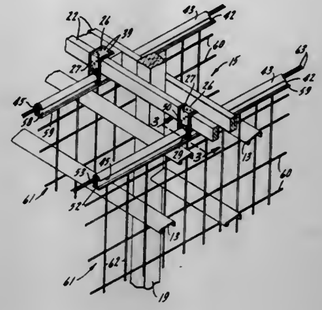
(a) a plurality of column means extending generally vertically in said tower;

(b) generally horizontal members connected to said column means;

(c) a plurality of beam hanger clips supported by each horizontal member at spaced intervals therealong, the hanger clips on adjacent horizontal members being generally aligned in series;

(d) an elongated generally horizontal fill hanger beam supported by each series of aligned clips;

(e) a fill hanger grid supported at its upper end by each fill hanger beam, each grid comprising generally horizontal and vertical strands connected so as to form a lattice of



holes, the holes on adjacent grids being generally aligned, and

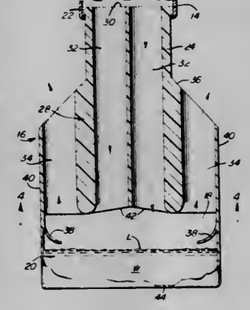
(f) a plurality of generally horizontal splash fill members extending through said aligned holes in said grids and being supported on said generally horizontal strands.

4,115,485

LINT INTERCEPTOR

Richard J. Genessi, 2434 Rivera St., San Francisco, Calif. 94116

Filed Jun. 27, 1977, Ser. No. 810,387
Int. Cl.² B01F *3/04*
U.S. Cl. 261—119 R **1 Claim**



1. In a lint interceptor, including, in combination:

(a) a housing having a frusto-conical top portion and a rectangular lower portion provided with a cavity forming a liquid reservoir, the top portion including a vertically extending, longitudinal neck including passage means for communicating with the cavity:

(b) fitting means provided on the neck of the top portion of the housing for connecting a hose to the housing and placing the hose in communication with the cavity; and

(c) aperture means provided in the top portion of the housing for permitting the escape from the housing of a fluid ejected into the cavity at the fitting means;

(d) the improvement comprising baffle means arranged within the housing for directing the flow of the fluid through the housing along a desired path, the baffle means being arranged in the housing above the cavity provided in the housing, the baffle means including passage means disposed in communication with the fitting means, cavity, and aperture means for forming a flow path through the housing, the baffle means further including opposed wall portions extending from the top portion to the lower

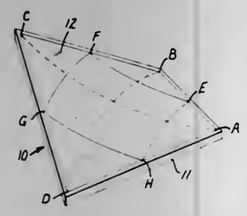
portion, and opposed curved fender means arranged beneath the passage means and attached to the wall portions and extending a relatively short distance into the cavity from the wall portions and disposed above an upper level of the liquid reservoir for directing fluid flow from the passage means across the upper level of the liquid reservoir and to the aperture means, the fitting means including a plurality of openings, and the passage means including a like number of substantially parallel passages communicating with the openings, one-to-one, the aperture means including a plurality of apertures, and the passage means further including a like number of substantially parallel bores communicating with the apertures, one-to-one, the passages and bores being arranged substantially parallel to one another, the baffle means comprising a body member in which the apertures and bores are provided and on which a curved surface is defined.

4,115,486

METHOD OF DEVELOPING AN ANTICLASTIC CONCENTRATOR

Charles D. Cowman, Jr., St. Paul, Minn., and John P. G. Shepherd, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 560,541, Mar. 20, 1975, Pat. No. 4,035,064.
This application Apr. 25, 1977, Ser. No. 790,581
Int. Cl.² B29D *11/00*; B29C *17/02*
U.S. Cl. 264—1 **4 Claims**



1. Method of developing a rigid continuous hyperbolic paraboloidal anticlastic surface comprising affixing a specularly reflective elastic web to the sides and ends of a rigid closed frame, said sides and ends comprising spaced elongate rigid supports angularly offset about their mutual axes, and applying a force to said web between said supports by means for contracting said web to bring said web to a condition of minimum surface area between said supports.

4,115,487

METHOD FOR DENTAL RESTORATION

Thomas J. Rockett, East Greenwich, R.I., and John J. O'Connell, Tustin, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 416,807, Nov. 19, 1973, abandoned. This application Jul. 17, 1974, Ser. No. 489,093
Int. Cl.² A61C *13/04*
U.S. Cl. 264—16 **10 Claims**

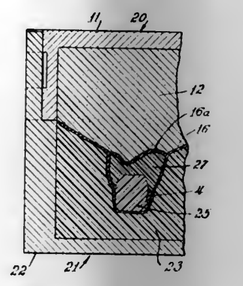
1. A method for forming dental restorations comprising the steps of mixing and applying to a site requiring dental restoration a composite sub-layer comprising a mixture of a polymerizable resin binder having a refractive index within the range of about 1.53 to 1.56, a reinforcing filler comprising a finely-divided inorganic compound having a particle size no greater than about 50 microns and having a refractive index substantially different than the refractive index of said resin, and a catalyst for curing said resin; and mixing and applying to the same site, over said sub-layer and before the resin of said sub-layer has fully cured, a composite surface layer comprising the same resin and catalyst components used in said sub-layer in admixture with a reinforcing filler consisting of a finely-divided inorganic compound having a particle size no greater than about 50 microns and having substantially the same refractive index as that of said resin, whereby, a double-layered dental restoration is formed having different refraction characteristics in each layer and having a continuous resin phase.

4,115,488

DENTURES AND PROCESS FOR MAKING THE SAME

Ralph W. Colpitts, St. Louis, Mo., assignor to Polythetics, Inc., St. Louis, Mo.

Division of Ser. No. 595,035, Jul. 11, 1975, Pat. No. 4,024,637.
This application Apr. 20, 1977, Ser. No. 789,120
Int. Cl.² B29C *5/00*; B29D *9/00*
U.S. Cl. 264—17 **11 Claims**



1. The process for making a denture comprising teeth of hard non-hydrophilic polyurethane elastomer imbedded in soft non-hydrophilic polyurethane elastomer from a model assembly comprising a mouth model having mounted thereon a wax replicate denture, which comprises coating the mouth model and wax replicate denture portions of the model assembly with a release material, and imbedding it in investment material to form a mold having a cavity corresponding to the wax replicate denture, allowing or causing the investment material to set up, removing the mouth model and wax replicate denture therefrom, pouring into the cavity thus formed hard non-hydrophilic polyurethane elastomer-forming material to a depth above the gum line but below the gum-engaging portion of the denture to be formed and allowing or causing it to set up to form a hard non-hydrophilic polyurethane elastomer casting, removing the casting from the mold cavity and trimming off the flash from the anterior and posterior sides of the casting down to the gum line to delineate the shape of that portion of the teeth to be imbedded in the gum portion of the denture, removing the wax replicate denture from the mouth model, coating with release material the portion of the mouth model exposed by the removal of the wax replicate denture, assembling the mouth model and the female mold to form a denture mold, introducing thereinto soft non-hydrophilic polyurethane-forming material and allowing or causing the same to set up therein to form soft non-hydrophilic polyurethane elastomer and to chemically unite with the portions of the hard non-hydrophilic polyurethane elastomer teeth with which it is in contact, removing the cast denture from the mold and finishing them as needed.

4,115,489

PLASTICIZING AND MOLDING ARTICLES FROM POLYMER STRIP

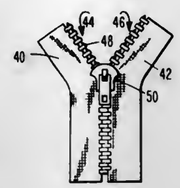
Norman W. Macfee, Conneaut Lake, Pa., assignor to Textron, Inc., Providence, R.I.

Filed Jun. 24, 1977, Ser. No. 809,842
Int. Cl.² B29D *5/00*; B29C *5/00, 11/00*
U.S. Cl. 264—23 **10 Claims**

1. In a method of manufacturing coupling elements for a slide fastener, the steps comprising:

advancing a continuous filament of thermoplastic,

sequentially plasticizing unsevered successive portions of the filament, and



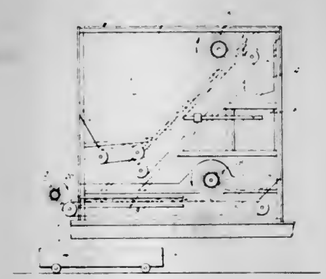
molding the plasticized successive portions in cavity means to at least partially form coupling elements.

4,115,490

MOLDING METHOD

Edmund Munk, Oberstenfeld, Germany, assignor to Furnier- und Sperrholzwerk J. F. Werz Jr. KG Werzalit-Pressholzwerk Oberstenfeld, Oberstenfeld, Germany

Continuation of Ser. No. 479,490, Jun. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 224,511, Feb. 8, 1972, abandoned. This application Dec. 12, 1975, Ser. No. 640,384
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1971, 2105998
Int. Cl.² B29C *25/00*; B29G *1/00*
U.S. Cl. 264—26 **2 Claims**



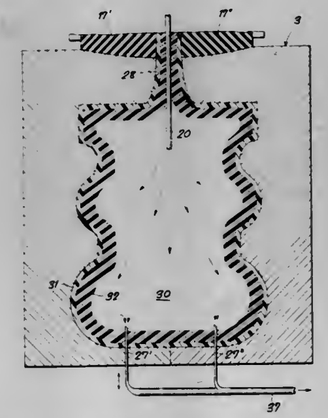
1. In a method of making molded articles, in combination, the steps of storing in a supply container a pourable mixture comprised of a heat-setting binder and a particulate and porous fibrous material the fibers of which contain in absorbed condition both moisture and a part of the heat-setting binder; continually transporting the pourable mixture of heat-setting binder and fibrous material from the supply container along a predetermined path into an unheated mold, the transporting step comprising pouring the pourable mixture into the unheated mold; subjecting the mixture poured into the unheated mold to a cold-molding operation in the mold without addition of heat to the mixture in the mold and not resulting in setting of the binder; during said transporting step utilizing a high-frequency electromagnetic field to impart to the pourable mixture of heat-setting binder and fibrous material, prior to entry thereof into the unheated mold, an adhesiveness so great that the mixture in the unheated mold, upon completion of a molding operation without addition of heat to the mixture in the mold, can be removed from the unheated mold as a unitary body and thereafter transported away from the unheated mold without falling apart, the imparting of said adhesiveness consisting of utilizing the high-frequency electromagnetic field to heat the pourable mixture of heat-setting binder and fibrous material to a temperature which does not cause the heat-setting binder to set and which is furthermore no higher than between 40° and 100° C. to convert the individual fibers of the fibrous material into a state in which the absorbed moisture and binder within the individual fibers throughout the fibrous material are expelled from the interiors to the surfaces of the individual fibers without thereby substantially changing the overall moisture content of the mixture, said molding operation performed in the unheated mold being carried out with the individual fibers of the fibrous material in said state; and upon completion of the molding operation, and without adding heat to the mixture in the mold, removing the mixture from the unheated mold as a unitary body and transporting it as a unitary body away from the unheated mold.

4,115,491

METHOD OF MAKING THERMOPLASTIC ARTICLES WITH POROUS CORES

Robert Hanning, Via Tagliaferri 15, Campione d'Italia, Italy

Division of Ser. No. 599,055, Jul. 25, 1975, Pat. No. 4,033,710.
This application May 17, 1976, Ser. No. 687,339
Int. Cl.² B29D *27/00*
U.S. Cl. 264—45.1 **3 Claims**



1. A method of making a thermoplastic article with a highly porous core surrounded by a skin of low to zero porosity, comprising the steps of:

providing a supply of substantially homogeneous flowable thermoplastic material;

directing part of said material in the form of an outer tubuler stream through a nozzle into a restricted entrance end of a mold cavity closed at its opposite end;

directing another part of said material, after initiation of the flow of said outer tubular stream, through said nozzle into said cavity as an inner tubular stream coaxially enveloped by said outer tubular stream;

continuously admixing a foaming agent with said inner tubular stream ahead of said entrance end;

admitting a fluid under pressure along the axis of said streams into said cavity, thereby building up a relatively nonporous continuous outer layer of said material on an inner cavity wall including said opposite end and a relatively porous continuous inner layer contiguously overlying said outer layer; and

allowing said layers to harden in said cavity.

4,115,492

PROCESS FOR PREPARING MICROPOROUS POLYETHYLENE HOLLOW FIBERS

Robert D. Mahoney, Dublin, and Stephen E. Schneider, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 619,431, Oct. 3, 1975, Pat. No. 4,020,230.
This application Jan. 28, 1977, Ser. No. 763,480
Int. Cl.² B29H *7/20*
U.S. Cl. 264—49 **8 Claims**

1. A process for preparing a hollow fiber which consists essentially of polyethylene and is a microporous hollow fiber

in which the porosity is contiguous and the O_2 gas permeability is at least 2×10^{-5} cc (STP) per cm^2 per second per cm Hg transmembrane pressure differential, said process comprising:

(a) providing a polyethylene/ester mixture of which about 20 to about 80 weight percent consists essentially of polyethylene and the balance consists essentially of an ester or a mixture of esters, of the formula $R^1(COOR^2)_n$, wherein n is 1 or 2, R^1 is a mono- or divalent hydrocarbon radical, optionally interrupted by one or two —O— or —S— links, and containing from 1 to 32 carbons, each R^2 independently is an aliphatic hydrocarbon radical of 2-26 carbon atoms or consists of two aliphatic hydrocarbon moieties joined by an —O— or —S— link and containing a total of from 3 to 20 carbons;

(b) heating said polyethylene/ester mixture to a temperature at which it is a homogeneous liquid but below the boiling or decomposition temperature thereof, and extruding it from a spinnerette in the form of a hollow fiber;

(c) cooling the issuing extrudate to solidify it while maintaining sufficient tension on the forming fiber to achieve a draw ratio of from about 1.0/1 to about 40/1;

(d) at a temperature above the melting point of the ester, but at least 10° below the cloud point of said homogeneous liquid, post-spin drawing the solidified fiber under sufficient tension to achieve an overall draw ratio of from about 1.5/1 to about 800/1; and

(e) contacting the post-spin drawn fiber with a liquid ester-removal medium, at a temperature intermediate of the freezing point of the medium and the flow point of the polyethylene, until at least a major proportion of the ester is removed from the fiber.

4,115,493

METHOD FOR MAKING A MONOLITHIC CERAMIC CAPACITOR EMPLOYING A NON-REDUCING DIELECTRIC CERAMIC COMPOSITION

Yukio Sakabe, and Hiroshi Seno, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Aug. 19, 1977, Ser. No. 826,115
Claims priority, application Japan, Aug. 19, 1976, 51/99397
Int. Cl.² C04B *35/46*
U.S. Cl. 264—61 **3 Claims**

1. A method for making a monolithic ceramic capacitor with internal electrodes made of base metal or alloy of the group consisting of nickel, iron, cobalt and alloys thereof, the method comprising the steps of preparing a plurality of dielectric green sheets with a dielectric ceramic composition, forming an internal electrode on each green sheet, stacking and pressing the resultant green sheets to form a monolithic multilayer unit, and providing terminations for the resultant monolithic unit, the terminations being electrically connected to the internal electrodes of the monolithic unit, wherein the improvement comprises mixing and presintering raw materials in such compositional proportions to produce said dielectric ceramic composition having the formula

$$\{(Ba_{1-x}Ca_x)O\}_m(Ti_{1-y}Zr_y)O_2$$

wherein

$1.005 \leqq m \leqq 1.03$

$0.02 \leqq x \leqq 0.22$

$0 < y \leqq 0.20$,

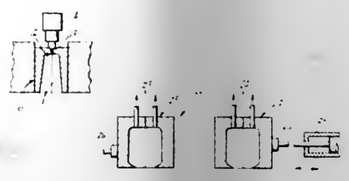
and the firing is effected in a reducing atmosphere containing hydrogen.

4,115,494

METHOD FOR CONTROLLED PROCESSING OF BLOWN PLASTIC ARTICLES

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Division of Ser. No. 479,287, Jun. 14, 1974, Pat. No. 3,970,419, and a continuation-in-part of Ser. No. 473,580, May 24, 1974, Pat. No. 3,966,378. This application Dec. 17, 1975, Ser. No. 641,638
Int. Cl.² B29C *17/07*
U.S. Cl. 264—89 **31 Claims**



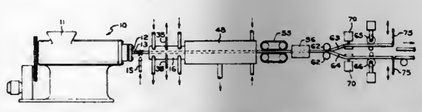
1. In a method for the preparation of hollow objects of moldable organic material by providing a parison in a formable condition, locating said parison in a blow mold, and expanding said parison within said blow mold to form an expanded parison, the improvement which comprises: providing a temperature adjusting retaining mold spaced laterally from said blow mold; transferring said expanded parison to said retaining mold by means of a core including the steps of separating said expanded parison while on said core from said blow mold, aligning said core with expanded parison thereon and said retaining mold by relative lateral movement, engaging said core with expanded parison thereon and said retaining mold by relative axial movement to seat same within said retaining mold and placing said expanded parison in surface contact with the walls of the retaining mold through an applied force; then separating said expanded parison from said core by relative axial movement and permitting said expanded parison to reside within said retaining mold in surface contact with the walls of the retaining mold for a predetermined period of time sufficient to adjust the temperature thereof before removal therefrom said applied force being continued through at least a part of said predetermined period of time has been inserted.

4,115,495

PROCESSING EXTRUDED THERMOPLASTIC POLYMER

Joachim Ernst Hartitz, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 6, 1977, Ser. No. 785,264
Int. Cl.² B29D *7/04*
U.S. Cl. 264—90 **7 Claims**



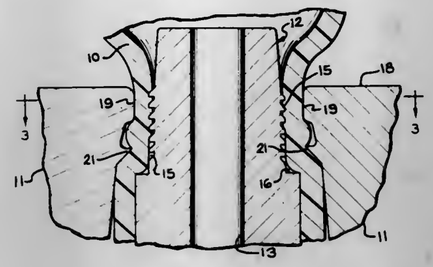
1. A method of manufacturing house siding comprising the steps of extruding a hollow rectangular shaped thermoplastic extrudate, cooling said extrudate immediately after said extruding, thence vacuum sizing and cooling said hollow extrudate as it is moved in a linear direction away from said extruder, thence cooling said sized extrudate to ambient temperature, thence heating the respective longitudinally extending corners of said hollow extrudate as it is fed in a direction away from said extruder to stress relieve said corners, cutting said hollow extrudate into continuous two separate flat L-shaped sidings, and thence cutting said sidings into predetermined length panels.

4,115,496

METHOD FOR MOLDING A THREADED BUNGHOLE

Thomas J. Krall, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 28, 1977, Ser. No. 810,767
Int. Cl.² B29C *5/06*; B29D *23/03*
U.S. Cl. 264—94 **3 Claims**



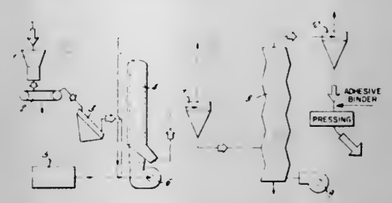
1. A method for molding a threaded hole in a blowmolded article comprising the steps of: positioning a parison within an interior space defined by open mold sections, said open mold sections having a main body portion and at least one compression molding portion; partially extending a threaded pin assembly into one end of said parison such that a portion of the threads on said pin assembly are within the confines of the compression molding portion of the mold sections; partially closing the open mold sections about the parison and the pin assembly to mold said portion of said threads in said parison; completing molding of threads in the parison by fully extending the pin assembly after the parison has substantially filed said portion of said threads and completely closing said mold sections and expanding the parison into contact with a blow cavity defined by the mold sections to form the blowmolded article with a threaded opening.

4,115,497

PROCESS FOR THE PRODUCTION OF PRESSED BODIES FROM MUNICIPAL REFUSE

Terje Martin Halmø, and Liv Skoglund, both of Trondheim, Norway, assignors to Elopak A/S, Spikkestad, Norway

Filed Dec. 1, 1976, Ser. No. 746,550
Claims priority, application Norway, Dec. 1, 1975, 754035
Int. Cl.² B29J *1/00*
U.S. Cl. 264—115 **8 Claims**



1. In a process of producing pressed bodies comprising preparing particulate material, adding adhesive binder thereto and pressing the resulting mixture into pressed bodies, the improvement which comprises preparing said particulate material from municipal refuse by the steps of:

(a) dividing up collected refuse, without the addition of fluid, to reduce its particle size;

(b) drying the refuse particles in a hot gas until their water content is reduced to less than 15 weight percent; and

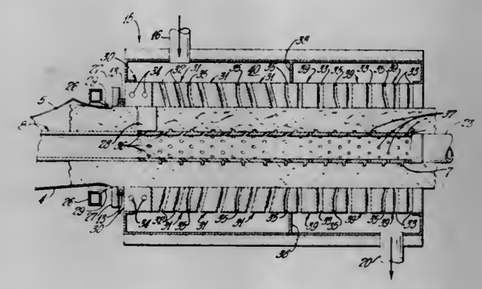
(c) screening the resulting particles of refuse in a stream of air in order to separate particles of at least those heavy fractions of metal, glass and stone thereby leaving behind the desired particulate material.

4,115,498

METHOD AND APPARATUS FOR MOLDING ARTICLES FROM FIBROUS MATERIAL

Ronald E. Kissell, Alexandria, and Ulysses T. Gambill, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 27, 1976, Ser. No. 661,893
Int. Cl.² B29D *23/00*
U.S. Cl. 264—119 **8 Claims**



1. A method of continuously producing fibrous glass pipe insulation comprising:

a. continuously advancing an elongated strip of fibrous glass wool between a forming shoe and a mandrel longitudinally of the strip and axially of the mandrel, the wool having uncured binder on glass fibers thereof;

b. continuously forming the strip into a longitudinally split hollow cylindrical shape by advancing it through the forming shoe to form it around the mandrel;

c. continuously advancing the formed strip through a curing chamber wherein the binder is cured while the strip is confined in the hollow cylindrical shape; and

d. continuously cooling the formed strip immediately before it enters the curing chamber to prevent partial curing of the binder in upstream portions of the strip in the forming shoe and thereby prevent build-up of binder on the forming shoe.

4,115,499

LARGE VOID-FREE POLYETHYLENE CASTINGS

Ival O. Salyer, Dayton, and Charles J. North, West Carrollton, both of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Division of Ser. No. 565,165, Apr. 4, 1975, Pat. No. 3,979,357, which is a division of Ser. No. 425,894, Dec. 13, 1973, Pat. No. 3,929,939, which is a continuation of Ser. No. 219,498, Jan. 20, 1972, abandoned. This application Jan. 16, 1976, Ser. No. 649,628
Int. Cl.² C08L *23/06*
U.S. Cl. 264—122 **8 Claims**

1. A method of making a void-free composite of polyethylene which comprises the steps of:

(a) placing in a mold a blend of 25 to 50 weight percent low density polyethylene powder with 50 to 75 weight percent high density polyethylene pellets;

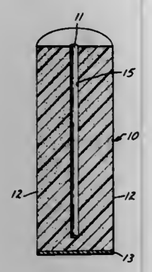
(b) heating the blended polyethylene to a temperature above the melting point of the low density polyethylene, but below the temperature at which the high density polyethylene will flow; and

(c) causing the molten low density polyethylene to flow to fill the voids.

4,115,500
PROCESS FOR PRODUCING A POROUS MATRIX

Douglas W. Voegeli, Shoreview, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 539,088, Jan. 7, 1975, Pat. No. 3,978,176, which is a continuation-in-part of Ser. No. 286,112, Sep. 5, 1972, abandoned. This application Jun. 14, 1976, Ser. No. 695,904
Int. Cl.² B29G *1/00*
U.S. Cl. 264—122 **7 Claims**

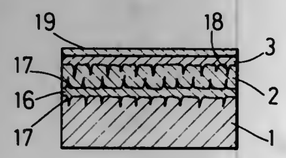


1. Process for producing a porous matrix having numerous interconnecting passageways therethrough and extending to the surfaces thereof which comprises entirely coating the surfaces of solid, substantially spherical particles of substantially uniform size in the range of about 30 to 90 microns with a solid, uncured thermosetting resin to a substantially uniform coating thickness provided by employing about 10 to 15 parts by weight of solid resin for each 100 parts of spherical particles and distributing said resin evenly over the surfaces of said particles, placing a mass of said coated particles in a heated mold, in the presence of an inert lubricant, subjecting said mass to pressure just sufficient to adhere the coated particles to each other at points of contact but not so much pressure as to fill the interstices between said coated particles, and then, curing the said resin to a unitary matrix in which the said resin is confluent at said point of contact while remaining in place as a uniform coating of essentially its original thickness over the surfaces of said particles in the interstices therebetween.

4,115,501
METHOD OF PRODUCING CEMENT PANELS REINFORCED WITH FIBERS

Naomichi Yano, Osaka, Japan, assignor to Kubota Ltd., Osaka, Japan

Filed Feb. 14, 1977, Ser. No. 768,533
Claims priority, application Japan, Feb. 12, 1976, 51-14728; Feb. 12, 1976, 51-14729
Int. Cl.² C04B *41/04;* B28B *1/16*
U.S. Cl. 264—133 **3 Claims**



1. A method of producing cement panels reinforced with fibers comprising the successive steps of:
- preparing a soft base plate material by spreading a mixture composed predominantly of inorganic fibers and a cement to a uniform thickness and applying water to the spread mixture,
- applying a liquid synthetic resin composition to a surface of the soft base plate material to form an inner waterproof layer thereon, with the synthetic resin composition penetrating into the base plate material among the particles thereof,
- applying a finely divided coloring material to the waterproof layer immediately after the application of the synthetic resin composition to form a layer of the coloring material, with the synthetic resin composition penetrating also into the coloring material layer among the particles thereof, the coloring material being composed predominantly of a cement and a pigment mixed together,
- pressing the resulting coated base plate material to compact the material,
- cutting the compacted material to a shape of suitable dimensions in accordance with the dimensions of the product to be obtained and to thereby obtain base plates,
- spontaneously curing the base plates for 2 to 3 days to obtain semihardened base plates,
- applying a colorless transparent liquid synthetic resin composition to the coloring material layer of each of the semihardened base plates to form a surface waterproof layer, and
- maintaining the resulting base plates in a high-temperature high-pressure atmosphere.

4,115,502
EXTRUSION METHOD INVOLVING ROTATIONS

Ole-Bendt Rasmussen, 14, Anemonevej, 2820 Gentofte, Denmark

Filed Dec. 9, 1975, Ser. No. 639,006
Int. Cl.² B29F *3/10*
U.S. Cl. 264—173 **13 Claims**



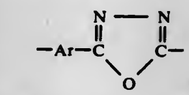
1. A method of extruding a continuous or discontinuous tubular sheet from an extrudable plastic material which comprises the steps of feeding said extrudable material to a rotatable extrusion die having there on an exposed, exteriorly accessible generally continuous circular inlet channel by laying in pressure-free fashion at least one continuous stream of said extrudable material said channel along a generally tangential path while rotating said die and channel about the channel axis to lay said stream in spiral fashion within said channel, said die having at one end spaced from said channel a continuous or discontinuous generally circular extrusion orifice in communication with the bottom of said channel through a continuous or discontinuous circular passageway, applying pressure against the material spiraled in said channel downstream of the tangential point of delivery by means associated with said channel and operative upon rotation of said channel about its axis to advance the material through said die and out of said orifice, and collecting the thus extruded sheet.

4,115,503
NOVEL PROCESS FOR THE PREPARATION OF FIBER OF ARYLENE OXADIAZOLE/ARYLENE N-ALKYLHYDRAZIDE COPOLYMER

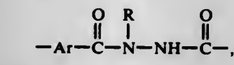
Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 390,667, Aug. 22, 1973, abandoned, and a continuation of Ser. No. 202,590, Nov. 26, 1971, abandoned, and Ser. No. 422,041, Dec. 5, 1973, abandoned, and a continuation of Ser. No. 202,669, Nov. 26, 1971, abandoned. This application Nov. 4, 1974, Ser. No. 520,503
Int. Cl.² D01F *7/00*
U.S. Cl. 264—184 **10 Claims**

1. A process for preparing fiber of a random copolymer consisting essentially of recurring units of the formulas

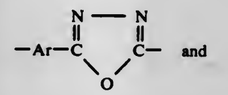

(I)

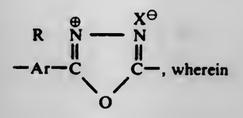
and


(II)

wherein Ar is arylene and R is lower alkyl and wherein the mole ratio of units (I) to units (II) is between 20:80 and 95:5 comprising

(1) extruding a spinning dope into an aqueous coagulation medium, said dope consisting essentially of (a) a random copolymer having an inherent viscosity of at least 2.0 and consisting essentially of recurring units of the formulas


(A) and


(B), wherein

X^- is an anion contained in said dope and Ar and R have the same meaning as above and wherein the mole ratio of units (A) to units (B) is between 20:80 and 95:5 and (b) a solvent consisting essentially of oleum or sulfuric acid of at least 90% concentration;

(2) reacting said copolymer of the dope with water present in said aqueous coagulation medium and obtaining said copolymer consisting essentially of units (I) and (II) in the shape of a fiber;

(3) withdrawing said fiber from said coagulation medium;

(4) washing said fiber with water and an aqueous alkaline solution to remove and/or neutralize sulfuric acid which is in contact therewith; and

(5) drying said fiber.

4,115,504
METHOD FOR CASTING VITREOUS MATERIALS USING THE LOST WAX PROCESS

Jean Dewitte, Boulogne, and Pierre Letourneur, Paris, both of France, assignors to Compagnie Internationale de Minerallurgie-CIM, Neuilly-sur-Seine, France

Filed Nov. 12, 1976, Ser. No. 741,452
Claims priority, application France, Nov. 19, 1975, 75 35301
Int. Cl.² B29C *1/02*
U.S. Cl. 264—221 **18 Claims**

1. A process for casting vitreous materials according to the lost wax process comprising:

(a) making a pattern of an article to be cast using a substance which is vaporized at the casting temperature of the vitreous material;

(b) embedding the vaporizable pattern in a heat resistant silica compound such as sand or microballs of a refractory oxide which surrounds the pattern to form a casting mold, the sand or microballs being contained in a receptacle called a casting shell;

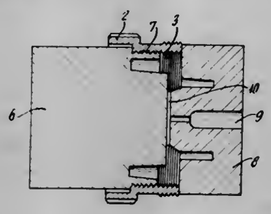
(c) casting the vitreous material at a temperature at which its viscosity is between 20 and 100 poises; and

(d) removing the cast article from the casting mold.

4,115,505
PROCESS AND APPARATUS FOR THE MANUFACTURE OF THREAD ENGAGEABLE MEMBERS

Tsuneyo Metabi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1977, Ser. No. 772,373
Claims priority, application Japan, Mar. 12, 1976, 51-27515
Int. Cl.² B29C *5/00;* B29D *23/02;* B29F *1/00*
U.S. Cl. 264—242 **10 Claims**



1. The method for making an assembled pair of first and second tubular members having mutually engaging threaded portions, comprising: positioning a set of die members with said first tubular member releaseably fastened to a first of said die members at a predetermined position thereon by engaging threads of said first tubular member with threads of said first die member until said first tubular member abuts a shoulder of said first die member, inserting a second of said die members into said first tubular member, abutting said first die member, said die members and said first tubular members defining a mold cavity therebetween, at least a threaded portion of said first tubular member defining a surface of said cavity, and said cavity being coaxial with said first member threaded portion injecting a molten thermoplastic material into said cavity cooling and solidifying said thermoplastic material in said cavity to produce said second tubular member in threaded engagement with said first tubular member, separating said die members and removing said first and second tubular members.

4,115,506
METHOD FOR PRODUCING INJECTION MOLDED SKI

Yoshiharu Shima, Ueda, Japan, assignor to Nissei Plastics Industrial Co., Ltd., Japan

Division of Ser. No. 751,755, Dec. 17, 1976. This application Oct. 26, 1977, Ser. No. 845,542
Int. Cl.² B29D *3/00;* B29F *1/00*
U.S. Cl. 264—250 **4 Claims**

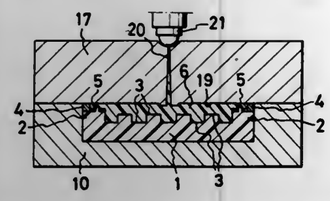
1. A method for producing injection molded skis which comprises:

(A) closing a pair of molds including a female mold having mold surfaces for forming the top surface and both side surfaces of a ski body and a first mold half having mold surfaces to form a bottom surface and edge receiving surfaces having a plurality of projections, of said ski body, and injecting molten thermoplastic resin into the cavity of said closed molds to form a ski body having edge receiving protions with said projections;

(B) opening said molds by removing said first mold half from said female mold and fitting a pair of steel edges to said

edge receiving portions by fixing said steel edges to said projections on said edge receiving portions; and

(C) closing said female mold with a second mold half form-



ing another cavity between said ski body and said second mold half, and injecting thermoplastic resin into said another cavity to form a sole plate which is integrally joined with said ski body and said steel edges.

4,115,507

MANUFACTURE OF ABRASION-RESISTANT SCREENING APPARATUS

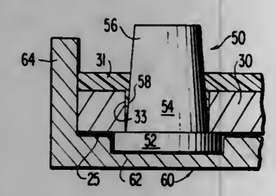
Francisco Antonio Pico, deceased, late of Chihuahua, Mexico, and James J. Shanley, personal representative, 10910 Picasso La., Potomac, Md. 20854

Continuation-in-part of Ser. No. 69,813, Sep. 4, 1970, Pat. No. 3,972,974. This application Aug. 3, 1976, Ser. No. 711,212

The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.

Int. Cl.² B29D *3/02, 9/00;* B29G *7/00*

U.S. Cl. 264—267 **26 Claims**



1. A method of coating a perforated substrate to produce a screening member of increased abrasion resistance, the substrate having upper and lower major surfaces and having perforations defined by sidewalls extending between said major surfaces, said method comprising the steps of

providing a plurality of forms, each form having a base portion and a pair of consecutively superposed sections carried by the base section, the lower section contiguous to the base having sidewalls not greater in size and shape than the sidewalls of a perforation, the upper section having sidewalls inwardly spaced from the sidewalls of the first upper section, the cross sectional area of the upper section in planes parallel to the upper major surface of the substrate not increasing throughout the height of the upper section, the base portion being designed to limit movement of the form relative to the lower major surface of the substrate,

positioning a form in each perforation with the base portion contiguous to the lower major surface of the substrate, with at least the lowermost portion of the lower section embraced by the sidewalls of the perforation and with the upper section protruding above the upper major surface of the substrate,

forming a layer of hardenable elastomer in a plastic state on the upper surface of the substrate to a depth not greater than the height of the upper portion of the form,

hardening the elastomer to form a coating of abrasion-resistant elastomer adhered to the upper surface of the substrate and surrounding the upper portion of the form, and

removing the form after the layer of abrasion-resistant elastomer is formed.

4,115,508

POLYMERS AND ROTATIONALLY MOLDING SAME

James K. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 31, 1977, Ser. No. 802,081

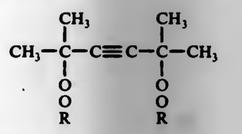
Int. Cl.² B29C *5/04;* C08K *3/04*

U.S. Cl. 264—310 **22 Claims**

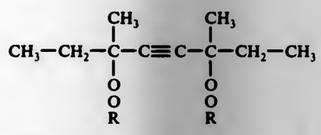
1. A composition of matter comprising a solid polymer, an acetylenic diperoxy compound and a carbon black

wherein the solid polymer is selected from the group consisting of ethylene hompolymers, copolymers of ethylene and at least one acyclic mono-1 olefin hydrocarbon having 3 to 8 carbon atoms per molecule, and mixtures thereof,

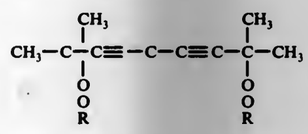
wherein the amount of the acetylenic diperoxy compound is a crosslinking amount and the acetylenic diperoxy compound is selected from the group consisting of hexynes having the formula



octynes having the formula



and octadiynes having the formula



wherein R is selected from the group consisting of tertiary alkyl, alkyl carbonate, and benzoate; and

wherein the amount of the carbon black is an amount to provide a surface area using nitrogen according to ASTM D 3037-76 of up to about 30 $m^2/100$ g of polymer; and

wherein said polymer has a transition metal catalyst residue content of less than about 3 parts per million.

4,115,509

MOULDING OF FILLED SYNTHETIC PLASTICS MOULDING COMPOSITIONS

Brian John Kendall-Smith, Birmingham, and Michael Glynn Bonnington, Sedgley, both of England, assignors to British Industrial Plastics Ltd., England

Continuation of Ser. No. 630,174, Nov. 10, 1975, abandoned. This application Oct. 25, 1977, Ser. No. 845,217

Claims priority, application United Kingdom, Nov. 12, 1974, 48980/74

Int. Cl.² B29B *5/04*

U.S. Cl. 264—331 **8 Claims**

1. The method of injection moulding amino-formaldehyde thermosetting material to produce a cured artefact having filler homogeneously dispersed therewithin without requiring the preliminary step of compounding a moulding powder having the filler already homogeneously dispersed therein, which comprises the steps of:

(a) providing a dry thermosetting amino-formaldehyde material which is partly condensed but essentially solid at ambient temperatures;

(b) introducing said dry material and filler in at best a rough, non-homogeneous blend directly into the barrel of an injection moulding machine in the absence of solubilizing quantities of solvent, said machine having a heated barrel and a rotary screw which is axially movable in said barrel;

(c) rotating said screw simultaneously to feed the blend along the barrel, further condense the material, plasticize said material and impregnate the filler with the plasticized material to provide a homogeneous blend, and effect transfer of homogeneous blend ahead of the screw by screw-back of the screw;

(d) injecting homogeneous blend from ahead of the screw into a heated mould; and

(e) curing the artefact in the mould.

4,115,510

PROCESS AND APPARATUS FOR CURING ELASTOMERIC CONVEYOR BELTS AND THE LIKE

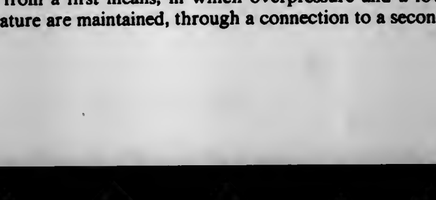
Augusto Previati, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Nov. 16, 1976, Ser. No. 742,245

Claims priority, application Italy, Nov. 27, 1975, 29692 A/75

Int. Cl.² B29H *5/01, 7/22*

U.S. Cl. 264—347 **6 Claims**



1. A process for curing conveyor belts and the like made out of an elastomeric composition containing volatile substances which comprises the three steps of

(1) heating said conveyor belt to the curing temperature of the elastomeric composition, subjecting it to a pressure less than 6 kg/cm^2 and at least equal to the vapor tension of the volatile substances present in said elastomeric composition while at the curing temperature until the crude elastomeric composition plastifies without significant bubble formation,

(2) maintaining the conveyor belt at the curing temperature of the elastomeric composition, increasing the applied pressure to a valve between 6 and 10 kg/cm^2, and molding the elastomeric composition of the conveyor belt without provoking any danger of alterations in the arrangement of the structure of the conveyor belt itself, and

(3) while still maintaining the conveyor belt at the curing temperature of the elastomeric composition, subjecting said conveyor belt to a pressure of less than 6 kg/cm^2 but not less than the vapor tension of the volatile substances present in the said elastomeric composition until the curing of the elastomeric composition of the conveyor belt is completed.

4,115,511

CONTINUOUS VULCANIZATION OF RUBBER

Rune Mauritzon, Box 2024, 550 02 Jönköping, Sweden

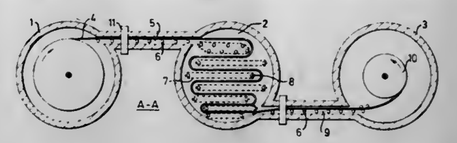
Filed Nov. 22, 1976, Ser. No. 743,660

Claims priority, application Sweden, Nov. 27, 1975, 7513413

Int. Cl.² B29H *5/01*

U.S. Cl. 264—347 **3 Claims**

1. A method of vulcanization of a strip of rubber or rubber-like material under such an overpressure that blisters in the material are avoided by the material being continuously transported from a first means, in which overpressure and a low temperature are maintained, through a connection to a second means, in which overpressure and vulcanization temperature are maintained, and wherein the material is unrolled in said first means and transported in a path running to and fro through said second means, whereafter the material rolled up



and in that the pressure in said first means is kept somewhat higher than the pressure in said second means in order to reduce the heat leakage, via said connection path, from said second means to said first means.

4,115,512

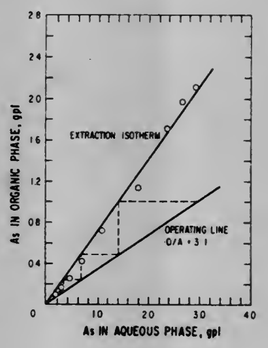
METHOD FOR REMOVING ARSENIC FROM COPPER AND/OR NICKEL BEARING AQUEOUS ACIDIC SOLUTIONS BY SOLVENT EXTRACTION

Derek G. E. Kerfoot, Edgware, England, assignor to Noranda Mines Limited, Toronto, Canada

Filed Dec. 3, 1976, Ser. No. 747,104

Int. Cl.² C01B *27/00*

U.S. Cl. 423—24 **12 Claims**



1. A method for removing arsenic by solvent extraction from a copper and/or nickel bearing aqueous solution containing about 100 to 600 gpl sulphuric acid, comprising contacting said solution with an organic solution consisting of about 5 to 80% by volume of tributylphosphate and a quaternary ammonium reagent in a positive amount up to about 15% by volume in an organic diluent, and subsequently stripping the arsenic from the loaded organic solution with a stripping agent.

4,115,513

PROCESSING OF AMMONIUM PARATUNGSTATE FROM TUNGSTEN ORES

Avinash D. Kulkarni, Montclair, N.J., and James G. Cleary, Dormont Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 16, 1977, Ser. No. 825,124

Int. Cl.² C01G *41/00*

U.S. Cl. 423—56 **4 Claims**

1. The method of obtaining highly purified ammonium paratungstate crystals from tungsten ore, said method comprising:

(a) reducing the ore to be processed to a very finely divided status;

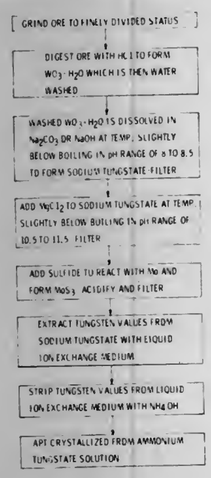
(b) forming a slurry of the finely divided ore in a moderately strong HCl solution and digesting the slurry at a temperature at least about 100° C for a sufficient time to substantially convert the tungsten values in the ore to $WO_3.H_2O$,

separating the resulting tungstic oxide from the acid solution to remove acid-soluble impurities from said tungstic oxide, and water washing the separated tungstic oxide to remove substantially all remaining water-soluble impurities therefrom;

(c) dissolving the washed tungstic oxide in an aqueous solution of Na_2CO_3 or NaOH at a temperature slightly below the boiling point of water with the pH adjusted to a steady value of from about 8 to 8.5 to convert the insoluble tungstic oxide to soluble sodium tungstate solution, and separating the soluble sodium tungstate solution from remaining insoluble material to further remove impurities;

(d) heating the resulting sodium tungstate solution to slightly below the boiling point of water and adding sodium hydroxide thereto to raise the pH to about 10.5 to 11.5, adding to said heated solution magnesium chloride in amount sufficient at least to lower the pH of said solution, thereafter adding to the resulting solution additional sodium hydroxide to raise the pH thereof to about 10.5 to 11.5 to precipitate as hydroxide the magnesium and additional metallic impurity leaving a further purified sodium tungstate solution, and separating the resulting sodium tungstate solution from the formed precipitate;

(e) adding to the further purified sodium tungstate solution at least one of ammonium sulfide and thioacetamide in



amount more than sufficient to react with any molybdenum impurity present to form MoS_3, and with the solution at a temperature slightly less than the boiling point of water acidifying the solution to a pH in the range of from about 2 to 3 to precipitate substantially all molybdenum as MoS_3 from the sodium tungstate solution, and separating the precipitated MoS_3 from the residual solution;

(f) intimately contacting said purified sodium tungstate solution with a water-immiscible ion exchange liquid in which the active ingredient is amine salt the anionic portion of which is exchanged with the tungstate radical of said sodium tungstate solution to form amine tungstate and the corresponding sodium salt, settling said immiscible liquids to separate them, and isolating the separted liquids from each other;

(g) intimately contacting said tungstate-containing ion exchange liquid with ammonium hydroxide solution to form immiscible ammonium tungstate solution and tungstate-stripped ion exchange liquid, settling said immiscible liquids to separate them, and isolating the separated liquids from each other; and

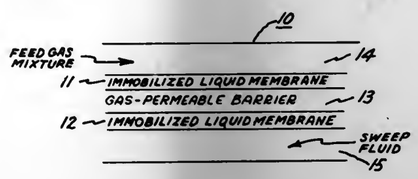
(h) converting said isolated ammonium tungstate solution to ammonium paratungstate crystals, and separating the precipitated ammonium paratungstate crystals from residual solution.

4,115,514

SEPARATION OF HYDROGEN SULFIDE FROM GAS MIXTURE INCLUDING CARBON DIOXIDE

William J. Ward, III, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 599,871, Jul. 28, 1975. This application May 11, 1977, Ser. No. 796,017
Int. Cl.² B01D *53/34*
U.S. Cl. 423—232 **3 Claims**



1. A method of selectively removing hydrogen sulfide from a mixture of gases including carbon dioxide, comprising:

contacting a first immobilized liquid membrane with said mixture, said first immobilized liquid membrane consisting of a carbonate bicarbonate mixture to allow facilitated transport of hydrogen sulfide through said first membrane to a porous gas-permeable barrier;

passing gases emerging from said first membrane through said gas-permeable barrier; and

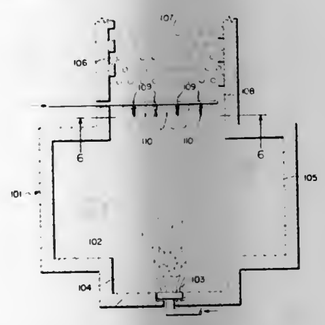
contacting a second immobilized liquid membrane with gases emerging from said gas-permeable barrier, said second immobilized liquid membrane consisting of a carbonate/bicarbonate mixture to allow facilitated transport of hydrogen sulfide emerging from said gas-permeable barrier through said second membrane.

4,115,515

METHOD FOR REDUCING NO_x EMISSION TO THE ATMOSPHERE

Arthur R. Tenner, Morris Plains, and David W. Turner, South Brunswick, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 678,656, Apr. 20, 1976, abandoned. This application Jun. 2, 1977, Ser. No. 802,868
Int. Cl.² C01B *21/00*
U.S. Cl. 423—235 **4 Claims**



1. In a combustion process wherein a reducing gas comprising ammonia, either alone or in combination with one or more additional reducing gases is injected into a flowing combustion effluent containing NO and oxygen when at least a portion of said combustion effluent is at a temperature within the range of from about 700° to about 1000° C. to reduce the NO concentration therein, the improvement which comprises placing an injection means having a plurality of spaced apertures or nozzles at a location within the path of said flowing combustion gases and generally perpendicular to the path of said flowing combustion gases, at least a portion of said gases flowing across said injection means being at a temperature in the range of from 700° to 900° C. and at least a portion of said gases flowing across said injection means being at a temperature in the range of from 900° to 1000° C., and injecting a first gas mixture comprising ammonia and an inert diluent and wherein the said ammonia is the sole reducing gas contained therein through one or more of said apertures or nozzles into said combustion gases that are at a temperature in the range of from 900° to 1000° C. and injecting a second gas mixture comprising ammonia, an additional reducing gas and an inert diluent through one or more of said apertures or nozzles into said combustion gases that are at a temperature in the range of from 700° to 900° C.

4,115,516

METHOD OF TREATING EXHAUST GAS DISCHARGED FROM NITRIC ACID PLANT

Koichi Takami; Shingo Abe; Yukio Takigawa, all of Kita-Kyushu; Toshinori Tsutsumi, Fukuoka, and Yoshio Kinsho, Kita-Kyushu, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Jun. 10, 1977, Ser. No. 805,354
Claims priority, application Japan, Jun. 22, 1976, 51-73675
Int. Cl.² B01D *53/00*
U.S. Cl. 423—239 **6 Claims**

1. In a method for the catalytic reduction of NO_x in a compressed exhaust gas discharged from a compressed absorption type nitric acid plant containing an exhaust gas turbine and catalyst conversion layer with ammonia or an ammonia precursor, the improvement comprising the steps of:

compressing the exhaust gas discharged from said nitric acid plant;

mixing said compressed exhaust gas with ammonia and passing said mixture through a catalyst bed which catalyzes the reductive decomposition of NO_x with ammonia;

preventing the precipitation of ammonium nitrate from said exhaust gas containing an equilibrium mixture of ammonia, NO_x ammonium nitrate by maintaining the temperature of the main flow of the exhaust gas in the zone from the point which ammonia or an ammonia precursor is mixed with said exhaust gas to the outlet of the exhaust gas turbine at a level sufficient to prevent precipitation of said ammonium nitrate from the equilibrium mixture;

feeding an inert gas into passages in said zone where said exhaust gas can stagnate in order to flush exhaust gas from said passages thereby preventing precipitation of said ammonium nitrate; and

discharging the treated exhaust gas through said exhaust gas turbine.

4,115,517

TREATMENT OF SULFUR OXIDES WITH AQUEOUS GLYOXYLIC ACID SOLUTIONS

William H. Stark, Cincinnati, Ohio, and Cheng-Hsien Chu, Etobicoke, Canada, assignors to Spring Chemicals Limited, Toronto, Canada

Filed Aug. 24, 1976, Ser. No. 717,082
Int. Cl.² C01B *17/00*; C01F *1/00*
U.S. Cl. 423—243 **8 Claims**

1. A process for the extraction of sulfur dioxide and sulfur trioxide from gases containing sulfur dioxide and sulfur trioxide, which process comprises contacting the gas with an aqueous solution of glyoxylic acid to absorb sulfur dioxide and sulfur trioxide in said aqueous solution, removing the sulfur dioxide from the aqueous glyoxylic acid solution by heating to strip the sulfur dioxide as a vapor from the aqueous glyoxylic acid solution, and thereafter removing absorbed sulfur trioxide by contacting the aqueous glyoxylic acid solution with a barium compound selected from the group consisting of barium hydroxide and barium carbonate, the barium compound being essentially inert to the glyoxylic acid and being present in an amount effective to precipitate barium sulfate from the aqueous glyoxylic acid solution.

4,115,518

GAS DESULPHURIZATION

Bernard Delmon, Wavre, and Ghislain Van Houte, Leuven, both of Belgium, assignors to Unibra, Belgium

Filed Nov. 4, 1975, Ser. No. 628,663
Claims priority, application France, Nov. 6, 1974, 74 36862
Int. Cl.² C01B *17/00*; B01J *8/00*; C09K *3/00*
U.S. Cl. 423—244 **18 Claims**

1. A method for desulfurizing flue gases wherein said gases are contacted at a temperature of 250° to 1300° C with a reagent in powdered form consisting of a main component selected from the group consisting of calcium, magnesium and mixed calcium and magnesium oxides, hydroxides and carbonates, said main component being impregnated with an additive in an amount of from 0.1 to 15% by mole, said additive being selected from the group consisting of hydrochloric acid, hydrobromic acid and sulfuric acid followed by drying, thus converting said reagent into a sulfate and recovering said sulfate.

4,115,519

MANUFACTURING PROCESS FOR SODIUM PERBORATE MONOHYDRATE AND PRODUCT OBTAINED ACCORDING TO THE PROCESS

Jean Brichard, Vilvoorde, and Jean-Claude Colery, Brussels, both of Belgium, assignors to Interox, Brussels, Belgium

Filed Nov. 1, 1976, Ser. No. 737,686
Claims priority, application Luxembourg, Nov. 6, 1975, 73751
Int. Cl.² C01B *15/12*
U.S. Cl. 423—279 **12 Claims**

1. A process for the manufacture of sodium perborate monohydrate in the form of abrasion resistant granules, comprising introducing an aqueous solution containing hydroen peroxide and an aqueous solution containing sodium metaborate simultaneously into a fluidized bed dryer which contains seeds of a size which is smaller than that of the granules one wishes to obtain, and evaporating the water present in the said aqueous solutions by inroducing fluidization gas into the fluidized bed dryer.

4,115,520

PROCESS FOR THE SYNTHESIS OF TETRADECAHYDROUNDECABORATE COMPOUNDS

Gary Burr Dunks, Peekskill, and Kathy Palmer Ordonez, Eastchester, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 799,005, May 20, 1977, which is a continuation of Ser. No. 668,859, Mar. 22, 1976, abandoned, which is a continuation of Ser. No. 436,663, Jan. 25, 1974, abandoned. This application Sep. 29, 1977, Ser. No. 837,981
Int. Cl.² C01B *35/18*
U.S. Cl. 423—287 **3 Claims**

1. Process for preparing a tetradecahydroundecaborate which comprises contact in an inert solvent medium and at a temperature of from 100° C. to 120° C. BF_3 with an octahydrotriborate having the formula MB_3H_8 wherein M represents an ion selected from the class consisting of lithium, sodium, potassium, cesium and alkylammonium.

4,115,521

PROCESS FOR THE SYNTHESIS OF DECABORANE(14)

Gary Burr Dunks, Peekskill, and Kathy Palmer Ordonez, Eastchester, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 668,859, Mar. 22, 1976, abandoned, which is a continuation of Ser. No. 436,663, Jan. 25, 1974, abandoned. This application Jul. 5, 1977, Ser. No. 813,073
Int. Cl.² C01B *35/18*
U.S. Cl. 423—294 7 Claims

1. Process for preparing decaborane (14) which comprises contacting and oxidizing tetradecahydroundecaborate (−1) ions at a temperature between −10° and 50° C with an oxidizing agent having an electrode potential (E°) of at least +0.6 volts.

4,115,522

STABILIZED RED PHOSPHORUS AND PROCESS FOR MAKING IT

Horst Staendeke; Franz-Josef Dany, and Joachim Kandler, all of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 11, 1977, Ser. No. 814,464
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631532
Int. Cl.² C01B *25/01, 25/02, 25/04*
U.S. Cl. 423—322 9 Claims

1. In a process for making a homogeneous blend of red phosphorus stabilized against oxidation having a particle size of at most about 2 mm and the neutral aluminum, magnesium, calcium or zinc salt of orthophosphoric acid, the improvement which comprises: intimately blending red phosphorus particles with a size of at most about 2 mm with about 0.5 to 5 weight % of orthophosphoric acid or sodium hydrogen phosphate, based on red phosphorus; suspending the blend in water and heating the resulting suspension to about 60° to 95° C.; gradually admixing the suspension with at least stoichiometric proportions of an aqueous solution of a water-soluble aluminum, magnesium, calcium or zinc salt to cause precipitation of the respective salt of orthophosphoric acid from the aqueous suspension at a pH of 3.0 to 7.5; filtering the resulting mixture, and drying the filter residue comprising a homogeneous blend of red phosphorus and said neutral salt of orthophosphoric acid at elevated temperature.

4,115,523

SYNTHESIS OF HYDROXYLAMINE FROM HYDROGEN SULFIDE AND NITRIC OXIDE

Charles T. Ratcliffe, Morristown, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 7, 1977, Ser. No. 848,975
Int. Cl.² C01B *21/14*
U.S. Cl. 423—387 6 Claims

1. In a process for producing hydroxylamine including reacting excess hydrogen sulfide with nitric oxide, or mixtures of nitrogen oxides, in aqueous acidic media of pH below 7 at ambient temperature and pressure, the improvement which comprises conducting the reaction in the presence of a solid sulfur-resistant catalyst and substantially in the absence of elemental oxygen.

4,115,524

PRODUCTION OF CARBON MONOXIDE

Martin R. Cines, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

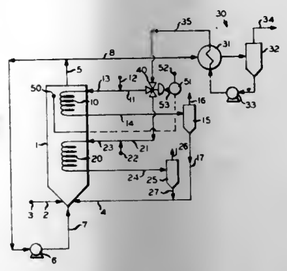
Filed Feb. 2, 1977, Ser. No. 764,927
Int. Cl.² C01B *31/18*
U.S. Cl. 423—415 A 14 Claims

1. A process for the production of carbon monoxide comprising

a. reacting a carbon source with ZnO under such conditions of temperature and pressure that the temperature is at or above the boiling point of zinc under the given pressure conditions and that the reaction forms a gaseous effluent comprising CO and Zn,

b. separating Zn from said gaseous effluent and removing a CO containing gas as the product of the process,

c. oxidizing a first portion of said Zn with air to form a first quantity of ZnO,



d. oxidizing a second portion of said Zn with H_2O to form a second quantity of ZnO, and

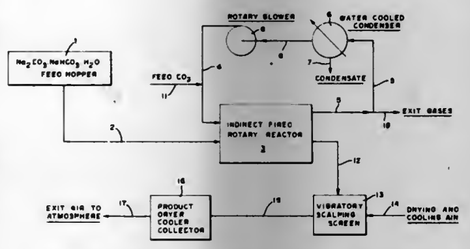
e. transferring at least a portion of the heat developed in the oxidizing steps c and d to the reaction step a by indirect heat exchange means.

4,115,525

ABSORPTIVE LOW BULK DENSITY PRODUCT FROM SODIUM SESQUICARBONATE

Alan B. Gancy, and Rustom P. Poncha, both of Syracuse, N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 2, 1973, Ser. No. 356,663
Int. Cl.² C01D *7/14, 7/37*
U.S. Cl. 423—425 6 Claims



1. A method for the treatment of sodium sesquicarbonate particles to product product particles having a bulk density of from 12 to 25 pounds per cubic foot and a pore volume of 0.20 to 0.42 ml/gm (pores having a diameter equal to or less than 2 microns) without loss of particulate identity which comprises passing said sodium sesquicarbonate particles through a reaction zone wherein the particles are heated to a temperature within the range of 70° to 105° C., introducing into said reaction zone a gas mixture comprising by volume 15–85 percent carbon dioxide and 15–80 percent water vapor, maintaining said gas mixture containing water vapor in direct contact with the particles during the initial period of reaction until the particles contain at least 10 percent of Wegscheider's Salt, and continuing the reaction in said reaction zone with Net production of water until the particles contain from 85 percent to in excess of 95 percent by weight of Wegscheider's Salt and have a water content of less than 12 percent by weight, discharging the gas containing water from said reaction zone after contact with the particles, and discharging said product particles from said reaction zone.

4,115,526

PROCESS FOR THE PREPARATION OF REACTIVE TUNGSTEN AND DERIVATIVES THEREOF

James J. Auborn, Warren, N.J., and Elizabeth A. Trickett, Acton, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 17, 1977, Ser. No. 807,362
Int. Cl.² C01B *31/34*
U.S. Cl. 423—440 1 Claim

1. A continuous process of preparing binary compounds of tungsten and carbon comprising the steps of

reducing an oxygen-containing tungsten compound by heating said compound in a hydrogen-containing atmosphere at temperatures ranging from about 485° C. to about 585° C., and

carburizing the resultant material in a methane-containing atmosphere at temperatures in the range from about 485° C. to about 600° C.

whereby there is produced finely divided ditungsten carbide (W_2C).

4,115,527

PRODUCTION OF CARBON FIBERS HAVING HIGH ANISOTROPY

Sugio Otani, Kiryu; Shoji Watanabe, Niigata, and Tadashi Araki, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Toyo Boseki Kabushiki Kaisha, Osaka, both of, Japan

Continuation-in-part of Ser. No. 564,895, Apr. 3, 1975, Pat. No. 4,016,247, which is a continuation-in-part of Ser. No. 20,050, Mar. 16, 1970, abandoned. This application Dec. 29, 1976, Ser. No. 755,603
Claims priority, application Japan, Mar. 31, 1969, 44-24161
Int. Cl.² D01F *9/14*
U.S. Cl. 423—447.4 2 Claims

1. In a method of producing carbon fibers having high molecular orientation, anisotropy, strength and modulus of elasticity from pitch as the raw material through the process steps of forming the pitch into fibers, subjecting the same to infusibilization, carbonization, and optionally graphitization treatments, the improvement which comprises forming said raw material pitch through the steps of

(a) heat-treating crude petroleum oil or its fractionated components at a temperature of from 700° C to 2000° C for a period of from 1/1000 to 1/10 second to form resinous pitch or tar,

(b) subjecting the resinous pitch or tar thus-obtained to heat treating at a temperature of 250° C to 550° C for 1 to 300 minutes while distilling off rather volatile matters, and

(c) subjecting the thus heat-treated resinous pitch or tar to a second heating at a temperature of 380° to 450° C for 60 to 300 minutes while removing fine solid particles by filtration,

said raw material pitch thus-obtained having a carbon content in the range of from 95% to 96.5% by weight, a mean molecular weight of from 400 to 2,000, a melt viscosity of from 0.4 to 700 poises at a temperature range of from 320° C to 480° C, and optical anisotropy to such an extent that an isotropic portion thereof can hardly be recognized on examination by a polarization microscope.

4,115,528

METHOD FOR FABRICATING A CARBON ELECTRODE SUBSTRATE

Larry G. Christner, Glastonbury, Conn.; Dennis C. Nagle, Catonsville, Md., and Paul R. Watson, Marlborough, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 15, 1977, Ser. No. 824,751
Int. Cl.² C01B *31/02;* B29C *25/00*
U.S. Cl. 423—449 9 Claims

1. A method for fabricating a porous carbon sheet comprising the steps of:

coating chopped carbon fibers with a low viscosity mixture of at least 70% by weight furfuryl alcohol, 0.25–5%, by weight, of an aqueous solution of 85% phosphoric acid or an equivalent amount of phosphoric acid, and a balance of water;

forming a mat of said coated fibers;

polymerizing the furfuryl alcohol and curing the mat by heating the mat to a temperature between 50°–200° C.; and

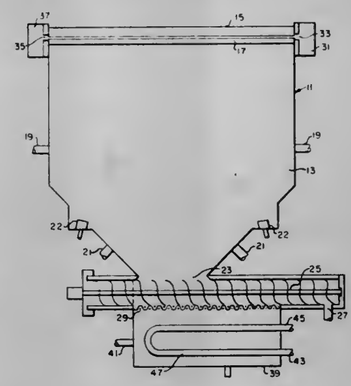
carbonizing the cured mat by heating to at least 1500° C.

4,115,529

HALOGEN HYDRATE FORMATION FROM HALOGEN AND FINELY DIVIDED AQUEOUS DROPLETS

Harvey L. Behling, Madison Heights, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Continuation of Ser. No. 375,567, Jul. 2, 1973, abandoned. This application Dec. 23, 1976, Ser. No. 753,692
Int. Cl.² C01B *7/02*
U.S. Cl. 423—472 6 Claims



1. A method of manufacturing a halogen hydrate which comprises the steps of:

maintaining a forming surface at a temperature sufficient to form halogen hydrate from a halogen and an aqueous medium, said surface being maintained at a temperature from about −20° to about −5° C;

introducing under pressure onto said forming surface:

a halogen and

an aqueous medium consisting of a plurality of atomized liquid droplets each having a diameter between 1 millimicron and about 10 microns, the temperature of said aqueous medium being maintained above the freezing point of said medium and below 5° C.

the pressure of said aqueous medium being greater than the pressure of said halogen, and said halogen and said aqueous medium being introduced in amounts such that the stoichoimetric ratio of halogen to water in the aqueous medium is at least about 6 moles of water per mole of halogen;

contacting said halogen and said aqueous medium on said forming surface such that the droplets of said medium are surrounded by said halogen to form halogen hydrate with

a small percentage of some halogen becoming dissolved; and

removing said halogen hydrate from said forming surface.

4,115,530

PROCESS FOR OBTAINING GASEOUS HYDROGEN CHLORIDE FROM DILUTE, AQUEOUS HYDROCHLORIC ACID

Alfred Coenen; Kurt Kosswig, and Günter Prominski, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Jul. 14, 1977, Ser. No. 815,761

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1976, 2633640

Int. Cl.² C01B *7/08*

U.S. Cl. 423—488 **22 Claims**

1. A process for the production of gaseous hydrogen chloride by extraction of dilute aqueous hydrochloric acid with amines, wherein:

(a) aqueous hydrochloric acid is extracted with an amine selected from the group consisting of tertiary alkyl amines, tertiary aryl dialkyl amines, secondary arylalkyl amines, primary alkylaryl amines, or mixtures thereof, which contain 14–32 carbon atoms in the nitrogen-bound side chains, and among these at most one nitrogen-bound methyl group and at least one aliphatic group containing at least 6 carbon atoms, and wherein the acid constant K_a of the amine is smaller than 10^{-3};

(b) an inert, water-immiscible organic solvent which has a lower boiling point than the amine employed is added to the extract;

(c) the extract is distilled, the vapors thus-formed are condensed, the water is continuously separated from the two-phase condensate, and the organic phase is returned into the distillation process; and

(d) after removal of the water, the extract is distilled under reflux at sump temperatures of between about 100° C. and 250° C., and the gaseous hydrogen chloride liberated at the head of the column is withdrawn.

4,115,531

PRODUCTION OF HYDROCHLORIC ACID BY REMOVING HYDROGEN CHLORIDE FROM COMBUSTION GAS

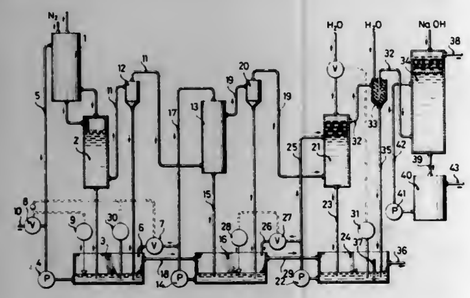
Wolfgang Opitz, Hürth-Alstädten, and Hans Hennen, Hürth, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 29, 1977, Ser. No. 820,043

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1976, 2634959

Int. Cl.² C01B *7/08*

U.S. Cl. 423—488 **8 Claims**



1. A process for the continuous production of hydrochloric acid having a substantially constant HCl content of 20 to 36% by removing hydrogen chloride from hot combustion gas which comprises: introducing hot combustion gas containing 1 to 10% by volume of HCl and steam, this gas being obtained by the joint combustion of off-gases containing chlorinated hydrocarbons and liquid residues of chlorinated hydrocarbons, into a quenching zone, and quenching it therein, down to a temperature lower than its dew point, by means of cooled hydrochloric acid containing hydrogen chloride in a concentration of 20 to 36%, which concentration corresponds to the concentration of the hydrochloric acid which is to be produced; introducing the resulting gas-liquid mixture into an absorption cooling zone wherein upon cooling steam is condensed and gaseous hydrogen chloride absorbed in the liquid, the phases separating into cooled hydrochloric acid and cooled combustion gas containing 0.1 to 1% by volume of HCl; introducing the said cooled hydrochloric acid into a reservoir zone capable of receiving a multiple of the quantity of hydrochloric acid produced per hour; and recycling the hydrochloric acid from the said reservoir zone to the quenching zone, the additional 20 to 36% hydrochloric acid produced being taken out of the quenching cycle comprising the said quenching, absorption cooling and reservoir zones, as the desired product.

4,115,532

PREPARATION OF SOLID TITANIUM TRICHLORIDE

Kazuo Yamaguchi, Fujisawa; Genjiro Kakogawa; Masayoshi Hasuo, both of Yokohama; Nobuaki Goko, and Yasuo Maruyama, both of Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 600,819, Jul. 31, 1975, Pat. No. 4,060,593, which is a continuation-in-part of Ser. No. 598,425, Jul. 23, 1975, abandoned. This application Aug. 1, 1977, Ser. No. 820,910

Claims priority, application Japan, Jul. 31, 1974, 49/88476; Jul. 31, 1974, 49/88477

The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.

Int. Cl.² C01G *23/02*

U.S. Cl. 423—492 **2 Claims**

1. A process for the production of solid purple titanium trichloride suitable for use as a catalyst for polymerization of an alpha-olefin, which comprises:

mixing solid titanium trichloride, an ether and a hydrocarbon solvent selected from the group consisting of aliphatic, alicyclic and aromatic hydrocarbon solvents for reaction to form a homogeneous solution or mixture comprising titanium trichloride, said ether having the generic formula $R^1—O—R^2$, wherein R^1 and R^2 are individually an alkyl or alkenyl group having at least six carbon atoms, and said ether is added in an amount so the molar ratio of ether to titanium trichloride is greater than 1;

mixing said homogeneous solution or mixture and a Lewis acid to form a second mixture, said Lewis acid having higher acidity than titanium trichloride;

heating said second mixture to a temperature within the range of 20°–150° C to form a purple precipitate of titanium trichloride; and

separating said precipitate.

4,115,533

PREPARATION OF SOLID TITANIUM TRICHLORIDE

Kazuo Yamaguchi, Fujisawa; Genjiro Kakogawa; Masayoshi Hasuo, both of Yokohama; Nobuaki Goko, and Yasuo Maruyama, both of Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 600,819, Jul. 31, 1975, Pat. No. 4,060,593. This application Aug. 1, 1977, Ser. No. 820,911

Claims priority, application Japan, Jul. 31, 1974, 49-88476; Jul. 31, 1974, 49-88477

The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.

Int. Cl.² C01G *23/02*

U.S. Cl. 423—492 **7 Claims**

1. A process for the production of solid purple titanium trichloride suitable for use as a catalyst for polymerization of an α-olefin, which comprises:

forming a homogeneous solution or mixture comprising titanium trichloride by treating titanium tetrachloride with an organoaluminum compound represented by the generic formula, $AlR^3_nX_{3-n}$, wherein R^3 denotes a hydrocarbon radical of 1 to 20 carbon atoms, n is a number of the value of 1 to 3 and X a halogen atom, in the presence of an ether and a hydrocarbon solvent selected from the group consisting of alicyclic and aromatic hydrocarbon solvents;

said ether having the generic formula, $R^1—O—R^2$, wherein R^1 and R^2 are individually an alkyl or alkenyl group and at least one of R^1 and R^2 is an alkyl or alkenyl group having five or less carbon atoms;

heating the thus obtained homogeneous solution or mixture in the presence of a Lewis acid at a temperature in the range of 20°–150° C to cause precipitation of a finely granulated purple solid titanium trichloride; and separating the precipitate.

4,115,534

IN VITRO DIAGNOSTIC TEST

Dionyssis S. Ithakissios, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 715,933, Aug. 19, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 808,339

Int. Cl.² G01N *33/16*; A61K *43/00*

U.S. Cl. 424—1 **25 Claims**

1. A method for determining the concentration of substances present in biological fluids comprising the steps of:

providing a mixture of (i) a known quantity of said biological fluid containing said substance whose concentration is to be determined, (ii) a known quantity of a radioactively labeled form of said substance and (iii) a known quantity of magnetically responsive composite microparticles comprising a magnetically responsive material and a permeable, solid, water-insoluble matrix selected from proteinaceous materials, polysaccharides, polyurethanes and mixtures thereof; wherein said magnetically responsive material is dispersed throughout said water-insoluble matrix; and wherein said water-insoluble matrix is capable of sorbing said substances;

reacting said mixture so as to cause said substance and its radioactively labeled form to competitively complex with said composite microparticles;

magnetically separating the complexed microparticles from the mixture;

counting the radioactivity of either the separated complexes or the remaining mixture; and

relating the counted radioactivity to a standard curve to determine the concentration of said substance.

4,115,535

DIAGNOSTIC METHOD EMPLOYING A MIXTURE OF NORMALLY SEPARABLE PROTEIN-COATED PARTICLES

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 22, 1977, Ser. No. 809,005

Int. Cl.² G01N *33/16*

U.S. Cl. 424—1 **19 Claims**

1. A diagnostic method for determining the presence or absence of select protein in a liquid sample comprising the steps of:

dispersing a plurality of finely divided inert first particles and a plurality of finely divided inert second particles in the sample liquid, said first particles possessing a property facilitating separation thereof from said sample liquid, said second particles possessing a property facilitating detection thereof, said first and second particles both being coated with protein material specific to said select protein;

separating said first particles from said sample liquid utilizing the separation-facilitating property thereof, and

determining whether a substantial portion of said plurality of second particles have accompanied said separated first particles.

4,115,536

AGENT FOR INTRAVASCULAR ADMINISTRATION

Ulf Sven Erik Rothman, Höllviksnas; Sven Lennart Kägedal, and John Lennart Söderberg, both of Upsala, all of Sweden, assignors to Pharmacia Fine Chemicals AB, Upsala, Sweden

Filed Sep. 10, 1975, Ser. No. 611,942

Claims priority, application Sweden, Sep. 27, 1974, 7412164

Int. Cl.² A61K *29/00, 43/00*

U.S. Cl. 424—1 **2 Claims**

1. An agent for intravascular administration for diagnostic and physiological investigations comprising a suspension of minute particles in a physiologically acceptable liquid, which particles have a particle size of 0.1–300 micrometer and are labelled with at least one metallic radionuclide, said particles being insoluble but swellable in water and comprising hydroxyl group-containing polymer molecules selected from the group consisting of polymeric and polymerized carbohydrates and sugar alcohols and physiologically acceptable derivatives thereof, wherein said particles are covalently bound to a chelate complex composed of at least four, 5-, or 6-membered rings, said complex including said radionuclide and two metal coordinating atoms at a distance of two or three atoms from each other, one of said metal coordinating atoms being a nitrogen atom and the other a nitrogen atom or a sulphur atom or an oxygen atom.

4,115,537

RESIN TABLET AND USE THEREOF IN DIAGNOSTIC TESTS

Richard C. Driscoll, and Clara B. Morejon, both of Miami, Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 7, 1976, Ser. No. 720,990

Int. Cl.² G01N *33/16*; A61K *43/00*; C08L *1/00*

U.S. Cl. 424—1 **23 Claims**

12. A competitive binding method for measuring serum T4 comprising the steps of mixing a solution of free T4 extracted from a sample of patient's serum with a dilute buffered solution of known radioisotope-labeled T4 bound to saturated TBG, and separating the unbound T4 with an anion-exchange resin, wherein the improvement comprises

providing said anion-exchange resin in the form of a tablet consisting essentially of polystyrene-based anion-exchange resin beads of 50 to 600 mesh bound together by microcrystalline cellulose, and performing said mixing and separating steps concurrently without incubating the mixed solutions prior to contact with said tablet.

4,115,538

ASSAY KIT FOR CAMP AND/OR CGMP AND METHOD OF USING THE SAME

Tomokazu Satoh; Junichi Takezawa; Akira Kuninaka, all of Choshi; Miyuki Honma, and Michio Ui, both of Sapporo, all of Japan, assignors to Yamasu Shoyu Kabushiki Kaisha, Japan

Filed Feb. 7, 1977, Ser. No. 766,509

Claims priority, application Japan, Feb. 12, 1976, 51-14665

Int. Cl.² G01N *33/16*; A61K *43/00*; B65D *81/32*

U.S. Cl. 424—1 **12 Claims**

12. In a method for assaying cAMP, cGMP or both contained in organisms wherein cAMP, cGMP or both in a sample taken from an organism are succinylated, the succinylated cAMP, cGMP or both are caused to undergo an antigen-antibody reaction with anti-cAMP serum, anti-cGMP serum or both in the presence of succinyl cAMP tyrosine methyl ester, succinyl cGMP tyrosine methyl ester labeled with radioactive iodine, or both which undergo an antigen-antibody reaction with the anti-cAMP serum, anti-cGMP serum or both, the antigen-antibody complex thus formed is separated, and the

radioactivity of the antigen-antibody complex or free antigen is measured thereby to determine the content of cAMP, cGMP or both in the organism based on the radioactivity thus measured, the improvement which comprises the use, as a reaction medium for the antigen-antibody reaction, of an imidazole buffer solution of 0.1 M or higher concentration.

4,115,539

ANALYTICAL OR CLINICAL DERIVATIVES, TAGGED DERIVATIVES AND METHODS OF ANALYSIS USING SUCH DERIVATIVES

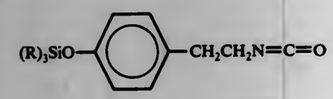
William Anthony Eisenhardt, Jr., Yorktown Heights; Eddie Hedaya, White Plains, and Spyros Theodoropulos, Yorktown Heights, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 17, 1976, Ser. No. 687,149
Int. Cl.² A61K *43/00*; G01N *33/00*
U.S. Cl. 424—1 **67 Claims**

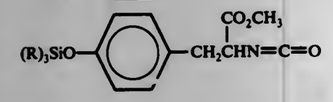
1. A composition of matter comprising the reaction product of:

(a) a member selected from the group consisting of steroids, steroidal glycosides, drugs, vitamins, plant and animal hormones, peptides, proteins, amino acids, enzymes, pesticides, polyamines, viruses, bacterial cells, nicotine derivatives and other metabolites, said member having at least one radical reactive with an isocyanato radical, and

(b) an isocyanate selected from the group consisting of



and



wherein R is a member selected from the group consisting of lower alkyl, alicyclics, aryl, alkaryl and aralkyl, each having no more than about 10 carbon atoms.

4,115,540

RADIODIAGNOSTIC AGENT

George A. Digenis; Manvendra B. Shambhu, both of Lexington, Ky., and Michael C. Theodorakis, Gurnee, Ill., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Jun. 16, 1976, Ser. No. 696,802
Int. Cl.² A61K *43/00, 29/00*
U.S. Cl. 424—1 **11 Claims**

1. A method for analyzing the gastrointestinal tract of a human being or animal which comprises orally administering a diagnostic amount of a solid, insoluble non-toxic synthetic resin bearing a detectable amount of Tc 99m thereon, and analyzing the number of radioactive counts given off by the decay of the Tc 99m as said resin passes through the gastrointestinal tract.

4,115,541

BONE-SEEKING TECHNETIUM-99M COMPLEX

Gopal Subramanian, Manlius, and John Gilmore McAfee, Fayetteville, both of N.Y., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 368,473, Jun. 11, 1973, which is a continuation-in-part of Ser. No. 263,171, Jun. 15, 1972, abandoned. This application Mar. 26, 1975, Ser. No. 562,102
Int. Cl.² A61K *29/00*; G01T *1/161*; G21H *5/02*; A61K *43/00*
U.S. Cl. 424—1.5 **3 Claims**

1. A method for skeletal-imaging which includes the intravenous administration of a solution adapted for intravenous administration containing a technetium-99m-tin-phosphonate complex wherein said phosphonate is methylene diphosphonate or 1-aminoethane-1,1-diphosphonate.

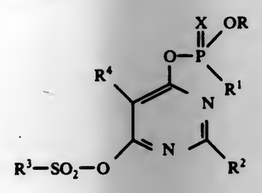
4,115,542

O-ALKYL-O-(6-ALKANESULPHONYLOXY-PYRIMIDIN(4)YL)-(THIONO) (THIOL) PHOSPHORIC (PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES AND ARTHROPODICIDAL COMPOSITIONS AND METHODS OF COMBATING ARTHROPODS USING THEM

Fritz Maurer; Hans-Jochem Riebel, both of Wuppertal, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 5, 1977, Ser. No. 794,333
Claims priority, application Fed. Rep. of Germany, May 20, 1976, 2622501
Int. Cl.² A01N *9/36*; C07F *9/65*
U.S. Cl. 424—200 **10 Claims**

1. An O-alkyl-O-(6-alkanesulphonyloxypyrimidin(4)-yl)-(thiono)(thiol) phosphoric (phosphonic) acid ester or ester amide of the formula



in which

R is alkyl with 1 to 4 carbon atoms,

R^1 is alkyl, alkylthio, alkoxy or monoalkylamino with in each case 1 to 4 carbon atoms, or phenyl,

R^2 is alkyl, alkoxy or alkylthio with 1 to 3 carbon atoms, dialkylamino with 1 or 2 carbon atoms per alkyl radical, or hydrogen,

R^3 is alkyl with 1 to 3 carbon atoms,

R^4 is hydrogen, halogen, methyl or ethyl, and

X is oxygen or sulphur.

8. An arthropodicidal composition containing as active ingredient an arthropodicidally effective amount of a compound according to claim 1 in admixture with a diluent.

9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

4,115,543

IDENTIFICATION OF *NEISSERIA GONORRHOEAE*

Rebecca Wallace, Ottawa; Fraser E. Ashton, Lucerne; Malcolm B. Perry, and Benito B. Diena, both of Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Dec. 20, 1976, Ser. No. 752,681
Int. Cl.² A61K *31/70, 39/40*; G01N *21/38, 33/16*
U.S. Cl. 424—8 **10 Claims**

1. A method of preparing a reagent comprising antibodies causing agglutination of cells of *Neisseria gonorrhoeae* comprising

(a) providing lipopolysaccharide antigen of the type which is common to *N. gonorrhoeae,* said antigen having the following composition: (weight %)

2-Amino-2-deoxy-D-glucose	13.8
D-Glucose	6.0
D-Galactose	6.9
L-glycero-D-manno-Heptose	3.8
3-Deoxy-D-Manno-octulosonic acid	7.3
Phosphorus	3.6
Total lipid	44.0

-continued

Ethanolamine	Trace
Protein	0.2

(b) inoculating live fowl with this lipopolysaccharide antigen in amounts effective to raise antibodies in the fowl, and

(c) recovering blood serum containing the antibodies from the inoculated fowl.

5. A reagent causing specific agglutination of cells of *Neisseria gonorrhoeae* comprising antiserum or antibodies derived from the antiserum from fowl inoculated with lipopolysaccharide antigen of the type which is common to *N. gonorrhoeae* said antigen being as defined in claim 1.

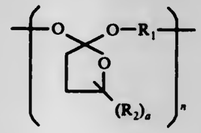
4,115,544

OCULAR SYSTEM MADE OF BIOERODIBLE ESTERS HAVING LINEAR ETHER

John W. Shell, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 715,519, Aug. 18, 1976, abandoned, which is a division of Ser. No. 592,555, Jul. 2, 1975, Pat. No. 4,001,388, which is a continuation-in-part of Ser. No. 369,916, Jun. 14, 1973, Pat. No. 3,914,402. This application Nov. 10, 1977, Ser. No. 850,275
Int. Cl.² A61K *9/14, 9/22, 9/32*
U.S. Cl. 424—14 **4 Claims**

1. An ophthalmic dosage form comprising solid particles of from 0.01 up to 20 parts of an ophthalmic drug admixed with from 0.01 up to 30 parts of a bioerodible drug release rate-controlling orthoester homopolymer of the general formula:



wherein R_1 is a member selected from the group consisting of alkylene of 4 to 12 carbons, a cycloalkylene of 5 to 6 carbons, and an alkyleneoxy of 1 to 7 carbons, R_2 is a lower alkyl of 1 to 7 carbons, a is 0 to 1, and n is greater than 10, said solid particles from 10 to 300 microns in largest dimensions, non-irritating and non-toxic to the eye, with from 1 to 5 parts of said solid particles admixed with a suspension agent and up to 100 parts of an ophthalmically-acceptable liquid medium having a pH acceptable to the eye, and when said liquid dosage form is dispensed to an eye, the solid particles bioerde in response to the environment of the eye at a controlled rate and administer drug over a prolonged period of time.

4,115,545

PHARMACEUTICAL COMPOSITION CONTAINING PROSTADIENOIC ACID FOR REGULATING GASTRIC SECRETION

Ned M. Weinshenker, Sunnyvale, Calif., and Niels H. Anderson, Seattle, Wash., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 570,621, Apr. 23, 1975, Pat. No. 4,055,593, which is a continuation of Ser. No. 117,166, Feb. 19, 1971, abandoned. This application Aug. 11, 1977, Ser. No. 823,811
Int. Cl.² A61K *31/22, 31/19*; A61L *9/04*
U.S. Cl. 424—45 **2 Claims**

1. A pharmaceutical composition useful for regulating gastric secretion in warm-blooded mammals, said composition comprising 0.1 milligram to 1500 milligrams of 11α,15(S)-bis(-dimethyl',isopropoxy',methyloxy)-9-oxo-5-cis,13-trans-prostadienoic acid mixed with a therapeutically acceptable inert carrier stable in a warm-blooded mammal.

4,115,546

ORAL COMPOSITIONS CONTAINING DEXTRANASE

James David Vidra, Clinton, and Julius Harvey Nachtigal, Colonia, both of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 557,855, Mar. 12, 1975, Pat. No. 3,991,177, which is a continuation-in-part of Ser. No. 419,343, Nov. 27, 1973, abandoned, which is a continuation-in-part of Ser. No. 313,304, Dec. 8, 1972, abandoned. This application Aug. 16, 1976, Ser. No. 714,442
Int. Cl.² A61K *7/28, 37/48, 37/54*
U.S. Cl. 424—50 **4 Claims**

1. A dental cream or gel comprising a carrier material, dextranase having an activity of about 20 to 400 units/mg. protein in amount of about 0.001 to about 5% by weight and a non-toxic compound which provides an effective amount of at least 0.001 percent of stabilizer/activator calcium metal ions, said metal ions being provided from water-soluble salts selected from the group consisting of chlorides and nitrates, namely calcium chloride and calcium nitrate, said metal ions being effective to stabilize said dextranase and activate its dextranase activity.

4,115,547

SUNSCREENING COMPOSITIONS

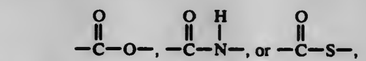
Peter John Degen, Woodbury Township, Washington County, and Anthony James Lucas, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 492,180, Jul. 26, 1974, Pat. No. 4,002,733. This application Oct. 20, 1976, Ser. No. 734,036
Int. Cl.² A61K *7/44*
U.S. Cl. 424—60 **6 Claims**

1. In a sunscreening composition comprising a pharmaceutical extending medium and an effective sunscreening amount of a dermally non-irritating, ultraviolet light-absorbing compound, the improvement wherein the dermally non-irritating, ultraviolet light-absorbing compound is a substantive compound of the formula

$$(XE)_n—R—(AY)_{n^1}$$

Wherein R is the aliphatic portion of polymerized 18-carbon fatty acids and contains 34, 51, 68, 85 or 102 carbon atoms; A and E are independently



X and Y are aromatic, ultraviolet light absorbing moieties characterized by ultraviolet light absorption maxima in the range of 280 nm to about 360 nm, and when $n + n^1$ is greater than 2, Y may be hydrogen or an alkyl radical containing 1 to 6 carbon atoms; *n l and* n^1 are independently integers from 1 to 6 designating different or the same (XE)— and —(AY) respectively, except $n + n^1$ must equal 2–6.

4,115,548

DETERGENT COMPOSITIONS COMPRISING MODIFIED PROTEINS

Robert Anthony Marsh, Newcastle upon Tyne; Gordon John Mackie, Cramlington, and Peter Hale, Whitley Bay, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 20, 1974, Ser. No. 534,914
Claims priority, application United Kingdom, Jan. 18, 1974, 2366/74
Int. Cl.² A61K *7/06, 7/48, 37/12, 37/16, 37/18*
U.S. Cl. 424—70 **3 Claims**

1. A composition for protecting keratinous material from the deleterious effects of detergent or from adverse climatic conditions, said composition comprising

(a) an effective amount of oxybutylated gelatin, said oxybutylated gelatin having a molecular weight greater than 5,000 and an isoionic point greater than 6;
(b) from 0.1 to 90% by weight of a surface-active agent; and
(c) a compatible carrier.

4,115,549

COATING THE HAIR WITH A HEAT-SETTABLE COMPOSITION

Howard L. Scott, Philadelphia, Pa., assignor to Widner College, Chester, Pa.

Continuation-in-part of Ser. No. 86,597, Nov. 3, 1970, Pat. No. 3,949,764, which is a continuation-in-part of Ser. No. 721,158, Apr. 15, 1968, Pat. No. 3,568,685, which is a continuation-in-part of Ser. No. 386,730, Jul. 31, 1964, abandoned. This application Apr. 13, 1976, Ser. No. 676,616
The portion of the term of this patent subsequent to Apr. 13, 1993, has been disclaimed.
Int. Cl.² A61K *7/11*
U.S. Cl. 424—71 **4 Claims**

1. A method of treating natural or synthetic hair or fur which comprises coating said hair or fur with an effective amount sufficient to set said hair or fur of a composition comprising a hardening and adhesive agent in either an aqueous or oil media, said hardening and adhesive agent being in a concentration of about 1–85% by volume and being selected form the group consisting of (1) p,p'-methylenedianiline; (2) a copolymer of (a) about 0.5–25% by weight of itaconic acid, (b) 3–4% by weight of at least one polymerizable compound selected from the group consisting of acrylonitrile, alkyl esters of acrylic and methacrylic acids having from 1 to 18 carbon atoms in the alkyl group, phenyl methacrylate, methacrylonitrile, methyl vinyl ketone and vinyl chloride, and (c) 35–96.5% by weight of vinylidene chloride, the proportions being selected to total 100% (3) water insoluble copolymers obtained by the emulsion copolymerization of about 0.5–6 parts by weight of either N-methylolacrylamide, N-methylolmethacrylamide, or mixtures thereof, with about 0.5–25 parts by weight of either acrylamide or methacrylamide, and having a molecular weight of 100,000 to 10,000,000; (4) a copolymer of acrylonitrile and styrene wherein a 50% by weight solution has a viscosity of SX (Gardner Holdt) at 25° C; (5) chlorophyll a having the formula $C_{55}H_{72}MgN_4O_5$ and chlorophyll b which has the formula $C_{55}H_{70}MgN_4O_6$; (6) a vinyl chloride-vinylidene chloride co-polymer; (7) vinyl chloride polymers plasticized with alkyl aryl phosphate plasticizers at levels of 25 and 35 parts per 100 parts of polymer respectively; (8) a vinyl chloride polymer plasticized with 35 parts dioctyl phthalate per 100 parts of polymer; (9) vinyl chloride-acrylic latexes; and (10) vinyl-chloride/butadiene-acrylonitrile polyblend latex.

4,115,550

COMPOSITION FOR LOWERING BLOOD CHOLESTEROL LEVEL

Joseph E. Fields, Ballwin, and John H. Johnson, Kirkwood, both of Md., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 353,832, Apr. 23, 1973, Pat. No. 3,923,972, which is a continuation-in-part of Ser. No. 188,577, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 789,081, Jan. 2, 1969, abandoned. This application Apr. 29, 1975, Ser. No. 573,281
The portion of the term of this patent subsequent to Dec. 2, 1992, has been disclaimed.
Int. Cl.² A61K *31/34*
U.S. Cl. 424—78 **24 Claims**

1. An animal feed composition comprising a nutrient ration and an effective blood cholesterol lowering amount of a copolymer of (1) alpha alkene of 10 to about 22 carbon atoms and (2) maleic acid or anhydride, or a pharmaceutically acceptable amide, ester, imide, salt thereof of mixtures thereof, said copolymer having a molecular weight in the range of about 1,000 to about 1,000,000, said cholesterol lowering amount of copolymer being sufficient to lower the blood cholesterol level in a living animal.

4,115,551

COMPOUNDS OF THE PLASMINOGEN TYPE AND METHOD FOR OBTAINING SUCH COMPOUNDS FROM PLACENTAL PULPS

Jean-Claude Lormean, Maromme-la-Maine; Jean Goulay, Oissel, and Edmond Vairel, Paris, all of France, assignors to Choay S.A., Paris, France

Filed Dec. 17, 1974, Ser. No. 533,631
Claims priority, application France, Dec. 18, 1973, 73 45289
Int. Cl.² A61K *35/50*
U.S. Cl. 424—105 **55 Claims**

1. A method for the preparation of an active plasminogen compound capable of activation to plasmin which comprises mechanically reducing frozen placentas to placental pulps, defrosing the resulting pulps, thereby obtaining a fluid mass of placental liquid and solids, separating from the mass of liquid and solids the liquid which contains the fluid placental blood, which liquid contains proteins and plasmins and recovering the placental solids including the pulps, macerating said pulps at a pH between about 5 and about 10 in an aqueous solution of an inhibitor of plasminogen activation to plasmin, removing the pulps, collecting the liquid solution containing the plasminogen compounds, separating said inhibitor of plasminogen activation and recovering the solution of the plasminogen dissolved therein.

13. composition having polasminogen activity capable of activation to plasmin which composition comprises native plasminogen and preactivated plasminogen said preactivated plasminogen having a molecular weight which is of about 7000 to 8000 less than the molecular weight of the native plasminogen, said composition being substantially free of plasmin and soluble in distilled water.

4,115,552

FACTOR A AND B OF ANTIBIOTIC A-4696

Robert L. Hamill, New Ross; William M. Stark, and Donald C. DeLong, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 678,511, Apr. 19, 1976, Pat. No. 4,064,233, which is a continuation-in-part of Ser. No. 533,570, Dec. 17, 1974, Pat. No. 3,952,095, which is a continuation-in-part of Ser. No. 259,334, Jun. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 118,674, Feb. 25, 1971, abandoned. This application Sep. 28, 1977, Ser. No. 837,124
Int. Cl.² A61K *35/00*
U.S. Cl. 424—118 **2 Claims**

1. Factor A of antibiotic A-4696, **or a pharmaceutically acceptable acid addition salt thereof, which antibiotic in the form of its hydrochloride salt is a white, crystalline substance soluble in water and insoluble in the common organic solvents; has the approximate composition of** 50.21 percent carbon, 5.48 percent hydrogen, 4.96 percent nitrogen, 30.42 percent oxygen, and 6.96 percent chlorine; has a specific rotation, $[\alpha]_D^{25}$ of −81° (c=0.8, H_2O); has an ultraviolet adsorption maximum in acidic and neutral solutions at 282 mμ. with an extinction coefficient $E_{1cm.}^{1\%}$ of 35.9; and has the following distinguishable bands in its infrared absorption spectrum when determined in a mineral oil mull: 3.0 broad, 3.44, 4.25, 4.31, 6.07, 6.20, 6.31, 6.65, 7.04, 7.73, 8.10, 8.21, 8.47, 8.89, 9.43, 9.69, 9.83, 10.14, 11.07, 11.36 and 12.25 microns.

4,115,553

ANTACID TABLETS

Andrew M. Rubino, New Providence, and Jack J. Margres, Old Bridge, both of N.J., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 423,226, Dec. 10, 1973. This application Jun. 24, 1974, Ser. No. 482,431
The portion of the term of this patent subsequent to Sep. 9, 1995, has been disclaimed.
Int. Cl.² A61K *33/12, 33/10, 33/08*
U.S. Cl. 424—155 **11 Claims**

1. An antacid tablet comprising the codried combination of a hydrous gelatinous aluminum hydroxide material with an alcohol, and an excipient therefor, said material being selected from the group consisting of:
(1) basic aluminum bicarbonate-carbonate and
(2) basic aluminum bicarbonate-carbonate in combination with magnesium basic carbonate, magnesium hydroxide, or magnesium trisilioate, or mixtures thereof,
said alcohol being a foodgrade di- or trihydroxy alcohol suitable for oral ingestion, wherein analysis of the codried combination yields a figure of from 30 to 60 weight percent for the sum of the aluminum hydroxide and magnesium hydroxide calculated as Al_2O_3 and MgO and shows that there is present at least 0.3 mole of carbonate calculated as CO_2 for each mole of Al_2O_3, said codried combination being contained in the tablet in an amount of from 10 to 90 weight percent of the tablet.

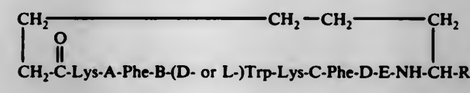
4,115,554

SOMATOSTATIN ANALOGS

Daniel F. Veber, Ambler, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 29, 1977, Ser. No. 828,791
Int. Cl.² A61K *37/02*; C07C *103/52*
U.S. Cl. 424—177 **5 Claims**

1. Compounds of the formula:



wherein
R is H, COOH,
A is $(Asn)_n$, α-Abu, Pro, Ala wherein n = 0 or 1,
B is Phe, Tyr,
C and D are independently Thr, Val,
E is Ser, Pro, Ala, Gly,
wherein at least one of A and E is Pro and the ring formed by the peptide backbone contains 35 to 38 atoms and pharmaceutically acceptable non-toxic acid addition salts thereof.

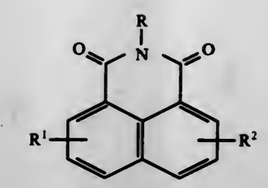
4,115,555

2-SUBSTITUTED-1H-BENZ[de]-ISOQUINOLINE-1,3(2H)-DIONES

Peter C. Wade, Pennington, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 727,836, Sep. 9, 1976, Pat. No. 4,051,246. This application Jul. 5, 1977, Ser. No. 812,886
Int. Cl.² A61K *31/70*
U.S. Cl. 424—180 **8 Claims**

1. A compound of the formula:



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, lower alkylthio, nitro, cyano, and trifluoromethyl; and R is selected from the group consisting of triacetyl substituted pentose, pentose, tetraacetyl substituted hexose, and hexose.

7. A pharmaceutical composition useful for treating inflammation in a mammalian specie comprising as the active ingredient from about 1 mg./kg. to about 30 mg./kg. of a compound or mixture of compounds of claim 1 and a pharmaceutically acceptable carrier.

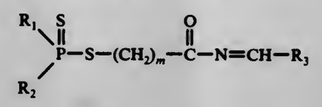
4,115,556

CERTAIN FORMAMIDINE DITHIOPHOSPHATES AND PHOSPHONATES AND THEIR USE AS INSECTICIDES

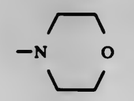
Hsiao Ling Lam, and Eugene G. Teach, both of El Cerrito, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 657,438, Feb. 12, 1976, Pat. No. 4,045,557. This application Jul. 25, 1977, Ser. No. 818,477
Int. Cl.² A01N *9/36*; C07D *265/30*
U.S. Cl. 424—200 **37 Claims**

1. A compound having the formula

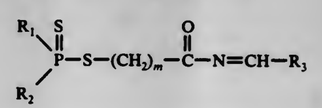


in which R_1 is lower alkyl or lower alkoxy, R_2 is lower alkoxy or methylthio-substituted lower alkoxy, R_3 is

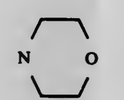


and m is 1 or 2.

20. A method for controlling insects comprising applying to the insect or the habitat thereof an insecticidally effective amount of a compound having the formula



in which R_1 is lower alkyl or lower alkoxy, R_2 is lower alkoxy or methylthio-substituted lower alkoxy, R_3 is



and m is 1 or 2.

4,115,557
SUBSTITUTED PYRIDINYL O-ALKYL PHENYL/PHOSPHONOTHIOATES AND THEIR USE AS PESTICIDES

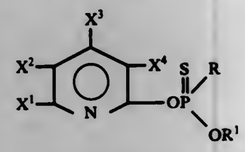
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 649,433, Jan. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 568,220, Apr. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 456,943, Apr. 1, 1974, abandoned. This application Apr. 18, 1977, Ser. No. 788,400

Int. Cl.[2] A01N *9/22*; C07D *213/02*

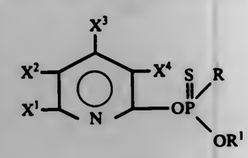
U.S. Cl. 424—200 **68 Claims**

1. A compound corresponding to the formula:



wherein R is phenyl of phenyl being mono- or polysubstituted with bromo, chloro, fluoro or methyl; R^1 represents alkyl or 1 to 4 carbon atoms; and X^1, X^2, X^3 and X^4 each independently represent bromo, chloro, fluoro, trifluoromethyl or hydrogen, with the proviso that at least one of X^1, X^2, X^3 and X^4 is hydrogen; at least one of the others of X^1, X^2, X^3 and X^4 is other than hydrogen; with the added proviso that when X^1, X^2, X^3 or X^4 is selected from bromo, chloro or fluoro, that no more than two of X^1, X^2, X^3 and X^4 can be the same.

47. A method for controlling cotton leafworm larvae which comprises contacting said larvae and/or their habitats with a pesticidally-effective amount of composition containing as the active ingredient a compound corresponding to the formula:



wherein R is phenyl or phenyl being mono- or polysubstituted with bromo, chloro, fluoro or methyl; R^1 represents alkyl of 1 to 4 carbon atoms; and X^1, X^2, X^3 and X^4 each independently represent bromo, chloro, fluoro, trifluoromethyl or hydrogen, with the proviso that at least one of X^1, X^2, X^3 and X^4 is is hydrogen; at least one of the others of X^1, X^2, X^3 and X^4 is other than hydrogen; with the added proviso that when X^1, X^2, X^3 or X^4 is selected from bromo, chloro or fluoro, that no more than two of X^1, X^2, X^3 and X^4 can be the same.

4,115,558
HYDRAZONE DITHIOPHOSPHATES AND PHOSPHONATES AND USE THEREOF AS INSECTICIDES

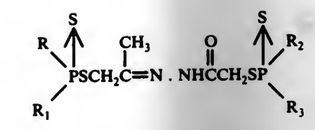
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 20, 1977, Ser. No. 843,999

Int. Cl.[2] A01N *9/36*; C07F *9/40, 9/165*

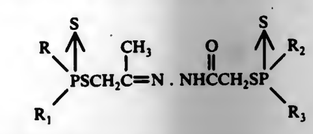
U.S. Cl. 424—205 **21 Claims**

1. A method of controlling insects comprising applying to said insects or the habitat or feedstuff of said insects an insecticidally effective amount of a compound having the general structural formula



in which each of R and R_2 is an alkyl or alkoxy group and each of R_1 and R_3 is an alkoxy group.

15. A compound having the general structural formula



in which each of R and R_2 is an alkyl or alkoxy group and each of R_1 and R_3 is an alkoxy group.

4,115,559
DIPHOSPHORUS DERIVATIVES AND FUNGICIDAL COMPOSITIONS CONTAINING THEM

Guy Lacroix, Lyon; Jean-Claude Debourge, Courbevole, and Jacques Ducret, Lyon, all of France, assignors to Philagro S.A., France

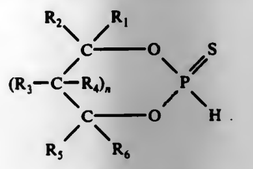
Filed Jan. 30, 1976, Ser. No. 654,052

Claims priority, application France, Feb. 5, 1975, 75 04394

Int. Cl.[2] A01N *9/36*

U.S. Cl. 424—209 **11 Claims**

1. A method for controlling the growth of fungus in plants which comprises contacting said plants with a fungicidally effective amount of at least one compound of the formula:



wherein R_1, R_2, R_3, R_4, R_5 and R_6, which may be the same or different, represent hydrogen, or alkyl of from 1 to 5 carbon atoms, and

$n = 0$ or 1;

and wherein R_1 and R_5 when $n = 0$, or R_1 and R_3 when $n = 1$, may together form a phenyl group.

4,115,560
CERTAIN FORMAMIDINE DITHIOPHOSPHATES AND PHOSPHONATES AND THEIR USE AS INSECTICIDES

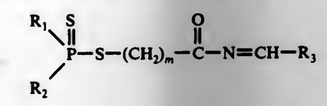
Hsiao Ling Lam, and Eugene G. Teach, both of El Cerrito, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 657,438, Feb. 12, 1976, Pat. No. 4,045,557. This application Jul. 25, 1977, Ser. No. 818,478

Int. Cl.[2] A01N *9/36*; C07F *9/02*

U.S. Cl. 424—211 **50 Claims**

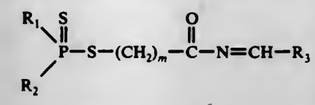
1. A compound having the formula



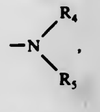
in which R_1 is lower alkyl or lower alkoxy, R_2 is lower alkoxy or methylthio-substituted lower alkoxy, R_3 is

R_4 and R_5 are lower alkyl and m is 1 or 2.

30. A method for controlling insects comprising applying to the insect or the habitat thereof an insecticidally effective amount of a compound having the formula



in which R_1 is lower alkyl or lower alkoxy, R_2 is lower alkoxy or methylthio-substituted lower alkoxy, R_3 is



R_4 and R_5 are lower alkyl and m is 1 or 2.

4,115,561
N-PHENYL-N'METHYL-N''-(O,S-DIALKYLPHOSPHONYL)-1,3,5-TRIAZAPENTA-1,4-DIENES AS PESTICIDES

Manfred Boger, Weil am Rhein, Germany, and Odd Kristiansen, Mohlin, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

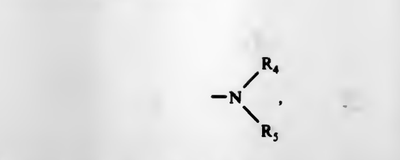
Filed Nov. 14, 1977, Ser. No. 851,327

Claims priority, application Switzerland, Dec. 1, 1976, 15129/76; Feb. 2, 1977, 1242/77; Nov. 3, 1977, 13389/77

Int. Cl.[2] C07F *9/24*; A01N *9/36*

U.S. Cl. 424—211 **17 Claims**

1. A 1,3,5-triazapenta-1,4-diene of the formula



(I)

wherein each of R_1, R_2 and R_3 represents hydrogen, halogen or C_1–C_4 alkyl and each of R_4 and R_5 represents C_1–C_5 alkyl.

17. A method of controlling a variety of animal and plant pests which comprises the use of a 1,3,5-triazapenta-1,4-diene according to claim 1.

4,115,562
TREATED FABRICS AND PROCESS

James T. Gragson, Bartlesville, Okla., and Joseph E. Ballard, Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 591,921, Jun. 30, 1975, Pat. No. 4,029,639. This application Mar. 11, 1977, Ser. No. 776,686

Int. Cl.[2] C08G *75/16*; B29C *25/00*

U.S. Cl. 264—234 **7 Claims**

1. A process for improving the physical properties of fabrics of phenylene sulfide polymer fibers comprising heat treating in a relaxed state a fabric made from phenylene sulfide polymer fibers that have been drawn in the solid state at least about three to about eight times to provide a high degree of orientation and have been produced from polymers having a melt flow within the range of 75 to 800 grams per 10 minutes as measured by ASTM method D-1238-70 modified to operate at 650° F with a piston load of 5 kilograms at an elevated temperature near, but from about 5° C to about 25° C below, the crystalline melting point of the polymer for a finite period of time sufficient to render the fabric water-repellent but under conditions of temperature and time such that the treatment does not cause degradation of physical properties or discoloration of the fabric.

4,115,563
PHARMACEUTICAL STEROID FORMULATION

Phillip Merrill John, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Mar. 14, 1977, Ser. No. 777,317

Int. Cl.[2] A61K *31/58*

U.S. Cl. 424—241 **10 Claims**

1. A solid pharmaceutical formulation comprising from 5 to 80 percent by weight of a pharmaceutically active steroid, 1 to 8 percent by weight of sodium starch glycolate and the remainder conventional excipients.

4,115,564
TREATMENT OF DIARRHEA WITH AMIDINOUREAS

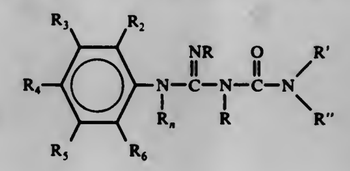
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 558,186, Mar. 13, 1975, Pat. No. 4,025,652. This application Nov. 3, 1976, Ser. No. 738,426

Int. Cl.[2] A61K *31/33, 31/535, 31/425, 31/445*

U.S. Cl. 424—244 **12 Claims**

1. A method for the treatment of diarrhea in humans and mammals which comprises the administering thereto between 0.01 to 500 mg/kg per day of a compound of the formula:



where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are: hydrogen, halo, loweralkyl, haloloweralkyl, nitro, loweralkoxy, hydroxy, arloweralkoxy, acyloxy, cyano, haloloweralkoxy or loweralkylsulfonyl;

R and R_n are hydrogen or loweralkyl; and

R' and R'' together form a ring containing a group selected from the group consisting of tetramethylene, pentamethylene and hexamethylene 5–7 atom ring which may additionally include 0–2 hetero atoms of N,O or S; and the non-toxic acid addition salts thereof.

4,115,565
6,7-DIMETHOXY-2-(4-THIOMORPHOLINYL)-4-QUINAZOLINAMINE AND RELATED SULFOXIDE AND SULFONE

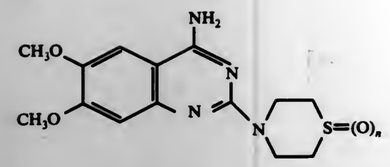
Lawrence D. Wise, and Glenn C. Morrison, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 759,695, Jan. 17, 1977, abandoned. This application Oct. 25, 1977, Ser. No. 844,755

Int. Cl.[2] A61K *31/505*; C07D *417/04*

U.S. Cl. 424—246 **5 Claims**

1. Compounds of the general formula:



wherein *n* is 0, 1 or 2 and pharmaceutically acceptable salts thereof.

5. A pharmaceutical composition comprising a pharmaceutical acceptable carrier in combination with a pharmaceutically effective amount of a compound or salt according to claim 1.

4,115,566

7α UREIDO CEPHEM-4-CARBOXYLIC ACID DERIVATIVES

Karoly Kocsis, Basel; Bruno Fechtig, Reinach, and Hans Bickel, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

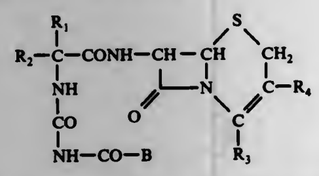
Division of Ser. No. 344,004, Mar. 22, 1973, Pat. No. 3,954,802. This application Dec. 19, 1975, Ser. No. 642,505

Claims priority, application Switzerland, Mar. 29, 1972, 4732/72

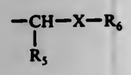
Int. Cl.² A61K *31/545*; C07D *501/28*

U.S. Cl. 424—246 **7 Claims**

1. A compound of the formula



wherein R_4 denotes methyl, or methyl mono-substituted by hydroxy, lower alkanoyloxy with up to 6 carbon atoms or a nitrile group, R_3 denotes a carboxyl group, R_1 is hydrogen and R_2 is phenyl, thienyl or furyl and wherein B denotes a group of the formula



wherein X represents carbonyloxy or sulphonyl, R_5 represents hydrogen, lower alkyl, phenyl, thienyl, furyl or pyridyl and R_6 represents (a) lower alkyl or lower alkyl mono-substituted by halogen, lower alkoxy, phenoxy or lower alkanoloxy or (b) phenyl, naphthyl, benzyl, furyl, thienyl, furfuryl, thenyl, pyridyl, pyrazinyl or pyrimidyl or phenyl, naphthyl, benzyl, furyl, thienyl, furfuryl, thenyl, pyridyl, pyrazinyl or pyrimidyl mono substituted by lower alkyl, lower alkoxy, halogen or nitro, or a pharmaceutically acceptable salt thereof.

7. A pharmaceutical preparation with antibacterial activity which comprises a therapeutically effective amount of a compound of claim 1, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier.

4,115,567

6-CARBOXY-2-(2'-PYRAZINYL)-CHROMONES AND ESTERS THEREOF

Gianfederico Doria; PierNicola Giraldi; Francesco Lauria; Maria Luisa Corno, all of Milan; Piero Sberze, Varese, and Marcello Tibolla, Milan, all of Italy, assignors to Carlo Erba S. p. A., Milan, Italy

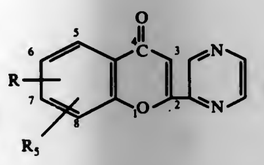
Division of Ser. No. 660,383, Feb. 23, 1976, Pat. No. 4,065,467, which is a continuation of Ser. No. 536,476, Dec. 26, 1974, abandoned. This application Jun. 1, 1976, Ser. No. 691,488

Claims priority, application Italy, Dec. 27, 1973, 32089 A/73; Jul. 4, 1974, 24777 A/74; Jul. 17, 1974, 25244 A/74

Int. Cl.² A61K *31/495*; C07D *405/04*

U.S. Cl. 424—250 **12 Claims**

1. A 5:6-benzo-γ-pyrone compound having the following formula:



wherein

R is carboxy or —$COOR_{13}$, wherein R_{13} is C_1–C_{12} alkyl;

R_5 is hydrogen, allyl or propyl;

the radical R is in the 6- or 7-position of the benzopyrone ring, or a pharmaceutically acceptable salt thereof.

3. An antiallergic pharmaceutical composition comprising a suitable carrier and/or diluent, and, as the active ingredient, a compound of claim 1.

8. A method for prevention and/or treatment of allergic conditions, said method comprising administrating a therapeutically effective amount of a compound of claim 1.

4,115,568

THIENO[3,2-b]-[1,5]BENZODIAZEPINES

Jiban Kumar Chakrabarti, Camberley, and David Edward Tupper, Bracknell, both of England, assignors to Lilly Industries Limited, London, England

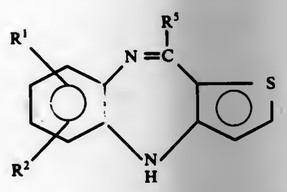
Division of Ser. No. 633,895, Nov. 20, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 787,197

Claims priority, application United Kingdom, Nov. 26, 1974, 51240/74

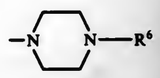
Int. Cl.² A61K *31/495, 31/55*; C07D *495/04*

U.S. Cl. 424—250 **9 Claims**

1. A thieno[3,2-b][1,5]benzodiazepine of the formula

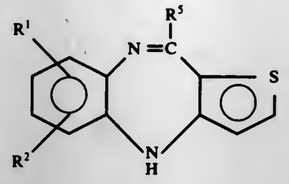


or an acid addition salt thereof, wherein R^1 and R^2 independently represent hydrogen, C_{1-4} alkyl, halogen, C_{1-4} haloalkyl, nitro, amino, C_{1-4} alkoxy, C_{1-4} alkylthio or a group of the formula —$SO_2N(R^4)_2$ where R^4 is C_{1-4} alkyl; wherein R^5 is a group of the formula

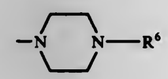


wherein R^6 is hydrogen, phenyl, halo phenyl, C_{1-4} alkyl, C_{1-4} carbalkoxy or —$(CH_2)_nOH$ where *n* is 2 or 3; and wherein the thiophene ring is unsubstituted or is substituted by a C_{1-4} alkyl group.

7. A pharmaceutical formulation comprising as an active ingredient a chemotherapeutically effective amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein R^1 and R^2 independently represent hydrogen, C_{1-4} alkyl, halogen, C_{1-4} haloalkyl, nitro, amino, C_{1-4} alkoxy, C_{1-4} alkylthio or a group of the formula —$SO_2N(R^4)_2$ where R^4 is C_{1-4} alkyl; wherein R^5 is a group of the formula:



wherein R^6 is hydrogen, phenyl, halo phenyl, C_{1-4} alkyl, C_{1-4} carbalkoxy or —$(CH_2)_nOH$ where *n* is 2 or 3; and wherein the thiophene ring is unsubstituted or is substituted by a C_{1-4} alkyl group.

4,115,569

CYCLIC DIAMINE DERIVATIVES

Rolf-Ortwin Weber, Wiesbaden; Alfons Söder, Frankfurt, Main-Schwanheim, and Istvan Boksay, Kiedrich, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

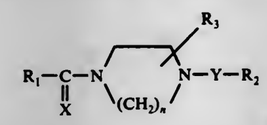
Division of Ser. No. 307,406, Nov. 17, 1972. This application Aug. 21, 1975, Ser. No. 606,488

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1972, 2240665; Nov. 19, 1971, 2157424

Int. Cl.² A61K *31/495*; C07D *295/10*

U.S. Cl. 424—250 **6 Claims**

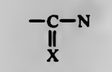
1. A pharmaceutically active N,N'-disubstituted cyclic diamine compound of the formula



(I)

wherein

R_1 is an unsubstituted binuclear heterocyclic ring system bound to the group



at a carbon atom and being selected from the group consisting of benzofuryl, dihydrobenzofuryl and benzothienyl,

X is oxygen, sulphur or a NH-group,

Y is an unsubstituted alkylene group having 1 to 3 carbon atoms in the chain or an alkylene group having 1 to 3 carbon atoms in the chain substituted by (a) up to 3 alkyl groups each having up to 3 carbon atoms and a total of not more than 8 carbon atoms, or by (b) one or two phenyl groups,

R_2 is a mononuclear heterocyclic radical selected from the group consisting of (A) furfuryl, tetrahydrofurfuryl and thenyl and (B) substitution products of (A) containing at least one substituent selected from the group consisting of nitro, halogen, trifluormethyl, alkyl having 1 to 6 carbon atoms,

R_3 is hydrogen or up to two substituents selected from alkyl groups having up to 2 carbon atoms and phenyl groups;

n is 2 or 3

or a physiologically-acceptable acid addition salt thereof.

6. A pharmaceutical composition useful for psychotherapeutic treatment comprising as an active ingredient a compound (I) or its pharmaceutically acceptable acid addition salt as claimed in claim 1 together with a compatible adjuvant.

4,115,570

MORPHOLINE COMPOUNDS AND METHODS OF USE

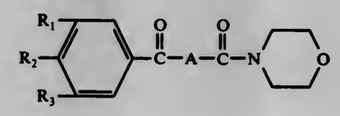
Aldo Garzia, Lodi (Milan), Italy, assignor to Istituto Chemioterapico Italiano, S.p.A., Italy

Filed Feb. 28, 1975, Ser. No. 554,177

Int. Cl.² A61K *31/535*; C07D *295/18*

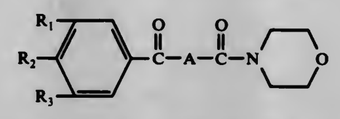
U.S. Cl. 424—248.57 **13 Claims**

1. A compound of the formula



wherein A is lower alkylene and R_1, R_2 and R_3 are lower alkoxy.

6. A method for providing central nervous system depressant activity to a host comprising administering to the host an effective amount to provide the depressant activity of a compound of the formula



wherein A is lower alkylene and each of R_1, R_2 and R_3 is hydrogen or lower alkoxy.

4,115,571

10-(BIS-PYRROLINYL) PHENOXAZINES

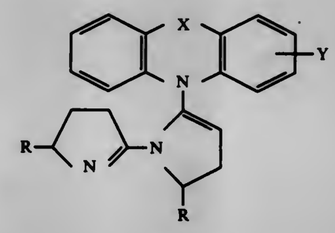
Yao Hua Wu, and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 641,007, Dec. 15, 1975, Pat. No. 4,077,959, which is a division of Ser. No. 521,618, Nov. 6, 1974, Pat. No. 3,946,004, which is a continuation-in-part of Ser. No. 336,845, Feb. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 147,667, May 27, 1971, Pat. No. 3,719,671. This application Jan. 13, 1978, Ser. No. 869,201

Int. Cl.² A61K *31/535*; C07D *413/00*

U.S. Cl. 424—248.56 **9 Claims**

1. A compound selected from the group consisting of 10-(bis-pyrrolinyl)phenoxazines represented by



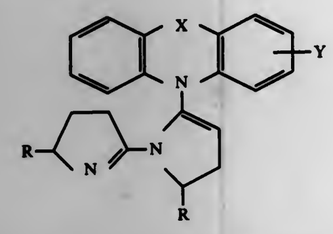
and non-toxic pharmaceutically acceptable acid addition salts thereof wherein

X is oxygen;

Y represents hydrogen, trifluoromethyl, halogen, lower alkyl of from 1 to 4 carbon atoms inclusive or lower alkoxy of 1 to 4 carbon atoms inclusive; and

R represents hydrogen or straight chain lower alkyl of 1 to 4 carbon atoms inclusive.

8. A process for producing a diuretic, smooth muscle relaxant or antithrombogenic effect in a mammal which comprises administering thereto a dose of from about 0.01 to 30 mg./kg. of body weight of said mammal of a compound selected from the group consisting of 10-(bis-pyrrolinyl)phenothiazines, 10-(bis-pyrrolinyl)acridans and 10-(bis-pyrriolinyl)phenoxazines represented by Formula I



and non-toxic pharmaceutically acceptable acid addition salts thereto wherein

X is selected from the group consisting of sulfur, oxygen, or a divalent methylene radical represented by the formula $-C(Z_1Z_2)-$, wherein Z_1 and Z_2 are independently selected from hydrogen or straight chain lower alkyl of from 1 to 4 carbon atoms inclusive;

Y represents hydrogen, trifluoromethyl, halogen, lower alkyl of from 1 to 4 carbon atoms inclusive or lower alkoxy of 1 to 4 carbon atoms inclusive; and

R represents hydrogen or straight chain lower alkyl of 1 to 4 carbon atoms inclusive.

4,115,572

IMIDAZO-[1,5-D]-AS-TRIAZIN-1(2H)-ONES AND METHOD OF AMELIORATING ASTHMA

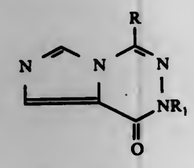
Rolf Paul, River Vale, N.J., and Judith Menschik, Tappan, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 765,337, Feb. 3, 1977, abandoned. This application Oct. 18, 1977, Ser. No. 843,302

Int. Cl.[2] C07D *471/04*

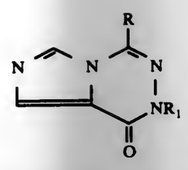
U.S. Cl. 424—249 **14 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen and alkyl having up to six carbon atoms, and R_1 is hydrogen or allyl.

12. A therapeutic composition in dosage unit form useful for meliorating asthma in mammals comprising from about 1.0 mg. to about 25.0 mg. per kg. of body weight per daily dosage unit, in association with a pharmaceutical carrier, of a compound of the formula:



wherein R is selected from the group consisting of hydrogen and alkyl having up to six carbon atoms, and R_1 is hydrogen or allyl.

4,115,573

N-PYRAZINECARBONYL-N'-SUBSTITUTED-SULFAMOYLGUANIDINE AND PROCESSES FOR PREPARING SAME

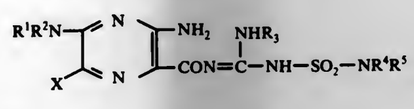
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 4, 1977, Ser. No. 774,360

Int. Cl.[2] A61K *31/495*; C07D *241/02*

U.S. Cl. 424—250 **5 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen,
lower alkyl having from 1 to 5 carbon atoms;
cycloalkyl having from 3 to 6 carbon atoms,
lower alkenyl having from 2 to 3 carbon atoms;

R^2 is hydrogen,
lower alkyl having 1 to 5 carbon atoms;

R^1 and R^2 can be joined to form with the nitrogen atom to which they are attached a heterocyclic ring having 3 to 6 carbon atoms therein;

R^3 is hydrogen,
lower alkyl having from 1 to 5 carbon atoms;

R^4 is hydrogen,
lower alkyl having from 1 to 5 carbon atoms,
cycloalkyl having from 3 to 6 nuclear carbon atoms;

R^5 is hydrogen,
lower alkyl having 1 to 5 carbon atoms,
cycloalkyl having from 3 to 6 nuclear carbon atoms;

X is halogen;

and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,115,574

BENZODIAZEPINE DERIVATIVES

Jiban Kumar Chakrabarti, Camberley, and David Edward Tupper, Bracknell, both of England, assignors to Lilly Industries Limited, London, England

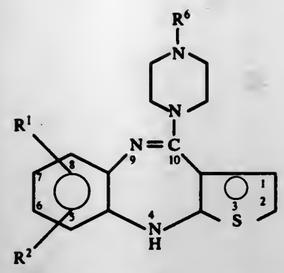
Continuation of Ser. No. 633,895, Nov. 20, 1975, abandoned. This application Jun. 1, 1977, Ser. No. 802,381

Claims priority, application United Kingdom, Nov. 26, 1974, 51240/74

Int. Cl.[2] A61K *31/495, 31/55*; C07D *495/04*

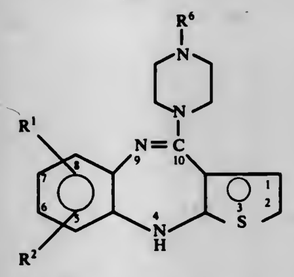
U.S. Cl. 424—250 **21 Claims**

1. A thieno[2,3-b][1,5]benzodiazepine compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 independently represent hydrogen, C_{1-4} alkyl, halogen, C_{1-4} haloakyl, nitro, amino, C_{1-4} alkoxy, C_{1-4} alkylthio or a group of the formula $-SO_2N(R^4)_2$ where R^4 is C_{1-4} alkyl; wherein R^6 is hydrogen, phenyl, halophenyl, C_{1-4} alkyl, C_{1-4} carbalkoxy or $-(CH_2)_nOH$ where n is 2 or 3; and wherein the thiophene ring is unsubstituted or is substituted by a C_{1-4} alkyl group in the 2-position.

8. A method of treating an animal suffering from, or susceptible to, disorder of the CNS, which comprises administering to the animal a chemotherapeutically effective amount of a thieno[2,3-b][1,5]benzodiazepine compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein R^1 and R^2 independently represent hydrogen, C_{1-4} alkyl, halogen, C_{1-4} haloalkyl, nitro, amino, C_{1-4} alkoxy, C_{1-4} akylthio or a group of the formula $-SO_2N(R^4)_2$ where R^4 is C_{1-4} alkyl; wherein R^6 is hydrogen, phenyl, halophenyl, C_{1-4} alkyl, C_{1-4} carbalkoxy or $-(CH_2)_nOH$ where n is 2 or 3; and wherein the thiophene ring is unsubstituted or is substituted by a C_{1-4} alkyl group in the 2-position.

4,115,575

2-(3-AMINO-2-HYDROXY-PROPOXY)-PYRAZINES

Jörg Frei, Schönenbuch; Knut A. Jaeggi, Basel; Franz Ostermayer, Riehen, and Herbert Schröter, Füllinsdorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

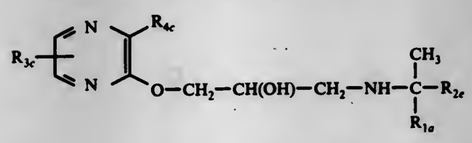
Continuation of Ser. No. 590,363, Jun. 25, 1975, abandoned, and a continuation-in-part of Ser. No. 442,711, Feb. 14, 1974, abandoned. This application Jan. 7, 1977, Ser. No. 757,529

Claims priority, application Switzerland, Feb. 20, 1973, 2444/73; Finland, Jan. 23, 1974, 193/74

Int. Cl.[2] A61K *31/495*; C07D *241/04, 241/12, 241/18*

U.S. Cl. 424—250 **24 Claims**

1. A compound of the formula



(Iae)

wherein R_{1a} is hydrogen or methyl, R_{2a} is methyl or 2-phenylethyl, R_{3c} is hydrogen, hydroxy, bromine, methyl, 2-methoxyethyl or 2-methoxycarbonylaminoethyl, and R_{4c} is hydrogen, chlorine, methoxy, 2-methoxyethoxy, allyloxy, methylthio, ethylthio, morpholino, 4-hydroxypiperidino, dimethylamino, isopropylamino, phenylthio or N'-methylpiperazino their antipodes or a therapeutically acceptable salt thereof.

11. A pharmaceutical preparation useful as β-receptor blocking agent in the treatment of angina pectoris, hypertonia and disturbances of the rhythm of the heart comprising a therapeutically effective amount of a compound of the formula (Iae) as claimed in claim 1 wherein R_{1a} and R_{2a} have the meanings given, R_{3c} and R_{4c} have the meanings given except for hydrogen or a therapeutically acceptable salt of such a compound together with a pharmaceutically usable excipient.

4,115,576

COMPOSITIONS AND METHOD OF EMPLOYING THE SAME FOR INHIBITING ALCOHOL INTOXICATION

Nathar W. Penn, 453 Glendale Ave., Wyckoff, N.J. 07481

Continuation of Ser. No. 457,226, Apr. 2, 1974, abandoned. This application Oct. 26, 1976, Ser. No. 735,145

Int. Cl.[2] A61K *31/44, 31/455, 31/505*

U.S. Cl. 424—251 **13 Claims**

1. A composition useful for combatting alcohol intoxication consisting essentially of 5-hydroxymethylcytosine, a B_6 vitamin selected from the group consisting of pyridoxal and derivatives or mixtures thereof, and nicotinamide or nicotinic acid, or mixtures thereof, said 5-hydroxymethylcytosine, said B_6 vitamin, and said nicotinamide or nicotinic acid being present in said composition in the molar ratio 1–6: 1–10: 1–10, respectively.

2. A method of combatting alcohol intoxication in a subject which comprises administering to the subject a composition in accordance with claim 1, the components of said composition being administered to said subject in an amount in milligrams per kilogram of subject body weight in the range 10–30 5-hydroxymethylcytosine, 10–30 said B_6 vitamin, and 7–30 nicotinamide or nicotinic acid.

4,115,577

PYRIDOPYRROLOBENZHETEROCYCLES

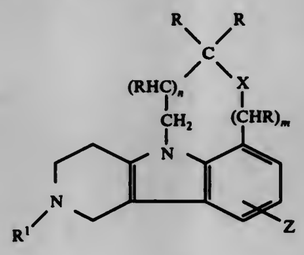
Parthasarathi Rajagopalan, Westbury, N.Y., assignor to Endo Laboratories, Inc., Garden City, N.Y.

Division of Ser. No. 586,746, Jul. 13, 1975, Pat. No. 4,013,652, which is a division of Ser. No. 357,528, May 7, 1973, Pat. No. 3,914,421, which is a continuation-in-part of Ser. No. 263,766, Jun. 9, 1972, abandoned. This application Dec. 28, 1976, Ser. No. 755,121

Int. Cl.[2] C07D *495/22*; A61K *31/44*

U.S. Cl. 424—256 **9 Claims**

1. Compound of the formula:



where

X is S, S or SO_2;

m and n are either 0 or 1 and the sum of m and n is at least 1;

the R's are the same or different and are H or CH_3, and one of them can be C_2–C_9 alkyl, phenyl, C_7–C_{10} phenylalkyl, furyl, thienyl, pyridyl, phenyl or C_7–C_{10} phenylalkyl substituted on adjacent ring carbon atoms with methylenedi-

oxy, or phenyl or C_7–C_{10} phenylalkyl substituted on the ring with 1, 2 or 3 substituents individually selected from methoxy, ethoxy, bromine, chlorine, fluorine, trifluoromethyl and C_1–C_4 alkyl; when X is S and *m* is 0, one R on the group —RCR— can be —OCH_3; and when X is S and *m* is 1, the R on the group $(CHR)_m$ can be —OCH_3;

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_5 alkenyl, C_3–C_5 alkynyl, C_3–C_6 cycloalkyl, C_2–C_4 alkoxycarbonyl, trifluoroacetyl or substituted C_1–C_4 alkyl where the substituent is C_3–C_6 cycloalkyl, phenyl, phenyl substituted on adjacent carbon atoms with methylenedioxy, or phenyl substituted with 1, 2 or 3 substituents individually selected from methoxy, ethoxy, bromine, chlorine, fluorine, trifluoromethyl and C_1–C_4 alkyl; and

Z is H, Cl or CH_3;

and their pharmaceutically suitable salts.

9. A pharmaceutical preparation suitable for use in warm-blooded animals consisting essentially of a pharmaceutically suitable vehicle and an effective sedative amount of the compound of claim 1.

4,115,578

1-SUBSTITUTED ARALKYL IMIDAZOLES

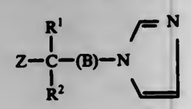
George A. Miller, Maple Glen, and Ronald P. Owen, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 642,041, Dec. 8, 1975, which is a continuation-in-part of Ser. No. 547,291, Feb. 5, 1975, abandoned. This application Nov. 12, 1976, Ser. No. 741,440

Int. Cl.² C07D *233/58;* A61K *31/415*

U.S. Cl. 424—273 R 6 Claims

1. A compound of the formula



wherein Z is phenyl or phenyl substituted with up to three substituents selected from the group consisting of chloro, fluoro, bromo, iodo, $(C_1$–$C_4)$alkyl, methoxy, ethoxy, nitro, amino, methylthio, and trihalomethyl; R^1 is hydrogen; $(C_1$–$C_{10})$alkyl; $(C_2$–$C_{12})$-alkenyl; $(C_7$–$C_9)$aralkyl the aryl portion of which is substituted with up to two substituents selected from the group consisting of $(C_1$–$C_4)$alkyl, methoxy, ethoxy, chloro, fluoro, bromo, iodo, nitro, amino, methylthio and trihalomethyl; phenyl or phenyl substituted with up to two substituents selected from the group consisting of $(C_1$–$C_4)$alkyl, methoxy, ethoxy, chloro, fluoro, bromo, iodo, nitro, amino, methylthio and trihalomethyl; $(C_3$–$C_7)$cycloalkyl; or $(C_5$–$C_7)$-cycloalkenyl; R^2 is phenyl or phenyl substituted with up to three substituents selected from the group consisting of chloro, fluoro, bromo, iodo, methyl, ethyl, methoxy, ethoxy, nitro, amino, methylthio and trihalomethyl; B is a divalent $(C_1$–$C_5)$-alkylene group and the agronomically acceptable acid addition salts thereof.

3. A method for controlling phytopathoenic fungi which comprises applying to a plant, to plant seeds or to the plant habitat a fungicidally effective amount of a compound of claim 1.

4,115,579

PROCESS FOR INHIBITING BLOOD PLATELET AGGREGATION

Joseph Strubbe, Dilbeek, Belgium, assignor to U C B, Societe Anonyme, Belgium

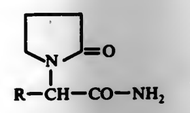
Filed Oct. 19, 1977, Ser. No. 843,693

Claims priority, application United Kingdom, Oct. 19, 1976, 43300/76

Int. Cl.² A61K *31/40*

U.S. Cl. 424—274 6 Claims

1. A process of inhibiting blood platelet aggregation, which comprises administering internally to a man requiring such inhibition an amount effective to inhibit platelet aggregation of a 2-(2-oxo-pyrrolidino)alkanamide having the formula



wherein R is a hydrogen atom or a methyl or ethyl radical.

4,115,580

3,4-EPOXY-CYCLOPENTA-1,2-DIYL PROSTANES

Jean Bowler, and Graham Ernest Robinson, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

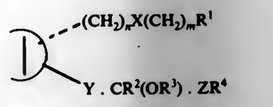
Filed Jul. 18, 1977, Ser. No. 816,666

Claims priority, application United Kingdom, Aug. 11, 1976, 33382/76

Int. Cl.² C07C *177/00*

U.S. Cl. 424—278 10 Claims

1. A prostane derivative of the formula:



I

wherein R^1 is carboxy or $C_{2\text{-}12}$ alkoxycarbonyl and D is 3,4-epoxy-5-oxocyclopenta-1,2-diyl or 3,4-epoxy-5-hydroxycyclopenta-1,2-diyl, X is ethylene or vinylene; Y is ethylene or trans-vinylene; *n* is 1 or 2 and *m* is 2 to 5, provided that *n* and *m* together total 4 to 6; R^2 and R^3 which may be the same or different are each hydrogen or $C_{1\text{-}4}$ alkyl; Z is a direct bond, $C_{1\text{-}3}$ alkylene or $C_{1\text{-}3}$ alkyleneoxy, in which the oxygen is bonded to R^4; and R^4 is phenyl or naphthyl optionally bearing one or more substituents selected from halogen, nitro, hydroxy and phenyl, and $C_{1\text{-}4}$ alkyl, alkoxy and halogenoalkyl; and for those compounds wherein R^1 is carboxy, the pharmaceutically or veterinarily acceptable salts thereof.

9. A pharmaceutical or veterinary luteolytic composition which comprises an effective amount of the prostane derivative of claim 1 and a pharmaceutically or veterinarily acceptable diluent or carrier.

4,115,581

BIS-STANNANE INSECTICIDES

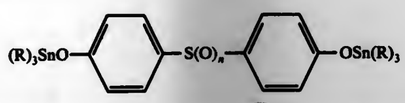
Alexander Mihallovski, Kensington, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 9, 1977, Ser. No. 858,984

Int. Cl.² A01N *9/00*

U.S. Cl. 424—288 7 Claims

1. A method of controlling insects comprising applying to said insects an insecticidally effective amount of a compound having the formula



in which R is cyclohexyl or alkyl having 2 to 6 carbon atoms, and *n* is 0, 1, or 2.

4,115,582

N-1,1,2,2-TETRACHLORO-2-FLUOROETHYLTHIO BENZANILIDE AND ITS USE AS FUNGICIDE AND ACARICIDE

Hsiao-Ling Lam, El Cerrito, and Ferenc M. Pallos, Walnut Creek, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 15, 1977, Ser. No. 833,525

Int. Cl.² A01N *9/12;* C07C *69/76*

U.S. Cl. 424—298 4 Claims

1. N-1,1,2,2-tetrachloro-2-fluoroethylthio benzanilide.

3. A method of controlling fungi comprising applying thereto a fungicidally effective amount of N-1,1,2,2-tetrachloro-2-fluoroethylthio benzanilide.

4,115,583

PESTICIDAL SULPHENYLATED FORMAMIDINE COMPOUNDS

Manfred Böger, Weil am Rhein, Germany, and Jozef Drabek, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

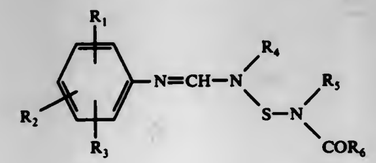
Division of Ser. No. 646,814, Jan. 6, 1976, abandoned. This application May 2, 1977, Ser. No. 792,754

Claims priority, application Switzerland, Jan. 16, 1975, 534/75; Jun. 26, 1975, 8310/75; Nov. 7, 1975, 14425/75

Int. Cl.² C07C *145/04;* A01N *9/12*

U.S. Cl. 424—300 20 Claims

1. A compound of the formula I



(I)

wherein

R_1, R_2 and R_3 independently of one another represent hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, trifluoromethyl, cyano or nitro,

R_4 represents C_1–C_4-alkyl,

R_5 represents an C_1–C_{10}-alkyl, halogen substituted C_1–C_{10}-alkyl; C_3–C_{10}-cycloalkyl, C_4–C_{10}-(cycloalkylalkyl) or C_2–C_{10}-(alkoxyalkyl) and

R_6 represents C_1–C_{10}-alkoxy; C_3–C_{10}-cycloalkoxy, C_4–C_{10}-(cycloalkylalkoxy) or C_2–C_{10}-(alkoxyalkoxy).

4,115,584

SUBSTITUTED 2-HIGHER ALKYL-3-HYDROXY-1,4-NAPHTHOQUINONE CARBOXYLIC ACID ESTERS AND THEIR USE AS MITICIDES

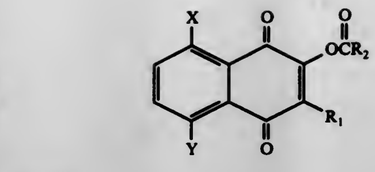
Russell Frank Bellina, Wilmington, and Dennis Lynn Fost, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 671,044, Mar. 29, 1976, Pat. No. 4,070,481, which is a continuation-in-part of Ser. No. 613,553, Sep. 15, 1975, Pat. No. 4,055,661, which is a continuation-in-part of Ser. No. 531,483, Dec. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 494,294, Aug. 2, 1974, abandoned, which is a continuation of Ser. No. 468,692, May 10, 1974, abandoned. This application Oct. 12, 1977, Ser. No. 841,453

Int. Cl.² A01N *9/24;* C07C *69/96*

U.S. Cl. 424—301 9 Claims

1. A compound of the formula:



wherein

R_1 is alkyl of 8–14 carbon atoms which are branched, cyclic or straight chain;

R_2 is alkoxy of 1–4 carbon atoms;

X is hydrogen, fluorine, chlorine, bromine, methyl or methoxy; and

Y is hydrogen, fluroine, chlorine, bromine, methyl or methoxy;

provided that at least one of X and Y is other than hydrogen.

4. A method for protecting plants from mites or aphids which comprises applying to the plant a miticidally or aphicidally effective amount of a compound of claim 1.

4,115,585

ESTERS OF 1-(P-HYDROXYPHENYL)-2-(1'-METHYL-2'-PHENOXYETHYLAMINO)-1-PROPANOL

Elso Manghisi, Monza (Milan); Aldo Salimbeni, Milan, and Giovanni Ferni, Cusano Milanino (Milan), all of Italy, assignors to Instituto Luso Farmaco d'Italia S.r.l., Milan, Italy

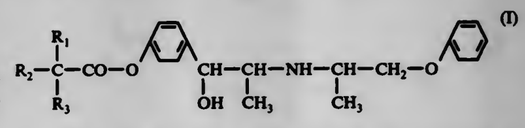
Filed May 10, 1977, Ser. No. 795,543

Claims priority, application Italy, May 17, 1976, 23347/76; Mar. 28, 1977, 21735/77

Int. Cl.² A61K *31/24;* C07C *93/26*

U.S. Cl. 424—311 5 Claims

1. An ester of 1-(p-hydroxyphenyl)-2-(1'-methyl-2'-phenoxyethylamino)-1-propanol of formula I:



(I)

in which R_1, R_2, and R_3 are alkyl groups of from 1 to 4 carbon atoms, or a pharmaceutically acceptable salt thereof.

3. A vasodilating composition containing a vasodilating effective amount of 1-(p-α,α-dimethylpropionyloxyphenyl)-2-(1'-methyl-2'-phenoxyethylamino)-1-propanol together with a pharmaceutically acceptable expipient.

4. Method for effecting vasodilation in a patient which comprises administering to said patient a vasodilating amount of a pharmaceutical composition having as active ingredient 1-(p-α,α-dimethylpropionyloxyphenyl)-2-(1'-methyl-2'-phenoxyethylamino)-1-propanol in a pharmaceutically acceptable excipient.

4,115,586

ANTIHYPERTHERMIC USE FOR PROSTAGLANDINS

William L. Miller, Jr., Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 18, 1977, Ser. No. 816,398

Int. Cl.² A61K *31/19, 31/215*

U.S. Cl. 424—317 9 Claims

1. A method of preventing or ameliorating fever in a human susceptible to fever development, such susceptibility being by virtue of pyrogen or fever-inducing prostaglandin challange, which comprises administering a hypothermic dose of a hypothermic-prostaglandin (hypothermic-PG) to ameliorate said fever or administering prior to said challenge to prevent said fever.

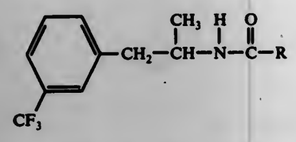
4,115,587

FATTY ACID AMIDES OF NORFENFLURAMINE AND COMPOSITIONS AND METHODS THEREOF

Carl D. Lunsford, Richmond, and Albert D. Cale, Jr., Mechanicsville, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 655,195, Feb. 4, 1976, abandoned. This application Dec. 16, 1976, Ser. No. 751,294
Int. Cl.[2] A61K *31/165*; C09F *5/00*
U.S. Cl. 424—324 21 Claims

1. A fatty acid amide of norfenfluramine having effective cholesterol-lowering activity in mammals of the formula:



wherein R is selected from the group consisting of alkyl having 12 to 22 carbon atoms and alkenyl having 12 to 22 carbon atoms.

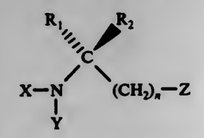
4,115,588

ANTIBACTERIAL NOVEL SOFT N-CHLOROAMINO ALCOHOL DERIVATIVES

James J. Kaminski, and Nicolae S. Bodor, both of Lawrence, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Division of Ser. No. 632,012, Nov. 14, 1975, Pat. No. 4,036,843. This application Jun. 6, 1977, Ser. No. 803,868
Int. Cl.[2] A01N *9/20*
U.S. Cl. 424—325 9 Claims

1. A method for inhibiting bacterial growth which comprises applying to said bacterial growth, an antibacterially effective amount of a compound having the formula:

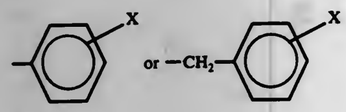


(I)

wherein X and Y each represent a member which may be the same or different selected from the group consisting of H and Cl with the proviso that X and Y cannot represent H simultaneously; R_1 and R_2 each represent a member which may be the same or different selected from the group consisting of n- or branched alkyl of from 1 to 20 carbon atoms, phenyl, naphthyl, or



wherein *m* represents an integer of from 2 to 5; *n* represents an integer of 1 to 8; and Z represents —OR_3, wherein R_3 represents a member selected from the group consisting of n- or branched alkyl of 1 to 20 carbon atoms, phenyl, naphthyl, benzyl,



wherein X is halogen.

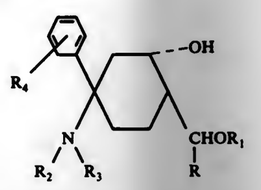
4,115,589

COMPOUNDS, COMPOSITIONS AND METHOD OF USE

Daniel Lednicer, Evansville, Ind., assignor to The Upjohn Company, Kalamazoo, Mich.

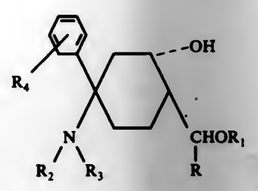
Filed May 17, 1977, Ser. No. 797,782
Int. Cl.[2] A01N *9/20*; C07C *91/02*
U.S. Cl. 424—330 15 Claims

1. A compound of the formula



wherein R is hydrogen or alkyl of one to three carbon atoms, inclusive, R_1 is hydrogen R_2 and R_3 are the same or different and are alkyl of one to five carbon atoms, inclusive; and R_4 is hydrogen, meta or para halo, hydroxy or alkyl of one to three carbon atoms, inclusive, and physiologically acceptable acid addition salts thereof.

11. A method for inducing analgesia in mammals in need of such treatment which comprises administering to said mammal an analgetically effective amount of a compound of the formula



wherein R is hydrogen or alkyl of one to three carbon atoms, inclusive, R_1 is hydrogen, R_2 and R_3 are the same or different and are alkyl of one to five carbon atoms, inclusive; and R_4 is hydrogen, meta or para halo, hydroxy or alkyl of one to three carbon atoms, inclusive, and physiologically acceptable acid addition salts thereof.

4,115,590

BINUCLEAR PHENOLS FOR REDUCING PLASMA LIPID LEVELS

Sidney I. Lerner, Cincinnati, Ohio, assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 347,357, Feb. 26, 1964, abandoned. This application Jan. 28, 1970, Ser. No. 6,588
Int. Cl.[2] A61K *31/05, 31/10, 31/105, 31/19*
U.S. Cl. 424—337 16 Claims

9. A method for lowering serum cholesterol in an animal comprising administering orally to an animal a compound selected from the group consisting of 4,4'-thiobis(6-tert-butyl-m-cresol), 4,4'-thiobis(6-tert-butyl-o-cresol), and α,α'-thiobis(2,6-di-tert-butyl-p-cresol) in a daily dosage of from about 0.8 to about 1,000 milligrams of compound per kilogram of animal body weight.

4,115,591

PROCESS FOR PRODUCING KOJI AND UTILIZATION OF THE KOJI

Fumio Noda, Kamagaya; Keitaro Mogi, and Toshio Sakasai, both of Noda, all of Japan, assignors to Kikkoman Shoyu Co. Ltd., Noda, Japan

Filed Apr. 26, 1977, Ser. No. 790,870
Claims priority, application Japan, Apr. 27, 1976, 51-47298
Int. Cl.[2] A23L *1/20, 1/238*
U.S. Cl. 426—7 8 Claims

1. In a process for producing koji for fermented food products which comprises inoculating a koji mold in a modified koji substrate and cultivating it at a temperature of 20° to 40° C. for a time sufficient to produce koji for fermented food products, the improvement wherein the cultivation is carried out in the presence of 0.05 to 8% by weight, based on the total weight of the unmodified koji substrate, of a sodium or potassium salt of an aliphatic carboxylic acid containing up to 4 carbon atoms.

4,115,592

INSTANT DISSOLVING EGG WHITE

Dwight H. Bergquist, Springfield, Mo.; Franklin E. Cunningham, Manhattan, Kans., and Robert M. Eggleston, Winnipeg, Canada, assignors to Henningsen Foods Inc., White Plains, N.Y.

Continuation of Ser. No. 89,045, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 670,405, Sep. 25, 1967, abandoned. This application Jun. 13, 1975, Ser. No. 586,653
Int. Cl.[2] A23B *5/06*
U.S. Cl. 426—32 10 Claims

1. Process for preparing dried egg white having improved flow and water solubility characteristics consisting of the steps of:

(a) spray coating dried egg white particles with an aqueous solution of sucrose containing between about 40 and about 80% sucrose by weight while agitating the particles to form a substantially complete and uniform sucrose coating over said particles, the resulting coating comprising from about 15 to about 35% of the total weight of the coated particles, on a dry basis;

(b) sifting the coated egg white particles to prevent formation of clumps; and

(c) drying the still substantially completely coated particles to reduce the moisture content thereof to about 3 to 6% by weight.

4,115,593

PROCESS FOR PRODUCING FEED PROTEIN

Dick Peter Henry, Brookfield, Australia, assignor to The University of Queensland, St. Lucia, Australia

Continuation of Ser. No. 744,338, Nov. 23, 1976, abandoned, which is a continuation of Ser. No. 621,577, Oct. 10, 1975, abandoned, which is a continuation of Ser. No. 476,838, Jun. 6, 1974, abandoned. This application Jan. 4, 1978, Ser. No. 866,909
Claims priority, application Australia, Jun. 6, 1973, 3561/73; Apr. 22, 1974, 7314/74
Int. Cl.[2] A23K *1/00*
U.S. Cl. 426—53 4 Claims

1. A process for producing yeast protein including the following steps:

(a) subjecting biological waste material to anaerobic fermentation in a liquid medium to provide a yeast growth promoting substrate comprised of a mixture of volatile monocarboxylic acids;

(b) introducing into the resultant ferment a pellicle-forming yeast selected from the group consisting of *Candida ingens* and *Pichia membranaefaciens;*

(c) adjusting the ammonia nitrogen content of said liquid medium to a total nitrogen content of between 0.4% and 2.0% by weight of dry matter;

(d) allowing a surface layer of said yeast to grow on said liquid medium;

(e) gently circulating said medium beneath said surface layer without disturbing or breaking up said layer;

(f) skimming off said layer; and

(g) drying said skimmed yeast to form said yeast protein.

4,115,594

EXTRUDABLE COLLAGEN CASING AND METHOD OF PREPARATION

Thomas Engel Higgins, Brookfield; Camilla Brems Ross, Hinsdale, and Henry John Snella, Oak Forest, all of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 30, 1977, Ser. No. 782,959
Int. Cl.[2] A22C *13/00*
U.S. Cl. 426—140 8 Claims

1. An extrudable collagen mass comprising an additive of polyoxyethylene sorbitan ester selected from the group consisting of polyoxyethylene (20) sorbitan monostearete and polyoxyethylene (20) sorbitan monoleate, in an amount between about 0.05 to about 2 percent based upon the total weight of the collagen mass.

4,115,595

PROCESS FOR COLORING MARASCHINO CHERRIES WITH NATURAL COLORS

J. Kirk Jordan, Lombard, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Nov. 14, 1977, Ser. No. 851,357
Int. Cl.[2] A23L *1/275*
U.S. Cl. 426—250 15 Claims

1. Process for dyeing fruit or vegetable food with oxidation-sensitive, water soluble plant extract natural colors, said process comprising:

adjusting the SO_2 content of the food, if necessary, to a maximum of 30 ppm;

adjusting the pH of the food, if necessary, to a value below 7.0;

placing the food and water in a sealable container, wherein the amount of water is at least that amount required to substantially cover said food;

removing substantially all air in said sealable container;

adding a coloring amount of an oxidation-sensitive water soluble plant extract natural color to said water;

thereafter sealing said sealable container while excluding air therefrom; and

permitting said food to be exposed to said natural color in said container at a temperature below 100° F. at least for a time sufficient to dye the food the desired color.

4,115,596

METHOD FOR REDUCING THE TEMPERATURE OF BAKERY PRODUCTS

Leif Brudal Knutrud, Jar, Norway, assignor to Norsk Cerealinstitutt ved Statens Teknologiske Institutt, Oslo, Norway

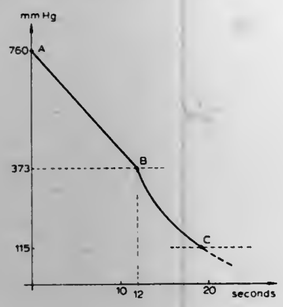
Continuation-in-part of Ser. No. 541,944, Jan. 17, 1975, abandoned. This application Dec. 8, 1976, Ser. No. 748,452
Claims priority, application Norway, Jan. 18, 1974, 740166
Int. Cl.[2] A21D *13/00, 15/02*
U.S. Cl. 426—497 4 Claims

1. A process for rapid vacuum cooling of hot bakery products, immediately after the discharge thereof from an oven, to a temperature suitable for packaging said bakery products, and for forming said bakery products with a relatively thick and crisp crust without bursting said crust, said process consisting essentially of:

subjecting bakery products, immediately after the completion of baking and discharge thereof from an oven at atmospheric pressure, and without subjecting said bakery products to a deliberate initial air cooling operation, to a first pressure reduction which is substantially linear as a function of time at a rate of from 10 to 60 mm Hg per

second, thereby preventing bursting of the crust of said bakery products; and

immediately thereafter subjecting said bakery products to a second non-linear pressure reduction at an increased rate, and reducing the pressure to a value corresponding to the vapor pressure of a desired temperature suitable for packaging said bakery products;



the reduction of pressure during said first pressure reduction comprising at least half the total reduction of pressure of said first and second pressure reductions; and wherein substantially all of the cooling of the bakery products is done by using a vacuum to subject the bakery products to reduced pressures.

4,115,597

METHOD FOR MAINTAINING UNIFORM LEVEL OF ANTI-OXIDANT IN HEATED COOKING OIL

Marshall Pellar, 1550 via Corona, La Jolla, Calif. 92037

Filed Dec. 29, 1976, Ser. No. 755,244
Int. Cl.² A23L *3/34*
U.S. Cl. 426—541 **4 Claims**

1. The method of dispersing anti-oxidant directly into cooking oil in a cooking vessel, the method comprising the steps of:

providing a cooking vessel containing a quantity of cooking oil at an elevated temperature sufficient to effect deep fat cooking,

providing a supply of anti-oxidant as an aqueous emulsion,

and introducing said anti-oxidant aqueous emulsion directly into said cooking oil, said anti-oxidant aqueous emulsion having a specific gravity sufficient to cause the anti-oxidant aqueous emulsion to pass directly into the heated cooking oil thereby vaporizing water and creating turbulence within the heated cooking oil that disperses the anti-oxidant throughout the cooking oil, said anti-oxidant aqueous emulsion added at a rate sufficient to maintain a dispersed effective level of anti-oxidant in the heated cooking oil.

4,115,598

PHASE INVERTING LOW FAT SPREADS

David Patrick Joseph Moran, Potters Bar, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 739,825, Nov. 8, 1976, abandoned. This application Jun. 8, 1977, Ser. No. 804,661
Claims priority, application United Kingdom, Nov. 7, 1975, 46217/75
Int. Cl.² A23D *3/00*
U.S. Cl. 426—604 **13 Claims**

1. A water-in-oil emulsion which destabilizes at body temperature comprising:

(a) 50 to 65 percent by weight of a dispersed aqueous phase, wherein said phase has a pH value of 4 to 6;

(b) 50 to 35 percent by weight of a continuous fat phase, wherein said fat has:

(i) a solids content of 10 to 35 percent at all temperatures from 10° to 20° C,

(ii) a difference in solids content at 10° and 20° C of no greater than 10 percent, and

(iii) a solids content at 30° C of less than 5 percent but at least 10 percent less than the solids content at 20° C; and

(c) an emulsifier system comprising:

(i) 0.1 to 0.8 percent by weight of said emulsion of a partial glyceride emulsifier, wherein said partial glyceride emulsifier has an iodine value of 20 to 100, and

(ii) an amount sufficient of an oil-in-water promoting emulsifier to give the emulsion a phase instability temperature of 20° to 35° C.

4,115,599

PROCESS FOR PRODUCING GLASS ARTICLE HAVING FRAGMENT RETAINING AND ALKALI RESISTANT COATING

Lynn J. Taylor, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 521,217, Nov. 6, 1974, abandoned. This application Jun. 7, 1976, Ser. No. 693,616
Int. Cl.² B32B *17/10*; B05D *3/02*
U.S. Cl. 427—55 **4 Claims**

1. A process for applying a flexibilized epoxy coating to a glass substrate, said coating having glass fragment-retentive properties and alkali-resistance, which process comprises

applying a chemically convertible liquid coating composition to the surface of a glass substrate and then converting the liquid composition to a solid, protective polymeric film by the application of energy,

the chemically convertible coating composition consisting of the following ingredients:

(1) an epoxy resin derived from Bisphenol A and epichlorohydrin;

(2) a flexibilizing aliphatic diepoxide or polyepoxide resin having a flexible molecular structure selected from the group consisting of aliphatic hydrocarbon and polyether chains joining terminal epoxide groups;

(3) a polyether-free, flexibilizing aliphatic diamine or polyamine curing agent having at least two amino groups and having a flexible molecular structure and being present in an amount ranging from 0.80 to 1.25 times the stoichiometric amount calculated from the equivalent weights of said Bisphenol-A derived epoxy resin and flexibilizing epoxy resin, said stoichiometric amount of curing agent being the minimum quantity required to completely react with all of the epoxy groups of both epoxy resins; and

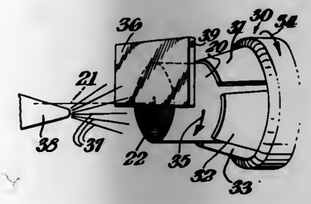
(4) a silane coupling agent.

4,115,600

METHOD FOR FORMING A METAL TERMINATION ON A WOUND CAPACITOR SECTION

Walter W. Schroeder, Williamstown; Noel C. Sears, Dalton, and Joseph C. Boni, Williamstown, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 1, 1977, Ser. No. 783,927
Int. Cl.² H01G *7/00*; B05D *5/12*
U.S. Cl. 427—79 **8 Claims**



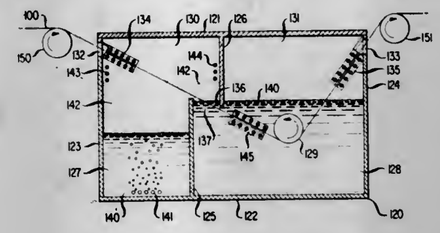
1. A method for forming a metal termination at an end of a wound capacitor section, said wound section including two metal electrodes being spaced by dielectric layers, one of said electrodes extending outwardly from the other of said electrodes at an end of said section, said dielectric layers being selected from polypropylene, polyethyleneterephthalate, polycarbonate, polystyrene and fluorocarbons, comprising (a) rotating said section about an axis that is parallel to the axis of said wound section; (b) placing a shield plate adjacent to and spaced from said end of said wound section; and (c) spraying a molten metal onto said section end during said rotating, said placing including offsetting said shield plate with respect to said axis of rotation to expose each region of said section end to said sprayed metal for less than the full period of a revolution of said rotation whereby said shield plate allows each region of said section end to undergo some periodic cooling during a complete revolution of said section.

4,115,601

FLEXIBLE CIRCUIT REFLOW SOLDERING PROCESS AND MACHINE

Hans Hugo Ammann, Chester, and Michael Ackman Oien, Chatham Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 1, 1977, Ser. No. 812,230
Int. Cl.² B05D *3/04, 1/42*
U.S. Cl. 427—96 **10 Claims**



1. A process for reflowing solder plated flexible circuits comprising:

introducing said flexible circuits into a first chamber having a vapor diffusion trap at an entry port and a liquid seal at an exit port;

controlling, in said first chamber, the temperature of said flexible circuits to a point below the solder eutectic temperature;

positioning said flexible circuits in a planar orientation for entry into a second chamber, containing a condensing vapor, at a point below the vapor air interface, said condensing vapor being partially confined in said second chamber by said liquid seal;

exposing said flexible circuits to said condensing vapor in said second chamber for a time sufficient to melt and reflow said solder while maintaining on said flexible circuits a condensate film to subsequently evaporatively cool said flexible circuits below the solder eutectic temperature;

recapturing residual traces of condensate on said flexible circuits; and

removing said flexible circuits through an exit port.

4,115,602

METHOD OF REPRINTING ON A PRINT REMOVABLE PAPER PRODUCT

Wade A. Bullard, P.O. Box H, Sturgis, Mich. 49091

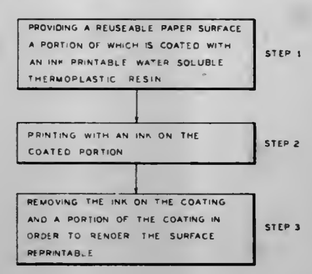
Filed Feb. 28, 1977, Ser. No. 772,477
Int. Cl.² B32B *35/00*
U.S. Cl. 427—140 **9 Claims**

1. A method for reprinting on reusable paper which is precut to precise dimensions which comprises:

(a) providing a reusable paper surface a portion of which is coated with an ink printable water soluble thermoplastic reaction product of alkylene oxides containing 1 to 6 carbon atoms with cellulose which is dried sufficiently to be tack free such that the coated portion of the paper surface becomes non-porous;

(b) printing with an ink on the coated portion without penetration of the ink to fibers forming the paper such that the ink is completely removable by rubbing with an abrasive containing rubber eraser; and

(c) removing the ink on the coating and a portion of the coating in order to render the surface recoatable with the thermoplastic resin and then reprintable.



4,115,603

PROCESS FOR PRODUCING LITHOGRAPHIC PRINTING PLATES HAVING A PAPER BASE

Michael J. Shaw, Kalamazoo, Mich., assignor to Allied Paper Incorporated, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 653,469, Jan. 29, 1976, abandoned. This application Aug. 11, 1977, Ser. No. 823,844
Int. Cl.² B41C *1/10*
U.S. Cl. 427—326 **6 Claims**

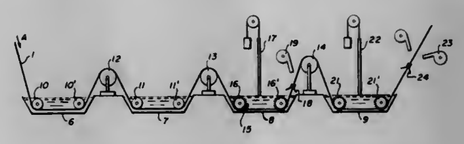
1. In a process for the manufacture of a lithographic printing plate having a paper base and a lithographic printing surface thereon comprising a resinous coating, said process being carried out on a fourdrinier paper machine and including the steps of forming said base and subjecting the base to initial drying, the improvemet for reducing coat weight and achieving increased fourdrinier machine speeds of at least about 350 feet per minute which comprises smoothing said base to not substantially greater than about 150 Sheffield units following said initial drying; and size-press coating onto the resulting smoothed base either a barrier coat for said lithographic printing surface or a single coat comprising said lithographic printing surface, at the rate of about 2 to about 7 pounds per ream.

4,115,604

ALUMINUM PLATING PROCESS

Max Jérémie Bernstein, Paris, France, assignor to Bremat S.A., Luxembourg, Luxembourg

Filed Apr. 6, 1976, Ser. No. 674,071
Claims priority, application Luxembourg, Apr. 7, 1975, 72235
Int. Cl.² C23C *1/02*
U.S. Cl. 427—329 **12 Claims**



1. A process for the plating of an aluminum substrate comprising the steps of:

cleaning the substrate;

coating the cleansed substrate with a layer of an intermediate alloy comprising, by weight, 80 to 86% zinc, 6 to 13% bismuth, 2 to 8% cadmium, 1 to 5% tin and 0.1 to 1.5%

lead by passing the substrate through a molten bath of the intermediate alloy; and

plating an oxidation resistant metal having a fusion point which does not exceed that of tin and its alloys over the intermediate alloy layer by passing the coated substrate through a bath containing the oxidation resistant metal in molten form.

4,115,605

ANTI-STATIC COMPOSITIONS COMPRISING A COPOLYMER OR PERFLUOROALKYL ACRYLATE AND POLYOXYALKYLENE ACRYLATE, WETTING AGENT, AND A SALT SELECTED FROM THE GROUP CONSISTING OF POTASSIUM ACETATE AND LITHIUM CHLORIDE IN AQUEOUS MEDIUM

David P. Hultman, Neenah, and Jack L. Bergsbaken, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 601,725, Aug. 4, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,559
Int. Cl.² B05D *1/28, 3/02, 3/04*
U.S. Cl. 427—377 **9 Claims**

6. A composition useful for imparting antistatic characteristics to a hydrophobic substrate while maintaining water repellency comprising, in an aqueous medium:

an essentially linear copolymer of perfluoroalkyl acrylate and polyoxyalkylene acrylate;

a salt selected from the group consisting of potassium acetate and lithium chloride, in an amount enabling said composition to impart a high level of anti-static characteristics to said substrate; and

a small amount of a nonionic, permanent wetting agent.

9. A method of treating a hydrophobic substrate whereby, in addition to imparting antistatic characteristics and maintaining water repellency, alcohol repellency is imparted to the substrate, which comprises application of the composition of claim 6 to substantially saturate the substrate, then drying and curing the substrate by exposing it to heat.

4,115,606

METHOD FOR RETARDING SCALE FORMATION

Orwin G. Maxson, and Gary D. Achenbach, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 695,276, Jun. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 550,306, Feb. 18, 1975, abandoned, which is a continuation of Ser. No. 366,929, Jun. 4, 1973, abandoned. This application Aug. 26, 1977, Ser. No. 827,916
Int. Cl.² B05D *7/14, 3/10*
U.S. Cl. 427—386 **4 Claims**

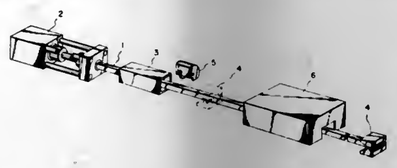
1. In a method for retarding the deposition of scale on a metallic surface wherein said surface is coated prior to exposure to an aqueous or oil base liquid having scale-forming components, the improvement wherein said metallic surface is coated with a fluid mixture of from 98 to 75 percent by weight of a low surface energy polymer selected from the group consisting of epoxy resins and polyimide resins with from 2 to 25 percent by weight of boron nitride filler, and said fluid mixture is allowed to solidify on said metallic surface prior to exposure to said liquid having scale-forming components.

4,115,607

PROCESS OF COATING ALUMINUM MATERIALS MOLDED BY EXTRUSION WITH POLYSILOXANE COATING

Mutsuo Hasegawa; Sunichi Segawa, both of Uozu; Yuji Koise, Funabashi; Hisao Okada, Ichikawa; Shiro Gomyo, and Yoshiaki Kudo, both of Annaka, all of Japan, assignors to Yoshida Kogyo K.K.; Toa Paint Co., Ltd. and Shin-Etsu Chemical Co., Ltd., all of, Japan, part interest to each

Filed Mar. 23, 1977, Ser. No. 780,427
Claims priority, application Japan, Mar. 29, 1976, 51-34935
Int. Cl.² C23F *17/00*
U.S. Cl. 427—387 **11 Claims**



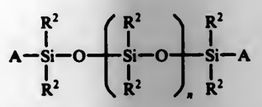
1. A process for providing protective coatings on the surface of a material composed of aluminum or an aluminum-based alloy molded by extrusion which comprises extruding said material; coating said material while its surface temperature is maintained between 550° and 250° C. following extrusion with an organopolysiloxane composition comprising

(a) from 100 to 15 parts by weight of an organopolysiloxane expressed by the average unit formula

$$R^1_a SiO_{\frac{4-a}{2}}$$

where R^1 is the same or different monovalent hydrocarbon group and a is a positive number in the range from 1.10 to 1.90 inclusive, and

(b) from 0 to 85 parts by weight of a diorganopolysiloxane represented by the general formula



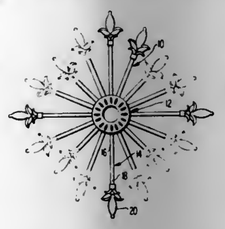
where R^2 is the same or different monovalent hydrocarbon group, A is a group selected from the class consisting of monovalent hydrocarbon groups, alkoxy groups and a hydroxy group and n is a positive integer, and having a viscosity of from 100 to 1,000,000 centistokes at 25° C.

4,115,608

ORNAMENTAL SUNBURST HUB

Carl R. Glass, 1036 Partin Dr., Kissimmee, Fla. 32741

Filed Nov. 22, 1977, Ser. No. 853,915
Int. Cl.² B32B *3/02*; 403 *174;178;218*
U.S. Cl. 428—65 **1 Claim**



1. An ornamental sunburst hub for forming a plurality of

substantially rectangular, elongated spoke elements, with distal and proximal ends, and with molded spear points on their distal ends, into an ornamental sunburst, the hub comprising:

an annular inner base plate having a central opening and a peripheral edge, the base plate having a series of radially arranged, spaced apart, countersunk aperatures formed therein and being of selected depth;

an outer hub member comprising a central tubular rim and an outer wall;

said rim having an outside wall, and an inner rim wall;

the outer hub member having opposite exposed and interior surfaces and having a peripheral wall;

said exposed surface of said outer hub member having a series of decorative projections thereon;

the interior surface of the outer hub member having a plurality of radially arranged, spaced part wedge members with enlarged, rounded outer ends coincident with the peripheral wall, and having inner, pointed ends abutting and affixed integrally to the outside wall of the rim;

said wedge members defining spaces therebetween to frictionally engage the proximal ends of the spoke elements;

the wedge members having top walls spaced inwardly from the top rim wall a distance substantially equal to the depth of the base plate;

the wedge members having openings therein, and the base plate being engaged over the rim and against the wedge members with the aperatures thereof aligned with the wedge member openings; and

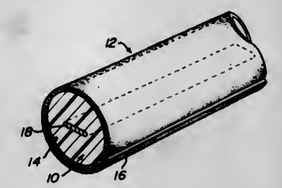
changeable fasteners extended through said aperatures and into said openings to clampingly engage the base plate in place.

4,115,609

STRIP TYPE COUPLING MEMBER

Stephen A. Denman, 1216 Cloverfield Ave., Apt. (A), Dayton, Ohio 45429

Continuation of Ser. No. 183,448, Sep. 24, 1971, abandoned. This application Jan. 26, 1977, Ser. No. 762,383
Int. Cl.² B32B *1/04*
U.S. Cl. 428—68 **20 Claims**



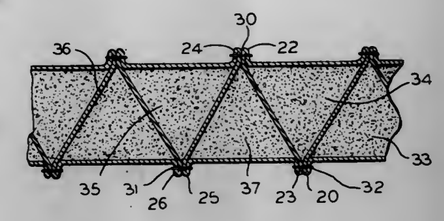
1. A coupling device comprising a core formed of resilient material the composition of which is such to condition said core to plastically deform in response to and to the extent of an applied load when said core is at a temperature in a range from about 250° to 500° F., the composition of said core being characterized by stability when the temperature thereof is within said range, means defining a sheath for at least a portion of said core, adhesive bonding material on the exterior surface portion of said sheath, and said sheath being constructed and applied in a form to provide a directed and controlled shift of a portion of said core when the core is subjected to a load on placement of said coupling device between surfaces of parts to be bonded and caused to reach a temperature in said predetermined range, whereby to produce a controlled change in the core configuration and a bond and seal between said parts.

4,115,610

QUILT CONSTRUCTION AND METHOD OF MAKING SAME

Harold Wortman, 5936 Monroe St., Morton Grove, Ill. 60053

Filed Aug. 30, 1976, Ser. No. 719,072
Int. Cl.² B32B *3/06, 3/20*
U.S. Cl. 428—102 **12 Claims**



5. An improved quilt construction for quilted articles such as sleeping bags, jackets and bedspreads comprising:

one or more layers of quilt encompassing material means forming a top and a bottom lining surface of said quilted article;

a plurality of baffling ridges interposed between said top and bottom surfaces of quilt encompassing material means;

said baffling ridges emanating at an angle from said bottom surface to said top surface and successively from said top surface to said bottom surface and intersecting with said top and bottom surfaces respectively at a plurality of intersections, to form a series of quilt compartments,

said baffling ridges securely restrained between said top and bottom surfaces at each said intersection respectively by baffle fastening means;

said intersections in said top surface pinched and securely restrained on the upper side of said top surface; and

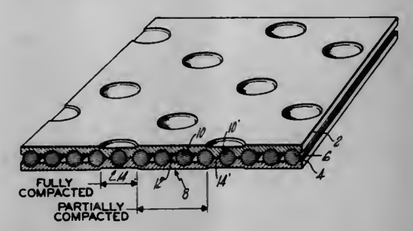
quilt filler means inserted into said quilt compartments.

4,115,611

SELECTIVELY BONDED COMPOSITE TAPE

Leon Stoltze, East Hartland, and John M. Graff, West Suffield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1976, Ser. No. 749,134
Int. Cl.² B32B *3/00*
U.S. Cl. 428—174 **7 Claims**



1. A composite tape consisting of:

a layer of collimated fibers; and

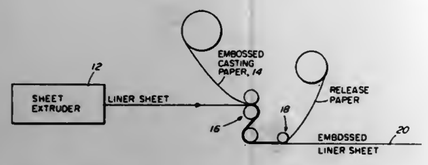
a foil sheet on each side of the fibers and in direct contact therewith, the assemblage being compacted fully only in certain non-contiguous areas to cause deformation of the sheets around the fibers and contact between and bonding of the opposed sheets between adjacent fibers in these selected areas only with this bonding holding the tape together in assembled form, the remainder of the assemblage having less compaction with the contiguous surfaces of the sheets out of contact in these areas.

4,115,612

LAMINATED THERMOPLASTIC COUNTER STIFFENER

Addison W. Closson, Jr., 41 Concord Ave., Cambridge, Mass. 02138

Filed May 4, 1976, Ser. No. 682,993
The portion of the term of this patent subsequent to Jul. 1, 1992, has been disclaimed.
Int. Cl.[2] B32B *3/30, 27/08, 31/30;* A43D *21/00*
U.S. Cl. 428—172 9 Claims



1. A method of forming a laminate which comprises:
(a) forming a thermoplastic base sheet from polyethylene or a copolymer of ethylene having a melt index of between about 0.3 to 10;
(b) forming a cross-linkable liner sheet from a low density polyethylene and a vinyl silane, the sheet having an inner surface and an outer surface;
(c) adding an ethylenically compatible coloring to the liner sheet;
(d) embossing the liner sheet on the outer surface;
(e) contacting the inner surface of the liner sheet and the base sheet;
(f) laminating the liner sheet to the base sheet;
(g) cross-linking subsequent to said lamination the vinyl silane with the polyethylene, the coloring added in step (c) remaining colorfast; and,
(h) thermoforming the laminated sheet into a desired shape.

8. A laminate which comprises:
a base sheet comprising a polyethylene or a copolymer of ethylene;
a liner sheet laminated thereto, having a cross-linked silane to polyethylene or copolymer of ethylene, its outer surface being embossed and further including an entylenically compatible color incorporated therein which will remain colorfast during and subsequent to the cross-linking of the silane.

4,115,613

HEAT-SENSITIVE RECORDING MATERIALS AND RECORDING PROCESS OF USING THE SAME

Eiichi Inoue; Taiji Nose, both of Tokyo, and Masakazu Inaba, Higashimurayama, all of Japan, assignors to Process Shizai Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,136
Claims priority, application Japan, Dec. 30, 1975, 50-158479
Int. Cl.[2] B32B *3/10;* B41M *5/18*
U.S. Cl. 428—207 23 Claims

1. A heat-sensitive recording material comprising a support and having thereon a recording layer comprising, as the heat-recording medium, a soluble heat-sensitive organic high molecular weight compound having a molecular weight between about 3,000 and 3,000,000, which is folded to show a granular state on the support, wherein said high molecular weight compound is selected from the group consisting of globular proteins and water soluble high molecular weight ethylene oxide compounds represented by the following formula (III):

$$+CH(R_6)-CH_2-O+_p \quad \text{(III)}$$

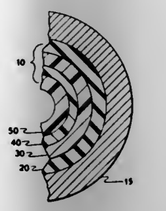
wherein R_6 represents H or CH_3 and p is a positive integer.

4,115,614

BONDING LAYERS FOR LINING ARTICLES WITH A CHLORINATED POLYETHYLENE MATERIAL

Theodore O. Martin, Jr., Wadsworth, Ohio, assignor to Chloeta F. Martin, Wadsworth, Ohio, a part interest

Filed Apr. 27, 1977, Ser. No. 791,563
Int. Cl.[2] B32B *31/00, 15/18, 17/06, 25/14*
U.S. Cl. 428—220 34 Claims



1. A duo bonding layer for adhering a chlorinated polyethylene to a rubber layer, comprising:
at least a single first bonding layer containing a blend of a material, said blend by weight having from 75 to 25 percent of a chlorinated polyethylene and from 25 to 75 percent by weight of an elastomer selected from the class consisting of natural rubber, a homopolymer, and a copolymer,
said homopolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms; said copolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms and vinyl substituted aromatic compounds having from 8 to 12 carbon atoms and from combinations of diene monomers having from 4 to 12 carbon atoms,
at least a single second bonding layer containing a blend of the material, said blend having from 90 to 55 percent by weight of chlorinated polyethylene and from 10 to 45 percent by weight of an elastomer selected from the class consisting of natural rubber, a homopolymer, and a copolymer,
said homopolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms; said copolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms and vinyl substituted aromatic compounds having from 8 to 12 carbon atoms, and from combinations of diene monomers having from 4 to 12 carbon atoms.

25. A composite layer, comprising:
at least one layer of a rubber material, said rubber material selected from the class consisting of natural rubber, a homopolymer, and a copolymer; said homopolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms; said copolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms and vinyl substituted aromatic compounds having from 8 to 12 carbon atoms, and from combinations of diene monomers having from 4 to 12 carbon atoms;
at least one layer of a first bonding layer bonded to said rubber layer, said first bonding layer containing a blend having from 5 to 25 percent by weight of a chlorinated polyethylene and from 25 to 75 percent by weight of an elastomer selected from the class consisting of natural rubber, a homopolymer, and a copolymer; said homopolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms; said copolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms and vinyl substituted aromatic compounds having from 8 to 12 carbon atoms, and from combinations of diene monomers having from 4 to 12 carbon atoms;
at least one layer of a second bonding layer bonded to said first bonding layer, said second bonding layer containing a blend having from 90 to 55 percent by weight of a chlorinated polyethylene and from 10 to 45 percent by weight of an elastomer selected from the class consisting of natural rubber, a homopolymer, and a copolymer; said homopolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms; said copolymer made from monomers selected from the class consisting of dienes having from 4 to 12 carbon atoms and vinyl substituted aromatic compounds having from 8 to 12 carbon atoms, and from combinations of diene monomers having from 4 to 12 carbon atoms; and
at least one chlorinated polyethylene layer bonded to said second bonding layer so that said chlorinated polyethylene layer is bonded to said rubber layer through said bonding layers.

4,115,615

FABRIC PERMEABLE TO ULTRAVIOLET RADIATIONS

Jean-Pierre de Buck van Overstraeten, Zwijnaarde, Belgium, assignor to Uvetex Glarus AG., Glarus, Switzerland

Filed May 4, 1977, Ser. No. 793,550
Claims priority, application Belgium, May 10, 1976, 166902
Int. Cl.[2] A41D *7/00;* D03D *15/00*
U.S. Cl. 428—229 11 Claims

1. A fabric, which is made from yarn of a polymer or a polymer mixture having an absorption curve of radiating energy characterized by a minimum absorption between 3,200 and 4,000 A and an important filtering below 3,200 A, said polymer being extruded at a speed allowing an extremely quick cooling such that the formation of large crystallites is inhibited while proliferation of crystallites of very small sizes is promoted, said yarn being furthermore composed of a very low number of strands, and said fabric being woven or knitted so as to minimize air/polymer interfaces.

4,115,616

SELF-SEALING FUEL LINE ASSEMBLY

Roger M. Heitz, Palos Verdes Estates, and Franklin Hill, Van Nuys, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1978, Ser. No. 876,445
Int. Cl.[2] B32B *3/26*
U.S. Cl. 428—310 3 Claims



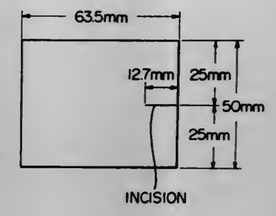
1. A multi-laminated composite material for use in aircraft self-sealing fuel line systems comprising:
(a) a first layer of ballistic nylon impregnated with a cured epoxy resin mixture;
(b) a second layer of ballistic nylon impregnated with a polysulfide resin sealant; and
(c) a third layer interdisposed between and bonded to said first and second layers and composed of a precompressed, natural rubber, fuel sensitive foam.

4,115,617

WEATHER-RESISTANT ADHESIVE FILM

Yukio Mitsuishi; Shigeru Shiozaki, both of Machida, and Kinji Hasegawa, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 24, 1976, Ser. No. 669,972
Int. Cl.[2] B32B *15/08, 27/36*
U.S. Cl. 428—336 8 Claims



1. An adhesive film having weatherability comprising (I) a polyethylene terephthalate film base being oriented in at least one direction and having a refractive index, in the orientation direction, of 1.59 to 1.75, a refractive index, in the thickness direction, of 1.485 to 1.56, a density of 1.350 to 1,382g/cm^3 and a thickness of 5 to 250 microns, (III) a layer of a metallic film applied directly to at least one surface of the film base and (II) an adhesive layer coated directly on the exposed surface of at least one of the metallic film layers.

7. An adhesive film having weatherability comprising (I) a polyethylene terephthalate film base being oriented in at least one direction and having a refractive index, in the orientation direction, of 1.59 to 1.75, a refractive index, in the thickness direction, of 1.485 to 1.56, a density of 1.350 to 1.382 g/cm^3 and a thickness of 5 to 250 microns, (II) an adhesive layer coated directly on one surface of said film base, and (III) a metallic film layer applied directly to the other surface of the film base.

4,115,618

NOVEL PROTECTIVE PLASTOMERIC SHEET FOR IDENTIFICATION CARD

William T. MacLeish, North Andover, and Joseph Shulman, Hyde Park, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 2, 1976, Ser. No. 654,220
Int. Cl.[2] B32B *7/06*
U.S. Cl. 428—204 20 Claims



1. A protective plastic sheet material comprising a cellulose ester sheet having one surface thereof hydrolyzed and a layer, bonded to said hydrolyzed surface, consisting essentially of a mixture of a hydrolyzed polyvinyl alcohol and a low molecular weight polyvinyl acetate, the ratio of the hydrolyzed polyvinyl alcohol to the polyvinyl acetate being between about 1:3 to about 3:1.

9. A laminated article which comprises a plastomeric sheet material comprising a cellulose ester sheet having one surface thereof hydrolyzed and a layer, bonded to said hydrolyzed surface, said layer consisting essentially of a mixture of a hydrolyzed polyvinyl alcohol and a low molecular weight polyvinyl acetate having a molecular weight below about 200,000 and where the ratio of the hydrolyzed polyvinyl alcohol to the polyvinyl acetate is between about 1:3 to about 3:1 and a diffusion transfer color image bonded to said layer, said color image

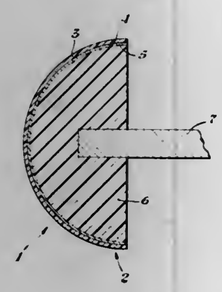
being carried in an image-receiving layer comprising a mixture of polyvinyl alcohol and poly-4-vinyl pyridine.

4,115,619

HIGHLY REFLECTIVE MULTILAYER METAL/POLYMER COMPOSITES

Virgil B. Kurfman, Midland, and Raymond E. Gransden, Jr., Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 7, 1977, Ser. No. 757,706
Int. Cl.² B32B *5/00, 15/08*
U.S. Cl. 428—336 **16 Claims**



1. A formed metal/organic polymer composite comprising a normally solid thermoplastic polymer layer and a normally solid, soft metal layer adhered to at least one surface of the polymer layer, at least a portion of said formed composite having been modified during forming such that the portion undergoes a cumulative surface dimensional change of at least 20 percent, said soft metal being indium or an alloy of at least two of cadmium, indium, tin, antimony, lead, bismuth, magnesium, aluminum, zinc, copper or silver which alloy melts at a temperature or over a range of temperatures that is from about 80 to about 135 percent of the temperature used in forming, said temperatures being in ° K, said formed composite having a specular brightness essentially the same as that of the composite prior to forming.

4,115,620

CONJUGATE FILAMENTS

Rakesh Kumar Gupta; George Jurkiewitsch, both of Raleigh, and Lawrence Joseph Logan, Cary, all of N.C., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jan. 19, 1977, Ser. No. 760,495
Int. Cl.² D02G *3/00*
U.S. Cl. 428—374 **12 Claims**

1. A conjugate filament capable of spontaneous crimping comprised of at least two components, one of said components being a blend of stereoregular polypropylene and from 5 to about 50% of at least one hard, non-crystalline resin compatible with said polypropylene and having a drop softening point of at least 70° C. and another of said components being stereoregular polypropylene or a blend of said polypropylene and up to 50% of at least one of said resins, said resins being selected from the group consisting of low molecular weight resins derived from hydrocarbons having at least 4 carbon atoms and rosin derivatives, and, if present in two or more of said components, the amount thereof in the respective blends differing from each other by at least 5%.

4,115,621

TEXTURING FINISH FOR SYNTHETIC FILAMENTS

Roland L. Hawkins, 2220 Hickory Dr., Spartanburg, S.C. 29302

Division of Ser. No. 542,683, Jan. 20, 1975, Pat. No. 4,069,160.
This application Nov. 11, 1977, Ser. No. 850,540
Int. Cl.² B05D *3/02;* B32B *27/03*
U.S. Cl. 428—395 **4 Claims**

1. A polyethylene terephthalate filament yarn having as a finish thereon a composition comprising 40 to 75 weight percent of a high molecular weight fatty acid ester lubricant characterized by a weight loss of not more than 25 weight percent when subjected to a temperature of 210° C. for 24 hours; 20 to 50 weight percent of an emulsifier for said lubricant, said emulsifier having a low fuming propensity and being stable against thermal degradation; 2 to 20 weight percent of a neutralized phosphated adduct of an alcohol having a chain length of about 8 to 18 carbon atoms and 4 to 10 moles of ethylene oxide.

4,115,622

ABRASION RESISTANT COATING COMPOSITIONS

George E. Cartier, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 7, 1977, Ser. No. 840,204
Int. Cl.² C09D *3/78;* C08K *5/05;* B32B *7/02, 17/10*
U.S. Cl. 428—409 **20 Claims**

1. A coating composition suitable for application to a substrate which coating composition comprises a polyvinyl acetal resin, a fluorinated aliphatic alcohol containing from 4 to 10 carbon atoms and polysilicic acid, in which the ratio by weight of polysilicic acid, calculated as SiO_2, to resin is from 1:1 to 5:1 and in which the ratio by weight of resin to alcohol is from 1:2 to 15:1.

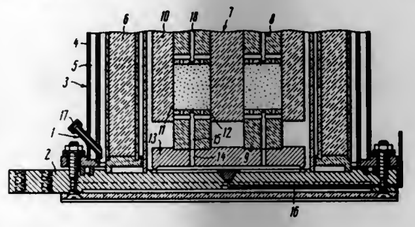
12. A substrate coated with a coating composition according to claim 1.

4,115,623

POROUS MATERIAL FOR MAKING TOOL-ELECTRODE AND METHOD OF PRODUCING SAME

Oleg Vadimovich Padalko, Nizhny Kislovsky pereulok, 8, kv. 7; Maxim Lvovich Levit, prospekt Vernadskogo 91, korpus 1, kv. 25, and Nikolai Vasilievich Voinov, Krasnodarskaya ulitsa, 8, kv. 6, all of Moscow, U.S.S.R.

Filed Aug. 25, 1976, Ser. No. 717,519
Claims priority, application U.S.S.R., Dec. 8, 1975, 2192874
Int. Cl.² B22F *3/00*
U.S. Cl. 428—566 **6 Claims**



1. In a porous material for making a tool-electrode applicable for spark-erosion machining, said material featuring a porosity up to 15–25 percent of the entire volume thereof, a pore size from about 10 microns to about 40 microns, the improvement which comprises, maintaining the oxygen content of said material from about 0.01 wt.% to about 0.1 wt.%.

3. A method of producing a porous material for making a tool-electrode by way of hot compression moulding in a closed mould, comprising charging a compression mould with a porous powder having a pore size from about 10 to about 40 microns, heating to a temperature in degrees centigrade equal to 0.3–0.5 of the melting temperature of the electrode material, concurrently feeding a reducing gas through the powder at a pressure of 1.2–1.8 atm, maintaining the powder at said temperature in degrees centigrade equal to 0.3–0.5 of the melting temperature of the electrode material for a holding time long enough for the oxides contained in the powder to completely reduce, while continuing to feed the reducing gas, wherein the amount of the reducing gas is at least twice the stoichiometric quantity, said powder holding time followed by heating the powder to a temperature equal to 0.6–0.9 of the melting temperature in degrees centigrade of the elecrode material and applying a pressure necessary for shaping the material to a preset porosity.

4,115,624

THERMOSTAT METAL COMPOSITIONS

Anthony J. Izbicki, Reading, Pa., assignor to Hood & Co., Inc., Hamburg, Pa.

Filed Mar. 29, 1977, Ser. No. 782,587
Int. Cl.² B32B *15/18, 15/20*
U.S. Cl. 428—617 **7 Claims**

1. A thermostat metal in which the transverse conductivity is above about 200 BTU in/ft²hr°F comprising:
a first layer of a high expensive metal;
a second layer of a low expansive metal;
the metals of the first and second layers cooperating to provide substantially uniform flexivity over an extended temperature range; and
an intermediate layer of substantially pure copper comprising over 60% by volume of the thermostat metal, having a thermal conductivity in excess of 2,400 BTU in/ft²hr°F.

4,115,625

SODIUM THALLIUM TYPE CRYSTAL ON CRYSTALLINE LAYER

Norman E. Reitz, Redwood City, Calif., assignor to Sotec Corporation, Redwood City, Calif.

Division of Ser. No. 737,389, Nov. 1, 1976, Pat. No. 4,042,447.
This application Apr. 21, 1977, Ser. No. 789,566
Int. Cl.² B32B *15/00, 15/20*
U.S. Cl. 428—641 **10 Claims**

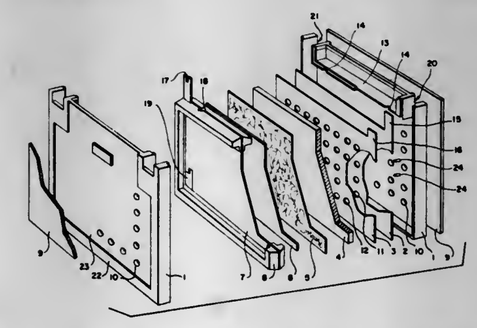
1. A composition of matter comprising a conductive sodium thallium type crystalline alloy substrate having crystalline silicon integrally overgrown thereon in an oriented crystal layer, said substrate being selected from the group consisting of LiZn, LiAl, LiGa, LiIn, NaTl and LiCd.

4,115,626

AIR/ZINC FLAT CELL

Hans Sauer, Idstein-Walsdorf, and Dieter Spahrbier, Fischbach, Taunus, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 23, 1977, Ser. No. 780,435
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615921
Int. Cl.² H01M *8/22*
U.S. Cl. 429—27 **9 Claims**



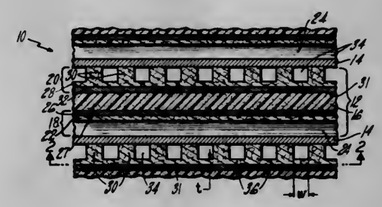
1. An air/zinc element having a plate-shaped negative zinc electrode positioned between two positive air electrodes positioned in a synthetic plastic housing and comprising
two half shells having rims and perforated outer walls, each half shell having a portion of its rim protruding outwardly beyond its perforated wall so as to space the perforations from adjoining objects,
a conductive foil, take-off conductor, and positive electrode pressed body being positioned in each half shell, and
the half shells being joined to each other, forming a synthetic plastic housing with interposition of separators and of the negative plate-shaped zinc electrode which has a synthetic plastic frame around its rim, said frame having shoulders to accomodate said separators providing an electrolyte space between said separators and said zinc electrode,
the half shells being provided with electrolyte supply apertures and take-off conductor lead-throughs.

4,115,627

ELECTROCHEMICAL CELL COMPRISING A RIBBED ELECTRODE SUBSTRATE

Larry G. Christner, Glastonbury, Conn., and Dennis C. Nagle, Catonsville, Md., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 15, 1977, Ser. No. 824,764
Int. Cl.² H01M *4/96*
U.S. Cl. 429—44 **1 Claim**

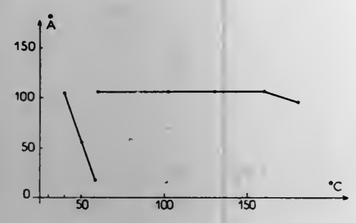


1. An electrochemical cell stack comprising a plurality of cells, adjacent cells being separated by a gas impermeable separator plate having substantially flat opposing surfaces, each cell comprising an electrolyte retaining matrix layer and a catalyst layer on each side of said matrix layer and in contact therewith, each cell also including a pair of gas porous substrates, a substrate being adjacent the nonmatrix facing side of each of said catalyst layers, said substrates comprising 50–80% carbon fibers and 20–50% carbonized resin, each substrate including a first side having hydrophilic ribs defining grooves therebetween extending across said substrate and a second side opposed to said first side and having a substantially flat surface, each of said grooves having a base, said flat surface of each of said substrates being in contact with its respective adjacent catalyst layer, said ribs of each of said substrates being in continuous contact with the flat surface of the separator plate adjacent thereto, the majority of the volume of said substrates being hydrophilic, said substrates being at least 75% porous and including a plurality of paths of hydrophilic material aligned with each rib, said paths of hydrophilic material extending from said flat surface of said substrate to said aligned hydrophilic ribs, said substrate being hydrophobic from said flat surface to the base of said grooves except for said plurality of paths of hydrophilic material aligned with each rib.

4,115,628
ELECTRODE COMPRISING A NICKEL BASED CATALYST FOR ELECTROCHEMICAL GENERATORS

Maurice Bonnemay, Boulogne-Billancourt; Guy Bronoël, Versailles; Lysiane Angely, and Gilbert Pealerbe, both of Meudon la Foret, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Jan. 9, 1976, Ser. No. 647,987
Claims priority, application France, Jan. 10, 1975, 75 00722
Int. Cl.² H01M *4/86*
U.S. Cl. 429—44 **23 Claims**

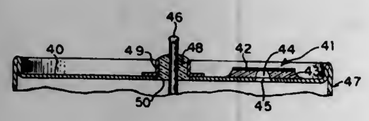


1. An electrode for an electrochemical generator enabling electrochemical oxidation of hydrogen in contact with it, comprising an electrically-conducting support and a nickel-containing catalyst deposited thereon or incorporated therewith, said nickel-containing catalyst being formed of crystallites having sizes ranging from about 20 to about 130 A and being at most reversibly oxidizable under the action of an anodic overvoltage of −300 mV and taking up spontaneously a potential sufficiently close to that of a reversible ideal hydrogen electrode with respect to an electrolyte solution saturated with molecular hydrogen to be capable of electrochemically breaking and oxidizing molecular hydrogen into hydrogen ions, H^+.

4,115,629
HERMETIC VENT STRUCTURE

Arabinda N. Dey, Needham, and James H. Him, Burlington, both of Mass., assignors to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 700,421, Jun. 28, 1976, abandoned. This application Dec. 28, 1977, Ser. No. 865,149
Int. Cl.² H01M *2/12*
U.S. Cl. 429—56 **14 Claims**

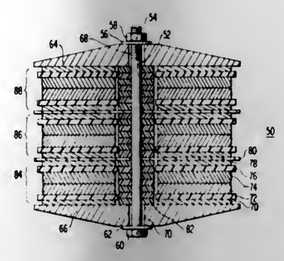


1. An electrical device in a closed metallic container having a low pressure vent therein, said vent comprising an aperture in a flexible metallic part of said metallic container said aperture having a predetermined area, a metallic member covering said aperture externally, said member being of a size greater than the size of said aperture and overlapping the periphery of said aperture, said member and said metallic part being separated by and hermetically attached to each other by a layer of glass bonded thereto, wherein movement of said member in relation to said metallic part is unimpeded by further attachment of said member to said container or to said electrical device, said glass and the metals of said flexible part and said member all having substantially equal coefficients of expansion.

4,115,630
METAL-HYDROGEN BATTERY

Gerrit Van Ommering, Chevy Chase; Joseph F. Stockel, Rockville, and James D. Dunlop, Gaithersburg, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Mar. 17, 1977, Ser. No. 778,821
Int. Cl.² H01M *12/06*
U.S. Cl. 429—72 **22 Claims**

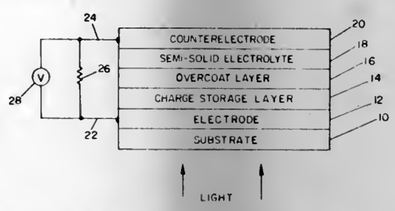


1. In a rechargeable metal oxide-hydrogen battery with a number of modules, each module having an electrode stack with a pair of positive electrodes positioned directly adjacent each other, electrode separators disposed on open faces of the respective positive electrodes, a negative electrode having a hydrophobic surface and placed adjacent to each electrode separator and a module separator placed adjacent each negative electrode to separate negative electrodes of adjacent modules, the improvement comprising: the negative electrodes of one module electrically coupled to each other and to the positive electrodes of the succeeding adjacent module in the battery and the positive electrodes in said one module electrically coupled to each other and to the negative electrodes in the preceding module, wherein a series coupled high voltage battery is formed by successive couplings of adjacent modules.

4,115,631
ENERGY STORING PHOTOGALVANIC CELL HAVING DIELECTRIC OVERCOATING

Satyendra Kumar Deb, East Brunswick, N.J., assignor to Optel Corporation, Princeton, N.J. and Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jul. 16, 1976, Ser. No. 706,077
Int. Cl.² H01M *6/30, 6/36*
U.S. Cl. 429—111 **8 Claims**



1. A multiple layer photogalvanic cell capable of storing electrical charge comprising:
- a transparent substrate;
- a light transmissive electrode supported on the substrate;
- a transition metal charge storing layer covering the electrode;
- a layer overcoating the charge storage layer;
- a semi-solid electrolyte covering the overcoat layer, the overcoat layer
  - (a) insulating the semi-solid electrolyte from the charge storage layer;
  - (b) being permeable to the cation of the electrolyte; and
  - (c) being resistant to attack by said semi-solid electrolyte;
- a counterelectrode covering the semi-solid electrolyte; and

- leads connected to the electrode and counterelectrode for producing a voltage therebetween when the cell converts light energy impinging thereon to electrical energy, the voltage being maintained after removal of light due to charge storage by the cells.

7. A multiple layer photogalvanic cell capable of storing electrical charge comprising:
- a transparent substrate;
- a light transmissive electrode supported on the substrate;
- a charge storing layer covering the electrode, this layer including tungsten oxide;
- a layer overcoating the charge storage layer, the overcoat layer including the oxide of a preselected metal;
- a semi-solid electrolyte covering the overcoat layer, the overcoat layer insulating the semi-solid electrolyte from the charge storage layer and being permeable to the cation of the electrolyte, the electrolyte including an acidic medium mixed with a material which produces an electrolyte of preselected consistency;
- a counterelectrode covering the semi-solid electrolyte; and
- leads connected to the electrode and counterelectrode for producing a voltage therebetween when the cell converts light energy impinging thereon to electrical energy, the voltage being maintained after removal of light due to charge storage by the cell.

4,115,632
METHOD OF PREPARING ELECTROLYTE FOR USE IN FUEL CELLS

Kimio Kinoshita, and John P. Ackerman, both of Downers Grove, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

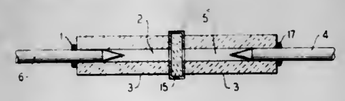
Filed May 5, 1977, Ser. No. 794,295
Int. Cl.² H01M *8/00, 8/14*
U.S. Cl. 429—188 **11 Claims**

1. A method of preparing an electrolyte for use in a fuel cell, said electrolyte including alkali metal compounds and a support material of rod-shaped, lithium-aluminate particles, the method comprising:
- contacting alumina particles with a solution including a mixture of hydroxides of lithium and cations of a second alkali metal;
- evaporating the solvent from said solution to form alumina particles impregnated and coated with said mixture of alkali metal compounds; and
- maintaining said alumina particles at a temperature of 100°–450° C. to react lithium hydroxide with alumina to form rod-shaped lithium aluminate particles.

4,115,633
ELECTROCHEMICAL DEVICE COMPRISING TERNARY IONIC CONDUCTORS

Horst Manfred Kasper, Warren; Benjamin Tell, Matawan, and Sigurd Wagner, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1977, Ser. No. 783,649
Int. Cl.² H01M *6/18, 4/02*
U.S. Cl. 429—191 **11 Claims**



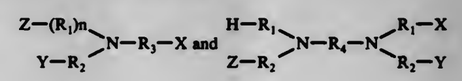
1. An electrochemical device comprising cathode and anode electrode structures in intimate contact with an electrolyte such that said anode electrode structure supplies ions to said electrolyte CHARACTERIZED IN THAT at least one of said cathode electrode structure, anode electrode structure and electrolyte being solid and includes an ionic conducting material represented by the formula AB_xC_y where A is a metallic atom with atomic number no greater than 55 which has a +1 oxidation state, B is a group III A metallic atom, C is a group VI A atom and where x and y are such that AB_xC_y is essentially electrically neutral; wherein any of said ionic conducting materials included in said electrode structures, has an ionic transport number between 0.1 and 0.9 and any of said ionic conducting materials included in said electrolyte, has an ionic transport number of at least 0.5.

4,115,634
AMINE SALTS OF AMINO ACIDS AS DELAYED ACTION CATALYSTS

Ibrahim S. Bechara, Boothwyn; Rocco L. Mascioli, Media, and Philip J. Zaluska, Glen Riddle, all of Pa., assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Dec. 1, 1976, Ser. No. 746,312
Int. Cl.² C08G *18/18*
U.S. Cl. 521—126 **28 Claims**

1. In a process for the production of a urethane composition by polymerizing an organic polyisocyanate, an organic compound having an active hydrogen atom, and an organometallic catalyst, the improvement which comprises using an effective proportion of a catalyst comprising an organometallic catalyst and an amine salt of an amino acid selected from the group represented by the formulas:



wherein
- R_1, R_2 and R_3 independently are alkylene groups having from 1 to 15 carbon atoms, cycloalkyl groups, phenyl groups and phenyl alkyl groups with the alkyl portion having from 1 to 6 carbon atoms; and
- R_4 is an alkylene radical having from 1 to 4 carbon atoms;
- X is an amine salt of a carboxylic acid group;
- Y is a hydrogen atom, a hydroxyl group, a carboxylic acid group, a nitrile group, or an amine salt of a carboxylic acid group;
- Z is a hydrogen atom, a hydroxyl group, a carboxylic acid group, a nitrile group, or an amine salt of a carboxylic acid group; and
- n is 0 or 1;

with the proviso that when X, Y, or Z is an amine salt of a carboxylic acid group, the carboxyl moiety is the linkage bonding the X, Y, or Z radical to the residue of the amine salt of formula I or II.

4,115,635
PROCESS FOR THE PRODUCTION OF POLY (ALLYL HALIDE ALLYL ALCOHOL) POLYMER

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 757,239, Jan. 6, 1977, Pat. No. 4,069,391, which is a continuation of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259. This application Dec. 7, 1977, Ser. No. 858,112
Int. Cl.² C08G *77/00, 77/02;* C08F *2/00, 16/08*
U.S. Cl. 526—29 **10 Claims**

1. The process for the production of poly (allyl halide allyl alcohol) polymer by the following steps:
- (a) mixing about one part by weight of an alkali silicate with about 1 to 2 parts by weight of a mono-olefinic allyl type mono-halide;
- (b) agitating said mixture in a closed system and keeping the temperature between 0° and 100° C. for about 1 to 12 hours at ambient pressure, thereby
- (c) producing poly (allyl halide allyl alcohol) polymer.

4,115,636

MODIFIED AND STABILIZED SYNTHETIC CIS-1,4 POLYISOPRENE AND METHOD FOR PRODUCING SAME

Lev Moiseevich Kogan, prospekt Geroev, 12, kv. 130; Natalya Borisovna Monastyrskaya, Tramvainy prospekt, 18, kv. 33; Larisa Mikhailovna Davydova, ulitsa Partizana Germana, 10, korpus P, kv. 82; Elena Nikolaevna Kropacheva, Grechesky pereulok, 12, kv. 61, all of Leningrad; Izrail Markovich Belgorodsky, ulitsa K. Marxa, 50, kv. 25, Tolyatti; Olga Izrailevna Belgorodskaya, ulitsa Podvoiskogo, 24, korpus 1, kv. 313; Basia Moiseevna Bolkhovets, prospekt Geroev, 26, kv. 5, both of Leningrad; Anatoly Vasilievich Gagin, ulitsa Pobedy, 72, kv. 62, Tolyatti; Izmail Vladimirovich Garmonov, ulitsa Saltykova-Schedrina, 20, kv. 18, Leningrad; Nikolai Fedorovich Kovalev, prospekt Veteranov, 147, kv. 170, Leningrad; Vladimir Alexandrovich Krol, ulitsa Avtovskaya, 25, kv. 8, Leningrad; Anatoly Ivanovich Lukashov, ulitsa Palekhskaya, 9, korpus 1, kv. 65, Moscow; Valentin Vasilievich Sazykin, ulitsa K. Marxa, 64, kv. 8, Tolyatti; Vladislav Petrovich Smirnov, Kirovsky prospekt, 73/75, kv. 17, Leningrad; Arkady Samuilovich Estrin, prospekt K. Marxa, 33/1, kv. 35, Leningrad; Jury Alexandrovich Lvov, ulitsa Letchika Pilotova, 46, kv. 15, Leningrad; Efim Moiseevich Sire, ulitsa K. Marxa, 64, kv. 27, Tolyatti; Lidia Mikhailovna Pospelova, ulitsa Sovetskaya, 63, kv. 27, Tolyatti; Ljubov Petrovna Bataeva, ulitsa Gorkogo, 29-b, kv. 9, Tolyatti; Semen Moiseevich Kavun, ulitsa 26 Bakinskikh komissarov, 7, korpus IV, kv. 97, Moscow, and Anatoly Sergeevich Lykin, poselok Kuchino, proezd Zhukovskogo, 5, kv. 64, Moskovskaya oblast, all of U.S.S.R.

Filed Sep. 29, 1976, Ser. No. 727,716

Int. Cl.[2] C08F *8/32*

U.S. Cl. 526—47.6 7 Claims

1. A method for producing modified and stabilized synthetic cis-1,4 polyisoprene comprising polymerization of isoprene in a hydrocarbon solvent in the presence of a Ziegler-Natta catalyst, contacting the polymerization mass with 0.05 to 1 mass percent of 4-nitrosodiphenylamine, and degassing and drying the rubber thus produced at 100° to 250° C.

4,115,637

METHOD FOR CURING POLYMERS CONTAINING HYDROXYALKYLAMIDE GROUPS BY MEANS OF NONPOLYMERIC POLYCARBOXYLIC ACIDS, AND COMPOSITIONS

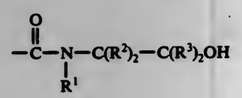
Harry J. Cenci, Warminster, and Graham Swift, Bluebell, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 454,645, Mar. 25, 1974, abandoned. This application Aug. 9, 1976, Ser. No. 712,552

Int. Cl.[2] C08J *3/24, 5/12;* C08K *5/12*

U.S. Cl. 526—56 26 Claims

1. A method of curing addition polymers containing two or more pendant β-hydroxyalkyl amide groups of the formula:



IV

wherein R^1 is hydrogen, or alkyl having 1 to 5 carbon atoms, or hydroxyalkyl having from 1 to 5 carbon atoms; R^2 and R^3 are the same or different radicals selected from hydrogen, straight or branched chain alkyl having from 1 to 5 carbon atoms, or one of the R^2 and one of the R^3 radicals joined together with the carbon atoms to which they are attached form cycloalkyl, which comprises the steps of (1) mixing said polymer with a nonpolymeric polycarboxylic acid free of polymerizable unsaturation or a mixture of such acids, and (2) reacting the acid and polymer by heating the mixture at a temperature of from about 125° to 400° C. until the cured polymer is obtained.

4,115,638

PROCESS FOR LETTING DOWN ETHYLENE HIGH PRESSURE POLYMERIZATION SYSTEMS

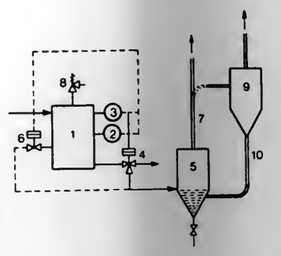
Rolf Becker, Weinheim-Hohensachsen; Klaus Borho, Frankenthal; Oskar Buechner, Dudenhofen; Hans Gropper, Ludwigshafen, and Ulrich Hartig, Neckargemuend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,462

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1976, 2631834

Int. Cl.[2] C08F *10/02*

U.S. Cl. 526—61 10 Claims



1. A process for rapidly lowering the pressure in a continuously operated high-pressure polymerization system in which ethylene or a mixture of ethylene and one or more compounds copolymerizable with ethylene is polymerized at from 500 to 5,000 bars and from 150° to 400° C., to a pressure below the prevailing reaction pressure, when predetermined pressure and/or temperature limits are exceeded or another fault occurs, by opening one or more relief devices fitted to the high pressure polymerization system and transferring the let-down hot reaction mixture from the polymerization system via one or more let-down lines through one or more expansion vessels into the atmosphere, wherein the jet of let-down hot reaction mixture issuing from the let-down line is led into a partially water-filled expansion vessel at an angle of from 0° to 45° to the water surface, so that the jet does not enter below the surface but touches or strikes it, the volume of the expansion vessel being at least as great as the volume of the high pressure polymerization system which is to be let down.

4,115,639

ETHYLENE POLYMERIZATION WITH ETHER MODIFIED CATALYST

Gary Leigh Brown, South Charleston, W. Va.; Weldon Clifford Cummings, Victoria, Tex., and Isaac Jacob Levine, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

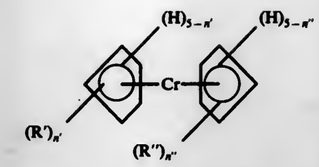
Filed Dec. 20, 1973, Ser. No. 426,559

Int. Cl.[2] C08F *4/02, 10/02*

U.S. Cl. 526—130 32 Claims

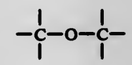
1. In a process for polymerizing a monomer charge comprising ethylene by contacting said charge with activated inorganic oxide supported bis(cyclopentadienyl) chromium [II] catalyst

wherein said inorganic oxide is selected from the group consisting of silica, alumina, thoria, zirconia and mixtures thereof, and the bis(cyclopentadienyl) chromium [II] compound has the structure



wherein n' and n'' are each integers of 0 to 5, inclusive, and R' and R'' are each C_1 to C_{20}, inclusive, hydrocarbon radicals,

the improvement which comprises modifying said catalyst prior to said contact with said monomer charge by contacting said catalyst with, per mol of the organochromium compound, 0.01 to 20mols of at least one modifying compound having in its structure at least one moiety of the formula



said modifying compound being devoid of OH, SH, NH_2, COOH, halogen, alkoxy and aryloxy radicals in such amounts as would poison the polymerization system under the prevailing reaction conditions, and

said modifying with said modifying compound providing a modified catalyst with which, in comparison to the use of the unmodified catalyst in said polymerization process, polymers of improved impact strength are prepared.

4,115,640

AFTERTREATMENT OF SPRAY DRIED, POWDERED VINYL CHLORIDE EMULSION POLYMERIZATES

Josef Kalka, Herten, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Sep. 13, 1976, Ser. No. 722,397

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1975, 2541008

Int. Cl.[2] C08F *6/02*

U.S. Cl. 528—483 11 Claims

1. A process for improving the rheological properties of powdered polymerizates formable into plastisols, which comprises polymerizing vinyl chloride or a mixture of vinyl chloride and a copolymerizable monomer in an aqueous emulsion in the presence of a water-soluble catalyst and an alkali metal salt of a fatty acid as the polymerization emulsifier, spray drying the resultant polymerizate to form a powder, and subsequently treating the powdered polymerizate with a gas mixture which forms an acid in an aqueous solution to effect said improvement in rheological properties wherein the acid-forming gas is present in the gas mixture at a concentration of 0.5–20% by volume.

4,115,641

RIBOFURANOSYL-IMIDAZOLE DERIVATIVES

Ulf Fischer, Frenkendorf, and Pierre-Charles Wyss, Muttenz, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

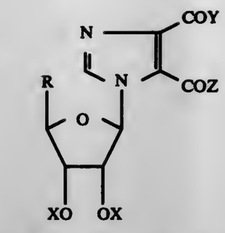
Filed Aug. 1, 1977, Ser. No. 820,501

Claims priority, application Austria, Aug. 6, 1976, 5859/76

Int. Cl.[2] C07H *17/00*

U.S. Cl. 536—23 17 Claims

1. A compound of the formula



I

wherein R,X,Y and Z have one of the meanings set forth hereinafter under (1)-(5):

(1) R is $—CH_2OH$;

X is H, and

Y and Z are $—C_{1-4}$-alkoxy, $—NH(C_{1-7}$-alkyl), $—NH(C_{2-4}$-alkenyl), $—NH(C_{3-6}$-cycloalkyl) or —NH-phenyl-(lower alkyl); or

(2) R is $—CH_2ONO_2$;

X is $—NO_2$; and

Y and Z are $—C_{1-4}$-alkoxy, $—NH_2$, $—NH(C_{1-7}$-alkyl), $—NH(C_{2-4}$-alkenyl), —NH-phenyl-(lower alkyl) or $—N(NO_2)(C_{1-7}$-alkyl); or

(3) R is $—COO(C_{1-4}$-alkyl), $—CONH_2$, $—CONH(C_{1-4}$-alkyl), $—CONH(C_{2-4}$-alkenyl); $—CONH(C_{3-6}$-cycloalkyl) or —CO—Het wherein Het is a 5-membered or 6-membered heterocyclic ring which may contain, in addition to the nitrogen atom via which it is bound with the carbonyl group, the hetero atom nitrogen, oxygen or sulfur;

X is H; and

Y and Z are $—NH_2$ or $—NH(C_{1-7}$-alkyl); or

(4) R is $—COO(C_{1-4}$-alkyl);

X is $—NO_2$; and

one of Y and Z is $—NH_2$ and the other is $—NHNO_2$; or

(5) R is $—CONH_2$, $—CONH(C_{1-4}$-alkyl) or $—CONH(C_{5-6}$-cycloalkyl);

X is $—NO_2$; and

both of Y and Z are $—NH_2$, $—NH(C_{1-7}$-alkyl) or $—N(NO_2)(C_{1-7}$-alkyl) or one of Y and Z is $—NH_2$ and the other is $—NHNO_2$.

4,115,642

METHOD FOR PREPARING AURANOFIN

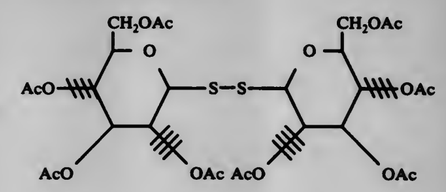
David T. Hill, North Wales, Pa.; Ivan Lantos, Blackwood, N.J., and Blaine M. Sutton, Hatboro, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Jun. 30, 1977, Ser. No. 811,641

Int. Cl.[2] C07H *23/00*

U.S. Cl. 536—121 5 Claims

1. The method of preparing auranofin comprising reacting the compound of the formula:



in which Ac is acetyl, with a compound of the formula:

$(C_2H_5)_3PAuX$

in which X is lower alkylthio of 1–6 carbons, benzylthio, phenethylthio or triethylphosphinegoldthio in an organic solvent in which said reactants are soluble and which is chemically inert toward the reactants.

4,115,643

PROCESS FOR 3-CHLORO CEPHALOSPORINS

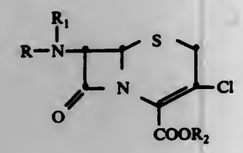
Stjepan Kukolja, Carmel, and Douglas O. Spry, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 714,948, Aug. 16, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,472

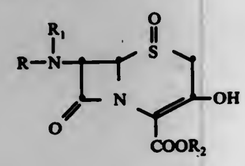
Int. Cl.² C07D *501/04*

U.S. Cl. 544—16 **9 Claims**

1. The process for preparing a 3-chloro-3-cephem ester of the formula



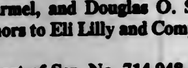
which comprises the step of reacting a 3-hydroxy-3-cephem sulfoxide ester of the formula



under substantially anhydrous conditions in the presence of dimethylformamide at a temperature between about −65° C. and about 25° C. with between about 2 and about 9 moles of a chlorinating agent selected from the group of phosphorus trichloride, phosphorus pentachloride and phosgene, per mole of said sulfoxide ester wherein R is an acyl group of the formula



wherein R' is C_1–C_6 alkyl, phenyl, or phenyl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, or carboxy; or R is an acyl group of the formula



wherein R'' is thienyl, furyl, phenyl, or phenyl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, or carboxy, n is 0 or 1; and when n is 1 R'' is other than thienyl or furyl; R_1 is hydrogen or R_1 and R taken together with the nitrogen atom to which they are attached are succinimido or phthalimido; and R_2 is benzyl, 4-methoxybenzyl, 3,5-dimethoxybenzyl, 3,5-dimethoxy-4-hydroxybenzyl, 4-nitrobenzyl, diphenylmethyl, 4-methoxydiphenylmethyl, 2,2,2-trichloroethyl, t-butyl, phenacyl, 4-nitrophenacyl, or methoxymethyl.

4,115,644

PROCESS FOR PREPARING PURE CEFAMANDOLE FROM ALKALI METAL AND AMMONIUM SALTS THEREOF

Ta Sen Chou, and Gary D. Zintgraff, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 19, 1977, Ser. No. 834,633

Int. Cl.² C07D *501/12*

U.S. Cl. 544—20 **7 Claims**

1. A method of preparing pure crystalline cefamandole from alkali metal and ammonium salts thereof comprising:

(a) dissolving the cefamandole salt in water;

(b) acidifying the solution from (a) with a buffer solution to a pH of from about 3.5 to about 4.5;

(c) passing the solution from (b) through a bed of adsorbent resin having a large active surface (macroporosity) conducive to van der Waals adsorption and having weak electrolyte activity, said resin having been previously flushed with a buffer solution having a pH of from about 3.5 to about 4.5;

(d) crystallizing the cefamandole from the effluent from said resin bed by adjusting the pH of said effluent to about 2; and,

(e) separating the crystalline cefamandole from the acidified effluent.

4,115,645

DECOLORIZING PROCESS FOR 7-AMINO-3-(((2-METHYL-1,3,4-THIADIAZOL-5-YL)THIO)METHYL)-3-CEPHEM-4-CARBOXYLIC ACID

Billy G. Jackson, Indianapolis, and Roger E. McPherson, Lafayette, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 10, 1977, Ser. No. 795,464

Int. Cl.² C07D *501/12*

U.S. Cl. 544—20 **7 Claims**

1. A process for decolorizing impurities associated with 7-amino-3-(((2-methyl-1,3,4-thiadiazol-5-yl)thio)methyl)-3-cephem-4-carboxylic acid or a salt thereof, which comprises (1) adding a reducing agent selected from the group consisting of sodium sulfite and sodium dithionite to an aqueous solution of a salt of 7-amino-3-(((2-methyl-1,3,4-thiadiazol-5-yl)thio)methyl)-3-cephem-4-carboxylic acid and colored impurities, and (2) recovering decolorized 7-amino-3-(((2-methyl-1,3,4-thiadiazol-5-yl)thio)methyl)-3-cephem-4-carboxylic acid or a salt thereof from the solution.

4,115,646

PROCESS FOR PREPARING 7-AMINOCEPHALOSPORANIC ACID DERIVATIVES

Peter Hubert Bentley, Rudgwick, and Gerald Brooks, Reigate, both of England, assignors to Beecham Group Limited, Brentford, England

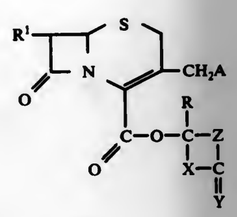
Continuation of Ser. No. 652,527, Jan. 26, 1976, abandoned. This application Aug. 22, 1977, Ser. No. 826,371

Claims priority, application United Kingdom, Feb. 22, 1975, 7546/75

Int. Cl.² C07D *501/36*

U.S. Cl. 544—27 **8 Claims**

1. A process for the preparation of a compound of formula (IA):



(IA)

wherein

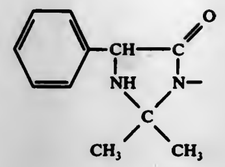
X and Y are both oxygen;

Z is 1,2-phenylene unsubstituted or substituted by alkoxy, nitro or halogen;

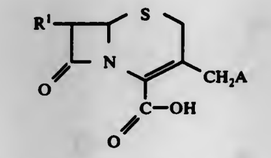
R is hydrogen, phenyl or methyl;

A is hydrogen, acetoxy, carbamoyloxy or a 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,3,4-tetrazolyl, oxazolyl, thiazolyl, 1,3,4-oxadiazolyl, 1,3,4-thiadiazolyl or 1,2,4-thiadazolyl group;

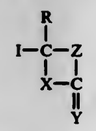
R^1 is an amino group, an organic acylamino group which is conventional for cephalosporin side chains, or a group of formula:



which process is characterized by esterifying a compound of formula:



or a salt thereof, with an iodolactone of formula:



to form the corresponding 3-cephem cephalosporin lactonyl ester substantially exclusively.

4,115,647

AMIDINOUREAS

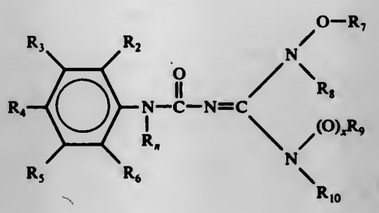
George Henry Douglas, Malvern; William Lyon Studt, Harleysville, and Stuart Alan Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 671,763, Mar. 30, 1976, Pat. No. 4,058,557. This application Jun. 17, 1977, Ser. No. 881,092

Int. Cl.² C07D *261/00, 265/02*

U.S. Cl. 544—63 **7 Claims**

1. A compound of the formula:



where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are: hydrogen, halo, loweralkyl, halologweralkyl, nitro, amino, acylamino, hydroxy, aralkyloxy or loweralkoxy;

R_n is hydrogen or loweralkyl;

R_7 and R_8 together and R_9 and R_{10} together may form a ring selected from the group consisting of isooxazolidine and isooxazine;

x is 0–1;

R_9 and R_{10}, when x is 0, may be the same or different and are: hydrogen, alkyl, alkenyl, alkylyl, cycloalkyl or aralkyl;

the sum total of carbon atoms present in R_7, R_8, R_9 and R_{10} together is less than 12; and

the non-toxic acid addition salts thereof.

4,115,648

2,5-DIHYDROXY BENZENE SULFONIC ACID MONO ESTERS

Antonio Esteve-Subirana, Barcelona, Spain, assignor to Laboratorios del Dr. Esteve, S.A., Barcelona, Spain

Division of Ser. No. 505,934, Sep. 13, 1974, Pat. No. 3,954,767, which is a continuation-in-part of Ser. No. 360,394, May 14, 1973, Pat. No. 3,876,651. This application Oct. 28, 1975, Ser. No. 626,024

Int. Cl.² C07C *143/68;* C07D *295/00*

U.S. Cl. 544—110 **2 Claims**

1. Diethylamine 2,5-dihydroxy benzene sulfonate monotosylate.

2. Morpholine 2,5-dihydroxy benzene sulfonate monotosylate.

4,115,649

PHENYL PYRAZOLE MORPHOLINE AMIDES

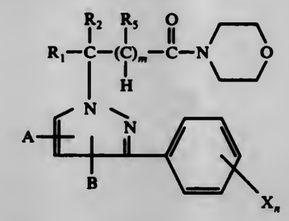
Malcolm W. Moon, and Gabriel Kornis, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 686,548, May 14, 1976, Pat. No. 4,072,498, which is a continuation-in-part of Ser. No. 524,231, Nov. 15, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,181

Int. Cl.² C07D *413/06*

U.S. Cl. 544—140 **2 Claims**

1. A compound of the formula:



where R_1 is hydrogen, alkyl of 1 to 7 carbon atoms, inclusive, haloalkyl of 1 to 7 carbon atoms, inclusive, phenyl, benzyl or cycloalkyl of 3 to 6 carbon atoms, inclusive, with the proviso that when R_1 is benzyl or cycloalkyl m = 0; R_2 and R_5 are the same or different and are hydrogen, halogen, alkyl of 1 to 6 carbon atoms, inclusive, haloalkyl of 1 to 6 carbon atoms, inclusive, or phenyl; R_1 and R_2 together with the attached carbon atom can be cycloalkyl of 3 to 6 carbon atoms, inclusive, when m = 0; m is 0 or 1 provided that when m = 0, R_1 is not hydrogen and when m = 1 at least one of R_2 or R_5 is hydrogen; A and B are the same or different and are hydrogen, alkyl of from 1 to 6 carbon atoms, inclusive, phenyl, halogen, cyano, haloalkyl of 1 to 6 carbon atoms, inclusive, alkoxy or alkylthio in which the alkyl group is from 1 to 3 carbon atoms, inclusive, or trifluoromethyl and when adjacent can be joined to form a ring of from 5 to 7 carbon atoms, inclusive; where X is halogen, nitro, cyano, acetyl, dimethylcarbamoyl, alkyl, haloalkyl, alkoxy or carboalkoxy in which the alkyl group is from 1 to 3 carbon atoms, inclusive, phenyl, benzyl, 2-phenylethyl and n is 0, 1, or 2 or an acid addition salt thereof.

4,115,650

PROCESS FOR PREPARING 2,4-DIAMINO-5-(SUBSTITUTED BENZYL)-PYRIMIDINES

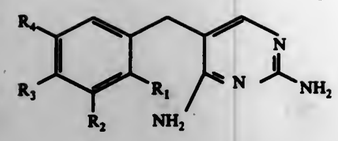
Percy Manchand, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 17, 1976, Ser. No. 742,959

Int. Cl.² C07D *239/48, 405/06*

U.S. Cl. 544—324 **2 Claims**

1. A process for the preparation of 2,4-diamino-pyrimidines of the formula



wherein R_1 is hydrogen or lower alkyl; R_2 is hydrogen or lower alkoxy; R_3 is lower alkoxy or lower alkyl; R_4 is hydrogen or lower alkoxy; and R_2 and R_3, when taken together, are methylenedioxy,
which comprises the steps of treating the correspondingly substituted α-alkoxymethylcinnamonitrile with an alkali metal alkoxide in 2-methoxyethanol and an alkanol of the formula ROH, wherein R is lower alkyl, and treating the resulting reaction mixture with guanidine at a temperature in the range of from about 100° to about 140° C.

4,115,651

CIS-4,5-DIDEHYDRO-13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-18,19,20-TRINOR-PGF$_{1\alpha}$ COMPOUNDS

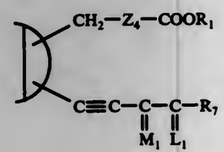
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,979

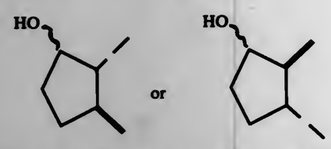
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 560—55 **73 Claims**

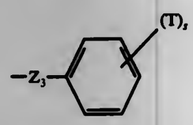
1. A prostaglandin analog of the formula



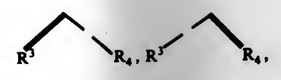
wherein D is



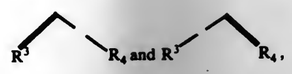
wherein Z_4 is cis-CH_2-CH=CH-$(CH_2)_g$-CF_2-,
wherein *g* is one, 2, or 3;
wherein R_7 is



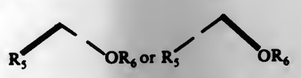
wherein Z_3 is oxa or methylene, *s* is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,115,652

PROCESS FOR THE PREPARATION OF AMINO-NITROPHENOLS

Karl Linhart, and Adolf Friedrich, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

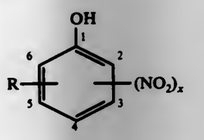
Filed Mar. 30, 1977, Ser. No. 783,036

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2624825

Int. Cl.^{2} C07C *79/28, 91/34*

U.S. Cl. 568—706 **13 Claims**

1. A process for preparing an amino-nitrophenol which consists essentially of contacting a polynitrophenol of the formula



wherein
x signifies the number 2 and R stands for low alkyl, fluorine, chlorine, bromine or carboxylic or sulfonic acid residue with a reaction mixture consisting essentially of an aqueous ammonia solution and sodium hydrogen sulfide, said aqueous ammonia being present in an amount of 1 to 8 mols ammonia per mol of polynitrophenol and said sodium hydrogen sulfide being present in an amount of 2.5 to 6 mols sulfide ion per mol of polynitrophenol and the reaction being performed at room temperature up to 100° C.

4,115,653

ELECTRON BEAM VAPORIZER

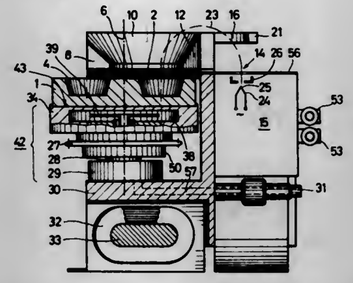
Gerhard Kienel, Hanau am Main, and Helmut Petersein, Gelnhausen-Höchst, both of Germany, assignors to Leybold-Heraeus GmbH & Co. KG, Cologne, Germany

Filed Oct. 4, 1976, Ser. No. 729,575

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1975, 2544725

Int. Cl.^{2} H01J *37/305*

U.S. Cl. 13—31 **5 Claims**



1. Electron beam varporizer comprising beam generating means with heated cathode means, focusing means and electromagnetic deflection means for the deflection and guidance of the beam, exchangeable, fluid-cooled vaporizing crucible means associated with the beam generating means and relatively movable with respect thereto and having at least one depression in the base thereof for at least one substance to be vaporized and passages for the flow of coolant beneath said depression, said vaporizing crucible means and the base thereof being constructed as separate components and having a common contact surface so that a removable crucible head is formed, said crucible base being closed off from its environment with regard to said flow passages.

4,115,654

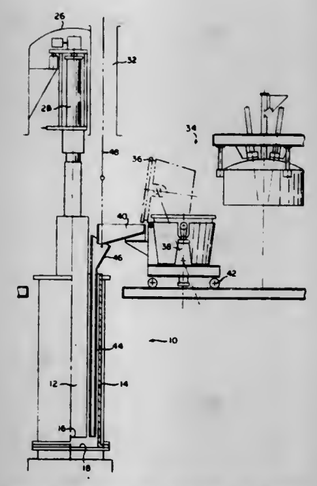
INTRODUCTION OF STARTING MOLTEN FLUX FROM THE TOP OF A CRUCIBLE

Patrick J. Wooding, Moorestown, N.J., and Clifton P. Anderson, Morrisville, Pa., assignors to Wooding Corporation, Moorestown, N.J.

Filed Mar. 1, 1977, Ser. No. 773,330

Int. Cl.^{2} F27D *3/14*; H05B *3/60*

U.S. Cl. 13—33 **14 Claims**



1. In an electroslag melting system including a crucible having interior side walls and an opening adjacent the top thereof, a consumable electrode extending downwardly through said opening into the interior of said crucible, the outer dimensions of said electrode being slightly less than the inside dimensions of said crucible whereby a narrow annular space remains between said electrode and the inside walls of said crucible and means for introducing pre-melted flux into the bottom of said crucible, the improvement comprising: means for guiding said pre-melted flux downwardly from said opening and through said narrow space while substantially preventing said flux from contacting said side walls of said crucible and said electrode.

4,115,655

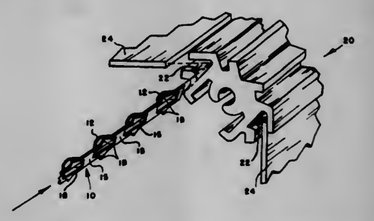
ELECTROMAGNETIC INTERFERENCE SHIELDING DEVICE

Leon Austin Prentice, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 18, 1976, Ser. No. 743,014

Int. Cl.^{2} H05K *9/00*

U.S. Cl. 174—35 R **5 Claims**



1. An electronic cabinet having supporting members provided with groove means extending along the lengths thereof, metal closure means having their edge means positioned within the groove means, the improvement comprising:
an electromagnetic interference shielding means which includes a substantially planar strip of metal having first contact means extending outwardly from each side of said strip and being located at spaced locations along said strip, said first contact means being located in the plane of said planar strip, the width of said strip across said first contact means being slightly wider than the groove means along which said strip is disposed so that said first contact means scores the surfaces of the groove means as said strip is moved along the groove means thereby breaking down any oxide coating on said first contact means and the surfaces of the groove means and making connection therewith, said strip extending along substantially the entire length of the groove means; and
second contact means provided by said strip extending outwardly from the plane of said planar strip engaging the edge means of the closure means that are disposed within the groove means.

4,115,656

SHIELDED PASSAGEWAY INTERCONNECTION FOR ELECTROMAGNETIC INTERFERENCE SHIELDED SHELTERS

Moe Lawrence Aitel, Andover, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

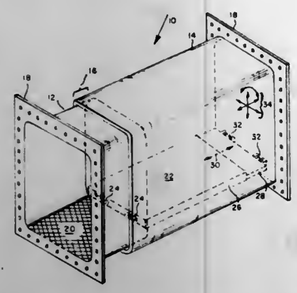
Filed Apr. 8, 1976, Ser. No. 674,810

Int. Cl.^{2} H05K *9/00*

U.S. Cl. 174—35 MS **26 Claims**

1. An EMI shielding passageway for use between shelters having portals comprising:
loosely fitting telescoping sections, said sections having electrically conducting walls, portions of which overlap, resilient EMI shielding material between the walls of the

overlapped portions of the sections, said shielding being electrically connected to said walls, and



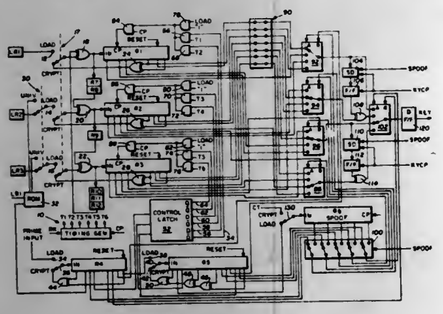
means at the end of a telescoping section opposite the overlapped portion for fixedly and electrically attaching said end to one of said shelters at the portal thereof.

4,115,657

RANDOM DIGITAL CODE GENERATOR

Barrie O. Morgan, Dallas, Tex., assignor to Datotek, Inc., Dallas, Tex.

Filed Nov. 11, 1976, Ser. No. 741,014
Int. Cl.[2] H04L *9/00*
U.S. Cl. 178—22 **32 Claims**



10. A random code generator for generating a randomized digital key stream comprising:

a plurality of first registers of different lengths and different cycle periods, the cycle period of each of said first registers not including common factors with the cycle periods of any of the remaining ones of said first registers,

a plurality of second registers,

means for individually clocking said second registers in dependence upon the digital data contained within different ones of said first registers, and

means for receiving the output from said second registers and for generating a randomized digital key stream in response thereto.

4,115,658

TWO WAY TELEPHONE AMPLIFIER

Richard W. Williams, 2837 S. Raritan, Englewood, Colo. 80110

Filed Apr. 11, 1977, Ser. No. 786,335
Int. Cl.[2] H04M *9/08*
U.S. Cl. 179—1 HF **7 Claims**

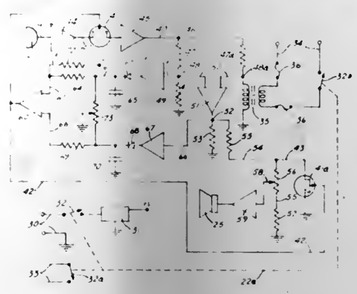
1. A telephone amplifier system comprising

(a) signal transfer means from and to a telephone line including a coupling transformer connected for both transmit and receive signals at one side of transformer secondary coil;

(b) a transmit amplifier circuit and a receive amplifier circuit connected to said one side,

(c) normally on switching means in said transmit amplifier circuit holding the same closed in absence of a received signal,

(d) bridge circuit means between said one side and said



transmit amplifier circuit and said receive amplifier circuit,

(e) a differential amplifier connected in said bridge circuit, and

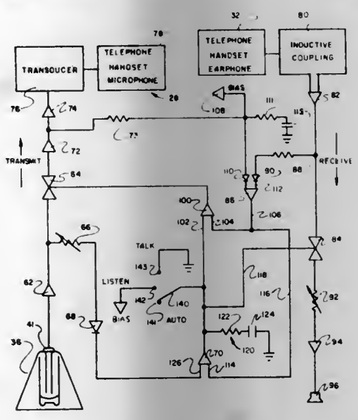
(f) a comparator circuit means for closing said receive amplifier circuit on receipt of a received signal and opening said transmit amplifier circuit.

4,115,659

ELECTROACOUSTICAL TELEPHONE ADAPTER

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540, and Leonard F. Shepard, Dover, Del., assignors to Abram N. Spanel, Princeton, N.J.

Filed Jun. 16, 1977, Ser. No. 807,104
Int. Cl.[2] H04M *9/08, 1/21*
U.S. Cl. 179—1 HF **29 Claims**



1. A telephone adapter for hands-free telephony, adapted for use with a telephone handset having structure including an earpiece, comprising:

a transmit signal path comprising, in series, a microphone, first amplification means, first disabling means and a transducer;

a receive signal path having means for amplifying sound energy from said earpiece, said receive path comprising, in series, a coupler, second amplification means, second disabling means and speaker means;

bias means for maintaining said transmit path in an active state when no signals are present; and,

means for interrupting said circuit paths in a complementary manner, comprising:

means for introducing a predetermined delay prior to disabling;

means for shortening said delay in response to a louder sound received by said microphone;

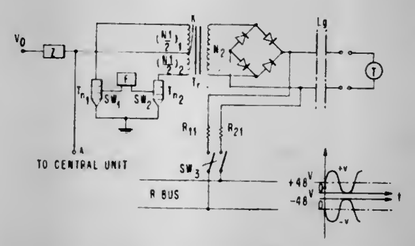
a comparator having at least two inputs, one of said comparator inputs connected to the output of said transmit path, and another of said at least comparator inputs connected to said receive path; and, third amplification means, having at least two inputs, the output of said comparator being connected to one of said inputs of said third amplification means, another of said inputs of said third amplification means connected to said transmit path, said second disabling means, and said delay means, the output of said third amplification means being connected to the first disabling means.

4,115,660

TELEPHONE LINE INTERFACING CIRCUIT WITH DIRECTIONAL TRANSFER OF RINGING CURRENT AND OFF-HOOK INDICATIONS

Alain Croisier, Cagnes-sur-Mer, and Christian Jacquart, Gattières, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1977, Ser. No. 831,329
Claims priority, application France, Oct. 4, 1976, 76 30658
Int. Cl.[2] H04M *3/18*
U.S. Cl. 179—2.5 R **3 Claims**



1. A circuit for interfacing a telephone exchange having a source of ringing current with a line connected to a telephone set having a ringing bell facility, said facility subject to audible actuation by said ringing current, said interface circuit comprising:

sources of RF carrier signals, D.C. voltage and ground voltage;

an RF transformer having a center-tapped primary winding and a secondary winding;

means responsive to said RF carrier signals for connecting ends of said primary winding to said ground voltage alternately at the frequency of said RF carrier signals;

means connecting the center tap of said primary winding to said exchange for effectively superimposing voice frequency signals on said carrier signals in said primary winding;

means coupling said center tap to said D.C. voltage through a series impedance effective to prevent voice frequency signals from passing through said source of D.C. voltage;

detection means coupling ends of said secondary winding to said line for transferring voice frequency signals between said exchange and said line while preventing said RF carrier signals from reaching said line;

means for coupling said ringing current to said line, including a disconnection switch controllable by said exchange and an impedance in series with said switch, said impedence related to the impedance presented to said line by said telephone set in the off-hook state;

said detection means being conditioned to prevent passage of any signals between said exchange and said line when said ringing current is coupled to said set and said set is in the on-hook state;

said detection means further being responsive to the impedance change in said set accompanying the transition of said set from on-hook state to off-hook state, even when ringing current is present on said line, for passing a signal to said exchange uniquely indicative of said transition; said uniquely indicative signal being useful to actuate said exchange to control said disconnection switch to disconnect said ringing current from said line and thereby from said set.

4,115,661

SINGLE CHANNEL PER BURST TDMA MULTIPLE TRANSPONDER NETWORK

William G. Schmidt, Gaithersburg, Md., assignor to Satellite Business Systems, McLean, Va.

Filed Mar. 21, 1977, Ser. No. 779,874
Int. Cl.[2] H04J *3/06*
U.S. Cl. 179—15 BS **24 Claims**



7. A time division multiple access network for communication between a plurality of geographically separated stations through at least two satellite-located transponders, comprising a first transponder associated with a first group of stations of said plurality, each of said first group of stations capable of establishing go and return communication links through said first transponder using a first common up-link frequency and a first common down-link frequency, a second transponder associated with the second group of stations of said plurality, each of said second group of stations capable of establishing go and return communication links through said second transponder using a second common up-link frequency and a second common down-link frequency, said first group of stations capable of establishing go or return communication links with stations of said second group through said second transponder, exclusive of said first transponder, and said second group of stations capable of correspondingly establishing return or go communication links with stations of said first group through said first transponder, exclusive of said second transponder.

4,115,662

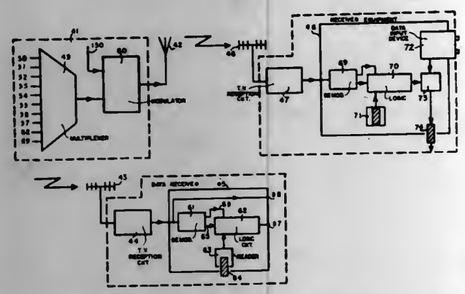
ONE WAY DATA TRANSMISSION SYSTEM

Yves Maurice Guinet, Rennes, and Yves Maurice Noirel, Montfort, both of France, assignors to Etablissement Public Dit Telediffusion de France, Montrouge and L'Etat Francais, Represente par le Secretaire d'Etat aux Postes et Telecommunications, Issy-les-Moulineaux, both of, France

Continuation of Ser. No. 689,493, Jun. 3, 1976, Pat. No. 4,055,830. This application Sep. 6, 1977, Ser. No. 830,683
Claims priority, application France, Jun. 6, 1975, 75 18319
Int. Cl.[2] H04M *1/32, 1/34, 1/44*
U.S. Cl. 179—15 BV **2 Claims**

1. A one-way data transmission system for use in a communication system wherein a transmitter station is connected to transmit data packs of information at a system data bit rate and over a plurality of channels, with transmission on a time multi-

plex basis, each data pack, comprising a prefix signal containing a synchronization signal, channel identification signal, and a format signal which indicates the length of the data sequence which follows the prefix within the data pack, said data transmission system comprising: a transmitter station containing a plurality of coupler means, there being one coupler for each of said channels, each coupler including an input circuit means, data memory means, and counter means, means for coupling an output of each channel to the input circuit means of its associated coupler means, means for coupling the output of each input circuit means to the input of an associated one said data memory means, multiplex circuit means, common control means associated with a plurality of said coupler means, means



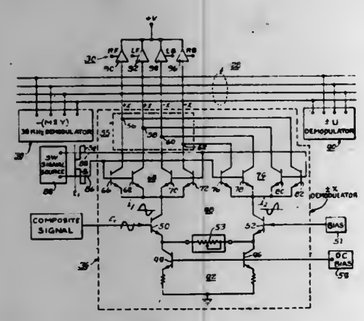
for coupling the output of each data memory means to said multiplex circuit means under the control of said common control means, said counter means being loadable with data at a predetermined count rate, means responsive to either a full data memory means or the counter in a coupler means reaching a predetermined count for applying an inhibit order signal to an input circuit means in the same coupler means, said full data memory condition being signalled responsive to information contained in said full data memory condition for connecting said data memory means to said multiplex circuit means when it next becomes idle, the data in said data memory means being then transferred to said multiplex circuit means, and means for thereafter resetting said counter and removing said inhibit order.

4,115,663

DOUBLY BALANCED DEMODULATOR FOR MULTIPLE CHANNEL FM STEREO SYSTEM

Dirk de Weger, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 4, 1976, Ser. No. 729,510
Int. Cl.² H04H 5/00
U.S. Cl. 179—15 BT **2 Claims**



1. A doubly balanced demodulator for developing a predetermined plurality of audio difference components from a source of composite baseband signal comprising:

a constant current source;

a differential amplifier comprising a first signal translating device having first, second and third electrodes and a second signal translating device also having first, second and third electrodes;

means for coupling the source of composite baseband signal to said first electrode of said first signal translating device;

means for coupling a first source of bias potential to said first electrode of said second signal translating device;

means for coupling said constant current source to said second electrode of each of said first and second signal translating devices;

means for intercoupling said second electrodes of said first and second signal translating devices;

a utilization circuit comprising four input terminals;

first switch means comprising four current splitting devices each having an input electrode coupled to said third electrode of said first signal translating device, an output electrode coupled to an assigned one of said utilization circuit input terminals and a control electrode;

second switch means also comprising four current splitting devices each having an input electrode coupled to said third electrode of said second signal translating device, an output electrode coupled to an assigned one of said utilization circuit input terminals and a control electrode; and

switch activating means for rendering, at a predetermined repetition rate, selected ones of said current splitting devices conductive

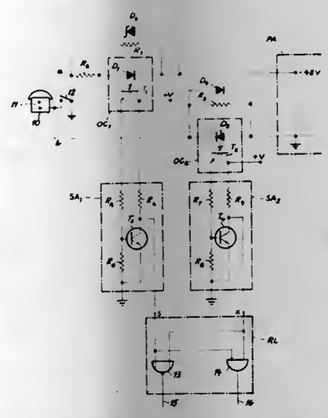
and for rendering, alternately and at said same repetition rate, the remaining ones of said current splitting devices conductive to enable said current splitting devices to translate segments of said composite signal and to collectively apply said segments to said utilization circuit input terminals to enable said utilization circuit to develop said predetermined plurality of audio difference components.

4,115,664

DISCRIMINATING NETWORK FOR TELEPHONE SWITCHING SIGNALS

Carmelo Laface, Milan, and Carlo Vantellini, Varedo, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Apr. 5, 1977, Ser. No. 784,673
Claims priority, application Italy, Apr. 6, 1976, 21954 A/76
Int. Cl.² H04M 3/02
U.S. Cl. 179—84 R **5 Claims**



1. In a telephone system wherein a central office is linked with a subscriber station by a line including a first and a second signal wire, said first signal wire being connected at the central office to a source of d-c voltage, said second signal wire being grounded at the central office, said subscriber station being provided with a hook switch for interconnecting said first and second signal wires to form a closed loop traversed by direct current from said source, said subscriber station being further provided with a key for selectively grounding said second signal wire whereby current passes only through said first signal wire upon closure of said hook switch,

the combination therewith of a discriminating network comprising:

a first light-emitting diode in series with said first signal wire;

a second light-emitting diode in series with said second signal wire, said light-emitting diodes being cascaded in said loop for traverse by the same current from said source upon closure of said hook switch with said key unoperated;

a first photon detector juxtaposed with said first light-emitting diode;

a second photon detector juxtaposed with said second light-emitting diode;

first and second amplifier means respectively connected to said first and second photon detectors for generating an ouput voltage indicative of current flow in the corresponding signal wire; and

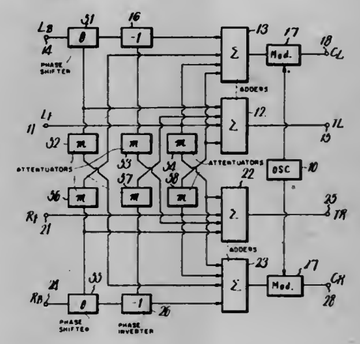
a logic circuit connected to both said amplifier means for distinguishing between current flow in both signal wires and current flow in said first signal wire only.

4,115,666

DISCRETE 4-CHANNEL STEREO RECORDING AND/OR REPRODUCING SYSTEM COMPATIBLE WITH MATRIX SYSTEMS

Keiichiro Ogura, Kawasaki, Japan, assignor to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Continuation of Ser. No. 541,992, Jan. 17, 1975, abandoned, which is a continuation of Ser. No. 364,934, May 29, 1973, abandoned. This application Aug. 13, 1976, Ser. No. 714,131
Claims priority, application Japan, May 30, 1972, 47-53622; Jun. 8, 1972, 47-57230; Jun. 8, 1972, 47-57232; Jun. 8, 1972, 47-57231; Jun. 15, 1972, 47-59844; May 30, 1972, 47-53621
Int. Cl.² H04R 5/00
U.S. Cl. 179—100.4 ST **3 Claims**



1. A multichannel audio signal recording and reproducing system comprising:

(a) means for encoding four input audio information signals designated as L_F, L_B, R_F and R_B to produce first and second transmission signals T_L and T_R and first and second carrier signals C_L and C_R; and

(b) means for recording said first and second transmission signals T_L and T_R and said first and second carrier signals C_L and C_R on a recording medium having first and second channels each of which has an audio frequency band for a transmission signal and a carrier frequency band for a modulated carrier signal, respectively, wherein said first and second transmission signals T_L and T_R and said first and second carrier signals C_L and C_R are related to four input audio information signals according to the following equations:

$$T_L = A_{LB} + L_F + mR_F - mAR_B$$

$$T_R = -mAL_B + mL_F + R_F + AR_B$$

$$C_L = -AL_B + L_F + 0\,mR_F + mAR_{B0}$$

$$C_R = mAL_B + mL_F + R_F - AR_B$$

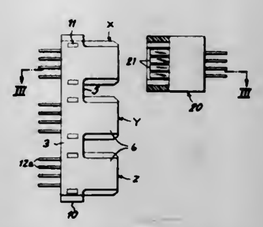
where $A = e^{j\theta}$, $A = e^{-j\theta}$, $O < m < 1$ and $O \leqq \theta \leqq 90°$, L = left, R = right, F=front, B = back, T = transmission and C = carrier.

4,115,665

MULTIPLE CIRCUIT INTERRUPTER FOR TELECOMMUNICATION SYSTEM

Guglielmo Giacoppo, Milan, and Ercole Tres, Cornaredo (MI), both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Apr. 5, 1977, Ser. No. 784,676
Claims priority, application Italy, Apr. 6, 1976, 21955 A/76
Int. Cl.² H04Q 1/14
U.S. Cl. 179—98 **6 Claims**



1. A multiple circuit interrupter facilitating the selective insertion of ancillary equipment into a multiplicity of lines of a telecommunication system, comprising:

a body of generally rectangular outline split into a central section and two lateral sections along surfaces substantially paralleling the major sides of the rectangle, said sections defining between them a multiplicity of jacks arrayed in two rows parallel to said major sides, said body having at least one transverse incision extending across said central and lateral sections whereby a plurality of identical bosses of generally rectangular outline are formed which encompass respective groups of said jacks, each jack including a pair of conductor springs normally in contact with each other; and

at least one complementary socket fitting around any one of said bosses, said socket carrying a group of plugs insertable between the conductor springs of the group of jacks of the engaged boss with a wall portion of said socket received in said incision.

4,115,667

LOUDSPEAKER VOICE COIL BEARING

Burton A. Babb, Dallas, Tex., assignor to Babbco, Ltd., Dallas, Tex.

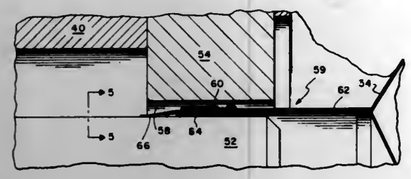
Continuation-in-part of Ser. No. 372,074, Jun. 21, 1973, Pat. No. 3,983,337. This application Mar. 22, 1976, Ser. No. 669,315
Int. Cl.² H04R 9/04
U.S. Cl. 179—115.5 VC **21 Claims**

13. In a loudspeaker, the combination comprising:

a magnetic assembly for producing an annular flux gap around a cylindrical center pole,

a tubular coil disposed around and spaced from the center pole, and

a continuous, thin, flexible bearing strip extending at least



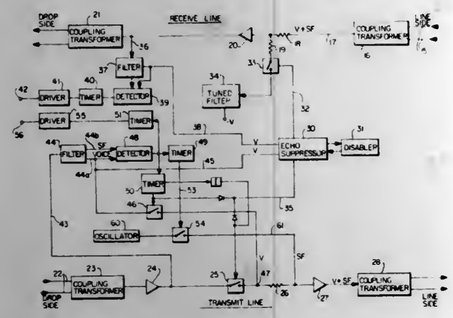
substantially around the center pole, extending axially from the coil, and extending radially inwardly from the coil into sliding contact with the center pole for maintaining the coil radially aligned in the flux gap.

4,115,668

ECHO SUPPRESSOR WITH SF TRANSMISSION AND REGENERATION

Ambroz K. Skrovanek, Bethesda, Md., and Fred E. Clark, Jr., Arlington, Va., assignors to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed Apr. 29, 1977, Ser. No. 792,096
Int. Cl.² H04B 3/20
U.S. Cl. 179—170.2 **8 Claims**



1. In an interface unit for interconnecting voice signals and preselected single frequency control signals between a drop side terminal and a four wire transmission system having receive and transmit line pairs, the unit being of the type having echo suppressor means for comparing scaled voice signal levels on the receive and transmit lines and for reducing the signal level on the one of those lines having the smaller voice signal level, and means for coupling voice signals from the transmit and receive lines to the echo suppressor means for comparison, an improved apparatus for assuring continued transmission of the single frequency control signals comprising

passive circuit means connected to the receive line pair for preventing reduction of the control signal level when said echo suppressor means reduces the voice signal level on said receive line;

circuit means for separating the transmit line into electrically isolated "drop" and "line" sides;

means coupled to said drop and line sides of said transmit line for coupling an internally generated control signal to said line side of said transmit line whenever a control signal is present on said drop side of said transmit line; and

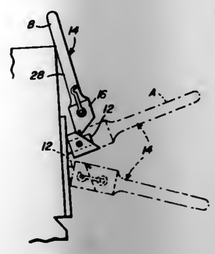
means responsive to said echo suppressor means for actuating said means for separating to couple a voice signal from said drop side to said line side of said transmit line whenever the scaled voice signal level on said receive line is lower than the scaled voice signal level on said transmit line.

4,115,669

RETRACTABLE BREAKER SWITCH TOGGLE HANDLE

Frank J. Cali, P.O. Box 279, Patterson, La. 70392

Filed May 25, 1977, Ser. No. 800,512
Int. Cl.² H01H 3/04
U.S. Cl. 200—331 **7 Claims**



1. A switch toggle operator comprising a sleeve member and a handle member, said sleeve member including first and second sections, and each section comprising first and second ends, a top portion and a bottom portion, said first end of said first section including means for telescoping over a switch toggle and said first end of said second section being integral with said handle member, said sections being joined together by a pivot means at an axis extending transversely of said sleeve member for relative angular displacement, each of said second ends including an oppositely beveled face extending from said top portion to said bottom section, said pivot means being disposed at one of said top portions and adjacent said beveled faces are closely juxtaposed when said sections are in end to end aligned position, said sleeve member including means to releasably retain said sections in said end to end aligned position.

4,115,670

ELECTRICAL SWITCH ASSEMBLY

Roy L. Chandler, Arlington, Tex., assignor to Geno Corporation, Arlington, Tex.

Continuation-in-part of Ser. No. 667,040, Mar. 15, 1976, abandoned, which is a division of Ser. No. 325,206, Jan. 19, 1973, Pat. No. 3,944,972. This application Apr. 26, 1977, Ser. No. 791,063
Int. Cl.² H01H 3/00, 15/00
U.S. Cl. 200—5 R **14 Claims**

1. Switching apparatus comprising:

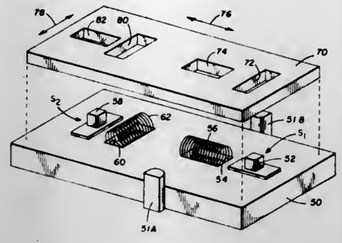
(a) a fixed base;

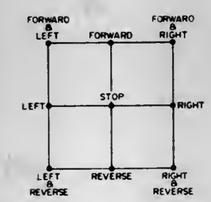
(b) a first slide switch characterized as a single-pole, double-throw switch which is mounted at one end of said base, and a second single-pole, double-throw slide switch mounted at the other end of the base, and the second switch being mounted in a direction which is perpendicular to the first switch, and both of said slide switches having projecting arms by which the switches are activated;

(c) a movable plate juxtaposed over said base, said plate having two spaced recesses into which the projecting arms of the two slide switches are fitted, and said recesses being sized such that movement of the plate along one axis will activate one of the slide switches and movement along an orthogonal axis will activate the other slide switch; and

(d) structural means against which a manual force may be

applied to the movable plate, so as to slide the plate with respect to the base and thereby move at least one of the





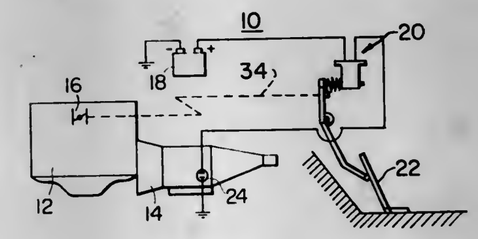
projecting arms, whereby at least one of the two slide switches will be activated.

4,115,671

CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION INCLUDING SWITCH WITH LOST MOTION ACTUATOR

Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1976, Ser. No. 753,792
Claims priority, application Japan, Dec. 27, 1975, 50/157067
Int. Cl.² H01H 3/16; B60K 21/00
U.S. Cl. 200—61.91 **5 Claims**



1. A control system for an automatic power transmission of a vehicle driven by an engine the output of which is controlled by the opening degree of a throttle valve operatively connected to the accelerator pedal, said transmission having a downshift circuit for providing a shift-down operation when energized and for further providing a shift-up operation when deenergized, said control system comprising:

a snap-action switch having first and second states thereof which alternately take place in a snap-action manner, said first state being a state in which said switch closes to energize said downshift circuit and said second state being a state in which said switch opens to deenergize said downshift circuit; and

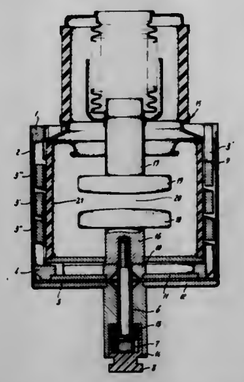
actuating means for permitting said snap-action switch to take said first state when said accelerator pedal is depressed beyond a relatively long predetermined distance corresponding to a first predetermined position of said throttle valve and to take said second state when said accelerator pedal is permitted to return to a partially depressed position corresponding to a second predetermined position of said throttle valve, the opening degree of said throttle valve at said first predetermined position being greater than that of the second predetermined position.

4,115,672

VACUUM SWITCH AND ELECTRO-MAGNETIC COIL ASSEMBLY THEREFOR

Joseph H. F. G. Lipperts, Hengelo, Netherlands, assignor to Hazemeijer B. V., Hengelo, Netherlands

Filed Feb. 18, 1977, Ser. No. 770,276
Claims priority, application Netherlands, Feb. 19, 1976, 7601690
Int. Cl.² H01H 33/66
U.S. Cl. 200—144 B **4 Claims**

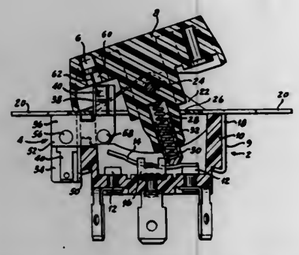


1. A vacuum switch comprising an evacuated electrically conducting cylindrical envelope having therein two contact elements which are relatively movable such that the two contact elements make electrical contact in the closed condition of the switch and are separated by an electrically insulating gap in the open condition of the switch, said gap being symmetrically disposed with respect to the central axis of said cylindrical envelope, an electro-magnetic coil disposed coaxially around said cylindrical envelope, said electro-magnetic coil being connected in series with said two contact elements when the switch is in the closed condition and producing an axial magnetic field in the region of current passage between the closed contact elements, the ends of the electro-magnetic coil being connected to respective electrically conducting joining rings one of which is connected to said electrically conducting cylindrical envelope coaxially surrounding the electro-magnetic coil and the other of which is connected to an electrically conducting disc in a central bore of which a first central conductor is mounted, one end of said cylindrical envelope extending beyond said other ring and being connected to a disc-shaped electrically conducting base, in a central bore of which a second central conductor is mounted, insulating material being provided between the electro-magnetic coil, said other joining ring and the envelope as well as between the electrically conducting disc and the disc-shaped base, one of the contact elements being connected to the first central conductor, whereas the other contact element and the second central conductor serve to connect the circuit to be controlled to the vacuum switch.

4,115,673
CURRENT COMMUTATION MEANS FOR ILLUMINATED SWITCH INDICATOR

Franklin E. Smith, Sullivan, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Feb. 16, 1977, Ser. No. 769,439
Int. Cl.² H01H 9/00
U.S. Cl. 200—315 **15 Claims**

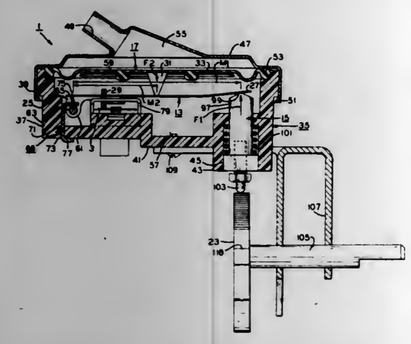


1. An electric switch comprising in combination:
a housing;
contact means mounted in said housing;
operator means movably mounted to said housing and having a portion internal of said housing for actuating said contact means and having a portion external of said housing;
an indicator lamp, including lamp terminal means, carried by said external portion of said operator means; and
attachment means mounted to said housing and supporting stationary supply terminals such that in response to movement of said operator means to a designated position said lamp terminal means and said supply terminals engage in sliding and wiping contact externally of said housing in the plane of said movement of said operator means to enable current commutation from said supply terminals to said indicator lamp for illumination of the latter when said operating means is in said designated position.

4,115,674
MOUNTING DEVICE

Stanley J. Budlane, Fulton; Dana W. Denny, and Ronald L. Hilty, both of Morrison, all of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 489,841, Jul. 18, 1974, Pat. No. 3,984,650. This application Apr. 19, 1976, Ser. No. 677,969
Int. Cl.² H01H 35/40
U.S. Cl. 200—329 **7 Claims**

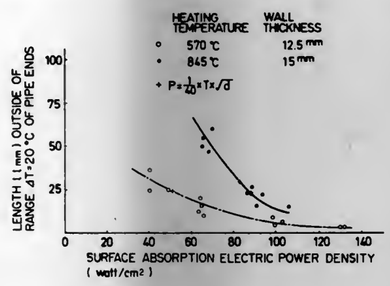


1. In a condition responsive electrical device having a housing, means movable in the housing between opposite positions for controlling a circuit through the device, means pivotally movable in the housing for effecting actuation of the controlling means, means for pivotally mounting the actuation means, means operable generally in response to the occurrence of a preselected condition for driving the actuation means to pivot it and conjointly move the controlling means toward one of its opposite positions, means selectively operable for biasing the actuation means against the driving means to also pivot the actuation means and effect conjoint movement of the controling means toward the other of its opposite positions, and a mounting device associated with the mounting means and the housing for the actuating means; the improvement wherein the mounting device comprises groove means in the housing for supporting the mounting means including an open side, and a pair of opposed means intersecting with said open side for abutment with the mounting means so as to generally constrain its movement therebetween, and means removably arranged with the housing for displacement preventing engagement with the mounting means including means disposed geneally in overlaying relation with the mounting means for retaining it against displacement from the open side of said groove means between said abutment means, and means integral with said retaining means and extending through the housing into engagement with an exterior portion thereof for maintaining the overlaying relation of said retaining means with respect to the mounting means.

4,115,675
INDUCTION HEATING METHOD OF STEEL PIPE

Katsuhiko Narihara, Kimitsu; Hajime Nakasugi, Kisarazu, and Masanobu Yamaguchi, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Japan

Continuation-in-part of Ser. No. 603,626, Aug. 11, 1975, abandoned. This application May 31, 1977, Ser. No. 802,195
Int. Cl.² H05B 5/06
U.S. Cl. 219—10.41 **3 Claims**



1. A method for heating steel pipe by induction heating coils, while the pipe is travelling through said coils in the axial direction, which comprises:
(a) calculating the limit absorption electric power density Po (W/cm^2) by the following formula:

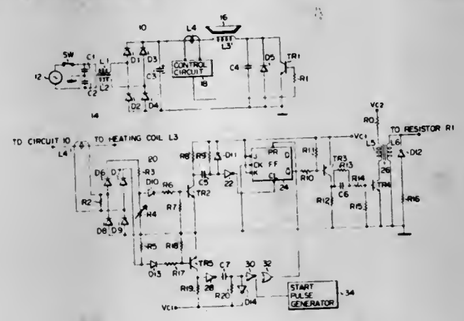
$$Po = 1/40 \times T \times \sqrt{d}$$

wherein T = heating temperature (° C.) and d = wall thickness (mm);
(b) attaching a power supply of low frequency to the induction heating coils;
(c) setting said power supply for maximum capacity to be impressed on said induction heating coils, and
(d) heating the steel pipe as it is travelling through said induction heating coils heated by said power supply, at such speed as to permit the steel pipe to be heated to the desired temperature, and heating the steel pipe with the set power if the absorption electric power density P by the set power is $P \geqq Po$, and heating the steel pipe by shortening the effective length of the induction heating coils to obtain $P \geqq Po$ if $P < Po$; thereby causing the difference in the temperature between the ends and the central portion of the steel pipe in the axial direction to be no greater than about 20° C.

4,115,676
INDUCTION HEATING APPARATUS

Iwao Higuchi, Ayase, and Takashi Fujita, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,116
Claims priority, application Japan, Feb. 10, 1976, 51-13541; Feb. 10, 1976, 51-13542; Feb. 10, 1976, 51-13543; Feb. 10, 1976, 51-13544; Feb. 10, 1976, 51-13545; Jul. 27, 1976, 51-89470
Int. Cl.² H05B 5/04
U.S. Cl. 219—10.49 R **17 Claims**



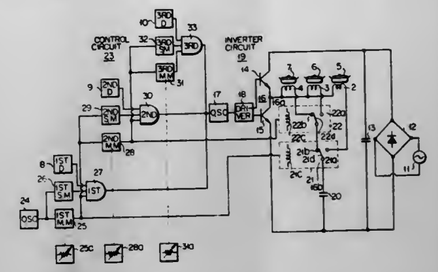
1. An induction heating apparatus comprising first and second DC power source terminals, a series circuit connected between the first and second DC power source terminals and including a series circuit of a heating coil and capacitor, unidirectional means connected in parallel with the capacitor and in a polarity-reversed relation to the first and second DC power source terminals, first switching means connected in parallel with the capacitor, a first current detection means for detecting a current through the heating coil, and a first control circuit for controlling the switching means in response to an output signal of the current detection means by supplying a first output signal to cause the switching means to be rendered nonconductive when the current detection means detects that a first current flowing in a predetermined direction through the heating coil and the switching means in the conductive state reaches a first predetermined value and supplying a second output signal to cause the switching element to be rendered conductive when the current detection means detects that a second current flowing in a direction opposite to said predetermined direction through the heating coil and the unidirectional means reaches a second predetermined value.

4,115,677
INDUCTION HEATING APPARATUS

Hideo Yamamura, Nagoya; Katsuharu Matsuo, Aichi, and Nobuyuki Nagai, Nagoya, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 729,428, Oct. 4, 1976, abandoned. This application Jan. 18, 1978, Ser. No. 870,583
Claims priority, application Japan, Oct. 2, 1975, 50/119181; Aug. 16, 1976, 51/97030
Int. Cl.² H05B 5/04
U.S. Cl. 219—10.49 R **8 Claims**

1. An induction heating apparatus comprising:
an inverter circuit;
a plurality of output coils for induction heating;
an output coil selection circuit for selectively connecting said each output coil to the output terminal of said inverter circuit
a control circuit for driving said output coil selection circuit and said inverter circuit so as to cyclically supply an output of said inverter circuit to selected one of said output coils for each predetermined time of a predetermined cycle;

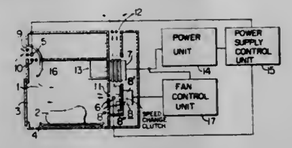


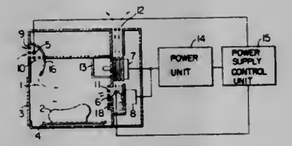
a plurality of output adjusting devices coupled to said control circuit and adapted to set an output period of said each output coil which is included in said predetermined cycle to a desired time period.

4,115,678
MICROWAVE OVEN

Hajime Tachikawa, and Kenji Satoh, both of Yokohama, Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

Filed Feb. 25, 1977, Ser. No. 771,914
Claims priority, application Japan, Feb. 26, 1976, 51-21957[U]
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 B **12 Claims**





1. A microwave oven comprising:
a casing constituting a heating chamber for accommodating an object to be heated;
a high-frequency energy generator operative to generate high-frequency energy and feeding it to said heating chamber;
means for ventilation of air in said heating chamber, said ventilation means including a ventilation path constituted in part by the space of said heating chamber, said high-frequency energy generator being disposed on a part of said ventilation path which is outside of said heating chamber;
first heating time control means for automatically controlling the heating time for an object to be heated, said first heating time control means including temperature sensor means for sensing at least one of temperatures of the air within said heating chamber and of the air drawn out of said heating chamber and means for controlling said high-frequency energy generator to change the amount of supply of the high-frequency energy from said generator when the temperature sensed by said temperature sensor means reaches a predetermined value;
second heating time control means for manually controlling the heating time for an object to be heated;
means for selectively actuating said first and second heating

time control means to change the heating time control mode between an automatic and a manual control mode; and

means for varying the amount of ventilation achieved by said ventilation means in accordance with the heating time control mode selected by said selectively actuating means.

4,115,679

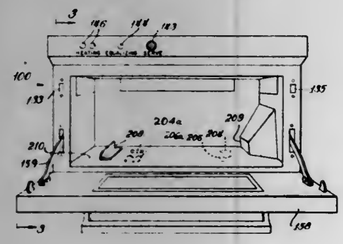
METHOD FOR AUTOMATICALLY HEATING VARIABLE NUMBERS AND SIZES OF FOOD ITEMS OR THE LIKE, IN AN ELECTROMAGNETIC OVEN

Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 380,187, Jul. 18, 1973, Pat. No. 3,854,022, which is a continuation-in-part of Ser. No. 300,763, Oct. 25, 1972, Pat. No. 3,936,626. This application Sep. 9, 1974, Ser. No. 504,567

Int. Cl.² H05B 9/06

U.S. Cl. 219—10.55 M **12 Claims**



1. A method of heating items using electromagnetic energy supplied to an oven under the control of an energy sensing means a magnetic characteristic of which changes in response to the absorption of a predetermined amount of electromagnetic energy comprising the steps of:

subjecting said sensing means to a given thermal environment outside said oven for a sufficient length of time to adjust the temperature thereof to a predetermined value;

thereafter exposing the items and the means for sensing to the electromagnetic energy in said oven; and

terminating said exposure in response to a change in said characteristic of said sensing means.

4,115,680

APPARATUS FOR PROVIDING TEMPERATURE EQUALIZATION CYCLES FOR A MICROWAVE OVEN

Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 574,430, May 5, 1975, Pat. No. 3,999,027. This application Jun. 4, 1976, Ser. No. 692,741

Int. Cl.² H05B 9/06

U.S. Cl. 219—10.55 B **6 Claims**

1. In an electromagnetic oven, the combination of:

a cavity in which items to be heated are placed;

means for supplying electromagnetic energy to said cavity;

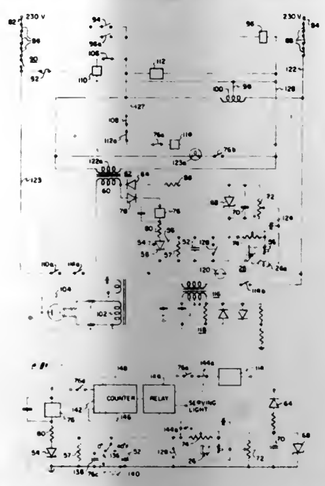
energy level detecting means for instantaneously developing an electrical signal proportional to the level of electromagnetic energy in said cavity;

control means having a first state in which electromagnetic energy is supplied to said cavity by said supply means and a second state in which said supply means is prevented from supplying energy to said cavity;

means for placing said control means in said first state;

means for integrating said electrical signal and actuating said control means to said second state when said integrated electrical signal reaches a predetermined value; and

means for establishing a holding cycle after said integrated electrical signal reaches said predetermined value in which holding cycle the rate at which said electrical signal is integrated is substantially increased so as to supply short bursts of microwave energy to the item in the cavity after it has been initially heated therein.



4,115,681

METHOD AND APPARATUS FOR CUTTING CLOTH

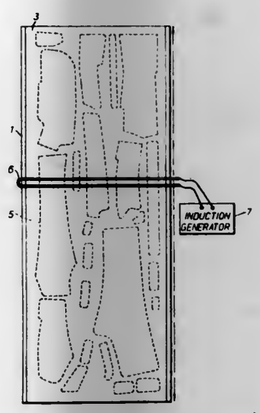
John Charles Burley, 47a Southwick St., Southwick, Brighton, Sussex, England

Division of Ser. No. 529,000, Dec. 2, 1974, Pat. No. 4,007,349, which is a continuation-in-part of Ser. No. 442,582, Feb. 14, 1974, abandoned. This application Nov. 5, 1976, Ser. No. 739,295

Claims priority, application United Kingdom, Feb. 14, 1973, 7166/73

Int. Cl.² H05B 5/08

U.S. Cl. 219—10.57 **8 Claims**



1. Apparatus for cutting out a section of cloth comprising:

an electrically conductive strip element bent into the shape of a section to be cut,

cloth support means adapted to support a piece of cloth,

mounting means locating said strip element with one edge adjacent to the plane of said cloth,

an induction heating electrode positioned adjacent the side of said cloth remote from said element and adapted to heat a part only of said edge,

energy source means connected to supply high frequency electrical energy to said electrode to heat the part of the strip element edge closest thereto to a temperature sufficient to sever the cloth, and

means to provide relative movement of said element and said electrode to progressively heat said edge to thereby sever said cloth section in a progressive manner by contact with the heated edge.

4,115,682

WELDING OF GLASSY METALLIC MATERIALS

Sheldon Kaveah, Whippany, and Gerald R. Bretts, Livingston, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 24, 1976, Ser. No. 744,658

Int. Cl.² B23K 11/16

U.S. Cl. 219—118 **6 Claims**

1. A process for welding at least two metal bodies together, at least one of which comprises a metallic material that is at least 50% glassy, comprising

(a) clamping overlapped portions of the bodies between electrodes and applying a clamping force to the overlapped portions;

(b) passing an electrical current having a rapid decay such that at least 90% of the energy is delivered in less than 4×10^{-3} sec through the bodies sufficient to melt at least a portion of one of the bodies; and

(c) extracting heat from the bodies through the electrodes to cool the bodies at a rate of at least 10^{5}° C./sec by employing high conductivity electrodes having a thermal conductivity of at least about 0.30 cal/sec/cm²/° C. to form a weld nugget having a high shear strength which is at least 25% of the tensile strength of the body having the lowest tensile strength.

4,115,683

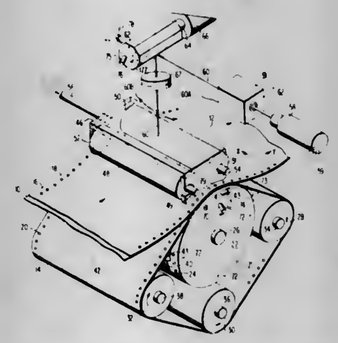
LASER PIERCING OF MATERIALS BY INDUCED SHOCK WAVES

Kendall Clark, and Milton R. Shapiro, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 533,362, Dec. 16, 1974, abandoned. This application Apr. 6, 1977, Ser. No. 785,270

Int. Cl.² B23K 9/00

U.S. Cl. 219—121 L **9 Claims**



1. Apparatus for perforating a material comprising:

a. means for positioning said material in accurate registration in a work area;

b. a gas under pressure to be supplied to said work area;

c. means for confining said pressurized gas within the work area comprising a chamber with the material to be perforated forming a wall of said chamber;

d. a laser source and means for directing said laser beam onto said work area; said beam being periodically operative to ionize said gas above the area of said material, and generating a shock wave, said compressed gas confining the shock wave and directing it towards the material; and

e. means for removing the debris from the work area wherein the means for confining said pressurized gas comprises:

a plurality of rollers resting on said material and adapted for rotation as the material passes through the work area thereby keeping said chamber in a stationary position; and

a window to transmit said beam.

4,115,684

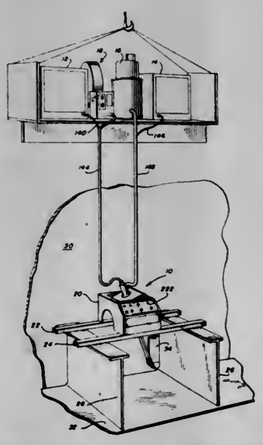
PORTABLE, PROGRAMMABLE MANIPULATOR APPARATUS

Torsten H. Lindbom, Brookfield, Conn., assignor to Unimation, Danbury, Conn.

Filed Jun. 17, 1976, Ser. No. 696,903

Int. Cl.² B23K 9/00

U.S. Cl. 219—124.22 **33 Claims**



1. A portable welding system for use in shipbuilding and the like, comprising a frame, means for clamping said frame in position above a predetermined work area, a manipulator arm pivotally mounted in said frame for movement in a plurality of axes and having an end portion extending into said work area, motive means for moving said arm in each of said axes, a welding gun positioned on said end of said arm, means for disabling said motive means so that said arm may be manually moved over a desired welding path in said work area, means operative during said manual movement of said arm over said desired welding path for recording a series of digital signals corresponding to the position of said arm in each of said axes at different points along said desired welding path, and playback means controlled by said recorded digital signals for controlling said motive means to move said welding gun over said desired welding path.

4,115,685

RESISTIVE HEATING OF ELONGATED STOCK

Friedrich-Hans Grandin; Werner Fritsch, both of Ratingen, and Günter Wengenrod, Mülheim, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 1, 1977, Ser. No. 812,337

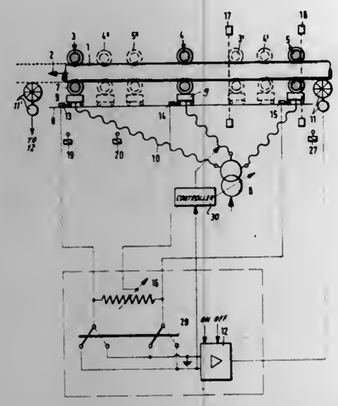
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629911

Int. Cl.² C21D 9/62

U.S. Cl. 219—155 **6 Claims**

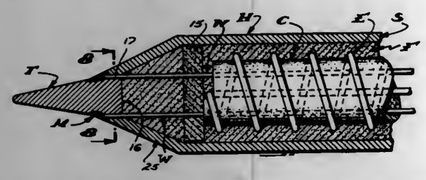
1. Apparatus for resistive heating of elongated stock such as tubes, rods, wires, etc., comprising:

a plurality of electrodes respctively in sliding or rolling contact with the stock;
means connected for feeding current to the electrodes for passage through the stock between the electrodes;
a plurality of carriages respectively for individually mounting all of the electrodes of the plurality;
drive means for each carriage for moving the respective carriage along the stock and into the different positions corresponding to differences in spacings between the electrodes of the pluralities;
means responsive to entering and leaving of a piece of stock; and



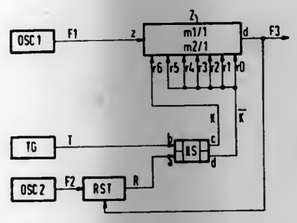
means operated by said responsive means for controlling the drive means to obtain respectively an increasing of all the spacings between the electrodes as a piece of stock enters the apparatus, whereby a first one of the carriages carrying an electrode being the last one to make contact with the piece of stock, tracks the front end of the stock, and to obtain a decreasing of all the spacings between the electrodes as the piece of stock leaves the apparatus, whereby a last one of the carriages carrying an electrode being the first one to disengage from the piece of stock, tracks the rear end of the stock.

4,115,686
CARTRIDGE HEATER WITH IMPROVED THERMOCOUPLE
David E. Williams, and Edwin D. Hoyt, both of Hemet, Calif., assignors to Amark Industries, Inc., San Jacinto, Calif.
Continuation-in-part of Ser. No. 668,236, Mar. 3, 1976, Pat. No. 4,010,351. This application Feb. 18, 1977, Ser. No. 769,865
Int. Cl.² H05B *3/80*
U.S. Cl. 219—523 **11 Claims**



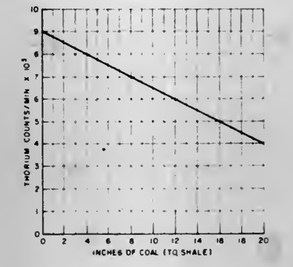
1. A cartridge heater with improved thermocouple comprising an elongate tubular, cylindrical metal sheath with open front and rear ends, an elongate electric and heat conducting metal plug with a rearwardly disposed rear end in tight heat conducting contact within and closing the front end of the sheath, a filler of dielectric material in the sheath rearward of the plug and an elongate resistance wire element supported by said filler, said plug having a pair of circumferentially spaced, elongate, radially outwardly opening longitudinal grooves cooperating with the sheath to define radially spaced longitudinal passages opening at the front of the sheath and at the rear end of the plug, a pair of elongate thermocouple wires extending longitudinal in the sheath and supported by said filler, said wires having front end portions in tight heat and electric conducting engagement in the passages and electrically contacting said plug at said rear end thereof, whereby said rear end of the plug establishes a thermocouple junction between the wires, weld means sealing between the plug and sheath, and sealing said passages, conductors for said wires and elements extending freely from the rear end of the sheath and means sealing said rear end of the sheath and about said conductors.

4,115,687
CIRCUIT ARRANGEMENT FOR CONTROLLING THE PULSE REPETITION FREQUENCY OF A SIGNAL
Günter Boese; Ernst Neudorfer, both of Munich, and Gero Schollmeier, Gauting, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Apr. 11, 1977, Ser. No. 786,214
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616398
Int. Cl.² H03K *21/36*
U.S. Cl. 235—92 DM **7 Claims**



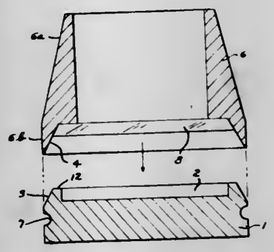
1. A circuit arrangement for regulating the pulse repetition frequency of a controlled signal in dependence upon the value of the pulse repetition frequency of a controlling signal comprising:
a presettable binary counter, the initial and end count values of which are settable responsive to signals coupled to control inputs therein, said binary counter including reset means for resetting said binary counter to said initial count valve when said end count value is reached,
first source means for supplying an input signal having a first pulse repetition frequency to said binary counter for frequency division therein to produce said controlled signal,
second source means for producing a controlling signal having a second pulse repetition frequency,
control circuit means for producing a regulating signal indicating the difference between the pulse repetition frequencies of said controlled and controlling signals,
clock generator means for producing a timing signal,
bistable trigger stage having inputs connected to receive said timing and regulating signals and for assuming one of two states responsive to the values of those signals, a trigger output signal indicating the state of said bistable trigger stage being produced, and
means for connecting said trigger output signal to at least one of said control inputs of said binary counter whereby in dependence on the binary value of said trigger output signal and on which of said control inputs is selected either the initial or the end count of said binary counter is varied to thereby produce a too high or to low pulse repetition frequency of said controlled signal.

4,115,688
MINING AND DRILLING CONTROL OF DISTANCE TO THE COAL-SHALE INTERFACE - THORIUM MEASUREMENT BY GAMMA SPECTROMETRY
Walter H. Fertl, Houston, Tex., and Preston L. Gant, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Mar. 31, 1977, Ser. No. 783,091
Int. Cl.² G01V *5/00*; E21B *47/00*
U.S. Cl. 250—253 **10 Claims**



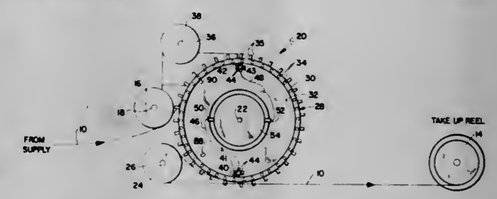
1. A method for sensing distance to shale from coal deposits comprising (1) determining the amount of gamma emission from thorium contained in shale surrounding the coal deposit; (2) measuring the amount of said gamma emission from thorium at points in the coal deposit, the distance from said points to the shale being predetermined; (3) correlating the ratio of gamma emission from (1) and (2) to provide a gamma emission to coal thickness relationship for the coal deposit; and (4) closely approximating distance from subsequent measuring points in the coal deposit to surrounding shale using the relationship determined in (3).

4,115,689
LEVELING DEVICE FOR FORMING X-RAY SPECIMEN
Vann Y. Won, 6697 Gloria Dr., Sacramento, Calif. 95831
Filed Jul. 6, 1977, Ser. No. 813,392
Int. Cl.² H01J *37/20*
U.S. Cl. 250—272 **2 Claims**



1. A specimen holder and loader therefor for use in the preparation of specimens for X-ray fluorescence analysis, comprising:
a. a cylindrical holder having a chamfered end with a shallow cylindrical specimen cavity of such diameter as to leave a flat rim between the cavity edge and the chamfer, and having a circumferential groove between the chamfer and the other end; and
b. a loader in the form of a circular body having a maximum outside diameter at one end equal to the outside diameter of the holder and a somewhat smaller minimum outside diameter at the other end, and having a circular recess in its larger end defined by a tapered wall congruent with said chamfer and a bottom in the form of a flat plate;
c. said loader operating when pressed over said holder, after said cavity has been slightly overfilled with the specimen material and covered with a thin plastic film, to level the specimen by expelling excess material over said rim and also to facilitate the installation of an elastic O-ring in said groove for retaining the film.

4,115,690
BACKSCATTER INSTRUMENT FOR MEASURING THICKNESS OF A CONTINUOUSLY MOVING COATED STRIP OF SUBSTRATE MATERIAL
Jacques Weinstock, Flushing; Derek Lieber, North Merrick, and William Dunning Hay, Peekskill, all of N.Y., assignors to Unit Process Assemblies, Inc., Syosset, N.Y.
Filed Jun. 3, 1977, Ser. No. 803,250
Int. Cl.² G01N *23/00*
U.S. Cl. 250—308 **4 Claims**

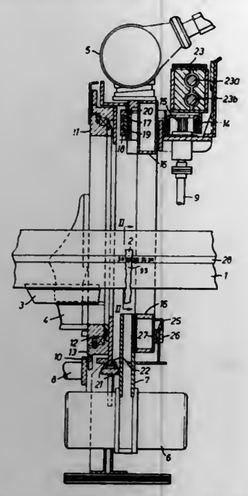


1. A backscatter thickness measuring device for measuring the thickness of a coating on a strip of substrate material moving at a predetermined speed from a feed supply to a take-up location comprising:
a measurement wheel having a rim and an axle of rotation and being rotated at a speed of rotation such that the tangential speed of a point on the rim is equal to the predetermined speed of the moving coated strip of substrate material;
means for feeding the coated strip of substrate material into frictional engagement with an outer portion of the rim in a direction such that the direction of movement of the coated strip of substrate material corresponds to the direction of rotation of the rim whereby a point on the rim of the measurement wheel and an adjacent point on the coated strip of substrate material are stationary relative to one another while the measurement wheel is rotating;
probe means mounted on the rim of the measurement wheel for irradiating the coating on the coated substrate material and detecting the backscattered radiation; and
counting and measurement means connected to the probe means for counting the backscattered radiation and determining the thickness of the coating in accordance with the backscatter count.

4,115,691
APPARATUS FOR IDENTIFYING COMPUTERIZED AXIAL TOMOGRAPHS
William Henry Oldendorf, Los Angeles, Calif., assignor to EMI Limited, Middlesex, England
Filed Dec. 8, 1976, Ser. No. 748,720
Claims priority, application United Kingdom, Dec. 23, 1975, 52525/75
Int. Cl.² G03B *41/16*; G03C *9/00*; A61B *6/00*
U.S. Cl. 250—312 **7 Claims**

1. Radiographic apparatus including: source means for projecting penetrating radiation through a slice of the body of a patient along a plurality of substantially linear paths; detector means for detecting the radiation emergent from the body along each of said paths and for producing output signals indicative of the absorption suffered by said radiation on traversing said paths; a stack of similar indicium members disposed adjacent said body, each of which is formed of or includes material which absorbs said radiation to an extent which differs from the absorption of matter surrounding the member, said members being secured together to form a rod; and a

contact member associated with said rod and disposed to contact the under-arm of said patient and thereby to cause one



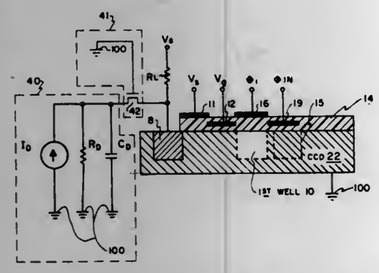
of said indicium members to intercept said radiation and thereby be associated with said slice.

4,115,692

SOLID STATE READOUT DEVICE FOR A TWO DIMENSIONAL PYROELECTRIC DETECTOR ARRAY

Raymond S. Balcerak, Alexandria, and Lynn E. Garn, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 4, 1977, Ser. No. 793,688
Int. Cl.² G01J *1/00*; G01T *1/22*
U.S. Cl. 250—338 **8 Claims**



1. A solid state pyroelectric detector readout device comprising:

a readout chip semiconductor substrate having charge coupled device transfer means deposited on one surface thereof, wherein said charge coupled device transfer means is comprised of an array of solid state readout charge coupled devices having individual source inputs;

a pyroelectric retina comprised of a two dimensional pyroelectric detector array that has a scene modulated thereon for absorbing infrared radiation and producing a signal charge pattern therefrom during thermal modulation periods, wherein each of the pyroelectric detector elements of the two dimensional pyroelectric detector array is directly interfaced with one of the individual source inputs of said array of solid state readout charge coupled devices; and

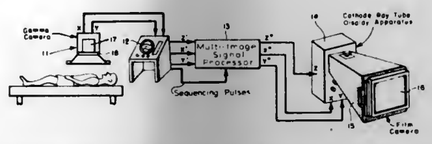
interfacing means between said two dimensional pyroelectric detector array and said individual source input wherein the intergration capability of said charge coupled device transfer means allows short thermal modulation periods for minimizing the pyroelectric detector signal losses through thermal conduction to said semiconductor substrate for eliminating the scene background flux and maximizing the dynamic range of said readout device.

4,115,693

SIGNAL PROCESSING SYSTEM FOR A GAMMA CAMERA

Neal McGrath, Alexandria, Va., assignor to Illinois Nuclear Electronics, Inc., Addison, Ill.

Filed Mar. 8, 1976, Ser. No. 664,631
Int. Cl.² G01T *1/20*
U.S. Cl. 250—363 S **6 Claims**



1. In a system for recording the distribution of a radioactive substance on film, said system including

a camera responsive to at least a portion of the emissions impinging from said substance for generating position-indicative output signals each including X, Y, and Z components of predetermined momentary duration upon each impingement;

a storage-display apparatus including a cathode-ray tube having a display screen and circuit means responsive to said output signals for producing spot images on said display screen corresponding to the locations of each of said impingements; and

a film camera for exposing a frame of film to said display screen, said film responding to application of a predetermined quantum of light from said spot images to record said spot images, the cumulative recording of said spot images on said film illustrating the distribution pattern of said radioactive substance; the improvement comprising: a signal processor including first and second sample and hold circuits disposed between said camera and said display apparatus and responsive to an applied control signal, and control circuit means responsive to said Z component for generating a control signal for application to said first and second sample and hold circuits to extend the duration of said X and Y components from said camera to respective first and second predetermined intervals greater than said momentary duration of said X and Y components, and for extending the duration of said Z component to a third predetermined interval greater than said predetermined momentary duration of said Z component but less than said first and second predetermined intervals, whereby the duration of said spot images on said display screen is extended to said third predetermined interval to allow production of said predetermined quantum of light by said cathode-ray tube at a reduced beam current for improved resolution.

4,115,694

SCINTILLATION CAMERA SYSTEM WITH IMPROVED MEANS FOR CORRECTING NONUNIFORMITY IN REAL TIME

Kai Lange, Vedbaek; Verner Toefting, Nivaa, both of Denmark; Ernest J. Wiesen, Wauwatosa, and Robert R. Lijewski, Milwaukee, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

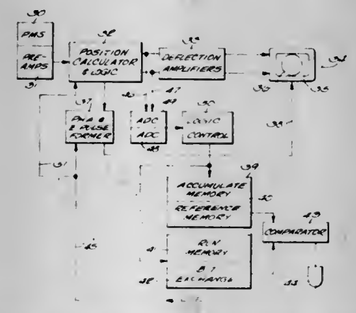
Filed Apr. 13, 1977, Ser. No. 787,122
Int. Cl.² G01T *1/20*
U.S. Cl. 250—363 S **11 Claims**

1. In a scintillation camera system comprising means responsive to intercepting radiation over a relatively large area field by producing scintillation events, means for detecting said events and operative to produce corresponding electric signals, means responsive to said electric signals by producing signals which represent the positions of said events, means responsive to said signals being within predetermined limits by producing *z* signals, display means responsive to occurrence of *z* signals by producing intensity changes, respectively, corresponding substantially with the positions of said events,

improved means for correcting for nonuniformity between the positions of said events and their positions on said display means, comprising:

accumulate memory means operative during an accumulate mode to accumulate and store in binary digital form counts of said events occurring in small areas, respectively, within said large area field when a substantially uniform radiation field is presented to said means for detecting radiations,

means for terminating counting of said events when the counts corresponding with at least one of said small areas



attains a predetermined number and when counts corresponding with others of said small areas may be lower than said predetermined number,

run memory means operative during a run mode to store in binary digital form counts of said events occurring in small areas within said field corresponding with the aforesaid small areas when a body containing a radioactive substance is presented to said means for detecting radiation,

comparator means operative to continuously compare counts corresponding with counts accumulated for said small areas during said accumulation mode with counts for corresponding areas during said run mode and operative to produce a number of correlation signals substantially equal to the difference between the numbers of counts in said memories for each of said areas, respectively, and

said *z* signal producing means responding to said correction signals by causing an intensity change in a corresponding area on said display means.

4,115,695

GANTRY FOR COMPUTED TOMOGRAPHY

Arnold Lloyd Kelman, Waukesha, Wis., assignor to General Electric Company, Schenectady, N.Y.

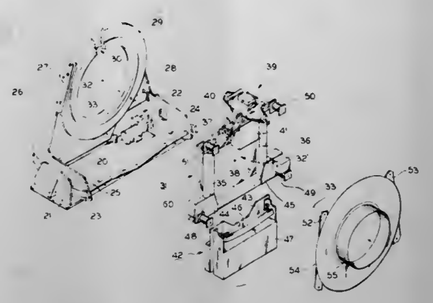
Filed Feb. 25, 1977, Ser. No. 772,188
Int. Cl.² A61B *6/02*; G01N *23/08*
U.S. Cl. 250—445 T **9 Claims**

1. X-ray tomographic apparatus comprising:

frame means and means for supporting said frame means for movement along a curved path about a laterally directed virtual axis to thereby enable said frame means to be tilted between opposite angles with respect to vertical,

rotatable base means supported for rotation relative to said frame means about a longitudinal axis which is perpendicular to and intersects said laterally directed virtual axis,

x-ray source and x-ray detector means mounted on said rotatable means on opposite sides, respectively, of said longitudinal axis for jointly orbiting about an examination body which may be disposed along said longitudinal axis, and



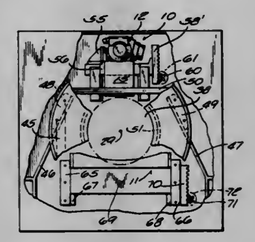
means for driving said frame means along said curved path to thereby effect tilting of said frame means about said virtual axis of rotation.

4,115,696

COMPUTED TOMOGRAPHY SCANNER

John Compton Truscott, Brookfield, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,387
Int. Cl.² A61B *6/00*; G01N *23/08*
U.S. Cl. 250—445 T **4 Claims**



1. Apparatus for examining a layer in a body with X-radiation comprising:

means rotatable about an axis on which an examination body may be disposed,

a source for projecting a fan-shaped beam of X-radiation originating substantially from a point, said beam being coincident with said layer and having boundary rays that diverge at a fixed angle from said point in the plane of said layer,

a generally circumferentially distributed array of X-ray detector means on a side of said axis opposite from said source disposed across said diverging beam for detecting radiation between said boundary rays after said radiation has passed across said axis, and

means for mounting said source and detector means on said rotatable means for orbiting jointly about said axis and means operable to shift said source and detector means jointly in the plane of said layer to thereby enable disposing a layer regardless of its width substantially tangentially to said boundary rays so that the projection of said layer will cover substantially the whole array of detector means.

4,115,697

X-RAY TUBE COOLING ARRANGEMENT

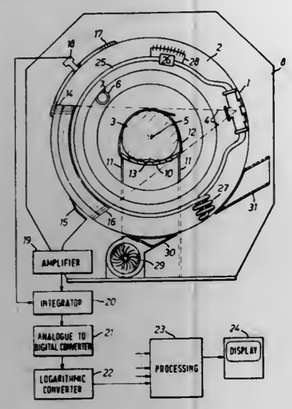
Godfrey Newbold Hounsfield, Newark, and Anthony Michael Williams, Iver, both of England, assignors to EMI Limited, Hayes, England

Filed May 17, 1977, Ser. No. 797,837

Claims priority, application United Kingdom, Jun. 2, 1976, 22719/76

Int. Cl.[2] A61B 6/00; G01N 23/08

U.S. Cl. 250—445 T 9 Claims



1. A radiographic apparatus, for examining a region of the body of a patient, including: a support movable around the body; an X-ray tube mounted on said support to direct radiation through the body; a coolant circuit, connected to said tube and mounted on said support, containing coolant, which can circulate therein, and including a radiative surface at which heat can be removed from the coolant; means for moving the support, and with it the tube and coolant circuit, around the body from a defined rest position, to direct the radiation therethrough along a plurality of different paths thereafter returning to the rest position; and cooling means disposed to direct further coolant at the radiative surface when the support is in said rest position to remove heat from said first mentioned coolant.

4,115,698

RADIOGRAPHY

Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Limited, Middlesex, England

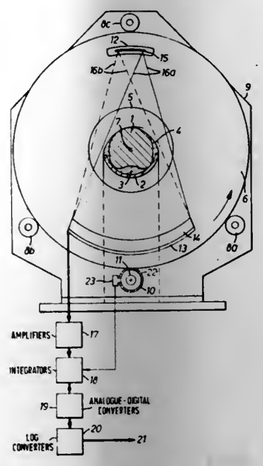
Filed Oct. 19, 1976, Ser. No. 733,941

Claims priority, application United Kingdom, Oct. 25, 1975, 43984/75

Int. Cl.[2] G03B 41/16

U.S. Cl. 250—445 T 7 Claims

1. Radiographic apparatus comprising: means defining a patient position; a source of a substantially planar, fan-shaped spread of X-radiation; means supporting said source so that said radiation propagates through a region of said patient position along a plurality of diverging beam paths; detecting means, also supported by said supporting means, including a plurality of detector devices each adapted to detect radiation emergent from said region along a respective one of said beam paths; scanning means for moving said supporting means, and with it said source and said detecting means, angularly around said patient position causing said source to project said radiation through said region along further beam paths and causing said detecting means to detect radiation emergent from said region along said further beam paths, each detector device producing distinguishable electrical signals relating to a plurality of said beam paths during movement of said support through a substantial angle; means causing the source of said spread of radiation to repeatedly shift with respect to said detecting means during said angular movement of the supporting means though said substantial angle so that each detector device detects sequentially, during each shift, radiation emerging from said region along several mutually inclined beam paths; and means for combining electrical signals produced by different detector devices for beam paths which pass through



substantially the same part of said region to provide composite electrical signals, each of which relates to a composite beam path passing through said part of the region, for processing to derive a representation of the distribution of absorption of the radiation in said region.

4,115,699

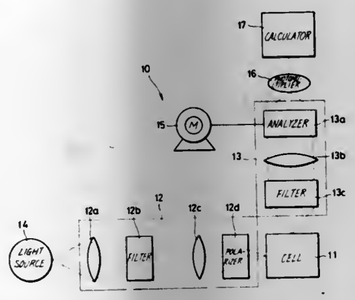
APPARATUS FOR SENSITIVE DETECTION AND QUANTITATIVE ANALYSIS OF BIOLOGICAL AND BIOCHEMICAL SUBSTANCES

Toshinobu Mizuta, Takasaki, and Tooru Hayashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Nihon Kotai Kenkyujo, Japan

Filed Jun. 16, 1977, Ser. No. 807,153

Int. Cl.[2] G01N 21/38

U.S. Cl. 250—461 B 3 Claims



1. Apparatus for sensitively detecting and quantitatively analyzing biological and biochemical substances, which apparatus comprises: a cell for accommodating therein a test molecule labeled with a fluorescent dyestuff; an exciting optical system oriented in an X-axis or vertical direction relative to said cell for transmitting plane polarized light to excite said labeled molecule, said exciting optical system including a lens for transforming plane light originating from a light source placed in opposite relation to said cell in the X-axis direction, a filter for transmitting only monochromatic light out of the light passing through said lens, and a lens for collecting the monochromatic light from said transforming lens; a polarizing optical system oriented in a Y-axis or lateral direction relative to said cell for taking up fluorescent light emitted from said labeled molecule, said polarising optical system including a filter and a lens each for transmitting the fluorescent light only, and an analyzer for collecting parallel and perpendicularly polarized light from said molecule; a photomultiplier for measuring the fluorescence intensities of the parallel and perpendicularly polarized light; and a calculator for computing and converting the fluorescence intensities into the degree of polarization of said molecule.

4,115,700

HIGH DENSITY FUEL STORAGE RACKS

Malcolm Duane Groves, Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 4, 1977, Ser. No. 784,012

Int. Cl.[2] G21F 5/00

U.S. Cl. 250—518 16 Claims



1. An apparatus for the safe and compact storage of a plurality of nuclear fuel assemblies within a plurality of adjacent discrete neutron absorbing open-ended shields disposed in side-by-side relationship each one of which is adapted to perimetrically encircle one of each of the nuclear fuel assemblies, wherein the theoretical minimum safe separation distance between shields is known, comprising:

a. a plurality of said shields, each having at several positions along its entire perimeter a plurality of axially spaced, outwardly protruding ridges, the heights of which are approximately one-half said separation distance, whereby contact of the ridges on adjacent shields will prevent adjacent shields from coming closer together than said separation distance;

b. a plurality of shield end fittings one of each of which is attached to each end of each of said shields, having an open center cross-section at least as large as the open cross-section of said shields and having a polygonal perimeter with an outer dimension between opposite sides of said end fitting being at least equal to the perpendicular distance between the maximum heights of said ridges on opposite sides of said shields; and

c. means for securing firm and rigid contact between each of said end fittings and all immediately adjacent end fittings in side-by-side relationship therewith.

4,115,701

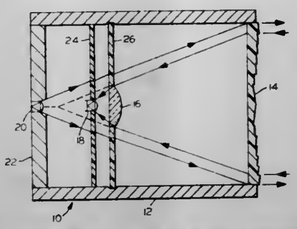
COAXIAL REFLEX PHOTOELECTRIC SCANNER

Robert C. Guichard, Normal, Ill., assignor to General Electric Company, New York, N.Y.

Filed Dec. 9, 1976, Ser. No. 749,187

Int. Cl.[2] H01L 9/00

U.S. Cl. 250—552 6 Claims



1. A coaxial reflex photoelectric scanner comprising:

(a) a housing;

(b) a first lens mounted with said housing;

(c) a photoelectric light source mounted in said housing to radiate toward one side of said first lens and produce parallel rays of light from the other side thereof;

(d) a second lens positioned within said housing in coaxial alignment with and between said first lens and said light source; and

(e) a photodetection device coaxially aligned and positioned between said light source and said second lens at a point of optimum absorption of light energy which is reflected back from an object and through said first and second lens.

4,115,702

DEVICE FOR MEASURING AT LEAST ONE DIMENSION OF AN OBJECT AND A METHOD OF OPERATING SAID DEVICE

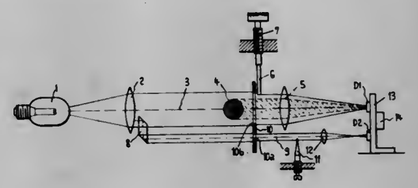
Peter Nopper, Lyss, Switzerland, assignor to Zumback Electronic AG, Orpund, Switzerland

Filed Apr. 25, 1977, Ser. No. 790,182

Claims priority, application Switzerland, May 5, 1976, 5607/76

Int. Cl.[2] G01N 21/30

U.S. Cl. 250—560 25 Claims



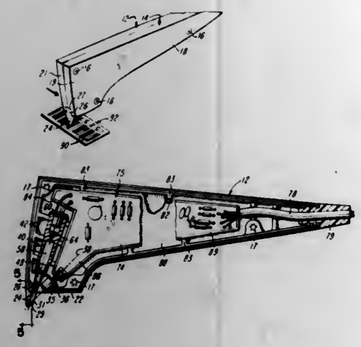
1. In a device for measuring at least one dimension of an object, comprising a light source, means defining two independent light channels for conducting light from said source to respective photo-electric transducers, means for adjusting the relative quantities of light transmitted by said channels, and a comparison circuit connected to the outputs of said transducers in order to compare the relationship between the intensities of illumination thereof, whereby when the object to be measured is introduced into one of said channels the dimension thereof can be determined in terms of the deviation of said relationship from a preset condition; the improvement wherein said photo-electric transducers are connected to the input of an amplifier of said circuit in parallel and with their polarity mutually reversed with respect to one another, and the said amplifier is provided with a negative feedback resistance connected to its output and arranged to compensate the difference between the electric currents of the said two transducers.

4,115,703

HAND HELD OPTICAL READING DEVICE

Bruce W. Dobras, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Nov. 8, 1976, Ser. No. 739,525
Int. Cl.[2] G06K 7/10
U.S. Cl. 250—568 20 Claims



1. A hand held optical reading device comprising a housing including a head portion extending from a handle portion adapted to be held in one hand, said head portion of said housing having a forward end surface, a tip member projecting downwardly from said head portion and having a bottom surface adapted to be passed across a predetermined code carried by an article, said tip member having a forward end surface generally coplanar with said forward end surface of said head portion of said housing, a light source supported within said head portion of said housing and positioned to project a light beam onto the code adjacent said bottom surface of said tip member, a lens supported within said head portion of said housing having an optical axis, a photosensing unit disposed on said optical axis of said lens and adapted to generate electrical signals corresponding to light interruptions reflected through said lens when passing said tip member across the code, said optical axis of said lens substantially intersecting said bottom surface of said tip member and being inclined relative to said forward end surfaces of said head portion and said tip member, and electronic amplifier means enclosed within said housing and connected to amplify the signals generated by said photosensing unit.

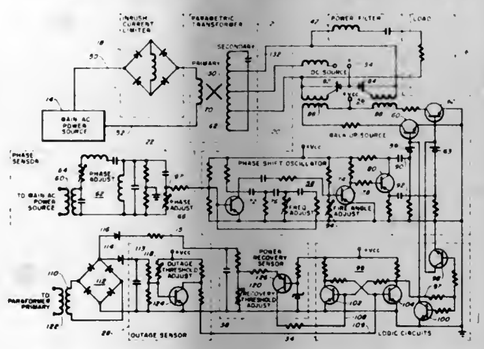
4,115,704

PARAMETRIC ENERGY COUPLED UNINTERRUPTIBLE POWER SUPPLY

Dennis M. Hannemann, Vienna, Va.; Kwang Ta Huang, Ventura, and Dallas M. Shiroma, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1977, Ser. No. 791,458
Int. Cl.[2] H02J 9/00
U.S. Cl. 307—64 11 Claims

1. An a-c power supply circuit comprising:
a. transformer means for furnishing alternating current power to a load, said transformer means transferring power only from a primary winding to a secondary winding; said load communicating with said secondary winding of said transformer means;
b. means for connecting a source of alternating current line power to said primary winding of said transformer means;
c. backup means for converting direct current power to alternating current power and furnishing said alternating current power to said secondary winding of said transformer means;
d. power outage sensing means associated with said backup means and responsive to said line power for providing a power outage control signal for energizing said backup means when said a-c line power drops below a first predetermined threshold level;
e. means for sensing the phase of said a-c line power and providing a phase control signal for controlling the phase of the a-c power generated by said backup means;
f. recovery sensing means for providing a recovery control signal for de-energizing said backup means when said a-c line power recovers to a second predetermined threshold level; said backup means including;
(1) an inverter circuit communicating with said secondary winding;
(2) means responsive to said phase control signal for driving said inverter circuit such that said inverter circuit generates a-c power in phase with said a-c line power;
(3) means responsive to said power outage control signal



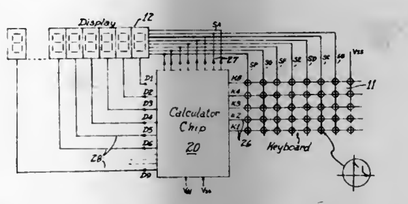
and said recovery control signal for energizing and de-energizing, respectively, said inverter circuit; said energizing and de-energizing means including:
(a) a bistable multivibrator responsive to said power outage control signal and to said recovery control signal, said bistable multivibrator assuming a first state when said power outage control signal is received and assuming a second state when said recovery control signal is received; and
(b) first and second energizing transistors, responsive to said first and second state of said bistable multivibrator and communicating with said inverter driving means, for activating said inverter driving means when said bistable multivibrator is in said first state and deactivating said inverter driving means when said bistable multivibrator is in said second state.

4,115,705

ELECTRONIC CALCULATOR WITH PUSH-BUTTON ON-OFF SYSTEM

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 14, 1976, Ser. No. 695,886
Int. Cl.[2] H03K 17/60
U.S. Cl. 307—140 3 Claims



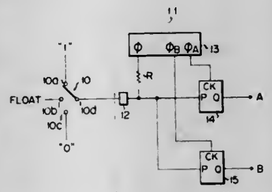
1. Power switch apparatus for a batteryoperated electronic calculator device having a plurality of pushbutton momentary contact keyswitches, a large-scale-integrated MOS semiconductor device coupled to the keyswitches by a plurality of conductors, electronic circuitry within the device for processing information entered by the keyswitches, a segmented multiple digit display, means for scanning inputs of the display with scan signals, the keyswitches being in a matrix of rows and columns, the columns of the keyswitches being actuated by said scan signals, comprising: a bistable latch circuit continuously powered by the battery, a semiconductor control element in the form of an MOS transistor responsive to the condition of the latch circuit and exhibiting a low impedance when the latch is in one condition and exhibiting a high impedance when the latch is in the other condition, coupling means connecting a first of the keyswitches to the latch circuitry to cause the latch circuit to switch to said one condition upon actuation of the push-button keyswitch, means connecting said electronic circuitry to the battery only through the semiconductor control element, coupling means connecting a second of the keyswitches to the latch circuit to cause the latch circuit to switch to the other stable state upon actuation of the associated push-button, said first and second keyswitches being on the same column, the column upon which the first and second keyswitches appears being actuated continuously by a fixed potential which is different from the potential of the scan signals.

4,115,706

INTEGRATED CIRCUIT HAVING ONE-INPUT TERMINAL WITH SELECTIVELY VARYING INPUT LEVELS

Tetsuo Yamaguchi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed May 31, 1977, Ser. No. 801,911
Claims priority, application Japan, May 31, 1976, 51-63063
Int. Cl.[2] H03K 19/20, 5/15
U.S. Cl. 307—209 6 Claims



1. An input integral circuit comprising one input terminal to which different levels of input signals are selectively supplied; a clock pulse generator having a first, a second and a third output from which a first, a second and a third clock pulse are generated respectively; a resistor connected between said input terminal and said first output of said clock pulse generator; and an output circuit portion at least including a first latch circuit having an input connected to said input terminal and a clock input connected to said second output of said clock pulse generator and a second latch circuit having an input connected to said input terminal and a clock input connected to said third output of said clock pulse generator, in which said output circuit portion generates outputs whose logical states correspond to different levels of input signals, respectively, which are selectively supplied to said input terminal.

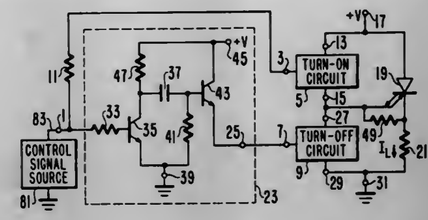
4,115,707

CIRCUIT FOR SINGLE-LINE CONTROL OF GTO CONTROLLED RECTIFIER CONDUCTION

Martin Aaron Kalfus, Morganville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,223
Int. Cl.[2] H03K 17/72
U.S. Cl. 307—252 C 5 Claims

1. In a circuit for operating a gate-turn-off controlled rectifier having a gate electrode, including turn-on circuit means having an input terminal receptive of a first control signal, and responsive thereto for applying an operating voltage to and supplying current to said gate electrode for turning on said gate-turn-off controlled rectifier, and turn-off circuit means having an input terminal receptive of a second control signal of the same polarity as said first control signal, and responsive thereto for applying a reference potential to and conducting current from said gate electrode, for turning off said gate-turn-off controlled rectifier, the improvement comprising:
a signal input terminal receptive of said first control signal;



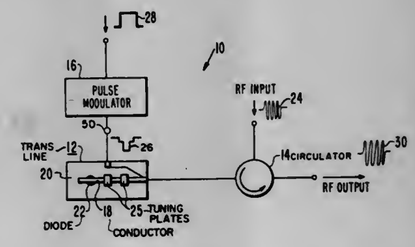
resistor means connected between said signal input terminal and the input terminal of said turn-on means; and
one-shot circuit means connected between said signal input terminal and said turn-off means, responsive to the trailing edge of said first control signal, for producing and applying said second control signal to the input terminal of said turn-off circuit means for a predetermined period of time, thereby permitting said turn-on circuit means and turn-off circuit means to be operated via control signals on a single control line, instead of individual control lines, respectively.

4,115,708

FAST-SWITCHING PULSE MODULATOR

Shing-Gong Liu, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 23, 1976, Ser. No. 708,219
Int. Cl.[2] H03K 5/01, 1/00, 3/335
U.S. Cl. 307—268 7 Claims



1. In a microwave system including a fast-switching pulse modulator for generating and applying an output signal having first and second current levels in response to a low-power input D.C. pulse to a microwave apparatus including an avalanche semiconductor diode having a threshold value at which said diode is capable of operating in a high efficiency mode at a predetermined operating current, said diode generating, in response to a concurrently applied pulsed RF input signal, a microwave pulsed RF output signal, said system further including means for applying said pulsed RF input signal to said diode, and means for isolating the D-C. input pulse from RF signals, said modulator comprising:
a transistor having base, collector and emitter electrodes, said base and emitter electrodes being connected in a circuit to form an input circuit for said transistor for receiving said low-power input D.C. pulse, and said collec-

tor and emitter electrodes being connected in an output circuit with said diode, said diode being connected to shunt said collector and emitter electrodes; and

means for biasing the input circuit of said transistor such that said transistor is in a non-conducting mode and such that said transistor responsive to said low power input D.C. pulse is switched to a first conducting mode at a saturated condition during application of each of said low-power input D.C. pulses, said transistor in said first conducting mode generating the first output current level of said output signal, said first output current level being lower than the level of said predetermined operating current of said diode;

whereby upon application of said concurrently applied pulsed RF input signal to said diode, said diode is triggered into the high efficiency mode of operation generating thereby said pulsed RF output signal and switching thereby said transistor to a second conducting mode generating said output signal at said second current level, said second current level being at least equal to said predetermined operating current of said diode, the rise time of said RF output signal being determined by the rise time of the output current from said first current level signal to said diode operating current level.

4,115,709

GATE CONTROLLED DIODE PROTECTION FOR DRAIN OF IGFET

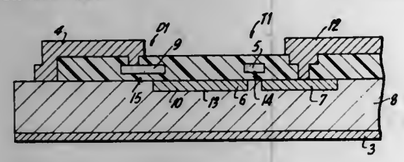
Yasukazu Inoue, and Masanori Kikuchi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 595,897, Jul. 14, 1975, abandoned. This application Feb. 15, 1977, Ser. No. 768,897

Claims priority, application Japan, Jun. 13, 1975, 50-71767; Jul. 16, 1974, 49-81471

Int. Cl.² H01L *27/04, 29/78, 29/90*

U.S. Cl. 307—304 **17 Claims**



1. An integrated circuit comprising a semiconductor chip including a semiconductor substrate, an insulated-gate field effect transistor having a source, a drain and a gate *p-n* junctions being respectively formed between said substrate and each of said source and drain, a plurality of bonding pads for external leads formed on said semiconductor chip, one of said bonding pads serving as an external lead for said transistor, and a protection device for preventing the gate insulator of said transistor from being destroyed by an excess electric field applied to said drain, said integrated circuit including means for connecting said protection device to said drain of said transistor, said gate being supplied with an input signal for said transistor, said drain being coupled with said one of said bonding pads, said source being supplied with a fixed voltage with respect to said substrate, said protection device including a gate-controlled diode having a *p-n* junction formed in said substrate, the breakdown voltage of said *p-n* junction of said gate-controlled diode being less than that of the *p-n* junction between said substrate and the drain of said transistor, and said gate of said transistor being electrically isolated from said drain of said transistor.

4,115,710

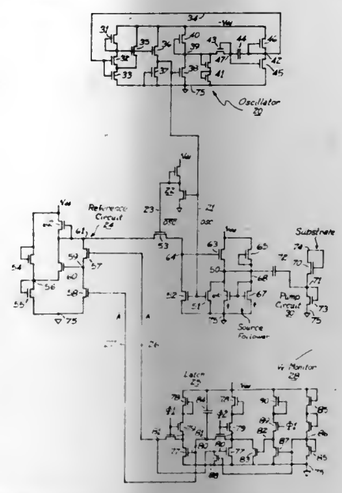
SUBSTRATE BIAS FOR MOS INTEGRATED CIRCUIT

Perry W. Lou, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1976, Ser. No. 754,474

Int. Cl.² H03K *1/02, 3/353*

U.S. Cl. 307—304 **3 Claims**



1. A substrate pump circuit for a semiconductor integrated circuit, comprising diode means coupling a pump node to the substrate at a location on the chip removed from critical devices, generator means for producing a periodic voltage, the generator means having an output connected to the pump node and having an input responsive to the output of a reference circuit, the reference circuit having means responsive to the supply voltage level, and means responsive to threshold voltage for changing the output of the generator means from a high level voltage when the threshold is low to a regulated voltage when the threshold voltage is above a given magnitude.

4,115,711

THRESHOLD CIRCUIT WITH HYSTERESIS

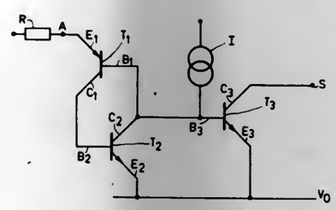
Michel Moussie, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 674,882, Apr. 8, 1976, abandoned. This application Jul. 13, 1977, Ser. No. 815,266

Claims priority, application France, Apr. 22, 1975, 75 12480

Int. Cl.² H03K *5/20*

U.S. Cl. 307—350 **10 Claims**



1. A threshold circuit with hysteresis comprising:

an input;

planar complementary first and second transistors and an output third transistor each having an emitter, base and collector; a current injector for supplying current to said output transistor; said base of each of said complementary first and second transistors being connected directly to the collector of the other complementary transistor; said emitter of said first transistor being connected to said input of the circuit; said collector of said second transistor connected to said base of said third transistor in a d.c. path, said collector of said second transistor and said base of said third transistor being of opposite conductivity type; said emitter of said second transistor and said emitter of said third transistor being coupled directly to a common voltage reference point; and

an output connected to the collector of said third transistor.

4,115,712

HIGH POWER AND HIGH SPEED LINEAR MOTOR

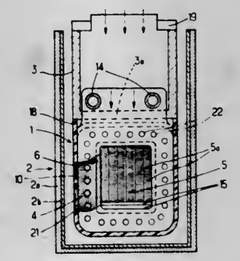
Jean Guimbal, Saint-Etienne, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Oct. 27, 1976, Ser. No. 736,132

Claims priority, application France, Oct. 30, 1975, 75 34533

Int. Cl.² H02K *41/02*

U.S. Cl. 310—12 **12 Claims**



1. A linear electric motor, comprising: an inductor unit having a system of coaxial coils each having a generally rectangular cross-section, the coils being longitudinally spaced apart by free spaces, the inductor unit also having a longitudinally extending core common to the coils and surrounded by them, the inductor unit being free of magnetic parts interposed on the system of coils; an armature unit of U-shaped cross-section surrounding the inductor unit so that the system of coils constitutes an electrically conducting layer between the core and the armature, through which layer a magnetic flux induced by the inductor passes, for moving one of the units along the other without any conduction of the flux through any local portions of the system of coils, the coils having longitudinal passages extending through them between the free spaces; and means for circulating cooling air through the passages in the coils and through the free spaces.

4,115,713

ROTOR BIAS MEANS FOR MINIATURE WATCH MOTORS OR THE LIKE

Harry H. daCosta; Victor W. Foster, both of Scottsdale, and Charles G. Thornton, deceased, late of Phoenix, Ariz. (by Ella J. Thornton, heir), assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 555,929, Mar. 6, 1975, abandoned. This application Mar. 29, 1976, Ser. No. 671,919

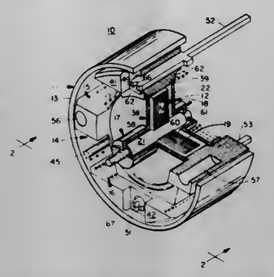
Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **2 Claims**

1. A miniature stepping motor including a nonmagnetic stator having a cylindrical cavity of predetermined dimensions, a ring yoke of high permeability and low remanance contiguously surrounding the stator, windings for producing, in response to applied current drive pulses, a magnetic field of a predetermined direction, a rotor which includes a permanent magnet member having north and south poles which is mounted on a shaft and is responsive to the magnetic field produced by the windings to be caused to step in 180° increments, comprising in combination:

the stator being a bobbin having longitudinal and traverse slots formed therein for receiving the windings and being of unibody construction;

bearing members attached at their peripheries to said stator interiorally of the windings for closing the cylindrical cavity, said bearing members including a sleeve portion, a first radially extending flange member attached to said sleeve portion at one end thereof and a second radially extending flange member attached to the other end of said sleeve portion, said second flange member supporting the ends of the shaft of the rotor; and



bias means for stopping the rotor of the motor in a preferential direction with respect to the magnetic field produced by the windings when energized, said bias means including at least one soft iron pin attached to the inside wall of the ring yoke externally to the windings and spaced from but extending in the same direction and along the length of the axis of the shaft of the rotor, said at least one soft iron pin establishing an uniform magnetic bias for stopping the rotor as either one of the north or the south poles thereof become aligned opposite of said at least one soft iron pin so that said rotor is stopped after being rotated 180°.

4,115,714

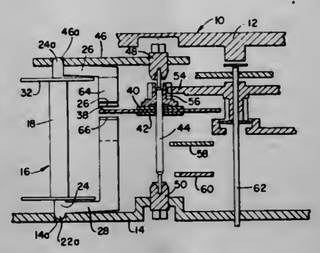
STEPPING MOTOR

Michael J. Ingenito, Bronx, N.Y., and Harold J. Hartnett, Norwalk, Conn., assignors to General Time Corporation, Thomaston, Conn.

Filed Mar. 4, 1976, Ser. No. 663,766

Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **13 Claims**



1. A unidirectional, self-starting stepping motor comprising:

(a) a rotor having a series of permanently magnetized poles of alternating polarity disposed around an axis of rotation of said rotor;

(b) a stator including a core and an energizing winding, said core having at least one pair of pole pieces providing a pole pair having an air gap through which said magnetic poles are arranged to pass when said rotor is rotating therebetween, said energizing winding being coupled to said stator core and adapted for connection to a current source for developing an energizing flux field across said air gap between said pole pieces; and,

(c) supplemental flux conducting means including projecting

members extending from respective pole pieces in a plane parallel to the plane of rotation of said rotor, each said projecting member being mounted on one of said pole pieces to increase, parallel to the line of movement of said magnetized poles, the pole face area of said pole piece bounding said air gap with each said projecting member being disposed in alignment, across said air gap, with one of an opposed pole piece and a projecting member, and each said projecting member being arranged, also, so that aligned portions of said pole face area are disposed closer toward said plane of rotation of said rotor than the other aligned portions so that the closer aligned portions attractively influence each of said magnetized poles, when in said air gap, during operation.

4,115,715

BRUSHLESS D. C. MOTOR

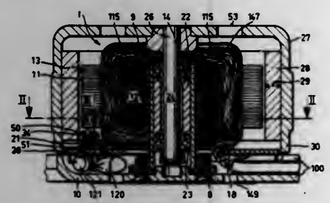
Rolf Müller, St. Georgen i.Schwarzwald, Germany, assignor to Papst-Motoren KG, St. Georgen i.Schwarzwald, Germany

Continuation of Ser. No. 565,761, Apr. 7, 1975, abandoned. This application Jan. 25, 1977, Ser. No. 762,822

Claims priority, application Luxembourg, Apr. 8, 1974, 69810; Oct. 25, 1974, 71180

Int. Cl.² H02K *11/00*

U.S. Cl. 310—68 B **35 Claims**



1. A brushless d.c. motor comprising:
a stator;
a permanent magnet rotor having opposite poles and positioned with respect to said stator to provide a narrow radially directed air gap therebetween;
a stationary magnetic flux-sensitive control member;
a first magnetic flux conductor having a first end at said control member and a second end extending to a position closely adjacent a first pole of said rotor, a first narrow air gap being between said first pole and said second end of said first flux conductor;
a second magnetic flux conductor separate from said first flux conductor and having a first end at said control member and a second end extending to a position closely adjacent a second pole of said rotor, a second narrow air gap being between said second pole and said second end of said second flux conductor;
said second ends of said first and second flux conductors being substantiallly wider in cross-sectional dimension than said control member; and
at least one of said first ends of said first and second flux conductors being constricted in size to the cross-sectional dimension of said control member.

4,115,716

ROTOR OF MAGNETO GENERATOR

Nobuhiko Ogasawala, Mito; Mituo Odazima, and Yasuaki Watanabe, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

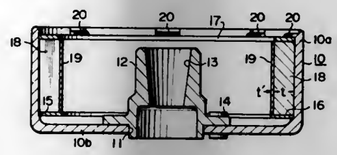
Filed Jun. 22, 1977, Ser. No. 809,006

Claims priority, application Japan, Jun. 23, 1976, 51-73233

Int. Cl.² H02K *21/22*

U.S. Cl. 310—153 **11 Claims**

1. A rotor structure for use in a magneto generator including a yoke of cup-like shape consisting of a cylindrical wall and a side wall extending from one end of said cylindrical wall, a plurality of magnets provided by permanent magnets disposed along the circumference of said cylindrical wall of said yoke in a relation circumferentially spaced apart by a predetermined distance, each said magnet having first and second flat surfaces axially facing each other, an outer peripheral surface curved to conform substantially to the curved contour of the inner surface of said cylindrical wall of said yoke and an inner peripheral surface curved to be substantially coaxial with the curved contour of the inner surface of said cylindrical wall of said yoke, said magnets being arranged in area contact with the inner surface of said cylindrical wall by means of their outer peripheral surfaces, and means for holding said magnets in



predetermined positions wherein said holding means comprises a first magnet holding plate disposed on a circumferential shoulder formed at a predetermined position on the inner surface of said cylindrical wall of said yoke, said first magnet holding plate having a surface on which said magnets are disposed in area contact by means of their first flat surfaces, a second magnet holding plate disposed in area contact with the second flat surfaces of said magnets, to axially face said first magnet holding plate, and a third magnet holding plate of cylindrical shape arranged in area contact with the inner peripheral surfaces of said magnets to press said magnets against the inner surface of said cylindrical wall of said yoke.

4,115,717

STATIONARY ANODE X-RAY TUBE

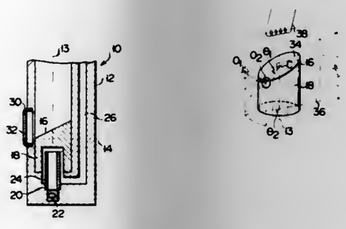
Kenji Iwasaki, and Sotaro Hijikata, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 23, 1977, Ser. No. 799,654

Claims priority, application Japan, May 26, 1976, 51/60789

Int. Cl.² H01J *35/00*

U.S. Cl. 313—59 **2 Claims**



1. A stationary anode X-ray tube comprising an evacuated envelope, an anode target having an electron-impact surface inclined to a horizontal plane perpendicular to the central longitudinal axis of the anode target and hermetically fixed to one end of the envelope, and an X-ray transmitting window located on the side wall of the envelope adjacent to the anode target, the center of the window deflecting from the vertical center plane of the electron-impact surface in the circumferential direction.

4,115,718

ROTARY-ANODE X-RAY TUBE

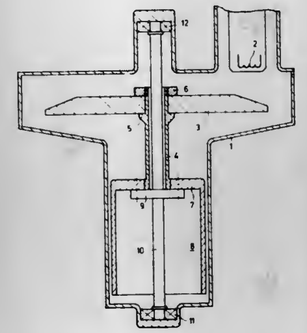
Harry Eggelsmann, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,260

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1976, 2610660

Int. Cl.² H01J *35/10*

U.S. Cl. 313—60 **5 Claims**



1. A rotary-anode X-ray tube, comprising a rotary anode which is journalled on two sides and including an anode disc mounted on a hollow shaft, a further shaft concentrically arranged in said hollow shaft and connected to said hollow shaft, said further shaft being journalled for connection to bearing means arranged on both sides of the anode disc.

4,115,719

ELECTRON MULTIPLIER WITH HIGH ENERGY ELECTRON FILTER

Carmen Anthony Catanese, Rocky Hill, N.J.; James Berkeley Harrison, Jr., Morrisville, Pa., and Norman Lee Lindburg, Berkeley Heights, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,281

Int. Cl.² H01J *43/10, 43/18*

U.S. Cl. 313—105 R **20 Claims**



1. An electron multiplier, comprising:
at least two spaced substrates of electrically insulative material;
a cathode at one end of said substrates;
a plurality of parallel dynodes on the surfaces of said substrates which face each other, said dynodes on one of said surfaces being in staggered relation to said dynodes on the other of said surfaces;
an electron filter including at least one filter body which extends from each of said surfaces of said substrates a sufficient distance so as to substantially prevent high energy electrons from passing through said filter, said filter bodies on said surfaces being in staggered parallel relation with respect to each other and in parallel relation with respect to said dynodes, each of said filter bodies including an electrically conductive surface; and
a transition region at least a portion of which is disposed between said dynodes and said electron filter, said transition region including transition dynodes and steering electrodes on said substrates in a parallel relation to said dynodes and said filter bodies, at least some of said transition dynodes being in a staggered relation which is modified with respect to said dynodes, said steering electrodes on each substrate being in a facing relation with respect to the transition dynodes on the other substrate, there being at least three consecutive staggered transition dynodes and said electron filter being disposed between said transition dynodes so that electrons emitted from one of said transition dynodes pass through without striking said filter.

4,115,720

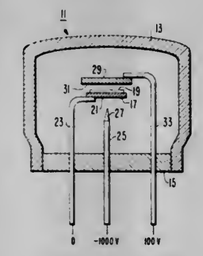
DEVICE HAVING THERMIONIC CATHODE HEATED BY FIELD-EMITTED ELECTRONS

Jules David Levine, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,220

Int. Cl.² H01J *1/20, 19/10*

U.S. Cl. 313—337 **7 Claims**



1. An electronic device comprising an evacuated envelope containing a main thermionic cathode having a first surface adapted to emit electrons when heated to elevated temperatures and an opposed second surface which is adapted to absorb energetic electrons and to convert the energy of said electrons to heat, an auxiliary field-emission cathode adapted to emit energetic electrons toward said second surface and spaced from said second surface, and means for applying a voltage between said main cathode and said auxiliary cathode, said voltage being of sufficient magnitude to cause a field emission of electrons from said auxiliary cathode with sufficient energy when absorbed by said second surface to heat said main cathode to cause thermionic electron emission from said first surface, there being no other means for heating said main cathode and said auxiliary cathode in said device.

4,115,721

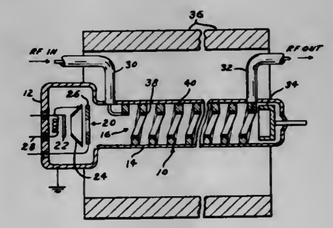
TRAVELING WAVE DEVICE WITH UNIFIC COMPOSITE METAL DIELECTRIC HELIX AND METHOD FOR FORMING

Walter Friz, Yellow Springs, Ohio, assignor to Louis E. Hay, Dayton, Ohio

Filed Jan. 7, 1977, Ser. No. 757,698

Int. Cl.² H01J *25/34*

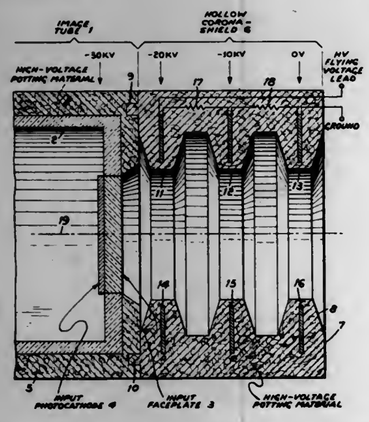
U.S. Cl. 315—3.5 **20 Claims**



1. A traveling wave device comprising:
(a) a body member having a longitudinal tubular element;

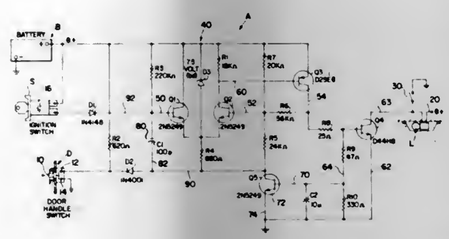
(b) an elongated unific slow wave structure in intimate contact within the tubular element of said body member, said slow wave structure comprising a metallic core with predetermined electrical characteristics over a predetermined frequency range, and a dielectric deposition deposited to the peripheral surface of said metallic core to form said unific slow wave structure;
(c) means within said body member spaced from the first end of and coaxial with said slow wave structure for generating and projecting an electron beam through said slow wave structure;
(d) RF energy means joined to said slow wave structure, the electron beam interacting with and amplifying the RF energy flowing through said traveling wave device;
(e) magnetic means surrounding said body member for producing a magnetic field guiding the electron beam; and
(f) collector means within said body member spaced from the second end of said slow wave structure for collecting the spent electron beam.

4,115,722
CORONA-SHIELD FOR AN IMAGE-TUBE PHOTOCATHODE
Charles Bruce Johnson, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Jun. 27, 1977, Ser. No. 810,122
Int. Cl.² H01J 19/78
U.S. Cl. 315—52 **6 Claims**



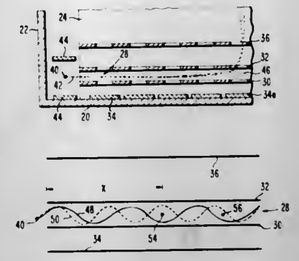
1. A corona-shield for an image-tube photocathode, said tube having an input faceplate adjacent said photocathode and an image-tube envelope encased in a first high voltage potting material comprising:
a hollow cylindrical member composed of a second high voltage potting material secured adjacent said photocathode to said first potting material, said hollow member is concentric with the axis of said tube and extends away from said photocathode;
a plurality of equally spaced metallic discs embedded in said second potting material interconnected by a plurality of resistors;
a high voltage coupled to one of said metallic discs adjacent said photocathode; and
ground coupled to another of said metallic discs most remote from said photocathode.

4,115,723
CONTROL CIRCUIT FOR VEHICLE COMPARTMENT LIGHT
James C. Byrne, Farmington Hills, and Dennis D. Talmage, Canton, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Jul. 21, 1977, Ser. No. 817,703
Int. Cl.² B60Q 7/00
U.S. Cl. 315—84 **29 Claims**



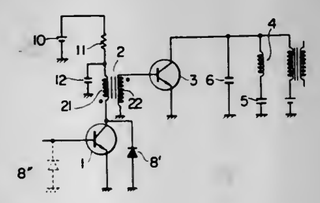
1. A control circuit for shifting a compartment light of a vehicle having a door, a control switch manually movable to an operating position upon releasing said door for opening, and an ignition switch having an actuated position and a non-actuated position, said shifting being between an illuminating condition of said light and a non-illuminating condition of said light, said control circuit including a voltage responsive input, an output, means for creating a first output condition when said input receives a voltage greater than a preselected value and a second output condition when said input receives a voltage less than said preselected given value, and switching means for shifting said operating circuit between a first, steady state condition with said operating circuit electrically floating and a second, timing condition with said operating circuit connected across a substantial voltage differential, means for holding said output at said first output condition irrespective of the voltage at said input when said operating circuit is in said steady state condition; means responsive to said first output condition for shifting said light into said non-illuminating condition and responsive to said second output condition for shifting said light into said illuminating condition; a capacitor normally discharged during said steady state condition of said operating circuit; means connecting said capacitor to said input for controlling the voltage on said input in accordance with the charged condition of said capacitor; time constant means for charging said capacitor at a given rate when actuated; means responsive to moving said control switch to said operating position for actuating said time constant means by shifting said switching means to said second, timing condition; and, means for shifting said switching means to said steady state condition in response to said capacitor being charged to a voltage applying at least said preselected given value.

4,115,724
ELECTRON BEAM OSCILLATION COMPENSATION METHOD
John Guiry Endriz, Cupertino, Calif., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 25, 1977, Ser. No. 827,688
Int. Cl.² H05B 37/00, 39/00, 41/00
U.S. Cl. 315—169 TV **9 Claims**



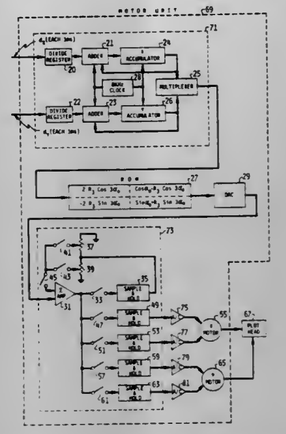
1. A method for compensating for electron beam oscillations in an electron beam guide comprising varying the electrical fields within the guide so as to alter the phase of the electron beam oscillations.

4,115,725
HORIZONTAL DEFLECTION CIRCUIT
Yoitiro Hashimoto, Yokohama, Japan, assignor to Hitachi, Ltd., Japan
Filed Dec. 28, 1976, Ser. No. 754,957
Claims priority, application Japan, Dec. 30, 1975, 50-158258
Int. Cl.² H01J 29/70, 29/76
U.S. Cl. 315—403 **8 Claims**



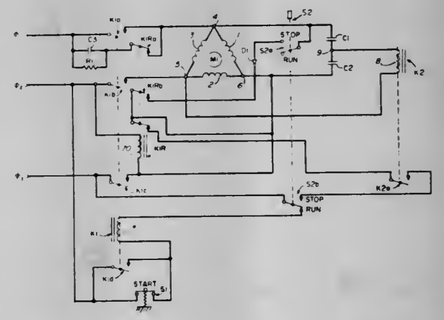
1. In a horizontal deflection circuit comprising:
a horizontal output transistor;
a horizontal deflection means connected between the collector and emitter of said horizontal output transistor and adapted to conduct a horizontal deflection current therethrough;
excitation means for generating an excitation signal to control turn-on and turn-off of said horizontal output transistor; and
an excitation transformer having a primary winding applied with said excitation signal from said excitation means and a secondary winding connected between the base and emitter of said horizontal output transistor, wherein a horizontal deflection current flows at an early stage of the horizontal scan through a series path including the base-collector junction of said horizontal output transistor and said secondary winding, the improvement comprising impedance means connected to said primary winding such that said impedance means exhibits a low impedance to a voltage induced in said primary winding by the horizontal deflection current flowing through said secondary winding at said early stage of the horizontal scan.

4,115,726
OPEN-LOOP ELECTRIC DRIVE WITH CORRECTIVE CONTROLLER
Marvin LeRoy Patterson, Ramona; Robert Dale Haselby, Escondido, and Albert Prall Kendig, Ramona, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 4, 1977, Ser. No. 756,679
Int. Cl.² H02P 5/40
U.S. Cl. 318—171 **11 Claims**



10. In an inductor-type synchronous motor having a magnetized moveable portion driven by an alternating signal having a fundamental frequency and bipolar phase currents, a method of diminishing force perturbations that occur in the motor at selected harmonics of the fundamental frequency, the method comprising the steps of:
adjusting the phase currents until the lowest frequency harmonic substantially coincides with the lowest resonant frequency of the moveable portion; and
adjusting the peak amplitude of the phase currents relative to each other until a null occurs in vibration of the moving portion.

4,115,727
BRAKING SYSTEM FOR THREE PHASE MOTORS
Thomas A. O. Gross, Concord Rd., R.F.D., Lincoln, Mass. 01773
Filed Jan. 4, 1977, Ser. No. 756,640
Int. Cl.² H02P 3/20
U.S. Cl. 318—212 **8 Claims**



1. A braking system for three phase motors having at least first, second and third accessible terminals, comprising a pair of impedances connected in series across said first and second terminals, voltage sensing circuit means connected between

said third terminal and the junction of said impedances for producing a first signal in responce to a voltage therebetween, and means responsive to an applied signal in the presence of said first signal for supplying direct current to a pair of said first and second terminals.

4,115,728

FREQUENCY-COMPARING DEVICES

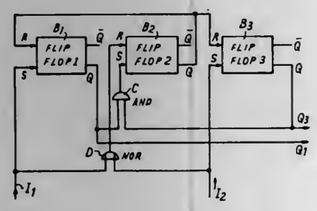
Ian Wilfrid Buckner, Reading, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Mar. 18, 1977, Ser. No. 778,922

Claims priority, application United Kingdom, Mar. 18, 1976, 10861/76

Int. Cl.² H02P 5/06

U.S. Cl. 318—318 **6 Claims**



1. A device for effecting a phase and frequency comparison of the pulses of two pulse sequences respectively applied at a first and a second input of the device, which comprises a first and a second flip-flop unit of the reset-set type, respectively associated with the two inputs each flip-flop unit having a 'set' inlet connected to the input with which the unit is associated and an outlet operative in the 'set' condition and inoperative in the 'reset' condition of the unit, first and second output channels connected respectively to said outlets of said first and second flip-flop units for receiving output signals from the respective flip-flop outlets; an AND gate, having two inlets respectively connected to the said first and second output channels and an outlet connected to the 'set' inlet of a third flip-flop unit, said third flip-flop unit interconnected with said first and second flip-flop units and operative in its 'set' condition to supply a 'reset' input to both said first and second flip-flop units, and means for resetting the third flip-flop unit.

4,115,729

MULTIPHASE TO SINGLE PHASE AND FREQUENCY CONVERTER SYSTEM

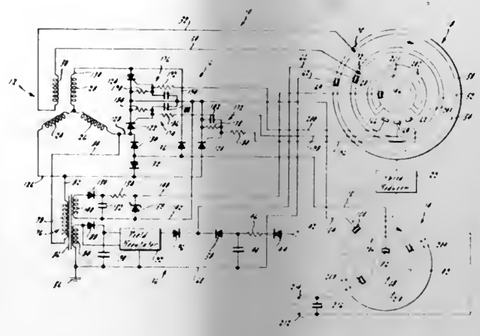
Thomas A. Young, Burton, and Ronald J. Freimark, Chagrin Falls, both of Ohio, assignors to Tenna Power Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 542,949, Jan. 22, 1975, abandoned. This application Sep. 27, 1976, Ser. No. 726,791

Int. Cl.² H02M 5/38; F02B 63/04

U.S. Cl. 322—86 **61 Claims**

49. In an engine driven electrical energy generator system having a generator with a field winding and an armature, and an engine connected in driving relation with the generator, the engine including an ignition primary circuit generating a series of electrical pulses in response to the rotation of the engine, the improvement comprising an energy storage means connected to the ignition primary for storing at least a portion of the series of electrical pulses, means connectiang the energy storage means to the field for initially providing excitation energy to the field winding from the ignition primary and the energy storage means during the start-up of the generator, running field excitation means connected to the armature winding and field winding for providing exciting energy to



the field from the armature winding during running of the generator, and switching means for controlling the connection of said energy storage means or the armature winding to the field winding in response to said exciting energy from the armature winding bearing a preselected relationship to the voltage at said energy storage means.

4,115,730

NUCLEAR MAGNETIC RESONANCE APPARATUS AND METHODS

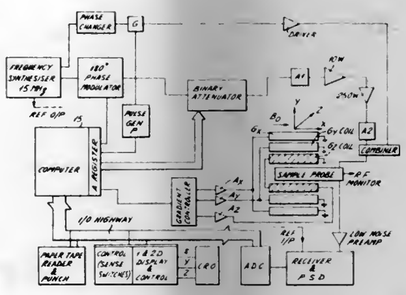
Peter Mansfield, Chilwell, England, assignor to National Research Development Corporation, London, England

Filed Apr. 7, 1977, Ser. No. 785,448

Claims priority, application United Kingdom, Apr. 14, 1976, 15295/76; Jul. 20, 1976, 30187/76

Int. Cl.² G01R 33/08

U.S. Cl. 324—0.5 A **9 Claims**



1. A method of obtaining a nuclear magnetic resonance spin density distribution of a sample which comprises maintaining a static magnetic field along one axis, applying a first magnetic field gradient to said static magnetic field to cause said field to vary along an axis selected from said one axis and an axis orthogonal thereto at the same time applying a selective excitation pulse so as to select at least one planar layer in the sample normal to the selected axis, removing said first magnetic field gradient and applying a second magnetic field gradient to said static magnetic field to cause said field to vary along an axis which is orthogonal to said selected axis and at the same time applying a selective excitation pulse to excite a series of strips in said at least one selected layer, and then simultaneously applying magnetic field gradients to said magnetic field to

cause said field to vary in at least two of said orthogonal directions such that each point of the selected strips is subjected to a resultant magnetic field of amplitude unique to that point, and reading out the resulting free induction decay (FID) signal from said strips.

4,115,731

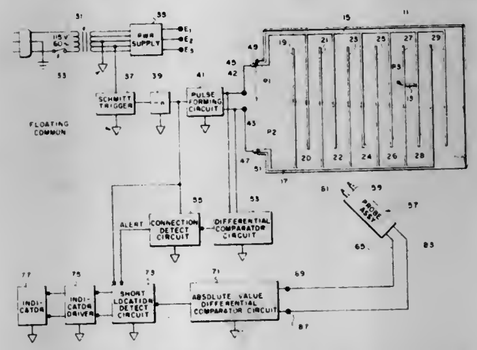
SYSTEM FOR LOCATING ELECTRICAL SHORTS BY TRACKING THE PATHS OF INJECTED PULSE CURRENTS UTILIZING A VOLTAGE DIFFERENTIAL RESPONSIVE PROBE

Clyde R. Axtell, III, Dallas, Tex., assignor to Digital Facilities, Inc., Dallas, Tex.

Filed Jun. 1, 1976, Ser. No. 691,475

Int. Cl.² G01R 31/08, 31/28, 19/16

U.S. Cl. 324—52 **12 Claims**



1. A system for locating an electrical short between PCB conductors, said system comprising:

pulse generating means for injecting a low amplitude pulse train into the circuit path formed by said conductors and said short,

first and second probe means suitable for contacting exclusively even a narrow width conductor closely adjacent another conductor,

probe holding means for receiving said first and second probe means and maintaining a substantially constant small separation therebetween,

indicator means having at least first and second indicating states, and

means responsive to voltage differential between said first and second probe means for effecting a change in said indicator means from said first indicating state to said second indicating state only after the voltage differential between said probe means manifests reception by said probe means of at least two pulses of predetermined amplitude.

4,115,732

DETECTION SYSTEM FOR LIGHTNING

Edmund Philip Krider; Ralph Carl Noggle, both of Tucson, Ariz., and Martin Allan Uman, Gainesville, Fla., assignors to The University of Arizona Foundation, Tucson, Ariz.

Filed Oct. 14, 1976, Ser. No. 732,365

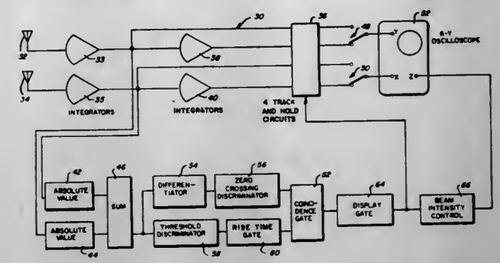
Int. Cl.² G01R 31/02

U.S. Cl. 324—72 **82 Claims**

1. A direction finder for determining the direction relative to said direction finder of lightning discharges to ground characterized by one or more strokes having a substantially vertical portion extending from the ground and one or more branches above the substantially vertical portion, said substantially vertical portion and said branches each producing a field, said direction finder comprising:

means for detecting the field produced by a stroke; and

means coupled to said detecting means and responsive only to the field generated by the substantially vertical portion



of the stroke for generating an indication of the direction of said portion.

4,115,733

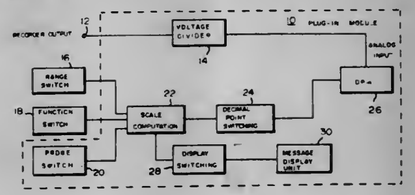
DIGITAL DISPLAY PLUG-IN

Jeffrey L. Silberberg, Beltsville, Md., assignor to The United States of America as represented by of the Department of Health, Education and Welfare, Washington, D.C.

Filed Sep. 17, 1976, Ser. No. 724,248

Int. Cl.² G01R 17/06, 15/08

U.S. Cl. 324—99 D **6 Claims**



1. A metering arrangement comprising:

a parent metering system having a probe, a range switch, a function switch and an analog meter; and

a device for automatically converting analog information from said parent metering system into digital form and for displaying the information in digital form, the device including:

digital display means for converting and displaying a digital output in response to an analog signal of the parent metering system, said digital display means having one input coupled to an output from said parent metering circuit;

message display means for displaying the proper dimensions of the digital output;

scale computation means coupled to said range switch and to said function switch for processing signals received therefrom representing function and scale information;

circuit means coupled between an output from said computation means and said digital display means for positioning a decimal point in said digital display means; and

means coupled between an output from said computation means and said message display means for selecting correct message units on said message display means.

4,115,734

LAMINATED DRIVER COIL FOR RECORDER PEN DRIVE MECHANISM

Steven I. Zoltan, Shaker Heights, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 9, 1976, Ser. No. 748,833

Int. Cl.² G01R 5/06, 1/04

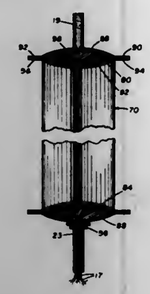
U.S. Cl. 324—151 A **5 Claims**

1. In a driving mechanism for the pen of a recorder wherein the mechanism includes a rotatable coil assembly located in an air gap defined between an essentially cylindrical core and a

surrounding essentially cylindrical shell, an improved coil assembly, comprising:

an inner, rectangular frame formed from at least one thin resilient strip, said frame having spaced upper and lower transverse legs along which said strip has an outwardly concave form, and spaced longitudinal side legs along which said strip has an outwardly convex form, said transverse legs being joined to said side legs to form said frame;

a plurality of coil turns wound on and laminated to said inner frame;



an outer, rectangular frame formed from at least one further thin resilient strip, said outer frame being laminated to said inner frame and said coil turns whereby said outer frame has further, spaced upper and lower transverse legs of outwardly concave form and further, spaced longitudinal side legs of outwardly convex form;

a first end cap having a first mounting shaft mounted on said further upper transverse leg; and

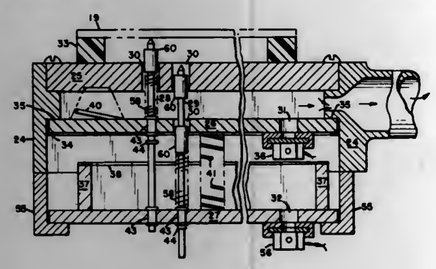
a second end cap having a second mounting shaft mounted on said further lower transverse leg, said first and second mounting shafts being positioned coaxially to permit rotation of said coil assembly in said air gap.

4,115,735

TEST FIXTURE EMPLOYING PLURAL PLATENS FOR ADVANCING SOME OR ALL OF THE PROBES OF THE TEST FIXTURE

Melvin E. Stanford, Latham, N.Y., assignor to Faultfinders, Inc., Latham, N.Y.

Filed Oct. 14, 1976, Ser. No. 732,531
Int. Cl.² G01R *31/02, 15/12*
U.S. Cl. 324—158 F **18 Claims**



1. An improved circuit board testing system of the type having a test fixture for holding the circuit board being tested, said fixture containing a plurality of electrically conductive probes connected to the system and having tips for making electrical contact with selected points on the circuit board under test, wherein the improvement comprises:

a plurality of stacked and spaced-apart platens, each having a predetermined number of the probes mounted substantially upright thereon with their tips pointing substantially in the same direction and each platen having apertures therein through which probes mounted on other platens may slideably pass;

means for holding the circuit board under test and the platens in a stacked and spaced-apart relationship so that the tips of the probes mounted on a particular platen will make contact with the circuit board when that platen is advanced toward the circuit board; and

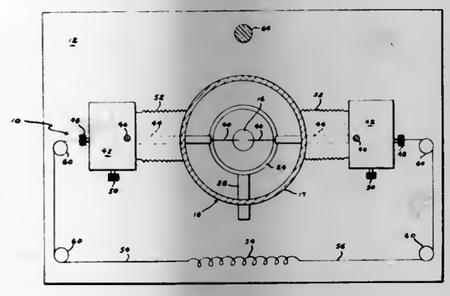
means for selectively advancing one or more platens toward the circuit board being tested whereby the tips of the probes mounted thereon will be brought into contact with their associated points in the circuit under test.

4,115,736

PROBE STATION

John M. Tracy, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 9, 1977, Ser. No. 776,037
Int. Cl.² G01R *31/02, 31/22*
U.S. Cl. 324—158 F **8 Claims**



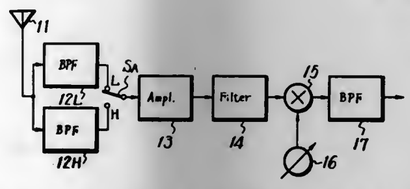
1. A probe station for the testing of specimens at preselected temperatures and pressures comprising a chamber, means operably connected to said chamber for maintaining said preselected pressure within said chamber, a container located within said chamber, a cryogenic liquid located within said container, said container having a top thereon, said top being in the form of a flat block-like platform and having a plurality of rods attached to the underside thereof, said rods being immersed within said liquid within said container, at least one contact wire in operative relationship with said specimen located on said top and means operatively connected to said contact wire for moving said wire in a plurality of directions.

4,115,737

MULTI-BAND TUNER

Masayuki Hongu, Komae; Tsutomu Niimura, Hiratsuka, and Hiromi Kawakami, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 739,275, Nov. 5, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,283
Claims priority, application Japan, Nov. 13, 1975, 50-136622
Int. Cl.² H04B *1/06*
U.S. Cl. 325—459 **8 Claims**



1. A tuner for receiving a broadcast signal on a selected channel of a group of channels in spaced frequency bands, said frequency bands including a lower band comprising a plurality of lower band channels and an upper band comprising a plurality of upper band channels, said tuner comprising:

first filter, means having a fixed pass band tuned to pass said lower band signals;

second filter means having a fixed pass band tuned to pass said upper band signals;

third filter means having a pass band with an upper cut-off frequency below the second harmonic of the lowest frequency of said upper band;

switching means connected to said first and second filter means to provide a signal path through a selective one of said first and second filter means and said third filter means;

a mixer connected to said third filter means to receive the output signal thereof;

a local oscillator connected to said mixer to supply thereto a frequency-converting signal having a higher frequency than the highest frequency of a selected channel to convert the frequency of said selected channel in the output signal of said third filter means to an intermediate frequency band having a lowest frequency f_L determined by the following conditions:

$$f_L > \frac{f_S - f_P - f_B}{2}$$

and

$$f_L > \frac{f_W - f_T - f_B}{2}$$

and one of the following:

$$f_L < \frac{2f_P - f_S - f_B}{2}$$

$$f_L > \frac{2f_S - f_P - f_B}{2}$$

where:

f_B is the bandwidth of each channel,

f_P is the lowest frequency in the lower band,

f_S is the highest frequency in the upper band,

f_T is the lowest frequency in the upper band, and

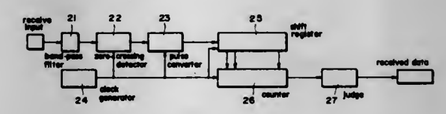
f_W is the highest frequency in the upper band.

4,115,738

DIGITAL FREQUENCY SHIFT SIGNAL DEMODULATOR

Akira Mitarai, Yamatokoriyama, and Sigekazu Fujiwara, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 15, 1977, Ser. No. 816,279
Claims priority, application Japan, Jul. 16, 1976, 51-85432
Int. Cl.² H03D *3/04;* H03K *9/06;* H04L *27/14*
U.S. Cl. 329—105 **3 Claims**



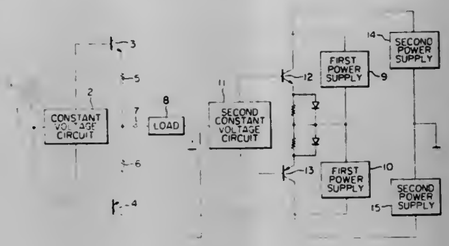
1. An FS signal demodulator comprising a zero-crossing detector which detects zero-crossings of frequency shift signals (FS), a pulse converter which generates a train of "0" and "1", "0" representative of a time slot from the first detected zero-crossing through a given period of time and "1" representative of a time slot from that period through the next succeeding zero-crossing, a memory means receiving the outputs of the pulse converter and thus containing the train of the pulses with the length corresponding to modulation rate, a counter means counting the number of "1's" or "0's" contained within the memory means in response to clock signals, and a determination circuit which effects frequency discrimination by comparing the counts of the counter means with a given limit.

4,115,739

POWER AMPLIFIER

Nobuya Sano, Nara; Hiroshi Goto, Katano, and Yutaka Hirota, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 18, 1977, Ser. No. 788,324
Claims priority, application Japan, Apr. 28, 1976, 51-49248; Oct. 26, 1976, 51-129070
Int. Cl.² H03F *3/183*
U.S. Cl. 330—263 **23 Claims**



1. A power amplifier comprising

(a) a first amplifier for driving a load in response to an input signal, said first amplifier comprising a first complementary symmetry transistor push-pull circuit and having an operating point for Class-A or Class-B operation,

(b) a first power supply with a floating reference point for supplying a voltage to said first amplifier,

(c) a second amplifier for driving said first power supply in response to the input signal, said second amplifier comprising a second complementary symmetry transistor push-pull circuit and having an operating point for Class-AB or Class-B operation, and

(d) a second power supply with a fixed reference point for supplying a voltage to said second amplifier, said first and second power supplies each comprising a positive power supply and a negative power supply interconnected at a common junction point, and said second amplifier drives the junction point of said positive and negative power supplies of said first power supply.

4,115,740

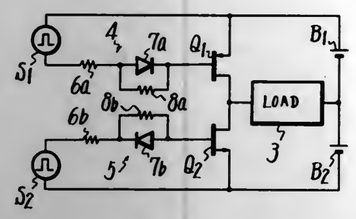
PUSH-PULL PULSE AMPLIFIER HAVING IMPROVED TURN-ON AND TURN-OFF TIMES

Tadao Yoshida, and Tadao Suzuki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 11, 1977, Ser. No. 850,830
Claims priority, application Japan, Nov. 18, 1976, 51/138819
Int. Cl.² H03F *3/16, 3/26;* H03K *17/60*
U.S. Cl. 330—264 **9 Claims**

1. A pulse amplifier, comprising first and second field effect transistors, each having an input electrode and a pair of output electrodes and each exhibiting an inherent capacitance at its input electrode, said first and second field effect transistors being connected in push-pull relation such that one of the output electrodes of each of said field effect transistors is connected in common to an output terminal, the other output electrode of each of said field effect transistors is adapted to receive a DC energizing voltage and the input electrode of each of said field effect transistors is adapted to receive a pulse signal; means for supplying pulse signals; and first and second drive circuits connected between said pulse signal supply means and the input electrodes of said first and second field

effect transistors respectively, each of said drive circuits exhibiting a higher impedance when a pulse is supplied to turn the respective field effect transistor ON and a lower impedance when a pulse is terminated to turn the respective field effect transistor OFF, said higher impedance cooperating with the inherent capacitance at the input electrode of said respective



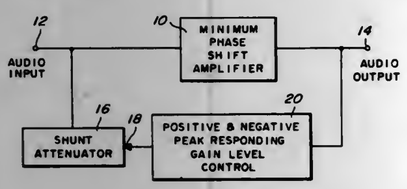
field effect transistor to provide a higher discharge time constant to turn said field effect transistor ON and said lower impedance cooperating with the inherent capacitance at the input electrode of said respective field effect transistor to provide a lower charge time constant to turn said field effect transistor OFF, whereby said first and second field effect transistors are not ON concurrently.

4,115,741

FAST ATTACK AUTOMATIC GAIN CONTROL CIRCUIT

Frank Robert Skutta, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 679,413, Apr. 22, 1976, abandoned.
This application Aug. 1, 1977, Ser. No. 820,668
Int. Cl.² H03G 3/10
U.S. Cl. 330—284 **8 Claims**



1. An automatic gain control circuit comprising:
an amplifier means having an input, for receiving a.c. signals, and an output, the amplifier reproducing received signals at its input at said output;
an attenuator means, coupled to the input of the amplifier means, for attenuating a.c. signal thereat responsive to a control signal; and
control means, coupled between the amplifier means output and the attenuator means, for sensing both positive and negative transitions of the a.c. signal at the amplifier means output and, in response to the instantaneous peak levels thereof, generating a control signal to control the attenuation of the attenuator means such that said instantaneous peak levels are predeterminedly gain controlled.

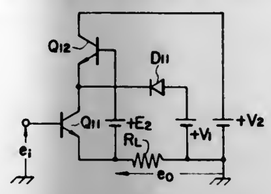
4,115,742

VARIABLE LOAD LINE POWER AMPLIFIER

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 18, 1977, Ser. No. 778,927
Claims priority, application Japan, Mar. 18, 1976, 51/28659
Int. Cl.² H03F 3/04
U.S. Cl. 330—297 **11 Claims**

1. In a power amplifier of the type wherein the applied source voltage to the amplifier is change in accordance with the voltage level of input signals applied to said amplifier, and including an amplifying transistor for providing to a power amplifier output terminal, an amplified output signal having a voltage level in accordance with said input signal level and further including a switching transistor, each transistor having first, second and control electrodes, said first and second electrodes defining a current path therebetween, conduction by said path being in accordance with the voltage difference between said control electrode and said second electrode, said



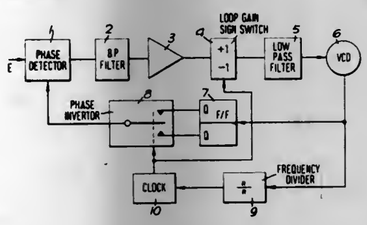
switching transistor conduction path being connected in series with said amplifying transistor conduction path to selectively couple said amplifying transistor to an auxiliary power source to change thereby said applied source voltage, the improvement wherein:
said switching transistor control electrode is coupled to said power amplifier output terminal such that said switch selectively couples said auxiliary source to said amplifying transistor in accordance with said output signal level.

4,115,743

ERROR COMPENSATING PHASE-LOCKED LOOP

Jacques Alfred Lalande, Velizy-Villacoublay, and Rene Roger Thevin, Bures sur Yvette, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 3, 1977, Ser. No. 821,388
Int. Cl.² H03B 3/04
U.S. Cl. 331—14 **5 Claims**



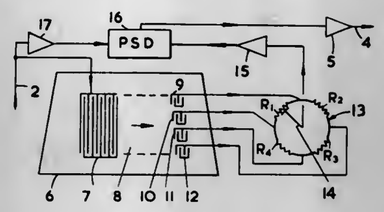
1. A phase-locked loop adapted to provide an output signal of the same phase as the input signal, including: a phase detector for receiving the input signal and means for feeding to said detector a reference signal furnishing an error voltage proportional to the phase difference between these output and input signals, a band-pass filter coupled to receive an output signal from said phase detector to eliminate the high frequency components of the phase detector output signal, a high-gain amplifier coupled to receive the signal with eliminated components whose gain sign is switched by a clock signal, a low-pass filter receptive of amplified signals to eliminate the a-c components of the output signal of the said amplifier, a voltage-controlled oscillator controlled by the output signal from the said low-pass filter, and a phase switch supplying, from the output signal of the said oscillator, the said reference signal of the same frequency as the said input signal and whose phase is inverted on command of the said clock signal.

4,115,744

PROGRAMABLE FREQUENCY ACOUSTIC WAVE DISCRIMINATOR

Meirion Francis Lewis, Malvern, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 717,392, Aug. 24, 1976, abandoned.
This application Sep. 20, 1977, Ser. No. 835,030
Claims priority, application United Kingdom, Aug. 26, 1975, 35257/75
Int. Cl.² H03B 3/04
U.S. Cl. 331—16 **9 Claims**



1. A discriminator for use in controlling the output frequency of a voltage controlled oscillator, comprising:
an acoustic wave delay line and a phase sensitive detector arranged to measure the phase difference between signals applied to the delay line and signals received from the delay line and produce a signal representing such phase difference, wherein the delay line comprises a substrate capable of supporting acoustic waves, first and second transducer means arranged on the substrate and connected to the phase sensitive detector to launch and receive acoustic waves in and from the track, the second transducer means arranged on the substrate and connected to the phase sensitive detector to launch and receive acoustic waves in and from the track, the second transducer means comprising a plurality of transducers each spaced apart along the track at a different distance from the first transducer means, and each being capable of supporting oscillation at a number of harmonic frequencies, said difference in distance being less than one wavelength at the transducer means center frequency, and switch circuitry for selectively switching each of the plurality of transducers to the phase sensitive detector so that by sequential operation of said switching means the oscillator may be caused to oscillate any one of said harmonic frequencies such number being much greater than the number of second transducers.

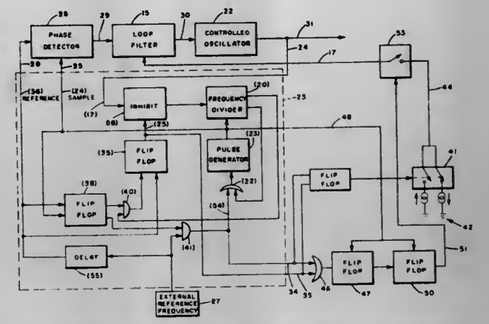
4,115,745

PHASE LOCK SPEED-UP CIRCUIT

William F. Egan, Cupertino, Calif., assignor to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Oct. 4, 1977, Ser. No. 839,330
Int. Cl.² H03B 3/04
U.S. Cl. 331—17 **8 Claims**

1. In a phase-locked loop circuit having a controlled oscillator with an output frequency f_o, a reference signal source having an output frequency f_r, logic means comprising a frequency divider responsive to frequency f_o for dividing same by a predetermined number N, said logic means also being responsive to frequency f_r and producing a first output signal when f_o/N is greater than f_r and a second output signal when f_o/N is less than f_r, a phase detector responsive to frequencies f_o/N and f_r and producing an error signal output corresponding to the phase difference between the sample pulse train at frequency f_o/N and the reference pulse train at frequency f_r, loop filter means responsive to said error signal for producing a correction signal for tuning said oscillator so as to maintain a phase-locked condition in which a predetermined fixed ratio N exists between f_o and f_r, said loop filter means comprising an integrator having a resistance R_1 and a capacitance C_1 and a low pass filter having a resistance R_4 and a capacitance C_2, said filters being connected in series, said loop filter means also having first and second stabilizing resistors R_2 and R_3, respectively, connected in series between resistor R_1 and capacitor C_1, the improvement comprising means for increasing the rate of said tuning of said oscillator comprising
means for adding direct current (DC) to a junction between resistors R_2 and R_3,



said resistors and capacitors having values for satisfying the relation

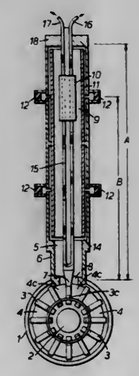
$$R_3C_1 = R_4C_2.$$

4,115,746

MULTIPACTOR DISCHARGE TUNED RESONANT CAVITY DEVICES

Michael Barry Brady, Maldon, and Peter Frederick Lewis, Chelmsford, both of England, assignors to English Electric Valve Company Limited, England

Filed Oct. 22, 1976, Ser. No. 734,881
Claims priority, application United Kingdom, Dec. 6, 1975, 50158/75
Int. Cl.² H03B 9/10
U.S. Cl. 331—90 **7 Claims**



1. A resonant cavity device wherein a separate resonator is coupled to a resonant cavity of said device and a multipactor discharge arrangement is provided to influence said separate resonator, said separate resonator comprising a resonant transmission path extending between said multipactor discharge arrangement and said cavity and wherein said transmission path is of such length that said multipactor discharge arrangement is positioned at least approximately at a point at which appears in operation a high radio frequency voltage and which is approximately a distance from the end of said transmission path adjacent said cavity equal to $n\lambda/4$ and said transmission path extends beyond said multipactor discharge arrangement to a total length equal to $m\lambda/2$ and is short circuited at its end

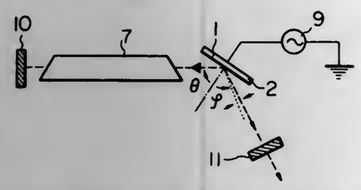
remote from said cavity, where n is one of a series of odd whole numbers including unity; λ is the wavelength corresponding to the mean frequency between the two extremes of frequency obtained as a result of initiating and inhibiting discharge of said multipactor arrangement and m is a whole number.

4,115,747

OPTICAL MODULATOR USING A CONTROLLABLE DIFFRACTION GRATING

Heihachi Sato, 7-13, Maborikaigan 3-chome, and Toda Kohji, 2069C-209, Futaba 1-chome, both of Yokosuka City, Kanagawa, Japan

Filed Dec. 27, 1976, Ser. No. 754,580
Int. Cl.[2] H01S *3/10*
U.S. Cl. 331—94.5 M **3 Claims**



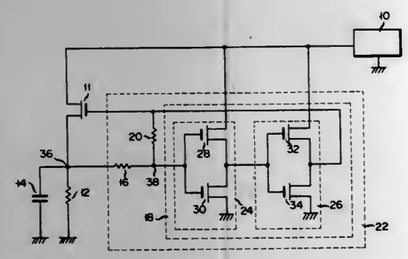
1. A controllable diffraction grating comprising an optically opaque electro-optic substrate having the property that the refractive index of the substrate depends upon the electric field applied to said substrate, an interdigital diffraction electrode mounted on a major surface of said substrate, said electrode having a plurality of pairs of adjacent parallel fingers, a plurality of terminals connected to each member of said pairs of fingers, said surface of the substrate being capable of diffracting a light beam impinging thereon from a direction perpendicular to the fingers and reflecting the diffracted light beam, the diffraction of the reflected light beam being dependent upon the electric potential applied to said interdigital diffraction electrode via said terminals.

4,115,748

MOS IC OSCILLATION CIRCUIT

Daijiro Kabo, Yamato, and Masaru Hashimoto, Ayase, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1977, Ser. No. 778,567
Claims priority, application Japan, Mar. 18, 1976, 51-31680[U]
Int. Cl.[2] H03K *3/295, 3/353*
U.S. Cl. 331—111 **9 Claims**



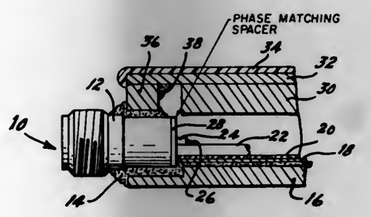
1. A complementary MOS IC oscillation circuit comprising:
a power source having a first terminal of a first potential and a second terminal of a second potential;
a series circuit including an active circuit having a control terminal and a first resistor means which are connected in series to each other to form a junction and said series connected between the first and second terminals of said power source with said active circuit being connected to said first terminal and said first resistor means being connected to said second terminal;
a Schmitt trigger circuit including cascade-connected first and second complementary MOS inverters each comprising complementary MOS FET's, a second resistor means provided between the junction of said active circuit and first resistor means and the input of said first complementary MOS inverter, and a third resistor means provided between the output of said second complementary MOS inverter and the input of said first complementary MOS inverter, said Schmitt trigger circuit adapted to receive an input signal from said junction between said active circuit and first resistor means and to provide an output signal to the control terminal of said active circuit for controlling the ON-OFF operation of said active circuit; and
a capacitor means one end of which is connected to said junction between said active circuit and first resistor means and the other end of which is connected to either one of the first and second terminals of said power source.

4,115,749

MICROWAVE HYBRID PHASE MATCHING SPACER

Sidney Michael Cole, Waverly, and Paul Lee Clouser, Vestal, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 25, 1977, Ser. No. 790,778
Int. Cl.[2] H01P *1/18*
U.S. Cl. 333—31 R **1 Claim**



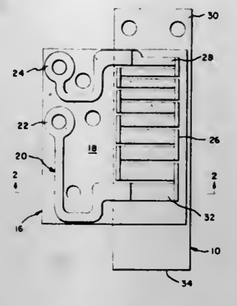
1. A microwave hybrid means for connecting coaxial and microstrip circuits and providing a phase matched connection comprising:
a box adapted to contain microstrip circuit boards;
a microstrip circuit board mounted within the box;
a cylindrically shaped female coaxial connector soldered to the box having a threaded member extending outwardly from the box and a pin positioned along the central logituding axis of the connector extending inwardly from the box, and said pin extending sufficiently to contact said microstrip circuit;
and a spacing means adapted to provide a sliding fit over said pin and mounted in juxtaposition with one end of said female coaxial connector and abutting said microstrip circuit, said spacing means further including a metal, ring shaped outer member and an inner member of dielectric material and having a thickness and dielectric constant selected for correcting phase error between said female coaxial connector and said microstrip circuit board.

4,115,750

BIMETAL ACTUATOR

Niels Junior Hansen, Camp Hill; John Ambrose Ward, Carlisle; William Hintze, Camp Hill, all of Pa., and David Charles Johnson, Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 405,223, Oct. 10, 1973, abandoned.
This application Sep. 12, 1975, Ser. No. 612,888
Int. Cl.[2] H01H *61/02*
U.S. Cl. 337—107 **9 Claims**



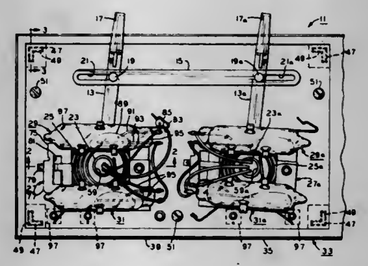
1. An improved bimetallic actuator including:
a bimetallic element comprising two metal members of different coefficients of thermal expansion bonded together, said bimetallic element adapted to be fixedly mounted by at least one side; and
a thin film resistor bonded to the high expansion side of said bimetal, said resistor including a thin film insulating substrate with a non-linear resistive circuit plated thereon in a serpentine configuration formed by a pair of spaced terminals interconnected by a continuous series of loops, each successive loop having a greater width than the preceeding adjacent loop from a first narrow width at the at least one fixed side of the bimetallic element to a second greater width remote from the at least one fixed side, whereby said element is differentially heated.

4,115,751

THERMOSTAT AND METHOD OF OPERATING SUCH

Ronald G. Huizenga, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 13, 1976, Ser. No. 750,277
Int. Cl.[2] H01H *37/12*
U.S. Cl. 337—323 **23 Claims**



1. A thermostat for regulating temperature of a space comprising:
(a) a casing including base;
(b) first and second posts rotatably mounted to said base;
(c) first and second bimetal elements adapted for movement to respective ones of adjusted positions in the thermostat and operable generally therein to sense the temperature in the space, said first and second bimetal elements each having a generally spiral configuration with radially inner and outer ends and said radially inner ends being secured to said first and second posts, respectively;
(d) first and second pairs of switches respectively operable generally for energization and de-energization at predetermined trip points thereof;
(e) first and second brackets secured to said outer ends of said bimetal elements and including first and second pairs of legs for supporting said first and second switch pairs and said legs of said first and second leg pairs being mounted for pivotal movement with respect to each other toward selected positions so as to establish the respective predetermined trip points of said switches of said first and second switch pairs, respectively;
(f) first and second temperature selectors manually movable in said casing within a predetermined range of temperature settings so as to set selected temperatures for the space and connected with said first and second posts to conjointly rotate them and said first and second bimetal elements to respective ones of the adjusted positions thereof, respectively;
(g) a connecting link disposed between said first and second temperature selectors including first and second spaced apart slots; and
(h) first and second abutments on said first and second temperature selectors extending into said first and second slots for lost motion engagement with said connecting link, said connecting link being driven in response to the engagement of one of said first and second abutments therewith to conjointly rotate both one of said first and second temperature selectors and one of said first and second posts so as to move one of said first and second bimetal elements toward a respective one of its adjusted positions maintaining one of said first and second switch pairs deenergized upon the manual movement of the other of said first and second temperature selectors toward a temperature setting defining its selected temperature, and the other of said first and second posts being rotated in response to the manual movement of said other of said first and second temperature selectors to conjointly move the other of said first and second bimetals to a respective one of its adjusted positions so as to effect the energization and de-energization operations of the other of said first and second switch pairs when said other of said first and second bimetals operates in its respective one adjusted position to sense the preselected temperature upon the occurrence thereof in the space.

4,115,752

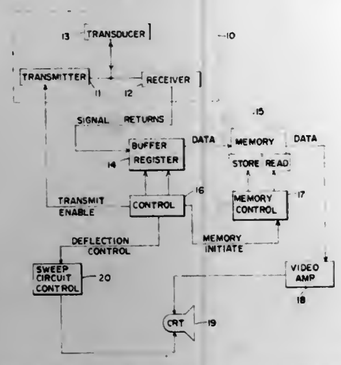
ECHO SOUNDING DEVICE WITH CATHODE RAY TUBE DISPLAY

Roger C. Hertel, Minneapolis, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed Jun. 15, 1977, Ser. No. 806,761
Int. Cl.[2] G01S *9/68, 9/70, 7/62*
U.S. Cl. 340—3 C **2 Claims**

1. In an echo sounding device having means for transmitting sounding pulses, means for receiving signal returns from the transmitted sounding pulses and for converting the signal returns into a series of electrical signals, and a cathode ray tube having vertical and horizontal sweeps and a display face, the improvement comprising: N stage binary register means coupled to said receiving means for forming the signal returns from each transmitted pulse into a series of N segments, each stage which represents a corresponding segment being set to a binary "0" state in the absence of a received echo signal and being set to a binary "1" state upon the presence of a received echo signal; static memory means coupled to said receiving means for storing the binary-valued segmented electrical signal representations of the received signal returns from each transmitted sounding pulse; and means for feeding the stored electri-

cal signal representations of the received signal returns from the memory means to the cathode ray tube for visually displaying a plurality of said signal returns vertically side by side concurrently on the cathode ray tube face.

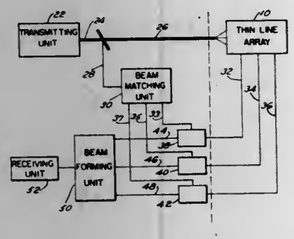


4,115,753

FIBER OPTIC ACOUSTIC ARRAY

Peter Shajenko, Storrs, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 18, 1977, Ser. No. 816,561
Int. Cl.[2] G01S *3/80*; H04R *23/00*
U.S. Cl. 340—6 R **11 Claims**



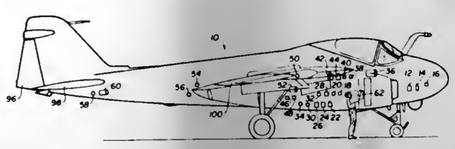
1. A fiber-optic acoustic array for detecting acoustic signals in a body of water which comprises:
- a transmitting unit for generating and sending a laser beam as an output thereof;
- a line array including a plurality of optic hydrophones positioned in series in a line, said line array being coupled to said transmitting unit for receiving the output thereof as an input for each of said plurality of hydrophones from said transmitting unit;
- a beam matching unit including a plurality of optical delay lines, said beam matching unit being coupled to said transmitting unit for receiving as an input for each of said plurality of optical delay lines from said transmitting unit;
- a plurality of photodetectors, each photodetector being coupled to a corresponding hydrophone of said plurality of optic hydrophones of said line array and to a corresponding optical delay line of said plurality of optical delay lines;
- a beam forming unit coupled to said plurality of photodetectors, receiving its input therefrom; and
- a receiving unit coupled to said beam forming unit, said receiving unit getting an input thereof from said beam forming unit.

4,115,754

AIRCRAFT ONBOARD OPERATIONAL STATUS INDICATOR

John J. Duzich, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,276
Int. Cl.[2] G08B *5/36*
U.S. Cl. 340—27 R **5 Claims**



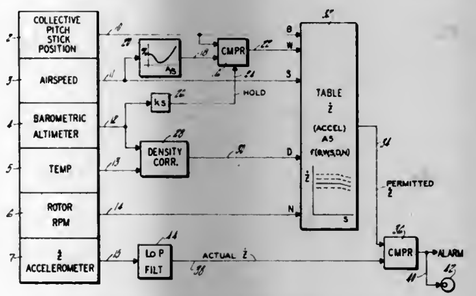
5. An airplane having the usual pneumatic and hydraulic systems for operation and control thereof said airplane comprising:
- a plurality of components in the pneumatic and hydraulic systems;
- a plurality of signal generating means to provide signals of malfunction of said components and systems;
- an exteriorly located ground-accessible selector read-out panel on the airplane;
- indicator means grouped according to components and systems on the face of said panel to be viewable exteriorly of the airplane while on the ground for checking previous inflight and postflight operation of said components and systems, said indicator means being inclusive of fluid power system monitors, of power generation, of power processing, of power transmission, of fluid condition, of fluid source reserve, temperature, density, contamination; and component operation monitors of valves, of struts, and of actuators,
- first switch means on the panel connecting signal generating means and said indicator means to activate said indicator means as are showing previous inflight and postflight component and system status; and
- second switch means on said panel to activate said indicator means in testing their ability to function.

4,115,755

AERODYNAMIC SURFACE LOAD SENSING

Lou S. Cotton, Monroe, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 11, 1976, Ser. No. 695,501
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—27 R **4 Claims**



1. In a helicopter, navigation apparatus comprising:
- speed means providing a signal indicative of the airspeed of the helicopter;
- means responsive to the output of said speed means for providing a design collective pitch signal indicative of a predetermined collective pitch stick position associated with the particular speed indicated by the output signal of said speed means as a function of the nominal weight of the helicopter, said design collective pitch signal continuously varying with airspeed in a manner according to a predetermined function;
- collective pitch stick position sensing means for providing an actual collective pitch signal indicative of the actual position of the collective pitch control stick;
- comparison means responsive to both of said collective pitch signals to provide an output weight signal indicative of a relationship of the actual weight of the helicopter to said nominal weight;
- barometric altimeter sensing means for providing an altimeter signal indicative of the altitude of the aircraft;
- differentiator means responsive to said altimeter signal to provide a hold signal indicating vertical maneuvering of the aircraft, said comparison means being responsive to said hold signal to continuously provide the last weight signal prior to the appearance of said hold signal until said hold signal disappears;
- temperature sensing means for providing a signal indicative of the temperature of the atmosphere surrounding the aircraft;
- density correction means responsive to said altimeter signal and to said temperature signal for providing a signal indicative of the density of the atmosphere surrounding said aircraft;
- rotor speed sensing means for providing a signal indicative of rotor speed; and
- means responsive to said collective pitch signal, said weight signal, said airspeed signal, said density signal, and said rotor speed signal for providing a signal in response thereto which is indicative of the aircraft acceleration corresponding to permissible loading of the aircraft within the structural envelope thereof.

4,115,756

WHEEL AND BRAKE ADVISORY SYSTEM FOR AIRCRAFT

Salvatore A. DiCecio, Irving, Tex., assignor to Avmar, Incorporated, Ronkonkoma, N.Y.

Filed Sep. 27, 1976, Ser. No. 726,958
Int. Cl.[2] B08B *21/00*; B60T *17/22*
U.S. Cl. 340—27 R **10 Claims**



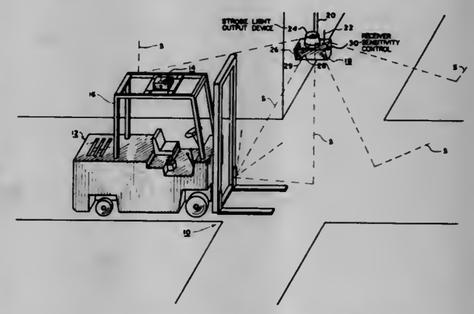
10. In an advisory system for detecting and indicating an abnormal rate of change, in one direction, of a changing function comprising
- signal generating means, including transducer means responsive to a changing wheel speed function, for producing a changing DC voltage function signal which is proportional in linear relation to the change of said wheel speed function;
- a comparator circuit, having two inputs and an output, for comparing two DC voltage input signals and for producing an output signal when one input signal changes polarity relative to the other input signal;
- a first charging circuit, coupling the output of said signal generating means to one comparator circuit input, for producing a function input signal which tracks the changing function signal;
- a second charging circuit, coupling the output of said signal generating means to the other comparator circuit input, for producing a reference input signal which tracks the changing function signal at a selected difference value relative to said function input signal and which tracks the changing function signal with a time delay greater than that of said function input signal, whereby said function input signal will change polarity relative to said reference input signal for a selected abnormally high rate of change of said function signal;
- said first charging circuit comprising parallel branch circuits, including a resistance branch and a diode branch, connecting input and output points, and a capacitor coupling said output point to ground; said resistance branch including resistance means of selected value; said diode branch including diode means of selected resistance value to pass current from said input point to said output point;
- said second charging circuit comprising parallel branch circuits, including a resistance branch and a diode branch, connecting input and output points, and a capacitor coupling the output points to ground; said resistance branch including resistance means of higher value than the resistance means of said first charging circuit resistance branch; said diode branch including diode means of selected resistance value to pass current from the input to the output point, said resistance value of said second charging circuit diode means being higher than the resistance value of said first charging circuit diode means;
- said second charging circuit, for an increasing function signal, thereby producing a reference input signal which is lower in value than the function input signal produced by said first charging circuit;
- and said second charging circuit, for a rapidly decreasing function signal, producing a reference input signal which decreases slower than the function input signal produced by said first charging circuit, thereby allowing said function input signal to change polarity relative to said reference input signal;
- said signal generating means including wheel speed transducer means, whereby the produced voltage function signal is proportional to the rotational speed of the wheel; said function input signal and said reference input signal thereby decreasing when said wheel speed decreases; and said system producing a comparator output signal when said wheel speed decreases at a selected abnormally higher rate due to a binding brake.

4,115,757

OMNIDIRECTIONAL VISUAL VEHICULAR WARNING SYSTEM

Charles Stephen Blahunka, 993 Marlene Ave., Elgin, Ill. 60120

Filed May 3, 1976, Ser. No. 682,508
Int. Cl.[2] G08G *1/00*; H04B *7/26*
U.S. Cl. 340—32 **8 Claims**



8. A vehicular warning system for use with lift truck surface

vehicles of the type which routinely traverse given fixed locations comprising:

a receiver fixedly mounted at one of said given fixed locations, said receiver having an antenna network and being adapted to detect radiated energy signals of a predetermined frequency and above a given minimum signal threshold, and said receiver having a decoder responsive to the detected radiated signals for providing an output signal indicative thereof;

a visual light output device providing a substantially omnidirectional pulsating light output and being fixedly mounted in proximity to said receiver and coupled to receive said output signal, wherein said device illuminates substantially entirely said one given fixed location in response to said output signal, and

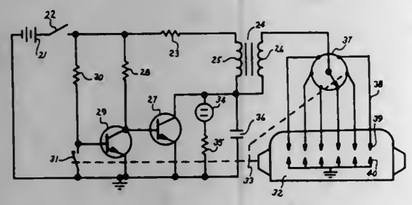
at least one transmitter fixedly mounted to the upper surface of the roll cage of one of said surface vehicles and continuously generating said energy signals when said one of said vehicles is moving, said transmitter having an antenna network integrally formed with an enclosure of said transmitter and being adapted to continuously radiate said continuously generated energy signals but at levels sufficient to exceed said minimum signl threshold only when said transmitter is within a given distance from said receiver and wherein said one of said surface vehichles is substantially continuously pulsatingly illuminated by the pulsating light output of said device throughout the interval when said one of said surfce vehicles is traversing said one given fixed location, said transmitter including an enclosure having integral means for adjusting the levels of the radiated energy, and wherein said transmitter is powered by the primary power source of said one of said vehicles and wherein said one of said vehicles includes a seat switch coupled between said primary power source and said transmitter to provide an operator responsive on-off switch which applies power to said transmitter when said switch is closed.

4,115,758

VISUAL TEST INDICATOR FOR IGNITION SYSTEMS

Frank K. Luteran, Rd. #1, Montdale, Pa. 18447

Filed Apr. 21, 1975, Ser. No. 570,076
Int. Cl.² G08B *21/00*
U.S. Cl. 340—52 R **8 Claims**



1. A visual indicator for an internal combustion engine ignition system comprising in combination;

a. an ignition coil having a primary winding and a secondary winding, the primary winding serially connected in a primary circuit;

b. a voltage source producing a current in the primary circuit;

c. semiconductor switching means connected in the primary circuit for changing the current in the primary circuit in synchronization with engine crankshaft rotation, the change in current producing a H.V. pulse in the secondary winding and an overvoltage in the primary circuit;

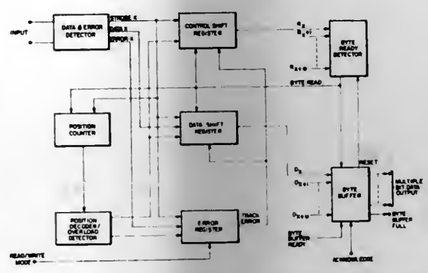
d. light emitting means connected in the primary circuit in parallel with the primary winding and energized when the overvoltage occurs in the primary circuit.

4,115,759

MULTIPLE BIT DESKEW BUFFER

Edward Roald Besenfelder, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Aug. 8, 1977, Ser. No. 822,476
Int. Cl.² G06K *5/04*
U.S. Cl. 340—146.1 F **8 Claims**



1. In a data processing system which utilizes a plurality of apparatus for reading digital data from mass storage devices and a plurality of data and error detectors, a multiple bit deskew buffer comprising:

a plurality of bit tracking and storing sections, each of said sections comprising:

a position counter responsive to a one of said plurality of data and error detectors for determining the number of bits stored in the section;

a position decoder/overload detector responsive to the outputs of the position counter for providing individual error signals and a digital count of the number of bits stored in the section;

a control shift register responsive to said digital count and to the data and error detector for providing a bit ready output signal indicating that a bit of data from that section is now ready to be read;

a data shift register responsive to said digital count and to the data and error detector for providing a data output corresponding to the bit ready output signal of the control shift register; the data shift register also providing means for storing a plurality of data bits;

an error register responsive to the data and error detector and to the error signals from the position decoder/overload detector for providing a track error signal when an error is detected, said track error signal forcing the bit ready output signal to indicate that a bit is ready to be read and forcing the data shift register data output to indicate that a logic "0" data bit is ready to be read;

a byte ready detector responsive to the bit ready output signal of each of said control shift registers and to the strobe output signal of each of the data and error detectors for providing an output signal indicating that one byte of data is properly aligned and ready to be transmitted, and

a byte buffer responsive to the output of the byte ready detector and the data output of each of said data shift registers for providing one byte of deskewed data as an output.

4,115,760

FIGURE PRE-PROCESSING DEVICE

Chiaki Ito, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 631,149, Nov. 11, 1975, abandoned. This application May 12, 1977, Ser. No. 796,366
Claims priority, application Japan, Nov. 18, 1974, 49-133057
Int. Cl.² G06K *9/00*
U.S. Cl. 340—146.3 H **1 Claim**

1. A figure pre-processing device of a figure recognition system consisting of scanning means for scanning a figure and providing a picture signal in accordance with said scanning,

quantizing means connected to the scanning means for quantizing said picture signal into "0" and "1" signals and figure reducing means connected to the quantizing means for focusing on each point of the figure to be scanned and deleting in accordance with such focusing a picture signal of a point focused on when the picture signal pattern of points around said point is equal to any of a plurality of previously determined patterns, said figure pre-processing device comprising

a plurality of figure reducing circuits included in the figure reducing means of the figure pre-processing device, said figure reducing circuits being connected in series, each of said figure reducing circuits comprising shift register means for shifting the picture signal provided in series by the quantizing means or provided by another of said figure reducing circuits in synchronism with the scanning of the scanning means, each of said shift register means having a plurality of parallel outputs from a plurality of previously determined bit positions corresponding to each point of a picture signal pattern of points around the point focused on and storing and comparing means for storing deletion judging patterns classified into a plurality of groups and for comparing the picture signal pattern with the previously determined judging patterns wherein the point focused on is excluded from a group of the plurality of groups in accordance with patterns rotated 180 radial degrees around the point focused on, the classified groups being supplied to the series-connected figure reducing circuits as a deletion judging pattern for deleting a point in said figure reducing circuits, the judging patterns in each of the figure reducing circuits being different from those



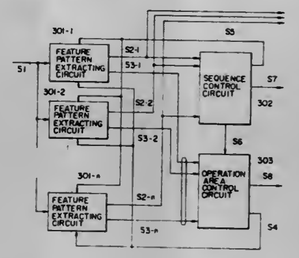
of the others, said storing and comparing means being supplied with the picture signal corresponding to each point of the picture signal pattern at points around the point focused on as the address, said storing and comparing means comprising read only memory means having a memory area of the address corresponding to the deletion judging pattern and storing in said memory area information instructing the deletion of the picture signal of the point focused on, the read only memory means of a first of the figure reducing circuits storing "0" in the words of an address corresponding to a predetermined number of the plurality of previously determined patterns and storing "1" in the other words so that said first of said figure reducing circuits deletes the point focused on only when the pattern around said point focused on is the same as any of the predetermined number of the plurality of previously determined patterns, and the read only memory means of the next-succeeding one of the figure reducing circuits storing "0" in the words of an address corresponding to a predetermined number of additional previously determined patterns derived from the plurality of previously determined patterns by rotating each of them 180° around the point focused on and storing "1" in the other words so that said next-succeeding one of said figure reducing circuits deletes the point focused on only when the pattern around said point focused on is the same as any of the predetermined number of additional previously determined patterns, no pattern of the group of additional previously determined patterns being the same as a pattern of the group of previously determined patterns from which it is derived.

4,115,761

METHOD AND DEVICE FOR RECOGNIZING A SPECIFIC PATTERN

Hirotada Ueda; Takeshi Uno, both of Sayama; Masakazu Ejiri, Tokorozawa; Sadahiro Ikeda, Tokyo, and Shinji Matsuoka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 7, 1977, Ser. No. 766,486
Claims priority, application Japan, Feb. 13, 1976, 51-14030; Feb. 13, 1976, 51-14031
Int. Cl.² G06K *9/12*
U.S. Cl. 340—146.3 AC **13 Claims**



1. In a device for recognizing the presence of a specific object pattern on an information pattern, a recognition method comprising:

a first step of inputting the information pattern including an object pattern having at least a first and a second feature parts of specific shape;

a second step of extracting information from said information pattern indicating the presence of said first feature part of specific shape and its position coordinates on said information pattern;

a third step of determining a certain extracting area on the basis of said position coordinate information of said first feature part of specific shape and extracting said second feature part of specific shape existing in said extracting area and the position coordinates therefor;

a fourth step of determining at least a first coordinate identifying the position of a third feature part from the position coordinates of at least one of said first and second feature parts;

a fifth step of sequentially cutting out partial patterns in an area related to said first coordinate determined in said fourth step from among the information picked up in said first step and determining the position coordinates for these partial patterns;

a sixth step of extracting the presence and at least a second coordinate identifying the position of said third feature part from among said sequentially cut out partial patterns;

a seventh step of recognizing feature parts contained in said sequentially cut out partial patterns and generating a signal representative thereof; and

an eighth step of selecting a signal output generated in said seventh step as the desired character recognition signal when the position coordinates of said sequentially cut out partial pattern in which said feature recognized in said seventh step is located substantially matches the position coordinates of said third feature part determined in said fourth and sixth steps.

4,115,762

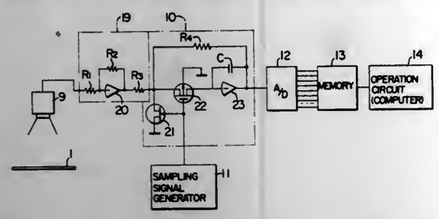
ALIGNMENT PATTERN DETECTING APPARATUS

Nobuyuki Akiyama, and Yoshimasa Oshima, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 30, 1977, Ser. No. 856,096
Claims priority, application Japan, Dec. 1, 1976, 51-143355
Int. Cl.² G01J *1/20*
U.S. Cl. 340—146.3 H **5 Claims**

1. An alignment pattern detecting apparatus comprising an image pick-up device for scanning and picking up an optical

image of a registration pattern formed on a wafer, the direction of the scanning being in a direction transverse to the lengthwise direction of the pattern, and means for symmetrically returning a video signal obtained from said image pick-up



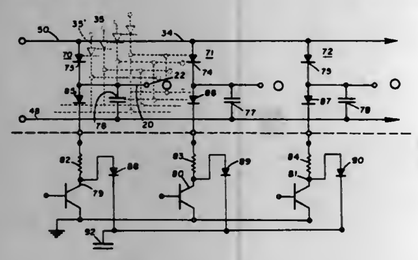
device to determine the degree of matching of said video signal with the video signal returned and for determining a return point associated with the best matching to detect said return point as the center of said alignment pattern.

4,115,763

ELECTRICAL SWITCHING SYSTEM

Arling Dix Brown, Jr., Cleveland Hts., and Edward Justus Reilly, Mayfield Hts., both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 671,427, Mar. 29, 1976, Pat. No. 4,058,814. This application Jan. 10, 1977, Ser. No. 758,102
Int. Cl.² G01D *15/06*; G11C *5/02, 11/36*
U.S. Cl. 340—166 R **10 Claims**



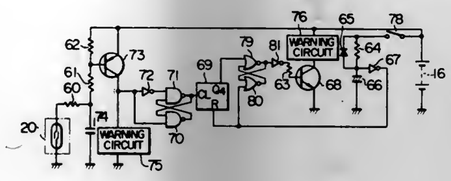
1. A switching system comprising:
a first diode circuit having a first high stored charge diode;
switch means in series with said first high stored charged diode;
means for impressing a forward voltage across said high stored charge diode and said switch means whereby when said switch means is closed and said forward voltage is impressed, a current flows through said high stored charge diode;
an output connected to the cathode of said first high stored charge diode; and
means for impressing a reverse voltage across said first high stored charge diode, whereby when said switch means is closed and said reverse voltage is impressed, a reverse output voltage of greater magnitude than the forward voltage across the high stored charge diode and the switch means is caused on said output.

4,115,764

DIAGNOSTIC SYSTEM EMPLOYING A MAGNETIC FIELD RESPONSIVE APPARATUS

Hiroaki Yamaguchi, Anjo, and Hiroshi Fujinami, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 608,239, Aug. 27, 1975, abandoned. This application Jan. 12, 1977, Ser. No. 758,773
Claims priority, application Japan, Sep. 27, 1974, 49/111883
Int. Cl.² G08B *21/00*; G01R *19/00*; B60Q *1/00*
U.S. Cl. 340—530 **4 Claims**



1. A current detecting apparatus comprising:
a switch for energizing an electric load through a wire;
a mounting member attachable on said wire;
a reed switch fixedly mounted in said mounting member in such a manner that the longitudinal dimension of said reed switch extends substantially perpendicular to the direction of flow of current in the portion of said wire where said mounting member is attached;
first warning means connected to said reed switch for giving a warning indicative of a sufficient current in said wire, the warning of said first warning means being synchronized with either one of opening and closing operations of said reed switch;
a counter circuit connected to said reed switch, responsive to the closing of said switch, for counting the number of opening and closing operations of said reed switch and generating an alarm signal when a preset count is reached;
second warning means connected to said counter circuit for giving a warning in response to said alarm signal, the warning of said second warning means being maintained irrespective of opening and closing operations of said reed switch; and
a timer circuit connected to said switch and said counter circuit for delaying the initiation of the counting operation of said counter circuit a predetermined period after said wire is energized by the closing of said switch.

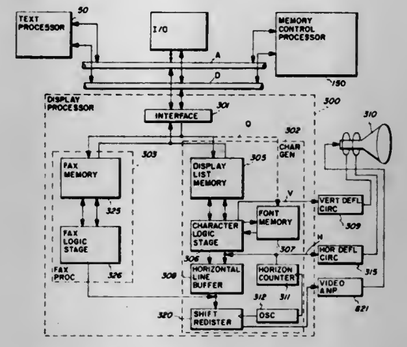
4,115,765

AUTONOMOUS DISPLAY PROCESSOR

David Hartke, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1977, Ser. No. 769,597
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 AD **5 Claims**

1. An autonomous display processor adapted for use with a data processing system comprising:
bus means communicating with the data processing system;
a list memory connected to said bus means for storing in a common sequence both data codes and instruction codes;
a font memory adapted to store dot matrix images of text characters at addressable locations therein;
addressing means connected to said font memory and said list memory for selecting particular ones of said text characters matrix images according to said data codes;
arithmetic means connected to said font memory and initiated by said instruction codes in said list memory for sequentially selecting successive rows of a particular one of said text character matrix images;
cycling means connected to said arithmetic and addressing means for selecting a row in the text character matrix image selected by the succeeding data code in said list memory to be adjacent said particular one of said text character matrix images, said selected row of said adjacent one of said text character matrix images corresponding to the last selected row of said particular one of said text character matrix images;
accumulating means adapted to alternatively store said selected corresponding rows of said text character matrix images and to produce parallel output signals indicative of the combination of said selected rows;



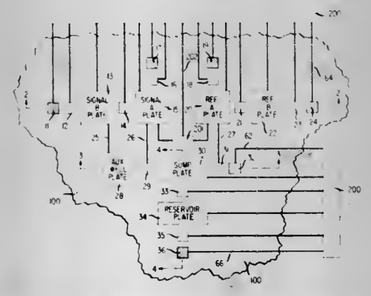
video shifting means connected to cyclically receive said parallel output signals from said accumulating means for producing a stream of binary signals within each alternating cycle of said accumulating means; and
a video tube connected to said video shifting means of said arithmetic means for producing rows of video amplitude corresponding to said stream of binary signals, each row of video amplitude being aligned according to said arithmetic means.

4,115,766

SEMICONDUCTOR APPARATUS FOR ANALOG TO DIGITAL CONVERSION

George Elwood Smith, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 31, 1977, Ser. No. 783,342
Int. Cl.² H03K *13/09*
U.S. Cl. 340—347 AD **18 Claims**



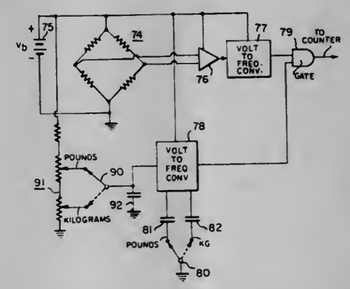
16. Semiconductor apparatus for analog signal to digital signal conversion comprising:
(a) first and second substantially identical signal well surface regions of a major surface of a semiconductor body, said wells electrically controlled by first and second, respectively, overlying signal electrodes in insulating relationship to said major surface;
(b) first means for introducing into the first well region a first amount of charge in accordance with the analog signal;
(c) second means for inducing the transfer of a second amount of charge from the first to the second well region through a gate surface region located between said first and second signal well regions, said gate surface region electrically controlled by an overlying gate electrode that has an area of at least two orders of magnitude less than that of the said signal electrode, whereby a third amount of charge, equal to the first less the second amount of charge, remaining in said first well region, corresponds to the analog signal less the most significant bit of said analog signal.

4,115,767

APPARATUS FOR CONVERTING AN ANALOG SIGNAL INTO DIGITAL FORM PARTICULARLY ADAPTED FOR USE IN DIGITAL COUNTER DISPLAYS

Amnon Brosh, Montvale, N.J., and Dana F. Geiger, New York, N.Y., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Division of Ser. No. 631,383, Nov. 12, 1975, Pat. No. 4,041,289. This application Dec. 1, 1976, Ser. No. 746,240
Int. Cl.² H03K *13/20*
U.S. Cl. 340—347 CC **7 Claims**



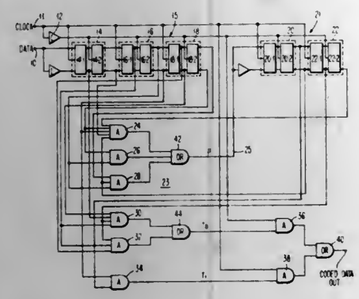
1. In a system of the type employing an analog transducer biased from a source of operating potential, which undesireably varies to effect the output of said transducers, the combination therewith of apparatus for converting the analog signal into a digital form relatively independent of said variation of said source, comprising:
(a) a voltage to frequency converter having an input responsive to said analog signal to provide at an output thereof, a frequency related to said analog signal, said frequency at said output being undesireably effected by said source variation to therefore contain a component related to said source variation and unrelated to said true value of said analog signal,
(b) counting means coupled to said output and operative to count said frequency upon application of a suitable predetermined duration, gating waveform to said counting means, to thereby provide a count indicative of said frequency and therefore of both said analog signal and said undesireable variation,
(c) a gate generator including a second voltage to frequency converter responsive to said potential source to provide said suitable gating waveform which varies from said predetermined duration according to said undesired potential variation to thereby compensate said gating waveform according to said undesireable variation in said analog signal to enable said counter to correctly count said frequency strictly according to said true value of said analog signal and relatively independent of said variations, and
(d) means for applying said gating waveform to said counter.

4,115,768

SEQUENTIAL ENCODING AND DECODING OF VARIABLE WORD LENGTH, FIXED RATE DATA CODES

John S. Eggenberger, Los Altos, and Paul Hodges, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 466,360, May 2, 1974, abandoned. This application Jun. 20, 1977, Ser. No. 807,999
Int. Cl.[2] H03K *13/24*
U.S. Cl. 340—347 DD 14 Claims



1. A method of decoding by electrical circuitry on a bit sequential basis a first string of run length limited binary bits representing variable length multi-bit code words into a second string of binary bits representing sequential multi-bit data words, said words belonging to a predefined dictionary, where said code words have twice as may bits as said data words, said method comprising:

(1) generating by electrical circuitry a group of electrical signals representing the binary values of the bits in the first eight positions of said first string;

(2) decoding by electrical circuitry the pair of bits in said 5th and 6th positions of said first string by logically combining in electrical circuitry all of said electrical signals from said group except one into a plurality of sub groups so that either said one electrical signal or the electric signal resulting from the sub group combination represents the value of the first bit of said second string one of said subgroups including a signal from said first position and another of said subgroups including a signal from said second position to thereby resolve the ambiguity between two four-bit patterns common to a pair of said code words in said predefined dictionary; and

(3) repeating said first and second steps for the next new combination of eight sequential bit positions (3–10) beginning with the next sequential odd bit position (3) until said first string has been decoded.

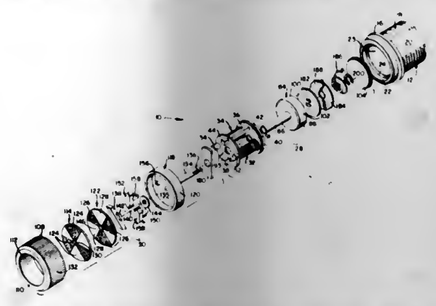
4,115,769

DAMPING MEANS FOR INDICATORS

Robert D. Hart, Collinsville, and Robert Mazzamauro, Waterbury, both of Conn., assignors to General Time Corporation, Thomaston, Conn.

Filed Jun. 2, 1977, Ser. No. 802,937
Int. Cl.[2] G08B *5/22*
U.S. Cl. 340—373 9 Claims

1. In a binary indicator for indicating one of a normal condition and a fault or malfunction condition of apparatus being monitored comprising a casing, an indicator assembly received by said casing and including an indicator disc, means mounting said indicator disc for movement about the axis of said casing in opposite rotational directions through less than a full turn between two stable positions, means in said casing responsive to a change of at least momentary duration from said normal condition, means cooperating both with said condition responsive means and mounting means to impart rotational impetus to said indicator disc whereby said indicator disc relocates from one to the other of said stable positions upon occurrence of said change, means for resetting said indicator disc to the former of said stable positions so that said indicator disc may similarly relocate to the latter position upon a subsequent change in condition, said resetting means being carried by said casing and adapted to be rotated from a first limit position, said resetting means including means for imparting rotational impetus to said indicator disc to return to said former position when said resetting means shall have been rotated to a second limit position, means biasing said resetting means toward said first limit



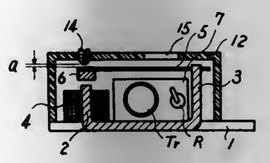
position, damping means for damping movement of said resetting means in return to said first limit position under forces of said biasing means, said damping means including at least a pair of friction discs and a layer of a high shear force material therebetween in surface-to-surface contact with the discs of each pair, and window means for viewing a display definitive of said condition on said indicator disc, said window means being carried by said resetting means and coaxial with said indicator disc.

4,115,770

A BUZZER HAVING ADJUSTABLE BUZZER SOUND

Masayuki Kanazawa, Ishioka, Japan, assignor to Kabushiki Kaisha Seikosha, Japan

Filed May 27, 1976, Ser. No. 690,522
Claims priority, application Japan, Jun. 9, 1975, 50/78618[U]
Int. Cl.[2] G10K *9/12*
U.S. Cl. 340—396 3 Claims



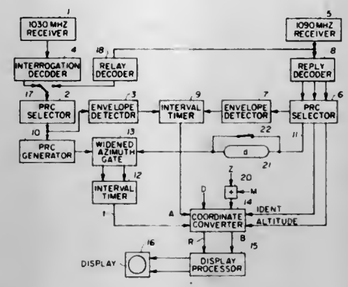
1. In a buzzer: a vibrator mounted at one end to undergo vibration at its other free end; drive means for vibrationally driving said vibrator to effect vibration of the vibrator free end; an impact member disposed in the vibrational path of travel of the vibrator free end so as to be repeatedly struck thereby during vibration of said vibrator to produce a buzzer sound; and means mounting said impact member to enable selective positioning thereof along said path of travel in directions towards and away from said vibrator free end to accordingly selectively vary the buzzer sound, said means mounting said impact member comprising a screw thread on said impact member, and means defining a screw-threaded opening fixedly located relative to said vibrator and having said screw thread adjustably threaded therein so that turning of said impact member effects axial movement thereof and varies the point along said path of travel at which said vibrator free end strikes said impact member to accordingly vary the buzzer sound.

4,115,771

PASSIVE ATCRBS USING SIGNALS OF REMOTE SSR

George B. Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.

Continuation-in-part of Ser. No. 685,312, May 11, 1976, abandoned. This application May 17, 1977, Ser. No. 797,675
Int. Cl.[2] G01S *9/56*
U.S. Cl. 343—6 R 10 Claims



6. Apparatus for indicating the position of a transponder with respect to a reference position at a known location within the service area of a secondary surveillance radar (SSR), comprising

(a) means for receiving interrogations from said SSR,

(b) means for receiving transponder replies to said interrogations,

(c) means for measuring the interval between reception of a group of interrogations and the reception of a group of transponder replies to determine the differential azimuth A,

(d) means for measuring the differential time of arrival *t* between an interrogation, or a simulation thereof, and the corresponding reply, and

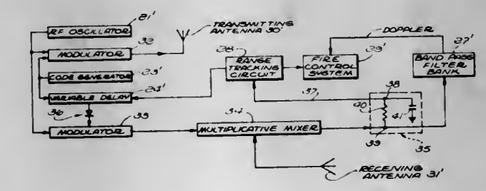
(e) means for computing the position of said transponder from said quantities A and *t* and the distance D and azimuth Z of said known location from said SSR.

4,115,772

PSEUDO-NOISE RADAR SYSTEM

Sergio F. Valdes, Canyon Country, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 7, 1975, Ser. No. 593,219
Int. Cl.[2] G01S *9/56*
U.S. Cl. 343—6.5 R 3 Claims



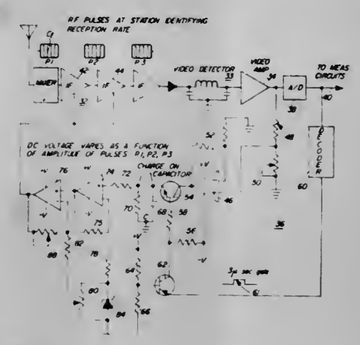
1. A pseudo-noise radar system with effectively zero amplitude cross-correlation function for a phase shift of one bit or more to one bit less than a word, said system comprising: a radio frequency (RF) oscillator having an output and being provided to produce an output signal thereat; first and second modulators each having first and second inputs and an output; a transmitting antenna connected from the output of said first modulator; a multiplicative mixer having first and second inputs, and an output; utilization means connected from the output of said multiplicative mixer; a receiving antenna, the output of said second modulator and said receiving antenna being connected to said first and second multiplicative mixer inputs, respectively, the first inputs of said first and second modulators both being connected from said RF oscillator output; and code generator means having first and second outputs, one of said first and second modulators being a bi-phase modulator, the other of said first and second modulators being an amplitude modulator, both of said first inputs of said first and second modulators being connected from said RF oscillator output, said code generator means first and second outputs being connected to the second inputs of said one and said other of said modulators, respectively, said code generator means producing a first signal at said first output thereof to said one modulator to produce an output signal at the output thereof which is in phase for one or more equal, but either spaced or successive first time periods T_b with said Rf oscillator output signal, and which is 180° out of phase for one or more equal, but either spaced or successive second time periods T_b, said first and second time periods occurring consecutively, said code generator means producing a second signal at said second output thereof of pulses of widths equal to mT_b and of a constant amplitude where *m* is any positive integer, said second signal having a zero amplitude between said mT_b pulses, said second signal being formed into a binary pulse code having equal successive word lengths, each successive word having a maximal binary pulse code identical to the next preceding word, said pulses mT_b occurring synchronously with the singular or successive ones of one of said first and second periods.

4,115,773

SYNCHRONIZED PULSE AMPLITUDE CONTROL FOR PULSE MEASURING CIRCUITS

James E. Metcalf, Arlington, Tex., assignor to Del Norte Technology, Inc., Euless, Tex.

Filed Feb. 2, 1977, Ser. No. 764,717
Int. Cl.[2] G01S *7/34, 9/02*
U.S. Cl. 343—7 AG 9 Claims

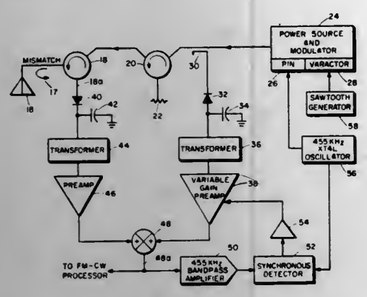


1. A pulse amplitude control circuit for a radio ranging system wherein received radar pulses continuously recur at a predetermined repetition rate, said circuit comprising means for transmitting radar ranging pulses at said predetermined rate with closely controlled characteristics, receiver means having a controllable gain for receiving and forwarding said radar ranging pulses for data processing, gate means driven at said predetermined rate for feeding back as gate pulses signals derived from said forwarded pulses responsive to received radar pulses whereby said gate means feeds back said gate pulses only if the received radar pulses recur at the predetermined rate, and means responsive to said fedback gate pulses for adjusting said controllable gain for the duration of said gate pulses to provide a standard amplitude amplitude radar pulse responsive to deviations of the received pulse from the controlled characteristic of the transmitted pulse, said standard amplitude pulse being usable by said data processing means.

4,115,774
CW RADAR AM-NOISE VIDEO-CANCELLATION SYSTEM

Carl P. Treaselt, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 17, 1977, Ser. No. 825,311
Int. Cl.² G01S 7/40
U.S. Cl. 343—17.7 **13 Claims**

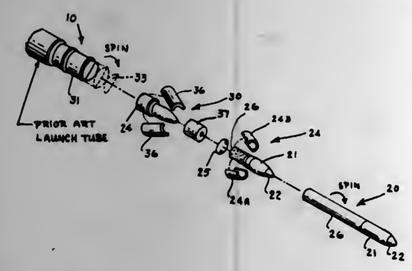


1. In a continuous wave radar system wherein means are provided for generating a continuous wave for transmission by said system and where a resultant radar return signal is received by said system, an improvement comprising:
means for introducing predetermined amplitude modulated sidebands to said continuous wave; and,
means for removing the amplitude modulated components in the resultant radar return signal caused by the introduced predetermined amplitude modulated sidebands.

4,115,775
DEEP PENETRATING FOREBODY WITH TETHERED RADAR REFLECTOR

John J. Harrington, Tewksbury, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 29, 1976, Ser. No. 727,103
Int. Cl.² H01Q 15/00
U.S. Cl. 343—18 B **10 Claims**

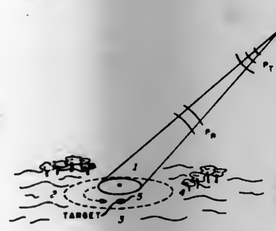


1. An electronic signal reflector, adapted for use as a radar signal reflector, capable of forming a target which is false in size and in configuration, comprising:
a. a payload subassembly which includes:
(1) a cone-shaped, deep penetrating forebody having an orgival nosetip fore and a base aft;
(2) a bellows-folded, expansible, cylinder-like shaped, tethered radar signal reflector bag, with said reflector bag releasably connected to said aft base of said deep penetrating forebody, and with said reflector bag having an open foreward end, a closed aft end, and a length along which are affixed a plurality of circumferential crown reflectors in spaced relationship to each other;
(3) and, a split, hollow, open-ended container, having a removably attached aft cover, for housing said bellows-folded, tethered radar signal reflector bag.
b. a housing subassembly surrounding said payload subassembly, for containing said payload subassembly, which includes:
(1) a hollow cannister having an open fore end with a removably attached cover closing said fore end, and an aft end whereby said fore end is selectively openable;
(2) and, means for holding and supporting said payload subassembly within said hollow cannister, wherein said means further includes:
(a) a split sabot essentially at said aft end of said hollow cannister;
(b) and, a one piece sabot at said fore end of said hollow cannister.

4,115,776
ADAPTIVE GAIN CONTROL FOR RADIOMETRIC TARGET TRACKING SYSTEM

Robert S. Roeder, Dunedin, Fla., and Lucien C. Bomar, II, Marietta, Ga., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 9, 1977, Ser. No. 804,956
Int. Cl.² G01W 1/00
U.S. Cl. 343—100 ME **11 Claims**

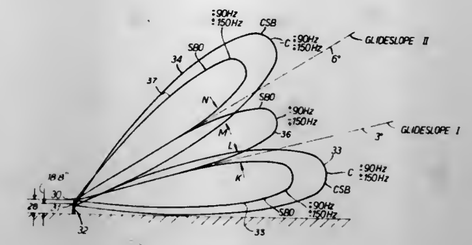


1. High frequency radiometric target tracking apparatus of the kind including conically-scanned gimbal-mounted antenna means, radiometric receiver means responsive to said antenna means, target tracking servo loop means responsive to said radiometric receiver means for positioning said antenna means about first and second axes, said target tracking apparatus additionally including:
system clock means,
conical scan motive means responsive to said system clock means,
first demodulator means responsive to said radiometric receiver means and to said conical scan motive means,
integrator means responsive to said first demodulator means,
servo means responsive to said integrator means for positioning said gimbal-mounted antenna means about at least said first axis,
automatic gain control signal generator means additionally responsive to said first demodulator means,
frequency divider means additionally responsive to said system clock means for producing a first frequency signal,
signal amplitude divider means responsive to said frequency divider means and to said automatic gain control means for producing a quotient output, and
first signal adder means in series relation with said integrator means and said servo means and responsive to said signal amplitude divider means for supplying a combined output for control of said servo means.

4,115,777
AIRCRAFT LANDING SYSTEMS

Frank Howard Taylor, London, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Oct. 27, 1976, Ser. No. 736,355
Claims priority, application United Kingdom, Oct. 28, 1975, 44398/75
Int. Cl.² G01S 1/18, 1/10
U.S. Cl. 343—108 R **6 Claims**

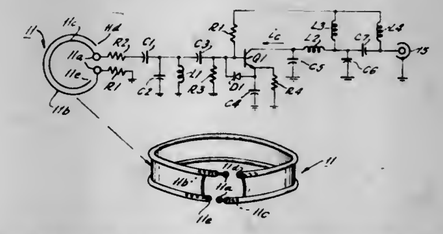


1. An aircraft landing system for aircraft having I.L.S. equipment, including a glide slope antenna system which comprises two antennae mounted on a support structure at respective heights above ground in the ratio of 3:2 and signal generating and distribution means for generating and feeding respective signals to said antennae so that the antennae provide in combination a multi-lobe radiation pattern which produces resultant signals just below and just above slope paths at 3° and 6° angles to the ground for generating in an approaching aircraft "fly-up" and "fly-down" signals, respectively, thereby providing for glide slope approaches by aircraft at said angles.

4,115,778
ELECTRONIC SOLID STATE FM DIPOLE ANTENNA

Robert Eric Snow, Raleigh, N.C., assignor to JFD Electronics Corporation, Oxford, N.C.

Filed Nov. 18, 1976, Ser. No. 742,680
Int. Cl.² H01Q 1/26
U.S. Cl. 343—701 **2 Claims**

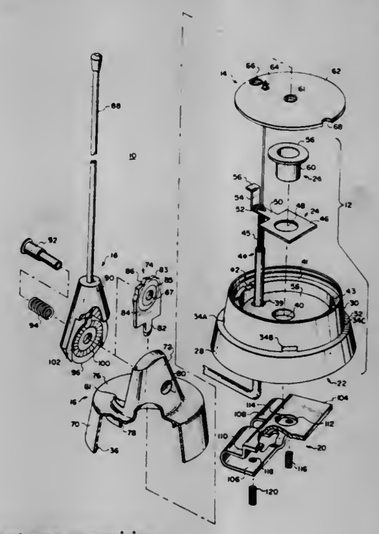


1. An antenna designed to provide omnidirectional reception over a predetermined frequency band comprising:
a single dipole assembly having first and second dipole substantially coplaner arms each having inboard and outboard ends;
a pair of closely spaced feed points for coupling energy from said assembly to associated circuitry, and being connected to said inboard ends;
each of said arms being bent or formed to lie along an imaginary circle of said arms being positioned slightly above the other and so that inboard ends of the arms lie along said imaginary circle and are spaced apart by a distance at least as great as the distance between said feed points; and
solid state amplifier means coupled to said feed points for providing substantially constant gain over said frequency band to signals received from said feed points; and an
AC to DC converter means having an input for coupling said means to a source of AC energy;
a cable coupling;
impedance conversion means coupled between the DC output side of said AC-DC converter means and said second coupling;
a coaxial cable coupled between said amplifier and said cable coupling for transferring DC energy to amplifier means and for transferring amplified signals received by said dipole assembly to said impedance conversion means;
said amplifier including impedance means coupled to said cable for coupling DC energy to said amplifier while blocking high frequency energy especially in said reception band.

4,115,779
AUTOMOBILE TRUNK ANTENNA MOUNT

Danny M. Dantzler, Lincoln, Nebr.; James Bartley Meehan, Waterloo, Iowa; Wayne Fredrick Everman, Cedar Falls, Iowa; Donald E. Fluent, Cedar Falls, Iowa, and Howard George Sachs, Lincoln, Nebr., assignors to Instrumentation Specialties Company, Lincoln, Nebr.

Filed May 14, 1976, Ser. No. 686,310
Int. Cl.² H01G 1/32
U.S. Cl. 343—715 **14 Claims**



1. An antenna comprising:
an antenna base;
said base including a bottom wall having a top surface and a bottom surface;
mounting bracket means for mounting the antenna base to a surface of a vehicle;
means for receiving a coaxial cable having inner and outer conductors;
means for mounting an antenna mast to said base;
a ground strap;
said ground strap including means for intimately engaging the outer conductor of said coaxial cable;
means for electrically and mechanically connecting said mounting bracket means and ground strap together;
said means for electrically and mechanically connecting said mounting bracket means and ground strap together comprising means for holding said ground strap on the top surface of said bottom wall of said base and for holding said mounting bracket means to said bottom surface of said base bottom wall;
said means for electrically and mechanically connecting including internal walls defining an opening in the bottom wall of said base;
said ground strap being positioned on the top surface of said bottom wall and one surface of said mounting bracket means being positioned on the bottom surface of said wall;
said means for electrically and mechanically connecting

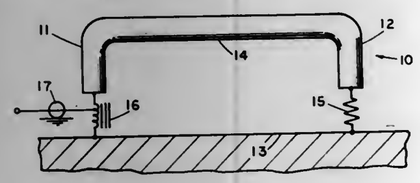
having a first portion passing through said hole, a second portion overlying said ground strap and a third portion positioned underneath said surface of said mounting bracket means, whereby said bottom wall, ground strap and surface of said mounting bracket means are compressed together.

4,115,780

DIRECTION FINDING ANTENNA SYSTEM

David J. Goodman, P.O. Box 18161, Cleveland Heights, Ohio 44118

Filed Jan. 12, 1977, Ser. No. 758,591
Int. Cl.[2] H01Q *1/48, 21/08*
U.S. Cl. 343—739 **5 Claims**



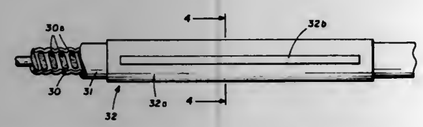
1. A direction finding antenna system comprising a plurality of antennas each having a terminated end and an output end, each terminated end being positioned about a central point on an electrically conductive surface, each output end being outboard from the terminated end and separated from the output ends of the other antennas by an equal angle, each antenna being U-shaped comprising three electrically active elements, two of said elements being spaced-apart monopoles mounted on said electrically conductive surface, the third element being a transmission line, top connecting said monopoles over said surface.

4,115,781

RADIATION ENHANCEMENT DEVICE

David N. Gershberg, Rockville, Md.; Alexander Y. Lee, Arlington, Va., and Michael D. D'Orto, Hyattsville, Md., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jun. 10, 1977, Ser. No. 805,448
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—768 **23 Claims**



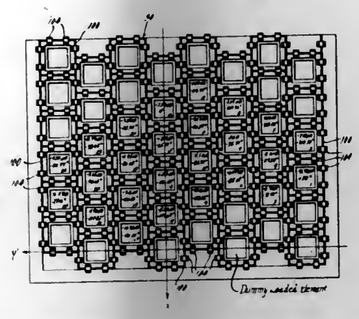
1. In a radiation enhancement system for a coaxial transmission line having a center conductor and an outer conductor with longitudinally spaced radiation slots, the combination which comprises:
(a) a dielectric tube partially encircling and slidably positionable along the transmission line; and
(b) conductive element bonded to the outer surface of said dielectric tube for movement therewith to enhance the orthogonally polarized component of energy coupled from said center conductor through said radiation slots.

4,115,782

MICROWAVE ANTENNA SYSTEM

Ching C. Han, Sunnyvale, and Harry J. Gould, Cupertino, both of Calif., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 21, 1976, Ser. No. 698,254
Int. Cl.[2] H01Q *19/14, 19/12*
U.S. Cl. 343—779 **11 Claims**



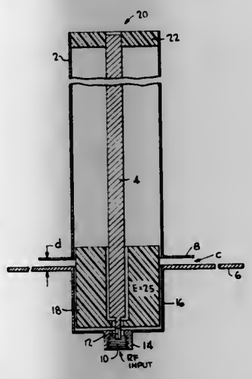
4. A microwave antenna system which comprises: a plurality of waveguide elements, each of said waveguide elements having first and second ports, means for converting a first linearly polarized microwave signal at one of said ports to or from a left-hand circularly polarized microwave signal within said waveguide element and for converting a second linearly polarized signal at the other of said ports to or from a right-hand circularly polarized microwave signal, each of said waveguide elements having an end, separated from said first and second ports by said converting means, said waveguide element end being in communication with free space, thereby, to permit circularly polarized microwave electromagnetic radiation to be transmitted from or received by said waveguide element end, and said waveguide element end having associated with it isolation means for reducing mutual coupling of circularly polarized microwave radiation associated with one of said waveguide elements with such circularly polarized microwave radiation of other of said waveguide elements.

4,115,783

BROADBAND HYBRID MONOPOLE ANTENNA

Frank Reggia, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 14, 1977, Ser. No. 806,575
Int. Cl.[2] H01Q *9/44*
U.S. Cl. 343—792 **12 Claims**



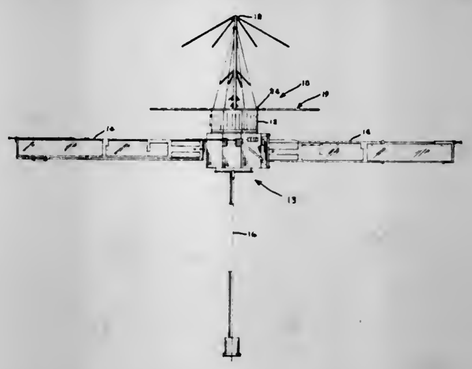
1. A broadband hybrid monopole antenna which comprises:
a metal ground plane;
a metal inner conductor feed network passing through the ground plane and extending approximately ¼ of the operating wavelength above the plane;
a metal outer conductor whose length is slightly less than ¼ of the operating wavelength, concentric with the inner conductor and capacitively coupled to the ground plane; and
an rf input with one conductor electrically coupled to the input end of the inner conductor for feeding electromagnetic energy into the inner conductor and the second conductor electrically coupled to the ground plane, wherein electromagnetic energy is capacitively coupled to the outer conductor.

4,115,784

DEPLOYABLE GROUND PLANE ANTENNA

Lee Schwerdtfeger, Silver Spring; Lee E. Stillman, Wheaton, and William E. Frain, Ellicott City, all of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 4, 1977, Ser. No. 765,719
Int. Cl.[2] H01Q *15/20*
U.S. Cl. 343—915 **7 Claims**



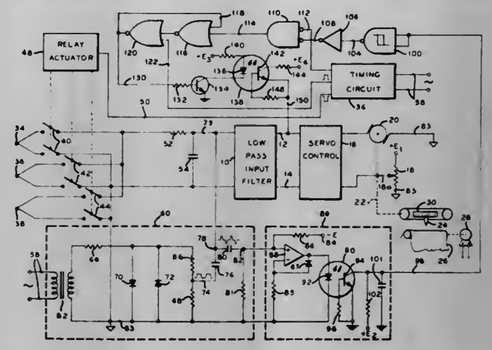
1. A deployable ground plane antenna comprising a housing, said housing lying substantially within a single preselected plane, an antenna centrally located within said housing, said antenna having its longitudinal axis extending in a direction perpendicular to said preselected plane of said housing, a ground plane, said ground plane being made of collapsible material, means pivotally connected to said housing for supporting said ground plane in either a deployed condition radially extending from said housing or in a collapsed condition wrapped around said housing, said supporting means lying during said deployed conditions as well as said collapsed position substantially within said preselected plane of said housing, means operably connected to said supporting means for moving said supporting means and said ground plane between said collapsed position located adjacent to the periphery of said housing and wrapped therearound while lying substantially in said preselected plane of said housing and a deployed position extending radially beyond said housing while lying substantially within said preselected plane of said housing and means for maintaining said ground plane in the collapsed position whereby upon said release of said ground plane maintaining means said ground plane extends to said deployed position.

4,115,785

OPEN CIRCUIT DETECTOR FOR MULTIPOINT RECORDER

Howard Sherman Hoopes, Hatfield; Robert William McClenahan, Philadelphia; Thomas Joseph Walsh, Hatboro, and James William Zecca, Telford, all of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Aug. 12, 1977, Ser. No. 824,150
Int. Cl.[2] G01D *9/34*
U.S. Cl. 346—34 **4 Claims**



1. Apparatus for detecting an open input circuit in a multipoint recording system having a plurality of input circuits which are sequentially switched in a predetermined time phase relationship with an a.c. power source to sequentially connect said input circuits to a servo-operated measuring circuit through a low-pass input filter, comprising:
a pulse generator for generating a train of short pulses at the frequency of said power source including,
means for connecting said generator to said a.c. power source so that said pulses are phased to occur only when one of said inputs is connected to said measuring circuit,
a clipping circuit for providing limited amplitude square wave having the frequency of said power source, and
means for differentiating said square wave to produce said short pulses;
means connecting said pulse generator across said input circuits when said input circuits are connected to said measuring circuit so that the magnitude of the pulses generated at the output of said generator increases in response to an increased impedance across the generator output when the connected input circuit is open circuited; and
a pulse magnitude detecting circuit connected to said pulse source, said detecting circuit being operative to produce an output signal when detecting said increase in said pulse magnitude indicative of an open circuit in the input circuit connected to the measuring system.

4,115,786

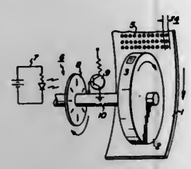
CONSTANT WAVELENGTH MAGNETIC RECORDING

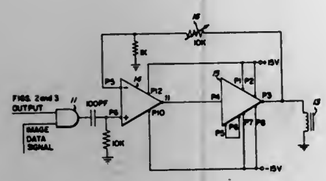
Thomas M. Frey, Brighton, and Stephen F. Pond, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1976, Ser. No. 747,284
Int. Cl.[2] G03G *19/00*; G11B *21/02*
U.S. Cl. 346—74.1 **7 Claims**

1. Variable speed, constant wavelength magnetic imaging apparatus, comprising:
(a) a rotational recording member having a record head mounted thereon;
(b) means for generating a first signal at a frequency lower than the desired recording frequency and directly proportional to the rotational speed of said recording member;
(c) means for generating a second signal at the desired recording frequency which is a multiple of the frequency of said first signal;

(d) means for maintaining said second signal in phase with said first signal by generating a third signal which is substantially locked in phase and frequency with said first





signal and used as a reference signal for locking said second signal in phase with said first signal; and

(e) means for driving said record head at the frequency of said second signal.

4,115,787

INTERPOLATION IN AN INK JET SYSTEM PRINTER

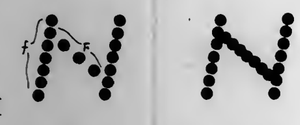
Isao Fujimoto, Kunitachi; Masahiko Aiba, Nara; Yoichi Yamamoto, Nara, and Tomoo Makita, Nara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Sharp Kabushiki Kaisha, Osaka, both of, Japan

Filed Aug. 14, 1975, Ser. No. 604,798

Claims priority, application Japan, Aug. 16, 1974, 49-94341

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **6 Claims**



Prior Art

1. In an ink jet system printer of the charge amplitude controlling type which emits a stream of ink droplets of a uniform size from a nozzle toward a recording medium, selectively charges said ink droplets at a desired amplitude in accordance with a print information signal, deflects said charged ink droplets by deflection means, and prints desired symbols on said recording medium in a dot matrix pattern with said deflected ink droplets, said deflected ink droplets charged in accordance with said print information signal comprising primary matrix dots, the improvement comprising:

interpolation means for depositing interpolation ink droplets between adjacent primary matrix dots on the recording medium, said interpolation ink droplets having a same size as said deflected ink droplets comprising said primary matrix dots.

4,115,788

COMPOUND MATRIX FORMATION IN AN INK JET SYSTEM PRINTER

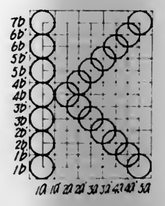
Rikuo Takano, Musashino; Mitsushi Matsunaga, Tokorozawa; Yuhkichi Tsuchida, Akishima; Yuji Sumitomo, Nara; Ikuo Umeda, Kitakatsuragi, and Masahiko Aiba, Nara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Sharp Kabushiki Kaisha, Osaka, both of, Japan

Filed May 6, 1976, Ser. No. 683,964

Claims priority, application Japan, May 8, 1975, 50-55696

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **8 Claims**



1. An ink jet system printer of the charge amplitude controlling type wherein an ink stream emitted from a nozzle having an ultrasonic vibrator is broken into ink droplets of a uniform size at a given vibration frequency, and the individual ink droplets, charged by a charging electrode in accordance with a video signal generated from a video generator, are deflected in accordance with the amplitude of charges carried thereon as they pass through an electrostatic field of a fixed high voltage, thereby printing desired symbols on a recording medium in a dot matrix pattern, said video generator comprising:

first means for developing a first video signal for forming a primary matrix pattern;

second means for developing a second video signal for forming an auxiliary matrix pattern; and

third means for alternatively supplying the first video signal and the second video signal to the charging electrode, wherein auxiliary droplets charged by the second video signal are deposited on the positions where primary droplets charged by the first video signal are not deposited.

4,115,789

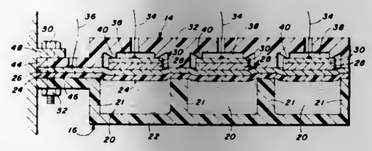
SEPARABLE LIQUID DROPLET INSTRUMENT AND PIEZOELECTRIC DRIVERS THEREFOR

Kenneth H. Fischbeck, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 649,381, Jan. 15, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,664

Int. Cl.² G01D *15/18*; H01L *41/10*

U.S. Cl. 346—140 R **11 Claims**



1. In a liquid drop generator comprising: a housing having a plurality of pressure chambers therein, said pressure chambers opening onto an outer surface of said housing; elastic diaphragm means sealing each chamber opening thereby forming an outer wall of a respective chamber; driver unit means releasably secured to said housing, said driver unit means comprising a carrier member and a plurality of transducer means operatively secured to said carrier member; said transducer means comprising a plurality of piezoelectric members and elastic means operatively secured to each said piezoelectric member for deforming therewith, the portion of said transducer elastic means corresponding to each said piezoelectric members operatively engaging said diaphragm means of a respective one of said chambers in such a manner to normally exert a stress on said diaphragm means tending to decrease the volume of a respective said chamber; and means for applying a voltage across said piezoelectric members to deform the same and thereby their respective said transducer elastic means and diaphragm means for decreasing the volume of their respective said chambers.

4,115,790

DEVICE FOR PREVENTING LEAKAGE CURRENT IN LIGHT RESPONSIVE CIRCUIT

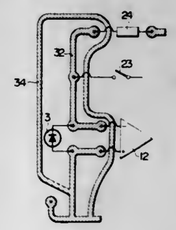
Katsuhiko Tsunefuji, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 31, 1977, Ser. No. 801,583

Claims priority, application Japan, Jun. 7, 1976, 51/73844[U]

Int. Cl.² G03B *7/00*

U.S. Cl. 354—60 R **5 Claims**



1. A device for preventing a leakage current in a light responsive circuit of a camera including a photoelectric transducer element, the device comprising a shield line surrounding the light responsive circuit and to which is applied a potential equal to the potential of the light responsive circuit, thereby preventing disturbances to a weak signal current flowing through the light responsive circuit which may be caused by flow of a leakage current between the light responsive circuit and other circuits of different potentials.

4,115,791

FILM-TRANSPORTING AND SHUTTER-COCKING MECHANISM FOR STILL CAMERAS

Günter Fauth, and Dieter Engelsmann, both of Unterhaching, Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 9, 1977, Ser. No. 794,934

Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621437

Int. Cl.² G03B *17/42, 13/02*

U.S. Cl. 354—206 **15 Claims**



1. In a photographic apparatus for use with film which is collected by a rotary take-up member during forward transport to place successive film frames into exposure position, a combination comprising input means movable in a first direction from an operative position to a rest position; shutter means including a shutter element movable in an opposite second direction from a cocked position to a released position; motion-transmitting means for moving said shutter means to said cocked position in response to movement of said input means to said rest position thereof; and transmission means receiving motion from said input means and including a slide member mounted for movement with said input means and a gear mounted on said slide member to rotate the take-up member during movement of said input means from said rest position to said operative position.

4,115,792

FILM TRANSPORT MECHANISM FOR CAMERAS

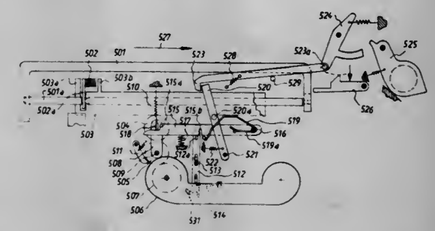
Dieter Engelsmann, Unterhaching; Hubert Hackenberg, and Siegfried Zobel, both of Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 8, 1977, Ser. No. 823,000

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636617

Int. Cl.² G03B *1/16*

U.S. Cl. 354—213 **13 Claims**



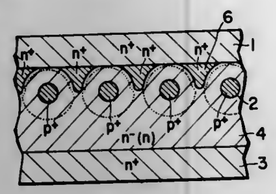
1. In a photographic roll-film camera, a film-transport arrangement comprising, in combination, means defining a path of travel for film within the camera; an input component mounted for movement by the user of the camera to supply film-transport force; a rotary transmission mechanically coupled to the input component for transmitting film-transport force from the input component to film in the camera, the transmission including first and second output components; and arresting means operative for causing the first output component to be arrested and the second output component non-arrested and for then causing the second output component to be arrested and the first output component non-arrested, the arresting means comprising locking means displaceable between a locking position arresting the first output component and an unlocking position releasing the first output component, and sensing means operative in response to film frame advancement for entering into a film perforation, causing the locking means to move to the unlocking position and causing the second output component to become arrested by the resistance of the film to transport, the transmission including a gear driven by the input component and driving the second output component and a rocker mounting the gear for both rotation and swinging movement, the rocker constituting the first output component of the transmission.

4,115,793

FIELD EFFECT TRANSISTOR WITH REDUCED SERIES RESISTANCE

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed Nov. 29, 1977, Ser. No. 855,617
Claims priority, application Japan, Nov. 30, 1976, 51/143698
Int. Cl.[2] H01L *29/78, 29/80*
U.S. Cl. 357—22 13 Claims



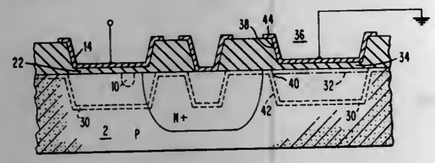
1. A field effect transistor comprising:
a semiconductor region of one conductivity type;
a highly doped source region of said one conductivity type disposed adjacent to said semiconductor region;
a gate structure disposed adjacent to said semiconductor region to define at least one channel in said semiconductor region by depletion layer extending therefrom;
at least one highly doped drain region of said one conductivity type disposed adjacent to said semiconductor region; and
an additional highly doped source region disposed adjacent to said source region in said semiconductor region and extending toward the channel with a converging envelope conforming to the envelope of the depletion layer.

4,115,794

CHARGE PUMPING DEVICE WITH INTEGRATED REGULATING CAPACITOR AND METHOD FOR MAKING SAME

Francisco H. De La Moneda, Reston, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 613,781, Sep. 16, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,311
Int. Cl.[2] H01L *29/78*
U.S. Cl. 357—23 1 Claim



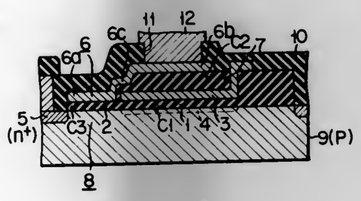
1. A charge pumping device, comprising:
a semiconductor substrate of a first conductivity type;
a first region in the surface of said substrate of a second conductivity type, biased with respect to said substrate;
an insulating layer deposited on the surface of said substrate, having a relatively thin portion located over the semiconductor substrate and overlapping at least one of the edges of said first region defining a gate region;
a gate electrode located over said thin portion of the insulating layer and overlapping said first region, connected to a source of periodic voltage pulses having a first state and a second state with respect to a reference potential;
a voltage source connected between said first region and said reference potential and of such value and polarity to reverse bias the p-n junction formed by said first region except during said first state of the voltage source applied to the gate;
said first state of the voltage pulse driving said substrate underlying said gate into deep depletion of charge carriers of said first conductivity type and said second state voltage pulse driving said substrate underlying said gate into a first magnitude of accumulation of said charge carriers of said first conductivity type;
a second region in the surface of said substrate, adjacent to said first region and beneath said gate, having said first conductivity type of a magnitude greater than that of said substrate and a correspondingly higher threshold voltage;
said substrate having concentration of said first conductivity type dopant of approximately 7×10^{15} atoms per cubic centimeter and said second region has a concentration of said first conductivity type dopant of approximately 10^{17} atoms per cubic centimeter;
said second state voltage pulse driving said second region beneath said gate into a second magnitude of accumulation of said charge carriers of said first conductivity type, greater than said first magnitude;
a second gate electrode over said substrate and separated by said insulating layer;
a third region of said first conductivity type in the surface of said substrate beneath said second gate electrode;
said second gate electrode connected to ground potential;
said third region and said second gate serving as a regulating capacitor so that the DC voltage level produced in said substrate by said pumping device will be regulated;
a blanket layer in said substrate, of said first conductivity type which serves to distribute DC voltage level stored by said regulating capacitor throughout said substrate;
said blanket layer being an electrical contact with said third region;
whereby charge carriers of said second conductivity type which are injected from said first region into said substrate beneath the gate in response to the application of said voltage to said gate electrode will be prevented from rediffusing into said first region by the greater accumulation of said second region when said second state voltage is applied to said gate.

4,115,795

SEMICONDUCTOR MEMORY DEVICE

Fujio Masuoka, and Hisakazu Iizuka, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1976, Ser. No. 754,693
Claims priority, application Japan, Dec. 26, 1975, 50/154769
Int. Cl.[2] H01L *27/10*
U.S. Cl. 357—24 8 Claims



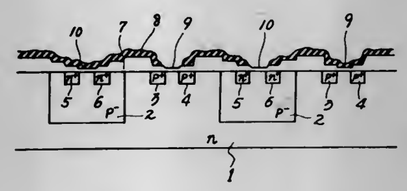
1. A semiconductor memory device comprising:
a semiconductor substrate of a first conductivity type;
a capacitive memory element including a first insulating layer formed on a part of the surface of said substrate and a first electrode formed on said insulating layer, said first electrode serving as one capacitor electrode and said substrate serving as another capacitor electrode of said capacitive memory element;
a semiconductor region of a second conductivity type formed in said substrate spaced from a surface region of said substrate facing said first electrode and said semiconductor region connected to a first external conductor;
a second insulating layer provided on the surface of said substrate between the semiconductor region of said second conductivity type and said surface region of said substrate;
a third insulating layer provided on said first electrode;
a second electrode including first, second, and third portions, said first and second portions being connected to said third portion and said first portion being disposed on said second insulating layer and said second portion being disposed on said third insulating layer; and
an electrode contacted with said second portion of said second electrode over said surface region of said substrate and connected to a second external conductor.

4,115,796

COMPLEMENTARY-MOS INTEGRATED SEMICONDUCTOR DEVICE

Takeo Fujimoto, Toyonaka; Yasuo Torimaru, Nara; Shin-ichi Ogawa, Suita, and Shinya Yasue, Matsubara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 592,936, Jul. 3, 1975, abandoned. This application Apr. 5, 1977, Ser. No. 784,715
Claims priority, application Japan, Jul. 5, 1974, 49-81920
Int. Cl.[2] H01L *27/04*
U.S. Cl. 357—42 2 Claims



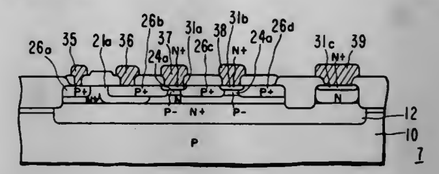
1. In a complementary integrated semiconductor device including a substrate of a first conductivity type, well-regions of a second conductivity type, a first pair of channels of the second conductivity type formed on the substrate, and a second pair of channels of the first conductivity type formed on the well-regions, the improvement comprising:
ion implanted gate regions in a selected one of said first pair of channels formed on the substrate and in a selected one of said second pair of channels formed on said well-regions, the ion implanted gate region in said first pair of channels having a first threshold level and the ion implanted gate region in said second pair of channels having a second threshold level different from said first threshold level;
non-ion implanted gate regions in the remaining channels of said pairs formed on the substrate and well-regions, the non-ion implanted gate region in said first pair of channels having said second threshold level and the non-ion implanted gate region in said second pair of channels having said first threshold level;
a first pair of complementary MOS transistors including the channel on the substrate in which the gate region is ion implanted and the channel on the well-region in which the gate region is not ion implanted; and
a second pair of complementary MOS transistors including the channel on the substrate in which the gate region is not ion implanted and the channel on the well-region in which the gate is ion implanted.

4,115,797

INTEGRATED INJECTION LOGIC WITH HEAVILY DOPED INJECTOR BASE SELF-ALIGNED WITH INJECTOR EMITTER AND COLLECTOR

Hemraj K. Hingarh, Santa Clara, and Richard E. Crippen, Mountain View, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 4, 1976, Ser. No. 729,045
Int. Cl.[2] H01L *21/22, 27/04, 21/82*
U.S. Cl. 357—46 12 Claims



1. An integrated injection logic circuit having improved current characteristics comprising:
a semiconductor material having at least one substantially flat surface,
a lateral transistor having an emitter of first conductivity type formed in a first portion of said semiconductor material adjacent said at least one surface, a base of opposite conductivity type to the emitter formed in a second portion of said semiconductor material adjacent said at least one surface, a collector of first conductivity type formed in a third portion of said semiconductor material adjacent said at least one surface, said second portion being laterally disposed between the first portion and the third portion, said second portion being formed by the diffusion of opposite conductivity type impurity into a first region of the surface and into a second region of the surface, the first and second regions being non-contiguous;
a vertical transistor having a second collector of opposite conductivity type to the collector of the lateral transistor defined by a fourth portion of said semiconductor material adjacent said at least one surface, a second base of first conductivity type defined by a fifth portion of said semiconductor material underlying said fourth portion, and a second emitter of opposite conductivity type to the second base defined by a sixth portion of said semiconductor material underlying said fifth portion and spaced from said fourth portion by said fifth portion;
said collector of said lateral transistor being formed subsequent to formation of said lateral transistor base and providing a low resistance current path to said base of said vertical transistor;
means for electrically contacting said first emitter, first base and first collector; and
means for electrically contacting said second emitter, said second base and said second collector.

4,115,798

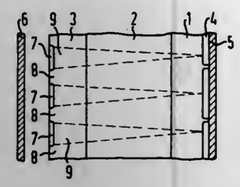
SEMICONDUCTOR COMPONENT HAVING PATTERNED RECOMBINATION CENTER MEANS WITH DIFFERENT MEAN VALUE OF RECOMBINATION CENTERS ON ANODE SIDE FROM THAT ON CATHODE SIDE

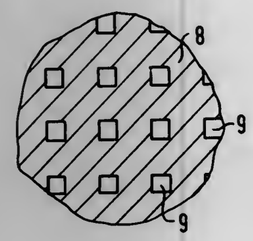
Karl Platzoeder, Haimhausen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 2, 1977, Ser. No. 802,816
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625856
Int. Cl.[2] H01L *29/167*
U.S. Cl. 357—64 8 Claims

1. A semiconductor component comprising a semiconductor body having at least two zones of alternate opposite conductivity type, the outer anode-side zone being connected on its entire surface with an anode electrode, said semiconductor

body having recombination centers therein with means for gettering the recombination centers on the outer, cathode-side zone, where at the anode-side and at the cathode-side a drop occurs in the concentration of the recombination centers toward a central region, at least the outer, anode-side region of





the said central region being divided into surface elements having different levels of concentration of recombination centers, and the ratio of the surface elements being such that in the central region the anode-side mean value of the concentration of the recombination centers is higher than the cathode-side mean value.

4,115,799

THIN FILM COPPER TRANSITION BETWEEN ALUMINUM AND INDIUM COPPER FILMS

Fang-Chen Luo, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 26, 1977, Ser. No. 762,546
Int. Cl.² H01L 29/46, 29/54
U.S. Cl. 357—71 **5 Claims**



1. In a thin film transistor matrix array in which X–Y aluminum buses electrically interconnect thin film transistor circuit arrays in which the source and drain contacts of the thin film transistors comprise a layer of indium contacting the semiconductive material and a layer of copper atop the indium forming indium-copper source and drain contacts the improvement comprising thin film copper transition areas between the aluminum buses and the indium-copper source and drain contacts.

4,115,800

COLOR VIDEO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS

Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 777,551, Mar. 14, 1977, abandoned. This application Oct. 13, 1977, Ser. No. 841,982
Int. Cl.² H04N 5/78
U.S. Cl. 358—8 **7 Claims**

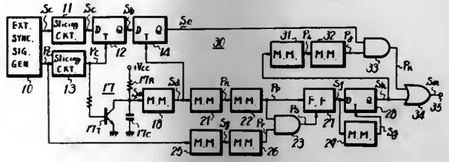
1. Recording apparatus for color video signal including field and line frequency synchronizing signals and a color subcarrier signal, said apparatus comprising:

means for generating a first signal having a frequency commensurate with the field frequency of said color video signal;

means for generating a second signal indicating a field interval in which there is a predetermined phase relationship between the line synchronizing signals and the color subcarrier signal;

means for combining said second signal with said first signal to produce a composite control signal; and

means for recording said composite control signal on a recording medium.

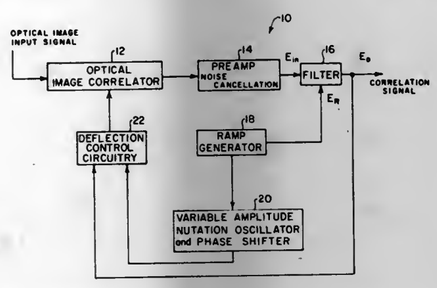


4,115,801

OPTICAL IMAGE CORRELATOR TRACKING FILTER CIRCUIT

Richard A. Salmen, Youngstown, and Clark G. Reed, Greentown, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Mar. 3, 1977, Ser. No. 773,998
Int. Cl.² H04N 7/18
U.S. Cl. 358—93 **6 Claims**



1. An optical image correlator circuit, comprising:

an optical image correlator receiving an optical image input signal, converting said input signal to an electron stream and nutating said stream as it approaches a storage grid upon which a reference image is maintained as a distributed charge, said correlator producing an output signal indicative of the correlation between the input signal and the reference image;

deflection coils interposed within said correlator for nutating said electron stream;

a deflection coil control circuit means interconnected with and controlling said deflection coils for linearly regulating the rate of nutation of said electron stream, said deflection coil control circuit means including a ramp generator; and

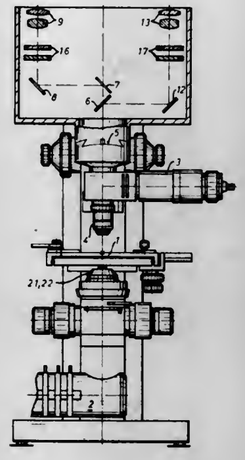
a filter circuit interconnected between said correlator and said deflection coil control circuit for receiving and filtering the output signal of the correlator, said filter circuit having a characteristic frequency response which linearly varies with, and is under control of, an output of said deflection coil control circuit and includes a first multiplier circuit receiving an output from said ramp generator, a first integrator connected to and receiving an output from said multiplier, and a summing point amplifier connected to said first integrator and said correlator and receiving output signals therefrom.

4,115,802

OPTICAL-ELECTRONIC MICROSCOPY APPARATUS AND PROCESS

Klaus Kramer, Giessen; Toni Dietrich, Wetzlar, and Peter Braun, Krofdorf-Gleiberg, all of Germany, assignors to Wilhelm Will KG, Nauborn, Germany

Filed Aug. 8, 1975, Ser. No. 603,238
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1974, 2437984
Int. Cl.² H04M 7/00
U.S. Cl. 358—93 **24 Claims**



1. A process for increasing the magnification of an optical electronic microscope together with increasing the resolving power to observe dynamic phenomena in living specimens which are not visible through light optical means due to insufficient optical resolving power, comprising the steps of producing by light optical means on two iconoscopes two real images of different light qualities of a specimen, scanning point by point in synchronism the two real images on the two iconoscopes and amplifying electronically both of the scanned real images, and forming by logarithmic difference a single visible image from the two amplified real images such that separate cell structures are visible in the image.

4,115,803

IMAGE ANALYSIS MEASUREMENT APPARATUS AND METHODS

Roger R. A. Morton, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 23, 1975, Ser. No. 580,439
Int. Cl.² H04N 7/18
U.S. Cl. 358—107 **16 Claims**

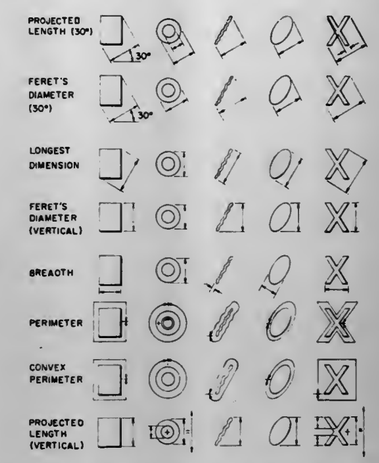
1. An image analysis system for measuring an image in a field of view as a function of the relationship of assigned values or points on lines of scan such that points of equal value on separate lines of scan lie in a straight line oriented at a predetermined angle with respect to the lines of scan traversing the field of view, comprising:

means for scanning the image within the field of view to generate a video signal;

means for generating boundary signals as a function of the video signal to define the boundaries of the image;

electronic means for producing a count value in synchronism with the scanning means such that all location points of the scanning spot on each scan line at a specific count value of the electronic means, align at a predetermined angle to the scan lines; and

processing means for measuring the image as a function of the count value of the electronic means related to the time



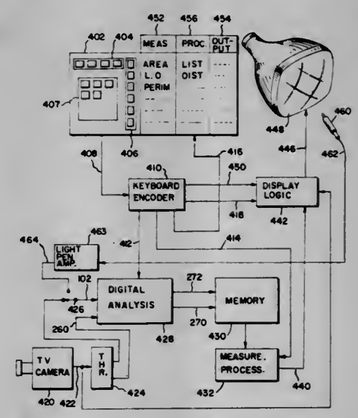
of occurrence of the boundary of the image as defined by the boundary signal.

4,115,804

IMAGE ANALYSIS DATA EXTRACTION

Roger R. A. Morton, Penfield, and Cornelius J. D. McCarthy, Fairport, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 23, 1975, Ser. No. 580,392
Int. Cl.² H04N 7/18
U.S. Cl. 358—107 **13 Claims**



5. An image analysis system for producing a video signal from images of objects in a field of view by scanning across the field of view, comprising:

means for generating measurement data of individual objects during a single field of scan as a function of the video signal; and

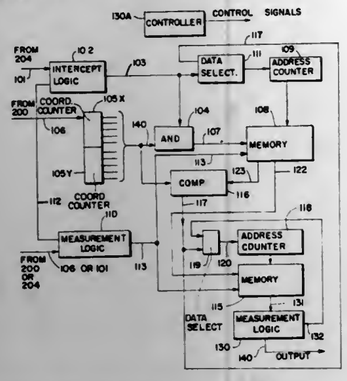
means for displaying the measurement data of individual objects together with the image of the field of view as a function of the video signal on the same display.

4,115,805

IMAGE ANALYSIS INDEXING APPARATUS AND METHODS

Roger R. A. Morton, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 23, 1975, Ser. No. 580,393
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—107 **7 Claims**



5. An image analysis system performing compound measurements derived from two or more measurements extracted from different fields of scan on each of a number of objects within a field of scan, comprising:

means for performing, during a first field of scan, measurements on individual objects within the field of scan;

means for performing on a second field of scan a different measurement on the objects within the field of scan;

storage means for storing the measurements from each of the field of scans; and

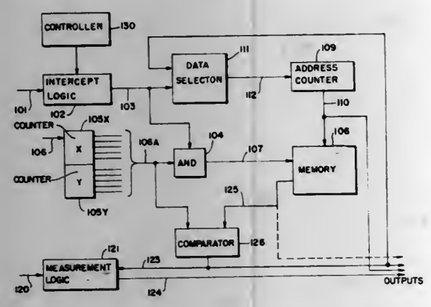
measurement processing means for processing for each object the measurements from each of the field of scans to form a compound meaurement.

4,115,806

IMAGE ANALYSIS DATA TRANSFER

Roger R. A. Morton, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 23, 1975, Ser. No. 580,438
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—107 **10 Claims**



1. An image analysis system for processing data extracted from an image across a field of view using repeated scans of the image, comprising:

means for producing a video signal as a function of the image;

means for producing a binary signal as a function of the video signal;

means for extracting data from the binary signal to define a position of a point within the field of view;

means for storing the data defining the point; and

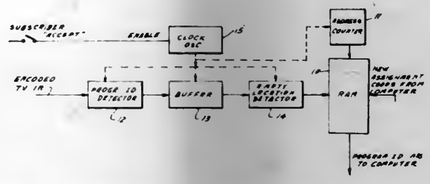
means employing the stored data during a subsequent scan of the image for identifying data generated as a function of the video signal during the occurrence of the subsequent scan, at the defined point by comparing the data defining the position of the point within the field of view with the position of the scan at which the video signal is used to generate further data.

4,115,807

TELEPHONE BILLING APPARATUS FOR A SUBSCRIPTION TELEVISION SYSTEM

H. George Pires, 20 Surrey La., Parlin, N.J. 08859

Continuation-in-part of Ser. No. 706,929, Jul. 19, 1976, Pat. No. 4,068,264. This application Nov. 1, 1976, Ser. No. 737,856
Int. Cl.[2] H04N *1/44*
U.S. Cl. 358—122 **14 Claims**



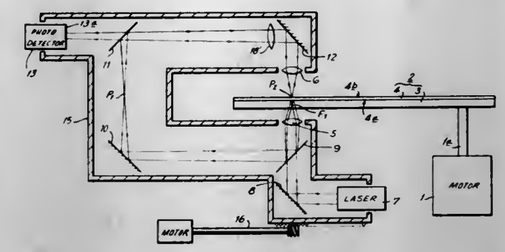
1. In a television system furnishing television programs to subscribers having access to a communications network and having encoding-transmitting means for furnishing and transmitting encoded television signals and a plurality of receiving-decoding means, each for receiving said encoded television signals and furnishing corresponding decoded television signals only when activated by a subscriber-furnished program acceptance signal: a billing system, comprising, in combination, storage means in each of said receiving-decoding means, for storing a customer identification number and a plurality of program identification numbers, each indicative of the charge for a subscriber-accepted television program; central computing means connected to said communications network for computing the charge to each of said subscribers for so-accepted programs in response to billing signals applied thereto; a plurality of read-out means, each intercoupled between one of said storage means and said communications network and responsive to an initiation signal, for reading out said customer identification number and said program identification numbers, furnishing corresponding respective customer identification signals and billing signals, and applying said signals to said communications network for transmission to said central computing means; and means for furnishing said initiation signal under subscriber control; wherein said means for furnishing said initiation signal comprises means for furnishing said initiation signal under subscriber control; wherein said encoding-transmitting means comprises means for encoding television signals for each of said television programs in accordance with a selected one of a set of predetermined codes, and means for periodically changing said set of predetermined codes; wherein said receiving-decoding means comprises decoder logic circuit means operable in a selected one of a plurality of decoder modes corresponding in number to said set of predetermined codes in accordance with program code signals applied thereto; wherein said storage means comprises a random access memory having a first set of storage locations for storing said program identification numbers, a second set of storage locations for storing said customer identification number, and a third set of storage locations for storing program code numbers corresponding to said program code signals; and wherein said central computing means comprises means for furnishing updated ones of said program code signals corresponding to a changed set of said predetermined codes to said random access memory only following receipt of said billing signals by said central computing means.

4,115,808

OPTICAL SIGNAL PLAY-BACK DEVICE WITH AUTO-FOCUSSING OF A LIGHT BEAM AT A RECORD CARRIER SURFACE

Senri Miyaoka, Zushi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 775,368
Claims priority, application Japan, Mar. 11, 1976, 51-26310
Int. Cl.[2] H04N *5/84, 5/76;* G11B *7/12*
U.S. Cl. 358—127 **12 Claims**



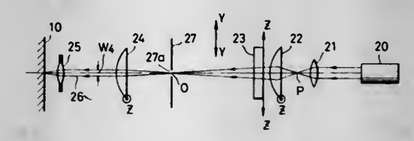
1. In a signal play-back device having a substantially flat record carrier with first and second oppositely facing reflective surfaces and a signal recorded as variations in at least said second surface, a light source emitting a light beam for scanning the recorded signal variations and providing correspondingly varied reflected beam energy, and light detecting means having a surface for receiving said varied reflected beam energy and providing a corresponding output; an optical system comprising first lens means directing said light beam from said source against said surface for reflection by the latter and focussing the light beam reflected from said first surface at an image point remote from said first surface, second lens means for effecting a predetermined focussing of said image point of the light beam onto said second surface and directing the light beam reflected from said second surface toward said surface of the light detecting means, the magnification factors of said first and second lens means being proportioned relative to each other for maintaining said predetermined focussing of said image point at said second surface irrespective of variations in the distance of said second surface from said second lens means, and third lens means interposed in the path of the light beam between said second lens means and said light detecting means and being dimensioned and positioned to focus, at the plane of said surface of the light detecting means, a plane which is spaced from said second lens means toward said third lens means by a distance equal to the focal length of said second lens means.

4,115,809

LASER BEAM SYSTEM FOR OPTICALLY RECORDING INFORMATION SIGNALS ON A RECORD DISC

Ichiro Ueno, Isehara, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 29, 1976, Ser. No. 745,685
Claims priority, application Japan, Nov. 29, 1975, 50-142758
Int. Cl.[2] H04N *5/76*
U.S. Cl. 358—128 **3 Claims**



1. A system for optically recording on a record disc, comprising:

light source means for emitting a light modulated in conformance with an information signal to be recorded;

optical system means for converting said light from the light source into a light beam having a relatively large width in the longitudinal direction of a track formed on said recording disc and a relatively small width in the transverse direction of said track;

slit plate means in said optical system means for limiting the width of said light beam to a constant width in said transverse direction of the track; and

focusing lens means for receiving as incident light said light beam having a limited width and for forming on said recording disc a light spot which is small in the longitudinal direction of the track and large in the transverse direction of said track;

said light spot forming in the upper surface of said recording disc a plurality of pits each of which has a small width in the longitudinal direction of the track and a constant large width in the transverse direction of said track, thereby recording said information signal along said track on said recording disc,

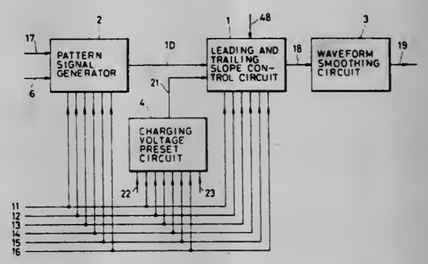
said optical system means having at least one focal point within the optical path, and said slit plate being at the position of said focal point.

4,115,810

TELEVISION SIGNAL GENERATOR

Tsuneo Mikado, Hachioji, Japan, assignor to Nippon Television Industry Corporation, Tokyo, Japan

Filed Oct. 26, 1976, Ser. No. 735,395
Claims priority, application Japan, Jun. 25, 1976, 51-75879; Oct. 28, 1975, 50-130215
Int. Cl.[2] H04N *5/30;* H03K *4/00*
U.S. Cl. 358—139 **9 Claims**



1. A television signal generator, comprising: means for generating a television signal for reproducing on a television picture tube a required pattern, shape and the like;

a time constant circuit to change the rise and fall times respectively at every leading and trailing edge of waveforms corresponding to each horizontal scanning line of said television signal; and

control means to selectively change the time constant of said time constant circuit such that said time constant has predetermined values, said predetermined values being selected in dependence on the variation of the outline of said pattern, shape and the like relative to each said horizontal scanning line.

4,115,811

DATA SLICING APPARATUS AND METHOD

Raymond Charles Goff, Farnborough, England, assignor to Aston Electronic Developments Ltd., England

Filed Dec. 6, 1976, Ser. No. 748,232
Claims priority, application United Kingdom, Dec. 9, 1975, 50366/75; Feb. 12, 1976, 5584/76
Int. Cl.[2] H04N *5/21*
U.S. Cl. 358—167 **10 Claims**

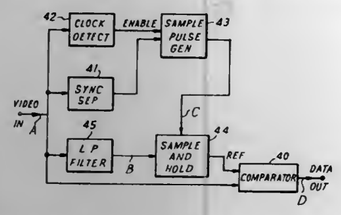
1. A data slicer for use with a data signal comprising a burst

of clock pulses followed by a sequence of data pulses comprising:

(a) detector means connected to a signal input for detecting the presence of clock pulses on an incoming signal;

(b) generator means connected to said detector means for generating a sampling pulse during the time that the presence of the clock pulses is detected;

(c) averaging means connected to said signal input for establishing the mean level of the incoming clock pulses;



(d) sampler means connected to said averaging means for sampling the mean incoming signal level when established by said averaging means during the sampling pulse interval and for storing the sampled signal;

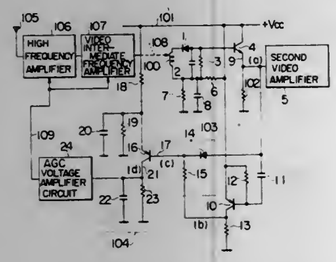
(e) comparator means having a first input connected to said signal input and a second input connected to the sampler means for receiving and comparing said incoming signal with the sampled signal stored in said sampler means to effect slicing of said data pulses from the incoming signal.

4,115,812

AUTOMATIC GAIN CONTROL CIRCUIT

Mitsuharu Akatsu, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 526,406, Nov. 22, 1974, abandoned. This application Aug. 15, 1977, Ser. No. 824,783
Claims priority, application Japan, Nov. 26, 1973, 48-131710
Int. Cl.² H04N *5/52*
U.S. Cl. 358—174 **11 Claims**



1. An automatic gain control circuit for a television receiver comprising:

an amplifier means for amplifying a television signal containing a composite video signal having a horizontal synchronizing signal and pedestal portions;

a detector circuit for detecting the output signal from said amplifier means to produce said composite video signal;

a horizontal synchronizing signal generator to separate and produce said horizontal synchronizing signal from said composite video signal;

an automatic gain control signal generator for receiving said horizontal synchronizing signal and said composite video signal to produce an automatic gain control signal; and

means for supplying said automatic gain control signal to said amplifier means to control the gain thereof so that the level of said pedestal portions can be maintained constant;

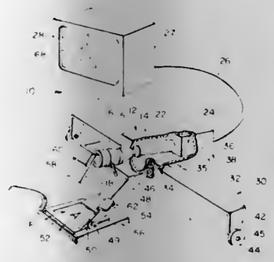
wherein said automatic gain control signal generator comprises a switch circuit supplied with said horizontal synchronizing signal from said horizontal synchronizing signal generator and said composite video signal from said detector circuit for producing a modified composite video signal in which the pedestal portion thereof has a peak value and an automatic gain control signal detecting circuit supplied with said modified composite video signal from said switch circuit for producing said automatic gain control signal by peak rectification of said modified composite video signal; and said switch circuit is adapted to be turned off by said horizontal synchronizing signal during the duration thereof and turned on at least during the duration of said pedestal portion to thereby supply and composite video signal to said automatic gain control signal detecting circuit, whereby said automatic gain control signal detecting circuit produces an automatic gain control signal in dependence upon the level of said pedestal portion greater than a predetermined reference value.

4,115,813

TELEVISION ENLARGING DISPLAY APPARATUS FOR GRAPHIC MATERIAL

Takashi Mikami, Machida, Japan, assignor to Mikami & Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,395
Claims priority, application Japan, Jul. 28, 1976, 51-99561[U]
Int. Cl.² H04N *5/65, 7/18*
U.S. Cl. 358—229 **10 Claims**



1. Optical apparatus for displaying enlargements of a graphic copy, comprising:

a television camera having a lens for picking up an optical image from said graphic copy;

a platform means carrying said camera in an elevated position above said graphic copy and rotatable on a horizontal axis to lift said camera;

an arm secured to said platform means and extending downwardly therefrom toward said copy;

a frame means secured to said arm and disposed to bear on said copy and to outline a scanning field on said copy, whereby said frame means is lifted off said copy when said platform means and said arm are rotated on said horizontal axis; and

an image reflector means supported by said platform means and disposed in an optical path between said frame and said lens for transmitting an image of said copy to said lens.

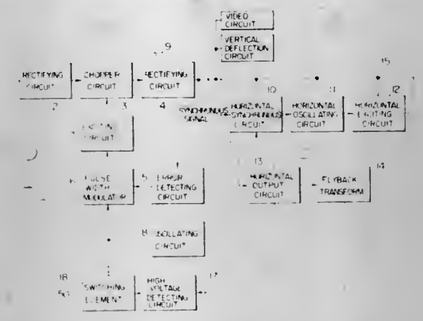
4,115,814

CIRCUIT FOR EXTINGUISHING ABNORMALLY HIGH VOLTAGE IN TELEVISION RECEIVER

Kimito Kosaka; Kunio Umehara, and Takeshi Maruyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 15, 1977, Ser. No. 768,752
Claims priority, application Japan, Feb. 20, 1976, 51-17066
Int. Cl.² H04N *5/44, 5/68*
U.S. Cl. 358—243 **24 Claims**

1. An abnormally high voltage extinguishing circuit for a television receiver including a switching-type stabilized power supply circuit having a chopper circuit and a control circuit for controlling the switching operation of said chopper circuit so as to generate a stabilized output voltage from the power supply circuit, and a horizontal deflection circuit having a horizontal output circuit and a flyback transformer, said horizontal deflection circuit receiving the stabilized output voltage from said power supply circuit, supplying a current to a horizontal deflection coil, and also supplying a high voltage to an



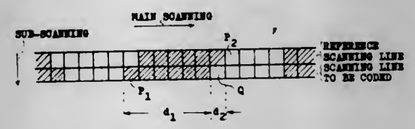
anode of a picture tube through said flyback transformer; said abnormally high voltage extinguishing circuit comprising first means for generating a voltage proportional to said high voltage and for detecting whether or not the generated voltage exceeds a predetermined level and second means connected with said first means for operatively controlling said control circuit to stop the switching operation of said chopper circuit when the voltage generated by said first means exceeds the predetermined level.

4,115,815

FACSIMILE SIGNAL CODING METHOD

Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamazaki, Hiratsuka, and Yasushi Wakahara, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Nov. 1, 1976, Ser. No. 737,072
Claims priority, application Japan, Oct. 30, 1975, 50-130842
Int. Cl.² H04N *1/40*
U.S. Cl. 358—260 **2 Claims**



1. A method of coding a facsimile signal, comprising:

classifying information change picture elements of a facsimile signal into two classes according to the information change directions of the picture elements;

selecting information change picture elements classified as having an information change from white to black;

coding the shorter of a first distance from an instant information change picture element to be coded to a first reference black-to-white information change picture element immediately proceeding said instant information change picture element on the same scanning line, and a second distance on an immediately preceeding scanning line from a picture element just above said instant information change picture element to a second white-to-black information change picture element immediately succeeding a picture element just above said first reference black-to-white information change picture element;

selecting information change picture elements classified as having an information change from black to white;

predicting a distance from an instant information change picture element to be coded to the immediately preceeding information change picture element on the basis of a previously coded run; and

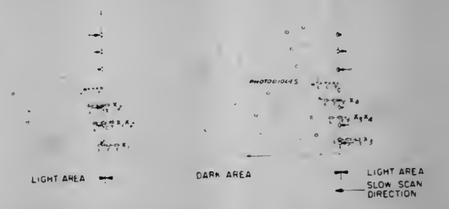
coding the error between the predicted value and the run length of the instant run.

4,115,816

ELECTRONIC SCREENING

William West Moe, Stratford; Robert William Lotz, Darien; Ethan Robert Green, Monroe, and Rodolfo Fazio, Southport, all of Conn., assignors to Printing Developments, Inc., New York, N.Y.

Division of Ser. No. 414,798, Nov. 12, 1973, Pat. No. 3,983,319. This application Aug. 16, 1976, Ser. No. 714,482
Int. Cl.² H04N *1/40, 1/46*
U.S. Cl. 358—283 **19 Claims**



1. In an apparatus for scanning an input image and forming a corresponding output image in halftone dots, the combination of scanning means for scanning successive points of the input image and generating an output signal representative of tonal densities of said successive points of the input image, at least three photocells, separate from said scanning means, a first being responsive to the input image in a region displaced from but adjacent to the point instantaneously being scanned to produce a first output, a second being centrally located with respect to the other two and responsive to the input image in a region including said instantaneously scanned point to produce a second output, and the third being responsive to a region of said input image equally displaced from the point instantaneously being scanned and on the side of said point opposite the region to which said first photocell is responsive to produce a third output, means including comparator means responsive to said photocell outputs for generating a dot-offset signal that depends on the relative magnitudes of said first, second and third photocell outputs, and means responsive to said dot-offset signal for adjusting the position and shape of said halftone dots in said output imge.

4,115,817

DEVICE INCLUDING A UNIT FOR FEEDING A RECORDING MEDIUM AT A PREDETERMINED SPEED TO A UNIT FOR PROCESSING THAT PROVISIONAL RECORD INTO A FINAL ONE WHICH IS FORMED ON THE MEDIUM FED AT ANOTHER SPEED

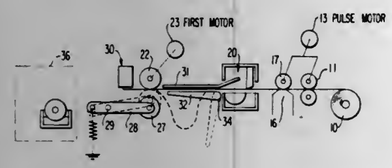
Etsuo Suzuki, and Hidekazu Sakurai, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1977, Ser. No. 770,972
Int. Cl.² H04N *1/12, 1/31*
U.S. Cl. 358—288 **9 Claims**

1. A device for processing a recording medium having a leading edge, comprising variable speed feed means for feeding the recording medium along a predetermined path with a preselected one of a plurality of speeds, means for recording a provisional record of a pattern on the recording medium being fed by said feed means, means forwardly along said path of said feeding means and said recording means for processing said

provisional record into a final record of said pattern, store means between said processing means and one of said variable speed feed means and said recording means that is nearer to said processing means to be put normally in a first position for guiding the recording medium fed thereto by said variable speed feed means towards said processing means and controllably in a second position for storing the recording medium fed thereto by said variable speed feed means, controllable feed means for further feeding the stored recording medium to said processing means, and control means for controlling said store means and said controllable feed means, wherein:

said controllable feed means comprises a feed roller transversely of said path, a cooperating member put normally in a first location of disengaging with said roller and controllably in a second location of engaging therewith, and controllable drive means put controllably in a first mode of operation for making said feed roller feed at a predetermined speed the recording medium put between said feed roller and normally in a second mode of operation for rendering said feed roller to feed nothing;



said control means comprising detector means along said path at a predetermined distance from said feed roller for detecting passage thereby of the leading edge of the recording medium fed by said variable speed feed means to produce a start signal, first means responsive to said start signal for putting said cooperating member into said second location and said store means into said second position, second means for putting said controllable drive means into said first mode of operation a first predetermined interval after the last-mentioned leading edge reaches said feed roller, and third means for putting said cooperating member back into said first location, said store means back into said first position, and said controllable drive means back into said first mode of operation approximately a second predetermined interval after production of said start signal, said second predetermined interval being longer than said first predetermined interval.

4,115,818

APPARATUS FOR MONITORING EVOLUTIVE INFORMATION

Jean-Paul Lesieur, Massy, France, assignor to Compagnie Internationale pour l'Informatique Cii Honeywell Bull, Paris, France

Filed Jan. 12, 1977, Ser. No. 758,840
Int. Cl.² G11B *5/00*; H04N *5/795*
U.S. Cl. 360—5 **8 Claims**

1. A system for monitoring evolutive information data picked up at points in an informatics equipment and analyzing selected information data sequences comprising the combination of:

means adapted to be operatively connected to the information equipment to record evolutive information data on a multi-track loop rotatable magnetic carrier and for reading said recorded data, said means comprising as many erase/write and as many reading heads as are tracks, each operable in an erase/write condition or a read-out condition,

means for selectively interrupting the recording of said evolutive information and switching the operation of said means for recording and reading from its erase/write condition to its read-out condition,

visual display means having inputs connected to display information derived from outputs of the said reading heads,

synchronizing means connected to said visual display means for synchronizing the display with the rotation of the said carrier,

pulse trigger means for repetitively activating the synchronizing means,

means responsive to the interruption of the recording of said data to cause an index marking the origin of the information data sequences to be displayed to be written in or recorded on an index track of said carrier, means to read said index at each rotatation of the said carrier, and,

means to convert each read-out of the said index into a trigger pulse applied to the said display synchronizing means,



manually controllable means for introducing a variable delay between the read out of the index and the application of a corresponding trigger pulse to the said display synchronizing means, said manually controllable means including

a clock pulse generator,

a clock pulse counter connected to count the clock pulses of said generator,

a manually operable pulse count selector, and

comparator means connected to said counter and said selector for issuing a trigger pulse at the identity of the count in said clock pulse counter and of a count selected in said pulse count selector and for stopping the count in said counter and resetting it to zero up to the next occurrence of the index on the index track of said carrier.

4,115,819

SYSTEM FOR THE EDITING OF A MAGNETIC TAPE IN ONE VTR WITH A PORTION OF A SIGNAL REPRODUCED FROM A TAPE ON ANOTHER VTR

Yasuo Shigeta, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

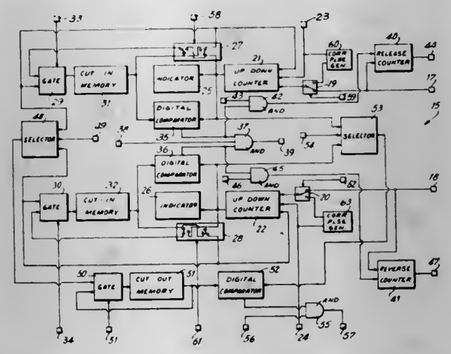
Filed Jan. 21, 1977, Ser. No. 761,070
Claims priority, application Japan, Jan. 23, 1976, 51-6770
Int. Cl.² H04N *5/78*
U.S. Cl. 360—14 **5 Claims**

1. A tape editing system having a first VTR with means for effecting forward and reverse movement of a first tape therein and being operable, during forward movement of said first tape, in a playback mode for reproducing video signals recorded on said first tape, a second VTR with means for effecting forward and reverse movement of a second tape therein and being selectively operable, during forward movement of the second tape, in a playback mode for reproducing video signals recorded on said second tape and in a record mode for recording on said second tape the video signals being simultaneously reproduced from said first tape, and an editing control apparatus comprising

first and second tape address counting means for up- and down-counting of addresses along said first and second tapes, respectively, during the forward and reverse movement, respectively, of the first and second tapes;

first and second cut-in address memory means operable for storing addresses indicated by said first and second tape address counting means, respectively, at the commencement of selected portions of the video signals on the first and second tapes, respectively;

first and second cut-in comparator means connected with said first and second tape address counting means and said first and second cut-in address memory means, respectively, for providing first and second cut-in output signals, respectively, upon coincidence of the addresses in said first and second tape address counting means with the stored addresses in said first and second cut-in address memory means, respectively;



first and second reverse counting means being operable by said first and second cut-in output signals, respectively, during reverse movement of said first and second tapes, respectively, said first and second reverse counting means including, respectively, first and second means for halting the reverse movement of said first and second tapes at stand-by addresses located at equal predetermined distances along said first and second tapes in the reverse direction from the cut-in addresses of said first and second tapes; and

means for initiating the simultaneous forward playback modes of said first and second VTRs and causing the change-over of said second VTR to the recording mode upon the occurrence of said second cut-in output signal.

4,115,820

SYSTEM FOR REPRODUCING A VIDEO SIGNAL

Minoru Morio, and Masahiro Kambara, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 10, 1975, Ser. No. 630,332
Claims priority, application Japan, Nov. 11, 1974, 49-129687; Jan. 16, 1975, 50-7375
Int. Cl.² H04N *5/795*
U.S. Cl. 360—33 **8 Claims**

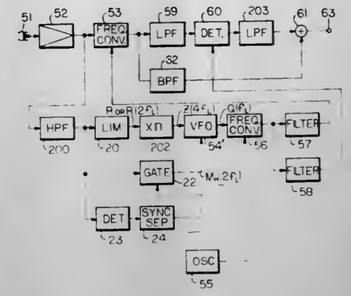
1. A system for reproducing a video signal recorded on a magnetic recording medium, said video signal containing at least a luminance signal which is balanced-modulated on a carrier signal including a synchronizing pulse signal portion having pulses of a larger amplitude than other signal portions, said system comprising:

magnetic transducer means for reproducing said video signal from said magnetic recording medium;

a synchronous detector for synchronously detecting said balanced-modulated luminance signal;

supply means to supply a reference carrier signal to said synchronous detector; and

control means to control the phase of said reference carrier signal, said control means comprising means connected to said transducer means for controlling the phase of said reference carrier signal continuously with a component of



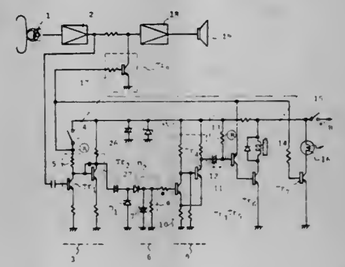
said reproduced video signal and during said synchronizing signal pulses of said modulated luminance signal.

4,115,821

NONRECORDED SECTION DETECTION IN A TAPE RECORDER APPARATUS

Yoshimasa Okada, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 21, 1976, Ser. No. 734,460
Claims priority, application Japan, Oct. 21, 1975, 50-127003
Int. Cl.² G11B *15/18, 15/48*
U.S. Cl. 360—72 **7 Claims**



1. In a nonrecorded section detection system of a tape recorder apparatus comprising a nonrecorded section detection circuit, a main power switch for the tape recorder, and a driving means for activating a plunger in order to release a nonrecorded section detection mode in response to an output signal of the nonrecorded section detection circuit, the improvement comprising:

a switching means interposed between the nonrecorded section detection circuit and the driving means;

an auxiliary power supply switch connected to a power supply terminal through said main power switch, said auxiliary power supply switch being placed in its ON condition only when the tape recorder apparatus is in the nonrecorded section detection mode; and

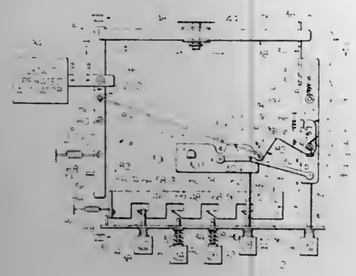
circuit means for applying a bias voltage from said power supply terminal to said switching means only via said auxiliary power supply switch.

4,115,822

AUTOMATIC START AND SHUT-OFF APPARATUS FOR MAGNETIC-TAPE SOUND RECORDER

Kunihiko Kitazawa; Masuichiro Mimura, and Mitsuo Iwata, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Dec. 28, 1976, Ser. No. 755,056
Claims priority, application Japan, Dec. 29, 1975, 51-176583[U]; Dec. 30, 1975, 50-178303[U]
Int. Cl.² G11B *15/48*
U.S. Cl. 360—74 13 Claims



1. An automatic start and shut-off apparatus for a magnetic-tape sound recorder having a plurality of modes of operation and including component members having operative conditions for selectively effecting each of said modes of operation and manually-operable, mode-selecting and selected-mode holding means for selecting a desired one of said modes of operation and actuating said component members to effect the selected mode of operation, said means having a first condition operative to hold the selected mode of operation and a second condition clearing the selected mode of operation, comprising locking means operable independently of said mode-selecting and selected-mode holding means and shiftable manually into an operative condition locking said component members in inoperative conditions thereof and shiftable automatically into an inoperative condition releasing the inoperative conditions of the component members, unlatching means having a first condition engageable with said mode-selecting and selected-mode holding means and a second condition unengageable with the mode-selecting and selected-mode holding means, motion translating means intervening between said locking means and said unlatching means and operative to convert the inoperative and operative conditions of the locking means into the first and second conditions, respectively, of the unlatching means, unlocking means intervening between said locking means and said unlatching means and having an operative condition producing in said locking means the inoperative condition thereof and an inoperative condition allowing the locking means to hold the operative condition thereof, said unlatching means being shiftable irrespectively of said first and second conditions thereof and independently of said motion translating means between an operative condition producing in said unlocking means the operative condition thereof and an inoperative condition producing in the unlocking means the inoperative condition thereof, said unlatching means being in engagement with said mode-selecting and selected-mode holding means for shifting the mode-selecting and selected-mode holding means from the first condition to the second condition thereof when the unlatching means in said first condition is shifted from said inoperative condition thereof to said operative condition thereof, and power-operated actuating means drivingly connected to said unlatching means and operative to selectively produce the operative and inoperative conditions of the unlatching means irrespectively of the first and second conditions of the unlatching means.

4,115,823

TRACK FOLLOWING SERVOSYSTEM FOR DATA STORAGE APPARATUS

Robert Duncan Commander, Eastleigh; Peter Alan Edward Gardner, Southampton, and John Richard Taylor, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,328
Claims priority, application United Kingdom, Dec. 22, 1976, 53582/76
Int. Cl.² G11B *21/10, 17/00, 5/82*
U.S. Cl. 360—77 9 Claims



1. A servosystem in a disk drive for accessing selected data tracks on disk surfaces and for following selected data track as the disk surfaces are rotated, one of such disk surfaces being dedicated to servo information, and the other surfaces having data information with servo information sectors in the data tracks, having accessing means including movable magnetic heads coupled to an actuator that is responsive to servo signals comprising:

means for generating a first continuous position signal having high frequency components derived from the dedicated servo disc surface, said continuous position signal including linear and non-linear signal portions;

means for modifying said non-linear signal portions to linear signal portions in response to sensed d.c. voltage levels of previous linear signal portions preceding the non-linear signal portions;

means for generating a second position signal having d.c. and low frequency components derived from data surface servo information;

means for forming a hybrid position signal from said modified and second position signals; and

servo control circuit means for controlling the movement of said accessing means relative to the data track being followed in response to said hybrid position signal.

4,115,824

METHOD FOR REGAINING SYNCHRONIZATION BETWEEN A VISUAL IMAGE PROJECTOR AND AN ASSOCIATED AUDIO PLAYBACK MACHINE

Marvin I. Mindell, Pittsford, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Jul. 7, 1977, Ser. No. 813,558
Int. Cl.² G11B *31/00*
U.S. Cl. 360—80 12 Claims

1. Method of changing visual presentations in a series of visual presentations to a selected visual presentation and regaining synchronization between said selected visual presentation and an associated magnetic tape having both cue tone and audio signals recorded thereon comprising the steps of:

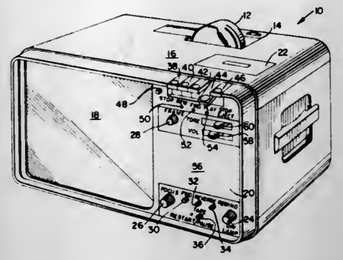
changing said visual presentations in a selected direction to a selected one of said visual presentations;

counting said visual presentations as they are changed in said selected direction;

transporting said magnetic tape in said selected direction;

sensing said cue tones recorded on said magnetic tape as said magnetic tape is transported;

counting said sensed cue tones;



comparing said cue tone count with said visual presentation count;

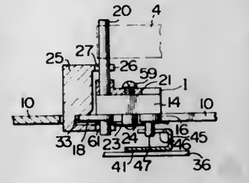
stopping said magnetic tape transport when said cue tone count and said visual presentation count are equal.

4,115,825

TAPE LOADING APPARATUS IN A MAGNETIC RECORDING AND REPRODUCING APPARATUS

Yoshiaki Hayashi, and Nobuyoshi Fujimori, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 25, 1977, Ser. No. 790,500
Claims priority, application Japan, May 4, 1976, 51-51026
Int. Cl.² G11B *15/66*
U.S. Cl. 360—85 12 Claims



1. In a magnetic tape recording and reproducing device of the helical scanning type, apparatus for loading in said device a magnetic tape contained within a cassette comprising

a base plate;

a head cylinder mounted on said base plate and having a plurality of rotary heads associated therewith; and

a pair of tape lead-out mechanisms provided at opposing sides of said head cylinder, said tape lead-out mechanisms comprising

movable means movable along guide paths located on both sides of said cylinder and extending between a first position adjacent said head cylinder and a second position adjacent a cassette loaded in said device,

a tape lead-out pin fixedly mounted on said movable means and having upper and lower portions,

driving means for advancing and retarding said movable means along said guide paths,

stopper means including

first means including means for holding, in said first position, said movable means so as to prevent said movable means from further advancing beyond said first position,

second means for preventing, in said first position, said movable means from moving in a direction substantially perpendicular to the plane including said base plate, and

third means for preventing, in said first position, said movable means from moving in the plane substantially perpendicular to the advancing direction of said movable means, said first, second and third means being integrally incorporated as part of a stationary post and said guide paths consisting of arcuate guide grooves, and

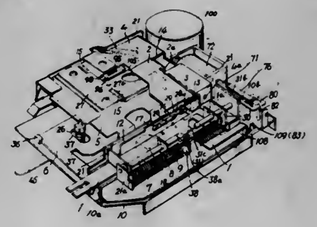
spring means for causing said movable means to abut against said base plate under resilient pressure thereby preventing said movable means from being disengaged from said guide grooves.

4,115,826

CARTRIDGE TYPE MAGNETIC TAPE RECORDERS

Satoshi Takagi; Wataru Watanabe, and Tadashi Yokota, all of Toda, Japan, assignors to Clarion Company Limited, Tokyo, Japan

Filed Feb. 10, 1977, Ser. No. 767,423
Claims priority, application Japan, Oct. 28, 1976, 51-128800; Feb. 13, 1976, 51-14012; Feb. 17, 1976, 51-15412; Feb. 19, 1976, 51-16524; Feb. 20, 1976, 51-16944; Feb. 20, 1976, 51-16945; Feb. 20, 1976, 51-16946
Int. Cl.² G11B *15/10, 15/24, 23/04*
U.S. Cl. 360—96 21 Claims



1. In a cartridge type magnetic tape recorder of the type comprising an operating frame, means for pivotally mounting one end of said operating frame to a stationary member of the tape recorder, a cartridge receiving frame for receiving a cartridge of the magnetic tape and pivotally connected to the other end of said operating frame, means for moving said receiving frame in a direction perpendicular to the direction of loading of said cartridge thereby moving said cartridge to a reproducing position, a head plate disposed at the reproducing position, a reproducing-recording head and pinch rollers mounted on said head plate, a reel drive shaft for driving the magnetic tape, and a cartridge ejecting lever extending in the direction of loading of said cartridge, the improvement which comprises a sliding frame provided with an inverted L-shaped cam slot and arranged to be slid on said operating frame by the cartridge loaded in said receiving frame, a cam mounted on said ejecting lever, and comprising upper and lower horizontal portions interconnected by an inclined portion, an operating member projecting from one side of said operating frame to engage said cam slot and said cam, and spring means for urging said cartridge ejecting lever and said sliding frame to their inoperative positions.

4,115,827

MAGNETIC TRANSDUCER FOR NARROW TRACK RECORDING AND PLAYBACK

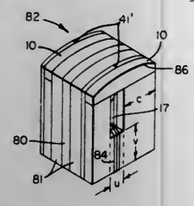
Beverley R. Gooch, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 22, 1975, Ser. No. 615,532
Int. Cl.² G11B *5/14, 5/22, 5/28*
U.S. Cl. 360—121 20 Claims

1. A magnetic transducer suitable for recording and reproduction on narrow tracks of a magnetic medium, comprising:

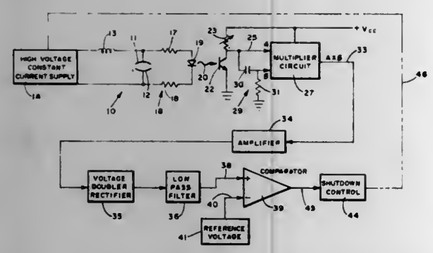
(a) a magnetic core having at least two confronting poles defining at least one transducing gap therebetween, and having a width defining a recording track width, said magnetic core having a first planar surface extending over both side poles and said gap;

(b) a supporting composite body comprising a nonmagnetic front portion and a contiguous magnetic back portion and having a first planar surface extending over both said nonmagnetic front portion and said magnetic back portion;
(c) a first bond integrally joining said magnetic core at said first planar surface thereof to said first planar surface of said composite body with said nonmagnetic front portion of said composite body adjacent to and spanning said



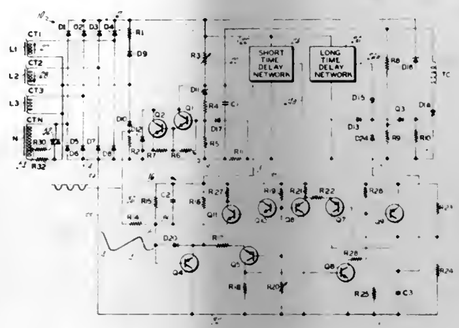
transducing gap of said magnetic core, said magnetic core, composite body and bond thus forming an integral transducer body; and
(d) said integrally joined magnetic core having a second exposed planar surface substantially parallel with its first planar surface, said first and second planar surfaces defining a selected narrow track width of a substantially smaller dimension relative to the width of said magnetic core prior to joining to said composite body.

4,115,828
ARC DETECTION AND CONTROL APPARATUS
Don H. Rowe, Portola Valley, and Michael W. Sasnett, Los Altos, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.
Filed Apr. 5, 1977, Ser. No. 784,699
Int. Cl.² H02H 7/22, 3/32
U.S. Cl. 361—1 **4 Claims**



1. Arc detection and control apparatus for a high power gas discharge laser having first and second electrodes and a constant current DC power supply connected across said electrodes comprising
a light emitting diode coupled across said electrodes and adapted to emit light having an intensity proportional to the voltage across said electrodes,
a photosensitive detector optically coupled to said diode and adapted to produce a current proportional to the intensity of light emitted by said diode,
means for converting said detector current into a detector voltage, said voltage being substantially less than and proportional to said voltage across said electrodes,
means for differentiating said detector voltage,
means for multiplying said detector voltage and the output of said differentiating means,
means for comparing the output of said multiplying means with a reference voltage whereby to produce an output when the former exceeds the latter, and
control means responsive to the output of said comparing means and operatively connected to said power supply to disconnect the latter from said electrodes upon occurrence of an arc.

4,115,829
OVERCURRENT AND GROUND FAULT RESPONSIVE TRIP UNIT FOR CIRCUIT BREAKERS
Edward Keith Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.
Filed May 6, 1977, Ser. No. 794,488
Int. Cl.² H02H 3/16
U.S. Cl. 361—42 **12 Claims**

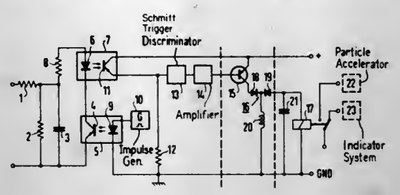


1. A circuit breaker electronic trip unit comprising, in combination:
A. current sensor means linked to the various conductors of a distribution circuit to be protected;
B. a rectifying network connected to the output of said current sensor means;
C. a burden resistor connected in circuit with said rectifying network for developing a half-wave rectified ground fault signal voltage proportional to an imbalance in the currents flowing in the distribution circuit;
D. means filtering said half-wave rectified signal voltage such as to develop a ripple signal voltage;
E. variable means establishing an adjusted ground fault signal pick-up level voltage;
F. a differential amplifier having a first input terminal connected to receive said ripple signal voltage and a second input terminal connected to receive said pick-up level voltage;
G. a timing capacitor and a resistor connected in parallel;
H. a current source adjusted to supply a determined magnitude of charging current to said capacitor; and
I. electronic switch means operating in series with said capacitor as a variable duty cycle switch under the control of said differential amplifier, said switch means being closed during the intervals the peaks of said ripple signal voltage exceeds said pick-up level voltage to permit charging of said capacitor and being open during the intervals said pick-up level voltage exceeds the valleys of said ground fault signal voltage to terminate charging of said capacitor, whereby said capacitor is charged to a trip initiating voltage at a rate determined by the amplitude of said ripple signal voltage.

4,115,830
MONITORING SYSTEM FOR HIGH-VOLTAGE SUPPLY
Volker Adolf Wilhelm Stieber, Lafayette, Calif., assignor to Applied Radiation Corporation, Walnut Creek, Calif.
Filed Apr. 1, 1977, Ser. No. 783,781
Int. Cl.² H01H 47/24
U.S. Cl. 361—187 **6 Claims**

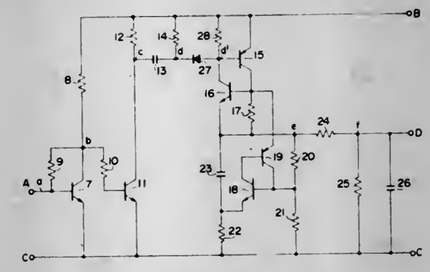
1. A current supply monitoring system for the kilovolt range high-voltage supply of an ionization chamber for the supervision of particle accelerators, comprising in combination:

(a) a substantially hysteresis free measuring system means for measuring the level of the high voltage supply;
(b) separator means for connection to the kilovolt range high voltage supply and electrically separating and isolating



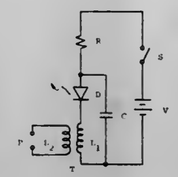
the high voltage supply kilovolt range voltages from the measuring system means; and
(c) switch means for connection to the measuring system means and also to the particle accelerator for supervising operation of the particle accelerator.

4,115,831
VELOCITY DETECTING APPARATUS INSENSITIVE TO NOISE
Hiroshi Minakuchi, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 25, 1977, Ser. No. 818,859
Claims priority, application Japan, Aug. 5, 1976, 51/93645
Int. Cl.² H02P 5/00
U.S. Cl. 361—236 **2 Claims**



1. A velocity detecting apparatus comprising;
a waveform shaping circuit including a first stage switching transistor connected in a rotational speed control loop for a rotary machine, for amplifying and shaping an A.C. signal derived from a velocity sensor, said switching transistor being operated between a saturation region and an active region;
a waveform transform circuit having a stable state and a quasi-stable state for a given period after the application of an input signal, for transforming an output signal of said waveform shaping circuit to a square wave having a given duration;
an integration circuit for integrating said square wave with time to produce an integrated output; and
a comparator for comparing said output voltage of said integration circuit with a reference voltage;
wherein;
the beginning of said quasi-stable state of said waveform transform circuit is established by the beginning of said active region of said first stage switching transistor of said waveform shaping circuit;
said integration circuit includes first and second series-connected resistors arranged to voltage divide said square wave;
one end of an integrating capacitor is connected to the junction of said first and second resistors; and
the resistances of said first and second resistors are selected such that a duty factor of said square wave during constant velocity control lies between approximately 4/5 and 1/1.

4,115,832
IGNITER UTILIZING A NEGATIVE RESISTANCE LIGHT EMITTING DIODE
Tutomu Nakamura, Akashi; Junichiro Shigemasa, Yamatokoriyama, and Zenpei Tani, Tondabayashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 15, 1976, Ser. No. 750,627
Claims priority, application Japan, Dec. 16, 1975, 50-150341; May 19, 1976, 51-58181
Int. Cl.² F23Q 3/01
U.S. Cl. 361—256 **5 Claims**

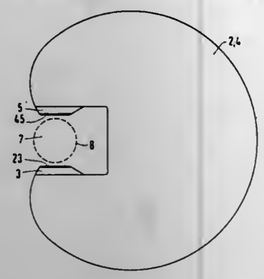


1. An igniter circuit for a gaseous material having means for indicating a deficiency in the quantity of gaseous material or a deficiency in the operation of said circuit comprising:
a. a voltage source for supplying energy to said igniter circuit;
b. a negative resistance light emitting diode having a predetermined threshold voltage and selectable conductive and nonconductive states, said diode emitting light in said conductive state when the voltage applied across said diode exceeds said predetermined threshold voltage;
c. capacitor means connected in parallel with said diode and coupled to said voltage source to receive a charging current therefrom when said diode is in said nonconductive state, said capacitor means switching said diode to said conductive state when said capacitor means is charged to at least said predetermined threshold voltage to thereby discharge said capacitor means through said diode;
d. means for generating a voltage for electrically igniting said gaseous material in response to the discharge of said capacitor means through said diode; and
e. means for transmitting the light emitted from said diode to an observation point externally of said circuit; whereby the presence of light emission from said diode and the absence of ignition of said gaseous material is indicative of a deficiency in the quantity of gaseous material, while the absence of light emission and the absence of ignition of gaseous material is indicative of a deficiency in the operation of said ignition circuit.

4,115,833
POWER CAPACITOR
Hans-Jürgen Cirkel, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany
Filed Aug. 8, 1977, Ser. No. 822,675
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635471
Int. Cl.² H01G 1/013
U.S. Cl. 361—303 **5 Claims**

1. Power capacitor with minimal self-inductance comprising a stack of metal layers mutually superimposed perpendicularly to a given axis, with respective layers of insulation disposed between mutually adjacent metal layers of said stack, said metal layers and said insulation layers being formed laterally with mutually aligned cut-outs in vicinity of said given axis, said mutually aligned cut-outs collectively forming a free

channel within said stack open at opposite ends and along a side thereof, respective surface portions of alternating layers of said metal layers projecting into said channel above one an-



other as electrodes of given common polarity, the surface portions of the metal layers of respective opposite common polarity being disposed opposite one another and symmetrically with respect to said given axis in said channel.

4,115,834

DIELECTRIC COMPOSITION AND DEVICE CONTAINING SAME

William M. Robinson, and Edward Lobo, both of New Bedford, Mass., assignors to Cornell-Dubilier Electric Corp., Newark, N.J.

Filed Aug. 23, 1976, Ser. No. 716,663
Int. Cl.² H01G 4/22
U.S. Cl. 361—318 **11 Claims**

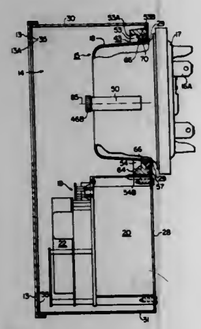
1. A liquid dielectric composition useful as a capacitor impregnant consisting essentially of, approximately by weight:
a. 97 to 51 parts of a bis (C_{6-12} alkyl) phthalate;
b. 2 to 48 parts of butylated monochloro diphenyl oxide; and
c. 0.001 to 5 parts of epoxide stabilizer.

4,115,835

ELECTRIC LOAD RESEARCH DEVICE INCLUDING AN ENCLOSURE HAVING ADJUSTABLE METER POSITIONS

William P. Doby, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 680,659, Apr. 27, 1976, Pat. No. 4,063,661. This application Sep. 19, 1977, Ser. No. 834,366
Int. Cl.² H02B 9/00
U.S. Cl. 361—370 **5 Claims**



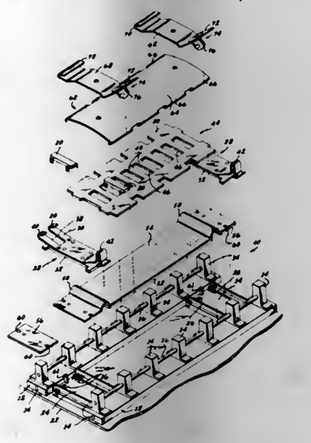
1. An electric load research device comprising:
an elongated enclosure including a rear wall and top, bottom and opposing side wall portions extending forward from said rear wall and terminating at a front opening of the enclosure, and said rear wall including a hole opening, and said elongated enclosure further including a lid mountable over said top, bottom and side wall portions and closing said front opening;
a metering unit having a base carrying a meter movement equipped with a pulse initiating device on a forward side thereof and contact terminals extending from the rear side thereof, said metering unit further including a cup-shaped cover extending forward from said base;
a recorder unit mounted in said enclosure and connectable to said pulse initiating device of said metering unit for receiving electrical impulses;
a mounting ring surrounding said hole opening in said rear wall, said mounting ring including an inner circular support surface detachably receiving said cover, and a plurality of recessed notches arcuately spaced adjacent said support surface;
a bracket assembly including a strap member having front and rear portions, said rear portion being removably received by different ones of said plurality of recessed notches when said enclosure has different rotated positions relative to said metering unit, and said bracket assembly further including a fastening means releasably securing said cover to said forward portion of said strap member so as to attach said metering unit to said enclosure in alternate preselected rotated positions of the enclosure.

4,115,836

COOLING SYSTEM FOR DUAL-IN-LINE PACKAGES

Robert V. Hutchison, Oceanside; Peter P. Gregg, Vista, and James J. MacBride, Carlsbad, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 25, 1977, Ser. No. 790,291
Int. Cl.² H05K 7/20
U.S. Cl. 361—382 **11 Claims**



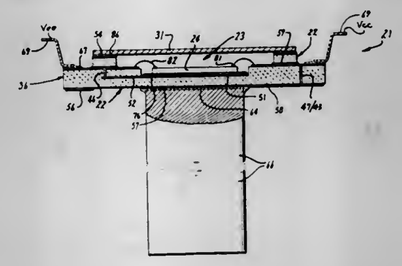
1. A packaging system for electronic equipment comprising at least one island, including:
a plurality of integrated circuit packages having leads thereon,
an interconnection medium having first electrical conductors thereon,
a cooling frame fastened to said interconnection medium configured such that a plurality of sections of thermally conductive material are situated in parallel spaced apart relationship across the surface of said interconnection medium,
connector means having a plurality of electrical contacts and operatively connected in a predetermined relationship to said interconnection medium at opposite ends thereof and providing respective electrical paths between said integrated circuit packages and said interconnection medium first conductors,
a heat sink carrier means disposed between said frame sections and in thermal conductive relationship therewith and having package supporting means thereon,
second conductor means adjacent said heat sink carrier plate and extending into said connector means at each end of said interconnection medium,
said packages being mounted on said heat sink carrier means in rows straddling package supporting means and electrically connected to said second conductor means,
means for urging a portion of said second conductor means into said connector means so as to provide electrical contact with the electrical contacts therein.

4,115,837

LSI CHIP PACKAGE AND METHOD

Robert J. Beall, San Jose, and John J. Zasio, Sunnyvale, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 270,448, Jul. 10, 1972, abandoned. This application Dec. 20, 1974, Ser. No. 534,853
Int. Cl.² H05K 7/20
U.S. Cl. 361—388 **11 Claims**



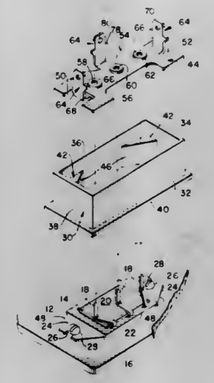
1. In a package for use with an LSI chip of the type having oppositely facing parallel first and second major chip surfaces and a plurality of spaced apart contact pads disposed adjacent the outer perimeter on said first major chip surface, said package including a one-piece carrier formed exclusively of a ceramic which is essentially all alumina, said carrier being free of glass seals and having a rectangular base with oppositely facing parallel first and second major base surfaces, having wall means defining a recess extending downwardly through said first major base surface for receiving the chip, a chip carrying surface in said recess parallel to the first major base surface and inset from the first major base surface, means securing the chip to said chip carrying surface so that the second chip surface is in contact with the chip carrying surface and the first chip surface is in close proximity to the first major base surface, a raised part carried on said first major base surface surrounding said recess and being spaced inwardly from the outer perimeter of the base, a metallic cooling stud secured to said second major base surface generally opposite said chip carrying surface and extending away from said second major base surface outwardly in a direction away from said base for exposure to the atmosphere for cooling by air, a lead pattern formed on said first major base surface extending below said raised part and into close proximity to said recess whereby said lead pattern and said pads on a chip in said recess each have exposed surfaces facing in the same direction into a region extending from said chip carrying surface and said first chip surface outwardly in a direction away from said carrier thereby permitting access through said region to connect leads between said exposed surfaces of said pads and said lead pattern, said lead pattern extending on said first major base surface to all four sides of said base, and a plurality of relatively rigid conductive leads mounted on said first major base surface near the outer perimeter of said base in contact with said lead pattern, said conductive leads extending outwardly from all four sides of said rectangular base and having contact areas lying in a plane generally parallel to said first major base surface, said contact areas facing in a direction away from the base and opposite the direction in which the cooling stud extends from said base.

4,115,838

PACKAGING OF A SEMICONDUCTOR

George J. Yagusic, Litchfield, and Richard A. Boronosky, Thomaston, both of Conn., assignors to General Time Corporation, Thomaston, Conn.

Filed Aug. 17, 1976, Ser. No. 715,001
Int. Cl.² H05K 5/06
U.S. Cl. 361—388 **4 Claims**



1. A package for an electrical component comprising:
(a) a housing having side wall means and opposite open ends adapted to telescope around said electrical component;
(b) base means providing a surface upon which each said electrical component and said housing are mounted;
(c) a terminal board, said terminal board being formed of a non-conductive material and including a plurality of openings in spaced-apart relation;
(d) a first plurality of terminals;
(e) conductive eyelet means mounting one end of each of said first plurality of terminals, said conductive eyelet means received through respective openings in said terminal board whereby each of said first plurality of terminals is insulated from the others;
(f) means mounting said terminal board within said housing so that the other end of said terminals extend outwardly from said housing;
(g) said electrical component including a second plurality of terminals, each terminal of said second plurality of terminals received through and electrically connected to one of said conductive eyelet means; and,
(h) means encapsulating said terminal board and electrical component within said housing.

4,115,839

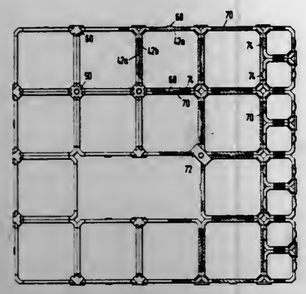
SELF-SUPPORTING MODULAR SWITCHBOARD PANEL

Herbert Hummel, Niedereschach, Fed. Rep. of Germany, assignor to Hans Kreutzenbeck GmbH, Velbert-Neviges, Fed. Rep. of Germany

Filed Dec. 1, 1976, Ser. No. 746,206
Int. Cl.² H02B 1/04; H01H 9/02
U.S. Cl. 361—393 **15 Claims**

1. A self-supporting modular switchboard panel comprising: a plurality of substantially rectangular one-piece frame elements having closed faces on four sides and open top and bottom faces disposed in matrix-type array whereby a side face of each adjacent frame element is in tangential parallel relation with an adjacent frame side face along inner portions of the matrix-type array, and said four sides of said frame elements define corner edges where the sides meet wherein said edges

are set at an angle of substantially 45° relative to the side faces so that the intersection of four corner edges of four frames define a square-shaped aperture, and means for fastening said

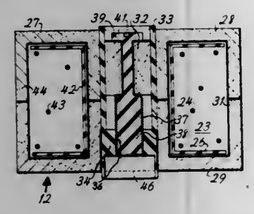


frames together at said corner edges whereby said frames are constrained from motion and the top and bottom faces of all frames are all coplanar and said means for fastening said frames lie below said top face and above said bottom face.

4,115,840
PRINTED CIRCUIT BOARD WITH FLUOROCARBON COATED INDUCTOR

Steven A. Horton, Los Alamitos, Calif., assignor to The Anaconda Company, Greenwich, Conn.

Division of Ser. No. 504,773, Sep. 10, 1974, Pat. No. 3,973,321.
This application Mar. 8, 1976, Ser. No. 664,688
Int. Cl.² H05K *1/04*
U.S. Cl. 361—400 **5 Claims**



1. An inductor comprising in combination:
A. a coil of insulated wire,
B. a ferrite core,
C. a helically threaded tubular surface associated with said core,
D. an adjustable ferrite slug,
E. a helically threaded cylindrical surface associated with said slug and fitting said tubular surface,
F. a fine layer of particles of fluorocarbon polymer coating said wire and said surfaces, said layer having been applied by immersion of the inductor in a bath of said polymer, a sufficient amount of said polymer having submicron size particles.

2. The inductor of claim 1 disposed onto a printed circuit board having a plurality of conducting surfaces and non-inductor circuit elements wherein an adherent conformal coating is applied thereto, and only said inductor being free from adherence to the adherent conformal coating.

4,115,841
SEARCHLIGHT

Eli James Alexander, 9024 David Ave., Los Angeles, Calif. 90034

Filed Dec. 2, 1976, Ser. No. 746,879
Int. Cl.² F21M *3/00*
U.S. Cl. 362—44 **21 Claims**



1. A searchlight apparatus mountable on a vehicle comprising
first bearing means fixedly mountable on a floor of a vehicle,
second bearing means fixedly mountable on the hull of a vehicle,
tubular means extending through and beyond said first and second bearing means for rotation relative thereto and having
a first end on the side of said first bearing means distal from said second bearing means,
a second end on the side of said second bearing means distal from said first bearing means,
head support means fixedly mounted on said first end of said tubular means, and
hinge support means fixedly mounted on said second end of said tubular means,
bracket means attached to said hinge support means for pivotal movement relative to said hinge support means,
link means extending through said tubular means into said head means at said first end of said tubular means and pivotally attached to said bracket means at said second end of said tubular means,
means operatively attached to said link means in said head means and extending out of said head means for actuation of said link means by an operator, and
lamp means mounted on said bracket means for movement about the axis of said hinge support means as said actuation means is actuated by an operator to move said link means longitudinally in said tubular means and for movement about the axis of said tubular means as said actuation means is actuated by an operator to rotate said tubular means about its axis.

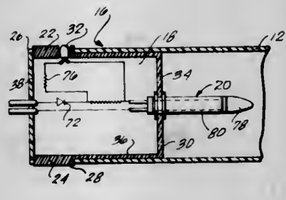
4,115,842
FLASHLIGHT AND FLASHLIGHT CHARGING RECEPTACLE

Donald A. Keller, Irvine, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 29, 1976, Ser. No. 709,764
Int. Cl.² F21L *7/00*
U.S. Cl. 362—183 **4 Claims**

1. A flashlight, battery charger, and auxillary power source comprising:
(a) a flashlight having a head with a flashlight bulb, an insulative battery housing, rechargeable batteries in the battery housing and in electric circuit with the flashlight bulb, and a female electrical receptacle within said housing at a butt end of the flashlight, the female receptacle having positive and negative terminals, the circuit to the female receptacle providing the batteries with charging current during a charging mode and drawing current from the batteries during an auxillary use mode, the auxillary use mode having the female receptacle in receipt of a male plug of an auxillary electrical device;
(b) a flashlight storage receptacle and battery charger for receipt of the flashlight, the storage receptacle and battery charger having insulative barrel means for receipt of the butt end and battery housing of the flashlight, a male plug within the barrel positioned to receive the female receptacle, positive and negative terminals of the plug for connection to the like terminals of the receptacle, charging circuit means to the male plug and adapted to be connected to a source of current to thereby charge the batteries of the flashlight;



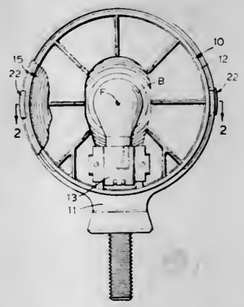


said storage receptacle and battery charger including a circuit housing at the base thereof, the circuit housing mounting the male plug coaxially with the axis of the barrel and containing the circuit means;
said circuit means including a charging resistor and light emitting diode means in parallel circuit with the charging resistor, the parallel circuit being in series circuit with the positive terminal of the plug; and
said circuit housing including a pair of diametrically opposed ears and the barrel includes a pair of diametrically opposed slots, the ears being received in the slots and the light emitting diode being mounted in one of the ears to face outwardly of the receptacle.

4,115,843
WARNING LAMP

Robert I. Nagel, Mesa, Ariz., assignor to Dominion Auto Accessories Limited, Toronto, Canada

Filed May 4, 1977, Ser. No. 793,725
Int. Cl.² F21V *5/02*
U.S. Cl. 362—291 **16 Claims**

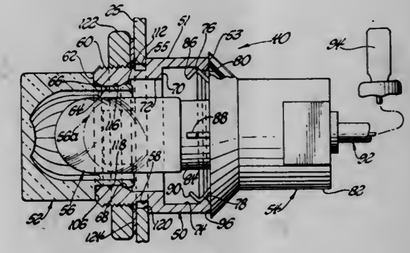


1. In a signal lamp, the combination comprising
a housing having an annular wall,
a bulb having a filament within the confines of the annular wall,
a lens closing the end of the annular wall,
said lens having a front wall and a peripheral wall surrounding the front wall and telescoped over the annular wall of the housing,
and a prism formed on said peripheral wall of said lens along at least opposed side portions of said peripheral wall of said lens and constructed and arranged to redirect light from the filament of said bulb in a direction generally at 90° to the axis of the lens.

4,115,844
LAMP ASSEMBLY

Dale L. Bull, and Norman A. Rautiola, both of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Division of Ser. No. 544,773, Jan. 28, 1975, Pat. No. 3,982,122.
This application Aug. 3, 1976, Ser. No. 711,395
The portion of the term of this patent subsequent to Sep. 21, 1993, has been disclaimed.
Int. Cl.² F21V *17/00*; F21Q *3/00*
U.S. Cl. 362—382 **7 Claims**



1. A lamp assembly, comprising lamp assembly body means, said lamp assembly body means comprising a bulb socket portion at one end of said lamp assembly body means and effective for supporting a bulb therein, said lamp assembly body means being adapted to be supported by associated support means, an open end formed in a second end of said lamp assembly body means generally opposite to said one end, a cavity formed in said lamp assembly body means extending generally inwardly thereof from said open end and adapted to receive said bulb therein, lens means operatively connected to said lamp assembly body means as to be supported and carried thereby and effectively closing said open end, and detentlike latching means effective for detachably securing said lens means to said lamp assembly body means, said detentlike latching means being effective to enable said lens means to be removed from or attached to said lamp assembly body means without the necessity of having to cause relative motion as between said lamp assembly body means and said associated support means, said detent-like latching means comprising ramp-like retaining surface means formed generally in said cavity and at least first and second leg-like members integrally formed with and carried by said lens means as to be extending generally therefrom, said at least first and second leg-like members being spaced from each other and resiliently deflectable generaly toward and away from each other, said at least first and second leg-like members respectively having first and second free ends resiliently deflectable generally toward and away from each other, said first free end having a first portion formed thereon of relatively enlarged cross-sectional thickness, said second free end having a second portion thereon of relatively enlarged cross-sectional thickness, said first and second enlarged portions effectively resiliently engaging said ramp-like retaining surface means for detachably securing said lens means to said lamp assembly body means, said first and second enlarged portions effectively engaging said ramp-like retaining surface means and causing said at least first and sec-

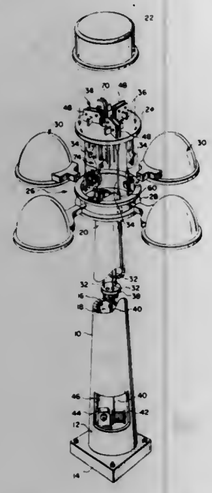
ond leg-like members to resiliently deflect toward each other when said lens means is undergoing detachmemt from said lamp assembly body means.

4,115,845

AUTOMATIC LOCKING AND SUPPORT DEVICE FOR HIGH MAST LIGHTING STRUCTURE

Edward J. Blahut, Riverside, Ill., assignor to Kapcoa Corp., Glenview, Ill.

Filed Mar. 31, 1977, Ser. No. 783,433
Int. Cl.² F21V *21/14*; B42F *13/00*
U.S. Cl. 362—403 **21 Claims**



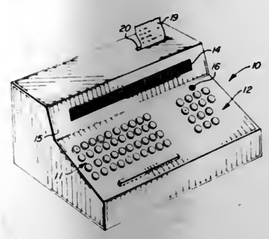
1. In a high mast lighting structure including a hollow mast with an interior space extending the length thereof, an equipment carrying assembly having illumination fixtures or the like mounted thereon, the assembly including a frame positioned about the mast and at least one hoisting cable secured to the assembly and passing over the top of the mast and through the interior space to the base of the mast to enable raising or lowering of the assembly on the mast to and from the top thereof by operation of the cable, the invention comprising, locking and support means positioned between the frame and the top of the mast for releasably locking and supporting the frame in its uppermost position on the mast, said locking and support means including a first member secured to the frame and a second member secured to the top of the mast, the first member having a pair of elongate jaws pivotally mounted at one respective end thereof on the frame and disposed in face-to-face relationship, a spring operable on each said jaw to bias the jaws into generally parallel relationship in a first closed position thereof, each jaw having a cam-riding surface formed on the end thereof opposite the end mounted to the frame and an opening therein adjacent the end having said cam-riding surface, the second member including an elongate shank with opposite facing cam members extending therefrom, each cam member having a camming surface and a locking surface formed thereon, whereby movement of the assembly to the top of the mast will cause the second member to contact the first member such that the camming surfaces engage upon the cam-riding surfaces to spread the jaws and permit the cam members to enter the openings in the jaws with the perimeter of the openings resting on the locking surfaces of the cam members to maintain the assembly in locked and supported position on the mast, and release means associated with the locking and support means operable to disengage the first and second members to permit movement of the assembly away from the top of the mast.

4,115,846

REMINDER SYSTEM

Buddy Laine, 10454 Cumberland Dr., Sun City, Ariz. 85051

Filed Feb. 22, 1977, Ser. No. 770,437
Int. Cl.² G06F *3/02, 3/14*
U.S. Cl. 364—200 **5 Claims**



1. A program reminder system for entering, storing and displaying formated messages for subsequent reference including in combination:

display means for displaying messages having a predetermined format;

storage means for storing at least predetermined portions of said messages;

variable data entry means for entering variable data into the system, said variable data entry means including a data entry keyboard having a plurality of keys for entering data and a first random access memory for temporarily storing data entered by operation of at least some of said keys of said entry keyboard;

control means connecting said storage means and said variable data entry means with said display means; and

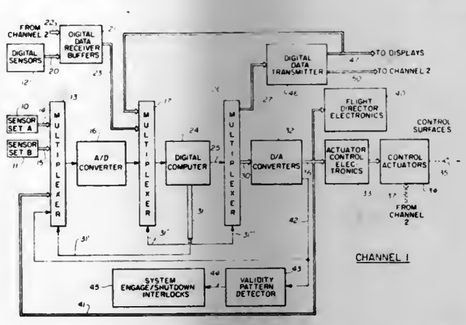
programmable operating means having an operating program and coupled with said control means for operating said control means to effect display of said predetermined portions of said messages and said variable data on said display means in an array of message portions corresponding to the program of said operating means.

4,115,847

AUTOMATIC FLIGHT CONTROL SYSTEM WITH OPERATIVELY MONITORED DIGITAL COMPUTER

Stephen S. Osder, Scottsdale, and David C. Mossman, Phoenix, both of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 485,862, Jul. 5, 1974, abandoned. This application Jan. 3, 1977, Ser. No. 756,467
Int. Cl.² G06F *15/50*; G05B *1/00*
U.S. Cl. 364—101 **25 Claims**



1. An automatic flight control system for aircraft having aerodynamic control surfaces and associated servo means coupled therewith for positioning said control surfaces and having sensor means for providing sensor signals in accordance with flight conditions experienced by said aircraft, comprising

digital computer means having computer input means responsive to said sensor signals, program memory means, a repertoire of instructions operative in said flight control system and computer output means,

computer input coupling means for coupling said sensor means to said computer input means,

said computer means having a program stored in said program memory means comprising a plurality of first program segments structured for sequential execution by said computer means for controlling said computer means to operate on said sensor signals by sequentially performing a plurality of tasks respectively, to provide surface command signals to said computer output means,

said program further including a plurality of second program segments associated with said first program segments, respectively, for switching task completion indicia in said computer means to a set state in accordance with completion of said tasks, respectively,

said program further including a third program segment for testing said indicia for said set state thereby testing said indicia for completion of said tasks,

said program utilizing all of said instructions of said repertoire within at least one of said first, second and third program segments in a manner to cause at least one of said indicia to remain unset upon failure of an instruction to function properly,

said program further including a failure program segment that is entered from said third program segment when one of said indicia remains unset, said failure program segment including instructions for stopping the execution of said program,

means for controlling repeated executions of said program,

said program further including a fourth program segment for generating a precisely defined dynamically varying validity pattern by controlling a validity pattern signal at said computer output means to exhibit one level during an execution of said program and a different level during a subsequent execution thereof,

validity pattern detector means coupled to said computer output means to receive said validity pattern signal for detecting said validity pattern signal being in a state different from said precisely defined state during a time interval in which said repeated executions of said program would normally provide said precisely defined dynamically varying validity pattern signal and for providing a failure signal in accordance therewith, and

computer output coupling means said computer output means to said surface servo means for providing said surface command signals thereto.

4,115,848

METHOD AND SYSTEM OF CONTROLLING PLANTS

Yoichi Kogure, Tama; Toshimi Minoura, Fuchu, and Toshio Fujiwara, Inagi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 11, 1975, Ser. No. 639,980
Int. Cl.² G05B *15/02*
U.S. Cl. 364—107 **8 Claims**

1. In a method of controlling the operation of a plant by means of an electronic computer including memory means of the type wherein a process signal corresponding to the operation state of the plant is generated, the process signal being compared with a predetermined reference signal and the plant being controlled by the result of the comparison, the improvement which comprises the steps of

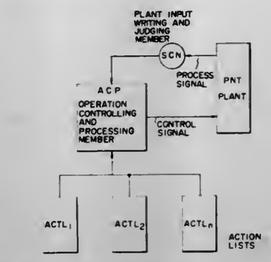
predetermining the judging conditions of the plant states and control and supervisory operations corresponding to respective judging conditions in the form of tables,

preparing a plurality of action lists having a standard form of plant state judging conditions plus controlling and supervisory operations,

storing the contents of respective action lists in memory means of said computer,

sampling said process signal,

comparing said sampled process signal with a reference signal for producing a trigger signal



selecting an action list corresponding to said process signal in accordance with said trigger signal,

judging the content of the selected action list for producing a control signal, and

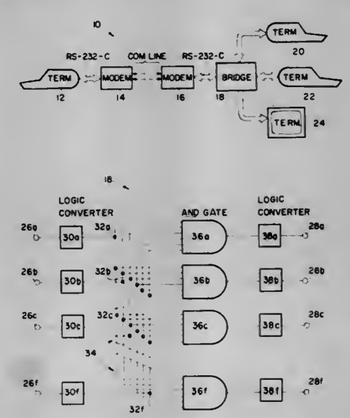
controlling said plant in accordance with said control signal.

4,115,849

DATA INTERFACE BRIDGE

Bill E. Johnson, and John E. Dannenmann, Jr., both of Portland, Oreg., assignors to Bejed, Inc., Portland, Oreg.

Filed Jan. 27, 1977, Ser. No. 762,999
Int. Cl.² H04Q *3/64*; H03K *17/00*
U.S. Cl. 340—147 CV **10 Claims**



1. A multiport bridge for interconnecting data terminal and data communication equipment in a serial binary data communication system, said bridge having at least three equipment interface ports, comprising

a multipin electrical connector for each port, each such connector having a data input pin and a separate data output pin, and

circuit means operatively interconnecting said input and output pins for transmitting a data signal received at any port's data input pin simultaneously to all of the other port's data output pins, said circuit means including

a multiconductor bus having an individual binary input signal line for each port,

means electrically connecting each data input pin to a corresponding input signal line in the bus, and

a plurality of multiple input logic circuits, one associated with each port for transmitting binary input signals from the bus to the data output pin of the associated port, the different inputs of each said logic circuit being individually connected to the different input signal lines in the bus,

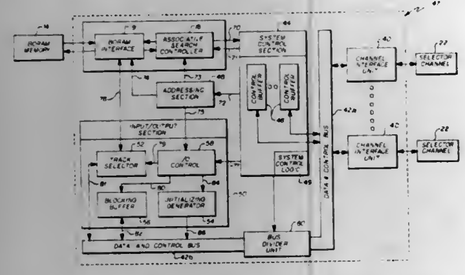
with the output of each circuit being connected to the associated port's output pin.

4,115,850

APPARATUS FOR PERFORMING AUXILIARY MANAGEMENT FUNCTIONS IN AN ASSOCIATIVE MEMORY DEVICE

George B. Houston, 742 Boylston Ave. E., Seattle, Wash. 98102, and Roger H. Simonsen, 26840-8th Ave. S., Kent, Wash. 98031

Filed Nov. 3, 1976, Ser. No. 738,570
Int. Cl.[2] G06F *7/00*
U.S. Cl. 364—200 10 Claims



1. An apparatus for performing data management functions for a data search device which is responsive to a search specification originated by a digital computer to search data that is stored in a memory which is peripheral to the digital computer, wherein the data in the peripheral memory is stored in a first data format of tracks of data which comprise successive data sectors, which are the smallest addressable groups of data in the peripheral memory, said apparatus comprising:

(a) means for receiving from the digital computer a data management request containing at least one of the following: (1) a search specification, and (2) data which is to be stored in the peripheral memory, wherein the data received from the digital computer is in a second data format of a series of logical records, wherein said receiving means includes means for temporarily storing the data management request;

(b) first connecting means for passing the search specification to the data search device;

(c) means for storing the address of the location of a particular sector of data in the peripheral memory containing a particular logical record found by the data search device to satisfy the search specification;

(d) means for retrieving data from, and writing data into, the peripheral memory in the first data format, including means responsive to said address storing means for retrieving the particular data sector from the peripheral memory which contains the particular logical record;

(e) means for reformatting data originally in the first data format into the second data format, and for reformatting data originally in the second data format into the first data format, including means for extracting the particular logical record from the remainder of the particular sector of data;

(f) second connecting means for passing data in the first data format between said reformatting means and said data retrieving and writing means;

(g) third connecting means for passing the data which has been received in said receiving means from the digital computer to said reformatting means; and

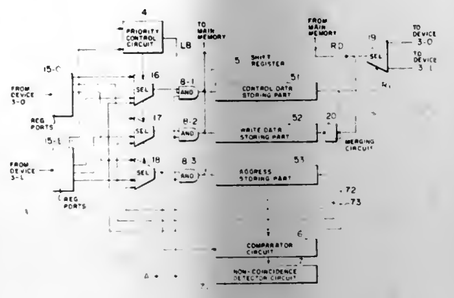
(h) fourth connecting means for passing the particular logical record from said reformatting means to said receiving means, from where it is passed to the digital computer in satisfaction of the search specification.

4,115,851

MEMORY ACCESS CONTROL SYSTEM

Genzo Nagano, Yokohama; Hiroshi Nakamura, Kawasaki, and Yukio Sohma, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 6, 1977, Ser. No. 785,104
Claims priority, application Japan, Apr. 24, 1976, 51/47039
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 12 Claims



1. A memory access control system for controlling access by at least one accessing device of a main memory of a given cycle time in accordance with a clock signal, and which includes a plurality of independently accessible logical storages, said memory access control system comprising:

means for receiving, from said at least one accessing device, a request for access to one of said logical storages designated by a given address;

means for receiving address information of those logical storages which are busy being accessed;

shift register means including a plurality of register stages corresponding in number to the given cycle time of the main memory for storing said address information those logical storages which are busy being accessed and for sequentially shifting the stored content in synchronism with said clock signal; and

comparator circuit means for comparing the content of each stage of the shift register means with said given address of the logical storage designated by the access request from the accessing device, and responsive thereto, when there is no coincidence between the content of each stage of the shift register means and said given address, to generate a control signal for accessing the designated logical storage.

4,115,852

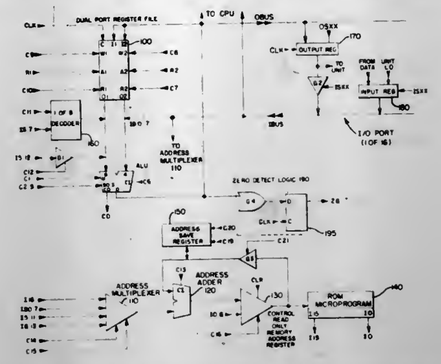
MICROPROGRAMMED CONTROLLER

James O. Rozell, Richardson, Tex., assignor to Harris Data Communications, Inc., Dallas, Tex.

Filed Dec. 7, 1976, Ser. No. 748,179
Int. Cl.[2] G06F *9/16*
U.S. Cl. 364—200 28 Claims

1. A controller circuit for connection to a central processor unit and at least one peripheral unit for controlling the transfer of data therebetween in response to instructions from the central processor unit comprising memory means for storing a plurality of microprograms each consisting of a plurality of microinstruction signals, address means responsive to instructions from said central processing unit for reading out selected microprograms from said memory means, at least one input-output port including input register means for storing data from said peripheral unit and output register means for storing data to be outputted to said peripheral unit, arithmetic means for performing arithmetic and logic functions, first bus means for connecting said input register means to a first input of said arithmetic means, second bus means for connecting the output of said arithmetic means to said output register means, feedback control means for selectively connecting the output of said output register means to said first bus means so as to feed

the data being applied to said peripheral unit directly back to said arithmetic means for further processing, said central processor unit being connected to said first and second bus means, and logic control means responsive to selected microinstruction signals from said memory means for providing a plurality of control signals for controlling the operation of said arithmetic means, said input register and output register means, said feedback control means, and said address means.

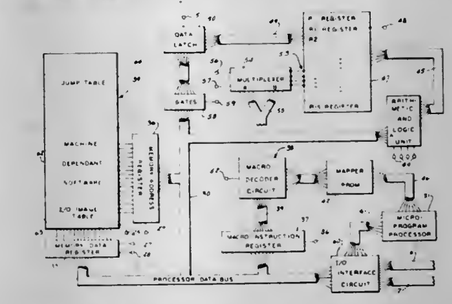


4,115,853

JUMP STRUCTURE FOR A DIGITAL CONTROL SYSTEM

Ernst H. Dummermuth, Chesterland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 21, 1976, Ser. No. 752,849
Int. Cl.[2] G06F *9/06*
U.S. Cl. 364—200 7 Claims



1. In a digital system, the combination comprising:

memory means for storing at successive memory addresses a set of control instructions;

memory address means coupled to said memory means and being operable to selectively address one of said control instructions;

jump table storage means for storing a plurality of selectable target memory addresses, each at a separate storage location;

first means coupled to said memory means for reading addressed control instructions from said memory means;

second means coupled to said first means and said jump table storage means for selecting one of said stored target memory addresses in response to a selected code in one of said control instructions;

third means coupled to said jump table storage means and said memory address means for loading a selected target memory address into said memory address means; and

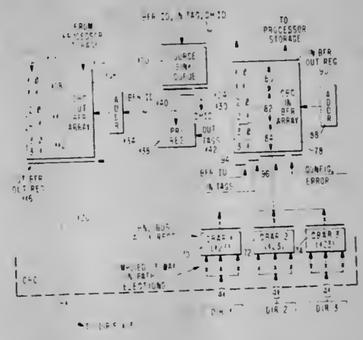
fourth means coupled to said memory means, said memory address means and said jump table storage means and being operable in response to another selected code in another selected one of said control instructions read from said memory means to load a memory address from said memory address means into a selected location in said jump table storage means.

4,115,854

CHANNEL BUS CONTROLLER

Robert S. Capowski, Verbank; Lewis W. Wright, Hopewell Junction, and Terrence K. Zimmerman, Red Hook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,895
Int. Cl.[2] G06F *9/00*
U.S. Cl. 364—200 12 Claims



1. In a data processing system having a channel bus controller for transferring request information entities from multiple input/output channels to a shared processor store and for transferring response information entities associated with said request entities from said store to said channels, wherein said controller includes an input buffer having multiple positionally ordered spaces for storing said request entities in transit from said channels to said store, and an output buffer having multiple spaces corresponding to said input buffer spaces for storing said response entities in transit from said store to said channels, in combination:

means associated with said input buffer for providing tag entities in association with transfers of individual said request entities to said input buffer, said tag entities denoting the sequence of entry of the associated request entities into said input buffer;

means coupled to said input buffer for applying said request entities to said store in a sequence susceptible of differing from the sequence of entry of said request entities into said input buffer;

buffer means for retaining said tag entities after respective said request entities have been removed from said input buffer and applied to said store; and

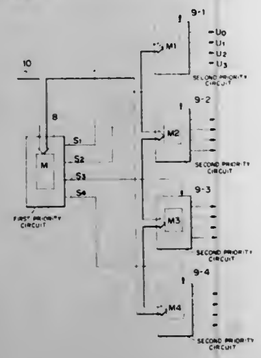
means associated with said tag entity retaining means for utilizing said retained tag entities to order the sequence of transfers of said response entities from said output buffer to said channels in correspondence with the sequence of entry of the associated request entities into said input buffer.

4,115,855

BUFFER MEMORY CONTROL DEVICE HAVING PRIORITY CONTROL UNITS FOR PRIORITY PROCESSING SET BLOCKS AND UNIT BLOCKS IN A BUFFER MEMORY

Takashi Chiba, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 19, 1976, Ser. No. 715,862
Claims priority, application Japan, Aug. 22, 1975, 50-101750
Int. Cl.[2] G06F *7/00, 13/00*
U.S. Cl. 364—200 **11 Claims**



1. A buffer memory control device having priority control units for priority processing set blocks and unit blocks in a buffer memory, each set block comprising a predetermined number of unit data blocks, said buffer memory control device comprising:

means for identifying each of said set blocks in accordance with determining their priority levels so as to designate a least recently used set block;

means for identifying each one of the unit data blocks of each of said set blocks in accordance with determining priority levels of said unit data blocks within each of said set blocks based on which of said unit data blocks within said each of said set blocks was least recently used, said priority levels of said unit data blocks being determined simultaneously with the identifying of said set blocks; and

means for extracting one unit data block by a combination of identifying the least recently used set block and the least recently used unit data block from each set block.

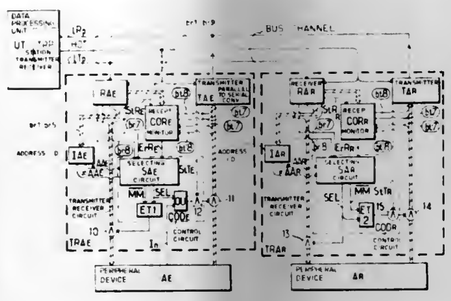
4,115,856

INTERFACES FOR CONNECTING A DATA-PROCESSING UNIT TO A WORKING STATION

Gerard François Labeye-Voisin, Ste Gemmes sur Loire, and Claude Hostein, Avrille, both of France, assignors to Compagnie Internationale pour l'Informatique Cii Honeywell Bull, Paris, France

Filed Nov. 26, 1976, Ser. No. 745,237
Claims priority, application France, Nov. 27, 1975, 75 36385
Int. Cl.[2] G06F *3/04*
U.S. Cl. 364—200 **19 Claims**

1. An interface for connecting a data processing unit to data transmitting and receiving devices; the interface including a transmitter/receiver circuit connected to the unit and transmitter/receiver circuit means associated with the devices; the unit transmitter/receiver circuit being connected to transmitter/receiver circuit means for the devices by two signal transmission lines in a channel which exchanges data between the unit and the devices, character by character, by sequentially transmitting bits of each character; a dialoguing sequence between the unit and one of the devices being initiated by a first character containing an address associated with the one device; first first characters indicating single mode operation whereby the unit and only one of the devices are interconnected to exchange data, second first characters indicating multiple mode operation whereby two of the devices are interconnected via the lines and the unit, the single mode being identified by first characters having first and second bits in a predetermined first logic state, the single mode first characters including additional bits for indicating an address of the one device; the multiple mode being identified by first characters having the first and second bits in a predetermined second logic state, first and second first characters being derived during only one sequence when there is multiple mode operation, the first and second first characters having addresses for different ones of the devices; comprising station transmitter/receiver means including a first data terminal connected to one of the lines for sequentially receiving bits transmitted by the unit via the one line, a second data terminal connected to the other line for sequentially feeding bits to be transmitted by the interface to the unit via the other line, means for establishing a transmitting and receiving dialogue between the unit and only the one addressed device in response to the first character indicating single mode operation and for establishing a transmitting and receiving dialogue during only one sequence. with the addressed devices indicated by the first and second first characters in response to the first and second first characters indicating multiple mode operation; said means for establishing including: means responsive to the sequential bits of each first character received at the first data terminal for identifying the address of the first character as being the address of the one device, and for identifying the mode indicated by the two bits of the first character; the circuit for each device further including: means responsive to the identified first and second bits being for the single mode for enabling the one device associated with the identified address to be a data transmitter and receiver; the circuits associated with each of the two devices selected for multiple mode operation including means responsive to the identified first and second bits being for the multiple mode for enabling the device associated with the circuit at one of the two identified addresses to dialogue with the unit during the same sequence, one of the two devices being activated as a data transmitter and the other of the two devices being activated as a data receiver in the multiple mode; the station transmitter/receiver means including means for feeding to the second data terminal sequential bits derived in the interface in response to signals derived by a device connected to the interface.



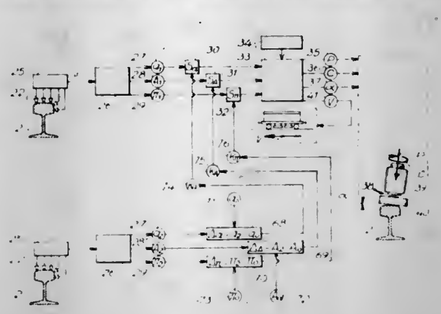
4,115,857

PROCESS AND APPARATUS FOR ON-TRACK TRUING OF THE HEADS OF RAILS OF A RAILWAY

Romolo Panetti, Geneva, Switzerland, assignor to Speno International S.A., Geneva, Switzerland

Filed Feb. 14, 1977, Ser. No. 768,431
Claims priority, application Switzerland, Feb. 18, 1976, 1961/76
Int. Cl.[2] G06F *15/46*; B24B *49/10*
U.S. Cl. 364—474 **12 Claims**

7. In apparatus for on-track truing of the surface of the head of rails of a railway comprising at least one grinding vehicle including a pre-determined number of tools for truing the head of the rails, a feed and control circuit connected to said tools and comprising means for controlling the value of at least one parameter depending from said circuit and influencing the metal-removing capability of at least one truing tool according to a control value which is preestablished as a function of the desired cutting depth of said tool, and means for setting said control value, the improvement comprising means positioned in front of the truing vehicle for measuring at least one of (a) the mean amplitude (a_1) of undulatory deformations of short wavelength, (b) the amplitude (A_1) of undulatory deformations of long wavelength, and (C) the amplitude (π_1) of defects in the profile of the head of the rails and for generating an output signal representative of the value of said amplitude, means for setting said value of the amplitude, and means for setting known values corresponding to the metal-removing capability of the tool in question, the control value of the selected parameter to obtain the cutting depth desired and/or the position of said tool being determined as a function of the value of the amplitude set and of the metal-removing capability values set.

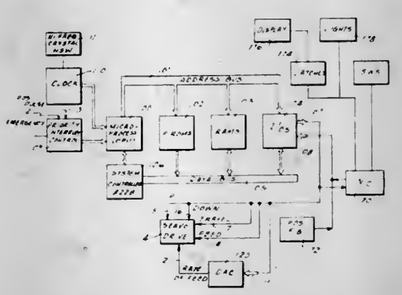


4,115,858

MACHINE TOOL CONTROLLER EMPLOYING MICROPROCESSOR SYSTEM FOR CONTROLLING Z AXIS

Menachen Kaufman, Hawaiian Gardens, Calif., assignor to Hondaille Industries, Inc., Buffalo, N.Y.

Filed Jan. 12, 1976, Ser. No. 648,299
Int. Cl.[2] G05B *19/18*
U.S. Cl. 364—474 **24 Claims**



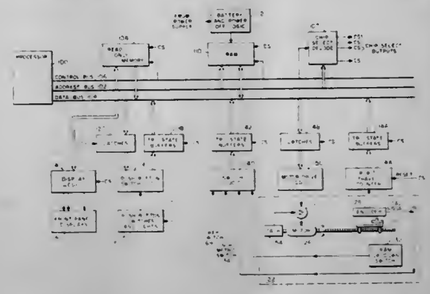
1. In a machine tool having motion control means for controlling two axes of movement of said machine tool, a controller separate from said motion control means adapted to control a third axis of operation of a machine tool, said third axis being aligned with the axis of a tool supporting spindle, said controller comprising a microprocessor dedicated to said axis, a memory unit associated with said microprocessor, an input/output control unit associated with said microprocessor and a control panel incorporating a keyboard connected with said input/output control unit, said panel incorporating a display unit for displaying data supplied to or from said input/output control unit, said memory unit having a plurality of storage locations for storing data associated with different operations of said machine tool relative to said third axis, and said keyboard being operative to permit entry of said data into said memory unit, via said input/output control unit.

4,115,859

BACK GAUGE CONTROLLER

Richard A. Brisk, Wayland, and David E. Miller, Beverly, both of Mass., assignors to Dynamics Research Corporation, Wilmington, Mass.

Filed Jun. 30, 1977, Ser. No. 811,908
Int. Cl.[2] G06F *15/46*; B21D *5/00*
U.S. Cl. 364—476 **22 Claims**



1. For use in a gauging system for a forming machine having a forming tool, a gauge bar movable along a travel path toward and away from said forming tool, and an encoder providing a signal indication of the position of the gauge bar along said travel path, a programmable, digital controller comprising:

a pre-programmed processor having a plurality of stored operating modes;

a plurality of manually operable mode controls for selecting respective operating modes stored in said processor;

a plurality of manually operable data select controls for selection of respective gauge parameters;

keyboard means manually operable for entry of numerical data associated with said data select controls;

memory means for storing data entered by said data select controls and keyboard means, representing a sequence of steps, each having a plurality of associated gauge parameters;

said processor including means for sequentially accessing the data represenative of each step of a sequence of steps stored in said memory means;

means operative in response to signals from said encoder to provide data to said processor representative of the position of said gauge bar along said travel path; and

drive logic means, operative in response to data from said processor during selected ones of said modes, for causing movement of said gauge bar to an intended position specified by the data representative of the gauge parameters associated with the step presently accessed by said processor;

the controller further including:

means operative during a first mode for displaying the gauge parameter associated with each step as said processor sequentially accesses the data representative of each step, without causing said drive logic means to move said gauge bar;

means operative during a second mode for enabling said drive logic means to move said gauge bar to the intended position associated with each step as the processor sequentially accesses the data representative of each step, without requiring actuation of the forming machine; and

means operative during a third mode for automatically causing said drive logic means to automatically move

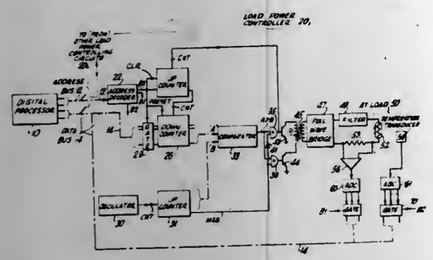
said gauge bar, following each actuation of the forming machine, to the intended position associated with each step as the processor sequentially accesses the data representative of each step.

4,115,860

PLURAL LOAD POWER CONTROLLER WITH TIME-SHARED PROCESSOR

Jerrold Bradford Atwater, North Plainfield, N.J., assignor to Lockheed Electronics Co., Inc., Plainfield, N.J.

Filed Jun. 2, 1977, Ser. No. 802,965
Int. Cl.[2] H02J *1/00*; G06F *15/20*
U.S. Cl. 364—492 **9 Claims**



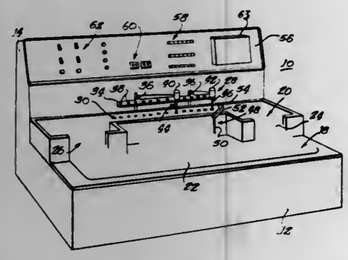
1. In combination in regulator apparatus, plural loads, digital processor means, and plural load regulator means each connected between said processor means and a different one of said loads, each of said plural load regulator means including binary wind registering means, means for loading said word registering means with an output from said digital processor means, variable duty factor means connected to and responsive to said binary word registering means for supplying an output control wave of varying duty factor, and gated load energizing means having a gate control port connected to the output of said variable duty factor means.

4,115,861

CHEMICAL ANALYZER

Robert William Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Mar. 28, 1977, Ser. No. 781,768
Int. Cl.[2] G06F *15/20*; G01N *33/16*
U.S. Cl. 364—497 **19 Claims**



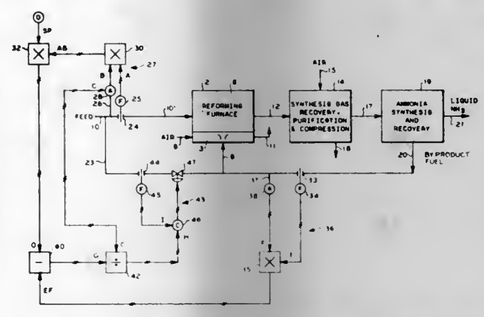
1. Automatic apparatus comprising:
at least one actuator of a first type having first and second discrete states;
at least one actuator of a second type controllable across a range of states;
means adapted to replaceably hold a program;
said program having first and second types of instructions;
said first type of instruction including a command and said second type of instruction including a command and data;
sequencing means for sequencing to different instructions of said program;
first execution means connected to receive said first type of instructions for energizing actuators of said first type having first and second discrete states in response to said first instruction;
second execution means connected to receive said steps instructions of said second type for energizing actuators of said second type controllable across a range of states;
data means for controlling the particular state in said range of states of said actuators of said second type in response to said data; and
time delay means for delaying sequencing of said sequencing means after an instruction of said first type until said actuator of said first type has reached a predetermined state; and
said sequencing means including means for sequencing to data in said program after a command of said second type.

4,115,862

PROCESS CONTROL METHOD AND APPARATUS

William S. Stewart, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 20, 1977, Ser. No. 808,000
Int. Cl.[2] G06G *7/58*; F23N *1/00*
U.S. Cl. 364—500 **12 Claims**



7. A method for controlling thermal cracking of at least a portion of a feed hydrocarbon stream wherein heat is supplied for cracking by the combustion of a fuel stream and a supplemental fuel stream, said method including the steps of:
measuring the cracking heat input per unit time requirement for a predetermined level of cracking of said portion of the feed hydrocarbon stream;
measuring the combustion heating value per unit time of the fuel stream;
determining the quantity per unit time of supplemental fuel needed to supplement the combustion heating value of said fuel stream to produce the required cracking heat input; and
combining the required amount of the supplemental fuel with fuel from said fuel stream.

4,115,863

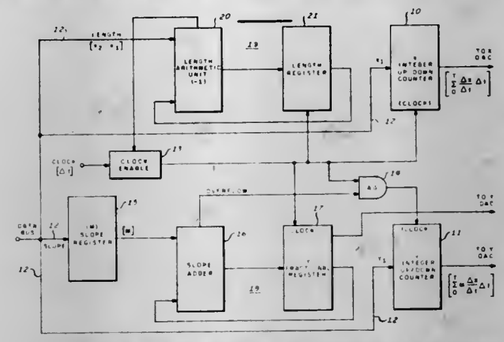
DIGITAL STROKE DISPLAY WITH VECTOR, CIRCLE AND CHARACTER GENERATION CAPABILITY

Richard R. Brown, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 7, 1976, Ser. No. 748,357
Int. Cl.[2] G06F *3/14*
U.S. Cl. 364—521 **49 Claims**

1. Digital stroke display apparatus having display tube means with a display face and writing means positionable along X and Y display axes for writing vectors with predetermined slopes and circular curves comprising a series of concatenated vectors on said display face comprising
a source of clock pulses,
first counter means coupled to receive said clock pulses for counting said clock pulses and providing a first digital count signal in accordance therewith,

first positioning means responsive to said first digital count signal and coupled to said writing means for positioning said writing means along one of said axes in accordance with said first digital count signal at a first rate,
means for providing a slope signal representative of said slope,
multiplying means responsive to said clock pulses and to said slope signal for providing further clock pulses representative of the product therebetween,
second counter means for counting said futher clock pulses and providing a second digital count signal in accordance therewith,
second positioning means responsive to said second digital



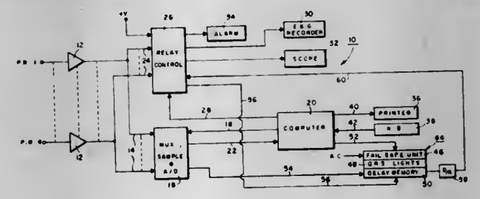
count signal and coupled to said writing means for positioning said writing means along the other of said axes in accordance with said second digital count signal at a rate proportional to the product of said slope and said first rate,
said means for providing a slope signal including slope memory means for storing a plurality of slope values corresponding to said series of concatenated vectors respectively, and
slope memory addressing means coupled to said slope memory means for addressing said plurality of slope values to provide said slope signal to said multiplying means in accordance therewith, thereby writing said circular curves.

4,115,864

FAIL SAFE DETECTOR IN A CARDIAC MONITOR

Howard Andrew Vick, Pearland, and Donald B. Johnson, Houston, both of Tex., assignors to Hycel, Inc., Houston, Tex.

Continuation of Ser. No. 515,107, Oct. 31, 1974, abandoned.
This application Apr. 27, 1977, Ser. No. 791,559
Int. Cl.[2] G08B *21/00*
U.S. Cl. 364—550 **6 Claims**



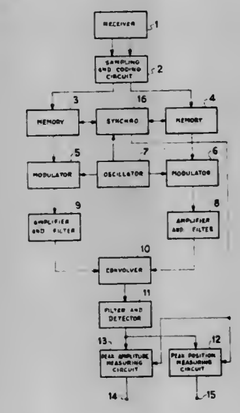
1. In an electrocardiac waveform monitoring apparatus for monitoring at least one source of cardiac waveforms and including a failsafe unit for producing an alarm signal in the absence of reset signals applied thereto, computer means coupled to said failsafe unit for supplying reset signals to said failsafe unit, and means for triggering said computer means periodically in response to processing of periodically produced cardiac waveforms to produce a reset signal periodically, the computer means being responsive to each said source for providing a signal indicative of the absence of a cardiac waveform applied from each said source when no waveforms are applied therefrom, and wherein said computer means comprises means for responding to said signal indicative of the absence of a cardiac waveform from each said source to trigger periodically production of a reset signal, whereby a false alarm condition is prevented when said electrocardiac waveform monitoring apparatus is operative to process waveforms and no cardiac waveforms are received thereby for processing.

4,115,865

HIGH-SPEED CORRELATING DEVICE

Thierry Beauvais, and Philippe Souchay, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 6, 1977, Ser. No. 785,300
Claims priority, application France, Apr. 9, 1976, 76 10564
Int. Cl.[2] G06F *15/34*; G06G *7/19*
U.S. Cl. 364—604 **9 Claims**



1. A high-speed correlating device for delivering an output correlation signal which is the result of the correlation of two input signals in the form of successive samples, comprising:
at least a first and second memory for storing respectively samples of said two input signals;
a synchronizing circuit for controlling the read out from said first and second memory simultaneously with a time inversion for the read out of one of said first and second memories;
an oscillator for producing a carrier wave;
first amplitude modulating means for modulating the amplitude of said carrier wave by using the information read out from said first memory, said first amplitude modulating means delivering a first analogue signal reconstituted in the form of a modulation of the amplitude of the carrier wave;
second amplitude modulating means for modulating the amplitude of said carrier wave by using the information read out from said second memory, said second amplitude modulating means delivering a second analogue signal reconstituted in the form of a modulation of the amplitude of the carrier wave;
an electroacoustical convolver device for receiving the respective first and second analogue signals; and
means for filtering and detecting the modulation of the output signal from the convolver and delivering said output correlation signal.

4,115,866

DATA PROCESSING NETWORK FOR COMMUNICATIONS SWITCHING SYSTEM

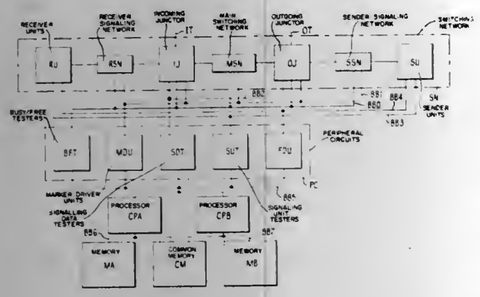
Julisan Leo Gerard Janssens, Olmen, and Marie Jeanne Françoise Louise Ghislaine Malherbe, Berchem, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 335,683, Feb. 26, 1973. This application May 7, 1976, Ser. No. 684,422

Claims priority, application Netherlands, Feb. 25, 1972, 7202503

Int. Cl.² G06F *1/00*

U.S. Cl. 364—900 **4 Claims**



1. An automatic communications switching system comprising a switching network for completing calls through the system, a data processing network for controlling the completion and supervision of calls through the system by the execution of programs, and a plurality of peripheral circuits interfacing between said switching network and data processing network to provide signals regarding the condition of the switching network to the processing network and for transmitting signals from the processing network for controlling and supervising the operation of the switching network, and in which said data processing network includes a first and a second processor, a first individual memory normally accessible only to the first processor for storing data including programs of a first set concerning calls being handled by said first processor, a second individual memory normally accessible only to the second processor for storing data including programs of said first set concerning calls being handled by said second processor, means in individual memories for storing address information of calls through peripheral circuits, the calls being handled by the processor associated with the respective individual memory, a further memory commonly accessible from both said first and said second processor for storing data representing conditions of said peripheral circuits being completed through said peripheral circuits under the control of both said processors in a load sharing manner and, in which each of said processors includes means to prevent said programs of said second set from being simultaneously executed by both processors to thereby give rise to conflicting situations due to the simultaneous handling of similar programs, said preventing means comprising a storage table individual to each processor, said table indicating the programs to be handled and not to be handled by the particular processor.

4,115,867

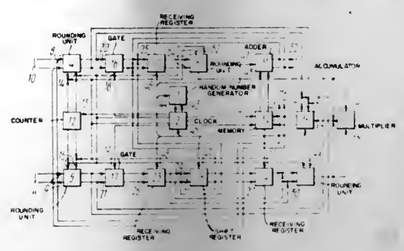
SPECIAL-PURPOSE DIGITAL COMPUTER FOR COMPUTING STATISTICAL CHARACTERISTICS OF RANDOM PROCESSES

Evgeny Evgenievich Vladimirov, ulitsa Yaroslava Gasheka, 2, kv. 1; Vladimir Gerasimovich Korchagin, prospekt Veteranov, 144/21, kv. 202; Jury Borisovich Sadomov, ulitsa Tipanova, 2, kv. 17, and Lev Mikhailovich Khokhlov, ulitsa Gertsena, 47, kv. 10, all of Leningrad, U.S.S.R.

Filed Jul. 5, 1977, Ser. No. 813,162

Int. Cl.² G06F *7/00, 15/06, 15/36*

U.S. Cl. 364—900 **2 Claims**



1. A special-purpose digital computer, comprising:
input data lines;
output lines;
a random-number generator for producing a uniform pseudo-random number sequence having
an input and a multi-channel output;
a clock having
an input, a multi-channel input, outputs and multi-channel outputs,
said multi-channel input of said clock being connected to said multi-channel output of said random-number generator;
a quantization step counter for determining the value of a quantization amplitude interval having
an input and first and second multi-channel outputs,
said input of said quantization step counter being connected to a first of said outputs of said clock; first, second, third and fourth stochastic data rounding units for linear conversion of the code into its probability and for stochastic rounding of numbers having
first and second multi-channel inputs and a multi-channel output,
said first multi-channel inputs of said first and said second rounding units being connected to said input data lines,
said second multi-channel inputs of said first and second stochastic data rounding units being connected to said first and second multi-channel outputs of said quantization step counter, being coupled to a first of said multi-channel outputs of said clock and being connected to said second multi-channel inputs of said third and fourth stochastic data rounding units;
a shift register unit having
an input, a multi-channel input and a multi-channel output;
first, second and third receiving registers having an input, a multi-channel input and a multi-channel output,
said multi-channel output of said first receiving register being connected to said first multi-channel input of said third stochastic data rounding units,
said multi-channel input of said third receiving register being interconnected with said multi-channel input of said first receiving register, being coupled to said multi-channel output of said shift register unit and being connected to said multi-channel input of said shift register unit, to said multi-channel outputs of said second and third receiving register and to said first multi-channel input of said fourth stochastic data round-off unit;
first and second gate units having
an input, a multi-channel input and a multi-channel output,

said multi-channel inputs of said first and second receiving registers being connected to said multi-channel outputs of said first and second gate units, respectively;
said multi-channel inputs of said first and second gate units being connected to multi-channel outputs of said first and second stochastic data rounding units, respectively,
said inputs of said gate units being connected to respective outputs of said clock;
an adder having an input, a multi-channel input and multi-channel output,
said multi-channel output of said adder being connected to said multi-channel input of said first receiving register and being connected to some of said output lines;
a data accumulator for accumulation and group shift of information having
inputs, a multi-channel output and a multi-channel input,
said multi-channel input of said data accumulator being connected to said multi-channel outputs of said first and second stochastic data rounding units;
a read-only memory to store harmonic functions, "correlation window" functions, the values of the functions of the form

$$\eta = -P \log_2 P,$$

and microinstructions having
first and second multi-channel inputs, outputs and a multi-channel output,
said first multi-channel input of said read-only memory being connected to a second of said multi-channel outputs of said clock,
said outputs of said read-only memory being connected to said inputs of said random-number generator, said clock, said first, second and third receiving registers, said adder, and said shift register unit and to a first of said inputs of said data accumulator,
said multi-channel output of said read-only memory being connected to said multi-channel input of said adder,
said second multi-channel input of said read-only memory being connected to said multi-channel output of said data accumulator and being coupled to other of said output lines and to said first multi-channel inputs of said first and second stochastic data rounding units; and
a single-time step multiplier for stochastic multiplication of numbers having
inputs and an output,
said inputs of said multiplier being connected, respectively, to outputs of said third and fourth stochastic data rounding units, and
said output of said multiplier being connected to said outputs of said third and fourth stochastic data rounding units and being coupled to said input of said data accumulator.

4,115,868

INFORMATION TRANSFERRING APPARATUS

Seigo Suzuki, Yokohama; Seiji Eguchi, Kawasaki, and Yoshiaki Moriya, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

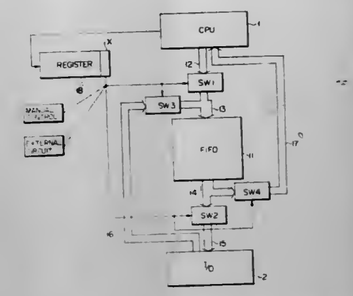
Filed Oct. 15, 1976, Ser. No. 732,703

Claims priority, application Japan, Oct. 15, 1975, 50-124140

Int. Cl.² G06F *13/00*

U.S. Cl. 364—900 **4 Claims**

1. An information transferring apparatus disposed between first and second information processing units comprising:
a first-in first-out stack having an input terminal and an output terminal;
a first information line connected between the first information processing unit and said input terminal for transferring information from said first information processing unit to said first-in first-out stack;
a second information line connected between said output terminal and the second information processing unit for transferring information from said first-in first-out stack to said second information processing unit;
a third information line connected between the second information processing unit and said input terminal for transferring information from said second information processing unit to said first-in first-out stack;
a fourth information line connected between said output terminal and the first information processing unit for transferring information from said first-in first-out stack to said first information processing unit;



switching means for selectively deactivating said first to fourth information lines; and
control means for applying first and second control signals to said switching means, wherein said switching means operates responsive to the first control signal from said control means to deactivate said third and fourth information lines while holding active said first and second information lines, and operates responsive to the second control signal from said control means to deactivate said first and second information lines while holding active said third and fourth information lines.

4,115,869

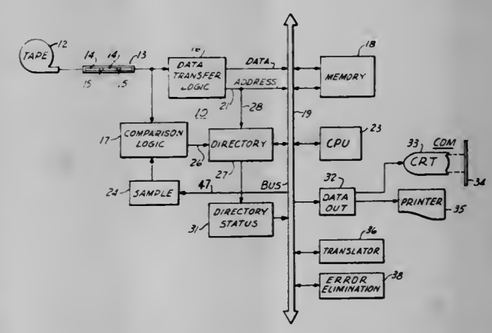
METHODS AND APPARATUS FOR PROCESSING DATA INCLUDING A CHARACTERISTIC MARK OR ERROR

Hubert P. Putnam, Orange, and William O. Butts, Irvine, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Oct. 12, 1976, Ser. No. 731,245

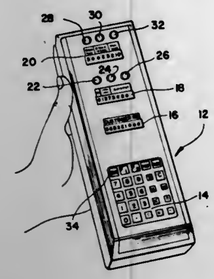
Int. Cl.² G06F *1/00*

U.S. Cl. 364—900 **33 Claims**



1. In a method of processing data including a recurring characteristic mark, the improvement comprising in combination the steps of:
storing said data at storage locations;
establishing a directory of specific locations of stored data including said characteristic mark;
processing said stored data; and
controlling said processing with the aid of said directory.

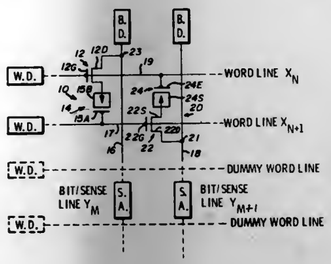
4,115,870
HAND-HELD DATA PROCESSING TERMINAL
Arthur C. Lowell, Newport Beach, Calif., assignor to Wordsmith, Inc., Santa Monica, Calif.
Filed Nov. 18, 1976, Ser. No. 742,841
Int. Cl.[2] G07C *1/10*; G06F *3/02*
U.S. Cl. 364—900 **13 Claims**



1. A hand-held data processing and data logging terminal system comprising:
- a plurality of field registers, and a corresponding plurality of associated visible display means for exhibiting the data included in each said field register;
- an entry register and a corresponding associated visible display means for exhibiting numbers included in said entry register; said entry register and associated visible display means being separate from said field registers and associated displays;
- a keyboard;
- means for entering data from said keyboard into said entry register, and concurrently displaying said data in said associated visible display;
- a plurality of individual switching means mounted on the face of said hand-held data processing system and adjacent each of said field registers for selectively shifting information from said entry register directly into the selected one of said field registers for immediate display in the visible display associated with each field register;
- housing means for mounting said registers, display means, keyboard, data shifting means and switching means into a lightweight hand-held unit;
- a memory unit;
- means for entering information stored in said field registers into said memory unit;
- means for initially entering a key predetermined multidigit number and a number indicating the time of day into said entry register;
- means for continuously updating said time of day information;
- decoding means responsive to the entry of said predetermined multidigit number and said number representing the time of day for enabling the transfer of information from said field registers to said memory unit; and
- means for automatically storing said time of day information with information transferred from said field registers to said memory unit.

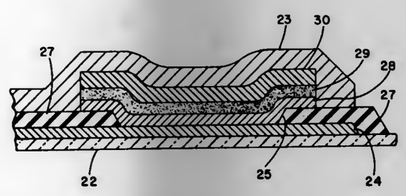
4,115,871
MOS RANDOM MEMORY ARRAY
Andrew G. Varadi, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Apr. 19, 1977, Ser. No. 788,871
Int. Cl.[2] G11C *11/24, 7/02*
U.S. Cl. 365—149 **10 Claims**

10. An MOS random access memory array comprising, in combination, a plurality of interconnected memory cells, means for writing information into said memory cells, means for reading information contained in said memory cells, each of said memory cells comprising an MOS device having source and drain regions and a gate electrode and a semiconductor capacitor device connected to said MOS device, said semiconductor capacitor device of each of said memory cells having an electrically conductive electrode as one plate of the semiconductor capacitor device, said electrically conductive electrode being connected to the gate electrode of another MOS device of one of said plurality of memory cells, said gate electrode of said MOS device being in electrical contact with an electrically conductive electrode plate of another semiconductor



capacitor device coupled to said another MOS device, a plurality of word lines and a plurality of bit/sense lines, each of said memory cells being connected to two adjacent word lines and one bit/sense line, each one of said memory cells having an adjacent memory cell, said each one of said memory cells being connected to one of said plurality of bit/sense lines and said adjacent memory cell being connected to another of said plurality of bit/sense lines.

4,115,872
AMORPHOUS SEMICONDUCTOR MEMORY DEVICE FOR EMPLOYMENT IN AN ELECTRICALLY ALTERABLE READ-ONLY MEMORY
Vernon A. Bluhm, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed May 31, 1977, Ser. No. 801,773
Int. Cl.[2] G11C *11/00*
U.S. Cl. 365—163 **10 Claims**



1. An electrically alterable memory device comprising:
- a positive electrode;
- a negative electrode; and
- a structure of memory material mounted inbetween said electrodes, which structure is constructed of first, second and third regions, said first region being adjacent to said positive electrode, said third region being adjacent to said negative electrode, said second region being between said first and third regions;
- said second region being formed of a tellurium based chalcogenide which has higher electrical resistance in its amorphous state and lower electrical resistance in its crystalline state and can be switched from one state to the other upon application of said electrodes of an electrical signal of appropriate value;
- said first region being formed of a material having a higher percentage of tellurium than said second region;
- said third region being formed of material having a higher percentage of germanium than said second region.

DESIGN PATENTS

GRANTED SEP. 19, 1978

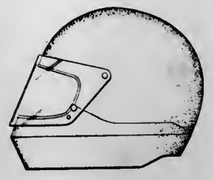
ERRATA

For CLASS	See PATENT NO.
D09–191	249,490
D09–219	249,491
D16–030	249,521

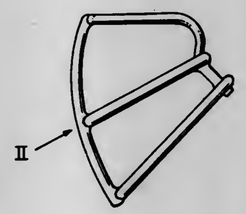
DESIGNS

SEPTEMBER 19, 1978

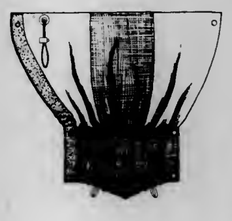
249,396
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to ShoeiSafety Helmet Corporation, Los Angeles, Calif.
Filed Nov. 1, 1976, Ser. No. 737,680
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



249,397
FACE GUARD FOR MOUNTING ON AN ATHLETIC HELMET
Delby C. Humphrey, Terre Haute, and Robert D. Humphrey, Litchfield, both of Ill., assignors to Schutt Manufacturing Company, Litchfield, Ill.
Filed Sep. 30, 1976, Ser. No. 728,394
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



249,398
PROTECTIVE GAITER FOR SNOW SKIERS
Scott Stewart, 901 Watson St., Madison, Wis. 53713
Filed Jun. 21, 1976, Ser. No. 697,836
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—275



249,399
NECKTIE
John Joseph Knapman, Jays, 49A Cricketers Lane, Herongate, Brentwood, Essex CM13 3QB, England
Filed Sep. 22, 1976, Ser. No. 725,362
Claims priority, application United Kingdom, Mar. 29, 1976, 975100
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—357



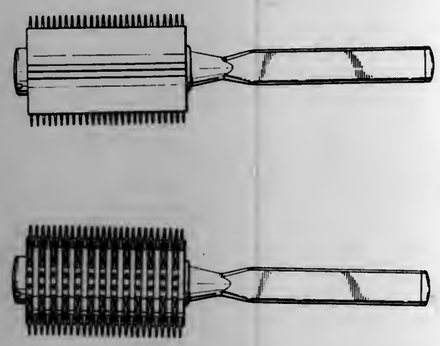
249,400
TOY BOXING GLOVE
Maxwell Pearson, Zionsville, Pa., assignor to Cartex Corporation, Doylestown, Pa.
Filed Aug. 11, 1976, Ser. No. 713,555
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



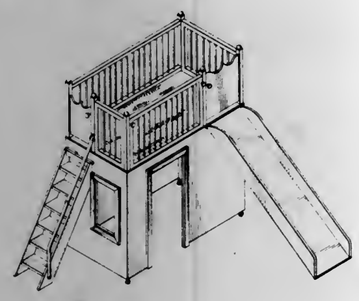
249,401
HAIRBRUSH
Myron Glasberg, Needham, Mass., assignor to Brynel Incorporated, Watertown, Mass.
Filed Jul. 29, 1977, Ser. No. 820,358
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—31



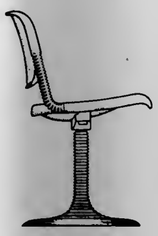
249,402
HAIRBRUSH
Harold Leighton, London, England, assignor to Harold Leighton (Products) Limited, London, England
Filed Jan. 17, 1977, Ser. No. 759,836
Claims priority, application United Kingdom, Jul. 16, 1976, 976538
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—31



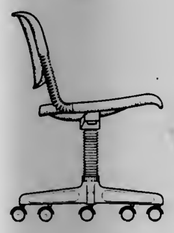
249,403
COMBINED CHILD'S BED AND AMUSEMENT CENTER
James M. Lamb, 2402 Nottingham Dr., Garland, Tex. 75040
Filed Jul. 13, 1976, Ser. No. 704,793
Term of patent 14 years
Int. Cl. D6—*01, 05*
U.S. Cl. D6—6



249,404
CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Division of Ser. No. 692,899, Jun. 4, 1976. This application Aug. 11, 1977, Ser. No. 823,824
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



249,405
CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Division of Ser. No. 692,899, Jun. 4, 1976. This application Aug. 11, 1977, Ser. No. 823,825
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



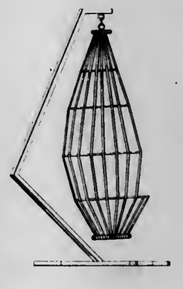
249,406
CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Division of Ser. No. 692,899, Jun. 4, 1976. This application Aug. 11, 1977, Ser. No. 823,823
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



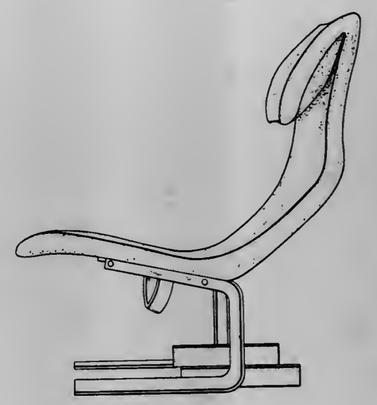
249,407
TABLET ARM CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Division of Ser. No. 692,899, Jun. 4, 1976. This application Aug. 11, 1977, Ser. No. 823,826
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—44



249,408
SUSPENSION CHAIR AND STAND
William P. Jackson, 431 Bonsall Ave., Yeadon, Pa. 19050
Filed Feb. 10, 1977, Ser. No. 767,266
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—54



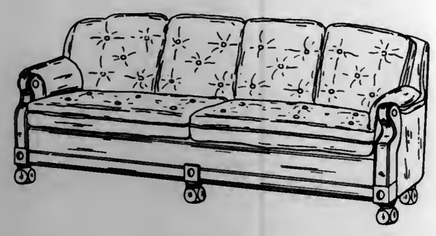
249,409
CHAIR
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Italy
Filed Mar. 15, 1976, Ser. No. 667,160
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



249,410
SEAT
Jan Dranger, and Johan Huldt, both of Stockholm, Sweden, assignors to Innovator Design AB, Stockholm, Sweden
Continuation of Ser. No. 730,253, Oct. 6, 1976, abandoned, which is a continuation of Ser. No. 695,550, Jun. 14, 1976, abandoned, which is a continuation of Ser. No. 695,548, Jun. 14, 1976, abandoned. This application Sep. 19, 1877, Ser. No. 834,757
Claims priority, application Sweden, Dec. 16, 1975, 752507; Jun. 4, 1976, 761225
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



249,411
SEAT OR SIMILAR ARTICLE
Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Jan. 24, 1977, Ser. No. 761,700
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



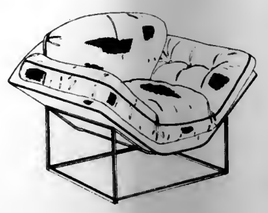
249,412
SEAT OR SIMILAR ARTICLE
Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Jan. 24, 1977, Ser. No. 761,699
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



249,413
CHAIR
James Frank, Hunters Hill, Australia, assignor to Framac Industries Pty. Limited, Granville, Australia
Filed Nov. 5, 1976, Ser. No. 739,231
Claims priority, application Australia, May 19, 1976, 69235
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,414
LOUNGE CHAIR, OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,678
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



249,415
CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Division of Ser. No. 692,899, Jun. 4, 1976. This application Aug. 11, 1977, Ser. No. 823,682
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—72



249,416
CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Division of Ser. No. 692,899, Jun. 4, 1976. This application Aug. 11, 1977, Ser. No. 823,725
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—72



249,417
CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Filed Jun. 4, 1976, Ser. No. 692,899
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—78



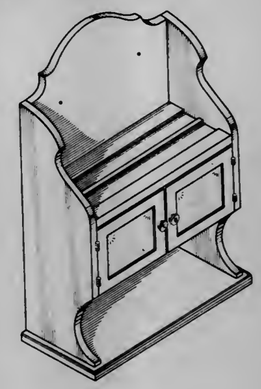
249,418
STEM FOR SUPPORTING A SOAP DISH OR THE LIKE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Oct. 12, 1977, Ser. No. 841,549
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



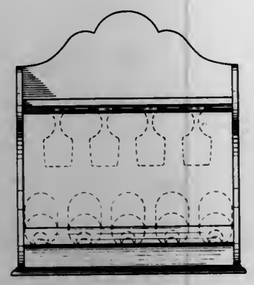
249,419
STEM FOR SUPPORTING A TOWEL TREE OR THE LIKE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Oct. 12, 1977, Ser. No. 841,541
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—103



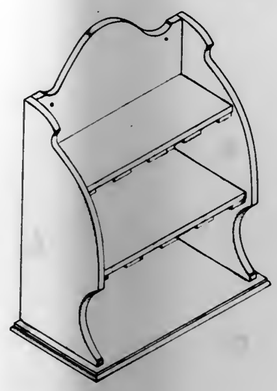
249,420
STONEWARE HUTCH CABINET
Maurice G. Mountain, and William S. Ripley, III, both of York, Pa., assignors to Susquehanna Broadcasting Co., York, Pa.
Filed Oct. 6, 1976, Ser. No. 730,244
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—127

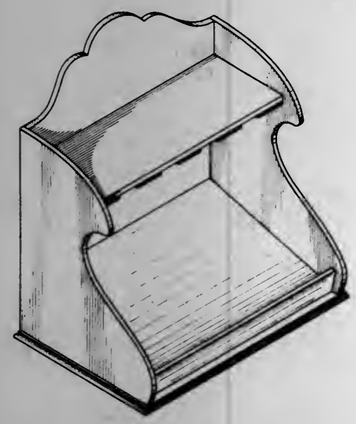


249,421
VINTNERS' BIN AND CABINET
Paul E. Helgesen, Seven Valleys; Maurice G. Mountain, and William S. Ripley, III, both of York, all of Pa., assignors to Susquehanna Broadcasting Co., York, Pa.
Filed Oct. 6, 1976, Ser. No. 730,245
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130

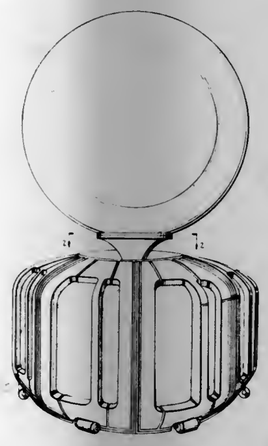


249,422
GLASSWARE HUTCH CABINET
Paul E. Helgesen, Seven Valleys, and William S. Ripley, III, York, both of Pa., assignors to Susquehanna Broadcasting Co., York, Pa.
Filed Oct. 6, 1976, Ser. No. 730,246
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—134

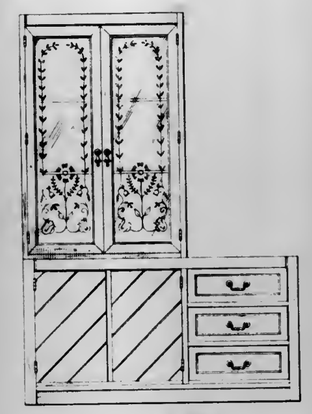




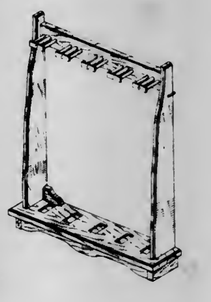
249,423
MOBILE DEVICE FOR THE DISPLAY OF ADVERTISING OR ENTERTAINMENT, OR FOR DISPENSING PRODUCTS
Kenneth H. Walker; Garfield Langworthy, both of New York, N.Y., and Robert L. Turner, Florham Park, N.J., assignors to Walker-Grad Inc.
Filed Apr. 27, 1976, Ser. No. 680,725
Term of patent 14 years
Int. Cl. D20—*02, 03*
U.S. Cl. D6—146



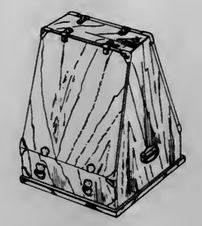
249,424
BUFFET AND CHINA DECK
James D. Brown, High Point, N.C., assignor to The Lane Company, Inc.
Filed Dec. 30, 1976, Ser. No. 758,546
Term of patent 3 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



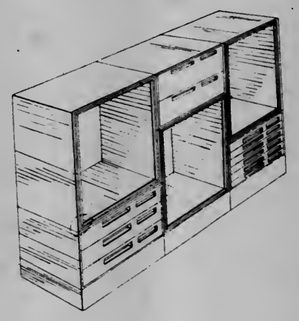
249,425
SKI RACK
John A. Jones, 7820 Boulder Ave., Highland, Calif. 92346
Filed Jan. 24, 1977, Ser. No. 761,599
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—157



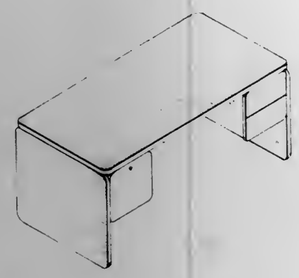
249,426
JEWELRY DISPLAY CASE
Harley West Parsons, 9005 Grandview, Arvada, Colo. 80002
Filed Mar. 2, 1977, Ser. No. 773,540
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—158



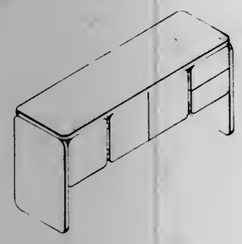
249,427
MODULAR STORAGE UNIT
Rene E. Neveux, Les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Jun. 22, 1976, Ser. No. 698,759
Claims priority, application France, Dec. 31, 1975, 75 74450
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



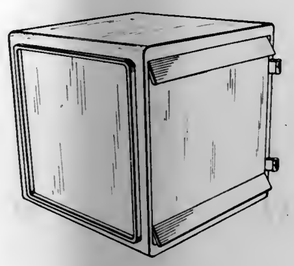
249,428
DESK
Fuller Robinson, Jalisco, Mexico, assignor to Standard Desk Limited
Division of Ser. No. 448,506, Mar. 6, 1974. This application Mar. 4, 1976, Ser. No. 663,998
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



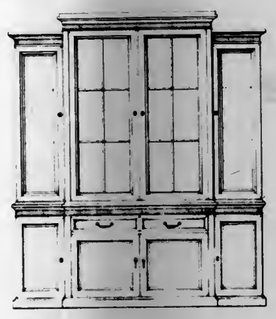
249,429
CREDENZA
Fuller Robinson, Jalisco, Mexico, assignor to Standard Desk Limited
Division of Ser. No. 448,506, Mar. 6, 1974. This application Mar. 4, 1976, Ser. No. 663,991
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



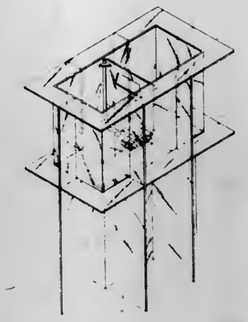
249,430
CABINET OR SIMILAR ARTICLE
Robert A. Chervenak, Seattle, Wash., assignor to Comerco, Inc., Tacoma, Wash.
Filed Nov. 8, 1976, Ser. No. 739,998
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



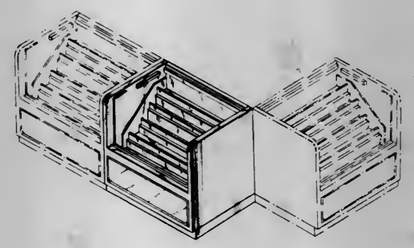
249,431
DINING ROOM BREAKFRONT, OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,685
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—172



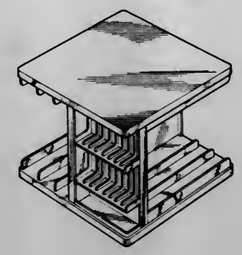
249,432
COMBINED PLANTER AND SUPPORT
Mary Ellen Pearce, and John Scott Pearce, both of 8800 Burbank Rd., Annandale, Va. 22003
Filed Dec. 22, 1975, Ser. No. 643,232
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02;* D30—*02*
U.S. Cl. D6—183



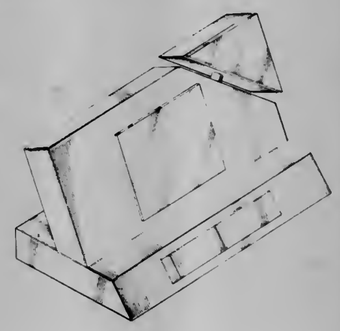
249,433
MODULAR NEWSSTAND
Roger Leonard Carlsen, Yonkers, N.Y., assignor to Jacob Froehlich Cabinet Works Inc.
Filed Aug. 2, 1977, Ser. No. 821,327
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—184



249,434
PHONOGRAPH RECORD SUPPORT STAND OR SIMILAR ARTICLE
David Peter Harris, London, England, assignor to Pye Limited, Cambridge, England
Filed Nov. 29, 1976, Ser. No. 745,959
Claims priority, application United Kingdom, Jun. 2, 1976, 975955/76
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—185



249,435
PICTURE HOLDER
Richard K. Ishmael, 31 Alta Vista Way, San Rafael, Calif. 94901
Filed Jul. 21, 1976, Ser. No. 707,332
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—233



249,436
SLEEPING BAG
Margaret J. Myers, 282 Viejo, Laguna Beach, Calif. 92651
Filed Feb. 7, 1977, Ser. No. 765,947
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—268



249,437
SLEEPING BAG
Margaret J. Myers, 282 Viejo, Laguna Beach, Calif. 92651
Filed Feb. 4, 1977, Ser. No. 767,466
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—268



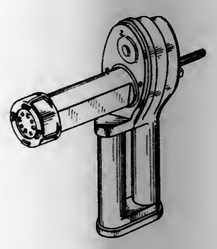
249,438
BEVERAGE MUG OR THE LIKE
Kenneth R. Meier, Wildwood Rd., Beaver, Pa. 15009, and Thomas J. McKnight, 513 Fifth St., Apt. B, New Brighton, Pa. 15066
Filed Dec. 20, 1976, Ser. No. 752,130
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5



249,439
BOWL OR SIMILAR ARTICLE
Frank J. Benes, and James Lloyd Thrush, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 487,456, Jul. 11, 1974, Pat. No. D. 243,463.
This application Feb. 6, 1976, Ser. No. 656,012
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—17

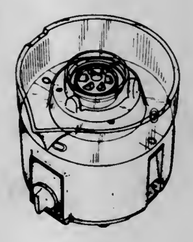


249,440
BATTERY OPERATED PRESS FOR COOKIES OR THE LIKE
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Jul. 14, 1976, Ser. No. 705,124
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—43

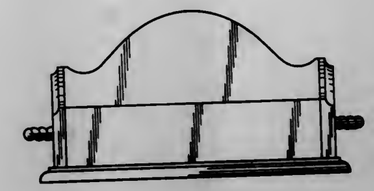


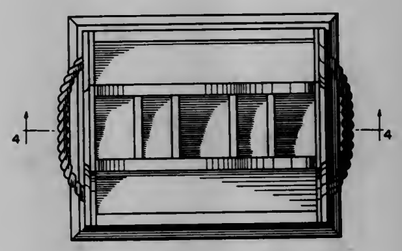
249,441
JUICER
Noboru Fukumoto, Toyonaka, and Shyusuke Inoue, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodoma, Japan
Filed Aug. 2, 1976, Ser. No. 711,082
Claims priority, application Japan, Feb. 4, 1976, 51-3427
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—49



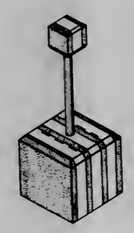


249,442
CADDY FOR TABLEWARE UTENSILS OR SIMILAR ARTICLES
Paul E. Helgesen, Seven Valleys, and William S. Ripley, III, York, both of Pa., assignors to Susquehanna Broadcasting Co., York, Pa.
Filed Oct. 6, 1976, Ser. No. 730,247
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—73





249,443
KNIFE HOLDER
Anton Ackerman, Billerica, and William J. Jones, Saugus, both of Mass., assignors to Dynamic Designs, Inc., Saugus, Mass.
Filed Jul. 1, 1976, Ser. No. 701,650
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74



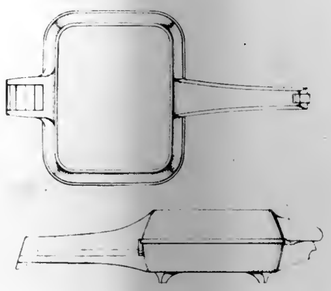
249,444
ICE BUCKET
Earl G. Forsberg, 761 Morosgo Dr., NE., Apt. 6, Atlanta, Ga. 30324
Continuation-in-part of Ser. No. 719,210, Aug. 31, 1976, abandoned. This application Nov. 16, 1977, Ser. No. 852,180
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—78



249,445
STORAGE JAR OR SIMILAR ARTICLE
Frank J. Benes, and James Lloyd Thrush, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 487,456, Jul. 11, 1974, Pat. No. D. 243,463. This application Jan. 5, 1976, Ser. No. 646,507
Term of patent 14 years
Int. Cl. D7—*07, 01*
U.S. Cl. D7—79



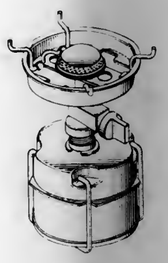
249,446
SANDWICH MAKER
Alfred W. Madl, Glendale, and Charles J. Kirschling, Milwaukee, both of Wis., assignors to Oster Corporation, Milwaukee, Wis.
Filed Jul. 14, 1976, Ser. No. 705,083
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



249,447
COMBINED COOKING AND SERVING BOWL
Coley T. Brown, Box 133-G, Browns Corners Rd., Jamesburg, N.J. 08831
Filed Sep. 21, 1976, Ser. No. 723,791
Term of patent 14 years
Int. Cl. D7—*02, 01*
U.S. Cl. D7—97



249,448
PORTABLE CARTRIDGE GAS COOKING STOVE
Marcel Vache, Sainte-Foy-les-Lyon, France, assignor to Application Des Gaz, Paris, France
Filed Mar. 11, 1977, Ser. No. 776,685
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



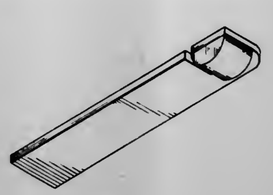
249,449
MICROWAVE OVEN
John J. Pink, 519 33rd St., NE., Cedar Rapids, Iowa 52402, and Jerry L. Walter, 6126 Underwood Ave., SW., Cedar Rapids, Iowa 52404
Continuation of Ser. No. 626,093, Oct. 28, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,938
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



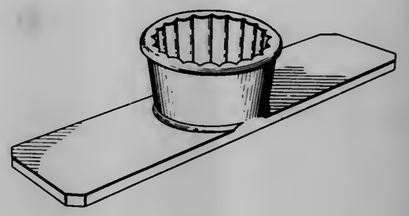
249,450
ARTICLE OF FLATWARE
Ronald A. Guodace, Yalesville, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Jul. 29, 1976, Ser. No. 709,593
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



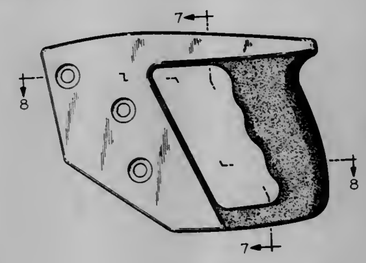
249,451
OPENING TOOL FOR TEAR-OPEN-TYPE CONTAINERS
Albert Frank Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jul. 29, 1976, Ser. No. 709,758
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—18



249,452
COMBINED BOTTLE CAP TIGHTENER AND REMOVER
Simon Gendron, Montreal, Canada, assignor to Payge Manufacturing (1973) Limited, Montreal, Canada
Filed Nov. 30, 1976, Ser. No. 746,010
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—40



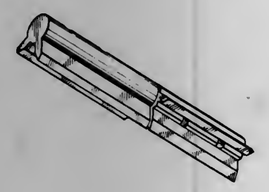
249,453
HANDLE FOR HAND SAW
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Aug. 9, 1976, Ser. No. 712,461
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—97



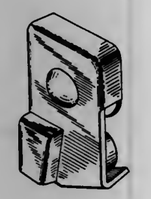
249,454
HANDLE FOR FURNITURE DOORS, DRAWERS OR THE LIKE
Roland Spellier, Lemgo, Fed. Rep. of Germany, assignor to Firma Richard Heinze GmbH & Co. KG, Herford, Fed. Rep. of Germany
Filed May 12, 1976, Ser. No. 685,570
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1975, 6 AR 235/75
Term of patent 14 years
Int. Cl.[2] D8—*06*
U.S. Cl. D8—313



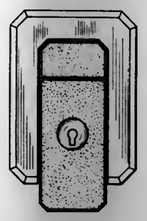
249,455
HINGE
Alan G. Tilley, 10 Mountain View Rd., New Germany, Natal, South Africa
Filed Jan. 31, 1977, Ser. No. 764,465
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—323



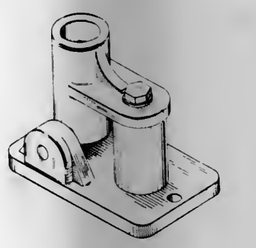
249,456
LATCH
Carmen Testa, Stamford, Conn., assignor to Excelsior Hardware Company, Stamford, Conn.
Filed Dec. 27, 1976, Ser. No. 754,970
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—338



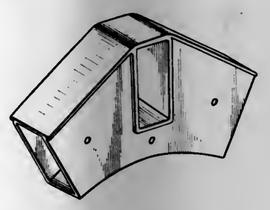
249,457
DRAW BOLT FOR LUGGAGE OR THE LIKE
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.
Filed Mar. 14, 1977, Ser. No. 777,085
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—338



249,458
MOORING WHIP BASE
Robert H. Olsen, 106 SE. 10th St., Ft. Lauderdale, Fla. 33316
Filed Jul. 6, 1976, Ser. No. 702,467
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D8—349



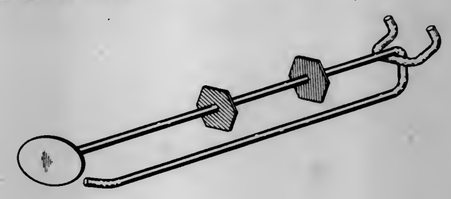
249,459
ANGLE JOINT FOR BUILDING SYSTEM
Keith Halliwell, Collaroy, Australia, assignor to Injectaform Pty. Limited, Brookvale, Australia
Filed Feb. 9, 1976, Ser. No. 656,823
Claims priority, application Australia, Aug. 11, 1975, 6755/75
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



249,460
HANGER BRACKET
Theodore Magnus Bleed, Rockford, Ill., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Aug. 12, 1976, Ser. No. 713,878
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373



249,461
HANGER BRACKET
Frank E. Swinehart, Fairfield, and Lawrence Castel, Stamford, both of Conn., assignors to Coats & Clark, Inc., Stamford, Conn.
Filed Aug. 16, 1976, Ser. No. 714,500
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373



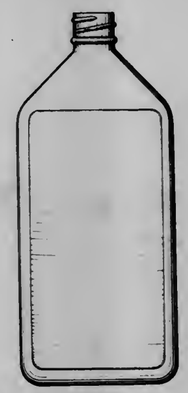
249,462
BOTTLE
Allen Schwartz, Mill Valley, and Wayne A. Bonnett, Sausalito, both of Calif., assignors to Sonoma Vineyards, Windsor, Calif.
Filed Dec. 27, 1976, Ser. No. 754,283
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



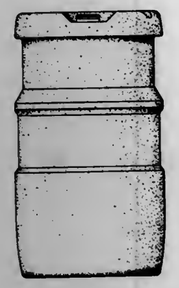
249,463
JAR
Floyd E. Pettengill, Lancaster, Ohio, assignor to General Foods Corporation, White Plains, N.Y.
Division of Ser. No. 567,462, Apr. 14, 1975, Pat. No. Des. 242,222. This application Aug. 24, 1976, Ser. No. 717,070
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—58



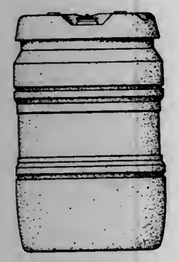
249,464
BOTTLE
Luigi A. G. Smali, 1201 Steeles Ave. West, Suite 1203, Willowdale, Ontario, Canada
Filed Jul. 2, 1976, Ser. No. 702,223
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—149



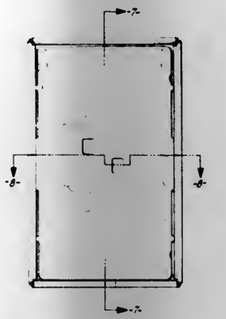
249,465
PLASTIC DRUM
James A. MacTavish, Houston, Tex., assignor to Igloo Corporation, Houston, Tex.
Filed Nov. 2, 1976, Ser. No. 738,337
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—170



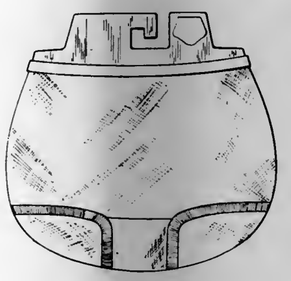
249,466
PLASTIC DRUM
David C. Parrish, Sr., Houston, Tex., assignor to Igloo Corporation, Houston, Tex.
Filed Nov. 2, 1976, Ser. No. 738,338
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—170



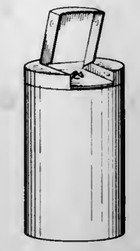
249,467
BOX FOR A LOCK SET
Richard E. Jones, Pleasanton, and Joseph R. Quiroz, South San Francisco, both of Calif., assignors to Schlage Lock Company, San Francisco, Calif.
Filed Oct. 20, 1976, Ser. No. 734,266
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



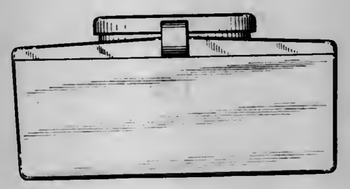
249,468
PANTYHOSE PACKAGE
Barry G. Carroll, Burlington, N.C., assignor to Burlington Industries, Inc.
Filed Jul. 2, 1976, Ser. No. 702,359
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



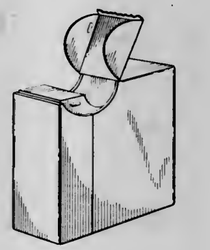
249,469
CANDY DISPENSER
Frank Russert, Palos Heights, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,396
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



249,470
DISPENSING CONTAINER
Saul Robert Kohn, Dresher, Pa., assignor to Youngs Drug Products Corporation, Piscataway, N.J.
Filed Nov. 12, 1976, Ser. No. 741,199
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—232



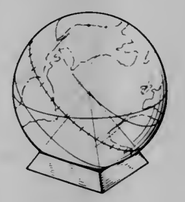
249,471
CANDY DISPENSER
Walter Stern, Wilmette, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,466
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—235



249,472
PEANUT WATCH
Betty L. Sumpter, 6413 Jackson St., Pittsburgh, Pa. 15206
Filed Sep. 17, 1976, Ser. No. 724,343
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—36



249,473
SUNDIAL
Daniel L. Wenger, P.O. Box 221, Soquel, Calif. 95073
Filed Jan. 12, 1977, Ser. No. 758,669
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—45



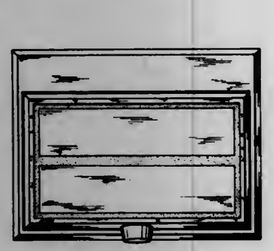
249,474
COMBINATION SUNDIAL AND NOCTURNAL CELESTIAL TIMEPIECE
James E. Wagoner, Swanton, Ohio, assignor to Toledo Astronomical Association, Toledo, Ohio
Filed Feb. 22, 1977, Ser. No. 770,521
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—45



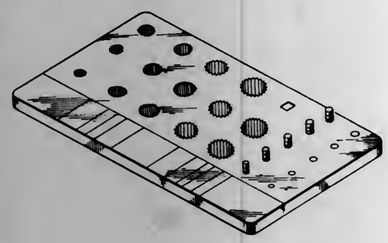
249,475
ELECTRONIC THERMOMETER HOUSING
Robert Bruce Turner, Weymouth, and Paul E. Brefka, Southboro, both of Mass., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Apr. 28, 1976, Ser. No. 681,209
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



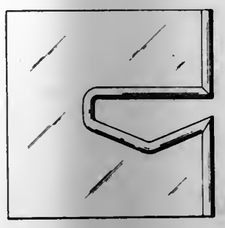
249,476
THERMOSTAT COVER
Donald P. Kolbow, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 29, 1976, Ser. No. 681,651
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—60



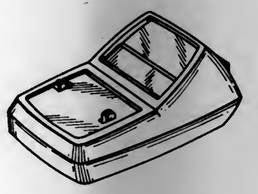
249,477
FAUCET STEM SIZE GUIDE
Var E. Lordahl, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Filed Oct. 12, 1976, Ser. No. 731,853
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



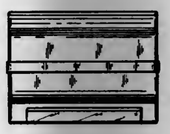
249,478
DRAWING GUIDE FOR MUSIC
Richard A. Hopper, 5723 34th Ave., Moline, Ill. 61265
Filed Jul. 19, 1976, Ser. No. 706,821
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



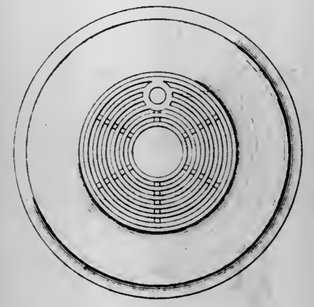
249,479
TIMING METER
Howard J. Rasmussen, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Jul. 17, 1975, Ser. No. 596,665
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



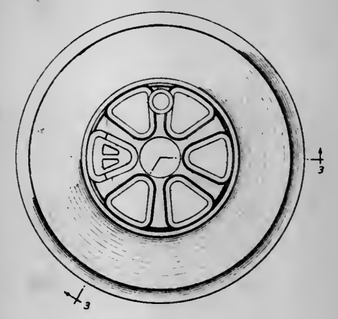
249,480
PH TESTING DEVICE
Maury Jungman, Bayville, N.Y., assignor to J & M Instruments Corp., Farmingdale, N.Y.
Filed Aug. 2, 1976, Ser. No. 711,096
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81



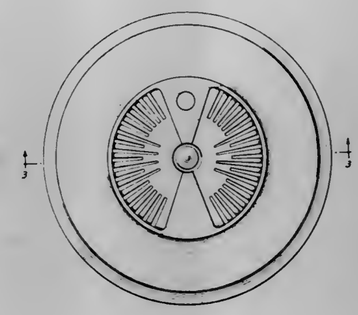
249,481
HOUSING FOR FIRE AND SMOKE DETECTOR
Frederick J. Conforti, Aurora; Roy C. A. Robertson, Bolingbrook, and Harvey Hanig, North Aurora, all of Ill., assignors to Pittway Corporation, Northbrook, Ill.
Filed Jul. 5, 1977, Ser. No. 812,512
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



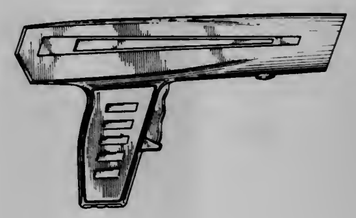
249,482
HOUSING FOR FIRE AND SMOKE DETECTOR
Frederick J. Conforti, Aurora; Roy C. A. Robertson, Bolingbrook, and Harvey Hanig, North Aurora, all of Ill., assignors to Pittway Corporation, Northbrook, Ill.
Filed Jul. 5, 1977, Ser. No. 813,130
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



249,483
HOUSING FOR FIRE AND SMOKE DETECTOR
Frederick J. Conforti, Aurora; Roy C. A. Robertson, Bolingbrook, and Harvey Hanig, North Aurora, all of Ill., assignors to Pittway Corporation, Northbrook, Ill.
Filed Jul. 5, 1977, Ser. No. 813,219
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



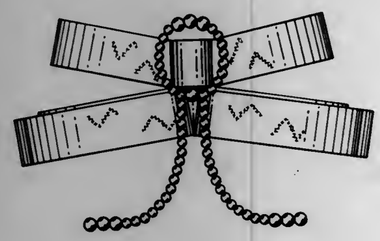
249,484
ENGINE TIMING LIGHT
DeWayne J. Shumway, Fruita, and William F. Burke, Grand Junction, both of Colo., assignors to Dixson, Inc., Grand Junction, Colo.
Filed Jan. 6, 1977, Ser. No. 757,396
Term of patent 14 years
Int. Cl.[2] D10—*05*
U.S. Cl. D10—112



249,485
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 1, 1976, Ser. No. 662,757
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—125



249,486
BUTTERFLY BOW DECORATION FOR PACKAGES
Elaine V. Del Grosso, 318 Greenway Dr., Pittsburgh, Pa. 15235
Filed Nov. 12, 1975, Ser. No. 631,099
Term of patent 14 years
Int. Cl. D5—*04;* D11—*05*
U.S. Cl. D11—137



249,487
PLAQUE WITH SUNK RELIEF
Jerome A. Grunstad, West Saint Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 18, 1977, Ser. No. 788,659
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—139



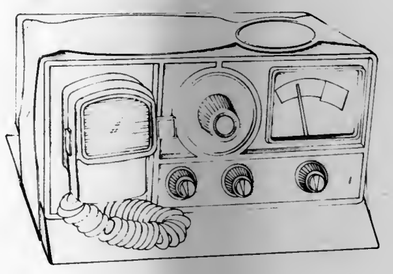
249,488
BENCH SHOOTER FIGURINE
Owen R. Siegel, 1517 Basswood Dr., Glenview, Ill. 60025
Filed May 11, 1976, Ser. No. 685,276
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D11—160



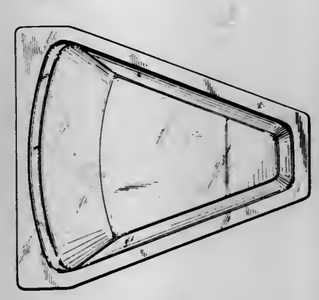
249,489
CROSSBEAM OF A MOCK BALANCE SCALE
Peter Horvick, Scranton, Pa., assignor to Bardane Manufacturing Company, Scranton, Pa.
Filed Oct. 5, 1976, Ser. No. 729,794
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—162



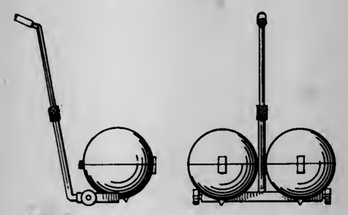
249,490
TOY TRANSCEIVER PACKAGE
Beverly W. Taylor, Hermann, and Reet Thomas, Jr., St. Louis, both of Mo., assignors to Steven Manufacturing Company, Hermann, Mo.
Filed Oct. 18, 1976, Ser. No. 733,455
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



249,491
PIE PORTION CONTAINER
Daniel Bernhardt, P.O. Box 681, Rutland, Vt. 05701
Filed Jul. 21, 1976, Ser. No. 707,244
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



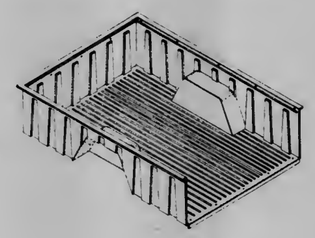
249,492
DUAL BOWLING BALL CADDY
Blanche A. Morley, 3401 N. Franklin, Stockton, Calif. 95204
Filed Mar. 2, 1977, Ser. No. 777,945
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—33



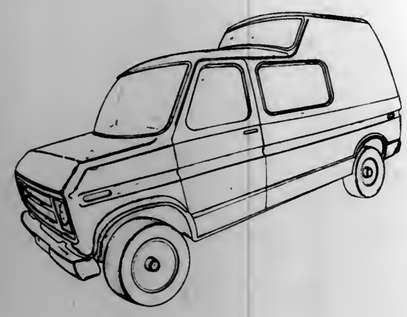
249,493
HULL FOR A SAILBOAT
Richard Lynn Rineman, 4644 Mount Brighton Ave., Brighton, Mich. 48116, assignor to Harold J. Rineman; Richard Lynn Rineman; S. Albert Young and Benjamin W. Colman, part interest to each
Continuation-in-part of Ser. No. 629,689, Nov. 6, 1975, Pat. No. D. 242,614. This application Sep. 7, 1976, Ser. No. 721,132
The portion of the term of this patent subsequent to Dec. 7, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



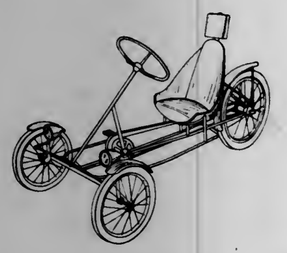
249,494
CARGO BOX LINER FOR PICKUP TRUCKS
Robert H. Lambitz, Linden, and Robert J. Zeffero, Fenton, Mich., assignors to Zefflamb Industries, Inc.
Filed Dec. 17, 1976, Ser. No. 751,372
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—98



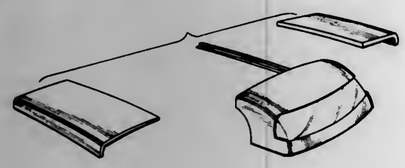
249,495
VAN
Earl C. Wallace, and Richard A. Bell, both of Andrews, Ind., assignors to General Engineering & Manufacturing Corporation, Andrews, Ind.
Filed Dec. 20, 1976, Ser. No. 752,249
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—99



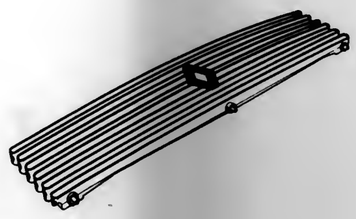
249,496
TRICYCLE
George W. Morgan, 405 Riverdale Dr., Rocky River, Ohio 44116
Filed Aug. 12, 1977, Ser. No. 824,250
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



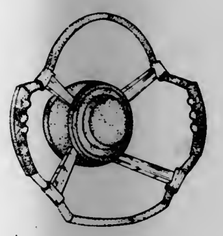
249,497
THREE PIECE CONVERTIBLE HARDTOP
John Slider, Box 43, Merrittstown, Pa. 15463
Filed Mar. 24, 1976, Ser. No. 669,913
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



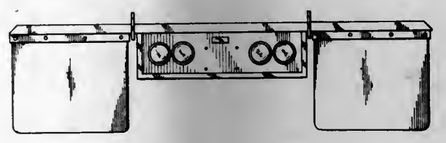
249,498
CAR RADIATOR GRILLE
Michel Tixier, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Jul. 21, 1975, Ser. No. 597,719
Claims priority, application France, Feb. 20, 1975, 73 636
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—163



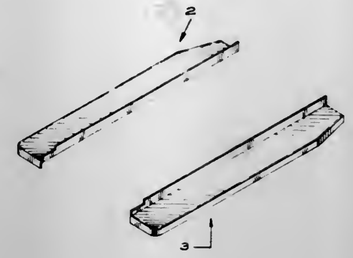
249,499
STEERING WHEEL
John T. LeRose, 31-74 37th St., Astoria, N.Y. 11102
Filed Oct. 26, 1976, Ser. No. 735,816
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—175



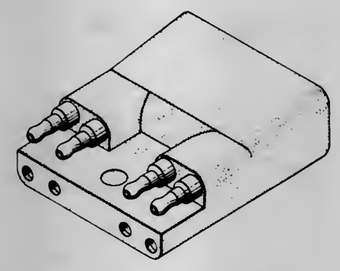
249,500
COMBINED MUDGUARD AND LIGHT SUPPORT FOR TRUCKS
Ronald A. Cox, 1018 Q. St., Apt. 3, Springfield, Oreg. 97477
Filed Jan. 18, 1977, Ser. No. 760,438
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185



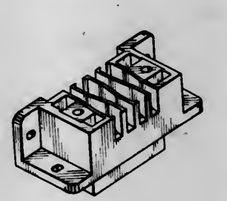
249,501
SET OF VEHICLE RUNNING BOARDS
Leon Chapman, 414 Oak St., Ypsilanti, Mich. 48197
Filed Mar. 7, 1977, Ser. No. 774,671
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



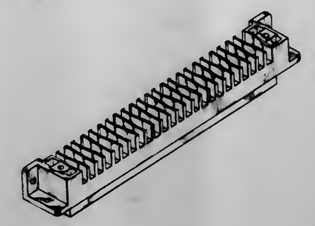
249,502
ELECTRICAL TERMINAL
Richard J. Rink, Evart, and Gerald K. Miller, Hersey, both of Mich., assignors to Nartron Corporation, Reed City, Mich.
Filed Mar. 16, 1977, Ser. No. 778,121
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



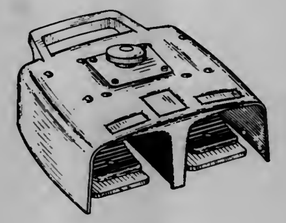
249,503
ELECTRICAL CONNECTOR
Arthur Thomas Spencer, Biggleswade, and Paul Robert Hardy, Upper Caldecote, both of England, assignors to Pye (Electronic Products) Limited, Cambridge, England
Filed Apr. 18, 1977, Ser. No. 788,122
Claims priority, application United Kingdom, Oct. 19, 1976, 977566/76
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



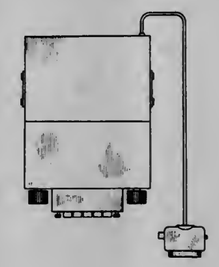
249,504
ELECTRICAL CONNECTOR
Arthur Thomas Spencer, Biggleswade, and Paul Robert Hardy, Upper Caldecote, both of England, assignors to Pye (Electronic Products) Limited, Cambridge, England
Filed Apr. 18, 1977, Ser. No. 788,121
Claims priority, application United Kingdom, Oct. 19, 1976, 977567/76
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



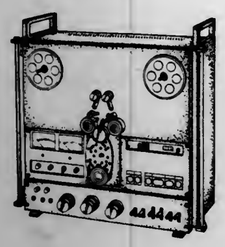
249,505
FOOT OPERATED CONTROL UNIT
Alfred R. Di Bonaventura, North Grosvernordale, Conn., assignor to The Linemaster Switch Corporation
Filed Apr. 11, 1977, Ser. No. 786,121
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—36



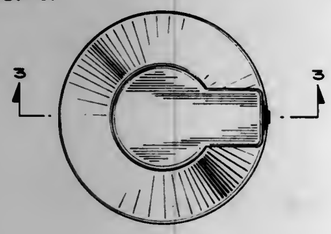
249,506
COMBINED AUTOMOBILE RADIO TRANSCEIVER AND CARTRIDGE PLAYER
Kazuo Arai, Kitamoto, Japan, assignor to Nissan Denshi Kabushiki Gaisha, Ohmiya, Japan
Filed Apr. 20, 1976, Ser. No. 678,904
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—7



249,507
TAPE RECORDER
Takemi Ebata, Kyoto, and Kunishige Miki, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Japan
Filed Dec. 23, 1976, Ser. No. 753,913
Claims priority, application Japan, Jul. 9, 1976, 51-26599
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—8

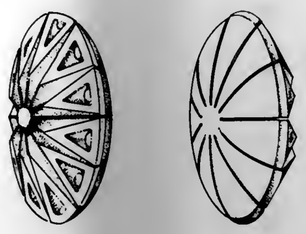


249,508
AUDIO SPEAKER HOUSING FOR PROTECTIVE HELMETS
Ronald D. Coughlin, 100 W. Alma Dr., Melbourne, Fla. 32935, and Kenneth E. Pohlmann, Jr., P.O. Box 219, Melbourne, Fla. 32901
Filed Mar. 15, 1976, Ser. No. 667,184
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—37

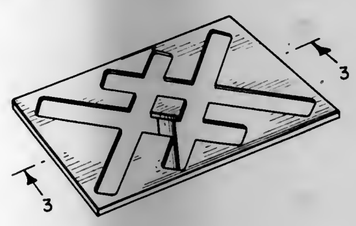




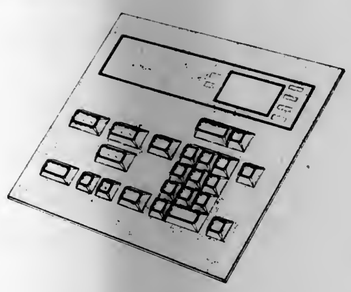
249,509
ACOUSTICAL TRANSFORMER FOR COUPLING SOUND WAVES FROM THE DIAPHRAGM TO THE THROAT OF A HORN-TYPE LOUDSPEAKER
Clifford A. Henricksen, Yorba Linda, Calif., assignor to Altec Corporation, Anaheim, Calif.
Filed Sep. 23, 1976, Ser. No. 725,981
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D14—37



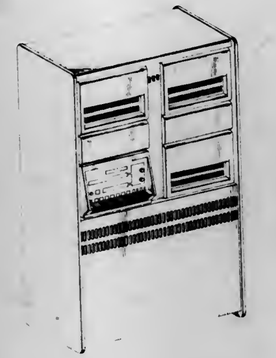
249,510
POS OPTICAL SCANNING STATION
Paul S. Wu, Randolph, and Dominick S. Fazio, Whippany, both of N.J., assignors to Litton Business Systems, Inc.
Filed May 2, 1975, Ser. No. 574,138
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40



249,511
KEYBOARD FOR ELECTRONIC APPARATUS
Richard Joseph Olson, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 31, 1977, Ser. No. 802,107
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40



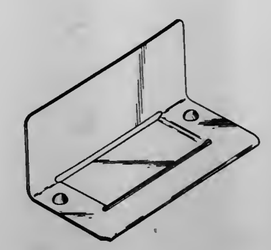
249,512
COMPUTER SYSTEM
Richard C. Schneider, Marlboro; Paul E. Benigni, Bridgewater, both of Mass., and Allan E. Weaver, Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed May 2, 1977, Ser. No. 793,091
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42



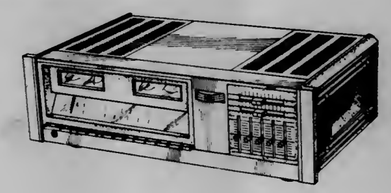
249,513
KEYBOARD
Clarence D. Zierhut, Richardson, Tex., assignor to Mohawk Data Sciences Corp., Herkimer, N.Y.
Filed Nov. 15, 1976, Ser. No. 742,031
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45



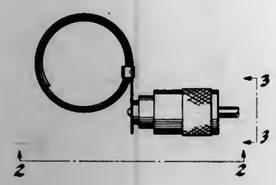
249,514
NOTEPAD ATTACHMENT FOR A TELEPHONE
Kurt M. Loeb, Melrose Park, Pa., assignor to Ed Letven, Jenkintown, Pa., a part interest
Filed Jul. 29, 1976, Ser. No. 709,672
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—59



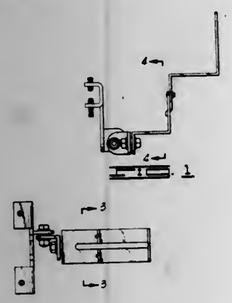
249,515
COMBINED RADIO RECEIVER, TUNER AND AMPLIFIER
Ken Kira; Kinshiro Nakazawa, both of Yokohama, and Katsuji Yoshida, Kamakura, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed May 27, 1976, Ser. No. 690,774
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—72



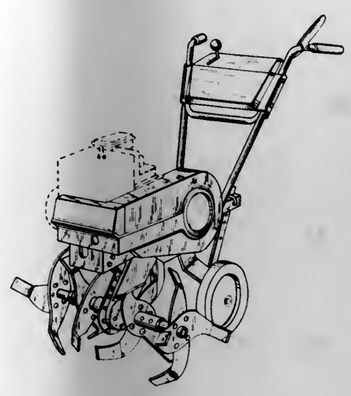
249,516
EMERGENCY ANTENNA
Jay S. Reisman, 4808 D La Villa Marina, Marina del Rey, Calif. 90291
Filed Feb. 7, 1977, Ser. No. 766,031
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86



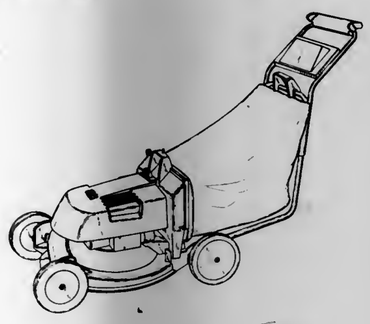
249,517
ANTENNA MOUNTING SUPPORT
Alfred P. Parduhn, 14501 Wilson Rd., Edmond, Okla. 73034
Continuation-in-part of Ser. No. 246,585, Jun. 1, 1976. This application Jul. 8, 1977, Ser. No. 814,031
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D14—91



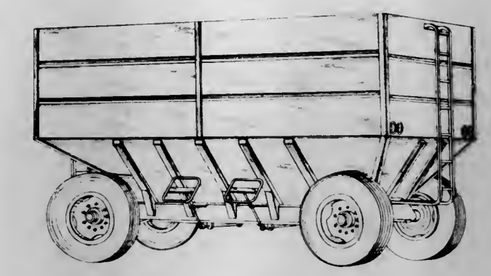
249,518
ROTO-TILLER
Larry M. Cognata, and Thomas C. Appleton, both of Nashville, Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.
Filed Aug. 12, 1976, Ser. No. 713,992
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—12



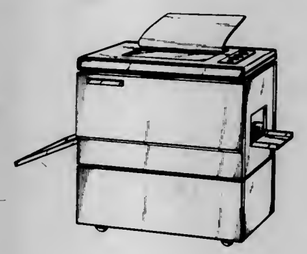
249,519
COMBINED LAWN MOWER AND GRASS CATCHER
Donald Gene Haffner, Glendale, and Neill Carl Woelffer, Racine, both of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.
Filed Jul. 25, 1977, Ser. No. 818,983
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—14



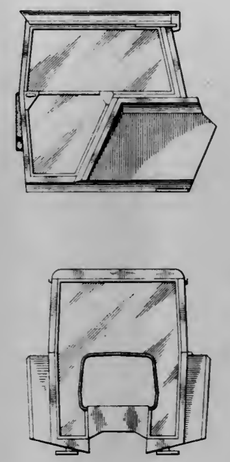
249,520
GRAIN WAGON
Michael D. Van Mill, R.R. #1, Shell Rock, Iowa 50670
Filed Dec. 14, 1976, Ser. No. 750,501
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—27



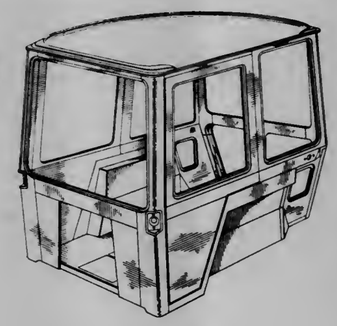
249,521
ELECTRONIC COPIER
Kanzi Murai, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed Jan. 18, 1977, Ser. No. 760,415
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



249,522
TRACTOR CAB
Lee E. Elfes, Bloomfield Hills, and Leo J. Lorenz, Farmington, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Continuation-in-part of Ser. No. 659,067, Feb. 18, 1976, abandoned. This application Jan. 28, 1977, Ser. No. 763,377
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—30



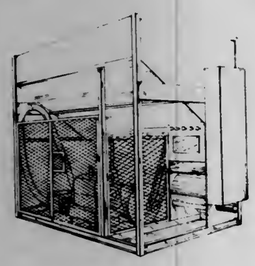
249,523
ENCLOSURE FOR A TRACTOR TYPE VEHICLE
Jaime Segales, Vallirana (Barcelona), Spain, assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Mar. 17, 1977, Ser. No. 778,805
Term of patent 7 years
Int. Cl. D12—*09*
U.S. Cl. D15—30



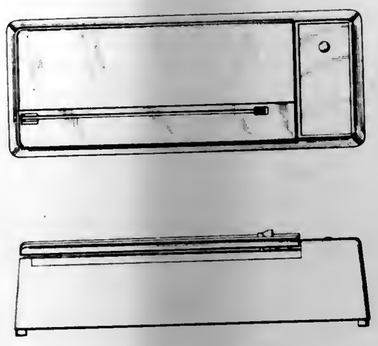
249,524
SUCTION CLEANER UPPER HOUSING AND BAG OR THE LIKE
Richard A. Wareham, 2315 Schneider Rd., NE., North Canton, Ohio 44721
Filed Nov. 8, 1976, Ser. No. 739,631
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—62



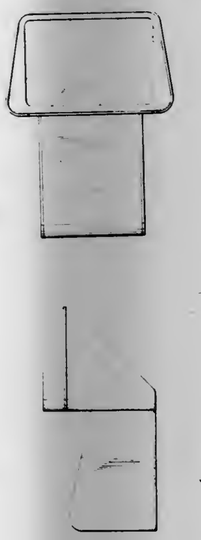
249,525
INSULATION APPLICATION UNIT
Henry Sperber, Englewood, Colo., assignor to Ark Seal Corporation
Filed Oct. 26, 1976, Ser. No. 735,174
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—122



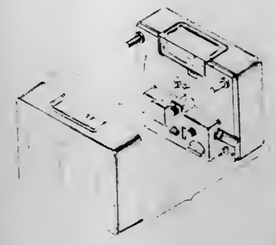
249,526
PLASTIC BAG FORMING AND SEALING APPARATUS
Shizuaki Kishida, Atsugi, Japan, assignor to Sanyei Corporation, Tokyo, Japan
Filed Oct. 28, 1976, Ser. No. 736,575
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—146



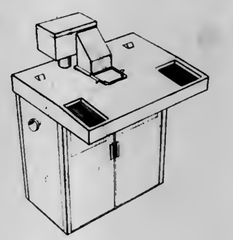
249,527
AUDIO VISUAL DISPLAY CABINET
Joseph F. Stralka, South Euclid, Ohio, assignor to Rappaport Exhibits, Inc., Cleveland, Ohio
Filed Aug. 25, 1976, Ser. No. 717,475
Term of patent 14 years
Int. Cl. D16—*02;* D14—*02*
U.S. Cl. D16—14



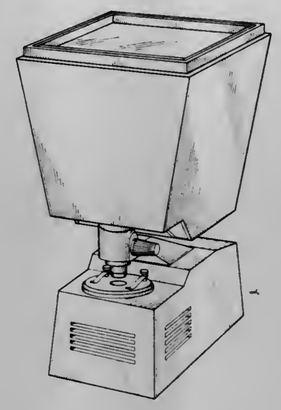
249,528
MOTION PICTURE PROJECTOR
Paul D. Miller, New York, N.Y., and John Svezia, Milburn, N.J., assignors to GAF Corporation, New York, N.Y.
Filed Jan. 21, 1977, Ser. No. 761,387
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—23



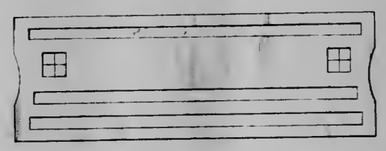
249,529
PHOTOGRAPHIC PRINTER
Patrick J. Gilligan, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed Mar. 11, 1977, Ser. No. 776,877
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—34



249,530
HAIR MICROANALYZER
Colin Brett, West Paterson, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Oct. 22, 1976, Ser. No. 734,920
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—48

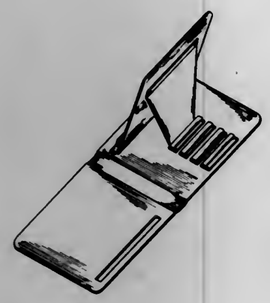


249,531
JACKET FOR A COMBINED PHOTO CALCULATOR AND DIGITAL RULER
Kurt Neufeld, 22665 Napoli, Laguna Hills, Calif. 92653
Filed Apr. 5, 1976, Ser. No. 673,616
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—3

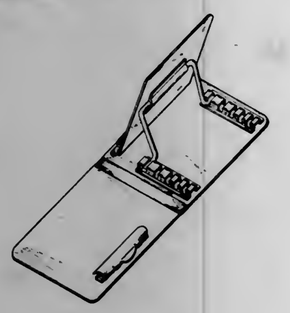




249,532
FOLDABLE PORTFOLIO WITH AN ADJUSTABLE EASEL
Murphy Dennis Cudahy, III, 2037 Beverly Pl., South Bend, Ind. 46616, and Joseph Lloyd Mossey, 59483 Clover Rd., Mishawaka, Ind. 46544
Continuation-in-part of Ser. No. 475,391, Jun. 3, 1974, abandoned. This application Apr. 7, 1976, Ser. No. 674,543
Term of patent 7 years
Int. Cl. D19—*06*
U.S. Cl. D19—35



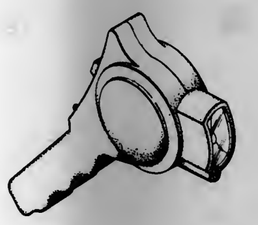
249,533
FOLDABLE PORTFOLIO WITH AN ADJUSTABLE EASEL
Murphy Dennis Cudahy, III, 2037 Beverly Pl., South Bend, Ind. 46616, and Joseph Lloyd Mossey, 59483 Clover Rd., Mishawaka, Ind. 46544
Continuation-in-part of Ser. No. 475,503, Jun. 3, 1974, abandoned. This application Apr. 7, 1976, Ser. No. 674,544
Term of patent 7 years
Int. Cl. D19—*06*
U.S. Cl. D19—35



249,534
GLOBE
Don W. Denney, 19215 Marine View Cir. SW., Seattle, Wash. 98166
Filed Feb. 14, 1977, Ser. No. 768,216
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—61



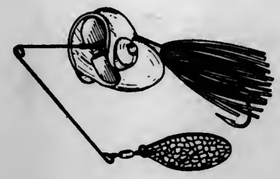
249,535
NON-LETHAL PERSONAL DEFENSE WEAPON
Burton M. Cantor, 2519 E. Palmera Dr., Las Vegas, Nev. 89121
Filed Feb. 24, 1977, Ser. No. 771,787
Term of patent 14 years
Int. Cl. D22—*02;* D26—*02*
U.S. Cl. D22—1



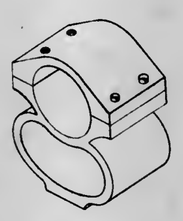
249,536
FISHING LURE BODY
Robert Glynn Carver, P.O. Box 996, Minden, La. 71055
Filed Mar. 31, 1977, Ser. No. 783,466
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



249,537
FISHING LURE
Douglas W. Parker, 1801 Garner La., Fort Smith, Ark. 72901
Continuation of Ser. No. 585,704, Jun. 10, 1975, abandoned. This application Sep. 20, 1976, Ser. No. 724,512
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



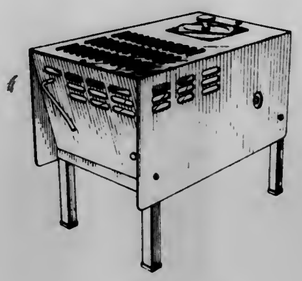
249,538
TELESCOPIC SIGHT MOUNT FOR FIREARMS
Gerald T. Weast, 23702 Crossley, Hazel Park, Mich. 48050
Filed Dec. 16, 1976, Ser. No. 751,136
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



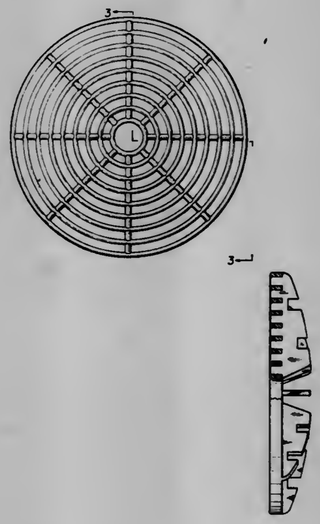
249,539
LIVE-BAIT CONTAINER
Andrew O. Lightfoot, 2848 Bonnywood, Dallas, Tex. 75233
Filed Jul. 9, 1976, Ser. No. 704,043
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—14



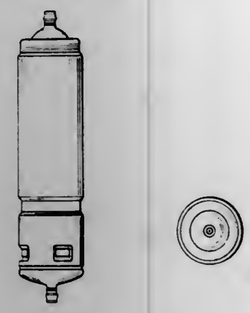
249,540
WATER STILL
Paul S. Giovagnoli, 4200 NE. Birmingham Rd., Kansas City, Mo. 64116
Filed Nov. 15, 1976, Ser. No. 741,774
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



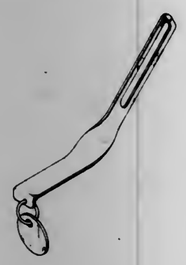
249,541
FILTER BAFFLE PLATE
Peter A. Cattano, Sr., 140 E. Merrick Rd., Freeport, N.Y. 11520
Filed Feb. 2, 1977, Ser. No. 767,284
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



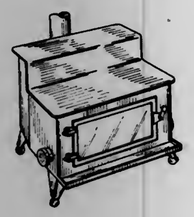
249,542
WATER FILTER
Albert Horace Aldridge, Maple Cross Nr. Rickmansworth, and Michael Pizzey, Reading, both of England, assignors to Thomas Ness Limited, Harrow-on-the-Hill, England
Filed Jan. 17, 1977, Ser. No. 760,023
Claims priority, application United Kingdom, Sep. 24, 1976, 977303/76
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



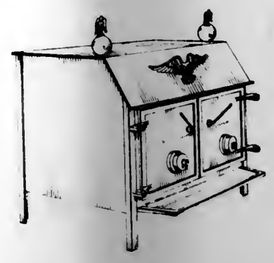
249,543
EXTENSION FOR A FIRE PLACE DAMPER LEVER
Turner C. Smith, 6280 E. Powers Ave., Englewood, Colo. 80110
Filed May 10, 1976, Ser. No. 684,908
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



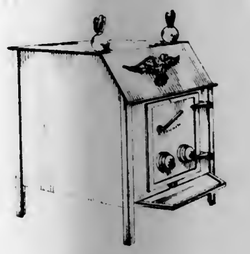
249,544
COAL AND WOOD STOVE
Fred J. Bonney, 496 E. 6815 South, Midvale, Utah 84047
Filed Oct. 31, 1977, Ser. No. 846,964
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



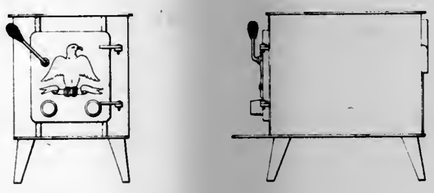
249,545
WOOD BURNING STOVE
Edmund P. Bullard, Sr., R.D. 2, Lyons, N.Y. 14489, and Gary A. Togni, 402 Palmer Dr., N. Syracuse, N.Y. 13212
Filed Mar. 31, 1977, Ser. No. 783,165
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



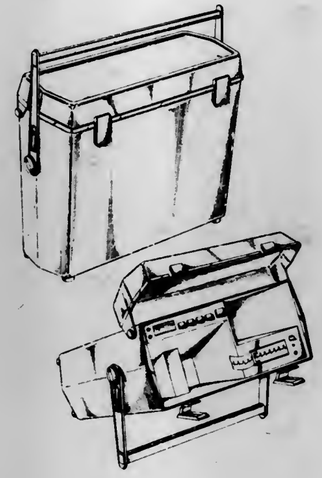
249,546
WOOD BURNING STOVE
Edmund P. Bullard, Sr., R.D. 2, Lyons, N.Y. 14489, and Gary A. Togni, 402 Palmer Dr., N. Syracuse, N.Y. 13212
Filed Mar. 31, 1977, Ser. No. 783,163
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



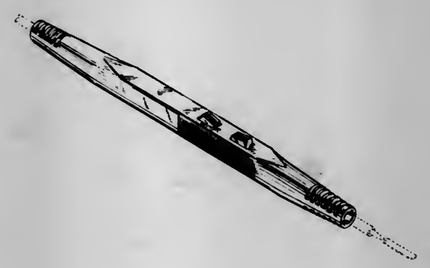
249,547
WOOD BURNING STOVE
Arthur B. Pruitt, Rocky Mount, Va., assignor to Pruitt's Welding & Wood Burning Stove Shop, Inc., Rocky Mount, Va.
Filed Sep. 19, 1977, Ser. No. 834,699
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



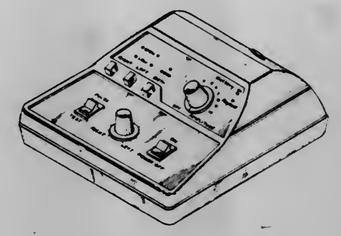
249,548
CARDIORESUSCITATION SYSTEM PACKAGE
Joseph D. Napoli, Billerica, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Oct. 4, 1976, Ser. No. 729,615
Term of patent 14 years
Int. Cl. D24—*02, 01*
U.S. Cl. D24—17



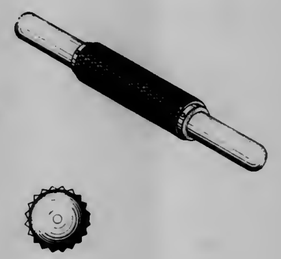
249,549
ELECTROSURGICAL HANDLE
Harold L. Pike, Littleton, Colo., assignor to Aspen Laboratories, Inc., Littleton, Colo.
Filed Oct. 22, 1976, Ser. No. 735,119
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—30



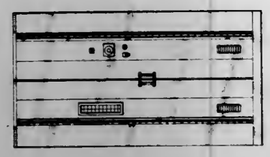
249,550
MUSCLE STIMULATING PULSE GENERATOR
Bernard Jankelson, 1451 Medical-Dental Bldg., Seattle, Wash. 98101, and John C. Radke, Seattle, Wash., assignors to Bernard Jankelson, Seattle, Wash.
Filed Jun. 27, 1977, Ser. No. 810,586
Term of patent 14 years
Int. Cl. D28—*03;* D24—*01*
U.S. Cl. D24—36

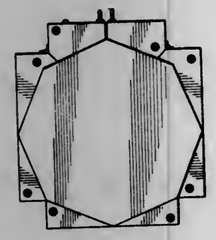


249,551
THERAPEUTIC APPARATUS
Monte H. Greenawalt, 225 Southgate, Dubuque, Iowa 52001
Filed Jul. 15, 1976, Ser. No. 705,615
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



249,552
WALK-IN CABINET FOR RADIATION TREATMENT OF DISEASE
Jack H. Schwartz, Shaker Heights, Ohio, assignor to National Biological Corporation, Cleveland, Ohio
Filed Mar. 1, 1976, Ser. No. 662,613
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—39

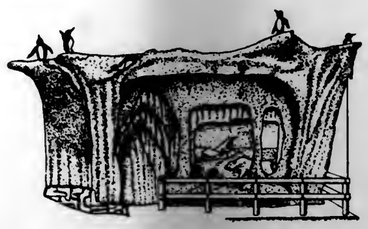




249,553
PIPETTE
Ronald Leo Sturm, San Carlos, and James Curtis Smith, Hayward, both of Calif., assignors to Oxford Laboratories, Inc., Foster City, Calif.
Filed Aug. 25, 1976, Ser. No. 716,751
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55

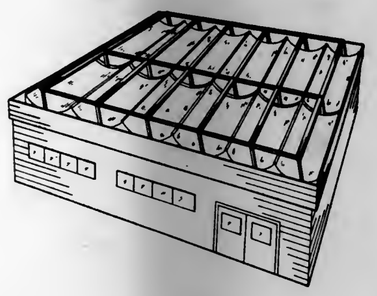


249,554
AMUSEMENT PARK BUILDING
Robert F. Ott, Allentown, Pa., assignor to Dorney Park Coaster Company, Inc., Allentown, Pa.
Filed Nov. 26, 1976, Ser. No. 745,340
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—9

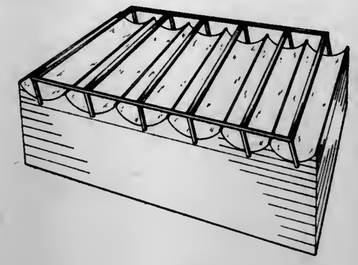


249,555
BUILDING STRUCTURE
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Dec. 29, 1976, Ser. No. 755,326
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—21

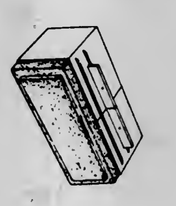
249,556
BUILDING STRUCTURE
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Dec. 29, 1976, Ser. No. 755,327
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—21



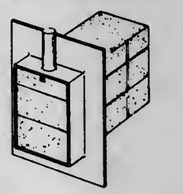
249,557
BUILDING STRUCTURE
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Dec. 29, 1976, Ser. No. 755,324
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—21



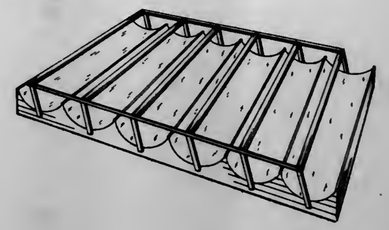
249,558
COMBINED ELASTIC FRAME AND MOLD BLOCK FOR FIREPROOF FEED-THROUGH OF ELECTRIC CABLES OR THE LIKE
Erik Mikael Blomqvist, Karlskrona, Sweden, assignor to AB Lyckeaborgs Bruk, Karlskrona, Sweden
Filed Dec. 21, 1976, Ser. No. 757,222
Claims priority, application Sweden, Sep. 24, 1976, 76-1863
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—35



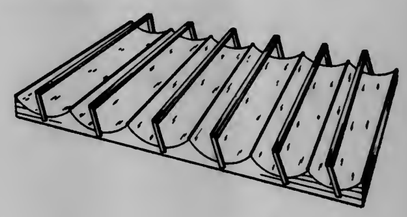
249,559
COMBINED ELASTIC FRAME AND MOLD BLOCK FOR FIREPROOF FEED-THROUGH OF ELECTRIC CABLES OR THE LIKE
Erik Mikael Blomqvist, Karlskrona, Sweden, assignor to AB Lyckeaborgs Bruk, Karlskrona, Sweden
Filed Dec. 21, 1976, Ser. No. 757,223
Claims priority, application Sweden, Sep. 24, 1976, 76-1864
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—35



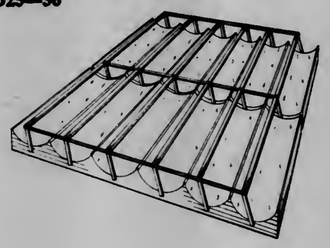
249,560
ROOF STRUCTURE
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Dec. 29, 1976, Ser. No. 755,299
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—56



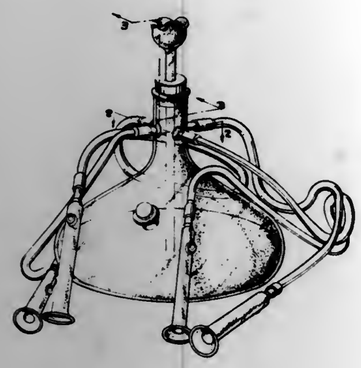
249,561
ROOF STRUCTURE
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Dec. 29, 1976, Ser. No. 755,300
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—56



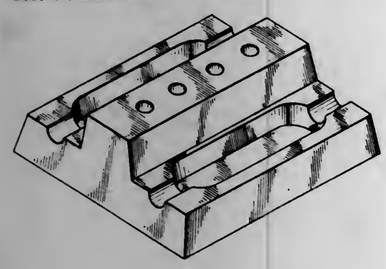
249,562
ROOF STRUCTURE
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Dec. 29, 1976, Ser. No. 755,325
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—56



249,563
SMOKING DEVICE
Roger Graham, 5218 Monroe Pl., Hyattsville, Md. 20781
Filed Jan. 16, 1976, Ser. No. 649,814
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



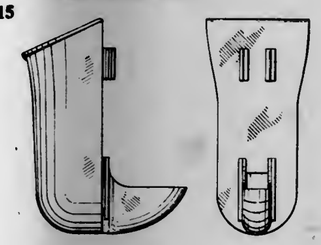
249,564
ASHTRAY
Ernest L. Sackett, 100 Waverly Dr., Grants Pass, Oreg. 97526, and Marvin E. Sackett, 3525 Whitney Ave., #1, Sacramento, Calif. 95821
Filed Oct. 27, 1976, Ser. No. 736,354
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—29



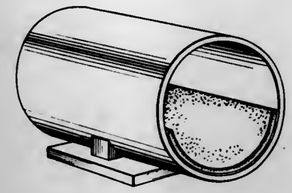
249,565
MANICURING IMPLEMENT
Monte L. Levin, New York, N.Y., assignor to Clairol Incorporated
Filed May 3, 1976, Ser. No. 682,688
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—58



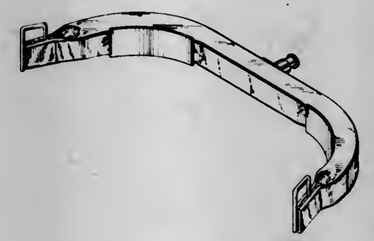
249,566
BIRD FEEDER
William Wilhelm, 209 S. Birch, #C, Santa Ana, Calif. 92701
Filed Sep. 1, 1977, Ser. No. 829,601
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



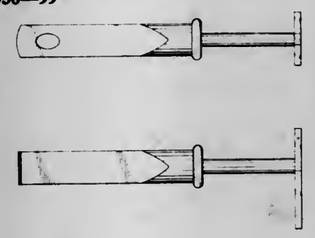
249,567
CAT BED
Loretta Madi, 17 Lenox Ave., Green Brook, N.J. 08812
Filed Sep. 1, 1977, Ser. No. 829,950
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—41



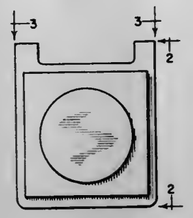
249,568
CALF PULLER BUTT YOKE
Frank Kratky, Rist Canyon Rte., Bellvue, Colo. 80512
Filed Jun. 6, 1977, Ser. No. 804,181
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



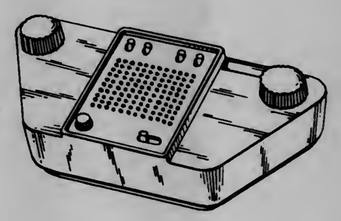
249,569
HORSE FOOT PICK
Carlo J. Moran, 434 Cinnabar, Dallas, Tex. 75227
Filed Aug. 22, 1977, Ser. No. 826,937
Term of patent 14 years
Int. Cl.[2] D30—*99*
U.S. Cl. D30—99



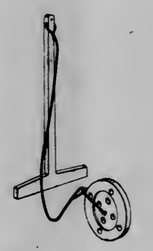
249,570
COMBINED GOLF BALL MARKER AND CARRYING CLIP THEREFOR
Leonard Earl Studt, 470 Sunset Dr., Elgin, Ill. 60120
Filed Jul. 16, 1976, Ser. No. 706,052
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



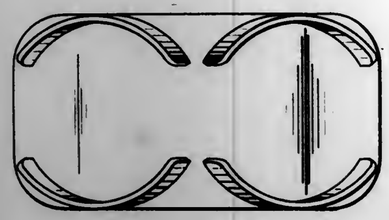
249,571
HOUSING FOR T.V. GAME
Vivian David, Tempe, Ariz., and Ronald Emmerling, New Cit N.Y., assignors to Drawbridge, Inc., Cranford, N.J.
Filed Jul. 30, 1976, Ser. No. 710,338
Term of patent 3 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L



249,572
COMBINED HOOP ROLLER AND HOOP
Farrell T. Foster, 2420 Holcomb, Des Moines, Iowa 50310
Filed Sep. 24, 1976, Ser. No. 726,404
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 HP



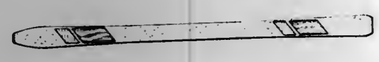
249,573
TENNIS BALL HOLDER
Charles Roy Harris, Jr., 4012 Cherrywood Rd., Austin, Tex. 78722
Filed Nov. 22, 1976, Ser. No. 743,841
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



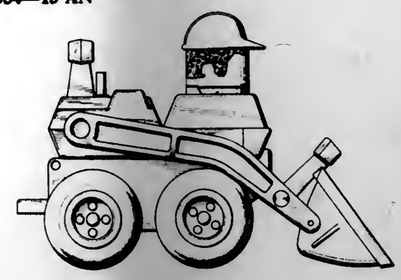
249,574
GOLFER'S TOOL
Boris Kralevich, 4868 Beason Hill Dr., Castro Valley, Calif. 94546
Filed Jan. 28, 1977, Ser. No. 763,342
Term of patent years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



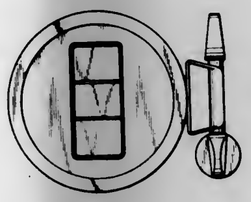
249,575
SKI
Rudolf Ferch, Salzburg, Austria, assignor to Kastle Gesellschaft m.b.H., Innkreis, Austria
Filed May 14, 1976, Ser. No. 686,555
Claims priority, application Austria, Nov. 18, 1975, 18699/75
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 D



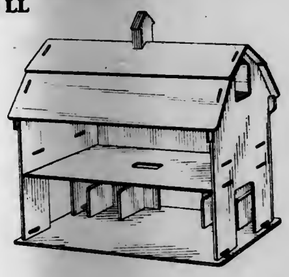
249,576
COMBINED TOY LOADER AND FIGURE THEREFOR
George W. Dunbar, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.
Filed Oct. 18, 1976, Ser. No. 731,441
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



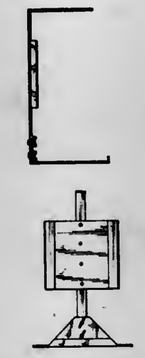
249,577
TOY DRUM
Andrew I. Bergman, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 6, 1976, Ser. No. 748,092
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



249,578
TOY BARN
William Donald Gordon, Sr., Glenview, Ill., assignor to Arvey Corporation, Chicago, Ill.
Filed Jan. 31, 1977, Ser. No. 763,881
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



249,579
LANTERN HOLDER
Kenneth J. Kelling, and Barbara A. Kelling, both of 5318 Kingsbridge Rd., Madison, Wis. 53714
Filed Jul. 13, 1977, Ser. No. 815,205
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—4 A



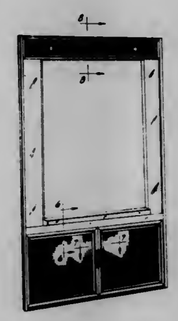
249,580
LAWN DECORATION
Clifford Hill, Rte. 1, Box 184, Grove Hill, Ala. 36451
Filed Sep. 3, 1976, Ser. No. 720,342
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D48—20 E



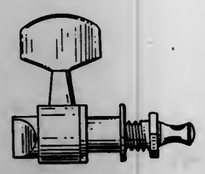
249,581
PUSH-ON FLASHLIGHT
Werner C. Von Clemm, 214 E. 17th St., New York, N.Y. 10003
Filed Nov. 29, 1976, Ser. No. 745,845
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



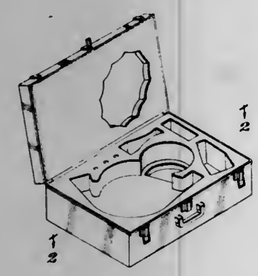
249,582
FRONT DOOR FOR A VENDING MACHINE
Walter E. Moore, Bel-Nor, and Albert K. Grethey, Bridgeton, both of Mo., assignors to UMC Industries, Inc., New York, N.Y.
Filed Jun. 28, 1976, Ser. No. 700,517
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R



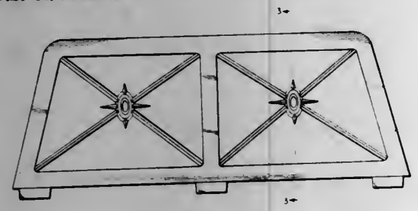
249,583
GUITAR MACHINE
Robert Worthing, and Lawrence Beattie, both of Pompano Beach, Fla., assignors to Mark VI Enterprises, Inc., Pompano Beach, Fla.
Filed Jun. 28, 1976, Ser. No. 700,563
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



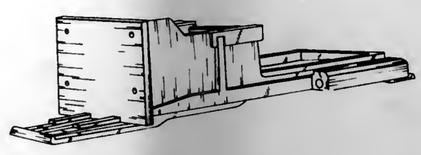
249,584
CARRYING CASE FOR A MUSICAL INSTRUMENT
Robert J. Atkinson, 1427 E. Windsor Rd., Glendale, Calif. 91205
Filed Jul. 12, 1976, Ser. No. 704,162
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D56—1 B



249,585
MUSIC RACK
Harold B. Martin, West Caldwell, and Herman O. Rogg, Watchung, both of N.J., assignors to Graber-Rogg, Inc., Cranford, N.J.
Filed Dec. 29, 1975, Ser. No. 644,766
Term of patent 14 years
Int. Cl. D17—*99*
U.S. Cl. D56—9



249,586
COMBINED PRINTER AND PAPER-HOLDING SLIDE DEVICE
Joseph Varadi, 8655 SW. 89th, Portland, Oreg. 97225
Filed Jul. 19, 1976, Ser. No. 706,639
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



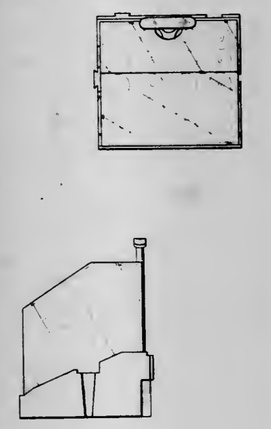
249,587
FONT OF TYPE
Carmino T. Asprinio, East Greenwich, R.I., assignor to Tesoro Manufacturing Co., Inc., Cranston, R.I.
Filed Mar. 14, 1977, Ser. No. 777,421
Term of patent 7 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



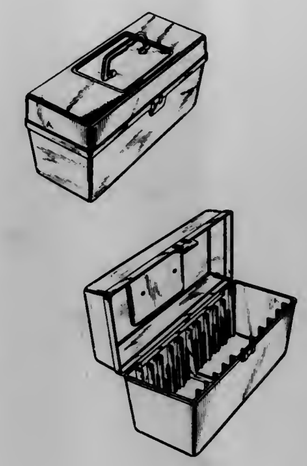
249,588
CANDLE
Masashi Tanikawa, Kameyama, Japan, assignor to Kameyama Candle Co., Ltd., Kameyama, Japan
Continuation-in-part of Ser. No. 631,364, Nov. 12, 1975, abandoned, and a continuation-in-part of Ser. No. 631,366, Nov. 12, 1975, abandoned, and a continuation-in-part of Ser. No. 631,390, Nov. 12, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,767
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D73—1 R



249,589
MODULAR CARRIER FOR TUBES OF PAINT OR SIMILAR ARTICLES
Patrick J. Adams, Belle Fontaine, Ohio, assignor to Artex Hobby Products, Inc., Lima, Ohio
Filed Sep. 2, 1976, Ser. No. 719,917
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



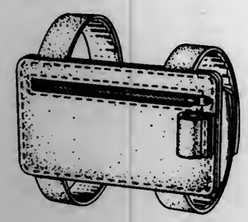
249,590
CARRYING CASE FOR TAPE CARTRIDGES AND CASSETTES
Joseph L. Berkman, 48 Country Rd., Mamaroneck, N.Y. 10543
Filed Nov. 26, 1976, Ser. No. 745,233
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



249,591
TOOTHPICK HOLDER
Anthony J. Mijares, Jr., 6001 NW. 153rd St., Miami Lakes, Fla. 33014
Filed Jan. 14, 1977, Ser. No. 759,343
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



249,592
FOREARM CARRYALL
Michael R. Libonati, 2855 Calle La Cota, Thousand Oaks, Calif. 91360
Filed Mar. 9, 1977, Ser. No. 776,003
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 R



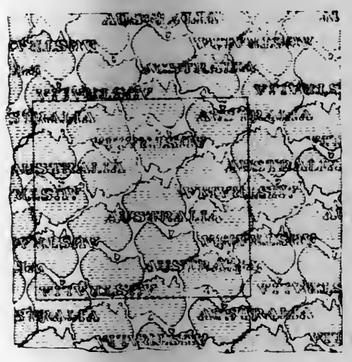
249,593
HANDBAG OR SIMILAR ARTICLE
Ilma R. Glaser, 101 Arundel, St. Louis County, Mo. 63105
Division of Ser. No. 665,966, Mar. 11, 1976. This application Dec. 15, 1977, Ser. No. 861,095
Term of patent 7 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 D



249,594
BACK PACK
Scott Stewart, c/o Stewart Designs, Inc. 901 Watson St., Madison, Wis. 53713
Filed Dec. 3, 1976, Ser. No. 747,293
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 R



249,595
FABRIC
Leo John Comensoli, Dural, and Gloria Dawn Smythe, Potts Point, both of Australia, assignors to Speedo Knitting Mills Pty, Limited
Filed Sep. 21, 1976, Ser. No. 725,261
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 EE



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF SEPTEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Sundman, Frey Viking, 4,115,186, Cl. 162-65.000.

A. B. Dick Company: *See—*
Bach, Frederick O.; Chapin, Leo N.; and Freed, Robert, 4,115,289, Cl. 252-62.10P.

A. E. Staley Manufacturing Company: *See—*
Young, Austin H.; and Verbanac, Frank, 4,115,332, Cl. 260-17.4GC.

A. H. Robins Company, Inc.: *See—*
Lunsford, Carl D.; and Cale, Albert D., Jr., 4,115,587, Cl. 424-324.000.

A/S Kjaettingfabriken: *See—*
Brynemo, Jan Jorgen; and Spilhaug, Tor William, 4,114,940, Cl. 294-82.00R.

A-T-O Inc.: *See—*
Carter, Sidney T., 4,115,179, Cl. 156-444.000.

Aaldenberg, Eric R.: *See—*
Jacobs, Maxwell E.; and Aaldenberg, Eric R., 4,114,709, Cl. 177-156.000.

AB Akerlund & Rausing: *See—*
Ekstrand, Stig, 4,115,176, Cl. 156-244.250.

Abbes, Claude; Gournier, Andre; Rouaud, Christian; and de Villepoix, Raymond, to Commissariat a l'Energie Atomique. Resilient metal gasket. 4,114,907, Cl. 277-206.00R.

Abe, Motoaki: *See—*
Aoki, Teruaki; and Abe, Motoaki, 4,114,254, Cl. 29-571.000.

Abe, Shingo: *See—*
Takami, Koichi; Abe, Shingo; Takigawa, Yukio; Tsutsumi, Toshinori; and Kinsho, Yoshio, 4,115,516, Cl. 423-239.000.

Abels, Michael Allen, to Micro Tec Instrumentation, Inc. Medical and surgical implement detection system. 4,114,601, Cl. 128-1.00R.

Abex Corporation: *See—*
Frank, Earl E., 4,114,844, Cl. 246-162.000.

Aboshi, Yuzo: *See—*
Aoki, Shigeru; Tashiro, Yasuhisa; Aboshi, Yuzo; Narita, Toshiro; and Shirai, Tadashi, 4,115,439, Cl. 562-402.000.

ABU Aktiebolag: *See—*
Murvall, Ake Eugen, 4,114,825, Cl. 242-84.21R.

Acalor International Ltd.: *See—*
Bennett, John Reginald; and Greer, Kent R., 4,115,269, Cl. 210-150.000.

ACF Industries, Incorporated: *See—*
Behle, Gunter R., 4,114,636, Cl. 137-43.000.
Dugge, Richard H., 4,114,785, Cl. 222-545.000.
Malo, Lowell L., 4,114,935, Cl. 292-104.000.
Wempe, Richard J.; and Polley, Richard B., 4,114,783, Cl. 222-398.000.

Achelpohl, Fritz; and Brinkmeier, Friedhelm, to Windmoller & Holscher. Apparatus for making bags from a continuously fed thermoplastic tubular web of film. 4,114,520, Cl. 93-33.00H.

Achelpohl, Fritz; and Mundus, Friedhelm, to Windmoller & Holscher. Apparatus for making bags from a two-ply web of thermoplastic material. 4,115,183, Cl. 156-515.000.

Achenbach, Gary D.: *See—*
Maxson, Orwin G.; and Achenbach, Gary D., 4,115,606, Cl. 427-386.000.

Acieries Reunies de Burbach-Eich-Dudelange S.A. Arbed: *See—*
Metz, Paul; Schockmel, Robert; Nick, Desire; and Pfeiffer, Paul, 4,115,089, Cl. 65-19.000.

Ackerman, John P.: *See—*
Kinoshita, Kimio; and Ackerman, John P., 4,115,632, Cl. 429-188.000.

Adachi, Keiichi; Ikeda, Tadashi; and Tsujino, Nobuyuki, to Fuji Photo Film Co., Ltd. Internal latent image silver halide emulsion containing a heterocyclic quaternary salt having a propargyl or a butyryl containing substituent. 4,115,122, Cl. 96-76.00R.

Adams, Frank H.; and Knapik, H. Peter G., to UOP Inc. Hydrocarbon conversion with a selectively sulfided acidic multimetallic catalytic composite. 4,115,253, Cl. 208-139.000.

Adamson, James R., Jr., to United States of America, Army. Collector for hoist chain. 4,114,855, Cl. 254-175.500.

Adrian, Rudolf: *See—*
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,115,393, Cl. 260-295.50R.

Aerojet-General Corporation: *See—*
Lista, Edwin L.; Hartupee, Richard B.; Manfred, Ralph K.; and O'Neil, Paul L., 4,115,166, Cl. 149-7.000.

Aerpat A.G.: *See—*
Jeal, Harvey Philip, 4,114,508, Cl. 85-41.000.

Aeschlimann, Peter, to Ciba-Geigy AG. Dry heat process for dyeing and printing organic material. 4,115,053, Cl. 8-2.50A.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Bonnemay, Maurice; Bronoel, Guy; Angely, Lysiane; and Peslerbe, Gilbert, 4,115,628, Cl. 429-44.000.
Guimbal, Jean, 4,115,712, Cl. 310-12.000.

Agency of Industrial Science & Technology: *See—*
Murata, Ryoji, 4,115,005, Cl. 356-120.000.

AGFA-Gevaert AG: *See—*
Engelsmann, Dieter; Hackenberg, Hubert; and Zobel, Siegfried, 4,115,792, Cl. 354-213.000.
Fauth, Gunter; and Engelsmann, Dieter, 4,115,791, Cl. 354-206.000.
Liepold, August, 4,114,833, Cl. 242-199.000.
Mischo, Klaus; and Liermann, Traugott, 4,115,000, Cl. 355-29.000.
Mischo, Klaus; Liermann, Traugott; and Pustka, Karel, 4,115,001, Cl. 355-29.000.

Aglitsky, Vladimir Efimovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.

Ahmed, Quazi: *See—*
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,115,393, Cl. 260-295.50R.

Ahrens, Gerd: *See—*
Kleineisel, Gustav; Kuchenbecker, Dietrich; and Ahrens, Gerd, 4,115,033, Cl. 417-216.000.

Aiba, Masahiko: *See—*
Fujimoto, Isao; Aiba, Masahiko; Yamamoto, Yoichi; and Makita, Tomoo, 4,115,787, Cl. 346-75.000.
Takano, Rikuo; Matsunaga, Mitsushi; Tsuchida, Yuhkichi; Sumitomo, Yuji; Umeda, Ikuo; and Aiba, Masahiko, 4,115,788, Cl. 346-75.000.

Aimar, Michele, to ITW Fastex Italia, S.p.A. Self-tapping wing nut. 4,114,506, Cl. 85-32.00W.

Air Industrie: *See—*
Denjean, Rene, 4,114,862, Cl. 266-44.000.

Air Products & Chemicals, Inc.: *See—*
Bechara, Ibrahim S.; Mascioli, Rocco L.; and Zaluska, Philip J., 4,115,634, Cl. 521-126.000.

Airflow Developments Limited: *See—*
Bagley, Peter Edward, 4,114,558, Cl. 116-114.0PV.

Aisan Kogyo Kabushiki Kaisha: *See—*
Goto, Mikio; Sasano, Mitsunori; Oosawa, Koichi; and Yoshihara, Mitsuya, 4,114,576, Cl. 123-119.00A.

Aisin Seiki Company, Limited: *See—*
Kasahara, Takahiko; Shichi, Shigeharu; Banno, Hideo; Suito, Senji; and Kato, Masayuki, 4,114,548, Cl. 112-258.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Sugiura, Teruo; Tsubouchi, Hiromitsu; Ishida, Nobuyasu; and Kobayashi, Kiyonori, 4,114,740, Cl. 192-70.180.

Aitel, Moe Lawrence, to Sanders Associates, Inc. Shielded passageway interconnection for electromagnetic interference shielded shelters. 4,115,656, Cl. 174-35.0MS.

Akahoshi, Takashi: *See—*
Masuda, Tetsuzo; Tagawa, Tomiyasu; Yoshioka, Hachiro; and Akahoshi, Takashi, 4,115,071, Cl. 422-179.000.

Akamatsu Alloy Tool Co., Ltd.: *See—*
Akamatsu, Motoji, 4,114,217, Cl. 10-85.000.
Akamatsu, Motoji, to Akamatsu Alloy Tool Co., Ltd. Die assembly. 4,114,217, Cl. 10-85.000.

Akanuma, Kiyohiko: *See—*
Kon, Tsuneyoshi; Toi, Hiroshi; Matsuura, Tamiaki; Akanuma, Kiyohiko; Takamiya, Toru; and Usui, Motosuke, 4,114,252, Cl. 29-563.000.

Akao, Masatake: *See—*
Yamashita, Kazuo; Yokose, Yoshikazu; Akao, Masatake; Hirakawa, Koichi; Iho, Katsuhiko; and Shibano, Takashi, 4,115,175, Cl. 156-172.000.

Akashi, Tetsuya; and Nikawa, Akio, to Topura Co., Ltd. (Kabushiki Kaisha Tohpura). Method for securing screw means onto metal plate and metal plate having screw means secured. 4,114,670, Cl. 151-41.720.

Akatsu, Mitsuharu, to Hitachi, Ltd. Automatic gain control circuit. 4,115,812, Cl. 358-174.000.

Akiyama, Nobuyuki; and Oshima, Yoshimasa, to Hitachi, Ltd. Alignment pattern detecting apparatus. 4,115,762, Cl. 340-146.30H.

Aktiebolaget Draco: *See—*
Wetterlin, Kjell Ingvar Leopold, 4,114,615, Cl. 128-173.00R.

Aktiebolaget IRO: *See—*
Jacobsson, Kurt Arne Gunnar, 4,114,822, Cl. 242-47.010.

Aktiebolaget Leo: *See—*
Kristensson, Sten Krister; and Stamvik, Anders Robert, 4,115,414, Cl. 260-397.500.

Akzo NV: *See—*
Havinga, Reginoldus; and Swaters, Pieter Dirk, 4,115,224, Cl. 204-159.180.

Akzona Incorporated: *See—*
Zengel, Hans; and Bergfeld, Manfred, 4,115,451, Cl. 260-566.00A.

Alamprese, Leo, to Honeywell Inc. Modulating plug valve. 4,114,850, Cl. 251-86.000.

Albats, Boris Samuilovich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.

Alberghini, Alfred C.: *See—*
Morris, Frank R.; and Alberghini, Alfred C., 4,114,347, Cl. 53-300.000.

Alderfer, Richard Bernhard; and Scheibner, Gerald Harry, to Union Carbide Corporation. Apparatus for internally cooling a plastic tubular film bubble. 4,115,048, Cl. 425-72.00R.

Alexander, Eli James. Searchlight. 4,115,841, Cl. 362-44.000.

Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich. Carrier for the pneumatic conveying of loads over a pipeline. 4,114,835, Cl. 243-32.000.

Alexandrov, Adolf Moritsovich: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.

Aley, Carl Lee, to Boeing Company, The. Container integrated work stand. 4,114,754, Cl. 206-319.000.

Alinari, Carlo. Fluid pressure transducer and pressure measuring instrument including the transducer. 4,114,458, Cl. 73-729.000.

Allegheny Ludlum Industries, Inc.: *See—*
Benford, James G.; and Bishop, Harry L., Jr., 4,115,160, Cl. 148-111.000.
Datta, Amitava, 4,115,161, Cl. 148-111.000.
Reen, Orville W., 4,115,158, Cl. 148-31.550.
Southern, Raymond L.; and Bishop, Harry L., 4,114,251, Cl. 29-527.700.

Allen, Billy R.: *See—*
Coughlin, Robert W.; Charles, Marvin; and Allen, Billy R., 4,115,198, Cl. 195-63.000.

Allen-Bradley Company: *See—*
Dummermuth, Ernst H., 4,115,853, Cl. 364-200.000.

Allied Chemical Corporation: *See—*
Cipris, Divna, 4,115,238, Cl. 204-290.00R.
Gancy, Alan B.; and Kaminski, Chester J., 4,115,219, Cl. 204-99.000.
Gancy, Alan B.; and Poncha, Rustom P., 4,115,525, Cl. 423-425.000.
Kavesh, Sheldon; and Bretts, Gerald R., 4,115,682, Cl. 219-118.000.
Lazarus, Stanley David; and Chakravarti, Kalidas, 4,115,350, Cl. 260-45.80A.
Ratcliffe, Charles T., 4,115,523, Cl. 423-387.000.
Smura, B. Bernard, 4,115,236, Cl. 204-254.000.

Allied Paper Incorporated: *See—*
Shaw, Michael J., 4,115,603, Cl. 427-326.000.

Allington, Robert William, to Instrumentation Specialties Company. Chemical analyzer. 4,115,861, Cl. 364-497.000.

Alsberg, Henry; Skalla, Dale W.; and Tirpak, Michael R., to Richardson Corporation. High impact polymer and process for its production. 4,115,478, Cl. 260-880.00R.

Aluminum Company of America: *See—*
Booz, Albert David; and Kondis, Thomas J., 4,115,107, Cl. 75-0.50R.
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., 4,115,215, Cl. 204-67.000.
Hargis, Robert L., 4,115,214, Cl. 204-64.00R.

Alza Corporation: *See—*
Shell, John W., 4,115,544, Cl. 424-14.000.
Weinshenker, Ned M.; and Anderson, Niels H., 4,115,545, Cl. 424-45.000.

Amano, Toshio; and Kaku, Hidetoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Fail-safe oil feed control linkage for two cycle internal combustion engine. 4,114,587, Cl. 123-196.00S.

Amark Industries, Inc.: *See—*
Williams, David E.; and Hoyt, Edwin D., 4,115,686, Cl. 219-523.000.

Ambico Inc.: *See—*
Petillo, Phillip J., 4,114,503, Cl. 84-422.00S.

Amdahl Corporation: *See—*
Beall, Robert J.; and Zasio, John J., 4,115,837, Cl. 361-388.000.

American Can Company: *See—*
Croasdale, William H., 4,114,725, Cl. 181-205.000.

American Chain & Cable Company, Inc.: *See—*
Nicodemus, Robert N., Jr.; Bosler, James W.; and Kershner, Marvin R., 4,114,538, Cl. 104-88.000.

American Cyanamid Company: *See—*
Ellwanger, Richard Earl, 4,115,340, Cl. 260-29.6HN.
Lang, Stanley Albert, Jr.; and Walworth, Bryant Leonidas, 4,115,097, Cl. 71-92.000.
Paul, Rolf; and Menschik, Judith, 4,115,572, Cl. 424-249.000.

American Hospital Supply Corporation: *See—*
Driscoll, Richard C.; and Morejon, Clara B., 4,115,537, Cl. 424-1.000.
Lewyn, Lanny Louis; and Simpson, Glen David, 4,114,627, Cl. 128-419.0PT.
Rockett, Thomas J.; and O'Connell, John J., 4,115,487, Cl. 264-16.000.

American Optical Corporation: *See—*
Travnicek, Edward A., 4,114,993, Cl. 351-160.000.

Ameron, Inc.: *See—*
Robertson, Harry H., 4,114,332, Cl. 52-224.000.

Amisaki, Yumiko: *See—*
Kinoshita, Yoshikiyo; Aoi, Takashi; Kimura, Yoshihiro; and Amisaki, Yumiko, 4,115,480, Cl. 260-885.000.

Ammann, Hans Hugo; and Oien, Michael Ackman, to Bell Telephone Laboratories, Incorporated. Flexible circuit reflow soldering process and machine. 4,115,601, Cl. 427-96.000.

Ammco Tools, Inc.: *See—*
Spainhour, Phillip A.; Hampton, Robert S., Jr.; and Morrison, Leonard A., 4,114,283, Cl. 33-337.000.

AMP Incorporated: *See—*
Hansen, Niels Junior; Ward, John Ambrose; Hintze, William; and Johnson, David Charles, 4,115,750, Cl. 337-107.000.
Loomis, Phillip Eugene; Martz, Paul Elwood; and Phillips, Howard Charles, 4,114,253, Cl. 29-566.200.
Weidler, Charles Harry, 4,114,975, Cl. 339-176.00M.

Ampex Corporation: *See—*
Gooch, Beverley R., 4,115,827, Cl. 360-121.000.

AMSTED Industries Incorporated: *See—*
Strugielski, Ronald T.; and Mulcahy, Harry William, 4,114,540, Cl. 105-226.000.

Amtel, Inc.: *See—*
Sussmuth, Reiner W., 4,115,024, Cl. 407-114.000.

Anaconda Company, The: *See—*
Horton, Steven A., 4,115,840, Cl. 361-400.000.

Ancos Co., Ltd.: *See—*
Torii, Osamu, 4,115,015, Cl. 401-110.000.

Anderson, Clifton P.: *See—*
Wooding, Patrick J.; and Anderson, Clifton P., 4,115,654, Cl. 13-33.000.

Anderson, Joseph A., to Mertens, Benny F., a part interest. Inoculator. 4,115,200, Cl. 195-127.000.

Anderson, Niels H.: *See—*
Weinshenker, Ned M.; and Anderson, Niels H., 4,115,545, Cl. 424-45.000.

Ando, Hisashi: *See—*
Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, 4,114,243, Cl. 29-25.140.

Andre, Thierry: *See—*
Melchior, Jean; and Andre, Thierry, 4,114,379, Cl. 60-606.000.

Andrepont, John S.: *See—*
Orndorff, James A., Jr.; Wozniak, Robert S.; and Andrepont, John S., 4,114,556, Cl. 114-230.000.

Andrews, Christopher Michael, to Ciba-Geigy Corporation. Polyhalocarboxylic acid salts as accelerators for curing epoxide resins. 4,115,296, Cl. 528-92.000.

Andrews, Peter. Motor vehicle oil drip pan apparatus device for at least indirectly saving lives and accidents on a highway. 4,114,717, Cl. 180-69.100.

Angely, Lysiane: *See—*
Bonnemay, Maurice; Bronoel, Guy; Angely, Lysiane; and Peslerbe, Gilbert, 4,115,628, Cl. 429-44.000.

Ansbaugh, Donald I.; and Heilman, Glenn A., to Heilman Enterprises, Inc. Terrain traversing device having impeller means for propelling grass clippings and leaves into a receptacle. 4,114,353, Cl. 56-13.300.

Anselrode, Lodewijk, to Stork Brabant B.V. Electrophoretic transfer process. 4,115,234, Cl. 204-180.00R.

Anshus, Byron E., to Chevron Research Company. Preparation of catalyst for the polymerization of 2-pyrrolidone. 4,115,399, Cl. 260-326.5FN.

Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Nametkin, Nikolai Sergeevich; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich. Method for dimerization of olefins. 4,115,468, Cl. 260-683.15D.

Antonov, Andrei Alexandrovich: *See—*
Bocharov, Jury Nikolaevich; Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,469, Cl. 260-683.15D.

Antos, George J., to UOP Inc. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 4,115,252, Cl. 208-139.000.

Antos, George J., to UOP Inc. Dehydrocyclization with an acidic multimetallic catalytic composite. 4,115,254, Cl. 208-139.000.

Aoi, Takashi: *See—*
Kinoshita, Yoshikiyo; Aoi, Takashi; Kimura, Yoshihiro; and Amisaki, Yumiko, 4,115,480, Cl. 260-885.000.

Aoki, Aiko: *See—*
Kametani, Hiroshi; and Aoki, Aiko, 4,115,222, Cl. 204-117.000.

Aoki, Shigeru; Tashiro, Yasuhisa; Aboshi, Yuzo; Narita, Toshiro; and Shirai, Tadashi, to Nippon Kayaku Kabushiki Kaisha. Process for the preparation of optically active α-phenylglycine and intermediates thereof. 4,115,439, Cl. 562-402.000.

Aoki, Teruaki; and Abe, Motoaki, to Sony Corporation. Method for manufacture of a semiconductor device. 4,114,254, Cl. 29-571.000.

Aoki, Tooru: *See—*
Takahashi, Jiro; Miyamoto, Akihiko; Aoki, Tooru; Kunieda, Naoshi; and Tanisawa, Kuniaki, 4,115,117, Cl. 96-29.00D.

Aoyama, Syunichi, to Nissan Motor Company, Limited. Exhaust gas recirculation control system. 4,114,577, Cl. 123-119.00A.

Aoyama, Syuniti; Hayashi, Yoshimasa; and Nakajima, Yasuo, to Nissan Motor Company, Limited. Valve operating mechanism of internal combustion engine. 4,114,643, Cl. 137-495.000.

Apparatebau Rothemuhle Brandt & Kritzler: *See—*
Kritzler, Gerhard; and Eckert, Paul, 4,114,680, Cl. 165-4.000.

Applegate, Barry George: *See—*
Davies, Robert William; and Applegate, Barry George, 4,114,355, Cl. 53-389.000.

Applied Radiation Corporation: *See—*
Stieber, Volker Adolf Wilhelm, 4,115,830, Cl. 361-187.000.

Arai, Yoshi: *See—*
Sato, Hisato; Tazume, Masayuki; Yamaki, Takasi; Fujita, Yutaka; and Arai, Yoshi, 4,115,310, Cl. 252-299.000.

Araki, Tadashi: *See—*
Otani, Sugio; Watanabe, Shoji; and Araki, Tadashi, 4,115,527, Cl. 423-447.400.

Araoka, Toshinobu, to Toyo Denki Kogyosho Co., Ltd. Method and apparatus for transferring material with the use of a fluid. 4,114,955, Cl. 302-15.000.

Archer, Wesley L.: *See—*
Spencer, David R.; and Archer, Wesley L., 4,115,461, Cl. 260-652.50R.

Arco Industries Ltd.: *See—*
Chow, Thomas, 4,114,311, Cl. 46-192.000.

Arenco Machine Company: *See—*
Wildmoser, Martin Michael, 4,115,182, Cl. 156-515.000.

Argus Chemical Corporation: *See—*
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,115,476, Cl. 260-880.00R.

Arman S.p.A.: *See—*
Blackman, Ronald, 4,114,227, Cl. 15-250.320.

Armco Steel Corporation: *See—*
Beck, David E., 4,114,338, Cl. 52-478.000.
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,114,563, Cl. 118-63.000.

Armour and Company: *See—*
Skidmore, Lawrence M., 4,114,492, Cl. 83-367.000.

Armour Pharmaceutical Company: *See—*
Rubino, Andrew M.; and Margres, Jack J., 4,115,553, Cl. 424-155.000.

Armstrong Cork Company: *See—*
Bulson, Walter T.; Christie, Peter A.; and Jones, James R., 4,115,423, Cl. 260-429.500.

Arndt, Henry Clifford: *See—*
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, 4,115,438, Cl. 562-498.000.
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, 4,115,453, Cl. 260-586.00G.

Arneklev, Duane R., to Stauffer Chemical Company. Antidote compositions and method of use with herbicides. 4,115,099, Cl. 71-93.000.

Arruda, Michael. Automobile oil changing device. 4,114,660, Cl. 141-98.000.

Art-Phyl Creations: *See—*
Hochman, Arthur, 4,114,763, Cl. 211-57.100.

Arzoumanian, Aram Sarkis, to Dataproducts Corporation. Impact printer magnet assembly. 4,114,532, Cl. 101-93.480.

Asahi Glass Company Ltd.: *See—*
Asawa, Tatsuro; and Gunjima, Tomoki, 4,115,240, Cl. 204-296.000.
Suzuki, Yoshiro; Kokubu, Yoshinori; Chiba, Jiro; Hara, Morihisa; Nagahara, Shigehiro; and Yamamoto, Koichi, 4,115,132, Cl. 106-53.000.

Asam, Adolf R.; and Maklad, Mokhtar S., to International Telephone and Telegraph Corporation. Low loss multilayer optical fiber. 4,114,980, Cl. 350-96.330.

Asamoto, Toshitaka: *See—*
Hashimoto, Yoshitoshi; Kondo, Takajiro; and Asamoto, Toshitaka, 4,114,491, Cl. 83-341.000.

Asaro, Vito F. Avalanche rescue marker system. 4,114,561, Cl. 116-124.00B.

Asawa, Tatsuro; and Gunjima, Tomoki, to Asahi Glass Company Ltd. Method of regenerating electrochemical properties of cation exchange membrane of fluorinated polymer. 4,115,240, Cl. 204-296.000.

ASEA Aktiebolag: *See—*
Gustavsson, Rolf; and Hedvall, Per, 4,115,262, Cl. 210-42.00S.

Ashfield, Herbert Edward, to David Brown Tractors Limited. Epicyclic gearing. 4,114,479, Cl. 74-801.000.

Ashton, Fraser E.: *See—*
Wallace, Rebecca; Ashton, Fraser E.; Perry, Malcolm B.; and Diena, Benito B., 4,115,543, Cl. 424-8.000.

Aspheric Associates, Ltd.: *See—*
Hooker, Derrell C., 4,114,486, Cl. 82-12.000.

Astier, Pierre Jean Baptiste. Locking device and means for actuating this device. 4,114,410, Cl. 70-339.000.

Aston Electronic Developments Ltd.: *See—*
Goff, Raymond Charles, 4,115,811, Cl. 358-167.000.

Athenstedt, Martin: *See—*
Dietzel, Walter; and Athenstedt, Martin, 4,115,145, Cl. 127-5.000.

Atlantic Richfield Company: *See—*
Sheng, Ming Nan; and Kao, Jar-lin, 4,115,440, Cl. 562-533.000.

Atlas Powder Company: *See—*
Machacek, Oldrich, 4,115,165, Cl. 149-5.000.

Atlas Tool & Manufacturing Co.: *See—*
White, Kenneth W., 4,114,471, Cl. 74-551.600.

Ato Chimie: *See—*
Foy, Paul; and Kern, Rene, 4,115,475, Cl. 260-857.0PE.

Atwater, Jerrold Bradford, to Lockheed Electronics Co., Inc. Plural load power controller with time-shared processor. 4,115,860, Cl. 364-492.000.

Auborn, James J.; and Trickett, Elizabeth A., to GTE Laboratories Incorporated. Process for the preparation of reactive tungsten and derivatives thereof. 4,115,526, Cl. 423-440.000.

Aust, John J., to Owens-Illinois, Inc. Reinforced form-fitting shipping container. 4,114,755, Cl. 206-326.000.

Austin, Forrest L.; and Cornelius, Richard T., to Black and Decker Manufacturing Company, The. Spray nozzle. 4,114,812, Cl. 239-492.000.

Auto-Chlor Inc.: *See—*
James, Robert Frederic, 4,115,263, Cl. 210-60.000.

Automotive Products Limited: *See—*
Rawlings, Dennis George, 4,114,742, Cl. 192-89.00B.

Avedis Zildjian Company: *See—*
Zildjian, Armand A., 4,114,502, Cl. 84-402.000.

Avery, Noyes L., to Rohm and Haas Company. Selective removal of iron cyanide anions from fluids containing thiocyanates. 4,115,260, Cl. 210-34.000.

Avicon Development Group: *See—*
Pratt, Wayne L., 4,114,442, Cl. 73-341.000.

Avmar, Incorporated: *See—*
DiCecio, Salvatore A., 4,115,756, Cl. 340-27.00R.

Axtell, Clyde R., III, to Digital Facilities, Inc. System for locating electrical shorts by tracking the paths of injected pulse currents utilizing a voltage differential responsive probe. 4,115,731, Cl. 324-52.000.

Axtell, Martin John Shelley, executor: *See—*
Selwood, Peter Richard, deceased; Selwood, Timothy John, executor; Axtell, Martin John Shelley, executor; and Burton, John David, 4,115,041, Cl. 417-440.000.

AZO-Maschinenfabrik Adolf Zimmermann: *See—*
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B. F. Goodrich Company, The: *See—*
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B/W Metals Company, Inc.: *See—*
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Babb, Burton A., to Babbco, Ltd. Loudspeaker voice coil bearing. 4,115,667, Cl. 179-115.5VC.

Babbco, Ltd.: *See—*
Babb, Burton A., 4,115,667, Cl. 179-115.5VC.

Babcock & Wilcox Company, The: *See—*
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Babin, Gennady Andreevich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.

Baboff, Leon Ian; Shichman, Daniel; and Reed, Lawrence Paul, to Uniroyal, Inc. Apparatus and method for applying puncture sealant material to a tire. 4,115,172, Cl. 156-115.000.

Bach, Frederick O.; Chapin, Leo N.; and Freed, Robert, to A. B. Dick Company. Dry powdered or liquid developer compositions. 4,115,289, Cl. 252-62.10P.

Bach, Hartwig C., to Monsanto Company. Novel process for the preparation of fiber of arylene oxadiazole/arylene N-alkylhydrazide copolymer. 4,115,503, Cl. 264-184.000.

Bachhofer, Bruno; Locher, Anton; Skirde, Gerhard; and Quistorff, Hansjorg. Apparatus for treating and degerminating bath water, particularly bath water contaminated by the germ bact. *pseudomonas pyocanea,* in medical tub-baths and underwater massage baths. 4,115,267, Cl. 210-136.000.

Bacon, John E.: *See—*
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Badgley, Charles G., to Badgley, Richard B. Overhead roof-mounted rear view mirror. 4,114,989, Cl. 350-302.000.

Badgley, Richard B.: *See—*
Badgley, Charles G., 4,114,989, Cl. 350-302.000.

Baeck, Henry S.; Bennett, William C.; Condon, David C.; Gillette, Harold R.; and Herbert, Donald G., to Hydra Corporation. Printer

system having local control for dynamically alterable printing. 4,114,750, Cl. 400-279.000.
Baecke, Antoine Marinus Rene: *See—*
Oosterling, Pieter Adriaan; and Baecke, Antoine Marinus Rene, 4,114,814, Cl. 239-689.000.
Bagley, Peter Edward, to Airflow Developments Limited. Measuring instrument indicating mechanism. 4,114,558, Cl. 116-114.0PV.
Bailey, Robert L. Cake cutter and server. 4,114,265, Cl. 30-122.000.
Bainard, Dean R., to Garlock Inc. Pressure shaft seal method. 4,114,245, Cl. 29-156.40R.
Bainard, Dean R., to Garlock Inc. Method for installing seal over splined shaft. 4,114,897, Cl. 277-1.000.
Bainard, Dean R.; and Wright, Roger W., to Garlock Inc. Oil seal with permanently deformable locking member. 4,114,898, Cl. 277-9.000.
Baird-Atomic, Inc.: *See—*
Demers, Donald R., 4,115,063, Cl. 23-230.00M.
Baker International Corporation: *See—*
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Baker, Melvin Charles, to E.I. DuPont de Nemours and Company. Conversion of poly(tetramethylene ether) glycol in aqueous effluent stream to tetrahydrofuran. 4,115,408, Cl. 260-346.110.
Balaian, Ruben Dzhangirovich: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.
Balcerak, Raymond S.; and Garn, Lynn E., to United States of America, Army. Solid state readout device for a two dimensional pyroelectric detector array. 4,115,692, Cl. 250-338.000.
Baldwin, Bernard A.; Williams, Ralph P.; and Rohde, Raymond, to Phillips Petroleum Company. Lubricant antiwear additives containing sulfur and boron. 4,115,286, Cl. 252-46.300.
Ball, Peter: *See—*
Goodacre, John Purefoy; Potter, Colin; and Ball, Peter, 4,114,662, Cl. 141-387.000.
Ballard, Joseph E.: *See—*
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Ballas, George Charles, Sr., to Weed Eater, Inc. Rotary cutting assembly. 4,114,269, Cl. 30-276.000.
Bamberg, Wolfgang: *See—*
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, 4,115,443, Cl. 562-402.000.
Bandag Incorporated: *See—*
Dundon, Michael J., 4,115,171, Cl. 156-96.000.
Banno, Hideo: *See—*
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Banucci, Eugene G.: *See—*
Boldebuck, Edith M.; and Banucci, Eugene G., 4,115,341, Cl. 260-33.20R.
Barbe, Karl-Heinz, to Hauni-Werke Korber & Co. Kg. Apparatus for expelling gases from liquid adhesives. 4,115,085, Cl. 55-193.000.
Barbe, Pier Camillo: *See—*
Scata, Umberto; Luciani, Luciano; and Barbe, Pier Camillo, 4,115,319, Cl. 252-429.00B.
Barker, George E.: *See—*
Unland, Mark L.; and Barker, George E., 4,115,424, Cl. 252-432.000.
Barker, Harold Reed. Solar energy collector and glazing system. 4,114,595, Cl. 126-270.000.
Barmag Barmer Maschinenfabrik AG: *See—*
Berges, Dietrich; Damzog, Bodo; and Saam, Ulrich, 4,114,361, Cl. 57-156.000.
Bartek, Joseph P.; Dolhyj, Serge R.; Velenyi, Louis J.; and Grasselli, Robert K., to Standard Oil Company, The. Process for preparing diarylethylenes. 4,115,464, Cl. 260-668.00C.
Bartels, Gunter; Immenroth, Horst; and Heyer, Gunter, to Preussag Aktiengesellschaft Metall. Process for the preparation of high purity antimony. 4,115,220, Cl. 204-105.00R.
Bartels, Manfred, to Empisal Knitmaster Luxembourg S.A. Control unit for a hand knitter. 4,114,405, Cl. 66-75.200.
Barth, Rudolph; and Jaeger, Oskar, to Behringwerke Aktiengesellschaft. Rabies vaccine preparation. 4,115,195, Cl. 195-1.300.
Barth, Wayne E., to Pfizer Inc. Antibacterial 3-(5-tetrazolyl) penam compounds. 4,115,385, Cl. 260-239.100.
BASF Aktiengesellschaft: *See—*
Becker, Rolf; Borho, Klaus; Buechner, Oskar; Gropper, Hans; and Hartig, Ulrich, 4,115,638, Cl. 526-61.000.
Gall, Ludwig; and Fabian, Wolfgang, 4,115,386, Cl. 260-281.00P.
Oppenlaender, Knut; Seib, Karl; and Krapf, Heinz, 4,115,314, Cl. 252-309.000.
BASF Wyandotte Corporation: *See—*
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,115,281, Cl. 252-8.800.
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,115,281, Cl. 252-8.800.
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,115,281, Cl. 252-8.800.
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Bataeva, Ljubov Petrovna: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Batzar, Kenneth, to Du Pont de Nemours, E. I., and Company. Dust-free thermally stable lead chromate pigment composition and process of preparation. 4,115,143, Cl. 106-298.000.
Bauer, Heinrich Franz; Eichinger, Anton; and Feitzelmayer, Ernst, to Motoren-und Turbinen-Union Munchen GmbH. Method of applying miniaturized high-temperature free-grid strain gauges. 4,115,174, Cl. 156-155.000.
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Finley, Joseph H.; Brubaker, Gaylen R.; and Baum, Burton M., 4,115,060, Cl. 8-111.000.
Baumgartner, Heinrich, to BBS-Kraftfahrzeugtechnik GmbH & Co. KG. Motor vehicle wheel. 4,114,953, Cl. 301-63.0DD.
Bausch & Lomb Incorporated: *See—*
Morton, Roger R. A., 4,115,803, Cl. 358-107.000.
Morton, Roger R. A.; and McCarthy, Cornelius J. D., 4,115,804, Cl. 358-107.000.
Morton, Roger R. A., 4,115,805, Cl. 358-107.000.
Morton, Roger R. A., 4,115,806, Cl. 358-107.000.
Baxter Travenol Laboratories, Inc.: *See—*
Brown, Richard I., 4,114,802, Cl. 233-26.000.
Bayer Aktiengesellschaft: *See—*
Bien, Hans-Samuel; Klauke, Erich; and Wunderlich, Klaus, 4,115,378, Cl. 260-146.00T.
Bier, Peter; and Binsack, Rudolf, 4,115,371, Cl. 528-279.000.
Corte, Herbert; Heller, Harold; Lange, Michael; and Netz, Otto, 4,115,261, Cl. 210-40.000.
Elfert, Klaus; Rosenkranz, Hans Jurgen; and Rudolf, Hans, 4,115,465, Cl. 260-674.00R.
Henes, Gerhard; Muller, Hans Jurgen; Gupta, Pramod; and Zirner, Joachim, 4,115,373, Cl. 528-48.000.
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Maurer, Fritz; Riebel, Hans-Jochem; and Hammann, Ingeborg, 4,115,542, Cl. 424-200.000.
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Perrey, Hermann; Wolf, Karlheinz; Eimers, Erich; Nonn, Konrad; and Hornle, Reinhold, 4,115,379, Cl. 260-163.000.
Raue, Roderich; Eifler, Willi; and Kuhlthau, Hans-Peter, 4,115,413, Cl. 260-390.000.
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Thelen, Hermann; Halcour, Kurt; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,115,462, Cl. 260-667.000.
Bayly, Russell James; Chambers, Virginia Edith May; and Monks, Reginald, to Radiochemical Centre Limited, The. Saturation analysis of folate compound with selenium-75 labeled folate. 4,115,065, Cl. 23-230.600.
Bazen, Badger R. Stacking racks. 4,114,343, Cl. 52-665.000.
BBC Brown Boveri & Company Limited: *See—*
Oberle, Arthur, 4,114,651, Cl. 137-630.140.
Oberle, Arthur, 4,114,652, Cl. 137-630.140.
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Beal, Steven G.; Ceballos, Arthur; and Ceballos, Dolores D. Worm harvesting. 4,114,762, Cl. 209-78.000.
Beall, Robert J.; and Zasio, John J., to Amdahl Corporation. LSI Chip package and method. 4,115,837, Cl. 361-388.000.
Beall, William R., to Baker International Corporation. Apparatus for measuring the concentration of impurities within a substance. 4,114,421, Cl. 73-17.00R.
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Zavagli, Steven B.; and Kasik, Robert L., 4,115,376, Cl. 260-120.000.
Beauvais, Thierry; and Souchay, Philippe, to Thomson-CSF. High-speed correlating device. 4,115,865, Cl. 364-604.000.
Bechara, Ibrahim S.; Mascioli, Rocco L.; and Zaluska, Philip J., to Air Products & Chemicals, Inc. Amine salts of amino acids as delayed action catalysts. 4,115,634, Cl. 521-126.000.
Bechet, Henri L. J.; and Vertongen, Jose J. A., to Westinghouse Electric Corp. Electrical switchboard framework. 4,114,336, Cl. 52-280.000.
Beck, David E., to Armco Steel Corporation. Reinforcing plate for overlapped joints. 4,114,338, Cl. 52-478.000.
Becker, Rolf; Borho, Klaus; Buechner, Oskar; Gropper, Hans; and Hartig, Ulrich, to BASF Aktiengesellschaft. Process for letting down ethylene high pressure polymerization systems. 4,115,638, Cl. 526-61.000.
Beckman, Paul. Partial oxygen measurement system. 4,115,230, Cl. 204-195.00R.
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Beelow, Ralph E. Pontoon boat trailer. 4,114,772, Cl. 214-512.000.
Beernaerts, Andre M. H. J.; and Eskes, Hendrik J. K., to International B. F. Goodrich-Europe B.V. Method for manufacturing essentially wrinkle-free foamed articles with an upholstery material adhering thereto and resultant article. 4,114,213, Cl. 5-345.00R.
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Behle, Gunter R., to ACF Industries, Incorporated. Bottom operable air inlet and outlet valve. 4,114,636, Cl. 137-43.000.
Behling, Harvey L., to Energy Development Associates. Halogen hydrate formation from halogen and finely divided aqueous droplets. 4,115,529, Cl. 423-472.000.
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Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
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Bell Telephone Laboratories, Incorporated: *See—*
Ammann, Hans Hugo; and Oien, Michael Ackman, 4,115,601, Cl. 427-96.000.
Kasper, Horst Manfred; Tell, Benjamin; and Wagner, Sigurd, 4,115,633, Cl. 429-191.000.
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Thibault, Louis Robert; and Dy Yau, Leopoldo, 4,114,256, Cl. 29-571.000.
Bellavance, David Walter, to Texas Instruments Incorporated. Method of fabrication of a monolithic integrated optical circuit. 4,114,257, Cl. 29-572.000.
Bellina, Russell Frank; and Fost, Dennis Lynn, to Du Pont de Nemours, E. I., and Company. Substituted 2-higher alkyl-3-hydroxy-1,4-naphthoquinone carboxylic acid esters and their use as miticides. 4,115,584, Cl. 424-301.000.
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Bentley, Peter Hubert; and Brooks, Gerald, to Beecham Group Limited. Process for preparing 7-aminocephalosporanic acid derivatives. 4,115,646, Cl. 544-27.000.
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Berges, Dietrich; Damzog, Bodo; and Saam, Ulrich, to Barmag Barmer Maschinenfabrik AG. Twisting machine process for stranding wires. 4,114,361, Cl. 57-156.000.
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Bien, Hans-Samuel; Klauke, Erich; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Soluble reactive azodyestuffs containing a fluorotriazinyl group attached via a nitrogen bridge to the dyestuff molecule. 4,115,378, Cl. 260-146.00T.
Bier, Albert; and Vogelgesang, Herbert, to Moeller & Neumann GmbH. Rolling disc attachment. 4,114,416, Cl. 72-238.000.
Bier, Peter; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Stabilization of polycondensates of polyethylene terephthalate. 4,115,371, Cl. 528-279.000.
Biermans, Andreas J.; and Jonckers, Kees, to Unie Van Kunstmestfabrieken, B.V. Process for preparing a urea solution from ammonia and carbon dioxide. 4,115,449, Cl. 260-555.00A.
Bigelow, John Howard, to Du Pont de Nemours, E. I., and Company. Organophosphine sulfides as photographic sensitizers. 4,115,129, Cl. 96-107.000.
Bigi, Leonardo. Method for regenerating dialysing liquids in hemodialysis systems. 4,115,259, Cl. 210-22.00A.
Bikbau, Marsel Yanovich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
Nudelman, Boris Izrailovich; Sventsitsky, Alexandr Sergeevich; Bikbau, Marsel Yanovich; Bun, Isaak Mozesovich; and Kevvai, Arnold Arnoldovich, 4,115,138, Cl. 106-100.000.
Billeter, Henry R., to Sloan Valve Company. Lead screw tapping

arrangement for use with self-opening die heads and collapsible taps. 4,115,026, Cl. 408-10.000.
Bindicator Company: *See—*
Zepp, Lawrence C.; and Mosteller, Marston D., 4,115,009, Cl. 356-201.000.
Bingham, Lowell. Dryers for lettuce and like salad components. 4,114,286, Cl. 34-58.000.
Binsack, Rudolf: *See—*
Bier, Peter; and Binsack, Rudolf, 4,115,371, Cl. 528-279.000.
Bishop, Harry L.: *See—*
Southern, Raymond L.; and Bishop, Harry L., 4,114,251, Cl. 29-527.700.
Bishop, Harry L., Jr.: *See—*
Benford, James G.; and Bishop, Harry L., Jr., 4,115,160, Cl. 148-111.000.
Bishop, Marilyn. Sterile port structure. 4,114,669, Cl. 150-8.000.
Bisping, Heinz, to Hilti Aktiengesellschaft. Interlocking clamps for piping and cable. 4,114,241, Cl. 24-81.0CC.
Bitson, Joseph W., to General Dynamics Corporation. Moving magnet miniature angular rate sensor. 4,114,452, Cl. 73-504.000.
Bitson, Joseph W.: *See—*
Crittenden, Jack H.; and Bitson, Joseph W., 4,114,451, Cl. 73-504.000.
Bitterlin, Albert: *See—*
Kirner, Hans Dieter; Bitterlin, Albert; and Muller, Ekkehard Walter, 4,115,055, Cl. 8-26.000.
Bjalme, Bengt G.: *See—*
Coblitz, Sanford E.; and Bjalme, Bengt G., 4,114,485, Cl. 82-4.00C.
Bjerklie, John W., to Hague International. Radiation reflecting door for process furnace. 4,115,051, Cl. 432-3.000.
Bjermo, Gote Herbert Egard; and Tresjo, Paul Einar, to System AB Infotenik. Sludge film conveying device. 4,114,753, Cl. 198-608.000.
Blach, James P. Water-flow control device and method. 4,114,204, Cl. 4-324.000.
Black and Decker Manufacturing Company, The: *See—*
Austin, Forrest L.; and Cornelius, Richard T., 4,114,812, Cl. 239-492.000.
Blackman, Ronald, to Arman S.p.A. Connection between a windshield wiper blade and the oscillating arm carrying it. 4,114,227, Cl. 15-250.320.
Blahunka, Charles Stephen. Omnidirectional visual vehicular warning system. 4,115,757, Cl. 340-32.000.
Blahut, Edward J., to Kapcoa Corp. Automatic locking and support device for high mast lighting structure. 4,115,845, Cl. 362-403.000.
Blanchard, William B.; and Ryan, Charles W., to Eli Lilly and Company. Preparation of cis-1-hydroxy-3-substituted-6,6-dimethyl-6,6a,7,8,10,10a-hexahydro-9H-dibenzo [b,d]pyran-9-ones and intermediates therefor. 4,115,403, Cl. 260-340.90R.
Blanton, William A., Jr.; and Flanders, Robert L., to Chevron Research Company. Process for removing sulfur from a gas. 4,115,249, Cl. 208-120.000.
Blanton, William A., Jr.: *See—*
Flanders, Robert L.; and Blanton, William A., Jr., 4,115,250, Cl. 208-120.000.
Flanders, Robert L.; and Blanton, William A., Jr., 4,115,251, Cl. 208-120.000.
Blaylock, Arnold O.; Falconer, Robert P.; and Campbell, Charles M., to Lectric Lites Company. Mounting apparatus for vehicle emergency warning signal. 4,114,789, Cl. 224-42.10E.
Blaylock, Tommey J. Clutch throw-out bearing plate. 4,114,744, Cl. 192-98.000.
Bleha, William P., Jr.; and Grinberg, Jan, to Hughes Aircraft Company. Visible-to-infrared converter light valve. 4,114,991, Cl. 350-338.000.
Bloching, Helmut: *See—*
Krause, Horst-Jurgen; Hase, Christian; and Bloching, Helmut, 4,115,309, Cl. 252-186.000.
Bloker, Richard T. Protective plug for the ends of tubular cores. 4,114,655, Cl. 138-89.000.
Blount, David H. Process for the production of poly (allyl halide allyl alcohol) polymer. 4,115,635, Cl. 526-29.000.
Blu-Surf, Inc.: *See—*
Flynn, Charles S., 4,115,052, Cl. 432-72.000.
Bluhm, Vernon A., to Burroughs Corporation. Amorphous semiconductor memory device for employment in an electrically alterable read-only memory. 4,115,872, Cl. 365-163.000.
Blumbergs, John H.; Finley, Joseph H.; and Baum, Burton M., to FMC Corporation. Aromatic sulfonic anhydrides as peroxygen activators. 4,115,058, Cl. 8-111.000.
Blumbergs, John H.; and Scholer, Fred R., to FMC Corporation. Aromatic sulfonyl fluorides as peroxygen activators. 4,115,059, Cl. 8-111.000.
Bocharov, Jury Nikolaevich; Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich. Method of dimerization of olefins. 4,115,469, Cl. 260-683.15D.
Boddeker, Karl W.; and Hilgendorff, Walter, to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH. Apparatus for desalinating water by reverse osmosis. 4,115,274, Cl. 210-321.00R.
Bodenseewerk: *See—*
Krogmann, Uwe, 4,114,437, Cl. 73-178.00R.
Bodor, Nicolae S.: *See—*
Kaminski, James J.; and Bodor, Nicolae S., 4,115,588, Cl. 424-325.000.
Bodyagina, Rashida Gafievna: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
Boehler, William L., to Partnership of W. L. Boehler and A. G. Whaley Co., Inc., The. Guide for filamentary material. 4,114,829, Cl. 242-157.00R.
Boeing Company, The: *See—*
Aley, Carl Lee, 4,114,754, Cl. 206-319.000.
Carolan, Raymond Jerome, 4,114,203, Cl. 4-317.000.
Perkins, Donald Leroy; and Streckenbach, Bruce Lindsay, 4,114,930, Cl. 285-334.500.
Boenke, Clyde A.: *See—*
Means, David K.; and Boenke, Clyde A., 4,114,730, Cl. 187-29.00R.
Boese, Gunter; Neudorfer, Ernst; and Schollmeier, Gero, to Siemens Aktiengesellschaft. Circuit arrangement for controlling the pulse repetition frequency of a signal. 4,115,687, Cl. 235-92.0DM.
Boettcher, Edward G. Boat fastening means. 4,114,920, Cl. 280-414.00R.
Bogensberger, Joseph. Feeding bottle holder. 4,114,847, Cl. 248-104.000.
Boger, Manfred; and Kristiansen, Odd, to Ciba-Geigy Corporation. N-phenyl-N'methyl-N''-(O,S-dialkylphosphonyl)-1,3,5-triazapenta-1,4-dienes as pesticides. 4,115,561, Cl. 424-211.000.
Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Pesticidal sulphenylated formamidine compounds. 4,115,583, Cl. 424-300.000.
Boggs, Roger L., to Caterpillar Tractor Co. Replaceable wear members for an endless track. 4,114,958, Cl. 305-56.000.
Boginsky, Vladimir Petrovich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Boginsky, Vladimir Petrovich, 4,114,700, Cl. 175-19.000.
Bohen, Joseph Michael; and Toukan, Sameeh Said, to Pennwalt Corporation. Heat stabilizer composition for halogenated resins. 4,115,352, Cl. 260-45.75B.
Bohmrich, Jack L.; Bowden, William A., Jr.; and Pedersen, Vernon G., to Dacor Corporation. Constant volume buoyancy compensator. 4,114,389, Cl. 405-186.000.
Boise Cascade Corporation: *See—*
Hough, Robert J.; and Bacon, John E., 4,114,784, Cl. 220-408.000.
Boksay, Istvan: *See—*
Weber, Rolf-Ortwin; Soder, Alfons; and Boksay, Istvan, 4,115,569, Cl. 424-250.000.
Boldebuck, Edith M.; and Banucci, Eugene G., to General Electric Company. Polyetheramide-acid-imide solution and process for preparation thereof. 4,115,341, Cl. 260-33.20R.
Bolkhovets, Basia Moiseevna: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Bolto, Brian Alfred; and Eppinger, Kurt Hermann, to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Thermally regenerable amphoteric ion exchangers prepared by sequential treatment of polymeric beads with two reagents of opposing acid base character. 4,115,297, Cl. 521-32.000.
Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 4,114,696, Cl. 172-59.000.
Bomar, Lucien C., II: *See—*
Roeder, Robert S.; and Bomar, Lucien C., II, 4,115,776, Cl. 343-100.0ME.
Bondi, Pasquale Columbo, to General Electric Company. Spool type metering valve. 4,114,857, Cl. 251-324.000.
Boni, Joseph C.: *See—*
Schroeder, Walter W.; Sears, Noel C.; and Boni, Joseph C., 4,115,600, Cl. 427-79.000.
Bonnemay, Maurice; Bronoel, Guy; Angely, Lysiane; and Peslerbe, Gilbert, to Agence Nationale de Valorisation de la Recherche (ANVAR). Electrode comprising a nickel based catalyst for electrochemical generators. 4,115,628, Cl. 429-44.000.
Bonnette, Rene W.: *See—*
Prince, Ronald E.; and Bonnette, Rene W., 4,114,510, Cl. 89-12.000.
Bonnington, Michael Glynn: *See—*
Kendall-Smith, Brian John; and Bonnington, Michael Glynn, 4,115,509, Cl. 264-331.000.
Booz, Albert David; and Kondis, Thomas J., to Aluminum Company of America. Method of producing metal flake. 4,115,107, Cl. 75-0.50R.
Borg, John P. Plug release mechanism. 4,114,969, Cl. 339-45.00R.
Borg-Warner Corporation: *See—*
Clauss, Julius Alphonse, 4,114,478, Cl. 74-781.00R.
Lindquist, Terry Kent, 4,114,741, Cl. 192-89.00B.
van Hesden, Jan Willem, 4,115,285, Cl. 252-32.500.

Wentworth, Robert S., Jr., 4,114,904, Cl. 277-88.000.
Wiese, Winfred John, 4,114,900, Cl. 277-27.000.
Borho, Klaus: *See—*
Becker, Rolf; Borho, Klaus; Buechner, Oskar; Gropper, Hans; and Hartig, Ulrich, 4,115,638, Cl. 526-61.000.
Borner, Gerhard: *See—*
Stieringer, Albert; and Borner, Gerhard, 4,114,995, Cl. 352-171.000.
Boronosky, Richard A.: *See—*
Yagusic, George J.; and Boronosky, Richard A., 4,115,838, Cl. 361-388.000.
Bosler, James W.: *See—*
Nicodemus, Robert N., Jr.; Bosler, James W.; and Kershner, Marvin R., 4,114,538, Cl. 104-88.000.
Bost, Howard W., to Phillips Petroleum Company. Triphenylphosphine oxide as a promoter for phosphorus-containing flame retardant. 4,115,349, Cl. 260-45.8NT.
Bostick, Hoyt A.; Sutton, Paul M.; and Richards, Chester L., to United States of America, Air Force. Buried grating shared aperture device. 4,114,978, Cl. 350-1.700.
Botte, Anthony Joseph, to International Business Machines Corporation. Collation controls. 4,114,871, Cl. 271-173.000.
Boulet, William Paul. Dryer system. 4,114,289, Cl. 34-173.000.
Bouplon, Edward J., to Chicago Pneumatic Tool Company. Drill rod table bushing arrangement. 4,114,701, Cl. 175-84.000.
Bourggraff, Robert; and Coulon, Jean-Claude, to Saint-Gobain Industries. Method and apparatus for manufacturing glass ribbon on a float bath. 4,115,091, Cl. 65-99.00A.
Bouy, Pierre; and Ravier, Dominique, to Rhone-Poulenc Industries. Coated anode. 4,115,239, Cl. 204-290.00F.
Bovio, Robert J.; and Mercaldi, Renaldo, to GTE Sylvania Incorporated. Rotary seal for vacuum and pressure systems. 4,114,903, Cl. 277-81.00R.
Bowden, William A., Jr.: *See—*
Bohmrich, Jack L.; Bowden, William A., Jr.; and Pedersen, Vernon G., 4,114,389, Cl. 405-186.000.
Bowen, Charles E. Turnbuckle wrench for tensioning sailboat mast stays. 4,114,433, Cl. 73-143.000.
Bowler, Jean; and Robinson, Graham Ernest, to Imperial Chemical Industries Limited. 3,4-Epoxy-cyclopenta-1,2-diyl prostanes. 4,115,580, Cl. 424-278.000.
Bozeman, Arlene, executrix: *See—*
Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased, 4,115,241, Cl. 208-33.000.
Bozeman, Paul P., Jr., deceased: *See—*
Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased, 4,115,241, Cl. 208-33.000.
Bozzi, Edward G.; and Nelson, Robert C., to Ciba-Geigy Corporation. Process for making stable solvent-free, aqueous epoxy resin dispersions. 4,115,328, Cl. 260-24.000.
Braatz, Willi. Tumbler lock alarm construction. 4,114,412, Cl. 70-441.000.
Brady, Donnie G., to Phillips Petroleum Company. Mold corrosion inhibition in poly(arylene) sulfide processing. 4,115,344, Cl. 260-37.00R.
Brady, Michael Barry; and Lewis, Peter Frederick, to English Electric Valve Company Limited. Multipactor discharge tuned resonant cavity devices. 4,115,746, Cl. 331-90.000.
Braitinger, Helmut: *See—*
Schneider, Franz; Braitinger, Helmut; and Schumann, Burkhard, 4,114,489, Cl. 83-298.000.
Brandt-Pra, Inc.: *See—*
Di Blasio, John A., 4,114,870, Cl. 271-35.000.
Jones, Alan P.; and Sherman, William, 4,114,804, Cl. 235-476.000.
Braun, Hans; Cieslok, Gunter; and Wolf, Franz, to L. Schuler GmbH. Strip material dividing device. 4,114,490, Cl. 83-303.000.
Braun, Peter: *See—*
Kramer, Klaus; Dietrich, Toni; and Braun, Peter, 4,115,802, Cl. 358-93.000.
Braunschweigische Maschinenbauanstalt: *See—*
Dietzel, Walter; and Athenstedt, Martin, 4,115,145, Cl. 127-5.000.
Brawn, Peter Nelson. Positive reinforcement respiratory inhalation device. 4,114,616, Cl. 128-210.000.
Bremat S.A.: *See—*
Bernstein, Max Jeremie, 4,115,604, Cl. 427-329.000.
Breneman, Inc.: *See—*
Erpenbeck, Paul J., 4,114,266, Cl. 30-123.000.
Bretts, Gerald R.: *See—*
Kavesh, Sheldon; and Bretts, Gerald R., 4,115,682, Cl. 219-118.000.
Brichard, Jean; and Colery, Jean-Claude, to Interox. Manufacturing process for sodium perborate monohydrate and product obtained according to the process. 4,115,519, Cl. 423-279.000.
Brill, William F., to Halcon International, Inc. Catalytic conversion of thallium (I) to thallium (III). 4,115,420, Cl. 260-429.00R.
Brill, William F., to Halcon International, Inc. Process for converting thallium (I) to thallium (III). 4,115,421, Cl. 260-429.00R.
Brindle, Dale L., to Hennessy Products, Incorporated. Plug door operating and moving mechanism. 4,114,318, Cl. 49-215.000.
Brinkmeier, Friedhelm: *See—*
Achelpohl, Fritz; and Brinkmeier, Friedhelm, 4,114,520, Cl. 93-33.00H.
Brisk, Richard A.; and Miller, David E., to Dynamics Research Corporation. Back gauge controller. 4,115,859, Cl. 364-476.000.
Bristol-Myers Company: *See—*
Monkovic, Ivo, 4,115,389, Cl. 260-289.00D.
British Industrial Plastics Ltd.: *See—*
Kendall-Smith, Brian John; and Bonnington, Michael Glynn, 4,115,509, Cl. 264-331.000.
British Petroleum Company Limited, The: *See—*
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Brooks, Gerald: *See—*
Bentley, Peter Hubert; and Brooks, Gerald, 4,115,646, Cl. 544-27.000.
Brosh, Amnon; and Geiger, Dana F., to Kulite Semiconductor Products, Inc. Apparatus for converting an analog signal into digital form particularly adapted for use in digital counter displays. 4,115,767, Cl. 340-347.0CC.
Brown, Andrew James. Explosive device. 4,114,537, Cl. 102-24.0HC.
Brown, Arling Dix, Jr.; and Reilly, Edward Justus, to Gould Inc. Electrical switching system. 4,115,763, Cl. 340-166.00R.
Brown, Gary Leigh; Cummings, Weldon Clifford; and Levine, Isaac Jacob, to Union Carbide Corporation. Ethylene polymerization with ether modified catalyst. 4,115,639, Cl. 526-130.000.
Brown, Herbert R., to United States of America, Air Force. Parachute canopy deployment control apparatus. 4,114,840, Cl. 244-152.000.
Brown, Jack Frederick, to James Ross Limited. Creping doctor device. 4,114,228, Cl. 15-256.510.
Brown Oil Tools, Inc.: *See—*
Dinning, Robert W., 4,114,694, Cl. 166-318.000.
Brown, Richard I., to Baxter Travenol Laboratories, Inc. Centrifugal apparatus with biaxial connector. 4,114,802, Cl. 233-26.000.
Brown, Richard R., to Sperry Rand Corporation. Digital stroke display with vector, circle and character generation capability. 4,115,863, Cl. 364-521.000.
Brown, Vaikai K.; and Fatur, Richard N., to Towmotor Corporation. Brake and creeper control system. 4,114,738, Cl. 192-4.00A.
Brown, William A., to Champion International Corporation. Solicitation envelope carrier. 4,114,799, Cl. 229-72.000.
Browning, Charles E., to United States of America, Air Force. Environmental test chamber system. 4,114,420, Cl. 73-15.600.
Brownlee, Theodore. Radiation powered illuminated display. 4,114,299, Cl. 40-545.000.
Brubaker, Gaylen R.: *See—*
Finley, Joseph H.; Brubaker, Gaylen R.; and Baum, Burton M., 4,115,060, Cl. 8-111.000.
Brueckner, Hubert U.: *See—*
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Brunet, Maurice: *See—*
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Brunsch, Klaus: *See—*
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Brunsting, Albert, to Coulter Electronics, Inc. Cuvette configured for photoanalysis use. 4,115,011, Cl. 356-246.000.
Brunswick Corporation: *See—*
Sleder, Richard L.; and Schmiedel, Robert C., 4,114,583, Cl. 123-148.0CC.
Storms, Ronald L., 4,114,794, Cl. 228-182.000.
Bruun, Lars Ojvind, to Volvo BM AB. Method of forest harvesting and a machine for performing said method. 4,114,666, Cl. 144-309.0AC.
Brynemo, Jan Jorgen; and Spilhaug, Tor William, to A/S Kjaettingfabriken. Safety hook. 4,114,940, Cl. 294-82.00R.
Buccella, Osvaldo: *See—*
Ubaldi, Luciano; and Buccella, Osvaldo, 4,114,562, Cl. 118-50.000.
Buchanan, Ritchie. Mop having a removable cover. 4,114,223, Cl. 15-228.000.
Buchholz, Alexis Emmanuel, to Gillette Company, The. Clipper mechanism. 4,114,264, Cl. 30-34.100.
Buchsteiner, Josef: *See—*
Malata, Peter; and Buchsteiner, Josef, 4,114,276, Cl. 32-26.000.
Buckbee-Mears Company: *See—*
Hertel, Roger C., 4,115,752, Cl. 340-3.00C.
Buckeye Cellulose Corporation, The: *See—*
Smith, Linda Hebert; and Johnson, Robert C., 4,114,200, Cl. 2-51.000.
Buckley, Raymond. Screens suitable for use in photo-engraving and photo-lithographic processes and in color television. 4,114,982, Cl. 350-127.000.
Buckner, Ian Wilfrid, to Plessey Handel und Investments AG. Frequency-comparing devices. 4,115,728, Cl. 318-318.000.
Budke, Robert L.; and Freeborn, Lowell C. Noise-controlled circular saw blade. 4,114,494, Cl. 83-835.000.
Budlane, Stanley J.; Denny, Dann W.; and Hilty, Ronald L., to General Electric Company. Mounting device. 4,115,674, Cl. 200-329.000.
Buechner, Oskar: *See—*
Becker, Rolf; Borho, Klaus; Buechner, Oskar; Gropper, Hans; and Hartig, Ulrich, 4,115,638, Cl. 526-61.000.
Buhrer, Erwin. Method and apparatus for pouring a mold with a selectable amount of casting material. 4,114,675, Cl. 164-4.000.
Buhrer, Erwin. Mold forming apparatus with mold flask bracer means. 4,114,678, Cl. 164-207.000.
Bukowick, Peter Anthony, to Hercules Incorporated. Certain oximinyl allophanates and their use as herbicides. 4,115,093, Cl. 71-88.000.
Bull, Dale L.; and Rautiola, Norman A., to Nartron Corporation. Lamp assembly. 4,115,844, Cl. 362-382.000.

Bullard, Wade A. Method of reprinting on a print removable paper product. 4,115,602, Cl. 427-140.000.
Bulson, Walter T.; Christie, Peter A.; and Jones, James R., to Armstrong Cork Company. Process for producing metal halide-amide reaction product. 4,115,423, Cl. 260-429.500.
Bultmann, Friedrich, to Daimler-Benz Aktiengesellschaft. Retarder for vehicles, especially heavy trucks. 4,114,734, Cl. 188-274.000.
Bun, Isaak Mozesovich: *See—*
Nudelman, Boris Izrailovich; Sventsitsky, Alexandr Sergeevich; Bikbau, Marsel Yanovich; Bun, Isaak Mozesovich; and Kevvai, Arnold Arnoldovich, 4,115,138, Cl. 106-100.000.
Buonadonna, Victor R.; Richardson, Ralph J.; Rasmussen, Richard L.; and Jeffers, William Q., to McDonnell Douglas Corporation. Carbon monosulfide generating process. 4,115,168, Cl. 149-109.600.
Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Emulsifying and separating latex and solvent. 4,115,316, Cl. 252-359.00A.
Burley, John Charles. Method and apparatus for cutting cloth. 4,115,681, Cl. 219-10.570.
Burnham, Geoffrey Desmond: *See—*
Laird, Richard Alan; and Burnham, Geoffrey Desmond, 4,114,911, Cl. 280-11.37F.
Burns, Howard Mathew. Holder device. 4,114,925, Cl. 281-45.000.
Burroughs Corporation: *See—*
Bluhm, Vernon A., 4,115,872, Cl. 365-163.000.
Hutchison, Robert V.; Gregg, Peter P.; and MacBride, James J., 4,115,836, Cl. 361-382.000.
Burt, Harold S., to Conco Inc. Vacuum pickup head. 4,114,939, Cl. 294-64.00R.
Burton, John David: *See—*
Selwood, Peter Richard, deceased; Selwood, Timothy John, executor; Axtell, Martin John Shelley, executor; and Burton, John David, 4,115,041, Cl. 417-440.000.
Burton, Ralph Ashby, to Northwestern University. Ignition enhancement chamber for internal combustion engine. 4,114,567, Cl. 123-30.00A.
Burwell, Clifton J.: *See—*
Sturman, Oded E.; and Grill, Benjamin, 4,114,647, Cl. 137-624.200.
Busch, Theodore N., to Caswell Equipment Co. Ventilation method and system for protecting shooters from pollutants. 4,114,521, Cl. 98-36.000.
Bushey, William Raymond, to Du Pont de Nemours, E. I., and Company. Process for treating zircon-containing foundry sand. 4,115,345, Cl. 260-38.000.
Butcher, Norman P. Tube coupling for vacuum cleaners. 4,114,927, Cl. 285-7.000.
Butler, Stanley Milton, to Direct Power Limited. Opposed piston internal combustion engine-driven pump. 4,115,037, Cl. 417-341.000.
Butti, James Paul, to Babcock & Wilcox Company, The. Reactor pressure vessel support. 4,115,194, Cl. 176-87.000.
Butts, William O.: *See—*
Putnam, Hubert P.; and Butts, William O., 4,115,869, Cl. 364-900.000.
Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Scherbakov, Vsevolod Sergeevich; and Gruzintsev, Igor Andreevich. Suction valve of the piston compressor. 4,115,043, Cl. 417-559.000.
Byrne, James C.; and Talmage, Dennis D., to Gulf & Western Manufacturing Company. Control circuit for vehicle compartment light. 4,115,723, Cl. 315-84.000.
C. van der Lely N.V.: *See—*
Gijsbers, Roelof, 4;114,815, Cl. 241-45.000.
van der Lely, Ary, 4,114,695, Cl. 172-47.000.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 4,114,696, Cl. 172-59.000.
Cale, Albert D., Jr.: *See—*
Lunsford, Carl D.; and Cale, Albert D., Jr., 4,115,587, Cl. 424-324.000.
Cali, Frank J. Retractable breaker switch toggle handle. 4,115,669, Cl. 200-331.000.
Cambron, Robert B.: *See—*
Glover, Glen A., Jr.; and Cambron, Robert B., 4,114,518, Cl. 92-208.000.
Camillo, Edward: *See—*
Humphreys, Wesley G.; and Camillo, Edward, 4,114,805, Cl. 236-1.00G.
Campana, Patsie Carmen. Thermal torch and method. 4,114,863, Cl. 266-48.000.
Campbell, Charles M.: *See—*
Blaylock, Arnold O.; Falconer, Robert P.; and Campbell, Charles M., 4,114,789, Cl. 224-42.10E.
Canadian Foremost Ltd.: *See—*
Saruwatari, Minoru, 4,114,375, Cl. 60-372.000.
Canadian Patents & Development Limited: *See—*
Wallace, Rebecca; Ashton, Fraser E.; Perry, Malcolm B.; and Diena, Benito B., 4,115,543, Cl. 424-8.000.
Cancilleri, Ezio, to Cean S.p.A. Process for manufacturing enamels of polyester-polyimide resins, particularly for coating electric conductors. 4,115,337, Cl. 260-29.20N.
Capone, David M., to Thermo-Lab Instruments, Inc. Apparatus for sampling a gaseous stream. 4,115,229, Cl. 204-195.00S.
Capone, David M., to Thermo-Lab Instruments, Inc. Apparatus for conveying a gas sample through an analyzer chamber. 4,115,235, Cl. 204-195.00S.
Capowski, Robert S.; Wright, Lewis W.; and Zimmerman, Terrence K., to International Business Machines Corporation. Channel bus controller. 4,115,854, Cl. 364-200.000.
Carborundum Company, The: *See—*
Holt, William H., 4,115,271, Cl. 210-247.000.
Carey, John Laurence: *See—*
Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, 4,115,404, Cl. 260-343.30R.
Carl Freudenberg, Firma: *See—*
Disko, Eberhard, 4,114,224, Cl. 15-229.00A.
Carl Manufacturing Co., Ltd.: *See—*
Mori, Chuzo, 4,114,301, Cl. 40-389.000.
Carl Still, Firma: *See—*
Lorenz, Kurt; Dungs, Horst; Speich, Peter; and Kurtz, Roman, 4,115,202, Cl. 202-99.000.
Carlin, Jack M. Rupturable flow retarding disk for fire hoses. 4,114,653, Cl. 138-45.000.
Carlizza, Jean: *See—*
Fustier, Geraud; Langeron, Jean-Paul; de la Bastie, Joseph; and Carlizza, Jean, 4,115,113, Cl. 75-206.000.
Carlo Erba S. p. A.: *See—*
Doria, Gianfederico; Giraldi, PierNicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,115,567, Cl. 424-250.000.
Carlson, Carl S.; Kinsella, Lawrence M.; and Pixley, Daniel L., to Diceon Electronics, Inc. Method of thermally dimensionally stabilizing a printed circuit board. 4,115,185, Cl. 156-634.000.
Carlson, Glenn R., to Rohm and Haas Company. 1-Aryl-4-pyridones. 4,115,101, Cl. 71-94.000.
Carlucci, James J. Finger wheel. 4,114,697, Cl. 172-543.000.
Carmack, Gary: *See—*
Freiser, Henry; James, Helen J.; Carmack, Gary; Cattrall, Robert W.; and Kneebone, Barbara M., 4,115,209, Cl. 204-1.00T.
Carolan, Raymond Jerome, to Boeing Company, The. Water closet tank drain valve. 4,114,203, Cl. 4-317.000.
Carpentier, Theodore, to Universal Power Corporation. Drive means for electric generators particularly adapted in floating power plant. 4,114,468, Cl. 74-410.000.
Carpio, Ronald A.: *See—*
Nardi, John C.; Hussey, Charles L.; King, Lowell A.; and Carpio, Ronald A., 4,115,390, Cl. 260-290.0HL.
Carroll, Frank E., to Carroll Research, Inc. Sheet metal structural shape and use in building structures. 4,114,335, Cl. 52-336.000.
Carroll, John C.; and Carroll, John M. Roll conveyor for a machine tool. 4,114,749, Cl. 193-35.00C.
Carroll, John M.: *See—*
Carroll, John C.; and Carroll, John M., 4,114,749, Cl. 193-35.00C.
Carroll Research, Inc.: *See—*
Carroll, Frank E., 4,114,335, Cl. 52-336.000.
Carter, Sidney T., to A-T-O Inc. Wrap neck label mechanism. 4,115,179, Cl. 156-444.000.
Cartier, George E., to Monsanto Company. Abrasion resistant coating compositions. 4,115,622, Cl. 428-409.000.
Cash, George V.: *See—*
Smashey, Russell W.; Frey, Elmer L.; Cash, George V.; and Irons, George S., 4,115,112, Cl. 75-171.000.
Caswell Equipment Co.: *See—*
Busch, Theodore N., 4,114,521, Cl. 98-36.000.
Catanese, Carmen Anthony; Harrison, James Berkeley, Jr.; and Lindburg, Norman Lee, to RCA Corporation. Electron multiplier with high energy electron filter. 4,115,719, Cl. 313-105.00R.
Caterpillar Tractor Co.: *See—*
Boggs, Roger L., 4,114,958, Cl. 305-56.000.
Davis, Warren W.; and Keedy, David E., 4,114,368, Cl. 60-39.16R.
Glover, Glen A., Jr.; and Cambron, Robert B., 4,114,518, Cl. 92-208.000.
Johnson, Howard L., 4,114,516, Cl. 91-420.000.
Sanders, Julian V., 4,114,716, Cl. 180-68.00R.
Cattaneo, Maurizio; and Bertone, Antonino, to FIAT Societa per Azioni. Servo-assisted hydraulic braking system. 4,114,376, Cl. 60-548.000.
Cattrall, Robert W.: *See—*
Freiser, Henry; James, Helen J.; Carmack, Gary; Cattrall, Robert W.; and Kneebone, Barbara M., 4,115,209, Cl. 204-1.00T.
Cean S.p.A.: *See—*
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Ceballos, Arthur: *See—*
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Ceballos, Dolores D.: *See—*
Beal, Steven G.; Ceballos, Arthur; and Ceballos, Dolores D., 4,114,762, Cl. 209-78.000.
Cecka, Andrew M., to Fansteel, Inc. Tennis racket assembly. 4,114,880, Cl. 273-73.00G.
Celanese Corporation: *See—*
Slinkard, William E., 4,115,442, Cl. 562-548.000.
Cenci, Harry J.; and Swift, Graham, to Rohm and Haas Company. Method for curing polymers containing hydroxyalkylamide groups by means of nonpolymeric polycarboxylic acids, and compositions. 4,115,637, Cl. 526-56.000.
Centro-Maskin Goteborg AB: *See—*
Johansson, Bengt, 4,115,151, Cl. 148-9.500.
Johansson, Bengt, 4,115,152, Cl. 148-9.500.
Johansson, Bengt, 4,115,153, Cl. 148-9.500.
Ceperley, Peter Hutson. Traveling wave heat engine. 4,114,380, Cl. 60-721.000.
Ceraver S.A.: *See—*
Willem, Michel, 4,114,676, Cl. 164-108.000.

CGR Ultrasonic: *See—*
Dory, Jacques, 4,114,456, Cl. 73-622.000.
Chadha, Naresh Kumar; Partridge, John Joseph, Jr.; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Assymmetric synthesis of optically active prostaglandins. 4,115,452, Cl. 260-586.00R.
Chadwick, David H., to Mobay Chemical Corporation. Hydroxyl containing materials from distillation residue obtained by distilling hexamethylene diamine from a mixture thereof with by-products obtained in the hydrogenation of adiponitrile to produce hexamethylene diamine. 4,115,304, Cl. 521-167.000.
Chakirof, Dimitri A., to Upjohn Company, The. Stabilized polyol compositions and polyurethane foams. 4,115,300, Cl. 521-171.000.
Chakrabarti, Jiban Kumar; and Tupper, David Edward, to Lilly Industries Limited. Thieno[3,2-b]-[1,5]benzodiazepines. 4,115,568, Cl. 424-250.000.
Chakrabarti, Jiban Kumar; and Tupper, David Edward, to Lilly Industries Limited. Benzodiazepine derivatives. 4,115,574, Cl. 424-250.000.
Chakravarti, Kalidas: *See—*
Lazarus, Stanley David; and Chakravarti, Kalidas, 4,115,350, Cl. 260-45.80A.
Chalker, Betty B. Method of fitting a garment. 4,114,277, Cl. 33-14.000.
Chambers, Hubert Harold; and Tear, Brian John, to Laporte Industries Limited. Method of preparing metal oxide slurries. 4,115,144, Cl. 106-300.000.
Chambers, Virginia Edith May: *See—*
Bayly, Russell James; Chambers, Virginia Edith May; and Monks, Reginald, 4,115,065, Cl. 23-230.600.
Chambley, Phillip W.; and Norris, Alan H., to Champion International Corporation. Pile fabric. 4,114,549, Cl. 112-410.000.
Champion International Corporation: *See—*
Brown, William A., 4,114,799, Cl. 229-72.000.
Chambley, Phillip W.; and Norris, Alan H., 4,114,549, Cl. 112-410.000.
Mulroy, Terence J., 4,114,795, Cl. 229-23.00R.
Sieffert, William G., 4,114,757, Cl. 206-424.000.
Vassiliades, Anthony E.; Vincent, David N.; and Shroff, Shrenik, 4,115,474, Cl. 260-855.000.
Chandler, Roy L., to Geno Corporation. Electrical switch assembly. 4,115,670, Cl. 200-5.00R.
Chang, Wei-Yi; and Cheng, Chen-Yen. Method and apparatus for tracking the sun for use in a solar collector with linear focusing means. 4,114,596, Cl. 126-270.000.
Chapin, Leo N.: *See—*
Bach, Frederick O.; Chapin, Leo N.; and Freed, Robert, 4,115,289, Cl. 252-62.10P.
Charbonnages de France: *See—*
Valantin, Alfred Alphonse Marie, 4,114,385, Cl. 405-298.000.
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Coughlin, Robert W.; Charles, Marvin; and Allen, Billy R., 4,115,198, Cl. 195-63.000.
Chas. Olson & Sons: *See—*
Nelson, Eldrid W., 4,114,947, Cl. 297-344.000.
Chas. S. Tanner Co.: *See—*
Lindemann, Martin K., 4,115,306, Cl. 260-17.00A.
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Every, Richard L.; and Jacob, Jose T., 4,115,139, Cl. 106-100.000.
Chemetron Corporation: *See—*
Moore, Donald G., 4,115,679, Cl. 219-10.55M.
Moore, Donald G., 4,115,680, Cl. 219-10.55B.
Chemische Werke Huls AG: *See—*
Coenen, Alfred; Kosswig, Kurt; and Prominski, Gunter, 4,115,530, Cl. 423-488.000.
Kalka, Josef, 4,115,640, Cl. 528-483.000.
Muller, Wolfgang, 4,115,460, Cl. 260-648.00R.
Cheng, Chen-Yen: *See—*
Chang, Wei-Yi; and Cheng, Chen-Yen, 4,114,596, Cl. 126-270.000.
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Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
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Chesebrough-Pond's Inc.: *See—*
Russo, Ronald D., 4,114,607, Cl. 128-2.080.
Russo, Ronald D., 4,114,608, Cl. 128-2.080.
Chevron Research Company: *See—*
Anshus, Byron E., 4,115,399, Cl. 260-326.5FN.
Blanton, William A., Jr.; and Flanders, Robert L., 4,115,249, Cl. 208-120.000.
Flanders, Robert L.; and Blanton, William A., Jr., 4,115,250, Cl. 208-120.000.
Flanders, Robert L.; and Blanton, William A., Jr., 4,115,251, Cl. 208-120.000.
Jennings, Harley Y., Jr., 4,114,956, Cl. 302-66.000.
Mulaskey, Bernard F., 4,115,248, Cl. 208-112.000.
Nielsen, William C., 4,115,072, Cl. 422-207.000.
Chiba, Jiro: *See—*
Suzuki, Yoshiro; Kokubu, Yoshinori; Chiba, Jiro; Hara, Morihisa; Nagahara, Shigehiro; and Yamamoto, Koichi, 4,115,132, Cl. 106-53.000.
Chiba, Takashi, to Fujitsu Limited. Buffer memory control device having priority control units for priority processing set blocks and unit blocks in a buffer memory. 4,115,855, Cl. 364-200.000.
Chibana, Masanobu; Futamase, Tsuyoshi; and Yamada, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having an electronic filter with time variant slope. 4,114,498, Cl. 84-1.190.
Chicago Bridge & Iron Company: *See—*
Orndorff, James A., Jr.; Wozniak, Robert S.; and Andrepont, John S., 4,114,556, Cl. 114-230.000.
Chicago Pneumatic Tool Company: *See—*
Bouplon, Edward J., 4,114,701, Cl. 175-84.000.
Chino, Nobuo: *See—*
Hane, Yoshio; Chino, Nobuo; Murata, Katsuhiro; and Harayama, Akira, 4,114,282, Cl. 33-180.00R.
Choay S.A.: *See—*
Lormeau, Jean-Claude; Goulay, Jean; and Vairel, Edmond, 4,115,551, Cl. 424-105.000.
Chou, Ta Sen; and Zintgraff, Gary D., to Eli Lilly and Company. Process for preparing pure cefamandole from alkali metal and ammonium salts thereof. 4,115,644, Cl. 544-20.000.
Chow, Thomas, to Arco Industries Ltd. Toy guns. 4,114,311, Cl. 46-192.000.
Chr. Hansen's Laboratory, Inc.: *See—*
Porubcan, Randolph S.; and Sellars, Robert L., 4,115,199, Cl. 195-96.000.
Christ, Alfred, to Escher Wyss Limited. Hydrostatic supporting device including bearing shoe. 4,114,959, Cl. 308-3.500.
Christie, Peter A.: *See—*
Bulson, Walter T.; Christie, Peter A.; and Jones, James R., 4,115,423, Cl. 260-429.500.
Christner, Larry G.; Nagle, Dennis C.; and Watson, Paul R., to United Technologies Corporation. Method for fabricating a carbon electrode substrate. 4,115,528, Cl. 423-449.000.
Christner, Larry G.; and Nagle, Dennis C., to United Technologies Corporation. Electrochemical cell comprising a ribbed electrode substrate. 4,115,627, Cl. 429-44.000.
Chrysler Corporation: *See—*
Platzer, George E., Jr., 4,114,574, Cl. 123-117.00R.
Chu, Cheng-Hsien: *See—*
Stark, William H.; and Chu, Cheng-Hsien, 4,115,517, Cl. 423-243.000.
Chung, Alfred: *See—*
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Ciba-Geigy AG: *See—*
Aeschlimann, Peter, 4,115,053, Cl. 8-2.50A.
Evans, Graham; Fryberg, Mario; Stauner, Thomas; Tschopp, Paul; and Leppard, David G., 4,115,121, Cl. 96-56.300.
Koller, Stefan; Karlen, Urs; Kneubuhler, Werner; and Defago, Raymond, 4,115,056, Cl. 8-39.00B.
Rossi, Alberto; and Egli, Christian, 4,115,416, Cl. 260-413.000.
Ciba-Geigy Corporation: *See—*
Andrews, Christopher Michael, 4,115,296, Cl. 528-92.000.
Boger, Manfred; and Kristiansen, Odd, 4,115,561, Cl. 424-211.000.
Boger, Manfred; and Drabek, Jozef, 4,115,583, Cl. 424-300.000.
Bozzi, Edward G.; and Nelson, Robert C., 4,115,328, Cl. 260-24.000.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,115,231, Cl. 204-159.220.
Darms, Roland; Pfeifer, Josef; and Kvita, Vratislav, 4,115,359, Cl. 528-170.000.
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Frei, Jorg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,115,575, Cl. 424-250.000.
Garner, Robert; and Petitpierre, Jean Claude, 4,115,450, Cl. 260-558.00A.
Kocsis, Karoly; Fechtig, Bruno; and Bickel, Hans, 4,115,566, Cl. 424-246.000.
Loeffler, Herbert H., 4,114,811, Cl. 239-288.500.
Ramanathan, Visvanathan, 4,115,381, Cl. 260-207.100.
Rohr, Otto, 4,115,430, Cl. 260-465.00D.
Roth, Martin; Darms, Roland; and Pfeifer, Josef, 4,115,368, Cl. 528-229.000.
Schurter, Rolf; Rempfler, Hermann; and Fory, Werner, 4,115,100, Cl. 71-94.000.
Cieslok, Gunter: *See—*
Braun, Hans; Cieslok, Gunter; and Wolf, Franz, 4,114,490, Cl. 83-303.000.
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., to BASF Wyandotte Corporation; BASF Wyandotte Corporation; and BASF Wyandotte Corporation. Compositions for souring and softening laundered textile materials, method of preparing the same, and stock solutions prepared therefrom. 4,115,281, Cl. 252-8.800.
Cime Bocuze: *See—*
Fustier, Geraud; Langeron, Jean-Paul; de la Bastie, Joseph; and Carlizza, Jean, 4,115,113, Cl. 75-206.000.

Cines, Martin R., to Phillips Petroleum Company. Production of carbon monoxide. 4,115,524, Cl. 423-415.00A.

Cipris, Divna, to Allied Chemical Corporation. Selenium- and tellurium-coated metal electrodes. 4,115,238, Cl. 204-290.00R.

Cirkel, Hans-Jurgen, to Kraftwerk Union Aktiengesellschaft. Power capacitor. 4,115,833, Cl. 361-303.000.

Clarion Company Limited: *See—*
Takagi, Satoshi; Watanabe, Wataru; and Yokota, Tadashi, 4,115,826, Cl. 360-96.000.

Clark, Albert L., to Pac-Craft Products, Inc. Scissors lift work platform. 4,114,854, Cl. 254-122.000.

Clark Equipment Company: *See—*
Doolittle, Mac R., 4,114,724, Cl. 180-155.000.

Clark, Fred E., Jr.: *See—*
Skrovanek, Ambroz K.; and Clark, Fred E., Jr., 4,115,668, Cl. 179-170.200.

Clark, John Campbell, to Coal Industry (Patents) Limited. Method of and apparatus for sensing strain in strained members. 4,114,429, Cl. 73-88.50R.

Clark, Kendall; and Shapiro, Milton R., to International Business Machines Corporation. Laser piercing of materials by induced shock waves. 4,115,683, Cl. 219-121.00L.

Clark, Leonard R.; and Meehl, David W., to Standard Pressed Steel Co. Method of assembling storage system. 4,114,249, Cl. 29-513.000.

Clark, Michael J.; and Rohrmoser, Howard L., to Dow Chemical Company, The. Separation process. 4,115,080, Cl. 55-54.000.

Clark, Thomas D. Method and apparatus for photographic recordation of multiple images. 4,115,002, Cl. 355-54.000.

Clark, Trevor Percival. Freeze thaw indicator. 4,114,443, Cl. 73-358.000.

Clarke-Gravely Corporation: *See—*
Jones, Terry H.; and Oakes, John J., 4,114,229, Cl. 15-320.000.

Clarke, John F., to United States of America, Energy. High beta plasma operation in a toroidal plasma producing device. 4,115,190, Cl. 176-3.000.

Clauss, Julius Alphonse, to Borg-Warner Corporation. Planetary transmission mechanism. 4,114,478, Cl. 74-781.00R.

Cleary, James G.: *See—*
Kulkarni, Avinash D.; and Cleary, James G., 4,115,513, Cl. 423-56.000.

Clifton, Kenneth C.: *See—*
Gladow, Dean E.; and Clifton, Kenneth C., 4,114,869, Cl. 270-37.000.

Close, Ralph E.; and Oroshnik, William, to SCM Corporation. Synthesis of acetylenic compounds useful in preparing dehydrophytols and Vitamin E. 4,115,466, Cl. 260-678.000.

Closson, Addison W., Jr. Laminated thermoplastic counter stiffener. 4,115,612, Cl. 428-172.000.

Clouser, Paul Lee: *See—*
Cole, Sidney Michael; and Clouser, Paul Lee, 4,115,749, Cl. 333-31.00R.

Coal Industry (Patents) Limited: *See—*
Clark, John Campbell, 4,114,429, Cl. 73-88.50R.

Coats Company, Inc., The: *See—*
Holladay, Jimmie L.; and Scott, Ray A., 4,114,672, Cl. 157-1.240.

Coats, Ronald Galen. Distribution rectifier for inlet manifold systems. 4,114,580, Cl. 123-141.000.

Coblitz, Sanford E.; and Bjalme, Bengt G., to Wheeler Manufacturing Corporation. Pipe cutter and beveler. 4,114,485, Cl. 82-4.00C.

Cochran, C. Norman: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., 4,115,215, Cl. 204-67.000.

Coenen, Alfred; Kosswig, Kurt; and Prominski, Gunter, to Chemische Werke Huls AG. Process for obtaining gaseous hydrogen chloride from dilute, aqueous hydrochloric acid. 4,115,530, Cl. 423-488.000.

Coggins, Robert Wayne, to Combustion Engineering, Inc. Combined separator vessel and gas absorber vessel. 4,115,084, Cl. 55-176.000.

Cohen, Merrill. Growing plants in an aquarium. 4,114,316, Cl. 47-64.000.

Cohen, Teddy. Foldable multi-purpose cart. 4,114,914, Cl. 280-30.000.

Colclough, Terence; and Swinney, Brian, to Exxon Research and Engineering Company. Lubricating compositions. 4,115,287, Cl. 252-48.200.

Cole, Sidney Michael; and Clouser, Paul Lee, to United States of America, Air Force. Microwave hybrid phase matching spacer. 4,115,749, Cl. 333-31.00R.

Coleman, Eugene W., to Picker Corporation. Package and method of making. 4,114,758, Cl. 206-471.000.

Colery, Jean-Claude: *See—*
Brichard, Jean; and Colery, Jean-Claude, 4,115,519, Cl. 423-279.000.

Coles, Albert Edward: *See—*
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Colgate Palmolive Company: *See—*
Vidra, James David; and Nachtigal, Julius Harvey, 4,115,546, Cl. 424-50.000.

Colle, Pierre: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.

Colleoni, Gianfranco: *See—*
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Collette, Ronald J.: *See—*
MacAfee, Jerry D.; and Collette, Ronald J., 4,114,856, Cl. 251-306.000.

Colombier, Gabriel: *See—*
Patrie, Jos; and Colombier, Gabriel, 4,115,212, Cl. 204-38.00E.

Colonna, Jerome; Monville, Jean-Michel; and Munoz, Francois, to SKF Compagnie d'Applications Mecaniques. Spring for free-wheeling device. 4,114,739, Cl. 192-41.00A.

Colpitts, Ralph W., to Polythetics, Inc. Dentures and process for making the same. 4,115,488, Cl. 264-17.000.

Combustion Engineering, Inc.: *See—*
Coggins, Robert Wayne, 4,115,084, Cl. 55-176.000.
Groves, Malcolm Duane, 4,115,700, Cl. 250-518.000.

Combustion Equipment Associates Inc.: *See—*
Lyshkow, Norman A., 4,115,067, Cl. 422-56.000.

Commander, Robert Duncan; Gardner, Peter Alan Edward; and Taylor, John Richard, to International Business Machines Corporation. Track following servosystem for data storage apparatus. 4,115,823, Cl. 360-77.000.

Commissariat a l'Energie Atomique: *See—*
Abbes, Claude; Gournier, André; Rouaud, Christian; and de Villepoix, Raymond, 4,114,907, Cl. 277-206.00R.
Jogand, Patrick, 4,115,192, Cl. 176-40.000.
Marchand, Joseph; and Puig, Jean-Rene, 4,115,303, Cl. 521-53.000.
Saint-Lebe, Louis; Berger, Gerard; Michel, Jean-Pierre; Huchette, Michel; and Fleche, Guy, 4,115,146, Cl. 127-38.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Bolto, Brian Alfred; and Eppinger, Kurt Hermann, 4,115,297, Cl. 521-32.000.

Communications Satellite Corporation: *See—*
Van Ommering, Gerrit; Stockel, Joseph F.; and Dunlop, James D., 4,115,630, Cl. 429-72.000.

Compagnie des Terminaux Marins Coterm: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines: *See—*
Lamy, Jacques Edouard, 4,114,392, Cl. 405-207.000.

Compagnie Internationale de Minerallurgie-CIM: *See—*
Dewitte, Jean; and Letourneur, Pierre, 4,115,504, Cl. 264-221.000.

Compagnie Internationale pour l'Informatique Cii Honeywell Bull: *See—*
Lesieur, Jean-Paul, 4,115,818, Cl. 360-5.000.

Compagnie Internationale pour l'Informatique Cil Honeywell Bull: *See—*
Labeye-Voisin, Gerard Francois; and Hostein, Claude, 4,115,856, Cl. 364-200.000.

Compagnie Royale Asturienne des Mines: *See—*
Dekeister, Roger; Lemaire, Gilbert; and Marzys, Daniel, 4,115,210, Cl. 204-10.000.

Comperatore, John A., to PPG Industries, Inc. Shaping glass sheets by gravity sagging on solid molds. 4,115,090, Cl. 65-25.00A.

Compton, Thomas A.: *See—*
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,114,563, Cl. 118-63.000.

Conco Inc.: *See—*
Burt, Harold S., 4,114,939, Cl. 294-64.00R.

Condon, David C.: *See—*
Baeck, Henry S.; Bennett, William C.; Condon, David C.; Gillette, Harold R.; and Herbert, Donald G., 4,114,750, Cl. 400-279.000.

Cone, Charles N.; and Steinberg, Julius M., to Pacific Adhesives, Inc. Method of making glued, laminated assemblies in prepressed and final pressed stages. 4,115,178, Cl. 156-291.000.

Conservation Controls Corp.: *See—*
Naseck, Melvin L.; and Hickman, Mark R., 4,114,807, Cl. 236-1.00E.

Consolidated Packaging, Inc.: *See—*
Voges, Fred Paul, 4,114,796, Cl. 229-27.000.

Container Corporation of America: *See—*
Gardner, Jeffrey M., 4,114,798, Cl. 229-43.000.

Continental Oil Company: *See—*
Fertl, Walter H.; and Gant, Preston L., 4,115,688, Cl. 250-253.000.
Maxson, Orwin G.; and Achenbach, Gary D., 4,115,606, Cl. 427-386.000.
Sweany, Glenn A., 4,115,246, Cl. 208-56.000.

Cooper, George Anthony, to Institut Cerac SA. Method and apparatus for breaking a hard compact material such as rock or concrete. 4,114,950, Cl. 299-15.000.

Cooper, James B. Arithmetic dice game. 4,114,290, Cl. 35-31.00R.

Cooper Laboratories, Inc.: *See—*
Diamond, Julius, 4,115,447, Cl. 260-553.00R.
Diamond, Julius, 4,115,448, Cl. 260-553.00A.

Cooper, Robin D. G., to Eli Lilly and Company. Alkoxycarbonylethylthio-azetidinones and process for their preparation. 4,115,383, Cl. 260-239.00A.

Cornelius, Richard T.: *See—*
Austin, Forrest L.; and Cornelius, Richard T., 4,114,812, Cl. 239-492.000.

Cornell-Dubilier Electric Corp.: *See—*
Robinson, William M.; and Lobo, Edward, 4,115,834, Cl. 361-318.000.

Corno, Maria Luisa: *See—*
Doria, Gianfederico; Giraldi, PierNicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,115,567, Cl. 424-250.000.

Corrado, Giovanni, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Unsaturated polyesteramides, method for their production and hardenable resins produced from the said polyesteramides. 4,115,370, Cl. 260-22.0CQ.

Corte, Herbert; Heller, Harold; Lange, Michael; and Netz, Otto, to Bayer Aktiengesellschaft. Process for treating drinking water and sewage. 4,115,261, Cl. 210-40.000.

Cosby, Lowell Alan; Fiato, Rocco Anthony; and Vidal, Jose Luis, to Union Carbide Corporation. Catalyst and process for producing polyhydric alcohols and derivatives. 4,115,433, Cl. 260-449.00L.

Coster, Charles S. Module for forming articles of furniture. 4,114,964, Cl. 312-198.000.

Cotton, Lawrence M., to Stanley Works, The. Apparatus for routing designs in panels. 4,114,664, Cl. 144-134.00D.

Cotton, Lou S., to United Technologies Corporation. Aerodynamic surface load sensing. 4,115,755, Cl. 340-27.00R.

Coughlin, Robert W.; Charles, Marvin; and Allen, Billy R. Method of immobilization of biologically active organic substances including enzymes. 4,115,198, Cl. 195-63.000.

Coulon, Jean-Claude: *See—*
Bourggraff, Robert; and Coulon, Jean-Claude, 4,115,091, Cl. 65-99.00A.

Coulter Electronics, Inc.: *See—*
Brunsting, Albert, 4,115,011, Cl. 356-246.000.

Council, Clifton T.: *See—*
Craig, Robert J. C.; and Council, Clifton T., 4,114,402, Cl. 64-15.00B.

Cowman, Charles D., Jr.; and Shepherd, John P. G., to Minnesota Mining and Manufacturing Company. Method of developing an anticlastic concentrator. 4,115,486, Cl. 264-1.000.

Crabb, Jerry A.: *See—*
Johnson, Winston O.; and Crabb, Jerry A., 4,114,279, Cl. 33-178.00R.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. 2,3-Dichloro-4-[(substituted-sulfonyl)-phenoxy]-acetic acids. 4,115,402, Cl. 260-332.20A.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. N-pyrazinecarbonyl-N'-substituted-sulfamoylguanidine and processes for preparing same. 4,115,573, Cl. 424-250.000.

Craig, Robert J. C.; and Council, Clifton T., to Litton Systems, Inc. Flexure hinge assembly. 4,114,402, Cl. 64-15.00B.

Cram, Phillip J.; and Redford, David A., to Texaco Exploration Canada Ltd. Low-temperature oxidation method for the recovery of heavy oils and bitumen. 4,114,690, Cl. 166-261.000.

Cramer, John J.: *See—*
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,115,281, Cl. 252-8.800.

Crawford, Irvin H.: *See—*
Etter, Doyle O.; and Crawford, Irvin H., 4,115,125, Cl. 96-83.000.

Crawley, Richard K. Window and door construction. 4,114,317, Cl. 49-209.000.

Creach, Wally E., to La Barge, Inc. Temperature indicating apparatus. 4,114,447, Cl. 73-362.0AR.

Creus, Rufino, to Spurmach Espana S. L. Driven spinning ring device for yarn machines. 4,114,359, Cl. 57-124.000.

Crippen, Richard E.: *See—*
Hingarh, Hemraj K.; and Crippen, Richard E., 4,115,797, Cl. 357-46.000.

Crittenden, Jack H.; and Bitson, Joseph W., to General Dynamics Corporation. Moving coil miniature angular rate sensor. 4,114,451, Cl. 73-504.000.

Croasdale, William H., to American Can Company. Shield and acoustical assembly. 4,114,725, Cl. 181-205.000.

Croisier, Alain; and Jacquart, Christian, to International Business Machines Corporation. Telephone line interfacing circuit with directional transfer of ringing current and off-hook indications. 4,115,660, Cl. 179-2.50R.

Cross Manufacturing Company (1938) Ltd.: *See—*
Cross, Michael Ellison; and Coles, Albert Edward, 4,114,639, Cl. 137-246.220.

Cross, Michael Ellison; and Coles, Albert Edward, to Cross Manufacturing Company (1938) Ltd. Lubricated rotary valve with concentric sealing rings. 4,114,639, Cl. 137-246.220.

Crossland, William A.: *See—*
Mash, Derek H.; Crossland, William A.; and Morrissy, Joseph H., 4,114,990, Cl. 350-337.000.

Crouzet: *See—*
Muraz, Jean-Max; Payre, Michel; and Rampin, Pierre, 4,114,438, Cl. 73-194.00A.

Crouzet, Pierre Albert. Stable aqueous polyester-monomer emulsions. 4,115,336, Cl. 260-29.6NR.

Crowley, Donald P., to United States of America, Navy. Cook-off coating. 4,114,369, Cl. 60-200.00A.

Cruff, Carlton E.; and Harrison, William E., to United Technologies Corporation. Method and apparatus for drying investment casting molds. 4,114,285, Cl. 34-29.000.

Crump, Ronald Alfred; and McCain, Colin Christopher, to British Petroleum Company Limited, The. Biocidal compositions. 4,115,130, Cl. 106-15.00R.

Csoka, Frank S., to Fun Things, Inc. Peg game. 4,114,892, Cl. 273-265.000.

Cummings, Gary Eugene: *See—*
Dean, Charles Wallace; Cummings, Gary Eugene; and Harvey, Gary Lee, 4,114,340, Cl. 52-520.000.

Cummings, Weldon Clifford: *See—*
Brown, Gary Leigh; Cummings, Weldon Clifford; and Levine, Isaac Jacob, 4,115,639, Cl. 526-130.000.

Cuniberti, Mario; and Pinsenschaum, Edwin C., to Owens-Illinois, Inc. Article transfer method. 4,114,769, Cl. 214-152.000.

Cunningham, Franklin E.: *See—*
Bergquist, Dwight H.; Cunningham, Franklin E.; and Eggleston, Robert M., 4,115,592, Cl. 426-32.000.

Cutler-Hammer, Inc.: *See—*
Smith, Franklin E., 4,115,673, Cl. 200-315.000.

Cyrenne, Roland O. Paper machine draw roll. 4,115,189, Cl. 162-305.000.

D.B.A.: *See—*
Debrus, Philippe Maurice Henri, 4,114,513, Cl. 91-19.000.

Dacey, Raymond B.; and Stringer, Frederick David, to W. R. Grace & Co. Winding core for heat shrinkable film material. 4,114,756, Cl. 206-389.000.

Dacor Corporation: *See—*
Bohmrich, Jack L.; Bowden, William A., Jr.; and Pedersen, Vernon G., 4,114,389, Cl. 405-186.000.

daCosta, Harry H.; Foster, Victor W.; and Thornton, Charles G., deceased (by Thornton, Ella J., heir), to Motorola, Inc. Rotor bias means for miniature watch motors or the like. 4,115,713, Cl. 310-49.00R.

Dai Nippon Printing Co., Ltd.: *See—*
Noshiro, Atsumi; and Inoue, Yoshio, 4,115,329, Cl. 260-25.000.

Daido Tokushuko Kabushiki Kaisha: *See—*
Itoh, Tetsuro; Takahashi, Tetsuo; Kimura, Atsuyoshi; and Yamano, Seiichi, 4,115,111, Cl. 75-128.00P.

Daidone, Philip, to Vynacron Dental Co. Casting resins by polymerizing liquid monomer in mixture of particulated vinyl halide resins. 4,115,479, Cl. 260-884.000.

Daimler-Benz Aktiengesellschaft: *See—*
Bultmann, Friedrich, 4,114,734, Cl. 188-274.000.
Hornig, Rudolf; Beeskow, Bruno; and Worner, Gunter, 4,114,472, Cl. 74-574.000.

Dainippon Ink & Chemicals Inc.: *See—*
Sato, Hisato; Tazume, Masayuki; Yamaki, Takasi; Fujita, Yutaka; and Arai, Yoshi, 4,115,310, Cl. 252-299.000.

Damzog, Bodo: *See—*
Berges, Dietrich; Damzog, Bodo; and Saam, Ulrich, 4,114,361, Cl. 57-156.000.

Dana Corporation: *See—*
Phelps, Orville E., 4,114,404, Cl. 64-17.00A.
Sink, William H.; and Mitchener, Russel L., 4,114,743, Cl. 192-91.00R.

Danfoss A/S: *See—*
Fick, Willy Julius, 4,114,439, Cl. 73-194.00A.
Graversen, Niels Peter Grand, 4,114,806, Cl. 236-1.00C.
Knud, Vagn Valbjorn, 4,114,682, Cl. 165-39.000.
Petersen, Poul, 4,114,846, Cl. 248-68.0CB.
Schjelde, Ole Mikel; and Larsen, Ebbe, 4,115,039, Cl. 417-363.000.
Tankred, Hans Jurgen; and Madsen, Per Johan, 4,115,035, Cl. 417-312.000.
Thun, Niels, 4,114,457, Cl. 73-632.000.

D'Angelo, George J.: *See—*
Roy, Henry A.; and D'Angelo, George J., 4,114,202, Cl. 3-1.500.

Danielak, Joseph H. Paper holder. 4,114,824, Cl. 242-55.530.

Danna, Gary F.: *See—*
Welch, Clark M.; Danna, Gary F.; and Vigo, Tyrone L., 4,115,422, Cl. 260-429.300.

Dannenmann, John E., Jr.: *See—*
Johnson, Bill E.; and Dannenmann, John E., Jr., 4,115,849, Cl. 340-147.0CV.

Dansk Signal Industri A/S: *See—*
Franck, Bent, 4,114,262, Cl. 29-628.000.

Dantzler, Danny M.; Meehan, James Bartley; Everman, Wayne Fredrick; Fluent, Donald E.; and Sachs, Howard George, to Instrumentation Specialties Company. Automobile trunk antenna mount. 4,115,779, Cl. 343-715.000.

Dany, Franz-Josef: *See—*
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,115,522, Cl. 423-322.000.

Darms, Roland; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Crosslinkable mixtures of oligomers or polymers and diamines. 4,115,231, Cl. 204-159.220.

Darms, Roland; Pfeifer, Josef; and Kvita, Vratislav, to CIBA-Geigy Corporation. Crosslinkable polymers prepared from maleimidyl substituted trimellitic acid compounds. 4,115,359, Cl. 528-170.000.

Darms, Roland: *See—*
Roth, Martin; Darms, Roland; and Pfeifer, Josef, 4,115,368, Cl. 528-229.000.

Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., to Aluminum Company of America. Aluminum purification. 4,115,215, Cl. 204-67.000.

Dataproducts Corporation: *See—*
Arzoumanian, Aram Sarkis, 4,114,532, Cl. 101-93.480.

Datotek, Inc.: *See—*
Morgan, Barrie O., 4,115,657, Cl. 178-22.000.

Datta, Amitava, to Allegheny Ludlum Industries, Inc. Processing for cube-on-edge oriented silicon steel. 4,115,161, Cl. 148-111.000.

David Brown Tractors Limited: *See—*
Ashfield, Herbert Edward, 4,114,479, Cl. 74-801.000.

Davidson, Richard Robertson, to Welwyn Hall Research Association. Agglomerated fillers used in paper. 4,115,187, Cl. 162-168.00R.
Davies, Robert William; and Applegate, Barry George, to Molins Limited. Apparatus for the production of wrappers. 4,114,355, Cl. 53-389.000.
Davies, Robert William; and Willett, Peter Ernest, to Molins Limited. Blank feeding. 4,114,872, Cl. 271-91.000.
Davis, Gershon Jerry, to Stauffer Chemical Company. Process for preparing mono-alkyl acid phosphates having high mono-content and light color. 4,115,483, Cl. 260-980.000.
Davis, Warren W.; and Keedy, David E., to Caterpillar Tractor Co. Support for concentric turbine blade shroud. 4,114,368, Cl. 60-39.16R.
Davy Powergas Limited: *See*—
Fowler, Ray, 4,115,467, Cl. 260-683.00R.
Davydova, Larisa Mikhailovna: *See*—
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Dawkins, Terence Brian, to Terrytune Developments Limited. Internal-combustion engines. 4,114,585, Cl. 123-191.00M.
de la Bastie, Joseph: *See*—
Fustier, Geraud; Langeron, Jean-Paul; de la Bastie, Joseph; and Carlizza, Jean, 4,115,113, Cl. 75-206.000.
De La Moneda, Francisco H., to International Business Machines Corporation. Charge pumping device with integrated regulating capacitor and method for making same. 4,115,794, Cl. 357-23.000.
Dean, Charles Wallace; Cummings, Gary Eugene; and Harvey, Gary Lee, to Dean Steel Buildings, Inc. Self-interlocking standing seam for a building panel. 4,114,340, Cl. 52-520.000.
Dean Steel Buildings, Inc.: *See*—
Dean, Charles Wallace; Cummings, Gary Eugene; and Harvey, Gary Lee, 4,114,340, Cl. 52-520.000.
Deb, Satyendra Kumar, to Optel Corporation; and Grumman Aerospace Corporation. Energy storing photogalvanic cell having dielectric overcoating. 4,115,631, Cl. 429-111.000.
Debourge, Jean-Claude: *See*—
Lacroix, Guy; Debourge, Jean-Claude; and Ducret, Jacques, 4,115,559, Cl. 424-209.000.
De Brey, Robert J. Particle monitoring system. 4,114,557, Cl. 116-67.00R.
Debrus, Philippe Maurice Henri, to D.B.A. Step-by-step controlled servomechanism. 4,114,513, Cl. 91-19.000.
de Buck van Overstraeten, Jean-Pierre, to Uvetex Glarus AG. Fabric permeable to ultraviolet radiations. 4,115,615, Cl. 428-229.000.
Decker, Bernard J.; and Schmitt, Frederick J. Tree caddy. 4,114,766, Cl. 214-3.000.
Decker, Henry P. Woodworking bench for portable motor driven hand tools. 4,114,665, Cl. 144-286.00R.
Deets, Gary L., to Monsanto Company. Nitrogenous polymer composition emitting reduced amounts of hydrogen cyanide on combustion. 4,115,353, Cl. 260-45.75C.
Deex, Oliver D.; and Weiss, Virgil W., to Monsanto Company. Polyesters of 1,2-bis(hydroxyphenyl)ethanes and aromatic dicarboxylic acids. 4,115,357, Cl. 528-294.000.
Defago, Raymond: *See*—
Koller, Stefan; Karlen, Urs; Kneubuhler, Werner; and Defago, Raymond, 4,115,056, Cl. 8-39.00B.
DeFeo, Francesco; Gemini, Vincenzo; and Floridia, Luigi, to Montedison S.p.A. Process for the dyeing of fibrous materials containing basic functions in dyeing baths based on organic solvents. 4,115,057, Cl. 8-54.000.
Degen, Peter John; and Lucas, Anthony James, to Minnesota Mining and Manufacturing Company. Sunscreening compositions. 4,115,547, Cl. 424-60.000.
De Haan, Friedrich Jacobus, administrator: *See*—
Horowitz, Alexandre; Kymmell, Georg Rudolph Wolter; Krijne, Johannes; Beusink, Bernard Joseph, deceased; and De Haan, Friedrich Jacobus, administrator, 4,114,406, Cl. 68-24.000.
Dekeister, Roger; Lemaire, Gilbert; and Marzys, Daniel, to Compagnie Royale Asturienne des Mines. Method of electrolytically preparing a metal in pulverulent form. 4,115,210, Cl. 204-10.000.
Del Norte Technology, Inc.: *See*—
Metcalf, James E., 4,115,773, Cl. 343-7.0AG.
Delmon, Bernard; and Van Houte, Ghislain, to Unibra. Gas desulphurization. 4,115,518, Cl. 423-244.000.
DeLong, Donald C.: *See*—
Hamill, Robert L.; Stark, William M.; and DeLong, Donald C., 4,115,552, Cl. 424-118.000.
DelRaso, Americo. Golf putting game apparatus. 4,114,887, Cl. 273-176.0FA.
Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Weighing and transporting system. 4,114,707, Cl. 177-145.000.
Deluty, Michael E. Friction type exercising device. 4,114,875, Cl. 272-133.000.
Demers, Donald R., to Baird-Atomic, Inc. Method for determining the inorganic and metallo-organic salt content in an organic solvent. 4,115,063, Cl. 23-230.00M.
Den Norske Gipsplatefabrikk A/S: *See*—
Nilsen, Walter, 4,114,345, Cl. 52-745.000.
Dengel, Ferdinand, to Knoll AG. Method for making basically-substituted phenylacetonitriles. 4,115,432, Cl. 260-465.00E.
Denis, Vintsentas Ionovich: *See*—
Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich, 4,115,163, Cl. 148-175.000.
Denjean, Rene, to Air Industrie. Processes and installations for melting pig-iron in a cupola furnace. 4,114,862, Cl. 266-44.000.
Denman, Stephen A. Strip type coupling member. 4,115,609, Cl. 428-68.000.
Denny, Dann W., to General Electric Company. Thermostat, method of operating such electrical circuit and method of heating a temperature sensing means. 4,114,681, Cl. 165-26.000.
Denny, Dann W.: *See*—
Budlane, Stanley J.; Denny, Dann W.; and Hilty, Ronald L., 4,115,674, Cl. 200-329.000.
Deno, Kohji, to Murata Kikai Kabushiki Kaisha. Means for transferring, collecting and distributing trolleys in conveyer system. 4,114,539, Cl. 104-165.000.
Dent, Robert K. Method of fixing a threaded tube to a threaded shank or nipple. 4,114,250, Cl. 29-517.000.
Dentalwerk Burmoos Gesellschaft m.b.H.: *See*—
Malata, Peter; and Buchsteiner, Josef, 4,114,276, Cl. 32-26.000.
Dentsply Research and Development Corporation: *See*—
Gonser, Donald I., 4,114,622, Cl. 128-303.140.
Deschamps, Bernard F.: *See*—
Macuga, Henry J.; and Deschamps, Bernard F., 4,114,326, Cl. 52-28.000.
Deshpande, Narayan V., to Xerox Corporation. Resilient lithographic masters for direct printing. 4,114,535, Cl. 101-141.000.
Detecto Scales, Inc.: *See*—
Jacobs, Maxwell E.; and Aaldenberg, Eric R., 4,114,709, Cl. 177-156.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Note frequency generator for a polyphonic tone synthesizer. 4,114,496, Cl. 84-1.100.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Dieckelmann, Gerhard; Jeromin, Lutz; and Tollkotter, Gunther, 4,115,411, Cl. 260-348.260.
Deutsche Texaco Aktiengesellschaft: *See*—
Grasshoff, Hans Dieter, 4,115,282, Cl. 252-18.000.
de Villepoix, Raymond: *See*—
Abbes, Claude; Gournier, Andre; Rouaud, Christian; and de Villepoix, Raymond, 4,114,907, Cl. 277-206.00R.
de Weger, Dirk, to Zenith Radio Corporation. Doubly balanced demodulator for multiple channel FM stereo system. 4,115,663, Cl. 179-15.0BT.
de Wit, Hendrik; and Frentzel, Kurt Heinz, to Hunter Douglas International N.V. Locking mechanism for vertical slat blind. 4,114,673, Cl. 160-166.00A.
Dewitte, Jean; and Letourneur, Pierre, to Compagnie Internationale de Minerallurgie-CIM. Method for casting vitreous materials using the lost wax process. 4,115,504, Cl. 264-221.000.
Dey, Arabinda N.; and Him, James H., to P.R. Mallory & Co. Inc. Hermetic vent structure. 4,115,629, Cl. 429-56.000.
de Zeeuw, Hotze Jan. Apparatus and method for particle separation and grading. 4,115,256, Cl. 209-3.000.
Diamond, Barry S.: *See*—
Lello, Diane L.; and Diamond, Barry S., 4,114,915, Cl. 280-47.190.
Diamond, Julius, to Cooper Laboratories, Inc. Carbamylguanidine antimicrobial compounds. 4,115,447, Cl. 260-553.00R.
Diamond, Julius, to Cooper Laboratories, Inc. Carbamylguanidine antimicrobial compounds. 4,115,448, Cl. 260-553.00A.
Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Treatment of diarrhea with amidinoureas. 4,115,564, Cl. 424-244.000.
Diamond Shamrock Corporation: *See*—
Lemanski, Michael F.; Leitert, Frederick C.; and Vinson, Carl G., Jr., 4,115,323, Cl. 252-455.00R.
Di Blasio, John A., to Brandt-Pra, Inc. Document handling and counting device having guide fingers for facilitating the feeding of curled, folded and creased documents and further having improved outfeed stacker means for facilitating the neat stacking of documents of the aforementioned type. 4,114,870, Cl. 271-35.000.
DiCecio, Salvatore A., to Avmar, Incorporated. Wheel and brake advisory system for aircraft. 4,115,756, Cl. 340-27.00R.
Diceon Electronics, Inc.: *See*—
Carlson, Carl S.; Kinsella, Lawrence M.; and Pixley, Daniel L., 4,115,185, Cl. 156-634.000.
Didde-Glaser, Inc.: *See*—
Gladow, Dean E.; and Clifton, Kenneth C., 4,114,869, Cl. 270-37.000.
Diebolder, Helmut. Cable drum with rotatable positioning. 4,114,826, Cl. 242-85.000.
Dieckelmann, Gerhard; Jeromin, Lutz; and Tollkotter, Gunther, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Continuous process for epoxidizing organic compounds containing olefinic double bonds. 4,115,411, Cl. 260-348.260.
Diena, Benito B.: *See*—
Wallace, Rebecca; Ashton, Fraser E.; Perry, Malcolm B.; and Diena, Benito B., 4,115,543, Cl. 424-8.000.

Diesch, Robert E.: *See*—
Jensen, Gerald A.; Larson, Louis A.; and Diesch, Robert E., 4,114,349, Cl. 53-54.000.
Dietrich, Toni: *See*—
Kramer, Klaus; Dietrich, Toni; and Braun, Peter, 4,115,802, Cl. 358-93.000.
Dietzel, Walter; and Athenstedt, Martin, to Braunschweigische Maschinenbauanstalt. Diffusion tower for sugar beet cossettes. 4,115,145, Cl. 127-5.000.
Digenis, George A.; Shambhu, Manvendra B.; and Theodorakis, Michael C., to University of Kentucky Research Foundation, The. Radiodiagnostic agent. 4,115,540, Cl. 424-1.000.
DiGiacomo, Hector L.; and Sacco, John A., to General Battery Corporation. Industrial battery stack, and apparatus and method for stacking, aligning and burning same. 4,114,260, Cl. 29-623.100.
Digital Facilities, Inc.: *See*—
Axtell, Clyde R., III, 4,115,731, Cl. 324-52.000.
Dikeman, Forrest L.; and Wilkinson, Robert C. Squeeze type exerciser device with force measuring gauge. 4,114,449, Cl. 73-379.000.
Dinning, Robert W., to Brown Oil Tools, Inc. No-shock pressure plug apparatus. 4,114,694, Cl. 166-318.000.
Direct Power Limited: *See*—
Butler, Stanley Milton, 4,115,037, Cl. 417-341.000.
Disko, Eberhard, to Carl Freudenberg, Firma. Mop comprising bonded nonwoven fabric absorptive elements. 4,114,224, Cl. 15-229.00A.
Dismukes, Newton Bradford. Recovery of petroleum. 4,114,689, Cl. 166-249.000.
Dobras, Bruce W., to Monarch Marking Systems, Inc. Hand held optical reading device. 4,115,703, Cl. 250-568.000.
Doby, William P., to Westinghouse Electric Corp. Electric load research device including an enclosure having adjustable meter positions. 4,115,835, Cl. 361-370.000.
Dode, Peter Francis; and Hawkins, Michael Francis, to Gascoigne Gush & Dent (Agricultural) Limited. Milking system and a valve therefor. 4,114,565, Cl. 119-14.010.
Dodson, Stuart Alan: *See*—
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, 4,115,647, Cl. 544-63.000.
Doi, Toshio: *See*—
Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, 4,114,243, Cl. 29-25.140.
Dokin, Viktor Alexeevich: *See*—
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.
Dolhyj, Serge R.: *See*—
Bartek, Joseph P.; Dolhyj, Serge R.; Velenyi, Louis J.; and Grasselli, Robert K., 4,115,464, Cl. 260-668.00C.
Dominguez, Edward. Identification of gemstones by relative reflectance measurements coupled with a scale calibrated in gem names. 4,114,936, Cl. 292-342.000.
Dominion Auto Accessories Limited: *See*—
Nagel, Robert I., 4,115,843, Cl. 362-291.000.
Doolittle, Mac R., to Clark Equipment Company. Steering mechanism. 4,114,724, Cl. 180-155.000.
Doria, Gianfederico; Giraldi, PierNicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, to Carlo Erba S. p. A. 6-Carboxy-2-(2'-pyrazinyl)-chromones and esters thereof. 4,115,567, Cl. 424-250.000.
Dorian, Mark: *See*—
Nelson, David H., 4,115,177, Cl. 156-245.000.
Dorr-Oliver Incorporated: *See*—
Jukkola, Walfred Wilhelm; and Tomasicchio, Giorgio, 4,115,070, Cl. 422-142.000.
Dorreboom, Jelmer, to Spin Physics, Inc. Method of making a high density multitrack magnetic head. 4,114,259, Cl. 29-603.000.
D'Orto, Michael D.: *See*—
Gershberg, David N.; Lee, Alexander Y.; and D'Orto, Michael D., 4,115,781, Cl. 343-768.000.
Dory, Jacques, to CGR Ultrasonic. Ultrasonic device for cutting sections of constant weight from a tubular blank. 4,114,456, Cl. 73-622.000.
Double A Products Company: *See*—
Johnson, Charles E., 4,114,637, Cl. 137-116.000.
Douglas, George H.: *See*—
Diamond, Julius; and Douglas, George H., 4,115,564, Cl. 424-244.000.
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, to William H. Rorer, Inc. Amidinoureas. 4,115,647, Cl. 544-63.000.
Dow Chemical Company, The: *See*—
Clark, Michael J.; and Rohrmoser, Howard L., 4,115,080, Cl. 55-54.000.
Kurfman, Virgil B.; and Gransden, Raymond E., Jr., 4,115,619, Cl. 428-336.000.
Mahoney, Robert D.; and Schneider, Stephen E., 4,115,492, Cl. 264-49.000.
Pawloski, Chester E., 4,115,557, Cl. 424-200.000.
Smith, Harry A., 4,115,365, Cl. 528-132.000.
Spencer, David R.; and Archer, Wesley L., 4,115,461, Cl. 260-652.50R.
Dow Corning Corporation: *See*—
Hilliard, John R., 4,115,356, Cl. 528-18.000.
Downs, John D., to Mobil Oil Corporation. Polyol intermediate, polyesters made therefrom, and polyester coating compositions. 4,115,473, Cl. 260-850.000.
Dowty Mining Equipment Limited: *See*—
Rutherford, Dennis Franklin, 4,114,387, Cl. 405-293.000.
Doyel, John S. Hand-held, battery-operated decorative extruder for cookie dough and similar food substances. 4,114,781, Cl. 222-326.000.
Drabek, Jozef: *See*—
Boger, Manfred; and Drabek, Jozef, 4,115,583, Cl. 424-300.000.
Draese, Rudiger: *See*—
Kotzsch, Hans-Joachim; Draese, Rudiger; and Vahlensieck, Hans-Joachim, 4,115,427, Cl. 260-448.20E.
Drees, Jan M.; Sonneborn, Walter G. O.; and Yen, Jing G., to Textron, Inc. Hub spring moment isolation in underslung two-bladed teetering rotor. 4,115,031, Cl. 416-134.00A.
Drellishak, Glen J.: *See*—
Marchak, Roman O.; and Drellishak, Glen J., 4,114,570, Cl. 123-32.0EG.
Dresser Industries, Inc.: *See*—
Stratienko, Andrew, 4,114,469, Cl. 74-424.8VA.
Stratienko, Andrew, 4,114,474, Cl. 74-625.000.
Driessen, Frans M.; Ubbels, Jacob; and Stadhouders, Jacobus J., to Stichting Bedrijven Van Het Nederlands Instituut Voor Zuivelonderzoek. Device for generating shearing forces in treating yogurt and other viscous liquids or gels. 4,114,525, Cl. 99-465.000.
Driscoll, Richard C.; and Morejon, Clara B., to American Hospital Supply Corporation. Resin tablet and use thereof in diagnostic tests. 4,115,537, Cl. 424-1.000.
Dubner, Evgeny Mikhailovich: *See*—
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.
Ducret, Jacques: *See*—
Lacroix, Guy; Debourge, Jean-Claude; and Ducret, Jacques, 4,115,559, Cl. 424-209.000.
Duffy, Neil David: *See*—
Leach, Leslie Alan; Riddoch, Henry Jamieson; and Duffy, Neil David, 4,114,893, Cl. 274-9.0RA.
Dugge, Richard H., to ACF Industries, Incorporated. Control valve for bottom discharge outlet. 4,114,785, Cl. 222-545.000.
Dummermuth, Ernst H., to Allen-Bradley Company. Jump structure for a digital control system. 4,115,853, Cl. 364-200.000.
Dundon, Michael J., to Bandag Incorporated. Retreading stacked tires. 4,115,171, Cl. 156-96.000.
Dungs, Horst: *See*—
Lorenz, Kurt; Dungs, Horst; Speich, Peter; and Kurtz, Roman, 4,115,202, Cl. 202-99.000.
Dunks, Gary Burr; and Ordonez, Kathy Palmer, to Union Carbide Corporation. Process for the synthesis of tetradecahydroundecaborate compounds. 4,115,520, Cl. 423-287.000.
Dunks, Gary Burr; and Ordonez, Kathy Palmer, to Union Carbide Corporation. Process for the synthesis of decaborane(14). 4,115,521, Cl. 423-294.000.
Dunlop, James D.: *See*—
Van Ommering, Gerrit; Stockel, Joseph F.; and Dunlop, James D., 4,115,630, Cl. 429-72.000.
Dunn, Robert C. Disc Brake. 4,114,732, Cl. 188-73.200.
Dunn, Robert O.: *See*—
McCarthy, William C.; and Dunn, Robert O., 4,115,264, Cl. 210-63.00R.
Du Pont de Nemours, E. I., and Company: *See*—
Batzar, Kenneth, 4,115,143, Cl. 106-298.000.
Bellina, Russell Frank; and Fost, Dennis Lynn, 4,115,584, Cl. 424-301.000.
Bigelow, John Howard, 4,115,129, Cl. 96-107.000.
Bushey, William Raymond, 4,115,345, Cl. 260-38.000.
Finlay, Joseph Burton; and Omura, Hisanori, 4,115,481, Cl. 260-900.000.
Gerow, Clare William, 4,115,334, Cl. 260-28.50D.
Hazan, Isidor, 4,115,227, Cl. 204-181.00C.
Hess, Richard William, 4,115,142, Cl. 106-288.00B.
Maloney, James Francis, Jr., 4,114,759, Cl. 206-523.000.
Marsh, Frank Dennis, 4,115,384, Cl. 260-239.00E.
Piltingsrud, Douglas Howard, 4,115,141, Cl. 106-288.00B.
Romanauskas, William A., 4,114,803, Cl. 233-26.000.
Schoenholz, Daniel; and Perl, Martin M., 4,115,293, Cl. 252-102.000.
Whitney, George Crosier, III, 4,115,126, Cl. 96-84.00R.
Duzich, John J., to Grumman Aerospace Corporation. Aircraft onboard operational status indicator. 4,115,754, Cl. 340-27.00R.
Dy Yau, Leopoldo: *See*—
Thibault, Louis Robert; and Dy Yau, Leopoldo, 4,114,256, Cl. 29-571.000.
Dyckerhoff & Widmann AG: *See*—
Schambeck, Herbert, 4,114,219, Cl. 14-16.100.
Dyer, Donald R.; Johnson, Claude, Jr.; and Wilbarg, Robert R., to International Business Machines Corporation. Method of forming thin film patterns by differential pre-baking of resist. 4,115,120, Cl. 96-36.200.
Dyment, John Cameron, to Northern Telecom Limited. Method of

producing optoelectronic devices with control of light propagation. 4,115,150, Cl. 148-1.500.
Dynamics Research Corporation: *See—*
Brisk, Richard A.; and Miller, David E., 4,115,859, Cl. 364-476.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Kotzsch, Hans-Joachim; Draese, Rudiger; and Vahlensieck, Hans-Joachim, 4,115,427, Cl. 260-448.20E.
E.G. Sprinkler Corporation: *See—*
Goodman, James M., 4,114,414, Cl. 72-105.000.
E.I. DuPont de Nemours and Company: *See—*
Baker, Melvin Charles, 4,115,408, Cl. 260-346.110.
E. R. Squibb & Sons, Inc.: *See—*
Hoehn, Hans; and Schulze, Ernst, 4,115,394, Cl. 260-296.00H.
Krapcho, John; and Turk, Chester F., 4,115,382, Cl. 260-239.00A.
Wade, Peter C.; and Vogt, Berthold Richard, 4,115,555, Cl. 424-180.000.
E-Systems, Inc.: *See—*
Gershberg, David N.; Lee, Alexander Y.; and D'Orto, Michael D., 4,115,781, Cl. 343-768.000.
Earth Sciences, Inc.: *See—*
Pyrih, Roman Z.; and Rickard, Robert S., 4,115,110, Cl. 75-101.00R.
Eastman Kodak Company: *See—*
Etter, Doyle O.; and Crawford, Irvin H., 4,115,125, Cl. 96-83.000.
Hamilton, Lewis R.; and Sutton, Richard C., 4,115,124, Cl. 96-82.000.
Johnson, Robert B., 4,114,831, Cl. 242-194.000.
Wang, Richard H. S.; and Zannucci, Joseph S., 4,115,348, Cl. 260-45.8NZ.
Eberle, Jon W.: *See—*
Lyle, Judge M.; and Eberle, Jon W., 4,114,611, Cl. 128-75.000.
Eckert, Paul: *See—*
Kritzler, Gerhard; and Eckert, Paul, 4,114,680, Cl. 165-4.000.
Eckhardt, Friedrich, to Zinser Textilmaschinen GmbH. Open-end spinning apparatus. 4,114,356, Cl. 57-34.00R.
Eckhart, Lewis. Phonograph tonearm pickup counterbalance. 4,114,895, Cl. 274-23.00R.
Eckle, Manfred: *See—*
Engel, Gerhard; and Eckle, Manfred, 4,115,312, Cl. 252-301.500.
Eclipse Mfg. Inc.: *See—*
Macuga, Henry J.; and Deschamps, Bernard F., 4,114,326, Cl. 52-28.000.
Ecodyne Corporation: *See—*
Saxton, Forest Jackson, 4,115,484, Cl. 261-111.000.
Econo Fuel Systems, Inc.: *See—*
Harpman, Webster B.; and Mahoney, Fred G., 4,114,566, Cl. 123-25.00B.
Edward R. Langfield: *See—*
Langfield, Edward R.; Hile, James L.; and Hird, David L., 4,114,951, Cl. 299-22.000.
Eff, Christian A., to General Electric Company. Oscillatory drive means for a rotisserie spit. 4,114,523, Cl. 99-393.000.
Effbe-Werk Fritz Brumme & Co. K.G.: *See—*
Weisenberger, Gottfried, 4,114,845, Cl. 248-24.000.
Efficiency Production, Inc.: *See—*
Nieber, Allen J., 4,114,383, Cl. 405-282.000.
Egan, William F., to GTE Sylvania Incorporated. Phase lock speed-up circuit. 4,115,745, Cl. 331-17.000.
Eggelsmann, Harry, to U.S. Philips Corporation. Rotary-anode X-ray tube. 4,115,718, Cl. 313-60.000.
Eggenberger, John S.; and Hodges, Paul, to International Business Machines Corporation. Sequential encoding and decoding of variable word length, fixed rate data codes. 4,115,768, Cl. 340-347.0DD.
Eggleston, Robert M.: *See—*
Bergquist, Dwight H.; Cunningham, Franklin E.; and Eggleston, Robert M., 4,115,592, Cl. 426-32.000.
Egli, Christian: *See—*
Rossi, Alberto; and Egli, Christian, 4,115,416, Cl. 260-413.000.
Eguchi, Seiji: *See—*
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,115,868, Cl. 364-900.000.
EIC International Corporation: *See—*
Hsu, Sheau-Po, 4,114,793, Cl. 227-63.000.
Eichhorst, Gustav E. Method and apparatus for controlling the wheel brakes to prevent skid. 4,114,957, Cl. 303-96.000.
Eichinger, Anton: *See—*
Bauer, Heinrich Franz; Eichinger, Anton; and Feitzelmayer, Ernst, 4,115,174, Cl. 156-155.000.
Eifler, Willi: *See—*
Raue, Roderich; Eifler, Willi; and Kuhlthau, Hans-Peter, 4,115,413, Cl. 260-390.000.
Eimers, Erich: *See—*
Perrey, Hermann; Wolf, Karlheinz; Eimers, Erich; Nonn, Konrad; and Hornle, Reinhold, 4,115,379, Cl. 260-163.000.
Eisenhardt, William Anthony, Jr.; Hedaya, Eddie; and Theodoropulos, Spyros, to Union Carbide Corporation. Analytical or clinical derivatives, tagged derivatives and methods of analysis using such derivatives. 4,115,539, Cl. 424-1.000.
Ejiri, Masakazu: *See—*
Ueda, Hirotada; Uno, Takeshi; Ejiri, Masakazu; Ikeda, Sadahiro; and Matsuoka, Shinji, 4,115,761, Cl. 340-146.3AC.
Ekstrand, Stig, to AB Akerlund & Rausing. Laminated paper product and a method for manufacturing said product. 4,115,176, Cl. 156-244.250.
Elettrocarbonium S.p.A.: *See—*
Ubaldi, Luciano; and Buccella, Osvaldo, 4,114,562, Cl. 118-50.000.
Elex A.G.: *See—*
Huppi, Xaver Johann, 4,115,083, Cl. 55-148.000.
Elfert, Klaus; Rosenkranz, Hans Jurgen; and Rudolf, Hans, to Bayer Aktiengesellschaft. Separation of aromatic hydrocarbons from mixtures, using polyurethane membranes. 4,115,465, Cl. 260-674.00R.
Eli Lilly and Company: *See—*
Blanchard, William B.; and Ryan, Charles W., 4,115,403, Cl. 260-340.90R.
Chou, Ta Sen; and Zintgraff, Gary D., 4,115,644, Cl. 544-20.000.
Cooper, Robin D. G., 4,115,383, Cl. 260-239.00A.
Hamill, Robert L.; Stark, William M.; and DeLong, Donald C., 4,115,552, Cl. 424-118.000.
Jackson, Billy G.; and McPherson, Roger E., 4,115,645, Cl. 544-20.000.
Kukolja, Stjepan; and Spry, Douglas O., 4,115,643, Cl. 544-16.000.
Queener, Stephen W.; and Nash, Claude H., III, 4,115,197, Cl. 195-36.00R.
Thompson, Gerald L.; and Paschal, Gloria C., 4,115,388, Cl. 260-287.00B.
Zimmerman, Dennis M., 4,115,400, Cl. 260-326.50B.
Elkem-Spigerverket A/S: *See—*
Ydstie, Birger Leif, 4,115,108, Cl. 75-11.000.
Eller, Fritz. Switching bearing assembly for a motor-driven spindle. 4,114,747, Cl. 192-150.000.
Ellwanger, Richard Earl, to American Cyanamid Company. Inversion of water-in-oil emulsions of polyacrylamide in hard water. 4,115,340, Cl. 260-29.6HN.
Elmer, Stefan: *See—*
Jansen-Herfeld, Rottger; and Elmer, Stefan, 4,114,270, Cl. 30-394.000.
Elopak A/S: *See—*
Halmo, Terje Martin; and Skoglund, Liv, 4,115,497, Cl. 264-115.000.
EMI Limited: *See—*
Hounsfield, Godfrey Newbold; and Williams, Anthony Michael, 4,115,697, Cl. 250-445.00T.
Hounsfield, Godfrey Newbold, 4,115,698, Cl. 250-445.00T.
Oldendorf, William Henry, 4,115,691, Cl. 250-312.000.
Emmons, Johnny Dale. Pigging string and method of manufacture. 4,114,360, Cl. 57-142.000.
Emmons, William D.; Kim, Samuel S.; and Winey, Donald A., to Rohm and Haas Company. Polyfunctional ester ketimines, adhesives derived therefrom and method for adhering materials. 4,115,169, Cl. 156-71.000.
Empisal Knitmaster Luxembourg S.A.: *See—*
Bartels, Manfred, 4,114,405, Cl. 66-75.200.
Enchelmaier, Harvard W. K. Helically wound brush. 4,114,221, Cl. 15-182.000.
Endo Laboratories, Inc.: *See—*
Rajagopalan, Parthasarathi, 4,115,577, Cl. 424-256.000.
Endriz, John Guiry, to RCA Corporation. Electron beam oscillation compensation method. 4,115,724, Cl. 315-169.0TV.
Energy Development Associates: *See—*
Behling, Harvey L., 4,115,529, Cl. 423-472.000.
Engel, Gerhard; and Eckle, Manfred, to Merck Patent Gesellschaft mit beschrankter Haftung. X-ray fluorescent luminescent cadmium tungstate compositions. 4,115,312, Cl. 252-301.500.
Engelhard, Thomas. Window boot. 4,114,943, Cl. 296-23.0MC.
Engelhardt, Hans-Peter: *See—*
Kunkele, Rudolf; and Engelhardt, Hans-Peter, 4,115,133, Cl. 106-56.000.
Engelsmann, Dieter; Hackenberg, Hubert; and Zobel, Siegfried, to AGFA-Gevaert AG. Film transport mechanism for cameras. 4,115,792, Cl. 354-213.000.
Engelsmann, Dieter: *See—*
Fauth, Gunter; and Engelsmann, Dieter, 4,115,791, Cl. 354-206.000.
Engle, Donald D., Jr.; and Utt, Michael E., to Union Oil Company of California. Lateral support members for a tension leg platform. 4,114,393, Cl. 114-264.000.
English Electric Valve Company Limited: *See—*
Brady, Michael Barry; and Lewis, Peter Frederick, 4,115,746, Cl. 331-90.000.
Enomoto, Masahisa: *See—*
Ogisu, Kenji; and Enomoto, Masahisa, 4,115,213, Cl. 204-39.000.
Enomoto, Masao, to Ichikoh Industries, Limited. Mirror angle adjusting device, with consecutively driven worms in remotely controlled rear-view mirror apparatus. 4,114,988, Cl. 350-289.000.
Enso-Gutzeit Osakeyhtio: *See—*
Paakkinen, Ilmari; Hakkinen, Seppo; and Matula, Jouni, 4,114,818, Cl. 241-244.000.
Entenmann, Charles E., to Entenmann's Bakery, Inc. Baking and packaging system. 4,114,760, Cl. 206-562.000.
Entenmann's Bakery, Inc.: *See—*
Entenmann, Charles E., 4,114,760, Cl. 206-562.000.
Eppinger, Kurt Hermann: *See—*
Bolto, Brian Alfred; and Eppinger, Kurt Hermann, 4,115,297, Cl. 521-32.000.
Erb, Robert Allan, to Franklin Institute, The. Unitary solar collector. 4,114,597, Cl. 126-271.000.
Erco Industries Limited: *See—*
McGilvery, James D., 4,115,307, Cl. 252-135.000.
Ericson, Hans Goran; and Steneras, Bo Sanfrid Emanuel, to Volvo BM AB. Dual steering system for vehicles. 4,114,720, Cl. 180-133.000.
Ernyei, Herbert; and Langlois, Etienne, to Societe Telegraphiques et Telephoniques. Method of measuring the resonance frequency of mechanical resonators. 4,114,454, Cl. 73-579.000.

Erpenbeck, Paul J., to Breneman, Inc. Apparatus and method for rotary cutting of rolled window shades and the like. 4,114,266, Cl. 30-123.000.
Escher Wyss Limited: *See—*
Christ, Alfred, 4,114,959, Cl. 308-3.500.
Eskes, Hendrik J. K.: *See—*
Beernaerts, Andre M. H. J.; and Eskes, Hendrik J. K., 4,114,213, Cl. 5-345.00R.
Estaque, Andre, to Societe Anonyme Automobiles Citroen. Control devices for transmissions of automotive vehicle engines. 4,114,480, Cl. 74-865.000.
Esteve-Subirana, Antonio, to Laboratorios del Dr. Esteve, S.A. 2,5-Dihydroxy benzene sulfonic acid mono esters. 4,115,648, Cl. 544-110.000.
Estrin, Arkady Samuilovich: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Etablissement Public Dit Telediffusion de France: *See—*
Guinet, Yves Maurice; and Noirel, Yves Maurice, 4,115,662, Cl. 179-15.0BV.
Etat Francais: *See—*
Melchior, Jean; and Andre, Thierry, 4,114,379, Cl. 60-606.000.
Ethyl Corporation: *See—*
Lerner, Sidney I., 4,115,590, Cl. 424-337.000.
Etter, Doyle O.; and Crawford, Irvin H., to Eastman Kodak Company. Polymeric films peelably adhered to a pressure-sensitive adhesive photographic element. 4,115,125, Cl. 96-83.000.
Evans, Graham; Fryberg, Mario; Stauner, Thomas; Tschopp, Paul; and Leppard, David G., to Ciba-Geigy AG. Silver halide color photographic material containing yellow coupler. 4,115,121, Cl. 96-56.300.
Everman, Wayne Fredrick: *See—*
Dantzler, Danny M.; Meehan, James Bartley; Everman, Wayne Fredrick; Fluent, Donald E.; and Sachs, Howard George, 4,115,779, Cl. 343-715.000.
Evers, Robert C., to United States of America, Air Force. Perfluoroalkylene ether bibenzoxazole polymers. 4,115,367, Cl. 528-210.000.
Every, Richard L.; and Jacob, Jose T., to Chemed Corporation. Production of raw mix cement slurries having reduced water content. 4,115,139, Cl. 106-100.000.
Extracorporeal Medical Specialties, Inc.: *See—*
Winstead, Thomas W., 4,115,273, Cl. 210-321.00A.
Exxon Research and Engineering Company: *See—*
Burke, Oliver W., Jr., 4,115,316, Cl. 252-359.00A.
Colclough, Terence; and Swinney, Brian, 4,115,287, Cl. 252-48.200.
Oswald, Alexis A.; and Lesser, Joseph H., 4,115,482, Cl. 260-957.000.
Tenner, Arthur R.; and Turner, David W., 4,115,515, Cl. 423-235.000.
Eymard, Pierre: *See—*
Nanthavong, Souli; Pigerol, Charles; Eymard, Pierre; and Simiand, Jacques, 4,115,401, Cl. 260-326.430.
F. L. Smidth & Co.: *See—*
Hansen, Dan S., 4,115,136, Cl. 106-100.000.
Fa. August Thiele: *See—*
Verse, Egon, 4,114,367, Cl. 59-85.000.
Fabian, Wolfgang: *See—*
Gall, Ludwig; and Fabian, Wolfgang, 4,115,386, Cl. 260-281.00P.
Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, to List, Hans. Motor vehicle having sound-suppressing engine enclosure. 4,114,714, Cl. 180-54.00A.
Fahey, Darryl R.; and Mahan, John E., to Phillips Petroleum Company. Organophosphorus nickel complexes and use thereof. 4,115,470, Cl. 260-683.15D.
Fairchild Camera and Instrument Corporation: *See—*
Hingarh, Hemraj K.; and Crippen, Richard E., 4,115,797, Cl. 357-46.000.
Falconbridge Nickel Mines Limited': *See—*
Pasieka, Arnold Roy; Wilson, John Corner; and Moruzi, George Alexander, 4,114,954, Cl. 302-14.000.
Falconer, Robert P.: *See—*
Blaylock, Arnold O.; Falconer, Robert P.; and Campbell, Charles M., 4,114,789, Cl. 224-42.10E.
Falk Corporation, The: *See—*
Phinney, John M., 4,114,745, Cl. 192-0.098.
Famolare, Inc.: *See—*
Famolare, Joseph P., Jr., 4,114,297, Cl. 36-50.000.
Famolare, Joseph P., Jr., to Famolare, Inc. Cinching closure. 4,114,297, Cl. 36-50.000.
Fan, John C. C.: *See—*
Henrich, Victor E.; and Fan, John C. C., 4,115,228, Cl. 204-192.0EC.
Fancher, Llewellyn W., to Stauffer Chemical Company. Hydrazone dithiophosphates and phosphonates and use thereof as insecticides. 4,115,558, Cl. 424-205.000.
Fansteel, Inc.: *See—*
Cecka, Andrew M., 4,114,880, Cl. 273-73.00G.
Fastenmeier, Karl: *See—*
Meinke, Hans Heinrich; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz, 4,114,623, Cl. 128-303.140.
Fatur, Richard N.: *See—*
Brown, Vaikai K.; and Fatur, Richard N., 4,114,738, Cl. 192-4.00A.
Faultfinders, Inc.: *See—*
Stanford, Melvin E., 4,115,735, Cl. 324-158.00F.
Faup, John Joseph; and Wolf, David Harvey, to Otis Elevator Company. Elevator safety arrangement. 4,114,731, Cl. 187-29.00R.
Fauth, Gunter; and Engelsmann, Dieter, to AGFA-Gevaert AG. Film-transporting and shutter-cocking mechanism for still cameras. 4,115,791, Cl. 354-206.000.
Fazio, Rodolfo: *See—*
Moe, William West; Lotz, Robert William; Green, Ethan Robert; and Fazio, Rodolfo, 4,115,816, Cl. 358-283.000.
Feamster, William C., III. Pipe cutting or end prepping apparatus. 4,114,484, Cl. 82-4.00C.
Fearnley, Charles; Fordham, Glenda Helen; and Lee, Frank, to Ciba-Geigy Corporation. Bactericidal soap bar. 4,115,294, Cl. 252-106.000.
Fechtig, Bruno: *See—*
Kocsis, Karoly; Fechtig, Bruno; and Bickel, Hans, 4,115,566, Cl. 424-246.000.
Fecker, Josef; and Memminger, Gustav, to Memminger, Gustav. Yarn delivery apparatus for use with textile machines. 4,114,823, Cl. 242-47.010.
Federal Paper Board Co., Inc.: *See—*
Manizza, Guelfo A., 4,114,797, Cl. 229-31.00R.
Feitzelmayer, Ernst: *See—*
Bauer, Heinrich Franz; Eichinger, Anton; and Feitzelmayer, Ernst, 4,115,174, Cl. 156-155.000.
Felcman, Frances Adolph: *See—*
Wood, James Carlos; and Felcman, Frances Adolph, 4,115,014, Cl. 400-611.000.
Fellner, Helmut: *See—*
Pockrandt, Gunter; and Fellner, Helmut, 4,115,079, Cl. 55-43.0BN.
Fentress, D. G. Portable, collapsible furniture. 4,114,542, Cl. 108-157.000.
Ferni, Giovanni: *See—*
Manghisi, Elso; Salimbeni, Aldo; and Ferni, Giovanni, 4,115,585, Cl. 424-311.000.
Ferranti Limited: *See—*
Shepherd, Alexander Turnbull, 4,115,008, Cl. 356-172.000.
Fertl, Walter H.; and Gant, Preston L., to Continental Oil Company. Mining and drilling control of distance to the coal-shale interface - thorium measurement by gamma spectrometry. 4,115,688, Cl. 250-253.000.
FIAT Societa per Azioni: *See—*
Cattaneo, Maurizio; and Bertone, Antonino, 4,114,376, Cl. 60-548.000.
Fiato, Rocco Anthony: *See—*
Cosby, Lowell Alan; Fiato, Rocco Anthony; and Vidal, Jose Luis, 4,115,433, Cl. 260-449.00L.
Fick, Willy Julius, to Danfoss A/S. Apparatus for ultrasonically measuring physical parameters of flowing media. 4,114,439, Cl. 73-194.00A.
Fields, Joseph E.; and Johnson, John H., to Monsanto Company. Composition for lowering blood cholesterol level. 4,115,550, Cl. 424-78.000.
Figueredo, Hector: *See—*
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Fini, Anthony W., Jr. Automatic torque stick transmission. 4,114,476, Cl. 74-745.000.
Finlay, Joseph Burton; and Omura, Hisanori, to Du Pont de Nemours, E. I., and Company. Fluoroelastomer blend composition. 4,115,481, Cl. 260-900.000.
Finley, Joseph H.; Brubaker, Gaylen R.; and Baum, Burton M., to FMC Corporation. N-sulfonylimidazoles as peroxygen activators. 4,115,060, Cl. 8-111.000.
Finley, Joseph H.: *See—*
Blumbergs, John H.; Finley, Joseph H.; and Baum, Burton M., 4,115,058, Cl. 8-111.000.
Finta, Laszlo. Motor vehicle with special arrangement of front wheels, front door, driver's cabin and engine. 4,114,712, Cl. 180-21.000.
Firmenich SA: *See—*
Renold, Walter; Skorianetz, Werner; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 4,114,630, Cl. 131-17.00R.
Fischbeck, Kenneth H., to Xerox Corporation. Separable liquid droplet instrument and piezoelectric drivers therefor. 4,115,789, Cl. 346-140.00R.
Fischenich, Bernhard: *See—*
Luepertz, Hans-Henning; and Fischenich, Bernhard, 4,114,430, Cl. 73-121.000.
Fischer, Artur; and Fischer, Klaus, to Fischer, Artur. Anchoring arrangement kit. 4,114,329, Cl. 52-173.00R.
Fischer, Donald A.; Lipowski, Edwin M.; and Kalt, William E., to Kalt Manufacturing Company, The. Drill screw. 4,114,507, Cl. 85-41.000.
Fischer, Klaus: *See—*
Fischer, Artur; and Fischer, Klaus, 4,114,329, Cl. 52-173.00R.
Fischer, Ulf; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Ribofuranosyl-imidazole derivatives. 4,115,641, Cl. 536-23.000.
Flachenecker, Gerhard: *See—*
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Flanders, Robert L.; and Blanton, William A., Jr., to Chevron Research Company. Method for removing pollutants from catalyst regenerator flue gas. 4,115,250, Cl. 208-120.000.
Flanders, Robert L.; and Blanton, William A., Jr., to Chevron Research Company. Process for removing pollutants from catalyst regenerator flue gas. 4,115,251, Cl. 208-120.000.
Flanders, Robert L.: *See—*
Blanton, William A., Jr.; and Flanders, Robert L., 4,115,249, Cl. 208-120.000.
Fleche, Guy: *See—*
Saint-Lebe, Louis; Berger, Gerard; Michel, Jean-Pierre; Huchette, Michel; and Fleche, Guy, 4,115,146, Cl. 127-38.000.
Flexowall Corporation: *See—*
Plaut, Werner P. B., 4,114,531, Cl. 100-90.000.
Floridia, Luigi: *See—*
DeFeo, Francesco; Gemini, Vincenzo; and Floridia, Luigi, 4,115,057, Cl. 8-54.000.
Florjancic, Dusan; and Matthias, Heinz-Bernd, to Klein, Schanzlin & Becker Aktiengesellschaft. Centrifugal pump. 4,115,029, Cl. 415-211.000.
Fluent, Donald E.: *See—*
Dantzler, Danny M.; Meehan, James Bartley; Everman, Wayne Fredrick; Fluent, Donald E.; and Sachs, Howard George, 4,115,779, Cl. 343-715.000.
Fluor Corporation: *See—*
Jordan, Charles H.; and Sampat, Ajit, 4,115,086, Cl. 62-28.000.
Flynn, Charles S., to Blu-Surf, Inc. Web stock treating oven. 4,115,052, Cl. 432-72.000.
FMC Corporation: *See—*
Blumbergs, John H.; Finley, Joseph H.; and Baum, Burton M., 4,115,058, Cl. 8-111.000.
Blumbergs, John H.; and Scholer, Fred R., 4,115,059, Cl. 8-111.000.
Finley, Joseph H.; Brubaker, Gaylen R.; and Baum, Burton M., 4,115,060, Cl. 8-111.000.
Lochte, Glen E., 4,114,928, Cl. 285-18.000.
Sticker, Robert Earl, 4,115,096, Cl. 71-92.000.
Ford Motor Company: *See—*
Han, Ching C.; and Gould, Harry J., 4,115,782, Cl. 343-779.000.
Rogerson, Jerry B.; and Harrison, Robert S., 4,114,584, Cl. 123-179.00G.
Siegl, Walter O., 4,115,397, Cl. 260-296.00T.
Fordham, Glenda Helen: *See—*
Fearnley, Charles; Fordham, Glenda Helen; and Lee, Frank, 4,115,294, Cl. 252-106.000.
Forman, Hugh M., to Will Ross Inc. Drain valve. 4,114,640, Cl. 137-381.000.
Fort, William G. S.; and Lee, William W., Jr., to United States of America, Energy. Process gas solidification system. 4,115,073, Cl. 23-293.00R.
Fory, Werner: *See—*
Schurter, Rolf; Rempfler, Hermann; and Fory, Werner, 4,115,100, Cl. 71-94.000.
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Foster, C. Mackay, Jr.: *See—*
Patton, Bobbie J.; Sexton, James H.; Gravley, Wilton; and Foster, C. Mackay, Jr., 4,114,435, Cl. 73-151.500.
Foster, Victor W.: *See—*
daCosta, Harry H.; Foster, Victor W.; and Thornton, Charles G., deceased, 4,115,713, Cl. 310-49.00R.
Foster, William R.; and Snavely, Earl S., Jr., to Mobil Oil Corporation. Method of treating formation to remove ammonium ions without decreasing permeability. 4,114,693, Cl. 166-305.00R.
Fotel Inc.: *See—*
Nachtrieb, Robert W., 4,115,003, Cl. 355-133.000.
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, to Compagnie des Terminaux Marins Coterm; and Spetsialnoe Konstruktorskoe Bjuro "Transnefteavtomatika". Safety connection device for interconnecting two piping elements. 4,114,638, Cl. 137-242.000.
Fournier, Yves J. Miniature reed-type valve. 4,114,852, Cl. 251-138.000.
Fowler, Joe W. Bulk cure tobacco barn with improvements in construction for optimizing heating efficiency. 4,114,288, Cl. 34-93.000.
Fowler, Peter L.: *See—*
McKerrow, George C.; Pelletier, Albert; and Fowler, Peter L., 4,114,865, Cl. 266-136.000.
Fowler, Ray, to Davy Powergas Limited. Hydrocarbon conversion process. 4,115,467, Cl. 260-683.00R.
Foy, Paul; and Kern, Rene, to Ato Chimie. Method to prepare copolyesteramides for moulding. 4,115,475, Cl. 260-857.0PE.
Frahm Fireplace Grate Co., Inc.: *See—*
Frahm, Harlan C., 4,114,590, Cl. 126-121.000.
Frahm, Harlan C., to Frahm Fireplace Grate Co., Inc. Air feed fireplace grate. 4,114,590, Cl. 126-121.000.
Frain, William E.: *See—*
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Franc, Eugene K. Automatic swimming pool cleaning system. 4,114,206, Cl. 4-172.000.
Franck, Bent, to Dansk Signal Industri A/S. Cable connector. 4,114,262, Cl. 29-628.000.
Frank, Earl E., to Abex Corporation. Tongue switch for rail installations. 4,114,844, Cl. 246-162.000.
Franklin Institute, The: *See—*
Erb, Robert Allan, 4,114,597, Cl. 126-271.000.
Franz, John E.; and Howe, Robert K., to Monsanto Company. 5-Aryl-1,2,4-thiadiazole-3-carboxylates and agricultural methods. 4,115,095, Cl. 71-90.000.
Franz, John E., to Monsanto Company. Dicyanovinylhydrazonomalononitriles and the herbicidal use thereof. 4,115,104, Cl. 71-105.000.
Franz Klaus-Union: *See—*
Knorr, Manfred, 4,115,040, Cl. 417-420.000.
Fraser, Douglas S., to FTS Systems, Inc. Acid resistant freeze drying trap. 4,114,287, Cl. 34-92.000.
Frederiksen, John E., to Texas Instruments Incorporated. Electronic timepiece. 4,114,362, Cl. 58-4.00A.
Freeberg, Fred. Motor vehicle wheel track sanding device. 4,114,932, Cl. 291-33.000.
Freeborn, Lowell C.: *See—*
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Freed, Robert: *See—*
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Frei, Jorg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, to Ciba-Geigy Corporation. 2-(3-Amino-2-hydroxy-propoxy)-pyrazines. 4,115,575, Cl. 424-250.000.
Freimark, Ronald J.: *See—*
Young, Thomas A.; and Freimark, Ronald J., 4,115,729, Cl. 322-86.000.
Freiser, Henry; James, Helen J.; Carmack, Gary; Cattrall, Robert W.; and Kneebone, Barbara M., to Research Corporation. Method of determining ion activity using coated ion selective electrodes. 4,115,209, Cl. 204-1.00T.
Frentzel, Kurt Heinz: *See—*
de Wit, Hendrik; and Frentzel, Kurt Heinz, 4,114,673, Cl. 160-166.00A.
Frey, Elmer L.: *See—*
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Frey, Thomas M.; and Pond, Stephen F., to Xerox Corporation. Constant wavelength magnetic recording. 4,115,786, Cl. 346-74.100.
Friederich Justus & Co.: *See—*
Vornfett, Karl-Ulrich, 4,114,488, Cl. 83-198.000.
Friedman, Jerome D. Shield for high power infrared laser beam. 4,114,985, Cl. 350-266.000.
Friedrich, Adolf: *See—*
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Fritsch, Werner: *See—*
Grandin, Friedrich-Hans; Fritsch, Werner; and Wengenrod, Gunter, 4,115,685, Cl. 219-155.000.
Fritsch, Willi. Conical filter basket for a continuously operating centrifuge. 4,115,278, Cl. 210-488.000.
Friz, Walter, to Hay, Louis E. Traveling wave device with unific composite metal dielectric helix and method for forming. 4,115,721, Cl. 315-3.500.
Frohling, Hans-Joachim; and Rothe, Werner, to H. F. & Ph. F. Reemtsma. Folded cigarette box. 4,114,777, Cl. 229-44.0CB.
Fryberg, Mario: *See—*
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FTS Systems, Inc.: *See—*
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Fuhrhop, Ronald Elmer, to Union Carbide Corporation. Method and apparatus for producing a post-mixed, stabilized scarfing pre-heating flame. 4,115,154, Cl. 148-9.500.
Fuji Photo Film Co., Ltd.: *See—*
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Ikeda, Tomoaki; Mizobuchi, Yuzo; Nahara, Akira; Washizawa, Yasuo; Ono, Yoshihiro; and Tomotsu, Takeshi, 4,115,127, Cl. 96-85.000.
Kita, Nobuyuki, 4,115,128, Cl. 96-91.00D.
Kondo, Toshihiro, 4,114,994, Cl. 352-139.000.
Kondo, Toshihiro, 4,114,994, Cl. 352-139.000.
Kubotera, Kikuo; Kashiwabara, Akira; and Sato, Kotaro, 4,115,118, Cl. 96-33.000.
Fujii, Hideo; Fujiki, Tokio; Uemura, Masaru; and Sakura, Masakazu, to Toyo Soda Manufacturing Co., Ltd. Apparatus for preparing multilaminated sheet. 4,115,181, Cl. 156-497.000.
Fujikawa, Kanichi: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,115,102, Cl. 71-94.000.
Fujikawa, Tetsuzo; and Misawa, Kichiji, to Kawasaki Jukogyo Kabushiki Kaisha. Accessory mounting means for internal combustion engines. 4,114,586, Cl. 123-195.00A.
Fujiki, Tokio: *See—*
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Fujikura Cable Works, Ltd., The: *See—*
Ishida, Yukinori; Kojima, Moriaki; Kobayashi, Toshiaki; and Sugawara, Yasuyuki, 4,114,981, Cl. 350-96.330.
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Fujimoto, Isao; Aiba, Masahiko; Yamamoto, Yoichi; and Makita, Tomoo, to Nippon Telegraph and Telephone Public Corporation; and Sharp Kabushiki Kaisha. Interpolation in an ink jet system printer. 4,115,787, Cl. 346-75.000.
Fujimoto, Takeo; Torimaru, Yasuo; Ogawa, Shin-ichi; and Yasue, Shinya, to Sharp Kabushiki Kaisha. Complementary-MOS integrated semiconductor device. 4,115,796, Cl. 357-42.000.
Fujinami, Hiroshi: *See—*
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Fujita, Yutaka: *See—*
Sato, Hisato; Tazume, Masayuki; Yamaki, Takasi; Fujita, Yutaka; and Arai, Yoshi, 4,115,310, Cl. 252-299.000.
Fujitsu Limited: *See—*
Chiba, Takashi, 4,115,855, Cl. 364-200.000.
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Katoh, Tadayoshi; and Itaya, Eiji, 4,114,710, Cl. 178-67.000.
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Fujiwara, Sigekazu: *See—*
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Fujiwara, Toshio: *See—*
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Fukuda, Heijiro. Method of continuously producing resinoid abrasive wheels for cutting hard materials. 4,115,077, Cl. 51-296.000.
Fukui, Kiyozumi, to Teijin Seiki Company Limited. Drive controlling mechanism. 4,114,737, Cl. 192-3.00N.
Fukuoka, Shigetada: *See—*
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Fun Things, Inc.: *See—*
Csoka, Frank S., 4,114,892, Cl. 273-265.000.
Funsten, Stanard R.: *See—*
Webb, Daniel R.; Steinke, John R.; Berry, Robert W.; and Funsten, Stanard R., 4,114,698, Cl. 173-1.000.
Fur, Nick. Apparatus for the storage and retrieval of items. 4,114,767, Cl. 214-16.40A.
Furmaga, Walter V. Safety structure. 4,114,529, Cl. 100-53.000.
Furmanite International Limited: *See—*
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Furnier- und Sperrholzwerk J. F. Werz Jr. KG Werzalit-Pressholzwerk Oberstenfeld: *See—*
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Fuscone, Roy. Dart flights. 4,114,883, Cl. 273-106.50C.
Fustier, Geraud; Langeron, Jean-Paul; de la Bastie, Joseph; and Carlizza, Jean, to Cime Bocuze. Process for the preparation of molybdenum based alloys by sintering. 4,115,113, Cl. 75-206.000.
Futamase, Tsuyoshi: *See—*
Chibana, Masanobu; Futamase, Tsuyoshi; and Yamada, Hideo, 4,114,498, Cl. 84-1.190.
G. H. Endress & Co.: *See—*
Magri, Antonio, 4,114,441, Cl. 73-290.00V.
Gabry, Frank F. Expandable door. 4,114,674, Cl. 160-222.000.
GAF Corporation: *See—*
Hort, Eugene V., 4,115,458, Cl. 568-847.000.
Kelly, Edward G., 4,114,346, Cl. 52-746.000.
Gager, Morgan E.: *See—*
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Gagin, Anatoly Vasilievich: *See—*
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Gale, Glen Roy; and Meischen, Sandra Jan, to United States of America, America. 1,2-Diaminocyclohexane platinum (II) complexes having antineoplastic activity. 4,115,418, Cl. 260-429.00R.
Galimova, Guzal Abdulkhaevna: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
Gall, Ludwig; and Fabian, Wolfgang, to BASF Aktiengesellschaft. Perylene-3,4,9,10-tetracarboxylic acid diimide pigment, its manufacture and its use. 4,115,386, Cl. 260-281.00P.
Gallien, Shelby W.: *See—*
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Gallus, Julius P., to Union Oil Company of California. Method for cementing high temperature wells. 4,114,692, Cl. 166-293.000.
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Gancy, Alan B.; and Kaminski, Chester J., to Allied Chemical Corporation. Brine purification process. 4,115,219, Cl. 204-99.000.
Gancy, Alan B.; and Poncha, Rustom P., to Allied Chemical Corporation. Absorptive low bulk density product from sodium sesquicarbonate. 4,115,525, Cl. 423-425.000.
Gannaway, Edwin L., to Tecumseh Products Company. Valve arrangement for compressor. 4,115,044, Cl. 417-564.000.
Gant, Preston L.: *See—*
Fertl, Walter H.; and Gant, Preston L., 4,115,688, Cl. 250-253.000.
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, to Merck Patent Gesellschaft mit beschrankter Haftung. Alkyne compounds and method of use. 4,115,456, Cl. 260-613.00R.
Garden, Graham Miller; and Harwood, Richard James, to New Zealand Inventions Development Authority. Drive means and harvesting apparatus incorporating same. 4,114,463, Cl. 74-61.000.
Gardner, Jeffrey M., to Container Corporation of America. Interlocking cover and tray. 4,114,798, Cl. 229-43.000.
Gardner, Peter Alan Edward: *See—*
Commander, Robert Duncan; Gardner, Peter Alan Edward; and Taylor, John Richard, 4,115,823, Cl. 360-77.000.
Garlock Inc.: *See—*
Bainard, Dean R., 4,114,245, Cl. 29-156.40R.
Bainard, Dean R., 4,114,897, Cl. 277-1.000.
Bainard, Dean R.; and Wright, Roger W., 4,114,898, Cl. 277-9.000.
Garmonov, Izmail Vladimirovich: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Garn, Lynn E.: *See—*
Balcerak, Raymond S.; and Garn, Lynn E., 4,115,692, Cl. 250-338.000.
Garner, Robert; and Petitpierre, Jean Claude, to Ciba-Geigy Corporation. Bis-aminoarylethane amide compounds. 4,115,450, Cl. 260-558.00A.
Garrett Corporation, The: *See—*
Saylor, B. Franklin, 4,114,808, Cl. 236-87.000.
Garrett, Michael Ernest: *See—*
Smith, Kenneth Cecil; and Garrett, Michael Ernest, 4,115,258, Cl. 210-15.000.
Garrison, Harold K. Ventilated head cover. 4,114,201, Cl. 2-209.700.
Garzia, Aldo, to Istituto Chemioterapico Italiano, S.p.A. Morpholine compounds and methods of use. 4,115,570, Cl. 424-248.570.
Gasanova, Alevtina Anatolievna: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
Gascoigne Gush & Dent (Agricultural) Limited: *See—*
Dode, Peter Francis; and Hawkins, Michael Francis, 4,114,565, Cl. 119-14.010.
Gaston County Dyeing Machine Company: *See—*
Turner, James Keith; and Sturkey, William Cleere, 4,114,407, Cl. 68-178.000.
Gatby, Sven-Olof. Combination tool. 4,114,216, Cl. 7-116.000.
Gay, Derek John, to Mattel, Inc. Toy helicopter. 4,114,309, Cl. 46-75.000.
Gee, Victor L. Gate lock and latch. 4,114,408, Cl. 70-128.000.
Geiger, Dana F.: *See—*
Brosh, Amnon; and Geiger, Dana F., 4,115,767, Cl. 340-347.0CC.
Geints, Dmitry Evgenievich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.
Gemini, Vincenzo: *See—*
DeFeo, Francesco; Gemini, Vincenzo; and Floridia, Luigi, 4,115,057, Cl. 8-54.000.
General Battery Corporation: *See—*
DiGiacomo, Hector L.; and Sacco, John A., 4,114,260, Cl. 29-623.100.
General Dynamics Corporation: *See—*
Bitson, Joseph W., 4,114,452, Cl. 73-504.000.

Crittenden, Jack H.; and Bitson, Joseph W., 4,114,451, Cl. 73-504.000.

General Electric Company: *See—*
Boldebuck, Edith M.; and Banucci, Eugene G., 4,115,341, Cl. 260-33.20R.
Bondi, Pasquale Columbo, 4,114,857, Cl. 251-324.000.
Budlane, Stanley J.; Denny, Dann W.; and Hilty, Ronald L., 4,115,674, Cl. 200-329.000.
Denny, Dann W., 4,114,681, Cl. 165-26.000.
Eff, Christian A., 4,114,523, Cl. 99-393.000.
Giaever, Ivar, 4,115,535, Cl. 424-1.000.
Guichard, Robert C., 4,115,701, Cl. 250-552.000.
Howell, Edward Keith, 4,115,829, Cl. 361-42.000.
Huizenga, Ronald G., 4,115,751, Cl. 337-323.000.
Jenis, Donald S.; Kuczkowski, Thomas A.; Mazer, Jack S.; and Westerkamp, Douglas F., 4,114,684, Cl. 165-82.000.
Kelman, Arnold Lloyd, 4,115,695, Cl. 250-445.00T.
Lange, Kai; Toefting, Verner; Wiesen, Ernest J.; and Lijewski, Robert R., 4,115,694, Cl. 250-363.00S.
Lawrence, George J., 4,114,974, Cl. 339-103.00C.
Mark, Victor; and Hoogebroom, Thomas J., 4,115,354, Cl. 260-45.70S.
Patenaude, Raymond Arthur, 4,114,511, Cl. 89-33.0CA.
Phipps, Donald Lee, Jr.; and Wambach, Allen Dale, 4,115,333, Cl. 260-22.00R.
Smashey, Russell W.; Frey, Elmer L.; Cash, George V.; and Irons, George S., 4,115,112, Cl. 75-171.000.
Truscott, John Compton, 4,115,696, Cl. 250-445.00T.
Vestergaard, Jorgen H., 4,115,358, Cl. 528-196.000.
Ward, William J., III, 4,115,514, Cl. 423-232.000.

General Motors Corporation: *See—*
Shellhause, Ronald L., 4,114,377, Cl. 60-589.000.

General Time Corporation: *See—*
Hart, Robert D.; and Mazzamauro, Robert, 4,115,769, Cl. 340-373.000.
Ingenito, Michael J.; and Hartnett, Harold J., 4,115,714, Cl. 310-49.00R.
Yagusic, George J.; and Boronosky, Richard A., 4,115,838, Cl. 361-388.000.

Genessi, Richard J. Lint interceptor. 4,115,485, Cl. 261-119.00R.

Geno Corporation: *See—*
Chandler, Roy L., 4,115,670, Cl. 200-5.00R.

Georg Fischer Aktiengesellschaft: *See—*
Pavlovsky, Rudolf; and Wuest, Heinz, 4,114,281, Cl. 33-180.00R.
Wernli, Max, 4,114,677, Cl. 164-168.000.

Gerow, Clare William, to Du Pont de Nemours, E. I., and Company. Antistatic vinylidene chloride coating composition, and film coated therewith. 4,115,334, Cl. 260-28.50D.

Gershberg, David N.; Lee, Alexander Y.; and D'Orto, Michael D., to E-Systems, Inc. Radiation enhancement device. 4,115,781, Cl. 343-768.000.

Gerwin, Reinhard, to J. Eberspacher. Burner construction and method for burning liquid and/or gaseous fuel. 4,115,050, Cl. 431-352.000.

Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH.: *See—*
Boddeker, Karl W.; and Hilgendorff, Walter, 4,115,274, Cl. 210-321.00R.

Giacoppo, Guglielmo; and Tres, Ercole, to Societa Italiana Telecomunicazioni Siemens S.p.A. Multiple circuit interrupter for telecommunication system. 4,115,665, Cl. 179-98.000.

Giaever, Ivar, to General Electric Company. Diagnostic method employing a mixture of normally separable protein-coated particles. 4,115,535, Cl. 424-1.000.

Gijsbers, Roelof, to C. van der Lely N.V. Apparatus for conninuting solids in liquids. 4,114,815, Cl. 241-45.000.

Gillette Company, The: *See—*
Buchholz, Alexis Emmanuel, 4,114,264, Cl. 30-34.100.

Gillette, Harold R.: *See—*
Baeck, Henry S.; Bennett, William C.; Condon, David C.; Gillette, Harold R.; and Herbert, Donald G., 4,114,750, Cl. 400-279.000.

Gindler, E. Melvin, to Pierce Chemical Company. Method for bilirubin determination. 4,115,064, Cl. 23-230.00B.

Giraldi, PierNicola: *See—*
Doria, Gianfederico; Giraldi, PierNicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,115,567, Cl. 424-250.000.

Girling Limited: *See—*
Knight, Peter Charles, 4,114,733, Cl. 188-196.0BA.

Gladow, Dean E.; and Clifton, Kenneth C., to Didde-Glaser, Inc. Mechanism for effecting interlock of multiple sheet continuous business forms. 4,114,869, Cl. 270-37.000.

Glaenzer Spicer: *See—*
Orain, Michel A., 4,115,022, Cl. 403-359.000.

Glass, Carl R. Ornamental sunburst hub. 4,115,608, Cl. 428-65.000.

Glenn, Edwin E., Jr., to Mobil Oil Corporation. Method and system for acoustic noise logging. 4,114,721, Cl. 181-105.000.

Glover, Glen A., Jr.; and Cambron, Robert B., to Caterpillar Tractor Co. Piston valve pocket relief. 4,114,518, Cl. 92-208.000.

Go, Santos W., to Owens-Illinois, Inc. Linear copolyesters of isophthalic acid 4,4'-sulfonyldibenzoic acid, bis(4-beta-hydroxyethoxyphenyl) sulfone and ethylene glycol. 4,115,363, Cl. 528-294.000.

Goeman, Friedrich, to W. R. Bonsal Company. Composition and method for producing glass reinforced cement products. 4,115,135, Cl. 106-99.000.

Goff, Raymond Charles, to Aston Electronic Developments Ltd. Data slicing apparatus and method. 4,115,811, Cl. 358-167.000.

Goko, Nobuaki: *See—*
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,532, Cl. 423-492.000.
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,533, Cl. 423-492.000.

Goldberg, Eitan: *See—*
Goldberg, Moshe; and Goldberg, Eitan, 4,114,659, Cl. 141-26.000.

Goldberg, Moshe; and Goldberg, Eitan, to Goldberg, Eitan. Pipette filling and liquid dispensing device. 4,114,659, Cl. 141-26.000.

Goldenberg, Marvin M.: *See—*
Wright, George C.; and Goldenberg, Marvin M., 4,115,405, Cl. 260-345.200.
Wright, George C.; and Goldenberg, Marvin M., 4,115,407, Cl. 260-345.200.

Goldfarb, Adolph E.; and Benkoe, Erwin. Memory skill game. 4,114,877, Cl. 273-1.00R.

Golz, Hans-Joachim: *See—*
Lindenberg, Hans-Georg; Illmann, Joachim; and Golz, Hans-Joachim, 4,114,649, Cl. 137-625.190.

Gomyo, Shiro: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.

Gonser, Donald I., to Dentsply Research and Development Corporation. Electrosurgical device. 4,114,622, Cl. 128-303.140.

Gooch, Beverley R., to Ampex Corporation. Magnetic transducer for narrow track recording and playback. 4,115,827, Cl. 360-121.000.

Goodacre, John Purefoy; Potter, Colin; and Ball, Peter, to National Supply Company (U.K.) Limited. Articulated arms. 4,114,662, Cl. 141-387.000.

Goodman, David J. Direction finding antenna system. 4,115,780, Cl. 343-739.000.

Goodman, James M., to E.G. Sprinkler Corporation. Backup roll for thin walled pipe grooving device. 4,114,414, Cl. 72-105.000.

Goodyear Aerospace Corporation: *See—*
Salmen, Richard A.; and Reed, Clark G., 4,115,801, Cl. 358-93.000.

Gordon, Carroll G. Valve structure. 4,114,650, Cl. 137-625.630.

Gori & Zucchi S.p.A.: *See—*
Orlandini, Orlando Paladino, 4,114,398, Cl. 63-3.000.

Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich. Method of growing epitaxial semiconductor films utilizing radiant heating. 4,115,163, Cl. 148-175.000.

Goto, Hiroshi: *See—*
Sano, Nobuya; Goto, Hiroshi; and Hirota, Yutaka, 4,115,739, Cl. 330-263.000.

Goto, Kuniaki; and Kodama, Kazumi, to Nippon Zeon Co. Ltd. Novel derivatives useful as additives for inhibiting the deterioration of degradable substances. 4,115,355, Cl. 260-45.95H.

Goto, Mikio; Sasano, Mitsunori; Oosawa, Koichi; and Yoshihara, Mitsuya, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Kogyo Kabushiki Kaisha. Exhaust gas recirculating control system. 4,114,576, Cl. 123-119.00A.

Goulay, Jean: *See—*
Lormeau, Jean-Claude; Goulay, Jean; and Vairel, Edmond, 4,115,551, Cl. 424-105.000.

Gould, Harry J.: *See—*
Han, Ching C.; and Gould, Harry J., 4,115,782, Cl. 343-779.000.

Gould Inc.: *See—*
Brown, Arling Dix, Jr.; and Reilly, Edward Justus, 4,115,763, Cl. 340-166.00R.
Zoltan, Steven I., 4,115,734, Cl. 324-151.00A.

Gournier, Andre: *See—*
Abbes, Claude; Gournier, Andre; Rouaud, Christian; and de Villepoix, Raymond, 4,114,907, Cl. 277-206.00R.

Governale, Bernard C., to Peachtree Doors, Inc. Bottom sweep and rail unit for foam-filled doors. 4,114,319, Cl. 49-488.000.

Graff, Hart F.: *See—*
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,114,563, Cl. 118-63.000.

Graff, John M.: *See—*
Stoltze, Leon; and Graff, John M., 4,115,611, Cl. 428-174.000.

Gragson, James T.; and Ballard, Joseph E., to Phillips Petroleum Company. Treated fabrics and process. 4,115,562, Cl. 264-234.000.

Graham, Blair M.; and Hamrick, Harry C., to Graham, Blair M. Airplane configuration designed for the simultaneous reduction of drag and sonic boom. 4,114,836, Cl. 244-1.00N.

Graham, Sandra I.: *See—*
Nyi, Kayson; and Graham, Sandra I., 4,115,232, Cl. 204-159.230.

Grandin, Friedrich-Hans; Fritsch, Werner; and Wengenrod, Gunter, to Mannesmann Aktiengesellschaft. Resistive heating of elongated stock. 4,115,685, Cl. 219-155.000.

Gransden, Raymond E., Jr.: *See—*
Kurfman, Virgil B.; and Gransden, Raymond E., Jr., 4,115,619, Cl. 428-336.000.

Grant, Louis R., Jr., to United States of America, Air Force. Preparation of fluorotrinitromethane. 4,115,459, Cl. 260-644.000.

Grass, Alfred. Door hinge. 4,114,237, Cl. 16-145.000.

Grasselli, Robert K.: *See—*
Bartek, Joseph P.; Dolhyj, Serge R.; Velenyi, Louis J.; and Grasselli, Robert K., 4,115,464, Cl. 260-668.00C.

Grasshoff, Hans Dieter, to Deutsche Texaco Aktiengesellschaft. Biodegradable grease composition. 4,115,282, Cl. 252-18.000.

Grather, Gunter: *See—*
Rabus, Friedrich; Wahl, Josef; and Grather, Gunter, 4,114,582, Cl. 123-148.00E.

Graversen, Niels Peter Grand, to Danfoss A/S. Thermostatically actuated regulator for a 4-lead air conditioning plant. 4,114,806, Cl. 236-1.00C.

Gravley, Wilton: *See—*
Patton, Bobbie J.; Sexton, James H.; Gravley, Wilton; and Foster, C. Mackay, Jr., 4,114,435, Cl. 73-151.500.

Gray, Lew T.: *See—*
Reusser, Robert E.; Gray, Lew T.; and Marrs, Oren L., 4,115,335, Cl. 260-28.5AS.

Greber, Gerd: *See—*
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,115,231, Cl. 204-159.220.

Green, Ethan Robert: *See—*
Moe, William West; Lotz, Robert William; Green, Ethan Robert; and Fazio, Rodolfo, 4,115,816, Cl. 358-283.000.

Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, to Imperial Chemical Industries Limited. Benzodifuran dyestuffs. 4,115,404, Cl. 260-343.30R.

Greenspan, Harold Jack. Abrasive member. 4,114,322, Cl. 51-206.00R.

Greer, Kent R.: *See—*
Bennett, John Reginald; and Greer, Kent R., 4,115,269, Cl. 210-150.000.

Greeson, Thomas J. Table top assembly for vehicle bumper jack. 4,114,858, Cl. 254-1.000.

Gregg, Peter P.: *See—*
Hutchison, Robert V.; Gregg, Peter P.; and MacBride, James J., 4,115,836, Cl. 361-382.000.

Gregorius, Klaus: *See—*
Janner, Karl; and Gregorius, Klaus, 4,115,078, Cl. 55-2.000.

Greier, Josef: *See—*
Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,114,714, Cl. 180-54.00A.

Greinacher, Ekkehard; Reinhardt, Klaus; and Strnat, Karl, to TH. Goldschmidt AG. Method of increasing the coercive force of pulverized rare earth-cobalt alloys. 4,115,159, Cl. 148-105.000.

Greiner, Karl Walter. Expandable house trailer structure. 4,114,942, Cl. 296-23.00G.

Greive, Aloys, to Hamel GmbH Zwirnmaschinen. Thread-wetting arrangement for yarn-twisting apparatus. 4,114,357, Cl. 57-35.000.

Greulich, Bodo Arthur: *See—*
Kraus, Willibald; and Greulich, Bodo Arthur, 4,114,972, Cl. 339-65.000.

Grey, John Constantine, to Thorpenco (Sales & Service Ltd.). Couplings. 4,114,403, Cl. 64-15.00B.

Grieder, Charles K. Aerodynamically driven toy. 4,114,308, Cl. 46-53.000.

Griffith, Edward J., to Monsanto Company. Treatment of aqueous dispersions. 4,115,233, Cl. 204-180.00R.

Grill, Benjamin: *See—*
Sturman, Oded E.; and Grill, Benjamin, 4,114,647, Cl. 137-624.200.

Grimmer, Klaus Jurgen. Unbalanced vibrator for an oscillating conveyor or a vibrating screen. 4,114,462, Cl. 74-61.000.

Grimsley, Ernest E. Portable boring tool for ball valves. 4,114,483, Cl. 82-1.200.

Grinberg, Jan: *See—*
Bleha, William P., Jr.; and Grinberg, Jan, 4,114,991, Cl. 350-338.000.

Gritti, Sergio, to Montedison S.p.A. Liquid compositions based on polyglycolethers having a high boiling point. 4,115,291, Cl. 252-73.000.

Gropper, Hans: *See—*
Becker, Rolf; Borho, Klaus; Buechner, Oskar; Gropper, Hans; and Hartig, Ulrich, 4,115,638, Cl. 526-61.000.

Gross, Albert; and Schaefer, Roland, to Kulzer & Co. GmbH. Hydroxy group containing diesters of acrylic acids and their use in dental material. 4,115,346, Cl. 260-42.150.

Gross, Thomas A. O. Braking system for three phase motors. 4,115,727, Cl. 318-212.000.

Groves, Malcolm Duane, to Combustion Engineering, Inc. High density fuel storage racks. 4,115,700, Cl. 250-518.000.

Grubb, Donald G. Means for forming and splitting prestressed concrete elements. 4,115,049, Cl. 425-111.000.

Grumman Aerospace Corporation: *See—*
Deb, Satyendra Kumar, 4,115,631, Cl. 429-111.000.
Duzich, John J., 4,115,754, Cl. 340-27.00R.

Grunewalder, Werner, to Henkel Kommanditgesellschaft auf Aktien. Combination method for cleaning greatly soiled textiles. 4,115,061, Cl. 8-137.000.

Gruzintsev, Igor Andreevich: *See—*
Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Scherbakov, Vsevolod Sergeevich; and Gruzintsev, Igor Andreevich, 4,115,043, Cl. 417-559.000.

GTE Laboratories Incorporated: *See—*
Auborn, James J.; and Trickett, Elizabeth A., 4,115,526, Cl. 423-440.000.
Rhodes, William H., 4,115,134, Cl. 106-73.200.

GTE Sylvania Incorporated: *See—*
Bovio, Robert J.; and Mercaldi, Renaldo, 4,114,903, Cl. 277-81.00R.
Egan, William F., 4,115,745, Cl. 331-17.000.
Latassa, Frank M., 4,114,968, Cl. 316-1.000.
Rowe, Don H.; and Sasnett, Michael W., 4,115,828, Cl. 361-1.000.

Guerrero, Benjamin G.; Leistikow, Gerard K.; and Sindlinger, Norman E., to Mattel, Inc. Combination doll and accessory articles. 4,114,313, Cl. 46-264.000.

Guerry, Raymond Ellwood, to Procter & Gamble Company, The. High-shear process for preparing silicate-containing paste-form detergent compositions. 4,115,308, Cl. 252-135.000.

Guertin, Emile. Solar heating system. 4,114,593, Cl. 126-270.000.

Guichard, Robert C., to General Electric Company. Coaxial reflex photoelectric scanner. 4,115,701, Cl. 250-552.000.

Guillaume, Andre; and Sagi, Ferenc, to Rhone-Poulenc Industries. Homogeneous dispersions of diorganopolysiloxane compositions in mineral oils. 4,115,343, Cl. 260-33.6SB.

Guimbal, Jean, to Agence Nationale de Valorisation de la Recherche (ANVAR). High power and high speed linear motor. 4,115,712, Cl. 310-12.000.

Guinet, Yves Maurice; and Noirel, Yves Maurice, to Etablissement Public Dit Telediffusion de France; and L'Etat Francais, Represente par le Secretaire d'Etat aux Postes et Telecommunications. One way data transmission system. 4,115,662, Cl. 179-15.0BV.

Gulf & Western Manufacturing Company: *See—*
Byrne, James C.; and Talmage, Dennis D., 4,115,723, Cl. 315-84.000.

Gun, Dmitry Rudolfovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.

Gunjima, Tomoki: *See—*
Asawa, Tatsuro; and Gunjima, Tomoki, 4,115,240, Cl. 204-296.000.

Gupta, Pramod: *See—*
Henes, Gerhard; Muller, Hans Jurgen; Gupta, Pramod; and Zirner, Joachim, 4,115,373, Cl. 528-48.000.

Gupta, Rakesh Kumar; Jurkiewitsch, George; and Logan, Lawrence Joseph, to Hercules Incorporated. Conjugate filaments. 4,115,620, Cl. 428-374.000.

Gurkov, Konstantin Stepanovich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Boginsky, Vladimir Petrovich, 4,114,700, Cl. 175-19.000.

Gustavsson, Rolf; and Hedvall, Per, to ASEA Aktiebolag. Magnetic separator. 4,115,262, Cl. 210-42.00S.

Gvozdev, Vladimir Nikolaevich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.

H. F. & Ph. F. Reemtsma: *See—*
Frohling, Hans-Joachim; and Rothe, Werner, 4,114,777, Cl. 229-44.0CB.

Haake, Robert, to Phone-mate, Inc. Tape drive system and one-way clutch mechanism. 4,114,834, Cl. 242-200.000.

Habermann, Helmut; Brunet, Maurice; and LeClere, Jacques, to Societe Europeenne de Propulsion. Radial displacement detector device for a magnetic bearing. 4,114,960, Cl. 308-10.000.

Habib, David P.; and Gager, Morgan E., to Trans World Technology Laboratories, Inc. Barrier coat for use in thermographic imaging assembly. 4,114,926, Cl. 282-27.500.

Habu, Nobuo: *See—*
Yanagihara, Hiromichi; and Habu, Nobuo, 4,114,568, Cl. 123-30.00D.

Hackenberg, Hubert: *See—*
Engelsmann, Dieter; Hackenberg, Hubert; and Zobel, Siegfried, 4,115,792, Cl. 354-213.000.

Hague International: *See—*
Bjerklie, John W., 4,115,051, Cl. 432-3.000.

Hakkinen, Seppo: *See—*
Paakkinen, Ilmari; Hakkinen, Seppo; and Matula, Jouni, 4,114,818, Cl. 241-244.000.

Halcon International, Inc.: *See—*
Brill, William F., 4,115,420, Cl. 260-429.00R.
Brill, William F., 4,115,421, Cl. 260-429.00R.
Naglieri, Anthony N.; and Rizkalla, Nabil, 4,115,419, Cl. 260-429.00R.
Rizkalla, Nabil, 4,115,444, Cl. 260-549.000.

Halcour, Kurt: *See—*
Thelen, Hermann; Halcour, Kurt; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,115,462, Cl. 260-667.000.

Hale, Peter: *See—*
Marsh, Robert Anthony; Mackie, Gordon John; and Hale, Peter, 4,115,548, Cl. 424-70.000.

Hall, Eric R. D., to Schaefer Marine Products. Goose-neck fitting. 4,114,551, Cl. 114-98.000.

Hall, Ernest M., Jr., to Western Geophysical Co. of America. Electrical marine connector. 4,114,970, Cl. 339-49.00R.

Hall, John B.; Sprecker, Mark A.; Shuster, Edward J.; Schmitt, Frederick Louis; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Substituted dimethyl dihydroxy benzene and cyclohexadiene compounds and uses thereof for augmenting or enhancing the taste and/or aroma of consumable materials including tobaccos, perfumes and perfumed articles. 4,115,431, Cl. 260-465.00F.

Hall, John B.: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,115,406, Cl. 260-345.100.

Halmo, Terje Martin; and Skoglund, Liv, to Elopak A/S. Process for the production of pressed bodies from municipal refuse. 4,115,497, Cl. 264-115.000.

Hamel GmbH Zwirnmaschinen: *See—*
Greive, Aloys, 4,114,357, Cl. 57-35.000.

Hamill, Robert L.; Stark, William M.; and DeLong, Donald C., to Eli Lilly and Company. Factor A and B of antibiotic A-4696. 4,115,552, Cl. 424-118.000.

Hamilton, Gerald A., to Val-Trac Incorporated. Window trim assembly. 4,114,233, Cl. 16-95.00R.

Hamilton, Joel A.: *See—*
Mahaffy, Reid A.; and Hamilton, Joel A., 4,114,348, Cl. 53-433.000.

Hamilton, Lewis R.; and Sutton, Richard C., to Eastman Kodak Company. Method of immobilizing optical brighteners. 4,115,124, Cl. 96-82.000.

Hammann, Ingeborg: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; and Hammann, Ingeborg, 4,115,542, Cl. 424-200.000.

Hammond, Robert Louis. Anchored golf tee. 4,114,878, Cl. 273-32.00A.

Hamon Sobelco S.A.: *See—*
Verlinden, Michel Francois Emile Jacques, 4,114,683, Cl. 165-78.000.

Hampton, Robert S., Jr.: *See—*
Spainhour, Phillip A.; Hampton, Robert S., Jr.; and Morrison, Leonard A., 4,114,283, Cl. 33-337.000.

Hamrick, Harry C.: *See—*
Graham, Blair M.; and Hamrick, Harry C., 4,114,836, Cl. 244-1.00N.

Han, Ching C.; and Gould, Harry J., to Ford Motor Company. Microwave antenna system. 4,115,782, Cl. 343-779.000.

Hane, Yoshio; Chino, Nobuo; Murata, Katsuhiro; and Harayama, Akira, to Taisei Kensetsu Kabushiki Kaisha; and Teikoku Piston Ring Co., Ltd. Vertical centering method and jig for plating. 4,114,282, Cl. 33-180.00R.

Hannemann, Dennis M.; Huang, Kwang Ta; and Shiroma, Dallas M., to United States of America, Navy. Parametric energy coupled uninterruptible power supply. 4,115,704, Cl. 307-64.000.

Hanning, Robert. Method of making thermoplastic articles with porous cores. 4,115,491, Cl. 264-45.100.

Hans Kreutzenbeck GmbH: *See—*
Hummel, Herbert, 4,115,839, Cl. 361-393.000.

Hansen, Dan S., to F. L. Smidth & Co. Method of heat treating raw materials and rotary kiln plant therefor. 4,115,136, Cl. 106-100.000.

Hansen, Niels Junior; Ward, John Ambrose; Hintze, William; and Johnson, David Charles, to AMP Incorporated. Bimetal actuator. 4,115,750, Cl. 337-107.000.

Hara, Morihisa: *See—*
Suzuki, Yoshiro; Kokubu, Yoshinori; Chiba, Jiro; Hara, Morihisa; Nagahara, Shigehiro; and Yamamoto, Koichi, 4,115,132, Cl. 106-53.000.

Harayama, Akira: *See—*
Hane, Yoshio; Chino, Nobuo; Murata, Katsuhiro; and Harayama, Akira, 4,114,282, Cl. 33-180.00R.

Hargis, Robert L., to Aluminum Company of America. Fused bath cell lid having corrosion protection means and method of using same. 4,115,214, Cl. 204-64.00R.

Harman Brother Limited: *See—*
Powell, Robert George, 4,114,238, Cl. 16-157.000.

Harpman, Webster B.; and Mahoney, Fred G., to Econo Fuel Systems, Inc. Hot fuel gas generator. 4,114,566, Cl. 123-25.00B.

Harrington, John J., to United States of America, Air Force. Deep penetrating forebody with tethered radar reflector. 4,115,775, Cl. 343-18.00B.

Harrington Manufacturing Company: *See—*
Jordan, Bertram Lee; and Mitchell, John Davis, 4,114,770, Cl. 214-130.00R.

Harris, Alan M.: *See—*
Horton, Michael L.; and Harris, Alan M., 4,114,352, Cl. 54-79.000.

Harris Data Communications, Inc.: *See—*
Rozell, James O., 4,115,852, Cl. 364-200.000.

Harris, Fred A., to Olin Corporation. Granulator. 4,114,817, Cl. 241-73.000.

Harris, James A. Mobile fluid treatment tank servicing apparatus. 4,114,661, Cl. 141-231.000.

Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased (by Bozeman, Arlene, executrix), to Texaco Inc. Solvent dewaxing process. 4,115,241, Cl. 208-33.000.

Harrison, Charles W.; Pitman, Herbert J.; and Sequeira, Avilino, to Texaco Inc. Solvent dewaxing process. 4,115,243, Cl. 208-33.000.

Harrison, Charles W.; and Watts, Leonard R., to Texaco Inc. Solvent dewaxing process. 4,115,245, Cl. 208-33.000.

Harrison, Charles W.: *See—*
Pitman, Herbert J.; Harrison, Charles W.; and Sequeira, Avilino, 4,115,244, Cl. 208-33.000.
Sequeira, Avilino; Pitman, Herbert J.; Harrison, Charles W.; and Quasny, Jerry E., 4,115,242, Cl. 208-33.000.

Harrison, James Berkeley, Jr.: *See—*
Catanese, Carmen Anthony; Harrison, James Berkeley, Jr.; and Lindburg, Norman Lee, 4,115,719, Cl. 313-105.00R.

Harrison, Robert S.: *See—*
Rogerson, Jerry B.; and Harrison, Robert S., 4,114,584, Cl. 123-179.00G.

Harrison, William E.: *See—*
Cruff, Carlton E.; and Harrison, William E., 4,114,285, Cl. 34-29.000.

Hart, Robert D.; and Mazzamauro, Robert, to General Time Corporation. Damping means for indicators. 4,115,769, Cl. 340-373.000.

Hartig, Ulrich: *See—*
Becker, Rolf; Borho, Klaus; Buechner, Oskar; Gropper, Hans; and Hartig, Ulrich, 4,115,638, Cl. 526-61.000.

Hartitz, Joachim Ernst, to B. F. Goodrich Company, The. Processing extruded thermoplastic polymer. 4,115,495, Cl. 264-90.000.

Hartke, David, to Xerox Corporation. Autonomous display processor. 4,115,765, Cl. 340-324.0AD.

Hartnett, Harold J.: *See—*
Ingenito, Michael J.; and Hartnett, Harold J., 4,115,714, Cl. 310-49.00R.

Hartupee, Richard B.: *See—*
Lista, Edwin L.; Hartupee, Richard B.; Manfred, Ralph K.; and O'Neil, Paul L., 4,115,166, Cl. 149-7.000.

Hartwell Corporation: *See—*
Poe, L. Richard, 4,114,509, Cl. 85-84.000.

Haruch, James: *See—*
Wohlert, Andrew M.; and Haruch, James, 4,114,305, Cl. 43-17.600.

Harvey, Gary Lee: *See—*
Dean, Charles Wallace; Cummings, Gary Eugene; and Harvey, Gary Lee, 4,114,340, Cl. 52-520.000.

Harvey Hubbell Incorporated: *See—*
Skrovanek, Ambroz K.; and Clark, Fred E., Jr., 4,115,668, Cl. 179-170.200.

Harwood, Richard James: *See—*
Garden, Graham Miller; and Harwood, Richard James, 4,114,463, Cl. 74-61.000.

Hase, Christian: *See—*
Krause, Horst-Jurgen; Hase, Christian; and Bloching, Helmut, 4,115,309, Cl. 252-186.000.

Hasegawa, Kinji: *See—*
Mitsuishi, Yukio; Shiozaki, Shigeru; and Hasegawa, Kinji, 4,115,617, Cl. 428-336.000.

Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, to Yoshida Kogyo K.K.; Toa Paint Co., Ltd.; and Shin-Etsu Chemical Co., Ltd., part interest to each. Process of coating aluminum materials molded by extrusion with polysiloxane coating. 4,115,607, Cl. 427-387.000.

Haselby, Robert Dale: *See—*
Patterson, Marvin LeRoy; Haselby, Robert Dale; and Kendig, Albert Prall, 4,115,726, Cl. 318-171.000.

Hashimoto, Masaru: *See—*
Kubo, Daijiro; and Hashimoto, Masaru, 4,115,748, Cl. 331-111.000.

Hashimoto, Yoitiro, to Hitachi, Ltd. Horizontal deflection circuit. 4,115,725, Cl. 315-403.000.

Hashimoto, Yoshitoshi; Kondo, Takajiro; and Asamoto, Toshitaka, to Hitachi Metals, Ltd. Full rotation type paper web cutting device. 4,114,491, Cl. 83-341.000.

Hashizume, Kyosuke: *See—*
Shimizu, Junichi; and Hashizume, Kyosuke, 4,115,147, Cl. 127-54.000.

Hasuo, Masayoshi: *See—*
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,532, Cl. 423-492.000.
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,533, Cl. 423-492.000.

Hattori, Tadashi; Nakase, Takamichi; and Kohama, Tokio, to Nippon Soken, Inc. Air-to-fuel ratio control system. 4,114,578, Cl. 123-124.00R.

Hattori, Tatsuo: *See—*
Katsuragawa, Kanzi; Hattori, Tatsuo; Kihara, Keiichi; and Tamabayashi, Hanzo, 4,115,436, Cl. 260-505.00N.

Hauni-Werke Korber & Co. Kg.: *See—*
Barbe, Karl-Heinz, 4,115,085, Cl. 55-193.000.

Hauser, Ivo, to Societe d'Assistance Technique pour Produits Nestle, S.A. Device for measuring the adhesion forces in a closure seal for a container and a method of operating this device. 4,114,434, Cl. 73-150.00R.

Haverstock, Charles B. Skin closure means. 4,114,624, Cl. 128-335.000.

Havinga, Reginoldus; and Swaters, Pieter Dirk, to Akzo NV. Radiation acid curable resin compositions and process for curing them. 4,115,224, Cl. 204-159.180.

Hawkins, Michael Francis: *See—*
Dode, Peter Francis; and Hawkins, Michael Francis, 4,114,565, Cl. 119-14.010.

Hawkins, Roland L. Texturing finish for synthetic filaments. 4,115,621, Cl. 428-395.000.

Hay, Louis E.: *See—*
Friz, Walter, 4,115,721, Cl. 315-3.500.

Hay, William Dunning: *See—*
Weinstock, Jacques; Lieber, Derek; and Hay, William Dunning, 4,115,690, Cl. 250-308.000.

Hayashi, Tooru: *See—*
Mizuta, Toshinobu; and Hayashi, Tooru, 4,115,699, Cl. 250-461.00B.

Hayashi, Yoshiaki; and Fujimori, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Tape loading apparatus in a magnetic recording and reproducing apparatus. 4,115,825, Cl. 360-85.000.

Hayashi, Yoshimasa: *See—*
Aoyama, Syuniti; Hayashi, Yoshimasa; and Nakajima, Yasuo, 4,114,643, Cl. 137-495.000.

Hayden, Howard Wayne: *See—*
Wadsworth, Milton E.; Miller, Jan D.; Herbst, John A.; Kolbe, John L.; and Hayden, Howard Wayne, 4,115,221, Cl. 204-108.000.

Hayes, John C.; and Pollitzer, Ernest L., to UOP Inc. Process for hydrogenating a coke-forming hydrocarbon distillate. 4,115,255, Cl. 208-143.000.

Hazan, Isidor, to Du Pont de Nemours, E. I., and Company. Cathodic electrodeposition of paints. 4,115,227, Cl. 204-181.00C.

Hazemeijer B. V.: *See—*
Lipperts, Joseph H. F. G., 4,115,672, Cl. 200-144.00B.

Hearsey, Colin John, to Quimco GmbH. Process for the preparation of trisubstituted ureas. 4,115,445, Cl. 260-553.00A.

Heasman, Edward E., to Imoco-Gateway Corporation. Concrete reinforcement splice with location tab. 4,114,344, Cl. 52-741.000.

Heaton, Michael H. Cargo handling device. 4,114,941, Cl. 294-86.00R.

Hechler, Valentine, IV. Method of monitoring ratio of flowing mixture. 4,114,635, Cl. 137-3.000.

Hedaya, Eddie: *See—*
Eisenhardt, William Anthony, Jr.; Hedaya, Eddie; and Theodoropulos, Spyros, 4,115,539, Cl. 424-1.000.

Hedlund, Richard C. Device for preventing ice fishing holes from freezing closed. 4,114,304, Cl. 43-4.000.

Hedstrom, Jerry W., to Xerox Corporation. End-of-ribbon sensor device. 4,115,013, Cl. 400-249.000.

Hedvall, Per: *See—*
Gustavsson, Rolf; and Hedvall, Per, 4,115,262, Cl. 210-42.00S.

Heilman Enterprises, Inc.: *See—*
Ansbaugh, Donald I.; and Heilman, Glenn A., 4,114,353, Cl. 56-13.300.

Heilman, Glenn A.: *See—*
Ansbaugh, Donald I.; and Heilman, Glenn A., 4,114,353, Cl. 56-13.300.

Heimbrock, Henry H., to Van Products, a Division of Standex International Corporation. Cluster assembly and block therefor. 4,114,971, Cl. 339-59.00R.

Heitz, Roger M.; and Hill, Franklin, to United States of America, Air Force. Self-sealing fuel line assembly. 4,115,616, Cl. 428-310.000.

Heldt, Earl R., to Hewlett-Packard Company. Fiber optic connector. 4,114,979, Cl. 350-96.210.

Heller, Harold: *See—*
Corte, Herbert; Heller, Harold; Lange, Michael; and Netz, Otto, 4,115,261, Cl. 210-40.000.

Hendry, David V. Toy vehicle. 4,114,312, Cl. 46-223.000.

Henes, Gerhard; Muller, Hans Jurgen; Gupta, Pramod; and Zirner, Joachim, to Bayer Aktiengesellschaft. Process for the production of polyisocyanates containing isocyanurate groups. 4,115,373, Cl. 528-48.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Dieckelmann, Gerhard; Jeromin, Lutz; and Tollkotter, Gunther, 4,115,411, Cl. 260-348.260.
Grunewalder, Werner, 4,115,061, Cl. 8-137.000.
Krause, Horst-Jurgen; Hase, Christian; and Bloching, Helmut, 4,115,309, Cl. 252-186.000.
Weber, Rudolf; Pochandke, Winfried; and Schwadtke, Karl, 4,114,284, Cl. 34-12.000.

Hennen, Hans: *See—*
Opitz, Wolfgang; and Hennen, Hans, 4,115,531, Cl. 423-488.000.

Hennessy Products, Incorporated: *See—*
Brindle, Dale L., 4,114,318, Cl. 49-215.000.

Henningsen Foods Inc.: *See—*
Bergquist, Dwight H.; Cunningham, Franklin E.; and Eggleston, Robert M., 4,115,592, Cl. 426-32.000.

Henrich, Victor E.; and Fan, John C. C., to Massachusetts Institute of Technology. Method of making secondary-electron emitters. 4,115,228, Cl. 204-192.0EC.

Henry, Dick Peter, to University of Queensland, The. Process for producing feed protein. 4,115,593, Cl. 426-53.000.

Herbert, Donald G.: *See—*
Baeck, Henry S.; Bennett, William C.; Condon, David C.; Gillette, Harold R.; and Herbert, Donald G., 4,114,750, Cl. 400-279.000.

Herbez, Francois. Camping tent for motorcycles and cyclists. 4,114,633, Cl. 135-1.00A.

Herbst, John A.: *See—*
Wadsworth, Milton E.; Miller, Jan D.; Herbst, John A.; Kolbe, John L.; and Hayden, Howard Wayne, 4,115,221, Cl. 204-108.000.

Hercules Incorporated: *See—*
Bukowick, Peter Anthony, 4,115,093, Cl. 71-88.000.
Gupta, Rakesh Kumar; Jurkiewitsch, George; and Logan, Lawrence Joseph, 4,115,620, Cl. 428-374.000.
Putney, Richard Knight, 4,115,377, Cl. 260-151.000.
Restaino, Alfred J., 4,115,339, Cl. 260-29.6HN.

Hergeth, Friedrich: *See—*
Hums, Dieter; Hergeth, Friedrich; and Wetzig, Werner, 4,115,140, Cl. 106-120.000.

Hermanson, Terry, to Mr. Christmas Incorporated. Disposable rain and weather protector. 4,114,634, Cl. 135-19.500.

Hermes, Julius, to Martin Processing, Inc. Process for the rapid, continuous and waterless dyeing and texturizing and heat-setting of textile and plastic materials. 4,115,054, Cl. 8-17.000.

Hertel, Roger C., to Buckbee-Mears Company. Echo sounding device with cathode ray tube display. 4,115,752, Cl. 340-3.00C.

Hess, Richard William, to Du Pont de Nemours, E. I., and Company. Pigmentary bright primrose yellow monoclinic bismuth vanadate and processes for the preparation thereof. 4,115,142, Cl. 106-288.00B.

Heuckroth, Carl C. Bulk wire storage and transport system. 4,114,771, Cl. 214-384.000.

Hewlett-Packard Company: *See—*
Heldt, Earl R., 4,114,979, Cl. 350-96.210.
Patterson, Marvin LeRoy; Haselby, Robert Dale; and Kendig, Albert Prall, 4,115,726, Cl. 318-171.000.

Heyer, Gunter: *See—*
Bartels, Gunter; Immenroth, Horst; and Heyer, Gunter, 4,115,220, Cl. 204-105.00R.

Hi-Speed Checkweigher Co., Inc.: *See—*
Del Rosso, Victor, 4,114,707, Cl. 177-145.000.

Hickey, Christopher Daniel Dowling. Containers having fluid-tight sealing means. 4,114,668, Cl. 150-0.500.

Hickman, Mark R.: *See—*
Naseck, Melvin L.; and Hickman, Mark R., 4,114,807, Cl. 236-1.00E.

Hicks, Albert Edward. Oil cooler tester. 4,114,425, Cl. 73-40.000.

Higgins, Thomas Engel; Ross, Camilla Brems; and Snella, Henry John, to Union Carbide Corporation. Extrudable collagen casing and method of preparation. 4,115,594, Cl. 426-140.000.

Higuchi, Iwao; and Fujita, Takashi, to Tokyo Shibaura Electric Co., Ltd. Induction heating apparatus. 4,115,676, Cl. 219-10.49R.

Hiiro, Takeshi; Sakurai, Hideki; and Kondo, Fumihiko, to Kawaken Fine Chemicals Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Method for the preparation of dialkylchlorosilanes. 4,115,426, Cl. 260-448.20E.

Hijikata, Sotaro: *See—*
Iwasaki, Kenji; and Hijikata, Sotaro, 4,115,717, Cl. 313-59.000.

Hildebrandt, Juergen J.: *See—*
Schubert, Klaus-Peter; Keller, Hartmut; and Hildebrandt, Juergen J., 4,114,464, Cl. 74-89.140.

Hildebrandt, William J.; and Rathbun, Richard H., to Stanley Works, The. Shears with improved latch for handles. 4,114,268, Cl. 30-262.000.

Hile, James L.: *See—*
Langfield, Edward R.; Hile, James L.; and Hird, David L., 4,114,951, Cl. 299-22.000.

Hilgendorff, Walter: *See—*
Boddeker, Karl W.; and Hilgendorff, Walter, 4,115,274, Cl. 210-321.00R.

Hill, David T.; Lantos, Ivan; and Sutton, Blaine M., to SmithKline Corporation. Method for preparing auranofin. 4,115,642, Cl. 536-121.000.

Hill, Franklin: *See—*
Heitz, Roger M.; and Hill, Franklin, 4,115,616, Cl. 428-310.000.

Hill, Walter W.: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., 4,115,215, Cl. 204-67.000.

Hilliard, John R., to Dow Corning Corporation. Self adhering room temperature vulcanizable silicone elastomers. 4,115,356, Cl. 528-18.000.

Hilti Aktiengesellschaft: *See—*
Bisping, Heinz, 4,114,241, Cl. 24-81.0CC.

Hilty, Ronald L.: *See—*
Budlane, Stanley J.; Denny, Dann W.; and Hilty, Ronald L., 4,115,674, Cl. 200-329.000.

Him, James H.: *See—*
Dey, Arabinda N.; and Him, James H., 4,115,629, Cl. 429-56.000.

Hingarh, Hemraj K.; and Crippen, Richard E., to Fairchild Camera and Instrument Corporation. Integrated injection logic with heavily doped injector base self-aligned with injector emitter and collector. 4,115,797, Cl. 357-46.000.

Hintze, Anton E. Wind powered cylinder. 4,115,028, Cl. 415-2.000.

Hintze, William: *See—*
Hansen, Niels Junior; Ward, John Ambrose; Hintze, William; and Johnson, David Charles, 4,115,750, Cl. 337-107.000.

Hirai, Koji: *See—*
Kikuga, Toyoji; and Hirai, Koji, 4,115,327, Cl. 260-17.200.

Hirakawa, Koichi: *See—*
Yamashita, Kazuo; Yokose, Yoshikazu; Akao, Masatake; Hirakawa, Koichi; Iho, Katsuhiko; and Shibano, Takashi, 4,115,175, Cl. 156-172.000.

Hirato, Mizuho: *See—*
Ozaki, Hiromi; Yamane, Mamoru; Satomi, Yoshihito; Suzuka, Teruo; Miyake, Toshinobu; and Hirato, Mizuho, 4,115,324, Cl. 252-459.000.

Hird, David L.: *See—*
Langfield, Edward R.; Hile, James L.; and Hird, David L., 4,114,951, Cl. 299-22.000.

Hirota, Yutaka: *See—*
Sano, Nobuya; Goto, Hiroshi; and Hirota, Yutaka, 4,115,739, Cl. 330-263.000.

Hirsbrunner, Hans G.: *See—*
Santala, Teuvo J.; and Hirsbrunner, Hans G., 4,115,325, Cl. 252-514.000.

Hirsh, Ivan Yehudi: *See—*
Labbe, Francis Auguste Maurice; and Hirsh, Ivan Yehudi, 4,114,631, Cl. 131-84.00C.

Hitachi Heating Appliances Co., Ltd.: *See—*
Tachikawa, Hajime; and Satoh, Kenji, 4,115,678, Cl. 219-10.55B.

Hitachi, Ltd.: *See—*
Akatsu, Mitsuharu, 4,115,812, Cl. 358-174.000.
Akiyama, Nobuyuki; and Oshima, Yoshimasa, 4,115,762, Cl. 340-146.30H.
Hashimoto, Yoitiro, 4,115,725, Cl. 315-403.000.

Kosaka, Kimito; Umehara, Kunio; and Maruyama, Takeshi, 4,115,814, Cl. 358-243.000.
Miura, Yoshio; Kobayashi, Kazuhiro; and Yusa, Koue, 4,114,432, Cl. 72-135.000.
Mori, Yasunori, 4,114,573, Cl. 123-117.00D.
Ogasawala, Nobuhiko; Odazima, Mituo; and Watanabe, Yasuaki, 4,115,716, Cl. 310-153.000.
Ozaki, Hiromi; Yamane, Mamoru; Satomi, Yoshihito; Suzuka, Teruo; Miyake, Toshinobu; and Hirato, Mizuho, 4,115,324, Cl. 252-459.000.
Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, 4,114,243, Cl. 29-25.140.
Takahashi, Reijiro; Musoh, Masanori; and Ito, Tosikazu, 4,114,397, Cl. 62-516.000.
Ueda, Hirotada; Uno, Takeshi; Ejiri, Masakazu; Ikeda, Sadahiro; and Matsuoka, Shinji, 4,115,761, Cl. 340-146.3AC.

Hitachi Metals, Ltd.: *See—*
Hashimoto, Yoshitoshi; Kondo, Takajiro; and Asamoto, Toshitaka, 4,114,491, Cl. 83-341.000.

Hitzrot, Henry W., Jr., to Bethlehem Steel Corporation. Abrasive material suitable for manually blast cleaning ferrous metals prior to painting. 4,115,076, Cl. 51-295.000.

Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having a coupler effect. 4,114,497, Cl. 84-1.170.

Hochman, Arthur, to Art-Phyl Creations. Composite units for displaying merchandise. 4,114,763, Cl. 211-57.100.

Hochstein, Alfred. Inflatable structure. 4,114,325, Cl. 52-2.000.

Hodge, Joel W. Newspaper support for a newspaper delivery tube. 4,114,800, Cl. 232-1.00C.

Hodges, Paul: *See—*
Eggenberger, John S.; and Hodges, Paul, 4,115,768, Cl. 340-347.0DD.

Hoechst Aktiengesellschaft: *See—*
Opitz, Wolfgang; and Hennen, Hans, 4,115,531, Cl. 423-488.000.
Schladetsch, Hans Jakob; and Schroth, Gunther, 4,115,380, Cl. 260-186.000.
Skaletz, Detlev Herbert, 4,115,216, Cl. 204-73.00R.
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,115,522, Cl. 423-322.000.
Weber, Rolf-Ortwin; Soder, Alfons; and Boksay, Istvan, 4,115,569, Cl. 424-250.000.

Hoehn, Hans; and Schulze, Ernst, to E. R. Squibb & Sons, Inc. Amino derivatives of 6-phenylpyrazolo[3,4-b]pyridines. 4,115,394, Cl. 260-296.00H.

Hofferber, Henry E.; and Parker, Robert H., to Sperry Rand Corporation. Acceleration limited preselect altitude capture and control. 4,114,842, Cl. 244-180.000.

Hoffmann-La Roche Inc.: *See—*
Chadha, Naresh Kumar; Partridge, John Joseph, Jr.; and Uskokovic, Milan Radoje, 4,115,452, Cl. 260-586.00R.
Fischer, Ulf; and Wyss, Pierre-Charles, 4,115,641, Cl. 536-23.000.
Manchand, Percy, 4,115,650, Cl. 544-324.000.
Scannell, James Parnell; and Stempel, Arthur, 4,115,105, Cl. 71-113.000.
Valentine, Donald Herman, Jr., 4,115,417, Cl. 260-413.000.

Hoffmeister, Jurgen; and Saupe, Martin, to Kaltenbach & Voigt GmbH & Co. Medical treatment chair. 4,114,946, Cl. 297-191.000.

Hogan, Clarence Vaughn: *See—*
Selvin, Gerald Joseph; Oliver, Leland Wayne; Yamamoto, Stephen Kazuo; and Hogan, Clarence Vaughn, 4,114,976, Cl. 339-217.00S.

Hogan, Robert Benson: *See—*
Muhlfelder, Ludwig; and Hogan, Robert Benson, 4,114,841, Cl. 244-166.000.

Hogenson, Lavernon S. Lockable attachment means for luggage. 4,114,234, Cl. 16-114.00R.

Hohmann, Walter; and Kuhnel, Werner, to Bayer Aktiengesellschaft. Process for dyeing textiles. 4,115,412, Cl. 260-380.000.

Hokuriku Pharmaceutical Co., Ltd.: *See—*
Kato, Hideo; Koshinaka, Eiichi; Kurata, Sakae; and Uesaka, Ikuo, 4,115,392, Cl. 260-295.50R.

Holbrook, James E. F. Vehicle hitch device. 4,114,922, Cl. 280-512.000.

Holladay, Jimmie L.; and Scott, Ray A., to Coats Company, Inc., The. Tire changing apparatus. 4,114,672, Cl. 157-1.240.

Holson Co., The: *See—*
Holson, Sheldon, 4,114,300, Cl. 40-152.000.

Holson, Sheldon, to Holson Co., The. Photo album cover with framed inserts. 4,114,300, Cl. 40-152.000.

Holt, William H., to Carborundum Company, The. Rotary drum screen. 4,115,271, Cl. 210-247.000.

Honeywell Inc.: *See—*
Alamprese, Leo, 4,114,850, Cl. 251-86.000.
Nelson, Marvin D., 4,114,445, Cl. 73-360.000.

Honeywell Information Systems Inc.: *See—*
Besenfelder, Edward Roald, 4,115,759, Cl. 340-146.10F.

Hongu, Masayuki; Niimura, Tsutomu; and Kawakami, Hiromi, to Sony Corporation. Multi-band tuner. 4,115,737, Cl. 325-459.000.

Honma, Chuichi: *See—*
Iguchi, Yoshio; Honma, Chuichi; Itoh, Takesi; and Hosokawa, Kazutaka, 4,114,427, Cl. 73-63.000.

Honma, Miyuki: *See—*
Satoh, Tomokazu; Takezawa, Junichi; Kuninaka, Akira; Honma, Miyuki; and Ui, Michio, 4,115,538, Cl. 424-1.000.

Honshu Seishi Kabushiki Kaisha: *See—*
Iguchi, Yoshio; Honma, Chuichi; Itoh, Takesi; and Hosokawa, Kazutaka, 4,114,427, Cl. 73-63.000.

Hood & Co., Inc.: *See—*
Izbicki, Anthony J., 4,115,624, Cl. 428-617.000.

Hoogebroom, Thomas J.: *See—*
Mark, Victor; and Hoogebroom, Thomas J., 4,115,354, Cl. 260-45.70S.

Hooker, Derrell C., to Aspheric Associates, Ltd. Lathe for generating spherical or aspherical surfaces on workpieces, method for generating aspherical surfaces on workpieces and workpiece having aspherical surface. 4,114,486, Cl. 82-12.000.

Hoopes, Howard Sherman; McClenahan, Robert William; Walsh, Thomas Joseph; and Zecca, James William, to Leeds & Northrup Company. Open circuit detector for multipoint recorder. 4,115,785, Cl. 346-34.000.

Hori, Sumisaburo: *See—*
Morimoto, Toshiki; and Hori, Sumisaburo, 4,114,351, Cl. 53-157.000.

Hornby, William Edward; and Morris, David Lindsey, to National Research Development Corporation. Support matrix for carrying biologically active materials and process for the preparation thereof. 4,115,305, Cl. 260-6.000.

Hornig, Rudolf; Beeskow, Bruno; and Worner, Gunter, to Daimler-Benz Aktiengesellschaft. Installation for vibration damping in drive connection of motor vehicles. 4,114,472, Cl. 74-574.000.

Hornle, Reinhold: *See—*
Perrey, Hermann; Wolf, Karlheinz; Eimers, Erich; Nonn, Konrad; and Hornle, Reinhold, 4,115,379, Cl. 260-163.000.

Horowitz, Alexandre; Kymmell, Georg Rudolph Wolter; Krijne, Johannes; Beusink, Bernard Joseph, deceased; and by De Haan, Friedrich Jacobus, administrator, to U.S. Philips Corporation. Washing machine. 4,114,406, Cl. 68-24.000.

Hort, Eugene V., to GAF Corporation. Mixed polyhalogenated-1,4-butanediols. 4,115,458, Cl. 568-847.000.

Horton, Michael L.; and Harris, Alan M., to United States of America, Air Force. Protective jacket for chronically instrumented dogs. 4,114,352, Cl. 54-79.000.

Horton, Steven A., to Anaconda Company, The. Printed circuit board with fluorocarbon coated inductor. 4,115,840, Cl. 361-400.000.

Hoshi, Juro; and Watanabe, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Rotation control system. 4,114,830, Cl. 242-191.000.

Hosokawa, Kazutaka: *See—*
Iguchi, Yoshio; Honma, Chuichi; Itoh, Takesi; and Hosokawa, Kazutaka, 4,114,427, Cl. 73-63.000.

Hosokawa, Takashi: *See—*
Nakajima, Hiroyuki; and Hosokawa, Takashi, 4,114,648, Cl. 137-625.500.

Hostein, Claude: *See—*
Labeye-Voisin, Gerard Francois; and Hostein, Claude, 4,115,856, Cl. 364-200.000.

Houdaille Industries, Inc.: *See—*
Kamman, Gordon W., 4,114,246, Cl. 29-451.000.
Kaufman, Menachen, 4,115,858, Cl. 364-474.000.

Houdeshell, Donald D. Multiple use adapters for pliers. 4,114,482, Cl. 81-421.000.

Hough, Robert J.; and Bacon, John E., to Boise Cascade Corporation. Compartmented composite container including a snap-fit separator member. 4,114,784, Cl. 220-408.000.

Hounsfield, Godfrey Newbold; and Williams, Anthony Michael, to EMI Limited. X-ray tube cooling arrangement. 4,115,697, Cl. 250-445.00T.

Hounsfield, Godfrey Newbold, to EMI Limited. Radiography. 4,115,698, Cl. 250-445.00T.

Houston, George B.; and Simonsen, Roger H. Apparatus for performing auxiliary management functions in an associative memory device. 4,115,850, Cl. 364-200.000.

Howa, Scott P., to Vibrabrush, Inc. Vibratory dental tool. 4,114,271, Cl. 32-2.000.

Howe, Robert K.: *See—*
Franz, John E.; and Howe, Robert K., 4,115,095, Cl. 71-90.000.

Howell, Edward Keith, to General Electric Company. Overcurrent and ground fault responsive trip unit for circuit breakers. 4,115,829, Cl. 361-42.000.

Hoyt, Edwin D.: *See—*
Williams, David E.; and Hoyt, Edwin D., 4,115,686, Cl. 219-523.000.

Hruza, Denis E., Sr.: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,115,406, Cl. 260-345.100.

Hsu, Sheau-Po, to EIC International Corporation. Multi-purpose stapler. 4,114,793, Cl. 227-63.000.

Huang, Kwang Ta: *See—*
Hannemann, Dennis M.; Huang, Kwang Ta; and Shiroma, Dallas M., 4,115,704, Cl. 307-64.000.

Huch, Albert; and Lubbers, Dietrich Werner, to L. Eschweiler & Co. Process and arrangement for determining the perfusion factor of a gas in a sample. 4,114,602, Cl. 128-2.00E.

Huchette, Michel: *See—*
Saint-Lebe, Louis; Berger, Gerard; Michel, Jean-Pierre; Huchette, Michel; and Fleche, Guy, 4,115,146, Cl. 127-38.000.

Huddleston, Paul W., to Wean United, Inc. Broken wire switch apparatus. 4,114,413, Cl. 72-5.000.

Hughes Aircraft Company: *See—*
Bleha, William P., Jr.; and Grinberg, Jan, 4,114,991, Cl. 350-338.000.

Hughes, James K., to Phillips Petroleum Company. Polymers and rotationally molding same. 4,115,508, Cl. 264-310.000.

Huizenga, Ronald G., to General Electric Company. Thermostat and method of operating such. 4,115,751, Cl. 337-323.000.

Hulin, Martin J.: *See—*
Malish, Terrance J.; and Hulin, Martin J., 4,114,225, Cl. 15-230.170.

Hultman, David P.; and Bergsbaken, Jack L., to Kimberly-Clark Corporation. Anti-static compositions comprising a copolymer or perfluoroalkyl acrylate and polyoxyalkylene acrylate, wetting agent, and a salt selected from the group consisting of potassium acetate and lithium chloride in aqueous medium. 4,115,605, Cl. 427-377.000.

Hummel, Herbert, to Hans Kreutzenbeck GmbH. Self-supporting modular switchboard panel. 4,115,839, Cl. 361-393.000.

Humphreys, Wesley G.; and Camillo, Edward. Thermal damper assembly. 4,114,805, Cl. 236-1.00G.

Hums, Dieter; Hergeth, Friedrich; and Wetzig, Werner, to Intong AB. Lime silicic acid mixtures and methods of making building materials therefrom. 4,115,140, Cl. 106-120.000.

Hunter Douglas International N.V.: *See—*
de Wit, Hendrik; and Frentzel, Kurt Heinz, 4,114,673, Cl. 160-166.00A.

Huppi, Xaver Johann, to Elex A.G. Electrode hanger. 4,115,083, Cl. 55-148.000.

Hurley, James E.: *See—*
Berlik, Lee; and Hurley, James E., 4,114,589, Cl. 126-21.00R.

Hurni, William M.: *See—*
McAleer, William J.; and Hurni, William M., 4,115,010, Cl. 356-201.000.

Hussey, Charles L.: *See—*
Nardi, John C.; Hussey, Charles L.; King, Lowell A.; and Carpio, Ronald A., 4,115,390, Cl. 260-290.0HL.

Hutchings, Thomas J.; and Sanders, Virgil E., to Litton Systems, Inc. Counterbalanced oscillating ring laser gyro. 4,115,004, Cl. 356-106.0LR.

Hutchison, Robert V.; Gregg, Peter P.; and MacBride, James J., to Burroughs Corporation. Cooling system for dual-in-line packages. 4,115,836, Cl. 361-382.000.

Hutson, Donald G. Method of monitoring diet. 4,114,422, Cl. 73-23.100.

Hycel, Inc.: *See—*
Vick, Howard Andrew; and Johnson, Donald B., 4,115,864, Cl. 364-550.000.

Hydra Corporation: *See—*
Baeck, Henry S.; Bennett, William C.; Condon, David C.; Gillette, Harold R.; and Herbert, Donald G., 4,114,750, Cl. 400-279.000.

Hydro-Quebec: *See—*
Morcos, Ikram, 4,115,322, Cl. 252-447.000.

Hydrocarbon Research, Inc.: *See—*
Lehman, Leon M.; and Lambert, Glen I., 4,115,247, Cl. 208-62.000.

Ichikawa, Kiyoshi: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,114,497, Cl. 84-1.170.

Ichikoh Industries, Limited: *See—*
Enomoto, Masao, 4,114,988, Cl. 350-289.000.

Ichimura, Takeo: *See—*
Ishibashi, Kazufumi; and Ichimura, Takeo, 4,115,131, Cl. 106-47.00Q.

ICI Australia Limited: *See—*
Bolto, Brian Alfred; and Eppinger, Kurt Hermann, 4,115,297, Cl. 521-32.000.

Iguchi, Yoshio; Honma, Chuichi; Itoh, Takesi; and Hosokawa, Kazutaka, to Honshu Seishi Kabushiki Kaisha. Apparatus for accurately measuring the freeness of paper stock flowing in a feed pipe. 4,114,427, Cl. 73-63.000.

Iho, Katsuhiko: *See—*
Yamashita, Kazuo; Yokose, Yoshikazu; Akao, Masatake; Hirakawa, Koichi; Iho, Katsuhiko; and Shibano, Takashi, 4,115,175, Cl. 156-172.000.

Iijima, Tetsuya, to Nissan Motor Company, Limited. Control system for an automatic transmission including switch with lost motion actuator. 4,115,671, Cl. 200-61.910.

Iizuka, Hisakazu: *See—*
Masuoka, Fujio; and Iizuka, Hisakazu, 4,115,795, Cl. 357-24.000.

Iizuka, Tomio: *See—*
Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, 4,114,243, Cl. 29-25.140.

Ikeda, Sadahiro: *See—*
Ueda, Hirotada; Uno, Takeshi; Ejiri, Masakazu; Ikeda, Sadahiro; and Matsuoka, Shinji, 4,115,761, Cl. 340-146.3AC.

Ikeda, Tadashi: *See—*
Adachi, Keiichi; Ikeda, Tadashi; and Tsujino, Nobuyuki, 4,115,122, Cl. 96-76.00R.

Ikeda, Tomoaki; Mizobuchi, Yuzo; Nahara, Akira; Washizawa, Yasuo; Ono, Yoshihiro; and Tomotsu, Takeshi, to Fuji Photo Film Co., Ltd. Processing-free type lithographic printing plate material. 4,115,127, Cl. 96-85.000.

Ikeura, Kenji, to Nissan Motor Company, Limited. Internal combustion engine with air-fuel ratio control device. 4,114,372, Cl. 60-276.000.

Illinois Nuclear Electronics, Inc.: *See—*
McGrath, Neal, 4,115,693, Cl. 250-363.00S.

Illmann, Joachim: *See—*
Lindenberg, Hans-Georg; Illmann, Joachim; and Golz, Hans-Joachim, 4,114,649, Cl. 137-625.190.

Imamura, Yoichi, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 4,114,363, Cl. 58-23.00R.

Imax Entertainment Limited: *See—*
Shaw, William C., 4,114,996, Cl. 352-184.000.

Imler, Carl E. Water closet flush valve. 4,114,208, Cl. 4-366.000.

Immenroth, Horst: *See—*
Bartels, Gunter; Immenroth, Horst; and Heyer, Gunter, 4,115,220, Cl. 204-105.00R.

Imoco-Gateway Corporation: *See—*
Heasman, Edward E., 4,114,344, Cl. 52-741.000.

Imperial Chemical Industries Limited: *See—*
Bowler, Jean; and Robinson, Graham Ernest, 4,115,580, Cl. 424-278.000.
Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, 4,115,404, Cl. 260-343.30R.
Kennedy-Skipton, Henry Kinny, 4,114,384, Cl. 405-260.000.
Lafeber, Andre, 4,114,820, Cl. 242-18.00A.
Large, Michael Stewart; and Smith, Leslie Harold, 4,115,409, Cl. 260-347.300.

In Situ Technology Inc.: *See—*
Terry, Ruel C., 4,114,688, Cl. 166-246.000.

Inaba, Masakazu: *See—*
Inoue, Eiichi; Nose, Taiji; and Inaba, Masakazu, 4,115,613, Cl. 428-207.000.

Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, to Nippon Soken, Inc. Electric motor or generator including centrifugal cooling fan. 4,115,030, Cl. 416-93.00R.

Inata, Hiroo; and Kawase, Shoji, to Teijin Limited. Process for preparing polyesters. 4,115,362, Cl. 528-190.000.

Industrie Pirelli S.p.A.: *See—*
Maiocchi, Luigi; and Silva, Luigi, 4,114,671, Cl. 152-209.00R.
Previati, Augusto, 4,115,510, Cl. 264-347.000.

Ingenito, Michael J.; and Hartnett, Harold J., to General Time Corporation. Stepping motor. 4,115,714, Cl. 310-49.00R.

Inoue, Eiichi; Nose, Taiji; and Inaba, Masakazu, to Process Shizai Co., Ltd. Heat-sensitive recording materials and recording process of using the same. 4,115,613, Cl. 428-207.000.

Inoue, Yasukazu; and Kikuchi, Masanori, to Nippon Electric Co., Ltd. Gate controlled diode protection for drain of IGFET. 4,115,709, Cl. 307-304.000.

Inoue, Yoshio: *See—*
Noshiro, Atsumi; and Inoue, Yoshio, 4,115,329, Cl. 260-25.000.

Inpro, Inc.: *See—*
Orlowski, David Chester, 4,114,902, Cl. 277-53.000.

Institut Cerac SA.: *See—*
Cooper, George Anthony, 4,114,950, Cl. 299-15.000.

Institut Dr. Ing. Reinhard Straumann AG: *See—*
Straumann, Fritz, 4,115,156, Cl. 148-12.70N.
Wenger, Alfred, 4,114,423, Cl. 73-30.000.

Instituto Luso Farmaco d'Italia S.r.l.: *See—*
Manghisi, Elso; Salimbeni, Aldo; and Ferni, Giovanni, 4,115,585, Cl. 424-311.000.

Instrumentation Specialties Company: *See—*
Allington, Robert William, 4,115,861, Cl. 364-497.000.
Dantzler, Danny M.; Meehan, James Bartley; Everman, Wayne Fredrick; Fluent, Donald E.; and Sachs, Howard George, 4,115,779, Cl. 343-715.000.

Intel Corporation: *See—*
Salsbury, Phillip J.; Perlegos, George; and Morgan, William L., 4,114,255, Cl. 29-571.000.

International B. F. Goodrich-Europe B.V.: *See—*
Beernaerts, Andre M. H. J.; and Eskes, Hendrik J. K., 4,114,213, Cl. 5-345.00R.

International Business Machines Corporation: *See—*
Botte, Anthony Joseph, 4,114,871, Cl. 271-173.000.
Capowski, Robert S.; Wright, Lewis W.; and Zimmerman, Terrence K., 4,115,854, Cl. 364-200.000.
Clark, Kendall; and Shapiro, Milton R., 4,115,683, Cl. 219-121.00L.
Commander, Robert Duncan; Gardner, Peter Alan Edward; and Taylor, John Richard, 4,115,823, Cl. 360-77.000.
Croisier, Alain; and Jacquart, Christian, 4,115,660, Cl. 179-2.50R.
De La Moneda, Francisco H., 4,115,794, Cl. 357-23.000.
Dyer, Donald R.; Johnson, Claude, Jr.; and Wilbarg, Robert R., 4,115,120, Cl. 96-36.200.
Eggenberger, John S.; and Hodges, Paul, 4,115,768, Cl. 340-347.0DD.

International Flavors & Fragrances Inc.: *See—*
Hall, John B.; Sprecker, Mark A.; Shuster, Edward J.; Schmitt, Frederick Louis; and Vinals, Joaquin F., 4,115,431, Cl. 260-465.00F.
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,115,406, Cl. 260-345.100.

International Standard Electric Corporation: *See—*
Janssens, Juliaan Leo Gerard; and Malherbe, Marie Jeanne Francoise Louise Ghislaine, 4,115,866, Cl. 364-900.000.
Lalande, Jacques Alfred; and Thevin, Rene Roger, 4,115,743, Cl. 331-14.000.
Mash, Derek H.; Crossland, William A.; and Morrissy, Joseph H., 4,114,990, Cl. 350-337.000.
Thrush, Edward John, 4,115,223, Cl. 204-129.600.

International Telephone and Telegraph Corporation: *See—*
Asam, Adolf R.; and Maklad, Mokhtar S., 4,114,980, Cl. 350-96.330.
Johnson, Charles Bruce, 4,115,722, Cl. 315-52.000.
Keller, Donald A., 4,115,842, Cl. 362-183.000.

Selvin, Gerald Joseph; Oliver, Leland Wayne; Yamamoto, Stephen Kazuo; and Hogan, Clarence Vaughn, 4,114,976, Cl. 339-217.00S.
Valdes, Sergio F., 4,115,772, Cl. 343-6.50R.

Interox: *See—*
Brichard, Jean; and Colery, Jean-Claude, 4,115,519, Cl. 423-279.000.

InterRoyal Corporation: *See—*
Benoit, Roland A., 4,114,949, Cl. 297-445.000.

INTERx Research Corporation: *See—*
Kaminski, James J.; and Bodor, Nicolae S., 4,115,588, Cl. 424-325.000.

Intong AB: *See—*
Hums, Dieter; Hergeth, Friedrich; and Wetzig, Werner, 4,115,140, Cl. 106-120.000.

Ionics, Inc.: *See—*
Parsi, Edgardo J., 4,115,225, Cl. 204-180.00P.

Irons, George S.: *See—*
Smashey, Russell W.; Frey, Elmer L.; Cash, George V.; and Irons, George S., 4,115,112, Cl. 75-171.000.

Ishibashi, Kazufumi; and Ichimura, Takeo, to Nippon Kogaku K.K. Optical glass. 4,115,131, Cl. 106-47.00Q.

Ishida, Nobuyasu: *See—*
Sugiura, Teruo; Tsubouchi, Hiromitsu; Ishida, Nobuyasu; and Kobayashi, Kiyonori, 4,114,740, Cl. 192-70.180.

Ishida, Tsutomu: *See—*
Kaneko, Yutaka; and Ishida, Tsutomu, 4,114,536, Cl. 101-426.000.

Ishida, Yukinori; Kojima, Moriaki; Kobayashi, Toshiaki; and Sugawara, Yasuyuki, to Nippon Telegraph and Telephone Public Corporation; and Fujikura Cable Works, Ltd., The. Optical fiber for communication. 4,114,981, Cl. 350-96.330.

Ishihara Sangyo Kaisha, Ltd.: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,115,102, Cl. 71-94.000.

Ishikawa, Kunio: *See—*
Yoshihara, Hiroshi; Tobita, Takashi; Tomizawa, Ryoichi; and Ishikawa, Kunio, 4,115,415, Cl. 260-410.000.

Isii, Sigeki: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,114,497, Cl. 84-1.170.

Isogaya, Kazuyoshi: *See—*
Yoshida, Kenji; Isogaya, Kazuyoshi; Tomita, Tadayoshi; Kikuchi, Katsutoshi; and Kuboyama, Hisaharu, 4,115,074, Cl. 48-95.000.

Istituto Chemioterapico Italiano, S.p.A.: *See—*
Garzia, Aldo, 4,115,570, Cl. 424-248.570.

Itaya, Eiji: *See—*
Katoh, Tadayoshi; and Itaya, Eiji, 4,114,710, Cl. 178-67.000.

Ithakissios, Dionyssis S., to Minnesota Mining and Manufacturing Company. In vitro diagnostic test. 4,115,534, Cl. 424-1.000.

Ito, Chiaki, to Fujitsu Limited. Figure pre-processing device. 4,115,760, Cl. 340-146.30H.

Ito, Keizo, to Toyoda Gosei Co., Ltd. Structure for combining two bodies and sheeting. 4,114,339, Cl. 52-507.000.

Ito, Tosikazu: *See—*
Takahashi, Reijiro; Musoh, Masanori; and Ito, Tosikazu, 4,114,397, Cl. 62-516.000.

Itoh, Takesi: *See—*
Iguchi, Yoshio; Honma, Chuichi; Itoh, Takesi; and Hosokawa, Kazutaka, 4,114,427, Cl. 73-63.000.

Itoh, Tetsuro; Takahashi, Tetsuo; Kimura, Atsuyoshi; and Yamano, Seiichi, to Daido Tokushuko Kabushiki Kaisha. Free-cutting structural steel for machines. 4,115,111, Cl. 75-128.00P.

ITT Industries, Inc.: *See—*
Luepertz, Hans-Henning; and Fischenich, Bernhard, 4,114,430, Cl. 73-121.000.

ITW Fastex Italia, S.p.A.: *See—*
Aimar, Michele, 4,114,506, Cl. 85-32.00W.

Ivannikova, Galina Evgenievna: *See—*
Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich, 4,115,163, Cl. 148-175.000.

Iverson, Roger A. Reversible power transmission. 4,114,477, Cl. 74-768.000.

Iwamoto, Tamio: *See—*
Kogiso, Masahiro; Sakata, Minehiro; Oda, Hatsuo; and Iwamoto, Tamio, 4,114,999, Cl. 355-10.000.

Iwans, Robert C., to Koehler-Dayton, Inc. Toilet. 4,114,207, Cl. 4-319.000.

Iwasaki, Kenji; and Hijikata, Sotaro, to Tokyo Shibaura Electric Co., Ltd. Stationary anode X-ray tube. 4,115,717, Cl. 313-59.000.

Iwasaki, Tetsuji: *See—*
Sugimura, Yukio; Miyamoto, Norioki; Iwasaki, Tetsuji; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,115,103, Cl. 71-98.000.

Iwata, Mitsuo: *See—*
Kitazawa, Kunihiko; Mimura, Masuichiro; and Iwata, Mitsuo, 4,115,822, Cl. 360-74.000.

Iwatsu Electric Co., Ltd.: *See—*
Kogiso, Masahiro; Sakata, Minehiro; Oda, Hatsuo; and Iwamoto, Tamio, 4,114,999, Cl. 355-10.000.

Izbicki, Anthony J., to Hood & Co., Inc. Thermostat metal compositions. 4,115,624, Cl. 428-617.000.

J. Eberspacher: *See—*
Gerwin, Reinhard, 4,115,050, Cl. 431-352.000.

J.J. Lester & Co., Inc.: *See—*
Nackenson, Joel J., 4,114,240, Cl. 24-67.110.

J-Mark Quality Products, Inc.: *See—*
Kowalczyk, Adolph J., 4,114,481, Cl. 81-64.000.

Jackson, Billy G.; and McPherson, Roger E., to Eli Lilly and Company. Decolorizing process for 7-amino-3-(((2-methyl-1,3,4-thiadiazol-5-yl)thio)methyl)-3-cephem-4-carboxylic acid. 4,115,645, Cl. 544-20.000.

Jacob, Jose T.: *See—*
Every, Richard L.; and Jacob, Jose T., 4,115,139, Cl. 106-100.000.

Jacobs, Maxwell E.; and Aaldenberg, Eric R., to Detecto Scales, Inc. Electronic scale load cell protector. 4,114,709, Cl. 177-156.000.

Jacobsson, Kurt Arne Gunnar, to Aktiebolaget IRO. Thread delivery device for textile machines. 4,114,822, Cl. 242-47.010.

Jacquart, Christian: *See—*
Croisier, Alain; and Jacquart, Christian, 4,115,660, Cl. 179-2.50R.

Jaeger, Oskar: *See—*
Barth, Rudolph; and Jaeger, Oskar, 4,115,195, Cl. 195-1.300.

Jaeggi, Knut A.: *See—*
Frei, Jorg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,115,575, Cl. 424-250.000.

Jager, Albert; Lucht, Alfred; and Munch, Gerhard, to Messer Griesheim GmbH. Device for removal of smoke gases, dust and the like. 4,114,864, Cl. 266-51.000.

Jager, Hans; and Seipp, Emil, to Metallurgie Hoboken-Overpelt. Method of epitaxial deposition of an $A_{III}B_V$-semiconductor layer on a germanium substrate. 4,115,164, Cl. 148-175.000.

Jahn, Eberhard: *See—*
Siegler, Gustav; and Jahn, Eberhard, 4,115,018, Cl. 408-239.00A.

Jahn, Ulrich: *See—*
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,115,393, Cl. 260-295.50R.

James, Helen J.: *See—*
Freiser, Henry; James, Helen J.; Carmack, Gary; Cattrall, Robert W.; and Kneebone, Barbara M., 4,115,209, Cl. 204-1.00T.

James, Robert Frederic, to Auto-Chlor Inc. Periodic chlorination and superchlorination of recirculating swimming pool water. 4,115,263, Cl. 210-60.000.

James Ross Limited: *See—*
Brown, Jack Frederick, 4,114,228, Cl. 15-256.510.

Jamesbury Corp.: *See—*
MacAfee, Jerry D.; and Collette, Ronald J., 4,114,856, Cl. 251-306.000.

Jamieson, Geoffrey A.: *See—*
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,115,281, Cl. 252-8.800.

Jankelewitz, Eliezer; and Benedict, John Pinhas. Lock structure. 4,114,933, Cl. 292-37.000.

Janner, Karl; and Gregorius, Klaus, to Kraftwerk Union Aktiengesellschaft. Separation of gaseous mixtures of matter. 4,115,078, Cl. 55-2.000.

Jansen-Herfeld, Rottger; and Elmer, Stefan, to Schmid & Wezel. Butcher's meat saw. 4,114,270, Cl. 30-394.000.

Janssens, Juliaan Leo Gerard; and Malherbe, Marie Jeanne Francoise Louise Ghislaine, to International Standard Electric Corporation. Data processing network for communications switching system. 4,115,866, Cl. 364-900.000.

Japan Crown Cork Co., Ltd.: *See—*
Shinozaki, Tokujiro, 4,114,775, Cl. 215-324.000.

Jarman, David J. Material handling means. 4,114,418, Cl. 72-386.000.

Jarvis, Clarence W.; and Wenrich, Richard A. Pool hand cleaning device holder. 4,114,321, Cl. 51-205.00R.

Jeal, Harvey Philip, to Aerpat A.G. Self-drilling screw. 4,114,508, Cl. 85-41.000.

Jeffers, William Q.: *See—*
Buonadonna, Victor R.; Richardson, Ralph J.; Rasmussen, Richard L.; and Jeffers, William Q., 4,115,168, Cl. 149-109.600.

Jelinek, Jerry G., to Parker-Hannifin Corporation. Sealed joint and gasket therefor. 4,114,906, Cl. 277-166.000.

Jenis, Donald S.; Kuczkowski, Thomas A.; Mazer, Jack S.; and Westerkamp, Douglas F., to General Electric Company. Tube support system for heat exchanger. 4,114,684, Cl. 165-82.000.

Jennings, Harley Y., Jr., to Chevron Research Company. Transporting iron ore slurries. 4,114,956, Cl. 302-66.000.

Jensen, Gerald A.; Larson, Louis A.; and Diesch, Robert E., to Pako Corporation. Automatic sorting, conveying and packing mechanism for photographic prints. 4,114,349, Cl. 53-54.000.

Jerabek, Robert D.: *See—*
Zwack, Robert R.; and Jerabek, Robert D., 4,115,226, Cl. 204-181.00C.

Jeromin, Lutz: *See—*
Dieckelmann, Gerhard; Jeromin, Lutz; and Tollkotter, Gunther, 4,115,411, Cl. 260-348.260.

JFD Electronics Corporation: *See—*
Snow, Robert Eric, 4,115,778, Cl. 343-701.000.

Jogand, Patrick, to Commissariat a l'Energie Atomique. Fast neutron nuclear reactor. 4,115,192, Cl. 176-40.000.

Joh, Yasushi. Flame retardant composition. 4,115,351, Cl. 260-45.9NP.

Johansson, Bengt, to Centro-Maskin Goteborg AB. Method and apparatus for workpiece surface treatment. 4,115,151, Cl. 148-9.500.

Johansson, Bengt, to Centro-Maskin Goteborg AB. Method and device for gas planing a workpiece surface to remove surface defects. 4,115,152, Cl. 148-9.500.

Johansson, Bengt, to Centro-Maskin Goteborg AB. Method at gas planing. 4,115,153, Cl. 148-9.500.

John, Phillip Merrill, to Sterling Drug Inc. Pharmaceutical steroid formulation. 4,115,563, Cl. 424-241.000.

Johns Hopkins University, The: *See—*
Seylar, George R., 4,114,606, Cl. 128-2.05E.

Johnson, Andrew P. Gas-fluid-sound isolation door assembly with integral testing means. 4,114,424, Cl. 73-40.000.

Johnson, Bill E.; and Dannenmann, John E., Jr., to Bejed, Inc. Data interface bridge. 4,115,849, Cl. 340-147.0CV.

Johnson, Charles Bruce, to International Telephone and Telegraph Corporation. Corona-shield for an image-tube photocathode. 4,115,722, Cl. 315-52.000.

Johnson, Charles E., to Double A Products Company. Variable differential pressure unloading valve apparatus. 4,114,637, Cl. 137-116.000.

Johnson, Claude, Jr.: *See—*
Dyer, Donald R.; Johnson, Claude, Jr.; and Wilbarg, Robert R., 4,115,120, Cl. 96-36.200.

Johnson, David Charles: *See—*
Hansen, Niels Junior; Ward, John Ambrose; Hintze, William; and Johnson, David Charles, 4,115,750, Cl. 337-107.000.

Johnson, Donald B.: *See—*
Vick, Howard Andrew; and Johnson, Donald B., 4,115,864, Cl. 364-550.000.

Johnson, Howard L., to Caterpillar Tractor Co. Anti-cavitation and pressure modulating relief valve for controlling hydraulic cylinders. 4,114,516, Cl. 91-420.000.

Johnson, John H.: *See—*
Fields, Joseph E.; and Johnson, John H., 4,115,550, Cl. 424-78.000.

Johnson, Robert B., to Eastman Kodak Company. Concentric reel drive for a tape cassette. 4,114,831, Cl. 242-194.000.

Johnson, Robert C.: *See—*
Smith, Linda Hebert; and Johnson, Robert C., 4,114,200, Cl. 2-51.000.

Johnson, Winston O.; and Crabb, Jerry A. Tire correction system. 4,114,279, Cl. 33-178.00R.

Johnston, David J.: *See—*
Shivak, Robert A.; and Johnston, David J., 4,114,851, Cl. 251-88.000.

Jonckers, Kees: *See—*
Biermans, Andreas J.; and Jonckers, Kees, 4,115,449. Cl. 260-555.00A.

Jones, Alan P.; and Sherman, William, to Brandt-Pra, Inc. Counterfeit detection means for paper counting. 4,114,804, Cl. 235-476.000.

Jones, Arthur Lee, to Pelton & Crane Company. Movable power-operated instrument console and treatment chair apparatus. 4,114,274, Cl. 32-22.000.

Jones, Arthur Lee; and Leffler, Dennis Frank, to Pelton & Crane Company. Foot controller apparatus for air driven dental handpieces or the like. 4,114,275, Cl. 32-22.000.

Jones, Harold E.; and Ottenweller, Donald T. Wall panel unit. 4,114,333, Cl. 52-265.000.

Jones, James R.: *See—*
Bulson, Walter T.; Christie, Peter A.; and Jones, James R., 4,115,423, Cl. 260-429.500.

Jones, John Alexander. Vehicle-lift superstructure. 4,114,728, Cl. 187-8.750.

Jones, Terry H.; and Oakes, John J., to Clarke-Gravely Corporation. Surface cleaning apparatus. 4,114,229, Cl. 15-320.000.

Jones, Thomas C. Tank trailer. 4,114,917, Cl. 280-116.000.

Jones, William C. Skate exercise device. 4,114,873, Cl. 272-61.000.

Jordan, Bertram Lee; and Mitchell, John Davis, to Harrington Manufacturing Company. Implement for handling a bulk tobacco container. 4,114,770, Cl. 214-130.00R.

Jordan, Charles H.; and Sampat, Ajit, to Fluor Corporation. Recovery of light hydrocarbons from refinery gas. 4,115,086, Cl. 62-28.000.

Jordan, Edgar R. Valve deactuator for internal combustion engines. 4,114,588, Cl. 123-198.00F.

Jordan, J. Kirk, to Beatrice Foods Co. Process for coloring maraschino cherries with natural colors. 4,115,595, Cl. 426-250.000.

Joseloff, Stanley. Supermarket counter construction and method of using same. 4,114,727, Cl. 186-1.0AC.

Joslyn, Larry James, to Sybron Corporation. Air detecting device for steam or gas sterilizers. 4,115,068, Cl. 422-56.000.

Joynt, Gerald E.; and Mayhew, Michael R., to Multech Corp. Telescopic tailgate extension. 4,114,944, Cl. 296-50.000.

JRC Products, Inc.: *See—*
Taitel, Charles M.; and Ryan, Ralph L., 4,114,909, Cl. 279-1.00Q.

Jukkola, Walfred Wilhelm; and Tomasicchio, Giorgio, to Dorr-Oliver Incorporated. Transfer pipe system. 4,115,070, Cl. 422-142.000.

Jurkiewitsch, George: *See—*
Gupta, Rakesh Kumar; Jurkiewitsch, George; and Logan, Lawrence Joseph, 4,115,620, Cl. 428-374.000.

K-Tron Soder AG: *See—*
Saner, Kaspar, 4,114,708, Cl. 177-145.000.

Kabanov, Viktor Alexandrovich: *See—*
Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Nametkin, Nikolai Sergeevich; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,468, Cl. 260-683.15D.
Bocharov, Jury Nikolaevich; Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,469, Cl. 260-683.15D.

Kabushiki Kaisha Daini Seikosha: *See—*
Matsuura, Eiichi; Takahashi, Keikichi; Tsukada, Nobuo; and Tatsumi, Yoshio, 4,114,365, Cl. 58-23.0BA.
Takahashi, Norio, 4,114,364, Cl. 58-23.00D.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Wada, Mitsuyoshi; Shimada, Hideyuki; and Ohta, Koji, 4,115,023, Cl. 404-98.000.

Kabushiki Kaisha Nihon Kotai Kenkyujo: *See—*
Mizuta, Toshinobu; and Hayashi, Tooru, 4,115,699, Cl. 250-461.00B.

Kabushiki Kaisha Seikosha: *See—*
Kanazawa, Masayuki, 4,115,770, Cl. 340-396.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Imamura, Yoichi, 4,114,363, Cl. 58-23.00R.

Kagedal, Sven Lennart: *See—*
Rothman, Ulf Sven Erik; Kagedal, Sven Lennart; and Soderberg, John Lennart, 4,115,536, Cl. 424-1.000.

Kahley, Vance F., Sr. Tape laying trenching apparatus. 4,114,391, Cl. 405-176.000.

Kajimoto, Norifumi: *See—*
Kubota, Yuichi; and Kajimoto, Norifumi, 4,115,290, Cl. 252-62.540.

Kakogawa, Genjiro: *See—*
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,532, Cl. 423-492.000.
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,533, Cl. 423-492.000.

Kaku, Hidetoshi: *See—*
Amano, Toshio; and Kaku, Hidetoshi, 4,114,587, Cl. 123-196.00S.

Kakuta, Akio: *See—*
Ohno, Masayoshi; Kakuta, Akio; Miyauchi, Terukatsu; and Kikuchi, Tatsuji, 4,115,081, Cl. 55-64.000.

Kalfus, Martin Aaron, to RCA Corporation. Circuit for single-line control of GTO controlled rectifier conduction. 4,115,707, Cl. 307-252.00C.

Kaljuzhnaya, Galina Alexandrovna: *See—*
Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich, 4,115,163, Cl. 148-175.000.

Kalka, Josef, to Chemische Werke Huls AG. Aftertreatment of spray dried, powdered vinyl chloride emulsion polymerizates. 4,115,640, Cl. 528-483.000.

Kalnin, Igor Martynovich: *See—*
Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Scherbakov, Vsevolod Sergeevich; and Gruzintsev, Igor Andreevich, 4,115,043, Cl. 417-559.000.

Kalt Manufacturing Company, The: *See—*
Fischer, Donald A.; Lipowski, Edwin M.; and Kalt, William E., 4,114,507, Cl. 85-41.000.

Kalt, William E.: *See—*
Fischer, Donald A.; Lipowski, Edwin M.; and Kalt, William E., 4,114,507, Cl. 85-41.000.

Kaltenbach & Voigt GmbH & Co.: *See—*
Hoffmeister, Jurgen; and Saupe, Martin, 4,114,946, Cl. 297-191.000.

Kambara, Masahiro: *See—*
Morio, Minoru; and Kambara, Masahiro, 4,115,820, Cl. 360-33.000.

Kametani, Hiroshi; and Aoki, Aiko, to National Research Institute For Metals. Method for electrolytic winning of lead. 4,115,222, Cl. 204-117.000.

Kaminski, Chester J.: *See—*
Gancy, Alan B.; and Kaminski, Chester J., 4,115,219, Cl. 204-99.000.

Kaminski, James J.; and Bodor, Nicolae S., to INTERx Research Corporation. Antibacterial novel soft n-chloroamino alcohol derivatives. 4,115,588, Cl. 424-325.000.

Kamman, Gordon W., to Houdaille Industries, Inc. Method of and means for making tuned viscous torsional vibration dampers. 4,114,246, Cl. 29-451.000.

Kanazawa, Masayuki, to Kabushiki Kaisha Seikosha. A buzzer having adjustable buzzer sound. 4,115,770, Cl. 340-396.000.

Kandler, Joachim: *See—*
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,115,522, Cl. 423-322.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Kinoshita, Yoshikiyo; Aoi, Takashi; Kimura, Yoshihiro; and Amisaki, Yumiko, 4,115,480, Cl. 260-885.000.

Kaneko, Yutaka; and Ishida, Tsutomu, to Ricoh Co., Ltd. Method of and apparatus for transfer printing a toner image. 4,114,536, Cl. 101-426.000.

Kanki, Hiroshi; Yasuda, Kazuyoshi; and Tatsuke, Hisashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for supporting a bobbin holder shaft in a high speed winder. 4,114,819, Cl. 242-18.00R.

Kantor, Ilya Solomonovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.

Kao, Jar-lin: *See—*
Sheng, Ming Nan; and Kao, Jar-lin, 4,115,440, Cl. 562-533.000.

Kao Soap Co., Ltd.: *See—*
Sugimura, Yukio; Miyamoto, Norioki; Iwasaki, Tetsuji; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,115,103, Cl. 71-98.000.

Kapcoa Corp.: *See—*
Blahut, Edward J., 4,115,845, Cl. 362-403.000.

Karl Storz Endoscopy-America, Inc.: *See—*
Meinke, Hans Heinrich; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz, 4,114,623, Cl. 128-303.140.

Karlen, Urs: *See—*
Koller, Stefan; Karlen, Urs; Kneubuhler, Werner; and Defago, Raymond, 4,115,056, Cl. 8-39.00B.

Karol, Frederick John; Wu, Chisung; Reichle, Walter Thomas; and Maraschin, Norma Jean, to Union Carbide Corporation. Cyclopentadienyl chromium oxides. 4,115,425, Cl. 260-438.50R.

Kasagi, Takao; Kuwakado, Satoshi; and Takei, Toshihiro, to Nippon Soken, Inc. Inflatable bag apparatus for protecting occupants in vehicles. 4,114,924, Cl. 280-740.000.

Kasahara, Takahiko; Shichi, Shigeharu; Banno, Hideo; Suito, Senji; and Kato, Masayuki, to Aisin Seiki Company, Limited. Sewing machine with base extension. 4,114,548, Cl. 112-258.000.

Kashiwabara, Akira: *See—*
Kubotera, Kikuo; Kashiwabara, Akira; and Sato, Kotaro, 4,115,118, Cl. 96-33.000.

Kasik, Robert L.: *See—*
Zavagli, Steven B.; and Kasik, Robert L., 4,115,376, Cl. 260-120.000.

Kasper, Horst Manfred; Tell, Benjamin; and Wagner, Sigurd, to Bell Telephone Laboratories, Incorporated. Electrochemical device comprising ternary ionic conductors. 4,115,633, Cl. 429-191.000.

Kato, Hideo; Koshinaka, Eiichi; Kurata, Sakae; and Uesaka, Ikuo, to Hokuriku Pharmaceutical Co., Ltd. Monofumarate salt of 3-pyridylmethyl nicotinate. 4,115,392, Cl. 260-295.50R.

Kato, Masayuki: *See—*
Kasahara, Takahiko; Shichi, Shigeharu; Banno, Hideo; Suito, Senji; and Kato, Masayuki, 4,114,548, Cl. 112-258.000.

Kato, Tetuo, to Tokico Ltd. Hydraulic damper and valve structure. 4,114,735, Cl. 188-282.000.

Kato, Tetuo, to Tokico Ltd. Gas filling arrangement for a telescopic suspension unit. 4,114,866, Cl. 267-64.00R.

Katoh, Tadayoshi; and Itaya, Eiji, to Fujitsu Limited. Carrier regeneration circuit. 4,114,710, Cl. 178-67.000.

Katsura Machine Co., Ltd.: *See—*
Sekiguchi, Yoji, 4,114,773, Cl. 214-623.000.

Katsuragawa, Kanzi; Hattori, Tatsuo; Kihara, Keiichi; and Tamabayashi, Hanzo, to Toyo Soda Manufacturing Co., Ltd. Process for producing ammonium p-styrenesulfonate. 4,115,436, Cl. 260-505.00N.

Kaufman, Menachen, to Houdaille Industries, Inc. Machine tool controller employing microprocessor system for controlling Z axis. 4,115,858, Cl. 364-474.000.

Kavesh, Sheldon; and Bretts, Gerald R., to Allied Chemical Corporation. Welding of glassy metallic materials. 4,115,682, Cl. 219-118.000.

Kavun, Semen Moiseevich: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,114,496, Cl. 84-1.100.

Kawakami, Hiromi: *See—*
Hongu, Masayuki; Niimura, Tsutomu; and Kawakami, Hiromi, 4,115,737, Cl. 325-459.000.

Kawaken Fine Chemicals Co., Ltd.: *See—*
Hiiro, Takeshi; Sakurai, Hideki; and Kondo, Fumihiko, 4,115,426, Cl. 260-448.20E.

Kawamura ainstitute of Chemical Research: *See—*
Sato, Hisato; Tazume, Masayuki; Yamaki, Takasi; Fujita, Yutaka; and Arai, Yoshi, 4,115,310, Cl. 252-299.000.

Kawamura, Kiyoshi: *See—*
Nakamura, Koji; Otaki, Haruo; Yamamoto, Yutaka; Shimizu, Noboru; Kawamura, Kiyoshi; and Sato, Seiichi, 4,115,398, Cl. 260-326.100.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Amano, Toshio; and Kaku, Hidetoshi, 4,114,587, Cl. 123-196.00S.
Fujikawa, Tetsuzo; and Misawa, Kichiji, 4,114,586, Cl. 123-195.00A.
Matsuda, Munekazu, 4,114,371, Cl. 60-282.000.
Matsuda, Munekazu; and Sakaue, Yoshiaki, 4,114,572, Cl. 123-59.0PC.

Kawase, Shoji: *See—*
Inata, Hiroo; and Kawase, Shoji, 4,115,362, Cl. 528-190.000.

Kawneer Company, Inc.: *See—*
Sukolics, Ronald D., 4,114,330, Cl. 52-200.000.

Kay Manufacturing Corp.: *See—*
Krakauer, Edwin G., 4,114,212, Cl. 5-267.000.

Keedy, David E.: *See—*
Davis, Warren W.; and Keedy, David E., 4,114,368, Cl. 60-39.16R.

Keenan, Thomas W.: *See—*
Morre, D. James; Kloppel, Thomas M.; and Keenan, Thomas W., 4,115,062, Cl. 23-230.00B.

Keller, Donald A., to International Telephone and Telegraph Corporation. Flashlight and flashlight charging receptacle. 4,115,842, Cl. 362-183.000.

Keller, Hartmut: *See—*
Schubert, Klaus-Peter; Keller, Hartmut; and Hildebrandt, Juergen J., 4,114,464, Cl. 74-89.140.

Kellner, Jerome C., to Plastics Engineering Company. Phenolic resin-melamine composition. 4,115,366, Cl. 528-131.000.

Kelly, Donald V. Handle for sliding window. 4,114,934, Cl. 292-87.000.

Kelly, Edward G., to GAF Corporation. Method and product for installation of sheet flooring. 4,114,346, Cl. 52-746.000.

Kelly, Virgil M., to Purex Corporation. Multi-port backwash valve. 4,115,276, Cl. 210-425.000.

Kelman, Arnold Lloyd, to General Electric Company. Gantry for computed tomography. 4,115,695, Cl. 250-445.00T.

Kemanord AB: *See—*
Larsson, Karl-Georg; and Norell, Maria, 4,115,217, Cl. 204-95.000.
Larsson, Karl-Georg; and Norell, Maria, 4,115,217, Cl. 204-95.000.
Larsson, Karl-Georg; and Norell, Maria, 4,115,217, Cl. 204-95.000.

Kendall-Smith, Brian John; and Bonnington, Michael Glynn, to British Industrial Plastics Ltd. Moulding of filled synthetic plastics moulding compositions. 4,115,509, Cl. 264-331.000.

Kendig, Albert Prall: *See—*
Patterson, Marvin LeRoy; Haselby, Robert Dale; and Kendig, Albert Prall, 4,115,726, Cl. 318-171.000.

Kennedy-Skipton, Henry Kinny, to Imperial Chemical Industries Limited. Method of securing fixing elements in rock. 4,114,384, Cl. 405-260.000.

Kennedy, William Alvis, to Texaco Development Corp. Cross-linker for flexible and semi-flexible polyurethane foams. 4,115,301, Cl. 521-155.000.

Kerfoot, Derek G. E., to Noranda Mines Limited. Method for removing arsenic from copper and/or nickel bearing aqueous acidic solutions by solvent extraction. 4,115,512, Cl. 423-24.000.

Kern, Rene: *See—*
Foy, Paul; and Kern, Rene, 4,115,475, Cl. 260-857.0PE.

Kershner, Marvin R.: *See—*
Nicodemus, Robert N., Jr.; Bosler, James W.; and Kershner, Marvin R., 4,114,538, Cl. 104-88.000.

Kesler, Michael G., to Mobil Oil Corporation. Method for separating the product effluent of an alkylation process. 4,115,471, Cl. 260-683.430.

Kesling, Peter C. Athletic mouthguard. 4,114,614, Cl. 128-136.000.

Kevvai, Arnold Arnoldovich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
Nudelman, Boris Izrailovich; Sventsitsky, Alexandr Sergeevich; Bikbau, Marsel Yanovich; Bun, Isaak Mozesovich; and Kevvai, Arnold Arnoldovich, 4,115,138, Cl. 106-100.000.

Khokhlov, Lev Mikhailovich: *See—*
Vladimirov, Evgeny Evgenievich; Korchagin, Vladimir Gerasimovich; Sadomov, Jury Borisovich; and Khokhlov, Lev Mikhailovich, 4,115,867, Cl. 364-900.000.

Kienel, Gerhard; and Petersein, Helmut, to Leybold-Heraeus GmbH & Co. KG. Electron beam vaporizer. 4,115,653, Cl. 13-31.000.

Kihara, Keiichi: *See—*
Katsuragawa, Kanzi; Hattori, Tatsuo; Kihara, Keiichi; and Tamabayashi, Hanzo, 4,115,436, Cl. 260-505.00N.

Kikkoman Shoyu Co. Ltd.: *See—*
Noda, Fumio; Mogi, Keitaro; and Sakasai, Toshio, 4,115,591, Cl. 426-7.000.

Kikuchi, Katsutoshi: *See—*
Yoshida, Kenji; Isogaya, Kazuyoshi; Tomita, Tadayoshi; Kikuchi, Katsutoshi; and Kuboyama, Hisaharu, 4,115,074, Cl. 48-95.000.

Kikuchi, Masanori: *See—*
Inoue, Yasukazu; and Kikuchi, Masanori, 4,115,709, Cl. 307-304.000.

Kikuchi, Tatsuji: *See—*
Ohno, Masayoshi; Kakuta, Akio; Miyauchi, Terukatsu; and Kikuchi, Tatsuji, 4,115,081, Cl. 55-64.000.

Kikuga, Toyoji; and Hirai, Koji, to Sumitomo Durez Company, Ltd. Phenolic resin color developing compositions for copying papers and methods of preparation. 4,115,327, Cl. 260-17.200.

Kim, Samuel S.: *See—*
Emmons, William D.; Kim, Samuel S.; and Winey, Donald A., 4,115,169, Cl. 156-71.000.

Kimbell, Charles L. Method of testing an analyzer to determine the accuracy thereof and a volumetric primary standard apparatus for doing same. 4,114,419, Cl. 73-1.00G.

Kimberly-Clark Corporation: *See—*
Hultman, David P.; and Bergsbaken, Jack L., 4,115,605, Cl. 427-377.000.

Kimmell, Steven Donald, to Mattel, Inc. Wheel assembly for a skateboard or the like. 4,114,952, Cl. 301-5.700.

Kimura, Atsuyoshi: *See—*
Itoh, Tetsuro; Takahashi, Tetsuo; Kimura, Atsuyoshi; and Yamano, Seiichi, 4,115,111, Cl. 75-128.00P.

Kimura, Isao; and Yata, Sizukuni, to Nippon Kynol Incorporated. Process for producing modified phenolic novolak fibers. 4,115,364, Cl. 260-841.000.

Kimura, Tadashi, to Olympus Optical Co., Ltd. Variant Ernostar type long focus lens system. 4,114,992, Cl. 350-216.000.

Kimura, Yoshihiro: *See—*
Kinoshita, Yoshikiyo; Aoi, Takashi; Kimura, Yoshihiro; and Amisaki, Yumiko, 4,115,480, Cl. 260-885.000.

King, Lowell A.: *See—*
Nardi, John C.; Hussey, Charles L.; King, Lowell A.; and Carpio, Ronald A., 4,115,390, Cl. 260-290.0HL.

Kinoshita, Hirotugu; Sekiya, Makoto; and Makino, Nobuo, to Nippon Oil Co., Ltd. Brake grease compositions. 4,115,284, Cl. 252-29.000.

Kinoshita, Kimio; and Ackerman, John P., to United States of America, Energy. Method of preparing electrolyte for use in fuel cells. 4,115,632, Cl. 429-188.000.

Kinoshita, Yoshikiyo; Aoi, Takashi; Kimura, Yoshihiro; and Amisaki, Yumiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of production of acrylic resin for film use and an acrylic resin obtained therefrom. 4,115,480, Cl. 260-885.000.

Kinsella, Lawrence M.: *See—*
Carlson, Carl S.; Kinsella, Lawrence M.; and Pixley, Daniel L., 4,115,185, Cl. 156-634.000.

Kinsho, Yoshio: *See—*
Takami, Koichi; Abe, Shingo; Takigawa, Yukio; Tsutsumi, Toshinori; and Kinsho, Yoshio, 4,115,516, Cl. 423-239.000.

Kirch, Otto; and Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Sewing machine with a workpiece guide mechanism. 4,114,546, Cl. 112-153.000.

Kirner, Hans Dieter; Bitterlin, Albert; and Muller, Ekkehard Walter, to Rohner AG Pratteln. Mixture of water-insoluble monoazo dyestuffs for coloring textile materials consisting at least partly of linear, aromatic polyesters. 4,115,055, Cl. 8-26.000.

Kish, Arthur S., to Murray Corporation. Hose assembly. 4,114,656, Cl. 138-109.000.

Kissell, Ronald E.; and Gambill, Ulysses T., to Owens-Corning Fiberglas Corporation. Method and apparatus for molding articles from fibrous material. 4,115,498, Cl. 264-119.000.

Kita, Nobuyuki, to Fuji Photo Film Co., Ltd. Positive image forming radiation sensitive compositions containing diazide compound and organic cyclic anhydride. 4,115,128, Cl. 96-91.00D.

Kitazawa, Kunihiko; Mimura, Masuichiro; and Iwata, Mitsuo. to Victor Company of Japan, Limited. Automatic start and shut-off apparatus for magnetic-tape sound recorder. 4,115,822, Cl. 360-74.000.

Kittredge, Lloyd G., to Pitney-Bowes, Inc. Automatic postage meter date setter. 4,114,533, Cl. 101-99.000.

Kiwala, Jacob: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,115,406, Cl. 260-345.100.

Klaschka, Rudolf. Method for mounting of electrical components, in particular electrolyte capacitors. 4,114,244, Cl. 29-25.410.

Klauke, Erich: *See—*
Bien, Hans-Samuel; Klauke, Erich; and Wunderlich, Klaus, 4,115,378, Cl. 260-146.00T.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Florjancic, Dusan; and Matthias, Heinz-Bernd, 4,115,029, Cl. 415-211.000.

Kleineisel, Gustav; Kuchenbecker, Dietrich; and Ahrens, Gerd, to Linde Aktiengesellschaft. Control device for a hydraulic system having at least two pumps. 4,115,033, Cl. 417-216.000.

Kleiner, Wayne E., to W. R. Grace & Co. Shock absorbing device and container. 4,114,761, Cl. 206-591.000.

Klimkin, Nikolai Emelyanovich: *See—*
Vodopyanov, Jury Mikhailovich; Klimkin, Nikolai Emelyanovich; Savvateev, Ivan Ivanovich; Strelchenko, Vladimir Sergeevich; Kuris, Alexandr Pavlovich; and Koltsov, Sergei Ivanovich, 4,114,415, Cl. 72-214.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Otte, Wilhelm; Bergmann, Gunther; and Kubitza, Kar-Heinz, 4,115,265, Cl. 210-68.000.

Kloppel, Thomas M.: *See—*
Morre, D. James; Kloppel, Thomas M.; and Keenan, Thomas W., 4,115,062, Cl. 23-230.00B.

Kluender, Harold Clinton: *See—*
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, 4,115,438, Cl. 562-498.000.
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, 4,115,453, Cl. 260-586.00G.

Knapik, H. Peter G.: *See—*
Adams, Frank H.; and Knapik, H. Peter G., 4,115,253, Cl. 208-139.000.

Knapp, Heinrich, to Robert Bosch GmbH. Plastic pipe or hose connection for fuel conduits. 4,114,929, Cl. 285-45.000.

Knauf, James E. Carrier for skis and ski poles. 4,114,838, Cl. 224-45.00S.

Kneebone, Barbara M.: *See—*
Freiser, Henry; James, Helen J.; Carmack, Gary; Cattrall, Robert W.; and Kneebone, Barbara M., 4,115,209, Cl. 204-1.00T.

Kneubuhler, Werner: *See—*
Koller, Stefan; Karlen, Urs; Kneubuhler, Werner; and Defago, Raymond, 4,115,056, Cl. 8-39.00B.

Knight, Peter Charles, to Girling Limited. Automatic slack adjusters for vehicle brake linkages. 4,114,733, Cl. 188-196.0BA.

Knoll AG.: *See—*
Dengel, Ferdinand, 4,115,432, Cl. 260-465.00E.

Knorr, Manfred, to Franz Klaus-Union. Permanent magnet type pump. 4,115,040, Cl. 417-420.000.

Knud, Vagn Valbjorn, to Danfoss A/S. Apparatus for heating, cooling or air-conditioning a room. 4,114,682, Cl. 165-39.000.

Knutrud, Leif Brudal, to Norsk Cerealinstitutt ved Statens Teknologiske Institutt. Method for reducing the temperature of bakery products. 4,115,596, Cl. 426-497.000.

Kobayashi, Kazuhiro: *See—*
Miura, Yoshio; Kobayashi, Kazuhiro; and Yusa, Koue, 4,114,432, Cl. 72-135.000.

Kobayashi, Kiyonori: *See—*
Sugiura, Teruo; Tsubouchi, Hiromitsu; Ishida, Nobuyasu; and Kobayashi, Kiyonori, 4,114,740, Cl. 192-70.180.

Kobayashi, Sadao; and Okita, Yasuo, to Mitsui Toatsu Kagaku Kabushiki Kaisha (Mitsui Toatsu Chem., Inc.). Metallic tone coating composition. 4,115,338, Cl. 260-29.4UA.

Kobayashi, Toshiaki: *See—*
Ishida, Yukinori; Kojima, Moriaki; Kobayashi, Toshiaki; and Sugawara, Yasuyuki, 4,114,981, Cl. 350-96.330.

Koch, Bernard C. Golf club. 4,114,886, Cl. 273-162.00B.

Koch, Guido. Knee bending device. 4,114,610, Cl. 128-25.00R.

Kocsis, Karoly; Fechtig, Bruno; and Bickel, Hans, to Ciba-Geigy Corporation. 7α Ureido cephem-4-carboxylic acid derivatives. 4,115,566, Cl. 424-246.000.

Kodama, Kazumi: *See—*
Goto, Kuniaki; and Kodama, Kazumi, 4,115,355, Cl. 260-45.95H.

Koehler-Dayton, Inc.: *See—*
Iwans, Robert C., 4,114,207, Cl. 4-319.000.

Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich. Modified and stabilized synthetic cis-1,4 polyisoprene and method for producing same. 4,115,636, Cl. 526-47.600.

Kogiso, Masahiro; Sakata, Minehiro; Oda, Hatsuo; and Iwamoto, Tamio, to Iwatsu Electric Co., Ltd. Apparatus for making plates for printing. 4,114,999, Cl. 355-10.000.

Kogure, Yoichi; Minoura, Toshimi; and Fujiwara, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and system of controlling plants. 4,115,848, Cl. 364-107.000.

Kohama, Tokio: *See—*
Hattori, Tadashi; Nakase, Takamichi; and Kohama, Tokio, 4,114,578, Cl. 123-124.00R.

Kohara, Tadashi: *See—*
Tsuchida, Nobuo; Kohara, Tadashi; Morishita, Syozo; Yamagata, Seiichi; and Sakai, Masaaki, 4,114,358, Cl. 57-51.000.

Kohji, Toda: *See—*
Sato, Heihachi; and Kohji, Toda, 4,115,747, Cl. 331-94.50M.

Kohler, Ulf, to Linden-Alimak AB. Halt selector system. 4,114,729, Cl. 187-29.00R.

Koise, Yuji: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.

Kojima, Moriaki: *See—*
Ishida, Yukinori; Kojima, Moriaki; Kobayashi, Toshiaki; and Sugawara, Yasuyuki, 4,114,981, Cl. 350-96.330.

Kojima, Yoichi, to Planning Kogyo Kabushiki Kaisha. Apparatus for rotating heavy objects. 4,114,765, Cl. 214-1.0QC.

Kokubu, Yoshinori: *See—*
Suzuki, Yoshiro; Kokubu, Yoshinori; Chiba, Jiro; Hara, Morihisa; Nagahara, Shigehiro; and Yamamoto, Koichi, 4,115,132, Cl. 106-53.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,115,815, Cl. 358-260.000.

Kolbe, John L.: *See—*
Wadsworth, Milton E.; Miller, Jan D.; Herbst, John A.; Kolbe, John L.; and Hayden, Howard Wayne, 4,115,221, Cl. 204-108.000.

Koller, Stefan; Karlen, Urs; Kneubuhler, Werner; and Defago, Raymond, to Ciba-Geigy AG. Methods for dyeing or printing using amino-anthraquinone reactive disperse dyes. 4,115,056, Cl. 8-39.00B.

Koltsov, Sergei Ivanovich: *See—*
Vodopyanov, Jury Mikhailovich; Klimkin, Nikolai Emelyanovich; Savvateev, Ivan Ivanovich; Strelchenko, Vladimir Sergeevich; Kuris, Alexandr Pavlovich; and Koltsov, Sergei Ivanovich, 4,114,415, Cl. 72-214.000.

Kon, Tsuneyoshi; Toi, Hiroshi; Matsuura, Tamiaki; Akanuma, Kiyohiko; Takamiya, Toru; and Usui, Motosuke, to Sony Corporation. Manufacturing apparatus for tape cassette. 4,114,252, Cl. 29-563.000.

Konan Electric Co., Ltd.: *See—*
Nakajima, Hiroyuki; and Hosokawa, Takashi, 4,114,648, Cl. 137-625.500.

Kondis, Thomas J.: *See—*
Booz, Albert David; and Kondis, Thomas J., 4,115,107, Cl. 75-0.50R.

Kondo, Fumihiko: *See—*
Hiiro, Takeshi; Sakurai, Hideki; and Kondo, Fumihiko, 4,115,426, Cl. 260-448.20E.

Kondo, Takajiro: *See—*
Hashimoto, Yoshitoshi; Kondo, Takajiro; and Asamoto, Toshitaka, 4,114,491, Cl. 83-341.000.

Kondo, Toshihiro, to Fuji Photo Film Co., Ltd.; and Fuji Photo Film Co. Ltd. Focus detecting system. 4,114,994, Cl. 352-139.000.

Konig, Rudolf; and Brunsch, Klaus, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Connecting element for introducing forces into a structural part. 4,114,962, Cl. 308-238.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Takahashi, Jiro; Miyamoto, Akihiko; Aoki, Tooru; Kunieda, Naoshi; and Tanisawa, Kuniaki, 4,115,117, Cl. 96-29.00D.

Korchagin, Vladimir Gerasimovich: *See—*
Vladimirov, Evgeny Evgenievich; Korchagin, Vladimir Gerasimovich; Sadomov, Jury Borisovich; and Khokhlov, Lev Mikhailovich, 4,115,867, Cl. 364-900.000.

Koregelos, George. Demoisturizer for wind musical instruments. 4,114,504, Cl. 84-453.000.

Kornis, Gabriel: *See—*
Moon, Malcolm W.; and Kornis, Gabriel, 4,115,649, Cl. 544-140.000.

Kosaka, Kimito; Umehara, Kunio; and Maruyama, Takeshi, to Hitachi, Ltd. Circuit for extinguishing abnormally high voltage in television receiver. 4,115,814, Cl. 358-243.000.

Koshinaka, Eiichi: *See—*
Kato, Hideo; Koshinaka, Eiichi; Kurata, Sakae; and Uesaka, Ikuo, 4,115,392, Cl. 260-295.50R.

Kosswig, Kurt: *See—*
Coenen, Alfred; Kosswig, Kurt; and Prominski, Gunter, 4,115,530, Cl. 423-488.000.

Kostylev, Alexandr Dmitrievich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Boginsky, Vladimir Petrovich, 4,114,700, Cl. 175-19.000.

Kotzsch, Hans-Joachim; Draese, Rudiger; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Method of preparing silicon-nitrogen compounds. 4,115,427, Cl. 260-448.20E.

Kovalev, Nikolai Fedorovich: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.

Kowa Company Ltd.: *See—*
Nakamura, Koji; Otaki, Haruo; Yamamoto, Yutaka; Shimizu, Noboru; Kawamura, Kiyoshi; and Sato, Seiichi, 4,115,398, Cl. 260-326.100.

Kowalczyk, Adolph J., to J-Mark Quality Products, Inc. Oil filter wrench with ratchet drive. 4,114,481, Cl. 81-64.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Cirkel, Hans-Jurgen, 4,115,833, Cl. 361-303.000.
Janner, Karl; and Gregorius, Klaus, 4,115,078, Cl. 55-2.000.

Krakauer, Edwin G., to Kay Manufacturing Corp. Bed spring unit and method. 4,114,212, Cl. 5-267.000.

Krall, Thomas J., to Owens-Illinois, Inc. Method for molding a threaded bunghole. 4,115,496, Cl. 264-94.000.

Kramer, Klaus; Dietrich, Toni; and Braun, Peter, to Wilhelm Will KG. Optical-electronic microscopy apparatus and process. 4,115,802, Cl. 358-93.000.

Krapcho, John; and Turk, Chester F., to E. R. Squibb & Sons, Inc. 3,3-Dichloro-2-azetidinone derivatives having basic substituents. 4,115,382, Cl. 260-239.00A.

Krapf, Heinz: *See—*
Oppenlaender, Knut; Seib, Karl; and Krapf, Heinz, 4,115,314, Cl. 252-309.000.

Kraus, Willibald; and Greulich, Bodo Arthur, to TRW Inc. Wedge base bulb socket. 4,114,972, Cl. 339-65.000.

Krause, Horst-Jurgen; Hase, Christian; and Bloching, Helmut, to Henkel Kommanditgesellschaft auf Aktien. Compositions and method for activating oxygen utilizing cyclic ester-anhydrides of α-hydroxycarboxylic acids. 4,115,309, Cl. 252-186.000.

Krautkramer-Branson, Incorporated: *See—*
Walker, Philip A., 4,114,455, Cl. 73-597.000.

Krider, Edmund Philip; Noggle, Ralph Carl; and Uman, Martin Allan, to University of Arizona Foundation, The. Detection system for lightning. 4,115,732, Cl. 324-72.000.

Krijne, Johannes: *See—*
Horowitz, Alexandre; Kymmell, Georg Rudolph Wolter; Krijne, Johannes; Beusink, Bernard Joseph, deceased; and De Haan, Friedrich Jacobus, administrator, 4,114,406, Cl. 68-24.000.

Kristensson, Sten Krister; and Stamvik, Anders Robert, to Aktiebolaget Leo. Estramustine phosphate alcohol complexes, their preparation, and their use as intermediates in purification of said compound and salts thereof. 4,115,414, Cl. 260-397.500.

Kristiansen, Odd: *See—*
Boger, Manfred; and Kristiansen, Odd, 4,115,561, Cl. 424-211.000.

Kritzler, Gerhard; and Eckert, Paul, to Apparatebau Rothemuhle Brandt & Kritzler. Regenerative air preheater for separate preheating of two or more air-or gas streams. 4,114,680, Cl. 165-4.000.

Krogmann, Uwe, to Bodenseewerk. Navigation instrument for the navigation of land vehicles. 4,114,437, Cl. 73-178.00R.

Krol, Vladimir Alexandrovich: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.

Kropacheva, Elena Nikolaevna: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna, Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.

Kropp, James E.: *See—*
Robins, Janis; Kropp, James E.; and Young, Chung I., 4,115,295, Cl. 528-90.000.

Krumpelt, Michael, to BASF Wyandotte Corporation. Method of electrolyzing brine. 4,115,218, Cl. 204-98.000.

Kubens, Rolf; and Meyer, Frank, to Bayer Aktiengesellschaft. Process for the consolidation of geological formations and loosened rock and earth masses. 4,114,382, Cl. 405-264.000.

Kubitza, Kar-Heinz: *See—*
Otte, Wilhelm; Bergmann, Gunther; and Kubitza, Kar-Heinz, 4,115,265, Cl. 210-68.000.

Kubo, Daijiro; and Hashimoto, Masaru, to Tokyo Shibaura Electric Co., Ltd. MOS IC Oscillation circuit. 4,115,748, Cl. 331-111.000.

Kubota Ltd.: *See—*
Yano, Naomichi, 4,115,501, Cl. 264-133.000.

Kubota, Naohiro: *See—*
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,115,476, Cl. 260-880.00R.

Kubota, Yuichi; and Kajimoto, Norifumi, to TDK Electronics Co., Ltd: Magnetic recording medium. 4,115,290, Cl. 252-62.540.

Kubotera, Kikuo; Kashiwabara, Akira; and Sato, Kotaro, to Fuji Photo Film Co., Ltd. Process for production of printing plate. 4,115,118, Cl. 96-33.000.

Kuboyama, Hisaharu: *See—*
Yoshida, Kenji; Isogaya, Kazuyoshi; Tomita, Tadayoshi; Kikuchi, Katsutoshi; and Kuboyama, Hisaharu, 4,115,074, Cl. 48-95.000.

Kuchenbecker, Dietrich: *See—*
Kleineisel, Gustav; Kuchenbecker, Dietrich; and Ahrens, Gerd, 4,115,033, Cl. 417-216.000.

Kuczkowski, Thomas A.: *See—*
Jenis, Donald S.; Kuczkowski, Thomas A.; Mazer, Jack S.; and Westerkamp, Douglas F., 4,114,684, Cl. 165-82.000.

Kudlich, Hans; and Schweitzer, Karl, to Maschinenfabrik Peter Zimmer Aktiengesellschaft. Control system for rotary printing screens. 4,114,534, Cl. 101-115.000.

Kudo, Yoshiaki: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.

Kuhlthau, Hans-Peter: *See—*
Raue, Roderich; Eifler, Willi; and Kuhlthau, Hans-Peter, 4,115,413, Cl. 260-390.000.

Kuhn, Margrit. Foot rest. 4,114,613, Cl. 128-80.00R.

Kuhnel, Werner: *See—*
Hohmann, Walter; and Kuhnel, Werner, 4,115,412, Cl. 260-380.000.

Kukolja, Stjepan; and Spry, Douglas O., to Eli Lilly and Company. Process for 3-chloro cephalosporins. 4,115,643, Cl. 544-16.000.

Kulabukhov, Vadim Alexandrovich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.

Kulite Semiconductor Products, Inc.: *See—*
Brosh, Amnon; and Geiger, Dana F., 4,115,767, Cl. 340-347.0CC.

Kulkarni, Avinash D.; and Cleary, James G., to Westinghouse Electric Corp. Processing of ammonium paratungstate from tungsten ores. 4,115,513, Cl. 423-56.000.

Kulzer & Co. GmbH: *See—*
Gross, Albert; and Schaefer, Roland, 4,115,346, Cl. 260-42.150.

Kulzer, Friedhelm; and Mayer, Ehrhard. Cooled mechanical seal. 4,114,899, Cl. 277-22.000.

Kunieda, Naoshi: *See—*
Takahashi, Jiro; Miyamoto, Akihiko; Aoki, Tooru; Kunieda, Naoshi; and Tanisawa, Kuniaki, 4,115,117, Cl. 96-29.00D.

Kuniko Saita: *See—*
Oyama, Shoji, 4,114,916, Cl. 280-47.290.

Kuninaka, Akira: *See—*
Satoh, Tomokazu; Takezawa, Junichi; Kuninaka, Akira; Honma, Miyuki; and Ui, Michio, 4,115,538, Cl. 424-1.000.

Kunkele, Rudolf; and Engelhardt, Hans-Peter, to Magnesital-Feuerfest GmbH. Unburnt refractory masses or bricks for metallurgical vessels based on chrome-ore and carbon-containing binder. 4,115,133, Cl. 106-56.000.

Kurahashi, Takashi: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, 4,115,030, Cl. 416-93.00R.

Kurata, Sakae: *See—*
Kato, Hideo; Koshinaka, Eiichi; Kurata, Sakae; and Uesaka, Ikuo, 4,115,392, Cl. 260-295.50R.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Otani, Sugio; Watanabe, Shoji; and Araki, Tadashi, 4,115,527, Cl. 423-447.400.

Kurfman, Virgil B.; and Gransden, Raymond E., Jr., to Dow Chemical Company, The. Highly reflective multilayer metal/polymer composites. 4,115,619, Cl. 428-336.000.

Kuris, Alexandr Pavlovich: *See—*
Vodopyanov, Jury Mikhailovich; Klimkin, Nikolai Emelyanovich; Savvateev, Ivan Ivanovich; Strelchenko, Vladimir Sergeevich; Kuris, Alexandr Pavlovich; and Koltsov, Sergei Ivanovich, 4,114,415, Cl. 72-214.000.

Kurmeier, Hans-Adolf: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,115,456, Cl. 260-613.00R.

Kurtz, Roman: *See—*
Lorenz, Kurt; Dungs, Horst; Speich, Peter; and Kurtz, Roman, 4,115,202, Cl. 202-99.000.

Kutami, Toshio: *See—*
Tsukamoto, Takeo; Okamura, Miyoshi; and Kutami, Toshio, 4,115,211, Cl. 204-37.00R.

Kuwakado, Satoshi: *See—*
Kasagi, Takao; Kuwakado, Satoshi; and Takei, Toshihiro, 4,114,924, Cl. 280-740.000.

Kuznetsov, Andrei Vasilievich: *See—*
Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich, 4,115,163, Cl. 148-175.000.

Kvita, Vratislav: *See—*
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,115,231, Cl. 204-159.220.
Darms, Roland; Pfeifer, Josef; and Kvita, Vratislav, 4,115,359, Cl. 528-170.000.

Kymmell, Georg Rudolph Wolter: *See—*
Horowitz, Alexandre; Kymmell, Georg Rudolph Wolter; Krijne, Johannes; Beusink, Bernard Joseph, deceased; and De Haan, Friedrich Jacobus, administrator, 4,114,406, Cl. 68-24.000.

L.A. & E.W. Tunnicliffe Limited: *See—*
Tunnicliffe, Leonard Alfred, 4,114,884, Cl. 273-106.50C.

L. Eschweiler & Co.: *See—*
Huch, Albert; and Lubbers, Dietrich Werner, 4,114,602, Cl. 128-2.00E.

L. Schuler GmbH: *See—*
Braun, Hans; Cieslok, Gunter; and Wolf, Franz, 4,114,490, Cl. 83-303.000.
Schneider, Franz; Braitinger, Helmut; and Schumann, Burkhard, 4,114,489, Cl. 83-298.000.

La Barge, Inc.: *See—*
Creach, Wally E., 4,114,447, Cl. 73-362.0AR.

La Cellophane: *See—*
Quang, Pham Kim; and Marckmann, Jean-Claude, 4,115,114, Cl. 96-1.400.

La Telemecanique Electrique: *See—*
Bernard, Pierre Jean, 4,114,848, Cl. 248-346.000.

Labaz: *See—*
Nanthavong, Souli; Pigerol, Charles; Eymard, Pierre; and Simiand, Jacques, 4,115,401, Cl. 260-326.430.

Labbe, Francis Auguste Maurice; and Hirsh, Ivan Yehudi, to Molins Limited. Cigarette-making machines. 4,114,631, Cl. 131-84.00C.

Labeye-Voisin, Gerard Francois; and Hostein, Claude, to Compagnie Internationale pour l'Informatique Cil Honeywell Bull. Interfaces for connecting a data-processing unit to a working station. 4,115,856, Cl. 364-200.000.

Laboratorios del Dr. Esteve, S.A.: *See—*
Esteve-Subirana, Antonio, 4,115,648, Cl. 544-110.000.

Lachinov, Evgeny Alexandrovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.

Lacroix, Guy; Debourge, Jean-Claude; and Ducret, Jacques, to Philagro S.A. Diphosphorus derivatives and fungicidal compositions containing them. 4,115,559, Cl. 424-209.000.

Laface, Carmelo; and Vantellini, Carlo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Discriminating network for telephone switching signals. 4,115,664, Cl. 179-84.00R.

Lafeber, Andre, to Imperial Chemical Industries Limited. Yarn winding apparatus. 4,114,820, Cl. 242-18.00A.

Laine, Buddy. Reminder system. 4,115,846, Cl. 364-200.000.

Laird, Richard Alan; and Burnham, Geoffrey Desmond. Ski pole. 4,114,911, Cl. 280-11.37F.

Lalande, Jacques Alfred; and Thevin, Rene Roger, to International Standard Electric Corporation. Error compensating phase-locked loop. 4,115,743, Cl. 331-14.000.

Lalezari, Iraj: *See—*
Shafiee, Ali; Lalezari, Iraj; and Yassa, Narges, 4,114,314, Cl. 47-85.000.

Lam, Hsiao Ling; and Teach, Eugene G., to Stauffer Chemical Company. Certain formamidine dithiophosphates and phosphonates and their use as insecticides. 4,115,556, Cl. 424-200.000.

Lam, Hsiao Ling; and Teach, Eugene G., to Stauffer Chemical Company. Certain formamidine dithiophosphates and phosphonates and their use as insecticides. 4,115,560, Cl. 424-211.000.

Lam, Hsiao-Ling; and Pallos, Ferenc M., to Stauffer Chemical Company. N-1,1,2,2-tetrachloro-2-fluoroethylthio benzanilide and its use as fungicide and acaricide. 4,115,582, Cl. 424-298.000.

Lambert, Glen I.: *See—*
Lehman, Leon M.; and Lambert, Glen I., 4,115,247, Cl. 208-62.000.

Lamy, Jacques Edouard, to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines. Platform structure for maritime installations. 4,114,392, Cl. 405-207.000.

Landstorfer, Friedrich: *See—*
Meinke, Hans Heinrich; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz, 4,114,623, Cl. 128-303.140.

Lang, Stanley Albert, Jr.; and Walworth, Bryant Leonidas, to American Cyanamid Company. Pyrazolyltriazole herbicides. 4,115,097, Cl. 71-92.000.

Lange, Heinz. Windmill rotor. 4,115,032, Cl. 416-227.00A.

Lange, Kai; Toefting, Verner; Wiesen, Ernest J.; and Lijewski, Robert R., to General Electric Company. Scintillation camera system with improved means for correcting nonuniformity in real time. 4,115,694, Cl. 250-363.00S.

Lange, Michael: *See—*
Corte, Herbert; Heller, Harold; Lange, Michael; and Netz, Otto, 4,115,261, Cl. 210-40.000.

Langenegger, Werner: *See—*
Realini, Enrico; and Langenegger, Werner, 4,114,706, Cl. 177-70.000.

Langenfeld, Michel, to Pont-A-Mousson S.A. Large-diameter insulated pipe. 4,114,657, Cl. 138-109.000.

Langeron, Jean-Paul: *See—*
Fustier, Geraud; Langeron, Jean-Paul; de la Bastie, Joseph; and Carlizza, Jean, 4,115,113, Cl. 75-206.000.

Langfield, Edward R.; Hile, James L.; and Hird, David L., to Edward R. Langfield. Hydraulically actuated tool for mechanically splitting rock-like material. 4,114,951, Cl. 299-22.000.

Langlois, Etienne: *See—*
Ernyei, Herbert; and Langlois, Etienne, 4,114,454, Cl. 73-579.000.

Langsford, Stephen Walter, to Overseas Containers Australia Pty Limited. Clamp. 4,115,020, Cl. 403-322.000.

Lantos, Ivan: *See—*
Hill, David T.; Lantos, Ivan; and Sutton, Blaine M., 4,115,642, Cl. 536-121.000.

Laporte Industries Limited: *See—*
Chambers, Hubert Harold; and Tear, Brian John, 4,115,144, Cl. 106-300.000.

Large, Michael Stewart; and Smith, Leslie Harold, to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,115,409, Cl. 260-347.300.

Larsen, Ebbe: *See—*
Schjelde, Ole Mikel; and Larsen, Ebbe, 4,115,039, Cl. 417-363.000.

Larsen, Ole Fjord. Apparatus for preventing erosion of the seabed in front of hydraulic structures. 4,114,394, Cl. 405-25.000.

Larson, Louis A.: *See—*
Jensen, Gerald A.; Larson, Louis A.; and Diesch, Robert E., 4,114,349, Cl. 53-54.000.

Larsson, Karl-Georg; and Norell, Maria, to Kemanord AB; Kemanord AB; and Kemanord AB. Process for electrolytic preparation of chlorites. 4,115,217, Cl. 204-95.000.

Latassa, Frank M., to GTE Sylvania Incorporated. Method of processing fluorescent lamp. 4,114,968, Cl. 316-1.000.

Lauria, Francesco: *See—*
Doria, Gianfederico; Giraldi, PierNicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,115,567, Cl. 424-250.000.

LaVene, Leon F., to Schmelzer Corporation. Method and apparatus for making metal parts. 4,114,417, Cl. 72-379.000.

Lawrence, George J., to General Electric Company. Dust shield for cap and connector. 4,114,974, Cl. 339-103.00C.

Lawrence, Robert Raymond. Prefabricated transportable building without continuous steel chassis. 4,114,328, Cl. 52-79.100.

Lawrimore, William T. Hazardous travel simulating game. 4,114,891, Cl. 273-250.000.

Laws, Arthur Ernest, to Trubenised (Sales) Limited. Tracer apparatus. 4,114,278, Cl. 33-23.00K.

Lawson, Nelson E., to Union Camp Corporation. Novel coating compositions. 4,115,330, Cl. 260-26.000.

Lazarus, Stanley David; and Chakravarti, Kalidas, to Allied Chemical Corporation. Production of thermally stabilized polyester. 4,115,350, Cl. 260-45.80A.

Le Joint Francais: *See—*
Mercier, Bernard, 4,114,905, Cl. 277-164.000.
Leach, Leslie Alan; Riddoch, Henry Jamieson; and Duffy, Neil David, to Pico Electronics Limited. Gramophone equipment. 4,114,893, Cl. 274-9.0RA.
Leasure, William R.: *See—*
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,114,563, Cl. 118-63.000.
LeClere, Jacques: *See—*
Habermann, Helmut; Brunet, Maurice; and LeClere, Jacques, 4,114,960, Cl. 308-10.000.
Lectric Lites Company: *See—*
Blaylock, Arnold O.; Falconer, Robert P.; and Campbell, Charles M., 4,114,789, Cl. 224-42.10E.
Lednicer, Daniel, to Upjohn Company, The. Compounds, compositions and method of use. 4,115,589, Cl. 424-330.000.
Lee, Alexander Y.: *See—*
Gershberg, David N.; Lee, Alexander Y.; and D'Orto, Michael D., 4,115,781, Cl. 343-768.000.
Lee, Frank: *See—*
Fearnley, Charles; Fordham, Glenda Helen; and Lee, Frank, 4,115,294, Cl. 252-106.000.
Lee, William W., Jr.: *See—*
Fort, William G. S.; and Lee, William W., Jr., 4,115,073, Cl. 23-293.00R.
Leeds & Northrup Company: *See—*
Hoopes, Howard Sherman; McClenahan, Robert William; Walsh, Thomas Joseph; and Zecca, James William, 4,115,785, Cl. 346-34.000.
Walsh, Thomas Joseph, 4,114,446, Cl. 73-362.0AR.
Leffler, Dennis Frank: *See—*
Jones, Arthur Lee; and Leffler, Dennis Frank, 4,114,275, Cl. 32-22.000.
Legleye, Andre Jules: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.
Lehman, Leon M.; and Lambert, Glen I., to Hydrocarbon Research, Inc. Benzene production by solvent extraction and hydrodealkylation. 4,115,247, Cl. 208-62.000.
Leistikow, Gerard K.: *See—*
Guerrero, Benjamin G.; Leistikow, Gerard K.; and Sindlinger, Norman E., 4,114,313, Cl. 46-264.000.
Leitert, Frederick C.: *See—*
Lemanski, Michael F.; Leitert, Frederick C.; and Vinson, Carl G., Jr., 4,115,323, Cl. 252-455.00R.
Lello, Diane L.; and Diamond, Barry S. Ski caddy. 4,114,915, Cl. 280-47.190.
Lemaire, Gilbert: *See—*
Dekeister, Roger; Lemaire, Gilbert; and Marzys, Daniel, 4,115,210, Cl. 204-10.000.
Lemanski, Michael F.; Leitert, Frederick C.; and Vinson, Carl G., Jr., to Diamond Shamrock Corporation. Catalyst and process for production of VCM. 4,115,323, Cl. 252-455.00R.
Leppard, David G.: *See—*
Evans, Graham; Fryberg, Mario; Stauner, Thomas; Tschopp, Paul; and Leppard, David G., 4,115,121, Cl. 96-56.300.
Lerg, George: *See—*
Nelson, David H., 4,115,177, Cl. 156-245.000.
Lerner, Sidney I., to Ethyl Corporation. Binuclear phenols for reducing plasma lipid levels. 4,115,590, Cl. 424-337.000.
Lesieur, Jean-Paul, to Compagnie Internationale pour l'Informatique Cii Honeywell Bull. Apparatus for monitoring evolutive information. 4,115,818, Cl. 360-5.000.
Lesser, Joseph H.: *See—*
Oswald, Alexis A.; and Lesser, Joseph H., 4,115,482, Cl. 260-957.000.
L'Etat Francais, Represente par le Secretaire d'Etat aux Postes et Telecommunications: *See—*
Guinet, Yves Maurice; and Noirel, Yves Maurice, 4,115,662, Cl. 179-15.0BV.
Letourneur, Pierre: *See—*
Dewitte, Jean; and Letourneur, Pierre, 4,115,504, Cl. 264-221.000.
Lettine Anthony: *See—*
Lettine, Howard J.; and Lettine Anthony, 4,114,514, Cl. 91-211.000.
Lettine, Howard J.; and Lettine Anthony. Oscillating steam engines. 4,114,514, Cl. 91-211.000.
Lever Brothers Company: *See—*
Moran, David Patrick Joseph, 4,115,598, Cl. 426-604.000.
Levine, Alexander M.; and Ramsey, Henry R., to Webster Spring Co. Inc. Spring assembly with reinforcement. 4,114,210, Cl. 5-260.000.
Levine, Alexander M.; Ramsey, Henry R.; and Martin, Robert T., to Webster Spring Co. Inc. Corner stiffener. 4,114,211, Cl. 5-261.000.
Levine, Isaac Jacob: *See—*
Brown, Gary Leigh; Cummings, Weldon Clifford; and Levine, Isaac Jacob, 4,115,639, Cl. 526-130.000.
Levine, Jules David, to RCA Corporation. Device having thermionic cathode heated by field-emitted electrons. 4,115,720, Cl. 313-337.000.
Levit, Maxim Lvovich: *See—*
Padalko, Oleg Vadimovich; Levit, Maxim Lvovich; and Voinov, Nikolai Vasilievich, 4,115,623, Cl. 428-566.000.
Lewis, Meirion Francis, to National Research Development Corporation. Programable frequency acoustic wave discriminator. 4,115,744, Cl. 331-16.000.
Lewis, Peter Frederick: *See—*
Brady, Michael Barry; and Lewis, Peter Frederick, 4,115,746, Cl. 331-90.000.
Lewyn, Lanny Louis; and Simpson, Glen David, to American Hospital Supply Corporation. Cardiac pacer system and method with capture verification signal. 4,114,627, Cl. 128-419.0PT.
Leybold-Heraeus GmbH & Co. KG: *See—*
Kienel, Gerhard; and Petersein, Helmut, 4,115,653, Cl. 13-31.000.
Libsch, Karl David; and Rao, Mannige Vikram, to N L Industries, Inc. Secondary lead smelting process. 4,115,109, Cl. 75-77.000.
Licentia Patent-Verwaltungs-GmbH: *See—*
Wolf, Otto, 4,114,699, Cl. 173-109.000.
Lieber, Derek: *See—*
Weinstock, Jacques; Lieber, Derek; and Hay, William Dunning, 4,115,690, Cl. 250-308.000.
Liebeskind, Arthur S. Adjustable configuration toy. 4,114,307, Cl. 46-1.00R.
Liepold, August, to AGFA-Gevaert AG. Magnetic tape cassette. 4,114,833, Cl. 242-199.000.
Liermann, Traugott: *See—*
Mischo, Klaus; and Liermann, Traugott, 4,115,000, Cl. 355-29.000.
Mischo, Klaus; Liermann, Traugott; and Pustka, Karel, 4,115,001, Cl. 355-29.000.
Lijewski, Robert R.: *See—*
Lange, Kai; Toefting, Verner; Wiesen, Ernest J.; and Lijewski, Robert R., 4,115,694, Cl. 250-363.00S.
Lilly Industries Limited: *See—*
Chakrabarti, Jiban Kumar; and Tupper, David Edward, 4,115,568, Cl. 424-250.000.
Chakrabarti, Jiban Kumar; and Tupper, David Edward, 4,115,574, Cl. 424-250.000.
Lincklaen Arriens, Jan: *See—*
Van Steveninck, Johannes; and Lincklaen Arriens, Jan, 4,114,390, Cl. 405-163.000.
Lindbom, Torsten H., to Unimation. Portable, programmable manipulator apparatus. 4,115,684, Cl. 219-124.220.
Lindburg, Norman Lee: *See—*
Catanese, Carmen Anthony; Harrison, James Berkeley, Jr.; and Lindburg, Norman Lee, 4,115,719, Cl. 313-105.00R.
Linde Aktiengesellschaft: *See—*
Kleineisel, Gustav; Kuchenbecker, Dietrich; and Ahrens, Gerd, 4,115,033, Cl. 417-216.000.
Lindemann, Martin K., to Chas. S. Tanner Co. Vinyl ester aqueous adhesive emulsions including allyl carbamate. 4,115,306, Cl. 260-17.00A.
Linden-Alimak AB: *See—*
Kohler, Ulf, 4,114,729, Cl. 187-29.00R.
Lindenberg, Hans-Georg; Illmann, Joachim; and Golz, Hans-Joachim, to Varta Batterie Aktiengesellschaft. Lead dosing valve. 4,114,649, Cl. 137-625.190.
Lindenmeier, Heinz: *See—*
Meinke, Hans Heinrich; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz, 4,114,623, Cl. 128-303.140.
Lindquist, Terry Kent, to Borg-Warner Corporation. Fabricated pressure plate. 4,114,741, Cl. 192-89.00B.
Linhart, Karl; and Friedrich, Adolf, to Bayer Aktiengesellschaft. Process for the preparation of amino-nitrophenols. 4,115,652, Cl. 568-706.000.
Link, Otmar; and Nied, Gerhard, to AZO-Maschinenfabrik Adolf Zimmermann. Silo for bulk materials with fluidizing means. 4,114,324, Cl. 52-2.000.
Lipowski, Edwin M.: *See—*
Fischer, Donald A.; Lipowski, Edwin M.; and Kalt, William E., 4,114,507, Cl. 85-41.000.
Lipperts, Joseph H. F. G., to Hazemeijer B. V. Vacuum switch and electro-magnetic coil assembly therefor. 4,115,672, Cl. 200-144.00B.
Lipshield, Eugene C., to Orscheln Brake Lever Mfg. Company. Locking hook and pin apparatus for locking together a pair of components. 4,114,718, Cl. 180-89.140.
List, Hans: *See—*
Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,114,714, Cl. 180-54.00A.
Lista, Edwin L.; Hartupee, Richard B.; Manfred, Ralph K.; and O'Neil, Paul L., to Aerojet-General Corporation. Coated ammonium perchlorate. 4,115,166, Cl. 149-7.000.
Litchford, George B., to Litchstreet Co. Passive ATCRBS using signals of remote SSR. 4,115,771, Cl. 343-6.00R.
Litchstreet Co.: *See—*
Litchford, George B., 4,115,771, Cl. 343-6.00R.
Litman, Alan, to Smith & Wesson Chemical Company, Inc. Mounting arrangement for a rifle scope. 4,114,302, Cl. 42-1.0ST.
Litton Systems, Inc.: *See—*
Craig, Robert J. C.; and Council, Clifton T., 4,114,402, Cl. 64-15.00B.
Hutchings, Thomas J.; and Sanders, Virgil E., 4,115,004, Cl. 356-106.0LR.
Litzenberg, David P. Motor driven pump. 4,115,038, Cl. 417-357.000.
Liu, Shing-Gong, to RCA Corporation. Fast-switching pulse modulator. 4,115,708, Cl. 307-268.000.
Lobeck, Walter G., Jr.: *See—*
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Lobo, Edward: *See—*
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Loch, George N. Implement attachment to shank. 4,115,021, Cl. 403-353.000.
Locher, Anton: *See—*
Bachhofer, Bruno; Locher, Anton; Skirde, Gerhard; and Quistorff, Hansjorg, 4,115,267, Cl. 210-136.000.
Lochte, Glen E., to FMC Corporation. High force connecting mechanism. 4,114,928, Cl. 285-18.000.
Lockheed Electronics Co., Inc.: *See—*
Atwater, Jerrold Bradford, 4,115,860, Cl. 364-492.000.
Loeffler, Herbert H., to Ciba-Geigy Corporation. Spray dispenser with easily actuable mouthpiece. 4,114,811, Cl. 239-288.500.
Loeser, Julius A.: *See—*
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Loeser, William J.; and Loeser, Julius A. Coatings and methods of application. 4,114,505, Cl. 85-1.00C.
Logan, Lawrence Joseph: *See—*
Gupta, Rakesh Kumar; Jurkiewitsch, George; and Logan, Lawrence Joseph, 4,115,620, Cl. 428-374.000.
Loibl, Lorenz; and Scheurecker, Werner, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Arrangement for introducing a flexible starter bar into a continuous casting plant. 4,114,679, Cl. 164-426.000.
Lokalov, Anatoly Ivanovich: *See—*
Mukhamedyarov, Rashid Mustafievich; Smirnov, Boris Andreevich; Sery, Stanislav Vasilievich; Titkova, Tatyana Dmitrievna; and Lokalov, Anatoly Ivanovich, 4,115,272, Cl. 210-266.000.
Long, Clyde A. Fence rail connector. 4,114,861, Cl. 256-67.000.
Loomis, Phillip Eugene; Martz, Paul Elwood; and Phillips, Howard Charles, to AMP Incorporated. Application for terminals in strip form. 4,114,253, Cl. 29-566.200.
Lorenz, Kurt; Dungs, Horst; Speich, Peter; and Kurtz, Roman, to Carl Still, Firma; and Rheinische Braunkohlenwerke Aktiengesellschaft. Apparatus for producing non-abrasive coke forms from brown-coal briquets. 4,115,202, Cl. 202-99.000.
Lormeau, Jean-Claude; Goulay, Jean; and Vairel, Edmond, to Choay S.A. Compounds of the plasminogen type and method for obtaining such compounds from placental pulps. 4,115,551, Cl. 424-105.000.
Losinger AG: *See—*
Luthi, Kurt, 4,114,242, Cl. 24-115.00R.
Lotz, Robert William: *See—*
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Lou, Perry W., to Texas Instruments Incorporated. Substrate bias for MOS integrated circuit. 4,115,710, Cl. 307-304.000.
Lowell, Arthur C., to Wordsmith, Inc. Hand-held data processing terminal. 4,115,870, Cl. 364-900.000.
Lowrey, Dean R.: *See—*
Maffitt, Kent N.; Brueckner, Hubert U.; and Lowrey, Dean R., 4,114,983, Cl. 350-164.000.
Lubbers, Dietrich Werner: *See—*
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Lucas, Anthony James: *See—*
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Lucas Industries Limited: *See—*
Beech, Keith James William, 4,114,258, Cl. 29-596.000.
Lucht, Alfred: *See—*
Jager, Albert; Lucht, Alfred; and Munch, Gerhard, 4,114,864, Cl. 266-51.000.
Luciani, Luciano: *See—*
Scata, Umberto; Luciani, Luciano; and Barbe, Pier Camillo, 4,115,319, Cl. 252-429.00B.
Luepertz, Hans-Henning; and Fischenich, Bernhard, to ITT Industries, Inc. Brake system tester. 4,114,430, Cl. 73-121.000.
Lukashov, Anatoly Ivanovich: *See—*
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Luteran, Frank K. Visual test indicator for ignition systems. 4,115,758, Cl. 340-52.00R.
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Lyshkow, Norman A., to Combustion Equipment Associates Inc. Pollution monitoring apparatus. 4,115,067, Cl. 422-56.000.
MacAfee, Jerry D.; and Collette, Ronald J., to Jamesbury Corp. Valve seat insert. 4,114,856, Cl. 251-306.000.
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Hutchison, Robert V.; Gregg, Peter P.; and MacBride, James J., 4,115,836, Cl. 361-382.000.
MacFarland, Charles H., to Scott & Fetzer Company, The. Deflator-inflator attachment. 4,114,230, Cl. 15-330.000.
Macfee, Norman W., to Textron, Inc. Plasticizing and molding articles from polymer strip. 4,115,489, Cl. 264-23.000.
Machacek, Oldrich, to Atlas Powder Company. Hydrophobic aluminum sensitizing agents for explosives. 4,115,165, Cl. 149-5.000.
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Macuga, Henry J.; and Deschamps, Bernard F., to Eclipse Mfg. Inc. Fixture hanging assembly. 4,114,326, Cl. 52-28.000.
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Tankred, Hans Jurgen; and Madsen, Per Johan, 4,115,035, Cl. 417-312.000.
Maffitt, Kent N.; Brueckner, Hubert U.; and Lowrey, Dean R., to Minnesota Mining and Manufacturing Company. Polymeric optical element having antireflecting surface. 4,114,983, Cl. 350-164.000.
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Kunkele, Rudolf; and Engelhardt, Hans-Peter, 4,115,133, Cl. 106-56.000.
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Harpman, Webster B.; and Mahoney, Fred G., 4,114,566, Cl. 123-25.00B.
Mahoney, Robert D.; and Schneider, Stephen E., to Dow Chemical Company, The. Process for preparing microporous polyethylene hollow fibers. 4,115,492, Cl. 264-49.000.
Maier, Albin, to Snap-Tite, Inc. Cable reel valve and system. 4,114,827, Cl. 242-86.510.
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Makita, Tomoo: *See—*
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Maklad, Mokhtar S.: *See—*
Asam, Adolf R.; and Maklad, Mokhtar S., 4,114,980, Cl. 350-96.330.
Malan, Mabel. Disposable bib tray. 4,114,199, Cl. 2-49.00A.
Malata, Peter; and Buchsteiner, Josef, to Dentalwerk Burmoos Gesellschaft m.b.H. Dental tool handpiece assembly with removable spacer member. 4,114,276, Cl. 32-26.000.
Malec, Jerry P. Oil reclaimer. 4,115,201, Cl. 196-46.100.

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Janssens, Juliaan Leo Gerard; and Malherbe, Marie Jeanne Francoise Louise Ghislaine, 4,115,866, Cl. 364-900.000.
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Malo, Lowell L., to ACF Industries, Incorporated. Box car anti-pilferage device. 4,114,935, Cl. 292-104.000.
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Lista, Edwin L.; Hartupee, Richard B.; Manfred, Ralph K.; and O'Neil, Paul L., 4,115,166, Cl. 149-7.000.
Manghisi, Elso; Salimbeni, Aldo; and Ferni, Giovanni, to Instituto Luso Farmaco d'Italia S.r.l. Esters of 1-(p-hydroxyphenyl)-2-(1'-methyl-2'-phenoxyethylamino)-1-propanol. 4,115,585, Cl. 424-311.000.
Manheimer, Wallace M.: *See—*
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Manizza, Guelfo A., to Federal Paper Board Co., Inc. Tray type container. 4,114,797, Cl. 229-31.00R.
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Grandin, Friedrich-Hans; Fritsch, Werner; and Wengenrod, Gunter, 4,115,685, Cl. 219-155.000.
Mansfield, Peter, to National Research Development Corporation. Nuclear magnetic resonance apparatus and methods. 4,115,730, Cl. 324-0.50A.
Mao, Chung-Ling, to Uniroyal, Inc. Substituted morpholine catalyst for polyurethane foam. 4,115,302, Cl. 521-115.000.
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Karol, Frederick John; Wu, Chisung; Reichle, Walter Thomas; and Maraschin, Norma Jean, 4,115,425, Cl. 260-438.50R.
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Marchand, Joseph; and Puig, Jean-Rene, to Commissariat a l'Energie Atomique. Method of fabrication of porous macromolecular materials having an internal lining and materials obtained by means of said method. 4,115,303, Cl. 521-53.000.
Marchio, John P.; and Figueredo, Hector. Price label remover. 4,114,267, Cl. 30-172.000.
Marckmann, Jean-Claude: *See—*
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Marcus, Konrad H., to Prince Corporation. Reversible side mount mirror. 4,114,986, Cl. 350-282.000.
Margres, Jack J.: *See—*
Rubino, Andrew M.; and Margres, Jack J., 4,115,553, Cl. 424-155.000.
Marinelli, Nicola, to NCR Corporation. Pearlescent capsules and process for their preparation. 4,115,315, Cl. 252-316.000.
Marion, Jacques; and Pralus, Christian, to Produits Chimiques Ugine Kuhlmann. Catalysts and processes for preparing unsaturated nitriles. 4,115,434, Cl. 260-465.300.
Mark, Victor; and Hoogebroom, Thomas J., to General Electric Company. Flame retardant polycarbonate composition. 4,115,354, Cl. 260-45.70S.
Marmer, Melvin. Arithmetic teaching device. 4,114,294, Cl. 35-31.00C.
Marrs, Oren L.: *See—*
Reusser, Robert E.; Gray, Lew T.; and Marrs, Oren L., 4,115,335, Cl. 260-28.5AS.
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Marsh, Frank Dennis, to Du Pont de Nemours, E. I., and Company. N-cyanoaziridines. 4,115,384, Cl. 260-239.00E.
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Martin, Chloeta F.: *See—*
Martin, Theodore O., Jr., 4,115,614, Cl. 428-220.000.
Martin, David Joseph, to BICC Limited. Optical fibres. 4,115,087, Cl. 65-3.00C.
Martin, Frank Eugene; and Rich, Edward Larmour, III, to Midori Anzen Company, Ltd. Sequential ignition system for oxygen generation elements. 4,115,069, Cl. 422-112.000.
Martin Processing, Inc.: *See—*
Hermes, Julius, 4,115,054, Cl. 8-17.000.
Martin, Robert T.: *See—*
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Maruszak, John E. Pool table golf game. 4,114,876, Cl. 273-87.00B.
Maruyama, Takeshi: *See—*
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Maruyama, Yasuo: *See—*
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Mascioli, Rocco L.: *See—*
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Mash, Derek H.; Crossland, William A.; and Morrissy, Joseph H., to International Standard Electric Corporation. Liquid crystal rotator. 4,114,990, Cl. 350-337.000.
Massachusetts Institute of Technology: *See—*
Henrich, Victor E.; and Fan, John C. C., 4,115,228, Cl. 204-192.0EC.
Pratt, George W., Jr., 4,115,280, Cl. 250-527.000.
Masuda, Senichi. Electrostatic powder painting apparatus. 4,114,810, Cl. 239-15.000.
Masuda, Tetsuzo; Tagawa, Tomiyasu; Yoshioka, Hachiro; and Akahoshi, Takashi, to Nissan Motor Company, Limited. Catalytic converter having improved supporting members for monolithic catalyst. 4,115,071, Cl. 422-179.000.
Masuoka, Fujio; and Iizuka, Hisakazu, to Tokyo Shibaura Electric Co., Ltd. Semiconductor memory device. 4,115,795, Cl. 357-24.000.
Matson, Lawrence Wayne, Jr.; Nixon, Jeddy Darr, Jr.; and Remont, Larry Joseph, to Maurer Engineering Inc. Well drilling tool having sealed lubrication system. 4,114,703, Cl. 175-107.000.
Matsuda, Munekazu, to Kawasaki Jukogyo Kabushiki Kaisha. Internal combustion engine. 4,114,371, Cl. 60-282.000.
Matsuda, Munekazu; and Sakaue, Yoshiaki, to Kawasaki Jukogyo Kabushiki Kaisha. Fuel-air mixture feed device of the multiple cylinder and multiple carburetor type for an internal combustion engine. 4,114,572, Cl. 123-59.0PC.
Matsuda, Yoshinobu; Suzuki, Yukio; and Yasui, Seimei, to Sumitomo Chemical Company, Limited. Sulfonated product of butadiene or isoprene oligomer and the production therefor. 4,115,437, Cl. 260-513.00R.
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Minakuchi, Hiroshi, 4,115,831, Cl. 361-236.000.
Sano, Nobuya; Goto, Hiroshi; and Hirota, Yutaka, 4,115,739, Cl. 330-263.000.
Yamashita, Kazuo; Yokose, Yoshikazu; Akao, Masatake; Hirakawa, Koichi; Iho, Katsuhiko; and Shibano, Takashi, 4,115,175, Cl. 156-172.000.
Matsuura, Eiichi; Takahashi, Keikichi; Tsukada, Nobuo; and Tatsumi, Yoshio, to Kabushiki Kaisha Daini Seikosha. Battery lead plate member for an electronic wrist watch. 4,114,365, Cl. 58-23.0BA.
Matsuura, Tamiaki: *See—*
Kon, Tsuneyoshi; Toi, Hiroshi; Matsuura, Tamiaki; Akanuma, Kiyohiko; Takamiya, Toru; and Usui, Motosuke, 4,114,252, Cl. 29-563.000.
Mattel, Inc.: *See—*
Gay, Derek John, 4,114,309, Cl. 46-75.000.
Guerrero, Benjamin G.; Leistikow, Gerard K.; and Sindlinger, Norman E., 4,114,313, Cl. 46-264.000.
Kimmell, Steven Donald, 4,114,952, Cl. 301-5.700.
Schroeder, Robert Frederich, 4,115,042, Cl. 417-479.000.
Matthias, Heinz-Bernd: *See—*
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Mattila, Alvin J. Appliance for swimmers. 4,114,874, Cl. 272-71.000.
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Mau, Theodore A., to Runte, Robert Ralph. Variable velocity control for playing images for a manually controlled electronic video display game. 4,114,882, Cl. 273-85.00G.
Maurer Engineering Inc.: *See—*
Matson, Lawrence Wayne, Jr.; Nixon, Jeddy Darr, Jr.; and Remont, Larry Joseph, 4,114,703, Cl. 175-107.000.
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Maurer, Fritz; Riebel, Hans-Jochem; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-Alkyl-O-(6-alkanesulphonyloxy-pyrimidin(4)yl)-(thiono) (thiol) phosphoric (phosphonic) acid esters and ester-amides and arthropodicidal compositions and methods of combating arthropods using them. 4,115,542, Cl. 424-200.000.
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Mauritzon, Rune. Continuous vulcanization of rubber. 4,115,511, Cl. 264-347.000.
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Maxson, Orwin G.; and Achenbach, Gary D., to Continental Oil Company. Method for retarding scale formation. 4,115,606, Cl. 427-386.000.
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Mazer, Jack S.: *See—*
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McAfee, John Gilmore: *See—*
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McAleer, William J.; and Hurni, William M., to Merck & Co., Inc. Automated plate reader. 4,115,010, Cl. 356-201.000.
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McCabe, Francis J. Rotating blade fire damper. 4,114,646, Cl. 137-601.000.
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McCarthy, William C.; and Dunn, Robert O., to Phillips Petroleum Company. Method of purifying polluted water. 4,115,264, Cl. 210-63.00R.
McClelland, Keener D. Method and apparatus for quieting a fowl eviscerating device. 4,114,239, Cl. 17-45.000.
McClenahan, Robert William: *See—*
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McDonald, William Jesse, Jr.: *See—*
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McDonnell Douglas Corporation: *See—*
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McElroy, David J., to Texas Instruments Incorporated. Electronic calculator with push-button on-off system. 4,115,705, Cl. 307-140.000.
McGaha, George Vernon, to Pelton & Crane Company. Handpiece instrument console apparatus having improved mechanisms for extending and retracting operating flexible hose. 4,114,273, Cl. 32-22.000.
McGhee, Jerry R.; and Schaefer, Milton E., to University of Alabama in Birmingham. Intraoral cup for collecting saliva and method of using the same. 4,114,605, Cl. 128-2.00F.
McGilvery, James D., to Erco Industries Limited. Phosphate composition. 4,115,307, Cl. 252-135.000.
McGrath, Neal, to Illinois Nuclear Electronics, Inc. Signal processing system for a gamma camera. 4,115,693, Cl. 250-363.00S.
McGraw-Edison Company: *See—*
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McIntyre, David G.: *See—*
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McKellin, Wilbur H.; and Swarts, William A., to Pennwalt Corporation. Reduction of carbonyl-containing dialkyl peroxides to hydroxy-containing dialkyl peroxides. 4,115,455, Cl. 260-610.00R.
McKerrow, George C.; Pelletier, Albert; and Fowler, Peter L., to Noranda Mines Limited. Silencer for use on tuyere punchers. 4,114,865, Cl. 266-136.000.
McLean, F. Ronald. Liquid volumetric line leak testing apparatus. 4,114,426, Cl. 73-40.50R.
McNamee, Gerald P.; Roszkowski, Theodore R.; Stanbridge, David W.; and White, Gerald A., to Ralph M. Parsons Company, The. Process for the production of fuel values from carbonaceous materials. 4,115,075, Cl. 48-197.00R.
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McPherson, Roger E.: *See—*
Jackson, Billy G.; and McPherson, Roger E., 4,115,645, Cl. 544-20.000.
Mead Johnson & Company: *See—*
Wu, Yao Hua; and Lobeck, Walter G., Jr., 4,115,571, Cl. 424-248.560.
Means, David K.; and Boenke, Clyde A., to Reliance Electric Company. Transportation system with individual programmable vehicle processors. 4,114,730, Cl. 187-29.00R.
Mediax, Inc.: *See—*
Taub, Herman P., 4,114,291, Cl. 35-36.000.
Medvick, Richard J., to Swagelok Company. Quick connect coupling. 4,114,853, Cl. 251-149.600.
Meehan, James Bartley: *See—*
Dantzler, Danny M.; Meehan, James Bartley; Everman, Wayne Fredrick; Fluent, Donald E.; and Sachs, Howard George, 4,115,779, Cl. 343-715.000.
Meehl, David W.: *See—*
Clark, Leonard R.; and Meehl, David W., 4,114,249, Cl. 29-513.000.
Meinke, Hans Heinrich; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz, to Karl Storz Endoscopy-America, Inc. Cutting and coagulation apparatus for surgery. 4,114,623, Cl. 128-303.140.
Meischen, Sandra Jan: *See—*
Gale, Glen Roy; and Meischen, Sandra Jan, 4,115,418, Cl. 260-429.00R.
Melchior, Jean; and Andre, Thierry, to Etat Francais. Power unit. 4,114,379, Cl. 60-606.000.
Memminger, Gustav: *See—*
Fecker, Josef; and Memminger, Gustav, 4,114,823, Cl. 242-47.010.
Menahem, Salomon, to Superfile, Ltd. Suspended files. 4,114,963, Cl. 312-184.000.
Menasha Corporation: *See—*
Oiler, Willard E., 4,114,879, Cl. 273-34.00R.
Menschik, Judith: *See—*
Paul, Rolf; and Menschik, Judith, 4,115,572, Cl. 424-249.000.
Mercaldi, Renaldo: *See—*
Bovio, Robert J.; and Mercaldi, Renaldo, 4,114,903, Cl. 277-81.00R.
Mercier, Bernard, to Le Joint Francais. Seal ring comprising a hollow deformable metal element. 4,114,905, Cl. 277-164.000.
Merck & Co., Inc.: *See—*
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,115,402, Cl. 260-332.20A.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,115,573, Cl. 424-250.000.
McAleer, William J.; and Hurni, William M., 4,115,010, Cl. 356-201.000.
Veber, Daniel F., 4,115,554, Cl. 424-177.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Engel, Gerhard; and Eckle, Manfred, 4,115,312, Cl. 252-301.500.
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,115,456, Cl. 260-613.00R.
Merritt, Joseph E. Servicing apparatus. 4,114,448, Cl. 73-362.0AR.
Mertens, Benny F.: *See—*
Anderson, Joseph A., 4,115,200, Cl. 195-127.000.
Mery, Pierre. Motorized three wheel vehicle. 4,114,713, Cl. 180-27.000.
Messer Griesheim GmbH: *See—*
Jager, Albert; Lucht, Alfred; and Munch, Gerhard, 4,114,864, Cl. 266-51.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Konig, Rudolf; and Brunsch, Klaus, 4,114,962, Cl. 308-238.000.
Schubert, Klaus-Peter; Keller, Hartmut; and Hildebrandt, Juergen J., 4,114,464, Cl. 74-89.140.
Mester, Zoltan Csaba: *See—*
Vidal, Jose Luis; Mester, Zoltan Csaba; and Walker, Wellington Epler, 4,115,428, Cl. 260-449.00L.
Metabi, Tsuneyo, to Minolta Camera Kabushiki Kaisha. Process and

apparatus for the manufacture of thread engageable members. 4,115,505, Cl. 264-242.000.
Metallgesellschaft Aktiengesellschaft: *See—*
Pockrandt, Gunter; and Fellner, Helmut, 4,115,079, Cl. 55-43.0BN.
Metallurgie Hoboken-Overpelt: *See—*
Jager, Hans; and Seipp, Emil, 4,115,164, Cl. 148-175.000.
Metcalf, James E., to Del Norte Technology, Inc. Synchronized pulse amplitude control for pulse measuring circuits. 4,115,773, Cl. 343-7.0AG.
Mettler Instrumente AG: *See—*
Realini, Enrico; and Langenegger, Werner, 4,114,706, Cl. 177-70.000.
Metz, Paul; Schockmel, Robert; Nick, Desire; and Pfeiffer, Paul, to Acieries Reunies de Burbach-Eich-Dudelange S.A. Arbed. Process and apparatus for making expanded slag. 4,115,089, Cl. 65-19.000.
Meucci, Amleto. Speed convertors for providing variable drive ratios. 4,114,466, Cl. 74-117.000.
Meyborg, Holger, to Bayer Aktiengesellschaft. Catalysts for isocyanate polyaddition reactions. 4,115,320, Cl. 252-431.00C.
Meyer, Frank: *See—*
Kubens, Rolf; and Meyer, Frank, 4,114,382, Cl. 405-264.000.
Meyer, Warren A. Device for synchronously rotating solar collectors. 4,114,594, Cl. 126-270.000.
Michaut, Claude: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.
Michel, Jean-Pierre: *See—*
Saint-Lebe, Louis; Berger, Gerard; Michel, Jean-Pierre; Huchette, Michel; and Fleche, Guy, 4,115,146, Cl. 127-38.000.
Micro Tec Instrumentation, Inc.: *See—*
Abels, Michael Allen, 4,114,601, Cl. 128-1.00R.
Midana, Fiorenzo. Golf game apparatus. 4,114,889, Cl. 273-176.00F.
Midland-Ross Corporation: *See—*
Stanuszek, Dennis M., 4,114,378, Cl. 60-589.000.
Walker, Peter J., 4,114,528, Cl. 100-47.000.
Midori Anzen Company, Ltd.: *See—*
Martin, Frank Eugene; and Rich, Edward Larmour, III, 4,115,069, Cl. 422-112.000.
Mihailovski, Alexander, to Stauffer Chemical Company. Bis-stannane insecticides. 4,115,581, Cl. 424-288.000.
Mikado, Tsuneo, to Nippon Television Industry Corporation. Television signal generator. 4,115,810, Cl. 358-139.000.
Mikami & Co., Ltd.: *See—*
Mikami, Takashi, 4,115,813, Cl. 358-229.000.
Mikami, Takashi, to Mikami & Co., Ltd. Television enlarging display apparatus for graphic material. 4,115,813, Cl. 358-229.000.
Miki, Masayoshi: *See—*
Okubo, Masao; Miki, Masayoshi; and Ueda, Takeshi, 4,115,148, Cl. 134-21.000.
Milan, Daniel, to Societe B.V.S. Rock drilling tool having pulsed jets. 4,114,705, Cl. 175-340.000.
Miles Laboratories, Inc.: *See—*
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, 4,115,438, Cl. 562-498.000.
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, 4,115,453, Cl. 260-586.00G.
Milito, Richard A.: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., 4,115,215, Cl. 204-67.000.
Miller, David E.: *See—*
Brisk, Richard A.; and Miller, David E., 4,115,859, Cl. 364-476.000.
Miller, Frank. Anchor having built-in trip device. 4,114,554, Cl. 114-298.000.
Miller, George A.; and Owen, Ronald P., to Rohm and Haas Company. 1-Substituted aralkyl imidazoles. 4,115,578, Cl. 424-273.00R.
Miller, Jan D.: *See—*
Wadsworth, Milton E.; Miller, Jan D.; Herbst, John A.; Kolbe, John L.; and Hayden, Howard Wayne, 4,115,221, Cl. 204-108.000.
Miller, Ward B., to Owens-Corning Fiberglas Corporation. Apparatus for packaging compressible strips. 4,114,530, Cl. 100-87.000.
Miller, William L., Jr., to Upjohn Company, The. Antihyperthermic use for prostaglandins. 4,115,586, Cl. 424-317.000.
Mims, Carl C., Jr. Combination incontinent garment and liner. 4,114,621, Cl. 128-288.000.
Mimura, Masuichiro: *See—*
Kitazawa, Kunihiko; Mimura, Masuichiro; and Iwata, Mitsuo, 4,115,822, Cl. 360-74.000.
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, to Argus Chemical Corporation. 2,2,6,6-Tetramethyl-4-piperidyl carbonic acid esters of dihydric alcohols and phenols as stabilizers for synthetic polymers. 4,115,476, Cl. 260-880.00R.
Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Velocity detecting apparatus insensitive to noise. 4,115,831, Cl. 361-236.000.
Mindell, Marvin I., to Singer Company, The. Method for regaining synchronization between a visual image projector and an associated audio playback machine. 4,115,824, Cl. 360-80.000.
Ministry of Science & Higher Education, The: *See—*
Shafiee, Ali; Lalezari, Iraj; and Yassa, Narges, 4,114,314, Cl. 47-85.000.
Minnesota Mining and Manufacturing Company: *See—*
Cowman, Charles D., Jr.; and Shepherd, John P. G., 4,115,486, Cl. 264-1.000.
Degen, Peter John; and Lucas, Anthony James, 4,115,547, Cl. 424-60.000.
Ithakissios, Dionyssis S., 4,115,534, Cl. 424-1.000.
Maffitt, Kent N.; Brueckner, Hubert U.; and Lowrey, Dean R., 4,114,983, Cl. 350-164.000.
Robins, Janis; Kropp, James E.; and Young, Chung I., 4,115,295, Cl. 528-90.000.
Vandervort, John D., 4,114,236, Cl. 16-142.000.
Voegeli, Douglas W., 4,115,500, Cl. 264-122.000.
Minolta Camera Kabushiki Kaisha: *See—*
Metabi, Tsuneyo, 4,115,505, Cl. 264-242.000.
Minoura, Toshimi: *See—*
Kogure, Yoichi; Minoura, Toshimi; and Fujiwara, Toshio, 4,115,848, Cl. 364-107.000.
Misawa, Kichiji: *See—*
Fujikawa, Tetsuzo; and Misawa, Kichiji, 4,114,586, Cl. 123-195.00A.
Mischo, Klaus; and Liermann, Traugott, to AGFA-Gevaert AG. Apparatus for notching of webs. 4,115,000, Cl. 355-29.000.
Mischo, Klaus; Liermann, Traugott; and Pustka, Karel, to AGFA-Gevaert AG. Web marking apparatus. 4,115,001, Cl. 355-29.000.
Misek, Victor A.: *See—*
Schwartz, Jacob; and Misek, Victor A., 4,114,685, Cl. 165-96.000.
Mr. Christmas Incorporated: *See—*
Hermanson, Terry, 4,114,634, Cl. 135-19.500.
Misumi, Akira: *See—*
Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, 4,114,243, Cl. 29-25.140.
Mitarai, Akira; and Fujiwara, Sigekazu, to Sharp Kabushiki Kaisha. Digital frequency shift signal demodulator. 4,115,738, Cl. 329-105.000.
Mitchell, John Davis: *See—*
Jordan, Bertram Lee; and Mitchell, John Davis, 4,114,770, Cl. 214-130.00R.
Mitchell, Roderick A. Seed planting device with automatic seed covering. 4,114,543, Cl. 111-96.000.
Mitchener, Russel L.: *See—*
Sink, William H.; and Mitchener, Russel L., 4,114,743, Cl. 192-91.00R.
Mitsubishi Chemical Industries, Ltd.: *See—*
Takami, Koichi; Abe, Shingo; Takigawa, Yukio; Tsutsumi, Toshinori; and Kinsho, Yoshio, 4,115,516, Cl. 423-239.000.
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,532, Cl. 423-492.000.
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, 4,115,533, Cl. 423-492.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Sugio, Akitoshi; Furusawa, Tomotaka; Tanaka, Katsumasa; Umemura, Toshikazu; and Urabe, Hiroyuki, 4,115,369, Cl. 526-65.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Kanki, Hiroshi; Yasuda, Kazuyoshi; and Tatsuke, Hisashi, 4,114,819, Cl. 242-18.00R.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Morimoto, Toshiki; and Hori, Sumisaburo, 4,114,351, Cl. 53-157.000.
Mitsui Sugar Co., Ltd.: *See—*
Shimizu, Junichi; and Hashizume, Kyosuke, 4,115,147, Cl. 127-54.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Yoshida, Kenji; Isogaya, Kazuyoshi; Tomita, Tadayoshi; Kikuchi, Katsutoshi; and Kuboyama, Hisaharu, 4,115,074, Cl. 48-95.000.
Mitsui Toatsu Kagaku Kabushiki Kaisha (Mitsui Toatsu Chem., Inc.): *See—*
Kobayashi, Sadao; and Okita, Yasuo, 4,115,338, Cl. 260-29.4UA.
Mitsuishi, Yukio; Shiozaki, Shigeru; and Hasegawa, Kinji, to Teijin Limited. Weather-resistant adhesive film. 4,115,617, Cl. 428-336.000.
Miura, Nobuhiro: *See—*
Yamakawa, Yoshio; Yanagihara, Hiromichi; and Miura, Nobuhiro, 4,114,569, Cl. 123-30.00D.
Miura, Yoshio; Kobayashi, Kazuhiro; and Yusa, Koue, to Hitachi, Ltd. Coil winding apparatus. 4,114,432, Cl. 72-135.000.
Miyachi, Nobuji; Ogawa, Akira; Miyake, Keniti; and Onishi, Isao, to Miyachi Sewing Machine Co., Ltd. Apparatus for forming loops on a garment. 4,114,544, Cl. 112-104.000.
Miyachi Sewing Machine Co., Ltd.: *See—*
Miyachi, Nobuji; Ogawa, Akira; Miyake, Keniti; and Onishi, Isao, 4,114,544, Cl. 112-104.000.
Miyake, Keniti: *See—*
Miyachi, Nobuji; Ogawa, Akira; Miyake, Keniti; and Onishi, Isao, 4,114,544, Cl. 112-104.000.
Miyake, Toshinobu: *See—*
Ozaki, Hiromi; Yamane, Mamoru; Satomi, Yoshihito; Suzuka, Teruo; Miyake, Toshinobu; and Hirato, Mizuho, 4,115,324, Cl. 252-459.000.
Miyamoto, Akihiko: *See—*
Takahashi, Jiro; Miyamoto, Akihiko; Aoki, Tooru; Kunieda, Naoshi; and Tanisawa, Kuniaki, 4,115,117, Cl. 96-29.00D.
Miyamoto, Norioki: *See—*
Sugimura, Yukio; Miyamoto, Norioki; Iwasaki, Tetsuji; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,115,103, Cl. 71-98.000.
Miyaoka, Senri, to Sony Corporation. Optical signal play-back device with auto-focussing of a light beam at a record carrier surface. 4,115,808, Cl. 358-127.000.
Miyauchi, Terukatsu: *See—*
Ohno, Masayoshi; Kakuta, Akio; Miyauchi, Terukatsu; and Kikuchi, Tatsuji, 4,115,081, Cl. 55-64.000.
Mizobuchi, Yuzo: *See—*
Ikeda, Tomoaki; Mizobuchi, Yuzo; Nahara, Akira; Washizawa, Yasuo; Ono, Yoshihiro; and Tomotsu, Takeshi, 4,115,127, Cl. 96-85.000.
Mizuta, Toshinobu; and Hayashi, Tooru, to Kabushiki Kaisha Nihon Kotai Kenkyujo. Apparatus for sensitive detection and quantitative analysis of biological and biochemical substances. 4,115,699, Cl. 250-461.00B.
Mobay Chemical Corporation: *See—*
Chadwick, David H., 4,115,304, Cl. 521-167.000.
Reiff, Helmut F.; and Pantone, Richard S., 4,115,429, Cl. 260-453.0SP.
Mobil Oil Corporation: *See—*
Downs, John D., 4,115,473, Cl. 260-850.000.
Foster, William R.; and Snavely, Earl S., Jr., 4,114,693, Cl. 166-305.00R.
Glenn, Edwin E., Jr., 4,114,721, Cl. 181-105.000.
Kesler, Michael G., 4,115,471, Cl. 260-683.430.
Patton, Bobbie J.; Sexton, James H.; Gravley, Wilton; and Foster, C. Mackay, Jr., 4,114,435, Cl. 73-151.500.
Schmitt, Kirk D., 4,115,288, Cl. 252-50.000.
Moe, William West; Lotz, Robert William; Green, Ethan Robert; and Fazio, Rodolfo, to Printing Developments, Inc. Electronic screening. 4,115,816, Cl. 358-283.000.
Moeller & Neumann GmbH: *See—*
Bier, Albert; and Vogelgesang, Herbert, 4,114,416, Cl. 72-238.000.
Mogi, Keitaro: *See—*
Noda, Fumio; Mogi, Keitaro; and Sakasai, Toshio, 4,115,591, Cl. 426-7.000.
Molenaar, Lester V. Spring toy. 4,114,306, Cl. 46-1.00R.
Molins Limited: *See—*
Davies, Robert William; and Applegate, Barry George, 4,114,355, Cl. 53-389.000.
Davies, Robert William; and Willett, Peter Ernest, 4,114,872, Cl. 271-91.000.
Labbe, Francis Auguste Maurice; and Hirsh, Ivan Yehudi, 4,114,631, Cl. 131-84.00C.
Monarch Marking Systems, Inc.: *See—*
Dobras, Bruce W., 4,115,703, Cl. 250-568.000.
Monastyrskaya, Natalya Borisovna: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Monkelbaan, Edwin R., to Xerox Corporation. Method of forming tubular metal products. 4,114,431, Cl. 72-122.000.
Monkovic, Ivo, to Bristol-Myers Company. Process of N-demethylating (−)-1-(p-methoxybenzyl)-2-methyl-1,2,3,4,5,6,7,8-octahydroisoquinoline. 4,115,389, Cl. 260-289.00D.
Monks, Reginald: *See—*
Bayly, Russell James; Chambers, Virginia Edith May; and Monks, Reginald, 4,115,065, Cl. 23-230.600.
Monsanto Company: *See—*
Bach, Hartwig C., 4,115,503, Cl. 264-184.000.
Cartier, George E., 4,115,622, Cl. 428-409.000.
Deets, Gary L., 4,115,353, Cl. 260-45.75C.
Deex, Oliver D.; and Weiss, Virgil W., 4,115,357, Cl. 528-294.000.
Fields, Joseph E.; and Johnson, John H., 4,115,550, Cl. 424-78.000.
Franz, John E.; and Howe, Robert K., 4,115,095, Cl. 71-90.000.
Franz, John E., 4,115,104, Cl. 71-105.000.
Griffith, Edward J., 4,115,233, Cl. 204-180.00R.
Morris, Alonzo E., 4,115,477, Cl. 260-880.00R.
Unland, Mark L.; and Barker, George E., 4,115,424, Cl. 252-432.000.
Monsanto Research Corporation: *See—*
Salyer, Ival O.; and North, Charles J., 4,115,499, Cl. 264-122.000.
Montedison S.p.A.: *See—*
DeFeo, Francesco; Gemini, Vincenzo; and Floridia, Luigi, 4,115,057, Cl. 8-54.000.
Gritti, Sergio, 4,115,291, Cl. 252-73.000.
Scata, Umberto; Luciani, Luciano; and Barbe, Pier Camillo, 4,115,319, Cl. 252-429.00B.
Monville, Jean-Michel: *See—*
Colonna, Jerome; Monville, Jean-Michel; and Munoz, Francois, 4,114,739, Cl. 192-41.00A.
Moon, Malcolm W.; and Kornis, Gabriel, to Upjohn Company, The. Phenyl pyrazole morpholine amides. 4,115,649, Cl. 544-140.000.
Moore, Donald G., to Chemetron Corporation. Method for automatically heating variable numbers and sizes of food items or the like, in an electromagnetic oven. 4,115,679, Cl. 219-10.55M.
Moore, Donald G., to Chemetron Corporation. Apparatus for providing temperature equalization cycles for a microwave oven. 4,115,680, Cl. 219-10.55B.
Moore, Francis Claudell; and Perkinson, Leon Raymond, to Moore-Perk Corporation. Patient treatment pad for hot or cold use. 4,114,620, Cl. 128-254.000.
Moore-Perk Corporation: *See—*
Moore, Francis Claudell; and Perkinson, Leon Raymond, 4,114,620, Cl. 128-254.000.
Moran, David Patrick Joseph, to Lever Brothers Company. Phase inverting low fat spreads. 4,115,598, Cl. 426-604.000.
Morcos, Ikram, to Hydro-Quebec. Method for obtaining high activity electrocatalysts on pyrolytic graphite. 4,115,322, Cl. 252-447.000.
Morejon, Clara B.: *See—*
Driscoll, Richard C.; and Morejon, Clara B., 4,115,537, Cl. 424-1.000.
Morgan, Barrie O., to Datotek, Inc. Random digital code generator. 4,115,657, Cl. 178-22.000.
Morgan, William L.: *See—*
Salsbury, Phillip J.; Perlegos, George; and Morgan, William L., 4,114,255, Cl. 29-571.000.
Morganroth, Shila. Method of selectively altering hair color. 4,114,632, Cl. 132-7.000.
Mori, Chuzo, to Carl Manufacturing Co., Ltd. Indexing device. 4,114,301, Cl. 40-389.000.
Mori, Yasunori, to Hitachi, Ltd. Electronic ignition timing control device for internal combustion engines. 4,114,573, Cl. 123-117.00D.
Morimoto, Toshiki; and Hori, Sumisaburo, to Mitsui Mining & Smelting Co., Ltd. Encasing apparatus. 4,114,351, Cl. 53-157.000.
Morinaga & Co., Ltd.: *See—*
Nagamine, Kazuaki, 4,114,522, Cl. 99-348.000.
Morio, Minoru; and Kambara, Masahiro, to Sony Corporation. System for reproducing a video signal. 4,115,820, Cl. 360-33.000.
Morishita, Syozo: *See—*
Tsuchida, Nobuo; Kohara, Tadashi; Morishita, Syozo; Yamagata, Seiichi; and Sakai, Masaaki, 4,114,358, Cl. 57-51.000.
Moriya, Yoshiaki: *See—*
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,115,868, Cl. 364-900.000.
Morre, D. James; Kloppel, Thomas M.; and Keenan, Thomas W., to Purdue Research Foundation. Cancer detection by serum analysis of glycolipids. 4,115,062, Cl. 23-230.00B.
Morris, Alonzo E., to Monsanto Company. Process for recovering graft copolymers latex solids wherein a fines fraction is recycled and incorporated in said solids. 4,115,477, Cl. 260-880.00R.
Morris, David Lindsey: *See—*
Hornby, William Edward; and Morris, David Lindsey, 4,115,305, Cl. 260-6.000.
Morris, Frank R.; and Alberghini, Alfred C., to Pepsico, Inc. Capping apparatus having means for conveying containers while suspended by a flange. 4,114,347, Cl. 53-300.000.
Morris, Richard L., to Outboard Marine Corporation. Lawn mower blade mounting. 4,114,354, Cl. 56-295.000.
Morris, William E. Sludge dewatering apparatus. 4,115,275, Cl. 210-386.000.
Morrison, Glenn C.: *See—*
Wise, Lawrence D.; and Morrison, Glenn C., 4,115,565, Cl. 424-246.000.
Morrison, Leonard A.: *See—*
Spainhour, Phillip A.; Hampton, Robert S., Jr.; and Morrison, Leonard A., 4,114,283, Cl. 33-337.000.
Morrissy, Joseph H.: *See—*
Mash, Derek H.; Crossland, William A.; and Morrissy, Joseph H., 4,114,990, Cl. 350-337.000.
Morrow, Larry N. Throwing disc. 4,114,885, Cl. 273-106.00B.
Morton-Norwich Products, Inc.: *See—*
Schwan, Thomas J., 4,115,387, Cl. 260-286.00R.
Wright, George C.; and Goldenberg, Marvin M., 4,115,405, Cl. 260-345.200.
Wright, George C.; and Goldenberg, Marvin M., 4,115,407, Cl. 260-345.200.
Morton, Roger R. A., to Bausch & Lomb Incorporated. Image analysis measurement apparatus and methods. 4,115,803, Cl. 358-107.000.
Morton, Roger R. A.; and McCarthy, Cornelius J. D., to Bausch & Lomb Incorporated. Image analysis data extraction. 4,115,804, Cl. 358-107.000.
Morton, Roger R. A., to Bausch & Lomb Incorporated. Image analysis indexing apparatus and methods. 4,115,805, Cl. 358-107.000.
Morton, Roger R. A., to Bausch & Lomb Incorporated. Image analysis data transfer. 4,115,806, Cl. 358-107.000.
Morton, William G. Inter-liner for a safety helmet and method of assembly. 4,114,197, Cl. 2-423.000.
Moruzi, George Alexander: *See—*
Pasieka, Arnold Roy; Wilson, John Corner; and Moruzi, George Alexander, 4,114,954, Cl. 302-14.000.
Moses, John A. Laryngoscope. 4,114,609, Cl. 128-11.000.
Mossman, David C.: *See—*
Osder, Stephen S.; and Mossman, David C., 4,115,847, Cl. 364-101.000.
Mosteller, Marston D.: *See—*
Zepp, Lawrence C.; and Mosteller, Marston D., 4,115,009, Cl. 356-201.000.
Motoren-und Turbinen-Union Munchen GmbH: *See—*
Bauer, Heinrich Franz; Eichinger, Anton; and Feitzelmayer, Ernst, 4,115,174, Cl. 156-155.000.
Motorola, Inc.: *See—*
daCosta, Harry H.; Foster, Victor W.; and Thornton, Charles G., deceased, 4,115,713, Cl. 310-49.00R.
Skutta, Frank Robert, 4,115,741, Cl. 330-284.000.

Moussie, Michel, to U.S. Philips Corporation. Threshold circuit with hysteresis. 4,115,711, Cl. 307-350.000.

Muellenberg, Ralph. Shaft fastening assembly. 4,115,016, Cl. 403-16.000.

Mueller, Frank J.: *See—*
Richardson, David L.; and Mueller, Frank J., 4,115,292, Cl. 252-90.000.

Mueller, Paul; and Prine, Ray A., to Paul Mueller Company. Hot water system. 4,114,686, Cl. 165-110.000.

Mugler, Leon B., to Royal Industries, Inc. Grain cleaner. 4,115,257, Cl. 209-291.000.

Muhle, Dietrich, to Upjohn Company, The. High pressure mixing head. 4,115,066, Cl. 422-133.000.

Muhle, Dietrich, to Upjohn Company, The. Frothing method and an apparatus for carrying out the method. 4,115,299, Cl. 521-170.000.

Muhlfelder, Ludwig; and Hogan, Robert Benson, to RCA Corporation. Magnetic torquing system for changing the spin rate of an orbiting satellite. 4,114,841, Cl. 244-166.000.

Mukhamedyarov, Rashid Mustafievich; Smirnov, Boris Andreevich; Sery, Stanislav Vasilievich; Titkova, Tatyana Dmitrievna; and Lokalov, Anatoly Ivanovich. Apparatus for separation of chemical compounds and production of sterile solutions. 4,115,272, Cl. 210-266.000.

Mulaskey, Bernard F., to Chevron Research Company. Hydrocarbon hydroconversion with a catalyst having interconnected macropores. 4,115,248, Cl. 208-112.000.

Mulcahy, Harry William: *See—*
Strugielski, Ronald T.; and Mulcahy, Harry William, 4,114,540, Cl. 105-226.000.

Muller, Ekkehard Walter: *See—*
Kirner, Hans Dieter; Bitterlin, Albert; and Muller, Ekkehard Walter, 4,115,055, Cl. 8-26.000.

Muller, Gunter. Sauna. 4,114,205, Cl. 4-160.000.

Muller, Hans: *See—*
Thoma, Georg; and Muller, Hans, 4,114,821, Cl. 242-43.00R.

Muller, Hans Jurgen: *See—*
Henes, Gerhard; Muller, Hans Jurgen; Gupta, Pramod; and Zirner, Joachim, 4,115,373, Cl. 528-48.000.

Muller, Rolf, to Papst-Motoren KG. Brushless d. c. motor. 4,115,715, Cl. 310-68.00B.

Muller, Wolfgang, to Chemische Werke Huls AG. Method for producing hexachlorocyclobutene. 4,115,460, Cl. 260-648.00R.

Mulroy, Terence J., to Champion International Corporation. Corner lock bulk bin. 4,114,795, Cl. 229-23.00R.

Multech Corp.: *See—*
Joynt, Gerald E.; and Mayhew, Michael R., 4,114,944, Cl. 296-50.000.

Multinorm, B.V.: *See—*
Oosterling, Pieter Adriaan; and Baecke, Antoine Marinus Rene, 4,114,814, Cl. 239-689.000.

Munch, Gerhard: *See—*
Jager, Albert; Lucht, Alfred; and Munch, Gerhard, 4,114,864, Cl. 266-51.000.

Mundus, Friedhelm: *See—*
Achelpohl, Fritz; and Mundus, Friedhelm, 4,115,183, Cl. 156-515.000.

Munk, Edmund, to Furnier- und Sperrholzwerk J. F. Werz Jr. KG Werzalit-Pressholzwerk Oberstenfeld. Molding method. 4,115,490, Cl. 264-26.000.

Munoz, Francois: *See—*
Colonna, Jerome; Monville, Jean-Michel; and Munoz, Francois, 4,114,739, Cl. 192-41.00A.

Murata, Katsuhiro: *See—*
Hane, Yoshio; Chino, Nobuo; Murata, Katsuhiro; and Harayama, Akira, 4,114,282, Cl. 33-180.00R.

Murata Kikai Kabushiki Kaisha: *See—*
Deno, Kohji, 4,114,539, Cl. 104-165.000.

Murata Manufacturing Co., Ltd.: *See—*
Sakabe, Yukio; and Seno, Hiroshi, 4,115,493, Cl. 264-61.000.

Murata, Ryoji, to Agency of Industrial Science & Technology. Method for optically measuring a roughness profile of surface. 4,115,005, Cl. 356-120.000.

Muraz, Jean-Max; Payre, Michel; and Rampin, Pierre, to Crouzet. Devices for measuring the flow speed of a fluid. 4,114,438, Cl. 73-194.00A.

Murray Corporation: *See—*
Kish, Arthur S., 4,114,656, Cl. 138-109.000.

Murtha, Timothy P.; and Zuech, Ernest A., to Phillips Petroleum Company. Separation of phenol-, cyclohexanone-, and cyclohexylbenzene-containing mixtures employing an N,N-disubstituted amide. 4,115,204, Cl. 203-60.000.

Murtha, Timothy P., to Phillips Petroleum Company. Separation of phenol-, cyclohexanone-, and cyclohexylbenzene-containing mixtures employing an N-substituted lactam. 4,115,205, Cl. 203-60.000.

Murtha, Timothy P., to Phillips Petroleum Company. Separation of phenol-, cyclohexanone-, and cyclohexylbenzene-containing mixtures employing an organic carbonate. 4,115,206, Cl. 203-60.000.

Murtha, Timothy P., to Phillips Petroleum Company. Separation of phenol-, cyclohexanone-, and cyclohexylbenzene-containing mixtures employing a trisubstituted phosphate. 4,115,207, Cl. 203-60.000.

Murtha, Timothy P., to Phillips Petroleum Company. Production of cycloalkylaromatics. 4,115,463, Cl. 260-668.00B.

Murvall, Ake Eugen, to ABU Aktiebolag. Fishing reel with a line spreading device. 4,114,825, Cl. 242-84.21R.

Muryoi, Takeshi, to Nippon Kogaku K.K. Zoom lens barrel capable of macro-photography. 4,114,984, Cl. 350-187.000.

Musoh, Masanori: *See—*
Takahashi, Reijiro; Musoh, Masanori; and Ito, Tosikazu, 4,114,397, Cl. 62-516.000.

Muto, Osamu: *See—*
Usui, Kazuhisa; and Muto, Osamu, 4,114,746, Cl. 192-104.00R.

N L Industries, Inc.: *See—*
Libsch, Karl David; and Rao, Mannige Vikram, 4,115,109, Cl. 75-77.000.

Nachtigal, Julius Harvey: *See—*
Vidra, James David; and Nachtigal, Julius Harvey, 4,115,546, Cl. 424-50.000.

Nachtrieb, Robert W., to Fotel Inc. Graphic aid and method and system of making reproductions therefrom. 4,115,003, Cl. 355-133.000.

Nackenson, Joel J., to J.J. Lester & Co., Inc. Round back spring binder. 4,114,240, Cl. 24-67.110.

Naevestad, Roy, to Wilputte Corporation. Seal for coke oven doors. 4,115,203, Cl. 202-248.000.

Nagahara, Shigehiro: *See—*
Suzuki, Yoshiro; Kokubu, Yoshinori; Chiba, Jiro; Hara, Morihisa; Nagahara, Shigehiro; and Yamamoto, Koichi, 4,115,132, Cl. 106-53.000.

Nagai, Nobuyuki: *See—*
Yamamura, Hideo; Matsuo, Katsuharu; and Nagai, Nobuyuki, 4,115,677, Cl. 219-10.49R.

Nagamine, Kazuaki, to Morinaga & Co., Ltd. Method and apparatus for automatically detecting and controlling the degree of caramelization of candies. 4,114,522, Cl. 99-348.000.

Nagano, Genzo; Nakamura, Hiroshi; and Sohma, Yukio, to Fujitsu Limited. Memory access control system. 4,115,851, Cl. 364-200.000.

Nagel, Robert I., to Dominion Auto Accessories Limited. Warning lamp. 4,115,843, Cl. 362-291.000.

Nagle, Dennis C.: *See—*
Christner, Larry G.; Nagle, Dennis C.; and Watson, Paul R., 4,115,528, Cl. 423-449.000.
Christner, Larry G.; and Nagle, Dennis C., 4,115,627, Cl. 429-44.000.

Naglieri, Anthony N.; and Rizkalla, Nabil, to Halcon International, Inc. Process for converting thallium (I) to thallium (III). 4,115,419, Cl. 260-429.00R.

Nahara, Akira: *See—*
Ikeda, Tomoaki; Mizobuchi, Yuzo; Nahara, Akira; Washizawa, Yasuo; Ono, Yoshihiro; and Tomotsu, Takeshi, 4,115,127, Cl. 96-85.000.

Nakada, Akira: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,114,497, Cl. 84-1.170.

Nakagawa, Hiroshi. Exothermic metallic composition. 4,114,591, Cl. 126-263.000.

Nakagawa, Yasuhiko: *See—*
Sakai, Yasuo; Nakagawa, Yasuhiko; and Nakajima, Yasuo, 4,114,373, Cl. 60-282.000.

Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, to Kokusai Denshin Denwa Kabushiki Kaisha. Facsimile signal coding method. 4,115,815, Cl. 358-260.000.

Nakajima, Hiroyuki; and Hosokawa, Takashi, to Konan Electric Co., Ltd. Double acting electromagnetic valve. 4,114,648, Cl. 137-625.500.

Nakajima, Yasuo: *See—*
Aoyama, Syuniti; Hayashi, Yoshimasa; and Nakajima, Yasuo, 4,114,643, Cl. 137-495.000.
Sakai, Yasuo; Nakagawa, Yasuhiko; and Nakajima, Yasuo, 4,114,373, Cl. 60-282.000.

Nakamura, Hiroshi: *See—*
Nagano, Genzo; Nakamura, Hiroshi; and Sohma, Yukio, 4,115,851, Cl. 364-200.000.

Nakamura, Koji; Otaki, Haruo; Yamamoto, Yutaka; Shimizu, Noboru; Kawamura, Kiyoshi; and Sato, Seiichi, to Kowa Company Ltd. Isoindoline derivatives and the acid addition salts thereof and process for the preparation of same. 4,115,398, Cl. 260-326.100.

Nakamura, Tutomu; Shigemasa, Junichiro; and Tani, Zenpei, to Sharp Kabushiki Kaisha. Igniter utilizing a negative resistance light emitting diode. 4,115,832, Cl. 361-256.000.

Nakase, Takamichi: *See—*
Hattori, Tadashi; Nakase, Takamichi; and Kohama, Tokio, 4,114,578, Cl. 123-124.00R.

Nakasugi, Hajime: *See—*
Narihara, Katsuhiko; Nakasugi, Hajime; and Yamaguchi, Masanobu, 4,115,675, Cl. 219-10.410.

Nametkin, Nikolai Sergeevich: *See—*
Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Nametkin, Nikolai Sergeevich; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,468, Cl. 260-683.15D.

Nanthavong, Souli; Pigerol, Charles; Eymard, Pierre; and Simiand, Jacques, to Labaz. Prostaglandin derivatives and process for preparing the same. 4,115,401, Cl. 260-326.430.

Napp Systems (USA), Inc.: *See—*
Okai, Sakuo; and Tsuchida, Shozo, 4,115,119, Cl. 96-35.100.
Okai, Sakuo; and Tsuchida, Shozo, 4,115,123, Cl. 96-79.000.

Nardi, John C.; Hussey, Charles L.; King, Lowell A.; and Carpio, Ronald A. Method for the preparation of 1-alkyl pyridinium chlorides. 4,115,390, Cl. 260-290.0HL.

Narihara, Katsuhiko; Nakasugi, Hajime; and Yamaguchi, Masanobu, to Nippon Steel Corporation. Induction heating method of steel pipe. 4,115,675, Cl. 219-10.410.

Narita, Toshiro: *See—*
Aoki, Shigeru; Tashiro, Yasuhisa; Aboshi, Yuzo; Narita, Toshiro; and Shirai, Tadashi, 4,115,439, Cl. 562-402.000.

Nartron Corporation: *See—*
Bull, Dale L.; and Rautiola, Norman A., 4,115,844, Cl. 362-382.000.

Naseck, Melvin L.; and Hickman, Mark R., to Conservation Controls Corp. Control system. 4,114,807, Cl. 236-1.00E.

Nash, Claude H., III: *See—*
Queener, Stephen W.; and Nash, Claude H., III, 4,115,197, Cl. 195-36.00R.

National Distillers and Chemical Corporation: *See—*
Qualey, Christian H., 4,115,173, Cl. 156-120.000.

National Petro Chemicals Corporation: *See—*
Speca, Anthony N., 4,115,318, Cl. 252-428.000.

National Research Development Corporation: *See—*
Hornby, William Edward; and Morris, David Lindsey, 4,115,305, Cl. 260-6.000.
Lewis, Meirion Francis, 4,115,744, Cl. 331-16.000.
Mansfield, Peter, 4,115,730, Cl. 324-0.50A.

National Research Institute For Metals: *See—*
Kametani, Hiroshi; and Aoki, Aiko, 4,115,222, Cl. 204-117.000.

National Semiconductor Corporation: *See—*
Varadi, Andrew G., 4,115,871, Cl. 365-149.000.

National Standard Company: *See—*
Snavely, Cloyd A.; and Smith, John A., 4,115,106, Cl. 75-0.5AA.

National Supply Company (U.K.) Limited: *See—*
Goodacre, John Purefoy; Potter, Colin; and Ball, Peter, 4,114,662, Cl. 141-387.000.

Nauta, Jelle G. Motor ventilation system for wet/dry vacuum cleaner. 4,114,231, Cl. 15-413.000.

NCR Corporation: *See—*
Marinelli, Nicola, 4,115,315, Cl. 252-316.000.

Needham, Donald G., to Phillips Petroleum Company. Antifriction composition. 4,115,283, Cl. 252-12.400.

Neely, James Edwin, Jr., to PPG Industries, Inc. Method and apparatus for preventing bubble nucleation and growth in a molten glass delivery facility. 4,115,092, Cl. 65-99.00A.

Nelson, David H., to Van Dyke, Homer; Van Dyke, Dave; Dorian, Mark; and Lerg, George, part interest to each. Manufacture of solar reflectors. 4,115,177, Cl. 156-245.000.

Nelson, Eldrid W., to Chas. Olson & Sons; and Wheel Service Co., Inc. Detachable seat mounting for buses. 4,114,947, Cl. 297-344.000.

Nelson, Marvin D., to Honeywell Inc. Electrical thermostat control apparatus. 4,114,445, Cl. 73-360.000.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxy-methyl-5-oxa-ω-phenyl-pgd$_1$ compounds. 4,115,454, Cl. 260-590.00C.

Nelson, Robert C.: *See—*
Bozzi, Edward G.; and Nelson, Robert C., 4,115,328, Cl. 260-24.000.

Nelson, Roy G.: *See—*
Smith, William E.; and Nelson, Roy G., 4,114,248, Cl. 29-460.000.

Netz, Otto: *See—*
Corte, Herbert; Heller, Harold; Lange, Michael; and Netz, Otto, 4,115,261, Cl. 210-40.000.

Neudorfer, Ernst: *See—*
Boese, Gunter; Neudorfer, Ernst; and Schollmeier, Gero, 4,115,687, Cl. 235-92.0DM.

Neuhardt, Walther C. Wasted spacer member for wall elements, especially for glass bricks. 4,114,337, Cl. 52-442.000.

New Zealand Inventions Development Authority: *See—*
Garden, Graham Miller; and Harwood, Richard James, 4,114,463, Cl. 74-61.000.

Newell, John Henry, to Newtron Co. (Ancaster) Ltd. Air cleaner assembly. 4,115,082, Cl. 55-103.000.

Newell, William K.; and Tomson, Elizabeth C. Skate board. 4,114,913, Cl. 280-12.00H.

Newton, Alwin B., to Solation Products, Inc. Thermal storage and heat transfer system and method. 4,114,600, Cl. 126-271.000.

Newton, David Francis: *See—*
Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, 4,115,404, Cl. 260-343.30R.

Newtron Co. (Ancaster) Ltd.: *See—*
Newell, John Henry, 4,115,082, Cl. 55-103.000.

Nichols Engineering & Research Corporation: *See—*
Spater, Stuart S., 4,115,317, Cl. 252-418.000.

Nicholson, Terence Peter. Metal seals or gaskets. 4,114,908, Cl. 277-211.000.

Nick, Desire: *See—*
Metz, Paul; Schockmel, Robert; Nick, Desire; and Pfeiffer, Paul, 4,115,089, Cl. 65-19.000.

Nicoa Corporation: *See—*
Rogen, Neil E., 4,114,559, Cl. 116-114.500.

Nicodemus, Robert N., Jr.; Bosler, James W.; and Kershner, Marvin R., to American Chain & Cable Company, Inc. Hanging goods sorter. 4,114,538, Cl. 104-88.000.

Nieber, Allen J., to Efficiency Production, Inc. Portal frame for trench box stack. 4,114,383, Cl. 405-282.000.

Nied, Gerhard: *See—*
Link, Otmar; and Nied, Gerhard, 4,114,324, Cl. 52-2.000.

Nielsen, William C., to Chevron Research Company. Retractable fluids spraying assembly. 4,115,072, Cl. 422-207.000.

Nihon Kagaku Sangyo Co., Ltd.: *See—*
Tsukamoto, Takeo; Okamura, Miyoshi; and Kutami, Toshio, 4,115,211, Cl. 204-37.00R.

Niimura, Tsutomu: *See—*
Hongu, Masayuki; Niimura, Tsutomu; and Kawakami, Hiromi, 4,115,737, Cl. 325-459.000.

Nikawa, Akio: *See—*
Akashi, Tetsuya; and Nikawa, Akio, 4,114,670, Cl. 151-41.720.

Nikiforov, Mikhail Borisovich: *See—*
Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich, 4,115,163, Cl. 148-175.000.

Nilsen, Walter, to Den Norske Gipsplatefabrikk A/S. Method for the production of houses. 4,114,345, Cl. 52-745.000.

Nippon Columbia Kabushikikaisha: *See—*
Ogura, Keiichiro, 4,115,666, Cl. 179-100.4ST.

Nippon Electric Co., Ltd.: *See—*
Inoue, Yasukazu; and Kikuchi, Masanori, 4,115,709, Cl. 307-304.000.
Suzuki, Etsuo; and Sakurai, Hidekazu, 4,115,817, Cl. 358-288.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Chibana, Masanobu; Futamase, Tsuyoshi; and Yamada, Hideo, 4,114,498, Cl. 84-1.190.
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,114,497, Cl. 84-1.170.
Hoshi, Juro; and Watanabe, Makoto, 4,114,830, Cl. 242-191.000.
Tomisawa, Norio, 4,114,495, Cl. 84-1.010.
Yokoyama, Kenji, 4,115,742, Cl. 330-297.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Aoki, Shigeru; Tashiro, Yasuhisa; Aboshi, Yuzo; Narita, Toshiro; and Shirai, Tadashi, 4,115,439, Cl. 562-402.000.

Nippon Kogaku K.K.: *See—*
Ishibashi, Kazufumi; and Ichimura, Takeo, 4,115,131, Cl. 106-47.00Q.
Muryoi, Takeshi, 4,114,984, Cl. 350-187.000.
Yamamoto, Hiroshi; and Fukuoka, Shigetada, 4,114,890, Cl. 273-237.000.

Nippon Kynol Incorporated: *See—*
Kimura, Isao; and Yata, Sizukuni, 4,115,364, Cl. 260-841.000.

Nippon Mining Co., Ltd: *See—*
Ozaki, Hiromi; Yamane, Mamoru; Satomi, Yoshihito; Suzuka, Teruo; Miyake, Toshinobu; and Hirato, Mizuho, 4,115,324, Cl. 252-459.000.

Nippon Oil Co., Ltd.: *See—*
Kinoshita, Hirotugu; Sekiya, Makoto; and Makino, Nobuo, 4,115,284, Cl. 252-29.000.

Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Nakase, Takamichi; and Kohama, Tokio, 4,114,578, Cl. 123-124.00R.
Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, 4,115,030, Cl. 416-93.00R.
Kasagi, Takao; Kuwakado, Satoshi; and Takei, Toshihiro, 4,114,924, Cl. 280-740.000.
Yamaguchi, Hiroaki; and Fujinami, Hiroshi, 4,115,764, Cl. 340-530.000.

Nippon Steel Corporation: *See—*
Narihara, Katsuhiko; Nakasugi, Hajime; and Yamaguchi, Masanobu, 4,115,675, Cl. 219-10.410.

Nippon Telegraph and Telephone Public Corporation: *See—*
Fujimoto, Isao; Aiba, Masahiko; Yamamoto, Yoichi; and Makita, Tomoo, 4,115,787, Cl. 346-75.000.
Ishida, Yukinori; Kojima, Moriaki; Kobayashi, Toshiaki; and Sugawara, Yasuyuki, 4,114,981, Cl. 350-96.330.
Takano, Rikuo; Matsunaga, Mitsushi; Tsuchida, Yuhkichi; Sumitomo, Yuji; Umeda, Ikuo; and Aiba, Masahiko, 4,115,788, Cl. 346-75.000.

Nippon Television Industry Corporation: *See—*
Mikado, Tsuneo, 4,115,810, Cl. 358-139.000.

Nippon Zeon Co. Ltd.: *See—*
Goto, Kuniaki; and Kodama, Kazumi, 4,115,355, Cl. 260-45.95H.

Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Field effect transistor with reduced series resistance. 4,115,793, Cl. 357-22.000.

Nissan Motor Company, Limited: *See—*
Aoyama, Syunichi, 4,114,577, Cl. 123-119.00A.
Aoyama, Syuniti; Hayashi, Yoshimasa; and Nakajima, Yasuo, 4,114,643, Cl. 137-495.000.
Iijima, Tetsuya, 4,115,671, Cl. 200-61.910.
Ikeura, Kenji, 4,114,372, Cl. 60-276.000.
Masuda, Tetsuzo; Tagawa, Tomiyasu; Yoshioka, Hachiro; and Akahoshi, Takashi, 4,115,071, Cl. 422-179.000.
Sakai, Yasuo; Nakagawa, Yasuhiko; and Nakajima, Yasuo, 4,114,373, Cl. 60-282.000.

Nissei Plastics Industrial Co., Ltd.: *See—*
Shima, Yoshiharu, 4,115,506, Cl. 264-250.000.

Nisso Petrochemical Industries Co., Ltd.: *See—*
Yoshihara, Hiroshi; Tobita, Takashi; Tomizawa, Ryoichi; and Ishikawa, Kunio, 4,115,415, Cl. 260-410.000.

Nixon, Jeddy Darr, Jr.: *See—*
Matson, Lawrence Wayne, Jr.; Nixon, Jeddy Darr, Jr.; and Remont, Larry Joseph, 4,114,703, Cl. 175-107.000.

Noda, Fumio; Mogi, Keitaro; and Sakassi, Toshio, to Kikkoman Shoyu Co. Ltd. Process for producing koji and utilization of the koji. 4,115,591, Cl. 426-7.000.

Noggle, Ralph Carl: *See—*
Krider, Edmund Philip; Noggle, Ralph Carl; and Uman, Martin Allan, 4,115,732, Cl. 324-72.000.
Nohira, Hidetaka; and Tanaka, Masaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust pressure regulating system. 4,114,575, Cl. 123-119.00A.
Noirel, Yves Maurice: *See—*
Guinet, Yves Maurice; and Noirel, Yves Maurice, 4,115,662, Cl. 179-15.0BV.
Nonn, Konrad: *See—*
Perrey, Hermann; Wolf, Karlheinz; Eimers, Erich; Nonn, Konrad; and Hornle, Reinhold, 4,115,379, Cl. 260-163.000.
Nopper, Peter, to Zumback Electronic AG. Device for measuring at least one dimension of an object and a method of operating said device. 4,115,702, Cl. 250-560.000.
Noranda Mines Limited: *See—*
Kerfoot, Derek G. E., 4,115,512, Cl. 423-24.000.
McKerrow, George C.; Pelletier, Albert; and Fowler, Peter L., 4,114,865, Cl. 266-136.000.
Norbeck, Edwin, to University of Iowa Research Foundation, The. Pad for woodwind musical instrument. 4,114,500, Cl. 84-385.00P.
Nordin, Robert W., to Teletype Corporation. Printing machine with automatic off-center crown roller ribbon-wear compensation. 4,114,751, Cl. 400-248.000.
Nordisk Insulinlaboratorium: *See—*
Pedersen, Erik, 4,115,375, Cl. 260-112.00R.
Norell, Maria: *See—*
Larsson, Karl-Georg; and Norell, Maria, 4,115,217, Cl. 204-95.000.
Norlin, Stig Ivar, to Saab-Scania Aktiebolag. Bumper attachment. 4,114,937, Cl. 293-85.000.
Norris, Alan H.: *See—*
Chambley, Phillip W.; and Norris, Alan H., 4,114,549, Cl. 112-410.000.
Norsk Cerealinstitutt ved Statens Teknologiske Institutt: *See—*
Knutrud, Leif Brudal, 4,115,596, Cl. 426-497.000.
North, Charles J.: *See—*
Salyer, Ival O.; and North, Charles J., 4,115,499, Cl. 264-122.000.
Northern Telecom Limited: *See—*
Dyment, John Cameron, 4,115,150, Cl. 148-1.500.
Poulsen, Robert Gordon, 4,115,184, Cl. 156-626.000.
Northwestern University: *See—*
Burton, Ralph Ashby, 4,114,567, Cl. 123-30.00A.
Norton, David A. Ball retriever. 4,114,881, Cl. 273-73.00R.
Nose, Taiji: *See—*
Inoue, Eiichi; Nose, Taiji; and Inaba, Masakazu, 4,115,613, Cl. 428-207.000.
Noshiro, Atsumi; and Inoue, Yoshio, to Dai Nippon Printing Co., Ltd.; and Shin-Etsu Chemical Co., Ltd., part interest to each. Printing ink compositions. 4,115,329, Cl. 260-25.000.
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich. Method of producing cement clinker from chlorine-containing raw mixture. 4,115,137, Cl. 106-100.000.
Nudelman, Boris Izrailovich; Sventsitsky, Alexandr Sergeevich; Bikbau, Marsel Yanovich; Bun, Isaak Mozesovich; and Kevvai, Arnold Arnoldovich. Raw mixture for the production of cement. 4,115,138, Cl. 106-100.000.
N.V. Industrieele Handelscombinatie Holland: *See—*
Pot, Hendrik, 4,114,901, Cl. 277-34.300.
Nyi, Kayson; and Graham, Sandra I., to Rohm and Haas Company. Curing photopolymerizable compositions containing n-substituted acryloyloxyethyl amines. 4,115,232, Cl. 204-159.230.
Oakes, John J.: *See—*
Jones, Terry H.; and Oakes, John J., 4,114,229, Cl. 15-320.000.
Oberle, Arthur, to BBC Brown Boveri & Company Limited. Combined stop and control valve. 4,114,651, Cl. 137-630.140.
Oberle, Arthur, to BBC Brown Boveri & Company Limited. Combined stop and control valve. 4,114,652, Cl. 137-630.140.
O'Brien, Elva R., executrix: *See—*
O'Brien, Richard C., deceased; and O'Brien, Elva R., executrix, 4,115,188, Cl. 162-190.000.
O'Brien, Harry W., Jr. Apparatus for and method of interconnecting and controlling units of a power train for maximum flexibility and economy in operating auxilliary marine vessels. 4,114,555, Cl. 115-76.000.
O'Brien, John T.; and White, Woodrow W., to Uniroyal, Inc. Bisulfite terminated oligomers as dispersing agents. 4,115,435, Cl. 260-465.400.
O'Brien, Richard C., deceased; and by O'Brien, Elva R., executrix. Method for recycling paper mill waste water. 4,115,188, Cl. 162-190.000.
O'Connell, John J.: *See—*
Rockett, Thomas J.; and O'Connell, John J., 4,115,487, Cl. 264-16.000.
Oda, Hatsuo: *See—*
Kogiso, Masahiro; Sakata, Minehiro; Oda, Hatsuo; and Iwamoto, Tamio, 4,114,999, Cl. 355-10.000.
Odazima, Mituo: *See—*
Ogasawala, Nobuhiko; Odazima, Mituo; and Watanabe, Yasuaki, 4,115,716, Cl. 310-153.000.
Ogasawala, Nobuhiko; Odazima, Mituo; and Watanabe, Yasuaki, to Hitachi, Ltd. Rotor of magneto generator. 4,115,716, Cl. 310-153.000.
Ogawa, Akira: *See—*
Miyachi, Nobuji; Ogawa, Akira; Miyake, Keniti; and Onishi, Isao, 4,114,544, Cl. 112-104.000.
Ogawa, Shin-ichi: *See—*
Fujimoto, Takeo; Torimaru, Yasuo; Ogawa, Shin-ichi; and Yasue, Shinya, 4,115,796, Cl. 357-42.000.
Ogden, Barry: *See—*
Oye, Lloyd J.; and Ogden, Barry, 4,114,965, Cl. 312-209.000.
Ogisu, Kenji; and Enomoto, Masahisa, to Sony Corporation. Electrodeposition process & apparatus. 4,115,213, Cl. 204-39.000.
Ogura, Keiichiro, to Nippon Columbia Kabushikikaisha. Discrete 4-channel stereo recording and/or reproducing system compatible with matrix systems. 4,115,666, Cl. 179-100.4ST.
Ohkawa, Kozo, to Toyo Seikan Kaisha, Ltd. Apparatus for use in an automatic and continuous manufacture line for manufacturing the outer cylindrical cases of dry cells. 4,114,550, Cl. 113-7.00R.
Ohloff, Gunther: *See—*
Renold, Walter; Skorianetz, Werner; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 4,114,630, Cl. 131-17.00R.
Ohno, Masayoshi; Kakuta, Akio; Miyauchi, Terukatsu; and Kikuchi, Tatsuji, to Tokyo Shibaura Electric Co., Ltd.; and Miyauchi, Terukatsu. Process for separation of a mixed gas. 4,115,081, Cl. 55-64.000.
Ohshima, Katsutoshi. Method for separating foreign substances by means of a filter forming a floating layer. 4,115,266, Cl. 210-80.000.
Ohta, Koji: *See—*
Wada, Mitsuyoshi; Shimada, Hideyuki; and Ohta, Koji, 4,115,023, Cl. 404-98.000.
Oien, Michael Ackman: *See—*
Ammann, Hans Hugo; and Oien, Michael Ackman, 4,115,601, Cl. 427-96.000.
Oiler, Willard E., to Menasha Corporation. Gold putting cup and flagstick holding assembly. 4,114,879, Cl. 273-34.00R.
Okada, Hisao: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.
Okada, Yoshimasa, to Sharp Kabushiki Kaisha. Nonrecorded section detection in a tape recorder apparatus. 4,115,821, Cl. 360-72.000.
Okai, Sakuo; and Tsuchida, Shozo, to Napp Systems (USA), Inc. Shallow relief photopolymer printing plate and methods. 4,115,119, Cl. 96-35.100.
Okai, Sakuo; and Tsuchida, Shozo, to Napp Systems (USA), Inc. Shallow relief photopolymer printing plate and methods. 4,115,123, Cl. 96-79.000.
Okamura, Miyoshi: *See—*
Tsukamoto, Takeo; Okamura, Miyoshi; and Kutami, Toshio, 4,115,211, Cl. 204-37.00R.
Okano, Masami; and Yoshitomi, Shozo, to Okano Valve Seizo Kabushiki Kaisha. Device for automatically lapping wedge-gate valve seat. 4,114,323, Cl. 51-241.0VS.
Okano Valve Seizo Kabushiki Kaisha: *See—*
Okano, Masami; and Yoshitomi, Shozo, 4,114,323, Cl. 51-241.0VS.
Okawa, Taro, to Yoshida Kogyo Kabushiki Kaisha. Thermally and acoustically insulating structure. 4,114,342, Cl. 52-790.000.
Okita, Yasuo: *See—*
Kobayashi, Sadao; and Okita, Yasuo, 4,115,338, Cl. 260-29.4UA.
Okubo, Masao; Miki, Masayoshi; and Ueda, Takeshi, to Sumitomo Chemical Company, Limited. Method for preventing corrosion of a sulfur dioxide regenerating apparatus. 4,115,148, Cl. 134-21.000.
Okura, Keniti, to Pioneer Electronic Corporation. Phonographic pick-up cartridge. 4,114,896, Cl. 274-37.000.
Oldendorf, William Henry, to EMI Limited. Apparatus for identifying computerized axial tomographs. 4,115,691, Cl. 250-312.000.
Olin Corporation: *See—*
Harris, Fred A., 4,114,817, Cl. 241-73.000.
Watts, Herbert L., 4,115,410, Cl. 260-348.250.
Woodard, Kenneth E., Jr.; and Specht, Steven J., 4,115,237, Cl. 204-258.000.
Oliver, Leland Wayne: *See—*
Selvin, Gerald Joseph; Oliver, Leland Wayne; Yamamoto, Stephen Kazuo; and Hogan, Clarence Vaughn, 4,114,976, Cl. 339-217.00S.
Olympus Optical Co., Ltd.: *See—*
Kimura, Tadashi, 4,114,992, Cl. 350-216.000.
Tsunefuji, Katsuhiko, 4,115,790, Cl. 354-60.00R.
Omark Industries, Inc.: *See—*
Pomeroy, Raymond V., 4,114,792, Cl. 227-8.000.
Omura, Hisanori: *See—*
Finlay, Joseph Burton; and Omura, Hisanori, 4,115,481, Cl. 260-900.000.
Onat, Mustafa V. Anti-vomiting, anti-aspirating oral-nasal gastric tube. 4,114,625, Cl. 128-348.000.
Onder, Kemal B., to Upjohn Company, The. Novel copolyamideimides. 4,115,372, Cl. 528-73.000.
O'Neal, Chester L. Sanitary drinking spout for liquid container with tear tab. 4,114,778, Cl. 220-267.000.
O'Neil, Paul L.: *See—*
Lista, Edwin L.; Hartupee, Richard B.; Manfred, Ralph K.; and O'Neil, Paul L., 4,115,166, Cl. 149-7.000.
O'Neill, Robert S. Bale tying device and knot produced thereby. 4,114,527, Cl. 100-2.000.
Onishi, Akiyoshi: *See—*
Otsu, Ikuo; and Onishi, Akiyoshi, 4,114,461, Cl. 74-29.000.

Onishi, Isao: *See—*
Miyachi, Nobuji; Ogawa, Akira; Miyake, Keniti; and Onishi, Isao, 4,114,544, Cl. 112-104.000.
Ono, Yoshihiro: *See—*
Ikeda, Tomoaki; Mizobuchi, Yuzo; Nahara, Akira; Washizawa, Yasuo; Ono, Yoshihiro; and Tomotsu, Takeshi, 4,115,127, Cl. 96-85.000.
Oosawa, Koichi: *See—*
Goto, Mikio; Sasano, Mitsunori; Oosawa, Koichi; and Yoshihara, Mitsuya, 4,114,576, Cl. 123-119.00A.
Oosterling, Pieter Adriaan; and Baecke, Antoine Marinus Rene, to Multinorm, B.V. Agricultural implement. 4,114,814, Cl. 239-689.000.
Opitz, Wolfgang; and Hennen, Hans, to Hoechst Aktiengesellschaft. Production of hydrochloric acid by removing hydrogen chloride from combustion gas. 4,115,531, Cl. 423-488.000.
Oppenlaender, Knut; Seib, Karl; and Krapf, Heinz, to BASF Aktiengesellschaft. Production of water-in-oil emulsions. 4,115,314, Cl. 252-309.000.
Optel Corporation: *See—*
Deb, Satyendra Kumar, 4,115,631, Cl. 429-111.000.
Orain, Michel A., to Glaenzer Spicer. Couplings having sliding splines. 4,115,022, Cl. 403-359.000.
Ordonez, Kathy Palmer: *See—*
Dunks, Gary Burr; and Ordonez, Kathy Palmer, 4,115,520, Cl. 423-287.000.
Dunks, Gary Burr; and Ordonez, Kathy Palmer, 4,115,521, Cl. 423-294.000.
Orlandini, Orlando Paladino, to Gori & Zucchi S.p.A. Process for producing articles of jewelry, trinketry and the like, made of metals of different colors. 4,114,398, Cl. 63-3.000.
Orlowski, David Chester, to Inpro, Inc. Sealing rings. 4,114,902, Cl. 277-53.000.
Orndorff, James A., Jr.; Wozniak, Robert S.; and Andrepont, John S., to Chicago Bridge & Iron Company. Rigid mooring arm hook-up system. 4,114,556, Cl. 114-230.000.
Oroshnik, William: *See—*
Close, Ralph E.; and Oroshnik, William, 4,115,466, Cl. 260-678.000.
Orscheln Brake Lever Mfg. Company: *See—*
Lipshield, Eugene C., 4,114,718, Cl. 180-89.140.
Orshansky, Betty Bacon, executrix: *See—*
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,114,475, Cl. 74-687.000.
Orshansky, Elias, Jr., deceased (by Orshansky, Betty Bacon, executrix); and Weseloh, William E., to Orshansky Transmission Corporation. Hydromechanical transmission with three simple planetary assemblies, one sun gear being mounted on the output shaft and the other two on a common shaft connected to an input-driven hydraulic module. 4,114,475, Cl. 74-687.000.
Orshansky Transmission Corporation: *See—*
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,114,475, Cl. 74-687.000.
Orth, Dieter: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,115,456, Cl. 260-613.00R.
Osder, Stephen S.; and Mossman, David C., to Sperry Rand Corporation. Automatic flight control system with operatively monitored digital computer. 4,115,847, Cl. 364-101.000.
Oshima, Yoshimasa: *See—*
Akiyama, Nobuyuki; and Oshima, Yoshimasa, 4,115,762, Cl. 340-146.30H.
Ostermayer, Franz: *See—*
Frei, Jorg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,115,575, Cl. 424-250.000.
Oswald, Alexis A.; and Lesser, Joseph H., to Exxon Research and Engineering Company. Stereospecific cis- and trans-vinylic phosphorus esters. 4,115,482, Cl. 260-957.000.
Otaki, Haruo: *See—*
Nakamura, Koji; Otaki, Haruo; Yamamoto, Yutaka; Shimizu, Noboru; Kawamura, Kiyoshi; and Sato, Seiichi, 4,115,398, Cl. 260-326.100.
Otani, Sugio; Watanabe, Shoji; and Araki, Tadashi, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Toyo Boseki Kabushiki Kaisha. Production of carbon fibers having high anisotropy. 4,115,527, Cl. 423-447.400.
Otis Elevator Company: *See—*
Faup, John Joseph; and Wolf, David Harvey, 4,114,731, Cl. 187-29.00R.
Oto, Takao R., to Roto Manufacturing Co., Inc. Protective boot. 4,114,460, Cl. 74-18.200.
Otsu, Ikuo; and Onishi, Akiyoshi, to Toyoda-Koki Kabushiki Kaisha. Lever-operated feed device. 4,114,461, Cl. 74-29.000.
Ott, Edward; and Manheimer, Wallace M., to United States of America, Navy. Tokamak plasma heating with intense, pulsed, ion beams. 4,115,191, Cl. 176-3.000.
Otte, Wilhelm; Bergmann, Gunther; and Kubitza, Kar-Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for dehydrating suspension. 4,115,265, Cl. 210-68.000.
Ottenweller, Donald T.: *See—*
Jones, Harold E.; and Ottenweller, Donald T., 4,114,333, Cl. 52-265.000.
Outboard Marine Corporation: *See—*
Morris, Richard L., 4,114,354, Cl. 56-295.000.
Overseas Containers Australia Pty Limited: *See—*
Langsford, Stephen Walter, 4,115,020, Cl. 403-322.000.
Owen, Ronald P.: *See—*
Miller, George A.; and Owen, Ronald P., 4,115,578, Cl. 424-273.00R.
Owens-Corning Fiberglas Corporation: *See—*
Kissell, Ronald E.; and Gambill, Ulysses T., 4,115,498, Cl. 264-119.000.
Miller, Ward B., 4,114,530, Cl. 100-87.000.
Owens-Illinois, Inc.: *See—*
Aust, John J., 4,114,755, Cl. 206-326.000.
Cuniberti, Mario; and Pinsenschaum, Edwin C., 4,114,769, Cl. 214-152.000.
Go, Santos W., 4,115,363, Cl. 528-294.000.
Krall, Thomas J., 4,115,496, Cl. 264-94.000.
Stoll, Andrew Joseph, III, 4,114,779, Cl. 220-288.000.
Taylor, Lynn J., 4,115,599, Cl. 427-55.000.
Oyama, Shoji, to Kuniko Saita. Hand truck. 4,114,916, Cl. 280-47.290.
Oyama, Tetsuo: *See—*
Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, 4,114,243, Cl. 29-25.140.
Oye, Lloyd J.; and Ogden, Barry, to Trans-Aid Corporation. Medication dispensing cart. 4,114,965, Cl. 312-209.000.
Ozaki, Hiromi; Yamane, Mamoru; Satomi, Yoshihito; Suzuka, Teruo; Miyake, Toshinobu; and Hirato, Mizuho, to Nippon Mining Co., Ltd; and Hitachi, Ltd. Catalyst for treating heavy oils. 4,115,324, Cl. 252-459.000.
P.R. Mallory & Co. Inc.: *See—*
Dey, Arabinda N.; and Him, James H., 4,115,629, Cl. 429-56.000.
Paakkinen, Ilmari; Hakkinen, Seppo; and Matula, Jouni, to Enso-Gutzeit Osakeyhtio. Disk refiner. 4,114,818, Cl. 241-244.000.
Pac-Craft Products, Inc.: *See—*
Clark, Albert L., 4,114,854, Cl. 254-122.000.
Paccar Inc.: *See—*
Saunders, James Warren, 4,114,719, Cl. 180-90.000.
Pacific Adhesives, Inc.: *See—*
Cone, Charles N.; and Steinberg, Julius M., 4,115,178, Cl. 156-291.000.
Packer, Marvin, to RCA Corporation. Organic welding flax composition. 4,115,157, Cl. 148-23.000.
Padalko, Oleg Vadimovich; Levit, Maxim Lvovich; and Voinov, Nikolai Vasilievich. Porous material for making tool-electrode and method of producing same. 4,115,623, Cl. 428-566.000.
Pai, Damodar M.: *See—*
Stolka, Milan; Pai, Damodar M.; and Yanus, John F., 4,115,116, Cl. 96-1.50R.
Paitson, John Lloyd; and Parker, Marion Lonnie, to Western Geophysical Co. of America. Pneumatic seismic signal generator with independent firing control pressure. 4,114,723, Cl. 181-120.000.
Pako Corporation: *See—*
Jensen, Gerald A.; Larson, Louis A.; and Diesch, Robert E., 4,114,349, Cl. 53-54.000.
Pakradooni, Hamlin Andrus, to Webster Spring Co. Inc. Coil spring assembly. 4,114,867, Cl. 267-97.000.
Pallos, Ferenc M.: *See—*
Lam, Hsiao-Ling; and Pallos, Ferenc M., 4,115,582, Cl. 424-298.000.
Panetti, Romolo, to Speno International S.A. Process and apparatus for on-track truing of the heads of rails of a railway. 4,115,857, Cl. 364-474.000.
Pantone, Richard S.: *See—*
Reiff, Helmut F.; and Pantone, Richard S., 4,115,429, Cl. 260-453.0SP.
Papst-Motoren KG: *See—*
Muller, Rolf, 4,115,715, Cl. 310-68.00B.
Parisien, Rudolph E. Fence system. 4,114,860, Cl. 256-65.000.
Parker-Hannifin Corporation: *See—*
Jelinek, Jerry G., 4,114,906, Cl. 277-166.000.
Parker, Marion Lonnie: *See—*
Paitson, John Lloyd; and Parker, Marion Lonnie, 4,114,723, Cl. 181-120.000.
Parker, Robert H.: *See—*
Hofferber, Henry E.; and Parker, Robert H., 4,114,842, Cl. 244-180.000.
Parkin, Ann: *See—*
Poller, Robert Clive; and Parkin, Ann, 4,115,094, Cl. 71-88.000.
Parlec, Inc.: *See—*
Lutz, Peter M., 4,114,918, Cl. 280-284.000.
Parsi, Edgardo J., to Ionics, Inc. Electrodialysis cell electrode reversal and anolyte recirculation system. 4,115,225, Cl. 204-180.00P.
Partnership of W. L. Boehler and A. G. Whaley Co., Inc., The: *See—*
Boehler, William L., 4,114,829, Cl. 242-157.00R.
Partridge, John Joseph, Jr.: *See—*
Chadha, Naresh Kumar; Partridge, John Joseph, Jr.; and Uskokovic, Milan Radoje, 4,115,452, Cl. 260-586.00R.
Paschal, Gloria C.: *See—*
Thompson, Gerald L.; and Paschal, Gloria C., 4,115,388, Cl. 260-287.00B.
Pasieka, Arnold Roy; Wilson, John Corner; and Moruzi, George Alexander, to Falconbridge Nickel Mines Limited'. Hydraulic hoisting. 4,114,954, Cl. 302-14.000.
Patenaude, Raymond Arthur, to General Electric Company. Endless conveyor mechanism. 4,114,511, Cl. 89-33.0CA.
Paterson, David, to U.S. Philips Corporation. Pump for pumping liquid in a pulse-free flow. 4,115,036, Cl. 417-322.000.

Patik, Leonid Ozerovich: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.

Patrie, Jos; and Colombier, Gabriel, to Societe de Vente de l'Aluminium Pechiney. Electrolytic coloring process for non anodized aluminum and its alloys. 4,115,212, Cl. 204-38.00E.

Patterson, Marvin LeRoy; Haselby, Robert Dale; and Kendig, Albert Prall, to Hewlett-Packard Company. Open-loop electric drive with corrective controller. 4,115,726, Cl. 318-171.000.

Patton, Bobbie J.; Sexton, James H.; Gravley, Wilton; and Foster, C. Mackay, Jr., to Mobil Oil Corporation. Well drilling system. 4,114,435, Cl. 73-151.500.

Patzelt, Heinz Wolfgang: *See—*
Schneider, Gottfried; Wagner, Kuno; and Patzelt, Heinz Wolfgang, 4,115,298, Cl. 260-2.300.

Paul Mueller Company: *See—*
Mueller, Paul; and Prine, Ray A., 4,114,686, Cl. 165-110.000.

Paul, Rolf; and Menschik, Judith, to American Cyanamid Company. Imidazo-[1,5-d]-as-triazin-1(2H)-ones and method of ameliorating asthma. 4,115,572, Cl. 424-249.000.

Pauliukonis, Richard S. Adjustable self-reciprocating operator. 4,114,515, Cl. 91-284.000.

Pauliukonis, Richard S. Directional valves with thermo-electric operators. 4,114,645, Cl. 137-596.170.

Paulus, Helmut, to Saint-Gobain Industries. Cutting device with rotating cutters. 4,114,493, Cl. 83-488.000.

Pavlecka, Vladimir H.; and McIntyre, David G., to Skagit Corporation. Air transport and lifting vehicle. 4,114,837, Cl. 244-26.000.

Pavlovsky, Rudolf; and Wuest, Heinz, to Georg Fischer Aktiengesellschaft. Method of and device for clamping a workpiece. 4,114,281, Cl. 33-180.00R.

Pawlik, Dieter; and Zschauer, Karl-Heinz, to Siemens Aktiengesellschaft. Process for the production of epitaxial layers on monocrystalline substrates by liquid-phase-slide epitaxy. 4,115,162, Cl. 148-171.000.

Pawloski, Chester E., to Dow Chemical Company, The. Substituted pyridinyl O-alkyl phenyl/phosphonothioates and their use as pesticides. 4,115,557, Cl. 424-200.000.

Payre, Michel: *See—*
Muraz, Jean-Max; Payre, Michel; and Rampin, Pierre, 4,114,438, Cl. 73-194.00A.

Payton, Joy T., to Texaco Inc. Systems for producing bitumen from tar sands. 4,114,687, Cl. 166-51.000.

Payton, Joy T., to Texaco Inc. Method for controlling sand in thermal recovery of oil from tar sands. 4,114,691, Cl. 166-276.000.

Peachtree Doors, Inc.: *See—*
Governale, Bernard C., 4,114,319, Cl. 49-488.000.

Pedersen, Erik, to Nordisk Insulinlaboratorium. Method of isolation and recovery of protein hormones, deriving from pituitary tissues using polyethylene glycol. 4,115,375, Cl. 260-112.00R.

Pedersen, Vernon G.: *See—*
Bohmrich, Jack L.; Bowden, William A., Jr.; and Pedersen, Vernon G., 4,114,389, Cl. 405-186.000.

Pelifian, Lenny M. Device for cancelling inside force of pickup arm of record player. 4,114,894, Cl. 274-23.00R.

Pellar, Marshall. Method for maintaining uniform level of anti-oxidant in heated cooking oil. 4,115,597, Cl. 426-541.000.

Pelletier, Albert: *See—*
McKerrow, George C.; Pelletier, Albert; and Fowler, Peter L., 4,114,865, Cl. 266-136.000.

Pelton & Crane Company: *See—*
Jones, Arthur Lee, 4,114,274, Cl. 32-22.000.
Jones, Arthur Lee; and Leffler, Dennis Frank, 4,114,275, Cl. 32-22.000.
McGaha, George Vernon, 4,114,273, Cl. 32-22.000.

Pendell, Larry Stuart. Method of forming flat four-sided fastener parts having an opening therein. 4,114,218, Cl. 10-86.00R.

Penn, Nathar W. Compositions and method of employing the same for inhibiting alcohol intoxication. 4,115,576, Cl. 424-251.000.

Pennwalt Corporation: *See—*
Bohen, Joseph Michael; and Toukan, Sameeh Said, 4,115,352, Cl. 260-45.75B.
McKellin, Wilbur H.; and Swarts, William A., 4,115,455, Cl. 260-610.00R.

Pepsico, Inc.: *See—*
Morris, Frank R.; and Alberghini, Alfred C., 4,114,347, Cl. 53-300.000.

Perenco Limited: *See—*
Sharpe, Charles William Scott, 4,114,470, Cl. 74-441.000.

Perkey, R. V. Otis. Auto headrest. 4,114,948, Cl. 297-397.000.

Perkins, Donald Leroy; and Streckenbach, Bruce Lindsay, to Boeing Company, The. Swaged tube coupling. 4,114,930, Cl. 285-334.500.

Perkinson, Leon Raymond: *See—*
Moore, Francis Claudell; and Perkinson, Leon Raymond, 4,114,620, Cl. 128-254.000.

Perl, Martin M.: *See—*
Schoenholz, Daniel; and Perl, Martin M., 4,115,293, Cl. 252-102.000.

Perlegos, George: *See—*
Salsbury, Phillip J.; Perlegos, George; and Morgan, William L., 4,114,255, Cl. 29-571.000.

Perlin, Boris Abramovich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.

Perrey, Hermann; Wolf, Karlheinz; Eimers, Erich; Nonn, Konrad; and Hornle, Reinhold, to Bayer Aktiengesellschaft. Dyestuff salts. 4,115,379, Cl. 260-163.000.

Perry, Malcolm B.: *See—*
Wallace, Rebecca; Ashton, Fraser E.; Perry, Malcolm B.; and Diena, Benito B., 4,115,543, Cl. 424-8.000.

Peslerbe, Gilbert: *See—*
Bonnemay, Maurice; Bronoel, Guy; Angely, Lysiane; and Peslerbe, Gilbert, 4,115,628, Cl. 429-44.000.

Pet Foods: *See—*
Soran, Robert L., 4,114,526, Cl. 99-533.000.

Petersein, Helmut: *See—*
Kienel, Gerhard; and Petersein, Helmut, 4,115,653, Cl. 13-31.000.

Petersen, Poul, to Danfoss A/S. Cable clamp. 4,114,846, Cl. 248-68.0CB.

Petershack, Victor D., to Rexnord Inc. Snap-on wear pad. 4,114,467, Cl. 74-255.00R.

Petillo, Phillip J., to Ambico Inc. Drumstick. 4,114,503, Cl. 84-422.00S.

Petitpierre, Jean Claude: *See—*
Garner, Robert; and Petitpierre, Jean Claude, 4,115,450, Cl. 260-558.00A.

Petroff, Robert J. Lead screw tapping unit. 4,115,025, Cl. 408-6.000.

Pfaff Industriemaschinen GmbH: *See—*
Kirch, Otto; and Willenbacher, Erich, 4,114,546, Cl. 112-153.000.

Pfeifer, Josef: *See—*
Darms, Roland; Pfeifer, Josef; and Kvita, Vratislav, 4,115,359, Cl. 528-170.000.
Roth, Martin; Darms, Roland; and Pfeifer, Josef, 4,115,368, Cl. 528-229.000.

Pfeiffer, Paul: *See—*
Metz, Paul; Schockmel, Robert; Nick, Desire; and Pfeiffer, Paul, 4,115,089, Cl. 65-19.000.

Pfister, Barry Lee. Combination leveling and grade checking tool. 4,114,220, Cl. 15-105.000.

Pfizer Inc.: *See—*
Barth, Wayne E., 4,115,385, Cl. 260-239.100.

Pharmacia Fine Chemicals AB: *See—*
Rothman, Ulf Sven Erik; Kagedal, Sven Lennart; and Soderberg, John Lennart, 4,115,536, Cl. 424-1.000.

Phelps, Orville E., to Dana Corporation. Universal joint. 4,114,404, Cl. 64-17.00A.

Philagro S.A.: *See—*
Lacroix, Guy; Debourge, Jean-Claude; and Ducret, Jacques, 4,115,559, Cl. 424-209.000.

Phillips, Ash S. Chlorinator for swimming pools. 4,115,270, Cl. 210-169.000.

Phillips, Howard Charles: *See—*
Loomis, Phillip Eugene; Martz, Paul Elwood; and Phillips, Howard Charles, 4,114,253, Cl. 29-566.200.

Phillips Petroleum Company: *See—*
Baldwin, Bernard A.; Williams, Ralph P.; and Rohde, Raymond, 4,115,286, Cl. 252-46.300.
Bost, Howard W., 4,115,349, Cl. 260-45.8NT.
Brady, Donnie G., 4,115,344, Cl. 260-37.00R.
Cines, Martin R., 4,115,524, Cl. 423-415.00A.
Fahey, Darryl R.; and Mahan, John E., 4,115,470, Cl. 260-683.15D.
Gragson, James T.; and Ballard, Joseph E., 4,115,562, Cl. 264-234.000.
Hughes, James K., 4,115,508, Cl. 264-310.000.
McCarthy, William C.; and Dunn, Robert O., 4,115,264, Cl. 210-63.00R.
Murtha, Timothy P.; and Zuech, Ernest A., 4,115,204, Cl. 203-60.000.
Murtha, Timothy P., 4,115,205, Cl. 203-60.000.
Murtha, Timothy P., 4,115,206, Cl. 203-60.000.
Murtha, Timothy P., 4,115,207, Cl. 203-60.000.
Murtha, Timothy P., 4,115,463, Cl. 260-668.00B.
Needham, Donald G., 4,115,283, Cl. 252-12.400.
Reusser, Robert E.; Gray, Lew T.; and Marrs, Oren L., 4,115,335, Cl. 260-28.5AS.
Stewart, William S., 4,115,862, Cl. 364-500.000.

Phinney, John M., to Falk Corporation, The. Marine propulsion control transfer system. 4,114,745, Cl. 192-0.098.

Phipps, Donald Lee, Jr.; and Wambach, Allen Dale, to General Electric Company. Warp-resistant reinforced thermoplastic compositions comprising polyester resins and zinc stearate. 4,115,333, Cl. 260-22.00R.

Phone-mate, Inc.: *See—*
Haake, Robert, 4,114,834, Cl. 242-200.000.

Picker Corporation: *See—*
Coleman, Eugene W., 4,114,758, Cl. 206-471.000.

Pico Electronics Limited: *See—*
Leach, Leslie Alan; Riddoch, Henry Jamieson; and Duffy, Neil David, 4,114,893, Cl. 274-9.0RA.

Pico, Francisco Antonio, deceased; and Shanley, James J., personal representative. Manufacture of abrasion-resistant screening apparatus. 4,115,507, Cl. 264-267.000.

Pied, Jean-Philippe, to Societe des Plastiques de Carmaux Scasar. Polyolefin compositions. 4,115,347, Cl. 260-42.460.

Pierce Chemical Company: *See—*
Gindler, E. Melvin, 4,115,064, Cl. 23-230.00B.

Pierson, Marvin B.: *See—*
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,114,563, Cl. 118-63.000.

Pigerol, Charles: *See—*
Nanthavong, Souli; Pigerol, Charles; Eymard, Pierre; and Simiand, Jacques, 4,115,401, Cl. 260-326.430.

Piltingsrud, Douglas Howard, to Du Pont de Nemours, E. I., and Company. Process for the preparation of pigmentary bright primrose yellow bismuth vanadate. 4,115,141, Cl. 106-288.00B.

Pinsenschaum, Edwin C.: *See—*
Cuniberti, Mario; and Pinsenschaum, Edwin C., 4,114,769, Cl. 214-152.000.

Pioneer Electronic Corporation: *See—*
Okura, Keniti, 4,114,896, Cl. 274-37.000.

Pioneer Filters, Inc.: *See—*
Swank, Roy L., 4,115,277, Cl. 210-436.000.

Piper, Eldon L. Recycling drain pan. 4,114,644, Cl. 137-565.000.

Pires, H. George. Telephone billing apparatus for a subscription television system. 4,115,807, Cl. 358-122.000.

Pithie, Donald Roy, to Rolls-Royce Motors Limited. Bearings. 4,114,961, Cl. 308-237.00R.

Pitman, Herbert J.; Harrison, Charles W.; and Sequeira, Avilino, to Texaco Inc. Solvent dewaxing process. 4,115,244, Cl. 208-33.000.

Pitman, Herbert J.: *See—*
Harrison, Charles W.; Pitman, Herbert J.; and Sequeira, Avilino, 4,115,243, Cl. 208-33.000.
Sequeira, Avilino; Pitman, Herbert J.; Harrison, Charles W.; and Quasny, Jerry E., 4,115,242, Cl. 208-33.000.

Pitney-Bowes, Inc.: *See—*
Kittredge, Lloyd G., 4,114,533, Cl. 101-99.000.

Pixley, Daniel L.: *See—*
Carlson, Carl S.; Kinsella, Lawrence M.; and Pixley, Daniel L., 4,115,185, Cl. 156-634.000.

Planning Kogyo Kabushiki Kaisha: *See—*
Kojima, Yoichi, 4,114,765, Cl. 214-1.0QC.

Plastics Engineering Company: *See—*
Kellner, Jerome C., 4,115,366, Cl. 528-131.000.

Plattier, Marcel; and Teisseire, Paul Jose, to Societe Anonyme Roure Bertrand Dupont. Perfuming of composition using 3-(10-undecenyloxy)proprionitrile. 4,115,326, Cl. 252-522.000.

Platzer, George E., Jr., to Chrysler Corporation. Electronic spark timing advance controller. 4,114,574, Cl. 123-117.00R.

Platzoeder, Karl, to Siemens Aktiengesellschaft. Semiconductor component having patterned recombination center means with different mean value of recombination centers on anode side from that on cathode side. 4,115,798, Cl. 357-64.000.

Plaut, Werner P. B., to Flexowall Corporation. Compacting apparatus. 4,114,531, Cl. 100-90.000.

Plavskikh, Vladimir Dmitrievich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Boginsky, Vladimir Petrovich, 4,114,700, Cl. 175-19.000.

Plessey Handel und Investments AG: *See—*
Buckner, Ian Wilfrid, 4,115,728, Cl. 318-318.000.
Taylor, Frank Howard, 4,115,777, Cl. 343-108.00R.

Ploeger, Jeanne M.: *See—*
Ploeger, Walter, Jr.; and Ploeger, Jeanne M., 4,115,012, Cl. 400-202.100.

Ploeger, Walter, Jr.; and Ploeger, Jeanne M. Printing ribbon spool. 4,115,012, Cl. 400-202.100.

Pluss, Ernest. Container, particularly for collecting products to be recycled. 4,114,776, Cl. 220-22.000.

Pluzhnov, Stanislav Konstantinovich: *See—*
Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Nametkin, Nikolai Sergeevich; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,468, Cl. 260-683.15D.
Bocharov, Jury Nikolaevich; Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,469, Cl. 260-683.15D.

Pochandke, Winfried: *See—*
Weber, Rudolf; Pochandke, Winfried; and Schwadtke, Karl, 4,114,284, Cl. 34-12.000.

Pockrandt, Gunter; and Fellner, Helmut, to Metallgesellschaft Aktiengesellschaft. Removing pollutants from aqueous liquor used to scrub fuel gasification product. 4,115,079, Cl. 55-43.0BN.

Poe, L. Richard, to Hartwell Corporation. Fastener plunger entry resistance means. 4,114,509, Cl. 85-84.000.

Polaroid Corporation: *See—*
MacLeish, William T.; and Shulman, Joseph, 4,115,618, Cl. 428-204.000.

Polidori, Mario, to UTM Power Products, Inc. Single wedge-type grid wire connector. 4,114,977, Cl. 339-270.00R.

Pollak, Henry M. Guard for belt pulley. 4,114,473, Cl. 74-611.000.

Poller, Robert Clive; and Parkin, Ann, to Research Corporation. Organotin sucrose compounds and method of use. 4,115,094, Cl. 71-88.000.

Polley, Richard B.: *See—*
Wempe, Richard J.; and Polley, Richard B., 4,114,783, Cl. 222-398.000.

Pollitzer, Ernest L.: *See—*
Hayes, John C.; and Pollitzer, Ernest L., 4,115,255, Cl. 208-143.000.

Polythetics, Inc.: *See—*
Colpitts, Ralph W., 4,115,488, Cl. 264-17.000.

Pomeroy, Raymond V., to Omark Industries, Inc. Powder actuated tool. 4,114,792, Cl. 227-8.000.

Poncha, Rustom P.: *See—*
Gancy, Alan B.; and Poncha, Rustom P., 4,115,525, Cl. 423-425.000.

Pond, Stephen F.: *See—*
Frey, Thomas M.; and Pond, Stephen F., 4,115,786, Cl. 346-74.100.

Pont-A-Mousson S.A.: *See—*
Langenfeld, Michel, 4,114,657, Cl. 138-109.000.

Popenoe, Charles H. Radio-frequency tuned-circuit microdisplacement transducer. 4,114,428, Cl. 73-88.00F.

Porter, Samuel, Jr.; and McBane, Bruce N., to PPG Industries, Inc. Urethane coating compositions. 4,115,472, Cl. 260-836.000.

Porubcan, Randolph S.; and Sellars, Robert L., to Chr. Hansen's Laboratory, Inc. Preparation of culture concentrates for direct vat set cheese production. 4,115,199, Cl. 195-96.000.

Poseidon Marketing and Development Co.: *See—*
Lundh, Roy W., 4,114,381, Cl. 405-94.000.

Pospelova, Lidia Mikhailovna: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.

Pot, Hendrik, to N.V. Industrieele Handelscombinatie Holland. Seal for unloading hatch of hopper barge or similar vessel. 4,114,901, Cl. 277-34.300.

Potter, Colin: *See—*
Goodacre, John Purefoy; Potter, Colin; and Ball, Peter, 4,114,662, Cl. 141-387.000.

Poulsen, Robert Gordon, to Northern Telecom Limited. Method of plasma etching. 4,115,184, Cl. 156-626.000.

Powell, Robert George, to Harman Brother Limited. Hinge for jewelry and the like. 4,114,238, Cl. 16-157.000.

PPG Industries, Inc.: *See—*
Comperatore, John A., 4,115,090, Cl. 65-25.00A.
Neely, James Edwin, Jr., 4,115,092, Cl. 65-99.00A.
Porter, Samuel, Jr.; and McBane, Bruce N., 4,115,472, Cl. 260-836.000.
Schwenninger, Ernest N.; and Schwenninger, Ronald L., 4,114,444, Cl. 73-359.00R.
Walker, Marvin E., 4,115,088, Cl. 65-11.00W.
Zwack, Robert R.; and Jerabek, Robert D., 4,115,226, Cl. 204-181.00C.

Pralus, Christian: *See—*
Marion, Jacques; and Pralus, Christian, 4,115,434, Cl. 260-465.300.

Pratt, George W., Jr., to Massachusetts Institute of Technology. Apparatus for altering the biological and chemical activity of molecular species. 4,115,280, Cl. 250-527.000.

Pratt, Wayne L., to Avicon Development Group. Temperature monitoring system. 4,114,442, Cl. 73-341.000.

Prentice, Leon Austin, to Tektronix, Inc. Electromagnetic interference shielding device. 4,115,655, Cl. 174-35.00R.

Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See—*
Remington, Richard Charles, 4,114,235, Cl. 16-139.000.

Preussag Aktiengesellschaft Metall: *See—*
Bartels, Gunter; Immenroth, Horst; and Heyer, Gunter, 4,115,220, Cl. 204-105.00R.

Previati, Augusto, to Industrie Pirelli S.p.A. Process and apparatus for curing elastomeric conveyor belts and the like. 4,115,510, Cl. 264-347.000.

Prince Corporation: *See—*
Marcus, Konrad H., 4,114,986, Cl. 350-282.000.

Prince, Ronald E.; and Bonnette, Rene W., to United States of America, Air Force. Muzzle clamp assembly. 4,114,510, Cl. 89-12.000.

Prine, Ray A.: *See—*
Mueller, Paul; and Prine, Ray A., 4,114,686, Cl. 165-110.000.

Printing Developments, Inc.: *See—*
Moe, William West; Lotz, Robert William; Green, Ethan Robert; and Fazio, Rodolfo, 4,115,816, Cl. 358-283.000.

Probst, Richard O., to Ransburg Corporation. Electrostatic coating apparatus. 4,114,564, Cl. 118-626.000.

Process Shizai Co., Ltd.: *See—*
Inoue, Eiichi; Nose, Taiji; and Inaba, Masakazu, 4,115,613, Cl. 428-207.000.

Procter & Gamble Company, The: *See—*
Guerry, Raymond Ellwood, 4,115,308, Cl. 252-135.000.
Marsh, Robert Anthony; Mackie, Gordon John; and Hale, Peter, 4,115,548, Cl. 424-70.000.
Richardson, David L.; and Mueller, Frank J., 4,115,292, Cl. 252-90.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Marion, Jacques; and Pralus, Christian, 4,115,434, Cl. 260-465.300.

Prokai, Bela: *See—*
Sandner, Michael Ray; and Prokai, Bela, 4,115,321, Cl. 252-431.00C.

Prominski, Gunter: *See—*
Coenen, Alfred; Kosswig, Kurt; and Prominski, Gunter, 4,115,530, Cl. 423-488.000.

Puig, Jean-Rene: *See—*
Marchand, Joseph; and Puig, Jean-Rene, 4,115,303, Cl. 521-53.000.

Pullan, Ronald Ernest, to Schlegel(UK) Limited. Door seals. 4,114,320, Cl. 49-491.000.

Purdue Research Foundation: *See—*
Morre, D. James; Kloppel, Thomas M.; and Keenan, Thomas W., 4,115,062, Cl. 23-230.00B.

Purex Corporation: *See—*
Kelly, Virgil M., 4,115,276, Cl. 210-425.000.

Pustka, Karel: *See—*
Mischo, Klaus; Liermann, Traugott; and Pustka, Karel, 4,115,001, Cl. 355-29.000.

Putnam, Hubert P.; and Butts, William O., to Bell & Howell Company. Methods and apparatus for processing data including a characteristic mark or error. 4,115,869, Cl. 364-900.000.

Putney, Richard Knight, to Hercules Incorporated. Rubine mixed strontium-cadmium salts of 3-chloro-4-methyl-6-sulfophenylazo-hydroxynaphthoic acid. 4,115,377, Cl. 260-151.000.

Pyrih, Roman Z.; and Rickard, Robert S., to Earth Sciences, Inc. Vanadium recovery process. 4,115,110, Cl. 75-101.00R.

Qualey, Christian H., to National Distillers and Chemical Corporation. Valve base roughening process. 4,115,173, Cl. 156-120.000.

Quality Measurement Systems, Inc.: *See—*
Rucinski, David W., 4,114,280, Cl. 33-172.00E.

Quang, Pham Kim; and Marckmann, Jean-Claude, to La Cellophane. Electrostatic charge image transfer. 4,115,114, Cl. 96-1.400.

Quasny, Jerry E.: *See—*
Sequeira, Avilino; Pitman, Herbert J.; Harrison, Charles W.; and Quasny, Jerry E., 4,115,242, Cl. 208-33.000.

Queener, Stephen W.; and Nash, Claude H., III, to Eli Lilly and Company. Procedure for obtaining penicillium species mutants with improved ability to synthesize mycophenolic acid. 4,115,197, Cl. 195-36.00R.

Quimco GmbH: *See—*
Hearsey, Colin John, 4,115,445, Cl. 260-553.00A.

Quinn, William T., III. Frame for facial identification system with component reservoir. 4,114,293, Cl. 35-28.000.

Quistorff, Hansjorg: *See—*
Bachhofer, Bruno; Locher, Anton; Skirde, Gerhard; and Quistorff, Hansjorg, 4,115,267, Cl. 210-136.000.

R. G. Dixon & Company Limited: *See—*
Wilkins, John Thomas, 4,114,711, Cl. 180-6.500.

Rabus, Friedrich; Wahl, Josef; and Grather, Gunter, to Robert Bosch GmbH. Voltage limited ignition system, particularly for an internal combustion engine. 4,114,582, Cl. 123-148.00E.

Radiochemical Centre Limited, The: *See—*
Bayly, Russell James; Chambers, Virginia Edith May; and Monks, Reginald, 4,115,065, Cl. 23-230.600.

Radner, Gerd; and Zillessen, Christoph, to Ruhrkohle, A.G. Method and device for removing resilient gallery lining frames in mining and tunnelling which consist of a number of section segments inserted one into another in a dissimilar manner. 4,114,386, Cl. 405-150.000.

Raidel, John E. Air spring and beam suspension. 4,114,923, Cl. 280-711.000.

Rajagopalan, Parthasarathi, to Endo Laboratories, Inc. Pyridopyrrolobenzheterocycles. 4,115,577, Cl. 424-256.000.

Ralph M. Parsons Company, The: *See—*
McNamee, Gerald P.; Roszkowski, Theodore R.; Stanbridge, David W.; and White, Gerald A., 4,115,075, Cl. 48-197.00R.

Ramanathan, Visvanathan, to Ciba-Geigy Corporation. Azo dyestuffs having a carboxyl group and an iminosulfonamido, iminosulfonylalkyl or iminosulfonylaryl group in the coupling component. 4,115,381, Cl. 260-207.100.

Rampin, Pierre: *See—*
Muraz, Jean-Max; Payre, Michel; and Rampin, Pierre, 4,114,438, Cl. 73-194.00A.

Ramsey, Henry R.: *See—*
Levine, Alexander M.; and Ramsey, Henry R., 4,114,210, Cl. 5-260.000.
Levine, Alexander M.; Ramsey, Henry R.; and Martin, Robert T., 4,114,211, Cl. 5-261.000.

Ransburg Corporation: *See—*
Probst, Richard O., 4,114,564, Cl. 118-626.000.

Rao, Mannige Vikram: *See—*
Libsch, Karl David; and Rao, Mannige Vikram, 4,115,109, Cl. 75-77.000.

Rasmussen, Ole-Bendt. Extrusion method involving rotations. 4,115,502, Cl. 264-173.000.

Rasmussen, Richard L.: *See—*
Buonadonna, Victor R.; Richardson, Ralph J.; Rasmussen, Richard L.; and Jeffers, William Q., 4,115,168, Cl. 149-109.600.

Ratcliffe, Charles T., to Allied Chemical Corporation. Synthesis of hydroxylamine from hydrogen sulfide and nitric oxide. 4,115,523, Cl. 423-387.000.

Rathbun, Richard H.: *See—*
Hildebrandt, William J.; and Rathbun, Richard H., 4,114,268, Cl. 30-262.000.

Raue, Roderich; Eifler, Willi; and Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Triaryl-methane dyestuffs. 4,115,413, Cl. 260-390.000.

Rautiola, Norman A.: *See—*
Bull, Dale L.; and Rautiola, Norman A., 4,115,844, Cl. 362-382.000.

Ravier, Dominique: *See—*
Bouy, Pierre; and Ravier, Dominique, 4,115,239, Cl. 204-290.00F.

Rawlings, Dennis George, to Automotive Products Limited. Friction clutch cover assemblies. 4,114,742, Cl. 192-89.00B.

Raymond Lee Organization, Inc., The: *See—*
Roseboom, Wayne L., 4,114,888, Cl. 273-176.00L.
Smith, Stanley E., 4,114,292, Cl. 35-9.00B.
Zur, Walter J., 4,114,399, Cl. 63-12.000.

RCA Corporation: *See—*
Catanese, Carmen Anthony; Harrison, James Berkeley, Jr.; and Lindburg, Norman Lee, 4,115,719, Cl. 313-105.00R.
Endriz, John Guiry, 4,115,724, Cl. 315-169.0TV.
Kalfus, Martin Aaron, 4,115,707, Cl. 307-252.00C.
Levine, Jules David, 4,115,720, Cl. 313-337.000.
Liu, Shing-Gong, 4,115,708, Cl. 307-268.000.
Muhlfelder, Ludwig; and Hogan, Robert Benson, 4,114,841, Cl. 244-166.000.
Packer, Marvin, 4,115,157, Cl. 148-23.000.

Rea Magnet Wire Co., Inc.: *See—*
Shelby, Thomas A.; and Gallien, Shelby W., 4,115,342, Cl. 260-33.40P.

Realini, Enrico; and Langenegger, Werner, to Mettler Instrumente AG. Electrical weighing apparatus. 4,114,706, Cl. 177-70.000.

Redford, David A.: *See—*
Cram, Phillip J.; and Redford, David A., 4,114,690, Cl. 166-261.000.

Redin, Alexei Alexandrovich: *See—*
Trubin, Vladimir Fomich; and Redin, Alexei Alexandrovich, 4,114,658, Cl. 139-452.000.

Reed, Clark G.: *See—*
Salmen, Richard A.; and Reed, Clark G., 4,115,801, Cl. 358-93.000.

Reed, Lawrence Paul: *See—*
Baboff, Leon Ian; Shichman, Daniel; and Reed, Lawrence Paul, 4,115,172, Cl. 156-115.000.

Reeder, Marion F. Lathe chuck assembly for holding universal joints. 4,114,910, Cl. 279-123.000.

Reen, Orville W., to Allegheny Ludlum Industries, Inc. Process for producing soft magnetic material. 4,115,158, Cl. 148-31.550.

Reggia, Frank, to United States of America, Army. Broadband hybrid monopole antenna. 4,115,783, Cl. 343-792.000.

Regie Nationale des Usines Renault: *See—*
Theron, Didier, 4,114,715, Cl. 180-64.00A.

Reichle, Walter Thomas: *See—*
Karol, Frederick John; Wu, Chisung; Reichle, Walter Thomas; and Maraschin, Norma Jean, 4,115,425, Cl. 260-438.50R.

Reiff, Helmut F.; and Pantone, Richard S., to Mobay Chemical Corporation. Low-temperature storage stable liquid diphenylmethane diisocyanates. 4,115,429, Cl. 260-453.0SP.

Reilly, Edward Justus: *See—*
Brown, Arling Dix, Jr.; and Reilly, Edward Justus, 4,115,763, Cl. 340-166.00R.

Reinhardt, Klaus: *See—*
Greinacher, Ekkehard; Reinhardt, Klaus; and Strnat, Karl, 4,115,159, Cl. 148-105.000.

Reitz, Norman E., to Sotec Corporation. Sodium thallium type crystal on crystalline layer. 4,115,625, Cl. 428-641.000.

Reliance Electric Company: *See—*
Means, David K.; and Boenke, Clyde A., 4,114,730, Cl. 187-29.00R.

Remington, Richard Charles, to Presto Lock Company, Division of Walter Kidde & Company, Inc. Stay for hinged members. 4,114,235, Cl. 16-139.000.

Remont, Larry Joseph: *See—*
Matson, Lawrence Wayne, Jr.; Nixon, Jeddy Darr, Jr.; and Remont, Larry Joseph, 4,114,703, Cl. 175-107.000.

Rempfler, Hermann: *See—*
Schurter, Rolf; Rempfler, Hermann; and Fory, Werner, 4,115,100, Cl. 71-94.000.

Renner, Karl H.; and Williams, Clark Russell, to Texas Instruments Incorporated. Digital brightness control system. 4,114,366, Cl. 58-50.00R.

Renold, Walter; Skorianetz, Werner; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, to Firmenich SA. Spirane derivatives, their use and process for preparing same. 4,114,630, Cl. 131-17.00R.

Repshis, Vitautas Ionovich: *See—*
Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich, 4,115,163, Cl. 148-175.000.

Research Corporation: *See—*
Freiser, Henry; James, Helen J.; Carmack, Gary; Cattrall, Robert W.; and Kneebone, Barbara M., 4,115,209, Cl. 204-1.00T.
Poller, Robert Clive; and Parkin, Ann, 4,115,094, Cl. 71-88.000.
Subramanian, Gopal; and McAfee, John Gilmore, 4,115,541, Cl. 424-1.500.
Wong, John Lui, 4,115,391, Cl. 260-290.0HL.

Restaino, Alfred J., to Hercules Incorporated. High molecular-weight, water-soluble vinyl polymers. 4,115,339, Cl. 260-29.6HN.

Reusser, Robert E.; Gray, Lew T.; and Marrs, Oren L., to Phillips Petroleum Company. Asphalt and rubber comprising composition. 4,115,335, Cl. 260-28.5AS.

Rexnord Inc.: *See—*
Petershack, Victor D., 4,114,467, Cl. 74-255.00R.

Reymond, Jean-Claude; and Bellissant, Alain, to Thomson-CSF. Arrangement for detecting light sources. 4,115,006, Cl. 356-152.000.

Rheinische Braunkohlenwerke Aktiengesellschaft: *See—*
Lorenz, Kurt; Dungs, Horst; Speich, Peter; and Kurtz, Roman, 4,115,202, Cl. 202-99.000.

Rhodes, William H., to GTE Laboratories Incorporated. Transparent yttria ceramics and method for producing same. 4,115,134, Cl. 106-73.200.

Rhone-Poulenc Industries: *See—*
Bouy, Pierre; and Ravier, Dominique, 4,115,239, Cl. 204-290.00F.
Guillaume, Andre; and Sagi, Ferenc, 4,115,343, Cl. 260-33.6SB.

Rich, Edward Larmour, III: *See—*
Martin, Frank Eugene; and Rich, Edward Larmour, III, 4,115,069, Cl. 422-112.000.

Rich, Walter. Hanger. 4,114,764, Cl. 211-100.000.

Richards, Chester L.: *See—*
Bostick, Hoyt A.; Sutton, Paul M.; and Richards, Chester L., 4,114,978, Cl. 350-1.700.

Richardson, Arthur William, to Furmanite International Limited. Tube plug. 4,114,654, Cl. 138-89.000.

Richardson Corporation: *See—*
Alsberg, Henry; Skalla, Dale W.; and Tirpak, Michael R., 4,115,478, Cl. 260-880.00R.

Richardson, David L.; and Mueller, Frank J., to Procter & Gamble Company, The. Enzyme-containing detergent articles. 4,115,292, Cl. 252-90.000.

Richardson, Ralph J.: *See—*
Buonadonna, Victor R.; Richardson, Ralph J.; Rasmussen, Richard L.; and Jeffers, William Q., 4,115,168, Cl. 149-109.600.

Rickard, Robert S.: *See—*
Pyrih, Roman Z.; and Rickard, Robert S., 4,115,110, Cl. 75-101.00R.

Rickert, Glenn E. Refrigeration evaporator coil with non-frosting fins. 4,114,396, Cl. 62-406.000.

Ricoh Co., Ltd.: *See—*
Kaneko, Yutaka; and Ishida, Tsutomu, 4,114,536, Cl. 101-426.000.

Riddoch, Henry Jamieson: *See—*
Leach, Leslie Alan; Riddoch, Henry Jamieson; and Duffy, Neil David, 4,114,893, Cl. 274-9.0RA.

Riebel, Hans-Jochem: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; and Hammann, Ingeborg, 4,115,542, Cl. 424-200.000.

Rinella, Pamela A. Process for growing alfalfa sprouts from seed and apparatus therefor. 4,114,315, Cl. 47-61.000.

Ring, Roger R.: *See—*
Thorell, Rook O.; and Ring, Roger R., 4,114,921, Cl. 280-478.00B.

Riverbank Laboratories, Inc.: *See—*
Wohlert, Andrew M.; and Haruch, James, 4,114,305, Cl. 43-17.600.

Rizk, Nabil I. Demand pacemaker with self-adjusting threshold and defibrillating feature. 4,114,628, Cl. 128-419.0PG.

Rizkalla, Nabil, to Halcon International, Inc. Process for preparing carboxylic acid anhydrides. 4,115,444, Cl. 260-549.000.

Rizkalla, Nabil: *See—*
Naglieri, Anthony N.; and Rizkalla, Nabil, 4,115,419, Cl. 260-429.00R.

Robbins, Robert Ralph. Water closet valve assembly. 4,114,642, Cl. 137-436.000.

Robert Bosch GmbH: *See—*
Knapp, Heinrich, 4,114,929, Cl. 285-45.000.
Rabus, Friedrich; Wahl, Josef; and Grather, Gunter, 4,114,582, Cl. 123-148.00E.
Stieringer, Albert; and Borner, Gerhard, 4,114,995, Cl. 352-171.000.
Stumpp, Gerhard, 4,114,579, Cl. 123-139.0AW.
Wurst, Bert, 4,114,581, Cl. 123-148.00E.

Robertson, Donald Keir. Container companion plate. 4,114,768, Cl. 214-152.000.

Robertson, Harry H., to Ameron, Inc. Anchoring system for prestressed concrete pipe. 4,114,332, Cl. 52-224.000.

Robins, Janis; Kropp, James E.; and Young, Chung I., to Minnesota Mining and Manufacturing Company. Polymerizable compositions containing highly fluorinated aliphatic sulfonyl protonic acid catalyst. 4,115,295, Cl. 528-90.000.

Robinson, Frank D., to Robinson Helicopter Co. Control stick assembly. 4,114,843, Cl. 244-84.000.

Robinson, Graham Ernest: *See—*
Bowler, Jean; and Robinson, Graham Ernest, 4,115,580, Cl. 424-278.000.

Robinson Helicopter Co.: *See—*
Robinson, Frank D., 4,114,843, Cl. 244-84.000.

Robinson, Howard Keith; and Robinson, Larry Keith. Sewage relief valve. 4,114,641, Cl. 137-430.000.

Robinson, Larry Keith: *See—*
Robinson, Howard Keith; and Robinson, Larry Keith, 4,114,641, Cl. 137-430.000.

Robinson, William M.; and Lobo, Edward, to Cornell-Dubilier Electric Corp. Dielectric composition and device containing same. 4,115,834, Cl. 361-318.000.

Rockett, Thomas J.; and O'Connell, John J., to American Hospital Supply Corporation. Method for dental restoration. 4,115,487, Cl. 264-16.000.

Roe, Gerald J., to Bethlehem Steel Corporation. Low carbon high yield and tensile strength steel and method of manufacture. 4,115,155, Cl. 148-12.00F.

Roeder, Robert S.; and Bomar, Lucien C., II, to Sperry Rand Corporation. Adaptive gain control for radiometric target tracking system. 4,115,776, Cl. 343-100.0ME.

Rogen, Neil E., to Nicoa Corporation. Temperature monitoring. 4,114,559, Cl. 116-114.500.

Rogerson, Jerry B.; and Harrison, Robert S., to Ford Motor Company. Carburetor choke positive closure mechanism. 4,114,584, Cl. 123-179.00G.

Rohde, Raymond: *See—*
Baldwin, Bernard A.; Williams, Ralph P.; and Rohde, Raymond, 4,115,286, Cl. 252-46.300.

Rohm and Haas Company: *See—*
Avery, Noyes L., 4,115,260, Cl. 210-34.000.
Carlson, Glenn R., 4,115,101, Cl. 71-94.000.
Cenci, Harry J.; and Swift, Graham, 4,115,637, Cl. 526-56.000.
Emmons, William D.; Kim, Samuel S.; and Winey, Donald A., 4,115,169, Cl. 156-71.000.
Miller, George A.; and Owen, Ronald P., 4,115,578, Cl. 424-273.00R.
Nyi, Kayson; and Graham, Sandra I., 4,115,232, Cl. 204-159.230.

Rohner AG Pratteln: *See—*
Kirner, Hans Dieter; Bitterlin, Albert; and Muller, Ekkehard Walter, 4,115,055, Cl. 8-26.000.

Rohr, Otto, to Ciba-Geigy Corporation. 2-Methyl-3-nitrobenzoic acid (2'-cyanoethyl) ester. 4,115,430, Cl. 260-465.00D.

Rohrmoser, Howard L.: *See—*
Clark, Michael J.; and Rohrmoser, Howard L., 4,115,080, Cl. 55-54.000.

Rolls-Royce Motors Limited: *See—*
Pithie, Donald Roy, 4,114,961, Cl. 308-237.00R.

Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Centrifuge tube enclosure. 4,114,803, Cl. 233-26.000.

Romic, Ivica, to W. Schlafhorst & Co. Knotting device. 4,114,931, Cl. 289-2.000.

Roquette Freres: *See—*
Saint-Lebe, Louis; Berger, Gerard; Michel, Jean-Pierre; Huchette, Michel; and Fleche, Guy, 4,115,146, Cl. 127-38.000.

Roseboom, Wayne L., to Raymond Lee Organization, Inc., The, a part interest. Golf tour game. 4,114,888, Cl. 273-176.00L.

Rosenkaimer, Siegfried, to Ruko of Canada Ltd. Sheath for knife with dead blade. 4,114,787, Cl. 224-2.00D.

Rosenkranz, Hans Jurgen: *See—*
Elfert, Klaus; Rosenkranz, Hans Jurgen; and Rudolf, Hans, 4,115,465, Cl. 260-674.00R.

Ross, Camilla Brems: *See—*
Higgins, Thomas Engel; Ross, Camilla Brems; and Snella, Henry John, 4,115,594, Cl. 426-140.000.

Ross, Sigmund Lance; Shuffman, Oscar, deceased; and by Shuffman, Rose, executrix. Cryothermal manipulation of petroleum. 4,114,552, Cl. 114-227.000.

Rossi, Alberto; and Egli, Christian, to Ciba-Geigy AG. Process for the manufacture of new carboxylic acids. 4,115,416, Cl. 260-413.000.

Roszkowski, Theodore R.: *See—*
McNamee, Gerald P.; Roszkowski, Theodore R.; Stanbridge, David W.; and White, Gerald A., 4,115,075, Cl. 48-197.00R.

Roth, Martin; Darms, Roland; and Pfeifer, Josef, to Ciba-Geigy Corporation. Crosslinkable polymers of compounds containing 5-maleimidyl-isophthalic acid derivatives. 4,115,368, Cl. 528-229.000.

Rothe, Werner: *See—*
Frohling, Hans-Joachim; and Rothe, Werner, 4,114,777, Cl. 229-44.0CB.

Rothman, Ulf Sven Erik; Kagedal, Sven Lennart; and Soderberg, John Lennart, to Pharmacia Fine Chemicals AB. Agent for intravascular administration. 4,115,536, Cl. 424-1.000.

Roto Manufacturing Co., Inc.: *See—*
Oto, Takao R., 4,114,460, Cl. 74-18.200.

Rouaud, Christian: *See—*
Abbes, Claude; Gournier, Andre; Rouaud, Christian; and de Villepoix, Raymond, 4,114,907, Cl. 277-206.00R.

Rowe, Don H.; and Sasnett, Michael W., to GTE Sylvania Incorporated. Arc detection and control apparatus. 4,115,828, Cl. 361-1.000.

Roy, Henry A.; and D'Angelo, George J. Prosthetic valve assembly for use in cardiovascular surgery. 4,114,202, Cl. 3-1.500.

Royal Cake Company: *See—*
Welch, Gray Gurney, 4,114,524, Cl. 99-450.400.

Royal Industries, Inc.: *See—*
Mugler, Leon B., 4,115,257, Cl. 209-291.000.
Thiele, Carl L.; and Shapiro, Haskell, 4,115,007, Cl. 356-155.000.

Rozell, James O., to Harris Data Communications, Inc. Microprogrammed controller. 4,115,852, Cl. 364-200.000.

Rubino, Andrew M.; and Margres, Jack J., to Armour Pharmaceutical Company. Antacid tablets. 4,115,553, Cl. 424-155.000.

Rucinski, David W., to Quality Measurement Systems, Inc. Digital electronic indicator. 4,114,280, Cl. 33-172.00E.

Rudolf, Hans: *See—*
Elfert, Klaus; Rosenkranz, Hans Jurgen; and Rudolf, Hans, 4,115,465, Cl. 260-674.00R.

Ruf, Max. Means for controlling the oil cooling of the piston of a piston engine. 4,114,571, Cl. 123-41.350.

Ruhrkohle, A.G.: *See—*
Radner, Gerd; and Zillessen, Christoph, 4,114,386, Cl. 405-150.000.

Ruko of Canada Ltd.: *See—*
Rosenkaimer, Siegfried, 4,114,787, Cl. 224-2.00D.

Runte, Robert Ralph: *See—*
Mau, Theodore A., 4,114,882, Cl. 273-85.00G.

Russell, Richard, to U.S. Blind Stitch Machine Corp. Stitch shortening and tacking assembly. 4,114,547, Cl. 112-178.000.

Russo, Ronald D., to Chesebrough-Pond's Inc. Inhalation device. 4,114,607, Cl. 128-2.080.

Russo, Ronald D., to Chesebrough-Pond's Inc. Inhalation device. 4,114,608, Cl. 128-2.080.

Rutherford, Dennis Franklin, to Dowty Mining Equipment Limited. Mine roof support. 4,114,387, Cl. 405-293.000.

Ryan, Charles W.: *See—*
Blanchard, William B.; and Ryan, Charles W., 4,115,403, Cl. 260-340.90R.

Ryan, James Walter; and Chung, Alfred. Substrates for angiotensin converting enzyme. 4,115,374, Cl. 260-112.50R.

Ryan, Ralph L.: *See—*
Taitel, Charles M.; and Ryan, Ralph L., 4,114,909, Cl. 279-1.00Q.

Saab-Scania Aktiebolag: *See—*
Norlin, Stig Ivar, 4,114,937, Cl. 293-85.000.

Saam, Ulrich: *See—*
Berges, Dietrich; Damzog, Bodo; and Saam, Ulrich, 4,114,361, Cl. 57-156.000.

Sablan, Francisco C.: *See—*
Sibley, Clarence E.; and Sablan, Francisco C., 4,114,839, Cl. 244-118.00R.

Sacco, John A.: *See—*
DiGiacomo, Hector L.; and Sacco, John A., 4,114,260, Cl. 29-623.100.

Sachs, Howard George: *See—*
Dantzler, Danny M.; Meehan, James Bartley; Everman, Wayne Fredrick; Fluent, Donald E.; and Sachs, Howard George, 4,115,779, Cl. 343-715.000.

Sadomov, Jury Borisovich: *See—*
Vladimirov, Evgeny Evgenievich; Korchagin, Vladimir Gerasimovich; Sadomov, Jury Borisovich; and Khokhlov, Lev Mikhailovich, 4,115,867, Cl. 364-900.000.

Safeguard Automotive Corporation: *See—*
Schlenker, H. Oscar, 4,114,400, Cl. 64-3.000.

Sagi, Ferenc: *See—*
Guillaume, Andre; and Sagi, Ferenc, 4,115,343, Cl. 260-33.6SB.

Saint-Gobain Industries: *See—*
Bourggraff, Robert; and Coulon, Jean-Claude, 4,115,091, Cl. 65-99.00A.
Paulus, Helmut, 4,114,493, Cl. 83-488.000.

Saint-Lebe, Louis; Berger, Gerard; Michel, Jean-Pierre; Huchette, Michel; and Fleche, Guy, to Commissariat a l'Energie Atomique; and Roquette Freres. Process for the depolymerization of starch by irraciation and products so obtained. 4,115,146, Cl. 127-38.000.

Saitoh, Shigeru. Self-powered toy animal with openable and closable eyes. 4,114,310, Cl. 46-104.000.

Sakabe, Yukio; and Seno, Hiroshi, to Murata Manufacturing Co., Ltd. Method for making a monolithic ceramic capacitor employing a non-reducing dielectric ceramic composition. 4,115,493, Cl. 264-61.000.

Sakai, Masaaki: *See—*
Tsuchida, Nobuo; Kohara, Tadashi; Morishita, Syozo; Yamagata, Seiichi; and Sakai, Masaaki, 4,114,358, Cl. 57-51.000.

Sakai, Yasuo; Nakagawa, Yasuhiko; and Nakajima, Yasuo, to Nissan Motor Company, Limited. Internal combustion engine having siamesed exhaust ports and an aftercombustion chamber. 4,114,373, Cl. 60-282.000.

Sakamoto, Hiroshi: *See—*
Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, 4,114,243, Cl. 29-25.140.

Sakamoto, Hitoshi, to Sony Corporation. Color video signal recording and/or reproducing apparatus. 4,115,800, Cl. 358-8.000.

Sakasai, Toshio: *See—*
Noda, Fumio; Mogi, Keitaro; and Sakasai, Toshio, 4,115,591, Cl. 426-7.000.

Sakashita, Nobuyuki: *See—*
Takahashi, Ryobei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,115,102, Cl. 71-94.000.

Sakata, Minehiro: *See—*
Kogiso, Masahiro; Sakata, Minehiro; Oda, Hatsuo; and Iwamoto, Tamio, 4,114,999, Cl. 355-10.000.

Sakaue, Yoshiaki: *See—*
Matsuda, Munekazu; and Sakaue, Yoshiaki, 4,114,572, Cl. 123-59.0PC.

Sakura, Masakazu: *See—*
Fujii, Hideo; Fujiki, Tokio; Uemura, Masaru; and Sakura, Masakazu, 4,115,181, Cl. 156-497.000.

Sakurai, Hidekazu: *See—*
Suzuki, Etsuo; and Sakurai, Hidekazu, 4,115,817, Cl. 358-288.000.

Sakurai, Hideki: *See—*
Hiiro, Takeshi; Sakurai, Hideki; and Kondo, Fumihiko, 4,115,426, Cl. 260-448.20E.

Salimbeni, Aldo: *See—*
Manghisi, Elso; Salimbeni, Aldo; and Ferni, Giovanni, 4,115,585, Cl. 424-311.000.

Salmen, Richard A.; and Reed, Clark G., to Goodyear Aerospace Corporation. Optical image correlator tracking filter circuit. 4,115,801, Cl. 358-93.000.

Salsbury, Phillip J.; Perlegos, George; and Morgan, William L., to Intel Corporation. Floating gate storage device and method of fabrication. 4,114,255, Cl. 29-571.000.

Salyer, Ival O.; and North, Charles J., to Monsanto Research Corporation. Large void-free polyethylene castings. 4,115,499, Cl. 264-122.000.

Sampat, Ajit: *See—*
Jordan, Charles H.; and Sampat, Ajit, 4,115,086, Cl. 62-28.000.

Sampson, Arthur R. Wind powered hydraulic heating system. 4,114,809, Cl. 237-1.00A.

Sandelman, Robert L. Perpetual calendar. 4,114,298, Cl. 40-110.000.

Sanders Associates, Inc.: *See—*
Aitel, Moe Lawrence, 4,115,656, Cl. 174-35.0MS.
Schwartz, Jacob; and Misek, Victor A., 4,114,685, Cl. 165-96.000.

Sanders, Julian V., to Caterpillar Tractor Co. Housing apparatus. 4,114,716, Cl. 180-68.00R.

Sanders, Virgil E.: *See—*
Hutchings, Thomas J.; and Sanders, Virgil E., 4,115,004, Cl. 356-106.0LR.

Sandler, Benzion, to Ben Gurion University of the Negev Research & Development Authority. Accelerometer sensor. 4,114,453, Cl. 73-517.00R.

Sandlin, Joseph P. Tilting attachment for a bed. 4,114,209, Cl. 5-62.000.

Sandner, Michael Ray; and Prokai, Bela, to Union Carbide Corporation. Catalyst systems containing N,N-dimethylaminoalkoxypropionitriles for polyurethane foam formulation. 4,115,321, Cl. 252-431.00C.

Sandoz Ltd.: *See—*
Wiedemann, Achim, 4,115,457, Cl. 260-615.00B.

Sands, Jessie E. Welder's helmet lens. 4,114,198, Cl. 2-8.000.

Saner, Kaspar, to K-Tron Soder AG. Conveyor type scale. 4,114,708, Cl. 177-145.000.

Sano, Nobuya; Goto, Hiroshi; and Hirota, Yutaka, to Matsushita Electric Industrial Co., Ltd. Power amplifier. 4,115,739, Cl. 330-263.000.

Sanson, Joseph F., to Upjohn Company, The. Cushion or seat structure of plastic foam with integrated cover and incorporated reinforcing grid or skeleton, and method of making same. 4,115,170, Cl. 156-79.000.

Santala, Teuvo J.; and Hirsbrunner, Hans G., to Texas Instruments Incorporated. Electrical contact material. 4,115,325, Cl. 252-514.000.

Santo, Philip J. Unitary accessory control for a waterbed. 4,114,215, Cl. 5-370.000.

Sanyo Chemical Industries, Ltd.: *See—*
Tominaga, Yoichi; and Shibahara, Yasuo, 4,115,331, Cl. 260-17.4CL.

Saragossi, Albert. Process for the manufacture of dental prostheses. 4,114,272, Cl. 32-8.000.

Sarkes Tarzian, Inc.: *See—*
Valdettaro, Alarico A., 4,114,459, Cl. 74-10.410.

Saruwatari, Minoru, to Canadian Foremost Ltd. Pump jack device. 4,114,375, Cl. 60-372.000.

Sasano, Mitsunori: *See—*
Goto, Mikio; Sasano, Mitsunori; Oosawa, Koichi; and Yoshihara, Mitsuya, 4,114,576, Cl. 123-119.00A.

Sasaya, Hideaki: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, 4,115,030, Cl. 416-93.00R.

Sasnett, Michael W.: *See—*
Rowe, Don H.; and Sasnett, Michael W., 4,115,828, Cl. 361-1.000.

Satellite Business Systems: *See—*
Schmidt, William G., 4,115,661, Cl. 179-15.0BS.

Sato, Heihachi; and Kohji, Toda. Optical modulator using a controllable diffraction grating. 4,115,747, Cl. 331-94.50M.

Sato, Hisato; Tazume, Masayuki; Yamaki, Takasi; Fujita, Yutaka; and Arai, Yoshi, to Dainippon Ink & Chemicals Inc.; and Kawamura ainstitute of Chemical Research. Liquid crystalline composition. 4,115,310, Cl. 252-299.000.

Sato, Kotaro: *See—*
Kubotera, Kikuo; Kashiwabara, Akira; and Sato, Kotaro, 4,115,118, Cl. 96-33.000.

Sato, Seiichi: *See—*
Nakamura, Koji; Otaki, Haruo; Yamamoto, Yutaka; Shimizu, Noboru; Kawamura, Kiyoshi; and Sato, Seiichi, 4,115,398, Cl. 260-326.100.

Satoh, Kenji: *See—*
Tachikawa, Hajime; and Satoh, Kenji, 4,115,678, Cl. 219-10.55B.

Satoh, Tomokazu; Takezawa, Junichi; Kuninaka, Akira; Honma, Miyuki; and Ui, Michio, to Yamasu Shoyu Kabushiki Kaisha. Assay kit for cAMP and/or cGMP and method of using the same. 4,115,538, Cl. 424-1.000.

Satomi, Yoshihito: *See—*
Ozaki, Hiromi; Yamane, Mamoru; Satomi, Yoshihito; Suzuka, Teruo; Miyake, Toshinobu; and Hirato, Mizuho, 4,115,324, Cl. 252-459.000.

Sauer, Hans; and Spahrbier, Dieter, to Varta Batterie Aktiengesellschaft. Air/zinc flat cell. 4,115,626, Cl. 429-27.000.

Saunders, James Warren, to Paccar Inc. Dash console access enabling tilting steering column. 4,114,719, Cl. 180-90.000.

Saupe, Martin: *See—*
Hoffmeister, Jurgen; and Saupe, Martin, 4,114,946, Cl. 297-191.000.

Savvateev, Ivan Ivanovich: *See—*
Vodopyanov, Jury Mikhailovich; Klimkin, Nikolai Emelyanovich; Savvateev, Ivan Ivanovich; Strelchenko, Vladimir Sergeevich; Kuris, Alexandr Pavlovich; and Koltsov, Sergei Ivanovich, 4,114,415, Cl. 72-214.000.

Sawafuji Denki Kabushiki Kaisha: *See—*
Usui, Kazuhisa; and Muto, Osamu, 4,114,746, Cl. 192-104.00R.

Sawaoka, Eiji: *See—*
Shimizu, Wataru; and Sawaoka, Eiji, 4,114,998, Cl. 355-3.0DR.

Saxton, Forest Jackson, to Ecodyne Corporation. Cooling tower fill assembly. 4,115,484, Cl. 261-111.000.

Saylor, B. Franklin, to Garrett Corporation, The. Pressure biased pneumatic thermostat. 4,114,808, Cl. 236-87.000.

Sazykin, Valentin Vasilievich: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.

Sberze, Piero: *See—*
Doria, Gianfederico; Giraldi, PierNicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,115,567, Cl. 424-250.000.

Sbrocca, Dino A., to United States of America, Navy. Castable binder for cast plastic-bonded explosives. 4,115,167, Cl. 149-19.500.

Scalia, Peter F. Dispenser and applicator apparatus for edge wrapping of stained glass chips and the like with foil. 4,115,180, Cl. 156-446.000.

Scannell, James Parnell; and Stempel, Arthur, to Hoffmann-La Roche Inc. L-2-amino-4-(2-aminoethoxy)-butanoic acid. 4,115,105, Cl. 71-113.000.

Scata, Umberto; Luciani, Luciano; and Barbe, Pier Camillo, to Montedison S.p.A. Catalysts and catalyst components for polymerizing olefins. 4,115,319, Cl. 252-429.00B.

Schacht, Erich: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,115,456, Cl. 260-613.00R.

Schaefer, Hans-Joachim. Convertible sports shoe. 4,114,295, Cl. 36-100.000.

Schaefer Marine Products: *See—*
Hall, Eric R. D., 4,114,551, Cl. 114-98.000.

Schaefer, Milton E.: *See—*
McGhee, Jerry R.; and Schaefer, Milton E., 4,114,605, Cl. 128-2.00F.

Schaefer, Roland: *See—*
Gross, Albert; and Schaefer, Roland, 4,115,346, Cl. 260-42.150.

Schambeck, Herbert, to Dyckerhoff & Widmann AG. Longitudinally displaceable connection for cantilevered beam-type structural parts. 4,114,219, Cl. 14-16.100.

Scheibner, Gerald Harry: *See—*
Alderfer, Richard Bernhard; and Scheibner, Gerald Harry, 4,115,048, Cl. 425-72.00R.

Scheidegger, Albert. Closure cap. 4,114,774, Cl. 215-250.000.

Scherbakov, Vsevolod Sergeevich: *See—*
Bykov, Alexandr Vasilievich; Kalnin, Igor Martynovich; Scherbakov, Vsevolod Sergeevich; and Gruzintsev, Igor Andreevich, 4,115,043, Cl. 417-559.000.

Scherenberg, Volker. Cord retractor for retracting cord of electrical appliances. 4,114,736, Cl. 191-12.400.

Schering Corporation: *See—*
Mayer, Joseph; and Sherlock, Margaret H., 4,115,395, Cl. 260-296.00N.

Scheurecker, Werner: *See—*
Loibl, Lorenz; and Scheurecker, Werner, 4,114,679, Cl. 164-426.000.

Schiek, Robert J. All purpose indexing device. 4,114,752, Cl. 198-491.000.

Schjelde, Ole Mikel; and Larsen, Ebbe, to Danfoss A/S. Resilient pressure tube. 4,115,039, Cl. 417-363.000.

Schladetsch, Hans Jakob; and Schroth, Gunther, to Hoechst Aktiengesellschaft. Process for the preparation of dihydroxyphenylazophenylazophenyl dyestuffs. 4,115,380, Cl. 260-186.000.

Schlage, Ernest L., to Schlage Lock Company. Augmented key and cylinder lock. 4,114,411, Cl. 70-421.000.

Schlage Lock Company: *See—*
Schlage, Ernest L., 4,114,411, Cl. 70-421.000.

Schlegel(UK) Limited: *See—*
Pullan, Ronald Ernest, 4,114,320, Cl. 49-491.000.

Schlenker, H. Oscar, to Safeguard Automotive Corporation. Safety sleeve. 4,114,400, Cl. 64-3.000.

Schmelzer Corporation: *See—*
LaVene, Leon F., 4,114,417, Cl. 72-379.000.

Schmid & Wezel: *See—*
Jansen-Herfeld, Rottger; and Elmer, Stefan, 4,114,270, Cl. 30-394.000.

Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, to Veb Jenapharm. Process of making D,L-lithium pantoate and resolving the racemic mixture into its optically active isomers. 4,115,443, Cl. 562-402.000.

Schmidt, William G., to Satellite Business Systems. Single channel per burst TDMA multiple transponder network. 4,115,661, Cl. 179-15.0BS.

Schmiedel, Robert C.: *See—*
Sleder, Richard L.; and Schmiedel, Robert C., 4,114,583, Cl. 123-148.0CC.

Schmitt, Frederick J.: *See—*
Decker, Bernard J.; and Schmitt, Frederick J., 4,114,766, Cl. 214-3.000.

Schmitt, Frederick Louis: *See—*
Hall, John B.; Sprecker, Mark A.; Shuster, Edward J.; Schmitt, Frederick Louis; and Vinals, Joaquin F., 4,115,431, Cl. 260-465.00F.

Schmitt, Kirk D., to Mobil Oil Corporation. Lubricants containing substituted triazoles as antiwear agents. 4,115,288, Cl. 252-50.000.

Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., to Armco Steel Corporation. Apparatus for continuously contact-coating one side only of a ferrous base metal strip with molten coating metal. 4,114,563, Cl. 118-63.000.

Schneider, Bernhard Hank, to Steel Heddle Manufacturing Company. Bobbin. 4,114,828, Cl. 242-118.300.

Schneider, Franz; Braitinger, Helmut; and Schumann, Burkhard, to L. Schuler GmbH. Dividing means control device. 4,114,489, Cl. 83-298.000.

Schneider, Georg. Feeding mechanism. 4,114,791, Cl. 226-91.000.

Schneider, Gottfried; Wagner, Kuno; and Patzelt, Heinz Wolfgang, to Bayer Aktiengesellschaft. Process for splitting up polyurethane waste into activated polyhydroxyl compounds. 4,115,298, Cl. 260-2.300.

Schneider, Stephen E.: *See—*
Mahoney, Robert D.; and Schneider, Stephen E., 4,115,492, Cl. 264-49.000.

Schneider, Walter. Bathroom cabinet. 4,114,966, Cl. 312-245.000.

Schneider, Wolfgang: *See—*
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, 4,115,443, Cl. 562-402.000.

Schockmel, Robert: *See—*
Metz, Paul; Schockmel, Robert; Nick, Desire; and Pfeiffer, Paul, 4,115,089, Cl. 65-19.000.

Schoenholz, Daniel; and Perl, Martin M., to Du Pont de Nemours, E. I., and Company. Denture cleanser. 4,115,293, Cl. 252-102.000.

Schold, George R. Apparatus for dispersing finely divided solid particles in a liquid vehicle. 4,114,816, Cl. 241-46.110.

Scholer, Fred R.: *See—*
Blumbergs, John H.; and Scholer, Fred R., 4,115,059, Cl. 8-111.000.

Schollmeier, Gero: *See—*
Boese, Gunter; Neudorfer, Ernst; and Schollmeier, Gero, 4,115,687, Cl. 235-92.0DM.

Schroeder, Robert Frederich, to Mattel, Inc. Single flow direction miniature pump. 4,115,042, Cl. 417-479.000.

Schroeder, Walter W.; Sears, Noel C.; and Boni, Joseph C., to Sprague Electric Company. Method for forming a metal termination on a wound capacitor section. 4,115,600, Cl. 427-79.000.

Schroter, Herbert: *See—*
Frei, Jorg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,115,575, Cl. 424-250.000.

Schroth, Gunther: *See—*
Schladetsch, Hans Jakob; and Schroth, Gunther, 4,115,380, Cl. 260-186.000.

Schubert, Klaus-Peter; Keller, Hartmut; and Hildebrandt, Juergen J., to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Artificial hand and drive apparatus for such hand. 4,114,464, Cl. 74-89.140.

Schulte-Elte, Karl-Heinrich: *See—*
Renold, Walter; Skorianetz, Werner; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 4,114,630, Cl. 131-17.00R.

Schulte, Theodore B. Silage door guide. 4,114,748, Cl. 193-33.000.

Schulze, Ernst: *See—*
Hoehn, Hans; and Schulze, Ernst, 4,115,394, Cl. 260-296.00H.

Schulze, Heinz; and Waddill, Harold G., to Texaco Development Corp. Polyether urea epoxy additives. 4,115,360, Cl. 528-94.000.

Schulze, Heinz; and Waddill, Harold G., to Texaco Development Corp. Polyether urea epoxy additives. 4,115,361, Cl. 260-47.0EN.

Schulze, Heinz, to Texaco Development Corp. Polyether polyureides. 4,115,446, Cl. 260-553.00R.

Schumann, Burkhard: *See—*
Schneider, Franz; Braitinger, Helmut; and Schumann, Burkhard, 4,114,489, Cl. 83-298.000.

Schurter, Rolf; Rempfler, Hermann; and Fory, Werner, to Ciba-Geigy Corporation. Selective herbicidal composition containing 2-pyridinol compounds. 4,115,100, Cl. 71-94.000.

Schwadtke, Karl: *See—*
Weber, Rudolf; Pochandke, Winfried; and Schwadtke, Karl, 4,114,284, Cl. 34-12.000.

Schwan, Thomas J., to Morton-Norwich Products, Inc. 3-Methyl-4-phenyl-1,2,3,4-tetrahydrobenz [H]isoquinoline hydrobromide. 4,115,387, Cl. 260-286.00R.

Schwartz, Jacob; and Misek, Victor A., to Sanders Associates, Inc. Method and apparatus for increasing heat transfer efficiency. 4,114,685, Cl. 165-96.000.

Schweitzer, Karl: *See—*
Kudlich, Hans; and Schweitzer, Karl, 4,114,534, Cl. 101-115.000.

Schwendt, Lutz, to Thyssen Industrie Aktiengesellschaft. Stabilized turret. 4,114,512, Cl. 89-36.00K.

Schwenninger, Ernest N.; and Schwenninger, Ronald L., to PPG Industries, Inc. Measuring glass surface temperature during annealing. 4,114,444, Cl. 73-359.00R.

Schwenninger, Ronald L.: *See—*
Schwenninger, Ernest N.; and Schwenninger, Ronald L., 4,114,444, Cl. 73-359.00R.

Schwerdtel, Wulf: *See—*
Thelen, Hermann; Halcour, Kurt; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,115,462, Cl. 260-667.000.

Schwerdtfeger, Lee; Stillman, Lee E.; and Frain, William E., to United States of America, Air Force. Deployable ground plane antenna. 4,115,784, Cl. 343-915.000.

Scire, Joseph S. Lock assembly for bicycle wheel quick release mechanism. 4,114,409, Cl. 70-225.000.

SCM Corporation: *See—*
Close, Ralph E.; and Oroshnik, William, 4,115,466, Cl. 260-678.000.

Scott & Fetzer Company, The: *See—*
MacFarland, Charles H., 4,114,230, Cl. 15-330.000.

Scott, Howard L., to Widner College. Coating the hair with a heat-settable composition. 4,115,549, Cl. 424-71.000.
Scott, Ray A.: *See—*
Holladay, Jimmie L.; and Scott, Ray A., 4,114,672, Cl. 157-1.240.
Sears, Noel C.: *See—*
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Sedlacek, Bruce; and Stevens, Gus, Jr. Cigarette rolling paper with integral pouch. 4,114,629, Cl. 131-15.00R.
Segawa, Sunichi: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.
Seib, Karl: *See—*
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Seipp, Emil: *See—*
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Sekiguchi, Yoji, to Katsura Machine Co., Ltd. Feeding device of a concrete block splitting apparatus. 4,114,773, Cl. 214-623.000.
Sekiya, Makoto: *See—*
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Sellars, Robert L.: *See—*
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Selvin, Gerald Joseph; Oliver, Leland Wayne; Yamamoto, Stephen Kazuo; and Hogan, Clarence Vaughn, to International Telephone and Telegraph Corporation. Electrical connector assembly. 4,114,976, Cl. 339-217.00S.
Selwood, Peter Richard, deceased; by Selwood, Timothy John, executor; by Axtell, Martin John Shelley, executor; and Burton, John David, to William R. Selwood Limited. Pumps. 4,115,041, Cl. 417-440.000.
Selwood, Timothy John, executor: *See—*
Selwood, Peter Richard, deceased; Selwood, Timothy John, executor; Axtell, Martin John Shelley, executor; and Burton, John David, 4,115,041, Cl. 417-440.000.
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Sentinella, Victor Edward. Fire escape devices. 4,114,726, Cl. 182-5.000.
Sepelak, George R., to United States of America, Energy. Nuclear reactor pressure vessel support system. 4,115,193, Cl. 176-87.000.
Sequeira, Avilino; Pitman, Herbert J.; Harrison, Charles W.; and Quasny, Jerry E., to Texaco Inc. Solvent dewaxing process. 4,115,242, Cl. 208-33.000.
Sequeira, Avilino: *See—*
Harrison, Charles W.; Pitman, Herbert J.; and Sequeira, Avilino, 4,115,243, Cl. 208-33.000.
Pitman, Herbert J.; Harrison, Charles W.; and Sequeira, Avilino, 4,115,244, Cl. 208-33.000.
Serediuk, Vladislaus. Hairbrush. 4,114,222, Cl. 15-186.000.
Sery, Stanislav Vasilievich: *See—*
Mukhamedyarov, Rashid Mustafievich; Smirnov, Boris Andreevich; Sery, Stanislav Vasilievich; Titkova, Tatyana Dmitrievna; and Lokalov, Anatoly Ivanovich, 4,115,272, Cl. 210-266.000.
Sexton, James H.: *See—*
Patton, Bobbie J.; Sexton, James H.; Gravley, Wilton; and Foster, C. Mackay, Jr., 4,114,435, Cl. 73-151.500.
Seylar, George R., to Johns Hopkins University, The. Monitoring apparatus for resonant circuit intracranial pressure implants. 4,114,606, Cl. 128-2.05E.
Shafiee, Ali; Lalezari, Iraj; and Yassa, Narges, to Ministry of Science & Higher Education, The. Process for the production of thebaine. 4,114,314, Cl. 47-85.000.
Shajenko, Peter, to United States of America, Navy. Fiber optic acoustic array. 4,115,753, Cl. 340-6.00R.
Shambhu, Manvendra B.: *See—*
Digenis, George A.; Shambhu, Manvendra B.; and Theodorakis, Michael C., 4,115,540, Cl. 424-1.000.
Shanley, James J., personal representative: *See—*
Pico, Francisco Antonio, deceased; and Shanley, James J., personal representative, 4,115,507, Cl. 264-267.000.
Shapiro, Haskell: *See—*
Thiele, Carl L.; and Shapiro, Haskell, 4,115,007, Cl. 356-155.000.
Shapiro, Milton R.: *See—*
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Sharon, Shaul. Combination industrial razor blade dispenser and used blade receiver. 4,114,780, Cl. 221-101.000.
Sharova, Valentina Petrovna: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
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Fujimoto, Isao; Aiba, Masahiko; Yamamoto, Yoichi; and Makita, Tomoo, 4,115,787, Cl. 346-75.000.
Fujimoto, Takeo; Torimaru, Yasuo; Ogawa, Shin-ichi; and Yasue, Shinya, 4,115,796, Cl. 357-42.000.
Mitarai, Akira; and Fujiwara, Sigekazu, 4,115,738, Cl. 329-105.000.
Nakamura, Tutomu; Shigemasa, Junichiro; and Tani, Zenpei, 4,115,832, Cl. 361-256.000.
Okada, Yoshimasa, 4,115,821, Cl. 360-72.000.
Takano, Rikuo; Matsunaga, Mitsushi; Tsuchida, Yuhkichi; Sumitomo, Yuji; Umeda, Ikuo; and Aiba, Masahiko, 4,115,788, Cl. 346-75.000.
Sharpe, Charles William Scott, to Perenco Limited. Relating to pressure fluid operated actuators. 4,114,470, Cl. 74-441.000.
Shaw, Michael J., to Allied Paper Incorporated. Process for producing lithographic printing plates having a paper base. 4,115,603, Cl. 427-326.000.
Shaw, Robert F.; and Sperinde, John M. Catheter oximeter apparatus and method. 4,114,604, Cl. 128-2.00L.
Shaw, Wilfrid G.; and Terrill, David B., to Standard Oil Company, The. Catalyst compositions especially useful for preparation of unsaturated acids. 4,115,441, Cl. 562-534.000.
Shaw, William C., to Imax Entertainment Limited. Inlet guide structure for rolling loop film transport mechanism. 4,114,996, Cl. 352-184.000.
Shelby, Thomas A.; and Gallien, Shelby W., to Rea Magnet Wire Co., Inc. Wire enamel with low soldering temperature. 4,115,342, Cl. 260-33.40P.
Shell, John W., to Alza Corporation. Ocular system made of bioerodible esters having linear ether. 4,115,544, Cl. 424-14.000.
Shell Oil Company: *See—*
Van Steveninck, Johannes; and Lincklaen Arriens, Jan, 4,114,390, Cl. 405-163.000.
Shellhause, Ronald L., to General Motors Corporation. Master cylinder assembly. 4,114,377, Cl. 60-589.000.
Sheludko, Valentin Vasilievich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.
Sheng, Ming Nan; and Kao, Jar-lin, to Atlantic Richfield Company. Selenium catalyzed decomposition of peroxide intermediates resulting from the autoxidation of acrolein and methacrolein. 4,115,440, Cl. 562-533.000.
Shepard, Leonard F.: *See—*
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Shepherd, Alexander Turnbull, to Ferranti Limited. Displacement measuring apparatus. 4,115,008, Cl. 356-172.000.
Shepherd, John P. G.: *See—*
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Sherlock, Margaret H.: *See—*
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Sherman, William: *See—*
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Shibahara, Yasuo: *See—*
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Shibano, Takashi: *See—*
Yamashita, Kazuo; Yokose, Yoshikazu; Akao, Masatake; Hirakawa, Koichi; Iho, Katsuhiko; and Shibano, Takashi, 4,115,175, Cl. 156-172.000.
Shibata, Toshihiro: *See—*
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Shichi, Shigeharu: *See—*
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Shigeta, Yasuo, to Sony Corporation. System for the editing of a magnetic tape in one VTR with a portion of a signal reproduced from a tape on another VTR. 4,115,819, Cl. 360-14.000.
Shima, Yoshiharu, to Nissei Plastics Industrial Co., Ltd. Method for producing injection molded ski. 4,115,506, Cl. 264-250.000.
Shimada, Hideyuki: *See—*
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Shimizu, Junichi; and Hashizume, Kyosuke, to Mitsui Sugar Co., Ltd. Process for producing nutritive sugar from cane juice. 4,115,147, Cl. 127-54.000.
Shimizu, Noboru: *See—*
Nakamura, Koji; Otaki, Haruo; Yamamoto, Yutaka; Shimizu, Noboru; Kawamura, Kiyoshi; and Sato, Seiichi, 4,115,398, Cl. 260-326.100.
Shimizu, Wataru; and Sawaoka, Eiji, to Tokyo Shibaura Electric Co., Ltd. Copying machine with removable photosensitive drum. 4,114,998, Cl. 355-3.0DR.

Shin-Etsu Chemical Co., Ltd.: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.
Hiiro, Takeshi; Sakurai, Hideki; and Kondo, Fumihiko, 4,115,426, Cl. 260-448.20E.
Noshiro, Atsumi; and Inoue, Yoshio, 4,115,329, Cl. 260-25.000.
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Umeda, Katsuhiko, 4,114,232, Cl. 16-35.00R.
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Shuffman, Oscar, deceased: *See—*
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Shuffman, Rose, executrix: *See—*
Ross, Sigmund Lance; Shuffman, Oscar, deceased; and Shuffman, Rose, executrix, 4,114,552, Cl. 114-227.000.
Shulman, Joseph: *See—*
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Sibley, Clarence E.; and Sablan, Francisco C. Aerial photography camera mount assembly. 4,114,839, Cl. 244-118.00R.
Sieffert, William G., to Champion International Corporation. Book carton. 4,114,757, Cl. 206-424.000.
Siegfried Aktiengesellschaft: *See—*
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,115,393, Cl. 260-295.50R.
Siegl, Walter O., to Ford Motor Company. Metal chelating ligands. 4,115,397, Cl. 260-296.00T.
Siegler, Gustav; and Jahn, Eberhard. Sleeve plug for attachment to a spindle head. 4,115,018, Cl. 408-239.00A.
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Pawlik, Dieter; and Zschauer, Karl-Heinz, 4,115,162, Cl. 148-171.000.
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Sighieri, Pierluigi; and Colleoni, Gianfranco, to UTITA S.p.A. Officine e Fonderie di Este. Device for capturing and removing textile yarns, by suction and pneumatic entraining. 4,114,790, Cl. 226-91.000.
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Silberberg, Jeffrey L., to United States of America, Health, Education and Welfare. Digital display plug-in. 4,115,733, Cl. 324-99.00D.
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Toft, Kenneth Herman, 4,115,279, Cl. 210-521.000.
Simonsen, Roger H.: *See—*
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Simpson, Glen David: *See—*
Lewyn, Lanny Louis; and Simpson, Glen David, 4,114,627, Cl. 128-419.0PT.
Sinclair, Albert Richard: *See—*
Maurer, William Casper; Sinclair, Albert Richard; and McDonald, William Jesse, Jr., 4,114,704, Cl. 175-107.000.
Sindlinger, Norman E.: *See—*
Guerrero, Benjamin G.; Leistikow, Gerard K.; and Sindlinger, Norman E., 4,114,313, Cl. 46-264.000.
Singer Company, The: *See—*
Mindell, Marvin I., 4,115,824, Cl. 360-80.000.
Sink, William H.; and Mitchener, Russel L., to Dana Corporation. Fluid actuated operator and clutch linkage. 4,114,743, Cl. 192-91.00R.
Sire, Efim Moiseevich: *See—*
Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Skagit Corporation: *See—*
Pavlecka, Vladimir H.; and McIntyre, David G., 4,114,837, Cl. 244-26.000.
Skaletz, Detlev Herbert, to Hoechst Aktiengesellschaft. Process for the electrochemical dihydrogenation of naphthyl ethers. 4,115,216, Cl. 204-73.00R.
Skalla, Dale W.: *See—*
Alsberg, Henry; Skalla, Dale W.; and Tirpak, Michael R., 4,115,478, Cl. 260-880.00R.
SKF Compagnie d'Applications Mecaniques: *See—*
Colonna, Jerome; Monville, Jean-Michel; and Munoz, Francois, 4,114,739, Cl. 192-41.00A.
Skidmore, Lawrence M., to Armour and Company. Method and machine for slicing materials. 4,114,492, Cl. 83-367.000.
Skirde, Gerhard: *See—*
Bachhofer, Bruno; Locher, Anton; Skirde, Gerhard; and Quistorff, Hansjorg, 4,115,267, Cl. 210-136.000.
Skoglund, Liv: *See—*
Halmo, Terje Martin; and Skoglund, Liv, 4,115,497, Cl. 264-115.000.
Skorianetz, Werner: *See—*
Renold, Walter; Skorianetz, Werner; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 4,114,630, Cl. 131-17.00R.
Skrovanek, Ambroz K.; and Clark, Fred E., Jr., to Harvey Hubbell Incorporated. Echo suppressor with SF transmission and regeneration. 4,115,668, Cl. 179-170.200.
Skutta, Frank Robert, to Motorola, Inc. Fast attack automatic gain control circuit. 4,115,741, Cl. 330-284.000.
Sleder, Richard L.; and Schmiedel, Robert C., to Brunswick Corporation. Triggered ignition system for internal combustion engines with anti-reverserunning control. 4,114,583, Cl. 123-148.0CC.
Slinkard, William E., to Celanese Corporation. Oxidation of butene. 4,115,442, Cl. 562-548.000.
Sloan Valve Company: *See—*
Billeter, Henry R., 4,115,026, Cl. 408-10.000.
Smashey, Russell W.; Frey, Elmer L.; Cash, George V.; and Irons, George S., to General Electric Company. Cobalt-base alloy and article. 4,115,112, Cl. 75-171.000.
Smetanjuk, Vladimir Ivanovich: *See—*
Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Nametkin, Nikolai Sergeevich; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,468, Cl. 260-683.15D.
Bocharov, Jury Nikolaevich; Antonov, Andrei Alexandrovich; Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,115,469, Cl. 260-683.15D.
Smirnov, Boris Andreevich: *See—*
Mukhamedyarov, Rashid Mustafievich; Smirnov, Boris Andreevich; Sery, Stanislav Vasilievich; Titkova, Tatyana Dmitrievna; and Lokalov, Anatoly Ivanovich, 4,115,272, Cl. 210-266.000.
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Kogan, Lev Moiseevich; Monastyrskaya, Natalya Borisovna; Davydova, Larisa Mikhailovna; Kropacheva, Elena Nikolaevna; Belgorodsky, Izrail Markovich; Belgorodskaya, Olga Izrailevna; Bolkhovets, Basia Moiseevna; Gagin, Anatoly Vasilievich; Garmonov, Izmail Vladimirovich; Kovalev, Nikolai Fedorovich; Krol, Vladimir Alexandrovich; Lukashov, Anatoly Ivanovich; Sazykin, Valentin Vasilievich; Smirnov, Vladislav Petrovich; Estrin, Arkady Samuilovich; Lvov, Jury Alexandrovich; Sire, Efim Moiseevich; Pospelova, Lidia Mikhailovna; Bataeva, Ljubov Petrovna; Kavun, Semen Moiseevich; and Lykin, Anatoly Sergeevich, 4,115,636, Cl. 526-47.600.
Smith, Daniel Wm. Work aligning vise jaw. 4,114,868, Cl. 269-136.000.
Smith, Franklin E., to Cutler-Hammer, Inc. Current commutation means for illuminated switch indicator. 4,115,673, Cl. 200-315.000.
Smith, Gardner M. Interchangeable sandal. 4,114,296, Cl. 36-101.000.
Smith, George Elwood, to Bell Telephone Laboratories, Incorporated. Semiconductor apparatus for analog to digital conversion. 4,115,766, Cl. 340-347.0AD.
Smith, Harry A., to Dow Chemical Company, The. Process for preparing aminomethyl diaryl compound resins. 4,115,365, Cl. 528-132.000.
Smith, Herman W., to Upjohn Company, The. cis-4,5-Didehydro-13,14-

didehydro-11-deoxy-17-phenyl-18,19,20-trinor-PGF$_{1\alpha}$compounds. 4,115,651, Cl. 560-55.000.

Smith International, Inc.: *See—*
Webb, Daniel R.; Steinke, John R.; Berry, Robert W.; and Funsten, Stanard R., 4,114,698, Cl. 173-1.000.

Smith, John A.: *See—*
Snavely, Cloyd A.; and Smith, John A., 4,115,106, Cl. 75-0.5AA.

Smith, Kenneth Cecil; and Garrett, Michael Ernest. Treatment of sewage. 4,115,258, Cl. 210-15.000.

Smith, Leslie Harold: *See—*
Large, Michael Stewart; and Smith, Leslie Harold, 4,115,409, Cl. 260-347.300.

Smith, Linda Hebert; and Johnson, Robert C., to Buckeye Cellulose Corporation, The. Liquid impervious cuff for a disposable surgical gown and method of attachment of the cuff thereto. 4,114,200, Cl. 2-51.000.

Smith, Roland L. Vehicle-actuated air compressor and system therefor. 4,115,034, Cl. 417-231.000.

Smith, Stanley E., to Raymond Lee Organization, Inc., The, a part interest. Match up game. 4,114,292, Cl. 35-9.00B.

Smith, Thomas W.; and Bibbee, Jeffrey N., to McNeil Corporation. Probe injection system for a tire curing process. 4,115,046, Cl. 425-29.000.

Smith & Wesson Chemical Company, Inc.: *See—*
Litman, Alan, 4,114,302, Cl. 42-1.0ST.

Smith, William E.; and Nelson, Roy G., to United Technologies Corporation. Method of making resiliently coated metallic finger seals. 4,114,248, Cl. 29-460.000.

SmithKline Corporation: *See—*
Hill, David T.; Lantos, Ivan; and Sutton, Blaine M., 4,115,642, Cl. 536-121.000.

Smolyanitsky, Boris Nikolaevich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Boginsky, Vladimir Petrovich, 4,114,700, Cl. 175-19.000.

Smura, B. Bernard, to Allied Chemical Corporation. Cell connector for bipolar electrolyzer. 4,115,236, Cl. 204-254.000.

Snap-Tite, Inc.: *See—*
Maier, Albin, 4,114,827, Cl. 242-86.510.

Snavely, Cloyd A.; and Smith, John A., to National Standard Company. Method for producing metallic oxide compounds. 4,115,106, Cl. 75-0.5AA.

Snavely, Earl S., Jr.: *See—*
Foster, William R.; and Snavely, Earl S., Jr., 4,114,693, Cl. 166-305.00R.

Snella, Henry John: *See—*
Higgins, Thomas Engel; Ross, Camilla Brems; and Snella, Henry John, 4,115,594, Cl. 426-140.000.

Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Corrado, Giovanni, 4,115,370, Cl. 260-22.0CQ.

Sno-Trik Company: *See—*
Shivak, Robert A.; and Johnston, David J., 4,114,851, Cl. 251-88.000.

Snow, Robert Eric, to JFD Electronics Corporation. Electronic solid state FM dipole antenna. 4,115,778, Cl. 343-701.000.

Snyder, J. Gerald. Method and apparatus for adjusting the resilience of a hollow ball having an internal pressure. 4,114,350, Cl. 53-79.000.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Giacoppo, Guglielmo; and Tres, Ercole, 4,115,665, Cl. 179-98.000.
Laface, Carmelo; and Vantellini, Carlo, 4,115,664, Cl. 179-84.00R.

Societe Anonyme Automobiles Citroen: *See—*
Estaque, Andre, 4,114,480, Cl. 74-865.000.

Societe Anonyme pour l'Etude et la Promotion des Entreprises: *See—*
Vincens, Rene, 4,114,341, Cl. 52-580.000.

Societe Anonyme Roure Bertrand Dupont: *See—*
Plattier, Marcel; and Teisseire, Paul Jose, 4,115,326, Cl. 252-522.000.

Societe B.V.S.: *See—*
Milan, Daniel, 4,114,705, Cl. 175-340.000.

Societe d'Assistance Technique pour Produits Nestle, S.A.: *See—*
Hauser, Ivo, 4,114,434, Cl. 73-150.00R.

Societe de Vente de l'Aluminium Pechiney: *See—*
Patrie, Jos; and Colombier, Gabriel, 4,115,212, Cl. 204-38.00E.

Societe des Plastiques de Carmaux Scasar: *See—*
Pied, Jean-Philippe, 4,115,347, Cl. 260-42.460.

Societe Europeenne de Propulsion: *See—*
Habermann, Helmut; Brunet, Maurice; and LeClere, Jacques, 4,114,960, Cl. 308-10.000.

Societe Telegraphiques et Telephoniques: *See—*
Ernyei, Herbert; and Langlois, Etienne, 4,114,454, Cl. 73-579.000.

Soder, Alfons: *See—*
Weber, Rolf-Ortwin; Soder, Alfons; and Boksay, Istvan, 4,115,569, Cl. 424-250.000.

Soderberg, John Lennart: *See—*
Rothman, Ulf Sven Erik; Kagedal, Sven Lennart; and Soderberg, John Lennart, 4,115,536, Cl. 424-1.000.

Soeno, Ko; Doi, Toshio; Iizuka, Tomio; Sakamoto, Hiroshi; Ando, Hisashi; Oyama, Tetsuo; and Misumi, Akira, to Hitachi, Ltd. Process for producing cathode for cathode ray tube of directly heating type. 4,114,243, Cl. 29-25.140.

Sohma, Yukio: *See—*
Nagano, Genzo; Nakamura, Hiroshi; and Sohma, Yukio, 4,115,851, Cl. 364-200.000.

Solation Products, Inc.: *See—*
Newton, Alwin B., 4,114,600, Cl. 126-271.000.

Sonneborn, Walter G. O.: *See—*
Drees, Jan M.; Sonneborn, Walter G. O.; and Yen, Jing G., 4,115,031, Cl. 416-134.00A.

Sony Corporation: *See—*
Aoki, Teruaki; and Abe, Motoaki, 4,114,254, Cl. 29-571.000.
Hongu, Masayuki; Niimura, Tsutomu; and Kawakami, Hiromi, 4,115,737, Cl. 325-459.000.
Kon, Tsuneyoshi; Toi, Hiroshi; Matsuura, Tamiaki; Akanuma, Kiyohiko; Takamiya, Toru; and Usui, Motosuke, 4,114,252, Cl. 29-563.000.
Miyaoka, Senri, 4,115,808, Cl. 358-127.000.
Morio, Minoru; and Kambara, Masahiro, 4,115,820, Cl. 360-33.000.
Ogisu, Kenji; and Enomoto, Masahisa, 4,115,213, Cl. 204-39.000.
Sakamoto, Hitoshi, 4,115,800, Cl. 358-8.000.
Shigeta, Yasuo, 4,115,819, Cl. 360-14.000.
Yoshida, Tadao; and Suzuki, Tadao, 4,115,740, Cl. 330-264.000.

Soran, Robert L., to Pet Foods. Apparatus for denaturing food products not intended for human consumption. 4,114,526, Cl. 99-533.000.

Sosenko, Lev Matveevich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.

Sotec Corporation: *See—*
Reitz, Norman E., 4,115,625, Cl. 428-641.000.

Souchay, Philippe: *See—*
Beauvais, Thierry; and Souchay, Philippe, 4,115,865, Cl. 364-604.000.

Southern, Raymond L.; and Bishop, Harry L., to Allegheny Ludlum Industries, Inc. Process for producing elongated metal articles. 4,114,251, Cl. 29-527.700.

Spahrbier, Dieter: *See—*
Sauer, Hans; and Spahrbier, Dieter, 4,115,626, Cl. 429-27.000.

Spainhour, Phillip A.; Hampton, Robert S., Jr.; and Morrison, Leonard A., to Ammco Tools, Inc. Caster camber gauge. 4,114,283, Cl. 33-337.000.

Spanel, Abram N.; and Shepard, Leonard F., to Spanel, Abram N. Electroacoustical telephone adapter. 4,115,659, Cl. 179-1.0HF.

Spater, Stuart S., to Nichols Engineering & Research Corporation. Method and apparatus for regenerating and manufacturing activated carbon. 4,115,317, Cl. 252-418.000.

Speaight, David Clement, to Wellworthy Limited. Pistons. 4,114,519, Cl. 92-221.000.

Speca, Anthony N., to National Petro Chemicals Corporation. Olefin polymerization catalyst. 4,115,318, Cl. 252-428.000.

Specht, Steven J.: *See—*
Woodard, Kenneth E., Jr.; and Specht, Steven J., 4,115,237, Cl. 204-258.000.

Speich, Peter: *See—*
Lorenz, Kurt; Dungs, Horst; Speich, Peter; and Kurtz, Roman, 4,115,202, Cl. 202-99.000.

Spencer, David R.; and Archer, Wesley L., to Dow Chemical Company, The. Stabilized 1,1,1-trichloroethane composition. 4,115,461, Cl. 260-652.50R.

Speno International S.A.: *See—*
Panetti, Romolo, 4,115,857, Cl. 364-474.000.

Sperinde, John M.: *See—*
Shaw, Robert F.; and Sperinde, John M., 4,114,604, Cl. 128-2.00L.

Sperry Rand Corporation: *See—*
Brown, Richard R., 4,115,863, Cl. 364-521.000.
Hofferber, Henry E.; and Parker, Robert H., 4,114,842, Cl. 244-180.000.
Osder, Stephen S.; and Mossman, David C., 4,115,847, Cl. 364-101.000.
Roeder, Robert S.; and Bomar, Lucien C., II, 4,115,776, Cl. 343-100.0ME.

Spetsialnoe Konstruktorskoe Bjuro "Transnefteavtomatika": *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.

Spilhaug, Tor William: *See—*
Brynemo, Jan Jorgen; and Spilhaug, Tor William, 4,114,940, Cl. 294-82.00R.

Spin Physics, Inc.: *See—*
Dorreboom, Jelmer, 4,114,259, Cl. 29-603.000.

Sprague Electric Company: *See—*
Schroeder, Walter W.; Sears, Noel C.; and Boni, Joseph C., 4,115,600, Cl. 427-79.000.

Sprecker, Mark A.: *See—*
Hall, John B.; Sprecker, Mark A.; Shuster, Edward J.; Schmitt, Frederick Louis; and Vinals, Joaquin F., 4,115,431, Cl. 260-465.00F.

Spring Chemicals Limited: *See—*
Stark, William H.; and Chu, Cheng-Hsien, 4,115,517, Cl. 423-243.000.

Spry, Douglas O.: *See—*
Kukolja, Stjepan; and Spry, Douglas O., 4,115,643, Cl. 544-16.000.

Spurmach Espana S. L.: *See—*
Creus, Rufino, 4,114,359, Cl. 57-124.000.

Stadhouders, Jacobus J.: *See—*
Driessen, Frans M.; Ubbels, Jacob; and Stadhouders, Jacobus J., 4,114,525, Cl. 99-465.000.

Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Stabilized red phosphorus and process for making it. 4,115,522, Cl. 423-322.000.

Stamicarbon, B.V.: *See—*
Verstegen, Johannes D. M., 4,115,208, Cl. 203-81.000.

Stamvik, Anders Robert: *See—*
Kristensson, Sten Krister; and Stamvik, Anders Robert, 4,115,414, Cl. 260-397.500.

Stanbridge, David W.: *See—*
McNamee, Gerald P.; Roszkowski, Theodore R.; Stanbridge, David W.; and White, Gerald A., 4,115,075, Cl. 48-197.00R.

Standard Oil Company, The: *See—*
Bartek, Joseph P.; Dolhyj, Serge R.; Velenyi, Louis J.; and Grasselli, Robert K., 4,115,464, Cl. 260-668.00C.
Shaw, Wilfrid G.; and Terrill, David B., 4,115,441, Cl. 562-534.000.

Standard Pressed Steel Co.: *See—*
Clark, Leonard R.; and Meehl, David W., 4,114,249, Cl. 29-513.000.

Stanford, Melvin E., to Faultfinders, Inc. Test fixture employing plural platens for advancing some or all of the probes of the test fixture. 4,115,735, Cl. 324-158.00F.

Stanley Works, The: *See—*
Cotton, Lawrence M., 4,114,664, Cl. 144-134.00D.
Hildebrandt, William J.; and Rathbun, Richard H., 4,114,268, Cl. 30-262.000.

Stanuszek, Dennis M., to Midland-Ross Corporation. Rod and piston connection for hydraulic devices. 4,114,378, Cl. 60-589.000.

Stapler, W. Mead. Turbine-type flow responsive device. 4,114,440, Cl. 73-231.00R.

Stark, William H.; and Chu, Cheng-Hsien, to Spring Chemicals Limited. Treatment of sulfur oxides with aqueous glyoxylic acid solutions. 4,115,517, Cl. 423-243.000.

Stark, William M.: *See—*
Hamill, Robert L.; Stark, William M.; and DeLong, Donald C., 4,115,552, Cl. 424-118.000.

Stauffer Chemical Company: *See—*
Arneklev, Duane R., 4,115,099, Cl. 71-93.000.
Davis, Gershon Jerry, 4,115,483, Cl. 260-980.000.
Fancher, Llewellyn W., 4,115,558, Cl. 424-205.000.
Lam, Hsiao Ling; and Teach, Eugene G., 4,115,556, Cl. 424-200.000.
Lam, Hsiao Ling; and Teach, Eugene G., 4,115,560, Cl. 424-211.000.
Lam, Hsiao-Ling; and Pallos, Ferenc M., 4,115,582, Cl. 424-298.000.
Mihailovski, Alexander, 4,115,581, Cl. 424-288.000.

Stauner, Thomas: *See—*
Evans, Graham; Fryberg, Mario; Stauner, Thomas; Tschopp, Paul; and Leppard, David G., 4,115,121, Cl. 96-56.300.

Steel Heddle Manufacturing Company: *See—*
Schneider, Bernhard Hank, 4,114,828, Cl. 242-118.300.

Steinberg, Julius M.: *See—*
Cone, Charles N.; and Steinberg, Julius M., 4,115,178, Cl. 156-291.000.

Steinke, John R.: *See—*
Webb, Daniel R.; Steinke, John R.; Berry, Robert W.; and Funsten, Stanard R., 4,114,698, Cl. 173-1.000.

Stelmack, Joseph J. Apparatus for quenching blown films. 4,115,047, Cl. 425-72.00R.

Stempel, Arthur: *See—*
Scannell, James Parnell; and Stempel, Arthur, 4,115,105, Cl. 71-113.000.

Steneras, Bo Sanfrid Emanuel: *See—*
Ericson, Hans Goran; and Steneras, Bo Sanfrid Emanuel, 4,114,720, Cl. 180-133.000.

Stenson, Stanley E. Fence staple. 4,114,859, Cl. 256-48.000.

Stephens, James W. Solar collector. 4,114,599, Cl. 126-271.000.

Sterling Drug Inc.: *See—*
John, Phillip Merrill, 4,115,563, Cl. 424-241.000.

Stevens, Gus, Jr.: *See—*
Sedlacek, Bruce; and Stevens, Gus, Jr., 4,114,629, Cl. 131-15.00R.

Stewart, William S., to Phillips Petroleum Company. Process control method and apparatus. 4,115,862, Cl. 364-500.000.

Stichting Bedrijven Van Het Nederlands Instituut Voor Zuivelonderzoek: *See—*
Driessen, Frans M.; Ubbels, Jacob; and Stadhouders, Jacobus J., 4,114,525, Cl. 99-465.000.

Sticker, Robert Earl, to FMC Corporation. Dihydropyrazolone herbicide. 4,115,096, Cl. 71-92.000.

Stieber, Volker Adolf Wilhelm, to Applied Radiation Corporation. Monitoring system for high-voltage supply. 4,115,830, Cl. 361-187.000.

Stieringer, Albert; and Borner, Gerhard, to Robert Bosch GmbH. Digital display of photographic data. 4,114,995, Cl. 352-171.000.

Stiller, Paul Franklin. Power supply for transportable devices. 4,114,973, Cl. 339-92.00M.

Stillman, Lee E.: *See—*
Schwerdtfeger, Lee; Stillman, Lee E.; and Frain, William E., 4,115,784, Cl. 343-915.000.

Stockel, Joseph F.: *See—*
Van Ommering, Gerrit; Stockel, Joseph F.; and Dunlop, James D., 4,115,630, Cl. 429-72.000.

Stolka, Milan; Pai, Damodar M.; and Yanus, John F., to Xerox Corporation. Imaging member having a polycarbonate-biphenyl diamine charge transport layer. 4,115,116, Cl. 96-1.50R.

Stoll, Andrew Joseph, III, to Owens-Illinois, Inc. Bung hole assembly. 4,114,779, Cl. 220-288.000.

Stoltze, Leon; and Graff, John M., to United Technologies Corporation. Selectively bonded composite tape. 4,115,611, Cl. 428-174.000.

Stork Brabant B.V.: *See—*
Anselrode, Lodewijk, 4,115,234, Cl. 204-180.00R.

Storms, Ronald L., to Brunswick Corporation. Method of autogenously bonding filter assemblies. 4,114,794, Cl. 228-182.000.

Stowe, Alan Andrews. Towing apparatus. 4,114,919, Cl. 280-292.000.

Strader, M. Lane. Gutter cleaning device. 4,114,938, Cl. 294-19.00R.

Stratienko, Andrew, to Dresser Industries, Inc. Valve actuator. 4,114,469, Cl. 74-424.8VA.

Stratienko, Andrew, to Dresser Industries, Inc. Gear shaft assembly. 4,114,474, Cl. 74-625.000.

Straub, Erik K. Pile protection device. 4,114,388, Cl. 405-216.000.

Straumann, Fritz, to Institut Dr. Ing. Reinhard Straumann AG. Method of manufacturing a bearing part. 4,115,156, Cl. 148-12.70N.

Streckenbach, Bruce Lindsay: *See—*
Perkins, Donald Leroy; and Streckenbach, Bruce Lindsay, 4,114,930, Cl. 285-334.500.

Strelchenko, Vladimir Sergeevich: *See—*
Vodopyanov, Jury Mikhailovich; Klimkin, Nikolai Emelyanovich; Savvateev, Ivan Ivanovich; Strelchenko, Vladimir Sergeevich; Kuris, Alexandr Pavlovich; and Koltsov, Sergei Ivanovich, 4,114,415, Cl. 72-214.000.

Stringer, Frederick David: *See—*
Dacey, Raymond B.; and Stringer, Frederick David, 4,114,756, Cl. 206-389.000.

Strnat, Karl: *See—*
Greinacher, Ekkehard; Reinhardt, Klaus; and Strnat, Karl, 4,115,159, Cl. 148-105.000.

Strubbe, Joseph, to U C B, Societe Anonyme. Process for inhibiting blood platelet aggregation. 4,115,579, Cl. 424-274.000.

Strugielski, Ronald T.; and Mulcahy, Harry William, to AMSTED Industries Incorporated. Railway truck bolster. 4,114,540, Cl. 105-226.000.

Studt, William Lyon: *See—*
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, 4,115,647, Cl. 544-63.000.

Stull Chemical Company: *See—*
Stull, Emerson B., 4,115,098, Cl. 71-93.000.

Stull, Emerson B., to Stull Chemical Company. Pest control composition and method. 4,115,098, Cl. 71-93.000.

Stumpp, Gerhard, to Robert Bosch GmbH. Fuel-air-mixtures controller for internal combustion engines. 4,114,579, Cl. 123-139.0AW.

Sturkey, William Cleere: *See—*
Turner, James Keith; and Sturkey, William Cleere, 4,114,407, Cl. 68-178.000.

Sturman, Oded E.; and Grill, Benjamin, to Burwell, Clifton J., a part interest. Fluid control system and controller and moisture sensor therefor. 4,114,647, Cl. 137-624.200.

Subramanian, Gopal; and McAfee, John Gilmore, to Research Corporation. Bone-seeking technetium-99m complex. 4,115,541, Cl. 424-1.500.

Suga, Shigeru. Three-dimensional atomizing spray tower. 4,114,813, Cl. 239-500.000.

Sugawara, Yasuyuki: *See—*
Ishida, Yukinori; Kojima, Moriaki; Kobayashi, Toshiaki; and Sugawara, Yasuyuki, 4,114,981, Cl. 350-96.330.

Sugimura, Yukio; Miyamoto, Norioki; Iwasaki, Tetsuji; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, to Kao Soap Co., Ltd. Germicidal herbicide for agriculture and horticulture. 4,115,103, Cl. 71-98.000.

Sugio, Akitoshi; Furusawa, Tomotaka; Tanaka, Katsumasa; Umemura, Toshikazu; and Urabe, Hiroyuki, to Mitsubishi Gas Chemical Company, Inc. Process for continuous production of oxymethylene polymers. 4,115,369, Cl. 526-65.000.

Sugiura, Teruo; Tsubouchi, Hiromitsu; Ishida, Nobuyasu; and Kobayashi, Kiyonori, to Aisin Seiki Kabushiki Kaisha. Device for preventing vibration of a pressure plate of a friction clutch of a vehicle. 4,114,740, Cl. 192-70.180.

Suito, Senji: *See—*
Kasahara, Takahiko; Shichi, Shigeharu; Banno, Hideo; Suito, Senji; and Kato, Masayuki, 4,114,548, Cl. 112-258.000.

Sukolics, Ronald D., to Kawneer Company, Inc. Skylight system. 4,114,330, Cl. 52-200.000.

Suminsby, John Edward. "Strapdown" induction compass transmitter with compensation for heading errors due to the vertical component of the Earth's magnetic field and due to two cycle error during turns and during climbing and diving maneuvers. 4,114,436, Cl. 73-178.00R.

Sumitomo Chemical Company, Limited: *See—*
Matsuda, Yoshinobu; Suzuki, Yukio; and Yasui, Seimei, 4,115,437, Cl. 260-513.00R.
Okubo, Masao; Miki, Masayoshi; and Ueda, Takeshi, 4,115,148, Cl. 134-21.000.

Sumitomo Durez Company, Ltd.: *See—*
Kikuga, Toyoji; and Hirai, Koji, 4,115,327, Cl. 260-17.200.

Sumitomo, Yuji: *See—*
Takano, Rikuo; Matsunaga, Mitsushi; Tsuchida, Yuhkichi; Sumitomo, Yuji; Umeda, Ikuo; and Aiba, Masahiko, 4,115,788, Cl. 346-75.000.

Sump, Kenneth R., to United States of America, Energy. Nuclear waste storage container with metal matrix. 4,115,311, Cl. 252-301.10W.

Sundman, Frey Viking, to A. Ahlstrom Osakeyhtio. Process for bleaching cellulose pulp with molecular oxygen. 4,115,186, Cl. 162-65.000.

Superfile, Ltd.: *See—*
Menahem, Salomon, 4,114,963, Cl. 312-184.000.

Sussmuth, Reiner W., to Amtel, Inc. Spade drill blade. 4,115,024, Cl. 407-114.000.

Sutton, Blaine M.: *See—*
Hill, David T.; Lantos, Ivan; and Sutton, Blaine M., 4,115,642, Cl. 536-121.000.

Sutton, Paul M.: *See—*
Bostick, Hoyt A.; Sutton, Paul M.; and Richards, Chester L., 4,114,978, Cl. 350-1.700.

Sutton, Richard C.: *See—*
Hamilton, Lewis R.; and Sutton, Richard C., 4,115,124, Cl. 96-82.000.

Suzuka, Teruo: *See—*
Ozaki, Hiromi; Yamane, Mamoru; Satomi, Yoshihito; Suzuka, Teruo; Miyake, Toshinobu; and Hirato, Mizuho, 4,115,324, Cl. 252-459.000.

Suzuki, Etsuo; and Sakurai, Hidekazu, to Nippon Electric Co., Ltd. Device including a unit for feeding a recording medium at a predetermined speed to a unit for processing that provisional record into a final one which is formed on the medium fed at another speed. 4,115,817, Cl. 358-288.000.

Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, to Tokyo Shibaura Electric Co., Ltd. Information transferring apparatus. 4,115,868, Cl. 364-900.000.

Suzuki, Tadao: *See—*
Yoshida, Tadao; and Suzuki, Tadao, 4,115,740, Cl. 330-264.000.

Suzuki, Yoshiro; Kokubu, Yoshinori; Chiba, Jiro; Hara, Morihisa; Nagahara, Shigehiro; and Yamamoto, Koichi, to Asahi Glass Company Ltd. Sealing composition. 4,115,132, Cl. 106-53.000.

Suzuki, Yukio: *See—*
Matsuda, Yoshinobu; Suzuki, Yukio; and Yasui, Seimei, 4,115,437, Cl. 260-513.00R.

Sventsitsky, Alexandr Sergeevich: *See—*
Nudelman, Boris Izrailovich; Sventsitsky, Alexandr Sergeevich; Bikbau, Marsel Yanovich; Bun, Isaak Mozesovich; and Kevvai, Arnold Arnoldovich, 4,115,138, Cl. 106-100.000.

Swagelok Company: *See—*
Medvick, Richard J., 4,114,853, Cl. 251-149.600.

Swank, Roy L., to Pioneer Filters, Inc. Blood filtering apparatus of graduated fiber density. 4,115,277, Cl. 210-436.000.

Swarts, William A.: *See—*
McKellin, Wilbur H.; and Swarts, William A., 4,115,455, Cl. 260-610.00R.

Swaters, Pieter Dirk: *See—*
Havinga, Reginoldus; and Swaters, Pieter Dirk, 4,115,224, Cl. 204-159.180.

Sweany, Glenn A., to Continental Oil Company. Oil conversion process. 4,115,246, Cl. 208-56.000.

Sweeney, James E. Sled apparatus. 4,114,912, Cl. 280-12.0KL.

Swift, Graham: *See—*
Cenci, Harry J.; and Swift, Graham, 4,115,637, Cl. 526-56.000.

Swinney, Brian: *See—*
Colclough, Terence; and Swinney, Brian, 4,115,287, Cl. 252-48.200.

Swisher, Calvin C., Sr., to Wisconsin Centrifugal, Inc. Metal coupling or other metal attachment and method for welding it to a metal tube or other metal support. 4,115,019, Cl. 403-270.000.

Swodenk, Wolfgang: *See—*
Thelen, Hermann; Halcour, Kurt; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,115,462, Cl. 260-667.000.

Sybron Corporation: *See—*
Joslyn, Larry James, 4,115,068, Cl. 422-56.000.

System AB Infotenik: *See—*
Bjermo, Gote Herbert Egard; and Tresjo, Paul Einar, 4,114,753, Cl. 198-608.000.

Systems Consultants, Inc.: *See—*
Shulman, Lawrence M.; and Weingart, Norman, 4,114,450, Cl. 73-489.000.

Szpur, Roman. Method of manufacturing medical electrodes. 4,114,263, Cl. 29-630.00R.

Tachibana, Kyozaburo: *See—*
Sugimura, Yukio; Miyamoto, Norioki; Iwasaki, Tetsuji; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,115,103, Cl. 71-98.000.

Tachikawa, Hajime; and Satoh, Kenji, to Hitachi Heating Appliances Co., Ltd. Microwave oven. 4,115,678, Cl. 219-10.55B.

Tagawa, Tomiyasu: *See—*
Masuda, Tetsuzo; Tagawa, Tomiyasu; Yoshioka, Hachiro; and Akahoshi, Takashi, 4,115,071, Cl. 422-179.000.

Taisei Kensetsu Kabushiki Kaisha: *See—*
Hane, Yoshio; Chino, Nobuo; Murata, Katsuhiro; and Harayama, Akira, 4,114,282, Cl. 33-180.00R.

Taitel, Charles M.; and Ryan, Ralph L., to JRC Products, Inc. Core locking device. 4,114,909, Cl. 279-1.00Q.

Takagi, Satoshi; Watanabe, Wataru; and Yokota, Tadashi, to Clarion Company Limited. Cartridge type magnetic tape recorders. 4,115,826, Cl. 360-96.000.

Takahashi, Jiro; Miyamoto, Akihiko; Aoki, Tooru; Kunieda, Naoshi; and Tanisawa, Kuniaki, to Konishiroku Photo Industry Co., Ltd. Color diffusion transfer process employing phosphoramides. 4,115,117, Cl. 96-29.00D.

Takahashi, Keikichi: *See—*
Matsuura, Eiichi; Takahashi, Keikichi; Tsukada, Nobuo; and Tatsumi, Yoshio, 4,114,365, Cl. 58-23.0BA.

Takahashi, Norio, to Kabushiki Kaisha Daini Seikosha. Driving pulse width controlling circuit for a transducer of an electronic timepiece. 4,114,364, Cl. 58-23.00D.

Takahashi, Reijiro; Musoh, Masanori; and Ito, Tosikazu, to Hitachi, Ltd. Evaporator. 4,114,397, Cl. 62-516.000.

Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha, Ltd. Pyridyl compound, herbicidal composition containing the same and method of use thereof. 4,115,102, Cl. 71-94.000.

Takahashi, Tetsuo: *See—*
Itoh, Tetsuro; Takahashi, Tetsuo; Kimura, Atsuyoshi; and Yamano, Seiichi, 4,115,111, Cl. 75-128.00P.

Takami, Koichi; Abe, Shingo; Takigawa, Yukio; Tsutsumi, Toshinori; and Kinsho, Yoshio, to Mitsubishi Chemical Industries, Ltd. Method of treating exhaust gas discharged from nitric acid plant. 4,115,516, Cl. 423-239.000.

Takamiya, Toru: *See—*
Kon, Tsuneyoshi; Toi, Hiroshi; Matsuura, Tamiaki; Akanuma, Kiyohiko; Takamiya, Toru; and Usui, Motosuke, 4,114,252, Cl. 29-563.000.

Takano, Rikuo; Matsunaga, Mitsushi; Tsuchida, Yuhkichi; Sumitomo, Yuji; Umeda, Ikuo; and Aiba, Masahiko, to Nippon Telegraph and Telephone Public Corporation; and Sharp Kabushiki Kaisha. Compound matrix formation in an ink jet system printer. 4,115,788, Cl. 346-75.000.

Takei, Toshihiro: *See—*
Kasagi, Takao; Kuwakado, Satoshi; and Takei, Toshihiro, 4,114,924, Cl. 280-740.000.

Takeno, Tsuneyuki: *See—*
Sugimura, Yukio; Miyamoto, Norioki; Iwasaki, Tetsuji; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,115,103, Cl. 71-98.000.

Takezawa, Junichi: *See—*
Satoh, Tomokazu; Takezawa, Junichi; Kuninaka, Akira; Honma, Miyuki; and Ui, Michio, 4,115,538, Cl. 424-1.000.

Takigawa, Yukio: *See—*
Takami, Koichi; Abe, Shingo; Takigawa, Yukio; Tsutsumi, Toshinori; and Kinsho, Yoshio, 4,115,516, Cl. 423-239.000.

Talmage, Dennis D.: *See—*
Byrne, James C.; and Talmage, Dennis D., 4,115,723, Cl. 315-84.000.

Tamabayashi, Hanzo: *See—*
Katsuragawa, Kanzi; Hattori, Tatsuo; Kihara, Keiichi; and Tamabayashi, Hanzo, 4,115,436, Cl. 260-505.00N.

Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,114,374, Cl. 60-302.000.

Tanaka, Atsuo, to Tomy Kogyo Co., Inc. Musical toy. 4,114,501, Cl. 84-330.000.

Tanaka, Katsumasa: *See—*
Sugio, Akitoshi; Furusawa, Tomotaka; Tanaka, Katsumasa; Umemura, Toshikazu; and Urabe, Hiroyuki, 4,115,369, Cl. 526-65.000.

Tanaka, Masaaki: *See—*
Nohira, Hidetaka; and Tanaka, Masaaki, 4,114,575, Cl. 123-119.00A.

Tani, Zenpei: *See—*
Nakamura, Tutomu; Shigemasa, Junichiro; and Tani, Zenpei, 4,115,832, Cl. 361-256.000.

Tanisawa, Kuniaki: *See—*
Takahashi, Jiro; Miyamoto, Akihiko; Aoki, Tooru; Kunieda, Naoshi; and Tanisawa, Kuniaki, 4,115,117, Cl. 96-29.00D.

Tankred, Hans Jurgen; and Madsen, Per Johan, to Danfoss A/S. Motor compressor. 4,115,035, Cl. 417-312.000.

Tashiro, Yasuhisa: *See—*
Aoki, Shigeru; Tashiro, Yasuhisa; Aboshi, Yuzo; Narita, Toshiro; and Shirai, Tadashi, 4,115,439, Cl. 562-402.000.

Tatsuke, Hisashi: *See—*
Kanki, Hiroshi; Yasuda, Kazuyoshi; and Tatsuke, Hisashi, 4,114,819, Cl. 242-18.00R.

Tatsumi, Yoshio: *See—*
Matsuura, Eiichi; Takahashi, Keikichi; Tsukada, Nobuo; and Tatsumi, Yoshio, 4,114,365, Cl. 58-23.0BA.

Taub, Herman P., to Mediax, Inc. Table with integral projector. 4,114,291, Cl. 35-36.000.

Tauscher, Wolfgang G. Cartridge for tape-, ribbon-, or filament-like information storage media. 4,114,832, Cl. 242-194.000.

Taylor, Frank Howard, to Plessey Handel und Investments AG. Aircraft landing systems. 4,115,777, Cl. 343-108.00R.

Taylor, John Richard: *See—*
Commander, Robert Duncan; Gardner, Peter Alan Edward; and Taylor, John Richard, 4,115,823, Cl. 360-77.000.

Taylor, Lynn J., to Owens-Illinois, Inc. Process for producing glass article having fragment retaining and alkali resistant coating. 4,115,599, Cl. 427-55.000.

Tazume, Masayuki: *See—*
Sato, Hisato; Tazume, Masayuki; Yamaki, Takasi; Fujita, Yutaka; and Arai, Yoshi, 4,115,310, Cl. 252-299.000.

TDK Electronics Co., Ltd.: *See—*
Kubota, Yuichi; and Kajimoto, Norifumi, 4,115,290, Cl. 252-62.540.

Teach, Eugene G.: *See—*
Lam, Hsiao Ling; and Teach, Eugene G., 4,115,556, Cl. 424-200.000.

Lam, Hsiao Ling; and Teach, Eugene G., 4,115,560, Cl. 424-211.000.

Tear, Brian John: *See—*
Chambers, Hubert Harold; and Tear, Brian John, 4,115,144, Cl. 106-300.000.

Tecumseh Products Company: *See—*
Gannaway, Edwin L., 4,115,044, Cl. 417-564.000.

Teijin Limited: *See—*
Inata, Hiroo; and Kawase, Shoji, 4,115,362, Cl. 528-190.000.
Mitsuishi, Yukio; Shiozaki, Shigeru; and Hasegawa, Kinji, 4,115,617, Cl. 428-336.000.

Teijin Seiki Company Limited: *See—*
Fukui, Kiyozumi, 4,114,737, Cl. 192-3.00N.

Teikoku Piston Ring Co., Ltd.: *See—*
Hane, Yoshio; Chino, Nobuo; Murata, Katsuhiro; and Harayama, Akira, 4,114,282, Cl. 33-180.00R.

Teisseire, Paul Jose: *See—*
Plattier, Marcel; and Teisseire, Paul Jose, 4,115,326, Cl. 252-522.000.

Tektronix, Inc.: *See—*
Prentice, Leon Austin, 4,115,655, Cl. 174-35.00R.

Teletype Corporation: *See—*
Nordin, Robert W., 4,114,751, Cl. 400-248.000.

Tell, Benjamin: *See—*
Kasper, Horst Manfred; Tell, Benjamin; and Wagner, Sigurd, 4,115,633, Cl. 429-191.000.

Tenna Power Corporation: *See—*
Young, Thomas A.; and Freimark, Ronald J., 4,115,729, Cl. 322-86.000.

Tenner, Arthur R.; and Turner, David W., to Exxon Research and Engineering Company. Method for reducing NO_x emission to the atmosphere. 4,115,515, Cl. 423-235.000.

Ter-Aganov, Grant Leonidovich: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.

Teramachi, Hiroshi. Double acting actuator. 4,114,517, Cl. 92-2.000.

Teramura, Hiroichi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,115,815, Cl. 358-260.000.

Terrill, David B.: *See—*
Shaw, Wilfrid G.; and Terrill, David B., 4,115,441, Cl. 562-534.000.

Terry, Ruel C., to In Situ Technology Inc. Minimizing environmental effects in production and use of coal. 4,114,688, Cl. 166-246.000.

Terrytune Developments Limited: *See—*
Dawkins, Terence Brian, 4,114,585, Cl. 123-191.00M.

Texaco Development Corp.: *See—*
Kennedy, William Alvis, 4,115,301, Cl. 521-155.000.
Schulze, Heinz; and Waddill, Harold G., 4,115,360, Cl. 528-94.000.
Schulze, Heinz; and Waddill, Harold G., 4,115,361, Cl. 260-47.0EN.
Schulze, Heinz, 4,115,446, Cl. 260-553.00R.

Texaco Exploration Canada Ltd.: *See—*
Cram, Phillip J.; and Redford, David A., 4,114,690, Cl. 166-261.000.

Texaco Inc.: *See—*
Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased, 4,115,241, Cl. 208-33.000.
Harrison, Charles W.; Pitman, Herbert J.; and Sequeira, Avilino, 4,115,243, Cl. 208-33.000.
Harrison, Charles W.; and Watts, Leonard R., 4,115,245, Cl. 208-33.000.
Payton, Joy T., 4,114,687, Cl. 166-51.000.
Payton, Joy T., 4,114,691, Cl. 166-276.000.
Pitman, Herbert J.; Harrison, Charles W.; and Sequeira, Avilino, 4,115,244, Cl. 208-33.000.
Sequeira, Avilino; Pitman, Herbert J.; Harrison, Charles W.; and Quasny, Jerry E., 4,115,242, Cl. 208-33.000.

Texas Instruments Incorporated: *See—*
Bellavance, David Walter, 4,114,257, Cl. 29-572.000.
Frederiksen, John E., 4,114,362, Cl. 58-4.00A.
Lou, Perry W., 4,115,710, Cl. 307-304.000.
McElroy, David J., 4,115,705, Cl. 307-140.000.
Renner, Karl H.; and Williams, Clark Russell, 4,114,366, Cl. 58-50.00R.
Santala, Teuvo J.; and Hirsbrunner, Hans G., 4,115,325, Cl. 252-514.000.
Weber, Richard Martin; and Bedenbender, John William, 4,114,722, Cl. 181-114.000.
Wood, James Carlos; and Felcman, Frances Adolph, 4,115,014, Cl. 400-611.000.

Textron, Inc.: *See—*
Drees, Jan M.; Sonneborn, Walter G. O.; and Yen, Jing G., 4,115,031, Cl. 416-134.00A.
Macfee, Norman W., 4,115,489, Cl. 264-23.000.

TH. Goldschmidt AG: *See—*
Greinacher, Ekkehard; Reinhardt, Klaus; and Strnat, Karl, 4,115,159, Cl. 148-105.000.

Thelen, Hermann; Halcour, Kurt; Schwerdtel, Wulf; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Gas phase aromatic hydrogenation using palladium lithium aluminum spinel catalyst. 4,115,462, Cl. 260-667.000.

Theodorakis, Michael C.: *See—*
Digenis, George A.; Shambhu, Manvendra B.; and Theodorakis, Michael C., 4,115,540, Cl. 424-1.000.

Theodoropulos, Spyros: *See—*
Eisenhardt, William Anthony, Jr.; Hedaya, Eddie; and Theodoropulos, Spyros, 4,115,539, Cl. 424-1.000.

Thermo-Lab Instruments, Inc.: *See—*
Capone, David M., 4,115,229, Cl. 204-195.00S.
Capone, David M., 4,115,235, Cl. 204-195.00S.

Theron, Didier, to Regie Nationale des Usines Renault. Pipe, in particular an exhaust pipe for motor vehicles. 4,114,715, Cl. 180-64.00A.

Thevin, Rene Roger: *See—*
Lalande, Jacques Alfred; and Thevin, Rene Roger, 4,115,743, Cl. 331-14.000.

Thibault, Louis Robert; and Dy Yau, Leopoldo, to Bell Telephone Laboratories, Incorporated. Reliable metal-to-junction contacts in large-scale-integrated devices. 4,114,256, Cl. 29-571.000.

Thiele, Carl L.; and Shapiro, Haskell, to Royal Industries, Inc. Vehicle wheel alignment system. 4,115,007, Cl. 356-155.000.

Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, to Siegfried Aktiengesellschaft. Pyridyl alkyl esters of substituted phenoxy alkanoic acids having the ability to reduce the level of fatty substances in the blood. 4,115,393, Cl. 260-295.50R.

Thien, Gerhard: *See—*
Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,114,714, Cl. 180-54.00A.

Thissen, Christopher P. Waste water treatment rotor. 4,115,268, Cl. 210-150.000.

Thoma, Georg; and Muller, Hans, to Maschienefabrik Memmingen KG. Ing. Theodor Otto. Method and apparatus for winding rapidly running thread. 4,114,821, Cl. 242-43.00R.

Thomas, Robert Nason. Vertical windmill. 4,115,027, Cl. 415-2.000.

Thompson, Gerald L.; and Paschal, Gloria C., to Eli Lilly and Company. 3'-Oxygenated derivatives of 4'-deoxy VLB "A" and "B" and related 1-formyl compounds. 4,115,388, Cl. 260-287.00B.

Thomson-CSF: *See—*
Beauvais, Thierry; and Souchay, Philippe, 4,115,865, Cl. 364-604.000.
Reymond, Jean-Claude; and Bellissant, Alain, 4,115,006, Cl. 356-152.000.

Thorell, Rook O.; and Ring, Roger R. Vehicle hitch. 4,114,921, Cl. 280-478.00B.

Thoren, Torgny A. Building component. 4,114,334, Cl. 52-303.000.

Thornton, Charles G., deceased: *See—*
daCosta, Harry H.; Foster, Victor W.; and Thornton, Charles G., deceased, 4,115,713, Cl. 310-49.00R.

Thornton, Ella J., heir: *See—*
daCosta, Harry H.; Foster, Victor W.; and Thornton, Charles G., deceased, 4,115,713, Cl. 310-49.00R.

Thorpenco (Sales & Service Ltd.): *See—*
Grey, John Constantine, 4,114,403, Cl. 64-15.00B.

Thrush, Edward John, to International Standard Electric Corporation. Gallium arsenide photocathodes. 4,115,223, Cl. 204-129.600.

Thun, Niels, to Danfoss A/S. Apparatus for ultrasonic measurement. 4,114,457, Cl. 73-632.000.

Thyssen Industrie Aktiengesellschaft: *See—*
Schwendt, Lutz, 4,114,512, Cl. 89-36.00K.

Tibolla, Marcello: *See—*
Doria, Gianfederico; Giraldi, PierNicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,115,567, Cl. 424-250.000.

Timofeev, Boris Petrovich: *See—*
Fournier, Pierre; Legleye, Andre Jules; Colle, Pierre; Michaut, Claude; Timofeev, Boris Petrovich; Alexandrov, Adolf Moritsovich; Balaian, Ruben Dzhangirovich; Patik, Leonid Ozerovich; Berezovsky, Victor Leontjevich; and Matzkin, Leonid Arkadjevich, 4,114,638, Cl. 137-242.000.

Tirpak, Michael R.: *See—*
Alsberg, Henry; Skalla, Dale W.; and Tirpak, Michael R., 4,115,478, Cl. 260-880.00R.

Titkova, Tatyana Dmitrievna: *See—*
Mukhamedyarov, Rashid Mustafievich; Smirnov, Boris Andreevich; Sery, Stanislav Vasilievich; Titkova, Tatyana Dmitrievna; and Lokalov, Anatoly Ivanovich, 4,115,272, Cl. 210-266.000.

Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Boginsky, Vladimir Petrovich. Pneumatic apparatus of the percussive type. 4,114,700, Cl. 175-19.000.

Toa Paint Co., Ltd.: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.

Tobita, Takashi: *See—*
Yoshihara, Hiroshi; Tobita, Takashi; Tomizawa, Ryoichi; and Ishikawa, Kunio, 4,115,415, Cl. 260-410.000.

Toefting, Verner: *See—*
Lange, Kai; Toefting, Verner; Wiesen, Ernest J.; and Lijewski, Robert R., 4,115,694, Cl. 250-363.00S.

Toft, Kenneth Herman, to Simon-Hartley Limited. Apparatus for separation of oil from oil and water mixtures. 4,115,279, Cl. 210-521.000.

Toi, Hiroshi: *See—*
Kon, Tsuneyoshi; Toi, Hiroshi; Matsuura, Tamiaki; Akanuma, Kiyohiko; Takamiya, Toru; and Usui, Motosuke, 4,114,252, Cl. 29-563.000.
Tokico Ltd.: *See—*
Kato, Tetuo, 4,114,735, Cl. 188-282.000.
Kato, Tetuo, 4,114,866, Cl. 267-64.00R.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kogure, Yoichi; Minoura, Toshimi; and Fujiwara, Toshio, 4,115,848, Cl. 364-107.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Higuchi, Iwao; and Fujita, Takashi, 4,115,676, Cl. 219-10.49R.
Iwasaki, Kenji; and Hijikata, Sotaro, 4,115,717, Cl. 313-59.000.
Kubo, Daijiro; and Hashimoto, Masaru, 4,115,748, Cl. 331-111.000.
Masuoka, Fujio; and Iizuka, Hisakazu, 4,115,795, Cl. 357-24.000.
Ohno, Masayoshi; Kakuta, Akio; Miyauchi, Terukatsu; and Kikuchi, Tatsuji, 4,115,081, Cl. 55-64.000.
Shimizu, Wataru; and Sawaoka, Eiji, 4,114,998, Cl. 355-3.0DR.
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,115,868, Cl. 364-900.000.
Yamaguchi, Tetsuo, 4,115,706, Cl. 307-209.000.
Yamamura, Hideo; Matsuo, Katsuharu; and Nagai, Nobuyuki, 4,115,677, Cl. 219-10.49R.
Tollkotter, Gunther: *See—*
Dieckelmann, Gerhard; Jeromin, Lutz; and Tollkotter, Gunther, 4,115,411, Cl. 260-348.260.
Tomasicchio, Giorgio: *See—*
Jukkola, Walfred Wilhelm; and Tomasicchio, Giorgio, 4,115,070, Cl. 422-142.000.
Tominaga, Yoichi; and Shibahara, Yasuo, to Sanyo Chemical Industries, Ltd. Surface sizing compositions for paper. 4,115,331, Cl. 260-17.4CL.
Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Channel processor. 4,114,495, Cl. 84-1.010.
Tomita, Tadayoshi: *See—*
Yoshida, Kenji; Isogaya, Kazuyoshi; Tomita, Tadayoshi; Kikuchi, Katsutoshi; and Kuboyama, Hisaharu, 4,115,074, Cl. 48-95.000.
Tomizawa, Ryoichi: *See—*
Yoshihara, Hiroshi; Tobita, Takashi; Tomizawa, Ryoichi; and Ishikawa, Kunio, 4,115,415, Cl. 260-410.000.
Tomotsu, Takeshi: *See—*
Ikeda, Tomoaki; Mizobuchi, Yuzo; Nahara, Akira; Washizawa, Yasuo; Ono, Yoshihiro; and Tomotsu, Takeshi, 4,115,127, Cl. 96-85.000.
Tomson, Elizabeth C.: *See—*
Newell, William K.; and Tomson, Elizabeth C., 4,114,913, Cl. 280-12.00H.
Tomy Kogyo Co., Inc.: *See—*
Tanaka, Atsuo, 4,114,501, Cl. 84-330.000.
Topolyansky, Jury Arnoldovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.
Topura Co., Ltd. (Kabushiki Kaisha Tohpura): *See—*
Akashi, Tetsuya; and Nikawa, Akio, 4,114,670, Cl. 151-41.720.
Toray Industries, Inc.: *See—*
Tsuchida, Nobuo; Kohara, Tadashi; Morishita, Syozo; Yamagata, Seiichi; and Sakai, Masaaki, 4,114,358, Cl. 57-51.000.
Torii, Osamu, to Ancos Co., Ltd. Retractable pen with internal tip seating. 4,115,015, Cl. 401-110.000.
Torimaru, Yasuo: *See—*
Fujimoto, Takeo; Torimaru, Yasuo; Ogawa, Shin-ichi; and Yasue, Shinya, 4,115,796, Cl. 357-42.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Manabe, Takao; and Matunaga, Sigetugu, 4,114,545, Cl. 112-121.150.
Toti, Andrew J. Method of assembling a panel assembly structure. 4,114,247, Cl. 29-453.000.
Toukan, Sameeh Said: *See—*
Bohen, Joseph Michael; and Toukan, Sameeh Said, 4,115,352, Cl. 260-45.75B.
Towmotor Corporation: *See—*
Brown, Vaikai K.; and Fatur, Richard N., 4,114,738, Cl. 192-4.00A.
Toyo Boseki Kabushiki Kaisha: *See—*
Otani, Sugio; Watanabe, Shoji; and Araki, Tadashi, 4,115,527, Cl. 423-447.400.
Toyo Denki Kogyosho Co., Ltd.: *See—*
Araoka, Toshinobu, 4,114,955, Cl. 302-15.000.
Toyo Engineering Corporation: *See—*
Yoshida, Kenji; Isogaya, Kazuyoshi; Tomita, Tadayoshi; Kikuchi, Katsutoshi; and Kuboyama, Hisaharu, 4,115,074, Cl. 48-95.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Ohkawa, Kozo, 4,114,550, Cl. 113-7.00R.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Fujii, Hideo; Fujiki, Tokio; Uemura, Masaru; and Sakura, Masakazu, 4,115,181, Cl. 156-497.000.
Katsuragawa, Kanzi; Hattori, Tatsuo; Kihara, Keiichi; and Tamabayashi, Hanzo, 4,115,436, Cl. 260-505.00N.
Toyoda Gosei Co., Ltd.: *See—*
Ito, Keizo, 4,114,339, Cl. 52-507.000.
Toyoda-Koki Kabushiki Kaisha: *See—*
Otsu, Ikuo; and Onishi, Akiyoshi, 4,114,461, Cl. 74-29.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Goto, Mikio; Sasano, Mitsunori; Oosawa, Koichi; and Yoshihara, Mitsuya, 4,114,576, Cl. 123-119.00A.
Nohira, Hidetaka; and Tanaka, Masaaki, 4,114,575, Cl. 123-119.00A.
Tanahashi, Toshio, 4,114,374, Cl. 60-302.000.
Yamakawa, Yoshio; Yanagihara, Hiromichi; and Miura, Nobuhiro, 4,114,569, Cl. 123-30.00D.
Yanagihara, Hiromichi; and Habu, Nobuo, 4,114,568, Cl. 123-30.00D.
Tracy, John M., to United States of America, Air Force. Probe station. 4,115,736, Cl. 324-158.00F.
Trans-Aid Corporation: *See—*
Oye, Lloyd J.; and Ogden, Barry, 4,114,965, Cl. 312-209.000.
Trans World Technology Laboratories, Inc.: *See—*
Habib, David P.; and Gager, Morgan E., 4,114,926, Cl. 282-27.500.
Travnicek, Edward A., to American Optical Corporation. Finished silicone contact lenses. 4,114,993, Cl. 351-160.000.
Tres, Ercole: *See—*
Giacoppo, Guglielmo; and Tres, Ercole, 4,115,665, Cl. 179-98.000.
Tresjo, Paul Einar: *See—*
Bjermo, Gote Herbert Egard; and Tresjo, Paul Einar, 4,114,753, Cl. 198-608.000.
Tresselt, Carl P., to Bendix Corporation, The. CW radar AM-noise video-cancellation system. 4,115,774, Cl. 343-17.700.
Trickett, Elizabeth A.: *See—*
Auborn, James J.; and Trickett, Elizabeth A., 4,115,526, Cl. 423-440.000.
Troy, M. Frank, to Vapor Corporation. Modulating failsafe valve actuator using differential gearing. 4,114,465, Cl. 74-89.170.
Trubenised (Sales) Limited: *See—*
Laws, Arthur Ernest, 4,114,278, Cl. 33-23.00K.
Trubin, Vladimir Fomich; and Redin, Alexei Alexandrovich. Mechanism for compensating the length of a weft thread for a loom. 4,114,658, Cl. 139-452.000.
Truscott, John Compton, to General Electric Company. Computed tomography scanner. 4,115,696, Cl. 250-445.00T.
TRW Inc.: *See—*
Kraus, Willibald; and Greulich, Bodo Arthur, 4,114,972, Cl. 339-65.000.
Tschopp, Paul: *See—*
Evans, Graham; Fryberg, Mario; Stauner, Thomas; Tschopp, Paul; and Leppard, David G., 4,115,121, Cl. 96-56.300.
Tsimbler, Jury Abramovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gvozdev, Vladimir Nikolaevich; Geints, Dmitry Evgenievich; Gun, Dmitry Rudolfovich; Dokin, Viktor Alexeevich; Dubner, Evgeny Mikhailovich; Kantor, Ilya Solomonovich; Lachinov, Evgeny Alexandrovich; Topolyansky, Jury Arnoldovich; Tsimbler, Jury Abramovich; and Chernikin, Alexei Vadimovich, 4,114,835, Cl. 243-32.000.
Tsubouchi, Hiromitsu: *See—*
Sugiura, Teruo; Tsubouchi, Hiromitsu; Ishida, Nobuyasu; and Kobayashi, Kiyonori, 4,114,740, Cl. 192-70.180.
Tsuchida, Nobuo; Kohara, Tadashi; Morishita, Syozo; Yamagata, Seiichi; and Sakai, Masaaki, to Toray Industries, Inc. Method and apparatus for commencing the yarn forming operation of a fasciated yarn. 4,114,358, Cl. 57-51.000.
Tsuchida, Shozo: *See—*
Okai, Sakuo; and Tsuchida, Shozo, 4,115,119, Cl. 96-35.100.
Okai, Sakuo; and Tsuchida, Shozo, 4,115,123, Cl. 96-79.000.
Tsuchida, Yuhkichi: *See—*
Takano, Rikuo; Matsunaga, Mitsushi; Tsuchida, Yuhkichi; Sumitomo, Yuji; Umeda, Ikuo; and Aiba, Masahiko, 4,115,788, Cl. 346-75.000.
Tsujii, Yasuhiro: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,115,102, Cl. 71-94.000.
Tsujino, Nobuyuki: *See—*
Adachi, Keiichi; Ikeda, Tadashi; and Tsujino, Nobuyuki, 4,115,122, Cl. 96-76.00R.
Tsukada, Nobuo: *See—*
Matsuura, Eiichi; Takahashi, Keikichi; Tsukada, Nobuo; and Tatsumi, Yoshio, 4,114,365, Cl. 58-23.0BA.
Tsukamoto, Takeo; Okamura, Miyoshi; and Kutami, Toshio, to Nihon Kagaku Sangyo Co., Ltd. Process for metal plating on aluminum and aluminum alloys. 4,115,211, Cl. 204-37.00R.
Tsunefuji, Katsuhiko, to Olympus Optical Co., Ltd. Device for preventing leakage current in light responsive circuit. 4,115,790, Cl. 354-60.00R.
Tsutsumi, Toshinori: *See—*
Takami, Koichi; Abe, Shingo; Takigawa, Yukio; Tsutsumi, Toshinori; and Kinsho, Yoshio, 4,115,516, Cl. 423-239.000.
Tunnicliffe, Leonard Alfred, to L.A. & E.W. Tunnicliffe Limited. Darts. 4,114,884, Cl. 273-106.50C.
Tupper, David Edward: *See—*
Chakrabarti, Jiban Kumar; and Tupper, David Edward, 4,115,568, Cl. 424-250.000.
Chakrabarti, Jiban Kumar; and Tupper, David Edward, 4,115,574, Cl. 424-250.000.
Turk, Chester F.: *See—*
Krapcho, John; and Turk, Chester F., 4,115,382, Cl. 260-239.00A.
Turner, David W.: *See—*
Tenner, Arthur R.; and Turner, David W., 4,115,515, Cl. 423-235.000.
Turner, James Keith; and Sturkey, William Cleere, to Gaston County Dyeing Machine Company. Soft flow jet dyeing machine. 4,114,407, Cl. 68-178.000.
Turner, Thomas D.; and Benson, Alan R. Apparatus for infusion of a measured volume of blood. 4,114,617, Cl. 128-214.00R.
U C B, Societe Anonyme: *See—*
Strubbe, Joseph, 4,115,579, Cl. 424-274.000.
Ubaldi, Luciano; and Buccella, Osvaldo, to Elettrocarbonium S.p.A. Impregnation furnaces for carbon articles. 4,114,562, Cl. 118-50.000.
Ubbels, Jacob: *See—*
Driessen, Frans M.; Ubbels, Jacob; and Stadhouders, Jacobus J., 4,114,525, Cl. 99-465.000.
Ueda, Hirotada; Uno, Takeshi; Ejiri, Masakazu; Ikeda, Sadahiro; and Matsuoka, Shinji, to Hitachi, Ltd. Method and device for recognizing a specific pattern. 4,115,761, Cl. 340-146.3AC.
Ueda, Takeshi: *See—*
Okubo, Masao; Miki, Masayoshi; and Ueda, Takeshi, 4,115,148, Cl. 134-21.000.
Uemura, Masaru: *See—*
Fujii, Hideo; Fujiki, Tokio; Uemura, Masaru; and Sakura, Masakazu, 4,115,181, Cl. 156-497.000.
Ueno, Ichiro, to Victor Company of Japan, Limited. Laser beam system for optically recording information signals on a record disc. 4,115,809, Cl. 358-128.000.
Uesaka, Ikuo: *See—*
Kato, Hideo; Koshinaka, Eiichi; Kurata, Sakae; and Uesaka, Ikuo, 4,115,392, Cl. 260-295.50R.
Ui, Michio: *See—*
Satoh, Tomokazu; Takezawa, Junichi; Kuninaka, Akira; Honma, Miyuki; and Ui, Michio, 4,115,538, Cl. 424-1.000.
Uman, Martin Allan: *See—*
Krider, Edmund Philip; Noggle, Ralph Carl; and Uman, Martin Allan, 4,115,732, Cl. 324-72.000.
Umeda, Ikuo: *See—*
Takano, Rikuo; Matsunaga, Mitsushi; Tsuchida, Yuhkichi; Sumitomo, Yuji; Umeda, Ikuo; and Aiba, Masahiko, 4,115,788, Cl. 346-75.000.
Umeda, Katsuhiko, to Shin Nihon Koku Seibi K.K. Caster with braking mechanism. 4,114,232, Cl. 16-35.00R.
Umehara, Kunio: *See—*
Kosaka, Kimito; Umehara, Kunio; and Maruyama, Takeshi, 4,115,814, Cl. 358-243.000.
Umemura, Toshikazu: *See—*
Sugio, Akitoshi; Furusawa, Tomotaka; Tanaka, Katsumasa; Umemura, Toshikazu; and Urabe, Hiroyuki, 4,115,369, Cl. 526-65.000.
Unibra: *See—*
Delmon, Bernard; and Van Houte, Ghislain, 4,115,518, Cl. 423-244.000.
Unie Van Kunstmestfabrieken, B.V.: *See—*
Biermans, Andreas J.; and Jonckers, Kees, 4,115,449, Cl. 260-555.00A.
Unimation: *See—*
Lindbom, Torsten H., 4,115,684, Cl. 219-124.220.
Union Camp Corporation: *See—*
Lawson, Nelson E., 4,115,330, Cl. 260-26.000.
Union Carbide Corporation: *See—*
Alderfer, Richard Bernhard; and Scheibner, Gerald Harry, 4,115,048, Cl. 425-72.00R.
Brown, Gary Leigh; Cummings, Weldon Clifford; and Levine, Isaac Jacob, 4,115,639, Cl. 526-130.000.
Cosby, Lowell Alan; Fiato, Rocco Anthony; and Vidal, Jose Luis, 4,115,433, Cl. 260-449.00L.
Dunks, Gary Burr; and Ordonez, Kathy Palmer, 4,115,520, Cl. 423-287.000.
Dunks, Gary Burr; and Ordonez, Kathy Palmer, 4,115,521, Cl. 423-294.000.
Eisenhardt, William Anthony, Jr.; Hedaya, Eddie; and Theodoropulos, Spyros, 4,115,539, Cl. 424-1.000.
Fuhrhop, Ronald Elmer, 4,115,154, Cl. 148-9.500.
Higgins, Thomas Engel; Ross, Camilla Brems; and Snella, Henry John, 4,115,594, Cl. 426-140.000.
Karol, Frederick John; Wu, Chisung; Reichle, Walter Thomas; and Maraschin, Norma Jean, 4,115,425, Cl. 260-438.50R.
Sandner, Michael Ray; and Prokai, Bela, 4,115,321, Cl. 252-431.00C.
Vidal, Jose Luis; Mester, Zoltan Csaba; and Walker, Wellington Epler, 4,115,428, Cl. 260-449.00L.
Warren, Peter Carter, 4,114,226, Cl. 15-236.00R.
Union Oil Company of California: *See—*
Engle, Donald D., Jr.; and Utt, Michael E., 4,114,393, Cl. 114-264.000.
Gallus, Julius P., 4,114,692, Cl. 166-293.000.
Uniroyal, Inc.: *See—*
Baboff, Leon Ian; Shichman, Daniel; and Reed, Lawrence Paul, 4,115,172, Cl. 156-115.000.
Mao, Chung-Ling, 4,115,302, Cl. 521-115.000.
O'Brien, John T.; and White, Woodrow W., 4,115,435, Cl. 260-465.400.
Unit Process Assemblies, Inc.: *See—*
Weinstock, Jacques; Lieber, Derek; and Hay, William Dunning, 4,115,690, Cl. 250-308.000.
United Aircraft Products, Inc.: *See—*
Simmons, Carl E., 4,114,395, Cl. 62-386.000.
U.S. Blind Stitch Machine Corp.: *See—*
Russell, Richard, 4,114,547, Cl. 112-178.000.
United States of America
Agriculture: *See—*
Welch, Clark M.; Danna, Gary F.; and Vigo, Tyrone L., 4,115,422, Cl. 260-429.300.
Air Force: *See—*
Bostick, Hoyt A.; Sutton, Paul M.; and Richards, Chester L., 4,114,978, Cl. 350-1.700.
Brown, Herbert R., 4,114,840, Cl. 244-152.000.
Browning, Charles E., 4,114,420, Cl. 73-15.600.
Cole, Sidney Michael; and Clouser, Paul Lee, 4,115,749, Cl. 333-31.00R.
Evers, Robert C., 4,115,367, Cl. 528-210.000.
Grant, Louis R., Jr., 4,115,459, Cl. 260-644.000.
Harrington, John J., 4,115,775, Cl. 343-18.00B.
Heitz, Roger M.; and Hill, Franklin, 4,115,616, Cl. 428-310.000.
Horton, Michael L.; and Harris, Alan M., 4,114,352, Cl. 54-79.000.
Prince, Ronald E.; and Bonnette, Rene W., 4,114,510, Cl. 89-12.000.
Schwerdtfeger, Lee; Stillman, Lee E.; and Frain, William E., 4,115,784, Cl. 343-915.000.
Tracy, John M., 4,115,736, Cl. 324-158.00F.
America: *See—*
Gale, Glen Roy; and Meischen, Sandra Jan, 4,115,418, Cl. 260-429.00R.
Army: *See—*
Adamson, James R., Jr., 4,114,855, Cl. 254-175.500.
Balcerak, Raymond S.; and Garn, Lynn E., 4,115,692, Cl. 250-338.000.
Reggia, Frank, 4,115,783, Cl. 343-792.000.
Energy: *See—*
Clarke, John F., 4,115,190, Cl. 176-3.000.
Fort, William G. S.; and Lee, William W., Jr., 4,115,073, Cl. 23-293.00R.
Kinoshita, Kimio; and Ackerman, John P., 4,115,632, Cl. 429-188.000.
Sepelak, George R., 4,115,193, Cl. 176-87.000.
Sump, Kenneth R., 4,115,311, Cl. 252-301.10W.
Winston, Roland, 4,114,592, Cl. 126-270.000.
Health, Education and Welfare: *See—*
Silberberg, Jeffrey L., 4,115,733, Cl. 324-99.00D.
Navy: *See—*
Crowley, Donald P., 4,114,369, Cl. 60-200.00A.
Hannemann, Dennis M.; Huang, Kwang Ta; and Shiroma, Dallas M., 4,115,704, Cl. 307-64.000.
Ott, Edward; and Manheimer, Wallace M., 4,115,191, Cl. 176-3.000.
Sbrocca, Dino A., 4,115,167, Cl. 149-19.500.
Shajenko, Peter, 4,115,753, Cl. 340-6.00R.
U.S. Philips Corporation: *See—*
Eggelsmann, Harry, 4,115,718, Cl. 313-60.000.
Horowitz, Alexandre; Kymmell, Georg Rudolph Wolter; Krijne, Johannes; Beusink, Bernard Joseph, deceased; and De Haan, Friedrich Jacobus, administrator, 4,114,406, Cl. 68-24.000.
Moussie, Michel, 4,115,711, Cl. 307-350.000.
Paterson, David, 4,115,036, Cl. 417-322.000.
United Technologies Corporation: *See—*
Christner, Larry G.; Nagle, Dennis C.; and Watson, Paul R., 4,115,528, Cl. 423-449.000.
Christner, Larry G.; and Nagle, Dennis C., 4,115,627, Cl. 429-44.000.
Cotton, Lou S., 4,115,755, Cl. 340-27.00R.
Cruff, Carlton E.; and Harrison, William E., 4,114,285, Cl. 34-29.000.
Smith, William E.; and Nelson, Roy G., 4,114,248, Cl. 29-460.000.
Stoltze, Leon; and Graff, John M., 4,115,611, Cl. 428-174.000.
Universal Power Corporation: *See—*
Carpentier, Theodore, 4,114,468, Cl. 74-410.000.
University of Alabama in Birmingham: *See—*
McGhee, Jerry R.; and Schaefer, Milton E., 4,114,605, Cl. 128-2.00F.
University of Arizona Foundation, The: *See—*
Krider, Edmund Philip; Noggle, Ralph Carl; and Uman, Martin Allan, 4,115,732, Cl. 324-72.000.
University of Iowa Research Foundation, The: *See—*
Norbeck, Edwin, 4,114,500, Cl. 84-385.00P.
University of Kentucky Research Foundation, The: *See—*
Digenis, George A.; Shambhu, Manvendra B.; and Theodorakis, Michael C., 4,115,540, Cl. 424-1.000.
University of Queensland, The: *See—*
Henry, Dick Peter, 4,115,593, Cl. 426-53.000.
Unland, Mark L.; and Barker, George E., to Monsanto Company. Zeolite catalyst. 4,115,424, Cl. 252-432.000.
Uno, Takeshi: *See—*
Ueda, Hirotada; Uno, Takeshi; Ejiri, Masakazu; Ikeda, Sadahiro; and Matsuoka, Shinji, 4,115,761, Cl. 340-146.3AC.
UOP Inc.: *See—*
Adams, Frank H.; and Knapik, H. Peter G., 4,115,253, Cl. 208-139.000.
Antos, George J., 4,115,252, Cl. 208-139.000.
Antos, George J., 4,115,254, Cl. 208-139.000.
Hayes, John C.; and Pollitzer, Ernest L., 4,115,255, Cl. 208-143.000.
Upjohn Company, The: *See—*
Chakirof, Dimitri A., 4,115,300, Cl. 521-171.000.
Lednicer, Daniel, 4,115,589, Cl. 424-330.000.
Miller, William L., Jr., 4,115,586, Cl. 424-317.000.

Moon, Malcolm W.; and Kornis, Gabriel, 4,115,649, Cl. 544-140.000.
Muhle, Dietrich, 4,115,066, Cl. 422-133.000.
Muhle, Dietrich, 4,115,299, Cl. 521-170.000.
Nelson, Norman A., 4,115,454, Cl. 260-590.00C.
Onder, Kemal B., 4,115,372, Cl. 528-73.000.
Sanson, Joseph F., 4,115,170, Cl. 156-79.000.
Smith, Herman W., 4,115,651, Cl. 560-55.000.
Ursprung, Joseph J., 4,115,396, Cl. 260-296.00R.

Urabe, Hiroyuki: *See—*
Sugio, Akitoshi; Furusawa, Tomotaka; Tanaka, Katsumasa; Umemura, Toshikazu; and Urabe, Hiroyuki, 4,115,369, Cl. 526-65.000.

Ursprung, Joseph J., to Upjohn Company, The. Pyridine n-oxides. 4,115,396, Cl. 260-296.00R.

Uskokovic, Milan Radoje: *See—*
Chadha, Naresh Kumar; Partridge, John Joseph, Jr.; and Uskokovic, Milan Radoje, 4,115,452, Cl. 260-586.00R.

Usui, Kazuhisa; and Muto, Osamu, to Sawafuji Denki Kabushiki Kaisha. Overrunning clutch device for engine starting unit. 4,114,746, Cl. 192-104.00R.

Usui, Motosuke: *See—*
Kon, Tsuneyoshi; Toi, Hiroshi; Matsuura, Tamiaki; Akanuma, Kiyohiko; Takamiya, Toru; and Usui, Motosuke, 4,114,252, Cl. 29-563.000.

UTITA S.p.A. Officine e Fonderie di Este: *See—*
Sighieri, Pierluigi; and Colleoni, Gianfranco, 4,114,790, Cl. 226-91.000.

UTM Power Products, Inc.: *See—*
Polidori, Mario, 4,114,977, Cl. 339-270.00R.

Utt, Michael E.: *See—*
Engle, Donald D., Jr.; and Utt, Michael E., 4,114,393, Cl. 114-264.000.

Uvarova-Nistratova, Ida Timofeevna: *See—*
Nudelman, Boris Izrailovich; Sharova, Valentina Petrovna; Ter-Aganov, Grant Leonidovich; Sosenko, Lev Matveevich; Bikbau, Marsel Yanovich; Kulabukhov, Vadim Alexandrovich; Sheludko, Valentin Vasilievich; Uvarova-Nistratova, Ida Timofeevna; Simon, Albert Pavlovich; Perlin, Boris Abramovich; Chepkalenko, Mikhail Gavrilovich; Gasanova, Alevtina Anatolievna; Galimova, Guzal Abdulkhaevna; Bodyagina, Rashida Gafievna; Kevvai, Arnold Arnoldovich; Albats, Boris Samuilovich; and Babin, Gennady Andreevich, 4,115,137, Cl. 106-100.000.

Uvetex Glarus AG.: *See—*
de Buck van Overstraeten, Jean-Pierre, 4,115,615, Cl. 428-229.000.

Vagi, Robert J. Deflector control circuit. 4,114,987, Cl. 350-285.000.

Vahlensieck, Hans-Joachim: *See—*
Kotzsch, Hans-Joachim; Draese, Rudiger; and Vahlensieck, Hans-Joachim, 4,115,427, Cl. 260-448.20E.

Vairel, Edmond: *See—*
Lormeau, Jean-Claude; Goulay, Jean; and Vairel, Edmond, 4,115,551, Cl. 424-105.000.

Val-Trac Incorporated: *See—*
Hamilton, Gerald A., 4,114,233, Cl. 16-95.00R.

Valantin, Alfred Alphonse Marie, to Charbonnages de France. Roof support. 4,114,385, Cl. 405-298.000.

Valdes, Sergio F., to International Telephone and Telegraph Corporation. Pseudo-noise radar system. 4,115,772, Cl. 343-6.50R.

Valdettaro, Alarico A., to Sarkes Tarzian, Inc. Detent UHF tuner with memory type independent fine tuning. 4,114,459, Cl. 74-10.410.

Valentine, Donald Herman, Jr., to Hoffmann-La Roche Inc. Asymmetric hydrogenation catalyzed by rhodium complexes of chiral tertiary phosphines. 4,115,417, Cl. 260-413.000.

Valyi, Emery I. Method for controlled processing of blown plastic articles. 4,115,494, Cl. 264-89.000.

Van Products, a Division of Standex International Corporation: *See—*
Heimbrock, Henry H., 4,114,971, Cl. 339-59.00R.

van der Lely, Ary, to C. van der Lely N.V. Rotary harrow with pivotable coupling assembly. 4,114,695, Cl. 172-47.000.

van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, to C. van der Lely N.V. Cultivators. 4,114,696, Cl. 172-59.000.

Vandervort, John D., to Minnesota Mining & Manufacturing Company. Hinge structure for platen covers. 4,114,236, Cl. 16-142.000.

Van Dyke, Dave: *See—*
Nelson, David H., 4,115,177, Cl. 156-245.000.

Van Dyke, Homer: *See—*
Nelson, David H., 4,115,177, Cl. 156-245.000.

van Hesden, Jan Willem, to Borg-Warner Corporation. Cutting oil additives. 4,115,285, Cl. 252-32.500.

Van Hoose, William E. Universal joint embodying oscillating drive pin. 4,114,401, Cl. 64-7.000.

Van Houte, Ghislain: *See—*
Delmon, Bernard; and Van Houte, Ghislain, 4,115,518, Cl. 423-244.000.

Van Leeuwen, Egon. Solar heater and element therefor. 4,114,598, Cl. 126-271.000.

Van Ommering, Gerrit; Stockel, Joseph F.; and Dunlop, James D., to Communications Satellite Corporation. Metal-hydrogen battery. 4,115,630, Cl. 429-72.000.

Van Orden, John J. Retractable mailbox. 4,114,801, Cl. 232-17.000.

Van Steveninck, Johannes; and Lincklaen Arriens, Jan, to Shell Oil Company. Burying a conduit in the bottom of a body of water. 4,114,390, Cl. 405-163.000.

Vantellini, Carlo: *See—*
Laface, Carmelo; and Vantellini, Carlo, 4,115,664, Cl. 179-84.00R.

Vapor Corporation: *See—*
Troy, M. Frank, 4,114,465, Cl. 74-89.170.

Varadi, Andrew G., to National Semiconductor Corporation. MOS random memory array. 4,115,871, Cl. 365-149.000.

Vargas, Jorge J. Catheter assembly. 4,114,618, Cl. 128-214.400.

Varian Associates, Inc.: *See—*
Bell, Ronald L., 4,115,149, Cl. 136-89.0PC.

Varta Batterie Aktiengesellschaft: *See—*
Lindenberg, Hans-Georg; Illmann, Joachim; and Golz, Hans-Joachim, 4,114,649, Cl. 137-625.190.
Sauer, Hans; and Spahrbier, Dieter, 4,115,626, Cl. 429-27.000.

Vassiliades, Anthony E.; Vincent, David N.; and Shroff, Shrenik, to Champion International Corporation. Grafted, polymeric microcapsular system. 4,115,474, Cl. 260-855.000.

Vaughn, James C. Muzzle loading firearm. 4,114,303, Cl. 42-51.000.

Veb Jenapharm: *See—*
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, 4,115,443, Cl. 562-402.000.

Veber, Daniel F., to Merck & Co., Inc. Somatostatin analogs. 4,115,554, Cl. 424-177.000.

Velenyi, Louis J.: *See—*
Bartek, Joseph P.; Dolhyj, Serge R.; Velenyi, Louis J.; and Grasselli, Robert K., 4,115,464, Cl. 260-668.00C.

Verbanac, Frank: *See—*
Young, Austin H.; and Verbanac, Frank, 4,115,332, Cl. 260-17.4GC.

Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Loibl, Lorenz; and Scheurecker, Werner, 4,114,679, Cl. 164-426.000.

Verlinden, Michel Francois Emile Jacques, to Hamon Sobelco S.A. Flexible tube type fluid-fluid heat exchanger. 4,114,683, Cl. 165-78.000.

Verse, Egon, to Fa. August Thiele. Locking element for connecting chain links. 4,114,367, Cl. 59-85.000.

Verstegen, Johannes D. M., to Stamicarbon, B.V. Recovery of styrene from cracked hydrocarbon fractions. 4,115,208, Cl. 203-81.000.

Vertongen, Jose J. A.: *See—*
Bechet, Henri L. J.; and Vertongen, Jose J. A., 4,114,336, Cl. 52-280.000.

Vestergaard, Jorgen H., to General Electric Company. Process for preparing aromatic carbonate polymers. 4,115,358, Cl. 528-196.000.

Vibrabrush, Inc.: *See—*
Howa, Scott P., 4,114,271, Cl. 32-2.000.

Vick, Howard Andrew; and Johnson, Donald B., to Hycel, Inc. Fail safe detector in a cardiac monitor. 4,115,864, Cl. 364-550.000.

Victor Company of Japan, Limited: *See—*
Kitazawa, Kunihiko; Mimura, Masuichiro; and Iwata, Mitsuo, 4,115,822, Cl. 360-74.000.
Ueno, Ichiro, 4,115,809, Cl. 358-128.000.

Vidal, Jose Luis; Mester, Zoltan Csaba; and Walker, Wellington Epler, to Union Carbide Corporation. Catalyst and process for producing polyhydric alcohols and derivatives. 4,115,428, Cl. 260-449.00L.

Vidal, Jose Luis: *See—*
Cosby, Lowell Alan; Fiato, Rocco Anthony; and Vidal, Jose Luis, 4,115,433, Cl. 260-449.00L.

Vidra, James David; and Nachtigal, Julius Harvey, to Colgate Palmolive Company. Oral compositions containing dextranase. 4,115,546, Cl. 424-50.000.

Vigo, Tyrone L.: *See—*
Welch, Clark M.; Danna, Gary F.; and Vigo, Tyrone L., 4,115,422, Cl. 260-429.300.

Vinals, Joaquin F.: *See—*
Hall, John B.; Sprecker, Mark A.; Shuster, Edward J.; Schmitt, Frederick Louis; and Vinals, Joaquin F., 4,115,431, Cl. 260-465.00F.

Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, to International Flavors & Fragrances Inc. 2-Alkyl-4-phenyl-dihydropyrans and processes for augmenting the organoleptic properties of foodstuffs and tobacco using one or more of said pyrans. 4,115,406, Cl. 260-345.100.

Vincens, Rene, to Societe Anonyme pour l'Etude et la Promotion des Entreprises; and Vincens, Rene, part interest to each. Composite structure constituted standardized elements. 4,114,341, Cl. 52-580.000.

Vincent, David N.: *See—*
Vassiliades, Anthony E.; Vincent, David N.; and Shroff, Shrenik, 4,115,474, Cl. 260-855.000.

Viner, Brynley Emberley. Automatic screwdriver. 4,114,663, Cl. 144-32.00R.

Vinson, Carl G., Jr.: *See—*
Lemanski, Michael F.; Leitert, Frederick C.; and Vinson, Carl G., Jr., 4,115,323, Cl. 252-455.00R.

Vladimirov, Evgeny Evgenievich; Korchagin, Vladimir Gerasimovich; Sadomov, Jury Borisovich; and Khokhlov, Lev Mikhailovich. Special-purpose digital computer for computing statistical characteristics of random processes. 4,115,867, Cl. 364-900.000.

Vock, Manfred Hugo: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,115,406, Cl. 260-345.100.

Vodopyanov, Jury Mikhailovich; Klimkin, Nikolai Emelyanovich; Savvateev, Ivan Ivanovich; Strelchenko, Vladimir Sergeevich; Kuris, Alexandr Pavlovich; and Koltsov, Sergei Ivanovich. Profile plano-type knurling machine. 4,114,415, Cl. 72-214.000.

Voegeli, Douglas W., to Minnesota Mining & Manufacturing Company. Process for producing a porous matrix. 4,115,500, Cl. 264-122.000.

Vogelgesang, Herbert: *See—*
Bier, Albert; and Vogelgesang, Herbert, 4,114,416, Cl. 72-238.000.

Voges, Fred Paul, to Consolidated Packaging, Inc. Container having braced partitions. 4,114,796, Cl. 229-27.000.

Vogt, Berthold Richard: *See—*
Wade, Peter C.; and Vogt, Berthold Richard, 4,115,555, Cl. 424-180.000.

Voinov, Nikolai Vasilievich: *See—*
Padalko, Oleg Vadimovich; Levit, Maxim Lvovich; and Voinov, Nikolai Vasilievich, 4,115,623, Cl. 428-566.000.

Volvo BM AB: *See—*
Bruun, Lars Ojvind, 4,114,666, Cl. 144-309.0AC.
Ericson, Hans Goran; and Steneras, Bo Sanfrid Emanuel, 4,114,720, Cl. 180-133.000.

VonHeck, Robert. Super-conforming seating system. 4,114,214, Cl. 5-367.000.

von Holdt, John W. Pivot mold assembly. 4,114,849, Cl. 249-58.000.

von Valtier, Eric. Method and apparatus for securing vibrato and tremolo effects. 4,114,499, Cl. 84-1.250.

Vornfett, Karl-Ulrich, to Friederich Justus & Co. Apparatus for feeding and checking separated longitudinal subjects. 4,114,488, Cl. 83-198.000.

Vul, Bentsion Moiseevich: *See—*
Gorina, Yulia Ivanovna; Kaljuzhnaya, Galina Alexandrovna; Kuznetsov, Andrei Vasilievich; Maximovsky, Sergei Nikolaevich; Nikiforov, Mikhail Borisovich; Vul, Bentsion Moiseevich; Ivannikova, Galina Evgenievna; Denis, Vintsentas Ionovich; Yarmalis, Mikolas Mikolo; and Repshis, Vitautas Ionovich, 4,115,163, Cl. 148-175.000.

Vynacron Dental Co.: *See—*
Daidone, Philip, 4,115,479, Cl. 260-884.000.

W. R. Bonsal Company: *See—*
Goeman, Friedrich, 4,115,135, Cl. 106-99.000.

W. R. Grace & Co.: *See—*
Dacey, Raymond B.; and Stringer, Frederick David, 4,114,756, Cl. 206-389.000.
Kleiner, Wayne E., 4,114,761, Cl. 206-591.000.

W. Schlafhorst & Co.: *See—*
Romic, Ivica, 4,114,931, Cl. 289-2.000.

Wada, Mitsuyoshi; Shimada, Hideyuki; and Ohta, Koji, to Kabushiki Kaisha Komatsu Seisakusho. Paving material agitation apparatus for use in water channel forming machine. 4,115,023, Cl. 404-98.000.

Waddill, Harold G.: *See—*
Schulze, Heinz; and Waddill, Harold G., 4,115,360, Cl. 528-94.000.
Schulze, Heinz; and Waddill, Harold G., 4,115,361, Cl. 260-47.0EN.

Wade, Peter C.; and Vogt, Berthold Richard, to E. R. Squibb & Sons, Inc. 2-Substituted-1H-benz[de]-isoquinoline-1,3(2H)-diones. 4,115,555, Cl. 424-180.000.

Wadsworth, Milton E.; Miller, Jan D.; Herbst, John A.; Kolbe, John L.; and Hayden, Howard Wayne. Acid ferric sulfate leaching of copper sulfide concentrates. 4,115,221, Cl. 204-108.000.

Wagner, Kuno: *See—*
Schneider, Gottfried; Wagner, Kuno; and Patzelt, Heinz Wolfgang, 4,115,298, Cl. 260-2.300.

Wagner, Sigurd: *See—*
Kasper, Horst Manfred; Tell, Benjamin; and Wagner, Sigurd, 4,115,633, Cl. 429-191.000.

Wagner, Wolfgang. Automatic injecting apparatus. 4,114,619, Cl. 128-215.000.

Wahl, Josef: *See—*
Rabus, Friedrich; Wahl, Josef; and Grather, Gunter, 4,114,582, Cl. 123-148.00E.

Wakahara, Yasushi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,115,815, Cl. 358-260.000.

Walker, Marvin E., to PPG Industries, Inc. Binder applicator for glass fibers. 4,115,088, Cl. 65-11.00W.

Walker, Peter J., to Midland-Ross Corporation. Apparatus for web caliper control. 4,114,528, Cl. 100-47.000.

Walker, Philip A., to Krautkramer-Branson, Incorporated. Ultrasonic velocity measuring method and apparatus. 4,114,455, Cl. 73-597.000.

Walker, Wellington Epler: *See—*
Vidal, Jose Luis; Mester, Zoltan Csaba; and Walker, Wellington Epler, 4,115,428, Cl. 260-449.00L.

Wallace, Rebecca; Ashton, Fraser E.; Perry, Malcolm B.; and Diena, Benito B., to Canadian Patents & Development Limited. Identification of *Neisseria gonorrhoeae*. 4,115,543, Cl. 424-8.000.

Walsh, Thomas Joseph, to Leeds & Northrup Company. Temperature measurement with three lead resistance thermometers. 4,114,446, Cl. 73-362.0AR.

Walsh, Thomas Joseph: *See—*
Hoopes, Howard Sherman; McClenahan, Robert William; Walsh, Thomas Joseph; and Zecca, James William, 4,115,785, Cl. 346-34.000.

Walworth, Bryant Leonidas: *See—*
Lang, Stanley Albert, Jr.; and Walworth, Bryant Leonidas, 4,115,097, Cl. 71-92.000.

Wambach, Allen Dale: *See—*
Phipps, Donald Lee, Jr.; and Wambach, Allen Dale, 4,115,333, Cl. 260-22.00R.

Wang, Richard H. S.; and Zannucci, Joseph S., to Eastman Kodak Company. Multichromophoric ultraviolet stabilizers and their use in organic compositions. 4,115,348, Cl. 260-45.8NZ.

Ward, Charles E.: *See—*
Maurer, William C.; McDonald, William J., Jr.; and Ward, Charles E., 4,114,702, Cl. 175-107.000.

Ward, John Ambrose: *See—*
Hansen, Niels Junior; Ward, John Ambrose; Hintze, William; and Johnson, David Charles, 4,115,750, Cl. 337-107.000.

Ward, William J., III, to General Electric Company. Separation of hydrogen sulfide from gas mixture including carbon dioxide. 4,115,514, Cl. 423-232.000.

Warner-Lambert Company: *See—*
Wise, Lawrence D.; and Morrison, Glenn C., 4,115,565, Cl. 424-246.000.

Warren, Peter Carter, to Union Carbide Corporation. Wear resistant alpha alumina article useful to clean magnetic tape and the process of producing said. 4,114,226, Cl. 15-236.00R.

Washizawa, Yasuo: *See—*
Ikeda, Tomoaki; Mizobuchi, Yuzo; Nahara, Akira; Washizawa, Yasuo; Ono, Yoshihiro; and Tomotsu, Takeshi, 4,115,127, Cl. 96-85.000.

Watanabe, Makoto: *See—*
Hoshi, Juro; and Watanabe, Makoto, 4,114,830, Cl. 242-191.000.

Watanabe, Shoji: *See—*
Otani, Sugio; Watanabe, Shoji; and Araki, Tadashi, 4,115,527, Cl. 423-447.400.

Watanabe, Wataru: *See—*
Takagi, Satoshi; Watanabe, Wataru; and Yokota, Tadashi, 4,115,826, Cl. 360-96.000.

Watanabe, Yasuaki: *See—*
Ogasawala, Nobuhiko; Odazima, Mituo; and Watanabe, Yasuaki, 4,115,716, Cl. 310-153.000.

Watson, Paul R.: *See—*
Christner, Larry G.; Nagle, Dennis C.; and Watson, Paul R., 4,115,528, Cl. 423-449.000.

Watts, Herbert L., to Olin Corporation. Process for making peroxycarboxylic acid. 4,115,410, Cl. 260-348.250.

Watts, Leonard R.: *See—*
Harrison, Charles W.; and Watts, Leonard R., 4,115,245, Cl. 208-33.000.

Wean United, Inc.: *See—*
Huddleston, Paul W., 4,114,413, Cl. 72-5.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Lutz, Alfons, 4,114,945, Cl. 296-137.00E.

Webb, Daniel R.; Steinke, John R.; Berry, Robert W.; and Funsten, Stanard R., to Smith International, Inc. Method and apparatus for tunneling upwardly. 4,114,698, Cl. 173-1.000.

Weber, Richard Martin; and Bedenbender, John William, to Texas Instruments Incorporated. Broadband seismic energy source. 4,114,722, Cl. 181-114.000.

Weber, Rolf-Ortwin; Soder, Alfons; and Boksay, Istvan, to Hoechst Aktiengesellschaft. Cyclic diamine derivatives. 4,115,569, Cl. 424-250.000.

Weber, Rudolf; Pochandke, Winfried; and Schwadtke, Karl, to Henkel Kommanditgesellschaft auf Aktien. Sachets particularly for use in clothes driers. 4,114,284, Cl. 34-12.000.

Webster Spring Co. Inc.: *See—*
Levine, Alexander M.; and Ramsey, Henry R., 4,114,210, Cl. 5-260.000.
Levine, Alexander M.; Ramsey, Henry R.; and Martin, Robert T., 4,114,211, Cl. 5-261.000.
Pakradooni, Hamlin Andrus, 4,114,867, Cl. 267-97.000.

Weddendorf, Elmer R., to B/W Metals Company, Inc. Rotating cafeteria type food service counter with improved drive system. 4,114,541, Cl. 108-20.000.

Weed Eater, Inc.: *See—*
Ballas, George Charles, Sr., 4,114,269, Cl. 30-276.000.

Weekly, Jon L. Drawer. 4,114,967, Cl. 312-328.000.

Wegmann, Jerome B., to McNeil Corporation. Flow sensor. 4,114,560, Cl. 116-117.00R.

Weidler, Charles Harry, to AMP Incorporated. Displation type electrical connector. 4,114,975, Cl. 339-176.00M.

Weigelt, Christian: *See—*
Schmidt, Joachim; Weigelt, Christian; Bamberg, Wolfgang; and Schneider, Wolfgang, 4,115,443, Cl. 562-402.000.

Weiler, Ernest A. H., to Xerox Corporation. Method of manufacture of a xerographic microfield donor. 4,114,261, Cl. 29-624.000.

Weingart, Norman: *See—*
Shulman, Lawrence M.; and Weingart, Norman, 4,114,450, Cl. 73-489.000.

Weinshenker, Ned M.; and Anderson, Niels H., to Alza Corporation. Pharmaceutical composition containing prostadienoic acid for regulating gastric secretion. 4,115,545, Cl. 424-45.000.

Weinstock, Jacques; Lieber, Derek; and Hay, William Dunning, to Unit Process Assemblies, Inc. Backscatter instrument for measuring thickness of a continuously moving coated strip of substrate material. 4,115,690, Cl. 250-308.000.

Weisenberger, Gottfried, to Effbe-Werk Fritz Brumme & Co. K.G. Support apparatus being adjustable as to height and insulating vibrations for machines and the like. 4,114,845, Cl. 248-24.000.

Weiss, Virgil W.: *See—*
Deex, Oliver D.; and Weiss, Virgil W., 4,115,357, Cl. 528-294.000.

Welch, Clark M.; Danna, Gary F.; and Vigo, Tyrone L., to United States of America, Agriculture. Antibacterial textile finishes utilizing zirconyl acetate complexes of inorganic peroxides. 4,115,422, Cl. 260-429.300.

Welch, Gray Gurney, to Royal Cake Company. Filler capper machine. 4,114,524, Cl. 99-450.400.

Wellworthy Limited: *See—*
Speaight, David Clement, 4,114,519, Cl. 92-221.000.
Welwyn Hall Research Association: *See—*
Davidson, Richard Robertson, 4,115,187, Cl. 162-168.00R.
Wempe, Richard J.; and Polley, Richard B., to ACF Industries, Incorporated. Eduction pipe with guide sleeve and seal to draw liquid from the bottom and allow telescoping when tank top moves down under impact. 4,114,783, Cl. 222-398.000.
Wengenrod, Gunter: *See—*
Grandin, Friedrich-Hans; Fritsch, Werner; and Wengenrod, Gunter, 4,115,685, Cl. 219-155.000.
Wenger, Alfred, to Institut Dr. Ing. Reinhard Straumann AG. Device for measuring the density of liquid and gaseous substances and method for operating the device. 4,114,423, Cl. 73-30.000.
Wenrich, Richard A.: *See—*
Jarvis, Clarence W.; and Wenrich, Richard A., 4,114,321, Cl. 51-205.00R.
Wentworth, Robert S., Jr., to Borg-Warner Corporation. Bellows-type mechanical seal. 4,114,904, Cl. 277-88.000.
Wernli, Max, to Georg Fischer Aktiengesellschaft. Molding machine for producing casting molds. 4,114,677, Cl. 164-168.000.
Weseloh, William E.: *See—*
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,114,475, Cl. 74-687.000.
Westerkamp, Douglas F.: *See—*
Jenis, Donald S.; Kuczkowski, Thomas A.; Mazer, Jack S.; and Westerkamp, Douglas F., 4,114,684, Cl. 165-82.000.
Western Geophysical Co. of America: *See—*
Hall, Ernest M., Jr., 4,114,970, Cl. 339-49.00R.
Paitson, John Lloyd; and Parker, Marion Lonnie, 4,114,723, Cl. 181-120.000.
Westinghouse Electric Corp.: *See—*
Bechet, Henri L. J.; and Vertongen, Jose J. A., 4,114,336, Cl. 52-280.000.
Doby, William P., 4,115,835, Cl. 361-370.000.
Kulkarni, Avinash D.; and Cleary, James G., 4,115,513, Cl. 423-56.000.
Luo, Fang-Chen, 4,115,799, Cl. 357-71.000.
Wetterlin, Kjell Ingvar Leopold, to Aktiebolaget Draco. Aerosol inhalation device. 4,114,615, Cl. 128-173.00R.
Wetzig, Werner: *See—*
Hums, Dieter; Hergeth, Friedrich; and Wetzig, Werner, 4,115,140, Cl. 106-120.000.
Wheel Service Co., Inc.: *See—*
Nelson, Eldrid W., 4,114,947, Cl. 297-344.000.
Wheeler Manufacturing Corporation: *See—*
Coblitz, Sanford E.; and Bjalme, Bengt G., 4,114,485, Cl. 82-4.00C.
White, Gerald A.: *See—*
McNamee, Gerald P.; Roazkowski, Theodore R.; Stanbridge, David W.; and White, Gerald A., 4,115,075, Cl. 48-197.00R.
White, Kenneth W., to Atlas Tool & Manufacturing Co. Adjustable handle bar assembly for rotary tiller. 4,114,471, Cl. 74-551.600.
White, Woodrow W.: *See—*
O'Brien, John T.; and White, Woodrow W., 4,115,435, Cl. 260-465.400.
Whitney, George Crosier, III, to Du Pont de Nemours, E. I., and Company. Magenta triphenylmethane antihalation dyes for photographic elements. 4,115,126, Cl. 96-84.00R.
Widner College: *See—*
Scott, Howard L., 4,115,549, Cl. 424-71.000.
Wiedemann, Achim, to Sandoz Ltd. Polyglycol ether derivatives. 4,115,457, Cl. 260-615.00B.
Wiese, Harold. Garment hanger. 4,114,786, Cl. 223-94.000.
Wiese, Winfred John, to Borg-Warner Corporation. Balanced mechanical seal with flow control. 4,114,900, Cl. 277-27.000.
Wiesen, Ernest J.: *See—*
Lange, Kai; Toefting, Verner; Wiesen, Ernest J.; and Lijewski, Robert R., 4,115,694, Cl. 250-363.00S.
Wilbarg, Robert R.: *See—*
Dyer, Donald R.; Johnson, Claude, Jr.; and Wilbarg, Robert R., 4,115,120, Cl. 96-36.200.
Wild, Albrecht: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,115,456, Cl. 260-613.00R.
Wildmoser, Martin Michael, to Arenco Machine Company. Sealing means. 4,115,182, Cl. 156-515.000.
Wilhelm Will KG: *See—*
Kramer, Klaus; Dietrich, Toni; and Braun, Peter, 4,115,802, Cl. 358-93.000.
Wilhelmsson, Wilhelm H. Device for drilling hole of predetermined depth. 4,115,017, Cl. 408-14.000.
Wilkins, John Thomas, to R. G. Dixon & Company Limited. Floor treating machines. 4,114,711, Cl. 180-6.500.
Wilkinson, Harold A. Intracranial pressure monitoring catheter. 4,114,603, Cl. 128-2.00R.
Wilkinson, Robert C.: *See—*
Dikeman, Forrest L.; and Wilkinson, Robert C., 4,114,449, Cl. 73-379.000.
Will Ross Inc.: *See—*
Forman, Hugh M., 4,114,640, Cl. 137-381.000.
Willem, Michel, to Ceraver S.A. Method for fixing a metallic armature on a non-metallic part. 4,114,676, Cl. 164-108.000.
Willenbacher, Erich: *See—*
Kirch, Otto; and Willenbacher, Erich, 4,114,546, Cl. 112-153.000.
Willett, Peter Ernest: *See—*
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William H. Rorer, Inc.: *See—*
Diamond, Julius; and Douglas, George H., 4,115,564, Cl. 424-244.000.
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, 4,115,647, Cl. 544-63.000.
William R. Selwood Limited: *See—*
Selwood, Peter Richard, deceased; Selwood, Timothy John, executor; Axtell, Martin John Shelley, executor; and Burton, John David, 4,115,041, Cl. 417-440.000.
Williams, Anthony Michael: *See—*
Hounsfield, Godfrey Newbold; and Williams, Anthony Michael, 4,115,697, Cl. 250-445.00T.
Williams, Arthur C. Light fixture support. 4,114,327, Cl. 52-28.000.
Williams, Clark Russell: *See—*
Renner, Karl H.; and Williams, Clark Russell, 4,114,366, Cl. 58-50.00R.
Williams, David E.; and Hoyt, Edwin D., to Amark Industries, Inc. Cartridge heater with improved thermocouple. 4,115,686, Cl. 219-523.000.
Williams, Ralph P.: *See—*
Baldwin, Bernard A.; Williams, Ralph P.; and Rohde, Raymond, 4,115,286, Cl. 252-46.300.
Williams, Richard W. Two way telephone amplifier. 4,115,658, Cl. 179-1.0HF.
Wilputte Corporation: *See—*
Naevestad, Roy, 4,115,203, Cl. 202-248.000.
Wilson, John Corner: *See—*
Pasieka, Arnold Roy; Wilson, John Corner; and Moruzi, George Alexander, 4,114,954, Cl. 302-14.000.
Windmoller & Holscher: *See—*
Achelpohl, Fritz; and Brinkmeier, Friedhelm, 4,114,520, Cl. 93-33.00H.
Achelpohl, Fritz; and Mundus, Friedhelm, 4,115,183, Cl. 156-515.000.
Winey, Donald A.: *See—*
Emmons, William D.; Kim, Samuel S.; and Winey, Donald A., 4,115,169, Cl. 156-71.000.
Winstead, Thomas W., to Extracorporeal Medical Specialties, Inc. Wave patterned support for dialyzer membrane. 4,115,273, Cl. 210-321.00A.
Winston, Roland, to United States of America, Energy. Cylindrical radiant energy direction device with refractive medium. 4,114,592, Cl. 126-270.000.
Wisconsin Centrifugal, Inc.: *See—*
Swisher, Calvin C., Sr., 4,115,019, Cl. 403-270.000.
Wise, Lawrence D.; and Morrison, Glenn C., to Warner-Lambert Company. 6,7-Dimethoxy-2-(4-thiomorpholinyl)-4-quinazolinamine and related sulfoxide and sulfone. 4,115,565, Cl. 424-246.000.
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, to Miles Laboratories, Inc. Bicycloalkyl derivatives of prostaglandins 11-deoxy-PGE_2 acids and esters. 4,115,438, Cl. 562-498.000.
Woessner, Warren Dexter; Sih, Charles John; Kluender, Harold Clinton; Arndt, Henry Clifford; and Biddlecom, William Gerard, to Miles Laboratories, Inc. Bicycloalkyl derivatives of prostaglandins PGE_1 alcohols. 4,115,453, Cl. 260-586.00G.
Wohlert, Andrew M.; and Haruch, James, to Riverbank Laboratories, Inc. Illuminated fishing lure. 4,114,305, Cl. 43-17.600.
Wolf, David Harvey: *See—*
Faup, John Joseph; and Wolf, David Harvey, 4,114,731, Cl. 187-29.00R.
Wolf, Franz: *See—*
Braun, Hans; Cieslok, Gunter; and Wolf, Franz, 4,114,490, Cl. 83-303.000.
Wolf, Karlheinz: *See—*
Perrey, Hermann; Wolf, Karlheinz; Eimers, Erich; Nonn, Konrad; and Hornle, Reinhold, 4,115,379, Cl. 260-163.000.
Wolf, Otto, to Licentia Patent-Verwaltungs-GmbH. Pneumatic rotary hammer device. 4,114,699, Cl. 173-109.000.
Woltersdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,115,402, Cl. 260-332.20A.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,115,573, Cl. 424-250.000.
Won, Vann Y. Leveling device for forming X-ray specimen. 4,115,689, Cl. 250-272.000.
Wong, John Lui, to Research Corporation. Bridgehead nitrogen analogs of poly-chlorinated cyclic hydrocarbon insecticides. 4,115,391, Cl. 260-290.0HL.
Wood, James Carlos; and Felcman, Frances Adolph, to Texas Instruments Incorporated. Impact printer driveshaft gear and bearing assembly. 4,115,014, Cl. 400-611.000.
Woodard, Kenneth E., Jr.; and Specht, Steven J., to Olin Corporation. Electrolytic cell having membrane enclosed anodes. 4,115,237, Cl. 204-258.000.
Wooding Corporation: *See—*
Wooding, Patrick J.; and Anderson, Clifton P., 4,115,654, Cl. 13-33.000.
Wooding, Patrick J.; and Anderson, Clifton P., to Wooding Corporation. Introduction of starting molten flux from the top of a crucible. 4,115,654, Cl. 13-33.000.
Woods, Claude A., to Woods Enterprises, Inc. Exhaust gas recirculation means. 4,114,370, Cl. 60-279.000.

Woods Enterprises, Inc.: *See—*
Woods, Claude A., 4,114,370, Cl. 60-279.000.
Wordsmith, Inc.: *See—*
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Wortman, Harold. Quilt construction and method of making same. 4,115,610, Cl. 428-102.000.
Wozniak, Robert S.: *See—*
Orndorff, James A., Jr.; Wozniak, Robert S.; and Andrepont, John S., 4,114,556, Cl. 114-230.000.
Wright, George C.; and Goldenberg, Marvin M., to Morton-Norwich Products, Inc. 6-Nitro-or amino-4-chromanone oxime. 4,115,405, Cl. 260-345.200.
Wright, George C.; and Goldenberg, Marvin M., to Morton-Norwich Products, Inc. N-Benzyl-4-chromanamines. 4,115,407, Cl. 260-345.200.
Wright, Lewis W.: *See—*
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Wright, Roger W.: *See—*
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Wu, Chisung: *See—*
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Wu, Yao Hua; and Lobeck, Walter G., Jr., to Mead Johnson & Company. 10-(Bis-pyrrolinyl) phenoxazines. 4,115,571, Cl. 424-248.560.
Wuest, Heinz: *See—*
Pavlovsky, Rudolf; and Wuest, Heinz, 4,114,281, Cl. 33-180.00R.
Wunderlich, Klaus: *See—*
Bien, Hans-Samuel; Klauke, Erich; and Wunderlich, Klaus, 4,115,378, Cl. 260-146.00T.
Wurst, Bert, to Robert Bosch GmbH. Pulse-supplied ignition system for internal combustion engines. 4,114,581, Cl. 123-148.00E.
Wyman, James C. Rotary motor. 4,115,045, Cl. 418-97.000.
Wyss, Pierre-Charles: *See—*
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Xerox Corporation: *See—*
Deshpande, Narayan V., 4,114,535, Cl. 101-141.000.
Fischbeck, Kenneth H., 4,115,789, Cl. 346-140.00R.
Frey, Thomas M.; and Pond, Stephen F., 4,115,786, Cl. 346-74.100.
Hartke, David, 4,115,765, Cl. 340-324.0AD.
Hedstrom, Jerry W., 4,115,013, Cl. 400-249.000.
Marsh, Dana G., 4,115,115, Cl. 96-1.50R.
Monkelbaan, Edwin R., 4,114,431, Cl. 72-122.000.
Stolka, Milan; Pai, Damodar M.; and Yanus, John F., 4,115,116, Cl. 96-1.50R.
Weiler, Ernest A. H., 4,114,261, Cl. 29-624.000.
Yagusic, George J.; and Boronosky, Richard A., to General Time Corporation. Packaging of a semiconductor. 4,115,838, Cl. 361-388.000.
Yamada, Hideo: *See—*
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Yamagata, Seiichi: *See—*
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Yamaguchi, Hiroaki; and Fujinami, Hiroshi, to Nippon Soken, Inc. Diagnostic system employing a magnetic field responsive apparatus. 4,115,764, Cl. 340-530.000.
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, to Mitsubishi Chemical Industries, Ltd. Preparation of solid titanium trichloride. 4,115,532, Cl. 423-492.000.
Yamaguchi, Kazuo; Kakogawa, Genjiro; Hasuo, Masayoshi; Goko, Nobuaki; and Maruyama, Yasuo, to Mitsubishi Chemical Industries, Ltd. Preparation of solid titanium trichloride. 4,115,533, Cl. 423-492.000.
Yamaguchi, Masanobu: *See—*
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Yamaguchi, Tetsuo, to Tokyo Shibaura Electric Co., Ltd. Integrated circuit having one-input terminal with selectively varying input levels. 4,115,706, Cl. 307-209.000.
Yamakawa, Yoshio; Yanagihara, Hiromichi; and Miura, Nobuhiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with an auxiliary combustion chamber. 4,114,569, Cl. 123-30.00D.
Yamaki, Takasi: *See—*
Sato, Hisato; Tazume, Masayuki; Yamaki, Takasi; Fujita, Yutaka; and Arai, Yoshi, 4,115,310, Cl. 252-299.000.
Yamamoto, Hiroshi; and Fukuoka, Shigetada, to Nippon Kogaku K.K. Reproduction apparatus for a game. 4,114,890, Cl. 273-237.000.
Yamamoto, Koichi: *See—*
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Yamamoto, Stephen Kazuo: *See—*
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Yamamoto, Yukio, to Yoshida Kogyo K.K. Exterior window unit. 4,114,331, Cl. 52-202.000.
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Yamamura, Hideo; Matsuo, Katsuharu; and Nagai, Nobuyuki, to Tokyo Shibaura Electric Co., Ltd. Induction heating apparatus. 4,115,677, Cl. 219-10.49R.
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Yamashita, Kazuo; Yokose, Yoshikazu; Akao, Masatake; Hirakawa, Koichi; Iho, Katsuhiko; and Shibano, Takashi, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing synthetic resin packed product assembly. 4,115,175, Cl. 156-172.000.
Yamasu Shoyu Kabushiki Kaisha: *See—*
Satoh, Tomokazu; Takezawa, Junichi; Kuninaka, Akira; Honma, Miyuki; and Ui, Michio, 4,115,538, Cl. 424-1.000.
Yamazaki, Yasuhiro: *See—*
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Yanagihara, Hiromichi; and Habu, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with an auxiliary chamber. 4,114,568, Cl. 123-30.00D.
Yanagihara, Hiromichi: *See—*
Yamakawa, Yoshio; Yanagihara, Hiromichi; and Miura, Nobuhiro, 4,114,569, Cl. 123-30.00D.
Yano, Naomichi, to Kubota Ltd. Method of producing cement panels reinforced with fibers. 4,115,501, Cl. 264-133.000.
Yanus, John F.: *See—*
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Yarmalis, Mikolas Mikolo: *See—*
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Yassa, Narges: *See—*
Shafiee, Ali; Lalezari, Iraj; and Yassa, Narges, 4,114,314, Cl. 47-85.000.
Yasuda, Kazuyoshi: *See—*
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Yata, Sizukuni: *See—*
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Ydstie, Birger Leif, to Elkem-Spigerverket A/S. Matte smelting. 4,115,108, Cl. 75-11.000.
Yen, Jing G.: *See—*
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Yokomichi, Isao: *See—*
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Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Variable load line power amplifier. 4,115,742, Cl. 330-297.000.
Yoshida, Kenji; Isogaya, Kazuyoshi; Tomita, Tadayoshi; Kikuchi, Katsutoshi; and Kuboyama, Hisaharu, to Mitsui Toatsu Chemicals, Inc.; and Toyo Engineering Corporation. Gasification process. 4,115,074, Cl. 48-95.000.
Yoshida Kogyo K.K.: *See—*
Hasegawa, Mutsuo; Segawa, Sunichi; Koise, Yuji; Okada, Hisao; Gomyo, Shiro; and Kudo, Yoshiaki, 4,115,607, Cl. 427-387.000.
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Yoshida Kogyo Kabushiki Kaisha: *See—*
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Yoshida, Tadao; and Suzuki, Tadao, to Sony Corporation. Push-pull pulse amplifier having improved turn-on and turn-off times. 4,115,740, Cl. 330-264.000.
Yoshihara, Hiroshi; Tobita, Takashi; Tomizawa, Ryoichi; and Ishikawa, Kunio, to Nisso Petrochemical Industries Co., Ltd. Process for the production of alkylene glycol ether ester of organic carboxylic acid. 4,115,415, Cl. 260-410.000.

Yoshihara, Mitsuya: *See—*
Goto, Mikio; Sasano, Mitsunori; Oosawa, Koichi; and Yoshihara, Mitsuya, 4,114,576, Cl. 123-119.00A.
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Young, Austin H.; and Verbanac, Frank, to A. E. Staley Manufacturing Company. Water-absorbent starch copolymerizates. 4,115,332, Cl. 260-17.4GC.
Young, Chung I.: *See—*
Robins, Janis; Kropp, James E.; and Young, Chung I., 4,115,295, Cl. 528-90.000.
Young, Thomas A.; and Freimark, Ronald J., to Tenna Power Corporation. Multiphase to single phase and frequency converter system. 4,115,729, Cl. 322-86.000.
Yusa, Koue: *See—*
Miura, Yoshio; Kobayashi, Kazuhiro; and Yusa, Koue, 4,114,432, Cl. 72-135.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See—*
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Zavagli, Steven B.; and Kasik, Robert L., to Beatrice Foods Co. Bland neutralized casein. 4,115,376, Cl. 260-120.000.
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Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Benzene-1,3,5-tris-acetoxime and the process for making phloroglucinol therewith. 4,115,451, Cl. 260-566.00A.
Zenith Radio Corporation: *See—*
de Weger, Dirk, 4,115,663, Cl. 179-15.0BT.
Zepp, Lawrence C.; and Mosteller, Marston D., to Bindicator Company. Optical sight tube for flowing fluid materials. 4,115,009, Cl. 356-201.000.
Zidek, Charles E. Mooring device and cleat. 4,114,553, Cl. 114-230.000.
Zildjian, Armand A., to Avedis Zildjian Company. Cymbal. 4,114,502, Cl. 84-402.000.
Zillessen, Christoph: *See—*
Radner, Gerd; and Zillessen, Christoph, 4,114,386, Cl. 405-150.000.
Zimmerman, Dennis M., to Eli Lilly and Company. 1-Azoniabicyclo[3.1.0]hexanes. 4,115,400, Cl. 260-326.50B.
Zimmerman, Terrence K.: *See—*
Capowski, Robert S.; Wright, Lewis W.; and Zimmerman, Terrence K., 4,115,854, Cl. 364-200.000.
Zinser Textilmaschinen GmbH: *See—*
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Zintgraff, Gary D.: *See—*
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Zirner, Joachim: *See—*
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Zobel, Siegfried: *See—*
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Zoltan, Steven I., to Gould Inc. Laminated driver coil for recorder pen drive mechanism. 4,115,734, Cl. 324-151.00A.
Zschauer, Karl-Heinz: *See—*
Pawlik, Dieter; and Zschauer, Karl-Heinz, 4,115,162, Cl. 148-171.000.
Zuech, Ernest A.: *See—*
Murtha, Timothy P.; and Zuech, Ernest A., 4,115,204, Cl. 203-60.000.
Zufich, Anthony C. Front load carrying apparatus for backpacks. 4,114,788, Cl. 224-25.00A.
Zumback Electronic AG: *See—*
Nopper, Peter, 4,115,702, Cl. 250-560.000.
Zur, Walter J., to Raymond Lee Organization, Inc., The, a part interest. Earring for pierced ear. 4,114,399, Cl. 63-12.000.
Zwack, Robert R.; and Jerabek, Robert D., to PPG Industries, Inc. Cataphoretic electrodeposition baths containing water-soluble lead salts. 4,115,226, Cl. 204-181.00C.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF SEPTEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Andeen, Gerry B.: *See—*
Crane, Hewitt D.; Taenzer, Jon C.; and Andeen, Gerry B., Re. 29,765, Cl. 73-432.00R.
Bauer, William, Jr.: *See—*
Niederhauser, Warren D.; Bauer, William, Jr.; Lane, Constance A.; and Belmares-Sarabia, Hector, Re. 29,772, Cl. 260-859.00R.
Baxter Travenol Laboratories, Inc.: *See—*
Kiesow, Lutz A., Re. 29,769, Cl. 23-230.00B.
Belmares-Sarabia, Hector: *See—*
Niederhauser, Warren D.; Bauer, William, Jr.; Lane, Constance A.; and Belmares-Sarabia, Hector, Re. 29,772, Cl. 260-859.00R.
Canon Kabushiki Kaisha: *See—*
Kohtani, Yutaka, Re. 29,776, Cl. 354-23.00D.
Crane, Hewitt D.; Taenzer, Jon C.; and Andeen, Gerry B., to SRI International. Strain gauge transducer system. Re. 29,765, Cl. 73-432.00R.
Cull, Neville L.; and Smith, Warren M., to Exxon Research & Engineering Co. Flue gas desulfurization sorbent. Re. 29,771, Cl. 252-455.00R.
D'Andrea, Corrado: *See—*
Selander, Stig Daniel; Marechal, Bernard; and D'Andrea, Corrado, Re. 29,770, Cl. 162-13.000.
Enercon Corporation, The: *See—*
Helmer, Robert, Re. 29,775, Cl. 318-302.000.
Exxon Research & Engineering Co.: *See—*
Cull, Neville L.; and Smith, Warren M., Re. 29,771, Cl. 252-455.00R.
Frito-Lay, Inc.: *See—*
Wisdom, Lawrence W.; and Hilton, Barney W., Re. 29,773, Cl. 426-49.000.
Futch, Max Gerald. Apparatus and method for use in assembling food on trays. Re. 29,767, Cl. 186-1.00D.
Gourmandy, Raymond: *See—*
Vidal, Roger; and Gourmandy, Raymond, Re. 29,774, Cl. 428-400.000.
Helmer, Robert, to Enercon Corporation, The. Controlled rotor motor. Re. 29,775, Cl. 318-302.000.
Hilton, Barney W.: *See—*
Wisdom, Lawrence W.; and Hilton, Barney W., Re. 29,773, Cl. 426-49.000.
Isorel S.A.: *See—*
Selander, Stig Daniel; Marechal, Bernard; and D'Andrea, Corrado, Re. 29,770, Cl. 162-13.000.
Kiesow, Lutz A., to Baxter Travenol Laboratories, Inc. Method and apparatus for deriving oxygen association rate curves for blood samples. Re. 29,769, Cl. 23-230.00B.
Kohtani, Yutaka, to Canon Kabushiki Kaisha. Exposure control device. Re. 29,776, Cl. 354-23.00D.
Lane, Constance A.: *See—*
Niederhauser, Warren D.; Bauer, William, Jr.; Lane, Constance A.; and Belmares-Sarabia, Hector, Re. 29,772, Cl. 260-859.00R.
Marechal, Bernard: *See—*
Selander, Stig Daniel; Marechal, Bernard; and D'Andrea, Corrado, Re. 29,770, Cl. 162-13.000.
Mehnert, Johannes S. Blow-molding apparatus. Re. 29,768, Cl. 425-535.000.
Niederhauser, Warren D.; Bauer, William, Jr.; Lane, Constance A.; and Belmares-Sarabia, Hector, to Rohm and Haas Company. Urethane elastomer with active hydrogen containing monoethylenically unsaturated monomer. Re. 29,772, Cl. 260-859.00R.
Poly-Wide, Inc.: *See—*
Wideman, Ronald H., Re. 29,766, Cl. 128-132.00D.
Rhone-Poulenc-Textile: *See—*
Vidal, Roger; and Gourmandy, Raymond, Re. 29,774, Cl. 428-400.000.
Rohm and Haas Company: *See—*
Niederhauser, Warren D.; Bauer, William, Jr.; Lane, Constance A.; and Belmares-Sarabia, Hector, Re. 29,772, Cl. 260-859.00R.
Selander, Stig Daniel; Marechal, Bernard; and D'Andrea, Corrado, to Isorel S.A.; and Selander, Stig Daniel. Manufacture of fiberboard according to the wet method with closed backwater system. Re. 29,770, Cl. 162-13.000.
Smith, Warren M.: *See—*
Cull, Neville L.; and Smith, Warren M., Re. 29,771, Cl. 252-455.00R.
SRI International: *See—*
Crane, Hewitt D.; Taenzer, Jon C.; and Andeen, Gerry B., Re. 29,765, Cl. 73-432.00R.
Taenzer, Jon C.: *See—*
Crane, Hewitt D.; Taenzer, Jon C.; and Andeen, Gerry B., Re. 29,765, Cl. 73-432.00R.
Vidal, Roger; and Gourmandy, Raymond, to Rhone-Poulenc-Textile. Elongated textile product. Re. 29,774, Cl. 428-400.000.
Wideman, Ronald H., to Poly-Wide, Inc. Method of and means for treating burn victims. Re. 29,766, Cl. 128-132.00D.
Wisdom, Lawrence W.; and Hilton, Barney W., to Frito-Lay, Inc. Process for producing potato chips. Re. 29,773, Cl. 426-49.000.

LIST OF PLANT PATENTEES

Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara": *See—*
Holtkamp, Reinhold, 4,302, Cl. 69.000.
Holtkamp, Reinhold, 4,303, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,302, 9-19-78, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,303, 9-19-78, Cl. 69.000.
Williams, Ernest D. Miniature rose plant. 4,305, 9-19-78, Cl. 7.000.
Zaiger, Chris Floyd. Almond tree. 4,304, 9-19-78, Cl. 30.000.

LIST OF DESIGN PATENTEES

AAI Corporation: *See—*
Barr, Irwin R., 249,555, Cl. D25-21.000.
Barr, Irwin R., 249,556, Cl. D25-21.000.
Barr, Irwin R., 249,557, Cl. D25-21.000.
Barr, Irwin R., 249,560, Cl. D25-56.000.
Barr, Irwin R., 249,561, Cl. D25-56.000.
Barr, Irwin R., 249,562, Cl. D25-56.000.
AB Lyckeaborgs Bruk: *See—*
Blomqvist, Erik Mikael, 249,558, Cl. D25-35.000.
Blomqvist, Erik Mikael, 249,559, Cl. D25-35.000.
Abbott Laboratories: *See—*
Bujan, Albert Frank, 249,451, Cl. D8-18.000.
Ackerman, Anton; and Jones, William J., to Dynamic Designs, Inc. Knife holder. 249,443, 9-19-78, Cl. D7-74.000.
Adams, Patrick J., to Artex Hobby Products, Inc. Modular carrier for tubes of paint or similar articles. 249,589, 9-19-78, Cl. D87-1.00R.
Adkinson, Joseph E. Lounge chair. 249,414, 9-19-78, Cl. D6-69.000.
Adkinson, Joseph E. Dining room breakfront. 249,431, 9-19-78, Cl. D6-172.000.
Aldridge, Albert Horace; and Pizzey, Michael, to Thomas Ness Limited. Water filter. 249,542, 9-19-78, Cl. D23-4.000.
Altec Corporation: *See—*
Henricksen, Clifford A., 249,509, Cl. D14-37.000.

Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 249,404, 9-19-78, Cl. D6-30.000.
Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 249,405, 9-19-78, Cl. D6-30.000.
Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 249,406, 9-19-78, Cl. D6-31.000.
Ambasz, Emilio, to Center for Design Research and Development N.V. Tablet arm chair. 249,407, 9-19-78, Cl. D6-44.000.
Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 249,415, 9-19-78, Cl. D6-72.000.
Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 249,416, 9-19-78, Cl. D6-72.000.
Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 249,417, 9-19-78, Cl. D6-78.000.
American Optical Corporation: *See—*
Napoli, Joseph D., 249,548, Cl. D24-17.000.
Amerock Corporation: *See—*
Tegner, Raymond U. H., 249,418, Cl. D6-86.000.
Tegner, Raymond U. H., 249,419, Cl. D6-103.000.
Anchor Hocking Corporation: *See—*
Benes, Frank J.; and Thrush, James Lloyd, 249,439, Cl. D7-17.000.
Benes, Frank J.; and Thrush, James Lloyd, 249,445, Cl. D7-79.000.
Appleton, Thomas C.: *See—*
Cognata, Larry M.; and Appleton, Thomas C., 249,518, Cl. D15-12.000.
Application Des Gaz: *See—*
Vache, Marcel, 249,448, Cl. D7-110.000.
Arai, Kazuo, to Nissan Denshi Kabushiki Gaisha. Combined automobile radio transceiver and cartridge player. 249,506, 9-19-78, Cl. D14-7.000.
Ark Seal Corporation: *See—*
Sperber, Henry, 249,525, Cl. D15-122.000.
Artex Hobby Products, Inc.: *See—*
Adams, Patrick J., 249,589, Cl. D87-1.00R.
Arvey Corporation: *See—*
Gordon, William Donald, Sr., 249,578, Cl. D34-15.0LL.
Aspen Laboratories, Inc.: *See—*
Pike, Harold L., 249,549, Cl. D24-30.000.
Asprinio, Carmino T., to Tesoro Manufacturing Co., Inc. Font of type. 249,587, 9-19-78, Cl. D64-12.00B.
Atkinson, Robert J. Carrying case for a musical instrument. 249,584, 9-19-78, Cl. D56-1.00B.
Ball Corporation: *See—*
Campbell, William B., 249,485, Cl. D11-125.000.
Grunstad, Jerome A., 249,487, Cl. D11-139.000.
Bardane Manufacturing Company: *See—*
Horvick, Peter, 249,489, Cl. D11-162.000.
Barr, Irwin R., to AAI Corporation. Building structure. 249,555, 9-19-78, Cl. D25-21.000.
Barr, Irwin R., to AAI Corporation. Building structure. 249,556, 9-19-78, Cl. D25-21.000.
Barr, Irwin R., to AAI Corporation. Building structure. 249,557, 9-19-78, Cl. D25-21.000.
Barr, Irwin R., to AAI Corporation. Roof structure. 249,560, 9-19-78, Cl. D25-56.000.
Barr, Irwin R., to AAI Corporation. Roof structure. 249,561, 9-19-78, Cl. D25-56.000.
Barr, Irwin R., to AAI Corporation. Roof structure. 249,562, 9-19-78, Cl. D25-56.000.
Beatrice Foods Co.: *See—*
Lordahl, Var E., 249,477, Cl. D10-64.000.
Beattie, Lawrence: *See—*
Worthing, Robert; and Beattie, Lawrence, 249,583, Cl. D56-1.00A.
Bell, Richard A.: *See—*
Wallace, Earl C.; and Bell, Richard A., 249,495, Cl. D12-99.000.
Benes, Frank J.; and Thrush, James Lloyd, to Anchor Hocking Corporation. Bowl or similar article. 249,439, 9-19-78, Cl. D7-17.000.
Benes, Frank J.; and Thrush, James Lloyd, to Anchor Hocking Corporation. Storage jar or similar article. 249,445, 9-19-78, Cl. D7-79.000.
Benigni, Paul E.: *See—*
Schneider, Richard C.; Benigni, Paul E.; and Weaver, Allan E., 249,512, Cl. D14-42.000.
Bergman, Andrew I., to Quaker Oats Company, The. Toy drum. 249,577, 9-19-78, Cl. D34-15.00C.
Berkman, Joseph L. Carrying case for tape cartridges and cassettes. 249,590, 9-19-78, Cl. D87-1.00D.
Bernhardt, Daniel. Pie portion container. 249,491, 9-19-78, Cl. D9-219.000.
Bleed, Theodore Magnus, to Coats & Clark, Inc. Hanger bracket. 249,460, 9-19-78, Cl. D8-373.000.
Blomqvist, Erik Mikael, to AB Lyckeaborgs Bruk. Combined elastic frame and mold block for fireproof feed-through of electric cables or the like. 249,558, 9-19-78, Cl. D25-35.000.
Blomqvist, Erik Mikael, to AB Lyckeaborgs Bruk. Combined elastic frame and mold block for fireproof feed-through of electric cables or the like. 249,559, 9-19-78, Cl. D25-35.000.
Bonnett, Wayne A.: *See—*
Schwartz, Allen; and Bonnett, Wayne A., 249,462, Cl. D9-1.000.
Bonney, Fred J. Coal and wood stove. 249,544, 9-19-78, Cl. D23-97.000.
Brefka, Paul E.: *See—*
Turner, Robert Bruce; and Brefka, Paul E., 249,475, Cl. D10-57.000.
Brett, Colin, to Hoffmann-La Roche Inc. Hair microanalyzer. 249,530, 9-19-78, Cl. D16-48.000.
Brown, Coley T. Combined cooking and serving bowl. 249,447, 9-19-78, Cl. D7-97.000.
Brown, James D., to Lane Company, Inc., The. Buffet and china deck. 249,424, 9-19-78, Cl. D6-154.000.
Brynel Incorporated: *See—*
Glasberg, Myron, 249,401, Cl. D4-31.000.
Bujan, Albert Frank, to Abbott Laboratories. Opening tool for tear-open-type containers. 249,451, 9-19-78, Cl. D8-18.000.
Bullard, Edmund P., Sr.; and Togni, Gary A. Wood burning stove. 249,545, 9-19-78, Cl. D23-97.000.
Bullard, Edmund P., Sr.; and Togni, Gary A. Wood burning stove. 249,546, 9-19-78, Cl. D23-97.000.
Burke, William F.: *See—*
Shumway, DeWayne J.; and Burke, William F., 249,484, Cl. D10-112.000.
Burlington Industries, Inc.: *See—*
Carroll, Barry G., 249,468, Cl. D9-191.000.
Campbell, William B., to Ball Corporation. Christmas ornament. 249,485, 9-19-78, Cl. D11-125.000.
Cantor, Burton M. Non-lethal personal defense weapon. 249,535, 9-19-78, Cl. D22-1.000.
Carlsen, Roger Leonard, to Jacob Froehlich Cabinet Works Inc. Modular newsstand. 249,433, 9-19-78, Cl. D6-184.000.
Carroll, Barry G., to Burlington Industries, Inc. Pantyhose package. 249,468, 9-19-78, Cl. D9-191.000.
Cartex Corporation: *See—*
Pearson, Maxwell, 249,400, Cl. D2-361.000.
Carver, Robert Glynn. Fishing lure body. 249,536, 9-19-78, Cl. D22-27.000.
Castel, Lawrence: *See—*
Swinehart, Frank E.; and Castel, Lawrence, 249,461, Cl. D8-373.000.
Cattano, Peter A., Sr. Filter baffle plate. 249,541, 9-19-78, Cl. D23-4.000.
Center for Design Research and Development N.V.: *See—*
Ambasz, Emilio, 249,404, Cl. D6-30.000.
Ambasz, Emilio, 249,405, Cl. D6-30.000.
Ambasz, Emilio, 249,406, Cl. D6-31.000.
Ambasz, Emilio, 249,407, Cl. D6-44.000.
Ambasz, Emilio, 249,415, Cl. D6-72.000.
Ambasz, Emilio, 249,416, Cl. D6-72.000.
Ambasz, Emilio, 249,417, Cl. D6-78.000.
Chapman, Leon. Set of vehicle running boards. 249,501, 9-19-78, Cl. D12-203.000.
Chervenak, Robert A., to Comerco, Inc. Cabinet or similar article. 249,430, 9-19-78, Cl. D6-167.000.
Clairol Incorporated: *See—*
Levin, Monte L., 249,565, Cl. D28-58.000.
Coats & Clark, Inc.: *See—*
Bleed, Theodore Magnus, 249,460, Cl. D8-373.000.
Swinehart, Frank E.; and Castel, Lawrence, 249,461, Cl. D8-373.000.
Cognata, Larry M.; and Appleton, Thomas C., to Murray Ohio Manufacturing Co., The. Roto-tiller. 249,518, 9-19-78, Cl. D15-12.000.
Colman, Benjamin W.: *See—*
Rineman, Richard Lynn, 249,493, Cl. D12-64.000.
Comensoli, Leo John; and Smythe, Gloria Dawn, to Speedo Knitting Mills Pty, Limited. Fabric. 249,595, 9-19-78, Cl. D92-1.0EE.
Comerco, Inc.: *See—*
Chervenak, Robert A., 249,430, Cl. D6-167.000.
Conforti, Frederick J.; Robertson, Roy C. A.; and Hanig, Harvey, to Pittway Corporation. Housing for fire and smoke detector. 249,481, 9-19-78, Cl. D10-106.000.
Conforti, Frederick J.; Robertson, Roy C. A.; and Hanig, Harvey, to Pittway Corporation. Housing for fire and smoke detector. 249,482, 9-19-78, Cl. D10-106.000.
Conforti, Frederick J.; Robertson, Roy C. A.; and Hanig, Harvey, to Pittway Corporation. Housing for fire and smoke detector. 249,483, 9-19-78, Cl. D10-106.000.
Coughlin, Ronald D.; and Pohlmann, Kenneth E., Jr. Audio speaker housing for protective helmets. 249,508, 9-19-78, Cl. D14-37.000.
Covey, Laird F., to Stanley Works, The. Handle for hand saw. 249,453, 9-19-78, Cl. D8-97.000.
Cox, Ronald A. Combined mudguard and light support for trucks. 249,500, 9-19-78, Cl. D12-185.000.
Cudahy, Murphy Dennis, III; and Mossey, Joseph Lloyd. Foldable portfolio with an adjustable easel. 249,532, 9-19-78, Cl. D19-35.000.
Cudahy, Murphy Dennis, III; and Mossey, Joseph Lloyd. Foldable portfolio with an adjustable easel. 249,533, 9-19-78, Cl. D19-35.000.
David, Vivian; and Emmerling, Ronald, to Drawbridge, Inc. Housing for T.V. game. 249,571, 9-19-78, Cl. D34-5.00L.
Del Grosso, Elaine V. Butterfly bow decoration for packages. 249,486, 9-19-78, Cl. D11-137.000.
Denney, Don W. Globe. 249,534, 9-19-78, Cl. D19-61.000.
Di Bonaventura, Alfred R., to Linemaster Switch Corporation, The. Foot operated control unit. 249,505, 9-19-78, Cl. D13-36.000.
Digital Equipment Corporation: *See—*
Schneider, Richard C.; Benigni, Paul E.; and Weaver, Allan E., 249,512, Cl. D14-42.000.
Dixson, Inc.: *See—*
Shumway, DeWayne J.; and Burke, William F., 249,484, Cl. D10-112.000.
Dorney Park Coaster Company, Inc.: *See—*
Ott, Robert F., 249,554, Cl. D25-9.000.
Doyel, John S. Battery operated press for cookies or the like. 249,440, 9-19-78, Cl. D7-43.000.
Dranger, Jan; and Huldt, Johan, to Innovator Design AB. Seat. 249,410, 9-19-78, Cl. D6-57.000.

Drawbridge, Inc.: *See—*
David, Vivian; and Emmerling, Ronald, 249,571, Cl. D34-5.00L.
Dunbar, George W., to Kusan, Inc. Combined toy loader and figure therefor. 249,576, 9-19-78, Cl. D34-15.0AN.
Dynamic Designs, Inc.: *See—*
Ackerman, Anton; and Jones, William J., 249,443, Cl. D7-74.000.
Eastman Kodak Company: *See—*
Olson, Richard Joseph, 249,511, Cl. D14-40.000.
Ebata, Takemi; and Miki, Kunishige, to Matsushita Electric Industrial Co. Tape recorder. 249,507, 9-19-78, Cl. D14-8.000.
Elfes, Lee E.; and Lorenz, Leo J., to Massey-Ferguson Inc. Tractor cab. 249,522, 9-19-78, Cl. D15-30.000.
Emmerling, Ronald: *See—*
David, Vivian; and Emmerling, Ronald, 249,571, Cl. D34-5.00L.
Excelsior Hardware Company: *See—*
Testa, Carmen, 249,456, Cl. D8-338.000.
Fazio, Dominick S.: *See—*
Wu, Paul S.; and Fazio, Dominick S., 249,510, Cl. D14-40.000.
Ferch, Rudolf, to Kastle Gesellschaft m.b.H. Ski. 249,575, 9-19-78, Cl. D34-14.00D.
Forsberg, Earl G. Ice bucket. 249,444, 9-19-78, Cl. D7-78.000.
Foster, Farrell T. Combined hoop roller and hoop. 249,572, 9-19-78, Cl. D34-5.0HP.
Framac Industries Pty. Limited: *See—*
Frank, James, 249,413, Cl. D6-67.000.
Frank, James, to Framac Industries Pty. Limited. Chair. 249,413, 9-19-78, Cl. D6-67.000.
Fratelli Saporiti: *See—*
Offredi, Giovanni, 249,409, Cl. D6-56.000.
Fukumoto, Noboru; and Inoue, Shyusuke, to Matsushita Electric Industrial Co., Ltd. Juicer. 249,441, 9-19-78, Cl. D7-49.000.
GAF Corporation: *See—*
Miller, Paul D.; and Svezia, John, 249,528, Cl. D16-23.000.
Gendron, Simon, to Payge Manufacturing (1973) Limited. Combined bottle cap tightener and remover. 249,452, 9-19-78, Cl. D8-40.000.
General Engineering & Manufacturing Corporation: *See—*
Wallace, Earl C.; and Bell, Richard A., 249,495, Cl. D12-99.000.
General Foods Corporation: *See—*
Pettengill, Floyd E., 249,463, Cl. D9-58.000.
Gilligan, Patrick J., to Pako Corporation. Photographic printer. 249,529, 9-19-78, Cl. D16-34.000.
Giovagnoli, Paul S. Water still. 249,540, 9-19-78, Cl. D23-3.000.
Glasberg, Myron, to Brynel Incorporated. Hairbrush. 249,401, 9-19-78, Cl. D4-31.000.
Glaser, Ilma R. Handbag or similar article. 249,593, 9-19-78, Cl. D87-3.00D.
Gordon, William Donald, Sr., to Arvey Corporation. Toy barn. 249,578, 9-19-78, Cl. D34-15.0LL.
Graber-Rogg, Inc.: *See—*
Martin, Harold B.; and Rogg, Herman O., 249,585, Cl. D56-9.000.
Graham, Roger. Smoking device. 249,563, 9-19-78, Cl. D27-03.000.
Greenawalt, Monte H. Therapeutic apparatus. 249,551, 9-19-78, Cl. D24-36.000.
Grethey, Albert K.: *See—*
Moore, Walter E.; and Grethey, Albert K., 249,582, Cl. D52-3.00R.
Grunstad, Jerome A., to Ball Corporation. Plaque with sunk relief. 249,487, 9-19-78, Cl. D11-139.000.
Guodace, Ronald A., to International Silver Company. Article of flatware. 249,450, 9-19-78, Cl. D7-137.000.
Haffner, Donald Gene; and Woelffer, Neill Carl, to Jacobsen Manufacturing Company. Combined lawn mower and grass catcher. 249,519, 9-19-78, Cl. D15-14.000.
Halliwell, Keith, to Injectaform Pty. Limited. Angle joint for building system. 249,459, 9-19-78, Cl. D8-354.000.
Hanig, Harvey: *See—*
Conforti, Frederick J.; Robertson, Roy C. A.; and Hanig, Harvey, 249,481, Cl. D10-106.000.
Conforti, Frederick J.; Robertson, Roy C. A.; and Hanig, Harvey, 249,482, Cl. D10-106.000.
Conforti, Frederick J.; Robertson, Roy C. A.; and Hanig, Harvey, 249,483, Cl. D10-106.000.
Hardy, Paul Robert: *See—*
Spencer, Arthur Thomas; and Hardy, Paul Robert, 249,503, Cl. D13-24.000.
Spencer, Arthur Thomas; and Hardy, Paul Robert, 249,504, Cl. D13-24.000.
Harold Leighton (Products) Limited: *See—*
Leighton, Harold, 249,402, Cl. D4-31.000.
Harris, Charles Roy, Jr. Tennis ball holder. 249,573, 9-19-78, Cl. D34-5.0ST.
Harris, David Peter, to Pye Limited. Phonograph record support stand or similar article. 249,434, 9-19-78, Cl. D6-185.000.
Helgesen, Paul E.; Mountain, Maurice G.; and Ripley, William S., III, to Susquehanna Broadcasting Co. Vintners' bin and cabinet. 249,421, 9-19-78, Cl. D6-130.000.
Helgesen, Paul E.; and Ripley, William S., III, to Susquehanna Broadcasting Co. Glassware hutch cabinet. 249,422, 9-19-78, Cl. D6-134.000.
Helgesen, Paul E.; and Ripley, William S., III, to Susquehanna Broadcasting Co. Caddy for tableware utensils or similar articles. 249,442, 9-19-78, Cl. D7-73.000.
Henricksen, Clifford A., to Altec Corporation. Acoustical transformer for coupling sound waves from the diaphragm to the throat of a horn-type loudspeaker. 249,509, 9-19-78, Cl. D14-37.000.
Hill, Clifford. Lawn decoration. 249,580, 9-19-78, Cl. D48-20.00E.
Hirma Richard Geinze GmbH & Co. KG: *See—*
Spellier, Roland, 249,454, Cl. D8-313.000.
Hoffmann-La Roche Inc.: *See—*
Brett, Colin, 249,530, Cl. D16-48.000.
Honeywell Inc.: *See—*
Kolbow, Donald P., 249,476, Cl. D10-60.000.
Hopper, Richard A. Drawing guide for music. 249,478, 9-19-78, Cl. D10-65.000.
Horvick, Peter, to Bardane Manufacturing Company. Crossbeam of a mock balance scale. 249,489, 9-19-78, Cl. D11-162.000.
Huldt, Johan: *See—*
Dranger, Jan; and Huldt, Johan, 249,410, Cl. D6-57.000.
Humphrey, Delby C.; and Humphrey, Robert D., to Schutt Manufacturing Company. Face guard for mounting on an athletic helmet. 249,397, 9-19-78, Cl. D2-233.000.
Humphrey, Robert D.: *See—*
Humphrey, Delby C.; and Humphrey, Robert D., 249,397, Cl. D2-233.000.
Igloo Corporation: *See—*
MacTavish, James A., 249,465, Cl. D9-170.000.
Parrish, David C., Sr., 249,466, Cl. D9-170.000.
Injectaform Pty. Limited: *See—*
Halliwell, Keith, 249,459, Cl. D8-354.000.
Innovator Design AB: *See—*
Dranger, Jan; and Huldt, Johan, 249,410, Cl. D6-57.000.
Inoue, Shyusuke: *See—*
Fukumoto, Noboru; and Inoue, Shyusuke, 249,441, Cl. D7-49.000.
International Silver Company: *See—*
Guodace, Ronald A., 249,450, Cl. D7-137.000.
Ishmael, Richard K. Picture holder. 249,435, 9-19-78, Cl. D6-233.000.
J & M Instruments Corp.: *See—*
Jungman, Maury, 249,480, Cl. D10-81.000.
Jackson, William P. Suspension chair and stand. 249,408, 9-19-78, Cl. D6-54.000.
Jacob Froehlich Cabinet Works Inc.: *See—*
Carlsen, Roger Leonard, 249,433, Cl. D6-184.000.
Jacobsen Manufacturing Company: *See—*
Haffner, Donald Gene; and Woelffer, Neill Carl, 249,519, Cl. D15-14.000.
Jankelson, Bernard; and Radke, John C., to Jankelson, Bernard. Muscle stimulating pulse generator. 249,550, 9-19-78, Cl. D24-36.000.
Johnson & Johnson: *See—*
Turner, Robert Bruce; and Brefka, Paul E., 249,475, Cl. D10-57.000.
Jones, John A. Ski rack. 249,425, 9-19-78, Cl. D6-157.000.
Jones, Richard E.; and Quiroz, Joseph R., to Schlage Lock Company. Box for a lock set. 249,467, 9-19-78, Cl. D9-185.000.
Jones, William J.: *See—*
Ackerman, Anton; and Jones, William J., 249,443, Cl. D7-74.000.
Jungman, Maury, to J & M Instruments Corp. pH Testing device. 249,480, 9-19-78, Cl. D10-81.000.
Kamata, Eitaro, to ShoeiSafety Helmet Corporation. Helmet. 249,396, 9-19-78, Cl. D2-232.000.
Kameyama Candle Co., Ltd.: *See—*
Tanikawa, Masashi, 249,588, Cl. D73-1.00R.
Kastle Gesellschaft m.b.H.: *See—*
Ferch, Rudolf, 249,575, Cl. D34-14.00D.
Kelling, Barbara A.: *See—*
Kelling, Kenneth J.; and Kelling, Barbara A., 249,579, Cl. D48-4.00A.
Kelling, Kenneth J.; and Kelling, Barbara A. Lantern holder. 249,579, 9-19-78, Cl. D48-4.00A.
Kira, Ken; Nakazawa, Kinshiro; and Yoshida, Katsuji, to Victor Company of Japan, Ltd. Combined radio receiver, tuner and amplifier. 249,515, 9-19-78, Cl. D14-72.000.
Kirschling, Charles J.: *See—*
Madl, Alfred W.; and Kirschling, Charles J., 249,446, Cl. D7-94.000.
Kishida, Shizuaki, to Sanyei Corporation. Plastic bag forming and sealing apparatus. 249,526, 9-19-78, Cl. D15-146.000.
Knapman, John Joseph. Necktie. 249,399, 9-19-78, Cl. D2-357.000.
Kohn, Saul Robert, to Youngs Drug Products Corporation. Dispensing container. 249,470, 9-19-78, Cl. D9-232.000.
Kolbow, Donald P., to Honeywell Inc. Thermostat cover. 249,476, 9-19-78, Cl. D10-60.000.
Kralevich, Boris. Golfer's tool. 249,574, 9-19-78, Cl. D34-5.0CB.
Kratky, Frank. Calf puller butt yoke. 249,568, 9-19-78, Cl. D30-99.000.
Kusan, Inc.: *See—*
Dunbar, George W., 249,576, Cl. D34-15.0AN.
Lamb, James M. Combined child's bed and amusement center. 249,403, 9-19-78, Cl. D6-6.000.
Lambitz, Robert H.; and Zeffero, Robert J., to Zefflamb Industries, Inc. Cargo box liner for pickup trucks. 249,494, 9-19-78, Cl. D12-98.000.
Lane Company, Inc., The: *See—*
Brown, James D., 249,424, Cl. D6-154.000.
Langworthy, Garfield: *See—*
Walker, Kenneth H.; Langworthy, Garfield; and Turner, Robert L., 249,423, Cl. D6-146.000.
Leighton, Harold, to Harold Leighton (Products) Limited. Hairbrush. 249,402, 9-19-78, Cl. D4-31.000.
LeRose, John T. Steering wheel. 249,499, 9-19-78, Cl. D12-175.000.
Letven, Ed: *See—*
Loeb, Kurt M., 249,514, Cl. D14-59.000.
Levin, Monte L., to Clairol Incorporated. Manicuring implement. 249,565, 9-19-78, Cl. D28-58.000.
Libonati, Michael R. Forearm carryall. 249,592, 9-19-78, Cl. D87-3.00R.

Lightfoot, Andrew O. Live-bait container. 249,539, 9-19-78, Cl. D22-14.000.
Linemaster Switch Corporation, The: *See—*
Di Bonaventura, Alfred R., 249,505, Cl. D13-36.000.
Litton Business Systems, Inc.: *See—*
Wu, Paul S.; and Fazio, Dominick S., 249,510, Cl. D14-40.000.
Loeb, Kurt M., to Letven, Ed, a part interest. Notepad attachment for a telephone. 249,514, 9-19-78, Cl. D14-59.000.
Lordahl, Var E., to Beatrice Foods Co. Faucet stem size guide. 249,477, 9-19-78, Cl. D10-64.000.
Lorenz, Leo J.: *See—*
Elfes, Lee E.; and Lorenz, Leo J., 249,522, Cl. D15-30.000.
MacTavish, James A., to Igloo Corporation. Plastic drum. 249,465, 9-19-78, Cl. D9-170.000.
Madi, Loretta. Cat bed. 249,567, 9-19-78, Cl. D30-41.000.
Madl, Alfred W.; and Kirschling, Charles J., to Oster Corporation. Sandwich maker. 249,446, 9-19-78, Cl. D7-94.000.
Mark VI Enterprises, Inc.: *See—*
Worthing, Robert; and Beattie, Lawrence, 249,583, Cl. D56-1.00A.
Martin, Harold B.; and Rogg, Herman O., to Graber-Rogg, Inc. Music rack. 249,585, 9-19-78, Cl. D56-9.000.
Massey-Ferguson Inc.: *See—*
Elfes, Lee E.; and Lorenz, Leo J., 249,522, Cl. D15-30.000.
Segales, Jaime, 249,523, Cl. D15-30.000.
Matsushita Electric Industrial Co.: *See—*
Ebata, Takemi; and Miki, Kunishige, 249,507, Cl. D14-8.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Fukumoto, Noboru; and Inoue, Shyusuke, 249,441, Cl. D7-49.000.
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79.1	4,114,328
173 R	4,114,329
200	4,114,330
202	4,114,331
224	4,114,332
265	4,114,333
280	4,114,336
303	4,114,334
336	4,114,335
442	4,114,337
478	4,114,338
507	4,114,339
520	4,114,340
580	4,114,341
665	4,114,343
741	4,114,344
745	4,114,345
746	4,114,346
790	4,114,342

CLASS 53

54	4,114,349
79	4,114,350
157	4,114,351
300	4,114,347
389	4,114,355
433	4,114,348

CLASS 54

79	4,114,352

CLASS 55

2	4,115,078
43 BN	4,115,079
54	4,115,080
64	4,115,081
103	4,115,082
148	4,115,083
176	4,115,084
193	4,115,085

CLASS 56

13.3	4,114,353
295	4,114,354

CLASS 57

34 R	4,114,356
35	4,114,357
51	4,114,358
124	4,114,359
142	4,114,360
156	4,114,361

CLASS 58

4 A	4,114,362
23 BA	4,114,365
23 D	4,114,364
23 R	4,114,363
50 R	4,114,366

CLASS 59

85	4,114,367

CLASS 60

39.16 R	4,114,368
200 A	4,114,369
276	4,114,372
279	4,114,370
282	4,114,371
	4,114,373
302	4,114,374
372	4,114,375
548	4,114,376
589	4,114,377
	4,114,378
606	4,114,379
721	4,114,380

CLASS 62

28	4,115,086
386	4,114,395
406	4,114,396
516	4,114,397

CLASS 63

3	4,114,398
12	4,114,399

CLASS 64

3	4,114,400
7	4,114,401
15 B	4,114,402
	4,114,403
17 A	4,114,404

CLASS 65

3 C	4,115,087
11 W	4,115,088
19	4,115,089
25 A	4,115,090
99 A	4,115,091
	4,115,092

CLASS 66

75.2	4,114,405

CLASS 68

24	4,114,406
178	4,114,407

CLASS 70

128	4,114,408
225	4,114,409
339	4,114,410
421	4,114,411
441	4,114,412

CLASS 71

88	4,115,093
	4,115,094
90	4,115,095
92	4,115,096
	4,115,097
93	4,115,098
	4,115,099
94	4,115,100
	4,115,101
	4,115,102
98	4,115,103
105	4,115,104
113	4,115,105

CLASS 72

5	4,114,413
105	4,114,414
122	4,114,431
135	4,114,432
214	4,114,415
238	4,114,416
379	4,114,417
386	4,114,418

CLASS 73

1 G	4,114,419
15.6	4,114,420
17 R	4,114,421
23.1	4,114,422
30	4,114,423
40	4,114,424
	4,114,425
40.5 R	4,114,426
63	4,114,427
88 F	4,114,428
88.5 R	4,114,429
121	4,114,430
143	4,114,433
150 R	4,114,434
151.5	4,114,435
178 R	4,114,436
	4,114,437
194 A	4,114,438
	4,114,439
231 R	4,114,440
290 V	4,114,441
341	4,114,442
358	4,114,443
359 R	4,114,444
360	4,114,445
362 AR	4,114,446
	4,114,447
	4,114,448
379	4,114,449
432 R	Re.29,765
489	4,114,450
504	4,114,451
	4,114,452
517 R	4,114,453
579	4,114,454
597	4,114,455
622	4,114,456
632	4,114,457
729	4,114,458

CLASS 74

10.41	4,114,459
18.2	4,114,460
29	4,114,461
61	4,114,462
	4,114,463
89.14	4,114,464
89.17	4,114,465
117	4,114,466
255 R	4,114,467
410	4,114,468
424.8 VA	4,114,469
441	4,114,470
551.6	4,114,471
574	4,114,472
611	4,114,473
625	4,114,474
687	4,114,475
745	4,114,476
768	4,114,477
781 R	4,114,478
801	4,114,479
865	4,114,480

CLASS 75

0.5 AA	4,115,106
0.5 R	4,115,107
11	4,115,108
77	4,115,109
101 R	4,115,110
128 P	4,115,111
171	4,115,112
206	4,115,113

CLASS 81

64	4,114,481
421	4,114,482

CLASS 82

1.2	4,114,483
4 C	4,114,484
	4,114,485
12	4,114,486

CLASS 83

198	4,114,488
298	4,114,489
303	4,114,490
341	4,114,491
367	4,114,492
488	4,114,493
835	4,114,494

CLASS 84

1.01	4,114,495
1.1	4,114,496
1.17	4,114,497
1.19	4,114,498
1.25	4,114,499
330	4,114,501
385 P	4,114,500
402	4,114,502
422 S	4,114,503
453	4,114,504

CLASS 85

1 C	4,114,505
32 W	4,114,506
41	4,114,507
	4,114,508
84	4,114,509

CLASS 89

12	4,114,510
33 CA	4,114,511
36 K	4,114,512

CLASS 91

19	4,114,513
211	4,114,514
284	4,114,515
420	4,114,516

CLASS 92

2	4,114,517
208	4,114,518
221	4,114,519

CLASS 93

33 H	4,114,520

CLASS 96

1.4	4,115,114
1.5 R	4,115,115
	4,115,116
29 D	4,115,117
33	4,115,118
35.1	4,115,119
36.2	4,115,120
56.3	4,115,121
76 R	4,115,122
79	4,115,123
82	4,115,124
83	4,115,125
84 R	4,115,126
85	4,115,127
91 D	4,115,128
107	4,115,129

CLASS 98

36	4,114,521

CLASS 99

348	4,114,522
393	4,114,523
450.4	4,114,524
465	4,114,525
533	4,114,526

CLASS 100

2	4,114,527
47	4,114,528
53	4,114,529
87	4,114,530
90	4,114,531

CLASS 101

93.48	4,114,532
99	4,114,533
115	4,114,534
141	4,114,535
426	4,114,536

CLASS 102

24 HC	4,114,537

CLASS 104

88	4,114,538
165	4,114,539

CLASS 105

226	4,114,540

CLASS 106

15 R	4,115,130
47 Q	4,115,131
53	4,115,132
56	4,115,133
73.2	4,115,134
99	4,115,135
100	4,115,136
	4,115,137
	4,115,138
	4,115,139
120	4,115,140
288 B	4,115,141
	4,115,142
298	4,115,143
300	4,115,144

CLASS 108

20	4,114,541
157	4,114,542

CLASS 111

96	4,114,543

CLASS 112

104	4,114,544
121.15	4,114,545
153	4,114,546

178 4,114,547
258 4,114,548
410 4,114,549

CLASS 113

7 R 4,114,550

CLASS 114

98 4,114,551
227 4,114,552
230 4,114,553
4,114,556
264 4,114,393
298 4,114,554

CLASS 115

76 4,114,555

CLASS 116

67 R 4,114,557
114 PV 4,114,558
114.5 4,114,559
117 R 4,114,560
124 B 4,114,561

CLASS 118

50 4,114,562
63 4,114,563
626 4,114,564

CLASS 119

14.01 4,114,565

CLASS 123

25 B 4,114,566
30 A 4,114,567
30 D 4,114,568
4,114,569
32 EG 4,114,570
41.35 4,114,571
59 PC 4,114,572
117 D 4,114,573
117 R 4,114,574
119 A 4,114,575
4,114,576
4,114,577
124 R 4,114,578
139 AW 4,114,579
141 4,114,580
148 CC 4,114,583
148 E 4,114,581
4,114,582
179 G 4,114,584
191 M 4,114,585
195 A 4,114,586
196 S 4,114,587
198 F 4,114,588

CLASS 126

21 R 4,114,589
121 4,114,590
263 4,114,591
270 4,114,592
4,114,593
4,114,594
4,114,595
4,114,596
271 4,114,597
4,114,598
4,114,599
4,114,600

CLASS 127

5 4,115,145
38 4,115,146
54 4,115,147

CLASS 128

1 R 4,114,601
2 E 4,114,602
2 F 4,114,605
2 L 4,114,604
2 R 4,114,603
2.05 E 4,114,606
2.08 4,114,607
4,114,608
11 4,114,609
25 R 4,114,610
75 4,114,611
76 R 4,114,612
80 R 4,114,613
132 D Re.29,766
136 4,114,614
173 R 4,114,615
210 4,114,616
214 R 4,114,617
214.4 4,114,618
215 4,114,619
254 4,114,620
288 4,114,621
303.14 4,114,622
4,114,623
335 4,114,624
348 4,114,625
4,114,626
419 PG 4,114,628
419 PT 4,114,627

CLASS 131

15 R 4,114,629
17 R 4,114,630
84 C 4,114,631

CLASS 132

7 4,114,632

CLASS 134

21 4,115,148

CLASS 135

1 A 4,114,633
19.5 4,114,634

CLASS 136

89 PC 4,115,149

CLASS 137

3 4,114,635
43 4,114,636
116 4,114,637
242 4,114,638
246.22 4,114,639
381 4,114,640
430 4,114,641
436 4,114,642
495 4,114,643
565 4,114,644
596.17 4,114,645
601 4,114,646
624.2 4,114,647
625.19 4,114,649
625.5 4,114,648
625.63 4,114,650
630.14 4,114,651
4,114,652

CLASS 138

45 4,114,653
89 4,114,654
4,114,655
109 4,114,656
4,114,657

CLASS 139

452 4,114,658

CLASS 141

26 4,114,659
98 4,114,660
231 4,114,661
387 4,114,662

CLASS 144

32 R 4,114,663
134 D 4,114,664
286 R 4,114,665
309 AC 4,114,666

CLASS 148

1.5 4,115,150
9.5 4,115,151
4,115,152
4,115,153
4,115,154
12 F 4,115,155
12.7 N 4,115,156
23 4,115,157
31.55 4,115,158
105 4,115,159
111 4,115,160
4,115,161
171 4,115,162
175 4,115,163
4,115,164

CLASS 149

5 4,115,165
7 4,115,166
19.5 4,115,167
109.6 4,115,168

CLASS 150

0.5 4,114,668
1 4,114,667
8 4,114,669

CLASS 151

41.72 4,114,670

CLASS 152

209 R 4,114,671

CLASS 156

71 4,115,169
79 4,115,170
96 4,115,171
115 4,115,172
120 4,115,173
155 4,115,174
172 4,115,175
244.25 4,115,176
245 4,115,177
291 4,115,178
444 4,115,179
446 4,115,180
497 4,115,181
515 4,115,182
4,115,183
626 4,115,184
634 4,115,185

CLASS 157

1.24 4,114,672

CLASS 160

166 A 4,114,673
222 4,114,674

CLASS 162

13 Re.29,770
65 4,115,186
168 R 4,115,187
190 4,115,188
305 4,115,189

CLASS 164

4 4,114,675
108 4,114,676
168 4,114,677
207 4,114,678
426 4,114,679

CLASS 165

4 4,114,680
26 4,114,681
39 4,114,682
78 4,114,683
82 4,114,684
96 4,114,685
110 4,114,686

CLASS 166

51 4,114,687
246 4,114,688
249 4,114,689
261 4,114,690
276 4,114,691
293 4,114,692
305 R 4,114,693
318 4,114,694

CLASS 172

47 4,114,695
59 4,114,696
543 4,114,697

CLASS 173

1 4,114,698
109 4,114,699

CLASS 174

35 MS 4,115,656
35 R 4,115,655

CLASS 175

19 4,114,700
84 4,114,701
107 4,114,702
4,114,703
4,114,704
340 4,114,705

CLASS 176

3 4,115,190
4,115,191
40 4,115,192
87 4,115,193
4,115,194

CLASS 177

70 4,114,706
145 4,114,707
4,114,708
156 4,114,709

CLASS 178

22 4,115,657
67 4,114,710

CLASS 179

1 HF 4,115,658
4,115,659
2.5 R 4,115,660
15 BS 4,115,661
15 BT 4,115,663
15 BV 4,115,662
84 R 4,115,664
98 4,115,665
100.4 ST 4,115,666
115.5 VC 4,115,667
170.2 4,115,668

CLASS 180

6.5 4,114,711
21 4,114,712
27 4,114,713
54 A 4,114,714
64 A 4,114,715
68 R 4,114,716
69.1 4,114,717
89.14 4,114,718
90 4,114,719
133 4,114,720
155 4,114,724

CLASS 181

105 4,114,721
114 4,114,722
120 4,114,723
205 4,114,725

CLASS 182

5 4,114,726

CLASS 186

1 AC 4,114,727
1 D Re.29,767

CLASS 187

8.75 4,114,728
29 R 4,114,729
4,114,730
4,114,731

CLASS 188

73.2 4,114,732
196 BA 4,114,733
274 4,114,734
282 4,114,735

CLASS 191

12.4 4,114,736

CLASS 192

0.098 4,114,745
3 N 4,114,737
4 A 4,114,738
41 A 4,114,739
70.18 4,114,740
89 B 4,114,741
4,114,742
91 R 4,114,743
98 4,114,744
104 R 4,114,746
150 4,114,747

CLASS 193

33 4,114,748
35 C 4,114,749

CLASS 195

1.3 4,115,195
36 R 4,115,197
63 4,115,198
96 4,115,199
127 4,115,200

CLASS 196

46.1 4,115,201

CLASS 198

491 4,114,752
608 4,114,753

CLASS 200

5 R 4,115,670
61.91 4,115,671
144 B 4,115,672
315 4,115,673
329 4,115,674
331 4,115,669

CLASS 202

99 4,115,202
248 4,115,203

CLASS 203

60 4,115,204
4,115,205
4,115,206
4,115,207
81 4,115,208

CLASS 204

1 T 4,115,209
10 4,115,210
37 R 4,115,211
38 E 4,115,212
39 4,115,213
64 R 4,115,214
67 4,115,215
73 R 4,115,216
95 4,115,217
98 4,115,218
99 4,115,219
105 R 4,115,220
108 4,115,221
117 4,115,222
129.6 4,115,223
159.18 4,115,224
159.22 4,115,231
159.23 4,115,232
180 P 4,115,225
180 R 4,115,233
4,115,234
181 C 4,115,226
4,115,227
192 EC 4,115,228
195 R 4,115,230
195 S 4,115,229
4,115,235
254 4,115,236
258 4,115,237
290 F 4,115,239
290 R 4,115,238
296 4,115,240

CLASS 206

319 4,114,754
326 4,114,755
389 4,114,756
424 4,114,757
471 4,114,758
523 4,114,759
562 4,114,760
591 4,114,761

CLASS 208

33 4,115,241
4,115,242
4,115,243
4,115,244
4,115,245
56 4,115,246
62 4,115,247
112 4,115,248
120 4,115,249
4,115,250
4,115,251
139 4,115,252
4,115,253
4,115,254
143 4,115,255

CLASS 209

3 4,115,256
78 4,114,762
291 4,115,257

CLASS 210

15 4,115,258
22 A 4,115,259
34 4,115,260
40 4,115,261
42 S 4,115,262
60 4,115,263
63 R 4,115,264
68 4,115,265
80 4,115,266
136 4,115,267
150 4,115,268
4,115,269
169 4,115,270
247 4,115,271
266 4,115,272
321 A 4,115,273
321 R 4,115,274
386 4,115,275
425 4,115,276
436 4,115,277
488 4,115,278
521 4,115,279

CLASS 211

57.1 4,114,763
100 4,114,764

CLASS 214

1 QC 4,114,765
3 4,114,766
16.4 A 4,114,767
130 R 4,114,770
152 4,114,768
4,114,769
384 4,114,771
512 4,114,772
623 4,114,773

CLASS 215

250 4,114,774
324 4,114,775

CLASS 219

10.41 4,115,675
10.49 R 4,115,676
4,115,677
10.55 B 4,115,678
4,115,680
10.55 M 4,115,679
10.57 4,115,681
118 4,115,682
121 L 4,115,683
124.22 4,115,684
155 4,115,685
523 4,115,686

CLASS 220

22 4,114,776
267 4,114,778
288 4,114,779
408 4,114,784

CLASS 221

101 4,114,780

CLASS 222

326 4,114,781
382 4,114,782
398 4,114,783
545 4,114,785

CLASS 223

94 4,114,786

CLASS 224

2 D 4,114,787
25 A 4,114,788
42.1 E 4,114,789
45 S 4,114,838

CLASS 226

91 4,114,790
4,114,791

CLASS 227

8 4,114,792
63 4,114,793

CLASS 228

182 4,114,794

CLASS 229

23 R 4,114,795
27 4,114,796
31 R 4,114,797
43 4,114,798
44 CB 4,114,777
72 4,114,799

CLASS 232

1 C 4,114,800
17 4,114,801

CLASS 233

26 4,114,802
4,114,803

CLASS 235

92 DM 4,115,687
476 4,114,804

CLASS 236

1 C 4,114,806
1 E 4,114,807
1 G 4,114,805
87 4,114,808

CLASS 237

1 A 4,114,809

CLASS 239

15 4,114,810
288.5 4,114,811
492 4,114,812
500 4,114,813
689 4,114,814

CLASS 241

45 4,114,815
46.11 4,114,816
73 4,114,817
244 4,114,818

CLASS 242

18 A 4,114,820
18 R 4,114,819
43 R 4,114,821
47.01 4,114,822
4,114,823
55.53 4,114,824
84.21 R 4,114,825
85 4,114,826
86.51 4,114,827
118.3 4,114,828
157 R 4,114,829
191 4,114,830
194 4,114,831
4,114,832
199 4,114,833
200 4,114,834

CLASS 243

32 4,114,835

CLASS 244

1 N 4,114,836
26 4,114,837
84 4,114,843
118 R 4,114,839
152 4,114,840
166 4,114,841
180 4,114,842

CLASS 246

162 4,114,844

CLASS 248

24 4,114,845
68 CB 4,114,846
104 4,114,847
346 4,114,848

CLASS 249

58 4,114,849

CLASS 250

253 4,115,688
272 4,115,689
308 4,115,690

312 4,115,691
338 4,115,692
363 S 4,115,693
4,115,694
445 T 4,115,695
4,115,696
4,115,697
4,115,698
461 B 4,115,699
518 4,115,700
527 4,115,280
552 4,115,701
560 4,115,702
568 4,115,703

CLASS 251

86 4,114,850
88 4,114,851
138 4,114,852
149.6 4,114,853
306 4,114,856
324 4,114,857

CLASS 252

8.8 4,115,281
12.4 4,115,283
18 4,115,282
29 4,115,284
32.5 4,115,285
46.3 4,115,286
48.2 4,115,287
50 4,115,288
62.1 P 4,115,289
62.54 4,115,290
73 4,115,291
90 4,115,292
102 4,115,293
106 4,115,294
135 4,115,307
4,115,308
186 4,115,309
299 4,115,310
301.1 W 4,115,311
301.5 4,115,312
309 4,115,313
4,115,314
316 4,115,315
359 A 4,115,316
418 4,115,317
428 4,115,318
429 B 4,115,319
431 C 4,115,320
4,115,321
432 4,115,424
447 4,115,322
455 R Re.29,771
4,115,323
459 4,115,324
514 4,115,325
522 4,115,326

CLASS 254

1 4,114,858
122 4,114,854
175.5 4,114,855

CLASS 256

48 4,114,859
65 4,114,860
67 4,114,861

CLASS 260

2.3 4,115,298
6 4,115,305
17 A 4,115,306
17.2 4,115,327
17.4 CL 4,115,331
17.4 GC 4,115,332
22 CQ 4,115,370
22 R 4,115,333
24 4,115,328
25 4,115,329
26 4,115,330
28.5 AS 4,115,335
28.5 D 4,115,334
29.2 N 4,115,337
29.4 UA 4,115,338
29.6 HN 4,115,339
4,115,340
29.6 NR 4,115,336
33.2 R 4,115,341
33.4 P 4,115,342
33.6 SB 4,115,343
37 R 4,115,344
38 4,115,345
42.15 4,115,346
42.46 4,115,347
45.7 S 4,115,354
45.75 B 4,115,352
45.75 C 4,115,353
45.8 A 4,115,350
45.8 NT 4,115,349
45.8 NZ 4,115,348
45.9 NP 4,115,351
45.95 H 4,115,355
47 EN 4,115,361
112 R 4,115,375
112.5 R 4,115,374
120 4,115,376
146 T 4,115,378
151 4,115,377
163 4,115,379
186 4,115,380
207.1 4,115,381
239 A 4,115,382
4,115,383
239 E 4,115,384
239.1 4,115,385
281 P 4,115,386
286 R 4,115,387
287 B 4,115,388
289 D 4,115,389
290 HL 4,115,390
4,115,391
295.5 R 4,115,392
4,115,393
296 H 4,115,394
296 N 4,115,395
296 R 4,115,396
296 T 4,115,397
326.1 4,115,398
326.43 4,115,401
326.5 B 4,115,400
326.5 FN 4,115,399
332.2 A 4,115,402
340.9 R 4,115,403
343.3 R 4,115,404
345.1 4,115,406
345.2 4,115,405
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346.11 4,115,408
347.3 4,115,409
348.25 4,115,410
348.26 4,115,411
380 4,115,412
390 4,115,413
397.5 4,115,414
410 4,115,415
413 4,115,416
4,115,417
429 R 4,115,418
4,115,419
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4,115,421
429.3 4,115,422
429.5 4,115,423
438.5 R 4,115,425
448.2 E 4,115,426
4,115,427
449 L 4,115,428
4,115,433
453 SP 4,115,429
465 D 4,115,430
465 E 4,115,432
465 F 4,115,431
465.3 4,115,434
465.4 4,115,435
505 N 4,115,436
513 R 4,115,437
549 4,115,444
553 A 4,115,445
4,115,448
553 R 4,115,446
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555 A 4,115,449
558 A 4,115,450
566 A 4,115,451
586 G 4,115,453
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590 C 4,115,454
610 R 4,115,455
613 R 4,115,456
615 B 4,115,457
644 4,115,459
648 R 4,115,460
652.5 R 4,115,461
667 4,115,462
668 B 4,115,463
668 C 4,115,464
674 R 4,115,465
678 4,115,466
683 R 4,115,467
683.15 D 4,115,468
4,115,469
4,115,470
683.43 4,115,471
836 4,115,472
841 4,115,364
850 4,115,473
855 4,115,474
857 PE 4,115,475
859 R Re.29,772
880 R 4,115,476
4,115,477
4,115,478
884 4,115,479
885 4,115,480
900 4,115,481
957 4,115,482
980 4,115,483

CLASS 261

111 4,115,484
119 R 4,115,485

CLASS 264

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17 4,115,488
23 4,115,489
26 4,115,490
45.1 4,115,491
49 4,115,492
61 4,115,493
89 4,115,494
90 4,115,495
94 4,115,496
115 4,115,497
119 4,115,498
122 4,115,499
4,115,500
133 4,115,501
173 4,115,502
184 4,115,503
221 4,115,504
234 4,115,562
242 4,115,505
250 4,115,506
267 4,115,507
310 4,115,508
331 4,115,509
347 4,115,510
4,115,511

CLASS 266

44 4,114,862
48 4,114,863
51 4,114,864
136 4,114,865

CLASS 267

64 R 4,114,866
97 4,114,867

CLASS 269

136 4,114,868

CLASS 270

37 4,114,869

CLASS 271

35 4,114,870
91 4,114,872
173 4,114,871

CLASS 272

61 4,114,873
71 4,114,874
133 4,114,875

CLASS 273

1 R 4,114,877
32 A 4,114,878
34 R 4,114,879
73 G 4,114,880
73 R 4,114,881
85 G 4,114,882
87 B 4,114,876
106 B 4,114,885
106.5 C 4,114,883
4,114,884
162 B 4,114,886
176 F 4,114,889
176 FA 4,114,887
176 L 4,114,888
237 4,114,890
250 4,114,891
265 4,114,892

CLASS 274

9 RA 4,114,893
23 R 4,114,894
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CLASS 277

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9 4,114,898
22 4,114,899
27 4,114,900
34.3 4,114,901
53 4,114,902
81 R 4,114,903
88 4,114,904
164 4,114,905
166 4,114,906
206 R 4,114,907
211 4,114,908

CLASS 279

1 Q 4,114,909
123 4,114,910

CLASS 280

11.37 F 4,114,911
12 H 4,114,913
12 KL 4,114,912
30 4,114,914
47.19 4,114,915
47.29 4,114,916
116 4,114,917
284 4,114,918
292 4,114,919
414 R 4,114,920
478 B 4,114,921
512 4,114,922
711 4,114,923
740 4,114,924

CLASS 281

45 4,114,925

CLASS 282

27.5 4,114,926

CLASS 285

7 4,114,927
18 4,114,928
45 4,114,929
334.5 4,114,930

CLASS 289

2 4,114,931

CLASS 291

33 4,114,932

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37 4,114,933
87 4,114,934
104 4,114,935
342 4,114,936

CLASS 293

85 4,114,937

CLASS 294

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64 R 4,114,939
82 R 4,114,940
86 R 4,114,941

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23 G 4,114,942
23 MC 4,114,943
50 4,114,944
137 E 4,114,945

CLASS 297

191 4,114,946
344 4,114,947
397 4,114,948
445 4,114,949

CLASS 299

15 4,114,950
22 4,114,951

CLASS 301

5.7 4,114,952
63 DD 4,114,953

CLASS 302

14 4,114,954
15 4,114,955
66 4,114,956

CLASS 303

96 4,114,957

CLASS 305

56 4,114,958

CLASS 307

64 4,115,704
140 4,115,705
209 4,115,706
252 C 4,115,707
268 4,115,708
304 4,115,709
4,115,710
350 4,115,711

CLASS 308

3.5 4,114,959
10 4,114,960
237 R 4,114,961
238 4,114,962

CLASS 310

12 4,115,712
49 R 4,115,713
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68 B 4,115,715
153 4,115,716

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184 4,114,963
198 4,114,964
209 4,114,965
245 4,114,966
328 4,114,967

CLASS 313

59 4,115,717
60 4,115,718
105 R 4,115,719
337 4,115,720

CLASS 315

3.5 4,115,721
52 4,115,722
84 4,115,723
169 TV 4,115,724
403 4,115,725

CLASS 316

1 4,114,968

CLASS 318

171 4,115,726
212 4,115,727
302 Re.29,775
318 4,115,728

CLASS 322

86 4,115,729

CLASS 324

0.5 A 4,115,730
52 4,115,731
72 4,115,732
99 D 4,115,733
151 A 4,115,734
158 F 4,115,735
4,115,736

CLASS 325

459 4,115,737

CLASS 329

105 4,115,738

CLASS 330

263 4,115,739
264 4,115,740
284 4,115,741
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CLASS 331

14 4,115,743
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17 4,115,745
90 4,115,746
94.5 M 4,115,747
111 4,115,748

CLASS 333

31 R 4,115,749

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107 4,115,750
323 4,115,751

CLASS 339

45 R 4,114,969
49 R 4,114,970
59 R 4,114,971
65 4,114,972
92 M 4,114,973
103 C 4,114,974
176 M 4,114,975
217 S 4,114,976
270 R 4,114,977

CLASS 340

3 C 4,115,752
6 R 4,115,753
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4,115,755
4,115,756
32 4,115,757
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146.1 F 4,115,759
146.3 AC 4,115,761
146.3 H 4,115,760
4,115,762
147 CV 4,115,849
166 R 4,115,763
324 AD 4,115,765
347 AD 4,115,766
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347 DD 4,115,768
373 4,115,769
396 4,115,770
530 4,115,764

CLASS 343

6 R 4,115,771
6.5 R 4,115,772
7 AG 4,115,773
17.7 4,115,774
18 B 4,115,775
100 ME 4,115,776
108 R 4,115,777
701 4,115,778
715 4,115,779
739 4,115,780
768 4,115,781
779 4,115,782
792 4,115,783
915 4,115,784

CLASS 346

34 4,115,785
74.1 4,115,786
75 4,115,787
4,115,788
140 R 4,115,789

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1.7 4,114,978
96.21 4,114,979
96.33 4,114,980
4,114,981
127 4,114,982
164 4,114,983
187 4,114,984
216 4,114,992
266 4,114,985
282 4,114,986
285 4,114,987
289 4,114,988
302 4,114,989
337 4,114,990
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CLASS 351

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CLASS 352

139 4,114,994
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CLASS 353

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CLASS 354

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10 4,114,999
29 4,115,000
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133 4,115,003

CLASS 356

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246 4,115,011

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23 4,115,794
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107 4,115,803
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122 4,115,807
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139 4,115,810
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174 4,115,812
229 4,115,813
243 4,115,814
260 4,115,815
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CLASS 360

5 4,115,818
14 4,115,819
33 4,115,820
72 4,115,821
74 4,115,822
77 4,115,823
80 4,115,824
85 4,115,825
96 4,115,826
121 4,115,827

CLASS 361

1 4,115,828
42 4,115,829
187 4,115,830
236 4,115,831
256 4,115,832
303 4,115,833
318 4,115,834
370 4,115,835
382 4,115,836
388 4,115,837
4,115,838

393	4,115,839	359	4,115,022		CLASS 422	200	4,115,542	79	4,115,600	171	4,115,300
400	4,115,840		CLASS 404	56	4,115,067		4,115,556	96	4,115,601		CLASS 526
	CLASS 362	98	4,115,023		4,115,068	140	4,115,557	140	4,115,602	29	4,115,635
44	4,115,841		CLASS 405	112	4,115,069	205	4,115,558	326	4,115,603	47.6	4,115,636
183	4,115,842	25	4,114,394	133	4,115,066	209	4,115,559	329	4,115,604	56	4,115,637
291	4,115,843	94	4,114,381	142	4,115,070	211	4,115,560	377	4,115,605	61	4,115,638
382	4,115,844	150	4,114,386	179	4,115,071		4,115,561	386	4,115,606	65	4,115,369
403	4,115,845	163	4,114,390	207	4,115,072	241	4,115,563	387	4,115,607	130	4,115,639
	CLASS 364	176	4,114,391		CLASS 423	244	4,115,564		CLASS 428		CLASS 528
101	4,115,847	186	4,114,389	24	4,115,512	246	4,115,565	65	4,115,608	18	4,115,356
107	4,115,848	207	4,114,392	56	4,115,513		4,115,566	68	4,115,609	48	4,115,373
200	4,115,846	216	4,114,388	232	4,115,514	248.56	4,115,571	102	4,115,610	73	4,115,372
	4,115,850	260	4,114,384	235	4,115,515	248.57	4,115,570	172	4,115,612	90	4,115,295
	4,115,851	264	4,114,382	239	4,115,516	249	4,115,572	174	4,115,611	92	4,115,296
	4,115,852	282	4,114,383	243	4,115,517	250	4,115,567	204	4,115,618	94	4,115,360
	4,115,853	293	4,114,387	244	4,115,518		4,115,568	207	4,115,613	131	4,115,366
	4,115,854	298	4,114,385	279	4,115,519		4,115,569	220	4,115,614	132	4,115,365
	4,115,855		CLASS 407	287	4,115,520		4,115,573	229	4,115,615	170	4,115,359
	4,115,856	114	4,115,024	294	4,115,521		4,115,574	310	4,115,616	190	4,115,362
474	4,115,857		CLASS 408	322	4,115,522		4,115,575	336	4,115,617	196	4,115,358
	4,115,858	6	4,115,025	387	4,115,523	251	4,115,576		4,115,619	210	4,115,367
476	4,115,859	10	4,115,026	415 A	4,115,524	256	4,115,577	374	4,115,620	229	4,115,368
492	4,115,860	14	4,115,017	425	4,115,525	273 R	4,115,578	395	4,115,621	279	4,115,371
497	4,115,861	239 A	4,115,018	440	4,115,526	274	4,115,579	400	Re.29,774	294	4,115,357
500	4,115,862		CLASS 415	447.4	4,115,527	278	4,115,580	409	4,115,622		4,115,363
521	4,115,863	2	4,115,027	449	4,115,528	288	4,115,581	566	4,115,623	483	4,115,640
550	4,115,864		4,115,028	472	4,115,529	298	4,115,582	617	4,115,624		CLASS 536
604	4,115,865	211	4,115,029	488	4,115,530	300	4,115,583	641	4,115,625	23	4,115,641
900	4,115,866		CLASS 416		4,115,531	301	4,115,584		CLASS 429	121	4,115,642
	4,115,867	93 R	4,115,030	492	4,115,532	311	4,115,585	27	4,115,626		CLASS 544
	4,115,868	134 A	4,115,031		4,115,533	317	4,115,586	44	4,115,627	16	4,115,643
	4,115,869	227 A	4,115,032		CLASS 424	324	4,115,587		4,115,628	20	4,115,644
	4,115,870		CLASS 417	1	4,115,534	325	4,115,588	56	4,115,629		4,115,645
	CLASS 365	216	4,115,033		4,115,535	330	4,115,589	72	4,115,630	27	4,115,646
149	4,115,871	231	4,115,034		4,115,536	337	4,115,590	111	4,115,631	63	4,115,647
163	4,115,872	312	4,115,035		4,115,537		CLASS 425	188	4,115,632	110	4,115,648
	CLASS 400	322	4,115,036		4,115,538	29	4,115,046	191	4,115,633	140	4,115,649
202.1	4,115,012	341	4,115,037		4,115,539	72 R	4,115,047		CLASS 431	324	4,115,650
248	4,114,751	357	4,115,038		4,115,540		4,115,048	352	4,115,050		CLASS 560
249	4,115,013	363	4,115,039	1.5	4,115,541	111	4,115,049		CLASS 432	55	4,115,651
279	4,114,750	420	4,115,040	8	4,115,543	535	Re.29,768	3	4,115,051		CLASS 562
611	4,115,014	440	4,115,041	14	4,115,544		CLASS 426	72	4,115,052	402	4,115,439
	CLASS 401	479	4,115,042	45	4,115,545	7	4,115,591		CLASS 521		4,115,443
110	4,115,015	559	4,115,043	50	4,115,546	32	4,115,592	32	4,115,297	498	4,115,438
	CLASS 403	564	4,115,044	60	4,115,547	49	Re.29,773	53	4,115,303	533	4,115,440
16	4,115,016		CLASS 418	70	4,115,548	53	4,115,593	115	4,115,302	534	4,115,441
270	4,115,019	97	4,115,045	71	4,115,549	140	4,115,594	126	4,115,634	548	4,115,442
322	4,115,020			78	4,115,550	250	4,115,595	155	4,115,301		CLASS 568
353	4,115,021			105	4,115,551	497	4,115,596	167	4,115,304	706	4,115,652
				118	4,115,552	541	4,115,597	170	4,115,299	847	4,115,458
				155	4,115,553	604	4,115,598				
				177	4,115,554		CLASS 427				
				180	4,115,555	55	4,115,599				

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D2—	232	249,396		167	249,430		149	249,464		156	249,497		48	249,530	D27—	03	249,563
	233	249,397		172	249,431		170	249,465		163	249,498	D19—	3	249,531		29	249,564
	275	249,398		183	249,432			249,466		175	249,499		35	249,532	D28—	58	249,565
	357	249,399		184	249,433		185	249,467		185	249,500			249,533	D30—	15	249,566
	361	249,400		185	249,434		191	249,468		203	249,501		61	249,534		41	249,567
D4—	31	249,401		233	249,435			249,490	D13—	24	249,502	D22—	1	249,535		99	249,568
		249,402		268	249,436		219	249,491			249,503		7	249,538			249,569
D6—	6	249,403			249,437		224	249,469			249,504		14	249,539	D34—	5 CB	249,570
	30	249,404	D7—	5	249,438		232	249,470		36	249,505		27	249,536			249,574
		249,405		17	249,439		235	249,471	D14—	7	249,506			249,537		5 HP	249,572
	31	249,406		43	249,440	D10—	36	249,472		8	249,507	D23—	3	249,540		5 L	249,571
	44	249,407		49	249,441		45	249,473		37	249,508		4	249,541		5 ST	249,573
	54	249,408		73	249,442			249,474			249,509			249,542		14 D	249,575
	56	249,409		74	249,443		57	249,475		40	249,510		97	249,544		15 AN	249,576
	57	249,410		78	249,444		60	249,476			249,511			249,545		15 C	249,577
	62	249,411		79	249,445		64	249,477		42	249,512			249,546		15 LL	249,578
	63	249,412		94	249,446		65	249,478		45	249,513			249,547	D48—	4 A	249,579
	67	249,413		97	249,447		78	249,479		59	249,514		127	249,543		20 E	249,580
	69	249,414		110	249,448		81	249,480		72	249,515	D24—	17	249,548		24 A	249,581
	72	249,415		128	249,449		106	249,481		86	249,516		30	249,549	D52—	3 R	249,582
		249,416		137	249,450			249,482		91	249,517		36	249,550	D56—	1 A	249,583
	78	249,417	D8—	18	249,451			249,483	D15—	12	249,518			249,551		1 B	249,584
	86	249,418		40	249,452		112	249,484		14	249,519		39	249,552		9	249,585
	103	249,419		97	249,453	D11—	125	249,485		27	249,520		55	249,553	D64—	11 R	249,586
	127	249,420		313	249,454		137	249,486		30	249,522	D25—	9	249,554		12 B	249,587
	130	249,421		323	249,455		139	249,487			249,523		21	249,555	D73—	1 R	249,588
	134	249,422		338	249,456		160	249,488		62	249,524			249,556	D87—	1 D	249,590
	146	249,423			249,457		162	249,489		122	249,525			249,557		1 R	249,589
	154	249,424		349	249,458	D12—	33	249,492		146	249,526		35	249,558			249,591
	157	249,425		354	249,459		64	249,493	D16—	14	249,527			249,559		3 D	249,593
	158	249,426		373	249,460		98	249,494		23	249,528		56	249,560		3 R	249,592
	159	249,427			249,461		99	249,495		30	249,521			249,561		5 R	249,594
	161	249,428	D9—	1	249,462		112	249,496		34	249,529			249,562	D92—	1 EE	249,595
	164	249,429		58	249,463												

CLASSIFICATION OF PLANTS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,114,303	4,115,556	4,114,425	4,115,797	4,114,782	4,114,751
4 : 4,114,492	4,115,560	4,114,451	4,115,827	4,114,816	4,114,757
4,114,842	4,115,581	4,114,452	4,115,830	4,114,839	4,114,796
4,115,713	4,115,582	4,114,460	4,115,837	4,114,879	4,114,798
4,115,732	4,115,689	4,114,468	4,115,841	4,114,881	4,114,802
6 : 4,114,206	4,115,772	4,114,496	4,115,842	4,114,895	4,114,849
4,114,226	4,115,828	4,114,526	4,115,858	4,114,910	4,114,850
4,114,298	4,115,836	4,114,527	4,115,869	4,114,920	4,114,876
4,114,322	4,115,840	4,114,532	4,115,870	4,114,948	4,114,882
4,114,332	8 : 4,114,477	4,114,627	4,115,871	4,114,989	4,114,902
4,114,422	4,114,688	4,114,637	4,115,872	4,115,011	4,114,912
4,114,448	4,114,871	4,114,641	08 : 4,114,596	4,115,026	4,114,913
4,114,475	4,115,110	4,114,667	4,114,665	4,115,034	4,114,927
4,114,504	4,115,200	4,114,692	09 : 4,114,207	4,115,046	4,114,939
4,114,509	4,115,658	4,114,698	4,114,268	4,115,247	4,114,958
4,114,561	9 : 4,114,533	4,114,788	4,114,285	4,115,316	4,115,003
4,114,604	4,114,949	4,114,834	4,114,455	4,115,374	4,115,025
4,114,626	4,115,172	4,114,838	4,114,607	4,115,466	4,115,064
4,114,647	4,115,611	4,114,868	4,114,608	4,115,503	4,115,067
4,114,650	4,115,684	4,114,874	4,114,609	4,115,537	4,115,139
4,114,653	4,115,753	4,114,880	4,114,803	4,115,608	4,115,252
4,114,661	4,115,769	4,114,900	4,115,048	4,115,776	4,115,253
4,114,697	4,115,838	4,114,936	4,115,070	13 : 4,114,277	4,115,254
4,114,719	01 : 4,114,605	4,115,004	4,115,198	4,114,279	4,115,255
4,114,730	04 : 4,114,315	4,115,007	4,115,302	4,114,299	4,115,332
4,114,750	4,114,317	4,115,009	4,115,372	4,114,319	4,115,376
4,114,801	4,114,808	4,115,027	4,115,385	4,114,549	4,115,455
4,114,837	4,115,209	4,115,075	4,115,435	4,114,599	4,115,473
4,114,843	4,115,340	4,115,167	4,115,528	4,114,732	4,115,474
4,114,877	4,115,759	4,115,177	4,115,627	4,115,135	4,115,478
4,114,878	4,115,843	4,115,270	4,115,700	14 : 4,115,262	4,115,594
4,114,904	4,115,846	4,115,289	4,115,755	15 : 4,115,072	4,115,595
4,114,906	4,115,847	4,115,300	4,115,816	17 : 4,114,283	4,115,610
4,114,934	4,115,863	4,115,313	4,115,829	4,114,305	4,115,632
4,114,952	06 : Re.29,765	4,115,399	10 : 4,114,754	4,114,335	4,115,663
4,114,956	4,114,204	4,115,484	4,114,886	4,114,354	4,115,674
4,114,965	4,114,214	4,115,485	4,115,093	4,114,368	4,115,679
4,114,978	4,114,247	4,115,544	4,115,142	4,114,389	4,115,680
4,114,979	4,114,255	4,115,545	4,115,339	4,114,465	4,115,701
4,114,991	4,114,259	4,115,558	4,115,345	4,114,516	4,115,741
4,115,028	4,114,265	4,115,597	4,115,384	4,114,518	4,115,751
4,115,042	4,114,290	4,115,616	4,115,481	4,114,540	4,115,757
4,115,099	4,114,308	4,115,625	4,115,584	4,114,543	4,115,845
4,115,149	4,114,309	4,115,635	12 : 4,114,209	4,114,553	18 : 4,114,218
4,115,166	4,114,313	4,115,686	4,114,248	4,114,556	4,114,312
4,115,185	4,114,321	4,115,691	4,114,267	4,114,567	4,114,330
4,115,248	4,114,328	4,115,724	4,114,294	4,114,592	4,114,353
4,115,249	4,114,381	4,115,726	4,114,340	4,114,629	4,114,396
4,115,250	4,114,393	4,115,736	4,114,426	4,114,635	4,114,418
4,115,251	4,114,401	4,115,745	4,114,542	4,114,669	4,114,459
4,115,276	4,114,402	4,115,765	4,114,601	4,114,674	4,114,564
4,115,459	4,114,411	4,115,768	4,114,727	4,114,681	4,114,580
4,115,492	4,114,421	4,115,782	4,114,780	4,114,716	4,114,614

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249,411
249,412
249,418
249,419
249,446
249,519
249,579
249,594

PLANT PATENTS

06 : 4,304
48 : 4,305

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UNITED STATES PATENT and TRADEMARK OFFICE

September 26, 1978 Volume 974 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
May 2, 1978. *Acting Commissioner of Patents and Trademarks.*

Reinstatement of Patent Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office

Any person whose name has been removed from the Register of Attorneys or the Register of Agents pursuant to 37 CFR 1.347 may request reinstatement on the appropriate register. However, where the long lapse of time since removal or other circumstances indicate that the person may no longer be qualified for registration, the Committee on Enrollment may require the person to again show that he or she satisfies the requirements of 37 CFR 1.341(c) and that registration would be appropriate before reinstatement is granted.

LUTRELLE F. PARKER,
Aug. 21, 1978. *Chairman, Committee on Enrollment.*

Report on Results of a June, 1978 Survey on the Citation by Applicants of Prior Art in Patent Applications

This report summarizes the data compiled from a sample of 724 allowed applications surveyed in the Office of Patent Program Control during the weeks of June 4 to June 17, 1978.

All applications in this survey were filed on or after July 1, 1977, the effective date of the establishment of new rules 37 CFR 1.97–1.99 relating to the citation of prior art by applicants.

For the purposes of the survey, a "citation," whether appearing in the specification or in a separate paper, is defined as (1) a listing of patents or publications together *with* a concise explanation of the relevance of each listed item [i.e. a prior art "statement" under 37 CFR 1.98(a)] or (2) a "mere listing" of patents or publications. In addition, a "reference" is defined as any patent or other publication cited by applicant.

This survey is similar to and presented in the same general format as the survey published in the Official Gazette of November 23, 1976, pages 1356 and 1357.

The statistics are presented without comment.

	Chem.	Elec.	Mech.	Total
(1) Number of applications in sample	247	190	287	724
(Percent of total)	34	26	40	100
Number of applications having citations submitted in:				
(2) Separate papers only	58	32	45	135
(Percent of sample 2/1)	24	17	16	19
(3) Both separate papers *and* in specification	7	7	20	34
(Percent of sample 3/1)	3	4	7	5
(4) The specification only	119	75	97	291
(Percent of sample 4/1)	48	39	34	40
(5) Total number of applications having citations	184	114	162	460
(Percent of sa mple 5/1)	74	60	56	64

Applications in which the applicant submitted citations in the *specification*.

	Chem.	Elec.	Mech.	Total
(6) Number of applications including citations in the specification	126	82	117	325
(Percent of applications having citations 6/1)	51	43	41	45
(7) Number of applications including mere listing of references in the specification	34	12	14	60
(Percent of applications having mere listing of refcrences 7/1)	14	6	5	8
(8) Number of applications including prior art statements in the specification	93	70	103	266
(Percent of applications having prior art statements 8/1)	38	37	36	37
(9) Number of applications including prior art statements in the specification which included copies of the references	10	10	17	37
(Percent of applications, with statements, having copies of references 9/8)	11	14	17	14
(10) Number of applications having prior art statements in the specification which comply fully with the guidelines (37 CFR 1.97–1.99; MPEP § 609) (e.g. timely filed, translations where applicable, etc.)	10	10	13	33
(Percent of applications, with statements, in accordance with CFR and MPEP 10/8)	11	14	13	12
(11) Number of applications having prior art statements citing non-English documents in specification	55	12	12	79
(Percent of applications, with statements. citing non-English documents 11/8)	59	17	12	30
(12) Number of applications having prior art statements citing non-English documents in specification which included an English translation or English equivalent document	4	3	2	9
(Percent of applications, with statements, having translations of non-English documents 12/11)	7	25	17	11

Applications in which applicant submitted citations in *separate papers*.

	Chem.	Elec.	Mech.	Total
(13) Number of applications having citations in a separate paper	65	40	66	171
(Percent of applications having citations in separate papers 13/1)	26	21	23	24
(14) Number of separate papers having citations. (Note that 178 papers were filed in 171 applications. Of 171 applications, 165 had one paper, 5 applications had two papers and one application had three papers)	67	43	68	178

	Chem.	Elec.	Mech.	Total
(15) Number of separate papers having citations submitted within 3 months of the filing date of the application	50	35	51	136
(Percent of separate papers having citations submitted within 3 months 15/14)	75	81	75	76
Number of separate papers having citations filed later than 3 months after the filing date and after the first Office action which:				
(16) Included a statement explaining why the prior art was not earlier presented	2	1	3	6
(Percent of separate papers having citations including explanations for late filing 16/14)	3	2	4	3
(17) *Did not include* a statement explaining why the prior art was not earlier presented	15	7	14	36
(Percent of separate papers having citations not including explanation for late filing 17/14)	22	16	21	20
(18) Number of separate papers having citations which included a copy(s) of the reference(s)	53	38	51	142
(Percent of separate papers having citations including copy(s) of the reference(s) 18/14)	79	88	75	80
(19) Number of separate papers having citations which included a non-English document citation	26	8	7	41
(Percent of separate papers having citations citing non-English documents 19/14)	39	19	10	23
(20) Number of separate papers having citations which included an English translation or English language equivalent of a non-English document	10	3	2	15
(Percent of separate papers having translation etc., of non-English documents 20/19)	38	38	29	37
(21) Number of separate papers having prior art statements	63	28	42	133
(Percent of separate papers having prior art statements 21/14)	94	65	62	75
(22) Number of separate papers having citations which fully conformed with the guidelines (37 CFR 1.97–1.99; MPEP § 609)	41	20	27	88
(Percent of separate papers fully conforming with CFR and MPEP 22/14)	61	47	40	49

Applications (with statements in specification) grouped below according to numbers of references cited.

	Chem.	Elec.	Mech.	Total
(23) Number of applications including statements in the specification having a range of 1–5 references	73	57	88	218
(Percent of applications having statements in specification with 1–5 references 23/8)	79	81	85	82
(24) Number of applications including statements in the specification having a range of 6–10 references	14	13	10	37
(Percent of applications having prior art statements in specification with 6–10 references 24/8)	15	19	10	14
(25) Number of applications including statements in the specification having more than 10 references	6	0	5	11
(Percent of applications having statements in specification with 10 or more references 25/8)	6	---	5	4

Separate papers (with statements) grouped below according to numbers of references cited.

	Chem.	Elec.	Mech.	Total
(26) Number of separate papers including statements having a range of 1–5 references	41	19	34	94
(Percent of separate papers with 1–5 references 26/21)	65	68	81	71
(27) Number of separate papers including statements having a range of 6–10 references	8	6	6	20
(Percent of separate papers with 6–10 references 27/21)	13	21	14	15
(28) Number of separate papers including statements having more than 10 references	14	3	2	19
(Percent of separate papers with 10 or more references 28/21	22	11	5	41

Applications (with mere listings of references in specification and separate papers) grouped below according to number of references cited.

	Chem.	Elec.	Mech.	Total
(29) Number of applications having a range of 1–5 references	22	17	25	64
(Percent of applications having listings of 1–5 references 29/29+30+31)	57	63	64	61
(30) Number of applications having a range of 6–10 references	6	6	8	20
(Percent of applications having listings of 6–10 references 30/29+30+31)	15	22	21	19
(31) Number of applications having more than 10 references	11	4	6	21
(Percent of applications having listings of 10 or more references 31/29+30+31)	28	15	15	20

Dated: August 29, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 234,101, Re. S.N. 910,662, Filed Jun. 21, 1978, Cl. D6/26, STOOL, Philip Robert Salmon, et al., Owner of Record: *Inventors,* Attorney or Agent: Fred Wiviott, et al., Ex. Gp.: 290

3,809,845, Re. S.N. 930,641, Filed Jul. 31, 1978, Cl. 219/10.55, HEATING OF PRODUCTS IN ELECTRO-MAGNETIC FIELD, Lennart Arvid Stenstrom, Owner of

Record: *Alfa-Laval AB, Tumba, Sweden,* Attorney or Agent: Cyrus S. Hapgood, et al., Ex. Gp.: 213

3,886,979, Re. S.N. 930,866, Filed Aug. 3, 1978, Cl. 138/118.1, SHIRRED TUBULAR FOOD CASINGS HAVING A BARRIER COATING, Jerome J. M. Rasmussen, Owner of Record: *Union Carbide Corporation, New York, N.Y.,* Attorney or Agent: James C. Arvantes, et al., Ex. Gp.: 243

4,026,985, Re. S.N. 930,867, Filed Aug. 3, 1978, Cl. 264/129, SHIRRED TUBULAR FOOD CASINGS HAVING A BARRIER COATING, Jerome J. M. Rasmussen, Owner of Record: *Union Carbide Corporation, New York, N.Y.,* Attorney or Agent: James C. Arvantes, et al., Ex. Gp.: 147

PATENT NOTICES

Certificates of Correction for the Week of Sept. 26, 1978

P.P. 4213	4,064,379	4,075,569	4,082,880
D. 247,796	4,065,380	4,075,968	4,083,042
3,797,930	4,065,471	4,076,698	4,083,209
3,816,025	4,066,678	4,077,303	4,083,229
3,920,673	4,067,281	4,077,765	4,083,303
3,950,321	4,067,390	4,077,802	4,083,667
3,952,478	4,069,569	4,077,847	4,084,960
3,999,711	4,069,704	4,078,253	4,085,211
4,018,346	4,069,727	4,078,695	4,085,234
4,033,272	4,069,819	4,078,762	4,085,325
4,036,788	4,070,276	4,078,950	4,085,447
4,038,088	4,070,352	4,078,983	4,086,679
4,039,112	4,070,370	4,079,119	4,086,763
4,042,900	4,070,981	4,079,411	4,087,712
4,047,643	4,071,281	4,079,509	4,087,888
4,047,763	4,071,474	4,079,943	4,089,127
4,048,318	4,071,610	4,080,449	4,089,564
4,050,374	4,073,103	4,080,502	4,089,678
4,052,379	4,073,437	4,080,719	4,089,728
4,053,463	4,073,537	4,080,821	4,090,689
4,053,853	4,074,760	4,081,257	4,090,790
4,058,497	4,074,789	4,081,533	
4,058,546	4,075,108	4,082,060	
4,061,704	4,075,253	4,082,414	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY
Office of Judge Advocate General, Patent Division,
Room 2C-455 Pentagon, Washington, D.C. 20310

Patent 3,942,132. Combined Electron Beam Semiconductor Modulator and Junction Laser. Filed Sept. 6, 1974. Patented Mar. 2, 1976.

Patent 3,944,729. Stabilized Terrain Optical Position Sensor. Filed Mar. 25, 1975. Patented Mar. 16, 1976.

Patent 3,948,699. Hydrogen Gas Generators for Use in Chemical Lasers. Filed Nov. 8, 1974. Patented Apr. 6, 1976.

Patent 3,948,700. Method of Producing High Temperature Hydrogen. Filed Nov. 8, 1974. Patented Apr. 6, 1976.

Patent 3,950,862. Solar Cell Detector Array for Engagement Simulation. Filed Oct. 3, 1974. Patented Apr. 20, 1976.

Patent 3,952 583. Apparatus and Method for the Remote Detection of Vibrations of Diffuse Surfaces. Filed Jan. 2, 1975. Patented Apr. 27, 1976.

Patent 3,958,457. Electronically Operated Tipping-Bucket Rain Guage. Filed Sept. 26, 1975. Patented May 25, 1976.

Patent 3,959,659. Intense Energetic Electron Beam Assisted Fusion Neutron Gencrator. Filed Apr. 4, 1976. Patented May 25, 1976.

Patent 3,965,081. Isotactic and Syndiotactic Polyvinyl Nitrates and Processes for their Formation. Filed Jan. 21, 1974. Patented June 22, 1976.

Patent 3,965,749. Sampling and Dilution Method. Filed Mar. 19, 1975. Patented June 29, 1976.

Patent 3,967,121. Low Level Infrared Camera (LLIR Camera). Filed Sept. 10, 1975. Patented June 29, 1976.

Patent 3,972,864. Copolymers of Methyl Alpha-N-Alkylacrylate and Methyl Methacrylate. Filed Feb. 19, 1975. Patented Aug. 3, 1976.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents,
Washington, D.C. 20314

Patent 3,911,280. Method of Measuring a Profile of the Density of Charged Particles in a Particular Beam. Filed Apr. 11, 1974. Patented Oct. 7, 1975.

Patent 3,912,625. Method for Removing and Decolorizing Aqueous Waste Effluents Containing Dissolved or Dispersed Organic Matter. Filed Nov. 5, 1973. Patented Oct. 14, 1975.

Patent 3,914,054. Zeeman Effect Absorption Spectrometer. Filed Feb. 13, 1974. Patented Oct. 21, 1975.

Patent 3,914,373. Method for Separating Isotopes. Filed Jan. 20, 1973. Patented Oct. 21, 1975.

Patent 3,914,388. Volatilization of Iodine from Nitric Acid Using Peroxide. Filed Sept. 11, 1973. Patented Oct. 21, 1975.

Patent 3,916,200. Window for Radiation Detectors and the Like. Filed Sept. 4, 1974. Patented Oct. 28, 1975.

Patent 3,918,812. Diagnoses of Disease States by Fluorescent Measurements Utilizing Scanning Laser Beams. Filed May 7, 1973. Patented Nov. 11, 1975.

Patent 3,918,818. Method for Detection of Trichinellae. Filed Mar. 29, 1974. Patented Nov. 11, 1975.

Patent 3 919,273. Nonaqueous Actinide Hydride Dissolution and Production of Actinide Beta-Diketonates. Filed Aug. 23, 1974. Patented Nov. 11, 1975.

Patent 3,919,274. Nonaqueous Method for Dissolving Lanthanide and Actinide Metals. Filed Aug. 23, 1974. Patented Nov. 11, 1975.

Patent 3,920,577. Iodine Retention During Evaporative Volume Reduction. Filed July 16, 1974. Patented Nov. 18, 1975.

Patent 3,922,311. Fluorodinitroethyl Difluoroformal and Process of Manufacture. Filed May 10, 1972. Patented Nov. 25, 1975.

Patent 3,922,872. Iron Titanium Manganese Alloy Hydrogen Storage. Filed Feb. 4, 1975. Patented Dec. 2, 1975.

Patent 3,923,619. 018 Enrichment Process in U02F2 Utilizing Laser Light. Filed Sept. 16, 1974. Patented Dec. 2, 1975.

Patent 3,923,959. Method for Preparing Actinide Nitrides. Filed Nov. 28, 1973. Patented Dec. 2, 1975.

Patent 3,924,180. Potential Sensing Cell Analyzer. Filed Oct. 12, 1973. Patented Dec. 2. 1975.

Patent 3,925,036. Stage Design. Filed Mar. 23, 1951. Patented Dec. 9, 1975.

Patent 3 925,039. System for Treating Fuel Gas. Filed Nov. 18, 1974. Patented Dec. 9, 1975.

Patent 3,926,560. System for Detecting Gaseous Contaminants In Air. Filed Oct. 30, 1973. Patented Dec. 16, 1975.

Patent 3,926,953. Process for Producing 1,5-Diacetyl-3,7-Dinatro-1,3,5,7-Tetraazacyclooctane. Filed Dec. 5, 1974. Patented Dec. 16, 1975.

Patent 3,929 585. Production of Charcoal from Sawdust in a Fluidized Bed. Filed Aug. 16, 1972. Patented Dec. 30, 1975.

Patent 3,929,601. Synthesis of Pentafluorides. Filed Mar. 26, 1974. Patented Dec. 30, 1975.

Patent 3,929,979. Process for Generating Hydrogen. Filed Sept. 10, 1974. Patented Dec. 30. 1975.

Patent 3,929,980. Method of Producing Hydrogen. Filed Dec. 26, 1974. Patented Dec. 30, 1975.

Patent 3,932,300. System for Disposing of Radioactive Water. Filed Sept. 10, 1973. Patented Jan. 13, 1976.

Patent 3,936,633. Method of Determining Lanthanides in a Transition Element Host. Filed Jan. 16, 1975. Patented Feb. 3, 1976.

Patent 3,939,049. Process for Radiation Grafting Hydrogels onto Organic Polymeric Substrates. Filed Apr. 10, 1974. Patented Feb. 17, 1976.

Patent 3,943,062. Cryolite Process for the Solidification of Radioactive Wastes. Filed May 13, 1974. Patented Mar. 9, 1976.

Patent 3,943.204. Method for Improving the Extraction Properties of a Tributyl Phosphate Solution. Filed Feb. 5, 1974. Patented Mar. 9, 1976.

Patent 3,944,638. Process for Preparing Metal-Carbide-Containing Microspheres From Metal-Loaded Resin Beads. Filed June 18, 1974. Patented Mar. 16, 1976.

Patent 3,946,932. Brazing Graphite to Graphite. Filed Apr. 25, 1968. Patented Mar. 30, 1976.

Patent 3,947,335. Isotope Separation by Selective Photocisosciation of Glyoxal. Filed Mar. 4, 1975. Patented Mar. 30, 1976.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents Office of Naval Research—
Code 302, Arlington, Va. 22217

Patent 3,942,127. Aspheric Cassegrain Laser Power Amplifier System. Filed Apr. 11, 1975. Patented Mar. 2, 1976.

Patent 3,948,042. System for Controlling the Nozzle Throat Aren of a Rocket Motor. Filed Dec. 23, 1968. Patented Apr. 6, 1976.

Patent 3,948,182. Semi-Active Electro-Optical Bomblet Fuze. Filed Oct. 3, 1968. Patented Apr. 6, 1976.

Patent 3,956,991. Optical, Semi-Active Bomblet Fuze. Filed Oct. 3, 1968. Patented May 18, 1976.

Patent 3,957,350. Device for Displaying a Laser Beam. Filed Aug. 26, 1974. Patented May 18, 1976.

Patent 3,964,416. Boiler Reactor. Filed July 19, 1965. Patented June 22, 1976.

Patent 3,968,400. Flash Tube Modulator. Filed Mar. 30, 1965. Patented July 6, 1976.

Patent 3,969,667. Device for Determining the State of Charge in Batteries. Filed Dec. 20, 1974. Patented July 13, 1976.

Patent 3,974,323. Metal Article Having Protective Thin Film Coating and Method of Applying. Filed Nov. 19, 1973. Patented Aug. 10, 1976.

Patent 3,978,724. Fluidic Angle-of-Attack Sensor. Filed Dec. 4, 1975. Patented Sept. 7, 1976.

Patent 3,979,253. Method for Dispersing Glass Fibers for the Preparation of Glass Filter Media. Filed Feb. 5, 1976. Patented Sept. 7, 1976.

Patent 3,979,561. Level-Code Encoded Multiplexer. Filed May 6, 1975. Patented Sept. 7, 1976.

Patent 3,982,235. Sinusoidal Film Plated Memory Wire. Filed Aug. 28, 1974. Patented Sept. 21, 1976.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—
NASA Code GP–2, Washington, D.C. 20546

Patent 3,977,231. Static Coefficient Test Method and Apparatus. Patented Aug. 31, 1976.

Patent 3,977,771. Optical Noise Suppression Device and Method. Patented Aug. 31, 1976.

Patent 3,977,787. High Resolution Fourier Interferometer-Spectrophotopolarimeter. Patented Aug. 31, 1976.

Patent 3,978,287. Real Time Analysis of Voiced Sounds. Patented Aug. 31, 1976.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch
General Service Division, Federal Building,
Agricultural Research Service
Hyattsville, Md. 20782

Patent 3,982,037. Peeling Fruits and Vegetables by Multiple Heatings and Coolings. Filed Jan. 15, 1975. Patented Sept. 21, 1976.

DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,910,673. Coaxial Cable Connectors. Filed Sept. 18, 1973. Patented Oct. 7, 1975.

Patent 3,913,657. Method and Apparatus for Fabricating a Composite Structure Consisting of a Filamentary Material in a Metal Matrix. Filed July 17, 1974. Patented Oct. 21, 1975.

Patent 3,914,133. Thermal Battery. Filed Apr. 17, 1973. Patented Oct. 21. 1975.

Patent 3,914,392. High Temperature Insulating Carbonaceous Material. Filed Mar. 27, 1973. Patented Oct. 21, 1975.

Patent 3,914,681. Ring Magnet Firing Angle Control. Filed Nov. 6, 1974. Patented Oct. 21, 1975.

Patent 3,915,119. Apparatus for Fabricating Composite Ceramic Members. Filed May 7, 1974. Patented Oct. 28, 1975.

Patent 3,915,742. Interelectrode Separator for Electrochemical Cell. Filed May 7, 1974. Patented Oct. 28, 1975.

Patent 3,916,432. Superconductive Microstrip Exhibiting Negative Differential Resistivity. Filed May 17, 1974. Patented Oct. 28, 1975.

Patent 3,917,782. Method for Preparing Thin-Walled Ceramic Articles of Configuration. Filed May 16, 1973. Patented Nov. 4, 1975.

Patent 3,918,961. Method of Removing Bulk Sodium from Metallic Surfaces. Filed Dec. 12, 1974. Patented Nov. 11, 1975.

Patent 3,918,965. Iridium-Hafnium Alloys. Filed Apr. 26, 1974. Patented Nov. 11, 1975.

Patent 3,922,748. Reactor Vessel Seal Service Fixture. Filed May 9, 1974. Patented Dec. 2, 1975.

Patent 3,922,903. High Temperature Aqueous Stress Corrosion Testing Device. Filed Sept. 27, 1974. Patented Dec. 2, 1975.

Patent 3,923,231. Diffusion Bonding of Gold to Gold. Filed Apr. 11, 1975. Patented Dec. 2, 1975.

Patent 3,924,184. Vibrating Fiber Electrometer. Filed Sept. 16, 1974. Patented Dec. 2, 1975.

Patent 3,924,794. Solder Leveling Process. Filed Dec. 2, 1974. Patented Dec. 9, 1975.

Patent 3,928,849. Intrusion Detector Self-Test System. Filed Dec. 17, 1974. Patented Dec. 23, 1975.

Patent 3,931,520. Sample Positioning Apparatus. Filed Nov. 8, 1974. Patented Jan. 6, 1976.

Patent 3,931,522. Period Meter for Reactors. Filed Sept. 27, 1974. Patented Jan. 6, 1976.

Patent 3,931,673. Aluminum for Bonding Si—Ge Alloys to Graphite. Filed Oct. 8, 1969. Patented Jan. 13, 1976.

Patent 3,932,717. High-Explosive Driven Crowbar Switch. Filed Oct. 30, 1974. Patented Jan. 13, 1976.

Patent 3,933,447. Underground Gasification of Coal. Filed Nov. 8, 1974. Patented Jan. 20, 1976.

Patent 3,933,520. Method of Preparing Electrodes with Porous Current Collector Structures and Solid Reactants for Secondary Electrochemical Cells. Filed Apr. 3, 1975. Patented Jan. 20, 1976.

Patent 3,933,521. Anode for a Secondary, High-Temperature Electrochemical Cell. Filed Feb. 13, 1975. Patented Jan. 20, 1976.

Patent 3,933,581. Control Rod Drive for Reactor Shutdown. Filed June 4, 1974. Patented Jan. 20, 1976.

Patent 3,934,649. Method for Removal of Methane from Coalbeds. Filed July 25, 1974. Patented Jan. 27, 1976.

Patent 3,935,063. Emergency Heat Removal System for a Nuclear Reactor. Filed Nov. 28, 1973. Patented Jan. 27, 1976.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP–2
Washington, D.C. 20546

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U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP
Washington, D.C. 20314

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U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch
General Service Division, Federal Building,
Agricultural Research Service
Hyattsville, Md. 20782

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U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

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U.S. DEPARTMENT OF THE NAVY
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Office of Naval Research
Code 302
Arlington, Va. 22217

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Patent 3,982,189. Square Wave to Sine Wave Converter. Filed Nov. 25, 1975. Patented Sept. 21, 1976.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP–2
Washington, D.C. 20546

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Patent 3,977,197. Thermal Energy Storage System. Patented Aug. 31, 1976.

U.S. DEPARTMENT OF THE ARMY
Office of Judge Advocate General, Patent Division,
Room 2C–455 Pentagon
Washington, D.C. 20314

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U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch
General Services Division, Federal Building,
Agricultural Research Service
Hyattsville, Md. 20782

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Patent 4,071,925. Apparatus for Forming Textile Lap. Filed May 25, 1976. Patented Feb. 7, 1978. Not available NTIS.

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U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

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Patent 4,040,801. Method and Apparatus for Rapid Adjustment of Process Gas Inventory in Gaseous Diffusion Cascades. Filed Jun 14, 1976. Patented Aug. 9, 1977. Not available NTIS.

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20014

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U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302
Arlington, Va. 22217

Patent 4,062,897. Acetals Derived From Negatively Substituted Aldehydes and Polynitro- or Halonitroethanols. Filed Dec. 12, 1975. Patented Dec. 13, 1977. Not available NTIS.

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Patent 4,065,726. Negative Feedback Amplifier and Level Shifter. Filed Aug. 11, 1976. Patented Dec. 27, 1977. Not available NTIS.

Patent 4,066,736. Process for Producing Concentrated Solutions of Hydroxylammonium Nitrate and Hydroxylammonium Perchlorate. Filed Mar. 19, 1976. Patented Jan. 3, 1978. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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NASA Code GP–2
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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 12, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-12-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-17-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-17-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-6-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-28-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-11-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-23-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	11-24-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders. Woodworking; Tools; Cutlery; Jacks.	5-24-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors: Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors: Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-8-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive

Plant Patents..... Numbers 2,085 to 2,094, inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,777

CONCRETE TANK OF PRECAST CONCRETE PANELS WITH PRETENSIONED BEAM MEANS

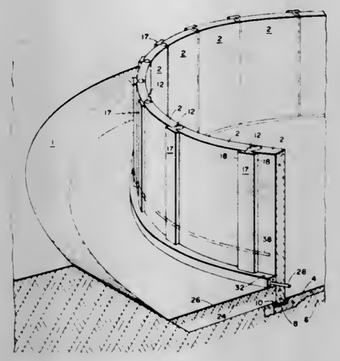
Francis X. Crowley, 24 Lanark Rd., Wellesley, Mass. 02181

Original No. 4,015,383, dated Apr. 5, 1977, Ser. No. 576,121, May 9, 1975. Continuation of Ser. No. 418,443, Nov. 23, 1973, abandoned. Application for reissue Jul. 22, 1977, Ser. No. 818,244

Int. Cl.[2] E04H *12/16*

U.S. Cl. 52—224

5 Claims



1. A tank wall comprising:

a multiplicity of precast panels concrete, laterally spaced-apart over their entire thickness, and vertically one-piece integral over the entire height of said wall,

cast concrete filler units filling the entire spaces between said panels,

a plurality of vertically spaced-apart cast continuous circular concrete beams contiguous with said panels,

said beams forming horizontal collars surrounding said wall to reinforce said wall, and

metal reinforcing means surrounding said wall and covered by the concrete of said beams,

said reinforcing means being in tension while the tank formed by said wall is empty, thereby to stress said wall.

Re. 29,778

PEDIATRIC RESPIRATOR

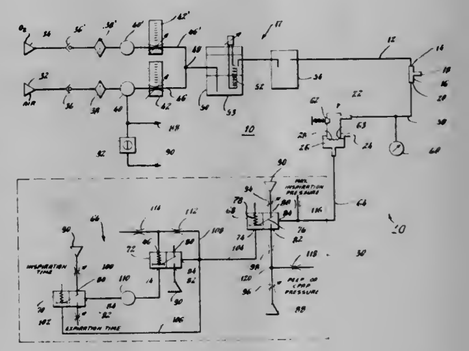
Jeffrey L. Stewart, Brookfield, Conn., assignor to Bio-Med Devices, Inc., Stamford, Conn.

Original No. 3,949,749, dated Apr. 13, 1976, Ser. No. 477,194, Jun. 7, 1974. Continuation-in-part of Ser. No. 445,758, Feb. 24, 1974, Pat. No. 3,910,270. Application for reissue Oct. 29, 1976, Ser. No. 736,991

Int. Cl.[2] A61M *16/00*

U.S. Cl. 128—145.8

9 Claims



4. A compact respirator operating in an ambient environment with a source of pressurized gas comprising

patient connection means having a patient port, an inlet port and a control port in communication with the patient port for delivering breathable gas;

means for supplying the inlet port with a flow of breathable gas at a rate selected to aid the breathing cycle from the patient port, said gas being continuously suppliable through the inlet port to the patient port and to the control port;

control valve means coupled between the control port and the ambient environment to controllably release gas from the control port for a corresponding control of gas at the patient port;

means including a pneumatically controlled bistable gas pressure controlling element operatively coupled to the control valve to control inspiratory gas flow to the patient port during one state of the bistable element and enable expiratory gas flow away from the patient port during the other state of the bistable element;

[The respirator as claimed in claim **2** wherein the means to control inspiratory and expiratory gas flow at the patient port further includes]

[means producing a source of gas under pressure;]

[a] maximum pressure control *means* operatively coupled between the [gas] source [producing means] *of pressurized gas* and the bistable gas pressure controlling element to establish a desired maximum inspiratory pressure level [at the patient port] *on said control valve means and thereby regulate inspiratory gas flow to the patient port during one state of the bistable element effectively through the bistable gas pressure controlling element*; and

[a] minimum pressure control *means* operatively coupled between the [gas] source [producing means] *of pressurized gas* and the bistable gas pressure controlling element to establish a desired expiratory pressure level [at the patient port] *on said control valve means and thereby regulate expiratory gas flow to the patient port during another state of the bistable element effectively through the bistable gas pressure controlling element;*

pneumatic oscillating means for providing cyclic gas pressures between levels selected to actuate the bistable gas pressure controlling element between its states, a first gas pressure level from the pneumatic oscillating means being selected to endure in correspondence with a desired length of time of inspiratory gas flow to the patient port and a second gas pressure level from the pneumatic oscillating means being selected to endure in correspondence with a desired length of time of the expiratory gas flow away from the patient port;

whereby the patient port may be provided with a continuous supply of breathable gas from the inlet port independent of the state of the control valve while producing inspiration and expiration respiratory support.

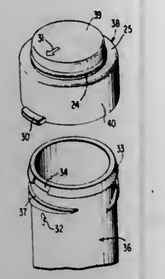
Re. 29,779
CHILD-PROOF AND PHARMACIST-ASSISTING REVERSIBLE CLOSURE FOR CONTAINERS

Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415

Original No. 3,865,267, dated Feb. 11, 1975, Ser. No. 426,534, Dec. 20, 1973. Application for reissue Jan. 19, 1977, Ser. No. 760,520

Int. Cl.[2] B65D *55/02, 85/56;* A61J *1/00*

U.S. Cl. 215—206 20 Claims



18. A reversible closure having two independent positions of use on a container comprising a first coupling part on said closure adapted to engage a container in one use position of the closure wherein the closure protects the interior of the container from contamination, the first coupling part separating from the container by application thereto of a simple force, and a second coupling part on the closure having positive interlocking engagment with the container in the second position of use of the closure on the container and being releasable by complex manipulation, whereby said first coupling part is the only part closing the container in said one use position and said second coupling part is the only part closing the container in the second position of use.

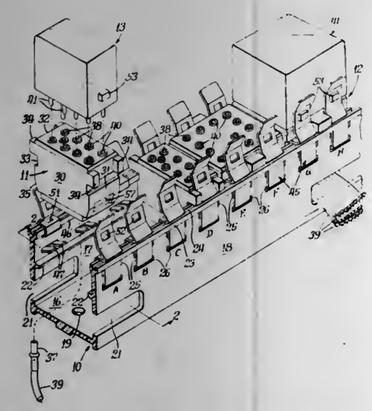
Re. 29,780
MULTIPLE SOCKET ASSEMBLY FOR ELECTRICAL COMPONENTS

John L. Rutkowski, Mount Prospect, Ill., assignor to Appleton Electric Company, Chicago, Ill.

Original No. 4,032,209, dated Jun. 28, 1977, Ser. No. 649,477, Jan. 15, 1976. Application for reissue Sep. 7, 1977, Ser. No. 831,355

Int. Cl.[2] H01R *13/54*

U.S. Cl. 339—91 R 7 Claims



1. In an electrical apparatus comprising electrical component means, connector means having wires extending therefrom and a mounting track, said track including a pair of parallel rails defining a space therebetween, said connector means being positioned in said space and supported on said rails, said means having a plurality of mating plugs and sockets for releasably securing the component means to the connector means, the improvement comprising:

a plurality of pairs of spring clip means engaging the track, the two clip means of each pair being mounted opposite each other on respective rails and each pair defining a station, said track having the general shape of a U shaped channel having an open side and including a base between said rails opposite said open side, said rails at each station having members for supporting a connector means at said open side and at a specific location above said base whereby the wires may extend through the part of that space between the connector means and the base, said clip means and said component means having interengaging devices for releasably securing the clip means to the component means, said clip means applying a spring force between the track and the component means urging the component means onto the connector means and holding the combination of a component means and a connector means onto the rail.

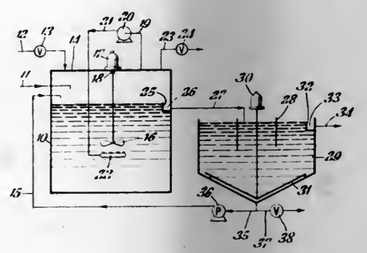
Re. 29,781
HIGH OXYGEN UTILIZATION IN BOD-CONTAINING WATER TREATMENT

John R. McWhirter, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Original No. 3,547,812, dated Dec. 15, 1970, Ser. No. 838,467, Jul. 2, 1969. Application for reissue Sep. 26, 1977, Ser. No. 836,740

Int. Cl.[2] C02C *1/10, 1/12*

U.S. Cl. 210—7 10 Claims



1. In a method for treating BOD-containing water by oxygenation in contact with active biomass, the improvement comprising: mixing BOD-containing water, biomass and feed gas comprising at least 60% oxygen (by volume) in an aeration zone *of a reactor* to form [a] *an oxygenated* liquor body and [continuing said mixing while] *a body of aeration gas isolated from the atmosphere above said liquor and continuously recirculating one of the aeration gas and liquor fluids in intimate contact with the other of said fluids in said aeration zone while venting a portion of the aeration gas to the atmosphere; and* simultaneously maintaining: (a) the oxygen feed gas to mixing plus gas-liquor contact energy ratio of 0.03–0.4 lb. moles oxygen per horsepower hour of energy supplied, (b) the aeration gas above said liquor at oxygen partial pressure of at least 300 mm. Hg but below 80% oxygen while consuming at least 50% of the feed gas oxygen in said liquor, (c) the dissolved oxygen concentration of said liquor at below 70% of saturation with respect to the oxygen in said aeration gas but above about 2 p.p.m. and [(d) continuously recirculating one of the aeration gas and liquor fluids in intimate contact with the other of said fluids in said aeration zone; and thereafter] withdrawing oxygenated liquor from said aeration zone.

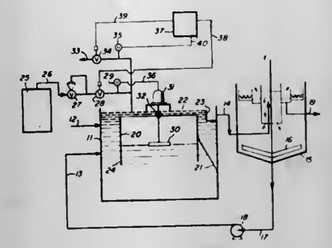
Re. 29,782
CYCLIC OXYGENATION OF BOD-CONTAINING WATER

John R. McWhirter, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Original No. 3,547,811, dated Dec. 15, 1970, Ser. No. 838,442, Jul. 2, 1969. Application for reissue Sep. 26, 1977, Ser. No. 836,757

Int. Cl.[2] C02C *1/10, 1/12*

U.S. Cl. 210—7 14 Claims



15. A method for treatment of BOD-containing water by cyclic oxygenation in contact with biomass comprising: as a first oxygenation cycle, introducing a first liquor of BOD-containing water and biomass into a chamber having a closed upper end and a lower end in fluid common with a surrounding liquid storage enclosure and substantially filling said chamber with said first liquor, introducing into said chamber a first feed gas quantity comprising at least 50% oxygen (by volume) and having oxygen partial pressure of at least 7.3 p.s.i.a. to progressively downwardly displace said first liquor from an upper level in said chamber to a lower chamber level, mixing said first feed gas and first liquor in said chamber while simultaneously continuously recirculating one of such fluids against the other fluid for at least 10 minutes and with sufficient mixing and gas-liquor contact energy input to consume at least 60% (by volume) of the oxygen in said first feed gas to form a first oxygenated liquid-solid and first unconsumed oxygen containing gas over said first oxygenated liquid-solid comprising a 10–70% oxygen but of lower oxygen purity than said first feed gas and having oxygen partial pressure of at least 1.47 p.s.i.a., exhausting said first unconsumed oxygen-containing gas from said chamber and raising a hydrostatic head of a second liquor of second BOD-containing water and second biomass into said chamber until said chamber is substantially filled with said second liquor; as a second oxygenation cycle, introducing into said chamber a second feed gas quantity comprising at least 50% oxygen (by volume) and having oxygen partial pressure of at least 7.3 p.s.i.a. to progressively downwardly displace said second liquor from an upper level in said chamber to a lower chamber level, mixing said second feed gas and second liquor in said chamber while simultaneously continuously recirculating one of such fluids against the other fluid for at least 10 minutes and with sufficient mixing and gas-liquid contact energy to consume at least 60% (by volume) of the oxygen in said second feed gas to form second oxygenated liquid-solid and second unconsumed oxygen-containing gas over said second oxygenated liquid-solid comprising 10–70% oxygen but of lower oxygen purity than said second feed gas and having oxygen partial pressure of at least 1.47 p.s.i.a., said second BOD-containing water and second biomass of said second liquor being composed at least in part of said first oxygenated liquid-solid, and exhausting said second unconsumed oxygen-containing gas from said chamber and raising a hydrostatic head of liquor of BOD-containing water and biomass in said chamber until the chamber is substantially filled with said liquor.

Re. 29,783
PROCESS FOR TREATING AQUEOUS CHEMICAL WASTE SLUDGES AND COMPOSITIONS PRODUCED THEREBY

Charles L. Smith, Conshohocken, and William C. Webster, Warminster, both of Pa., assignors to IU Technology Corporation, Miami, Fla.

Original No. 3,720,609, dated Mar. 13, 1973, Ser. No. 29,561, Apr. 17, 1970. Application for reissue Feb. 8, 1977, Ser. No. 766,796

Int. Cl.[2] C02C *5/02*

U.S. Cl. 210—59 19 Claims

1. The method of treating *an* aqueous chemical waste [sludges] *sludge including a sulfate compound* comprising adding to said [sludges] *sludge* sufficient lime, [aluminum-containing material] *fly ash* and water soluble sulfate compound to produce a composition having available sulfate ions, a second type of available ion selected from the group consisting of aluminum and ferric ions, the concentration of which is expressed in Al_2O_3 equivalents, and a third type of available ions selected from the group consisting of calcium and magnesium, the concentration of which is expressed in CaO equivalents, wherein the composition, including available ions in said added lime, [aluminum-containing material] *fly ash* and water soluble sulfate compounds includes at least 0.5 weight percent [$—SO_4$] $(—SO_4)^{-2}$, at least 0.2 weight percent Al_2O_3 and equivalents thereof, and at least 0.5 weight percent CaO and equivalents thereof, *the fly ash being present in said composition in an amount of at least 20% by weight of the amount of sludge in said composition, said composition being cementitiously hardenable through chemical reactions the products of which include calcium sulfo-aluminate hydrate or calcium alumino-sulfate hydrate, and allowing said composition to harden by chemical reaction to develop penetration resistance therein under atmospheric conditions.*

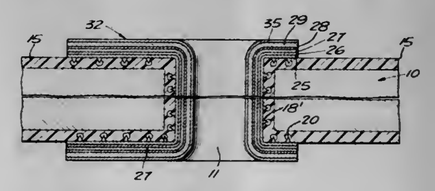
Re. 29,784
THERMAL DISSIPATING METAL CORE PRINTED CIRCUIT BOARD

Donald H. Chadwick, Northbridge, and Ruben T. Apodaca, Inglewood, both of Calif., assignors to International Electronics Research Corp., Burbank, Calif.

Original No. 3,514,538, dated May 26, 1970, Ser. No. 772,672, Nov. 1, 1968. Continuation of Ser. No. 370,792, Jun. 18, 1973, abandoned, which is a continuation of Ser. No. 131,102, Apr. 5, 1971, abandoned. Application for reissue Jun. 28, 1974, Ser. No. 483,972

Int. Cl.[2] H05K *1/00*

U.S. Cl. 174—68.5 8 Claims



1. A metal core printed circuit board comprising

a sheet of metal having a thickness slightly less than the thickness of a standard complete printed circuit board,

a base film of synthetic plastic resin forming a coating extending over at least one surface of said sheet, said coating having a roughened surface texture comprising a multiplicity of keying depressions,

a circuit pattern on said coating comprising conducting metallic lines,

said metallic lines comprising a base layer of nickel in keyed bonded engagement with said coating and the depresions therein, a film of copper in electroplated engagement with said nickel, an outer layer of nickel in electroplated en-

gagement with said film of copper, a layer of pyrophosphate copper in bonded engagement with said last identified layer of nickel, and an overlying layer of metal unlike said copper and nickel in adhesive engagement with said pyrophosphate copper, there being spaces between said conducting metallic lines wherein said coating is exposed and said metal core is covered by said coating.

Re. 29,785

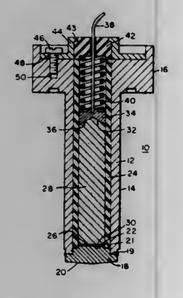
REPLACEABLE ELEMENT ULTRASONIC FLOWMETER TRANSDUCER

Walter C. Leschek, Monroeville, and James L. McShane, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Original No. 3,925,692, dated Dec. 9, 1975, Ser. No. 479,057, Jun. 13, 1974. Application for reissue Jun. 6, 1977, Ser. No. 804,119

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—327 **2 Claims**



1. An acoustic transducer assembly comprising:

an electrically conductive, generally tubular metal transducer housing;

an acoustically transmissive metal window sealingly disposed at one end of the transducer housing, with the [exterior and] interior [surfaces] *surface* of the metal window being lapped optically flat for optimum acoustic coupling;

a thin disk, piezoelectric transducer element having opposed surfaces lapped optically flat and one such surface in optical contact with the interior surface of the metal window;

an insulating sleeve disposed within the generally tubular metal transducer housing;

a generally cylindrical acoustic wave damping block disposed within the insulating sleeve, which damping block is electrically conductive and has one end surface lapped optically flat and in optical contact with the transducer element disk, while the other end of the damping block has a convex cone shaped terminus;

an electrical contact member disposed within the insulating sleeve and having a concave conically shaped surface which mates with the damping block convex cone shaped terminus, which contact member is retained in physical and electrical contact with the damping block by a coil spring means disposed within the insulating sleeve;

an insulating plate provided at one end of the insulating sleeve contacting the coil spring and having an electrical lead-in extending therethrough connected to the contact member, whereby electrical connection is made to the interior surface of the transducer element serially via the electrical contact member and the conductive damping block, with the metal transducer housing serving as another electrical lead to the other side of the transducer element via the metal window;

a closure member closing the tubular transducer housing and connectable thereto about the insulating plate and contacting the insulating plate to thereby compress the coil spring to compress together the contact member, the damping block, and the transducer element to the metal window.

Re. 29,786

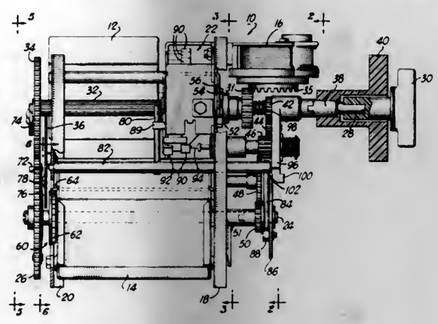
COMBINED 82-POSITION UHF AND VHF TELEVISION TUNER WITH MEMORY FINE TUNING

Morton L. Weigel, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Original No. 3,973,229, dated Aug. 3, 1976, Ser. No. 537,841, Jan. 2, 1975. Application for reissue Feb. 14, 1977, Ser. No. 768,102

Int. Cl.[2] H03J *1/02, 3/12*

U.S. Cl. 334—86 **23 Claims**



15. A combination UHF and VHF television tuning system comprising:

a VHF television tuner tunable to each of the television channels in the VHF television band;

a UHF television tuner having a continuously variable tuning shaft, rotation of said tuning shaft being effective to tune said UHF tuner over the entire UHF television band;

a single selector shaft coupled to said UHF and VHF television tuners, rotation of said selector shaft being effective to tune said television tuners to all of the UHF and VHF television channels in the UHF and VHF television bands, said selector shaft including detent means for rendering said selector shaft incrementally rotatable over a predetermined number of detent positions for selecting each of the channels in the UHF and VHF television bands, each of said detent positions uniquely corresponding to one of said UHF and VHF channels; and

means for providing a unique indication of the channel number corresponding to each detent position of said selector shaft.

Re. 29,787

COLOR PHASE MATCHING SYSTEM FOR MAGNETIC VIDEO TAPE RECORDINGS

David W. Bargen, Pleasanton, Calif., assignor to Orrox Corporation, Santa Clara, Calif.

Original No. 3,890,638, dated Jun. 17, 1975, Ser. No. 390,577, Aug. 22, 1973. Application for reissue Feb. 7, 1977, Ser. No. 765,949

Int. Cl.[2] H04N *5/78*

U.S. Cl. 358—4 **16 Claims**

1. A color frame system for use with a video tape recorder/-reproducer for providing color burst phase matching comprising:

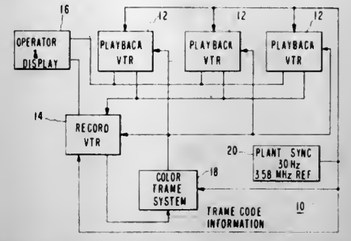
a. means for *sequentially* identifying [alternate frames] *each individual frame* of video recorded on the recording tape;

b. means for detecting the [alternate-] *sequential individual* frame identifications to generate alternate-frame identification signals *from the sequential individual frame identifications* to distinguish alternate frames recorded on the tape;

c. means synchronized with a stable signal source for generating frame reference signals at a frequency to provide

means for distinguishing alternate video frames in time relative to said stable signal source;

d. means for comparing said alternate-frame identification signals and said frame reference signals; and



e. means [responsive] *responsive* to said comparison means to control the tape speed and/or position for correcting the recording tape frame position relative to said frame reference signal if required for proper color burst phase match.

Re. 29,788

INVERTER HAVING FORCED TURN-OFF

Thomas E. Anderson, Normal, Ill., and John P. Walden, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Original No. 3,953,780, dated Apr. 27, 1976, Ser. No. 516,772, Oct. 21, 1974. Application for reissue Feb. 1, 1977, Ser. No. 764,695

Int. Cl.[2] H02M *7/537*

U.S. Cl. 363—97 **30 Claims**

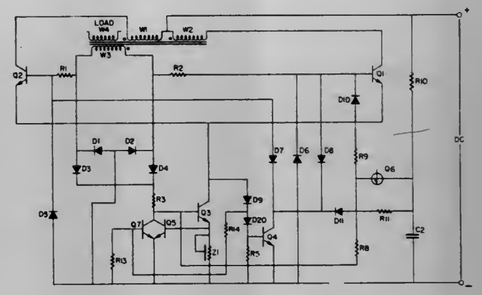
1. An electrical inverter circuit for converting a d.c. electrical input into an a.c. electrical output, said inverter circuit comprising:

a transformer structure having secondary winding means for supplying said electrical output and a primary winding means, said winding means being magnetically coupled to each other through magnetic circuit means,

active element switch means electrically connected to said primary winding means and electrically connectable to said d.c. electrical input for alternately switching said d.c. electrical input to said primary winding means for producing corresponding varying magnetic fields in said magnetic circuit means and thereby producing said a.c. electrical output in said secondary winding means, and

electrical control means electrically connected to said active element switch means for monitoring the magnitude of electrical current flowing in said primary winding means and controlling said alternate switching operation in response to the detection of current in said primary winding in excess of a predetermined level,

said electrical control means including a further controllable active element means in circuit with said active element switch means such that the primary winding current also flows therethrough and synchronous control means for synchronously controlling said further active element means so as to increase the electrical impedance thereof during at least a portion of each switching transition of said active element switch means.



PLANT PATENTS

GRANTED SEPTEMBER 26, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,306

KALANCHOE PLANT

Claude Hope, Cartago, Costa Rica, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Aug. 11, 1977, Ser. No. 823,851
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of kalanchoe known by the cultivar name Adagio and characterized particularly as to uniqueness by the combined characteristics of intense red purple flower color; excellent keeping qualities of the flowers; large floral display; small compact foliage; profuse self-branching; rapid rooting habit, and by the characteristic of being ideally suited for either normal or miniature flowering.

4,307

KALANCHOE PLANT

Claude Hope, Cartago, Costa Rica, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Aug. 11, 1977, Ser. No. 823,852
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of kalanchoe plant known by the cultivar name of Rhumba and particularly characterized as to uniqueness by the combined characteristics of clear orange red flower color, with the throat being light orange; massive inflorescence, having substantial depth of flowering; excellent keeping qualities for both flowers and foliage; relatively thin but stiff, wiry flower stems; long, elliptical, double crenate foliage, excellent branching habit, and by its early, uniform flowering.

4,308

VIOLET PLANT NAMED VERA

Arnold W. Fischer, Fallbrook, Calif., assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed Sep. 30, 1977, Ser. No. 839,285
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct variety of African violet plant substantially as herein shown and described, characterized by its purple-violet flowers, most petals of which are delicately edged with white.

4,309

ROSE PLANT

Samuel D. McGredy, P.O. Box 14-100, Auckland, New Zealand

Filed Nov. 25, 1977, Ser. No. 854,512
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—16 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by high centered, spiral flowers of persistent orange blend coloring borne primarily singly to a stem which display a brilliant orange to salmon orange general tonality upon aging and are long lasting on the plant and as cut flowers grown on a very vigorous upright growing, free branching plant with large abundant foliage.

4,310

POINSETTIA

Cleveland Ott, 677 Grater Ave., Graterford, Pa. 19426

Filed Oct. 14, 1976, Ser. No. 732,369
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of poinsettia plant, substantially as herein illustrated and described, characterized particularly as to novelty by a color which is bright red but a darker red than its parent, Annette Hegg Supreme (U.S. Plant Pat. No. 3,392), its grandparent, Annette Hegg (U.S. Plant Pat. No. 2,962), and related sports which have evolved directly or indirectly from said grandparent, bracts which are between 10 and 40% wider than in the parent Annette Hegg Supreme, thereby providing less open space between bracts, a plant which is approximately 10–20 percent shorter and is more compact than its parent, Annette Hegg Supreme, its grandparent, Annette Hegg, and sports thereof, a plant which grows more uniformly than does the parent, Annette Hegg Supreme, a plant which blooms 3–5 days earlier than its parent and its grandparent, and a plant which has good leaf and bract retentions equal to that of the parent.

PATENTS

GRANTED SEP. 26, 1978

ERRATA

For CLASS	See PATENT NO.
229-048 R	4,115,909
035-055	4,115,937
527-073	4,115,973
535-070	4,115,978
535-034	4,115,982
405-066	4,116,007
405-119	4,116,008
114-264	4,116,009
405-262	4,116,010
405-134	4,116,011
405-238	4,116,012
405-216	4,116,013
405-179	4,116,014
405-169	4,116,015
084-267	4,116,107
084-330	4,116,108
118-648	4,116,141
136-089 H	4,116,207
126-271	4,116,219
126-271	4,116,220
126-271	4,116,221
126-271	4,116,222
126-271	4,116,223
126-271	4,116,224
126-271	4,116,225
126-299 D	4,116,226
128-002	4,116,227
128-002 R	4,116,228
128-002 V	4,116,229
128-002.5 M	4,116,230
128-002.1 Z	4,116,231
128-020	4,116,232
128-032	4,116,233
123-032 SP	4,116,234
128-069	4,116,235
128-080 C	4,116,236
128-142.7	4,116,237
128-172.1	4,116,238
128-184	4,116,239
128-218 M	4,116,240
128-260	4,116,241
209-570	4,116,435
417-286	4,116,577
427-154	4,116,628
422-013	4,116,629
422-024	4,116,630
422-101	4,116,636

ERRATA—Continued

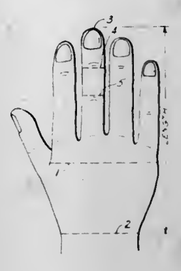
422–063	4,116,637
422–099	4,116,638
422–111	4,116,639
422–264	4,116,640
422–246	4,116,641
422–249	4,116,642
062–059	4,116,651
062–534	4,116,652
096–111	4,116,700
195–029	4,116,786
528–088	4,116,886
528–020	4,116,887
521–031	4,116,888
521–027	4,116,889
521–028	4,116,890
521–089	4,116,891
521–137	4,116,893
521–094	4,116,894
528–220	4,116,923
528–034	4,116,935
526–286	4,116,936
528–170	4,116,937
528–093	4,116,938
528–215	4,116,939
528–173	4,116,940
528–283	4,116,942
528–292	4,116,943
528–366	4,116,944
528–362	4,116,945
528–172	4,116,946
528–388	4,116,947
544–325	4,116,958
544–284	4,116,959
544–366	4,116,960
568–726	4,117,018
310–320	4,117,074
521–060	4,117,178

PATENTS

GRANTED SEPTEMBER 26, 1978

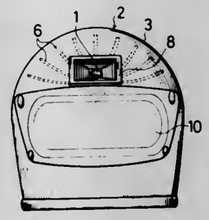
GENERAL AND MECHANICAL

4,115,873
HIGHLY STRETCHABLE GLOVE AND METHOD OF SIZING SAME
Benjamin Stansbury, Beverly Hills, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 31, 1977, Ser. No. 846,928
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—163 **15 Claims**



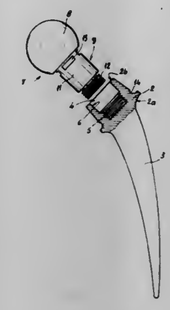
1. A series of highly stretchable gloves of different sizes, the series consisting of gloves with incremental differences in the lengths of the glove hand portion that are smaller than the incremental differences in the circumferences of the glove hand portion, whereby a reduced number of gloves are needed to properly fit a wide variety of hand shapes.

4,115,874
HELMET FOR USE IN RIDING VEHICLES
Masahiro Hasegawa, 1-11-12, Nishiazabu, Minato-ku, Tokyo, Japan
Filed Sep. 15, 1977, Ser. No. 833,413
Claims priority, application Japan, Feb. 21, 1977, 52-19992[U]; Apr. 7, 1977, 52-42587[U]; May 30, 1977, 52-70501[U]
Int. Cl.[2] A42B *3/02*
U.S. Cl. 2—425 **3 Claims**



1. A helmet for use in riding vehicles such as motorcycles and motorbikes comprising:
- a cap like body formed of hard and solid material;
- a bumping body applied on an inner surface of the cap like body; and
- a plurality of uninterrupted streamline recesses formed in an outer surface of the bumping body and extending completely from a forehead edge portion to a backhead edge portion of the helmet.

4,115,875
HIP PROSTHESIS
Andre Rambert, 27, avenue Lacassagne, Lyon, 3eme, Rhone; Gilles Bousquet, 19, avenue Beranger, Ecully, Rhone, and Henri Dejour, 21, rue des Deux Fermes, Bron, Rhone, all of France
Filed Apr. 19, 1977, Ser. No. 788,827
Claims priority, application France, Apr. 26, 1976, 76 13189
Int. Cl.[2] A61F *1/24*
U.S. Cl. 3—1.913 **2 Claims**

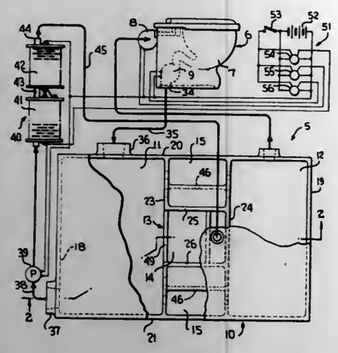


1. Prosthesis of the male-female ball-and-socket type comprising:
- a base of the male element composed of a plate designed to bear on the upper sectioned end of the femur, the bearing face of said plate having a rod designed to engage the femur end,
- an active organ comprising a sphere provided with a radial projection having a smooth part followed by a terminal threaded zone, said smooth part of said radial projection of said active organ having a conical shape with a slight taper toward the free end thereof, the face opposite said bearing face of the base having a threaded bore able to receive the threaded end of said radial projection of said active organ, and a conical bearing surface above said threaded bore with a shape matching said smooth part of said radial projection of said active organ, and
- means for allowing said active organ to rotate and preventing said base from rotating, said means being provided to facilitate assembly of said active organ on said base and removing said active organ.

4,115,876
SELF-CONTAINED RECIRCULATING TOILET SYSTEM
William Cole, Jr., Oakland, and William R. Preis, River Edge, both of N.J., assignors to Cole Resdevel Corp., Fairlawn, N.J.
Filed Nov. 24, 1976, Ser. No. 744,873
Int. Cl.[2] E03D *5/016*
U.S. Cl. 4—317 **11 Claims**

1. A self-contained recirculation waste system comprising a disposal unit of the type including a flush system having an inlet and a discharge system having an outlet, a holding tank unit, a sterilization cell unit, said holding tank unit including a flush water compartment and a raw waste compartment; and plumbing means coupling said discharge system outlet to said raw waste compartment, said raw waste compartment to said cell unit, said cell unit to said flush water compartment, and

said flush water compartment to said flush system inlet, said holding tank unit including a flotation separation compartment



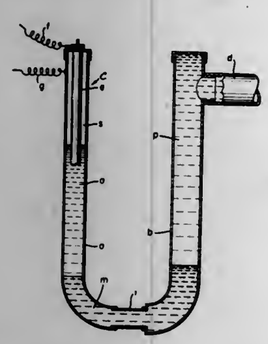
coupled between said cell unit and said flush water compartment.

4,115,877

LIQUID LEVEL SENSING DEVICE AND SWIMMING POOL WATER CIRCULATION SYSTEMS CONTAINING THE SAME

Frederick Wall, 707 Belleview Rd., Rock Hill, S.C. 29730

Filed Mar. 24, 1977, Ser. No. 780,742
Int. Cl.[2] E04H *3/16*; G01F *23/10*
U.S. Cl. 4—172.17 **26 Claims**



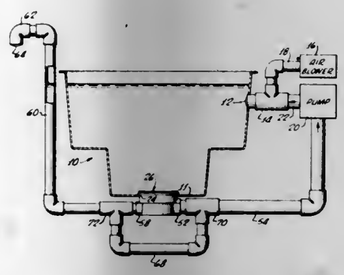
1. A liquid level sensing and control device comprising, in combination, a U-tube having substantially vertical legs connected by another member putting the legs in fluid flow intercommunication at their lower ends; a variable capacitor in one leg of the U-tube, comprising two spaced electrodes; a first mobile body in said one leg of a first dielectric liquid capable of rising and falling within the space between the electrodes and to a level at which it partially or fully fills the space; a second mobile body in said one leg of a second liquid having a higher density than and immiscible with the dielectric liquid and having an upper surface on which rests the first body of dielectric liquid; a third mobile body in the second leg of a third liquid immiscible with the second liquid and disposed in operative relationship with the second body of liquid; and a fluid line connection putting said third body of liquid into contact with a fourth body of the same or different liquid whose liquid level is to be sensed, the third body moving in the U-tube to a changed position in response to change in hydrostatic fluid pressure communicated from the fourth body to said third body as a function of fluid level of the fourth body so that the relative level of said first body of first liquid in the space between the electrodes in the variable capacitor is related to liquid level in said fourth body, communicated as fluid pressure via the fluid pressure communication to said third body, the third body thereby moving the second body of liquid and the second body of liquid moving the first body of liquid in the U-tube to a level related to liquid level in said fourth body, and corresponding to a capacitance of the variable capacitor; and means sensing at least one selected capacitance of the variable capacitor and initiating a control reaction responsive thereto.

4,115,878

SPA SAFETY DRAIN

Lawrence E. Johnson, Dana Point; William W. Conger, IV, Santa Ana, and Gerald W. Moreland, Garden Grove, all of Calif., assignors to South Pacific Industries, Santa Ana, Calif.

Filed Mar. 14, 1977, Ser. No. 777,034
Int. Cl.[2] E04H *3/19*; A61H *9/00, 33/02*
U.S. Cl. 4—172.17 **10 Claims**



1. In a spa including a shell with a water inlet, a drain completely submerged at the bottom of said shell, a recirculating water pump having a suction line connected to the drain and a pressure line connected to the inlet, the improvement comprising

safety apparatus for decreasing suction forces exerted upon an object or person that may inadvertently block flow of water into the drain, to thereby avoid entrapment of such object or person at the drain, said apparatus comprising a vent conduit having an end at the bottom of said shell connected with said drain and having an intake open to atmosphere and positioned above water level of said shell, said vent conduit extending externally of said shell and upwardly from said drain and the bottom of said shell to said intake; a drain by-pass conduit connected to and between said pump suction line and said vent conduit, whereby blockage of said vent conduit within said drain will not disable operation of said vent conduit to avoid entrapment.

4,115,879

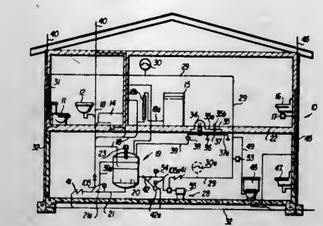
WATER RECIRCULATION SYSTEM

Ed P. Toms, Arlington, Va., assignor to The Water-Cyk Corporation, Vienna, Va.

Filed Jul. 21, 1976, Ser. No. 707,340
Int. Cl.[2] E03D *1/26*; B01D *21/10*
U.S. Cl. 4—318 **11 Claims**

1. A water conservation system comprising: means distributing clean water to selected household facilities for use therein; drain means in said selected facilities other than facilities which have as their primary function the disposal of human waste for delivering said water from said selected facilities to a settling tank at a level below said facilities for the gravitational separation of solids therefrom; water pump means associated with said settling tank, said pump having conduit means for receiving water from said tank and delivering pressurized water to a storage receptacle at a pressure level above that of said facilities, water purification means adapted to destroy microorganisms therein which is associated with said settling tank for

treating all water delivered from said drain means passing through said settling tank; and other household facilities asso-



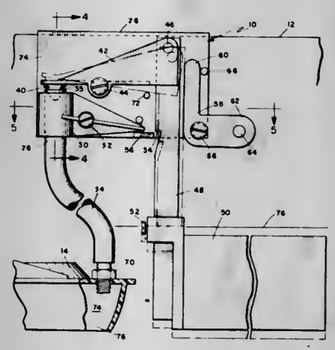
ciated with said storage receptacle for drawing water therefrom, as required.

4,115,880

FLUSH VALVE CONTROL ASSEMBLY

Henry William Gruenhagen, 2030 Ebers, San Diego, Calif. 92107

Filed Aug. 15, 1977, Ser. No. 824,528
Int. Cl.[2] E03D *1/34, 1/14, 3/12*
U.S. Cl. 4—325 **9 Claims**



1. Vent control assembly for a flapper type flush valve comprising:

a valve body having a bore,

tubular means connected to said valve body for communicating said bore with the air chamber of a flush valve,

a valve member mounted on said body and comprising a rocker arm having a valve plug on one end for engaging said valve bore and selectively movable into and out of engagement with said valve bore for either selectively closing or venting said air chamber, and

a float assembly connected to the other end of said rocker arm and responsive to the level of water acting thereon for controlling said valve member.

4,115,881

TOILET FLUSHING ASSEMBLY

Andrew Joseph Stone, 457 Beach 124th St., New York, N.Y. 11694

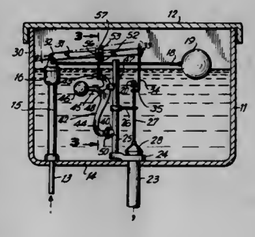
Filed Jul. 25, 1977, Ser. No. 818,637
Int. Cl.[2] E03D *1/14*
U.S. Cl. 4—326 **2 Claims**

1. In a toilet flushing assembly of the type including a water tank, a water discharge pipe disposed at least partially within the tank and having an opening at the upper end thereof defining a primary flush valve seat, a flush valve ball, means for moving the flush valve ball between an open and closed position relative to the primary flush valve seat to respectively permit the discharge from and the containment of the water introduced into the tank, and a generally upstanding overflow pipe disposed within the tank and having a lower open end which communicates with the discharge pipe, the improvement, comprising:

said overflow pipe having an opening therein disposed at a level above said primary valve seat which opening defines a secondary flush valve seat;

a movable valve member disposed within said tank for effecting sealing engagement with said secondary valve seat; and

means for moving said valve member between an open and closed position relative to said secondary flush valve seat, so as to permit in said open position thereof, a partial discharge of the water held in said tank through said overflow pipe and, in turn, said discharge pipe, while said flush valve ball remains in a closed position relative to said primary valve seat, said means for moving said valve member includes a float member, a pivotable rocker arm pivotably mounted on said overflow pipe by a mounting bracket and pin and having a first leg extending generally axially to which said float member is rigidly secured at the end of said first end remote from said bracket and pin and a second leg, disposed beneath said first leg, to which said



valve member is secured and means for pivoting said rocker arm in a first direction to permit movement of said valve member from said closed to said open position thereof, so as to permit partial discharge of water contained in said tank, said float member being lowered as the water level drops and causing pivotable movement of said rocker arm in a second direction opposite to that of said first direction to, in turn, cause movement of said valve member from said open to said closed position thereof; and wherein said rocker arm includes a third leg and wherein said means for pivoting said rocker arm includes a pivotable handle mounted externally on said tank, an elongated trip arm generally horizontally disposed within the tank, one end of which is coupled to said handle to permit pivotable movement of said trip arm about said inner end thereof, and an elongated, generally vertically disposed trip hook secured to said trip arm, having a lower depending end which engages said third leg of said rocker arm; and wherein said rocker arm has a generally S-shaped configuration, the upper and lower ends of which define, respectively, said third and second legs thereof, with said first leg disposed between said upper and lower ends thereof.

4,115,882

FLUSH VALVE FOR TOILET TANKS

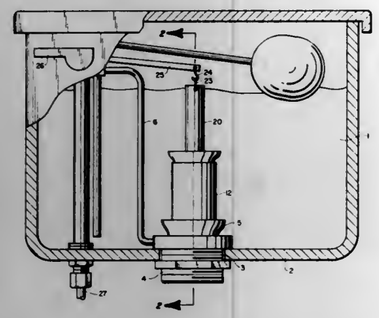
Paul Paulus, 3394 Paris Blvd., Westerville, Ohio 43081

Filed Mar. 31, 1977, Ser. No. 783,148
Int. Cl.[2] E03D *1/14*
U.S. Cl. 4—327 **9 Claims**

1. A flush valve for use in a toilet flush tank having a trip lever and a drain opening from said tank comprising:

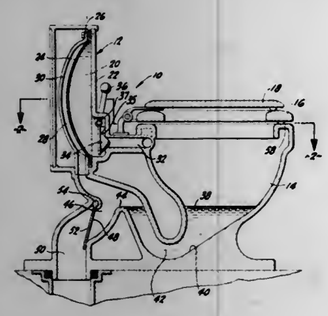
(a) a first vertically movable tubular member, open at each end, having a longitudinal bore therethrough and adapted at one end to seat and seal against a valve head;

(b) a first valve head fixed on the other end of said first tubular member and adapted to seal against the drain opening in said tank;
(c) a guide engaging said first tubular member and adapted to guide it vertically;
(d) a second valve head adapted to seal against said one end of said first tubular member;
(e) means for attaching said second valve head to said trip lever;



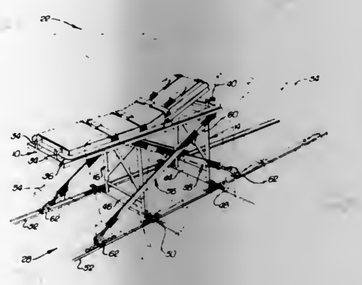
(f) means attached to said first tubular member for arresting the upward travel of said second valve head relative to said first tubular member; and
(g) means for equalizing the pressure between the interior of said first tubular member and the atmosphere when the water level around said first tubular member subsides below the top of said first tubular member.

4,115,883
DIAPHRAGM ACTIVATED TOILET
Hector A. Dauvergne, P.O. Box 884, San Leandro, Calif. 94577
Filed May 31, 1977, Ser. No. 801,521
Int. Cl.[2] E03D *3/10*
U.S. Cl. 4—353 **4 Claims**



1. A water saving toilet device comprising:
a bowl constructed to hold a quantity of sedentary water and waste;
a first cavity having a flexible diaphragm wherein said flexible diaphragm divides said first cavity into a water storage chamber having a variable volume on one side of said diaphragm and an air chamber having a variable volume on the other side of said chamber;
means for deforming said diaphragm, increasing the volume of the water storage chamber and diminishing the volume of the air chamber;
discharge means communicating with said water storage chamber for initiating a discharge of a stored quantity of water from said storage means to said bowl when said discharge means is activated;
a trap means communicating with said bowl for maintaining a predetermined quantity of sedentary water in said bowl;
a second cavity communicating with said trap means for temporarily holding a quantity of water evacuated from said bowl, said second cavity having release means for releasing water held in said cavity to a conventional sewer line; and,
draw means comprising an air passage between said air chamber and said second cavity for drawing sedentary water in said bowl and trap means into said second cavity; wherein said discharge means, when activated, reverses the action of said deforming means, decreasing the volume of the water storage chamber and increasing the volume of the air chamber, generating a partial vacuum in said second cavity.

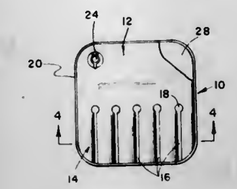
4,115,884
STRETCHER SUPPORTING STRUCTURE FOR AIRPLANES, OR THE LIKE
Marvin J. Keogh, North Hollywood, Calif., assignor to Air Medic, Inc., North Hollywood, Calif.
Filed Sep. 28, 1977, Ser. No. 837,587
Int. Cl.[2] A47B *83/04*
U.S. Cl. 5—82 R **6 Claims**



1. A stretcher supporting structure for use in an airplane, or other vehicle, including:
(a) an elongated stretcher supporting frame adapted to be positioned generally horizontally;
(b) hook means adjacent one end of said frame facing longitudinally of said frame toward the other end thereof and adapted to receive one end of the stretcher;
(c) upwardly facing hook means adjacent said other end of said frame and adapted to receive the other end of the stretcher; and
(d) means for securing the other end of the stretcher in said upwardly facing hook means.

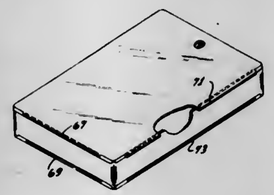
4,115,885
WATER CUSHION AND METHOD OF USING THE SAME
Charles E. Davis, 714 N. Lazard, San Fernando, Calif. 91340
Filed Aug. 29, 1977, Ser. No. 828,527
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—349 **1 Claim**

1. A cushion particularly suited for use in supporting a human body in a seated disposition comprising:
a sealed envelope formed of a pair of similarly configured flexible sheets disposed in superimposed registry and having an endless seam extended about the periphery thereof, said envelope being characterized by a first section extended transversely across said envelope for receiving in supporting relation the buttocks of a seated human body and having defined therein a water-filled, unbaffled chamber from which the water is expelled in response to the weight of a seated human body, and a second section of a thickness slightly less than the thickness of the first section extended transversely across the envelope in juxtaposed parallelism with the first section for receiving water expelled from said unbaffled chamber including support means for supporting the second section against deformation about axes lying in the plane thereof comprising,
an array of at least six tubular chambers of uniform cylindrical configurations normally related to the first chamber and extended in juxtaposed parallelism, each having an open end communication with said first chamber for



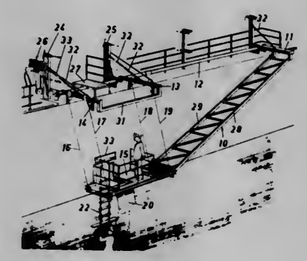
receiving water expelled therefrom and a sealed end opposite said open end for confining the expelled water under pressure, whereby the tubular chambers are adapted to become substantially rigid in response to the weight of the seated body, and
means including a sealable port for introducing into said unbaffled chamber water of a quantity sufficient for imparting rigidity to said tubular chambers as the water is expelled from said unbaffled chamber in response to the weight of a human body as the buttocks thereof are received by said first section of said envelope.

4,115,886
FLUID MATTRESS WITH SQUARED GUSSET PANEL CONSTRUCTION
Craig Salvatore Miller, 7688 Caila Durango, Anaheim, Calif. 92803
Filed Dec. 23, 1976, Ser. No. 754,015
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—365 **13 Claims**



1. A mattress having characteristics for being filled with a liquid, comprising:
a first sheet of material having a first marginal portion extending around the periphery of the first sheet and having a generally planar configuration when the mattress is filled with the fluid;
a second sheet of material having a second marginal portion extending around the periphery of the second sheet and having a generally planar configuration when the mattress is filled with the fluid;
the first sheet having generally the shape of a rectangle, the rectangle having four substantially straight sides and four corners, a particular one of the corners having the configuration of a curve with a radius not greater than three inches;
a side panel extending around the periphery of the mattress and having a third marginal portion and a fourth marginal portion extending between first and second ends of the side panel;
means for connecting the third marginal portion of the side panel to the first marginal portion of the first sheet to form a first seal extending around the periphery of the mattress;
the side panel at the particular corner of the first sheet having the configuration of a curved surface when the mattress is filled with the fluid and the curved surface having a radius not greater than about 3 inches;
means for connecting the fourth marginal portion of the side panel to the second marginal portion of the second sheet to form a second seal extending around the periphery of the mattress;
means for connection the first end of the side panel to the second end of the side panel to form a fluid-tight cavity between the first sheet, the second sheet and the side panel; and
means for providing access to the cavity to provide for the filling of the mattress with the fluid.

4,115,887
SHIP'S EMBARKATION DEVICE FOR E.G. PILOTS
Gunnar Ewards, Askim, Sweden, assignor to AB Welin, Askim, Sweden
Filed Jul. 1, 1977, Ser. No. 812,408
Claims priority, application Sweden, Jul. 6, 1976, 7607699
Int. Cl.[2] E04G *3/00*
U.S. Cl. 9—1.6 **8 Claims**



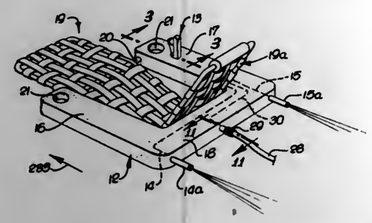
1. In a ship's embarkation device for e.g. pilots comprising a projecting means extending substantially parallel to the ship's side, said projecting means at one of its ends being pivotally mounted in the vertical plane and unrotatably connected in the horizontal plane to a bracket mounted at the ship's deck, at the opposite end of the projecting means a platform being pivotally mounted, said platform by means of a wire arrangement being supported by two davit arms, said davit arms by means of an axle extending in the longitudinal direction of the ship being unrotatably connected to said bracket, the improvement wherein the embarkation device is provided with at least one means, which in relation to the ship's side is placed outside a central longitudinal plane through the embarkation device for giving said device a component force directed towards the ship's side, said force being stronger than the force striving to swing the device out from the ship's side when the ship heels moderately (10°–13°).

4,115,888
POOL FLOAT PROPELLING APPARATUS
George K. Sievers, 1110 Kenwood St., Burbank, Calif. 91505
Filed Jun. 30, 1977, Ser. No. 811,486
Int. Cl.[2] B63C *9/30*
U.S. Cl. 9—347 **12 Claims**

1. In combination with a forwardly longitudinally oriented carrier float adapted to be propelled while floating in a pool of water, comprising
(a) manual control means on the carrier float,
(b) propellant fluid ducting on the float and having outlet

means to be submerged in the pool, said fluid outlet means including two fluid jet outlets which are laterally spaced apart and from which propellant fluid may escape in jets at controllable rates, both outlets remaining fixed relative to the float and directed generally rearwardly relative to a forward propulsion direction of the float,

(c) and other control means on the carrier float responsive to selective movement of said manual control means to variably control the escape of propellant fluid from said two



outlets thereby to control the direction of propulsion of the float in the pool,

(d) said other control means including valve means coupled to said manual control means, one portion of said ducting extending from said valve means to said outlets,

(e) there being a tubular coupling on the carrier float exposed for connection to a flexible line to supply propulsion fluid under pressure to said outlets via said ducting, another portion of said ducting extending to said valve means from said tubular coupling.

4,115,889

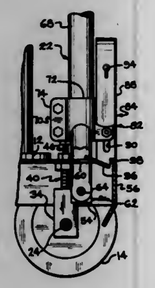
Patent Not Issued For This Number

4,115,890

HIGH-SPEED POLISHING MACHINE

Jack L. Burgoon, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Apr. 25, 1977, Ser. No. 790,396
Int. Cl.[2] A47L *11/162*
U.S. Cl. 15—49 R **5 Claims**



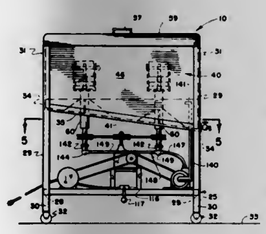
1. A polishing machine comprising a platform, wheels at a rear portion of said platform for supporting the platform above the floor, a housing at a forward portion of said platform, a rotatable pad driver rotatably supported by said housing, a motor mounted on an intermediate portion of said platform between said housing and said wheels for rotating said driver, a handle pivotally mounted on a rear portion of said machine, said wheels having an axle extending transversely of said machine under said platform, at least two spaced adjusting members under said platform and having transverse holes receiving said axle, said members having threaded bores therein, threaded shanks received in said bores, said threaded shanks having smaller threaded bores, and bolt means extending through openings in said platform and threadedly engaged in said smaller threaded bores of said threaded shanks, said threaded shanks raising and lowering said spaced adjusting members with respect to said platform to raise and lower said wheels when said threaded shanks are turned into and out of said adjusting members.

4,115,891

CLEANING APPARATUS

Robert N. Wills, 5942 E. Hamilton Ave., Fresno, Calif. 93727

Filed Jan. 6, 1977, Ser. No. 757,203
Int. Cl.[2] A46B *13/04*
U.S. Cl. 15—71 **7 Claims**



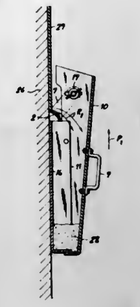
5. An apparatus for cleaning a container having a substantially cylindrical side wall with an exterior surface, an interior surface bearing paint, lacquer or the like, a bottom wall and an annular lip bounding an opening remote from the bottom wall, the apparatus comprising a brush having a longitudinal axis and dimensioned to be received in the container extending substantially between the bottom wall and the lip and in engagement with the interior surface of the side wall at the time of insertion; means for rotating the brush about its longitudinal axis; more than two elongated members borne by the apparatus substantially equally spaced from each other to receive said container between the members when the brush is received in the container; means for urging said members toward the longitudinal axis of the brush and into engagement with the exterior surface of the side wall extending more than half the distance between the bottom wall to the lip to mount said container in fixed position in axial alignment with the longitudinal axis of the brush; and means for supplying a solvent to the interior surface of the container.

4,115,892

SCRAPING TOOL

Heinz Stickler, Bahnstrasse 258, A-2551 Enzesfeld, Austria

Filed Jun. 28, 1977, Ser. No. 810,751
Int. Cl.[2] A47L *13/08*
U.S. Cl. 15—105 **14 Claims**



9. A scraping tool comprising:

an elongate body with a pair of sidewalls and a foreshortened wall perpendicular thereto, said foreshortened wall forming a flat guide face slidable along a surface to be scraped, said sidewalls having extensions set back from said guide face and projecting beyond a transverse boundary of said foreshortened wall to form a clearance between said body and the surface contacted by said guide face, said sidewalls further having longitudinal edges which are substantially parallel to said guide face;

a blade in said clearance having a pair of shanks which bracket said sidewalls and are pivotally secured to said extensions with freedom to turn about a transverse swing axis parallel to said boundary, said blade having a pair of working edges parallel to said swing axis positioned for alternate engagement with the contacted surface upon sliding of said body thereover in opposite directions, said blade being outwardly concave about an axis of curvature parallel to said swing axis; and

abutment means including said longitudinal edges on said body for arresting said blade in two limiting positions in which said working edges are respectively located at substantially the level of said guide face.

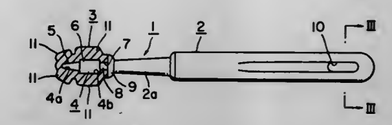
4,115,893

GUM BRUSH FOR INFANTS

Yuichi Nakata, Chigasaki, and Tadayoshi Murakami, Tokyo, both of Japan, assignors to Pigeon Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1977, Ser. No. 793,803
Claims priority, application Japan, Jul. 7, 1976, 51-89907
Int. Cl.[2] A46B *9/04*
U.S. Cl. 15—110 **3 Claims**

1. A gum brush for infants comprising an elongated handle with a forward stem end, a brush head made of a rubberlike material and secured onto said stem end, and a plurality of projections made of a rubber-like material and integrally joined to and projecting outward from the outer surface of said brush head, said projecting comprising first fin-like projections and second fin-like projections aligned in directions intersecting



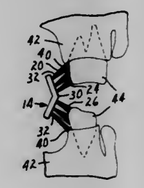
the directions of said first fin-like projections, all projections projecting radially outward from said brush head, and said first and second fin-like projections being mutually interspersed in symmetrical and distributed arrangement around the surface of the brush head.

4,115,894

TOOTHBRUSH FOR SIMULTANEOUS-SURFACE AND SULCUS CLEANING

Vacharee S. Peterson, 1618 Eustis, Apt. 7, St. Paul, Minn. 55108

Filed Apr. 18, 1977, Ser. No. 788,128
Int. Cl.[2] A46B *9/04*
U.S. Cl. 15—167 R **4 Claims**



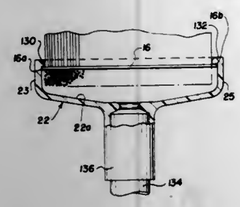
1. A toothbrush consisting essentially of a handle having a necked portion and a head attached to said handle at said necked portion, said head comprising two elongated head portions each having two sides, two ends and two surfaces, one of said two surfaces being a bristle-bearing surface, said head portions being joined in side to side relationship so that said bristle-bearing surfaces together form a face varying from concave to convex and each said head portion having a plurality of bristles of substantially equal length on said bristle-bearing surface disposed in at least two rows extending lengthwise of said head portion and inserted in and secured to said bristle-bearing surface at an angle of less than 90°, and each bristle extending from said head portion to a free end and all the bristles in each said head portion being so inserted in the bristle-bearing surface thereof as to diverge from all the bristles in the adjacent head portion.

4,115,895

MOP CONSTRUCTION

Audrey H. Ballew, Sweetwater, Tex., assignor to Dallas County Association for the Blind, Dallas, Tex.

Division of Ser. No. 680,964, Apr. 27, 1976, Pat. No. 4,043,602.
This application Feb. 4, 1977, Ser. No. 765,435
Int. Cl.[2] A47L *13/20*
U.S. Cl. 15—229 R **1 Claim**



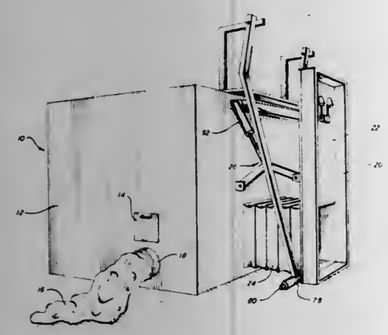
1. A mop head comprising: a hollow holder including an elongated body a cavity formed inwardly from one edge, an outwardly extending handle receiving sleeve secured to said body, said body further having downwardly deflected ends which have opposed shoulders formed therein which extend inwardly from the lower edge of said downwardly deflected ends; a plurality of strands of mop material folded into said cavity in said body; and a straight elongated, flexible retainer wire disposed in said fold of said strands of mop material such that the ends of said retainer wire member are positioned over and abut said shoulders inside of said cavity in said body, said retainer wire retaining said strands of mop material within the cavity.

4,115,896

VEHICLE INTERIOR CLEANING SYSTEM

Dean V. Costanzo, Chittenango, N.Y., assignor to Costanzo Bus Bath, Inc., Chittenango, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,368
Int. Cl.[2] B60S *3/00*
U.S. Cl. 15—301 **10 Claims**



1. Apparatus for removing dirt, trash, and other loose foreign materials from an enclosed interior space having openings substantially at opposite ends thereof by means of an air stream flowing into one and out of the other of the openings, said apparatus comprising:

a. a housing having parallel front and rear end walls;

b. a forward section of said housing adjoining said front wall and extending rearwardly therefrom for a portion of the distance between said front and rear walls and having an interior surface which is convolute in a plane parallel to said end walls;

c. a cylindrical duct having a first open end communicating with an air outlet opening in said front wall and extending through said forward section, substantially coaxially thereof, to a second open end intermediate of said end walls;

d. means defining an air inlet opening tangential to said interior surface of said forward section;

e. a fan mounted within said cylindrical duct for exhausting air from within said housing through said air outlet opening, thereby drawing air into said housing through said tangential air inlet opening and creating a circular flow of air about said convolute surface, exteriorly of said circular duct;

f. a rear section of said housing between said forward section and said rear wall having a cross section such that said flow of air continues in a circular manner from front to rear within said housing before flowing to the central portion of said housing and moving forwardly into and through said cylindrical duct;

g. a trash receiving section communicating with said rear section through an opening in the interior wall thereof adjacent to and extending forwardly from said rear wall, whereby solid material carried by said flow of air is deposited in said trash receiving section as the air flow moves forwardly to said circular duct inlet;

h. means for removing solid material from said trash receiving section; and

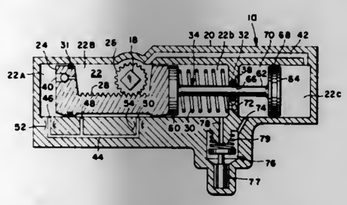
i. means for placing said air inlet opening in substantially sealing communication with said enclosed interior space through said other opening thereof.

4,115,897

ZERO FORCE HOLD OPEN DOOR CLOSER

Richard L. Zunkel, Marshville, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 11, 1977, Ser. No. 840,696
Int. Cl.[2] E05F *3/00*
U.S. Cl. 16—49 **18 Claims**



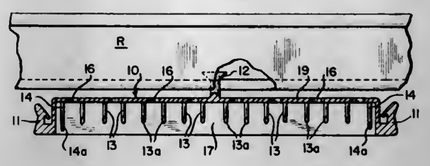
1. A door closer assembly for moving a door connected thereto from an open position toward a closed position comprising a housing, a chamber located in said housing, biasing means disposed in said chamber providing a restoring force to move the door toward its closed position, a piston slidable in said chamber in response to movement of the door, said piston being movable in a first direction against the force of said biasing means as the door moves toward an open position and being biased in a second direction, opposite said first direction, by said biasing means which normally biases the piston to urge the door towards its closed position, and means for rendering said biasing means ineffective to exert said restoring force on said piston to bias the door toward its closing position.

4,115,898

SUPPORT DEVICE FOR VERTICAL SLATS OF A SLATTED BLIND

Kurt Heinz Frentzel, Zevenhoven, Netherlands, assignor to Hunter Douglas International N.V., Willemstad, Netherlands Antilles

Filed Mar. 29, 1977, Ser. No. 782,314
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613751
Int. Cl.[2] E05D *13/02*
U.S. Cl. 16—87 R **3 Claims**



1. A device for attaching a slat to a support of a slatted blind comprising an elongated cap; said cap having a pair of spaced substantially parallel side walls, a transverse wall extending between said side walls along their length, and an end wall extending between said side walls at each end thereof; said cap having an open side opposite to said transverse wall; a plurality of support lugs extending from one side wall toward the other side wall for engagement in openings adjacent an end of a slat; at least three ribs extending from the other of said side walls toward said one side wall; said ribs being so dimensioned as to permit deliberate disengagement of a slat from said lugs while insuring maintenance of such engagement under normal use conditions, said ribs being elongated in a direction transverse to the length of said cap, said lugs and said ribs having a sloped surface generally facing the open side of said cap, at least one opening through said transverse wall for insertion of a tool to disengage a slat from said lugs, and the rib adjacent each end of said other wall extending to closer to the open side of said cap than ribs between said end ribs

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4,115,899

DOUBLE DRAPERY CARRIER

James A. Ford, Sherman Township, St. Joseph County, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed Oct. 17, 1977, Ser. No. 842,554
Int. Cl.[2] A47H *13/00, 15/00*
U.S. Cl. 16—87.4 R **2 Claims**



1. In a rigid hanger for slidably supporting a drapery on a traverse rod having an elongate bottom slot, said hanger including a head portion slidably supported on said rod and projecting downwardly through said slot, said head portion having groove means into which projects said rod, said head portion being attached to an elongate flexible element which has a plurality of said head portions connected thereto at predetermined intervals, and a pendant portion integral with and projecting downwardly from said head portion for releasable attachment with the drapery, the improvement wherein said pendant portion comprises:

a depending plate portion fixed centrally to said head portion and projecting downwardly therefrom, said depending plate portion defining a central vertical plane which contains the central axis of the head portion and is aligned with the lengthwise extent of the slot;

an upper plate portion fixed to the lower edge of said depending plate portion and projecting downwardly therefrom, said upper plate portion being parallel with and horizontally offset a selected distance to one side of said central plane;

a lower plate portion fixed to the lower edge of said upper plate portion and projecting downwardly therefrom, said lower plate portion being parallel with and horizontally offset said selected distance to the other side of said central plane;

first means associated with said upper plate portion for permitting attachment thereto of a first drapery which is positioned on said one side of said central plane adjacent the outer side of said upper plate portion, said first means including a first opening positioned centrally of said upper plate portion and extending horizontally therethrough for reception of a first snap button associated with said first drapery;

second means associated with said lower plate portion for permitting attachment thereto of a second drapery which is disposed on said other side of said central plane adjacent the outer side of said lower plate portion, said second means including a second opening positioned centrally of said lower plate portion and extending horizontally therethrough for reception of a snap button associated with said second drapery;

an upper annular reinforcing flange fixed to the inner side of said upper plate portion in surrounding relationship to said first opening, said annular flange being of substantially larger diameter than said first opening and terminating in a free edge located substantially in a vertical plane defined by the outer side of said lower plate portion; and

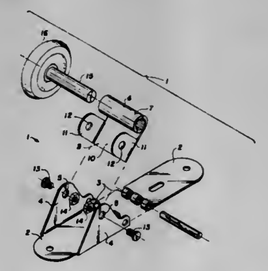
a lower annular reinforcing flange fixed to the inner side of said lower plate portion in surrounding relationship to said second opening, said lower annular flange being of substantially larger diameter than said second opening and terminating in a free edge disposed substantially within a second vertical plane defined by the outer side of said upper plate portion.

4,115,900

HINGE AND ROLLER SUPPORT DEVICE FOR SECTIONAL DOOR

Arthur Mihalcheon, 74 Valleyview Crescent, Edmonton, Alberta, Canada

Filed Aug. 16, 1976, Ser. No. 714,303
Int. Cl.[2] E05D *15/04*
U.S. Cl. 16—104 **1 Claim**



1. A hinge and roller support device for a sectional door, comprising:

a pair of plates hinged together end to end and adapted to be attached to the door;

one of the plates having a pair of spaced bearing support ears

upstanding therefrom, each ear forming a transverse bolt-receiving aperture spaced above the plate;

a bearing member comprising a tubular support portion, for receiving the shaft of a roller, and an arm portion of generally right-angled configuration and extending from the support portion, said arm portion comprising a tongue portion, extending from the tubular support portion, and a pair of spaced apertured lugs projecting from the side edges of the tongue portion at its end remote from the tubular support portion, said lugs forming said right angles with the tongue portion, whereby, when the elements are assembled, the apertures of the lugs are located adjacent to and in alignment with the ear apertures;

threaded bolt means for connecting the support ears and the lugs by extension through the adjacent pairs of apertures; and

nut means threadable on the bolt means for disengagably locking the bearing member to the support ears;

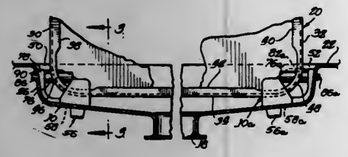
whereby the arm portion can be rotated about the bolt means to vary the distance of the tubular support portion from the plates and then be fixed in place by tightening only the bolt and nut means recited.

4,115,901

LAUNDRY APPLIANCE DOOR HINGE

Bradley J. Schmidt, East Dundee, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 4, 1977, Ser. No. 821,650
Int. Cl.² E05D *7/12, 5/10*
U.S. Cl. 16—176 **12 Claims**



1. A one-piece molded plastic hinge member for mounting a door on an appliance or other support structure of the type described having an aperture therethrough, said hinge member comprising a body portion for overlying said support structure, an integral attachment prong portion projecting in one direction from said body portion for insertion through said aperture and securing the hinge member to said support structure, a pintle spaced from said body portion oppositely from said prong portion for pivotal connection with a door to be mounted, a support element integrally joining said pintle and said body portion, and an integral pad element located at a position behind said pintle for engaging a door supported by the pintle when said door is in an open position and preventing substantial contact between said door and any adjacent part of the support structure, and a stop element integral with said body portion and projecting therefrom in a direction opposite from said attachment portion and at a location forwardly of said pintle for engaging a door supported by the pintle at a side of the pintle opposite from said pad element when the door is in said open position for resisting further opening of the door.

4,115,902

BRACE HINGE

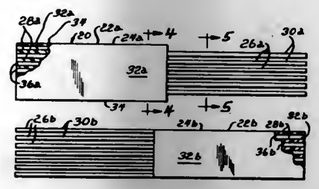
Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 792,824, May 2, 1977. This application Feb. 15, 1978, Ser. No. 878,051
Int. Cl.² E05D *15/58*
U.S. Cl. 16—179 **11 Claims**

1. A hinge, comprising:

a first hinge member having a housing, and a plurality of elongated flexible ribs extending from one end of said housing, said ribs being spaced laterally across the housing and defining a plurality of laterally spaced grooves extending longitudinally in the housing; and

a second hinge member having a housing, and a plurality of elongated flexible ribs extending from one end of the second member housing, the second member ribs being spaced laterally across the second member housing and



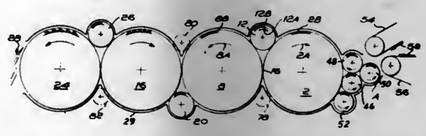
defining a plurality of laterally spaced grooves extending longitudinally in the second member housing, said ribs of the first hinge member being slidably received in the grooves of the second hinge member, and said ribs of the second hinge member being slidably received in the grooves of the first hinge member.

4,115,903

PROCESSING OF FIBROUS MATERIALS TO REDUCE SAME TO A GENERALLY HOMOGENEOUS MASS OF FIBERS

Norman B. Barber, Cleckheaton, England, assignor to Garnett-Bywater Limited, Cleckheaton, England

Filed Feb. 10, 1977, Ser. No. 767,544
Int. Cl.² D01G *15/12*
U.S. Cl. 19—99 **2 Claims**



1. A method of processing fibrous materials to produce a homogeneous mass of fibres wherein, the method includes the steps of:

(a) feeding the fibrous material to the first clothed cylinder of a series of clothed cylinders of which series the clothing of each cylinder is coarser than the preceding cylinder, and the cylinders being so arranged that the fibrous material passes to the next and each subsequent cylinder in turn, being worked as it passes between cylinders, until it is discharged from the last cylinder as a mass of fibres;

(b) rotating adjacent cylinders of the series in opposite directions and so that the peripheral speed of each cylinder is greater than the preceding cylinder;

(c) working the material with at least one clothed worker roller arranged tangentially with respect to two adjacent cylinders of the series by rotating said worker roller in the same direction as the slower peripheral speed roller of said pair and having a peripheral speed less than that of the slower peripheral speed roller of said pair;

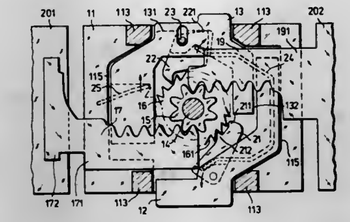
(d) creating a flow of air along the path of travel of the material to cool, and assist in transporting same by rotating the cylinders at a sufficiently high speed and by encasing the cylinders with cover means closely matching the peripheral shape of the cylinders and having only an inlet and outlet for the entry and escape of air.

4,115,904

LOCK FOR BRACELETS, BELTS AND THE LIKE

Robert Zwyssig, Schaffhausen, and Bernhard Tesch, Ennetbürgen, both of Switzerland, assignors to Zwyro A.G., Switzerland

Filed Mar. 18, 1977, Ser. No. 778,999
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611651
Int. Cl.² A44C *5/18*; A44B *11/26*
U.S. Cl. 24—19 **15 Claims**



1. Lock for connecting the two ends of a bracelet, belt and the like, which is detachably connected to at least one end of the bracelet, characterized in that each of the two ends of the bracelet is connected with a movable lock part, said lock including means mounting said lock parts for movement essentially in the lengthwise direction of the bracelet in the opposite directions, drive means for effecting synchronous movement of said lock parts, and latch means for locking said drive means in a selected position, said lock including a housing, and the movable lock parts being sliders guided inside lengthwise guides of said lock housing, said sliders including gear racks and said drive means including a gear meshed with said gear racks from opposite sides, said latch means including a disconnectable locking latch, a disconnect key for disengaging said locking latch.

4,115,905

FASTENER FOR SHOES

Sigurd Seidel, Graz, Austria, assignor to Skischuhfabrik Dynafit Gesellschaft m.b.H., Graz, Austria

Filed May 23, 1977, Ser. No. 799,232
Int. Cl.² A43C *11/14*
U.S. Cl. 24—69 SK **4 Claims**



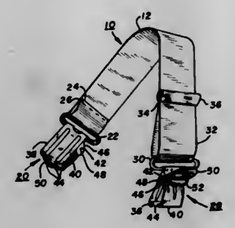
1. A fastener for a shoe, particularly for a sports shoe, comprising a strap having connection means at each end for connecting the strap, a buckle formed with female detent means for receiving and retaining the connection means of one end of the strap, a retaining plate having at least two succeeding female detent means for releasably receiving the connection means of the other end of the strap, and covering means for covering the female detent means in the retaining plate, the covering means having a cap formed of extensible material formed with pockets at opposite ends, the retaining plate having raised edge portions for receiving the pockets in such manner that the cap is under initial stress.

4,115,906

CLIPPABLE TROUSER RETAINING STRAP

Mortimore Lavine, and Leanelda Lavine, both of 425 Randall Ave., Trenton, N.J. 08610

Filed Aug. 1, 1977, Ser. No. 820,905
Int. Cl.² A41F *17/04*
U.S. Cl. 24—72 **2 Claims**



1. A clippable trouser retaining strap for maintaining a cuff of an unmodified trouser leg of a user in a downward position comprising:

an elongated elastic member of adjustable length, said elongated elastic member for placement beneath the foot of the user, said elongated elastic member being elastic in a direction along the longitudinal axis thereof, said elongated elastic member being tapered from the longitudinal axis thereof to the longitudinal edges thereof, said edges being thinner than the portion of said elastic member adjacent to the longitudinal axis thereof;

a first locking clip secured to one end of said elongated elastic member, said clip for engaging a first portion of said cuff, said first clip being selectively securable to said first portion;

a second locking clip secured to said elongated elastic member adjacent to the other end thereof, said second locking clip for engaging a second portion of said cuff, said second clip being selectively securable to said second portion, said first and second portions of said cuff being substantially opposite each other;

a locking clamp for adjusting the length of said elongated elastic member, said locking clamp fixedly secured to said other end of said elastic member, an elongated ring being provided by said second locking clip, a portion of said elongated elastic member adjacent to said other end thereof passing through said elongated ring and being positioned adjacent to said elastic member, said clamp being selectively clampable to said elastic member, the positioning of said clamp on said elongated elastic member adjusting the length thereof; and

said first and second locking clips each including a pair of jaws pivotally affixed together, and a clamp element having a tongue projecting therefrom, a bracket fixedly secured to one of said jaws, said clamp element pivotally mounted by said bracket adjacent to the juncture of said tongue thereof, each of said jaws providing a plurality of teeth for engaging said cuff, urging of said clamp element toward said pair of jaws causing said tongue to engage the other of said jaws thereby effecting the locking of said jaws together.

4,115,907

FIBER PROCESS

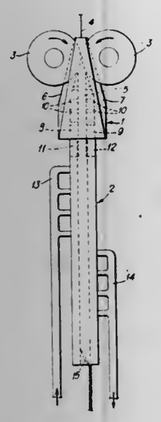
Ronald Lawson, and David Watson, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sep. 9, 1977, Ser. No. 831,827

Claims priority, application United Kingdom, Sep. 9, 1976, 37386/76

Int. Cl.[2] D02G *1/12*

U.S. Cl. 28—266 3 Claims



1. In a process for the continuous production of heat-set, crimped, thermoplastic filaments selected from the group consisting of polyamide filaments or copolyamide filaments and polyester filaments or copolyester filaments or copolyester filaments, comprising feeding by means of conveyor surfaces, a tow of filaments into the crimping chamber of a stuffer box crimper to crimp the tow, and passing the crimped tow through a heat setting device attached to the exit of the stuffer box crimper, the improvement comprising cooling the tow while in the crimping chamber to a temperature not exceeding 100° C.

4,115,908

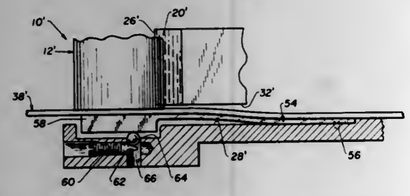
APPARATUS FOR STUFFER BOX CRIMPING

Daniel Isaiah Saxon, Kingsport, and Vernon Leon Leonard, Bristol, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,468

Int. Cl.[2] D02G *1/12*

U.S. Cl. 28—269 3 Claims



1. In an apparatus for crimping continuous filament tow, said apparatus having

a stuffer box crimping chamber;

a pair of coacting feedrolls spaced closely together so as to form therebetween a nip through which moving continuous filament tow is fed into the stuffer box crimping chamber;

a pair of scraper blades extending longitudinally generally parallel to and at right angles to the axes of the coacting feedrolls and forming two opposed sides of the crimping chamber, each scraper blade having a blade edge positioned so that it nearly touches one of the feedroll surfaces;

a pair of sidewalls, each sidewall extending along the length of the stuffer box crimping chamber and also along and adjacent the endfaces of the coacting feedrolls and the side edges of the pair of scraper blades;

a pair of moveable ribbon sideplates, each ribbon sideplate positioned so as to bridge the nip of the coacting feedrolls along their endfaces in sealing relation therewith and also to extend into the crimping chamber along one of the sidewalls to form a sealing relation with the pair of scraper blades to define one of the other opposed sides of the stuffer box crimping chamber;

means for moving said pair of ribbon sideplates relative to said feedroll endfaces, said sidewalls and said scraper blades; and

means for adjustably urging the ribbon sideplates into said sealing relation;

the improvement wherein said means for adjustably urging the ribbon sideplates into said sealing relation comprises a pair of flexible backing members, each backing member flexibly bearing in supporting relation against one side of one of the ribbon sideplates along its length from the coacting feedrolls and into the crimping chamber and providing a smooth, elastic curved surfaced path for the ribbon sideplate to move thereagainst in all positions of its adjustment, one end of the flexible backing member being connected in cantilevered manner at a location beyond the exit end of, the the nip of the feedrolls.

4,115,909

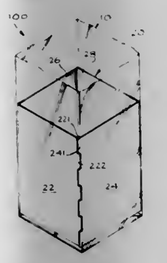
REINFORCING INSERT FOR COLLAPSIBLE PACKAGES

Arthur P. Corella, 8166 Vanscoy Ave., North Hollywood, Calif. 91602

Continuation-in-part of Ser. No. 717,097, Aug. 24, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,122

Int. Cl.[2] B65D *5/42*

U.S. Cl. 229—48 R 12 Claims



1. A reinforcing insert for flexible packaging, formed from a single blank, comprising:

a plurality of facets, each corresponding to a panel in said blank;

a plurality of fold lines, each corresponding to a score line in said blank for defining said panels; and

a plurality of alternating projecting tabs and intervening spaces in each of matable edges of at least two of said facets, said tabs being substantially straight and substantially rectangular and said spaces being substantially rectangular, said tabs and spaces being so conformed that the tabs in one of said matable edges substantially dimensionally correspond to the spaces in the other of said matable edges, said projecting tabs in the matable edges being interleaved to form a seam, with each of the projecting tabs forming said seam being substantially unbent and substantially in the same plane as its adjoining facet and the outer ends of the projecting, unbent tabs demarcating said seam.

4,115,910

ROLLER REINFORCED WITH A HARD METAL JACKET

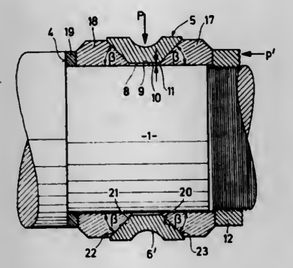
Gunther Hertel, Weissenseestrasse 9, D-8500, Nurnberg, and Karl Gustav Hertel, Espanstrasse, 6, D-8510 Furth, both of Fed. Rep. of Germany

Filed Apr. 27, 1977, Ser. No. 791,297

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629802

Int. Cl.[2] B21B *27/02*

U.S. Cl. 29—123 3 Claims



1. In a hot roller for working material, which roller includes a rotatably mounted roller body, a reinforcing working jacket composed of hard metal and having the form of a hollow cylinder disposed around the roller body, clamping means mounted between the roller body and the jacket and including clamping rings bearing against the axial end surfaces of the jacket and means acting via the rings for applying an axial compressive prestress force to the jacket, the axial end surfaces of the jacket and the clamping ring surfaces which bear thereagainst being inclined with respect to the roller axis, and the roller body and working jacket defining an annular gap between the inner peripheral surface of the working jacket and the outer peripheral surface of the roller body, the dimension of the annular gap in the direction between said jacket and roller body being sufficiently large to maintain the outer peripheral surface of the roller body and the inner peripheral surface of the working jacket out of contact with one another during operation of the roller at temperatures extending over its entire operating temperature range, the improvement wherein the clamping surfaces at opposed ends of said working jacket diverge from one another in the radial direction away from the roller axis.

4,115,911

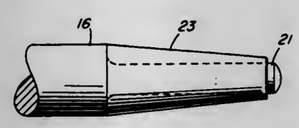
METHOD OF MAKING RETIPPED TOP-DRIVE FILLING SPINDLES

Ernest G. Poole, Charlotte, and Lucius M. Hair, Pineville, both of N.C., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 568,560, Apr. 16, 1975, Pat. No. 4,010,600. This application Jan. 10, 1977, Ser. No. 757,949

Int. Cl.[2] B22D *19/10;* B23P *7/00*

U.S. Cl. 29—401 D 6 Claims



1. A method of making a top-drive filling spindle having a tapered tip thereon of hardened material comprising:

forming a neck portion on the uppermost tip of a top-drive filling spindle blade, said neck portion being of reduced diameter and sufficient length as to accept a sleeve of hardened material thereon;

placing a sleeve of hardened material over said neck portion;

causing said sleeve to become securely attached to said neck portion in butting relationship with said spindle blade; and,

forming a predetermined taper uniformly on said sleeve of hardened material.

4,115,912

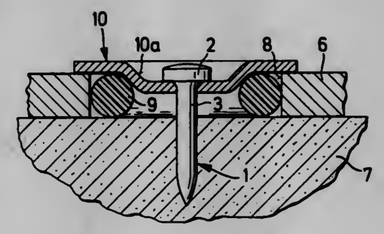
METHOD OF AND ASSEMBLY FOR FASTENING OBJECTS ON A SUPPORT MATERIAL

Franz Beck, Schaan, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jan. 17, 1977, Ser. No. 760,025

Int. Cl.[2] B23P *11/00;* F16B *15/00*

U.S. Cl. 29—432 4 Claims



1. A method of attaching objects to a support material by means of fastening elements having a head and a shank extending axially from the head with the head having a greater diameter than the shank, which fastening elements are driven into the support material by an explosive powder charge operating setting device, comprising the steps of laterally enclosing the shank of the fastening element with a ring-shaped elastic member having a dimension between its inside diameter and outside diameter in the range of one to five times the diameter of the shank of the fastening element, forming an opening in the object to be attached with the opening having a diameter and shape corresponding substantially to the outside diameter and contour of the elastic member, driving the fastening element by means of an explosive powder charge into the support material and seating the elastic member within the opening in the object for attaching the object to the support material and separating the object from the shank of the fastening element by means of the elastic member so that the forces acting through the object transverse to the axial direction of the fastening elements are at least damped by the elastic member, separating the head of the fastening element from the elastic member with a metal washer having an outside diameter greater than the outside diameter of the elastic member, and placing the elastic member in spaced relationship with the shank of the fastening element.

4,115,913

METHOD AND APPARATUS FOR WIND LOADING FILM MAGAZINES

Ikuro Moriya, and Masao Tsuruta, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 9, 1977, Ser. No. 795,267

Claims priority, application Japan, May 10, 1976, 51-52991

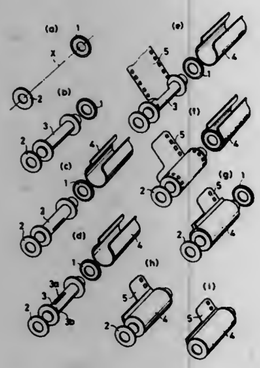
Int. Cl.[2] B23P *19/02, 21/00*

U.S. Cl. 29—450 4 Claims

1. A method for roll loading a precut strip of photographic film into a magazine and simultaneously assembling the latter from a spool having an axial slot therein for receiving an end of the film strip, a slotted cylindrical shell adapted to be concentrically disposed around the spool, and a pair of opposite end caps adapted to be disposed over the spool ends and to engage the ends of the shell, characterized by the steps of:

(a) inserting the leading end of the film strip into the spool slot,
(b) rotating the spool to wind the film strip thereon until only a predetermined tail end length of the film strip remains unwound and extending outwardly from the spool,
(c) axially moving the shell over the wound spool to concentrically surround the spool with the tail end of the film strip extending through the shell slot,
(d) squeeze engaging the shell to close the slot therein and reduce the shell diameter,
(e) axially moving the end caps toward each other, over the ends of the spool, and into contact engagement with the ends of the shell, and
(f) releasing the shell to enable it to diametrically expand into locking engagement with the end caps,
(g) all of the above steps being carried out during the continuous movement of the film, spool, end caps and shell in the same direction and with the spool, end caps and shell continuously maintained in axial alignment.

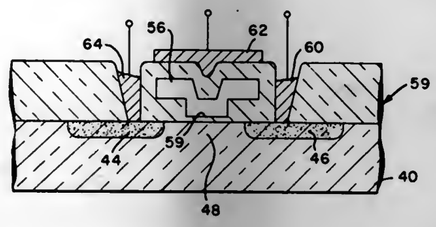
2. An apparatus for roll loading a precut strip of photographic film into a magazine and simultaneously assembling the latter from a spool having an axial slot therein for receiving an end of the film strip, a slotted cylindrical shell adapted to be



concentrically disposed around the spool, and a pair of opposite end caps adapted to be disposed over the spool ends and to engage the ends of the shell, said spool, shell and end caps being continuously maintained in axial alignment, said apparatus characterized by:
(a) means for inserting the leading end of the film strip into the spool slot,
(b) means for rotating the spool to wind the film strip thereon until only a predetermined tail end length of the film remains unwound and extending outwardly from the spool,
(c) means for axially moving the shell over the wound spool to concentrically surround the spool with the tail end of the film strip extending through the shell slot,
(d) means for squeeze engaging the shell to close the slot therein and reduce the shell diameter,
(e) means for axially moving the end caps toward each other, over the ends of the spool, and into contact engagement with the ends of the shell,
(f) means for releasing the shell to enable it to diametrically expand into locking engagement with the end caps, and
(g) conveyor means mounting all of the means recited in sub-paragraphs (b)–(f), inclusive, for continuous movement in the same direction during their operation.

4,115,914
ELECTRICALLY ERASABLE NON-VOLATILE SEMICONDUCTOR MEMORY

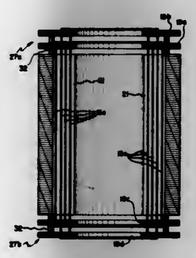
Eliyahou Harari, Irvine, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 671,183, Mar. 26, 1976. This application Feb. 22, 1977, Ser. No. 770,346
Int. Cl.[2] H01L *29/78*
U.S. Cl. 29—571 **12 Claims**



1. A process for fabricating a nonvolatile field effect transistor storage device comprising the steps of:
(a) forming active field effect transistor regions, including a source region, a channel region, and a drain region, in a semiconductor substrate;
(b) forming a first layer of a dielectric material on top of said active field effect transistor regions having a relatively thin section therein spatially disposed entirely over one of said active field effect transistor regions;
(c) forming a layer of resistive material on top of said dielectric layer and extending over said relatively thin section to thereby form a first gate electrode;
(d) forming a second dielectric layer up to 300A thick on top and around said resistive material thereby electrically isolating said first gate electrode and making it a floating gate electrode;
(e) forming a second gate electrode on top of said new dielectric layer and spatially disposed over said first gate electrode and covering the entire length of said channel region.

4,115,915
PROCESS FOR MANUFACTURING MOTOR HAVING WINDINGS CONSTRUCTED FOR AUTOMATED ASSEMBLY

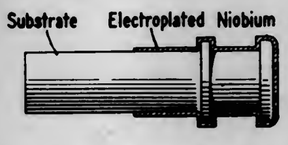
David E. Godfrey, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 600,875, Jul. 31, 1975, abandoned. This application May 11, 1977, Ser. No. 795,737
Int. Cl.[2] H02K *15/06*
U.S. Cl. 29—596 **4 Claims**



1. A process for manufacturing an electric machine stator core and winding assembly with sectionalized coils comprising the steps of
providing a magnetic stator core having opposing end faces and a plurality of peripherally spaced, axially extending stator slots,
cutting a continuous length of electrical wire with a rectangular cross section into straight coil side wires of different lengths, forming bundles of straight coil side wires with graduated lengths of wire in each bundle which are stacked in a predetermined pattern, and applying an external insulating layer to every bundle while leaving the end portions of the coil side wires exposed,
inserting said coil side wire bundles longitudinally into designated stator slots,
fabricating end cap rigid insulating boards each with an adhered planar array of rectangular cross section coil end turn conductors having the ends thereof exposed in a predetermined pattern,
successively assembling the end cap boards in superimposed relationship in two groups respectively parallel to the stator core end faces with the ends of selected coil side wires in every bundle butting against the ends of selected coil end turn conductors on a plurality of end cap boards and, alternately with the assembly of the end cap boards, making joints between coil side wires and end turn conductors in butting engagement to form a continuous winding.

4,115,916
AC SUPERCONDUCTING ARTICLES AND A METHOD FOR THEIR MANUFACTURE

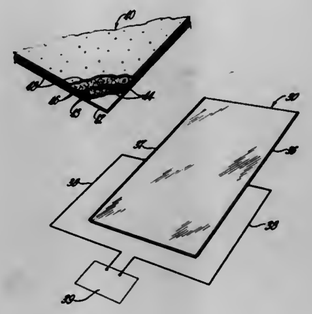
Robert Wagner Meyerhoff, Croton-on-Hudson, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 359,377, May 11, 1973, Pat. No. 3,906,412, which is a continuation of Ser. No. 160,926, Jul. 8, 1971, abandoned, which is a continuation of Ser. No. 701,594, Jan. 30, 1968, abandoned. This application Jul. 17, 1975, Ser. No. 596,621
Int. Cl.[2] H01V *11/00*
U.S. Cl. 29—599 **1 Claim**



1. A method of fabricating an AC superconducting transmission line for continuously transmitting AC power at power line frequencies with very low AC hysteretic losses which remain low even at high current density and/or high AC magnetic fields comprising the steps of: forming at least one multilayer tubular conductor wherein one outer layer of said tubular conductor is niobium and wherein a second layer of said conductor is composed of a material selected from the group consisting of copper, iron, ferrous alloys and nickel; said niobium layer being formed as a direct deposit onto said second layer by electrolyzing with the aid of an anode and the exposed second layer as cathode, and an electrolytic melt consisting of: (a) a base melt of at least one fluoride of potassium, rubidium, of cesium and at least one fluoride of other elements higher in the electromotive series than niobium, and (b) at least one fluoride of niobium, the proportions of said fluorides in said melt, the temperature of said melt and the electrolyzing current density being adjusted to produce a dense, structurally coherent deposit of said niobium upon said second layer; and enclosing said tubular conductor within a cryogenic envelope adapted to establish a cryogenic environment necessary to render said niobium superconductive.

4,115,917
METHOD FOR MAKING AN ELECTRICALLY CONDUCTIVE PAPER

Clarence W. Charon, Newark, Ohio, and Laurent C. Renaud, Pittsfield, Mass., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Jun. 23, 1975, Ser. No. 589,304
Int. Cl.[2] H05B *3/00*
U.S. Cl. 29—611 **1 Claim**



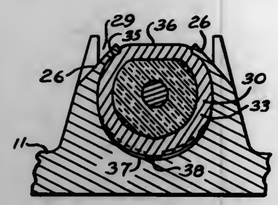
1. A method for making a heating system for a dwelling having a wall surface facing a room to be heated comprising:
a. adhering a bi-layered sheet of glass fiber felted paper to said wall surface, said sheet having a front electrically conductive layer of glass fibers having electrically conductive fibers dispersed in contact relationship throughout and an electrically non-conductive back layer of glass fibers;
b. fixing a first electrical conductor on the front surface of said sheet;
c. fixing a second electrical conductor on the front surface of said sheet in spaced relationship to said first electrical conductor; and,
d. connecting different polarities of a power supply to said conductors.

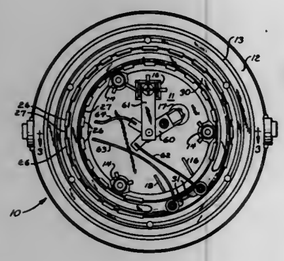
4,115,918
METHOD OF MAKING ELECTRIC APPLIANCE WITH INTERMITTENTLY STAKED SHEATHED HEATING ELEMENT

Richard F. Anderl, Chippewa Falls, and Lawrence J. Tienor, Eau Claire, both of Wis., assignors to National Presto Industries, Inc., Eau Claire, Wis.
Division of Ser. No. 736,449, Oct. 28, 1976, Pat. No. 4,052,590. This application Jun. 15, 1977, Ser. No. 806,729
Int. Cl.[2] H05B *3/00*
U.S. Cl. 29—611 **7 Claims**

1. Method of staking a sheathed heater element within a receiving channel having upstanding walls therefor in one wall of a cooker comprising the steps of locating the heater element within the channel between the upstanding walls thereof, shearing and pressing longitudinally spaced segments of the outer edge of the channel walls into the sheath of the located

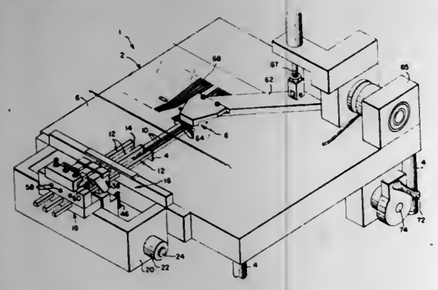
heater element, and flattening the sheathed heater element along its length between said pressed segments to urge said





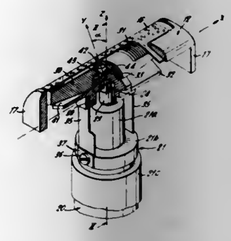
sheathed heater element into close surface contact with the channel base and sides.

4,115,919
MACHINE FOR PRESS FIT INSERTION OF CHIP DEVICES
Harold Oakley Woolley, Jr., Hershey, and Charles Richard Wise, Jr., Annville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 25, 1977, Ser. No. 844,854
Int. Cl.[2] H05K *3/32*
U.S. Cl. 29—740 **2 Claims**



1. An insertion device for small conductive chips, comprising:
- a work table having a planar surface provided with a work station and a plurality of parallel vertically recessed paths communicating with said work station,
- a sweep in alignment with each said paths whereby chips serially aligned along said paths are urged by said sweep toward said work station,
- a pressure arm at said work station for horizontally pressing a substrate against said table,
- said pressure arm having a plurality of spaced feet engaging said substrate, said feet being interdigitated with said paths,
- an inserter ram mounted under said table for vertical reciprocation towards and away from said substrate at said work station,
- said inserter ram having a plurality of heads entering into respective tracks during reciprocation toward said substrate,
- a first pivot arm for urging said sweep along said path,
- jam clamp means connecting said first pivot arm and said sweep,
- a cam shaft having a first cam,
- a second pivot arm connected at one end with said cam and at another end to said inserter ram and said first pivot arm, and
- crank arm means for rotating said cam shaft whereby said cam is rotated pivoting said second pivot arm to vertically reciprocate said inserter ram for vertical insertion of a foremost chip of each said paths into a corresponding opening of said substrate, and whereby said inserter ram upon return vertical reciprocating motion pivots said first pivot arm to urge said sweep along said paths and thereby advance a serial array of chips along each said paths.

4,115,920
DRY SHAVER WITH PRIMARY AND SECONDARY MODES OF OSCILLATION
Enzo Ascoli, Lausanne, Switzerland, assignor to The Gillette Company, Boston, Mass.
Filed Apr. 27, 1977, Ser. No. 791,648
Claims priority, application United Kingdom, May 13, 1976, 19706/76
Int. Cl.[2] B26B *19/26, 19/02*
U.S. Cl. 30—43.3 **10 Claims**

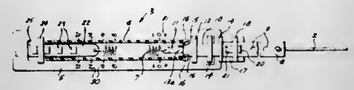


1. An electric dry shaver comprising a flexible part-cylindrical curved cutting foil; a cutter body having a plurality of cutter blades with cutting edges; means urging said cutter blade cutting edges into engagement with said foil; and driver means adapted to drive said cutter body both in a primary mode of oscillation along a linear path substantially parallel to said foil to effect a shaving action and in a secondary mode of oscillation along a linear path at an angle to said foil to cause said foil to oscillate in sympathy with said secondary mode of oscillation of said cutter body, the frequency of said secondary mode of oscillation being at least twice the frequency of said primary mode of oscillation.

4,115,921
EXTRAORAL FORCE-APPLYING ORTHODONTIC APPLIANCE
Maclay M. Armstrong, Seattle, Wash., assignor to Northwest Orthodontics, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 655,401, Feb. 5, 1976, which is a continuation-in-part of Ser. No. 613,243, Aug. 15, 1975, abandoned. This application May 6, 1977, Ser. No. 794,407
Int. Cl.[2] A61L *7/00*
U.S. Cl. 32—14 D **91 Claims**

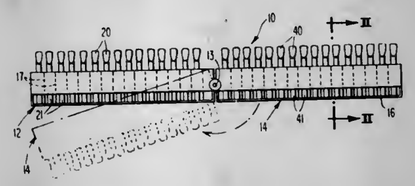
1. In an orthodontic appliance including force-reaction means engageable with the wearer's head and/or neck, orthodontic force-applying means for applying force to a jaw and connector means connecting the force-reaction means and the

force-applying means and including resilient force-producing means for producing a yieldable force applied to the force-applying means, the improvement comprising means for providing relative movement of the force-reaction means and the



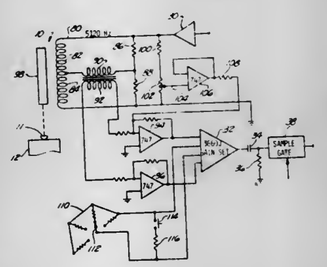
force-applying means away from each other free of the yieldable force of the resilient force-producing means automatically in response to relative movement of the force-reaction means and the force-applying means away from each other beyond a predetermined limit.

4,115,922
DENTAL CROWN AND BRIDGE SHADING SYSTEM
C. Gale Alderman, 437 Donalyn La., Berwyn, Pa. 19312
Filed Sep. 20, 1976, Ser. No. 724,981
Int. Cl.[2] G09B *19/00*
U.S. Cl. 32—71 **4 Claims**



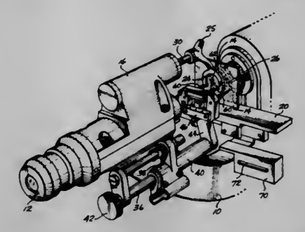
1. In a shade guide for dental crowns and bridges, the combination of a holder, a plurality of gingival shade selectors held thereby and a separate plurality of incisal shade selectors held thereby, each such selector comprising a shade button having an opaque backing layer, with each shade button of the gingival shade selectors having a concave portion tapering to a relatively thin edge, and each shade button of the incisal shade selectors having a corresponding edge portion that is convex and relatively thicker than that of the gingival shade button.

4,115,923
ELECTRONIC COLUMN GAGE
David L. Smith, Brighton, and Norman J. Scherr, Jr., Warren, both of Mich., assignors to The Valeron Corporation, Oak Park, Mich.
Division of Ser. No. 606,444, Aug. 21, 1975, Pat. No. 4,038,756. This application Mar. 7, 1977, Ser. No. 775,256
Int. Cl.[2] G01B *7/14*
U.S. Cl. 33—172 E **3 Claims**



1. A probe for use with an electronic sizing gage comprising first and second normally balanced inductive sensing circuits, including respective coil portions; part contacting means including a movable ferrite member juxtaposed to said coil portions, and means altering the balance between said circuits in response to movement of said member according to part size, means producing an electrical output signal representing the degree of imbalance produced by said movable member; said means including excitation means for applying an excitation signal of alternating waveform to the first and second circuits; and, nulling means adding selectively variable portions of said excitation signal to said electrical output signal for reducing said electrical output signal to zero irrespective of the degree of imbalance between said first and second circuit, said nulling means including amplifier means receiving said electrical output signal and said variable portions of said excitation signal and producing an output in response to the difference in said signals, whereby said null condition may be detected by said amplifier output signal.

4,115,924
SPECTACLE LENS MARKING DEVICE
Dick L. Kleinkopf, P.O. Box 1660, Fairbanks, Ak. 99707
Filed Aug. 25, 1977, Ser. No. 827,580
Int. Cl.[2] G01B *11/27*
U.S. Cl. 33—174 A **4 Claims**

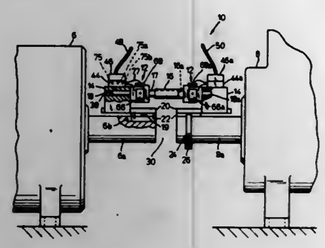


1. In combination with a lensometer for locating the optical center of a ground lens for eye spectacles having means to move the lens relative to the line of sight of the lensometer until the optical center of the lens coincides with the optical center determined by said lensometer, the improvement comprising a frame carried by said lensometer; spaced apart, first lens marking means carried by said frame for marking said lens with two spaced apart marks located at predetermined positions with respect to the optical center of said ground lens, the two spaced apart marks and the optical center being colinear; and first fixed scale carried by said frame; a slide member slidably connected with said frame, having a reference mark thereon cooperating with said fixed scale, and having a second marking means for forming a mark in a predetermined spaced relationship with respect to said reference mark; and means for adjustably moving said slide member amounts corresponding to the desired spacing between the optical center of the ground lens and the optical center of the lens when mounted in an eye spectacle.

4,115,925
SHAFT ALIGNER
Stephen P. Malak, 1720 N. Prospect Ave., Milwaukee, Wis. 53202
Filed May 16, 1977, Ser. No. 797,302
Int. Cl.[2] G01B *7/31*
U.S. Cl. 33—181 R **26 Claims**

10. A shaft aligner for statically aligning a first shaft with a second shaft comprising:
- a first universal joint comprising a first yoke and a second yoke pivotally mounted on a first support;
- a second universal joint comprising an input yoke and an output yoke pivotally mounted on a second support;
- first axial sensing means mounted on the first universal joint

to sense angular orientation of the first yoke with respect to the second yoke and providing a first signal and a second axial sensing means mounted on the second universal joint to sense angular orientation of the input yoke with respect to the output yoke and providing a second signal;
means for mounting the first yoke to the first shaft;
means for mounting the input yoke to the second shaft;
a connector member connecting the second yoke to the output yoke; and



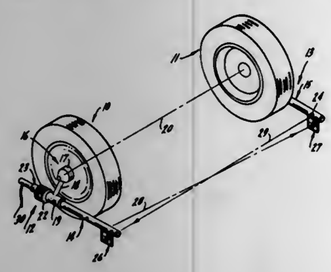
alignment readout means having a defined align node and responsive to the first signal and second signal for visually displaying shaft alignment, whereby with adjustment of the first shaft with respect to the second shaft alignment of the first shaft with the second shaft will be indicated by the alignment readout means when the first yoke and the second yoke are oriented at the align node, and the input yoke and the output yoke are oriented at the align node.

4,115,926

AUTOMOTIVE TOE-IN GAUGE

Robert S. Hampton, Jr., Waukegan; Leonard A. Morrison, Chicago; John W. Murphy, Waukegan, and Craig E. Mountz, Libertyville, all of Ill., assignors to Ammco Tools, Inc., North Chicago, Ill.

Filed Jun. 27, 1977, Ser. No. 810,294
Int. Cl.² G01B *11/26*
U.S. Cl. 33—288 **4 Claims**



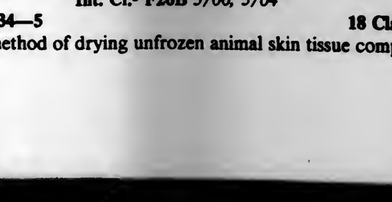
1. For use in a wheel alignment system, the combination of a first housing assembly,
means for temporarily fixedly connecting said first housing assembly to a first wheel which is to be aligned,
said first housing assembly having an optical system which includes means for generating a light beam emanating from said first housing assembly for reception on a target screen carried by a similar, oppositely positioned second housing assembly associated with a second wheel which is located axially opposite said first wheel, and
a target screen carried by said first housing assembly for receiving a light beam emanating from means for generating a light beam emanating from said second housing assembly,
means for eliminating the effect of physical displacement of a housing assembly from an initial line of reference, such as the horizontal, due to forces applied to the wheel with which it is associated during the alignment procedure,
said displacement elimination means comprising a plurality of visible indicia on said target screen carried by said first housing assembly,
each indicia being an arc struck about the point of connection of said first housing assembly to its associated first wheel as a center,
whereby a true reading may be obtained irrespective of the displacement of said first housing assembly from an initial line of reference as by movement of said first wheel during the alignment procedure, and consequent movement of said first housing assembly therewith.

4,115,927

PROCESS FOR OPERATING A MAGNETICALLY STABILIZED FLUIDIZED BED

Ronald E. Rosensweig, Summit, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 610,071, Sep. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 514,003, Oct. 11, 1974, abandoned. This application Apr. 11, 1977, Ser. No. 786,613
Int. Cl.² F26B *3/08*
U.S. Cl. 34—1 **34 Claims**



1. In a process for fluidizing a bed containing solid particulate magnetizable, fluidizable material within an external force field, wherein at least a portion of the bed containing said solid particulate magnetizable, fluidizable material and a fluidizing fluid are subjected to a nontime varying and substantially uniform applied magnetic field having a substantial component along the direction of the external force field such that said solid particulate magnetizable, fluidizable material has a component of magnetization along the direction of the external force field, the improvement which comprises continuously stably fluidizing at least a portion of said bed containing the solid particulate magnetizable, fluidizable material by a flow of a fluid opposing said external force field at a superficial fluid velocity ranging between:
(a) more than the normal minimum fluidization superficial fluid velocity required to fluidize said bed in the absence of said applied magnetic field; and
(b) less than the superficial fluid velocity required to cause time-varying fluctuations of pressure difference through said stably fluidized bed portion over a finite period of time during continuous fluidization in the presence of said applied magnetic field.

4,115,928

FREEZE-DRY PROCESS AND PRODUCT

Frank W. Reichenbacher, Scottsdale, Ariz., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Dec. 17, 1973, Ser. No. 425,599
The portion of the term of this patent subsequent to Aug. 26, 1993, has been disclaimed.
Int. Cl.² F26B *5/06, 5/04*
U.S. Cl. 34—5 **18 Claims**

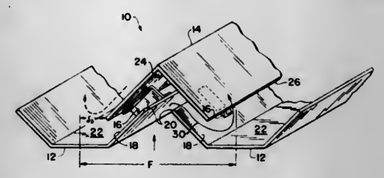
1. A method of drying unfrozen animal skin tissue comprising the steps of freezing said tissue by drawing a vacuum across the tissue and thereafter lyophilizing said tissue.

4,115,929

GAS DISTRIBUTOR FOR FLUIDIZING BEDS

Fred W. Staub, and Peter A. Morgan, both of Schenectady, N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 27, 1976, Ser. No. 735,930
Int. Cl.² F26B *3/08*
U.S. Cl. 34—10 **5 Claims**



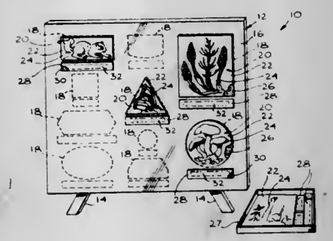
1. A gas flow distributor for fluidizing a bed of particulate material, said distributor comprising:
a plurality of base plates defining longitudinal troughs with raised side walls and arranged in longitudinal rows to form at least one slot orifice of pre-selected size between the edges of adjacent side walls;
at least one deflector baffle forming a covering over said at least one orifice and said trough side wall edges;
spacing means for separating said plates and said at least one baffle, wherein said spacing means comprises at least one flexible rib supportably joining facing surfaces of said base plates and said at least one baffle and for accommodating expansion and contraction of said plates and said at least one baffle for establishing a circuitous fluid flow path between a plenum below the distributor and the bed above the distributor.

4,115,930

EDUCATIONAL TEACHING DEVICE

Charles R. Beck, 4432 Laurel Grove, Studio City, Calif. 90048

Filed Dec. 29, 1976, Ser. No. 755,227
Int. Cl.² G09B *29/00*
U.S. Cl. 35—7 R **16 Claims**



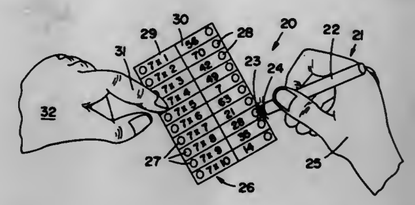
1. An improved educational teaching device, said device comprising, in combination:
a. a teaching display board of extended surface area;
b. at least one set of related units of informational material;
c. means for releasably securing each of said informational units to and positioning each of said informational units on said board;
d. at least one set of related captions for each said set of informational material, each said caption bearing a first physical key, and a separate second physical key being disposed on either (a) each said caption, or (b) each said informational unit; and,
e. means for releasably securing said captions to and repositioning said captions on said board adjacent said information units to signify a relationship therewith.

4,115,931

INDIVIDUALIZED TEACHING SYSTEM UTILIZING ELECTRICAL CONTINUITY

John A. Futhey, P.O. Box 32, Petrolia, Calif. 95558

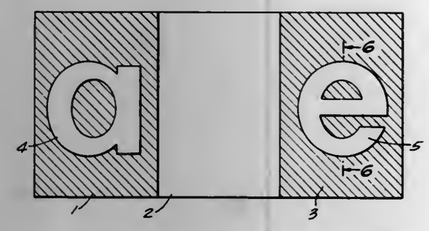
Filed Sep. 8, 1976, Ser. No. 721,538
Int. Cl.² G09B *7/06*
U.S. Cl. 35—9 C **4 Claims**



1. A device for education, amusement and the like comprising:
three sheets interfacially bound together into a laminated card with the outermost two faces thereof each having two columns for plural pairs of informational items with one of each pair being in a first column and the other in a second column;
adjacent to each said item, an opening through said outer card providing access to a face of an inner card, said inner card being made of electrically nonconductive material and having adhered on one face of said inner card a plurality of unconnected vertically arrayed electrically conductive ink strips, and on the other face of said inner card a plurality of unconnected horizontally arrayed electrically conductive ink strips, the number of said horizontal strips being twice the number of said vertical strips, each horizontal strip alternatively terminating in enlarged ink deposits positioned adjacent to the left edge and the right edge of said inner card and aligned with one of the aforementioned perforations in the outer sheets, preselected horizontal strips being electrically connected to preselected vertical strips via small apertures through said inner card, said apertures being filled with electrically conductive ink, said apertures being positioned in accordance with the placement of the informational items or spaces heretofore described and in such a manner that exists a plurality of distinct continuity paths from the said ink deposits adjacent to one edge of said inner card to corresponding ink deposits adjacent to the other edge of said card, said continuity paths being defined by the positions of the inked perforations, and accessibility to said continuity paths being through the perforations in the outer cards;
a hand held wireless indicator probe having a conductive probe tip enabling the user to make contact between said tip and a said enlarged ink deposit of said card, a hand contact enabling electrical contact between said probe and the user's hand which is holding the probe, visual indicator means in said probe for indicating to the user the occurrence of a completed electrical continuity circuit loop, low voltage battery power supply means in said probe connected for powering said visual indicator means, switch means connected between said battery and said indicator for switching on said indicator, switch control means connected between said hand contact and said probe contact into said switch means, said switch control means responsive to minute electrical current flow through a loop including the user's body and finger held in contact with an ink deposit being connected by a said continuity path to said ink deposit in which said probe tip is in contact, and said probe tip in electrical contact with said ink deposit, said switch control means thereupon

activating said switch means and thereby eliminating said visual indicator means of said probe.

4,115,932
PHONETICS SYSTEM AND METHOD OF TEACHING PHONETICS
Rita Charlesworth, 2214 22nd St., Newport Beach, Calif. 92660
Filed Jul. 15, 1977, Ser. No. 815,968
Int. Cl.[2] G09B *19/04*
U.S. Cl. 35—35 J **9 Claims**



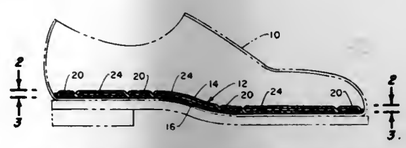
1. A phonetics system for the English language including a plurality of tiles, each tile including one or more letters that have a sound denoted by a color marking on said tile, said plurality including vowel tiles associating one color with short single vowel sounds, vowel tiles associating a second color with long single vowel sounds, digraph tiles bearing the color of vowels that commonly appear in English words with said digraph, vowel/digraph combination tiles bearing the colors associated with the sound of the vowel in said vowel/digraph combination in English words, and tiles bearing vowel combinations marked with the colors associated with the vowel sounds said vowel combinations commonly have in English words.

4,115,933
REMOVABLE SHIELD FOR FOOTWEAR
Gasper Chiaramonte, Jr., 229 Court Ave., Lyndhurst, N.J. 07071
Filed Feb. 18, 1977, Ser. No. 770,097
Int. Cl.[2] A43B *21/00, 3/24*
U.S. Cl. 36—34 B **10 Claims**



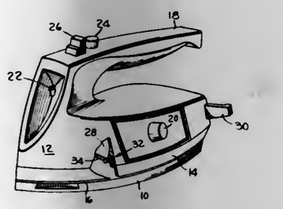
1. The combination of a wearer's shoe having a platform with surrounding upper and lower marginal anchor means of restricted channel configuration, and a replaceable laminiform cover of flexible material adapted to interfacially and conformably surround the exterior of the said platform and with upper and lower marginal beads disengageably secured in the channels of said upper and lower marginal anchor means of the platform.

4,115,934
LIQUID SHOE INNERSOLE
John M. Hall, 783 Moreno Dr., Oaji, Calif. 93023
Filed Feb. 11, 1977, Ser. No. 767,759
Int. Cl.[2] A43B *13/38*
U.S. Cl. 36—44 **3 Claims**



1. An innersole adapted to be placed within a shoe, said innersole comprising:
an upper layer of material and a lower layer of material being connected together forming a permanent first seal at the peripheral edges forming an interior main chamber, said interior main chamber extending throughout the length of the insole a liquid within said main chamber, said upper layer of material and said lower layer of material being constructed of a flexible plastic material; and
a second chamber surrounded by within said main chamber and in the plane thereof, the peripheral edge of said second chamber being formed by the connecting together of said upper and said lower layers of material to form a permanent second seal, the plane of said second seal being within the plane of said first seal, said second seal being formed with liquid being located within said main chamber, leakage of said liquid being prevented between said main chamber and said second chamber.

4,115,935
PLASTIC STEAM IRON
Kaj Toft, Monroe, Conn., assignor to General Electric Company, Bridgeport, Conn.
Filed May 16, 1977, Ser. No. 797,523
Int. Cl.[2] D06F *75/36*
U.S. Cl. 38—88 **6 Claims**



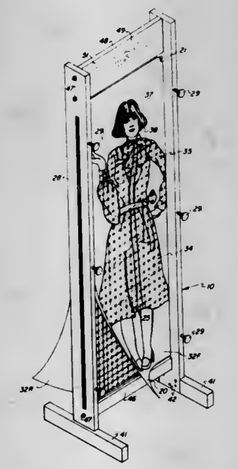
1. A lightweight steam iron having a soleplate and means to selectively deliver water thereto for distribution of steam therefrom, the improvement comprising
a first plastic plate above the soleplate substantially coextensive therewith and having a portion forming a skirt thereabout,
a second plastic housing having a handle and sealingly mounted on and supported by said plate,
said plate and housing forming the walls of an internal water tank and enclosing the iron operating components, and
said sealing mount being disposed along all surface contacts between the plate and housing and formed to provide a portion always under compression on different rates of expansion or contraction of said plastics to form a seal therebetween at all times.

4,115,936
CHANGEABLE CHARACTER SIGN STRUCTURE
James G. Nidelkoff, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 3, 1977, Ser. No. 756,258
Int. Cl.[2] G09F *11/00*
U.S. Cl. 40—449 **2 Claims**



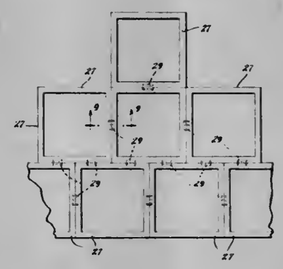
1. A sign structure having changeable characters, comprising:
a plate having a patterned array of rectangular openings, said plate having front and rear surfaces, the front surface being a predetermined color;
shutters having opposite surface portions, one surface portion being the same color as the front surface of said plate and the opposite surface portion being a contrasting color, each of said shutters being rotatably mounted in one of said openings for movement between a first position presenting the one surface portion to said opening and a second position presenting the opposite surface portion to said opening; and
handle means for securing the shutters in the first or second position, said handle means comprising:
a magnetizable handle plate and flange integral with and extending from said shutter; and
a magnet disposed on opposite sides of each of said shutters proximate thereto for magnetically attracting said handle to retain said shutter and handle in said first or second positions.

4,115,937
DISPLAY FRAME
Stanley Wolpert, Syosset, N.Y., assignor to Loomskill, Inc., New York, N.Y.
Filed Jan. 6, 1977, Ser. No. 757,255
Int. Cl.[2] G09B *25/00*
U.S. Cl. 35—55 **4 Claims**



1. A display frame for mounting of a swath of cloth behind a marked transparent overlay sheet so as to display the mounted cloth in the form of a garment worn by a pictured model comprising
an open frame bounded by a pair of spaced vertical members each joined to a base pedestal and joined together by spaced horizontal means,
a hangar rod mounted to the vertical members so as to extend between said vertical members, with
each vertical member formed with a through slot extending a substantial length of the said vertical member, said vertical members each fitted with means to detachably clamp a side edge of a swath of cloth in a said slot so that the swath is suspended between the vertical members below the hangar rod,
said hangar rod adaptable for suspending a transparent overlay sheet over the length of the suspended cloth, in which
each said slot of a vertical member extends between the opposed sides of the vertical member so that a common plane may pass through the through slots of the two vertical members, such that
a swath of cloth may be fastened in, or removed from, the frame sidewise through the said slots independently of the suspended overlay, and the overlay may be replaced independently of the suspended swath.

4,115,938
VARIABLE PICTURE FRAME ASSEMBLY
Harold M. Belmuth, Westport, Conn.; Alfred R. Leto, Springfield, Mass.; Lawrence London, Norwalk, and Herman A. Zuckerman, Westport, both of Conn., assignors to Saugatuck Industries, Incorporated, Westport, Conn.
Filed Dec. 22, 1976, Ser. No. 753,287
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—152 **6 Claims**



1. A variable picture frame assembly comprising:
(a) a plurality of picture frames, each of said picture frames having a front wall having an opening to expose a picture mounted within the frame and a plurality of side walls along the front wall along the periphery thereof and extending rearwardly therefrom, each side wall including an inside surface and an outside surface, a lip formed on the inside surface of each side wall adjacent a back edge thereof extending along said back edge; and
(b) connecting means for joining adjacent picture frames together, said connecting means comprising snap-on type removal clips, each clip including a pair of spaced leg portions containing a transversely extending bead adapted to fit over the lips on the inside surface of side walls of the adjacent frames to join the frames together.

4,115,939
BOTTLE WITH A MULTIPLE PART LABEL
Cedric Marks, 880 Fifth Ave., New York, N.Y. 10021
Filed Oct. 4, 1976, Ser. No. 729,172
Int. Cl.[2] G09F *3/00*
U.S. Cl. 40—310 **1 Claim**

1. A package construction comprising a bottle of light-

permeable material, a light-permeable liquid in said bottle, and front and rear label sections on opposed sides of said bottle to be viewed in cooperative relation, at least one of said label sections including a field at least in part distorted to compensate for optical distortion of the rear label section due to refraction of the bottle and liquid, the rear label section having visually perceptible information thereon facing towards the front label section, said information being distorted to compensate for said optical distortion, the front label section being provided with an opening through which the rear label section



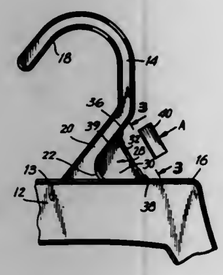
is viewed, said bottle being generally cylindrical, the information in the field of the rear label section being compressed in lateral direction to compensate for optical distortion, the opening being laterally expanded, the rear label section further having visually perceptible information thereon facing away from the front label section and being devoid of the distortion of the first said visually perceptible information; the information in the field of the rear label section being compressed by about 40–60%, said opening being laterally expanded by about 10–20%.

4,115,940

GARMENT HANGER WITH SIZE INDICATOR

Robert Phillips, Fort Lee, N.J., assignor to A. & E. Warbern, Inc., Keasbey, N.J.

Filed Jul. 29, 1977, Ser. No. 820,267
Int. Cl.² G09F *3/00*
U.S. Cl. 40—322 **9 Claims**



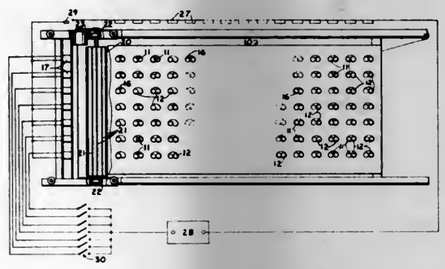
1. A garment hanger comprising a body, a hook member formed integrally with said body and being joined to said body at one end of said hook member, a tab holder formed integrally with said body and said hook member and being connected to both said body and said hook member substantially at the junction of said body and hook member thereby forming an integral, one piece structure of said body, hook member and tab holder, said tab holder being oriented substantially in the direction of a plane formed by said body and said hook member, said tab holder extending for a finite distance along an edge of said body and along an edge of said hook member and being further defined by a free edge extending between the terminus of the extent of said tab holder along said edge of said body and the terminus of the extent of said tab holder along said edge of said hook member and an information tab removably connectable to said tab holder, said tab holder and information tab including cooperating retaining means for holding said information tab on said tab holder against inadvertent dislodgement.

4,115,941

DISPLAY AND RESET APPARATUS

Lorne Stephenson, Spokane, Wash., assignor to American Sign & Indicator Corporation, Spokane, Wash.

Filed Mar. 7, 1977, Ser. No. 774,887
Int. Cl.² G09F *9/30*
U.S. Cl. 40—452 **5 Claims**



1. In an information display device having:
an upright panel with a plurality of discrete light-transmitting areas, arranged along transversely spaced upright columns and surrounded by a background;
a backing member spaced parallel to the panel;
a plurality of circular disks equal in number to the number of light-transmitting areas on the panel, each disk having a diameter capable of overlying an associated light-transmitting area;
means individually mounting each disk within the space separating said panel and said backing member for selective coplanar movement between alternate stable positions in relation to its associated light-transmitting area, namely a first position in which the disk overlies its associated light-transmitting area, and a second position in which it is clear thereof;
and carriage means mounted rearward of the backing member for permitting relative movement between the panel and said carriage means in a continuous sweep;
the improvement comprising:
first and second disk operating means on said carriage means for sequentially exerting inductive forces on each disk operatively encountered thereby during a continuous sweep of the panel relative to said carriage means;
said first disk operating means being positioned on said carriage means relative to the position of said second disk operating means so as to lead said second disk operating means during each sweep of the panel, said first disk operating means being operable to preset each disk in one of said alternate positions prior to its operative encounter by said second disk operating means;
said second disk operating means being operable to move selected individual disks operatively encountered thereby from said one position to their remaining alternate positions

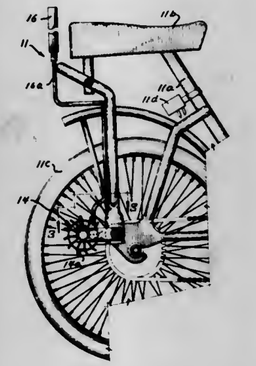
one of said disk operating means comprising a column of disk operators in fixed positions on the carriage means;
the remaining one of said disk operating means comprising a drum rotatably mounted to said carriage means about an axis parallel to said column of disk operators.

4,115,942

MESSAGE DISPLAY ARRANGEMENT FOR BICYCLE OR LIKE VEHICLE

Ernest L. Sears, 5111 Elmhurst Dr., Evansville, Ind. 47711

Filed Feb. 17, 1977, Ser. No. 769,651
Int. Cl.² B60Q *11/00*; G09F *11/23*
U.S. Cl. 40—547 **4 Claims**



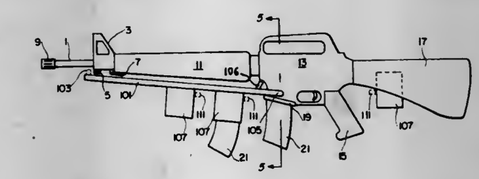
1. A message display arrangement for a bicycle having a wheel-supported framework comprising light producing means mounted on said framework, a rotatable indicia carrying segment wheel mounted on a portion of said framework adjacent to said light producing means and positioned to pass light through said indicia, a message display unit mounted on said framework, and a system of fiber optic strands extending from the side of the segment wheel opposite to said light producing means to said message display unit transmitting light which passes through said indicia on said segment wheel to said message display unit, where a projection on a bicycle wheel selectively and intermittently engages one of a series of pins extending from said indicia carrying segment wheel to rotate the latter, said movement of said bicycle wheel providing a continual message on said message display unit.

4,115,943

RESERVE MAGAZINE HOLDER

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed May 31, 1977, Ser. No. 801,641
Int. Cl.² F41C *27/00*
U.S. Cl. 42—90 **4 Claims**



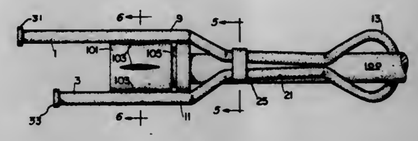
1. A frame arranged for attachment to a firearm having a stock and a detachable magazine adapted for installation at a feeding position on said firearm said frame including: means for storing said magazine at a non-feeding position separate from said feeding position, quickly releasable detent means capable of retaining said magazine at said non-feeding position and insulating means for shielding a magazine stored at said non-feeding position from heat emanating from a barrel of said firearm.

4,115,944

BALLISTIC CUTTERS

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed Nov. 25, 1977, Ser. No. 854,819
Int. Cl.² F41C *27/00*
U.S. Cl. 42—90 **5 Claims**



1. A ballistic cutter comprising: means adapted for engagement with a barrel of a firearm near a muzzle thereof; a pair of members extending from said means, each of said pair terminating in a windlassing lug; wedge means on each of said pair positionally adapted for engagement with a slot in a device affixed to said muzzle; and means for retaining said wedge means in said engagement whereby said cutter can be mounted with each said lug protruding beyond said device.

4,115,945

TRAP SETTER FOR BEAVER TRAPS

Clarence B. Hession, and Dorothy Hession, both of 1107 Franklin St., Hattiesburg, Miss. 39401

Continuation-in-part of Ser. No. 776,832, Mar. 14, 1977. This application Mar. 28, 1977, Ser. No. 781,635
Int. Cl.² A01M *23/28*
U.S. Cl. 43—97 **1 Claim**



1. An improvement in an apparatus for setting beaver-type animal traps of the type having at least one V-shaped closing spring unit, said unit having normally divergent spring-based arms provided at free ends with slideable jaw encircling eyes, said apparatus having a tubular frame having an elongated slot on one side, and having one hook fixed to said tubular frame, and having one hook attached to a movable rod protruding through and into said tubular frame, wherein the improvement comprises:
a. said fixed hook upwardly pointing in operation and attached to the lower end of said frame at the lower end of said elongated slot;
b. said hook attached to said movable rod is downwardly pointing in operation and attached to said movable rod by swivel means;
c. said movable rod having ratchet teeth; and
d. ratchet means, attached to the upper end of said frame for applying great mechanical advantage to said movable

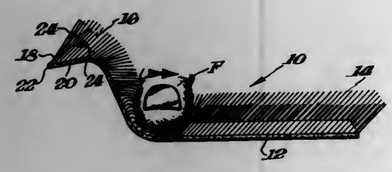
ratchet rod and providing for selectably forcibly advancing and slideably retrieving said ratchet rod through said frame.

4,115,946
FLEXIBLE DISCUS DEVICE
Daniel Vukmirovich, 9233 Bedford, Detroit, Mich. 48224
Continuation-in-part of Ser. No. 730,179, Oct. 7, 1976, abandoned. This application Jan. 17, 1977, Ser. No. 759,783
Int. Cl.² A63H *33/18*
U.S. Cl. 46—74 D **14 Claims**



1. A device comprising a disc-shaped section of flexible, non-resilient sheet material having an edge section with an extension in a direction normal to the nominal plane of the disc when the sheet and edge section are extended, and an annular distributed weight formed of a material having a density substantially in excess of the sheet material connected to said laterally extending edge, whereby the device may be readily folded or crumpled, and when hurled with a rotational motion the centrifugal forces acting on the weights will cause the device to assume an extended position so as to exhibit aerodynamic properties.

4,115,947
ACTION TOY AND AMUSEMENT DEVICE
Joseph A. Giordano, 213 S. Gray Ave., Colonial Heights, Wilmington, Del. 19805
Filed Aug. 31, 1976, Ser. No. 719,267
Int. Cl.² A63H *3/02*
U.S. Cl. 46—116 **1 Claim**



1. A method of making and manipulating an action toy and amusement device comprising cutting a thin strip of rug material having upstanding nap material extending generally perpendicular to a stiff flexible backing member to a size about eight times longer in length than in width and of a width narrower than the length of the user's finger, cutting opposite sides of one end of the strip to form a pointed end, forming simulated eyes on the pointed end to form a simulated head thereby, and stroking the strip with the user's finger from an upstream direction to a downstream direction in its longitudinal direction while the strip is on a support surface to bend the nap material toward the horizontal and toward the backing member in the direction of stroke thereby causing the nap material to raise the upstream backing material to result in the strip moving up and down with respect to the support surface.

4,115,948
DRINKING DOLL HAVING WETTING AND NON-WETTING MODES
Lucile Burks, 5906 Oxley Dr., Flint, Mich. 48504
Filed Nov. 10, 1976, Ser. No. 740,595
Int. Cl.² A63H *13/02*
U.S. Cl. 46—141 **5 Claims**

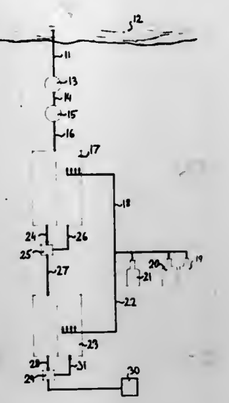


1. In a toy doll of the type having a system for simulating the elimination of body fluids, the improvement which comprises:
(a) an opening defining a mouth,
(b) a first flow conduit having a first end secured about and in registry with the opening, the first flow conduit extending into the interior of the doll,
(c) a reservoir removably mounted within the interior of the doll,
(d) means at the exterior surface of the doll for removing the reservoir from the interior of the doll.
(e) a second flow conduit disposed within the doll having a first end in flow communication with a second exterior opening formed in the doll, the second end being proximate the second end of the first flow conduit, and
(f) means for detachably interconnecting the reservoir, the second end of the first flow conduit and the second end of the second flow conduit, the interconnecting means being selectively connectable to the reservoir and last mentioned flow conduit ends in a first mode wherein liquid entering the mouth bypasses the second conduit and flows into the reservoir, and in a second mode wherein liquid entering the mouth bypasses the reservoir and flows through the second exterior opening.

4,115,949
PRODUCTION OF GLYCEROL FROM ALGAE
Mordhay Avron, Rehovot, and Ami Ben-Amotz, Ramat Gan, both of Israel, assignors to Yeda Research and Development Company Ltd., Rehovot, Israel
Filed May 25, 1977, Ser. No. 800,521
Claims priority, application Israel, Jun. 6, 1976, 49726
Int. Cl.² A01G *7/00, 33/02*
U.S. Cl. 47—1.4 **16 Claims**

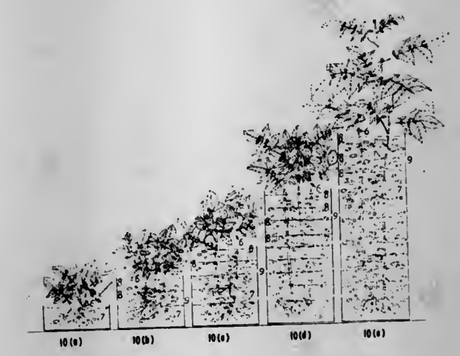
1. A process for the production of glycerol and proteinous substances of nutritive value which comprises cultivating algae species of the *Dunaliella* genus in a nutrient medium containing the mineral requirements of growth of the algae, said nutrient medium having a sodium chloride content of at least 1.5 M, the cultivation being effected while an adequate supply of carbon dioxide is provided and continued until a maximum concentration of algae is obtained, and continuing the cultivation of the algae in a nutrient medium having a content of sodium chloride

of at least 3 M, cultivating the algae in this second nutrient medium until a high glycerol content is established, harvesting



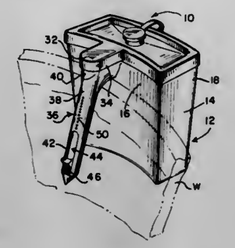
the algae, recovering from same the glycerol, and recovering the residue having a high protein content.

4,115,950
METHOD OF INCREASING THE YIELD IN THE CULTIVATION OF TUBER-PRODUCING PLANTS AND A DEVICE FOR CARRYING OUT THE METHOD
Kälmän Lantai, Götatan 4^II, 752 22 Uppsala, Sweden
Filed Mar. 1, 1976, Ser. No. 662,936
Claims priority, application Sweden, Mar. 6, 1975, 7502498
Int. Cl.² A01G *1/00*
U.S. Cl. 47—58 **6 Claims**



1. A method for increasing the yield in the cultivation of tuber-producing plants comprising the steps of:
(a) planting a seed-tuber in a first box-like frame unit;
(b) adding a new layer of soil in said first frame unit to cover the embryonal axil buds formed as the plant grows from the seed-tuber;
(c) placing a second box-like frame unit on top of said first box-like frame unit when the soil added to said first box-like frame unit reaches the top of said first box-like frame unit;
(d) adding layers of soil in said second box-like frame unit to cover the embryonal axil buds formed as the plant grows; and
(e) adding additional box-like frame units one on top of the other as the plant grows, each time covering the embryonal axil buds with new layers of soil in said frame units as said plant grows until the pile of soil formed reaches a given height.

4,115,951
APPARATUS FOR SUPPLYING FLUIDS TO POTTED PLANTS
Joseph T. Becker, 2 S. 214 Sheffield Rd., Glen Ellyn, Ill. 60137, and Byron L. Doran, 1725 LaPalma Ct., Wheaton, Ill. 60187
Filed Nov. 1, 1976, Ser. No. 737,702
Int. Cl.² A01G *27/00, 29/00*
U.S. Cl. 47—81 **1 Claim**

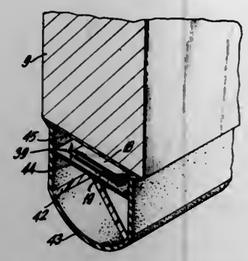


1. A plant watering apparatus adapted to provide a continuous supply of water to soil within a soil and plant containing receptacle, and to be readily removable from said soil and receptacle without disturbance thereof for periodic adjustment of said apparatus to control the rate of water flowing therthrough to said soil in said receptacle, said apparatus comprising, in combination, a water reservoir portion including a reservoir body and a cover unit for said reservoir body, a soil probe unit having a probe body consisting of a straight, generally cylindrical, rigid tube having upper, lower and intermediate portions, and having the lower portion thereof closed off by a pointed nose element extending from said lower body portion along the axis of said tubular body, an axially extending, wick receiving passage forming the inner diameter of said straight, cylindrical soil probe body, a probe neck portion joined at one part thereof to said upper portion of said soil probe body and at another part thereof to an upper portion of said water reservoir, said probe neck portion also including an interior passage providing communication between the interior of said reservoir body and said passage in said probe body, said upper and intermediate portions of said probe body and said probe neck being imperforate above the level of the soil in said receptacle when said apparatus is in position of use, a wick disposed within said apparatus and extending, in position of use, from said reservoir body through said passage in said probe neck and throughout substantially the entire length of said passage in said probe body, said probe further including a generally radially outwardly facing, axially extending moisture flow opening in the lower portion thereof, and a slide unit covering part of said mositure flow opening and arranged for adjustable movement axially of said probe body between a plurality of positions, including a relatively open position and another position in which a substantial portion of said moisture flow opening is closed off, means for retaining said slide in a selected one of said plurality of positions, said generally cylindrical, axially extending, wick receiving passage includes a lower portion tapering inwardly toward the lower portion of said probe so as to form a wick receiving probe passage of a gradually reducing cross section, said tapering portion being situated in the vicinity of said moisture flow opening, whereby movement of said slide toward a closed off position of said opening tends to pinch said wick against the surface of said wick receiving passage with increasing force, thereby pinching said wick into a condition of reduced moisture flow when said slide is moved toward said position closing off said moisture flow opening, said probe neck having means forming a part thereof for support by engaging a portion of said soil and plant containing receptacle, whereby said apparatus may be repeatedly removed from and inserted into said soil and plant containing receptacle for movement of said slide unit between different positions of said adjustment to provide varying rates of water flow from said reservoir to said soil.

4,115,952
SAFETY DOOR EDGE

Harlan S. French, Phillipsburg, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 2, 1977, Ser. No. 773,496
Int. Cl.[2] E05F *15/02*
U.S. Cl. 49—26 4 Claims

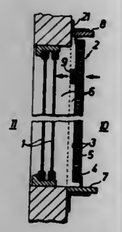


1. A fail-safe door safety closing system including a door frame, a door movably mounted in said door frame and movable into an open and a closed position, a control means to generate a control signal, a door operating means having an independent first power source to open said door upon receiving a control signal from said control means, said door having a safety edge means which is movable against said door frame in said closed position, said edge means including first and second conductive ribbon means, each of said ribbon means having first and second terminals separated by a length of conductive ribbon, said ribbons being normally separated and contacting each other upon an edge striking an obstruction, an active circuit comprising second power source means to provide electrical power to said active circuit and a relay means having a coil with first and second terminals, relay contacts and a movable member which closes said relay contacts when the relay is energized and opens said relay contacts when the relay is de-energized, the first relay terminal being connected to the first terminal of the first ribbon means and the second relay terminal being connected to the first terminal of the second ribbon means, said second terminals of both said ribbon means being connected in series with said second power source, said relay contacts when closed operating said control means and starting the operation of said door operating means to close the door, said contacts when open de-energizing said control means so that said door operating means opens said door, wherein said relay coil is shorted by the contacting of said ribbons and said relay is de-energized upon failure of the active circuit, thereby opening said door upon active circuit failure.

4,115,953
SELF SEALING HEAT INSULATING SHUTTER SYSTEM

Karl Hilding Broscnius, Stockholm, Sweden, assignor to Tekram Associates, North Haven, Conn.

Filed Jul. 11, 1977, Ser. No. 814,188
Int. Cl.[2] E05D *15/26*
U.S. Cl. 49—125 25 Claims

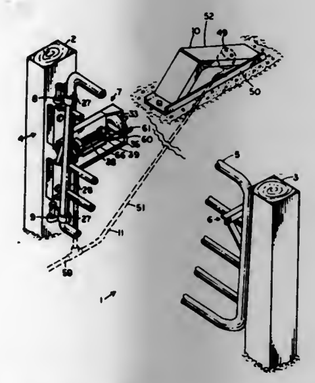


1. A heat insulating shutter system for use on a window or the like comprising a plurality of insulating shutter sections, guide means mounted above said shutters, means for movably mounting said sections to said guide means and means for air sealing the space between the window and the shutter sections, said mounting means comprising means for pivotally mounting said sections to said guide means, such that said sections may be pivoted from a first position, wherein said sections are substantially parallel to the window and said sealing means are engaged, and a second position, inclined inwards with respect to said first position, and wherein said sealing means are disengaged, said pivotal mounting means permitting movement of said sections along said guide means between opened and closed positions, when said sections are in said second position.

4,115,954
REMOTELY OPERATED GATE STRUCTURE

Mark E. Larkin, 419 Northgate, Lindenhurst, Ill. 60046, and Michael H. King, P.O. Box K, R.R. 3, Scottsburg, Ind. 47170

Filed Dec. 1, 1976, Ser. No. 746,512
Int. Cl.[2] E05D *7/06*
U.S. Cl. 49—240 21 Claims

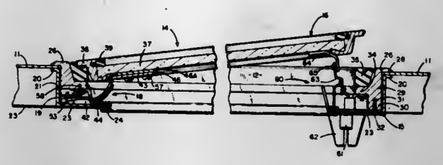


1. A remotely operated gate comprising:
(a) a support;
(b) a gate member having opposite ends;
(c) hinge means cooperating with said support and one end of said gate member and hingedly mounting said gate member on said support, said hinge means including a plurality of hinge members in spaced apart relation and being movable relative to one another to selectively change the plane of the gate member whereby the gate member will move under the influence of gravity between open and closed positions;
(d) first means cooperating with said hinge members for effecting the relative movement therebetween, said first means including motive means with at least a portion thereof remote from said support and actuator means operably connected to said hinge means, said motive means being operably connected to said actuator means by an energy transmitting member which when transmitting energy is substantially immovable whereby operation of said motive means effects operation of said actuator means effecting the relative movement of said hinge members for effecting changing the plane of the gate member whereby said gate member moves between the open and closed positions; and
(e) force applying means operably associated with said gate member, said force applying means including a movable member cooperating with said gate member and said actuator means whereby when said actuator means effects relative movement of said hinge members, said movable member is moved for applying force to said gate member to help start opening movement of said gate thereby assisting gravity induced opening movement.

4,115,955
PANEL AND HINGE ASSEMBLY

Darrell L. Aldrich, 800 Park Dr., Owatonna, Minn. 55060

Filed Aug. 1, 1977, Ser. No. 820,634
Int. Cl.[2] E05D *15/58;* B60J *7/18*
U.S. Cl. 49—261 16 Claims

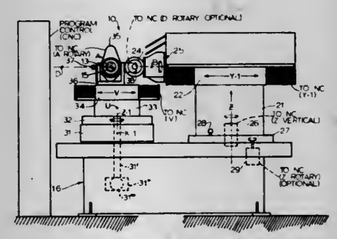


1. A panel and hinge assembly comprising:
a panel unit;
frame means defining an opening;
hinge means pivotally connecting the panel unit to the frame means for movement between a closed position covering the opening and an open position clear of the opening;
said hinge means including at least one hinge assembly;
said hinge assembly having a first hinge member and a second member;
one hinge member being connected to the panel unit and the other to the frame means;
said first hinge member having an arcuate shoulder and a tongue extended away from the shoulder providing bearing surfaces for the first hinge member located on opposite sides of the first hinge member from one another to be orientated to face in generally opposite directions;
said second hinge member having an arcuate yoke portion and a curved platform providing bearing surfaces for the second hinge member located on opposite sides of the second hinge member from one another to be orientated to face in generally opposite directions;
the arcuate yoke portion of the second hinge member having an opening;
said first and second hinge members being in assembled relationship with said tongue of the first hinge member extending through the opening of the arcuate yoke portion to bear upon the curved platform in sliding bearing engagement with said curved platform of the second hinge member, said shoulder of the first hinge member being in sliding engagement with the arcuate yoke portion of the second hinge member.

4,115,956
PROGRAMMABLY CONTROLLED MACHINE FOR GRINDING END CUTTING TOOLS AND THE LIKE

Stanley E. Huffman, Clover, S.C., assignor to S. E. Huffman Corporation, Clover, S.C.

Filed Jun. 28, 1977, Ser. No. 810,776
Int. Cl.[2] B24B *3/08*
U.S. Cl. 51—96 14 Claims



1. A numerically controlled (N/C) grinding machine for grinding a workpiece such as a cutting tool at one station while the workpiece remains fixed with respect to and in the same holder as the holder rotates and all grinds thereon are made with a grinding wheel and are programmably defined, located and executed by N/C servomotor positioning of said workpiece and wheel with reference to three mutually perpendicular fixed intersecting axes designated X, Y, Z, and other axes positioned in reference thereto, comprising in combination:
(a) a base structure;
(b) a grinding wheel support system including:
(i) a rotary vertically extending support structure mounted on said base structure for arcuate movement about and vertical movement parallel to a first fixed vertical axis;
(ii) first N/C servomotor means for linear vertical positioning of said vertical support structure incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor drive means of said machine;
(iii) first positioner means for rotative positioning said vertical support structure about said first vertical axis and fixing such vertical support structure in a selected arcuate position, said first positioner means being operable incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine;
(iv) a first slide mounted on said vertical support structure above said base structure and movable vertically and rotatively therewith, said first slide being positionable on a second horizontal linear axis perpendicular to said first vertical axis;
(v) second N/C servomotor means for linear positioning said first slide on said second axis incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine;
(vi) rotary support means mounted at one end of said first slide and rotatably positionable about a third horizontal axis fixed parallel to said second axis;
(vii) third N/C servomotor means for rotatively positioning said rotary support means with respect to said third axis incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine;
(viii) a variable speed grinding wheel drive motor fixedly mounted on said rotary support means with the longitudinal axis thereof, a fourth axis, fixed perpendicular to said third axis and positionable therewith around said third axis;
(ix) motor control means enabling the energization and speed of said motor to be controlled independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine; and
(x) a grinding wheel mounted on one end of a spindle and driven by said grinding wheel drive motor about said fourth axis;
(c) a workpiece support system including:
(i) a second slide mounted on said base structure and positionable on a fifth horizontal fixed linear axis;
(ii) fourth N/C servomotor means for linear positioning said second slide incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine;
(iii) rotary table means rotatably mounted on and above said second slide for rotation around a sixth vertical axis which sixth axis is in turn positioned linearly on said fifth axis as said second slide is positioned thereon;
(iv) fifth N/C servomotor means for rotatively positioning said rotary table means about said sixth vertical axis incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine;
(v) a third slide secured to and above said rotary table means and rotatably positionable therewith about said sixth vertical axis, said third slide being positionable on

a seventh horizontal linear axis perpendicular to said sixth axis;

(vi) sixth N/C servomotor means for linearly positioning said third slide on said sixth horizontal axis incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine;

(vii) a fourth slide secured to and above said third slide and rotatably positionable therewith about said sixth vertical axis, said fourth slide being positionable on an eighth horizontal linear axis fixed perpendicular to said seventh horizontal axis;

(viii) seventh N/C servomotor means for linearly positioning said fourth slide on said eighth horizontal axis incrementally, independently of and simultaneously with positioning of other N/C positioning servomotor means of said machine;

(ix) a holder assembly for a workpiece such as a cutting tool, including workpiece holding means enabling the workpiece to be positioned about an axis extending therethrough, a ninth axis;

(x) eighth N/C servomotor means for rotatively positioning said workpiece holding means about said ninth axis incremently, independently of and simultaneously with positioning of other N/C servomotor means of said machine;

(xi) mounting means for said assembly and eighth N/C servomotor means secured to and above said fourth slide for arcuate positioning of said tool holding means and the workpiece held therein about a tenth horizontal axis extending through said mounting means and perpendicular to said ninth axis; and

(xii) second positioner means for arcuate positioning of said holding means about said tenth axis and fixing said holding means in a selected arcuate position, incrementally, independently of and simultaneously with positioning of other N/C positioned servomotor means of said machine; and

(d) numerical control means including programming means defining, locating and controlling the execution of each grind on said workpiece and the speed of said wheel according to the edge or surface comprising the same and including N/C means operating said N/C servomotor means for N/C positioning of said workpiece and wheel relative to at least said first axis, vertically, said second axis linearly, said third axis rotatively, said fifth axis linearly, said sixth axis rotatably, said seventh axis linearly, said eighth axis linearly, and said ninth axis rotatively wherein all of said grinds may be completed precisely and in a series of consecutive grinding and positioning operations which may proceed in an uninterrupted sequence incrementally, independently and simultaneously throughout the grinding operation.

4,115,957

BELT CENTERING AND REPLACEMENT MECHANISM FOR BELT SANDERS AND THE LIKE

Chris H. Porth, Palatine, and E. Harold Lilja, Arlington Heights, both of Ill., assignors to Skil Corporation, Chicago, Ill.

Filed Sep. 28, 1977, Ser. No. 837,470
Int. Cl.[2] B24B *21/18, 23/06*
U.S. Cl. 51—170 EB **10 Claims**

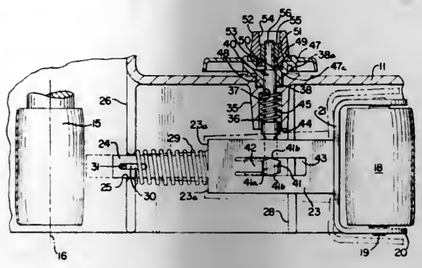
1. In a belt-type abrading, burnishing or polishing device of the type having a housing, a driving motor, drive and idler rollers rotatable about generally parallel axes, wherein the drive roller is driven by said motor, and a belt entrained over said drive and idler rollers, the improved belt centering and replacement mechanism comprising:

(a) mounting means supporting said idler roller from said housing for swinging movement in a plane containing the axes of both of the drive and idler rollers and for shifting movement along a path generally toward and away from the drive roller;

(b) a control member mounted by said housing for compound movement in first and second different modes;

(c) first means connecting said control member with said mounting means such that movement of the control member in said first mode causes swinging movement to the mounting means;

(d) second means connecting said control member with said



mounting means such that movement of the control member in said second mode imparts shifting movement of the mounting means for moving said idler roller toward said drive roller;

(e) a manually operated belt centering member connected with said control member for moving the same in said first mode; and

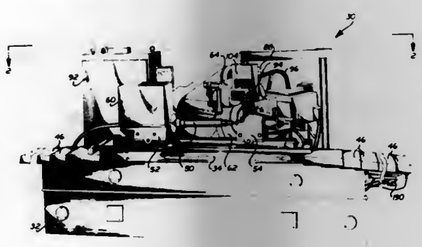
(f) a manually operated belt replacement member also connected with said control member for moving the same in said second mode.

4,115,958

METHOD OF CYLINDRICAL AND SHOULDER GRINDING

Gary E. Englander, Shrewsbury; Richard P. Chase, Spencer; Donald P. Anderson, Prinston, and Guy D. Metcalf, West Boylston, all of Mass., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Feb. 18, 1977, Ser. No. 769,945
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—289 R **45 Claims**



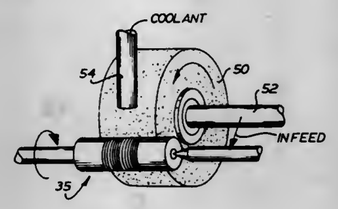
1. A method of grinding a workpiece having a radially outwardly projecting shoulder portion and an axial portion extending away from the shoulder portion, said method comprising the steps of rotating the workpiece about a first axis, providing a grinding wheel having a first surface for use in grinding the shoulder portion of the workpiece and a second surface for use in grinding the axial portion of the workpiece, rotating the grinding wheel about a second axis extending at an acute angle to the first axis, effecting relative movement between the rotating grinding wheel and the rotating workpiece through a first work stroke, engaging the axial portion of the workpiece with the second surface on the grinding wheel during the first work stroke, moving the grinding wheel toward the first axis along a path extending at an acute angle to the first axis after completing the first work stroke, said step of moving the grinding wheel toward the first axis being effective to move the first surface on the grinding wheel toward the shoulder portion of the workpiece, compensating for the extent of movement of the first surface on the grinding wheel toward the shoulder portion of the workpiece during said step of moving the grinding wheel toward the first axis by initiating movement of the grinding wheel toward the first axis from a position in which the first surface of the grinding wheel is offset from the plane of a radially extending surface of the shoulder portion by a distance which is at least substantially equal to the distance which the first surface on the grinding wheel moves toward the shoulder portion of the workpiece during said step of moving the grinding wheel toward the first axis, effecting relative movement between the rotating grinding wheel and the rotating workpiece through a second work stroke after completing said step of moving the grinding wheel toward the first axis.

4,115,959

METHOD FOR INCREASING THE LIFE OF SILICON CARBIDE GRINDING WHEELS

Harold E. McCormick, Ballwin, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

Filed Jan. 31, 1977, Ser. No. 763,831
Int. Cl.[2] B24D *3/24*
U.S. Cl. 51—295 **15 Claims**



1. A method for increasing the life of silicon carbide grinding wheels used in manufacturing an article and which comprises forming a bearing surface on a metallic substrate by plasma spray applying a powder containing from 8.5 by weight to 22.5% by weight of titanium dioxide; from 76.5 by weight to 67.5% by weight of aluminum oxide, and from 10 to 15% by weight of a metal fluoride, said titanium dioxide, aluminum oxide and metal fluoride constituting at least 91.5% of said powder, said metal fluoride being selected from the group consisting of alkaline earth metal fluorides and mixtures of alkaline earth metal fluorides, cooling said coated metal substrate; and grinding said coating with a silicon carbide grinding wheel to smooth said surface, whereby the life of said silicon carbide grinding wheel is increased.

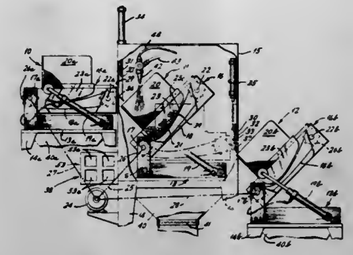
4,115,960

METHOD AND APPARATUS FOR DEFLASHING

Robert F. Zecher, Huntingdon Valley, Pa., assignor to Advanced Plastics Machinery Corporation, Ivyland, Pa.

Filed Apr. 28, 1977, Ser. No. 791,726
Int. Cl.[2] B24B *31/00*
U.S. Cl. 51—422 **17 Claims**

1. In apparatus for tumbling objects to remove flash from the surfaces of such objects: belt-type conveyor means having associated therewith means defining an object loading zone and an object discharge zone; drive means for advancing said conveyor means in one direction past said loading zone and toward said discharge zone during tumbling and discharging operations; guide means forming a portion of said conveyor means into a shaped contour surface upwardly sloped in the direction of advance of said portion of the conveyor means for causing substained tumbling of objects upon said surface during the tumbling operation; and means for effecting movement of at least said portion of said conveyor means between a first, upper, loading position providing for tumbling of objects upon



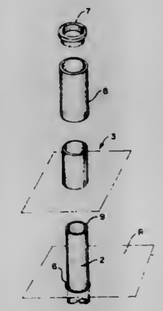
the conveyor means, and a second, lower position in which said objects are discharged from said discharge zone under the influence of the advancing movement of the conveyor means in said direction.

4,115,961

VENT COVER

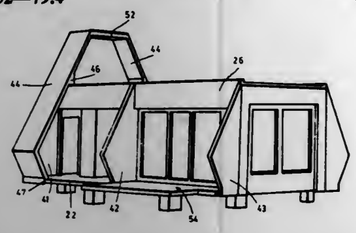
Robert L. Bishop, Ballwin, Mo., assignor to West County Supply & Mfg. Co., Inc., Ballwin, Mo.

Filed Jul. 28, 1977, Ser. No. 819,981
Int. Cl.[2] E04D *13/08*
U.S. Cl. 52—58 **13 Claims**



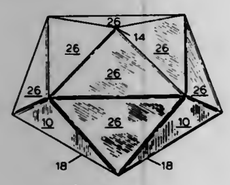
1. A vent cover for a plumbing installation and for use in preventing element leakage around a vent pipe formed of an expandable material and its flashing as formed from a material having a different coefficient of expansion than the said vent pipe, both said cover and pipe normally being disposed upon a roof structure, with the vent pipe being of the type that normally projects through its accompanying flashing, comprising, a sleeve having an internal diameter greater than the external diameter of the flashing and when disposed therearound capable of independent movement without obstruction therefrom, an adapter connecting with the upwardly disposed end of said sleeve and capable of attachment with the upper end of the vent pipe, said adapter including a shoulder being of a size to accommodate the upper end of the said vent pipe in mating engagement, said adapter having an opening therethrough and being of the same diameter as the internal diameter of the vent pipe upon which it mounts so as to provide no obstruction to the discharge of vent gases to the atmosphere, said adapter extending only a short distance above the vent pipe upon which it mounts, and said sleeve and adapter disposed for simultaneous movement with the expansion of the said vent pipe and shrouding the upper end of the flashing while being out of contact therewith for preventing the leakage of any elements therearound.

4,115,962
PREFABRICATED BUILDING STRUCTURE
Ronald Caisley, Mansfield, Canada (L0N 1M0)
Filed Nov. 15, 1976, Ser. No. 742,312
Claims priority, application United Kingdom, Nov. 14, 1975, 47064/75
Int. Cl.² E04H *1/00*
U.S. Cl. 52—79.4 **8 Claims**



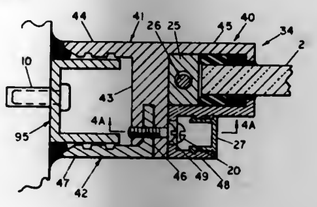
1. A building structure comprising a core having a base defining a rectangular ground floor, a pair of end walls extending upwardly from respective opposite sides of the ground floor, a bridge extending between and supported by the end walls, the bridge being a structural member and defining an upper floor above the ground floor; panel means coupled to the base and to the bridge to provide additional ground floor and to protect the sides of the ground floor and of the upper floor between the end walls, said panel means including upper portions inclined upwardly and over the upper floor and top portions extending from the respective upper portions to meet other such top portions above the upper floor and said panel means being coupled to the bridge at the upper inclined portions.

4,115,963
BUILDING MODULE
Donald S. Lubov, San Jose, Calif., assignor to Georight Industries, Inc., San Jose, Calif.
Continuation of Ser. No. 591,012, Jun. 27, 1975, abandoned. This application Mar. 3, 1977, Ser. No. 773,979
Int. Cl.² E04B *1/32*
U.S. Cl. 52—81 **19 Claims**



1. A building module for a building on a support having a preselected maximum height above the support, said module comprising:
a first plurality of substantially identical right isosceles triangular first members, each member having two side edges of a length substantially equal to said maximum height and a base edge resting on said support, said base edges collectively defining an enclosed area, each member sloping upwardly and outwardly and having base vertexes at each end of said base edge for joining the respective base vertexes of the adjacent member, the vertex opposite said base edge of each of said members providing roof support points; and
a second plurality of isosceles triangular second members, each second member having two side edges whose length is substantially equal to said maximum height and a base edge, said second members being joined to each other along their side edges with all vertexes opposide said base edges at a common point to form a roof, corresponding vertexes of said second members resting for support on respective ones of said support points, and said common point forming the roof apex having a height above said support which is substantially equal to said maximum height.

4,115,964
WINDOWS AND METHOD OF MAKING THE SAME
George W. Montrouil, Palo Alto, Calif., assignor to Montrouil Enterprises, Inc., Palo Alto, Calif.
Filed Aug. 8, 1975, Ser. No. 603,046
Int. Cl.² E04H *3/08*
U.S. Cl. 52—106 **18 Claims**



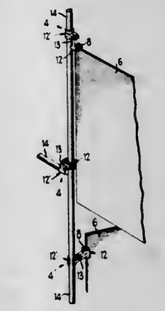
1. In a window frame assembly having framing means for supporting a glazing product, said assembly comprising:
a sub-framing member;
an *h*-shaped framing member having a single leg portion and a U-shaped portion, said U-shaped portion being adapted to fit over said sub-framing member;
means forming a glazing stop;
means for attaching said glazing stop to said *h*-shaped framing member to form, in cooperation with said single leg portion of said *h*-shaped member, a U-shaped channel about a peripheral edge of said glazing product;
saw proofing means including rotatable means disposed within said U-shaped channel; and
means for preventing the non-destructive removal of said glazing stop from said *h*-shaped framing.

4,115,965
GUY STRAIN INSULATORS
Ira Thomas White, 318 Cherokee Dr., Trussville, Ala. 35173
Filed Apr. 9, 1976, Ser. No. 675,622
Int. Cl.² E04H *12/20*
U.S. Cl. 52—148 **2 Claims**



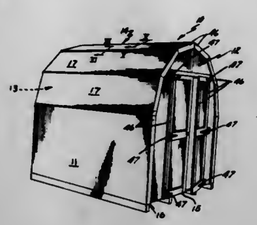
1. A device for attaching one end of an elongated guy strain insulator to a stranded guy wire with the other end of said insulator being anchored comprising:
(a) a first connector member carrying a clevis-like member adjacent one end thereof adapted to be attached to a stranded guy wire,
(b) a second connector member having a barrel at one end thereof and an axially extending shaft carried by the other end thereof and rotatably connected to the other end of said first connector member with said first connector member being adapted to rotate freely under tension relative to said second connector member,
(c) a sealed bearing unit carried by said first connector member and receiving said shaft,
(d) retainer means carried by said shaft and limiting axial movement of said shaft relative to said bearing unit so that upon the application of tension and torsion forces to said guy wire said first connector member rotates freely on said bearing unit while said shaft remains stationary, and
(e) means affixing said one end of said elongated guy strain insulator within said barrel of said second connector member with said insulator and said second connector member remaining stationary without any turning of said insulator about its longitudinal axis upon rotation of said first connector member under tension.

4,115,966
CLAMPING DEVICE FOR DISPLAY STRUCTURES
Barry DeLee, 2650 N. Lakeview, Chicago, Ill. 60614
Filed Feb. 14, 1977, Ser. No. 768,364
Int. Cl.² G09F *7/18*; E04H *12/20*
U.S. Cl. 52—148 **13 Claims**



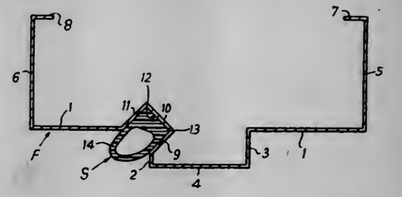
1. A clamping device comprising, in combination, a pair of socket-forming assemblies each mounted for independent pivotable movement relative to the other about a given pivot axis, each of said socket-forming assemblies comprising a pair of confronting members having confronting surfaces forming a socket, the longitudinal axes of the sockets of said confronting members being perpendicular to the pivot axis of each socket-forming assembly so that the angular position of said socket-forming assemblies can be adjusted to various positions between those where said socket axes are parallel and where they are generally perpendicular to one another, the socket-forming surface of one of the members of each of said pairs of confronting members providing a socket-forming surface extending over a greater arc than that of the other member and terminating at points which provide a socket entryway occupying an appreciable portion of a quadrant and which is asymmetrically related to a reference line extending transversely of its pivot axis, said pair of members of each socket-forming assembly being reversible in position in the clamping device so that the socket entryways of the two socket-forming assemblies can be asymmetrically related to said reference line on either side thereof, each of said pairs of confronting members forming a clamp and being mounted for relative movement wherein the confronting socket-forming surfaces thereof are progressively movable toward one another to clamp around an elongated member or slotted panel-receiving insert member when placed in the socket formed therebetween, and clamp-forming means for forcing each of said pair of members toward each other to tighten the same around an insert member or elongated member placed within the socket thereof.

4,115,967
BUILDING CONSTRUCTION AND METHOD AND KIT THEREFORE
Gerald A. Kragt, Marne, Mich., assignor to Jer Manufacturing, Inc., Coopersville, Mich.
Filed Nov. 21, 1977, Ser. No. 853,104
Int. Cl.² E04B *7/02*
U.S. Cl. 52—90 **13 Claims**



1. A building having a roof, side walls and end walls including:
a pair of spaced parallel end panels, each of said end panels formed of planar sheet material having generally the same silhouette and including roof line and side wall edges extending from the floor to the roof line and each panel being formed prior to assembly as a separate integrally formed panel member for an entire end wall of the building construction;
guide means attached to the inside surface of each of said end panels at spaced intervals along its periphery for positioning the ends of purlins at positions along said periphery;
a plurality of purlins having a length being generally equal to the distance separating said end panels, said purlins being located, abutted against, and attached to the planar sheet material of said end panels so that the ends of said purlins cooperate with said end panels to form the frame structure for the building;
said purlins including roof purlins located at spaced intervals along said roof line edges at each of said guide means, and at least one purlin located adjacent each of the junctures of the roof line edges and sidewall edges of said end panels; and
side and roof panel members attached to the outer edges of said purlins and end panels thereby enclosing the building.

4,115,968
FRAME AND SEAL ASSEMBLY
Asit Majumdar, Saddle Brook, N.J., assignor to Pioneer Industries, Div. of Core Industries Inc., Carlstadt, N.J.
Continuation of Ser. No. 743,056, Nov. 18, 1976. This application Dec. 20, 1977, Ser. No. 862,658
Int. Cl.² E06B *1/04, 7/16*
U.S. Cl. 52—204 **13 Claims**



1. In a frame for use with a door closure adapted to be moved between an open and a closed position including a frame section having a cross-section formed of a rabbet and an intersecting stop wall perpendicularly disposed thereto, the improvement comprising: the combination of a recess extend-

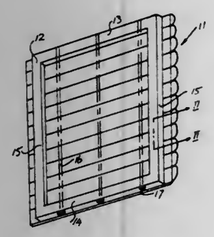
ing the entire length of said frame section with the cross-section of said recess symmetrically disposed about a medial plane of said recess bisecting said intersection of said rabbet and said stop wall, said recess defined by a pair of side walls disposed on either side of said medial plane substantially parallel to said medial plane and an end wall substantially perpendicular thereto connecting said side walls with said recess opening towards said closure; with a seal receivable in said recess and projecting therefrom in engaging relationship with said door closure when said door closure is in said closed position, said seal having a cross section including a solid retaining portion having the shape of a quadrilateral with three relatively perpendicular sides and a fourth relatively non-perpendicular side and a sealing portion having a narrow arcuate segment extending from a first substantially parallel side of said quadrilateral to a second substantially parallel side having substantially the shape of an involute of a circle with a radius of curvature of said involute being smallest at an intersection of said retaining portion and said sealing portion where said first substantially parallel side of said retaining portion is adjacent said door rabbet and greatest at an intersection of said retaining portion and said sealing portion of said seal where said second substantially parallel side of said retaining portion is adjacent said stop wall whereby said segment of said sealing portion having the smallest radius of curvature first comes into engaging relationship with said door closure as said door closure is moved from said open position to said closed position but before said closed position is reached.

4,115,969

BUILDING PANEL AND WALL

Donald Stewart Napier, 744 Canterbury Rd., Surrey Hills, Victoria, Australia (3127)

Filed Jul. 6, 1977, Ser. No. 813,355
Int. Cl.² E04B *1/10*
U.S. Cl. 52—233 **6 Claims**



1. A wall of a cabin, house or like structure, comprising:

a. a plurality of spaced roof support posts extending between the floor and roof of the structure;

b. wall panels extending between said posts and having vertical side edges which abut adjacent to a respective post, said panels being formed adjacent their vertical side edges with frame members which, with the ends of said panels, serve to form a recess around said post;

c. means extending around the outer surface of said post for shielding and thus weatherproofing the abutment joint between adjacent panels, and

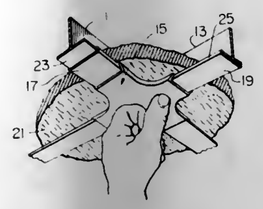
d. coverplates extending between and secured to said frame members thereby fully enclosing said support post and hiding the joint from the interior of the room, the ends of said shielding means being secured between said coverplates and said frame members.

4,115,970

GRID CEILING TRIM INTERSECTION CAP

Roger Neil Weinar, Buffalo, N.Y., assignor to Ceiling Resurfacing Systems, Inc., Eggertsville, N.Y.

Filed Sep. 1, 1977, Ser. No. 829,729
Int. Cl.² B44F *7/00*
U.S. Cl. 52—311 **8 Claims**



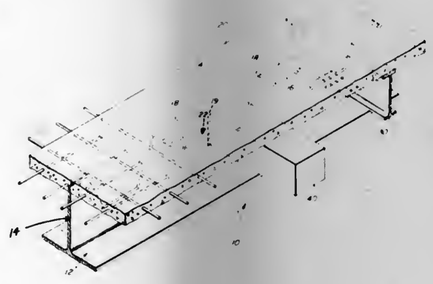
1. An intersection cap for covering ends of a plurality of pieces of grid ceiling trim mounted on grid ceiling supports where such intersect which comprises a substantially horizontal base member and a plurality of wall members extending upwardly from the base member, said wall members being tapered upwardly away from the base member at ends of the wall members and having at said extended tapered ends inwardly extending retainers suitable for holding onto grid ceiling trim.

4,115,971

SAWTOOTH COMPOSITE GIRDER

I. Steven Varga, 398 Woodward St., Waban, Mass. 02168

Filed Aug. 12, 1977, Ser. No. 824,049
Int. Cl.² E04B *1/24*
U.S. Cl. 52—334 **14 Claims**



1. A composite structural member comprising:

a first section having a lower flange portion and a web, the web having a plurality of projections extending therefrom, the projections defining recesses therebetween and forming a discontinuous web, at least one anchor member secured to at least one side of the upper portion of each projection,

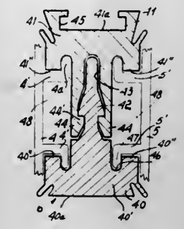
a second section comprising a cast concrete floor slab, said floor slab secured to the upper portion of each projection, the anchor member being engaged therewith, the floor slab defining with the projections, apertures adapted for the passage of longitudinal members therethrough said slab further comprising the sole compression part of the member and resisting substantially the entire compressive force acting on the member, and being the sole connector for the series of projections.

4,115,972

FIXED AND MOVABLE FRAME FIXTURES FOR DOORS AND WINDOWS

Giovanni Varlonga, Piazza della Repubblica, 7, Milano, Italy

Filed May 20, 1977, Ser. No. 799,019
Int. Cl.² E04B *1/62*
U.S. Cl. 52—398 **4 Claims**



1. In an insulated composite metal frame for doors and windows with superimposed metallic frame parts and a jointing insulating member arranged between the superimposed metallic frame parts, wherein the metallic frame parts are arranged in parallel planes and are constituted from metallic profile sections and wherein the interposed jointing insulating member is coextensive therewith, connection means comprising said jointing insulating member composed of two coextensive parts snap engaged with each other, each of said coextensive insulating member parts having a T-like cross-section with an integral flange portion and an integral web portion, the flange portion having a reverse surface extending transverse to said web portion and facing the side where the web portion extends and the flange portion having an obverse surface extending transverse to said web portion and facing in a direction opposite to the extension of said web portion, a first one of said coextensive insulating member parts having an engagement groove in the web portion thereof opening at the free end of said web portion and coextensive therewith, the opening of said groove having a narrowing with respect to the width of the engagement groove, a second one of said coextensive insulating member parts having part of its web portion in the form of a tongue formation coextensive therewith and having an arrow like shape and adapted to penetrate into said engagement groove and be anchored by said narrowing therein, said integral web portions of each of said coextensive insulated mutually engaging member parts having on both sides thereof coplanar lateral surfaces extending parallel to said parallel planes of said metallic frame parts and an undercut groove in each of said reverse surfaces thereof to provide an elongated engagement seat therein, said metallic frame parts having each on the side facing said interposed jointing insulating member a pair of opposite spaced apart L-like ledge formations having each projecting legs of the L-shape engaged into the respective said undercut grooves thereby to provide connection between two superimposed metallic frame parts facing coextensively said interposed insulating member on both lateral sides thereof, said obverse surfaces being arranged in a position unobstructed by said metallic frame parts.

4,115,973

BUILDING STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.

Division of Ser. No. 325,337, Jan. 22, 1973, Pat. No. 3,905,154, which is a division of Ser. No. 36,303, Jun. 22, 1970, Pat. No. 3,711,995. This application Sep. 16, 1975, Ser. No. 613,824
Int. Cl.² E06B *3/54*
U.S. Cl. 52—773 **6 Claims**

1. A glazing strip for securing a glazing panel in a window structure or the like, comprising an elongated resilient member having a cross section including a first substantially straight portion, one end of which is independently flexible, the other end of which is adapted to engage a recess in the window frame for securing the glazing strip in the window frame, a second substantially straight portion depending substantially perpendicularly from the one end of the first portion adapted to engage a glazing panel positioned in the window frame for



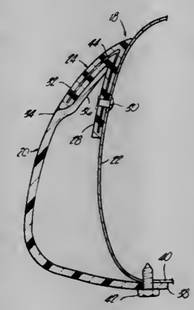
securing the glazing panel in the window frame, and a third substantially straight portion one end of which is connected to the first portion which diverges from the first portion toward the other end of the first portion for securing the glazing strip in the recess in the window frame.

4,115,974

RETAINER ARRANGEMENT FOR PANELS

Jack Purcell, 5201 Curtis, Dearborn, Mich. 48126

Filed May 18, 1977, Ser. No. 798,071
Int. Cl.² E04B *1/38*
U.S. Cl. 52—512 **13 Claims**



1. A retainer arrangement for securing a plastic overlay panel to a metallic support structure, said plastic overlay panel and metal support structure being constructed of materials having substantially dissimilar rates of thermal expansion, comprising:

a continuous plastic retainer strip extending along said metallic support structure;

means for fastening said plastic retainer strip to said metallic support structure;

said plastic retainer strip having a portion for receiving an edge of said plastic overlay panel trapping said plastic overlay panel edge therein, said trapped edge of said plastic overlay panel being contour blended with said metallic support structure to create a highly visible seam with said metallic support structure; and

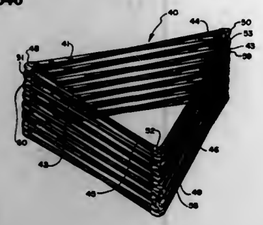
means for mounting at least one other edge of said plastic overlay panel to said metallic support structure, whereby said trapped plastic edge may freely expand relative to said metallic support structure to accommodate thermal growth and thereby eliminate distortions at said highly visible seam of said plastic overlay panel imposed by connection to said support structure.

4,115,975

FOLDABLE/EXTENSIBLE STRUCTURE

Robert L. Bliss, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Aug. 11, 1977, Ser. No. 823,785
Int. Cl.² E04B *1/343*
U.S. Cl. 52—646 **12 Claims**



1. A foldable and linearly extensible structure comprising:

a plurality of base modules, each base module comprising six rigid members flexibly interconnected end-to-end in a closed figure with the closed figure being configurated with:

one end of the first rigid member swivelly interconnected to one end of a second rigid member in a first swivel;

the other end of the second rigid member swivelly interconnected to one end of a third rigid member in a second swivel;

the other end of the third rigid member swivelly interconnected to one end of a fourth rigid member in a third swivel;

the other end of the fourth rigid member swivelly interconnected to one end of a fifth rigid member in a fourth swivel;

the other end of the fifth rigid member swivelly interconnected to one end of sixth rigid member in a fifth swivel;

the other end of the sixth rigid member swivelly interconnected to the other end of the first rigid member in a sixth swivel;

each base module further including the first rigid member pivotally connected to the inside of the fourth rigid member in a first pivot, the second rigid member pivotally connected to the outside of the fifth rigid member in a second pivot and the third rigid member pivotally connected to the inside of the sixth rigid member in a third pivot, all of said pivotal connections being made adjacent the midpoint of each respective rigid member; and

said foldable and linearly extensible structure comprising flexibly and serially interconnected base modules, wherein a first base module is flexibly interconnected to a second base module by flexibly joining the first, third and fifth swivels of the first base module to the second, fourth and sixth swivels of the second base module, respectively, and the second base module is flexibly interconnected to a third base module by flexibly joining the first, third and fifth swivels of the second base module to the second, fourth and sixth swivels of the third base module, respectively, thereby swivelly and flexibly interconnecting a plurality of base modules to form the foldable and linearly extensible structure, the structure being foldable into a relatively flat configuration having a triangular outline.

4,115,976

METHOD FOR SCREEDING CEMENT

Walter J. Rohrer, Kansas City, Kans., assignor to John Rohrer Contracting Company, Kansas City, Kans.

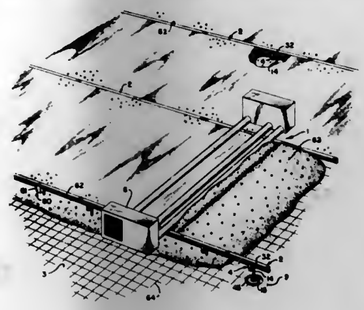
Filed Mar. 21, 1977, Ser. No. 779,606
Int. Cl.² E04G *21/10*
U.S. Cl. 52—741 **4 Claims**

1. In a method for screeding cement floors to a desired level with a self-propelled screeding machine, including providing an area of ground with an aggregate bed surface thereover, and a pair of rails for supporting each side of said screeding machine above said aggregate bed surface, the improvement comprising:

(a) digging a plurality of holes through said aggregate bed surface into the ground; said holes being arranged in at least two substantially parallel and spaced apart rows wherein the holes in each row are spaced apart and generally aligned;

(b) pouring unsolidified cement into each of said holes;

(c) inserting an open ended sleeve in a substantially vertical orientation in the unsolidified cement in each of said holes; positioning a closed end of said sleeve downwardly within



said cement, and positioning an open end of said sleeve in a position communicating with the area above the free surface of said cement;

(d) curing said cement to a solidified state, thereby forming a cement footing around each sleeve and fixedly setting the same in said bed surface;

(e) inserting a rail support member telescopically into each sleeve; said support member including an upper end; and

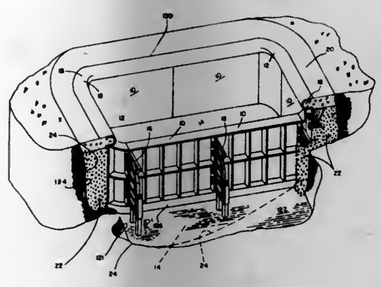
(f) connecting said rails to the upper end of each support member whereby the weight of said screeding machine does not settle said support members and cause undulations and deviation from the desired level of said floor.

4,115,977

METHOD OF ERECTING SWIMMING POOL STRUCTURE

Lyle E. Bertsch, 8207 Seiler, New Haven, Ind. 46774

Division of Ser. No. 713,255, Aug. 10, 1976. This application Aug. 1, 1977, Ser. No. 820,464
Int. Cl.² E04B *1/35*
U.S. Cl. 52—742 **16 Claims**



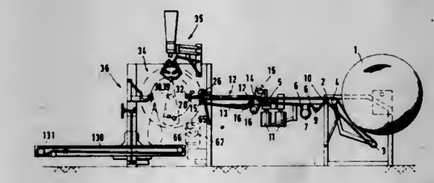
1. A method of erecting a swimming pool comprising the steps of preparing the ground for a swimming pool bottom and to provide a lip extending generally horizontally outwardly from said pool bottom, placing a plurality of wall sections on said lip, securing said wall sections together so as to form a generally continuous interior wall surface conforming shape to the interior wall of said pool, attaching braces to said wall sections at spaced intervals, said braces extending rearwardly of said wall sections, each of said braces having a pair of stake guides, one of said stake guides being adjacent to said wall sections, the other stake guides being remote from said wall sections, placing stakes in said guides, positioning the bottoms of said wall sections as desired, driving said adjacent stakes into said lip, holding said wall sections so as to position said wall surface generally vertical, driving said remote stakes into said lip, lifting said wall sections to a desired height, adjusting said wall sections a desired attitude relative to said vertical, and fastening said stakes and braces together.

4,115,978

APPARATUS FOR AUTOMATICALLY FILLING AND CLOSING SACKS

Carl Langemeyer, and Konrad Tetenborg, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jun. 24, 1977, Ser. No. 809,653
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 2629065
Int. Cl.² B65B *43/30*
U.S. Cl. 53—570 **11 Claims**



1. An apparatus for automatically filling and closing sacks, preferably side pleated sacks comprising a frame having an axis; supply means with respect to the frame for supplying sacks; filling means for filling sacks and having means for opening a sack to be filled and having a movable filling funnel; welding means for welding filled sacks; take away means for removing filled sacks; said supply means, said filling means, and said welding means being positioned in equal angular steps about the frame axis; and conveying means intermittently rotatable in equal angular steps about the frame axis for sequentially transferring sacks between the supply means, filling means, and welding means; the sacks having upper regions defining filling apertures; and the conveying means comprising:

two spaced-apart rotatable vertical axis (**41**) having facing inner surfaces;

two support shafts (**38**) for supporting said two discs, said support shafts being horizontal, coaxial, and rotatable and having outer ends connected to the frame and inner ends facing and spaced-apart from each other, the inner ends supporting said discs with a space between their facing inner surfaces;

rotation means for synchronously rotating said two support shafts so that said vertical discs are intermittently rotated in equal angular steps;

pairs of aligned shafts (**43**) positioned in equal angular steps on said two discs (**41**), the shafts of each pair of aligned shafts being displaceable towards and away from each other and the pairs occupying positions offset eccentrically from each other and from the axis of the frame during rotation of said vertical discs;

confronting tongs (**37**) secured on each of said aligned shafts; and

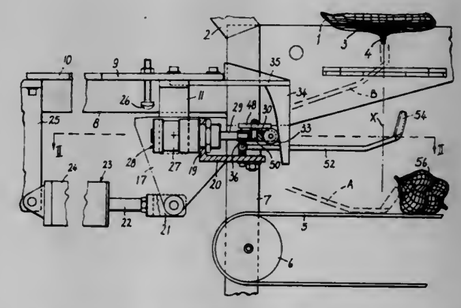
controlled rotary drive means (**46, 54, 55, 56, 57**) operatively associated with said rotation means and said confronting tongs for moving said confronting tongs into a position for engaging at both sides of its filling aperture a sack supplied by said supply means, for sequentially moving the tongs to transport an engaged sack from the supply means to the filling means and to transport a filled sack from the filling means past the welding means to the take away means, said confronting tongs being moved to deposit the filled sack on the take away means in such manner that the upper region of the filled sack is buckled, pulled taut, and turned through 90° prior to welding.

4,115,979

DEVICE FOR STEPWISE FEEDING A HOSE FOR PACKAGING PRODUCTS, IN PARTICULAR FRUIT AND VEGETABLE PRODUCTS

Rino Morini, Via San Francesco, 35, Imola (Province of Bologna), Italy

Filed Apr. 18, 1977, Ser. No. 788,489
Claims priority, application Italy, Apr. 29, 1976, 3414 A/76
Int. Cl.² B65B *41/00*
U.S. Cl. 53—393 **3 Claims**



1. A device for stepwise feeding a hose having a lower closed end for packaging fruit and vegetable products, comprising a frame, a bracket rotatably supported on said frame about a horizontal axis, a pair of arms pivoted on said bracket about respective axes perpendicular to said horizontal axis, said arms having free ends provided with jaws, a first hydraulic jack acting between said frame and said bracket for rotating the arms between a raised position in which said jaws are arranged beneath said closed end of the hose and a lowered position in which said jaws are arranged above a removing conveyor, a second hydraulic jack mounted on said bracket for operating said arms so as to cause said jaws to grip the lower closed end of the hose when the arms are in raised position and to release said closed end, when the arms are in lowered position.

4,115,980

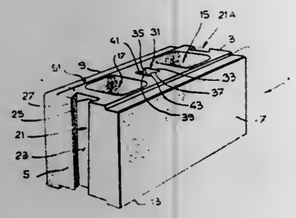
WALL SYSTEM

Charles Siméon Martel, 36 blvd. Jacques Cartier, Lauzon, Quebec, Canada; Jean-Guy Papillon, 332, blvd. Centenaire, and Paul Papillon, 186, blvd. Centenaire, both of St-Basile de Portneuf, Quebec, Canada (G0A 3G0)

Filed Sep. 7, 1976, Ser. No. 721,102
Claims priority, application Canada, Sep. 10, 1975, 235380
Int. Cl.² E04C *1/10*
U.S. Cl. 52—591 **5 Claims**

1. A wall structure comprising a plurality of courses of substantially rectangular building blocks of substantially uniform height, the blocks in each course being offset longitudinally a distance equal to one-half the length of a block with respect to blocks in adjacent courses, each block having means for use in interlocking the block to other blocks in the same course and to blocks in the adjacent lower course, the interlocking means being located in at least one endwall of the block and in the center of the block, and at both locations extending the full height of the block, the interlocking means in the endwall of each block comprising a vertical dovetail slot

positioned centrally of the endwall and tapering uniformly down from the top to the bottom of the block, each slot being adapted to confront another, substantially identical slot in another block of the same course, and the interlocking means in the center of each block comprising a centrally positioned through vertical opening having the shape of two of said dovetail slots positioned in face to face relationship, said opening tapering down at the same angle from the top to the bottom of the blocks as said dovetail slot, the dovetail slot at the bottom of each block having a size equal to about one-half of the size of said slot at the top of the block, and said vertical opening having a size at the top of the block equal to about the size of two of said dovetail slots positioned in face to face relationship at the bottom of said block, said blocks, said slots and said openings being dimensioned so that when placed in adjacent



courses the axis of each confronting pair of said slots in aligned with the axis of one of said vertical openings, and removable locking pins made from the same material as the blocks and having straight sidewalls tapering at the same angle as the interlocking means and cooperating therewith, each locking pin having the complementary shape of two dovetail slots positioned in face to face relationship and a length substantially equal to the height of two of said blocks, each locking pin having a size at its large end about equal to the size of two of said dovetail slots in face to face relationship at the top of said block, and a size at its small end substantially equal to the size of the opening at the bottom of the block, said tapering locking pins being adapted to be inserted into said aligned tapered slots and openings and driven home to form a wedge fit, with the straight sidewalls of said pins in frictional engagement with the walls defining said aligned slots and openings.

4,115,981

APPARATUS FOR ASSEMBLING AND PACKING PHOTOGRAPHIC PRINTS WITH ASSOCIATED DEVELOPED FILMS

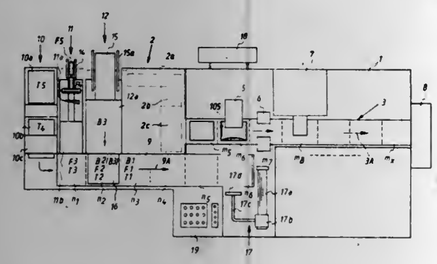
August Hell, Feldkirchen; Wolfram Kobusch, Vaterstetten, and Fritz Braun, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jun. 7, 1977, Ser. No. 804,393

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626448

Int. Cl.² B65B *57/08, 57/16*

U.S. Cl. 53—55 **37 Claims**



1. Apparatus for assembling developed prints with related developed films which are provided with first and second indicia respectively denoting successive film frames and the last film frame and which, prior to development thereof, are confined in information-bearing envelopes, comprising first and second feeding devices respectively including first and second severing means operative to subdivide developed films into sections and a web of prints into discrete prints, said web having third and fourth indicia respectively denoting successive prints and the last one of a series of prints which are related to a given film; a third feeding device including a source of a succession of information-bearing envelopes and means for decoding the information on successive envelopes and for transmitting corresponding signals; conveyor means cooperating at least with said first and second feeding devices to assemble sections of successive films with related prints; a packing unit including a source of empty containers; means for transferring successive assembled film sections and related prints into successive containers; control means including means for operating said first severing means in synchronism with said second severing means; and computer means having input means for said signals.

4,115,982

TUBE CASER

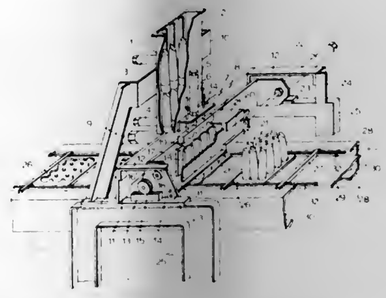
Atsushi Sato, Chiba, and Hikotarou Kawaguchi, Sakura, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1977, Ser. No. 826,401

Claims priority, application Japan, Sep. 27, 1976, 51-129536[U]

Int. Cl.² B65B *5/08, 5/10*

U.S. Cl. 53—534 **1 Claim**



1. An apparatus for inserting rows of tubes into a receptacle, which comprises:

intermittently movable conveyor means for supporting a receptacle, said conveyor means comprising an elongated planar member having upstanding longitudinally spaced-apart drive elements extending thereacross for engaging the rearward edges of receptacles in order to advance same in the lengthwise direction;

a chute disposed above said conveyor means and adapted for holding a row of tubes;

a movable feed frame disposed between said chute and said conveyor means, said feed frame having a plurality of chambers therein for receiving said row of tubes from said chute, said chambers being substantially U-shaped in cross section, said feed frame being movable between a first retracted position wherein said chambers are aligned to receive a row of tubes discharged from said chute and a second advanced position wherein said chambers are disposed above said receptacle;

a stationary tube-receiving bottom plate positioned above and extending crosswise of said conveyor means, said feed frame being disposed directly above said bottom plate so that in said first retracted position of said feed frame said bottom plate blocks the lower end of said chambers, said bottom plate terminating short of the position of said chambers in said second advanced position of said feed frame;

a reciprocable holding plate adapted to extend across the open sides of said chambers to retain tubes therein; and

a movable presser member arranged to overlie said chambers when said feed frame is in said second advanced position to press said tubes downwardly into said receptacle, said presser member having inverted V-shaped grooves in the lower surface thereof for engaging the seal portions of said tubes, the crests of said V-shaped grooves extending at an angle of about 45° to an imaginary plane passing through the centers of a row of tubes when said row of tubes are positioned in said chambers in said second advanced position of said feed frame.

4,115,983

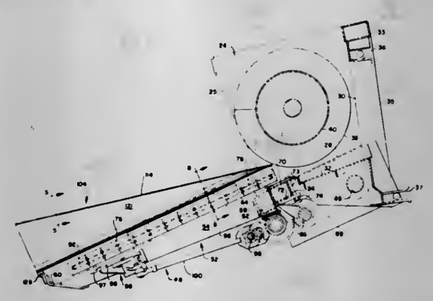
ROW-CROP HARVESTING HEADER

Theodore Marion Barnes; Joseph John Shindelar; Merlyn Duane Bass, and Henry William Suechting, Jr., all of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 19, 1974, Ser. No. 498,781

Int. Cl.² A01D *45/02*

U.S. Cl. 56—98 **24 Claims**



1. A row crop harvesting header for a mobile harvesting machine for removing a plurality of rows of row planted crop material from a field as the machine advances and comprising: a header frame having opposite sides and a floor extending between the opposite sides; a transverse auger extending between the opposite sides above the floor for moving crop material laterally along the floor and including an axial auger tube and auger flighting wound around the tube; a plurality of generally fore and aft extending divider members mounted on the header frame and defining a plurality of generally fore and aft passageways between adjacent divider members, each passageway being adapted to receive the crop material growing in a row as the machine advances; a crop gathering means supported on the frame adjacent each passageway and including a pair of endless flexible gathering elements respectively disposed on opposite sides of the passageway, each pair of gathering elements having opposite, fore and aft extending, inner runs moving rearwardly along the passageway and operative to engage the crop material in the passageway and move it rearwardly to the auger, the rearward, discharge ends of each pair of endless flexible gathering elements being disposed above and adjacent to the forward end of the floor and directly below the front side of the auger tube; and cutting means below and adjacent to the forward intake end of each pair of gathering elements for severing the crop material from the field as it is engaged by the gathering element.

4,115,984

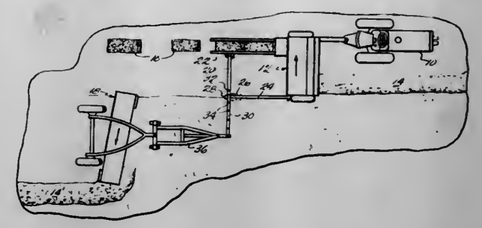
ARRANGEMENT FOR INTERCONNECTING A SIDE DELIVERY RAKE AND A BALER

Talmadge Whipple Simpson, Rte. 2, Cochran, Ga. 31014

Filed Dec. 7, 1976, Ser. No. 748,290

Int. Cl.² A01D *55/26;* **B60D** *1/14*

U.S. Cl. 56—13.5 **8 Claims**



1. An arrangement for performing simultaneous raking and baling of a crop distributed on a field, comprising:

a baler adapted to be moved by a tractor over a first strip of said field, said baler including means, laterally displaced from a path traversed by the tractor during such movement, for picking up a windrow of said crop;

a support member pivotally connected at one of its ends to the baler and projecting laterally of the direction of movement of the baler towards the opposite side of said strip from the tractor path;

additional support means joined to said baler and said support member for maintaining the member from engaging the ground; and

a windrow-forming side delivery rake secured to the other end of the support member and movable with the baler to pass over a second strip of said field, at least the major portion of said second strip extending laterally beyond the first strip on the opposite side thereof from said tractor path.

4,115,985

METHOD OF APPARATUS FOR THE THERMAL TREATMENT OF TEXTILES ARTICLES

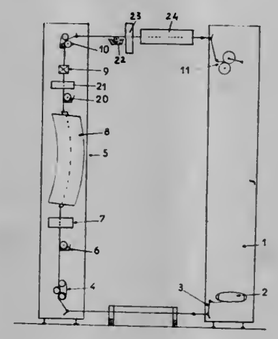
Jean Venot, Roanne, France, assignor to ASA S.A., Roanne, France

Filed Jul. 11, 1977, Ser. No. 814,381

Claims priority, application France, Jul. 12, 1976, 76 21371

Int. Cl.² D02G *1/02;* **D01H** *13/28*

U.S. Cl. 57—34 HS **7 Claims**



4. In an apparatus for texturising a moving yarn of the type comprising:

(a) means for storing a supply of yarn;

(b) yarn delivery means;

(c) first thermal treatment means;

(d) yarn cooling means;
(e) false twist producing means;
(f) further thermal treatment means; and
(g) withdrawal and rewinding means;
the improvement comprising:
(h) complementary treatment means comprising means for wetting the yarn and means for subjecting the yarn to a high frequency yarn heater, said complementary treatment means being positioned at least after said first thermal treatment means and before said false twist producing means.

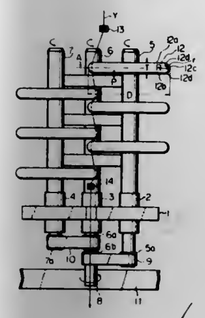
4,115,986
TWIST TUBE FOR FALSE-TWIST DEVICES
Joachim Bleniok, Wattwil, Switzerland, and Henri Crouzet, Roanne, France, assignors to Heberlein & Co. AG, Switzerland and Ateliers Roannais de Constructions Textiles, France
Filed Feb. 21, 1975, Ser. No. 551,985
Claims priority, application Switzerland, Apr. 5, 1974, 4834/74
Int. Cl.² D01H 7/92; D02G 1/06
U.S. Cl. 57—77.3 **1 Claim**



1. A twist tube for a false twist device for texturing textile yarns comprising a tubular portion consisting of a straight tubular part and a coaxial tubular uniform head of larger diameter than that of said tubular part, said tubular part including a longitudinal bore that passes into an enlarged longitudinal bore in said head for the passage of textile yarn through said tubular portion when the twist tube is in operation, and a single cylindrical pin fixed in said head and extending through said enlarged head for the yarn to be wound once therearound prior to passing out of said enlarged head, said pin having uniform cylindrical ends with an intervening cylindrical concave surface symmetrically disposed between said ends and said pin being mounted in the wall of said head with its axis displaced laterally with respect to the axis of said head by a distance which is a fraction of the diameter of said cylindrical ends, and said head being formed with a transverse bore thereon having an axis perpendicular to that of said pin and constituted by openings in opposed wall parts of said head to aid the threading of yarn in the twist tube, the opening in the wall part towards which said pin is laterally displaced being larger than the other of said openings so as to compensate for lack of balance of the twist tube about the longitudinal axis thereof.

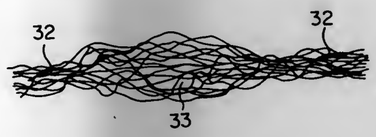
4,115,987
FRICTION FALSE-TWISTING DEVICE
Katsutoshi Taniguchi, and Yoji Kuroda, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Apr. 6, 1977, Ser. No. 785,126
Claims priority, application Japan, Nov. 12, 1976, 51-135239
Int. Cl.² D02G 1/08
U.S. Cl. 57—77.4 **7 Claims**

1. A friction false-twisting device comprising three shafts disposed at vertexes of a triangle so as to be parallel to each other and rotatable in the same direction, and a plurality of friction discs each having a yarn contacting surface made of ceramic disposed on each of said shafts, said friction discs being positioned along a screw-thread and being partially juxtaposed, wherein each said friction disc comprises:
a pair of end surfaces disposed in parallel having a distance T (mm) between said end surfaces in a range between 5 and 8 mm, and said disc having a shape symmetrical with respect to a plane centrally situated between said end surfaces and parallel to said end surfaces;
a curved edge surface disposed at a position between said end surfaces having a radius of curvature R (mm) in a range between 5 and 8 mm;
a pair of connecting surfaces disposed at positions between said end surfaces and said curved surface having a smaller



radius of curvature *r* (mm) in a range between 1/5 R and 2/5 R; and
a yarn contacting surface comprising said curved surface and a pair of said connecting surfaces having a surface roughness in a range between 1^s and 6^s,
said yarn contacting surface (i) comprising ceramic material having an average particle diameter in a range between 2 and 30μ and (ii) being free of any tracks thereon oriented in any predetermined direction.

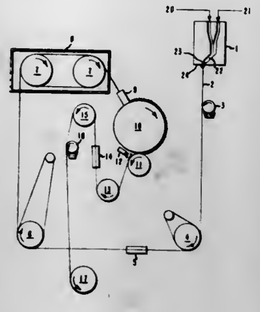
4,115,988
INTERLACED MULTIFILAMENT YARNS
Kiyoshi Nakagawa, Mishima; Masatoshi Mineo, Mishima; Tadayuki Matsumoto, Mishima, and Kozo Imaeda, Shizuoka, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Jul. 14, 1976, Ser. No. 705,145
Claims priority, application Japan, Jul. 18, 1975, 50-87372
Int. Cl.² D02G 1/16, 3/24
U.S. Cl. 57—140 BY **7 Claims**



1. An interlaced multifilament yarn produced by a fluid treatment operation utilizing jetting fluid, said yarn being provided with such property that the degree of interlacing of individual filaments of said multifilament yarn is increased:
by imparting repeated stretching action to said yarn, and
conducting said repeated stretching action under a yarn tension between 0.1–1.0 g/d.

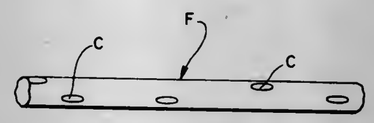
4,115,989
PRODUCT AND PROCESS
Jerzy Spolnicki, Camden, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed May 2, 1977, Ser. No. 792,708
Int. Cl.² D02G 1/16, 3/04
U.S. Cl. 57—140 BY **6 Claims**

1. A multifilament polyester yarn of bicomponent filaments composed of a poly(ethylene terephthalate) component and a copolyester component intimately adhered together in side-by-side relationship along the length of each filament, the poly-(ethylene terephthalate) component having a relative viscosity of 12 to 15 as determined for a solution of 0.8 gram of polymer in 10 milliliters of hexafluoropropanol at 25° C. and the copolyester component having a relative viscosity of 23 to 26 that is 11 to 14 units higher than the relative viscosity of the poly-(ethylene terephthalate) component, the copolyester compo-



nent consisting of about 90 mole percent of ethylene terephthalate and about 10 mole percent of other ester units that form a copolyester which has a Tg shrinkage value of 49° to 65° C.; the filaments having a substantially uniform cross section along the length of each filament, a random helical crimp along each filament which is random relative to the crimp of adjacent filaments, and a crimp frequency of 25 to 40 crimps per inch of filament length with at least 50 percent of the crimps having a helix diameter of at least 1.7 mils; and the yarn having a crimp contraction value of 5 to 9 percent.

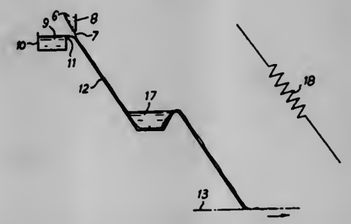
4,115,990
VOLUMINOUS FILAMENTARY YARN AND METHOD OF MANUFACTURE
Chester John Dudzik, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.
Continuation-in-part of Ser. No. 693,738, Jun. 7, 1976, abandoned. This application Jul. 14, 1977, Ser. No. 815,844
Int. Cl.² D02G 1/02
U.S. Cl. 57—140 R **6 Claims**



1. A method of manufacturing yarn comprising the steps of, providing a source of unprocessed supply yarn constituted of a bundle of extruded thermoplastic filaments wherein all of said filaments are either undrawn or all are partially drawn to the same degree with at least a substantial portion of the filaments having contaminant particles embedded therein and randomly spaced along the length thereof and with said bundle of filaments being twisted to a level to preclude disintegration of said filaments during subsequent processing, continuously withdrawing the yarn from said source at a preselected linear speed, passing said yarn through a draw-twist zone under a predetermined tension to simultaneously draw said yarn to a predetermined cross-sectional dimension while effecting breakage of substantially all of the filaments at the loci of the contaminant particles therein to provide free ends of said filaments, said yarn when in said draw-twist zone being subjected to stretching in the order of 40-95 percent of the ultimate elongation of the yarn, concurrently heating and cooling said yarn in said draw-twist zone while twisting the yarn in said heated zone and untwisting the yarn to thereby false twist the yarn, a substantial portion of the free ends of the filaments being twisted into said bundle of filaments constituting the yarn as the yarn is twisted and at least a portion of said free ends being released to extend away from said bundle of filaments when said yarn is untwisted with unbroken filaments randomly situated along the length of said yarn with portions of said unbroken filaments being on the surface of said yarn and portions being interiorly of said yarn, and finally collecting the processed yarn after it is untwisted.

5. A yarn produced in accordance with the method of claim 1.

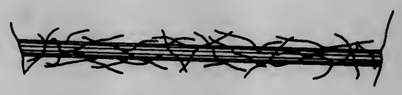
4,115,991
ASBESTOS PRODUCTS
Anthony N. Magnall, Haslingden; Philip H. Taylor, Rochdale, and Fred Roberts, Blackpool, all of England, assignors to TBA Industrial Products Ltd., Manchester, England
Filed Feb. 23, 1976, Ser. No. 660,495
Claims priority, application United Kingdom, Mar. 8, 1975, 9746/75
Int. Cl.² D02G 3/20
U.S. Cl. 57—153 **19 Claims**



1. A process for producing a coherent strand from a dispersion of asbestos in an aqueous soap solution containing a fatty acid in an amount up to a 100 percent molar excess over the fatty acid content of the soap comprising forming a stream of said dispersion, chilling said newly formed stream sufficiently to gel the dispersion and form a strand, said chilling step being effected by contacting the newly-formed stream with cold water, and treating the strand to prevent redispersion thereof under the action of heat.

8. Coherent asbestos strands and yarns therefrom made by a process according to claim 1.

4,115,992
METHOD OF MAKING TEXTURED CONTINUOUS FILAMENT YARN
Roeland Van Tijn, Almelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands
Division of Ser. No. 695,935, Jun. 14, 1976, abandoned. This application Feb. 28, 1977, Ser. No. 772,915
Claims priority, application Netherlands, Jun. 23, 1975, 7507442
Int. Cl.² D02G 3/40
U.S. Cl. 57—164 **17 Claims**



1. Method for the manufacture of textured continuous filament yarn from a sliver or a roving comprising at least staple fibre material, comprising the steps of drafting said sliver or roving in a wet condition to form a thinner fibre strand, com-

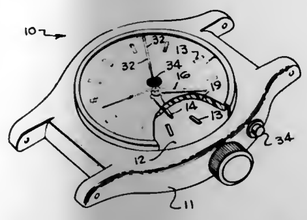
bining the wet thinner fibre strand so drafted with at least one stable continuous filament to form a filament-fibre blend, and then bonding the staple fibres to the continuous filament, wherein the sliver or roving includes an at least potentially adhesive first component, said component bonding said staple fibres to said at least one filament during the bonding step.

4,115,993
DIGITAL ALARM WATCH
Tokio Moriya, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan
Filed Oct. 7, 1976, Ser. No. 730,430
Claims priority, application Japan, Oct. 13, 1975, 50-123013
Int. Cl.² G04B *23/13*; G04C *21/12*
U.S. Cl. 58—38 R **1 Claim**



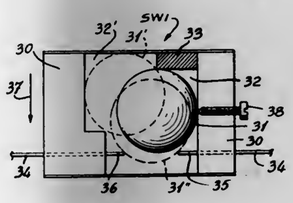
1. A digital alarm timepiece comprising: time standard means for generating a repetitive time standard signal for defining passage of time; dividing means receptive of said time standard signal for dividing the same and for developing a repetitive output signal having a repetition rate less than that of said time standard signal; a counter receptive of said dividing means output signal for counting the same and for developing a count representative of time and date; date-second switching circuit means cooperative with said counter for switching between a count representative of seconds and a count representative of date; a plurality of memory circuits each defining a different channel and each for storing a time signal representative of a time; a display responsive to the contents of said counter and to said time signals for displaying the time corresponding thereto; channel selecting means for applying a selected one of the time signals stored in one of said memories or the count switched by said date-second switching circuit means to display a selected time or a date or seconds; a coincidence circuit for comparing the count developed by said counter with the time signals stored in said memories and for developing an output signal when the count and one of said time signals coincide; means for actuating said channel selecting means, wherein said means for actuating said channel selecting means comprises a switching circuit operable between two states, a first switch connected for applying a signal to change the state of said switching circuit, and a second switch connected in series with said switching circuit for controlling application of an actuating signal to said channel selecting means through said switching circuit when the same is in a conductive state; alarm means responsive to the output signal of said coincidence circuit for sounding an alarm, wherein said alarm means is responsive to a control signal for terminating operation of the same; and means for applying a control signal to said alarm means, wherein the last-mentioned means includes a second switching circuit operable between two states, said first switch connected for applying a signal to change the state of said second switching circuit, and a third switch connected in series with said second switching circuit for controlling application of the control signal to said alarm means through said second switching circuit when the same is in a conductive state.

4,115,994
DIAL ILLUMINATION MEANS
James N. Tomlinson, 1114 Kathryn St., Boalsburg, Pa. 16827
Filed Jul. 13, 1976, Ser. No. 705,569
Int. Cl.² G04B *39/00, 19/30*
U.S. Cl. 58—50 R **16 Claims**



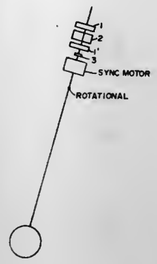
1. In a watch having a face with visual hour indicators, the improvement comprising a transparent crystal member having an inner face and an outer face positioned over the watch face and having a peripheral edge, light source means positioned internally of said crystal member, a source of electrical voltage selectively connectable to said light source means for actuation of said light source means, reflector means positioned radially outwardly of the peripheral edge of said crystal member for receiving light rays directly from the peripheral edge of said crystal member which have been directed internally of said crystal from said light source means and for reflecting and concentrating substantially all of said light rays emitted from the peripheral edge of the crystal member in the area of said dial in which said visual indicators are located.

4,115,995
AUTOMATIC WRISTWATCH CONSTRUCTION
André Guy Brien, 3110 rue Germain, Fabreville, Canada
Filed Sep. 20, 1976, Ser. No. 724,283
Int. Cl.² G04C *3/00, 9/00, 19/00*
U.S. Cl. 58—50 R **9 Claims**



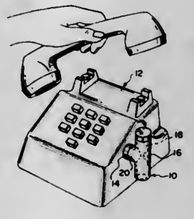
1. In a wristwatch having a housing with an electronic digital visual display and a program electrical circuit means in said housing to operate said visual display, the improvement comprising motion activated switch means to reset said digital visual display to a desired digital value, said switch means comprising a first and second gravity activated switch, a switch contact in said first and second switch and connected to a respective function of said circuit means, said second switch when motion activated to cause a switch contact closure activating its respective function of said circuit means to permit a display of an actual digital value on said visual display, said first switch being motion activated in a first direction after said second switch to cause a switch contact closure activating its respective function of said circuit means to activate sequential display movement of said actual digital value selected by said second switch, said first switch being activated in a second direction to stop the activation of said sequential display movement to a desired value.

4,115,996
SELF ACTUATING PENDULUM SYSTEM
Raymond Walter Coy, 805 Libby Dr., Riverside, Calif. 92507
Filed Oct. 18, 1976, Ser. No. 733,187
Int. Cl.² G04B *17/02*
U.S. Cl. 58—129 **1 Claim**



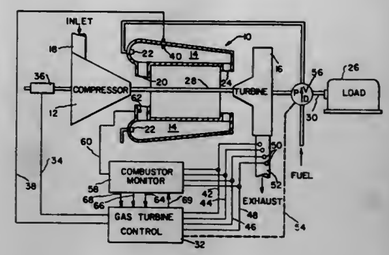
1. A selfstarting, self actuating pendulum that accelerates from stand-still to a stable arc length employing a 60 Hz synchronous motor, geared to counter rotating eccentric weights which form an integral part of a partially counter balancing weight and fixed to the pendulum rod above the pendulum axis of rotation which weights rotate in a plane perpendicular to the center line of the pendulum and apply a sinusoidal thrust to the pendulum and when combined with the action of gravity overcome the pendulum losses and maintain predetermined, continuous and regular pendulum oscillation.

4,115,997
TIMING ATTACHMENT FOR TELEPHONES
A. Terry Rogovin, 900 N. Lake Shore Dr., Chicago, Ill. 60611
Filed Apr. 15, 1977, Ser. No. 787,911
Int. Cl.² G04B *47/02*; G04F *1/06*
U.S. Cl. 58—144 **7 Claims**



1. A timing attachment for telephones or the like, comprising:
- a base member having two ends including means at one end thereof for mounting said base member;
- an elongate member including hourglass means for measuring a predetermined period of time each time said elongate member is rotated substantially 180° from a substantially vertical first position to a substantially vertical second position, said elongate member including a pivot member secured to one side thereof substantially at a midpoint thereof and pivotally attached to a second end of said base member, said elongate member including at least one substantially cylindrical end; and
- indicating means for automatically indicating the passage of at least one period of time when said elongate member is rotated, said automatic indicating means including a cap rotatably secured on top of said cylindrical end of said elongate member, said cap including at least one set of two successive time period indicia displayed thereon on opposite sides of said cap.

4,115,998
COMBUSTION MONITOR
Kendall E. Gilbert, Schenectady; Daniel Johnson, Rexford, and Robert Raymond Macier, Saratoga Springs, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 638,855, Dec. 8, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,271
Int. Cl.² F02C *9/08*
U.S. Cl. 60—39.09 R **10 Claims**

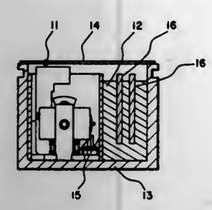


1. In combination, a gas turbine of the type having a compressor, a combustion system for receiving fuel and compressed air from said compressor and for generating an annular hot gas stream, a turbine adapted to be rotatably driven by said annular hot gas stream and drivingly connected to said compressor, an exhaust duct for exhausting said hot gas stream after passage through said turbine, and control means for controlling the operation of said gas turbine and for regulating fuel flow to the combustion system in response to various parameters of operation of said gas turbine and means for early detection of malfunctions in the combustion system and for causing the fuel flow to said combustion system to shut off in response to a detected malfunction, said detection means including:
- a temperature sensor disposed in temperature sensing relationship to the discharge flow of compressed air from said compressor;
- a plurality of temperature sensors disposed in a generally equally spaced annular array in temperature sensing relationship to the hot gas stream generated by said combustion system;
- monitoring means for automatically and repeatedly scanning each said temperature sensor and for determining the median temperature sensed by said hot gas stream temperature sensors during each complete scan of said temperature sensors, for determining a high and a low trip limit for each complete scan of said temperature sensors as a function of the reading of said compressor discharge temperature sensor and said median temperature, for automatically comparing each said hot gas stream temperature sensor reading to said high and said low trip limits, and for generating a signal operative to cause said control means to shut off fuel flow to said combustion system when a predetermined number of said hot gas stream temperature sensors are outside of said trip limits in a predetermined pattern.

4,115,999
USE OF HIGH ENERGY PROPELLANT IN GAS GENERATORS
James P. Diebold, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 13, 1975, Ser. No. 558,194
Int. Cl.² C06D *5/06*
U.S. Cl. 60—219 **3 Claims**

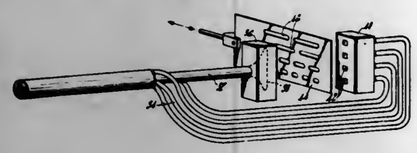
1. In a method for doing work wherein a gas generating material within a housing is ignited and burned to produce a gas which does said work without damaging said housing by means of heat, the improvement residing in utilizing as said material a composite consisting essentially of a potting material

and one or more pieces of conventional solid rocket propellant potted in said potting material in a way such that said pieces



will primarily end burn when ignited and will endothermically pyrolyze sufficient potting material to lower the flame temperature and the oxidativeness of the propellant combustion gases.

4,116,000
ENGINE CONTROL SYSTEM
Anthony Newman Martin, Simsbury; Carl James Buczek, Manchester, both of Conn., and Robert Joseph Mongeon, East Longmeadow, Mass., assignors to United Technologies Corporation, Hartford, Conn.
Filed Nov. 1, 1976, Ser. No. 737,379
Int. Cl.[2] F02K *1/18*
U.S. Cl. 60—242 **2 Claims**

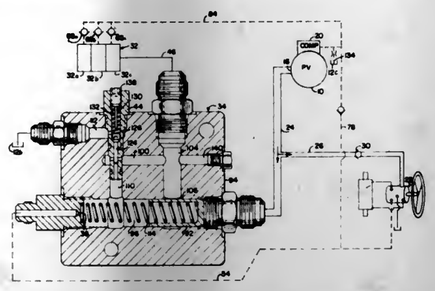


1. Apparatus for controlling the aperture of a variable area exhaust nozzle of a gas turbine engine, comprising:
- an intelligence processing unit positioned remotely from the exhaust nozzle;
- a sensing unit located in proximity to the exhaust nozzle and which has incorporated therein a signal encoder operative in response to an optical signal initiated at said intelligence processing unit for sensing the position of the exhaust nozzle;
- means for transmitting the initiated optical signal from the intelligence processing unit to the position sensing unit and returning the encoded position signal to the intelligence processing unit; and
- actuator means, which is mechanically coupled to the exhaust nozzle and which is responsive to a signal initiated at said intelligence processing unit for setting the aperture area of said exhaust nozzle.

4,116,001
SIMPLIFIED LOAD SENSITIVE HYDRAULIC SYSTEM FOR USE WITH A VEHICLE STEERING SYSTEM
Harold R. Orth, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Aug. 1, 1977, Ser. No. 820,518
Int. Cl.[2] F15B *11/20*
U.S. Cl. 60—420 **3 Claims**

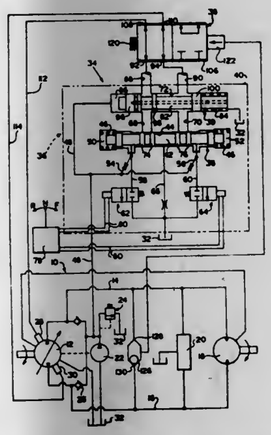
1. In a flow compensated hydraulic system having a variable displacement pump, a priority dependent work circuit, a secondary work circuit and a flow compensating priority valve including a valve body having a plurality of bores, including a first passage and a discharge passage communicating with said first passage therein, a priority valve spool carried in the first passage of said valve body, a priority spool spring urging said priority valve spool to an undisplaced position of repose, the improvement comprising:

a relief valve responsive to pressure in said first passage allowing fluid to flow from said first passage via said discharge passage to said secondary work circuit, said



relief valve will remain open and said priority valve spool will be closed when said secondary work circuit does not require fluid flow.

4,116,002
CONTROL FOR A VARIABLE DISPLACEMENT PUMP OR MOTOR
Kenneth K. Knapp, and Charles R. Cornell, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Aug. 22, 1977, Ser. No. 826,278
Int. Cl.[2] F16H *39/46*
U.S. Cl. 60—445 **9 Claims**



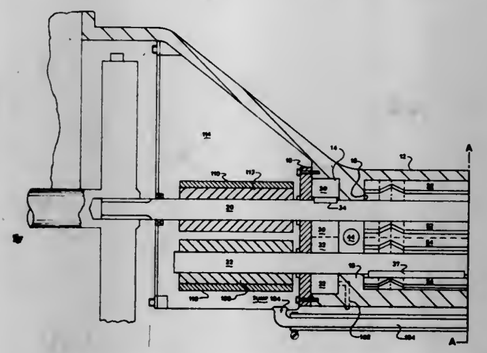
1. A control for use with a variable displacement pump or motor unit having a pair of strokers into and out of which fluid must be directed to vary the displacement of the unit and having a relatively high pressure fluid conduit and a relatively low pressure fluid conduit, a source of fluid at a relatively high pressure and a source of fluid at a relatively low pressure, said control comprising:

A. control valve means having first and second passages adapted to communicate and be intermediate said sources of fluid and said strokers and operational in response to an input to direct fluid from said high pressure source toward one of said strokers via said first passage and simultaneously from said other stroker to said low pressure source via said second passage to vary the displacement of said unit; and

B. override valve means adapted to communicate and be intermediate said control valve means and said strokers and having a first port adapted for fluid communication with said first control passage, and a second port adapted for fluid communication with said second control passage, a first passage adapted for fluid communication with said

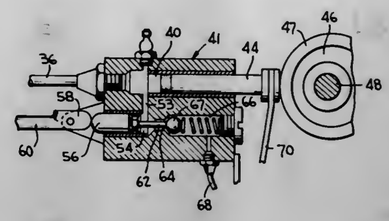
one stroker, a second passage adapted for fluid communication with said other stroker, and means for directing fluid between said first override passage and said first port and simultaneously between said second override passage and said second port and responsive to another input to first restrict said fluid communication and then terminate said fluid communication and during said termination to communicate said first and second override passages.

4,116,003
MULTI-SPEED HYDRAULIC DRIVE TORQUE CONVERTER
Ralph Franklin Walworth, P.O. Box 11711, St. Petersburg, Fla. 33733
Filed Aug. 1, 1977, Ser. No. 820,566
Int. Cl.[2] F16D *39/00*
U.S. Cl. 60—487 **7 Claims**



1. In a multi-speed torque converter, a housing defining a chamber,
- parallel input and output shafts in said housing chamber, said input shaft being driven,
- a pair of input gears individually positioned on said shafts with only the gear on the input shaft being secured thereto,
- a plurality of pairs of transfer gears journalled on said shafts with one gear of each pair being on one of said shafts,
- a pair of output gears individually positioned on said shafts with only the gear on said output shaft being secured to said shaft,
- an input and an output gallery being formed in the housing by said gears, and
- means operatively positioned in the housing to move pairs of said transfer gears axially to engage said input or said output gears to form an operative gear unit therewith and to retain said transfer gears in their given positions when the converter is in operation;
- the improvement comprising side pressure vane means slidably positioned in said housing at an end thereof for movement axially of said chamber to extend therefrom and engage side faces of adjacent gears; bore means in the housing connecting to the axially outer surfaces of said vane means, and check valves is said housing for receiving housing chamber pressure and transmitting it to said bore means for urging said vane means axially inwardly of said chamber to press axially against said gears.

4,116,004
HYDRAULIC PULSE GENERATING APPARATUS
William R. C. Geary, 4/18 Kensington Rd., South Yarra, Victoria, Australia (3141)
Division of Ser. No. 549,053, Feb. 11, 1975, Pat. No. 3,988,828.
This application Sep. 20, 1976, Ser. No. 724,535
Int. Cl.[2] F15B *7/02*
U.S. Cl. 60—543 **1 Claim**

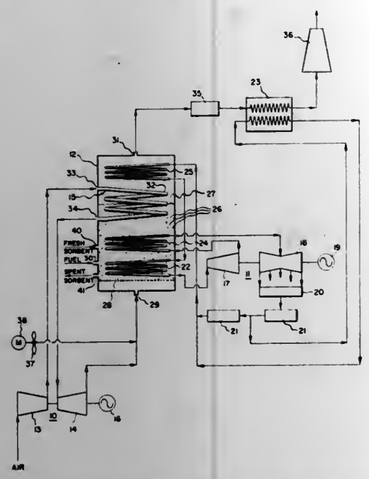


1. Hydraulic pulse generating apparatus comprising a hydraulic master cylinder adapted to be connected to a slave motor, means for providing continuous fluid communication between said master cylinder and the slave motor, a plunger reciprocable in the cylinder to produce successive pressure pulses in the liquid therein, power actuated driving means for the plunger, a hydraulic fluid reservoir communicating with the master cylinder for the supply thereto of fluid under a substantially constant base pressure which is intermediate between the maximum and minimum pressures produced in the master cylinder during operation, a transfer chamber of variable capacity which continuously communicates with the master cylinder, manual control means operable to increase the capacity of the transfer chamber beyond its normal operating capacity by an amount at least equal to the volume of liquid normally displaced by said plunger of the master cylinder whereby when its capacity is thus increased the fluid which is normally pulsed by the plunger towards the slave motor passes into the transfer chamber from the master cylinder thereby to interrupt the transmission of said pressure pulses to the slave motor while said power operated means continues to operate and the master cylinder continuously communicates with the motor, and including valve means for preventing the flow of additional fluid into the cylinder from the reservoir when the capacity of the transfer chamber is thus increased.

4,116,005
COMBINED CYCLE POWER PLANT WITH ATMOSPHERIC FLUIDIZED BED COMBUSTOR
David M. Willyoung, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jun. 6, 1977, Ser. No. 803,530
Int. Cl.[2] F01K *23/00*
U.S. Cl. 60—655 **9 Claims**

1. A combined cycle steam turbine and gas turbine power plant comprising:
- (a) a gas turbine including a compressor section and a turbine section;
- (b) a fluidized bed combustor for combustion of carbonaceous sulfur-bearing fuel at nearly atmospheric pressure and in an environmentally clean manner, said combustor having a bed of fluidizable sulfur-sorbing particles, a first inlet for receiving fluidizing and combustion air at nearly atmospheric pressure from the turbine section of said gas turbine, a second inlet for receiving carbonaceous sulfur-bearing fuel, a third inlet for receiving sulfur-sorbing particles, a first outlet for discharge of gaseous and entrained solid particulate products, and a second outlet for discharge of spent sorbing particles and ash solids;
- (c) an air heat exchanger within said fluidized bed combustor, said heat exchanger including an inlet for receiving pressurized air from the compressor section of said gas

turbine, heat exchange surface means allowing heating of the compressed air without intermixing of air heat exchanger air and fluidized bed combustor material, and an outlet to direct heated pressurized air out of the fluidized



bed combustor for passage to the turbine section of said gas turbine;

(d) a steam turbine; and

(e) steam generating means in said fluidized bed combustor for furnishing steam to drive said steam turbine.

4,116,006

MODULAR ENGINE ASSEMBLY

Marvin E. Wallis, 5535 Longfellow Rd., Santa Barbara, Calif. 93111

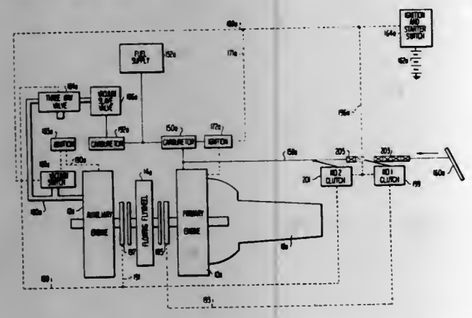
Continuation-in-part of Ser. No. 652,326, Jan. 26, 1976, Pat. No. 4,027,485, and Ser. No. 650,374, Jan. 19, 1976, said Ser. No. 652,326, is a continuation-in-part of Ser. No. 650,374, , which is a division of Ser. No. 557,746, Mar. 12, 1975, Pat. No. 3,949,556.

This application Apr. 12, 1977, Ser. No. 786,897

The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.

Int. Cl.² F01B *21/00*

U.S. Cl. 60—709 **33 Claims**



1. A modular engine assembly for connection with a transmission driven thereby comprising:

a primary engine,

means for starting said primary engine,

an auxiliary engine disposed in tandem with said primary engine,

means adjacent the end of said primary engine remote from said auxiliary engine for connecting said primary engine to the transmission for driving the latter by said primary engine,

means for selectively coupling and decoupling said auxiliary engine and said primary engine one to the other for driving the transmission selectively by said primary engine or both said primary engine and said auxiliary engine, and

means for starting said auxiliary engine including means for storing kinetic energy developed by said primary engine and applying said kinetic energy to said auxiliary engine to assist in starting said auxiliary engine, said kinetic energy storing and applying means being located adjacent the end of said primary engine remote from said auxiliary engine.

4,116,007

DEPLOYABLE BARRIER APRON APPARATUS FOR USE WITH CONTAMINANT RECOVERY SYSTEMS

Merlin D. Stagemeyer, Northbrook, Ill., and Seth Ford Allcorn, Columbia, Mo., assignors to Oil Spill Recovery, Inc., Northbrook, Ill.

Filed Mar. 21, 1977, Ser. No. 779,676

Int. Cl.² E02B *15/04*; B01D *17/02*

U.S. Cl. 405—66 **10 Claims**



1. A readily deployable barrier apron apparatus for utilization with contaminant material recovery systems to encompass said contaminant material on the surface of a body of water, said apparatus comprising:

upper impenetrable apron means which extend from below the bottom surface of said contaminant material on said body of water to a position substantially above the upper surface of said contaminant material;

lower penetrable apron means extending downwardly from said upper apron member from a position beneath the lower surface of said contaminant material for maintaining said apparatus in a generally upright position in said body of water while stabilizing said apparatus when said apparatus is moved through said body of water;

said apron means being divided into a plurality of apron segments hingedly attached to each other for quickly and easily deploying said apparatus in said body of water; and

uprighting flotation means including a lower channel means having an aperture allowing water to enter said channel means and an upper buoyancy means for effectively positioning said apparatus in an upright position in said body of water and for maintaining said apparatus in position in said body of water.

4,116,008

GUTTER MANIPULATING APPARATUS AND METHOD

Edwin J. Ward, 13839 Clifton Blvd., Lakewood, Ohio 44107

Division of Ser. No. 613,444, Sep. 15, 1975, Pat. No. 4,061,151.

This application Jul. 27, 1977, Ser. No. 819,392

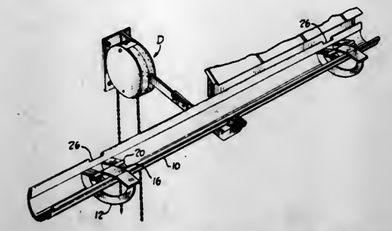
Int. Cl.² E02B *9/04*

U.S. Cl. 405—119 **3 Claims**

1. A gutter-manipulating apparatus for dumping debris from a gutter, comprising:

(a) structure supporting the gutter for rotation about a longitudinal axis of the gutter; and

(b) means for imparting rotary motion to the gutter about the longitudinal axis, the longitudinal axis being located within the gutter between its upper edge and its bottom



whereby the radius of rotary motion of the gutter is less than its depth.

4,116,009

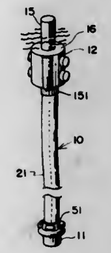
COMPLIANT UNDERWATER PIPE SYSTEM

Scott C. Daubin, 115 Sunrise Dr., Key Biscayne, Fla. 33149

Filed Aug. 24, 1976, Ser. No. 717,352

Int. Cl.² E02B *9/00*

U.S. Cl. 114—264 **11 Claims**



1. A compliant pipe system for use under water for the transfer of fluids therethrough comprising inner and outer compliant pipes having cylindrical surfaces positioned in substantially coaxial and in substantially close relation with each other a plurality of longitudinally separated wall means extending transversely between said cylindrical surfaces forming a plurality of substantially elongated and longitudinally disposed chambers between said pipes for receiving a buoyancy affecting fluid therein, said inner compliant pipe forming a fluid passageway for the transfer of fluid from a lower area to substantially the surface thereof; and wherein each of said compliant pipes consists of a plurality of layers of elastomer material forming a sandwich, each layer consisting of a plurality of strips of elastomer material having substantially high strength filaments embedded therein, said strips of elastomer material bonded together in helices, the helix of one layer spiralling in substantially the opposite direction of at least one other layer; and further comprising a longitudinal layer forming part of said sandwich with said longitudinal layer having said strips of elastomer material extending longitudinally in said compliant pipe; and further in combination with valve means mounted on said cylindrical surface of the outer compliant pipe at the position of each chamber for filling and emptying said chambers of said buoyancy affecting fluid.

4,116,010

STABILIZED EARTH STRUCTURES

Henri Vidal, 8 bis, Boulevard Maillot, 92 Neuilly-sur-Seine, France

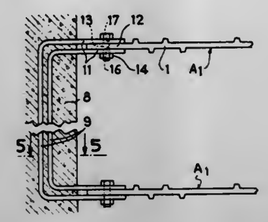
Filed Sep. 24, 1976, Ser. No. 726,436

Claims priority, application France, Sep. 26, 1975, 75 29600

Int. Cl.² E02D *5/20*

U.S. Cl. 405—262 **11 Claims**

1. A stabilized earth structure comprising a mass of earth, a plurality of reinforcing elements embedded in the mass, said reinforcing elements being elongated and pliable and being capable of sustaining tension without permanently elongating and without fracture, a portion of said earth being in direct frictional engagement with one surface of said reinforcing elements, said one surface having a plurality of ribs spaced apart longitudinally of said element, said ribs having a height of



about 3 millimeters, said earth being pressed against said one surface with sufficient pressure to be retained by said ribs and to become an integral part of said reinforcing element, and thereby increasing frictional resistance between said earth mass and said reinforcing elements.

4,116,011

METHOD OF EXCAVATING TUNNELS

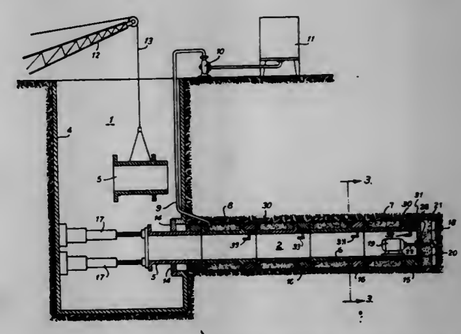
Pablo Girault, Volcan 120, Mexico City, Mexico (10)

Filed Jun. 3, 1977, Ser. No. 803,310

Claims priority, application Mexico, Jun. 4, 1976, 164996

Int. Cl.² E21D *11/10*

U.S. Cl. 405—134 **6 Claims**



1. A method of excavating tunnels wherein a casing is gradually pushed inwardly of the excavation as the excavation front advances, which comprises the steps of

excavating a tunnel having a cross-sectional area larger than the outer cross-sectional area of the casing;

placing the casing concentrically of the excavation at the open mouth thereof to be pushed inwardly of said excavation to thereby leave an annular chamber between the outer wall of the casing and the surface of the excavation;

gradually pushing the casing inwardly of the excavation as the excavation front advances;

placing at least a seal between the outer wall of the casing and the wall of the excavation at the innermost end of the casing and another seal between the outer wall of the casing and the wall of the excavation at the mouth of said excavation in order to form a closed annular chamber;

injecting a sufficient amount of drilling fluid under pressure into said chamber such that the casing is floated in said drilling fluid and the walls of the excavation will be spaced from the wall of the casing by a thick layer of said fluid thus eliminating friction stresses between the casing and the excavation;

and then continue to push the casing inwardly of the excava-

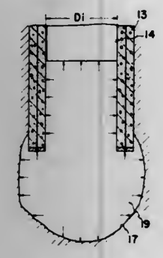
tion while maintaining the pressure of the fluid in said chamber as the excavation front advances.

4,116,012

METHOD OF OBTAINING SUFFICIENT SUPPORTING FORCE FOR A CONCRETE PILE SUNK INTO A HOLE

Nobuyuki Abe, Matsudo; Osamu Watanabe, Iwatsuki; Koji Nunokawa; Ichiro Tanaka, both of Kamakura, and Masao Manabe, Kawasaki, all of Japan, assignors to Nippon Concrete Industries Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1977, Ser. No. 815,767
Claims priority, application Japan, Nov. 8, 1976, 51-133257
Int. Cl.² E02D *5/38, 5/44;* E21C *17/00*
U.S. Cl. 405—238 **10 Claims**



1. A method for setting a concrete pile and obtaining secure support for the lower end of the pile which comprises:

inserting a screw auger having a bit at the forward end thereof through a hollow concrete pile and rotating said auger and bit to bore a leading hole just below the lower end of said pile, and advancing the pile into the hole until the desired depth is reached;

excavating a hole having a diameter at least as large as the diameter of the pile underneath the lower end of the pile;

completely filling the hole excavated underneath said pile with a cementitious material and rotating said bit so as to mix the cementitiuos material with gravel and debris remaining in the hole after excavation, said cementitious material containing from about 5% to 30% of an expanding agent selected from the group consisting of calcium sulfoaluminate and lime and displaying substantial expansion upon hardening;

withdrawing the auger from the pile, and

seating the pile within the cementitious material by advancing the pile a short distance downwardly into said material to further compact the cementitious material below the lower end of the pile and to obtain a secure support for the pile as the cementitious material expands upon hardening.

4,116,013

UNDERWATER PILING RESTORATION SYSTEM

Emil Donald Hellmers, 6414 Bayshore Walk, Long Beach, Calif. 90803

Filed Dec. 27, 1976, Ser. No. 754,631
Int. Cl.² E02D *5/60*
U.S. Cl. 405—216 **10 Claims**

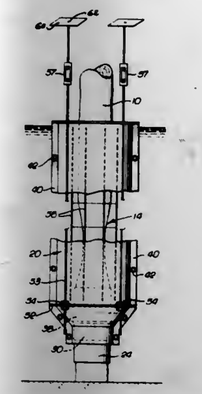
1. The method of casting a concrete splint about a deteriorating underwater section of a pile which comprises:

(a) affixing about the pile at a level beneath the deteriorating section, a first seal member having a downwardly facing sealing element;

(b) placing about the said section and said first seal member, a split elongated hollow form having at its lower end a seal member having an upwardly facing second element opposed to said sealing element of said first seal member;

(c) supporting said hollow form from above the water level;

(d) pumping the water from the form to allow buoyancy forces firmly to establish a sealing relationship between said seal members;



(e) pouring concrete mix into the form while the form is maintained relatively dry;

(f) thereafter removing the form.

4,116,014

EXCAVATING AND PIPELINE INSTALLATION SYSTEM

Charles R. Satterwhite, Dallas, Tex., assignor to Unit Rig and Equipment Co., Tulsa, Okla.

Filed May 6, 1976, Ser. No. 683,970
Int. Cl.² E02F *5/08;* F16L *1/02*
U.S. Cl. 405—179 **29 Claims**



1. An excavating and pipeline installation system comprising:

a vehicle adapted for movement over a surface of the earth and including a frame having a front end and a rear end;

means supporting the frame for movement along the surface;

an excavating wheel assembly for excavating a pipeline receiving trench at a predetermined location beneath the surface of the earth, said assembly having two rigid excavating wheels mounted in a V-shaped array, said wheels being supported by the frame for rotation about angularly disposed axes and being connected to the front end of the frame for engagement with material to be excavated;

each of the excavating wheels including a plurality of digging buckets each having a cutting edge which extends to a stationary wall and a wall mounted for pivotal movement from a material receiving position to a material dumping position;

means mounted on the frame for first positioning the pipeline directly above the predetermined location, between the excavating wheels and above the axes of rotation thereof and for thereafter positioning the pipeline within the pipeline receiving trench;

main conveyor means mounted on the frame for transporting the excavated material rearwardly and upwardly from the excavating wheels to the rear of the vehicle; and

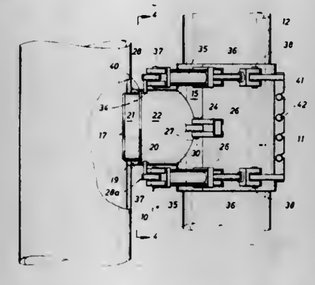
means for actuating the supporting means to propel the vehicle and for actuating the main conveyor means.

4,116,015

METHOD AND APPARATUS FOR REMOTELY ATTACHING A RISER PIPE TO AN OFFSHORE STRUCTURE

Anthony Bruce Duncan, Missouri City, Tex., assignor to HydroTech International, Inc., Houston, Tex.

Filed Jan. 3, 1977, Ser. No. 755,474
Int. Cl.² F16L *41/00*
U.S. Cl. 405—169 **2 Claims**



1. In apparatus for attaching a riser pipe to an offshore structure, the combination comprising:

an arcuate seat having a radius of curvature substantially equal to that of said pipe;

means for rigidly mounting said seat to said structure;

a pair of arcuate jaws each having a radius of curvature substantially equal to that of said pipe hingedly attached to said arcuate seat for movement between an open position to receive said pipe and a closed position to hold said pipe to said structure;

power means for moving said arcuate jaws between said open position and said closed position;

and locking means for locking said arcuate jaws in said closed position.

4,116,016

CORROSION-RESISTANT LIQUIFIED GAS EVAPORATOR

Robert Roop, Doylestown, and Carl Shine, Philadelphia, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

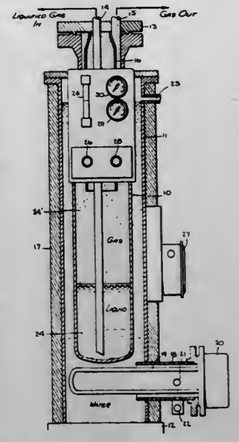
Filed Mar. 8, 1977, Ser. No. 775,524
Int. Cl.² F17C *7/02*
U.S. Cl. 62—52 **3 Claims**

1. An evaporator for vaporizing a liquified gas such as chlorine, said evaporator comprising:

A. a water vessel having a heater therein to raise the temperature of the water to a degree sufficient to effect vaporization of liquified gas;

B. a vapor tank supported within said vessel and surrounded by said heated water, said tank having a steel wall possessing high heat transfer characteristics;

C. means to supply the liquified gas into the tank to be vaporized by heat transferred from the water through the steel wall, said steel wall having an outer surface coated by a layer of sintered tetrafluoroethylene powders that adhere to the surface, said layer having a thickness in the range of 4 to 6 mils just sufficient to render it impermeable to the water but insufficient to materially reduce the heat transfer characteristics of the steel wall, thereby inhibiting



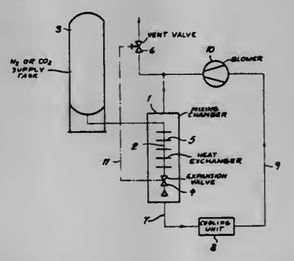
corrosion of the outer surface and the formation of scales thereon without the loss of heat energy.

4,116,017

METHOD OF AND APPARATUS FOR THE COOLING OF ARTICLES WITH A CIRCULATED COOLING GAS

Jakob Oberpriller, Baierbrunn, Germany, assignor to Linde AG., Hollriegelskreuth, Germany

Filed Dec. 3, 1976, Ser. No. 747,404
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2554906
Int. Cl.² F25D *17/06*
U.S. Cl. 62—62 **8 Claims**



1. A process for the deep cooling of an article which comprises the steps of:

circulating a cooling gas along a closed path through an enclosure;

contacting said article with the circulated cooling gas downstream of said enclosure at a relatively low temperature, thereby warming said cooling gas;

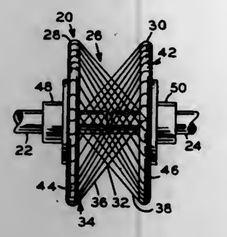
injecting a liquid coolant from a storage facility into said enclosure through an expansion valve to merge with the warmed cooling gas and reduce the temperature thereof upon expansion of the injected coolant, the coolant being stored at said facility under a pressure higher than that of said enclosure; and

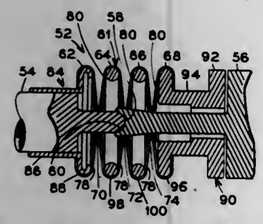
supplying heat to the coolant on its way from said facility to said expansion valve in a quantity corresponding only to the vaporization enthalpy of said coolant.

4,116,018
UNIVERSAL JOINT

Warren W. Weible, Defiance, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Filed Sep. 16, 1976, Ser. No. 723,770
Int. Cl.² F16D 3/30
U.S. Cl. 64—12 11 Claims





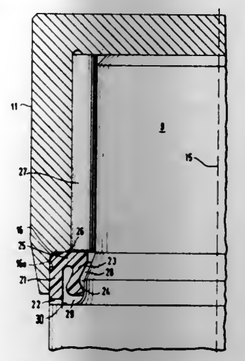
1. A universal joint for transmitting torque from one shaft to another at substantially constant angular velocity, said universal joint comprising a first member having means for attaching a central portion thereof to one of said shafts, a second member having means for attaching a central portion thereof to the other of said shafts, said members being in spaced relationship and positioned to rotate in substantially parallel planes perpendicular to the axes of said shafts when said shafts are aligned, a body which is substantially circular in transverse cross section and has one end connected to said first member and another end connected to said second member, said body having at least one intermediate portion of large diameter between said members and at least one portion of smaller diameter between said large diameter intermediate portion and each of said members, said body comprising a multiplicity of bridging lines, said lines extending from first points on the periphery of one of said members to second points on the periphery of the other of said members, said second points being peripherally displaced in a clockwise direction from said first points as viewed from one end of the universal joint, and said body further comprising an additional multiplicity of bridging lines, the last-mentioned lines extending from third points on the periphery of said one member to fourth points on the periphery of said other member, said fourth points being peripherally displaced in a counterclockwise direction from said third points as viewed from the same end of the universal joint.

4,116,019
BEARING ELEMENT SEAL FOR A UNIVERSAL JOINT

Hans-Heinrich Welschof, Odenwaldstrasse 26, 6451 Rodenbach 1, Fed. Rep. of Germany, assignor to Löhr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Aug. 13, 1976, Ser. No. 714,232
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1975, 2536113
Int. Cl.² F16D 3/30, 3/41
U.S. Cl. 64—17 A 5 Claims

1. A device for sealing relative to a trunion of a universal joint and a bearing element surrounding a trunnion pin having roller bearings adjacent thereto, and comprising a sealing ring of substantially U-shaped cross-section having first and second legs interconnected by a web, said sealing ring consisting of a resilient material, there being a first annular shoulder on a bearing element and a second annular shoulder on a trunnion pin, said sealing ring first leg supported between said shoulders to position the sealing ring axially, said second leg having a sealing lip resiliently engaging the trunnion pin such that any

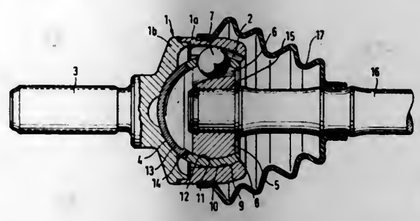


excess lubricant can flow from the roller elements to the exterior of the joint, said web positioned within said first shoulder and having a portion engageable with the roller elements to restrain said roller elements against axial movement.

4,116,020
CONSTANT VELOCITY UNIVERSAL JOINT

Erich Aucktor, Offenbach am Main, and Wolfgang Rubin, Hanau, both of Fed. Rep. of Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed May 21, 1976, Ser. No. 688,831
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522670
Int. Cl.² F16D 3/30
U.S. Cl. 64—21 15 Claims

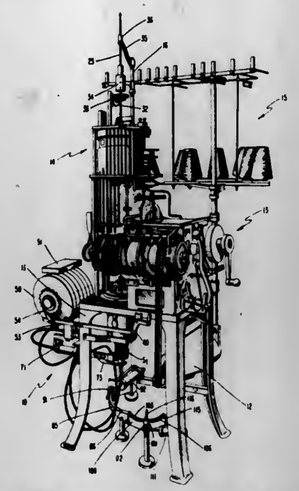


1. A constant velocity universal joint comprising an outer joint element having a cavity therein with a surface and a plurality of grooves in meridial planes in said cavity surface, an inner joint element within said cavity having a spherical outer surface and having a plurality of grooves in meridial planes in said outer surface corresponding in number to said outer joint element grooves to define pairs of opposed grooves, a plurality of balls between said joint elements with each ball being in a pair of opposed grooves, means between said joint elements for retaining said balls and having a first spherical surface on its outer face and a second spherical surface on its inner face, said cavity surface of said outer joint element co-acting with said ball retaining means first spherical surface and said inner joint element spherical outer surface co-acting with said ball retaining means second spherical surface to retain said balls in a plane which bisects the angle between the joint elements, said cavity surface having a non-undercut configuration in an axial direction with respect to one end of said outer joint element, and means on said one end of said outer joint element for maintaining said ball retaining means in co-acting relationship with said cavity surface.

4,116,021
HOSIERY HANDLING APPARATUS AND METHOD

John D. Harrill, Shelby, N.C., assignor to Marvel Specialty Company, Hickory, N.C.

Filed Aug. 19, 1977, Ser. No. 827,269
Int. Cl.² D04B 15/88, 27/34, 35/00
U.S. Cl. 66—149 S 29 Claims

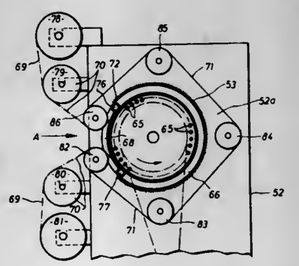


1. In a circular knitting machine having a circular knitting head for knitting a depending string of tubular material, a positioning tube suspended in the machine below the circular knitting head about which the material is knitted and means for turning the material into lower the end of the tube during continuous the knitting operation.

4,116,022
DEVICE FOR PRINTING ON WEBS OF TEXTILE MATERIAL

Karl Peter Lopata, and Günter Schiffer, both of Krefeld, Fed. Rep. of Germany, assignors to Kleinewefers Industrie-Companie GmbH, Krefeld, Fed. Rep. of Germany

Filed Aug. 30, 1976, Ser. No. 718,620
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1975, 2538795; Sep. 17, 1975, 2541448
Int. Cl.² B41M 5/26
U.S. Cl. 68—5 D 4 Claims

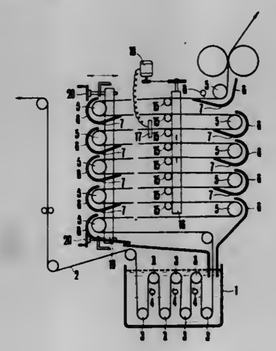


1. In a combination with an apparatus for printing upon webs of textile material by sublimation of the dye of printing foil web, which includes a rotatable cylinder having an axis, means for looping a web of textile material and of a printing foil web and a belt around said cylinder, a heating device in said cylinder, a tubular wall surrounding the cylinder in spaced relationship and with side walls forming a chamber around the cylinder and being connected with a vacuum source and provided with inlet and outlet means for the textile material, the foil web and the belt, one side wall of said vacuum chamber being formed as by welding, the other side wall being detachably connected in an airtight manner to the tubular wall, and an endless compressible sealing means surrounding the inlet and outlet means.

4,116,023
CONTINUOUS WATER WASHING APPARATUS FOR CLOTH

Yoshikazu Sando; Hiroshi Ishidoshiro; Takashi Tsuchihashi, and Keiji Saika, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Japan

Filed May 19, 1977, Ser. No. 798,354
Claims priority, application Japan, May 27, 1976, 51-61482; May 27, 1976, 51-61483; May 27, 1976, 51-61484
Int. Cl.² D06B 3/12, 23/04
U.S. Cl. 68—13 R 4 Claims



1. A continuous water washing apparatus for cloth comprising a pre-washing tank, first multi-layer guide rolls and pressurized air blow out pipes located within said tank, second multi-layer guide rolls arranged above said tank in a staggered manner and in two laterally spaced vertical columns for pulling the cloth upwardly from said tank and shifting the cloth horizontally in a zigzag manner over said second guide rolls, a water receptacle provided at and below each of said second guide rolls in the vertical columns, a cleaning water supply volume adjusting mechanism connected to the uppermost said water receptacle said cleaning water supply volume adjusting mechanism including a cloth shifting speed detection mechanism, another mechanism including a tension detection mechanism and a cloth sag prevention member to hold the shifting cloth horizontally, and a cloth width detection mechanism for adjusting the water filled up width of said water receptacles.

4,116,024
ANTI-THEFT DEVICE FOR MACHINES EQUIPPED WITH A DIESEL OR LIKE ENGINE

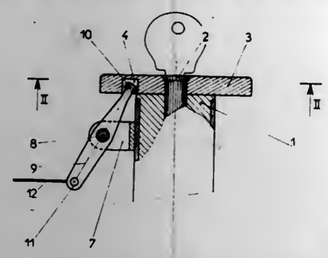
Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed May 3, 1977, Ser. No. 793,411
Claims priority, application France, May 21, 1976, 76 15316
Int. Cl.² B60R 25/02, 25/04
U.S. Cl. 70—201 2 Claims

1. In an anti-theft device for a vehicle having an internal combustion engine and a fuel injection pump, comprising a body, a lock rotor rotatable within said body about an axis, a locking bolt operable by said lock rotor to be moved between locking and unlocking positions in which it locks and unlocks respectively an element of the vehicle essential to the safe operation of that vehicle, an electrical switch operable by said lock rotor and adapted for connection in a circuit starting said vehicle, and locking bolt drive means operable by said lock rotor, the provision of

(a) a drive plate provided exteriorly to said body connected to said lock rotor and perpendicular to the axis thereof having a cam groove formed on that side of said plate which is adjacent the body, said groove lying outside the body and a portion of which groove is eccentric to the axis of rotation of the lock rotor, said grooved side being in a flat plane seating on said body; and

(b) a lever pivotably mounted between its ends on the outside of said body about an axis at right angles to the rotor axis between the ends of said body, one end of said lever being in engagement with said groove and the other end being movable substantially linearly in a direction at right



angles to the rotor axis and in a plane containing said rotor axis and connectible to said fuel injection pump to transmit pump opening and closing movement to said pump upon operation of said lock rotor,

said locking bolt drive means first causing said bolt to be moved to said unlocking position before said pump is opened as the lock rotor is moved in a direction to cause pump opening movement of said drive plate and lever, and when said lock rotor is moved in the direction to cause pump closing movement of said drive plate and lever, first causing said pump to be closed before said bolt is moved to said locking position.

4,116,025

REVERSIBLE FLAT KEY FOR CYLINDER LOCKS

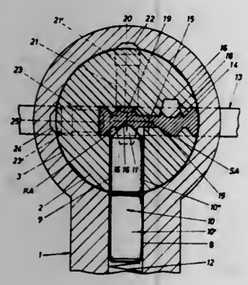
Heinz Wolter, Kürten, Fed. Rep. of Germany, assignor to DOM-Sicherheitstechnik GmbH & Co. KG, Brühl, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,372

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658495

Int. Cl.² E05B *19/04, 27/06*

U.S. Cl. 70—358 **4 Claims**



1. A reversible flat key for cylinder locks having rows of recesses arranged in opposite wide faces of the key for bringing tumbler pins of the cylinder lock into the correct position, comprising

a flat key having opposite wide faces and a tip,

a rib formed on each of said wide faces of the key projecting thereabove defining a rear face, said rib being formed with a plurality of recesses constituting a row of recesses,

said key is formed with lead-in bevels in the region of said tip of the key in alignment with a respective of said row of recesses, each of said lead-in bevels extends inclined into the respective of said opposite wide faces of the key,

each of said lead-in bevels runs out into said rear face of said rib projecting above the corresponding each of said wide faces of the key and carrying said recesses, and

at least one of said recesses has a greater depth than the height of said rib.

4,116,026

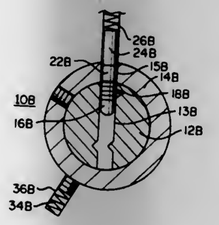
KEY SETTABLE, PICK PROOF LOCK

Orin Q. Flint, P.O. Box 536, Linwood, Mass. 01525

Filed Apr. 14, 1977, Ser. No. 787,307

Int. Cl.² E05B *25/00*

U.S. Cl. 70—383 **5 Claims**



1. Key settable, pick-proof lock, comprising, in combination,

means forming a movable key plug with a locking channel,

means defining at least one array of a plurality of key chips movably mounted within said locking channel for resting on a land of a key inserted into said channel,

means defining a movable lock plug with a channel therein

means defining surrounding lock body structure containing said key plug and lock plug,

means forming a lock pin movably arranged within said lock plug channel and being movable between a first position extending partly out of said lock plug channel and engaging the body to lock the lock plug and a second position wholly within the channel to unlock the lock plug,

first means-for-interconnecting the key chips with the locking channel such that when the array of chips is moved to predetermined height by a predetermined key land height, then the chips in turn act through said first means-for-interconnecting to allow movement of the lock pin from locking to unlocking position,

means for interconnecting the lock plug to a latch so that unlocking the lock plug and moving it in turn releases the latch and means for moving the lock plug when unlocked,

lost motion interconnection means between said plugs allowing initial key plug movement to separate chips in said body channel from chips in said key plug channel before lock plug movement can be attempted to test the control key image of chips stacked in the body channel, the chips having a control key image that works in response to correct service key insertion in the key plug,

means in said lock body structure for storing chips, and,

second means-for-interconnecting said storage means and key plug channel for chip transfer to change the lock setting,

said second means-for-interconnecting being operable by a present correct service key and accomodatable to a new service key to effect such chip transfer.

4,116,027

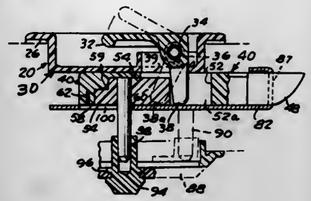
DOOR LOCK

Edward F. Tannery, Coldwater, Mich., assignor to Theodore Bargman Company, Coldwater, Mich.

Filed Jun. 9, 1977, Ser. No. 805,099

Int. Cl.² E05B *55/04*

U.S. Cl. 70—472 **20 Claims**



1. A door lock comprising a frame, an elongate belt disposed in said frame for movement in the direction of the bolt axis, said bolt having a cavity therein and having a nose end extending outwardly beyond said frame, first means carried by said frame and extending into said cavity for movement between first and second positions generally in a direction parallel to said bolt axis, a latch disposed to slide laterally of said bolt axis within said cavity between an unlock position in which said latch is aligned with said first means in the direction of said bolt axis for abutment therewith such that movement of said first means from said first to said second position results in conjoint movement of said latch and said bolt to retract said bolt and a lock position in which said latch is spaced from said first means laterally of said bolt axis in both said first and second positions of said first means, and means for selectively positioning said latch in either said lock or said unlock position.

4,116,028

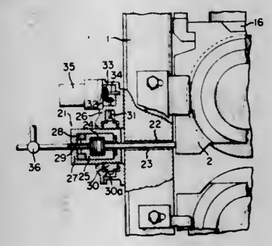
ROLLING MILL

Toyohiko Okamoto, Toyonaka; Yoshisuke Misaka, Takarazuka, and Motoo Asakawa, Minoo, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 738,061, Nov. 2, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,734

Int. Cl.² B21B *37/06*

U.S. Cl. 72—21 **20 Claims**



14. Load sensing device for measurement of a force in a workpiece extending between adjacent two roll stands each of which includes a frame, at least a pair of work rolls and work roll chocks for supporting the work rolls respectively, comprising a housing adapted to be mounted on the frame of one of the adjacent two roll stand, load sensing rod means having one end adapted to be contacted with one of the work roll chocks of said one roll stand, transducer means associated with said load sensing rod means so as to receive a force axially transmitted through said rod means for generating an electric signal representing the force, means for effecting axial movement of said rod means into and out of contact with said one work roll, and hydraulic means including hydraulic cylinder means and piston means disposed in said cylinder means, said piston means being adapted to support said rod means under a predetermined hydraulic pressure so that when a force acting on through said rod means exceeds said predetermined pressure, said piston moves to prevent such an excessive force from being applied to said transducer means.

4,116,029

DEVICE FOR MEASURING THE FLATNESS OF METAL STRIPS

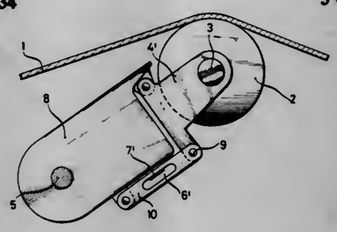
Wolfgang Fabian; Hermann-Josef Kopineck, and Wilhelm Tappe, all of Dortmund, Germany, assignors to Hoesch Werke AG, Dortmund, Germany

Filed Jun. 2, 1977, Ser. No. 802,948

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1976, 2633351

Int. Cl.² B21C *51/00*

U.S. Cl. 72—34 **5 Claims**



1. An arrangement for measuring the flatness of metal strips under tensile stress while being rolled, comprising: measuring roller means; measuring elements; means for carrying said measuring elements and having side members; bearing means on said side members and supporting said measuring roller means; pivot means supporting said side members, said side members being swivable about said pivot means; rigid box means reinforcing said pivot means; said means for carrying said measuring elements including cover plate means having a recess for holding said measuring element and being attached to a side of said box means; said side members being T-shaped and being pivotably connected to said box means and being pivotally connected to said cover plate means, said side members absorbing a substantial amount of force transmitted by said roller means to said side members for reducing substantially the amount of force applied to said measuring elements.

4,116,030

METHOD OF MAKING PROFILED WORK OF ALUMINUM OR ALUMINUM ALLOY BY EXTRUDING PROCESS

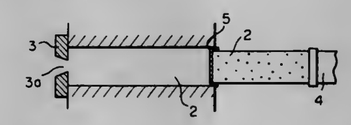
Yoshiyuki Kobayashi, and Shigeru Okaniwa, both of Fuji, Japan, assignors to Kabushikikaisha Nippon Keikinzoku Sogokenkyusho, Tokyo, Japan

Filed Apr. 21, 1977, Ser. No. 789,734

Claims priority, application Japan, Apr. 23, 1976, 51-45323

Int. Cl.² B21C *23/32, 35/06*

U.S. Cl. 72—40 **16 Claims**



1. In a method of making a profiled work of aluminum or aluminum alloy by an extruding process including the steps of loading a billet of aluminum or aluminum alloy into a container having an extruding die formed with at least one extruding hole of required configuration mouned at one end thereof, and

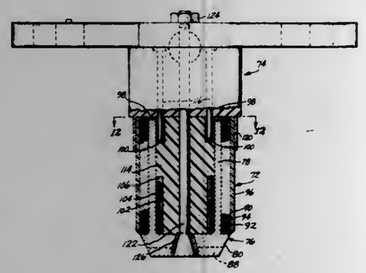
moving a ram into said container from the opposite end thereof so as to urge said billet against said extruding die thereby permitting said billet to be extruded through said extruding hole so as to form a profiled work having its cross-section conforming with the configuration of said extruding hole, the improvement comprising locating a preformed abrasive containing disc of aluminum or aluminum alloy between said extruding die and said billet prior to extruding said billet through said extruding hole said disc containing at least one element selected from the group consisting of elements B, Be, Ti, Zr, W, Mo and V, said element forming very hard and fine particles acting as the abrasive.

4,116,031

FLUX CONCENTRATOR FOR ELECTROMAGNETIC PULLING

Karl A. Hansen, and I. Glen Hendrickson, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1976, Ser. No. 752,755
Int. Cl.² B21D *26/14*
U.S. Cl. 72—56 **15 Claims**



1. A flux concentrator for electromagnetic pulling of a conductive material comprising: a first primary coil wound around an outer surface of a single turn secondary coil, said secondary coil having means for concentrating flux to exert electromagnetic force in an axial direction with respect to the secondary coil; a second primary coil wound adjacent an inner surface and an end of the secondary coil wherein the inside surface of the secondary coil has integral spirally formed radial grooves into which the second primary coil is wound; means for introducing a slow rise high amplitude electrical current to the first primary coil; means for quickly shutting off the slow rise high amplitude current; and means for introducing a timed fast rise reversed polarity electrical current to the second primary coil to generate an axially directed pulling electromagnetic flux at the secondary coil.

4,116,032

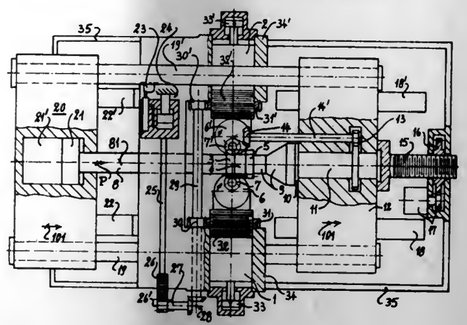
METHOD AND APPARATUS FOR MANUFACTURING STRAIGHT OR INCLINED TOOTHED MACHINE ELEMENTS, ESPECIALLY SPUR GEARS BY COLD WORKING

Hans Krapfenbauer, Zurich, and Ernst Grob, Meilen, both of Switzerland, assignors to Ernst Grob, Mannedorf, Switzerland

Filed Jun. 15, 1977, Ser. No. 806,830
Claims priority, application Switzerland, Jun. 30, 1976, 8332/76
Int. Cl.² B21H *5/02*
U.S. Cl. 72—68 **17 Claims**

1. A method of manufacturing straight or inclined toothed machine elements, especially spur gears, by cold working, comprising the steps of:

retaining under axial prestress an individual gear-workpiece blank which is in a cold condition during a cold rolling operation between two press punches in order to essentially prevent any appreciable flow of material of the blank in its axial direction and at such a pressure that under the action of the cold rolling operation there occur pressure stresses between the press punches and the workpiece, these pressure stresses corresponding to at least the elastic limit of the material of the workpiece; and



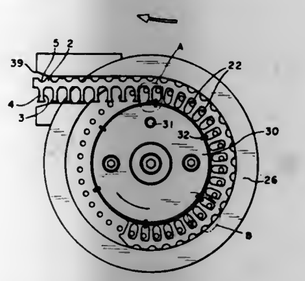
forming at least at one of both end surfaces of the workpiece an end surface disposed exactly perpendicular to the lengthwise axis of the workpiece due to the simultaneous action of the prestressing force and the rolling operation.

4,116,033

METHOD AND APPARATUS FOR FORMING A WOUND CORE

Yoshiyuki Iwaki, and Ryozo Kuroda, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1977, Ser. No. 790,913
Claims priority, application Japan, Dec. 28, 1976, 51-159950
Int. Cl.² H02K *15/00*; B21D *11/06*
U.S. Cl. 72—142 **5 Claims**



1. A method for helically winding a core element comprising the steps of:

providing a strip having a solid portion with a plurality of teeth extending therefrom with slots between the teeth;

providing a pin having a shank of diameter smaller than the width of the slots between the teeth included in the strip;

reciprocating the pin along its axis;

engaging the shank of the pin inside a slot formed by a pair of teeth included in the strip;

rotating the pin about a fixed point;

providing a mandrel having a key;

engaging, simultaneously with the engagement of said pin shank in said slot, the key of the mandrel between forward edges of said pair of teeth included in the strip to position the center of said key at a predetermined angle relative to the center of said pin shank; and

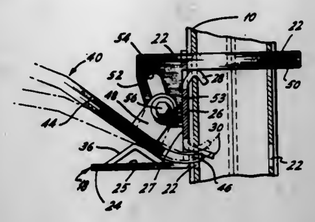
rotating the mandrel about the fixed point simultaneously with the step of rotating the pin to impart local stresses in the solid portion of the strip as the strip is helically wound about the fixed point.

4,116,034

TOOL FOR ASSEMBLING STORAGE SYSTEM

Frederick Ruediger, Willow Grove, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Division of Ser. No. 668,369, Mar. 19, 1976, Pat. No. 4,041,600.
This application May 26, 1977, Ser. No. 800,768
Int. Cl.² B21D *7/06*
U.S. Cl. 72—387 **4 Claims**



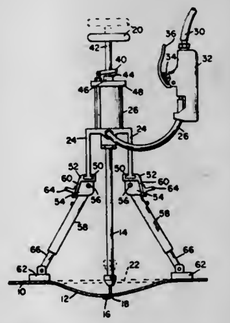
1. A tool for use with a support member having a hook member engaged in a slot on a support post and a bendable tab member inserted in another slot on the support post, said tool comprising an elongated member having a handle portion at one end, a bending finger at the other end, and a portion protruding from said elongated member between the ends thereof, and a reaction finger having opposite planar faces and an ear extending at a right angle from said planar faces toward said elongated member, said reaction finger extending beyond said bending finger, one of said planar faces being adjacent said bending finger and said bending finger being curved in a direction toward said one planar face, said ear being formed with a slot for receiving a pivot pin carried on said protruding portion whereby said reaction finger is capable of translation and is pivotable with respect to said protruding portion, and whereby said reaction finger is adapted to be inserted into said support post slot and overlie said hook member, and said bending finger is adapted to be inserted in said another slot so that a bending force can be applied to said tab member by said bending finger and a reaction force is provided on said reaction finger.

4,116,035

DENT PULLER

Frank Malarsky, 27 Chamberlain Pkwy., Worcester, Mass. 01602

Filed Sep. 8, 1977, Ser. No. 831,493
Int. Cl.² B21C *1/12*
U.S. Cl. 72—389 **5 Claims**



1. A dent puller comprising an inverted solid single U-shaped bracket, said bracket including legs, means on said bracket midway between the legs of the U, for holding a slidable dent puller rod thereon, said dent puller rod extending through said bracket and having a handle at one end and a dent puller tool at the opposite end thereof,

mechanical means for retracting said dent puller by increments, and a cockable washer on said rod automatically acting to prevent motion of the dent puller rod in the opposite direction,

said mechanical means for moving said dent puller rod in increments being under control of the operator,

a pair of separate extension legs, means on each leg of the U-shaped bracket to receive and detachably hold one of said extension legs, said extension legs diverging and being adapted to straddle a larger dent than could be straddled by the U-shaped bracket,

means mounted said extension legs relative to the respective bracket leg for pivotal motion thereon,

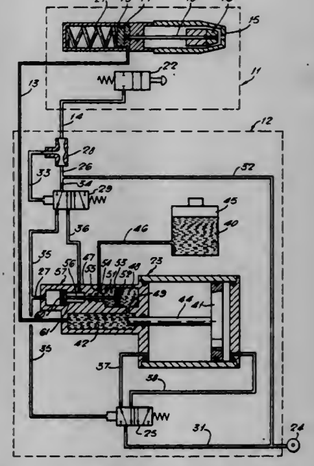
and means restraining said pivotal motion in a direction separating the extension legs.

4,116,036

HYDRAULICALLY OPERATED RIVETING APPARATUS

David John Sheffield, Hemel Hempstead, and John William Charles Saxon, Sawtry, both of England, assignors to Aerpat A.G., Zug, Switzerland

Filed Apr. 11, 1977, Ser. No. 786,192
Claims priority, application United Kingdom, Apr. 12, 1976, 14767/76
Int. Cl.² B21J *15/22*
U.S. Cl. 72—391 **2 Claims**



1. In or for hydraulically operated riveting apparatus in which operation of the riveting head is effected by the application of hydraulic pressure to the riveting head, hydraulic pressure generation apparatus which includes

a hydraulic pressure generator for generating hydraulic pressure;

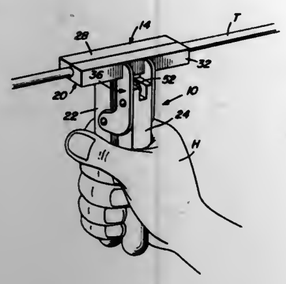
a hydraulic conduit connecting the generator to the riveting head for feeding hydraulic pressure from the generator to the head;

a reservoir for hydraulic fluid;

valve means operable to open and thereby connect the hydraulic conduit and the pressure generator to the reservoir and to close and thereby to disconnect the hydraulic conduit and the pressure generator from the reservoir;

and valve control means for causing the valve means to close at the start of each application of hydraulic pressure by the generator and to open at the cessation of each application of hydraulic pressure by the generator.

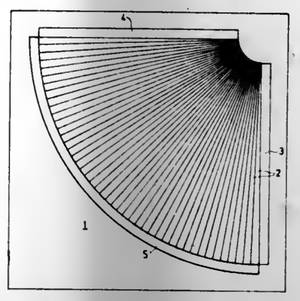
4,116,037
TUBING SIZER AND STRAIGHTENER
Hugh A. Honeycutt, Rte. 1, Box 877, Los Lunas, N. Mex. 87031
Filed Jun. 28, 1977, Ser. No. 810,794
Int. Cl.² B21D 3/00
U.S. Cl. 72—409 7 Claims



1. A tubing sizer and straightener, comprising, in combination:
(a) a first lever and a second lever:
(b) a first jaw part and a second jaw part; and
(c) linkage means pivotally connected to the first lever, and the second lever for connecting the same to one another for sequentially moving the first jaw part and second jaw part toward and away from one another such that the first jaw part and second jaw part will abut one another along a common plane, each of the first lever and second lever including a longitudinally extending member having longitudinally spaced ends, the first lever having a cutout provided at one of the ends thereof, with the associated first jaw part comprising a longitudinally extending element provided with a semi-cylindrical groove, the element being mounted on the member forming the first lever and disposed in the cutout provided at an end of the member, with the element being disposed extending longitudinally perpendicularly to the longitudinal extent of the member forming the first lever, the second jaw part being substantially identical to the first jaw part, and being affixed to the linkage means and, with the second jaw part including a further groove disposed facing the groove of the first jaw part, the linkage means including a curved piece having spaced end portions joined by an intermediate portion, one of the end portions being pivotally attached to the first lever, and the intermediate portion being pivotally attached to the second lever at a point thereon disposed between the point of pivotal attachment of the one of the end portions to the first lever and the second jaw part, with a further cutout being provided on the curved piece in the other of the end portions, and the second jaw part being disposed at the other of the end portions of the curved piece and arranged received in the further cutout.

4,116,038
APPARATUS FOR SHAPING SHEET MATERIAL
Knud Vilhelm Berthou, Lystbaadeves 12, DK-4000 Roskilde, Denmark
Filed Mar. 21, 1977, Ser. No. 779,586
Claims priority, application Denmark, Mar. 23, 1976, 1269/76
Int. Cl.² B21D 37/10
U.S. Cl. 72—413 8 Claims

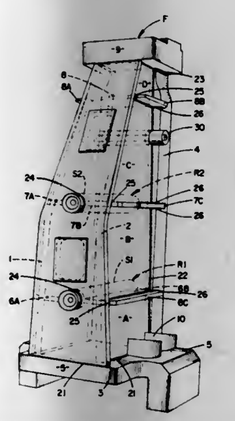
1. Apparatus for manufacturing a ship propeller, comprising upper and lower cooperating shaping means each including
(a) a base member; and
(b) a plurality of contiguous surface forming elements mounted on said base member, each of said elements having the configuration of the sector of a cylinder, the heights of successive elements being progressively gradu-



ated to cause the upper surfaces of said elements to define a helicoidal shaping surface

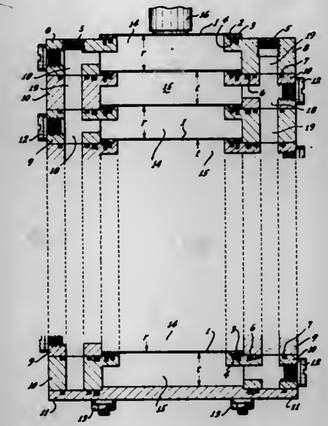
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4,116,039
DROP HAMMER FRAME WELDMENT AND ASSEMBLY
Joseph A. Geuss, Alliance, Ohio, assignor to Amca International Corporation, Hanover, N.H.
Filed Mar. 9, 1977, Ser. No. 776,088
Int. Cl.² B21J 7/06
U.S. Cl. 72—455 18 Claims



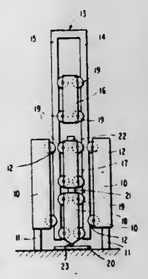
1. A drop hammer frame element comprising in combination an upright front member carrying the gib for guiding the ram, an upwardly extending back member spaced rearwardly from the front member, upwardly extending near and far side plates normal to said members and widely spaced from each other and engaging and spacing said front and back members and welded thereto, a base plate upon which the lower ends of said members and said side plates are supported and to which they are welded, a top plate supported by and welded to the upper ends of said members and side plates, all said plates and members forming an internally unreinforced frame element, rectangular horizontal internal reinforcing structures having vertical peripheral edges closely fitting substantially the whole interior perimeters of said element adjacent the said edges of said structures and welded to said side plates and members throughout substantially the whole peripheries of said structures at spaced elevations in said element between the lower and upper ends thereof, said reinforcing structures with said base and top plates, side plates and members making a plurality of six-sided box-like fabrications comprising a whole reinforced frame element, bolts adjacent and aligned horizontally with certain of said structures and connected operatively to said front and back members, and means for stressing said bolts in tension and prestressing said reinforcing structures in compression between said members.

4,116,040
TISSUE SIMULATING CALIBRATION AND REFERENCE STANDARD
Günter Schoknecht, Mühlenstrasse 5, 1000 Berlin 37, and Udo Flesch, Fontanestrasse 7, 1000 Berlin 33, both of Fed. Rep. of Germany
Filed Nov. 16, 1977, Ser. No. 852,092
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2653384
Int. Cl.² G01C 25/00
U.S. Cl. 73—1 R 4 Claims



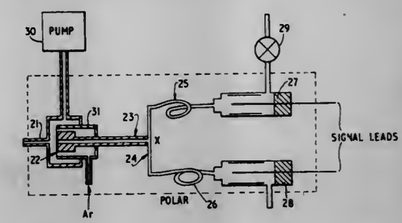
1. Calibration dummy for simulating cell tissue, comprising:
a stack of containers, separated from each other by thin foils and defining a path for transmission of ultrasonic waves, the containers being alternately filled with two different liquids, differing in their ultrasonic impedance, but both having acoustic speed, absorption and acoustic impedance values similar to the respective values for different human or animal cell tissue.

4,116,041
APPARATUS FOR BEARING CAPACITY MEASUREMENT WITH A FALLING WEIGHT DEFLECTOMETER
Bengt Olov Tholén, and Hans Ivar Hedström, both of Järfälla, Sweden, assignors to Kuab Konsult och Utveckling AB, Järfälla, Sweden
Filed Aug. 16, 1977, Ser. No. 825,077
Claims priority, application Sweden, Aug. 18, 1976, 7609211
Int. Cl.² G01N 3/30
U.S. Cl. 73—12 7 Claims



1. An apparatus for bearing capacity measurement with a falling weight deflectometer comprising a frame structure for guiding a vertically movable intermediate weight of a predetermined mass and adapted to be supported by a pressure plate adapted to rest on the material to be measured such as the ground, a road, completed or in construction stage, a first shock absorber being interposed between the intermediate weight and the pressure plate, a falling weight being movable vertically along guides of the frame structure under the influence of gravity from a predetermined height to strike the intermediate weight through the medium of a second shock absorber, characterized in that one of the two shock absorbers is comprised of a body of elastically yieldable material such as shock absorbing rubber.

4,116,042
METHOD AND APPARATUS FOR DETECTING A CONSTITUENT IN AN ATMOSPHERE
Anthony Jenkins, 54 Finchams Close, Linton, Cambridgeshire, and Douglas Walter Isgrove, 144 Malvern Rd., Cherryhinton, Cambridgeshire, both of England
Filed Nov. 18, 1976, Ser. No. 742,907
Claims priority, application United Kingdom, Nov. 20, 1975, 47727/75
Int. Cl.² G01N 31/06, 33/22
U.S. Cl. 73—23 5 Claims

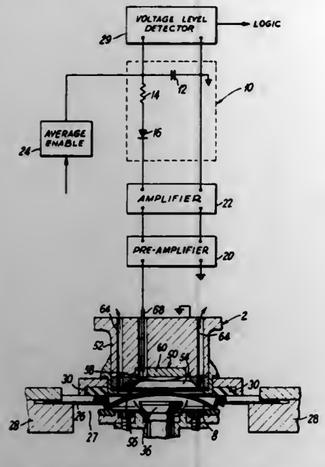


1. A method of detecting the presence of a particular constituent in an atmosphere which comprises drawing a sample of the atmosphere along two substantially identical flow paths, each path containing a respective detector capable of detecting said particular constituent, delaying the elution time of the particular constituent along one but not the other of the paths and passing the flows to the respective detectors, obtaining a resulting difference in signals from the two detectors, recognizing the presence of said particular constituent in the atmosphere when said difference signal has a positive increasing initial portion and utilizing said positive increasing difference signal to actuate means normally isolating the detector associated with said other flow path from an indicating means whereby to present a signal at said indicating means indicative of the presence of the particular constituent in the atmosphere.

4,116,043
ELECTRONIC DETECTION APPARATUS FOR LEAKS
John George Pencak, Fairport, N.Y., assignor to American Can Company, Greenwich, Conn.
Filed Jul. 11, 1977, Ser. No. 814,734
Int. Cl.² G01M 3/24
U.S. Cl. 73—40 4 Claims

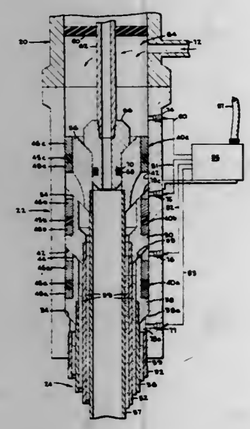
1. An electronic detecting apparatus for sensing the ultrasonic noise produced by a fluid flowing under pressure through a leak in an article comprising
a microphone positioned near said article,
an amplifier means connected to said microphone so as to receive and amplify the electronic signal generated by said microphone,
a signal averaging means connected to the output terminals of said amplifier means to receive and average the signal generated by said amplifier device,
an enable circuit connected to said signal averaging means to provide an enable trigger pulse to said signal averaging

means when said pressure is applied to said fluid to thereby start the operation of said signal averaging network,



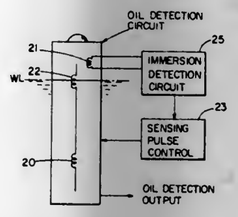
a voltage level detector circuit connected to said signal averaging means, said voltage level detector providing a logic pulse useful for article processing when the voltage to said voltage level detector from said signal averaging network exceeds a reference voltage.

4,116,044
PACKOFF LEAK DETECTOR
Michael R. Garrett, Spring, Tex., assignor to FMC Corporation, San Jose, Calif.
Filed Apr. 28, 1977, Ser. No. 792,083
Int. Cl.² G01M *3/28*
U.S. Cl. 73—40.5 R **9 Claims**



1. Apparatus for detecting a leak in an annular seal disposed between the exterior of an inner tubular member and a wellhead from which the inner tubular member is suspended, said apparatus comprising:
means for isolating the bore of said inner tubular member from the space directly above said annular seal;
means for applying pressure to the top of said annular seal to provide a pressure differential across said annular seal;
first and second pressure-sensitive transducers;
means for connecting said first pressure-sensitive transducer to a chamber below said annular seal to detect changes in pressure below said seal in response to leakage therethrough due to the pressure differential across said seal; and
means for connecting said second pressure-sensitive transducer in said space above said annular seal to monitor the pressure applied above said annular seal.

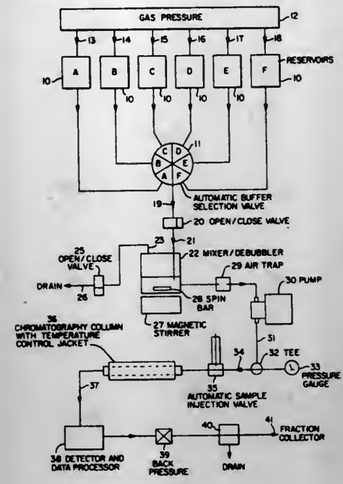
4,116,045
OIL DETECTOR
Bronson M. Potter, R.F.D. 1, Greenville, N.H. 03048
Filed Dec. 20, 1976, Ser. No. 752,199
Int. Cl.² G01N *27/18*
U.S. Cl. 73—61.1 R **26 Claims**



1. A system for detecting different fluids such as oil at the surface of water comprising:
a monitoring element having a surface exposed for contact with fluid to be monitored, said monitoring element having an electrical current flow characteristic that changes as a function of temperature, and electronic circuitry for heating said monitoring element, said electronic circuitry adapted to apply heating current pulses to heat and produce a temporary increase in temperature of said monitoring element and said electrical circuitry including output means responsive to change in said electrical current flow characteristic during cooling of said monitoring element after termination of said heating to indicate the fluid in contact with said exposed surface.

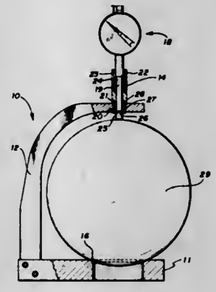
4,116,046
LIQUID CHROMATOGRAPHY SYSTEM
Stanley Stein, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Aug. 5, 1977, Ser. No. 822,114
Int. Cl.² G01N *31/08*
U.S. Cl. 73—61.1 C **5 Claims**

1. A fully automated liquid-column chromatography system comprising in combination:
A. a plurality of gas pressurized buffer reservoir means;
B. an automatic, programmable buffer selection valve means whereby controlled sequential buffer flow from said buffer reservoir means is obtained;
C. mixer-debubbler, chamber means downstream of said buffer selection value means whereby a concentration gradient may be established between said buffers and said buffer stream is concomitantly debubbled;
D. pump means whereby the flow rate of said buffers is controlled;
E. automatic sample valve means downstream of said pump means whereby samples are injected into said buffer stream in a sequential manner;
F. liquid chromatography column means whereby components in said samples are separated and passed into a column effluent stream;



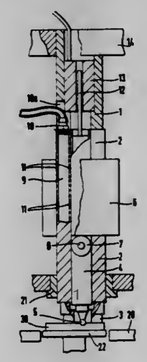
G. detection means for identifying the presence of said sample components in the column effluent stream; and
H. fraction collection means.

4,116,047
BOWLING BALL AND HARDNESS MEASURING INSTRUMENT HOLDING DEVICE
Charles S. Hejkal, 617 W. Commerce St., Dallas, Tex. 75208
Filed Sep. 6, 1977, Ser. No. 830,677
Int. Cl.² G01N *3/42*
U.S. Cl. 73—81 **2 Claims**



1. In a bowling ball and hardness measuring instrument holding device, a platform base member having a vertical bore through and a chamfer at an upper end intersection of the bore with a platform base member top surface forming a bowling ball retaining means; an upright member affixed at an end of the platform base member and having a free end section with a through bore vertically concentric with the platform base member vertical bore, the free end section above and spaced from the platform base member a distance greater than a diameter of a bowling ball; a straight tubular sleeve having a greater outside diameter portion and a lesser outside diameter portion, the greater diameter portion projected perpendicularly above the upright member free end section and the lesser diameter portion tightly fitted into the free end section through bore; a coil spring return means within an inner cylindrical chamber of the tubular sleeve, the coil spring and tubular sleeve having suitable inside diameters concentric with the free end section vertical bore to facilitate guided axial passage of a shaft sleeve of a hardness measuring instrument to the extent where an upper end of the coil spring engages an annular shoulder of the shaft sleeve causing resilient compression of the coil spring with axial movement of the shaft sleeve by a manual downward force on the hardness measuring instrument, the force moving a hardness measuring instrument shaft sleeve probe end to contact a surface of a bowling ball in the bowling ball retaining means; the hardness measuring instrument shaft sleeve probe end retracted into the tubular sleeve by resiliency of the coil spring with the downward force removed from the hardness measuring instrument.

4,116,048
HARDNESS TESTER
David Dale Appleford, and Paul Stephen Warwick, both of Swindon, England, assignors to Monsanto Company, St. Louis, Mo.
Filed Mar. 16, 1977, Ser. No. 778,102
Claims priority, application United Kingdom, Mar. 16, 1976, 10460/76
Int. Cl.² G01N *3/44*
U.S. Cl. 73—83 **2 Claims**

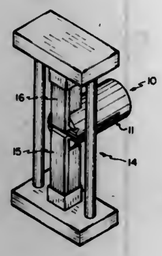


1. Apparatus for measuring the hardness of a sample of rubber, comprising a sample support surface, an indentor comprising a plunger terminating in a probe and having its axis perpendicular to the support surface, a housing within which the plunger is a sliding fit, means for introducing gas under pressure between the bearing surfaces of the plunger and the housing, a foot providing a datum surface that is flat and normal to the indentor axis, the foot being such as to allow free passage of the probe therethrough, means for lowering the foot into contact with a sample, means for lowering the probe into contact with the same such that the indentor is free standing on the sample and exerts on the sample a determined contact force for a first determined period of time, means applicable to the indentor to increase the weight on the sample by the indenting force increment for a second determined period of time, and means to indicate the downward movement of the indentor during the said second determined period of time; said apparatus further including a transducer which provides electrical signals indicative of the position of the indentor relative to the housing, and an electrical circuit including a linear analogue to digital convertor which obtains and stores a digital number corresponding to the position of the indentor in contact with the sample at the end of the first said period of time, and a non-linear analogue to digital convertor which includes a digital store in the form of a "table" giving the non-linear correlation defined in the Standards between indentation (converted to an analogue input signal) and International Rubber Hardness Degrees presented as a digital output.

4,116,049
METHOD FOR MEASURING PLANE STRAIN FRACTURE TOUGHNESS

Lynn Marshall Barker, Salt Lake City, Utah, assignor to Terra Tek, Inc., Salt Lake City, Utah

Filed Jun. 10, 1977, Ser. No. 805,312
Int. Cl.[2] G01N 3/08
U.S. Cl. 73—87 4 Claims

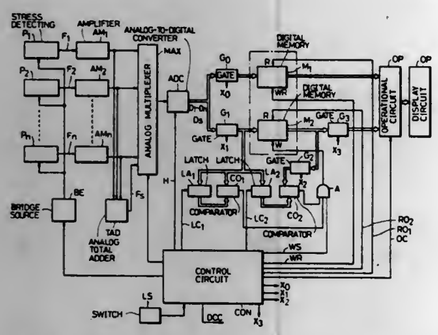


1. A method for measuring the fracture toughness of a material comprising the steps of,
- forming a slotted specimen leaving an internal "v" shape as a remainder therein;
- applying an incrementally increasing load to cause a crack to initiate and propagate in plane strain conditions along a predetermined path through said specimen;
- measuring the maximum load in propagating the crack through the specimen; and
- calculating said material's fracture toughness from the measured maximum load, and from considerations involving the specimen size and geometry.

4,116,050
PRESS LOAD METER

Sakae Tanahashi, and Takashi Shima, both of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

Filed Sep. 28, 1977, Ser. No. 837,589
Claims priority, application Japan, Sep. 30, 1976, 51-117717
Int. Cl.[2] G01B 7/16
U.S. Cl. 73—88.5 R 6 Claims

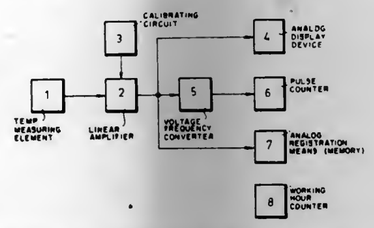


1. A press load meter comprising:
- a plurality of stress detecting sections provided at predetermined points of the ram or slide of a press and built in a bridge circuit;
- adder means for summing the outputs of said stress detecting sections in an analog mode;
- an analog multiplexer for repeatedly scanning the outputs of said adder means and stress detecting sections to arrange said outputs in time-sharing series;
- an analog-to-digital converter for converting the output of said analog multiplexer to digital signals;
- a first memory means for storing the outputs of said analog-to-digital converter which are representative of initial unbalance components of said stress detecting sections prior to start of one operation cycle of the press, i.e., when no load is applied to said press;
- a second memory means which operates to rewrite its storage content only when the output of said analog-to-digital converter is greater than said content during the application of load;
- a control means for controlling the rewriting operation of said second memory means;
- a digital operational circuit for subtracting the content stored in said first memory means from the content stored in said second memory means upon completion of one operation cycle of said press; and
- a display means for displaying the output of said operational circuit.

4,116,051
ENGINE LOAD-PROPORTIONAL WORKING TIME MEASUREMENT

Lajos Laib; György Komándi; Nándor Polyák, and János Bolyky, all of Budapest, Hungary, assignors to Csepel Muvek Hiradastechnikai Gepgyara, Budapest, Hungary

Filed Dec. 16, 1976, Ser. No. 751,055
Int. Cl.[2] G01K 3/04; G01M 15/00
U.S. Cl. 73—116 2 Claims



1. A method for establishing load-proportional working characteristics of internal combustion motors comprising establishing a load-proportional system characteristic by measuring the temperature of the exhaust gas of the motor, producing a signal representing the temperature of the exhaust gases, generating a load signal by transforming according to a linear function the signal representing the said temperature, and coupling the said load signal to an analog or digital display means.

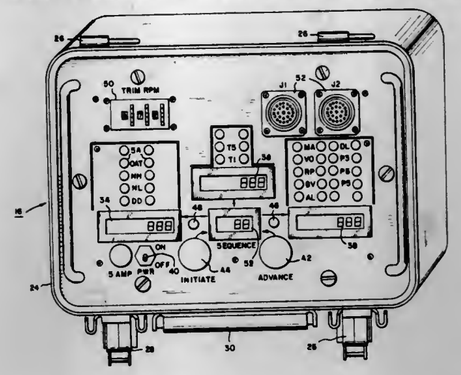
4,116,052
JET ENGINE TEST SET

Charles F. Paluka, Northridge, Calif., assignor to Semco Instrument, Inc., North Hollywood, Calif.

Filed Sep. 19, 1977, Ser. No. 834,277
Int. Cl.[2] G01M 15/00
U.S. Cl. 73—117.3 28 Claims

20. An apparatus for the multifunctional testing of an engine, comprising:
- means for connecting the test apparatus to the engine;
- variable means for displaying a sequence number representing the successive tests undertaken by the testing apparatus;
- advance switch means for manually advancing the test sequence to the desired test sequence;
- initiate switch means for initiating the test sequence indicated by the sequence display means;
- a plurality of additional variable display means for displaying data resulting from tests performed by said test apparatus;
- means for successively testing various engine parameters and displaying in the sequence display means an indication of the tests being performed and for presenting the data

results from said tests in said additional variable display means;
- means for establishing limits for a number of said tests; and

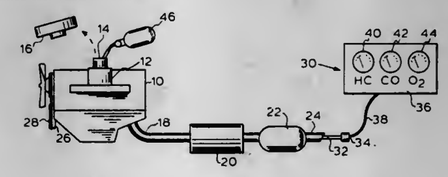


- means for stopping said tests and providing a special bold visual indication of fault at such time as any of said established limits are passed.

4,116,053
THERMAL REACTOR/CATALYTIC CONVERTER EFFICIENCY DETERMINATION METHOD

John David Blanke, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 15, 1977, Ser. No. 824,897
Int. Cl.[2] G01M 15/00
U.S. Cl. 73—117.3 8 Claims

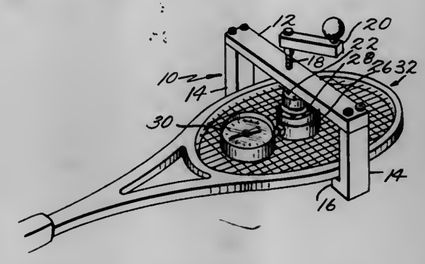


1. In an engine having means for producing an air/fuel mixture including an air inlet, an exhaust system including a catalytic converter, and means for injecting air into the exhaust system, the method of testing the efficiency of the exhaust system comprising the steps of:
- (a) disabling the air injection means;
- (b) verifying that the engine is running properly at curb idle speed and taking any corrective action necessary before proceeding to the next step;
- (c) adjusting the air/fuel mixture producing means as necessary to achieve an oxygen level in the emissions from the exhaust system of 1% ±0.2%;
- (d) enabling the air injection means;
- (e) reading the oxygen level in the emissions from the exhaust system;
- (f) disabling the air injection means;
- (g) injecting a continuous flow of additional fuel into the air inlet in an amount sufficient to cause the carbon monoxide level in the emissions from the exhaust system to achieve a level of 2% ±0.1%;
- (h) enabling the air injection means;
- (i) reading the carbon monoxide level in the emissions from the exhaust system while maintaining the flow of additional fuel; and,
- (j) determining the efficiency of the exhaust system as a function of the carbon monoxide level read in step (i) of this claim from a straight line graphic representation of efficiency in percent v. carbon monoxide in the exhaust emissions in percent passing through the points (100% efficiency, 0% carbon monoxide) and (0% efficiency, ((21-O_2%)/10)% carbon monoxide) where O_2% is the reading obtained in step (e) of this claim.

4,116,054
APPARATUS FOR MEASURING THE COMBINED RESISTANCE TO DISPLACEMENT OF STRINGS AFFIXED IN A RACKET HEAD

John G. Howe, Jamestown Star Rte., Boulder, Colo. 80302

Filed Apr. 25, 1977, Ser. No. 790,611
Int. Cl.[2] G01L 5/04
U.S. Cl. 73—145 7 Claims



1. Apparatus for measuring the combined resistance to displacement of strings normally affixed in a plane within a racket head, said apparatus comprising:
- an inverted U-shaped frame formed by a web portion and arms extending from opposite ends of the web, said arms being provided with respective flanges extending towards one another which are adapted to support the racket head at spaced locations about the head;
- a member supported by the frame and movable in a direction normal to the plane of the strings when said racket head is supported by the flanges;
- means for moving said member relative to the frame in said direction; and
- a measuring device adapted to be interposed between the movable member and said strings in contacting relationship therewith whereby movement of the member towards said strings is transmitted by the measuring device to cause displacement of the strings from said normal plane, the measuring device including means for providing an indication of the force involved in effecting said displacement.

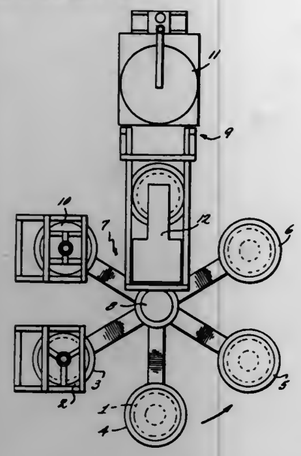
4,116,055
TIRE INSPECTING APPARATUS

Horst Kogler, Dieburg; Herwig Hönlinger, Gross-Rohrheim; Günther Himmler, Darmstadt, and Günter Knoll, Buttelborn, all of Germany, assignors to Gebr. Hofmann, G.m.b.H. & Co., Maschinenfabrik, Darmstadt, Germany

Filed Oct. 31, 1977, Ser. No. 847,027
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653700
Int. Cl.[2] G01M 17/02
U.S. Cl. 73—146 7 Claims

1. Apparatus for the automatic inspection of tires in an inspection area comprising:
- means for moving a tire through said inspection area;
- a plurality of pans each attached to said moving means for holding a tire;
- particulate material partially filling said pans for the stabilization of the position of said tires in said pans;
- a base plate in said inspection area;
- a means for covering said tire when said tire is in said inspection area including a covering hood having a top;
- a mirror attached to said covering means;
- means for lifting said mirror and said covering hood to

permit entry of said tire into and removal of said tire from said inspection area; and



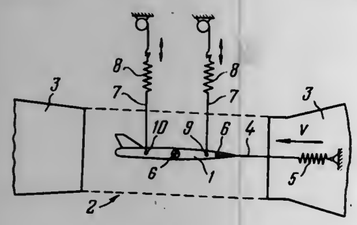
means for centering said mirror and said covering hood with respect to said base plate.

4,116,056

DEVICE FOR SUSPENSION OF AIRCRAFT MODEL IN WIND TUNNEL

Gennady Alexeevich Bulychev, ulitsa Dugina, 27, kv. 73; Anatoly Vladimirovich Bykovsky, ulitsa Gagarina, 26, kv. 70; Stanislav Pavlovich Machigin, ulitsa Naberezhnaya Tsiolkovskogo, 20, kv. 53, and Konstantin Sergeevich Strelkov, ulitsa Pushkina, 12, kv. 1, all of Zhukovsky Moskovskoi oblasti, U.S.S.R.

Filed Jul. 12, 1977, Ser. No. 814,973
Int. Cl.² G01M *9/00*
U.S. Cl. 73—147 **12 Claims**



1. A device for suspension of an aircraft model in a wind tunnel, comprising two horizontal ropes extending on both sides of said model and connected to said model ahead and behind its center of gravity, as well as to said wind tunnel; two vertical ropes connected with their ends to said model, while their opposite ends are connected to said wind tunnel.

4,116,057

PENDULOUS INDUCTION COMPASS TRANSMITTER WITH MEANS TO COMPENSATE FOR HEADING ERRORS IN TURNS DUE TO THE VERTICAL COMPONENT OF THE EARTH'S MAGNETIC FIELD AND DUE TO TWO CYCLE ERROR

Gerald Leslie Sullivan, 24 Scollay Cir., Salem, Rockingham, N.H. 03079

Filed Dec. 20, 1976, Ser. No. 752,265
Int. Cl.² G01C *21/00*
U.S. Cl. 73—178 R **4 Claims**

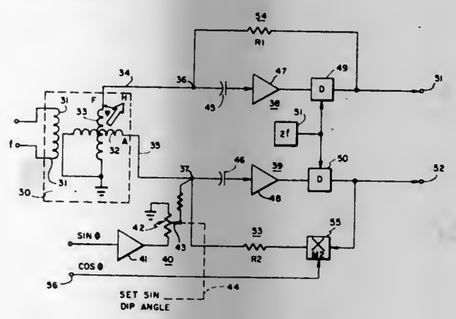
1. In a pendulous induction compass transmitter compensated for errors due to the Earth's field and for two cycle errors during turns, the combination comprising:

(a) magnetic sensing means for producing a first modulated signal responsive to the strength of the Earth's magnetic field along one axis of an aircraft, and for producing a second modulated signal responsive to the strength of the Earth's magnetic field along another axis of the aircraft,

(b) means to compensate said signals for errors due to the Earth's vertical field during turns including;

(1) means to generate a correction signal proportional to the product of the Earth's magnetic field M, the magnetic dip angle, and the bank angle, said correction signal being equal to the vertical field error in the magnetic field sensed along one of the said axes of an aircraft during a turn,

(2) means responsive to said correction signal to produce a flux field which cancels the flux sensed by said magnetic sensing means due to the Earth's vertical field during turns,



(c) means for demodulating the first and second signals including;

(1) first and second demodulators each having an input and an output associated with the magnetic sensing means to produce, respectively, first and second demodulated signals from said first and second modulated signals,

(2) feedback paths from the outputs to the inputs of each of said first and second demodulators for producing negative feedback signals,

(d) means to correct one of said first and second modulated signals for two cycle error including means to reduce the negative feedback in one of said paths by a factor proportional to the cosine of the bank angle whereby the output signal of the demodulator associated with said one feedback path is increased correspondingly to cancel two cycle error.

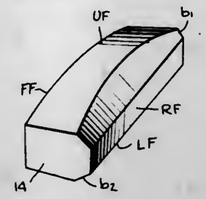
4,116,058

CONTOURED OBSTACLE ASSEMBLY FOR VORTEX-TYPE FLOWMETER

Peter J. Herzl, Morrisville, and Warren Strohmeier, Warminster, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Continuation-in-part of Ser. No. 758,849, Jan. 12, 1977, Pat. No. 4,052,895. This application Jul. 25, 1977, Ser. No. 818,733
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.² G01F *1/32*
U.S. Cl. 73—194 VS **7 Claims**

1. A vortex-type flowmeter in which the fluid to be metered is conducted through a flow tube having a given internal diameter and an obstacle assembly therein to cause vortex shedding at a frequency which is a function of flow rate, said assembly comprising a block fixedly mounted across the tube at right angles to the direction of flow, said block having a width as measured between the upper and lower faces of the block which assumes a maximum value at its midpoint and diminishes gradually toward the ends where the width assumes a minimum value whereby the mean width of the block has a value which is significantly smaller than the maximum value, thereby minimizing the pressure drop introduced by the flowmeter, said block having a substantially rectangular cross-sec-



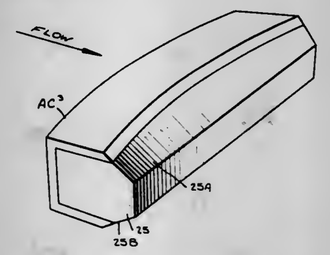
tion to present a flat front face to the incoming fluid, the upper and lower faces being bellied and the front face having a double-convex contour to produce a block contour which is compatible with a typical flow velocity profile, the upper and lower rear corners of the block being bevelled to define a flat rear face of reduced width to enhance the shedding characteristics of the assembly.

4,116,059

MULTI-RANGE VORTEX-TYPE FLOWMETER

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Continuation-in-part of Ser. No. 768,416, Feb. 14, 1977, Pat. No. 4,062,238. This application Sep. 20, 1977, Ser. No. 835,170
The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.
Int. Cl.² G01F *1/32*
U.S. Cl. 73—194 VS **6 Claims**



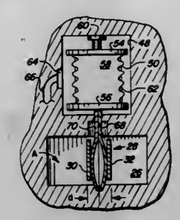
1. In combination with a flowmeter of the vortex type in which an obstacle assembly mounted in a flow tube includes a block having a predetermined configuration fixedly mounted across the tube at right angles to the direction of fluid flow, the front face of the block being presented to the incoming fluid, a replaceable adapter cap fitting over the front face of the block, said cap having a longitudinal channel therein which conforms to the profile of the block and acts as a socket therefor, said cap having a formation effectively expanding the cross-sectional area of the block throughout the length of the block without altering its geometric configuration whereby the resultant expanded block restricts the effective area in the flow tube of the fluid passing by the block, thereby making it possible to measure flow rates below the normal operating range of the meter in the absence of the cap.

4,116,060

MASS FLOW SENSOR AND METHOD

Gary L. Frederick, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 747,119, Dec. 2, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,549
Int. Cl.² G01F *1/32*
U.S. Cl. 73—194 VS **36 Claims**



1. A mass flow sensor comprising:

a conduit for carrying mass fluid flow to be sensed;

a bluff body disposed in said conduit for producing periodic vortices, said body and conduit defining a flow cross-sectional area A therebetween, said body having a characteristic dimension *d* in a direction substantially perpendicular to the direction of mass flow through the conduit whereby the frequency of said vortices is a function of the product $A \times d$;

means for adjusting the product $A \times d$ in relation to the density of said mass flow whereby said frequency is indicative of said mass flow; and

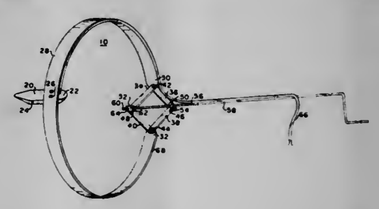
means for sensing said frequency.

4,116,061

SEWER LINE ANALYZER PROBE

Peter D. Petroff, 4102 Piedmont Dr., Huntsville, Ala. 35802

Continuation of Ser. No. 602,974, Aug. 8, 1975. This application Jun. 30, 1977, Ser. No. 811,557
Int. Cl.² G01F *23/14*
U.S. Cl. 73—299 **1 Claim**



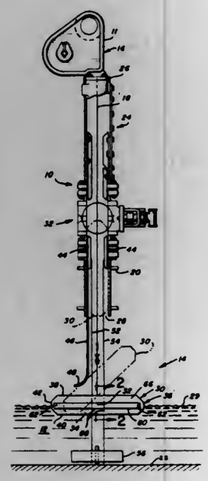
1. A device for measuring liquid height in a pipe comprising:

a generally circular loop, said loop being discontinuous at a pair of spaced ends;

a pressure transducer mounted on said loop; and

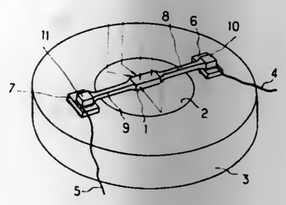
adjustable connecting means interconnecting said ends and including operating means for adjustably varying the distance between said ends, whereby the effective circumference of said loop is variable, wherein said adjustable connecting means includes operating means comprising an arm of a length in the range of 0.8 to 5 times the diameter of said loop for positioning said loop within a said pipe and selectively operating said operating means, whereby: said loop would be contracted to enable it to be inserted into a pipe; would then be expanded to enable it to engage and lock into peripheral engagement with the pipe; and finally, being removable by contraction of said loop.

4,116,062
REMOVABLE TANK GAUGE FLOAT
Raymond G. Reip, Clarendon Hills, Ill., assignor to Vapor Corporation, Chicago, Ill.
Filed Aug. 4, 1977, Ser. No. 821,791
Int. Cl.[2] G01F *23/08*
U.S. Cl. 73—321 8 Claims



1. A method of measuring the level of fluid in a reservoir employing a data acquisition device coupled to a float by a length of wire, said float being asymmetrically mounted, said data acquisition device being in communication with the interior of said reservoir through a length of tube; the depth and width of said float being substantially less than the length of said float, said tube including an arcuate camming surface at a lower end, the steps comprising:
- pivoting said float within said tube to a first orientation wherein the length of said float is parallel to the axis of said tube and the width of said float is transverse to said axis;
- lowering said float in said tube to said lower end thereof;
- pivoting said float to a second orientation by sliding engagement of said float along said camming surface due to said asymmetrical mounting as said float is lowered wherein said length of said float in said second orientation being substantially transverse to said axis; and
- lowering said float to floating engagement with the upper surface of said fluid
- measuring the distance said float was lowered to determine the level of said fluid,
- raising said float from said fluid surface toward said lower end of said tube;
- pivoting said float to said first orientation;
- raising said float into said tube; and removing said float from said tube.

4,116,063
LIQUID HELIUM-COOLED BOLOMETER WHEREIN THE SENSITIVE ELEMENT AND THE ELEMENTS LINKING THE LATTER TO THE ELECTRICAL CONNECTIONS ARE OBTAINED FROM THE SAME SEMICONDUCTOR BODY
Jacques Leblanc, Palaiseau; Gérard Dambier, Elancourt; Noël Coron, Igny, and Jean-Pierre Moalic, Plaisir, all of France, assignors to Agence Nationale de Valorisation de la Recherche, France
Filed Nov. 26, 1976, Ser. No. 745,491
Claims priority, application France, Nov. 26, 1975, 75 36104; Nov. 26, 1975, 75 36103
Int. Cl.[2] G01J *5/20*
U.S. Cl. 73—355 R 10 Claims



1. An ultra-sensitive bolometer comprising : a Thermal sink ; means for cooling the said thermal sink at a temperature lower than 5° K.; a semi-conductor crystal body having a central portion which is liable to temperature variations as a function of radiation to which the bolometer is subjected , said semi-conductor crystal body further having first and second elongate extensions ; first and second electrically conductive layers on said first and second extensions, said layers extending from said central portion respectively to first and second regions in which the said temperature variations are negligibly small; and layers making direct ohmic contact with said central portion without any additional bonding material between said layers and said central portion, said elongate extensions having a cross-section which is gradually decreasing; from said central portion in the directions of said regions, said elongate extensions and said layers having a predetermined thermal resistance ; rigid means thermally and mechanically connecting the said regions to the thermal sink ; first and second externally extending electrical leads respectively connected to said regions.

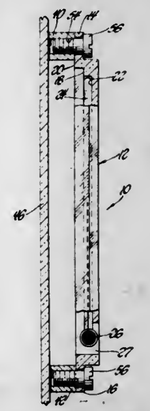
4,116,064
DISPOSABLE TAPE CORD THERMOMETER
John F. McGlynn, White Plains, N.Y., assignor to IPCO Hospital Supply Corporation, White Plains, N.Y.
Continuation-in-part of Ser. No. 594,218, Jul. 9, 1975. This application Oct. 3, 1977, Ser. No. 838,899
Int. Cl.[2] G01K *7/16*
U.S. Cl. 73—362 AR 38 Claims



1. An electronic sensing assembly comprising: a plurality of sensing probes mounted in a disposable and severable electrically conductive tape in spaced relationship to each other, a cartridge for housing a supply of said tape, a reader unit comprising means for housing said cartridge, means for electrically contacting a portion of said tape proximate the cartridge with powered electronic circuitry and indicating means, said tape being severable at said probe to expose the probe and permit used tape portions to be discarded and means permitting withdrawal of additional lengths of tape, whereby a fresh length of tape and a fresh probe can be withdrawn for each use of said sensing probe after severing the former length which was subject to a prior use.

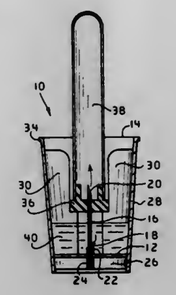
25. For use in an electronic sensing assembly, a disposable and severable electrically conductive tape, a plurality of sensing probes mounted in said tape in spaced relationship to each other, said tape being severable at said probe to expose the probe and permit used tape portions to be discarded and permitting use of additional lengths of tape, whereby a fresh length of tape and a fresh probe can be used after severing the former length which was subject to a prior use.

4,116,065
TRANSPARENT THERMOMETER
William Kenneth Jensen, Royal Oak, Mich., assignor to O.E.M. Technical Sales, Inc., Southfield, Mich.
Filed Aug. 29, 1977, Ser. No. 828,705
Int. Cl.[2] G01K *1/14*
U.S. Cl. 73—378 3 Claims



1. A thermometer device of the type adapted to be mounted on the outside of a window for viewing from within a compartment, said device comprising an elongated, transparent body having a planar front face adapted to be disposed adjacent said window and a rear face spaced from said front face, a pair of integral tab members projecting beyond the upper and lower ends of said body, a recess formed in the front face of said body and axially aligned between said tabs, an elongated, encapsulated tube containing a temperature responsive liquid therewithin, said tube being mounted within said recess so as to be disposed between the front and rear faces of said transparent body, said encapsulated tube including an enlarged, temperature responsive, liquid containing reservoir at its lower end, said body recess terminating at its lower end in an opening extending between the front and rear body faces and within which opening said reservoir is disposed, a temperature indicating scale disposed on said body proximate said recess, a pair of transparent brackets each including a first face adhered to said window and a second face transversely spaced from said first bracket face and means for securing said tabs to the second faces of said brackets whereby the entire transparent body is transversely spaced from said window.

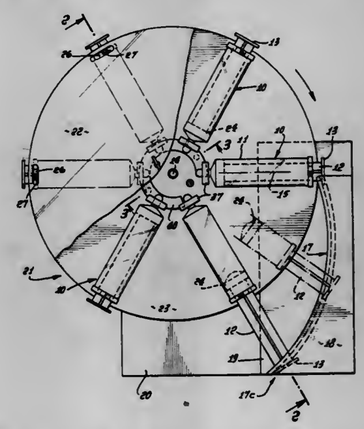
4,116,066
SPECIMEN SAMPLER CUP
Jack J. Mehl, Landing, and Edward L. Nugent, North Caldwell, both of N.J., assignors to Becton, Dickinson and Company, Rutherford, N.J.
Filed Dec. 12, 1977, Ser. No. 859,591
Int. Cl.[2] A61B *10/00*
U.S. Cl. 73—421 R 15 Claims



1. A liquid specimen collection apparatus for biological fluids comprising:
- a collection container having a closed bottom end and an open top end; and
- a hollow cannula substantially vertically attached to said container, the cannula having an upper end adapted for piercing a closure of an evacuated container, and an opening towards its bottom end in fluid communication with the interior of the collection container

whereby a liquid deposited in the collection container will flow into the opening towards the bottom end of the cannula, through the cannula, and into the evacuated container when the upper end of the cannula penetrates the closure of the evacuated container.

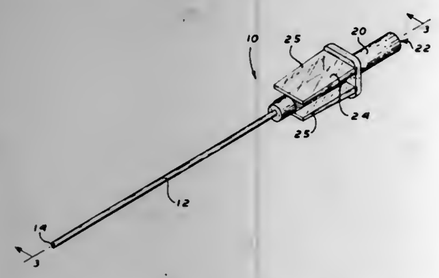
4,116,067
FLUID SAMPLING DEVICES
David V. Pankratz, La Canada, and Bruce E. Wright, Rolling Hills Estates, both of Calif., assignors to Aerovironment Inc., Pasadena, Calif.
Filed Sep. 6, 1977, Ser. No. 830,384
Int. Cl.[2] G01N *1/24*
U.S. Cl. 73—421.5 R 10 Claims



1. Fluid sampling apparatus comprising:
(a) a syringe having cylinder and plunger elements, there being a cam follower on one of said elements,

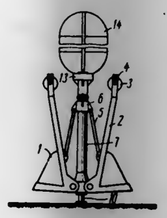
(b) the syringe having an opening to pass fluid between the cylinder exterior and interior,
(c) a cam having a riser engaging said follower, and
(d) means to effect relative motion between the syringe and cam to in turn cause the cam riser to displace the follower whereby the plunger and cylinder are relatively displaced for displacing fluid through said opening.

4,116,068
ADAPTER FOR THE ASPIRATION NOZZLE OF AN AUTOMATIC ANALYTICAL INSTRUMENT
Shenoda S. Megahed, Rutherford, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.
Filed Mar. 18, 1977, Ser. No. 778,929
Int. Cl.² G01N *1/14;* B01L *3/02*
U.S. Cl. 73—425.4 P **2 Claims**



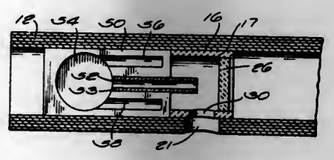
1. An adapter for transferring liquid specimens from a collection vessel to an analysis instrument, which comprises;
an elongate tube having a first end and a second end, said second end being expanded so that the bore of said tube has the configuration of a funnel with the funnel opening at said second end, the bore of said tube at said first end having a diameter of about 0.050 inches and the outer diameter of said tube at said first end being about 0.085 inches;
an endpiece having a first end surface, a second end surface and a straight conduit therethrough communicating between said first and second end surfaces, said conduit at a point proximal to said second end surface being expanded so that it will receive in sealing association and mate with the expanded second end of said elongate tube;
a flexible tube mounted over the first end surface and on said endpiece, the end of said flexible tube distal to said endpiece being open and of a dimension adapted to receive the aspiration nozzle of a biochemical analysis instrument;
said expanded end of said elongate tube being mounted in the expanded portion of the conduit passing through said endpiece, sealing the second end surface;
the bore of said elongate tube, conduit of said endpiece and bore of said flexible tube all being in communication with each other to form a continuous, closed, uninterrputed passage between the first end of said elongate tube and the distal end of said flexible tube, said passage being free of cavities which would retain and trap liquids passing therethrough; and
means for grasping said adapter, mounted on said endpiece.

4,116,069
DEVICE FOR TAKING BOTTOM SOIL SAMPLES FROM DEEP WATER BASINS
Georgy Mikhailovich Lezgintsev, Leninsky prospekt, 36, kv. 250; Stanislav Jurievich Istoshin, Koptevskaya ulitsa, 26, korpus 3, kv. 69; Mikhail Anatollevich Belyavsky, ulitsa Butlerova, 10, kv. 81; Evgeny Alexeevich Kontar, ulitsa Kropotkina, 9, kv. 2; Nikolai Nikolaevich Koptyazhin, Matveevskaya ulitsa, 36, korpus 2, kv. 145, all of Moscow; Georgy Ivanovich Agaltsov, ulitsa Yana-Shilfa Yaunzema, 5, kv. 3, Riga; Boris Serafimovich Chernov, ulitsa Zilupes, 22, kv. 97, Riga; Eduard Isaakovich Ter-Saakov, ulitsa Moskavas, 71, kv. 2, Riga, and Evgeny Petrovich Shkatov, ulitsa Ordinarnaya, 20, kv. 14, Leningrad, all of U.S.S.R.
Filed Jul. 16, 1976, Ser. No. 705,915
Int. Cl.² G01N *1/00;* E02F *3/44;* B66C *3/02*
U.S. Cl. 73—425.2 **3 Claims**



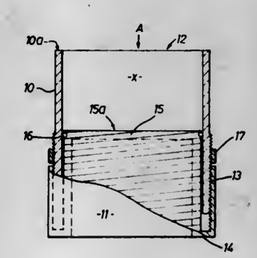
1. A device for taking bottom soil samples from deep water basin comprising: a frame, a leader rod accommodated in said frame and provided with a float at the top; a sampling element located at the lower part of said leader rod and made in the form of a grab with normally open jaws; ballast weights removably suspended from said frame and weighing enough to lower the device in the water of the basin until the lower end of said leader rod strikes the bottom of the basin; means for closing the grab jaws; means for removing the ballast weights from said frame when said leader rod strikes the bottom of the basin; wherein said means for removing includes a mechanical lock joint, which connects said weights with the leader rod so that when said leader rod strikes the bottom said lock joint shifts the weights to an unstable state and they are removed from the frame, containers which are articulated at lower points on the jaws of the grab in a state of labile equilibrium and are filled with the ballast weights of a preset mass, and a system of levers, said levers having one end connected with said leader rod and the other end bearing against said containers for holding them in an initial position and for releasing them at the moment when the leader rod strikes an obstacle, said leader rod being movable in an axial direction.

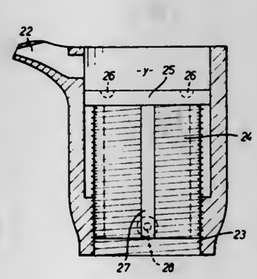
4,116,070
MOLTEN METAL SAMPLER WITH REFRACTORY MOLD HALVES
Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186
Filed Aug. 18, 1977, Ser. No. 825,800
Int. Cl.² G01N *1/12*
U.S. Cl. 73—425.4 R **3 Claims**



1. Molten metal sampling apparatus comprising a sleeve, a side entry port in said sleeve, and a sample cartridge including refractory wall means defining a cylindrical mixing chamber having an open end and an entry port in the side wall in registry with said sleeve entry port to receive molten metal entering said side entry port, said sample cartridge including refractory mold halves having recesses, said mold halves cooperating to form a fill chamber and a sample forming cavity, with said fill passage being positioned in said sleeve in communication with said open end of said mixing chamber to receive metal therefrom.

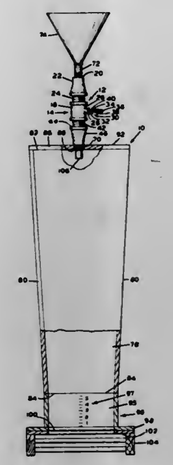
4,116,071
DEVICE FOR MEASURING QUANTITY OF FLOWABLE MATERIALS
Gerald Paul Sakura, 1 Earl Cottages, London, SE1, England
Filed Dec. 1, 1976, Ser. No. 746,202
Claims priority, application United Kingdom, Dec. 1, 1975, 49274/75
Int. Cl.² G01F *19/00*
U.S. Cl. 73—429 **6 Claims**





1. A measuring device having a in a container with an open top which enables charging and/or discharging of a material into said chamber, said container comprises a cylindrical tube-like body having a central axis, and a member forming a wall of said chamber extending transversely of the central axis of said tube-like body, said wall being progressively movable in the direction of said central axis relative to said tube-like body for varying the volume of said chamber, said tube-like body having a first annular surface and said wall having a second annular surface and said first and second surfaces each being smooth and defining the variable volume interior of said chamber, said tube-like body having a third annular surface having a diameter different from said first annular surface, said member having a fourth annular surface in sliding engagement with said third annular surface and being displaceable relative to said third annular surface for varying the position of said wall within said chamber, screw-threaded connecting means on the fourth surface of said member and the third surface of said tube-like body providing the sliding engagement thereof, said third annular surface being an internal surface, and said member comprises a cylindrical plug for said tube-like body and said fourth annular surface being an external surface on said plug.

4,116,072
METHOD AND APPARATUS FOR DETERMINING THE DENSITY OF DRY FIBERS
Robert W. Cogley, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Aug. 5, 1977, Ser. No. 822,052
Int. Cl.² G01N *9/02*
U.S. Cl. 73—433 **8 Claims**

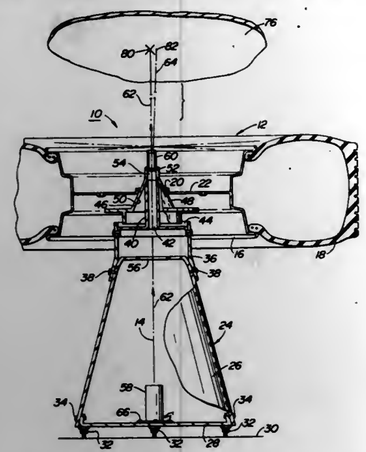


1. A method for determining the density of dry fibers mainly in the form of fiber bundles comprising the steps of:
(a) weighing a sample of said dry fibers,
(b) opening the fiber bundles of the sample to disperse said fiber bundles into a combination of smaller fiber bundles and individual fibers by the use of pressurized air,
(c) depositing the combination of smaller fiber bundles and individual fibers onto a screen,
(d) measuring the volume of said deposited combination, and
(e) calculating the density of the dry fibers using the measured weight and volume of the sample.

4,116,073
BALANCING SYSTEM
Sailor H. Mohler, 5410 Lightning View, Columbia, Md. 21044
Filed Dec. 14, 1977, Ser. No. 860,326
Int. Cl.² G01M *1/12*
U.S. Cl. 73—483 **12 Claims**

1. A balancing system for balancing an object about a vertically directed axis line, comprising:
(a) housing means adapted to be levelled on a base surface defining a plane substantially normal said vertical axis line;
(b) balancing head means displaceably mounted to said housing means, said object being releasably mounted to an external surface of said balancing head means; and,
(c) light emission means fixedly secured to said housing means and said balancing head means for passing at least a first coherent beam of light substantially coincident said vertical axis line in a predetermined direction and a second coherent beam of light angularly displaced from said first beam of light in said predetermined direction responsive to an unbalanced condition of said object about said verti-

cal axis line, said first and second beams of light being substantially coincident each with respect to the other



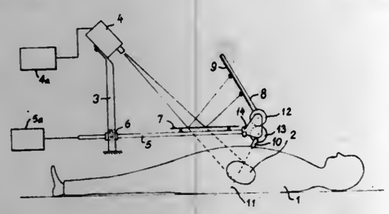
when said object is in a balanced condition with respect to said vertical axis line.

4,116,074

METHOD AND APPARATUS FOR THE EXAMINATION OF BODIES

Palle Rasmus Jensen, Forhabningsholms Alle 30; 1904, Copenhagen V, Denmark

Filed Sep. 10, 1976, Ser. No. 721,958
Claims priority, application Denmark, Sep. 12, 1975, 4079/75
Int. Cl.² G01N *29/00*
U.S. Cl. 73—607 **21 Claims**



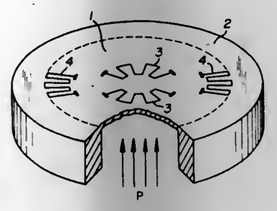
1. A method for facilitating the examination of an object within an optically opaque body through the use of an impulse-echo technique that includes transmitting a sequence of energy impulses into a body along a line from a source, receiving echoes from an object located within the body along said line in response to each impulse, and displaying the received echoes as luminous points on a linear array, the spacing of each luminous point from one end of the array being proportional to the distance from said source of the corresponding echo-producing point on the object, wherein the improvement comprises:
- locating a reflecting surface at a reference plane between an observation point and the body such that the reflecting surface faces the observation point and intersects a line between the observation point and the object in the body;
- positioning the source at a predetermined location with respect to the reference plane;
- operatively coupling the linear array to the source in a predetermined relation thereto for movement, relative to the reference plane, in synchronism with movement of the source, relative to said body; and
- providing a reflective path from the linear array to the observation point via the reflective surface such that a virtual image of each luminous point of the array is provided by the reflective surface at an apparent location, relative to the observation point, that is coincident with the actual location of the corresponding echo-producing point on the object in the body.

4,116,075

MECHANICAL TO ELECTRICAL TRANSDUCER

Werner Ort, Darmstadt, Fed. Rep. of Germany, assignor to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 9, 1977, Ser. No. 767,124
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1976, 2608381
Int. Cl.² G01L *9/04*
U.S. Cl. 73—708 **18 Claims**



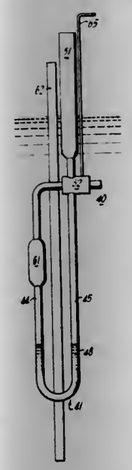
1. In a transducer for converting a mechanical movement of a diaphragm to an electric signal, wherein the diaphragm is mounted on a reinforced clamping rim and a plurality of strain gauges are mounted to be stressed in response to movement of said diaphragm, said strain gauges being thermally coupled to said rim and being mounted at different distances from said rim, the improvement wherein the heat transfer characteristics of said transducer between said rim and each of said strain gauges are the same, and wherein strain gauges located at different distances from said rim have different surface dimensions, to achieve the same heat transfer characteristics.

4,116,076

SENSITIVE J-TUBE AND APPLICATIONS THEREOF

David G. Nolte, Houston, Tex., assignor to Westinghouse Canada Ltd., Hamilton, Canada

Continuation of Ser. No. 713,087, Aug. 9, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,932
Int. Cl.² G01F *23/16*
U.S. Cl. 73—299 **13 Claims**



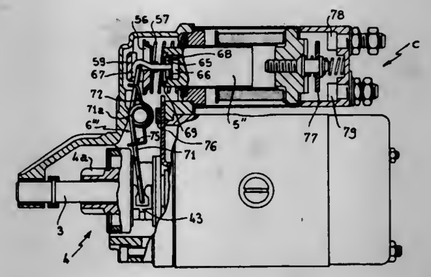
1. Sensitive J-tube device for measuring change in the surface level of a fluid, comprising
- a relatively small inside diameter U-tube containing a predetermined quantity of a colored indicator-fluid that is immiscible with said fluid the surface level of which is to be measured,
- said indicator-fluid having a density approximately the same but heavier than said fluid being measured,
- a relatively large inside diameter tube connected to one leg of said U-tube and forming the taller leg of said J-tube,
- said large tube being long enough to extend from above the maximum surface level of said fluid being measured to below the minimum surface level thereof,
- a three-way valve having three ports for connection to each of the legs of said U-tube and to the body of said fluid being measured,
- means for connecting said U-tube leg ports to said U-tube at a location that is above the maximum height of said indicator-fluid therein,
- said three-way valve having at least three positions one for connecting all three of said ports together and one for connecting only the shorter leg of said J-tube to the body of said fluid being measured and one for closing said U-tube leg ports,
- a reservoir connected into the shorter leg of said J-tube at a location above the maximum expected height of said indicator-fluid in order to contain any overflow without loss of indicator-fluid,
- an elongated support for holding said J-tube device in a fixed position when a measurement is being taken, and
- an elongated handle for actuating said three-way valve from a location above the surface of said fluid being measured.

4,116,077

STARTERS

Alfred Bruno Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, Lyons, France

Filed Nov. 1, 1976, Ser. No. 737,370
Claims priority, application France, Nov. 7, 1975, 75 34934
Int. Cl.² F02N *11/00, 15/06*
U.S. Cl. 74—7 A **6 Claims**



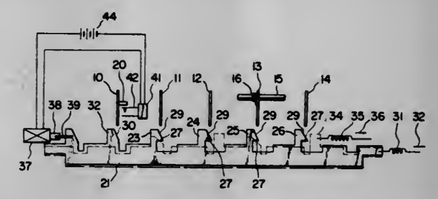
1. An improved electric starter of the type having a housing, a pinion reciprocable on a pinion shaft toward and away from an engaged position with the gear of an engine, a solenoid switch having an axially reciprocable core, and a lever operatively connected at its first end to reciprocate with the core and having a second end operatively connected to slide the pinion on the pinion shaft, the improvement comprising:
- coupling means coupling the core to the first end of the lever in such a way that said first end of the lever is urged to reciprocate with the core;
- connecting means connecting the second end of the lever to the pinion in such a way that the pinion will be moved axially with respect to the pinion shaft when the first end of the lever is reciprocated;
- fixed opposed bearing surface means supported on the housing and located to bear against an intermediate portion of the lever to act as a fulcrum to cause pivoting of the lever, said intermediate portion of said lever rocking between engagement first with one of said fixed bearing surfaces and then subsequently into engagement with the other of said bearing surfaces as a result of movement of the solenoid core;
- said lever comprising a hairpin-shaped steel wire member having a closed first end receiving said coupling means, and having arms extending away from said first end and comprising the second end of the lever engaging said connecting means, and the intermediate portion of the lever including a bent spring loop in each arm disposed between said bearing surfaces and operative to yieldably bias the pinion on the shaft in the direction in which the second end of the lever is urged by reciprocation of the core; and
- a plate attached to the lever intermediate its ends and operative to distort said spring loops and pre-tension them thereabout, said plate having first and second cut-outs through which the first and second ends of the lever respectively extend, and the plate having a central portion shaped to abut the spring loops and pre-tension the legs of the lever thereabout.

4,116,078

LOCK RELEASE MECHANISM FOR PUSH BUTTON LEVERS IN A TAPE RECORDER

Chiharu Kitamura, and Bunichi Ando, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1977, Ser. No. 808,541
Claims priority, application Japan, Jun. 23, 1976, 51-82454
Int. Cl.² G05G *1/02;* G11B *15/18;* E05B *47/00*
U.S. Cl. 74—10.27 **2 Claims**



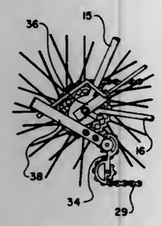
1. A lock release mechanism for push button levers in a tape recorder comprising:
- a stop button lever mounted on the tape recorder for angular movement and having a first and a second engaging portion;
- a plurality of push button levers moveably mounted on the tape recorder;
- a locking bar having a plurality of locking projections spaced along its length for locking engagement with said push button levers and having a release projection having a cam surface disposed for slidable engagement with said first engaging portion, said locking bar being urged lengthwise by a spring in a first direction, said locking bar being shiftable lengthwise in a second direction opposite to said first direction against the force from said spring toward a position wherein said locking projections are held back out of engagement with the push button levers when said first engaging portion of said stop button lever displaces upon its angular movement said release projection by slidable engagement with said cam surface;
- a solenoid having a coil and an armature, said armature being mechanically connected to said locking bar; and
- a switch electrically connected to said coil, said solenoid being energizable upon closing of said switch to thereby enable said armature to pull said locking bar in said second direction toward said position against the bias of said spring, and said switch being closable by said second engaging portion of said stop button lever upon its angular movement prior to displacement by said first engaging portion of said release projection.

4,116,079

CHAIN DRIVE SHIFT SYSTEM

James D. Pearce, 1800 Banbury Rd., Raleigh, N.C. 27608; Stanley E. Pearce, 5004 Lakemont Dr., Raleigh, N.C. 27609, and D. Kevin Pearce, 3025 Lewis Farm Rd., Raleigh, N.C. 27607

Filed Oct. 12, 1976, Ser. No. 731,852
Int. Cl.² F16H 9/00
U.S. Cl. 74—217 B 5 Claims



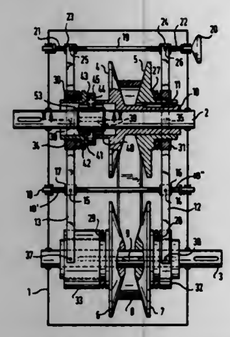
1. An improved shift means for standard bicycle sprocket derailleur means comprising: a plurality of varying sized sprocket means; a flexible chain drive means; standard derailleur means for shiftingly training said chain drive means from one sprocket to another; a generally J-shaped derailleur adapter means fixedly secured to said standard derailleur means; crank means pivotably mounted adjacent said derailleur means, one end of said crank means being in cooperative operative engagement with said J-shaped adapter means; and handle means operatively associated with said crank means on the end thereof opposite the engagement with said J-shaped adapter means whereby said derailleur can be moved to shift said chain drive means from one sprocket to another by manipulation of said handle.

4,116,080

CONE PULLEY ARRANGEMENT

Heinrich Berens, Bad Homburg von der Hohe, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers Kommanditgesellschaft, Fed. Rep. of Germany

Filed Sep. 3, 1976, Ser. No. 720,511
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1975, 2539094
Int. Cl.² F16H 55/52
U.S. Cl. 74—230.17 A 43 Claims



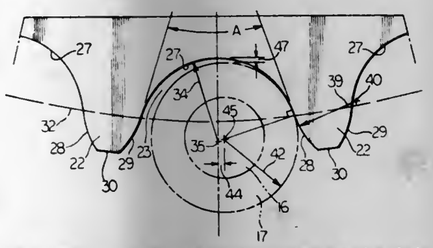
1. An infinitely variable cone pulley transmission arrangement which includes a drive input shaft, a drive output shaft, at least a pair of cone pulleys arranged on each shaft, a transmission means circulating between the pairs of pulleys on each shaft, means for connecting each pair of cone pulleys with one another and their associated shaft, means for mounting at least one cone pulley on each shaft for axial displacement relative thereto, a transmission ratio setting means for selectively axially displacing the axially displaceable cone pulleys, and rotary connection means provided at at least one of the pairs of cone pulleys for generating torque dependent and ratio dependent pressing forces between the cone pulleys and the transmission means including a presser device comprising a plurality of pairs of spaced oblique faces of variable gradients lying peripherally opposite one another, rolling means fashioned as ball elements interposed between each of the pairs of oblique faces, an axially mounted support ring arranged on the shaft, said rolling means being supported at least indirectly against an adjacent cone pulley and the support ring, the cone pulley associated with the pressing device is exclusively supported by the presser device, and the presser device is in shape-locking engagement with the ball elements of the rolling means, characterized in that the pairs of oblique faces form channels extending substantially parallel to the axis of the shaft, said channels having an effective oblique face gradient which is modified over the channel length, said ball elements of the rolling means being arranged in said channels so as to be displaceable substantially along the axis of the shaft over the entire transmission ratio, and in that an abutment face means is provided on at least one of the support ring and adjacent cone pulley facing the respective channels for engaging the ball elements of the rolling means.

4,116,081

SPROCKET PROFILE

Richard W. Luttrell, Morton, and Robert J. Purcell, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 25, 1977, Ser. No. 800,387
Int. Cl.² F16H 55/30, 55/06
U.S. Cl. 74—243 R 10 Claims



1. In a chain drive including a sprocket member and a chain with spaced cylindrical bushings and having a preselected backlash, said sprocket member having a plurality of circumferentially spaced teeth defining pockets therebetween centered on a radial center line, said teeth being defined by a pitch circle of preselected radius, an improved pocket configuration comprising:

an arcuate bottom root surface defined by a radius centered on a point on said pocket center line spaced outwardly of said pitch circle, said radius being at least as great as the sum of the radius of said bushing plus one half of said backlash; and

an arcuate outer topping surface radially outward from each end of said root surface each topping surface extending to the periphery of the sprocket member.

4,116,082

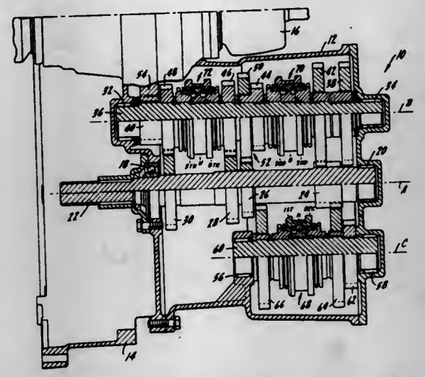
COMPACT MANUAL TRANSMISSION FOR A TRANSVERSELY MOUNTED ENGINE

Donald William Kelbel, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 1, 1976, Ser. No. 746,460
Int. Cl.² F16H 3/08, 37/08, 3/02
U.S. Cl. 74—360 16 Claims

1. A transmission comprising a rotatable input shaft, first and second gears secured to said input shaft for rotation therewith, a first countershaft, third and output gears secured to said first countershaft for rotation therewith, compound gear means

journalled on said first countershaft, said compound gear means including fourth and fifth gears secured together, said fourth gear meshing with said first gear, first clutch means movable for selectively engaging and disengaging said compound gear means with said first countershaft, a second countershaft, a sixth gear secured to said second countershaft for



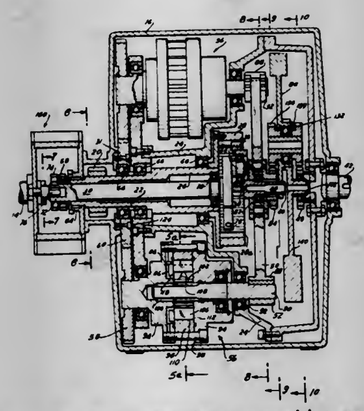
rotation therewith, said sixth gear meshing with said third gear, seventh and eighth gears journalled on said second countershaft, said seventh gear meshing with said fifth gear, said eighth gear meshing with said second gear, and second clutch means movable for selectively engaging and disengaging said seventh and eighth gears with said second countershaft.

4,116,083

VARIABLE SPEED TRANSMISSION

Laird B. Gogins, Salt Lake City, Utah, assignor to Power-Matic Corporation, Salt Lake City, Utah

Filed Dec. 17, 1976, Ser. No. 751,952
Int. Cl.² F16H 35/02
U.S. Cl. 74—393 16 Claims



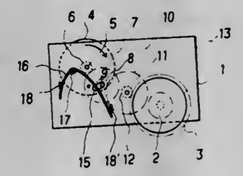
1. A variable speed transmission comprising, an input drive shaft, a variable throw crank assembly including an adjustably positioned crank pin having a zero throw position aligned with said input shaft, means for coupling said crank pin for rotation with said shaft; means for varying the throw of the crank pin with respect to the shaft; a link member rotatably mounted on said crank pin; a plurality of selectively engaged clutches having input and output shafts, said clutch input shafts having cranks fixed thereto; a plurality of links respectively pivotally connected at their opposed ends to said clutch cranks and to said link member to oscillate said cranks upon movement of the link member by rotation of said crank pin with said input drive shaft; and means operatively connected to the output shafts of said clutches for rotation thereby.

4,116,084

MOVABLE TOY HAVING GEAR DISENGAGING MECHANISM AND GEAR CHANGING MECHANISM

Akio Masuda, Tokyo, Japan, assignor to Alps Shoji Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1977, Ser. No. 811,861
Claims priority, application Japan, Dec. 27, 1976, 52-177106; Apr. 6, 1977, 52-43315
Int. Cl.² F16H 3/22, 1/02; A63H 29/20
U.S. Cl. 74—342 7 Claims



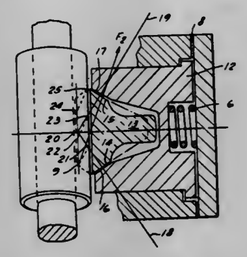
1. A movable toy having a gear disengaging mechanism which comprises: a first gear which is rotated by a driving section, a third gear which transmits the rotation to wheels, a second gear which is disposed between said first gear and said third gear, and a slot-shaped bearing hole for supporting the shaft of said second gear which is disposed on the outside of the imaginary line defined by connecting the shafts of said first gear and said third gear, in which the shaft of said second gear is urged toward said imaginary line by a spring so as to engage said second gear with said third gear, and when said third gear is forcibly stopped in relation to said first gear rotating in a certain direction, the shaft of said second gear is shifted in said bearing hole by the rotation of said first gear in the direction remote from said imaginary line against the force of said spring, thereby releasing the engagement between said second gear and said third gear.

4,116,085

RACK AND PINION STEERING GEAR

Arthur Ernest Bishop, 17 Burton St., Mosman, New South Wales, Australia

Filed Dec. 20, 1976, Ser. No. 752,802
Claims priority, application Australia, Dec. 31, 1975, PC4436
Int. Cl.² B62D 1/20; F16H 1/18
U.S. Cl. 74—422 6 Claims



1. A rack and pinion steering gear comprising a helical pinion engaging a rack mounted substantially transverse to the axis thereof, rack support means for guiding the rack for longitudinal reciprocation, spring means urging the pinion and rack into mutual engagement, a pair of longitudinal guide faces on the rack angularly inclined to the median longitudinal guide faces on the rack angularly inclined to the median longitudinal plane of the rack on each side, guide means in the rack support

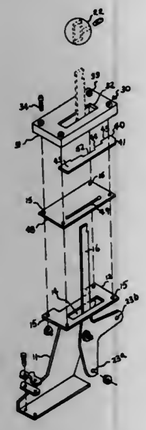
means contacting the longitudinal guide faces of the rack, said guide faces being such that the common normals passing through the points of contact or passing through the centers of the areas of contact between the guide means and the guide faces intersect at a point displaced from the centroid of the rack section towards the pinion center-line.

4,116,086

CHANGEABLE GATE PLATE MEANS FOR LEVER CONTROL DEVICES

William D. Langford, Stow; Dale F. Lesenberger, and Howard A. Hazlett, both of Cuyahoga Falls, all of Ohio, assignors to Incom International, Inc., Pittsburgh, Pa.

Filed Nov. 26, 1976, Ser. No. 745,293
Int. Cl.² B62D *1/04*; B60K *20/00*; G05G *1/04*
U.S. Cl. 74—532 **4 Claims**



1. A changeable gate plate means for lever control devices having a mounting plate with an opening therein through which the lever passes, said gate plate means comprising

a. a cover means adapted to mount on said mounting plate including an opening therein substantially coextensive with said opening in the mounting plate and a gate plate receiving means positioned adjacent said opening for removably positioning a gate plate at said opening and comprising a cavity formed integrally with the cover means having a peripheral cage adapted to abut said mounting plate; and

b. a gate plate removably positioned within said receiving means and including at least one opening in which said lever may travel and at least two stops for limiting travel of said lever.

4,116,087

ENERGY ABSORBING STRUCTURE FOR THE STEERING COLUMN OF A MOTOR VEHICLE

Gregor Zeller, Obernau, Fed. Rep. of Germany, assignor to Firma Petri AG, Aschaffenburg, Fed. Rep. of Germany

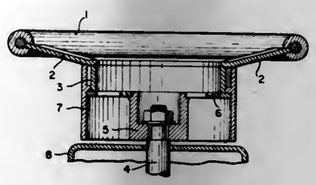
Filed Aug. 6, 1976, Ser. No. 712,357
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1975, 2535063
Int. Cl.² B62D *1/04*
U.S. Cl. 74—552 **16 Claims**

1. An energy absorbing structure, particularly suited for use in a torque transmitting, rotationally rigid assembly, such as a steering wheel assembly, for example, which, when subjected to an axial force in excess of a predetermined level, undergoes plastic deformation, thereby absorbing energy from the source of said axial force, the structure comprising in combination:

an energy absorbing member having an outward shape which resembles that of an annular connecting member of uniform wall thickness, an inner connecting line and an outer connecting line being defined on opposite loop portions 16' of the energy absorbing member; and

means defined by said torque transmitting assembly for connecting the energy absorbing member to two separate torque transmitting portions of the torque transmitting assembly at said inner and outer connecting lines, respectively; and wherein:

the energy absorbing member includes, between said inner and outer connecting lines, a plurality of angularly adjacent energy absorbing member portions which, when viewed in the direction perpendicular to said wall, have a serpentine shape, each serpentine-shaped member portion having one extremity attached at the inner connecting line to one of the two torque transmitting portions, and an-



other extremity attached at the other connecting line to the other torque transmitting portion; and

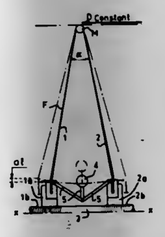
the serpentine-shaped member portions have loop portions which are so tight that substantially no deformation of the loop portions can take place under torque transmission by the energy absorbing member, said loop portions being subjected to and plastically yielding to torsion stress, when said axial force is applied to the energy absorbing member, via its inner and outer connecting lines, while the serpentine shape of the member portion is permanently stretched in the axial direction, undergoing plastic bending deformation, as the inner and outer connecting lines of the energy absorbing member shift in relation to one another in the axial direction.

4,116,088

COMPOSITE WHEEL STRUCTURE CAPABLE OF WITHSTANDING LARGE CENTRIFUGAL FORCES

Jean-Luc Giovachini, Paris, France, and Dante Marc Vendramini, Asnieres, Hauts de Seine, France, assignors to Institute de Recherche des Transports, Arcueil and Dante Marc Vendramini, Asnieres, both of, France

Filed Aug. 4, 1976, Ser. No. 711,567
Claims priority, application France, Aug. 5, 1975, 75 24426
Int. Cl.² F16C *15/00*
U.S. Cl. 74—572 **12 Claims**



1. A composite wheel with a hub, capable of withstanding large centrifugal forces, comprising at least two elements made of materials with different yield strengths,

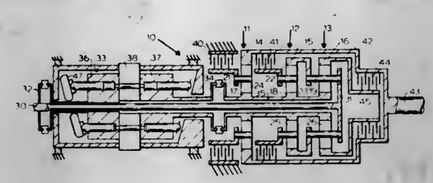
one of said elements being peripheral; the other of said elements connecting said peripheral element to said hub and being formed by two conical flanges having their concave sides facing each other and forming an angle therebetween; and means being provided to vary said angle to obtain a limitation of the stresses in said flanges with the diameter of said wheel remaining constant and said angle widening.

4,116,089

HYDROMECHANICAL TRANSMISSION

Elias Orshansky, Jr. deceased, late of San Francisco, Calif. (by Betty Bacon Orshansky, executrix), and William E. Weseloh, San Diego, Calif., assignors to Orshansky Transmission Corporation, New York, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,851
Int. Cl.² F16H *47/04*
U.S. Cl. 74—687 **4 Claims**



1. A power transmission comprising:

a stationary frame,

input means,

output means,

first, second and third planetary assemblies each having a sun gear, a ring gear, and a carrier with planet gears, all said sun gears being rigidly connected together, the ring gear of said first planetary assembly being rigidly connected to said output means, the ring gear of said second planetary assembly being connected to the carrier of said third planetary assembly and therethrough to said input means,

a reversible speed-varying module connecting said input means to said first sun gear,

braking means for releasably connecting said carrier of said first planetary assembly to said frame, whereby when said braking means is engaged, said output means is driven from said input means through said speed-varying module and said first planetary assembly,

first releasable clutching means for connecting said carrier of said second planetary assembly with said output means, and

second releasable clutching means connecting said ring gear of said third planetary assembly to said output means.

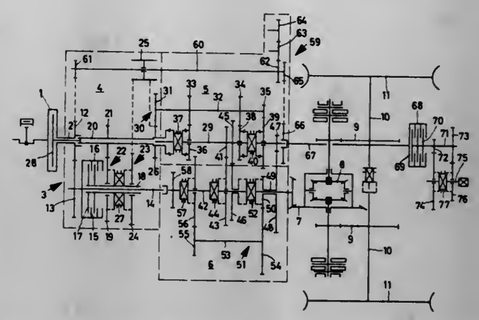
4,116,090

CHANGE GEAR TRANSMISSION IN GROUP ARRANGEMENT, ESPECIALLY FOR MOTOR VEHICLES FOR USE IN AGRICULTURE AND IN THE CONSTRUCTION FIELD

Walter Zenker, Bensberg-Refrath, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 554,432, Mar. 3, 1975, abandoned. This application Mar. 4, 1977, Ser. No. 774,536
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1974, 2410163
Int. Cl.² F16H *3/02*
U.S. Cl. 74—745 **17 Claims**

1. A transmission in group arrangement with relatively small rotating masses and merely with friction clutch means suitable for frequent shifting under load, especially for motor driven agricultural and construction vehicles, comprising in combination: a main control group, a group transmission which precedes said main control group and having one control stage shiftable under load for rearward drive and having two control stages shiftable under load for forward drive adapted selectively to shift under load from forward drive to reverse drive by way of the same transmission as well as having a first input shaft adapted for continuous frictional connection to a source of driving power and a first output shaft, a main control transmission following said group transmission and having a first auxiliary shaft driven by the output shaft of said group transmission and a second output shaft, said control group having a third output shaft adapted for connection to a load, first gears fixed to said first auxiliary shaft, second gears rotatable on said second output shaft meshing with said first gears, first clutch means for selectively coupling said second gears to said second output shaft, third gears fixed to said second output shaft and fourth gears driven by said third gears and rotatable on said



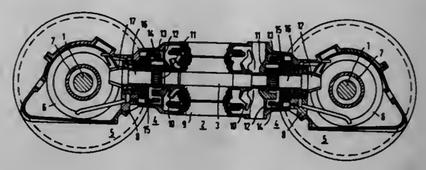
third output shaft, second clutch means for selectively coupling said fourth gears to said second output shaft, a friction clutch means coaxially between said first input shaft and said first output shaft, a countershaft driven by said first input shaft, a hollow shaft coaxially rotatable on said countershaft, forward and reverse drive gear trains each including a gear fixed to said first output shaft and a gear rotatable on said hollow shaft, third clutch means for selectively coupling said hollow shaft to the said gears thereon, and interengageable clutch elements on said countershaft and hollow shaft.

4,116,091

DRIVE FOR AN ELECTRIC RAIL MOTOR CAR

Roman Susdorf, and Heinz Engelmann, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 11, 1977, Ser. No. 786,566
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1976, 2616310
Int. Cl.² F16H *1/28*; B60K *1/00*; H02K *5/00*
U.S. Cl. 74—801 **5 Claims**



1. In a drive for use with an electric rail car having two axles, the drive comprising: a propulsion motor disposed between said axles and having a stator and a rotor, said stator being without housing and including a lamination stack arranged between pressure plates clamped by tensioning elements; angle transmissions responsive to said motor for coupling drive power to said axles, each of said transmissions including a pinion adapted to be connected to at least one of said axles and disposed at an end of the shaft of said rotor, and a transmission housing adapted to be supported by said one drive axle and supporting the lamination stack of said stator, said transmission housing including a bearing for supporting said end of said shaft; and a coupling for connecting the pinion of one of said transmissions to its respective end of said shaft,

said coupling being disposed between said respective shaft end and the bearing supporting said respective shaft end so as to permit longitudinal shifts and centering of said rotor shaft; the improvement comprising:

planetary drives, each disposed within one of said transmission housings between the pinion shaft of the of said one housing and the end of said rotor shaft supported in said one housing and including:

a sun gear formed by a geared portion of said end of said shaft supported in said one housing:

a stationary planet carrier;

planetary gears supported on said carrier and driven by said sun gear;

a hollow gear arranged to be driven by said planetary gears; and

a curved gear coupling for coupling said hollow gear to said shaft of the pinion supported in said one housing.

4,116,092

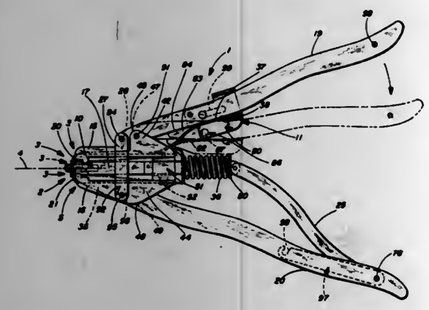
DEVICE FOR STRIPPING INSULATION FROM A WIRE

Charles Joseph Wheeler, Geneva, Ohio, assignor to Ashtabula Development Co., Ashtabula, Ohio

Filed Jun. 13, 1977, Ser. No. 805,699

Int. Cl.² H02G *1/12*

U.S. Cl. 81—9.5 R **13 Claims**



13. A device for stripping insulation from a wire, comprising,

first blade means of at least two blades having cutting edges,

first mounting means mounting said blades of the first blade means at an angle to each other and at an angle to an imaginary axis,

the first mounting means being movable to move at least one of the blades of the first blade means towards another of said blades to a location where the cutting edges of said blades are substantially in the same plane,

second blade means of at least two blades having cutting edges,

second mounting means mounting said blades of the second blade means at an angle to each other and at an angle to the blades of the first cutting means,

the second mounting means being movable to move at least one of the blades of the second blade means towards another of the blades of the second blade means to a location wherein the cutting edges of said blades of the second blade means are substantially in the same plane with the cutting edges of the blades of the first blade means, and then to move the second blade means axially of the imaginary axis away from the first blade means, and

motive means operably connected to the first and second mounting means to move said mounting means.

4,116,093

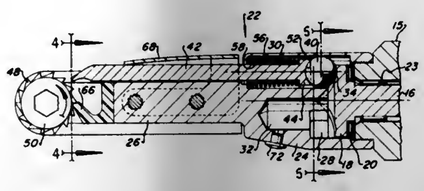
DRIVE MECHANISM FOR POWER RATCHET WRENCH

Glenn H. DePagter, Spring Lake, Mich., assignor to Gardner-Denver Company, Dallas, Tex.

Continuation of Ser. No. 743,997, Nov. 22, 1976, abandoned. This application Jan. 11, 1978, Ser. No. 868,658

Int. Cl.² B25B *13/46*

U.S. Cl. 81—57.39 **6 Claims**



1. A drive mechanism for a power ratchet wrench or the like comprising:

a rotatable spindle;

a housing including an interior chamber and means for supporting a toothed rotary ratchet socket;

a circular cam formed on said spindle and including at least one cam lobe projecting axially with respect to the axis of rotation of said spindle, said cam being disposed in said chamber;

a cylindrical bore in said housing and intersecting said chamber, the central axis of said bore being spaced from and substantially parallel to the axis of rotation of said spindle;

a spherical cam follower disposed in said bore for reciprocating movement in response to the rotation of said cam by said spindle;

an actuating member supported by said housing, said actuating member having an end portion adapted to be engaged by said cam follower and an opposite end portion engageable with said toothed socket for intermittent rotation of said socket in response to the rotation of said cam; and,

resilient means disposed in said bore and engaged with said actuating member for biasing said actuating member and said cam follower into engagement with said cam.

4,116,094

METHOD AND APPARATUS FOR CENTERING A WHEEL SET

Theodor Dombrowski, and Helmut Wittkopp, both of Erkelenz, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed May 10, 1977, Ser. No. 795,428

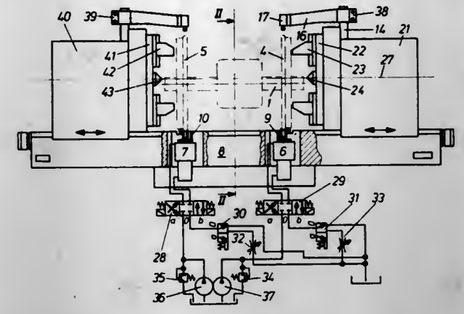
Claims priority, application Fed. Rep. of Germany, May 12, 1976, 2621050

Int. Cl.² B23B *5/28, 13/00*

U.S. Cl. 82—8 **11 Claims**

1. In an arrangement for centering a two-wheel set along a horizontal center line of a machine, a combination comprising a pair of vertically movable lifting means respectively engaging the wheels of the two-wheel set at bottom portions thereof; a pair of vertically movable sensing means respectively coordinated with said pair of lifting means and respectively arranged for engaging the wheels of the set substantially opposite said portions which are engaged by said lifting means; and means

cooperating with at least one of the first-mentioned two means for stopping the lifting movement of the respective lifting



means, independent of the other, when the center of the respective wheel coincides with said center line.

4,116,095

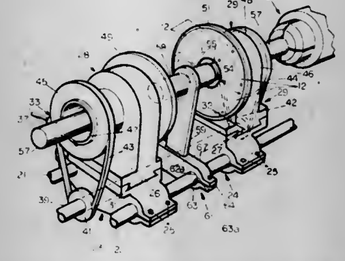
METAL SAWING OR MILLING MACHINE

Walter F. Cousino, 4830 W. Bancroft St., Toledo, Ohio 43615

Continuation-in-part of Ser. No. 822,007, Aug. 5, 1977. This application Nov. 18, 1977, Ser. No. 852,612

Int. Cl.² B23B *5/14*

U.S. Cl. 82—71 **5 Claims**



1. Apparatus for concurrently making two axially spaced cuts on an elongated bar stock type workpiece, comprising, in combination:

a. chuck means for grasping a portion of said workpiece;

b. an elongated support underlying the portion of said workpiece projecting outwardly from said chuck means;

c. a pair of annular cutters having cutting teeth formed on their inner annuli;

d. a sleeve secured to each said annular cutter;

e. a pair of sleeve supports adjustable mounted on said elongated support and respectively journalling said sleeves for rotation about the workpiece length axis with both sleeves and cutters surrounding the projecting end of said workpiece;

f. means for concurrently rotating said sleeves; and

g. means for concurrently moving said sleeve supports transversely relative to said workpiece to produce two cuts therein spaced according to the longitudinal spacing of said sleeve supports.

4. Apparatus for concurrently making two axially spaced cuts on an enlongated bar stock type workpiece, comprising, in combination:

a. rotatable chuck means for grasping a portion of said workpiece and rotating same about its length axis.

b. an elongated support underlying the portion of said workpiece projecting outwardly from said chuck means;

c. a pair of annular cutters having cutting teeth formed on their inner annuli;

d. a sleeve secured to each said annular cutter;

e. a pair of sleeve supports adjustably mounted on said elongated support and respectively journalling said sleeves for rotation about an axis parallel to the workpiece length axis with both said sleeves and said cutters surrounding the projecting end of said workpiece;

f. means for concurrently rotating said sleeves; and

g. means for concurrently moving said sleeve supports transversely relative to said rotating workpiece to produce two cuts therein spaced according to the longitudinal spacing of said sleeve supports.

4,116,096

STRIP CUTTER APPARATUS FOR ROLLED SHEET FORMED OF RUBBER

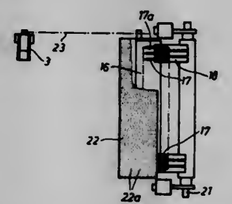
Walter Hugo Schiesser, Zürich, Switzerland, assignor to Schiesser AG, Zürich, Switzerland

Filed Dec. 1, 1976, Ser. No. 746,548

Claims priority, application Switzerland, Dec. 5, 1975, 15865/75

Int. Cl.² B23D *19/00*; B26D *1/22*

U.S. Cl. 83—101 **6 Claims**



1. A strip cutter apparatus for rolled sheet formed of rubber and rubber-like material, comprising:

a transport device for transporting the rolled sheet in a predetermined direction of travel; said transport device comprising a conveyor band for the rolled sheet;

a number of adjacently arranged substantially disc-shaped cutters located transversely with respect to the direction of travel of the rolled sheet for cutting the rolled sheet into individual strips;

a roller brush having bristles and arranged after the cutters, viewed in the direction of travel of the rolled sheet;

means for driving said roller brush in the direction of travel of the rolled sheet;

means mounting said cutters to provide intermediate spaces between neighboring said cutters;

said bristles of said roller brush penetrating into the intermediate spaces between said cutters for displacing away from the sides of said cutters material of the rolled sheet which possibly has been lifted by said cutters, and realigning said strips in flat condition on said conveyor band;

said roller brush being arranged above said conveyor band in such a manner that the outer ends of said bristles engage into the intermediate spaces of said cutters up to about the center of said cutters and up to about a plane containing said conveyor band.

4,116,097

CUTTING MACHINE INCORPORATING MEANS FOR TRANSFERRING CUT PARTS AND SCRAP

Gordon Judson Graham, Reading; John Frederick Martin, South Essex, and Douglas Hodgen Crowell, Beverly, all of Mass., assignors to USM Corporation, Farmington, Conn.

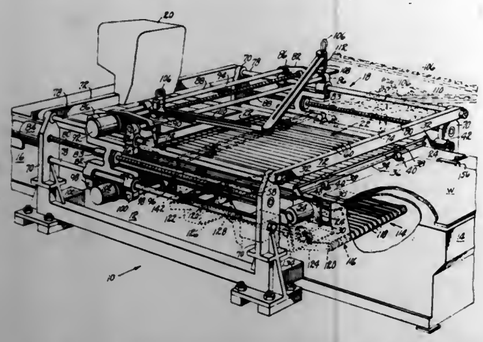
Filed Sep. 6, 1977, Ser. No. 830,459

Int. Cl.² B26F *3/00*

U.S. Cl. 83—155 **9 Claims**

1. In a machine for cutting sheet material by means of a fluid jet cutter movable in a plane, a main frame, a cutting bed mounted on the frame to support the sheet material substan-

tially parallel and adjacent to said plane and normal to the jet from the cutter, the bed being comprised of a plurality of



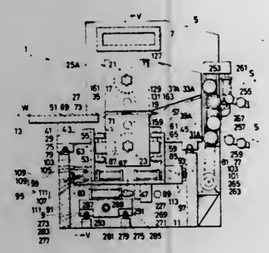
spaced, parallel, taut wires respectively having a tensile strength adequate to fully counter any tendency of the jet to displace successive cutting localities of the material.

4,116,098

GANG SLITTING MACHINE

Takashi Suzaki, Sagamihara; Tsutomu Ikezawa, Yokohama, and Kazui Ogasawara, Isehara, all of Japan, assignors to Amada Company, Limited, Japan

Filed Mar. 16, 1977, Ser. No. 778,107
Claims priority, application Japan, Mar. 17, 1976, 51-28916
Int. Cl.[2] B26D *1/24, 7/26*
U.S. Cl. 83—425.4 **10 Claims**



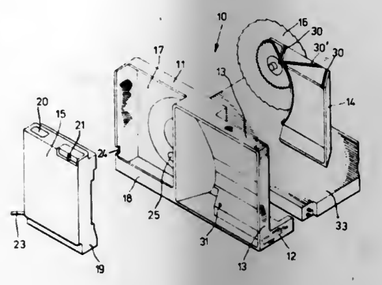
1. A gang slitting machine for continuously slitting wide sheet material having a given width into a plurality of narrower width strips comprising side frames, supporting plates mounted to said frames substantially at the front and rear sides thereof and spanning therebetween, a plurality of tool carriages movably mounted on said supporting plates, respective upper and lower tool shafts mounted in each tool carriage independently of the tool shafts of other tool carriages, an upper and a lower rotary shearing tool mounted on said upper and lower tool shafts respectively, means associated with said tool carriages for driving said rotary shearing tools, each tool carriage separately including an upper tool-holding member for supporting said upper shearing tool and upper tool shaft and a lower tool-holding member for supporting said lower shearing tool and lower tool shaft and each tool carriage further including means for vertically moving one of said upper and lower tool-holding members relative to the other tool-holding member.

4,116,099

HOUSEHOLD APPLIANCE DRIVEN BY AN ELECTRIC MOTOR, ESPECIALLY SLICING MACHINE FOR FOODS

Rolf Mayer, Glengen, Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Germany

Filed Jun. 27, 1977, Ser. No. 810,206
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629352
Int. Cl.[2] B26D *4/28, 7/00*
U.S. Cl. 83—571 **4 Claims**



1. In a household appliance driven by an electric motor, such as a slicer for food, having a housing for the household appliance and an electric-motor drive mounted therein as well as switching and control elements controlling the operation, and a tool, such as circular blades and the like, that can be moved by the electric-motor drive and acts on the food to be operated on, the improvement comprising,

(a) said electric-motor drive mounted in and enclosed in a separate housing of its own as a unitary drive block,

(b) said housing of the household appliance at the flank of the housing on which the tool is mounted, has an at least approximately prismatic form standing on end,

(c) said housing of the household appliance having a vertical partition wall with the circular blade tool on one side of the partition wall and the drive block on the other side of the partition wall,

(d) a recess in the housing on the side of the housing opposite the tool, for inserting with a tight fit said drive block also having an at least approximately prismatic form,

(e) with said recess equipped with a border member at the base of said housing, which border, together with vertical members of the housing extending from the base of the housing, form a case-like receptacle, and wherein said drive block has a lower section shaped to correspond to the lower end of the receptacle bounded by the border, and wherein the lower end of the drive block engages with said correspondingly shaped lower section of the receptacle bounded by the border,

(f) an opening in the partition wall through which protrudes a drive pinion mounted on the inner side of the drive block facing the circular blade,

(g) a gear rim on the inside of the circular blade with the drive pinion meshing with the teeth of the gear rim, and

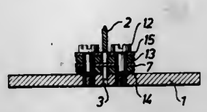
(h) a bayonet joint connection holding the circular blade mounted on the outside of the partition wall of the housing, and the unitary drive block mounted on the other side of the partition wall of the housing to the housing.

4,116,100

DEVICE FOR FASTENING CUTTING DIES ON A BASE PLATE

Martinus Johannes Joseph Witberg, Breda, Netherlands, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Feb. 23, 1977, Ser. No. 771,376
Claims priority, application Sweden, Feb. 24, 1976, 7602191
Int. Cl.[2] B26F *1/44*
U.S. Cl. 83—698 **14 Claims**



1. A cutting die assembly comprising:

a cutting die including a body portion defining a plane and having an upper cutting edge located substantially in said plane, and a lower part located substantially in said plane;

apertures provided in said body portion of said die;

a base plate having a slot removably receiving said lower part of said die; and

means for fastening the die to the base plate comprising

a plurality of clamp members removably received in respective ones of said apertures for engagement with the die body, said clamp members extending laterally through said apertures above said base plate; and

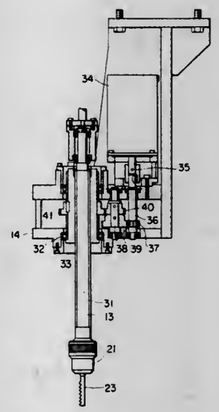
fastening elements extending into said base plate for releasably securing said clamp members to said base plate such that, in response to release of said fastening elements, said die is removable from said base plate and said clamp members are freely removable from said die apertures.

4,116,101

AUTOMATIC FRET SAWING MACHINES

Hideo Kawakami, Numazu, and Hitoshi Ebata, Mishima, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 808,880
Claims priority, application Japan, Jun. 24, 1976, 51-73829
Int. Cl.[2] B27B *19/02*
U.S. Cl. 83—747 **1 Claim**



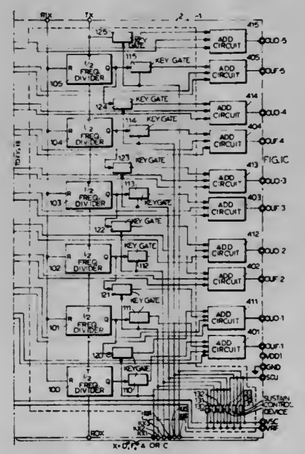
1. In an automatic fret sawing machine adapted to cut a groove of a predetermined profile through a workpiece wherein the workpiece is moved in two orthogonal directions in a plane by a profile control or a numerical control while a fret saw blade is continuously reciprocated in a direction perpendicular to said plane, the improvement which comprises a pair of drive shafts respectively provided with spline portions, mating bushings and connected to opposite ends of said fret saw blade, a pair of pulse motors which are controlled to move in a direction and by an amount designated by said profile control or numerical control, said pulse motors being respectively connected to said drive shafts through said bushings and reduction gear trains for driving said drive shafts, means for synchronously energizing said pulse motors so as to direct said saw blade always in a direction tangential to said profile to be worked, and a clamping member secured to said drive shaft and adapted to clamp one end of the fret saw blade.

4,116,102

INTEGRATED CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Masahiko Tsunoo, Suita; Namio Hirose, Hirakata; Takeji Kimura, Hirakata; Michihiro Inoue, Hirakata, and Masaharu Sato, Noriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1976, Ser. No. 718,320
Claims priority, application Japan, Sep. 3, 1975, 50-107180
Int. Cl.[2] G10H *1/06;* H01L *27/02*
U.S. Cl. 84—1.22 **6 Claims**



1. An integrated circuit for an electronic musical instrument comprising a single monolithic layer having:

a plurality of input terminals for receiving input signals;

a plurality of frequency divider chains comprising MOSFET's each having an input connected to one of said plurality of input terminals and a plurality of outputs, for producing a plurality of signals each having a frequency that is an integral fraction of the frequency of the signal applied to the respective input terminal;

a plurality of sets of keyer control terminals each set associated with one of said plurality of frequency divider chains, for receiving keyer control signals;

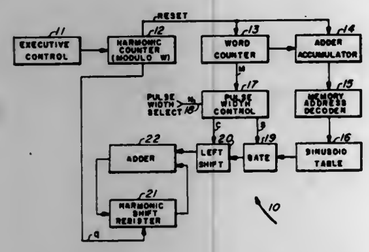
a plurality of sets of keyer-gates each set associated with one of said plurality of frequency dividers and one of said plurality of sets of keyer control terminals, each keyer-gate comprising MOSFET's and a bipolar transistor emitter follower circuit and having an input connected to a respective one of the outputs of said associated frequency divider chain, a control input connected to a respective one of said keyer control terminals of said associated set of keyer control terminals, and and output, for switching on and off the signal applied to the input thereof according to said respective keyer control signal, said keyer-gates being prepared for at least two ranks of feet coupler;

a plurality of output terminals for producing the outputs of said integrated circuit; and

a plurality of adding means comprising a plurality of semiconductor resistors and a bipolar transistor emitter follower circuit each having at least two inputs connected to

the outputs of keyer-gates of different sets having the same rank of feet coupler and an output connected to a corresponding one of said plurality of output terminals, for producing an output signal which is the sum of the signals applied to the inputs.

4,116,103
PULSE WIDTH MODULATION IN A DIGITAL TONE SYNTHESIZER
Ralph Deutsch, Sherman Oaks, Calif., assignor to Deutsch Research Laboratories, Ltd., Sherman Oaks, Calif.
Filed Jul. 12, 1976, Ser. No. 704,244
Int. Cl.[2] G10H *1/02, 5/00*
U.S. Cl. 84—1.24 **10 Claims**



1. In a waveshape generating system of the type wherein waveshapes are generated by calculating the constituent Fourier components of a waveshape according to a discrete Fourier algorithm and wherein each said Fourier component comprises the product of a trigonometric function and a harmonic coefficient, the improvement for generating a waveshape having the spectral quality of a repetitive pulse train of selectable pulse width comprising;

a control means for selecting a member N of a set of control parameters each control parameter being associated with a pulse width of said repetitive pulse train, and

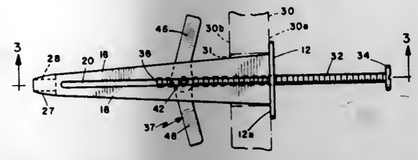
a coefficient generating means, operative during a coefficient computation cycle and responsive to said selected member of said set of control parameters, for providing said harmonic coefficients to said waveshape generating system thereby causing a corresponding waveshape to be generated having the spectral quality of a repetitive pulse train, where said coefficient generating means comprises: a clock generator means wherein timing signals are generated, each said timing signal in said coefficient computation cycle corresponds to a harmonic number q, a select means for choosing a member N from a set of pulse width parameters, a width factor means whereby said chosen member N of set of pulse width parameters is scaled by a selected scale factor H to produce a pulse width value N/H, and an address-accumulator means, initialized at the start of said coefficient computation cycle and operative during each computation time interval corresponding to said timing signals for repeatedly adding said pulse width value N/H to sum previously in said adder-accumulator means, whereby the resulting contents of said adder-accumulator means is the argument number q N/H.

4,116,104
TOGGLE BOLT WING NUT RETAINER
Arvest Gethner Kennedy, 13130 Carriage Rd., Poway, Calif. 92064
Filed Apr. 15, 1977, Ser. No. 787,899
Int. Cl.[2] F16B *37/04*
U.S. Cl. 85—3 S **5 Claims**

1. A wing nut retainer adapted for use in combination with a toggle bolt and a wing nut having a pair of interconnected wings pivotally mounted on a hinge pin on a central nut member for pivoting about an axis transverse to the axis of the bolt, comprising:

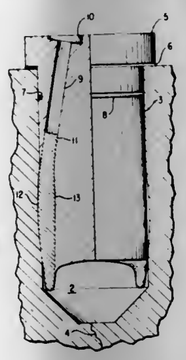
a face plate having an aperture therethrough being of a size for the insertion and removal therethrough of a toggle bolt and wing nut mounted thereon when the wings of said nut are oriented along the axis of said bolt:

a pair of guide rails extending from one side of said plate and spaced apart for receiving a wing nut therebetween and including opposed faces defining frictional means for



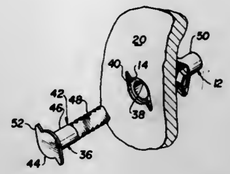
frictionally engaging a single one of the wings of said wing nut off center of the pivotal axis thereof for pivoting said wings about said transverse axis for alignment parallel to the axis of said bolt when moved along between said rails for insertion into and removal from said aperture, and each of said rails including a substantially straight hinge pin receiving slot extending the length thereof and entend entirely through said face plate for retaining said wing nut in position therebetween upon removal of the bolt therefrom.

4,116,105
FASTENER
Hainbuchner Herman, 13910 EnterPrise Ave., Cleveland, Ohio 44135
Filed Jul. 13, 1977, Ser. No. 815,154
Int. Cl.[2] F16B *13/04*
U.S. Cl. 85—66 **8 Claims**



1. A fastener comprising a solid metal cylinder for use with a workpiece having a cylindrical cavity receiving said cylinder, said cylinder provided with a bore hole forming an acute angle with the axis of said cylinder running through said cylinder from one end face to the cylindrical wall thereof and a spent projectile which has been fired into said bore hole from said end face lodged in said bore hole and having a bulged extension disposed between the cylindrical walls of said cavity and cylinder whereby said walls are deformed to the contour of said bulge.

4,116,106
METHOD AND PLUG FOR CONCEALING FASTENER ANCHOR
William P. Barbour, Westminister, Md., assignor to Kile, Gholz, Bernstein & Georges, Arlington, Va., part interest to each
Filed Jun. 14, 1977, Ser. No. 806,448
Int. Cl.[2] E04G *23/02;* F16B *13/06*
U.S. Cl. 85—71 **16 Claims**



1. In combination,

(a) an anchor fastener comprising a hollow shaft and a head having a hole therein, said anchor fastener being shaped to receive an anchor bolt fitting through the hole in the head of said anchor fastener and into the hollow shaft, and

(b) a plug for filling the hole left by removal of an anchor bolt from said anchor fastener when said anchor fastener is embedded in an object such that the outer surface of the head of the anchor fastener is beneath the surface of the object forming a depression, and for facilitating the refinishing of the surface of the object, said plug comprising:

(i) a shaft portion the diameter of which is sized to fit into the hole in the head of said anchor fastener and

(ii) a head portion carried by said shaft portion and sized and shaped to fit snugly into and substantially fill the depression in the surface of the object.

10. In combination,

(a) an anchor fastener comprising a hollow shaft and a head having a hole therein, said anchor fastener being shaped to receive an anchor bolt fitting through the hole in the head of said anchor fastener and into the hollow shaft;

(b) an anchor bolt comprising:

(i) a shaft portion the diameter of which is sized to fit into the hole in the head of said anchor fastener and

(ii) a head portion carried by said shaft portion and

(c) a stepped washer located between the head portion of said anchor bolt and the head of said anchor fastener when said anchor fastener is being embedded in an object, said stepped washer comprising:

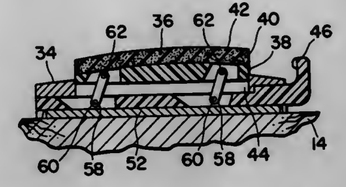
(i) a shaft portion sized such that the axially inner face of said shaft portion bears against the head of said anchor fastener but does not extend radially outwardly beyond the head of said anchor fastener and

(ii) a head portion carried by said shaft portion and sized such that the axially inner face of said head portion extends radially outwardly beyond the head of said anchor fastener and, during use, bears against the surface of the object in which said anchor fastener is being embedded,

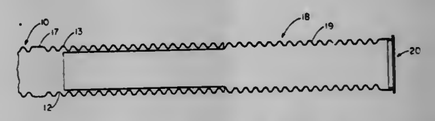
whereby, during use, the head of said anchor fastener is embedded in the object by a distance equal to the length of the shaft portion of said stepped washer.

4,116,107
STRINGED INSTRUMENT MUTE MECHANISM
James H. Rickard, Harwinton, Conn., assignor to Ovation Instruments, Inc., New Hartford, Conn.
Filed Jan. 19, 1977, Ser. No. 760,735
Int. Cl.[2] G10D *3/04*
U.S. Cl. 84—267 **7 Claims**

1. The combination with a stringed musical instrument having a body and a set of generally parallel strings which are attached to said body and define a common surface containing said strings and a mute mechanism carried by said body, said mute mechanism comprising a base fixed to said body and located on one side of said common surface and extending transversely across said strings, said base having a recess with a mouth facing said strings, said recess being elongated in the direction transverse of said strings and extending transversely across said strings, a mute received in said recess and having a cross-sectional shape complementary to that of said recess so as to be confined by the walls of said recess to rectilinear sliding movement relative to said base toward and away from said strings, said base also having a slide recess elongated in the direction transverse of said strings, an actuating member received in said slide recess and restrained by the walls of said slide recess to sliding movement relative to said base in said direction transverse of said strings, said actuating member having a handle portion located on one side of said strings and being manually slidable relative to said base between first and second positions, and means for moving said mute toward and away from said strings in response to shifting of said actuating member in opposite directions and whereby said mute engages said strings when said actuating member is in said first position relative to said base and is free of said strings when said actuating member is in said second position relative to said base.

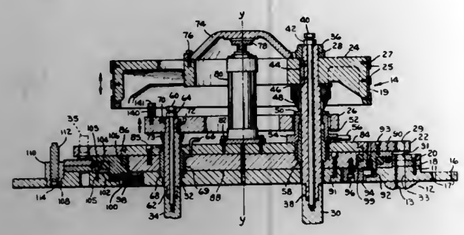


4,116,108
MUSICAL TUBE
Jeffrey M. Hyman, 58 Morton St., Newton Centre, Mass. 02159
Filed Jan. 3, 1977, Ser. No. 756,262
Int. Cl.[2] G10D *7/00, 7/12*
U.S. Cl. 84—330 **12 Claims**



1. A one-piece, elongated, pliant, flexible, open-ended tube of predetermined length having a first end and a second end and being capable of producing musical notes when held in one's hand and swung in a rotary fashion in the air wherein the tube is a corrugated plastic tube having an inner surface and an outer surface and being of predetermined inner and outer diameters, said inner surface comprising a series of interconnected parallel alternate grooves and ridges of uniform dimensions between the ends and along the length of the tube and lateral thereto, and a narrow planar band located between adajacent ridges of the tube and connecting these adjacent ridges together, said band being located near one end but spaced a distance therefrom along the length of the tube whereby to delimit a handle portion for holding the tube during use.

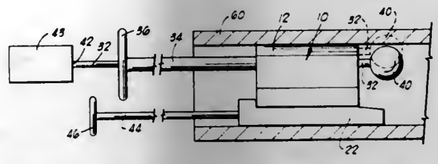
4,116,109
AMMUNITION LOADING MACHINE
Albert W. G. Ervine, Bridgeport, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Jul. 29, 1976, Ser. No. 709,811
Int. Cl.² F42B *33/02*
U.S. Cl. 86—23 **12 Claims**



1. An ammunition loading machine comprising:
a die set comprising stationary base means, an annular dial having an enlarged central opening and a plurality of peripherally-spaced pocket means for receiving ammunition casings for loading, said base means and said dial being formed with complementary surfaces of revolution, a plurality of roller means spaced about said dial and comprising bearing means each engaging one of said surfaces of revolution to mount said dial on said base means for rotation about a fixed axis for transportation of said pocket means successively to a series of loading stations circumferentially spaced about said axis, and ram means movably mounted on said base means for reciprocation along said axis, said ram means and said base means being adapted for mounting selected tools for performing loading operations on ammunition casings received in said pocket means;
and a drive chassis supporting said base means and comprising indexing means detachably drivingly engaged with said roller means and constructed and arranged to intermittently rotate said dial about said axis to index said pocket means sequentially to said loading stations, drive rod means extending through said base means and said central opening in said dial, detachable connecting means for drivingly engaging said drive rod means with said ram means, and a drive mechanism constructed and arranged for reciprocating said drive rod means and ram means parallel to said axis to perform said loading operations in synchronism with the indexing of said pocket means to said loading stations;
said die set being detachable as a unit from said drive chassis merely by detaching said connecting means and lifting said base means from said drive chassis along said axis to separate said indexing means from said dial and said die set from said drive chassis.

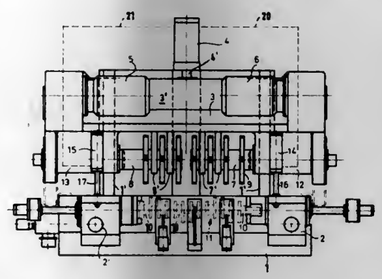
4,116,110
METHOD AND APPARATUS FOR FORMING INTERNAL RECESSES IN A HOLLOW BODY
Jack E. Dines, Fort Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.
Filed Jan. 10, 1977, Ser. No. 758,298
Int. Cl.² B23C *1/20, 1/00*
U.S. Cl. 90—12 R **8 Claims**

1. An apparatus for forming a recess in an internal surface of a body having a hollow interior which comprises:
a housing adapted to be positioned within said interior of said body;
clamping means for rigidly positioning said housing in a desired location within said body wherein said clamping means comprises:
a tapered surface along a side of said housing;
a gib having a tapered surface positioned adjacent to and slidably engaging said tapered surface of said housing whereby relative longitudinal movement between said gib and said housing changes the distance between external opposite surfaces of said gib and said housing; and
means for longitudinally moving said gib with respect to said housing attached thereto so that said external opposite surfaces of said gib and said housing can be selectively wedged against adajcent internal surfaces of said body at desired positions therein;
a mill rotatably attached to said housing for grinding a recess in said internal surface of said body;



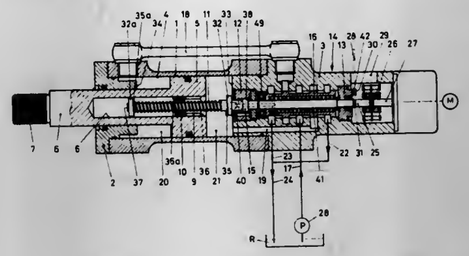
reciprocating means attached to said housing for selectively moving said mill relative to said housing along a line perpendicular to the longitudinal axis of said housing between a position out of contact with said internal surface and a position in contact with said internal surface whereby said mill forms a recess of desired depth in said internal surface; and
power means for rotating said mill.

4,116,111
MILLING APPARATUS
Karlheinz Schmid, Neckartenzlingen, Germany, assignor to Gebrueder Heller Maschinenfabrik GmbH, Nuertingen, Germany
Filed Jan. 18, 1977, Ser. No. 760,253
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1976, 2618093
Int. Cl.² B23C *3/06*; B24B *5/40*; B23B *5/18*
U.S. Cl. 90—15 R **5 Claims**



1. A milling apparatus, especially for crankshafts, comprising base means, guide means carried by said base means, a milling unit slidably supported on said guide means, drive means operatively connected to said milling unit for advancing said milling unit back and forth along said guide means, said milling unit including milling cutter arbor means, said apparatus further comprising workpiece chucking means operatively supported on said base means for cooperation with said milling unit, and continuously adjustable bracing means adjustably interconnecting said workpiece chucking means and said milling unit on a side opposite said base means, whereby the instantaneous horizontal spacing between said workpiece chucking means and said milling unit may be maintained substantially rigidly regardless of horizontally effective milling force components.

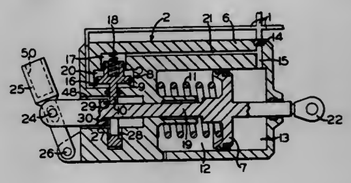
4,116,112
FLUIDIC AMPLIFIER
Karel Hampejs, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Jun. 30, 1976, Ser. No. 701,014
Claims priority, application Switzerland, Jul. 4, 1975, 8752/75
Int. Cl.² F15B *9/10*
U.S. Cl. 91—380 **5 Claims**



1. In a hydraulic linear amplifier for converting a low-energy rotary movement of a control member into a linear setting movement of a piston rod of an operating piston mounted in a cylinder for linear movement, wherein said control member is connectable with one end of a rotatably mounted but axially fixed threaded spindle via an input shaft which is coaxial with said spindle and which is mounted so that it is rotatable about and movable along its longitudinal axis; wherein an opposite free end of said threaded spindle extends into an axial bore in said piston rod of said operating piston and through a spindle nut mounted in said axial bore with threads of said threaded spindle matingly engaging said spindle nut; wherein hydraulic pressure for charging said operating piston to produce a setting movement of said piston rod is controllable by means of an axial deflection of a control piston of a control valve which is connected to said cylinder via pressure lines; wherein first means are provided for connecting said control piston to said input shaft for axial movement therewith; and wherein second means are provided for connecting said input shaft to said threaded spindle so that rotation of said input shaft by said control member results in said axial deflection of said input shaft, and hence of said control piston, to cause said setting movement of said piston rod and said setting movement causes said control piston to be axially repositioned to its starting position, said second means including a threaded axial bore formed in said one end of said threaded spindle and engaging a threaded pin on an adjacent end of said input shaft; the improvement further comprising: means, upon the occurrence of interference with the movement of said operating piston, for automatically and nondestructively disengaging said threaded pin and said threaded axial bore after a predetermined amount of relative rotation so that said input shaft can thereafter be freely rotated; and means for aiding in the reestablishment of the mechanical screw conncection between said threaded pin of said input shaft and said threaded axial bore of said threaded spindle upon reversal of the rotary movement of said input shaft.

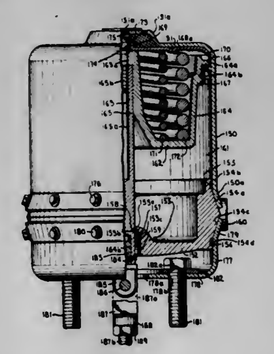
4,116,113
SPRING ACTUATED BRAKE CYLINDER DEVICE WITH FLUID PRESSURE OPERABLE RELEASE PISTON LOCKOUT MEANS
Serge Leclerc, Sevran, France, assignor to Wabco Westinghouse, Freinville-Sevran, France
Filed Jul. 11, 1977, Ser. No. 814,078
Int. Cl.² F15B *15/26*
U.S. Cl. 92—24 **5 Claims**

1. A spring-actuated brake cylinder device of the type comprising brake piston means including a brake piston and a piston rod having a larger-diameter portion at one end opposite an end connected to the brake piston and an axially disposed annular groove formed within said larger-diameter portion at the juncture of said larger-diameter portion with a smaller-diameter portion of the piston rod and extending along the radius of said rod a distance less than the radius of said larger-diameter portion, a brake spring acting on one side of said brake piston means for urging movement thereof in one direction toward a brake-applying position, the opposite side of said brake piston means being subjected to service brake fluid pressure prevailing in a release chamber disposed adjacent said opposite side of the brake piston means and acting in opposition to said brake spring for urging the brake piston means toward a release position, and a locking device which comprises a locking element capable of blocking axial movement of



the brake piston means, a locking piston to which said locking element is operably connected, said locking element having a projecting toe engageable in said annular groove in a locking relationship therewith, biasing means for urging said locking piston, and therefore said locking element, toward a locked position in which said annular groove is engaged by said projecting toe, said locking piston being subjected and operable responsively to said service brake pressure at a displacement value commensurate with the value at which said brake spring is effective for initiating movement of the brake piston means out of said release position, said displacement value of said service brake pressure being greater than a locking value thereof at which said biasing means is rendered effective for moving said locking piston and element to said locked position.

4,116,114
DOUBLE PISTON BRAKE ACTUATOR
Kenneth D. Swander, Jr., and Bruce D. Sibley, both of Lawrence, Kans., assignors to Aeroquip Corporation, Jackson, Mich.
Division of Ser. No. 451,916, Mar. 18, 1974, Pat. No. 3,977,308.
This application Apr. 19, 1976, Ser. No. 677,908
The portion of the term of this patent subsequent to Aug. 31, 1993, has been disclaimed.
Int. Cl.² F01B *7/00*
U.S. Cl. 92—130 A **3 Claims**



1. Brake actuating mechanism comprising, in combination, a closed housing having inner and outer end walls,

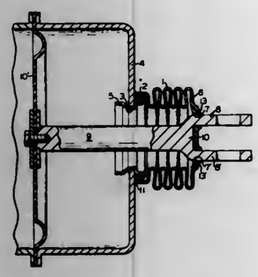
said walls inner and outer with respect to a vehicle brake mechanism,
a piston within said housing adapted to reciprocate inwardly and outwardly therewithin,
means for introducing fluid under pressure to said housing adjacent the outer end wall thereof and to the outer side of said piston,
a brake operating rod on the other, inner side of said piston axially arranged relative thereto and rigidly connected axially thereof at one end of said rod,
said rod projecting through the inner end wall of the housing for reciprocatory movements,
means attaching the other end of said brake operating rod to a pivoted slack adjuster, whereby said rod moves in an arcuate path, thus requiring the said piston to cant or articulate within the housing during reciprocation therewithin,
said piston configured peripherally so as to be able to articulate or tilt within the housing during reciprocation therewithin by said piston having a considerably lesser outer diameter than the inner diameter of said housing and a radially extending circumferential flange positioned peripherally therearound, said flange spaced inwardly on the first piston from the outer end thereof, and
means on the periphery of said piston and cooperating with the housing to maintain continuous circumferential bearing contact and seal therewith during reciprocation,
said latter means comprising, in combination, a hollow-centered circumferential packing cup mounted on the periphery of the piston outboard of the flange on the piston and opening toward the outer pressurized side of said piston, and
a separate circumferential piston bearing removably fixed on the periphery of said circumferential flange on said piston, said packing cup resting on and backed by said piston bearing.

4,116,115

BELLOWS FOR SEALING OFF THE PISTON ROD PASSAGE IN AN OPERATING CYLINDER

Friedrich Gross, Harenberg; Peter Binder, Wunstorf, and Dieter Brehmer, Hanover, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,596
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613447
Int. Cl.² F15J *15/18*
U.S. Cl. 92—168 **5 Claims**



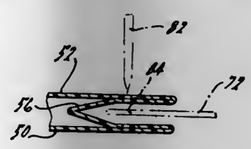
1. A bellows type sealing member for sealing off an opening formed in an end wall of a diaphragm type operating cylinder, in particular a diaphragm cylinder for vehicle air-brake systems, for accommodating reciprocal movement of a piston rod, wherein the piston rod is connected at one end to a diaphragm in the cylinder and is provided at the other end with a forkhead, and the bellows can be fitted on a holding support mounted in said opening in the diaphragm cylinder in the area of the piston rod movement, characterized in that the bellows is provided at one end with an annular portion of torus by which the bellows can be fitted on the holding support and which has a continuous sealing lip along its outer peripheral edge disposed coaxially to the axis of the bellows and which, with the torus fitted in place, lies with an inner surface under tension against a surface of the end wall of the diaphragm cylinder, while the other end, provided with a cover portion which is reinforced in its central area and can be pulled, by way of conforming openings made therein, over respective legs of the forkhead.

4,116,116

METHOD OF MAKING A HEAT SHRINKABLE BAG

Karl F. Barnett, Bloomfield Hills, Mich., assignor to Cadillac Products, Inc., Sterling Heights, Mich.

Division of Ser. No. 594,807, Jul. 10, 1975, Pat. No. 4,022,321, which is a continuation-in-part of Ser. No. 408,308, Oct. 23, 1973, abandoned. This application Feb. 25, 1977, Ser. No. 771,910
Int. Cl.² B31B *1/64*
U.S. Cl. 93—35 R **1 Claim**



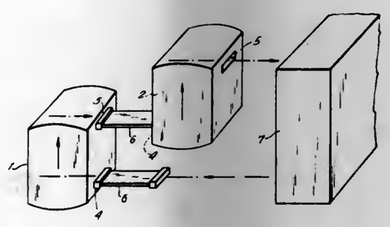
1. The method of fabricating a shrink wrap, comprising the steps of: forming a gussetted sleeve-like enclosure; positioning a separator between the opposed portions of each of the gussetted sides of said enclosure proximate to an end of said enclosure when the latter is collapsed to prevent said portions from contacting one another; and applying heat to a localized spot on the plies of said enclosure by piercing said enclosure with a heated needle that is adapted to piece the portions of said enclosure on both sides of said separator as well as said separator whereby localized heat seals are formed between said ply proximate to said end of said enclosure, said heat seals being wholly spaced from the side edges of said collapsed enclosure.

4,116,117

INSTALLATION FOR THERMAL TREATMENT OF CONTAINER-PACKED COMMODITIES

Hendricus Johannes Maria Bogaard, Alkmaar, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands

Filed Apr. 28, 1976, Ser. No. 681,257
Claims priority, application Netherlands, May 7, 1975, 7505435
Int. Cl.² A23L *3/04*
U.S. Cl. 99—361 **5 Claims**



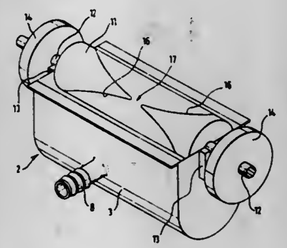
1. An installation for thermal treatment of container packed commodities, such as foodstuffs or medicines, comprising:
(A) a plurality of carriers, each for carrying a respective group of containers;
(B) at least two treatment spaces, each having a vertical orientation and having vertical ends, with an inlet at one said vertical end of each said treatment space, and an outlet at the opposite said vertical end of each said treatment space; between a said treatment space inlet and outlet, said treatment space having a height greater than a stack of carriers containing containers;
(C) means for heating the interior of at least one of said treatment spaces;
(D) vertical moving means in each said treatment space for engaging a said carrier in said treatment space at the vertical level of said inlet thereof and for transmitting that said carrier vertically in said treatment space to the vertical level of said outlet therefrom;
(E) horizontal displacement locking means in each said tratment space for blocking horizontal displacement of said carriers during the vertical displacement thereof from said treatment space inlet to said treatment space outlet; each of said horizontal displacement locking means comprising a vertically extending rod in said treatment space and being of a length and being so located as to be between the levels of said inlet and said outlet of said treatment space and being positioned in said treatment space to engage said rack of each said carrier moving vertically through said treatment space for locking said carrier against moving horizontally as it moves vertically past said rod;
(F) horizontal displacement sluice means connected to said treatment space inlets and to said outlet of one of said at least two treatment spaces, thereby joining said outlet of one said treatment space to said inlet of the other said treatment space; and
(G) horizontal moving members for transmitting said carriers horizontally over said sluice means, said horizontal moving members comprising:
(1) a rack on each said carrier and oriented thereon to extend along the direction of horizontal movement thereof;
(2) rotatable pinion means in each said treatment space and located at the vertical levels of said treatment space at said inlet and said outlet thereof, and positioned and adapted to engage a set rack when the respective said carrier is at said inlet and at said outlet of the respective said treatment space, such that rotation of said pinion means in engagement with said rack moves the respective said carrier into said inlet of said treatment space and out of said outlet of said treatment space.

4,116,118

APPARATUS FOR PREPARING PASTRY

Harry Hon Hai Wong, Kowloon, Hong Kong, assignor to Winner Food Products Limited, Kowloon, Hong Kong

Filed Feb. 25, 1977, Ser. No. 772,075
Claims priority, application United Kingdom, Jul. 21, 1976, 31221/76
Int. Cl.² A47J *37/10, 27/00*
U.S. Cl. 99—423 **5 Claims**



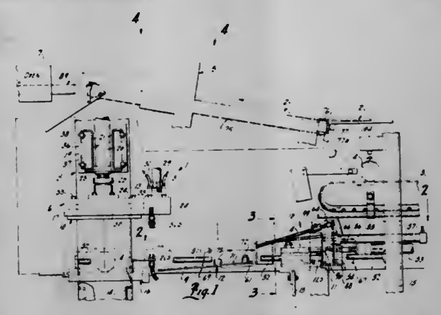
1. Apparatus for the continuous preparation of at least partially cooked pastry, comprising: a substantially cylindrical cooking drum mounted for rotation with its axis substantially horizontal; a roller mounted for rotation with its axis substantially horizontal, the periphery of the roller being adjacent to the periphery of the drum and having at least one recess of constant depth; means for supplying a farinaceous paste to the periphery of the roller in a zone remote from the drum, such that upon rotation of said drum and said roller at the same peripheral speed, paste is repeatedly taken up by the said at least one recess and transferred to the drum in the form of portions; and means for removing said portions from the drum.

4,116,119

FOOD FORMING APPARATUS

Harvey G. Kuhlman, N56 W21466 Silver Spring Dr., Menomonee Falls, Wis. 53051

Filed Jan. 26, 1977, Ser. No. 762,382
Int. Cl.² A21C *9/06*
U.S. Cl. 99—450.6 **43 Claims**



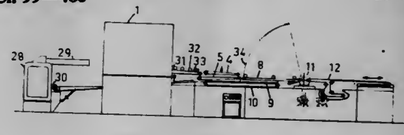
11. A forming apparatus for producing a partially baked food element from a bulk material, comprising a support plate means having an opening, a heating means secured within said opening and having an upper die surface, a transfer means mounted in overlying spaced relation to said support means and including a raw material support having a forward confining stop wall having a confining position for the raw material and mounted for limited vertical movement to a release position above the confining position and a back confining wall and movable outwardly to move the raw material toward the forward confining stop wall and off the support onto the heating means, a movable forming die means mounted in overlying relation to said heating means and movable into engagement with said heating means for pressing said material, and means for moving said transfer means longitudinally between said die means and said heating means with said die means spaced from said heating means, and then moving the raw material onto the heating means and thereafter raising the confining wall and retracting the transfer means.

4,116,120

CONVERTIBLE DOUGH MAKEUP LINE FOR THE PRODUCTION OF DIFFERENT KINDS OF BREAD

Kate Kemper, Wybüelstrasse 6, 8702 Zürich-Zollikon, Switzerland

Filed Sep. 27, 1976, Ser. No. 726,530
Int. Cl.² A23C *3/02*
U.S. Cl. 99—483 **15 Claims**



1. A convertible dough makeup line for the mechanized processing of a mass of bread dough into dough pieces of at least two different shapes, in the selective production of different kinds of bread in a production line baking operation, the dough makeup line comprising in combination:
a head unit, including means for dividing the bread dough

into a regular succession of dough pieces and means for rounding the dough pieces;

a proofing unit succeeding the head unit in the sense of dough piece conveyance, the proofing unit including means for receiving the rounded dough pieces from the head unit, for proofing them, and for delivering proofed dough pieces at a discharge station;

a first dough piece molding line succeeding the proofing unit, said line including means for conveying the dough pieces and simultaneously shaping them into loaves, said means being adjustable so as to convey the dough pieces without reshaping them;

a second dough piece molding line including means for conveying the dough pieces and simultaneously shaping them to a flat shape, the second dough piece molding line being arranged behind the first dough piece molding line, in the sense of dough piece conveyance;

a displaceable conveyor unit arranged between said first and second dough piece molding lines; the displaceable conveyor unit being movable between a transfer position in which it transfers the dough pieces from the first dough piece molding line to the second dough piece molding line and a position in which the dough pieces are allowed to fall from the first dough piece molding line; and

means arranged underneath the first dough piece molding line for receiving the falling dough pieces and for removing them to a baking oven.

4,116,121

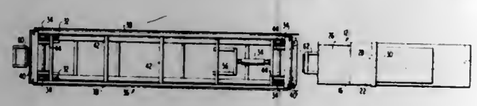
METHODS FOR LOADING REFUSE

Harvey W. Liberman; Paul L. Goranson, both of Knoxville; R. Houston Ratledge, Jr., Maryville, and John C. Salyers, Oak Ridge, all of Tenn., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 641,375, Dec. 17, 1975. This application May 19, 1977, Ser. No. 798,732

Int. Cl.² B30B *13/00*

U.S. Cl. 100—39 **9 Claims**



1. In a method of transferring refuse from a hopper to a container wherein the container is positioned adjacent a refuse discharge opening of said hopper, refuse is introduced into the hopper through a refuse inlet opening of said hopper spaced from the discharge opening, a packer head is reciprocated within said hopper to displace such refuse through said discharge opening and into said container, and a clearing member is positioned for vertical reciprocation across said discharge opening; said packer head being spaced below a top wall of said hopper to define therebetween a gap which may tend to become occupied by an elongate refuse article extending between said container and said refuse inlet in a manner resisting transfer of said elongate article into said container; the improvement comprising the steps of:

sensing an article extending between said container and said refuse inlet;

generating a signal in response to said sensing to indicate the presence of said article;

retracting said packer head from said discharge opening;

lowering said clearing member into contact with said article to displace said article downwardly;

raising said clearing member;

advancing said packer head toward said discharge opening to shift said article toward said container; and

repeating said steps of retracting, lowering, raising, and advancing at least until said article has cleared said refuse inlet.

4,116,122

HYDRAULIC DRIVEN PRESS

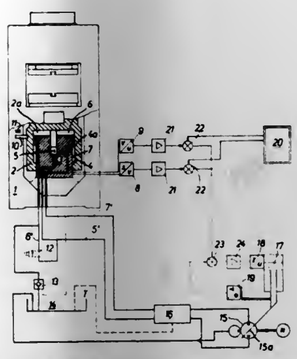
Ernst Linder, Bellach, and Kurt Thut, Schnottwil, both of Switzerland, assignors to Osterwalder AG, Lyss, Switzerland

Filed Oct. 11, 1977, Ser. No. 840,948

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1976, 2645849

Int. Cl.² B30B *15/16*

U.S. Cl. 100—48 **7 Claims**



1. A hydraulic driven press for embossing, bending, stamping, especially for precision blanking, comprising:

support means;

a ram guided in said support means;

pressure chambers and a piston provided for said ram;

said ram being supported at said support means by said pressure chambers and said piston;

said pressure chambers comprising at least one actuation pressure chamber and a counter pressure chamber;

means for supplying a pressurized medium to said actuation pressure chamber and said counter pressure chamber;

means for measuring and determining the displacement path of the ram and the ram speed and the quantity of delivered pressurized medium and for delivering measurement values representative of such measurement operations;

a regulation device for regulating the ram movement as a function of the measurement values measured by said measuring means.

4,116,123

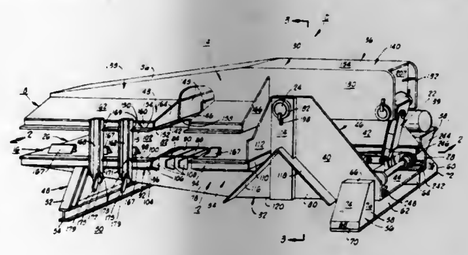
COMPACTING APPARATUS

Mervin Ramer, Cushing, Okla., assignor to Lawrence Murray, Perkins, Okla.

Filed Mar. 29, 1977, Ser. No. 782,493

Int. Cl.² B30B *9/32*

U.S. Cl. 100—233 **13 Claims**



1. An apparatus for compacting an object, comprising:

a base having a forward section and a rear section, the forward section forming a lower jaw;

a lid member having a forward section and a rear section, the forward section forming an upper jaw, the lid member pivotally connected to the base at a pivot disposed intermediate to the forward and rear sections of the lid member, the upper jaw substantially overlaying the lower jaw of the base and disposed a preselected distance therefrom in a closed position of the lid member, the upper jaw removed from the lower jaw of the base in an open position of the lid member;

a toggle linkage member having a first end and a second end, the first end pivotally connected to the rear section of the lid member; and

means for moving the second end of the toggle linkage member alternatively in a first direction toward the lower jaw and in a second direction away from the lower jaw, the lid member moved toward the open position when the second end of the toggle linkage member is moved in the first direction, and the lid member moved toward the closed position when the second end of the toggle linkage member is moved in the first direction, wherein the means for moving the second end of the toggle linkage member is characterized as comprising:

a longitudinal guideway supported by the base;

a reciprocating member supported by the guideway, the reciprocating member movable along the guideway alternatively in the first direction and in the second direction, the second end of the toggle linkage member pivotally connected to the reciprocating member; and

means for moving the reciprocating member in the first direction and in the second direction.

4,116,124

TWO-SIDED SIMULTANEOUS PRINTING METHOD

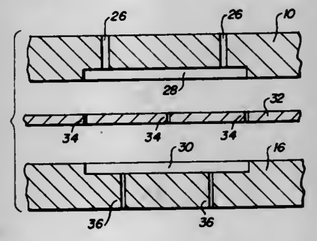
Harold Frederick Farrow, Hitchin, and Bernard Booth Rackstraw, High Wycombe, both of England, assignors to Encoline (Process) Limited, England

Continuation of Ser. No. 682,184, Apr. 30, 1976, abandoned, which is a continuation of Ser. No. 548,558, Feb. 10, 1975, abandoned. This application Sep. 22, 1977, Ser. No. 835,585

Claims priority, application United Kingdom, Feb. 20, 1974, 7816/74

Int. Cl.² B41M *1/10*; B41F *1/20*

U.S. Cl. 101—170 **5 Claims**



1. A method of simultaneously printing both sides of a gasket having feed holes therethrough with a sealant material comprising providing a generally planar, impervious gasket having two major surfaces and having feed holes therethrough of sufficient size to allow flow therethrough of a sealant material under pressure but to prevent flow therethrough when said sealant material is only under the force of gravity, locating said impervious gasket between upper and lower printing intaglio plates with recesses in the plates facing said two major surfaces, moving the upper intaglio printing plate toward the gasket and toward the lower intaglio printing plate to initiate a printing stroke, contacting said major surfaces of the gasket with said upper and lower printing plates with the recesses facing the gasket to create an enclosure of the recesses of said printing plates with the feed holes of said gasket providing fluid communication between the recesses, forcing the sealant material to be printed through the upper intaglio printing plate from a piston pump injector unit into the recessed design facing the gasket, through the feed holes in the gasket, to the recess in said lower intaglio printing plate located on the other side of the gasket from the upper intaglio plate, bleeding the air in said recesses out from the plates as said recesses are filled with the sealant material to be printed, passing the air being bled out of the recesses through air bleed holes in said lower intaglio printing plate, moving the upper intaglio printing plate away from the printed gasket to complete the printing stroke, removing the printed gasket from between said intaglio printing plates, and preventing sealant material from flowing through the feed holes in the gasket under gravity by said size of the feed holes in the gasket.

4,116,125

CONTROL SYSTEM FOR POSITIONING UNITS EXHIBITING DEAD TIME IN THEIR RESPONSE TO ACTIVATING SIGNALS

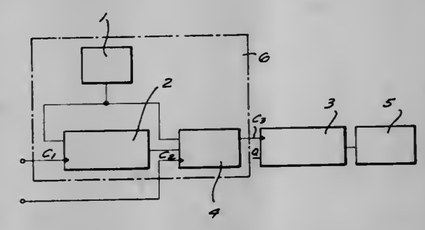
Karl-Heinz Förster, Dresden, and Werner Lein, Radebeul, both of German Democratic Rep., assignors to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, German Democratic Rep.

Filed Mar. 29, 1977, Ser. No. 782,544

Claims priority, application German Democratic Rep., Mar. 29, 1976, 192088

Int. Cl.² B41F *13/24*

U.S. Cl. 101—212 **9 Claims**



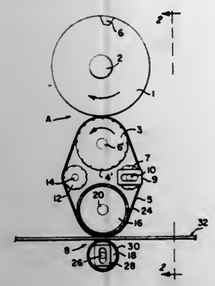
1. An improved control system for a variable-speed cyclically operating printing machine, the control system being of the type including a clocked control unit receiving printing-machine-synchronized clock signals and being operative in dependence thereon for generating activating signals, the control system furthermore including at least one positioning unit connected to receive activating signals from the clocked control unit but exhibiting a dead time in its response to activating signals, the duration of the dead time not varying linearly with the speed of operation of the printing machine, whereby the fraction of a printing-machine operating cycle constituted by the duration of the dead time varies as the speed of operation of the printing machine varies, the improvement comprising the provision of pulse-generating means operative for generating pulses corresponding to angular increments in the angular position of a rotary reference component of the printing machine; and time-delay means connected to the pulse-generating means and to the clocked control unit and operative for automatically compensating for variations in the fractional relationship between the printing-machine operating-cycle duration and the dead-time duration by introducing, into the transmission of an activating signal from the clocked control unit to the positioning unit, a compensatory time delay whose duration offsets variations in the fractional relationship, the time-delay means comprising calculating and converting means operative for calculating from the pulses a digital value indicative of the compensatory time delay needed to offset variations in the fractional relationship and operative for converting the calculated value into said compensatory time delay.

4,116,126

APPARATUS FOR PRINTING ON COMPRESSIBLE MATERIAL

Donald L. Milner, 766 Brookside Cir., Elmira, N.Y. 14903

Filed Oct. 4, 1976, Ser. No. 729,200
Int. Cl.² B41F *7/02*
U.S. Cl. 101—217 **1 Claim**



1. Apparatus for printing on compressible material without compression or distortion thereof, including in combination, a continuous traveling printing blanket, an image transfer station including means mounting a printing plate, pressure means coactive therewith and said printing blanket traveling between said means and said pressure means and in contact with said printing plate for transfer to an image therefrom to the printing blanket, the means and the pressure means having noncompressible surfaces, and a printing station adapted to print an image from the printing blanket on a compression material, said printing station including a pair of coactive rotatable impression means, one of said impression means being fixed against radial movement, the other of said impression means being radially moveable independent of said one of said impression means and being rotatably journaled and supported at each end thereof, and said coactive impression means comprises a primary cylinder and a secondary cylinder, said primary cylinder being of greater diameter than said secondary cylinder and said printing blanket is raised about said primary cylinder and in printing contact with said traveling compressible material and said primary cylinder is of the same diameter as said pressure means, and said means and said pressure means are rotatable cylinders and said impression means are rotatable cylinders having cushioned surfaces and the length of said continuous printing blanket is substantially the same as the circumferential dimension of said means which mounts a printing plate, said means being a single cylinder, the axes of the means mounting a printing plate, the pressure means and the primary and secondary cylinders being in the same projected plane.

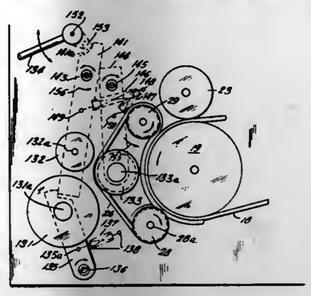
4,116,127

TICKET COUNTER AND ENDORSER

George P. McInerny, Andalusia, Pa., assignor to Brandt-Pra, Inc., Cornwells Heights, Pa.

Division of Ser. No. 632,318, Nov. 17, 1975, Pat. No. 3,998,451, which is a division of Ser. No. 465,700, Apr. 30, 1974, Pat. No. 3,944,210. This application Sep. 27, 1976, Ser. No. 726,830
Int. Cl.² B41F *13/24*
U.S. Cl. 101—232 **5 Claims**

1. An endorser assembly for use in apparatus for feeding sheets arranged in a stack in a predetermined direction and having a closed loop feed belt and roller means for supporting the belt and second closed loop belt means and a group of roller means supporting said second belt means for urging the second belt means toward the feed belt, the feed belt and second belt means cooperatively defining an arcuate path for guiding and moving documents therebetween; said endorser assembly comprising endorser means driven by said second belt means for endorsing documents as they pass between the feed belt and the second belt means; means for selectively



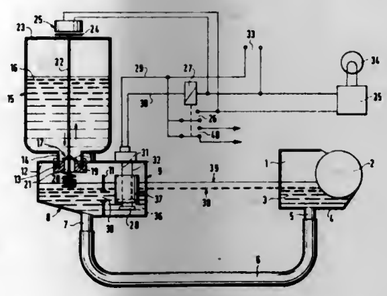
positioning said endorser means in either an engaging or displaced position with regard to said documents.

4,116,128

DEVICE FOR CONTROLLING A WASHING LIQUID LEVEL IN A WASH TANK OF A PRINTING MACHINE

Werner Lehmann, Gutach; Horst Purr, Tennenbronn, and Herrmann Raible, St. Georgen, all of Germany, assignors to Mathias Bäuerle GmbH, Germany

Filed May 12, 1977, Ser. No. 796,187
Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621804
Int. Cl.² B41F *35/00*
U.S. Cl. 101—425 **4 Claims**



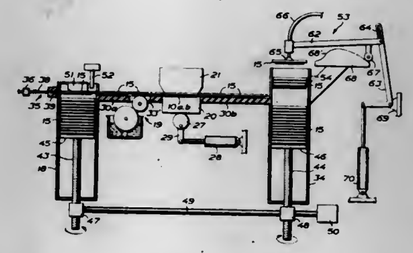
1. A device for controlling and monitoring the level of washing liquid in a washing unit of a printing machine, which machine includes a wash tank having a washing liquid therein, a pickup roller mounted in the wash tank and rotatable in the washing liquid to lift the liquid therefrom and move it on the roller surface above the liquid level to transfer it to a rubber blanket roller to be cleaned, comprising a control tank adapted to be located alongside the wash tank at substantially the same level thereof and having a connection to the wash tank connected to the wash tank at a location below the level of the liquid in the wash tank, a supply tank for washing liquid located above said control tank, a supply conduit connection from said supply tank to said control tank, an electromagnetically actuable valve having a prtion in said supply conduit connection for regulating the flow through said conduit connection to said control tank, a float switch mounted on the liquid in said control tank and connected to said valve to open and close said valve so as to maintain the level of liquid in said control tank at a predetermined amount and thereby to regulate the level of liquid of said wash tank correspondingly by flow between said control tank and said wash tank through the connection therebetween, and a partition wall in said control tank having an opening therethrogh located below the level of liquid in said control tank, said float switch being located on one side of said partition wall to cause a time-delay in the action of said float switch and the other side of said partition wall being connected to said supply tank and said connection to the wash tank.

4,116,129

METHOD FOR PRINTING COMBINATIONS OF SIGNS IN A PREDETERMINED NUMBER AND IN AN IRREGULAR SEQUENCE

Uno Arne Ivan Ståhl, Eksjögatan 10, and Nils Magnus Håkansson, Allmänningsgatan 5, both of S-253 51 Helsingborg, Sweden

Filed Aug. 4, 1976, Ser. No. 711,652
Claims priority, application Sweden, Aug. 8, 1975, 7508950
Int. Cl.² B41L *47/46*
U.S. Cl. 101—426 **3 Claims**



1. A method for printing a predetermined number of signs in a plurality of different successive sequences and in an irregular and unpredictable order in each sequence, wherein in each sequence the signs are assembled in a nonrepetitive order that is different from the order in preceding and succeeding sequences, which comprises the steps of

(a) providing the signs on a number of plates, each plate carrying at least one sign;
(b) arranging the plates in a first order;
(c) feeding the plates one at a time to a printing station;
(d) printing with the plates in the first order at said printing station;
(e) collecting the plates after the printing, and
(f) rearranging the plates in a second order different from the first order;
(g) printing with the plates in the second order;
(h) continuing to rearrange the plates in each successive sequence to an order different from the order in the preceding and succeeding sequences; and printing with the plates in each sequence in an unpredictable order that is nonrepetitive in successive sequences.

4,116,130

METHODS AND APPARATUS FOR SEVERING TUBULAR MEMBERS

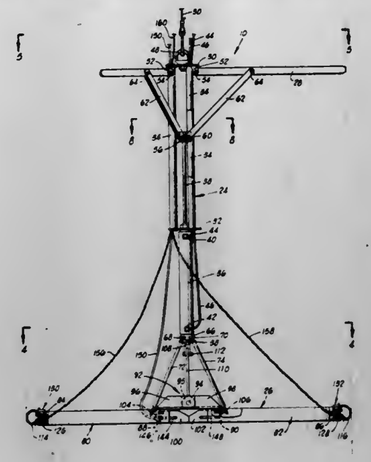
Glenn B. Christopher, and John A. Regalbuto, both of Fort Worth, Tex., assignors to Jet Research Center, Inc., Arlington, Tex.

Filed Apr. 4, 1977, Ser. No. 784,096
Int. Cl.² E21B *29/02*
U.S. Cl. 102—20 **20 Claims**

1. A method of severing a tubular member comprising the steps of:

placing a tool within the interior of said tubular member at the point where it is desired to sever said member, said tool including a remotely extendible framework formed of a pair of hinged semicircular parts which when extended move from a folded vertical position to an unfolded horizontal position having one or more remotely detonatable shaped charges attached thereto, said tool and framework being of a size such that when said framework is not extended, said tool readily passes through said tubular member and when extended, said framework is positioned transversely to the axis of said member and said shaped charges are positioned adjacent the interior walls of said member;

extending said framework after said tool has been placed



within said member so that said shaped charges are positioned adjacent the interior walls of said member at said point where it is desired to sever said member; and

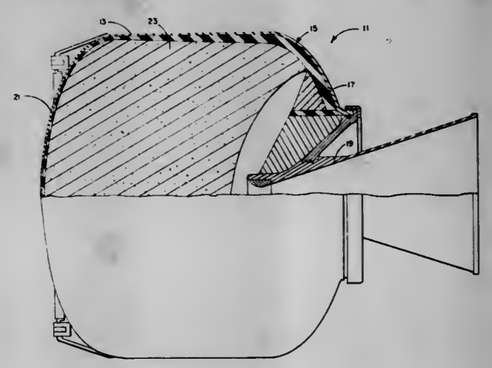
detonating said charges thereby severing said member.

4,116,131

SOLID PROPELLANT MOTOR

John I. Shafer, Pasadena, and Harold E. Marsh, Jr., La Canada, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 13, 1970, Ser. No. 48,621
Int. Cl.² F42B *1/00*
U.S. Cl. 102—103 **8 Claims**



1. A long-burning, case bonded, end burning solid propellant motor having a maximum acceleration of less than 1 g comprising:

an outer motor case,

an end burning solid propellant charge bonded to said case, said propellant having an elongation at maximum stress of 85 to 400 percent and a secant modulus of from 175 to 5 psi, and comprising a minor amount of an elastomeric binder including a prepolymer having a molecular weight from 1000 to 5000 containing reactive terminal functional groups, a difunctional compound reactive with said groups, at least one trifunctional compound and a monofunctional compound to form a lightly cross-linked elasto-

meric network and a major amount of a solid particulate oxidizer salt,

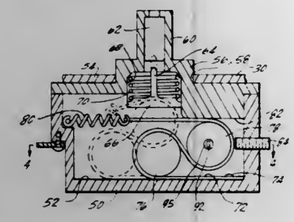
an insulative liner comprising a rubber binder containing heat insulation fillers bonded to the inner walls of said motor case and to said propellant charge.

4,116,132

INERTIAL SENSORS

Lon E. Bell, Altadena, Calif., assignor to Technar Incorporated, Calif.

Filed Dec. 17, 1976, Ser. No. 751,880
Int. Cl.² F42C 1/04; H01H 35/14
U.S. Cl. 102—200 **18 Claims**



1. A sensor responsive to a predetermined level of acceleration force or deceleration force acting on an associated structure when said sensor is properly mounted to said structure, said sensor comprising:

a linearly movable mass including a first section;

firing means including a firing element for actuation of a mechanism;

means urging said first section into operative engagement with said firing means;

mounting means for mounting said sensor to said associated structure;

releasable safety interlock means normally preventing said mass from operative engagement with said firing means; and

means for automatically releasing said safety interlock means upon proper mounting of said sensor to said associated structure.

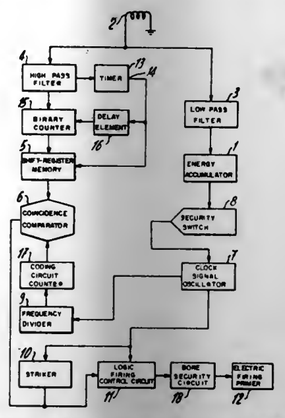
4,116,133

ELECTRONIC FIRING DEVICE FOR MISSILES

Roger Beuchat, Gland, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Nov. 17, 1976, Ser. No. 742,422
Claims priority, application Switzerland, Nov. 25, 1975, 15240/75
Int. Cl.² F42C 11/06, 9/00
U.S. Cl. 102—215 **2 Claims**

1. An electric firing device for missiles, comprising a source of energy, means for applying the energy to an electric primer, said applying means comprising time delay means for controlling firing after a determined time interval, counted from the appearance of a control signal, an electronic memory for storing a pulse value defining said time interval, and an input circuit to receive a signal representing said time interval, wherein said input circuit is connected to a coded selective filter supplying to the memory a coded pulse value defining said time interval, and said time delay means comprises an oscillator supplying clock signals, a coding circuit receiving the clock signals and transferring them into the same code as that of the coded signal applied to the memory, a comparator connected to the memory and to the coding circuit to supply a firing signal when there is a coincidence, said energy source supplied through said input circuit to an accumulator chargeable before use of the missile, said input circuit comprising means for receiving input signals which supply energy to the accumulator and represent said time interval, said coded selective filter being disposed between said receiving means and said memory and allowing passage to said memory of signals of relatively high frequency which represent said time interval, and a second filter disposed between said receiving means and



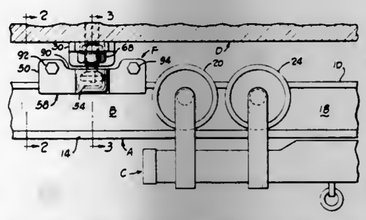
the accumulator, said second filter allowing passage of signals of relatively low frequency which supply charging energy to the accumulator.

4,116,134

HANGERS FOR OVERHEAD SUSPENDED TRACK

Paul H. Troth, Euclid, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Mar. 3, 1977, Ser. No. 773,830
Int. Cl.² E01B 25/24
U.S. Cl. 104—111 **1 Claim**



1. In an overhead suspended rail-type material handling apparatus, a rail comprising a web and transversely extending flanges on both sides of said web adjacent to the opposite edge thereof, a cleat member including a plate-like part for attachment to an overhead structure and a hanger part projecting from the plate-like part provided with an enlargement adjacent to one of its free ends having a semi-spherical bearing surface facing the plate-like part, a pair of clamp plates of similar shape orientated lengthwise of said rail and having recesses facing one another providing a spherical-like aperture therebetween the walls of which enclose said enlargement at the projecting end of said hanger part and a T-slot at each opposite side of said plates that intersect the spherical-like aperture the walls of which T-slots engage about the narrower flanges on a part of said rail, and means securing said clamp plates together.

4,116,135

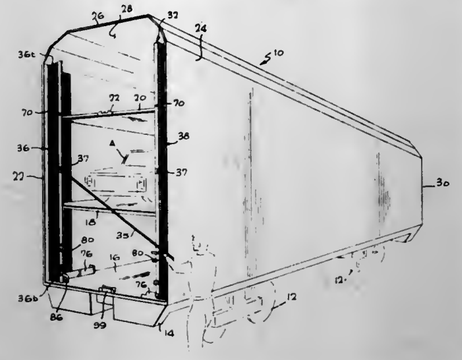
SLIDING SCREEN CLOSURE FOR RAIL CARS

William M. Jaekle, Moraga; Robert Byrne, San Carlos, and Armand Giovanelli, San Francisco, all of Calif., assignors to Southern Pacific Transportation Company, San Francisco, Calif.

Filed Nov. 1, 1976, Ser. No. 737,543
Int. Cl.² B61D 17/06
U.S. Cl. 105—378 **7 Claims**

1. In a railroad car for carrying automobiles, which includes a chassis having a lower deck and at least one upper deck spaced above said lower deck, protective side walls, and at least one open end, the improvement comprising:

a gate having a plurality of vertical frame members, a flexible screen supported on said frame members, and a plurality of rollers attached to said frame members; and



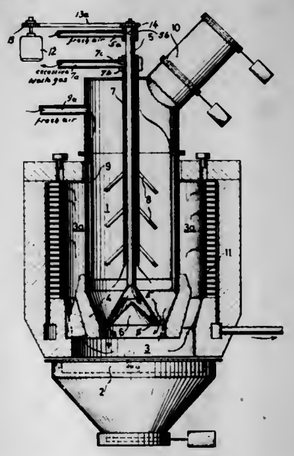
a track supported immediately under said upper deck and extending to at least about the middle of the width of the upper deck, said rollers rollably engaged with said track, and the area above said upper deck being devoid of means for guiding and supporting said gate in its movement away from the side portion of the upper deck, whereby said gate can be moved to one side of the decks to leave the decks free to move automobiles onto and off from the decks.

4,116,136

METHOD OF AND FURNACE FOR BURNING WASTE MATERIAL

Heinz Mallek; Werner Jablonski, both of Linnich, Tetz, and Peter Pelzer, Niederzier, Obz., all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Feb. 2, 1977, Ser. No. 764,915
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1976, 2604409
Int. Cl.² F23G 5/12
U.S. Cl. 110—251 **5 Claims**



1. A method of burning waste material, which includes in combination the steps of: heating said waste material while preventing access of air thereto to thereby form waste gases and degasified waste, passing in a flow the thus formed waste gases and degasified waste to an area of combustion and constricting said flow in a location prior to its reaching said area of combustion while admixing fresh air to said flow where said flow is being constricted so that by way of admixing fresh air to the constricting location both the waste gases and degasified waste are combusted in common at the constricting location, said fresh air being added to flow at a below stoichiometric quantity ratio.

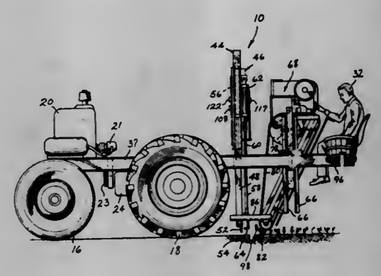
3. A furnace for burning waste material, which includes: container means for receiving the waste material to be burned, said container means having a lower open end, a combustion chamber arranged below said lower end and provided with a normally closed bottom, first conduit means connectable to a source of fresh air and substantially extending coaxially with and through said container means into the vicinity of said combustion chamber, a furnace muffle extending from said lower open end of said container means to said combustion chamber and with said first conduit means defining a constriction, said first conduit means leading to said constriction, flue means surrounding said container means and communicating with said combustion chamber for releasing waste gases therefrom, and rotatable means arranged in said container means for aiding the movement of the waste material to be burned through said container means.

4,116,137

PLANTER FOR TREES, HERBS, SHRUBS AND SIMILAR PLANTS

Henry Westerhoven, 2030 S. Bainbridge Ctr. Rd., Benton Harbor, Mich. 49022

Filed May 25, 1977, Ser. No. 800,409
Int. Cl.² A01C 11/00
U.S. Cl. 111—2 **7 Claims**



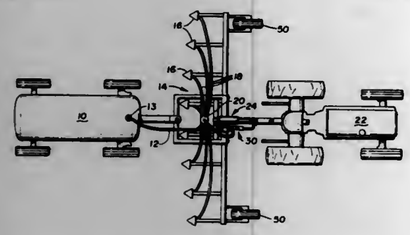
1. A planter for trees, shrubs, herbs and similar plants comprising a chassis, wheel means supporting said chassis for movement over the ground in a selected direction of travel, a blade carried by said chassis and extending transversely to said direction of chassis travel, said blade being shiftable relative to said chassis along said direction of chassis travel between fore and aft positions, said blade being further shiftable relative to said chassis between a lower ground engaging position and an upper position spaced from said ground, a conveyor carried by said chassis and including means for releasably supporting a plurality of plants in a row extending transversely to the direction of said chassis travel, means for shifting said blade from its said upper and fore positions into its said lower and aft positions for forming a trough in said ground transversely relative to the direction of chassis travel, said conveyor having one end located rearwardly of and extending to adjacent said blade in its lower and aft positions, means for rotating said conveyor to position said plant supporting means at said trough with the plants extending into the trough, said blade shifting means for shifting said blade from its lower and aft trough forming positions into its upper and fore positions and thereafter again into its lower and aft positions adjacently forwardly of said trough to cover said trough and the plants where they extend therein and simultaneously form another trough paralleling and located forwardly of said first mentioned trough, and means for

rotating said wheel means to move said chassis forwardly to position said conveyor one end adjacent said other trough whereby said conveyor may be rotated to position said plant supporting means at said other trough with additional plants being carried thereby extending into said other trough.

4,116,138
AUTOMATIC FLUID FERTILIZER CONTROL APPARATUS

David Lee McFarland, P.O. Box 154, and Raymond Joseph McFarland, P.O. Box 457, both of Gwinner, N. Dak. 58040

Filed Mar. 4, 1977, Ser. No. 774,512
Int. Cl.² A01C *23/02*
U.S. Cl. 111—7 **12 Claims**



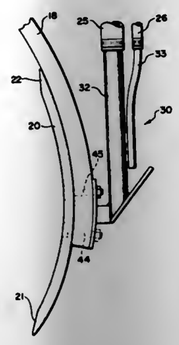
1. In a fluid fertilizer application system of the type comprising:
a fertilizer supply;
an implement having fertilizer application elements;
means for moving said application elements between a lowered, application position and a raised, transport position; and conduit means for delivering fertilizer from the fertilizer supply to the application elements;
the improvement comprising:
valve means interposed in said conduit means for delivering fertilizer from the fertilizer supply to the application elements, said valve means having a control lever having projection engaging means; and
collapsible and extendable valve actuator means, at least a portion of which is movable relative to said valve means in response to said means for moving said application elements between raised and lowered positions, said relatively movable portion of said actuator means having thereon a projection for engagement by said control lever, whereby movement of said relatively movable portion of said actuator means in response to said means for moving said application elements causes the projection on said actuator means to engage and to move said control lever such that said valve means is open when the application elements are in said lowered position and closed when the application elements are in said raised position.

4,116,139
COLD FLOW LIQUID VAPOR SHOE

Clement J. Sauer, Evansville, Ind., assignor to Chem-Farm Inc., Evansville, Ind.

Filed May 19, 1977, Ser. No. 798,573
Int. Cl.² A01C *23/02*
U.S. Cl. 111—7 **14 Claims**

1. A shoe for use with an earth plow having at least one chisel blade mounted upon a chisel shank and adapted to move through field earth so as to create a trench, the shoe comprising means for applying and at least temporarily holding ammonia in the soil, the means including, a vapor tube for receiving ammonia vapor, a vapor tube orifice defined in the vapor tube for dispensing the received ammonia vapor, a liquid tube for receiving ammonia liquid, and a liquid tube orifice defined in the liquid tube and located above and to the rear of the vapor tube orifice for dispensing liquid ammonia in a path that intersects from above the path of discharge of the previously dispensed ammonia vapor as the plow chisel moves through the ground and forms the trench, so as to encourage the liquid ammonia to act as a fluid blanket to the ammonia vapor and to

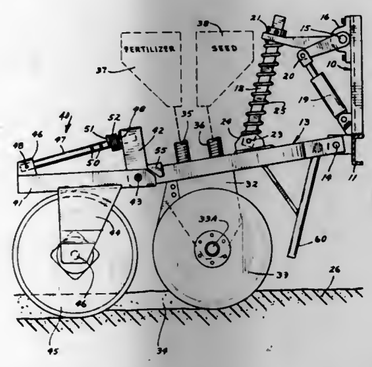


discourage vapor escape from the trench before the liquid and vaporous ammonia are covered by field earth.

4,116,140
PRESS WHEEL DEPTH CONTROL FOR GRAIN DRILL FURROW OPENERS

Joseph A. Anderson, and Chester G. Neukom, both of Jamestown, N. Dak., assignors to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Dec. 9, 1976, Ser. No. 749,051
Int. Cl.² A01C *5/00*
U.S. Cl. 111—52 **3 Claims**



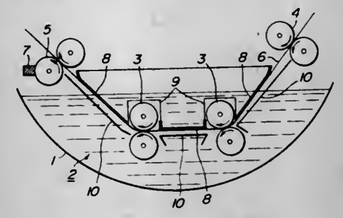
1. In combination, a depth control apparatus for controlling the depth of furrow openers used for planting seeds or the like comprising a first frame adapted to be pivotally mounted to a prime mover about a generally horizontal axis at a leading end thereof; a furrow opener for opening a path for seed mounted on said first frame member; a second frame member pivotally mounted about a generally horizontal axis to said first frame member to the rear of said furrow opener; a ground engaging press wheel rotatably mounted on said second frame member and positioned to follow in the path of said furrow opener mounted on said first frame member, said wheel being positioned closely adjacent the rear portions of said furrow opener; adjustable means to limit the upward pivotal movement of said wheel mounted on said second frame member relative to said first frame member about the pivot between the first and second frame members to retain said wheel in position engaging the ground as the furrow opener enters the ground to control the depth of said furrow opener, said adjustable means to limit the upward movement comprising an elongated member pivotally mounted on said second frame member to the rear of the rotational axis of said wheel, a fixed upright support mounted

on said first frame member including means spaced above said first frame to slidably receive said elongated member in said upright support member to permit relative sliding between the elongated member and upright support as the second frame member pivots relative to the first frame member, and means to limit the travel of said elongated member relative to the support member to limit the pivotal movement of said second frame member upwardly relative to said first frame member comprising a series of apertures in said elongated member, a pin removably mounted in one of said apertures, and means on said upright support engageable by said pin to form a positive upward stop as the second frame member pivots upwardly; and second stop means separate from said elongated member cooperating between said first and second frame members to prevent said second frame member from pivoting downwardly relative to said first frame member more than a desired amount while permitting unrestrained upward movement of the second frame member.

4,116,141
PLATE SHAPED DEVELOPMENT ELECTRODE

Masaji Nishikawa; Yoshiro Suzuki, both of Hachioji, and Noboru Takasugi, Higashi-Yamato, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1977, Ser. No. 770,502
Claims priority, application Japan, Feb. 23, 1976, 51-17972
Int. Cl.² G03G *15/06*
U.S. Cl. 118—648 **5 Claims**



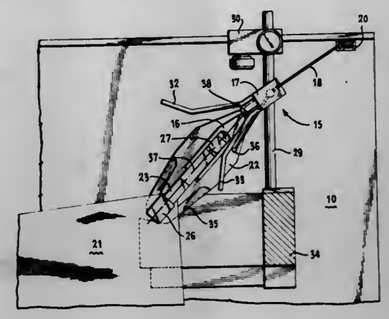
1. A device for developing an electrostatic latent image produced on a record sheet, which travels along a path, by means of electrically charged particles dispersed in a developing liquid, comprising at least one pair of developing and squeezing rollers arranged along said path and bringing the electrostatic latent image produced on the record sheet into contact with the developing liquid, said rollers being in contact with the surface of said record sheet, and at least one plate-shaped perforated fixed electrode arranged in front and at the rear of said pair of developing and squeezing rollers, said plate-shaped perforated fixed electrode being provided with a number of elongate holes arranged with respect to the traveling direction of the record sheet, such that one half of the total number of elongate holes is inclined at an angle with respect to the traveling direction of the record sheet and the other half is inclined in the opposite direction.

4,116,142
WORKPIECE TENSIONING DEVICE FOR A SEWING UNIT

Roberto Sanvito, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Sep. 29, 1977, Ser. No. 837,680
Claims priority, application Italy, Oct. 29, 1976, 28836 A/76
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.26 **2 Claims**

1. A workpiece tensioning and positioning device for a traveling gripper movable along the work surface of a sewing unit while holding a workpiece being advanced to the stitching instrumentalities of a sewing machine mounted adjacent one end of the work surface, said workpiece tensioning and positioning device comprising:
(a) a cable element interconnecting the traveling gripper with a return device for applying tension to the workpiece while being advanced to the sewing machine and returning the gripper to its starting position upon release of the workpiece therefrom.
(b) a positioning member mounted on the work surface defining the starting position for the traveling gripper which includes;
(i) a pair of divergent tongues having a shock absorber assembled intermediate the inner ends thereof;

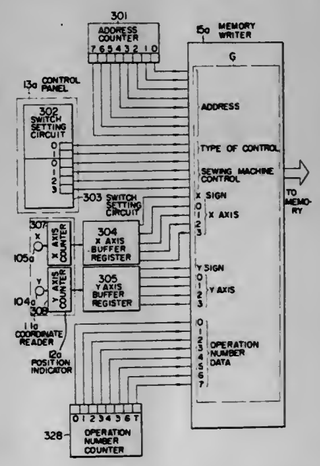


(ii) means defining a central opening in said positioning member through which said cable element is caused to travel during movement of the traveling gripper; and
(c) said cable element being attached to the traveling gripper at a location displaced from its longitudinal axis for effecting pivotal movement thereof, upon its return to starting position, to a location in readiness for attachment to a workpiece.

4,116,143
PROGRAMMING SYSTEMS FOR AUTOMATIC SEWING MACHINES

Takao Manabe, Shizuoka, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1977, Ser. No. 782,232
Claims priority, application Japan, Mar. 31, 1976, 51-35524
Int. Cl.² D05B *19/00*
U.S. Cl. 112—121.11 **6 Claims**



1. In a programming system for an automatic sewing machine of the type comprising a memory device provided with a plurality of addresses corresponding to respective steps of the sewing operation of said sewing machine, said addresses being used to store sewing machine driving signals corresponding to

respective addresses and means for storing a sewing command program in said memory device, the improvement which comprises:

a sewing pattern sheet provided with marks corresponding to needle lowering positions of a predetermined sewing profile;

a coordinate reader including a stylus movable on said sheet to a selected mark, and an X axis and a Y axis counter for representing the X and Y coordinates respectively of said stylus at said selected mark;

an axis buffer register and a Y axis buffer register;

switch means for producing a reset signal which is used to set the contents of said X and Y axis counters respectively in said X and Y axis buffer registers and to reset said X and Y counters when said stylus is positioned on said selected mark, said X and Y axis buffer registers holding the set values until said stylus is moved to a succeeding mark;

an operation number counter which counts the number of the successive marks positioned along a straight line which constitutes a portion of the sewing pattern profile;

gate circuit means for producing a counting signal supplied to said operation number counter, said gate circuit means including coincidence circuits for detecting coincidence of the content of said X axis counter with that of said X axis buffer register and coincidence of the content of said Y axis counter with that of said Y axis buffer register;

a control panel for producing a signal regarding the type of the sewing machine control and a sewing machine control signal;

an address counter which advances its count in response to a reset signal for said operation number counter, for the signal regarding the type of control and for the sewing machine control signal; and

a memory writer for storing said signal regarding the type of the sewing machine control, said sewing machine control signal, and bit values of said X and Y axis buffer registers and of said operation number counter in a memory region corresponding to an address in said memory device designated by said address counter.

4,116,144

STITCH PATTERN FORMING CONTROL IN A SEWING MACHINE

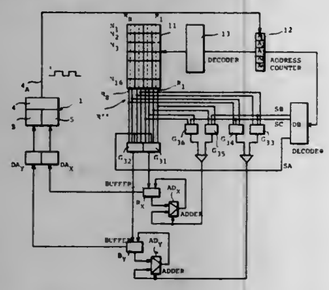
Akira Tanimoto, Kashihara; Yukihiro Yoshida, Ikoma, and Sunao Katoh, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 7, 1977, Ser. No. 766,349

Claims priority, application Japan, Feb. 6, 1976, 51-13483; Feb. 6, 1976, 51-13484; Feb. 9, 1976, 51-13667; May 11, 1976, 51-54009; Aug. 30, 1976, 51-103913

Int. Cl.² D05B *3/02*

U.S. Cl. 112—158 E **23 Claims**



1. In an electric sewing machine which forms a stitch pattern in response to an output signal from a control system, the control system comprising:

a static memory for storing digital information related to positional coordinates for each stitch of a predetermined stitch pattern;

an address counter for progressively advancing steps of the static memory for read out purposes;

a dynamic memory for temporarily storing the digital information derived from the static memory;

a synchronization pulse signal generator for developing a synchronization pulse signal in response to stitch forming operation conducted by the sewing machine;

means for progressively reading out the digital information temporarily stored in the dynamic memory in response to the synchronization pulse signal;

modification means for modifying the digital information temporarily stored in the dynamic memory; and

supply means for supplying the digital information read out from the dynamic memory to a stitch forming section of the sewing machine.

4,116,145

UPPER FABRIC FEED DEVICE FOR SEWING MACHINES

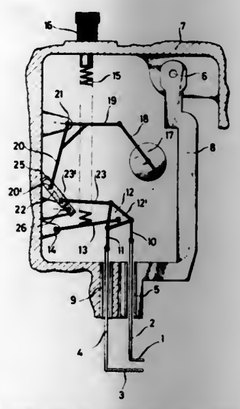
Karl Nicolay, Bielefeld, Germany, assignor to Durkoppwerke GmbH, Bielefeld, Germany

Filed May 3, 1977, Ser. No. 793,415

Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620209

Int. Cl.² D05B *27/04*

U.S. Cl. 112—212 **9 Claims**



1. in a sewing machine a transport mechanism comprising a pressure foot and a feed foot for advancing the material to be sewn, the transport transmission which comprises:

a crank disc for transmitting rotary motive power;

an input crank eccentrically connected to said crank disc;

a bell crank actuated by said input crank, said bell crank comprising:

a receiving arm connected to said input crank,

a swing arm, and

a fixed pivot center for said bell crank disposed between said receiving arm and said swing arm;

a composite connecting link actuated by said swing arm said composite link comprising:

a guide bar having a fixed pivot pin, and

a guided sliding link having two pivot centers in fixed relation near its ends;

an output crank actuated by said composite connecting link;

a ternary link carrying on its base the pressure foot and the feed foot;

a further link attached with one end to a fixed pivot center and with its other end pivotally attached to the pivot center of said ternary link; and

pressure means for maintaining said further link under a predetermined pressure.

4,116,146

SEWING MACHINES

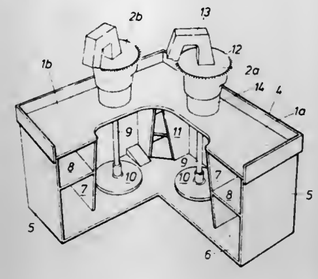
Denis Matthews, Sutton in Ashfield, England, assignor to Mathbirk Limited, Sutton in Ashfield, England

Filed May 11, 1977, Ser. No. 795,924

Claims priority, application United Kingdom, May 19, 1976, 20606/76

Int. Cl.² D05B *75/06*

U.S. Cl. 112—217.2 **2 Claims**



1. A work station for the joining together of textile fabrics comprising at least two rotatable sewing machines and a bench having a horizontal work surface on which each of said sewing machines is mounted for rotation about a substantially vertical axis relative to the work surface, said work station characterized by:

(a) an L-shaped horizontal work surface having limbs of substantially equal length, each limb supporting rotatably at least one sewing machine, whereby said work surface together with the sewing machines rotatably mounted thereon are disposed relative to each other so that an operator may be placed in a position to operate each of said sewing machines in turn,

(b) a base spaced below the work surface,

(c) spaced vertical members mounted on the base for supporting the work surface,

(d) partitions interposed between the work surface and the base for defining shelves, cupboards, compartments and the like and

(e) a vertical, rotatable shaft depending from each sewing machine and extending downwardly toward the base, each said shaft having means affixed thereto for imparting rotation to the sewing machine from which the shaft depends.

4,116,147

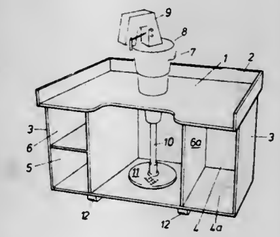
SEWING MACHINES

Denis Matthews, Sutton in Ashfield, England, assignor to Mathbirk Limited, Sutton in Ashfield, England

Filed May 11, 1977, Ser. No. 795,925

Int. Cl.² D05B *75/06*

U.S. Cl. 112—217.1 **1 Claim**



1. A work table for a sewing machine, said work table including:

(a) a horizontal work surface and a sewing machine mounted rotatably relative to said work surface,

(b) said work surface having side and rear edge portions defined by a peripheral upstanding edge for containment of work on the work surface and a front edge portion in which is formed an indentation,

(c) a base spaced below the work surface,

(d) spaced vertical members mounted to the base and extending upwardly therefrom to support the horizontal work surface,

(e) a space interposed between the base and the work surface,

(f) at least one shelf and at least one compartment located in the space,

(g) a vertical, rotatable shaft connected to and extending downwardly from the sewing machine into the space to enable rotation of the sewing machine from beneath the work surface and

(h) foot engageable means affixed to the shaft below the work surface for imparting rotation to the shaft and to the sewing machine.

4,116,148

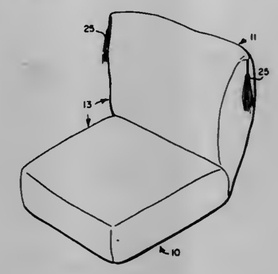
FLOOR-SUPPORTED CUSHION ASSEMBLY AND METHOD OF MAKING SAME

Kay Anne Torrez, 924 E. Washington, Phoeniz, Ariz. 85034

Filed Sep. 26, 1977, Ser. No. 836,737

Int. Cl.² D05B *97/00*

U.S. Cl. 112—262 **8 Claims**



1. In the making of a floor-supported cushion assembly, the method comprising the steps of:

(a) folding a piece of fabric having a decorative face and a plain face in half with said decorative faces in engagement and providing a longitudinal fold at one side and free edges at the opposite side;

(b) placing pattern pieces over end portions of said folded fabric in spaced relation, with one pattern piece being for the seat portion of the envelope and the other pattern piece for the back portion of the envelope;

(c) marking the top ply of said folded fabric to designate end seam lines and seam lines spaced from the free edges, each of which extends inwardly from an end edge;

(d) cutting out a rectangular recess from both plies midway between the fold and the opposite seam line and at the end edges of said bottom seat portion;

(e) sewing the seams which extend inwardly from the end edges, leaving a slot for the accommodation of a zipper;

(f) opening the seams and adjusting the folded fabric to move the seams to the center front;

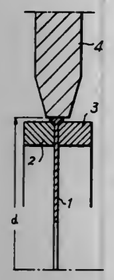
(g) sewing seams along the marked seam lines that are spaced from the end edges, and when the seam at the end of the bottom seat portion is formed it will leave a cut-out corner at each end thereof;

(h) adjusting the corners to bring the free edges thereat into accurate coincidence, and then stitching a seam at a space from and parallel to these edges;

(i) turning the envelope inside-out to bring the decorative face of the fabric into exposed position;

(j) inserting the zipper into the slot and securing in place by stitching;
(k) opening the zipper and inserting a foam pad into the seat end portion, with corners of the pad being snugly received in front corners of the seat end portion;
(l) inserting a pillow into the back end portion of the envelope; and
(m) placing the envelope with the cushion and pillow therein on a flat supporting surface, with the zipper in a downward position and forcing the upper ply of the envelope downwardly against the bottom ply in the space between the end portions and securing them together by sewing to form a hinge.

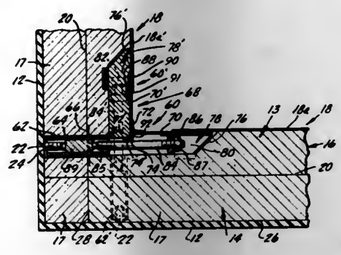
4,116,149
CENTRIFUGAL BLADE FOR A TURBINE - ROTOR METHOD FOR MAKING THE SAME
Alois Kauf, Unterzeitlbach; Georg Kandler, Unterpfaffenhofen; Axel Roesmann, and Fritz Nustede, both of Karlsfeld, all of Germany, assignors to Motoren- und Turbinen-Union Munchen GmbH, Munich, Germany
Filed Dec. 21, 1976, Ser. No. 753,110
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558436
Int. Cl.² B21D *51/00*
U.S. Cl. 113—116 D **13 Claims**



1. A method for producing turbine rotor blades having curved root portions by using sheet stock comprising of steps of: applying to sheet stock an outer rim curvature geometrically similar to a final curvature of the root portions of said blades; curving said sheet stock three-dimensionally; clamping said sheet stock in dies having a circumferential contour corresponding to the final contour of the root portions of said blades but being smaller for forming a seam; rolling said seam under pressure for forming a T-shape having a final rim curvature of the root portions of said blades; and cutting a plurality of blades from said sheet stock.

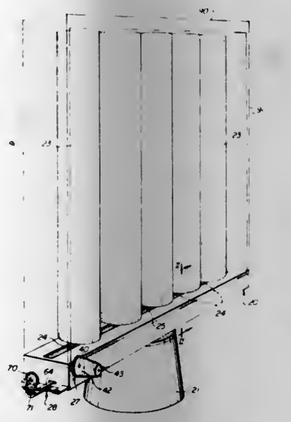
4,116,150
CRYOGENIC INSULATION SYSTEM
Thomas E. McCown, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Mar. 9, 1976, Ser. No. 665,285
Int. Cl.² B63B *25/08*; B65D *25/18*
U.S. Cl. 114—74 A **22 Claims**

1. A container for cryogenic liquefied gases which comprises a container wall, at least one fiber reinforced plastic foam insulation layer disposed within said container wall, a low temperature resistant metal liner in contact with the inner side of said at least one foam insulation layer, mechanical fastener means connected to and depending from said metal liner at spaced locations along said liner, retainer means disposed in and connected to said at least one foam insulation layer adjacent said inner side thereof, said retainer means comprising a plurality of strips positioned at spaced locations within said foam insulation layer and secured thereto, said fastener means being engaged in said strips and holding said metal liner in position against said at least one foam insulation layer, said container having corners and including at least one corner structure, said corner structure comprising coupler means positioned in said at least one foam insulation layer, said coupler means comprising an elongated member bonded to said at least one foam insulation layer, and means connecting



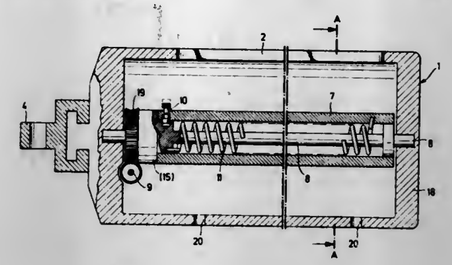
said metal liner to said coupler means, said connecting means including a corner support member in said at least one foam insulation layer adjacent said metal liner, and means connecting said coupler means to the wall of said container, said coupler means transmitting tension loads from said metal liner to the wall of said container.

4,116,151
WIND POWERED APPARATUS
John Guthrie, Suite 1401–555–13th St., West Vancouver, British Columbia, Canada (V7T 2N8)
Filed Aug. 15, 1977, Ser. No. 824,624
Claims priority, application Canada, Sep. 8, 1976, 260709
Int. Cl.² B63H *9/06*
U.S. Cl. 114—102 **8 Claims**



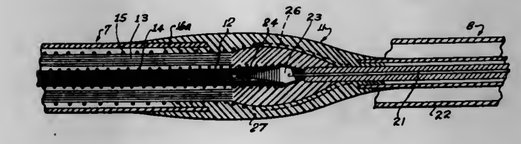
1. A wind-powered apparatus comprising:
an elongate support;
a series of elongate generally parallel foil devices carried on said support, said foil devices extending normally to said support and being uniformly spaced longitudinally thereof;
extension means in said support being operative to move said foil devices in unison longitudinally of said support to vary selectively said uniform spacing;
each said foil device being rotatable about an axis parallel to its length, means maintaining said foil devices in identical orientation about their respective axes and operative to rotate said foil devices in unison selectively to vary said orientation;
and means operative to pivot said support about a vertical axis to position said foil devices in a selected vertical plane.

4,116,152
REEFING APPARATUS FOR A SAILING SHIP
Karl Olof Axel Helmer Larsson, Industriestrasse 40, CH - 6300, Switzerland
Filed Dec. 23, 1976, Ser. No. 753,710
Claims priority, application Sweden, Feb. 19, 1976, 7601980
Int. Cl.² B63H *9/04*
U.S. Cl. 114—106 **6 Claims**



1. Reefing apparatus for the sail of a sailing vessel having a sail with a footrope and comprising:
(a) a hollow boom for the sail, said boom having a longitudinal slot therein with a length at least equal to that of the footrope of the sail;
(b) a hollow shaft rotatably mounted within the boom and extending substantially the length of the slot, and to which said footrope is attachable; and
(c) drive means for rotating the shaft in order to roll up the sail on the shaft,
(d) said drive means comprising a helical spring disposed within and connected to said hollow shaft and stressed by unrolling of the sail, said spring subsequently effecting re-rolling of said sail on said shaft, and
(e) manually operable means affording the capability of prestressing said spring prior to unrolling of said sail.

4,116,153
ELASTIC ELECTRICALLY-CONDUCTIVE STRAIN CABLE
Frederick H. Fisher, and Victor C. Anderson, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 4, 1977, Ser. No. 784,020
Int. Cl.² B63B *21/56*; H01B *7/06*
U.S. Cl. 114—244 **8 Claims**



1. An elastic electrically-conductive strain cable comprising:
an inner member providing an axially-extending core having a circular cross-section of a predetermined diameter,
electrically-conductive wire means helically wound on said inner member throughout its length,
an outer strain member surrounding said inner member and said helical wire means,
said outer strain member being a bundle of fibers disposed in a substantially parallel arrangement and both said inner and outer members also being formed of a elastomeric material selected in accordance with their elastic properties and Poisson ratio characteristics, and
an insulating plastic impregnating the interstices of the fiber bundle for binding the inner and outer members and the helical wire means together into said fixed circular geometry,
said wire means being wound with a particular helical pitch in turns/unit length with the pitch being so related to said inner member diameter and to said Poisson ratio that, when said cable is tensioned, the fractional change in volume per fractional change in length is substantially the same for both said wire means and said elastomeric members.

4,116,154
BICYCLE DISTANCE SAFETY DEVICE
Willie Harris, 1519 - 89th Ave., Oakland, Calif. 94621
Filed Apr. 26, 1976, Ser. No. 679,885
Int. Cl.² B60Q *1/34*
U.S. Cl. 116—35 A **4 Claims**

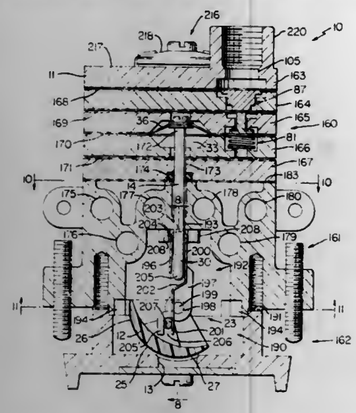


1. A bicycle distance safety device which indicates not only the presence of a bicycle but also the minimum distance that should be maintained by others in passing the bicycle, the safety device includes a Z-shaped support member that mounts at one end of the frame of a bicycle immediately below the bicycle seat on an seat-elevation-adjustment-bolt, and the support member extends parallel to the horizontal front bar of the bicycle frame and forms a right angle at it's end, a portion of said member is to be L-shaped, a horizontal indicating member is pivotally attached to said parallel support member at said L-shaped angle portion and extends in a lateral outwardly horizontal portion from the side of the bicycle frame a predetermined distance beyond the lateral extension of handlebar of said bicycle, means maintaining said indicating member in said lateral extended position, thus assuring a motorist that by miss hitting said horizontal indicating member the motorist will positively miss hitting the bicyclist, said horizontal indicating member comprises two long-angle arrow-shaped means and reflector material that extends the full length of said horizontal indicating member, whereby manual movement of said indicating member will create an illusion of a moving arrow for better attention getting to prevent an accident, the parallel support member of said safety device also includes the reflector material on both sides and in front to provide three-way protection, the horizontal indicating member and the parallel support member are connected together to form the pivotally movable bicycle distance safety device whereby the safety device provides selective four-way indicating protection for the bicyclist.

4,116,155
INDICATOR FLAG CONSTRUCTION
Harley V. Bible, Maryville; Clifford E. Goff, and William T. Moon, Jr., both of Knoxville, all of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Apr. 25, 1977, Ser. No. 790,406
Int. Cl.² G01L *19/08*
U.S. Cl. 116—65 **14 Claims**

1. In an indicator construction having a housing means carrying a movable flag means and a movable plunger operatively associated with said flag means to cause movement thereof upon movement of said plunger by control means carried by said housing means and being operatively interconnected to said plunger, the improvement comprising a spring member having means operatively interconnected to said

plunger and having means operatively interconnected to said movable flag means to cause movement thereof upon movement of said plunger, said flag means being pivotally carried by said housing means, said spring member holding said flag means in one pivoted position thereof by the normal bias of said spring member when said plunger is in one position relative to said housing means, said plunger forcing said spring member out of its normal bias position to another position thereof to hold said flag means in another pivoted position



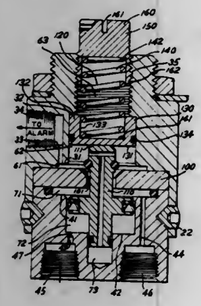
thereof when said plunger is in another position relative to said housing means, said spring member having a leaf portion, said plunger camming against said leaf portion to force said leaf portion to said another position of said spring member and thereby move said flag means to said another position thereof when said plunger is moved to said another position thereof, said leaf portion of said spring member having a step therein, said plunger camming against said step to force said leaf portion to said another position and thereby move said flag means to said another position thereof.

4,116,156

MAINTENANCE ALARM ACTUATOR

Walter E. Draxler, Arlington Heights, Ill., assignor to Arrow Pneumatic, Inc., Forest Park, Ill.

Filed May 25, 1977, Ser. No. 800,252
Int. Cl.[2] G01L *19/12*
U.S. Cl. 116—70 **3 Claims**



1. An improved maintenance alarm actuator adapted for actuating a warning alarm to signal the need to clean or change a fluid filter that is disposed in a fluid flow line and that is subject to clogging as a result to flow through the fluid flow line, the improved maintenance alarm actuator comprising:

a casing including: a main cylindrical cavity having a first diameter and having a first end and a second end; a second cylindrical cavity having a second diameter and being disposed adjacent to and in communication with the first end of the main cavity; and a cylindrical valve seat having a third diameter and being disposed adjacent to and in communication with the first end of the main cavity and with the second cylindrical cavity, with the longitudinal axes of the main cavity, the second cavity and the valve seat being coaxial and with the first diameter being greater than the third diameter;

a balanced valve element comprising: a first cylindrical end portion including a distal end of a fourth diameter and an adjacent, intermediate neck of a fifth diameter; a second cylindrical end portion with a sixth diameter; and a cylindrical flange portion with a seventh diameter and formed between the first and second end portions; the fourth diameter being substantially equal to the third diameter, the fifth diameter being less than the third and fourth diameters, and the seventh diameter being substantially equal to the first diameter providing for sealing engagement of the flange portion with the wall of the main cavity, and the valve element being disposed within the main cavity so that the first end portion of the valve element is disposed within the valve seat, so that the flange portion of the valve element is disposed within the main cavity and so that the valve element is slidable within the main cavity between a first portion wherein the distal end of the first end portion of the valve element is adjacent to the valve seat so as to block flow through the valve seat and a second position wherein the intermediate neck of the first end portion of the valve element is adjacent to the valve seat so as to permit flow through the valve seat;

means for biasing the valve element to its first position including means abutting the distal end of the first end portion of the valve element;

means for permitting communication between the fluid flow line, upstream of the fluid filter, and a higher pressure portion of the main cavity defined by the flange portion of the valve element and the second end of the main cavity so that the pressure of the fluid in the fluid flow line upstream of the fluid filter acts to bias the valve element to it second position;

means for permitting communication between the fluid flow line, downstream of the fluid filter, and a lower pressure portion of the main cavity defined by the flange portion of the valve element and first end of the cavity so that the pressure of the fluid in the fluid flow line downstream of the fluid filter acts to bias the valve element to its first position; and

means, including the valve seat, and the second cavity for permitting communication between the lower pressure portion of the main cavity and the warning alarm when the force resulting from the pressure of the fluid in the higher pressure portion of the main cavity acting on the flange portion of the valve element exceeds the sum of the force resulting from the pressure of the fluid in the lower pressure portion of the main cavity acting on the flange portion of the valve element plus the force that the biasing means exerts on the valve element so that the valve element is moved to its second position and thereby permits flow through the valve seat.

4,116,157

ROTATABLE VISUAL INDICATOR FOR SAFETY SYSTEMS

Willie V. Evans, Kilgore, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

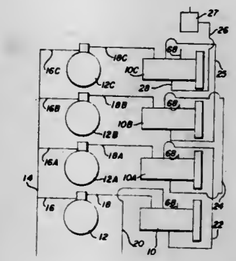
Filed Nov. 15, 1976, Ser. No. 741,648
Int. Cl.[2] F16K *37/00*; G01L *19/12*
U.S. Cl. 116—125 **4 Claims**

1. A visual indicator structure for indicating a predetermined fluid pressure condition in a fluid system comprising:

a housing having a central bore therein, an elongate slide valve mounted within said bore for longitudinal movement between extended and retracted positions and having a piston adjacent one end thereof in fluid communication with a sensed fluid in the system, said slide valve being biased to extended position by spring means;

visual indicating means mounted adjacent the other end of the slide valve within the bore for movement between a first indicating position to indicate normal operation and a second indicating position to indicate a predetermined abnormal operating condition in the fluid system being sensed, said visual indicating means including an outer fixed indicator element and a generally flat movable inner indicator element, means mounting the inner indicator element for rotational movement about an axis generally in alignment with the longitudinal axis of the slide valve;

said outer indicator element having a plurality of pie-shaped clear segments, said inner indicator element being divided into alternate pie-shaped segments of one color and into



intervening pie-shaped segments of another contrasting color, said alternate and intervening segments being alternately aligned with the clear segments of the outer indicator element for viewing;

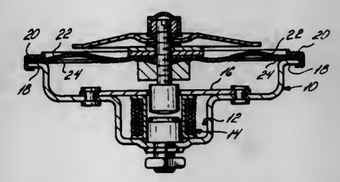
a torsion spring having one end secured to the inner indicator element and the other end secured to the slide valve, and means to effect rotation of the slide valve about its longitudinal axis as it moves longitudinally between extended and retracted positions including a cam groove in the slide valve and a pin received in said groove and fixed to said housing to effect rotation of said slide valve upon longitudinal movement thereof, said slide valve rotating in one direction when moving to an extended position for biasing said torsion spring in one direction and rotating in an opposite direction when moving in an opposite direction for biasing said torsion spring in an opposite direction.

4,116,158

VIBRATING MEMBRANE HORNS

Bertrand Antoine Warnod, Neuilly, France, assignor to Klaxon S.A., Courbevoie, France

Continuation of Ser. No. 721,930, Sep. 15, 1976, abandoned. This application Nov. 17, 1977, Ser. No. 852,381
Claims priority, application France, Sep. 18, 1975, 75 28544
Int. Cl.[2] G10K *9/00*
U.S. Cl. 116—142 R **6 Claims**



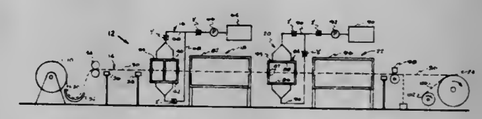
1. A vibrating membrane horn of the type comprising a generally cup-shaped case having a peripheral flange extending about an open end of said case, a membrane extending across said open end of said case to close that case, a peripheral portion of said membrane being supported on said flange, a vibration generator disposed in said case and acting on said membrane, a gasket interposed between said membrane and said flange, said gasket being formed of an absorbent material impregnated with a water proofing product, and means clamping the peripheral portion of said membrane and said gasket to said flange, said case, said membrane and said clamping means defining a complete enclosure for said generator to which enclosure, the only access for air and water would be past the edge of said peripheral portion of said membrane, said gasket constituting means admitting air to the interior of the case past said peripheral portion substantially to equalize the pressure in the case with ambient pressure and precluding the ingress of water to the interior of the casing past said peripheral portion.

4,116,159

SUBSTRATE PASSES THROUGH POOL CONFINING WALL COATING APPARATUS

Delmar D. Long, Rock Hill, S.C., assignor to M. Lowenstein & Sons, Inc., New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,659
Int. Cl.[2] B05C *3/12*
U.S. Cl. 118—34 **11 Claims**



1. Apparatus for applying viscous coating material to a longitudinally moving porous web to fill the interstices and coat the faces thereof, comprising means for moving an indefinite length porous web in a generally horizontal path of travel, viscous material applicator means comprising a coating head having a pair of elongate manifolds for containing viscous coating material, said manifolds positioned respectively above and below said path of travel to engage the web, each manifold having an elongate sealing opening extending across said web path with said openings positioned in opposed relation to apply viscous coating material onto the opposite face portions of the web as it passes between the manifolds, means for introducing a viscous coating material into the manifolds to coat upper and lower faces of the moving web, and edge means positioned generally centrally in each of said manifolds and extending across said path to contact opposite face portions of the web during its movement between the manifolds and force coating material on the surfaces of the web into the interstices thereof.

4,116,160

FLUIDIZED BED, GAS COATING APPARATUS

John Randolph Langley, Trenton, N.J., and Michael H. Spritzer, San Diego, Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Oct. 26, 1976, Ser. No. 735,186
Int. Cl.[2] C23C *13/00*
U.S. Cl. 118—48 **9 Claims**

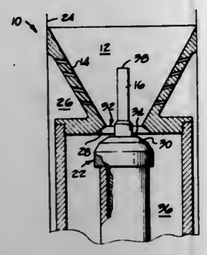
1. Apparatus for coating particles with a substance contained in a reactant gas, comprising

means defining a generally cylindrical coating chamber for containing the particles to be coated,

an inverted conical member having a downwardly extending apex forming a base for said coating chamber and including means for producing a flow of inert gas thereabove in order to form a fluidized bed of the particles above said conical member,

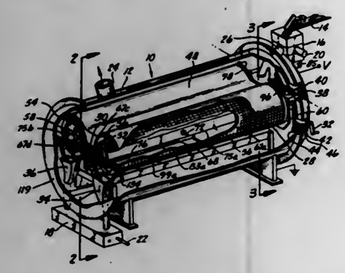
a movable plug forming an apex portion of the inverted conical member, the unloading plug being movable to form an opening for unloading coated particles from said coating chamber, and

an elongated nozzle mounted on said movable plug and extending upwardly from the apex of said conical member



with its outlet being spaced substantially thereabove for introducing reactant gas into said coating chamber.

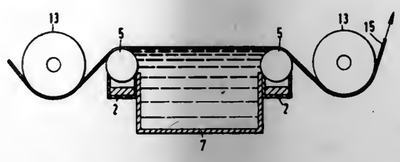
4,116,161
DUAL TUMBLING BARREL PLATING APPARATUS
Kenneth E. Steube, St. Charles, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Nov. 12, 1976, Ser. No. 741,307
Int. Cl.[2] C23C *13/08*
U.S. Cl. 118—49.1 **7 Claims**



1. An apparatus for plating articles including:
means forming an enclosed chamber in which the establishment of a desired reduced pressure environment is possible;
support means within said chamber, said support means including a first portion fixedly connected to said chamber forming means, a second portion hingedly connected to said first portion and a pair of elongated inner shields connected to and extending sidewardly from said support means second portion;
a pair of article supporting open mesh barrels of generally cylindrical configuration, said barrels being spaced generally parallel from each other and supported for axial rotation by said inner shields which are positioned therein;
drive means connected to rotate said barrels so that adjacent portions thereof travel upwardly and distant portions thereof travel downwardly; and
means for supplying plating material, said supply means being oriented adjacent the lower adjacent quadrants of said barrels and along a line generally parallel to the axes of said barrels.

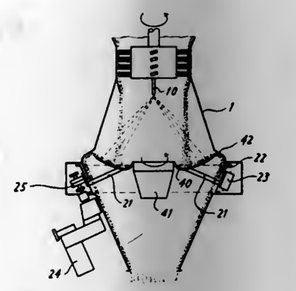
4,116,162
COATING DEVICE
Peter Dinter, Hallgarten; Andreas Kolbe, Wiesbaden, and Reinhold Guckes, Hohenstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Aug. 31, 1977, Ser. No. 829,425
Int. Cl.[2] B05C *1/08, 11/10, 3/18*
U.S. Cl. 118—104 **19 Claims**

1. Apparatus for continuously applying a flowable coating agent to moving web material of predetermined width comprising:
a coating agent applicator trough extending widthwise across the path of travel of the moving web;
means for supplying coating agent to the trough;
first and second rotatable doctor rods extending parallel to the width of the trough and located along both sides thereof, the doctor rods extending beyond the adjacent sides of the trough so that they form in effect a part of the sidewall of the trough;
support means for the doctor rods comprising channels



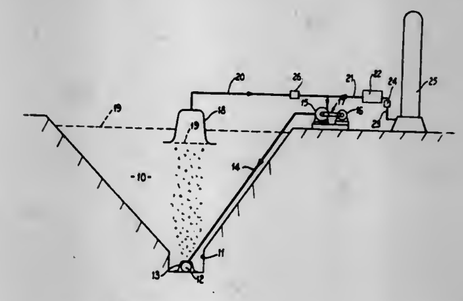
extending parallel to the rods, the channels having openings across which the doctor rods lie, said channel openings being of lesser width than the doctor rod diameters and said channels having a pair of narrow edge areas in contact with the doctor rods during operation of the apparatus; and
means for guiding a tensioned web to be coated across the first doctor rod, across the applicator trough and then over the second doctor rod,
whereby coating material picked up by the web surface facing the trough is wiped to a desired thickness by the second doctor rod in the path of travel of the moving web.

4,116,163
APPARATUS TO COAT A FLOWING MASS OF PARTICULATE MATERIAL
Aldo Torelli, Oberwil, and Erwin Prinz, Adliswil, both of Switzerland, assignors to Peter Fahrni, Kilchberg, Switzerland
Filed Nov. 21, 1977, Ser. No. 853,590
Claims priority, application Switzerland, Nov. 26, 1976, 14905/76
Int. Cl.[2] B05B *17/00*
U.S. Cl. 118—303 **10 Claims**



1. Apparatus for coating particulate material comprising:
a housing having means therein to establish a freely falling annular curtain of said particulate material;
a spray device disposed within said curtain and concentric thereto and effecting at least one jet of coating material directed against the inner side of the curtain whereby a first coating is applied to the particulate material and a remainder portion of the spray passes through the curtain;
a rotatable plate member supported concentrically to the axis of said curtain and disposed so as to intercept said annular curtain after the impringment thereon of said directed spray;
drive means rotating said plate so as to subject the intercepted particulate material to centrifugal forces whereby the intercepted particulate travels radially across the plate and is flung outwardly therefrom;
said housing being configured so as to deflect the outwardly flung particulate material and to guide the deflected material to discharge from said apparatus; and
the directed spray portion passing through the curtain impinges on a portion of said plate lying outside of the curtain path whereby the intercepted particulate material moving radially across the plate due to said centrifugal forces is subjected to an additional coating operation.

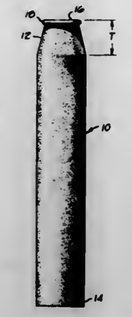
4,116,164
METHOD OF FISH FARMING
Fuad Aboodi Shabi, Chester, and Richard Loxley Hibberd, Sheffield, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation-in-part of Ser. No. 687,800, May 19, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,376
Int. Cl.[2] A01K *63/00*
U.S. Cl. 119—3 **7 Claims**



1. A method of accelerating the rate of growth of aquatic life such as fish, mollusks and crustacea comprising the steps of:
confining the aquatic life in a body of water wherein the level and oxygen content of the water can be controlled;
introducing a gas containing at least 25% by volume oxygen, balance nitrogen or other gas not harmful to aquatic life below the surface of said body of water allowing said gas to disperse through said body of water; and
maintaining the dissolved oxygen level throughout said entire body of water at least 120% above saturation with respect to ambient air, whereby said aquatic life exhibits a faster rate of growth than in a conventional artificially oxygenated body of water.

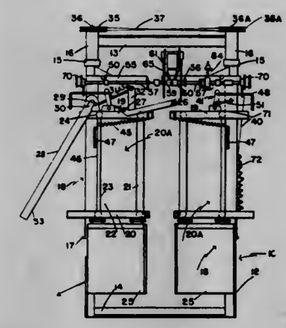
4,116,165
MILKING LINER
Bradford Lee Arrington, 5 Hamilton Dr., Petaluma, Calif. 94952
Filed Dec. 13, 1976, Ser. No. 749,734
Int. Cl.[2] A01J *5/04*
U.S. Cl. 119—14.47 **3 Claims**

1. A milking liner for use with a milking machine having a rigid outer casing, said casing having a shouldered enlargement at one end, said liner comprising:
(a) a tube of elastic material having a wall thickness of $\frac{1}{8}$ inch, said tube adapted to fit longitudinally within said casing, a main body portion of said tube having a uniform diameter,
(b) a first end of said tube having a conically tapered decreased diameter portion, the inner diameter of which tapers from 13/16 inch to 9/16 inch,
(c) a smoothly rounded external bead on the outer end of said first end,
(d) said first end of said tube adapted to be received in the enlarged shoulder portion of the casing when said first end is expanded by the insertion of a rigid ring member therein,



(e) said wall thickness of the first end of said tube decreasing along said tapered portion from an initial thickness of $\frac{1}{8}$ inch to a final thickness of from 3/32 inch to 1/16 inch.

4,116,166
AUTOMATIC CATTLE GATE ASSEMBLY
Armand Gofflot, R.R. #1, Pipestone, Canada
Filed Nov. 8, 1976, Ser. No. 739,492
Int. Cl.[2] A61D *3/00*; A01K *1/06*
U.S. Cl. 119—99 **11 Claims**



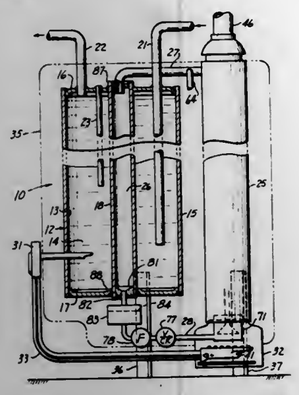
1. In conjunction with an animal chute and the like, a gate assembly situated at one end of the chute and adapted to hold the animal by the neck in position within the chute; said gate assembly comprising in combination supporting structure adjacent said one end of said chute, a pair of neck engaging gates operatively mounted to said supporting structure, at least one of said neck engaging gates being mounted for sideways movement across part of said one end of said chute, means to mount said one gate on said supporting structure for said sideways movement, said last mentioned means including spring means normally urging said one gate from an open position to a closed position, and trigger means situated adjacent said one end of said chute operatively connected to said one gate and normally retaining said one gate in the open position against pressure of said spring means, said trigger means adapted to be engaged by the head of an associated animal in said chute thereby releasing said trigger means whereby said spring means moves said one gate from said open position towards said closed position, means mounting said gates upon said supporting structure for selective partial rotation in either direction relative to said supporting structure for quick release of the associated animal, means normally retaining said gates in a plane substantially at right angles to the longitudinal axis of said chute, and means mounting the other of said gate for selective sideways movement across said chute and positioning said gates in any one of several positions relative to said chute.

4,116,167

METHODS AND APPARATUS FOR HEATING A FLUID BY VAPOR CONDENSATION

Ralph A. Hamilton, 1836 Lake St., Glendale, Calif. 91201

Filed Jan. 24, 1977, Ser. No. 761,839
Int. Cl.[2] F22B *1/02*; F22D *7/00*
U.S. Cl. 122—33 13 Claims



1. A method of heating and storing a fluid, comprising in combination the steps of:
containing said fluid in a space;
heat insulating said space;
providing a vaporizable heat transfer medium;
heating said heat transfer medium in a first region located at a distance from said space to generate from said heat transfer medium a vapor condensable through transfer of heat to said contained fluid and providing a vapor pressure in said first region;
providing by heat transfer to said fluid in said space a second region of a pressure lower than said vapor pressure in said first region;
providing by heat transfer to said fluid in said space a second region of a pressure lower than said vapor pressure in said first region;
flowing said vapor to said lower pressure second region into heat transfer relationship with, but physically separate from, said fluid and converting said vapor to a condensate in said lower pressure second region by heat transfer to said fluid whereby said fluid is heated;
maintaining said condensate physically separate from said fluid;
transferring said condensate from said second region to said first region by means of the pressure differential therebetween;
converting said transferred condensate to vapor by reheating in said first region;
continuing to provide by heat transfer to said fluid in said space a lower pressure second region;
recycling said converted vapor from said first region to said second region into heat transfer relationship with, but physically separate from, said fluid and reconverting said vapor to a condensate in said lower pressure second region by heat transfer to said fluid whereby said fluid is further heated;
maintaining said reconverted condensate physically separate from said fluid;
continuing to transfer and recycle condensate from said second region to said first region, to convert recycled condensate to vapor by reheating in said first region, to recycle converted vapor from said first region to said second region, and to reconvert vapor to condensate in said second region, and to reconvert vapor to condensate in said second region by heat transfer to said fluid until said fluid has attained a desired temperature and
inhibiting heat flow from said second region to said first region contrary to the flow of vapor from said first region to said second region.

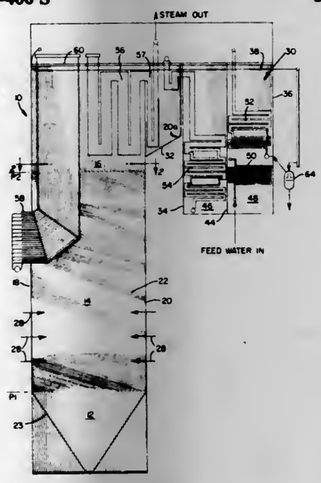
5. Apparatus for heating and storing a fluid, comprising in combination:
first means for containing and heat insulating said fluid;
second means spaced from said first means for receiving and heating a vaporizable heat transfer medium to generate a vapor in a first region located at a distance from said contained fluid and to provide a vapor pressure in said first region with said vapor;
third means at said first means for providing by heat transfer to said contained fluid a second region of a pressure lower than said vapor pressure in said first region and for maintaining said second region physically separate from, but in heat transfer relationship with, said fluid;
fourth means connected to said second and third means for flowing and recycling vapor from said first first region to said lower pressure second region into heat transfer relationship with, but physically separate from, said fluid and converting said vapor to a condensate in said lower pressure second region by heat transfer to said fluid whereby said fluid is heated;
fifth means connected to said second and third means for recycling condensate from said second region to said first region for reevaporation and
means included in said third and fourth means for inhibiting heat flow from said second region to said first region contrary to the flow of vapor from said first region to said second region.

4,116,168

VAPOR GENERATING SYSTEM UTILIZING INTEGRAL SEPARATORS AND ANGULARLY ARRANGED FURNANCE BOUNDARY WALL FLUID FLOW TUBES

Walter P. Gorzegno, and Juan Antonio Garcia-Mallol, both of Morristown, N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 28, 1977, Ser. No. 791,830
Int. Cl.[2] F22B *29/02*; F22D *7/00*
U.S. Cl. 122—406 S 16 Claims



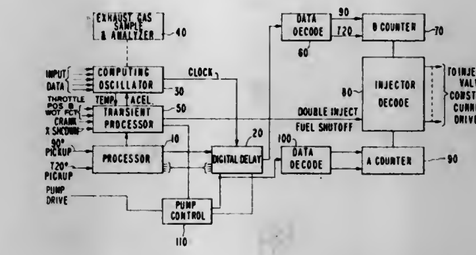
1. A vapor generating system comprising a vapor generating section, a fluid separating section, a superheating section, and fluid flow circuitry connecting said sections in a series flow relationship; said vapor generating section comprising an upright furnace section the boundary walls of which are formed by a plurality of tubes, burner means associated with said furnace section, said tubes being directly exposed to heat from said burner means for the entire height of said boundary walls, said tubes extending vertically in the plane of each boundary wall in the lower portions and upper portions of said furnace section walls and extending at an acute angle with respect to a horizontal plane in the intermediate portions of said boundary walls extending between said upper and lower portions, and means for simultaneously passing all of said fluid through said tubes to apply said heat to said fluid.

4,116,169

ELECTRONIC CONTROL SYSTEM

David M. Krupp, Mountain View, and Robert B. Hood, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 213,905, Dec. 30, 1971, Pat. No. 3,893,432. This application Dec. 9, 1974, Ser. No. 531,127
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 EC 9 Claims



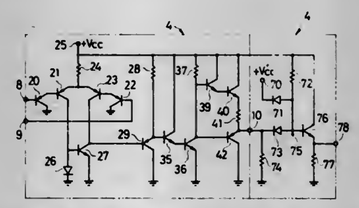
1. An electronic fuel injection system for an internal combustion engine having a plurality of cylinders, comprising an electrically operated fuel injector for each cylinder; a channel connected to each injector for opening and closing it, each channel including a digital divider circuit for holding the injector connected thereto open during the counting of a predetermined number of input pulses; engine operated timing means for impressing voltage pulses on the divider circuits to start said circuits sequentially; a variable frequency fuel pulse generator connected to the inputs of all said divider circuits; and means connected to said pulse generator for controlling its frequency inversely in accordance with the fuel demand, whereby said injectors are actuated for periods proportional to the fuel demand.

4,116,170

ELECTRONIC CLOSED LOOP CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Makoto Anzai, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Aug. 31, 1976, Ser. No. 719,332
Claims priority, application Japan, Sep. 1, 1975, 50-119265[U]
Int. Cl.[2] F02B *3/00*; F02M *7/00*
U.S. Cl. 123—32 EE 3 Claims



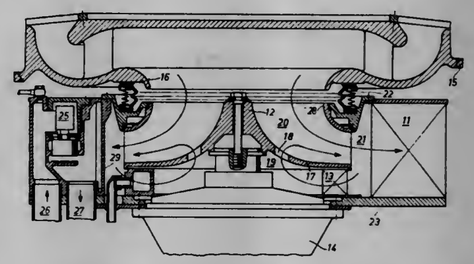
1. An electronic closed loop control system for controlling an air-fuel ratio of the air-fuel mixture supplied to an internal combustion engine (1), which system includes: and exhaust gas sensor (3) for sensing a component of exhaust gases to generate an electrical signal representative thereof, a differential signal generator (4) fed by a source of single polarity and connected to said exhaust gas sensor for generating an electrical signal representative of a differential value between the signal from the sensor and a reference signal, control means (5) connected to the differential signal generator, and an actuator (6) connected between said control means and the engine, said control means controlling said actuator depending upon said differential value to optimally regulate the air-fuel ratio of the air-fuel mixture,
wherein said electronic closed loop control system further comprises: clamping means (4') for clamping the signal from said differential signal generator to generate a signal therefrom, said clamping means being electrically interposed between said differential signal generator and said control means and including a first d.c. power source the potential of which is lower than that of a second d.c. power source provided for the differential signal generator, the potential of the signal from said clamping means ranging substantially from that of said first d.c. power source and zero potential, and the middle value of the signal from said clamping means substantially corresponding to the case where the potential of the signal from the sensor is equal to that of said reference signal.

4,116,171

COOLING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Robert Schulmeister, and Helmut Roth, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Nov. 10, 1976, Ser. No. 740,669
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1975, 2550481
Int. Cl.[2] F01P *9/04*, *7/02*; F28F *13/08*; F04D *5/00*
U.S. Cl. 123—41.57 18 Claims

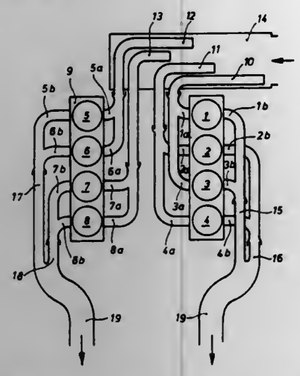


1. A cooling arrangement for a liquid-cooled internal combustion engine, the arrangement including a first annular cooler means traversed by a flow of cooling air from the inside of said annular cooler means to the outside thereof, a radial-flow fan means having a rotor means arranged within the first annular cooler means for axially drawing in cooling air from an air intake means, a second annular cooler means arranged downstream of said radial-flow fan means, as viewed in the intake flow direction, for cooling of fuel of the internal combustion engine, characterized in that the rotor means includes a rotor inlet means for communicating with the intake openings and a wall member, at least a portion of which is interposed between the rotor inlet means and the second annular cooler means so as to define a rotor side chamber means, and in that means are provided in said rotor means for communicating said rotor side chamber means with said rotor inlet means so as to effect a flow of cooling air through said second annular cooler means.

4,116,172
NATURALLY ASPIRATED EIGHT CYLINDER INTERNAL COMBUSTION ENGINE

Joachim Löhr, Schwaig; Friedrich Bauer, Mittelhembach, and Kurt Leonhard, Nüremberg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nüremberg, Fed. Rep. of Germany

Filed Jun. 9, 1976, Ser. No. 694,160
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1975, 2525769
Int. Cl.² F02B 75/18
U.S. Cl. 123—52 M 4 Claims



1. A naturally aspirated eight cylinder internal combustion V-engine equalized for mass and bearing loads by more uniformity in firing intervals of the individual cylinders, in which the cylinders of each bank of cylinders are divided into groups of two cylinders each, the first, second, third and fourth cylinders form one cylinder bank and the fifth, sixth, seventh and eighth cylinders form the second cylinder bank, and in which a firing order of he first, fifth, seventh, second, sixth, third, fourth, and eighth cylinder at a firing interval of 90° crank angle is adopted, and which includes in combination: inlet valve means respectively associated with said cylinders, inlet manifolds, the inlet valve means of one group of cylinders pertaining to the same cylinder bank together communicating with a joint inlet manifold, each two cylinders of one group of cylinders having a firing interval which is at least equal to the opening period of the respective inlet valve means pertaining to the respective group of cylinders, the respective inlet valve means with an alternate firing interval of 270° and 450° crank shaft angle being the inlet valve means which are brought together to the respective joint inlet manifolds, and equalizing container means, said manifolds having approximately the same length designed in conformity with the speed of rotation of said engine and leading into said equalizer container means, said inlet manifolds projecting to a different extent into said equalizing container means in order to obtain nearly equal mean lengths of said inlet manifolds.

4,116,173
INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

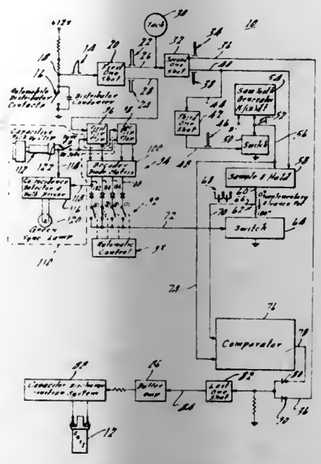
John A. McDougal, 2801 S. Port Hwy., A-4, Flint, Mich. 48507, and John W. Lennington, 1018 Congress, Ypsilanti, Mich. 48197

Continuation of Ser. No. 572,167, Apr. 28, 1975, abandoned, which is a division of Ser. No. 336,559, Feb. 28, 1973, Pat. No. 3,903,856. This application May 26, 1977, Ser. No. 800,959
Int. Cl.² F02P 5/04; F02M 7/00
U.S. Cl. 123—117 R 35 Claims

1. For an engine having a wall means defining a predetermined plurality of combustion chambers and ignition means associated with each of said combustion chambers for igniting a charge in each of said combustion chambers at times established at least in accordance with an operating cycle of said engine, a system for controlling said engine comprising:

single detecting means for detecting a parameter relating to the actual combustion of said charge in said combustion chambers and for providing an output signal representative of said parameter for said combustion chambers; and

control means being responsive to said output signal of said single detecting means and including distinguishing means

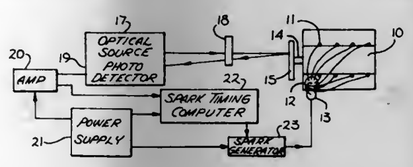


responsive to said operating cycle of said engine for distinguishing between said parameter relating to the actual combustion of said charge in each respective one of said combustion chambers, said distinguishing means providing a signal indicative of said parameter for each respective one of said combustion chambers, said control means operatively associated with said engine and utilizing said distinguishing means signal for providing a control signal which is effective to control the operation of said engine.

4,116,174
SPARK TIMING COMPUTER

Kenneth J. Schlichting, 13651 N. Mindora Ave., Sylmar, Calif. 91342

Filed Jun. 23, 1976, Ser. No. 699,057
Int. Cl.² F02P 5/04, 5/06
U.S. Cl. 123—117 R 5 Claims



1. A spark timing computer for use in combination with a system for advancing or retarding the spark timing of an engine having a set of spark plugs, a spark generator for generating a pulse in response to a spark trigger, a coil for generating a spark in response to the pulse, a distributor for distributing the spark to each of the spark plugs, with the engine also having a crankshaft and a reference angle detecting device coupled to the crankshaft and having a squarewave output, said spark timing computer comprising:

a. resetting means for forming a start pulse and a stop pulse electrically coupled to the reference angle detecting device;

b. an integrator electrically coupled to a voltage reference and reset by either the start pulse or the stop pulse from said resetting means;

c. peak detecting means for detecting and holding the peak amplitude of said integrator and reset by the start pulse;

d. scaling means for scaling the peak amplitude of said peak detecting means electrically coupled to said peak detecting means;

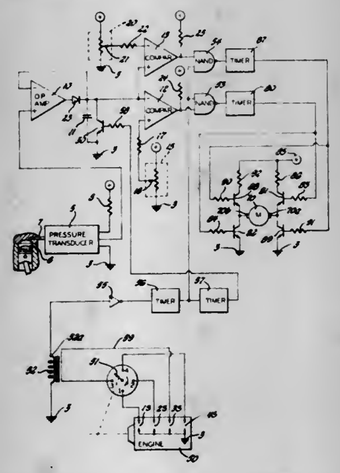
e. comparing means for comparing the scaled peak amplitude of said peak detecting means with the output of said integrator; and

f. triggering means for forming a spark trigger in response to a signal from said comparing means and for sending the spark trigger to the spark generator.

4,116,175
INTERNAL COMBUSTION ENGINE IGNITION SPARK TIMING SYSTEM MODULATED BY CYLINDER COMBUSTION PRESSURE

Roger D. Sand, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1976, Ser. No. 709,493
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 R 5 Claims

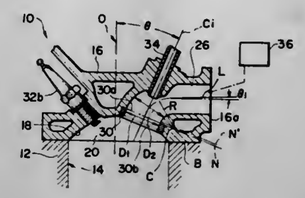


1. An internal combustion engine ignition spark timing system modulated by cylinder combustion pressure for use with internal combustion engines equipped with an ignition system for sequentially firing the engine cylinders including an ignition spark initiating mechanism of the type operable to advance or retard the ignition spark, comprising: means for producing during each power stroke of a selected monitored engine cylinder an electrical peak cylinder combustion pressure indicating signal of a potential magnitude directly proportional to the peak combustion pressure of said monitored engine cylinder during said power stroke; first means including first timer circuit means responsive to each said peak cylinder combustion pressure indicating signal of a potential magnitude less than a first predetermined value for producing an output ignition spark advance signal of a predetermined pulse width; second means including second timer circuit means responsive to each said peak cylinder combustion pressure indicating signal of a potential magnitude greater than a second higher predetermined value for producing an output ignition spark retard signal of a predetermined pulse width; and means responsive to each said ignition spark advance signal for operating said ignition spark initiating mechanism to advance the ignition spark and to each said ignition spark retard signal for operating said ignition spark initiating mechanism to retard the ignition spark.

4,116,176
DUAL SPARK PLUG IGNITION INTERNAL COMBUSTION ENGINE HAVING IMPROVED CYLINDER HEAD CONFIGURATION

Yoshimasa Hayashi, Yokohama, and Yasuo Nakajima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 15, 1977, Ser. No. 768,876
Claims priority, application Japan, Feb. 16, 1976, 51-15703
Int. Cl.² F03M 25/06
U.S. Cl. 123—119 A 8 Claims



1. An internal combustion engine having a cylinder block in which a cylinder is formed, comprising:

a cylinder head formed with a concavity defining therein a combustion chamber, the surface of the concavity closing one end of the cylinder;

means for supplying a portion of the exhaust gases of the engine into the combustion chamber of the engine;

two spark plugs disposed at said cylinder head and projected into the combustion chamber, said two spark plugs being located such that their electrodes lie generally symmetrical with respect to the center axis of the cylinder;

intake and exhaust valve heads which are respectively seatably disposed on annular intake and exhaust valve seats secured to the surface of the cylinder head concavity, said intake and exhaust valve heads being located such that the centers of said intake and exhaust valve heads are spaced apart from each other in the direction of a longitudinal axis of the cylinder head;

an intake port formed in said cylinder head, said cylindrical intake port being connected at its one end to the combustion chamber through the intake valve seat and opening at its other end to one side of said cylinder head, the center axis of the intake port including a curved portion which is formed with the radius of curvature ranging from 0.73 times to 0.77 times the minimum inner diameter of the annular intake valve seat, the axis of the curved portion being joined at its one end to the center axis of the intake valve seat, and a generally straight portion generally parallel with the bottom surface of said cylinder head and connected to the other end of the curved portion, the cylinder head being secured at the bottom surface thereof to the cylinder block.

4,116,177
PRE-VOLATILIZING ELECTRONICALLY CONTROLLED CARBURETOR

Norman Whatley, Jr., 3505 E. Lake Way, Littleton, Colo. 80121

Filed Jan. 21, 1977, Ser. No. 761,460
Int. Cl.² F02B 31/00; F02M 7/00
U.S. Cl. 123—119 R 24 Claims

13. A carburetor for an internal combustion engine, comprising:

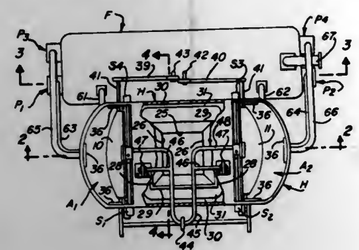
a fuel and air mixing chamber connected to the intake manifold of said engine;

means for controlling the supply of air to said mixing chamber;

a plurality of separate fuel volatilization chambers at different positions around or along said mixing chamber, each said fuel chamber having an outlet connecting with said mixing chamber;

means for supplying fuel to said fuel volatilization chambers including a series of fuel pumps connected to the respective fuel chambers;

at least one of said chambers having a different size than another of said chambers; and



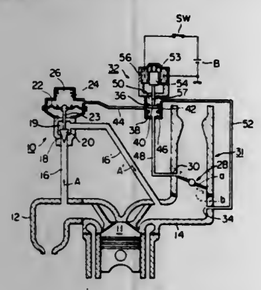
means for controlling said pumps to cause a variation in the operating sequence of fuel pumps and chambers in accordance with the idle, low and high speed modes of said engine.

4,116,178

EXHAUST GAS RECIRCULATION APPARATUS

Haruhiko Saito, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 2, 1977, Ser. No. 765,068
Claims priority, application Japan, Dec. 10, 1976, 51-148449
Int. Cl.[2] H02M *25/06*
U.S. Cl. 123—119 A **2 Claims**



1. An exhaust gas recirculation apparatus for an internal combustion engine, comprising:

an exhaust system and an intake system connected with said engine, said intake system including an intake passage with a throttle valve mounted therein;

pipe means connecting said exhaust system with said intake system;

a vacuum operated flow control valve arranged on said pipe means and having a vacuum operating chamber which is normally connected to a first vacuum port formed in said intake passage at a position located slightly upstream of said throttle valve when closed in its idle position, said vacuum operated valve being opened by a vacuum signal transmitted to said chamber from said first vacuum port when the throttle valve is, during the operation of the engine, opened from said idle position so that the port is located downstream of said throttle valve, thereby causing a part of the gas from the exhaust system to be recirculated to the intake system via said pipe means; and,

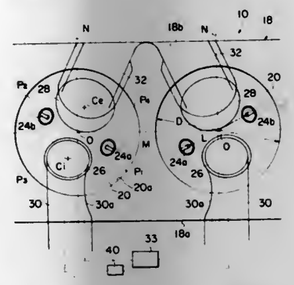
switching valve means for disconnecting the connection of said vacuum operating chamber with said first port, and for connecting said vacuum operating chamber with a second vacuum port formed in said intake passage at a position located downstream of said throttle valve in its idle position when the operation of the engine is stopped, the connection of said vacuum operating chamber with said second vacuum port allowing the opening of said valve in response to a vacuum signal which is formed in the intake system when engine "dieseling" takes place thereby causing the exhaust gas in the exhaust system due to the "dieseling" to be recirculated to the intake system via said pipe means.

4,116,179

DUAL SPARK-IGNITION INTERNAL COMBUSTION ENGINE

Shin-ichi Nagumo; Yoshimasa Hayashi, both of Yokohama, and Kizuku Otsubo, Kokubunji, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 4, 1977, Ser. No. 765,770
Claims priority, application Japan, Feb. 6, 1976, 51-11912
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **17 Claims**



1. An internal combustion engine having a cylinder formed in a cylinder block thereof, comprising:

a combustion chamber defined by the crown of a piston reciprocally movably disposed in the cylinder and a cylinder head secured to the cylinder block to close one end of the cylinder, said combustion chamber being divided into first, second, third, and fourth imaginary parts by a vertical longitudinal plane parallel to the longitudinal axis of the cylinder head and passing through the center axis of the cylinder, and a lateral vertical plane perpendicular to the vertical longitudinal plane and passing through the center axis of the cylinder;

two spark plugs disposed so that the midpoints of central and side electrodes thereof are respectively located at the first and second imaginary parts of said combustion chamber;

intake and exhaust valve heads disposed so that the centers thereof are respectively located at the third and fourth imaginary parts of said combustion chamber;

means for supplying a portion of the exhaust gases of the engine into said combustion chamber.

4,116,180

INTERNAL COMBUSTION ENGINE WITH IMPROVED EXHAUST VALVE ARRANGEMENT

Yoshimasa Hayashi, and Shin-ichi Nagumo, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

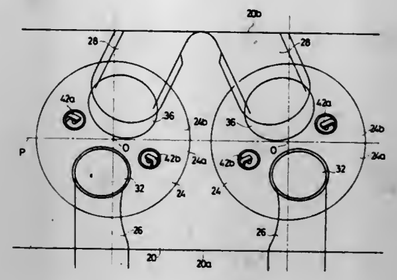
Filed Feb. 4, 1977, Ser. No. 765,771
Claims priority, application Japan, Feb. 6, 1976, 51-11913
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **7 Claims**

3. In an internal combustion engine having a cylinder block forming therein a cylinder in which a piston is reciprocally disposed, a cylinder head secured to the cylinder block to close the one end of the cylinder and form a combustion chamber between a recessed surface portion of the cylinder head and the crown of the piston, said cylinder head being formed with an intake port communicable with the combustion chamber and at least one exhaust port communicable with the combustion chamber, means for recirculating a portion of the exhaust

gases into the combustion chamber, and two spark plugs disposed within the combustion chamber to ignite a charge containing the exhaust gases, the improvement comprising;

an intake valve movably disposed at the circular surface portion of the cylinder head and arranged to block or establish the communication between the combustion chamber and the intake port, said intake valve being located at one side of the recessed surface portion with respect to a vertical longitudinal plane of the cylinder, said longitudinal vertical plane passing through the center axis of the cylinder; and

at least one exhaust valve movably disposed at the recessed surface portion of the cylinder head and arranged to block



or establish the communication between the combustion chamber and the at least one exhaust port, said exhaust valve being located on the other side of the recessed surface portion, opposite to the one side with respect to the vertical longitudinal plane of the cylinder head, the cross-sectional area defined by the outermost periphery of said at least one exhaust valve being 0.19 to 0.24 times the cross-sectional area of the cylinder bore.

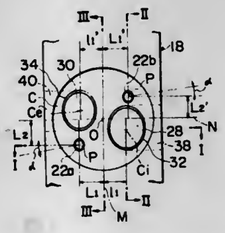
5. An internal combustion engine as claimed in claim 3, in which the exhaust gas recirculating means includes means for controlling the amount of the exhaust gases recirculated into the combustion chamber within the range, at maximum, from 20 to 40% by volume of the intake air inducted in the combustion chamber through the intake port.

4,116,181

DUAL SPARK PLUG IGNITION INTERNAL COMBUSTION ENGINE

Yasuo Nakajima, Yokosuka, and Yoshimasa Hayashi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 14, 1977, Ser. No. 768,700
Claims priority, application Japan, Feb. 16, 1976, 51-15704
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **9 Claims**



1. An internal combustion engine including a cylinder block having therein a cylinder in which a piston is reciprocally movably disposed, comprising:

a cylinder head secured at its flat surface to the flat surface of the cylinder block and formed with a concavity, the surface of the concavity closing one end of the cylinder and defining a combustion chamber between the concavity surface and the crown of the piston;

two spark plugs secured to the cylinder head such that the midpoints of the spark plug gaps formed between the center and side electrodes thereof project and lie in the combustion chamber and lie generally opposite to each other with respect to the center axis of the cylinder, the midpoint of the spark plug gap of each spark plug being located at a first predetermined distance from the extension of the flat surface of said cylinder head in the direction of the center axis of the cylinder;

intake and exhaust valve seats embedded in the concavity surface of said cylinder head, said intake valve seat having an annular surface which is exposed to the combustion chamber, the center of said intake valve seat which lies on the extension of the annular surface being located at a second predetermined distance from the extension of the flat surface of said cylinder head in the direction of the cylinder center axis, the second predetermined distance being in the range of from slightly larger to smaller than the first predetermined distance;

intake and exhaust valve heads respectively seatably disposed on said intake and exhaust valve seats, the centers of said intake and exhaust valve heads which lie on the surfaces exposed to the combustion chamber being located generally opposite to each other with respect to the cylinder center axis; and

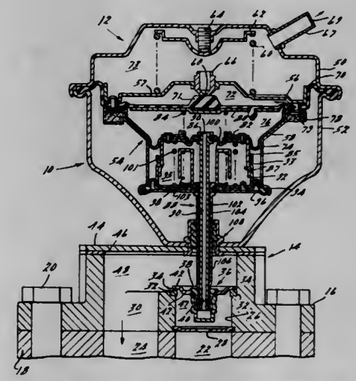
means for supplying a portion of the exhaust gases of the engine into the combustion chamber.

4,116,182

VARIABLE PERCENTAGE EXHAUST GAS RECIRCULATION VALVE

Cyril E. Bradshaw, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 22, 1977, Ser. No. 808,840
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **6 Claims**



1. In an exhaust gas recirculation valve assembly for controlling the recirculation of exhaust gases between the exhaust manifold and the inlet manifold of an internal combustion engine, the valve assembly being of the type including a pressure transducer assembly operative to move a recirculation valve in response to the pressure level in a power signal chamber and wherein said pressure transducer assembly includes air bleed valve means for controlling the flow of air from atmosphere to the power signal chamber, an improvement comprising:

a. a moveable valve member carried with said air bleed valve means; and

b. means operative to apply a force to move said air bleed valve moveable member between a position preventing air flow through said air bleed valve and a position permitting

air flow through said air bleed valve in response to changes in engine exhaust back pressure and engine inlet manifold pressure.

4,116,183

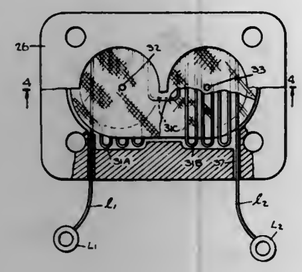
FUEL ATOMIZING UNIT WITH OVEN CHAMBER

Arthur Hayward, Bronx, N.Y., assignor to Electronic Fuel Saver, Inc., Bronx, N.Y.

Continuation-in-part of Ser. No. 587,846, Jun. 18, 1975, Pat. No. 4,020,812. This application May 2, 1977, Ser. No. 792,681

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 F **8 Claims**



1. An atomizing unit interposable in a conduit which feeds a relatively cold mixture of fuel droplets dispersed in an air stream at a varying flow rate to a combustion chamber for ignition therein, said unit acting to effect vaporization of said mixture before it enters said combustion chamber and comprising:

A. a metal plate fabricated of a material which is non-reactive with said mixture and possessing heat sink characteristics, said plate having a flow passage which registers with said conduit, said plate having a cavity therein;

B. a permeable assembly seated in said cavity and constituted by a pair of parallel planar mesh screens having an electrical heating element in the space therebetween to define an atomization zone which restricts the flow of said mixture through said passage, said screens intercepting and dissecting said droplets to develop in the output of the unit a fog-like suspension of minute particles in air, said screens having a mesh size introducing a restriction to flow whose impedance is at least about 15%;

C. a pair of gaskets formed of thermal insulation placed above and below said plate to render said plate effective as an oven chamber having a relatively stable temperature which surrounds said zone; and

D. means to energize said element to heat said zone to a temperature level exceeding about 550° F. in the absence of said cold mixture to cause said fog in the presence of said mixture to attain a temperature level lying above about 150° F. to promote vaporization thereof, said oven chamber maintaining said temperature level despite said variations in flow rate.

4,116,184

APPARATUS FOR TREATING EVAPORATED FUEL GAS

Kazuo Tomita, Shizuoka, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jan. 5, 1977, Ser. No. 757,013

Claims priority, application Japan, Oct. 4, 1976, 51-119115

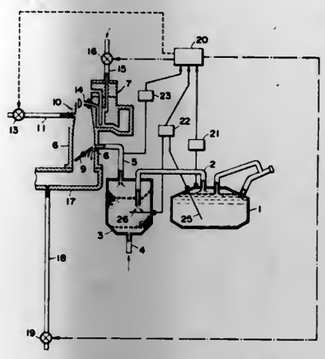
Int. Cl.² F02M *23/12*

U.S. Cl. 123—136 **4 Claims**

1. An apparatus for treating evaporated fuel gas in a motor vehicle having a closed fuel tank vented to an intake portion of an engine in said motor vehicle via a pipe and charcoal canister, said apparatus comprising:

a means for sensing a plurality of parameters indicative of the amount of evaporated fuel gas at a plurality of locations;

a controllable means for increasing the amount of air into said intake portion of said engine through at least one of three passages, an air intake passage of a carburetor, an intake manifold passage and a main air bleed passage of said carburetor; and



a control means responsive to said sensing means for actuating said controllable means such that when the amount of evaporated fuel gas increases at said plurality of locations, the amount of air in said intake portion is increased thereby maintaining a proper air-fuel ratio.

4,116,185

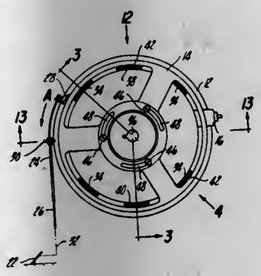
RADIAL CARBURETOR

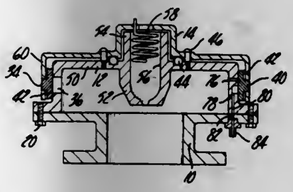
Endre A. Mayer, Birmingham, and Charles R. Kelso, Farmington Hills, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 20, 1976, Ser. No. 752,377

Int. Cl.² F02M *27/08*; F02B *33/00*

U.S. Cl. 123—139 AW **25 Claims**





1. A carburetor comprising:

an air control valve having an axis of symmetry, a plurality of inlet ports radially disposed about said axis admitting air into said valve in a radial direction towards the axis of symmetry, means for controlling the effective open area of said inlet ports, and an outlet port disposed concentric with said axis; and

fuel delivery means for delivering a controlled quantity of atomized fuel at a location inside said air control valve intermediate said inlet ports and said outlet port and concentric with said axis symmetry.

10. In combination with an internal combustion engine having an intake manifold, a pressurized fuel source, and an accelerator control for providing a signal indicative of an operator's command, an improved carburetor for supplying an air/fuel mixture to the intake manifold comprising:

an air control valve means fixedly attached to said intake manifold for controlling the air flow to the engine, said air control valve having an axis of symmetry, an outlet port concentric with said axis conducting the air flowing through said air control valve means to said intake manifold, a plurality of inlet ports radially disposed about said axis admitting air into said control valve means in a radial direction towards said outlet port and means responsive to the signals generated by said accelerator control for controlling the effective open area of said inlet ports; and

fuel delivery means receiving fuel from the pressurized fuel source for delivering a controlled quantity of atomized fuel inside said air control valve means intermediate said inlet ports and said outlet port.

22. A carburetor comprising:

a housing enclosing an inner chamber having an axis of symmetry, said housing admitting air into said inner chamber in a radial direction towards said axis of symmetry having a plurality of air inlet ports radially disposed through the walls of said housing, an outlet port disposed concentric with said axis of symmetry, at least one valve aperture disposed through the wall of said housing intermediate two adjacent air inlet ports, and at least one valve outlet passageway disposed proximate said valve aperture;

A cage movable from a first position to a second position, attached to said housing and circumscribing said air inlet ports and said at least one valve aperture, said cage having a plurality of shutter members equal in number to said inlet ports, resiliently mounted to said cage, and covering each of said inlet ports when said cage is in said first position and not covering said inlet ports when said cage is in said second position, and at least one valve shutter resiliently mounted to said cage between said cage and said housing over the location of said valve aperture and valve outlet passageway, said valve shutter having a face adjacent to the housing conforming to the contour of housing and an air aperture passing therethrough connecting to the valve outlet passageway for a first predetermined interval of movement of said cage between said first and second positions and wherein said valve shutter further includes a vacuum signal passageway formed along said face connecting said valve aperture with said valve outlet passageway for a second interval of movement of said cage between said first and second positions; and

fuel delivery means for delivering a controlled quantity of atomized fuel inside said housing at a location intermediate said inlet ports and said outlet port concentric with said axis of symmetry.

4,116,186

FUEL INJECTION PUMPING APPARATUS

Moshe Drori, East Twickenham, England, assignor to CAV Limited, Birmingham, England

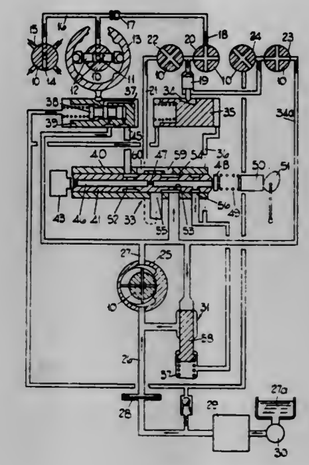
Filed Jun. 20, 1977, Ser. No. 808,131

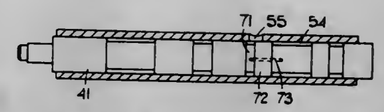
Claims priority, application United Kingdom, Jun. 22, 1976, 25822/76

Int. Cl.² F02D *1/02*

U.S. Cl. 123—139 AM **2 Claims**

1. A fuel injection pumping apparatus for supplying fuel to internal combustion engines and of the kind comprising an injection pump, a feed pump for supplying fuel under pressure to the injection pump, an axially movable member disposed in a surrounding body, an adjustable orifice defined by a groove in the member and a port in the body, the size of said orifice determining the amount of fuel supplied to the engine at each injection stroke by the injection pump, a pivotal centrifugal weight acting on one end of the member and urging the member in an axial direction to reduce the size of said orifice, a governor spring acting to urge the member against the action of said weight, operator adjustable means for varying the force exerted by the spring, a reaction member for the pivot of said weight, resilient means acting to urge the reaction member and pivot in opposition to said governor spring and a dash-pot acting to limit the rate of movement of the reaction member against the action of said resilient means when the force exerted by the governor spring is increased, said weight, spring and orifice constitute a governor to control the speed of the associated engine in accordance with the setting of the operator adjustable means, characterised in that a further groove is provided on the aforesaid member, said further groove being spaced from said first mentioned groove, said further groove being brought into registration with said port when the aforesaid orifice is closed during engine deceleration, said further groove being in restricted communication with said first mentioned groove so that a restricted supply of fuel can be supplied to the engine when said orifice is closed, during conditions of engine deceleration.





4,116,187

APPARATUS FOR INCREASING THE BLEND AND CHARGE OF THE FUEL-AIR MIXTURE FOR AN ENGINE

Randall J. Moore, 916 Engleman Pl., Loveland, Colo. 80537

Filed Aug. 29, 1977, Ser. No. 828,263

Int. Cl.² F02M *29/06*

U.S. Cl. 123—141 **17 Claims**

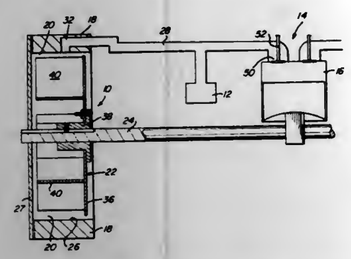
1. In an internal combusion engine system having a carburetor for mixing fuel and air, an intake opening to a cylinder of said engine and a manifold for delivering fuel and air from said carburetor to said intake opening, the improvement comprising:

a housing member of an essentially airtight construction and including a hollow interior chamber;

port means defined in said chamber for receiving and delivering fuel-air mixture;

a conduit coupled between said port means and said manifold for communicating fuel-air mixture between said manifold and said port means;

blending means disposed within said chamber for inducing turbulence into air-fuel mixture drawn through said port means from said conduit and delivering blended air-fuel mixture through said port means to said conduit;



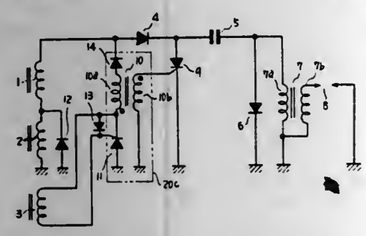
and means for driving said blending means in synchronized relationship with operation of said engine, said driving means effecting delivery of said blended air-fuel mixture to said conduit when the intake opening of said engine is opened.

4,116,188

CAPACITOR DISCHARGE TYPE CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Masao Nagasawa, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 515,247, Oct. 16, 1974, Pat. No. 4,014,309. This application Nov. 29, 1976, Ser. No. 745,645
Claims priority, application Japan, Oct. 17, 1973, 48/117120
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 CC **6 Claims**



1. A capacitor discharge type contactless ignition system for an internal combustion engine comprising:

a capacitor charging coil mounted on a magneto generator driven by an internal combustion engine for generating alternating current in synchronism with the rotation of said internal combustion engine, said alternating current having positive half waves and negative half waves;

a capacitor connected in series with said capacitor charging coil for storing said positive half waves;

an ignition coil having a primary winding and a secondary winding, said primary winding being connected in series with said capacitor;

a spark plug connected to said secondary winding and mounted in said internal combustion engine;

a switching means having a control gate and connected to said capacitor, said switching means, said capacitor and said primary winding forming a capacitor discharging circuit;

a trigger coil for generating first and second signals in synchronism with said internal combustion engine;

a control circuit connected to said trigger coil, said control gate of said switching means and said capacitor charging coil, said control circuit generating ignition signals in response to said first signals and said negative half waves of said alternating current producing during rotation of said engine in a proper direction, said control circuit also generating reversion protecting signals in response to said second signals and the negative half waves of said alternating current produced during rotation of said engine in an improper direction,

said ignition signals being supplied to said control gate of said switching means to make it conductive, to thereby discharge the stored charge on said capacitor to produce an ignition spark at said spark plug, to thereby keep the rotation of said engine in said proper direction,

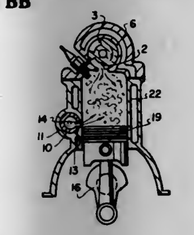
said reversion protecting signals being supplied to said control gate of said switching means to discharge the stored charge on said capacitor to produce a spark at a time where the engine is at the position where substantial combustion does not take place, to thereby prevent the reverse rotation from being kept.

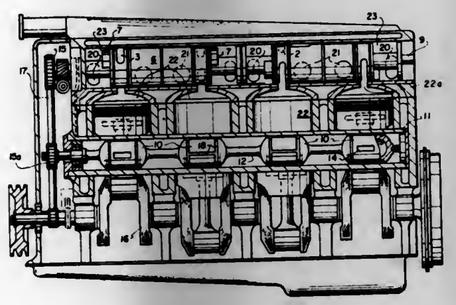
4,116,189

INTERNAL COMBUSTION ENGINE

Ryuzi Asaga, 1-10 No. 579 Fukuzumi Oshibedani-cho, Tarumi-ku, Kobe City, Japan

Filed Dec. 23, 1976, Ser. No. 753,686
Int. Cl.² F01L *7/00*
U.S. Cl. 123—190 BB **7 Claims**





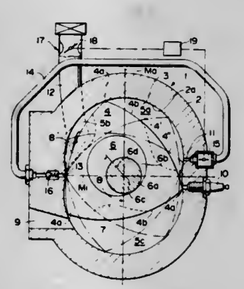
1. In an internal combustion engine having a block with at least one cylinder defined therein a piston reciprocable in the cylinder, a crank shaft connected to said piston and rotated thereby, said engine having intake means connected to said block for supplying air and fuel to said cylinder for ignition therein to form combustion products, and exhaust means connected to said block for venting said combustion products from said cylinder, the improvement comprising, in combination: said block having a valve housing chamber defined therein above said cylinder and connecting with said exhaust means, rotary valve means rotatably mounted in said valve housing chamber, inlet and exhaust passage means defined in said cylinder adjacent said valve housing chamber, said rotary valve means having a valve intake passage and a valve exhaust passage circumferentially spaced from said valve intake passage defined therein, said valve intake passage being communicable between said inlet passage means of said cylinder and the intake means for admitting air and fuel into said cylinder, said valve exhaust passage being communicable between said exhaust passage means of said cylinder and said valve housing chamber for venting said combustion products from said cylinder, and drive means connected between said crank shaft and said rotary valve means for rotation of said valve means; wherein said inlet and exhaust passage means of the cylinder comprise a single inlet-exhaust passage, said valve intake passage further comprising an intake aperture alignable over said inlet exhaust passage and an intake opening alignable with the intake means, and said valve exhaust passage further comprises an exhaust aperture alignable over said inlet-exhaust passage circumferentially spaced and in the same diametric plane as said intake aperture, and an exhaust opening communicated with said valve housing chamber, said exhaust opening is partially covered by an exhaust cover connected to said rotary valve means for deflecting the combustion products as they leave the cylinder through said inlet-exhaust passage and said exhaust aperture to induce a swirling of the products and enhance the recombustion of unburned fuel in said valve housing chamber.

4,116,190

TROCHOIDAL ROTARY PISTON ENGINE WITH BYPASS OF COMPRESSED MIXTURE TO EXHAUST CHAMBER

Katsuaki Kikura, Japan; Hiroshi Nomura, Takehara, and Kiyohiro Takeda, Hiroshima, all of Japan, assignors to Toyo Kogyo Co. Ltd., Hiroshima

Filed Dec. 27, 1976, Ser. No. 754,550
Claims priority, application Japan, Dec. 27, 1975, 51-157864; Feb. 24, 1976, 51-19708
Int. Cl.² F02B *53/00, 55/14*
U.S. Cl. 123—202 **13 Claims**



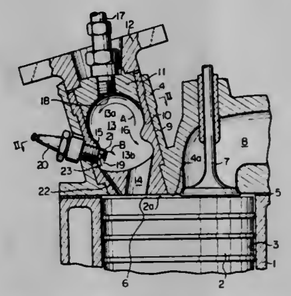
1. Rotary piston engine comprising a casing which includes a rotor housing having an inner wall of trochoidal configuration and a pair of side housings secured to the opposite sides of the rotor housing to define a rotor cavity of trochoidal configuration having a major and a minor axis, and a substantially polygonal rotor disposed in the rotor cavity for rotation with apex portions in sliding contact with the inner wall of the rotor housing to define, between the inner wall of the rotor housing and flanks of the rotor, working chambers which are displaced along the inner wall of the rotor housing as the rotor rotates with volumes varying in response to the rotation of the rotor through intake, compression, expansion and exhaust strokes, intake port means provided in said casing to open to one of the working chambers which is in the intake stroke, exhaust port means provided in said casing to open to another working chamber which is in the exhaust stroke, ignition means provided in the casing for igniting compressed air-fuel mixture, mixture take-out port means provided in said casing to open to the working chamber which is at the end of the compression stroke wherein the working chamber possesses the minimum volume, mixture discharge port means provided in said casing to open to the working chamber which is in the exhaust stroke, said mixture take-out port means being located at a side of the minor axis of the trochoid opposite to the rotor rotation to draw a part of the compressed mixture in the working chamber in the compression stroke and being connected with said mixture discharge port means.

4,116,191

INTERNAL COMBUSTION ENGINE WITH AN AUXILIARY CHAMBER

Hiromichi Yanagihara, and Nobuo Habu, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 20, 1977, Ser. No. 799,097
Claims priority, application Japan, Apr. 6, 1977, 52-42020[U]
Int. Cl.² F02B *19/08, 17/00*
U.S. Cl. 123—30 D **4 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a cylinder head having a cavity therein and mounted on said cylinder block, said cavity having an inner wall which defines an auxiliary chamber with an axis;

a piston reciprocally movable in said cylinder bore, said piston and said cylinder head forming a main chamber therebetween;

an intake valve movably mounted on said cylinder head for leading gas into said main chamber;

an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;

an annular raised portion formed on the inner wall of said auxiliary chamber around the axis of said auxiliary chamber and forming a recess on the inner wall of said auxiliary chamber beneath said annular raised portion, said annular raised portion dividing said auxiliary chamber into a first chamber and a second chamber which are arranged in tandem along the axis of said auxiliary chamber;

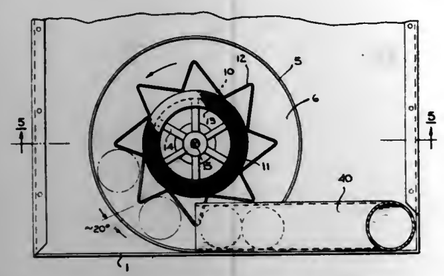
a connecting passage communicating said auxiliary chamber with said main chamber and arranged to be tangentially connected to the inner wall of said second auxiliary chamber for forming a strong swirl motion in said first auxiliary chamber, said recess having a recess portion at a position opposite to the inner wall to which said connecting passage is tangentially connected with respect to the axis of said auxiliary chamber;

a fuel injector having an injecting nozzle disposed in said auxiliary chamber and directed to said recess portion for forming a rich air-fuel mixture therein;

a spark plug having a spark gap located in said recess portion for igniting the rich air-fuel mixture formed in said recess portion, and;

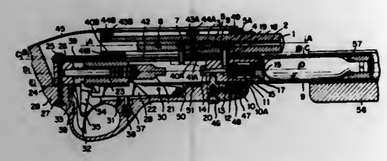
a connecting hole communicating said recess portion with said main chamber and arranged to be tangentially connected to the inner wall of said recess portion for strengthening a swirl motion in said recess portion, which is caused by the strong swirl motion created in said first chamber.

4,116,192
TENNIS BALL RETRIEVER
Jack C. Scott, 8547 Amestoy Ave., Northridge, Calif. 91324
Filed Apr. 28, 1977, Ser. No. 791,970
Int. Cl.[2] A63B *69/38*
U.S. Cl. 124—51 R **16 Claims**



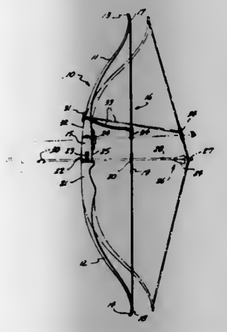
1. A ball retriever and transporter comprising:
a pinwheel member having a central axis and a plurality of projections disposed around a circular periphery thereof, each of said projections having a vertical extent substantially less than a ball diameter;
a wall member encircling at least a portion of said pinwheel member, said plurality of projections on said pinwheel member in combination with said circular member defining a plurality of ball receiving open regions;
means for rotating said pinwheel about said central axis;
means for disposing loose balls into said open regions between said wall member and said projections;
a hollow tube member having a first end disposed through said wall member adjacent said pinwheel and said wall member so that said first end is aligned with the movement of balls around said wall and having a second end thereof disposed adjacent a final destination point, said tube member having an open region at a side thereof adjacent said pinwheel member so as to allow passage of said projections thereby;
whereby said balls disposed in said open regions in said wall are engaged by said pinwheel and constrained to roll around at least a portion of the interior of said wall in contact with said wall member and said pinwheel, and then into the hollow tube member for forcible transport through said tube member.

4,116,193
PRESSURIZED GAS OR AIR OPERATED REPEATER RIFLE
Kensuke Chiba, Tokyo, Japan, assignor to Sharp Rifle Company, Ltd., Japan
Filed Dec. 2, 1976, Ser. No. 746,722
Claims priority, application Japan, Dec. 27, 1975, 50-157064
Int. Cl.[2] F41B *11/02, 11/06*
U.S. Cl. 124—72 **7 Claims**



1. A pressurized gas or air operated repeater rifle having a barrel provided with a bolt which is slidable within a bore therein, a cylinder positioned in parallel with the axial line of the barrel, a hammer chamber within said cylinder, and a mechanical seat supporting the barrel and cylinder, said repeater rifle being capable of storing pressurized gas in the cylinder for firing pellets, characterized by a magazine having at least one chamber that can be loaded or unloaded on the side of the barrel, pellets housed in the magazine chamber being normally yieldingly urged towards an opening of the magazine by means of a spring; said bolt having a bolt nock that projects into said hammer chamber at the lower portion of the barrel, a carrier positioned so as to extend through said bore at horizontal right angle to said bolt, said carrier being slidable in said barrel, said carrier also being in freely sliding contact with said magazine opening at horizontal right angle to the direction of said magazine chamber, said carrier being provided with a lateral through hole at such position adapted to match the opening of said magazine when said carrier shifts to the magazine side to admit one pellet from the magazine chamber, and also adapted to match the bore when it shifts in the direction opposite to the magazine side, so that the bolt that has moved forward passes through said hole to load forward a pellet housed in it, an operation bar that connects said bolt with an operation bar handle mounted for freely sliding movement on said cylinder; and movement means for causing reciprocating movement of said carrier by reciprocating movement of said operation bar, said movement means positioned between said bolt and said hammer chamber allowing movement of a pellet from the magazine through the carrier to said bore upon one reciprocating motion of the operation bar.

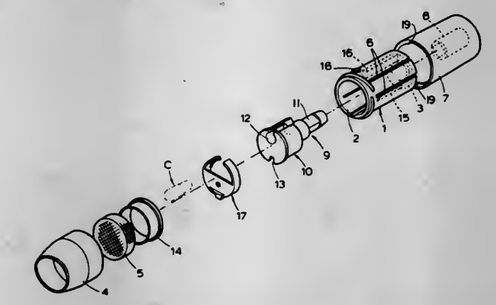
4,116,194
PEEP SIGHT FOR ARCHERY BOW
Kenneth D. Topel, Puyallup, Wash., assignor to Fine-Line, Inc., Puyallup, Wash.
Filed Oct. 18, 1976, Ser. No. 733,229
Int. Cl.[2] F41B *5/00*
U.S. Cl. 124—87 **11 Claims**



1. An improved peep sight comprising: a body having a sighting bore means extending therethrough, said body including means for mounting said body on a bow string so that said bore means is substantially horizontal when a bow string is in a drawn position and is angled with respect to a longitudinal extension of a bow string when a bow string is in a relaxed or uncocked position; and, an elastic cord means for attaching said body to a bow, said elastic cord means having first and second end means, said first end means being secured to said body and said second end means being adapted to be secured to an archery bow.

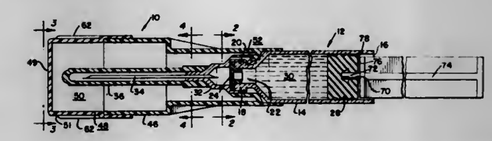
4,116,195
DEVICE FOR DISPENSING MEDICAMENTS
Michael James, Welwyn Garden City, England, assignor to Allen & Hanburys Limited, London, England
Filed Feb. 10, 1977, Ser. No. 767,518
Claims priority, application United Kingdom, Feb. 10, 1976, 5098/76
Int. Cl.[2] A61M *15/00*
U.S. Cl. 128—266 **7 Claims**

1. An inhalation device for self-administration to a patient powdered medicaments contained in a capsule, the said device comprising:
(a) a housing defining a chamber adapted to receive a capsule containing a powdered medicament, said housing having a nozzle communicating with the interior of the chamber through which air from said chamber can be inhaled and air inlet means defining apertures formed in said housing for causing air to flow through said apertures said chamber and through said nozzle and thereby, causing said capsule to be agitated;
(b) a magazine slidably mounted in said chamber and longitudinally slidable to and from an operative position, said magazine being also rotatable about a longitudinal axis in said chamber, and having therein a longitudinal capsule loading passage and at least one other longitudinal capsule loading passage circumferentially spaced from said capsule loading passage, said passages being eccentric equidistantly to said axis means for sliding and rotating said magazine in said chamber;



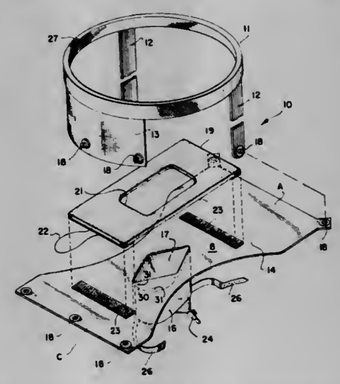
(c) means including a capsule piercing needle and a capsule ejecting member circumferentially spaced from said needle and mounted to said housing and so arranged and positioned inside said chamber that said passages can be registered simultaneously one with said needle and the other with said ejector member or vice versa, on rotation of said magazine and so that movement of said magazine to said operative position will cause a capsule in one of said passages registered with said needle to engage said needle and be pierced by it or will cause a capsule in one of said passages registered with said ejector member to be engaged by said member thereby to displace the capsule from said passage into said chamber so that the powdered medicament from the pierced capsule can be aspirated through said nozzle by the inhalation of the patient; and
(d) means for preventing the capsule leaving said chamber when the patient inhales through said nozzle.

4,116,196
ADDITIVE ADAPTER
Sheldon Kaplan, Potomac, Md.; Edward M. Curley, Washington, D.C., and Gerlof Homan, Olivette, Mo., assignors to Survival Technology, Inc., Bethesda, Md.
Filed Mar. 17, 1977, Ser. No. 778,727
Int. Cl.[2] A61J *1/00*
U.S. Cl. 128—272.3 **12 Claims**



1. An additive adapter for use in conjunction with an injector wherein the injector includes a cylindrical body having a rearward open end and a forward end necked inwardly to form an annular lip, said forward end having a central opening of reduced diameter, sealing means closing off the central opening, a plunger sealingly and slidably fitted in the rearward portion of the body to form a medicament chamber between the sealing means and the plunger, a needle hub affixed to the annular lip, a needle carried by the hub whereby its inner end will be in fluid communication with the medicament chamber upon the opening of the sealing means, the additive adapter comprising:
a main body portion, said main body portion including a cylindrical sleeve open at its forward end and rearward end and a circular skirt portion extending from the rearward end of the cylindrical sleeve, said skirt being sized to snugly engage and fit over the cylindrical portion of the injector's cylindrical body immediately rearward of the necked portion,
a cylindrical shield extending from the forward end of the cylindrical sleeve, and
a retaining assembly extending inwardly from the main body portion to engage the annular lip of the necked end of the injector body to retain the adapter in assembled condition on the aforesaid body.

4,116,197
DISPOSABLE FEMALE-BODY-WORN URINAL
Winifred Bermingham, 171 E. 77th St., New York, N.Y. 10021
Filed Aug. 30, 1977, Ser. No. 828,986
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—286 **10 Claims**



1. A female urinary collection device comprising, a waist belt having a plurality of depending support elements with upper portions integral with the waist belt, an elongated flexible sheet of waterproof material having front, rear and center sections, the front and rear sections in detachable engagement with a lower portion of the support elements, the center section of the sheet having a width substantially less than that of the front section and the rear section, the center section of the sheet further having a depending substantially elongated pouch integral therewith, an opening in the center section in fluid communication with the interior of the pouch, a liquid absorbing pad associated with the flexible sheet and having an opening in the center thereof maintained in positional relationship with the opening in the flexible sheet, mutual engaging means on the absorbing pad and the flexible sheet for releasably maintaining the pad in association with the sheet, and a valve at the base of the pouch, in fluid communication with the interior of the pouch.

4,116,198

ELECTRO - SURGICAL DEVICE

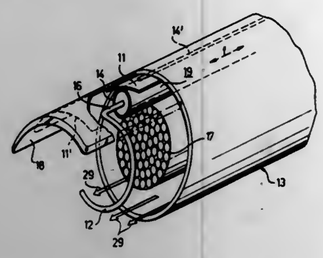
Eberhard Roos, Tuttlingen, Fed. Rep. of Germany, assignor to DELMA, elektro und medizinische Apparatebaugesellschaft m.b.H., Tuttlingen, Fed. Rep. of Germany

Filed May 14, 1976, Ser. No. 686,600

Claims priority, application Fed. Rep. of Germany, May 15, 1975, 2521719

Int. Cl.² A61B *17/32*

U.S. Cl. 128—303.15 **20 Claims**



1. In combination: an endoscope having an endoscope body of substantially tubular shape, and an electro-surgical device comprising a treatment electrode projecting at one end from said endoscope body and a neutral electrode arranged adjacent said treatment electrode, insulated cable means for connecting said treatment electrode to one pole of a high-frequency generator, and means for connecting said neutral electrode to the other pole of a high-frequency generator, said endoscope body having an-insulating projection extending over a portion of the periphery of said endoscope body at said one end and having a front edge, said neutral electrode being located within said endoscope body and spaced a distinct distance inwardly from said front edge, a space being formed between said treatment electrode and said neutral electrode which is adapted to be filled with liquid to provide electrical conductance between said electrodes.

4,116,199

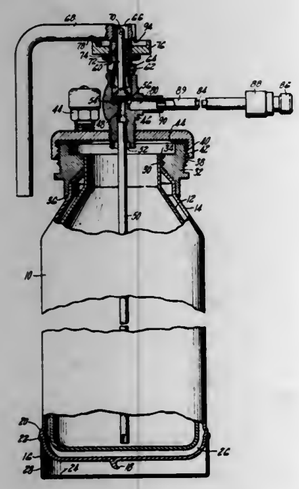
CRYOSURGICAL INSTRUMENT RESERVOIR

Michael D. Bryne, Vernon, Conn., assignor to Brymill Corporation, Vernon, Conn.

Filed Dec. 6, 1976, Ser. No. 747,904

Int. Cl.² A61B *17/36*

U.S. Cl. 128—303.1 **3 Claims**



2. A cryosurgical instrument having application means for cryosurgical extraction of heat from living tissue in the treatment thereof, a reservoir means comprising a metal vacuum bottle having an inner wall structure with a mouth forming a container for holding liquid gas cryogen and an outer wall structure separated from said inner wall structure except at a peripheral metallurgical joint between said outer and inner wall structures, said wall structures thereby confining an insulating space between them, said space being at least partially evacuated, and operator-controlled means for conveying the cryogen from said reservoir means to said application means, in which the improvement comprises:

a heavy metal collar metallurgical joined to said outer wall structure near the mouth of said inner wall structure so as to encompass said peripheral metallurgical joint, said collar having a thickness several times thicker than said wall structures, said collar having external threads machined into the periphery thereof; and

a cap having internal threads therein for engagement with the threads of said collar, said application means and said operator controlled means being disposed on said cap to provide an integral control and delivery portion which is releasably engageable to said reservoir means, whereby said reservoir means is reinforced against rupture by cryogenic pressure within said insulating space and said control and delivery portion is securely held to said reservoir means against cryogenic pressure in said container.

4,116,200

MILLING TOOL FOR SURGICAL PURPOSES

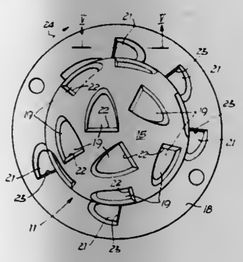
Karl Braun, Talheim; Rainer Lacher, Muhlheim, and Willi Pfeiffer, Tuttlingen, all of Germany, assignors to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer, Tuttlingen, Germany

Filed Oct. 1, 1976, Ser. No. 728,728

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1975, 2543723

Int. Cl.² A61B *17/32*

U.S. Cl. 128—305 **10 Claims**



1. A surgical milling tool for milling a member of a joint having a substantially spherical shape, said tool being adapted to be connected to a hand-operated milling machine and comprising a cup member having a milling surface, at least a portion of said milling surface being hemispherical, said hemispherical portion being defined by a radius and an equatorial plane, said cup member being rotatable about an axis perpendicular to the equatorial plane, said hemispherical portion having a plurality of openings therethrough, each of said openings having a trailing edge portion on the perimeter thereof, each trailing edge portion defining a cutting edge movable along a cutting trajectory when said cup member is rotated about said axis, at least some of said cutting edges being spaced from said axis of rotation by a distance less than said radius of said hemispherical portion, each cutting edge having a length, the entire length of at least some of said cutting edges being substantially equi-spaced a radial distance from a hemispherical surface of said cup member, said openings being distributed over said hemispherical portion in relation to one another such that the cutting trajectories of said at least some cutting edges define a hemisphere.

4,116,201

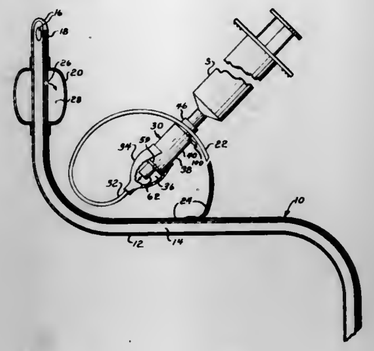
CATHETER WITH INFLATION CONTROL DEVICE

Nayan S. Shah, Carpentersville, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Dec. 20, 1976, Ser. No. 752,761

Int. Cl.² A61M *25/00*

U.S. Cl. 128—351 **17 Claims**



1. A catheter, comprising:

an elongated shaft;

an inflatable balloon secured to the shaft;

an inflation lumen extending along the shaft and communicating with the balloon;

valve means communicating with the inflation lumen, said valve means being normally closed and being openable to pump fluid into the inflation lumen for inflating said balloon; and

vent means communicating with the inflation lumen, said vent means being normally closed and only opening in response to closure of the valve means and a pressure in the balloon above a predetermined amount, said vent means relieving pressure in the balloon above said predetermined amount after inflation of the balloon; and

means for increasing the effective pressure at which the vent means opens responsive to opening of the valve means and preventing actuation of the vent means while the valve means is open.

4,116,202

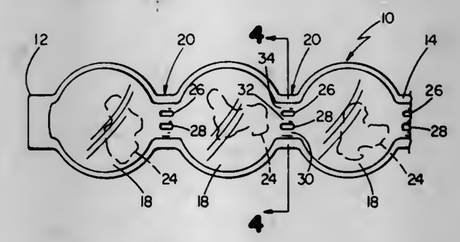
TEETHER WITH PRESSURIZED FLUID

Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.

Filed Jun. 22, 1977, Ser. No. 809,108

Int. Cl.² A61J *17/00*

U.S. Cl. 128—359 **5 Claims**



1. A teether comprising two separate sheets of organic thermoplastic material sealed together along their edges and defining a plurality of separate cells connected together by narrow necks between said cells, fluid underpressure within said cells, and fluid flow paths defined by said necks communicating said fluid between adjacent cells, the improvement in which said sheets are connected together at said necks by at least one seal between and spaced inwardly from said edges to define multiple fluid flow paths at each said necks.

4,116,203

METHOD AND APPARATUS FOR BLENDING TOBACCO

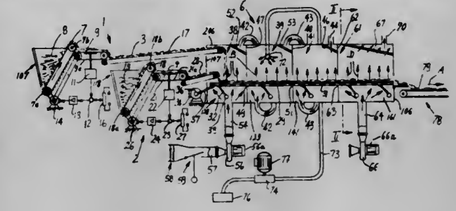
Waldemar Wochnowski, Hamburg-Meiendorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Fed. Rep. of Germany

Filed Aug. 5, 1976, Ser. No. 711,704

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1975, 2540411

Int. Cl.² A24B *3/08*; B01F *11/00, 13/02*

U.S. Cl. 131—138 **24 Claims**



12. Apparatus for blending fibrous materials, particularly tobacco, comprising a conveyor including an elongated foraminous support and means for vibrating said support; means for admitting different types of fibrous material onto one end of said support whereby the vibrating support advances the material in a direction toward the other end thereof wherein said different types having differing densities; means for conveying ascending streamlets of a fluid medium at a predetermined speed through said foraminous support and across the material on said support so that the material is converted into a fluidized bed of substantially constant height wherein the constituents of said different types of fibrous material rise and fall as a result of vibration as well as under the action of said streamlets whereby said different types of material are intimately mixed with each other wherein a homogeneous mixture is formed of said different types; and means for reducing the speed of said fluid medium above the fluidized bed to a second speed at which the ascending medium is incapable of entraining appreciable quantities of material from said bed.

4,116,204

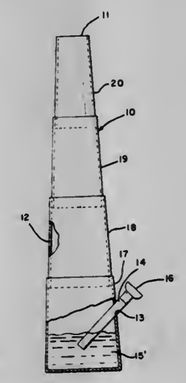
COLLAPSIBLE TELESCOPIC WATER PIPE

James E. Kline, Box 1455-R.D. 4, Linglestown, Pa. 17112

Filed Nov. 15, 1976, Ser. No. 741,514

Int. Cl.² A24F *1/14, 1/30*

U.S. Cl. 131—173 **5 Claims**



1. A pipe for consumption of tobacco and other smokable

substances comprising: (1) a collapsible, telescopic body in the shape of a truncated cone, closed at its base and open at its narrow end to form a mouth piece, the sidewall of the body having a first carburetor hole and a second stem hole, said telescopic body comprising a series of truncated cone sections, each having a bottom portion having outside bottom edge diameter greater than the inside top lip diameter of the next succeeding larger lower cone so that the sections may be extended and held by the pressure of the top lip of a lower section against the bottom edge of an upper section; (2) a stem inserted into the body through the second hole said second hole being beveled downwardly from the outside to the inside of the said collapsible body and said stem having an outside diameter approximating the inner diameter of said second hole to fit firmly within said second hole at a plurality of positions and to extend downwardly toward the base of the said body; and (3) a bowl attached to the exterior end of the stem for the holding of the smokable substance.

4,116,205

FOLDABLE HAIR BRUSH

Ronald C. Owen, Harwood Heights, and John C. Curry, Westchester, both of Ill., assignors to Plastisonics Company, Inc., Chicago, Ill.

Filed Dec. 20, 1976, Ser. No. 752,592
Int. Cl.[2] A45D *44/18*
U.S. Cl. 132—85 **10 Claims**



1. A hair brush comprising:
a hollow elongated handle portion having an elongated opening therein;
a brush portion hingedly connected to said handle;
bristle means extending from said brush portion;
one of said portions having radially inwardly extending flange means and the other one of said portions having a bi-furcated end for receiving said flange means;
a pin socket connected to one of said bi-furcated ends and said flange means;
hinge pin means connected at the other one of said bi-furcated ends and the distal end of said flange means for engaging hingedly said socket to connect said brush portion to said handle portion so that the brush can be moved to its closed position to enable said bristle means to be moved through said elongated opening into the hollow interior of said handle portion for storage purposes; and
a pair of oppositely disposed open position detent members on the side faces of one of said bi-furcated ends and said flange means spaced outwardly from said pin means by a substantial distance projecting in a direction parallel to the axis of said hinge pin and means defining a pair of grooves at the other one of said bi-furcated ends and said flange means for receiving releasably said detent members to hold releasably said brush in its open position with said brush portion and said handle portion in a substantially coplanar relationship.

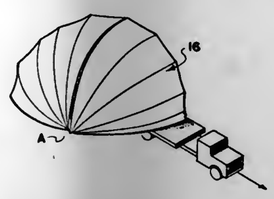
4,116,206

PORTABLE STRUCTURES SR SERIES

Kurt Ehrich Warner, and Gerhardt Allan Warner, both of 97 Canora St., Winnipeg, Manitoba, Canada

Filed Nov. 5, 1976, Ser. No. 739,124
Int. Cl.[2] A45F *1/16*
U.S. Cl. 135—4 R **8 Claims**

1. A collapsible shelter comprising in combination two sets of arched rib supports, each of said supports including a pair of lower ends, means to mount said lower ends of each set on an individual substantially common axis for pivotal action of said arched rib supports from a collapsed folded position to an open erected position and vice-versa, a flexible cover secured to and extending over said rib supports, and a flexible substantially triangular gore extending between the adjacent inner ends of the flexible cover, each of said rib supports comprising at least two sections one each extending upwardly from one of said lower ends and being pivotally secured together at the apex of said arched rib support for hinging action whereby, when said rib supports are in the folded collapsed position, the lower ends



may be folded inwardly towards one another and overlap one another together with said flexible cover, for storage purposes, said means to mount said lower end portions on a substantially common axis including a mounting channel and an end plate pivoted adjacent each end of said channel, transverse bolt means extending through said end plates and through the lower end portions of said rib supports whereby said rib supports are pivotally mounted upon said bolt means and fastening means for said bolt means.

4,116,207

SOLAR PANEL WITH MAT BASE MEMBER

Ramon Dominguez, Rockville, Md., assignor to Solarex Corporation, Rockville, Md.

Filed Jul. 12, 1977, Ser. No. 814,923
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—89 H **8 Claims**

1. A solar panel which maintains solar energy cells in position to receive light impinging thereon, comprising a base member having an upwardly facing surface with respect to the source of light, a body of cured silicone resin adhesively adhered to said upwardly facing surface, and photovoltaic cells disposed within and encapsulated by said body of resin so that said cells are maintained by said panel in position to receive light impinging on surfaces thereof and convert such light into electrical energy while being protected from ambient conditions by said body of resin, wherein said base member is formed from an, insulating, glass mat polyester that is resistant to warpage at temperatures of about 150° to 200° C. said upwardly facing surface of said base member being formed with alternating peaks and valleys in which the peak-to-valley dimension is less than about 0.01 inch to improve adherence of said body of resin to said mat and retard delamination under adverse ambient conditions.

4,116,208

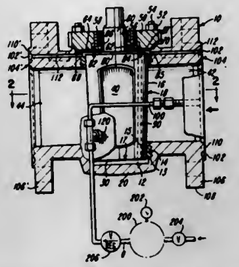
METHOD OF AND APPARATUS FOR PRESSURE BUFFERING ALL LEAK PATHS OF A LINED PLUG VALVE

Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Jan. 6, 1977, Ser. No. 757,355
Int. Cl.[2] F16K *5/16*
U.S. Cl. 137—1 **17 Claims**

1. The improvement which confines any leakage to externally applied pressurized buffering media rather than line media in a rotary plug valve of the type which includes a body portion having inlet and outlet ports, a plug rotatably mounted in the body and having a through-port defined therein for fluidly connecting the inlet and outlet ports to permit flow of

line media through the valve, means for rotating the plug to selectively fluidly connect and isolate the inlet and outlet ports, upper and lower chambers defined in the body portion adjacent opposite ends of the plug, and means fluidly connecting the upper and lower chambers for establishing a condition of fluid equilibrium therein, the improvement comprising:
means for introducing pressurized buffering media to said chambers;



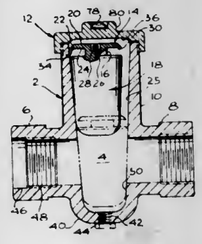
means for introducing pressurized buffering media into the through-port of the plug when the inlet and outlet ports of the valve body are fluidly isolated from each other by said plug so that when said inlet and outlet ports are in fluid communication via the through-port of the plug the pressurized buffering media in said through-port is exhausted into the line media; and
means for connecting each of the aforesaid means to an external source of buffering media at a pressure above the pressure of the line media.

4,116,209

SHOCK ACTUATED SHUT-OFF VALVE

Charles W. Greer, 303 N. Swall Dr., Beverly Hills, Calif. 90210

Filed May 5, 1977, Ser. No. 794,264
Int. Cl.[2] F16K *17/36*
U.S. Cl. 137—38 **18 Claims**



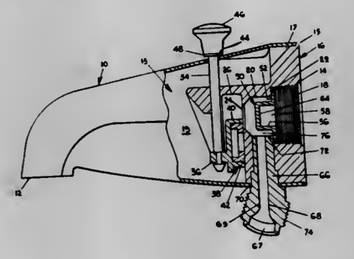
1. A shock actuated shut-off valve for fluid flow lines which comprises:
a valve housing having a central chamber in communication with (a) a hollow inlet conduit, (b) a hollow outlet conduit, and (c) a hollow stowage arm in upward, substantially plumb communication with said chamber, said stowage arm being provided with closure means at its outer end;
a valve element disposed in said stowage arm, said valve element having a valve body and a valve head interconnected by a valve neck, with the valve head being distal to the central chamber;
valve element support means secured to the inner wall of said stowage arm, with the valve head of said valve element being in engagement with and releasably supported by said support means; and
said valve element being in spaced relationship to the inner wall of said stowage arm to provide valve element clearance between said support means and said wall whereby lateral dislodgement of the valve head from the support means effects transition of the valve element through the stowage arm to the central chamber with the valve body sealingly engaging said chamber with respect to at least one of said inlet and outlet conduits.

4,116,210

DIVERTER SPOUT ASSEMBLY

Merritt J. Nelson, Sparta, Mich., assignor to Zin-Plas Corporation, Comstock Park, Mich.

Filed Sep. 10, 1976, Ser. No. 722,145
Int. Cl.[2] F16K *1/00*
U.S. Cl. 137—119 **12 Claims**



1. In a diverter spout assembly having a spout with a discharge opening; a passageway within the spout for passing water from a water supply pipe to the discharge opening; a diverter conduit transversely connected to the passageway; a valve operably mounted within the passageway to alternatively open and close the passageway so as to alternatively direct water through the discharge opening or diverter conduit; the improvement comprising:
means within the passageway having open ends, a downstream end and upstream end, and channelling surfaces substantially aligned with the flow of water from the water supply pipe, circumscribing the water flow therethrough and positioned over the diverter conduit for channelling all the water over and past the diverter conduit, the downstream end of the channelling means so positioned to minimize water leakage and siphon effects through the diverter conduit;
means for mounting the channelling means within the passageway such that the channelling surface of the channelling means is substantially horizontal, vertically aligned over the diverter conduit, and spaced apart from the inlet end of the diverter conduit so as to form an open passage from the front open end of the channelling means to the inlet end of the diverter conduit; and the front edge of the channelling surface is directly aligned over the front edge of the diverter conduit.

4,116,211

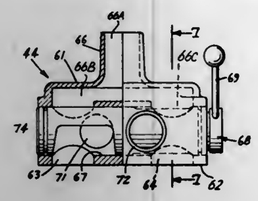
VALVE ASSEMBLY

James L. Richardson, St. Paul, Minn., assignor to VEDA, Inc., Long Lake, Minn.

Division of Ser. No. 500,133, Aug. 23, 1974, Pat. No. 4,061,273.
This application Mar. 9, 1977, Ser. No. 775,739
Int. Cl.[2] F16K *11/085*
U.S. Cl. 137—205 **20 Claims**

1. A valve assembly for controlling the flow of air moved by a pump means to and from a chamber in a tank, said valve assembly being mounted on the pump means operable to selectively connect the pump means to the tank chamber in an air evacuation condition or an air supply condition, said valve assembly comprising: a housing having a bore, at least three first ports in the housing open to the bore, said first ports being in communication with the pump means and the tank chamber, and at least two second ports open to the bore and the atmosphere, a movable spool located in said bore for controlling the

flow of air through the valve assembly, said spool having a plurality of cavities orientated relative to the first and second ports to provide passages for movement of air through the



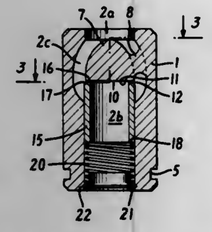
valve assembly for evacuating air from and supplying air to the tank chamber, and handle means to selectively move the spool to an air evacuation position.

4,116,212

UNIDIRECTIONAL FLOW CONTROL VALVE

Roydon B. Cooper, Locust Valley, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jun. 14, 1976, Ser. No. 696,110
Int. Cl.[2] F16K *21/00*
U.S. Cl. 137—220 **10 Claims**



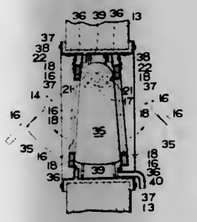
1. A unidirectional flow control valve capable when closed of shutting off flow through a fluid line in one direction, and when open of accommodating the full flow of fluid through the fluid line in the other direction at uniform velocity and a high flow rate with negligible pressure drop, comprising, in combination, a valve housing; an internal wall of the housing defining a valve fluid flow passage of fixed dimensions extending therethrough, having aligned coaxial straight end portions interconnected by an enlarged coaxial bulbous outwardly curved intermediate portion; a fixed valve member having an end surface defining a valve seat, the remainder of the valve member having a smoothly contoured and substantially tear drop shape, the valve seat receiving one end of a tubular valve element and having a substantially flat and smooth surface for fluid-tight sealing therewith, the valve member being disposed coaxially and concentrically in the enlarged portion of the fluid flow passage, and attached to the valve housing at the side of the enlarged portion of the fluid flow passage in a manner to permit fluid flow therepast and defining an outwardly curved valve fluid flow passage as an annulus of fixed dimensions about its outer periphery; the outer periphery of the valve member being shaped to define an annular passage substantially free from sharp bends and changes in direction; a tubular valve element that is light in weight reciprocably disposed coaxially and concentrically in one end portion of the flow passage adjacent the annular passage and movable quickly along the internal wall of the housing in either direction between a closed position in which it extends across the annular passage and an open position in which it is nested against the side walls of the end portion of the fluid flow passage and movable only between fully open and fully closed positions, into and away from engagement with the valve seat; having an open central passage through which when the tubular valve element is in the open position must pass fluid flowing through the valve flow passage in the valve housing; the tubular valve element when in sealing engagement with the valve seat extending across the line of flow between its central portion and the annular portion of the passage, and closing the valve passage at the annular portion thereof, and when away from sealing engagement with the valve seat adopting a nonflow-obstructing position abutting the side walls of the end portion of the flow passage that is concentric and coaxial to the end portion of the fluid flow passage and opening the valve passage for fluid flow through the open center of the tubular valve element; the central passage of the tubular valve element, the annular fluid flow passage and the end portions of the fluid flow passage having open volumes capable of accommodating full fluid flow at uniform velocity and a high flow rate with negligible pressure drop, when the tubular valve element is in a fully open position; a fluid pressure-receiving surface on the surface on the tubular valve element at the end that engages the valve seat, facing and exposed to fluid pressure in the annular portion of the valve fluid passage, and tending under a sufficient fluid pressure to move the tubular valve element from the closed into an open position; and bias means acting on the tubular valve element and retaining the tubular valve element in the closed position until a fluid pressure differential across the tubular valve element exceeding a predetermined minimum is reached, and then allowing the tubular valve element to move against the biasing force of the bias means immediately from the closed into a fully open position allowing full flow of fluid through the fluid line to pass through the valve.

4,116,213

AIR PRESSURE CONTROL APPARATUS FOR A HOT OR COLD STORAGE CHAMBER

Masaaki Kamezaki, Tokyo, Japan, assignor to Taisei Kosan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1976, Ser. No. 717,346
Claims priority, application Japan, Dec. 3, 1975, 50-144182
Int. Cl.[2] F16K *17/18*
U.S. Cl. 137—360 **8 Claims**



1. An air pressure control apparatus for a hot or cold storage chamber comprising:

a damper disposed in a window provided in a panel or wall of said storage chamber defining an air passage around a periphery of said damper for ventilating air within said storage chamber therethrough;

said damper being pivotally supported within said window by connecting members projecting inwardly from upper sides of said window and disposed at upper right and left opposite sides thereof enabling said damper to be swingable both inwardly and outwardly in response to variation of air pressure within said chamber;

first and second pivotable frames for airtightly closing said air passage extending thereover and contacting with peripheral surfaces of said window and said damper at inside and outside walls of said storage chamber; and

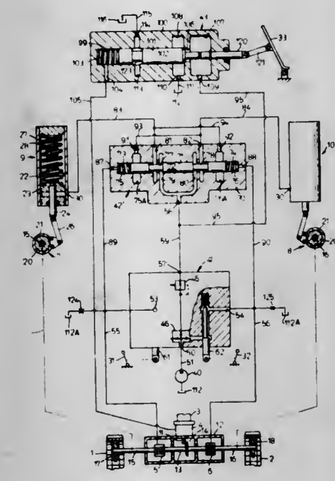
wherein said frames have openings at central portions thereof through which said damper is exposed to the inside and outside of said storage chamber and are moveable together with said damper, whereby said damper and one of said frames may be shifted either in the inside or outside direction of said chamber releasing the airtight sealing of said air passage in accordance with the variation of air pressure within said chamber to establish air pressure equilibrium between the inside and outside of said chamber.

4,116,214

STEERING CLUTCH AND SINGLE PEDAL BRAKE CONTROL SYSTEM FOR CRAWLER TRACTOR

George Paul Koch, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Division of Ser. No. 640,753, Dec. 15, 1975, Pat. No. 4,042,052.
This application Mar. 31, 1977, Ser. No. 783,203
Int. Cl.[2] F16K *15/18*
U.S. Cl. 137—522 **6 Claims**



1. In a hydraulic control valve:

a housing;

a first chamber being connectable to receive fluid from a source of pressurized fluid whose pressure is to be controlled and having a discharge outlet;

a second chamber being connectable to a source of pilot fluid;

a valve spool in said housing and movable between one position wherein it closes said discharge outlet of said first chamber thereby maintaining fluid in said first chamber at a predetermined pressure level and another position wherein it opens said discharge outlet thereby causing the fluid in said first chamber to fall below said predetermined pressure level;

biasing means in said second chamber for acting in conjunction with said pilot fluid in said second chamber to bias said valve spool toward said one position;

said biasing means being of insufficient force in the absence of pilot fluid of a predetermined pressure level to maintain said valve spool in said one position; and

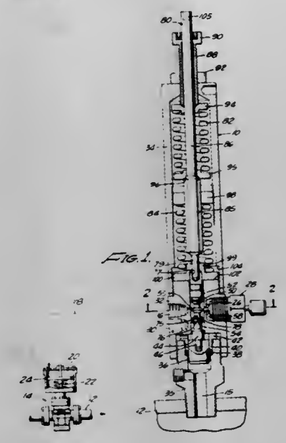
actuator means extending into said first chamber and in coaxial arrangement with said valve spool for selectively moving said valve spool toward said other position, said actuator means being releasably engageable with said valve spool so that said valve spool can be moved independently of said actuator means.

4,116,215

AUTOMATIC RESET PILOT VALVE

John D. Muchow, Cerritos, Calif., assignor to Willis Oil Tool Co., Long Beach, Calif.

Continuation of Ser. No. 617,386, Sep. 29, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,906
Int. Cl.[2] F16K *11/10*
U.S. Cl. 137—596.18 **6 Claims**



1. A single pilot valve mechanism to control the transmission of control fluid from a pressurized source to a control cylinder of a spring-loaded shut-off valve in a pipeline in response to changes in the pipeline pressure, said pilot valve having in combination:

a valve body having a bore therein and four ports communicating with said bore, namely, a supply port for connection with the source of control fluid, a cylinder port for communication with the control cylinder of a shut-off valve, an exhaust port, and a sensing port for communication with the pipeline downstream from the shut-off valve;

a first valve member movable along said bore and responsive to changes in the pressure at the sensing port and having a normal position when the pressure in the pipeline is in a predetermined normal range;

first spring means effective to move the first valve member in one direction in said bore out of its normal position to a first alternate position in response to drop of pressure in the pipeline below said normal range;

second spring means effective to enable movement of the first valve member in the other direction in said bore out of its normal position to a second alternate position in response to rise in the pipeline pressure above said normal range;

a second valve member for controlling flow through said supply port;

said first valve member at its normal position being operable to actuate said second valve member to open position and placing said supply port in communication with the cylinder port to supply control fluid to the control cylinder of the shut-off valve to open the shut-off valve, and simultaneously cutting off the supply port from the exhaust port,

said first valve member at each of its two alternate positions being operable to permit movement of said second valve member to closed position cutting off the supply port from the cylinder port, and simultaneously placing the cylinder port in communication with the exhaust port to vent the control cylinder of the shut-off valve to cause the shut-off valve to close,

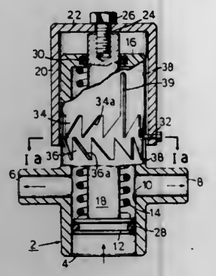
said first valve member at each ot its two alternate positions being free to return automatically to its normal position in response to return of the pipeline pressure to the normal range.

4,116,216

REMOTELY ACTUATED VALVES AND FLUID DISTRIBUTION SYSTEM INCLUDING SAME

Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Aug. 11, 1976, Ser. No. 713,616
Claims priority, application Israel, Jul. 1, 1976, 49947
Int. Cl.[2] A01G *25/02*
U.S. Cl. 137—624.13 4 Claims



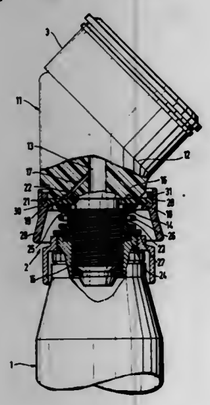
1. A valve comprising: a housing having an inlet for pressurized fluid, an outlet for the pressurized fluid, and a passageway connecting the inlet to the outlet; a valve member reciprocatable within said passageway to open or close the valve; and a steppable counting mechanism stepped with each new application of pressurized fluid to said inlet and effective to reciprocate said valve member to open or close said passageway after the counting mechanism has been stepped a predetermined number of times, said steppable counting mechanism comprising a pair of nestable cup-shaped members including an inner cup-shaped member fixed to and closing one end of the housing and an outer cup-shaped member rotatably coupled to the valve member so that the outer cup-shaped member is reciprocated with the valve member but is rotatable with respect thereto, and cooperable indexing elements carried by said inner and outer cup-shaped members to rotate the outer cup-shaped member one step around the inner cup-shaped member and around the valve member with each reciprocation of the valve member.

4,116,217

DEFLATION VALVE FOR BLOOD PRESSURE MEASURING DEVICES

Blasius Speidel, Hochmeisterstrasse 33, 7455 Jungingen, Fed. Rep. of Germany

Filed Dec. 17, 1976, Ser. No. 751,717
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2558058
Int. Cl.[2] A61B *5/02*; F16K *11/02*
U.S. Cl. 137—625.12 17 Claims



1. A manually operable deflation valve for the adjustable slow release of air from a pressurized air system and for the selective quick deflation of said system, which is particularly suited for use in conjunction with a blood pressure measuring device, for example, the valve comprising in combination:

a valve body enclosing a cavity in communication with said pressurized air system and defining a valve axis;

a valve seat arranged on the outside of the valve body, on a surface area of the latter which faces outwardly in a substantially axial direction and surrounds an axial protrusion of the valve body;

at least one outlet port to the atmosphere arranged within the surface area of the valve seat, and at least one connecting channel leading from the valve body cavity to said outlet port;

a valve member mounted on the valve body so as to cooperate with its valve seat in such a way that, in its normal position, it covers and closes said outlet port, or ports, to the atmosphere, the valve member being forcibly removable from said normal position into a position in which air can flow through said outlet port, or ports, respectively;

means for guiding and positioning the valve member in relation to the valve body, said means being defined by the valve body and by a peripheral portion of the valve member surrounding a valve member aperture accommodating said valve body protrusion;

spring means biasing the valve member towards its normal position; and

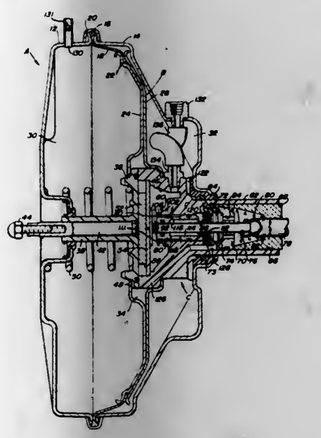
a manually adjustably actuatable control member connected to the valve member in such a way that, when actuated, it effects said forcible removal of the valve member from the valve seat in proportion to the displacement of the control member.

4,116,218

SEQUENTIAL VALVE FOR POWER BRAKE UNIT

Sydney R. Acre, Elsie, and Marquis J. Lake, Sr., Corunna, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 15, 1975, Ser. No. 640,902
Int. Cl.[2] F16K *11/16*
U.S. Cl. 137—627.5 4 Claims



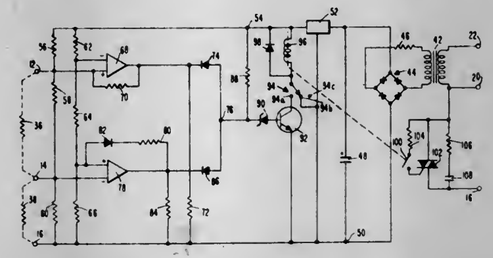
1. A valve mechanism including valve means having relatively movable cooperating valve member means and valve seat means, passage means in said valve means for connecting a chamber to three different pressure sources of three different magnitudes, operating means movable in one direction for operating said valve member means and valve seat means to sequentially connect the chamber to the three different pressure sources through said passage means in order of increasing magnitude while closing off each preceding pressure source substantially simultaneously with opening of each succeeding pressure source, said operating means being movable in an opposite direction for operating said valve member means and valve seat means to sequentially connect the chamber to the three different pressure sources through said passage means in reverse order of decreasing magnitude, said valve member means including, first, second and third movable valve members, said passage means including a passage through said third valve member, and communication with the chamber past said first and second valve members being through said passage in said third valve member.

4,116,219

DIFFERENTIAL THERMOSTATIC CONTROLLER FOR SOLAR HEATING SYSTEM

Richard K. Nurnberg, Norristown, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 22, 1976, Ser. No. 679,286
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 11 Claims



1. In a solar heating system, a controller for energizing a pump motor to circulate fluid between a solar collector and a storage tank, the controller comprising:

first temperature responsive means for sensing the temperature in the collector;

second temperature responsive means connected in series with said first temperature responsive means for sensing the temperature in the storage tank;

switching means for energizing the pump motor;

first comparator means including an operational amplifier having one input connected between the first and second temperature responsive means and also including voltage dividing means connected to another input of the operational amplifier to create a fixed voltage thereat; and

second comparator means for responding to the total temperature sensed by both the first and second temperature responsive means to inhibit the switching means to prevent energization of the motor.

4,116,220

SOLAR ENERGY COLLECTOR

David Miller Burd, 1841 R St. NW., Washington, D.C. 20009

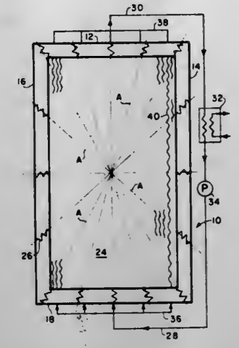
Filed Apr. 27, 1976, Ser. No. 680,708
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 9 Claims

1. A solar energy collector comprising:

front, back and peripheral insulating walls defining a sealed enclosure, at least said front wall being transparent;

at least one thin planar collecting member having front and back surfaces and edges, said collecting member being disposed in said enclosure in spaced relationship to said walls;

tension means associated with said peripheral walls and said edges to entirely support said member in a planar configuration under all conditions of thermal contraction and expansion thereof;



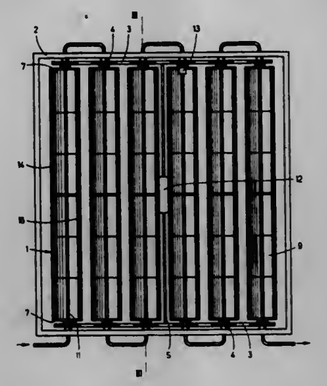
and means to transmit energy collected by said member for utilization thereof.

4,116,221

SOLAR ENERGY COLLECTING AND CONCENTRATING APPARATUS

Hans Zaugg, Weekendweg 1, Einigen, Canton of Berne, Switzerland (3646), and Harald Liebi, Bolgen, Zweisimmen, Canton of Berne, Switzerland (3770)

Filed Sep. 7, 1976, Ser. No. 720,728
Claims priority, application Switzerland, Sep. 11, 1975, 11707/75
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 1 Claim



1. An installation comprising a frame, a plurality of transversely spaced units rockably supported within said frame for collecting and concentrating solar energy upon at least one pipe for conveying a heat-carrier each unit including a support structure having a pair of longitudinally spaced opposite transversely extending end plates and parabolic-cylindrical reflectors divided into sections and supported by said support structure, means for driving the reflectors to follow the position of the run including a motor drive, characterized in that each support structure includes at least two cradle members extending longitudinally between respective opposite end plates and having longitudinally extending grooves therein engaging corresponding opposite edge of said reflector sections and there are included first and second pinions mounted to respective opposite end plates of each support structure, a first transversely extending rack engaging the first pinions, a second transversely extending rack engaging the second pinions, the motor drive being centrally disposed relative to the installa-

tion, a longitudinally extending shaft coupled at the middle thereof to the motor drive and gears affixed to said shaft and engaging each of said racks to synchronously rock said energy collecting units.

4,116,222

PROCESS AND APPARATUS FOR COLLECTING SOLAR ENERGY

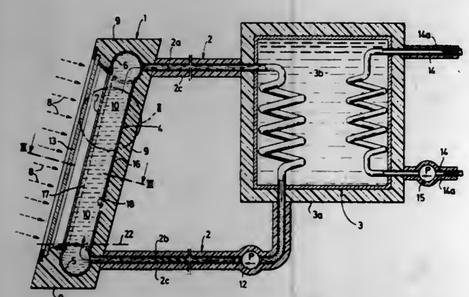
Walter Seifried, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 13, 1977, Ser. No. 759,009

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1976, 2601170

Int. Cl.² F24J 3/02

U.S. Cl. 126—271 **22 Claims**



1. An improved process for converting solar energy into usable heat comprising passing a fluid mixture of a heat carrier and heat absorber particles suspended therein to a heating zone for exposure to solar radiation, passing said heated mixture to a heat sink and recovering heat therefrom, and recirculating the mixture to said heating zone through a non-heated zone disposed below said heating zone, whereby damage to the heating zone due to overheating of the mixture during circulation system breakdowns is prevented, wherein the improvement comprises:

a. selecting said heat absorber particles to have a specific gravity such that said particles separate from said mixture when said mixture is not in motion; and

b. feeding and passing said mixture through said non-heated zone and said heating zone with a vertical component of flow such that upon termination of mixture movement, said heat absorber particles will separate from said mixture into said non-heated zone out of contact with said solar radiation.

4. An apparatus for converting solar energy into usable heat energy, comprising:

a. a mixture of at least one fluid heat carrier and a quantity of heat absorber particles, said heat absorber particles having a specific gravity such that said particles separate from said mixture when said mixture is not in motion;

b. at least one solar collector for exposing said mixture to solar radiation, said collector comprising a closed container having a transparent front wall, a back wall mounted in spaced relation with said transparent front wall such that a relatively vertical mixture flow passage is defined therebetween, top and side walls for enclosing said flow passage, and compartment means disposed below said transparent front wall and vertically communicating with said flow passage for storing said heat transfer particles out of contact with said solar radiation; and

c. means for circulating said mixture through said solar collector.

4,116,223

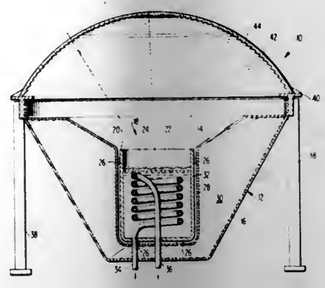
SOLAR ENERGY UNIT

Michael Vasilantone, 34 Columbia Rd., Somerville, N.J. 08876

Filed Jan. 18, 1977, Ser. No. 760,316

Int. Cl.² F24J 3/02

U.S. Cl. 126—271 **8 Claims**



1. A solar energy unit comprising a housing having a central cavity, a transparent dome on said housing covering said cavity, a reservoir in said cavity, a heat-absorbing liquid in said reservoir, a floating metal grid in said reservoir, heat exchange means in said reservoir immersed in said liquid and containing a heat exchange fluid, passageway means communicating said heat exchange means to a heat storage means, and means on said dome for magnifying and concentrating solar rays on said reservoir.

4,116,224

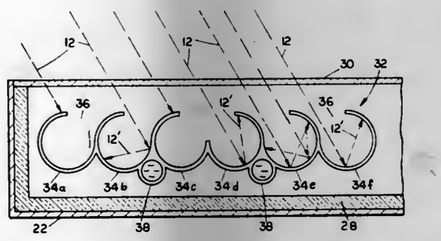
SOLAR ENERGY COLLECTION DEVICE

Raymond R. Lupkas, 54 Mt. Pleasant Dr., Trumbull, Conn. 06611

Filed Jan. 21, 1977, Ser. No. 761,422

Int. Cl.² F24J 3/02

U.S. Cl. 126—271 **8 Claims**



1. A collector for capturing solar rays and transferring the heat energy therein to a circulating fluid for utilization comprising:

A. a plurality of longitudinally extending adjoining tubes in heat exchange relationship with one another, each of said tubes having a longitudinally extending opening therein which subscribes an arc of approximately 90° and said openings are oriented in the first quadrant for half of the adjoining tubes and in the second quadrant for the other half of the adjoining tubes to permit a first portion of the interior of said tubes to be directly exposed to solar rays, said tubes having a second interior portion to be exposed to solar rays reflected from said first portion, the interior and exterior surfaces of said tubes having a heat absorbing coating thereon, and

B. at least one fluid carrying conduit located in heat exchange relationship with two of said tubes,

whereby when the collector is exposed to solar rays, a portion of the rays will strike the exterior surfaces of the tubes and a portion of the rays will pass through the openings in the tubes to directly strike the interior of the tubes where any reflected rays will strike another portion of the interior of the tubes to permit the tubes to absorb a greater measure of the available heat energy from the rays and said absorbed heat energy is transferred by conduction through the tubes to the fluid in the conduit for utilization.

4,116,225

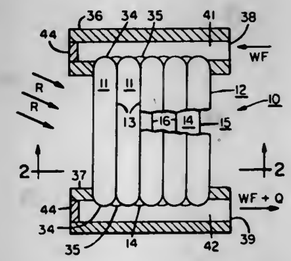
SOLAR ENERGY COLLECTOR

Ugur Ortabasi, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jul. 7, 1977, Ser. No. 813,545

Int. Cl.² F24J 3/02

U.S. Cl. 126—271 **37 Claims**



1. A solar energy collector structure comprising:

a plurality of partially evacuated tubular members substantially transparent to incident solar radiation, said tubular members having opposed lateral ends being arranged in a first group and lying adjacent one another in parallel axial alignment, means for joining each tubular member next to each adjacent tubular member of the group to form a self supporting tube sheet structure;

a second group of partially evacuated tubular members having opposed lateral ends joined as said first group to form a second tube sheet structure, said first and second tube sheets arranged adjacent each other in tandem to form at least one flow channel therebetween, means joining the lateral free ends of each tube sheet to an adjacent lateral free end of the other, for providing closure for and defining limits to the flow channel formed between said tube sheets, and

an absorber surface disposed in communication with said flow channel for intercepting and absorbing solar energy.

4,116,226

OIL SEPARATION AND HEAT RECOVERY SYSTEM

William J. Oakes, Chambersburg, Pa., assignor to Nibble With Gibble's Inc., Chambersburg, Pa.

Filed Apr. 6, 1977, Ser. No. 785,027

Int. Cl.² F24C 15/32; A47J 36/38

U.S. Cl. 126—299 D **6 Claims**

1. An oil separation and heat recovery system comprising,

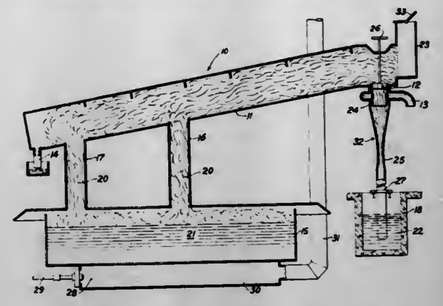
an inclined duct,

means supporting said duct adjacent a source of steam and oil vapor,

means connecting said duct to said source of steam and oil vapor,

a barometric condenser connected to the upper end of said duct,

water inlet means connected to said duct,



a hot water container at the lower end of said barometric condenser,

and a container for oil at the lower end of said duct.

4,116,227

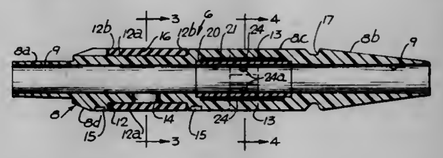
COMBINATION CATHETER VENTING AND URINE SAMPLE COLLECTING UNIT AND METHOD OF MAKING THE SAME

Melvin I. Eisenberg, Chicago; Norman Levy, Highland Park, and Glenn L. Beall, Gurnee, all of Ill., assignors to Plasco, Inc., Gurnee, Ill.

Filed Jun. 28, 1976, Ser. No. 700,729

Int. Cl.² A61B 10/00; A61M 25/00

U.S. Cl. 128—2 F **7 Claims**



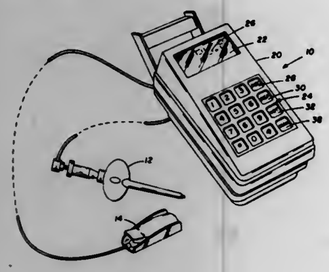
1. A combination catheter vent and urine sample collecting unit to be connected between a catheter extending to the bladder and a conduit extending to a urine collecting reservoir, said unit comprising: a one piece body of molded synthetic plastic material having a straight passageway extending longitudinally therethrough from an inlet end to an outlet end of said body aligned therewith, said body at the outlet end being adapted to receive and communicate with said conduit extending to said urine collecting reservoir and at the inlet end thereof being adapted to receive and communicate with said catheter extending to said bladder, said body having a laterally opening and extending urine collection needle-receiving aperture between said longitudinal passageway and the exterior of said body and a number of laterally opening and extending and circumferentially spaced venting apertures spaced longitudinally of said urine collection needle-receiving aperture and in air communication between said longitudinal passageway and the exterior of said body, an open-ended support tube in said body having a longitudinal passageway forming a continuation of said body passageway and having circumferentially spaced laterally opening and extending apertures communicating with the support tube passageway and in alignment with said laterally opening and extending venting apertures of said body, said support tube having a longitudinal opening therethrough in communication and in alignment with said body passageway, a bacteria and liquid impermeable and an air-permeable strip of filtering material supported on the outside of said support tube where it extends over said apertures in said support tube and underlies said venting apertures in said body where it makes liquid-sealing relation to the defining walls of said venting apertures in said body, and a urine collection needle punctur-

able self-sealing layer of material on said body covering said urine collection needle-receiving aperture and making a liquid and air sealing relationship with the defining walls of the latter laterally opening and extending aperture.

4,116,228
RESPIRATION DATA ACQUISITION, CONVERSION AND DISPLAY SYSTEM

Emmett L. Hudspeth; Philip C. Richardson; John L. Neathery, Jr.; Jerald P. Dykstra; Allen D. Boger, Jr.; William B. Sims, Jr.; Glenn E. Hunt, and Tony M. Quisenberry, all of Austin, Tex., assignors to United States Surgical Corporation, Stamford, Conn.

Division of Ser. No. 627,654, Oct. 31, 1975, which is a division of Ser. No. 385,699, Aug. 6, 1973, Pat. No. 3,940,742. This application Jul. 12, 1976, Ser. No. 704,450
Int. Cl.[2] A61B *5/08, 5/02*
U.S. Cl. 128—2 R **3 Claims**



1. A respiration data acquisition, conversion and display system comprising:

a respiration rate sensor having a resistance varying cyclically with respiration rate;

first means connected to the respiration rate sensor to generate a series of electrical output pulses having a repetition rate related to the cyclic change in the resistance of the respiration rate sensor;

means for generating a train of clock pulses,

a counter receiving the clock pulses, and triggered into an "on" state by a first specified number of output pulses of said first means and triggered into an "off" state by a second specified number of subsequent output pulses of said first means and where a total count registered represents the time period of the second specified number of output pulses representing the cyclic changes in the resistance of the respiration rate sensor;

a divider receiving the total count of the counter wherein the numerator of the divider is a scaling constant and the denominator of the divider is the total count of the counter and where the output of the divider represents the average respiration rate in respiration cycles per minute; and

display means connected to said divider for displaying the respiration rate.

4,116,229
ACOUSTIC IMAGING APPARATUS

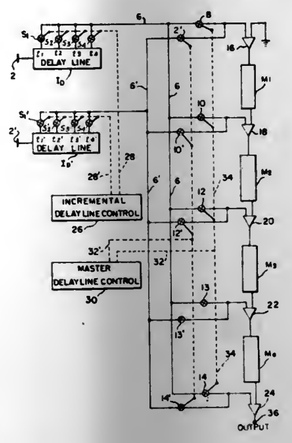
Richard D. Pering, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 30, 1976, Ser. No. 718,721
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—2 V **3 Claims**

1. In an apparatus for forming real time images of internal portions of the human body from reflections by internal tissue of transmitted short pulses of ultrasonic waves, the combination of

an array of receiving transducers,

a master delay line having a plurality of taps thereon and fixed delays between successive taps, and

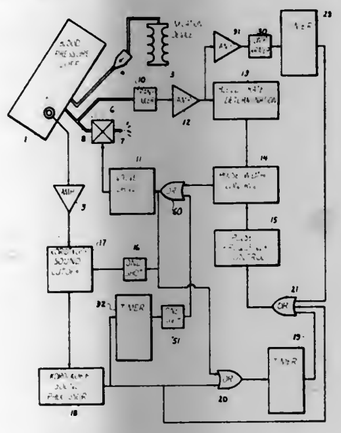


means for selectively providing predetermined small amounts of incremental delay between each of said transducers and any one of said taps on said master delay line.

4,116,230
BLOOD PRESSURE CUFF AUTOMATIC DEFLATION DEVICE

Donald E. Gorelick, 43 Royal Crest Dr., Nashua, N.H. 03060

Filed Sep. 10, 1976, Ser. No. 722,135
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—2.05 M **10 Claims**



1. Apparatus for measuring blood pressure of a patient, comprising in combination:

(A) an inflatable cuff for mounting on a patient;

(B) inflation means connected to said cuff for inflating said inflatable cuff with air to above systolic pressure;

(C) an electrically controlled two state valve connected to said cuff for bleeding air from said inflatable cuff in a controlled manner;

(D) pressure transducer connected to said inflatable cuff for generating a signal as a function of the air pressure in said cuff;

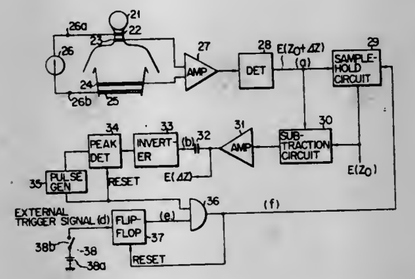
(E) sound sensing means for detecting Korotkoff sounds while air is being bled from said inflatable cuff; and

(F) control means connected between said pressure transducer and said electrically controlled valve for controlling the (1) frequency and (2) period of valve openings so as to produce a relatively consistent bleed rate, said control means including (a) timing means for triggering valve openings for predetermined finite periods until said systolic pressure is reached; (b) means responsive to said Korotkoff sounds for triggering valve openings as a function of said Korotkoff sounds; (c) bleed rate determination means for comparing pressure drop caused by each said valve opening to a known reference value; (d) means for correcting the duration and frequency of said valve openings in response to signals from said pressure transducer; and (e) means responsive to said means for correcting generating signal pulses for opening said valve.

4,116,231
LIVING BODY FUNCTION MEASURING APPARATUS

Satoshi Matsuo, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 8, 1976, Ser. No. 748,403
Claims priority, application Japan, Dec. 10, 1975, 50-147159
Int. Cl.[2] A61B *5/05*
U.S. Cl. 128—2.1 Z **3 Claims**



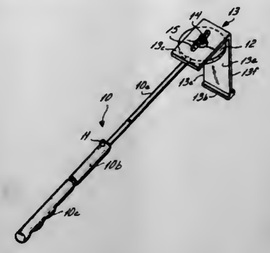
1. A living body function measuring apparatus comprising means for permitting a constant slight current of a high frequency wave of predetermined frequency to flow through a to-be-measured portion of the living body; means for detecting a voltage drop based on an impedance of the living body portion; a sample-hold circuit means connected to said detecting means for sampling a predetermined level of an output signal of the voltage detecting means and holding the sampled value; means connected to said detecting means and said sample-hold circuit means for obtaining a difference output between the output of said voltage detecting means and the output of the sample-hold circuit means; and means for applying automatically a trigger signal to the sample-hold circuit means according to a peak level of said output signal of the difference obtaining means, the peak level corresponding to an end of an expiratory phase of the living body.

4,116,232
SURGICAL RETRACTOR

Philipp Rabban, P.O. Box 390942, Miami Beach, Fla. 33139

Filed Mar. 7, 1977, Ser. No. 775,137
Int. Cl.[2] A61B *17/02*
U.S. Cl. 128—20 **5 Claims**

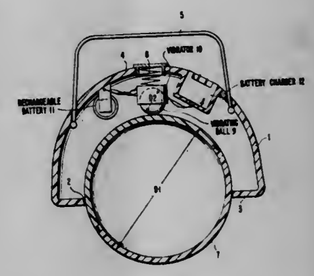
1. A hand held surgical retractor comprising a substantially straight shaft, a blade having substantially flat opposed faces, means for pivotally connecting the blade to one end of the shaft with the blade oriented substantially perpendicularly to the shaft and being free to turn about an axis substantially perpendicular to the shaft, the other end of the shaft being free, a handle formed at the free end of the shaft, an extremity of the blade most remote from the pivotal connection being free, and a rigid sole formed on the free extremity of the blade and defining substantially flat surfaces contiguous with and extending substantially perpendicularly from the flat faces of the blade beyond the thickness of the blade in opposite directions.



4,116,233
PORTABLE MASSAGER

Francis J. Scaduto, Rockford, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 14, 1977, Ser. No. 776,987
Int. Cl.[2] A61H *1/00, 15/00*
U.S. Cl. 128—32 **1 Claim**



1. A portable massager, comprising

a hand-sized housing having a hole formed through a first side thereof, said housing having a second side opposite the first side;

a handle mounted on the second side of the housing to accommodate a hand of a user with the palm on the second side whereby the housing is supported by the hand;

a massage ball of predetermined diameter larger than that of the hole through the first side of the housing mounted in the housing for free universal rotation in said hole whereby less than half the ball protrudes from said hole; and

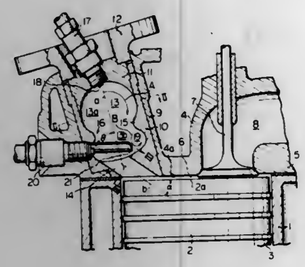
motive means in the housing abutting the massage ball for imparting vibration and motion to said massage ball, said motive means comprising a vibrating ball spring biasedly mounted in the housing, a vibrating ball mounted on the spring in abutment with the massage ball, a vibrator mounted in the housing for vibrating the vibrating ball, said vibrating ball having a diameter smaller than the predetermined diameter and rechargeable battery means in the housing electrically connected to the vibrator for operating said vibrator.

4,116,234

INTERNAL COMBUSTION ENGINE WITH AN AUXILIARY COMBUSTION CHAMBER

Hiromichi Yanagihara, and Nobuhiro Miura, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 6, 1977, Ser. No. 804,165
Claims priority, application Japan, Apr. 5, 1977, 52-38105
Int. Cl.² F02B *19/10, 19/16*
U.S. Cl. 123—32 SP **2 Claims**



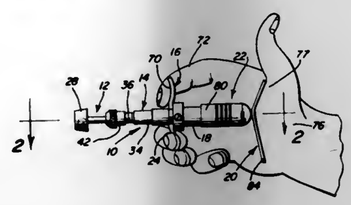
1. An internal combustion engine comprising:
a cylinder block having a cylinder bore therein;
a cylinder head having a cavity therein and mounted on said cylinder block, said cavity having an inner wall which defines an auxiliary chamber with an axis;
a piston reciprocally movable in said cylinder bore, said piston and said cylinder head forming a main chamber therebetween;
an intake valve movably mounted on said cylinder head for leading gas into said main chamber;
an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;
an annular raised portion formed on the inner wall of said auxiliary chamber and definning a restricted opening of approximately circular shape, said annular raised portion dividing said auxiliary chamber into a first chamber of approximately spherical shape and a second chamber of an ellipsoid shape, which are arranged in tandem along the axis of said auxiliary chamber and forming a recess in said second chamber beneath said annular raised portion;
a connecting passage formed in said cylinder head and communicating said main chamber with said auxiliary chamber, said connecting passage being arranged to be tangentially connected to the inner wall of said second chamber for creating a swirl motion of the gas at the time of the compression stroke;
a fuel injector having an injecting nozzle disposed in said auxiliary chamber and directed to said recess located opposite to the inner wall to which said connecting passage is tangentially connected with respect to the axis of said auxiliary chamber for forming a rich air-fuel mixture in said recess, and;
a spark plug having a spark gap located in said recess for igniting the rich air-fuel mixture formed therein, wherein said connecting passage has an approximately elliptical cross-section which has a major axis and a minor axis, a ratio of the length of said minor axis to the length of the major axis being in the range of 0.4 through 0.6, an angle between the axis of said connecting passage and a plane defined by the flat top surface of said piston being in the range of 25° through 45°, an angle between an axis of said connecting passage and the axis of said auxiliary chamber being in the range of 30° through 50°, a ratio of the cross-sectional area of the connecting passage to the volume of the auxiliary chamber being in the range of 0.05 through 0.1 cm^{-1}, the sum of the volumes of said auxiliary chamber and the connecting passage being more than 80 percent of the sum of the volumes of the auxiliary chamber, the connecting passage and said main chamber when said piston reaches the top dead center.

4,116,235

CHIROPRACTIC ADJUSTING INSTRUMENT

Arlan W. Fuhr, and Warren C. Lee, both of 821 E. Bridge St., Redwood Falls, Minn. 56283

Filed Jun. 20, 1977, Ser. No. 808,382
Int. Cl.² A61F *5/00*
U.S. Cl. 128—69 **6 Claims**



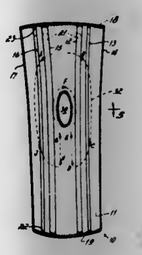
1. A chiropractic adjusting instrument comprising a longitudinally movable thrust element having a body contact member on one end thereof, a main body having handle means thereon longitudinally slidably receiving said thrust element, an opposing handle member aligned with the thrust member and main body, compression spring means associated with the thrust member and main body to spring bias the thrust element outwardly when the handle on the main body and the handle aligned therewith are squeezed together, and release means for the spring means for automatically releasing the thrust element when the handles have been squeezed together a predetermined distance.

4,116,236

KNEE BRACE WITH KNEECAP-ENCIRCLING FLEXIBLE RESILIENT PAD

William J. Albert, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio

Filed Feb. 14, 1977, Ser. No. 768,031
Int. Cl.² A61F *3/00*
U.S. Cl. 128—80 C **14 Claims**



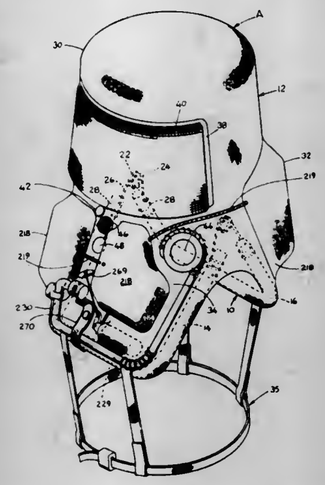
1. An improved knee brace comprising:
a one piece, continuous, generally cylindrical sleeve formed of elastic material stretchable in a circumferential direction and dimensioned to cover the leg area at the knee joint, said sleeve having a forward section with an opening therein to accommodate the kneecap area of the wearer, a rear section, and oppositely disposed side sections intermediate said forward and rear sections,
a flexible interior pocket disposed in the interior of the sleeve surrounding said kneecap opening adjacent at least the top and sides of said opening, said flexible pocket being secured to said sleeve,
a one piece inverted U-shaped resilient flexible pad disposed in said interior pocket and having integral upper and opposite side sections to surround the upper and lateral portions of the wearer's kneecap, respectively, said pad being relatively inelastic compared to said sleeve in a direction circumferentially encircling said knee to resist rearward movement and dislocation relative to the wearer's kneecap of said opposite side pad sections when the wearer's knee is flexed,
a plurality of longitudinal strips formed of an inelastic material stitched to the forward and side sections of said sleeve on the exterior surface thereof and extending substantially the full length of said sleeve, said strips cooperating with said sleeve to form a plurality of pockets, said pockets disposed on each side of the wearer's knee and being laterally spaced from each other to collectively overlie opposite sides of the wearer's knee from the edges of the kneecap to the ligaments running along the sides of the knee, and
a plurality of flexible pressure elements, each of said pressure elements comprising two interleaved and overlapping flattened helical springs and end caps for holding said springs in assembled relation, each of said springs being mounted within one of said pockets and extending over a substantial portion of the length of said sleeve.

4,116,237

EMERGENCY BREATHING APPARATUS

Norman Birch, 1709 Mantis Ave., San Pedro, Calif. 90732

Filed Feb. 7, 1977, Ser. No. 766,063
Int. Cl.² A62B *7/00*
U.S. Cl. 128—142.7 **39 Claims**



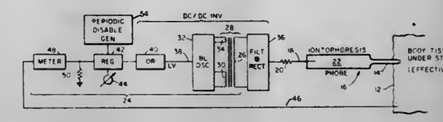
1. An emergency breathing apparatus for donning by an individual to create a substantially air-tight breathing plenum for the individual; said apparatus comprising:
(a) frame means comprising a relatively rigid frame section,
(b) said frame section having a chamber means formed therein capable of containing a supply of an oxygen containing gas,
(c) a hood formed of a relatively flexible substantially air-impervious material operatively located over a portion of said frame means and sized to be disposed over the head of an adult individual to form a breathing plenum,
(d) gas dispensing means comprising an outlet means on said frame section to permit the dispensing of said gas from said chamber means to said plenum when said apparatus is donned by an individual, and
(e) switch means automatically responsive to the donning of said apparatus for automatically dispensing the gas from the chamber to the plenum.

4,116,238

HIGH VOLTAGE CONSTANT CURRENT SOURCE FOR IONTOPHORESIS

David Pettijohn, Watertown, Mass., assignor to Midgard Electronics Company, Inc., Watertown, Mass.

Filed Aug. 18, 1976, Ser. No. 715,538
Int. Cl.² A61N *1/30*
U.S. Cl. 128—172.1 **2 Claims**



1. A high voltage DC regulated blockage clearing current source and iontophoresis system comprising:
an animal body under study;
an iontophoresis probe located for ion injection into said body;
a DC-to-DC inverter providing a relatively high voltage rectified DC squarewave output in response to a relatively low voltage DC input;
a feedback circuit responsive to the rectified DC squarewave voltage output at said relatively high voltage and including in circuit said iontophoresis probe and animal body under study in which the inverter output is applied to said probe;
means responsive to the magnitude of current flowing through said feedback circuit for developing a DC signal representative of the magnitude thereof; and
means for applying said DC signal as the relatively low voltage DC input to said DC-to-DC inverter in a polarity to provide negative feedback in said feedback circuit and to maintain a predetermined current from said inverter to said probe; and
means for adjusting the level of said DC signal applied to said DC-to-DC inverter to adjust the regulated magnitude of the relatively high voltage DC output of said DC-to-DC inverter to operate in the range of a few hundred volts or less in the absence of probe blockage and a relatively high current in said feedback circuit and to operate in a range of at least approximately 1500 volts in response to a probe blockage and a relatively low current in said feedback circuit.

4,116,239

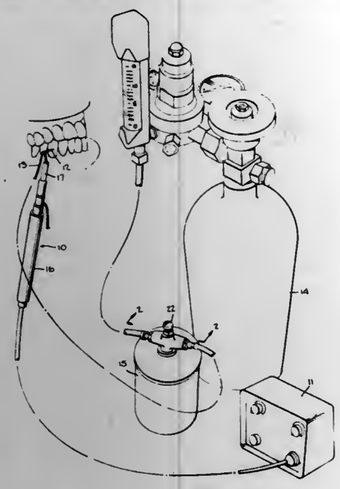
ULTRASONIC OXYGENATION INSTRUMENT

Sol J. Ewen, 107-21 Queens Blvd., Forest Hills, N.Y. 11375

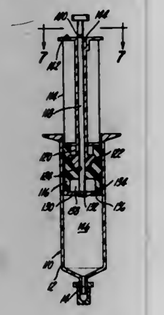
Filed Jun. 14, 1974, Ser. No. 479,549
Int. Cl.² R61M *13/00*
U.S. Cl. 128—184 **7 Claims**

1. An ultrasonic oxygenation instrument for the treatment of diseased tissue or other sites requiring treatment, said instrument comprising:
(A) an ultrasonic transducer having a nozzle attached thereto, whereby when the transducer is energized, the nozzle is caused to vibrate at an ultrasonic rate;
(B) a high-frequency generator connected to said transducer to energize same;
(C) a pressurized source of oxygen of a purity which is medically acceptable:
(D) an atomizer containing liquid; and
(E) means coupling said source to said nozzle through said atomizer to feed oxygen intermingled with said liquid

thereto, whereby oxygen intermingled with liquid passing through said vibrating nozzle and emitted therefrom as a jet is ultrasonically activated to render it highly reactive with said tissue.

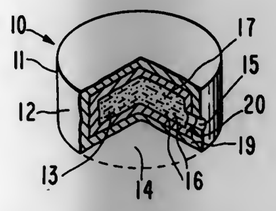


4,116,240
MIXING SYRINGE
Aeneas C. Guiney, 2855 Silverhill, Pontiac, Mich. 48055
Filed Mar. 11, 1977, Ser. No. 776,528
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 M **4 Claims**



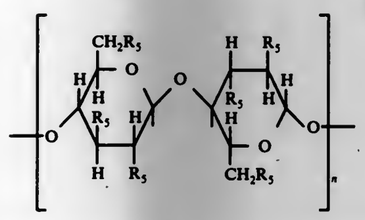
1. A syringe assembly for storing two different materials separately in readiness for mixing together and for injection as a liquid at the time of use, the combination of; a cylinder, a discharge port formed in a wall of said cylinder for communication with the interior of said cylinder, a plunger slidably disposed in said cylinder and projecting from an open end thereof opposite to said discharge port, said plunger forming a first chamber therein, a second chamber formed in said cylinder between said plunger and said discharge port, a movable wall member separating said first and said second chambers from each other, said second chamber being adapted to contain one of the materials to be mixed and said first chamber being adapted to contain the other of said materials, an actuating member supported for axial movement relative to said plunger, one end of said actuating member being connected to said wall and being operative to move said wall to a position communicating said first and said second chambers with each other, said plunger being movable toward said discharge port to displace said mixed materials from said cylinder and lock means for holding said rigid wall member in closed relationship with said plunger during movement of the latter to maintain said first and second chambers isolated from each other.

4,116,241
OSMOTIC SYSTEM WITH LAMINATED WALL COMPRISING STRUCTURALLY DIFFERENT SEMIPERMEABLE LAMINA
Felix Theeuwes, Los Altos, and Atul D. Ayer, Belmont, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Continuation of Ser. No. 654,194, Feb. 2, 1976, Pat. No. 4,014,334. This application Dec. 15, 1976, Ser. No. 750,773
The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.
Int. Cl.² A61K 9/24, 9/44
U.S. Cl. 128—260 **11 Claims**

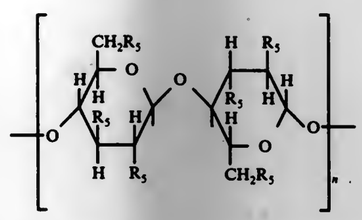


1. An oral osmotic system sized and adapted for the controlled administration of drug to an animal, said system comprising:

a. a shaped laminated wall comprising (1) a lamina formed of a material that maintains its physical and chemical integrity in the presence of fluid, drug and during the dispensing of drug, and is permeable to the passage of fluid and impermeable to the passage of drug, said lamina formed of a material having the general formula:



wherein R_5 is a member selected from the group consisting of hydroxyl, alkoxy, alkylcarbonate, alkylcarbamate, alkylsulfonate, alkylsulfamate and acyloxy, and wherein n is a positive number greater than 5 and at least one R is acyloxy, said lamina laminated to (2) a lamina formed of a different material that maintains its physical and chemical integrity in the presence of fluid, drug and during the dispensing of drug, and is permeable to the passage of fluid and impermeable to the passage of drug, said lamina formed of the different material selected from the general formula:



wherein R_5 is a member selected from the group consisting of

hydroxyl, alkoxy, alkylcarbonate, alkylcarbamate, alkylsulfonate, alkylsulfamate, and acyloxy, and wherein n is a positive number greater than 5 and at least one R is acyloxy; the wall surrounding and forming,

b. a compartment containing a member selected from the group consisting of locally and systemically acting drugs;

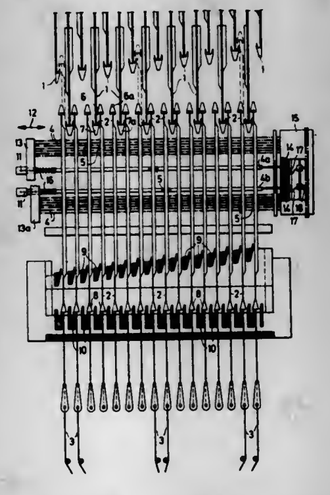
c. a passageway in the wall communicating with the compartment and the exterior of the system for administering drug from the system; and,

d. wherein in operation when the system is in the animal fluid therefrom is imbibed through the laminated wall into the compartment in a tendency towards osmotic equilibrium at a rate determined by the permeability of the laminated wall and the osmotic pressure gradient across the laminated wall thereby continuously dissolving drug that is administered according to the following equation:

$$h_T/k\pi_T = h_1/k\pi_1 + h_2/k\pi_2$$

wherein h_T is the thickness of the laminated wall, h_1 is the thickness of lamina (1,) h_2 is the thickness of lamina 2, $k\pi_T$ is the osmotic pressure of drug in the compartment times the permeability of the laminated wall to fluid, $k\pi_1$ is the osmotic pressure of drug in the compartment times the permeability of lamina (1) to fluid and $k\pi_2$ is the osmotic pressure of drug in the compartment times the permeability of lamina (2) to fluid, through the passageway at a controlled and continuous rate over a prolonged period of time.

4,116,242
JACQUARD MACHINE HAVING MEANS FOR CONTROLLING JACQUARD NEEDLE MOTION
Robert Bucher, Frick, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Dec. 8, 1976, Ser. No. 748,515
Claims priority, application Switzerland, Dec. 19, 1975, 16482/75
Int. Cl.² D03C 3/16, 3/06
U.S. Cl. 139—59 **9 Claims**



1. A jacquard machine for controlling warp yarns in a weaving machine comprising

a plurality of reciprocally mounted griffes;

a plurality of lifting wires for engaging with respective ones of said griffes;

a reciprocable drive element;

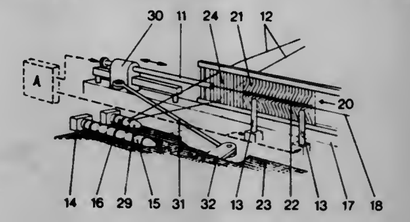
a plurality of jacquard needles extending longitudinally thereof from said drive element in a pressing direction, each said needle engaging a respective lifting wire for pressing said wire in said pressing direction into a position to be engaged with a respective griffe, each said needle being rotatably secured to said drive element for movement therewith in a direction opposite said pressing direction and having coupling pins engaging a respective wire and a flat section;

a pair of sliding members disposed about each flat section of a respective needle, each sliding member having a keyhole shaped aperture through which a flat section of a respective needle passes and is engaged against rotation, said sliding members being movable relative to said respective needle to disengage therefrom and to permit rotation of said needle into a position in which said pins thereof disengage from said respective lifting wires;

a plurality of force accumulators, each said force accumulator being disposed between said drive element and a respective needle to permit relative movement between said respective needle and said drive element in said pressing direction; and

a selector for selecting the jacquard needles to be moved in said pressing direction.

4,116,243
JET LOOM
Alfons Vettiger, Tann-Ruti, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Switzerland
Filed Mar. 31, 1977, Ser. No. 783,423
Claims priority, application Switzerland, Apr. 13, 1976, 4729/76
Int. Cl.² D03D 47/28
U.S. Cl. 139—435 **8 Claims**

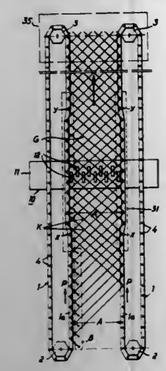


1. Jet loom having a device for the inserting of filling yarns by means of a gaseous fluid, a reed for beating up the inserted filling yarns to the fell of the cloth and temples arranged on both sides of the cloth, said reed comprising reed teeth provided with recesses, which recesses together form a channel for the gaseous fluid and straight reed teeth, the reed teeth with recesses being provided along the portion of the reed between the inner ends of the temples and the straight reed teeth being provided along the portions of the reed along the temples, the rearmost region of the recesses lying in the plane defined by the front edges of the straight reed teeth.

4,116,244
MULTISPOT WELDING MACHINE
Josef Ritter, Graz; Alois Sackl, Liezen; Klaus Ritter, and Gerhard Ritter, both of Graz, all of Austria, assignors to EVG Entwicklungs-u. Verwertungs- GmbH, Graz, Austria
Filed Feb. 23, 1977, Ser. No. 771,268
Claims priority, application Austria, Mar. 23, 1976, 2140/76
Int. Cl.² B21F 27/10
U.S. Cl. 140—112 **6 Claims**

1. In a multispot welding machine for producing a mesh web from arrays of wires running skew to the longitudinal direction of said web and crossing one another, said machine being of the kind having two endless synchronizing circulating feeders which carry deflector-pins and each of which has a straight working run, said working runs being uniformly spaced from one another and each defining a different one of the edges of said mesh web to be produced, a wire layer which is movable to and fro across said working runs and is arranged to lay at

substantially right angles to said working runs a member of wires alternatively about a corresponding number of deflector-pins on said working runs and a welding zone having means for welding said wires together at the crossover points thereof; the improvement which comprises an auxiliary drive mechanism



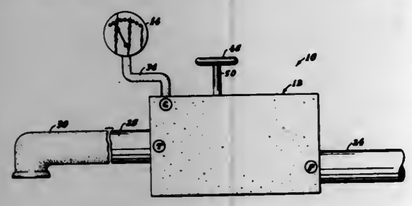
for said wire-layer, said drive mechanism being adapted of imparting to said wire-layer, each time after said wire-layer crosses over one of said feeder working runs, an additional rapid forward motion and a subsequent backward motion in a direction parallel to said working runs, whereby loops of wire are laid around said deflector-pins.

4,116,245

COMBINATION TIRE INFLATOR AND PRESSURE GAUGE

Wayne R. Ayers, R.R. 4, Box 218, Noblesville, Ind. 46060

Filed Jul. 13, 1977, Ser. No. 815,298
Int. Cl.² B65B *3/26*
U.S. Cl. 141—98 **10 Claims**



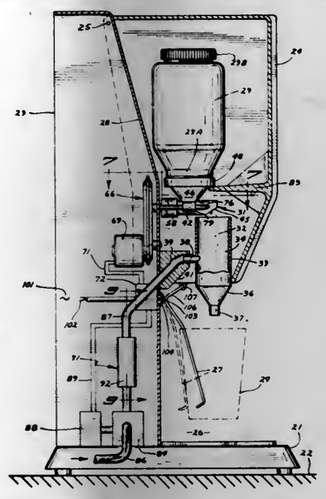
1. A combination tire inflator and pressure gauge means, comprising:
- a body member means;
- a pressure gauge; and
- a valving member;
- the body member means having a vent means, and being provided with passage means respectively operatively communicating with an associated source of pressure, the tire, and the pressure gauge;
- the valving member and the body member means being provided to have three relative positions or settings of the valving member, said positions or settings being such as follows:
- in a first relative position or setting there is provided communication between the gauge passage and the tire passage, the pressure-source passage being non-communicating with either of them or the vent means, thus the gauge indicating tire pressure;
- in a second relative position or setting there is provided communication between each of the gauge passage and the tire passage with the vent means, the pressure-source passage being non-communicating with either, thus venting air from the tire; and
- in the third relative position or setting there is provided communication between the pressure-source passage and the tire passage, but communication with either is blocked to the gauge passage and vent means, thus inflating the tire by air from the associated pressure source.

4,116,246

BEVERAGE DISPENSER

Raymond E. Franzen, Anoka, Minn., assignor to Medalie Manufacturing Co., Minneapolis, Minn.

Filed Oct. 12, 1976, Ser. No. 731,624
Int. Cl.² B65B *1/04*
U.S. Cl. 141—362 **28 Claims**



1. A machine for dispensing a beverage made by mixing a liquid with a granular food product comprising: a base adapted to engage a support, an upright wall mounted on the base, a container for storing a granular food product, means having a mixing chamber and an outlet passage wherein liquid and food product are mixed to form a beverage, a metering unit to receive food product from the container, means detachably mounting the container on the metering unit, said metering unit having rotatable means operable to dispense food product from the metering unit to said mixing chamber, cantilever mount means extending from said wall for slidably receiving and supporting the metering unit and container carried thereby on the wall above said base, said mount means thereby allowing the metering unit and container to be slidably removed as a unit from said wall for refill, cleaning and repair as necessary, drive means mounted on the wall engageable with and operable to rotate said rotatable means, means for controlling the amount of liquid discharged into the mixing chamber, said latter means including an on-off control valve operable to permit liquid to flow into the mixing chamber and to prevent liquid from flowing into the mixing chamber, and control means for concurrently actuating the drive means and valve whereby liquid and food product are simultaneously discharged into the mixing chamber forming the beverage, said beverage flowing into a collection container through the outlet opening in said means having a mixing chamber.

4,116,247

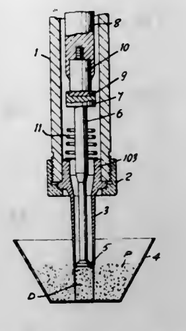
DOSING DEVICE

Luciano Zanasi, Bologna, Italy, assignor to Zanasi Nigris S.p.A., Bologna, Italy

Filed Mar. 4, 1977, Ser. No. 774,348
Claims priority, application Italy, Mar. 5, 1976, 12515 A/76
Int. Cl.² B65B *1/24*
U.S. Cl. 141—392 **3 Claims**

1. A dosing device, particularly for the filling of capsules with a pharmaceutical substance, comprising

(a) a tubular housing movable vertically up and down;
(b) a hollow punch having a cavity therein and removably secured to the lower end of said tubular housing;
(c) a piston slidably movable within said cavity said piston being provided at the lower end of a piston rod the upper end of which extends inside said tubular housing.
(d) an actuating rod vertically movable at the interior of the tubular housing and capable of contacting with its lower



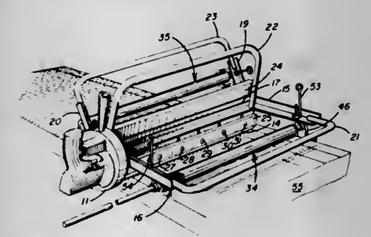
end the upper end of said piston rod, thereby imparting vertical movement to said piston rod;
(e) a permanent magnet at at least one of the contacting ends comprising the lower end of said actuating rod and the upper end of said piston rod;
(f) said contacting ends of the actuating rod and of the piston rod being flat horizontal surfaces, whereby relative sliding movement is permitted between the said surface while maintaining the magnetic connection between them.

4,116,248

APPARATUS FOR TEXTURIZING A MATERIAL

Wayne F. Erwin, Wooster, Ohio, assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 23, 1977, Ser. No. 835,857
Int. Cl.² B27G *13/00*
U.S. Cl. 144—2 R **3 Claims**



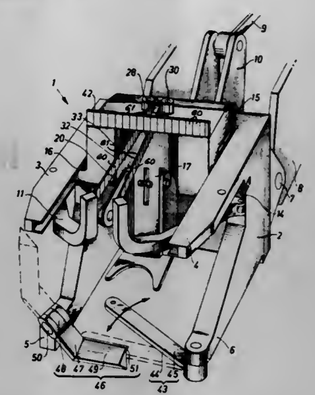
1. A portable surface texturizing apparatus which comprises:
(a) a portable chain saw having a saw chain bar carrying a rotable saw chain with cutters affixed thereto;
(b) a plurality of mounting members fixably mounted to the chain bar of said portable saw chain;
(c) a plurality of handles fixably mounted to said mounting members;
(d) a plurality of bar supports adjustably mounted along the chain bar, said bar supports having a beveled side extending longitudinally along the chain bar such that the beveled side will contact the surface of a work piece thereby to restrain the depth of cut;
(e) means for guiding said portable chain saw along the material to be surfaced; and
(f) angle support means for providing support for said portable chain saw and maintaining said portable chain saw at the proper angle.

4,116,249

APPARATUS FOR CUTTING, FELLING, AND DEBRANCHING TREES

Lars Gunnar Högberg, and Bo Gunnar Ekeborg, both of Bonassund, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Mar. 10, 1977, Ser. No. 776,385
Claims priority, application Sweden, Mar. 15, 1976, 7603282
Int. Cl.² A01G *23/08*
U.S. Cl. 144—3 D **14 Claims**



1. An apparatus for cutting, felling, and debranching trees combining tree-holding, tree-cutting and tree-felling means with tree-debranching means in one felling head, comprising, in combination, a mobile crane; a felling head pivotably mounted on the mobile crane; the felling head comprising means for holding a tree, means for cutting and felling a tree, and means for debranching a tree; the felling head being pivotable between a first position in which the tree can be held by the holding means, and cut and felled by the cutting and felling means; and a second position in which the felled tree can be moved along its longitudinal axis past and debranched by the debranching means, and the debranching means comprises first debranching means, second debranching means and third debranching means and a support means movable reciprocably with respect to the felling head and carrying at least in part the first, second and third debranching means and a holding means, the holding means, debranching means and support means being coordinately and combinably movable with respect to each other, so as to embrace a tree therebetween.

4,116,250

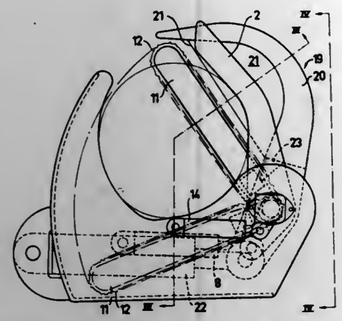
TREE FELLING UNIT

Jan-Eje Ericsson, Sundsvall, Sweden, assignor to Umeå Mekaniska AB, Umea, Sweden

Filed Oct. 1, 1976, Ser. No. 728,647
Claims priority, application Sweden, Oct. 7, 1975, 7511207
Int. Cl.² A01G *23/08*
U.S. Cl. 144—34 R **1 Claim**

1. A tree-felling unit comprising
- a substantially U-shaped stand with a tree-receiving space;
- at least one clamping means mounted in said stand for clamping the stand against a tree received in said space and to be felled;
- a saw chain means supported by said stand for operative movement into said space to perform an incomplete saw-through of such tree;
- a shearing means supported by the stand at substantially the same level as the saw chain means for a shearing movement substantially in an opposed direction to that of the operative movement of the saw chain means,
- said saw chain means being mounted for operative movement from a protective position within said stand into the tree-receiving space in a direction away from said stand;

said shearing means, the shearing movement of which is substantially opposed to the operative movement of said saw chain means, being movable, at least with its cutting edge, all the way into the bottom plane of the tree-receiving space of the stand thereby making it possible for said shearing means also to effect a direct cutting of a tree having a diameter smaller than a predetermined diameter;



independent power means to effect the different movements of said clamping means, said saw chain means and said shearing means, respectively; and

means sensing the diameter dimension of a tree to be felled, to start the operative movement of the saw chain means when sensing a tree having a diameter greater than said predetermined diameter and to start the cutting movement of the shearing device when sensing a tree having a diameter smaller than said predetermined diameter.

4,116,251

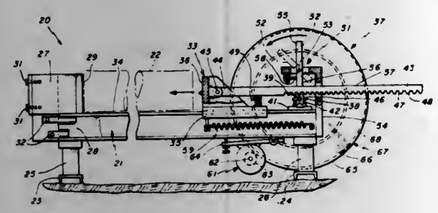
LOG SPLITTER WITH GEAR RACK DRIVE

Francis X. Graney, 50 Vale St., Tewksbury, Mass. 01876

Filed Jul. 22, 1977, Ser. No. 818,125

Int. Cl.² B27L *7/00*

U.S. Cl. 144—193 R **8 Claims**



1. A log splitter of the type having a horizontal, log-supporting, track, a splitter blade upstanding at one end of said track, a log-pusher carriage mounted to reciprocate along said track and power means for driving said carriage to push a log against said blade to split the same, characterized by:

said power means comprising:

a spur gear rotatably mounted at the other end of said track;

an elongated gear rack having a forward end pivotally connected to said carriage and having teeth adapted to engage the teeth of said spur gear but normally poised at a spaced distance therefrom;

control mechanism for selectively engaging and disengaging said teeth;

a drive motor, with a drive shaft unidirectionally rotating said spur gear to advance said gear rack and carriage, with a log supported on said track, into splitting engagement with said blade;

and retraction means for retracting said carriage when said teeth are disengaged.

4,116,252

METHOD AND APPARATUS FOR PRODUCING BASEBALL BATS

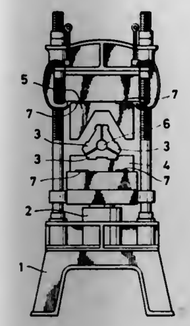
Yosaku Ikeda, 7229 Fukumitsu-cho, Nishitonami-Gun, Toyama-ken, Japan

Continuation-in-part of Ser. No. 655,424, Feb. 5, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 838,847

Claims priority, application Japan, Oct. 13, 1975, 50-139155

Int. Cl.² B29C *15/00*; B29G *7/00*

U.S. Cl. 144—309 D **2 Claims**



1. A method of producing baseball bats which comprises the steps of: forming a wood baseball bat having an initial diameter somewhat larger than the prescribed dimension; impregnating thermosetting resin into said baseball bat sufficiently to effect hardening to withstand heavy impact in the finished product; treating said impregnated bat with heat at about 100° to 120° C and pressure in a mold comprising at least three divided mold sections, said method including intermittent partial rotation in said mold with increased pressure; and thereafter maintaining said bat in said mold at a further increased pressure for a predetermined period.

4,116,253

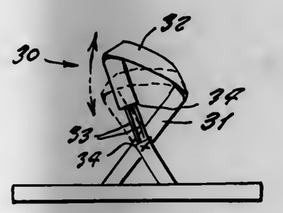
SNATCH PROOF HANDLE FOR POCKETBOOKS, HANDBAGS AND THE LIKE

Benjamin Watsky, 137-28 Northern Blvd., Flushing, N.Y. 11354

Filed Aug. 1, 1977, Ser. No. 807,900

Int. Cl.² A45C *13/26*

U.S. Cl. 150—33 **1 Claim**



1. An article of manufacture, comprising in combination, a hand-supported object such as a handbag, and a pair of handles attached to said handbag, said handles incorporating means to prevent readily falling from a persons hand or being forcibly pulled away therefrom; said handbag comprising a body of a pair of opposite side panels and a narrow side and bottom edge panel therebetween, an opening at a top of said handbag being selectively closable by a flap secured to one side panel of said handbag and being attached to the opposite side panel thereof by interconnectable Velcro elements, said handles being comprised of a pair of straps, one of said straps secured at its opposite ends to one of said sides of said handbag and the other of said straps secured at its opposite ends to the other side of said handbag, a longitudinal center portion of each strap is twisted one-half way around to form a loop with a crossing junction closing said loop, said crossing junction being stitched thereby forming said loop, said loops being vertically aligned in use and being of a size to receive an entire hand of a person up to his wrist and encircle the wrist from opposite sides of said handbag, each strap is of tubular construction, each strap at its loop being parted so to form a pair of loop ends, a plurality of stretchable tapes between said loop ends, opposite ends of said tapes being secured inside said tubular strap, and said tapes being of a length so that when relaxed from stretch, said loop ends abut and hide said tapes.

4,116,254

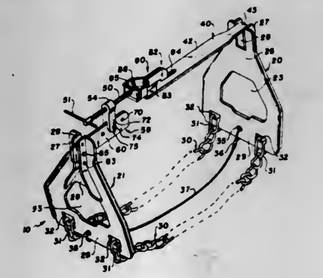
ANTI-SKID ATTACHMENT FOR VEHICLE TIRES

Walter V. Selp, 6738 Gilley Ave., Burnaby, B. C., Canada (V5H 3W9)

Filed Jan. 24, 1977, Ser. No. 762,045

Int. Cl.² B60C *27/02*

U.S. Cl. 152—233 **11 Claims**



1. An anti-skid attachment for a vehicle tire mounted on a wheel having transverse openings comprising opposing side wall plates having shoulder portions and bead portions, a traction member connected at opposite ends thereof to the shoulder portions, tensioning means passable through a wheel opening to interconnect the bead portions, said tensioning means including a clamping shaft and a nut engaged thereby, said clamping shaft being rotatable to draw the bead portions together and apply corresponding tension to the traction member, and mounting means including an arm adjustably securing the nut to one of the bead portions.

4,116,255

FOLDABLE PNEUMATIC TIRE

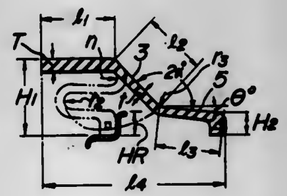
Hiroshi Hayakawa, Kodaira, and Sakae Ezura, Matsudo, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 7, 1977, Ser. No. 785,708

Claims priority, application Japan, Apr. 15, 1976, 51-41887

Int. Cl.² B60C *5/00*

U.S. Cl. 152—352 R **6 Claims**



1. In a foldable pneumatic tire including a substantially annular tread centrally located and sidewalls axially outwardly extending with slopes toward a rotating axis of the tire from both ends of said tread and terminating in inextensible bead portions, respectively, said sidewalls being foldable axially inwardly toward each other to be collapsed substantially inside said tread, the improvement comprising, when the tire is in an unfolded condition, each of said bead portions extends substantially perpendicular to the rotating axis and has a height 1.2 to 2.0 times of that of a flange of a rim, each said sidewall comprising a first sidewall axially inside and a second sidewall axially outside making an angle with each other in the range of 140° to 160°, and said second sidewall forming a substantially flat outer surface sloping at an angle not greater than 5° to the rotating axis.

4,116,256

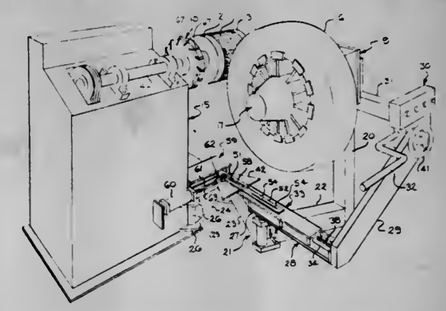
TIRE BUFFING APPARATUS

Jerry M. Morris; Leon Jay Cole, and Vaughn Rawls, all of Lima, Ohio, assignors to National-Standard Company, Niles, Mich.

Filed Apr. 22, 1976, Ser. No. 679,361

Int. Cl.² B29H *21/08*

U.S. Cl. 157—13 **12 Claims**



1. In a tire buffing apparatus including in combination:

a housing

movable frame means supported with respect to said housing, said movable frame means adapted to receive and mount a tire casing for rotation on a normal axis, said axis of rotation of said tire casing being movable within a plane,

a texturizing wheel and one finishing wheel on each side of said texturizing wheel, said wheels being rotatably mounted on said housing on an axis substantially within the plane of the axis of rotation of the tire casing,

cam means mounted to said housing, said cam means corresponding to the shape of said texturizing and said finishing wheels,

linear guide means mounted to and extending outwardly from said housing and lying in a plane which besects and is perpendicular to the rotational axis of the said texturizing wheel,

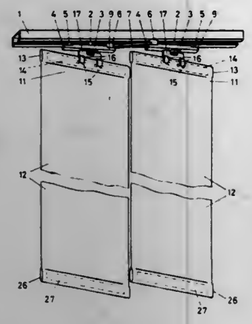
template guide means mounted to said movable frame, said template guide means corresponding to the desired profile of a buffed tire casing, and

cooperating means mounted to said movable frame and engageable with said linear guide means wherein the movement of said movable frame engages said template guide means with said cam means while said cooperating means and said linear guide means maintains a predetermined point which is substantially on the bisector of the tire casing perpendicular to the axis of the rotation of the tire casing on a line in a plane which bisects and is perpendicular to the rotational axis for said texturizing wheel and substantially perpendicular to the axis of rotation of said wheel thereby permitting engagement of said texturizing wheel with the crown of the tire casing and permitting engagement of said finishing wheels with predetermined portions of the sidewalls of the tire casing.

4,116,257
STRIP CURTAIN

Konrad Bratschi, Haldenweg 29, 3074 Muri, Switzerland

Filed Apr. 13, 1977, Ser. No. 787,168
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 7612227[U]
Int. Cl.² E06B 9/30
U.S. Cl. 160—168 R 6 Claims



1. A strip curtain having sliding hangers guided in a curtain track and rotatable about the vertical to which freehanging curtain strips are removably attached, characterized in that

every two sliding hangers are interconnected by a connecting member, the sliding hangers and the connecting members forming an articulated series of links capable of being extended and folded,

the sliding hangers being constructed so as to be juxtaposed and oriented transversely to the curtain track in the folded condition of the series of links, and to be positioned at least approximately in the vertical plane defined by the track in the extended condition of the series of links,

the upper end of the curtain strip having an upper seam reinforced by an elongated plate inserted in the seam, and a holder pushed down over the upper end, the plate having apertures and the holder having corresponding protrusions removably engageable in the apertures of the plate,

the sliding hanger having a member cooperating with the holder onto which the holder can be snapped in either of two positions, the plane of the curtain strip forming an acute angle α with the axis of the sliding hanger whereby, in either of said positions, the curtain strips touch each other in the one position and are spaced from each other in the other position when the series of links is extended, and

the curtain strips being snapped onto the sliding hangers.

4,116,258
PANEL DEPLOYMENT AND RETRACTION SYSTEM

Paul Slysh, and LeRoy E. Siden, both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Jan. 18, 1978, Ser. No. 870,305
Int. Cl.² E06B 3/32
U.S. Cl. 160—213 9 Claims



1. An improved panel deployment and retraction system of the type wherein a plurality of panels are hinged together in an end-to-end relation and alternately folded into an accordian folded stack, said panels adapted for unfolding between two deployment frames and subsequently being extended beyond said frames to form an elongated array of a type which may later be sequentially creased and folded, one pair of panels at a time, to reform an accordian folded stack, wherein the improvement comprises:

a plurality of rollers, one roller rotatably mounted to each end of each panel hinge, said rollers disposed in an upper row and a lower row when said panels are in an accordian folded stack;

a curved raceway formed in each deployment frame and adapted to guide rollers disposed in said upper row;

a straight raceway formed in each deployment frame and adapted to guide rollers disposed in said lower row;

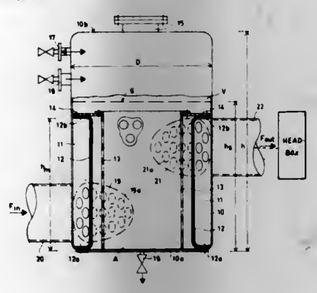
an escapement means for removing one of said rollers at a time in each of said raceways from the said folded stack; and

a first carriage mounted on each of said deployment frames and adapted for reciprocating travel thereon for transporting each of said rollers disposed in said lower row along said straight raceway.

4,116,259
DAMPING STRUCTURE IN A PIPE SYSTEM DELIVERING PULP SUSPENSION TO A HEADBOX

Jouni Koskimies, Jyvaskyla, and Erkki Ilmoniemi, Vaajakoski, both of Finland, assignors to Valmet Oy, Finland

Filed Nov. 18, 1977, Ser. No. 852,983
Claims priority, application Finland, Nov. 22, 1976, 763351
Int. Cl.² D21F 1/06
U.S. Cl. 162—380 14 Claims

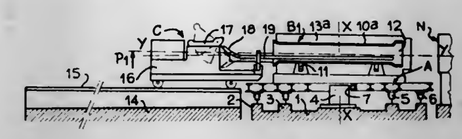


1. In an approach pipe system for delivering a pulp suspension to a headbox of a paper machine, hollow tank means having means defining in its interior an upper gas space and a lower liquid space adapted to contain a liquid which has an upper surface contacting gas in said gas space, flexible diaphragm means carried by said tank means in the interior thereof and defining with said tank means a flow space separated from said liquid space by said diaphragm means, supply pipe means communicating with said flow space in said tank means for delivering thereto pulp suspension which flows along the interior of said flow space, and discharge pipe means communicating also with said flow space of said tank means for receiving therefrom pulp suspension supplied thereto by said supply pipe means and for continuing the travel of the pulp suspension toward a headbox, whereby gas in said gas space will act through liquid in said liquid space on said diaphragm means for damping pressure and flow rate disturbances in pulp suspension flowing toward the headbox.

4,116,260
INSTALLATION FOR THE CENTRIFUGAL CASTING OF LARGE PIPES

Michel Pierrel, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Apr. 5, 1977, Ser. No. 784,878
Claims priority, application France, Apr. 13, 1976, 76 10800
Int. Cl.² B22D 13/10
U.S. Cl. 164—295 7 Claims



1. An installation for the centrifugal casting of large heavy pipes comprising on means defining a support, a horizontal platform mounted to be rotatable about a vertical axis, two centrifugal casting machines mounted on the platform and comprising rotative moulds each of which moulds has a pipe socket-forming end, the moulds having axes of rotation which are respectively contained in a first plane and a second plane which are parallel to each other and to said vertical axis and disposed on opposite sides of said vertical axis, the two moulds being in alignment transversely of said axes of rotation of the moulds in a direction substantially perpendicular to said two planes and arranged in opposite directions on the platform symmetrically relative to said vertical axis, a first station comprising mould preparing means and pipe extracting means, a cast pipe receiving region, a second station comprising means for pouring casting metal into the moulds, a third station comprising means for mounting a core in the pipe socket-forming end of the moulds, means combined with the platform for driving the platform in rotation about said vertical axis between a first casting position and a second casting position at 180° to said first position, said first station and said casting pipe receiving region being on opposite sides of the platform and contained in a third vertical plane and said second station and said third station being on opposite sides of the platform and contained in a fourth vertical plane, said first plane and third plane being coplanar and said second plane and fourth plane being coplanar in said first position of the platform and said second plane and third plane being coplanar and said first plane and said fourth plane being coplanar in said second position of the platform, and said pipe extracting means being positioned and operative to extract the cast pipe by pushing the cast pipe through the mould toward said cast pipe receiving region.

4,116,261
CONTINUOUS CASTING PLANT STRAND GUIDING MEANS

Othmar Pühringer, and Werner Scheurecker, both of Linz, Austria, assignors to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Dec. 13, 1976, Ser. No. 750,194
Claims priority, application Austria, Dec. 17, 1975, 9570/75
Int. Cl.² B22D 11/128
U.S. Cl. 164—448 4 Claims

1. In a continuous casting plant strand guiding means of the type including

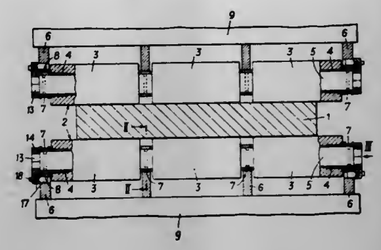
rollers arranged at a distance opposite one another to support and guide a cast strand, each roller having a plurality of roller bodies mounted on a roller shaft,

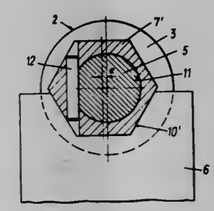
roller carriers supporting said roller shafts, and

holding means securing said roller shafts on said roller carriers so as to make them stationary, the improvement comprising:

cylindrical cross sections on the ends of the roller shafts, said ends being retained in cylindrical bores of said holding means, said holding means having projections that are attachable to projections from the roller carriers adjacent the holding means;

eccentric bushings mounting said roller shafts in said roller carriers, the eccentric bushings being formed with a prism-shaped outer configuration having a polygon-like cross section and eccentric bores to accommodate the roller shafts, the prism-shaped eccentric bushings being





received in corresponding prism-shaped receiving pockets of the roller carriers;

means securing the eccentric bushings against rotation relative to the roller shafts, the eccentric bushings being rotatable only upon release of the holding means to allow for incremental changes in the distance between rollers arranged opposite one another upon rotation of said eccentric bushings by rotation of said roller shafts.

4,116,262
ARCUATE SUPPORTING AND GUIDING CONSTRUCTION FOR CONTINUOUSLY CAST STRANDS

Franz Kagerhuber, Traun; Alois Scheinecker, and Werner Scheurecker, both of Linz, all of Austria, assignors to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Nov. 3, 1976, Ser. No. 738,535
Claims priority, application Austria, Nov. 12, 1975, 8602/75
Int. Cl.² B22D 11/12
U.S. Cl. 164—448 12 Claims

1. An arcuate supporting and guiding construction for a continuous casting plant having a base and producing continuously cast strands, in particular slabs, comprising:

oppositely arranged rollers forming roller paths to support the strand on opposite sides thereof;

uninterrupted arcuate longitudinal carriers extending over the entire length of the supporting and guiding construction and accommodating said rollers;

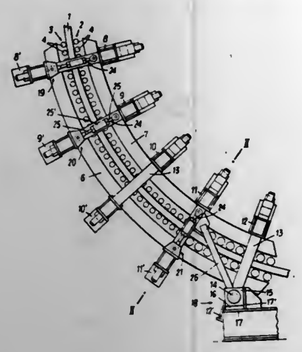
transverse carriers spaced along and being directly connected by the arcuate longitudinal carriers so as to back them up, said transverse carriers being arranged in opposing pairs;

drawing anchors connecting each opposing pair of transverse carriers;

a fixed bearing provided on one of said transverse carriers for directly mounting said one transverse carrier on the base, thereby mounting said arcuate supporting and guiding construction on the base of the plant; and

expansion bearings provided on other transverse carriers

along the arcuate supporting and guiding construction for mounting said other transverse carriers on the base,



thereby additionally mounting said arcuate supporting and guiding construction on said base.

4,116,263

MOUNTING STRUCTURE

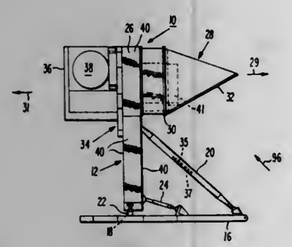
Eugene Robert Ganssle, Skillman, N.J.; Ralph Richard Scott, Claremont, Calif., and Richard Jean Williams, Marlton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1976, Ser. No. 750,401

Claims priority, application United Kingdom, Jan. 30, 1976, 03793/76

Int. Cl.² G05D *23/00*

U.S. Cl. 165—27 **14 Claims**



1. A thermally stable mounting system comprising:

a thermally conductive grid-like platform having a plurality of openings extending through the platform from one side to the opposite side thereof,

a heat generating device secured to one of said sides of the platform in a given orientation, said device tending to exhibit a temperature greater in magnitude than a given value, and

temperature control means coupled to said platform and said device for maintaining said platform and device substantially isothermal at a temperature of about said given value, said control means including means for selectively radiating thermal energy to the ambient from said device at said one side through said platform openings past the other side for maintaining said device at a temperature of about said given value.

4,116,264

NUCLEAR REACTORS

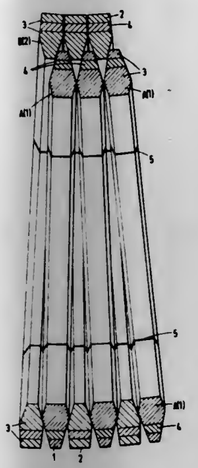
Falviano Farfaletti-Casali, Milan; Friedrich G. Peter, Ranco Uponne, and Peter G. Gritzmann, Ranco, all of Italy, assignors to European Atomic Energy Community (Euratom), Luxembourg

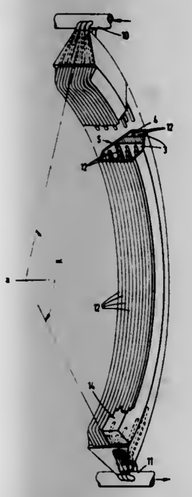
Filed Nov. 5, 1974, Ser. No. 521,143

Claims priority, application United Kingdom, Nov. 5, 1973, 51300/73

Int. Cl.² F21B *1/00*

U.S. Cl. 165—47 **8 Claims**





1. A hollow toroidal assembly for a reactor comprising at least two types of annular modules, said modules being tightly mounted in an alternating manner, each module being subdivided in a circumferential direction into submodules and having a uniform cross-section, said two types of modules having different cross-sections and diameters respectively, said type of module having a smaller diameter including first conically converging rims at least at the outer circumferential side of said module, and said type of module having a larger diameter including second conically converging rims at least at the inner circumferential side of said module, wherein said first and second conically converging rims of said modules in the assembly abut each other along a circular path, said circular path being displaced radially to the center of the toroidal assembly with respect to the toroidal assembly axis.

4,116,265

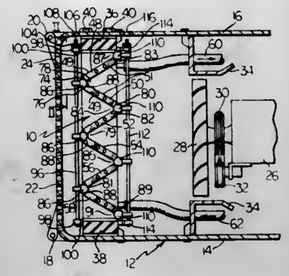
HEAT EXCHANGER HAVING CONTROLLABLE CLEANING MEANS

Paul J. Staebler, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 24, 1977, Ser. No. 809,723

Int. Cl.² F28F *27/00*

U.S. Cl. 165—95 **7 Claims**



1. A heat exchanger, comprising:

at least one cooling core pair, each cooling core having first and second opposed surfaces and first and second edges;

means fixedly maintaining adjacent cores of a core pair angularly oriented and spaced one from the other, said first edges of said core pair being spaced a first preselected distance one from the other and the second edges of said core pair being spaced a second preselected distance one from the other, said first preselected distance being less than said second preselected distance; and

closure means for controllably opening and closing the space between said first edges of said core pair.

4,116,266

APPARATUS FOR HEAT TRANSFER

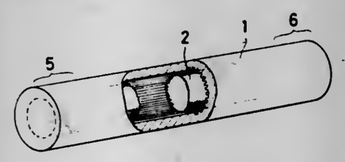
Shinji Sawata, Higashi-Murayama; Tatsuo Tani, Koganei; Tadayoshi Tanaka, and Takashi Horigome, both of Tanashi, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Division of Ser. No. 600,564, Jul. 31, 1975, abandoned. This application Aug. 15, 1977, Ser. No. 824,513

Claims priority, application Japan, Aug. 2, 1974, 49-88116

Int. Cl.² F28D *15/00*

U.S. Cl. 165—105 **3 Claims**



1. In an apparatus for heat transfer comprising a closed container in the shape of a pipe possessed of a heat energy input portion at one end thereof and a heat energy output portion at the other end thereof, a bundle of a multiplicity of fine metal wires disposed along the axis of said closed container extending from the input side to the output side thereof, and a heat medium sealed in said closed container, whereby the heat medium is moved in its liquid state inside the bundle through the passages formed between said multiplicity of fine metal wires from the output side to the input side by the suction due to vaporization of the heat medium on the input side, vaporized by the heat absorbed in the input portion, then moved in the vaporized state in the direction of the output side through the space formed between the bundle and the inner surface of the container by virtue of the difference of pressure created inside the closed container, and liquefied by the liberation of heat in the output portion, an improvement wherein said bundle is formed to provide passages between said multiplicity of fine metal wires having a gradually increasing cross-sectional area from the input side to the output side so that the resistance offered thereby to the flow of liquid gradually decreases in the direction from the input side to the output side.

4,116,267

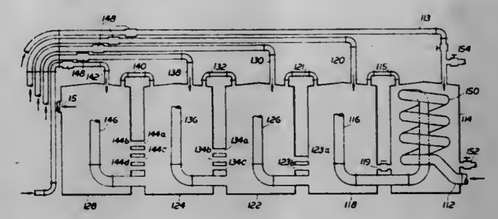
MODULAR INTEGRATED COOLING AND HEATING SYSTEMS FOR EFFLUENTS AND OTHER USES

Herbert V. Jacobs, 301 Chestnut St., Apt. 1005, Harrisburg, Pa. 17101

Filed Dec. 5, 1977, Ser. No. 857,067

Int. Cl.² F28C *3/04*; F28B *9/00*

U.S. Cl. 165—110 **9 Claims**



1. A modular integrated cooling and heating system comprising a plurality of at least two mi g tanks connected together, the first of said mixing tanks being provided with hot water supply means to deliver hot water to said mixing tank, cooling water supply means to deliver cooling water to said tank for direct mixing with said hot water to obtain water at a first intermediate temperature, second supply means to transport said intermediate temperature water to said second mixing tank, and second cooling water supply means to deliver water to said second mixing tank for direct mixing with said first intermediate temperature water to obtain water at a second intermediate temperature whereby said hot water is cooled by direct mixing with said cooling water to avoid the necessity of evaporative cooling towers.

4,116,268

WATER TANK FOR TRANSVERSE FLOW RADIATOR

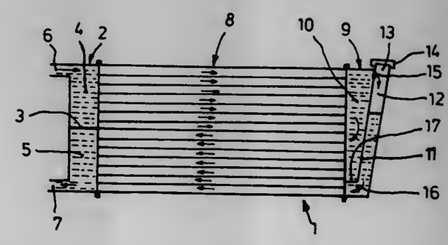
Hermann Krüger, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Oct. 1, 1976, Ser. No. 728,877

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1975, 2445458; Jun. 24, 1976, 2628331

Int. Cl.² F28B *9/10*; F28F *9/02*

U.S. Cl. 165—111 **12 Claims**



1. In a water tank for a transverse flow radiator including an overflow chamber separated from a main water coolant stream collecting chamber by means of a substantially vertical partition, means for permitting a secondary stream of coolant to flow through said overflow chamber, and a fill inlet opening into said overflow chamber and adapted to be closed by a pressure relief valve, the improvement wherein said water tank

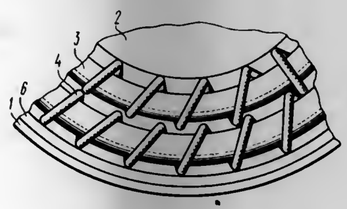
is made in one piece as a cast or die-cast member; said overflow chamber is disposed coaxially below said fill inlet; and said overflow chamber has a cross-sectional area which is equal to or less than that of said fill inlet.

4,116,270

TUBULAR COILED HEAT EXCHANGER AND DEVICE FOR MANUFACTURING SAME

Ruf Fedorovich Marushkin, ulitsa Miklukho-Maklaya 33, kv. 33; Jury Ivanovich Zelenov, 10 Parkovaya ulitsa, 4, kv. 14; Nikolai Alexandrovich Kozlov, ulitsa Usacheva, 29, kv. 521; Nikolai Prokopievich Filin, Trekhgorny val, 24, kv. 54; Iosif Isaakovich Gurevich, Strastnoi bulvar, 13a, kv. 66; Vladimir Vasilievich Usanov, Novodevichy proezd, 2, kv. 5; Oxana Kirillovna Krasnikova, ulitsa Udaltsova, 4, kv. 127; Vladimir Nikolaevich Lyalin, ulitsa Mikhailova, 29, korpus 3, kv. 103; Viktor Ivanovich Bykasov, Ryazansky prospekt, 53, kv. 41; Felix Petrovich Kirpichnikov, ulitsa Marii Ulyanovoi, 6, kv. 40; Viktor Petrovich Belyakov, Leninsky prospekt, 90, kv. 60; Vladimir Grigorievich Pronko, B. Kozlovsky pereulok,11, kv. 42; Vera Ivanovna Epifanova, Frunzenskaya naberezhnaya, 36, kv. 251; Vasily Dmitrievich Nikitkin, Tsvetnol, bulvar, 25, kv. 95; Zakhar Ivanovich Kandaurov, Frunzenskaya naberezhnaya, 16, kv. 52; Tamara Sergeevna Mischenko, prospekt Mira, 85, kv. 110; Alexandr Alexeevich Lavrentiev, Frunzensky val, 2, kv. 154; Galina Alexeevna Kondratieva, Volgogradsky prospekt, 130, kv. 27, all of Moscow; Alexandr Mikhailovich Orekhov, ulitsa Lesnaya, 2, Moskovskaya oblast, Schelkovsky raion, poselok Sverdlovsky; Evgeny Valentinovich Onosovsky, ulitsa Z.i A. Kosmodemyanskikh, 8/7, kv. 131, Moscow; Elvin Konstantinovich Kalinin, Schelkovsky proezd, 11, korpus 1, kv. 73, Moscow; Genrikh Alexandrovich Dreitser, ulitsa Shvernika, 6, korpus 2, kv. 35, Moscow; Dmitry Arkadievich Kirikov, Izmailovsky bulvar, 12, kv. 24, Moscow, and Boris Alexandrovich Chernyshev, Seleznevskaya ulitsa, 40, kv. 10, Moscow, all of U.S.S.R.

Filed Feb. 23, 1976, Ser. No. 660,268
Claims priority, application U.S.S.R., Jul. 30, 1975, 2153901
Int. Cl.[2] F28D *7/02*; F28F *1/36, 1/22*
U.S. Cl. 165—162 **3 Claims**



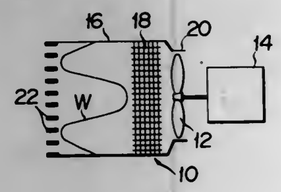
1. A generally compact multilayer tubular coiled heat exchanger comprising: a core; tubes having essentially the same length and tightly wound around said core in at least two layers; streamlined finned members in the form of wire rods being wound around each of said tubes with a pitch of at least twice the thickness of said member; a shell mounted coaxially with said core and encompassing it; said tubes are adapted to pass a fluid therealong and therebetween in a space defined by said shell and said core, said tubes being wound around said core to form coils, so that the distances between the centers of the cross-section of tube coils in one layer and between the centers of the cross-sections of the same tube coils of said layer gradually vary from a value equal to the sum of the diameter of one of said tubes plus twice the height of a wire rod fin to a value equal to the sum of the diameter of said tube plus a single height of the wire rod fin, the above distance relationship periodically repeating over the entire length and cross-section of the heat exchanger; wherein the finned wire rod surfaces of each tube coil alternately contacts the finned wire rod surfaces and the tube surface of the adjacent tube coils and wherein the number of turns in the layers of a multilayer tubular coiled heat exchanger can be varied without the need for structure distant pieces between the tube layers.

4,116,269

ENGINE RADIATOR WITH MEANS FOR NOISE REDUCTION

Hiromichi Ikeda, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 27, 1976, Ser. No. 680,699
Claims priority, application Japan, Apr. 28, 1975, 50-056834[U]; Sep. 30, 1975, 50-132855[U]; Sep. 30, 1975, 50-132856[U]
Int. Cl.[2] E04B *1/99*; B60K *11/00*; F01P *7/00*
U.S. Cl. 165—126 **1 Claim**



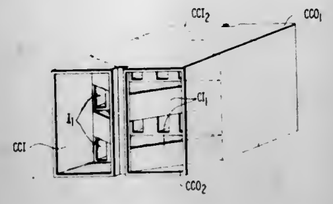
1. In a radiator having a core arranged opposite to an engine-driven fan adapted to supply airflow therethrough, wherein sound pressure waves having crests and roots are formed when the rate of airflow exceeds a critical value, the improvement comprising a means for reducing high intensity sound produced when the rate of airflow exceeds said critical value, said means comprising a plurality of fixedly mounted baffle plates, said baffle plates being positioned downstream in straight-line adjacency parallel with the airflow through said core, said baffle plates being spaced apart from each other in a direction at right angles to the direction of the airflow through said core, the positioning of said plates corresponding to the location of said crests and roots, wherein resonance of said core is minimized when the airflow through said core exceeds said critical value.

4,116,271

COUNTER-CURRENT BUMPED PLATES HEAT EXCHANGER

Guido Amandus De Lepeleire, Waverse baan, 178, B-3030 Heverlee, Belgium

Continuation of Ser. No. 547,068, Feb. 4, 1975, abandoned. This application Sep. 15, 1976, Ser. No. 723,368
Int. Cl.[2] F28F *3/00*
U.S. Cl. 165—166 **2 Claims**



1. A counter current heat exchanger comprising a plurality of spaced apart parallel plates having spacer means therebetween for separating said plates and for spreading the flow of fluid between said plates over the entire surface area of said plates, housing means completely closing the spaces between said plates along two opposed sides of said plates, said housing means defining a plurality of rows of spaced apertures between said plates along the other two opposed sides of said plates with the apertures in alternate rows being offset from each other, primary inlet and outlet collector means secured to said housing means and co-extensive with the sides of said housing means having said apertures, each of said collector means comprised of the one-piece zig-zag shaped wall member with adjacent portions of said wall member being disposed at right angles to each other so that alternate portions of said wall members are parallel to each other, said parallel wall portions having identical triangular configurations disposed perpendicular to said plates between said apertures so that alternate spaces between said triangular plates communicate with the apertures in alternate rows and secondary inlet and outlet collector means being comprised of wall means surrounding said primary collector means and disposed perpendicular to said apertured sides of said housing means, each of said secondary collector means in conjunction with each primary collector means defining two plenum chambers each having a triangular cross-section on opposite sides of said primary collector means.

4,116,272

SUBSEA TEST TREE FOR OIL WELLS

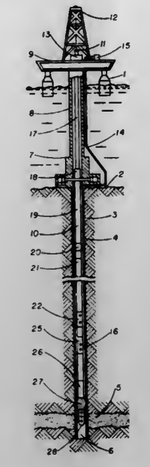
Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 21, 1977, Ser. No. 808,491
Int. Cl.[2] E21B *33/035, 43/12*
U.S. Cl. 166—340 **39 Claims**

9. A method of controlling a valve in the flow passageway of a blowout preventer stack located on a sea floor over an oil well comprising:

closing a set of rams in the blowout preventer stack for setting a reference pressure for maintaining the valve in a normal first condition;

applying hydraulic pressure to one side of said closed rams for raising the hydraulic pressure on said one side of said closed rams to a level higher than said reference pressure; and



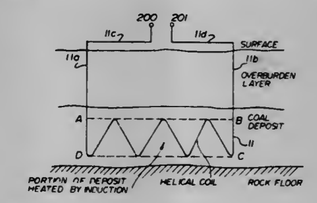
responsive to the higher level of hydraulic pressure, moving said valve from said first position to said second position.

4,116,273

INDUCTION HEATING OF COAL IN SITU

Sidney T. Fisher, 2850 Hill Park Rd., and Charles B. Fisher, 53 Morrison Ave., both of Montreal, Quebec, Canada

Filed Jul. 29, 1976, Ser. No. 709,830
Int. Cl.[2] E21B *43/24*; E21C *41/10*
U.S. Cl. 166—248 **16 Claims**



1. A method for heating a selected portion of an underground deposit of coal which comprises the step of directly heating said selected portion by electrical induction heating.

4,116,274

WIRELINE LATCHING APPARATUS AND METHOD OF USE

E. Edward Rankin, Aberdeen, Scotland, and David W. King, Fort Worth, Tex., assignors to Petro-Data C.A., Dallas, Tex.

Filed Jul. 25, 1977, Ser. No. 818,424
Int. Cl.[2] E21B *47/06, 23/02*
U.S. Cl. 166—250 **8 Claims**

1. An apparatus for preventing a wireline instrument from moving upward in pipe while measuring fluid flow conditions in oil and gas wells comprising:

a tubular body connected to the instrument;

an arm pivotally carried at its lower end by the tubular body, the upper end of the arm being movable between a closed position and an open position to engage the underside of a shoulder in the pipe, the arm being structured so as to allow fluid to flow past while in the open position; and

actuating means for moving the arm between the open and closed positions; the actuating means being electrically powered;

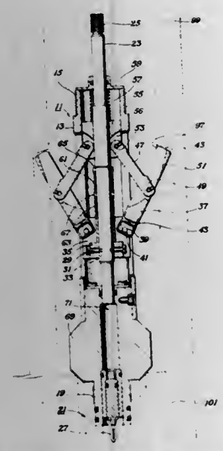
the actuating means and arm interconnected so that tension

in the line may be transmitted though the arm to draw it tightly against the shoulder, thereby preventing upward movement of the instrument and whipping of the wireline due to flowing fluid.

7. A method of measuring fluid temperature and pressure downhole in flowing oil and gas wells with an instrument lowered into the well on conductor cable, comprising:

placing a landing means having a downwardly facing shoulder in the well substantially at the depth where measurements are desired;

connecting a latching member to the instrument, the latching member having a plurality of arms whose upper ends selectively pivot between a closed position flush with the latching member and an open position protruding upward and outward; the latching member further having actuating means that includes an electrical motor for selectively opening and closing the arms when the motor is energized;



lowering the instrument into the well with the arms in the closed position and positioning the instrument so that the upper arms are below the shoulder;

then opening the arms by energizing the motor and tensioning the cable so that the upper ends of the arms bear against the shoulder to prevent upward movement;

then sensing the temperature and pressure as the fluid flows around the instrument, concurrently receiving an indication at the surface; and

closing the arms by energizing the motor after measuring is completed and then removing the instrument from the well.

4,116,275

RECOVERY OF HYDROCARBONS BY IN SITU THERMAL EXTRACTION

Roger Moore Butler; Caurino Cesar Bombardieri, and Bruce Alexander Slevinsky, all of Calgary, Canada, assignors to Exxon Production Research Company, Houston, Tex.

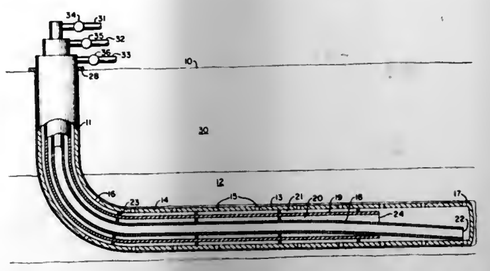
Filed Mar. 14, 1977, Ser. No. 777,292
Int. Cl.² E21B *43/24*
U.S. Cl. 166—303 **22 Claims**

1. A method for recovering hydrocarbons from a subterranean formation containing viscous hydrocarbons comprising,

drilling a well to said formation and extending the well into said formation;

completing the well with a casing means and with dual concentric tubing strings comprising an inner tubing and a larger diameter outer tubing, the inner tubing forming a first flow path, the inner tubing cooperating with the outer tubing to form a second flow path, and the outer tubing cooperating with the a second flow path, and the outer tubing cooperating with the casing means to form a third flow path, said casing means extending substantially the length of said well and containing passages to allow formation hydrocarbons to enter said casing means;

circulating a heated fluid within the casing means until flow of said heated fluid is established in each of said flow paths;



injecting heated fluid into the formation through at least a portion of said third flow path after flow of said heated fluid has been established by circulation within said casing means;

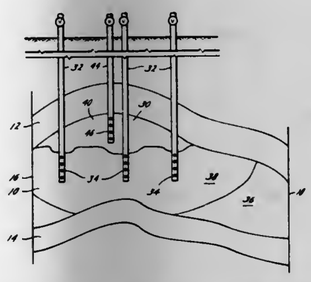
producing formation hydrocarbons from the formation by means of the well.

4,116,276

METHOD FOR INCREASING THE RECOVERY OF NATURAL GAS FROM A GEO-PRESSURED AQUIFER

Harold L. Cook, Jr.; Ernest C. Geer, both of Houston, Tex., and Donald L. Katz, Ann Arbor, Mich., assignors to Transco Energy Company, Houston, Tex.

Continuation-in-part of Ser. No. 689,621, May 24, 1976, Pat. No. 4,040,487, which is a continuation-in-part of Ser. No. 589,240, Jun. 23, 1975, abandoned. This application Jun. 16, 1977, Ser. No. 807,275
Int. Cl.² E21B *43/00*
U.S. Cl. 166—314 **7 Claims**



1. A method of increasing the recovery of natural gas from a geo-pressured aquifer having a trap in the aquifer and containing water and gas in solution in the water comprising,

producing water, from one or more wells extending from the surface and completed in said geo-pressured aquifer at a point below and spaced from the trap, by reservoir pressure at a high enough rate of production to reduce the pressure of a portion of the aquifer to allow a portion of the gas in solution to be released from the water whereby some of the released gas will migrate upwardly to form a free-gas phase in the trap and a portion of released gas will be produced from said one or more wells, and

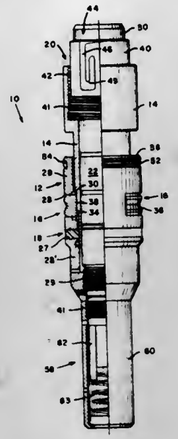
thereafter producing gas from one or more wells extending from the surface to the free-gas phase in the trap.

4,116,277

FULL FLOW TUBING PLUG WITH LOCKED ANCHOR AND METHOD

John K. McGee, and Charles D. Bridges, both of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Apr. 12, 1977, Ser. No. 786,934
Int. Cl.² E21B *23/02*
U.S. Cl. 166—315 **26 Claims**



17. A method of locking a down-hole member in place, comprising the steps of

(a) lowering the down-hole member into a tubing hanger or the like with a running tool, to a desired down-hole position,

(b) activating a structure for holding said down-hole member in place in the tubing hanger or the like at said desired position by actuation of said running tool in a first mode,

(c) locking said structure for holding said down-hole member in place in the well casing in its holding position by actuation of said running tool in a second mode different from said first mode,

(d) effecting removal of a running tool from the tubing hanger or the like only after the locking of the holding structure for the down-hole member is effected,

(e) removing said down-hole member from position within the tubing hanger or the like by actuation of a tool in a third mode different from said first and second modes to simultaneously release locking of said holding structure in said holding position and release holding of said holding structure in said holding position, and

(f) subsequently removing said down-hole member with said running tool.

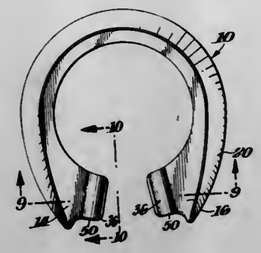
4,116,278

HORSESHOE MANUFACTURE

Dudley W. C. Spencer, 619 Shipley Rd., Wilmington, Del. 19809

Continuation-in-part of Ser. No. 673,371, Apr. 5, 1976, Pat. No. 4,036,302, which is a continuation-in-part of Ser. No. 614,766, Sep. 18, 1975, Pat. No. 4,013,126. This application Jan. 26, 1977, Ser. No. 762,394
Int. Cl.² A01L *5/00*
U.S. Cl. 168—4 **16 Claims**

1. A horseshoe comprising a U-shaped body member terminating in a pair of free ends, said body member being made of resilient material capable of being distorted out of its normal undistorted condition, said body member having an outer edge and an inner edge with a generally planar upper surface therebetween, said upper surface being adapted to be adhesively secured to the hoof, an upstanding rim along said outer edge extending inwardly and upwardly toward said inner edge, an upstanding projection at said inner edge at each of said free ends opposite a portion of said rim, each of said projections extending upwardly above said planar surface for fitting in corresponding pockets in the hoof, each of said projections having an inner wall disposed remote from the portion of said rim on its free end and adjacent the space between said free ends, each of said projections having an outer wall between its inner wall and the portion of said rim on its free end, each of



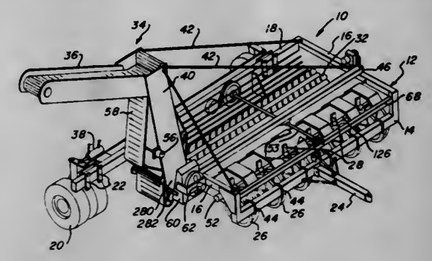
said outer walls being inclined from said planar surface upwardly and outwardly away from the portion of said rim at its free end, and said projections being connected to each other solely by their common mounting on said resilient body member whereby the spacing between said projections is determined by the location of the pockets in the hoof.

4,116,279

HYDRAULIC BEET HARVESTER

Ronald Lee Kilburn, Denver, Colo., assignor to H.F.E., Inc., Ft. Collins, Colo.

Continuation-in-part of Ser. No. 647,593, Jan. 8, 1976, abandoned. This application Apr. 20, 1977, Ser. No. 789,077
Int. Cl.² A01D *19/02*
U.S. Cl. 171—58 **18 Claims**



1. In a beet harvesting machine having a rectangular frame with longitudinal and transverse support beams and a front yoke, said machine being pulled at said yoke by a tractor for harvesting and delivering beets into a truck having means located on said frame for digging beets upwardly from the ground, means located on said frame operative on said dug beets for flailing said beets rearwardly, means located on said frame receptive of said rearwardly directed beets for conveying said beets further rearwardly in said machine, means located on said frame receptive of said rearwardly conveyed beets for delivering said beets laterally in said machine, and means located on said frame receptive of said laterally delivered beets for elevating said beets into said truck, the improvement to said machine comprising:

a reservoir disposed in the interior of one of said beams and substantially coextensive therewith for containing hydraulic fluid,

first means, in fluid communication with said reservoir and cooperative with the power-take-off of said tractor, for pumping a first portion of said fluid from said reservoir to drive said elevating means,

second means, in fluid communication with said reservoir and cooperative with the power-take-off of said tractor, for pumping a second portion of said fluid from said reser-

voir to drive said flailing means and said conveying means, and

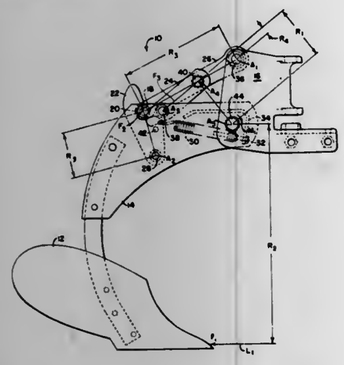
third means, in fluid communication with said reservoir and cooperative with the power-take-off of said tractor, for pumping a third portion of said fluid from said reservoir to drive said delivering means.

4,116,280

SPRING RESET MECHANISM

Gary Allen Rehn, Andover, and Robert Otto Taube, Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Mar. 18, 1977, Ser. No. 778,975
Int. Cl.[2] A01B 61/04
U.S. Cl. 172—266 **12 Claims**



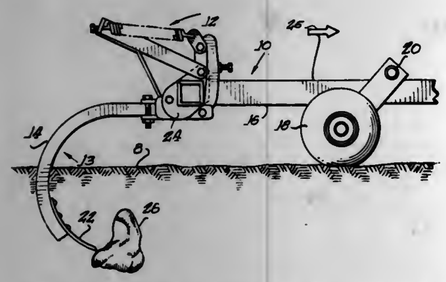
1. In an earthworking implement having a supporting frame, a tool support pivotally carried by the frame for swinging movement about a horizontal axis, an earthworking tool mounted on the support, a trip mechanism comprising: a first rigid link pivotally mounted to the frame above the support for swinging movement; a second rigid link pivotally connected at its one end with the tool support and at its other end with the first link; a releasable latch member carried on the tool support and engageable with the first link to prevent swinging movement of the support and first link; and resilient means acting on the latch member to maintain engagement of the latch member with the first link, but yieldable upon the tool encountering abnormal draft forces to permit disengagement of the latch member and first link.

4,116,281

FAST CLAMP CHISEL TRIP

Lawrence L. Lant, Evansville, Ind., assignor to Chem-Farm Inc., Evansville, Ind.

Filed Dec. 20, 1976, Ser. No. 752,679
Int. Cl.[2] A01B 61/04
U.S. Cl. 172—267 **5 Claims**



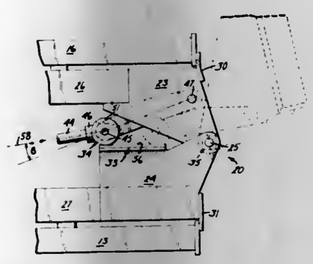
1. A fast clamp chisel trip apparatus for use with a chisel plow having a frame, a plowing tool including a shank, and means pivotally connecting said shank to said frame, said apparatus comprising rigid mounting means fixed to said frame, a shank plate having first and second ends, means rigidly connecting said first end of said shank plate to said shank, first pin means pivotally connecting said first end of said shank plate to said mounting means for movement of said shank between a work position and a retracted position, linkage means connected to said second end of said shank plate and said frame for releasably holding said shank in said work position and for permitting movement of said shank to said retracted position whenever said tool encounters a resisting force greater than a predetermined force, said linkage means including a generally vertical member and a breakover member, said vertical member having first and second ends, second pin means connecting said first end of said vertical member to said second end of said shank plate for movement in unison therewith, said breakover member having first and second ends, third pin means pivotally connecting said first end of said breakover member to said second end of said vertical member, fourth pin means pivotally connecting said second end of said breakover member to said mounting means for locating axes of said second, third and fourth pin means substantially adjacent to an imaginary line when said shank is in said work position, said line being substantially tangent to an arc of movement of said second pin about the axis of said first pin during movement of said shank from said work position toward said retracted position to align said linkage means for transmitting said resisting force through said shank plate, said second pin and said vertical member to said third pin substantially along said line whereby said breakover member substantially locks said shank in the work position until said predetermined resisting force is exceeded, and a tension member connected between said linkage means and said frame for yieldably biasing said linkage means and said shank from the retracted position to the work position.

4,116,282

AGRICULTURAL IMPLEMENT WITH WING LIFT

Loren F. Hansen, Lincoln, Nebr., assignor to Hiniker Company, Mankato, Minn.

Filed Oct. 18, 1976, Ser. No. 733,414
Int. Cl.[2] A01B 73/00
U.S. Cl. 172—311 **1 Claim**



1. In a farm implement comprising a central body and a lateral wing hinged thereto for movement through substantially 180° about a first horizontal axis between a first position, in which said wing lies inverted upon said central body, and a second position, in which said wing lies as an extension of said body, the improvement which comprises:

a. a link having a first end pivotally connected to said wing for rotation about a second axis parallel to and displaced from said first axis,

b. stop means carried by said wing for lateral engagement by said link at a location between its ends at a point in the pivotal movement of said link,

c. roller means carried at the second end of said link for rotation about a third axis parallel to said first axis,

d. a hydraulic cylinder, pivoted at one end to said body about a fourth axis parallel to said first axis and having an actuator pivoted at the other end to said second end of said link for rotation about said third axis, whereby to apply force, to said second end of said link along a line passing perpendicularly through said third axis, to first bring said link into engagement with said stop means and then cause rotation of said wing about said first axis,

e. and horizontal plane track means carried by the central body, said track means spaced lower than said first axis and incurring only downward engagement by said roller means after said link engages said stop means, so that continued application of said force thereafter continues the rotation of said wing and causes rolling movement of said roller means along said track means, and simultaneously causes displacement between said stop means and said link,

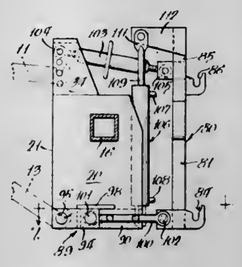
f. said first, second, third and fourth axes being so positioned with respect to each other and with respect to said plane track means that whenever said wing moves from said second position to said first position, said roller means first makes contact with said plane track means adjacent one each thereof and is then displaced to the opposite end of said plane track means and that during such displacement, said second axis moves steadily away from the line of action of said actuator up to and including the time said wing reaches said first position, said second axis being on the opposite side of said line from said plane track means whenever said roller means engages said plane track means, whereby force acting in a vertical plane through the line of action of said actuator has no component away from the plane of said track.

4,116,283

AGRICULTURAL TILLAGE EQUIPMENT

John B. Blessent, R.R. #1, Urbana, Ill. 61801

Continuation-in-part of Ser. No. 588,070, Jun. 18, 1975, abandoned. This application Nov. 26, 1976, Ser. No. 745,301
Int. Cl.[2] A01B 59/043
U.S. Cl. 172—443 **4 Claims**



1. Tillage equipment for use with agricultural wheel tractors equipped with a three-point, free-link, power lift hitch, comprising:

a tillage tool bar to extend laterally of the tractor,

a central main frame supporting said bar,

said frame having a pair of upright parallel plates spaced apart substantially at lower hitch point spread and extending front to rear relative to a tractor,

a central mast box section above the plates at upper hitch point height and

rigid framing connecting said upright plates and mast section,

said tool bar extending through said upright plates below said mast and being rigidly supported therein,

means respectively forming lower tractor link hitch pin connections at the lower front portions of said plates and a tractor upper link pin connection in said mast,

a rigid cross member joining the lower rearward portion of said upright plates,

an upright quick-attaching coupler tandem mounted closely to the rear of said main frame, said coupler having a pair of spaced frame parts joined to a central upright mast, hook bracket means carried adjacent the bottom of each of said frame parts and by said coupler mast extending rearwardly therefrom and spaced apart at a standard spacing for attaching connecting means of a tilling tool implement to be hitched to said coupler,

said mounting including a pair of draft links respectively pivotally joining the lower portion of each plate to the adjacent lower portion of the coupler parts and an adjustable length top link pivotally joining said mast section to the upper portion of the coupler, said link pivots being generally horizontally oriented providing upright swinging of the coupler about said link pivots to the main frame,

an upright lift cylinder device pivotally connected between said cross member and said coupler with hydraulic connections to a power source,

said coupler central mast having an upper forwardly extending attachment member positioned over said cross member and a lower forwardly extending attachment member, said attachment members being offset from each other on opposite lateral sides of said coupler central mast with said upper attachment member placed above the lower attachment member,

said cylinder device being connected to the upper attachment member and said adjustable link being connected to the lower attachment member so that said link and cylinder member may lift upon said coupler at a point above the upper pivot point of the coupler on said top link with said cylinder device remaining substantially upright,

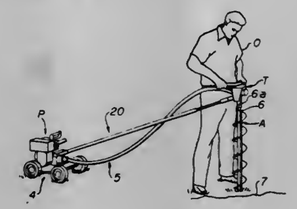
whereby said coupler may be raised and lowered relative to said main frame for adjustable positioning tilling tools hitched to the coupler relative to tilling tools on said tool bar while providing for conjoint elevation and lowering of both main frame and quick-coupler by the tractor power lift hitch.

4,116,284

EARTH DRILLS

Van R. Cox, P.O. Box 840, Livingston, Tex. 77351

Filed Jun. 10, 1977, Ser. No. 805,295
Int. Cl.[2] E21B 3/02
U.S. Cl. 173—140 **1 Claim**



1. A manually held earth auger arrangement including:

a. a power source mounted on wheels for moving over the earth's surface;

b. a flexible drive shaft connected to said power source;

c. a transmission connected to said drive shaft;

d. an auger removably connected to said transmission;

e. handle means secured to said transmission to manually position said auger in a desired position relative to the earth's surface for penetration therein;

f. throttle means on said handle for controlling said power source;

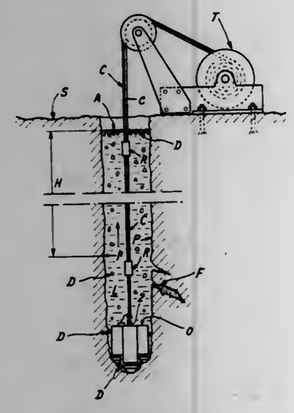
g. torque control means secured to said power source and extending to said transmission means to inhibit rotation of said handle means when said auger is rotated by said power source, said torque control means including:

1. first longitudinally extending socket means pivotally supported on said power source;

2. second longitudinally extending socket means pivotally supported on said handle means;

3. nonflexible shaft means for connecting to and extending between said first and second socket means, said shaft means including:
   a first member having means extending longitudinally from the end thereof to telescopically engage said first longitudinally extending socket means;
   a second member telescopically received in said first member and having means extending longitudinally from the end thereof to telescopically engage said second longitudinally extending socket means; and
h. spring loaded plunger means carried by each of said first and second longitudinally extending socket means engageable respectively with said first and second members to releasably secure said first and second members to said first and second socket means.

4,116,285
PROCESS AND APPARATUS FOR PRODUCING DEEP BOREHOLES
Paul Leon Guerber, Drancy, France, assignor to Coyne & Bellier, Bureau d'ingenieurs Conseils, Paris, France
Filed Dec. 10, 1976, Ser. No. 749,833
Claims priority, application France, Jun. 18, 1976, 76 18585
Int. Cl.² C09K 7/00; E21C 7/06
U.S. Cl. 175—7 **8 Claims**



1. Process for drilling the ground down to a very great depth, consisting in, as the drilling operation progresses downwards, filling a plurality of sections of the borehole situated one above the other with respectively a same plurality of different filling substances, each chosen so as to remain liquid at all points of the respective borehole section, while taking into account the laws which govern the increase in the ground temperature and the increase in pressure with increasing depth, and having a density greater than the average density of the drilled ground strata, so that debris and any possible infiltrations in said borehole move naturally up to the free surface of the liquid filling said borehole.

4,116,286
PROBE
Clayton W. Bash, P.O. Box 111, Forest, Ohio 45843
Filed Mar. 31, 1977, Ser. No. 783,150
Int. Cl.² E01N 33/24; E21C 13/00
U.S. Cl. 175—19 **2 Claims**

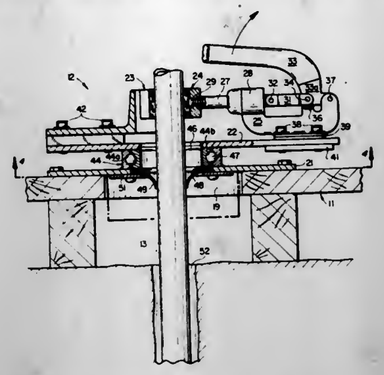
1. In a probe for locating buried plastic field tile, having the combination of an elongate shaft, a handle in engagement with one end of the shaft for imparting thrust and torque to the shaft, and a head in engagement with the other end of the shaft characterized by being
   a substantially lamellate body of a thickness equal in dimension to one of a dimension that is less than and another that is equal to a transverse dimension of the shaft, the body extending from the shaft end in a plane, which, when the body is viewed edgewise, is between two substantially parallel spaced lines, each on opposite sides of and parallel to the major longitudinal axis of the shaft and substantially coincidental with opposite lateral surfaces of the shaft, and when the body is viewed in plan from a point substantially 90° about the shaft major longitudinal axis from the point of mentioned edgewise view, extends laterally between and from one to the other of a second two substantially parallel spaced lines on opposite sides of an parallel to the major longitudinal axis of the shaft, one of which lines is spaced a greater distance from the major longitudinal axis of the shaft than the distance bwtween such axis and each of the first mentioned two lines;
the body having an end edge in spaced relation to the handle and of less thickness than the body extending linearly



substantially in the mentioned plane at an acute angle to the major longitudinal axis of the shaft and a second edge closer to the handle than the first mentioned edge and being of a thickness substantially equal to that of the body and extending in the mentioned plane and substantially normal to the mentioned shaft axis, whereby, through manipulation of the probe handle, the shaft may move the first mentioned edge of the head body to engage and having engaged then to line slit a wall of a sought plastic tile allowing, on further thrust of the probe shaft, passage of the probe head through the slit and into the tile interior and upon rotation of the shaft less than 180°, to dispose the second mentioned edge of the body to engage wall portions of the plastic tile on one side of the slit and thereby to signal the presence of a tile by the resistance to subsequent testing movement to withdraw the probe shaft.

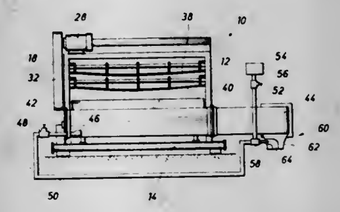
4,116,287
WELL DRILLING ASSEMBLY AND METHOD
Howard E. Foster, 932 St. Joseph Ave., Los Altos, Calif. 94022
Filed Jun. 23, 1977, Ser. No. 809,182
Int. Cl.² E21B 21/00
U.S. Cl. 175—65 **6 Claims**

5. A method of drilling a well through an access opening in a drill platform using a hand-held rotational power source for rotating drill stem sections coupled in tandem comprising the steps of coupling the power source to the upper end of a first section of drill stem, rotating said first section while supplying liquid under pressure therethrough to drill said first section into the ground, lifting said first section upwardly spaced from the bottom of the drilled hole, applying a clamp carried by the platform to grip said first section for holding said section in its lifted position, rotating said clamp and section together while



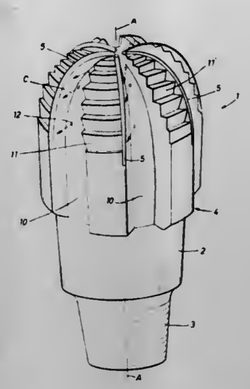
supported by the platform, and supplying liquid via said section to flush the drilled hole.

4,116,288
METHOD AND APPARATUS FOR CONTINUOUSLY SEPARATING LOST CIRCULATING MATERIAL FROM DRILLING FLUID
William W. Love, Houston, Tex., assignor to The Brandt Company, Houston, Tex.
Filed Apr. 18, 1977, Ser. No. 788,626
Int. Cl.² E21B 21/00
U.S. Cl. 175—66 **13 Claims**



1. A method of drilling well bores in formations having the characteristic of causing loss of circulating drilling fluid into the formation being drilled, said method comprising the steps of:
(a) providing drilling fluid and circulating the same in said well bore;
(b) continuously introducing lost circulation material into said circulating drilling fluid and circulating said lost circulation material along with said drilling fluid;
(c) continuously separating said lost circulation material from the drilling fluid containing undesirable particulate matter and lost circulation material exiting the well bore;
(d) subsequent to step (c), continuously separating at least a majority of the undesirable particulate matter from said drilling fluid to produce cleaned drilling fluid;
(e) reintroducing said lost circulating material into said cleaned drilling fluid; and
(f) continuing with circulation of said drilling fluid and lost circulation material in the well bore being drilled.

4,116,289
ROTARY BIT WITH RIDGES
Robijn Feenstra, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.
Filed Sep. 23, 1977, Ser. No. 836,259
Int. Cl.² E21B 9/36
U.S. Cl. 175—329 **6 Claims**



1. Rotary bit for drilling a hole in a subsurface formation, said bit comprising a body with central axis, a plurality of mud flow channels arranged in the outer surface of the body, said channels substantially extending from a place near the central axis to body portions having the largest radius with respect to the central axis, scraping means mounted on the body and having scraping edges for drilling a hole in a subsurface formation, said scraping means extending in a single row along one side of each channel and lining at least part of the wall of each channel, and ridge-shaped elements on the outer surface of the body, the elements being abrasive-resistant, being provided with nonscraping ridges that are located within the rotationally symmetric surface defined by the scraping edges of the scraping means, said ridges substantially extending along circles concentric to the central axis, and having flanks that are positioned at an acute angle with respect to the said symmetric surface.

4,116,290
SPOON-SHAPED SPRING SCALE
Avraham Fishman, Klosbachstr. 101, CH-8032 Zurich, Switzerland
Filed Feb. 25, 1977, Ser. No. 772,284
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1976, 2637972
Int. Cl.² G01G 3/02, 19/56
U.S. Cl. 177—149 **6 Claims**

1. A spoon-shaped spring scale comprising a tube-shaped hollow handle merging into the bowl of a spoon, a tube-shaped movable calibrated scale member slidingly arranged within said handle the outer end of said movable scale member having suspension means, a tension spring being located inside said movable scale member and said hollow handle one end of said spring being secured to said movable scale member the other end of said spring being secured to said hollow handle, said hollow handle having an inside projection engagable with a separate slide-in spring securement part to which the end of said spring secured to said hollow handle is fastened, said spring securement part being pushed into said hollow handle until it passes said projection where it is held by irreversible

engagement with said projection and the upper edge of said hollow handle providing the outer housing for the scale with



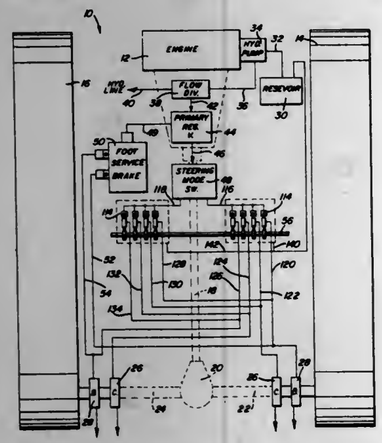
its upper rim providing a reading mark for said calibrated scale member.

4,116,291

INTEGRATED STEERING CONTROL FOR TRACKED VEHICLES

Nelson D. Brungart, 3001 Old Hayneville Rd., Montgomery, Ala. 36108

Filed Jul. 18, 1977, Ser. No. 816,906
Int. Cl.² B62D *11/08*
U.S. Cl. 180—6.2 **6 Claims**



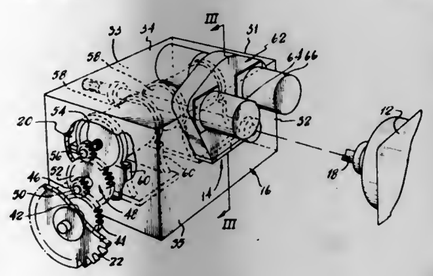
1. In combination with a crawler tracked vehicle of the type including right and left crawler tracks, a prime mover drivingly connected to said crawler tracks through a differential and with separate right and left clutch and brake mechanisms interposed in the drive train for said tracks intermediate said differential and tracks, a single oscillatable control, a set of fluid pressure actuators for said clutch and brake mechanisms, a source of fluid under pressure, a first set of fluid flow means communicating said source of fluid pressure with each of said actuators, independently, and a set of valves operatively associated with said set of fluid flow means for selectively controlling the flow of fluid therethrough to the corresponding actuators, said single oscillatable control and said first set of valves including first coacting means for opening and closing said valves in first predetermined opening and closing sequence in response to oscillation of said oscillatable control, a second set of fluid flow means communicating said source of fluid pressure with each of said actuators, independently, a second set of valves operatively associated with said second set of fluid flow means for selectively controlling the flow of fluid therethrough to the corresponding actuators, said single oscillatable control and said second set of valves including second coacting means for opening and closing said second set of valve means in a second predetermined relative sequence, different from the first mentioned sequence, in response to oscillation of said oscillatable control, and control means for selectively communicating said source with said first and second sets of fluid flow means.

4,116,292

HYDROSTATIC TRANSMISSIONS

Eugenio Todeschini, Latina, and Gian Piero Riganti, Anzio, both of Italy, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed May 17, 1977, Ser. No. 797,663
Claims priority, application United Kingdom, May 20, 1976, 20823/76
Int. Cl.² B62D *11/06*
U.S. Cl. 180—6.48 **3 Claims**



1. A crawler vehicle having a pair of tracks for propelling said vehicle, a rear housing, a drive assembly associated with each track and connected to opposite side members of said rear housing, a hydraulic motor connected to each drive assembly and located within said rear housing, a gear box mounted on the outside of an end face of said rear housing and having a power input and at least two power outputs, a pair of pumps mounted on said gear box external thereof each respectively connected to one of said power outputs, fluid conduit means connecting each pump to a motor and drive means connecting a prime mover to said power input.

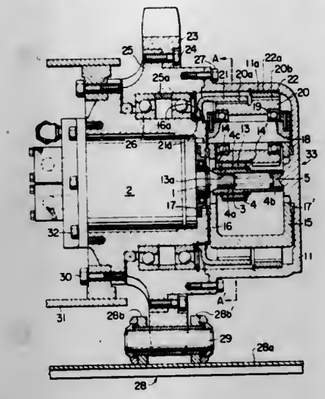
4,116,293

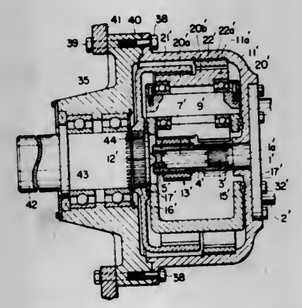
DRIVING MECHANISM

Kiyozumi Fukui, Gifu, Japan, assignor to Teijin Seiki Company Limitejd, Osaka, Japan

Filed Jun. 25, 1976, Ser. No. 699,971
Claims priority, application Japan, Jul. 4, 1975, 50-82949; Jul. 16, 1975, 50-86895; Sep. 30, 1975, 50-117922
Int. Cl.² B62D *55/12*
U.S. Cl. 180—43 B **5 Claims**

1. A driving mechanism comprising:
a stationary structure;
a drive motor fixedly supported by said stationary structure and having an output shaft;
a reduction gear unit including a hollow shaft having a hollow cavity axially extending and splinedly coupled at one end portion with said output shaft of said drive motor, a bearing accommodated in said hollow cavity to be splinedly coupled with the other end portion of said hollow shaft and having a semi-spherical cavity, a compression coil spring accommodated in said hollow cavity and having one end in contact with said output shaft and its other end in contact with said bearing to urge said hollow shaft and bearing axially outwardly of said hollow shaft and an input sun gear located on the outer periphery of said output shaft; and
a driven body driven by said drive motor through said reduction gear unit and having a central projection opposite said bearing which is semi-spherically formed and rotatably engaging with said semi-spherical cavity of said bearing to retain said input sun gear in axial alignment with said output shaft while said hollow shaft is supported by said output shaft and said central projection so as to be movable in a radial direction thereof to a very small degree.



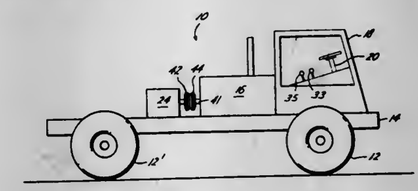


4,116,294

TORQUE EQUALIZER FOR A HYDRAULICALLY DRIVEN, FOUR-WHEEL-DRIVE VEHICLE

Otis A. Johnston, League City, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Feb. 23, 1977, Ser. No. 771,217
Int. Cl.² B60K *17/10, 17/34*
U.S. Cl. 180—44 F **7 Claims**



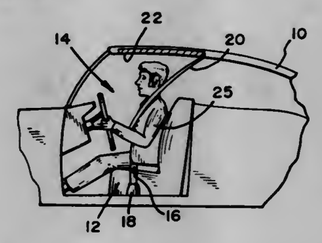
1. In a hydraulically driven vehicle, a system comprising at least a first and a second variable-displacement hydraulic pump wherein each said hydraulic pump drives first and second independent hydraulic propulsion means through separate fluid-drive circuits that are inhibited from fluid communication with one another, and in which means are provided for adjusting the displacement of, and hence the driving force delivered by, each said pump in response to a variation of a pilot pressure, the improvement comprising:
directly sensing an imbalance between the hydraulic fluid-drive pressures in said separate fluid drive circuits; and
means responsive to said imbalance for changing the pilot pressure applied to the displacement adjusting means in one of said first and second hydraulic pumps so that a change in displacement of said one pump restores equalization of the driving forces delivered to the two independent propulsion means.

4,116,295

ELECTRICALLY OPERATED SEATBELT RETRACTOR

Frederick C. Booth, 930 Larchlea Dr., Birmingham, Mich. 48012

Continuation of Ser. No. 659,172, Feb. 18, 1976, which is a continuation of Ser. No. 246,620, Apr. 24, 1972. This application Oct. 26, 1976, Ser. No. 735,307
Int. Cl.² B60R *21/00*
U.S. Cl. 180—82 C **5 Claims**

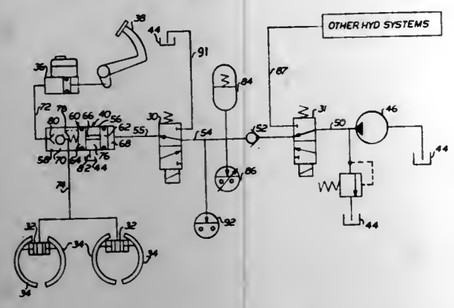


1. In a vehicle having a seat, a source of electrical power, a seatbelt system, comprising:
(a) a support;
(b) a retractor member movable on the support in either a belt-extending direction, or a belt-retracting direction;
(c) bias means for urging the retractor member in the belt-retracting direction;
(d) a safety seatbelt connected to the retractor member so as to be retracted as the retractor member is moved in its belt-retracting direction, and to be extended as the retractor member is moved in its belt-extending direction;
(e) a stop member mounted on the support for motion between a stop position in which it is operable to prevent belt extension, and a release position in which it is inoperable to prevent belt extension;
(f) a bias member operable to urge the stop member toward its stop position;
(g) an actuator connected to the stop member, and operable upon being electrically energized to move the stop member toward its release position, the actuator being inoperable when deenergized to prevent movement of the stop member;
(h) circuitry means, independent of the ignition circuit of the vehicle, connected to the source of electrical power and to the actuator for energizing the actuator to allow belt extension, and for automatically deenergizing the actuator in response to a predetermined change in vehicle motion to prevent belt extension,
(i) a seat switch in said seat located at a seating position and connected to said circuitry means by an electrical circuit independent of said ignition circuit, said circuitry means responsive to said seat switch, said seat switch responding to occupancy of the seating position, whereby said actuator is energized; and
(j) time delay means associated with said circuit means for delaying energization of said actuator for a predetermined time interval after it has been deenergized.

4,116,296
AUTOMATIC SEAT BRAKE

Walter J. Pleier, Bristol, and James A. Wahl, Langhorne, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 9, 1977, Ser. No. 775,825
Int. Cl.[2] B60T 7/02
U.S. Cl. 180—101 15 Claims



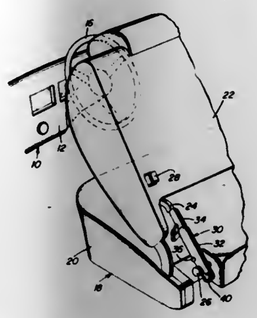
1. In a vehicle having a hydraulic service brake system and a movable operator's seat having an occupied position and an unoccupied position: an emergency brake actuation system comprising a hydraulic pressure source independent of said hydraulic service brake system; an oil-to-oil actuator connected to said independent hydraulic pressure source and to said hydraulic service brake system and operable to pressurize said hydraulic service brake system in response to the application of pressure by said independent hydraulic pressure source; hydraulic circuit means including first selector valve means connected between said independent hydraulic pressure source and said actuator, said first selector valve means having a first position directing oil from said independent hydraulic pressure source to said oil-to-oil actuator to pressurize said hydraulic service brake system, and a second position directing oil to a reservoir to depressurize said hydraulic service brake system; a first solenoid actuator energizable to shift said first selector valve means from said first position to said second position; a first seat switch in circuit with said first solenoid actuator; and control means including control switch means in circuit with said first seat switch and with said first solenoid actuator, said first solenoid actuator being energized only when both said first seat switch and said control switch means are closed.

4,116,297
VEHICLE SEAT LOCK

Curtis R. Ross, 3219 Oak Rd., Cleveland Heights, Ohio 44118; Frank R. Ross, 3676 Burbridge Rd., Cleveland Heights, Ohio 44121; Eugene G. Ross, 3579 Concord Dr., Beachwood, Ohio 44122, and Gloria R. Winborn, 16804 Gerard Ave., Maple Heights, Ohio 44137

Filed Jun. 3, 1977, Ser. No. 803,413
Int. Cl.[2] B60R 25/00
U.S. Cl. 180—114 4 Claims

1. In combination with a vehicle interior of the type including an operator's seat construction and a steering control for effecting steerage of the vehicle, said seat construction including a seat portion and a back rest portion supported from the seat portion for swinging between a rearwardly and upwardly inclined operative position and a forwardly and upwardly inclined inoperative position, said steering control being disposed forward of said back rest portion and in position to be engaged by said back rest portion when the latter is swung toward said inoperative position, said seat portion and back rest portion including coacting abutments abuttingly engageable with each other defining the rearward limit of swinging movement of said back rest portion toward said operative position and which are displaced away from each other when said back rest portion is swung from said operative position toward said inoperative position, and telescopic brace means releasably engageable between said abutments when said back rest portion is in said inoperative position and releasably lockable in position therebetween to prevent movement of said abutments toward each other and thus movement of said back rest portion toward said operative position, said brace means including a pair of end overlapped generally parallel elongated members having a first pair of adjacent ends guidingly supported from each other for relative lengthwise shifting of said

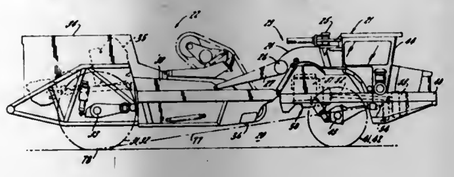


members and a second pair of remote ends extendable and retractable relative to each other upon relative longitudinal shifting of said members, said second pair of ends and said abutments including releasably telescopingly engaged portions preventing lateral disengagement of said second pair of ends from said abutments, and lock means releasably connected between said elongated members operative to selectively limit lengthwise shifting of said members to relatively retract said second pair of ends.

4,116,298
ANGLED ROLL AXIS SUSPENSION FOR OFF-ROAD VEHICLES

John H. Hyler, Peoria, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 756,128, Jan. 3, 1977, Pat. No. 4,063,361. This application Jul. 25, 1977, Ser. No. 818,660
Int. Cl.[2] B62D 53/02
U.S. Cl. 180—139 17 Claims

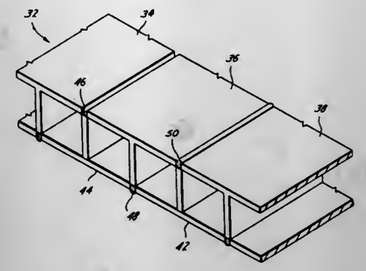


1. In an off-road vehicle, the combination comprising a front frame having a front laterally spaced set of ground-engaging wheels, a rear frame having a rear laterally spaced set of ground-engaging wheels, means for coupling the front frame and rear frame together to form an integrated vehicle, means for intentionally steering at least one set of the wheels thereby to steer the vehicle, means for driving at least one set of the wheels, the coupling means being in the form of a fore-and-aft extending hinge joint, the hinge joint being located adjacent the front set of wheels and being angled downwardly with the extended axis thereof intersecting the ground at a position substantially centered between the rear set of wheels so that the steering direction remains substantially constant in spite of engagement of major ground irregularities by individual ones of the wheels.

4,116,299
T-BAR BASE PLATE FOR A SEISMIC SIGNAL TRANSDUCER

Dallas James Martin, Friendswood, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Filed Apr. 4, 1977, Ser. No. 784,108
Int. Cl.[2] G01V 1/14; B23K 5/66
U.S. Cl. 181—113 3 Claims

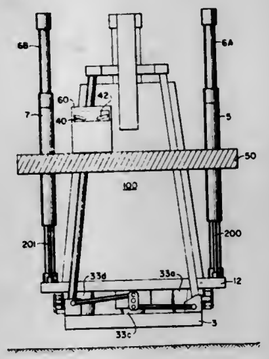


2. In a seismic signal transducer for shaking the ground, a ground contacting base plate of cellular construction, the cells being formed by a plurality of elongated, parallel T-bars each having a flange, the flanges of every T-bar being inverted with respect to the adjacent T-bars, the flanges and stems of adjacent T-bars being joined by a weld.

4,116,300
VIBRATOR TILT CONTROL SYSTEM FOR VEHICLE MOUNTED SEISMIC VIBRATORS

Jacob E. Stone, Bellaire, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Aug. 11, 1977, Ser. No. 823,570
Int. Cl.[2] G01V 1/04
U.S. Cl. 181—114 9 Claims



8. A method for controlling the tilt of a vehicle upon which a vibratory siesmic energy source is mounted wherein seismic energy is coupled to the ground by means of a baseplate and wherein at least a portion of the weight of said vehicle is applied to said baseplate through a support structure positioned above said baseplate and wherein air bags couple substantially vertical forces from said support structure to said baseplate, said air bags being positioned on said baseplate such that at least one air bag is located on each of the two opposite side of said seismic energy source, which comprises:

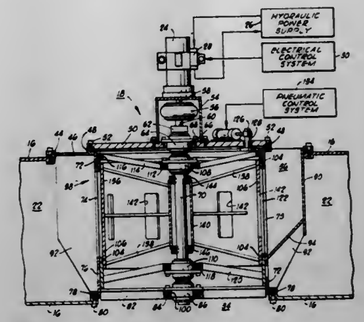
detecting the direction of tilt of said vehicle; and

decreasing the pressure in the air bag on the side of the seismic energy source opposite the direction of tilt of said vehicle.

4,116,301
ROTARY AIR MODULATOR

Delbert W. Fair, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Mar. 3, 1977, Ser. No. 773,924
Int. Cl.[2] G01V 1/14
U.S. Cl. 181—119 16 Claims



1. Apparatus for modulating air at selected pressure, comprising:

a source of air pressure;

a plenum enclosure connected to said source to receive and maintain air at elevated pressure;

stator means disposed in communication with said plenum by means of a plurality of circularly disposed ports;

shutter means having a plurality of circularly disposed ports, said shutter means being placed adjacent to said stator means and rotatable to open and close said stator means ports;

rotor means having a plurality of circularly disposed ports, said rotor means being placed adjacent to said stator means and shutter means in rotational support;

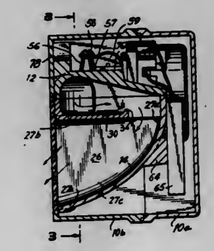
means actuatable to rotate said shutter means to open and close said stator means ports; and

motor means energizable to rotate said rotor means at selected rotational speed.

4,116,302
HORN LOUDSPEAKER

Frederick L. Seebinger, Smoke Rise, N.J., assignor to American Trading and Production Corp., Baltimore, Md.

Filed Mar. 17, 1977, Ser. No. 778,813
Int. Cl.[2] H05K 5/00; G10K 11/00
U.S. Cl. 181—192 8 Claims



1. A horn loudspeaker having an integrated sound chamber and horn assembly comprising a sound chamber adapted to receive a diaphragm and magnetic loudspeaker driver assembly, said sound chamber forming a sound opening having a predetermined acoustic orientation, a first horn stage having a first opening acoustically coupled to said sound opening, said first horn stage including a first portion having a flare rate that expands as said first stage extends away from said first opening

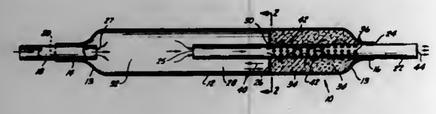
and a restrictive portion defining a further opening, said first stage having an acoustical orientation, at said restrictive portion, that is turned at least 180° in a first plane from the predetermined acoustical orientation of said sound opening, and an output horn stage acoustically coupled at a first end thereof to said restrictive portion of said first horn stage to define an acoustical junction therebetween, said output horn stage having a flare rate that expands as the output stage extends away from said acoustical junction between said first stage and said second stage to define a horn output at the other end of said output horn stage, said second stage having a continuously changing acoustical orientation along the lengthwise extent thereof that is varied as said flare rate expands, so that the acoustical orientation at said horn output is turned at least 90° in a plane perpendicular to said first plane so that the output of said second horn stage is oriented in the same direction as the predetermined acoustical orientation of said sound opening.

4,116,303

EXHAUST MUFFLER

Richard W. Trudell, Fountain Valley, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 8, 1976, Ser. No. 739,466
Int. Cl.² F01N *1/04, 1/00*
U.S. Cl. 181—252 **22 Claims**



1. A muffler comprising a casing, an inlet to said casing and an outlet from said casing, an elongated exit tube passing through said outlet and extending within said casing for a distance of at least one half the interior length of said casing, said exit tube being coaxially aligned with said inlet, baffle means positioned in the annulus between the outer wall of said exit tube and the inner wall of said casing, and intermediate the ends of said exit tube, forming a first chamber extending from said baffle means to the inlet end of said casing and communicating with said inlet, and a second chamber provided by the annular space between the outer wall of said exit tube and the inner wall of said casing and extending from said baffle means to the outlet end of said casing, the inner end of said exit tube extending into said first chamber and in communication therewith, said exit tube being perforated along the area thereof adjacent to said second chamber, and sound absorber material filling said second chamber.

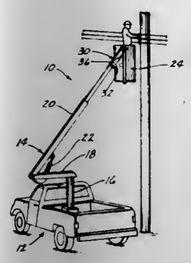
4,116,304

AERIAL PERSONNEL LIFT INCLUDING MEANS FOR AUTOMATICALLY CONTROLLING THE POSITION OF THE PERSONNEL BUCKET

Morris S. Durnell, Emmetsburg, Iowa, assignor to Durnell Engineering, Inc., Emmetsburg, Iowa

Filed Apr. 25, 1977, Ser. No. 790,307
Int. Cl.² B66F *11/04*
U.S. Cl. 182—2 **4 Claims**

1. An aerial personnel lift comprising,
a wheeled frame means,
a boom means having one end operatively pivotally and rotatably secured to said frame means,
an aerial personnel bucket means pivotally secured to the other end of said boom means about a horizontal axis transverse to the longitudinal axis of said boom means,
an electrically activated length adjustable means pivotally secured to and extending between said boom means and said bucket means,
a source of electric power for said length adjustable means,
an electrical switch assembly rigidly secured to said bucket means and including a pair of elongated mercury switches secured to said switch assembly in stationary relation to said bucket means and inclined relative to a horizontal plane when said bucket means is in a vertical position, said mercury switches electrically connected to said length adjustable means and said source of electric power for



automatically activating said length adjustable means responsive to vertical movement of said boom means and pivotal movement of said bucket means so that said bucket means is maintained in a substantially vertical position.

4,116,305

MECHANICAL ROBE GRAB

Arthur J. Leduc, Sarnia, Canada, assignor to Leduc Safety Basket Corporation, Ontario, Canada

Continuation-in-part of Ser. No. 742,279, Nov. 16, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 814,661
Int. Cl.² A62B *35/00*
U.S. Cl. 182—3 **10 Claims**



1. A rope grab for use as an arresting device in co-operation with a rope as a lifeline which passes through the rope grab to a worker, and a safety line attached between the rope grab and the worker, the rope grab comprising:
(a) a collar defining an axis;
(b) a jaw-like frame, defining a throat with distal and proximate regions, whereby the throat extends from the margin of the collar as two fingers, diverging from an intersection and medially bent in the same direction and with their respective distal ends joined whereby the fingers define the throat, with its distal throat region intersecting the prolongation of the axis and having a larger cross sectional area than its proximate throat region, which is bounded by the collar and the proximate ends of the finger-like members; and,
(c) means for attaching near the distal end a safety line whereby the lifeline extending through the collar and throat will normally assume a position relatively co-incident to the axis and its prolongation and hence extend through the distal throat region, but when tension is applied via the safety line to the distal end, the grab pivots and wedges the rope between the finger-like members in the proximate throat region.

4,116,306

ELEVATOR CAR GENERATOR-MOTOR-BRAKE CONTROL UNIT APPARATUS AND METHOD

Don B. Alley, Sacramento, Calif., assignor to Elevator Industries, Sacramento, Calif.

Filed Apr. 29, 1977, Ser. No. 792,399
Int. Cl.² B66B *1/30*
U.S. Cl. 187—29 R **17 Claims**

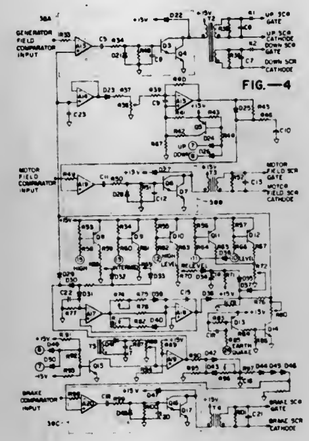


FIG.—4

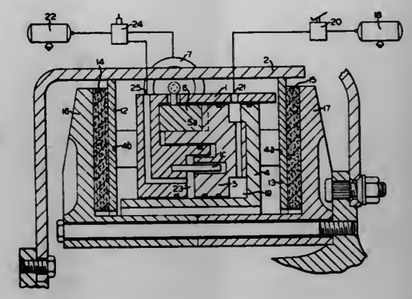
1. A control system for a generator, a hoist motor, and a hoist motor brake, which function to position an elevator car in an elevator hoistway in response to speed and direction inputs, the generator having a generator field winding and a driver, the hoist motor having a motor field winding and an output shaft coupled to drive the elevator car in the hoistway, and the hoist motor brake having an actuating coil operating to control engagement of the brake with the hoist motor output shaft, the system being energized by an alternating power source signal, comprising
a master waveform generator coupled to the power source signal and providing a predetermined ramp waveform having predetermined initial and terminal levels,
means for providing an output level command signal in response to the speed and direction inputs,
a generator field comparator coupled to said predetermined ramp waveform and said output level command signal and providing a generator field trigger signal in response to comparison therebetween,
a motor field comparator coupled to said predetermined ramp waveform and said output level command signal and providing a motor field trigger signal in response to comparison therebetween,
a brake comparator coupled to said predetermined ramp waveform and said output level command signal and providing a hoist motor brake trigger signal in response to comparison therebetween,
and a plurality of power metering circuit elements coupled to the power source signal and each receiving one of said generator field, motor field, and hoist motor brake trigger signals at a control input thereon, whereby respective ones of said plurality of power metering circuit elements are duty cycle controlled to pass the power source signal to energize the generator field winding, the motor field winding, and the hoist motor brake actuating coil in accordance with the speed and direction inputs.

4,116,307

FLUID PRESSURE OPERATED DISC BRAKE HAVING SERVICE, AUXILIARY AND PARKING BRAKE SYSTEMS

Erich Reinecke, Beinhorn, Fed. Rep. of Germany, assignor to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,543
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646870
Int. Cl.² F16D *55/10, 65/24*
U.S. Cl. 188—106 P **16 Claims**



1. A fluid pressure operative disc brake unit having at least one brake shoe adapted to be actuated into frictional engagement with a rotor member of said brake unit in response to operation of either a service brake valve device to which a service supply reservoir is connected or a parking brake valve device to which an auxiliary supply reservoir is connected, said disc brake unit comprising:
(a) a brake cylinder device;
(b) piston means for effecting actuation of said at least one brake shoe into engagement with said rotor member comprising:
(i) a service piston engageable with said at least one brake shoe and operative in said brake cylinder device responsive to the supply of said service reservoir pressure to a first actuating chamber thereof via said service brake valve device for movement to a brake application position; and
(ii) an auxiliary piston cooperatively arranged in said brake cylinder device between said service piston and said brake cylinder such as to form said first actuating chamber at the one face thereof and to further form a second actuating chamber at the opposite face thereof to which the connection of auxiliary supply reservoir pressure via said parking brake valve device urges said auxiliary piston into engagement with said service piston to move the latter into said brake application position; and
(c) locking means including an adjustable filling piece interposed between said brake cylinder and said auxiliary piston for maintaining said service piston in said brake application position following the release of fluid pressure from said second actuating chamber.

4,116,308

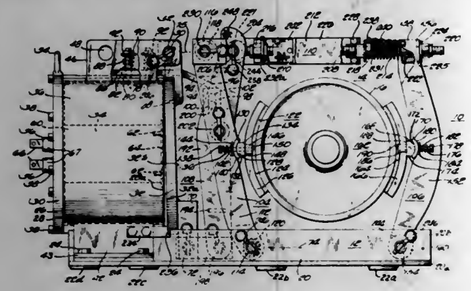
ELECTROMAGNETICALLY OPERATED FRICTION BRAKE

Janez F. Sever, Mequon, Wis., assignor to Square D Company, Park Ridge, Ill.

Continuation-in-part of Ser. No. 737,802, Nov. 1, 1976, abandoned. This application May 13, 1977, Ser. No. 796,582
Int. Cl.² B60T *13/04*
U.S. Cl. 188—171 **15 Claims**

1. A brake assembly for controlling rotative movement of a brake drum comprising: a base, a pair of spaced pivots on the base, a first brake arm extending upwardly of the base and

having an end pivoted on a first of said pair of pivots and a free end remote from the pivoted end, a second brake arm extending upwardly of the base in spaced relation to the first brake arm and having an end pivoted on a second of said pair of pivots and a free end remote from the pivoted end spaced from the free end on the first arm, a brake drum positioned forwardly of the base between the first and the second arms, a first and a second brake shoe pivotally mounted intermediate the ends of the first and second arms respectively to frictionally engage outer surface portions of the drum when the free ends of the first and the second arms are moved toward each other to a first position and to move out of the frictional engagement and release the drum for rotation when the free ends on the first and second arms move away from each other to a second position, an actuating lever having a first end movable along a portion of an axis extending through the spaced pivots and positioned external of the space between the pair of pivots, said actuating lever extending from the first end upwardly of the base to a free end that is movable in the space between the free ends on the first and the second arms, a rotatable connection between the first arm and the actuating lever located between



the mounting portion for the first brake shoe and the free end of the first arm, an operating rod pivotally interconnecting the free ends of the actuating lever and the second arm, a member having a first end pivotally connected to the free end of the first arm and extending to a second portion that is spaced between the free ends of the first and the second arms, a first spring reacting between the rod and the member constantly urging the first and the second arms toward their respective first positions, a pivot for the actuating lever spaced a predetermined distance from the connection between the first arm and actuating lever and the connection between the operating rod and the actuating lever, yieldable means automatically positioning the pivot for the actuating lever at a position which causes the first and the second brake shoes to simultaneously engage the brake drum during movement of the first and second arms from their respective second to first positions, and an energizable operating means having an operating member operatively connected to the operating lever for causing the first and second arms to move to their respective second positions when the operating means is energized and the operating member moves from a de-energized to an energized position.

4,116,309

FLUID PRESSURE BRAKING SYSTEMS FOR VEHICLES

Alastair John Young, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Oct. 26, 1976, Ser. No. 735,518

Claims priority, application United Kingdom, Oct. 29, 1975, 44740/75

Int. Cl.² B60T *8/18*

U.S. Cl. 188—195 **19 Claims**

1. In a vehicle having a body supported by a resilient suspension system, one rear wheel on one side of the vehicle and another rear wheel on the other side of the vehicle, one suspension component which moves with vertical movement of said one rear wheel relative to the vehicle body and another suspension component which moves with vertical movement of said other rear wheel relative to the vehicle body, a fluid pressure braking system which comprises:

a driver operable brake application control device, which provides a controlled source of fluid pressure;

one brake operative to brake said one rear wheel;

another brake operative to brake said other rear wheel;

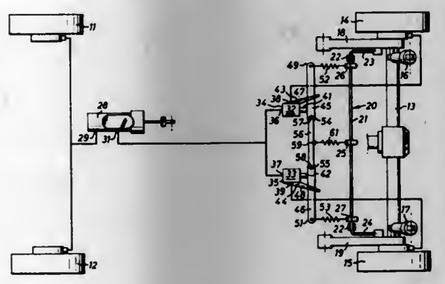
one brake motor cylinder operative to apply said one brake;

another brake motor cylinder operative to apply said other brake;

one fluid pressure control valve connected between said driver operable device and said one brake motor cylinder, said one valve being operable to reduce the pressure supplied from said driver operable device to said one brake motor cylinder by an amount which varies with the magnitude of a biasing load applied to said one valve;

another fluid pressure control valve connected between said driver operable device and said other brake motor cylinder, said other valve being operable to reduce the pressure supplied from said driver operable device to said other brake motor cylinder by an amount which varies with the magnitude of a biasing load applied to said other valve;

one control mechanism operatively connected to said one



valve and to said one suspension component, said one control mechanism including resilient means by which the magnitude of the biasing load applied to said one valve is varied with movement of said one suspension component such that any reduction in the pressure supplied to said one brake motor cylinder is proportionally greater as the load carried by said one rear wheel is reduced;

another control mechanism operatively connected to said other valve and to said other suspension component, said other control mechanism including resilient means by which the magnitude of the biasing load applied to said other valve is varied with movement of said other suspension component such that any reduction in the pressure supplied to said other brake motor cylinder is proportionally greater as the load carried by said other rear wheel is reduced;

and interconnection means interconnecting said control mechanisms such that the change in biasing load on each of said valves is greater when both rear wheels move vertically relative to the vehicle body by the same amount but in different directions that when both rear wheels move vertically relative to the vehicle body by said same amount and in the same direction.

4,116,310

COMBINED SHOULDER STRAP BAG AND CUSHION

Mary J. Shields, P.O. Box 207, Hastings, Mich. 49058

Filed Mar. 25, 1977, Ser. No. 781,526

Int. Cl.² A45C *15/00*

U.S. Cl. 190—42 **7 Claims**

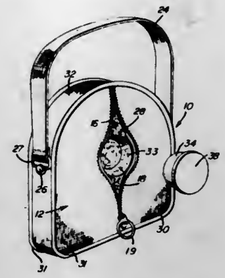
1. A combined seat cushion and article carrier, comprising:

cushion body means having a recess formed in one major surface face thereof for receiving at least one article therein;

covering means for encasing at least a portion of the cushion body means, said covering means having an opening

formed therein and surmounting at least a portion of the recess in the cushion body means, the opening providing access to the recess from externally of the covering means; and,

a strap adapted to be grasped by or worn over the shoulder



of a user, the ends of the strap being connected to the periphery of the seat cushion at two spaced points, the strap being of a length substanially equal to the larger perimetric distance taken about the periphery of the seat cushion between the spaced points of connection of the strap to said seat cushion.

4,116,311

LUGGAGE CASE

Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Nov. 29, 1977, Ser. No. 855,680

Int. Cl.² A45C *3/00*

U.S. Cl. 190—49 **3 Claims**



1. In a luggage case of the type comprising a body portion and a covering lid portion, respectively having substantially rectangular frames of corresponding contour, and covers which are stretched tautly over said frames, the improvement wherein each of said covers comprises a portion of a single thickness of covering material surrounding each of the said frames, a side wall portion for each of said frames of a single thickness of covering material, a relatively narrow strip of a single thickness of covering material coextensive in length to the surrounding portion and attached adjacent to the outer edge of the surrounding portion of covering material and projecting therebeyond, and corner edge welting attached between the outer edge of said separate strip and the periphery of the side wall portions of the covers.

4,116,312

MINE VEHICLE TROLLEY POLE

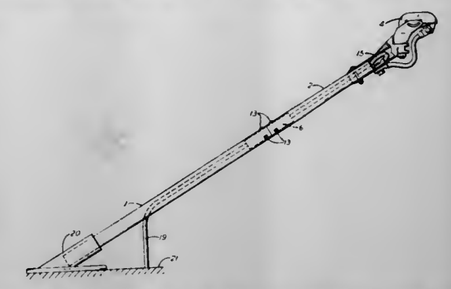
Stuart L. Adler, McMurray, and William O'Neil Hunt, Pittsburgh, both of Pa., assignors to Permali, Incorporated, Mount Pleasant and Shields Rubber Corporation, Pittsburgh, both of, Pa., part interest to each

Filed Sep. 28, 1977, Ser. No. 837,312

Int. Cl.² B60L *5/12*

U.S. Cl. 191—64 **8 Claims**

1. A mine vehicle trolley pole assembly comprising a hollow pole having upper and lower ends and an opening in the side of its lower portion, a trolley wire contact shoe mounted on the upper end of the pole, the pole being divided transversely into upper and lower sections, a fuse case fitting inside the pole and extending into both of said sections to connect them, a fuse contact disposed inside each end of said case, an electric cable extending from said shoe down through the hollow pole to the



upper fuse contact, and a second electric cable extending from the lower fuse contact down through the hollow pole and out through said side opening, said pole being formed from a filament-wound fiberglass reinforced plastic.

4,116,313

DRIVE MECHANISM FOR UTILITY OR COMMERCIAL VEHICLES SUCH AS TRACTORS, CONSTRUCTION MACHINERY OR THE LIKE

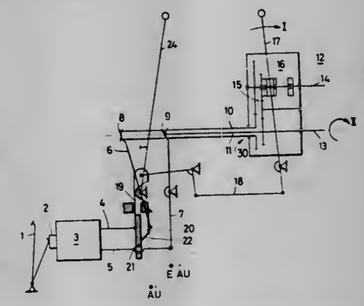
Paul Maucher, Sasbach, Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Sasbach, Germany

Filed Sep. 7, 1976, Ser. No. 720,632

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1975, 2540214

Int. Cl.² G05G *5/10, 11/00*; F16D *67/00*

U.S. Cl. 192—3.63 **8 Claims**



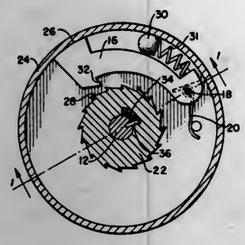
1. Drive mechanism for heavy vehicles such as tractors, construction machinery and the like, wherein one (31) of two clutches (31, 32) is selectively blocked by a shifting device (3) so as to prevent engagement and disengagement thereof, while the other (32) of the two clutches (31, 32) is released so as to be engageable and disengageable, and wherein an output shaft (13) of a transmission (12) is drivable by the one clutch (31) in one rotary direction, and the same output shaft (13) is drivable by the other clutch (32) in the other rotary direction, a set of reversing gears (15) being connectible to the transmission (12) through the other clutch (32), comprising a control clutch (16) disposed in force transmission path between the other clutch (32) and the output shaft (13) of the transmission (12), and including an additional output shaft (14) for an auxiliary drive, and means (4, 6, 8; 5, 7, 9) for shifting power flow selectively to the output shaft (13) of the transmission (12) and to said additional output shaft (14) thereof.

4,116,314

OVER RUNNING CLUTCH

Leonard Stanley Ackerman, 355 Lakeview Ave., Rockville Center, N.Y. 11570

Filed Mar. 3, 1977, Ser. No. 774,175
Int. Cl.[2] F16D 41/12
U.S. Cl. 192—46 3 Claims



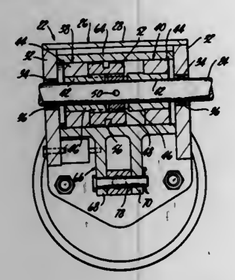
1. An over running pawl and ratchet device comprising a ratchet wheel mounted on a first shaft and having ratchet teeth about its periphery, a coaxial race surrounding but spaced from said ratchet wheel, a second rotatable shaft, a pawl mounted on said second rotatable shaft coaxial of said ratched wheel between said ratchet wheel and said race, means biasing said pawl away from said ratchet wheel, a movable element between said pawl and said race, the outer surface of said pawl being so shaped that as said second shaft is rotated in one direction, said movable element contacting both said race and the outer surface of said pawl, wedges said pawl radially inwardly into engagement with said ratchet wheel.

4,116,315

LANDING GEAR ACTUATOR

Ervin K. Vandenberg, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.

Filed Jan. 6, 1977, Ser. No. 757,305
Int. Cl.[2] F16D 41/04
U.S. Cl. 192—48.92 11 Claims



1. For use with a landing gear assembly having an extendable and retractable foot and an input member the rotation of which extends or retracts the foot in dependence upon the direction of rotation of said member, a landing gear actuator comprising:

a rotatable member drivingly connected with said input member;

a one-way clutch having a driven member and a drive member, said driven member being rotatably positioned around said rotatable member;

means for selectively drivingly connecting said driven member with said rotatable member, said means comprising an annular member fixedly attached to the rotatable member at a position axially spaced from the driven member, and a shifting gear disposed around said annular member and fixed against rotation with respect to the annular member, said shifting gear being axially movable between a position in which said shifting gear rotatably drivingly connects the driven member with the annular member and a further position in which the shifting gear is out of engagement with the driven member; and

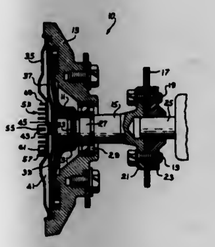
means for reciprocally rotatably driving said clutch drive member.

4,116,316

FLUID COUPLING DEVICE AND BIMETAL COIL ADJUSTMENT FOR USE THEREIN

Kenneth R. Streeter, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 687,264, May 17, 1976, Pat. No. 4,054,193. This application Aug. 24, 1977, Ser. No. 827,414
The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.
Int. Cl.[2] F16D 31/08
U.S. Cl. 192—58 A 5 Claims



1. A fluid coupling device including a first rotatable member, cover means associated with said first member to define a fluid chamber therebetween, a valve plate disposed to separate said fluid chamber into a fluid operating chamber and a fluid reservoir chamber, a second rotatable member disposed in said fluid operating chamber and rotatable relative to said first member, valve means operable to control fluid communication between said operating chamber and said reservoir chamber, temperature-responsive means controlling said valve means, said temperature-responsive means including a bimetal element having a first end portion operatively connected to said valve means and a second end portion, bracket means fixed relative to said device and including a generally flat terminal portion extending away from said cover means, a clip member including means receiving said second end portion of said bimetal element and substantially preventing rotational movement of said second end portion relative to said first end portion, said clip member being disposed in movable engagement with said terminal portion of said bracket means to permit adjustment of said second end portion of said bimetal element relative to said first end portion.

4,116,317

FLUID COUPLING DEVICE WITH IMPROVED DISENGAGED OPERATING CHARACTERISTICS

Kenneth R. Streeter, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 2, 1977, Ser. No. 764,772
Int. Cl.[2] F16D 31/08, 33/20
U.S. Cl. 192—58 B 11 Claims

1. A fluid coupling device comprising:

(a) a first rotatable member;

(b) cover means associated with said first member to define a fluid chamber therebetween;

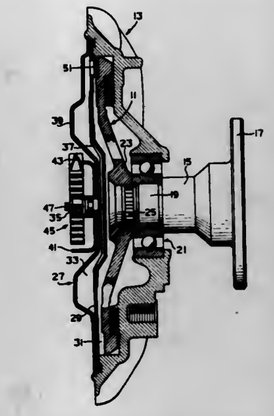
(c) a valve plate disposed to separate said fluid chamber into a fluid operating chamber and a fluid reservoir chamber;

(d) a second rotatable member disposed in said fluid operating chamber and being rotatable relative to said first member, said second member having first and second wall surfaces oriented generally perpendicular to the axis of rotation of said members and defining a thickness T therebetween, said second wall surface of said second member and an adjacent surface of said first member cooperating to define a shear space therebetween;

(e) valve means associated with said valve plate to control the flow of fluid between said reservoir chamber and said operating chamber and temperature-responsive means associated with said valve means to effect the operation of said valve means in response to variations in a pre-determined temperature condition;

(f) said second member defining a generally annular outer surface and said first member defining a generally annular inner surface; and

(g) said outer surface including a first surface portion disposed adjacent said first wall surface, said first surface portion being generally cylindrical, closely spaced apart from said annular inner surface, and extending axially a distance less than about T/3, said outer surface further including a second surface portion contiguous with said first surface portion and extending to said second wall surface, said second surface portion being generally frusto-conical and cooperating with said axis of rotation to define an included angle between about 15° and about 45°.



4,116,318

FLUID FLOW RESTRICTION PATH IN VISCOUS FLUID CLUTCH

Richard T. Crisenbery, Parma, and Thomas H. Tinholt, Marshall, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 5, 1977, Ser. No. 784,898
Int. Cl.[2] F16D 35/00, 43/25
U.S. Cl. 192—58 B 11 Claims

1. A viscous fan drive comprising:

(a) a housing rotatable about an axis and defining a cavity having a working chamber and a reservoir;

(b) a clutch member rotatable about said axis and located within said working chamber;

(c) an annular shear area within said working chamber defined by said members and located radially outwardly from said axis;

(d) viscous shear fluid located within said cavity;

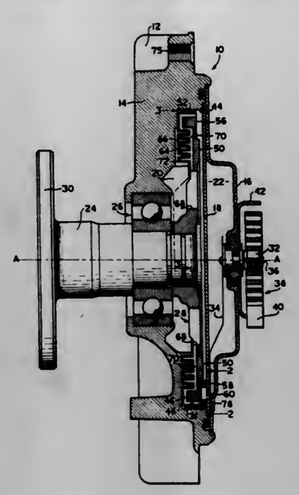
(e) means to direct said fluid from said reservoir to said shear area;

(f) means to pump said fluid from said shear area to said reservoir, said pumping means being located radially outwardly from said shear area;

(g) an input shaft mounted for rotation about said axis on one of said members and secured to the other member whereby rotation of said input shaft will cause rotation of said one member when viscous fluid is located within said annular shear area;

(h) a plurality of circumferentially spaced fluid flow paths extending radially on said clutch member through said shear area, each flow path having an effective area of A units and being in fluid communication with said directing means; and

(i) a fluid flow restriction path on said clutch member in fluid communication with each of said flow paths radially outwardly from said shear area and in fluid communication with said pumping means to direct substantially all of said fluid from said respective flow path to said pumping means, each restriction path having an effective area of B units, the value of B units being less than the value of A units to restrict, within said restriction path, said fluid flow from said respective flow path to said pumping means.

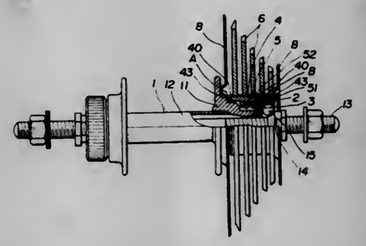


4,116,319

REAR GEAR FOR A BICYCLE

Masashi Nagano, and Etsuyoshi Watarai, both of Sakai, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed May 18, 1977, Ser. No. 798,140
Claims priority, application Japan, May 25, 1976, 51-60816; May 25, 1976, 51-60817
Int. Cl.[2] F16D 41/04; F16H 11/08
U.S. Cl. 192—64 10 Claims



1. A rear gear mounted to a rear wheel hub of a bicycle, said rear gear comprising,

(a) a cylindrical driven member rotatable jointly with said rear wheel hub,

(b) a cylindrical driving member supported on the outer periphery of said driven member,

said driving member being radially positioned at its inner periphery with respect to the outer periphery of said driven member, being supported rotatably with respect to said driven member, and being movable axially of said

driven member, said driving member and driven member forming therebetween axially opposite surfaces, said driving member having at its outer periphery two or more differently sized sprockets,

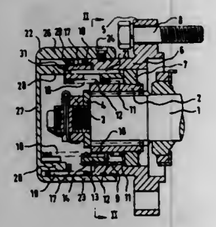
(c) a unidirectional transmission provided between the radially opposite surfaces of said driving member and said driven member, said transmission serving to transmit a rotational force in only one direction from said driving member to said driven member, and

(d) a clutch mechanism provided between axially opposite surfaces of said driving member and said driven member, said clutch mechanism being engageable to allow said driving member and said driven member to rotate together when said driving member is axially moved, a rotational force being transmitted from said rear wheel hub to said driving member through said driven member.

4,116,320
CLUTCH

Douglas John Quilliam, Pensilva Liskeard, England, assignor to Fairey Winches Limited, Heston, England

Filed Feb. 11, 1977, Ser. No. 767,834
Claims priority, application United Kingdom, Mar. 30, 1976, 12785/76; Nov. 24, 1976, 49040/76
Int. Cl.² F16D *1/06, 23/14*
U.S. Cl. 192—89 A **12 Claims**



1. In a hub clutch for the wheel of a vehicle, the clutch comprising an inner drive member, an external annular body encircling the drive member and being radially spaced therefrom; a bearing which maintains the body coaxial with the drive member; an annular clutch member coaxial with the drive member and the body, the clutch member being rigid in rotation with the body but being axially movable for selective engagement and disengagement with the drive member as regards rotation; an axially movable actuator connected to and spaced axially from the clutch member by spring connecting means; means for preventing rotation of the actuator relative to the body; and an axially fixed cover mounted on the body: the improvement that the ends of the body and drive member adjacent the cover are at substantially the same axial position, the cover has a rim coaxially encircling the body and has an end wall axially spaced from the body and drive member, the cover is rotatable relative to the body, spring biasing means are provided for urging the actuator towards the end wall, the end wall and the actuator have axially extending cam formations which cooperate to cause axial motion of the actuator upon rotation of the cover relative to the body, and the means for preventing rotation of the actuator comprise axially extending pins carried by the actuator and engaging permanently in axial slots in the body.

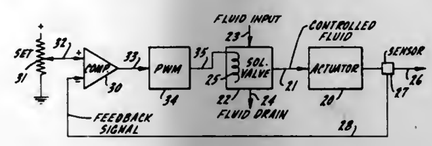
4,116,321
VALVE ARRANGEMENT FOR CLOSED-LOOP CONTROL SYSTEM

Alan Leonard Miller, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 27, 1976, Ser. No. 754,382
Int. Cl.² F16D *23/10, 43/06*
U.S. Cl. 192—103 F **8 Claims**

1. A control system for changing the pressure of a fluid to operate an actuator as a function of an analogue control signal, comprising:

a two-stage, four-way control valve in which the second stage is a power stage for producing the pressure change in the fluid in response to actuation of the first stage, and the first stage is a pilot stage which includes a solenoid valve with a winding connected to translate a signal to the second stage as a function of the signal received by the solenoid winding;



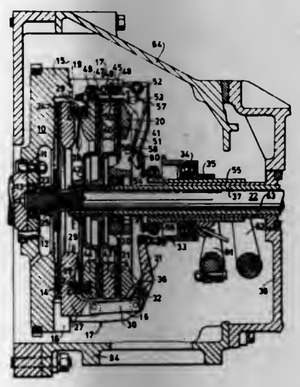
a pulse-width modulation stage, connected to receive the analogue control signal and to provide an output alternating signal the duty cycle of which is a function of the analogue signal, which alternating signal is applied to the solenoid winding in the first stage to effect the control valve operation; and

means for sensing the actuator operation, comparing the actuator operation to a desired operation, and providing said analogue control signal as a function of such comparison.

4,116,322
CLUTCHES

Herbert Edward Ashfield, Huddersfield, England, assignor to David Brown Tractors Limited, Huddersfield, England

Filed Jan. 12, 1977, Ser. No. 758,754
Claims priority, application United Kingdom, Feb. 14, 1976, 5887/76
Int. Cl.² F16D *21/06*
U.S. Cl. 192—48.8 **8 Claims**

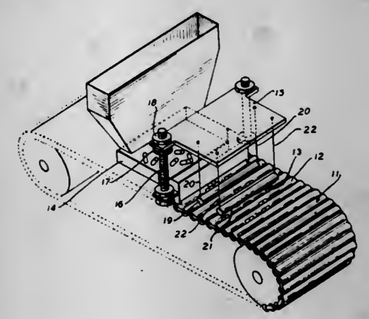


1. An engine/dual clutch combination including an engine flywheel having a counterbore defined by a recessed driving surface and a surrounding axially-projecting flange on the face of the flywheel remote from the engine; an annular clutch casing rigidly secured co-axially to the flywheel and having a radially-inwardly projecting flange with a driving surface on its face adjacent the flywheel; a power take-off shaft journalled co-axially in the flywheel; power take-off clutch means disposed partially within the counterbore in the flywheel; an output sleeve co-axially surrounding the power take-off shaft on that side of the power take-off clutch means remote from the flywheel; multi-plate drive clutch means comprising twin drive clutch plates carried driveably by the output sleeve, that one of said twin clutch plates remote from the flywheel being frictionally engageable between the driving surface on the flange on the clutch casing and a drive clutch auxiliary pressure plate interposed between the twin drive clutch plates, and that one of said twin clutch plates adjacent the flywheel being frictionally engageable between said auxiliary pressure plate and a drive clutch main pressure plate, said auxiliary and main clutch pressure plates being axially movable; said main pressure plate and the power take-off clutch means being both urged in thier respective clutch-engaging directions by common resilient means; and means for moving said main pressure plate in a direction towards the flywheel against the action of the resilient means to disengage the drive clutch comprising a plurality of circumferentially-spaced rods rigidly secured to said main pressure plate and passing driveably through apertures in the drive clutch auxiliary pressure plate, and respective second-class levers pivoted at their radially outer ends on that end of the clutch casing remote from the flywheel and capable of abutting between their ends against those ends of said rods remote from the flywheel, the radially inner ends of said levers being moveable in a direction towards the flywheel by an axially-slideable drive clutch operating sleeve.

4,116,323
APPARATUS FOR CONVEYING OBJECTS ONE BY ONE

Peter J. Dragotta, 23 Franklin Pl., East Rutherford, N.J. 07073

Filed Jun. 29, 1977, Ser. No. 811,048
Int. Cl.² B65G *47/14*
U.S. Cl. 198—453 **3 Claims**



1. An apparatus for singulating superposed objects on a conveyor for inspection comprising:

a. a conveyor for articles,

b. a plurality of transverse, successive spaces on the conveyor,

c. the spaces on the conveyor dimensioned generally to receive only a single layer of articles,

d. means to operate the conveyor from an article delivery station to an article discharge station,

e. a stationary support for a bar disposed over the conveyor,

f. means to deflectively suspend a bar, attached at one end to the stationary support, and at the other end to the bar,

g. a bar attached to the means to support and disposed transversely with respect to the direction of movement of the conveyor,

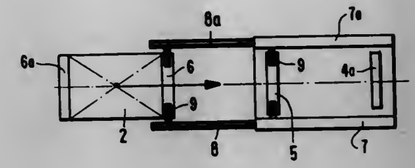
h. the bar further disposed in spaced relation to the spaces on the conveyor a distance sufficient to pass a single article on a space, but insufficient to pass an article superposed on another article on a space on the conveyor,

i. the weight of the bar being sufficient to displace a superposed article on the moving conveyor that the bar encounters, and to move it onto a successive empty space on the conveyor.

4,116,324
LOADING DEVICE

Karl-Heinz Burmeister, Kleve, Niederrhein, Fed. Rep. of Germany, assignor to Ipsen Industries International Gesellschaft mit beschrankter Haftung, Kleve, Niederrhein, Fed. Rep. of Germany

Filed Oct. 27, 1976, Ser. No. 735,977
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1975, 2550323
Int. Cl.² B65G *25/12*
U.S. Cl. 198—472 **8 Claims**



1. A loading device for the conveyance of transport containers, comprising

two endless chains being rotatably mounted parallel to and spaced from each other and each of said chains defining upper portions, and lower portions, respectively,

means for simultaneously rotating said two endless chains,

two loading rods being mounted adjacent thereabove and parallel to said upper portions of said endless chains, respectively, and longitudinally displaceable relative thereto, said loading rods defining ends,

two finger means arranged spaced from one another on each of said loading rods adjacent said ends thereof,

said two finger means for releaseably operatively coupling said loading rods to adjacent of said two endless chains, respectively, and to a transport container, respectively, in a transport condition thereof, whereby said rods are longitudinally driven by said endless chains in longitudinally extending positions of said loading rods relative to said upper portions of said endless chains, whereby the transport container is moved by said longitudinal rods via said finger means, respectively,

said upper portions of said endless chains being adapted to carry the transport container when the latter is located in positions over said endless chains on said upper portions of said endless chains,

two driver rail means extend crosswise to said two endless chains and being connected to said two endless chains, said two driver rail means for operatively moveably engaging the transport container when the latter is in said positions on said upper portions of said endless chains, respectively,

a transverse rail extends transversely to said two endless chains and being connected to both said endless chains and is located on corresponding one of said portions of said two endless chains when both said two driver rail means are located on the corresponding other of said portions of said two endless chains,

two downwardly opening U-shaped container rail means for releaseably engaging at least one of said two driver rail means, respectively, when the transport container is in said positions on said upper portions of said endless chains, whereby the transport container can be moved by said endless chains via said driver rail means when the transport container is in said positions on said upper portions of said endless chains, said container rail means for being joined to said transport container on opposite ends thereof, respectively,

means for rotating said loading rods operatively into and out of engagement with said transverse rail and said container rail means, respectively,

said two finger means of both of said two loading rods for releaseably engaging said transverse rail and said con-

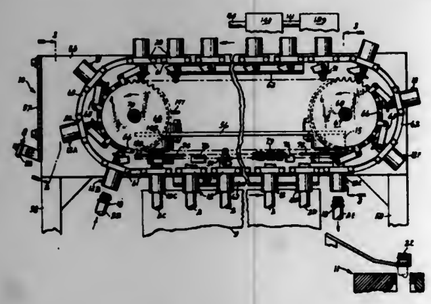
tainer rail means, respectively, whereby said loading rods can be moved by said endless chains via said transverse rail and said transport container can be additionally moved via said loading rods, respectively, when said loading rods are in the longitudinally extended positions relative to said upper portions of said endless chains and the transport container is longitudinally spaced apart from said endless chains, respectively.

4,116,325

CONVEYOR COMBINED WITH COUPLING FOR HANDLING WORKPIECE

David Ian McDonald, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 668,323, Mar. 18, 1976, abandoned. This application May 19, 1977, Ser. No. 798,552
Int. Cl.² B65G *37/00*
U.S. Cl. 198—484 **2 Claims**



1. An improved coupling assembly for use in combination with a conveyor means to form a machine that carries a hollow workpiece between a workpiece loading station and a workpiece unloading station and then returns to the former which machine further includes conveyor means movably mounted relative to the base of said machine for supporting at least one such coupling for repeated movement along respective first and second paths to and away from said respective stations for loading and unloading and wherein said improved coupling comprises

(a) a carrier that is a part of said conveyor means;

(b) a support member having an upper stem portion and a lower portion, said upper portion being mounted on said carrier to revolve but not reciprocate relative to said carrier, said lower portion being cup-shaped, the cup being defined by an annular wall surrounding a chamber and an end wall connecting said stem portion to said annular wall and having an open end on the bottom of said cup opposite said end wall;

(c) a follower slidably supported in said stem portion and having the lower end of said follower within said chamber, said follower being movable axially toward and away from said open end;

(d) detent means comprising a lever means pivotally mounted on said lower portion with one lever arm engageable by said follower and the end of the other said lever arm disposed to be radially movable within said chamber, respectively, away from and toward the central portion of said chamber responsive to axial movement of said follower to respectively disengage and engage such workpiece;

(e) an ejector means movably mounted on said lower end of said follower; and

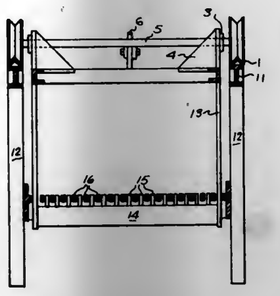
(f) means to resiliently bias said ejector means toward said cup open end.

4,116,326

VIBRATING CONVEYOR BAR CLEANING SYSTEM

David B. Tuman, Rte. 2, Box 2432, Stimpson Rd., Oroville, Calif. 95965

Filed Jun. 15, 1977, Ser. No. 806,667
Int. Cl.² B65G *45/00*
U.S. Cl. 198—498 **7 Claims**



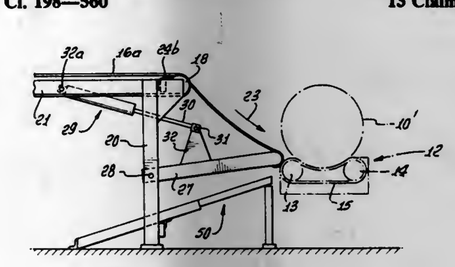
1. A vibrating conveyor bar cleaning system comprising a carriage frame having a top portion and vertical legs supporting said top portion, a carriage slidably disposed on said carriage frame top portion having depending frame elements inwardly disposed relative to said vertical legs of said carriage frame; said frame elements terminate in a transverse cross bar at the extremity remote from said top portion of said carriage frame, a plurality of parallel substantially horizontally disposed bars capable of vibratory motion, said bars being spaced from each other by a uniform distance and disposed below the top portion of said carriage frame, teeth members carried by said carriage by said transverse cross bar upwardly extending into the areas between said parallel bars to remove bits of matter entrained between said bars, and means for imparting a horizontally reciprocating motion to said carriage, whereby said teeth disposed on said carriage will traverse substantially the entire length of said vibratory bars, thereby removing entrained matter disposed between said bars along their entire extent, and the space between said carriage frame top portion and said teeth is great enough to prevent debris from jamming the sliding.

4,116,327

TRANSFER MECHANISM EMPLOYING BODILY EXTENSIBLE SLING STRUCTURE

Robert B. Eglinton, Hawthorne, and James S. Tuell, Manhattan Beach, both of Calif., assignors to Chromalloy American Corporation, New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,411
Int. Cl.² B65G *11/10*
U.S. Cl. 198—560 **13 Claims**



1. In load transfer apparatus

(a) load receiving sling means having opposite ends,

(b) support means operatively connected with at least one bodily movable end of the sling means and bodily movable to endwise elongate the sling means into a ramp position for gravity transfer of a load off the sling means,

(c) anchor means for a fixed end of the sling means remote from said bodily movable end of the sling means, and relative to which said one end of the sling means is bodily movable between up and down positions, said support means in said down position being further from the anchor means than in said up position, and

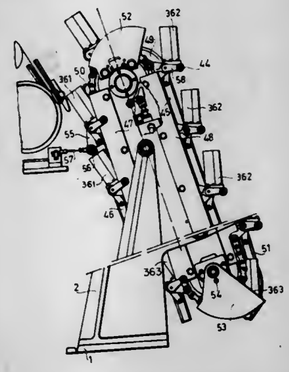
(d) movable transfer mechanism extending into proximity to the sling means fixed end to transfer a load over said fixed end of the sling means and onto the sling means in said up position of said one end of the sling means, said transfer mechanism comprising conveyor belts extending forwardly, the sling means including multiple belts having portions secured to said anchor means in load receiving proximity to the forwardmost ends of the conveyor belts.

4,116,328

APPARATUS FOR REPLENISHING CONTAINERS FOR THIN AND FLEXIBLE COMPONENTS

László Horváth; Ferenc Major; Ottó Gaál, and Sandor Lengyel, all of Budapest, Hungary, assignors to Egyesult Izzolampa es Villamossagi Rt., Budapest, Hungary

Filed Apr. 30, 1976, Ser. No. 682,107
Claims priority, application Hungary, May 5, 1975, EE 2327
Int. Cl.² B65G *47/06*
U.S. Cl. 198—648 **4 Claims**



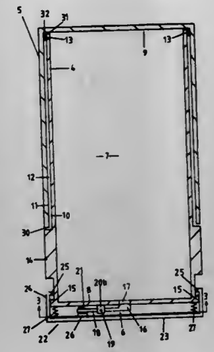
1. An improved apparatus for replenishing depleted, relatively inaccessible and moving containers that contain thin, cut-to-size components at a rate independent of a high-velocity product output that involves the components, the apparatus comprising, in combination: a component loader of a rotary construction; a plurality of component storage containers arranged on an endless conveying device and guided for oscillating movement; a control mechanism for alternatingly moving said containers according to a predetermined timing and along a predetermined path; means for guiding said conveying device along a path which includes working positions of said containers; indexing means for intermittently advancing said conveying device; a device for controlling the operation of said indexing means; a plurality of holders for said containers, rotatably journalled on said conveying device; arms on said holders, guided along the path of said conveying device, defined by fixedly arranged straight track sections, arcuate track sections, and a track section arranged for moving alternatingly in the regions of the working positions of said containers; and means for releasably securing said containers to said holders for accurate positioning, allowing replacement of empty containers when a previous supply of filled containers is depleted.

4,116,329

SAFETY CONTAINER HAVING VENT MEANS

Barrie Franklin Garden, Kilgour St., Seacliff via Dunedin, New Zealand

Filed Dec. 13, 1977, Ser. No. 860,227
Claims priority, application New Zealand, Dec. 21, 1976, 182939
Int. Cl.² A45C *13/10, 13/18*
U.S. Cl. 206—1.5 **13 Claims**



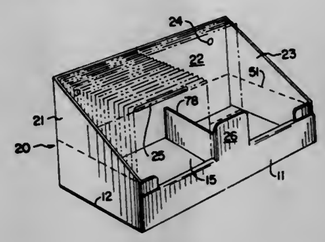
1. A container comprising: a first part or receptacle; a second part or cap; said first part and said second part being sealingly associable to define an enclosed container space; valve means included in said first or said second part adapted to allow expulsion of air from said enclosed space upon association on said first and said second parts, but not normally allow passage of air into said enclosed space; means included within said first or second part actuable to vent said enclosed space to the atmosphere surrounding said container.

4,116,330

COMBINATION PACKAGE AND DISPLAY CASE

A. Barry Ellis, Glen Ellyn, Ill., assignor to Azteca Corn Products Corporation, Chicago, Ill.

Filed Aug. 29, 1977, Ser. No. 828,494
Int. Cl.² B65D *5/54*
U.S. Cl. 206—44 R **1 Claim**



1. A four sided shipping container for the distribution and shelf display of prepackaged articles having a display face, said shipping container being formed from a single piece blank and having a cover, said cover enclosing a base portion having a lower base portion with substantially equal wall height and an upper base portion open on one side and of a certain greater uniform height on an opposed side, each of the other two sides comprising connecting sides uniformly rising in height from said open side to said opposing side, said shipping container having perforations detachably defining said cover, said upper base portion and said lower base portion, and being convertible from a first structure for completely enclosing said prepackaged articles for shipment, to a second structure by the removal of said cover from said upper base portion along their connecting perforations, thereby exposing said display face of

said prepackaged articles on said open side, said upper base portion substantially concealing said prepackaged articles on the remaining sides, said first structure being convertible to a third structure by the removal of both of said cover and said upper base portion along their respective perforations and said second structure being convertible to said third structure by the removal of said upper base portion along its perforated connection to the lower base, said third structure displaying said prepackaged articles on all sides, each of said second and third structures capable of being formed from said first structure for use in a plurality of shelf conditions, said second structure being for the exposure of the display faces of at least two prepackaged articles for use as desired on shelves allowing for a maximum of display space, and said third structure being for the exposure of the display face of one prepackaged article along one of said connecting sides for use as desired on shelves having a minimum of shelf space.

4,116,331

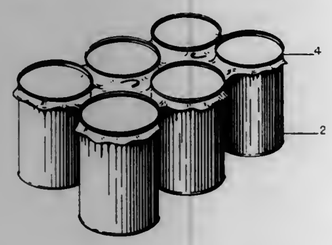
HEAT INSTALLED MULTI-PACK CARRIER, MACHINE AND METHOD

Byron V. Curry, 1150 Oriole Rd., Montecito, Calif. 93108, and Teofil L. Bonkowski, 978 El Camino Ave., Stockton, Calif. 95207

Continuation-in-part of Ser. No. 583,183, Jun. 2, 1975. This application Nov. 7, 1975, Ser. No. 629,769

Int. Cl.[2] B65D *75/00*

U.S. Cl. 206—150 **13 Claims**



1. A carrier intended to interconnect an array of elements as a package, the carrier comprising:

a sheet made of a material which may be shrunk by application of an external force,

said sheet having a plurality of openings, each intended to receive an element to be packaged, the openings being larger than the portion of the element about which the sheet is placed,

said sheet having a pre-formed cylindrical collar area about each opening,

said openings and the cylindrical collar areas about the openings being of a size and shape to, upon application of said external force, contract in size sufficiently to tightly hold and interconnect the elements of the array.

4,116,332

COMBINATION BRUSH HOLDER AND CAN CONNECTOR

Daniel W. Hartley, 1829 Moss Tree Rd., North Charleston, S.C. 29406

Filed Jul. 23, 1976, Ser. No. 708,127

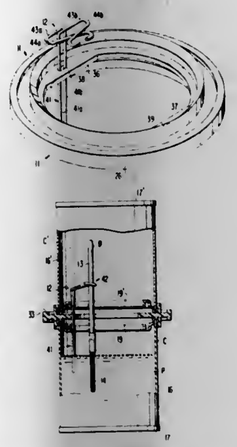
Int. Cl.[2] B65D *81/24*

U.S. Cl. 206—209 **6 Claims**

1. A combination brush holder and connector for cans of the type having a tubular body closed at one end and provided at the other end with an annular rim defining an access opening comprising, in combination;

(a) an annular body member of substantially T-shaped cross-sectional area, said body member including upper and lower vertically aligned annular flanges, an outer side wall, an inner side wall defining a central opening and an annular side flange extending radially outward from said outer side wall, at least one support flange on said inner side wall extending radially inward within said central opening, said upper and lower flanges being receivable in snug-fitting, sealing engagement within the outer rim of the top and bottom can respectively of a pair of cans arranged in vertically stacked, co-axially aligned, inverted relationship with said can access openings in adjacent relationship and with said body member side flange extending radially outward between the adjacent other ends of said stacked pair of cans, and

(b) a brush holder having an elongated body portion and a brush retaining portion for yieldable supporting engagement with a brush having a handle and an aperture in said support flange for supporting said body portion for vertical adjustment to position a brush having a handle supported on said retaining portion in a selected vertical position within said vertically stacked cans, said brush holder body portion comprises,



a folded spring wire member of substantially V-shaped configuration to provide a pair of yieldable leg portions, said folded wire member being slidably receivable vertically within said aperture for yielding movement of said leg portions towards each other for retaining said wire member in said selected vertical position in said aperture.

4,116,333

DISPENSER FOR SEWING MACHINE NEEDLES OR THE LIKE

Klaus Pavel, Eynatten, Belgium, assignor to Rhein-Nadel Maschinennadel GmbH, Aachen, Fed. Rep. of Germany

Filed Aug. 4, 1977, Ser. No. 821,776

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1977, 2715192

Int. Cl.[2] B65D *85/24*

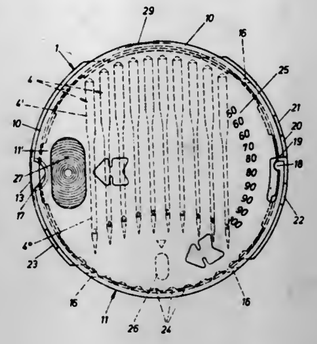
U.S. Cl. 206—380 **16 Claims**

1. A dispenser for sewing machine needles or the like, comprising

a lower part formed as a circular disc and having reception shafts adapted to receive sewing machine needles, said reception shafts are arranged secant-like, said lower part defining front sided push-in cross-sections respectively opening into said reception shafts through which the needles are insertable and removable,

an upper part rotatably mounted on said lower part, said upper part having an upper part edge closing said front sided push-in cross-sections of said reception shafts in a closed rotation position of said upper part relative to said lower part, said upper part edge defining a removal opening rotatable to a position aligned in front of said push-in cross-section of said reception shafts, respectively in open rotation positions of said upper part relative to said lower part,

said upper part is formed with a section located in a direction toward the periphery of said upper part laterally relative an outermost of said reception shafts when said upper part



is in the closed rotation position relative to said lower part, said upper part section is formed into a magnifying lens section,

said lower part is formed with a break-through opening therethrough located in a direction toward the periphery of said lower part laterally relative the outermost reception shaft, said break-through opening is under said lens section in the closed rotation position.

4,116,334

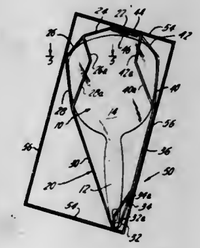
PACKAGED ARTICLES

Milton W. Herzog, Valley Stream, N.Y., assignor to H. Goodman & Sons, Inc., Kearny, N.J.

Filed Jun. 10, 1976, Ser. No. 694,896

Int. Cl.[2] B65D *85/48*

U.S. Cl. 206—453 **7 Claims**



1. A package including a merchandise unit having a peripheral surface and opposite top and bottom surfaces, and packing means including an elongated liner of stiff sheet material having parallel longitudinal edges, the width of the liner between its longitudinal edges being substantially greater than the width of said peripheral surface of the merchandise unit, said liner having a medial portion between but spaced from both of said longitudinal edges of the liner, said medial portion surrounding said merchandise unit and being divided by transverse creases into a series of panels that form successive angles buckled outward without inward-buckled angles intervening between the successive outward-buckled angles and that snugly confine the merchandise unit, said liner including further portions alongside said medial portion and bounded by said longitudinal edges, parts of said further portions of the liner forming integral lateral extensions of certain ones of said panels and other parts of said further portions of the liner forming inward buckled offsets above and below the merchandise unit, said other parts of said further portions having second longitudinal edges firmly supporting said merchandise unit against up-and-down movement in the liner.

4,116,335

FOLDING LINER FOR SHIRTS AND OTHER PACKAGED GARMENTS

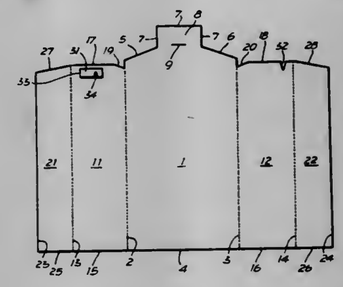
Leo Leopold, Austrasse 65, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Mar. 14, 1977, Ser. No. 777,519

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611406; Jan. 14, 1977, 2701501

Int. Cl.[2] B65P *85/18*

U.S. Cl. 206—492 **16 Claims**



1. A folding liner for a man's shirt, or a woman's blouse, or a similar outer garment which is to be assembled with the liner by folding it around the latter into a stiff flat package for purposes of storage, shipment, or retail display, for example, the folding liner comprising in combination:

a substantially rectangular center panel of a width and length which correspond substantially to the width and length of the intended package, the center panel having a bottom side, a top side, and two straight longitudinal sides;

two likewise substantially rectangular inner wing panels having a width slightly less than one-half the width of the center panel and straight longitudinal sides, one longitudinal side of each inner wing panel being the inner side, forming a junction and a lateral fold line with a longitudinal side of the center panel;

two likewise substantially rectangular outer wing panels having a width of at least approximately 5 cm, but less than the width of the inner wing panels, and straight longitudinal sides, one longitudinal side of each outer wing panel being the inner one, forming a junction and an intermediate fold line and with the outer longitudinal side of one of the inner wing panels;

the folding liner thus comprising a succession of five panels which are joined at only four straight fold lines along which the liner material is weakened by perforations, in order for the wing panels to be readily foldable over the center panel, in a configuration in which the outer wing panels lie in-between the inner wing panels and the center panels and in which the liner is capable of clampingly retaining layers of said garment between the inwardly folded outer wing panels and their underlying inner wing panels, on the one hand, and between said folded outer and inner wing panels and the center panel, on the other hand; and

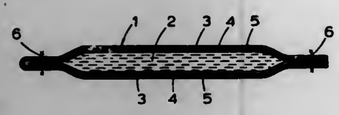
closure means for maintaining the folded wing panels in their folded position, said closure means being defined by cooperating closure members which are integral portions of the inner wing panels of the folding liner.

4,116,336

PACKAGE CONTAINING A REFERENCE LIQUID FOR BLOOD GAS EQUIPMENT

Soren Kaj Sorensen, Glostrup, and Carl Christian Holbek, Allerod, both of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

Continuation-in-part of Ser. No. 652,817, Jan. 27, 1976, abandoned. This application Mar. 1, 1977, Ser. No. 773,222
Claims priority, application Denmark, May 30, 1975, 2449/75; Jun. 17, 1976, 2724/76
Int. Cl.² C09K *3/00*; B65B *31/00*; B65D *81/20, 85/70*
U.S. Cl. 206—524.8 14 Claims



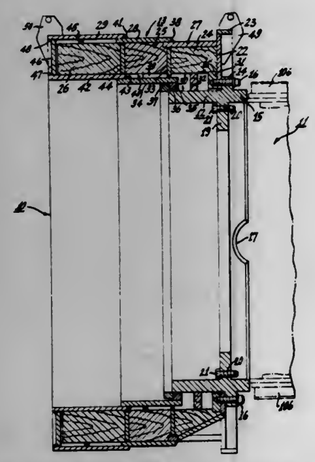
1. A package containing a synthetic reference liquid for quality control and/or calibration of blood gas measuring equipment, said liquid being enclosed in a flexible, gas-tight container without the presence of any gas phase in the container and showing (at a fixed temperature) a known pH, a known partial pressure of carbon dioxide and a known partial pressure of oxygen, the total gas pressure in said liquid being less than 600 mm Hg at 37° C.

4,116,337

IMPACT ABSORBING MEANS FOR SHIPPING CASK

Harold Adams Backus, Wynnewood, Pa., assignor to N L Industries, Inc., New York, N.Y.

Filed Apr. 29, 1976, Ser. No. 681,435
Int. Cl.² B65D *81/04*
U.S. Cl. 206—591 9 Claims



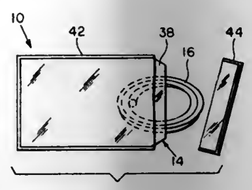
1. In a shipping cask for radio-active materials the improvement comprising impact absorbing means comprising a composite annulus of balsa wood, being a plurality of axially superimposed balsa wood rings, overlapping metal bands constructed and arranged to encase said balsa wood rings and an annular base-member, annular weldments joining adjacent pairs of said overlapping metal bands, substantially flat metal rings being freely positioned between adjacent balsa wood rings, and mounting means arranged to secure the annular base-member of said composite annulus on an end of said cask.

4,116,338

PACKAGE FOR STERILE ARTICLE

Edwin Gordon Weichselbaum, Eureka, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Sep. 30, 1977, Ser. No. 838,422
Int. Cl.² B65D *19/02*
U.S. Cl. 206—610 17 Claims



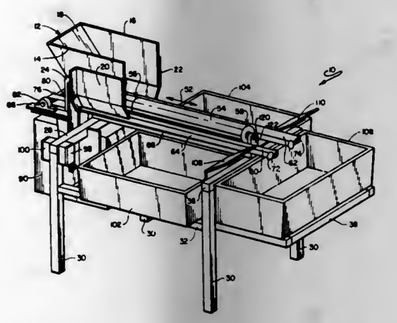
1. A sterile package comprising a pair of sterile panels of sheet material in facing relation, a sterile article disposed between said panels, and an envelope sealingly enclosing said panels and article, said envelope having a weakened area for manually tearing said envelope to provide an opening in said envelope, said panels having a portion thereof immovably restrained relative to said envelope before and after said envelope is opened, said panels extending longitudinally across the edge of said opening in said envelope after it is opened so that when said article is removed from between said panels it will not contact said envelope.

4,116,339

SORTING SYSTEM AND APPARATUS

Robert G. Holmes, Columbus, Ohio, assignor to Ohio Agricultural Research and Development Center, Wooster, Ohio

Filed Mar. 17, 1977, Ser. No. 778,794
Int. Cl.² B07C *1/00*
U.S. Cl. 209—699 41 Claims



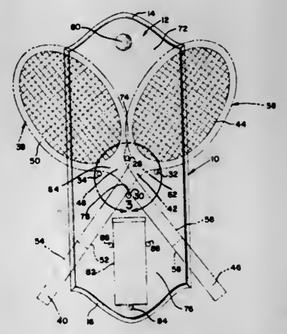
1. Sorting apparatus for objects exhibiting identifiable dynamic response to vibrational phenomena comprising:
means for introducing a quantity of said objects at the entrance location of a sorting zone extending along a given longitudinal axis;
means defining an oscillatory surface within said zone and extending along said longitudinal axis;
drive means including a dynamically balanced rotative drive member actuable to impart oscillation of predetermined frequency and amplitude characteristics to said oscillatory surface;
transporter means including a conveyer surface within said zone extending from said entrance location in parallel relationship with said longitudinal axis and adjacent said oscillatory surface for sequentially moving said objects within said zone in orientations promoting the kinetic reaction thereof with said oscillatory surface;
means adjacent said zone for receiving reacted said objects exhibiting predetermined dynamic response characteristics to said kinetic reaction; and
means for simultaneously actuating said drive means and said transporter means.

4,116,340

GAME EQUIPMENT HOLDER

Marvin H. Nelson, 4600 Sierra Wood La., Pleasanton, and Georgia R. Minshall, 11577 Ladera Ct., Dublin, both of Calif. 94566

Filed Nov. 24, 1976, Ser. No. 744,886
Int. Cl.² A47F *7/00*
U.S. Cl. 211—13 5 Claims



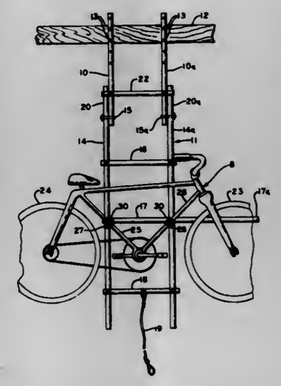
1. A racket game equipment holder for positioning at least a first and second racket in criss-cross fashion, each of the rackets having one and another sides and compactly positioning a cannister in relation to the rackets comprising:
a. backing means for presenting a surface;
b. a first member fixed to said backing means and extending outwardly therefrom;
c. a second member fixed to said backing means and extending outwardly therefrom, said second member intended for bearing on one side of a first game racket and another side of a second game racket, said second member vertically spaced lower than said first member on said backing means, said first member's extention outwardly from said backing means occuring between the first and second racket;
d. a third member fixed to said backing means and extending outwardly therefrom, said third member horizontally spaced from said second member, said first member and said third member adapted to form a channel narrower than the widest dimension of the head of the first racket;
e. a fourth member fixed to said backing means and extending outwardly therefrom, said fourth member horizontally spaced from said second member, said third member and said fourth member lying on opposite sides of a line on the surface of said backing means connecting the points of contact of said first and fourth member with said backing means, said first and fourth member with said backing means, said first and fourth members adapted to form a channel narrower than the widest dimension of the head of the second racket;
f. a fifth member fixed to said backing means and extending outwardly therefrom, said fifth member intended for bearing on a cannister; and
g. a sixth member and seventh member fixed to said backing means and extending outwardly therefrom, said sixth and seventh members forming a channel wider than a selected dimension of the cannister; said fifth, sixth, and seventh members positioned to lie between the racket handles of the first and second rackets to compactly support the cannister substantially between the racket handles, adjacent said backing means.

4,116,341

DEVICE FOR STORING BICYCLES IN A BUILDING

Thomas Hebda, 235 Vance, Lombard, Ill. 60148

Filed Jul. 16, 1976, Ser. No. 705,927
Int. Cl.² A47F *7/00*
U.S. Cl. 211—17 3 Claims



1. A device for storing a bicycle in a building structure comprising a pair of spaced straight vertical brackets attached to and depending from said structure, a pair of rigid spaced straight standards, said standards being in the same plane as said brackets when said standards are in vertical position, a pair of pins each extending through one of said standards and one of said brackets at a point spaced below the upper end of said standards when said standards are in a vertical position to thereby pivotally attach said standards to said brackets, a rigid cross piece extending horizontally across and attached to the front of said brackets and extending in front of the upper end portions of said standards to thereby prevent rearward movement of said standards about their pivots but permit forward movement of said standards about their pivots from a vertical position forwardly to a horizontal position, and means for clamping the frame of a bicycle to said standards when said standards are in vertical position whereby said bicycle is turned to a horizontal position when said standards are turned to a horizontal position.

4,116,342

BILLIARDS CUE HOLDER

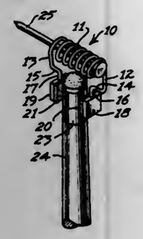
John W. Winfree, Jr., 1502 S. Virginia St., Hopkinsville, Ky. 42240

Division of Ser. No. 639,895, May 19, 1976, Pat. No. 4,079,839. This application Aug. 3, 1977, Ser. No. 821,397
Int. Cl.² A44B *21/00*
U.S. Cl. 211—68 1 Claim

1. A holder for a billiards cue having a tip portion of predetermined diameter, comprising:
(a) a pair of opposed jaw members,
(b) each of said jaw members having a soft resilient gripping surface, said gripping surfaces opposing each other,
(c) a coil spring member having a substantially straight coil axis and opposite end portions,
(d) said opposite end portions of said coil spring member comprising spaced apart and depending arms, each of said depending arms having a lower portion,
(e) each jaw member being fixed to a corresponding lower portion so that said opposed jaw members are spaced apart in a direction substantially parallel to said coil axis,
(f) said jaw members being biased by the force in said coil spring to a normally inoperative position in which the

distance between said opposed jaw members is less than the diameter of the tip portion of a cue to be held between said jaw members,

(g) said coil spring being yieldable to permit said opposed jaw members to be spread apart by said tip portion to an operative position gripping said tip portion to freely suspend said cue,



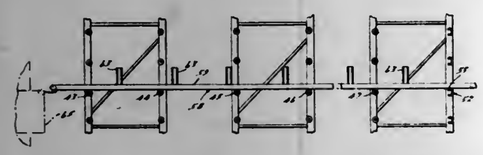
(h) an elongated fastener member adapted to extend substantially coaxially through said coil spring for mounting said jaw members in an elevated position upon a support member for freely suspending said cue in said operative position.

4,116,343

STORAGE RACK

Lee Z. Hall, Detroit, Mich., assignor to Palmer-Shile Company, Detroit, Mich.

Filed Aug. 18, 1977, Ser. No. 825,567
Int. Cl.² A47F 3/06
U.S. Cl. 211—151 **2 Claims**



1. A storage rack comprising a plurality of elongated front to rear openings in vertically arranged relation, a plurality of cassettes insertable in said openings, each cassette comprising an elongated frame with a pair of bottom rails, each opening having a series of transverse rollers, said series extending from front to rear, each roller being supported on anti-friction bearings, and a locking beam extending across the rear of each opening, said locking beam having a convex upper surface the highest point of which is slightly above the level of said rollers, the rearward end of each cassette having means engageable with said said locking beam as the cassette is inserted to cause said cassette to ride up onto the locking beam to create a frictional locking force between the locking beam and cassette.

4,116,344

FLUID PALLET AND A METHOD OF STACKING AND STORING GOODS

Theodore J. Ziemba, 806 W. 17th St., Hastings, Nebr. 68901

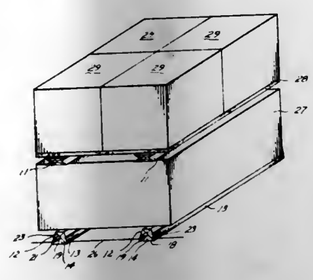
Filed Aug. 23, 1976, Ser. No. 716,613
Int. Cl.² B65G 1/14
U.S. Cl. 214—10.5 D **9 Claims**

1. A pallet comprising:

at least two parallel elongated inflatable, flexible tubes;

each tube being formed with side walls, end walls, a top wall and a bottom wall and is hexahedronally shaped in a cross-sectional view which is transverse to the longitudinal axis of the tube; a conduit being fluidly connected to each tube;

each conduit having a valve mounted therein for permitting the passage of fluid therethrough, thus allowing said tube to be inflated and deflated; and



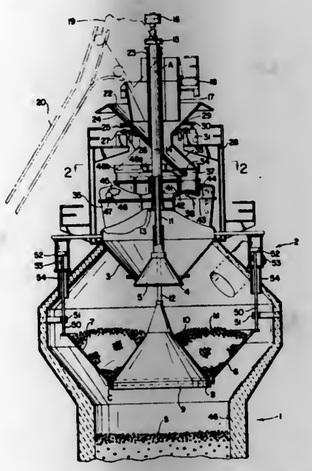
a rigid support member disposed on said tubes for receiving goods thereon, said tubes spaced apart to form a passage therebetween extending the length of said tubes.

4,116,345

CHARGING APPARATUS FOR SHAFT FURNACES AND METHOD

Melvin J. Greaves, Cleveland, and Frank V. Razgaitis, Seven Hills, both of Ohio, assignors to Arthur G. McKee & Company, Cleveland, Ohio

Continuation of Ser. No. 411,924, Nov. 1, 1973, abandoned. This application Aug. 13, 1975, Ser. No. 604,328
Int. Cl.² F27B 11/12
U.S. Cl. 214—37 **15 Claims**



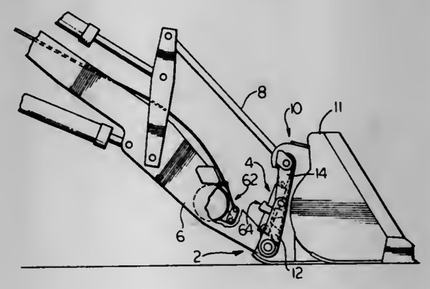
1. In apparatus for charging particulate material into a shaft furnace in which a substantial pressure of gas is maintained during operation of said furnace which furnace comprises a furnace portion having an upright inner furnace wall providing a periphery defining a cross sectional space in the furnace into which said material is to be deposited and gas lock means permitting introduction of said material into the upper portion of said space without harmful loss of gas pressure; distributor means in said space below said gas lock means comprising a distributor bell having an upper surface that converges upwardly and inwardly from a perimeter of said bell at the lower edge of said upper surface which is the largest perimeter of said bell, a distributor hopper surrounding said bell and having an upper surface that converges downwardly and inwardly said hopper having an opening adjacent the lower edge of said inner surface through which said bell may freely pass, the clearance space between the edge of said opening and said bell perimeter when said bell perimeter is in said opening being wide enough so that particulate material may freely pass through said space without jamming the bell in said opening, means for causing relative movement between said bell and said hopper along an upright path extending between a lower position in which the bell is located with its said bell perimeter a substantial distance below said hopper opening so particulate material deposited in said hopper passing through said hopper opening is directed by said upper surface of said bell toward said inner furnace wall, and an upper position in which said bell is located with its said bell perimeter a substantial distance above said hopper opening so particulate material deposited in said hopper and passing through said hopper opening is directed by said inner surface of said hopper to a location under the bell and away from said furnace wall; and means for discharging particulate material into said hopper while said relative movement between said bell and hopper is occurring, the space below ech of said distributor bell and said distributor hopper being free of any means, other than the bell, that can deflect toward said furnace wall particulate material passing through said opening of said distributor hopper, and the cross sectional dimension of said cross sectional space defined by the periphery provided by said furnace wall and the cross sectional dimensions of said bell perimeter and said hopper opening being so proportioned and related, and said converging surfaces of said distributor bell and distributor hopper being so proportioned and related, that although the space beneath said distributor bell and said hopper is free of said deflecting means, said bell and hopper while so relatively moved between said positions in said upright path can directly distribute said particulate material essentially entirely across the cross section of said cross sectional furnace space including the areas between the periphery of said space and the center of said space.

4,116,346

QUICK COUPLER

Tomio Uchida, Sapporo, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Jan. 31, 1977, Ser. No. 763,786
Claims priority, application Japan, Feb. 24, 1976, 51-018413
Int. Cl.² E02F 3/81
U.S. Cl. 214—145 A **5 Claims**



1. A quick coupler for attaching and detaching an implement to and from a vehicle equipped with a lift arm and a tilt link, comprising:

a hitch including a lower supporting assembly having a lower engaging member and being pivotally connected to said lift arm, an upper supporting assembly having an upper engaging member and being pivotally connected to said tilt link, said lower and upper supporting assemblies being pivotally connected and moveable between an over-center locking position and an angularly collapsed and disengaged position, and having means for urging said lower and upper supporting assemblies together, said lower engaging member being freely rotatably supported on said lower supporting assembly and having a substantially rectangular cross sectional configuration; and

a hook arrangement secured to the implement and having a lower hook portion and an upper hook portion respectively receiving said lower and upper engaging members

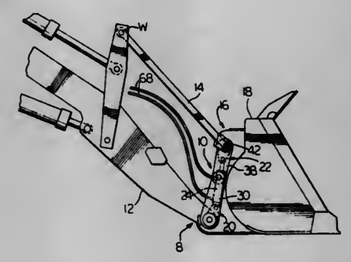
therein with said means maintaining said upper and lower supporting assemblies at said over-center locking position.

4,116,347

QUICK COUPLER

Tomio Uchida, Sapporo, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Jan. 31, 1977, Ser. No. 764,139
Claims priority, application Japan, Feb. 3, 1976, 51-009960
Int. Cl.² E02F 3/81
U.S. Cl. 214—145 A **10 Claims**



1. A quick coupler for attaching and detaching an implement to a vehicle equipped with a lift arm and a tilt link, comprising:

a hook arrangement having a lower hook portion and an upper hook portion and being secured to the implement; and

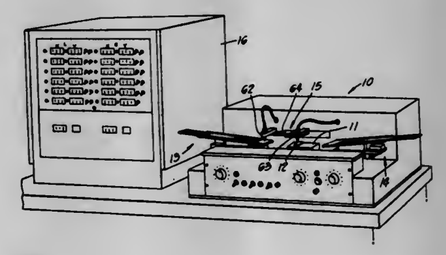
a hitch having a lower supporting assembly pivotally connected to the lift arm on a lower axis, an upper supporting assembly pivotally connected to the tilt link and pivotally connected to said lower supporting assembly on an upper axis, and an actuator pivotally connected between the supporting assemblies and being movable between an extended position and a retracted position, said lower and upper supporting assemblies being positioned between a substantially aligned first condition of reception in said lower and upper hook portions and an angularly collapsed second condition at said extended and retracted positions, said actuator having a central axis disposed forwardly of a plane passing through said lower and upper axes when said supporting assemblies are in said substantially aligned first condition.

4,116,348

COMPONENT LOCATING APPARATUS

Raymond D. Atchley, Los Angeles; John E. Barr, Brea, and John B. Pegram, Los Angeles, all of Calif., assignors to Deval Industries, Inc., Los Angeles, Calif.

Filed Jul. 19, 1976, Ser. No. 706,570
Int. Cl.² B65G 47/91
U.S. Cl. 214—309 **9 Claims**



1. Apparatus for locating components of different kinds on a substrate surface, comprising:

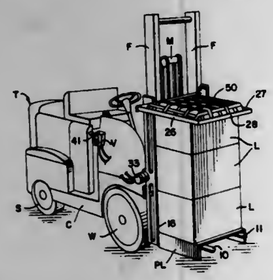
first and second magazines arranged in mutually spaced relation;
a plurality of elongated trays arranged in two sets on said first and second magazines in side-by-side relation, each tray including a plurality of components in end-to-end arrangement along the tray length;
a table carrying the substrate situated between said first and second magazines;
a pair of vacuum retainers mounted in fixed spaced relation on a plate;
means for moving said plate and vacuum retainers along a first path from a first extreme with one of said vacuum retainers disposed spaced above the first magazine and the other retainer spaced above the substrate to a second extreme with the other retainer spaced above the second magazine and the first recited retainer spaced above the substrate, and along a second path toward and then away from the substrate and magazines each time the plate and vacuum retainers are located at the first and second extremes of the first path; and
means for establishing a vacuum in the retainers to secure components thereto and for breaking the vacuum in each retainer at the conclusion of its movement toward the substrate.

4,116,349

FORK LIFT LOAD CLAMPING AND STABILIZING DEVICE

Harvey E. Durham, Box 164, Manila, Ark. 72442

Filed Apr. 7, 1977, Ser. No. 785,633
Int. Cl.² B66F *9/18*
U.S. Cl. 214—654 **4 Claims**



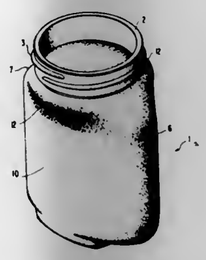
1. A load clamping and stabilizing device for attachment to the fork mounting carriage of a fork lift truck having a source of power, the carriage being guided and power driven for elevational movement in an upright lift frame supported on the forward end of the truck and having fork members extending forwardly from the carriage, the device comprising:
(a) a pair of upright guide rail members spaced transversely of the truck and disposed upright parallel to the lift frame, and each guide rail member being attached to and supported by said carriage for elevational movement therewith;
(b) a pair of upright slide members supported parallel to the guide rail members on guide rollers operative between the rail and slide members to permit relative elevational movement therebetween;
(c) a load clamping frame secured to the upright slide members, the frame extending forwardly of the truck over the fork members and having a yieldable load engaging web in the clamping frame;
(d) actuating means driven by said source of power and operative between the rail members and the slide members for selectively positioning the slide members and the clamping frame elevationally with respect to the rail members and the fork mounting carriage; and
(e) each upright guide rail member supporting a bearing aligned transversely of the truck with a bearing supported in the other upright rail member; a shaft journaled in said bearings, the shaft and bearings being offset rearwardly of the truck on the other side of the rail members from the fork members and spaced from the slide members; each slide member having rearwardly facing edges provided with rack teeth extending toward the shaft; pinion means fixed on the shaft and engaging the rack teeth on each slide member; and said actuating means including a reversible motor coupled to rotate the shaft and connected by control means to said source of power.

4,116,350

GLASS JAR WITH THREAD PROTECTOR

Alberto Allasia, New York, N.Y., assignor to Ferrero Nahrungs- und Genussmittel GmbH, Frankfurt am Main, Germany

Continuation of Ser. No. 696,659, Jun. 16, 1976, abandoned.
This application Aug. 12, 1977, Ser. No. 824,140
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1975, 7521179[U]
Int. Cl.² B65D *1/02*
U.S. Cl. 215—31 **1 Claim**



1. In a glass jar of the type for receiving food products having a cylindrical neck section provided with thread ridges adapted to receive a screw cap thereon and a body section having side walls, at least a portion of which do not extend outwardly beyond the external periphery of said thread ridges with the remaining portions of the body of the glass jar extending outwardly a distance greater than the outer periphery of the thread ridges, the improvement comprising bulges located in the body section immediately below the neck section, said bulges being coextensive with the portions of the side walls of the body of the glass jar which do not extend outwardly beyond the periphery of the thread ridges and having a curved rounded off periphery corresponding to the course of the thread ridges which bulges extend outwardly a distance at least as great as the diameter of the neck portion through said thread ridges.

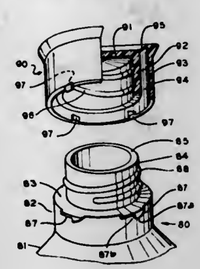
4,116,351

SAFETY CLOSURE CONTAINER

Gerhardt E. Uhlig, 5111 Secor Rd. - Secor Cedars Apt. #9, Toledo, Ohio 43623

Division of Ser. No. 475,593, Jun. 3, 1974, Pat. No. 3,984,021, which is a division of Ser. No. 288,129, Sep. 11, 1972, Pat. No. 3,830,391, which is a continuation of Ser. No. 16,427, Mar. 4, 1970, abandoned. This application Oct. 4, 1976, Ser. No. 728,938
Int. Cl.² B65D *55/02, 85/56;* H61J *1/00*
U.S. Cl. 215—216 **5 Claims**

1. The combination of a container and closure which comprises:
a container having an upstanding neck defined opening, said neck having closure attachment means formed on the exterior surface thereof and a plurality of depending, readially spaced stop projections proximately below said attachment means,
a closure including a top wall spanning said opening of said container, an inner depending skirt marginally connected to said top wall having attachment means formed thereon which are rotationally, releasably engageable with said attachment means on said neck of said container, said top wall fluidly sealing said opening when said attachment means on said container and closure are fully rotationally engaged, an outer depending skirt surrounding said first skirt and connected at the top by a flexible web, said second skirt including a plurality of radially spaced stop projections,
said stop projections being selected and cooperatively lo-



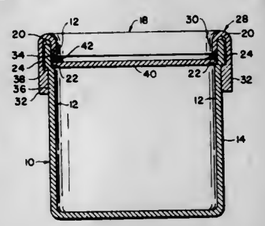
cated for coincident registration and releasable locking of said closure to said container when said top wall assumes fluid-sealed relationship with said opening, precluding accidental, non-purposeful, rotational removal of said closure,
said outer closure skirt being movable downwardly responsive to manually applied pressure on said outer skirt, thereby temporarily deflecting said web from its normal position to thereby disengage said stop projections, permitting coincident rotational removal of said closure.

4,116,352

SEALING DEVICE

Charles S. Davis, Antioch, Calif., assignor to Leonard Russo, San Rafael, Calif., a part interest

Filed Nov. 1, 1976, Ser. No. 737,762
Int. Cl.² B65D *53/00*
U.S. Cl. 215—270 **4 Claims**



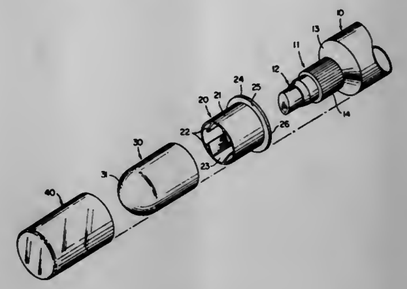
1. Sealing structure for a pressure-type containment vessel comprising:
a container;
a resilient lid disk;
a retaining ring; and
an elastomeric O-ring;
said container comprising a mouth, an interior wall, an exterior wall, an annular shoulder disposed along said interior wall, and at least one flange along said exterior wall;
said lid disk being adapted to seat against said interior wall shoulder;
said retaining ring comprising a continuous annular ridge for opposing said interior shoulder and at least one ring flange adapted to engage said container flange;
said O-ring being deformable and sealably compressible between said lid disk, said confronting ridge and said interior wall for sealing said container upon engagement between said ring flange and said container flange;
said ring ridge being tapered to present an at least partially radially disposed margin for engaging said O-ring, whereby said O-ring is urged into tighter sealable contact with said interior wall and with said lid disk upon outward axial flexure of said lid disk.

4,116,353

SELF-CENTERING ROTATABLE CLOSURE RETAINER

William Peter Schwabacher, Wharton, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 18, 1977, Ser. No. 770,250
Int. Cl.² B65D *45/32*
U.S. Cl. 215—274 **2 Claims**



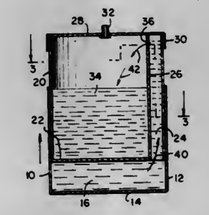
1. A self-centering rotatable closure retainer in combination with a cylindrical axially serrated cap comprising:
(a) a substantially annular collar; and
(b) four axially elongated flexible ribs inwardly mounted to the collar so that the ribs tangentially engage the outer wall of the cap to frictionally secure the retainer on the cap, the ribs extending past the point of tangency with the cap and being substantially symmetrically positioned to the collar inner wall so that opposing ribs extend radially inwardly toward the inner ends of one another to permit centering of the cap and free rotation of the retainer around the cap.

4,116,354

TWO CHAMBERED MIXING CONTAINER

Divaker B. Kenkare, South Plainfield; Robert T. Hall, II, Trenton, and John C. Carson, Jr., Manasquan Park, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 24, 1977, Ser. No. 761,845
Int. Cl.² B65D *1/24*
U.S. Cl. 220—20 **3 Claims**



1. A mixing container comprising a first container defining a first chamber for receiving a first substance, a second container adapted to telescopingly fit within said first chamber and defining a second chamber for receiving a second substance, and means for communicating said first and second chambers to allow mixing of the first and second substances when said second container is pushed into said first container, said means including an upwardly extending channel shaped groove provided in the side wall of said second container and an opening

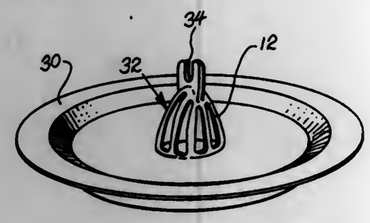
through said side wall communicating with said first chamber and disposed at the upper part of said groove.

4,116,355

DINING UTENSIL

John W. Munn, and Kevin J. Munn, both of 4815 Montibello Dr., Charlotte, N.C. 28211

Filed Oct. 7, 1976, Ser. No. 730,656
Int. Cl.² A47J 43/28; B65D 7/42
U.S. Cl. 220—83 5 Claims



1. A dining utensil for use in engaging a food particle on the tines of a fork, said utensil comprising:

(a) a base, having a flat bottom surface;

(b) a multiplicity of vertical ribs connected to said base and meeting at their upper ends to form a vertex, each of said ribs extending at least partially radially outward from said base; and

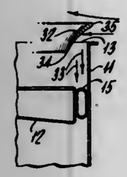
(c) a pair of horizontally spaced, substantially parallel upstanding members fixed to the vertex of said utensil and spaced apart slightly more than the spacing of the tines of a fork to be used therewith.

4,116,356

FLOATING TANK ROOF IMPROVEMENT

Hayden J. Silver, Jr., Poughkeepsie, and James H. Stackhouse, Jr., Hopewell Junction, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jun. 10, 1977, Ser. No. 805,258
Int. Cl.² B65D 25/00, 87/18
U.S. Cl. 220—85 R 7 Claims



1. In combination with a large open top tank having a floating type roof covering the fluid contained therein,

means for equalizing air pressure differentials on the edges of said roof caused by wind across said open top, comprising

an annular airfoil strip for diverting said wind downward onto said roof along the windward edge of said open top, said annular airfoil strip comprising

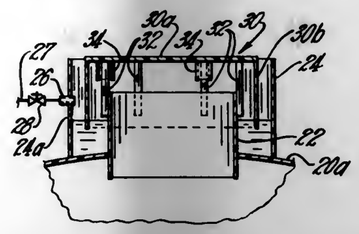
a downward sloping surface having a trailing edge extending radially inward a limited amount relative to said tank open top.

4,116,357

TANK WITH WATER-SEALABLE VENT

Marion L. Stanley, Jr., Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 22, 1977, Ser. No. 826,581
Int. Cl.² B65D 51/16, 53/06
U.S. Cl. 220—205 4 Claims



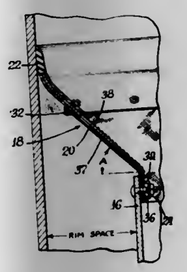
4. A corrosion resistant vented storage tank formed of glass fiber reinforced plastic and comprising a tank having a top wall portion, a first tubular projection extending upwardly from the top wall portion and communicating with the inside of the tank, a second tubular projection of larger diameter than that of the first, the second tubular projection being mounted on the outside of the top wall portion in concentrically spaced relationship to the first tubular projection, the tubular projections and the portion of the top wall portion therebetween providing an annular container for water, a cap including a flat circular unvented closure portion and a depending annular skirt portion of a diameter intermediate those of the tubular projections, the skirt portion being disposed in concentrically spaced relationship to the tubular projections, and cooperative slidingly engageable vertically extending rod and sleeve means on the cap and on the first tubular projection reciprocably mounting the cap with respect to the tubular projections and maintaining the closure portion of the cap in spaced relationship from the outer end of the first tubular projection and the lower end of the annular skirt in spaced relationship from the top wall portion of the tank.

4,116,358

WEATHER AND VAPOR SEAL FOR STORAGE TANK

John S. Kinghorn; Robert B. Wagoner, both of Houston, and Alfred J. Turala, Seabrook, all of Tex., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed May 16, 1977, Ser. No. 797,465
Int. Cl.² B65D 87/20
U.S. Cl. 220—222 15 Claims



1. In a storage tank having a cylindrical wall and a floating roof spaced from the wall by a rim space having a dimension between the wall and the roof which varies about an average dimension, a combined weather and vapor seal for covering the rim space, comprising:

a flexible shield comprising a plurality of adjacent flexible shield sections disposed around the perimeter of the roof and substantially completely covering the rim space, each such shield section having a first end rigidly connected to an upper portion of the floating roof and a second end extending toward the wall of the storage tank;

flexible means supported from said shield for engaging the inner surface of the wall, the combination of said shield and said flexible means disposed to extend from the upper portion of the roof to the wall at an acute angle A with respect to the horizontal, and each shield section having, when unflexed, a substantially linear dimension in the direction of its intended extension from the roof toward the wall which is greater than the average rim space dimension divided by the cosine of the angle A, such that, upon installation in the tank, each shield section flexes along its linear dimension to urge said flexible means against the tank wall; and

vapor seal means associated with said shield sections for preventing the escape of vapors from within the tank and between the shield sections,

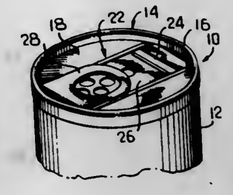
whereby the dimensioning of the shield ensures that the flexible means remains firmly pressed against the tank wall as the rim space varies so as to inhibit the release of vapors from the interior of the tank and to protect the interior of the tank from atmospheric contaminants, and said vapor seal means further inhibits the loss of vapors from the interior of the tank to the atmosphere.

4,116,359

THROUGH HOLE DEFORMATION AND INSIDE SEALING TEAR STRIP

Karl Josephy, Los Angeles, Calif., assignor to The Continental Group, Inc., New York, N.Y.

Filed Oct. 21, 1977, Ser. No. 844,183
Int. Cl.² B65D 41/02, 41/32
U.S. Cl. 220—265 12 Claims



9. An easy opening container unit comprising a container member having an inner surface and an opening therethrough, said container member having a protective coating on the inner surface thereof, a laminated tear strip temporarily closing said opening, said tear strip including an inner layer of plastics material, said tear strip being releasably bonded to the exterior of said container member with a portion of said tear strip being extruded through said opening, and at least the plastics layer being folded radially outwardly around said opening and bonded to said protective coating to seal said opening and mask any defects which may exist in said protective coating surrounding said opening.

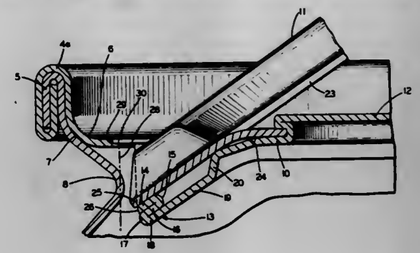
4,116,360

CAN END WITH PROTECTIVE FOLD

Bernard J. McKernan, Massillon, and Donald E. Stargell, North Canton, both of Ohio, assignors to Van Dorn Company, Cleveland, Ohio

Filed Feb. 28, 1972, Ser. No. 229,678
Int. Cl.² B65D 41/32
U.S. Cl. 220—273 5 Claims

1. Easy opening metal food products can construction including a metal can body, an end wall, double seam means connecting the end wall to the can body; an inwardly projecting annular bead formed in the can body side wall below the seam means; the end wall having a recessed corner located below the seam, and having a recessed portion extending from said corner; the end wall recessed corner being seated on said bead; an end-panel-defining continuous score line formed in the recessed portion close to the recessed corner; the inward projection of the bead being located radially inward of the profile of that portion of the end wall remaining on the can body after the end panel has been torn from the can on the score line; pull tab means secured to the end panel for tearing the end panel from the end wall; a protective three-layer fold formed in the end wall extending completely around and underlapping the score line; the fold comprising a first metal layer extending annularly inwardly from the score line and



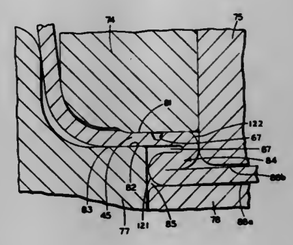
terminating in a reverse bend from which a second metal layer extends outwardly beneath the first metal layer and terminating in a second reverse metal bend from which a third metal layer extends inwardly beneath the first and second layers and into a main end panel portion of the end wall; the second reverse bend extending circumferentially outwardly beyond and below the location of the score line; the third metal layer extending inwardly to an offset panel portion; the offset panel portion merging by an angular wall portion into the main panel portion and forming an annular channel surrounded by the protective fold; and the main panel portion lying in the plane of the first fold layer.

4,116,361

FOLDED CAN END PRODUCT

Donald E. Stargell, North Canton, Ohio, assignor to Van Dorn Company, Cleveland, Ohio

Division of Ser. No. 299,447, Oct. 20, 1972, Pat. No. 3,871,314.
This application Dec. 13, 1974, Ser. No. 532,588
Int. Cl.² B65D 41/32
U.S. Cl. 220—273 18 Claims



1. In a metal can end of a type which is adapted to be seamed to a can body, in which the can end has a seam flange and a recessed corner located below the seam flange, in which a recessed portion extends inward from the corner, in which an annular three layer fold extends continuously around the recessed portion adjacent said corner, in which there is an inwardly convex upper reverse bend between the top two layers of the three layer fold and an outwardly convex lower reverse bend beneath the upper layer and between the lower two layers of the three layer fold, in which there is a continuous score line in the top surface of the top fold layer located radi-

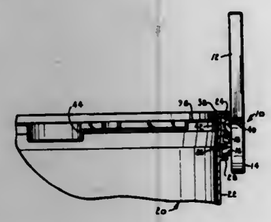
ally between the upper and lower reverse bends, and in which a pull tab has rivet connection with the recessed portion and has a nose located adjacent the score line; the improvement including a sector of the three layer fold extending on either side of a center line for the pull tab running through the pull tab rivet connection and nose having a thickness greater than the thickness of the remaining extent of the continuous three layer fold.

4,116,362

LID LIFTING TOOL FOR SHIPPING CONTAINERS

Warren Skinner, 520 Delphi, Sheridan, Wyo. 82801

Filed Aug. 4, 1977, Ser. No. 821,704
Int. Cl.² B65D *43/26*
U.S. Cl. 220—284 **10 Claims**



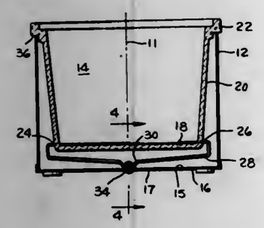
1. A tool for use in removing the lid which is tightly fit on top of a container presenting an upwardly facing shoulder spaced below the periphery of the lid, said tool comprising:
an elongate handle adapted for manual grasping;
a first peg projecting outwardly from said handle, said first peg being adapted to be applied to said shoulder and to bear thereagainst in a manner providing a fulcrum about which said handle may be turned; and
a second peg projecting outwardly from said handle at a location spaced apart from said first peg, said second peg being adapted to be applied to the periphery of said lid and to act upwardly thereon in prying fashion in response to turning of said handle about the fulcrum provided by said first peg, whereby said second peg applies a lifting force acting to pry said lid off of the top of the container as said handle is turned about said second peg.

4,116,363

SECURING MEANS FOR COOKING VESSELS

Fred E. Baker, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Oct. 25, 1977, Ser. No. 845,430
Int. Cl.² B65D *25/10*
U.S. Cl. 220—448 **7 Claims**



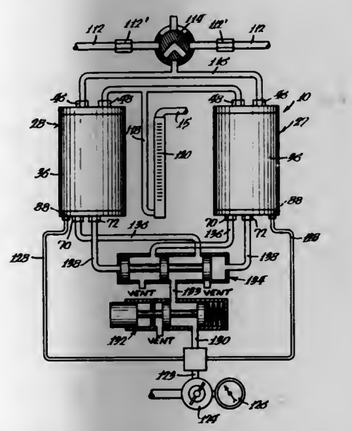
1. In a cooking vessel including a tubular housing having a normally vertical axis, an inner receptacle coaxially nested within the tubular housing from the top thereof, and means preventing relative downward axial movement of the inner receptacle toward the bottom of the tubular housing beyond the nested position thereof, improved locking means for preventing relative upward axial movement of the inner receptacle away from the bottom of the tubular housing, said locking means comprising:
bottom wall means extending across the bottom of the tubular housing, said bottom wall means having an upper surface axially spaced from the bottom of the inner receptacle when the inner receptacle is in the nested position and a lower surface remote from the inner receptacle,
said bottom wall means having an opening extending therethrough between said upper and lower surfaces thereof,
a first resilient locking member secured to a lower portion of inner receptacle,
said first locking member having a portion thereof and projecting downwardly through the opening in said bottom wall means only when said first locking member is substantially resiliently deformed axially downwardly from the inner receptacle, and
a second locking member having a predetermined dimension substantially greater than a respective predetermined dimension of the opening in said bottom wall means,
said bottom wall means having a recess in the lower surface thereof crossing said opening, the configuration of said recess mating with that of said second locking member such that said locking member being received in said recess, and said recess being oriented such that the predetermined dimension of said second locking member intersects the respective dimension of said opening when said second locking member is received in said recess,
the portion of said first locking member projecting downwardly through the opening when first locking member is substantially resiliently deformed downwardly to receive said second locking member,
whereby the locking means being assembled during the application of downwardly directed external axial force to said first locking member sufficient to substantially resiliently deform said first locking member, and whereby upon the release of such external axial force said first locking member will bias said second locking member into said recess and will thereafter resiliently prevent relative upward axial movement of the inner receptacle away from the bottom of the tubular housing.

4,116,364

DISPENSING SYSTEM FOR LOW STABILITY FLUIDS

Samuel W. Culbertson, Arvada, and James W. Polstra, Boulder, both of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Feb. 2, 1976, Ser. No. 654,699
Int. Cl.² B67D *5/46*
U.S. Cl. 222—40 **19 Claims**



1. A dispensing system for low stability fluids comprising pump means having low volumetric capacity for pumping said fluid, inlet means for connecting an inlet to said pump means with original containers of a low stability fluid and for maintaining the fluid free of contamination and in an unpressurized state, outlet means for said pump means, motor means operatively connected to said pump means for operating said pump means to draw fluid from the fluid container into the pump means and to pressurize the fluid in the pump means and outlet means, whereby the source of supply of the fluid is not pressurized and only a small incremental quantity of the fluid is pressurized at any given time, and means for disabling said pump means in the event of development of a predetermined excessive pressure in said pump means, said means for disabling said pump means comprising a releasable connection between said motor means and said pump means for disconnecting said pump means for said motor means without damage to either, said pump means including a pump chamber of low volumetric capacity, a contiguous chamber which is normally not in communication with said pump chamber, and a pumping member in said pump chamber connected with said motor means through said releasable connection and separating said pump chamber from said contiguous chamber, said releasable connection between said motor means and said pump means upon releasing accommodating movement of said pumping member out of said pump chamber and into said contiguous chamber to establish communication between said chambers thereby to instantly and substantially increase the effective volume of the pump chamber and effectively reduce the excessive pressure.

4,116,365

METHODS OF PREPARING BLEACH PASTE FOR AND APPLYING IT TO HAIR

Shila Morganroth, 1225 Waterbury Rd., Highland, Mich. 48031

Division of Ser. No. 579,012, May 19, 1975, which is a continuation-in-part of Ser. No. 481,695, Jun. 14, 1974. This application May 21, 1976, Ser. No. 688,596
Int. Cl.² B65D *35/44*
U.S. Cl. 222—92 **2 Claims**

1. A method of preparing a bleach paste of liquid developer and personally obnoxious dusting bleach powder which comprises prepackaging a unit quantity of powdered bleach in a flexible plastic bag having an opening in the wall thereof, said bag having a thin wall capable of being kneaded, introducing into said bag through said opening a quantity of liquid developer sufficient to convert the powder into paste of proper consistency for spreading on hair to be bleached, and kneading the bag to blend the liquid and powder into a paste while maintaining the opening in the bag closed to prevent dust from the powder escaping into the atmosphere outside the bag.

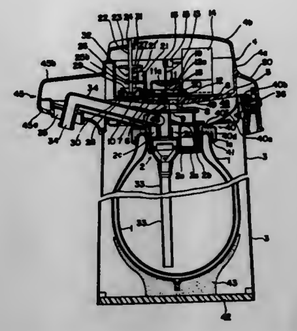
4,116,366

VACUUM BOTTLE CONTAINER WITH AIR PUMP HAVING VENT CLOSING SWITCH

Takefumi Takenakashima, Yao, and Toyohiko Takatuki, Izumi, Japan, assignors to Zojirushi Vacuum Bottle Co., Ltd., Osaka, Japan

Filed May 19, 1977, Ser. No. 798,668
Claims priority, application Japan, Aug. 5, 1976, 51-93741
Int. Cl.² B67D *5/54*; F04B *43/04, 49/02, 49/10*
U.S. Cl. 222—131 **2 Claims**

1. A vacuum bottle container having an air pump adapted to feed air into the interior of the vacuum bottle to increase the internal pressure therein, whereby the liquid in the vacuum bottle is poured therefrom, said container comprising a cylindrical body member, a vacuum bottle disposed in said body member, a cylindrical hollow stopper adapted to close the mouth of the vacuum bottle, said stopper having a downwardly-extending pumping tube and a transversely-extending pouring tube communicating with said pumping tube, a hollow lid body pivotally mounted on the upper end of the body member, said lid body being provided at its bottom with an air outlet and a vapour outlet, a chamber formed in said lid body and communicating with the interior of the vacuum bottle through said air outlet and with the atmosphere through said vapour outlet, an air pump disposed in said lid body and connected to said chamber, a motor for operating said air pump, said motor being disposed in said lid body and electrically connected to a



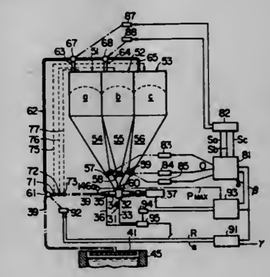
battery housed in said lid body, a valve for closing said vapour outlet, said valve being operated by means for operating a switch connected in the motor driving electric circuit.

4,116,367

APPARATUS FOR SUPPLYING POWDER TO CONTINUOUS CASTING MOLD

Tohri Kataoka, and Tetsuo Imi, both of Ohita, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 5, 1976, Ser. No. 739,450
Claims priority, application Japan, Nov. 12, 1975, 50-152894[U]; Nov. 20, 1975, 50-139615
Int. Cl.² B22D *45/00*
U.S. Cl. 222—144.5 **10 Claims**



1. An apparatus for supplying powder to a continuous casting mold comprising:
a plurality of powder hoppers arranged side by side, each having a funnel shaped bottom portion;
a plurality of dampers connected with the bottom end of the respective hoppers;
a header connected with said dampers;
a pneumatic powder conveyor connected to the bottom of said header for conveying powder to the mold, said conveyor having a powder intake which communicates with said dampers through said header, a powder forwarding portion connected with the powder intake section, and a means for directing pressurized air into said powder conveyor for entraining the powder in the air;
a powder supply nozzle means for positioning above the casting mold;
a main pneumatic powder conveying pipe having one end connected with said powder forwarding portion of said pneumatic powder conveyor and the other end connected with said nozzle means;
a pneumatic powder returning means connecting an intermediate point of said main pipe with the top portions of the respective hoppers; and

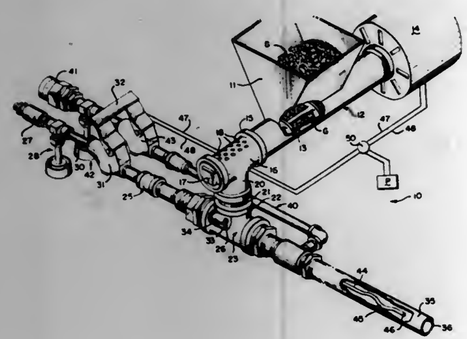
a changeover mechanism in the connection between said main pipe and said returning means for changing over the connection between the main pipe and the returning means for returning powder to the hoppers.

4,116,368

CLOG-FREE INORGANIC GROUT EMPLACEMENT GUN

Colen S. Smith, Spokane, Wash., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 16, 1976, Ser. No. 751,402
Int. Cl.² B05B 7/04, 7/06, 7/14
U.S. Cl. 222—145 **5 Claims**



5. A method of dispensing media comprising the steps of guiding a moving gaseous medium in a conduit extending between a first point and a second point therein with the latter point being defined by an outlet orifice, directing solid material into said gaseous medium at a third point in said conduit between said first and second points whereby said solid material is admixed with said gaseous medium and moved thereby toward said second point, directing a liquid in a further conduit to move centrally within said extended conduit and substantially parallel to a longitudinal axis thereof between said third and second points and toward a fourth point in proximity to said outlet orifice terminating said further conduit at an opening disposed so as to face substantially parallel to a central portion of said outlet orifice, and wherefrom said liquid issues in a tight stream confined within said admixed solid material and gaseous medium whereby effective admixing of said gaseous medium and said solid material with said liquid is essentially precluded until movement thereof is outside said conduits beyond said outlet orifice.

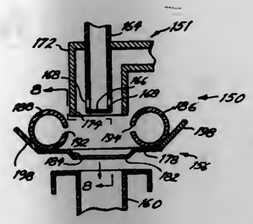
4,116,369

APPARATUS FOR MAKING FROZEN CONFECTIONS

John V. Crowder, Bethpage, N.Y., assignor to Consolidated Foods Corporation, Chicago, Ill.

Division of Ser. No. 102,411, Dec. 29, 1970, Pat. No. 3,971,853. This application Apr. 29, 1976, Ser. No. 681,316
Int. Cl.² B67D 5/60
U.S. Cl. 222—145 **6 Claims**

1. An apparatus for substantially intermixing a plurality of ingredients which will form a frozen confection of the type where each of said ingredients will be substantially discernible comprising a nozzle to be positioned over a mold for a frozen confection, said nozzle including a substantially planar member defining an aperture and at least first and second conduits for receiving at least first and second ingredients, said first and second conduits being disposed in spaced overlying relation to said aperture, said first conduit being substantially coaxial with and disposed within said second conduit, said first conduit having at least a first discharge opening within said second conduit, said second conduit comprising an outer wall defining a second discharge opening, so that said first and second ingredients are discharged through said aperture, third conduit means for receiving at least a third ingredient, said third conduit means being supported by said substantially planar member adjacent said aperture, said third conduit means being in communication with said aperture to permit said third ingredient to be discharged from said third conduit means through said aperture so that all of said ingredients are discharged through said aperture, said planar member being elongated and being provided with a plurality of spaced apertures, said third conduit means being elongated and being disposed along said planar member, and said third conduit means being provided with an opening adjacent each of said apertures.

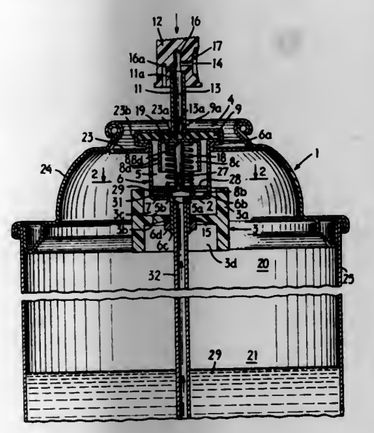


4,116,370

VAPOR TAP VALVE FOR AEROSOL CONTAINERS USED WITH FLAMMABLE PROPELLANTS

Joseph George Spitzer, 44 Coconut Row, Palm Beach, Fla. 33480; Marvin Small, 1100 Park Ave., New York, N.Y. 10021; Lloyd I. Osipow, 2 Fifth Ave., New York, N.Y. 10003, and Dorothea C. Marra, 107 Fernwood Rd., Summit, N.J. 07501

Continuation-in-part of Ser. No. 754,471, Dec. 27, 1976, which is a continuation-in-part of Ser. No. 706,857, Jul. 19, 1976, Continuation of Ser. No. 774,187, Mar. 3, 1977. This application Jun. 7, 1977, Ser. No. 804,423
Int. Cl.² B65D 83/14; F16K 31/58
U.S. Cl. 222—402.18 **25 Claims**



1. A vapor tap valve for use in aerosol containers with aerosol compositions containing liquefied flammable propellants, inhibiting delivery of flammable liquid propellant when the valve is opened immediately after shaking the container and contents, comprising, in combination, a delivery valve movable manually between open and closed positions and including a valve stem, a delivery port, and a valve chamber; bias means in the valve chamber biasing the delivery valve towards a closed position; a liquid tap orifice in flow communication with the valve chamber; a vapor tap orifice in flow communication with the valve chamber; an aperture forming a

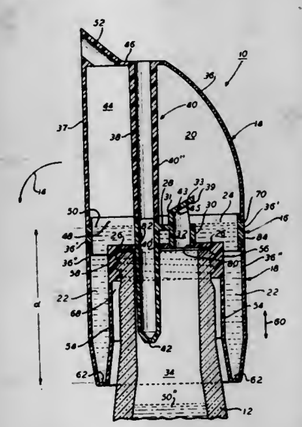
passage to the valve chamber and putting the valve chamber in flow communication with at least one of (a) the vapor tap orifice and (b) both the vapor tap orifice and the liquid tap orifice; and a shut-off valve linked to and movable with the delivery valve, closing off the aperture and thereby closing off the flow communication from the vapor tap orifice to the valve chamber against entry of liquefied propellant therethrough into the valve chamber when the delivery valve is closed, and opening the aperture and thereby the flow communication from the vapor tap orifice to the valve chamber when the delivery valve is manually moved to the open position, against the biasing force of the bias means.

4,116,371

METERING DEVICE AND METHOD

Edward Johnson Towns, Convent Station, and Edward Morris Brown, Livingston, both of N.J., assignors to Neil Hugh Downing, Katonah, N.Y.

Filed Mar. 22, 1977, Ser. No. 780,106
Int. Cl.² G01F 11/26
U.S. Cl. 222—455 **7 Claims**



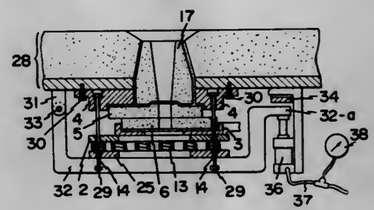
5. A fluid metering and pouring device comprising:
a first chamber,
a second smaller chamber below the first chamber when upright,
conduit means for supplying a fluid to said first chamber when the chambers are inverted,
a dump conduit between said chambers for dumping fluid from said first chamber to said second chamber when upright,
shield means disposed about said conduit means in said first chamber forming an opening in said conduit means and oriented to divert the flow of fluid in said first chamber around said conduit means opening while said chambers are being uprighted from the inverted position, said conduit means opening draining the fluid in excess of a given volume from said chambers after said chambers are uprighted to produce a measured volume in said second chamber,
means including a chamber dividing wall between the chambers having an edge above said second chamber when upright and spaced from one side wall of said first chamber, the space between said edge and said one side wall forming said dump conduit means, said opening being closer to said one side wall than said edge, and
a discharge opening coupled to said second chamber for discharging the fluid in said second chamber when said chambers are inverted, said discharge opening being located adjacent a side wall of said first chamber opposite said one side.

4,116,372

APPARATUS FOR APPLYING A DESIRED SEALING PRESSURE BETWEEN REFRACTORY PLATES OF SLIDING NOZZLE

Hiroshi Horiguchi, Ohmiya, and Terumoto Matsuo, Kitakyushu, both of Japan, assignors to Kurosaki Refractories Co., Ltd. and Nippon Steel Corporation, Tokyo, both of, Japan

Filed Nov. 19, 1976, Ser. No. 743,421
Claims priority, application Japan, Nov. 26, 1975, 50-141791
Int. Cl.² B22D 41/08
U.S. Cl. 222—600 **15 Claims**



1. Apparatus for regulating the flow of molten metal from the discharge opening of a vessel containing molten metal, comprising:
a sliding nozzle positionable across the discharge opening of a vessel containing a molten metal, said sliding nozzle including an upper metal frame, means for mounting said upper metal frame in fixed relation to the molten metal containing vessel and in peripherally enclosing relation to the discharge opening thereof, a lower metal frame releasably connectable to said upper metal frame, stationary and sliding refractory plates positioned between said upper and lower metal plates, means for reciprocating said slidable plate relative to said stationary plate, spring means applying a desired sealing force to said plates to effect sealing between said plates as said slidable plate is reciprocated relative to said stationary plate, a pressure control device operable to apply a controlled pressure to said spring means so that the spring means applies said sealing force between said plates, connecting means for connecting said upper and lower metal frames after said pressure control device has applied said controlled pressure to said spring means such that said connecting means maintains said desired sealing force between said plates, and means for detachably mounting said pressure control device on the armature such that the pressure control device is detachable from the apparatus, whereby the pressure control device is not subjected to the temperature of the apparatus during operation thereof.

4,116,373

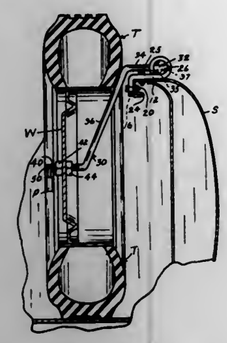
TWO POSITION SPARE WHEEL MOUNT FOR THE SIDEWALL OF A PICKUP TRUCK

James R. Bryngelson, Grand Rapids, Minn.

Filed May 4, 1977, Ser. No. 793,529
Int. Cl.² B62D 43/00
U.S. Cl. 224—42.21 **6 Claims**

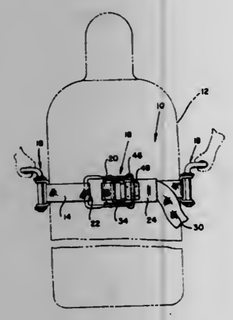
1. A two position spare wheel mount for the sidewall of a pickup truck comprising:
(a) a base member having
(b) means for securing the same to the upper surface of the sidewall of a pickup truck,
(c) an elongated support member having a straight elongated base portion terminating at one end in
(d) an obliquely disposed elongated portion which terminates in
(e) a straight elongated outer end portion substantially parallel to said base portion,
(f) said base portion of said support member having a pin secured to the other end thereof and normal thereto,

(g) said base member having a hollow cylindrical member secured thereto and in which said pin is pivotally mounted,
(h) a slot formed in said hollow cylindrical member and through which said base portion of said support member extends to allow said support member to pivot on said pin substantially 180°,



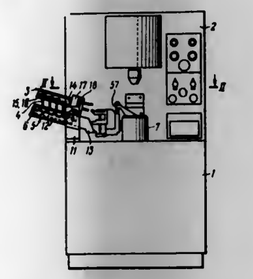
(i) means rotatably mounting the end of said base portion of said support member in said pin so as to enable said support member to rotate about the longitudinal axis of said base portion,
(j) said outer end portion having means thereon for securing a wheel thereto.

4,116,374
CYLINDER CARRYING STRAP
David J. Garello, Napa, Calif., assignor to Northwestern Equipment and Supply Co., Berkeley, Calif.
Filed Jul. 29, 1977, Ser. No. 820,311
Int. Cl.² B65D *71/00*
U.S. Cl. 224—55 **6 Claims**



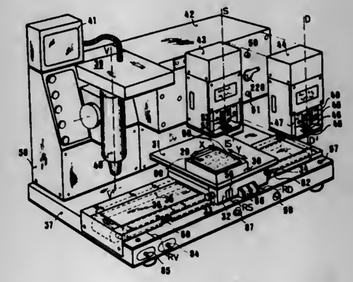
1. A hand carrier for carrying an elongated article with a peripheral outer surface in a longitudinal orientation that is substantially vertical, comprising:
a. an elongated flat strap having a first end and a second end;
b. a buckle means fastened to said first end for releasably engaging and retaining said second end, said buckle means having means for tightening said strap around the peripheral surface of the article, wherein said strap and buckle means are adapted to encircle the article in a plane generally perpendicular to vertical during carrying;
c. a handle assembly including a substantially horizontally oriented hand grip member having a first end with a rigid friction plate member pivotally connected to said first end, and a second end spaced from said first end with a rigid friction plate member pivotally connected to said second end, said plate members having a friction surface adapted to pivot on a vertical axis and orient substantially flat against the peripheral surface of the article during carrying; and,
d. means for connecting said belt member to said handle assembly and forceably directing said friction surface against the peripheral surface of the article.

4,116,375
APPARATUS FOR HARD FACING OF VALVES FOR INTERNAL COMBUSTION ENGINES
Anatoly Alexandrovich Mozzhukhin, ulitsa Pochaininskaya, 23, kv. 43, and Vladimir Petrovich Sotchenko, ulitsa P.Tychiny, 13, kv. 210, both of Kiev, U.S.S.R.
Filed Apr. 26, 1977, Ser. No. 790,980
Int. Cl.² B23K *1/04, 37/04*
U.S. Cl. 228—48 **8 Claims**



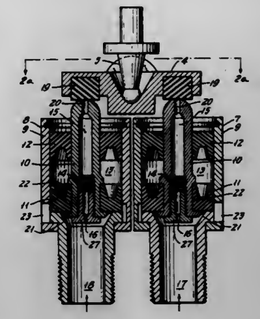
1. An apparatus for hard facing internal combustion engine valves by the melting and fusion of heat-resistant rings of hard alloy upon the seating surfaces thereof, comprising:
an actuator having:
a body;
a pair of articulated gripping jaws extending from said body and adapted to receive and hold a valve having a stem;
jaw moving means for moving said pair of articulated gripping jaws towards and away from each other, said jaw moving means being mounted within said body;
a support for receiving an alloy ring, said support being hinged to said body; and
conveying means kinematically linking said support with said jaw moving means;
a manipulator carrying said actuator and adapted to turn the latter in horizontal and vertical planes for conveying the valve with the alloy ring thereon from a receiving area to a fusion or welding zone while the stem of the valve is upwardly directed;
a heating means for fusing the alloy ring, said means being arranged in the fusion or welding zone at the end of the horizontal travelling path of said actuator;
a means for controlling said jaw moving means both when said actuator is in the valve and alloy ring receiving area and in the fusion or welding zone.

4,116,376
METHOD OF MOUNTING INTEGRATED CIRCUIT CHIPS ON A SUBSTRATE AND APPARATUS FOR CARRYING OUT THE METHOD
Raymond Louis Delorme, Bagnolet, and Henri Grosjean, Le Plessis-Trevise, both of France, assignors to Compagnie International pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France
Filed May 31, 1977, Ser. No. 801,787
Claims priority, application France, Sep. 20, 1976, 76 28170
Int. Cl.² B23K *1/12;* H01L *21/60*
U.S. Cl. 228—170 **18 Claims**
1. A method of mounting on a substrate which is provided with at least one set of connecting areas arranged in a predetermined configuration about a center, at least one integrated circuit chip which has previously been mounted on a flexible support of inextensible insulating material, the said chip being provided with connecting conductors which are attached to the said flexible support and extend from the edges of the chip, comprising the steps of:
positioning the support containing the chip on a support carrier,
placing the support carrier in a cutting tool having a cutting head movable along a working axis and a cutting die arranged in the path of the said head, in such a way that the center of the chip is placed over the die and is aligned with said working axis,
placing the substrate on a support block movable in a direction perpendicular to the said working axis, initially positioning the support block such that a reference on said support block is aligned in predetermined positions with respect to a fixed positioning axis parallel to the said working axis,
shifting the substrate with respect to the support block to cause the center of a set of connecting areas on the substrate to coincide with the said fixed positioning axis,



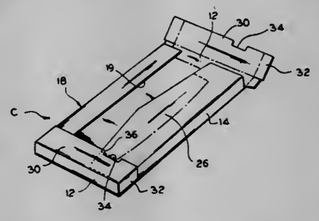
moving the support block to bring the substrate under the cutting tool such that the reference means occupies the same position with respect to the working axis of the said tool as occupied with respect to the positioning axis,
actuating the cutting tool to cause the cutting head, in the course of its movement, to cut through the connecting conductors of the chip which has been positioned on the cutting die, carrying the chip thus separated from its support along by the head and positioning said separated chip against the substrate,
raising the head clear of the die and after the head has been so raised, moving the support block to bring the substrate under a soldering head movable along a working axis parallel to the positioning axis, in such a way that the reference means occupy the same position with respect to the working axis of the soldering head as occupied with respect to the positioning axis,
actuating the soldering head to press against the connecting areas on the substrate the portions of the connecting conductors, remaining on the chip which has been positioned against the substrate, supplying power to the head to cause the said portions to be soldered to the said areas, and returning the soldering head to its initial position.

4,116,377
MIXER UNIT WITH THERMOSTAT-CONTROLLED VALVES
Maj Andersson, Stockholm, and Gunnar Lagher, Fjalkinge, both of Sweden, assignors to Maj Andersson Arkitektkontor AB, Stockholm, Sweden
Filed Feb. 11, 1977, Ser. No. 767,689
Claims priority, application Sweden, Feb. 16, 1976, 7601682
Int. Cl.² G05D *11/16*
U.S. Cl. 236—12 A **6 Claims**
1. A mixer unit with thermostat-controlled valves for mixing hot and cold liquid comprising a housing, valves for supplying hot and cold liquid to said housing, a yoke rockably mounted in the housing, the ends of which actuate the valves for hot and cold liquid respectively, said valves for hot and cold liquid comprising cylinders having outlet openings, pistons carried in



said cylinders and sealed by means of cup packings, the position of said pistons within said cylinders being movable to a suitable position for a certain mixture relationship between the liquids, by rocking movement of said yoke, and a bimetal spiral control thermostat for causing said rocking movement of said yoke upon regulation of said thermostat.

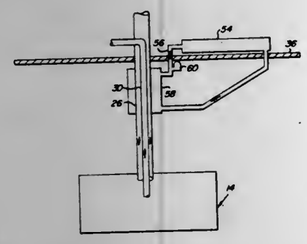
4,116,378
CARTON WITH RECLOSABLE INSPECTION FLAP
Richard L. Bell, Glenmorre; Patricia A. Josephs, Wayne, and Francis A. Chidsey, Jr., Devon, all of Pa., assignors to Container Corporation of America, Chicago, Ill.
Filed Oct. 25, 1977, Ser. No. 844,808
Int. Cl.² B65D *65/12*
U.S. Cl. 229—87 F **14 Claims**



1. In a carton, formed of a unitary blank of foldable paperboard, for holding and displaying a product such as bacon, the combination of:
(a) a bottom wall;
(b) opposed pairs of side and end walls foldably joined to and upstanding from opposed side and end edges of said bottom wall;
(c) a top wall including:
(i) a pair of end panels spaced from each other and foldably joined to and extending inboardly from upper edges of said end walls;
(ii) a pair of side panels spaced from each other and foldably joined to and extending inboardly from upper edges of said side walls and having portions overlying and secured with respect to portions of at least one of said end panels;
(d) said one end panel including:
(i) a generally U-shaped retaining section joined along an outboard edge to a related end wall;
(ii) a viewing section located intermediate the sides of said retaining section;

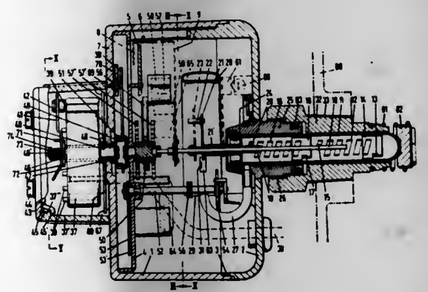
(e) said viewing section being partially detachably joined to said retaining section by:
(i) a hinge line extending across the entire width of said viewing section and disposed between a free inboard edge of said one end panel and the fold line joining said one end panel to said related end wall;
(ii) a pair of spaced lines of weakness extending from opposite ends of said hinge line to said free inboard edge of said first end panel, so that said viewing section may be detached, at its side edges along said lines of weakness, from said retaining section to permit viewing of a portion of said product;
(f) said viewing section including portions having interlocking engagement with portions of said side panels to retain said viewing section in a closed position after it has once been opened.

4,116,379
HEATING APPARATUS
Nyle Orland Movick, 4600 Macky Way, Boulder, Colo. 80302
Filed Jul. 1, 1977, Ser. No. 812,045
Int. Cl.² F24J *3/02*; F24D *3/00*
U.S. Cl. 237—1 A **10 Claims**



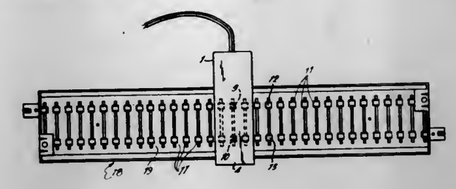
1. In a heating system for a building including fuel fired heating apparatus for heating a medium such as air or water and means for circulating the medium from a supply conduit to parts of the building for heating the building, supplemental heating apparatus comprising:
a working fluid;
collector means adapted to contain the working fluid for collecting heat from a source for heating the working fluid;
an expansion chamber in communication with the collector means for receiving heated liquid and vaporized working fluid from the collector means;
a first standpipe adapted to contain the working fluid with its upper end at an elevated location and its lower end at a lower location and in communication with the expansion chamber near its upper end;
a second standpipe adapted to contain the working fluid and in thermal conductive relationship with the first standpipe and in communication at one end with the collector means and at the opposite end with the first standpipe near the first standpipes lower end, whereby the working fluid may circulate in a closed circuit from the collector means into the expansion chamber down the first standpipe up the second standpipe and back through the collector means;
a heat storage tank located a level below at least a portion of the supply conduit of the heating system for containing a heat storage liquid for submerging at least one of the standpipes for extracting and storing heat from the heated working fluid;
a heat exchanger comprising a closed conduit loop routed through the storage liquid and the supply conduit and adapted to contain a heat transfer fluid and thermally circulate the heat transfer fluid from the heat storage liquid to the supply conduit for picking up heat from the heat storage liquid and for transferring the heat to the medium circulating in the heating system whereby heat may be extracted from the storage liquid whenever the temperature of the storage liquid is above the temperature of the medium circulating in the supply conduit,
a second heat exchanger comprising a second closed conduit loop for thermally circulating a second heat transfer fluid around the outside of the first or second standpipe; and
a heat radiator coupled to the second closed loop at a level above the lower end of the standpipes for radiating heat from the second heat transfer fluid to the building whereby the second heat transfer fluid may thermally circulate through the second closed loop picking up heat from the standpipes and transferring the heat through the radiator to the building.

4,116,380
CONTROL DEVICE FOR A CENTRAL HEATING INSTALLATION
Dorotheus Donkervoort, Vlaardingen, Netherlands, assignor to Eerste Nederlandse Fabriek van Manometers BV, Schiedam, Netherlands
Continuation-in-part of Ser. No. 658,560, Feb. 17, 1976, abandoned. This application Jan. 17, 1977, Ser. No. 760,051
Int. Cl.² F24D *3/00*; G05D *23/00*
U.S. Cl. 237—8 R **8 Claims**



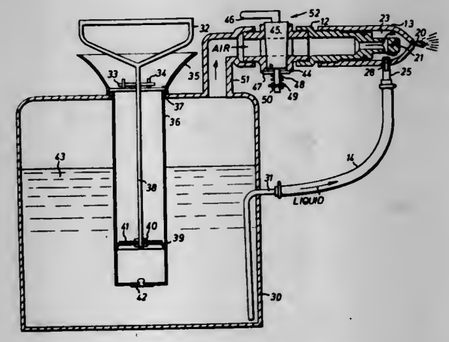
1. A control device for controlling the heating of a hot water boiler comprising:
a first temperature sensor for sensing the temperature of the boiler water,
control switch means,
means actuated by said first temperature sensor for switching said control switch means,
an outside temperature sensor including a liquid filled reservoir,
a tubular coiled spring,
means for communicating said tubular coiled spring and said reservoir,
said tubular coiled spring having the outer winding thereof movable,
means responsive to movement of said outer winding for switching said control switch means whereby to vary the temperature at which said control switch means is switched under the control of the first temperature sensor in response to outside temperature,
said outer winding responsive means comprising means for connection to said outer winding at any one of a plurality of locations along said outer winding.

4,116,381
ELECTRICAL CONNECTION DEVICE FOR A TOY VEHICLE TRACK
Duncan Tong, Hong Kong, Hong Kong, assignor to Playart Ltd., Hong Kong, Hong Kong
Filed Dec. 16, 1976, Ser. No. 751,762
Claims priority, application United Kingdom, Jul. 30, 1976, 31929/76
Int. Cl.² A63H *19/30*
U.S. Cl. 238—10 E **5 Claims**



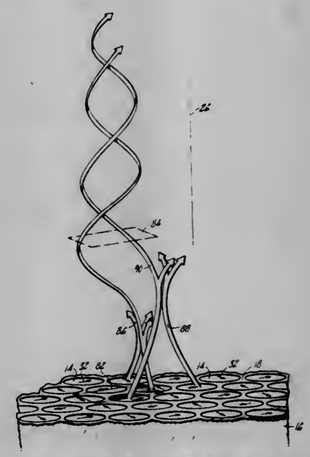
1. A toy railway track comprising in combination a continuous base section defined by a flat support plate and a pair of longitudinally extending sides depending from the plate, the base section including laterally spaced apart hole sets in the support plate, each set being defined by a plurality of spaced apart, longitudinally extending holes; a pair of solid rails disposed on top of the support plate and having a flat bottom face overlying the holes of the respective hole sets; an electric contact device detachably mounted to the base section and having a plurality of contacts, each aligned with a hole of the respective hole sets and resiliently urged upwardly to extend through the holes and contact each of said rails, the contact device further including means engaging the sides of the base section for holding the device in position on the base section.

4,116,382
SPRAY NOZZLE FOR ATOMIZING A LIQUID BY DIRECTING IT AGAINST AN OBSTRUCTION AND HAVING IT MIX WITH AIR
Ernest Joscelyn Clerk, 18 South Ave., Rest Pen, Kingston 10, Jamaica
Filed Jan. 11, 1977, Ser. No. 758,498
Claims priority, application United Kingdom, Jan. 26, 1976, 2820/76
Int. Cl.² B05B *7/24*
U.S. Cl. 239—8 **7 Claims**



1. A method of producing a spray of liquid and air from a nozzle, comprising causing said liquid to be injected into a mixing chamber in the nozzle through a pinhole-like minute opening so as to form a high-pressure jet, directing said high-pressure jet toward an air supply pipe terminated in the mixing chamber to cause the liquid to disintegrate, causing a flow of pressurized air to flow from said air supply pipe into said mixing chamber to mix with and assist in the disintegration of the jet of liquid, passing the mixture of liquid and gas through an outlet orifice of the nozzle, the source of pressurized air and the source of liquid being in a common container in flow communication with said nozzles, the pressure of the air being used to pressurize the liquid and being adjusted so that the air passing into the nozzle is at a lower pressure than the liquid entering the nozzle.

4,116,383
METHOD AND APPARATUS FOR MIXING FLUID
Bruce Virgil Johnson, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Feb. 10, 1977, Ser. No. 767,594
Int. Cl.² B05B *7/00*
U.S. Cl. 239—8 **15 Claims**



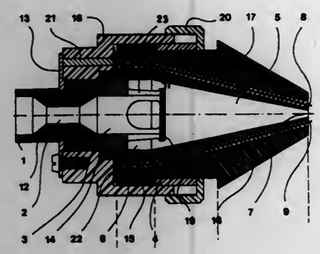
7. An apparatus having flow passageways grouped into clusters located adjacent to each other in an assembly which is substantially perpendicular to the flow axis wherein the apparatus comprises:
a plurality of clusters each including;
a first passageway having a centerline axis which is not parallel to the flow axis; and
a second passageway adjacent to the first and having a centerline axis which is not parallel either to the flow axis or to the axis of the first passageay; and
means connecting the first and second passageways of each cluster to a first and second source of fluid wherein the flow of fluid through each passageway assumes a side component of fluid velocity which is perpendicular to the flow axis and the fluids exiting the assembly mix, the centerline axis of the passageways oriented to form a geometric array such that fluid exiting each first and second passageway in any one cluster interacts and causes the fluid to swirl in a rotating pattern about the flow axis, with the swirling fluid from adjacent clusters interacting and the direction of swirl created by each cluster being opposite in direction to the swirl of each cluster adjacent thereto.

4,116,384

ELECTROSTATIC POWDER COATING APPARATUS

Adrien Lacchia, 10 Impasse des Lecheres, 38240 Meylan, France

Division of Ser. No. 726,105, Sep. 24, 1976, which is a continuation-in-part of Ser. No. 640,924, Dec. 15, 1975, abandoned. This application May 31, 1977, Ser. No. 802,023
Claims priority, application France, Jan. 16, 1975, 75 02009
Int. Cl.² B05B *5/04*
U.S. Cl. 239—15 **3 Claims**



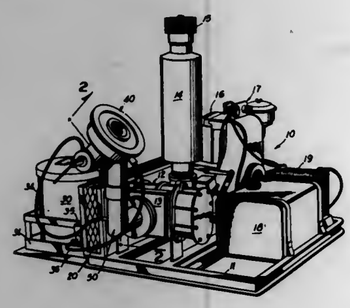
1. An electrostatic powder spraying nozzle including a slot type exit to effect a fan shape discharge comprising:
passage means for directing a stream of powder carrier gas mixture;
duct means downstream of said passage means; and
a flat plate deflector means disposed normal to said duct means, at an intermediate section thereof and so spaced from the duct defining walls of the duct means whereby to effect a generally uniform distribution of said mixture at the exit slot;
said duct means converting said stream to a flat fan shape.

4,116,385

FOG GENERATOR

David W. Waldron, Valdosta, Ga., assignor to Lowndes Engineering Co., Inc., Valdosta, Ga.

Continuation of Ser. No. 618,739, Oct. 2, 1975, abandoned, which is a continuation of Ser. No. 419,925, Nov. 29, 1973, abandoned, which is a division of Ser. No. 216,396, Jan. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 20,364, Mar. 17, 1970, Pat. No. 3,633,855. This application Mar. 4, 1977, Ser. No. 774,616
The portion of the term of this patent subsequent to Jul. 8, 1992, has been disclaimed.
Int. Cl.² A01M *17/00*
U.S. Cl. 239—77 **4 Claims**



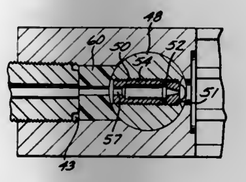
1. In a fog generator, an air blower means, a universal conduit having one end connected to said air blower means in communication therewith, and a fog generator head connected with the other end of said universal conduit for discharging fog in a selected direction, said universal conduit including a first elbow section including horizontal and vertical conduit portions, the horizontal conduit portion having said one end connected with said air blower means, an annular collar carried by said vertical portion of the first elbow section and having an internal annular shoulder, a second elbow section including vertical and horizontal portions, the vertical portion of the second elbow section having a reduced sleeve extension which has swiveled engagement within said collar, a ring seal interposed between said annular shoulder and the opposing end of said sleeve extension, a locking set screw for said sleeve extension on said collar, whereby the second elbow section may be swiveled on the axis of said vertical portions of the first and second elbow sections and locked in a selected adjusted position, another conduit section having a horizontal portion arranged coaxially with the horizontal portion of the second elbow section and having a closed end wall and a side extension projecting laterally thereof and including said other end with which said fog generator head is connected, means forming a swiveled and sealed coupling between the horizontal portion of the second elbow section and the horizontal portion of said another conduit section, the second elbow section having an end wall on the horizontal portion thereof in spaced opposed relationship to said closed end wall and being provided with a threaded opening, and a threaded tension rod extending axially through the horizontal portions of the second elbow section and said another conduit section and having threaded engagement with said threaded opening and swiveled engagement with said closed end wall, said threaded tension rod including a turning handle means exteriorly of said another conduit section, whereby said another conduit section is angularly adjustable with said fog generator head relative to said second elbow section and lockable in any selected adjusted position.

4,116,386

SPRAY NOZZLE HEAD

Oliver J. Calder, Orange, Calif., assignor to A.S.M. Company, Orange, Calif.

Continuation-in-part of Ser. No. 660,104, Feb. 23, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,334
Int. Cl.² B05B *15/02*
U.S. Cl. 239—119 **15 Claims**



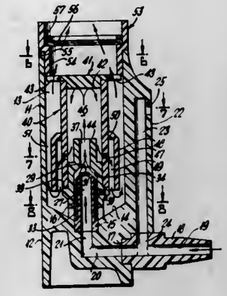
1. A spray tip holder member for rotatable mounting in a nozzle for airless spraying and the like comprising a turret body having an axis of rotation and a central through passageway orthogonal to said axis of rotation;
an orifice tip member received in said central through passageway and secured at one end thereof and having a small diameter orifice to produce a discharge spray pattern; and
a second orifice member also received in said central through passageway and secured therein to position a second orifice at the opposite end of the said central through passageway with said central through passageway open between said orifice tip and second orifice members to provide an unimpeded path for liquid therebetween, said second orifice having a diameter effective to diffuse liquid discharged therefrom, preventing its discharge as a coherent stream.

4,116,387

MIST GENERATOR

Carl P. Kremer, Jr., Darien, and Mark O. Powers, Norwalk, both of Conn., assignors to Eastfield Corporation, Darien, Conn.

Filed May 11, 1976, Ser. No. 685,307
Int. Cl.² A61M *11/02*
U.S. Cl. 239—338 **19 Claims**



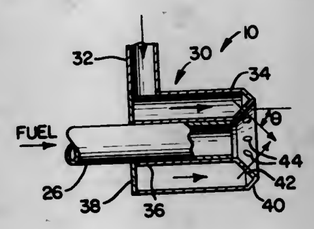
18. A mist generator comprising means for producing a mist, means defining a closed chamber, the first said means extending into said chamber for discharging said mist at a point within said chamber, said chamber defining means having a plurality of openings disposed rearwardly of the point of discharge of said mist into said chamber, a housing surrounding said chamber and having an outlet for discharging said mist and means for feeding a jet of gas into said housing to impart circular motion to said mist and cause the larger particles through the centrifugal force imparted thereto to strike said housing.

4,116,388

BURNER NOZZLE

Norman Kenneth Trozzi, W. Caldwell, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Feb. 10, 1977, Ser. No. 767,242
Int. Cl.² B05B *7/10*
U.S. Cl. 239—406 **10 Claims**



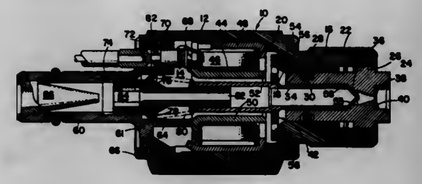
1. A burner nozzle comprising:
a housing having inner and outer concentric, cylindrical walls defining a volume between the walls;
a fuel conduit having an outlet portion extending into said inner cylindrical wall for axially discharging fuel from said housing;
an annular member joining one end portion of said inner and said outer cylindrical walls and forming a closure wall for said volume between said walls, said member having an aperture through which said fuel conduit passes;
means for supplying an atomizing fluid to the volume between said cylindrical walls; and
means for discharging said atomizing fluid in a direction substantially tangential to the fuel discharging axially from said fuel conduit, said fluid imparting a swirl to the fuel to distribute the fuel in a controlled manner to provide for even burning of the fuel.

4,116,389

ELECTROMAGNETIC FUEL INJECTION VALVE

Reginald D. Furtah, Livonia, and Gilbert J. Gardocki, Dearborn Heights, both of Mich., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Dec. 27, 1976, Ser. No. 754,646
Int. Cl.² B05B *1/30*
U.S. Cl. 239—585 **1 Claim**



1. An electromagnetic fuel injection valve, comprising:
a non-magnetic tubular housing having an inlet and an outlet at opposite ends of said housing;
an electromagnetic actuator including an electromagnetic coil situated axially inside said housing and an electromagnetic frame associated therewith;
an adjustable valve seat mounted in said housing at said outlet;
a hollow, unitary, tubular, non-magnetic plunger situated for axial movement within the bore of said electromagnetic coil, the end of said plunger being adapted to cooperate with said valve seat to control flow therethrough;
a washer shaped armature attached to said plunger intermediate its ends with said plunger extending axially through said armature, said armature being attracted to said electromagnetic actuator whenever said actuator is energized, there being substantiallv no magnetic force of attraction between said armature and said electromagnetic actuator other than at right angles to the flat face of said washer shaped armature;
means for causing a fluid flowing between said inlet and outlet to flow around said electromagnetic actuator to cool said coil; and
adjustable means for biasing said plunger toward said valve seat.

4,116,390

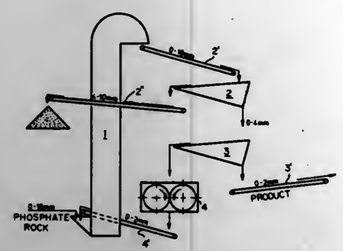
PROCESS FOR REDUCING THE GRAIN SIZE OF PHOSPHATE ROCK

Wilhelm Wengeler, Bochum-Stiepel, and Egbert Hoffmann, Bochum, both of Germany, assignors to Uhde GmbH, Dortmund, Germany

Continuation of Ser. No. 655,959, Feb. 6, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 784,509
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1975, 2506316
Int. Cl.² B02C *23/14*
U.S. Cl. 241—24 **1 Claim**

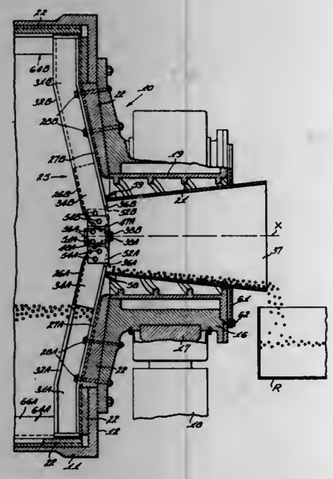
1. The process for transforming freshly mined phosphate rock having a moisture content of about 10–14% into crushed phosphate rock having a grain size under 2 mm. for further treatment in the production of phosphoric acid comprising the steps of:
(a) screening the freshly mined rock with a first screen to eliminate a first fraction consisting essentially of grain sizes greater than 4 mm.,
(b) disposing of the first fraction,
(c) screening that rock which passes through the first screen with a second screen to isolate a second fraction consisting essentially of grain sizes between 4 mm. and 2 mm.,

(d) grinding the second fraction in a plain-roller mill to a grain size inferior to 2 mm.,
(e) combining the second fraction after grinding with freshly mined rock being subjected to the first screen, and



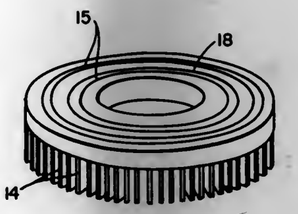
(f) removing crushed phosphate rock of a grain size inferior to 2 mm. as it passes through the second screen.

4,116,391
BALL DISCHARGER FOR GRINDING MILL
Raymond C. Jenness, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jun. 6, 1977, Ser. No. 804,053
Int. Cl.² B02C *17/18*
U.S. Cl. 241—171 **3 Claims**



1. A grinding media discharger for a rotary grinding mill having a hollow shell body provided with a discharge end wall including an outlet into a hollow trunnion and a feed end, said hollow shell body having an axis coaxial with the axis about which the mill rotates;
a grinding media pick-up means comprising a fabricated trough structure which is removably secured to the interior surface of the discharge end wall of the mill and extending radially from the discharge end wall outlet to the shell and being in communication with the outlet, said fabricated trough including a bottom plate, a pair of side plates and a top plate welded together, one of said side plates being on the side of the trough facing in the direction in which the mill rotates terminating a predetermined distance from the mill shell to define a scoop opening facing in the direction of rotation of the mill; and,
a hollow conical funnel removably disposed within the hollow trunnion and arranged to be in communication with the discharge end wall outlet and to extend beyond the exterior end of the trunnion to receive the grinding media from said trough and to direct the grinding media through the hollow trunnion to the exterior thereof;
whereby the grinding media picked-up by said scoop will flow radially along said trough inwardly towards the mill center as the mill rotates and discharges into the funnel through the discharge end wall outlet to the exterior of the trunnion and said grinding media pick-up means being removed from within the shell after the grinding media has been removed from the mill to condition the mill for further operation with new grinding media.

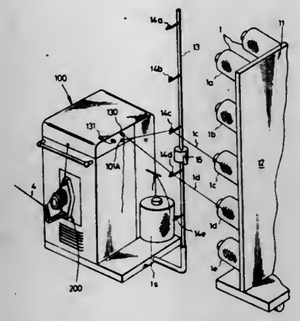
4,116,392
PULP REFINING DISK AND METHOD OF MAKING SAME
Waldemar Zinezi, Sao Paulo, Brazil, assignor to Inox Industria E Comercio de Aco S/A, Sao Paulo, Brazil
Filed Feb. 22, 1977, Ser. No. 770,273
Int. Cl.² B02C *7/12*
U.S. Cl. 241—296 **3 Claims**



1. The method of making a pulp refining disk comprising the steps of
A. fabricating a model which reproduces the intended disk, said model having a discoid base and a circular array of generally parallel vanes projecting from one side of the base representing the locations of the knife blades in the intended disk, said model being made of easily workable material,
B. employing said model to form a negative image mold of the model,
C. fabricating a plurality of tempered knife blades having approximately the same length and thickness as the model vanes but having a height in excess of said vanes,
D. positioning the blades cutting-edge-side-down in the slots in the mold formerly occupied by the model vanes so that they form a circular array,
E. placing one or more rings in the mold so that they rest on the margins of the blades projecting into the portion of the mold formerly occupied by the discoid model base, and so that they are coaxial with the blade array,
F. securing the rings to said projecting blade margins, and
G. casting settable material into the portion of the mold formerly occupied by the discoid model base whereby the material flows all around said rings and around both sides of the margins of the blades projecting into that portion so that when the material sets the finished article comprises a solid disk having a circular array of knife blades imbedded in and projecting from one side of the disk.

4,116,393
APPARATUS FOR COLLECTING AND PREPARING SAMPLE YARNS TO BE TESTED
Yoshinori Inouye; Hiromitsu Kanamori; Nobuo Tsuchida; Syozo Morishita, and Tetsuhiko Endo, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Oct. 11, 1977, Ser. No. 841,052
Claims priority, application Japan, Oct. 9, 1976, 51/121443
Int. Cl.² B65H *54/00*; G01L *5/04*
U.S. Cl. 242—1 **24 Claims**

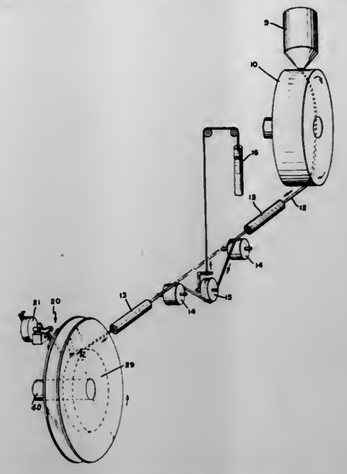
1. An apparatus for preparing a continuous test yarn composed of end-to-end connected sample yarns having a certain length, comprising (1) sample yarn collecting means which collects sample yarns having a certain length from a plurality of yarn packages and connects each of them to one another in an end-to-end manner to form a continuous yarn, (2) means for storing and feeding said continuous yarn, said storing and feeding means including a storing drum on which the continuous yarn is stored by introducing the continuous yarn from the peripheral direction of said drum and winding a predetermined quantity of the continuous yarn on the drum and from which the stored continuous yarn is continuously taken out from the axial direction of the drum, the speed for winding the continuous yarn on the storing drum being higher than the speed for



taking out the continuous yarn from said storing drum, and (3) a preset counter for indicating and counting a predetermined length of the continuous yarn stored in said storing and feeding means by one storing operation, wherein said preset counter transmits a signal when said storing and feeding means completes storing of the predetermined length of the continuous yarn, to instruct said storing and feeding means to stop the yarn storing operation and to instruct said sample yarn collecting means to prepare for the yarn connecting operation, and wherein said sample yarn collecting means transmits a signal on completion of the sample yarn collecting and connecting operation to cause said storing and feeding means to initiate the yarn storing operation.

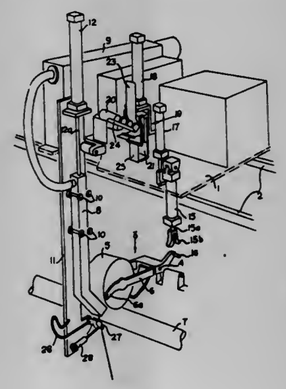
4,116,394
MOVING FILAMENT GRIPPING MECHANISM
Robert E. Smith, Monte Sereno; Frank S. Chytil, Escondido, both of Calif.; George Feldstein, and Dorman J. Swartz, both of Madison, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 703,715, Jul. 9, 1976, abandoned. This application Jul. 14, 1977, Ser. No. 815,732
Int. Cl.² B65H *54/00, 65/00, 75/28*
U.S. Cl. 242—25 R **6 Claims**

1. Apparatus for gripping and retaining an advancing filament on a rotating storage reel comprising, in combination:
(a) a reel having a core;
(b) a rotable reel mounting assembly for receiving said reel;
(c) a pivotable filament gripping element associated with said reel mounting assembly having a gripping leg adapted to hold the filament, when the gripping element is in a closed position, against the core of said reel in gripping engagement, and adapted further to be locked in an open position with the leg away from said reel core;
(d) biasing means adapted to pivot said filament gripping element into closed position to bring the gripping leg into gripping engagement with the filament and the core of said reel;
(e) retaining means adapted to releasably hold said gripping element in open position; and
(f) triggering means adapted to release said retaining means to permit said biasing means to pivot said filament gripping element into closed position to bring the gripping leg



into gripping engagement with the filament and the core of said reel.

4,116,395
DOFFING DEVICE FOR SPINNING MACHINES
Guy Courvoisier, Geneva, Switzerland, assignor to Nuova San Giorgio S.p.A., Genova-Sestri, Italy
Filed Dec. 27, 1976, Ser. No. 754,606
Claims priority, application Switzerland, Jan. 8, 1976, 155/76
Int. Cl.² B65H *54/26*
U.S. Cl. 242—35.5 A **3 Claims**



1. A bobbin doffing device for substituting a winding tube for a bobbin mounted on support means and rotated by a drive means for receiving yarn from a spinning unit, said doffing device comprising a suction conduit having a suction inlet, means for moving the suction inlet of said conduit from a first position adjacent a yarn length stretched between said spinning unit and said bobbin to allow said conduit to suck the yarn produced by said spinning unit, and a second position spaced from said first position for holding the yarn stretched between said spinning unit and said suction inlet, means for removing said bobbin from said drive means whereby the yarn is picked up by said suction inlet when moved to said first position, yarn cutting means for cutting the yarn extending from said suction inlet to said bobbin when said suction inlet is in said first position, means for removing said bobbin from said support means, means for mounting said winding tube on said support means,

said winding tube having a yarn adhering surface, and a yarn pusher operatively related to said yarn cutting means to move yarn stretched between said spinning unit and said suction inlet into operative cutting relation to said yarn cutting means and into contact with said yarn adhering surface of said winding tube when said suction inlet is moved to said second position, whereby the yarn extending between said suction inlet and said spinning unit is cut and the cut yarn extending from said spinning unit is adhered to said winding tube for winding thereon.

4,116,396

YARN TRAVERSING APPARATUS

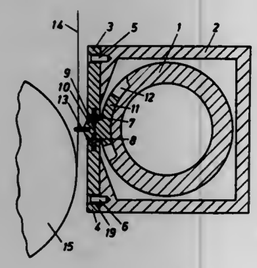
Jakob Fluck, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Jan. 26, 1978, Ser. No. 872,430

Claims priority, application Switzerland, Feb. 4, 1977, 1353/77

Int. Cl.² B65H *54/30*

U.S. Cl. 242—43 R **10 Claims**



1. An apparatus for traversing a yarn across a given path on a winding machine; said apparatus comprising

a housing

a drum rotatably mounted in said housing, said drum having an endless cam groove in a surface thereof;

a pair of parallel rails fixed to said housing, each said rail having a guide slat thereon containing a rigid center section and a pair of end sections, each said end section being elastically deflectable to a limited degree in a direction at right angles relative to said given path; and

a traversing guide for traversing a yarn in said given path, said guide including a gliding shoe slidably disposed in said cam groove of said drum and a gliding member projecting from said housing and having a pair of grooves receiving said guide slats respectively therein for movement parallel to said given path.

4,116,397

DRIVE ARRANGEMENT FOR YARN STORAGE AND DISPENSING UNITS

Martin Burgbacher, St. Georgen, Germany, assignor to Papst Motoren KG, St. Georgen, Schwarzwald, Germany

Continuation of Ser. No. 530,039, Dec. 5, 1974, abandoned. This application Aug. 20, 1976, Ser. No. 716,471

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1973, 2360900

Int. Cl.² B65H *51/20*

U.S. Cl. 242—47.01 **5 Claims**

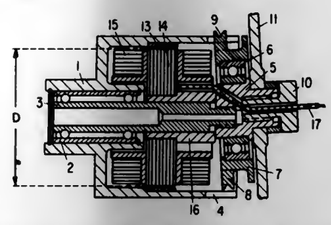
1. A drive arrangement for a yarn storage and dispensing unit of the type having a cylindrical winding member rotatably mounted to take up yarn at a yarn supply point and axially shift the yarn in juxtaposed windings along said winding member to a yarn delivery point from which the yarn can be fed to a textile machine, said drive arrangement comprising

a synchronous hysteresis drive motor including

stator means centrally disposed within said winding member on a fixed shaft and including a laminated core and a motor coil;

external rotor means rotatably mounted on said shaft including said winding member, said winding member being thin-walled and constructed of a light, nonmagnetic metal; and

a hysteresis ring constructed of magnetically low-grade carbon steel carried by said winding member in axial alignment with said stator core, said hysteresis ring having an axial length no greater than the axial length of



said stator core and having a minimum radial thickness with respect to full modulation of said carbon steel to suppress eddy currents,

said drive motor being braked by friction from movement of yarn windings along said winding member to operate at speeds less than the synchronous speed of said drive motor to drive said winding member with a substantially constant torque.

4,116,398

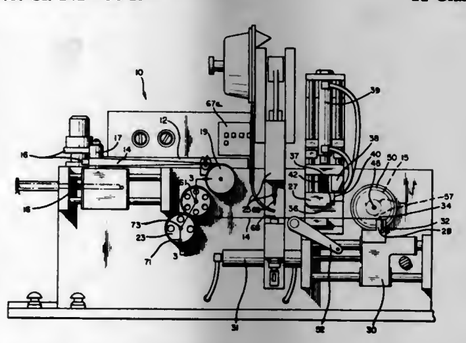
AUTOMATIC RIBBON WINDING MACHINE

Bruce D. Roberts, Dayton, Ohio, assignor to Central States Tooling Service, Inc., Dayton, Ohio

Filed Apr. 7, 1977, Ser. No. 785,335

Int. Cl.² B65H *19/26, 19/28, 25/32*

U.S. Cl. 242—56 R **11 Claims**



1. An automatic ribbon winding machine for winding a length of printing ribbon or the like from a supply thereof onto a spool having a hub and hooking means formed in the hub for securing the ribbon on the hub through a hole in the ribbon near the leading edge of the length of ribbon, comprising:

a. means for supporting such a spool on the machine and for rotating the spool in a winding direction,

b. means for punching a hole in the ribbon at a predetermined location in spaced relation to the leading edge thereof,

c. pin means for gripping the ribbon at a location near the leading edge of the ribbon by penetration of the ribbon from one side thereof for applying tension to and moving the ribbon with said gripping means when said gripping means is moved in a first, ribbon advancing direction and for releasing the ribbon therefrom when the ribbon is moved faster relative thereto in the same direction,

d. means for moving said gripping means in said first direction to bring the leading edge of the ribbon and the portion thereof having said hole therein to positions adjacent

the hub of an empty spool on said spool supporting and rotating means, and

e. means causing the portion of the ribbon having said hole therein to be partially wrapped about the hub of an empty spool supported on said spool supporting and rotating means while the hub is rotated so that rotation of the spool provides for engagement of the spool hooking means with said hole for pulling the ribbon in said first direction, releasing the ribbon from said gripping means, and winding the length of ribbon from the supply thereof onto the spool.

4,116,399

DEVICE FOR AUTOMATICALLY DETECTING THE END OF A WEB AND SPLICING A NEW WEB THERETO

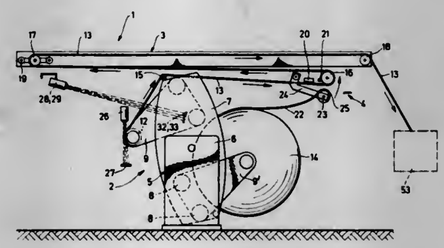
Hans Mosburger, Weiherhammer, and Christoph Reis, Etzenricht, both of Fed. Rep. of Germany, assignors to BHS-Bayerische Berg-, Hütten- und Salzwerke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 6, 1977, Ser. No. 803,673

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2627103

Int. Cl.² B65H *19/16, 19/08*

U.S. Cl. 242—58.4 **9 Claims**



1. A device for automatically detecting the end of or a tear in a web of material having a pair of longitudinal edges travelling through a corrugated cardboard installation or the like and for splicing said end or tear with a new web, the installation including a feed roller for a feed web roll and a prepared new web roll, said device comprising, control means movable into a preparatory stage for automatic activation of said web splicing, web sensing means including at least one sensor positioned at each of said longitudinal edges of said web, a web brake to slow the speed of the web through the installation, and a web storage space from which a supply of web material is removed during the web splicing, whereby when the end of the web is reached or when a tear therein occurs said sensors detect the same and deliver a signal to the control means to effect splicing of a new web.

4,116,400

MOTORIZED FILM TAKE-UP CANISTER

Lamar J. Jones, Tate, and Carl W. Williams, Woodstock, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed May 27, 1977, Ser. No. 801,222

Int. Cl.² B65H *17/02;* G03B *17/26*

U.S. Cl. 242—67.1 R **2 Claims**

1. A drive for applying a continuous take-up tension on an elongate web extending into a take-up canister comprising in combination:

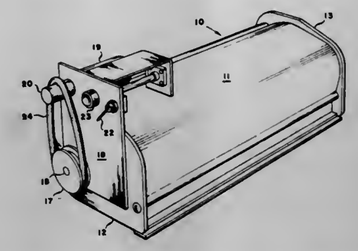
a chamber forming canister having a web entrance thereto, a pair of opposite end walls, and a rotatable shaft mounted in the end walls and extending through the chamber;

means incorporated with said shaft for connecting the web entering the canister entrance to the shaft;

a shaft rotary drive pulley means mounted to one end of said shaft external of said chamber;

an electric motor mounted proximate the container end wall said shaft rotary drive pulley means is near, said motor driving a motor rotary spindle drive means external of said chamber and spaced from said shaft rotary drive means;

and a continuous rotary drive O-ring means frictionally engaging both said shaft rotary drive pulley means and said motor rotary spindle drive means whereby rotation of said motor rotary spindle drive means by said motor can rotate said shaft through its said shaft rotary pulley drive means, said drive O-ring means sized whereby said frictional engagement of said drive O-ring means with the motor rotary spindle drive means is sufficiently small whereby said motor rotary spindle drive means may continue to rotate without rotating either the shaft or the drive O-ring means when the web is in sufficient tension to prevent web take-up onto the shaft as well as to permit said motor rotary spindle drive means to continue rotation as a portion of the web is withdrawn from the canister chamber and said shaft rotary pulley drive means is rotated in the direction opposite to that of the web take-up direction.



4,116,401

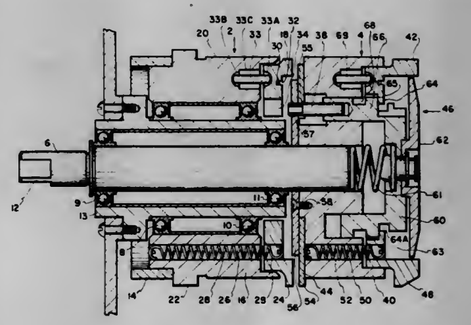
DUAL REEL HUB

Donald A. Evert, Littleton, Colo., and Charles W. Nies, deceased, late of Littleton, Colo. (by Carolyn J. Nies, executrix), assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 13, 1977, Ser. No. 796,528

Int. Cl.² G03B *1/04;* B65H *17/02*

U.S. Cl. 242—68.3 **12 Claims**



1. A dual reel hub for mounting an inner reel and an outer reel coaxially with each reel having an axial opening with at least one longitudinal groove on an inner surface thereof comprising

an inner reel hub means dimensioned to pass through the axial opening in a reel and having a fixed outwardly extending circumferential flange means at one end thereof to engage a face of a reel,

a first rotatable locking ring means coaxially positioned on the other end of said reel hub means for said flange means

and dimensioned to pass through the axial opening in a reel while having at least one radially outwardly extending locking finger projecting past the axial opening in a reel to engage a face of a reel and dimensioned to pass through the longitudinal groove in the axial opening of a reel,

first spring means connecting said locking ring means to said reel hub means and urging said locking ring means toward said fixed flange means,

center shaft means,

bearing means rotatably mounting said inner reel hub means on said shaft means,

an outer reel hub means dimensioned to pass through the axial opening in a reel,

attaching means for connecting said outer reel hub means to said shaft means for rotation with said shaft means and axially displaced from said inner reel hub means,

a rotatably reel support means coaxially positioned at one end of said outer reel hub means and dimensioned to pass through the axial opening in a reel while having at least one radially outwardly extending flange segment projecting past the axial reel opening to engage a face of a reel and dimensioned to pass through the longitudinal groove in the axial opening in a reel,

a second rotatable locking ring means coaxially positioned on the other end of said outer reel hub means for said reel support means and dimensioned to pass through the axial opening in a reel while having at least one radially outwardly extending reel locking finger projecting past the axial reel opening to engage a face of a reel and dimensioned to pass through the longitudinal groove in the axial opening in a reel,

second spring means connecting said second locking ring means to said outer reel hub means and urging said second locking ring means toward said reel support means, and

actuating means for selectively interconnecting said second locking ring means, said outer reel hub means, said reel support, means and said first locking ring means for aligning said locking fingers on said first and second locking rings with said flange segment on said reel support whereby the longitudinal groove in the axial opening of a reel passes over said aligned locking fingers and said flange segment to permit a mounting and dismounting of reels on said inner and outer reel hub means and for misaligning said locking fingers and said flange segment whereby to assume a position against a respective reel face to retain an inner reel on said inner hub means and an outer reel on said outer hub means.

4,116,402

PASSENGER RESTRAINING BELT RETRACTOR

Kenichiro Nomura; Mamoru Mori, both of Okazaki; Jun Yasumatsu, Toyota; Tatsushi Kubota, Okazaki; Sadao Hachisuka, Anjo, and Kazuhisa Tatematsu, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of, Japan

Filed Jul. 25, 1977, Ser. No. 818,296

Claims priority, application Japan, Aug. 3, 1976, 51-104293[U]

Int. Cl.² A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.1 **10 Claims**

1. A passenger restraining belt retractor for winding up two restraining belts, on a single retractor shaft one over the other comprising:

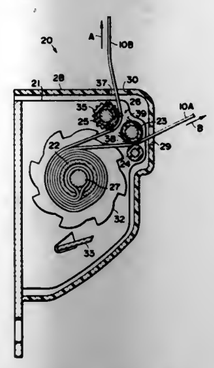
a base;

a retractor shaft rotatably supported by said base;

two restraining belts wound up on said retractor shaft one over the other;

a guide adjacent one of said belts;

a first roller, said roller engaging with and pressing against said guide one of said belts; and



a transmission means for causing said roller to rotate as the other one of said two belts is extended thereby insuring that both belts are extended equally.

4,116,403

BOBBIN UTILIZED FOR MAKING YARN PACKAGES IN TEXTILE MACHINES

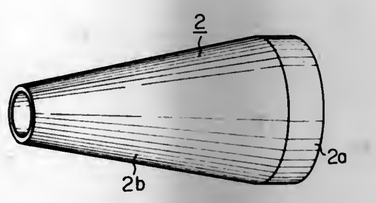
Teruo Ikeda, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan

Filed May 11, 1977, Ser. No. 796,030

Claims priority, application Japan, May 18, 1976, 51-62981[U]; Jun. 14, 1976, 51-77283[U]

Int. Cl.² B65H *55/00, 75/10*

U.S. Cl. 242—165 **1 Claim**



1. A yarn package comprising a bobbin having a major frustoconical portion and a minor smooth cylindrical portion extending from and coextensive with the large diameter end of said frustoconical portion, a conical yarn cheese wound only on said frustoconical portion of said bobbin, and a reserve yarn winding extending from the large diameter end of said cheese and wound only on said smooth cylindrical portion of said bobbin, whereby said reserve winding may be readily removed from said bobbin without substantially increasing the tension thereof.

4,116,404

AUTOMATIC BALANCING CONCEPT

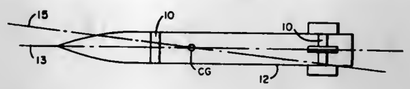
Thomas H. Howell, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 22, 1977, Ser. No. 818,188

Int. Cl.² F42B *15/02*

U.S. Cl. 244—3.23 **3 Claims**

1. An automatic system for balancing a rocket during flight said system comprising: two annular containers installed forward and aft of the rocket longitudinal CG station; said containers being provided with a chamber partially filled with high density fluid; a cover for closing said chamber and a plurality of paddles fastened to the underside of said cover and extending into said chamber to angularly accelerate and move



the fluid to the outer wall of said chamber thereby aligning the CG of each container about the rocket spin axis.

4,116,405

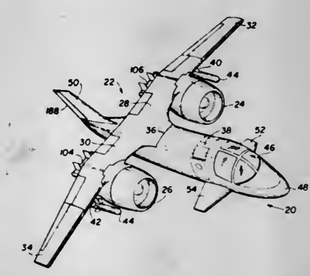
AIRPLANE

Anthony C. Bacchi, Massapequa, and Robert W. Kress, Lloyd Harbor, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,691

Int. Cl.² B64C *15/12*

U.S. Cl. 244—12.4 **11 Claims**



8. An airplane comprising:

a fuselage;

a wing for said fuselage, said wing being of a gull-wing contour having a center section projecting normal to the fuselage joined on each side to swept forward-tips, said wing being mounted in a wing well at the top of said fuselage;

propulsion means mounted under said wing so as to underlie said wing at the high point of the gull-wing contour to be within the fuselage profile;

stabilizer fins for said fuselage, said stabilizer fins being pivotally supported from the bottom of and to each side of said fuselage ahead of and under said propulsion means; and

vertical fin means haivng a rudder at the tail of said fuselage.

4,116,406

HANG GLIDER HAVING INFLATABLE AIRFOIL

Paul D. Hamilton, Apt. 11E River Run Apts., New Hartford, Conn. 06057

Filed Jun. 17, 1977, Ser. No. 807,412

Int. Cl.² B64C *31/02*

U.S. Cl. 244—16 **15 Claims**

1. A hang glider having a wing comprising, in combination:

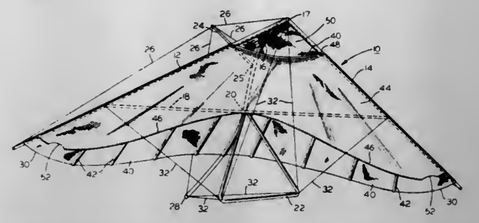
A. a rigid frame including

(1) a pair of leading edge members, adjacent ends of said members interconnected at a location corresponding to the nose of the wing and serving to define the leading edges of the wing, and

(2) a keel interconnected at its leading end to said leading edge members at the nose of the wing and extending rearwardly to the trailing edge of the wing;

B. a sail affixed to said frame, said sail including top and bottom fabric sheets joined along the leading edges of the wing and along a seam adjacent to and coextensive with the trailing edge of the wing to define an envelope;

C. means located at the nose of the wing forming an intake opening in said envelope through which an airstream enters to inflate said envelope and thereby create a double



surface airfoil constituting at least fifty percent of the wing area.

4,116,407

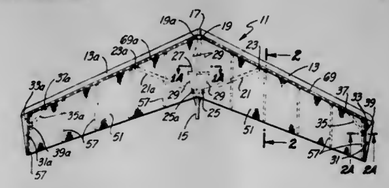
HANG GLIDER WITH COLLAPSIBLE AIRFOIL

Stephen C. Murray, 33871 El Encanto, Dana Point, Calif. 92629

Filed Oct. 1, 1976, Ser. No. 728,785

Int. Cl.² B64C *31/02*

U.S. Cl. 244—16 **12 Claims**



1. A device capable of flight comprising:

a frame including first and second leading edge members, a keel, means for interconnecting the leading edge members and the keel to allow the leading edge members to be pivoted relative to the keel, and first and second cross members connectable to said first and second leading edge members, respectively, and to said keel;

flexible membrane means for forming an airfoil;

means for attaching the flexible membrane means to said frame;

said attaching means including means defining a track on said first leading edge member, and first means on the flexible membrane means for being received by said track and for cooperating therewith to attach said flexible membrane means to said first leading edge member;

means coupled to said frame for supporting a load; and

a rib and means for carrying said rib on said flexible membrane means, said first means including means for pivotally coupling the rib to the track to allow relative pivotal movement between the rib and the track.

4,116,408

PORTABLE HELIPORT

Joe I. Soloy, The Dalles, Oreg., assignor to Soloy Conversions, Ltd., The Dalles, Oreg.

Continuation of Ser. No. 673,669, Apr. 5, 1976, abandoned, which is a continuation of Ser. No. 518,599, Oct. 29, 1974, abandoned. This application Jan. 14, 1977, Ser. No. 759,354

Int. Cl.² B64F *1/00*

U.S. Cl. 244—114 R **6 Claims**

1. In a portable heliport,

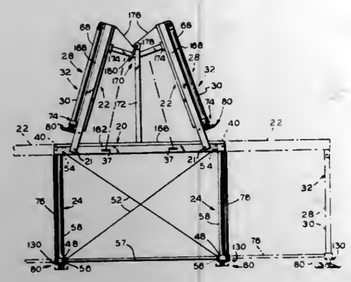
a central deck,

winch means including a central support and a pair of pads,

means detachably securing said central support of the winch means to the central deck,

deck extension means foldable into engagement with the pads,

means mounting the deck extension means foldably on the central deck,



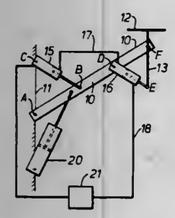
and cable means connecting the winch means to the deck extension means.

4,116,409

HYDRAULIC LEVELLING SYSTEMS FOR DRILLING MACHINES, ETC.

Antony Dobson Barber, Truro, and Zdenek Fisher, Porthleven, both of England, assignors to Compair Construction and Mining Limited, Cambourne, England

Filed Jul. 1, 1976, Ser. No. 701,803
Int. Cl.[2] E21C *11/00, 5/08*
U.S. Cl. 248—2 **15 Claims**



1. A supporting mechanism for a support seat which is capable of controlling the orientation thereof, the mechanism comprising

a jib having an inner end and an outer end, the inner end being pivotally connected along a first pivot axis to a support structure;

a support seat pivotally mounted onto said outer end of said jib, said support seat being pivotable about a second axis, said second axis being parallel to said first pivot axis;

a first hydraulic, linearly expandable and contractible jack, said first jack being pivotally connected at one end to said support structure and at the other end to said jib and capable of sensing angular movement of said jib relative to said support structure about said first pivot axis, said first jack having a closed full-bore end and an annular end;

a second hydraulic, linearly expandable and contractible jack, said second jack being pivotally connected at one end to said jib and at the other end to said support seat and capable of controlling the orientation of said support seat about said second axis, said second jack having a closed full-bore end and an annular end;

said first and second hydraulic, linearly expandable and contractible jacks being so constructed and arranged that in all angular positions of said jib a first triangle whose corners are respectively constituted by the pivotal connection point of said first jack to said support structure, the pivotal connection point of said jib to said support structure and the pivotal connection point of said first jack to said jib, is similar to but different in linear dimensions from a second triangle whose corners are respectively constituted by the pivotal connection point of said second jack to said support seat, the pivotal connection point of said jib to said support seat, and the pivotal connection point of said second jack to said jib, said first and second jacks lying in corresponding sides of said similar triangles;

first hydraulic connection means connecting said full-bore end of one of said first or second jacks with the annular end of the second of said first or second jacks, said first hydraulic connection means comprising a hydraulic connection of fixed volumetric capacity between said full-bore end and said annular end such that the displacement of a volume of a fluid from one of said first and second jacks into said connection on contraction of said one jack displaces an equal volume of fluid from said connection into the other of said jacks;

means for maintaining said first hydraulic connection means under positive hydraulic pressure; and

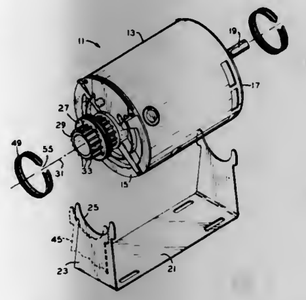
wherein each of said annular ends of said first and second jacks are smaller in effective cross-sectional area than said respective full-bore ends, and wherein the ratio of effective cross-sectional areas of said ends of said first and second jacks connected by said first hydraulic connection means is equal to the ratio of similarity of said second and first triangles, respectively, and such that on pivotal movement of said jib relative to said support structure, the ratio of corresponding changes in operative length of said first and second jacks equals the ratio of similarity of said first and second triangles, respectively, whereby said support seat is maintained in parallel orientation throughout said pivotal movement of said jib.

4,116,410

ADAPTABLE RESILIENT MOTOR MOUNTING

John H. Boyd, Jr., and Don C. Nelson, Jr., both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed May 25, 1977, Ser. No. 800,418
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—26 **19 Claims**



1. The method of supporting a motor having cradle engageable rings each mounted on a hub at opposite ends thereof in the arms of a selected one of a plurality of different size cradle bases comprising the steps of:

sliding at least one of the cradle engaging rings axially along the motor hub until the separation between the rings is appropriate for positioning the motor adjacent the selected base with the rings in registry with corresponding base arms;

engaging the base arms with the corresponding rings; and

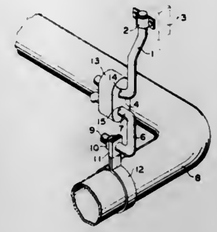
securing the rings to the base.

4,116,411

DEVICE FOR SUSPENDING AN EXHAUST PIPE IN VEHICLES

Hidemi Masuda, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 26, 1976, Ser. No. 745,438
Claims priority, application Japan, Sep. 17, 1976, 51-125552[U]
Int. Cl.[2] F16L *3/00*
U.S. Cl. 248—60 **5 Claims**



1. A device for suspending an exhaust pipe in a vehicle having a frame and an exhaust pipe, comprising first and second rod members each having a substantially uniform and circular cross-section and being formed with a hooked portion at one end thereof, a first mounting means to mount the other end of said first rod member to said frame, a second mounting means to mount the other end of said second rod member to said exhaust pipe, and a block element made of a rubber-like elastic material having two holes therethrough, each hole having a substantially uniform and circular cross-section corresponding to said rod members and receiving one of said hooked portions of said first and second rod members in a simple substantially circular peripheral surface engagement with no bonding means being applied between said block and said hooked portions, said two holes and hooked portions being positioned so as not to be parallel with each other and so as to be substantially in the same plane.

4,116,412

RESILIENT MOUNTING FOR AN OPERATOR'S STATION ON A VEHICLE

Gerald M. Walden, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 15, 1977, Ser. No. 815,953
Int. Cl.[2] B62D *23/00*
U.S. Cl. 248—358 R **12 Claims**

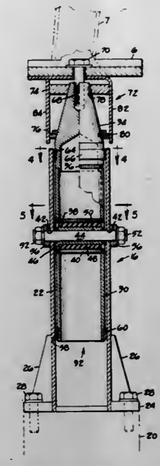
1. A mounting for removably associating a first structure with a second structure comprising:

a first hollow member affixed to said first structure;

a second member having a first portion disposed in said first hollow member; and a frustoconical-like extension integrally connected to said first portion and forming a second portion of said second member, said frustoconical-like extension extending outwardly of said first hollow member;

vibration-insulated fastening means for fixedly associating said first portion of said second member with said first hollow member; separate means insulating said second member from vibration imparted to said first hollow member;

means for removably associating said second structure with said second member including; a first plate defining a tapered opening therethrough; a second plate defining a tapered opening therethrough and of relatively larger size than said opening in said first plate; and means for associating said first and second plates with said second structure in a spaced apart relation with the axes of said tapered openings concentric so that said first and said second



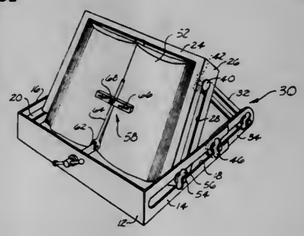
tapered openings may be placed in an overlapping relationship with said frustoconical-like extension.

4,116,413

COLLAPSIBLE BOOK STAND

Peter A. Andersen, Foxfire Apts. R4, Greenville, S.C. 29611

Filed Dec. 1, 1976, Ser. No. 746,415
Int. Cl.[2] A47B *97/04*
U.S. Cl. 248—451 **4 Claims**



1. A collapsible stand for supporting a book in an inclined readable position comprising:

(a) a base portion into which a book can be positioned, said base portion having a pair of rearwardly extending sides;

(b) a substantially planar book rest;

(c) a bracket supporting said book rest;

(d) means for pivotally connecting a lower end of said bracket to one of said rearwardly extending sides;

(e) means for pivotally connecting an upper end of said bracket to said book rest;

(f) said bracket being extendable so as to vary the overall length of said bracket:

(g) an elongated slot provided in at least one of said rearwardly extending sides; and

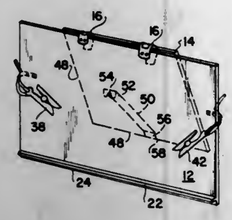
(h) said means for pivotally connecting a lower end of said bracket to one of said rearwardly extending sides includes:

(i) a bolt extending through a lower end of said bracket and said slot provided in said one side and

(ii) a nut carried on said bolt for securing said bracket to said side and for permitting said lower end of said bracket to be adjustable in a longitudinal direction along said side;

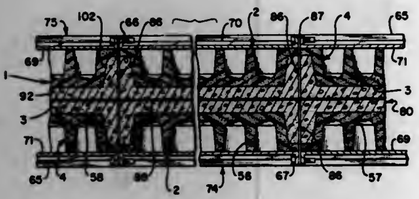
whereby the angle and height that said planar book rest is held relative to said base portion is adjustable for supporting a book at a desired reading angle and for accommodating different size books.

4,116,414
BOOK HOLDER
Vivian Robertson, 1100 SW. 12th St., Ft. Lauderdale, Fla. 33315
Filed Dec. 5, 1977, Ser. No. 857,242
Int. Cl.² A47B 97/04
U.S. Cl. 248—451 10 Claims



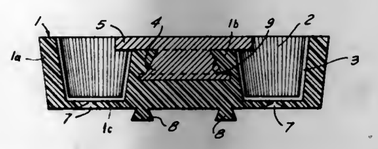
1. A book holder comprising a first rigid sheet, a second rigid sheet, an elongated bar, said first rigid sheet having said elongated bar fixedly secured thereto, said elongated bar being located on a first lateral surface of said first rigid sheet adjacent a first marginal edge thereof, the longitudinal axis of said elongated bar being disposed parallel to said first lateral surface of said first rigid sheet, said second rigid sheet hingeably secured to said first rigid sheet at a second marginal edge of said first rigid sheet, said first marginal edge and said second marginal edge of said first rigid sheet being disposed in parallel spaced apart relationship, said second rigid sheet having a first marginal edge thereof disposed substantially parallel to said first marginal edge of said first rigid sheet, said second rigid sheet having a second marginal edge thereof being located adjacent said second marginal edge of said first rigid sheet, said first marginal edge and said second marginal edge of said second rigid sheet being disposed in parallel spaced apart relationship, a flexible strap, one end of said flexible strap being disposed fixedly secured to a second lateral surface of said first rigid sheet, the other end of said flexible strap being disposed fixedly secured to said second rigid sheet at a location adjacent said first marginal edge thereof, a pair of cord-like elastic elements, one end each of said pair of cord elements fixedly secured to said second lateral surface of said first rigid sheet at a location adjacent a pair of opposed marginal edges extending transverse to said first marginal edge of said first rigid sheet, means to secure a portion of said each of said pair of cord element in a bight, a pinching device, said pinching device having a pair of arms, one end of one of said pair of arms having an eyelet-like opening, a portion of said bight passing through said opening, said means to secure including means to manually selectively adjust the length of said bight.

4,116,415
LINER FOR CONCRETE FORMS
Edward B. Ward, 820 Winchester, Kansas City, Mo. 64125
Filed Apr. 20, 1977, Ser. No. 789,451
Int. Cl.² E04G 11/12
U.S. Cl. 249—35 27 Claims



1. In a form for poured concrete walls having first and second panels positioned spaced apart to define a concrete receiving cavity therebetween, each of said panels having an interior surface, the improvement comprising:
(a) a first liner having a first side thereof abutting the interior surface of said first panel, and a second side thereof having a textured portion and being spaced apart from the interior surface of said second panel;
(b) a second liner having a first side thereof abutting the interior surface of said second panel, and having a second side thereof spaced apart from the second side of said first liner and forming an aperture therebetween for receiving unsolidified concrete therein, whereby unsolidified concrete is poured in said aperture and flows between the second sides of said first and second liners to form a poured concrete wall therebetween having a contoured, decorative exterior surface portion shaped in accordance with the textured second side portion of said first liner;
(c) means associated with the second liner for attaching the second side of said second liner with the interior surface of said wall; and
(d) means positioned in the first side of said second liner for receiving and retaining utility fixtures therein.

4,116,416
DENTAL MOLD
Claude Ginés Fernand Segura, Ave. des Pervenches, Perpignan, France (66000)
Filed Oct. 6, 1976, Ser. No. 729,950
Claims priority, application France, Oct. 6, 1975, 75 31208
Int. Cl.² A61C 13/12; B29C 1/16
U.S. Cl. 249—54 9 Claims

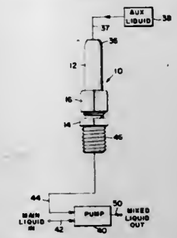


1. A mold for the temporary retention of a plurality of false roots for a multitooth denture, comprising:
a shell with a bottom, a central portion and a peripheral wall defining an upwardly open generally U-shaped trough of an outline conforming to a human jaw, said trough having a generally trapezoidal, upwardly diverging cross-section with bottom and side surfaces provided with closely spaced transverse corrugations facilitating the precise repositioning in said trough of a segment of a molded mass temporarily removed therefrom; and
a slider of generally T-shaped profile removably seated in said shell, said slider having a shelf partly overhanging said trough for holding said mass in place while giving access to false roots embedded in said mass, said slider being provided with a key forming the web of the T, said key being received in a complementary horizontal keyway formed in said central portion.

4,116,417
NEEDLE VALVE TYPE PUMP INJECTOR
Ward Orin Larsen, Rt. 1 Box 27, Glenwood, Wash. 98619
Filed Sep. 8, 1975, Ser. No. 611,338
Int. Cl.² F16K 1/04
U.S. Cl. 251—122 5 Claims

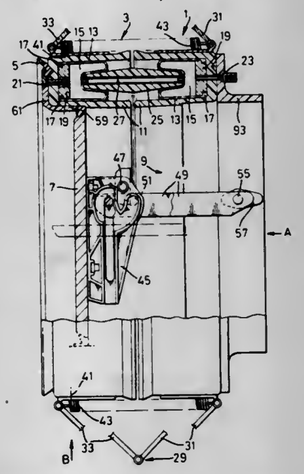
1. A pump injector valve apparatus comprising:
an externally threaded needle valve member having an adjusting head on one end thereof and a tapered shank at the other end thereof;
a valve seat member with a longitudinal passage therethrough having a side port opening through the side wall of the passage intermediate its opposite ends, said passage being threaded at one end for receipt of said needle valve member so that the tapered end thereof is positioned adjacent said side port;

connection means including a sleeve surrounding said needle valve member and said valve seat member, for connecting said valve apparatus to an auxiliary liquid supply and for transmitting said auxiliary liquid through said side port into said passage, said adjusting head of said needle valve member being contained within the sleeve;
means provided on said adjusting head for rotating said needle valve member to adjust the flow of said auxiliary liquid through said side port;
pump connector means including an externally threaded



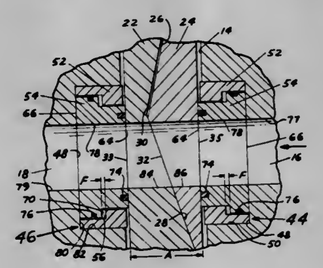
tubular connector member, for connecting the outlet end of said passage in said valve seat member to a liquid pump for injecting said auxiliary liquid into the main pumped liquid; and
compression means including a compression nut, for clamping said valve seat member between said sleeve and said pump connector member, said sleeve having an external flange at one end thereof which is engaged by said compression nut and said nut being threaded onto said connector member to clamp said sleeve between said nut and said connector member.

4,116,418
FLEXIBLE COUPLINGS FOR PROVIDING FLUID COMMUNICATION BETWEEN TWO MEMBERS
Kenneth White Pearson, and David William Thomas Richards, both of Yeovil, England, assignors to Shipowners Refrigerated Cargo Research Association, London, England
Filed Aug. 30, 1976, Ser. No. 720,045
Claims priority, application United Kingdom, Sep. 9, 1975, 37147/75
Int. Cl.² F16L 29/00
U.S. Cl. 251—149.2 16 Claims



1. A coupling suitable for connecting an apparatus leading to the interior of a refrigerated transport container with a duct for the supply or return of fluid, said coupling comprising a generally tubular device defined by separately formed first and second ends, means carried by said first end for connection to a duct and sealing means carried by said second end for sealing abutting relationship with a flat sealing surface surrounding an aperture in a container, said generally tubular device including a rolling diaphragm fixedly connected to one of said ends, said rolling diaphragm together with portions of said one end defining an annular inflatable closed space, said rolling diaphragm having an annular face portion facing the other of said ends with said annular face portion being defined by reversely turned portions of said diaphragm defining a U-shaped cross-sectional part of variable depth, and an annular force transmitting means carried by said other end and having an end portion remote from said other end seated in said diaphragm U-shaped cross-sectional part, said force transmitting means together with said diaphragm defining a conduit between said ends, means for applying fluid pressure to said closed space to cause extension and rolling of said diaphragm relative to said force transmitting means and movement of said ends apart, whereby said tubular member is extended and said coupling moved from a withdrawn inoperative position towards an extended sealing position engagement with a container to provide a fluid passageway from a duct to the interior of a container.

4,116,419
LIMITED FLOAT SEAT CONSTRUCTION FOR EXPANDING GATE VALVE
Robert J. Diehl, Vivian, La., and Robert C. Houlgrave, Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Oct. 21, 1977, Ser. No. 844,251
Int. Cl.² F16K 3/00
U.S. Cl. 251—196 6 Claims

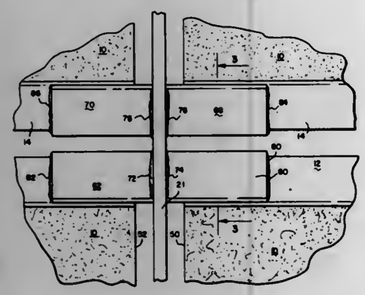


1. In a gate valve structure having a valve body and a valve chamber therein and inlet and outlet flow passages communicating with the valve chamber, an expanding gate assembly including a gate element and segment slidably mounted together within the valve chamber for movement between open and closed positions of the gate assembly with said gate element and segment expanding away from each other at the fully open and closed positions, and an annular recess in the body around each of said flow passages at said valve chamber and defined by an end wall extending transversely to the longitudinal axis of the associated flow passageway and an outer side wall radially outwardly of the associated flow passageway extending perpendicularly to said end wall; an improved seat assembly comprising:
(a) a generally L-shaped annular seat retainer fixed within each of said recesses and having an inturned lip opposite said recess end wall, said inturned lip having an inner annular abutment facing said end wall to form a limit stop;
(b) a generally L-shaped annular seat member mounted in a complementary relation within each of said seat retainers and adjacent said recess end wall for movement between extended and retracted positions in a direction longitudinally of the associated flow passage and relative to said retainer, said seat member having an outturned lip forming an outer annular abutment facing said inner annular

abutment on said seat retainer and contacting said inner abutment at its extended position for limiting the movement of the seat member in said extended position, said seat member having a seal around the outer perimeter thereof to seal against the associated seat retainer ring; and

(c) an annular face seal about a front face of each of said seat members to seal against said gate assembly, the combined longitudinal outward movement of both said seat members from a retracted position in contact with said recess end wall to an extended position in contact with said inturned lip being limited to a distance less than the total distance of expansion of said gate assembly to at least around one-half said total expansion of said gate assembly where said total distance of expansion is the distance that said gate element and said segment move away from each other when said gate assembly moves from a collapsed position to an expanded position making a fluid-tight seal against both of said seats in order to minimize drag of said seat members against said gate assembly as said gate assembly is moved between said open and closed positions.

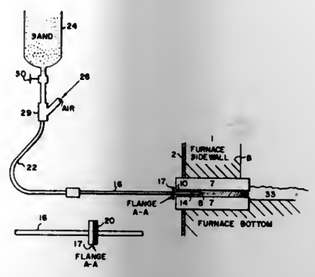
4,116,420
HORIZONTAL FENCE CONSTRUCTION
Earl T. Hazelett, 1940 Grand Ave., Grand Junction, Colo. 81501, assignor to Earl T. Hazelett, Grand Junction, Colo.
Filed Apr. 19, 1977, Ser. No. 788,804
Int. Cl.[2] E04H *17/16*
U.S. Cl. 256—24 **8 Claims**



1. In a panel fence construction: a plurality of spaced apart posts each having lower ends and opposite sides; a foundation in which a lower end of each post is fixed; a flat horizontally elongated panel disposed between said posts; said panel having opposite sides disposed vertically; said panel having upper and lower edges and opposite ends; said opposite ends disposed vertically adjacent to said opposite sides of said posts; said upper and lower edges of said panel having steel generally L-shaped in cross section edge reinforcing members fixed thereto; said posts being flat steel members having opposite edges directed generally toward opposite sides of said panels; said posts having opposite sides facing respective ends of said panels; the thickness dimension of said posts between opposite sides thereof being only a fraction of the dimension of said posts between said opposite edges thereof; steel clips fixed to said sides of said posts and fixed to said steel edge reinforcing members of said panels.

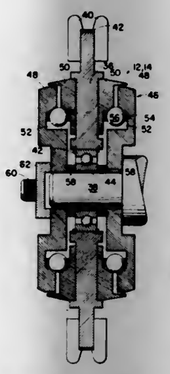
4,116,421
METHOD OF SEALING TAPHOLES IN A PHOSPHORUS FURNACE
Jerry Rowe, Pocatello, Id., assignor to FMC Corporation, Philadelphia, Pa.
Filed Jul. 25, 1977, Ser. No. 818,936
Int. Cl.[2] C21B *7/12*
U.S. Cl. 266—45 **5 Claims**

1. A method of closing a taphole in a metallurgical furnace, which comprises applying sufficient pneumatic pressure at the taphole to displace molten material from the boretube, then introducing particulate material into the resulting boretube whereby a zone of solidification is formed in the boretube



where the particulate material contacts molten furnace material thereby stopping the outward flow of molten material.

4,116,422
WIRE ANNEALING APPARATUS
Ralph A. Vogel, Three Rivers, Mich., and Robert K. Kittsmiller, Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.
Filed May 16, 1977, Ser. No. 797,081
Int. Cl.[2] C21D *9/62*
U.S. Cl. 266—104 **9 Claims**



1. In an apparatus having an electrical contact pulley which serves as an electrical contact to an electrically conductive strand material passing around said pulley and pulled through said apparatus, an improved contact pulley which comprises:

an electrically conductive wheel having flanges near its rim for guiding said strand;

a shaft driven at a rotational speed substantially equal to the rotational speed of the strand passing around said wheel;

means for rotatably, substantially freely, mounting said wheel on said driven low friction electrical connection means for electrically connecting said shaft and said wheel.

4,116,423
APPARATUS AND METHOD TO FORM METAL CONTAINING NONDENDRITIC PRIMARY SOLIDS
Foster C. Bennett, Columbus, Ohio, assignor to Rheocast Corporation, Germantown, Wis.
Filed May 23, 1977, Ser. No. 799,429
Int. Cl.[2] C22B *45/00*
U.S. Cl. 266—200 **4 Claims**

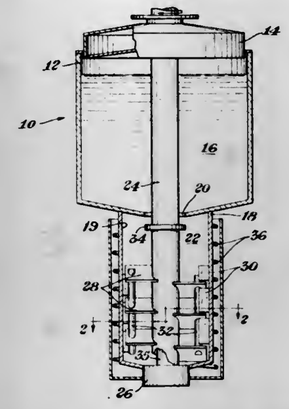
1. An apparatus to form metal containing degenerate dendrites comprising:

a means to contain a molten metal with an inlet suitable to feed metal and an outlet suitable to discharge the molten metal;

a means to receive the molten metal from said containing means; and to contain the molten metal during agitation and cooling of the molten metal;

a means in combination with said metal receiving means to control the temperature of the molten metal;

a rotatable means generally axially positioned within said metal receiving means, said rotatable means having a

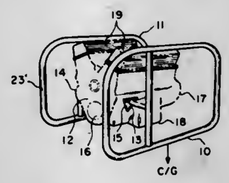


rotatable support with spaced apart molten metal agitating means attached to the support and extending in a generally outwardly direction therefrom toward an inner wall portion of said metal receiving means, the agitating means being spaced apart from the inner wall portion;

a means to remove solid metal deposited on the inner wall portion of said metal receiving means in operable combination with the agitating means;

said metal removal means being pivotably attached to the agitating means.

4,116,424
ENGINE REPAIR STAND
Theodore Varga, Atlantic City; Arthur Devine, Jr., and Warren Meikle, both of Ventnor, all of N.J., assignors to Meikle & Devine, Inc., Hammonton, N.J.
Filed Oct. 31, 1977, Ser. No. 847,133
Int. Cl.[2] B23Q *1/04*
U.S. Cl. 269—55 **12 Claims**



1. An engine repair stand comprising

(a) two holding frames, one right hand frame, and one left hand frame, each comprising,

(b) a bottom horizontal base having at least two points in a linear relationship such that when the base is placed on a relatively flat surface the base is supported on those points,

(c) two upright side struts,

(d) bottom connecting means providing rigid structural connection between the bottom horizontal base and each side strut, one strut being located near the front of the engine to be held and one strut being close to the rear of the engine to be held,

(e) a top horizontal base having at least two points in linear relationship located along the top horizontal base such that when the repair stand is turned up-side-down while holding the engine, that these points rest and support the repair stand lifting the engine off the flat surface,

(f) top connecting means providing rigid structural connection at each end of the top horizontal base to the top of the two side struts,

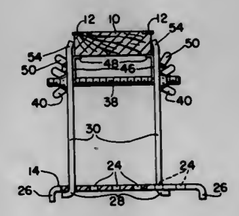
(g) at least one vertical support member which is rigidly and structurally connected between the bottom horizontal base and the top horizontal base capable of transmitting force directly to the points on the bottom horizontal base or to the points on the top horizontal base depending on the altitude of the engine stand,

(h) a horizontal cantilever member structurally connected to the vertical support member extending toward the engine,

(i) a mounting means structurally and rigidly attached to the cantilever member and capable of being demountably attached to the engine mount of engines of varying type and size at a location on the engine where the engine is normally mounted in the vehicle in which it is used and,

(j) the size and position of the elements being such that when the right hand frame is attached to the right hand side of the engine and the left hand holding frame is attached to the left hand side of the engine, that the engine is suspended off the flat surface on which the repair stand is resting and the engine is aligned such that its sides face the respective holding frames.

4,116,425
SKI VISE
Oiva J. Pesola, 29 Normal Rd., Fitchburg, Mass. 01420
Filed Mar. 6, 1978, Ser. No. 883,494
Int. Cl.[2] B25B *5/04*
U.S. Cl. 269—152 **12 Claims**



1. A ski vise comprising a base, a plurality of parallel rows of parallel slots in said base, said rows extending generally from side to side of the base,

a plurality of pairs of ski clamping plates, means on each plate for insertion in selected slots, said plates being arranged in pairs on said base facing each other and being generally parallel,

means for engaging said plates in pairs and drawing the same toward each other, said last named means extending between the plates of said pairs of plates, and holding the plates generally upright in cooperation with said first named means,

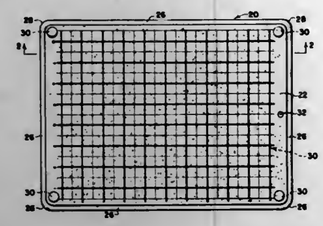
said clamping plates being adapted to clamp a ski in generally parallel relationship to said plates at the top edges of said clamping plates.

4,116,426

CUTTING BOARD

Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512

Filed Mar. 1, 1977, Ser. No. 773,285
Int. Cl.[2] B23Q *3/00*
U.S. Cl. 269—307 **5 Claims**



1. A cutting board, consisting of:
(a) a sheet of transparent plastics material having a top surface and an underlying bottom surface;
(b) the top surface including an embossed cutting surface portion extending over the majority of the area of the top surface and being defined by a multiplicity of spaced projections which extend upwardly from a lower, substantially planar surface segment and which have substantially flat tops defining upper surface segments, the lower and upper surface segments extending in planes substantially paralleling the plane of the underlying bottom surface, the space projections being separated one from another by the order of magnitude of the surface dimensions of the projections;
(c) the bottom surface including a smooth, planar back surface portion extending over the majority of the area of the bottom surface and underlying the embossed cutting surface portion;
(d) design means including a grid of intersecting guidelines formed directly on the back surface portion and being viewable through the embossed cutting surface portion to facilitate the trimming of articles supported on the embossed cutting surface portion;
(e) the design means additionally including indicia means adjacent selected ones of the guidelines for facilitating reference to the selected guidelines during the trimming of articles supported on the embossed cutting, surface portion; and,
(f) whereby the cutting surface portion has a major portion of its surface area defined by substantially flat surface segments extending in planes substantially paralleling the plane of the back surface portion thereby permitting the design on the back surface portion to be viewable through the cutting surface portion with minimal optical distortion.

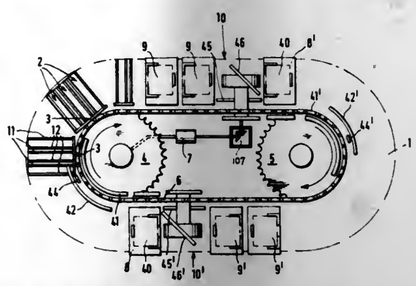
4,116,427

APPARATUS FOR STUFFING NEWSPAPERS OR THE LIKE

Hans Müller, Zofingen, Switzerland, assignor to GRAPHA-Holding AG., Hergiswil, Switzerland

Filed Feb. 1, 1977, Ser. No. 764,631
Claims priority, application Switzerland, Feb. 19, 1976, 2025/76
Int. Cl.[2] B65H *39/02*
U.S. Cl. 270—54 **11 Claims**

1. In an apparatus for collating and otherwise manipulating sheet material articles, particularly in a newspaper stuffing apparatus, a combination comprising a plurality of pockets; means for transporting said pockets in a predetermined direction along a predetermined path; means for feeding different sheet material articles into successive pockets in at least two different portions of said path; and means for withdrawing the articles from successive pockets in a further portion of said path including means to allow the articles to be withdrawn from the respective pockets, said further portion being located downstream of said first mentioned portions, as considered in said direction, said withdrawing means including means for



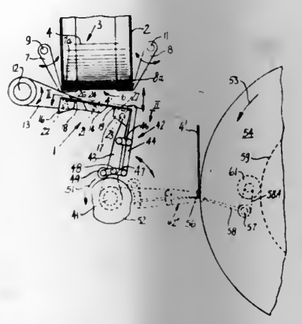
gripping the articles while in the pockets and moving the articles out of the pockets when the articles are allowed to be withdrawn from the respective pockets at said further portion of said path.

4,116,428

APPARATUS FOR SEPARATING LOWERMOST SHEETS FROM A STACK

Bernhard Schubert, Neu Börnsen, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Fed. Rep. of Germany

Filed Dec. 1, 1975, Ser. No. 636,580
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1974, 2456701; Dec. 7, 1974, 2458056
Int. Cl.[2] B65H *5/08*
U.S. Cl. 271—14 **7 Claims**



1. In an apparatus for removing the lowermost sheet of a stack of superposed sheets, especially a stack of sheets which are to be converted into constituents of containers for smokers' products, a combination comprising a substantially upright magazine having a lower end provided with an opening and being arranged to store a stack of sheets so that the lowermost sheet of the stack therein is adjacent to and can pass downwardly through said opening; a removing device movable substantially at right angles to the planes of sheets in said magazine between a first position in which said device supports the lowermost sheet of the stack in said magazine and a second position, at least the major component of the initial stage of movement of said removing device from said first to said second position being downwardly and substantially at right angles to said planes and said removing device having a first element which supports the lowermost sheet from below in said first position of said device, means for flexing at least one marginal portion of the lowermost sheet of the stack in said magazine to thereby separate said one marginal portion from

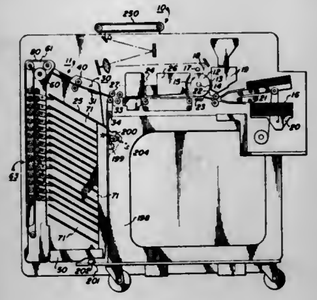
the next-to-the-lowermost sheet of the stack, and means for maintaining the lowermost sheet in contact with said device during subsequent movement of said device from said first to said second position so that the lowermost sheet becomes fully separated from the next-to-the-lowermost sheet during said initial stage; means for moving said device between said first and second positions; at least one retaining member movable with respect to said magazine to and from an operative position in which a portion of said member supports said one marginal portion of the lowermost sheet from below; and means for transferring sheets from said removing device while said device dwells in said second position, said transferring means comprising at least one tongs pivotable about a fixed axis and said removing device further having an additional element which is movable with respect to said one marginal portion of the lowermost sheet, said additional element having a recess and said tongs having a portion extending into said recess in said second position of said device.

4,116,429

SORTING APPARATUS AND REPRODUCING MACHINE

Warren T. VanBuskirk, Rochester, and Donald W. Tates, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,500
Int. Cl.[2] B65H *39/10*
U.S. Cl. 271—173 **19 Claims**



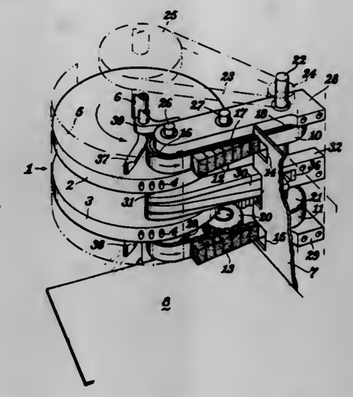
1. In a sorting apparatus for collating the output of a reproducing machine, said apparatus comprising:
a plurality of sheet receiving bins;
a first frame for supporting said sheet receiving bins;
sheet transport means for transporting said sheets to said bins;
a second frame for supporting said sheet transport means;
means for supporting said frames for relative movement between a first closed position wherein said transport means is operatively associated with said bins and a second open position to provide access to said transport means and said bins for sheet clearance therefrom; the improvement wherein, said apparatus further includes:
means supported in said second frame for guiding a sheet along said transport means;
means for supporting said guide means for movement between a first position wherein said guide means is spaced closely adjacent to said transport means and a second position wherein said guide means is more widely spaced apart from said transport means to allow sheets to be removed from between said guide means and said transport means; and
means for moving said guide means between said first position and said second position in response to the relative movement of said frames from said first closed position to said second position;
whereby clearance of said sheets from said sheet transport means is facilitated.

4,116,430

STACKING APPARATUS FOR FLEXIBLE SHEETS

Roy E. Winchester, St. Albans; Michael J. Marjoran, Rickmansworth, and Roger O'Brien, Watford, all of England, assignors to De La Rue Crosfield Limited, London, England

Continuation of Ser. No. 723,298, Sep. 14, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 863,060
Claims priority, application United Kingdom, Sep. 16, 1975, 37988/75
Int. Cl.[2] B65H *29/24, 29/38*
U.S. Cl. 271—177 **7 Claims**



1. Apparatus for stacking flexible sheets comprising:
a sheet transporting drum comprising a pair of axially aligned discs, each having in its periphery at least one vacuum port in communication with a source of suction to grip and propel a sheet;
a driving means to rotate said drum;
first and second endless belts carried upon respective first and third pulleys of equal diameter disposed wholly within an area bounded by an axial projection of said drum and having an axis offset with respect to the axis of the drum and upon respective second and fourth equal-diameter pulleys disposed at least partially outside said area, said first, second, third and fourth pulleys being sited so that a rectilinear part of each of the belts defines a delivery flow-line for the sheets substantially tangential to the periphery of the drum;
means for driving said belts at substantially the same speed as the peripheral speed of the transporting drum;
a support surface disposed substantially at rightangles to said flow-line and adapted to support in a stack the leading edges of successive sheets fed along said flow-line;
a pressure-member arranged to contact a face of a first sheet fed to said support surface;
biasing means acting on said pressure-member, said pressure-member being movable away from said flow-line against the bias of said biasing means as the sheets are progressively fed to said support surface;
a wedge-shaped separation member attached to the external surface of each of the said belts and protruding so as to overlap the flow-line, each wedge-shaped separation member being arranged to move along said rectilinear delivery flow-line in advance of the leading edge of a sheet propelled by the drum and fed into the flow-line and being oriented with respect to the flow-line such that said leading edge of the sheet follows immediately behind the thick end of the wedge-shaped member, said separation member thereby displacing sheets already in said stack and creating a space for receiving the leading edge of said drum-propelled sheet up to said support surface; and
an elongate retardation means having one end located between the two drum discs and between the two endless belts and the other end biased towards the flow-line and so arranged that a sheet approaching the support surface

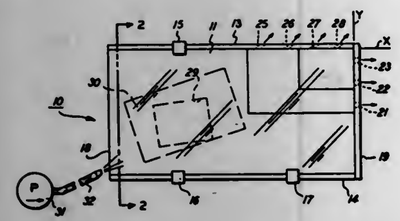
contacts said retardation means after the face of the stack is moved out of the path of the sheet by said wedge-shaped separation members.

4,116,431

METHOD FOR TRANSPORTING AND REGISTERING STACKED SHEETS

Klaus K. Stange, Pittsford; Richard E. Smith, Webster; Thomas J. Hamlin, Macedon, and James R. Cassano, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 627,572, Oct. 31, 1975. This application Jun. 27, 1977, Ser. No. 809,952
Int. Cl.² B65H 9/00
U.S. Cl. 271—236 **4 Claims**



1. A method for registering a stack of sheets with respect to perpendicularly related axes, the sheets having length and width dimensions within predetermined ranges, comprising the steps of:

(a) providing a sleeve for internally accommodating said stack of sheets, at least one point on an inner narrow wall of the sleeve being aligned in parallel with one of the axes;

(b) providing a stop at one end of the sleeve, the stop having at least one point aligned in parallel with the other of the axes;

(c) placing said stack of sheets in the sleeve; and

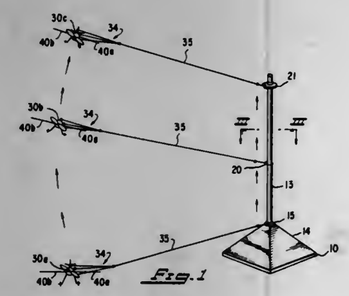
(d) providing in the sleeve a fluid stream having velocity components normal to each of the axes, whereby the stream moves the stack of sheets in the sleeve in unison and into abutment with said points.

4,116,432

STABILIZED PYLON AND MODEL AIRCRAFT SYSTEM

John J. Feeney, 1154 Dorset La., Costa Mesa, Calif. 92626

Filed Mar. 28, 1977, Ser. No. 781,776
Int. Cl.² A63H 27/04
U.S. Cl. 272—31 A **10 Claims**



1. A stabilized gasoline powered type model airplane and pylon assembly comprising:

a thin vertically extending pylon of substantially uniform cross-section;

means for supporting said pylon vertically without circumferential lateral interference;

a gasoline powered type model airplane;

means for securing said airplane to said pylon, said securing means including a small bearing member or ring freely mounted on said pylon and a restraint line extending between said model airplane and said bearing member;

means for adjusting said airplane for climbing flight above the bearing member or ring;

flexible damping and stop means secured near an upper end of said pylon having an undersurface adapted to engage a portion of said securing means in any rotational position of said securing means for reducing vertical oscillation of said model during flight, whereby said model airplane is constrained to take off, circle about said pylon, climb the height of said pylon, so that said plane is circling at an elevation above the elevation of said damping and stop means; and, following engagement between said portion of said securing means and said flexible damping and stop means, to continue circular flight about said upper end of said pylon until fuel is exhausted, and to then glide to a landing; and

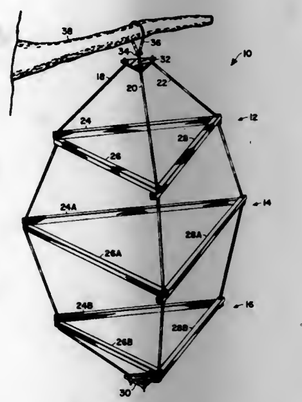
means for providing vertical clearance around said pylon and above said damping and stop means to facilitate climbing flight to an elevation above the damping and stop means.

4,116,433

CLIMBING TYPE GYMNASTIC APPARATUS

Dieter F. Koerner, 2701 E. Ironwood Dr., Phoenix, Ariz. 85028

Filed Aug. 30, 1976, Ser. No. 718,947
Int. Cl.² A63G 9/00
U.S. Cl. 272—85 **3 Claims**



1. A freely suspended climbing apparatus comprising, in combination:

(a) a plurality of rope-like members,

(b) at least two spaced bar-type element means mounted on said rope-like members for providing bar-type supports for climbing or gymnastic use,

(c) said spaced bar-type element means comprising at least a pair of separate triangular shaped elements,

(d) said plurality of rope-like members comprising three ropes supporting each of said triangular shaped elements spaced apart on said three ropes,

(e) said spaced bar-type element means comprising three separate triangular shaped elements spaced apart from each other on said three ropes, and

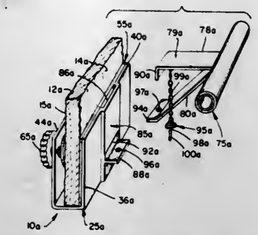
(f) said triangular shaped elements each consisting of three separate bar-type members, one end of each of said three separate bar-type members overlapping the end of the adjacent bar-type member.

4,116,434

SIT-UP EXERCISE APPARATUS

Morton J. Bernstein, 3636 Graystone Ave., Bronx, N.Y. 10463

Filed Mar. 15, 1977, Ser. No. 777,638
Int. Cl.² A63B 23/02
U.S. Cl. 272—93 **33 Claims**



1. A sit-up exercise apparatus adapted to be utilized in conjunction with a door having spaced apart vertically extending surfaces and a bottom intermediate said surfaces, said apparatus comprising:

A. frame means having oppositely disposed sides and adapted to be removably secured to the door, said frame means comprising:

(1) an elongated base adapted to extend below said bottom of the door,

(2) front and rear members, each one of said members having an oppositely disposed lower end connected to said base and an upper end with spaced apart inner and outer walls intermediate said ends, said inner walls adapted to extend in overlapping relation with said surfaces of the door, and

(3) said inner walls oppositely disposed with respect to each other defining a space therebetween greater than the width of the door defined by said surfaces so as to readily permit the positionment of the door therebetween,

B. clamping means operatively connected to one of said members and extending inwardly of said inner wall for releasably clamping one of said surfaces of the door, such that said frame is fixedly secured to the door at a selected position thereon and may be readily removed from securement therewith by releasing said clamping means,

C. said clamping means comprises a locking element being independently adjustable and having a threaded section extending in threaded engagement through one of said members with a shoe at one end of said threaded section for abutting engagement with said surface of the door and a handle at the opposite end of said threaded section so as to facilitate adjustment thereof,

D. supporting means extending outwardly from one of said members on said frame means and adapted to extend at a height above said base so as to be readily engageable by the feet of the user of the sit-up exercise apparatus,

E. coupling means for releasably securing said supporting means to said frame means so as to permit said supporting means to be dis-assembled therefrom when the sit-up apparatus is not in use such that said frame means may remain assembled with the door by means of said clamping means,

F. said supporting means comprises:

(1) a support element having spaced apart free ends, and extending in a plane substantially parallel to said member for engagement by the insteps of the user of the sit-up apparatus, and

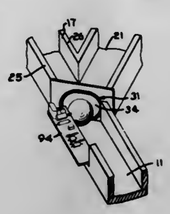
(2) a bracket extending between said support element and said member intermediate said spaced apart free ends so as to rigidly retain said support element in fixed relationship to said frame means, said coupling means releasably securing said bracket to said frame means.

4,116,435

AUTOMATIC CUE BALL SEPARATING DEVICE FOR BILLIARD TABLES

Randy D. Sines, P.O. Box 2006, Great Falls, Mont. 59403, and John F. Curran, Spokane, Wash., assignors to Randy D. Sines, Great Falls, Mont.

Filed Mar. 18, 1977, Ser. No. 779,252
Int. Cl.² A63D 15/00
U.S. Cl. 209—570 **9 Claims**



1. An automatic cue ball separating device for separating a metallic containing cue ball from nonmetallic object balls in a billiard table, in which the billiard table has a single file ball return run along which the cue and object balls roll and a cue ball return run leading from a junction with the single file ball return run, comprising:

an induction sensing coil mounted on said table adjacent the junction having a plurality of encircling loops extending about a central aperture with the loops capable of generating a concentrated oscillating electrical field in the central aperture;

said central aperture having dimensions sufficient so that the sensing induction coil is transversely mounted at an acute angle significantly less than 90° to the path of the rolling balls in the single file ball return run and facing the cue ball return run with the balls rolling unobstructed through the central aperture;

voltage means operatively connected to the sensing induction coil for applying an AC voltage to the coil to generate an oscillating electrical field;

detecting network means operatively connected to the induction sensing coil for detecting the presence of the cue ball in the oscillating electrical field; and

deflection means adjacent the central aperture and responsive to the detection of the cue ball passing through the central aperture for deflecting the cue ball from the single file ball return run to the cue ball return run while the cue ball is passing through the central aperture.

4,116,436

BALL-COLLECTING APPARATUS

Gunnar Björhn, Furusundsgatan 7, Stockholm, Sweden

Filed Apr. 15, 1977, Ser. No. 788,016
Claims priority, application Sweden, Apr. 28, 1976, 7604916
Int. Cl.² A63B 61/00
U.S. Cl. 273—29 R **7 Claims**

1. An apparatus useful for collecting tennis balls on a tennis court half comprising

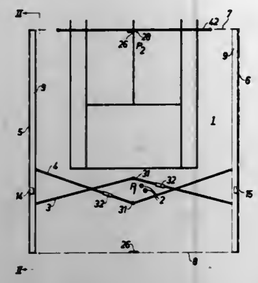
two ribs, each rib extending close to the court surface between two opposite side edges of the court half (1), one rib normally being located along each one of the two other side edges of the court half;

drive means (51–54; 61–64; 71–73) arranged to displace the ribs (3,4) towards each other while conveying balls such that these are collected in a limited area, and to displace the ribs into their normal positions,

at least one contrl means (14,15; 28) arranged actuatable from a position (P_1; P_2) on the court half,

said control means being arranged to control the drive

means, and said control position being located in the ball collecting area, and



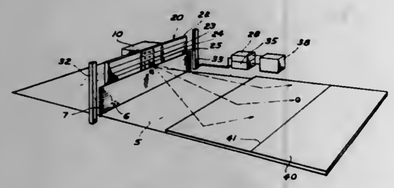
means arranged to maintain both ends of the ribs close to respective adjacent side edges of the court half during displacement of the ribs.

4,116,437

TENNIS TRAINING AND RATING APPARATUS

Neil E. Johnson, Three Woodbridge Ave., New Monmouth, N.J. 07748

Filed Feb. 8, 1973, Ser. No. 330,467
Int. Cl.² A63B *6/00*
U.S. Cl. 273—29 A **2 Claims**



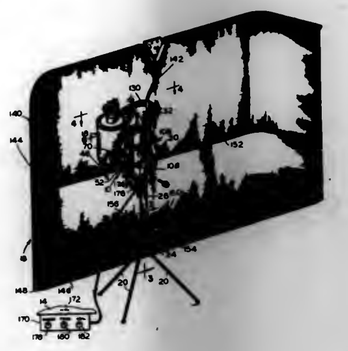
1. A tennis training and rating apparatus comprising: a playing area having opposite ends; ball-delivering means for individually delivering tennis balls into said playing area so that they may be returned by a player during use of the apparatus; a tennis net disposed on said playing area transversely thereof; and ball-accuracy sensing means for sensing the accuracy of placement of the tennis balls returned by the player against a predetermined target area positioned in a plane corresponding to the plane of said tennis net, and providing an output accuracy signal having a value dependent upon which portion of the target area the ball strikes, said target area comprising a plurality of individual target sections each having a ball-striking surface on which the returned balls initially strike on the fly and before bouncing when hitting said target area and each mounted for actuation independently of the others, means mounting said plurality of target sections in vertically superposed relationship one above the other with their corresponding ball-striking surfaces lying in vertical superposition and substantially aligned in the plane of said tennis net, and means for providing a different output accuracy signal in response to actuation of each target section including means for providing a signal having a different value in response to actuation of each target section.

4,116,438

TABLE TENNIS ROBOT

Gustave Berliner, 3243 NE. 143rd Ave., Portland, Oreg. 97230

Continuation of Ser. No. 579,929, May 22, 1975, abandoned, which is a division of Ser. No. 504,861, Sep. 11, 1974, abandoned. This application Mar. 15, 1977, Ser. No. 777,830
Int. Cl.² A63B *39/00*
U.S. Cl. 273—30 **6 Claims**



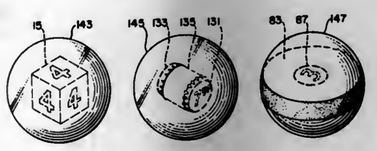
6. In a ball-throwing robot,
a game table,
generally vertical net means for catching balls manually hit back over the game table and including a bottom collection portion at a predetermined height which is no higher than the level of a game table with which the robot is to be used, mechanical throwing means for throwing balls in a direction away from the net means and from a height above said predetermined height,
means for oscillating the throwing means,
and hopper means including means for taking balls from the bottom collection portion, elevating the balls to the throwing means and feeding the balls to the throwing means,
the hopper means including a hopper container for holding a large number of balls, a ball conduit leading upwardly from the bottom collection portion of the net means to the hopper container, and means for creating a partial vacuum in the hopper container and the ball conduit to draw balls through the ball conduit into the hopper container,
the entire throwing means and the bottom of the hopper container being above said predetermined height,
means for oscillating the hopper container and the throwing means therewith to periodically change the direction of throw, the throwing means serving to periodically throw balls.

4,116,439

POOL BALL

Robert James Chavarria, Fountain Valley, Calif., and Clark Berg Foster, Seattle, Wash., assignors to C.F.F. Inc., Bloomington, Calif.

Filed Sep. 30, 1976, Ser. No. 728,498
Int. Cl.² A63B *37/04, 37/12*
U.S. Cl. 273—59 A **1 Claim**



1. A pool ball comprising, in combination:

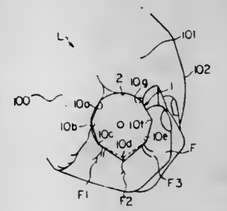
(a) a cylindrical object having identical numeral designations on its opposite ends;
(b) a colored disc member surrounding in continuous engagement the complete cylindrical surface of said object resulting in a disc-shaped assembly with said numeral designations on opposite sides of said disc-shaped assembly; and,
(c) a solid transparent hemispherical member comprised of polyester resin having a uniform imperforate surface completely covering the numeral designation on each of said opposite ends of said cylindrical object and each of the opposite sides of said disc member thereby forming a sphere with said disc-shaped assembly, the geometric center of said sphere coinciding with the center of gravity of said disc-shaped assembly, and the transparency of said hemispherical members rendering visible said colored disc member and said numeral designations.

4,116,440

GOLF CLUB GRIP

Hideyuki Takeshima, Kyoto, Japan, assignor to Hiroshi Kawamula, Tokyo, Japan

Filed Oct. 7, 1976, Ser. No. 730,607
Int. Cl.² A63B *53/14*
U.S. Cl. 273—81.4 **2 Claims**



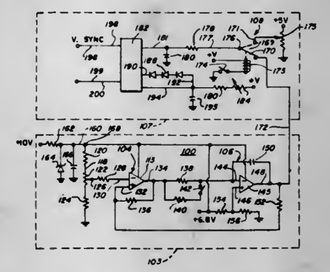
1. An improved tapered generally cylindrical golf club grip formed of elastomeric material, the improvement comprises: providing the surfaces of said grip with an arcuate surface and six planar surfaces disposed to provide a symmetrical grip when taken in cross-section and having two planar surfaces disposed opposite to the arcuate surface broader in width than the other four planar surfaces, to thereby form an extended edge surface therebetween.

4,116,441

MOVING GOALIE CIRCUIT FOR A MANUALLY CONTROLLED ELECTRONIC VIDEO GAME

Robert Ralph Runte, 912 Sandborn, Palatine, Ill. 60067, and Theodore A. Mau, Chicago, Ill., assignors to Robert Ralph Runte, Palatine, Ill.

Filed Oct. 29, 1976, Ser. No. 736,938
Int. Cl.² A63F *7/06*
U.S. Cl. 273—85 G **11 Claims**



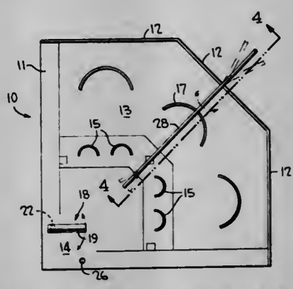
1. A moving goalie circuit for use with electronic visual games, for causing a blocking cursor to move periodically back and forth across a playing screen of the electronic visual game, comprising: a repetitive signal generator, said repetitive signal generator generating a periodic reference control signal; a reference signal generator generating a periodic reference signal; and a position control connected to said repetitive signal generator and said reference signal generator, said position control receiving said periodic reference signal at a first time, said position control producing a timed signal at a second time, said first time and said second time being separated by a time difference, said time difference being proportional to an amplitude of said periodic signal; means defining an elongated fixed target area extending in a certain direction on the playing screen; and means responsive to said timed signal for controlling the movement of the cursor in a direction parallel to the first-mentioned direction to cause the cursor to move repetitively back and forth in said direction spaced from said fixed target area to block and expose alternatingly said target area.

4,116,442

SIMULATED BASEBALL GAME

George W. Dickey, 1421 N. University, N-125, Little Rock, Ark. 72207

Filed Aug. 12, 1977, Ser. No. 824,173
Int. Cl.² A63F *7/06*
U.S. Cl. 273—89 **5 Claims**



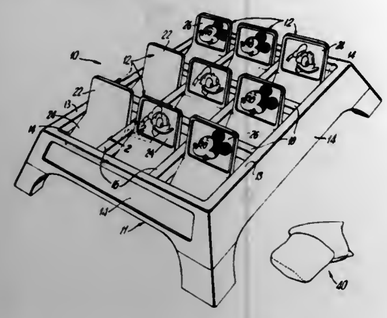
1. In a simulated baseball game including a board having an upper playing surface with upstanding walls attached to marginal edges thereof forming a fence, markings provided on said surface in the manner of a baseball field, and simulated players at infield and outfield positions in the form of upstanding interceptors mounted on said surface, the improvement comprising:
a bat disposed at a home plate position of said surface as marked, said bat comprising a substantially L-shaped member, one leg of said member having a lower surface resting on said playing surface and having opposing side surfaces, the other leg of said member extending downwardly through a first opening provided in said board for rotatable movement about the central axis thereof, and a launcher for directing a ball to be used in playing the game toward said one leg, said launcher comprising an elongated guide element in the form of a hollow tube extending toward said bat, said guide element having one end portion initially lying flatly against said playing surface, a central portion of said tube being disposed at an angle to said one end portion and resting on an upper edge of one of said walls, and an end portion of said guide element opposite said one end portion extending upwardly at an angle to said central portion and forming a handle for said tube, whereby the ball may be directed by said launcher for rolling along said playing surface in different directions toward said bat as said central portion is rotated about its axis upon movement of said handle so that the ball may be batted by one of said side surfaces of said one leg as said other leg is rotated in one direction about said axis and toward said launcher.

4,116,443

PIVOTING TARGET ARRAY GAME

Steven R. Dorfman, Levittown, N.Y., assignor to L.J.N. Toys, Ltd., New York, N.Y.

Filed Jan. 20, 1977, Ser. No. 807,918
Int. Cl.² A63B 63/04; F41J 7/00
U.S. Cl. 273—95 R **7 Claims**



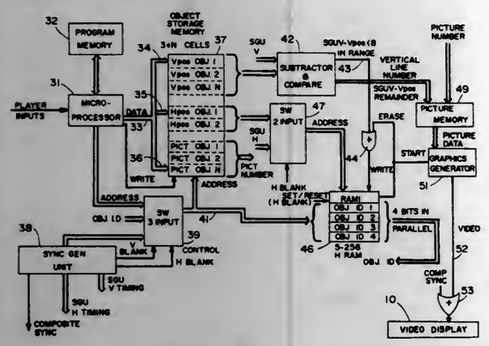
1. A game apparatus comprising a body structure; an array of display elements positioned for viewing from a predetermined side thereof and arranged in a series of rows extending in a first direction and a series of columns extending in a second direction; a corresponding array of shafts, each secured to said body and each mounting a display element to the body structure to turn about the shaft between different display positions, each shaft being generally pear-shaped in cross-section; each display element comprising three radially extending planar positions radiating from a central hub, said hub including an aperture through which the associated shaft extends, said aperture defining in cross-section a generally isosceles triangle.

4,116,444

METHOD FOR GENERATING A PLURALITY OF MOVING OBJECTS ON A VIDEO DISPLAY SCREEN

Steven T. Mayer, Auburn, and Ronald E. Milner, Grass Valley, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Jul. 16, 1976, Ser. No. 706,121
Int. Cl.² A63F 9/02
U.S. Cl. 273—101.2 **7 Claims**



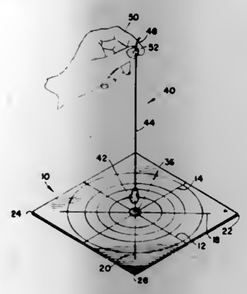
6. A method for generating complex fixed objects on a raster scan video display screen around which a plurality of moving objects move including the steps of storing data representative of the shape of segments of said fixed objects which may be displayed in more than one angular orientation, storing binary data with one portion indicative of said shape of said segment and another portion its angular orientation, in response to said one portion of binary data, reading out and displaying said data representative of the shape of a predetermined segment, and rotating such segment, to the proper angular orientation in response to said other portion, and concurrently displaying in contiguous relationship said data representative of the shape of said predetermined segment in a plurality of angular orientations.

4,116,445

THOUGHT DYNAMICS GAME

Gerald Forbes, 11515 Wood St., Maple Ridge, British Columbia, Canada

Filed Aug. 22, 1977, Ser. No. 795,232
Int. Cl.² A63F 9/18
U.S. Cl. 273—161 **1 Claim**



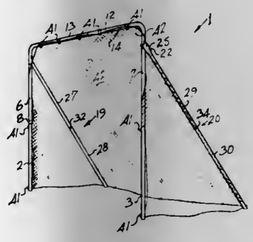
1. A game of thought dynamics which comprises a game board having parallel opposing sides and ends and inscribed with intersecting horizontal, vertical and diagonal lines, all of said lines intersecting at a center point on said game board, a plurality of spaced, concentric circles also inscribed on said game board radiating from said center point, a removable magnet provided in the center of said board overlying said center point, and a pendulum weighted element suspendible from an elongated support over said center point in a manner such that said weighted element is free to swing in any linear or circular direction consistent with said inscribed lines, said inscribed lines serving as thought guides, when supported by a player holding the free end of said elongated support, wherein said weighted element is formed of lead, and wherein the lower end of said lead weighted element has a minor amount of soft iron bonded thereto.

4,116,446

GAME NET SUPPORT APPARATUS

Roger E. Thompson, Adelaide, Australia, assignor to R.E.T. Nominees Pty. Ltd., Adelaide, Australia

Filed Nov. 3, 1976, Ser. No. 738,448
Int. Cl.² A63B 67/00
U.S. Cl. 273—181 F **1 Claim**



1. Apparatus to support a net for sporting purposes including a first two tubular rods, each having one end thereof tapered so as to be adapted to be engageable within the ground and supported vertically by such grounding engagement, a second two tubular rods; each having a lower end adapted to engage and

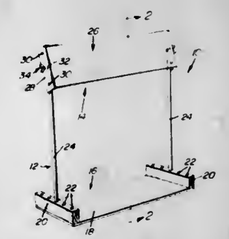
be supported vertically by an upper end of one of the first two rods, a cross-bar constituted by at least two tubular separable rods, said cross-bar including downwardly depending end portions adapted to be removably engageable with, in each case, the upper end of the said second tubular rods, and two rearwardly extending downwardly inclined stabilizing legs, each stabilizing leg being removably securable at an upper end to one of the vertically aligned portions of the rod, and, at a lower end, in each case, adapted to be at least ground engaging, each stabilizing leg being characterized by including at least two end to end separably engaging tubular rods, the arrangement being characterized in that at least one of the stabilizing rods from each leg is adapted to detachably engage in entering relationship at least one of the vertical rods, and net engaging means located in spaced apart positions along at least some of the said tubular rods, and adapted to retain a net with respect to the rods; and said net engaging means being characterized by including a resilient U-shaped clip adapted to engage around any of said rods with resilient holding pressure and support a net thereby.

4,116,447

METHOD AND APPARATUS FOR PRACTICING GOLF BALL CHIPPING AND PUTTING SHOTS

Albert Becker, 1536 Sunshine Ave., Port St. Lucie, Fla. 33452

Filed Mar. 15, 1977, Ser. No. 777,925
Int. Cl.² A63B 69/36
U.S. Cl. 273—183 B **2 Claims**



1. A golf chipping and putting trainer, comprising, in combination:

(a) a support assembly extending above a support surface; and

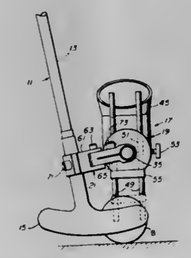
(b) guide means mounted on the support assembly and disposed spaced above the support surface for forcing the arm of a golfer swinging an untethered golf club at a ball on the support surface to pass along the guide means and swing in a straight line, the support assembly including a longitudinally extending base member provided with a pair of longitudinally spaced sockets, and poles removably disposed in the sockets and attached to the guide means for supporting the guide means in spaced relation above the base member, the base member comprising a longitudinally extending plate having longitudinally spaced end portions, and pole mounting blocks mounted on the plate at the end portions, with each of the mounting blocks being provided with a plurality of sockets spaced transversely of the extent of the base member and arranged for selectively receiving the poles and permitting adjustment of the guide means relative to the plate, the plate forming a feet positioning surface for a golfer using the trainer, the guide means including a longitudinally extending member coextensive with the base member and forming a planar guide surface defining a path above the golfer's knees for the arms of a golfer using the trainer, the longitudinally extending member comprising a self-supporting, longitudinally extending, planar sheet having spaced ends terminating in codirectionally extending flanges disposed substantially perpendicularly to the plane of the sheet, each of the flanges being provided with a plurality of holes, the poles each having upper portions provided with an aperture mating with one of the holes provided in the associated one of the flanges, and the support further including wing nut fasteners means for selectively and adjustably attachably attaching the sheet to the poles, and the lower edge of said planar sheet being located a substantial distance above said base member and not connected thereto whereby said planar sheet including said lower edge may be angularly adjusted relative to said base member.

4,116,448

GOLF PRACTICE SIGHTING DEVICE

Arthur E. Crowe, Jr., 12 Ruthellen Rd., Framingham, Mass. 01701

Filed Dec. 20, 1976, Ser. No. 752,783
Int. Cl.² A63B 69/36
U.S. Cl. 273—186 A **5 Claims**



1. A golf practice sighting device for attachment to a golf club comprising:

(a) a viewer adapted to be attached to a golf club for providing a view of a target in front of the club when looking down in the direction of the viewer,

(b) means for attaching the viewer directly to the shaft of the club, said means comprising a first bracket adapted to be attached at one end to the shaft of the golf club and a second bracket mounted at one end on to the first bracket for pivotal movement about an axis parallel to the shaft of the club and pivotally attached at the other end to the viewer so as to provide for pivotal movement of the viewer about an axis perpendicular to the pivot axis at the first end of said second bracket, and

(c) slidably movable means for aligning the viewer with the face of the head of the club, the slidably movable means for aligning the viewer with the face of the head of the club comprises a pair of gauge pins mounted for slidable movement on the viewer.

4,116,449

AMUSEMENT DEVICE

Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

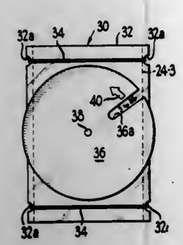
Filed Aug. 15, 1977, Ser. No. 824,350
Int. Cl.² A63F 3/00
U.S. Cl. 273—240 **6 Claims**

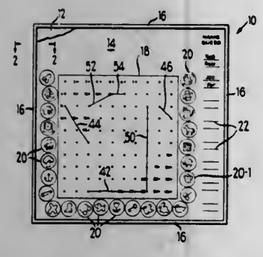
1. An amusement device useful in art education comprising:

a game board having a playing surface with a plurality of identified, spaced apart, dots arranged in a grid system thereon, and a plurality of symbols thereon adapted to be roughly represented by lines drawn between selected ones of said dots in accordance with a program card corresponding to each of said symbols;

a transparent sheet over said playing surface for removably displaying lines drawn with marker means running be-

tween selected dots as directed sequentially by a program card; and





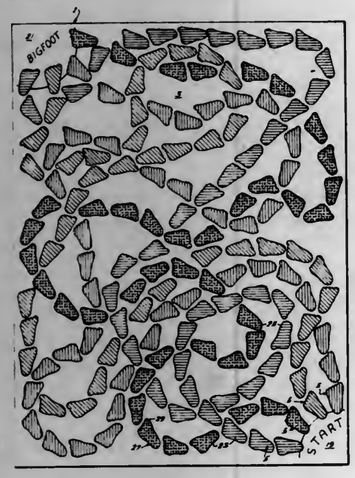
chance means for selecting the sequence of lines to be drawn from a program card representing one of said symbols.

4,116,450

BOARD GAME APPARATUS

Robert William Darrell, Fort Myers, Fla., assignor to Bigfoot Industries, Inc., Cape Coral, Fla.

Filed Dec. 27, 1976, Ser. No. 753,988
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—249 4 Claims



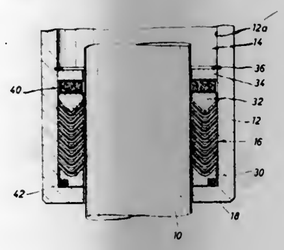
1. A game apparatus comprising,
a playing surface,
said playing surface having a plurality of trails,
each said trail having a plurality of spaces,
each said trail having a beginning point and an ending point,
each trail having an equal number of spaces between said beginning and end points of said trail,
each said trail having one movable playing piece which can only move along said trail,
random indicia selection means for determining number of spaces said playing piece may move down said trail,
said random indicia selection means including a deck of playing cards,
each said space having a foot print configuration,
each said space being aligned with its longitudinal axis substantially parallel with the center line of said trail,
at least one of said plurality of spaces of each said trail is aligned with its toes in reverse disposition relative to the balance of said plurality of spaces,
part of said cards having displayed thereon at least one left foot print,
part of said cards having displayed thereon at least one right foot print and said part being equal in number to said cards having displayed thereon a left foot print,
each said left foot print card having displayed thereon a left foot print card combination of player's identification and indicia equal to the number of spaces said playing piece may move,
each of said right foot print cards having displayed thereon a right foot print card combination of player's identification and indicia equal to the number of spaces said playing piece may move,
each said right foot print card combination of player's identification and indicia matching at least one said left foot print card combination of player's identification and indicia.

4,116,451

SHAFT SEAL ASSEMBLY AND SEAL RING THEREFOR

Jeddy D. Nixon, and Lawrence W. Matson, Jr., both of Houston, Tex., assignors to Maurer Engineering, Inc., Houston, Tex.

Filed Jun. 16, 1977, Ser. No. 807,243
Int. Cl.[2] F16J *15/00;* F16L *21/04*
U.S. Cl. 277—116 6 Claims



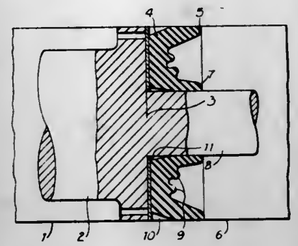
1. A seal for sealing the annular space between a rotating shaft and a housing comprising a plurality of seal rings that are V-shaped in cross-section with opposite convex and concave sides for stacking with the concave sides facing in the same direction, each seal ring including an annular body of self-lubricating, low-friction graphite having high thermal conductivity, said annular body being V-shaped in cross-section having outer and inner edges for moving into sealing engagement with a shaft and housing when subjected to a differential pressure and a ring of spring metal that is V-shaped in cross-section and embedded in the annular body of graphite to support the annular body of graphite in position to provide a seal between the shaft and the housing.

4,116,452

SLEEVE SEAL FOR MASTER CYLINDERS OF HYDRAULIC BRAKE SYSTEMS

Johannes Schanz, Bad Homburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 7, 1977, Ser. No. 848,839
Int. Cl.[2] F16J *9/00, 15/32*
U.S. Cl. 277—205 1 Claim



1. A sleeve seal for master cylinders of hydraulic brake systems comprising:
cylindrical cylinder wall having a longitudinal axis;
a piston disposed in said cylinder wall coaxial of said axis, said piston having a front end and a given diameter;
a cylindrical piston extension disposed coaxial of said axia and connected to said front end of said piston, said piston extension having a diameter less than said given diameter; and
said sleeve seal including
a flat surface transverse of said axis resting against said front end of said piston adjacent the outer surface of said piston extension and the inner surface of said cylinder wall, said flat surface providing a space adjacent the inner surface of said cylinder wall and a space adjacent the outer surface of said piston extension,
an outer elongated, circular sealing lip extending from said flat surface resting against the inner surface of said cylinder wall,
an inner elongated, circular sealing lip extending from said flat surface resting against the outer surface of said piston extension, and
circular coaxial undulations disposed in the front surface of said sleeve seal spaced from said flat surface between said outer and inner sealing lips.

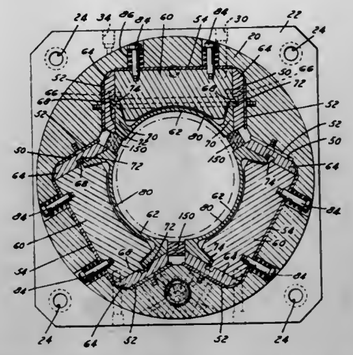
4,116,453

MULTI-PART PRESSURE CHUCK

Eugene R. Andre, 26405 Hendrie, Huntingdon Woods, Mich. 48070

Filed May 2, 1977, Ser. No. 793,129
Int. Cl.[2] B23B *5/22*
U.S. Cl. 279—4 7 Claims

1. A work clamp comprising:
(a) a support body to lie adjacent a work part,
(b) a plurality of pressure pads movably disposed in said body,
(c) means to mechanically move said pads to a position contacting a work part and to hold said pads in said position,
(d) a flexible pressure actuated wall between said pad and said work part having a fluid chamber to receive pressure to urge said wall into holding contact with said part,
(e) the support body having a plurality of open-topped rectangular recesses disposed about a common axis, each recess having side walls and a base to serve as a slide surface,
(f) said pressure pads being disposed singularly in said receses and having side surfaces to cooperate with said side slide surfaces of said recesses, and



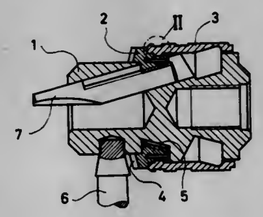
(g) means to bias said pressure pads toward the base of each respective recess.

4,116,454

CHUCK FOR HAMMERDRILLS AND THE LIKE

Albrecht Schnizler, Jr., Nürtingen, and Klaus Bartmann, Neuffen-Kappishäusern, both of Fed. Rep. of Germany, assignors to Metabowerke KG Closs Rauch & Schnizler, Nürtingen, Fed. Rep. of Germany

Filed Mar. 25, 1977, Ser. No. 781,445
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 2614030
Int. Cl.[2] B23B *5/22*
U.S. Cl. 279—62 14 Claims



1. A chuck for hammerdrills and the like, comprising in combination, a chuck body; a plurality of jaws on said chuck body for engaging and holding a tool bit; and means connected to said jaws for adjusting the engagement of said jaws with the tool bit, said means comprising a guide sleeve having a main portion with an outer and inner surface, said main portion defining a central axis therethrough, a toothed gear encircled by said sleeve and having a circumferentially extending groove facing the inner surface of said sleeve, said groove having a bottom which is at least partially roughened, said sleeve including at least one inwardly offset locking portion having an outer and inner surface which are inwardly offset with respect to the main portion of said sleeve, said inwardly offset portion projecting into said groove and engaging the roughened bottom of said groove.

4,116,455

SKATEBOARD SKI

Donald R. Dotson, 1837 Wallace Ave., Costa Mesa, Calif. 92627, and Ronald R. Smith, 318 E. Berkeley St., Santa Ana, Calif. 92707

Filed Mar. 7, 1977, Ser. No. 775,290
Int. Cl.[2] A63C *17/18*
U.S. Cl. 280—7.12 2 Claims

1. A skateboard ski adapted to be mounted to a skateboard

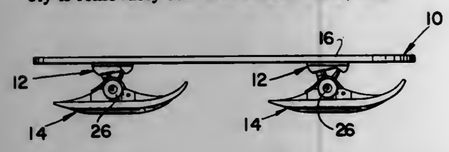
having a wheel-and-truck assembly, wherein said skateboard ski comprises:

a ski shoe having a substantially flat, elongated mid-section;

an upturned nose portion formed at the forward end of said ski shoe;

means for removably securing said ski shoe to said wheel-and-truck assembly;

a strut-support means formed integrally with said ski shoe, whereon said removable securing means is mounted thereon, said strut-support means comprising a pair of elongated strut members positioned in parallel relation to each other, and each having an upwardly open recess longitudinally disposed therein, wherein said recess defines longitudinally spaced oppositely disposed sides in said strut member, whereby said wheel-and-truck assembly is removably received in said recess; and



wherein said removably securing means comprises keeper means, said keeper means comprising an elongated strap member mounted to said strut member on one side of said recess, and a latch mounted to said strut member on the opposite side of said recess to receive said strap member, said recess being formed to receive the wheels of said truck assembly therein;

runners integrally formed on the under surface of said ski shoes;

kick-up means formed at the rearward end thereof, to prevent drag and binding with the snow;

restraining means formed adjacent an inner side of said recess on said ski shoe to prevent lateral movement of said ski shoe with respect to said wheel-and-truck assembly

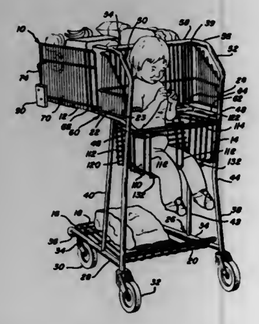
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4,116,456

SHOPPING CART

Don A. Stover, Moore; Norman R. Young, and Glenmore J. Runnion, both of Oklahoma City, all of Okla., assignors to Unarco Industries, Inc., Chicago, Ill.

Filed May 19, 1977, Ser. No. 798,295
Int. Cl.[2] B62B *3/00*
U.S. Cl. 280—33.99 B **13 Claims**



1. A shopping cart, comprising:

an elongated upper basket having a bottom for carrying groceries and the like, a pair of spaced elongated side walls extending upwardly from said bottom at a height sufficient to retain said groceries in said upper basket without the use of a supporting removable basket thereon, and a pair of spaced upright end walls including a front wall and a stationary rear wall extending between said side walls;

a baby basket spaced away from the interior of said elongated upper basket and including a seat positioned below the level of the bottom of said elongated upper basket for carrying a child so that the child's center of gravity is substantially below the level of the bottom of said elongated upper basket, a stationary back support extending upwardly from said seat, a crotch-like end wall spaced rearwardly of said rear wall and said back support so as to be positioned outside the area directly below the bottom of said elongated upper basket and defining a pair of leg holes below the level of the bottom of said elongated upper basket for positioning the child facing away from and remote from the front wall of said elongated upper basket to substantially prevent the child from reaching into said elongated upper basket and from kicking the bottom of said elongated upper basket, and a pair of spaced lower side walls extending between said back support and said crotch-like end wall; and

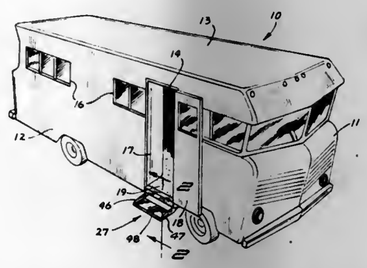
a support frame including a base having front and rear wheels, post-like support means extending upwardly from said base including baby-basket support means for securely engaging said lower side walls at locations adjacent said crotch-like end wall and said stationary back support to securely carry and support said baby basket, upper basket support means cantilevered from said post-like support means for supporting said elongated upper basket, and means fixedly connecting portions of said elongated upper basket to said upper basket support means for substantially preventing removal of said elongated upper basket.

4,116,457

STEP ASSEMBLY FOR VEHICLE

Marvin E. Nerem, 136 E. M St., Forest City, Iowa 50436, and Roger W. Denney, 1035 Allen, Garner, Iowa 50438

Filed Aug. 31, 1977, Ser. No. 829,235
Int. Cl.[2] B60R *3/02*
U.S. Cl. 280—166 **29 Claims**



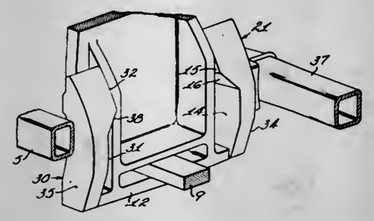
1. A step assembly for a vehicle having a doorway and support beams below the doorway comprising: a frame having a pair of parallel side members and a rear member secured to the side members, said frame adapted to be secured to the support beams below the doorway of the vehicle, a step unit selectively movable between an out step position below and outwardly of the doorway and an in storage position below the frame, first and second pairs of links pivotally connecting the step unit to the frame, each link having an upper end and a lower end, first pivot means connecting the upper end of one link of the first pair of links to one side member, a second pivot means connecting the upper end of one link of the second pair of links to the other side member, a transverse rod nonrotatably secured to the upper ends of the other links of the first and second pairs of links, said rod having opposite ends rotatably mounted on the side members; said step unit having a pair of horizontal side members, and a transverse horizontal platform secured to said side members; pivot means pivotally connecting the lower ends of the first pair of links to one side member and pivotally connecting the lower ends of the second pair of links to the other side member, a power unit pivotally connected to the rear member of the frame, said power unit having a reversible electric motor, a lead screw drivably connected to the motor, a nut threaded on the screw, crank means secured to the rod, and means pivotally connecting the nut to the crank means whereby when said motor is operated in a first direction of screw rotates to move the nut so that the crank means rotates the rod thereby moving the step unit from an out step position to an in storage position and when said motor is operated in a second direction the screw moves the nut to rotate the rod in an opposite direction to move the step from the storage position to the out step position.

4,116,458

REVERSIBLE SWAY LIMITING BLOCKS FOR A TRACTOR HITCH

David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 21, 1977, Ser. No. 853,090
Int. Cl.[2] A01B *59/043*
U.S. Cl. 280—474 **10 Claims**



1. A sway limiting device on a tractor having laterally spaced lower draft arms universally connected to the tractor for vertical and lateral swinging movement comprising, a tractor chassis, a sway limiting support means mounted on said chassis between said draft arms, a sway limiting block mounted on each of the laterally outward sides of said sway limiting support means, each of said sway limiting blocks defining a single bearing surface on one side and two vertically spaced bearing surfaces connected by an adjoining inclined surface on the other side, means selectively fastening a sway limiting block on each side of said support means with the single surface outwardly to restrict lateral swaying of the draft arms throughout the height of the blocks and selectively fastening one of the blocks on each of the sides of the support means with the two vertically spaced bearing surfaces outwardly to permit swaying of the draft arms in the lowered position and restrict swaying in the raised position to thereby provide interchangeable positioning of the blocks from side to side without any rotational movement of the blocks for utilizing the lateral surfaces of the sway blocks to control the swaying movement of the lower draft arms.

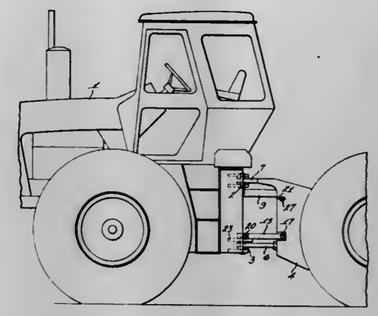
4,116,459

SAFETY LOCK FOR ARTICULATED JOINT ON VEHICLE

Ernest A. Kreitzberg, Mukwonago, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 30, 1976, Ser. No. 755,933
Int. Cl.[2] B62D *53/00*
U.S. Cl. 280—474 **9 Claims**

1. An articulating vehicle having a locking link for locking an articulating joint of the vehicle comprising, a bogie of an articulating vehicle, another bogie of the articulating vehicle, at least one articulating joint pivotally connecting said bogies of said vehicle, including an upper and a lower vertically aligned articulated bearings defining an articulating axis with one of said bearings pivotally connecting said bogies, an articulating link connected to the other of said bearings with a third bearing defining another articulating axis pivotally connecting said bogies, at least two of said bearings defining spherical bearings, a locking link, a pivotal joint defining a horizontal axis pivotally connecting a pivotal end of said link to one of said bogies of said articulating vehicle, a swingable end on said locking link defining a hole, a pin support defining a horizontal opening mounted on said one bogie of said vehicle for receiving the swingable end of said locking link for defining the rest



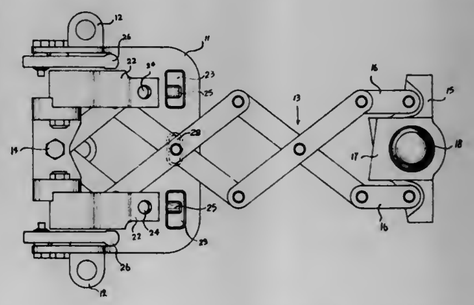
position of said locking link, a pin for reception in said hole in said locking link and the opening of said pin support in the rest position, a pin mounting means defining a horizontal pin opening mounted on the other of said bogies of said vehicle for selectively receiving said swingable end of said locking link, said pin selectively received in said pin mounting means and said swingable end of said locking link when said locking link is in the locking position to thereby lock said pin and said locking link when said locking link is in the locking position for locking said articulating joint.

4,116,460

TRAILER COUPLING

Wilfred Drower, Brisbane, Australia, assignor to Litecraft Pty. Ltd., Brisbane, Australia

Filed Nov. 1, 1976, Ser. No. 737,687
Int. Cl.[2] B60D *1/00*
U.S. Cl. 280—478 R **2 Claims**



1. A trailer coupling comprising a housing, an extensible lazy tongs linkage, one end of which is pivotally mounted on the housing for rotation about a substantially vertical axis, a plate for carrying a trailer coupling element mounted on the other end of said extensible linkage and centering means connected to the linkage and mounted thereon for engaging the plate so that the linkage is substantially self centering when retracting, wherein side guides are provided on said plate, which guides force the linkage to an angular position in which it moves directly without skew to the retracted position, and means for locking said extensible linkage to the housing when in the fully

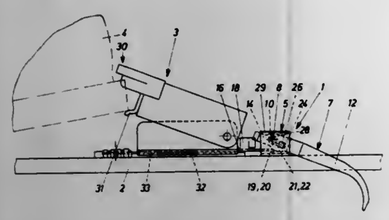
retracted position whereby substantially the whole of the load is borne by the housing.

4,116,461

BRAKE DEVICE FOR SKIS

Erwin Krob, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to TMC Corporation, Baar,Zug, Switzerland

Filed Nov. 24, 1976, Ser. No. 744,939
Claims priority, application Austria, Dec. 5, 1975, 9252/75
Int. Cl.² A63C 7/10
U.S. Cl. 280—605 **11 Claims**



1. A brake device for use on skis having a ski binding component mounted for movement relative to said ski in response to both an engagement with and release from a ski boot, comprising:

at least one lever and pivotal support means pivotally supporting said lever on said ski for movement about a horizontal axis and a vertical axis between a braking position and a retracted position, said lever having two arms, one arm defining a braking wing and the other arm defining a control arm for controlling the movement of said lever about said vertical axis, said lever also having a cam surface thereon;

resilient means continuously urging said lever toward said braking position about both said horizontal and vertical axes whereat said braking wing of said lever extends below the bottom surface of said ski;

first means on said ski binding component movable into engagement with said cam surface in response to an initial engagement of said ski boot therewith to effect a pivoting of said lever about said horizontal axis from said braking position to said retracted position and against the force of said resilient means; and

second means on said ski binding component movable into engagement with said control arm in response to a complete engagement of said ski boot therewith to effect a pivoting of said lever about said vertical axis and against the force of said resilient means to position said braking wing entirely over the upper surface of said ski.

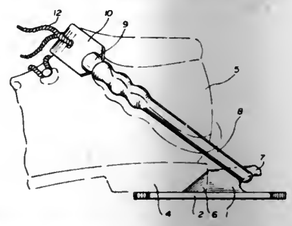
4,116,462

HEEL BINDING FOR TRAIL SKIS

G. Theodore Buel, 1179a King St., W., Toronto, Canada (M6K 3C5)

Filed Mar. 31, 1977, Ser. No. 783,334
Claims priority, application Canada, Apr. 27, 1976, 251177
Int. Cl.² A63C 9/12
U.S. Cl. 280—614 **7 Claims**

1. In a trail ski including a toe binding, a heel binding for use in combination with a ski boot, said heel binding comprising an elongated elastic member attached at each end thereof to said ski boot to form a closed loop, heel locating means including a flat base attached to the upper surface of the ski adjacent the heel of said ski boot, a shaped portion extending from one end of said base and a hook extending from the other end of said base, said shaped portion and hook being integral and forming a single member perpendicular to said base and integral therewith, a notch in said ski boot heel cooperating with said shaped portion to locate said boot on said ski in alignment with said toe binding, said hook releasably receiving said elastic member



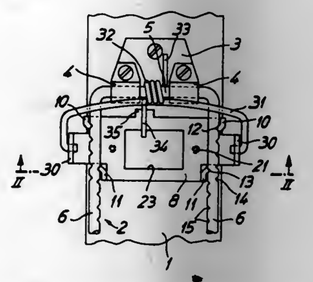
so as to maintain said elastic member under sufficient tension to resiliently retain the heel of the ski boot in contact with the ski.

4,116,463

SKI BINDING

Reinhold Zoor, Dachau, Fed. Rep. of Germany, assignor to Heinrich Wunder KG., Fed. Rep. of Germany

Filed Nov. 26, 1976, Ser. No. 745,041
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1975, 2553885
Int. Cl.² A63C 9/00
U.S. Cl. 280—615 **18 Claims**



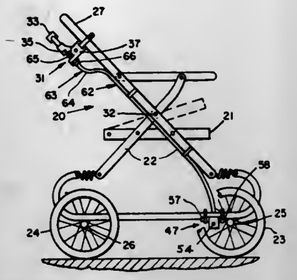
1. In a ski binding, a combination comprising a frame including a front portion and a plurality of elongated frame members extending rearwardly from said front portion, as considered in the skiing direction, at least one of said frame members having a plurality of first detent means spaced apart from each other, as considered longitudinally of said one frame member; means for coupling said front portion to a ski so as to enable said frame to pivot about an axis extending transversely of the skiing direction; means for reinforcing said frame, including a first section located below said frame members, a second section located above said frame members and at least partially overlying said first section, and means for fastening said sections to each other, said second section having an upper side which is contacted by the sole of a boot that is secured to the ski by said binding and at least one of said sections having second detent means releasably engaging selected first detent means of said one frame member to normally hold said one section against any movement lengthwise of said one frame member, said reinforcing means being movable lengthwise of said frame members solely upon disengagement of said first and second detent means from each other; and means for connecting said reinforcing means to the foremost portion of the sole of a boot which is secured to the ski, including a sole-engaging yoke and bearings provided on one of said sections and defining for said yoke a pivot axis extending transversely of the skiing direction.

4,116,464

AUTOMATIC BRAKE FOR WHEELED CARRIAGES

Frederick J. Haley, 819 Stevens St., Lowell, Mass. 01851

Division of Ser. No. 718,539, Aug. 30, 1976. This application Jul. 5, 1977, Ser. No. 813,006
Int. Cl. B62b 3/02
U.S. Cl. 280—647 **6 Claims**



1. In combination

a collapsible, foldable, baby stroller having a skeletonized foldable frame, a front and rear axle, spoked front and rear wheels and a push bar handle;

and automatic brake means comprising:

a pair of finger bar brackets each clamped proximate one of the opposite ends of said push bar handle, each having a fixed portion and a pivotable portion, said pivotable portions supporting a hollow tubular telescopable finger bar therebetween;

a pair of brake rod brackets, each clamped on an opposite side of said frame, proximate said front wheels, each having a brake rod slidable therein and normally spring biased outwardly with the free tip thereof between the spokes of one of said front wheels and each brake rod having a set screw slide mounted thereon;

and a sheathed flexible stranded cable connecting each finger bar bracket to one of said brake rod brackets, each stranded cable connecting the pivotable portion of a finger bar bracket to the set screw slide of a brake rod and one end of each sheath of each said cable being affixed to the fixed portion of a finger bar bracket and the other end of each said sheath being affixed to the corresponding brake rod bracket.

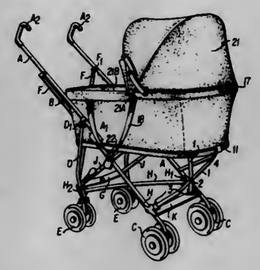
4,116,465

BABY CARRIAGES

Owen F. Maclaren, Barby, near Rugby, England, assignor to Gannet Holdings Limited, Channel Islands

Filed Oct. 29, 1976, Ser. No. 737,011
Claims priority, application United Kingdom, Nov. 3, 1975, 973092/75; Nov. 18, 1975, 47452/75
The portion of the term of this patent subsequent to Nov. 29, 1991, has been disclaimed.
Int. Cl. B62b 11/00
U.S. Cl. 280—647 **20 Claims**

1. A carriage, stroller, wheeled-chair, cart or like assembly which has a rigid three-dimensional structure when unfolded, and is capable of simultaneously folding in a plurality of its three dimensions to form a substantially stick-like bundle in its folded condition, said assembly comprising: a bottom cross frame of rigid members interpivoted at a point between their ends; a back cross frame of rigid members interpivoted at a point between their ends; pivot joint means interpivotally attaching one of the bottom frame members to one of the back frame members at each of two corners of said cross frames, said pivot joint means for permitting the members of each cross frame to pivot with respect to each other and for permitting said cross frames as a whole to pivot with respect to each other; two foldable brace members each comprising pivotally connected upper and lower members, one on each side of the assembly, pivotally attached to the bottom cross frame near the two other corners of the bottom cross frame, respectively, and to the back cross frame near the other two corners of the back cross frame, respectively; first releasable means for holding the members of at least one of the cross frames in an extended position when the assembly is unfolded; and second releasable means for holding said brace members in an extended position when the assembly is unfolded and for linking the folding actions of the foldable brace members and cross frames so that those folding actions occur simultaneously, said second releasable means comprising a pair of first strut members each pivotally connected to the upper member of one of said brace members and to a cross frame near the location of said pivot joint means, and a pair of second strut members each pivotally connected to the lower member of one of said brace members and to said pivot joint means; four wheel sets one near each corner of the bottom cross frame, two rear wheel sets being



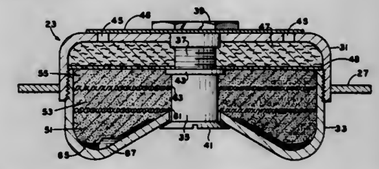
mounted on downwardly extended portions of said second strut members, and two front wheel sets being mounted on slightly extended ends of the foldable brace members; a third cross frame of rigid members interpivoted at a point between their ends with one end of one of the rigid members of said third cross frame being pivotally attached to one foldable brace member near one of said other corners of the bottom cross frame, and the other of said rigid members of said third cross frame being attached to the other foldable brace member near another of the other two corners of the bottom cross frame, said third cross frame simultaneously foldable with the remainder of the assembly, and pivotally extendable from a position substantially parallel the plane of the bottom cross frame to a position extending generally upwardly from said other two corners of the bottom cross frame in which position of said third cross frame comprises means for supporting the forward end of any carrying means mounted on the assembly.

4,116,466

FLUID SUPPLY FOR OCCUPANT RESTRAINT SYSTEM

Robert G. Gehrig, Southfield, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 528,247, Nov. 29, 1974, abandoned. This application Aug. 30, 1976, Ser. No. 718,737
Int. Cl.² B60R 21/08
U.S. Cl. 280—736 **19 Claims**



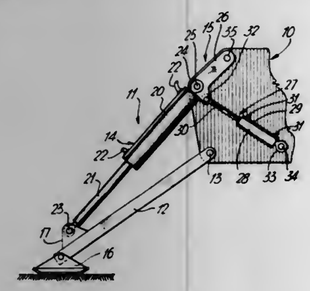
1. A fluid supply for inflating an expandable confinement of a vehicle occupant restraint system of the type activated in response to a vehicle collision signal, said fluid supply comprising:

(a) housing means defining a fluid discharge port for directing fluid flow from said housing means;
(b) gas generating means disposed within said housing means and including combustible means having
(i) a sustaining charge comprising a plurality of layers of granulated material, said sustaining charge being of the type which, upon combustion, produces solid, porous sinters and fly ash;
(ii) screen means disposed between adjacent layers of said sustaining charge, each of said screen means having a mesh substantially finer than the granules of material in the layer adjacent said screen means and upstream therefrom, each of said screen means permitting gas to pass freely therethrough and retaining said sinters upstream therefrom, said retained sinters being effective for permitting said generated gas to pass therethrough while simultaneously filtering said fly ash; and
(c) means operable to activate said sustaining charge in response to said collision signal.

4,116,467
OUTRIGGER

Russ J. Ewert, Calgary, Canada, assignor to Canadian Foremost Ltd., Canada

Filed Jan. 19, 1977, Ser. No. 760,715
Claims priority, application Canada, Feb. 16, 1976, 245819
Int. Cl.[2] B60S 9/10
U.S. Cl. 280—764 **6 Claims**



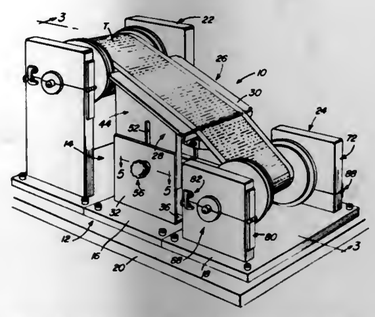
1. An outrigger for stabilizing the frame of a mobile apparatus, said outrigger comprising:
an outrigger arm consisting of a ground engaging outer end and a frame engaging inner end, the inner end being pivotally connected to the frame by way of pivotal means fixed relative to said frame;
a main hydraulic jack pivotally connected at the outer end thereof to said arm at a point outward of said inner end of the arm;
means connecting the inner end of said jack to the frame for forcing displacement to the inner end of the jack inwardly relative to the fixed pivot means and the frame.

4,116,468
REGISTER TAPE EDITOR

Hilda C. Marten, 13560 Ridge Rd., North Huntingdon, Pa. 15642

Filed Mar. 18, 1977, Ser. No. 778,937
Int. Cl.[2] B42D 19/00; B65H 17/02
U.S. Cl. 281—7 **12 Claims**

1. A register tape editor, comprising, in combination:
(a) a supporting base;
(b) first and second roller assemblies rotatably mounted in spaced, substantially parallel arrangement on the base; and
(c) reading and notation table means disposed between the first and second roller assemblies for supporting a length of tape extending between the roller assemblies, the latter winding and unwinding the tape from one of the roller assemblies to the other across the reading and notation table means, the reading and notation table means being adjustable vertically with respect to the supporting base of the editor, one of the first and second roller assemblies has an axis of rotation disposed vertically from the supporting base a greater distance than an axis of rotation of the other of the roller assemblies, with the reading and notation table means including a top portion forming an inclined tape support surface arrangeable substantially parallel to a plane assumed by the length of tape extending between the roller assemblies, the table means further including a pair of co-directionally extending, spaced stands arranged

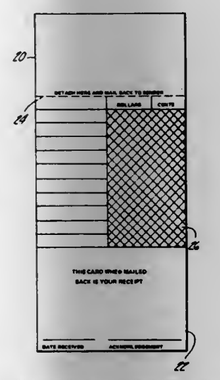


abutting with and fastened to the supporting base, with the stands being disposed extending upwardly, each of the stands being provided with an aperture, the top portion of the table means including two substantially parallel legs extending downwardly from the tape support surface, each of the legs being provided with a longitudinally extending slot cooperating with an aperture to form a pair of sets of apertures and slots, and fastener means engaging both sets of each of the cooperating apertures and slots for adjustably mounting the top portion of the top means on the stands.

4,116,469
COMBINED PAYMENT AND RECEIPT FORM AND METHOD OF USING

Russell H. Harriman, 30335 Woodhaven Ln., Birmingham, Mich. 48010, and Timothy T. May, 25 Crestwood, Gross Point Shores, Mich. 48236

Filed Aug. 8, 1977, Ser. No. 822,806
Int. Cl.[2] B42D 15/00
U.S. Cl. 282—23 R **6 Claims**

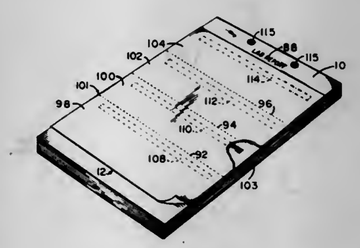


1. A combined payment and receipt form set for use in mailing a payment from a first party to a financial institution and acknowledgement thereof from the financial institution to the first party, said form set including a first top payment sheet and a second bottom receipt sheet, said top sheet having a preprinted payment information area adapted to be filled in by the first party, said second bottom sheet being formed of card stock and being of a size and thickness suitable for mailing as a postcard, said bottom sheet having a preprinted background camouflage pattern area located on the surface facing said top sheet and located immediately below the preprinted payment information area, said camouflage pattern printed in a first predetermined color, the opposite surface of the bottom sheet having an address area and a postage area, said set including means for imprinting payment information on said camouflage pattern in a second predetermined color when the first party writes payment information on the top sheet in the preprinted payment area, whereby when the camouflage pattern area is viewed through a transparent filter medium having a color transmitting frequency freely transmitting the first color but restricting transmission of the second color, the imprinted payment information on the bottom sheet will be visible to the viewer.

4,116,470
MEDICAL INFORMATION FORM FOR PLURALITY OF INDIVIDUAL REPORTS

Edward L. Johnsen, 12 Fox Meadow Ln., Wayland, Mass. 01778

Continuation of Ser. No. 613,546, Sep. 15, 1975, abandoned, which is a division of Ser. No. 382,162, Jul. 24, 1973, Pat. No. 3,945,879. This application Jan. 31, 1977, Ser. No. 767,945
Int. Cl.[2] B42D 11/00; G09F 1/10
U.S. Cl. 283—66 A **1 Claim**

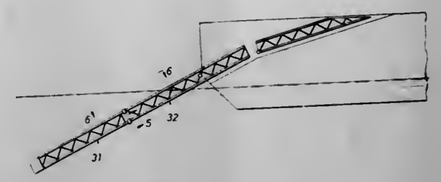


1. A medical information form comprising a base or carrier sheet and one or more reports which are selectively secured thereto, said base or carrier sheet having a particular pattern of pressure sensitive adhesive on one surface thereof, which subdivides said surface into areas which are free of adhesive, and wherein said pattern comprises an elongate, transversely extending strip co-extensive with the width of the base or carrier sheet, and a release sheet secured to, carried by, and overlying the said base or carrier sheet and the adhesively coated surface thereof, said release sheet longitudinally subdivided into a plurality of interconnected, independently removable sub-panels each of which overlies an adhesive strip and an area of the base or carrier sheet which is to be occupied by a single report upon removal of a sub-panel whereby to secure one report to the particular adhesive pattern which is exposed incident to the removal of a sub-panel of the release sheet, and wherein each report is not only secured to the base or carrier sheet but also to a portion of an adjacent report when mounted on the information form, said portion of the adjacent report including a coating of pressure sensitive adhesive and a strip of removable release sheet secured to, carried by, and concealing said adhesive coating.

4,116,471
QUICK OPERATING CONNECTOR FOR PIPES OR THE LIKE

Anthony Bruce Duncan, Missouri City, and Arthur H. T. Chin, Houston, both of Tex., assignors to HydroTech International, Inc., Houston, Tex.

Filed Apr. 25, 1977, Ser. No. 790,315
Int. Cl.[2] F16L 35/00
U.S. Cl. 285—1 **11 Claims**



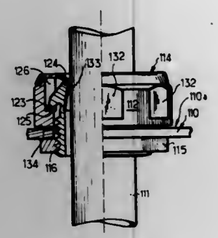
1. In apparatus for quick releasably connecting a first structure to a second structure, the combination comprising:
a plurality of first coupling members each connected at one end thereof to said first structure, and each having at the other end thereof an annular radially outwardly extending flange having a forward side and a rearward side, said rearward side having a radially inner portion and a radially outer portion, said radially inner portion having a slope relative to the central axis of said first coupling member greater than that of said radially outer portion;
a plurality of second coupling members, each connected at one end thereof to said second structure, and each having at the other end thereof a housing for receiving said flange in mating fashion;
a plurality of self-locking cams disposed circumferentially about each of said housings, said self-locking cams being generally radially inwardly and outwardly movable between a retracted position in which said flange is receivable within said housing and an extended position in which said self-locking cams engage said radially inner portion of said flange in self-locking fashion;
means for actuating said self-locking cams to and from said extended position;
a plurality of non-locking cams disposed circumferentially about each of said housings, said non-locking cams being generally radially movable between a retracted position and an extended position in which said non-locking cams engage said radially outer portion of said flange in non-locking fashion;
a plurality of hydraulic piston and cylinder assemblies disposed circumferentially about each of said housings, said piston and cylinder assemblies being arranged for actuating said non-locking cams to said extended position and holding said non-locking cams in engagement with said radially outer portion of said rearward side of said flange to thereby hold said first and second coupling members together when said self-locking cams are actuated to said retracted position;
and means for substantially simultaneously actuating all of said piston and cylinder assemblies so as to move said non-locking cams on all of said housings to said retracted positions after said self-locking cams have been actuated to said retracted position, to thereby quickly disconnect said first structure from said second structure.

4,116,472

SEALED WALL LEAD-THROUGH MEANS FOR CABLES IN PARTICULAR FOR JUNCTION BOXES

Ludwig Peter Schmitt, 67260 Sarre-Union, France

Filed Apr. 22, 1975, Ser. No. 571,018
Claims priority, application France, Apr. 25, 1974, 74 14476; Apr. 15, 1975, 75 11670
Int. Cl.² F16L 35/00
U.S. Cl. 285—4 7 Claims



1. In a fluid-tight wall lead-through packing and gland assembly for cables more particularly for the connection of electric cables within a hole in a wall of a junction box, comprising a bushing having a threaded portion securable within said hole and advanceable axially therewithin, said bushing terminating at one of its axial ends in circumferentially spaced and axially extending teeth radially tiltable with respect to said threaded portion, each of said teeth forming a lever one free end of which projects radially outwardly of the surface of said bushing, an annular collar adapted to axially abut the wall and positionable coaxially and externally of and about said one axial end of said bushing and comprising circumferentially spaced longitudinal cuts provided on a portion of the inner surface of said collar, said cuts being positioned and dimensioned to receive corresponding teeth of said bushing, one end of each said cut forming an abutment for bearing engagement by the free end of the corresponding tooth of said bushing, and an annular deformable sealing packing positionable concentrically about said cable and having a medial portion entering said one axial end of said bushing and a radially outer portion engaging with said annular collar; thereby said teeth are radially inwardly pivotable upon engagement of said collar with the wall in response to axial advancement of said bushing into the hole so as to deform said sealing packing into sealing engagement with the outer surface of the cable.

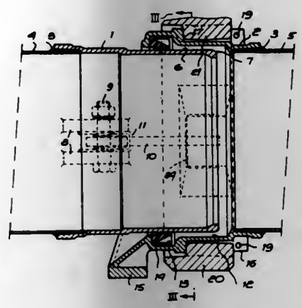
4,116,473

PIPE COUPLING

José Humet Crens, Avenida Mosen Jacinto Verdiguer, 15 Santa Perpetua de Moguda, Barcelona, Spain

Filed Nov. 3, 1976, Ser. No. 738,465
Claims priority, application Spain, Nov. 4, 1975, 216.609
Int. Cl.² F16L 39/04
U.S. Cl. 285—5 10 Claims

1. A pipe coupling for fluid carrying pipes comprising male and female coupling element respectively terminating in open ends, said male coupling element extending with clearance into said female coupling element so that the latter has an inner surface surrounding and spaced from an outer surface of said male coupling element and defining with said outer surface an annular gap, sealing means operatively connected with said elements for fluid-tightly sealing said gap while providing for tilting of said elements, one relative to the other, within the limits of the clearance therebetween, and attachment means operatively connected with said elements for releasably attaching them to each other, said attachment means including a ring loosely surrounding one of said coupling elements, a pair of diametrically opposed articulation means operatively connected between said ring and said one element for connecting said ring to said one element for swinging movement with respect thereto about a first swing axis extending through said pair of articulation means and perpendicularly across a central axis of said one coupling element, said attachment means further including two pairs of engagement means, one of said pairs of engagement means being diametrically opposed to each other and situated at said ring along a second swing axis which is perpendicular to said first swing axis and said central



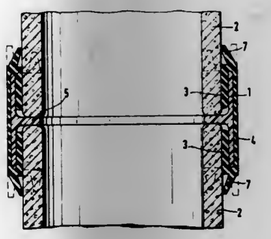
axis of said one coupling element, both of said swing axes being situated in a plane normal to said central axis of said one coupling element, and the other of said pairs of engagement means being carried by the other of said coupling elements respectively in axial alignment with said one pair of engagement means and respectively engaging said one pair of engagement means for swingably connecting said coupling elements to each other for swinging movement one relative to the other about said second swing axis, whereby said male and female coupling elements are free to undergo a universal relative angular movement when attached together.

4,116,474

PIPE COUPLING

Franz-Josef Wolf, D-6483 Bad Soden-Salmunster, Sprudelallee 19, Germany

Continuation-in-part of Ser. No. 675,457, Apr. 9, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,591
Int. Cl.² F16L 49/00
U.S. Cl. 285—110 7 Claims



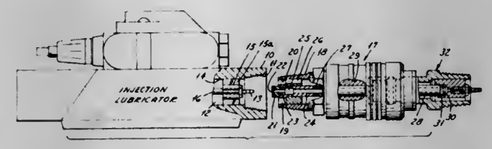
1. In a pipe coupling for connecting to one another the ends of two pipes made of mineral materials which includes an insertion socket in the form of a cylindrical body open at both ends and having an outside diameter larger than the diameter of either pipe and a packing ring in the form of a resilient, extensible cylindrical member having a central portion and two end portions, the central portion extending over the outer wall of said body and the end portions projecting beyond the open ends of the cylindrical body, at least one sealing ring on each of the end portions of the member forming the packing ring, the improvement comprising the packing ring being formed as the outer casing for the insertion socket, and the sealing rings on the end portions extending radially of the central portion beyond the ends of the insertion socket and having no contact with the inner wall of said body prior to insertion of a pipe end into the coupling and being disposed between the insertion socket in contact with said inner wall and the outer wall of the pipe during and after insertion.

4,116,475

DIRECT CONNECTION CO-AXIAL FITTING FOR INJECTION LUBRICATOR

Marshall H. Glaser, Birmingham, and Patrick L. Jeakle, Sterling Heights, both of Mich., assignors to Orsco, Inc., Troy, Mich.

Filed Oct. 8, 1976, Ser. No. 730,968
Int. Cl.² F16L 39/00
U.S. Cl. 285—133 R 13 Claims



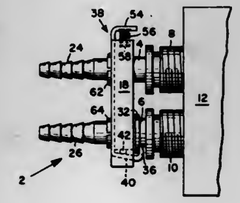
1. A co-axial direct connection fitting for dual fluid passage coupling with an Injection Lubricator, said Lubricator having means rigidly associating co-axial external air and internal lubricating fluid outlets, said external outlet including a threaded coupling element, said internal outlet terminating in a rigid relatively small diameter centrally located tubular coupling element, said fitting being characterized by means rigidly associaing co-axial external air and internal lubricating fluid inlets, said external inlet having means for sealed coupling with said external outlet including a threaded coupling element adapted to co-axially matingly engage said outlet threaded element upon rotation and thread produced axial displacement relative thereto, and said internal lubricating fluid inlet having means for sealed coupling with said internal outlet including a centrally located resiliant grommet adapted to directly align, overpass and sealingly connect with said outlet tubular element as a direct result of said co-axial mating engagement and thread produced axial displacement.

4,116,476

QUICK DISCONNECT COUPLER ASSEMBLY

Gary K. Porter, and George K. Porter, Jr., both c/o Porter Instrument Company, Inc., P.O. Box 326, Township Line Rd., Hatfield, Pa. 19440

Filed Nov. 11, 1977, Ser. No. 850,550
Int. Cl.² F16L 39/00
U.S. Cl. 285—137 R 1 Claim



1. The improvement in a coupler assembly for supplying different fluids having a base member adapted to supply fluid through a first socket member and a second different fluid through a second spaced socket member, each socket member being secured to the base and extending beyond the base, the improvement comprising:

a hose terminal fitting having a pair of spaced tubular plugs for entry into said socket members and each communicating with a hose nipple,

a hook secured to one of said socket members exterior of the base member and extending substantially perpendicular to the axis of the socket members,

a latch mounted on the hose terminal fitting substantially perpendicular to the axes of the nipples for engaging the hook and locking the tubular plugs against withdrawal from the sockets,

said latch having a first portion which extends along a rear face of the fitting and is connected to an operating finger adjacent one end of the fitting and which is connected to a second portion of the latch adjacent the other end of the fitting which engages the hook, said second portion of the latch having a cam surface for camming the latch to the open position as the latch engages the hook on inward movement of the plugs to permit the latch to pass and then engage the hook,

said first portion of the latch having recesses spanning the nipples to permit the latch to move relative to the nipples,

a compression spring engaging the finger to bias the latch to the closed position,

flanges on the fitting to guide the latch, and

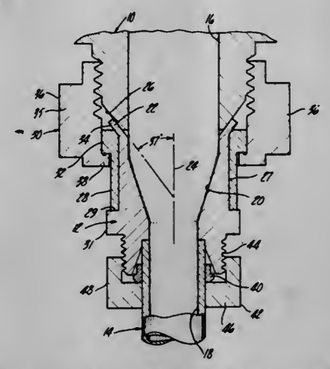
one of the plugs having a diameter larger than the diameter of the other plug and adapted to be received into the first socket member which has a diameter larger than the second socket member.

4,116,477

CONNECTOR, REDUCER/ADAPTER, FLARE TO FLARELESS

Ernest C. Wahoski, Harper Woods, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 14, 1977, Ser. No. 759,299
Int. Cl.² F16L 55/00
U.S. Cl. 285—169 3 Claims



1. In the combination comprising an externally threaded pipe (10) defining a large diameter fluid passage (16), said pipe having an external frusto-conical end surface (26); and a smooth-walled tube 14 having a cylindrical end section defining an internal passage (18) of appreciably smaller diameter than the aforementioned fluid passage (16);

the improvement comprising means for connecting the tube to the pipe in fluid-tight fashion, said connecting means including a one-piece annular connector body (12) having a first end section that defines a large diameter passage constituting a smooth continuation of the aforementioned passage (16), a second end section defining a small diameter passage constituting a smooth continuation of the aforementioned smaller passage (18), and an intermediate

section defining a tapering passage merging smoothly with the large and small diameter passages;

the first end section of the connector body including an annular flange (22) angled acutely outwardly relative to the connector body axis to define an internal frusto-conical surface (33) matable with the frusto-conical end surface (26) on the pipe, said annular flange also defining an external frusto-conical surface (34);

means pressuring the connector body flange (22) against the pipe end surface, comprising a sleeve (28) encircling the connector body and a sleeve-engaged nut (30) threaded onto the pipe to draw the sleeve and connector body toward the pipe end surface;

said second end section of the connector body having a cylindrical socket therein snugly fitting around the cylindrical end section of the aforementioned tube (14), the mouth of the cylindrical socket being flared to define an annular cavity surrounding the tube;

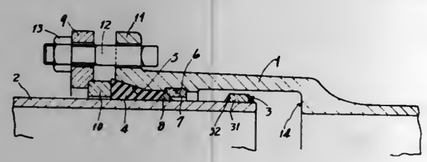
a sealing ring (40) seated within said cavity, and an annular cap (48) threaded onto the second end section of the connector body to compressively pack the sealing ring into the annular cavity.

4,116,478

SEPARATION-PREVENTIVE PIPE JOINT

Tadao Yamaji; Toshi Nakajima, and Takao Sagara, all of Amagasaki, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Sep. 1, 1977, Ser. No. 829,605
Claims priority, application Japan, Sep. 13, 1976, 51-110112
Int. Cl.² F16L *21/04*
U.S. Cl. 285—302 **8 Claims**



1. In a separation-preventive pipe joint comprising a socket, a spigot inserted in said socket, a seal packing pressed into an annular space defined between the mutually fitted socket and spigot, a split lock ring engaged with a groove in the inner peripheral surface of the socket inwardly of said seal packing, and an engaging projection engageable with said lock ring axially from the innermost part of the socket and provided on the outer peripheral surface of the front end of the spigot, the improvement wherein:

said split lock ring has a thickness less than the annular space defined between the socket and spigot and has a diametrically expanding force, and said groove has a depth less than the thickness of said split lock ring whereby said split lock ring is adapted to be inserted through said annular space into seating engagement with said groove, a portion of said split lock ring projecting from said groove in clearance relation with the outer peripheral surface of the spigot for engagement with said engaging projection;

a back-up ring is interposed between said split lock ring and said seal packing, said back-up ring having opposite lateral surfaces abutting said split lock ring and said seal packing; and,

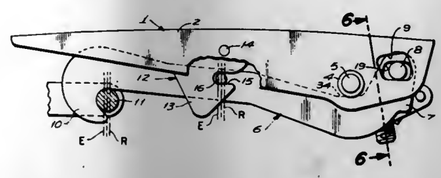
the abutting surfaces of said split lock ring and said back-up ring taper toward the front end of the spigot for retaining said split lock ring in seated engagement with said groove.

4,116,479

ADJUSTABLE FLUSH MOUNTED HOOK LATCH

L. Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Filed Jan. 17, 1977, Ser. No. 759,752
Int. Cl.² E05C *5/00, 19/12*
U.S. Cl. 292—113 **7 Claims**



1. The combination with a latch structure including a manually pivotable handle about a first shaft between a closed position and an angular exposed position; and a hook latch pivotably attached to the handle for a movement of its attached end about a second shaft carried by the handle whereby the extended end of the hook latch moves in an essentially longitudinal direction for engagement with or disengagement from a keeper, of a latch adjustment means, comprising:

a. means for permitting relative displacement of the first and second shafts while the shafts remain in parallel relation;

b. screwthreaded means extending between the shafts to effect such relative displacement thereby to change the stress exerted between the hook latch and its keeper;

c. the screwthreaded means including a screw member extending between the shafts, a screwthreaded anchor bar engaging one side of the two shafts, and a wedge member exerting a spreading force between the shafts;

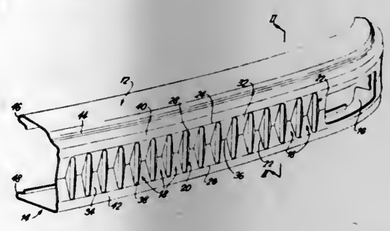
d. and an aperture in the handle providing access to the screwthreaded means while the hook latch and keeper are engaged.

4,116,480

AUTOMOTIVE VEHICLE BUMPER

Giovanni Crestetto, Turin, Italy, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 11, 1976, Ser. No. 666,100
Claims priority, application Italy, Mar. 21, 1975, 67714 A/75
Int. Cl.² B60R *19/02*
U.S. Cl. 293—98 **8 Claims**



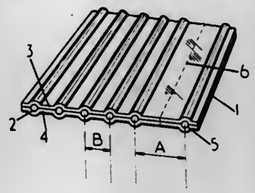
1. An automotive vehicle bumper of the type having a single shaped element of thin sheet steel having in cross-section a substantially C-shaped profile comprising a web and two flanges, wherein the free edges of said flanges are turned toward the interior of the bumper profile and wherein said web presents from its external surface a series of integral depressions drawn from said thin sheet steel which form a plurality of ribs, wherein each of said depressions presents a substantially rectangular outline with two side edges oriented in the transverse direction of said bumper and two end edges oriented in the longitudinal direction of said bumper and providing two pairs of wall parts synmmetrically converging towards the interior of the C-shaped profile respectively from said side edges and from said end edges.

4,116,481

LIFTING SLINGS AND A METHOD FOR PRODUCING SAME

Karl Moritz Raue, Basel, Switzerland, assignor to Spanset Inter A.G., Basel, Switzerland

Filed Dec. 20, 1976, Ser. No. 752,954
Claims priority, application United Kingdom, Dec. 24, 1975, 52785/75
Int. Cl.² B66C *1/16*
U.S. Cl. 294—74 **9 Claims**



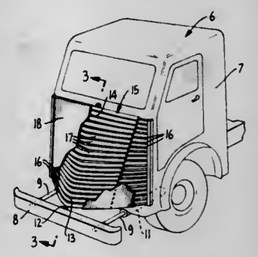
1. A load-lifting sling comprising a first loop of strip material, a second loop of strip material contigous with said first loop and bonded thereto, a plurality of fibre bundles located between said first and second loops of strip material and spaced one from another transversely across the width of the strip material of the sling, each fibre bundle comprising a length of fibre wound continuously as a hank, and means for allowing the strip material to be selectively longitudinally divisible between two fibre bundles along a portion of its length to provide at least one integral lashing component.

4,116,482

VEHICLE AIRFLOW CONTROL DEVICE

Leonard Lee Spiegel, 152 Buena Vista, Mill Valley, Calif. 94941

Filed Apr. 13, 1977, Ser. No. 787,004
Int. Cl.² B62D *35/00*
U.S. Cl. 296—1 S **10 Claims**



1. A streamlining device for attachment to a land vehicle comprising:

a bumper attached to a land vehicle to be movable toward and away of that vehicle;

bumper moving means on the land vehicle for moving said bumper while the vehicle is in motion;

an air deflecting structure attached to the land vehicle at one end of that vehicle to be essentially upright and to have a top end and a bottom end, said air deflecting structure top end being immovably attached to the land vehicle and said air deflecting structure bottom end being immovably attached to said bumper to be movable therewith so that said air deflecting structure moves with said bumper to change the orientation of said air deflecting structure with respect to the land vehicle as said bumper is moved toward and away of the land vehicle; and

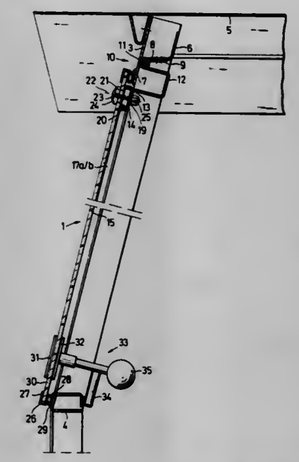
control means on the land vehicle controlling said bumper moving means to move said bumper while the vehicle is in motion so that at low speeds said bumper is located in a position closely adjacent the vehicle one end and said air deflecting structure is essentially vertical to be flush with the vehicle one end and thereby define a blunt surface to the atmosphere, and at higher speeds said bumper is located in a position spaced from the vehicle one end and said air deflecting structure bottom end is spaced from the vehicle one end thereby tilting said air deflecting structure with respect to the vehicle into a streamlining orientation with respect to the vehicle.

4,116,483

WINDOW FOR VEHICLE CABS, ESPECIALLY FOR VEHICLES EMPLOYED IN AGRICULTURE AND IN CONSTRUCTION

Peter Kramer, Troisdorf-Spich, and Peter Buchholz, Cologne, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Dec. 13, 1976, Ser. No. 750,162
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556309
Int. Cl.² B62D *33/06*
U.S. Cl. 296—28 C **12 Claims**



1. In combination: a motor vehicle cab having an upper frame member extending in the transverse direction of said cab, a lower frame member arranged in substantially parallel spaced relationship to said upper frame member, and two lateral frame members respectively arranged at the opposite ends of said upper and lower frame members and laterally interconnecting the same so as to define with each other and with said upper and lower frame members a substantially quadrangular window opening with the extension thereof in the transverse direction of said cab representing the length of said window opening and with the extension transverse to said length representing the width of said window opening; a window pane covering up said window opening and having an inner side facing toward the interior of said cab and having an oppositely located outer side facing away from the interior of said cab, said window pane having a first edge adjacent and substantially parallel to said upper frame member, a second edge opposite and substantially parallel to said first edge, and two lateral edges arranged opposite to each other and respectively extending from said first to said second edge; hinge means laterally spaced from each other and partly connected to said upper frame member and partly arranged on said inner side of said pane for hingedly connecting said window pane to said upper frame member; a yoke member bridging said hinge means and being connected thereto while being associated with and located exclusively only at said inner side along the first edge of said pane but in spaced relationship thereto, web means pivotally interconnecting said yoke member and said upper frame

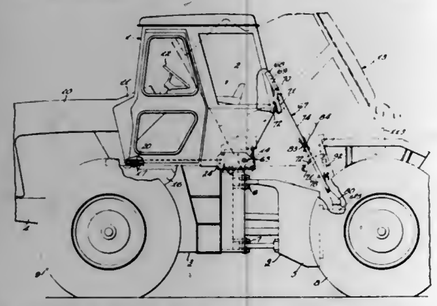
member relative to said hinge means, said yoke member having a longitudinal section arranged at and along said first edge while extending in the transverse direction of said cab, said yoke member also having lateral legs respectively arranged at said oppositely located lateral edges, said lateral legs having those ends thereof which are remote from said longitudinal section spaced from said second edge; and actuating means arranged between said second edge and said last mentioned legs and respectively connected to said legs and said lateral frame members.

4,116,484

TILTABLE CAB MOUNTING

Vernon W. Mangless, Mukwonago, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 17, 1976, Ser. No. 751,760
Int. Cl.[2] B62D *33/06*
U.S. Cl. 296—28 C **10 Claims**



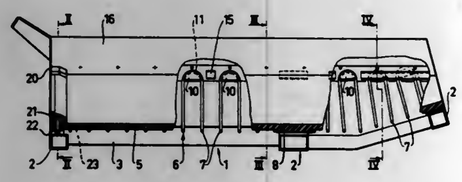
1. A tractor having a cab mounted thereon comprising, a tractor chassis, a cab supporting frame means resiliently mounted on said chassis, a cab defining an operator station including side members extending along the side of the cab and supported on said cab supporting frame means, a platform supported on said side members, fastening means removably fastening said platform and the side members of said cab to said cab supporting frame means, a control console mounted on said cab supporting frame means extending upwardly between said side members into said cab, pivotal support means resiliently mounted on said chassis and pivotally supporting the lower rear portion of said cab for pivotal movement above a horizontal axis, removable locking means for selectively and alternatively locking said cab in the operating position and releasing said cab for pivoting to a tilted position.

4,116,485

LOADING CAGE FOR BULK GOODS

Assar Svensson, Ersmark, Sweden, assignor to Skega AB, Ersmark, Sweden

Filed Aug. 18, 1976, Ser. No. 715,467
Int. Cl.[2] B62P *1/00*
U.S. Cl. 296—39 R **14 Claims**



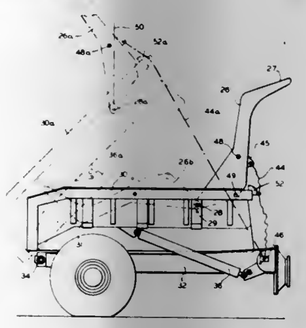
1. A container for receiving and carrying heavy bulk goods dropped into the container without suffering damage, the container comprising in combination: a substantially rigid supporting framework including means defining a base for the container and first and second opposite, generally parallel side members extending upwardly from the base; a sheet of an elastomeric material extending over the length of the container and having longitudinal edges disposed adjacent the side members, the sheet between its longitudinal edges defining at least a floor of a receptacle for the bulk goods and being further dimensioned so that such portions are at all times spaced apart from the framework; a plurality of generally parallel, flexible carrying means extending between the sides of the framework and in contact with an underside of the sheet so as to support the sheet over its length transversely to the carrying means; and means anchoring the carrying means to the sides; whereby bulk goods dropped into the receptacle are received by the elastomeric sheet without contacting and thereby damaging the rigid framework while the framework, in conjunction with the sheet and the carrying means supports the weight of the bulk goods.

4,116,486

RETRACTABLE ROCK GUARD FOR A DUMP TRUCK BODY

Ralph M. Duttarer, St. Joseph, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 21, 1977, Ser. No. 789,591
Int. Cl.[2] B60P *1/28*
U.S. Cl. 298—17 R **3 Claims**



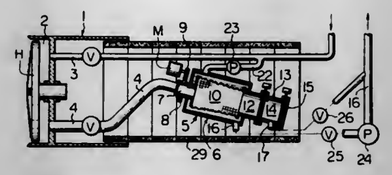
1. A retractable rock guard for a truck dump body, the dump body being normally horizontally disposed and pivotally connected near its rear extremity about a horizontal axis to a fixed frame portion of the truck and being selectively movable between the normal horizontally disposed position and a raised dump position, the retractable rock guard comprising a protective structure normally located in an upright position adjacent the front of the dump body and pivotally connected about a second horizontal axis to such dump body, means for detachably securing said protective structure to the dump body at a point spaced from said second horizontal axis, said securing means being operable to disconnect said protective structure from the dump body at said point when retraction is desired, the said protective structure being constructed and arranged so that when the dump body is raised to a dump position the center of mass of the protective structure passes through a vertical plane intersecting said second horizontal pivot axis and the protective structure pivots to the rear and retracts downwardly onto the dump body.

4,116,487

DEVICE FOR REMOVING GRAVELS AND THE LIKE FROM DISCHARGED MUD IN HYDRAULIC TUNNEL BORING SYSTEM

Hironobu Yamazaki, Kashiwa; Yoshiaki Uchida, Koshigaya, and Akira Nakaya, Tokyo, all of Japan, assignors to Tekken Construction Co. Ltd., Tokyo, Japan

Filed Jan. 24, 1977, Ser. No. 762,106
Claims priority, application Japan, Mar. 8, 1976, 51-24074
Int. Cl.[2] E21D *9/08*; E21C *39/00*
U.S. Cl. 299—1 **3 Claims**



1. In a hydraulic tunnel boring system in which pressurized water is fed to a hydraulic chamber at a boring head of a shield type tunnel boring machine through a feeding pipe for excavating ground formation, and excavated mud is discharged together with said water out of a tunnel being bored through a discharging pipe, a device for removing gravels, stones, rocks and the like of relatively larger sizes out of said excavated mud to be discharged, which comprises a rotatably mounted classifying means connected to said discharging pipe, said classifying means being of a lattice-shape, a housing surrounding said classifying means for rotatably retaining the classifying means and receiving the water and mud passed through the classifying means, a primary chamber communicating with a discharging side of the classifying means for receiving and storing separated gravels and the like of the relatively larger sizes from the classifying means, a secondary chamber communicating with said primary chamber for receiving and retaining such gravels and the like from the primary chamber, a primary valve means provided between said primary and secondary chambers for permitting removal of the gravels from the primary chamber to the secondary chamber when the primary chamber is filled with such gravels and the like, and a secondary valve means provided at a discharging side of the secondary chamber for permitting discharge of the gravels and the like when the secondary chamber is filled with the gravels and the like received from said primary chamber.

4,116,488

IN-SITU MINING METHOD AND APPARATUS

Limin Hsueh, Bedford; Robert A. Hard, Still River; Donald H. Davidson, Bedford, and Ray V. Huff, Acton, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sep. 20, 1976, Ser. No. 724,548
Int. Cl.[2] E21C *43/28*
U.S. Cl. 299—4 **98 Claims**

1. A process for the in-situ mining of a metal value selected from the group consisting of copper, nickel, molybdenum and mixtures thereof from an underground igneous ore body located at a depth of 800 ft. or more, said ore body having a permeability such that the product of the ore body thickness in ft. and permeability in md is a value of 20,000 md-ft or less, said ore also having minute fractures in which the metal values to be recovered are located in chemical combination with sulfur in a mineral of the generel formula MFe_yS_x, said process comprising:

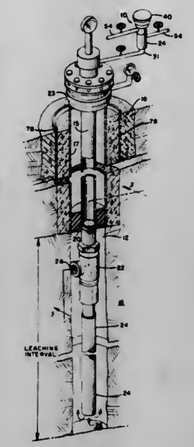
(a) drilling at least one injection hole and at least one production hole into said ore body;

(b) introducing a two-phase lixiviant down said injection hole and into a leaching interval in said ore body, said leaching interval being beneath the water table, said two-phase lixiviant being formed from

(1) an aqueous leach liquor capable of solubilizing the metal values, and,

(2) minute oxygen bubbles of a size small enough to enter the fractures in the ore body from which the metal values are to be recovered;

(c) forcing the two-phase lixiviant through the leaching interval of the underground ore body to enable the two-phase lixiviant to penetrate the ore body through the



fractures in the ore body and to enable the oxygen bubbles in the two-phase lixiviant to react with the sulfur to which the metal values are chemically bonded to enable the metal values to be solubilized by the aqueous leach liquor to produce a pregnant solution of metal values, said two-phase lixiviant being forced through said leaching interval by controlling the surface pressure of the two-phase lixiviant so that the minimum surface pressure, P_{SM}, in psi, is in accordance with the equation -

$$P_{SM} \geq \left(\frac{354.7\,[1.5x + 0.75y + 0.25z]}{MW}\right)\left(\frac{1-f_{gc}}{f_{gc}}\right)M/E,$$

in psi

where M is the metal loading in gpl of the metal value to be recovered, E is the overall efficiency of oxygen utilization, MW is the molecular weight of the metal ion to be recovered, z is the valance of the metal ion to be recovered, y and x are the subscripts for Fe and S respectively in a mineral of the general formula MFe_yS_x, where M is the metal to be recovered, and f_{gc} is the gas volume fraction associated with bubbly flow, the pressure of the two-phase lixiviant also being controlled so that the pressure of the two-phase lixiviant at the top of the leaching interval is less than the fracture pressure of the ore;

(d) withdrawing the pregnant solution to the surface through a production hole; and,

(e) recovering metal values from the pregnant solution.

4,116,489

LOCK RING FLANGED TIRE CARRYING RIM AND WHEEL

William D. Walther, Kettering, Ohio, assignor to Dayton-Walther Corporation, Dayton, Ohio

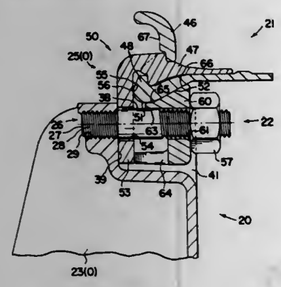
Continuation-in-part of Ser. No. 592,503, Jul. 9, 1975, abandoned. This application Dec. 13, 1976, Ser. No. 749,242
Int. Cl.[2] B60B *23/10*
U.S. Cl. 301—12 R **3 Claims**

1. A combination of dual inner and outer tire carrying rims seated and locked by fastening assemblies on a vehicle wheel, said wheel having a plurality of inner and outer spoke members, each of said inner spoke members having a felloe

comprising axially oriented and radially inclined surfaces and a radially directed surface extending inwardly from each of said axially oriented surfaces substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said inner rim fastening assemblies, each of said outer spoke members having a felloe comprising spaced-apart axially projecting wing portions providing outwardly facing dual axially oriented surfaces and a radially directed surface oriented transversely between said axially oriented surfaces substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said outer rim fastening assemblies,

each of said rims having a removable bead flange with a lock ring carried by a rim base edge portion having radially inwardly facing axially oriented and radially inclined surfaces, said lock ring having radially inwardly projecting mounting flanges, the terminal portion of each said mounting flange being radially directed and having a bore therein for receiving said axially projecting component of each said inner rim and outer rim fastening assembly,

each said fastening assembly for an outer rim comprising a threaded fastener and a clamp element supported by said threaded fastener, each said clamp element having lateral wing portions providing downwardly facing dual axially oriented surfaces, an axially inwardly directed member, and a radially outer portion with axially oriented and radially inclined surfaces,



whereby, said inner rim is seated on, and thereafter locked on, said inner spoke members by tightening of said inner rim fastening assemblies and the mating engagement of said axially oriented and radially inclined surfaces on each said inner spoke felloe with said axially oriented and radially inclined surfaces on said inner rim base edge portion and by the mating engagement of said radially directed surface on each said inner spoke felloe with said terminal portion of each said inner rim mounting flange, and,

whereby, said outer rim is seated on, and thereafter locked on, said outer spoke members by tightening of said outer rim fastening assemblies and the mating engagement of said radially directed surface on each said outer spoke felloe with said terminal portion of each said outer rim mounting flange and by the mating engagement of said axially oriented and radially inclined surfaces on each said outer rim base edge portion with said axially oriented and radially inclined surfaces on said radially outer portion of each said clamp element of each said outer rim fastening assembly, said downwardly facing dual axially oriented surfaces on said lateral wing portions of each said clamp element being in mating engagement with said outwardly facing dual axially oriented surfaces on each said outer spoke felloe and said axially inwardly directed member of each said clamp element being in mating engagement with said terminal portion of each said outer rim mounting flange.

4,116,490

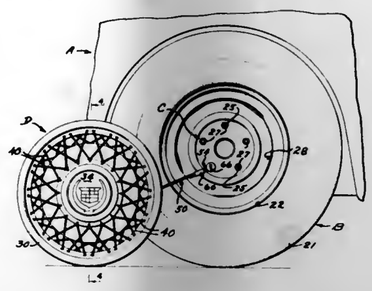
CABLE TYPE LOCK FOR WIRE WHEEL HUBCAPS

Eddie Huff, 1949 Handley Ave., SW., Atlanta, Ga. 30310, and Walter L. Huff, 149 Martha Ave., NE., Atlanta, Ga. 30317

Filed Jun. 29, 1977, Ser. No. 811,354

Int. Cl.[2] B60B *7/00*

U.S. Cl. 301—37 AT **7 Claims**



1. As an article of manufacture for use in association with a lug mounted vehicle wheel a wire wheel hubcap removably attached to the vehicle wheel and wherein said wire wheel hubcap includes a mounting rim, a cover, a plurality of spokes detachably interconnected to and extending between said mounting rim and said cover, spaced apart stud means for attaching said cover to said mounting rim whereby to securely mount said spokes in juxtaposed relationship between said mounting rim and said cover, said cover, studs and mounting rim defining a circumferential enclosed area within the hubcap and as to which a member entrained therewithin is accessible for removal therefrom only on disconnection and separation of said cover from said mounting rim, a wire wheel hubcap theft preventing device including a relatively elongate flexible member having means at one end thereof for relatively fixed attachment of said one end thereof to a lug mount of said vehicle wheel, the other end of said flexible member comprising a loop attachable about and entrained within said circumferential enclosed area, said elongate flexible member being of a length to permit said wire wheel hubcap to be removed and displaced a sufficient distance from a vehicle wheel receiving the same in order that ready access may be had to the lug mounting by which such vehicle wheel is mounted on a vehicle.

4,116,491

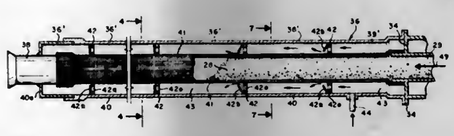
TUBULAR PNEUMATIC CONVEYOR PIPELINE

Lemuel Leslie Ply, Rte. 1, Box 354 E, Wimberley, Tex. 78676

Continuation-in-part of Ser. No. 638,114, Dec. 15, 1978, abandoned. This application May 12, 1977, Ser. No. 796,491

Int. Cl.[2] B65G *53/18*

U.S. Cl. 302—29 **6 Claims**



1. An apparatus for conveying a solid product, comprising:

a conveyor pipeline having an outer impervious pipe and an inner porous pipe radially spaced therefrom to form an annulus therebetween from the upstream end of the pipeline to the downstream end of the pipeline;

first and second end walls between said inner and outer pipes, said inner pipe receiving at the upstream end thereof a propelled solid product which is conveyed by said inner pipe to the downstream end thereof;

longitudinally spaced divider means between said inner and outer pipes dividing said annulus into a plurality of chambers;

each divider means having at least one uni-directional pressure-responsive vent, each vent being biased to open in the downstream direction; and

a gas inlet fluidly connected to the upstream portion of said annulus for receiving pressurized gas.

4,116,492

BRAKE VALVE ARRANGEMENT FOR A TWO-CIRCUIT BRAKE SYSTEM

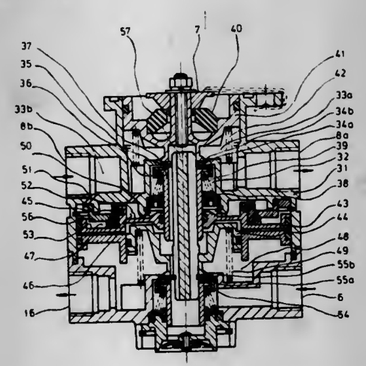
Erich Reinecke, Beinhorn, Fed. Rep. of Germany, assignor to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,601

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2548973

Int. Cl.[2] B60T *8/22, 15/12*

U.S. Cl. 303—22 R **2 Claims**



1. A two-circuit brake system for use with motor vehicles having at least two axles, said brake system comprising:

(a) a housing;

(b) a brake valve device in said housing;

(c) manually operable means for actuating said brake valve device;

(d) first piston valve means connected to said manually operable means and operable, upon movement of the manually operable means up to a certain amount, for controlling the amount of pressure in a first pressure chamber in the brake valve device;

(e) a relay piston assemblage operable to a braking position in response to pressure in said first pressure chamber and in a control pressure chamber acting jointly on a pressure surface area of the relay piston assemblage for controlling the amount of pressure in a second pressure chamber, said relay piston assemblage having a pair of intermediate control chambers formed therein adjacent said pressure surface area and connected, respectively, to the pressures in said first mentioned control chamber and in said first pressure chamber, said intermediate control chambers being separated from one another in a pressure-tight relationship,

(f) said first pressure chamber being connected, via a vehicle load-responsive brake pressure regulator, with brake cylinders on one of said axles for effecting braking thereof according to vehicle load, and said second pressure chamber being connected with wheel brake cylinders on the other of said axles for effecting braking thereof according to the amount of pressure in the second pressure chamber, the braking ratio between said one axle and said other axle being in accordance with the ratio of the pressure in said first and control chambers relative to the pressure in said second chamber; and

(g) a supplementary ring fixed concentrically in said housing and on the relay piston assemblage and which, along with an intermediate ring disposed within and concentrically relative thereto, acts to separate said intermediate control chambers in said pressure-tight relationship and to partly define the amount of said pressure surface area, being exposed to each of said intermediate control chambers said supplementary and intermediate rings being replaceable with respective rings of different dimensions so as to change the amount of said pressure surface area being exposed to each of said intermediate control chambers.

(h) said relay piston assemblage being tensionally connectable through a stem member with the manually operable means and being operable, in the event of failure of fluid pressure in said first chamber and upon movement of said manually operable means in excess of said certain amount, to its said braking position.

4,116,493

BRAKE PRESSURE CONTROL VALVE

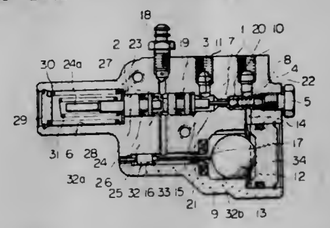
Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Japan

Filed Nov. 10, 1977, Ser. No. 850,489

Claims priority, application Japan, Nov. 16, 1976, 51-154041[U]

Int. Cl.[2] B60T *8/14*

U.S. Cl. 303—24 A **4 Claims**



1. A brake pressure control valve including an inertia member being movable in response to the inertia force acting on said member, particularly when the rate of deceleration caused by braking action exceeds a predetermined amount, so as to close a fluid passage for controlling hydraulic braking pressure being supplied through said valve, in which a stop member is mounted in a housing of said valve and being operable manually from the outside of the housing so as to abut with the inertia member for preventing said fluid passage from being closed by said inertia member.

4,116,494

TEST CIRCUIT FOR PERIODICALLY MONITORING THE INTEGRITY OF AN ANTISKID BRAKE CONTROL SYSTEM

Wolfgang Gudat, Hanover, Fed. Rep. of Germany, assignor to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,545

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1976, 2646061

Int. Cl.[2] B60T *8/02*

U.S. Cl. 303—92 **9 Claims**

1. A test circuit for an antiskid brake control system of a vehicle, said antiskid system including a wheel speed sensor and modulator valve means via which the vehicle brake pressure is regulated in accordance with wheel behavior signals developed from the output frequency of said wheel speed sensor, said test circuit comprising:

(a) pulse generator means;

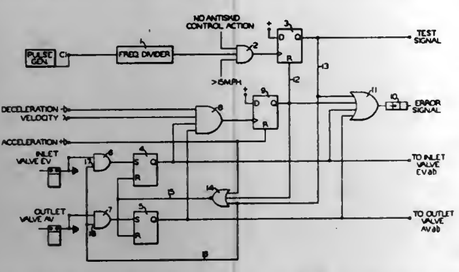
(b) circuit means subject to the output of said pulse generator means for initiating a periodic test signal, comprising:

(i) an AND gate having a first input connected to the output of said pulse generator means, a second input subject to a signal representative of the vehicle speed

exceeding a certain chosen value, and a third input subject to a signal indicative of the antiskid brake control system being inactive; and

(ii) a first flip-flop circuit having a set input connected to the output of said AND gate, a stable output providing said periodic test signal when a signal is present at the output of said AND gate, and a reset signal;

(c) a frequency divider circuit operative responsive to said test signal for reducing the output frequency of said wheel



speed sensor to simulate a wheel behavior condition in response to which said wheel behavior control signals are provided to pilot operation of said modulator valve means; and

(d) a logic circuit for sensing said wheel behavior control signals and modulator valve pilot signals produced in accordance with said wheel behavior control signals so as to provide an error signal in the absence of any one of said control and pilot signals.

4,116,495

DEVICE FOR HYDRAULIC BRAKING SYSTEM INCORPORATING ANTISKID CONTROL APPARATUS

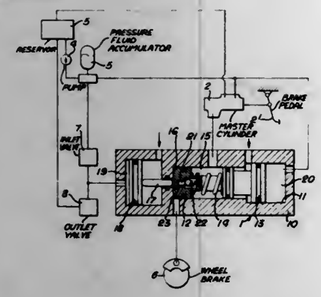
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,261

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644659

Int. Cl.² B60T 8/00

U.S. Cl. 303—115 **8 Claims**



1. A device for hydraulic braking systems incorporating antiskid control apparatus comprising:

a main piston disposed in a slidably sealed relation with a bore of a housing, one end of said main piston defining an outlet chamber connected to at least one wheel braking cylinder;

a passageway disposed in said main piston connecting an inlet chamber with said outlet chamber, said passageway adapted to be closed off by a valve member, said valve member being mechanically kept in the open position when the volume of said outlet chamber is smallest;

a control piston disposed adjacent said outlet chamber to displace said main piston to increase the volume of said outlet chamber; and

a reaction piston disposed to abut the other end of said main piston, said main piston and said reaction piston defining said inlet chamber communicating with a master cylinder, the actuation surface of said reaction piston remote from said main piston defining a reaction chamber in direct communication with a pressure-fluid accumulator.

4,116,496

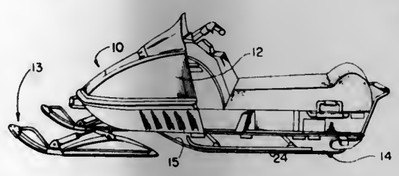
INTERNAL SNOW DEFLECTOR FOR SNOWMOBILE TRACK

Gary Scott, Idaho Falls, Id., assignor to Bombardier Limited, Valcourt, Canada

Filed Sep. 9, 1974, Ser. No. 504,261

Int. Cl.² B62D 55/20

U.S. Cl. 305—12 **15 Claims**



1. A snowmobile track comprising: a longitudinally-flexible generally flat belt of one-piece construction formed in an endless loop having an external ground-engaging surface and an internal surface, said internal surface defining longitudinally extending laterally spaced areas for engagement by suspension elements when the track is mounted in a snowmobile, said internal surface further including longitudinally extending drive engaging means for cooperating with a snowmobile drive means, said internal surface further comprising a continuous series of projecting ribs separate from said drive means positioned on said internal surface between said laterally spaced areas throughout the length of said belt, said ribs having a total lateral extent which corresponds to at least the major part of the lateral spacing between said laterally spaced areas and being constructed and arranged such that in operation they will sweep the region between the suspension elements of the snowmobile and inhibit compaction of snow in this region.

4,116,497

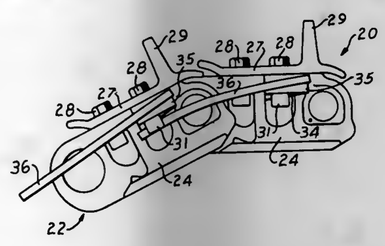
APPARATUS FOR REDUCING TRACK NOISE IN A TRACK-TYPE VEHICLE

James E. Schimpf, Joliet; Roger L. Boggs, East Peoria, and Malcolm H. Kinsinger, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 16, 1976, Ser. No. 696,456

Int. Cl.² B62D 55/22

U.S. Cl. 305—41 **13 Claims**



1. In a track for a track-type vehicle, said track comprising an endless drive chain made of a plurality of interconnected substantially identical links, means for reducing the noise made by circulation of said track during movement of said track-type vehicle comprising a plurality of elongated devices, means

projecting laterally of said drive chain for rigidly mounting each of said plurality of elongated devices to a different one of said plurality of links and a plurality of engagement surfaces projecting laterally of said drive chain each rigidly fixed with respect to a different one of said plurality of links, either or both said plurality of elongated devices and said plurality of engagement surfaces comprising resilient material, said plurality of elongated devices each extending between a different one of said mounting means and a different adjacent one of said engagement surfaces with one end thereof being carried by said mounting means, said elongated devices each extending across an interconnection between a different one of said links and a link adjacent thereto in said drive chain and cooperating with said engagement surface to resiliently oppose pivotal movement of said one link and said adjacent link in at least one direction with respect to each other about said interconnection therebetween.

4,116,498

TRACK CONSTRUCTION FOR TRACKED LAND VEHICLES SUCH AS TANKS

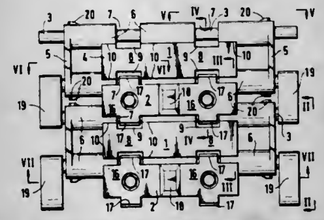
Hans G. K. Borner, Blieskastel-Mimbach, Fed. Rep. of Germany, assignor to Gerlach-Werke GmbH, Fed. Rep. of Germany

Filed Sep. 24, 1976, Ser. No. 726,111

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2554981

Int. Cl.² B62D 55/20

U.S. Cl. 305—58 R **14 Claims**



1. A track construction for land vehicles, such as tracked armored vehicles, said track construction comprising:

a plurality of track members each comprising first and second spaced parallel sets of transversely extending tubular members, said sets each comprising at least two tubular members mounted in axially spaced relationship so as to define a gap therebetween and having axially aligned bores therein, said track members each including a wheel contacting surface located on one side thereof and a ground engaging pad member located on the other side thereof and extending in both longitudinal directions of the track beyond the two connecting pins of the connection member;

a plurality of connection members each including a wheel contacting surface;

and connecting means, including a pair of connecting pins extending through resilient sleeves mounted in said aligned bores of said sets of tubular members, for connecting said connection members and said track members together in alternating relationship to form a track, said connection members engaging said connecting pins in gaps between said tubular members and the wheel contacting surfaces of said track members defining recesses in the areas of said gaps and portions of the wheel contacting surfaces of said connection members projecting into said gaps in the direction of said recesses.

4,116,499

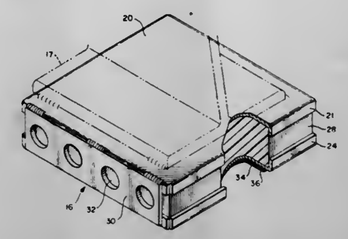
HIGH TEMPERATURE SLIDE BEARING

Daniel V. Laurizio, Convent, N.J., assignor to The Fluorocarbon Company, Anaheim, Calif.

Filed Aug. 12, 1977, Ser. No. 824,204

Int. Cl.² F16C 29/02

U.S. Cl. 308—3 R **11 Claims**



1. In a slide bearing for high temperature applications:

a plate made of good heat conductive material; and

a layer of bearing material mechanically locked to said plate to form a slide bearing surface adapted to engage a mating, metal slide bearing surface, said layer of bearing material having a low coefficient of friction and being able to withstand heavy loads when kept below a predetermined temperature, portions of good heat conductive material connected to said plate and extending through said layer to form heat conductive paths to conduct heat quickly away from said layer to keep the temperature of said layer below said predetermined temperature.

4,116,500

ELONGATED MACHINE ELEMENT SPHERICAL END

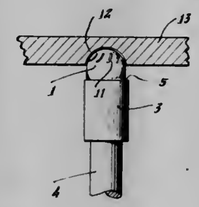
Wolfgang Huber, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 5, 1977, Ser. No. 812,632

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1976, 7623823[U]

Int. Cl.² F16C 17/04

U.S. Cl. 308—9 **9 Claims**



9. A bearing structure comprising a ball, a shell, said ball having a diameter at least equal to the inner diameter of said shell, said ball projecting from one end of said shell and being rigidly held therein, a shaft, the other end of said shell being press fit to said shaft and held rigidly thereon, said shaft extending only partways through said shell, and a bearing cup fit over said ball and engaging the spherical surfaces thereof, whereby said bearing cup and ball are relatively movable.

4,116,501

COOLING INSTALLATION FOR THE REDUCTION OF THE OIL TEMPERATURE OF OIL-LUBRICATED DAMPING BEARINGS

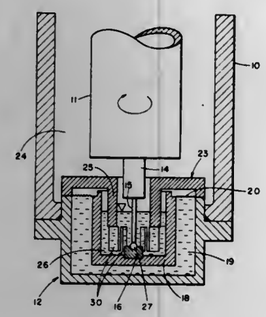
Karl Mötz, Munich; Josef Meyer, Olching, and Josef Schurrer, Deisenhofen, all of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Germany

Filed Jul. 13, 1977, Ser. No. 815,220

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2632977

Int. Cl.² F16C *37/00*; F16F *15/16*

U.S. Cl. 308—9 **8 Claims**



1. A cooling installation for reducing the temperature of an oil-lubricated, damped thrust bearing, for a vertically oriented high speed rotational body, having a bearing housing and an oil reservoir for the lubricating oil in which the bearing is immersed, comprising a cooling element constituted of a heat-conductive material substantially encompassing the bearing, said cooling element being in heat-conductive connection with the bearing housing and being at least partially immersed in the lubricating oil.

4,116,502

DUAL BEARING STRUCTURE FOR ROTATABLE MACHINE PARTS WITH ANTIFRICTION AND PLAIN BEARINGS

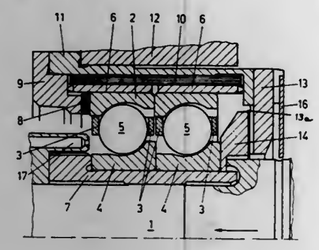
Hansulrich Hörler, Ulrich Linsi, both of Zurich, and Oswald Policke, Fislisbach, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 24, 1977, Ser. No. 800,014

Claims priority, application Switzerland, Jun. 3, 1976, 7002/76

Int. Cl.² F16C *32/00*

U.S. Cl. 308—9 **10 Claims**



1. A dual bearing structure for a rotatable shaft of a machine such as a turbocharger and the like, comprising:

antifriction bearing means for accommodating axial forces acting only in one direction of the shaft and radial forces, the antifriction bearing means being located between the shaft and a bearing housing;

plain thrust bearing means for accommodating axial forces acting only in a direction opposite to the direction of the axial forces accommodated by the antifriction bearing means the plain thrust bearing means being located adjacent to the antifriction bearing means but having an axial clearance therebetween;

lubricating oil supply means for supplying oil to the antifriction bearing means and to the plain thrust bearing means; and

at least one oil drain channel extending radially of the shaft and having an inlet provided at a radial distance from the shaft which is at least at an outer diameter of the antifriction bearing means, the location of the inlet of the at least one oil drain channel causing a rotating ring of lubricating oil to form at an outer periphery of the antifriction bearing means as a result of centrifugal force during a rotation of the shaft.

4,116,503

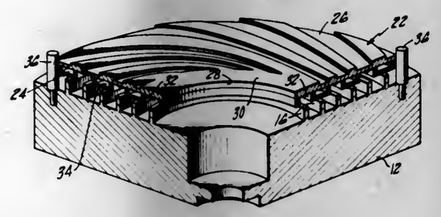
RESILIENT FOIL THRUST BEARINGS

Lazar Licht, San Mateo, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 13, 1977, Ser. No. 805,760

Int. Cl.² F16C *17/08*

U.S. Cl. 308—9 **15 Claims**



11. In a hydrodynamic thrust bearing wherein a fluid film of predetermined thickness and pressure distribution is generated between bearing surfaces provided on a rotating thrust runner and a stationary base member, the improvement which comprises a resilient bearing insert assembly mounted on said base member, said assembly comprising a compliant foil-like membrane having as a surface one of said bearing surfaces and an integral reticulated foil-like spider member resiliently mounting said foil-like membrane on said base member, said spider member comprising a plurality of support members and an array of spring elements connecting said support members and being spaced from said membrane, said array of spring elements having a stiffness distribution matched to said pressure distribution to ensure desired clearance and loading in said thrust bearing.

4,116,504

SPHERICAL BEARING AND METHOD OF MAKING THE SAME

Ronald F. Cass, Villa Park, Calif., assignor to Bertea Corporation, Irvine, Calif.

Filed May 31, 1977, Ser. No. 802,068

Int. Cl.² F16C *11/06*

U.S. Cl. 308—72 **12 Claims**

1. A bearing comprising:

outer bearing means including an outer bearing member having an annular insert receiving surface and at least one annular insert sized to be received within said insert receiving surface;

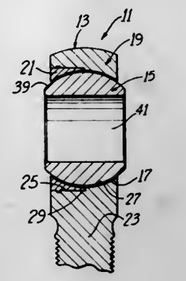
snap-fit retention means including at least one annular projection and at least one annular recess for forming a snap fit to at least assist in retaining the insert within said insert receiving surface of said outer bearing member, said insert being sized so that it can be pressed into the outer bearing member until the projection snaps into the recess;

an inner bearing member at least partly within said outer bearing member, said inner bearing member being retained in the outer bearing member by said insert;

a bearing liner between said inner bearing member and said outer bearing means;

said outer bearing means including inner surface means for engaging and supporting said bearing liner, at least a portion of said inner surface means being defined by said insert whereby the inner bearing member and the outer bearing means can undergo relative movement; and

an adhesive between said insert and said outer bearing member for at least assisting in retaining the insert within said outer bearing member.



4,116,505

BEARING FOR A SHAFT OF AN OPEN-END SPINNING ROTOR

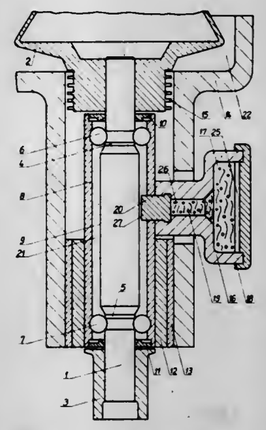
Hans Stahlecker, Süssen, Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Germany

Filed Oct. 17, 1977, Ser. No. 843,049

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647816

Int. Cl.² F16C *1/24, 35/08*; D01H *1/12, 7/04*

U.S. Cl. 308—187 **13 Claims**



1. Open-end spinning machine apparatus comprising:

a spinning shaft having means at one end portion for carrying a spinning rotor and having means at another end portion for carrying a driving whorl,

first roller bearing means having first roller elements bearingly engaged directly on said spinning shaft,

second roller bearing means having second roller elements bearingly engaged directly on said spinning shaft at a position spaced from said first roller bearing means,

and an oil-feed device for dispensing oil dropwise in the area between the first and second roller bearing means to lubricate said bearing means, said oil-feed device comprising sealing element means adjacent said spinning shaft, said sealing element means including means for dispensing oil only when a predetermined pressure differential prevails between the area adjacent the spinning shaft and the sealing element means, said pressure differential being dependent on the operating speed of the spinning shaft.

4,116,506

PRELOADED BEARING

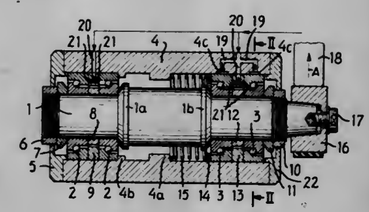
Sadao Moritomo, and Shigenori Ando, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Filed Apr. 28, 1977, Ser. No. 791,773

Claims priority, application Japan, Apr. 30, 1976, 51-56051[U]

Int. Cl.² F16C *33/16, 35/12*

U.S. Cl. 308—189 A **5 Claims**



1. A spindle device comprising a housing having a bore and a front end and a rear end, a plurality of antifriction radial thrust bearings in said bore comprising a front bearing fixed within said bore and a rear bearing axially slidable in said bore and spaced axially from said front bearing, a spindle rotatably supported by said bearings and having a rear end projecting beyond said housing, the projecting rear end of said spindle being subjected to a radial load in a predetermined radial direction, spring means acting axially on said axially slidable rear bearing and acting through said spindle on said front bearing to give said bearings a selected preload, means defining a recess between said rear bearing and said bore on the side of the bore toward which said rear bearing is pressed by said radial load on said spindle and duct means supplying pressurized lubricant from a common, source to said recess and to said bearings to lubricate said bearings and to apply to said rear bearing a radial force opposing and thereby counteracting said radial load applied to said spindle to facilitate axial movement of said rear bearing in said bore by said spring means.

4,116,507

RADIATOR CONCEALING ARTICLE OF FURNITURE

Frank Marusiak, Jr., Newark, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 7, 1977, Ser. No. 849,006

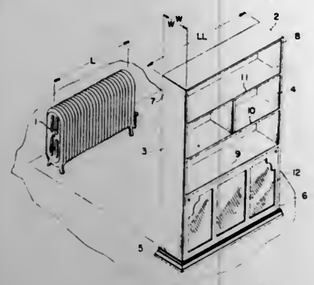
Int. Cl.² F24H *9/04*; A47B *81/00*

U.S. Cl. 312—210 **1 Claim**

1. A radiator concealing article of furniture for concealing a heating system radiator having a predetermined length, width and height, said article of furniture comprising

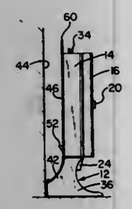
a bookshelf unit having a pair of parallel sides spaced from each other a distance greater than the length of the radiator, the sides being of the same dimensions and each having a bottom, a top and a predetermined width greater than the width of the radiator, a plurality of bookshelves extending between and supported by the sides in spaced parallel relation substantially perpendicular to said sides, the lowermost bookshelf being spaced a greater distance from the bottoms of the sides than the height of the radiator whereby the radiator is accommodated with clearance in the bookshelf unit between the sides and the lowermost bookshelf, a ledge provided in the lowermost bookshelf, a cover panel removably mounted in the bookshelf unit in perpendicular relation to the sides and the bookshelves,

said cover panel covering the area between the sides and the lowermost bookshelf and thereby covering the radiator and having screening therein for permitting a free flow



of air through said cover panel while obstructing a view of said radiator, and a securing device for clamping said cover panel to said ledge.

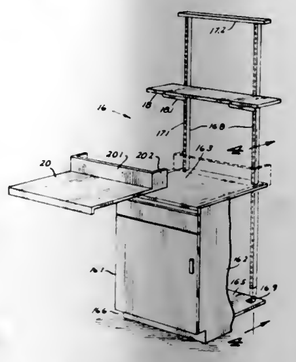
4,116,508
PORTABLE BATHROOM CABINET
Howard Sturtevant, 234 Eastwood Ave., Providence, R.I. 02919
Filed Sep. 17, 1976, Ser. No. 724,344
Int. Cl.[2] A46B *17/00*; A47F *5/08*
U.S. Cl. 312—245 **5 Claims**



1. A portable bathroom cabinet for traveling, comprising a generally rectangular cabinet having an open front, a pair of outwardly swinging doors mounted at the front, a tubular paper cup reservoir and dispenser mounted vertically in the center of said cabinet, means in said cabinet for holding the bathroom supplies, and a base for mounting said cabinet in a bathroom when said cabinet is not being used as a portable traveling cabinet, whereing said base comprises a base portion having a horizontal platform and a vertical wall portion extending upwardly from the rear edge of said platform, said vertical wall is spaced from the bathroom wall, said vertical wall having hooks on the rear thereof forholding brushes, the rear of said base is provided with a door fro forming a compartment for grooming accessories.

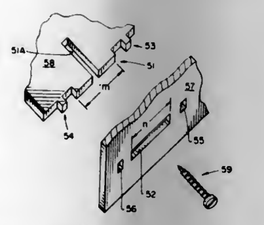
4,116,509
MODULAR FURNITURE UNIT FOR HOSPITAL PHARMACIES OR THE LIKE
Richard C. Smith, Edina, Minn., assignor to R. C. Smith Company, Minneapolis, Minn.
Filed Jul. 2, 1976, Ser. No. 702,106
Int. Cl.[2] A47B *97/00*
U.S. Cl. 312—257R **1 Claim**

1. Easily assembled free-standing modular furniture unit comprising a lower section including a self-supporting generally parallelepiped container having top and bottom walls, and an upper section, the lower section having at least a pair of spaced holes through its top wall and spaced inwardly from edges of the top wall, the lower section including upwardly exposed brackets carried by the bottom wall in vertical alignment with the top wall holes, the brackets having upright portions, at least a pair of upright support posts bearing at their upper ends the upper section and extending downwardly slideably through the top wall holes and in snug, supportive relationship with the holes, the posts having hollow lower ends receiving the upright bracket portions and removable upwardly therefrom and through the top wall holes, and an upwardly removable cover inserted over and joining the posts at their upper ends;



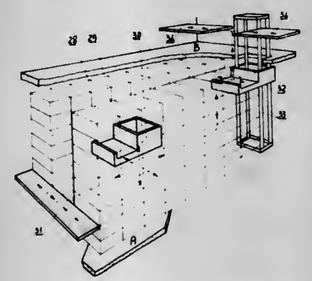
whereby the upper and lower sections may be easily assembled and disassembled by insertion and removal of the posts.

4,116,510
CHASSIS FORMED OF SHEET STOCK
Harold D. Franco, San Mateo, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Mar. 3, 1977, Ser. No. 773,984
Int. Cl.[2] A47B *43/00*
U.S. Cl. 312—257 SK **18 Claims**



1. Apparatus comprising:
first and second plates;
said first plate having a first elongated opening in one edge thereof; said first opening extending through said one edge and at least one of the adjacent opposite sides of said first plate, the width of said first opening being substantially equal to the thickness of said first plate, the length of said first opening extending into said first plate being greater than the thickness of said second plate;
said second plate having a second elongated opening in it; said second opening extending through opposite sides of said second plate, having a width substantially equal to the thickness of said first plate, and having a length that is greater than the width of said first opening;
a portion of said first plate and said one edge thereof including said first opening fitting securely into said second opening in said second plate so that opposing surfaces of said plates which form said first and second openings together define a third opening having a substantially square cross-section; and
a screw threaded into said third and first openings in the direction of the length of the latter — first opening for holding said first and second plates together, wherein said first plate has a first protrusion extending from an edge surface thereof with the first protrusion and first plate being in a common plane, said one edge containing the first opening being the exterior edge of said first protrusion and being spaced from said edge surface a distance which is substantially equal to the thickness of said second plate, said first protrusion being located in said second opening.

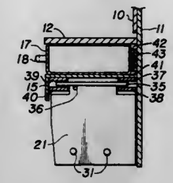
4,116,511
AUTOMATIC FILING CABINET RETRIEVAL APPARATUS
Natale Di Liddo, Borgo San Dalmazzo (Cuneo), Italy, assignor to Instituto Grafico Bertello S.p.A., Italy
Filed Feb. 28, 1977, Ser. No. 772,870
Claims priority, application Italy, Mar. 23, 1976, 12544 A/76
The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.
Int. Cl.[2] B65G *17/00*; A47B *49/00*
U.S. Cl. 312—268 **6 Claims**



1. An automatic filing cabinet retrieval apparatus for delivery of drawers to a consultation station, comprising:
(a) two spaced, facing banks of filing cabinets having a plurality of filing cabinet drawers;
(b) a vertically extending support frame;
(c) b a first automatic retrieval saddle means mounted on said support frame for reciprocal vertical movement to and from a consultation station at a different vertical level than said banks;
(d) a second automatic retrieval saddle means between said banks for extracting a drawer from either bank and delivering said drawer to said second saddle means and for returning an extracted drawer to its bank;
(e) said first and second saddle means being operable to transfer an extracted drawer between them; and
(f) said first saddle means being operable to deliver a drawer to said consultation location and to return a said drawer from said consultation location to said second saddle.

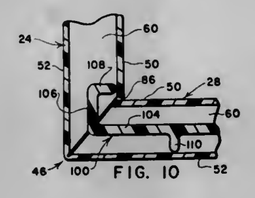
4,116,512
DRAWER LATCHING DEVICE
John A. Wiser, P.O. Box 192, Liberty, Tex. 77575
Division of Ser. No. 589,417, Jun. 23, 1975, Pat. No. 4,027,934.
This application Nov. 8, 1976, Ser. No. 739,425
The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.
Int. Cl.[2] A47B *58/00*; E05C *17/56*
U.S. Cl. 312—330 R **1 Claim**

1. A drawer latching device comprising
a body having openings therein,
drawers movably located in said openings and having a first metal plate member fixedly attached at the back thereof in operable alignment with a metal plate member immobily affixed to said body in contacting alignment with the first metal plate member on said drawer, said metal plate members contacting when said drawer is in the closed position in said body, at least one of said metal members being magnetized, thereby releasably maintaining the drawer in



the closed position by magnetic attraction between said metal plate members.

4,116,513
DRAWER CONSTRUCTION
Myron E. Ullman, Jr., Canfield, Ohio, assignor to Kessler Products Company, Youngstown, Ohio
Filed Jan. 17, 1977, Ser. No. 760,084
Int. Cl.[2] A47B *88/00*
U.S. Cl. 312—330 R **22 Claims**

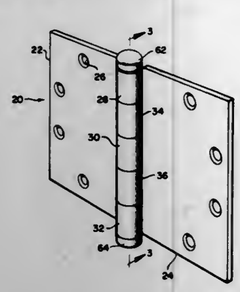


1. A drawer construction wherein a drawer side formation and a drawer back formation are formed integrally from a single, hollow, extruded plastic member which is folded along a miter-groove at a corner location between the side and back formations to form a corner of a drawer, and including snap-acting locking means carried in hollow portions of a selected one of the side and back formations at the location of a corner to be formed between these formations, the snap-acting locking means being operable when the formations are folded to close the miter groove lying therebetween to engage hollow portions of the other of these formations, for maintaining the folded configuration of these formations.

4,116,514
SECURITY HINGE
Tom M. Lawrence, Janesville, Wis., assignor to Lawrence Brothers, Inc., Sterling, Ill.
Filed Jul. 22, 1977, Ser. No. 817,984
Int. Cl.[2] H01R *39/00*
U.S. Cl. 339—4 **21 Claims**

1. A security hinge comprising a pair of leaves, one of said leaves including at least a pair of spaced end knuckles and the other of said leaves including at least one intermediate knuckle positioned between said end knuckles, said knuckles each including a central axial bore, said bores being aligned co-axially, a pin member disposed inside said bore of at least one of said end knuckles for rotation in unison therewith, and extending into said bore of said intermediate knuckle, stop means for preventing said pin member from being driven completely through said end knuckle bore, and means disposed in the bore of the other of said end knuckles to prevent said pin from being forced out of said one end knuckle, wherein said means includes a second pin member, such that one pin is associated with each of said end knuckles and each pin comprising a generally cylindrical body portion extending into said interme-

diate knuckle bore and an end portion of enlarged diameter disposed inside said bore of said end knuckle and engaged



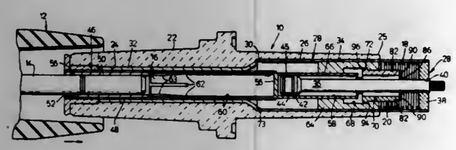
against said stop means to prevent further axially inward movement.

4,116,515

SPRING ACTUATED CONTACT FOR HIGH VOLTAGE BUSHING

Bruce G. Spicer, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Nov. 22, 1976, Ser. No. 743,944
Int. Cl.² H01R *11/30*
U.S. Cl. 339—12 R **11 Claims**



1. A high voltage bushing comprising:
a housing,
an electrical conductor extending into said housing,
an electrical contact operatively connected to said conductor and mounted for movement within said housing from a first position to a second position,
first means for biasing said contact to move within said housing from the first position to the second position,
a magnetically responsive member moveably mounted in said housing and located in a position to respond to the magnetic field produced by current flow through said conductor, said magnetic member releasably holding said contact in the first position in said housing, and second means biasing said member toward a position to hold said contact in the first position, said magnetic member being responsive to a fault current for releasing said contact for movement by said first biasing means to the second position.

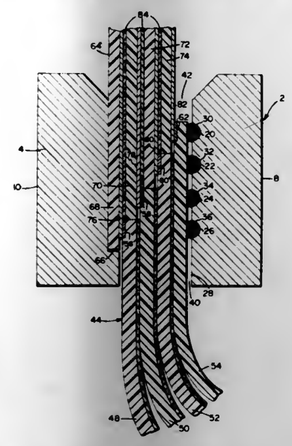
4,116,516

MULTIPLE LAYERED CONNECTOR

Wendell L. Griffin, Warren, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jun. 24, 1977, Ser. No. 809,927
Int. Cl.² H05K *1/07*
U.S. Cl. 339—17 F **15 Claims**

11. A connector for a multiple layered printed wiring board, comprising:
a hollow housing formed by first and second opposing side walls and including a first aperture, at least one multiple layered cable having one end which extends through said first aperture and into said housing, one layer of said cable end including at least one cable contact, and at least one other layer at said cable end offset from said one layer and including at least one other cable contact,
a second aperture for said printed wiring board, and
a plurality of spring means internal of said housing for



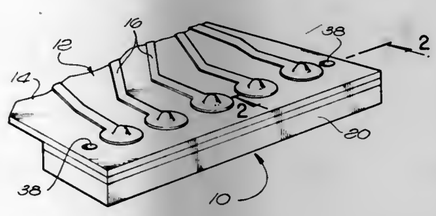
urging said cable contacts into electrical and physical engagement with said printed wiring board, said plurality of spring means are juxtaposed between one wall and said cable with each spring means affixed to said wall internal of said housing.

4,116,517

FLEXIBLE PRINTED CIRCUIT AND ELECTRICAL CONNECTION THEREFOR

Gerald J. Selvin, Huntington Beach, and John R. Moore, Santa Ana, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 673,958, Apr. 15, 1976, abandoned. This application Dec. 3, 1976, Ser. No. 747,238
Int. Cl.² H05K *1/02*
U.S. Cl. 339—17 F **9 Claims**



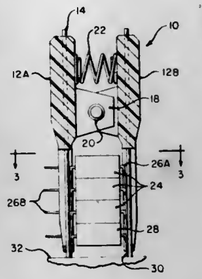
1. A printed circuit board connection assembly comprising:
a relatively rigid printed circuit board having a plurality of traces thereon;
a relatively flexible printed circuit comprising a flexible insulation sheet having a planar area generally parallel to said board and embodying conductive strips on the side thereof facing said board;
said conductive strips having contact projections thereon in said planar area arranged in a non-linear pattern matching selected areas of said traces on said board whereby said contact projections will be in registry with said selected areas, each said projection have a generally hermispherical configuration;
an elastomeric member on the side of said sheet opposite to said one side underlying said contact projections;
a relatively rigid pressure plate behind said elastomeric member; and
means for moving said board and said pressure plate toward each other to compress said elastomeric member and, thereby, resiliently urge said contact projections into electrical contact with said traces on said board.

4,116,518

CLIP FOR PARALLELING PACKAGED INTEGRATED CIRCUIT CHIPS

Larry J. Pleskac, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 31, 1977, Ser. No. 829,305
Int. Cl.² H05K *1/12*
U.S. Cl. 339—17 CF **10 Claims**



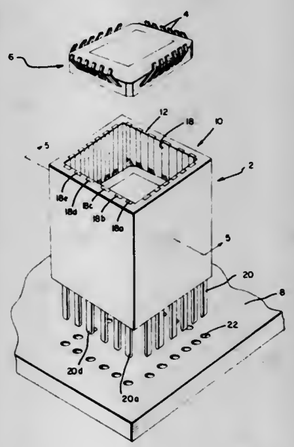
1. A clip for electrically paralleling a stacked plurality of integrated circuit chips each having a number of electrical pins, comprising:
a body member adapted to receive said plurality of integrated circuit chips;
a plurality of electrical contacts associated with said body member for connecting a desired number of said electrical pins in parallel; and
access openings thru said body member for enabling access to those of said electrical pins which are not connected in parallel by said electrical contacts.

4,116,519

ELECTRICAL CONNECTIONS FOR CHIP CARRIERS

Dimitry G. Grabbe, Lisbon Falls, Me., and Joseph Patrick Sweeney, Carlisle, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 2, 1977, Ser. No. 821,112
Int. Cl.² H01R *13/12*
U.S. Cl. 339—17 CF **7 Claims**



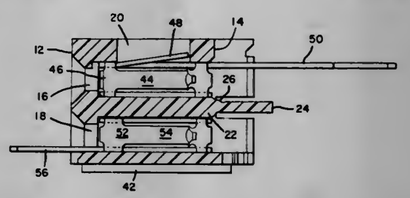
4. Packaging and interconnecting means for a plurality of microcircuit chips, said packaging and interconnecting means comprising:
a plurality of chip carriers and a chip carrier socket,
said chip carriers each comprising a generally prismatic housing having oppositely directed faces and laterally facing sides, each of said microcircuit chips being contained in one of said chip carriers, a plurality of contact leads on said sides of each of said chip carriers, said leads extending in parallel spaced-apart relationship between said faces, said leads extending into said housing and being electrically connected to the chip contained therein,
said socket comprising an insulating body having an open end and having a chip-receiving well extending therein from said open end, said chip carriers being in stacked relationship in said well,
a plurality of parallel conductors in said well extending inwardly from said open end, said conductors being spaced-apart by distances which correspond to the spacing between said contact leads, said contact leads being in electrical contact with said conductors,
said conductors being selectively interrupted between adjacent chip carriers by discontinuities thereby selectively to interconnect said leads of said plurality of chips, and
selected ones of said conductors extending externally of said socket and serving as input and output conductors.

4,116,520

CLOSED ENTRY CONNECTOR HOUSING

Gary Lee Zimmerman, Shermansdale; Richard Paul Clark, Hershey, and John A. Rehm, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 6, 1977, Ser. No. 830,978
Int. Cl.² H01R *13/40*; H05K *1/12*
U.S. Cl. 339—59 R **6 Claims**



1. A closed entry electrical connector assembly comprising:
a housing of insulating material having a mating face, a bottom wall, parallel upper and lower rows of contact receiving cavities opening onto said mating face, each row having a like plurality of cavities, an intermediate wall separating said rows of cavities, said intermediate wall having an end portion remote from said mating face moveable from a first portion in the plane of the wall to a second position extending normal to the plane of the wall and closing one end of said lower row of cavities locking means in said bottom wall receiving said end portion in said second position;
a like plurality of first electrical terminals received in said upper row of cavities; and
a like plurality of second terminals received in the lower row of cavities.

4,116,521

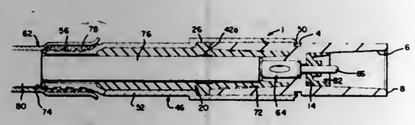
MINIATURE UNIVERSAL CONNECTOR MODULE

Henry Otto Herrmann, Jr., Mt. Joy, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 731,180, Oct. 12, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,798
Int. Cl.² H01R *13/52*
U.S. Cl. 339—60 R **9 Claims**

1. An electrical connector, comprising:
a rigid dielectric body,

a molded tubular body of elastomeric dielectric having hollow interior provided with an integral web which is joined to said tubular body, said web having an initial configuration bridging across said hollow interior,
said web having a central aperture therethrough,
an electrical lead having a central conductor provided thereover with an insulation jacket,
a portion of said conductor being received in the hollow interior of said tubular body,
said tubular body yielding elastically radially outward upon receipt of said insulation jacket in the hollow interior thereof,
said tubular body exerting a residual elastic radial grip on said insulation jacket to form a gas tight seal thereover,
said electrical lead being received through the central aperture of said web,
said web being stretched elastically to an elongate sleeve form encircling and elastically gripping a section of said insulation jacket to form a gas tight seal thereover,
said sleeve form web extending longitudinally of said hollow interior of said tubular body,
said tubular body elastically yielding radially outward to accommodate said sleeve form web,
said tubular body forming a gas tight sheath intimately and



compressibly encircling the length of said sleeve form web and a longitudinal section of said insulation jacket which is disposed in said tubular body and which is immediately adjacent said sleeve form web,
said sleeve form web being radially in compression externally by said tubular body and internally by said insulation jacket to prevent reformation of said sleeve form web to its original configuration,
said rigid dielectric body including a hollow interior,
a wall internally of said dielectric body and extending transversely of said hollow interior thereof,
a boss integral with said wall and projecting concentrically within said hollow interior,
said boss having a concentric bore therethrough communicating with a forward end portion of said rigid dielectric body,
a forward end portion of said tubular body yieldably elastically engaged in the hollow interior of said rigid dielectric body forming a gas tight seal therewith,
said forward end of said tubular body encircling said boss to form a gas tight seal therewith,
said conductor of said electrical lead being connected to an electrical terminal mounted in said bore of said boss, and
means securing together said tubular body and said rigid dielectric body.

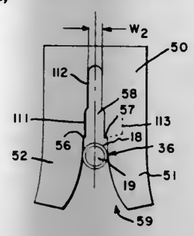
4,116,522

SLOTTED TERMINAL

Charles Edward Reynolds, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 703,725, Jul. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 607,401, Aug. 25, 1975, abandoned. This application Dec. 2, 1977, Ser. No. 856,877
Int. Cl.[2] H01R *11/20*
U.S. Cl. 339—97 R **2 Claims**

1. In an electrical connecting device of the type comprising a plate-like sheet metal member having a wire-receiving end and having a wire-receiving slot extending inwardly from said wire-receiving end, said slot having opposed edges and having an inner end portion which constitutes a wire contacting portion, said opposed edges being spaced apart by a distance which is less than the diameter of a wire for which said device is intended, the improvement to said connecting device comprising:
at least one generally L-shaped cut line in said plate-like member, said cut line having a first portion which extends transversely from one of said edges of said slot and having a second portion which extends from said first portion generally parallel to said slot towards said inner end portion of said slot,



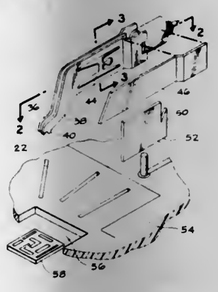
a shoulder on said one edge of said slot which faces said wire-receiving end of said plate-like member, said shoulder being located at said first portion of said cut line, said wire contacting portion extending from said shoulder towards said inner end whereby,
upon movement of a wire laterally of its axis and into said slot and into said wire contacting portion, said shoulder penetrates the insulation of said wire and electrical contact is established with said wire in said wire contacting portion.

4,116,523

HIGH FREQUENCY PROBE

Charles W. Coberly, Pasadena, and Howard A. Lewis, Yorba Linda, both of Calif., assignors to James M. Foster, El Monte, Calif.

Filed Jan. 23, 1976, Ser. No. 651,962
Int. Cl.[2] H01R *13/36;* G01R *31/02*
U.S. Cl. 339—108 TP **7 Claims**



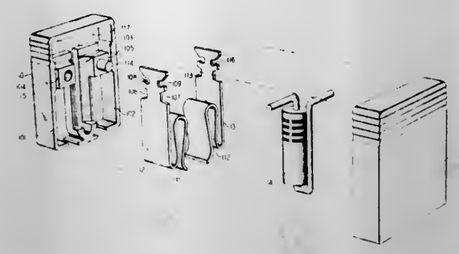
1. A novel high frequency electrical probe comprising:
a blade-like active body member adapted to be supported at one end with its major plane at substantially 90° to a circuit to which contact is to be made;
the other end of said body member formed to have a generally pointed edge to serve as a contact point to be abutted against the circuit;
on both sides of said active body member, ground contacts which are approximately coextensive with said body member, but having pointed edges which abut said circuit at points slightly displaced from the contact point of said active body member.

4,116,524

TERMINAL BRIDGING ASSEMBLY

Ernest Gerard DeNigris, Colts Neck; Joseph Girardi, Edison, both of N.J., and William Edwin Ruehl, Wheeling, Ill., assignors to Illinois Tool Works, and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., a part interest to each.

Filed Jun. 29, 1977, Ser. No. 811,293
Int. Cl.[2] H01R *3/00*
U.S. Cl. 339—113 R **31 Claims**



1. An assembly for bridging closely spaced electrical terminals of connector blocks having a variety of terminal spacings the assembly comprising:
a housing constructed of an electrically insulative material, said housing comprising,
a plurality of spaced ports having one end opening to the outer surface of said housing,
a component cavity disposed between said ports,
a connection cavity adjacent to the closed end of said ports and communicating with one end of said component cavity,
a passageway between each said closed end of each said port and said connection cavity;
at least one electrical element located in said component cavity having at least two leads formed to enable said leads to fit into said connection cavity;
first and second electrical contacts adapted to fit within said ports, each said electrical contact including,
means for fixing a first end of each said contact in said passageway of said housing such that the tip of said first end extends into said connection cavity while enabling the free movement of a second end of each said contact,
means for receiving in electrical contact at said tip of first end of said first contact a first lead of said element,
means for receiving in electrical contact at said tip of first end of said second contact a second lead of said element, and
means for allowing deflection of each said contact by providing contact surfaces which will cause each said contact to move in a first direction to align for a connection with a terminal of a terminal pair having a first spacing and move in a second direction to align for a connection with a terminal of a terminal pair having a second spacing when said terminals enter said ports.

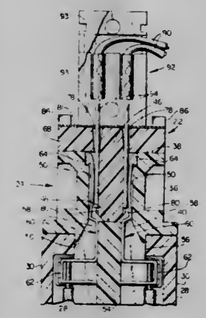
4,116,525

ELECTRICAL CONNECTOR ASSEMBLY

James J. Johnston, Old Saybrook, Conn., assignor to Automatic Equipment Development Corporation, West Haven, Conn.

Filed Jan. 27, 1977, Ser. No. 763,281
Int. Cl.[2] H01R *9/00*
U.S. Cl. 339—132 B **14 Claims**

1. In combination with a multi-contact electrical connector adapted for mounting on a panel and for connection to end portions of a multiplicity of first electrical conductors and having an insulated housing including a mating side and a connecting side, said housing having an elongated recess opening through said mating side and a mating surface surrounding said recess, means defining at least one contact supporting wall within said recess and extending longitudinally thereof, and at least one set of electrical contact terminals supported in longitudinal series in said housing, each of said contact terminals having a connecting portion exposed at the connecting side of said housing for connection to an associated one of the first electrical conductors and a contact portion disposed in said recess, the contact portions of said one set being arranged in longitudinal series generally adjacent said one contact supporting wall, a unitary conductor adaptor made from electrical insulating material and in plugging engagement with said electrical connector, said conductor adaptor including a panel section overlying an associated portion of said mating surface and a plugging section integrally connected to and projecting from said panel section and extending into said recess in plugging relation thereto, said adaptor having means for receiving axially elongated generally cylindrical bare terminal end portions of a multiplicity of individual second electrical conductors axially inserted thereinto when said conductor adaptor is in plugging engagement with said electrical connector, guiding



each of the axially inserted end portions to slide relative to an associated one of said contacting portions to a position of electrically contacting engagement with said associated one of said contacting portions, and releasably retaining each of said bare terminal end portions in its position of electrical contacting engagement with an associated one of said contact portions to be freely removable in an axial direction from its position of electrical contacting engagement and from an associated aperture, said receiving, guiding, and releasably retaining means comprising at least one row of conductor end portions receiving apertures extending through said panel section and arranged in longitudinal series therealong, and at least one longitudinally spaced series of parallel conductor guide slots formed in said plugging section, each of said guide slots communicating with an associated aperture in said one row and opening toward said one contact supporting wall and an associated one of said contact portions.

4,116,526

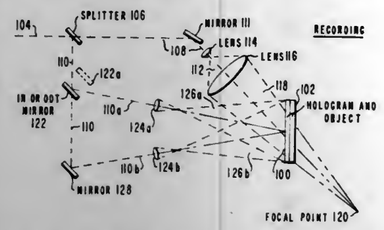
DOUBLE MODULATION HOLOGRAPHIC RECORDING TECHNIQUE

Burton Ross Clay, Wayland, and Gardner Thomas Burton, Danvers, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,498
Int. Cl.[2] G02B *27/00*
U.S. Cl. 350—3.67 **5 Claims**

1. A holographic recording method for enhancing the dynamic range of pictorial information manifested by an object transparency exhibiting relatively small dynamic range, where "relatively small dynamic range" is defined as a dynamic range which is materially smaller than that possible in a reconstructed image of a directly-viewable recorded hologram; said method comprising a step of:
simultaneously illuminating an area of a recording plane of a hologram recording medium through a relatively-poor dynamic range object transparency situated in substantially direct contact with said area with each of first and

second beams of mutually coherent light, said first and second beams having a given angular displacement with respect to each other, said first beam having a certain non-plane wavefront shape in the recording plane of said



hologram recording medium, said second beam having a wavefront shape in the recording plane of said hologram recording medium shape in the recording plane of said hologram recording medium which is substantially the conjugate of said certain non-plane wavefront shape.

4,116,527

DEVICE FOR CONCENTRATING LIGHT FROM A LINEAR FIELD ON TO A RECEIVER

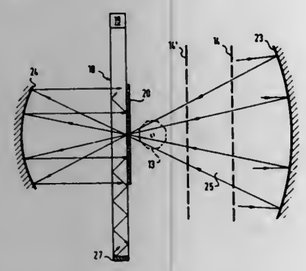
Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,340

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1975, 2550815

Int. Cl.² G02B *27/17*

U.S. Cl. 350—6.7 **17 Claims**



1. An apparatus for concentrating light from a linear field onto a relatively small receiver, comprising: a rod light guide with a peripheral surface, said receiver being disposed at the end of said rod light guide on the peripheral surface of which light emanating from the linear field is directed, a first concave strip mirror, said linear field being arranged substantially at the focal distance from said first concave strip mirror, said mirror being disposed so as to extend optically parallel to the field, and a second concave strip mirror, said first mirror reflecting the incident light from said field to said second concave strip mirror, said second mirror being optically parallel with the first mirror and forming therewith a substantially telecentric system and reflecting the incident light to the peripheral surface of the rod light guide, and a stepped mirror system carried by said light guide on that side of its periphery diametrically opposite the incident light, said stepped mirror system reflecting back, at angles of total reflection in the rod, incident light which strikes substantially perpendicularly to the axis of the rod.

4,116,528

OPTICAL VIEWING DEVICE OF THE PERISCOPE TYPE WITH ROTATING MEANS FOR FOCUSSING

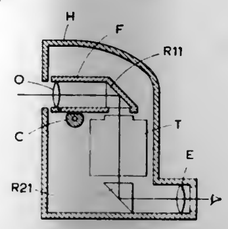
John A. Clarke, Carshalton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1976, Ser. No. 672,250

Claims priority, application United Kingdom, Apr. 10, 1975, 14765/75

Int. Cl.² G02B *23/08, 23/12, 7/04*

U.S. Cl. 350—52 **7 Claims**



1. An optical viewing device comprising a fixed focal length objective, a periscopic reflector system, an eyepiece lens, said objective and said periscopic reflector system comprising a focussing and light redirecting system, and means for rotating at least one member of said focussing and light redirecting system along an arc sufficient to alter the optical path between said objective and said eyepiece lens for focussing said optical viewing device on a selected object within a predetermined range of short viewing distances and for correspondingly tilting the optical axis through the objective toward a line of sight between said eyepiece lens and said selected object.

4,116,529

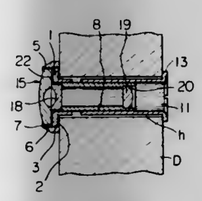
WIDE-ANGLE SPYGLASS

Takeyoshi Yamaguchi, 20-54, Tsurumaki, 5-chome, Setagaya-ku, Tokyo, Japan (154)

Filed Nov. 29, 1976, Ser. No. 745,697

Int. Cl.² G02B *7/02*

U.S. Cl. 350—69 **5 Claims**



1. A spyglass to be mounted in a door or the like for providing a wide-angle outdoor view comprising in combination:

an optical system including:

a wide-angle lens of a relatively large diameter and having on one side thereof a convex surface of a relatively large radius of curvature and on another side thereof an opposing concave surface of a smaller radius of curvature than said convex surface for converging incoming light of substantially 180° outdoor sight at a large rate,

an objective of smaller diameter than said lens and having a concave surface on a side thereof abutting coaxially against said other side of said lens containing said first-named concave surface, for collimating said converged light into a relatively small confined diameter, and

an eyepiece of smaller diameter than said lens and having a convex surface disposed coaxially with said objective and spaced therefrom for magnifying said collimated light to provide a normal view of said substantially 180° outdoor sight,

means for securing said lens, objective, and eyepiece relative to one another, said securing means comprising:

a substantially cylindrical portion of smaller diameter than said lens for closely enclosing said collimated light of confined diameter and including a first end securing said objective and a second end spaced axially from said first end for securing said eyepiece, and

an enlarged portion at the first end for securing said large diameter lens,

means for mounting said securing means including the optical system to the door or the like presenting said magnified view to the interior of the door or the like, said mounting means comprising:

a cylindrical member of smaller diameter than said lens and including one end attached to said second end of said cylindrical portion, and another end having a flange for engaging the door or the like so that one side of the door or the like is gripped by said enlarged portion and the other side of the door or the like is gripped by said flange.

4,116,530

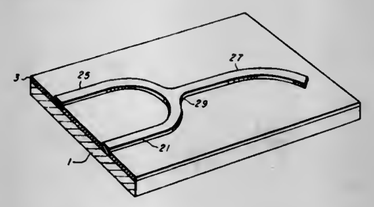
OPTICAL WAVEGUIDES GROWN BY SELECTIVE LIQUID PHASE EPITAXY

David W. Bellavance, Dallas, Tex., and Joe C. Campbell, Highlands, N.J., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 29, 1976, Ser. No. 709,554

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.12 **11 Claims**



1. An epitaxially grown arcuate optical waveguide comprising:

an arcuate semiconductor structure having a high index of refraction for guiding light, said structure having a radius of curvature in the range of about 25–125 mils, said structure having smooth side walls substantially free of faceting thereby preventing the scattering of light propagating therethrough into untrapped modes;

at least one semiconductor barrier layer of low refractive index in contact with said arcuate optical waveguide; and

a planarized semiconductor substrate for support of said arcuate optical waveguide.

4,116,531

FIBER OPTIC SWITCH ARRANGEMENT

John C. Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 1, 1977, Ser. No. 783,875

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.20 **2 Claims**

1. An optical fibre matrix switch arrangement comprising:

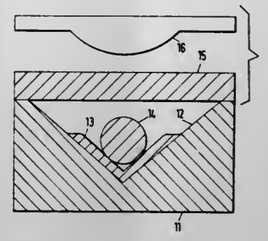
a rigid substrate having a flat surface;

a coating of relatively low refractive index material on said surface;

a substantially parallel array of light guides of a relatively high refractive index arranged on the coating, each of said light guides selectively coated along portions of its length with a protective layer of low index material;

an elastic diaphragm mounted adjacent the light guides; and

an array of bar members arranged substantially perpendicular to the light guides, each of said bar members being arranged relative to said selectively coated portions of the light guides so that depression of any one bar member distorts the diaphragm into contact with the light guides



thereby attenuating light only in the guides that have no coating in the region of contact so as to provide an *n* out of *m* switch code.

4,116,532

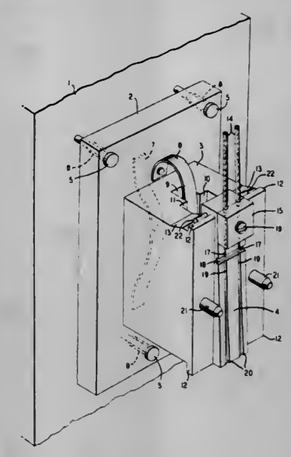
FIBER POSITIONING AND CONNECTION METHOD AND APPARATUS

William Marshall Hubbard, Colts Neck, and Willis Martin Muska, Little Silver, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 5, 1977, Ser. No. 756,997

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.21 **18 Claims**



1. A fiber positioner comprising:

fiber receptacle means having at least one groove extending from a precision positioning zone of each said groove to a capture zone of each said groove where each said groove is wider than at each said precision zone;

means for holding at least one fiber so that at least a portion of the length of each said fiber is respectively laterally exposable to each said groove; each said fiber portion being able to be respectively brought together with each said groove at each said capture zone, said receptacle means and said holding means having an initial orientation angle relative to one another; and

means for flexibly providing a positioning pressure so that as each said fiber portion is respectively brought together with each said groove at each said capture zone without bending of said fiber portion said relative orientation angle of said receptacle means and said holding means is automatically decreasable to essentially zero degrees, said pressure also serving to advance each said fiber portion in each said groove beginning with said capture zone and

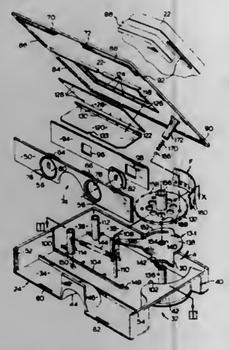
reaching said precision positioning zone without the end face of each said fiber contacting any surface of said groove.

4,116,533

STEREOSCOPIC VIEWER

Gunter Nerlich, Toronto, Canada, assignor to Dimensional Products Limited, Canada

Filed Jun. 7, 1976, Ser. No. 693,408
Int. Cl.² G02B *27/22*
U.S. Cl. 350—135 **4 Claims**



1. A viewer for a stereoscopic filmstrip having a plurality of spaced perforations along one longitudinal margin and including a series of pairs of left and right hand stereoscopic frames, the viewer comprising:

a casing for receiving the filmstrip, the casing including a front wall, a rear wall, and a top wall;

a pair of lenses mounted in positions spaced transversely of said front wall for use in viewing said filmstrip;

film masking means disposed inside the casing at a position spaced from and generally parallel to said front wall, said masking means defining a pair of apertures positioned to permit viewing of the respective left and right hand frames of successive frame pairs as the filmstrip is advanced through the viewer in use;

means for guiding the filmstrip in a path which extends transversely of said casing rearwardly of the masking means;

a film transport mechanism disposed inside the casing and positioned laterally of said apertures in the masking means, said mechanism including: a film-engaging disc which is turnable about an axis normal to the direction of filmstrip movement and which has a peripheral series of teeth for engagement in said perforations in the filmstrip so that turning of the disc advances the filmstrip past said apertures; a drive member for turning said disc, said member itself being turnable about an axis parallel to the turning axis of the disc and including an operating lever which projects to the exterior of the casing for turning the member and which is movable from a rest position to a fully advanced position; means biassing said drive member to normally maintain the operating lever in said rest position; ratchet means coupling said drive member and said disc and adapted, upon movement of the operating lever from said rest position to said fully advanced position to cause the said disc to turn unidirectionally through an angle subtended at the periphery of the disc by an arc of a length equal to the spacing between successive pairs of frames on said filmstrip; and a spring biassed detent coupled to said casing in a fixed position with respect to said disc, the disc having an upper surface formed with a plurality of recesses for receiving said detent and arranged so that, when the detent is engaged in one of said recesses, the disc is prevented from return movement in a direction counter to the film advance direction upon release of said operating lever and one of said pairs of frames in the filmstrip is in registration with the openings in the film masking means, said recesses being equally spaced about the axis of turning of the disc by an angle equal to said angle through which the disc turns, so that the detent engages in a succeeding one of of said recesses only when said operating lever is moved from said rest position to said fully advanced position to turn the disc fully through said angle, whereby the detent maintains registration of said frame pairs with the openings in the film masking means; and,

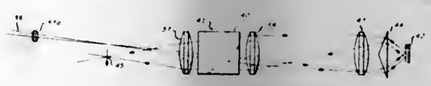
means for illuminating the filmstrip, said means comprising: at least one light admitting aperture in said top wall of the casing, said aperture being positioned rearwardly of said masking means; and reflector means arranged in an angular position at the rear of the film path for reflecting incoming light through said apertures in the masking means to illuminate the filmstrip.

4,116,534

APPARATUS AND METHOD FOR HIGH SPEED ACCESSING OF CHARACTER IMAGES

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 4, 1977, Ser. No. 784,087
Int. Cl.² G03B *27/16*; B02B *27/17*
U.S. Cl. 350—157 **26 Claims**



1. An apparatus for accessing one character symbol generator from a multiplicity of character symbol generators and for providing an image of a character symbol that is represented by said accessed one character symbol generator, at a predetermined fixed position that is independent of said one character symbol generator accessed, comprising:

means for emitting a light beam from a second end thereof in response to a light beam from an external source that is incident to a first end thereof at a first deviation angle thereto, and for emitting a light beam from said first end at a second deviation angle thereto, differing from said first deviation angle, in response to a light beam incident to said second end;

means for deflecting a light beam incident thereto from said second end of said deviation means in a direction determined by a selected angle of deflection corresponding to said one character symbol generator and for deflecting a light beam incident thereto from said direction to said second end of said deviation means;

means for emitting a substantially collimated light beam, having predetermined beam dimensions, in response to said light beam deflected from said deflector means; and

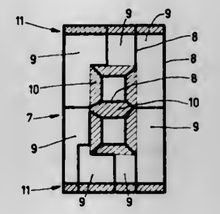
character generating means having a multiplicity of character generators, each of dimensions substantially equal to said predetermined beam dimensions, one of which, that corresponds to said one character symbol generator, is illuminated by said light beam emitted from said collimating means, said illuminating beam being spatially modulated by said one character symbol generator and reflected therefrom to be incident to said collimating means wherefrom said spatially modulated beam illuminates said deflector and is deflected to said second end of said deviating means, emerging from said first end at said second deviation angle and focused at said predetermined fixed position that is independent of said one character symbol generator accessed.

4,116,535

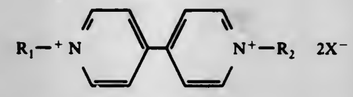
PICTURE DISPLAY CELL WITH MEMORY EFFECT

Johannes Jacobus Ponjeé, and Jacob Bruinink, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

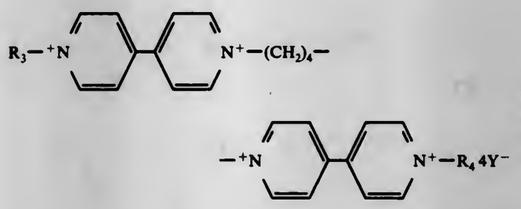
Filed Oct. 28, 1976, Ser. No. 736,485
Claims priority, application Netherlands, May 10, 1976, 7604954; Oct. 12, 1976, 7611240
Int. Cl.² G02F *1/23*; G03G *16/00*; C09K *3/00*
U.S. Cl. 350—355 **6 Claims**



1. An image display cell with a memory effect comprising a housing having a transparent wall part and containing a reversible reduceable redox material dissolved in an electro-chemically inert liquid which is in contact with at least two inert electrodes provided in said housing, characterized in that the electrochemically inert liquid is a mixture of water and an electrochemically inert solvent in which the redox material is a 4,4'-bipyridinium compound corresponding to the formula I



wherein R_1 and R_2 each represent an alkyl group having 4–8 carbon atoms and X^- is a ClO_4', NO_3', H_2PO_4' or BF_4' group, or a bipyridinium dimeric compound which corresponds to the formula II



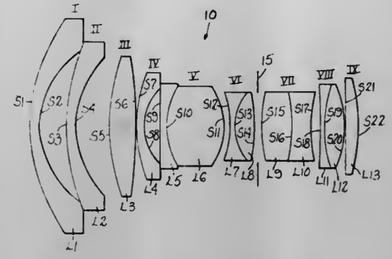
wherein R_3 and R_4 each represent an alkyl group having 1–4 carbon atoms or a benzyl group which may be substituted with an electrochemically inert substituent, and Y^- is a ClO_4', BF_4', H_2PO_4' or PF_6' group, or a bipyridinium polymeric compound which is obtained by reacting 4,4'-bipyridyl and α,ω-dibromobutane in a polar aprotic solvent and then replacing the bromide anion by a ClO_4' ion, H_2PO_4' ion or BF_4' ion the combination of said mixture of water and solvent and redox material being such that said redox material when in reduced form is colored and insoluble in said mixture of water and solvent.

4,116,536

WIDE ANGLE LENS

Jacob Moscovich, Hollywood, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Oct. 1, 1976, Ser. No. 728,649
Int. Cl.² G02B *11/34*
U.S. Cl. 350—214 **18 Claims**



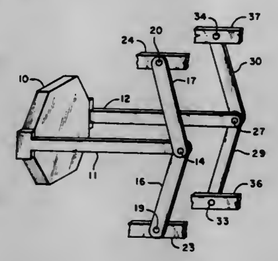
1. A wide angle lens of the retrofocus type comprising from the object end to the image end a first negative group, a second negative group, a third positive group, a fourth negative group, a fifth positive group, a sixth negative group, a seventh positive group, an eighth positive group and a ninth positive group, said eighth and ninth groups having a combined equivalent focal length opposite in sign to and having an absolute value within 10 percent of the combined equivalent focal lengths of said first and second groups.

4,116,537

THERMAL COMPENSATION APPARATUS

Donald C. Dilworth, Medford, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 8, 1975, Ser. No. 620,512
Int. Cl.² G02B *7/02*
U.S. Cl. 350—253 **5 Claims**



1. Apparatus for moving optical means along a first direction and an opposite direction with respect to reference means in accordance with temperature variations to compensate for optical changes which may accompany the temperature variations comprising:

first means connected to the optical means so that movement of said first means is accompanied by movement of the optical means;

second means having a first portion connected to the reference means at a first location and having a second portion connected to said first means at a second location such that a line through the first location and the second location lies at an angle of other than 90° with respect to the first direction and the opposite direction, said second means being at least partly constructed of a material having a coefficient of thermal expansion such that the distance between the first location and the second location changes with the temperature variations to produce a first motive force on said first means; and

third means constraining the optical means to move in the first and opposite direction, said third means including a first portion connected to the reference means at a third location and a second portion connected to the first means and wherein said third means is at least partly constructed of a material having a coefficient of thermal expansion such that the distance between the third location and the second location changes with the temperature variations to produce a second motive force on said first means and wherein the second portion of said third means is connected to the first means at the second location and alined through the third location and the second location lies at an angle of less than 90° with respect to the first direction.

4,116,538

MOTOR-CAR MIRROR ADJUSTABLE ABOUT TWO PERPENDICULAR AXES

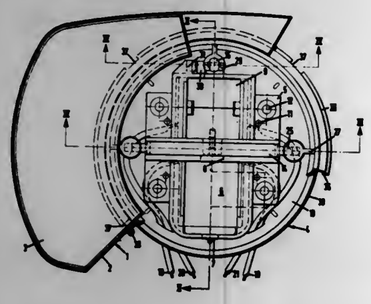
Aane Adriaan Oskam, De Meern, Netherlands, assignor to Industrie Koot B.V., Montfoort, Netherlands

Filed May 3, 1977, Ser. No. 793,354

Claims priority, application Netherlands, Jan. 10, 1977, 7700178

Int. Cl.² G02B 7/18

U.S. Cl. 350—289 **5 Claims**



1. An apparatus for adjusting a motor car mirror around two mutually perpendicular axes, said apparatus comprises a housing having therein a reversible motor, an electromagnetic clutch means connected to said motor, and two planetary transmission assemblies connected to said clutch means and each having an output shaft, said housing further having a cylindrical wall around said motor, clutch means and transmission assemblies having a sealing edge thereon, a tilting adjusting ring having a spherical surface thereon in sliding sealing engagement with said sealing edge and having means thereon for holding a mirror mounting plate on said adjusting ring, said adjusting ring further having at least two inwardly extending dogs thereon extending inwardly from the circumference of said adjusting ring, said dogs being circumferentially spaced from each other by 90° and having recesses therein, and mirror adjusting members connected between the respective planetary transmission assemblies and the corresponding dogs and engaged in a snap fit in the recesses in said dogs for swiveling movement in said recesses, whereby the force for swiveling said adjusting ring is transmitted from said transmission assemblies to said adjusting ring adjacent the circumference of said adjusting ring.

4,116,539

MULTI-POSITION FOCUSING APPARATUS

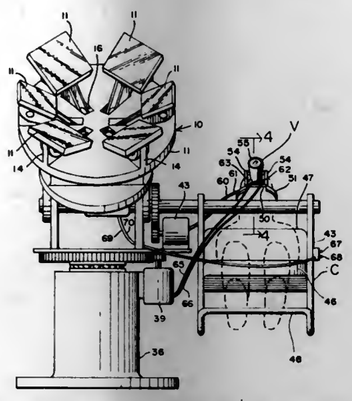
Ralph S. Evans, 1861 Inlet Dr., North Fort Myers, Fla. 33903

Filed Sep. 20, 1977, Ser. No. 834,827

Int. Cl.² G02B 5/08

U.S. Cl. 350—292 **12 Claims**

1. A multi-position focusing apparatus comprising a plurality of article receiving members substantially symmetrically disposed with relation to each other about a centerline, first support means, first pivot means mounting each said member on said first support means for individual pivotal movement of said members in a different vertical plane passing through said centerline, second support means supporting said first support means, means operatively connecting said members for simultaneous pivotal movement thereof, second pivot means engaging said first support means and mounted on said second support means for simultaneous pivotal movement of said members in a vertical plane, third support means, third pivot means mounting said second support means on said third support means for swinging movement of said first and second support means about said third support means in a vertical plane, fourth support means supporting said third support means and fourth pivot means for rotating said third support means in a horizontal plane.



4,116,540

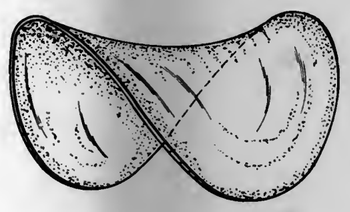
NON-PERVERTING MIRROR

David E. Thomas, 3205 Alcazar NE., Albuquerque, N. Mex. 87110

Filed Jun. 25, 1976, Ser. No. 700,051

Int. Cl.² G02B 5/10

U.S. Cl. 350—293 **20 Claims**



1. A mirror for providing a non-perverted visual image of an object comprising a light reflecting surface for reflecting visible light and having at least one intersecting concave and convex region substantially forming a continuous, unitary surface, said intersecting concave and convex region substantially forming a section of a toroid.

4,116,541

PARABOLIC REFLECTOR WITH VARY TRANSVERSE WIDTH

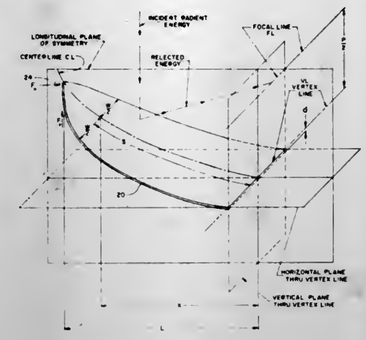
Daniel Weiss, 239 Normandy Rd., Massapequa, N.Y. 11758

Filed Jul. 13, 1977, Ser. No. 815,182

Int. Cl.² G02B 5/10

U.S. Cl. 350—296 **9 Claims**

1. A parabolic reflector made of pliable sheet material from a flat shield shaped blank of said material bent to form a curved member, said blank having continuously varying transverse widths from end to end thereof and having a lobe terminating at a point at one end thereof, opposite lateral edges of said blank being oppositely curved from end to end thereof, said blank being symmetrical in form on opposite sides of a central longitudinal line thereof, said member having a parabolic curvature longitudinally from end to end thereof and being straight transversely between opposite lateral edged along the entire length of said member.



4,116,542

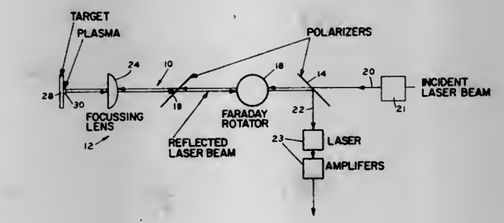
METHOD AND APPARATUS FOR REDUCING COHERENCE OF HIGH-POWER LASER BEAMS

Norman K. Moncur, and Frederick J. Mayer, both of Ann Arbor, Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Filed May 19, 1976, Ser. No. 687,927

Int. Cl.² G02B 0/00

U.S. Cl. 350—321 **17 Claims**



6. In an optical system for generating an output beam and which includes a plurality of optical components disposed on a beam path, the combination comprising target means composed of material which burns to form a beam-reflective plasma when irradiated by a beam having beam energy above an energy threshold, means disposed in said beam path among said system components to direct a beam traveling on said path from upstream system components onto said target means such that at least a portion of said target is burned to form a said reflective plasma and means disposed to redirect a beam portion reflected by said plasma to downstream system components to generate a said output beam, said target thereby isolating said downstream system components from said upstream system components for beams having beam energy below said threshold.

4,116,543

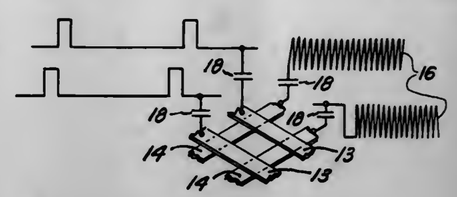
CONTROL ELECTRO-OPTICAL DEVICE UTILIZING LIQUID CRYSTAL

Charles R. Stein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 3, 1971, Ser. No. 139,675

Int. Cl.² G02F 1/13

U.S. Cl. 350—333 **5 Claims**



1. A liquid crystal display system comprising a thin layer of liquid crystal material which produces substantially no light scattering when in an unexcited state and a substantial amount of light scattering when in an excited state, a plurality of elongated conductors extending in parallel relation to each other on each side of the liquid crystal material with the conductors on one side extending orthogonally with respect to the conductors on the other side to provide a matrix of sites between opposed conductors, means for energizing all the conductors on one side of the liquid crystal material with a voltage having a frequency above the critical frequency of the liquid crystal material, means for simultaneously energizing successive ones of the plurality of conductors on the other side of said material during successive adjacent time periods with recurring voltage pulses having a frequency below the critical frequency and having a repetition rate in excess of that corresponding to the refresh time of the liquid crystal material, and means for removing the high frequency voltage from selected conductors on said one side of said material coincidentally with the application of the selected voltage pulses to conductors on the other side of said material to render selected sites light scattering.

4,116,544

LIQUID CRYSTAL REFLECTIVE DISPLAY APPARATUS

Richard A. Soref, Chestnut Hill, Mass., assignor to Beckman Instruments, Inc., Fullerton, California 92634

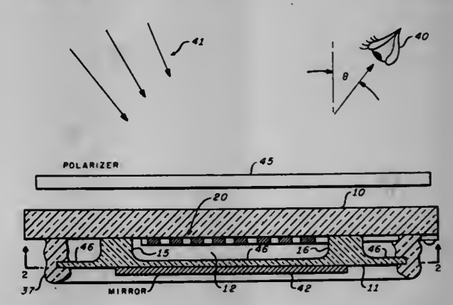
Continuation of Ser. No. 331,437, Feb. 12, 1973, abandoned.

This application Apr. 6, 1977, Ser. No. 785,009

The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.

Int. Cl.² G02F 1/13

U.S. Cl. 350—336 **4 Claims**



1. Electro-optical display apparatus comprising:

first and second coplanar optically transparent electrode means for forming an electric field between the coplanar electrodes;

first optically transparent plate means having first inner surface means,

said first and second coplanar optically transparent electrode

means supported on said first transparent plate in spaced substantially parallel cooperative relation,
optical circular polarization means spaced in substantially parallel relation with respect to the external surface means of said first optically transparent plate means,
second optically transparent plate means having second inner surface means,
mesa spacer means formed integrally with said second inner surface means for spacing said first inner surface means therefrom at a substantially constant predetermined distance,
electric field sensitive optically active means disposed between said first and second surface means for controlling the degree of optical transmission of said electro-optical display apparatus in accordance with the value of said electric field,
wall means for completing the enclosure of said electric field sensitive means sealed in hermetic relation at the peripheries of said first and second optically transparent plate means,
diffuse reflector means permanently affixed to the external surface of said second optically transparent plate means, and
said second optically transparent plate means bearing said diffuse reflector means being substantially thinner than the first of said optically transparent plate means so that said reflector means is relatively close to said coplanar electrode means for the purpose of substantially reducing parallax over a wide field of view.

4,116,545

POLYMERIC ELECTROLYTE FOR ELECTROCHROMIC DISPLAY DEVICES

Thomas Bradley Reddy, Pound Ridge, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 27, 1976, Ser. No. 735,939
Int. Cl.² G02F *1/17*
U.S. Cl. 350—357 **3 Claims**

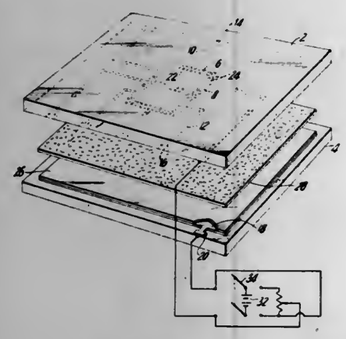
1. In an electrochromic variable light modulating device having an arrangement comprising a light transmitting substrate with a persistent electrochromic material as a light modulator and a counter-electrode separated from said substrate by an ion conducting material, an improved ion conducting material comprising an aqueous solution of polyethylene sulfonic acid which has been dehydrated to viscoelastic consistency.

4,116,546

ELECTROCHROMIC DEVICE WITH CATIONIC ION EXCHANGE RESIN SEPARATOR

Marshall Leibowitz, Ridgefield, Conn., assignor to Timex Corporation, Waterbury, Conn.

Continuation-in-part of Ser. No. 616,224, Sep. 24, 1975, abandoned. This application Apr. 27, 1977, Ser. No. 791,536
Int. Cl.² G02F *1/36*
U.S. Cl. 350—356 **12 Claims**



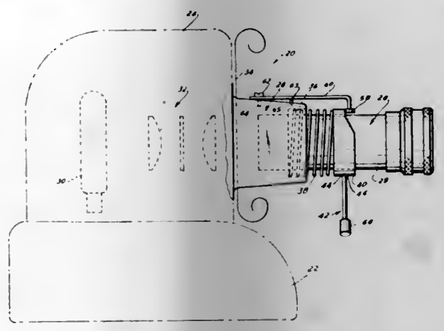
1. An electrochromic display device comprising in layered form, a first transparent substrate with a selectively actuatable transparent electrode thereon and a first electrochromic layer on said transparent electrode, a counterelectrode having a second electrochromic layer thereon, with an electrolyte-separator layer between said electrochromic layers, wherein the improvement comprises a solid electrolyte-separator comprised of a soluble polymer cationic ion exchange resin in the acid form, chemically wetted.

4,116,547

TACHISTOSCOPIC FOCUS CONTROL

Stanford Earl Taylor, Lloyd Harbor, and John N. Brucat, Floral Park, both of N.Y., assignors to Instructional/Communications Technology, Inc., Huntington Station, N.Y.

Filed Jan. 31, 1977, Ser. No. 764,062
Int. Cl.² A61B *3/02*; G02B *15/00*
U.S. Cl. 351—31 **24 Claims**



1. Apparatus for the tachistoscopic projection of an image from projectable material comprising:
a supporting structure;
a light source;
lens means on the supporting structure optically aligned with the light source;
means on the supporting structure for supporting the projectable material between the light source and the lens means;
cam means including a cam surface and a cam follower to effect relative displacement of said lens with respect to the stationary supported material to be projected to bring the projected image from an out of focus condition to an in focus condition for a rapid controlled time period and then to an out of focus condition again; manual actuator means to produce relative movement between the cam follower and the cam surface thereby bringing the projected image from a first out of focus condition into a controlled rapid focus condition and then into an out of focus condition again;
the manual actuator being a handle and being normally rotatable to a first position and releasable to rotate to a second position.

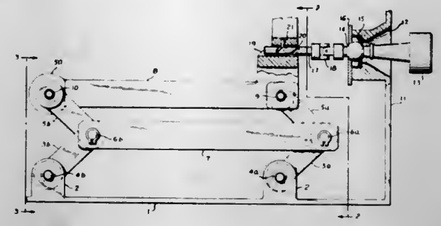
4,116,548

ADJUSTABLE SUPPORT

Staffan B. Persson, Kenmore, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 2, 1977, Ser. No. 773,572
Int. Cl.² A61B *3/00*
U.S. Cl. 351—38 **10 Claims**

1. Apparatus for providing adjustment from a normal vertical position and a normal horizontal position of a device which comprises:
a support member, a plurality of interconnected first and second link members, each of said first and second links having a pair of parallel pivot axes, one pivot axis of each first link and one pivot axis of the interconnected second link being a common pivot axis interconnecting said first and second links, each of said second links being connected to said support at the other second link pivot axis, a frame member for supporting said device pivotably connected to each of said first links at the other first link pivot axis, a rigid member connecting each said common



pivot axis for maintaining parallelinity between said support member and said frame member, torsion means connected to a link for substantially counterbalancing said device at said normal vertical position and positioning means connected to said support for selectively moving said device.

8. The apparatus according to claim 1 wherein the device is an ophthalmic instrument.

4,116,549

CONTACT LENS

James E. Harris, Rte. 2, Amity Heights, Bristol, Tenn. 37620, and Ben D. Parish, Box 758, Greeneville, Tenn. 37743

Filed Jan. 12, 1976, Ser. No. 648,011
Int. Cl.² G02C *7/04*
U.S. Cl. 351—160 **3 Claims**

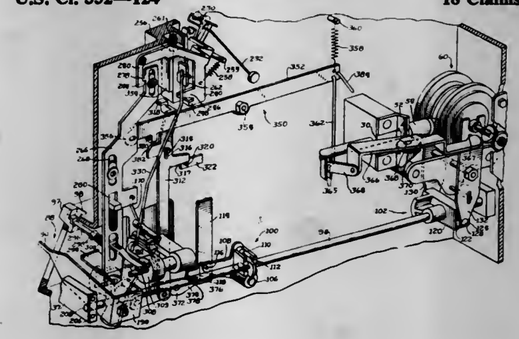
3. A contact lens comprised of an organic cellulose ester selected from the group consisting of cellulose acetate, cellulose acetate butyrate and cellulose acetate propionate, the contact lens characterized by a warpage tolerance not greater than 0.10 mm provided by an antiwarpage treatment wherein the lens material is exposed to an elevated temperature for a predetermined length of time prior to machining and grinding.

4,116,550

PROJECTOR RESET-AUTO STOP MECHANISM

Raymond W. H. Kim, Skokie, and Edward R. Prelletz, Chicago, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 18, 1976, Ser. No. 770,256
Int. Cl.² G03B *23/00*
U.S. Cl. 352—124 **18 Claims**



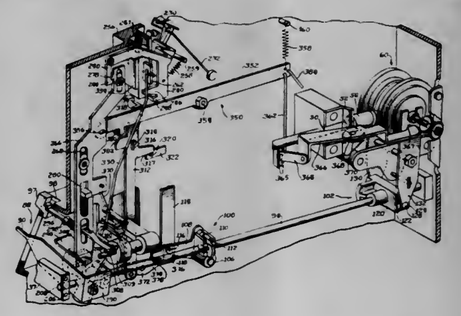
1. In a motion picture projector having a forward and reverse film transporting drive assembly selectively actuable in a forward and a reverse mode and a controller assembly movable into various positions for selecting various corresponding operating modes, a control mechanism to selectively cease film transport comprising:
means for sensing a predetermined film tension condition in at least one film transporting mode;
means actuated by said controller assembly for establishing a reset condition in which the projector is conditioned to sense said predetermined film tension condition; and
means selectively responsive to said tension sensing means in selected ones of said various operational modes for transmitting said sensed predetermined tension film condition to said reset condition establishing means,
said reset condition establishing means including means for positioning said controller assembly to cease normal film transporting action.

4,116,551

PROJECTOR AUTO REWIND MECHANISM

Raymond W. H. Kim, Skokie; Arthur L. Lueders, Mundelein; Edward R. Prelletz, and Gerald D. Warden, both of Chicago, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 18, 1977, Ser. No. 770,257
Int. Cl.² G03B *23/00*
U.S. Cl. 352—124 **14 Claims**



1. In a motion picture projector having a forward and reverse film transporting drive assembly selectively actuable in at least a forward and a reverse mode, an assembly for sensing a predetermined film tension condition and a controller assembly for selecting various operating modes, a control mechanism for selectively actuating a reverse mode of operation upon the occurrence of the predetermined film tension condition comprising:
means responsive to said tension sensing assembly in a first predetermined projector operating mode for conditioning said controller assembly to a second predetermined operating mode when said predetermined film tension condition is sensed; and
means for actuating said film transporting drive assembly in a reverse mode,
said controller assembly conditioning means comprising means movable between a first sensing position and a second operated position for operating said controller assembly and means responsive to said tension sensing assembly for controlling the position of said operating means,
said reverse mode actuating means being coupled to said operating means of said controller assembly conditioning means and responsive to actuate said film transporting drive assembly in the reverse mode upon said operating means moving from said first sensing position to said second operating position,
said film transporting drive assembly comprises a pivotable reverse drive actuating member which is displaced to actuate said drive assembly in a reverse mode,
the movement of said operating means from said first to said second position is a linear displacement, and
said reverse mode actuating means comprises means for

translating said linear displacement movement of said operating means to a rotational movement, means for coupling said rotational movement of said translating means and means coupled to said coupling means for displacing said pivotable reverse drive actuating member upon rotation of said translating means.

4,116,552

MOTION-PICTURE CAMERA WITH AUTOMATIC DIAPHRAGM CONTROL COMPENSATED FOR SHUTTER-SPEED VARIATIONS

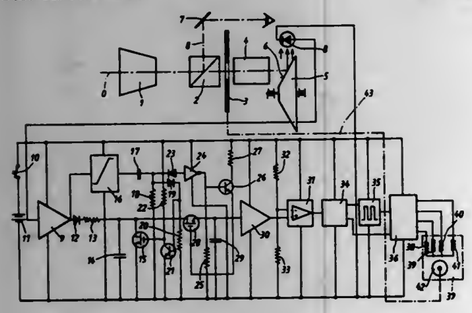
Eduard Wagensonner, Aschheim, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 23, 1977, Ser. No. 799,326

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1976, 2628843

Int. Cl.² G03B *7/08*

U.S. Cl. 352—141 **11 Claims**



1. In a motion-picture camera of the type including an adjustable diaphragm, light-sensitive means for generating a light-indicating signal, and a shutter mechanism which alternately assumes an exposure-phase setting for effecting film exposure and a reflex-phase setting for reflecting incident scene light onto the light-sensitive means, in combination therewith, a novel automatic diaphragm adjustment arrangement comprising control-pulse-generating means operative for generating a first control pulse at the start of the reflex phase and a second control pulse at the end of the reflex phase; integrating means receiving the light-indicating signal and the first control pulse and operative in response to the latter for generating during the reflex phase an integral signal dependent upon the time integral of the light-indicating signal; signal-storing means; signal-transmitting means connecting the signal-storing means to the integrating means and receiving the second control pulse and operative in response to the latter for transmitting the integral signal from the integrating means to the signal-storing means; adjusting means for adjusting the diaphragm; and negative-feedback control means connected to the signal-storing means and to the adjusting means and operative for controlling the operation of the adjusting means as a function of the difference between the signal stored by the signal-storing means and a predetermined reference signal.

4,116,553

DISPLAY METHOD AND APPARATUS

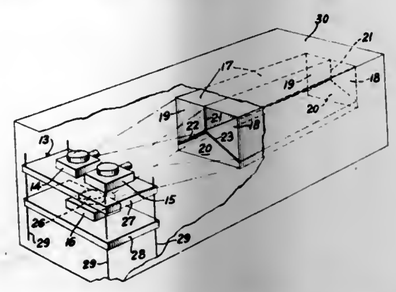
Norman E. Cohen, and Hannah M. Cohen, both of 4709 Highview Blvd., Erie, Pa. 16509

Filed Jan. 21, 1977, Ser. No. 761,297

Int. Cl.² G03B *21/00*

U.S. Cl. 353—31 **5 Claims**

1. A display apparatus comprising,
a screen,
a light tunnel,
projector means,
said screen comprising a back lighted type screen adapted to fit the end of the said light tunnel in close-spaced relation,
said light tunnel comprising an enclosure open at the end adjacent to said projector means and open at the end adjacent to said screen,
said light tunnel comprising an enclosure divided into at least three distinct and separate light paths by partition means extending the full length of said tunnel,
said partition means comprises a first partition extending vertically of said tunnel and second and third partitions connected to and extending downwardly from the end of



said first partitions such that the three partitions form angles of 120 degrees with each other whereby said colors projected on said screen combine to form a three dimensional representation of a corner of a room with an area for floor, wall and drapery surfaces to enable the comparison of different combinations of colors and patterns.
said projector means being adapted to selectively direct at least three color images through said light paths,
said partitioned light paths divide the screen so that the images projected on the said screen look like the corner of a room with an area for floor, wall, drapery surfaces to enable the comparison of different colors and patterns.

4,116,554

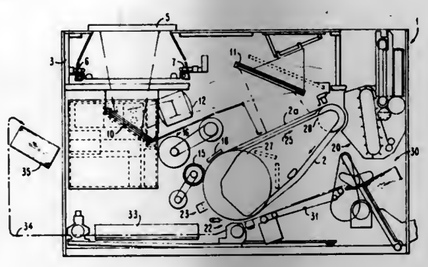
OPTICAL REDUCTION SYSTEM FEATURING THE PROVISION OF BORDERS

Edwin Langford Libby, Longmont, and Myrl J. Miller, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 608,941, Aug. 29, 1975, which is a continuation of Ser. No. 301,681, Oct. 27, 1972, which is a continuation of Ser. No. 87,508, Nov. 6, 1970. This application Aug. 17, 1977, Ser. No. 825,337

Int. Cl.² G03G *15/00*

U.S. Cl. 355—11 **5 Claims**



1. An electrophotographic copying machine for copying documents at various discrete magnification ratios, said documents typically of various rectangular sizes, comprising:
a transparent plate mounted on said machine for supporting said documents of various sizes in a stationary document plane, said documents located on said document plane along a common reference edge;

flash lamp means for illuminating said document plane, mounted adjacent to said transparent plate;
a photoconductive surface mounted in said machine;
power means operatively connected to said photoconductive surface for moving said surface in said machine;
an optical system including a mirror element and a lens member, mounted in said machine for projecting light received from the illuminated document plane to a stationary image plane on said photoconductive surface;
a lens supporting member mounted in said machine for movement, said movement including a component along the optical path defined by the axis of the light directed from said document plane to said photoconductive surface in order to provide different magnification ratios;
lens guide means mounted in said machine for supporting said lens supporting member, to provide a guideway for lens movement, said guideway inclined at an angle to said optical path in order to provide lens movement transverse to said path; and
drive means operatively connected to said lens supporting member to move said lens supporting member to a first position to produce a first image in an image area sized approximately the same as a first document area, and to move said lens supporting member to a second position to produce a reduced second image, said lens guide means and said drive means cooperating to shift said second image within said image area to produce borders along opposite edges of said second image, said lens guide means and said drive means further cooperating to shift said second image without deliberately causing the center of said second image to coincide with the center of said first image.

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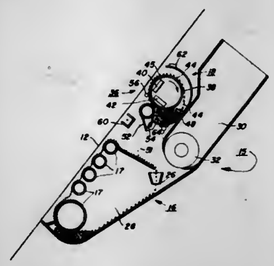
BACKGROUND REMOVAL APPARATUS

Eugene F. Young, Henrietta; Curtis M. Ray, Rochester, and Ryland F. Rogers, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 626,678, Oct. 29, 1975, abandoned, which is a continuation of Ser. No. 508,954, Sep. 25, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 764,101

Int. Cl.² G03G *21/00*

U.S. Cl. 355—15 **6 Claims**



6. Apparatus for removing toner particles from a photoreceptor, the apparatus comprising:
(a) transport means for transporting magnetic carrier beads into sweeping contact with the photoreceptor, and means for electrically biasing the transport means to a polarity and magnitude sufficient to assist in removing the toner particles from the photoreceptor and onto the carrier beads;
(b) first reclaim means positioned adjacent to the path of the transport means so as to contact the carrier beads having the toner particles thereon and means for electrically biasing the first reclaim means to a polarity and magnitude sufficient to remove the toner particles from the carrier beads; and
(c) means for at least substantially discharging any charge on the carrier beads after the carrier beads contact the first reclaim means but before the carrier beads contact the photoreceptor.

4,116,556

ELECTROPHOTOGRAPHIC COPYING APPARATUS

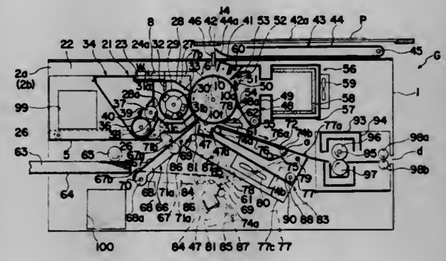
Susumu Tanaka, Sakai; Masaya Ogawa, Osaka; Hidetoshi Kawabata, Tondabayashi; Takao Fujiwara, Sakai; Takaji Kurita, Kawachinagano; Yuji Enoguchi, Osaka; Kenichi Wada, and Hiroshi Murasaki, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1976, Ser. No. 749,083

Claims priority, application Japan, Dec. 19, 1975, 50/152534

Int. Cl.² G03G *15/00*; B65H *5/02*

U.S. Cl. 355—3 SH **7 Claims**



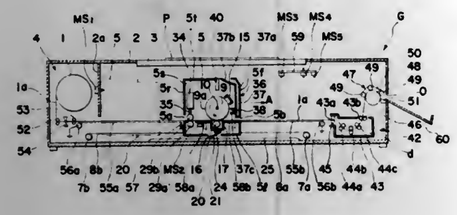
1. In an electrophotographic copying apparatus which has at least a movable photoreceptor member having a photoreceptor layer disposed on an outer periphery thereof, corona charging means for preliminarily charging said photoreceptor surface, means for exposing said preliminary charged photoreceptor surface to light images of an original to be copied so as to form images corresponding to said original on said photoreceptor surface as said photoreceptor member moves, means for transferring said images corresponding to said original onto said transfer material, and means for fixing said images corresponding to said original onto said transfer material for obtaining copied images of said original on said transfer material, the improvement which comprises:
a first transporting means for transporting said transfer material from a feeding means against said photoreceptor surface and between said photoreceptor surface and said transferring means and having an elongated transfer material supporting means extending toward said photoreceptor surface, said first transporting means being pivotally mounted at the end remote from said photoreceptor surface and having a free end adjacent said photoreceptor surface retractable away from and movable toward said photoreceptor surface;
a second transporting means for transporting said transfer material from between said photoreceptor surface and said transferring means to said fixing means and having an elongated transfer material supporting means extending away from said photoreceptor surface, said second transporting means being pivotally mounted at the end remote from said photoreceptor surface and having a free end adjacent said photoreceptor surface retractable away from and movable toward said photoreceptor surface, said first and second transporting means being associated with each other for forming a path for the transfer material from said feeding means to said fixing means; and
connecting means connecting said first transporting means with said second transporting means for moving the free ends of said first and second transporting means in association with each other during retraction from said photoreceptor surface for providing space along said path of said transfer material within said copying apparatus for facilitation of removal of jammed transfer material.

4,116,557

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Teizo Kushima, Osaka; Takaji Kurita, Kawachinagano, and Hiroaki Mizunoe, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1976, Ser. No. 753,088
Claims priority, application Japan, Dec. 27, 1975, 51/156506
Int. Cl.² G03G *15/28*
U.S. Cl. 355—8 **12 Claims**



1. An electrophotographic copying apparatus of the slit exposure type which comprises;

a platform member of transparent material disposed at an upper face of said copying apparatus for holding an original to be copied on said platform member;

a scanning frame member which includes therein at least a photoreceptor of cylindrical configuration having the photoreceptor surface on the outer periphery thereof, corona charging means for preliminarily charging the photoreceptor surface, an optical system for projecting a light image of the original onto the preliminarily charged photoreceptor surface for forming an image corresponding to the original on the photoreceptor surface, and means for transferring said image corresponding to the original onto a transfer material, said scanning frame member being movably disposed in said copying apparatus for reciprocation at a predetermined speed in a direction parallel to said platform member for scanning the original for forming said image corresponding to the original on said photoreceptor surface;

means for moving said scanning frame member from a scanning starting position in one direction for advancing the scanning frame member at the predetermined speed in a direction parallel to said transparent platform and from a scanning terminating position in the other direction for returning the scanning frame member to the starting position after termination of the scanning;

means for rotating said photoreceptor in association with the movement of said scanning frame member;

means for transporting the transfer material between said photoreceptor and said transfer means in the direction of the advancing of said scanning frame member at a speed equivalent to the sum of the speed of the advancing of said scanning frame member and the circumferential speed of rotation of said photoreceptor; and

means for guiding the transfer material between the scanning starting position and the scanning terminating position of said scanning frame member;

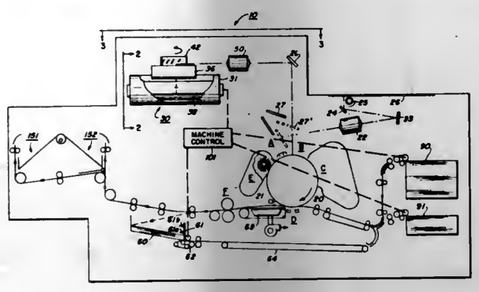
whereby said transfer material is transported for transfer of said image formed on said photoreceptor thereonto as it is transported at said speed which is the sum of the speed of advancing of said scanning frame member and the circumferential speed of rotation of said photoreceptor.

4,116,558

DUPLEX SYSTEM AND METHOD FOR PRE-COLLATION COPIERS

John A. Adamek, Rochester, and Richard T. Ziehm, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 9, 1977, Ser. No. 767,012
Int. Cl.² G03B *27/32*
U.S. Cl. 355—24 **23 Claims**



1. A method of reproducing pre-collated sets of sheets of page images comprising the steps of:

(a) providing a means for forming a page image on a sheet of final support material;

(b) presenting serially to said imaging means a plurality of page images arranged in a desired sequential order wherein page images arranged at an odd position in said order comprise odd type page images and page images arranged at an even position in said order comprise even type page images;

(c) providing first means for feeding first sheets of final support material from a first supply thereof;

(d) providing second means for feeding second sheets of final support material from a second supply thereof; and

(e) actuating in response to the presentation of a page image of one of said odd or even types to said imaging means said first feeding means to feed a first sheet of final support material to said imaging means for forming an image of one type of page image thereon and actuating a second feeding means in response to the presentation of a page image of the other of said odd or even types to said imaging means to feed a second sheet of final support material to said imaging means for forming an image thereon of said other type page image while continuing to feed sheets from said first feeding means.

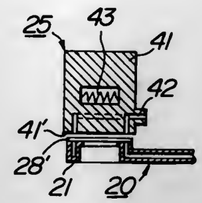
4,116,559

PROCESS OF AND APPARATUS FOR FORMING A PICTURE IMAGE INFORMATION SUCH AS A MANUSCRIPT, ETC. ON A DRY TREATED FILM AND DEVELOPING THE SAME

Tadashi Morokuma, Tokyo, and Ryo Fujimori, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 19, 1977, Ser. No. 798,613
Claims priority, application Japan, May 26, 1976, 51/59939; May 26, 1976, 51/59940; May 26, 1976, 51/59941
Int. Cl.² G03B *29/00;* G03C *5/24*
U.S. Cl. 355—28 **16 Claims**

1. A method of forming a picture image information on a dry treated roll film and developing the same, comprising the steps of: cutting said dry treated roll film into a portion having a given length, exposing said roll film portion to light reflected back from said picture image information and forming said picture image information thereon, hot developing said picture image information formed on said film segment under a flat state without applying tension thereto by attracting said film segment onto a heating block, said successive steps being carried out by attracting and holding said film segment on respective treatment blocks and carrying said film segment along a path.

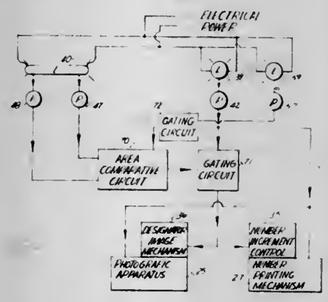


4,116,560

APPARATUS AND METHOD FOR DOCUMENT MICROFILMING SYSTEM

James J. Dragani, Columbus, and David S. Wise, Solon, both of Ohio, assignors to James J. Dragani, Columbus, Ohio

Filed Jun. 6, 1977, Ser. No. 804,011
Int. Cl.² G03B *27/52, 27/32*
U.S. Cl. 355—41 **31 Claims**



1. A microfilming system for information retrieval to photographically record sets of documents that include a primary document provided with specific indicia and associated subdocuments comprising

(a) photographic apparatus for forming on a strip of photographic film an image of documents transported in serially spaced sequence past an imaging station, said photographic apparatus including means for forming an identifying designator image on said film strip in proximately disposed relationship to selected document images in response to receipt of a control signal,

(b) document transport means engageable with the documents to be photographed and operable to serially convey the documents in longitudinally sequential relationship through said photographic apparatus,

(c) identifier imprinting means disposed in operative relationship to said document transport means to imprint an identifier on each of the transported documents, said imprinting means including indexing means operable to increment said imprinting means to a next successive identifier in response to receipt of a control signal, and

(d) control means including

(1) first sensing means responsive to passage of a leading edge of a document past a first sensing station for generating a first electrical signal which is applied to said identifier imprinting means to effect actuation thereof and imprint the document with the identifier,

(2) second sensing means responsive to the specific indicia carried by only primary documents of a set for generating a second electrical signal in response thereto, and

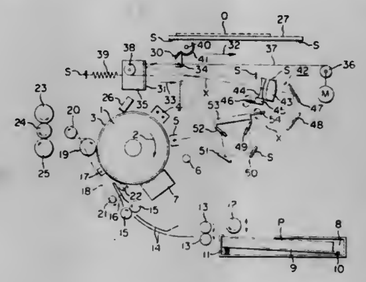
(3) circuit means responsive to concurrent generation of first and a second elecrtrical signals with respect to a primary document to form a control signal operative to actuate said identifying designator image forming means and index said identifier imprinting means.

4,116,561

COPYING APPARATUS

Wilhelm Knechtel, Biebertal, and Taisuke Tokiwa, Fernwald, both of Fed. Rep. of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1977, Ser. No. 805,564
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2620917
Int. Cl.² G03B *27/34*
U.S. Cl. 355—57 **24 Claims**



1. A copying apparatus having a variable copying magnification, comprising:

means for supporting an object to be copied;

a photosensitive medium;

focusing lens means for projecting the optical image of said object upon said photosensitive medium, said focusing lens means having a main lens positionally fixed in the optical path between the support means and the photosensitive medium, and a movable auxiliary lens movable into and out of said optical path; and

a group of mirrors movable into and out of one of the optical path portions between said focusing lens means and said support means and between said focusing lens means and said photosensitive medium, thereby adjusting the length of said one optical path.

4,116,562

OPTICAL SYSTEM FEATURING CHANGE IN MAGNIFICATION BY COMBINED LENS AND MIRROR MOTION

Edwin L. Libby, Longmont, and Myrl J. Miller, Boulder, both of Colo., assignors to International Business Machines, Armonk, N.Y.

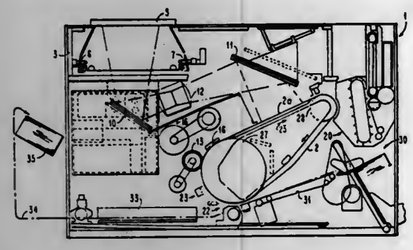
Continuation of Ser. No. 301,681, Oct. 27, 1972, abandoned, which is a continuation of Ser. No. 87,508, Nov. 6, 1970, abandoned. This application Aug. 29, 1975, Ser. No. 608,941
Int. Cl.² G03B *27/70;* G03G *15/26*
U.S. Cl. 355—60 **16 Claims**

1. A copier system incorporating at least a lens element and a reflector member and enabling the positioning on a document plane of documents within a predetermined size range from largest to smallest at a reference corner established by the intersection of two preselected intersecting reference edges of said documents positioned in said document plane, providing for at least one magnification mode change for projection of images of said documents from said document plane to an image plane, and maintaining a common reference corner in said image plane for images projected, comprising:

lens supporting means for supporting said lens element for movement substantially along the optical path of images transmitted in said system, the range of movement of said lens element being between at least a first position and a

second position to thereby effect change in magnification of images projected in said system, said supporting means being further arranged to concurrently impart a movement of said lens element transversely with respect to said optical bath as it moves between said first position and said second position, the extent of transverse movement of said lens element being of sufficient range to insure projection of images in said system in a constant relationship with respect to said image plane common reference corner for all documents of largest to smallest size;

first driving means for moving said lens supporting means and said lens element on a selective basis as required



between said first and second positions during operation of said system;

reflector supporting means supporting said reflector member in working relation in the optical path established in said system, said reflector supporting means being movable between first and second positions in conjunction with changes in magnification of images transmitted in said system; and

second driving means operable to drive said reflector supporting means and said reflector member concurrently with driving of said lens supporting means and said lens element by said first driving means.

4,116,563

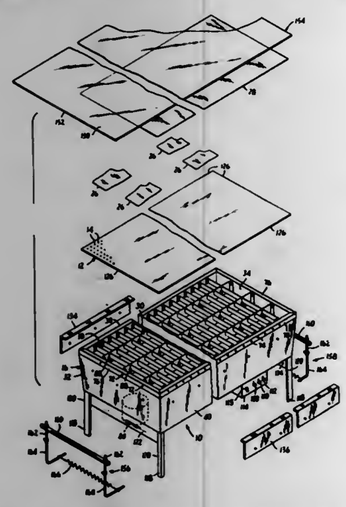
PATTERN REPRODUCTION TABLE

William Kaufman, 4 Stonehurst Ct., Pomona, N.Y. 10970

Continuation-in-part of Ser. No. 660,829, Feb. 24, 1976, abandoned. This application Sep. 2, 1977, Ser. No. 830,020

Int. Cl.² A47B *13/00*; G03B *27/20*

U.S. Cl. 355—91 **14 Claims**



1. A pattern reproduction table comprising an enclosure having a top open end, thin metal highly light reflecting criss-cross shaped grid means mounted across the said top open end of said enclosure and spaced above the lower end thereof, a flexible transparent air-permeable sheet of thin film material overlying said grid means and initially supported thereby by upper surfaces of said grid means which extend in a first direction, vacuum blower means communicating with said enclosure for exhausting air therefrom to create a suction through said air-permeable sheet, and a plurality of lamps mounted in said enclosure at the lower end thereof beneath said grid means, and spaced a substantial distance below said grid means, said flexible transparent sheet being drawn downwardly through openings in said grid means under the suction created by said vacuum blower means so as to engage the upper surfaces of all of said grid means which extend in said first direction and form downwardly bowed undulations therebetween, thereby presenting a sinuous shape in cross-section.

4,116,564

APPARATUS FOR THE STUDY OF PLASMAS

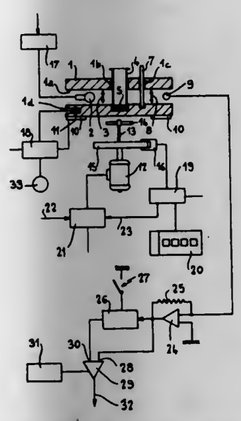
Serge Renaud, and Jean-Paul Rubel, both of Bron, France, assignors to Institut National de la Sante et de la Recherche Medicale Inserm, Paris, France

Filed Feb. 5, 1976, Ser. No. 655,394

Claims priority, application France, Feb. 12, 1975, 75 04904

Int. Cl.² G01N *21/00*; G01J *3/48*; G01N *21/24*

U.S. Cl. 356—39 **5 Claims**



1. An apparatus for the study of the aggregation and coagulation of plasmas by conducting an aggregation test and conducting a coagulation test, said apparatus comprising:

transparent container means for receiving a sample to be studied;

means for maintaining said container means and said received sample at a predetermined constant temperature;

light source means for generating a beam of light of constant intensity and for directing same towards said container means to cause same to pass through said received sample;

rotatable stirrer means disposed within said container means for acting on said received sample;

means for selectively rotating said stirrer means at two different constant speeds, namely a first speed of substantially 1100 rpm for an aggregation test and a second speed of substantially 100 rpm for a coagulation test;

photo-electic means for receiving the light from said light source means which has passed through said container means and through said received sample and for delivering a signal in response thereto;

means between said light source means and said photo-electric means for selectively receiving one of two different optical filters, namely a first one having a wave length of substantially 530μ (green) for an aggregation test and a second one having a wave length substantially from 360 to 400μ (violet) for a coagulation test;

means for deriving an outlet signal from the signal of said photo-electric means;

and means for zeroing the value of said outlet signal at the beginning of each test.

4,116,565

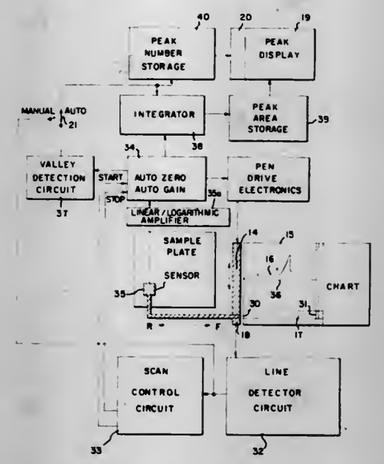
ELECTROPHORETIC ANALYZER WITH AUTOMATIC REFERENCE CIRCUIT

William E. Powell, and Richard G. Magner, both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed May 24, 1977, Ser. No. 799,944

Int. Cl.² G01N *27/26*

U.S. Cl. 356—105 **9 Claims**



1. An analyzer for electrophoretic samples comprising:

a source of analysis energy,

a detector producing a signal representing the optical characteristics of the sample,

a sample stage movable linearly with respect to said source and said detector to scan a sample,

means for generating a voltage representing the minimum in said signal during a first scan of said sample stage, and

means for combining said voltage with said signal during a second scan of the said sample stage to automatically correct said signal to a reference.

4,116,566

LINE SCANNING DEVICE FOR DETECTING DEFECTS IN WEBS OF MATERIAL

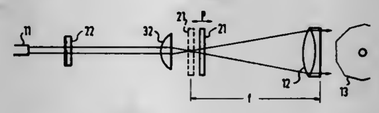
Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick Gesellschaft mit beschränkter Haftung Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,546

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1975, 2550814

Int. Cl.² G01N *21/16*

U.S. Cl. 356—200 **22 Claims**



1. In a line scanning device for detecting defects in webs of material, wherein a laser light source throws a light spot by way of an objective, a light deflector device, and a cylindrical lens onto a web of material moving parallel to its surface, said light spot periodically scanning the web at right angles to the direction of its movement and parallel to its surface, and wherein a light receiving arrangement comprising a rod light guide having a first surface, a second surface opposite said first surface and having a longitudinal axis and at least one photoreceiver is disposed parallel to the web of material and to the direction of scanning; the improvement comprising a step mirror arrangement carried by said rod light guide along said first surface and parallel to said axis, on that side of its periphery lying opposite the light inlet to said guide, and comprising a plurality of mirrors inclined with respect to said longitudinal axis, and arranged substantially exactly one behind the other when looking in the direction of said axis such that light reflected by said mirrors impinges on said second surface at angles of total reflection, and a light-scattering cylindrical lens grid, the axes of whose lenses extend in the scanning direction, disposed between the light source and said objective.

4,116,567

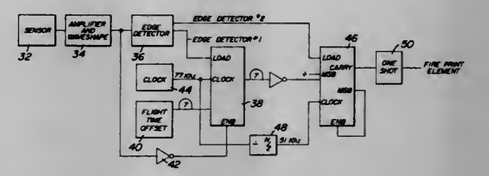
PRINTER SYNCHRONIZATION CONTROL FOR SHUTTLE HAVING NON-UNIFORM VELOCITY

Craig San Pietro, Philadelphia, Pa., assignor to Okidata Corporation, Moorestown, N.J.

Filed Dec. 22, 1976, Ser. No. 756,339

Int. Cl.² B41J *3/04*

U.S. Cl. 400—124 **9 Claims**



1. In a dot matrix printer including a shuttle and plural print elements mounted thereon for printing dots at preselected positions on a paper, wherein the relative velocity between the paper and the shuttle is non-uniform and wherein each of the print elements strikes the paper a finite time *T*flight after having been actuated, a printer synchronization control comprising:

means for measuring the relative velocity between the paper and the shuttle over a period of time *T*inc inversely proportional to the relative velocity;

means for determining the time *T*dec at which a print element must be actuated to strike the paper at a preselected columnar position; and

means for causing the print element to strike the paper at said preselected position as a function of said time determining means.

4,116,568

CARRIAGE DRIVING MECHANISM FOR PRINTER

Takami Suzuki; Masayuki Suzaki, both of Yokohama, and Tomoyuki Moriya, Atsugi, all of Japan, assignors to Ricoh Co., Ltd., Japan

Filed Apr. 4, 1977, Ser. No. 784,373

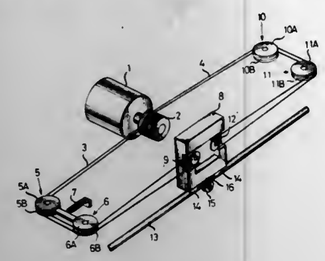
Claims priority, application Japan, Apr. 5, 1976, 51-37294

Int. Cl.² B41H *19/30*

U.S. Cl. 400—320 **8 Claims**

1. A carriage driving mechanism for a printer comprising: a driver motor, a drive pulley on said driver motor rotatable by said driver motor, at least one cable having two end portions connected adjacent each other to said drive pulley such that both end portions are wound or unwound simultaneously, said cable being folded near its center to form substantially equal and parallel first and second cable portions, at least one car-

riage pulley rotatably mounted on the carriage having the cable fold wrapped therearound so that the tension on said first



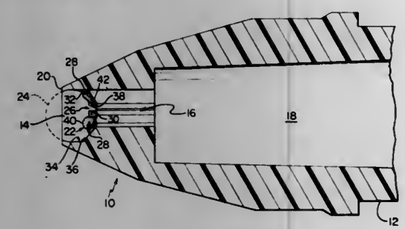
and second cable portions due to the driving of said drive pulley are at all times equal.

4,116,569

BALL HOLDER FOR A BALL-POINT PEN

Meuriel Francis Reed, North Reading, and Curtis Lawrence Malm, Quincy, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Feb. 14, 1977, Ser. No. 768,479
Int. Cl.[2] B43K *7/10*
U.S. Cl. 401—216 **3 Claims**



1. In a ball holder for a ball-point pen of the type having a tubular ball holder body and a ball socket with a cylindrical wall on an end of said body for rotatable retention of a writing ball, an ink reservoir extending into said body and an ink reservoir seat port extending from said ball socket to said reservoir, the improvement comprising:

a ball seat at a bottom of said ball socket, said ball seat having a plurality of convex surfaces formed on concave shoulder surfaces to provide a single ball contact point on each of said convex surfaces;

concavities between said convex surfaces adjacent to said shoulder surfaces for collecting and supplying ink to a surface of said writing ball; and

linearly tapered capillary channels providing a first gap separating said adjacent shoulder portions bordering said ink seat port and a second smaller gap separating said adjacent shoulder portions at said ball socket wall.

4,116,570

TOOTHBRUSH WITH CARTRIDGE CHAMBER

Ronald Parenti, 231 Bryn Mawr Ave., Roselle, Ill. 60172

Filed Nov. 8, 1976, Ser. No. 739,618
Int. Cl.[2] A46B *11/04*
U.S. Cl. 401—155 **1 Claim**

1. A toothbrush and paste cartridge assembly comprising in combination

a toothbrush formed by a handle defined by an exterior wall and having a hollow interior, and terminating in a closed bristled portion at one end and being open at the opposed end thereof,

said wall of said toothbrush handle provided with an elongate slot extending the substantial length of said toothbrush,

said slot provided with a plurality of pusher positioning means positioned along the length thereof,

said pusher positioning means formed by a plurality of nibs positioned along and formed integrally with the lateral confines of said slot,

pusher means reciprocally carried on said toothbrush and adapted for travel along the length of said hollow interior of said toothbrush,

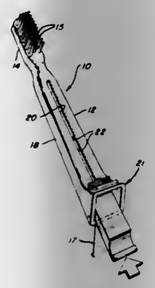
said pusher means formed by a pusher block sized and proportioned to be reciprocally movable within the confines of said hollow interior of said toothbrush handle,

an elongate rail mounted on said pusher block, said rail being sized and proportioned to slide within the confines of said slot,

said pusher means being further provided with pusher stop means in cooperating relation with said pusher positioning means provided in said slot thereby to permit positioning of said pusher means at a plurality of stop positions along the length of said toothbrush handle,

said pusher stop means formed by a stop boss carried on said rail and positioned to be in cooperative relation with said plurality of nibs whereby said stop boss is in frictional contact with said plurality of nibs thereby to effect a plurality of stop positions,

thumb grip means carried on said rail and extending, in use, beyond the confines of said slot thereby to provide a



gripping surface to facilitate reciprocation of said pusher block within said hollow interior of said toothbrush,

said hollow interior of said toothbrush handle including a chamfered section positioned adjacent said closed bristled end,

said chamfered section terminating in a nozzle section,

said nozzle section being disposed arcuately in the direction of and in open communication with said closed bristled portion of said toothbrush,

and a preformed and prefilled toothpaste cartridge constructed and sized for insertion and nesting within the hollow interior portion of said toothbrush handle,

said cartridge formed by an elongate body portion, a tapered neck portion adjacent the forward end thereof and said tapered neck portion terminating in a substantially flexible nozzle,

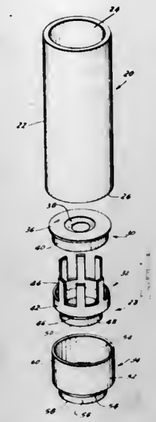
whereby said toothpaste cartridge is insertable within the hollow interior of said toothbrush handle with said tapered neck portion matingly nested within said chamfered section of said handle, and said nozzle positioned within said nozzle section of said toothbrush in open communication with said closed bristled portion of said toothbrush, and said pusher means being reciprocally positioned along the length of said slot to eject toothpaste from within said cartridge through said nozzle and into said bristled portion of said toothbrush.

4,116,571

DISPOSABLE FLUID DISPENSER

David Maxwell, 6035 Broadway, New York, N.Y. 10471

Continuation-in-part of Ser. No. 680,900, Apr. 27, 1976, abandoned. This application Nov. 17, 1976, Ser. No. 742,633
Int. Cl.[2] B43K *5/18*; B43M *11/06*; A47L *13/30*
U.S. Cl. 401—264 **10 Claims**



1. A dispenser for viscous liquids for personal use comprising; a hollow container having an opening at the forward end and means thereon to permit introduction of a supply of viscous liquid to the interior of the container, valve means adapted to be mounted on the container normally closing the opening in the container and adapted to be opened to release liquid, the valve means including a valve housing which is hollow and open at both ends, the housing adapted to be mounted in the opening in the container so that the passageway through the housing provides communication between the interior of the container and the exterior thereof, a valve seat formed in the housing, a valve piston movably mounted in the housing and shiftable between a position in engagement with the valve seat to close the opening at the forward end of the container and a position removed from the valve seat to permit the viscous liquid to flow from the container through the opening therein, spring means in the form of a plurality of substantially uniformly spaced stems extending rearwardly from the piston, spring retention means to engage with the stems and normally bias the spring stems to maintain the piston in engagement with the valve seat, and the piston in the seated position having an exposed portion extending beyond the housing whereby a predetermined application of force to the exposed portion will unseat the piston by applying a further bias to the spring stems and thereby permit the viscous liquid to flow from the container and, thereafter, release of the predetermined application of force will permit the piston to again seat and close the flow path from the container, and the spacing of the spring stems facilitating a uniform unseating of the piston and a consequent uniform flow of viscous liquid from the container.

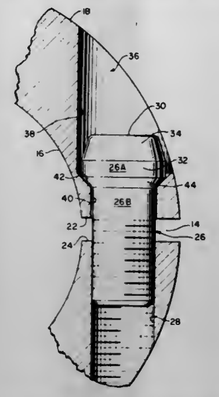
4,116,572

SHAFT CLAMPING DEVICE

Ernest J. Heldmann, Wethersfield, and Terry D. Capuano, New Britain, both of Conn., assignors to Veeder Industries Inc., Hartford, Conn.

Filed Jun. 6, 1977, Ser. No. 803,788
Int. Cl.[2] F16D *1/06*
U.S. Cl. 403—7 **7 Claims**

1. A shaft clamping device comprising a resilient annular collar for effecting a given holding power on a shaft of predetermined diameter and having a circular central opening and an outside collar diameter of reduced size in relation to a standard size specified for said given shaft holding power, the collar having a radial slot extending from the opening through an annular outer wall of the collar, the collar having a recess in its annular outer wall and a tapped opening coaxially aligned with the recess, the recess and tapped opening being respectively located on opposite sides of the radial slot and communicating therewith in perpendicular relation to the slot, the recess



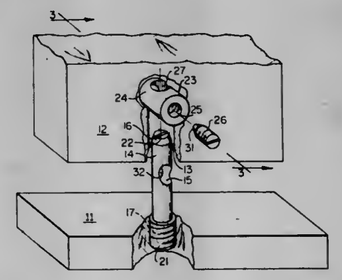
including an exposed entrance and a clamping screw clearance hole of reduced diameter relative to the entrance, the recess further including a tapered diameter surface defining a junction between the entrance of the recess and its clearance hole, the tapered diameter surface providing a clamping screw bearing shoulder effecting reduced stress concentration.

4,116,573

FASTENING

Lothar U. Fuchs, 262 Mill Rd., Chelmsford, Mass. 01824

Filed Mar. 28, 1977, Ser. No. 781,716
Int. Cl.[2] F16B *9/02*
U.S. Cl. 403—264 **8 Claims**



1. Fastening apparatus comprising, fastening rod means for fastening first and second members together formed with a conical opening near one end extending from at least one side of the fastening rod means to the center thereof and having connection means near another end thereof for connection to the second member,

set screw means formed with a conical end for being seated inside the first member and screwed into said conical opening for engagement with the surface around said conical opening for urging said fastening rod means in a direction toward said one end for fastening the first and second members together,

said conical opening extending across the center of said fastening rod means at least almost to the opposite side of said fastening rod means,

and set screw holder means formed with an internally threaded opening for accommodating said set screw means and a fastening rod opening extending through said set screw holder means for allowing movement of said

fastening rod means along the fastening rod means axis while restricting said movement of said fastening rod means orthogonal to the latter axis with said one end extending outside said set screw holder means for accommodating said fastening rod means and embracing said conical opening and the conical end of said set screw means.

4,116,574

CABLE TERMINALS FOR METAL CABLES

Camillo Pirovano, Via Spluga, Cernusco Lombardone (Como), Italy

Filed Sep. 22, 1977, Ser. No. 835,694
Claims priority, application Italy, Oct. 7, 1976, 28074 A/76
Int. Cl.² F16G *11/05*
U.S. Cl. 403—275 **4 Claims**



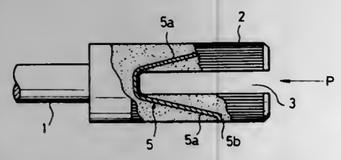
1. A cable terminal for metal cables, comprising a bush having an internally cylindrical bore flared internally at one end with an internal slightly conical part between the cylindrical part and the flared end, said bush mounted and locked on the cable, the cable strands are unwound inside the bush and a self-tapping screw is screwed between said strands in a direction axial to the bush for a depth not exceeding that of the bush, said screw having a head flared to correspond substantially to the flaring of the bush.

4,116,575

ENCAPSULATED REINFORCEMENT IN MOULDED SHAFT

Yoshio Nakatogawa, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1977, Ser. No. 817,179
Claims priority, application Japan, Jul. 20, 1976, 51-96311[U]
Int. Cl.² B25G *3/34*; F16B *17/00*
U.S. Cl. 403—265 **1 Claim**



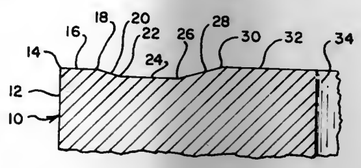
1. A coupling shaft used for electrical parts, made of molded material and provided with a slot along the axis of a coupling head characterized in that a resilient member is embedded in the shaft in such a manner that said slot is positioned in a valley formed by two arms of said resilient member.

4,116,576

CUTTING INSERT

William C. Gawryk, Sr., Allegheny County, Pa., assignor to Newcomer Products, Inc., Latrobe, Pa.

Filed Apr. 25, 1977, Ser. No. 790,175
Int. Cl.² B26D *1/00*
U.S. Cl. 407—114 **7 Claims**



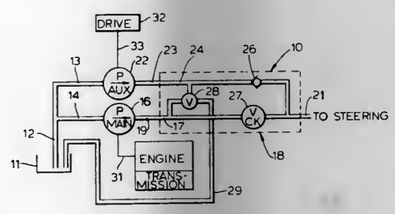
1. A cutting insert for controlling the removal of metal from a workpiece having:
(a) a peripheral wall surface;
(b) a planar land surface intersecting the peripheral wall surface;
(c) a cutting edge formed by the intersection of the peripheral wall and the planar surface;
(d) a first curved surface having a radius of from 0.006 to 0.018 inches adjoining and extending from the planar land surface;
(e) an inner wall surface descending from the first curved surface inwardly of the peripheral wall surface;
(f) a second curved surface descending from the inner wall surface and having a radius of from 0.006 to 0.018 inches; and
(g) a lower planar surface parallel to the planar land surface and adjoining and extending from the second curved surface thereby forming one continuous surface within the insert cutting edge.

4,116,577

FLOW SENSING AUXILIARY PUMP BY-PASS VALVE

John A. Lauck, Benton Harbor, Mich., assignor to National Machine Company, Inc., Stow, Ohio

Filed Mar. 21, 1977, Ser. No. 779,482
Int. Cl.² F04B *49/00*
U.S. Cl. 417—286 **7 Claims**



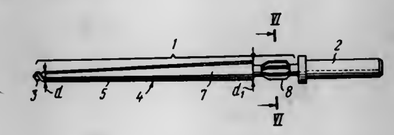
1. A valve for use in a system having a source of fluid, a first fluid pumping means operative by a driving mechanism and a second auxiliary fluid pumping means driven by a second driving mechanism and means responsive to a change in the flow condition of said fluid caused by a lack of proper performance of said first fluid pumping means to effect a utilization of the fluid pumped by said second fluid pumping means, said valve comprising:
means defining a body having a pair of inlet ports and an outlet port spaced from said inlet ports, said first pumping means being connectible in circuit with one of said pair of inlet ports, said second pumping means being connectible in circuit with the other one of said pair of inlet ports;
passageway means located in said body and between and in fluid communication with said pair of inlet ports and said outlet port;
first normally closed valve means in said passageway means for controlling the main flow of fluid from said first pumping means to said outlet port and being openable in response to a predetermined pressure differential in said fluid at said one of said inlet ports and said outlet port, said normally closed valve means being closed, in addition to said normal closing thereof, in response to a fluid flow from said second fluid pumping means; and
second normally closed valve means in said passageway means for controlling the return flow of fluid from said second pumping means to a reservoir therefor and being openable in response to a predetermined pressure differential in said fluid at said one of said inlet ports and said outlet ports to effect a return of fluid to said reservoir, said second normally closed valve means being closed, in addition to said normal closing thereof, in response to a drop in said predetermined pressure differential in said fluid to effect (1) a blocking of the return flow of fluid to said reservoir and (2) a flow of fluid from said second fluid pumping means to said outlet port.

4,116,578

ROTARY TOOL FOR MAKING HOLES

Mikhail Lvovich Gelfand, Yaroslavskoe shosse, 129, kv. 44; Boris Grigorievich Goldshtein, ulitsa Molodogvardeiskaya, 24, korpus 1, kv. 26; Leonid Avrumovich Gornik, ulitsa Krasny Kazanets, 3, korpus 5, kv. 139, all of Moscow; Jury Pavlovich Shishulin, Jubileiny prospekt, 18, kv. 30, Khimki Moskovskoi oblasti; Yakov Isaakovich Tsipenjuk, ulitsa Kirova, 5, Solntsevo Moskovskoi oblasti, and Oleg Semenovich Tsygankov, bulvar Yana Rainisa, 14, kv. 94, korpus 2, Moscow, all of U.S.S.R.

Filed Feb. 11, 1977, Ser. No. 767,785
Int. Cl.² B23B *51/00*
U.S. Cl. 408—222 **4 Claims**



1. A rotary tool for making holes, comprising: a working part; a shank; said working part comprising at least two axial portions of which a first distal, portion is made with a profile of a twist drill for making a pilot hole, and a second portion, disposed axially between the first portion and said shank, made with a diameter increasing from the first portion towards said shank, whereby said pilot hole is enlarged after the tool enters it; said second portion having cutting teeth arranged along a varying pitch helical line in the second portion of said working part with the pitch increasing from the first portion towards said shank, the teeth having a height increasing towards said shank, a maximum pitch of the helical line being substantially smaller than a minimum diameter of the second portion, whereby self-feed of the tool in an axial direction is ensured.

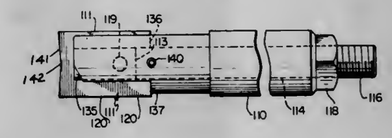
4,116,579

END MILL TOOL HOLDER BODY AND TOOL

Martin Norman Hamilton, Middle Rd., R.R. #4, Meadville, Pa. 16335

Filed Aug. 25, 1976, Ser. No. 717,643
Int. Cl.² B23B *51/00*; B26D *1/00*
U.S. Cl. 408—233 **10 Claims**

1. In combination, a tool holder body (110), a draw bar (115), and a cutting insert (111) comprising,
an elongated generally cylindrical body (110) having a laterally and longitudinally extending slot (112) in one end thereof,
said slot (112) being defined by two flat surfaces (112', 113') extending generally parallel to the central axis of said cylindrical body,
an axial cylindrical bore (114) of substantially uniform size in said body generally coaxial to the central axis of said cylindrical body (110) and extending parallel to the sides of said slot (112),
said slot (112) terminating in flat shoulders (136, 137) disposed generally perpendicular to said central axis of said cylindrical body and one said shoulder (136, 137) being disposed at each side of said cylindrical bore (114),
said insert (111) being generally rectangular in shape and having flat planar side surfaces (120, 124) resting on said flat surfaces (112', 113'),
a notch (114') in one end of said insert,
said notch (114') registering with an end of said cylindrical bore (114) and one flat end surface (131, 132) on said insert at each side of said notch resting on said shoulders (136, 137) on said body (110) at each side of said bore,
said notch (114') in said insert having a width equal to the diameter of said bore through said body,



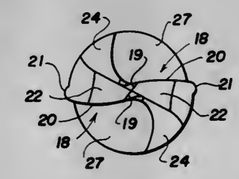
a draw bar (115),
said draw bar (115) having a diameter substantially equal to the diameter of said axial cylindrical bore (114) in said body and having a slot (123) in one end,
said slot (123) in said draw bar having flat side surfaces generally co-planar with and resting on said flat side surfaces of said insert (111),
said slot (123) in said draw bar receiving said insert,
the side edges of said notch (114') in said insert (111) engaging the side edges of said draw bar (115) holding said insert (111) against lateral movement,
a laterally extending hole in said draw bar (115) and a hole (130) in said insert and a pin (119) extending through said hole in said draw bar and through said hole in said insert holding said insert to said draw bar,
retaining means on said draw bar engaging said body urging said draw bar to draw said surfaces at the sides of of said notch (114') in said insert against said shoulders (136, 137) on said body whereby said insert (111) is held in rigid clamped relation to said body (110).

4,116,580

ALL CUTTING EDGE DRILL

Roy F. Hall, Overland, and Elmer C. Kramer, St. Louis County, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Apr. 8, 1977, Ser. No. 786,024
Int. Cl.² B23B *51/00*; B26D *1/12*
U.S. Cl. 408—230 **1 Claim**



1. In an all cutting edge drill comprising: an elongated generally cylindrical body formed with a cone shaped end and chip clearance flutes in the side of and extending spirally about the

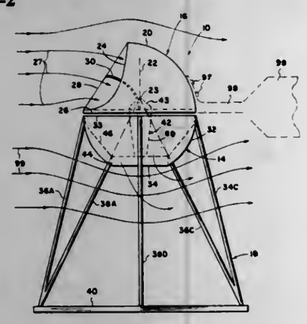
cylindrical body, said body having an axis of rotation passing through the apex of the cone shaped end; the improvement in which said cone shaped end includes at least two circumferentially spaced end surfaces and the cylindrical body is formed with side surfaces extending from said end surfaces and directed spirally along the cylindrical body in circumferentially spaced relation to form chip clearance flutes; each of said end surfaces having margins adjacent said apex forming oppositely facing cutting edges starting at said axis of rotation to form a split drill-point, second cutting edges on said end surfaces forming continuations of said split point cutting edges and directed toward the sides of said cylindrical body and third cutting edges continuing from said second cutting edges and curving into said cylindrical body side surfaces; and said side surfaces having side cutting edges which are continuations of said third cutting edges and follow said spiral flutes, said third cutting edges having a radius of curvature of about 12 percent of the diameter of the cylindrical body and blending into said second cutting edges and said side cutting edges, whereby said drill in forming a hole cuts from said axis of rotation at said apex to and including the cylindrical sides of said body.

4,116,581

SEVERE CLIMATE WINDMILL

Victor W. Bolie, 7504 American Heritage NE., Albuquerque, N. Mex. 87109

Filed Jan. 21, 1977, Ser. No. 761,398
Int. Cl.² F03D 7/00
U.S. Cl. 415—2 **13 Claims**



1. A windmill adapted for use in severe climates, comprising:
a central structure supported by a plurality of legs;
a lower hemispheric enclosure supported about its vertical axis by, and encompassing, said central structure, the lower hemisphere being truncated by a horizontal cut exposing a concentric circular exit opening;
an upper hemispheric enclosure rotatably supported about its vertical axis by said central structure and coaxially with and above said lower hemispheric enclosure, the enclosures forming substantially a sphere, the upper enclosure being cut away at one side to expose an entry opening forming an air scoop, air entering the opening flowing downwardly across the equatorial plane and into said lower hemispheric enclosure and out of said exit opening;
a generator supported by said central structure, the generator having a shaft extending coaxially of said enclosure aixs;
and a fan affixed to said shaft at said exit opening.

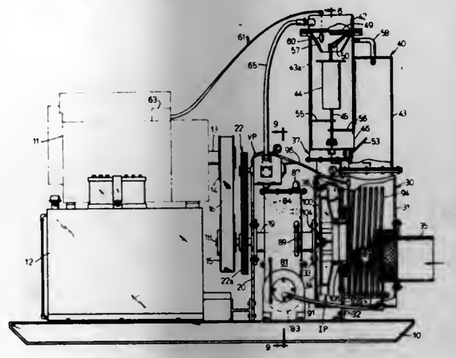
4,116,582

IMPELLER TYPE FLUID PUMP

Albert H. Sloan, 4201 Kean Rd., Fort Lauderdale, Fla. 33314

Division of Ser. No. 623,655, Oct. 20, 1975, Pat. No. 4,029,438. This application Jan. 19, 1977, Ser. No. 760,535
Int. Cl.² F01D 25/12; F04D 29/58; F03B 11/00
U.S. Cl. 415—175 **8 Claims**

1. An integral pump and drive shaft assembly comprising: a pump having a pump housing including a generally cylindrical side wall, a generally vertical back wall, and a front wall having an inlet opening, a tubular coil heat exchanger located in a forward portion of said pump housing whereby water entering said inlet opening passes over said heat exchanger, an impeller rotatably mounted in said pump housing, said impeller including a generally vertical, rear wall and a front wall, an inlet eye centrally located in said impeller front wall and a series of circumferentially spaced curved vanes located between and fixed to said front and rear walls of said impeller and for receiving water from the eye of said impeller, a diffuser mounted in said housing and on said rear wall of said pump



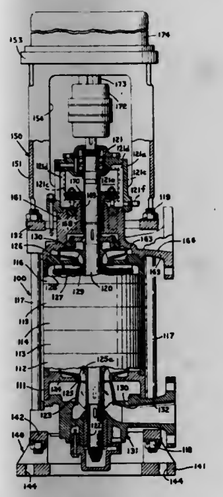
housing and concentric with said impeller and having a series of circumferentially spaced curved vanes for receiving water discharged from said impeller, said vanes of said diffuser being curved in a direction opposite to the curve of said impeller vanes; a drive shaft housing rigidly secured at one end to said rear wall of said pump housing, a drive shaft extending through and rotatably mounted in said shaft housing and connected in driving relationship with said impeller, a bearing means in said shaft housing and rotatably supporting said shaft in said shaft housing, and a fluid seal between said shaft and shaft housing.

4,116,583

MULTI-PURPOSE END CASINGS FOR RING TYPE MULTI-STAGE CENTRIFUGAL PUMPS

Allan R. Budris, Nutley, N.J., assignor to Worthington Pump, Inc., Mountainside, N.J.

Filed Mar. 2, 1977, Ser. No. 773,709
Int. Cl.² F01D 25/24; F03B 11/02
U.S. Cl. 415—199.1 **9 Claims**



1. In a multi-stage ring type centrifugal pump,

a. multi-purpose suction end casing means forming, a suction inlet for the fluid to be pumped by the centrifugal pump,
b. a plurality of intermediate pump stage casings having a corresponding plurality of pumping stages formed therein to form a fluid pumping flow path, at least the inlet one of said pumping stages defining an inlet for said fluid pumping flow path in communication with the suction inlet formed by the multi-purpose suction end casing means,
c. the last of said plurality of pumping stages defining an outlet for said fluid pumping flow path,
d. multi-purpose discharge end casing means forming a discharge outlet for the centrifugal pump and disposed to communicate with the outlet for said fluid pumping flow path formed by the last of said plurality of pumping stages,
e. said suction end casing having a first plurality of angularly spaced tie-rod lugs,
f. said discharge end casing having a second plurality of angularly spaced tie-rod lugs,
g. said first plurality of angularly spaced tie-rod lugs and said second plurality of angularly spaced tie-rod lugs each having a tie-rod bore forming a connecting means extending therethrough and respectively alignable with each other to permit the suction end casing and discharge end casing to be oriented so as to position the suction inlet and discharge outlet in the desired angular position relative to each other,
h. tie-rod means extending into the connecting means of said first plurality of tie-rod lugs and said second plurality of tie-rod lugs for holding said suction end casing, said plurality of intermediate pump stage casings, and said discharge end casing of said centrifugal pump in assembled position, and
i. means on the respective suction end casing and discharge end casing to aid and facilitate horizontal and vertical orientation of said multi-stage ring type centrifugal pump as desired, wherein said last mentioned means includes,
1. enlarged machined bearing surfaces about said connecting means on the respective plurality of tie-rod lugs and said second plurality of tie-rod lugs,
2. rabbet means formed by and disposed adjacent to each of said enlarged machined bearing surfaces operative with said machined bearing surfaces to provide spaced points of attachment on the respective suction end casing and discharge end casing for vertical orientation of said centrifugal pump,
3. said suction end casing having a first plurality of angularly spaced foot mounting means,
4. said discharge end casing having a second plurality of angularly spaced foot mounting means, and
5. said plurality of angularly spaced foot mounting means and second plurality of angularly spaced foot mounting means alignable in assembled position for horizontal disposition of said centrifugal pump.

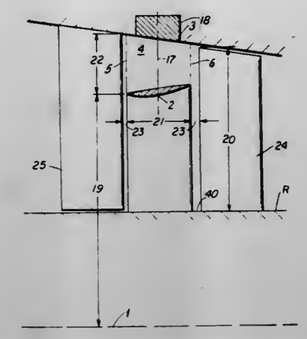
4,116,584

DEVICE FOR EXTENDING THE WORKING RANGE OF AXIAL FLOW COMPRESSORS

Karl Bammert, Hanover, and Rudolf Staude, Bottrop, both of Germany, assignors to Gutehoffnungshütte Sterkrade AG, Oberhausen, Germany

Continuation-in-part of Ser. No. 668,834, Mar. 22, 1976, abandoned, which is a continuation of Ser. No. 513,406, Oct. 9, 1974, abandoned. This application Feb. 4, 1977, Ser. No. 765,758
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1975, 2351308
Int. Cl.² F01D 1/02, 9/04; F04D 29/54
U.S. Cl. 415—199.5 **6 Claims**

1. An axial flow compressor comprising a rotor having a plurality of rotating blades mounted thereon, a central compressor axis about which said rotor rotates, a casing including an inner casing wall within which said rotor is located, said casing wall defining together with said rotor an annular compressor flow conduit converging in the direction of axial flow through said compressor, a plurality of stationary blades located in said compressor flow conduit upstream of said rotating blades, and a ring of airfoil cross section arranged concentrically to said compressor axis and located in said compressor flow conduit upstream of said rotating blades between said



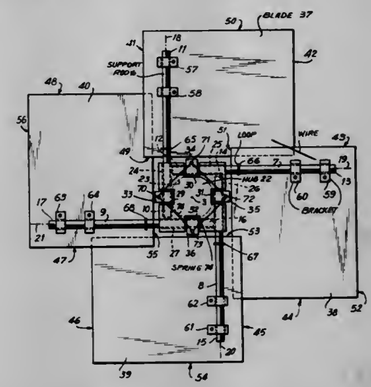
rotating blades and said stationary blades, said airfoil ring being configured and arranged to define together with said casing wall an annular flow channel therebetween converging in the direction of flow through said compressor flow conduit.

4,116,585

SELF-ADJUSTING WIND MACHINE

Mirko Maracic, 25-75 45th St., Astoria, N.Y. 11103

Filed Nov. 3, 1976, Ser. No. 738,618
Int. Cl.² F03D 7/04
U.S. Cl. 416—41 **7 Claims**



1. A self-adjusting wind machine for harnessing the power of the wind, said wind machine comprising
a rotatably mounted shaft having output means coupled thereto and rotatable therewith for transferring rotary motion of the shaft, the shaft having an axis;
a plurality of support rods each having spaced opposite first and second ends and an axis;
a hub affixed to the shaft and rotatable therewith, said hub having mounting means for mounting the plurality of support rods in equidistantly spaced relation from the axis of the shaft in a plane perpendicular to said axis for free rotation about the axis of each of said rods, each of said rods extending in the same direction of rotation of the shaft, tangential to a coaxial circle of the shaft, and said rods being equiangularly spaced from each other, said hub further having securing means for permitting a predetermined axial movement of each of the support rods and preventing each of said rods from leaving the hub;
a plurality of substantially rectangular blades, each having a

side and being affixed to a corresponding one of the support rods in the area of said side and rotatable with the corresponding support rod, said blades converting a wind into rotation of said shaft, each of said blades rotating with the support rod to which it is affixed in accordance with the force and direction of the wind in a manner whereby at a weak wind force in directions substantially parallel to the shaft and striking a predetermined surface of each blade, each blade is at a large angle of approximately 130° to 140° with the axis of the shaft at the surface of the blade opposite the predetermined surface and overlaps the next-adjacent blades to a predetermined extent and at a strong wind force in directions substantially parallel to the shaft and striking a predetermined surface of each blade, each blade is at a small angle of approximately 95° to 100° with the axis of the shaft at the surface of the blade opposite the predetermined surface and is spaced a minimum distance from the next-adjacent blades; and

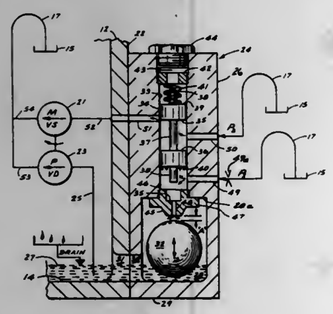
spring means coupled to the support rods via the securing means for adjusting the ease of rotation of said rods and thereby controlling the angles of the blades relative to the axis of the shaft to control the rotary speed of the shaft, said spring means comprising a plurality of pins each affixed to a corresponding one of the securing means and extending substantially radially therefrom substantially perpendicularly to the corresponding support rod, and a spring affixed to each of the pins and extending therebetween.

4,116,586

CONSTANT FLUID LEVEL CONTROL FOR MACHINE RESERVOIR

Richard Davidson Forney, Cincinnati; Richard Samuel Hernandez, Milford, and Richard Anderson Curless, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 9, 1977, Ser. No. 794,724
Int. Cl.[2] F04B *49/00*
U.S. Cl. 417—41 **1 Claim**



1. A constant fluid level control for machine reservoir, comprising in combination:

(a) a housing affixed to a machine carrier;

(b) a carrier reservoir maintaining a fluid level;

(c) a float in said reservoir movable in response to said fluid level;

(d) a bore in said housing;

(e) a spool slidably received in said bore;

(f) an orifice communicating with said bore on an upstream side and with said reservoir on a downstream side;

(g) a first fluid inlet line in said housing connected through pressure-dropping means to said bore between said upstream side of said orifice and an end of said spool;

(h) a second fluid inlet line in said housing connected to said bore between a pair of spool lands;

(i) a fluid motor mounted to said machine carrier;

(j) a fluid outlet line in said housing connected at one end to said bore for communication with said second fluid inlet line as said spool is shifted and connected at the other end to said fluid motor to influence speed control of said motor; and

(k) a fluid pump drivingly connected to said fluid motor and having the pump inlet in fluid communication with the fluid of said reservoir;

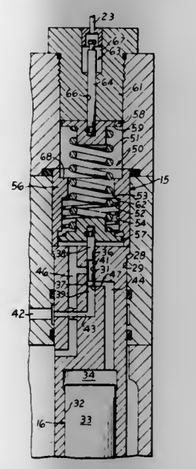
whereby said float is operable in response to said fluid level to directly restrict flow from said orifice, changing upstream pressure to shift said spool, thus varying said outlet line flow and motor speed in accordance with said fluid level, tending to match fluid level rise with reservoir pump down rate.

4,116,587

LOAD PLUS DIFFERENTIAL PRESSURE COMPENSATOR PUMP CONTROL ASSEMBLY

Kenneth P. Liesener, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 12, 1977, Ser. No. 841,426
Int. Cl.[2] F04D *25/00;* **F16H** *39/46*
U.S. Cl. 417—212 **4 Claims**



1. In a pump control assembly for moving a displacement control member of a variable displacement pump between maximum and minimum discharge displacement positions, said assembly having first means for controlling the position of the control member, said first means having an actuating means connected to the control member and a valve member positioned within a housing and having first and second end portions, said valve member being movable between a first position at which a pump discharge pressure signal is in communication with the actuating means and a second position at which said pump discharge pressure signal is blocked from communication with the actuating means and the actuating means is in communication with a drain, said first end portion of the valve member having an end substantially continuously exposed to said pump discharge pressure signal and being responsive thereto for biasing the valve member toward one of the first and second positions, the improvement comprising:

spring means for biasing the valve member toward the other of said positions in opposition to the biasing force exerted on the valve member by said pump discharge pressure signal for establishing a preselected minimum discharge pressure;

second means for increasing the biasing force of the spring means on the valve member for increasing the pump discharge pressure in response to a load pressure signal exceeding a preselected pressure level; and

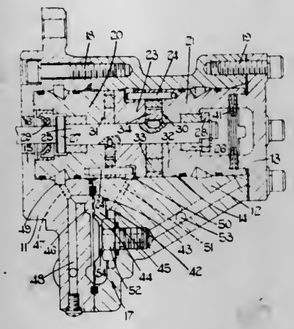
said spring means having a first spring positioned between the second means and the valve member, and a second spring positioned between the housing and the valve member, said second spring being of a construction and position sufficient for biasing the valve member toward said other position independently of the first spring and maintaining said pump discharge pressure at a preselected value above the load pressure signal only in response to the pump discharge pressure exceeding the preselected minimum discharge pressure level.

4,116,588

FLUID PUMP

Ronald Phillips, Northolt, and James Campbell Melville, Acton, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Aug. 12, 1976, Ser. No. 713,909
Claims priority, application United Kingdom, Jun. 22, 1976, 25824/76
Int. Cl.[2] F04C *11/00*
U.S. Cl. 417—252 **11 Claims**



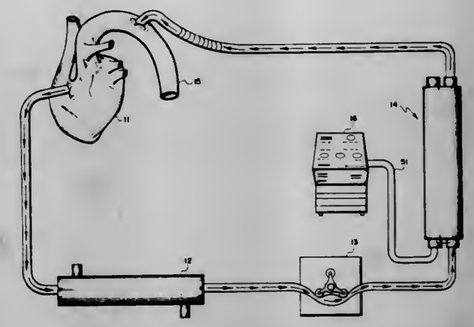
2. A fluid pump comprising a housing defining a bore, an end wall forming part of the housing and closing one end of said bore, a detachable end closure forming an end wall closing the other end of the bore, a pump assembly located in said bore and including a drive shaft, an aperture in one end wall through which the drive shaft extends, the pump assembly further comprising three stator portions disposed in end to end relationship within said bore, resilient means acting between one end wall and the adjacent stator portion and acting to bias the stator portions axially into engagement with the other end wall, bearings carried by the end stator portions respectively and acting to support said shaft for rotation, said pump assembly also including a pair of pump units each comprising a fixed outer annular member, an inner annular member and a gear wheel, the outer annular member of each pump unit being located between and held in engagement with the central stator portion and the respective end stator portion, teeth found on the inner periphery of said inner annular member for engagement with the teeth of said gear wheel whereby as the gear wheel rotates in use the inner annular member will partake of gyratory movement within the outer annular member, means coupling said gear wheel to the shaft so that the gear wheel will be rotated thereby, a fluid inlet to the pump and a fluid inlet and fluid outlet for each pump unit, passage means connecting the pump fluid inlet to the inlet of one of the pump units, further passage means connecting the outlet of said one pump unit to the inlet of the other pump unit, a fluid outlet from the pump and still further passage means connecting the outlet of said other pump unit with said pump fluid outlet, and valve means responsive to the inlet and outlet pressures of said other pump unit and operable to maintain the pressure drop between the inlet and outlet of said other pump unit substantially zero whereby the rate of fluid flow through the pump fluid outlet will be proportional to the speed or rotation of the shaft.

4,116,589

EXTRACORPOREAL PULSATILE BLOOD PUMP COMPRISED OF SIDE BY SIDE BLADDERS

Michael L. Rishton, Reading, Mass., assignor to Avco Corporation, Everett, Mass.

Filed Apr. 15, 1977, Ser. No. 787,787
Int. Cl.[2] F04B *9/12, 43/08*
U.S. Cl. 417—384 **8 Claims**



1. A blood pump comprising:

(a) an elongated rigid housing having a longitudinal axis, an annular side wall and oppositely disposed first and second end walls defining a closed chamber, said first end wall having a first opening off-set from said housing longitudinal axis and adjacent said side wall, said second end wall having a second opening coaxial with said first opening and one of said end walls having a third opening off-set from said longitudinal axis and adjacent said side wall;

(b) an elongated flexible blood pumping balloon disposed in said chamber, said balloon having a longitudinal axis, an annular central portion and generally sloping transitional end portions each terminating in a first and second port portion off-set from said pumping balloon longitudinal axis toward said side wall and respectively registering with said first and second openings in said end walls, said sloping end portions facing away from said housing side wall;

(c) an elongated flexible driver balloon disposed in said chamber in side-by-side and contacting relationship with said blood pumping balloon, said driver balloon having a longitudinal axis, an annular central portion and generally sloping transitional end portions facing inwardly away from said housing side wall and toward said blood pumping balloon sloping end portions, one of said end portions terminating in a third port portion off-set from said driver balloon longitudinal axis toward said side wall and registering with said third opening in said one of said end walls, the transitional end portions of said blood pumping and driver balloons each having a sloping configuration that results in substantially only rolling contact between the said balloons at these end portions;

(d) first and second connector means sealably carried by respectively said first and second end walls at said first and second openings for coupling said pumping balloon first and second port portions to blood carrying lines;

(e) third connector means carried by said one of said end walls at said third opening for coupling said driver balloon third port portion to a pressure line; and

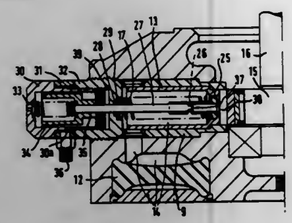
(f) venting means including at least one air passage in said housing for providing communication between the interior of said housing and atmosphere.

4,116,590

DIAPHRAGM PUMP WITH PULSE PISTON POSITION RESPONSIVE WORK FLUID REPLENISHMENT

John Richard Prestwich, Reading, England, assignor to Warwick Pump and Engineering Company Limited, Berinsfield, England

Filed Jan. 19, 1977, Ser. No. 760,665
Claims priority, application United Kingdom, Jan. 20, 1976, 2126/76; Oct. 1, 1976, 40782/76
Int. Cl.[2] F04B *9/10, 35/02, 43/06;* F01B *19/02*
U.S. Cl. 417—387 10 Claims



1. A high pressure pump adapted for connection to a source of hydraulic fluid comprising:
a housing;
at least one diaphragm contained in said housing;
at least one reciprocating piston in said housing, spaced from said diaphragm for actuating said diaphragm, said reciprocating piston having pumping and return strokes;
means for supplying hydraulic fluid to the space between the diaphragm and the reciprocating piston, said means for supplying being adapted for connection to a source of hydraulic fluid and including a replenishment valve for replenishing the space with hydraulic fluid during the return stroke of the reciprocating piston to replace any hydraulic fluid lost during the pumping stroke of the reciprocating piston, the hydraulic fluid substantially filling the space between the diaphragm and the reciprocating piston, said diaphragm having one side directly acted upon by the reciprocating pump through the hydraulic fluid; and
a chamber having an inlet valve and an outlet valve, said diaphragm having a second side in communication with said chamber, said inlet and outlet valves being adapted to respectively connect said chamber to a supply passage and a discharge passage for fluid to be pumped, the resilience of the diaphragm acting against the reciprocating piston on the pumping stroke and with the reciprocating piston on the return stroke, said diaphragm being made of elastomeric material and having a thickness to diameter ratio of at least 1:5, the resilience of said diaphragm being sufficient for said diaphragm to be substantially self-restoring on the return stroke of the reciprocating piston against normal atmospheric pressure in the event of total blockage of the inlet valve or of the supply passage.

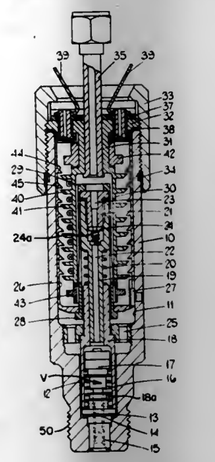
4,116,591

FUEL INJECTION PUMPS

John Edward Mardell, Uxbridge, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 14, 1977, Ser. No. 776,827
Claims priority, application United Kingdom, Mar. 20, 1976, 11319/76
Int. Cl.[2] F04B *17/04*
U.S. Cl. 417—417 10 Claims

1. A fuel injection pump for supplying fuel to an internal combustion engine comprising a housing defining a stepped cylindrical bore, comprising a cylindrical member defining a pumping chamber and having a discharge outlet, said cylindrical member being secured within the narrower portion of said bore, a pumping plunger slidable into and out of said cylindrical member and extending into the wider portion of said bore, a fuel inlet to said chamber from the bore, and resilient means normally biasing the plunger outwardly of said cylindrical member to maintain said chamber at a maximum volume, an annular armature guided for movement by the wall of the wider portion of the bore, an annular field assembly disposed in a space defined between the armature and the plunger, said field assembly being supported by an end closure of the wider



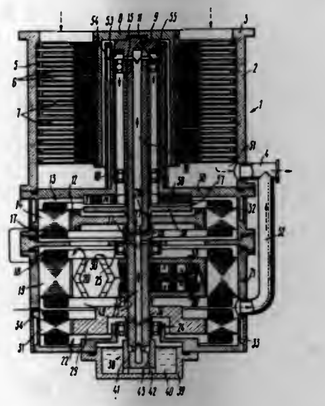
portion of the bore, means interconnecting the armature and the plunger and a winding carried by the field assembly, means for supplying said winding with electric current actuating the armature to effect movement of said plunger into said chamber reducing the volume thereof thereby to cause discharge of fuel under pressure through the outlet.

4,116,592

TURBOMOLECULAR HIGH-VACUUM PULP

Viktor Yakovlevich Cherny, ulitsa Zoi Kosmodemyanskoi 3, kv. 45; Boris Grigorievich Galperin, ulitsa Rozenshteina 36, kv. 22; Mikhail Mikhailovich Mikhailov, ulitsa Marshala Govorova 16, kv. 165; Vladimir Petrovich Meljukhov, ulitsa III Internatsionala 74, kv. 39, and Leonid Vasilievich Dobrokhotov, ulitsa Partizana Germana 33, kv. 155, all of Leningrad, U.S.S.R.

Filed Aug. 20, 1976, Ser. No. 716,258
Int. Cl.[2] F04B *17/00*
U.S. Cl. 417—424 16 Claims



1. A turbomolecular high-vacuum pump comprising:
a substantially vertically extending cylindrical casing;

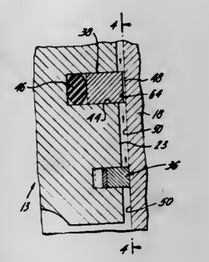
an inlet pipe for gas being evacuated provided on said casing;
an outlet pipe for gas being evacuated provided on said casing;
a pump stator having vanes accommodated in said casing, in the top part thereof;
a pump rotor having vanes accommodated in said casing, said vanes being disposed between said stator vanes to define passage for gas being evacuated;
bearings arranged within said casing;
a substantially vertically arranged high-speed hollow shaft extending within said casing, in the top part thereof, said shaft extending coaxially with said casing, being journalled in said bearings and connected to said rotor;
other bearings arranged within said casing;
a hollow low-speed shaft extending in the bottom part of said casing coaxially with said high-speed shaft, said low-speed shaft being journalled in said other bearings;
said shafts embracing each other at the ends facing each other for a part of their length;
a high-frequency electric drive motor arranged within said casing;
a rotor of said high-frequency electric drive motor connected to said high-speed shaft;
a stator of said high-frequency electric drive motor mounted in said casing;
a machine-type electric frequency converter accommodated in said casing;
an induction drive motor connected to said machine-type frequency converter being energizable through a source of power;
a generator electrically coupled to said machine-type frequency converter of said high frequency electric drive motor;
a rotor of said induction drive motor being mounted on said low-speed shaft;
a stator of said induction motor being fixed to said casing;
a stator of said generator being fixed to said casing and electrically coupled to said stator of said high-frequency electric drive motor;
means for lubricating the bearings, said means being arranged within said casing and mounted at the lower end of said low-speed shaft.

4,116,593

LUBRICANT METERING SYSTEM FOR ROTARY PISTON MECHANISM

Charles Jones, 208 Forest Dr., Hillsdale, N.J. 07642

Division of Ser. No. 739,521, Nov. 8, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,412
Int. Cl.[2] F01C *19/08, 21/04*
U.S. Cl. 418—94 3 Claims



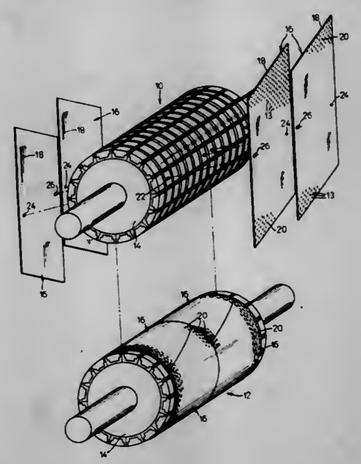
1. In a rotary mechanism having a housing comprising two end walls spaced apart by an intermediate wall having an inner peripheral surface of trochoidal shape and defining therebetween a multi-lobe cavity and having a rotor consisting of opposite side faces, a plurality of flank portions intersecting each other to form apex portions, and a hub portion, supported in the housing cavity at its hub portion on an eccentric portion of a mainshaft for planetary rotation and defining with the housing a plurality of working chambers which successively expand and contract in volumetric size as the rotor rotates in said cavity, the rotor carrying a seal grid, including seal strips and a lubricant seal ring located radially inwardly of the seal strips in at least one of the rotor side faces and surrounding the rotor hub portion, the seal ring having an outer peripheral contact surface engaging the adjacent housing end wall to seal the interstices between the rotor side face and the adjacent housing end wall, a lubrication metering system, including means for supplying lubricant to the area adjacent the hub portion of the rotor, comprising at least one recess in said outer peripheral contact surface of the seal ring for conducting a predetermined small quantity of lubricant from the interstices between the rotor side face and said adjacent end wall, in the area adjacent the hub portion, radially outwardly past the seal ring and into the interstices between the rotor side face said adjacent housing end wall in the area radially outwardly of the seal ring.

4,116,594

EMBOSSING APPARATUS HAVING MAGNETIC ROLLER AND FLEXIBLE EMBOSSING PLATES THEREFOR

Dale D. Leanna, Oconto Falls; Allen R. Jorgensen, Townsend; Thomas R. Curro, Green Bay, and Andrew M. Bray, Suamico, all of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.

Continuation-in-part of Ser. No. 640,049, Dec. 12, 1975, abandoned. This application Feb. 9, 1977, Ser. No. 766,977
Int. Cl.[2] B29D *7/14*
U.S. Cl. 425—3 6 Claims



1. An embossing roller for use in embossing apparatus employing a pair of embossing rollers to apply an embossed pattern on a web of material passing between said rollers comprising:
a magnetic roller having a cylindrical surface;
a plurality of flexible embossing plates, each plate comprising magnetically attractable material and releasably secured to said cylindrical surface by magnetic attraction, adjacent ones of said embossing plates being disposed in contiguous relationship on said cylindrical surface to provide an uninterrupted continuous embossing pattern around said magnetic roller, each embossing plate including a backing portion and a web engaging portion having an embossing pattern thereon, said embossing pattern including projections which are extendable between other projections on the other embossing roller of such a pair of

embossing rollers to physically deform said web and thereby provide said embossed pattern on said web; and

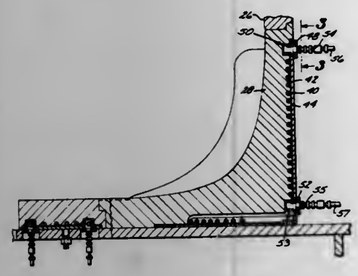
interengagable means on said cylindrical surface of said magnetic roller and on each of said embossing plates associated therewith to align and to prevent shifting of said plates with respect to said cylindrical surface, said interengagable means comprising a first groove in said cylindrical surface around the circumference of said magnetic roller and a first projecting rib on each of said embossing plates and receivable in said first groove, said interengagable means further comprising a second groove in said cylindrical surface and extending axially of said magnetic roller, and a second projecting rib on each of said embossing plates and receivable in said second groove.

4,116,595

TIRE MOLD APPARATUS

Louis T. Fike, Hacienda Heights, and Kenneth A. Green, Ontario, both of Calif., assignors to Ohio Machine Company, Inc., Los Angeles, Calif.

Filed Sep. 23, 1977, Ser. No. 836,044
Int. Cl.[2] B29H *5/04*
U.S. Cl. 425—17 **3 Claims**



1. In tire mold apparatus having a matrix formed with a groove wherein is positioned a steam tube having a different rate of thermal expansion than the material of said matrix, and with each end of said steam tube being rigidly affixed to a steam-fitting block, the improvement comprising:

a recess formed in said matrix for each of said steam-fitting blocks, each said recess being larger than its respective steam-fitting block whereby said steam fitting blocks float relative to their respective recess as said steam tube undergoes thermal expansion and contraction relative to said groove.

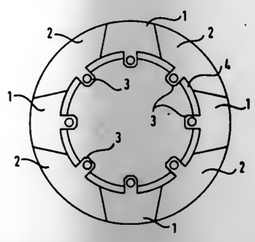
4,116,596

CONTRACTIBLE SEGMENTED RIGID CORE FOR A TIRE-CURING MOLD

Augusto Pizzorno, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Sep. 6, 1977, Ser. No. 830,826
Claims priority, application Italy, Sep. 22, 1976, 27471 A/76
Int. Cl.[2] B29H *5/18*
U.S. Cl. 425—55 **2 Claims**

1. A contractible segmented rigid core of a tire-curing mold, comprising a plurality of sectors, and means which permit a reduction of the transversal dimensions of the sectors to facilitate removal thereof from the cured tire, said means which permit the reduction of the transversal dimensions of the sectors comprise forming each of the sectors in three parts transversely of the mold, one a central part provided with means for producing a movement under the action of resistant elastic or resilient biasing means along the symmetrical plane of the sector, and two lateral parts being adapted to oscillate, in contrast with the elastic or resilient biasing means, with respect



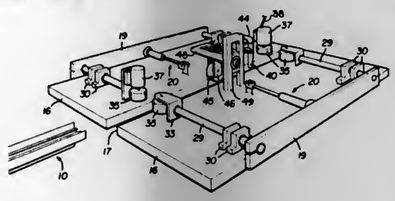
to an axis in the symmetrical plane of the sector and thereby having reduced transversal dimensions.

4,116,597

APPARATUS FOR FEEDING ELONGATED EXTRUSIONS

James M. Dunstan, Kalamazoo, Mich., assignor to Acorn Building Components, Inc., Detroit, Mich.

Filed Jul. 29, 1976, Ser. No. 709,630
Int. Cl.[2] B23P *17/00, 19/00*
U.S. Cl. 425—110 **11 Claims**



1. Apparatus for longitudinally feeding substantially uniform cross-section elongated members, such as extrusions and the like, comprising:

a horizontal table-like support surface having opposite sides and an elongated longitudinal feed area extending from a forward end to a rear end of the support surface between the sides thereof;

a pair of opposed adjustable feed means located at opposite sides of the feed area for cooperatively feeding such member longitudinally along said feed area, with each said feed means being formed of an E-shaped frame whose back is formed of an elongated bar arranged at its adjacent support surface side, approximately parallel to the feed area and whose central leg is secured at one end to the bar, and at its opposite end is pivotally fastened to the surface and whose end legs are spaced from the center leg and extend transversely towards said feed area, with vertically axised rollers rotatably mounted upon the inner end of each of said end legs, i.e., adjacent the feet area;

and the legs of each frame being axially aligned with the corresponding legs of the other frame transversely of the support surface;

each of said central legs being selectively adjustable in length for thereby moving the respective rollers transversely towards and away from the feed area for thereby engaging an elongated member to be fed, between the opposing rollers of corresponding end legs;

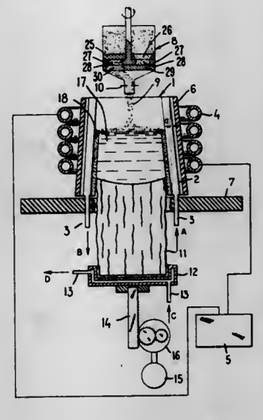
and power means for rotating at least some of said rollers for thereby feeding elongated members longitudinally of the support surfaces along the feed area.

4,116,598

APPARATUS FOR PRODUCING HIGH-MELTING-METAL-OXIDE-BASED CRYSTALLINE MATERIALS

Vladimir Ilich Alexandrov; Vyacheslav Vasilievich Osiko; Vladimir Mikhailovich Tatarintsev, and Viktor Timofeevich Udovenchik, all of Moscow, U.S.S.R., assignors to Fizichesky Institut Imeni P.N. Lebedeva Akademii Nauk SSSR, U.S.S.R.

Continuation of Ser. No. 555,295, Mar. 4, 1975, abandoned. This application Mar. 3, 1977, Ser. No. 774,019
Int. Cl.[2] B29D *7/02*
U.S. Cl. 425—174.8 R **1 Claim**



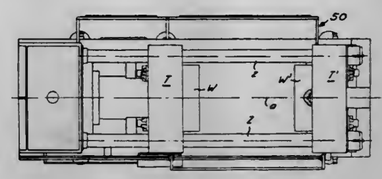
1. Apparatus for making a high-melting-metal-oxide based crystalline material by melting and crystallizing a part of the melt into the form of an ingot comprising, a continuous feed mechanism for feeding a powder-like crystallizable material, a water-cooled mold having an upper opening for continuously introducing therein a charge of said crystallizable material in a solid state and a bottom opening for removing from said mold a crystalline material subsequent to melting of the charge material and crystallizing thereof, said mold having an upper melting zone for containing molten material charged into the mold in a solid state and a crystallization zone within which the molten material is crystallized, a means defining a movable bottom on said mold closing the bottom of the mold and movable downwardly for withdrawing a solid crystalline ingot from said crystallization zone of said mold directly from below the melting zone, means operatively associated with said bottom to move said bottom downwardly at a rate for withdrawing said ingot downwardly while maintaining a steady state operation in which the volume of melt in said melting zone is maintained substantially constant in conjunction with the rate of feed of the charge by said feed mechanism, an inductive coil about said mold for applying energy of a high frequency electromagnetic field to define said melting zone of said mold, said melting zone constituting a major axial length of said mold, said mold having a body made as a truncated cone with the base of the cone being at the lower end of the mold and with an angle between its generatrix and cone height in a range of from 2° to 10°, a water jacket about said mold for cooling said mold along the axial length thereof to maintain an accretion of unmelted charge material circumferentially of said molten material in said melting zone and an interface of the charge material and the melt circumferentially of the melt, and said mold being divided circumferentially into a plurality of sections electrically insulated one from another.

4,116,599

DEVICE FOR ANCHORING AN INJECTION MOLDING MACHINE TOOL PART TO A TOOL CARRIER

Edwin Rüegg, Netstal, Switzerland, assignor to Netstal-Maschinen AG, Switzerland

Filed Jun. 17, 1977, Ser. No. 807,668
Claims priority, application Switzerland, Jun. 29, 1976, 8287/76
Int. Cl.[2] B29F *1/00*
U.S. Cl. 425—192 R **4 Claims**



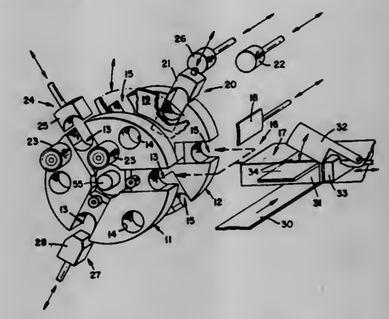
1. A tool carrier mechanism for injection molding machines for securing a tool part to a tool carrier, comprising a guide bolt having means for connecting it to the tool part so that it projects outwardly from the rear of the tool part, a tool carrier having a bore there through for receiving said guide bolt and having a front face against which the rear of the tool part is engageable and having an opposite rear face beyond which said guide bolt projects, slide means mounted on said tool carrier adjacent said rear face of said tool carrier and being movable toward and away from said guide bolt for engagement and disengagement therefrom, and wedge surface means defined between said guide bolt and said slide effecting an inward movement of said guide bolt with the tool part to exert an inward pressure engagement of the tool part with said tool carrier.

4,116,600

SOLID PACK TUNA CANNING MACHINE

Edward E. Dutton, Whittier, and Jack Gorby, Los Angeles, both of Calif., assignors to Sea-Pac, Inc., Gardena, Calif.

Filed Sep. 1, 1976, Ser. No. 719,415
Int. Cl.[2] A23P *1/00*; A22C *25/00*
U.S. Cl. 425—296 **31 Claims**



1. Fish-canning apparatus comprising:

(a) first and second movable members each having a fish-receiving and forming pocket formed into a surface thereof;

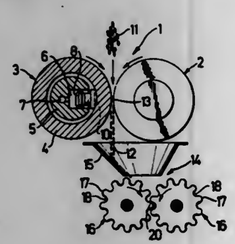
(b) first, second and third spaced-apart operational stations adjacent the path of movement of said movable members, said movable members being positionable adjacent each other at said first station with said pockets thereof in alignment with each other to form a single combined pocket;

(c) means at said first station for filling both of said pockets simultaneously with a single slug of fish;
(d) means operatively associated with said movable members for moving said movable members and for moving said members relative to each other to move the pocket of said first member from said first station to said second station and for moving said pocket of said second member from said first station to said third station;
(e) means operatively associated with said movable members for severing said slug of fish in said pockets crosswise thereto and between said pockets after said slug is filled into said pocket and before relative movement of said movable members;
(f) forming means at said second and third stations movable laterally into the pockets of said movable members thereat for forming the severed fish slugs in said pockets into desired shapes; and
(g) plunger means at said second and third stations movable lengthwise into the pockets of said movable members thereat for ejecting formed fish slugs lengthwise from said pockets.

4,116,601
APPARATUS FOR THE PRODUCTION OF FLAKES FROM GRANULAR PRODUCTS

Rolf Lehmann, Mutschellen, and Alfred Christ, Zurich, both of Switzerland, assignors to Escher Wyss GmbH, Ravensburg, Wurtt, Germany

Filed Aug. 8, 1974, Ser. No. 495,826
Claims priority, application Switzerland, Aug. 16, 1973, 11794/73
Int. Cl.² B29C *15/00*
U.S. Cl. 425—324.1 **12 Claims**



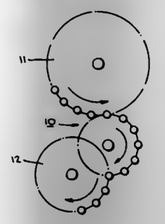
1. An apparatus for producing flakes comprising
a rolling means including at least one deflection-compensating roller for rolling a granular product into flakes of flat shape; and
a texturizing means downstream of said rolling or means for receiving the flakes and deforming the flakes into a shape different from a flat shape.

4,116,602
APPARATUS FOR COMPACTING MULTI-SECTIONAL PARTICULATE CONTAINING FILTERS

Floyd Van Hall, Durham, N.C., assignor to Liggett Group Inc., Durham, N.C.

Continuation of Ser. No. 764,575, Feb. 1, 1977, abandoned. This application Mar. 16, 1978, Ser. No. 887,564
Int. Cl.² B30B *11/08*; A24C *5/48*
U.S. Cl. 425—354 **3 Claims**

1. In combination with a multi-sectional particulate containing cigarette filter tips having spaced apart fibrous filter sections defining a cavity being partially filled with a granular material, an apparatus for moving a portion of the filter fibers of one filter section into the cavity whereby said cavity is filled with granular material and filter fibers protruding therein comprising
a rotatable shaft;
a transfer drum mounted on said shaft for rotation therewith, said drum having a plurality of circumferentially spaced peripheral grooves for receiving said filter tips;
a pair of punch wheels mounted on said shaft for rotation therewith, each said punch wheel having a generally cylindrical peripheral sleeve defining outwardly directed undulations and grooves on the opposite side of said undulations, each said groove being aligned with a respective groove of said transfer drum;
a plurality of punches, each said punch being slidably mounted in a respective groove of said punch wheel and each said punch having a pin mounted on the end thereof

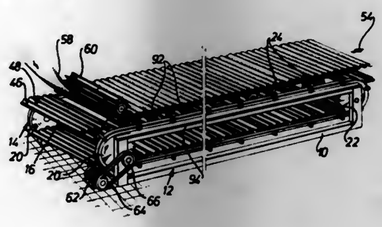


and extending in the direction towards said transfer drum and being in alignment with said filter tips residing in said transfer drum peripheral grooves, each said pin being of a smaller cross-section than the aligned filter tip; and
cam means mounted about said shaft and in contact with said punches, said cam means being adapted to guide said punches reciprocally within said respective sleeve to cause said pins to engage said filter tips and move a portion of said filter fibers to protrude into said cavity to compact a portion of said granular material in said cavity and thereby forming a recess therein.

4,116,603
APPARATUS FOR CORRUGATING A WEB OF SHEET MATERIAL

Ake Lindgren, Vällingby, and Sven Lindahl, Spånga, both of Sweden, assignors to Aktiebolaget Carl Munters, Sollentuna, Sweden

Continuation of Ser. No. 691,195, May 28, 1976, abandoned. This application Nov. 30, 1977, Ser. No. 855,975
Claims priority, application Sweden, Jul. 4, 1975, 7507719
Int. Cl.² B29C *15/00*
U.S. Cl. 425—370 **5 Claims**

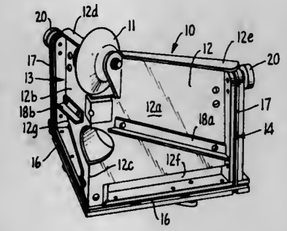


1. In an apparatus for corrugating continuously a web of deformable material as it is advanced between a corrugating head and a longitudinally extending forming table comprising a row of abutting corrugating plates which are circulated in closed path by a pair of drive belts each engaging a pair of oppositely disposed pulleys and being spaced from one another for articulately supporting the corrugating plates therebetween, the improvement comprising:
(a) a journal shaft extending from each of the opposite sides of the corrugating plates transversely to their direction of travel and connecting each of said plates to the adjacent drive belt;
(b) said journal shafts being offset from one another in their direction of travel to support the corrugating plates on the drive belts in a non-tiltable position; and
(c) said drive belts being correspondingly offset to provide separate individual movement of the corrugating plates tier-wise about the pulleys in a horizontal face-up position substantially parallel to the upper straight-away portions between the pulleys.

4,116,604
CORNER FINISHING TOOL

Eugene R. Johnson, Burlingame, and Morris F. Mower, Santa Clara, both of Calif., assignors to Bliss & Laughlin Industries, Inc., Oak Brook, Ill.

Filed Jun. 23, 1977, Ser. No. 809,279
Int. Cl.² B05C *17/10*; B29C *23/00*
U.S. Cl. 425—458 **6 Claims**



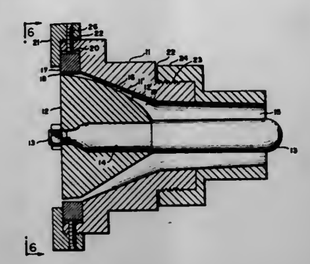
1. An improved corner finishing tool for applying mastic material along a wall joint, said tool comprising container means defining a cavity that is open in two convergent and substantially perpendicular planes and having surfaces in each of said planes that converge peripherally of said cavity; said container means comprising an angular retainer plate having a pair of integral sides resiliently joined at a corner, a pair of L-shaped frame members secured to said pair of integral sides, respectively, one side and frame member being resiliently movable relative to the other side and frame member; a pair of doctor blades mounted along intersecting edges of said frame members for doctoring mastic material that flows thereunder; and improved means for adjusting the resilient flex between said pair of integral sides comprising a pin and sleeve telescopically joined, one end of said pin and one end of said sleeve being pivotally secured to one of said integral sides, respectively; a second sleeve mounted on said first sleeve for axial and rotational movement thereon, said second sleeve having an irregular end surface engageable with a stop secured to said sleeve, and a helical spring disposed between said second sleeve and a contact with said pin, said spring applying a resilient force pressing the irregular end surface against said stop and urging said pin in an extended direction relative to said first sleeve.

4,116,605
APPARATUS FOR PRODUCING RETREADING ENVELOPES

John R. Burrell, 202 King Rd., Chalfont, Pa. 18914

Division of Ser. No. 680,273, Apr. 26, 1976, abandoned. This application Aug. 30, 1976, Ser. No. 718,792
Int. Cl.² B29D *23/04*
U.S. Cl. 425—466 **7 Claims**

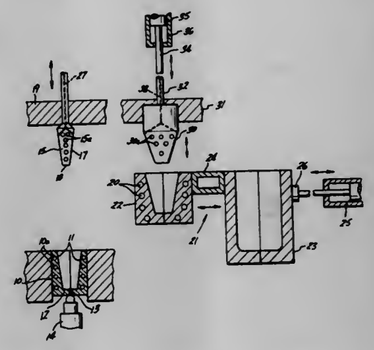
1. In an apparatus for producing an improved retreading envelope for tires,
an extrusion device having a die and a core positioned within said die and cooperating therewith to define an annular extrusion orifice which essentially determines the thickness of the extruded envelope,
a body portion of said die cooperating with said core to define a toroidal chamber adjacent to said orifice, said chamber being bounded by an internal surface of the body portion and by an exterior surface of the core,
and means defining an annular chamber adjacent to and communicating with said toroidal chamber through which natural or synthetic material fed to said extrusion device is passed as it flows to said toroidal chamber,
the improvement comprising the provision of said core having a shape which has a generally symmetrically tapered shape on one portion thereof and a cambered curvature throughout another portion thereof, said portions circumferentially forming said exterior surface of said core, said cambered curvature providing a partially deformed core configuration to result in an extruder envelope of high density characterized by a high concentration of material along its tread face and gradually diminishing sidewall thickness.



4,116,606
APPARATUS FOR THE PREPARATION OF HOLLOW PLASTIC ARTICLES

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Division of Ser. No. 618,782, Oct. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 473,580, May 24, 1974, Pat. No. 3,966,378. This application Jun. 27, 1977, Ser. No. 810,081
Int. Cl.² B29D *23/03*
U.S. Cl. 425—526 **19 Claims**



1. An apparatus for forming oriented hollow articles of moldable organic plastic material which comprises: a temperature controlled first core and a temperature controlled first mold; means for providing an organic plastic parison on said first core in said first mold in a formable condition at a temperature substantially above that required for orientation of said plastic; means for rapidly altering the heat content of said parison on said first core in said first mold with an unequal distribution of temperature across the walls of said parison resulting and to result substantially in the heat content of said parison corresponding to an average temperature suited for orientation; a temperature controlled second core and second mold in spaced relationship to said first core and first mold; means to transfer said first core bearing said parison to said

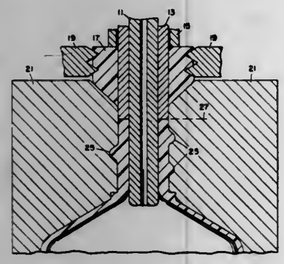
second mold; means for partially forming said parison located on said first core in said second mold to separate said parison from said first core and conform said parison to the shape of said second mold and to have an inside configuration shaped to permit insertion of said second core therein in substantially full contact therewith; means for separating said first core and second mold and partially formed parison contained therein; means for inserting the second core into the partially formed parison contained in the second mold; means for controlling the temperature of said parison in said second mold on said second core to substantially equalize the temperature distribution of said parison without substantially altering the heat content of the parison; a blow mold in spaced relationship to said second mold; means for transferring the partially formed parison to said blow mold; the means for fully expanding the partially formed parison in said blow mold.

4,116,607

THREAD FORMING AND NECK FINISHING APPARATUS

Richard Webster LeGrand, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 754,203, Dec. 26, 1976, Pat. No. 4,065,535. This application Jul. 7, 1977, Ser. No. 813,575
Int. Cl.² B29D *23/03*
U.S. Cl. 425—525 **1 Claim**



1. Apparatus for biaxially blow molding hollow plastic articles to provide a finished neck of axially oriented material comprising:

a tubular parison of partially crystalline material;

a tubular blow pin;

a cramming sleeve means slideably mounted over said tubular blow pin, said tubular parison having one end thereof mounted over said tubular blow pin and said cramming sleeve means, said tubular parison, said tubular blow pin and said cramming sleeve means being concentric of an axis;

mold means having neck finishing cavities contained therein positioned to close over said one end of said tubular parison and over said tubular blow pin; and,

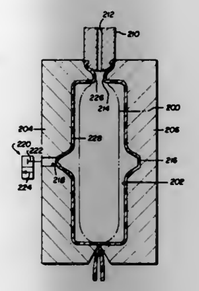
clamping means adjacent to said mold means, means to axially orient said tubular parison with respect to said axis, means operable to move said clamping means toward said cramming sleeve means to grasp said one end of said tubular parison on said tubular blow pin and said cramming sleeve means before said tubular parison is axially oriented and necks down over said tubular blow pin, means to close said neck finishing cavities of said mold means about the portion of said tubular parison positioned over said tubular blow pin after said tubular parison has been axially oriented, and means to move said cramming sleeve means along said axis to force a portion of the axially oriented tubular parison into the neck finishing cavities, said tubular blow pin having means introducing blow air to radially expand the remainder of said tubular parison to form a finished container.

4,116,608

APPARATUS FOR FORMING A BLOWN PLASTIC CONTAINER

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 735,554, Oct. 26, 1976, Pat. No. 4,070,429. This application Jul. 7, 1977, Ser. No. 813,642
Int. Cl.² B29D *23/03*
U.S. Cl. 425—525 **6 Claims**



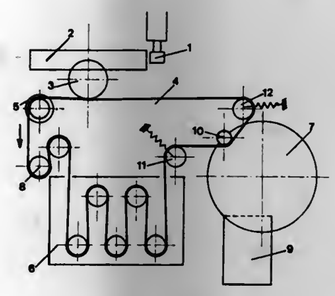
1. In a molding apparatus having blow mold sections which cooperate to define a blow mold cavity in which a parison is blown to form a blown plastic article, the improvement of means associated with said mold for forming a opening in the blown article, said means comprising an opening in one of said mold sections connecting the mold cavity with the atmosphere, valve means for selectively opening and closing the opening, and means independent of said opening for introducing air into a parison confined in said cavity, said valve means (a) closing the port during the introduction of air under pressure during a blow molding operation to form the blow plastic article and (b) opening the port to atmosphere subsequent to the blow molding operation so that the air under pressure within the blown article ruptures that portion of the article overlying the port and vents through the port to atmosphere.

4,116,609

APPARATUS FOR THE CONTINUOUS PRODUCTION OF ORIENTED HOLLOW BODIES

Marc Obsomer, Brussels; Luc Bodson, Grez-Doiceau, and Edmond Michel, Brussels, all of Belgium, assignors to SOLVAY, & Cie., Brussels, Belgium

Continuation of Ser. No. 647,072, Jan. 7, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,446
Claims priority, application Luxembourg, Jan. 7, 1975, 71598; Jun. 27, 1975, 72853
Int. Cl.² B29D *23/03*
U.S. Cl. 425—526 **11 Claims**



1. Apparatus for the continuous production of oriented hollow bodies from a thermoplastic comprising:

parison producing means for producing a continuous tubular parison from a thermoplastic;

preform blowing means arranged to be fed with the continuous tubular parison for blowing the parison into preforms, said preform blowing means including molds aligned end to end contiguously on a first rotary carrier for each producing, by blowing, a separate preform having a true neck connected to one end of the body of the preform and possessing an annular bulge and a false neck connected to the end of the true neck which is remote from the body of the preform, the true neck corresponding to the neck of the finished oriented hollow body;

deflashing means for deflashing the necks of the preforms by removing the false necks thereof;

thermal conditioning means for bringing the preforms to their optimum orientation temperature;

final blowing means including a plurality of molds mounted on a second rotary carrier;

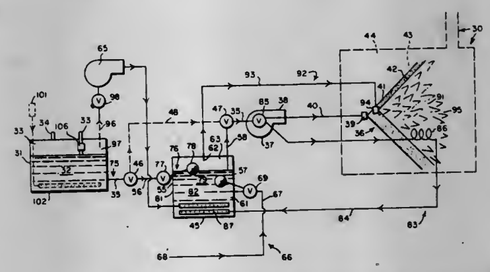
transfer means operatively associated with said preform blowing means, deflashing means, thermal conditioning means and final blowing means for conveying the preforms, and for continuously bringing the preforms in sequence from the preform blowing means, past said deflashing means and through said thermal conditioning means, and then to the final blowing means while moving them successively and continuously, said preform transfer means including carriers and a continuously moving endless chain on which said carriers are arranged to support the preforms in the region of their true necks which has already been molded, said endless chain undergoing a heat cycle along its path of travel and play existing between said endless chain and each of said blowing means, tending to produce slight fluctuations in the travel of said carriers in relation to both of said blowing means; a drive motor connected to drive said preform blowing means, said endless chain and said final blowing means for synchronizing the movement of said endless chain, in the region of said preform blowing means, with the discharge of preforms from said preform blowing means and, in the region of said final blowing means, with the introduction of preforms into said final blowing means; first drive coupling means connected to said motor for driving said first rotary carrier and said endless chain in the region of said preform blowing means; second drive coupling means connected to said motor for driving said second rotary carrier and said endless chain in the region of said final blowing means; and tensioning means for maintaining a selected tension in said chain over its path of travel from said preform blowing means to said final blowing means.

4,116,610

COMBUSTION PROCESS

Camille Berthiaume, Hampton, N.H., assignor to Columbia Chase Corporation, Braintree, Mass.

Continuation-in-part of Ser. No. 612,109, Sep. 10, 1975, Pat. No. 4,008,038. This application Oct. 26, 1976, Ser. No. 735,635
Int. Cl.² F23J *7/00*
U.S. Cl. 431—4 **10 Claims**



1. A process for burning liquid hydrocarbons at high temperatures within the confines of a combustion chamber, said process comprising the steps of:

(i) emulsifying said hydrocarbon with a water and a gaseous dispersing fluid to form a fuel emulsion,

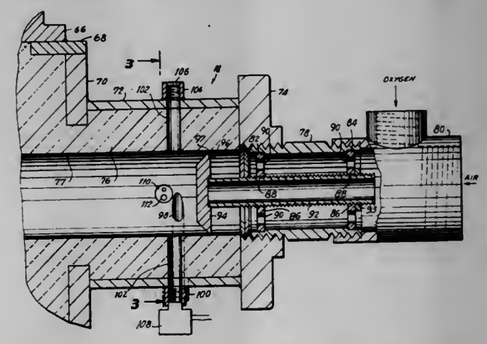
(ii) passing said emulsion under a higher pressure to a burner head and into a furnace at a lower pressure, causing said dispersing fluid to expand and dispense said fuel emulsion.

4,116,611

GASEOUS AND LIQUID FUEL BURNER

Andrew J. Syska, Marblehead, Mass., assignor to Consolidated Natural Gas Service Company, Pittsburgh, Pa.

Filed Sep. 1, 1976, Ser. No. 719,428
Int. Cl.² F23D *15/02*
U.S. Cl. 431—353 **7 Claims**



1. A burner comprising a substantially cylindrical refractory-lined mixing and combustion chamber having an open end, a burner disc positioned on the axis of said mixing and combustion chamber at the opposite end thereof and having a diameter smaller than the inside diameter of said mixing and combustion chamber and chamfered around the periphery thereof to define an annular oxidizer opening therebetween of increasing cross-sectional area toward the open end of said mixing and combustion chamber, at least one fuel port communicating with said mixing and combustion chamber, an ignition source port communicating with said mixing and combustion chamber and an ignition source located within said ignition source port.

4,116,612

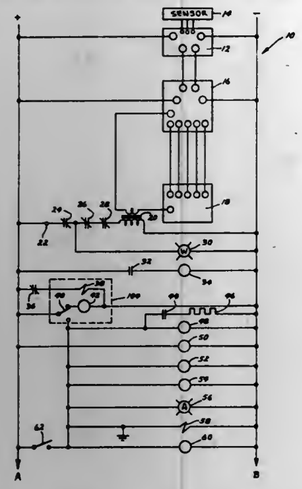
GAS MONITOR SYSTEM

Hans L. Melgaard, Minneapolis, Minn., assignor to Despatch Industries, Inc., Minneapolis, Minn.

Filed Jan. 31, 1977, Ser. No. 764,212
Int. Cl.² F23H *5/02*
U.S. Cl. 431—76 **21 Claims**

1. Gas monitor system to monitor combustible or flammable gas concentration comprising equipment means containing generated combustible or flammable gases, an exhaust flue in connection with said equipment means, a damper rotatably mounted in said exhaust flue, a motor means connected to said damper, a motor control means connected to said motor, combustible or flammable gas monitor having upper and lower set points connected to said motor control means, a sensor connected to said combustible or flammable gas monitor and calibration means including means periodically locking the damper in an open position and means for contacting the sensor with a known calibration gas to check calibration of the gas

monitor system, whereby said combustible or flammable gas monitor senses the lower flammable limit in said equipment



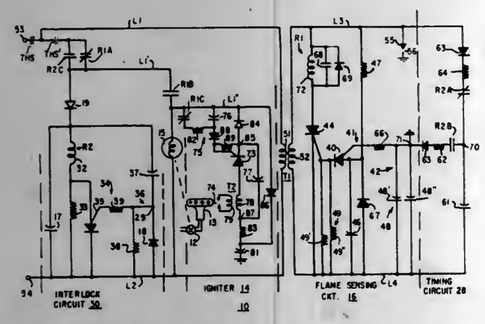
means to regulate said damper through said motor control means.

4,116,613

DIRECT IGNITION SYSTEM WITH INTERLOCK PROTECTION

Russell Byron Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Jan. 24, 1977, Ser. No. 761,660
Int. Cl.² F23H *5/00*
U.S. Cl. 431—78 **23 Claims**



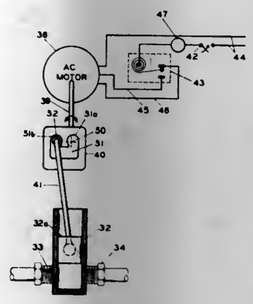
1. In a fuel ignition system including valve means operable when energized to supply fuel to a burner apparatus for ignition to establish a flame at said burner apparatus, a control circuit comprising control means including switching means, activate means responsive to a first condition to effect the energization of said control means over a first circuit path causing said switching means to operate and complete a portion of an energizing path for said valve means, flame sensing means operable when enabled to complete said energizing path thereby effecting the energization of said valve means to permit fuel to be supplied to said burner apparatus, and ignition timing means responsive to operation of said switching means to generate a timing signal defining a trial for ignition time interval, said timing signal below coupled to said flame sensing means by said switching means, to enable said flame sensing means for said trial-for-ignition time interval, said flame sensing means being operable to maintain said valve means energized when a flame is sensed at said burner apparatus during said time interval, and to cause the deenergization of said valve means when a flame fails to be sensed during said time interval.

4,116,614

OIL HEATER HAVING CONTROLLED OIL FLOW

Wolfgang A. Kutrieb, P.O. Box 1635, 1527 Beloit Ave., Janesville, Wis. 53545

Filed Feb. 2, 1977, Ser. No. 764,718
Int. Cl.² F23N *1/00*
U.S. Cl. 431—89 **9 Claims**



1. An improved oil burning heater of the type having a vaporizer pan for vaporizing by action of heat the oil that is supplied thereto, a feed tube for supplying oil to the vaporizer pan, and a fuel tank for holding oil, wherein the improvement comprises:

(a) a reciprocating piston pump having an inlet for receiving oil from the fuel tank on an intake stroke of the piston of said pump and an outlet for exhausting oil therefrom to the feed tube on an exhaust stroke of the piston;

(b) drive means for driving the piston of said pump at a constant reciprocation rate and at a selected one of a long reciprocating piston stroke and a shorter reciprocating piston stroke; and

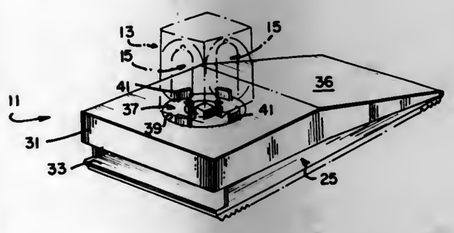
(c) means responsive to temperature for controlling said drive means to drive said pump at said long stroke below a selected temperature and at said short stroke above the selected temperature.

4,116,615

DOOR-ACTUATED ACTIVATION MEANS FOR FLASHLAMP ARTICLE

Harold H. Hall, Jr., Marblehead, and Andre C. Bouchard, Peabody, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 5, 1977, Ser. No. 839,652
Int. Cl.² G08B *3/14, 7/08, 13/08*
U.S. Cl. 431—92 **12 Claims**



1. A door-actuated activation means for activating at least one flashlamp unit located within a flashlamp article, and activation means comprising:

a housing including a base portion and movable arm portion, said movable arm portion pivotally mounted on said base portion for moving toward said base portion in response to external actuation of said housing by a door;

a casing secured to said arm portion of said housing and including a seating portion for having said flashlamp article positioned thereon;

an activator located substantially within said casing in operative relationship to said base portion for effecting activation of said flashlamp unit within said flashlamp article when said article is positioned on said seating portion of said casing, said activator effecting said activation in response to movement of said arm portion of said housing toward said base portion; and

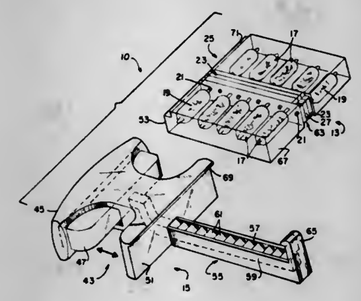
means located substantially within said housing in operative relationship to said arm and base portions of said housing for applying a force between said portions to effect separation thereof.

4,116,616

FLASHLAMP ASSEMBLY UTILIZING DISPOSABLE FLASHLAMP ARTICLE

Harold H. Hall, Jr., Marblehead, and Andre C. Bouchard, Peabody, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 25, 1977, Ser. No. 790,217
Int. Cl.² F21K *5/02*
U.S. Cl. 431—93 **21 Claims**



1. A disposable flashlamp article for being actuated by an actuating mechanism including a body member having a seating portion thereon, an elongated support member adjoining said seating portion and including a longitudinal slot therein, and an elongated ratchet member movably oriented within said longitudinal slot, said article comprising:

a housing defining at least one elongated chamber therein, said housing including a base portion adjacent said elongated chamber and defining a longitudinal channel therein substantially parallel to said elongated chamber;

a plurality of percussively-ignitable flashlamps arranged in an array within said elongated chamber of said housing, each of said flashlamps including a light-transmitting envelope and a primer member projecting therefrom, each of said primer members mounted within said base portion of said housing and extending within said longitudinal channel; and

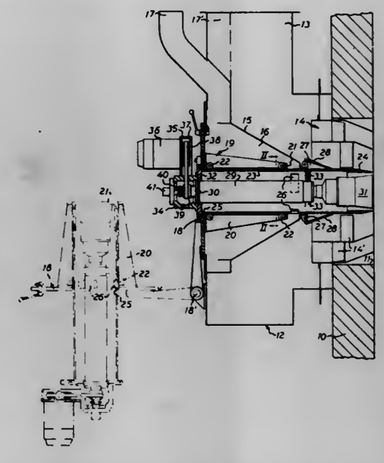
a resilient striking mechanism movably oriented within said longitudinal channel and adapted for being engaged by said elongated ratchet member of said actuating mechanism when said housing of said article is positioned on said elongated support member and against said seating portion, said striking mechanism including a protruding arm portion for selectively striking each of said primer members extending within said longitudinal channel to effect firing of said flashlamps during movement of said striking mechanism within said channel, said striking mechanism moving within said channel to effect said firing in response to movement of said elongated ratchet member within said longitudinal slot of said elongated support member of said actuating mechanism.

4,116,617

DEVICE IN BURNERS, IN PARTICULAR ROTARY BURNERS

Torsten Lorentz Backman, Mölndal, and Sten Yngve Olsson, V.Frölunda, both of Sweden, assignors to Ingenjorsfirman Petrokraft AB, Gothenburg, Sweden

Filed Mar. 8, 1977, Ser. No. 775,563
Claims priority, application Sweden, Mar. 12, 1976, 7603226
Int. Cl.² F23C *5/02*
U.S. Cl. 431—186 **8 Claims**



1. A device in burners, particularly rotary burners for allowing the burner element to be removed from a furnace without necessarily turning off said furnace comprising:

a heater wall having an opening thereon,

means forming a wind chamber about said opening, a secondary air supply duct connected to said wind chamber,

a burner cup substantially centrally disposed in said opening,

a secondary air nozzle disposed between said opening and said burner cup which communicates with said wind chamber,

an elongate tube between said secondary air nozzle and said cup, said tube having a primary air supply nozzle at a terminal portion proximate to said burner cup and a primary air supply duct communicating with said primary air supply nozzle, an opening in said windbox,

a scuttle closing said opening and disposed about said elongate tube at a terminal portion remote from said burner cup, means pivotably mounting said scuttle on said windbox,

and guide means connected to said scuttle extending towards said burner cup and supporting said elongate tube whereby said elongate tube and burner cup are retractable from said heater wall opening and said scuttle is pivoted so that said burner tip and elongate tube may be removed for servicing by first retracting said tube and burner cup and then pivoting said scuttle.

4,116,618

FLAME RETENTION APPARATUS FOR FLARES

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Jul. 13, 1977, Ser. No. 815,100
Int. Cl.² F23D *13/20*
U.S. Cl. 431—202 **4 Claims**

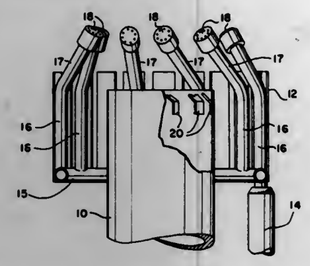
1. Flame retention apparatus for a flare stack which comprises

a cylindrical flare stack having a central opening at the discharge end of the stack for outward waste combustible gas delivery for combustion,

flame retention means at the discharge end of the stack

comprising a plurality of guide vanes spaced around the interior periphery of the stack and for changing the direction of the external portions of the stream of waste combustible gas with respect to the remaining portion of the stream of waste combustible gas, the interior of the discharge end of said flare stack being unobstructed except for said vanes,

each of said guide vanes having



a base portion extending inwardly of for a distance of less than a quarter of the diameter of said stack and secured along one edge to the interior of the stack, said base portions extending longitudinally of said stack, and

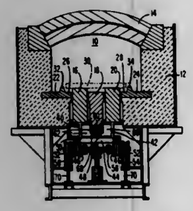
an upper portion disposed at an obtuse angle to the base portion and having an edge in juxtaposition with the internal periphery of said flare stack for directing external portions of advancing waste combustible gas in a vortex path around the remaining portion of the waste combustible gas for flame retention.

4,116,619

MULTIPLE BEAM FURNACE

Jacob Howard Beck, Waban, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.

Filed May 26, 1977, Ser. No. 800,871
Int. Cl.[2] F27D *1/16*; F27B *9/14*
U.S. Cl. 432—3 **9 Claims**



8. In a multiple beam furnace comprising:

an elongated furnace chamber formed of a high temperature material and having a hearth which includes shoulder portions disposed along the length thereof and adapted to support product carriers thereon;

first and second beams at least coextensive with the active length of said furnace chamber, each beam formed of a high temperature material and having an upper surface confronting said chamber and serving as part of the furnace hearth, and adapted for cyclic vertical and horizontal movement;

a third beam supported in a fixed position intermediate said first and second beams and formed of a high temperature material and having an upper surface confronting said chamber and serving as part of a furnace hearth, said third beam being in fixed position during cyclic movement of said first and second beams for the transport of product carriers through the furnace chamber;

first means coupled to said first and second beams and operative to elevate said first and second beams to a position above the plane of said shoulder portions to raise product carriers off of said shoulder portions and to lower said first and second beams to a position below the plane of said shoulder portions to replace product carriers onto said shoulder portions;

second means coupled to said first and second beams and to said first means and operative to provide lateral movement of said first and second beams along the axis of said furnace in a first direction when said first and second beams are in their upper position, and in an opposite direction when said first and second beams are in their lower position; and

means for providing cyclic operation of said first and second beams to transport product carriers in stepwise fashion through said furnace chamber;

the method comprising:

elevating said first and second beams to a position above said upper position to cause engagement and support of said third beam by said first and second beams;

removing the support for said third beam;

lowering the engaged first, second and third beams to a supporting surface below the furnace chamber; and

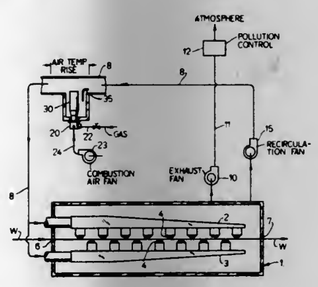
moving the engaged beams as a single unit from the furnace

4,116,620

WEB DRYING APPARATUS HAVING MEANS FOR HEATING RECIRCULATED AIR

Paul H. Stibbe, DePere, Wis., assignor to TEC Systems, Inc., DePere, Wis.

Filed May 23, 1977, Ser. No. 799,367
Int. Cl.[2] F27B *9/28*
U.S. Cl. 432—59 **2 Claims**



1. Web drying equipment including a dryer through which a web passes, web drying nozzles within the dryer for directing heated air against said web, a conduit for recirculating air from the interior of said dryer and to said nozzles, and apparatus for heating said recirculated air, said apparatus including a compartment secured to and extending from said conduit, a burner, means for supplying combustion air and fuel to said burner for mixing and burning thereof as the mixture is discharged from the burner, a containment tube located in said compartment and secured to the burner for receiving the discharged mixture therefrom and for shielding the resultant flame of the burning mixture, said containment tube having a discharge end for discharging heat and products of combustion therefrom, said end being located in communication with the interior of said recirculated air conduit whereby the discharge from said tube mixes directly with said recirculated air to heat the latter, said tube shielding the flame from said recirculated air, and a curved baffle means having one portion in said compartment and positioned parallel to and adjacent said tube, said baffle means also having a curved portion in said conduit for scooping and directing recirculated air from said conduit and directing it around the exterior of said tube to promote the heat transfer to said recirculated air.

4,116,621

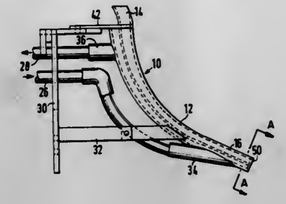
FEEDING CHUTE OR GATE

Leo Brassel, Kalenborn, Fed. Rep. of Germany, assignor to Schmelzbasaltwerk Kalenborn, Dr. Ing. Mauritz KG, Kalenborn, Fed. Rep. of Germany

Filed Mar. 9, 1977, Ser. No. 778,062
Int. Cl.[2] F27D *9/00, 9/12*
U.S. Cl. 432—233 **12 Claims**

1. A gate for casting molten material, including smelting basalt, which gate, particularly useful for spin-casting molds, comprises:

a channel having a main section, an end section, and a drawn-back inlet section, said main section having an impact region for the molten basalt stream located in the first third thereof, said inlet section being located above said impact region and provided with an arcuate wall defining the outer periphery thereof; and



means for cooling said channel so as to attain a temperature required for spinning operations.

4,116,622

DYEING PREPARATIONS AND PROCESS FOR DYEING POLYACRYLONITRILE MATERIAL IN STRONG, NEUTRAL, CLEAR BLUE SHADES

Josef Koller, Reinach, and Stefan Koller, Ramlinsburg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

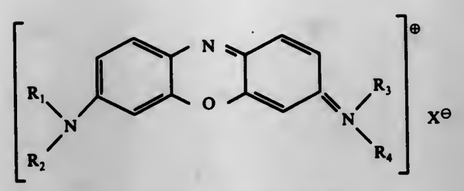
Filed Jul. 12, 1976, Ser. No. 704,271

Claims priority, application Switzerland, Jul. 17, 1975, 9356/75; Jun. 1, 1976, 6856/76

Int. Cl.[2] D06P *1/00, 3/70*

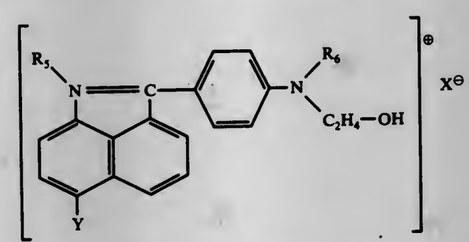
U.S. Cl. 8—25 7 Claims

1. A process for dyeing polyacrylonitrile in clear, neutral blue shades, which comprises the use of a mixture of an oxazine dye of the formula



(1)

and a naphtholactam dye of the formula



(2)

in the ratio of 1:3 to 3:1, in which R_1 and R_2 represent low molecular alkyl radicals, R_3 represents a low molecular alkyl radical or an aryl radical, R_4 represents hydrogen or a low molecular alkyl radical, each of R_5 and R_6 represents a low molecular alkyl radical, Y represents a halogen atom and $X^{\ominus}$ represents an anion.

4,116,623

CYANOTRIPHENODIOXAZINE COMPOUND

Seiichi Imahori, Kawasaki; Yukichi Murata, and Sumio Suzuki, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

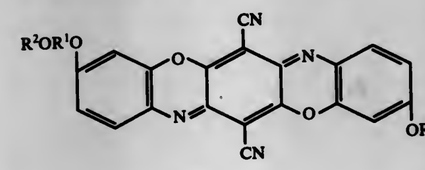
Filed Jul. 25, 1977, Ser. No. 818,841

Claims priority, application Japan, Jul. 27, 1976, 51-89576

Int. Cl.[2] C09B *19/00;* C07D *498/22*

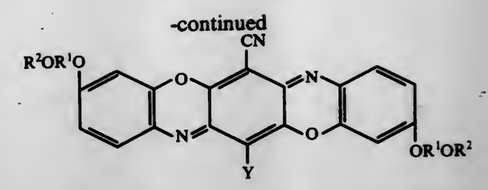
U.S. Cl. 8—25 17 Claims

17. A dyestuff comprising a mixture of compounds, as coloring ingredients, of the following formulae

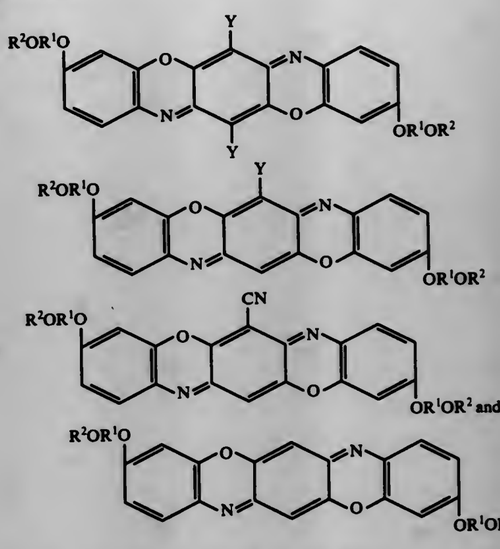


and

-continued



and, optionally, at least one of the compounds of the following formulae



(2)

wherein Y represents halogen, R^1 represents C_1–C_4 alkylene and R^2 represents C_1–C_4 alkyl, C_1–C_4 alkoxy-C_1–C_4 alkyl or C_1–C_4 alkoxy-C_1–C_4 alkoxy-C_1–C_4 alkyl.

4,116,624

NEW HEAVY METAL COMPLEX DYES, PROCESS FOR THEIR MANUFACTURE AND USE THEREOF

Otto Bitterlin, Basel, and Fabio Beffa, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

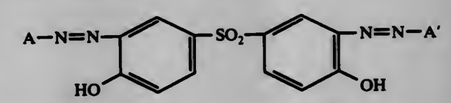
Filed Nov. 1, 1976, Ser. No. 737,932

Claims priority, application Switzerland, Nov. 18, 1975, 14919/75

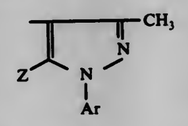
Int. Cl.[2] C09B *45/00;* D06P *1/10*

U.S. Cl. 8—42 B 3 Claims

1. In a process for dyeing and printing natural or synthetic polyamide materials, the improvement wherein the dyestuff is a cobalt, chromium, copper, iron or nickel metal complex of an azo dye of the formula



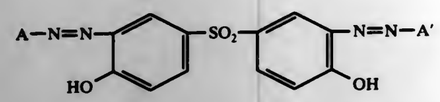
wherein each of A and A′ represents a radical of the formula



where Z is —OH or —NH_2, and

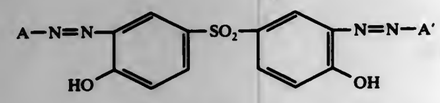
Ar is sulfophenyl which is unsubstituted or substituted by halo, alkyl or alkoxy.

2. In a process for dyeing and printing natural or synthetic polyamide materials, the improvement wherein the dyestuff is a cobalt, chromium, copper, iron or nickel metal complex of an azo dye of the formula

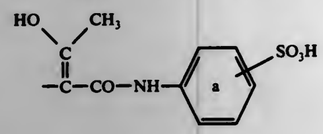


wherein each of A and A' represents the radical of hydroxynaphthalenemono-or-disulfonic acid.

3. In a process for dyeing and printing natural or synthetic polyamide materials, the improvement wherein the dyestuff is a cobalt, chromium, copper, iron or nickel metal complex of an azo dye of the formula



wherein each of A and A' represents a radical of the formula



wherein the ring *a* is further unsubstituted or substituted by chloro or bromo, or by low molecular alkyl or alkoxy.

4,116,625

PROCESS FOR MODIFYING FIBROUS PRODUCTS CONTAINING CELLULOSIC FIBERS

Kazuhide Yamamoto, Uji, Japan, assignor to Daido-Maruta Finishing Co., Ltd., Kyoto, Japan

Filed Sep. 22, 1976, Ser. No. 725,621

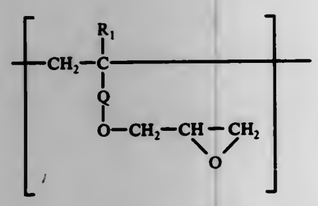
Claims priority, application Japan, Sep. 30, 1975, 50-117164

Int. Cl.[2] D06M *15/38*; B05D *3/00*

U.S. Cl. 8—120 **42 Claims**

1. A process for modifying a fibrous product containing cellulosic fibers which comprises treating said fibrous product with a solution or dispersion containing a glycidyl-containing copolymer consisting essentially of

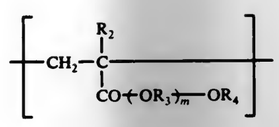
(a) 1 to 55 mole% of at least one structural unit of the formula



(I)

wherein R_1 represents a hydrogen atom or a methyl group, and Q is CO or CH_2,

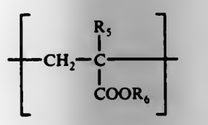
(b) 0.5 to 25 mole% of at least one structural unit of the formula



(II)

wherein R_2 represents a hydrogen atom or a methyl group, R_3 represents an alkylene group, R_4 represents a hydrogen atom, an alkyl group, an acryloyl group or a methacryloyl group, and *m* is an integer of at least 1, and

(c) 98.5 to 20 mole% of at least one structural unit of the formula

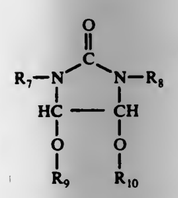


(III)

wherein R_5 represents a hydrogen atom or a methyl group, and R_6 represents an alkyl or hydroxyalkyl group;

drying the fibrous product; and heat-treating it in the presence of an acid catalyst at a temperature sufficient to cleave the oxirane linkage of the glycidyl group.

10. The process of claim 1 wherein said solution or dispersion further contains an imidazolidinone derivative of the formula



(VII)

wherein R_7 and R_8, independently from each other, represent a hydrogen atom, an alkyl group, a hydroxyl group, or an alkyl group substituted with a cyano, carboxy, lower alkoxy carbonyl or carbamoyl group, and R_9 and R_{10}, independently from each other, represent a hydrogen atom, an alkyl group, or an acyl group.

4,116,626

PRINTING OF PATTERN DESIGNS WITH COMPUTER CONTROLLED PATTERN DYEING DEVICE

George Clifford Varner, Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 17, 1976, Ser. No. 686,900

Int. Cl.[2] D06B *1/02, 11/00*

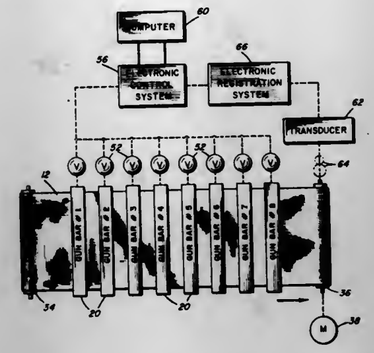
U.S. Cl. 8—149 **18 Claims**

1. A method of providing first and second different complete patterns on a material, each of said complete patterns including at least two colors, comprising:

(a) moving the material in a path of travel;

(b) forming a number of repeats of the first complete pattern on the material;

(c) simultaneously completing the formation of the final repeat of the first complete pattern and starting the formation of a first repeat of the second complete pattern on the material; and



(d) forming a number of repeats of the second complete pattern on the material.

4,116,627

METHOD FOR SEALING A HIGH PRESSURE STEAMER AND AN APPARATUS FOR CARRYING OUT THE SAME

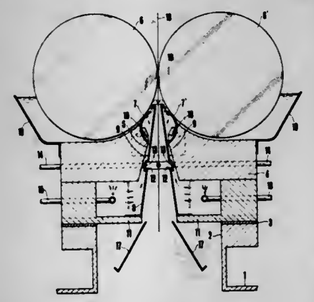
Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Japan

Filed Jun. 13, 1977, Ser. No. 806,058

Claims priority, application Japan, Jun. 16, 1976, 51-70839; Jun. 16, 1976, 51-70840

Int. Cl.[2] D06B *23/18*

U.S. Cl. 8—149.3 **8 Claims**



1. A method of sealing the inlet or outlet of a high-pressure steamer in which a textile article is treated by a fluid medium under high pressure and high temperature conditions with the textile article passing between a pair of mutually contacting seal rolls as it enters or exits the steamer, comprising the steps of forming a first air passage laterally enclosing a second air pressure with the air passages extending between the seal rolls and the inlet to or outlet from the steamer and the first and second passages being in fluid flow communication at the ends thereof adjacent the seal rolls, flowing air at a pressure higher than the pressure within the steamer and at a temperature at or below room temperature into the first air passage at a location spaced from the seal rolls and directing the flow of air through the first air passage into the space between the seal rolls adjacent the mutually contacting portions thereof, reversing the direction of flow of air into the end of the second passages adjacent the seal rolls and directing the flow of air through the second passage toward the steamer, admitting the fluid medium from the steamer into the adjacent end of the second passage, colliding the flow of air and the fluid medium within the second passage intermediate the ends thereof, and discharging at least a part of the flow of air through the second passage at a location spaced from both the opposite ends of the second passage.

3. Apparatus for sealing the inlet or outlet of a high pressure steamer in which a textile article is treated by a fluid medium under high pressure and high temperature conditions, comprising a high pressure steamer drum body having an opening for passing the textile article into or out of the drum body, wall means secured to said drum body forming a laterally closed passage communicating with and extending outwardly from the opening in said drum body, the passage having a first open end at the opening in said drum body and a second open end spaced outwardly from said drum body, a pair of seal rolls in contacting relation mounted on said wall means and forming a closure for the second end of said passage, a duct positioned in said passage and having a first end adjacent to the opening in said drum body and a second end adjacent and spaced closely inwardly from the contacting portions of said seal rolls, said duct spaced inwardly from the surface forming said passage and in combination therewith forming an annular first flow path about said duct, said duct forming a second flow path between the first and second ends thereof, said duct secured to one of said means and said drum body and forming a closure for the first flow path at the end thereof adjacent said drum body, the first and second flow paths being in fluid flow communication at the ends thereof adjacent said seal rolls, said wall means having an inlet aperture therein opening into the first flow path and spaced from both said seal rolls and said drum body for supplying air under pressure into the first flow path so that the air can flow toward the contacting portions of said seal rolls where its continued flow in that direction is blocked by the contacting portions of said seal rolls and the flow of air reverses direction and streams into the second flow path toward said drum body with the flow of air contacting the fluid medium from said drum body in the second flow passage, and means connected to said duct intermediate the ends thereof and extending exteriorly of said wall means for discharging at least a part of the flow of air streaming through the second flow path within said duct to a point exteriorly of the apparatus.

4,116,628

POWDERY PEARLESCENT PIGMENT COMPOSITION

Reiner Hesse; Hans Pratzer; Manfred Kieser, and Gerhard Edler, all of Darmstadt, Germany, assignors to E. Merck, Germany

Filed Jan. 27, 1977, Ser. No. 763,157

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603211

Int. Cl.[2] C09C *1/00*

U.S. Cl. 427—154 **5 Claims**

1. A method for increasing the resistance of flaky or plate-like pearlescent pigment particles to agglomeration and to mechanical stresses and decreasing loss of luster or luminosity of the pigment particles during handling or shipment in dry powder form, comprising the steps of

(a) combining a suspension of flaky or plate-like pearlescent pigment particles with a solution of a solid polymer;

(b) depositing the solid polymer on individual pigment particles and thereby coating the individual pigment particles with said polymer; and

(c) after said handling or shipment, removing the coating formed in step (b) from the pigment particles.

4,116,629

CORROSION INHIBITION OF STAINLESS STEEL EXPOSED TO HOT CARBONATES

Alan Brian Gancy, Syracuse, and Robert Edward Durling, Camillus, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 31, 1977, Ser. No. 801,947
Int. Cl.[2] C23F *11/06, 11/18*
U.S. Cl. 422—13 13 Claims

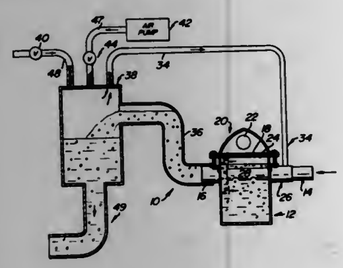
1. The method for the inhibition of corrosion of martensitic or ferritic stainless steel being contacted with aqueous hot alkali metal carbonate solutions which comprises contacting such stainless steel with an inhibiting amount of nickel ion.

4,116,630

STERILIZATION METHOD

Thomas E. Meacham, Jr., Philadelphia, and David C. Johnson, Ambler, both of Pa., assignors to Refreshment Machinery Incorporated, Warminster, Pa.

Division of Ser. No. 699,026, Jun. 23, 1976. This application Nov. 30, 1977, Ser. No. 855,650
Int. Cl.[2] A61L *3/00*
U.S. Cl. 422—24 6 Claims



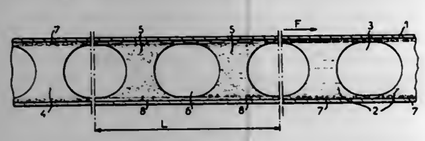
1. A method of sterilizing a liquid by radiation comprising flowing a liquid to be sterilized through a sterilization a chamber, providing a window transparent to sterilizing radiation to define the upper end of said chamber, providing an air pocket between said window and said liquid to prevent direct contact between the liquid and said window, sterilizing the liquid by sterilizing radiation which passes through said window and air pocket to the liquid while the liquid is flowing through the chamber, locating said window between a source of radiation and the liquid in said chamber, and introducing air into the liquid to maintain said air pocket in said chamber.

4,116,631

METHOD FOR MICROBIOLOGICAL ANALYSIS OF LIQUID MEDIUMS

Pierre-Andre Trinel; Henri Leclerc, both c/o Inserm Unite 146 Certia 369, rue Jules-Guesde, 59650 Villeneuve-d'Ascq, and Yves Moschetto, c/o Centre de Technologie Biomedicale Inserm, 13 rue Camille Guerin, 59000 Lille, all of France

Filed Feb. 10, 1977, Ser. No. 767,314
Claims priority, application France, Feb. 19, 1976, 76 05166
Int. Cl.[2] G01N *1/18, 21/26, 33/16*
U.S. Cl. 23—230 B 4 Claims



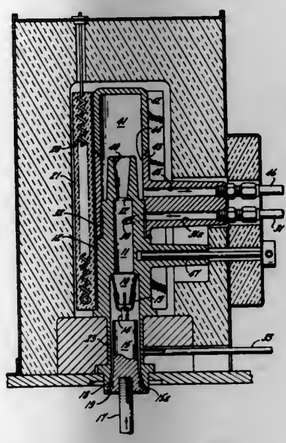
1. A method of transporting liquid samples for microbiological analysis in an automatic analysis apparatus comprising, spacing apart in a fluid stream in a conduit successive liquid biological samples by intermediate segments of a decontamination solution effective to decontaminate the conduit of bacteria in the next preceeding sample to insure freedom of contamination from one sample to the other, said spacing including spacing the liquid biological samples and intermediate decontamination solution with inert gas segments, transporting the stream through said conduit, and said segments of decontamination solution having a length effective to allow said solution to decontaminate the conduit in dependence upon the rate of flow of said stream.

4,116,632

COUNTERCURRENT COMBUSTION SYSTEM FOR PREPARING RADIOACTIVE SAMPLES AND THE LIKE

Niilo H. Kaartinen, and Pentti J. Juhala, both of Kuusisto, Finland, assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed May 31, 1977, Ser. No. 801,861
Int. Cl.[2] G01N *31/12, 33/16*
U.S. Cl. 23—230 PC 18 Claims



1. A process for combusting materials containing radioactive nuclides to permit recovery of the radioactive nuclides, said process comprising the steps of combusting a sample material containing at least one radioactive nuclide in a combustion zone while continuously exhausting combustion products from one end of the combustion zone, introducing a continuous pressurized stream of oxygen-containing gas into the combustion zone between the exhaust end of said zone and the sample during the combustion thereof, and directing at least a portion of the pressurized oxygen-containing gas stream through the combustion zone in a spiral path toward said sample to circulate at least a portion of the combustion products around the combustion zone as they flow towad the exhaust end of said zone counter to the flow of the spiraling stream of oxygen-containing gas, whereby said combustion products are intimately mixed with said oxygen-containing gas in said combustion zone.

4,116,633

GLOBULIN TEST

Abdus Salam Mia, Fairless Hills, Pa., assignor to Pitman-Moore, Inc., Washington Crossing, N.J.

Filed Aug. 22, 1977, Ser. No. 826,498
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B 9 Claims

8. A method for the determination of serum globulin comprising:

a. mixing a minor amount of serum containing globulin with a reagent comprising ethyl acetate, ferric ion, sulfuric acid, acetic acid and at least 15% v/v water; and

b. heating the mixture to a temperature from about 85° C. to about 100° C. for a period of from about 5 minutes to about 25 minutes; and

c. determining the concentration of globulin by photometrically measuring color absorbance and comparing the reading against a calibration curve or the absorbance of a standard sample with known globulin concentrations.

4,116,634

VOID, FLAW, AND CRACK INDICATOR FOR EPOXY BONDS

Vernon A. Nieberlein, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 26, 1977, Ser. No. 836,327
Int. Cl.[2] G01N *21/16*
U.S. Cl. 23—230 R 3 Claims

1. A method for testing for and locating imperfections including voids, bubbles, cracks, and flaws having an opening to a surface of cured epoxy resin of a cured epoxy resin article comprising completing the steps of:

(i) providing a cured epoxy resin article to be tested, said cured epoxy resin selected from the group consisting of an epoxy resin that is cured with an amine curing agent which results in alkaline characteristics in said amine cured epoxy resin and a cured epoxy resin that is cured with a carboxy-terminated polymeric curing agent which results in acidic characteristics in said carboxy-terminated polymeric cured epoxy resin;

(ii) adding to the surface of said cured epoxy resin article an indicator solution selected from the group consisting of a 0.1 percent alcoholic solution of bromcresol purple, bromthymol blue, thymol blue, meta-cresol purple, xylenol blue, aurin, methyl violet, lacmoid, resazurin, and mixtures thereof when testing for and locating imperfections in epoxy resins cured with said amine curing agent or adding to the surface of said cured epoxy resin article an indicator solution selected from the group consisting of a 0.1 percent alcoholic solution of congo red, p-sulfo-o-methoxybenzene, azodi-methyl-alpha-naphthylamine, and mixtures thereof when testing for and locating imperfections in epoxy resins cured with said carboxy-terminated polymeric curing agent;

(iii) examining said cured epoxy resin article to which said selected indicator solution has been added for evidence of penetration by said indicator a site of imperfection wherein the surface of said imperfection is dyed a color that is characteristic of said indicator solution for the alkaline or acid characteristic of said cured epoxy resin at the site of imperfection, said dyed surface of an imperfection rendering a previously inconspicuous imperfection visible which serves to locate and identify the imperfection in said cured epoxy resin article.

4,116,635

GENERAL PURPOSE IN VITRO ANTICOAGULANT

Mark A. Jaeger, 110 Betty Jean La., Lemay, Mo. 63125

Filed Mar. 14, 1977, Ser. No. 777,147
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B 10 Claims

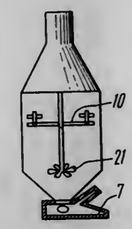
1. In a process for testing a sample of blood for coagulation, hematology, chemistries, enzymes, electrolytes, and trace metals wherein said sample is introduced into a vessel containing an anticoagulant, the improvement comprising selecting for the anticoagulant a calcium chelating agent having a Log K' from about 3.4 to about 4.2, where Log K' is the logarithm of the conditional stability constant at pH 7.5.

4,116,636

APPARATUS FOR ISOLATION OF TRICHINELLA LARVAE

Andrei Stefanovich Bessonov, B. Cheremushkinskaya ulitsa, 20, korpus 3, kv. 137; Alexandr Vitalievich Uspensky, Nagornaya ulitsa, 45, korpus 24, kv. 74, and Nikolai Vasilievich Shekhovtsov, ulitsa Krzhizhanovskogo, 7, korpus 3, kv. 23, all of Moscow, U.S.S.R.

Filed Apr. 29, 1977, Ser. No. 792,442
Int. Cl.[2] G01N *33/12*
U.S. Cl. 422—101 6 Claims



1. An apparatus for isolation of trichinae by artificial digestion of muscle tissues, comprising a vessel intended for filling with a digesting liquid and the sample;

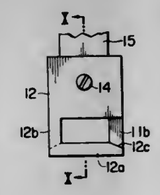
said vessel has upper and lower parts, the lower part being made in the form of a funnel, a settling vessel connected to the narrow outlet of said funnel, a means preventing penetration of non-digested parts of the sample into the said settling vessel, and a means for stirring the vessel contents.

4,116,637

BLOOD SERUM APPLICATOR

Tomohiro Kitahara, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jan. 14, 1977, Ser. No. 759,557
Claims priority, application Japan, Jan. 16, 1976, 51/2499
Int. Cl.[2] B01L *3/00;* G01N *1/12, 31/06, 33/16*
U.S. Cl. 422—63 5 Claims



1. A blood serum applicator, comprising:

a first vertically short, laterally thin, longitudinally long horizontal plate-like straight portion having a flat lower edge which extends from one end thereof to an opposite end thereof;

a second vertically short, laterally thin, longitudinally long horizontal plate-like straight portion having a flat lower edge which extends from one end thereof to an opposite end thereof;

said first and second straight portions being disposed laterally adjacent one another with a constant-width space therebetween and said flat lower edges at an equal level;

main body means space vertically above said first and second straight portions;

a first, one vertically tall, laterally thin, longitudinally horizontally short plate-like supporting portion fixedly integrated with said first straight portion and with said main body means, and constituting the sole means mounting the first straight portion to said main body means;

a second, at least one and no more than two vertically tall,

laterally thin, longitudinally horizontally short plate-like supporting portion fixedly integrated with said second straight portion and with said main body means, and constituting the sole means mounting the second straight portion to said main body means;

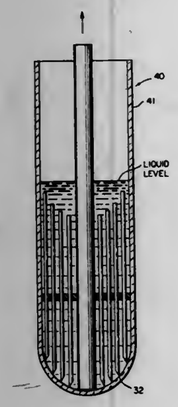
no part of said first, one supporting portion laterally confronting any part of said second at least one supporting portion, so that blood serum, when carried in said constant width space has no part thereof carried between said first, one supporting portion and said second at least one supporting portion.

4,116,638

IMMUNOASSAY DEVICE

Michael B. Kenoff, Hackettstown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 3, 1977, Ser. No. 774,190
Int. Cl.² G01N *33/16*
U.S. Cl. 422—99 **2 Claims**



1. A device for carrying out solid phase immunoassays comprising:

a disk having a plurality of apertures of substantially uniform diameter complimentary to the diameter of the exterior diameter of a capillary tube and said apertures extending through said disc and a center aperture centrally located in said disc and having a greater diameter than the other apertures;

a plurality of capillary tubes of substantially uniform length being maintaind in a spaced relationship to one another by extending through and being held in a number of the plurality of apertures by friction fit; and

a tubular member extending through and being frictionally held in the centrally located aperture, said member having a length and a diameter respectively greater than those of said capillary tubes.

4,116,639

METHOD AND APPARATUS FOR THE PRODUCTION OF CARBON BLACK FROM LIQUID OR GASEOUS HYDROCARBONS

Arthur E. Fross, Basel, Switzerland, assignor to Etablissement Gelan, Vaduz, Liechtenstein

Continuation of Ser. No. 633,035, Nov. 18, 1975, abandoned, which is a division of Ser. No. 412,599, Nov. 5, 1973, abandoned. This application May 2, 1977, Ser. No. 792,991
Claims priority, application Switzerland, Nov. 10, 1972, 16415/72; Aug. 31, 1973, 12573/73
Int. Cl.² C09C *1/48*
U.S. Cl. 422—111 **27 Claims**

1. Apparatus for production of carbon black by thermal decomposition of a supplied hydrocarbon material through partial combustion of the same hydrocarbon reagent material with a free-oxygen-containing reagent gas following preliminary heating and mixing of the reagents, comprising:

a chamber (1) having an entry end and an exit end respectively at opposite ends of a straight axis of the chamber;

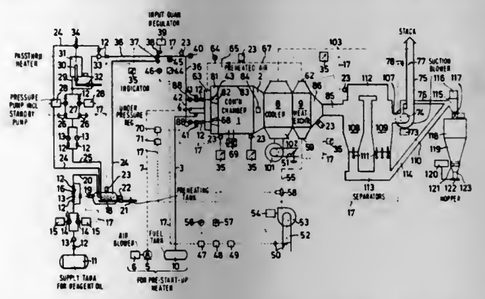
means for heating the chamber up from a cold condition to a reaction start temperature not less than 900° C;

means for supplying or removing heat respectively to and from said reaction chamber through a thermally conducting partition and means for controlling heat supplying and removing means so as to keep the temperature of said reaction chamber between preset limits lying above 900° and below 1,200° C.;

a header (81) extending over the full cross-section of the entry end of said reaction chamber and providing a plurality of ante-chambers (82) distributed over the cross-section of the reaction chamber, said ante-chambers having axes parallel to said reaction chamber axis, at one end of which axes they open out into said reaction chamber and at the other end of which axes they are fitted with means for admitting a reagent gas and adjustable means (43) for atomizing a liquid reagent, each of said ante-chambers having a cross-section increasing towards its end that opens into said reaction chamber;

means (11-22, 24-34, 36, 41, 42, 88) for supplying liquid hydrocarbon material under pressure and distributing said pressurized liquid hydrocarbon material to said atomizing means of said respective ante-chambers;

a first cooling chamber (8) adjoining and open to said reac-



tion chamber on the exit end of the latter and having coolant flow ducts in thermal exchange with said chamber and means for varying the flow of coolant there-through so as to maintain the temperature of discharge of reaction products at a point downstream of said first cooling chamber within a desired temperature range;

a second cooling chamber (9) adjoining and open to the exit end of said first cooling chamber and having flow ducts in thermal exchange with said second cooling chamber for preheating a gas reagent, said flow ducts being connected to a reagent gas supply duct the other end of which is connected to a reagent gas distribution box (63) mounted on said header, the space enclosed by which communicates with said means for admitting a reagent gas to said ante-chambers provided by said header;

carbon black separating apparatus (108-123) connected to the exit end of said second cooling means for receiving the cooled output of said second cooling chamber (9) and comprising a preliminary separator of the flow-pattern influence type and a final separator (109) of the porous filter type, and

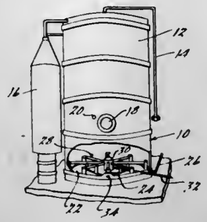
a system for controlling the ratio of the respective rates of supply of a liquid hydrocarbon reagent and of a combustion-supporting gas reagent to said ante-chambers and said reaction chamber, having means for measuring the rate of supply of each of said reagents and means for adjusting the rate of at least one of said reagents so as to maintain it at least approximately at a predetermined ratio to the rate of supply of the other.

4,116,640

SALT DISSOLVER

Melvin E. Leverenz, St. Clair, Mich., assignor to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Feb. 24, 1977, Ser. No. 771,460
Int. Cl.² B01D *11/02*; C01D *3/04*
U.S. Cl. 422—264 **9 Claims**



1. A bulk salt dissolver for producing saturated salt solutions comprising a tank having a base and defining an upright internal chamber adapted to be at least partly filled with a particulated salt charge, a sparger assembly comprising a conduit disposed adjacent to said base and provided with a plurality of nozzles disposed at spaced intervals therealong for introducing liquid into said chamber, a collector manifold disposed above and adjacent to said sparger assembly for withdrawing a filtered salt solution from said chamber, said collector manifold comprising a collector chamber supported by said base and positioned at substantially the center thereof, at least a portion of said nozzles in said conduit angularly oriented to discharge liquid toward a region spaced immediately above said collector manifold, a plurality of elongated foraminous collector conduits extending outwardly from said collector manifold in a substantially horizontal direction above said sparger assembly toward the periphery of said tank, each collector including coupling means on one end thereof for removably connecting each conduit in communication with the interior of said collector chamber, a tubular cylindrical sleeve of substantially circular cross section comprised of a porous filter medium disposed with the inner surface of said sleeve in overlying spaced relationship around each of said collector conduits, retaining means for applying an axial clamping force against opposite ends of each said sleeve for removably retaining said sleeve in appropriate sealed and spaced position around said collector conduit, support means for removably supporting each said collector conduit and tubular sleeve in spaced relationship from said base enabling replacement of said tubular sleeve in response to uncoupling of said coupling means, and an outlet conduit connected to said collector chamber for withdrawing a salt solution from said manifold assembly to a location exteriorly of said tank.

4,116,641

APPARATUS FOR PULLING CRYSTAL RIBBONS FROM A TRUNCATED WEDGE SHAPED DIE

Theodore Frank Ciszek, Salt Point, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1976, Ser. No. 677,579
Int. Cl.² B01J *17/18*; C01B *33/02*
U.S. Cl. 422—246 **7 Claims**



1. Apparatus for forming an elongated crystalline ribbon-shaped body comprising:

means for providing a substantially constant source of molten material;

a generally truncated wedge shaped die having an elongated capillary therein positioned partially submerged in said molten material so that the molten material moves into said capillary;

the top surface of said die being shaped so that it is thickest at the center and symmetrically curving to narrower ends;

the said top surface of said die being substantially perpendicular to the plane of ribbon-shaped body greater in height at its ends and decreasing in height to a lowest point at the center of said die; and

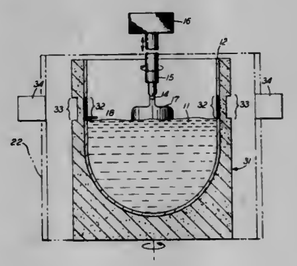
means for growing and pulling said body from said capillary.

4,116,642

METHOD AND APPARATUS FOR AVOIDING UNDESIRABLE DEPOSITS IN CRYSTAL GROWING OPERATIONS

Tze Yao Chu, Trenton, N.J.; Yogesh Jaluria, Kanpur, India; Robert Joseph Lavigna, Bath, Pa.; Raymond Edward Reusser, Bethlehem, Pa., and George Williams, Mercerville, Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,985
Int. Cl.² B01J *17/00*; C01B *33/02*
U.S. Cl. 422—249 **9 Claims**



1. Apparatus for Czochralski crystal growing comprising:

a crucible for containing a material from which a melt is produced;

a housing surrounding and supporting the crucible and for transmitting heat thereto;

means for heating the housing to heat the material in the crucible to a temperature at which it melts;

means for supporting and pulling a crystal of the material with respect to the melt; and

the combination of the crucible, housing and heating means cooperating with additional means, including an annular portion of reduced thickness in the housing located adjacent the crucible just above the melt surface to provide less resistance to the transmission of heat to the crucible, such additional means providing supplemental, locally intensified heating to an inner annular portion of the crucible, which is located just above the melt surface, sufficiently to avoid undesired formations of any material on said portion, including inwardly projecting deposits.

4,116,643

AMINE SALTS OF CARBOXYLATE HALF ESTERS OF 1-AZA-3,7-DIOXABICYCLO [3.3.0] OCT-5-YL METHYL ALCOHOLS, THEIR PREPARATION AND USE AS ADDITIVES FOR GASOLINE AND MIDDLE DISTILLATE FUELS

Jack Ryer, East Brunswick; Stanley J. Brois, Westfield, and Esther D. Winans, Colonia, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 752,872, Dec. 20, 1976, which is a division of Ser. No. 573,545, May 1, 1975, Pat. No. 4,017,406. This application Jul. 11, 1977, Ser. No. 814,161

Int. Cl.[2] C10L *1/22*

U.S. Cl. 44—63 **11 Claims**

1. A fuel composition comprising a major amount of liquid hydrocarbon fuel and in the range of about 0.001 to 0.5 wt.% of a fuel soluble amine salt-ester wherein said amine contains from 1 to 3 nitrogens and from 2 to 12 carbons and said ester is the half ester reaction product of: (a) about 1 molar proportion of a hydrocarbyl substituted C_4 to C_{10} dicarboxylic acid or anhydride having about 2 to about 50 carbon atoms per hydrocarbyl group partly esterified with the reaction product of (b) either about 1 or 2 molar proportions of an aldehyde, or one molar proportion of ketone and one molar proportion of aldehyde, reacted with about 1 molar proportion of tris-(hydroxymethyl) aminomethane; said half ester reaction product having a 1-aza-3,7-dioxabicyclo[3.3.0] octyl ring.

4,116,644

GASOLINE COMPOSITIONS

Philip F. Jackisch, 4218 Rosewold, Royal Oak, Mich. 48073, and Calvin J. Worrel, 20075 Houghton, Detroit, Mich. 48219

Continuation-in-part of Ser. No. 561,371, Mar. 24, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,214

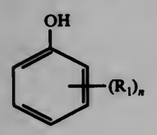
Int. Cl.[2] C10L *1/24*

U.S. Cl. 44—73 **6 Claims**

1. A concentrate for use in liquid hydrocarbon fuel boiling in the gasoline boiling range containing

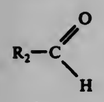
(I) from about 35 to about 50 weigh percent of the reaction product of:

(A) one mole part of an alkylphenol having the formula:



wherein *n* is an integer from 1 to 2, and R^1 is an aliphatic hydrocarbon radical having an average molecular weight of from about 400 to 1500;

(B) from 1-5 mole parts of an aldehyde having the formula:



wherein R_2 is selected from hydrogen and alkyl radicals containing 1-6 carbon atoms; and

(C) from 0.5-5 mole parts of an amine having at least one active hydrogen atom bonded to an amino nitrogen atom, and

(II) from about 1.4 to about 5.6 weight percent of a demulsifying agent containing:

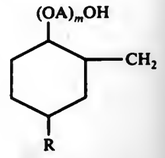
(A) at least one oil-soluble amine, ammonium, alkaline earth metal, or alkali metal salt of an aryl sulfonic acid;

(B) at least one oil-soluble polyether characterized by the presence within its structure of a group of the formula:

$-(O-A-)_x$

wherein A is an alkylene group containing from 2 to about 7 carbon atoms and where *x* has an average value of from about 5 to about 200; and

(C) oxyalkylated phenol formaldehyde resin of the formula



wherein A represents an alkylene group containing from about 2 to about 10 carbon atoms, where *m* has an average value of from about 4 to about 200, and where R is an alkyl group of about from 1 to about 20 carbon atoms,

(III) from about 20 to about 25 weight percent of a mononuclear or dinuclear aromatic hydrocarbon solvent,

(IV) from about 20 to about 35 weight percent of an alkanol having from 4 to 10 carbon atoms, and

(V) from about 3 to about 5 weight percent of a corrosion inhibitor.

4,116,645

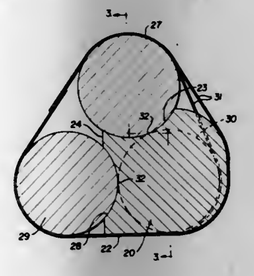
SOLID FUEL PACKAGE WITH IGNITER

Charles J. Dalzell, 940 N. 6th Ave., Yakima, Wash. 98902

Filed Nov. 11, 1976, Ser. No. 740,943

Int. Cl.[2] C10L *11/00*

U.S. Cl. 44—38 **4 Claims**



1. A solid fuel assembly comprising a unitary igniter and cradle element having a substantially flat bottom face adapted to rest on a level support surface and having substantially vertical end faces, said igniter and cradle element having an interior side provided with a log positioning arcuate recess and also having a top leg positioning arcuate recess above said side recess, an upper log whose length defines the length of said assembly resting stably in the upper arcuate recess of said igniter and cradle element, a lower log engaging in the side arcuate recess and positioned and stablized thereby relative to the upper log, and being of substantially the same length as the upper log, the bottom of the lower log being substantially flush with said flat bottom face of the igniter and cradle element, and a pair of log slices of considerably shorter lengths than the lengths of said upper and lower logs and disposed on opposite sides of said igniter and cradle element in spaced relation to said vertical end faces of such element and forming therewith a pair of spaced draft passages between said log slices and said igniter and cradle element, said side and top log positioning arcuate recesses maintaining said upper and lower logs in spaced substantially parallel relationship in said assembly and thereby forming a longitudinal draft passage in the assembly communicating with said pair of draft passages.

4,116,646

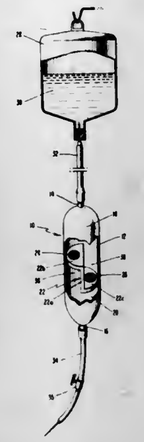
FILTER UNIT

James H. Edwards, Winchester, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed May 20, 1977, Ser. No. 798,934

Int. Cl.[2] B01D *19/00*; A61M *5/16*

U.S. Cl. 55—159 **21 Claims**



1. A filter unit designed to have, when in operation, a vertical axis,

said unit having an upper chamber and a lower chamber along said axis,

a hydrophilic filter separating said chambers,

a hydrophobic membrane separating said chambers and in operation lower along said axis than said hydrophilic filter,

a gas reservoir in the lower chamber above the membrane and below the filter, and

a liquid reservoir in the upper chamber above the membrane and below the filter,

whereby in operation liquid is trapped in the liquid reservoir and gas is trapped in the gas reservoir.

8. A filter unit having a liquid inlet chamber and a liquid outlet chamber,

a hydrophilic filter means mounted between said chambers to filter any liquid flow from said inlet chamber to said outlet chamber,

a hydrophobic membrane means mounted between said chambers to vent and pass excess gas from said outlet chamber to said inlet chamber,

in the normal orientation of said holder during operation, said hydrophilic filter means being at a higher elevation than that of said hydrophobic membrane means,

a liquid reservoir in said inlet chamber above said hydrophobic membrane means, and

a gas reservoir in said outlet chamber below said hydrophilic filter means.

4,116,647

AIR CLEANER

Herman H. Garner, Claremont, Calif., assignor to Vortox Company, Claremont, Calif.

Continuation of Ser. No. 664,551, Mar. 8, 1976, abandoned. This application Mar. 28, 1977, Ser. No. 781,883

Int. Cl.[2] B01D *47/02*

U.S. Cl. 55—223 **2 Claims**

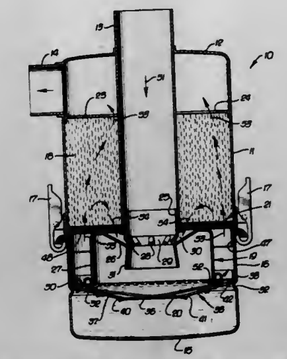
1. In an air cleaner of the oil-bath type, the combination of:

(a) outer shell means defining an upper filter chamber and cup means connected to said shell means defining a lower reservoir;

(b) a filter in said filter chamber and oil filling said reservoir to a static oil level;

(c) air inlet means extending downwardly through said filter chamber toward said reservoir and terminating in a lower end portion above said static oil level;

(d) venturi means encircling said lower end portion of said air inlet means, above said static oil level, for drawing oil from said filter chamber and for spraying such oil into the



air flowing downwardly through said lower end portion of the air inlet means, at a level above said static oil level; and;

(e) air outlet means connected to said shell means and in communication with said filter chamber.

4,116,648

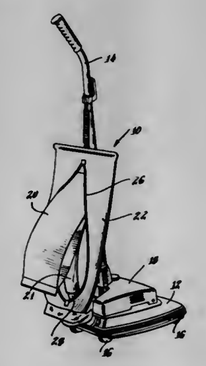
MULTI-LAYER FILTER DUST BAG FOR A VACUUM CLEANER

Charles R. Busch, Mishawaka, Ind., assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 27, 1976, Ser. No. 736,147

Int. Cl.[2] B01D *46/00*

U.S. Cl. 55—276 **9 Claims**



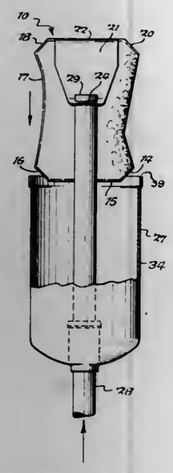
1. A multi-layer disposable filter bag for a vacuum cleaning apparatus used in hospitals or other health care facilities, said vacuum cleaning apparatus having an air discharge outlet, said filter bag comprising: at least two concentric and spaced air-pervious paper layers, a fibrous filter non-woven batt of glass fiber impregnated with a binder resin positioned in the space between said concentric layers, and an air-impervious connection from said filter bag to said discharge outlet whereby said discharged air flows in a path through the inner air-pervious layer, said fibrous filter non-woven batt and said outer air pervious layer.

4,116,649

SELF-RETAINING ADSORBENT BAG UNIT

John S. Cullen, Buffalo, and Paul W. Huber, Lancaster, both of N.Y., assignors to Multiform Desiccant Products, Inc., Buffalo, N.Y.

Filed Jan. 16, 1976, Ser. No. 649,586
Int. Cl.[2] B01D *39/00*
U.S. Cl. 55—387 33 Claims



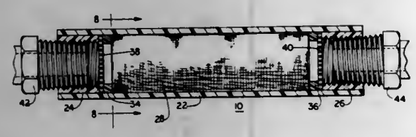
1. An adsorbent unit for mounting on the outside of a conduit comprising a container, adsorbent in said container, said container having a peripheral edge portion and a central portion, a flexible flap having first and second spaced portions, attaching means attaching said first portion proximate said peripheral edge portion with said flap extending toward said central portion, and securing means on said second portion for mounting said flap on the outside of a conduit.

4,116,650

DEVICE FOR PREVENTING CIRCULATION OF LIQUID WATER ENTRAINED IN COMPRESSED AIR

Arlo E. Lane, 2416 Wildwood Rd., Reading, Mich. 49274

Filed Mar. 30, 1977, Ser. No. 782,978
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—387 5 Claims



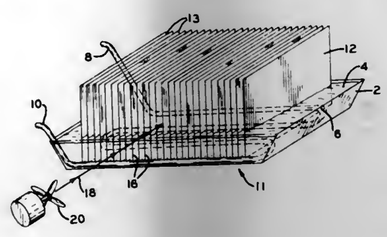
1. In combination with a compressed air line, a tubular container in series with the compressed air line and a plug of porous water absorbent material in the tubular container, the plug absorbing droplets of water in a stream of compressed air passing through the tubular container and providing a surface from which the water evaporates into the compressed air stream as the compressed air passes through the plug, the tubular container including a cylindrical body, the plug being in a central portion of the body, retaining ring members mounted in the body at opposite ends of the plug, perforated transverse members extending transversely of the body outboard of the retaining ring members, internally threaded insert members mounted in the body outboard of the perforated transverse members, the insert members preventing outward movement of the perforated transverse members to limit movement of the plug lengthwise of the body, and means for connecting end portions of sections of the compressed air line to the insert members.

4,116,651

HEAT SINK TEMPERATURE STABILIZED EVAPORATOR COIL

Glenn E. Rickert, Community Bank Building, Huntington, Ind. 46750

Filed Aug. 23, 1976, Ser. No. 716,789
Int. Cl.[2] F25D *3/00, 17/04, 11/00, 3/10*
U.S. Cl. 62—59 2 Claims



1. The method of stabilizing the temperature of a refrigeration system evaporator throughout a plurality of cycles of the refrigeration system comprising:
energizing the system to cool the evaporator;
passing air across the evaporator to cool the air and condense excess moisture therefrom;
retaining at least part of the condensate in good heat transfer relation with the evaporator;
continuing operation of the system to freeze the thus retained condensate;
deenergizing the system while continuing to pass air across the evaporator until at least a portion of the frozen condensate has changed back to a liquid phase; and
reenergizing the system to again cool the evaporator and refreeze the retained condensate when the temperature of the air passing across the evaporator coil exceeds a preferred dew point temperature to thereby maintain the temperature of the air passing across the evaporator coil generally below that preferred dew point temperature.

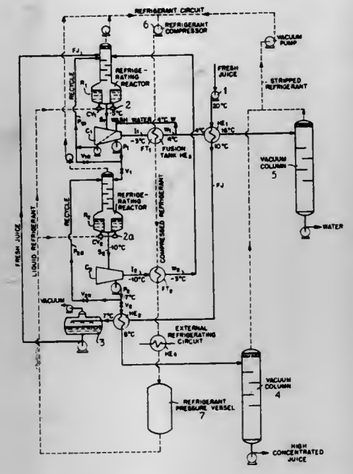
4,116,652

PROCESS FOR THE FREEZE CONCENTRATION OF SOLUTIONS

Klaus Zondek, Casilla 10012, Santiago, Chile

Continuation-in-part of Ser. No. 486,369, Jul. 8, 1974, abandoned, Ser. No. 309,689, Nov. 27, 1972, abandoned, and Ser. No. 170,249, Aug. 9, 1971, abandoned. This application May 17, 1976, Ser. No. 686,808
Int. Cl.[2] B01D *9/04*
U.S. Cl. 62—534 9 Claims

1. A process for concentrating a solution and for separating crystallizable components from a solution thereof which comprises
introducing said solution into a first crystallization zone,
spraying a highly volatile, pressurized and liquified cooling agent directly into said first crystallization zone into contact with said solution, wherein said cooling agent expands and cools said solution to a temperature sufficient to form a slurry of crystals of a first crystallizable component therein,
maintaining said temperature constant,
separating said crystals of first crystallizable component from said slurry to form a preliminary concentrated solution,
transferring substantially only said preliminary concentrated solution to at least one further crystallization zone separate from said first crystallization zone
spraying said cooling agent directly into said further crystallization zone into contact with said preliminary concentrated solution in an amount sufficient
(a) to cool said preliminary solution in said further crystallization zone sufficiently below the temperature of said solution in said first crystallization zone to form a further slurry of crystals therein and at the same time
(b) to act as a liquefacient for said further slurry and thus reduce the viscosity thereof, the temperature of said preliminary concentrated solution in said further crystallization zone being such that the total of the crystals formed in said first and said further crystallization zones is about 65 to 100% of the crystallizable components of said solution,
separating said crystals from said further slurry to form a concentrated solution containing liquified coolant and
separating said cooling agent from said concentrated solution.

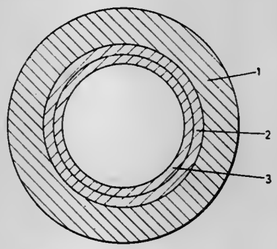


4,116,653

OPTICAL FIBER MANUFACTURE

John Irven, Bishops Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 699,749, Jun. 24, 1976, abandoned.
Claims priority, Application United Kingdom, Jul. 4, 1975, 28396/75
This application May 9, 1977, Ser. No. 815,461
Int. Cl.[2] C03B *37/00*
U.S. Cl. 65—2 6 Claims



1. A method of making a glass optical fiber, comprising the steps of:
treating a hollow tube of high silica content borosilicate glass to promote phase separation into two continuous phases, the first phase consisting of a high softening point phase rich in silica and the second phase consisting of a lower softening point phase rich in sodium borate;
removing the second phase by leaching to provide a plurality of pores in said glass;
heat treating the remaining first phase of the glass to consolidate the first phase to form a self-supporting hollow tubular glass substrate;
depositing by a chemical vapor deposition reaction at least one layer of optical energy guiding glass upon the internal bore of the tubular substrate; and
collapsing and drawing said tubular substrate into an optical fiber.

4,116,654

LOW ATTENUATION, HIGH STRENGTH OPTICAL FIBER WITH SILICA FILAMENT CORE

Yves Michel Trehu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1977, Ser. No. 770,462
Int. Cl.[2] G02B *1/10, 5/14*
U.S. Cl. 65—3 C 10 Claims

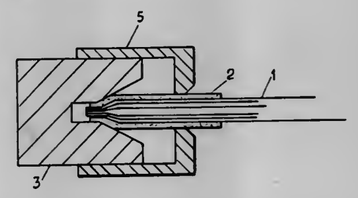
1. In a process of forming an optical fiber comprising a silica filament core and a thermoplastic polymer cladding having an index of refraction lower than that of the core by
(a) drawing a silica filament core from a molten mass of silica, and
(b) melt coating a thermoplastic polymer having an index of refraction lower than that of the core onto the silica filament core,
the improvement comprising:
(i) in step (a), drawing the silica filament core at a temperature from 2040° C. to 2140° C. and
(ii) in step (b), melt coating the polymer by extrusion at a draw down ratio from 1.2 to 2.0 without the filament core having touched a solid surface.

4,116,655

METHOD FOR MAKING OPTICAL-FIBRE CABLES

Edward Lloyd Lewis, Maidstone, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed Jun. 30, 1976, Ser. No. 701,240
Claims priority, application United Kingdom, Jul. 9, 1975, 28879/75; Jul. 10, 1975, 29094/75; Oct. 31, 1975, 45220/75
Int. Cl.[2] C03B *23/20*
U.S. Cl. 65—4 B 9 Claims



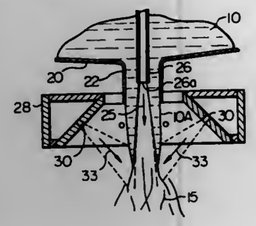
1. A method of terminating an optical fibre cable comprising a bundle of optical fibres, the method employing a die member and a deformable ferrule to enclose the fibre ends, the method including the steps of inserting the fibre ends into said deformable ferrule, heating said die member, and compressing said deformable ferrule onto said fibres by pushing the deformable ferrule axially into a tapered hole in said die member conductively to subject the fibre ends to heat from the die member and to deform them without any substantial fusion between individual ones of said fibres, so eliminating to a substantial extent any spaces between said fibre ends.

4,116,656

METHOD OF MANUFACTURING FIBERS OF INORGANIC MATERIAL AND APPARATUS FOR SAME

Kunihiko Mukai, c/o Mukai Consulting Engineers, Office, No. 349-45, Ishinden-cho, Tsu City, Japan; Michiharu Mishima, Matsusaka, Japan; Kiyoshi Ogino, Matsusaka, Japan, and Shuichi Iseki, Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube and Kunihiko Mukai, Tsu, both of, Japan

Filed Jun. 14, 1977, Ser. No. 806,334
Claims priority, application Japan, Jun. 21, 1976, 51-72896
Int. Cl.² C03B *37/04*
U.S. Cl. 65—5 19 Claims



1. A method of manufacturing fibres of an inorganic material which is fiberizable from a molten state, the method comprising the steps of:

providing a vertically-extending straight and cross-sectionally circular first tube;

inserting a cross-sectionally circular second tube concentrically into said first tube such that a cross-sectionally annular space is defined in at least an uppermost portion of said first tube around said second tube;

allowing a melt of the inorganic material to fill up said annular space and vertically fall therethrough by gravitation thereby establishing a cross-sectionally annular stream within said annular space, said cross-sectionally annular stream forming a hollow cylindrical stream upon leaving said annular space;

continuously injecting generally downwards through said second tube a pressurized gas into said hollow cylindrical stream; and

continuously blowing a pressurized gas at said hollow cylindrical stream from the outside in a downwardly and inwardly inclined direction.

4,116,657

PROCESS FOR INCREASING THE ANNEALING POINT OF 96% SILICA GLASS

Thomas H. Elmer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 5, 1977, Ser. No. 794,062
Int. Cl.² C03C *19/00, 15/00;* C03B *25/00*
U.S. Cl. 65—23 8 Claims

1. A process for producing a transparent 96% silica glass article having an annealing point in excess of about 1070° C. which comprises the steps of:

(a) depositing a carbon film upon the pore walls of a porous 96% silica glass article by contacting the porous glass at an elevated temperature with a hydrocarbon gas having a concentration sufficient to deposit said carbon film upon said pore walls but insufficient to clog the pores of said glass article;

(b) heating the glass article and carbon film under non-oxidizing conditions at a temperature below the porous glass consolidation temperature but not less than about 1000° C. for a time at least sufficient to achieve dehydroxylation of the porous glass; and

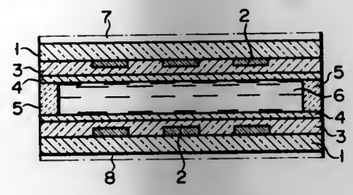
(c) heating the glass article in a dry oxidizing atmosphere at a temperature above the carbon oxidation temperature but below a porous glass consolidation temperature for a time at least sufficient to completely oxidize the carbon film.

4,116,658

METHOD OF COATING SUBSTRATE FOR LIQUID CRYSTAL DISPLAY DEVICE

Shunichi Sano, Zama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 21, 1977, Ser. No. 863,048
Claims priority, application Japan, Jan. 24, 1977, 52-5805
Int. Cl.² C03C *17/02, 17/30*
U.S. Cl. 65—42 7 Claims



1. A method of treating the substrate for a liquid crystal display device to permit unidirectional and horizontal alignment of the liquid crystal molecules, comprising the steps of

forming a transparent oxide film on the electrode bearing surface of a substrate;

laminating a silicon film on said oxide film;

rubbing the surface of said silicon film in a predetermined direction; and

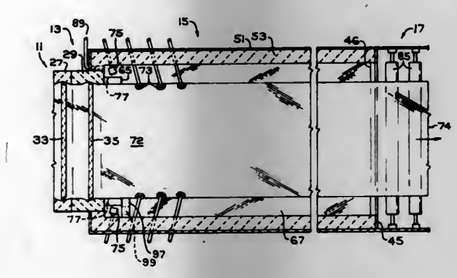
subjecting the substrate to a heat treatment for oxidizing the silicon film.

4,116,659

APPARATUS AND METHOD FOR CIRCULATING MOLTEN METAL IN A BATH USED IN THE MANUFACTURE OF GLASS

Joseph Michael Matesa, and Frank John Rau, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 31, 1977, Ser. No. 764,250
Int. Cl.² C03B *18/02*
U.S. Cl. 65—99 A 10 Claims



1. In a method of making flat glass wherein a layer of molten glass is delivered onto a pool of molten metal between a pair of spaced restraining members extending longitudinally from a location of molten glass delivery and spaced inwardly from side walls of the chamber containing the pool of molten metal and being at least partially submerged in the molten metal substantially along their longitudinal extent, the improvement which comprises establishing a flow of molten metal between the restraining members which is toward the location of molten glass delivery, causing the molten metal to flow outwardly under a submerged portion of each restraining member at locations adjacent to that of molten glass delivery and away from the location of molten glass delivery in portions of the pool of molten metal between the restraining members and the side walls of the chamber by establishing a wave action in the portions of the pool of molten metal between the restraining members and the side walls of the chamber and thereafter dampening the waves in the flowing molten metal in the remainder of the pool of molten metal.

3. In an apparatus for making flat glass comprising an enclosed chamber containing a pool of glass-supporting molten metal and having a glass delivery end, chamber side walls and a pair of restraining members, each spaced from a side wall and spaced from each other, extending from the glass delivery end of the chamber, the improvement which comprises restraining members at least partially submerged in the pool of molten metal having openings through a lower portion of each of them in the vicinity of their ends adjacent the glass delivery end of the chamber and providing a subsurface communication between molten metal in a space between the restraining members and molten metal in the spaces between each restraining member and its closest chamber side wall,

means for causing waves in the molten metal in the spaces between the restraining members and the chamber side walls for establishing a flow of molten metal between the restraining members toward the glass delivery end of the chamber, through the openings in the restraining members and away from the glass delivery end of the chamber thereafter directing the flow of molten metal back into a main portion of the pool of molten metal, and

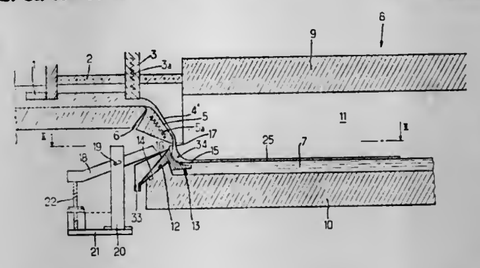
means, mounted adjacent the end of each restraining member remote from the glass delivery end of the chamber, for dampening the waves in the molten metal prior to directing the flow of molten metal back into the main portion of the pool of molten metal.

4,116,660

PRODUCTION OF FLAT GLASS

Michel Zortea, Chalon sur Saone, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jul. 19, 1977, Ser. No. 817,047
Claims priority, application France, Jul. 23, 1976, 76 22581
Int. Cl.² C03B *18/02*
U.S. Cl. 65—99 A 27 Claims



1. In the method for the production of flat glass in which a molten glass vein is directed from a melting furnace onto a molten metal bath having a specific gravity greater than that of the glass to form a glass strip floating on the surface of the bath by causing it to fall freely through a falling zone from a height spaced above the bath and glass strip and is thereafter fed horizontally along the surface of the bath as it is being cooled and is finally removed at a predetermined exit velocity at the downstream end of the bath as a glass strip having a predetermined width and thickness, the improvement comprising:

(a) feeding the molten glass into the falling zone at a rate to form a bulb of molten glass along a deflecting surface located at the upper surface of the bath and through which the glass flows in passing from the freely falling state to the surface of the bath and to produce a horizontal component of movement in the glass as it passes through the bulb, which component extends in the same direction as the direction of movement of the glass strip on the surface of the bath.

11. In an apparatus for the production of flat glass in which a molten glass vein is poured from a melting furnace onto a molten metal bath having a specific gravity greater than that of the glass by causing it to fall freely from a height above the bath and is thereafter fed horizontally along the surface of the bath as it is being cooled and is finally removed at a predetermined exit velocity at the downstream end of the bath as a glass strip having a predetermined width and thickness, the improvement comprising:

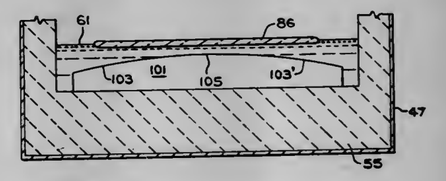
(a) a connecting member emerging out of said bath with the point of emergence being generally directly below the freely falling glass, said connecting member having an inclined forward surface facing in the direction of movement of the glass on the surface of the bath for receiving the freely falling glass at the level of the surface of the bath to give it a component of movement in the said direction.

4,116,661

SUBMERGED DAM BARRIERS FOR SELECTIVE DIVERSION OF MOLTEN METAL FLOW IN A GLASS FORMING CHAMBER

Charles K. Edge, Sarver, Pa., and Thomas J. Nier, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 7, 1977, Ser. No. 840,200
Int. Cl.² C03B *18/02*
U.S. Cl. 65—182 R 6 Claims



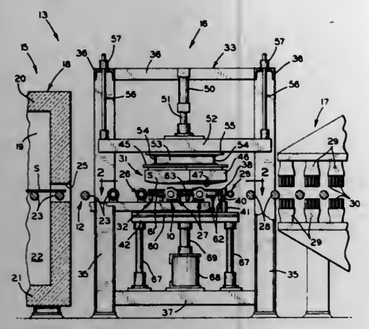
1. In a flat glass forming chamber including an enclosed chamber containing a pool of glass-supporting molten metal, means for delivering molten glass onto the pool of molten metal at an inlet end, means for removing a continuous sheet of glass from the pool of molten metal and from the chamber at an outlet end, means for advancing glass along the surface of the molten metal from the inlet end to the outlet end of the chamber while forming it into a continuous sheet of desired width and thickness and means for removing heat from the glass during its advance and for removing heat from the chamber, wherein there is provided in the pool of molten metal at least one dam barrier over which the glass can advance, the improvement which comprises

a dam barrier having an upper surface above the bottom of the pool of molten metal and extending at least partially transversely across a glass forming chamber beneath the surface of the pool of molten metal, which dam barrier has a central portion of its upper surface spaced closer to the surface of the pool of molten metal in a central portion of the glass forming chamber than the upper surface of the marginal portion of the dam barrier in a marginal portion of the glass forming chamber for permitting a greater flow of molten metal over the dam barrier along the marginal portion than along the central portion of the glass forming chamber.

4,116,662
GLASS SHEET SUPPORTING AND CONVEYING APPARATUS

Robert G. Revells, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sep. 22, 1977, Ser. No. 835,720
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—289 15 Claims



1. A conveyor roll comprising: a pair of elongated sections, each section formed of an inner core and an outer rotatable load supporting sleeve mounted on said core for rotation thereabout, said cores including outer ends having a common axis and inner ends axially offset from each other, means interposed between said core inner ends for connecting said inner ends together to form a unitary one piece construction of irregular angular shape, said sleeves having inner ends terminating inwardly of said core inner ends for free rotation about said cores, respectively, and drive means connected to the outer ends of said sleeves for rotating said sleeves in unison.

4,116,663
PLANT IRON SOURCE, PLANT GROWING MEDIUM, AND METHODS OF MAKING AND USING SAME

John McK. Ballou, 3105 E. Coolidge St., Long Beach, Calif. 90805

Continuation-in-part of Ser. No. 596,421, Jul. 16, 1975, abandoned. This application Nov. 19, 1976, Ser. No. 743,304
Int. Cl.[2] C05F *11/00*
U.S. Cl. 71—23 26 Claims

19. A growing medium for plants comprising the combination of Fe, and vegetable tannin reacted by the presence of H_2O and in the presence of an alkaline material to provide a plant growth stimulant and iron source.

4,116,664
FERTILIZER COMPOSITION AND METHOD OF MAKING SAME

Leon R. Jones, P.O. Box 597, Chandler, Ariz. 85224

Continuation-in-part of Ser. No. 738,888, Nov. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 670,240, Mar. 25, 1976, abandoned. This application Jun. 6, 1977, Ser. No. 803,435
Int. Cl.[2] C05B *15/00*
U.S. Cl. 71—29 30 Claims

1. A method for making a liquid nitrogen sulfur fertilizer composition comprising the steps of:

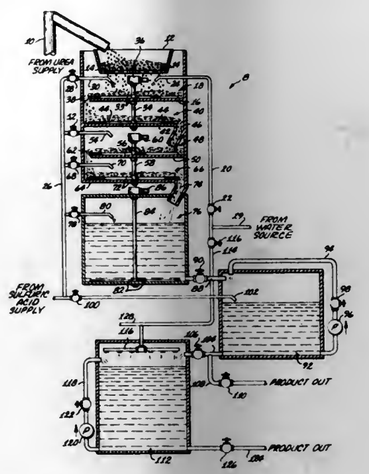
(a) adding a small quantity of a total predetermined amount of sulfuric acid to a total predetermined amount of urea to cause a reaction therebetween with said quantity of sulfuric acid being sufficient to produce a reaction temperature in the range of from approximately 100° F. to 225° F.;

(b) blending said quantity of sulfuric acid with said urea during step a to initiate the formation of a reacting molten slurry thereof;

(c) adding an additional small quantity of said total amount of sulfuric acid to said reacting molten slurry with said additional quantity of sulfuric acid being sufficient to maintain said reaction temperature in the range of from approximately 100° F. to 225° F.;

(d) blending said additionally added sulfuric acid with said reacting molten slurry during step c; and

(e) repeating steps c and d sequentially until the total amount



of sulfuric acid has been added which achieves a gradual reaction of said sulfuric acid with said urea to form a homogenous fused solution of urea sulfate and urea.

18. A new composition of matter useful as a one treatment liquid fertilizer consisting of

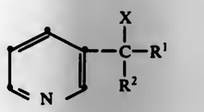
a solution of urea sulfate and urea produced by the process of claim 1.

4,116,665
METHOD OF REGULATING THE GROWTH OF AQUATIC WEEDS WITH PYRIDINE DERIVATIVES

Eriks V. Krumkalns, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 673,030, Apr. 2, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,541
The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.
Int. Cl.[2] A01N *9/22*
U.S. Cl. 71—66 13 Claims

1. A method for inhibiting the growth of submerged and floating aquatic weeds which comprises adding to the water containing said weeds an amount sufficient to provide a growth-regulating and non-herbicidal concentration of a compound of the formula



wherein

X is hydrogen, hydroxyl, halo, C_1-C_3 alkoxy, C_1-C_6 alkylthio, cyclohexylthio, 4-chlorophenylthio, $-N(R^3)_2$, acetamido, imidazol-1-yl, morpholino, or cyano;

R^1 is hydrogen, C_1-C_9 alkyl, ethynyl, C_3-C_6 cycloalkyl, benzyl, phenyl, or monohalophenyl;

R^2 is C_1-C_9 alkyl, C_3-C_6 cycloalkyl, cyclohexylmethyl, cyclohexylethyl, phenyl, monohalophenyl, dihalophenyl, 3,4-(methylenedioxy)phenyl, trifluoromethylphenyl, p-cumenyl, tolyl, phenoxyphenyl, phenoxy(C_1-C_4)alkyl, benzyl, C_1-C_4 alkoxyphenyl, pentafluorophenyl, xylyl, 2-thienyl, 3-pyridyl, 1,3-dioxan-5-yl, or 5-methyl-1,3-dioxan-5-yl; and

R^1 and R^2, when taken together with the carbon atom to which they are attached, form 2,6-dimethylcyclohexan-1-yl, 9-fluorenyl, 10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-yl, 9-xanthenyl, 5H-dibenzo[a,d]cyclohepten-5-yl, or 9-thioxanthenyl;

R^3 is hydrogen or C_1-C_6 alkyl; and

the nonphytotoxic acid addition salts thereof.

4,116,666
METHOD OF TREATING SEED

John Wesley Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 593,712, Jul. 7, 1975, Pat. No. 4,084,938, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Nov. 8, 1976, Ser. No. 740,041
Int. Cl.[2] A01N *21/02*
U.S. Cl. 71—77 22 Claims

1. A method of propagating plants from seed comprising intimately contacting the seed with water containing a catalytically effective amount of a catalyst to achieve faster germination thereof, and thereafter germinating the seed and propagating plants therefrom, the said catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium being in liquid phase and containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0;2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

the said alkali metal silicate reacting in the liquid phase aqueous medium with said dissolved substances providing calcium ion and magnesium ion and in the said molar ratio of calcium ion to magnesium ion to thereby produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles,

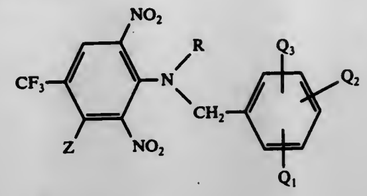
the said alkali metal silicate, the said dissolved substances which are sources of calcium ion and magnesium ion, and the said surfactant producing a catalyst in the said process for preparing the catalyst which is effective in the said method of propagating plants to initially cause the said seed to germinate faster and to thereafter promote the propagation of plants therefrom.

4,116,667
N-BENZYL-2,6-DINITRO-3-AMINO-4-TRIFLUOROMETHYLANILINES AS PLANT GROWTH REGULANTS

Merrill Wilcox, 2911 NW. 30th Ter., Gainesville, Fla. 32601

Division of Ser. No. 533,045, Dec. 16, 1974, Pat. No. 4,046,809. This application Jun. 22, 1977, Ser. No. 808,761
Int. Cl.[2] A01N *9/20*
U.S. Cl. 71—78 6 Claims

1. A composition for regulating the growth of plants by means of retardation which comprises (1) as active ingredient a compound of the formula



in which

R is lower alkyl,

Z is amino, lower alkylamino or di lower alkylamino,

each of Q_1 and Q_2 is hydrogen, halogen, lower alkyl or methoxy, and

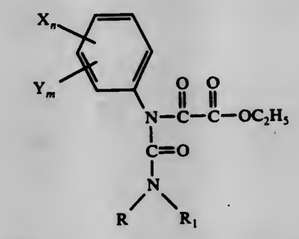
Q_3 is hydrogen, lower alkyl or methoxy, and (2) a carrier.

4,116,668
N-CARBAMOYL ETHYL OXANILATES

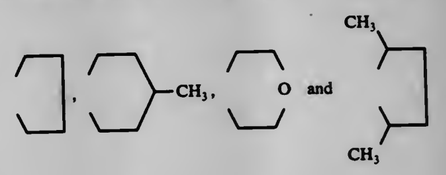
Edmund J. Gaughan, Berkeley, and George B. Large, Orinda, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 759,206, Jan. 13, 1977, Pat. No. 4,068,097, which is a division of Ser. No. 638,491, Dec. 8, 1975, Pat. No. 4,018,813, which is a continuation of Ser. No. 559,104, Mar. 17, 1975, abandoned. This application Oct. 3, 1977, Ser. No. 839,131
Int. Cl.[2] A01N *9/20, 9/22, 9/28*
U.S. Cl. 71—88 17 Claims

1. The method of controlling undesirable vegetation comprising applying to the locus where control is desired a phytotoxic amount of a compound having the formula



wherein X and Y are independently selected from the group consisting of chloro, bromo and trifluoromethyl; *n* is either 0 or 1; *m* is either 0 or 1; and R and R_1 are independently selected from the group consisting of lower alkyl from C_1 to C_3, inclusive; and lower alkoxy from C_1 to C_3, inclusive, or R and R_1 taken together is selected from the group consisting of



4,116,669

HERBICIDAL TETRAHYDROFURAN DERIVATIVES

Michael D. Barker, and Eirlys R. Barker, both of Maidstone, England, assignors to Shell Oil Company, Houston, Tex.

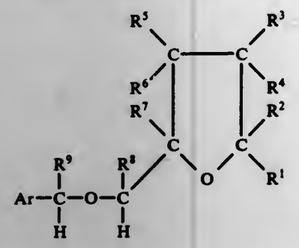
Filed Nov. 8, 1977, Ser. No. 849,567

Claims priority, application United Kingdom, Nov. 10, 1976, 46771/76

Int. Cl.² A01N *9/28*; C07D *307/12, 307/28, 307/94*

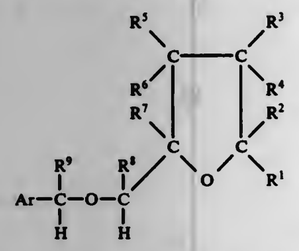
U.S. Cl. 71—88 **14 Claims**

1. A tetrahydrofuran derivative of the formula



wherein R^1 and R^2 each individually represents a hydrogen atom, a methyl group, or R^1 and R^2 together represent a pentamethylene moiety; R^3, R^4, R^5, and R^6 each individually represents a hydrogen atom or one of R^3 and R^4 and one of R^5 and R^6 together represent a carbon-carbon bond; R^7 represents an ethyl group; R^8 and R^9 each individually represents a hydrogen atom; and Ar represents a phenyl group or a phenyl group substituted with a 2-methyl-, 2-fluoro- or a 2,6-dichloro group.

11. A method of eradicating or controlling weeds infesting cereal crops at a locus by applying a herbicidally active amount of a tetrahydrofuran derivative of the formula



wherein R^1 and R^2 each individually represents a hydrogen atom, an alkyl group of up to 6 carbon atoms or a phenyl group; or together represent an alkylene moiety of up to 6 carbon atoms; R^3, R^4, R^5 and R^6 each individually represents a hydrogen atom, a halogen atom or an alkyl group of up to 6 carbon atoms or one of R^3 and R^4 and one of R^5 and R^6 together represent a carbon-carbon bond; R^7 represents a hydrogen atom or an alkyl group of up to 6 carbon atoms; R^8 and R^9 each individually represents a hydrogen atom or an alkyl group of up to 6 carbon atoms; and Ar represents a phenyl group or a phenyl group substituted by one or more halogen atoms or alkyl or alkoxy groups of up to 6 carbon atoms.

4,116,670

DIOXANE SUBSTITUTED AMIDES

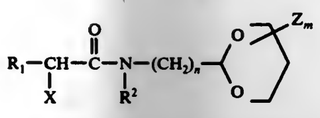
Leonard J. Stach, Riverside; Roger D. Hotz, Evanston, both of Ill., and Sidney B. Richter, Barberton, Ohio, assignors to Velsicol Chemical Company, Chicago, Ill.

Filed Apr. 4, 1977, Ser. No. 784,214

Int. Cl.² A01N *9/00*; C07D *319/04*

U.S. Cl. 71—88 **9 Claims**

1. A compound of the formula



wherein R^1 is selected from the group consisting of hydrogen and alkyl; X is halogen; R^2 is selected from the group consisting of alkyl, alkenyl and alkynyl; n is the integer 1 or 2; Z is alkyl; and m is an integer from 0 to 4.

8. A herbicidal composition comprising an inert carrier and, as an essential active ingredient, a herbicidally effective amount of a compound of claim 1.

9. A method of controlling weeds which comprises contacting said weeds with an effective amount of a herbicidal composition of claim 8.

4,116,671

3-ISOXAZOLYLCARBAMATE DERIVATIVES

Hisajiro Yukinaga, Kusatsu; Shinzaburo Sumimoto, Osaka; Ichiro Ishizuka, Higashinose, and Jitsuo Sugita, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 667,033, Mar. 15, 1976, Pat. No. 4,062,861, which is a continuation of Ser. No. 491,491, Jul. 23, 1974, abandoned. This application Sep. 23, 1977, Ser. No. 836,237

Claims priority, application Japan, Jul. 27, 1973, 48-85339

Int. Cl.² A01N *9/28*; C07D *261/14*

U.S. Cl. 71—88 **21 Claims**

1. A compound selected from the group consisting of methyl N-(5-propyl-3-isoxazolyl)carbamate, methyl N-(5-i-propyl-3-isoxazolyl)carbamate, methyl N-(5-t-butyl-3-isoxazolyl)carbamate, i-propyl N-(5-i-propyl-3-isoxazolyl)carbamate, i-propyl N-(5-t-butyl-3-isoxazolyl)carbamate, methyl N-(5-i-butyl-3-isoxazolyl)carbamate, ethyl N-(5-t-butyl-3-isoxazolyl)carbamate, methyl N-methyl-N-(5-t-butyl-3-isoxazolyl)carbamate, 2-propynyl N-(5-t-butyl-3-isoxazolyl)carbamate, methyl N-(5-t-butyl-3-isoxazolyl)thiolcarbamate, phenyl N-(5-t-butyl-3-isoxazolyl)thiolcarbamate, 2,2,2-trichloroethyl N-(5-t-butyl-3-isoxazolyl)carbamate, allyl N-(5-t-butyl-3-isoxazolyl)carbamate, propyl N-(5-t-butyl-3-isoxazolyl)carbamate, 2-hydroxyethyl N-(5-t-butyl-3-isoxazolyl)carbamate, 2-methoxyethyl N-(5-t-butyl-3-isoxazolyl)carbamate, α,α-dimethylbenzyl N-(5-t-butyl-3-isoxazolyl)carbamate, 2,2,2-trifluoroethyl N-(5-t-butyl-3-isoxazolyl)carbamate and methyl N-(4-bromo-5-t-butyl-3-isoxazolyl)carbamate.

21. A herbicidal composition comprising a herbicidal amount of a compound selected from the group consisting of methyl N-(5-propyl-3-isoxazolyl)carbamate, methyl N-(5-i-propyl-3-isoxazolyl)carbamate, methyl N-(5-t-butyl-3-isoxazolyl)carbamate, i-propyl N-(5-i-propyl-3-isoxazolyl)carbamate, i-propyl N-(5-t-butyl-3-isoxazolyl)carbamate, methyl N-(5-i-butyl-3-isoxazolyl)carbamate, ethyl N-(5-t-butyl-3-isoxazolyl)carbamate, methyl N-methyl-N-(5-t-butyl-3-isoxazolyl)-carbamate, 2-propynyl N-(5-t-butyl-3-isoxazolyl)carbamate, methyl N-(5-t-butyl-3-isoxazolyl)thiolcarbamate, phenyl N-(5-t-butyl-3-isoxazolyl)thiolcarbamate, 2,2,2-trichloroethyl N-(5-t-butyl-3-isoxazolyl)carbamate, allyl N-(5-t-butyl-3-isoxazolyl)carbamate, propyl N-(5-t-butyl-3-isoxazolyl)carbamate, 2-hydroxyethyl N-(5-t-butyl-3-isoxazolyl)carbamate, 2-methoxyethyl N-(5-t-butyl-3-isoxazolyl)carbamate, α,α-dimethylbenzyl N-(5-t-butyl-3-isoxazolyl)carbamate, 2,2,2-trifluoroethyl N-(5-t-butyl-3-isoxazolyl)carbamate and methyl N-(4-bromo-5-t-butyl-3-isoxazolyl)carbamate, in combination with a carrier therefor.

4,116,672

4(3H)-OXOBENZO-2,1,3-THIADIAZINE-2,2-DIOXIDES AND DERIVATIVES THEREOF

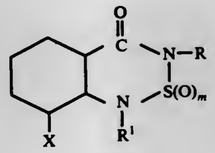
Lennon H. McKendry, Midland, Mich., and Walter P. Bland, Silver Spring, Md., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 660,577, Mar. 12, 1976, Pat. No. 4,051,130, which is a continuation-in-part of Ser. No. 497,583, Aug. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 398,355, Sep. 17, 1973, abandoned. This application Jun. 20, 1977, Ser. No. 807,996

Int. Cl.² A01N *9/14*

U.S. Cl. 71—91 **79 Claims**

1. A herbicidal composition comprising a herbicidal amount of a compound corresponding to the formula:



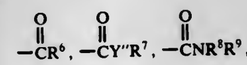
wherein:

X represents $-CH_3$, $-OCH_3$ or CF_3;

m represents an integer of 1 or 2;

R represents loweralkyl of 1 to about 6 carbon atoms, haloloweralkyl of 1 to about 6 carbon atoms, alkenyl of 3 to about 6 carbon atoms, haloalkenyl of 3 to about 6 carbon atoms, alkynyl of 3 to about 6 carbon atoms, haloalkynyl of 3 to about 6 carbon atoms, cycloalkyl of 3 to about 8 carbon atoms, unsubstituted phenyl, loweralkylphenyl, halophenyl, benzyl, loweralkylbenzyl, halobenzyl, loweralkoxyloweralkyl of 2 to 6 carbon atoms, diloweralkylaminoloweralkyl of 3 to 10 carbon atoms; loweralkylthioloweralkyl of 2 to 6 carbon atoms, or cyanoloweralkyl of 2 to 7 carbon atoms;

R^1 represents hydrogen,



$-SO_2R^{10}$ or $-SO_2NR^8R^9$;

R^6 represents loweralkyl and haloloweralkyl having from 1 to 5 carbon atoms, alkenyl and haloalkenyl of 2 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, loweralkoxyloweralkyl, loweralkylthioloweralkyl, each of 2 to 6 carbon atoms, alkoxycarbonylalkyl of 4 to 8 carbon atoms, phenyl, loweralkylphenyl or halophenyl;

R^7 represents alkyl of 1 to 7 carbon atoms, haloalkyl of 1 to 4 carbon atoms, alkenyl and haloalkenyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, loWeralkylphenyl or halophenyl;

R^8 represents loweralkyl of 1 to 4 carbon atoms and cycloalkyl of 3 to 6 carbon atoms;

R^9 represents R^8 and alkoxy, and when taken together with R^8 and the nitrogen from which each depends, a heterocyclic ring of 4 to 8 carbon atoms;

R^{10} represents alkyl and haloalkyl, each of 1 to 7 carbon atoms; and

where R^1 is hydrogen, the salts thereof with organic or inorganic bases,

in admixture with a solid or liquid adjuvant.

4,116,673

1-ALKYL-3-ARYL-4-PYRAZOLECARBOXYLATES

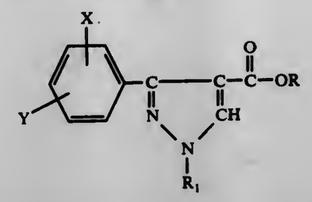
Lawrence H. Brannigan, Creve Coeur; John E. Franz, Crestwood, and Robert K. Howe, Bridgeton, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 645,181, Dec. 29, 1975, abandoned. This application Aug. 18, 1976, Ser. No. 715,011

Int. Cl.² A01N *9/22*; C07D *231/14*

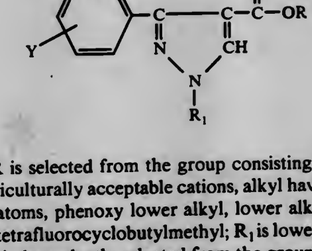
U.S. Cl. 71—92 **15 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen and its agriculturally acceptable cations, alkyl having from 1 to 8 carbon atoms, phenoxy lower alkyl, lower alkyl thio lower alkyl and tetrafluorocyclobutylmethyl; R_1 is lower alkyl; and X and Y are independently selected from the group consisting of hydrogen, trifluoromethyl, halo, lower alkyl and lower alkoxy; provided that X, Y and R may not simultaneously be hydrogen.

9. A herbicidal composition comprising a herbicidal adjuvant and a herbicidally effective amount of a compound having the formula



wherein R is selected from the group consisting of hydrogen and its agriculturally acceptable cations, alkyl having from 1 to 8 carbon atoms, phenoxy lower alkyl, lower alkyl thio lower alkyl and tetrafluorocyclobutylmethyl; R_1 is lower alkyl; and X and Y are independently selected from the group consisting of hydrogen, trifluoromethyl, halo, lower alkyl and lower alkoxy; provided that X, Y and R may not simultaneously by hydrogen.

4,116,674

PROCESS OF SEVERELY DAMAGING OR KILLING UNWANTED PLANTS WITH PYRIMIDINE COMPOUNDS

Raymond Leo Sunley, and Geoffrey David Snowling, both of Woodley, England, assignors to Imperial Chemical Industries Limited, London, England

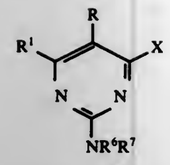
Filed Jul. 21, 1975, Ser. No. 597,572

Claims priority, application United Kingdom, Aug. 5, 1974, 34335/74

Int. Cl.² A01N *9/22*

U.S. Cl. 71—92 **6 Claims**

1. A process of severely damaging or killing unwanted plants, which comprises applying to the plants, or to the growth medium thereof, a herbicidally effective amount of pyrimidine compound of the formula:-



or a herbicidal acid addition salt thereof, wherein R^1 is an alkyl radical of 1 to 6 carbon atoms, cycloalkyl or alkenyl; R is a hydrogen atom or an alkyl or alkenyl radical of from 1 to 12 carbon atoms, which may be substituted by a phenyl radical; or R^1 and R taken together form a trimethylene or tetramethylene radical; X is a group —OR^5 wherein R^5 is an alkyl or alkenyl radical of 1 to 10 carbon atoms or cycloalkyl; and R^6 and R^7 each represent hydrogen or an alkyl or alkenyl radical of 1 to 8 carbon atoms, or cycloalkyl, or R^6 and R^7, taken together with the nitrogen atom to which they are attached constitute a pyrrolidinyl, piperidinyl, or morpholinyl ring.

4,116,675

PYRIDINIUM-S-TRIAZINES FOR REGULATING PLANT GROWTH

Hanspeter Fischer, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

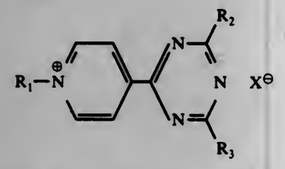
Filed Apr. 27, 1977, Ser. No. 791,267

Claims priority, application Switzerland, May 4, 1976, 5553/76

Int. Cl.² A01N 9/22; C07D 251/16

U.S. Cl. 71—93 **13 Claims**

1. A compound of the formula



in which R_1 represents an alkyl group of from 1 to 12 carbon atoms or a C_1–C_4 alkyl group substituted by halogen, C_1–C_4 alkoxy, cyano, phenyl, carboxyl, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyl, aminocarbonyl, mono- and di-(C_1–C_4) alkylaminocarbonyl, or R_1 represents C_3–C_7 alkenyl or C_3–C_7 haloalkenyl, each of R_2 and R_3 independently represents hydrogen, alkyl from 1 to 4 carbon atoms, haloalkyl from 1 to 4 carbon atoms; and $X^\ominus$ is a halogen anion, $Br_e^\ominus$ or $CH_3OSO_2O^\ominus$.

4,116,676

4-METHYLTHIO-2-TRIFLUOROMETHYLMETHANE-SULFONANILIDE AND DERIVATIVES THEREOF

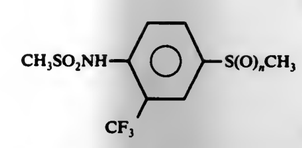
Tomas L. Fridinger, Woodbury; George G. I. Moore, Birchwood, and Larry R. Lappi, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 523,673, Nov. 14, 1974, Pat. No. 3,996,277. This application Nov. 5, 1976, Ser. No. 739,133

Int. Cl.² A01N 9/16

U.S. Cl. 71—103 **7 Claims**

1. A method for supressing or inhibiting the growth of higher plants which comprises contacting said plants with an effective amount of a compound of the formula



wherein *n* is zero, one or two and agriculturally acceptable salts thereof.

4,116,677

N-ALKYL-ALPHA-(SUBSTITUTED PHENOXY) ALKYLAMIDES AND THEIR USE AS HERBICIDES

Francis H. Walker, Mill Valley, and Don R. Baker, Orinda, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

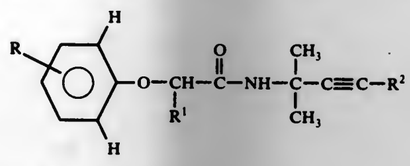
Continuation of Ser. No. 710,051, Jul. 30, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 850,998

The portion of the term of this patent subsequent to Jul. 27, 1993, has been disclaimed.

Int. Cl.² A01N 9/20; C07C 103/22

U.S. Cl. 71—118 **15 Claims**

11. A method of controlling undesirable vegetation comprising applying to the locus where control is desired an herbicidally effective amount of a compound having the formula



in which R is 3,5-dimethyl or 3,5-dichloro; R^1 is methyl or ethyl; and R^2 is methyl or ethyl.

4,116,678

METHOD OF PRODUCING IRON

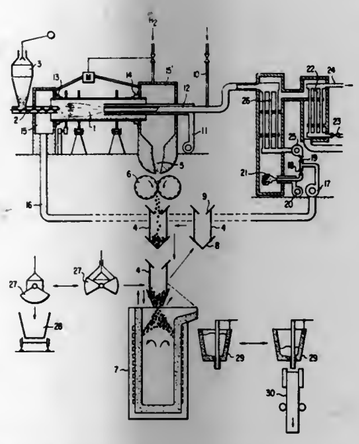
Robert Lafont, Gif sur Yvette, and Louis H. Hallot, Gagny, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 19, 1977, Ser. No. 760,819

Claims priority, application France, Jan. 20, 1976, 76 01333

Int. Cl.² C21C 5/52

U.S. Cl. 75—11 **5 Claims**



1. A method of producing iron by direct reduction of ore,

compaction into agglomerates and fusion of the reduced ore comprising the steps of:

reducing said ore by a gaseous process in two stages, first a prereduction to iron monoxide FeO in a 950°–1100° C. reducing atmosphere in a first reduction zone, then, without transition, reducing said iron monoxide at a temperature between 650°–750° C. in powdered form in a second reduction zone;

immediately compacting the resultant powder to agglomerates at the output temperature of a reducing kiln and collecting such agglomerates in a continuous manner which limits their cooling;

melting said agglomerates by mixing and contacting the same with a pre-existing charge of liquid metal in an induction furnace, to complete fusion; and

skimming the slag of said fusion and then pouring a resulting liquid metal charge into a ladle, to be refined, treated and poured, and then fed into a continuous casting installation.

4,116,679

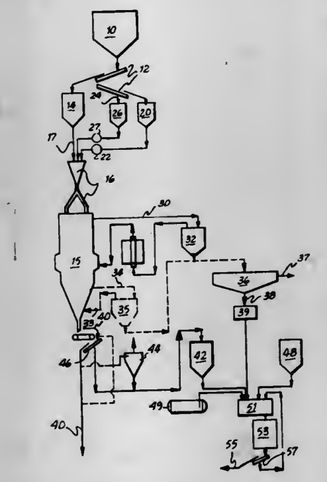
METALLIZED IRON BRIQUET

Wolfgang B. Pietsch, Charlotte, N.C., assignor to Midrex Corporation, Charlotte, N.C.

Division of Ser. No. 682,418, May 3, 1976, Pat. No. 4,032,352. This application Mar. 24, 1977, Ser. No. 780,960

Int. Cl.² C21B 13/00

U.S. Cl. 75—34 **6 Claims**



1. A method of making a briquet from directly reduced finely divided metallized material, comprising:

mixing from 85 to 95 percent finely divided metallized material with from 5 to 15 percent of binder comprising:

about 2 to about 40 percent pitch,

about 15 to about 35 percent hydrated lime,

about 15 to about 30 percent of a solution of sodium silicate, and up to 50 percent water;

to form a free flowing yet dense briquet feed material;

densifying said feed material, and

forming said feed material into briquets.

4,116,680

COPRODUCTION OF IRON AND CARBON BLACK

Robert Kenneth Jordan, 3979 Tuxey Ave., Pittsburgh, Pa. 15227

Filed Feb. 24, 1976, Ser. No. 660,934

Int. Cl.² C21B 5/00

U.S. Cl. 75—41 **2 Claims**

1. A process for the simultaneous production of a ferrous metal and carbon black comprising,

a. operating a ferrous metal blast furnace, modified by obviating the stoves and equipped to recycle a part of the top gas to the combustion zone, with a carbonaceous fuel combusted with oxygen in the presence of recycled gas of at least one of carbon monoxide and carbon dioxide to produce a molten ferrous metal and a top gas of carbon monoxide and carbon dioxide,

b. disproportionating the contained carbon monoxide of the cleaned remaining top gas to carbon black and carbon dioxide.

4,116,681

PROCESS FOR THE MANUFACTURE OF ORE PELLETS

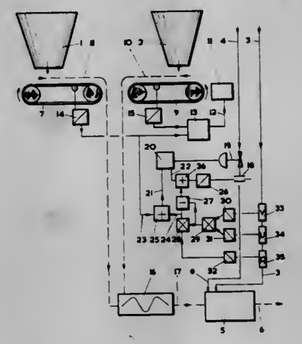
Herman Radstake, Uitgeest; Nicolas A. Hasenack, Heemskerk; Anthonie Van Latenstein, Santpoort, and Jacobus J. Burger, Driehuis, all of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens en Staalfabrieken, N.V., Ijmuiden, Netherlands

Continuation-in-part of Ser. No. 179,670, Sep. 13, 1971, abandoned. this application Aug. 27, 1975, Ser. No. 608,333

Claims priority, application Netherlands, Sep. 11, 1970, 13457

Int. Cl.² C21B 5/00

U.S. Cl. 75—41 **5 Claims**



1. A process for the manufacture of ore pellets comprising mixing a fine ore powder having a moisture content of less than 0.1% and consisting essentially of particles having a size less than 90 μ with 0.05 to 1% by volume of a powdered adhesive, adding 8 to 9% of water by weight to said mixture while said mixture is at a temperature of 50° to 90° C, homogenizing the mixture by a ploughing action to produce a moist mixture consisting essentially of fine ore powder, less than 1% of adhesive and about 8% of water, forming pellets from said moist mixture by a rolling operation and thereafter baking said formed pellets to produce the desired pellets.

5. Baked ore pellets prepared in accordance with the process of claim 1.

4,116,682

AMORPHOUS METAL ALLOYS AND PRODUCTS THEREOF

Donald E. Polk, 2 Rollins Pl., Boston, Mass. 02114, and Bill C. Giessen, 22 Centre St., Cambridge, Mass. 02139

Filed Dec. 27, 1976, Ser. No. 754,537

Int. Cl.² C22C 19/02, 19/07, 22/00, 27/06, 37/00, 38/00

U.S. Cl. 75—123 H **8 Claims**

1. An amorphous metal alloy of the formula $M_aT_bX_c$ which is substantially amorphous when rapidly cooled to the solid state wherein M is at least one element selected from the group consisting of Fe, Co, Ni, Cr and Mn and mixtures thereof, T is at least one element selected from the group consisting of Zr, Ta, Nb, Mo, W, Y, Ti and V and mixtures thereof, and X is at least one element selected from the group consisting of B, Si, P, C, Ge and As and mixtures thereof, wherein *a*, *b* and *c* are atomic percentages ranging from about 60 to 87, 3 to 30, and 1 to 10, respectively, said *a*, *b* and *c* totalling 100 in any one alloy.

4,116,683

NICKEL-FREE AUSTENITIC CORROSION-RESISTANT STEEL

Ivan Dimov Nikolov; Tzolo Valkov Rashev; Rangel Petrov Ivanov, and Chavdar Andreev Andreev, all of Sofia, Bulgaria, assignors to Institute po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Continuation-in-part of Ser. No. 672,339, Mar. 31, 1976, abandoned, which is a continuation of Ser. No. 459,191, Apr. 8, 1974, abandoned. This application Apr. 25, 1977, Ser. No. 790,537

Claims priority, application Bulgaria, Apr. 11, 1973, 23260

Int. Cl.² C22C *38/20, 38/38*

U.S. Cl. 75—125 **4 Claims**

1. A nickel-free corrosion-resistant steel which consists by weight of:

0.035% ≦ carbon ≦ 0.08%
18.05% ≦ chromium ≦ 21.0%
8.0% ≦ manganese ≦ 9.0%
0.50% ≦ nitrogen ≦ 0.90%
silicon ≦ 0.9%
sulfur ≦ 0.025%
phosphorus ≦ 0.035%
copper ≦ 3%
and the remainder being iron.

4,116,684

HIGH SPEED TOOL STEEL HAVING HIGH TOUGHNESS

Norimasa Uchida, Matsue; Kingo Kiyonaga, Yonago, and Hideki Nakamura, Yasugi, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 11, 1977, Ser. No. 776,924

Claims priority, application Japan, Mar. 17, 1976, 51-28090

Int. Cl.² C22C *38/22, 38/24, 38/26, 38/28*

U.S. Cl. 75—126 C **5 Claims**

1. A high speed tool steel having high toughness, consisting essentially of by weight percentages, C 0.7 - 1.4%; Si 0.5% max.; Mn 0.5% max.; Cr 3 - 6%; W 1 - 3.2%, Mo 5.5 - 7.5%, and the relationship between the contents of W and Mo being 12% ≦ W + 2Mo ≦ 16%; V 1 - 3.5%; Co 15% max.; N 0.02 - 0.1%; one or more of the elements selected from the group of Ti, Nb and Zr and being 0.02 - 0.1% in total, the balance being Fe and incidental impurities.

4,116,685

TOOL STEEL FOR WARM AND HOT WORKING

Toshio Okuno, Yasugi, Japan, assignor to Hitachi Metals, Ltd., Japan

Continuation-in-part of Ser. No. 642,718, Dec. 22, 1975, abandoned. This application Apr. 22, 1977, Ser. No. 789,993

Claims priority, application Japan, Dec. 27, 1974, 49-148981

Int. Cl.² C22C *38/44, 38/46, 38/52*

U.S. Cl. 75—128 B **4 Claims**

1. Tool steel for warm and hot working which consists essentially of, by weight, 0.50 - 1.0% of C, up to 1.50% of Si, up to 1.50% of Mn, 0.7 - 1.5% of Ni, 3.0 - 4.5% of Cr, 1.3 - 5.0% of W, 4.2 - 9.0% of Mo, 1.30 - 3.0% of V, 0.9 - 6.0% of Co and the balance essentially Fe and impurities, contents of said C and V satisfying 0.15 + 0.2 V≦C≦0.42 + 0.2 V.

4,116,686

COPPER BASE ALLOYS POSSESSING IMPROVED PROCESSABILITY

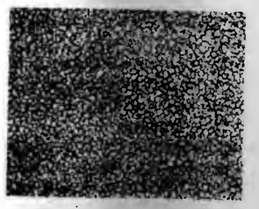
Brian Mravic, North Haven; Stanley Shapiro, New Haven; Derek E. Tyler, Cheshire, and Abid Khan, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 686,173, May 13, 1976, abandoned. This application Aug. 25, 1977, Ser. No. 827,495

Int. Cl.² C22C *9/02*; C22D *1/08*

U.S. Cl. 75—154 **9 Claims**

5. A copper base alloy in the cast condition, said cast alloy having a substantially non-dendritic grain structure and improved resistance to crack propagation during hot working, said alloy consisting essentially of from about 4.0 to about 6.0% tin, from about 0.01 to about 0.03% phosphorus, from about 1.9 to about 2.5% iron, from about 0.1 to about 0.3%



chromium, balance essentially copper, wherein said alloy is characterized when placed in the wrought condition by the substantial absence of phosphorus-rich and tin-rich low melting phases.

4,116,687

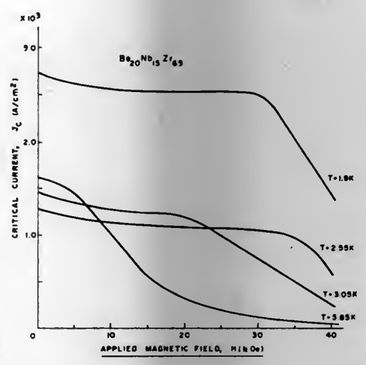
GLASSY SUPERCONDUCTING METAL ALLOYS IN THE BERYLLIUM-NIOBIUM-ZIRCONIUM SYSTEM

Ryusuke Hasegawa, Morristown, N.J., assignor to Allied Chemical Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 749,953, Dec. 13, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,019

Int. Cl.² C22C *1/00, 14/00*

U.S. Cl. 75—177 **7 Claims**



1. A metal alloy consisting essentially of about 20 to 45 atom percent beryllium, about 2.5 to 20 atom percent niobium and the balance essentially zirconium and incidental impurities.

4,116,688

ALLOY AND STRUCTURES MADE THEREFROM

William Thomas Kaarlela, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

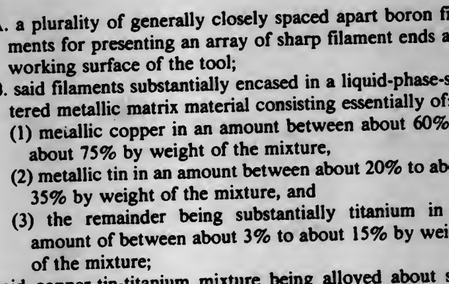
Filed Dec. 24, 1975, Ser. No. 643,992

Int. Cl.² C22C *1/09*

U.S. Cl. 75—229 **2 Claims**

1. A liquid phase sintered alloy for bonding together or to a substrate a plurality of high hardness boron filaments so as to hold the filaments in a solid, tough, metals matrix which supports and maintains the integrity of the filaments which comprises:

an alloy of a mixture of metals consisting essentially of
copper in an amount of about 68%,
tin in an amount of about 25%, and
titanium in an amount of about 7%,
all by weight of the alloy;
said alloy being produced from a slip containing about 4 parts of said metals mixture, the metals being in powdered substantially elemental form, and about 1 part of about a ½% to about 1% liquid solution of a hydrocolloid suspension agent by
preheating said slip in a non-oxidizing protective atmosphere at about 1 minute at about 600° F. to purify the slip by removing the liquid and the suspension agent therefrom;



liquid phase sintering said purified slip for about 2 minutes in a non-oxidizing protective atmosphere at from about 1500° F. to 1650° F.; and
cooling said liquid phase sintered purified slip in a non-oxidizing protective atmosphere.

4,116,689

MATERIAL AND METHOD FOR SECURING BORON FILAMENTS TO EACH OTHER AND TO A SUBSTRATE AND CUTTING TOOLS THEREFROM

William Thomas Kaarlela, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Filed Dec. 24, 1975, Ser. No. 644,005

Int. Cl.² C22C *1/09*

U.S. Cl. 75—229 **10 Claims**

1. A liquid-phase-sintered alloy for secure attachment of boron filaments to other like filaments and to metallic substrate materials so as generally to encase and fix the filaments in a tough, solid supporting alloyed metals matrix capable of maintaining the integrity of the boron filaments which consists essentially of:

(A.) metallic copper in an amount of between about 60% to about 75% copper by weight of the alloy;
(B.) metallic tin in an amount of between about 20% to about 35% by weight of the alloy; and
(C.) the remainder being essentially metallic titanium in an amount of between about 3% to about 15% by weight of the alloy;
the copper, tin and titanium being alloyed from powder form by a liquid-phase-sintering whereby the copper and titanium remain substantially unliquified.

3. A composition of matter having therein intact boron filaments surrounded along their lengths by a metal alloy to produce a boron-filament-containing tool structure comprising:

A. a plurality of generally closely spaced apart boron filaments for presenting an array of sharp filament ends at a working surface of the tool;
B. said filaments substantially encased in a liquid-phase-sintered metallic matrix material consisting essentially of:
(1) metallic copper in an amount between about 60% to about 75% by weight of the mixture,
(2) metallic tin in an amount between about 20% to about 35% by weight of the mixture, and
(3) the remainder being substantially titanium in an amount of between about 3% to about 15% by weight of the mixture;
said copper-tin-titanium mixture being alloyed about said filaments by liquid phase sintering during which the copper and titanium remain substantially unliquified to produce a composition of matter wherein the filaments are firmly held substantially undegraded in a strong, tough metallic matrix material effective to support the filaments in an end-on array of the filament ends for cutting, grinding or abrading tool operations.

4,116,690

FLUX FOR USE IN ELECTROSLAG REFINING PROCESS

Satish Vishwanath Joshi, Kokomo, Ind., and Douglas Lee Bracher, Downingtown, Pa., assignors to Lukens Steel Company, Coatesville, Pa.

Filed Jan. 21, 1977, Ser. No. 760,863

Int. Cl.² C22B *9/10*

U.S. Cl. 75—257 **3 Claims**

1. A flux used in an electroslag refining process which provides good desulfuration and substantially precludes the introduction of hydrogen into the liquid metal pool, the flux containing:

40 - 70% Calcium Fluoride (CaF_2),
15 - 35% Aluminum Oxide (Al_2O_3),
5 - 20% Bastnasite, a mixed rare-earth fluocarbonate mineral.

4,116,691

ELECTROPHOTOGRAPHIC IMAGING MEMBER OF MONOMERS HAVING PENDANT ELECTRON ACCEPTOR GROUPS

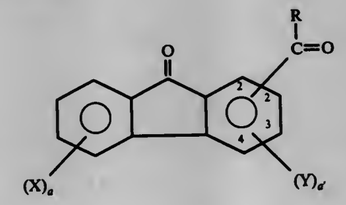
Sam R. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 596,690, Jul. 16, 1975, Pat. No. 4,062,866. This application May 23, 1977, Ser. No. 799,626

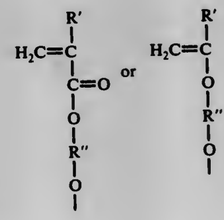
Int. Cl.² G03G *5/04, 5/09*

U.S. Cl. 96—1.5 R **2 Claims**

1. An electrophotographic imaging member comprising a conductive substrate and a photoconductive insulating layer containing a polymer comprising the product of the addition polymerization of at least one monomer represented by the structural formula



wherein R is



wherein
R′ is hydrogen or methyl;
R″ is alkyl of 1–10 carbon atoms;
X and Y are independently selected from the group consisting of NO_2, halogen and $—CF_3$; and
a and *a′* may be from 0–3.

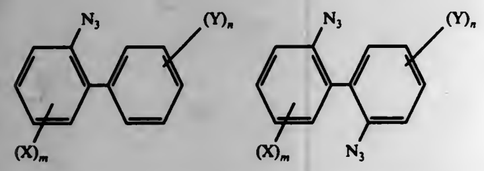
4,116,692

PHOTOGRAPHIC METHOD UTILIZING A PHOTOSENSITIVE COMPOSITION CONTAINING A 2-AZIDOBIPHENYL AND A TRIPLET SENSITIZER

Akira Yabe, Fujisawa, and Koichi Honda, Tokyo, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 11, 1977, Ser. No. 776,896
Claims priority, application Japan, Jun. 7, 1976, 51-066257
Int. Cl.² G03C *5/04, 1/58, 1/52*
U.S. Cl. 96—27 E **5 Claims**

1. A method for obtaining a stable image on a photosensitive coating of a composition containing at least a main photosensitive component, an aromatic carbonyl triplet sensitizer in a sensitizing amount triplet sensitizer and a polymer as binder, comprising forming the image on the photosensitive coating through imagewise expasing onto the coating a light of a certain wave length, followed by fixing the image through uniformly exposing the coating containing said image with a light of a wave length different from said certain wave length, said main photosensitive component comprising at least a compound selected from the group consisting of a 2-azidobiphenyl and a derivative thereof represented by the following formulas:



wherein X and Y represent the same or different substituents, *m* and *n* represent integers of 0 to 4.

4,116,693

PHOTO-IMAGING UTILIZING ALKALI-ACTIVATED PHOTOPOLYMERIZABLE COMPOSITIONS

Steven Levinos, Chatham, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Division of Ser. No. 291,851, Sep. 25, 1972, Pat. No. 4,012,256. This application Sep. 13, 1974, Ser. No. 505,720
Int. Cl.² G03C *5/00, 5/04*
U.S. Cl. 96—35.1 **3 Claims**

1. The method of forming a plurality of polymeric images at widely spaced times on a single support which comprises:

(a) providing photo-imaging material comprising a support and a coating thereon of a composition comprising:
(1) an ethylenically unsaturated polymerizable compound,
(2) a photo-initiator comprising the combination of a photo-reducible dye and an alkanolamine, and;
(3) sufficient acid to normally maintain said composition at a pH value below about 4.5, thereby rendering said material substantially insensitive to visible light;

(b) alkalizing at least a section of the coated composition of said material to render the pH value of said composition section greater than about 7.0;

(c) exposing imagewise to visible light said alkalized composition section, thereby effecting polymerization of said composition and forming a first polymeric image in light-exposed areas;

(d) fixing said polymeric image by effecting a reduction in the pH value of the alkalized section of said composition to below about 4.5; and

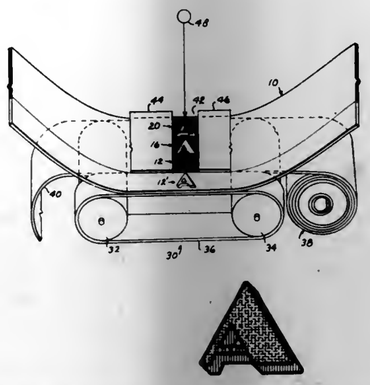
(e) thereafter repeating said alkalizing, exposing, and fixing steps to thereby effect the formation of each additional one of said plurality of images on said support.

4,116,694

COLOR SEPARATED FILM STRIP TYPE FONT

Thomas L. Byers, 3004 SE. 21, Oklahoma City, Okla. 73115

Filed Mar. 23, 1977, Ser. No. 780,631
Int. Cl.² G03C *5/04; G03B 15/00*
U.S. Cl. 96—41 **2 Claims**



1. A method of preparing a plurality of camera ready positive proof strips having printing registered type font characters and color separated components, comprising:

a. providing a positive print strip of juxtaposed characters of a complete type font;

b. preparing an overlay strip containing supplemental color printing components for each character of the type font;

c. arranging said positive print strip and each said overlay strip in a common plane in superposed spaced-apart parallel relation;

d. photographically producing a single negative photographic transparency strip containing the superposed positive print strip and each overlay strip;

e. successively contact printing an elongated message forming strip of selected characters and their respective color components of the negative transparency; and,

f. longitudinally dividing the contact printed strip to form a plurality of camera ready strips containing the selected characters and their color components, respectively.

4,116,695

METHOD OF PRODUCING A SUPPORT FOR A PRINTING PLATE

Teruo Mori, and Azusa Ohashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Continuation of Ser. No. 613,010, Sep. 12, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 787,119
Claims priority, application Japan, Sep. 12, 1974, 49-105291
Int. Cl.² G03C *1/94; G03F 7/02*
U.S. Cl. 96—86 P **21 Claims**

1. A method of producing a printing plate which comprises:

a. oxidizing an aluminum plate by anodizing;

b. etching the resulting oxidized aluminum plate;

c. treating the oxidized, etched aluminum plate with hot water at about 70° C. to 130° C. or with water vapor to form a printing plate support;

d. applying an unexposed photosensitive material in layer form to the product of step (c), whereby undesirable increased adhesion between the printing plate support and the photosensitive material with the passage of time is minimized.

4,116,696

PHOTOGRAPHIC MATERIAL

Sumitaka Tatsuta; Masuhiko Hirose, and Hiroshi Amari, all of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 547,682, Feb. 6, 1975, abandoned. This application Dec. 6, 1976, Ser. No. 748,030
Claims priority, application Japan, Feb. 6, 1974, 49-15107; United Kingdom, Feb. 5, 1975, 4972/75; Fed. Rep. of Germany, Feb. 6, 1975, 2505017
Int. Cl.² G03C *1/80*
U.S. Cl. 96—87 R **11 Claims**

1. A photographic material comprising a hydrophobic support having a subbing layer comprised of a hydrophilic resin adjacent thereto and at least one hydrophilic photographic layer on said subbing layer, wherein said subbing layer contains droplets of a non-volatile or low volatile hydrophobic liquid having a boiling point above 120° C, a solubility in water of about 10g/100g water, at 25° C, or less and not completely miscible with the subbing layer, said droplets having a diameter of between about 0.01 and 1 micron and less than the thickness of said subbing layer and being present in an amount of from 1/5 to 3 times by volume to the volume of the subbing layer resin on a dry basis.

11. A photographic material comprising a hydrophobic support having a subbing layer comprised of a hydrophilic resin adjacent thereto and at least one hydrophilic photographic layer on said subbing layer, wherein said subbing layer contains droplets consisting essentially of a non-volatile or low volatile hydrophobic liquid having a boiling point above 120° C, a solubility in water of about 10g/100g water, at 25° C, or less and not completely miscible with the subbing layer, said droplets having a diameter of between about 0.01 and 1 micron and less than the thickness of said subbing layer and being present in an amount of from 1/5 to 3 times by volume to the volume of the subbing layer resin on a dry basis.

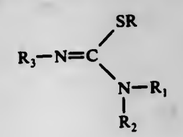
4,116,697

SULFUR-SUBSTITUTED ISOTHIOUREAS IN SILVER HALIDE EMULSIONS

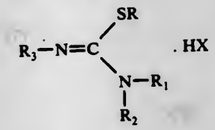
John Howard Bigelow, Rochester, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 751,586, Dec. 17, 1976, abandoned. This application Jan. 20, 1978, Ser. No. 871,114
Int. Cl.² G03C *1/06, 1/28*
U.S. Cl. 96—95 **10 Claims**

1. A light-sensitive silver halide photographic element comprising a support coated with a silver halide emulsion containing a sulfur-substituted isothiourea of the formula:

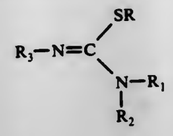


or its hydrohalide salt having the formula

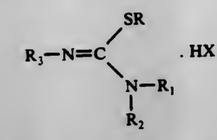


where R, R_1, R_2, and R_3 are each selected from the group consisting of alkyl, aryl, hetero, substituted alkyl, and substituted aryl, and wherein R_1 may optionally represent H, and X is iodine or chlorine, said isothiourea or its salt being employed in an amount sufficient to increase the Dmax and contrast of the silver halide emulsion.

9. A light-sensitive silver halide photographic element comprising a support coated with a silver halide emulsion containing a sulfur-substituted isothiourea of the formula:



or its hydrohalide salt having the formula



wherein R is selected from the group consisting of alkyl, aryl, and substituted aryl; R_1, R_2, and R_3 are each selected from the group consisting of alkyl, aryl, hetero, substituted alkyl, and substitued aryl, and wherein R_1 may optionally represent H, and wherein R_2 and R_3 may form a ring of two or more $>CH_2$ groups in which one or more of the H atoms may be substituted by R, and wherein X is iodine or chlorine, said isothiourea or its salt being employed in an amount sufficient to increase the Dmax and contrast of the silver halide emulsion.

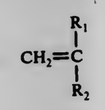
4,116,698

FERROCYANATE TREATING LIQUID FOR OFFSET MASTER

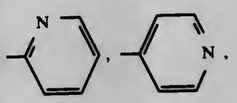
Hazime Machida; Hiroshi Tamura, and Kakuji Murakami, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 749,385, Dec. 10, 1976, abandoned. This application Sep. 23, 1977, Ser. No. 836,055
Claims priority, application Japan, Dec. 19, 1975, 50-150537
Int. Cl.² C09D *5/20; C09K 3/00; G03G 13/00*
U.S. Cl. 106—2 **10 Claims**

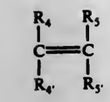
1. A liquid for treating offset masters which consists essentially of an aqueous solution containing more than 0.2 percent by weight of water-soluble ferrocyanate, from 0.1 to 12.0 percent by weight of water-soluble phosphate and from 0.1 to 10 percent by weight of at least one hydrophilic resin selected from the group consisting of (1) homopolymers of monomers having the formula I, (2) copolymers of different monomers having the formula I and (3) copolymers of monomer having the formula I and monomer having the formula II, wherein each of (1), (2) and (3) has a degree of polymerization of from 10 to 1000:



wherein R_1 is —H or $—CH_3$, and R_2 is $—CONH_2$, $—CONHR_3$, $—CON(R_3)_2$, $—CONHCH_2OH$,



$—COO(CH_2)_2N(CH_3)_2$ or $—COO(CH_2)_2N(C_2H_5)_2$, and R_3 is alkyl having 1 to 8 carbon atoms;



wherein R_4 and $R_{4'}$ are —H, —CH_3, —COOH, —$COOR_6$ or —COOMe; R_5 and $R_{5'}$ are —H, —CH_3, —COOH, —$COOR_6$, —COOMe or —CH_2COOH, R_6 is —CH_3 or —C_2H_5 and Me is Mg, Ba, Ca, Co, Mn, Fe, Ni or Zn, with the provisos that when R_4 and $R_{4'}$ are the same, R_5 is not the same as R_5, and that when R_4 is not the same as $R_{4'}$, R_5 can be the same as or different from $R_{5'}$.

4,116,699

ALUMINIUM POLISHING COMPOSITIONS

Terence R. Rooney, Bromsgrove, England, assignor to Albright & Wilson Ltd., Warley, England

Filed Oct. 18, 1976, Ser. No. 733,508

Claims priority, application United Kingdom, Oct. 20, 1975, 42902/75

Int. Cl.² C09K *13/06*

U.S. Cl. 106—3 **11 Claims**

1. An aluminum polishing solution consisting essentially of
(a) phosphoric and sulphuric acid in a relative proportion of from 1.5:1 to 1:1.5, measured as 40 percent P_2O_5 phosphoric acid and 98 percent sulphuric acid and together constituting at least 90 percent of the total composition;
(b) nitric acid in a proportion by weight of from 1.2 to 4.2 percent as 100 percent nitric acid;
(c) dissolved copper in a concentration of from 0.01 to 0.2 percent by weight;
(d) dissolved aluminum in a concentration of between zero and saturation;
(e) from 0.05 percent to 0.7 percent by weight of an organic etch inhibitor which is a bath soluble organic compound having an aromatic ring selected from the group consisting of benzene, naphthalene, benzoquinone, pyridine, pyrazine, and melamine rings and at least 2 hetero atoms selected from the group constituting nitrogen oxygen and sulphur atoms conjugated with said aromatic ring; and
(f) the balance substantially of water.

4,116,700

PROCESS FOR HARDENING PHOTOGRAPHIC LAYERS

Wolfgang Himmelmann, Leverkusen, Germany, assignor to AGFA-Gevaert, A.G., Leverkusen-Bayerwerk, Germany

Filed Apr. 11, 1977, Ser. No. 786,470

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616376

Int. Cl.² G03C *1/30*

U.S. Cl. 96—111 **10 Claims**

1. A process of hardening a layer containing protein in a photographic material having at least one layer containing a light sensitive silver halide comprising incorporating a hardening amount of a hardener in the layer to be hardened
wherein the improvement comprises the hardener is partially hydrolyzed bis(dichlorotriazin-2-yl)-alkylamines or -arylamines.

4,116,701

METAL CORROSION INHIBITOR

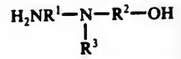
Alvin J. Conner, Sr., P.O. Box 8118, New Orleans, La. 70182

Filed Mar. 8, 1977, Ser. No. 775,425

Int. Cl.² C09D *5/08*

U.S. Cl. 106—14.14 **5 Claims**

1. A volatile metal corrosion inhibitor prepared by adding to water, by weight:
(a) 5–12 parts of an alkali metal nitrite;
(b) 2–6 parts of ammonium benzoate;
(c) 4–10 parts of an alkylalkanolamine of the formula:



where R^1 and R^2 are independently alkylidene of 1–4 carbon atoms and R^3 is hydrogen or alkyl of 1–4 carbon atoms, and
(d) 4–10 parts of a nitrogenous base selected from the group consisting of diamides of the formula:

$(R)_2NCON(R)_2$

where R is independently hydrogen or alkyl of 1–6 carbon atoms; carbamates, guanidine and diguanidine; the total amount of (a)–(d) and water being 100 parts and the total amount of (a), (b), (c) and (d) being not greater than 25 parts per said 100 parts.

4,116,702

AGENT FOR FLAME PROOFING SYNTHETIC FIBROUS MATERIAL

Peter Rohringer, Basel; Frank Lohmann, Arlesheim, and Rudolf F. Wurster, Pfeffingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 532,448, Dec. 13, 1974, abandoned. This application Sep. 15, 1976, Ser. No. 723,279

Int. Cl.² C09D *5/18*

U.S. Cl. 106—15 FP **4 Claims**

1. A flameproofing agent consisting essentially of 200 to 700 g/kg of a 1,2,5,6,9,10-hexabromocyclododecane (b) 0.1 to 300 g/kg of a dispersant selected from the group consisting of lignin sulphonates, ethyleneoxy adducts of alkylphenols, fatty amines, fatty alcohols or fatty acids, aromatic sulphonic acids or condensation products thereof with formaldehyde, saturated aliphatic dicarboxylic acids with long-chain alkyl radicals, sulphated substituted benzimidazoles or sulphonated fatty acid amides, (c) 0 to 30 g/kg of a protective colloid selected from the group consisting of polyvinyl alcohol, hydroxyethyl cellulose or carboxymethyl cellulose, and (d) water in order to bulk the flameproofing agent to 1 kg, said flameproofing agent being present in form of an aqueous dispersion, whose particles have an average diameter of 1 to 30 μ.

4,116,703

COMPOSITE FOAMABLE CEMENTS

John L. Stempin, Beaver Dams, and Dale R. Wexell, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 30, 1977, Ser. No. 838,088

Int. Cl.² C04B *7/02*

U.S. Cl. 106—75 **7 Claims**

1. An inorganic cement mixture, capable of being foamed, and consisting essentially of, in percent by weight, 8–20% crystalline hydraulic cement, 22–35% of a hydraulic cement in the form of a silicate glass powder, and 45–70% of quaternary ammonium silicate solution.

4,116,704

COLORED GLASSWARE

David C. Boyd; James E. Flannery; David W. Morgan, all of Corning; Sara E. Rosplock, Campbell, and Stella A. Sczerbaniewicz, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 809,325, Jun. 23, 1977, abandoned. This application Feb. 6, 1978, Ser. No. 875,200

Int. Cl.² C03C *3/08*

U.S. Cl. 106—54 **3 Claims**

1. A clear, light gray-brown glass exhibiting a spectral transmittance curve approximating that set forth in FIG. 6, FIG. 8, and FIG. 9 having a composition consisting essentially, in parts by weight on the oxide basis, of about 4.7–5.15 Na_2O, 2–2.21 Al_2O_3, 12.35–14.16 B_2O_3, 78.0–80.0 SiO_2, 0.001–0.006 Co_3O_4, 0.037–0.055 NiO, and 0.21–0.6 MnO_2.

4,116,705

DETOXIFICATION

Christopher Lee Chappell, Sale, England, assignor to Stablex AG, Zug, Switzerland

Continuation of Ser. No. 474,754, May 30, 1974, abandoned. This application Jun. 14, 1976, Ser. No. 695,670

Claims priority, application United Kingdom, Jun. 1, 1973, 26201/73

Int. Cl.² C04B *7/02*

U.S. Cl. 106—90 **9 Claims**

1. A process for detoxifying a hazardous essentially liquid waste which process comprises forming a flowable essentially aqueous slurry containing at least 20% water by mixing with the said waste while in essentially liquid form a material comprising Portland cement powder and an aluminum silicate powder or alumino-silicate powder or a mixture of said powders, said slurry thereafter setting into a detoxified frigid rock-like mass.

4,116,706

ADDITIVE COMPOSITION FOR HYDRAULIC CEMENT COMPOSITIONS

Robert W. Previte, Lawrence, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Jul. 1, 1977, Ser. No. 812,211

Int. Cl.² C04B *7/35*

U.S. Cl. 106—90 **27 Claims**

1. A set-accelerating, compressive strength-enhancing additive composition for hydraulic cement compositions, said additive composition consisting essentially of (a) a major amount of a chloride, formate or nitrite salt set-acclerating agent or mixture thereof, (b) from about 1 to about 6 percent by weight of an amine, and (c) from about 0.15 to about 3 percent by weight of a synthetic surface active agent having the following characteristics:
(1) a cloud point as defined herein not exceeding about 80° centigrade; and (2) a mechanically-induced agitated foam height as defined herein of less than about 30 millimeters.

4,116,707

RAW MIXTURE FOR PRODUCING REFRACTORY ALUMINOUS CEMENT

Pavel Alexandrovich Oborin, Chilanzar, kvartal 8, 34, kv. 44; Anatoly Yakovlevich Gadaev, kvartal TS-5, 41, kv. 24; Marsel Yanovich Bikbau, massiv Junus-Abad, B-2, 21, kv. 58; Boris Izrailovich Nudelman, Chilanzar, kvartal 8, 27, kv. 48; Irina Zelmanovna Aronova, kvartal TS-6, 96, kv. 18; Nail Yakubovich Bulatov, Chilanzar, kvartal 10, 19, kv. 31, and Lev Matveevich Sosenko, Chilanzar, kvartal 23, 69, kv. 4, all of Tashkent, U.S.S.R.

Filed May 2, 1977, Ser. No. 792,914

Int. Cl.² C04B *7/32*

U.S. Cl. 106—104 **6 Claims**

1. A raw mixture for the production of a refractory aluminous cement consisting of a basic component selected from the group consisting of barium carbonate and strontium carbonate, an acidic component selected from the group consisting of alumina and a mixture of alumina with zirconia in a ratio of from 1:14 to 5:1 respectively, and a chloride of at least one of the metals selected from the group consisting of barium, strontium, sodium, potassium; said components being contained in the following proportions percent by mass:

basic component	40 to 62
chlorides of said metals	5 to 20
acidic component	the balance.

4,116,708

ASPHALT COATING COMPOSITIONS

Gilbert W. Tarver, and Russell E. Koons, both of El Dorado, Ark., assignors to Lion Oil Company, Los Angeles, Calif.

Filed Sep. 4, 1975, Ser. No. 610,456

Int. Cl.² C08K *3/26, 3/36, 3/40; C08L 95/00*

U.S. Cl. 106—281 R **4 Claims**

2. A composition comprising about 80% to about 95%, by weight, of inert mineral filler, and, from about 5% to about 20%, by weight, of an asphalt blend consisting essentially of about 70 to about 92 parts by weight of an air-blown, solvent extracted asphalt having a penetration of about 0 to 7, and a softening point of about 200° to about 250° F., and, correspondingly, about 8 to about 30 parts by weight of a non-air-blown, solvent extracted asphalt having a penetration of about 40 to about 150, and a softening point of about 105° to about 130° F., said blend having a penetration of about 7 to about 15, a softening point of about 200° to about 220° F., and a ductility of at least about 2.5 cm.

4,116,709

PATCH MATERIAL FOR CHUCK HOLES IN PAVEMENT

Michael Donald La Bate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Nov. 3, 1976, Ser. No. 738,617

Int. Cl.² C08L *95/00; C09D 3/24*

U.S. Cl. 106—284 **5 Claims**

1. A metal producing material for filling chuck holes in pavements consisting of a mixture comprising between about 10% and 20% pitch, between about 20% and 25% refractory particles, and exothermic materials which comprise between about 37% and 60% iron scale and between about 10% and 18% aluminum particles, the iron scale and aluminum particles being present in amounts sufficient to form an exothermic reaction when ignited to melt the iron in the scale and form a molten liquid which includes the refractory particles therein.

4,116,710

METALLIC PARTICULATE

Henrik R. Heikel, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 409,356, Oct. 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 315,170, Dec. 14, 1972, abandoned. This application Feb. 5, 1975, Ser. No. 547,146

Int. Cl.² C04B *31/18*

U.S. Cl. 106—290 **21 Claims**

1. A method comprising providing a substrate with a coating on at least a portion of the substrate, the coating consisting essentially of an about 200 to about 600 angstrom thick vapor deposited metal layer, dissolving the substrate to separate at least a portion of the coating from the substrate to provide a plurality of generally separate irregularly shaped metal platelets with a largest dimension up to about 5000 microns, and introducing the metal platelets into a carrier suitable for use in a coating composition.

4,116,711

NON-DUSTING COLORING AGENT AND METHOD OF MANUFACTURE

Fitzhugh Lee Avera, 1809 Yale Dr., Alameda, Calif. 94501

Continuation-in-part of Ser. No. 590,420, Jun. 26, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,076

Int. Cl.² C09C *3/08*

U.S. Cl. 106—309 **10 Claims**

1. A process for forming a finely divided pigment into relatively larger particles by means of an organic pigment binder, said process comprising the following steps:
(a) dissolving about 2–20% by weight of a hexahydric alcohol of the formula $CH_2OH(CHOH)_4CH_2OH$ having a melting point within the range of 60°–200° C. in an aqueous carrier medium, the amount of water in said aqueous carrier medium being sufficient to provide at least 100

parts by weight of water per 21.3 parts by weight of hexahydric alcohol dissolved in said aqueous medium;
(b) dispersing 80–98% by weight of finely divided pigment in said hexahydric alcohol-aqueous medium, whereby a castable blend comprising said pigment, said hexahydric alcohol, and water is obtained, the amount of water being at least 40 parts by weight per hundred parts by weight of said pigment;
(c) casting a continuous wet layer of said blend formed in step (b) onto a substrate to form a continuous wet layer of 0.1–5 millimeters in thickness;
(d) heating said wet layer to a temperature in excess of 100° C., said temperature being selected such that, when said temperature is reached and thereafter lowered, said hexahydric alcohol will come out of solution to form a solid hexahydric alcohol matrix containing therein said pigment in suspension, said exposure to temperatures in excess of 100° C. being sufficient to assure that said matrix contains less than 0.5% chemically unassociated water by weight;
(e) removing the resulting coherent dried layer from said substrate; and
(f) comminuting said coherent dried layer to form generally flake-like particles with a thickness less than that of said continuous wet layer.

4,116,712
SOLVENT REFINING OF SUGAR
Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201
Filed Sep. 6, 1977, Ser. No. 830,578
Int. Cl.² C13D *1/14*
U.S. Cl. 127—46 R **19 Claims**

1. In the process of removing impurities from an original mixture with sugar and from 0.2% to 45% water, the steps comprising:
(a) counter current contacting said water-sugar mixture with a solvent mixture comprising acetone and a second liquid selected from the group consisting of ethanol and acetic acid;
(b) transferring by said counter current contacting said impurities from said original sugar-water mixture to said solvent mixture, and some part of said solvent mixture to said sugar-water mixture;
(c) removing from said counter current contacting operation a second sugar-water mixture containing less of said impurities than was present in said original sugar-water mixture, and some part of said solvent mixture;
(d) separating off for reuse said solvent mixture from said second sugar-water mixture containing less of said impurities;
(e) removing from said counter current contacting operation a solvent-extract liquid containing said solvent mixture and said impurities removed from said original sugar-water mixture; and
(f) evaporating off for reuse said solvent mixture from said solvent-extract liquid, thereby producing a first solvent-extract molasses containing said impurities.

4,116,713
ACID CLEANER AND PROCESS FOR DISPOSAL THEREOF
Joseph V. Otrhalek, Dearborn; Gilbert S. Gomes, Southgate, and Robert E. Gansser, Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
Division of Ser. No. 677,554, Apr. 16, 1976, Pat. No. 4,032,466. This application May 26, 1977, Ser. No. 800,995
Int. Cl.² B08B *3/08*
U.S. Cl. 134—3 **4 Claims**

1. In a process for cleaning heavy vehicles and the like comprising the step of contacting the vehicle with an acid cleaning composition consisting essentially of a concentrated composition diluted with from 1 to 9 parts of water per part of concentrate, said concentrated composition consisting essentially of
(1) an aqueous inorganic acid in an amount from about 5 to about 78 weight percent,
(2) an organic acid selected from the group consisting of oxalic, tartaric, citric acid and mixtures thereof in an amount from about 1 to about 6 weight percent,
(3) a nonionic surfactant in an amount from about 7 to about 23 weight percent,
(4) an anionic surfactant in an amount from about 1 to about 7 weight percent, and
(5) water in an amount from about 75 to about 12 weight percent; all weight percents being based on the total concentrated composition, provided that the said nonionic surfactant and the said anionic surfactant when taken together constitute from about 10 to about 30 weight percent of said concentrated composition and said nonionic surfactant constitutes from about 75 to about 90 weight percent of the combined weight percent of nonionic and anionic surfactants;
the improvement comprising the steps of adding to said concentrated composition from about 1 to about 12 percent by weight of the total concentrated composition of a flocculating agent containing bivalent iron, trivalent iron or trivalent aluminum in soluble form in acid solution prior to the step of contacting the vehicle with the acid cleaning composition, and after using the acid cleaning composition to clean the vehicle, raising the pH of the used cleaning composition an amount sufficient to generate hydroxide flocs from the flocculating agent present.

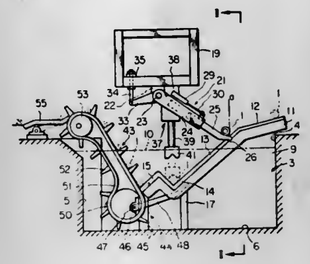
4,116,714
POST-POLISHING SEMICONDUCTOR SURFACE CLEANING PROCESS
Jagtar Singh Basi, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 15, 1977, Ser. No. 824,382
Int. Cl.² B08B *3/08*
U.S. Cl. 134—3 **8 Claims**

1. In a method for cleaning a semiconductor surface following polishing of said surface with a polishing slurry containing a colloidal silica abrasive, the improvement comprising removing silica residue by contacting the surface with an aqueous phosphoric acid solution containing about 10 to 50 percent by weight phosphoric acid at a temperature of about 20° to 30° C. and then removing the solution from said surface.

4,116,715
METHOD FOR REMOVING PHOTOPOLYMERS FROM METAL SUBSTRATES
Frank J. Smiggen, 350 Glenview Dr., #14, San Francisco, Calif. 94131; Devitt S. Burry, 311 Corbett #8, San Francisco, Calif. 94114; Joseph Kallaby, 350 Glenview Dr. #10, San Francisco, Calif. 94131, and Wayne H. Goltz, 1516 NE. 26th St., Wilton Manors, Fla. 33308
Filed Jul. 18, 1977, Ser. No. 816,446
Int. Cl.² B08B *1/00, 3/10*
U.S. Cl. 134—6 **6 Claims**

1. A method of completely removing a developed photopolymer layer from a support substrate of a photopolymer printing plate, said layer comprising developed photopolymer polymerized by photoinitiation from at least one water-soluble ethylenic monomer and a water-soluble polymer having both acetyl and hydroxy functional groups, said method consisting essentially of immersing the developed photopolymer plate layer in a bath consisting essentially of boiling water for sufficient time to swell the layer and then scraping the swollen layer from the substrate.

4,116,716
IMMERSION COOLING APPARATUS FOR HOT METAL PIPES
Kametaro Itoh; Wataru Takahashi; Yoshun Yamamoto, and Hachiro Harajiri, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Mar. 14, 1977, Ser. No. 777,547
Claims priority, Application, Japan, Dec. 29, 1976, 51–160719
Int. Cl.² B08B *9/02*
U.S. Cl. 134—134 **8 Claims**

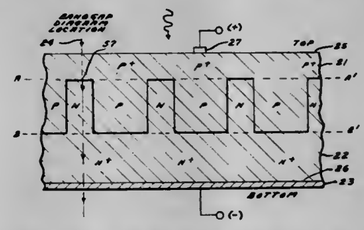


1. An immersion cooling apparatus for hot metal pipes comprising:
a cooling tank for containing a body of cooling liquid in which the pipes are to be immersed for cooling;
a plurality of skids extending from outside of the cooling tank downwardly into the cooling tank to a level below the level of the surface of the cooling liquid and being spaced in the direction of the length of the cooling tank for guiding the pipe into the tank along the skids;
pipe supporting means in the tank at the lower end of said skids for supporting a pipe thereon;
a pipe leveling means having pipe holding members which cross said skids and means on which said holding members are mounted for moving said holding members for causing a pipe moving downwardly along the skids into the tank to remain in a horizontal position;
a cooling liquid nozzle in said tank aligned with the position of the axis of a pipe supported in said pipe supporting means and spaced from the adjacent end of a pipe supported in said pipe supporting means for injecting cooling liquid into the pipe, the space between the end of said cooling liquid nozzle and the position of the end of the pipe being such that cooling liquid around the end of a pipe will be sucked into the pipe and discharged from the other end of the pipe by the jet from the cooling liquid nozzle; and
a source of cooling liquid under pressure connected to the cooling liquid nozzle for supplying cooling liquid to the cooling liquid nozzle.

4,116,717
ION IMPLANTED EUTECTIC GALLIUM ARSENIDE SOLAR CELL
William P. Rahilly, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 8, 1976, Ser. No. 748,584
Int. Cl.² H01L *31/06*
U.S. Cl. 136—89 SJ **3 Claims**

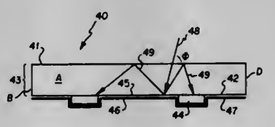
1. A solar cell comprising:
a. a wafer formed of a crystal of eutectic gallium arsenide having a plurality of alternating P and N doped regions forming a plurality of vertical PN junctions between a top and a bottom surface thereof;
b. a P+ region formed by multiple ion implantation into the said top surface of at least three P dopant implantation shots of progressively larger and larger ion doses with correspondingly lower and lower implant energies whereby the location of the maximum dopant density is substantially at the said top surface, and pulsed electron beam annealed;
c. an N+ region formed by multiple ion implantation into the said bottom surface of at least three N dopant implantation shots of progressively larger and larger ion doses with correspondingly lower and lower implant energies whereby the location of the maximum dopant density is substantially at the said bottom surface, and pulsed electron beam annealed;
d. a metallization contact positioned on the P+ region formed on said top surface;
e. a metallization contact positioned on the N+ region formed on said bottom surface.

3. The method of forming a solar cell on a wafer of eutectic gallium arsenide having a plurality of vertical PN junctions formed between a top surface and a bottom surface there of comprising the steps of:
a. implanting, using at least three implant steps, a P-type impurity in said top surface by implanting progressively



larger and larger implantation doses over the range of approximately 10^{14} ions/cm² to 10^{16} ions/cm² with correspondingly lower and lower energy levels over the range of approximately 50 kev to 5 kev, providing a maximum dopant density of P+ atoms substantially at the said top surface;
b. implanting, using at least three implant steps, an N-type impurity in said bottom surface by implanting progressively larger and larger implantation doses over the range of approximately 10^{14} ions/cm² to 10^{16} ions/cm² with correspondingly lower and lower energy levels over the range of approximately 50 kev to 5 kev, providing a maximum dopant density of N+ atoms substantially at the said bottom surface;
c. annealing the said top and bottom surfaces with a pulsed electron beam;
d. metallizing a contact to the P+ region formed on said top surface; and
e. metallizing a contact to the N+ region formed on said bottom surface.

4,116,718
PHOTOVOLTAIC ARRAY INCLUDING LIGHT DIFFUSER
John W. Yerkes, Granada Hills, and James E. Avery, Burbank, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Mar. 9, 1978, Ser. No. 884,861
Int. Cl.² H01L *31/04*
U.S. Cl. 136—89 PC **24 Claims**



1. A photovoltaic array comprising a light transmitting

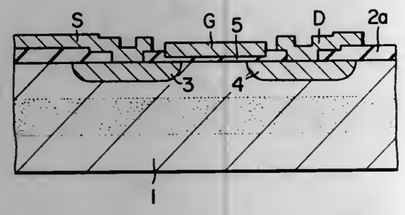
member having at least one pair of opposed essentially parallel sides, each of said sides being joined by an edge face, a plurality of photovoltaic cells adapted to receive radiation transmitted through said member carried on at least one of said sides, said cells having interstices therebetween, and a light diffusive member on said at least one side covering at least part of said interstices whereby at least a part of the light internally reflected by said diffusive member is caused to impinge on said photovoltaic cells, thereby increasing photovoltaic conversion efficiency.

4,116,719

METHOD OF MAKING SEMICONDUCTOR DEVICE WITH PN JUNCTION IN STACKING-FAULT FREE ZONE

Hirofumi Shimizu, Kodaira; Akira Yoshinaka, Hamuramachi, and Yoshimitsu Sagita, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 8, 1977, Ser. No. 766,727
Claims priority, application Japan, Feb. 12, 1976, 51-13234
Int. Cl.² H01L 7/52, 11/14
U.S. Cl. 148—1.5 **13 Claims**



1. A method of making a semiconductor device with a PN junction, comprising the steps of:

forming an oxidized layer on a major surface of a silicon semiconductor wafer by high temperature oxidation to produce stacking faults in the silicon semiconductor wafer;

annealing the silicon semiconductor wafer containing the stacking faults in a non-oxidizing atmosphere for a predetermined time and at a predetermined temperature effective to produce at least a zone of the silicon semiconductor wafer having a predetermined depth from said major surface substantially free from the stacking faults, thereby forming a stacking fault free zone having the predetermined depth; and

forming a PN junction having a depth shallower than said predetermined depth of said zone from said major surface in said zone of the silicon semiconductor wafer.

4,116,720

METHOD OF MAKING A V-MOS FIELD EFFECT TRANSISTOR FOR A DYNAMIC MEMORY CELL HAVING IMPROVED CAPACITANCE

Mark Alexander Vinson, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 27, 1977, Ser. No. 864,247
Int. Cl.² H01L 27/04, 29/78, 21/265
U.S. Cl. 148—1.5 **10 Claims**

4. A method of forming a field effect transistor comprising the steps of:

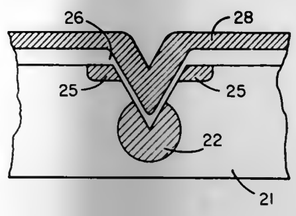
forming a masking layer over the surface of a crystalline substrate;

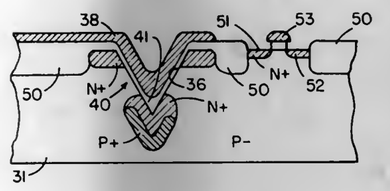
opening an aperture in said masking layer to expose said surface of said substrate;

applying an etchant to said exposed substrate to form a V-shaped recess in said substrate so that the recess is wider at said substrate surface than the aperture in said masking layer;

accellerating first ions of one conductivity type through said aperture in said masking layer for implantation in said substrate around the lower portion of said V-shaped recess;

subjecting said substrate to a thermal cycle to cause said first ions to diffuse inwardly into said substrate; and





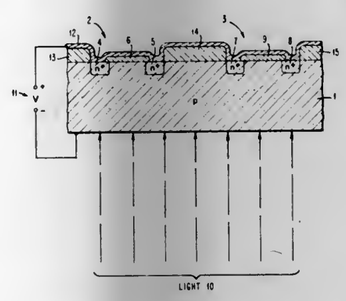
accellerating second ions of a second conductivity type through said aperture in said masking layer for implantation in said substrate around the lower portion of said V-shaped recess.

4,116,721

GATE CHARGE NEUTRALIZATION FOR INSULATED GATE FIELD-EFFECT TRANSISTORS

Tak Hung Ning, Yorktown Heights; Carlton Morris Osburn, Croton-on-Hudson, and Hwa Nien Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,563
Int. Cl.² H01L 7/54, 21/265
U.S. Cl. 148—1.5 **7 Claims**



1. In the fabrication of arrays of insulating gate field-effect transistors the improvement comprising:

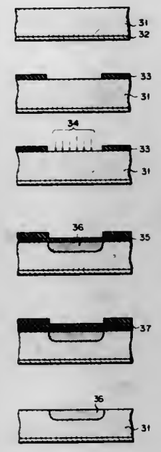
irradiating the substrate from the side opposite to the side on which the array is formed with light in a frequency range from the visible through the infrared while a voltage bias is maintained across the interface of the substrate and the oxide associated with each device in the array.

4,116,722

METHOD FOR MANUFACTURING COMPOUND SEMICONDUCTOR DEVICES

Kiyoo Kamei, Yokohama; Toshiaki Ikoma, Tokyo; Hirokuni Tokuda, Kawasaki, and Jeffrey Frey, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Tokyo and Toshiaki Ikoma, Kawasaki, both of, Japan

Filed Aug. 18, 1977, Ser. No. 825,717
Claims priority, application Japan, Feb. 24, 1977, 52-18721
Int. Cl.² H01L 21/26
U.S. Cl. 148—1.5 **6 Claims**



1. A method for manufacturing a semiconductor device comprising a step of preparing a compound semiconductor body, forming an oxidized film on a surface of said body by oxidizing said surface, heating said body with said oxidized film formed thereon, and forming an anodized film including said oxidized film on the surface of said body by anodizing said surface.

4,116,723

HEAT TREATED SUPERALLOY SINGLE CRYSTAL ARTICLE AND PROCESS

Maurice L. Gell, and David N. Duhl, both of Newington, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 17, 1976, Ser. No. 742,967
Int. Cl.² C22F 1/10
U.S. Cl. 148—3 **7 Claims**



7. A method for producing nickel base superalloy single crystal articles which have a homogeneous microstructure and in which the gamma prime phase presents a refined morphology, including the steps of:

a. providing a mass of nickel base superalloy material which is free from intentional additions of a cobalt, carbon, boron, and zirconium; and which consists essentially of from about 5 to 18% chromium; at least 5% of an element chosen from the group consisting of from 2 to 8% aluminum and from 1 to 5% titanium and mixture thereof; at least 5% of an element chosen from the group consisting of up to 10% molybdenum, up to 15% tungsten, up to 12% tantalum, up to 3% columbium, up to 3.5% hafnium, up to 7% rhenium, and mixtures thereof; balance essentially nickel,

b. melting the nickel base superalloy and solidifying the alloy under conditions of unidirectional heat flow so as to produce a single crystal article having a microstructure which consists essentially of gamma prime particles in a gamma prime matrix, with the gamma prime particles having a particle size of about 1.5 microns, said article having an incipient melting temperature, in excess of about 2300° F., as a result of the absence of carbon, boron and zirconium, and a gamma prime solvus temperature, which is less than the incipient melting temperature, said microstructure being free of MC type carbides as a result of the absence of carbon and free from TCP phases, as a result of the absence of cobalt,

c. heating the article to a temperature greater than the gamma prime solvus temperature and less than the incipient melting temperature for a period of time sufficient to dissolve substantially all of the gamma prime phase into solid solution while simultaneously homogenizing the microstructure,

d. heating the article at a temperature below the gamma prime solvus for a period of time sufficient to reprecipitate the gamma prime phase in refined form,

whereby the reprecipitated gamma prime phase has a particle size of less than about 0.5 microns and the heat treated single crystal article has a temperature advantage of at least 30° F. over non-heat treated articles.

4,116,724

METHOD OF HEAT TREATING COBALT-CHROMIUM-MOLYBDENUM BASED ALLOY AND PRODUCT

Dieter Hirschfeld, and Manfred Müller, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Fed. Rep. of Germany

Filed May 10, 1977, Ser. No. 795,526
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621789
Int. Cl.² C22F 1/10
U.S. Cl. 148—3 **10 Claims**

8. A method for heat treating a cast alloy consisting essentially of by weight 20 to 40% chromium, 2 to 12% molybdenum, up to 2% silicon, up to 5% manganese, up to 1% carbon, 0.1 to 1% nitrogen, and the remainder cobalt and the usual impurities inherent to the manufacturing process, comprising: subjecting the alloy to a heat treatment to homogenize the lattice of the alloy, and then rapidly quenching the alloy in order to prevent reformation of deposits in the lattice.

4,116,725

HEAT TREATMENT OF CADMIUM MERCURY TELLURIDE AND PRODUCT

Harry H. Shimizu, Trail, Canada, assignor to Cominco Ltd., Trail, Canada

Filed Aug. 30, 1976, Ser. No. 718,636
Claims priority, application Canada, Jun. 11, 1976, 254698
Int. Cl.² C22F 1/02
U.S. Cl. 148—20.3 **11 Claims**

1. A method for improving carrier lifetime of and reducing resistivity differences in n-type cadmium mercury telluride homogeneous single crystal material which includes subjecting single crystal cadmium mercury telluride represented by the formula $Cd_xHg_{1-x}Te$ wherein x has values in the range of 0.17 to 0.40 to heat treatment at a temperature in the range of 200° to 400° C. in the conjoint presence of tellurium and mercury and maintaining the temperature of the cadmium mercury

telluride in the range of from about 5° to about 40° C. above the temperatures of the tellurium and the mercury.

4,116,726

AS-CAST PERMANENT MAGNET SM-CO-CU MATERIAL WITH IRON, PRODUCED BY ANNEALING AND RAPID QUENCHING

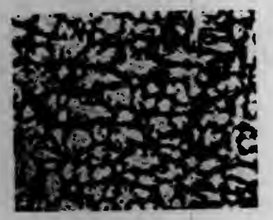
Anton Menth; Anthony J. Perry, both of Nussbaumen, and Ulrich Spinner, Aeugst, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Division of Ser. No. 637,057, Dec. 2, 1975. This application Jun. 27, 1977, Ser. No. 810,673

Claims priority, application Switzerland, Dec. 18, 1974, 16878/74

Int. Cl.² H01F *1/08, 1/22, 7/02*

U.S. Cl. 148—31.57 3 Claims



1. A permanent-magnet material characterized by a matrix comprising statistically oriented, single crystal grains wherein each grain is an aligned permanent magnet and having the composition $Sm(Co_{1-x-y}Fe_xCu_y)_z$, wherein $0 < x < 0.2$, $0.1 < y < 0.3$ and $6.5 < z < 7.5$, prepared by a process comprising melting together said elements in amounts according to said composition, solidifying the melt by slowly cooling said melt, annealing the alloy of the melted-together elements at temperatures between 1150° and 1250° C, subsequently rapidly quenching said alloy, and further annealing said alloy at temperatures between 750° and 850° C.

4,116,727

MAGNETICAL SOFT ALLOYS WITH GOOD MECHANICAL PROPERTIES

Rodney Victor Major, Crawley, England, assignor to Telcon Metals Limited, Sussex, England

Continuation-in-part of Ser. No. 661,271, Feb. 25, 1976, abandoned. This application May 3, 1977, Ser. No. 793,246

Claims priority, application United Kingdom, Mar. 4, 1975, 8948/75

Int. Cl.² H01F *1/14;* C22C *38/08, 38/10*

U.S. Cl. 148—31.55 11 Claims

1. A soft magnetic alloy which after heat-treatment at a temperature in the range of 680°–750° C. has a coercive force not greater than 1.5 kA/m, a fine microstructure having ductility and strength characteristics that are relatively insensitive to the heat-treatment temperature within said range, the alloy consisting essentially of 2–8% nickel, 0.5–3% vanadium, 33–35% cobalt, 0–1% chromium, 0–1% manganese, 0–0.1% carbon, 0–0.5% silicon, 0–0.5% niobium, 0–0.3% zirconium and the balance iron apart from alloying ingredients and incidental impurities.

4,116,728

TREATMENT OF AMORPHOUS MAGNETIC ALLOYS TO PRODUCE A WIDE RANGE OF MAGNETIC PROPERTIES

Joseph J. Becker; Fred E. Luborsky; Israel S. Jacobs, and Richard O. McCary, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1976, Ser. No. 719,914

Int. Cl.² C21D *1/04*

U.S. Cl. 148—108 10 Claims

1. A method for processing magnetic amorphous alloys to control the shape of the hysteresis loop of said alloys, said method comprising the steps of:

heating an amorphous magnetic alloy to a temperature sufficient to achieve stress relief but less than that required to initiate crystallization; and then

controllably cooling said alloy in the presence of a magnetic field, the rate of cooling being between approximately 0.1° C. per minute and approximately 100° C. per minute whereby magnetic amorphous alloys are usable in a greater variety of magnetic circuit applications.

4,116,729

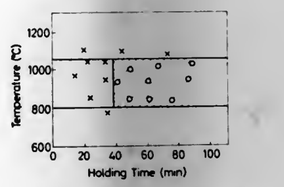
METHOD FOR TREATING CONTINUOUSLY CAST STEEL SLABS

Hiroshi Katoh; Yasumitsu Onoe, both of Kitakyushu; Osamu Akisue, and Kishio Mochinaga, both of Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 12, 1977, Ser. No. 832,577

Int. Cl.² B22D *11/00;* H01F *1/04*

U.S. Cl. 148—111 5 Claims



○ Having superior magnetic properties to those of the conventional materials

× Having inferior magnetic properties to those of the conventional materials

1. A method for treating a continuously cast steel slab obtained by continuously casting a molten steel containing 0.01 to 2.5% by weight of Al, which comprises holding the slab in a temperature range from the Ar_3 point to 650° C for at least 20 minutes when the temperature of said slab is first in said temperature range following said casting, to precipite nitrides, and hot rolling the slab.

4,116,730

SILICON-IRON PRODUCTION AND COMPOSITION AND PROCESS THEREFOR

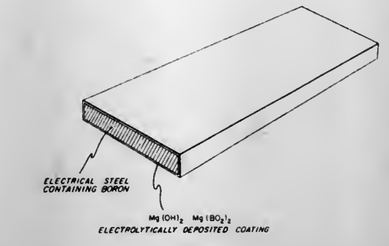
Ronald H. Arendt, Schenectady, N.Y., and Patrick F. Aubourg, Arlington, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 7, 1977, Ser. No. 774,808

Int. Cl.² H01F *1/04*

U.S. Cl. 106—113 3 Claims

1. The method of producing grain-oriented silicon-iron sheet which comprises the steps of providing a fine-grained, primary-recrystallized silicon-iron sheet containing 2.2 to 4.5 percent silicon, between about three and 50 parts per million boron, and between about 15 and 95 parts per million nitrogen in the ratio to boron of one to 15 parts per part of boron, electrolyzing an aqueous 0.05 to 1.0 molar solution of magnesium acetate containing magnesium metaborate and magnesia with the silicon-iron sheet being arranged as the cathode in said solution and the said solution being at a temperature of at least about 65° C and thereby covering the sheet with an adherent electrically insulating 0.05 to 0.4 mil-thick coating of $Mg(OH)_2$ containing between about 10 and about 70 parts per million boron on the basis of the silicon-iron sheet, and subjecting the coated sheet to a final heat treatment at 950° to 1175° C in an atmosphere selected from the group consisting of hydrogen and a mixture of hydrogen and nitrogen to develop (110)[001] secondary recrystallization texture in the silicon-iron sheet.



4,116,731

HEAT TREATED AND AGED MAGNESIUM-BASE ALLOY

Nina Mikhailovna Tikhova, Frunzenskaya naberezhnaya, 38/1, kv. 394; Valentina Alexeevna Blokhina, 15 Parkovaya ulitsa, 42, korpus 3, kv. 25; Antonina Petrovna Antipova, Sheremetievskaya ulitsa, 71a, kv. 19, and Tamara Pavlovna Vasilieva, Izmailovsky bulvar, 46, kv. 5, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 718,872, Aug. 30, 1976, abandoned, which is a continuation of Ser. No. 515,024, Oct. 15, 1974, abandoned, which is a continuation of Ser. No. 340,749, Mar. 13, 1973, abandoned. This application Jul. 27, 1977, Ser. No. 819,566

Int. Cl.² C22F *1/06*

U.S. Cl. 148—161 4 Claims

1. A heat-treated and aged magnesium-based alloy, possessing heat-resistance and castability, suitable for manufacturing parts operating for a long time at temperatures up to 300° C and for a short period of time at 400° C, said alloy consisting essentially of, by weight: 0.8–6.0% yttrium, 0.5–4% neodymium, 0.1–2.2% zinc, 0.31–1.1% zirconium, up to 0.05% copper, up to 0.2% manganese and the balance being magnesium, provided that no less than 50% of the total amount of neodymium and yttrium additions enters the solid solution after heat treatment, the alloy having been heated at approximately 535° C for 4–8 hours, cooled in air and then aged at approximately 200° C for 12 hours.

4,116,732

METHOD OF MANUFACTURING A BURIED LOAD DEVICE IN AN INTEGRATED CIRCUIT

John S. Shier, 519 N. Castlerock Ter., Sunnyvale, Calif. 94087

Division of Ser. No. 724,851, Sep. 20, 1976, Pat. No. 4,064,527. This application Jan. 10, 1977, Ser. No. 757,961

Int. Cl.² H01L *21/76, 29/36*

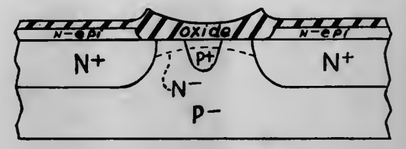
U.S. Cl. 148—175 4 Claims

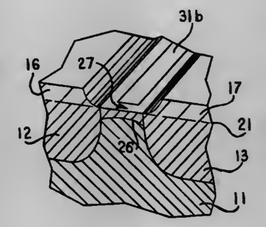
1. A process of forming an integrated circuit comprising the steps of

forming an elongated heavily doped region of first conductivity type in the upper surface of a lightly doped substrate of first conductivity type between at least first and second regions of second conductivity type disposed in the upper surface of said substrate, with at least one lateral opening of predetermined width through said elongated region,

depositing a lightly doped epitaxial layer of second conductivity type on the upper surface of said substrate over said regions, and

selectively oxidizing said epitaxial layer between said regions of second conductivity type to extend oxide at least into contact with said elongated region, said oxidation causing impurities to migrate from said epitaxial layer into the substrate surface, said impurities being sufficient to convert the substrate region defined by said lateral opening to the second conductivity type, and thus form a channel of lightly doped second conductivity type through the lateral opening in said elongated region between said first and second regions.





4,116,733

VAPOR PHASE GROWTH TECHNIQUE OF III-V COMPOUNDS UTILIZING A PREHEATING STEP

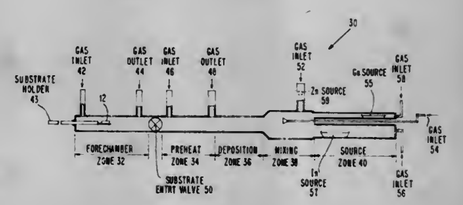
Gregory Hammond Olsen, Dayton, N.J.; Thomas Joseph Zamerowski, Yardley, and Charles Joseph Buiocchi, Levittown, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 6, 1977, Ser. No. 840,039

Int. Cl.² H01L *21/205 29/30; 29/38*

U.S. Cl. 148—175 5 Claims





1. In the method of fabricating a III-V semiconductor device wherein a semiconductor layer is vapor phase deposited onto a deposition body having a deposition surface and the deposition body is preheated prior to deposition, the improvement wherein the preheating step comprises:

preheating said deposition body to a temperature about 40° to 60° C. lower than the temperature of deposition for a predetermined period of time prior to raising the temperature of the body to the temperature of deposition.

4,116,734

COMPOSITE EXPLOSIVES

Guy Perrault, Ste-Foy; Raynald Francoeur, Nord, and Roger Lavertu, Ste-Foy, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Calif.X

Filed Oct. 7, 1977, Ser. No. 840,367
Claims priority, application Canada, Oct. 28, 1976, 264354
Int. Cl.[2] C06B *45/10*
U.S. Cl. 149—19.2 9 Claims

1. A gravity pourable explosive composition, comprising a solid explosive ingredient selected from the group consisting of cyclotrimethylenetrinitramine (RDX) and cyclotetramethylenetetranitramine (HMX), a hydroxy-terminated polybutadiene based binder cured with a diisocyanate, and an organofunctional silane selected from the group consisting of gamma-methacryloxypropyltrimethoxy silane, beta-3,4-(epoxy-cyclohexyl)ethyltrimethoxy silane, gamma-glycidoxypropyltrimethoxy silane, trimethychlorosilane and N,O-bis-(trimethylsilyl)-acetamide.

4,116,735

METHOD FOR THE MANUFACTURE OF A SPRING-INTERIOR MATTRESS

Robert Plasse, 6 Blvd. Anatole, Lyon 6 (Rhone), France

Filed Nov. 4, 1976, Ser. No. 738,975
Claims priority, application France, Apr. 5, 1976, 76 13996
Int. Cl.[2] B68G *7/00;* B32B *5/18, 31/12*
U.S. Cl. 156—79 7 Claims

1. A method of manufacturing a mattress comprising two sheets of foam on either side of a metal framework comprising springs, the method comprising the following successive stages:

a sheet of pre-fabricated foam is placed such that its inner side is turned upwards and is substantially horizontal;

a strand of resin forming a foam-producing mixture is applied along the periphery of the inner side of this pre-fabricated sheet of foam;

the metal framework is placed on said sheet of foam;

the foam of the resin strand is allowed to form and expand freely, such that the latter at least partly surrounds the lower coil of the peripheral springs of the framework, in order to fix said framework to the sheet; and

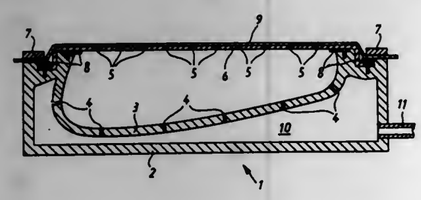
repeating the same operations with a second sheet of pre-fabricated foam and the same framework which is already integral with the first sheet of foam, after said framework has been turned over.

4,116,736

METHOD OF MAKING A FOAM PLASTIC CUSHION HAVING A PERIPHERAL FRAME AND AN EXTERIOR COVER

Joseph Sanson, Beaugency, France, and Kurt Moser, Kirchheim, Fed. Rep. of Germany, assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 1, 1976, Ser. No. 728,648
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1975, 2544664
Int. Cl.[2] B29C *13/00;* B29D *27/04*
U.S. Cl. 156—79 6 Claims



1. In a method of forming a cushion or similar product comprising a resilient elastomeric foam and a sheet material facing enclosing said foam and integrally secured thereto, the steps which comprise:

providing complementary partible members of a mold wherein said members have molding surfaces defining in the closed condition of said mold a cavity configured to the desired shape of the finished product, said mold members being respectively provided with elastic membranes secured across their open faces and confronting said molding surfaces of said molding cavity;

spraying a solvent-free liquid elastomer onto each of said membranes to form a layer thereon, allowing such layers to become adequately cured by polymerization to form mechanically coherent facing sheets, and then bringing said partible mold members together to join said facing sheets peripherally of the mold cavity to form a closed sack of deformable, air-impermeable sheet material;

applying differential pressure to said mold to stretch said elastic membranes and said facing sheets formed thereon into conformity with said mold cavity;

introducing into said sack while thus conformed a self-foaming liquid polymer mix and allowing said mix to develop and fill said sack with resilient foam;

holding said foam-filled sack in said mold until said foam is sufficiently jelled and said sack walls are secured thereto; and

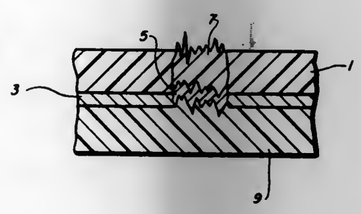
parting said mold members and removing said foam-filled product in desired configuration completely encased in said sheet material facing.

4,116,737

METHOD OF CREATING AN EMBOSSING EFFECT

Alvar A. Svens, 112 Main St., Ashburnham, Mass. 01430

Continuation of Ser. No. 523,326, Nov. 13, 1974, abandoned.
This application May 4, 1976, Ser. No. 683,236
Int. Cl.[2] B29C *27/00*
U.S. Cl. 156—85 6 Claims



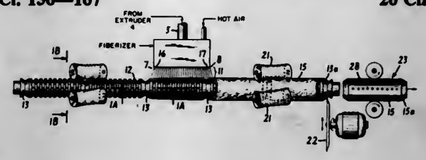
1. A method of creating an embossed effect in a desired pattern on a film, said film being constructed of a material which can have its heat resistance to wrinkle lowered by application of an attacking agent thereto, comprising the steps of impregnating selected areas of said film with said attacking agent thereby lowering the heat resistance to wrinkle of said selected film areas, laminating said film to a substrate heated to a temperature greater then 250° F., said heated substrate causing said selected areas of said film to wrinkle and distort, and thereby creating an embossed effect on said film.

4,116,738

CONTINUOUS PRODUCTION OF TUBULAR MODULAR FILTER ELEMENTS USING NONWOVEN WEBS FROM THERMOPLASTIC FIBERS AND PRODUCTS

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Division of Ser. No. 649,001, Jan. 14, 1976, which is a continuation-in-part of Ser. No. 393,688, Aug. 31, 1973, Pat. No. 3,933,557. This application Apr. 25, 1977, Ser. No. 792,084
Int. Cl.[2] B29C *27/28;* B29D *9/00, 73/04*
U.S. Cl. 156—167 20 Claims



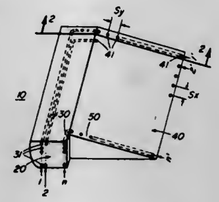
1. A process for continuously forming modular tubular filter elements of thermoplastic fibrous material, said elements having a seamless, generally cylindrical configuration and having a foraminous tubular support and a desired length, comprising: spinning a plurality of fibers from molten thermoplastic material, collecting and winding said fibers directly onto an axially moving, rotating foraminous tubular core to form thereon a wound cylindrical layer of randomly oriented heterogeneously interwined spun fibers, said layer being of indefinite length, cutting through said layer, and detatching a severed length of filter tube and a length of core together from said indefinite length thereby forming said tubular filter element having said tubular support.

4,116,739

METHOD OF FORMING AN OPTICAL FIBER DEVICE

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Nov. 26, 1976, Ser. No. 745,187
Int. Cl.[2] B65H *81/00;* G02B *5/14*
U.S. Cl. 156—169 14 Claims



1. A method of making an optical display apparatus, comprising the steps of:

(a) wrapping a plurality of optically conducting elongated strands in a substantially parallel configuration about a spacer element;

(b) positioning at least one additional spacer element over the previously wrapped strands and rewrapping said plurality of strands over said at least one additional spacer element in spiral fashion;

(c) repeating step (b) a desired number of times;

(d) severing the spirally wound construction substantially along the plane of said first-mentioned spacer element; and

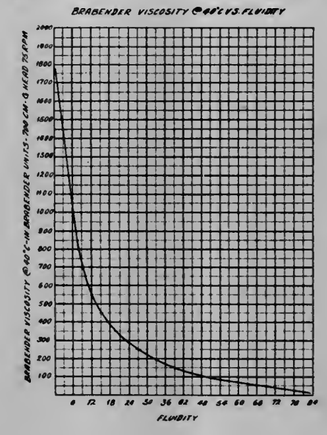
(e) angularly severing a resultant portion of the construction to form a pair of wedge-shaped display apparatuses.

4,116,740

WATER RESISTANT CORRUGATING ADHESIVE COMPOSITION

Camillus B. Musselman, Chesterfield, and Edward M. Bovier, St. Louis County, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Division of Ser. No. 477,325, Jun. 7, 1974, Pat. No. 3,912,530, which is a continuation-in-part of Ser. No. 264,868, Jun. 21, 1972, abandoned, and Ser. No. 371,040, Jun. 18, 1973, abandoned. This application Jul. 18, 1975, Ser. No. 597,395
The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.
Int. Cl.[2] B31F *1/22*
U.S. Cl. 156—205 7 Claims



1. A method of making multiwall thickness corrugated board at high speeds comprising the steps of

(a) preparing a water resistant adhesive mix having a gelatinized modified waxy starch in the carrier portion and raw starch as a bonding agent, said modified waxy starch having an alkali fluidity of 25 to about 90 mls at 25° C measured with a 5 gram sample,

(b) applying said mix to a corrugator, and

(c) forming a multiwall board on said corrugator at a higher than normal rate of speed.

4,116,741

TEXTILE COATING WITH POLYURETHANES

Wilhelm Thoma, Bergisch-Neukirchen; Jochen Wulff, Dusseldorf-Holthausen, and Georg Niederdellmann, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 20, 1975, Ser. No. 542,734
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1974, 2402799
Int. Cl.[2] D06Q *1/00;* B32B *5/02, 27/40*
U.S. Cl. 156—239 1 Claim

1. A process for producing coated textile sheets which comprises:

(A) applying to a release substrate an organic solvent solution top coat of a substantially linear polyurethane which is substantially free of reactive end groups prepared by a process comprising reacting,

i. an organic dihydroxy compound of molecular weight 500 to 4,000 and

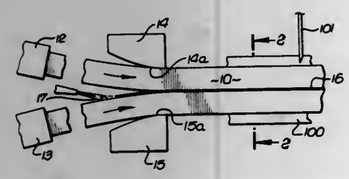
ii. a mixture of at least two organic diols of molecular weight 62 to 450 with at least two of which diols are present in a quantity of more than 5 mol %, and

iii. an aromatic diisocyanate, using a molecular ratio between components i) and ii) of 1:1 to 1:5 and an NCO-/OH ratio of 0.95: 1.05,

(B) evaporating sufficient solvent to leave a substantially dried top coat on said substrate,
(C) applying a polyurethane bonding coat solution to said top coat characterized in that said polyurethane bonding coat solution contains at most 25% by weight, based on the total quantity of solvent, of dimethylformamide,
(D) applying said textile sheet to be coated to said release substrate whereby said top coat and said bonding coat are therebetween,
(E) substantially evaporating the solvent from said bonding coat and,
(F) separating the resulting coated textile from said release substrate.

4,116,742
METHOD OF PACKAGING MUTUALLY REACTIVE SUBSTANCES

Francis G. Firth, Los Angeles, Calif., assignor to Applied Plastics Co., Inc., El Segundo, Calif.
Filed Dec. 6, 1976, Ser. No. 747,612
Int. Cl.² B32B 27/38; C09J 7/02
U.S. Cl. 156—289 **4 Claims**



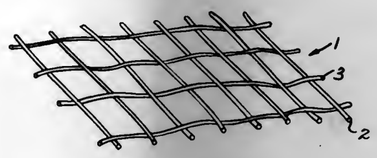
1. The method of packaging kneadable plastic masses that react when mixed, that includes
(a) providing first and second mutually reactive plastic masses which are kneadable together,
(b) interposing a thin, flexible barrier between and adjacent said masses to block contact of the masses until such time as they are intentionally kneaded together for reaction,
(c) and providing a common support for said masses, and engaging the masses with said support,
(d) said barrier being interposed by coating a liquid barrier film on that portion of at least one of the masses which is closest to and being relatively displaced toward the other mass, the film consisting essentially of a film former dissolved in a solvent, and
(e) evaporating said solvent to deposit the film former directly on adjacent portions of the masses, the former characterized as essentially impermeable to reactive ingredients in said masses.

4,116,743
NYLON OR POLYESTER SLIP SET FABRIC CHEMICALLY TREATED TO ADHERE NEOPRENE, EPDM OR BUTYL FILM

Delbert A. Davis, Kernersville, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Apr. 26, 1977, Ser. No. 790,872
Int. Cl.² C09J 5/06
U.S. Cl. 156—333 **2 Claims**

1. A process of bonding a woven fabric to a rubber substrate including the steps of:
(1) applying to an open mesh, woven nylon or polyester scrim fabric an elastomeric coating of a dispersion of a carboxylated chloroprene latex
said latex consisting essentially of chloroprene, as the primary monomer, with from about 2 to about 5% by weight of methacrylic acid as comonomer, and having a carboxyl functionality of about 0.033/100 grams of latex solids;
(2) drying the elastomeric coating applied in step (1) thereby mechanically securing the warp and fill yarns of said fabric together at their cross over points and preventing substantial movement or distortion of the individual yarns or thread members of said fabric; and thereafter
(3) contacting at least one planar surface of the coated fabric of step (2) with a rubber substrate to form a ply; and
(4) curing the fabric/rubber ply of step (3) under rubber-curing conditions to cure the rubber and to form chemical bonds between said fabric and the coating elastomer thereon.

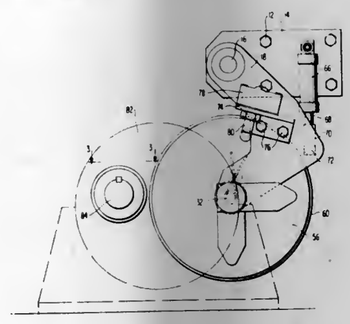
2. A process of bonding a woven fabric to a rubber substrate including the steps of:
(1) applying to an open mesh, woven nylon or polyester scrim fabric an elastomeric coating of a dispersion of a carboxylated chloroprene latex copolymer



said latex consisting essentially of chloroprene, as the primary monomer, with from about 2 to about 5% by weight of methacrylic acid as comonomer, having a carbonyl functionality of about 0.033/100 grams of latex solids and a chlorine content of about 36% by weight;
(2) drying the elastomeric coating applied in step (1) thereby mechanically securing the warp and fill yarns of said fabric together at their cross over points and preventing substantial movement or distortion of the individual yarns or thread members of said fabric, and thereafter
(3) contacting at least one planar surface of the coated fabric of step (2) with a rubber substrate to form a ply; and
(4) curing the fabric/rubber ply of step (3) under rubber-curing conditions to cure the rubber and form chemical bonds between said fabric and the coating elastomer thereon.

4,116,744
CONTROL APPARATUS FOR A TIRE BUILDING MACHINE

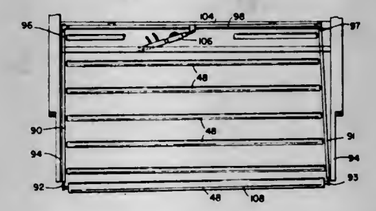
Raymond L. Currie, Findlay, Ohio, assignor to Cooper Tire & Rubber Company, Findlay, Ohio
Filed Aug. 22, 1977, Ser. No. 826,692
Int. Cl.² B29H 17/20
U.S. Cl. 156—352 **5 Claims**



1. A control apparatus for a tire building machine having a rotatably driven tire building drum with a gear train mechanism therefore positioned within a housing from which a rotatable drive shaft projects, a base plate, a rod connected to said base plate, a pair of spaced depending plate members pivotally mounted on said rod, a shaft rotatably supported in said plate members, a wheel secured to said shaft, a pair of cam arms adjustably mounted on said shaft, switch members mounted on one of said plate members and connected to said tire building drum for controlling the rotation thereof, a wheel secured to said rotatable drive shaft, an air cylinder carried by said base plate and connected to said plate members, means for energizing said air cylinder to move said plate members and wheel into engagement with said drive shaft wheel for rotating said cam arms into engagement with said switch members to terminate the rotative movement of the tire building drum and the de-energizing of said air cylinder.

4,116,745
LAP SEAM FOLDER AND WIDE WIDTH SEALER

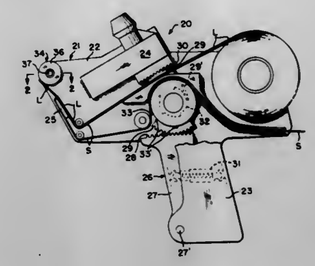
Everette M. Lambert, 3380 Edward Ave., Santa Clara, Calif. 95050
Division of Ser. No. 570,308, Apr. 21, 1975, Pat. No. 4,036,678.
This application Apr. 20, 1977, Ser. No. 789,035
Int. Cl.² B65C 9/40
U.S. Cl. 156—362 **2 Claims**



1. An apparatus for dispensing first and second relatively wide pieces of material onto a bed so that the pieces of material can be heat sealed together, the first piece of material at times comprising multiple connected and folded widths of said material disposed upstream of said dispensing apparatus, said dispensing apparatus comprising:
a support structure located at one end of the bed;
a pair of spaced frame members each having one end pivotally connected to the support structure and an opposite free end, the connected ends of said frame members being juxtaposed to that said frame members remain parallel when the free ends thereof are moved in concert, said frame members being disposed generally horizontal;
a plurality of first rollers spanning said frame members and rotatably attached thereto, said first rollers being adapted to receive thereover said first piece of material and to dispense it onto the bed;
a pair of second rollers positioned relatively horizontally to one another and above said support structure, said second rollers being adapted to support and underlie a free-turning web of said second material;
a plurality of third rollers intermediate of said second rollers and said first rollers, said third rollers being adapted to dispense said second piece of material from said web to overlie said first piece of material feeding onto said bed;
means for sensing the lateral position to the first piece of material on the bed to detect lateral misalignment of said first piece of material;
means for motivating the free ends of the spaced frame members from side to side in concert responsive to said sensing means to correspondingly divert the dispensed first piece of material to re-align the material on te bed;
a guide roller pivotally connected at the upstream end of said space frame members and adjacent the ends of said frame members which are pivotally connected to said support structure; and
linkage means between the ends of said guide roller and each of said frame members, said linkage means being adapted for vertically translating one or the other of the ends of said guide roller for re-aligning said first piece of material.

4,116,746
HAND-HELD LABELER

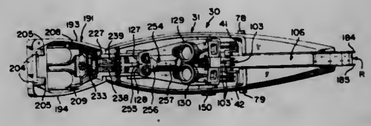
Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Mar. 7, 1977, Ser. No. 775,010
Int. Cl.² B32B 35/00
U.S. Cl. 156—384 **17 Claims**



1. Hand-held apparatus for printing and applying pressure sensitive labels carried on a web of supporting material, comprising: a frame having a handle, a platen and a cooperable print head mounted by the frame, means for delaminating printed labels from the web, a rotatable applicator roll for applying printed labels, means for advancing the web about the delaminating means to dispense a label into label applying relationship with respect to the applicator roll, an actuator disposed at the handle for moving the print head into cooperation with the platen and for moving the web advancing means, the applicator roll having stub ends, the frame having spaced apart sockets, wherein each stub end is received in a respective socket, the sockets being oversize relative to the respective stub ends to provide a loose fit so that the applicator roll will cant and accommodate the surface to which the label is to be applied.

4,116,747
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Apr. 25, 1977, Ser. No. 790,519
Int. Cl.² B32B 31/00
U.S. Cl. 156—384 **37 Claims**



1. Hand-held apparatus for printing and applying pressure sensitive labels releasably secured to a web of supporting material, comprising: a body having a handle, a manually operable actuator disposed at the handle, a platen, a print head cooperable with the platen for printing on successive labels, means responsive to movement of the actuator for moving the print head into printing cooperation with the platen and for advancing the web, a shaft mounted by the body, an applicator mounted on the shaft, the body having a body section pivotally mounted on the shaft and movable between open and closed positions, an inker for the print head disposed in the space within the body, and means for releasably latching the body section to the body in the closed position.

4,116,748

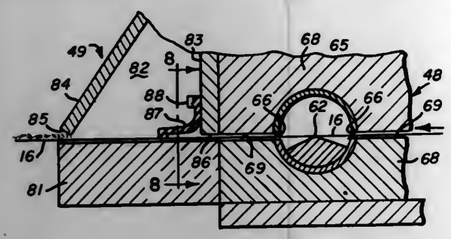
DRY WALL TAPING MACHINE HAVING AN IMPROVED TAPE SHEAR

Harold M. Lass, San Jose, Calif., assignor to Corban Industries, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 739,520, Nov. 8, 1976, abandoned. This application May 2, 1977, Ser. No. 793,081

Int. Cl.[2] B32B *31/00;* **B44C** *7/00;* **B26D** *1/00, 5/08*

U.S. Cl. 156—526 **9 Claims**



1. In a dry wall taping machine for applying tape to elongated seams between adjacent sections of dry wall:

main body means to be grasped by the operator for movement along the seam by the operator and having an application portion for applying tape from a supply over the seam to be taped;

mud box means carried from said main body means to be supplied with mud under pressure for applying mud to that surface of the tape which is to face the wall being taped and having a tape entrance opening therein through which the tape is fed into said mud box means;

tape shear means disposed at a station up-tape from said mud box means for shearing the tape at the end of the seam, said tape shearing means including a rotary shear structure having first and second shearing members disposed for passage of the tape therethrough, said first shearing member having a cutting edge portion formed thereon and said second shearing member being rotatable relative to said first shearing member for shearing of the tape therebetween, said rotatable shearing members being disposed such that the axis of revolution of said rotatable member extends laterally of the longitudinal axis of the tape passing through said tape shearing means; and

sealing means disposed down-tape from said shearing means for preventing travel of mud along the tape in the up-tape direction from said mud box means into said tape shearing means.

4,116,749

APPARATUS FOR THE APPLICATION OF POLYMER FILMS ON A SUPPORT

Jacques L. Dufort, Fleury-les-Aubrais, and Roger R. Hermelin, Olivet, both of France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France

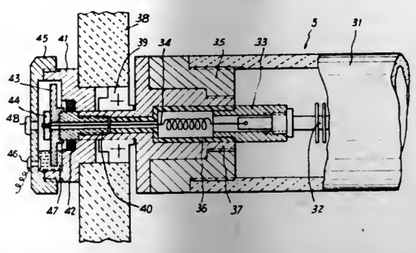
Filed Dec. 22, 1976, Ser. No. 753,381

Claims priority, application France, Dec. 24, 1975, 75 39775

Int. Cl.[2] B31F *5/00;* **B30B** *15/34;* **B21B** *27/06*

U.S. Cl. 156—555 **1 Claim**

1. An apparatus for applying a polymer film onto a support as the film and support move between a heating roller and a pressure roller journalled for rotation in a supporting frame, said heating roller comprising a hollow elongated cylinder, a heating element extending coaxially within said cylinder in uniform spaced relation relative to the interior of said hollow cylinder, support means for supporting one end of said heating element in said hollow cylinder and for rotatably supporting said cylinder in said supporting frame to allow for axial thermal expansion and contracting of said heating element and cylinder, first electrical contact means comprising a disc coaxially connected to said cylinder for axial movement therewith and a second electrical contact means comprised of a mercury bath means into which said disc extends secured to said supporting frame and adapted to be connected to a source of electrical power, said first and second contact means being



disposed in movable contact with each other for relative movement in the axial direction of said heating roller without breaking contact.

4,116,750

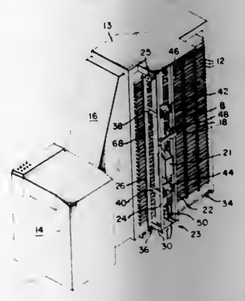
SHEET BINDING APPARATUS

Barry J. Lewis, Federal Way; John C. Kuspert, Seattle; Arthur G. Saunders, Maple Valley, and Robert R. McAusland, Seattle, all of Wash., assignors to Norfin, Inc., Seattle, Wash.

Filed Mar. 15, 1977, Ser. No. 777,730

Int. Cl.[2] B32B *31/00;* **B05C** *1/00;* **B42B** *1/02*

U.S. Cl. 156—563 **21 Claims**



1. Sheet binding apparatus, comprising: means for assembling sheets into individual groups within respective sheet holding compartments with the sheets having at least one of their edges aligned in a single plane; adhesive binding means including an adhesive application member and heat application means for applying adhesive to bind the sheets in at least one of said groups at a location along the length of the coplanar edges thereof; hold down means operatively associated with said binding means and said compartments for holding the sheets of said one group stationary to maintain copolar edge alignment thereof during binding; and means for controlling heat transfer between said adhesive application member and said heat application means by selectively positioning said adhesive application member with respect to said heat application means.

4,116,751

METHODS AND APPARATUS FOR PRODUCING UNSUPPORTED MONOCRYSTALLINE FILMS OF SILICON AND OF OTHER MATERIALS

Solomon Zaromb, 171 Clifton Ave., Newark, N.J. 07104

Filed Oct. 8, 1975, Ser. No. 620,650

Int. Cl. B01j *17/30, 17/32*

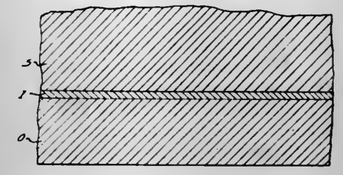
U.S. Cl. 156—600 **3 Claims**

1. A method of producing unsupported monocrystalline films which comprises:

(a) providing at least one reusable monocrystalline substrate

S having a crystal structure closely matching that of the desired films;

(b) epitaxially depositing on the lower surface of substrate S first an intermediate monocrystalline layer I and next an outer monocrystalline layer O so as to form a three-layer S-I-O configuration, said three layers having closely matching crystal structures;



(c) reducing the ambient pressure below the vapor pressure of at least one component of said intermediate layer I, or raising the temperature of said intermediate layer so as to raise the vapor pressure of at least one of its components above the ambient pressure, thereby blowing off said outer layer O and causing it to fall by gravity onto a supporting base; and

(d) recycling substrate S.

4,116,752

PRODUCTION OF SINGLE CRYSTALLINE FERRITE PARTICLES

Seiji Matsumoto, and Kiyoshi Fukai, both of Sakai, Japan, assignors to Sakai Chemical Industry Co., Ltd., Sakai, Japan

Filed May 23, 1974, Ser. No. 472,740

Claims priority, application Japan, Mar. 1, 1974, 49-23938

Int. Cl.[2] B01J *17/06;* **C01G** *49/02;* **C01F** *11/00*

U.S. Cl. 156—624 **13 Claims**

1. A method for producing single crystal strontium ferrite or barium ferrite particles in the form of hexagonal plates about 0.5μ to 2.0μ in diameter and less than about one-fourth of said diameter in thickness, which comprises:

(a) reacting an admixture of

(i) about 4.3 to 6.5 moles, expressed as ferric oxide, of an iron compound selected from the group consisting of ferric hydroxide, ferric oxyhydroxide, calcined porous ferric oxide and ferric oxide having a particle size less than about 0.8μ;

(ii) about one mole, expressed as metal oxide, of at least one metal compound selected from the group consisting of the oxides, hydroxides, carbonates and carboxylates of strontium and barium; and

(iii) about 0.05–2 moles of a metal chloride flux selected from the group consisting of strontium chloride, barium chloride and mixtures thereof,

at a temperature between the melting point of said metal chloride flux and 1300° C. to form said strontium ferrite or barium ferrite particles having the stoichiometric composition $MO{\cdot}6\ Fe_2O_3$ wherein M is divalent strontium or barium;

(b) cooling the resultant reaction mixture to form a cake comprising said single crystal ferrite particles and water soluble flux intervened therebetween; and

(c) extracting said water-soluble flux from said particles.

4,116,753

METHOD FOR THE MANUFACTURE OF OPTICAL MOLD FOR REPRODUCING CURVED SURFACES HAVING THE SAME SHAPE AS AN OPTICAL PROTOTYPE

Tsutomu Tojyo, and Shozo Sato, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1977, Ser. No. 804,242

Claims priority, application Japan, Jun. 14, 1976, 51-69593; Jun. 14, 1976, 51-69594

Int. Cl.[2] B32B *17/00, 7/12, 15/00*

U.S. Cl. 156—629 **4 Claims**

1. A method for manufacturing an optical mold for reproducing optical curved surfaces in the shape corresponding to that of an optical prototype comprising: forming a first layer of a metal on an optical prototype, forming on said first layer a second layer of a metal different from said first layer of metal, dissolving said first layer for releasing said second layer from said optical prototype and bonding said released second layer onto the surface of a base.

3. A method for manufacturing an optical mold for reproducing optical curved surfaces in the shape corresponding to that of an optical prototype comprising: forming a first layer of metal on the surface of an optical prototype, forming on said first layer a second layer of metal different from said first layer of metal, bonding a base onto said second layer of metal with a bonding agent interposed therebetween, and dissolving said first layer of metal for releasing said second layer of metal from said optical prototype.

4,116,754

METHOD OF FORMING MATT DISPLAY ELECTRODE

Frank Alfred Huntley, Porchester, and William Morris Morgan, Chandler's Ford, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1977, Ser. No. 831,218

Claims priority, application United Kingdom, Sep. 30, 1976, 40575/76

Int. Cl.[2] C23F *1/00*

U.S. Cl. 156—656 **9 Claims**

1. A method of improving the optical contrast between energized and unenergized display electrodes used in an electrically driven display device of the kind in which display electrodes are normally visible but are obscured when energized, the method comprising a chemical treatment including steps of;

(a) of subjecting at least the visible surfaces of aluminum electrodes to the action of a solution which combines with the material of the electrode to form a compound insoluble in the solution, said mixture being an aqueous solution of a mixture of chromium trioxide, nitric acid, and sulfuric acids; and

(b) subjecting the compound to the action of a second solution, said solution dissolves only the compound, comprising buffered hydrofluoric acid and a reducing agent thereby roughening the surface of the electrodes and providing a matt appearance.

4,116,755

CHEM-MILLING OF TITANIUM AND REFRACTORY METALS

Dolphus L. Coggins, St. Louis, and John Gumbelevicius, Creve Coeur, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sep. 6, 1977, Ser. No. 830,565

Int. Cl.[2] C23F *1/02*

U.S. Cl. 156—659 **13 Claims**

1. A method of chemically milling and surface treating a material selected from the group consisting of titanium, columbium, molybdenum, tungsten, tantalum, and their alloys without excessive hydrogen absorption comprising the steps of:

(a) exposing said material to a solution containing per liter of

solution about 126 to about 700 g pure nitric acid equivalent, an amount of fluoride producing material sufficient to provide the equivalent of about 8.8 to about 176.1 of pure hydrofluoric acid, at least 10 grams of a derivative of carbonic acid, at least about 1.5 gm monocarboxylic acid derivative containing alkali metal ions,

(b) at a temperature of about 0°–110° C,

(c) for a period of time sufficient to remove the undesired material.

4,116,756

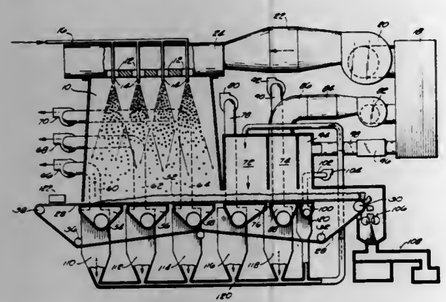
SPRAY DRYING ON WOVEN BELT OF MONOFILAMENT SYNTHETIC FIBER

Jack A. Quee, Fond du Lac, Wis., assignor to Dec International, Inc., Madison, Wis.

Continuation of Ser. No. 579,902, May 22, 1975, abandoned. This application Feb. 16, 1977, Ser. No. 769,143

Int. Cl.² B01D *1/00*

U.S. Cl. 159—45 **9 Claims**



1. A spray drying apparatus comprising the combination:

an enclosed primary stage spray chamber having an outlet at the lower end thereof; at least one hot gas inlet port in the upper portion thereof and a source of drying gas communicating therewith;

at least one spray nozzle extending into the spray chamber; a draft producing means connected to communicate with the chamber for forcing the drying gas from the gas source through the chamber and out through the outlet thereof; an endless collecting belt supported for horizontal movement at the chamber outlet, said belt being in the form of a double layer woven fabric comprised of two layers of weft threads with a plurality of warp threads interconnecting said two layers, the material of said weft and warp threads being monofilament synthetic fiber; and

drive means for advancing said belt.

4,116,757

SOLAR EVAPORATION OF ALKALINE TRONA-PROCESS WASTE POND LIQUORS WITH ACID BLACK 2 AND ACID GREEN 1

Norman R. Garofano, Syracuse, N.Y., and Ronald G. Bitney, Rock Springs, Wyo., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Nov. 18, 1976, Ser. No. 742,821

Int. Cl.² B01D *1/00*

U.S. Cl. 159—47 WL **4 Claims**

1. A process for increasing the rate of solar evaporation of water from an alkaline trona-process waste liquor which comprises introducing to the waste liquor an effective amount of a dye selected from the group consisting of Acid Black 2, and Acid Green 1, and subjecting the resulting mixture to solar radiation for evaporation of water therefrom.

4,116,758

METHOD OF PRODUCING HIGH YIELD CHEMIMECHANICAL PULPS

Michael J. Ford, West Hawkesbury, and Prescott Elliott Gardner, Vankleek Hill, both of Canada, assignors to Canadian International Paper Co., Montreal, Canada

Continuation of Ser. No. 687,454, May 18, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 838,837

Claims priority, application Canada, May 14, 1976, 252642

Int. Cl.² D21C *3/06, 3/12, 3/26*

U.S. Cl. 162—28 **11 Claims**

1. A method for production of high yield chemimechanical pulp from woody lignocellulosic material which comprises treating said woody lignocellulosic material with an aqueous solution of a mixture of sulfite and bisulfite having a pH of between about 6.0 and 8.5 at a temperature of between about 100° C. and 150° C. for a period of between about 10 and 90 minutes, said aqueous solution being of sufficient strength to sulfonate said woody lignocellulosic material to at least about 85% of the maximum level of sulfonation that can be achieved on said woody lignocellulosic material without reducing the yield of pulp below about 90% by weight, and subsequently subjecting the resulting sulfonated material to mechanical defibration.

4,116,759

PREPARATION OF LIQUOR FOR DELIGNIFICATION OR ALKALI TREATMENT BY AUTOCAUSTIZATION, AND THE PREPARATION OF PULP WITH THIS LIQUOR

Jan Janson, Granbackagranden 3B22, 02210 Espoo 21, Finland

Filed Aug. 31, 1976, Ser. No. 719,139

Claims priority, application Finland, Sep. 2, 1975, 752463

Int. Cl.² D21C *11/12*

U.S. Cl. 162—32 **8 Claims**

1. A method for the alkali pulping of ligno-cellulose materials, comprising the steps of cooking the ligno-cellulose material in an alkaline aqueous cooking liquor containing as an active ingredient at least one alkaline salt of a polybasic inorganic acid selected from the group consisting of NaH_2BO_3 and Na_2HBO_3, combusting the residual cooking liquor to obtain an alkaline inorganic substance, and dissolving said inorganic substance in water to provide the same alkaline salt as used in the cooking step.

5. A method for the alkaline bleaching of pulp derived from ligno-cellulose materials, the steps comprising bleaching the pulp in the presence of oxygen in an aqueous alkaline liquor containing as an active ingredient at least one alkaline salt of a polybasic inorganic acid selected from the group consisting of Na_2HBO_3 and NaH_2BO_3, combusting the residual liquor to obtain an alkaline inorganic substance, and dissolving the inorganic substance in water to form the same alkaline salt used in the bleaching step.

4,116,760

METHOD AND APPARATUS FOR REMOVING LIQUID FROM A SLURRY OF SOLID MATERIAL

Richard B. Kennedy, Ridgefield, Conn., assignor to General Recycling Corporation, Clayton, Mo.

Continuation-in-part of Ser. No. 694,099, Jun. 8, 1976, abandoned. This application Jun. 11, 1976, Ser. No. 694,920

Int. Cl.² B30B *9/20, 15/00, 15/30*

U.S. Cl. 162—56 **45 Claims**

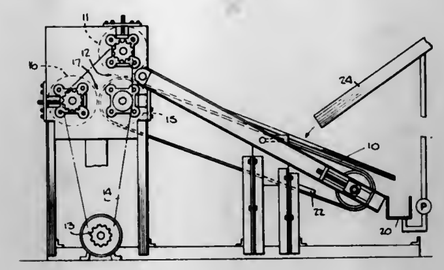
1. A method of removing liquid from a slurry of solid material in liquid, comprising the steps of:

conveying said slurry to a roll nip in an inclined plane by an inclined conveyor means,

squeezing liquid from said slurry by passing said slurry through said roll nip,

simultaneously with said step of squeezing and passing, blocking liquid squeezed from said slurry from flowing through said roll nip, and

simultaneously with said steps of squeezing and blocking, removing liquid squeezed from said slurry from said roll nip by guiding liquid squeezed from said slurry away from said roll nip in said inclined plane at selected intervals



along the length of said nip by a plurality of liquid guide means, disposed in spaced-apart parallel relationship, parallel to said inclined plane, and each having one end thereof disposed at and opening adjacent to said roll nip.

4,116,761

POROUS ELEMENT AND THE PREPARATION THEREOF

Brian Arthur Head, Maidstone, England, assignor to Whatman Reeve Angel Limited, Maidstone, England

Continuation of Ser. No. 664,501, Mar. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 523,587, Nov. 14, 1974, Pat. No. 3,972,694, which is a continuation-in-part of Ser. No. 509,204, Sep. 25, 1974, abandoned. This application Jan. 13, 1978, Ser. No. 869,053

Int. Cl.² D21F *11/00*

U.S. Cl. 162—152 **30 Claims**

1. A method of making a tubular element of uniform density and porosity which method comprises:

a. uniformly depositing onto the surface of a cylindrical porous mold from an aqueous dispersion of crushable fibres coated with a bonding agent, a tubular mat of the coated crushable fibres, the fibres of the aqueous dispersion consisting essentially of and selected from the group of polycrystalline fibres comprising alumina fibres, zirconia fibres, aluminum silicate fibres, and potassium polytitanate fibres which fibres have a diameter of from about 0.001 to about 10 microns, the mold substantially uniformly covered with drainage holes for the removal of excess water from the dispersion and having accurately circular and concentric circumferential collars of defined width at each end of the mold containing the drainage holes, the deposited tubular mat on the mold having a defined thickness which exceeds the width of said collars; and

b. compressing the tubular mat of fibres while on said mold by rolling the mold on the said collars across a surface with sufficient pressure to reduce the width of the tubular mat to the width of the circumferential collars to crush and rearrange the fibres and provide a mat of essentially uniform density and porosity and with a substantially smooth external surface; and

c. drying the resultant tubular mat of bonded and crushed fibres.

4,116,762

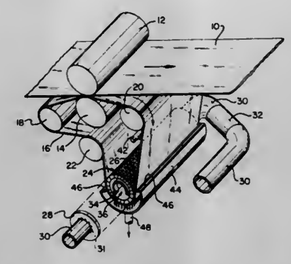
POROUS FELT WEB CONDITIONING SYSTEM

Frank J. Gardiner, 3 Ledge Rd., Cumberland Foreside, Me. 04011

Filed Jan. 28, 1977, Ser. No. 763,654

Int. Cl.² B08B *5/00, 7/04;* **D21F** *1/32*

U.S. Cl. 162—199 **26 Claims**



1. Apparatus for removing foreign matter from a porous, absorbent felt web, comprising:

a rotatably disposed roll closed at its extremes, said roll including a foraminous cylindrical shell having an axial dimension at least equal to the width of said web;

means for feeding said web at a selected speed under tension around said roll, said feeding means and said roll being positioned with respect to each other to provide an unsupported path portion therebetween for said tensioned web, said web being positioned to move jointly with said roll in contact therewith through a wrap angle of at least 90°;

means for introducing a gas under positive pressure directly to the interior of said roll; and

means for limiting the application of said pressurized gas to a positionally constant portion of said rotating shell, said shell portion extending axially substantially the full length of said roll and subtending an angle with the axis of said roll encompassed by said wrap angle.

22. Method of removing foreign matter from a moving porous absorbent felt web, said method comprising the steps of

moving said web under tension in contact with a rotatable, substantially cylindrical foraminous surface, said web moving jointly with said surface at a selected speed through a wrap angle of at least 90° of a circular path, and

applying a gas at a positive pressure to the concave side of said surface throughout the angle bracketed by said wrap angle, to pass through said durface and said web;

said speed and said gas pressure being selected with respect to the radius of said surface so that the combined action of said gas passing through said web and the centrifugal force created by the speed of said web moving in contact with said surface, tends to expel foreign matter from successive portions of said web passing through said bracketed angle.

4,116,763

SEPARATING SYSTEM FOR WIRES OF A DOUBLE-WIRE PAPER-MAKING MACHINE

Wolf-Gunter Stotz, and Herbert Holik, both of Ravensburg, Germany, assignors to Escher Wyss GmbH, Ravensburg, Wurtt., Germany

Filed Jan. 6, 1977, Ser. No. 757,139

Claims priority, application Switzerland, Jan. 19, 1976, 565/76

Int. Cl.² D21F *1/40*

U.S. Cl. 162—301 **13 Claims**

1. A double wire paper-making machine comprising

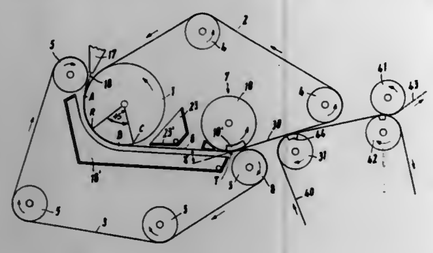
a rotatable directing roll;

a pair of forming wires of endless loop construction extending along a periphery of said roll from a place of engagement to a place of dis-engagement, said place of disengagement being disposed between the lowest point of said

roll and a point offset by 45° from said lowest point in a direction towards said place of engagement;

a plurality of guide rolls guiding said wires in respective endless paths, one of said wires being guided around much of said directing roll and both said wires being guided in a straight path downstream of said dis-engagement place;

a head box upstream of said directing roll for supplying stock between said wires to form a paper web therebetween;



a separator downstream of said directing roll for separating said wires from each other with the paper web on the bottom of said one wire; and

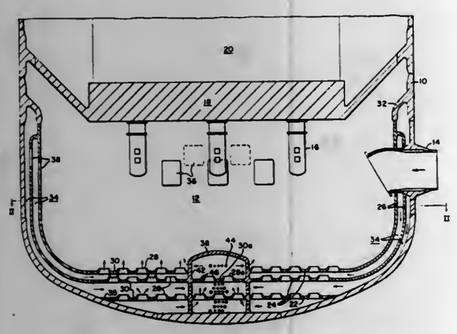
a take-off means downstream of said separator for removing the paper web from the bottom of said one wire, wherein said one wire extends from said separator and from said straight path along a straight run at an angle of less than ninety degrees relative to said straight path, said one wire extending away from the other wire in said straight run.

4,116,764

APPARATUS FOR CONTROLLING NUCLEAR CORE DEBRIS

Robert D. Jones, Irwin, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 11, 1976, Ser. No. 656,992
Int. Cl.² G21C *9/00*
U.S. Cl. 176—38 **11 Claims**



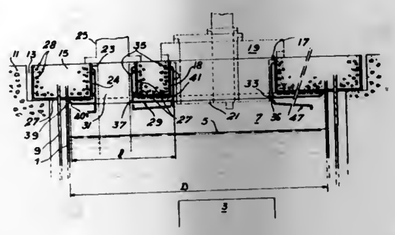
1. Apparatus for controlling debris resulting from meltdown of a nuclear reactor core normally cooled by a circulating liquid, said apparatus comprising a plurality of plates horizontally positioned beneath the core of said reactor and being in flow communication with said liquid under meltdown conditions, said plates disposed one atop another with a space therebetween, each said plate having a plurality of vertical openings therein each with a peripheral depression thereabout, adjacent openings being separated by a singular depression, said openings being spaced from one another such that substantially all of said openings are vertically aligned above a depression in the successively lower plate.

4,116,765

LIQUID METAL COOLED NUCLEAR REACTOR

Jean-Louis Boy Marcotte, Orsay; Georges Chevalier, Longjumeau; Janusz Gerij, St-Maur, and Jacques Leheu, Drancy, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 680,780, Apr. 27, 1976, abandoned. This application Dec. 16, 1976, Ser. No. 751,202
Int. Cl.² G21C *11/08*
U.S. Cl. 176—38 **11 Claims**



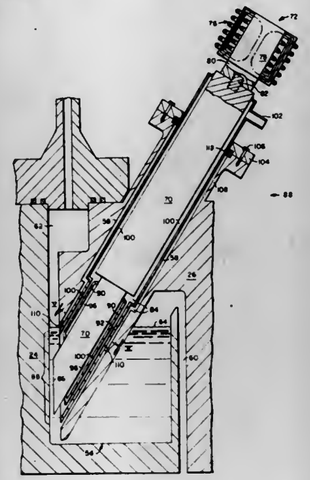
1. A liquid metal cooled reactor comprising a cylindrical primary vessel, a reactor core within said primary vessel, fuel assemblies in said core, a concrete slab roof closing said cylindrical primary vessel, a horizontal inner wall for said roof, a liquid metal coolant in said primary vessel, a hot gaseous medium above said liquid metal coolant, pumps and heat exchangers, a system of rotating shield plugs in said slab roof, a central opening in said roof for said system of rotating shield plugs, a first vertical wall for said roof delimitating said central opening, a plurality of passages in said roof for said heat exchangers and pumps, second vertical walls for said roof delimitating said passages, a third vertical wall for said roof located opposite to said primary vessel, a sheet metal plate covering said horizontal inner wall and said first, second and third vertical walls of said roof, a thermal protection device for said slab roof comprising an annular metallic planar plate of thickness smaller than and also equal to 25 mm extending beneath said slab roof parallel to said horizontal inner wall of said roof, an internal edge for said annular plate defined by said central opening, an external edge for said annular plate defined by said third vertical wall, openings in said annular plate located opposite to said passages for said heat exchangers and pumps, edges for said openings in said annular plate, a first vertical sealing shell surrounded by said first vertical wall of said roof, said first vertical sealing shell being fixely connected at one end to the inner edge of said metallic annular plate and at the other end to the sheet metal plate covering said first vertical wall of said roof at the upper part of said first vertical wall, second vertical sealing shells surrounded by said second vertical walls of said roof, each of said second vertical shells being fixely connected at one end to the edge of one of said openings in said metallic annular plate and at the other end to the sheet metal plate covering one of said second vertical walls of said roof at the upper part of said second vertical walls, said external edge of said annular metallic plate being connected to the sheet metal plate covering said third vertical wall of said roof by a connecting member, the radius of curvature of said connecting members being at least equal to 0.60 m, an inert gas trapped in closed spaces delimitated between said annular plate and said horizontal wall of said roof and between said first and second vertical walls of said roof and said first and second shells and means disposed in said roof along its horizontal inner wall and its vertical walls for evacuation of calories accumulated by said inert gas trapped in said closed spaces in contact with said annular plate.

4,116,766

ULTRASONIC DIP SEAL MAINTENANCE SYSTEM

Allan M. Poindexter, Pleasant Hills, and Herbert E. Ricks, Forest Hills, both of Pa., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 31, 1976, Ser. No. 719,310
Int. Cl.² G21C *9/00*
U.S. Cl. 176—38 **14 Claims**



1. A system for maintaining operability of dip seals located in a vessel designed to contain radioactive material comprising:

a closure head disposed on said vessel having at least one rotatable plug; said rotatable plug having an annulus therearound for enabling rotation of said rotatable plug;

liquid dip seals disposed in said annulus for preventing the release of said radioactive material;

an extension probe mounted on said rotatable plug and extending from a first end located above said rotatable plug to a second end located near said dip seal; and

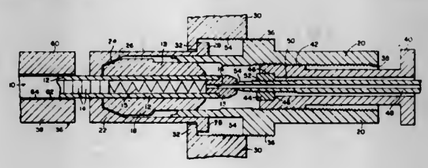
an ultrasonic transducer attached to said first end of said extension probe for producing vibrations in said extension probe that propagate from said first end to said second end for removing impurities from the metal surfaces of said dip seal and for wetting said metal surfaces thereby increasing the sealing capability of said liquid dip seal and promoting the rotatability of said rotatable plug.

4,116,767

FLUID PRESSURE APPARATUS FOR RECOVERING FUEL PELLETS FROM NUCLEAR FUEL ELEMENTS

Clarence D. John, Jr., Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 13, 1976, Ser. No. 749,869
Int. Cl.² G21C *19/26*
U.S. Cl. 176—87 **6 Claims**



1. Apparatus for removing nuclear fuel pellets from nuclear fuel elements comprising:

collet means for supporting a fuel element and for limiting the expansion of the metallic sheath of said fuel element;

a high pressure tube arranged in colinear alignment with said fuel element for conducting water into said fuel element thereby pressurizing said fuel element, thus expanding said metallic sheath away from said fuel pellets and enabling the easy removal of said fuel pellets;

a body disposed about said collet means for manipulating said collet means; and

a jamb nut movably disposed within said body for manipulating said high pressure tube into contact with said fuel element.

4,116,768

PROCESS FOR PRODUCING A PEPTIDE

Yoshikazu Isowa; Muneki Ohmori, both of Tokyo; Hideaki Kurita, Sagamihara; Tetsuya Ichikawa, Sagamihara; Masanari Sato, Sagamihara; Kaoru Mori, Sagamihara, and Kiyotaka Oyama, Sagamihara, all of Japan, assignors to (Zaidanhojin) Sagami Chemical Research Center, Tokyo, Japan

Division of Ser. No. 803,350, Jun. 3, 1977, which is a continuation of Ser. No. 734,010, Oct. 19, 1976, abandoned. This application Oct. 6, 1977, Ser. No. 839,848
Claims priority, application Japan, Apr. 19, 1976, 51-43686
Int. Cl.² C12D *13/06*
U.S. Cl. 195—29 **3 Claims**

1. A process for producing a peptide having the formula:

X—A—B—Y

wherein A and B are the same or different and each represents an amino acid residue or a peptide residue, X represents an amino acid protective group, Y represents a carboxyl protective group, which comprises:

reacting an acid component of an amino acid or peptide having an N-terminal protective group or a salt thereof which has the formula

X—A—OH

with an amine component of an amino acid or peptide having a C-terminal protective group or a salt thereof which has the formula

H—B—Y

in the presence of a metalloproteinase enzyme produced from microorganisms in an aqueous solution having a pH necessary to maintain the activity of said metalloproteinase enzyme;

wherein the combination of said acid component (I) and said amine component (II) is selected from the group consisting of L—I+DL—II, DL—I+L—II, and DL—I+D-L—II.

4,116,769

PROCESS FOR PREPARING 7-DEOXYSTEFFIMYCINOL

Vincent P. Marshall, Portage; David W. Elrod, Kalamazoo; James M. Koert, Kalamazoo; Elizabeth A. Reisender, Kalamazoo, and Paul F. Wiley, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 782,621, Mar. 30, 1977, Pat. No. 4,077,844. This application Nov. 16, 1977, Ser. No. 851,861
Int. Cl.² C12D *9/20*
U.S. Cl. 195—51 R **3 Claims**

1. A process for preparing the antibiotic 7-deoxysteffimycinol which comprises cultivating Aeromonas hydrophila, having the identifying characteristics of NRRL B-11099, in an aqueous nutrient medium under microaerophilic conditions in the presence of the antibiotic steffimycinol until bioconversion of steffimycinol to 7-deoxysteffimycinol, and recovering said 7-deoxysteffimycinol.

4,116,770
WAXY BARLEY STARCH WITH UNIQUE SELF-LIQUEFYING PROPERTIES

Kenneth J. Goering, and Robert Eslick, both of Bozeman, Mont., assignors to Research Corporation, New York, N.Y.

Filed Feb. 27, 1975, Ser. No. 553,680
Int. Cl.² C12D *13/02*; A01H *1/02*; C07G *17/00*
U.S. Cl. 195—63 **14 Claims**

1. A method for forming a liquified starch which comprises separating starch granules from the grain of the barley variety Washonupana which has been obtained by cross-breeding a first barley variety characterized by the hullness gene *n n* on chromosome 1, and a second barley variety which is characterized by the waxy endosperm gene *wx wx* on chromosome 1, which granules, when said granules are heated to a temperature of from 67° to 75° C., are self liquefying without the introduction of any outside source of enzymes,

admixing said starch granules with water to form a slurry,

heating said slurry until said starch granules form a paste which is then liquefied by the enzymatic activity of the amylase contained within said granules, without the addition of any other amounts of enzyme, and

recovering the liquefied starch.

9. Barley starch granules from the barley variety Washonupana which contain a sufficient amount of native α-amylase after separation from the grain so as to be characterized by being self-liquefying without the addition of further amounts of amylase, when said granules are heated to a temperature of from 67° to 75° C.

12. Barley starch granules from the barley variety Washonupana which are obtained by separation from the grain of a barley variety having the genetic characteristics of

$$\frac{lk2\ n\ wx}{lk2\ n\ wx}$$, wherein

wherein said granules contain an amount of amylase which is capable of effecting self-liquefication of said granules when the granules are heated to a temperature of from 67° to 75° C.

4,116,771
IMMOBILIZED SACCHARIFYING ENZYME PRODUCT AND PROCESS FOR PREPARATION THEREOF

Shmuel Amotz, Ganloese; Tage Kjaer Nielsen, Herlev; Poul Borge Rosenius Poulsen, Vaerloese, and Barrie Edmund Norman, Farum, all of Denmark, assignors to Novo Industri A/S, Bagsvaerd, Denmark

Filed Jun. 28, 1977, Ser. No. 810,788
Int. Cl.² C07G *7/02*
U.S. Cl. 195—63 **18 Claims**

1. An immobilized saccharifying enzyme product in particulate form, the saccharifying enzyme being selected from the group consisting of amyloglucosidase and maltogenic alpha-amylase, which product comprises carrier particles of granular casein having a coating of a liquid-permeable proteinaceous layer comprising the saccharifying enzyme and egg albumen cross-linked by reaction with glutaraldehyde.

4,116,772
FREE-FLOWING FUNGAL ENZYME COMPOSITION

Frederick D. Vidal, Englewood Cliffs, and Albert B. Gerrity, Hazlet, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 30, 1975, Ser. No. 600,323
Int. Cl.² C07G *7/02*; A21D *8/04*
U.S. Cl. 195—64 **8 Claims**

1. A process for preparing a fungal alpha-amylase composition suitable for use in the baking industry, which comprises uniformly blending a liquid fungal alpha-amylase concentrate having a minimum diastatic activity of 12,500 SKB units with a dried starch containing a maximum of about 3% moisture to obtain a free-flowing alpha-amylase composition having a diastatic activity of at least 1,000 SKB units and a moisture content of less than 8.5%.

4,116,773
ENZYMATIC REAGENT AND METHOD FOR INCREASING THE SENSITIVITY OF ENZYMATIC SUBSTRATE ANALYSES USING OXYGEN RATE ANALYZERS

Carole A. Polito, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 1, 1976, Ser. No. 701,920
Int. Cl.² G01N *33/00, 31/14*
U.S. Cl. 195—99 **9 Claims**

1. An enzymatic reagent comprising a buffered solution and an enzyme for use in the kinetic measurement of the concentration of a substrate by means of an oxygen rate analyzer, characterized in that said reagent further comprises a salt or a mixture of salts which will reduce the solubility of oxygen in said reagent by at least 30% when compared with the solubility of oxygen in water and thereby increase the magnitude of an output signal generated by the analyzer and indicative of said substrate concentration.

4,116,774
METHOD FOR THE DETERMINATION OF ENZYME ACTIVITIES

Sadamasa Minato; Atsushi Hattori; Yoshihiko Baba; Yuichiro Yabe, and Seigo Ueda, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed May 20, 1977, Ser. No. 798,938
Claims priority, application Japan, Jun. 1, 1976, 51-63786
Int. Cl.² G01N *33/00, 31/14*
U.S. Cl. 195—99 **6 Claims**

1. In a method for the colorimetric determination of enzyme activity in a substance wherein the substance is treated with a mixture of a substrate and color reagent and is then colorimetrically analyzed, the improvement which comprises:

the substrate being an aromatic primary amine derivative selected from the group consisting of

L-glutamic acid γ-p-dimethylaminoanilide,
L-glutamic acid γ-p-diethylaminoanilide,
L-glutamic acid γ-p-methoxyanilide,
L-glutamic acid γ-p-hydroxyanilide,
S-benzyl-L-cysteine p-dimethylaminoanilide,
S-benzyl-L-cysteine p-hydroxyanilide,
S-benzyl-L-cysteine p-methoxyanilide,
L-leucine p-dimethylaminoanilide,
L-leucine p-hydroxyanilide,
L-leucine p-methoxyanilide and
N-benzyl-L-tyrosine p-dimethylaminoanilide

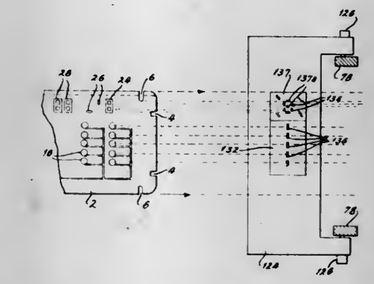
and said color reagent is an iron complex selected from the group consisting of sodium pentacyanoammineferroate and potassium pentacyanoammineferroate which is treated with a peroxide selected from the group consisting of sodium periodate, potassium periodate, potassium permanganate and hydrogen peroxide, and wherein said iron complex is further blended with an alkali metal hydrogencarbonate and low molecular dextran.

4,116,775
MACHINE AND PROCESS FOR READING CARDS CONTAINING MEDICAL SPECIMENS

Ronald A. Charles, St. Louis County; Paul W. Jones, St. Charles; John L. Staples, Florissant, and Joseph R. Wiegner, Ballwin, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 3, 1976, Ser. No. 682,728
Int. Cl.² C12K *1/04*
U.S. Cl. 195—103.5 M **25 Claims**

1. A process for examining a well containing a culture medium to determine if viable microorganisms exist in the well, a dilution of said culture medium having the capability of undergoing a change in its light transmitting characteristics when a viable microorganism is in the dilution and is sustained by the culture medium, said process comprising: projecting light through the well at successive time intervals, for each time the light is projected detecting the light at a plurality of adjacent locations beyond the well substantially simultaneously to determine the intensity of such light at each location, whereby some locations may register a greater change in light intensity than other locations as the result of bubbles or foreign material affecting the intensity of the light to such locations; and indicating that a viable microorganism is present only when a selected number of locations register a decrease in light intensity in excess of a predetermined value.



4,116,776
DIAGNOSTIC BLOOD TEST AND KIT FOR DETECTING HUMAN CHORIONIC GONADOTROPIN

Milton H. Dalbow, Springdale; Hernan F. Acevedo, Allison Park, and Malcolm Slifkin, Pittsburgh, all of Pa., assignors to International Radioimmune Systems, Inc., Brighton, Mich.

Filed Apr. 19, 1976, Ser. No. 679,251
Int. Cl.² G01N *31/14*
U.S. Cl. 195—103.7 **19 Claims**

1. A diagnostic blood test for human chorionic gonadotropin comprising the steps of:

(a) separating the white blood cells from the whole blood sample to be tested;

(b) treating the cells with neuraminidase;

(c) washing the cells to remove excess neuraminidase;

(d) treating the cells with antiserum specific to the beta-subunit of human chorionic gonadotropin, said antiserum including a clinically detectable label;

(e) washing excess antiserum from the cells; and

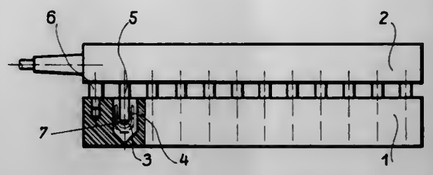
(f) clinically determining the presence or absence of said label; the presence of said label indicating the presence of human chorionic gonadotropin in the blood sample tested.

4,116,777
APPARATUS FOR AND A METHOD OF THE DETERMINATION OF INFLUENZA NEURAMINIDASE

Gyula Takátsy; Katalin Barb; István Murányi, and Ferencné Burda, all of Budapest, Hungary, assignors to Labor Muszeripari Muvek, Esztergom, Hungary

Filed Dec. 6, 1976, Ser. No. 747,781
Claims priority, application Hungary, Dec. 30, 1975, LA 880
Int. Cl.² G01N *31/14*
U.S. Cl. 195—127 **2 Claims**

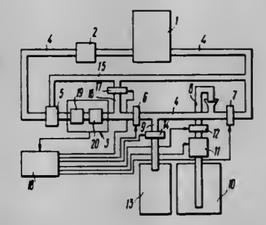
1. Device for use in carrying out reaction such as the determination of influenza neuraminidase, comprising a titration plate having series of bores for accommodating reaction mixtures, a heater block with series of heating elements immersible into the bores, and locating elements for ensuring positioning of the heater block relative to the titrating plate.



4,116,778
PLANT FOR CONTINUOUS CULTIVATION OF MICROORGANISMS

Viktor Vasilievich Belousov, ulitsa akademika Pavlova, 7, korpus 9, kv. 33, Moscow; Vadim Moiseevich Glazer, ulitsa Mayakovskogi, 8, kv. 50, Zhukovsy Moskovskoi oblasti, and Sergei Vasilievich Shestakov, ulitsa Garibaldi, 15, korpus 1, kv. 100, Moscow, all of U.S.S.R.

Continuation of Ser. No. 432,334, Jan. 10, 1974, abandoned. This application Aug. 19, 1976, Ser. No. 715,902
Int. Cl.² C12B *1/00*
U.S. Cl. 195—139 **3 Claims**



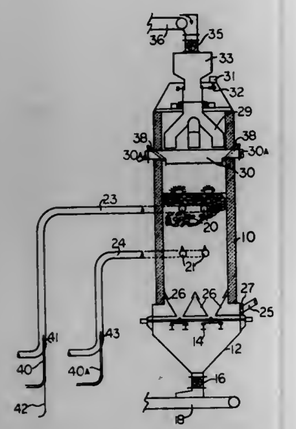
1. A plant for the continuous cultivation of microorganisms, comprising a fermenter for growing a suspension of microorganisms, which comprises a nutrient medium with a corresponding culture of microorganisms added thereto, said fermenter having an inlet and outlet, an annular duct having one end connected to the inlet into said fermenter and a second end connected to the outlet thereof for circulating the suspension of microorganisms therethrough; a recirculating pump installed in said annular duct downstream of said fermenter, and through which the suspension of microorganisms is pumped for effecting recirculation thereof; a process parameter measuring unit installed in said annular duct downstream of said recirculating pump; said fermenter, said recirculating pump, and said process parameter measuring unit being connected in series by said annular duct to form a recirculating circuit for continuously circulating the suspension of microorganisms therethrough; two locking means spaced apart in said annular duct downstream of said process parameter measuring unit; a supply line connected to the section of said annular duct between said locking means; a nutrient medium storage container connected to said supply line; an overflow connection connected to the section of said annular duct between said locking means for withdrawing the suspension of microorganisms from the section of said annular duct between said locking means; a microorganism suspension collector connected to said overflow connection; a metering pump located in said supply line for supplying measured quantities of the nutrient medium from said nutrient medium storage container to the section of the annular duct between said locking means and for; discharging therefrom an equal volume of the suspension of microorganisms into said microorganism suspension collector.

4,116,779

STARTING PROCEDURE FOR INTERNAL COMBUSTION VESSELS

Harry A. Harris, Rifle, Colo., assignor to Paraho Corporation, Grand Junction, Colo.

Filed Mar. 23, 1977, Ser. No. 780,413
Int. Cl.[2] C10B *49/04*
U.S. Cl. 201—34 5 Claims



1. A start-up procedure for the continuous, internal combustion retorting process for a bed of oil shale in a vertical shaft vessel which has upper and mid level air-gas injection distributors intermediate the top and bottom of the vessel, bottom gas injection means and has shale feed means and retorted shale withdrawal means, comprising:

(a) forming a partial bed of shale in the vessel having a surface above the upper level air-gas injection distributor;

(b) placing a plurality of ignited railroad type flare ignitors spacedly across the surface of the bed;

(c) initially passing air into the shale bed through both distributors and then gradually passing an increasing volume of air through said upper and reducing air volume to the mid level air-gas injection means, and at flow rates below the flame propagation rate to hold combustion in the shale bed and above the upper air-gas injection means;

(d) simultaneously with step (c) injecting a combustible gaseous fuel through said upper distributor into the bed with the air to produce a rich mixture that is not combustible at the temperature of the bed of shale until combined with the air from the mid-distributor thereby forming a combustion zone above the upper distributor;

(e) initiating and gradually increasing raw shale feed onto the bed, covering the ignitors;

(f) initiating flow of recycle gas into the bed;

(g) initiating and gradually increasing retorted shale withdrawal, at a rate less than increased raw shale feed of (e), to thereby gradually raise the level of the shale bed to normal operating height in the vessel during ignition of said ignitors;

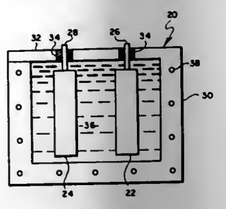
(h) gradually decreasing flow of gaseous fuel to a shut-off when ignition of shale is achieved during the time of ignition of said ignitors.

4,116,780

METHOD OF MAKING A LITHIUM-SILICON BORON ELECTRODE FOR ELECTRICAL ENERGY STORAGE DEVICE

Anthony F. Sammells, Newbury Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 793,815, May 5, 1977, Pat. No. 4,076,905.
This application Sep. 12, 1977, Ser. No. 832,315
Int. Cl.[2] H01M *10/44*
U.S. Cl. 204—2.1 3 Claims



1. A method for electrochemically forming a composite negative lithium electrode structure for an electrical energy storage device from the uncharged state, wherein the formed electrode structure comprises a supporting current-collecting matrix in intimate contact with an alloy of lithium, silicon, and boron having the empirical formula Li_xSiB_y, where x has a value from 1 to 5 and y has a value from 0.1 to 3, which includes the steps of:

providing a supporting current-collecting matrix in intimate contact with an alloy of boron and silicon, the boron being present in an amount from about 11 to 50 atom percent and the silicon being present in an amount from about 89 to 50 atom percent;

immersing the current-collecting matrix containing the boron-silicon alloy in a lithium-containing molten salt electrolyte in a cell in opposing relation to a positive electrode structure, and

electrochemically charging the boron-silicon electrode structure at a selected voltage or current for a time sufficient to form the desired lithium-silicon-boron alloy negative electrode structure.

4,116,781

REJUVENATION OF MEMBRANE TYPE CHLOR-ALKALI CELLS BY INTERMITTENTLY FEEDING HIGH PURITY BRINES THERETO DURING CONTINUED OPERATION OF THE CELL

Martin M. Dorio, Mentor, and Alan J. Stacey, Parma, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 19, 1977, Ser. No. 788,836
Int. Cl.[2] C25B *1/20, 1/26, 15/08, 13/08*
U.S. Cl. 204—98 13 Claims

1. The method of operating a membrane type chlor-alkali electrolytic cell so as to maximize current efficiency during long-term continuous operation comprising, feeding an impure brine solution containing membrane contaminating quantities of multivalent metallic impurities to said cell which gradually contaminates the membrane in the cell and causes a loss in current efficiency, replacing said impure brine feed with a pure brine feed containing less than 0.5 milligrams per liter of each multivalent metal contaminant found in said impure brine solution excluding complexed hardness ions for a period of time to improve the current efficiency and thereafter returning to feeding said impure brine solution, said replacement of the impure brine feed with said pure brine feed being made intermittently with sufficient frequency so as to prevent the current efficiency of the cell from dropping below 88% of the cell's original current efficiency.

4,116,782

CORROSION PREVENTION SYSTEM

Charles K. Bon, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 7, 1977, Ser. No. 774,838
Int. Cl.[2] C23F *13/00*
U.S. Cl. 204—147 5 Claims

1. A method to reduce corrosion of a grounded metal conduit in an aqueous electrolyte conduit system including a nonmetallic conduit system physically attached to the metal conduit comprising impressing an electric potential between an anode positioned at least partially within the nonmetallic conduit and a ground, the potential being at least about the difference between the electrochemical reaction potentials, at the reaction temperature, of reactions occurring at the anode and at the metal conduit.

4,116,783

METHOD FOR RECOVERING VARIABLE-VALENCY ELEMENTS AND PURIFYING SEWAGE WATERS

Gianni Generini, Ravenna, Italy, assignor to Anic, S.p.A., Palermo, Italy

Filed Jan. 10, 1977, Ser. No. 757,881
Claims priority, application Italy, Mar. 23, 1976, 21472 A/76
Int. Cl.[2] C02C *5/12*
U.S. Cl. 204—150 7 Claims

1. An improved method of removing a variable-valency element from sewage water which contains a compound of said element, with concurrent purification of said water, by an oxidation-reduction reaction whereby the variable-valency element of said compound is reduced to a value that permits precipitation thereof through alkalization, wherein the improvement comprises, causing said sewage water to flow through a shortcircuited electrode system containing a cathode and an anode, one of which is electropositive and the other of which is electronegative, in the presence of an effective amount of an element other than the cathode material and having a more electropositive character than the anode element.

4,116,784

METHOD FOR CROSS-LINKING POLYETHYLENE WITH AN IONIZING RADIATION

Fumio Hosoi, Takasaki; Miyuki Hagiwara, Maebashi, and Kunio Araki, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Aug. 25, 1976, Ser. No. 717,866
Claims priority, application Japan, Aug. 25, 1975, 50-102798; Aug. 25, 1975, 50-102799
Int. Cl.[2] C08F *8/00*
U.S. Cl. 204—159.16 8 Claims

1. A method for cross-linking polyethylene, characterized in that polyethylene is blended with dipropargyl maleate and a copolymer selected from the group consisting of an ethylene-acrylonitrile copolymer, an ethylene-acrylic ester copolymer, an ethylene-substituted acrylic ester copolymer, an ethylene-vinyl acetate copolymer, an ethylene-substituted vinyl acetate copolymer and mixtures thereof, and the resulting mixture is irradiated with an ionizing radiation.

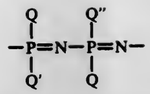
4,116,785

PHOSPHONITRILIC POLYMERS WITH CURABILITY BY SULFUR ACCELERATED CURES OR RADIATION CURES

Tai Chun Cheng, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 27, 1976, Ser. No. 662,074
Int. Cl.[2] C08F *8/00, 8/18*
U.S. Cl. 204—159.14 13 Claims

1. Sulfur cured non-fluorinated linear polyphosphazenes represented by the general formula



in which Q, Q' and Q'' represent monovalent groups randomly distributed along the —P=N— backbone, each of Q and Q' being free from flourine and being selected from the group consisting of alkoxy and aryloxy, both substituted and unsubstituted, and Q'' being a group with olefin unsaturation, the amount of Q'' being between 0.1 and 5% of the total of Q, Q' and Q''.

4,116,786

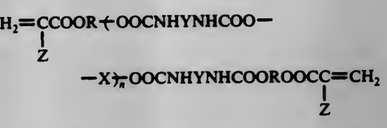
RADIATION CURABLE COATING COMPOSITIONS CONTAINING AN ACRYLATE-CAPPED, POLYETHER URETHANE AND A POLYSILOXANE

Leonard Edward Hodakowski, Saint Albans, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 8, 1976, Ser. No. 694,157
Int. Cl.[2] C08F *2/46, 30/08*
U.S. Cl. 204—159.13 8 Claims

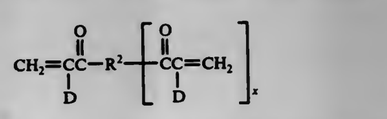
1. A radiation curable coating composition, convertible to a hard, flexible coating having inherent surface lubricity, comprising:

(A) from 5 to 70 weight percent of an acrylate-capped polyether urethane of the formula

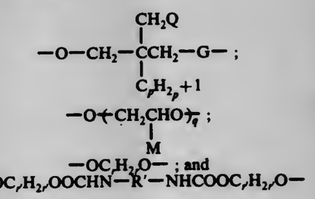


wherein Z is hydrogen or methyl; R is C_mH_{2m}; X is the residue of a polyether glycol having an average molecular weight from 300 to 4,000 after its reaction with an organic diisocyanate; Y is the residue of an organic diisocyanate after its reaction with a polyether glycol and a hydroxyalkyl acrylate; m has a value from 1 to 5; and n has a value from 1 to 5;

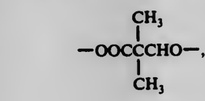
(B) from 80 to 5 weight percent of a low molecular weight polyfunctional acrylate having an average molecular weight of from 170 to 1,200 and defined by the formula



wherein D is hydrogen or methyl, x is 1 or 2, R^2 is chosen from the group consisting of



wherein Q is hydrogen or —O—, G is —O— or



M is hydrogen or alkyl having 1 to 2 carbon atoms, *p* has a value of 1 to 3, *q* has a value of 2 to 6, *r* has a value of 2 to 15, *r'* has a value of 2 to 4 and R' is the residue of an organic diisocyanate after its reaction with a hydroxyalkyl acrylate;

(C) from 0.1 to 2.0 weight percent of a polyether-functional polysiloxane chosen from the group of compounds represented by the formulas:

$$Me_3SiO(Me_2SiO)_f(MeSiO)_gSiMe_3$$
$$\quad\quad\quad

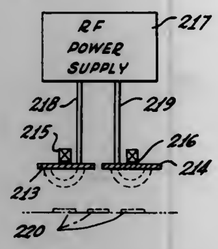
4,116,793
GLOW DISCHARGE METHOD AND APPARATUS

Alan S. Penfold, Playa del Rey, and John A. Thornton, Los Angeles, both of Calif., assignors to Telic Corporation, Santa Monica, Calif.

Division of Ser. No. 535,429, Dec. 23, 1974, Pat. No. 4,041,353, which is a continuation of Ser. No. 254,504, May 18, 1972, abandoned, and a continuation-in-part of Ser. No. 178,240, Sep. 7, 1971, Pat. No. 3,884,793. This application May 31, 1977, Ser. No. 801,857

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 R **25 Claims**



1. A method of generating a glow discharge, comprising the steps of:

supporting a pair of planar electrodes within a working gas environment;

applying electrical voltage across said electrodes; and

forming a magnetic field which defines, together with said electrodes, at least one trap for containing substantially all electrons emitted from said electrodes and having sufficient energy to further ionize said working gas.

9. Glow discharge apparatus, comprising:

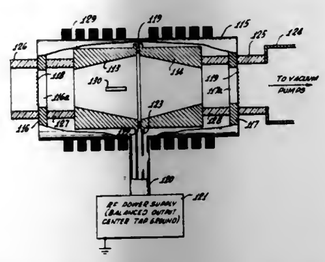
a pair of planar electrodes;

mounting means for supporting said electrodes in close, spaced apart relationship in a low pressure working gas environment;

power supply means for supplying an electrical voltage across said pair of electrodes; and

magnetic field means for forming a magnetic field which defines with said electrodes at least one completely closed trap for containing substantially all electrons emitted from said electrodes and having sufficient energy to further ionize said working gas.

forming a magnetic field which defines, together with said electrodes, at least one trap for containing substantially all



electrons emitted from said electrodes and having sufficient energy to further ionize said working gas.

4,116,795
SENSOR DEVICE

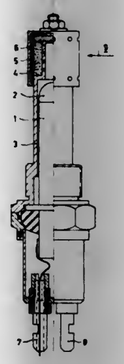
Herman Lambertus De Jong, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1977, Ser. No. 792,648

Claims priority, application Netherlands, May 12, 1976, 7605042

Int. Cl.² G01N *27/46*

U.S. Cl. 204—195 S **1 Claim**



1. A sensor device for measuring the oxygen concentration in the exhaust gases of combustion engines wherein said gases include particles that are to be filtered, comprising a sensor element that comprises a body element of stabilized ZrO_2 having electrode layers on both sides, said device further comprising a filter member that comprises a combination of at least three apertured partitions, a first one of said partitions being disposed between a second partition and a third partition and said partitions being spaced from each other, said partition apertures having diameters which significantly exceed the average diameter of the particles to be filtered and not being in register at least in the two outermost said partitions, so that this combination of apertures changes the direction of the gas stream and coarser said particles are separated from the gas stream; and further comprising a filter element that is a fine-meshed, sintered or fibrous filtering material and is present between two of said partitions located closer to said sensor element than the outermost said partition, said filter member being disposed between said sensor and the source of said exhaust gases.

4,116,794
GLOW DISCHARGE METHOD AND APPARATUS

Alan S. Penfold, Playa del Rey, and John A. Thornton, Los Angeles, both of Calif., assignors to Telic Corporation, Santa Monica, Calif.

Division of Ser. No. 535,429, Dec. 23, 1974, Pat. No. 4,041,353, which is a continuation of Ser. No. 254,504, May 18, 1972, abandoned, and a continuation-in-part of Ser. No. 178,240, Sep. 7, 1971, Pat. No. 3,884,793. This application May 31, 1977, Ser. No. 802,060

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 R **33 Claims**

1. A method of generating a glow discharge internally of a pair of hollow electrodes, comprising the steps of:

supporting a pair of hollow electrodes in end to end relationship within a working gas environment;

applying electrical voltage across said pair of electrodes; and

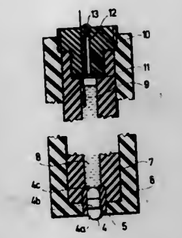
4,116,796
SELECTIVE HALIDE AND SULFIDE SENSITIVE ELECTRODES

Jenö Havas; Elek Doktor; Márton Patkö, and Ernö Pungor, all of Budapest, Hungary, assignors to Radelkis Elektrokemiai Muszergyarto Szovetkezet, Budapest, Hungary

Continuation-in-part of Ser. No. 570,655, Apr. 23, 1975, abandoned. This application Mar. 23, 1977, Ser. No. 780,264

Int. Cl.² G01N *27/46*

U.S. Cl. 204—195 M **4 Claims**



1. Selective halide- and sulfide- sensitive electrode for the determination of halide and sulfide ion concentrations and activities in solution having a solid sensor built up of a halide and/or sulfide precipitate, and an electrode body built in such a manner that one surface portion of the sensor contacts the sample solution whereas another surface portion of the sensor, isolated by the electrode body from the portion in contact with the sample, contacts an electrolyte solution of constant ion concentration, the latter being equipped with a potential outlet terminal, comprising a sensor in the form of a solid block, the surface portion of said block contacting the sample solution being spherical or of a curved surface void of edges or apices; the surface portion of said block not contacting the sample solution or the solution of constant ion concentration being connected to an elastic layer, which in turn is in contact with the wall of a tubular plastic electrode body, wherein said block is built up of three layers perpendicular to the longtitudinal axis thereof, the materials of the layers being a metal halide or a mixture of metal halides, a metal sulfide or a mixture of metal sulfides or a mixture of metal halides and metal sulfides, with the proviso that a metal layer is between the two metal salt layers.

4,116,797
OXYGEN SENSOR

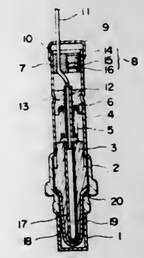
Takao Akatsuka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 23, 1977, Ser. No. 799,694

Claims priority, application Japan, Dec. 3, 1976, 51/145326

Int. Cl.² G01N *27/46*

U.S. Cl. 204—195 S **11 Claims**



1. An automotive exhaust system oxygen sensor utilizing atmospheric oxygen as a reference gas, comprising, a solid electrolyte tube with a closed tip; an outer electrode and an inner electrode formed respectively, on the outside and the inside of said tube; a housing supporting said tube; electrically conductive means to take out the output of said inner electrode; a cover supported by said housing; means defining an air passage at an end of said cover; and a multi-layer filter provided in said air passage, said filter comprising a heat-resistant material with a low rate of thermal expansion, and said filter excluding water, dust and other foreign matter from contact with said inner electrode.

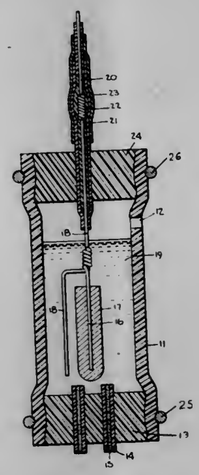
4,116,798
REFERENCE ELECTRODE FOR USE AT HIGH TEMPERATURES AND PRESSURES

Ingrid Joan Magar, Tuxedo, and Patrick Evan Morris, Warwick, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 659,642, Feb. 20, 1976, abandoned. This application Jun. 16, 1977, Ser. No. 807,052

Int. Cl.² G01N *27/30*

U.S. Cl. 204—195 F **6 Claims**



1. A reference electrode adapted for immersion in an aqueous liquid at high-temperature and high-pressure comprising:

(a) a heat-expandable plastic tube body sealed at one end with a heat-expandable, heat-resistant plastic bridge mounting plug and sealed at the opposite end with an electrode mounting plug enclosing a silver wire, a portion of said silver wire having a fused silver chloride bead, said silver wire fixably disposed within said tube body and immersed within a soluble chloride electrolyte solution contained within said tube body;

(b) a corrosion-resistant bridge restraining means circumjacent said tube body opposite the junction of said tube body and said bridge mounting plug, said restraining means selected to have a coefficient of expansion lower than the coefficient of expansion of said bridge mounting plug;

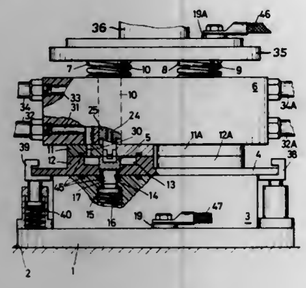
(c) a pre-shrunk bridge sleeve surrounding bridge fibers mounted within said bridge mounting plug, whereby heat expansion of said bridge mounting plug against said bridge restraining means directs lateral forces to seal said bridge mounting plug to said tube body while compressing said bridge fibers, and

(d) a heat sealing vent means in the wall of said tube body positioned above said electrolyte solution to substantially inhibit bubble formation through internal and external pressure equalization during pressurization and heating of said reference electrode, said heat sealing vent means adapted to close during heating to a temperature above about 300° C.

4,116,799
MACHINE FOR THE SIMULTANEOUS ELECTROCHEMICAL PROCESSING OF MULTIPLE WORKPIECES

Peter Gosger, Solingen, Burg; Paul Gerhard Pott, Wermelskirchen, and Bernd Wolter, Remscheid, all of Germany, assignors to AEG-Elotherm, G.m.b.H., Remscheid-Hasten, Germany

Filed Sep. 7, 1976, Ser. No. 720,643
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1975, 2540998
Int. Cl.² B23P *1/04, 1/14*
U.S. Cl. 204—224 M 4 Claims



1. A machine for simultaneously electrochemically machining a plurality of workpieces comprising;
a workpiece receiver for mounting a plurality of workpieces;
a plurality of working electrodes;
guide rail means mounted on said support base, for removably mounting said receiver, to permit horizontal movement thereof between a loading and a processing position, said guide rail means accurately positioning said workpieces with respect to said electrodes for machining;
a clamping element for holding said workpieces between said support base and said clamping element;
means for vertically moving said clamping element to clamp and release, respectively, said receiver;
means for defining a working gap between each electrode and workpiece;
means for supplying electrolyte to and removing electrolyte from said gaps; and
means for connecting a source of eroding current to said electrodes and workpieces.

4,116,800
ELECTROLYTIC CELL WITH REDUCED INTER-ELECTRODE GAP

John E. Currey; Colin S. McLarty, both of Lewiston, and Donald H. Porter, Tonawanda, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,307
Int. Cl.² C25B *11/02, 13/08;* H01B *13/00;* B21D *22/00*
U.S. Cl. 204—252 14 Claims

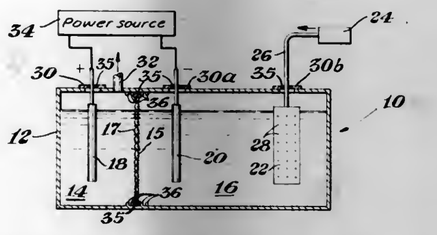


1. An anode comprising in combination an anode post and a pair of planar anode plates attached to said post, parallel to each other, the distance between said parallel plates being the diameter of said anode post, wherein the improvement comprises an expanded anode having each plate bent into a position wherein the plates are substantially parallel to each other and the distance between said parallel portion of said plates is greater than the diameter of the anode post except where the plate is attached to said post.

4,116,801
APPARATUS FOR ELECTROWINNING MULTIVALENT METALS

Paul R. Juckniess, and David R. Johnson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 517,567, Oct. 24, 1974, abandoned. This application Sep. 13, 1976, Ser. No. 722,916
Int. Cl.² C25C *3/22, 3/28, 7/04*
U.S. Cl. 204—247 76 Claims



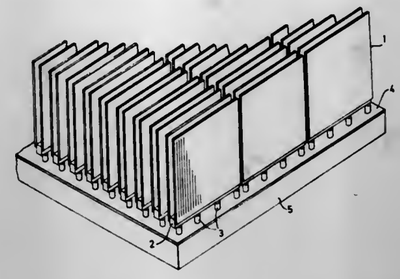
1. An electrolytic diaphragm cell, without means to adjust the diaphragm pore size, for the production of metallic titanium in a molten salt bath comprising:
a body adapted to contain the bath and to separate the bath from the ambient atmosphere;
an anode compartment disposed within said body;
a deposition cathode compartment disposed within said body and spaced apart from said anode compartment by a diaphragm;
at least one anode, adapted to be at least partially immersed in the bath, disposed within said anode compartment;
at least one deposition cathode, adapted to be at least partially immersed in the bath, disposed within said cathode compartment;
at least one foraminous diaphragm with a porous metal substrate and a metal coating thereon, the diaphragm being resistant to the corrosive environment within the containing means and having a diaphragm coefficient of greater than zero to about 0.5 and a flow coefficient within the range of from about 0.1 to about 25, the diaphragm being adapted to be at least partially immersed in the bath to space apart said anode and cathode compartments;
at least one feed means adapted to provide titanium ions to the bath;
a means to remove a gas from said anode compartment; and
a means to provide sufficient electrical energy to said anode and said cathode to deposit solid titanium on said cathode.

4,116,802
ELECTROLYTIC DIAPHRAGM CELLS

Frank Smith, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 21, 1977, Ser. No. 817,677
Claims priority, application United Kingdom, Aug. 4, 1976, 32490/76; Sep. 10, 1976, 37604/76
Int. Cl.² C25B *9/00, 11/02, 11/10*
U.S. Cl. 204—252 14 Claims

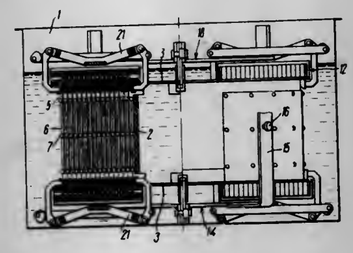
1. An assembly for an electrolytic cell the assembly comprising
a base plate of an electrically conductive metal which is unattacked by the electrolyte to be used in the cell,
a plurality of anodes or anode support members mounted on and attached in electrical contact with one surface of the base plate, and
an electrical conductor in the form of a metallic sheet electrically conductively bonded to the other surface of the base plate, the bonding having been achieved by placing a metallic inter layer between the base plate and the conductor sheet, heating the inter layer to a temperature at which the inter layer is molten, which temperature is at least 427° C. but is lower than the melting points of the base plate and the conductor sheet, and applying elevated pressure to the base plate and to the conductor sheet sufficient to substantially elimipate voids between the base plate and the conductor sheet.



4,116,803
METHOD AND APPARATUS FOR FORMING CERMET ELECTRODES FOR ALKALINE ACCUMULATORS

Ivan Alexandrovich Kolosov, ulitsa Astrakhanskaya, 118, kv. 54; Jury Egorovich Ivanyatov, ulitsa M. Zatonskaya, 21, and Vera Nikolaevna Kalininskaya, ulitsa Sakko-Vantsetti, 23, kv. 23, all of Saratov, U.S.S.R.

Filed May 11, 1977, Ser. No. 795,880
Int. Cl.² C25D *17/06, 17/08, 17/10*
U.S. Cl. 204—272 2 Claims



1. An apparatus for forming cermet electrodes used in alkaline accumulators comprising: an electrolytic tank; a spool disposed in said tank and having wound thereon a counterelectrode and a band stock insulated from each other; the width of said spool being 10 to 15% larger than that of the band stock and the counterelectrode, whereby the band stock and the counterelectrode are axially offset relative to each other during winding, said counterelectrode being formed of a band; the heads of said spool being insulated from each other and formed with openings; and contact terminals being arranged in said openings.

4,116,804
CATALYTICALLY ACTIVE POROUS NICKEL ELECTRODES

Christopher Roderick S. Needes, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

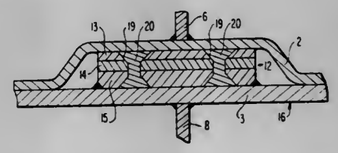
Filed Nov. 17, 1976, Ser. No. 742,615
Int. Cl.² C25B *11/03, 11/06*
U.S. Cl. 204—284 8 Claims

1. An improved electrode for use as a hydrogen-evolution cathode is an electrolytic cell, the electrode being of the type that has a continuous surface layer of active porous Raney nickel in electrical contact with a conductive metal core, the improvement comprising a porous Raney nickel surface layer having a thickness between 100 and 400 microns, an average porosity of at least 11%, and an average agglomerate size of at least 35 microns.

4,116,805
BIPOLAR ELECTRODE

Teruo Ichisaka, and Tadao Ikegami, both of Tamano, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed Feb. 15, 1978, Ser. No. 878,100
Claims priority, application Japan, Feb. 17, 1977, 52-15501
Int. Cl.² C25B *11/00*
U.S. Cl. 204—290 F 4 Claims



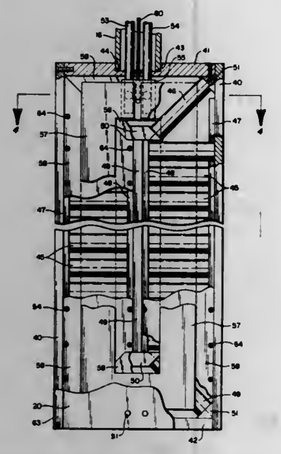
1. A bipolar electrode comprising
a. an anode member comprising a substrate made of an anticorrosive metal or metal alloy and an electrically conductive coating formed on the surface thereof;
b. a cathode member comprising a metal or a metal alloy;
c. a partition wall for separating the anode member from the cathode member, said partition wall comprising an anode-side sheet made of the same type of anticorrosive metal or metal alloy used as the substrate of said anode member and a cathode-side sheet made of the same type of metal or metal alloy used as the cathode member; and
d. a composite member for electrically and structurally connecting the anode member and the cathode member to each other, said composite member comprising bonded together (i) an anode-side portion made of the same type of anticorrosive metal or metal alloy used as the substrate of the anode member, (ii) a cathode-side portion made of the same type of metal or metal alloy used as the cathode member, and (iii), as an interlayer, a portion made of an electrically conductive metal or metal alloy, which is resistant to the migration of hydrogen and is substantially impermeable to atomic hydrogen; wherein (1) pins made of an electrically conductive metal or metal alloy, which is resistant to the migration of hydrogen and is substantially impermeable to atomic hydrogen, are caulk-fitted in through-holes provided in said composite member (*d*) and outwardly diverging toward both surfaces of the composite member (*d*) so that the pins (1) adhere closely to the inside surfaces of the through-holes in the composite member (*d*), (2) the anode-side sheet and the cathode-side sheet of the partition wall (*c*) are sheets having no through-hole for inserting the pins in the composite member, (3) the cathode-side portion of the composite member (*d*) is welded to the surface of the inside of the cathode-side sheet of the partition wall (*c*) in a superimposed state, and (4) the surface of the inside of the anode-side sheet is resistance welded to the top surface of the anode-side portion of the composite member (*d*) in a superimposed state.

4,116,806

TWO-SIDED PLANAR MAGNETRON SPUTTERING APPARATUS

Robert Bruce Love, Upper Arlington, and Alan W. Bowen, Plain City, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 8, 1977, Ser. No. 858,656
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—298 **18 Claims**



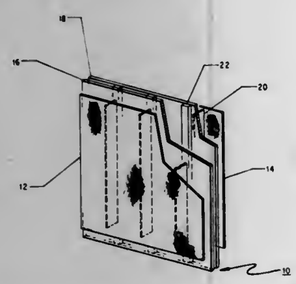
1. A two sided planar magnetron cathode comprising a substantially planar frame of substantially symmetric shape formed about a coplanar centerplane,
a plurality of magnets supported within the frame and positioned with the neutral axis of each magnet substantially in the centerplane, and
at least one target plate supported on the frame on opposite sides of the centerplane.

4,116,807

EXPLOSION BONDING OF BIPOLAR ELECTRODE BACKPLATES

Edward J. Peters, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 761,268, Jan. 21, 1977, Pat. No. 4,055,291. This application Aug. 22, 1977, Ser. No. 826,455
Int. Cl.[2] C25B *11/00*
U.S. Cl. 204—290 F **1 Claim**



1. A bipolar electrode for use in a filter press electrolytic cell comprising: a planar foraminous anode made of titanium bearing upon the surface thereof an electrocatalytically active, corrosive resistant material; a planar solid sheet anode backplate made of titanium connected to said anode in a spaced apart parallel relation; a plurality of solid metallic riser posts made of titanium connecting said anode to said anode backplate in a spaced apart parallel relation; a spaced series of strips of solid metallic electrical conductor made of copper explosion bonded to said anode backplate such that about 10 percent of the total area of said anode backplate is electrically and mechanically connected to said strips of solid metallic electrical conductor; a planar solid sheet cathode backplate having a metallic makeup selected from the group consisting of iron, mild steel, stainless steel and nickel explosion bonded to said spaced series of strips of solid metallic electrical conductor such that about 10 percent of the total area of said cathode backplate is electrically and mechanically bonded to said strips of solid metallic electrical conductor and in a spaced apart parallel relation to said anode backplate leaving a remaining area as a space between said strips of solid metallic electrical conductor to provide a means for hydrogen to vent before it attacks said anode backplate; a planar foraminous cathode having the same metallic makeup as said cathode backplate connected in spaced apart parallel relation to said cathode backplate; and a plurality of solid metallic riser posts having the same metallic makeup as said cathode backplate and said cathode connecting said cathode to said cathode backplate in a spaced apart parallel relation.

4,116,808

PROCESS FOR HYDROGENATING A SOLID CARBONACEOUS MATERIAL WITH Ni/Ti/Mo ON A MAGNESIUM-DEFICIENT MAGNESIUM ALUMINATE SPINEL-AS CATALYST

Donald C. Cronauer, Gibsonia, and William L. Kehl, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 707,521, Aug. 6, 1976. This application Oct. 11, 1977, Ser. No. 840,899
Int. Cl.[2] C10G *1/08*
U.S. Cl. 208—10 **7 Claims**

1. A process for hydrogenating a carbonaceous material which comprises subjecting said carbonaceous material, together with hydrogen, under hydrogenation conditions in the presence of a catalyst comprising a magnesium-deficient magnesium aluminate spinel of the following formula:

$$Mg_xAl_2O_{3+x}$$

wherein x is a number ranging from about 0.10 to about 0.40, carrying nickel, titanium and molybdenum.

4,116,809

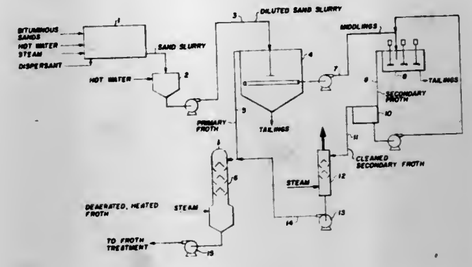
DEAERATOR CIRCUIT FOR BITUMEN FROTH

Thaddeus Eugene Kizior, Edmonton, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Ottawa; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; Ontario Energy Corporation; Imperial Oil Limited, both of Toronto; Canada-Cities Service, Ltd., Calgary and Gulf Oil Canada Limited, Toronto, all of, Canada

Filed Dec. 2, 1976, Ser. No. 746,669
Claims priority, application Canada, Apr. 27, 1976, 251187
Int. Cl.[2] C10G *1/04*
U.S. Cl. 208—11 LE **1 Claim**

1. In the hot water extraction process for treating tar sand wherein primary and secondary froth streams are produced by a primary separation vessel and a secondary flotation cell, said streams comprising mixtures of bitumen, water and solids, and the streams are transferred to a froth treatment circuit for recovering the bitumen, the improvement which comprises:
directly feeding the secondary froth stream by gravity from a secondary flotation cell to a first deaerator tower and heating and deaerating said stream by passing it countercurrently to steam through said tower;
conveying the deaerated secondary froth stream to a second deaerator tower;

directly feeding the primary froth stream by gravity from a primary separation vessel to the second deaerator tower;
passing said streams countercurrently to steam through said second tower to heat and deaerate them to provide a



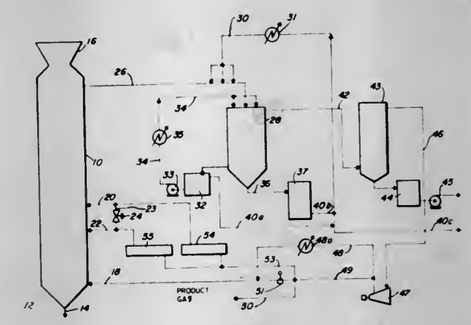
pumpable deaerated bitumen, water and solids product; and
pumping the product with one or more centrifugal pumps to the froth treatment circuit.

4,116,810

INDIRECT HEATING PYROLYSIS OF OIL SHALE

John B. Jones, Jr., and Adam A. Reeves, both of Grand Junction, Colo., assignors to Paraho Corporation, Grand Junction, Colo.

Filed May 24, 1976, Ser. No. 689,505
Int. Cl.[2] C10G *1/02*
U.S. Cl. 208—11 R **5 Claims**



1. A method of retorting oil shale in a closed vertical vessel during an externally heated gas for the pyrolysis of the shale providing an overall efficiency of about 97–100% Fischer Assay recovery of organic carbon comprising:
(a) forming a bed of crushed oil shale in about $a + \frac{1}{2}$ to - 3 inch size consist at a depth of about 24–26 feet ";
(b) feeding ambient temperature crushed shale at a rate of from 300–600 pounds per square foot per hour of cross-section of vessel to the top of the bed and withdrawing retorted shale from the bottom of the bed at a rate to maintain the bed depth;
(c) injecting a first quantity of a non-oxygenous gas into at least one position in said bed at a depth of about 7 feet below the surface of the bed in an amount of about 8,000–12,000 SCF/T at a temperature of about 1,000–1,300° F., said gas being injected in a plurality of jets across the lateral extent of the bed at velocity of less than about 100 feet/sec, and providing from 380 to 440 million BTU per ton of raw shale;
(d) injecting a second quantity of a non-oxygenous cooling gas into the bottom of the bed at temperature of less than about 250° F. and in an amount of 6,000–13,000 SCF/T;
(e) disengaging the resultant products of retorting mixed with the injected gas stream and withdrawing the mixed stream from the vessel.

4,116,811

METHOD OF SEPARATING ACTIVE HYDROGEN COMPOUNDS FROM HETEROGENEOUS MIXTURES ALSO CONTAINING COMPOUNDS WHICH DO NOT CONTAIN ACTIVE HYDROGENS

Hans-Georg Schaefer, Weberhof 17, D-5100 Aachen, and Axel Vogts, Kapellenweg 13, D-5180 Eschweiler, both of Germany

Filed Feb. 4, 1977, Ser. No. 765,681
Int. Cl.[2] C10C *1/20*
U.S. Cl. 208—44 **18 Claims**

1. The method of treating a heterogenous mixture of organic compounds, which mixture comprises at least one organic compound which does not have active hydrogen and at least one other organic compound which does have active hydrogen, which comprises the steps of:
(a) contacting said mixture with a reagent which reacts with said other compound to form a soluble compound, said reagent being selected from the group consisting of alkene oxides and ethyleneimime;
(b) introducing a solvent for said soluble compound into said mixture to form two phases therein; and then
(c) separating said phases from each other.

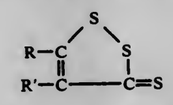
4,116,812

ORGANO-SULFUR COMPOUNDS AS HIGH TEMPERATURE ANTIFOULANTS

Richard L. Godar, and Philip R. Corneli, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 5, 1977, Ser. No. 813,193
Int. Cl.[2] C10G *9/16*; C08K *5/36*; C10C *7/18*
U.S. Cl. 208—48 AA **5 Claims**

1. A process of inhibiting the adhesion of deposits from hydrocarbons on metallic surfaces of the treating apparatus when said hydrocarbons are treated at elevated temperatures of from about 500° F. to about 1500° F. which comprises adding to said hydrocarbons during the treatment process an inhibiting amount of a heterocyclic organo-sulfur compound of high sulfur content having the formula



where R and R' which may be the same or different are hydrogen or a substituted group.

4,116,813

HYDROCARBON CONVERSION WITH CRYSTALLINE ZEOLITE ZSM-34

Mae K. Rubin, Bala Cynwyd, Pa.; Edward J. Rosinski, Pedricktown, and Charles J. Plank, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 738,771, Nov. 4, 1976, Pat. No. 4,086,186. This application Nov. 16, 1977, Ser. No. 852,167
Int. Cl.[2] C10G *11/04*; B01J *8/24*; C01B *29/28*
U.S. Cl. 208—46 **9 Claims**

1. A process for converting a hydrocarbon charge which comprises contacting said hydrocarbon charge, under hydrocarbon conversion conditions, with a catalyst comprising a zeolite or thermal decomposition product thereof, which zeolite has a composition, as synthesized and in anhydrous form, in terms of mole ratios of oxides as follows:

$$(0.5\text{–}1.3)R_2O : (0\text{–}0.15\ Na_2O) : (0.10\text{–}0.50)K_2O : Al_2O_3 : X\ SiO_2$$

where R is the organic nitrogen-containing cation derived

from choline and X is 8 to 50, said zeolite being characterized by:

(1) an X-ray diffraction pattern set forth in Table 1 of the specification; and

(2) the capability, after calcination at 1000° F for at least a time to remove the organic cation, of sorbing at least 9.5 weight percent of n-hexane at ambient temperature and a n-hexane pressure of 20 mm.

4,116,814

METHOD AND SYSTEM FOR EFFECTING CATALYTIC CRACKING OF HIGH BOILING HYDROCARBONS WITH FLUID CONVERSION CATALYSTS

John C. Zahner, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,849
Int. Cl.² B01J *8/24*; C10G *11/04, 37/02*
U.S. Cl. 208—78 **16 Claims**

1. In a process for converting hydrocarbons with fluid particles of catalyst and regenerating the catalyst particles by burning carbonaceous deposits on the catalyst in an adjacent catalyst regeneration thereby heating the catalyst particles to an elevated temperature before recycle to said hydrocarbon conversion operation, the improvement which comprises

providing at least two separate catalyst conversion zones for processing hydrocarbon fractions of different boiling range and coke producing characteristics,

converting a low coke producing first hydrocarbon fraction in the presence of a first mass of active crystalline zeolite fluid particles of catalyst of selected activity and physical characteristics under elevated temperature conversion conditions,

converting a second hydrocarbon fraction of higher coke producing characteristics in the presence of a second mass of active crystalline zeolite fluid particles of physical characteristics different from said first catalyst mass,

recovering catalyst particles from each of said conversion operations comprising different amounts of carbonaceous deposits of said conversion, recovering hydrocarbon conversion products of each of said hydrocarbon conversion operations,

passing said recovered catalyst comprising catalyst of said first and second mass of catalyst particles in admixture with one another into a catalyst regeneration under conditions selected to heat said mixture of particles of catalyst to an elevated temperature above 1200° F. by burning said carbonaceous deposits, separating by elutriation in said regeneration zone said first mass of fluid particles from said second mass of fluid particles,

recovering one of said catalyst masses from an upper portion of the regeneration zone and the other from a lower portion of the regeneration zone,

recycling the separately recovered regenerated first and second mass of catalysts to the conversion zone from which obtained and recycling a portion of one of said first and second mass of catalyst particles recovered from said regeneration zone to said catalyst regeneration operation for admixtures with particles of catalyst containing carbonaceous deposits being regenerated in said catalyst regeneration operation.

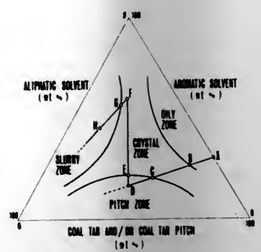
4,116,815

PROCESS FOR PREPARING NEEDLE COAL PITCH COKE

Hirofumi Sunago, Kitakyushu, and Wataru Migitaka, Kawasaki, both of Japan, assignors to Nittetsu Chemical Industrial Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1977, Ser. No. 808,775
Int. Cl.² C10G *9/14*
U.S. Cl. 208—87 **15 Claims**

1. A process for preparing needle coke which comprises mixing (1) coal tar, coal tar pitch or a mixture thereof with (2) an aromatic solvent and (3) an aliphatic solvent at atmospheric pressure and a temperature between 15° and 140° C., the mixing ratio among the aromatic solvent, the aliphatic solvent and the coal tar, coal tar pitch or mixture thereof being adjusted so that quinoline insoluble substances precipitate in a zone selected from the group consisting of a slurry zone and a crystal



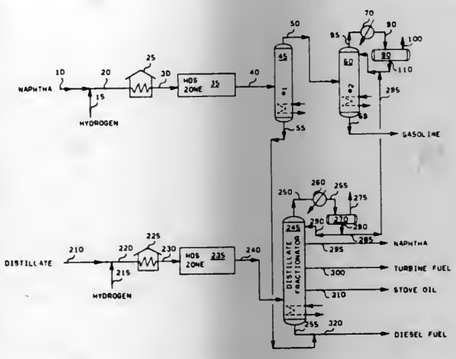
zone, separating the precipitated substances from the resultant mixture to obtain a supernatant, distilling the supernantant to obtain, as a distillation residue, hydrocarbons consisting substantially of aromatic compounds, said hydrocarbons being substantially free of quinoline insoluble substances, and coking the distillation residue to produce coke.

4,116,816

PARALLEL HYDRODESULFURIZATION OF NAPHTHA AND DISTILLATE STREAMS WITH PASSAGE OF DISTILLATE OVERHEAD AS REFLUX TO THE NAPHTHA DISTILLATION ZONE

Edgar D. Davis, and Gilbert L. Colbert, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 1, 1977, Ser. No. 773,236
Int. Cl.² C10G *23/00*
U.S. Cl. 208—209 **1 Claim**



1. A process for the production of sulfur-free oil fractions from separate naphtha and distillate streams, said process having separate naphtha and distillate hydrodesulfurization steps, which comprises:

(a) passing a preheated naphtha stream comprising hydrocarbons having boiling points between about 160° F (71° C) and about 480° F (249° C), and hydrogen to a hydrodesulfurization zone and therein subjecting said naphtha stream to such hydrodesulfurization conditions as to substantially remove sulfur and sulfur compounds present therein;

(b) passing substantially sulfur-free naphtha stream obtained in (a) to a first fractional distillation zone and subjecting same to such distillation conditions including temperature and pressure as to separate a first naphtha overhead and a first heavy bottoms fraction boiling in the range of about 300–530° F;

(c) withdrawing said naphtha overhead obtained in (b) and passing same to a second fractional distillation zone and therein subjecting the stream to such distillation conditions which result in separation of the stream into a second naphtha overhead and a second bottoms stream comprising gasoline boiling range hydrocarbons;

(d) cooling said second naphtha overhead sufficiently to condense said overhead, and recycling the liquid condensate thus formed as reflux to said second distillation zone;

(e) withdrawing said second bottoms stream as obtained in (c) as product;

(f) passing a preheated distillate stream comprising hydrocarbons having a boiling point range from about 300° F (149° C) to about 620° F (327° C) and hydrogen to a hydrodesulfurization zone maintained at such conditions as to substantially remove sulfur and sulfur compounds therefrom;

(g) passing the substantially sulfur-free distillate stream obtained in (f) to a distillate fractional distillation zone and subjecting said stream to such distillation conditions including temperature and pressure as to separate the stream into a distillate overhead boiling in the range of about 215°–400° F, intermediate cuts, and a heavy distillate bottoms boiling in the range of about 350–650° F;

(h) blending the first heavy bottoms fraction obtained in (b) with the heavy distillate bottoms obtained in (g) as a fuel product boiling in the range of about 320–625° F;

(i) withdrawing the intermediate cuts from step (g) as products, and;

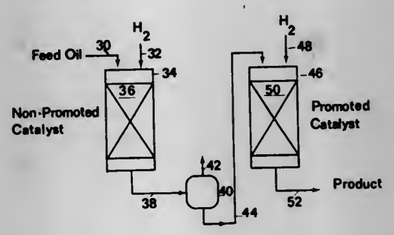
(j) passing a portion of said distillate overhead obtained in step (g) to the liquid condensate reflux stream in (d).

4,116,817

HYDRODESULFURIZATION PROCESS EMPLOYING A PROMOTED CATALYST

James Albert Frayer, Pittsburgh; Henri K. Lese, Monroeville; Joel Drexler McKinney, Pittsburgh; Kirk J. Metzger, Pittsburgh, and John Angelo Paraskos, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 28, 1977, Ser. No. 810,857
Int. Cl.² C10G *23/02*
U.S. Cl. 208—210 **13 Claims**



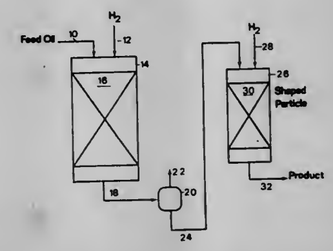
1. In a process for the hydrodesulfurization of an asphaltene-containing oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psi and a temperature between 600° and 900° F., wherein said oil and hydrogen are passed downwardly in trickle flow through upstream and downstream beds of catalyst particles in series, wherein said catalyst particles in said downstream catalyst bed comprises Group VI and Group VIII metals together with a promoting amount comprising between about 1 and 10 weight percent based on total catalyst weight of Group IV-B metal on a non-cracking support and wherein the catalyst in said upstream catalyst bed comprises Group VI and Group VIII metals on a non-cracking support without said promoting amount of Group IV-B metal, the invention comprising the particles of said promoted catalyst in said downstream bed comprising elongated extrudates which show in cross-section at least one groove defining protrusions and an average concavity index between about 1.01 and 1.35, the shortest distance between the depth of said at least one groove and the center in said cross-section being between about 1/30 and 1/120 inch, said grooving of the promoted catalyst particles allowing a given amount of desulfurization of said oil at a lower temperature as compared with the temperature required for a similar downstream catalyst which is not provided with said grooves, and said temperature in said downstream reactor increasing with increasing catalyst age at a lower rate than the rate of temperature increase for a similar downstream catalyst which is not provided with said grooves.

4,116,818

MULTI-REACTOR HYDRODESULFURIZATION PROCESS

James Albert Frayer, Pittsburgh; Henri K. Lese, Monroeville; Joel Drexler McKinney, Pittsburgh; Kirk J. Metzger, Pittsburgh, and John Angelo Paraskos, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 28, 1977, Ser. No. 811,135
Int. Cl.² C10G *23/02*
U.S. Cl. 208—210 **4 Claims**

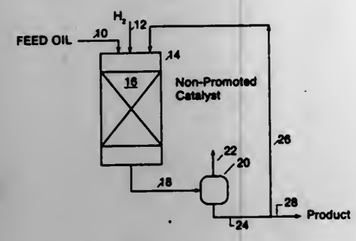


1. In a process for the hydrodesulfurization of an asphaltene-containing oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psi and a temperature between 600° and 900° F. wherein said oil and hydrogen are passed downwardly in trickle flow through upstream and downstream reactors in series, wherein said catalyst in the downstream reactor comprises Group VI and Group VIII metals together with a promoting amount comprising between about 1 and 10 weight percent based on total catalyst weight of Group IV-B metal on a non-cracking support and wherein the catalyst in the upstream reactor comprises Group VI and Group VIII metals on a non-cracking support without said promoting amount of Group IV-B metal, the invention comprising the mass velocity of said oil in said downstream reactor being higher than the mass velocity of said oil in said upstream reactor, the particles of said promoted catalyst in said downstream reactor comprising elongated extrudates which show in cross-section at least one groove defining protrusions and an average concavity index between about 1.01 and 1.35, the shortest distance between the depth of said at least one groove and the center in said cross-section being between 1/30 and 1/120 inch, said grooving of the promoted catalyst particles allowing a given amount of desulfurization of said oil at a lower temperature as compared with the temperature required for a similar downstream catalyst which is not grooved, with said temperature in said upstream reactor and said temperature in said downstream reactor increasing with increasing catalyst age, and with said temperature increase in said downstream reactor being lower at said higher oil mass velocity of the downstream reactor than the temperature increase at the oil mass velocity of the upstream reactor.

4,116,819
HYDRODESULFURIZATION PROCESS INCLUDING PRODUCT RECYCLE

James Albert Frayer, Pittsburgh; Henri K. Lese, Monroeville; Joel Drexler McKinney, Pittsburgh; Kirk J. Metzger, Pittsburgh, and John Angelo Paraskos, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 28, 1977, Ser. No. 810,860
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—216 21 Claims



1. In a process of the hydrodesulfurization of an asphaltene-containing oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psi and a temperature between 600° and 900° F. wherein said oil and hydrogen are passed downwardly in trickle flow through a reactor containing a bed of catalyst particles comprising Group VI and Group VIII metals on a non-cracking support and desulfurized liquid is removed from said reactor, the invention comprising the particles of said catalyst comprising elongated extrudates which show in cross-section at least one groove defining protrusions and an average concavity index between about 1.01 and 1.35, the shortest distance between the depth of said at least one groove and the center in said cross-section being between about 1/30 and 1/120 inch, and increasing the liquid mass velocity in said reactor by recycling a portion of said liquid product to said reactor to accomplish a given amount of desulfurization at a lower temperature than would be required without said product recycle.

4,116,820
PROCESS FOR DEMETALLIZING OF HEAVY HYDROCARBONS

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

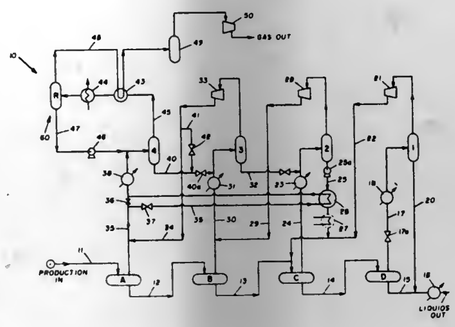
Filed Jun. 29, 1977, Ser. No. 811,235
Int. Cl.[2] C10G *17/00*
U.S. Cl. 208—251 R 6 Claims

1. A process for demetallizing heavy hydrocarbon tocks which comprises contacting said stocks at a temperature in the range from about 370° to 450° C. with a sorbent consisting essentially of particulate active carbon having at least a majority of its pore volume in pores having a diameter greater than 0.9 nm, which sorbent has previously been oxidized by contact with a highly acidic oxidizing fluid and substantially separated from said oxidizing fluid.

4,116,821
METHOD AND APPARATUS FOR PROCESSING A PETROLEUM PRODUCTION STREAM

Alfred M. Peiser, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 709,488, Jul. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 684,507, May 7, 1976, abandoned. This application Oct. 20, 1977, Ser. No. 844,010
Int. Cl.[2] C10G *7/00*
U.S. Cl. 208—361 8 Claims



1. A method of processing a petroleum production stream to produce a liquid product having a stabilized vapor pressure, said method comprising:

passing the production stream into a first separation stage having a first pressure to separate first gas products from liquid products in said production stream;

passing said liquid products from said first separation stage to a second separation stage having a second pressure lower than said first pressure to separate second gas products from said liquid products remaining in said production stream;

passing said liquid products from said second separation stage to a third separation stage having a third pressure lower than said second pressure to separate third gas products from said liquid products remaining in said production stream;

passing said liquid products from said third separation stage to a fourth separation stage having a fourth pressure lower than said third pressure to separate fourth gas products from said liquid products remaining in said production stream;

passing said liquid products now having a stabilized vapor pressure from said fourth separation stage to a utilization source;

passing said fourth gas products from said fourth separation stage to a first gas separator to condense first condensed liquid products from said fourth gas products;

passing the gas products from said first gas separator back to said third separation stage;

passing the gas products from said third separation stage to a second gas separator to condense second condensed liquid products from said gas products;

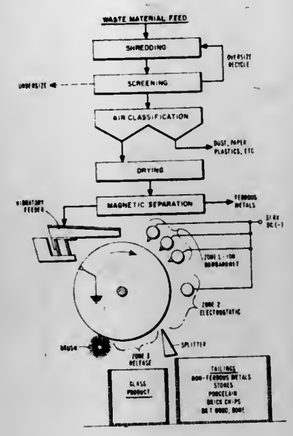
returning said second condensed liquid products from said second gas separator to said third separation stage; and

controlling said stabilized vapor pressure of said liquid products leaving said fourth separation stage by controlling both (1) the temperature at which said liquid products leave said third separation stage by supplying heat to said second condensed liquid products before said products enter said third separation stage and (2) the pressure in said fourth separation stage.

4,116,822
METHOD OF SELECTIVELY SEPARATING GLASS FROM WASTE MATERIAL

Clyde B. Webb, Jacksonville, Fla., assignor to Carpco, Inc., Jacksonville, Fla.

Continuation of Ser. No. 476,296, Jun. 4, 1974, abandoned. This application Jun. 30, 1976, Ser. No. 701,203
Int. Cl.[2] B03B *1/02*
U.S. Cl. 209—11 16 Claims



1. A method of separating glass particles from waste material comprising the steps of:

(a) sizing the waste material to a particle size greater than ¼ inch and less than 1½ inches;

(b) subjecting the waste material to preliminary classification to remove low bulk density material and reducing the moisture content of the waste material to less than 2%;

(c) pinning the glass particles to a grounded electrode comprising a metal drum having a diameter between about 14 and about 36 inches rotating at a rate lying in a range from about 8 to about 25 rpm by feeding the waste material in contact with said grounded electrode at a rate between 50 and 150 pounds per hour per inch of grounded electrode length through a first zone wherein the waste material is subjected to ion bombardment from at least one ionizing D.C. corona discharge electrode;

(d) removing non-glass particles by passing the waste material in contact with said grounded metal electrode into a second zone wherein the waste material is subjected to an electrostatic field from a non-ionizing electrode; and

(e) releasing and collecting the glass particles from said grounded electrode in a third zone.

4,116,823
VESSEL FOR STRIPPING OIL FROM FLUIDIZED ASH AND CHAR PARTICLES

Charles K. Choi, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 603,874, Aug. 11, 1975, abandoned. This application Aug. 31, 1976, Ser. No. 719,274
Int. Cl.[2] B07B *9/02*
U.S. Cl. 209—44 12 Claims

1. Apparatus for collecting particles of different densities, stripping said particles of entrained fluids and providing a mixture of said collected particles for feed to another apparatus, which comprises:

(a) a housing providing an elongated vertical chamber having an upper end including a top and a lower end;

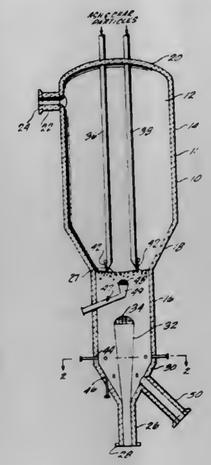
(b) at least one particles inlet conduit extending from said top downward into the chamber terminating at a point of discharge within the chamber, said particles inlet conduit for transferring particles collected external of the chamber downward to and into the chamber to form a bed of particles extending from said lower end to said point of discharge;

(c) a gas exhaust outlet at the upper end of the chamber;

(d) means for directing a flow of gas from said lower end through the contained bed of particles to fluidize said particles and strip said particles of entrained fluid;

(e) means included on said particles inlet for preventing flow of particles and gas upwards in said conduit;

(f) a first particles outlet conduit extending from the lower end of said chamber upward to a point of particles removal intermediate between said lower end and said point of discharge and providing at said point of particles removal, an opening for receiving a mixture of said particles of different densities;



(g) valve means associated with said particles outlet conduit for controlling the level of the bed of particles contained in the chamber; and

(h) a second particles outlet conduit extending from the side of said chamber to a point between said point of particles removal and said point of discharge and providing a second opening for receiving particles.

4,116,824
AUTOMATED WET SIEVING APPARATUS

Rozalija Somkaite, South Orange, and Bela Toth, New Providence, both of N.J., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Nov. 12, 1976, Ser. No. 741,327
Int. Cl.[2] B07B *1/46*
U.S. Cl. 209—262 9 Claims

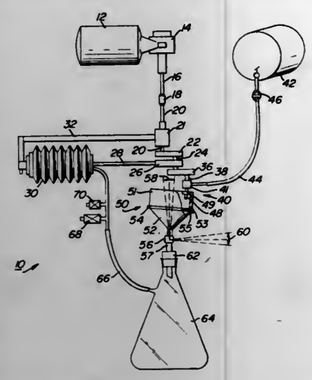
1. An automated wet sieving apparatus comprising:

(a) distributing means for supplying wetting liquid to a sieve containing particles to be sieved;

(b) eccentric drive means connected to said distributing means for driving said distributing means in an orbital path about a vertical axis generally perpendicular to and generally in the center of said sieve; and

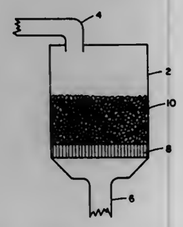
(c) vacuum and pressure creating means actuated by said

eccentric drive means for alternately creating vacuum and pressure below the sieves, to draw undersized particles



through the sieve and loosen particles which may blind the sieve openings.

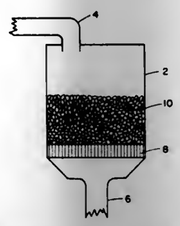
4,116,825
WATER PURIFICATION METHODS
Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corp., Nutley, N.J.
Division of Ser. No. 636,263, Nov. 28, 1975, Pat. No. 4,054,515.
This application Jun. 13, 1977, Ser. No. 806,201
Int. Cl.[2] C02B *1/14*
U.S. Cl. 210—27 16 Claims



12. A method for purifying contaminated water containing hormones comprising the steps of:
- treating said water by adding a flocculating chemical to coagulate and settle at least part of said hormones from said water;
- filtering said treated water to remove a further part of said hormones;
- treating said filtered water with a chemical germicide to kill bacteria; and
- contacting said germicide-treated water with large surface area clay particles selected from the group of natural clays consisting of attapulgite and sepiolite to remove remaining hormones from the water.

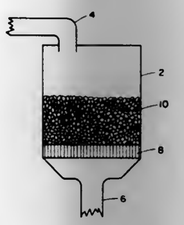
4,116,826
WATER PURIFICATION METHODS
Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corp., Nutley, N.J.
Division of Ser. No. 636,263, Nov. 28, 1975, Pat. No. 4,054,515.
This application Jun. 13, 1977, Ser. No. 806,202
Int. Cl.[2] C02B *1/14*
U.S. Cl. 210—27 14 Claims

11. A method for purifying contaminated water containing toxins comprising the steps of:
- treating said water by adding a flocculating chemical to coagulate and settle at least part of said toxins from said water;
- filtering said treated water to remove a further part of said toxins;
- treating said filtered water with a chemical germicide to kill bacteria; and



- contacting said germicide-treated water with large surface area clay particles selected from the group of natural clays consisting of attapulgite and sepiolite to remove remaining toxins from the water.

4,116,827
WATER PURIFICATION METHODS
Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corp., Nutley, N.J.
Division of Ser. No. 636,263, Nov. 28, 1975, Pat. No. 4,054,515.
This application Jun. 13, 1977, Ser. No. 806,250
Int. Cl.[2] C02B *1/14*
U.S. Cl. 210—27 18 Claims

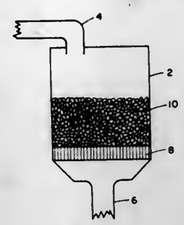


15. A method for purifying contaminated water containing viruses comprising the steps of:
- treating said water by adding a flocculating chemical to coagulate and settle at least part of said viruses from said water;
- filtering said treated water to remove a further part of said viruses;
- treating said filtered water with a chemical germicide to kill bacteria; and
- contacting said germicide-treated water with large surface area clay particles selected from the group of natural clay consisting of attapulgite and sepiolite to remove remaining viruses from the water.

4,116,828
WATER PURIFICATION METHODS
Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corp., Nutley, N.J.
Division of Ser. No. 636,263, Nov. 28, 1975, Pat. No. 4,054,515.
This application Jun. 13, 1977, Ser. No. 806,251
Int. Cl.[2] C02B *1/14*
U.S. Cl. 210—27 16 Claims

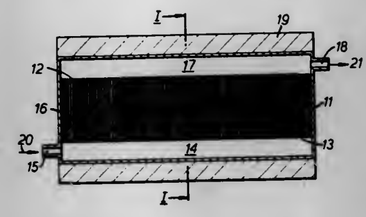
11. A method for purifying contaminated water containing pesticides comprising the steps of:
- treating said water by adding a flocculating chemical to coagulate and settle at least part of said pesticides from said water;
- filtering said treated water to remove a further part of said pesticides;
- treating said filtered water with a chemical germicide to kill bacteria; and

- contacting said germicide-treated water with large surface area clay particles selected from the group of natural clays



consisting of attapulgite and sepiolite to remove remaining pesticides from the water.

4,116,829
MAGNETIC SEPARATION, METHOD AND APPARATUS
Norman Owen Clark, Par, and James Henry Peter Watson, St. Austell, both of England, assignors to English Clays Lovering Pochin & Company Limited, England
Continuation-in-part of Ser. No. 540,977, Jan. 14, 1975, abandoned. This application Mar. 29, 1976, Ser. No. 671,723
Claims priority, application United Kingdom, Jan. 18, 1974, 2543/74
Int. Cl.[2] B01D *17/06;* B03C *1/02*
U.S. Cl. 210—42 S 17 Claims

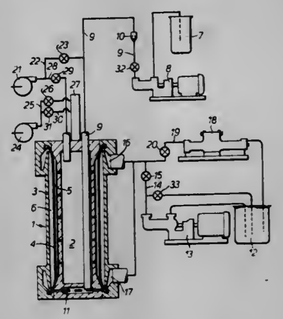


15. A method of separating magnetisable particles from a fluid in which they are suspended, which method comprises:
- (a) establishing a high intensity magnetic field in a matrix of a plurality of ferromagnetic filaments each filament of a diameter of less than 250 microns said filaments being arranged substantially parallel to one another in a first direction perpendicular to the direction of the magnetic field;
- (b) passing fluid containing magnetisable particles in suspension therein through the ferromagnetic matrix generally in said first direction, whereby the magnetisable particles are magnetised by the magnetic field and attracted to and retained on the filaments of the matrix; and
- (c) removing the magnetisable particles retained on the ferromagnetic matrix.

4,116,830
METHOD OF TREATING WET-WASHED SILICA DUST
Harald Krogsrud, Gjettum, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway
Filed Apr. 22, 1977, Ser. No. 789,865
Claims priority, application Norway, Apr. 23, 1976, 761383
Int. Cl.[2] C02C *5/06*
U.S. Cl. 210—63 R 5 Claims

1. A process for treating the waste gasses generated from metallurgical furnaces for the production of materials high in silicon content comprising:
- (a) wet-washing the waste gasses whereby a sludge is obtained comprising silica dust, phenols and cyanides;
- (b) introducing the sludge to a rotary kiln;
- (c) heating the sludge at temperatures not in excess of about 500° C. until substantially all of the water is driven off from the sludge;
- (d) thereafter raising the temperature of the sludge in the rotary kiln to from about 800° C. to about 1,400° C. while simultaneously treating it with an agent selected from the group consisting of those oxidizing and reducing agents capable of rendering phenols and cyanides harmless;
- (e) continuing the heating of step (d) until a substantial portion of the phenols and cyanides are rendered harmless;
- (f) and wherein pellets comprising silica dust are formed by the rotary action of the rotary kiln at the elevated temperatures of step (d).

4,116,831
SEPARATION OF SOLIDS AND LIQUIDS
Gordon Samuel Keat, Par, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, England
Filed Jan. 25, 1977, Ser. No. 762,250
Claims priority, application United Kingdom, Jan. 29, 1976, 3647/76
Int. Cl.[2] B01D *33/36*
U.S. Cl. 210—68 3 Claims



1. A method of reducing the liquid content of a mixture of a liquid and a particulate solid, which method comprises feeding a slurry of said mixture into the inner compartment of a tube pressure filter in an amount sufficient to fill said compartment; said tube pressure filter comprising an arragnement of a pair of generally coaxial tubular assemblies arranged one within the other, (b) an impermeable elastic sleeve disposed within and secured to the outer of said tubular assemblies, (c) a filter element disposed around and supported by the inner of said tubular assemblies, (d) first dishcarge means for the discharge of filtrate which has passed through the filter element, and (e) second discharge means for the discharge of solid material retained on said filter element, the arrangement being such that in a first operating condition of the tube pressure filter said second discharge means is closed and the tubular assemblies cooperate with each other to define a closed annular chamber which is divided into generally coaxial and non-intercommunicating inner and outer compartments by said impermeable elastic sleeve, the inner compartment having an inlet for a feed slurry comprising a mixture of liquid and a particulate solid and the outer compartment having an inlet for a hydraulic fluid under pressure, and in a second operating condition of the tube pressure filter the second discharge means is open to enable particulate solid in the form of a filter cake to be discharged from the inner compartment; introducing hydraulic fluid into the outer compartment of said tube pressure filter to cause the elastic sleeve to expand towards the inner tubular assembly of the tube pressure filter, thereby to force liquid through the filter element of the tube pressure filter and form on the filter element a filter cake of the particulate solid; thereafter withdrawing the hydraulic fluid from the outer compartment whilst simultaneously introducing into the inner compartment of the tube pressure filter a gas at a pressure ranging from about

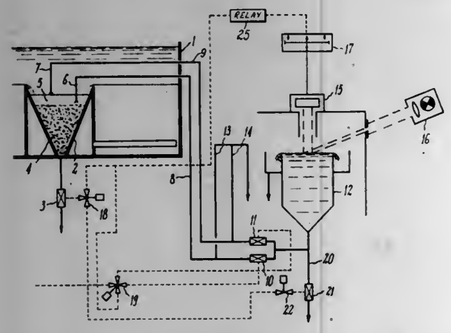
30 to about 100 p.s.i.g.; whereby cracking of the filter cake is prevented; and thereafter increasing the pressure applied to the gas to a value necessary for it to be forced through the pores of the filter cake by again supplying to said outer compartment hydraulic fluid under a pressure ranging from about 500 to about 2,000 p.s.i.g. thereby causing the elastic sleeve to expand towards said inner tubular assembly, to compress the gas and force it through the pores of the filter cake.

4,116,832

METHOD AND MEANS FOR THE AUTOMATIC REGULATION OF SLUDGE EXTRACTION IN SEWAGE TREATMENT APPARATUS

Jacques Tardivel, Plaisir, France, assignor to Degremont, Rueil-Malmaison, France

Filed Oct. 19, 1976, Ser. No. 733,938
Claims priority, application France, Nov. 6, 1975, 75 33927
Int. Cl.² B01D *21/24*
U.S. Cl. 210—83 **9 Claims**



1. A process for automatically extracting accumulated sludge from a sludge concentrator employed in a sludge-bed sewage treatment system, wherein said concentrator has in a lower portion thereof accumulated sludge and above said sludge a liquid region of vertically variable turbidity, the turbidity of said region gradually increasing as said sludge accumulates in said concentrator, and said turbidity of said region gradually decreasing as sludge is extracted from said concentrator, said process comprising:

continually taking a first sample of the liquid in said region at a first vertical level therein;

continuously taking a second sample of the liquid in said region at a second vertical level therein, said level being higher than said first level;

alternately passing one of said first and second liquid samples to a vessel positioned separately from said concentrator, while passing the other of said first and second liquid samples to an overflow;

continuously measuring the turbidity of the liquid in said vessel, to thereby continuously obtain a measurement of the turbidity of said region; and

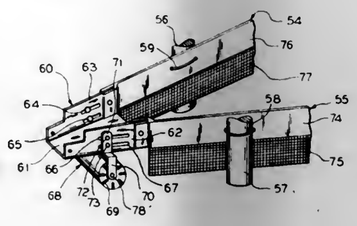
controlling, as a function of said turbidity measurement, extraction of accumulated sludge from said concentrator and which of said first and second samples is passed to said vessel, such that when said turbidity measurement reaches a determined maximum value sludge is extracted from said concentrator and said first sample is passed to said vessel, whereafter said turbidity measurement will decrease, and such that when said turbidity measurement reaches a determined minimum value extraction of said sludge is stopped and said second sample is passed to said vessel, whereafter said turbidity measurement will increase.

4,116,833

METHOD AND APPARATUS FOR REMOVING CONTAMINANTS FROM BODIES OF WATER

Merlin D. Stagemeyer, Northbrook, Ill., and Seth Ford Allcorn, Columbia, Mo., assignors to Oil Spill Recovery, Inc., Northbrook, Ill.

Filed Mar. 21, 1977, Ser. No. 779,638
Int. Cl.² B01D *21/24*; E02B *15/04*
U.S. Cl. 210—83 **19 Claims**



1. A method for removing petroleum and other spilled contaminant material from the surface of body of water, while at the same time recovering said petroleum or other contaminant in its original form for reuse or reprocessing, said method comprising:

a. positioning substantially impervious open-ended main barricade means about the periphery of said contaminant material;

b. channeling said contaminant towards one or more contaminant collection areas;

c. skimming both said body of water and said contaminant material at said one or more collection means at a desired depth by scoop means; rotating a roller means at the scoop means to aid in positioning the scoop means and in inducing flow through said scoop means;

d. separating said contaminant material from said water so as to isolate said contaminant material, and

e. directing said isolated contaminant material to contaminant retention means through which said contaminant material may be contained for said reuse and reprocessing.

6. A system for removing and recovering contaminant material from the surface of a body of water comprising:

open-ended apron channeling means maintained afloat in said body of water by apron buoys,

said apron channeling means restrainably attached to collection means so as to converge thereto,

said apron channeling means being impervious to said contaminant material;

said collection means including scoop means for skimming said contaminant material from the surface of said body of water as said contaminant material is directed to said collection means by said apron channeling means;

material transport means operably attached to said collection means for removing said contaminant material from said collection means; and

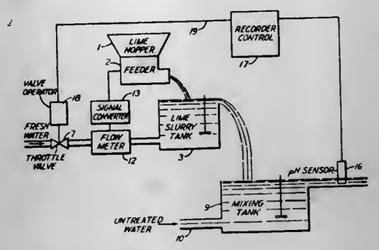
system activation means for initiating movement between said system and said body of water to channel said contaminant material to said collection means and to activate said skimming, said scoop means including a rotatable roller means having fins thereon for inducing rotation of said roller means when the body of water has relative movement to said scoop means to aid in positioning said scoop means relative to said apron channeling means and to induce flow of water and contaminant material into said scoop means.

4,116,834

APPARATUS FOR INCREASING THE PH OF WASTE WATER

Earle Cochran King, Evans City, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Aug. 1, 1977, Ser. No. 820,887
Int. Cl.² C02B *1/18, 1/30*
U.S. Cl. 210—96 R **1 Claim**



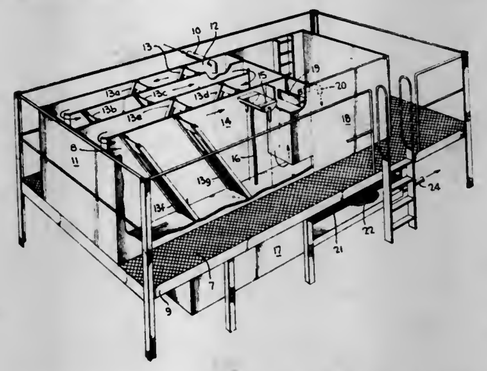
1. Apparatus for increasing the pH of waste water, comprising a lime water having an outlet, a lime slurry tank having an inlet for water and an overflow outlet, a conduit for delivering water to said slurry tank inlet, a throttle valve in said conduit, a flowmeter in the conduit for measuring the rate of flow therethrough, variable feed means for feeding lime from said hopper outlet to said slurry tank, a mixing tank having an inlet for untreated waste water and an outlet for treated waste water, said mixing tank being positioned to receive slurry from said overflow outlet to mix with waste water in the mixing tank, a sensor responsive to the pH of treated waste water leaving the mixing tank, means controlled by said sensor for operating said throttle valve, and means controlled by the flowmeter for operating said variable feed means to keep the concentration in said slurry tank substantially constant regardless of the rate of flow out of that tank.

4,116,835

POLLUTION CONTROL SYSTEM

Alexander Bruno Bertelson, Tinton Falls, N.J., assignor to Savage Technical Services, Inc., Clark, N.J.

Filed Apr. 8, 1977, Ser. No. 785,789
Int. Cl.² B01D *29/08*
U.S. Cl. 210—100 **6 Claims**



1. A unitary apparatus for removing hydrocarbons and other contaminants from aqueous effluents, comprising,

a. a unitary tank having a bottom and substantially vertical side and end walls;

b. a first vertically disposed wall adapted and constructed to divide said tank into a separation zone and an extraction zone;

c. said separation zone having at least one vertical baffle having one vertical end connected to a wall and the other end in spaced relationship to an opposite wall and adapted and constructed to provide a tortuous horizontal flow path for said aqueous effluents;

d. an aqueous effluent entrance orifice at substantially one end of said flow path of said separation zone;

e. at least one foraminous web positioned to interrupt said flow path extending from substantially said bottom upwardly at an angle in a direction against said flow path;

f. said foraminous web being constructed of an oleophilic material whereby said hydrocarbons coalesce into droplets on said foraminous web and then accumulate on the surface of said effluent;

g. skimmer means positioned near the other end of said flow path of said separation zone whereby said accumulated hydrocarbon is removed from said effluent;

h. said tank having a horizontally disposed member substantially coextensive with said separating zone adapted and constructed to form a reservoir for said hydrocarbon material between said bottom and said separating zone;

i. means for fluidly connecting said skimmer and said reservoir whereby hydrocarbons are discharged from said skimmer into said reservoir;

j. means fluidly connecting said separation zone and said extraction zone whereby substantially hydrocarbon free effluent is charged into said extraction zone;

k. a horizontally positioned foraminous web dividing said extraction zone;

l. a mass of adsorbing material positioned below said foraminous web for adsorbing any additional contaminants in said effluent;

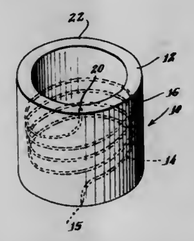
m. and means in said tank below said foraminous web to discharge cleansed effluent from said tank.

4,116,836

CHROMATOGRAPHIC COLUMN

William M. DeAngelis, Wilton, Conn., assignor to Henry Allen, Mamaroneck and Charles J. Garbarini, Jr., New York, both of, N.Y.

Filed Mar. 1, 1977, Ser. No. 773,325
Int. Cl.² B01D *15/08*
U.S. Cl. 210—198 C **22 Claims**



1. A packed chromatographic column comprising a glass monolithic construction having at least one pair of opposed surfaces and solid glass therebetween;

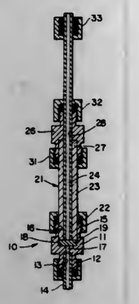
A continuous passageway of essentially constant diameter adapted to receive a fluid therethrough contained wholly within said solid glass between said opposed surfaces of said monolithic contruction, the passageway having an inlet and an outlet opening in at least one of said opposed surfaces, and

chromatographic packing material in said passageway for separating the components of a fluid sample introduced into and flowing through said passageway from said inlet to said outlet.

4,116,837
HIGH PRESSURE LIQUID CHROMATOGRAPHY APPARATUS

John J. Biermacher, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 12, 1978, Ser. No. 869,020
Int. Cl.[2] B01D *15/08*
U.S. Cl. 210—198 C 8 Claims

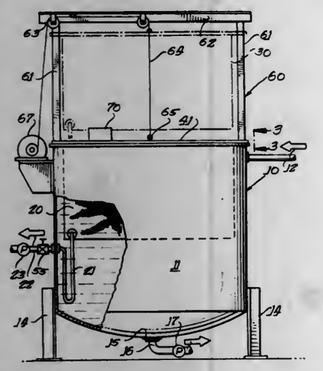


1. A high pressure liquid chromatography apparatus comprising a sample injection valve; a first tube of relatively small external diameter leading from said sample injection valve; an inline filter comprising a body having a first recess of relatively small diameter, the adjacent end of said first tube being received in said first recess, and a first tube fitting releasably sealingly securing said adjacent end of said first tube in said first recess, said body having a second recess of relatively large diameter, a bore extending between the adjacent inner ends of said first and second recesses, a filter element seated on the inner end of said second recess and covering the adjacent end of said bore, a tubular conduit having one end thereof extending into said second recess and into abutting contact with said filter element, and a second tube fitting for releasably sealingly securing said one end of said tubular conduit in said second recess; and a liquid chromatography column having an inlet releasably sealingly connected to the other end of said tubular conduit, the internal diameters of said first tube and said tubular conduit and the diameter of said bore being substantially the same so as to define a flow passage of essentially the same diameter throughout its entire length with said flow passage being interrupted only by said filter element.

4,116,838
SLUDGE FILTER

Thomas Frank Lazzarotto, 320 N. Harding Ave., Chicago, Ill. 60624

Filed Jul. 27, 1977, Ser. No. 819,292
Int. Cl.[2] B01D *29/14*
U.S. Cl. 210—209 15 Claims

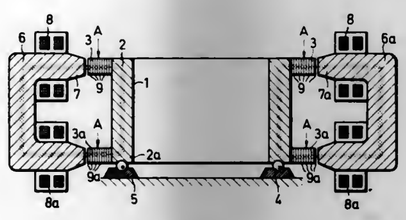


1. In a sludge filter comprising an open topped tank adapted to receive a quantity of sludge, a filter panel disposed within the tank, and a hose connection extending between the panel interior and the tank exterior to draw filtrate from the sludge filter tank, the improvement comprising a hollow, flexible, bi-walled, slick-sided, artificial cloth filter panel bag, and an open filter panel framework for supporting the bag at spaced-apart locations within the bag, the framework including a top frame member having a length sufficient to extend over the tank sides, and a strength sufficient to support the weight of the framework itself, the filter panel, any filtrate inside the panel, any material adhering to the panel outside, and at least part of the hose weight, the framework further including an open lattice of strut members depending from the top frame member at spaced apart locations, and fitting inside the cloth filter bag to maintain the bag walls in spaced-apart conditions against the pressure of sludge and water outside the bag and to permit filtrate to penetrate the bag cloth, fall to the bag bottom, and be drawn off by the filter hose.

4,116,839
HIGH INTENSITY MAGNETIC SEPARATOR FOR WET SEPARATION OF MAGNETIZABLE PARTICLES OF SOLIDS

Karl-Heinz Unkelbach, and Gottfried Duren, both of Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Feb. 7, 1977, Ser. No. 766,124
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606408
Int. Cl.[2] B03C *1/02*
U.S. Cl. 210—222 10 Claims

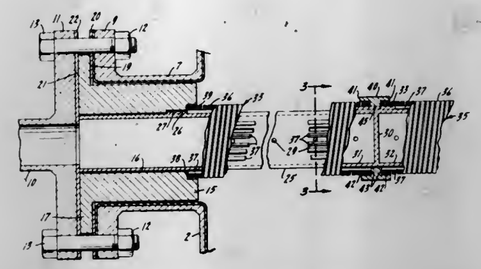


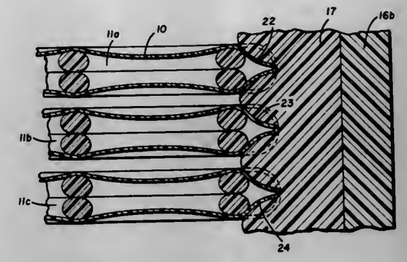
1. A high intensity magnetic separator for removing magnetizable particles from a slurry, comprising:
a hollow rotor mounted for rotation about a vertical axis and including a cylindrical outer wall;
a plurality of containers mounted above the periphery of said outer wall to receive a flow of slurry therethrough;
a plurality of magnetizable bodies in each of said containers for attracting and holding magnetizable particles from the slurry under the influence of a magnetic field;
a plurality of magnetic systems circumferentially spaced about said rotor for establishing magnetic fields and neutral zones therebetween, each of said magnetic systems comprising a pair of vertically aligned, opposite polarity magnetic poles adjacent said rotor and causing a closed flux path through said rotor wall and the adjacent containers parallel to said axis;
means for feeding the slurry to the containers as they rotate into each magnetic field; and
means for flushing magnetic concentrate from said magnetizable bodies while the containers are in each neutral zone.

4,116,840
LIQUID TREATMENT APPARATUS

Donald James Butterworth, Stirling, N.J., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Aug. 12, 1977, Ser. No. 824,005
Int. Cl.[2] B01D *23/10*
U.S. Cl. 210—279 7 Claims





1. Liquid treatment apparatus comprising:
(a) a vessel containing granular liquid treating material and having a pair of aligned nozzles extending from opposing portions of its surface permitting liquid to enter and to leave its interior;
(b) a pair of spaced aligned spools, each spool essentially filling one of said nozzles except for a circular opening through the center of each spool;
(c) a unitary cylindrical distribution pipe having each of its opposite ends inserted into and terminating in one of said circular openings in one of said spaced aligned spools, each end of said unitary liquid distribution pipe being removable from the circular hole in the spool in which it is inserted, there being a plurality of liquid distribution holes spaced along said unitary liquid distribution pipe, an integral wall of said unitary liquid distribution pipe spanning and completely closing said unitary liquid distribution pipe at its center so as to define two separated liquid distribution sections in said unitary liquid distribution pipe, each section being fed through its own separate nozzle, an integral longitudinal rib projecting from the exterior surface of said unitary liquid distribution pipe at its center;
(d) a pair of sleeves of well screen having spaced longitudinal support rods attached to their interior surfaces, each of said screens telescoping over one of the separated liquid distribution sections of said liquid distribution pipe, said rib laying into the space between said support rods on said screens; and
(e) a sealing ring surrounding said unitary liquid distribution pipe at its center and defining with the outside surface of said unitary liquid distribution pipe a pair of annular spaces into which the ends of said well screens extend and are sealed.

4,116,841
SEMIPERMEABLE MEMBRANE MASS TRANSFER APPARATUS HAVING COLLAPSED MEMBRANE ABOUT SUPPORT MEMBERS

Alexander S. Borsanyi, Corona del Mar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

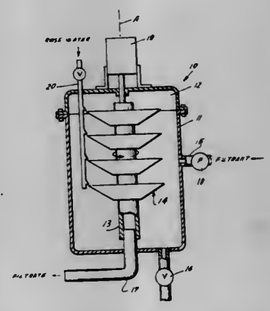
Filed Mar. 21, 1977, Ser. No. 779,576
Int. Cl.[2] B01D *29/04, 31/00*
U.S. Cl. 210—321 B 28 Claims

1. A mass transfer apparatus comprising a housing formed at least in part of solidified plastic material, a semipermeable membrane disposed within said housing, said membrane being folded to form a stack of accordion pleats, support members being disposed within the pleats on one side of the membrane, the ends, top and bottom and the sides of the stack being sealed to the housing except at longitudinally spaced side regions defining inlet and outlet regions on both sides of the stack, whereby two fluid compartments divided by said membrane are formed in the stack with each fluid compartment having longitudinally spaced inlet and outlet regions, the housing being provided with longitudinally spaced inlet and outlet ports individually communicating with said inlet and outlet regions enabling a fluid to be passed through each fluid compartment, those pleats of said membrane which receive said support members extending about longitudinal edges of said support members to define longitudinal creases, said creases being collapsed upon themselves and upon said longitudinal edges of said support members and being embedded in such collapsed condition in said solidified plastic material of said housing, thereby eliminating bypass channels in the compartment devoid of said support members.

4,116,842
FILTER ELEMENT FOR DISC-TYPE FILTER

Hanspeter Meier, Rapperswil, Switzerland, assignor to Dr. Ing. Hans Mueller, Maennedorf, Switzerland

Continuation of Ser. No. 701,991, Jul. 1, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,924
Claims priority, application Switzerland, Jul. 3, 1975, 8803/75
Int. Cl.[2] B01D *33/26*
U.S. Cl. 210—330 10 Claims



1. A filter element for a centrifugal disc filter, said element comprising a dished fluid-imprevious metal plate formed with a central hole and having a concave face formed with a plurality of spaced-apart bosses, said bosses being uniformly interspersed over said face of said plate from said central hole to the outer periphery of said plate; a fluid-pervious filter cloth having one surface onto which a filtrant is to be fed and another surface spaced from said one surface and lying on said plate directly on said bosses following the concave contour of said plate so as to define a space between said plate and said filter cloth around said bosses, said bosses being located in such a close relationship relative to one another that when the filtrant is fed onto said one surface of said filter cloth the latter is supported upon and bridges the space between adjacent ones of said bosses and is thereby prevented from conforming to the

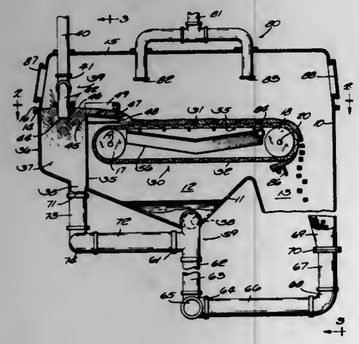
shape of said plate so as to maintain said space unobstructed to permit the flow of filtrate therein; and means for securing said cloth to said concave face.

4,116,843

LIQUID AND SOLIDS SEPARATOR

Ronald Dean Koenig, Fort Atkinson, Wis., assignor to Hartel Corporation, Fort Atkinson, Wis.

Filed Sep. 27, 1977, Ser. No. 836,936
Int. Cl.² B01D *33/04*
U.S. Cl. 210—391 **2 Claims**



1. Apparatus for separating a mixture of liquids and solids comprising:

first and second spaced apart pulleys arranged with their axes or rotation in substantial parallelism,

a closed loop filter belt of predetermined width and comprised of plastic filaments arranged to create a plurality of tortuous openings through the belt, said belt being for translating lengthwise on said pulleys and having upper and lower belt portions spanning between said pulleys, said upper belt portion running in a generally horizontal plane,

means for rotating at least one of said pulleys to cause translation of said belt,

a well adjacent said first pulley for receiving a fluidized solid and liquid mixture which is to be separated, said well having a bottom that is substantially below the level of said upper belt plane and a top opening which is above said plane, a planar member extending generally horizontally above and over said upper belt portion from said well opening and terminating beyond the line along the first pulley at which said upper belt portion makes its last tangential contact with said first pulley, said planar member being at a level for receiving only the overflow of said mixture from said well and for conducting said mixture on to said belt beyond said line of last tangential contact, and

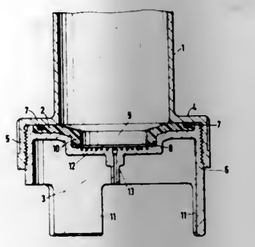
means for injecting said fluidized mixture into said well comprising a conduit disposed at the top of said well and extending in the lateral direction of said belt, said conduit having means intermediate its ends defining fluidized mixture inlet and said conduit having a plurality of nozzle means constituting outlets, said nozzle means being directed for discharging said mixture toward the bottom of said well for producing a turbulent stirring action therein.

4,116,844

COMPENSATING PLATE FOR A PRESSURE FILTRATION CELL

Wolfgang Hein; Claus Cosack, both of Dassel, and Peter Grundmann, Konigswinter, all of Fed. Rep. of Germany, assignors to Carl Schleicher & Schull, Einbeck, Fed. Rep. of Germany

Filed Jul. 22, 1977, Ser. No. 817,927
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657031
Int. Cl.² B01D *29/00*
U.S. Cl. 210—446 **7 Claims**



1. A compensating plate for a pressure filtration cell including a substantially cylindrical feeding vessel and a removable base therefor which forms a filter holder, said base adapted to be connected to the vessel by means of a flanged joint, the plate having an outer edge for engagement in a flange between the vessel and the filter holder such that on its upper side, the compensating plate is sealed against the vessel by way of a circumferential seal, the plate having a central opening corresponding to the size of the filter to be used and having a slight conical depression toward the said opening, the opening designed to pass into a downwardly extending cylindrical frame whose bottom edge is adapted to press the filter against the filter holder in a sealing manner when the filter holder and the vessel are forced axially toward one another, so that the compensating plate functions as a seal between the vessel and the filter holder.

4,116,845

HIGH CAPACITY BLOOD TRANSFUSION MICRO FILTER

Roy L. Swank, Portland, Oreg., assignor to Pioneer Filters, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 807,378, Jun. 17, 1977. This application Aug. 1, 1977, Ser. No. 820,791
Int. Cl.² B01D *27/00*
U.S. Cl. 210—446 **9 Claims**

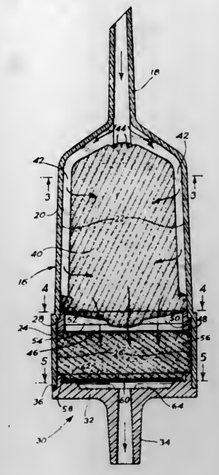
1. A blood transfusion micro filter comprising:

(a) a substantially vertically arranged elongated case having a peripheral wall terminating at its upper and lower ends in walls provided with inlet and outlet ports, respectively,

(b) a plurality of peripherally spaced longitudinal projections extending inwardly from the inner surface of the upper end wall and from the upper portion of the peripheral wall of the case,

(c) perforate blood filter material support means traversing the peripheral wall a spaced distance below the projections to form a chamber thereabove, and

(d) a quantity of woolly blood filter material contained in the chamber and fluffed into the spaces between the peripher-



ally spaced projections to provide therein filter areas of decreased filter material density.

4,116,846

HYDRAULIC FLUID COMPOSITIONS COMPRISING BORATE ESTERS

Teruyuki Sato, and Kunio Kawakatsu, both of Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed May 24, 1977, Ser. No. 800,111
Claims priority, application Japan, May 28, 1976, 51-62628
Int. Cl.² C10M *3/48, 3/20*
U.S. Cl. 252—78.1 **12 Claims**

1. A hydraulic fluid composition having a boron content of 0.2 to 1.6% by weight comprising:

(a) a reaction product selected from the group consisting of the reaction product of (i) and (iii) with (iv); (i), (ii) and (iii) with (iv) and mixtures thereof, wherein:

(i) is at least one polyglycol monoether of the formula:

$$R_1-(OA_1)_m OH$$

wherein R_1 is C_1-C_4 alkyl, A_1 is C_2-C_3 alkylene and n is 2 to 8;

(ii) is at least one polyglycol of the formula:

$$H-(OA_2)_n OH$$

wherein A_2 is C_2-C_3 alkylene and n is 2 to 10;

(iii) is at least one polyalkylene mono- or poly-ol of the formula:

$$R_2[(OA_3)_q OH]_p$$

wherein R_2 is a residue of a C_1-C_8 mono-ol or C_1-C_8 poly-ol, A_3 is C_2-C_3 alkylene, p is 1 to 4 and q is a number such that the molecular weight of component (iii) is 1,000 to 5,000; and

(iv) is at least one boron compound having an ability to form borate esters;

(b) at least one polyglycol monoether of the formula:

$$R_3-(OA_4)_a OH$$

wherein R_3 is C_1-C_4 alkyl, A_4 is C_2-C_3 alkylene and a is 2 to 8;

(c) at least one polyglycol of the formula:

$$H-(OA_5)_b OH$$

wherein A_5 is C_2-C_3 alkylene and b is 2 to 10; and

(d) at least one polyoxyalkylene mono- or poly-ol of the formula:

$$R_4[-(OA_6)_c OH]_d$$

wherein R_4 is a residue of a C_1-C_8 mono-ol or C_1-C_8 poly-ol, A_6 is C_2-C_3 alkylene, d is 1 to 4 and c is a number such that the molecular weight of component (d) is 1,000 to 5,000.

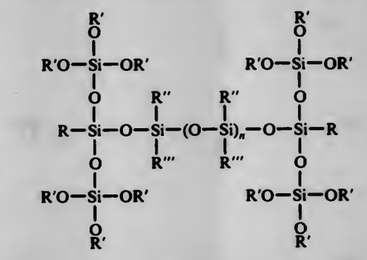
4,116,847

ALKOXYSILANE DOUBLE CLUSTER COMPOUNDS WITH SILICONE BRIDGES AND THEIR PREPARATION AND USE

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

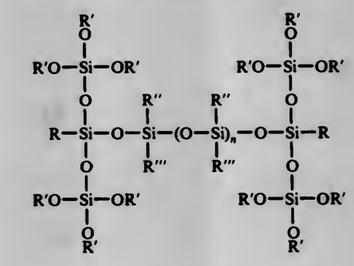
Division of Ser. No. 791,671, Apr. 28, 1977, Pat. No. 4,058,546. This application Aug. 8, 1977, Ser. No. 822,852
Int. Cl.² C10M *3/44, 3/46*
U.S. Cl. 252—78.3 **20 Claims**

1. In a functional fluid method comprising converting a first mechanical effort to pressure at a first location, transmitting said pressure from said first location to a second location through use of a hydraulic fluid, and converting said pressure at said second location to a second mechanical effort, the improvement characterized by using a hydraulic fluid comprising an effective amount of a compound having the formula:



wherein n is an integer from 0 to 300; R is hydrogen, alkyl, alkenyl, aryl, aralkyl or $-OSi(OR')_3$; each R' is independently selected from alkyl, alkenyl, aryl or aralkyl with the proviso that at least a majority of R' radicals are sterically hindered alkyl groups having at least 3 carbon atoms; and R'' and R''' are independently selected from hydrogen, alkyl, alkenyl, aryl, aralkyl, hydroalkyl, and halo or cyano substituted alkyl, alkenyl, aryl, aralkyl, and hydroalkyl.

11. In a functional fluid method comprising passing heat from a first heat conductor to a heat transfer fluid at a first location, transmitting the heat from said first location to a second location through use of said heat transfer fluid, and passing said heat from said heat transfer fluid to a second heat conductor at said second location, the improvement characterized by using a heat transfer fluid comprising an effective amount of a compound having the formula:



wherein *n* is an integer from 0 to 300; R is hydrogen, alkyl, alkenyl, aryl, aralkyl or —OSi(OR')$_3$; each R' is independently selected from alkyl, alkenyl, aryl or aralkyl with the proviso that at least a majority of R' radicals are sterically hindered alkyl groups having at least 3 carbon atoms; and R'' and R''' are independently selected from hydrogen, alkyl, alkenyl, aryl, aralkyl, hydroalkyl, and halo or cyano substituted alkyl, alkenyl, aryl, aralkyl, and hydroalkyl.

4,116,848

NOVEL CLEANING METHOD AND COMPOSITIONS

Daniel Schoenholz, Basking Ridge; Arthur Walter Petersen, Florham Park, and Marcus Allen Northup, Jr., Morristown, all of N.J., assignors to Church & Dwight Co., Inc., New York, N.Y.

Division of Ser. No. 361,140, May 17, 1973, Pat. No. 3,808,051, which is a continuation-in-part of Ser. No. 265,639, Jun. 23, 1972, abandoned. This application Nov. 7, 1973, Ser. No. 413,643

Int. Cl.^{2} C11D *17/00*

U.S. Cl. 252—90 **10 Claims**

1. A weakly alkaline composition for removing soil containing free or combined organic acids from a surface comprising (A) 1 to 99% by weight of an active ingredient consisting of at least two alkali metal salts of weak organic acids which will melt at temperatures between 250° and 550° F at which the weak organic acids will volatilize and/or decompose and (B) 1 to 5% by weight of a thickening agent, (C) 1 to 60% by weight of a finely divided inorganic material and (D) and the balance being an aqueous carrier.

4,116,849

THICKENED BLEACH COMPOSITIONS FOR TREATING HARD-TO-REMOVE SOILS

John William Leikhim, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 14, 1977, Ser. No. 777,191

Int. Cl.^{2} C11D *7/54, 7/56*

U.S. Cl. 252—103 **11 Claims**

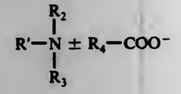
1. An alkaline, aqueous, liquid composition which is free of abrasives, having a pH of from about 9 to about 13, consisting essentially of:

(a) from about ½% to about 20% of a clay thickening and corrosion protection agent selected from the group consisting of smectite and attapulgite clays and mixtures thereof,

(b) from about ½% to about 9% of an alkali metal silicate having an SiO_2:M_2O ratio greater than about 1 wherein M is selected from the group consisting of sodium and potassium,

(c) a hypohalite liberating bleach component selected from the group consisting of alkali metal and alkaline earth metal hypochlorites and hypobromites, heterocyclic N-bromo and N-chloro imides and mixtures thereof, said hypohalite liberating bleach component being at a concentration to provide an available halogen level of from about ½% to about 10%,

(d) from 0% to about 10% of a bleach stable surfactant selected from the group consisting of alkyl sulfate salts containing from about 8 to about 18 carbon atoms in the alkyl group and water-soluble betaine surfactants having the general formula:



wherein R_1 is an alkyl group containing from about 8 to 18 carbon atoms, R_2 and R_3 are each alkyl groups containing from 1 to about 4 carbon atoms and R_4 is an alkylene group selected from the group consisting of methylene, propylene, butylene and pentylene,

(e) from 0% to about 15% of detergency improvers selected from the group consisting of alkali metal carbonates, polyphosphonates, polycarboxylates, phosphates and mixtures thereof, and

(f) from 0% to about 10% methylene chloride, and

(g) the remainder water, said composition having a viscosity of from about about 100 CPS to about 1,000,000 CPS.

4,116,850

DRAIN OPENER

J. Barry Ruck, Tampa, Fla., assignor to Theochem Laboratories, Inc., Tampa, Fla.

Filed Apr. 21, 1977, Ser. No. 789,534

Int. Cl.^{2} C11D *7/54*

U.S. Cl. 252—103 **4 Claims**

1. A drain opening composition consisting essentially of 10–60% by weight of a water-soluble hydroxide selected from the group of ammonium and alkali metal hydroxides, 0.1–15.0 by weight of a chlorine releasing agent, and 0.01–10% by weight of a compound selected from the group consisting of the chlorides of the period six metals of the periodic table of the elements.

4,116,851

THICKENED BLEACH COMPOSITIONS FOR TREATING HARD-TO-REMOVE SOILS

Lewis Allen Rupe; Lyle Brown Tuthill, and John William Leikhim, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 20, 1977, Ser. No. 808,016

Int. Cl.^{2} C11D *7/54, 7/56*

U.S. Cl. 252—103 **13 Claims**

1. An alkaline, aqueous, liquid composition having a pH of from about 9 to about 13, consisting essentially of:

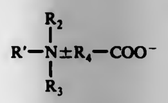
(a) from about ½% to about 20% of a clay thickening and corrosion protection agent selected from the group consisting of smectite and attapulgite clays and mixtures thereof,

(b) from about ½% to about 9% of an alkali metal silicate having an SiO_2:M_2O ratio greater than about 1 wherein M is selected from the group consisting of sodium and potassium,

(c) from about ½% to about 20% of a safety, dispensing, and/or cleaning improver selected from the group consisting of water-insoluble mineral oil compounds containing carbon chains in excess of about 20 carbon atoms and having a specific gravity of at least about 0.82, water-insoluble saturated fatty acid esters containing from about 13 to about 22 carbon atoms, water-insoluble dialkyl ethers wherein each alkyl contains from 1 to about 13 carbon atoms and the total carbon atoms is from about 7 to about 14, and mixtures thereof having a freezing point below about 15° C. and a vapor point above about 100° C.

(d) a hypohalite liberating bleach component selected from the group consisting of alkali metal and alkaline earth metal hypochlorites and hypobromites, brominated trisodium phosphate, chlorinated trisodium phosphate, heterocyclic N-bromo and N-chloro imides and mixtures thereof, said hypohalite liberating bleach component being at a concentration to provide an available halogen level of from about ½% to about 10%,

(e) from 0% to about 10% of a bleach stable surfactant selected from the group consisting of alkyl sulfate salts containing from about 8 to about 18 carbon atoms in the alkyl group and water-soluble betaine surfactants having the general formula:



wherein R_1 is an alkyl group containing from about 8 to 18 carbon atoms, R_2 and R_3 are each alkyl groups containing from 1 to about 4 carbon atoms and R_4 is an alkylene group selected from the group consisting of methylene, propylene, butylene and pentylene,

(f) from 0% to about 15% of detergency improvers selected from the group consisting of alkali metal carbonates, polyphosphonates, polycarboxylates, phosphates and mixtures thereof,

(g) from 0% to about 10% methylene chloride, and

(h) from 0% to about 60% of an abrasive selected from the group consisting of quartz, pumice, pumicite, titanium dioxide, silica sand, calcium carbonate, zirconium silicate, diatomaceous earth, whiting, feldspar and mixtures thereof, said abrasive having particle size diameters of from about 1 to about 250 microns and specific gravities of from about 0.5 to about 5.0, and

(i) the remainder water, said composition having a viscosity of from about 100 CPS to about 1,000,000 CPS.

4,116,852

BUILDERS AND BUILT DETERGENT COMPOSITIONS

John Bailey, Ryton; Michael John Randell, and Paul Richard Sherrington, both of Newcastle upon Tyne, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 657,655, Feb. 12, 1976, abandoned. This application Aug. 24, 1977, Ser. No. 828,111

Claims priority, application United Kingdom, Feb. 14, 1975, 6357/75

Int. Cl.^{2} C11D *3/06, 7/16*

U.S. Cl. 252—135 **9 Claims**

1. A detergent composition consisting essentially of:

(a) from about 1% to about 50% by weight of the composition of an organic surfactant selected from the group consisting of water soluble anionic, nonionic, ampholytic and zwitterionic surfactants and mixtures thereof; and

(b) from about 5% to about 60% by weight of the composition of a detergent builder consisting of a mixture of water soluble alkali metal phosphates selected from the group consisting of orthophosphates, pyrophosphates and tripolyphosphates, wherein the amount of tripolyphosphate lies in the range from about 1% to about 15% by weight of the phosphate mixture and wherein the amount of orthophosphates in the phosphate mixture is less than about 1% by weight of the phosphate mixture.

4,116,853

COMPOSITION FOR CLEANING ALUMINUM AT LOW TEMPERATURES

Robert Eric Binns, Roslyn, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

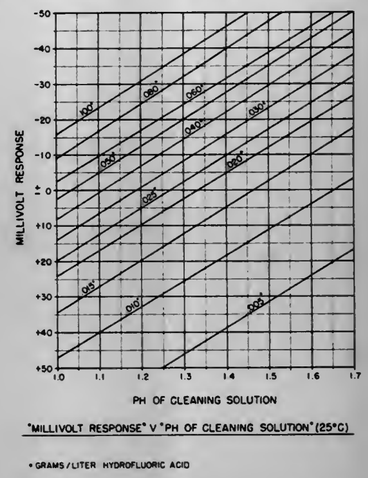
Division of Ser. No. 755,929, Dec. 30, 1976, and a continuation-in-part of Ser. No. 607,154, Aug. 25, 1975, Pat. No. 4,009,115, which is a continuation-in-part of Ser. No. 442,726, Feb. 14, 1974, abandoned. This application Dec. 30, 1976, Ser. No. 755,928

The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.

Int. Cl.^{2} C11D *7/08, 1/72;* C23G *1/12, 1/02*

U.S. Cl. 252—142 **3 Claims**

1. An aqueous cleaning composition for removing and dissolving aluminum fines and lubricating oils from an aluminum surface comprising hydrofluoric acid present in an amount of at least about 0.005 grams/liter of cleaning solution, sulfuric acid present in an amount from about 1.0 gram/liter to about 10 grams/liter of cleaning solution and a surfactant present in an amount from about 0.1 gram/liter to about 10 grams/liter of cleaning solution the hydrofluoric acid being present in an amount such that the composition has an aluminum dissolution



"MILLIVOLT RESPONSE" V "PH OF CLEANING SOLUTION" (25°C)

* GRAMS / LITER HYDROFLUORIC ACID

rate from about 8 to about 25 milligrams per square foot of aluminum surface treated.

4,116,854

DETERGENT COMPOSITIONS CONTAINING STARCH

Robert Dwight Temple; William Thomas Bryan, and Carl Joseph Willig, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 14, 1977, Ser. No. 768,675

Int. Cl.^{2} C11D *3/22, 3/43*

U.S. Cl. 252—167 **12 Claims**

1. A laundry detergent composition comprising:

(a) from about 4% to about 60% by weight of an organic surface-active agent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic detergents and mixtures thereof; and

(b) from about 0.1% to about 6% by weight of granular substantially water-insoluble starch having an average particle diameter of from about 1 to about 45 micrometers and a swelling power of less than about 15 at a temperature of 65° C., said starch containing from about 0.01% to about 5% by weight of a substantially water-insoluble organic liquid.

4,116,855

STABILIZED ACCELERATOR COMPOSITION FOR RUBBER

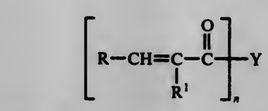
Rudolf Adolf Behrens, Gladstone, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 18, 1977, Ser. No. 779,113

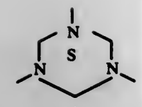
Int. Cl.^{2} C08K *5/43, 5/35*

U.S. Cl. 252—182 **5 Claims**

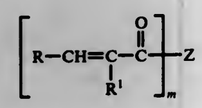
1. A stabilized accelerator composition for rubber comprising N,N'-[(thiocarbonyl)thio]dimorpholine and an effective stabilizing amount of a compound selected from (a) amides represented by the Formula



wherein R and R^1 are hydrogen or methyl; n is an integer of 1 to 3, inclusive, and Y is selected from —NH_2, —NHR^2, —$N(R^3)_2$, —$(NH)_2R^4$, —$(NHCH_2O)_2R^5$ and



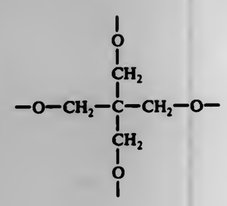
wherein R^2 and R^3 are, individually, alkyl, alkoxyalkyl or hydroxymethyl; R^4 and R^5 are, individually, alkylene, arylene or oxydialkylene; and (b) esters represented by the Formula:



wherein R and R^1 are as defined above, and *m* is an integer from 1 to 4, inclusive, provided that when *m* is 1, Z is the group: —OR^6, wherein R^6 is alkyl or alkoxyalkyl; when *m* is 2, Z is the group: —OR^7O—, wherein R^7 is alkylene or oxydialkylene; when *m* is 3, Z is the group:

—OR^8O—

wherein R^8 is alkylene; and when *m* is 4, Z is the group:



4,116,856

RECOVERY OF LITHIUM FROM BRINES

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 5, 1977, Ser. No. 812,534
Int. Cl.² B01D *15/04*
U.S. Cl. 252—184 **9 Claims**

1. A process for preparing a microcrystalline $LiX.2Al(OH)_3$ suspended in an anion exchange resin, the said process comprising,

providing a particulate anion exchange resin substantially in neutral or basic form having suspended therein hydrous alumina conforming to the formula $Al(OH)_3$,

reacting said $Al(OH)_3$ with aqueous LiOH at a temperature and for a period of time sufficient to form micro-crystalline $LiOH.2Al(OH)_3$ suspended in said resin,

reacting the so-formed $LiOH.2Al(OH)_3$ with a halogen acid or halide salt to convert it to $LiX.2Al(OH)_3$, where X is a halide.

4,116,857

RECOVERY OF MG^{++} FROM BRINES

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 5, 1977, Ser. No. 812,542
Int. Cl.² B01D *15/04*
U.S. Cl. 252—184 **9 Claims**

1. A composition of matter comprising a particulate anion exchange resin having suspended therein microcrystalline $MgX_2.2Al(OH)_3$, where X is a halide.

4,116,858

RECOVERY OF LITHIUM FROM BRINES

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 5, 1977, Ser. No. 812,543
Int. Cl.² B01D *15/04*
U.S. Cl. 252—184 **10 Claims**

1. A particulate, anion exchange resin having suspended therein a microcrystalline form of $LiX.2Al(OH)_3$, where X is a halogen.

4,116,859

METHOD OF PREPARING OXYGEN-CONTAINING BLEACH AND PRODUCT SO PRODUCED

George G. Merkl, 46 Sunset Ct., Haworth, N.J. 07651

Continuation-in-part of Ser. No. 534,084, Dec. 23, 1974, abandoned. This application Jan. 10, 1977, Ser. No. 758,343
Int. Cl.² C07C *179/20, 179/02;* C11D *3/395, 7/54*
U.S. Cl. 252—186 **9 Claims**

1. A method of preparing an oxygen-containing bleach which comprises:

mixing at a temperature below about 75° F.

(a) an aqueous solution of a water-soluble, multi-metal, inorganic, NH_2 group-containing monomeric complex; and

(b) hydrogen peroxide

whereby said hydrogen peroxide (b) reacts with said monomeric complex (a) upon mixing, and said oxygen-containing bleach crystallizes out of the reaction system.

4,116,860

REGENERANT COMPOSITION AND METHOD FOR REGENERATION OF WEAK ACID CATION EXCHANGE RESIN

Robert Kunin, Yardley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 698,459, Jun. 21, 1976, Pat. No. 4,071,446. This application Sep. 28, 1977, Ser. No. 837,344
Int. Cl.² C09K *3/00*
U.S. Cl. 252—192 **2 Claims**

1. A composition for regenerating weak acid cation exchange resin comprising about 70 to 80 weight percent alkali metal chloride, about 5 to 15 percent alkali metal carbonate, and the balance alkali metal chelating polycarboxylate.

4,116,861

DICHROIC LIQUID CRYSTAL COMPOSITIONS

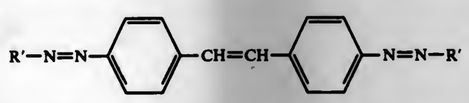
Siegfried Aftergut, Schenectady, and Herbert S. Cole, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,660
Int. Cl.² C09K *3/34;* G02F *1/13*
U.S. Cl. 252—299 **4 Claims**

1. A dichroic liquid crystal composition for use in a liquid crystal display, comprising:

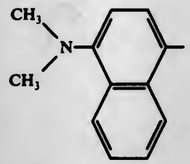
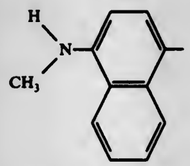
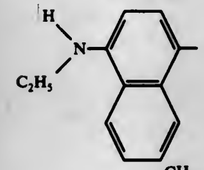
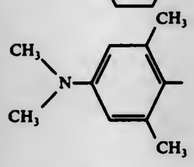
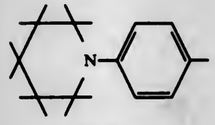
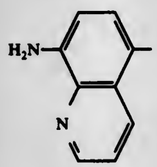
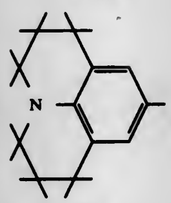
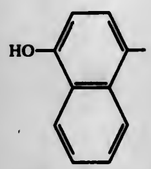
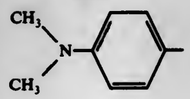
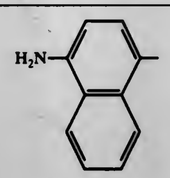
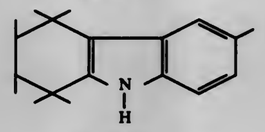
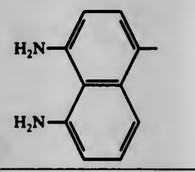
a host liquid crystal material; and

a guest dichroic dye exhibiting high order parameter values in said host, wherein the dichroic dye is selected from the group consisting of compounds of the chemical formula



where the radical R′ is selected in accordance with a desired approximate maximum absorption wavelength (λ) from the following table:

TABLE

DYE	R′	λ(nm.)
1		490
2		495
3		495
4		470
5		450
6		450
7		470
8		480
9		440
10		500
11		450
12		540

4,116,862

NEW PHOTOCHROMIC MATERIALS AND METHOD FOR THEIR PREPARATION

Constant Wippler, Illkirch Graffenstaden, France, assignor to Essilor International (Compagnie Generale d'Optique), Joinville-le-Pont, France

Filed Apr. 27, 1977, Ser. No. 791,638
Claims priority, application France, Apr. 30, 1976, 76 12962
Int. Cl.² G03C *1/733*
U.S. Cl. 252—300 **18 Claims**

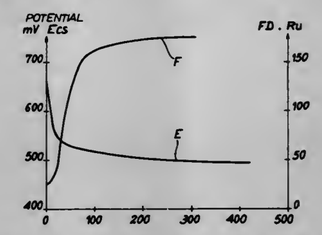
1. A photochromic material comprising a transparent polymer material having a block copolymer base with a structure wherein blocks of a first polymer form a dispersed phase in a matrix phase essentially composed of blocks of a second polymer, and an organic photochromic substance being uniformly distributed in said polymer material and being selectively retained in the area of one of said phases.

4,116,863

METHOD OF DECONTAMINATION OF RADIOACTIVE EFFLUENTS

Yves Berton, Le Puy Ste Reparade, and Pierre Chauvet, Manosque, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 23, 1977, Ser. No. 780,498
Claims priority, application France, Mar. 31, 1976, 76 09307; Jan. 27, 1977, 77 02285
Int. Cl.² G21F *9/06*
U.S. Cl. 252—301.1 W **21 Claims**



1. A method of decontamination of a radioactive effluent containing at least ruthenium, of the type in which a certain number of precipitates having absorbent and/or coprecipitant properties with respect to radioactive elements contained in an

effluent are formed in said effluent without intermediate phase separation, wherein a reduction of the effluent to be treated is made by the addition to the effluent of hydrazine or of a hydrazine salt and a cobalt sulphide precipitate is then formed in the effluent.

4,116,864

FLUORESCENT COMPOSITIONS FOR LOW-VELOCITY ELECTRON EXCITED FLUORESCENT DISPLAY DEVICES

Akiyasu Kagami, Ninomiyamachi Kawawa; Takashi Hase, Fujisawa; Yoshiyuki Mimura, Kamakura; Kinichiro Narita, and Minoru Hiraki, both of Chigasaki, all of Japan, assignors to Dai Nippon Toryo Co. Ltd., Osaka, Japan

Division of Ser. No. 684,674, May 10, 1976. This application Jan. 19, 1977, Ser. No. 760,721

Claims priority, application Japan, May 12, 1975, 50-56870; May 13, 1975, 50-57104; May 22, 1975, 50-61281; Jun. 10, 1975, 50-69861; Jun. 10, 1975, 50-69862; Jun. 10, 1975, 50-69863; Aug. 28, 1975, 50-104257; Aug. 29, 1975, 50-104643

Int. Cl.[2] C09K *11/18*

U.S. Cl. 252—301.6 S **2 Claims**

1. A fluorescent composition for low-velocity electron excitation consisting of a mechanical mixture of zinc oxide (ZnO) and a silver activated zinc sulfide phosphor (ZnS:Ag), said zinc oxide and said phosphor being present in a weight ratio from 1:9 to 9:1, the amount of silver contained in said phosphor being from 10^{-5} to 10^{-3} gram per one gram of zinc sulfide.

4,116,865

METHOD FOR PREPARING THERMOLUMINESCENT MATERIALS UTILIZING RARE EARTH OXYHALIDES ACTIVATED WITH TERBIUM

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 625,788, Oct. 24, 1975, abandoned, which is a division of Ser. No. 565,642, Apr. 7, 1975, Pat. No. 3,996,472. This application Feb. 4, 1977, Ser. No. 765,511

Int. Cl.[2] C09K *11/46*

U.S. Cl. 252—301.4 H **11 Claims**

1. A method for preparing a rare earth oxyhalide thermoluminescent material essentially expressed by the formula:

$$M_{1-w-y}OX:Tb_wA_y$$

wherein M is an element selected from the group consisting of La, Gd and Y;

X is an element selected from the group consisting of Cl and Br;

A is an elemental additive selected from the group consisting of Zr and Hf;

w is from 0.005 to 0.30 mole per mole of the oxyhalide; and

y is from a small but effective amount to improve the thermoluminescence up to 0.01 mole per mole of the selected oxyhalide, said method comprising the steps of:

(a) dissolving terbium oxide, an oxide of a rare earth selected from the group consisting of La, Gd, and Y and an inorganic salt of the elemental additive in nitric acid to form a dissolved mixture,

(b) adding sufficient oxalic acid to precipitate mixed oxalates of terbium, the selected rare earth and the elemental additive,

(c) firing the mixed oxalates at an elevated temperature of at least about 1,000° C in air to form the corresponding oxide mixture,

(d) blending the oxide mixture of step (c) with an ammonium halide selected from ammonium chloride and ammonium bromide,

(e) firing the blend of step (d) at an elevated temperature of about 400° C to form the corresponding oxyhalide thermoluminescent material,

(f) blending the thermoluminescent material with an alkali metal halide having the same halide ion as the oxyhalide, and

(g) recrystallizing the blended material of step (f) by refiring in the temperature range 800°–1200° C.

4,116,866

ORGANOPHILIC CLAY GELLANT

Claude Malcolm Finlayson, Houston, Tex., assignor to N L Industries, Inc., New York, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,099

Int. Cl.[2] B01J *13/00*

U.S. Cl. 252—316 **9 Claims**

1. An organophilic clay gellant comprising the reaction product of a castor-fatty propylamido benzyl dialkyl ammonium compound wherein the alkyls are of about 1 to 3 carbon atoms and a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay, and wherein the amount of said ammonium compound is from about 90 to about 120 milliequivalents per 100 grams of said clay, 100% active clay basis.

4,116,867

REJUVENATION OF NITROGEN-DAMAGED NOBLE METAL ZEOLITE CATALYSTS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 11, 1977, Ser. No. 814,339

Int. Cl.[2] B01J *29/38, 29/12;* C10G *13/10*

U.S. Cl. 252—416 **8 Claims**

1. A method for rejuvenating a catalyst comprising a Group VIII noble metal hydrogenating component supported on a hydrogen- and/or decationized crystalline aluminosilicate zeolite base, said catalyst being substantially free of carbonaceous deposits but having been partially deactivated by contact, in its oxidized state, with substantially oxygen-free elemental nitrogen at temperatures above 200° F, which comprises subjecting said partially deactivated catalyst without intervening reduction, to oxidation with a flowing stream of an oxygen-containing gas at temperatures between about 400° and 1200° F, and thereafter reducing the oxidized catalyst with hydrogen.

5. A method as defined in claim 1 wherein said contacting with elemental nitrogen occurred during pressure testing with nitrogen of a reactor loaded with said catalyst, said pressure testing having been carried out at a temperature above about 300° F and a pressure above about 750 psig.

8. A method as defined in claim 5 wherein said oxidation is carried out at a pressure between about 10 and 500 psig.

4,116,868

METHOD FOR PREPARING AN OXIDATION CATALYST

Ramon A. Mount; Harold Raffelson, and Warn D. Robinson, all of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 552,481, Feb. 24, 1975, abandoned. This application Dec. 1, 1976, Ser. No. 746,282

Int. Cl.[2] B01J *31/02, 27/14;* C01B *25/26;* C07D *307/60*

U.S. Cl. 252—428 **6 Claims**

1. A dispersion which comprises a dispersoid which comprises a finely divided phosphorus-vanadium-oxygen precursor having a phosphorus to vanadium atom ratio of between about 0.9:1 and about 2:1 wherein a substantial amount of the vanadium is tetravalent vanadium, a liquid chemically inert with the dispersoid and at least about 0.01 weight percent of a surfactant selected from the group consisting of anionic, nonionic, zwitterionic, and ampholytic compounds and mixtures thereof.

4,116,869

ORGANOALUMINUM-ORGANOPHOSPHINE-METAL SALT OF A BETA-DIKETONE CATALYST SYSTEM

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 577,137, May 13, 1975, Pat. No. 4,020,018, which is a division of Ser. No. 416,816, Nov. 19, 1973, Pat. No. 3,925,317. This application Jan. 21, 1977, Ser. No. 761,090

Int. Cl.[2] B01J *31/12, 31/14*

U.S. Cl. 252—431 P **8 Claims**

1. A catalyst system comprising (I) an organoaluminum compound represented by R_nAlH_m wherein each R is a hydrocarbon radical, *n* is an integer of 1 to 3, inclusive, and *m* is 0, 1, or 2, such that $n + m = 3$, (II) an organophosphine compound represented by R_3^1P wherein R^1 is a hydrocarbon or alkoxy-substituted hydrocarbon and (III) a beta-diketone substantially as the metal salt of said beta diketone, in catalytically effective ratios, wherein said metal of said (III) is selected from the group consisting of beryllium, magnesium, calcium, strontium, barium, boron, aluminum, gallium, indium, thallium, germanium, tin, lead, zinc, cadmium, and mercury.

4,116,870

CATALYSTS FOR THE HYDROTREATMENT OF HYDROCARBONS AND PROCESSES FOR THE UTILIZATION OF SAID CATALYSTS

Joseph Edouard Weisang, and Philippe Engelhard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed May 28, 1976, Ser. No. 690,908

Claims priority, application France, May 28, 1975, 75 16703

The portion of the term of this patent subsequent to Aug. 10, 1993, has been disclaimed.

Int. Cl.[2] B01J *27/04, 27/08, 27/10*

U.S. Cl. 252—439 **24 Claims**

1. A catalyst for the hydro-treatment of hydrocarbons comprising a refractory inorganic oxide support having acid sites, having between about 0.4 and 2% of halogen present in combined form with other catalyst components, and consisting essentially of the following on said support:

(a) about 0.02 to 2% of at least one platinum-metal ingredient,

(b) about 0.02 to 2% of at least one additional zirconium, or titanium ingredient, and

(c) about 0.02 to 2% of a tin ingredient; said weight percentages being calculated with respect to the respective elemental forms of said components and based on the total weight of the catalyst.

4,116,871

PREPARATION OF PHOSPHORUS-CONTAINING ACIDS AND SALTS

Andrew Doyle Abbott, Greenbrae, and George J. Benoit, San Anselmo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 29, 1977, Ser. No. 811,228

Int. Cl.[2] C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—32.7 E **7 Claims**

1. A process which comprises heating a mixture of an acid of the formula



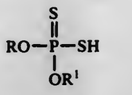
(A)

and an acid of the formula



(B)

for 3 to 10 hours at 55° to 95° C to form a mixture of acids (A) and (B) and an acid of the formula



(C)

wherein R is alkyl and R^1 is aryl.

2. The process according to claim 1 wherein the acid mixture is neutralized with a compound supplying a monovalent or divalent cation.

3. The process according to claim 2 wherein said compound is zinc, zinc oxide, zinc carbonate, potassium hydroxide or sodium hydroxide.

4. The process of claim 3 wherein R is C_1–C_{20} is alkyl, R^1 is phenyl or phenyl substituted by 1–3 alkyl groups of 1–20 carbon atoms each, and said compound is zinc oxide or zinc carbonate.

5. A lubricating oil composition containing an oil of lubricating viscosity and from 0.1 to 99% by weight of the product prepared by the process of claim 4.

4,116,872

HOT MELT METAL WORKING LUBRICANTS

Richard William Jahnke, Mentor-On-The-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 8, 1977, Ser. No. 766,642

Int. Cl.[2] C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—32.7 E **33 Claims**

1. A method for lubricating metal during working thereof which comprises applying to said metal a lubricating composition which provides lubricity thereto, said composition melting within the range of about 30°–100° C. and comprising at least one substantially neutral ester defined as follows:

I. The alcohol moieties are derived from (A) a polyalkylene glycol containing about 20–50 polyoxyalkylene units, or a mixture thereof with (B) at least one saturated aliphatic alcohol having at least about 10 carbon atoms;

II. The acid moieties are derived from (C) at least one C_{12-25} aliphatic monocarboxylic acid, or a mixture thereof with (D) at least one C_{4-20} aliphatic polycarboxylic acid.

16. A composition which melts within the range of about 30°–100° C. and which provides lubricity to metal surfaces, said composition comprising a mixture of substantially neutral esters defined as follows:

I. The alcohol moieties are derived from (A) a polyalkylene glycol containing about 20–50 polyoxyalkylene units and (B) at least one saturated aliphatic alcohol having at least about 10 carbon atoms;

II. The acid moieties are derived from (C) at least one C_{12-25} aliphatic monocarboxylic acid and (D) at least one C_{4-20} aliphatic polycarboxylic acid.

4,116,873

LUBRICATING OIL COMPOSITION CONTAINING GROUP I OR GROUP II METAL OR LEAD SULFONATES

Louis de Vries, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 585,411, Jun. 9, 1975, abandoned. This application May 10, 1976, Ser. No. 682,073

Int. Cl.[2] C10M *1/40, 3/34, 5/22, 7/38*

U.S. Cl. 252—33 **35 Claims**

1. An oil-soluble Group I or Group II metal or lead salt of a substantially saturated aliphatic hydrocarbylethylsulfonic acid in which the substantially saturated aliphatic hydrocarbyl group contains from about 50 to about 200 carbons atoms.

25. A composition comprising:

a major amount of an oil of lubricating viscosity, and

a detergent-dispersant amount up to 15% by weight of an oil-soluble Group I or Group II metal or lead salt of a substantially saturated aliphatic hydrocarbyl ethylsulfonic

acid in which the substantially saturated hydrocarbyl group contains 50–200 carbon atoms.

4,116,874

COMPRESSOR OIL COMPOSITIONS

Kensuke Sugiura; Toru Miyagawa, both of Kawasaki, and Haruo Seki, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 718,319, Aug. 27, 1976, abandoned. This application Jun. 22, 1977, Ser. No. 809,069

Claims priority, application Japan, Aug. 27, 1975, 50-103054

Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—46.7 **6 Claims**

1. A compressor oil composition comprising (A) a major proportion of a lubricating base oil selected from the group consisting of refined products of mineral lubricating oils having a viscosity at 37.8° C. of 20 to 100 centistokes and synthetic hydrocarbon oils having a viscosity at 37.8° C of 20 to 100 centistokes, and (B) 0.01 to 3.0% by weight, based on the total weight of the compressor oil composition, of each of (a) an aromatic amine selected from the group consisting of diphenylamine, phenyl-α-naphthylamine, phenyl-β-naphthylamine, phenyl-p-octylphenylamine, p,p'-dioctyldiphenylamine, 2,6-ditert.-butyl-α-dimethylamino-p-cresol and tetramethyldiaminodiphenylmethane, (b) an alkylphenol selected from the group consisting of 2,6-di-tert.-butyl-p-cresol, 4,4'-methylenebis(2,6-di-tert.-butylphenol), 4,4'-dihydroxy-3,3',5,5'-tetratert.-butyl biphenyl, 4,4'-thiobis(2,6-di-tert.-butylphenol), bis(3,5-di-tert.-butyl-4-hydroxybenzyl) sulfide and 2,2'-methylenebis(4-methyl-6-tert.-butylphenol), and (c) a triester of dithiophosphoric acid selected from the group consisting of S-dodecyl O,O'-dipropyl dithiophosphate, O,O'-bis(-propylphenyl)-S-benzyl dithiophosphate and O,O'-bis(propylphenyl)-S-styryl dithiophosphate.

4,116,875

MULTIFUNCTIONAL SUBSTITUTED TRIAZINE FUNCTIONAL FLUID ADDITIVES AND COMPOSITIONS CONTAINING SAME

John C. Nnadi, Glassboro, and Israel J. Heilweil, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 576,529, May 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 248,226, Apr. 27, 1973, Pat. No. 3,888,773. This application Jun. 9, 1977, Ser. No. 805,111

Int. Cl.² C10M *1/10*

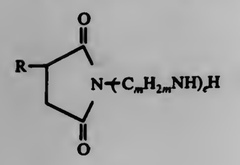
U.S. Cl. 252—49.7 **15 Claims**

1. An organic composition comprising a major proportion of an organic fluid lubricant or fuel medium and a minor proportion, sufficient to provide detergent, anti-oxidant or antiwear properties thereto, of a heterocyclic nitrogen compound selected from the group consisting of:

(a) a compound comprising at least two triazine nuclei, said nuclei being substituted by at least one monovalent amine substituent, said monovalent amine substituent being bonded through an amino nitrogen atom to a carbon atom of one of said triazine nuclei, said triazine nuclei being interlinked with a bivalent amine radical bonded through amino nitrogen atoms to a carbon atom of each of said triazine nuclei,

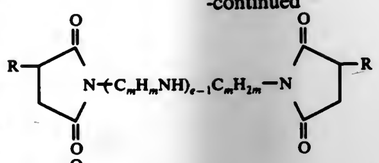
the amine of said monovalent amine substituent being selected from the group consisting of:

(1)

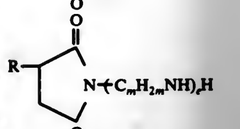


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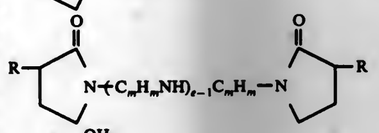
(2)



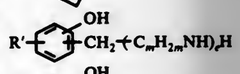
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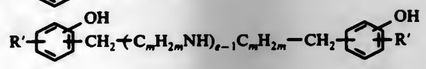
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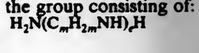


(6)



the amine of said bivalent amine radical being selected from the group consisting of:

(7)



and

(8)



wherein:

m is an integer of from 1 to 3;

e is an integer of from 1 to 10;

R is an alkenyl group containing from 8 to about 10,000 carbon atoms; and

R' is an alkyl group containing from 8 to about 10,000 carbon atoms; and

(b) a substituted triazine comprising at least one monovalent amine substituent bonded directly through an amino nitrogen atom to a carbon atom of the triazine nucleus, the amine of said monovalent amine substituent being selected from the group consisting of members 2 through 6 above.

4,116,876

BORATED OXAZOLINES AS VARNISH INHIBITING DISPERSANTS IN LUBRICATING OILS

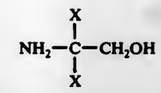
Stanley J. Brois, Westfield; Antonio Gutierrez, Hamilton Square, and Esther D. Winans, Colonia, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Jan. 28, 1977, Ser. No. 763,545

Int. Cl.² C10M *1/10, 1/50*

U.S. Cl. 252—49.6 **17 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and a minor but dispersing amount of a sludge dispersing and varnish inhibiting oil-soluble borated oxazoline material containing from about 0.1 to 2.0 wt. % boron, wherein said oxazoline material is formed by the reaction of (A) a hydrocarbyl substituted C_4 to C_{10} dicarboxylic acid or anhydride, wherein said hydrocarbyl group is a polymer of C_2 to C_5 monoolefin, said polymer having a molecular weight of about 900 and 10,000; and (B) a 2,2-disubstituted-2-amino-1-alkanol having 2 to 3 hydroxy groups and containing a total of 4 to 8 carbons and represented by the formula:



wherein X is an alkyl, or hydroxy alkyl group, with at least one of the X substituents being a hydroxy alkyl group of the structure $-(CH_2)_nOH$, said oxazoline material having one to two oxazoline rings.

4,116,877

ELASTOMER COMPATIBLE SEAL SWELL ADDITIVE FOR AUTOMATIC TRANSMISSION FLUIDS, POWER TRANSMISSION FLUIDS AND HYDRAULIC STEERING APPLICATIONS

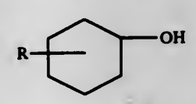
Edward Francis Outten; Jack Ryer, both of East Brunswick, and John E. Williams, Cranford, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Jul. 8, 1977, Ser. No. 813,893

Int. Cl.² C10M *1/46; 1/20*

U.S. Cl. 252—72 **9 Claims**

1. In a method of operating a hydraulic transmission having elastomer seals subject to deterioration and leakage, the improvement of using a transmission fluid comprising mineral oil containing at least a seal swelling amount of the combination of an organophosphite having the general formula $(RO)_3P$ wherein R is a hydrocarbyl group containing from 8 to 24 carbons and a phenol of the general formula



wherein R is a hydrocarbyl group of from 8 to 24 carbons; said organophosphite having a weight ratio to said phenol from 4:1 to 1:4, whereby the compatibility of said oil for said elastomer is enhanced.

4,116,878

DETERGENT COMPOSITION

Fritz Deutscher, Mannheim, and Robert Leitner, Ketsch, both of Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 584,306, Jun. 6, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,365

Claims priority, application Luxembourg, Jun. 14, 1974, 70322

Int. Cl.² C11D *3/395, 7/54, 1/14*

U.S. Cl. 252—94 **2 Claims**

1. A detergent and bleaching composition having a reduced fabric damaging effect consisting essentially of

(a) from 2 to 20% by weight of an anionic detergent compound selected from the group consisting of the sodium and potassium salts of C_{12}–C_{18} alkylbenezenesulphonic acids, C_{10}–C_{24} alkylsulphuric acid esters, C_{10}–C_{20} olefinsulphonic acids, C_{12}–C_{18} acylisethionic acids and C_{12}–C_{18} acyltaurines;

(b) from 1 to 80% by weight of sodium or potassium monopersulphate;

(c) from 0.1 to 5% by weight of sodium or potassium bromide; and

(d) from 0.1 to 20% by weight of urea or acetamide; the weight ratio of the sodium or potassium monopersulphate to the sodium or potassium bromide being higher than 1:1, and the total composition having a pH of from 8 to 11.

4,116,879

QUATERNARY HYDROXYALKYL TERTIARY AMINE BASES AS POLYURETHANE CATALYSTS

Ibrahim S. Bechara, Boothwyn; Felix P. Carroll, Chester; Rocco L. Mascioli, Media, all of Pa., and John R. Panchak, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 497,194, Aug. 14, 1974, Pat. No. 3,988,267, which is a continuation-in-part of Ser. No. 377,447, Jul. 9, 1973, Pat. No. 3,872,687. This application Aug. 10, 1976, Ser. No. 713,307

Int. Cl.² B01J *31/02, 27/24;* C08J *9/00;* C07C *87/30*

U.S. Cl. 252—426 **2 Claims**

1. A polyurethane catalyst composition for the polymerization of a polyol and an organic polyisocyanate which comprises a mixture of a tertiary amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, triisobutylamine and mixtures thereof and a quaternary hydroxyalkyl tertiary amine base prepared by reacting substantially stoichiometric amounts of water or a carbinol selected from the group consisting of methanol, ethanol, benzyl alcohol, furfuryl alcohol, allyl alcohol, phenol, octylphenol, nonylphenol, methylphenol, methoxyphenol, ethoxyphenol, 3-diethylamino phenol, naphthol, resorcinol, 1,4-hydroquinone, chlorophenols, chloronaphthols and p,p'-dihydroxydiphenyldimethylmethane; an alkylene oxide selected from the group consisting of propylene oxide, ethylene oxide, 1,2-butylene oxide, 1,2-pentene oxide, styrene oxide, butadiene epoxide, diepoxides prepared from p,p'-dihydroxydiphenyldimethylmethane and epichlorohydrin, an olefin oxide having 9–14 carbon atoms and mixtures thereof; and a tertiary amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, triisobutylamine and mixtures thereof, wherein the tertiary amine in said composition is present in a catalytic amount of up to 50% by weight of the composition.

4,116,880

SOLID CATALYSTS BASED ON FLUORINATED GRAPHITE

George A. Olah, Shaker Heights, Ohio, assignor to Produits Chimiques Ugine Kuhlmann, Clichy, France

Filed Jun. 16, 1977, Ser. No. 807,014

Int. Cl.² B01J *27/12*

U.S. Cl. 252—429 R **9 Claims**

1. A catalyst composition for hydrocarbon transformations comprising a fluorinated graphite having a fluorine to carbon atomic ratio of from about 0.1 to 1 having bonded thereto from between about 5 to about 50 percent by weight of the total catalyst composition of at least one Lewis acid selected from halides of the elements of Group II-A, III-A, IV-B, V or VI-B of the Periodic Table.

4,116,881

GAS-PURIFYING COMPOSITION AND METHOD OF PRODUCING IT

Tsuneo Shibata, Yamatokoriyama; Masao Maki, Nabari; Masao Suzuki, Nara, and Hidehiko Kawabe, Kashiwara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 516,869, Oct. 21, 1974, Pat. No. 4,025,603. This application Feb. 24, 1977, Ser. No. 771,677

Claims priority, application Japan, Oct. 19, 1973, 48-118281; Dec. 18, 1973, 48-142889; Dec. 28, 1973, 48-2897

Int. Cl.² B01J *23/02, 23/04, 27/02, 27/08*

U.S. Cl. 252—440 **6 Claims**

1. A granulated gas-purifying composition comprising calcium sulfate and potassium permanganate.

4,116,882

METHOD FOR THE FORMATION OF ALUMINA SPHERES

Larry L. Bendig; Cathy S. Siemsen, and Donald E. Stowell, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Dec. 14, 1977, Ser. No. 860,369
Int. Cl.[2] B01J *21/04*
U.S. Cl. 252—448 **5 Claims**

1. An improved method for forming high purity alumina spheres by dropping alumina slurry through a hydrocarbon filled column to form spheres said column having an aqueous ammonia layer at the lower portion thereof, said ammonia providing a set to the spheres allowing them to maintain spherical form, the improvement comprising forming alumina spheres having from 80–85% of the pore volume of said spheres in the range of from about 35 angstroms to about 65 angstroms, by peptizing an alumina slurry obtained from the hydrolysis of aluminum alkoxides, said slurry containing from 10 to 20 weight percent Al_2O_3, with an acid selected from a group such as acetic acid, formic acid, and nitric acid and allowing the slurry thus formed to age until a viscosity of from about 200 to about 600 centipoise is obtained, prior to dropping through a hydrocarbon filled column.

4,116,883

CATALYST SUPPORT COATING SLURRY AND COATINGS

James F. Rhodes, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1975, Ser. No. 553,106
Int. Cl.[2] B01J *21/04*
U.S. Cl. 252—463 **12 Claims**

1. A ceramic support coating slurry resistant to gel formation and adapted to form a porous, substantially uniform, thermally durable and adherent coating on a refractory ceramic substrate, consisting essentially of very fine grained gamma alumina having a size not larger than about 200 A in the amount of about 5 to 70 weight percent of the solids and one of the active alumina precursors consisting of alpha alumina monohydrate and pseudoboehmite in the amount of about 30 to 95 weight percent of the solids, said alumina and precursor being suspended in sufficient deionized water to form a slurry having the desired application characteristics, said solids being present in an amount of about 30–36% by weight of said slurry, said gamma alumina serving to disperse said precursor without the need for peptizing agents and functioning as a binder to give coherence within the coating and adherence to the substrate.

4,116,884

OXIDIZING CATALYZER

Tadayoshi Hayashi, Niiza; Yoshiaki Takagi, Kawagoe; Tetsuo Toizume, Takatsuki, and Masakazu Umeda, Nara, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1977, Ser. No. 821,282
Claims priority, application Japan, Aug. 6, 1976, 51-93138
Int. Cl.[2] B01J *23/72, 23/86, 21/04, 21/06*
U.S. Cl. 252—470 **5 Claims**

1. An oxidizing catalyst comprising a ternary alloy consisting essentially of 70–45% Ni, 30–55% Co and 0.5–10% Cr.

4,116,885

ANIONIC SURFACTANT-CONTAINING DETERGENT COMPOSITIONS HAVING SOIL-RELEASE PROPERTIES

Donna M. Derstadt, and Douglas W. Moeser, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 23, 1977, Ser. No. 836,127
Int. Cl.[2] C11D *1/14, 3/065, 3/20*
U.S. Cl. 252—532 **23 Claims**

1. A laundry detergent composition comprising:

(a) from about 0.15% to about 25% by weight of a soil-release polymer comprising ethylene terephthalate and polyethylene oxide terephthalate at a molar ratio of ethylene terephthalate to polyethylene oxide terephthalate of from about 50:50 to about 90:10, said polyethylene oxide terephthalate containing polyethylene oxide linking units having a molecular weight of from about 600 to about 5,000; and

(b) from about 5% to about 95% of compatible anionic surfactants selected from the group consisting of nonethoxylated C_8–C_{18} alcohol sulfates, C_5–C_{13} alcohol sulfates condensed with from about 1 to 30 moles of ethylene oxide, C_{14}–C_{20} alcohol sulfates condensed with from about 4 to 30 moles of ethylene oxide, and mixtures thereof;

wherein from 0 to about 10% of said detergent composition constitutes other types of anionic surfactants and, further, wherein from 0 to about 25% of the total anionic surfactant components contained in said composition is an incompatible surfactant selected from the group consisting of linear alkylbenzene sulfonates having from about 8 to 18 carbon atoms in the alkyl group, C_{14}–C_{20} alcohol sulfates condensed with from about 1 to 3 moles of ethylene oxide, and mixtures thereof.

4,116,886

MOISTURE CURABLE EPOXY COMPOSITIONS CONTAINING DICARBONYL CHELATES

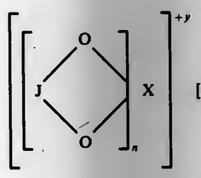
James A. Cella, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 20, 1977, Ser. No. 798,783
Int. Cl.[2] C08L *63/00*
U.S. Cl. 528—88 **16 Claims**

1. A moisture curable epoxy composition comprising

(A) an epoxy resin polymerizable to the high molecular weight state selected from epoxy monomer, epoxy prepolymer, oxirane containing organic polymer and mixtures thereof, and

(B) an effective amount of a moisture sensitive dicarbonyl chelate of the formula,



where X is a main row element selected from boron, silicon, phosphorus and germanium, J is a divalent organic radical having from 3 to 42 carbon atoms, M is an element selected from Sb, As, P, B and Cl, Q is fluorine or oxygen, n is an integer equal to 2 or 3, y is an integer equal to 1 or 2, and a is an integer equal to 4 to 6 or the valence of M.

4,116,887

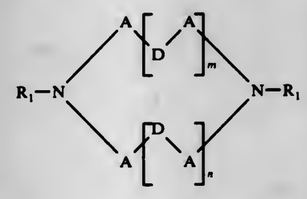
ANTIONIC POLYMERIZATION

Jean-Marie Lehn, Strasbourg; Francois Schué, Lutzelhouse; Sylvia Boileau, Paris; Bernd Kaempf, Strasbourg; Alain Andre Cau, Chateauneuf sur Loire; Jean Robert Moinard, Vert le Petit, and Serge Fernand Raynal, Villejuif, all of France, assignors to Societe Nationale des Poudres et Explosifs, France

Division of Ser. No. 401,119, Sep. 26, 1973, Pat. No. 3,890,278. This application Jan. 9, 1975, Ser. No. 539,729
Claims priority, application United Kingdom, Oct. 3, 1972, 45482/72; Jul. 30, 1973, 36257/73
Int. Cl.[2] C08G *65/12, 63/10, 75/06, 77/08*
U.S. Cl. 260—2 A **28 Claims**

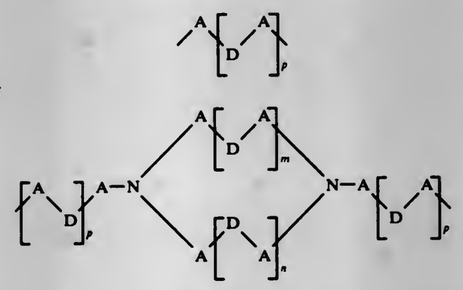
1. A process for the polymerization or copolymerization of heterocyclic monomers through ring opening which comprises polymerizing or copolymerizing at least one heterocyclic monomer structurally capable of anionic polymerization in a non-polar or slightly polar organic solvent medium in the presence of an anionic initiator and of a macro-heterocyclic complexing agent of the general formula I

(I)



in which:

R_1 is a hydrogen atom or a hydrocarbon group or an alkoxycarbonyl group, or the two R_1 together can form a group of the general formula:



or

wherein A is a hydrocarbon group, D is an oxygen or sulfur atom or a hydrocarbon group, with the proviso that at least two of the D groups are oxygen atoms or sulfur atoms and that if R_1 is a hydrogen atom, a hydrocarbon group or an alkoxycarbonyl group, one of the two D groups is oxygen or sulfur and the other is oxygen, and n and p are integers from 1 to 3 and m is 2 or 3.

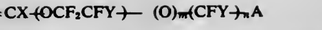
4,116,888

PROCESS FOR PRODUCING FLUORINATED COPOLYMER HAVING ION-EXCHANGE GROUPS

Hiroshi Ukihashi, Tokyo; Tatsuro Asawa, Yokohama; Masaaki Yamabe, Machida, and Haruhisa Miyake, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 8, 1976, Ser. No. 739,728
Int. Cl.[2] C08F *2/06*
U.S. Cl. 521—31 **6 Claims**

1. A fluorinated copolymer consisting essentially of 1–50 mole % of a functional fluorovinyl monomer having the formula:



wherein l is 0 to 3; m is 0 or 1; n is 0 to 12; X represents —F or $-CH_3$; Y and Y′ represent —F or a C_{1-10} perfluoroalkyl group; A represents —CN, COF, —COOH, $COOR_1$, COOM, or $CONR_2R_3$; R_1 represents a C_{1-10} alkyl group; R_2 and R_3 represent —H or $-R_1$; M represents an alkali metal atom or a quaternary ammonium group;

and 50–99 mole % of a copolymerizable fluorinated ethylenically unsaturated monomer, characterized by having the combination of properties of a T_Q greater than 150° C. and an ion exchange capacity of 0.5 to 4 meq/g of dry polymer;

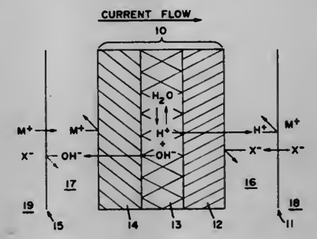
and which is produced by copolymerizing the constituent monomer in 0 to 10 moles of an inert organic solvent per 1 mole of said functional monomer under a pressure greater than 6 Kg/cm².

4,116,889

BIPOLAR MEMBRANES AND METHOD OF MAKING SAME

Frederick P. Chlanda, Rockaway; Lester T. C. Lee, Parsippany, and Kang-Jen Liu, Somerville, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 19, 1976, Ser. No. 715,765
Int. Cl.[2] C08J *5/22, 5/24;* C25D *21/22*
U.S. Cl. 521—27 **17 Claims**



1. A method for preparing bipolar membranes which comprises:

coating on (a) an ion exchange membrane, a fluid mixture of a dispersion of (b) particles of an ion exchange resin in (c) a matrix polymer where (b) has a charge opposite to the charge of (a); and

bonding said membrane and mixture to form a unitary bipolar membrane structure.

5. A method for preparing bipolar membranes which comprises coating on a membrane which is comprised of an inert polymeric matrix and an anion exchange crosslinked polyelectrolyte, a dispersion of cation exchange resin particles having a particle size of less than one micron diameter in a solution of a matrix polymer, and evaporating the solvent from the cation exchange resin solution to form a unitary bipolar membrane structure.

15. The product produced by the method of claim 1.

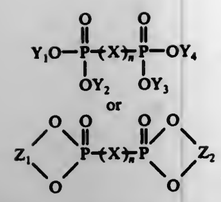
4,116,890

PHOSPHONATED FLUOROTELOMERS

James Chen-Shang Fang, Media, Pa., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 663,071, Mar. 2, 1976, abandoned. This application Feb. 2, 1977, Ser. No. 764,174
Int. Cl.[2] C25B *13/00*
U.S. Cl. 521—28 **22 Claims**

1. A fluorotelomer represented by the structure



where Y_1, Y_2, Y_3 and Y_4 are the same or different and are alkyl radicals of 1–10 carbon atoms or alkyl radicals of 1–10 carbon atoms substituted with at least one alkyl radical of 1–4 carbon atoms;

X is a homo- or cotelomeric moiety of at least one of

(a) one or more monoethylenically unsaturated monomers fully substituted with fluorine atoms or with a combination of at least one fluorine atom and chlorine or bromine atoms, and

(b) a perfluoroalkyl vinyl ether whose alkyl group contains 1–10 carbom atoms;

Z_1 and Z_2 are the same or different and are alkylene radicals of 1–10 carbon atoms, or alkylene radicals of 1–10 carbom atoms substituted with at least one alkyl radical of 1–4 carbon atoms, or Z_2 is made up of Y_1 and Y_2; and n is 2–500.

4,116,891

CATALYTIC PROCESS FOR THE PREPARATION OF PHOSPHAZENE POLYMERS

Ronald L. Dieck; Thomas B. Garrett, and Alan B. Magnusson, all of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 6, 1976, Ser. No. 747,626

Int. Cl.[2] C08G *79/02*

U.S. Cl. 521—89 **17 Claims**

1. A process for preparing a phosphazene polymer which comprises heating for 5 to 600 hours a cyclic compound of the formula $(NPCl_2)_y$ wherein y is 3,4, or mixtures thereof at 150°–250° C. in an inert atmosphere with a catalytically sufficient amount of a halide-containing Lewis acid catalyst selected from the group halides of Group I*b*, halides of Group II*b*, halides of Group III*b*, halides of Group IV*b*, actinide halides, halides of Group IV*a*, halides of Group V*a*, halides of Group V*b*, halides of Group VI*b*, halides of Group VI*a*, halides of Group VII*a*, halides of Group VIII, lanthanide halides and mixtures thereof; a non-halide containing Lewis acid catalyst selected from the group metal alkyls, acidic chalcides, and mixtures thereof; or mixtures thereof.

4,116,892

PROCESS FOR STRETCHING INCREMENTAL PORTIONS OF AN ORIENTABLE THERMOPLASTIC SUBSTRATE AND PRODUCT THEREOF

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Biax-Fiberfilm Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 563,623,. This application Sep. 17, 1975, Ser. No. 614,018

Int. Cl.[2] C08L *67/06, 23/12;* B29D *27/00;* B29C *17/02*

U.S. Cl. 521—62 **16 Claims**

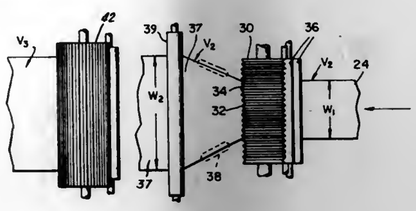
7. A process for bi-axially stretching incremental portions of a film formed of synthetic thermoplastic material selected from the group consisting of a thermoplastic orientable polymer or a blend of thermoplastic orientable polymers in which there is admixed an incompatible second phase material selected from the group consisting of an incompatible polymer or inorganic material which comprises:

(a) introducing said film into a nip of interdigitating rollers having grooves parallel to the axis of said rollers;

(b) controlling the velocity of introduction of said film into said nip to assume and maintain the velocity substantially identical to the surface velocity of said rollers to prevent slipping of said film and thereby longitudinally stretch incremental portions of said film by deflection of said film into the shape of said grooves;

(c) withdrawing said film from said rollers at a velocity greater than the rotational velocity of said rollers;

(d) introducing said film into a nip of interdigitating rollers having grooves substantially perpendicular to the axis of said rollers;



(e) controlling the velocity of introduction of said web into said nip to assume and maintain the velocity substantially identical to the surface velocity of said rollers to prevent narrowing of said film prior to introduction into said nip thereby to laterally stretch incremental portions of said web by deflection of said film into shape of said grooves;

(f) withdrawing said web from said rollers at a velocity substantially corresponding to the velocity of introduction and;

(g) collecting the thus stretched film.

4,116,893

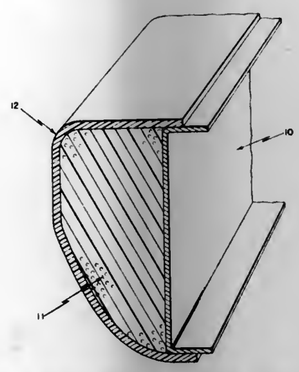
IMPACT ENERGY-ABSORBING URETHANE FOAM

Kirby E. L. Flanagan, Rochester, N.H., assignor to McCord Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 481,498, Jun. 21, 1974, abandoned. This application Dec. 2, 1976, Ser. No. 746,826

Int. Cl.[2] C08G *18/63, 18/65*

U.S. Cl. 521—137 **3 Claims**



1. An impact energy-absorbing urethane foam made from the following formulation:

	Parts by Weight
Polymer Polyol	70 to 90
Cross linker	10 to 30
Water	1 to 5
Prepolymer	To yield 90–115% Index
Catalyst	0 to 2

wherein:

said polymer polyol having a molecular weight in the range of 4000 to 8000 and comprising in the range of 2 to 6 parts of a poly (C_1–C_4 oxyalkylene) triol reacted with one part of a vinyl aromatic/olefinic C_2–C_6 nitrile monomer mixture;

said crosslinker is a polyol having a functionality in the range of 2 to 6 and an equivalent weight in the range of 50 to 150;

said prepolymer is a reaction product of (a) an aromatic diisocyanate selected from the group consisting of MDI and TDI and (b) a polyol selected from the group consisting of a 100 to 1000 molecular weight triol and a 100 to 200 molecular weight ether glycol and has a free isocyanate content in the range of 20 to 35 percent; and

said urethane foam being prepared in a closed mold at a pack factor in the range of 1.5 to 8 and having a density in the range of 5 to 20 lbs./ft.^{3}, a specific energy at 50% C/D greater than 25 in.-lbs./in.^{3}, a temperature index −20°/140° F. of less than 2.5 and at least 90% recovery at 70° F. after multiple impact.

4,116,894

COMPOSITIONS AND METHOD FOR ENHANCING ELECTRICAL LIFE OF COPOLYMERS

James A. Lentz, Penfield, and George J. Safford, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1976, Ser. No. 701,711

Int. Cl.[2] C08K *5/19;* C08L *23/02, 23/26*

U.S. Cl. 521—94 **15 Claims**

1. A composition containing a copolymer of butadiene and a terminally unsaturated hydrocarbon nitrile having improved electrical life comprising about 1.0 percent to about 12.0 percent terminally unsaturated hydrocarbon nitrile having the formula R—C≡N where R is an unsaturated, straight or branched chain hydrocarbon, the balance of the copolymer being butadiene and a sufficient amount of conductivity control agent to produce a composition having a resistivity from about 10^7 ohm-cm to about 5.0×10^{11} ohm-cm, the conductivity control agent being selected from the group consisting of organic dyes, organic pigments, organic salts, polyelectrolytes, inorganic salts, inorganic pigments and charge transfer complexes or materials which produce charge transfer complexes with the copolymer, the conductivity control agent being solubilized in the copolymer and in the composition formed therewith.

5. The composition of claim 1 further comprising the reaction product of the copolymer with an agent to convert the copolymer to an elastomer, a polymeric foam material, a polymer film or a cross-linked copolymer having improved electrical life wherein the terminally unsaturated hydrocarbon nitrile content of the copolymer is from about 1.0 percent to about 12.0 percent and the conductivity control agent is sufficient to produce in the reaction product a resistivity at the desired level within the range of about 10^7 to about 5.0×10^{11} ohm-cm.

6. The composition of claim 5 wherein the agent to convert the copolymer to an elastomer, a polymeric foam material, a polymer film or a crosslinked copolymer is a dibasic acid which forms an ester with the said copolymer as the reaction product, the reaction product having improved electrical life.

4,116,895

PUNCTURE SEALANT COMPOSITION

Kunio Kageyama, Yokohama, and Mituharu Iwakura, Hiratsuka, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed May 31, 1977, Ser. No. 802,046

Claims priority, application Japan, Jun. 7, 1976, 51-66225; May 10, 1977, 52-52586

Int. Cl.[2] B60C *21/08*

U.S. Cl. 260—5 **18 Claims**

1. A puncture sealant for a tubeless pneumatic tire comprising the reaction product of (a) 100 parts by weight in terms of the solid content of an aqueous butyl rubber emulsion, (b) 50 to 500 parts by weight in terms of the solid content of at least one aqueous saturated hydrocarbon polymer emulsion, said saturated hydrocarbon polymer having an average number molecular weight of from 500 to 100,000 and being derived from at least one monoolefin having 4 to 6 carbon atoms, (c) 1 to 15 parts by weight of a crosslinking agent for the rubber and (d) a crosslinking activator.

4,116,896

FOUNTAIN COMPOSITIONS FOR USE IN LITHOGRAPHIC PRINTING COMPRISING AQUEOUS SOLUTIONS OF POLYACRYLAMIDE BASED POLYMERS AND BLENDS OF POLYACRYLAMIDE AND POLYACRYLIC ACID WITH AN ORGANIC CHELATING AGENT

Walter L. Garrett, Freeland; Ralph E. Friedrich, and Ralph G. Czerepinski, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 586,452, Jun. 12, 1975, abandoned. This application Sep. 29, 1976, Ser. No. 727,825

Int. Cl.[2] C08L *1/28;* B41M *3/00;* B41N *3/00*

U.S. Cl. 260—17 R **26 Claims**

1. In a fountain solution for dampening a lithographic printing plate during a press run, of the type containing (1) polyvalent metal cations, (2) at least about 97 weight percent solvent, said solvent containing at least one lower alkyl mono- or polyhydric alcohol or glycol ether having a molecular weight of about 170 or less, and at least about 75 volume percent water, and (3) from about 0.001 to about 0.5 weight percent avtive polymer component, the active polymer component being selected from the group consisting of

(a) a polyacrylamide-based polymer wherein from about 3 to about 70 percent of the carbonyl sites are carboxyl groups, and the balance of said sites are amide moieties,

(b) a physical blend comprised of from about 97 to about 30 weight percent polyacrylamide and from about 3 to about 70 percent polyacrylic acid or an alkali metal or ammonium salt thereof,

(c) a physical blend comprised of polyacrylamide, or polyacrylic acid or an alkali metal or ammonium salt thereof, and at least one polyacrylamide-based polymer as described in (a), said polymers being employed in proportions such that of the total carbonyl sites present in the blend, from about 3 to about 70 percent are carboxyl groups and the balance are amide moieties,

(d) a mixture of any two or more of the foregoing, (a)– (c) the weight average molecular weight of each of said polyacrylamide-based polymer, polyacrylamide, and polyacrylic acid or salt thereof being in the range of from about 5000 to about 1,000,000, and

(e) a co-mixture of one or more of the foregoing (a)–(d) with up to about 30 weight percent hydroxypropyl methylcellulose based on the total weight of the comixture, said hydroxypropyl methylcellulose being of a type which produces a 2 weight percent aqueous solution having a viscosity of from about 1 to about 100 cP when measured according to ASTM Method D 2363-72,

the solution being further characterized by a pH of less than about 7, the improvement which comprises: providing in the composition, an effective amount of at least one organic chelating agent for the polyvalent metal cations, said chelating agent being substantially inert with respect to the active polymer component and further characterized

(A) by a 1:1 stability constant with zinc of at least about $10^{7.5}$ at 25° C,

(B) by a solubility in the water/alcohol solvent system at 25° C and at a pH of from about 3 to about 7, of at least 0.001 mole per liter, and

(C) by its property of forming with the polyvalent metal cations, a complex having a solubility in the water/alcohol solvent system at 25° C and at a pH of from about 3 to about 7 of at least 0.001 mole per liter.

4,116,897

COMPOUNDED PLASTIC SYSTEM

Andor Huszár; Géza Székely; István Rusznak; Lajos Trézl; György Bertalan; Ilona Zaoui nee Serfózó, and Imre Molnar, all of Budapest, Hungary, assignors to Tiszai Vegy Kombinat, Leninvaros, Hungary

Continuation-in-part of Ser. No. 522,357, Nov. 11, 1974, abandoned. This application Oct. 1, 1976, Ser. No. 728,762
Int. Cl.² C08K 5/00
U.S. Cl. 260—17.4 R 2 Claims

1. In a compounded plastic system containing 3 to 90% by weight of a crystalline polyolefine, 0.4 to 80% by weight of a non-crystalline polyolefine, 25 to 90% by weight of a pigment and/or filling agent, 0.5 to 10% by weight of surfactants, and optionally other polymers, the improvement that the system contains two surfactants of different HLB-values, the one surfactant having a HLB-value lower than 9 and the other surfactant having a HLB-value higher than 9, both surfactants being heat-resistant up to at least 160° C.

4,116,898

NON-THROMBOGENIC ARTICLES

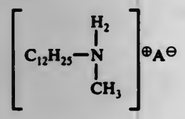
Betty J. Dudley, Durham, and Joel L. Williams, Cary, both of N.C., assignors to Becton, Dickinson and Company, Rutherford, N.J.

Filed Jan. 31, 1977, Ser. No. 764,474
Int. Cl.² C08L 5/10
U.S. Cl. 260—17.4 R 1 Claim

1. An article for use in association with whole blood, which comprises;

a solid polymeric resin substrate; and

a compound of the formula:



wherein A represents the residue of sodium heparin after removal of the sodium ion, affixed to said substrate said resin being polyethylene.

4,116,899

INCREASING ABSORBENCY OF POLYMERIC COMPOSITIONS BY CURING

George F. Fanta, Peoria, and William M. Doane, Morton, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 15, 1977, Ser. No. 824,776
Int. Cl.² C08L 1/02, 1/08, 3/02
U.S. Cl. 260—17.4 GC 14 Claims

1. A method for producing absorbent polymeric compositions comprising the following steps:

a. providing an aqueous dispersion of a physical mixture of a polyhydroxy polymer and a carboxylate-containing synthetic polymer, wherein said synthetic polymer is characterized by the property of remaining water dispersible upon initial drying of the aqueous dispersion of said physical mixture;

b. drying said aqueous dispersion to form water-dispersible dry solids of said polyhydroxy polymer and said synthetic polymer; and

c. curing said dry solids by treatment with a combination of time and temperature sufficient to render said solids non-dispersible and capable of swelling upon absorption of aqueous fluids.

4,116,900

CATHODIC ELECTROCOATING RESIN SYSTEM FROM POLYEPOXIDE, POLYAMINE, AND MONOEPOXIDE

William J. Belanger, Louisville, Ky., assignor to Celanese Polymer Specialties Company, Louisville, Ky.

Continuation of Ser. No. 715,266, Aug. 18, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,262
Int. Cl.² C08G 59/16; C25D 13/06
U.S. Cl. 260—18 EP 9 Claims

1. A resinous composition comprising the reaction product of

(A) a polyepoxide resin derived from a dihydric phenol and an epihalohydrin, said polyepoxide resin having a 1,2-epoxide equivalent weight of about 400 to about 4000; and

(B) a polyamine having at least 2 amine nitrogen atoms per molecule, at least 3 amine hydrogen atoms per molecule and no other groups reactive with epoxide groups; followed by reaction with

(C) a monoepoxide which contains one 1,2-epoxide group and no other groups reactive with amine groups, said monoepoxide having about 8 to 24 carbon atoms per molecule and being selected from the group consisting of epoxidized unsaturated hydrocarbons, epoxidized monoalcohol esters of unsaturated fatty acids, monoglycidyl ethers of monohydric alcohols and monoglycidyl esters of monocarboxylic acids,

wherein about 1 mol of (B) is reacted with each epoxide equivalent of (A), about 2 to about 6 mols of (C) are reacted per each mol of (A) and

wherein said reaction product has a weight per active nitrogen of about 200 to about 600.

4,116,901

LOW TEMPERATURE CURING ESTER COPOLYMERS-PHENOLIC CONDENSATES

Kazys Sekmakas, Chicago, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 15, 1977, Ser. No. 860,907
Int. Cl.² C09D 3/76
U.S. Cl. 260—19 UA 19 Claims

1. A low temperature curing epoxy ester copolymer-phenolic condensate comprising an epoxy ester of a resinous polyepoxide having an epoxy functionality in the range of from 1.4 to about 2.0 with at least about 0.2 moles of ethylenically unsaturated monocarboxylic acid containing conjugated ethylenic unsaturation per epoxy equivalent in the polyepoxide, and at least about 0.5 mole of ethylenically unsaturated monocarboxylic fatty acid containing nonterminal nonconjugated ethylenic unsaturation per epoxy equivalent in the polyepoxide, said epoxy ester being substantially free of epoxy functionality and being copolymerized in organic solvent solution with from about 15% to about 150%, based on the weight of the epoxy ester, of monoethylenically unsaturated monomers containing terminal ethylenic unsaturation to form a nongelled, solvent-soluble, copolymer possessing residual ethylenic unsaturation adapting the same for an oxidative cure, said monomers including from about 3% to about 20%, based on the weight of the copolymer, of carboxy-functional monomers selected from acrylic acid, methacrylic acid, fumaric acid and maleic acid, and said copolymer being precondensed with from 5% to 40% of a phenolic resin, based on the weight of the copolymer.

4,116,902

POLYURETHANE-MODIFIED ALKYD RESIN

Robert Richard Harris, Burnham, and Warren John Pollack, Carpentersville, both of Ill., assignors to International Minerals & Chemical Corp., Libertyville, Ill.

Filed Oct. 5, 1977, Ser. No. 839,718
Int. Cl.² C09D 3/64, 5/08
U.S. Cl. 260—22 TN 1 Claim

1. An air-drying, water-soluble, polyurethane-modified alkyd resin having superior corrosion resistance and hardness obtained by the steps of:

(a) (1) forming an alkyd resin by melting together at 175° F. a mixture of trimethylpentanediol 1170 parts, linoleic acid 1848 parts, and phthalic anhydride 1465 parts,

(2) with agitation adding thereto trimethylolethane 698 parts, dimethylolpropionic acid 567 parts, and dibutyl tin oxide 6.5 parts,

(3) heating the mixture slowly under a nitrogen blanket to 210° C. until an acid number of 52–57 is obtained,

(4) cooling the mixture to 160° C. and adding ethyl benzene 517 parts, cooling to 82° F. and adding methyl ethyl ketone 339 parts, and cooling to 65° C.,

(b) adding thereto toluene diisocyanate 730 parts over a two-hour period, maintaining the temperature at 82° C. or below, then heating to 100°–105° C. for about 1.5 hours, and then diluting with inert solvent.

4,116,903

ALKYD-SUPPORTED EMULSION INTERPOLYMERS AND METHODS FOR PREPARATION

Dennis E. Lietz, Western Springs, and Layton F. Kinney, Chicago, both of Ill., assignors to P.R.A. Laboratories Incorporated, Chicago, Ill.

Filed Mar. 2, 1977, Ser. No. 773,547
Int. Cl.² C09D 3/66, 5/02
U.S. Cl. 260—22 CB 51 Claims

1. A storage stable, emulsifier free, pourable emulsion comprising on a 100 weight percent total weight basis:

(A) from about 10 to 65 weight percent of an interpolymer system, and

(B) the balance up to 100 weight percent thereof being a carrier liquid selected from the group consisting of water and an organic water miscible liquid,

(C) said interpolymer system comprising on a 100 weight percent total non-volatile resin solids basis

(1) from about 5 to 90 weight percent of preformed, water-soluble alkyd resin which is free from unsaturated dibasic acid material selected from the group consisting of maleic acid, maleic anhydride, fumaric acid and itaconic acid and which has been pre-neutralized to a starting aqueous alkyd resin solution pH ranging from about 6 to 9, and

(2) the balance up to 100 weight percent thereof being at least one in situ emulsion polymerized vinyl monomer,

(D) said carrier liquid comprising on a 100 weight percent total carrier liquid basis:

(1) from 0 to about 50 weight percent of said organic water miscible liquid, and

(2) the balance up to 100 weight percent thereof being water.

4,116,904

WATER BASED ALKYD RESIN PRIMER

Monica Harish Verma, Troy, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 738,855, Nov. 4, 1976, abandoned. This application Dec. 7, 1977, Ser. No. 858,183
Int. Cl.² C09D 3/64, 5/08
U.S. Cl. 260—22 R 5 Claims

1. An aqueous primer composition comprising 5–50% by weight of a film-forming binder and 50–95% by weight of an aqueous medium; wherein the binder consists essentially of

an alkyd resin which is the esterification product of soya oil fatty acids, phthalic acid, trimellitic anhydride and trimethylol propane having an acid number of 20–100; and

the composition contains pigment in a pigment to binder weight ratio of about 300/100 to 10/100 in which the pigment is a mixture of talc, barytes and zinc/calcium molybdate and

about 0.05–1.0% by weight, based on the weight of the composition, of an anionic polyelectrolyte dispersant;

the composition containing sufficient ammonia or an amine to provide the composition with a pH of 6.5–8.5.

4,116,905

WATER-BASED COATING COMPOSITION CONTAINING POLYVINYL CHLORIDE

Kenneth G. Davis, Pittsburgh, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 585,938, Jun. 11, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 782,201
Int. Cl.² C08K 3/18; C08L 27/06, 67/08
U.S. Cl. 260—22 CB 11 Claims

1. A water-based coating formulation consisting essentially of powdered polyvinyl chloride dispersed in a solution of a water-dilutable resin, having functional carboxyl or hydroxy groups, selected from the group consisting of an alkyd resin, an acrylic resin, a mixture of an acrylic resin and an aminoplast, a mixture of an acrylic resin and a 1,2-epoxy resin, and a mixture of an acrylic resin, a 1,2-epoxy resin, and a phenolic resin, water-solubilized with ammonia, NH_4OH or an amine solubilizer, in water, a mixture of water and an alcohol or ether alcohol, or a mixture of water, alcohol, and ether alcohol; the weight ratio of polyvinyl chloride to water-dilutable resin being between 15:1 and about 1:1.

4,116,906

COATINGS FOR PREVENTING REFLECTION OF ELECTROMAGNETIC WAVE AND COATING MATERIAL FOR FORMING SAID COATINGS

Ken Ishino, Nagareyama, and Takashi Watanabe, Tokyo, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1977, Ser. No. 804,784
Claims priority, application Japan, Jun. 16, 1976, 51-74640[U]
Int. Cl.² C09D 5/23, 5/32
U.S. Cl. 260—22 A 7 Claims

1. Coatings for preventing a reflection of electromagnetic waves on iron structures, comprising 20–260 parts by weight of a ferrimagnetic ferrite powder having a particle size of 1–300μ selected from the group consisting of compounds having the formula MFe_2O_4 in which M is a bivalent metal selected from the group consisting of Mn, Ni, Co, Mg, Cu, Zn, and Cd; and 40–680 parts by weight of an iron powder having a particle size of 1–20μ dispersed in 100 parts by weight of a film forming polymer.

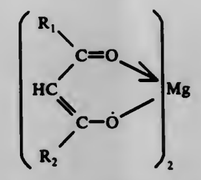
4,116,907

CHLORINE-CONTAINING RESIN COMPOSITIONS

Tomoo Shiohara; Takayoshi Matsunaga, both of Kyoto, and Mikihiko Horioka, Kobe, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1977, Ser. No. 787,118
Claims priority, application Japan, Aug. 2, 1976, 51-92671; Aug. 3, 1976, 51-93076
Int. Cl.² C08K 3/34
U.S. Cl. 260—23 XA 8 Claims

1. A chlorine-containing resin composition comprising a chlorine-containing resin and, as thermal stabilizers for the chlorine-containing resin, the combination of (1) at least one magnesium diketone complex which is represented by the formula



wherein R_1 represents a p-chlorophenyl group, a phenyl group,

or a methyl group, and R_2 represents a p-chlorophenyl group, a phenyl group, a methyl group or an ethoxy group, (2) at least one of (a) a monohydric acyclic or cyclic alcohol having 8 to 18 carbon atoms, a dihydric alcohol represented by the formula $OH-(CH_2)_n-OH$ wherein n is an integer of 6 or more, a polyhydric alcohol or a mono- or di-ester of said polyhydric alcohol having at least one hydroxyl group, or (b) a monovalent mercaptan or mercaptide having 3 to 18 carbon atoms, a divalent mercaptan or mercaptide having 5 to 12 carbon atoms, or a polyvalent mercaptan or mercaptide, and (3) at least one of a calcium silicate, a calcium aluminate or a calcium titanate, each obtained by a calcination method and being anhydrous.

4,116,908

PROCESS FOR THE PREPARATION OF A MASTER MIXTURE FOR A POWDER COMPOSITION WITH A POLYVINYL CHLORIDE BASE

Guy Charles Emery, 27380 - Radepont Par Fleury-sur-Andelle, France

Continuation-in-part of Ser. No. 449,080, Mar. 7, 1974, abandoned. This application Feb. 26, 1976, Ser. No. 661,532

Claims priority, application France, Mar. 8, 1973, 73.08347; Mar. 8, 1973, 73.08348

Int. Cl.² C08K *5/00, 9/12*

U.S. Cl. 260—23 XA **5 Claims**

1. A process for the preparation of a master batch mixture for polyvinyl chloride polymers, comprising heating to a temperature in the range of 80° C. to 150° C. in a mixer a first constituent mix comprising a mixture of

a polymer selected from the group consisting of polyvinyl chloride, a copolymer of vinyl chloride with polyvinylidene chloride and a mixture thereof,

at least one additional resin which is a shockproof, waterproof or barrier resin and is selected from the group consisting methyl acrylonnitrile-butadiene-styrene, methylacrylate-butadiene-styrene, acrylonitrile-butadiene-styrene and

polymerization additive, capable of being absorbed at temperatures in the range 80° C.–150° C. by said polymer, said additive being selected from at least one member of the group consisting of stabilizer and lubricant, the quantity of resin present in said first constituent mix being less than that of further resins introduced hereafter; transferring said heated first constituent mix, after a period of time sufficient for total absorption of said additive in said polymer of said first heated constituent mix into a second mixer already containing or then receiving a second, cooled or unheated constituent mix comprising an additional amount of said polymer and said additive maintained at a temperature at least 25° C. below said heated first constituent mix; mixing both constituent mixes to achieve rapid cooling by dissipation of the heat content of said first constituent mix by said second constituent mix and cooling the resultant mixture to room temperature to provide a final master batch mixture.

4,116,909

PARTICLE AND METHOD FOR DISPERSING ADDITIVES IN THERMOPLASTIC RESIN

Bruce M. Muller, Homerville, Ohio, assignor to Customcolor, Inc., Cumberland, R.I.

Filed Jul. 28, 1976, Ser. No. 709,392

Int. Cl.² C08K *9/00*

U.S. Cl. 260—23.7 R **14 Claims**

1. An additive particle adapted to be added to a mass of thermoplastic base resin to impact property improvement to the mass, comprising a mixture of:

(a) an additive which includes pigment said pigment being from about 50 to 95 weight percent of said particle,

(b) from about 3 to about 25 weight percent of said particle of thermoplastic rubber which is a styrene-olefin-styrene block copolymer, and

(c) about 5 to about 20 parts by weight per 100 parts thermoplastic rubber of petroleum-based, alkylated aromatic hydrocarbon carrier resin having an average molecular weight of approximately 770 and a ring-and-ball softening point of approximately 100° C.

4,116,910

PRINTING INK BINDERS

Albert Rudolphy, Wiesbaden, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 13, 1976, Ser. No. 750,134

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556183

Int. Cl.² C08K *3/08, 3/10*

U.S. Cl. 260—25 **9 Claims**

1. A printing ink binder comprising a reaction product of

(I) a natural resin,

(IIa) a phenol-formaldehyde resol, or

(b) the components of IIa), or

(c) a combination of IIa) and IIb) and

(III) a compound of a metal of Group II of the Periodic Table according to Mendelejev,

which reaction product has a viscosity of from 40 to 600 cP (50% toluene/20° C), a content of phenol units of from 0.3 to 25% by weight based on the weight of component I, a total amount of at least two metals of from 3 to 12% by weight based on component I, at least 60% by weight of the metal of the salt groups of the reaction product being calcium and at least 5% by weight being at least one metal selected from the group consisting of magnesium and zinc, and the total amount of formaldehyde used is between 0.9 and 4 mol/mol phenol.

9. A printing ink composition comprising a binder as defined in claim 1 with a solvent selected from the group consisting of petrol alone and petrol in admixture with toluene.

4,116,911

REAR PROJECTION SCREENS

Junji Miyahara, and Hisatoyo Kato, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 29, 1975, Ser. No. 644,683

Claims priority, application Japan, Dec. 26, 1974, 49-446

Int. Cl.² G03B *21/56;* **C08L** *91/00*

U.S. Cl. 260—28.5 A **22 Claims**

1. A rear projection screen comprising a wax which is solid at room temperature and a wax reforming agent which is miscible with the wax and is present in an amount from about 0.1 to 80 weight % based on the total weight of the composition.

4,116,912

AQUEOUS RESIN DISPERSION AND THERMOSETTING PAINT COMPOSITION CONTAINING SAME

Ryuzo Mizuguchi, Tondabayashi; Atsushi Takahashi, Kyoto, and Shinichi Ishikura, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

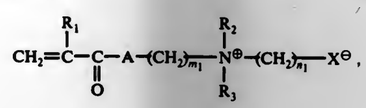
Filed Dec. 21, 1976, Ser. No. 753,086

Claims priority, application Japan, Dec. 26, 1975, 50-158407; Dec. 26, 1975, 50-158408; Dec. 29, 1975, 50-157651

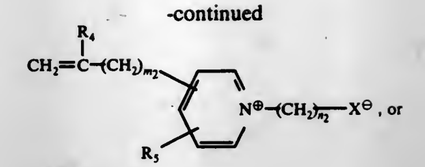
Int. Cl.² C08L *61/28, 61/24*

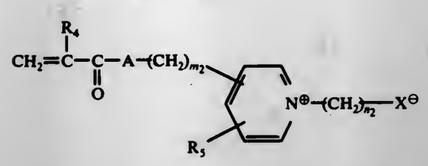
U.S. Cl. 260—29.4 UA **6 Claims**

1. A thermosetting coating composition which comprises (A) an aqueous resin dispersion prepared by polymerization of (1) a polymerizable monomer having an ampho-ionic structure of the formula



-continued





wherein R_1 is hydrogen or methyl, R_2 and R_3 are each C_1–C_6 alkyl, R_4 is hydrogen or methyl, R_5 is hydrogen or C_1–C_3 alkyl, A is —O— or —NH—, m_1 and n_1 are each an integer of 1 to 12, m_2 is an integer of 0 to 6, n_2 is an integer of 1 to 6 and $X^{\ominus}$ is $SO_3^{\ominus}$, $SO_4^{\ominus}$ or $COO^{\ominus}$, with (2) any other polymerizable monomer being copolymerizable therewith, in an aqueous medium, said polymerization being carried out by introducing the polymerizable monomer having an ampho-ionic structure and the other polymerizable monomer separately and simultaneously into the reaction system, and

(B) an aminoplast resin, the proportion of the resin component in the aqueous resin dispersion to the aminoplast resin being 100:5 to 100:100 by weight.

4,116,913

GELLING AGENT OF WATER MISCIBLE ORGANIC LIQUIDS

Eugene S. Barabas, Watchung, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 26, 1977, Ser. No. 790,922

Int. Cl.² C08L *35/00*

U.S. Cl. 260—29.6 E **14 Claims**

1. A thickened composition consisting essentially of:

(a) a water-based emulsion copolymer of vinyl acetate monomer and a monoester of an unsaturated dicarboxylic acid monomer,

(b) water, and

(c) a water-miscible organic liquid.

4,116,914

ELASTOPLASTIC COMPOSITIONS OF ETHYLENE-VINYL ACETATE RUBBER AND POLYOLEFIN RESIN

Aubert Y. Coran, and Raman P. Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 14, 1977, Ser. No. 768,329

Int. Cl.² C08L *23/08*

U.S. Cl. 260—30.6 R **14 Claims**

1. An elastoplastic composition comprising a blend of about 65 to about 15 parts by weight thermoplastic crystalline polyolefin resin and correspondingly about 35 to about 85 parts by weight cross-linked EVA rubber and rubber plasticizer in an amount of 0-50 weight percent of the EVA rubber wherein the EVA rubber is an amorphous copolymer of ethylene and 40 to 70 percent by weight vinyl acetate and is cross-linked to the extent that the toluene extractables as percent of rubber is 15 or less with the proviso that the combined weight of said resin, EVA rubber and optional rubber plasticizer is such that the amount of EVA rubber does not exceed 80 weight percent and the amount of polyolefin resin does not exceed 45 weight percent of the composition which composition is elastomeric and processable as a thermoplastic.

4,116,915

COMPOSITION FOR TREATING CONCRETE SURFACES

John A. Caramanian, 1021 Summer St., Cincinnati, Ohio 45204

Filed Mar. 29, 1977, Ser. No. 782,568

Int. Cl.² C08K *5/10*

U.S. Cl. 260—31.4 EP **7 Claims**

1. A composition for treating a concrete surface which consists essentially of 34 parts of an epoxy resin having an epoxide equivalent of a minimum of 175 to a maximum of 225, 13.6 parts of an organic polysulfide elastomer which is compatible with the epoxy resin, 8 parts of diethylene triamine, 52 parts ethylene glycol monoethyl ether acetate, 41 parts ethylene glycol monobutyl ether, and 51 parts of diluent in which a major portion is an aliphatic hydrocarbon solvent or diluents having a boiling point range from 150°–182° C., all parts being by weight, the composition having a viscosity of 9 to 24 seconds measured with a Number 4 Ford Cup.

4,116,916

FOUNDRY RESIN COMPONENTS

Melville J. Holik, Franklin Park, Ill., assignor to International Minerals & Chemical Corp., Libertyville, Ill.

Continuation-in-part of Ser. No. 733,722, Oct. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 631,549, Nov. 13, 1975, abandoned. This application Oct. 28, 1977, Ser. No. 846,250

Int. Cl.² C08K *5/06*

U.S. Cl. 260—33.2 R **27 Claims**

12. A resin component adapted for reaction with a polyisocyanate in the presence of a catalyst to provide a binder composition comprising in admixture

a. A phenol-formaldehyde resin characterized by:

(i) A phenol formaldehyde mole ratio in the range of 1.0:0.75 to 1.0:2.0,

(ii) A substituent $-(CH_2-O)_y-R$ group present at about 12 to 30% of the substituted phenolic nuclear positions,

(iii) Free phenol in the amount of about 5 to 15% by weight of the resin,

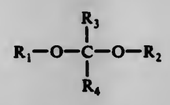
(iv) Water in the amount of less than 2% by weight of the resin,

(v) An average of about 2 ½ to 3 ½ phenolic nuclei per resin oligomer, and

(vi) A hydroxymethyl content of less than about 5 mole percent;

the bridges joining phenolic nuclei of said resin being predominantly ortho-para with at least about 20% of the bridges being para-para, said bridges being of the formula $-CH_2(OCH_2)_x-$ where x is zero in at least 30% of the bridges and x is an integer in the range of 1 to 6 in at least 20% of the bridges, y is an integer in the range of 1 to 6 and R is a hydrocarbon radical of 3 to 6 carbon atoms; and

b. A solvent in the amount of about 10% to 40% by weight of the resin solvent admixture, said solvent being of the formula



in which R_1 and R_2 are the same or different hydrocarbon radicals of 3 to 6 carbon atoms and R_3 and R_4 are the same or different hydrogen, methyl, ethyl or phenyl radicals.

4,116,917

HYDROGENATED STAR-SHAPED POLYMER

Rudolf J. A. Eckert, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 24, 1977, Ser. No. 762,211

Claims priority, application United Kingdom, Feb. 10, 1976, 5212/76

Int. Cl.² C08K 5/01

U.S. Cl. 260—33.6 AQ 27 Claims

1. A lubricating oil composition comprising a major proportion of a lubricating oil and between about 0.15 and 10.0% by weight of a hydrogenated star-shaped polymer wherein said polymer comprises a poly(poly-alkenyl coupling agent) nucleus and at least seven polymeric arms linked to said nucleus wherein said polymeric arms are selected from the group consisting of hydrogenated homopolymers of conjugated dienes and hydrogenated copolymers of two different conjugated dienes.

4,116,918

MELAMINE RESIN AND DYE MIXTURES

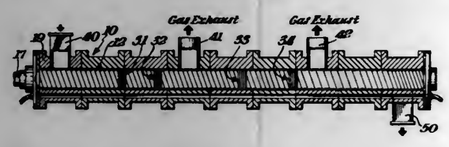
Hans Gattner, Frankfurt (Main), and Joachim Ribka, Offenbach (Main)-Burgel, both of Fed. Rep. of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 3, 1975, Ser. No. 583,174

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1974, 2427097

Int. Cl.² C08L 79/00

U.S. Cl. 260—37 P 6 Claims



1. A process for the preparation of a light-fast melamine resin which process comprises kneading at a temperature from about 120° to about 160° C in a self-cleaning vented multiple-spiral kneader, a resinifying liquid etherified melamine-formaldehyde adduct in which the melamine has at least 3 oxymethyl groups per molecule and at least 2 of these groups are etherified with a C_1 or C_2 alkyl, completing the kneading before the liquid becomes solid, then completing the resinification at a temperature no higher than 200° C and in the absence of significant super-atmospheric pressure.

4,116,919

TREATMENT OF REINFORCING SILICA

Janet L. Elias; Chi-Long Lee, both of Midland, and Myron T. Maxson, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

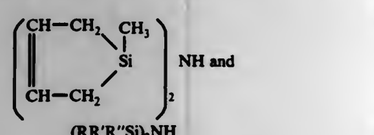
Filed Sep. 6, 1977, Ser. No. 830,527

Int. Cl.² C08L 83/04

U.S. Cl. 260—37 SB 11 Claims

1. A treated silica consisting essentially of finely divided silica with a surface area of at least 50 square meters per gram, said silica having been mixed with treating agent consisting essentially of silazanes of the formulae

(a)



NH and

$(RR'R''Si)_2NH$ (b)

where each R, R', and R'' is selected from a group consisting of lower alkyl, phenyl, and 2-(perfluoroalkyl) ethyl radicals in which the perfluoroalkyl radical is trifluoromethyl, perfluoroethyl, or perfluoroisobutyl, there being from 0.08 to 0.22 mole of treating agent per 25,000 square meters of silica surface, the mole ratio of (a) to (b) in the treating agent being from 1:5 to 1:40.

4,116,920

SILICONE RUBBER COMPOSITION USEFUL IN SHAFT SEALS

Hiroshi Honma, and Hiroshi Kakuno, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jan. 5, 1978, Ser. No. 867,066

Claims priority, application Japan, Jan. 13, 1977, 52-2778

Int. Cl.² C08K 3/34, 3/36

U.S. Cl. 260—37 SB 4 Claims

1. A silicone rubber composition which is useful as a shaft seal which consists essentially of

(A) 100 parts by weight of a heat curable organopolysiloxane rubber,

(B) 5–100 parts by weight of a reinforcing silica filler;

(C) 5–100 parts by weight of diatomaceous earth;

(D) 2–100 parts by weight of an acicular platy mineral powder and,

(E) 0.1–10 parts by weight of an organic peroxide, wherein the weight of the components (B), (C), (D) and (E) are based upon 100 parts of (A) and there is present 30 to 150 parts by weight of components (B), (C) and (D) in the total composition (A) to (E).

4,116,921

NOVEL THERMOSETTING MOLDING COMPOSITION

Anthony Robert Olivo, Neshanic Station, N.J.; Anthony Constantine Soldatos, Geneva, Switzerland, and Sidney Joseph Schultz, Cranford, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 499,933, Aug. 23, 1974, abandoned, which is a continuation of Ser. No. 307,628, Nov. 17, 1972, abandoned. This application Jan. 5, 1977, Ser. No. 757,061

Int. Cl.² C08G 8/20

U.S. Cl. 260—38 4 Claims

1. A process for producing a one-step, heat convertible resinous reaction product of formaldehyde and 2,2-bis(4-hydroxyphenyl)propane, said reaction product having a viscosity of not more than about 30 centistokes measured at 25° C. as a 35 weight per cent solution in ethanol, and a polydispersity of from about 1.5 to about 5, and said product being suitable for use in molding compounds, wherein said process comprises the steps of:

(a) reacting formaldehyde with 2,2-bis(4-hydroxyphenyl)-propane in proportions of from about 2 to about 3.75 moles of formaldehyde per mole of 2,2-bis(4-hydroxyphenyl)propane, at an elevated temperature of at least about 70° C., in the presence of a catalytic quantity of an alkali metal or barium oxide or hydroxide condensation catalyst, for a period of time sufficient to produce a resinous reaction product having a predetermined degree of polydispersity;

(b) cooling and neutralizing said reaction product to a pH of from about 3 to about 8; and

(c) recovering said reaction product.

4,116,922

REINFORCED POLYPIVALOLACTONE

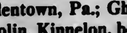
Edwin D. Hornbaker; Jesse D. Jones; Michael E. Kucsma, and Thomas S. Allen, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 7, 1977, Ser. No. 849,337

Int. Cl.² C08K 3/40

U.S. Cl. 260—40 R 46 Claims

1. A thermoplastic composition comprising an intimate blend of polypivalolactone, a glass fiber reinforcing filler and a coupling agent having the formula



where X is a hydrolyzable group capable of reaction with a hydroxyl group, Y is hydrogen or a monovalent hydrocarbon group, R is a divalent hydrocarbon group having from 1 to about 20 carbon atoms, Z is a primary or secondary amino or epoxy group or a secondary amino monohydrogen halide, "a" is an integer from 1 to 3, "b" is an integer from 0 to 2, "c" is an integer from 1 to 3, and the sum of $a + b + c = 4$, said coupling agent comprising from about 0.1 to about 2 weight percent based on the total weight of said compositions, and said glass fiber reinforcing filler comprising from about 15 to about 60 weight percent based on the total weight of said compositions.

4,116,923

DYED POLYESTERS, PROCESS FOR THEIR PREPARATION AND THEIR USE FOR THE DYEING OF PLASTICS

Hans Gattner, Bad Nenndorf; Ernst Spietschka, Oberauroff, and Helmut Tröster, Königstein, Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 28, 1977, Ser. No. 782,163

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2613493

Int. Cl.² C08L 67/00; C08G 63/12

U.S. Cl. 528—220 15 Claims

1. A polyester consisting essentially of recurring units of terephthalic acid, isophthalic acid or both of said acids and, per mol of said acid or acids, about 0.75 to 1.5 mol of a low-molecular weight trimethylol alkane, said polyester also containing 0.1 to 25% by weight of recurring units of the formula

$$-Y-F(-Z-)_n$$

in which F is identical or different dyestuff radicals, Y and Z, which are identical or different, are —O—CO— or —CO—O— and n is zero, 1 or 2.

4,116,924

PIGMENT CONCENTRATIONS

Alice Robertson Peabody, Glens Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 596,113, Jul. 15, 1975, which is a continuation-in-part of Ser. No. 575,284, May 7, 1975, abandoned. This application Oct. 29, 1976, Ser. No. 736,919

Int. Cl.² C08K 5/01

U.S. Cl. 260—40 R 7 Claims

1. A pelletizable pigment concentrate comprising an essentially agglomerate free intimate dispersion of by weight

(a) from 20 to 55% of pigment,

(b) from 5 to 35% of a friable dispersing resin having a softening point range of about 70° C. to about 195° C. and being selected from the group consisting of hydrocarbon resins having a molecular weight range of from about 350 to about 2000 and rosin esters, and

(c) from 30 to 65% of a polyester, at least 30% of which is at least one copolyester prepared from (1) ethylene glycol, (2) at least one aliphatic or cycloaliphatic diol containing 4 to 10 carbon atoms and (3) at least one difunctional dicarboxylic acid or its ester derivative, said copolyester having an intrinsic viscosity between about 0.45 and about 0.75 and a melting point range of about 140° to about 200° C.

4,116,925

POLY(TETRAMETHYLENE TEREPHTHALATE)-POLYETHER BLOCK

Armand E. Brachman, Allentown, Pa.; Ghazi Khattab, Parsippany, and Edwin M. Smolin, Kinnelon, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 14, 1976, Ser. No. 695,377

Int. Cl.² C08K 7/14; C08L 67/00, 67/06

U.S. Cl. 260—42.18 19 Claims

1. A thermoplastic block copolymer having an elevated heat deflection temperature, said block copolymer comprising a block copolymer of poly(tetramethylene terephthalate) and a polyether selected from the group consisting of polyethylene oxide, poly(tetramethylene ether glycol) and mixtures thereof; wherein said polyether is present in an amount between about 1 percent to and about 7 percent by weight based on poly(tetramethylene terephthalate) and is randomly distributed therein.

4,116,926

STABILIZER FOR POLYMERS

James F. York, Morgantown, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 603,848, Aug. 11, 1975, abandoned. This application Nov. 22, 1977, Ser. No. 853,923

Int. Cl.² C08K 5/52

U.S. Cl. 260—45.7 P 15 Claims

1. An improved acidic composition comprising in combination a dialkyl pentaerythritol diphosphite or a polyalkyl p,p'-isopropylidene diphenol polyphosphite wherein the alkyl groups each contain 8-20 carbon atoms, and a minor proportion of triisopropanolamine.

4,116,927

2,2,6,6-TETRAMETHYL-4-PIPERIDYL CARBOXYLIC ACID ESTERS OF BUTANE OR BUTENE TRI CARBOXYLIC ACIDS AS STABILIZERS FOR SYNTHETIC POLYMERS

Motonobu Minagawa, Kosigaya; Naohiro Kubota, and Toshihiro Shibata, both of Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

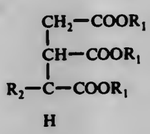
Filed Jul. 5, 1977, Ser. No. 812,968

Claims priority, application Japan, Jul. 12, 1976, 51-82024

Int. Cl.² C07D 211/44, 211/46; C08K 5/34, 5/35

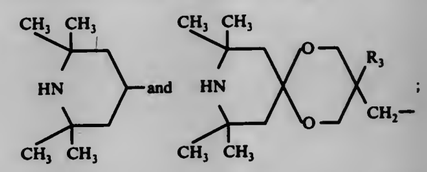
U.S. Cl. 260—45.8 NZ 18 Claims

1. 2,2,6,6-tetramethyl-4-piperidyl carboxylic acid esters of butane or butene tricarboxylic acids, having the general formula:



wherein:

R_1 is selected from the group consisting of:



;

R_2 is selected from the group consisting of CH_3 and CH_2; and R_3 is lower alkyl having from one to about six carbon atoms.

15. An olefin polymer composition having improved resistance to deterioration comprising an olefin polymer selected from the group consisting of polymers of alpha-olefins having

from two to six carbon atoms and polystyrene, and a compound in accordance with claim 1.

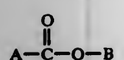
4,116,928

HETEROCYLIC ESTER, ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Gether Irick, Jr., and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

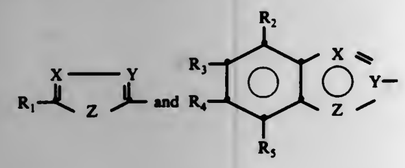
Division of Ser. No. 484,846, Jul. 1, 1974, abandoned. This application Dec. 17, 1976, Ser. No. 751,632
Int. Cl.[2] C08K 5/34, 5/35
U.S. Cl. 260—45.8 NZ 39 Claims

1. Compositions which comprise an organic material that is suceptible to ultraviolet degradation, and a stabilizing amount of a stabilizer selected from esters of heterocyclic acids having the formula:



wherein

A is a member of the group having the structures



wherein

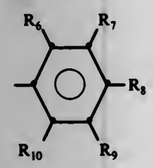
X is a carbon atom or a nitrogen atom in each formula;

Y is a carbon atom or a nitrogen atom in the first formula, but only a carbon atom in the second formula;

Z is an oxygen atom, a sulfur atom or a nitrogen atom containing a hydrogen atom or a substituted or unsubstituted lower alkyl group having 1 to 12 carbon atoms;

R_1, R_2, R_3, R_4 and R_5 are hydrogen, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, lower alkyl substituted amino, cyano, and the substituents R_2 and R_3, R_3 and R_4, and R_4 and R_5 combined with the carbon atoms to which they are attached are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3, R_4 and R_5; and

B is a group having the formula



wherein

at least one of R_6 or R_{10} is hydrogen and the other R_6, R_7, R_8, R_9 and R_{10} are hydrogen, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, lower alkyl substituted amino, hydroxy, carboalkoxy, nitrile, chloro, bromo and substituents R_6 and R_7, R_7 and R_8, R_8 and R_9, R_9 and R_{10} combined with the carbon atoms to which they are attached are joined alkylene groups completing a carbocyclic ring which can be substituted with any of the substituents listed above for R_6, R_7, R_8, R_9 and R_{10}.

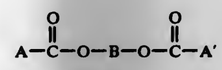
4,116,929

ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

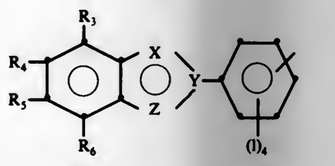
David Martin Pond, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 484,849, Jul. 1, 1974, Pat. No. 4,017,508. This application Jan. 12, 1977, Ser. No. 758,729
Int. Cl.[2] C08K 5/34, 5/35
U.S. Cl. 260—45.8 NT 72 Claims

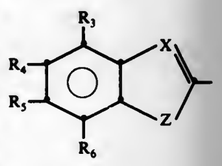
1. Compositions which comprise an organic material that is susceptible to ultraviolet degradation, and a stabilizing amount of a stabilizer selected from diesters of dihydroxybenzene compounds having the formula:

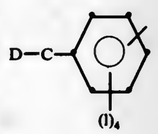


wherein A is a group having the structure


(1)


(2)


(3)


(4)

wherein

X and Y are a carbon atom or a nitroen atom;

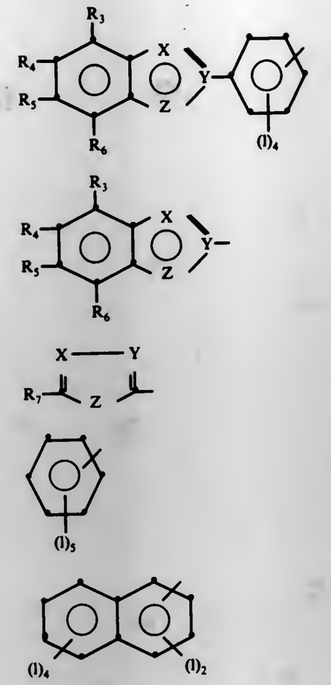
Z is an oxygen atom, a sulfur atom, a nitrogen atom (in formula (1) only), or a nitrogen atom containing a hydrogen atom or an alkyl group having 1 to 12 carbon atoms;

R_3, R_4, R_5, R_6 and R_7 are hydrogen, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, chlorine, bromine, substituted aryl, lower alkylaryl, aryl-substituted aryl, alkoxy, carboxy, nitrile, and the substituents R_3 and R_4, R_4 and R_5, and R_5 and R_6, combined with the carbon atoms to which they are attached are joined alkylene groups completing a carbocyclic ring which can be substituted with any of the substituents listed above for R_3, R_4, R_5, R_6 and R_7;

I is the same as R_3, R_4, R_5 and R_6 and is present on all positions of the benzenoid ring, except the carbon atom attached to the atom or the C group and the carbon atom attached to the carboxyl group connecting the A group with the aromatic B group;

the group C is a moiety consisting of vinyl, lower alkyloxy, oxy-lower-alkyl and oxy;

the group D is a moiety having the structure


(I)$_4$

(I)$_4$

(I)$_5$

(I)$_4$ (I)$_2$

wherein

X is a carbon atom or a nitrogen atom in each formula;

Y is a carbon atom or a nitrogen atom in formula 3, but only a carbon atom in formulas 1 and 2;

Z is an oxygen atom, a sulfur atom, or a nitrogen atom containing a hydrogen atom or a substituted or unsubstituted lower alkyl group having 1 to 12 carbon atoms;

R_3, R_4, R_5 and R_6 are hydrogen, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, chloro, bromo, alkoxy, substituted amino, cyano, carboxy and the substituents R_3 and R_4, R_4 and R_5, and R_5 and R_6, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_3, R_4, R_5 and R_6.

I is a substituent listed above for R_3, R_4, R_5 and R_6 and is present on all positions of the benzenoid ring, except the carbon atom attached to the Y atom and the carbon atom attached to the C group. The carbonyl connecting group is attached to the benzenoid ring in either the meta or para position from the carbon atom connected to the C group. The I substituents can all be one of the substituents listed above or different listed substituents.

A' is a substituted or unsubstituted alkyl, aryl or the same as A.

B is an aryl group having the formula



wherein the carboxys are attached ortho, meta, or para, at least one of R_8, R_9, R_{10}, R_{11} is hydrogen in the ortho position to the carboxy linking group and the other substituents R_8-R_{11} are hydrogen, lower alkyl substituted lower alkyl, cycloalkyl, lower alkylaryl, aryl-substituted-aryl, alkoxy, carboxy, nitrile, chloro, bromo, and the substituents R_8-R_{11}, combined with the carbon atoms to which they are attached, are joined alkylidene groups completing a carbocyclic ring which can be substituted with any of the substituents listed above for R_8-R_{11}.

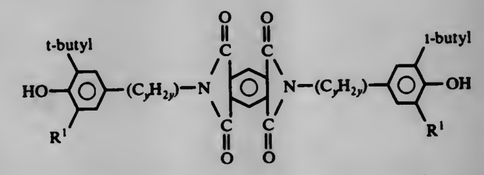
4,116,930

PYROMELLITIC DIMIIDES OF 3,5-DIALKYL-4-HYDROXYPHENYLSUBSTITUTED AMINES

Martin Dexter, Briarcliff Manor; Martin Knell, Ossining; Peter Klemchuk, Yorktown Heights, and John F. Stephen, New City, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 628,259, Nov. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 450,540, Mar. 12, 1974, abandoned, which is a continuation of Ser. No. 186,499, Oct. 4, 1971, abandoned. This application Sep. 14, 1976, Ser. No. 723,128
Int. Cl.[2] C08K 5/34
U.S. Cl. 260—45.8 N 9 Claims

1. A compound of the formula



wherein R^1 is tert-butyl group, and y has a value from 0 to 3.

7. A composition of matter stabilized against oxidative deterioration which comprises a synethetic organic polymeric material normally subject to oxidative deterioration containing from 0.005 to 5% by weight of a stabilizing compound according to claim 1.

8. A composition of claim 7 wherein the organic polymeric material is a polyolefin.

4,116,931

FLAME RETARDANT FIBERS, CARPETS AND MOLDING COMPOUNDS AND METHODS OF MAKING SAME

Pritam S. Minhas, Mendham, N.J., and Bernard Sukornick, Williamsville, N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 19, 1977, Ser. No. 861,779
Int. Cl.[2] C08K 5/09
U.S. Cl. 260—45.75 B 55 Claims

1. In a method of forming polyamide or polyester fibers which are formed from a melt, the improvement which comprises incorporating into the melt from about 0.5 to about 10% by weight of melt of a complex salt selected from the group consisting of antimony, aluminum and alkaline earth metal subgallates, borocitrates and borotartrates.

4,116,932

SYNTHETIC POLYMER COMPOSITIONS STABILIZED AGAINST DISCOLORATION AND DEGRADATION

Hans-Josef Buysch, Krefeld; Harald Oertel, Odenthal-Globebusch, and Ernst Roos, Odenthal-Osenau, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 20, 1976, Ser. No. 688,163
Claims priority, application Fed. Rep. of Germany, May 24, 1975, 2523107
Int. Cl.[2] C08K 5/13
U.S. Cl. 260—45.95 R 3 Claims

1. Polymer composition stabilised against degradation under the effect of light, heat and atmospheric influences, comprising

a polyurethane polymer and from 0.01 - 10% by weight, based on the quantity of said polymer, of a mixture of α,α'-bis-(2-hydroxy-3,5-dialkyl phenyl)-m-diisopropyl benzene and α,α'-bis-(2-hydroxy-3,5-dialkyl phenyl)-p-diisopropyl benzene, the mixture containing 40 - 70% by weight of the m-compound.

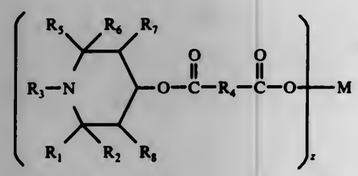
4,116,933
HINDERED PIPERIDINE CARBOXYLIC ACIDS, METAL SALTS THEREOF AND STABILIZED COMPOSITIONS

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 28, 1976, Ser. No. 700,380
Int. Cl.² C08K 5/17; C07D 211/46
U.S. Cl. 260—45.75 N **17 Claims**

1. A compound of the formula

I



wherein

R_1 and R_2 independently of each other are straight- or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,

R_3 is hydrogen, alkyl having 1 to 12 carbon atoms β-methoxyethyl, alkenyl having 3 to 4 carbon atoms, propargyl, benzyl, alkyl substituted benzyl or acyl,

R_4 is straight- or branched-chain alkylene having 1 to 8 carbon atoms, or the group $-(CH_2)_mY(CH_2)_n-$ wherein Y is oxygen or sulfur and m and n independently of each other are an integer from 1 to 3,

M is metal selected from the group consisting of nickel, manganese, copper, zinc, cobalt, tin and dialkyl tin,

Z has a value of from 1 to 4, the value of Z being the same as the available valence of M, and

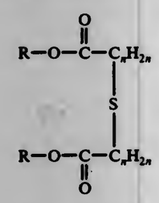
R_5 is alkyl of 2 to 6 carbon atoms, R_6 is alkyl of 1 to 6 carbon atoms, and R_7 and R_8 are independently hydrogen or alkyl of 1 to 5 carbon atoms, provided that R_7 and R_8 are not both hydrogen.

11. A composition of matter stabilized against ultraviolet deterioration which comprises a synthetic organic polymer normally subject to ultraviolet deterioration containing

(a) 0.005% to 5% of a stabilizing compound according to claim 1,

(b) 0 to 5% of a hindered phenolic antioxidant,

(c) 0 to 5% of a thio co-stabilizer



wherein R is an alkyl group having from 6 to 24 carbon atoms, and *n* is an integer from 1 to 6, and

(d) 0 to 5% of a U.V. absorber.

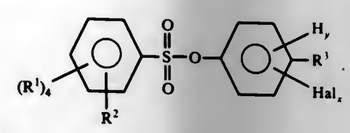
4,116,934
ARYLSULFONIC ACID BROMOPHENYL ESTERS, THEIR PREPARATION, AND THEIR USE AS FLAMEPROOFING AGENTS

Egon Norbert Petersen, Neunkirchen-Seelscheid, and Hermann Richtzenhain, Much-Schwellenbach, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

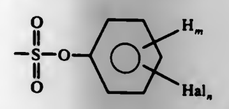
Continuation of Ser. No. 660,953, Feb. 24, 1976. This application May 2, 1977, Ser. No. 792,621
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1975, 2508993
Int. Cl.² C08K 3/22, 5/42
U.S. Cl. 260—45.75 B **23 Claims**

1. A flame stabilized polyolefin composition comprising a polyolefin and a flame stabilizing amount of an aryl sulfonic acid ester of the formula

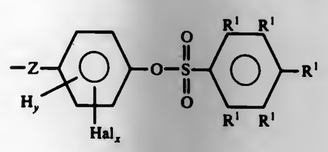
(I)



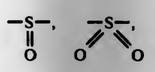
wherein R^1 represents hydrogen, alkyl groups of 1 to 8 carbon atoms, bromine or chlorine, R^2 represents R^1 or the group



Hal represents bromine or chlorine, *x* the numbers 2 to 4, *n* the numbers 3 to 5, *y* the numbers 4-*x*; *m* = 5-n, R^3 represents bromine, chlorine or the group



and Z represents —O—, —S—,



alkylene with 1 to 4 carbon atoms, or alkylidene, with the proviso that in the case of aryldisulfonic acid bis esters, the sulfonic ester groups are not in the ortho position.

4,116,935
ROOM-TEMPERATURE MOISTURE-CURING SILICONE ELASTOMER COMPOSITIONS AND A METHOD FOR THEIR PRODUCTION

Keiichi Kishimoto, and Masahiko Suzuki, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jul. 22, 1977, Ser. No. 817,950
Claims priority, application Japan, Aug. 20, 1976, 51/98738
Int. Cl.² C08G 77/04
U.S. Cl. 528—34 **4 Claims**

1. A room-temperature curing silicone elastomer composition consisting of

(A) a hydroxylated organopolysiloxane of the general formula

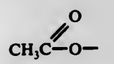
$HO(RR'SiO)_nH$

wherein R and R' are the same or different monovalent hydrocarbon groups,

n is at least 5;

(B) 0.5–15 weight percent, based on the weight of (A), of a crosslinking material which is a mixture of

(i) acetoxysilanes having the general formula $RSi(OAc)_3$ wherein R is the same as above and OAc is the radical



and

(ii) acetoxysiloxanes having the general formula $R(AcO)_2SiOSi(OAc)_2R$ wherein R and OAc have the meanings set forth above, wherein the ratio of (i) to (ii) is used in a range of 80–20 weight percent of (i) to 20–80 weight percent of (ii);

(C) 0–20 weight percent, based on the weight of (A), of a filler and,

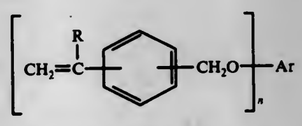
(D) 0–5 weight percent based on the weight of (A), of an organometallic compound.

4,116,936
POLYVINYLBENZYL ETHERS OF POLYPHENOLS, THEIR POLYMERS AND COPOLYMERS

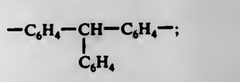
Edwin C. Steiner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 598,528, Jul. 23, 1975, abandoned. This application Sep. 7, 1976, Ser. No. 720,923
Int. Cl.² C08F 36/00, 12/34, 28/04
U.S. Cl. 526—286 **8 Claims**

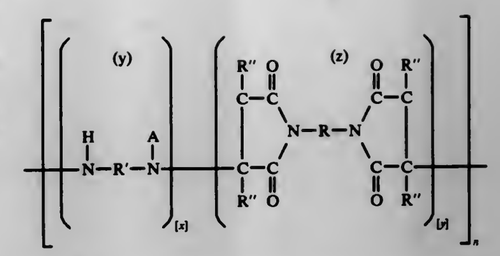
1. A thermoset polymeric product obtained by the addition polymerization of an unsaturated monomer having the formula:



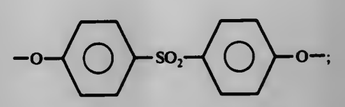
wherein Ar is a radical of an aromatic nucleus selected from the group consisting of $-C_6H_4-$; $-C_6H_4-C_6H_4-$; $-C_{10}H_6-$; $-C_{10}H_6-CH_2-C_{10}H_6-$; $-C_6H_2-CH_2-C_6H_4-$; and



where R is hydrogen or methyl and *n* is 2 or 3.

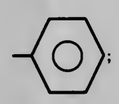


and with the component X of said aromatic radical being selected from the group consisting of —O—, —S—, $-SO_2-$, $-CH_2-$, $-C_2H_4$, —CO, $-C_3H_6-$, and

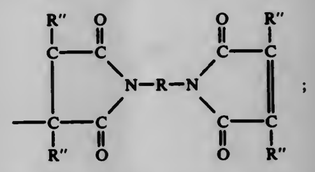


and with the amount of such aliphatic ether ranging from 30 to 60 percent by weight of R present and such aromatic radicals comprising the balance; wherein R' is a difunctional radical consisting essentially of one or more of the aromatic radicals in (ii) above;

R'' is selected from the group consisting of —H, —Cl, $-CH_3$, $-C_2H_5$, $-C_3H_7$, $-C_4H_9$, and



A is selected from the group consisting of hydrogen and



wherein the weight ratio of the *y* moiety to the *z* moiety of said precursor ranges from about 1 to 4 to about 1 to 6.5, and wherein *n* is an integer ranging from 2 to 150.

4,116,937
COMPLIANT MALEIMIDE BASED PLASTICS

Robert J. Jones, Hermosa Beach; Michael K. O'Rell, Manhattan Beach, and James D. Sutherland, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 25, 1976, Ser. No. 717,785
Int. Cl.² C08G 69/44, 73/12
U.S. Cl. 528—170 **7 Claims**

1. A melt produced, solid branched polyimide precursor having random recurring units of the following structure:

4,116,938
POLYETHER DIUREIDE EPOXY ADDITIVES

Heinz Schulze, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Development Corp., New York, N.Y.

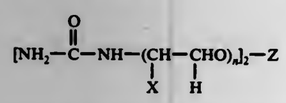
Filed Nov. 22, 1976, Ser. No. 743,877
Int. Cl.² C08G *59/48, 59/42*
U.S. Cl. 528—93 **14 Claims**

1. An epoxy resin composition having superior resistance to thermal shock and being the cured product of a curable admixture which comprises:

a vicinal polyepoxide having an epoxide equivalency of greater than 1.8;

a curing amount of a bicyclic vicinal dicarboxylic anhydride curing agent; and,

an effective amount of an additive consisting essentially of a polyether diureide of the formula



wherein X is hydrogen, a methyl radical or an ethyl radical; Z is a hydrocarbon alkylene radical having 2 to 5 carbon atoms and *n* is a number selected such that the molecule of the above formula has a molecular weight of from about 2,000 to about 3,000.

4,116,939
INTRINSIC VISCOSITY CONTROL OF POLYPHENYLENE ETHER REACTION MIXTURES

Glenn Dale Cooper, Delmar, and Daniel Edwin Floryan, Glenmont, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 20, 1976, Ser. No. 752,023
Int. Cl.² C08G *65/44*
U.S. Cl. 528—215 **25 Claims**

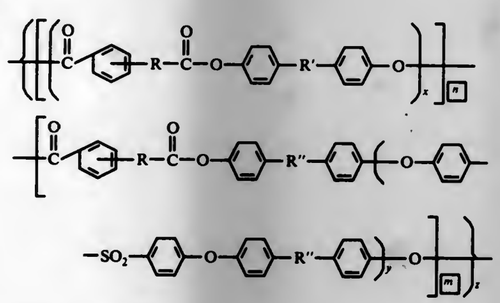
1. In a process for forming a polyphenylene ether by an oxidative coupling reaction in the presence of a chelatable metal ion-amine complex catalyst comprising passing an oxygen-containing gas through a reaction solution of a phenol and said catalyst, the improvement which comprises terminating the reaction and stabilizing the polymer against molecular weight degradation by contacting the reaction solution with (i) a chelating agent for such ion, the chelating agent being present in an amount from 0.1 mole to about 100 moles per mole of metal ion in the reaction solution, in combination with (ii) an aromatic amine, the aromatic amine being present in an amount of from about 1 to about 20 pounds per thousand pounds of polyphenylene ether, and recovering the polyphenylene ether from the reaction solution.

4,116,940
POLY/ARYLATE-SULPHONES/AND METHOD OF PREPARING SAME

Vasily Vladimirovich Korshak, ulitsa Gubkina, 4, kv. 81; Svetlana Vasilievna Vinogradova, ulitsa Miklukho-Maklaya, 30, korpus 2, kv. 63; Ivan Pavlovich Storozhuk, 1 Baltiisky pereulok, 6/21, korpus 7, kv. 24; Petr Maximilianovich Valetsky, Leningradskoe shosse, 48, kv. 132, all of Moscow; Lev Borisovich Sokolov, ulitsa Truda, 18, kv. 35, Vladimir; Abdulakh Kazbulatovich Mikitaev, ulitsa Profsojuznaya, 214, kv. 6, Nalchik; Andrei Alexandrovich Askadsky, ulitsa Profsojuznaya, 102, korpus 6, kv. 25, Moscow; Jury Sergeevich Kochergin, ulitsa D.Ulyanova, 5, kv. 10, Moscow; Grigory Lvovich Slonimsky, ulitsa Chkalova, 1, kv. 16, Moscow; Larisa Borisovna Shirokova, ulitsa Sovetskoi Armii, 3, kv. 45, Moscow; Ljudmila Fedorovna Nebosenko, ulitsa Tokareva, 8, kv. 26, and Nikolai Danilovich Zhuravlev, ulitsa Belokonskoi, 15b, kv. 44, both of Vladimir, all of U.S.S.R.

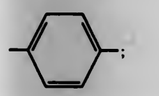
Filed Nov. 2, 1976, Ser. No. 737,994
Claims priority, application U.S.S.R., Nov. 17, 1975, 2187066
Int. Cl.² C08G *63/18, 63/66, 63/68*
U.S. Cl. 528—173 **12 Claims**

1. Poly(arylate-sulphones) having the formula:

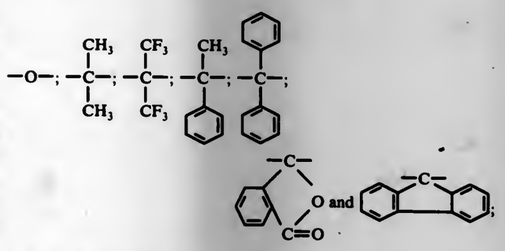


wherein

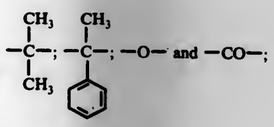
R is selected from the group consisting of a carbon-carbon bond in para- or meta- position; and



R′ is selected from the group consisting of



R″ is selected from the group consisting of



n and *m* are indices denoting statistical distribution of structures over the macrochain;

n and *m* are statistical values ranging from 1 to 10;

x is a statistical value ranging from 1 to 100;

y = 3 to 20;

x = 5 to 20.

4,116,941
WATER-SOLUBLE POLYESTER-IMIDES

Robert B. Hanson, Aurora, Ill., assignor to Standard Oil Company, a corporation of Indiana, Chicago, Ill.

Filed Jun. 1, 1976, Ser. No. 691,771
Int. Cl.² C08G *63/12*
U.S. Cl. 260—29.2 N **11 Claims**

1. A water-soluble polyesterimide resin comprising the reaction product of

1. a mixture of glycol and triol,
2. a mixture of organic diacid and trimellitic anhydride, and
3. aromatic primary diamine wherein the ratio of trimellitic anhydride to (3) is about 2:1 and wherein the equivalent ratio of (1) to (3) is about 1.7:1 to about 8:1

which is subsequently reacted with additional trimellitic anhydride.

4,116,942
PROCESS FOR CATALYTIC PRODUCTION OF POLYESTERS

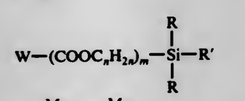
Kurt Weinberg, Upper Saddle River, N.J., and Gordon Carlton Johnson, Armonk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,759
Int. Cl.² C08G *63/12*
U.S. Cl. 528—283 **12 Claims**

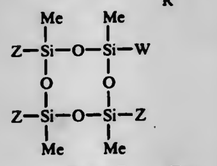
1. In a process for the manufacture of solid fiber-forming polyesters or copolyesters of dicarboxylic acid compounds and aliphatic glycols in the presence of catalysts, the improvement which comprises using as polyesterification catalyst a mixture comprising:

(A) antimony diglycollate and

(B) a silicon compound selected from the group consisting of:



(I)



(II)



(III)

or

$QCH_2CH_2SiR_3^{**}$ (IV)

wherein

W is $CH_2{=}CX-$ or



X is hydrogen or methyl and is methyl only when *m* is one;

R* is alkyl or haloalkyl having from 1 to 4 carbon atoms;

R** is methyl, ethyl, butyl, methoxy, ethoxy or butoxy;

R is methyl, ethyl, butyl, methoxy, ethoxy, butoxy or trimethylsiloxy;

R′ is methyl, methoxy, ethoxy, butoxy or trimethylsiloxy;

R″ is methoxy, ethoxy, butoxy, trimethylsiloxy or vinyldimethylsiloxy;

R‴ is methyl, ethyl, butyl or trimethylsilyl;

Me is methyl;

Z is methyl or W;

Q is an NH_2CH_2-, $NH_2CH_2CH_2NHCH_2-$, NC—, HS— or $HSCH_2CH_2S-$ group;

n is an integer having a value of from 2 to 5;

m is an integer having a value of zero or one;

x is an integer having a value of from 1 to 100; and

y is an integer having a value of from 1 to 100.

4,116,943
POLYESTER-AMIDES

Michel Ducarre, Sainte-Foy-Les-Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Mar. 15, 1977, Ser. No. 777,576
Claims priority, application France, Mar. 22, 1976, 76 08420
Int. Cl.² C08G *63/68*
U.S. Cl. 528—292 **4 Claims**

1. A moldable polyester-amide characterised in that it is derived from:

an aromatic organic diacid (1) whose carboxyl groups are directly attached to an aromatic ring in the para-position;

a primary diol (2) of the general formula $HO—CH_2—R—CH_2—OH$ in which R represents either a straight aliphatic chain comprising at least 4 carbon atoms, or an aliphatic chain branched by alkyl or aryl groups, or an aromatic ring; and

a salt of an organic diacid (3) and a primary diamine of aliphatic character (4);

and being further characterised in that it possesses a degree of whiteness equal to or greater than 80% and a luminosity equal to at least 35%, as defined in standard specification ASTM-E 308-66, and a number of $—NH_2$ end groups equal to or greater than 30 per ton of polymer, preferably greater than 40.

4,116,944
POLYESTER PROCESS

James C. Hill, Chesterfield, and Walter R. Knox, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 646,306, Jan. 2, 1976, abandoned. This application Feb. 2, 1978, Ser. No. 874,309
Int. Cl.² C08G *63/00;* C08F *18/14*
U.S. Cl. 528—366 **17 Claims**

1. A process for the production of a polyester having an acid number which is not greater than 65 which comprises:

a. forming a mixture of a diacid anhydride with a monoterminal epoxide in an anhydride to epoxide molar ratio of from 1:1 to 1:1.5 in the presence of a solvent for the polyester and from 0.2 to 0.0001 mole per mole of anhydride of a catalytically effective quaternary salt and, optionally, in the presence of up to 0.2 mole per mole of anhydride of water,

b. initiating a non-self-sustaining exothermic reaction between the epoxide and the anhydride,

c. raising the temperature of the mixture to a point at which the exothermic reaction becomes self-sustaining, and

d. controlling the reaction conditions such that the temperature of the reaction mixture is not reduced until the maximum peak temperature has been reached in the reaction mixture and substantially all available monomer has been consumed;

the time spent in stages *b* and *c* combined being less than 200 sec. and the time taken in stage *d* from the initiation of the self-sustaining exothermic reaction to the attainment of the peak temperature being also less than 200 seconds.

4,116,945

ELECTRICAL CONDUCTING PHTHALONITRILE POLYMERS

James R. Griffith, Riverdale Heights, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 681,087, Apr. 28, 1976, Pat. No. 4,057,569. This application Oct. 20, 1977, Ser. No. 843,906

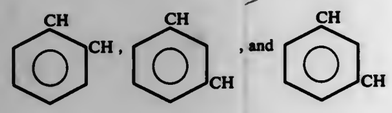
Int. Cl.[2] C08G *73/00, 12/08*

U.S. Cl. 528—362 **10 Claims**

1. A cyano-condensation resin obtained by heating one or more bisorthodinitriles of the general formula:



where R is selected from the class consisting of



to a temperature above the melting point thereof.

4,116,946

HARDENABLE MIXTURES CONTAINING POLYFUNCTIONAL AROMATIC CYANIC ACID ESTERS

Hans-Dieter Jakob, Leverkusen; Rolf Kubens, Odenthal, and Heinrich Heine, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jun. 20, 1977, Ser. No. 808,023

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628417

Int. Cl.[2] C08F *28/00*; C08G *75/00*

U.S. Cl. 528—172 **8 Claims**

1. A hardenable mixture comprising:

A. 40 to 90% by weight of at least one polyfunctional aromatic cyanic acid ester;

B. 10 to 60% by weight of at least one polymerisable olefinically unsaturated monomer selected from the group consisting of diisobutylene, styrene, styrene nuclearly substituted with alkyl having 1 to 4 carbon atoms in the alkyl group, α-methyl styrene, vinyl chloride, vinyl acetate, acrylic and methacrylic acid esters with 1 to 8 carbon atoms in the alcohol component, acrylonitrile and diallyl phthalate and, optionally

C. 0.01 to 10% by weight, based on the sum of (A) and (B) of at least one hardening catalyst.

4,116,947

BRANCHED ARYLENE SULFIDE POLYMER PRODUCTION

James T. Edmonds, Jr., and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 29, 1977, Ser. No. 792,172

Int. Cl.[2] C08G *75/16*

U.S. Cl. 528—388 **16 Claims**

1. A process for the production of branched arylene sulfide polymers having a melt flow sufficiently low that the resulting polymers can be fabricated without prior curing into shaped products having desirable properties, which process comprises contacting:

(1) at least one p-dihalobenzene;

(2) at least one polyhalo aromatic compound having more than two halogen substituents per molecule;

(3) at least one alkali metal sulfide;

(4) at least one N-alkyl lactam; and

(5) one member selected from the group consisting of:

(a) water in an amount of about 1.2 moles to about 2.4 moles per mole of alkali metal sulfide, and

(b) at least one sodium carboxylate and water in an amount of about 1.0 mole to about 2.4 moles per mole of alkali metal sulfide;

under polymerization conditions of temperature and for a period of time sufficient to form a branched arylene sulfide polymer having a low melt flow of about 1 to about 700.

4,116,948

PROCESS FOR REMOVAL OF INORGANICSALTS FROM PEPTIDE/SALT-CONTAINING SUBSTANCES

Hellmut Mittenzwei, Pixistrasse 10, 8000 Munich, Germany, and Janez Terpin, Hohenbrunn, Germany, assignors to Hellmut Mittenzwei, Germany

Continuation of Ser. No. 667,456, Mar. 16, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 838,486

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1975, 2512936

Int. Cl.[2] C07G *7/00*

U.S. Cl. 260—112 R **7 Claims**

1. A process for removing inorganic salts from a liquid medium having a solids content of from about 25 to about 65 mg/ml and which contains active organic peptide substances of a molecular weight of from about 500 to about 10,000 and a high amount up to 70% by weight of inorganic salts based on the solids content of the liquid medium, which comprises the steps of transferring said liquid medium onto a filtration gel layer carried on a perforated centrifuge drum at a liquid medium: gel volume ratio of from about 1:2.5 to about 1:4.5, said filtration gel layer being highly cross-linked and having a particle size of from about 40 to about 120μ, centrifuging at a maximum centrifugal force of from about 800 to about 1500 g, and collecting the liquid centrifugate which contains the active organic peptide substances and an amount of salt reduced by 32.2 to 80% of said high amount.

4,116,949

WATER-SOLUBLE, PHYSIOLOGICALLY ACTIVE, SYNTHETIC COPOLYPEPTIDES

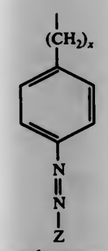
Murray Goodman, La Jolla; Michael S. Verlander, Del Mar; Nathan O. Kaplan, La Jolla, and J. Craig Venter, Solana Beach, all of Calif., assignors to The Reagents of the University of California, Berkley, Calif.

Filed Apr. 21, 1976, Ser. No. 679,032

Int. Cl.[2] C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R **12 Claims**

1. A water-soluble, physiologically active polymer having a high degree of physiological activity over a prolonged period of time, said polymer comprising a water-soluble, linear copolypeptide of an aromatic amine-substituted amino acid and at least one dissimilar amino acid, said copolypeptide having attached to the copolypeptide backbone at least one substituent having the structure:



wherein Z is selected from the group consisting of a catecholamine, morphine, an antibiotic, steroid, reserpine, α-methyl dihydroxyphenylalanine, L-dihydroxyphenylalanine, serotonin, carbutamide, tyrosine-containing peptide hormone, gastrin, and substituted phenethylamine group, and *x* is an integer equal to 0 or 1.

4,116,950

ANALOGS OF HUMAN β-ENDORPHIN

Choh Hao Li, Berkeley, Calif., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 16, 1978, Ser. No. 869,555

Int. Cl.[2] C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R **5 Claims**

1. Analogs of β-human endorphin of the formula

[X, Phe^{27}, Gly^{31}] - β_h-endorphin

wherein X is selected from null, $Ala^{6,7}$, Nle^5 and D-Thr^2 and the pharmaceutically acceptable acid addition salts thereof.

4,116,951

[ASN[2]]-THYMOSIN α_1 AND ANALOGS THEREOF

Su-sun Wang, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 789,898, Apr. 22, 1977, abandoned. This application Jan. 23, 1978, Ser. No. 871,563

Int. Cl.[2] C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R **3 Claims**

1. [Asn[2]]-thymosin α_1 and pharmaceutically acceptable salts thereof.

4,116,952

UNSYMMETRICAL AZO - AZO METHINE 1:2 CHROMIUM COMPLEX DYES

Fabio Beffa, Riehen, Switzerland; Gerhard Back, Lörrach, Germany, and Eginhard Steiner, Füllinsdorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.J.

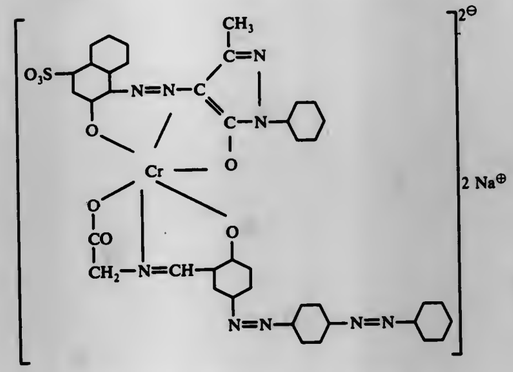
Division of Ser. No. 680,640, Apr. 27, 1976, Pat. No. 4,033,942. This application Apr. 18, 1977, Ser. No. 788,217

Claims priority, application Switzerland, May 14, 1975, 6193/75

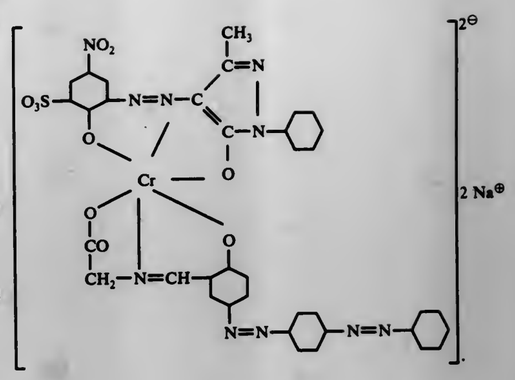
Int. Cl.[2] C09B *45/06, 45/26*; D06P *1/10, 3/32*

U.S. Cl. 260—145 B **2 Claims**

1. The chromium comples dye of the formula



2. The chromium complex dye of the formula



4,116,953

AZO DYES

Peter Dimroth, Mannheim; Helmut Junge, Wachenheim; Peter Tonne, Neustadt, and Rolf Urtel, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

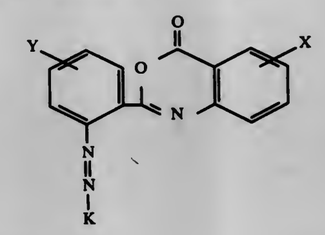
Filed Sep. 16, 1976, Ser. No. 723,916

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1975, 2544568

Int. Cl.[2] C09B *29/20, 29/22, 29/32, 29/36*

U.S. Cl. 260—157 **4 Claims**

1. A compound of the formula

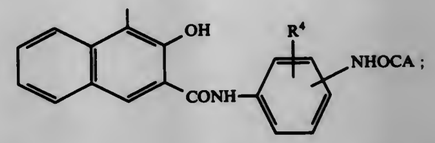


in which:

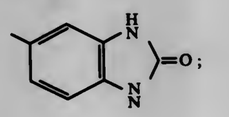
x is hydrogen, chloro, bromo, methyl or nitro;

Y is hydrogen, chloro, bromo or methyl;

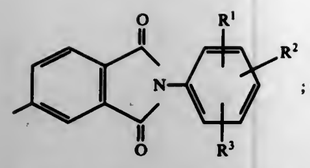
K is CH_3 COCHCONHZ or



Z is phenyl substituted by chloro, bromo, methyl, ethyl, methoxy, ethoxy, acetylamino, propionylamino, benzoylamino, chlorobenzoylamino or dichlorobenzoylamino; or



A is



; C_1 to C_4 alkyl;

C_1 to C_4 alkyl; phenyl; phenyl which is ring-substituted by chloro, bromo, methyl, ethyl, methoxy, ethoxy, cyano, carbamoyl, N-phenylcarbamoyl, N-chlorophenylcarbamoyl, N-bromophenylcarbamoyl, N-methylphenylcarbamoyl, N-methoxyphenylcarbamoyl, N-ethoxyphenylcarbamoyl, C_1 to C_4 alkoxycarbonyl or sulfamoyl; naphthyl; anthraquinonyl; amino; C_1 to C_5 alkylamino; benzylamino; phenylamino; phenylamino which is ring-substituted by chloro, bromo, methyl, ethyl, methoxy, ethoxy or carbamoyl; naphthylamino; anthraquinonylamino; phenoxy; or phenoxy substituted by chloro, bromo, methyl, ethyl, methoxy or ethoxy;

R^1 is hydrogen, chloro, bromo, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, phenyl, methylsulfonyl, ethylsulfonyl, carbamoyl or sulfamoyl;

R^2 is hydrogen, chloro, bromo, methyl, ethyl, methoxy or ethoxy;

R^3 is hydrogen, chloro, bromo, methyl or ethyl; and

R^4 is hydrogen, chloro, bromo, methyl, ethyl, methoxy or ethoxy.

4,116,954

5-[4-(N-TRIFLUOROETHYL-AMINO)PHENYLAZO]-PYRAZOLIUM DYESTUFFS

Gerard Emile Edgard Coispeau, Soisy Sous Montmorency, and Jacques Pierre Edmond Pechmeze, Paris, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

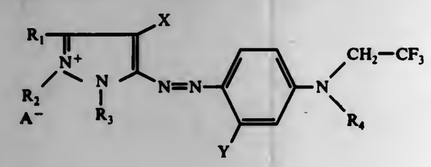
Filed Aug. 12, 1976, Ser. No. 714,079

Claims priority, application France, Oct. 28, 1975, 75 32860

Int. Cl.² C09B *29/00, 29/08;* D06P *1/04, 1/10*

U.S. Cl. 260—162 **1 Claim**

1. A dyestuff represented by the formula



wherein:

one of R_1 and R_3 is alkyl containing 1 to 4 carbon atoms and the other is phenyl, chlorophenyl or methoxyphenyl;

R_2 is alkyl containing 1 to 4 carbon atoms;

R_4 is hydrogen, alkyl containing 1 to 4 carbon atoms, or alkyl containing 1 to 4 carbon atoms and substituted by hydroxy, chlorine, alkoxy containing 1 to 4 carbon atoms or acylamino, the acyl residue of said acylamino being that of an aliphatic carboxylic acid containing 1 to 4 carbon atoms or benzoyl;

X is hydrogen or chlorine;

Y is hydrogen, chlorine, methyl, alkoxy containing 1 to 4 carbon atoms or acetylamino; and

A^- is a monovalent anion.

4,116,955

INCLUSION COMPLEX COMPOUND, PROCESS FOR ITS PRODUCTION, AND METHOD FOR ITS USE

Yataro Ichikawa; Mamoru Yamamoto; Hideki Tsuruta; Kenichi Kato, all of Iwakuni; Teizo Yamaji, Hachioji; Eishin Yoshisato, and Toshiyuki Hiramatsu, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

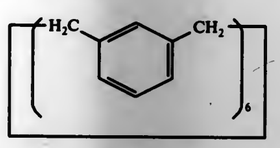
Filed May 31, 1977, Ser. No. 802,022

Claims priority, application Japan, Jun. 18, 1976, 51/66044

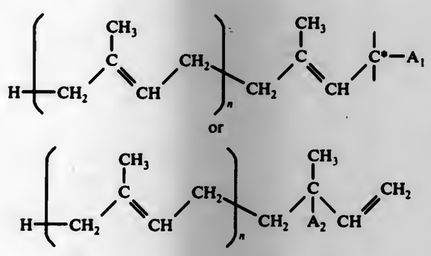
Int. Cl.² C07C *107/00;* C09B *27/00;* C11C *1/00;* C09F *5/00*

U.S. Cl. 260—192 **11 Claims**

1. An inclusion complex compound comprising (a) meta-cyclophane of the formula



and (b) a trans-terpenoid of the formula



wherein *n* is an integer of 1 to 9; A_1 and A_2 each represent (1) a hydrogen atom, (2) a halogen atom, (3) an inorganic group containing an oxygen, nitrogen or sulfur atom, (4) an organic group containing 1 to 5 carbon atoms, or (5) an organic group containing an oxygen, nitrogen or sulfur atom and 1 to 5 carbon atoms; and C^* is the carbon atom of a carbonyl or methylene group,

included by the meta-cyclophane.

4,116,956

BENZODIAZEPINE DERIVATIVES

Kanji Meguro, and Yutaka Kuwada, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

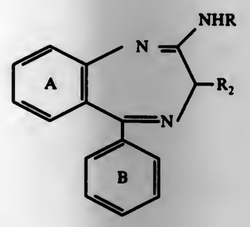
Division of Ser. No. 367,766, Jun. 7, 1973, abandoned, which is a division of Ser. No. 874,367, Nov. 5, 1969, abandoned. This application Aug. 26, 1976, Ser. No. 718,194

Claims priority, application Japan, Nov. 5, 1968, 43-80813; Dec. 17, 1968, 43-92928; Dec. 17, 1968, 43-92929; Dec. 17, 1968, 43-92930; Dec. 25, 1968, 43-95187; Feb. 13, 1969, 44-10702

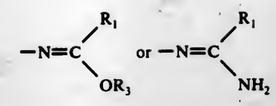
Int. Cl.² C07D *243/20*

U.S. Cl. 260—239 BD **2 Claims**

1. A compound of the formula



wherein R is



in which R_1 is hydrogen, alkyl of 1-6 carbon atoms, benzyl, phenethyl or phenyl and R_3 is methyl or ethyl, the rings A and B, independently of each other, are each unsubstituted or substituted by one member selected from the group consisting of nitro, halogen, trifluoromethyl, methyl, ethyl, propyl, methoxy and ethoxy, R_2 is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, sec-butyl, tert-butyl, amyl or hexyl, and the nitrogen atom at the 4-position is optionally in the form of an N-oxide.

4,116,957

RIFAMYCIN COMPOUNDS

Vittorio Rossetti; Leonardo Marsili, and Carmine Pasqualucci, all of Milan, Italy, assignors to Archifar Industrie Chimiche del Trentino S.p.A., Rovereto, Italy

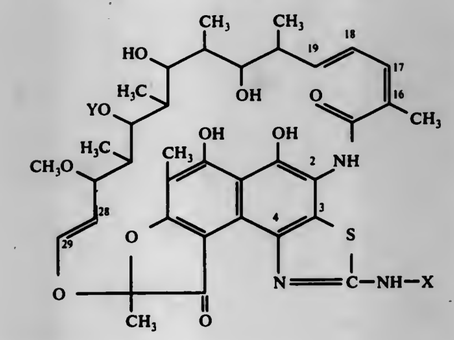
Filed Sep. 7, 1977, Ser. No. 831,224

Claims priority, application Italy, Oct. 18, 1976, 2962 A/76

Int. Cl.² C07D *51/18*

U.S. Cl. 260—239.3 P **2 Claims**

1. A rifamycin compound having the formula:



and its 16, 17, 18, 19 tetrahydroderivatives and 16, 17, 18, 19, 28, 29 hexahydroderivatives, wherein Y is —H or —$COCH_3$, and X is selected from the group consisting of hydrogen; C_1–C_{12} alkyl; C_3–C_4 alkoxyalkyl; C_2–C_4 hydroxyalkyl; C_4–C_6 N,N-dialkylaminoalkyl; C_7–C_8 arylalkyl hydrocarbon; C_3–C_7 cycloalkyl; C_3–C_6 alkenyl; phenyl; C_7 arylalkyl hydrocarbon substituted in the aromatic ring with a radical selected from the group consisting of halogen, methyl, ethyl, propyl, butyl, methoxyl, N,N-dimethylamino; phenylmethylimino; furfuryl-2-methylimino; and a heterocyclic group selected from the group consisting of furfuryl, tetrahydrofurfuryl, 1,2,4-triazol-3-yl, thienylmethyl and 1,3-dimethyl-2,6-dioxo-1,2,3,6-tetrahydropyrimidine-4-yl.

4,116,958

ORGANIC SYNTHETIC METHODS BENZYLPYRIMIDINE DERIVATIVES

Alexander Stuart, Bromley, and Thomas Paterson, Gravesend, both of England, assignors to Burroughs Wellcome Co., N.C.

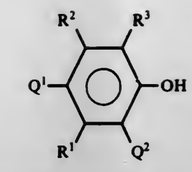
Filed Oct. 10, 1972, Ser. No. 295,890

Claims priority, application United Kingdom, Oct. 12, 1971, 47492/71; Dec. 10, 1971, 57512/71

Int. Cl.² C07D *237/48*

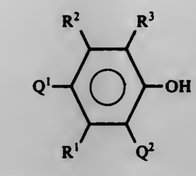
U.S. Cl. 544—325 **4 Claims**

1. A 2,4-diamino-5-benzylpyrimidine compound of the formula



wherein Q^1 is a 2,4-diaminopyrimidin-5-yl-methyl group and R^1, R^2, R^3 and Q^2 are alkyl groups of 1 to 4 carbon atoms.

2. A 2,4-diamino-5-benzylpyrimidine compound of the formula



wherein Q^2 represents a 2,4-diaminopyrimidin-5-yl-methyl group, R^1 and R^2 represent hydrogen atoms and Q^1 and R^3 represent alkyl groups of 1 to 4 carbon atoms.

4,116,959

ISOINDOLINE PIGMENTS

Jost von der Crone, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

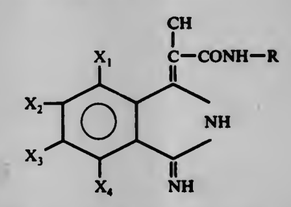
Filed Sep. 20, 1976, Ser. No. 724,828

Claims priority, application Switzerland, Sep. 26, 1975, 12567/75

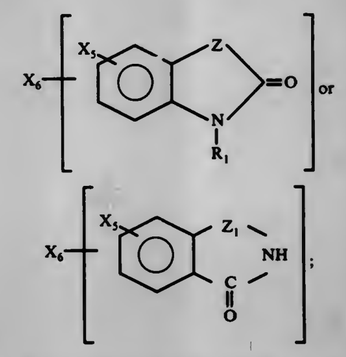
Int. Cl.² C09B *57/00*

U.S. Cl. 544—284 **7 Claims**

1. An isoindoline pigment of the formula

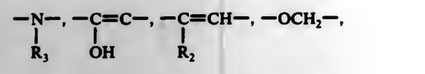


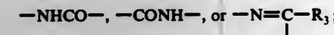
wherein R denotes a radical of the formula

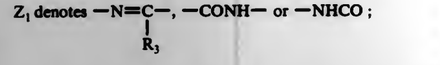


X_1, X_2, X_3, and X_4 denote hydrogen, halogen, or one or two of the radicals X_1–X_4 denote nitro, alkyl, alkoxy or phenoxy and the others denote hydrogen; X_5 denotes hydrogen, halogen, alkyl containing 1–4 carbon atoms, alkoxy containing 1–4 carbon atoms, or phenoxy; X_6 is a direct bond when linked to

the benzene ring or phenylene when linked to the heterocyclic ring; Z denotes O, S, or a group of the formula







wherein R_2 and R_3 denote hydrogen, alkyl containing 1–4 carbon atoms, phenyl, or phenyl substituted by halogen, alkyl containing 1–4 carbon atoms, alkoxy containing 1–4 carbon atoms, or alkanoylamino containing 1–4 carbon atoms; R_1 denotes hydrogen, alkyl containing 1–4 carbon atoms, phenyl, or phenyl substituted by halogen, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, or alkanoylamino containing 1–4 carbon atoms; and Z must represent a NH group when R_1 does not denote hydrogen.

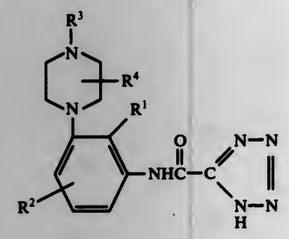
4,116,960

TETRAZOLE-5-CARBOXAMIDE DERIVATIVES

John M. Sellstedt, Pottstown, and Dieter H. Klaubert, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 669,570, Mar. 23, 1976, Pat. No. 4,013,647.
This application Sep. 24, 1976, Ser. No. 726,374
Int. Cl.[2] C07D *403/12*
U.S. Cl. 544—366 **4 Claims**

1. An anti-allergy compound of the formula:



in which
R^1 is —CN or —$CONH_2$;
R^2 is hydrogen, lower alkyl, lower alkoxy, halo, polyhalo(lower)alkyl, lower alkyl carbonyl or carb(lower)alkoxy;
R^3 is lower alkyl; and
R^4 is hydrogen or lower alkyl;
or a pharmaceutically acceptable salt thereof.

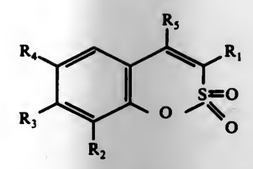
4,116,961

1,2-BENZOXATHIIN-2,2,-DIOXIDES

Charles F. Schwender, Lebanon, and Brooks R. Sunday, Hackettstown, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 24, 1977, Ser. No. 771,502
Int. Cl.[2] C07D *411/04, 327/06*
U.S. Cl. 260—293.57 **14 Claims**

1. A compound of the formula:



wherein R_1 is $N(R_6)$ carbamoyl wherein R_6 is selected from the group consisting of phenyl or lower alkyl of 1 to 6 carbon atoms; wherein R_2 is selected from the grop consisting of hydrogen and phenyl; wherein R_3 is hydrogen; wherein R_4 is hydrogen or halogen; and wherein R_5 is hydroxyl, and the pharmaceutically acceptable chelate salts thereof.

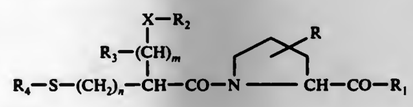
4,116,962

PYRROLIDINE AND PIPERIDINE-2-CARBOXYLIC ACID DERIVATIVES

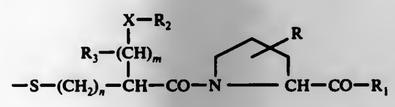
Miguel Angel Ondetti, Princeton, and Frank Lee Weisenborn, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 3, 1976, Ser. No. 747,280
Int. Cl.[2] C07D *211/32, 207/16*
U.S. Cl. 260—293.63 **12 Claims**

1. A compound of the formula

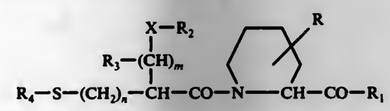


and salts thereof,
wherein R is hydrogen or hydroxy;
R_1 is hydroxy or lower alkoxy;
R_2 is hydrogen, lower alkyl or lower alkanoyl;
R_3 is hydrogen or lower alkyl;
R_4 is hydrogen, lower alkanoyl, benzoyl or

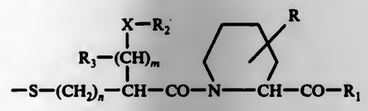


X is oxygen or sulfur;
m is 0, 1, 2, 3 or 4; and
n is 0 or 1.

9. A compound of the formula



and salts thereof, wherein
R is hydrogen or hydroxy;
R_1 is hydroxy or lower alkoxy;
R_2 is hydrogen, lower alkyl or lower alkanoyl;
R_3 is hydrogen or lower alkyl;
R_4 is hydrogen, lower alkanoyl, benzoyl or



X is oxygen or sulfur;
m is 0, 1, 2, 3 or 4; and
n is 0 or 1.

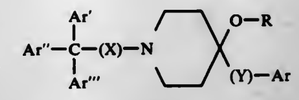
4,116,963

3,3,3-TRIARYLALKYL-4-PHENYLALKYL-4-HYDROXY PIPERIDINES AND RELATED COMPOUNDS

Gilbert W. Adelstein, Evanston, Ill., assignor to G.D. Searle & Co., Chicago, Ill.

Filed May 23, 1977, Ser. No. 799,864
Int. Cl.[2] C07D *211/48, 401/06*
U.S. Cl. 260—293.69 **9 Claims**

1. Compounds of the formula



and the pharmaceutically acceptable acid addition salts thereof wherein R represents hydrogen, alkanoyl having 1 to 7 carbon atoms or lower alkyl having 1 to 7 carbon atoms; X and Y represent alkylene having 1 to 3 carbon atoms and Ar, Ar', Ar'' represent phenyl, halosubstituted phenyl, lower alkyl substituted pheynyl wherein the lower alkyl contains 1 to 4 carbon atoms; and Ar''' represents phenyl, pyridyl, lower alkyl substituted phenyl wherein the lower alkyl contains 1 to 4 carbon atoms or halosubstituted phenyl.

4,116,964

2-[(N-2-PYRIDYLCARBAMOYL)METHYL]SACCHARIN

Harold Zinnes, Rockaway; Neil A. Lindo, New Providence, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 685,011, May 10, 1976, Pat. No. 4,074,048.
This application Aug. 16, 1977, Ser. No. 825,012
Int. Cl.[2] C07D *417/12*
U.S. Cl. 260—294.8 C **1 Claim**

1. 2[N-2-pyridylcarbamoyl)methyl]saccharin.

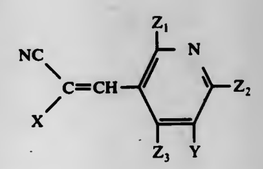
4,116,965

STYRYL DYESTUFFS CONTAINING CERTAIN AMINO, CYANOPYRIDINE MOIETIES

Nalin Binduprasad Desai, Bombay, India, and Visvanathan Ramanathan, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 566,498, Apr. 9, 1975, abandoned. This application Nov. 18, 1976, Ser. No. 742,924
Claims priority, application Switzerland, Apr. 10, 1974, 5069/74
Int. Cl.[2] C07D *213/57*
U.S. Cl. 260—294.9 **12 Claims**

1. A styryl dye devoid of acid, water-solubilizing groups, of the formula



wherein two radicals Z are —NR'R'' and one Z is —NR'R'', —OR''' or SR''' in which R', R'' and R'' are hydrogen, phenyl phenyl substituted by chlorine, bromine, lower alkyl of 1 to 5 carbon atoms, lower alkoxy of 1 to 2 carbon atoms, hydroxyethyl or carbolower alkoxy of 1 to 5 carbon atoms, benzyl, phenethyl, cyclohexyl, C_1–C_8-alkyl, C_1–C_8-alkyl interrupted by an oxygen atom, or C_1–C_8-alkyl substituted by hydroxy, carboxyl, carbo-C_1–C_5-alkoxy, alkoxy, phenoxy, C_1–C_{18}-fatty acid acyloxy, benzoyloxy, C_1–C_{18}-alkylcarbamoyloxy, C_1–C_{18}-alkyloxycarbonyloxy, phenylcarbamoyloxy, phenyloxycarbonyloxy, phenoxyacetoxy, chloroacetoxy, or phenylacetoxy, Z_3 is also lower alkyl of 1 to 5 carbon atoms or phenyl, Y is -CN and X is NC-.

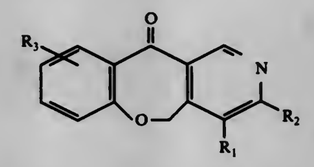
4,116,966

1-BENZOXEPINO[4,3-C]PYRIDINES

Sylvester Klutchko, Hackettstown, and Max von Strandtmann, Rockaway, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 768,258, Feb. 14, 1977, Pat. No. 4,092,322.
This application Nov. 21, 1977, Ser. No. 853,618
Int. Cl.[2] C07D *491/04*
U.S. Cl. 260—294.9 **3 Claims**

1. A compound of the formula:



I

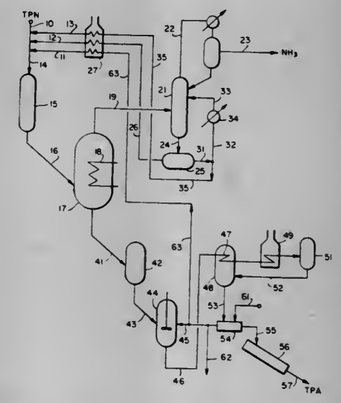
wherein R_1 is hydrogen or lower alkyl and R_2 is tetrazolyl and R_3 is hydrogen, lower alkyl, halogen, hydroxy or lower alkoxy.

4,116,967

PRODUCTION OF CARBOXYLIC ACIDS FROM NITRILES

Abraham P. Gelbein, Plainfield, and Morgan C. Sze, Upper Montclair, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Oct. 7, 1976, Ser. No. 730,385
Int. Cl.[2] C07D *213/55*; C07C *63/26*
U.S. Cl. 260—295.5 R **17 Claims**



1. In an acid catalyzed process for producing a carboxylic acid from a nitrile, the improvement comprising:
reacting a nitrile selected from the group consisting of nicotinonitrile and aromatic nitriles wherein the aromatic nucleus is selected from the group consisting of benzene and naphthalene and water in the vapor phase in the presence of an acid catalyst in solid form to produce a gaseous effluent containing the corresponding carboxylic acid; and
recovering the carboxylic acid from the gaseous effluent by sublimation of the carboxylic acid.

4,116,968

PROCESS FOR THE PRODUCTION OF 2-VINYL PYRIDINE

Peter Hardt, Visp, Switzerland, assignor to Lonza, Ltd., Basel, Switzerland

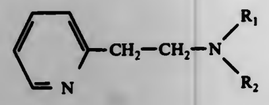
Filed Nov. 15, 1977, Ser. No. 851,786

Claims priority, application Switzerland, Nov. 15, 1976, 14339/76

Int. Cl.[2] C07D *213/06, 213/38*

U.S. Cl. 260—290 V **8 Claims**

1. Process for the production of 2-vinyl pyridine from a 2-(β-substituted ethyl)-pyridine characterized in that a 2-(β-aminoethyl)-pyridine having the formula:



wherein R_1 is the same as or different from R_2, and R_1 and R_2 each are alkyl having one to eight carbon atoms, cycloalkyl, wherein the alkyl moiety has three to eight carbon atoms, or aralkyl, wherein the alkyl moiety has one to eight carbon atoms, or R_1 and R_2 together are a $-(CH_2)_n-$ group, wherein n is 4 or 5, or R_1 and R_2 together are $-(CH_2)_2-O-(CH_2)_2$, is split through the action of a carrier-bound alkalihydroxide, as a catalyst, at a temperature between 100° and 500° C. into 2-vinyl pyridine and the corresponding secondary amine.

4,116,969

1-THIAZOLYL-5-HYDROXYIMIDAZOLIDINONES

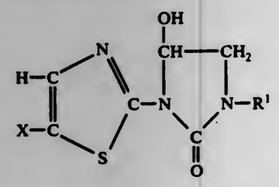
Chin Ching Wu, Libertyville, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Company, Chicago, Ill.

Filed Jun. 1, 1976, Ser. No. 691,743

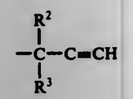
Int. Cl.[2] C07D *277/38*

U.S. Cl. 260—306.8 R **6 Claims**

1. A compound of the formula



wherein X is halogen; and R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower chloralkyl, lower bromoalkyl, and



wherein R^2 and R^3 are each selected from the group consisting of hydrogen and lower alkyl.

4,116,970

N-2-HYDROXYETHYL-OXAZOLIDINE COMPOUND

Paul Albert Ochsner, Geneva, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

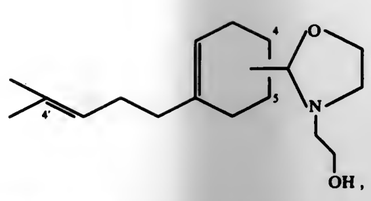
Filed Jun. 30, 1977, Ser. No. 811,915

Claims priority, application Austria, Jul. 12, 1976, 5109/76

Int. Cl.[2] C07D *263/04*

U.S. Cl. 260—307 FA **1 Claim**

1. A compound of the formula:



(II)

wherein the N-2-hydroxyethyl-oxazolidinyl group is in the 4- or 5-position, or a mixture of the 4-and 5-position isomers of formula II.

4,116,971

3-(1H-TETRAZOL-5-YL)CHROMONES

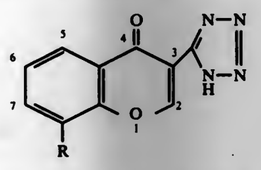
Max von Strandtmann, New Castle, Del.; Marvin P. Cohen, New Milford, N.J.; Sylvester Klutchko, Ann Arbor, Mich., and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 15, 1977, Ser. No. 824,385

Int. Cl.[2] G07D *257/04;* D61K *31/41*

U.S. Cl. 260—308 D **3 Claims**

1. A compound of the formula:



wherein R is lower alkoxy of 1 to 3 carbon atoms.

4,116,972

ANTI-INFLAMMATORY 1-OXO-ISOINDOLINE DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

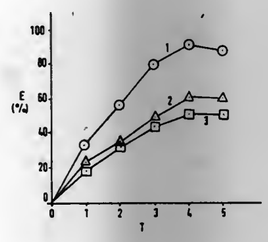
Tsutomu Kameyama, Tokyo, Japan; Shigetaka Yoshina, deceased, late of Nagoya, Japan by Teruko Yoshina, Takami Yoshina, heir at law, Nagoya, Japan, assignors to Fuji Chemical Industry Company Limited, Kamiichi, Japan

Filed Sep. 7, 1976, Ser. No. 720,675

Claims priority, application Japan, Sep. 11, 1975, 50-110692

Int. Cl.[2] C07D *209/44*

U.S. Cl. 260—326.1 **2 Claims**



1. Aluminium α-[4-(1-oxo-4,7-dihydro-2-isoindolinyl)-phenyl]propionate.

2. Bismuth α-[4-(1-oxo-4,7-dihydro-2-isoindolinyl)phenyl]-propionate.

4,116,973

THERMAL SENSITIVE MATERIALS

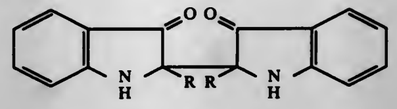
Kenneth D. Glanz, Appleton, Wis., and David B. McQuain, Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 631,336, Nov. 12, 1975, Pat. No. 3,978,270. This application May 7, 1976, Ser. No. 684,213

Int. Cl.[2] C09B *7/02;* C07D *209/42*

U.S. Cl. 260—326.11 R **2 Claims**

1. Dehydroindigo di(alkyl acylate) having the following structure wherein R is alkyl acylate having three to nine carbon atoms:



4,116,974

HERBICIDAL AND PHYTOHORMONAL AMIDOXIMES

Daniel Farge, Thiais; Jean Leboul, Gif sur Yvette; Yves Le Goff, Bretigny, Orge, and Gilbert Poiget, Thiais, all of France, assignors to Philagro, France

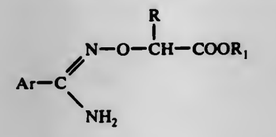
Filed Sep. 10, 1976, Ser. No. 722,215

Claims priority, application France, Sep. 11, 1975, 75 27884; Jul. 8, 1976, 76 21717

Int. Cl.[2] C07D *333/24;* A01N *9/12*

U.S. Cl. 260—332.2 A **7 Claims**

1. A new amidoxime of the formula



in which

R represents a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms, or a phenyl group,

R_1 represents a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms, or a metal atom and

Ar represents a thienyl group optionally substituted by a halogen atom, an alkyl group having 1 to 4 carbon atoms, alkoxy, alkylthio or phenalkyl in which the alkyl group contains 1 to 4 carbon atoms.

4,116,975

POLYENE COMPOUNDS

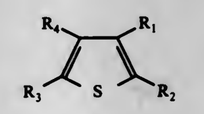
Michael Josef Klaus, Weil am Rhein, Fed. Rep. of Germany, and Beverly Ann Pawson, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 733,507, Oct. 18, 1976, Pat. No. 4,061,656, which is a continuation-in-part of Ser. No. 632,029, Nov. 14, 1975, abandoned. This application May 31, 1977, Ser. No. 801,688

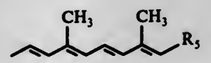
Int. Cl.[2] C07D *333/24;* A01N *9/00*

U.S. Cl. 260—332.2 A **6 Claims**

1. A compound represented by the formula



wherein one of R_1 or R_2 is



and the other of R_1 or R_2 and R_3 and R_4 are hydrogen, lower alkoxy-lower alkyl, hydroxy methyl, halogen, lower alkyl, lower alkoxy, amino, carboxyl, mono(lower alkyl)amino, lower alkylthio, di(lower alkyl)amino, mono(lower alkyl-)amino lower alkyl, di(lower alkyl)amino lower alkyl, hydroxy, lower alkenyl, lower alkenoxy, lower alkanoyl, lower alkanoyloxy, nitro, lower alkoxycarbonyl, lower alkanoylamido or a nitrogen containing heterocycle; and R_5 is carbamoyl, mono(lower alkyl)carbamoyl, and di(lower alkyl)-carbamoyl.

4,116,976

METHOD OF PREPARING PHTHALIDE

Fritz Englander, Bonn-Bad Godesberg, and Jurgen Amort, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez, Koeln, Germany

Filed Apr. 1, 1977, Ser. No. 783,575

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614294

Int. Cl.[2] C07D *307/88*

U.S. Cl. 260—343.3 R **8 Claims**

1. Process of preparing phthalide which comprises contacting 3-chlorophthalide with hydrogen in the presence of noble metal catalyst, at between about 50° and about 250° C. in the absence of HCL acceptors, for hydrogenolysis of the 3-chlorophthalide.

4,116,977

PROCESS FOR PRODUCING OXYGEN-CONTAINING CYCLIC FLUORO COMPOUND

Masaaki Yamabe, Machida; Kiyotaka Arai, Yokohama; Shunichi Samejima, Tokyo, and Makoto Noshiro, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

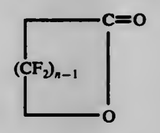
Filed Aug. 5, 1976, Ser. No. 711,978

Claims priority, application Japan, Aug. 5, 1975, 50-94736

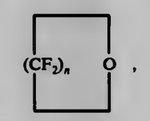
Int. Cl.[2] C07D *307/32, 307/04*

U.S. Cl. 260—343.6 **9 Claims**

1. A process for producing an oxygen containing cyclic fluoro compound selected from the group consisting of a perfluorolactone having the formula



a perfluorocyclic ether having the formula



and mixtures thereof which comprises:

reacting an α, ω-diiodoperfluoroalkane compound having the formula

$I(CF_2)_nI$

with fuming sulfuric acid, wherein n in wll formulas ranges from 3 to 5.

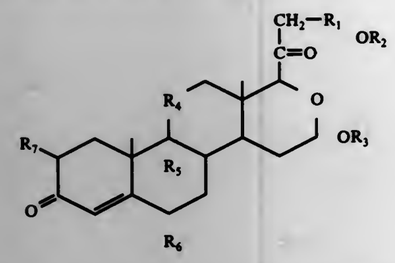
4,116,978

D-HOMO OXASTEROIDS

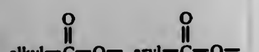
Christopher M. Cimarusti, Hamilton Square; Paul Grabowich, New Brunswick, and Ravi K. Varma, Belle Mead, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 20, 1977, Ser. No. 817,315
Int. Cl.[2] C07D *311/02*; A61K *31/35*
U.S. Cl. 260—345.2 **25 Claims**

1. A steroid having the formula,



or the 1,2-dehydro derivative thereof; wherein R_1 is hydrogen,



halogen or hydroxy; R_2 is hydrogen or alkyl; R_3 is alkyl; R_4 is carbonyl, β-hydroxymethylene, β-chloromethylene or β-bromomethylene; R_5 is hydrogen, fluorine, chlorine or bromine; R_6 is hydrogen, fluorine or methyl; and R_7 is hydrogen, chlorine or bromine; with the proviso that when R_1 is hydroxy, R_2 is alkyl; and with the further proviso that when R_2 is alkyl, it is the same alkyl group as R_3; wherein aryl is phenyl or phenyl substituted with one or two alkyl, alkoxy or halogen groups; and alkyl and alkoxy are groups having 1 to 10 carbon atoms.

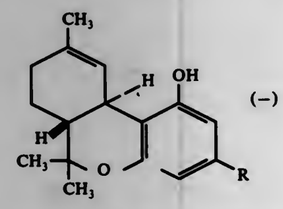
4,116,979

PROCESS FOR THE PREPARATION OF (−)-6A,10A-TRANS-6A,7,8,10A-TETRAHYDRODIBENZO[B,D]-PYRANS

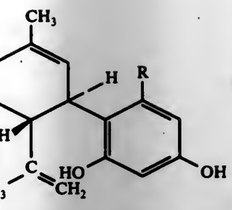
Raj Kumar Razdan, Belmont, and Haldean Cloyce Dalzell, Weston, both of Mass., assignors to Sheehan Institute for Research, Inc., Cambridge, Mass.

Division of Ser. No. 636,132, Nov. 28, 1975, Pat. No. 4,025,516, which is a continuation-in-part of Ser. No. 589,742, Jun. 24, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,435
Int. Cl.[2] C07D *311/78*
U.S. Cl. 260—345.3 **7 Claims**

1. A process for the preparation of a compound of the formula



wherein R is hydrogen or a straight or branched alkyl containing 1 to 10 carbon atoms, comprising treating a compound of the formula



wherein R is as above, with a Lewis acid catalyst in an inert organic solvent under anhydrous conditions.

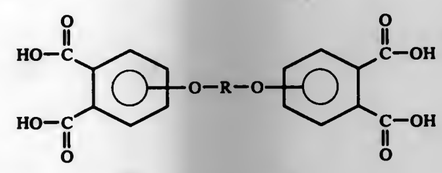
4,116,980

METHOD FOR MAKING AROMATIC BIS (ETHER PHTHALIC ACID) OR AROMATIC BIS (ETHER ANHYDRIDE)S

Jimmy L. Webb, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,127
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.3 **12 Claims**

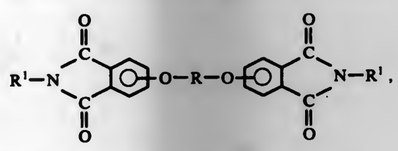
1. A method for making aromatic bis(ether phthalic acid) of the formula,



which comprises,

(A) heating at a temperature of 100°–300° C., a mixture comprising by weight

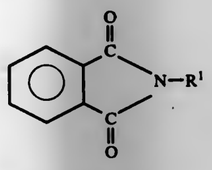
(i) aromatic bis(ether phthalimide) of the formula,



(ii) 0.01 to 100 parts of water, per part of (i)

(iii) 0.3 to 20 parts of phthalic anhydride or phthalic acid per part of (i),

to produce a liquid phase-vapor phase reaction mixture, comprising aromatic bis(ether phthalic acid) and phthalic acid in the liquid phase, and an N-organo substituted phthalimide of the formula,



in the vapor phase,

(B) venting the vapor phase from the reaction mixture of (A), and

(C) recovering the aromatic bis(ether phthalic acid) from the resulting mixture of (B),

where R is a divalent aromatic radical having from 6–30 carbon atoms and R^1 is a monovalent organo radical selected from the class consisting of $C_{(1-8)}$ alkyl radicals, and organic radicals having from 6–20 carbon atoms, selected from the class consisting of aromatic hydrocarbon radicals and halogenated derivatives thereof.

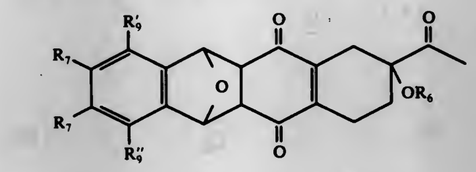
4,116,981

5,12-EPOXY-NAPHTHACENE-6,11-DIONE DERIVATIVES

Andrew S. Kende, Pittsford, N.Y., assignor to Yuh-Geng Tsay, Taichung, Taiwan and Research Corporation, New York, N.Y.

Filed May 2, 1977, Ser. No. 792,684
Int. Cl.[2] C07D *307/87*
U.S. Cl. 260—346.71 **7 Claims**

1. A compound of the formula



wherein

R_6 is lower alkanoyl or phenyl lower alkanoyl,

R_7 is hydrogen, lower alkyl, or halogen of the group chlorine or bromine,

R_9 is hydrogen, lower alkyl, or lower alkoxy, phenyl- or substituted phenyl lower alkyl wherein the substituent groups are lower alkyl, lower alkoxy or halo,

wherein the partial term "lower alk" signifies a straight or branch chain hydrocarbon moiety containing 1 to 5 carbon atoms in the chain, or halogen of the group chlorine or bromine,

provided that where one R_9 moiety is lower alkoxy, the other R_9 moiety has one of the alternate values given hereinabove, further provided that where both R_7 groups are other than hydrogen, R_9 is hydrogen and where R_9 is other than hydrogen, R_7 is hydrogen.

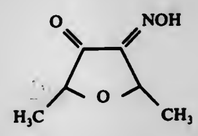
4,116,982

3-OXIMINO-4-OXO-2,5-DIMETHYL-TETRAHYDROFURAN

Manfred Baumann, Mannheim; Werner Hoffmann, Neuhofen, and Karl von Fraunberg, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,461
Int. Cl.[2] C07D *307/32*
U.S. Cl. 260—347.7 **1 Claim**

1. 3-Oximino-4-oxo-2,5-dimethyl-tetrahydrofuran of the formula



4,116,983

TWO STAGE MALEIC ANHYDRIDE PROCESS

John P. Schmidt, Princeton, N.J., assignor to Halcon International, Inc., New York, N.Y.

Continuation of Ser. No. 408,344, Oct. 23, 1973, abandoned. This application May 24, 1977, Ser. No. 800,141
Int. Cl.[2] C07D *307/60*
U.S. Cl. 260—346.75 **4 Claims**

1. A process for producing maleic anhydride which comprises oxidizing benzene with molecular oxygen in a first oxidation zone, in the presence of a catalyst comprising vanadium and molybdenum, said benzene being introduced into said zone as a vapor in admixture with air in a concentration of about 1 to 2 mol percent, withdrawing a gaseous stream from the outlet of said zone, and without cooling said gaseous stream, introducing substantially only benzene into said stream to provide a benzene concentration of about 0.8 to 1.8 mol percent in said withdrawn stream, and introducing the resulting benzene-enriched stream into a second oxidation zone containing a catalyst comprising vanadium and molybdenum to oxidize the benzene in said stream with the molecular oxygen in said stream, said first oxidation zone being at a temperature within the range of 330° –425° C., said second oxidation zone being substantially at least at the temperature of said first oxidation zone and the gaseous feed to the first oxidation zone being at a pressure of 10–60 psig and being caused to flow at a space velocity of 1800 to 3500 hr. $^{-1}$

4,116,984

MANUFACTURE OF ISOMERIC 1,4-DIBROMO-EPOXY-CYCLOHEXENES

Horst Prinzbach, and Reinhard Schwesinger, both of Freiburg, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 2, 1976, Ser. No. 710,459
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1975, 2537681
Int. Cl.[2] C07D *303/08, 301/32*
U.S. Cl. 260—348.12 **6 Claims**

1. A process for increasing the concentration of a particular isomer of 1,4-dibromo-epoxy-cyclohexene in an isomeric mixture of 1,4-dibromo-epoxy-cyclohexenes by establishing a given isomerization equilibrium which comprises;

dissolving said mixture of 1,4-dibromo-epoxy-cyclohexenes in a solvent selected from the group consisting of acetonitrile, methylene chloride, carbon tetrachloride, tetrahydrofuran, benzene, methanol and acetone, acetonitrile being selected as a solvent where the concentration of the endo,endo isomer is to be increased; methylene chloride, carbon tetrachloride, tetrahydrofuran being selected as a solvent where the concentration of the exo,exo isomer is to be increased; and benzene, methanol or acetone being selected as a solvent where the concentration of the endo,exo isomer is to be increased; and

allowing the mixture to stand in the presence of a catalytic amount of a soluble bromide salt until said isomerization equilibrium is reached.

4,116,985

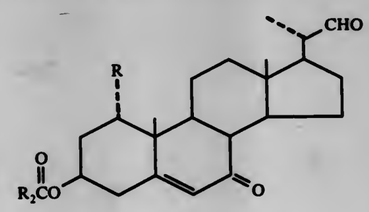
NOVEL METHOD FOR PREPARING CHOLESTA-5,7-DIENE 3β,25-DIOL AND DERIVATIVES THEREOF

William G. Salmond, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 26, 1976, Ser. No. 708,823
The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.
Int. Cl.[2] C07J *9/00*
U.S. Cl. 260—397.2 **90 Claims**

1. A process for preparing cholesta-5,7-diene-3β,25-diol or cholesta-5,7-diene-1α,3β,25-triol which comprises

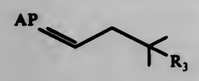
a. contacting an aldehyde of the formula



wherein R is hydrogen, hydroxy or



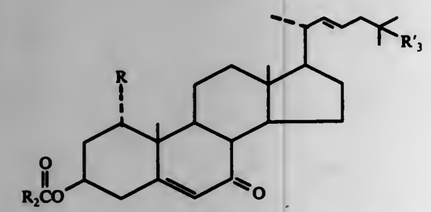
wherein R_1 and R_2 are the same or different and are alkyl of one to six carbon atoms, inclusive, or phenyl
with an ylide of the formula



wherein A is the portion of a Wittig reagent of the type $AP{=}CH_2$ and is inert to the reaction medium and R_3 is $O\ominus$ or



wherein R_4 is alkyl of one to six carbon atoms, inclusive, or phenyl to form a steroid of the formula



wherein R and R_2 are as defined previously and R'_3 is R_3 or, upon quenching the oxyanion, OH,

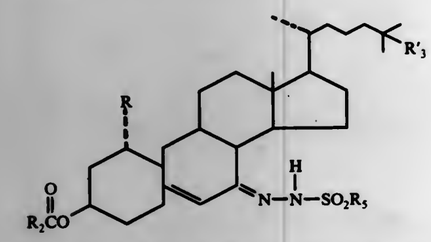
b. reacting the Δ^{22} steroid formed in "a" wherein R'_3 is OH or



with an aryl sulfonyl hydrazide

$R_5SO_2NHNH_2$

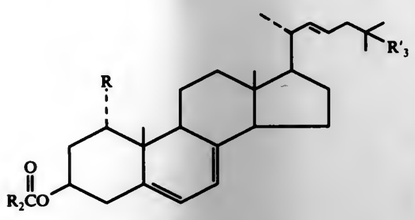
in an organic solvent wherein R_5 is phenyl or phenyl substituted with one to two alkyl groups, each alkyl group being the same or different and having one to three carbon atoms, inclusive, forming a sulfonyl hydrazone of the formula



wherein R, R_2 and R_5 are as previously defined and R'_3 is OH or

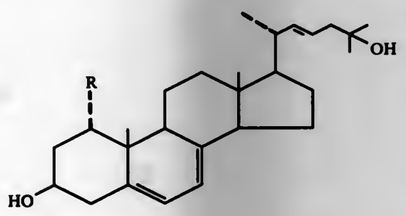


c. contacting the sulfonyl hydrazone of "b" with a hydride in an organic solvent to form a triene of the formula



R, R_2 and R'_3 are as previously defined;

d. hydrolyzing the triene of "c" to form the triene of the formula



wherein R is hydrogen or hydroxy;

e. selectively reducing the Δ^{22} bond of the triene of step "d" with

(1) biscyclopentadienyl zirconium dihydride in an organic solvent, or

(2) chloridohydridobiscyclopentadienyl zirconium in an organic solvent followed by contact with a hydride reducing agent, and

f. contacting the compound formed in step "e" with acid.

4,116,986

PROCESS FOR SULFATING FATTY ALKANOLAMIDES

Raymond G. Bistline, Jr., Wyndmoor; Warner M. Linfield, Oreland, and Wilfred R. Noble, Wyndmoor, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 6, 1977, Ser. No. 794,596
Int. Cl.[2] C07C *143/90*; C11D *1/28*
U.S. Cl. 260—401 **8 Claims**

1. In a process for preparing sulfated fatty alkanolamides wherein fatty acids and fatty acid esters are reacted with low molecular weight alkanolamines and the resultant fatty alkanolamide sulfated, the improvement which comprises adding from about 5 to about 15% by weight of a low molecular weight alcohol to the fatty alkanolamide and co-sulfating the alcohol and the alkanolamide with a sulfating agent, said alcohol having from 1 to 8 carbon atoms.

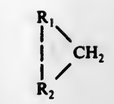
4,116,987

METHOD OF HYDROXYLATION

Norman C. Deno, State College, Pa., assignor to Fats and Proteins Research Foundation, Inc., Des Plaines, Ill.

Division of Ser. No. 622,661, Oct. 15, 1975, Pat. No. 4,045,498. This application Mar. 21, 1977, Ser. No. 779,467
Int. Cl.[2] C11C *3/02*
U.S. Cl. 260—410.9 R **3 Claims**

1. The process of preparing alcohols by single-carbon hydroxylation, which comprises the steps of: reacting a saturated hydrocarbon compound with an N-oxygenated amine in a medium including a Lewis acid and a salt of a first series transition metal element; and separating the reaction product from said medium, in which the saturated hydrocarbon compound has the general formula



wherein R_1 and R_2 are hydrocarbon groups which have combined a total of from 4 to 18 carbon atoms and wherein the dotted line represents an optional carbon-to-carbon bond, R_1 and R_2 being alkyl groups when said bond is absent and R_1 and R_2 being alkylene groups when said bond is present. and wherein one of R_1 and R_2 includes a carboxyl moiety.

2. The process according to claim 1 in which the saturated hydrocarbon is methyl octanoate.

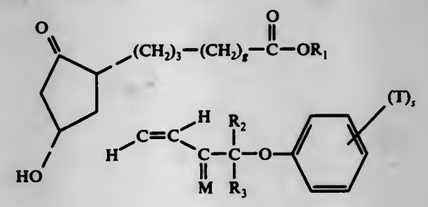
4,116,988

16-PHENOXY PROSTAGLANDIN E_1 ANALOGS

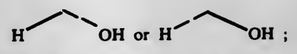
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 426,058, Dec. 19, 1973, which is a continuation of Ser. No. 252,030, May 10, 1972. This application Feb. 7, 1977, Ser. No. 766,010
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—413 **10 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein *g* is an integer from 2 to 5, incusive; wherein M is



wherein R_1 is hydroen or alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 and R_3 are hydrogen, methyl, or ethyl; wherein T is alkyl of one to 3 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_4$ wherein R_4 is alkyl of one to 3 carbon atoms, inclusive, and wherein *s* is zero one, 2, or 3, with the proviso that not more than two T's are other than akyl; including each of the lower dialkanoates thereof, and each of the pharmacologically acceptable salts thereof when R_1 is hydrogen.

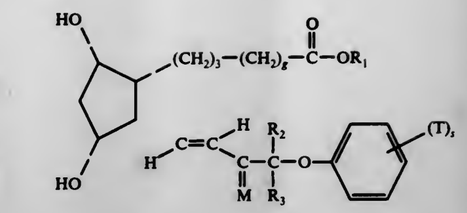
4,116,989

16-PHENOXY PROSTAGLANDIN $F_{1\alpha}$ ANALOGS

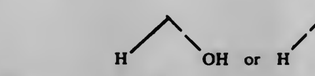
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 426,058, Dec. 19, 1973, which is a division of Ser. No. 252,030, May 10, 1972. This application Feb. 7, 1977, Ser. No. 766,011
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—413 **10 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein *g* is an integer from 2 to 5, inclusive; wherein M is



wherein R_1 is hydrogen or alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 and R_3 are hydrogen, methyl, or ethyl; wherein T is alkyl of one to 3 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_4$ wherein R_4 is alkyl of one to 3 carbon atoms, inclusive, and wherein *s* is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl; including each of the lower trialkanoates thereof, and each of the pharmacologically acceptable salts thereof when R_1 is hydrogen.

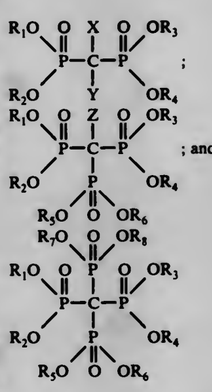
4,116,990

CHELATION

Edward G. Budnick, Scotch Plains, N.J., assignor to Plains Chemical Development Co., Scotch Plains, N.J.

Division of Ser. No. 33,513, Apr. 30, 1970, Pat. No. 4,020,091, and a continuation-in-part of Ser. No. 505,471, Oct. 28, 1965, abandoned, and Ser. No. 813,385, Feb. 28, 1969, abandoned, and a continuation-in-part of Ser. No. 485,624, Sep. 7, 1965, Pat. No. 3,471,406, and Ser. No. 482,257, Jun. 24, 1974, Pat. No. 3,471,552. This application May 20, 1976, Ser. No. 688,388
Int. Cl.[2] C07F *1/00, 7/22, 7/24, 9/38*
U.S. Cl. 260—429 J **23 Claims**

1. A process for chelating non-alkali metal ions comprising contacting said metal ions with a phosphorus chelating compound having a formula selected from the group consisting of:



(a)

(b)

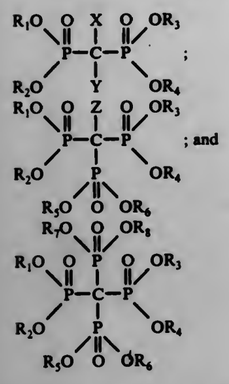
; and

(c)

wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are selected from the group consisting of hydrogen, alkali metal and ammonium, X is selected from the group consisting of hydrogen, alkenyl, aryl, chloroalkyl, chloroaryl, and halogen of atomic weight 35

to 80, Y is selected from the group consisting of hydroxyl, and halogen of atomic weight 35 to 80 and Z is selected from the group consisting of hydrogen, phenyl and halogen of atomic weight 35 to 80.

8. A process for the recovery of non-alkali metal ions from a solution of the same comprising contacting said solution of metal ions with a phosphorus chelating compound having a formula selected from the group consisting of:


(a)

(b)

; and

(c)

where R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are selected from the group consisting of hydrogen, alkali metal and ammonium, X is selected from the group consisting of hydrogen, alkyl, alkenyl, aryl, chloroalkyl, chloroaryl, and halogen of atomic weight 35 to 80, Y is selected from the group consisting of hydroxyl, phenyl and halogen of atomic weight 35 to 80 and Z is selected from the group consisting of hydrogen, phenyl and halogen of atomic weight 35 to 80, thereafter evaporating the solvent to obtain the chelated metal in a complex form and recovering the metal from said metal complex.

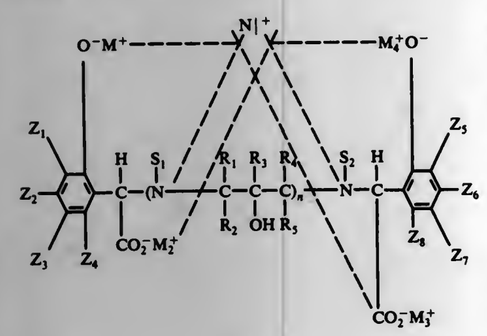
4,116,991

HYDROXY-CONTAINING AGENTS FOR CHELATING METAL IONS AND A PROCESS FOR PREPARING SAME

Andre Leneuf, Tours, France, assignor to Manufacture de Produits Chimiques Protex, Paris, France

Filed Apr. 14, 1975, Ser. No. 567,528
Claims priority, application France, Apr. 12, 1974, 74 13622
Int. Cl.² C07F *15/02*
U.S. Cl. 260—439 R **1 Claim**

1. A process for preparing a compound of the following formula:



wherein

R_1 through R_5 are each selected from the group which consists of hydrogen, methyl, ethyl and propyl;

S_1 and S_2 are each selected from the group which consists of hydrogen, $—CH_2CH_2OH$ and alkyl having 1 to 12 carbon atoms;

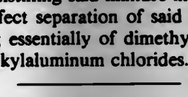
n is a whole number 1 through 4;

Z_1 through Z_8 are substituents each selected from the group which consists of alkyl, alkoxyl, carboxy, formyl, acyl, carboxy substituted by alkyl, carboxamido, hydroxyl, amino, nitro, halo, and sulfo;

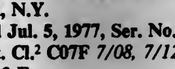
M_1 through M_4 are selected from the group which consists of hydrogen ion, an alkali metal ion, ammonium and ammonium substituted by alkyl 1 to 4 times;

N is divalent or trivalent iron of the above complex; and which comprises:

reacting a compound of the following formula:



simultaneously with a compound of the formula:



and simultaneously as well with a compound of the formula:



wherein Z', Z'', Z''', Z'''' are each any of Z_1 to Z_8 and Q is any of M_1 to M_4; and

chelating the resultant compound with iron with a valence of 2^+ or 3^+ and capable of chelating.

4,116,992

PROCESS FOR THE SIMULTANEOUS MANUFACTURE OF DIMETHYLALUMINUM CHLORIDE AND ALKYLALUMINUM CHLORIDES

Scott H. Eldt, Seabrook, Tex., assignor to Texas Alkyls, Inc., Deer Park, Tex.

Filed Apr. 27, 1977, Ser. No. 791,361
Int. Cl.² C07F *5/06*
U.S. Cl. 260—448 A **12 Claims**

1. A redistribution process for the production of dimethylaluminum chloride and alkylaluminum chlorides comprising forming a mixture comprising methylaluminum dichloride and at least one alkylaluminum compound selected from the group consisting of an aluminum trialkyl, a dialkylaluminum chloride, and an alkylaluminum sesquichloride, in which the alkyl group contains from 2 to 16 carbon atoms, such mixture having a chlorine-to-aluminum atomic ratio of from about 1.0 to about 2.0, and distilling said mixture in an efficient distillation column to effect separation of said mixture into a first fraction consisting essentially of dimethylaluminum chloride and a residue of alkylaluminum chlorides.

4,116,993

PROCESS FOR PRODUCING AROMATIC-CONTAINING SILICONE COMPOUNDS

Ben Alfred Bluestein, Schenectady, and E. Robert Evans, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 5, 1977, Ser. No. 812,954
Int. Cl.² C07F *7/08, 7/12, 7/18*
U.S. Cl. 260—448.2 E **14 Claims**

1. An improved process for producing an aromatic containing silicone compound comprising (a) reacting a aromatic organic compound of the formula, RX_a with a silicone compound of the formula, R_b' Si Z_{4-b} in the presence of molar quantities of Mg and from 0.5 up to 1 mole of a promoter per mole of the aromatic compound which is tetrahydrofuran wherein a portion of the reactants are added to the reaction chamber and then adding from 0.1 to 1% by weight of the total reactants of Cu_2Cl_2 as a coupler and then after a reaction period of time of 1 to 5 hours there is mixed into the reaction mixture the remaining portion of the reactants; and (b) distilling out the desired product where R is selected from the class consisting of monovalent and divalent mononuclear and binuclear aryl radicals, X is chlorine, *a* is a whole number that varies from 1 to 4, R' is a radical selected from the class consisting of monovalent hydrocarbon radicals. Z is selected from the class consisting of halogen and hydrocarbonoxy radicals and *b* varies 0 to 3.

4,116,994

HYDROCARBON SYNTHESIS FROM CO AND H_2 USING RH SUPPORTED ON TITANIUM OXIDES

M. Albert Vannice, Plainfield, and Robert L. Garten, Summit, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 673,358, Apr. 5, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,871
Int. Cl.² C07C *1/04*
U.S. Cl. 260—449 R **21 Claims**

1. A process for the enhanced synthesis of olefins and paraffins, wherein said paraffins are other than methane, comprising the steps of passing H_2 and CO in a H_2/CO ratio of 0.1 to 10 over a catalyst comprising rhodium on a titanium-containing oxide support, wherein said titanium-containing oxide support is selected from the group consisting of TiO_2, $ZrTiO_4$, TiO_2-carbon, TiO_2- Al_2O_3, TiO_2-SiO_2, alkaline earth titanates, alkali titanates, rare earth titanates and mixtures thereof, at a space velocity of from 100 to 50,000 V/V/Hr and at a temperature of from 100° to 500° C., at a pressure of from 100 to 10^5 kPa for a time sufficient to effect the generation of the desired olefinic and paraffinic products in the desired ratio, wherein the concentration of said rhodium in said catalyst is from 0.01 to 10% by weight.

4,116,995

HYDROCARBON SYNTHESIS USING A RARE EARTH PROMOTED METAL SILICATE

Thaddeus P. Kobylinski, and Harold E. Swift, both of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 29, 1976, Ser. No. 745,630
The portion of the term of this patent subsequent to Mar. 30, 1993, has been disclaimed.
Int. Cl.² C07C *27/06*
U.S. Cl. 260—449.6 M **33 Claims**

1. A process which comprises contacting a charge stock comprising hydrogen and at least one carbon oxide selected from the group consisting of CO and CO_2 wherein the molar ratio of hydrogen to combined carbon oxide is from 1:1 to 4:1 under reaction conditions including a temperature of from 300° F. to 500° F. with a catalyst consisting essentially of a rare earth promoted metal silicate characterized as having repeating units of the structural formula:

$$[(1=x)Ni^a + xRu^b]_n (OH)_4 Si_2O_5 \cdot wH_2O$$

where *x* is a number from 0 to 1, this number expressing the atomic fraction of the metals nickel and ruthenium; *a* is the valence of nickel; *b* is the valence of ruthenium; *n* is a number equal in value to that defined by the ratio

$$6/[a(1=x) + bx]$$

and *w* is a number ranging from 0 to 4;

and thereafter recovering a product, which product, on a methane-free hydrocarbon basis contains at least 60 mole percent of low molecular weight hydrocarbons having from 2 to 6 carbon atoms per molecule.

4,116,996

CATALYST FOR METHANE PRODUCTION

Yun-Yang Huang, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 6, 1977, Ser. No. 803,958
Int. Cl.² C07C *1/04*
U.S. Cl. 260—449.6 M **10 Claims**

1. A process for the conversion of a gaseous reactant mixture comprising carbon monoxide and hydrogen to methane, comprising contacting said gaseous mixture with a catalyst at an elevated temperature sufficient to convert said mixture to methane, said catalyst consisting essentially of (i) an alkali metal, (ii) activated carbon, and (iii) at least one halide of a transition metal selected from Group VIII of the Periodic Table, wherein the weight ratio of said transition metal halide to activated carbon is approximately 0.01–1.0:1, and of said alkali metal to activated carbon and transition metal halide is approximately 0.1–0.5:1.

4,116,997

METHOD FOR THE PREPARATION OF CARBONIC ACID MONOESTER SALTS

Gioacchino Cipriani, and Carlo Neri, both of San Donato Milanese, Italy, assignors to Anic, S.p.A., Palermo, Italy

Continuation of Ser. No. 639,444, Dec. 10, 1975, abandoned. This application May 24, 1977, Ser. No. 800,045
Claims priority, application Italy, Dec. 10, 1974, 30338 A/74
Int. Cl.² C07C *68/04*
U.S. Cl. 260—463 **2 Claims**

1. A method for the preparation of $KOCOOCH_3$ by the process which consists of reacting K_2CO_3 with an excess of CO_2 and methanol.

2. A method for the preparation of $Ca(OCOOCH_2CH{=}CH_2)_2$ by the process which consists of reacting CaO with an excess of CO_2 and allyl alcohol.

4,116,998

PREPARATION OF ESTERS OF M-PHENOXYBENZYL ALCOHOL AND ITS α-CYANO AND α-ETHINYL DERIVATIVES WITH 2,2-DIMETHYLCYCLOPROPANECARBOXYLIC ACIDS

George Kenneth Makinson, and David Schofield, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,635
Claims priority, application United Kingdom, Apr. 15, 1976, 15583/76
Int. Cl.² C07B *121/66*
U.S. Cl. 260—465 D **9 Claims**

1. A process for preparing insecticidal esters of m-phenoxybenzyl alcohol and its α-cyano and α-ethinyl derivatives with a 2,2-dimethylcyclopropanecarboxylic acid which comprises mixing a methyl or ethyl ester of the carboxylic acid, an ester of m-phenoxybenzyl alcohol or its α-cyano or α-ethinyl derivative with an acid of formula $R.CO_2H$ wherein R is an alkyl group containing not more than 3 carbon atoms, and tetramethyl or tetraethyl titanate and heating the mixture at a temperature such that the methyl or ethyl ester of the acid formula RCO_2H is removed by distillation as it is formed.

4,116,999

RECOVERY OF TEREPHTHALONITRILE

Richard K. Barchas, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 28, 1977, Ser. No. 791,838
Int. Cl.² C07C *120/14, 121/58*
U.S. Cl. 260—465 H 9 Claims

1. A process for separating terephthalonitrile from a solution containing terephthalonitrile and p-xylene, comprising:

introducing a solution containing terephthalonitrile and p-xylene and p-tolunitrile into a fractional distillation column, said p-tolunitrile being present in an amount sufficient to solubilize the terephthalonitrile in all portions of the fractional distillation column at which the temperature in the fractional distillation column is below the melting point of terephthalonitrile; and

recovering terephthalonitrile in liquid from the fractional distillation column.

4,117,000

PROCESS FOR PREPARING 4-OXOCAPRONITRILE

Theodorus Balg, Brunssum; Constant M. A. Cramers, Obbicht, and Hendrikus J. G. Maessen, Roermond, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Aug. 24, 1977, Ser. No. 827,334
Claims priority, application Netherlands, Aug. 26, 1976, 7609478
Int. Cl.² C07C *121/34, 120/00*
U.S. Cl. 260—465.1 3 Claims

1. In a process for the preparation of 4-oxocapronitrile by reacting excess acetone with acrylonitrile by means of a primary amine and/or Schiff base as a catalyst and in the presence of an acidic compound, in which the amount of oxygen dissolved in the reaction mixture is kept below 20 parts by weight per million, and the unconsumed reactants and the catalyst are distilled off from the resulting reaction mixture and the 4-oxocapronitrile product is recovered from the remaining residue, the improvements consisting essentially in that the said distillation of unconsumed reactants and the catalyst is conducted at a pressure not less than atmospheric in the presence of a sufficient amount of an inert solvent having a boiling point of between about 80° and 195° C., such that a bottom temperature below about 195° C. is maintained.

4,117,001

PYROLYSIS OF HEAVIES FORMED IN PRODUCTION OF UNSATURATED DINITRILES

George B. Fozzard, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 5, 1977, Ser. No. 813,063
Int. Cl.² C07C *120/00, 121/20, 121/70*
U.S. Cl. 260—465.8 R 31 Claims

1. A process which comprises reacting (a) at least one olefinically unsaturated mononitrile reactant and (b) at least one monoadduct of an olefinic hydrocarbon compound and an olefinically unsaturated mononitrile compound under reaction conditions suitable to produce at least one desired olefinically unsaturated dinitrile product and undesired compounds having higher boiling points than said at least one desired olefinically unsaturated dinitrile product, each of said olefinically unsaturated mononitrile reactant and said olefinically unsaturated mononitrile compound containing a cyano group attached to a carbon atom adjacent and doubly bonded to a carbon atom which is attached to at least one hydrogen atom, said olefinic hydrocarbon compound having at least one olefinic linkage having joined to one of the doubly bonded carbons thereof a carbon atom having at least one hydrogen atom attached thereto;

separating the resulting reaction effluent to produce a first fraction comprising said at least one desired olefinically unsaturated dinitrile product and a second fraction comprising said undesired compounds;

distilling said second fraction to produce a light cut and a heavy cut thereof;

subjecting said light cut to pyrolysis conditions in a pyrolysis reaction zone containing particulate heat transfer material to decompose at least a portion of the undesired compounds contained therein to thereby produce a decomposition product comprising at least one of said at least one olefinically unsaturated mononitrile reactant, said at least one monoadduct, said olefinic hydrocarbon compound and said olefinically unsaturated mononitrile compound; and

recovering said decomposition product from the resulting pyrolysis effluent.

4,117,002

PYROLYSIS OF HEAVIES FORMED IN PRODUCTION OF UNSATURATED DINITRILES

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 5, 1977, Ser. No. 813,062
Int. Cl.² C07C *120/00, 121/20, 121/70*
U.S. Cl. 260—465.8 R 28 Claims

1. A process which comprises reacting (a) at least one olefinically unsaturated mononitrile reactant and (b) at least one monoadduct of an olefinic hydrocarbon compound and an olefinically unsaturated mononitrile compound under reaction conditions suitable to produce at least one desired olefinically unsaturated dinitrile product and at least one undesired compound having a higher boiling point than said at least one desired olefinically unsaturated dinitrile product, each of said olefinically unsaturated mononitrile reactant and said olefinically unsaturated mononitrile compound containing a cyano group attached to a carbon atom adjacent and doubly bonded to a carbon atom which is attached to at least one hydrogen atom, said olefinic hydrocarbon compound having at least one olefinic linkage having joined to one of the doubly bonded carbons thereof a carbon atom having at least one hydrogen atom attached thereto;

separating the resulting reaction effluent to produce a first fraction comprising said at least one desired olefinically unsaturated dinitrile product and a second fraction comprising said at least one undesired compound;

subjecting said second fraction to pyrolysis conditions to decompose at least a portion of said at least one undesired compound to thereby produce a decomposition product comprising at least one of said at least one olefinically unsaturated mononitrile reactant, said at least one monoadduct, said olefinic hydrocarbon compound and said olefinically unsaturated mononitrile compound; and

recovering said decomposition product from the resulting pyrolysis effluent.

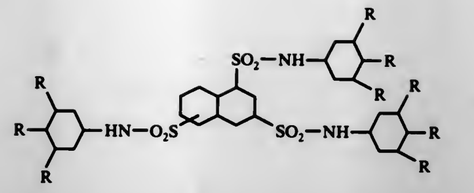
4,117,003

SUBSTITUTED AROMATIC NAPHTHALENE SULFONAMIDES

Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 28, 1977, Ser. No. 782,210
Int. Cl.² C07C *143/56;* A61K *31/185*
U.S. Cl. 260—510 7 Claims

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen and $-SO_3A$, wherein A is a non-toxic pharmaceutically acceptable salt cation; with the proviso that each phenyl must contain at least one $-SO_3A$, and that no phenyl may contain three $-SO_3A$.

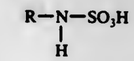
4,117,004

MANUFACTURE OF AMIDOSULFONIC ACIDS

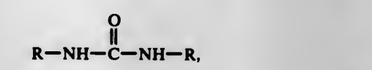
Roman Fischer, Mutterstadt, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 570,612, Apr. 23, 1975, abandoned. This application Aug. 5, 1977, Ser. No. 822,149
Claims priority, application Fed. Rep. of Germany, May 20, 1974, 2424371
Int. Cl.² C07C *143/86*
U.S. Cl. 260—513.6 10 Claims

1. A process for the manufacture of an amidosulfonic acid of the formula



where R is an alkyl of 1 to 12 carbon atoms or cyclohexyl optionally substituted by alkyl of 1 to 4 carbon atoms, which comprises the first step of reacting at −20° C to 140° C an urea of the formula



wherein R has the above meanings, with 1 to 1.9 moles of the compound SO_3 per mole of said urea, the reaction in said first step being carried out in a halohydrocarbon solvent which is inert under the reaction conditions, and the second step of reacting the resulting reaction mixture of said first step at 20° C to 140° C with 1 to 1.5 moles of 96 to 100 percent strength sulfuric acid or sulfuric acid monohydrate per mole of said urea to produce said amidosulfonic acid.

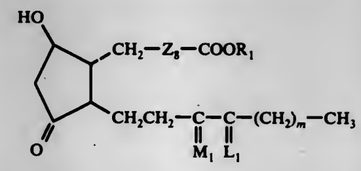
4,117,005

INTER-OXA-13,14-DIHYDRO-9β-PGD$_1$ COMPOUNDS

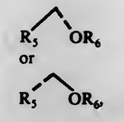
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 756,104
Int. Cl.² C07C *177/00*
U.S. Cl. 562—503 25 Claims

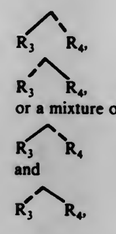
1. A prostaglandin analog of the formula



wherein *m* is one to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or pharmacologically acceptable cation; and
wherein Z_8 is

(1) $-CH_2-O-CH_2-(CH_2)_g-CH_2$,

(2) $-(CH_2)_2-O-(CH_2)_g-CH_2-$, or

(3) $-(CH_2)_3-O-(CH_2)_g-$,

wherein *g* is one, 2, 3.

4,117,006

SELECTIVE CHLORINATION OF BENZOYL CHLORIDE

Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 14, 1977, Ser. No. 806,378
Int. Cl.² C07C *51/58*
U.S. Cl. 260—544 D 1 Claim

1. A process for the selective chlorination of benzoyl chloride comprising:

(a) chlorinating benzoyl chloride, in the absence of a solvent, and in the presence of a catalyst, to abou: 7–8 mole % unconverted benzoyl chloride, thereby to form a monochlorinated product which is substantially the 3-chlorobenzoyl chloride in high yield, and 2,5-dichlorobenzoyl chloride as a by-product, and

(b) recovering the 3-chlorobenzoyl chloride in essentially pure form and in high yield from the catalyst and 2,5-dichlorobenzoyl chloride present in the reaction product mixture by simple distillation at low temperature and pressure to separate rapidly liquid products from catalyst followed by fractional distillation to separate the 3-benzoyl chloride from 2,5-dichlorobenzoyl chloride.

4,117,007

ERADICATION OF BIS-CHLOROMETHYL ETHER AND 1,1,1,2-TETRACHLOROETHANE FROM CHLOROACETYL CHLORIDE

Robert A. Bredeweg, and Yog R. Dhingra, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 17, 1977, Ser. No. 842,831
Int. Cl.[2] C07C *51/42*
U.S. Cl. 260—544 Y 8 Claims

1. A process of eradicating bis-chloromethyl ether and 1,1,1,2-tetrachloroethane from a mixture comprising chloroacetyl chloride, bis-chloromethyl ether and 1,1,1,2-tetrachloroethane, the process consisting essentially of contacting, in the absence of hydrochloric acid, the mixture with a catalytic amount of ferric and/or aluminum cations at a temperature of at least about 50° C.

4,117,008

PROCESS FOR THE PRODUCTION OF BENZOYL CYANIDE (II)

Herbert Klenk, and Heribert Offermanns, both of Hanau, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Jun. 2, 1977, Ser. No. 802,945
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1976, 2642199
Int. Cl.[2] C07C *63/06*
U.S. Cl. 260—545 R 19 Claims

1. A process for the production of benzoyl cyanide comprising reacting benzoic anhydride with an alkali metal cyanide in an inert organic solvent selected from ethers, esters, hydrocarbons, halogenated hydrocarbons and mixtures thereof.

4,117,009

METHOD OF MAKING N-[4-CHLOROPHENYL)AMINO]CARBONYL)-2,6-DIFLUOROBENZAMIDE

Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 9, 1977, Ser. No. 805,129
Int. Cl.[2] C07C *127/22*
U.S. Cl. 260—553 E 4 Claims

1. A process for the preparation of N-{[(4-chlorophenyl) amino] carbonyl}-2,6-difluorobenzamide from 2,6-difluorobenzamide which is formed by treating the corresponding nitrile with concentrated sulfuric acid solution, which comprises:

(a) extracting said 2,6-difluorobenzamide from said solution with a solvent which is water-insoluble and acid-stable, which has a boiling point of at least 120° C., wherein said solvent is a straight chain or branched polyhalogenated hydrocarbon having 2–10 carbon atoms, and from which said final product may be crystallized,

(b) condensing said extract with p-chlorophenyl isocyanate at a temperature of at least 120° C. to form said desired product, and,

(c) crystallizing said product from the solvent.

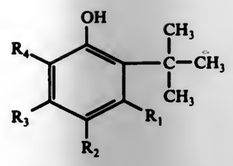
4,117,010

THIOLCARBAMATE SULFOXIDES STABILIZED WITH HINDERED PHENOLS

Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 8, 1976, Ser. No. 721,247
Int. Cl.[2] C07C *147/14*; A01N *9/14*; C07C *155/02*
U.S. Cl. 260—561 S 23 Claims

1. A composition comprising a herbicidal thiolcarbamate sulfoxide and a stabilizing amount of a hindered phenol of the formula



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, hydroxyl, lower alkyl and lower alkoxy.

4,117,011

ADDITIVES

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 6, 1974, Ser. No. 467,051
Int. Cl.[2] C07C *87/28*
U.S. Cl. 260—570.5 P 14 Claims

1. A dispersant-detergent composition made by the process comprising reacting (a) one mole part of a polyolefin hydrocarbon-substituted phenol wherein said polyolefin hydrocarbon substitutent has an average molecular weight of from about 650 to 5000, (b) from about 1 to 10 mole parts of a C_{1-4} aldehyde, (c) from about 0.1 to 10 mole parts of an alkylene polyamine having the formula $H_2N(R_1—NH)_nH$ wherein n is an integer from 1 to about 6 and R_1 is a divalent hydrocarbon group containing 2 to about 4 carbon atoms, and (d) from about 0.1 to 50 mole parts of an aklylene oxide containing from 2 to about 6 carbon atoms.

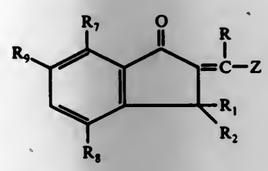
4,117,012

2-AMINOMETHYLENEINDANONE ANALGESIC AGENTS

Philip D. Hammen, East Lyme, and George M. Milne, Jr., Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 763,241, Jan. 27, 1977, Pat. No. 4,064,272, which is a division of Ser. No. 312,693, Dec. 6, 1972, Pat. No. 4,022,836. This application Sep. 1, 1977, Ser. No. 829,818
Int. Cl.[2] C07C *27/29*
U.S. Cl. 260—570.8 R 3 Claims

1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein

R is hydrogen, lower alkyl or phenyl;

Z is

$—NH(CH_2)_nOR_3$

wherein R_3 is hydrogen or lower alkyl and n is an integer of from 1 to 5;

R_1 and R_2 are each hydrogen or lower alkyl;

R_7 and R_8 are each hydrogen, fluoro or chloro; and

R_9 is hydrogen or fluoro.

4,117,013

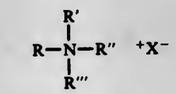
CATALYSTS FOR THE AMMONOLYSIS OF PENTAERYTHRITYL TETRACHLORIDE

William S. Anderson, Sunnyvale, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 698,580, Jun. 23, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 806,049
Int. Cl.[2] C07C *85/04*
U.S. Cl. 260—585 A 23 Claims

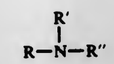
1. In a process for converting pentaerythrityl tetrachloride to pentaerythrityl tetramine by ammonolysis in methanolic ammonia, the improvement which comprises adding to the reaction mixture a catalytic amount of a material selected from the group consisting of:

(a) amine acid addition salts and quaternary ammonium halides and hydroxides, having the formula



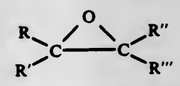
wherein R, R′ and R″ are selected from the group consisting of hydrogen and alkyl groups containing 1–18 carbon atoms, R‴ is selected from the group consising of alkyl, hydroxyalkyl, aryl and aralkyl groups containing 1–18 carbon atoms and X is selected from the group consisting of halogen and hydroxide radicals;

(b) tertiary amines having the formula



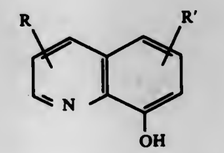
wherein R, R′ and R″ are alkyl, aryl, hydroxyalkyl and aralkyl groups containing from 1–18 carbon atoms, which tertiary amines are converted to the corresponding quaternary ammonium halide in the ammonolysis process;

(c) olefin epoxides having the formula



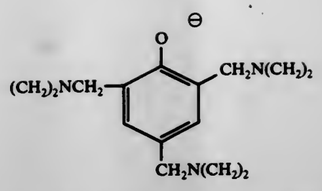
wherein R, R′, R″ and R‴ are selected from the group consisting of hydrogen, alkyl and aryl groups having from 1–18 carbon atoms and which epoxides react with ammonia or amines in the ammonolysis process;

(d) heterocyclic amines having the formula



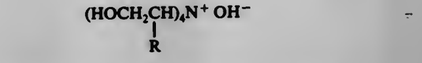
which are converted to amine phenoxide in the ammonolysis process and wherein R and R′ are selected from the group consisting of hydrogen, halogen, sulfonic acid and alkyl groups containing from 1–18 carbon atoms, and the metal and acid salts thereof;

(e) salts of an amine phenoxide of the formula



wherein R, R′ and R″ are hydrogen or alkyl groups containing from 1–18 carbon atoms:

(f) quaternary hydroxyalkyl ammonium hydroxides having the formula



wherein R is selected from the group consisting of hydrogen and alkyl groups having from 1–6 carbon atoms; and

(g) glycidyl halides and ethers having 1–18 carbon atoms.

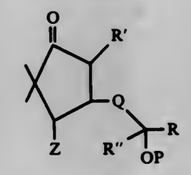
4,117,014

PROSTAGLANDIN DERIVATIVES

André G. Pernet, Kirkland, Canada; Hiromasa Nakamoto, Awara, and Naoyasu Ishizuka, Ou, both of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 647,822, Jan. 9, 1976, abandoned. This application Dec. 23, 1976, Ser. No. 753,115
Int. Cl.[2] C07C *49/28, 49/46*; C07D *309/06*
U.S. Cl. 260—586 R 16 Claims

1. A compound of the formula



wherein Z is H or CH_3, OP or CH_2OP; P is H or a protective group that can easily be removed without affecting the rest of the molecule; R′ is H; Q is $—CH_2—CH_2—$ or $—CH=CH—$;; R is a linear, branched or cyclic alkyl of 3 to 7 carbons, trifluoromethylbutyl, hydroxyalkyl or $—CH_2R‴$ where R‴ is phenyl, cyclopentyl, phenoxy, chlorophenoxy, propoxy or $—CH_2SCH_2CH_3$; and R″ is H or CH_3.

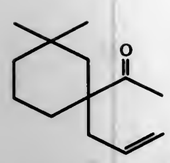
4,117,015

1-ACETYL-3-3-DIMETHYL-(2-PROPENYL)CYCLOHEXANE, PROCESS FOR PRODUCING SAME AND ORGANOLEPTIC USES OF SAME

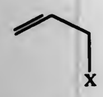
John B. Hall, Rumson; Mark A. Sprecker, Sea Bright; Frederick Louis Schmitt, Holmdel, and Manfred Hugo Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 713,429, Aug. 11, 1976, Pat. No. 4,021,488. This application Feb. 4, 1977, Ser. No. 765,867
The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.
Int. Cl.[2] C07C *45/00*
U.S. Cl. 260—586 C 1 Claim

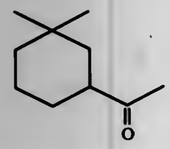
1. A process for preparing 1-acetyl-3,3-dimethyl-(2-propenyl)cyclohexane having the structure:



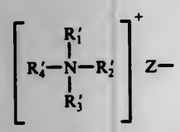
comprising the step of intimately admixing an allyl halide having the structure:



with 1-acetyl-3,3-dimethylcyclohexane having the structure:



in the presence of an alkali metal hydroxide, an inert solvent and a "phase transfer agent," said phase transfer agent having the structure:



wherein at least one of the groups R'_1, R'_2, R'_3 and R'_4 is C_6–C_{14} alkaryl or C_6–C_{20} alkenyl, and the other of R'_1,R'_2, R'_3 and R'_4 is C_1–C_8 alkyl, and Z represents halogen, the temperature of the reaction being in the range of from about 0 up to about 150° C, the mole ratio of 1-acetyl-3,3-dimethylcyclohexane: allyl halide being from 0.5:1.5 up to about 1.5:0.5, the mole ratio of alkali metal hydroxide:allyl halide being from about 0.75:1 up to about 1.5:1, and the concentration of "phase transfer agent" in grams per mole of 1-acetyl-3,3-dimethylcyclohexane being from 0.5 up to 25.

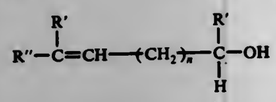
4,117,016

PROCESS FOR STRUCTURAL MODIFICATION OF UNSATURATED ALCOHOLS

William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 27, 1977, Ser. No. 801,447
Int. Cl.² C07C *45/00, 29/00, 27/00*
U.S. Cl. 260—593 R **10 Claims**

1. A process for the production of a carbonyl compound from an olefinically unsaturated alcohol having from 4 to 20 carbon atoms per molecule and which is represented by the formula



wherein R' and R'' are independently selected from the group consisting of hydrogen and a hydrocarbyl radical having from 1 to 8 carbon atoms, *n* is an integer having a value in the range of 0 to 17, wherein the two R' groups can together represent an alkylene radical having from 1 to 16 carbon atoms, which comprises contacting said olefinically unsaturated alcohol under reaction conditions with a catalytic amount of a catalyst composition comprising a ruthenium II hydride complex of a tertiary phosphine ligand which is represented by the formula

$$(R_3P)_3RuHXY_m$$

wherein each R is a hydrocarbon radical having from 1 to 10 carbon atoms, X is hydrogen or a halogen selected from the group consisting of chlorine, bromine and iodine, Y is selected from the group consisting of CO and PR_3, and *m* is an integer having a value of 0 or 1.

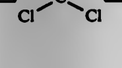
4,117,017

PROCESS FOR PREPARATION OF THIOLS USING A BENZOPINACOL INITIATOR

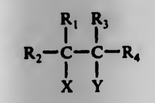
Charles Robert Morgan, Brookeville, and Richard Wayne Bush, Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,161
Int. Cl.² C07C *149/00*
U.S. Cl. 260—609 R **3 Claims**

1. The process of forming a primary thiol which comprises reacting at a temperature in the range 50°–150° C an ethylenically unsaturated compound, said unsaturation being in the terminal or pendant position or a combination thereof, with a thiolcarboxylic acid of the general formula:



wherein R is phenyl or an alkyl radical containing 1–6 carbon atoms in the presence of 0.01–5% by weight of the ethylenically unsaturated compound and the thiolcarboxylic acid, of an initiator comprising a pinacol of the general formula:



wherein R_1 and R_3 are aromatic radicals of the structure $-C_6H_4Z$, where Z is independently selected from the group consisting of H, Cl, Br, I, alkyl, aryl, and alkoxy; and R_2 and R_4 are members independently selected from the group consisting of R_1 and R_3 (as defined above), alkyl, aralkyl, alkoxyalkyl, haloalkyl and R_2 and R_4 together form a cycloalkyl group; and X and Y are members independently selected from the group consisting of hydroxyl, alkoxy and aryloxy to obtain a thiol ester and, thereafter, hydrolyzing said thiol ester with an alkali metal hydroxide to obtain the corresponding primary thiol.

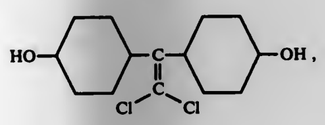
4,117,018

METHOD FOR DEHYDROCHLORINATING 1,1,1,-TRICHLORO-2,2-BIS(4-HYDROXYPHENYL)ETHANE AND PRODUCTS OBTAINED THEREFROM

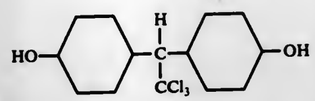
William K. S. Cleveland, Amsterdam; Jimmy L. Webb, Ballston Lake, and Charles M. Orlando, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,654
Int. Cl.² C07C *37/00*
U.S. Cl. 568—726 **5 Claims**

1. A method for making dichloride of the formula,



by dehydrochlorinating a trichloride of the formula,



which comprises,

(A) refluxing a mixture containing as essential ingredients,
  (a) the trichloride,
  (b) a dipolar aprotic solvent
  (c) a lithium halide,
  where there is used, per 100 parts by weight of (b), from 5 to 100 parts of (a) and .5 to 10 parts of (c),
(B) adding water the the mixture of (A) at a temperature of from 120° to 70° C to produce a mixture having from 100 to 150 parts of water, per 100 parts of dipolar aprotic solvent and effect the separation of dichloride,
(C) recovering the dichloride from the mixture of (B),
(D) adding water to a dipolar aprotic solvent solution of the dichloride at a temperature of about 90° C and thereafter allowing the mixture to cool slowly to effect the crystallization of the dichloride and
(E) recovering the dichloride from the mixture of (D).

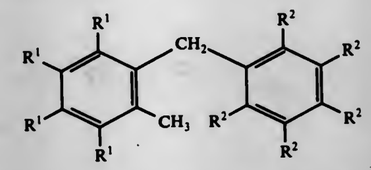
4,117,019

MANUFACTURE OF O-BENZYLTOLUENES

Heinz Eilingsfeld, Frankenthal; Manfred Patsch; Karl-Gerhard Baur, both of Ludwigshafen, and Wolfgang Ruehenbeck, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

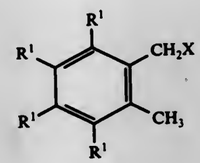
Filed Feb. 14, 1975, Ser. No. 549,910
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1974, 2408529; Jun. 11, 1974, 2428197; Jun. 18, 1974, 2429194; Nov. 30, 1974, 2456747
Int. Cl.² C07C *25/18, 15/16*
U.S. Cl. 260—649 R **13 Claims**

1. In a process for the manufacture of an o-benzyltoluene of the formula



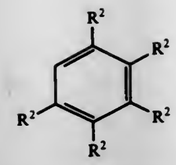
I

in which each R^1 is hydrogen or halogen and each R^2 is hydrogen, halogen, an aliphatic radical or an aromatic radical, by the reaction of an o-xylyl halide with an aromatic compound, the improvement which comprises reacting an o-xylyl halide of the formula



II

in which R^1 has the above meanings and X is halogen, with a benzene of the formula



III

in which R^2 has the above meanings, in a two phase aqueous-/organic reaction medium, wherein the organic phase is finely dispersed in the aqueous phase with droplets of the organic phase being at most 1,000 nanometers in size, and in the presence of sulfuric acid alone as the catalyst in a molar ratio of sulfuric acid to the starting material II of at least 3:1 while using a ratio of from 1 mole up to less than 6 moles of starting material III per mole of starting material II.

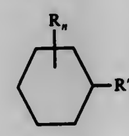
4,117,020

METHOD OF PRODUCING VALUABLE ALKYLATED AROMATIC HYDROCARBONS FROM TAR

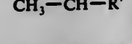
Yun Chung Sun, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 8, 1977, Ser. No. 785,982
Int. Cl.² C07C *3/62*
U.S. Cl. 260—668 C **23 Claims**

1. A method of producing valuable alkylated aromatic hydrocarbons of the formula:



wherein R is



each R' is individually hydrogen or methyl, and *n* is 1 or 2, from a tar obtained from the reaction product of an alkylation process comprising contacting in the presence of an alkylation catalyst and at alkylation parameters:
  (a) benzene, toluene or both; with
  (b) ethylene, propylene or both,
the tar being substantially free of monoaromatic alkylated material and comprising that fraction of the alkylation reaction product having a distillation temperature of at least about 240° C, the method comprising contacting at a temperature of at least about 240° C and at a pressure of at least about 200 psi:
  (i) the tar, with
  (ii) benzene, toluene or both; in the presence of a catalytic amount of
  (iii) a crystalline aluminosilicate molecular sieve catalyst.

4,117,021

PROCESS FOR REMOVING ORGANIC OXYGEN-CONTAINING IMPURITIES FROM AN ORGANIC COMPOSITION

Stephen S. Hupp, Reserve Township, Allegheny County; Edward T. Sabourin, Allison Park; Harold E. Swift, Gibsonia, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 27, 1977, Ser. No. 801,050
Int. Cl.² C07C *15/00*
U.S. Cl. 260—669 A **8 Claims**

1. The process for producing styrene from ethylene and toluene which comprises
  (a) dehydrocoupling toluene in the presence of a solid oxide

oxidant at a first temperature of between about 500° C. and about 700° C. to form a gaseous product stream comprising toluene, benzene, bibenzyl, stilbene, a minute amount of aromatic carbonyl and aromatic hydroxyl impurities, carbon dioxide and water,

(b) substantially reducing the carbon dioxide and the water in said gaseous product stream to a maximum water content of about 1 percent,

(c) purifying said substantially water-free product stream at a second temperature between about 150° C. and about 700° C. by contact with a catalyst comprising an oxide of titanium, iron, nickel, a Group IIb, Vb, VIb or VIIb metal, or a mixture thereof on a support to reduce the aromatic carbonyl and aromatic hydroxyl impurities to a maximum carbonyl content of 50 ppm.,

(d) removing a substantial amount of water from the purified product stream,

(e) contacting the substantially water-free and impurity-free reaction product comprising toluene, benzene, stilbene and bibenzyl with ethylene in the presence of a disproportionation catalyst at a temperature between about 150° C. and about 650° C. whereby stilbene and ethylene react to form styrene, and

(f) separating styrene from the reaction product.

4,117,022

NICKEL BIS-DIORGANO-ORTHOPHOSPHATES THEIR PREPARATION AND USE

Jeffrey G. Meyer, Adrian, Mich., assignor to Anderson Development Company, Adrian, Mich.

Division of Ser. No. 630,323, Nov. 10, 1975, which is a continuation-in-part of Ser. No. 416,390, Nov. 16, 1973, abandoned. This application Oct. 3, 1977, Ser. No. 839,117
Int. Cl.² C07C 3/21
U.S. Cl. 260—669 P 8 Claims

1. A method of olefin oligomerization consisting essentially of

(1) mixing a combination catalyst consisting essentially of the reaction product of (A) a nickel bis-diorgano-orthophosphate of the general formula $Ni[OP(O)(OR)_2]_2$ in which each R is selected from the group consisting of non-aromatic hydrocarbon groups free of aliphatic unsaturation and containing one to eight carbon atoms, non-aromatic hydrocarbon ether groups free of aliphatic unsaturation and containing three to six carbon atoms, and chlorinated and brominated derivatives thereof and (B) an alkyl aluminum halide of the general formula $R'_cAL\ X_d$ in which each R' is an alkyl group of one to six carbon atoms, each X is a halogen atom, each of *c* and *d* is 1 or 2 and the total of *c* and *d* is 3, the mol ratio of (A) to (B) ranging from 1:1 to 1:20, with (D) an olefinic hydrocarbon containing no more than about 8 carbon atoms, the mol ratio of total catalyst to component (D) ranging from 0.0001:1 to 0.01:1, at a temperature and pressure and for a time sufficient to cause reaction of (D); and

(2) separately the resulting products.

4,117,023

METHOD OF SEPARATION OF CATALYTIC RESIDUES DERIVED FROM ALUMINUM CHLORIDE

Philippe Jean Gillet, Creutzwald, and Gaston Henrich, Saint-Avold, both of France, assignors to Societe Chimique des Charbonnages, Courbevoie, France

Filed Nov. 12, 1976, Ser. No. 741,488
Claims priority, application France, Nov. 13, 1975, 75 34703; Nov. 13, 1975, 75 34704
Int. Cl.² C07C 3/56, 7/00
U.S. Cl. 260—671 R 9 Claims

1. In a method of alkylation of an aromatic hydrocarbon by an olefin hydrocarbon in the presence of aluminum chloride followed by neutralization of the acid alkylates by anhydrous ammonia, the improvement comprising continuously flocculating in the absence of free water the mineral salts obtained by said neutralization by the addition of steam, and separating-out the salts thus flocculated.

4,117,024

ETHYLATION OF AROMATIC COMPOUNDS

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 29, 1977, Ser. No. 820,051
Int. Cl.² C07C 3/52
U.S. Cl. 260—671 R 14 Claims

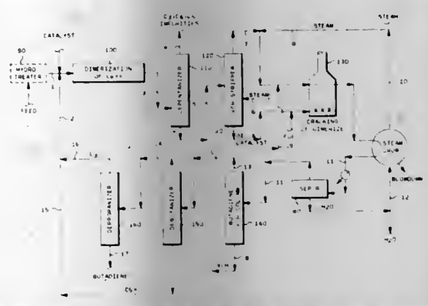
1. Process for the ethylation of mono alkyl benzenes wherein the alkyl substituent contains 1 or 2 carbon atoms which comprises contacting the same with ethylene in the presence of hydrogen under conversion conditions including a temperature between about 350° and about 500° C., a pressure greater than atmospheric but less than 400 psig, employing a hydrogen to ethylene mole ratio in the approximate range of 0.5 1 to 10 and in the presence of a catalyst comprising a crystalline aluminoslicate zeolite, which zeolite is characterized by an activity in terms of alpha value, of between about 2 and about 5000, a xylene sorption capacity greater than 1 gram/100 grams of zeolite and an ortho xylene sorption time for 30 percent of said capacity of greater than 10 minutes, said sorption capacity and sorption time being measured at 120° C. and a xylene pressure of 4.5 ± 0.8 mm. of mercury, said crystalline aluminosilicate zeolite further being characterized by a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, whereby aging of said catalyst during said ethylation is substantially reduced over comparable reaction carried out in the absence of hydrogen.

4,117,025

PROCESS FOR PURIFYING DIOLEFIN

Timothy C. Liebert, and William A. McClintock, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 20, 1977, Ser. No. 817,393
Int. Cl.² C07C 7/00
U.S. Cl. 260—681.5 7 Claims



1. A process for the separation of a diolefin from a mixture of hydrocarbons having boiling points close to that of the diolefin comprising subjecting the hydrocarbon mixture to conditions which will dimerize the diolefin, separating the effluent of the dimerization into a first heavy fraction comprising diolefin dimer and materials of higher boiling point than the diolefin dimer and a first light fraction comprising hydrocarbons having lower boiling points than the diolefin dimer, separating the first heavy fraction into a second heavy fraction comprising materials having higher boiling points than the diolefin dimer and a second light fraction comprising a diolefin dimer, passing the second light fraction along with steam through a cracking zone under conditions sufficient to de-dimerize the diolefin dimer, using at least a portion of the second heavy fraction as fuel for supplying heat for the cracking zone, cooling the effluent from the cracking zone to recover a water phase, separating the water phase from the hydrocarbon phase, converting at least a portion of the separated water into steam, directing the steam into and through the cracking zone, and subjecting at least a portion of the hydrocarbon phase to distillation so that a hydrocarbon composition is isolated which has a greater concentration of the diolefin than the original mixture of hydrocarbons.

4,117,026

SELECTIVE PRODUCTION OF PARA DIALKYL SUBSTITUTED BENZENES

Werner O. Haag, Lawrenceville, and David H. Olson, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 685,869, May 12, 1976, abandoned, and Ser. No. 685,872, May 12, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 841,073
Int. Cl.² C07C 3/52, 3/62
U.S. Cl. 260—671 R 25 Claims

1. A process for the selective production of para dialkyl substituted benzenes wherein the alkyl group contains from 1 to 4 carbon atoms which comprises contacting, under conversion conditions, a hydrocarbon precursor selected from the group consisting of mono alkyl-substituted benzenes having 1–4 carbon atoms in the alkyl substituent, C_2–C_{15} olefin and C_3–C_{60} paraffin or mixtures thereof including mixtures of benzene with at least one of the aforementioned olefins or paraffins with a catalyst characterized by a xylene sorption capacity greater than 1 gram/100 grams of zeolite and an ortho xylene sorption time for 30 percent of said capacity of greater than 10 minutes, said sorption capacity and sorption time being measured at 120° C. and a xylene pressure of 4.5 ± 0.8 mm. of mercury, said catalyst comprising a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12 and separating a para dialkyl substituted benzene from the resulting product.

4,117,027

THERMALLY STABLE HOT-MELT ADHESIVE COMPOSITION CONTAINING POLYCARBONATE-POLYDIMETHYLSILOXANE BLOCK COPOLYMER

Edward F. Johnson, Sunnyvale, and John S. Carlsen, Davis, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 560,615, Mar. 21, 1975, abandoned. This application Apr. 16, 1976, Ser. No. 677,528
Int. Cl.² C08L 43/04, 83/06, 83/10
U.S. Cl. 260—824 R 10 Claims

1. A thermally stable hot melt adhesive for bonding to substrates having low surface energies comprising a silicone block copolymer and a tackifier, said copolymer comprising polycarbonate and polysiloxane blocks and said tackifier selected from the group consisting of

a copolymer of vinyl toluene α-methyl styrene; hexabromobiphenyl; pentabromodiphenylether; and chlorinated terphenyls.

4,117,028

NON-CURING SILICONE PRESSURE SENSITIVE ADHESIVES

James R. Hahn, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 21, 1977, Ser. No. 789,398
Int. Cl.² C08L 43/04, 83/10
U.S. Cl. 260—825 4 Claims

1. A composition suitable for use as a pressure sensitive adhesive consisting essentially of

(1) from 30 to 70 percent by weight of a block copolymer consisting essentially of BAB or $(ABA)_n$ types where *n* is an integer of 2 or greater, A is a polydimethylsiloxane block having at least 15 siloxane units, B is a polystyrenic block having at least 15 styrenic units per block, the percent by weight B being from 5 to 25 percent of the total weight of A and B and

(2) from 30 to 70 percent by weight based on the weight of (1) and (2) of a benzene soluble copolymer of SiO_2 units and $Me_3SiO_{.5}$ units in which the mol ratio of $Me_3SiO_{.5}$ units to SiO_2 units is from about 0.6:1 to 0.9:1.

4,117,029

HALOGEN-CONTAINING RESIN COMPOSITION CONTAINING ORGANIC SUBSTANCE AS STABILIZER

Yoshikazu Kitano, Takatsuki, Japan, assignor to Nitto Kasei Co. Ltd., Osaka, Japan

Filed Oct. 1, 1974, Ser. No. 510,920
Claims priority, application Japan, Oct. 11, 1973, 48-115142; Oct. 19, 1973, 48-118363; Nov. 9, 1973, 48-126592
Int. Cl.² C08L 63/00
U.S. Cl. 260—836 10 Claims

1. A vinyl chloride-containing resin composition stable to heat and light consisting of (a) 100 parts by weight of vinyl chloride resin containing at least 87% by weight of vinyl chloride units, (b) from 0.1 to 10 parts by weight of a heterocyclic glycidyl compound containing a 5- or 6-membered heterocyclic ring with 2 or 3 nitrogen atoms to which at least 2 glycidyl groups are directly bonded, and optionally (c) from 0.01 to 10 parts by weight of a conventional stabilizer selected from one of the group consisting of organic nitrogen compounds, organic sulfur compounds, epoxy compounds, phenolic compounds, dicarboxylic acid monoesters, organotin compounds, metallic soap compounds, lead compounds, and polyhydric alcohols.

4,117,030

VINYL ESTER RESIN COMPOSITIONS CONTAINING DICYCLOPENTADIENE ALKENOATE

Donald Louis Nelson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

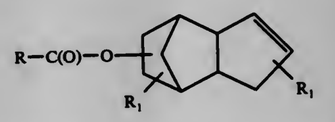
Filed Jul. 11, 1977, Ser. No. 814,358
Int. Cl.² C08L 63/00
U.S. Cl. 260—837 R 9 Claims

1. A thermosetting resin composition which comprises

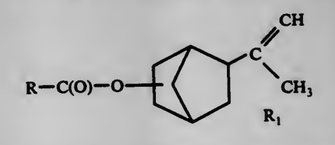
(A) about 80 to about 30% by weight of a vinyl ester resin having terminal unsaturation,

(B) about 20 to about 70% by weight of an unsaturated monomer mixture of a vinyl aromatic monomer and dicyclopentadiene alkenoate concentrate comprising

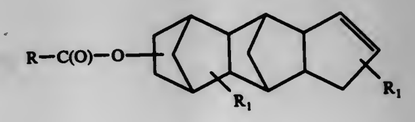
(a) about 50–100% by weight of compounds of the formula



(b) about 0–30% of compounds of the formula

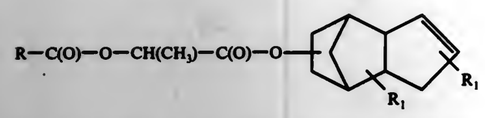


(c) about 0–2% of compounds of the formula



-continued
and

(d) about 0–2% of compounds of the formula



where R is a alkenyl group having 2–4 carbon atoms and R_1 is hydrogen or a methyl group wherein the range of dicyclopentadiene alkenoate concentrate in said mixture ranges from about 5 to about 90 weight percent.

4,117,031

CRUDE OIL DEMULSIFIERS

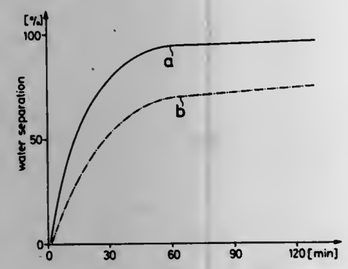
Johannes Maceaks, Burgkirchen, Alz; Manfred Fischer, Burgkirchen-Holzen, and Fritz Joachim Gohlke, Altotting, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1975, Ser. No. 615,462

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1974, 2445873

Int. Cl.² C08L 61/06

U.S. Cl. 260—838 **3 Claims**



1. A condensation product obtained by first preparing
a. an addition product of aliphatic aldehydes and phenol in a molar ratio of about 1 : 1 to 3 : 1, at temperatures in the range of from about 50° to 80° C, in the presence of an alkaline catalyst,
and separately therefrom
b. a block polymer, obtained from a polypropylene glycol having a molecular weight from about 1500 to 2500 by the addition of about 30 to 50% by weight of ethylene oxide in the presence of an alkaline catalyst,
and subsequently
c. condensing about 0.5 to 4 moles of a) with 1 mole of b), after previous neutralization, if necessary in the presence of inert solvents, at 80° to 150° C, and removing the reaction water formed.

4,117,032

WIRE COATING POWDER

James R. Kwiecinski, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 23, 1976, Ser. No. 726,036

Int. Cl.² C08L 77/00

U.S. Cl. 260—857 PE **20 Claims**

1. A coating prepared by hot melt-mixing, cooling, and grinding
(A) a coating powder composition which comprises a solventless, aromatic polyester-amide-imide which comprises the reaction product of
(1) an aromatic diamine;
(2) about 100 to about 110 mole % (of the stoichiometric amount needed to react with said diamine) of a trimellitic compound selected from the group consisting of trimellitic anhydride, trimellitic acid, trimellitic acid halide, and mixtures thereof; and
(3) about 35 to about 100 mole % in excess of the stoichiometric amount needed to react with said trimellitic compound of a polyol, admixed with
(B) an aromatic straight polyester in a weight ratio of about 9:1 to about 2:1, wherein said aromatic straight polyester is the reaction product of an aromatic straight polyester composition which comprises
(1) about 25 to about 45 mole % of a non-cyclic polyol having 2 to 3 hydroxyals;
(2) about 5 to about 15 mole % tris (2-hydroxy-ethyl-)isocyanurate;
(3) about 40 to about 60 mole % of an aromatic di-acid, di-ester, or di-functional mono-anhydride; and
(4) about 0.1 to about 0.5 mole % of a catalyst; and
(C) a reactive aromatic monomer, pre-polymer, or mixtures thereof in a weight ratio (to said polyester-amide-imide) of about 1:6 to about 1:9.

4,117,033

POLYOXYMETHYLENE/COPOLYETHER-ESTER BLENDS

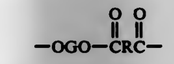
David Mark Gale, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 10, 1976, Ser. No. 749,220

Int. Cl.² C08L 59/02

U.S. Cl. 260—860 **19 Claims**

1. A thermoplastic molding composition comprising a mixture of:
(A) about 99.9–95 percent by weight of an oxymethylene polymer consisting essentially of about 95–100 percent by weight of oxymethylene units and 0 to about 5 percent by weight of oxyalkylene units of 2-8 adjacent carbon atoms in the main chain, said polymer having a number average molecular weight of about 1,000–500,000;
(B) about 0.1–5 percent by weight of a copolyether-ester having an inherent viscosity of about 0.05–0.8, as measured in m-cresol in 0.1 g/dl concentration at 30° C, said copolyether-ester consisting essentially of a multiplicity of recurring intralinear long-chain and short-chain ester units connected head-to-tail through ester linkages, said long-chain ester units having the formula:

(a) 

wherein G is a divalent radical remaining after removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having a carbon-to-oxygen mole ratio of about 2–4.3 and a molecular weight of about 400–6000; and
R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight less than about 300;
and said short-chain ester units having the formula:

(b) 

wherein D is a divalent radical remaining after removal of hydroxyl groups from a low molecular weight diol having a molecular weight less than about 250; and
R is as defined above;
with the proviso that the short-chain ester units constitute about 15–75 percent by weight and the long-chain ester units constitute about 85–25 percent by weight of the copolyether-ester.

4,117,034

AMORPHOUS POLYESTER GRAFT POLYMER ALLOYS

William Steffancin, Belpre, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 603,846, Aug. 11, 1975, abandoned. This application Feb. 18, 1977, Ser. No. 769,988

Int. Cl.² C08L 67/06

U.S. Cl. 260—873 **7 Claims**

1. A thermoplastic alloy composition comprising an amorphous copolyester derived from C_3- C_{10} alkylene glycols and phthalic acids and a synergistically effective amount of a graft polymer prepared by polymerizing from 10 to 60 parts by weight of a monomer mixture of at least two monomers selected from the group consisting of acrylic ester monomers, vinylaromatic monomers and acrylonitrile monomers in the presence of correspondingly from 90 to 40 parts by weight of a diene rubber whereby the thermoplastic alloy composition exhibits synergistically enhanced impact properties.

4,117,035

BLEND OF THERMOPLASTIC POLYMERS INCLUDING BLOCK RADIAL POLYMERS OF THE BUTADIENE-STYRENE TYPE

Edward Lawrence Hillier; Glen Henry Graham, and Warren Evan Eichelberger, all of Ashland, Ohio, assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 607,978, Aug. 26, 1975, Pat. No. 4,048,254. This application Apr. 18, 1977, Ser. No. 788,167

Int. Cl.² C08L 51/00, 53/00

U.S. Cl. 260—876 B **21 Claims**

1. An unvulcanized radial block copolymer mixture having a high degree of clarity and resealability consisting essentially of (a) from about 10–90% by weight of a butadiene-styrene radial block copolymer having a butadiene content the range of about 15–40% by weight, (b) from about 90–10% by weight of a butadiene-styrene radial block copolymer having a different butadiene-styrene content in the range of about 85–60% by weight and styrene content in the range of about 15–40% by weight and (c) about 5–75% by weight of said radial block copolymer mixture of clear polymeric methacrylate-styrene-butadiene copolymers and mixtures of said clear polymeric material, both said radial block copolymers having an average molecular weight of at least 150,000 as measured by inherent viscosity in toluene.

4,117,036

FUNCTIONAL HIGH POLYMERIC SUBSTANCES HAVING α,β-UNSATURATED CARBOXYLATE GROUP AND THE COMPOSITION THEREFROM

Toshio Honda, Akigawa; Itsuo Tanuma, Tokorozawa; Shoji Tanaka, Higashi-Yamato; Koichi Iwami, Kunitachi; Yukio Fukuura, Kodaira, and Yoshikatsu Suzuki, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 1, 1976, Ser. No. 746,556

Claims priority, application Japan, Dec. 1, 1975, 50-143767

Int. Cl.² C08F 8/20, 8/30, 8/36, 8/14

U.S. Cl. 260—878 R **18 Claims**

1. A high polymer substance having α,β-unsaturated carboxylate group and anaerobic curability and curability under ultraviolet irradiation obtained by reacting (A) a liquid high polymeric substance containing carbon-to-carbon unsaturated double bond or a solution of a high polymeric substance containing carbon-to-carbon unsaturated bond with (B) an α,β-unsaturated carboxylic acid or its derivatives selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxyethyl acrylate and 2-hydroxyethyl methacrylate in the presence of (C) at least one pseudo-halogen compound selected from the group consisting of alkylhypohalite, halogenated isocyanate, N, N-dihaloalkyl urethane, N,N-dichloroaryl sulfonamide and N-halocarboxylic acid imide, wherein the mole ratio of (A) to (B) is in the range of from 1:0.5 to 1:2.5.

4,117,037

BLOCK COPOLYMER COMPOSITIONS

Glenn R. Himes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 762,598, Jan. 26, 1977. This application Mar. 30, 1978, Ser. No. 892,010

Int. Cl.² C08F 297/04

U.S. Cl. 260—880 B **4 Claims**

1. A process for simultaneously forming a block copolymer and an anionic polyarene, which comprises:
(a) polymerizing a monoalkenyl arene in a solvent and in the presence of an organomonolithium initiator to form a living precursor polymer of the arene;
(b) adding less than the stoichiometric amount of terminating agent required to terminate all lithium ions wherein at least a portion of the remaining precursor arene polymer blocks contain living ions; therein forming terminated block polymers of anionic polyarenes;
(c) polymerizing a conjugated diene in the presence of the remaining living precursor arene blocks therein forming a living two block copolymer;
(d) contacting said living two block copolymer with a coupling agent therein forming a coupled block copolymer; and
(e) recovering the coupled block copolymer and the anionic polyarene block polymers.

4,117,038

STORABLE, RAPIDLY HARDENING EPOXY RESIN ADHESIVE

Hans Lehmann, Aesch, and Helmut Zondler, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,285

Claims priority, application Switzerland, Jan. 7, 1977, 172/77

Int. Cl.² C08L 63/00

U.S. Cl. 260—837 R **5 Claims**

1. A storable, rapidly hardening epoxy resin adhesive which comprises
a. a polyglycidyl compound containing on average more than one glycidyl group in the molecule and having a softening temperature between 40° and 90° C,
b. a salt of 1 mole of ethylenediamine, 1 mole of bisphenol A and 2 g of N,N-dimethyl-1,3-diaminopropane,
c. an ABS graft polymer and
d. a copolymer of ethylene, acrylic acid and acrylate having a melting range from 70° to 110° C,
said epoxy resin adhesive comprises, per 1 equivalent of glycidyl groups, 0.5 to 1.5 equivalents of hydrogen atoms bonded to nitrogen of ethylenediamine and of N,N-dimethyl-1,3-diaminopropane, and, per 100 parts of the polyglycidyl compound, 3 to 30 parts by weight of the ABS graft polymer and 3 to 20 parts by weight of the copolymer of ethylene, acrylic acid and acrylate, and is in the form of a fine heterogeneous powder.

4,117,039

LIGHT SENSITIVE MATERIALS

Allen Peter Gates, Knaresborough, and Allan Saunderson, Bradford, both of England, assignors to Vickers Limited, London, England

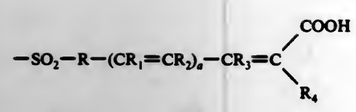
Continuation-in-part of Ser. No. 463,428, Apr. 23, 1974, abandoned. This application Dec. 1, 1975, Ser. No. 636,363

Claims priority, application United Kingdom, Apr. 26, 1973, 19994/73

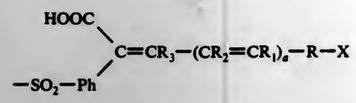
Int. Cl.² C08F 8/34

U.S. Cl. 260—875 **8 Claims**

1. A light-sensitive material comprising a polymer containing a plurality of primary and/or secondary amino groups and having attached to the nitrogen atoms of the amino groups groups of the formula



(I)



(II)

wherein R represents an aromatic radical; *a* is zero or unity; R_1, R_2 and R_3, which may be the same or different each represents a hydrogen atom, a halogen atom, a cyano group, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an aralkyl group or an aralkoxy group; R_4, when *a* is zero, is an alkoxy carbonyl group, a carboxyl group, or a phenyl group substituted with a deactivating group; R_4 when *a* is unity, an alkyl group, an alkoxy carbonyl group, a carboxyl group, a cyano group, a phenyl group substituted with a deactivating group, or a hydrogen atom; Ph is a phenyl group; and X is a deactivating group.

4,117,040

THERMOPLASTIC RESIN BLENDS CONTAINING POLYINDENE OR COUMARONE-INDENE RESIN

George S. Li, Aurora, and Irving Rosen, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 644,122, Dec. 24, 1975, Pat. No. 4,066,717. This application Jul. 18, 1977, Ser. No. 816,245

Int. Cl.² C08L *27/06*

U.S. Cl. 260—899 **1 Claim**

1. A composition having improved physical properties comprising a blend of (A) 100 parts by weight of polyvinyl chloride and (B) from 1 to 50 parts by weight of polyindene resin.

4,117,041

FLAME RETARDANT POLYMERIC COMPOSITIONS

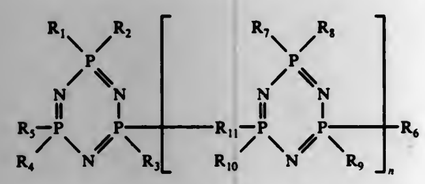
Randolph Joseph Guschl, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 696,278, Jun. 15, 1976. This application Sep. 30, 1977, Ser. No. 838,066

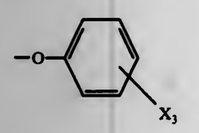
Int. Cl.² C07F *9/15*; C08K *5/53*

U.S. Cl. 260—927 N **6 Claims**

1. A compound of the formula



wherein each of R_1 to R_{10} is a substituent of the formula



where X_3 is hydrogen, bromine and chlorine, and

R_{11} is a linking group derived from bisphenol A, resorcinol, hydroquinone, bisphenol S and p,p'-dihydroxybiphenyl, and

n is the number 1 or greater.

4,117,042

AROMATIC POLYPHENYL PHOSPHONATES

Paul Couchoud, Dardilly, France, assignor to Rhone-Poulenc-Textile, Paris, France

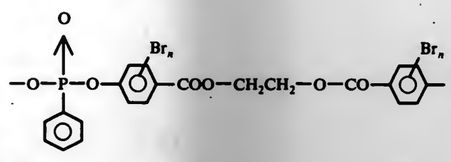
Filed Apr. 26, 1977, Ser. No. 790,997

Claims priority, application France, May 5, 1976, 76 13664

Int. Cl.² C07F *9/40*

U.S. Cl. 260—930 **1 Claim**

1. An aromatic polyphenylphosphonate consisting of recurring units of the formula:



(II)

in which n equals 0 or 2.

4,117,043

PROCESS FOR THE MANUFACTURE OF N-(BETA-DIORGANODITHIOPHOSPHORYLETHYL) ARYL AND ALKYL SULFONAMIDES

Llewellyn W. Fancher, Orinda, and Jeffrey D. Robbins, Berkeley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 26, 1977, Ser. No. 836,322

Int. Cl.² C07F *9/165, 9/32, 9/40*

U.S. Cl. 260—938 **15 Claims**

1. A process for the manufacture of a compound having the formula



in which R^1 is selected from the group consisting of C_1–C_{10} alkyl, halo-substituted C_1–C_{10} alkyl, phenyl, halo-substituted phenyl, C_1–C_5 alkyl-substituted phenyl, nitro-substituted phenyl, and naphthyl; and R^2 and R^3 are independently selected from the group consisting of C_1–C_{10} alkyl and C_1–C_{10} alkoxy; which comprises

(a) reacting 2-aminoethyl hydrogen sulfate with an aqueous solution of a compound having the formula M^1OH, in which M^1 is selected from the group consisting of lithium, sodium, potassium, ammonium, and tri-substituted ammonium wherein the substituents are independently C_1–C_{10} alkyl, at a M^1OH: (2-aminoethyl hydrogen sulfate) mole ratio of less than or equal to approximately 1.0;

(b) reacting the product of step (a) with approximately an equimolar amount of a compound having the formula R^1SO_2X, in which X is selected from the group consisting of chloride, bromide, or iodide;

(c) reacting the product of step (b) with a further quantity of an aqueous solution of a compound having the formula M^1OH such that the total molar quantity of M^1OH used in this step and step (a) is approximately twice the molar quantity of 2-aminoethyl hydrogen sulfate used in step (a) and the pH is maintained below about 12.5; and

(d) reacting the product of step (c) with a compound having the formula



in which M^2 is selected from the group consisting of lithium, sodium, potassium, ammonium, and tri-substituted ammonium wherein the substituents are independently C_1–C_{10} alkyl, at a pH of at least about 9.5.

4,117,044

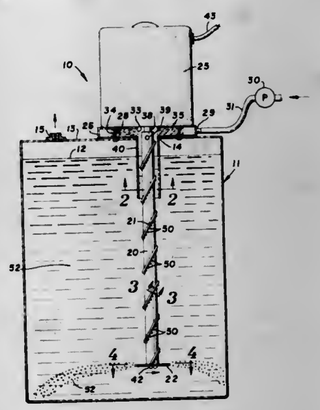
AERATOR

Stanley J. Durda, 1845 Meadowview Rd., Bloomington, Minn. 55420, and Walter D. Gustafson, 6800 Park Ave. South, Minneapolis, Minn. 55423

Continuation of Ser. No. 668,501, Mar. 19, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,547

Int. Cl.² B01F *3/04*

U.S. Cl. 261—30 **14 Claims**



1. An aerator comprising,

a cylindrical member,

a rib member extending around a peripheral surface of said cylindrical member in a number of turns and extending progressively downwardly as it successively passes around the periphery of said cylindrical member, said rib member having a lower wall of a configuration retaining gas bubbles on the under side thereof and said rib member having a radial depth of less than 50 percent of the diameter of said cylindrical member,

means for supporting said aerator with respect to a body of liquid having gas thereabove in such a position vertically that a portion of said rib member extends above the level of the liquid into the gas above the liquid and a substantial portion extends downwardly into direct contact with the liquid with the longitudinal axis of said rib member extending substantially vertically,

a relatively thin diffuser secured adjacent the lower end of said rib and rotatable therewith, said diffuser having an axis extending substantially perpendicular to said rib member axis, and being formed with substantially flat opposed major surfaces so as to eliminate virtually all liquid propelling action when rotated,

and means for rotating said diffuser and said rib member about its longitudinal axis in such a direction that gas bubbles trapped beneath the lower wall of said rib by reason of the portion of the rib extending above the liquid into the gas above move downwardly until they engage the diffuser and are broken up into fine bubbles of a size remaining dispersed in the liquid, said rib member being free of any imperforate enclosure closely surrounding the same for the major portion of its longitudinal extent so that the absence of such an enclosure and the relatively small radial depth of said ribs renders the rotation of said rib member virtually ineffective to cause movement of the liquid.

4,117,045

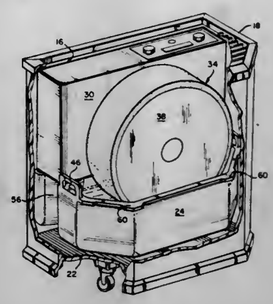
HUMIDIFIER WITH REMOVABLE WATER RECEPTACLE

Fred G. Henke, West Bend, and Carl R. Spoeth, Jr., Kewaskum, both of Wis., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Sep. 23, 1976, Ser. No. 725,805

Int. Cl.² B01F *3/04*

U.S. Cl. 261—30 **6 Claims**



1. A humidifier having an outer housing enclosing a removable power chassis and a removable rotating open-ended drum having a ribbed periphery covered by a peripheral water absorbent material said power chassis containing a power source connected to a fan by drive means, said drum located adjacent said fan whereby air is directed by the fan into said drum and out the periphery thereof through said absorbent material, said housing including interior projection means extending inwardly and a (removable) water reservoir removable from said housing and supported thereby having upstanding sidewalls defining a top opening dimensioned for insertion of a portion of said drum, said sidewalls being indented to cooperatingly engage the projection means for locating the reservoir at a secure predetermined position within the housing beneath said drum, and said sidewalls further including lifting means for removing said reservoir through an opening at the top of said housing.

4,117,046

VARIABLE-VENTURI CARBURETOR

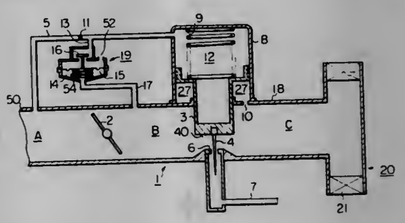
Hidetaka Nohira, Mishima, and Masaaki Tanaca, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Oct. 28, 1977, Ser. No. 846,460

Claims priority, application Japan, Jul. 7, 1977, 52/80399

Int. Cl.² F02M *9/06*

U.S. Cl. 261—44 C **5 Claims**



1. A carburetor of an internal combustion engine comprising:

a means for varying the sectional area of the intake air passage of the engine;

a pressure source for actuating said varying means;

a working chamber into which pressure is introduced from said pressure source so as to actuate said varying means;

a pipe which connects said pressure source and said working chamber, and;

a diaphragm type pressure control valve, the inlet of said valve being communicated with the atmosphere, the outlet of said valve being connected to said pipe, and the diaphragm chamber of said valve being communicated with the intake pipe of the engine at a portion between the throttle valve and said varying means.

4,117,047

DEVICE FOR MIXING GASES AND LIQUIDS

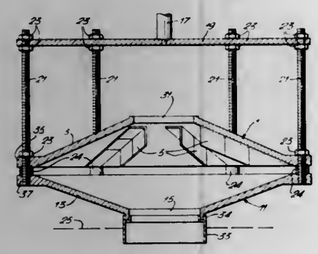
Robert Stephan Hannecart, 2, avenue J.Van Boendaele, 1980 Tervuren, Belgium

Continuation of Ser. No. 654,349, Feb. 2, 1976, abandoned. This application Oct. 21, 1977, Ser. No. 844,406

Claims priority, application Luxembourg, Feb. 3, 1975, 71782

Int. Cl.² B01F *3/04*

U.S. Cl. 261—91 **14 Claims**



1. A device for mixing a liquid with a gas having a liquid level defined therebetween, comprising an upper substantially horizontally extending plate having an upper face, a lower face and a periphery; impeller blades mounted on said upper plate lower face; a central gas intake opening provided in said upper plate; said blades being adapted to suck in gas from said upper plate gas intake opening and to impel it towards the periphery of said upper plate; means for rotating said upper plate; a lower substantially horizontally extending plate having a central liquid sucking aperture and a periphery; said lower plate being coaxial with said upper plate; means for fixedly connecting said upper plate and said lower plate at a distance one from the other, said upper and lower plates thus rotating in unison, a peripheral gap being thus defined between the periphery of said upper and lower plates, said impeller blades being spaced above said gap; and means for supporting said upper and lower plates with said gap being maintained above the liquid level.

4,117,048

APPARATUS FOR INTRODUCING GAS INTO A LIQUID

Josef Stockner, Baierbrunn, and Alfred Wildmoser, Haar b. München, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

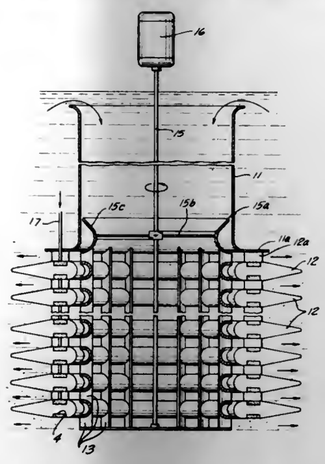
Filed Jul. 2, 1976, Ser. No. 702,052

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1975, 2530050

Int. Cl.² C02D *1/00*; C02C *5/04*

U.S. Cl. 261—93 **2 Claims**

1. A device for dispersing a gas in a liquid in the aeration of sewage in a clarifier tank, comprising a plurality of aerodynamically spaced ribs defining between them venturi passages, means for inducing a flow of liquid through said passages, said passages progressively converging from an upstream side to a constricted portion and thereafter diverging to a downstream side of the respective passage, and gas-permeable means along at least one surface of each of said ribs bounding a respective one of said passages in the region of the respective constriction for feeding gas to the liquid in a direction substantially perpendicular to the direction of liquid flow through the respective passage, a vertical duct in said tank open at its upper end and formed at its lower end with said ribs, said ribs being axially spaced horizontal rings, said means for displacing said liquid through said passages including an axial intake, radial outflow



pump having a rotor surrounded by said rings for displacing liquid between them.

4,117,049

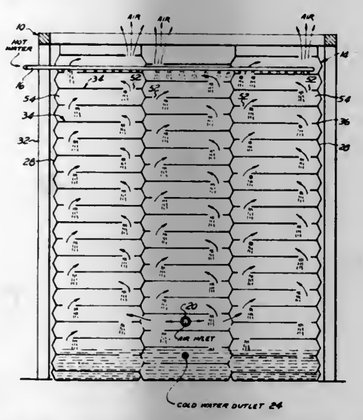
FLEXIBLE MULTI-COLUMNAR FLUID TREATMENT CELLULAR APPARATUS

Arnold J. Carrico, 930 Pinto Ct., Walnut Creek, Calif. 94596

Filed Mar. 14, 1977, Ser. No. 777,567

Int. Cl.² B01F *3/04*

U.S. Cl. 261—111 **6 Claims**



1. A flexible columnar cellular fluid treatment apparatus, comprising

a flexible collapsible upright structure adapted to be suspended from a support and including multiple generally horizontal substantially flat parallel partition walls of non-self-sustaining flexible material disposed in vertically-spaced generally-parallel relationship and also including generally-vertical accordion-folding zigzag-bent side walls of non-self-sustaining flexible material surrounding and engaging the edge portions of said partition walls in fluid-tight relationship therewith,

said partition walls and said side walls collectively defining a multiplicity of tiers of fluid treatment cells having laterally-spaced upper and lower fluid ports through their respective upper and lower partition walls,

said ports being disposed near the opposite ends of their respective cells in alternating succession defining a zigzag but generally-vertical fluid flow path through said cells of said structure,

and means for respectively admitting and discharging a treating fluid and a treated fluid at vertically-spaced locations in said structure for opposite directions of fluid flow therethrough.

4,117,050

METHOD FOR HEATING AND BLOW MOLDING PLASTER PARISONS

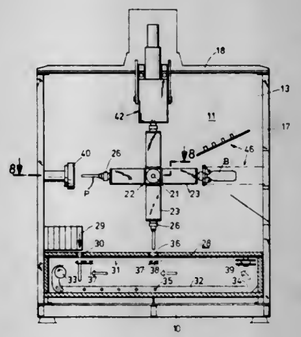
Adolf Appel, Egestorf-Nordheide; Claus Horwege, Hamburg; Wolfgang Reymann, Hamburg, and Otto Rosenkranz, Hamburg, all of Germany, assignors to Gildemeister Corpoplast GmbH, Hamburg, Germany

Filed Oct. 1, 1976, Ser. No. 728,828

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1975, 2545134

Int. Cl.² B29C *17/07*

U.S. Cl. 264—25 **5 Claims**



1. In a method of blow molding an article of a thermoplastic material from a blowable parison, the steps of:

(1) heating the parison uniformly to a temperature less than that at which the parison can be blow molded,

(2) transferring the uniformly heated parison of step (1) into heat transfer proximity to an infra red radiation source,

(3) displacing the parison axially at different speeds past said source to heat the parison to substantially different extents along its axial dimension by radiation from said source, with all blowable portions of the parison being at final blow molding temperature, and

(4) blow molding the parison while at said final blow molding temperature.

4,117,051

CARBON ARTICLE MANUFACTURING METHOD

Toshikatsu Ishikawa, Tokyo; Junichi Tanaka, Yokohama; Yoichiro Tominaga, Sagamihara; Kunio Matsubara, Yokohawa; Yoshihiko Kitazume, Yamanashi, and Tokuji Hayase, Fujisawa, all of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

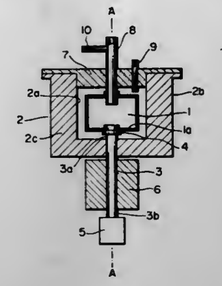
Filed May 26, 1976, Ser. No. 690,302

Claims priority, application Japan, May 30, 1975, 50-64950

Int. Cl.² C01B *31/02, 31/04*

U.S. Cl. 264—29.1 **9 Claims**

1. A carbon article manufacturing method comprising the steps of revolving a rotary hollow member having a carbonaceous material containing a coking material therein at a rotational speed sufficient to mold said material under pressure in the range of 10 to 500 kg/cm² by centrifugal force, and, while revolving the member, gradually baking said member by raising its temperature from room temperature to higher than 400° C., said rotary hollow member having a nonoxidizing atmosphere therein whereby molding and baking said material is simultaneously carried out.



4,117,052

METHOD AND ARRANGEMENT FOR USE IN LINING ARTICLES, PARTICULARLY MELTING OVEN

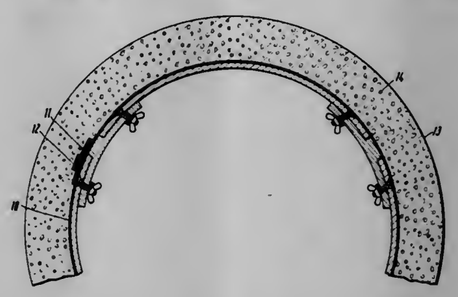
Rudolf Florian, Blomberg, Fed. Rep. of Germany, assignor to Dörentruper Sand- und Thonwerker G.m.b.H., Dorentrup, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 559,865, Mar. 19, 1975, Pat. No. 4,049,759. This application Mar. 28, 1977, Ser. No. 782,307

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612912

Int. Cl.² F27D *1/16*

U.S. Cl. 264—30 **7 Claims**



1. A method of lining an article, particularly a melting oven, comprising the steps of providing a mold member with a surface having a configuration substantially corresponding to a face of the article which is to be lined; arranging at said surface a plurality of circumferentially adjacent flexible plate-like elements of a refractory material and connecting said elements with one another so as to form a circumferentially complete refractory member releasably surrounding said mold member; arranging said mold member surrounded by said refractory member, and the article relative to one another so that a space is provided intermediate said refractory member and said face of the article; admitting said lining substance into said space intermediate said refractory member and said face of the article; removing said mold member from said refractory member intact and such a manner that said refractory member remains as a support for said lining substance; rigidifying said lining substance located in said space intermediate said refractory member and said face of the article including sintering of said lining substance after removing said mold member solely by admitting liquid metal into the interior of said refractory member remaining in the melting oven and supporting said lining substance while the melting oven is cold and newly lined so that during sintering said liquid metal supplies heat to and

exerts pressure on said lining substance; and using synthetic mica bonded by synthetic resin material, as the refractory material of said flexible plate-like elements, whereby the synthetic mica bonded by synthetic resin material due to its inherent low heat transmission inherently prevents said lining substance from being subjected to an instantaneous temperature shock and thereby inherently prevents the temperature of said lining substance from increasing to the point causing substantial expansion of the latter until at least after the interior of said refractory member has been filled with said liquid metal to a height sufficient for the metallostatic pressure of the liquid metal to resist such expansion.

4,117,053

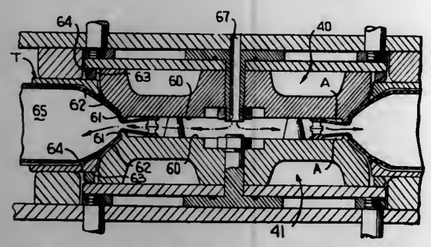
METHOD OF RETREADING A TIRE UTILIZING AN ANNULAR SEALING GAP

Kenneth T. MacMillen, 4992 Wesleyan Woods Dr., Macon, Ga. 31204

Division of Ser. No. 391,816, Aug. 27, 1973, Pat. No. 3,997,284. This application Nov. 5, 1975, Ser. No. 628,902

Int. Cl.² B29H *5/04*

U.S. Cl. 264—36 **5 Claims**



1. In a method of retreading a tire wherein the tire is opposing relatively movable matrices in conjunction with an annular bladder having a main annular portion housed within the tire and first and second innermost peripheral marginal portions in overlying relationship upon respective first and second relatively movable opposing head aligner wheels, the matrices are closed, and the bladder is inflated to urge the tire into intimate conformity with the matrices, the improvement comprising the steps of creating prior to closing the matrices a first hermetically sealed annular gap between a terminal edge of the first innermost peripheral marginal portion, an outboard portion of the first innermost peripheral marginal portion and the first bead aligner wheel and a second hermetically sealed annular gap between a terminal edge of the second innermost peripheral marginal portion, an outboard portion of the second innermost peripheral marginal portion and the second bead aligner wheel, to hold the innermost marginal portions against the bead aligner wheels.

4,117,054

METHOD OF COMPENSATING FOR THE ROLL DEFLECTION IN A CALENDER

Esko Salo, Jakobstad, Finland, assignor to Oy Wilk & Höglund Ab, Finland

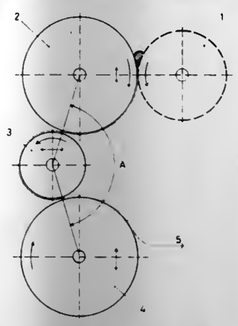
Filed Mar. 23, 1977, Ser. No. 780,425

Claims priority, application Finland, Mar. 30, 1976, 760841

Int. Cl.² B29C *15/00*; B29D *9/02, 7/14*

U.S. Cl. 264—40.1 **10 Claims**

1. A method for adjusting spacing, across the full width of a calendar stack, between at least rolls defining the last nip of a calendar stack having at least 3 rolls subjected to a common work-pressing load, less than a predetermined maximum value, axes of at least two of said rolls lying in a common plane, said



method comprising: crowning at least one roll of said three rolls to correspond to said maximum work load for said stack; for work loads less than said maximum, correcting for excess crowning of said one roll, by displacing at least one of said rolls forming said nip relative said common plane in such a way as to initially change spacing between the crowned roll and a remaining two of said at least three rolls while maintaining parallel the axes of said at least three rolls, and moving said two rolls toward each other in said plane to compensate for said displacement of said one roll.

4,117,055

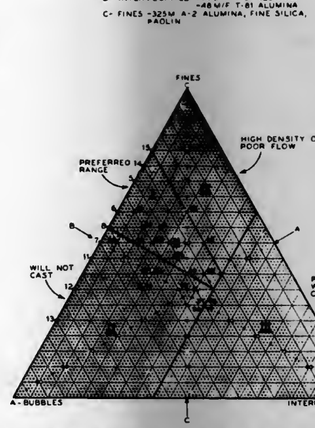
LOW MASS, HIGH ALUMINA-SILICA REFRACTORIES

Walter Howard Alexanderson, Augusta, Ga., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Sep. 20, 1977, Ser. No. 835,073

Int. Cl.² B28B *1/08*; C04B *35/10, 35/14*

U.S. Cl. 264—56 **3 Claims**



1. A low mass, high alumina-silica refractory mix which upon the addition of a non-phosphate polyelectrolyte deflocculant and from about 11.8 to 16 percent by weight of water is capable of forming a thixotropic casting slip suitable for the production of kiln furniture by vibration casting in a plaster mold, said mix consisting essentially of from 20 percent to 45 percent −4M/F alumina bubbles, from 0 percent to 40 percent −14M/F and −48M/F tabular sintered alumina, and from 35 percent to 80 percent −325M calcined alumina, −200M fine crystalline silica and kaolin, of which 10 percent is silica and 7 percent is kaolin, all percentages expressed on a weight basis.

3. A method of producing a low mass, high alumina-silica product suitable for use as kiln furniture comprising blending a dry mixture consisting essentially of from 20 percent to 45 percent −4M/F alumina bubbles, from 0 percent to 40 percent −14M/F and −48M/F tabular sintered alumina, and from 35

percent to 80 percent −325M calcined alumina, −200M fine crystalline kaolin, of which 10 percent is silica and 7 percent is kaolin, adding a mixture of non-phosphate polyelectrolyte deflocculant and water to the dry mixture, the water being about 11.8 to 16 percent by weight of the dry mixture, and mixing together, placing the resultant thixotropic combination of materials on a plaster mold, vibrating the resultant combination and the plaster mold causing the materials to flow into the mold, stopping the vibration and permitting the materials to become firm, removing the casting from the mold and air-drying, heating and firing the casting.

4,117,056

PRODUCTION OF BETA-ALUMINA CERAMIC ARTICLES

Ivor Wynn Jones, Chester, England, assignor to Chloride Silent Power Limited, London, England

Filed Mar. 9, 1977, Ser. No. 776,024

Claims priority, application United Kingdom, Feb. 7, 1977, 5007/77

Int. Cl.² C04B *35/10*

U.S. Cl. 264—57 **11 Claims**

1. A method of manufacturing a beta-alumina ceramic article comprising the steps of:

(a) compacting finely-divided particles of beta-alumina or a mixture of finely-divided powdered materials which react together, on heating, to form beta-alumina so as to produce a homogeneous green compact, and sintering the green compact to form an impervious polycrystalline ceramic;

(b) isostatically pressurising the sintered body at a temperature above the elastic/plastic transformation and between 1200° C. and 1550° C. at a pressure above 5000 psi;

(c) cooling said body under pressure to a temperature below the elastic/plastic transformation and below 1200° C.; and

(d) then releasing the pressure.

4,117,057

SILICON CARBIDE SINTERED MOLDINGS AND A METHOD FOR PRODUCING THE SAME

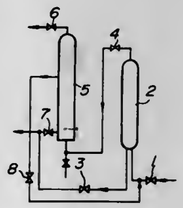
Seishi Yajima; Josaburo Hayashi, and Mamoru Omori, all of Oharai, Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Sendai, Japan

Filed Jun. 21, 1976, Ser. No. 698,453

Claims priority, application Japan, Jun. 25, 1975, 50/77567; Sep. 27, 1975, 50/115965

Int. Cl.² C04B *35/26*

U.S. Cl. 264—63 **15 Claims**



1. A method for producing SiC sintered moldings, which comprises mixing SiC powders with 0.3–30% by weight of a binder consisting essentially of organosilicon high molecular weight compounds having silicon and carbon as the main skeleton components, which have been produced through polycondensation reaction of polysilane compounds having Si—Si bond, molding the resulting mixture into a desired shape and heating the molding at a temperature of not higher than 2,200° C. under a non-oxidizing atmosphere to form SiC sintered molding.

4,117,058

METHOD OF MAKING BORON CONTAINING STRONTIUM FERRITE

Adolph L. Micheli, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1976, Ser. No. 747,069

Int. Cl.² C04B *35/26, 35/64*

U.S. Cl. 264—65 **3 Claims**

1. An energy-saving method of making a boron-containing strontium ferrite having a magnetoplumbite crystal structure and an empirical formula of about $SrO \cdot 6Fe_2O_3$, comprising the steps of:

forming a mixture of water and ferro-boron, a water-insoluble source of strontium oxide, and magnetite in substantially stoichiometric proportions corresponding to said boron-containing strontium ferrite, said ferro-boron providing a boron content equivalent to about 0.3 to 1.5% by weight boric acid;

concurrently grinding and blending said mixture to form a homogeneous slurry;

mechanically separating at least 50% of said water from said mixture to yield a uniformly blended residue of strontium ferrite reactants that retains stoichiometry, boron content, and uniform boron distribution of said mixture;

heating said residue in an oxidizing atmosphere to remove the balance of said water and to calcine said reactants;

comminuting the calcined residue;

compressing at least a portion of the calcined and comminuted residue to form a briquette; and

sintering the briquette to form a boron-containing strontium ferrite magnet.

4,117,059

METHOD AND APPARATUS FOR THE MANUFACTURE OF CONCRETE PRODUCTS

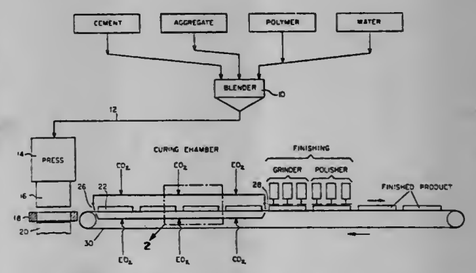
John A. Murray, Norristown, Pa., assignor to U.S. Terrazzo Panels, Inc., Bryn Mawr, Pa.

Division of Ser. No. 468,566, May 9, 1974, abandoned, which is a continuation of Ser. No. 317,060, Dec. 20, 1972, abandoned, which is a division of Ser. No. 106,364, Jan. 14, 1971, abandoned. This application May 19, 1976, Ser. No. 687,922

The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.² C04B *15/14*

U.S. Cl. 264—82 **13 Claims**



1. The method of manufacturing concrete products of a given shape comprising the steps of blending together about 60–75% by weight of an aggregate, about 20–25% by weight of hydraulic cement, about 1–2% by weight of a vinyl acetate-dibutyl maleate copolymer, and about 5–10% by weight of water; compressing said mixture into said given shape in a mold with sufficient pressure to maintain the mixture in said given shape when the mold is removed; curing the compressed shape in an atmosphere consisting essentially of carbon dioxide gas while simultaneously feeding said carbon dioxide gas so as to cause an exothermic temperature rise in the mixture of at least 20°–40° in less than about 5 minutes.

9. The method of manufacturing concrete products compris-

ing the steps of blending together about 60–75% by weight of an aggregate, about 20–25% by weight of hydraulic cement, about 1–2% by weight of a vinyl acetate-dibutyl maleate copolymer, and about 5–10% by weight of water; compressing said mixture into a shape of predetermined height, continuously conveying said compressed shape to and through a chamber, and curing the compressed shape in said chamber with carbon dioxide gas while simultaneously feeding said carbon dioxide gas into said chamber, and maintaining the height of said chamber at about 1½–4 times the height of said shape.

4,117,060

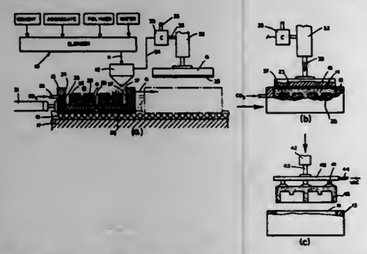
METHOD AND APPARATUS FOR THE MANUFACTURE OF CONCRETE AND LIKE PRODUCTS

John A. Murray, Norristown, Pa., assignor to U.S. Terrazzo Panels, Inc., Bryn Mawr, Pa.

Division of Ser. No. 388,558, Aug. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 336,362, Feb. 27, 1973, abandoned, and a continuation-in-part of Ser. No. 106,364, Jan. 14, 1971, abandoned. This application May 20, 1976, Ser. No. 688,323

Int. Cl.² C04B *15/14*

U.S. Cl. 264—82 **19 Claims**



1. A method of rapidly manufacturing concrete or like products having an advanced state of cure, comprising the steps of blending together of calcareous cementitious binder, aggregate, vinyl acetate-dibutyl maleate copolymer and water in effective quantities, depositing the starting mix into a mold cavity having inner surface portions that are substantially non-metallic, delivering carbon dioxide gas to the mold cavity in sufficient amounts to create a substantial essentially complete carbon dioxide environment in the cavity, molding the mixture to have a predetermined shape determined by the cavity configuration by compressing the carbon dioxide gas and the mixture in the mold cavity under the pressure exerted upon compacting the mix by bringing a press and mold together to seal the gas with the mix before the mix undergoes a temperature rise of about 20° F., and continuing the pressure in the mold cavity until there is a further exothermic temperature rise in the shape and until the shape has reached a self-sustaining configuration in an advanced state of cure, and removing the shape from the mold.

4. A method of rapidly manufacturing concrete or like products having an advanced state of cure comprising the steps of blending together a calcareous cementitious binder, an aggregate, vinyl acetate-dibutyl maleate copolymer and water to form a mix, depositing the starting mix into a mold cavity having inner surfaces that are substantially non-metallic, delivering carbon dioxide gas to the mold cavity in sufficient amounts to create a carbon dioxide environment in the cavity, molding the mixture to a predetermined shape determined by the cavity configuration, whereby the temperature of the mix rises, sealing the gas within the mix before the mix undergoes a temperature rise of about 20° F., continuing the pressure in the mold cavity until there is a further exothermic temperature rise in the shape and until the shape has reached a self-sustaining configuration in an advanced state of cure, and removing the shape from the mold.

4,117,061

METHOD OF MAKING A LAMINATED CONTAINER CONSISTING MAINLY OF THERMOPLASTIC MATERIAL

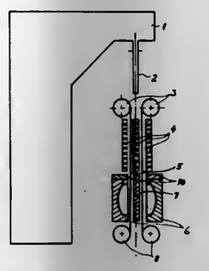
Torben Jørgensø, Vester Alle 5, Strandhuse, DK-6000 Kolding, Denmark

Filed Oct. 26, 1976, Ser. No. 735,202

Claims priority, application Denmark, Oct. 31, 1975, 4928/75

Int. Cl.² B29C *17/04, 17/07*

U.S. Cl. 264—89 **6 Claims**



1. A method of making a layered container consisting mainly of thermoplastic material comprising the steps of

feeding foil material along each side of an intermediary plate forming part of a vacuum mould having two mould halves,

closing each of the two mould halves of said vacuum mould upon the intermediary plate, thereby clamping foil material between each mould half and a corresponding side of the intermediary plate,

cutting blanks from said clamped foil material substantially along the peripheries of said mould halves in contact with said foil material,

applying a vacuum between each blank and the corresponding mould wall so as to shape the blanks in the respective mould halves into outer container elements lying closely against the walls of the mould halves,

removing the intermediary plate from between the mould halves,

closing the mould halves directly upon one another,

forming by blow moulding an inner container element within the mould with the already moulded outer container elements present therein in close contact with the mould wall so as to provide a container composed of said inner and outer elements being in intimate contact with one another, and

removing the container thus formed from the mould.

4,117,062

METHOD FOR MAKING A PLASTIC CONTAINER ADAPTED TO BE GRASPED BY STEEL DRUM CHIME-HANDLING DEVICES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 17, 1977, Ser. No. 807,704

Int. Cl.² B29C *17/07*

U.S. Cl. 264—94 **2 Claims**

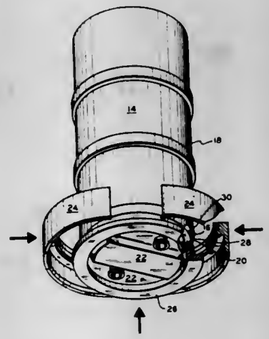
1. A method of forming a plastic container having a reinforced raised circular rim which has at its top a circumferential outwardly radially thickened portion defining a downwardly facing circumferential ledge adapted to be grasped by steel drum chime-handling devices which comprises

blow molding a generally tubular plastic parison in a blow mold to produce a preform having a bottom end, a top end and a generally circumferential sidewall between said ends, wherein a rounded peripheral shoulder joins said top and said sidewall which first flares outwardly in the form of the frustum of a cone and subsequently flares inwardly in the form of a first inverted frustum of a cone, said frustum and said first inverted frustum being connected by a circumferential outwardly radially extending rib forming a downwardly facing circumferential ledge meeting the top of said first inverted frustum,

and during and immediately after said blow molding differentially cooling the outer surface of the wall of said preform to form a relatively cool and rigid outer skin while maintaining the material between the wall surfaces of said container at a deformable temperature but maintaining the outer skin and interior of the wall of said shoulder and of said rib at a relatively warmer and more easily deformable temperature,

removing said preform from said mold cavity, and without further blow holding reshaping said preform by the steps of

(1) closing a split ring forming assembly around a portion of said preform to enclose and fit said first inverted frustum and the bottom and sidewall of said rib,



(2) thereafter pressing a circumferential shaping ring against said top end in the direction of said bottom end in an area extending radially inwardly from the juncture of said top end and said shoulder,

(3) continuing said pressing to reshape said preform by bending said preform (i) at the juncture of said frustum and said rib and (ii) at said rounded shoulder until (a) the curve of said rounded shoulder becomes reversed, (b) said frustum is repositioned inside said first inverted frustum and becomes itself a second inverted frustum parallel to and pressed against said first inverted frustum and (c) the top of said rib becomes the peripheral top of the thus reshaped preform,

said reshaping steps (1), (2) and (3) forming a container with an upstanding ring of double-walled thickness having said ledge near its top adapted to be grasped by steel drum chime-handling devices,

and cooling the resulting container to a rigid condition.

4,117,063

PROCESSING A GRAFT POLYMER OR ELASTOMER

Hermann Uwe Voigt; Martin Völker, both of Langenhagen, and Hans Peter Stehmann, Fuhrberg, all of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte AG., Hanover, Fed. Rep of Germany

Filed Dec. 22, 1975, Ser. No. 642,764

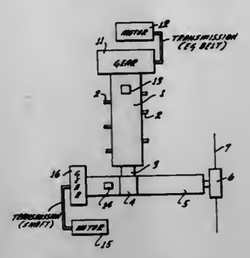
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1974, 2458776

Int. Cl.² C08F *29/12*

U.S. Cl. 264—102 **25 Claims**

1. In a method of continuously making a product of a thermoplastic or elastomeric material which is to cross-link subsequent to shaping the material into said product, wherein the thermoplastic or elastomeric base material and silane or a silane component are provided at a metered relation to the base material for purposes of grafting and ultimate cross-linking; and

the thus provided thermoplastic or elastomeric base material is mixed with the silane or a silane compound at a ratio to permit grafting of the silane or silane compound, resulting in a mixture; the improvement comprising an uninterrupted sequence of the following steps:



mechanically working the resulting mixture at a temperature in excess of 140° C to homogenize the melting mixture while obtaining said grafting;

degassing the still warm, worked, grafted mixture following immediately the working step as flowing from the working; and

immediately after degassing forming the still flowing and degassed mixture into the said product, the product cross-linking subsequently in the presence of moisture.

4,117,064

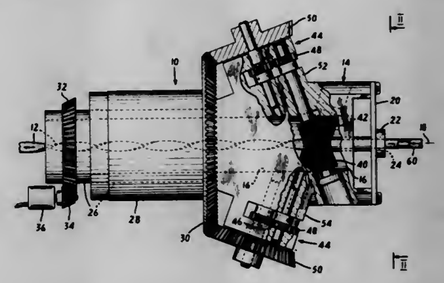
METHOD FOR TWISTING STRIP MATERIAL

George L. Mathe, Bon Air, and Jerome S. Osmalov, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 492,196, Jul. 26, 1974, abandoned. This application May 5, 1976, Ser. No. 683,393

Int. Cl.² B29F *3/10*

U.S. Cl. 264—103 **2 Claims**



1. A method for shaping a continuous ribbon of thermoplastic stock to impart a helical twist thereto which comprises advancing a continuous thermoplastic tube along a fixed, straight longitudinally directed axis and through the nip between cooperating rotating surfaces of oppositely biased rotating members rotating about fixed axes and disposed in crossing array relative to said advance course to present common strip engaging lengths on said surfaces thereby to flatten said tubing as a continuous ribbon and impart a helical twist to said ribbon without imparting any bodily rotation effect to the ribbon by concurrently bodily rotating said members about the fixed axis of advance of said ribbon to compensate for any rotational effect produced in said ribbon by said members tending to rotate said ribbon bodily about said axis of advance.

4,117,065

METHOD OF FORMING CONDUCTIVE CARBON-PLASTIC MATERIAL

Hsue C. Tsien, Livingston, and Agustin F. Venero, Berkeley Heights, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed May 2, 1977, Ser. No. 792,901
Int. Cl.[2] C04B 35/00
U.S. Cl. 264—105 11 Claims

1. A method of forming a conductive carbon-plastic material having enhanced surface conductivity characteristics, comprising:

(a) molding a conductive carbon-plastic material from a mixture containing about 10% to about 50% particulate conductive carbon and about 90% to about 50% plastic material, based on the total weight of the particulate conductive carbon and plastic material, said carbon having a particle size within the range of about 10 millimicrons to about 100 microns;

(b) forming a dry mixture of compacted carbon and metal particles by ball milling a mixture containing about 5% to about 30% of conductive carbon having a particle size of about 5 millimicrons to about 50 millimicrons and about 95% to about 70% of metal particles having a particle size of about 10 microns to about 200 microns based on the total weight of the carbon and metal particles; and

(c) simultaneously abrading the surface of said conductive carbon-plastic material and embedding carbon particles therein by projecting against said surface said dry mixture of compacted carbon and metal particles at a pressure of at least about 50 psig.

4,117,066

NOVEL PROCESS FOR THE COMPLETE ISOLATION AND RAPID DRYING OF SOLIDS FROM SUSPENSIONS

Hans Mollet, Reinach; Roland Häberli, Würenlingen; Alberto Rabassa, Kleindöttingen, and Fridolin Bäbler, Allschwil, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 575,117, May 6, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,111
Claims priority, application Switzerland, May 10, 1974, 6425/74
Int. Cl.[2] B01J 2/06
U.S. Cl. 264—117 5 Claims

1. A process for the agglomeration of solid suspended particles in a multiphase system comprising:

a. forming a suspension of the solid particles in a first liquid;

b. gradually adding to said suspension at room temperature, a second liquid which is soluble to the extent of up to about 20% in the first liquid at 20° C and in which second liquid the solid substance is partially soluble, in an agglomerating amount such that a multiphase system is formed and said solid substance is partially dissolved by said second liquid;

c. simultaneously agitating said multiphase system by intense turbulence until agglomerates of said solid particles are formed;

d. separating said agglomerates from the multiphase system; and

e. drying the separated agglomerates.

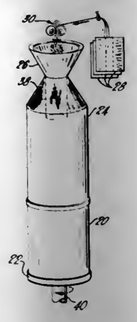
4,117,067

HIGH PRODUCTION METHOD OF PRODUCING GLASS FIBER RESIN COMPOSITES AND ARTICLES PRODUCED THEREBY

Kenneth F. Charter, Newark, Ohio; John R. Miller, Scottsburg, Ind., and David W. Garrett, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 31, 1975, Ser. No. 645,483
Int. Cl.[2] B29C 5/06
U.S. Cl. 264—119 4 Claims

1. The method of making a glass fiber preform comprising: providing a mold having an enclosed chamber, said enclosed chamber having a vented opening at its upper end, providing a filling tube with its lower end projecting down into the vent opening of said enclosed chamber so that air entering said filling tube changes direction approximately 180° to escape from the mold, directing a stream of chopped glass fibers and air into said filling tube, controlling the amount of air passing



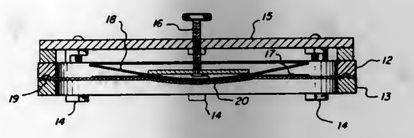
through said filling tube to distribute the chopped fibers in a controlled layer across the bottom of said mold, said fibers being distributed in a randomly oriented manner with the longitudinal axes of said fibers being substantially planar, compressing said layer to a controlled degree, bonding the fibers of said layer together with a resinous material to provide a preform, and removing said preform from the mold.

4,117,068

METHOD FOR FORMING CURVED PLASTIC FILM FROM A FLAT FILM

Charles Newell Miller, Richfield, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 26, 1976, Ser. No. 735,490
Int. Cl.[2] B29H 21/04
U.S. Cl. 264—130 8 Claims



1. A method of shaping a flat polyester film comprising the workpiece into a predetermined convex contour, comprising:

(a) attaching a flat backing film larger than the film and made of substantially the same material, about its periphery to a frame within which the workpiece film can lie;

(b) laying the workpiece film unclamped on the backing film;

(c) heating the films to above their heat distortion temperature;

(d) while the temperature is maintained, slowly forcing a die having substantially the predetermined contour into the films until the predetermined contour of the films are attained;

(e) while maintaining the position of the die, cooling the films to substantially below the heat distortion temperature; and then

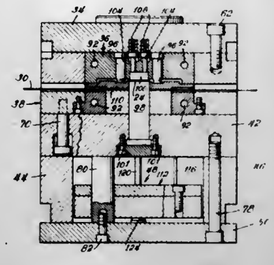
(f) withdrawing the die from the films.

4,117,069

METHOD OF MOLDING A CASSETTE HALF WITH WINDOW INSERT

John W. Von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Division of Ser. No. 683,906, May 6, 1976, Pat. No. 4,061,455.
This application Jun. 8, 1977, Ser. No. 804,824
Int. Cl.[2] B29C 5/00; B29D 3/00; B29F 1/00
U.S. Cl. 264—153 7 Claims



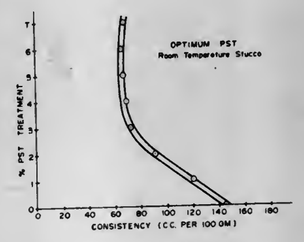
1. The method of molding a member defining a frame, said frame surrounding and retaining an insert member, which comprises: placing a pair of relatively movable mold cavity plate assemblies into an arrangement to define at least one mold cavity having the configuration of said frame-defining member, passing a strip of insert-forming material through a channel defined in one of said mold cavity plate assemblies, and moving a punch transversely through said channel in said mold cavity plate assembly to shear an insert member from said elongated strip of insert-forming material, while causing the margin of said insert member to protrude laterally beyond the end of said punch, moving said insert member into the cavity, thereafter filling said cavity with plasticized material to cause at least a portion of the margin of said insert member to become embedded in said plasticized material, and allowing said plasticized material to harden, whereby said insert member becomes embedded in the molded frame.

4,117,070

PROCESS FOR PREPARING CALCINED GYPSUM

Eugene Edward O'Neill, Okeene, Okla., assignor to United States Gypsum Company, Chicago, Ill.

Filed Mar. 14, 1977, Ser. No. 777,213
Int. Cl.[2] B32B 13/00; B28B 3/00
U.S. Cl. 264—234 11 Claims



1. A continuous process for manufacturing gypsum board characterized by using a reduced amount of water to fluidize calcined gypsum in forming the gypsum slurry which is fed to the board making machinery and therefore requiring less energy to dry the wet board which comprises:

(1) supplying calcined gypsum feed to be conveyed to a gypsum slurry mixer;

(2) diverting a portion of said calcined gypsum to a blender, said portion being at least about 50% by weight of the total calcined gypsum feed;

(3) blending a small amount of water with said calcined gypsum portion in said blender, said water ranging from about 1% to about 8% by weight of the total calcined gypsum feed;

(4) recombining the wetted diverted portion of said calcined gypsum with the dry, undiverted portion to form a homogeneous mixture of calcined gypsum;

(5) allowing the recombined homogeneous mixture of calcined gypsum to heal;

(6) feeding the healed mixture of calcined gypsum to the gypsum slurry mixer;

(7) adding additional water to the healed mixture of calcined gypsum in the slurry mixer, said additional water being added in an amount sufficient to provide from about 65 to about 85 parts of water, including water added in the blender, per 100 parts of the calcined gypsum, which results in reducing the amount of water to be evaporated from the wet board;

(8) mixing the healed mixture of calcined gypsum and water in the slurry mixer to form a homogeneous slurry;

(9) feeding the slurry to a gypsum board making machine to form a wet gypsum board;

(10) passing the wet gypsum board to a kiln to dry the board; and

(11) recovering dry gypsum board consisting essentially of calcium sulfate dihydrate.

7. A continuous process for manufacturing gypsum board characterized by using a reduced amount of water to fluidize calcined gypsum in forming the gypsum slurry which is fed to the board making machinery and therefore requiring less energy to dry the wet board which comprises:

(1) supplying calcined gypsum feed to be conveyed to a gypsum slurry mixer;

(2) conveying the calcined gypsum feed to a blender;

(3) blending a small amount of water with said calcined gypsum, said water ranging from about 1% to about 8% by weight of the calcined gypsum feed;

(4) allowing the wetted calcined gypsum to heal;

(5) feeding the healed calcined gypsum to the gypsum slurry mixer;

(6) adding additional water to the healed calcined gypsum in the slurry mixer, said additional water being added in an amount sufficient to provide from about 65 to about 85 parts of water, including water added in the blender, per 100 parts of the calcined gypsum which results in a substantially reduced amount of water to be evaporated from the wet board;

(7) mixing the healed calcined gypsum and water in the slurry mixer to form a homogeneous slurry;

(8) feeding the slurry to a gypsum board making machine to form a wet gypsum board;

(9) passing the wet gypsum board to a kiln to dry the board; and

(10) recovering dry gypsum board consisting essentially of calcium sulfate dihydrate.

4,117,071

CONCRETE TANKS WITH INTERLOCKING BOTTOM

James T. Hannah, 231 Main North Rd., Elizabeth Grove, South Australia 5112, Australia

Filed May 11, 1976, Ser. No. 685,320
Int. Cl.[2] B28B 1/16
U.S. Cl. 264—256 4 Claims

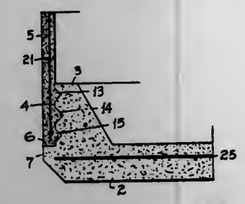
1. The method of forming hollow concrete articles such as tanks which comprises:

(a) providing a mould shaped to form a bottom and including on the bottom an upstanding integral ridge having a face and a laterally outward extending surface which cooperate with a wall of a concrete article to be formed to define the joint between said bottom and wall, said face forming the mould for the contiguous inner lower portions of said wall and said laterally, outward extending surface forming the mould for the lower end face of said wall, said ridge also including an interlocking sealing

formation extending generally parallel to the said bottom and around the face of said upstanding ridge, said interlocking sealing formation having an upstanding dimension at least equal to about the thickness of said bottom and a majority of its upstanding extent arranged to interlock with said wall in shear,

(b) pouring the said bottom,

(c) removing the mould from the said bottom to expose the interlocking sealing formation and the laterally, outward extending surface of said upstanding ridge,



(d) placing a mould on said bottom to form the sides of the concrete article to be formed and shaped to leave exposed the laterally, outward extending surface and the face of the said upstanding ridge having the interlocking sealing formation formed thereon, and

(e) forming the said wall against said mould and face, whereby the said bottom is interlocked with said wall by only concrete-to-concrete contact and with sufficient shear to provide an interlock without any metal reinforcement extending through the said interlocking sealing formation or the joint formed between said bottom and wall.

4,117,072

PROCESS FOR ENHANCEMENT OF MECHANICAL PROPERTIES OF PHOTOCONDUCTIVE POLYMERS

William M. Prest, Jr, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 16, 1974, Ser. No. 515,128

Int. Cl.² B29D *7/24*

U.S. Cl. 264—288 **23 Claims**

1. A process for enhancing the mechanical properties of films of photoconductive polymers, comprising:

(a) subjecting a film of a polymeric photoconductive material to strain induced orientation whereby the chains of the polymer within said film are oriented along the lines of force imparted by the strain to the film, the extent of orientation of the photoconductive polymer being sufficient to both enhance its mechanical properties and impose spatial constraints on the equilibrium molecular conformation of the bulky photoactive groups pendant from its backbone, said constraints causing deterioration in the charge carrier transport properties of the polymeric film; and

(b) subjecting said oriented film to a second strain subsequent to orientation thereof, the extent of stretching of the oriented film during this second strain being insufficient to cause appreciable realignment of the polymer chains of the oriented film in the direction of the second strain yet sufficient to relieve the spatial constraints imposed upon the bulky photoactive groups pendant from the backbone of the polymer, thereby allowing them to return to their equilibrium molecular conformation.

4,117,073

PROCESS FOR THE PRODUCTION OF PREPLASTICIZED MATERIALS

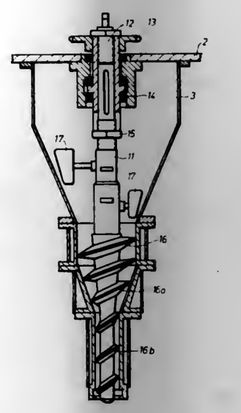
Heinrich Koch, Siegburg, and Josef Lehnen, Bad Soden bei Salmünster, both of Germany, assignors to Heinrich Koch, Auf der Hohl and Bayer Aktiengesellschaft, Leverkusen, both of, Germany

Filed Oct. 14, 1975, Ser. No. 622,237

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1974, 2449489

Int. Cl.² B29B *5/02*

U.S. Cl. 264—349 **4 Claims**



1. A process for the production of materials condensed to their final density from high molecular weight powder-form rubber mixtures, wherein the powder mixture is conveyed along a helical compression screw with decreasing helix diameter fitting closely within a conical casing and is thereby subjected to increasing compression through the application of additional shear forces in the outer zone of the helixes whilst at the same time the powder mixture is condensed and plasticized at a suitable temperature, the powder mixture being stirred and supplied to the helical compression screw by rotating pitched blades which prevent the formation of bridges in the supplied powder mixture, the gaseous constituents present in the powder mixture being continuously taken up by the mixture and carried off outwardly during compression.

4,117,074

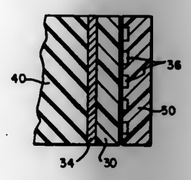
MONOLITHIC MOSAIC PIEZOELECTRIC TRANSDUCER UTILIZING TRAPPED ENERGY MODES

Harry F. Tiersten, 2288 Pine Haven Dr., Schenectady, N.Y. 12309; John F. McDonald, 608 Crescent Village Apts., Clifton Pk., N.Y. 12065, and Pankaj K. Das, 15 Johnson Rd., Cohoes, N.Y. 12047

Filed Aug. 30, 1976, Ser. No. 718,603

Int. Cl.² H01L *41/10*

U.S. Cl. 310—320 **15 Claims**



1. A transducer element array comprising:

a plate of piezoelectric material, means for vibrating said plate to produce vibration thereof including vibration in the thickness extensional mode,

a plurality of first electrode means operatively electrically coupled to one surface of said plate in spaced relationship with respect to each other and second electrode means operatively electrically coupled to said other surface of said plate to form with said plurality of first electrode means a plurality of pairs of electrodes, each said pair of electrodes forming a transducer element of the array,

said plurality of pairs of electrodes being operatively electrically coupled to said piezoelectric plate so as to provide acoustic energy trapping of the thickness extensional mode of vibration in the unelectroded space between adjacent ones of said pairs of electrodes and to thereby provide acoustic isolation between the adjacent transducer elements.

4,117,075

METHOD OF COMBUSTION FOR DEPRESSING NITROGEN OXIDE DISCHARGE

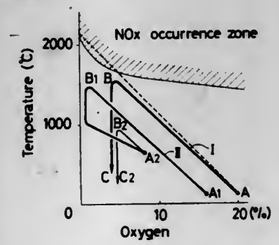
Hiroshi Sano, Ikeda, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 7, 1974, Ser. No. 495,429

Claims priority, application Japan, Aug. 9, 1973, 48-89468; Aug. 10, 1973, 48-90183; Dec. 25, 1973, 48-1855

Int. Cl.² C01B *21/00*

U.S. Cl. 423—235 **5 Claims**



1. A method for decreasing the discharge of nitrogen oxides by combustion in a medium temperature reducing flame atmosphere comprising the steps of:

(1) producing a high temperature oxidizing flame by combustion of a first fuel with an amount of air in excess of the theoretical amount required for complete combustion of said fuel wherein said combustion produces combustion products containing nitrogen oxides;

(2) admixing the combustion products containing nitrogen oxides with a second fuel selected from the group consisting of carbon monoxide, hydrogen or mixtures thereof at a temperature higher than 1000° C but lower than the critical temperature for the formation of nitrogen oxides, wherein the air to first fuel plus second fuel ratio is maintained greater than that necessary to completely combust said first fuel plus said second fuel and wherein the concentration of oxygen in the resulting waste gas is less than 1%, whereby additional combustion occurs forming a medium-temperature reducing flame atmosphere and decreasing the nitrogen oxides content of said waste gas; and

(3) discharging the resulting waste gas.

4,117,076

TITANIUM SLAG-COKE GRANULES SUITABLE FOR FLUID BED CHLORINATION

Michel Guéguin, Tracy, Canada, assignor to Quebec Iron and Titanium Corporation, Sorel, Canada

Continuation of Ser. No. 675,954, Apr. 12, 1976, abandoned. This application Jun. 30, 1977, Ser. No. 811,761

Int. Cl.² C01G *23/02*

U.S. Cl. 423—78 **7 Claims**

1. In a process for the production of titanium tetrachloride in a fluidized bed containing fluidized particulates from titanium oxide bearing material containing impurities including aluminum oxides and silicon oxides wherein pelletized mixtures of fine grains of bituminous coking coal, said titanium oxide bearing material, and a suitable water soluble binder therefor are employed for obtaining starting material grains for said fluidized bed production of titanium tetrachloride, wherein the improvement comprises coking said pelletized fine grains comprising said titanium oxide bearing material having as further impurities associated therewith alkali-earth impurities selected from the group consisting of CaO and MgO in amounts of 0.6 to 1.0 by weight of CaO, and 3.0 to 5.0 by weight of MgO, said coking being at a temperature up to 900°–950° C., such that said grains contain, after coking, 40–60% by weight of titanium oxide including said impurities and 15–25% carbon, and recovering and subsequently chlorinating titanium oxide in said grains, said grains having a crushing strength from 100–600 grams per millimeter of grain diameter.

4,117,077

PROCESS FOR ALUNITE TREATMENT

Gakif Zakirovich Nasyrov, prospekt Nauki, 12, kv. 49; Evgenia Ivanovna Zemlyanskaya, Gavanskaya ulitsa, 10, kv. 25, and Izabella Vladislavovna Ravdonikas, ulitsa III Internatsionala, 14, kv. 58, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 722,702, Sep. 13, 1976, abandoned. This application Nov. 23, 1977, Ser. No. 854,215

Int. Cl.² C01F *7/06*

U.S. Cl. 423—127 **7 Claims**

1. A process for the treatment of alunite ore containing silicon oxides in the form of opal and chalcedony which comprises:

(a) roasting said alunite ore in the presence of oxygen at a temperature of from 580° to 620° C. for 1 to 3 hours;

(b) [illegible]posing the roasted alunite ore in the presence of a reducing agent at a temperature of from 580° to 620° C. for 40 to 60 minutes, to form a reduced alunite ore;

(c) leaching the reduced alunite ore at a temperature of from 45° to 85° C. by treatment with a solution of sodium hydroxide having a concentration of 100 to 150 grams per liter in terms of Na_2O, to extract aluminum oxide and a mixture of potassium and sodium sulfates into solution, and to form a residue which is separated from said solution;

(d) evaporating said solution to concentrate the sodium hydroxide to 200 to 220 grams per liter in terms of Na_2O, thereby precipitating the potassium and sodium sulfates, and separating said mixed surface precipitate;

(e) diluting the aluminum oxide solution to a sodium hydroxide concentration of from 120 to 150 grams per liter in terms of Na_2O;

(f) precipitating aluminum hydroxide from the aluminum oxide solution by seeding said solution under agitation with aluminum hydroxide; and

(g) separating the aluminum hydroxide.

4,117,078

PROCESS FOR THE PRODUCTION OF HIGHLY CONCENTRATED MAGNESIUM CHLORIDE SOLUTIONS

Dietmar Kunze, Bad Salzdetfurth, Fed. Rep. of Germany, assignor to Kali und Salz Aktiengesellschaft, Kassel, Fed. Rep. of Germany

Filed Mar. 29, 1977, Ser. No. 782,410

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1976, 2613288

Int. Cl.² C01F *5/30*; C01D *3/06*; C01F *11/46*

U.S. Cl. 423—163 **9 Claims**

7. In a process for the production of highly concentrated magnesium chloride solutions from industrial liquors or brines which contain less than 320 g/l $MgCl_2$, and which also normally contain alkali metal chlorides, bromides and sulfates and other impurities, wherein the production steps include de-

bromination by means of chlorine, neutralization, sulfate precipitation, concentration, cooling and separation of crystallizates and impurities, the improvement which comprises:

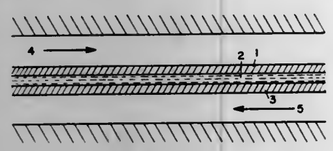
(a) adding to an industrial liquor or brine at temperatures in the range of 30°–50° C a stoichiometric excess of calcium chloride, based on the sulfate ion content of the liquor, to form a calcium sulfate dihydrate crystallizate;
(b) separating said crystallizate from the remaining liquor;
(c) debrominating said remaining liquor by the addition of chlorine thereto;
(d) neutralizing the debrominated liquor up to a pH value of 3–6 to form a precipitate;
(e) separating the precipitate from said neutralized liquor;
(f) admixing with said neutralized liquor a sufficient amount of carnallite to increase the $MgCl_2$ content thereof to 270–330 g/l after cold decomposition of the added carnallite;
(g) concentrating the resulting liquor up to a concentration of 440 to 475 g/l $MgCl_2$ in two or more steps in a direct current multi-stage evaporator;
(h) cooling the concentrate to room temperature; and
(i) separating said concentrate from the solid substances formed during the concentration, said solid substances consisting essentially of carnallite and sodium chloride.

4,117,079

REMOVAL OF A GAS COMPONENT PRESENT IN A GASEOUS STREAM

Richard James Bellows, Linden, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Jun. 2, 1977, Ser. No. 802,660
Claims priority, application United Kingdom, Jun. 11, 1976, 24299/76
Int. Cl.² B01D *53/34*
U.S. Cl. 423—223 **25 Claims**



1. A membrane suitable for absorbing a gas component present in a gaseous stream, which comprises:

a porous layer of hydrophilic material, both faces of which are covered by a layer of a mixture of 10 to 90% by weight of a hydrophobic substance and 90 to 10% by weight of a hydrophilic substance, the hydrophilic portions of the three layers being impregnated with a catalyst which permits the conversion of carbon dioxide to bicarbonate ions and the decomposition of bicarbonate to gaseous carbon dioxide, and with an alkali metal buffer solution of 12 to 14N, said catalyst being selected from the group consisting of meta arsenites, antimonites and bismuthites, arsenious oxide, antimony oxide and bismuth oxide, potassium selenite, tellurite and metaborate, sodium selenite, tellurite and metaborate, selenious acid and a mixture of boric acid and diethanolamine, the concentration of said catalyst being 0.1 to 3M.

4,117,080

PROCESS FOR REGENERATING PERMANGANATE AND/OR MANGANATE FROM MANGANESE DIOXIDE

Hideo Kawasaki; Masaji Nakatani; Toshihiro Ishii; Hiroshi Nakagawa, and Hiroshi Takaya, all of Tokyo, Japan, assignors to Nissan Engineering Ltd., Tokyo, Japan

Filed Apr. 28, 1977, Ser. No. 791,995
Claims priority, application Japan, May 7, 1976, 51-52545
Int. Cl.² C01G *45/12*
U.S. Cl. 423—235 **9 Claims**

1. A process for producing at least one member selected from the group consisting of permanganates and manganates from manganese dioxide which comprises

forming a dispersion of manganese dioxide in an aqueous solution of sodium or potassium hydroxide having a concentration of said hydroxide greater than 20% by weight, and contacting with said dispersion a gas containing NO_x having a molar ratio of NO_2/NO_x greater than 0.55 in the presence of at least one member selected from the group consisting of permanganates and manganates at a temperature above 40° C.

4,117,081

METHOD OF AND CATALYSTS FOR REMOVAL OF NITROGEN OXIDES

Hideya Inaba; Shigenori Onizuka, and Yasumi Kamino, all of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Continuation of Ser. No. 667,674, Mar. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 471,182, May 20, 1974, abandoned. This application Sep. 23, 1977, Ser. No. 836,131
Claims priority, application Japan, May 28, 1973, 48-59479
Int. Cl.² B01D *53/34*
U.S. Cl. 423—239 **4 Claims**

1. The method of removing nitrogen oxides from a flue gas containing sulphur oxides in excess of 100 ppm, oxygen and water vapor, comprising employing in said flue gas at least one of the reductants hydrogen and carbon monoxide in an amount between 1 and 2 times the theoretical amount required to reduce said nitrogen oxides and to react with said oxygen, and contacting said flue gas and reductant with a catalyst at a temperature in the range of about 300°–450° C, said catalyst consisting essentially of about 5.0% by weight of copper; about 0.005 to 0.05% by weight of rhodium; about 3.0% by weight of one of the metals potassium, barium, magnesium, chromium, manganese and molybdenum; and alumina; said catalyst acting to promote the substantially complete reduction of said nitrogen oxides by and the substantially complete reaction of said oxygen with said reductant, with substantially no conversion of said sulphur oxides into another substance and with substantially no conversion of said nitrogen oxides into ammonia.

4,117,082

METHOD OF COMPLETELY OXIDIZING CARBON MONOXIDE

Akira Matsuyama, Toyonaka, Japan, assignor to Figaro Giken Co., Ltd., Toyonaka, Japan

Division of Ser. No. 565,730, Apr. 7, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,118
Claims priority, application Japan, Apr. 19, 1974, 49-44896; Apr. 26, 1974, 49-48200
Int. Cl.² B01D *53/34*
U.S. Cl. 423—247 **2 Claims**

1. A process for completely oxidizing carbon monoxide comprising contacting carbon monoxide in the presence of oxygen with a catalyst at a temperature as low as 79° C., wherein said catalyst is formed by firing at 800° C. for one hour a mixture of finely divided SnO_2 and an aqueous solution of rhodium chloride in an amount of 5 atm. % calculated as Rh based on the SnO_2, mixing an aqueous suspension of the fired product with finely divided alpha-Al_2O_3 in an amount equal to that of the SnO_2 and aging the resultant mixture at 300° C. for 1 day.

4,117,083

PROCESS FOR INCREASING THE REACTION RATE OF UO_2F_2

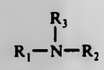
Edward T. Maas, Jr., Kendall Park, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Dec. 21, 1976, Ser. No. 752,722
Int. Cl.² C01G *43/00*
U.S. Cl. 423—253 **48 Claims**

1. A process for increasing the average reaction rate of reduction of UO_2F_2 comprising:

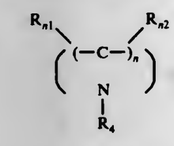
(a) combining UO_2F_2 with an organic compound capable of interacting with said UO_2F_2 to form a reaction product containing from 0.5 to 3.0 moles of said organic compound per mole of UO_2F_2, said organic compound selected from the group consisting of

amines of generalized formula



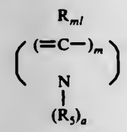
where at least one of radicals R_1, R_2 and R_3 is an aliphatic or an aromatic carbon network with carbon numbers of 1 to 6 with the remaining radicals, if any, being H,

aliphatic heterocyclic amines of generalized formula



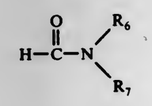
where R_4 is H or an aliphatic radical of carbon number of 1 to 4 and n can assume values of 4 to 6 inclusive and R_{n1} and R_{n2} are each individually H or methyl, each of R_{n1} and R_{n2} being the same or different;

aromatic heterocyclic amines of generalized formula



where m is an integer of 4 to 6 inclusive and $a = 1$ when $m =$ 4 or 6 and $a = 0$ when $m = 5$, and R_5 is H or aliphatic radical of carbon number 1 to 4 and R_{m1} is H or methyl,

aliphatic amides of formic acid of generalized formula



where R_6 and R_7 are each individually H or an aliphatic radical of carbon number 1 to 3, each of R_6 and R_7 being the same or different,

alcohols of generalized formula

$$R_8 - O - H$$

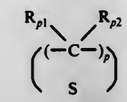
where R_8 is an aliphatic radical of carbon number 1 to 4 inclusive,

sulfides of generalized formula

$$R_9 - S - R_{10}$$

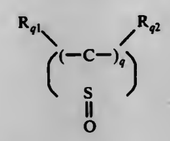
where R_9 and R_{10} are the same or different aliphatic radicals having a carbon number of 1 to 3,

aliphatic heterocyclic sulfides of generalized formula



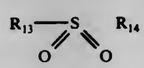
where p is an integer between 4 and 6 inclusive and R_{p1} and R_{p2} are each individually H or methyl, each of R_{p1} and R_{p2} being the same or different,

aliphatic heterocyclic sulfoxides of generalized formula



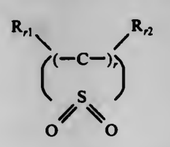
where q is an integer of 4 to 6 inclusive and R_{q1} and R_{q2} are each individually H or methyl, each of R_{q1} and R_{q2} being the same or different,

sulfones of generalized formula



where R_{13} and R_{14} are aliphatic radicals of carbon number 1 to 3,

aliphatic heterocyclic sulfones of generalized formula



where r is an integer of 4 to 6 inclusive and R_{r1} and R_{r2} are each individually H or methyl, each of R_{r1} and R_{r2} being the same or different, and mixtures thereof,

(b) decomposing said reaction product to yield UO_2F_2 in an increased kinetically reactive state.

4,117,084

PROCESS FOR PRODUCING UO_2F_2

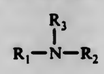
Edward T. Maas, Jr., Kendall Park, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Dec. 21, 1976, Ser. No. 752,736
Int. Cl.² C01G *43/02, 43/06*
U.S. Cl. 423—253 **29 Claims**

1. A process for producing UO_2F_2 comprising:

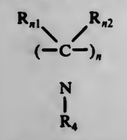
(a) adding a soluble uranyl salt to an organic solvent which exhibits Lewis Base characteristics said uranyl salt being selected from the group consisting of uranyl acetate and uranyl nitrate;
(b) adding a soluble fluoride salt to said solvent to form a reaction solution so that said uranyl salt and said fluoride salt react to produce a crystalline solid having the structure $UO_2F_2 \cdot (X)$ base;
(c) separating said crystalline solid from said reaction solution; and
(d) heating said $UO_2F_2 \cdot (X)$ base to a sufficient temperature to produce said UO_2F_2.

7. The process of claim 1 in which said solvent is selected from the group consisting of amines of generalized formula



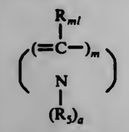
where at least one of radicals R_1, R_2 and R_3 is an aliphatic or an aromatic carbon network with carbon numbers of 1 to 6 with the remaining radicals, if any, being H,

aliphatic heterocyclic amines of generalized formula



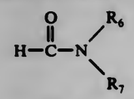
where R_4 is H or an aliphatic radical of carbon number of 1 to 4 and n can assume values of 4 to 6 inclusive and R_{n1} and R_{n2} are each individually H or methyl, each of R_{n1} and R_{n2} being the same or different,

aromatic heterocyclic amines of generalized formula



where m is an integer of 4 to 6 inclusive and $a = 1$ when $m = 4$ or 6 and $a = 0$ when $m = 5$, and R_5 is H or aliphatic radical of carbon number 1 to 4 and R_{m1} is H or methyl,

aliphatic amides of formic acid of generalized formula



where R_6 and R_7 are each individually H or an aliphatic radical of carbon number 1 to 3, each of R_6 and R_7 being the same or different,

alcohols of generalized formula

$$R_8-O-H$$

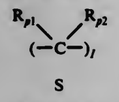
where R_8 is an aliphatic radical of carbon number 3 or 4,

sulfides of generalized formula

$$R_9-S-R_{10}$$

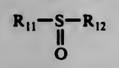
where R_9 and R_{10} are the same or different aliphatic radicals having a carbon number of 1 to 3,

aliphatic heterocyclic sulfides of generalized formula



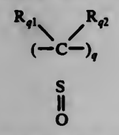
where p is an integer between 4 and 6 inclusive and R_{p1} and R_{p2} are each individually H or methyl, each of R_{p1} and R_{p2} being the same or different,

sulfoxides of generalized formula



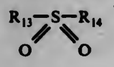
where R_{11} and R_{12} are aliphatic radicals of carbon number 1 to 3,

aliphatic heterocyclic sulfoxides of generalized formula



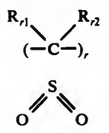
where q is an integer of 4 to 6 inclusive and R_{q1} and R_{q2} are each individually H or methyl, each of R_{q1} and R_{q2} being the same or different,

sulfones of generalized formula



where R_{13} and R_{14} are aliphatic radicals of carbon 1 to 3,

aliphatic heterocyclic sulfones of generalized formula



where r is an integer of 4 to 6 inclusive and R_{r1} and R_{r2} are each individually H or methyl, each of R_{r1} and R_{r2} being the same or different, and mixtures thereof.

19. The process of claim 1 in which said solvent is selected from the group consisting of aniline, pyridine, 2-picoline, 4-picoline, N,N-dimethylformamide, n-propylalcohol, tetrahydrothiophene, dimethylsulfoxide, tetramethylenesulfoxide, tetramethylenesulfone, and mixtures thereof.

4,117,085

TREATMENT OF ALUMINA TO REDUCE DISCOLORATION

Kang Yang, and John F. Scamehorn, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Jun. 20, 1977, Ser. No. 807,857

Int. Cl.[2] C01F 7/02

U.S. Cl. 423—264 **3 Claims**

1. A method for reducing discoloration of alumina, said alumina having been prepared by water hydrolysis of aluminum alkoxides, said discoloration being due to exposure to high temperatures, said method comprising adding an effective amount, in the range of about 1×10^{-6} to about 0.5 gram per gram of alumina, of hydrogen peroxide to the alumina after hydrolysis and prior to the exposure thereof to high temperatures, said term high temperatures referring to a temperature above 127° C. when the alumina is present in an alumina-water slurry containing at least 3 percent alumina and to a temperature of above 100° C. when the alumina contains less than about 40 weight percent water.

2. In the method of removing water from an alumina-water slurry, said slurry containing at least 3 weight percent alumina, said alumina having been prepared by water hydrolysis of aluminum alkoxides, by drying at a temperature above 127° C., the improvement which comprises adding an effective amount to reduce discoloration of said alumina, in the range of about 1×10^{-6} to about 0.5 gram per gram of alumina, of hydrogen peroxide to the alumina-water slurry after hydrolysis and prior to the drying.

3. In the method of storing and transporting alumina, wherein the alumina is at a temperature of above 100° C. for at least 1 hour, said alumina having been prepared by water hydrolysis of aluminum alkoxides and containing less than about 40 weight percent water, the improvement which comprises adding an effective amount to reduce discoloration of said alumina, in the range of about 1×10^{-6} to about 0.5 gram per gram of alumina, of hydrogen peroxide to the alumina after hydrolysis and prior to storage and transport at said temperature.

4,117,086

PROCESS OF STABILIZATION OF DIBASIC CALCIUM PHOSPHATE DIHYDRATE AGAINST HYDROLYSIS WITH 3-AMINO-1-HYDROXYPROPANE-1,1-DIPHOSPHONIC ACID

Walter Plöger, Hilden, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 1, 1975, Ser. No. 636,735

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1974, 2456692

Int. Cl.[2] C01B 15/16, 25/26

U.S. Cl. 423—268 **5 Claims**

1. A process for stabilizing dibasic calcium phosphate dihydrate against hydrolysis consisting essentially of suspending dibasic calcium phosphate dihydrate in an aqueous medium at a pH of from 5 to 10, containing from 0.01% to 5% by weight based on the content of said dibasic calcium phosphate dihydrate of a diphosphonic compound selected from the group consisting of (A) 3-amino-1-hydroxypropane-1,1-diphosphonic acid, and (B) water-soluble salts thereof, and separating said stabilized dibasic calcium phosphate dihydrate.

4,117,087

PROCESS FOR PREPARING STABILIZED SODIUM PERCARBONATE

Helmut Dillenburg, Rheinbrohl; Wilhelm Moser, Ariendorf b. Hoenningen, both of Fed. Rep. of Germany, and Robert Jones, Brussels, Belgium, assignors to Peroxid-Chemie GmbH., Minich, Fed. Rep. of Germany

Filed May 17, 1977, Ser. No. 797,757

Claims priority, application Fed. Rep. of Germany, May 20, 1976, 2622458

Int. Cl.[2] C01B 15/10

U.S. Cl. 423—275 **17 Claims**

1. A process for preparing a stabilized crystalline sodium percarbonate of substantially spheroidal crystal form consisting essentially of the steps of:

a. preparing an aqueous medium containing sodium carbonate and having a pH value of between about 10 and about 11;

b. adding to the aqueous medium an amount of a water soluble silicate which is equivalent to from about 0.2 to about 0.9% by weight of SiO_2 relative to the amount of the sodium percarbonate to be formed during which step the pH value of the aqueous medium is maintained in the range of between about 10 and about 11;

c. reacting the resulting aqueous medium with an aqueous hydrogen peroxide solution containing a heavy metal complexing agent, whereby a reaction mixture containing sodium percarbonate is formed;

d. crystallizing only a portion of about 50% to about 90% of the sodium percarbonate within the reaction mixture;

e. adding to said suspension an amount of a water soluble silicate which is equivalent to from about 0.2 to about 0.8% by weight of SiO_2 relative to the total amount of sodium percarbonate and which is sufficient to provide for a total content of silicate in the final crystalline product, equivalent to from about 0.5 to about 1.5% by weight of SiO_2 relative to the amount of sodium percarbonate;

f. crystallizing substantially the remaining portion of the crystallizable sodium percarbonate within said suspension; and,

g. recovering a crystalline sodium percarbonate of substantially spheroidal crystal form from said suspension.

4,117,088

HYDROPHOSPHIDE-GROUP CONTAINING MULTI-METAL INORGANIC POLYMERIC COMPLEX AND METHOD OF MAKING SAME

George G. Merkl, 46 Sunset Ct., Haworth, N.J. 07651

Filed Jan. 10, 1977, Ser. No. 758,345

Int. Cl.[2] C01B 25/00, 15/16, 25/26

U.S. Cl. 423—299 **17 Claims**

1. A method of producing an inorganic multi-metal polymeric complex containing a plurality of hydrophosphide groups which comprises:

reacting in an aqueous medium at a temperature of about 40° C to about 100° C

(a) at least one non-alkaline metal selected from Groups I–VIII of the Periodic Table;

(b) an alkali metal hydroxide; and

(c) a phosphorus-containing compound capable of conversion to hydrophosphide groups under the conditions prevailing in the aqueous reaction medium

according to the following:

(i) introducing a predetermined quantity of said non-alkaline metal into a reaction vessel containing said aqueous medium;

(ii) providing in said aqueous medium a supply of alkali metal hydroxide to achieve a highly alkaline pH in said aqueous medium;

(iii) incrementally introducing said phosphorus-containing compound into said aqueous medium, whereby hydrophosphide groups are formed which react with dissolved metal ions of said non-alkaline metal and alkali metal, the rate of introduction of said phosphorus-containing compound corresponding approximately proportionately to the rate of dissolution of the non-alkaline metal;

(iv) stopping the incremental introduction of said phosphorus-containing compound when the pH of said aqueous medium is reduced to a pH of about 8.5 to about 10.5, such reduction in pH being indicative of organic polymeric complex production; and

(v) thereafter terminating the reaction by removing from the aqueous medium any unreacted non-alkaline metal.

4,117,089

PROCESS FOR PREPARING SODIUM AMMONIUM HYDROGEN-PHOSPHATE AND AMMONIUM CHLORIDE FROM WET PROCESS PHOSPHORIC ACID

Yoshishige Fujita; Soichi Asagao, and Motoshige Ogura, all of Ube, Japan, assignors to Central Glass Company, Limited, Japan

Filed Aug. 9, 1977, Ser. No. 823,168

Claims priority, application Japan, Aug. 10, 1976, 51-94499

Int. Cl.[2] C01B 15/16, 25/26; C01C 1/16

U.S. Cl. 423—306 **12 Claims**

1. A process for producing sodium ammonium hydrogenphosphate and ammonium chloride from wet process phosphoric acid, the process comprising the steps of:

(a) introducing ammonia into a wet process phosphoric acid solution until the pH of said solution ranges from 3.5 to 6.0 to cause precipitation of impurities contained in said solution, said solution being maintained at a temperature above 60° C. upon completion of the introduction of ammonia;

(b) separating at least a portion of the precipitated impurities from said solution, the resulting solution having a molar ratio of NH_3/H_3PO_4 of from 0.7 to 1.5;

(c) adding the solution from which said impurities have been separated, to a circulating mother liquor maintained at temperatures within which sodium ammonium hydrogenphosphate is hard to precipitate;

(d) introducing sodium chloride into the solution in step (a) or into the mother liquor in step (c);

(e) additionally introducing ammonia into the liquor until the pH of said liquor ranges from 5.5 to 9.0, the total amounts of ammonia introduced in steps (a) and (e) and of sodium chloride introduced in step (d) being such that the molar ratios of H_3PO_4:NH_3:NaCl are in the range of 1:1.6–2.5:0.2–2.8;

(f) cooling of the liquor to a temperature of 30° C. to 60° C. to permit sodium ammonium hydrogenphosphate to separate as crystals;

(g) removing said crystals from the liquor;

(h) adding to the liquor from which said crystals have been removed, an acidic compound selected from the group consisting of phosphoric acid, acidic ammonium phosphate, hydrochloric acid, sulfuric acid, nitric acid and a mixture thereof, thereby adjusting the pH of the liquor to 5.6–6.4;

(i) cooling the resulting liquor to a temperature which is lower than the temperature of step (f) and which ranges from 5° C. to 50° C. to precipitate ammonium chloride as crystals;

(j) removing the ammonium chloride crystals from the liquor; and

(k) recycling the resulting solution for use as a circulating mother liquor.

4,117,090

PROCESS OF STABILIZATION OF DIBASIC CALCIUM PHOSPHATE DIHYDRATE AGAINST HYDROLYSIS WITH AZACYCLOALKANE-2,2-DIPHOSPHONIC ACIDS

Walter Plöger, Hilden, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

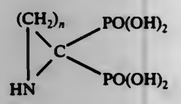
Filed Dec. 1, 1975, Ser. No. 636,732

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1974, 2456666

Int. Cl.² C01B *15/16, 25/26*

U.S. Cl. 423—268 5 Claims

1. A process for stabilizing dibasic calcium phosphate dihydrate against hydrolysis consisting essentially of suspending dibasic calcium phosphate dihydrate in an aqueous medium at a pH of from 5 to 10, containing from 0.01% to 5% by weight based on the content of said dibasic calcium phosphate dihydrate of an azacycloalkane-2,2-diphosphonic compound selected from the group consisting of (A) compounds of the formula



wherein *n* is an integer from 3 to 5, and (B) water-soluble salts thereof, and separating said stabilized dibasic calcium phosphate dihydrate.

4,117,091

WET PROCESS PHOSPHORIC ACID PRODUCED USING GYPSUM-CONTAINING WASTE WATER

Santad Kongpricha, Deer Park, Tex., assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 17, 1976, Ser. No. 697,179

Int. Cl.² C01B *25/16*

U.S. Cl. 423—320 4 Claims

1. In a process for producing phosphoric acid by the digestion of phosphate rock with diluted sulfuric acid obtained by the dilution of concentrated sulfuric acid with gypsum-containing waste water having a CaO concentration of from about 1,000 to 3,000 parts per million, the improvement which comprises:

a. introducing said concentrated sulfuric acid into a mixing tee;

b. admixing sufficient amounts of said gypsum-containing waste water with said concentrated sulfuric acid in said mixing tee to produce a diluted acid solution containing from about 70 to about 75 percent by weight of H_2SO_4,

c. cooling said diluted acid solution in a liquid-to-liquid heat exchanger, said heat exchanger remaining substantially free of gypsum scale as a result of the combination of calcium concentration, H_2SO_4 concentration, and temperature therein; and

d. feeding said diluted acid solution directly to a digestion reactor containing said phosphate rock to produce said wet phosphoric acid.

4,117,092

PROCESS FOR SEPARATING A PHOSPHORIC ACID-SOLVENT SOLUTION

Klaus Beltz, Budenheim, Rhein, and Klaus Frankenfeld, Hunfelden-Kirberg Mainzer, both of Germany, assignors to Chemishe Fabrik Budenheim, Budenheim, Rhein, Germany

Continuation of Ser. No. 753,727, Dec. 23, 1976, abandoned, which is a continuation of Ser. No. 594,522, Jul. 9, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,158

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1974, 2433307

Int. Cl.² C01B *25/16*

U.S. Cl. 423—321 S 12 Claims

1. A countercurrent multi-zoned process for separating an organic solvent from a phosphoric acid-solvent-solution whereby the organic solvent is miscible in all proportions with phosphoric acid and water to separate substantially all of said organic solvent as a mixture of water and organic solvent by the addition of an alkali material comprising the steps:

(a) introducing said phosphoric acid-solvent-solution into a first zone of a multi-zoned extractor;

(b) introducing an alkali (M) compound wherein the cation is selected from the group consisting of sodium, potassium and ammonium ions into said multi-zoned extractor in a zone downstream from said first zone of said multi-zoned extractor to effect a countercurrent contact in said multi-zoned extractor of said solution, the amount of alkali compound being added to cause in each zone a phase separation of said solution into an aqueous alkali phosphate phase and a solvent phase whereby an aqueous alkali phosphate phase in each zone of said multi-zoned extractor has a mole ratio of $M_2O:P_2O_5$ of from 0.45:1 to 0.90:1;

(c) separating by decantation in each zone of said multi-zoned extractor said alkali phosphate phase and said solvent phase, prior to passage of said respective phases to an upstream and downstream zone, respectively, of said multi-zoned extractor;

(d) withdrawing said aqueous organic solution substantially free of phosphoric acid from a last zone of said multi-zoned-extractor; and

(e) withdrawing said aqueous alkali phosphate solution having a ratio of $M_2O:P_2O_5$ from 0.45:1 to 0.90:1 substantially free of organic solvent from said first zone of said multi-zoned-extractor.

4,117,093

METHOD OF MAKING AN AMORPHOUS SILICON DIOXIDE FREE OF METAL IONS

Friedrich Christian Brunner; Friedrich Wilhelm Schwerdt, both of Sindelfingen, and Hans-Heluz Steinbeck, Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1977, Ser. No. 807,759

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629709

Int. Cl.² C01B *33/12, 33/18*

U.S. Cl. 423—339 5 Claims

1. A method of making an amorphous silicon dioxide free of metal ions comprising boiling a mixture of a hydroxybenzene, water, high grade silicon and organic amine in molar surplus to the amount of silicon and hydroxybenzene under reflux with bubbling oxygen to precipitate silicon dioxide, and rinsing the precipitated silicon dioxide with water.

4,117,094

PROCESS FOR SILICON AND TRICHLOROSILANE PRODUCTION

John M. Blocher, Jr., Worthington, and Melvin F. Browning, Upper Arlington, both of Ohio, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 13, 1977, Ser. No. 806,245

Int. Cl.² C01B *33/02, 33/08*

U.S. Cl. 423—342 6 Claims

1. A method for converting silicon tetrachloride to trichlorosilane comprising the steps of:

reacting silicon tetrachloride with elemental silicon at a temperature above 1400° k to form silicon dichloride, mixing hydrogen chloride with the silicon dichloride so formed to effect a stoichiometric ratio of hydrogen chloride to silicon dichloride of approximately 1:1 then quenching the dichloride-hydrogen chloride mixture to a temperature below 800° C, thereby forming trichlorosilane without polymer formation.

5. A method for converting metallurgical grade silicon to semiconductor grade silicon comprising the steps of:

reacting metallurgical grade silicon above 1400° K with silicon tetrachloride and hydrogen to form silicon dichloride; mixing hydrogen chloride with the silicon dichloride so formed to effect a stoichiometric ratio of hydrogen chloride to silicon dichloride of approximately 1:1

quenching the dichloride-hydrogen chloride mixture to a temperature below 800° C within two seconds to form trichlorosilane, without polymer formation;

purifying the trichlorosilane;

converting the trichlorosilane in a deposition reactor to semiconductor grade silicon and an effluent consisting essentially of hydrogen, hydrogen chloride, silicon tetrachloride and unreacted trichlorosilane; and then

separating the tetrachloride and hydrogen from the effluent and recycling said tetrachloride to react with additional metallurgical grade silicon.

4,117,095

METHOD OF MAKING α TYPE SILICON NITRIDE POWDER

Katsutoshi Komeya, Yokohama; Hiroshi Inoue, Kawaguchi, and Takao Ohta, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Sep. 22, 1976, Ser. No. 725,669

Claims priority, application Japan, Sep. 22, 1975, 50-113762

Int. Cl.² C01B *21/06*

U.S. Cl. 423—344 5 Claims

1. A method for manufacturing an α silicon nitride powder, consisting essentially of the steps of:

(a) admixing 1 part silica powder, 0.4 to 4 parts carbon powder and 0.01 to 2.0 parts metallic silicon powder;

(b) heating said mixture at 1350°–1550° C. in a non-oxidizing atmosphere containing at least one of nitrogen or ammonia and optionally at least one component selected from the group consisting of CO, H_2 and AR to effect the formation of α silicon nitride; and

(c) heating the so formed α silicon nitride at 600°–800° C. in an oxidizing atmosphere to effect decarbonization of said silicon nitride.

4,117,096

PROCESS FOR PRODUCING POWDER OF β-TYPE SILICON CARBIDE

Takuo Hosaka, Toyota; Tadao Sasaki, Shijiyonawate, and Hiroshige Suzuki, Tokyo, all of Japan, assignors to Nippon Crucible Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1977, Ser. No. 825,733

Claims priority, application Japan, Aug. 20, 1976, 51-99281

Int. Cl.² C01B *31/36*

U.S. Cl. 423—345 5 Claims

1. A process for producing a powder of β-type silicon carbide, which comprises heating a mixture of a carbon powder having a particle size of about 20 microns or less and a metallic silicon powder having a particle size not greater than 200 microns with a carbon-to-silicon molar ration of 1:0.6 to 1:2 to a temperature of 800° to about 1400° C in an oxidizing atmosphere having an oxygen concentration of 0.3 to 35% by volume, to thereby induce a spontaneous continuous reaction between carbon and silicon and effect the formation of β-type silicon carbide.

4,117,097

CONTINUOUS PROCESS FOR THE PRODUCTION OF A COMPACT, COARSE SODIUM PERCARBONATE

Hans Klebe, Rheinfelden; Gerd Knippschild, Wehr, and Hubert Schuster, Karsau-Beuggen, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

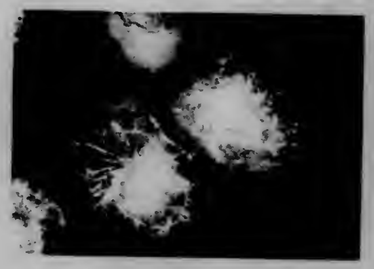
Filed Sep. 27, 1977, Ser. No. 837,221

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644148

Int. Cl.² C01B *15/10*

U.S. Cl. 423—415 P 8 Claims

1. A continuous process for the production of a compact, coarse abrasion resistant sodium percarbonate by reaction of sodium carbonate and hydrogen peroxide in the presence of sodium percarbonate inocculant seeds, sodium chloride, known active oxygen stabilizers and sodium hexametaphosphate at 10°–20° C., said process comprising feeding into the preliminary inocculant an aqueous hydrogen peroxide solution containing an active oxygen stabilizer and simultaneously either (1) a filtered solution saturated in sodium carbonate and containing 40–100 grams per liter of sodium percarbonate, 0.1–1.0 gram of sodium hexametaphosphate per liter, 100–200 grams of sodium chloride per liter and an active oxygen stabilizer or (2) a mother liquor containing 40–100 grams of sodium percarbonate per liter, 0.1–1.0 gram of sodium hexametaphosphate per liter, 100–200 grams of sodium chloride per liter of solution and an active oxygen stabilizer, with the proviso that



when the mother liquor is employed there is also fed into the preliminary inocculant such an amount of calcined soda that no sodium carbonate decahydrate forms as a solid phase in the preliminary inocculant, the amount of hydrogen peroxide added being approximately equivalent to the amount of dissolved sodium carbonate for reaction, while maintaining the same temperature during the entire process of precipitating sodium percarbonate, the supersaturation initially formed upon addition of the hydrogen peroxide being reduced by the precipitation of the sodium percarbonate, separating the precipitated sodium percarbonate, drying the separated sodium percarbonate and returning the resulting mother liquor after separation of the precipitated sodium percarbonate again into the first step of the process.

4,117,098

PROCESS FOR MANUFACTURING A CARBONACEOUS MATERIAL

Katsunobu Tatsumoto, Tokyo, and Kenji Fukuda, Omuta, both of Japan, assignors to Mitsui Mining Company, Limited and Mitsui Coke Co., Ltd., both of Tokyo, Japan

Filed Jun. 30, 1976, Ser. No. 701,409

Claims priority, application Japan, Aug. 4, 1975, 50-94228

Int. Cl.² C01B *31/04;* C10B *53/08, 53/04*

U.S. Cl. 423—448 13 Claims

1. A process for manufacturing an isotropic carbonaceous substance having a high density and a high crushing strength, which comprises the steps of (a) extracting organic components from at least one coal component of a lower rank of coalification than a sub-bituminous C coal by means of a solvent to produce a solvent-containing extract; (b) removing said solvent from said extract and (c) heating said extract at a temperature not exceeding 450° C. for a period of time sufficient to produce an istropic green coke which is 90 to about 98% insoluble in benzene and about 60 to about 85% insoluble in quinoline.

4,117,099
HYDROSULFIDE-GROUPS CONTAINING MULTI-METAL INORGANIC POLYMERIC COMPLEX AND METHOD OF MAKING SAME

George G. Merkl, 46 Sunset Ct., Haworth, N.J. 07641

Filed Dec. 8, 1976, Ser. No. 748,416
Int. Cl.² C01B *17/00, 17/32;* B01J *27/02*
U.S. Cl. 423—511 25 Claims

1. A method of producing an inorganic multi-metal polymeric complex containing a plurality of hydrosulfide groups which comprises:

reacting in an aqueous medium

(a) at least one non-alkaline metal selected from Groups I-VIII of the Periodic Table;

(b) an alkali metal hydroxide; and

(c) an inorganic sulfur containing compound capable of conversion to hydrosulfide groups under the conditions prevailing in the aqueous reaction medium

according to the following:

(i) introducing a predetermined quantity of said non-alkaline metal into a reaction vessel containing said aqueous medium;

(ii) providing in said aqueous medium a supply of alkali metal hydroxide to achieve a highly alkaline pH in said aqueous medium;

(iii) incrementally introducing said sulfur-containing compound into said aqueous medium, whereby said sulfur-containing compound is converted to hydrosulfide groups which react with dissolved metal ions of said non-alkaline metal and alkali metal hydroxide, the rate of the incremented introduction of said sulfur-containing compound corresponding approximately proportionately to the rate of dissolution of the non-alkaline metal, whereby the hydrosulfide groups formed are tied up and bound with the dissolved non-alkaline metal and alkali metal ions, the introduction of said sulfur-containing compound effecting a slow reduction of the pH of said aqueous medium;

(iv) stopping the incremental introduction of said sulfur-containing compound after some finite reduction in the pH of said aqueous medium, such reduction in pH being indicative of inorganic polymeric complex production; and

(v) terminating the reaction by removing from the aqueous medium any unreacted non-alkaline metal.

4,117,100
PROCESS FOR REDUCTION OF SULFUR DIOXIDE TO SULFUR

Lars Hellmer, Widdersdorf; Gerald Koller; Ghazi Rashid Al Muddarris, both of Cologne, and Kuldip Kumar Sud, Weiden, all of Fed. Rep. of Germany, assignors to Davy Powergas GmbH, Fed. Rep. of Germany

Filed Mar. 29, 1977, Ser. No. 782,360
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1976, 2613343
Int. Cl.² C01B *17/04*
U.S. Cl. 423—569 20 Claims

1. A process for producing elemental sulfur from sulfur dioxide-containing gases having at least about 10 percent sulfur dioxide therein comprising

introducing a carbonaceous fuel and an oxygen-containing gas into a thermal reduction zone, said oxygen-containing gas being up to about a sufficient amount on a stoichiometric basis for complete combustion of the fuel,

combusting said carbonaceous fuel with said oxygen-containing gas within the thermal reduction zone to provide combustion gases having temperatures at about 1100° to 2000° C. and to provide sufficient heat to maintain thermal reduction temperatures in the thermal reduction zone;

introducing a reducing agent capable of reducing sulfur dioxide to sulfur in the thermal reduction zone;

introducing into the thermal reduction zone, and commingling said sulfur dioxide-containing gases with the combustion gases wherein said combusting has proceeded sufficiently such that the combustion gases contain less than about 0.2 volume percent free or molecular oxygen, and wherein the mole ratio of hydrogen equivalents contained in said reducing agent and in said combusted gases to sulfur dioxide provided for thermal reduction in the thermal reduction zone is about 1.8 to 2.2;

thermally reducing about 50 to 80 percent of the sulfur dioxide in the sulfur dioxide-containing gases to elemental sulfur in the thermal reduction zone under reducing conditions including temperatures of about 950° to 1250° C. and an essential absence of free or molecular oxygen to produce an elemental sulfur-containing thermal reduction effluent wherein the gas velocity in the thermal reduction zone is about 1 to 25 meters per second and the residence time of the sulfur dioxide-containing gases in the thermal reduction zone is about 0.1 to 4 seconds;

cooling the thermal reduction effluent to about 240° to 400° C.;

subjecting the cooled thermal reduction effluent to catalytic hydrolysis in the presence of a catalytically-effective amount of a hydrogenation and hydrolysis catalyst to hydrolyze carbon disulfide and carbonyl sulfide contained in the thermal reduction effluent to hydrogen sulfide and reduce at least part of the sulfur dioxide present in the thermal reduction effluent to hydrogen sulfide; and

cooling the hydrolyzed thermal reduction effluent to about 118° to 170° C. to condense and separate elemental surface from the gases.

4,117,101
PROCESS FOR REDUCTION OF SO_2

Joachim Fechner, Hennef; Siegward Fiebig, Cologne-Auweiler; Friedrich Fischer, Lang-Gons; Herbert Fischer, Lollar; Lars Hellmer, Widdersdorf; Konrad Riedel, Cologne; Adolf Stauffer, Pulheim, and Kuldip Sud, Weiden, all of Fed. Rep. of Germany, assignors to Davy Powergas GmbH, Fed. Rep. of Germany

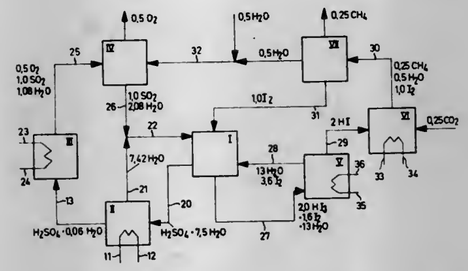
Continuation-in-part of Ser. No. 622,821, Oct. 16, 1975, abandoned, which is a continuation of Ser. No. 6 18,285, Sep. 30, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,452
Int. Cl.² C01B *17/04*
U.S. Cl. 423—569 22 Claims

1. A process for producing essentially carbon-free elemental sulfur from sulfur dioxide-containing gases having at least about 10 volume percent sulfur dioxide by thermal reduction using relatively moderate temperatures which comprises combusting hydrocarbon, in the essential absence of sulfur dioxide-containing gases, with an oxygen-containing gas, in an insufficient amount on a stoichiometric basis for complete combustion of the hydrocarbon, to provide a thermal reduction zone having reducing conditions including temperatures from about 950° to 1250° C. and pyrolysis of hydrocarbon to provide SO_2-reducing gas for thermally reducing sulfur dioxide to elemental sulfur; introducing the sulfur dioxide-containing gases into the thermal reduction zone downstream of the hydrocarbon combustion to thermally reduce the sulfur dioxide, with SO_2-reducing gas, in the relative absence of oxygen, and produce a reaction product containing elemental sulfur and sulfur compounds including carbonyl sulfide or carbon disulfide; catalytically contacting the reaction product under hydrogen sulfide-producing conditions including a temperature of about 200° to 460° C. to convert carbonyl sulfide or carbon disulfide to hydrogen sulfide which can be converted to additional amounts of elemental sulfur; and recovering elemental sulfur.

4,117,102
THERMOCHEMICAL PROCESS FOR PRODUCING METHANE AND OXYGEN FROM CARBON OXIDES AND WATER

Rudolf Schulten, Richterich, and Friedrich Behr, Gross Denkte, both of Germany, assignors to Rheinische Braunkohlenwerke AG, Cologne, Germany

Filed Apr. 28, 1977, Ser. No. 791,720
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619399
Int. Cl.² C01B *13/00*
U.S. Cl. 423—579 12 Claims



1. A recirculatory process for producing methane and oxygen which comprises:

(a) reacting sulphur dioxide with iodine and water in an exothermic reaction to form sulphuric acid and a polyiodide comprising a member selected from the group consisting of hydrogen triiodide and hydrogen triiodide hydrate,

(b) separating the resulting sulphuric acid from the reaction mixture formed in step (a),

(c) thermally concentrating and disposing the sulphuric acid separated in step (b) at increased temperature to form water, sulphur dioxide and oxygen,

(d) decomposing the polyiodide formed in step (a) to form iodine and gaseous hydrogen iodide,

(e) reacting the so formed gaseous hydrogen iodide with a carbon oxide selected from carbon monoxide, carbon dioxide and a mixture of carbon monoxide and carbon dioxide at an elevated temperature from 200° to 500° C. and at a pressure from 10 to 60 atmospheres to form methane and water, ps and in which the methane formed in step (e) and oxygen formed in step (c) are removed from the system and the remaining products of reaction formed in steps (a), (c), (d) and (e) are re-utilised in steps (a) to (e).

4,117,103
LITHIUM ION TRANSPORT COMPOSITIONS

Henry Y-P Hong, Westford, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 4, 1977, Ser. No. 793,801
Int. Cl.² C01G *17/00;* C01B *33/20*
U.S. Cl. 423—593 6 Claims

1. A crystalline compound which promotes fast lithium transport in a three dimensional network having the formula:

$$Li_{16-2x}D_x(GeO_4)_4$$

wherein D is a divalent cation and x is a number greater than zero and less than 4.

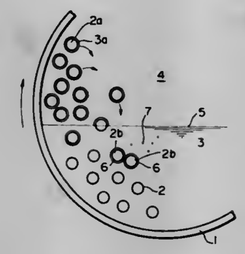
2. The compound of claim 1 of the formula:

$$Li_{14}Zn(GeO_4)_4$$

4,117,104
NOVEL LEAD MONOXIDE AND PROCESS FOR PREPARATION THEREOF

Yujiro Sugahara, Tokyo; Yoshibumi Noshi; Hiroyuki Naito, both of Tsuruoka; Mamoru Saito, Tsuruoka; Akira Takahashi, Tsuruoka, and Hisashi Tuchida, Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1977, Ser. No. 793,379
Claims priority, application United Kingdom, May 13, 1976, 19804/76
Int. Cl.² C01G *21/02*
U.S. Cl. 423—619 28 Claims



1. A process for the preparation of lead monoxide which comprises charging granules of metallic lead, a liquid medium and oxygen in a rotary mill, rotating the rotary mill under such conditions that at least parts of the metallic lead granules wetted with the liquid medium are located in the gas phase above the level of the liquid medium and friction is caused among the metallic granules through the liquid medium, to thereby form a dispersion of very fine particles of lead monoxide in the liquid medium, and separating the dispersion from the metallic lead granules.

25. A lead monoxide having a true density of 8.3 to 9.2 g/cc, an average particle size not larger than 0.2 μ, an infrared absorption peak at a wave number of 1400 to 1410 cm^{-1} and a chromic anhydride reactivity (RC) of at least 94%, said chromic anhydride reactivity (RC) being defined by the following formula:

$$RC\,(\%) = AC/TC \times 100$$

wherein AC denotes the quantitative analysis value (g) of CrO_3 in a product (lead chromate) obtained by reacting lead monoxide with chromic anhydride at a molar ratio of 1 : 1 in water in the absence of a catalyst and TC denotes a theoretical value (g) of CrO_3 to be contained in the product, namely the amount of chromic anhydride added.

4,117,105
PROCESS FOR PREPARING DISPERSIBLE BOEHMITE ALUMINA

Elliot P. Hertzenberg, Wilmington, Del.; Irwin Jerry Itzkovitch, Willowdale, and Ivan H. Joyce, Oakville, both of Canada, assignors to PQ Corporation, Valley Forge, Pa.

Filed Mar. 21, 1977, Ser. No. 779,441
Int. Cl.² C01F *7/02, 7/44*
U.S. Cl. 423—625 8 Claims

1. A process for preparing dispersible, colloidal sized particles of boehmite alumina, said boehmite alumina being characterized by a surface area of 35 to 250 m^2/g and dispersibility such that up to 25% by weight boehmite solids can be dispersed in water containing 0.01 to 0.5% HCl, said process comprising the steps of:

(a) calcining alumina trihydrate with a surface area of 0.2 to 15 m^2/g at temperatures between 200° and 800° C for a period of 2 to 17 hours, thereby increasing the surface area of the alumina to 250 to 800 m^2/g by partial dehydration;

(b) forming a slurry of said calcined alumina and water;

(c) autoclaving the slurry at a temperature between 140° and 200° C for a period of one-half to 6 hours, thereby achieving crystallization and rehydration of the alumina and producing a slurry of colloidal sized particles of boehmite and
(d) dewatering said slurry.

4,117,106

METHOD FOR PRODUCING BAYERITE

Larry L. Bendig, and John F. Scamehorn, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 1, 1977, Ser. No. 820,527
Int. Cl.² C01F *7/02*
U.S. Cl. 423—630 **3 Claims**

1. A method for enhancing bayerite production during the low temperature hydrolysis of aluminum alkoxides comprising injecting aluminum alkoxides into water or an aqueous solution at a temperature of from about 100° F to about 160° F wherein said injection is carried out at an injection velocity equal to or greater than 100 feet per second as determined using the formula $V=F/\rho A$ wherein A is orifice area in square feet, ρ is density in pounds per cubic foot, and F is flow rate in pounds per second, by-products and adsorbed alcohols are removed, and bayerite is recovered without an ageing period.

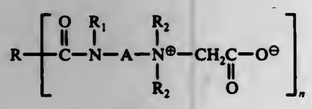
4,117,107

METHOD AND COMPOSITION FOR IMPROVING ORAL HYGIENE

Warren B. Shapiro, Randallstown, and Owen Rodney Blackburne, Baltimore, both of Md., assignors to Noxell Corporation, Baltimore, Md.

Filed Oct. 17, 1975, Ser. No. 623,277
The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.
Int. Cl.² A61K *7/22, 7/16*
U.S. Cl. 424—54 **38 Claims**

1. A method for retarding pellicle and plaque formation on teeth which comprises intermittently contacting sites of plaque formation and growth with a preparation comprising an amount sufficient to retard said pellicle and plaque formation of a compound of the formula:



wherein R is a monovalent or divalent hydrocarbyl group containing at least 14 carbon atoms, n is one when R is monovalent and is 2 when R is divalent; R_1 is H or an alkyl group containing from 1 to about 3 carbon atoms; A is a divalent hydrocarbon bridge containing from 1 to about 6 carbon atoms; and each R_2 individually is an alkyl group containing from 1 to about 5 carbon atoms; or both R_2 groups are interconnected to form a heterocyclic ring with the N atom to which they are attached and contains 5 to 6 members in the ring and being selected from the group consisting or morpholinyl, piperidinyl, pyrrolidinyl, and piperazinyl; or nontoxic, physiologically and orally acceptable salts of said compound; or mixtures thereof.

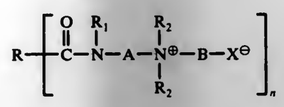
4,117,108

ORAL HYGIENE

Warren B. Shapiro, Randallstown, and Owen Rodney Blackburne, Baltimore, both of Md., assignors to Noxell Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 623,277, Oct. 17, 1975. This application Sep. 9, 1976, Ser. No. 721,746
Int. Cl.² A61K *7/22, 7/16*
U.S. Cl. 424—54 **46 Claims**

1. A method for retarding pellicle and plaque formation on teeth which comprises intermittently contacting sites of plaque formation and growth with a preparation comprising an amount sufficient to retard said pellicle and plaque formation of a compound of the formula:



wherein R is a monovalent or divalent hydrocarbyl group containing at least 14 carbon atoms, *n* is one when R is monovalent and is 2 when R is divalent; R_1 is H or a alkyl group containing from 1 to about 3 carbon atoms; A is a divalent hydrocarbon bridge containing from 1 to about 6 carbon atoms; each R_2 individually is an alkyl group containing from 1 to about 5 carbon atoms; or both R_2 groups are interconnected to form a heterocyclic ring with the N atom to which they are attached and contains 5 to 6 members in the ring, and being selected from the group consisting of morpholinyl, piperidinyl, pyrrolidinyl, and piperazinyl; B is a divalent alkylene or alkylidene group containing 1 or 2 carbon atoms, and X is a carboxylate or sulfonate group; and further provided that B contains 2 carbon atoms when X is a carboxylate group; or nontoxic, physiologically and orally acceptable salts of said compound; or mixtures thereof.

4,117,109

DENTIFRICE PREPARATION

George K. Stookey, Noblesville, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Jan. 22, 1976, Ser. No. 651,447
Int. Cl.² A61K *7/16, 7/18*
U.S. Cl. 424—57 **4 Claims**

1. A paste type dentifrice preparation comprising:
from about 10 up to about 20%, by weight calcium pyrophosphate;
from about 8 up to about 15%, by weight, of an inert filler comprising low particle size silica; and
from about 0.5 to about 5.0% of at least one detergent.

4,117,110

SOLID AIR-IMPROVING COMPOSITION

Horst Hautmann, Neuburg, Donau, Fed. Rep. of Germany, assignor to Globol Werk GmbH, Neuburg, Fed. Rep. of Germany

Continuation of Ser. No. 623,118, Oct. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 458,463, Apr. 8, 1974, abandoned. This application Apr. 14, 1977, Ser. No. 787,532
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1974, 2412900
Int. Cl.² A61L *13/00*
U.S. Cl. 424—76 **12 Claims**

1. A solid molded air improving gel composition comprising:
(a) a carrier material consisting of sodium stearate in a concentration of about 5 to 30 percent by weight of said composition;
(b) water in an amount of from at least 2% required for complete gelling; up to not more than about 20% by weight of said composition;

(c) a volatile component comprising
(c_1) a liquid paraffin having at 20° C an evaporation number ranging from 8 to 1000 based on the evaporation number at 20° C of diethylether being equal to 1, said liquid paraffin having a concentration of about 30 to 80 percent by weight of said composition; and
(c_2) a volatile deodorant or odorant material in an amount of not more than 62%, based on the weight of said composition, whereby the solidification point of said composition is not less than about 40° C, being sufficient to effectively deodorize or odorize the air in a closed room of determined space.

4,117,111

METHOD FOR LOWERING BLOOD CHOLESTEROL LEVEL

Joseph E. Fields, Ballwin, and John H. Johnson, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 353,832, Apr. 23, 1973, Pat. No. 3,923,972, which is a continuation-in-part of Ser. No. 188,577, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 789,081, Jan. 2, 1969, abandoned. This application Apr. 29, 1975, Ser. No. 572,799
Int. Cl.² A61K *31/74*
U.S. Cl. 424—78 **23 Claims**

1. A method of controlling blood cholesterol levels in a living animal body in need of such control which comprises orally administering to said animal body a pharmaceutically effective amount of material comprising a lipophilic polymer effective for such purpose and having recurring units of copolymer of (1) alpha-olefin of at least 10 carbon atoms selected from alkoxy-olefins, alkylcarboxyl olefins, or mixtures thereof, with (2) unsaturated carboxylic acids, or anhydrides, or the amides, esters, imides or salts thereof, or mixtures of the foregoing, said copolymer having a molecular weight in the range of from about 1,000 to about 1,000,000, and said pharmaceutically effective amount being sufficient to achieve such control.

4,117,112

VACCINE FOR PREVENTION OF FELINE LEUKEMIA

William Fleming Hoggan Jarrett; James Oswald Jarrett, and Lindsay Joan Mackey, all of Glasgow, Scotland, assignors to University of Glasgow, Glasgow, Scotland

Continuation-in-part of Ser. No. 668,110, Mar. 18, 1976, Pat. No. 4,034,081, which is a division of Ser. No. 505,625, Sep. 13, 1974, Pat. No. 3,966,907. This application May 19, 1977, Ser. No. 798,509
Claims priority, application United Kingdom, Sep. 18, 1973, 43642/73
Int. Cl.² A61K *39/12*
U.S. Cl. 424—89 **7 Claims**

1. A vaccine for the prevention of disease associated with feline leukemia virus which comprises an effective amount of adjuvant and about 10^5–10^7 feline lymphoblastoid cells chronically infected with feline leukemia virus and having viral associated antigen on their surface wherein the virus and cells are inactivated by chemical or physical means without destroying immunogenicity.

4,117,113

IMMUNOLOGICAL PREPARATIONS

Anthony Clifford Allison, Mill Hill, and Gregory Gregoriadis, Kenton, both of England, assignors to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 590,270, Jun. 25, 1975, Pat. No. 4,053,585. This application Aug. 22, 1977, Ser. No. 826,409
Claims priority, application United Kingdom, Jun. 25, 1974, 28131/74
Int. Cl.² A61K *39/12, 39/18*
U.S. Cl. 424—89 **14 Claims**

1. A pharmaceutical preparation for administration in vivo to effect immunization comprising an immunologically effective agent selected from viral antigens which agent is incorporated essentially entrapped in liposomes, said liposomes having a negative charge.

4,117,114

COMPOSITION AND METHOD OF TREATING BENIGN PROSTATIC HYPERTROPHY WITH HEPTAMYCIN

Harry W. Gordon, Bronx, N.Y., assignor to Schmid Laboratories, Inc., Little Falls, N.J.

Continuation of Ser. No. 584,607, Jun. 6, 1976, abandoned, continuation of Ser. No. 414,968, Nov. 23, 1978, Pat. No. 3,920,813, which is a division of Ser. No. 313,568, Dec. 8, 1972, Pat. No. 3,843,785, which is a division of Ser. No. 194,052, Oct. 29, 1971, Pat. No. 3,721,734, which is a division of Ser. No. 70,509, Sep. 8, 1970, Pat. No. 3,714,347, which is a continuation-in-part of Ser. No. 544,712, Apr. 25, 1966, abandoned, and a continuation of Ser. No. 623,847, Mar. 17, 1967, Pat. No. 3,584,118. This application Oct. 5, 1976, Ser. No. 729,786
Int. Cl.² H61K *35/00*
U.S. Cl. 424—115 **3 Claims**

1. A process for the treatment of prostatic hypertrophy in a large mammal afflicted with benign prostatic hypertrophy which comprises orally administering to said mammal an effective dose for treating prostatic hypertrophy of heptamycin.

4,117,115

TREATMENT OF CONJUNCTIVITIS WITH POWDERED ALUMINUM

Frank Hutchins, P.O. Box 9035, 67 Pinedale Rd., Asheville, N.C. 28805

Division of Ser. No. 771,645, Feb. 24, 1977. This application Oct. 7, 1977, Ser. No. 840,141
Int. Cl.² A61K *33/22, 33/06*
U.S. Cl. 424—148 **16 Claims**

1. A process for treating conjunctivitis in an animal which comprises topically administering to a diseased eye of the animal afflicted with conjunctivitis an amount of powdered aluminum sufficient to arrest and relieve the affliction.

4,117,116

METHOD FOR LOWERING THE VISCOSITY OF CERTAIN AGENTS

John D. Buehler, Fort Washington; Pravinchandra B. Shah, Willow Grove, both of Pa., and Robert S. Joslin, Northbrook, Ill., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 395,472, Sep. 10, 1973, abandoned. This application Mar. 31, 1975, Ser. No. 561,766
Int. Cl.² A61K *33/08*
U.S. Cl. 424—157 **6 Claims**

1. The method of lowering the viscosity of a commercially available aqueous antacid gel cake which is supplied as a stiff, putty-like, non-flowing, bulk mass to physically transform it to a flowable consistency which can be pumped through a pipe, said gel cake being selected from the group consisting of:
magnesium hydroxide,
aluminum hydroxide and
magnesium hydroxide and aluminum hydroxide mixtures, in which the antacid constitutes 25% to 35% w/w of the gel cake, which comprises mixing into said gel cake a fluidizing agent selected from the group consisting of:
acacia,
citric acid,
sodium citrate,
sodium lauryl sulfate and
dioctyl sodium sulfosuccinate, in which said fluidizing agent is added so that it amounts to from 0.1% to 4% of the final total mixture.

4,117,117

TRIDECAPEPTIDE HAVING GASTRIN EFFECT

Erich Wunsch, Tutzing, Germany, assignor to Max Planck-Gesellschaft zur Forderung der Wissenschaften, Gottingen, Germany

Filed Jun. 21, 1977, Ser. No. 808,517
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628006
Int. Cl.[2] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 **15 Claims**

6. A composition containing L-leucyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-alanyl-L-tyrosylglycyl-L-tryptophyl-L-leucyl-L-asparagyl-L-phenylalanineamide and/or a pharmaceutically acceptable salt thereof.

7. Process wherein the composition of claim 6 is used to stimulate the HCl secretion of the stomach.

4,117,118

ORGANIC COMPOUNDS

Eugen Härri, Therwil, and Artur Rüegger, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 721,836, Sep. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 604,941, Aug. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 528,474, Nov. 29, 1974, abandoned. This application Mar. 28, 1977, Ser. No. 781,722
Claims priority, application Switzerland, Apr. 9, 1976, 4527/76
Int. Cl.[2] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 **16 Claims**

1. Antibiotic S7481/F-1 having the following characteristics, when an amorphous form:

U.V. spectrum [CH_3OH; c = 1.063 g/l; d = 0.01 cm] as shown in FIG. 1 of the accompanying drawings,

I.R. spectrum [CH_2Cl_2] as shown in FIG. 2 of the accompanying drawings,

Proton N.M.R. spectrum [90 MHz; $CDCL_3$] as shown in FIG. 3 of the accompanying drawings,

High resolution mass spectrum [ion acceleration 4kv; temperature ion source 290° C; pressure 5.10^{-6} mm Hg] peak of mass = m/e 1183.831 [± 0.004] corresponding to $C_{62}H_{109}N_{11}O_{11}$ recognisable as product of elimination of water from $C_{62}H_{111}N_{11}O_{12}$; and empirical formula $C_{62}H_{111}N_{11}O_{12}$; or antibiotic S7481/F-2 having the following characteristics, when in amorphous form:

U.V. spectrum [CH_3OH; c = 1.062 g/l; d = 0.01 cm] as shown in FIG. 4 of the accompanying drawings;

I.R. spectrum [CH_2Cl_2] as hown in FIG. 5 of the accompanying drawings;

Proton N.M.R. spectrum [90 MHz; $CDCl_3$] as shown in FIG. 6 of the accompanying drawings;

High resolution mass spectrum [ion acceleration 4 kv; ion source temperature 290° C; pressure 5.10^{-6} mm Hg] peak of mass m/e 1169.815 (± 0.006) corresponding to $C_{61}H_{107}N_{11}O_{11}$, the product of water elimination from $C_{61}H_{109}N_{11}O_{12}$; empirical formula $C_{61}H_{109}N_{11}O_{12}$.

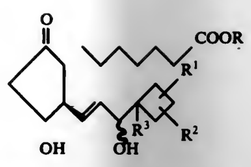
4,117,119

15-CYCLOBUTYL-PROSTAGLANDINS

Masayasu Kurono, Mishimagun; Hisao Nakai, and Takashi Muryobayashi, both of Takatsuki, all of Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

Continuation-in-part of Ser. No. 557,437, Mar. 11, 1975, Pat. No. 4,045,468. This application May 6, 1977, Ser. No. 794,580
Int. Cl.[2] C07C *177/00*; A61K *31/19, 31/215*
U.S. Cl. 424—180 **4 Claims**

1. A compound of the formula:



wherein R represents a hydrogen atom or a straight- or branched- chain alkyl group containing from 1 to 12 carbon atoms, R^1 and R^2 represent hydrogen atoms and R_3 represents a straight- or branched- chain alkyl group containing from 1 to 6 carbon atoms and cyclodextrin clathrates of such acids and esters, and, when R represents a hydrogen atom, non-toxic salts thereof.

4,117,120

MEDICATION FOR HERPES SIMPLEX AND CANKER SORES

Gilbert J. Elderbaum, 380 Main St., Wakefield, Mass. 01880

Filed Feb. 11, 1977, Ser. No. 767,887
Int. Cl.[2] A61K *35/78*
U.S. Cl. 424—195 **1 Claim**

1. The method of treatment of herpes simplex virus, cold sores, lesions and blisters affecting mucous membranes of the mough comprising topical application of kelp to the affected area.

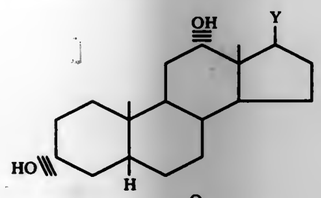
4,117,121

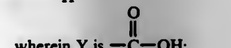
METHOD OF INCREASING BILE FLOW AND DECREASING LIPID LEVELS

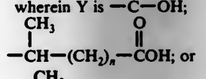
Hugo Gallo-Torres, Livingston; James Guthrie Hamilton, Nutley, and Ann Clare Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

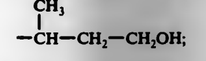
Filed Apr. 22, 1977, Ser. No. 790,163
Int. Cl.[2] A61K *31/56*
U.S. Cl. 424—238 **23 Claims**

1. A method for increasing bile flow and simultaneously reducing lipid levels in mammals comprising administering to mammals a compound of the formula



wherein Y is  ;

 ; or

 ;

and n is an integer of from 0 to 1; or pharmaceutically acceptable salts thereof, said compound being administered in an effective amount to increase the bile flow and reduce the lipid level in said system.

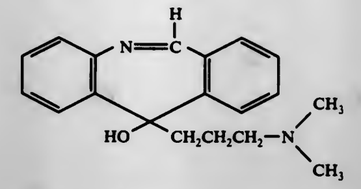
4,117,122

11-AMINOALKYLMORPHANTHRIDIN-11-OLS

Jules Freedman, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 526,722, Nov. 25, 1974, abandoned. This application Oct. 7, 1976, Ser. No. 730,310
Int. Cl.[2] A61K *31/635*; C07D *223/00*
U.S. Cl. 424—244 **4 Claims**

1. A pharmaceutical composition which is intended for use as an antidepressant which comprises an anti-depressive amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof in combination with a major proportion of a pharmaceutical diluent.

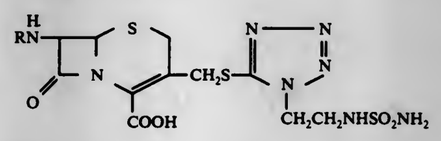
4,117,123

7-ACYLAMINO-3-[1-(2-SULFAMIDOETHYL)TETRAZOL-5-YLTHIOMETHYL]-3-CEPHEM-4-CARBOXYLIC ACIDS

David Alan Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

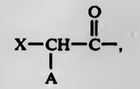
Filed Jun. 9, 1977, Ser. No. 805,197
Int. Cl.[2] A61K *31/545*; C07D *501/36*
U.S. Cl. 424—246 **6 Claims**

1. A compound of the formula:



in which:

R is an acyl group selected from the group consisting of:

 ,

where:

X is thienyl, furyl, phenyl or phenyl monosubstituted with hydroxy, hydroxymethyl, formamido or ureido;

A is NH_2, OH, COOH, SO_3H, or formoxyl or a nontoxic pharmaceutically acceptable salt thereof.

4. A pharmaceutical composition in dosage unit form having antibacterial activity comprising a pharmaceutical carrier and a chemical compound as defined in claim 1.

6. A method of treating bacterial infections comprising administering internally to an infected or susceptible human subject an antibacterially effective but nontoxic dose of a compound as claimed in claim 1.

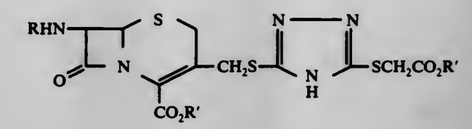
4,117,124

7-ACYLAMINO-3-[[3-(CARBOXYMETHYL)THIO-1H-1,2,4-TRIAZOL-5-YL]THIOMETHYL]-3-CEPHEM-4-CARBOXYLIC ACIDS

David Alan Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

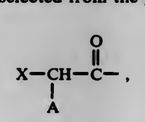
Filed Jun. 30, 1977, Ser. No. 811,642
Int. Cl.[2] A61K *31/545*; C07D *501/36*
U.S. Cl. 424—246 **6 Claims**

1. A compound of the formula:



in which:

R is an acyl group selected from the group consisting of:

 ,

where:

X is thienyl, furyl, phenyl or phenyl monosubstituted with hydroxy, hydroxymethyl, formamido or ureido;

A is NH_2, OH, COOH, SO_3H or, formoxyl

R′ is hydrogen or an alkali metal salt; or a nontoxic pharmaceutically acceptable salt thereof.

4. A pharmaceutical composition in dosage unit form having antibacterial activity comprising a pharmaceutical carrier and a chemical compound as defined in claim 1.

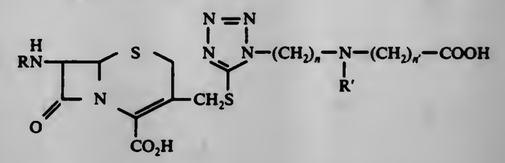
4,117,125

7-ACYLAMINO-3-[1-[2-(CARBOXYMETHYLAMINO]ETHYL) TETRAZOL-5-YLTHIOMETHYL]-3-CEPHEM-4-CARBOXYLIC ACIDS

David Alan Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

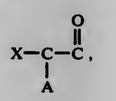
Filed Jun. 24, 1977, Ser. No. 809,585
Int. Cl.[2] A61K *31/545*; C07D *501/36*
U.S. Cl. 424—246 **6 Claims**

1. A compound of the formula:



in which:

R is an acyl group selected from the group consisting of:

 ,

where:

X is thienyl, furyl, phenyl or phenyl monosubstituted with hydroxy, hydroxyethyl, formamido, or ureido;

A is NH_2, OH, COOH, SO_3H, or formyloxy

R′ is hydrogen or lower alkyl;

n is 2 to 4;

n' is 1 to 4;

or a nontoxic pharmaceutically acceptable salt thereof.

4. A pharmaceutical composition in dosage unit form having antibacterial activity comprising a pharmaceutical carrier and a chemical compound as defined in claim 1.

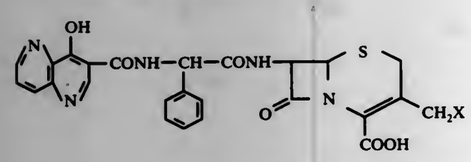
6. A method of treating bacterial infections comprising administering internally to an infected or susceptible human subject an antibacterially effective but nontoxic dose of a compound as claimed in claim 1.

4,117,126
7-(α-(4-HYDROXY-1,5-NAPHTHYRIDINE-3-CARBONAMIDO)-α-PHENYLACETAMIDO) CEPHALOSPORIN DERIVATIVES

Hirotada Yamada, Nishinomiya; Kosaku Okamura, Takarazuka; Hisao Tobiki, Kobe; Norihiko Tanno, Ashiya; Kozo Shimago, Toyonaka; Takenari Nakagome, Nishinomiya; Toshiaki Komatsu, Takarazuka; Akio Izawa, Kawanishi; Hiroshi Noguchi, Maebashi; Kenji Irie, Takarazuka, and Yasuko Eda, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Division of Ser. No. 674,205, Apr. 5, 1976, Pat. No. 4,061,748. This application Sep. 26, 1977, Ser. No. 836,922
Claims priority, application Japan, Apr. 3, 1975, 50-41011
Int. Cl.[2] C07D *501/36*
U.S. Cl. 424—246 **3 Claims**

1. A compound of formula (I):



(I)

wherein X is an —$OCOCH_3$ group, and the non-toxic, pharmaceutically acceptable salts thereof.

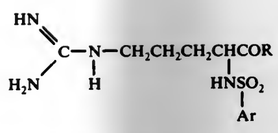
3. A pharmaceutical composition which comprises a therapeutically effective amount of a compound of claim 1 or a non-toxic, pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier or diluent.

4,117,127
N^2-ARYLSULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

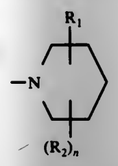
Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Machida; Yoshikuni Tamao, Yokohama; Kazuo Ohkubo, Machida; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd. and Shosuke Okamoto, both of Tokyo, Japan

Division of Ser. No. 760,745, Jan. 19, 1977, Pat. No. 4,066,773, which is a continuation-in-part of Ser. No. 653,217, Jan. 28, 1976, Pat. No. 4,055,651, Ser. No. 713,486, Aug. 11, 1976, Pat. No. 4,073,914, Ser. No. 671,436, Mar. 29, 1976, Pat. No. 4,066,758, and Ser. No. 703,704, Jul. 8, 1976, Pat. No. 4,069,323, said Ser. No. 671,436, is a division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Oct. 21, 1977, Ser. No. 844,188
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029357; Mar. 11, 1975, 50-029358
Int. Cl.[2] A61K *31/51;* **C07D** *417/12*
U.S. Cl. 424—247 **4 Claims**

1. An N^2-arylsulfonyl-L-argininamide having the formula



or a pharmaceutically acceptable salt thereof, wherein R is



wherein R_1 is —$COOR_3$ wherein R_3 is hydrogen, C_1–C_{10} alkyl, C_6–C_{10} aryl, C_7–C_{12} aralkyl or 5-indanyl; each R_2 independently is hydrogen, C_1–C_{10} alkyl, phenyl, C_1–C_5 alkoxy, C_2–C_6 alkoxycarbonyl, or carboxy; n is an integer of 1 to 4, R_1 is substituted into the piperidine ring at the 2 or 3 position; and R_2 is substituted into the piperidine ring at the 2, 3, 4, 5 or 6 position;

and Ar is 1, 2, 3, 4-tetrahydroquinolyl or 1, 2, 3, 4-tetrahydroisoquinolyl, either of which may be substituted with one or more groups selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, C_2–C_{20} dialkylamino, sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12} aralkyl, carboxy, C_2–C_{10} alkoxycarbomyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbomyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl, oxo and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof;

quinolyl, isoquinolyl, phthalozinyl, quinoxalinyl, quinazolinyl, cinnolinyl, acridinyl, phenazinyl, phenothiazinyl or phenoxazinyl, any of which may be substituted with one or more groups selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, C_2–C_{20} dialkylamino, sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkyl-carbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12} aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof.

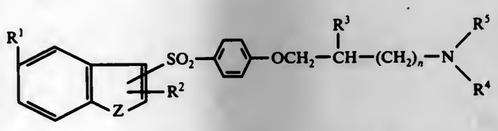
4. A method of inhibiting activity and suppressing activation of thrombin in vivo which comprises administering to a mammal a pharmaceutically effective amount of a compound of claim 1.

4,117,128
SULFONYL BENZOFURANS AND BENZOTHIOPHENES HAVING CORONARY VASODILATOR ACTIVITY

L. Martin Brenner, Havertown, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 3, 1976, Ser. No. 711,332
Int. Cl.[2] C07D *307/82;* **A61K** *31/34, 31/38*
U.S. Cl. 424—248.5 **11 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, in which:

R^1 is hydrogen, halo or lower alkyl;

R^2 is lower alkyl, phenyl, benzyl, lower alkylphenyl, halophenyl, trifluoromethylphenyl, lower alkylbenzyl, halobenzyl or trifluoromethylbenzyl;

R^3 is hydrogen or hydroxy;

R^4 is hydrogen or lower alkyl and R^5 is lower alkyl or R^4 and R^5 together with the nitrogen atom to which they are attached form a pyrrolidine, piperidine, N-(lower alkyl)-piperazine, morpholine or perhydroazepine ring;

n is 0 or 1 when R^3 is hydrogen and 1 when R^3 is hydroxy; and

Z is oxygen or sulfur.

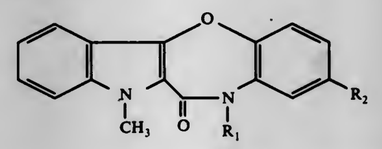
10. A pharmaceutical composition having coronary vasodilator activity comprising a pharmaceutical carrier and a compound of claim 1 in an amount sufficient to produce said activity.

4,117,129
INDOLOBENZOXAZEPINES AS CNS DEPRESSANTS

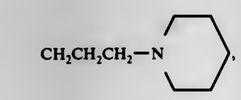
Richard E. Brown, Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

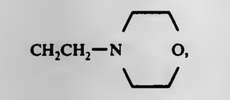
Continuation-in-part of Ser. No. 734,791, Oct. 22, 1976, Pat. No. 4,066,660, which is a division of Ser. No. 620,734, Oct. 8, 1975, Pat. No. 4,013,641. This application Sep. 8, 1977, Ser. No. 831,629
Int. Cl.[2] A61K *27/00, 31/40, 31/54, 31/495*
U.S. Cl. 424—248.57 **14 Claims**

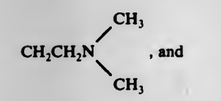
1. A method of producing a central nervous system depressant activity in a mammal which comprises the administration of an effective CNS depressing amount of a compound or a pharmaceutical composition comprising a compound of the general formula:

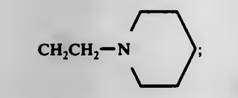


wherein R_1 is selected from the group consisting of









wherein R_2 is selected from the group consisting of

—Cl, and

—H;

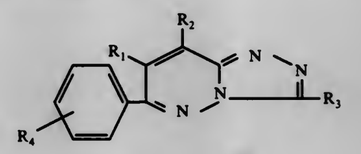
or the pharmaceutically acceptable salts thereof to said mammal.

4,117,130
METHOD FOR TREATING ANXIETY IN MAMMALS

George Rodger Allen, Jr., Old Tappan, N.J.; John William Hanifin, Jr.; Daniel Bryan Moran, both of Suffern, N.Y., and Jay Donald Albright, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 735,475, Oct. 26, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,724
Int. Cl.[2] A61K *31/495*
U.S. Cl. 424—250 **10 Claims**

1. The method of meliorating anxiety in a mammal which comprises administering internally to said mammal an effective amount of a compound selected from the group consisting of those of the formula:



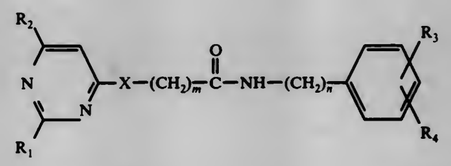
wherein R_1, R_2, and R_3 are each individually selected from the group consisting of hydrogen and alkyl having up to 3 carbon atoms and R_4 is meta or para fluoro, chloro, bromo, cyano, trifluoromethyl, nitro or amino with the proviso that at least one of R_1 and R_2 is hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

4,117,131
METHOD OF INHIBITING GASTRIC ACID SECRETIONS WITH 2-(4-PYRIMIDINYL)THIOACETAMIDES

Charles F. Schwender, Dexter, Mich., and Russell E. Pike, Stanhope, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 748,348, Dec. 7, 1976, abandoned. This application Sep. 12, 1977, Ser. No. 832,312
Int. Cl.[2] A61K *31/505;* **C07D** *239/00*
U.S. Cl. 424—251 **11 Claims**

1. A method of inhibiting gastric acid secretions in a mammal which comprises the administration to a mammal of a pharmaceutical composition comprising a compound of the formula:



wherein

R_1 and R_2 are selected from the group consisting of hydrogen, amino, alkylamino, hydroxyl, alkyl, and alkoxy; wherein

R_3 and R_4 are selected from the group consisting of: hydrogen, alkyl, alkoxy, amino, alkylamino, halogen, hydroxy, methylenedioxy, phenoxy, phenyl, alkylthio, trifluoromethyl, alkylsulfonyl, and alkylsulfinyl;

wherein *m* is 1 to 4 methylenes; wherein *n* is 0 to 4 methylenes; wherein X is O or S; wherein alkyl and alkoxy are defined as having 1 to 4 carbon atoms; and the pharmaceutically acceptable salts thereof in an amount sufficient to decrease gastric acid secretions in said mammal.

4,117,132

PROCESS FOR THE PRODUCTION OF STABILIZED PURE THEOPHYLLINE IN NEUTRAL, AQUEOUS SOLUTION

Adolf Seebach, Zurich, Switzerland, assignor to Dr. Adolf Seebach AG, Zurich, Switzerland

Filed Nov. 10, 1976, Ser. No. 740,672

Claims priority, application Switzerland, Apr. 2, 1976, 4152/76

Int. Cl.² A61K *31/52*

U.S. Cl. 424—253 **19 Claims**

1. A process of producing a pure, stable neutral aqueous solution of theophylline at a pH between 7 and 7.4 consisting essentially of adding pure theophylline to a neutral solution of a 7-hydroxypropyl theophylline selected from the group consisting of (a) 7-(2,3-dihydroxypropyl) theophylline and (b) a mixture of 7-(2,3-dihydroxypropyl) theophylline with 7-(2-hydroxypropyl) theophylline, the 7-hydroxypropyl theophylline being present in an amount sufficient to solubilize the theophylline.

4,117,133

VASODILATING CUANZINE HYDRAZIDES

Attilio Bonati, and Bruno Gabetta, both of Milan, Italy, assignors to Inverni Della Beffa S.p.A., Milan, Italy

Filed Oct. 20, 1976, Ser. No. 734,173

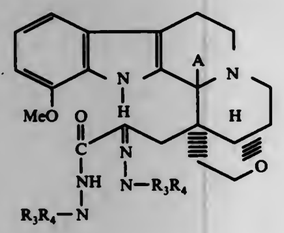
Claims priority, application United Kingdom, Oct. 28, 1975, 44441/75

Int. Cl.² C07D *519/04*; A61K *31/445*

U.S. Cl. 424—256 **11 Claims**

1. A compound having the general formula

III



wherein

A represents a hydrogen atom in the α- or β-configuration and

R_3 and R_4, which may be the same or different each represents a hydrogen atom or a C_{1-6} alkyl group.

5. A pharmaceutical composition having vasodilatory and hypotensive activity comprising a vasodilatory or hypotensive effective amount of a compound as claimed in claim 1 and a pharmaceutically acceptable diluent or carrier.

4,117,134

4,5-DIHYDRO-4,5-DIOXO-1H-1-BENZOPYRANO (2,3-B)-PYRIDINE-3-CARBOXYLIC ACIDS, SALTS AND ESTERS

David T. Connor, Ann Arbor, Mich., and Maximilian von Strandtmann, New Castle, Del., assignors to Warner-Lambert Company, Morris Plains, N.J.

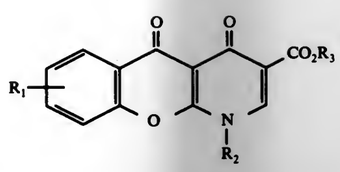
Filed Jun. 13, 1978, Ser. No. 806,026

Int. Cl.² C07D *405/04*; A61K *31/535*

U.S. Cl. 424—256 **8 Claims**

1. A compound of the formula VII:

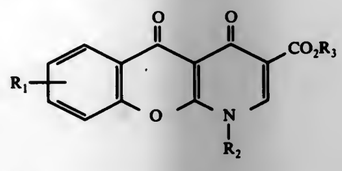
VII



wherein R_1 is hydrogen, lower alkyl, halogen, hydroxy or lower alkoxy; R_2 is hydrogen or lower alkyl; R_3 is hydrogen or lower alkyl; and the pharmaceutically acceptable, non-toxic salts thereof.

7. A pharmaceutical composition for alleviating allergic manifestations in mammals comprising an effective amount of a compound of the formula VII.

VII



wherein R_1 is hydrogen, lower alkyl, hydroxy or lower alkoxy; R_2 is hydrogen or lower alkyl; R_3 is hydrogen or lower alkyl; and the pharmaceutically acceptable, non-toxic salts thereof, together with an inert pharmaceutical carrier therefor.

4,117,135

NOVEL 5,6,7,8-TETRAHYDRO-5-QUINOLINES AND THEIR USE AS ANTI-INFLAMMATORY AGENTS

Eberhard Schröder, and Henning Koch, both of Berlin, Germany, assignors to Schering, A.G., West Berlin

Filed Oct. 8, 1975, Ser. No. 620,777

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1974, 2449030

Int. Cl.² C07D *215/16*; A61K *31/47*; C07D *215/18, 215/20*

U.S. Cl. 424—258 **31 Claims**

1. A compound selected from the group consisting of 2-phenyl-5,6,7,8-tetrahydro-5-quinoline carbonitrile, 2-phenyl-5,6,7,8-tetrahydro-5-quinolinehydroxamic acid, 5-hydroxy-2-phenyl-5,6,7,8-tetrahydro-5-quinoline-carboxylic acid, 5-acetoxy-2-phenyl-5,6,7,8tetrahydro-5-quinoline-carboxylic acid, 5-amino-2-phenyl-5,6,7,8-tetrahydro-5-quinoline-carboxylic acid, 5-acetamino-2-phenyl-5,6,7,8-tetrahydro-5-quinoline-carboxylic acid, -5-methyl-2-phenyl-,5,6,7,8-tetrahydro-5-quinoline-carboxylic acid, 7,7-dimethyl-2-phenyl-,5,6,7,8-tetrahydro-5-quinoline carbonitrile, 7,7-dimethyl-2-phenyl-5,6,7,8-tetrahydro-5-quinolinecarboxylic acid, 2-(4-chlorophenyl)-5,6,7,8-tetrahydro-5-quinoline carbonitrile, 2-(4-chlorophenyl)-5,6,7,8-tetrahydro-5-quinolinecarboxylic acid, 2-(2-tolyl)-5,6,7,8-tetrahydro-5-quinoline-carbonitrile, 2-(2-tolyl)-5,6,7,8-tetrahydro-5-quinoline-carboxylic acid, 2-(4-methoxyphenyl-5,6,7,8-tetrahydro-5-quinoline carbonitrile, 2-(4-methoxyphenyl)- 5,6,7,8-tetrahydro- 5-quinolinecarboxylic acid, 2-cyclohexyl-5,6,7,8-tetrahydro-5-quinoline carbonitrile, 2-cyclohexyl-5,6,7,8-tetrahydro-5-quinoline carboxylic acid, 2-isobutyl-5,6,7,8-tetrahydro-5-quinoline carbonitrile, 2-isobutyl-5,6,7,8-tetrahydro-5-quinoline carboxylic acid, 3-chloro-2-cyclohexyl5,6,7,8-tetrahydro-5-quinoline carbonitrile, and 3-chloro-2-cyclohexyl-5,6,7,8-tetrahydro-5-quinolinecarboxylic acid.

26. A method for the treatment of inflammation comprising administration to the affected patient an anti-inflammatorily effective amount of a compound of claim 1.

4,117,136

SYSTEMIC ANTIMICROBIAL QUINOLINES FOR PLANT DISEASE

Yoshio Hisada, Kawanishi; Kiyoto Maeda, Takarazuka, and Hideo Agui, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Aug. 16, 1977, Ser. No. 825,115

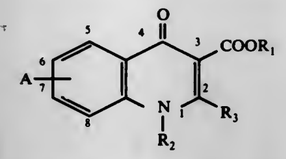
Claims priority, application Japan, Aug. 19, 1976, 51-99322

Int. Cl.² A61K *31/47*

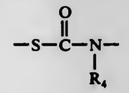
U.S. Cl. 424—258 **4 Claims**

1. A method for eradicating and preventing bacterially caused plant diseases which comprises applying to plants by foliar spraying or soil drenching or to seeds by dressing or immersing, as an effective component, 4(1H)-oxo-3-quinolinecarboxylic acids represented by the formula (I):

(I)



wherein A represents —OCH_2O—(attached at the 6- and 7-position) or



(attached at the 5- and 6-position), wherein R_4 represents a hydrogen atom or a (C_1–C_4)alkyl group; R_1 represents a hydrogen atom, a (C_1–C_4)alkyl group, an amino group, an ammonium group, or an alkali metal atom; R_2 represents a (C_1–C_4)alkyl group, a halogenated (C_1–C_4)alkyl group, a (C_1–C_4)hydroxyalkyl group, a (C_2–C_3)alkenyl group, or a (C_1–C_4)alkoxyl group; and R_3 represents a hydrogen atom or a (C_1–C_4)alkyl group.

4,117,137

2-AMINO-PYRIDYL NITROMETHYLKETONES AND 2-AMINO-PHENYL NITROMETHYLKETONES

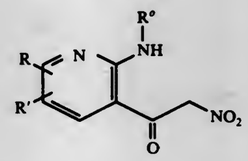
Goetz E. Hardtmann, Morristown, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 724,990, Sep. 20, 1976, abandoned. This application Jul. 6, 1977, Ser. No. 813,266

Int. Cl.² A61K *31/44*

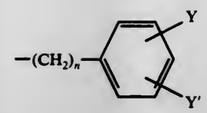
U.S. Cl. 424—263 **45 Claims**

1. A compound selected from the group consisting of: a) a nitromethylketone in free base form of the formula:



wherein

R* is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms or



n is 0 or 1,

Y and Y′ are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl, and

R and R′ are independently hydrogen or alkyl of 1 to 4 carbon atoms, with the proviso that the unsaturation in any alkenyl or alkynyl is other than on the alpha carbon atom; and b) a salt form thereof.

2. A compound of claim 1 in which the salt form is formed by a pharmaceutically acceptable cation.

22. The method of treating allergic conditions due to histamine release comprising administering to a mammal in need of such treatment an allergy treating effective amount of a compound of claim 2.

4,117,138

PYRROLIDONECARBOXYLIC ACID THERAPEUTIC AGENTS

Albin J. Nelson, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 647,132, Jan. 7, 1976, Pat. No. 4,064,264. This application Sep. 16, 1977, Ser. No. 833,909

Int. Cl.² A61K *31/44, 31/455*; C07D *213/44*

U.S. Cl. 424—263 **4 Claims**

1. A compound selected from the group consisting of N-[N′-(2-pyridyl)-4′-benzamido]-2-pyrrolidone-4-carboxylic acid, a lower alkyl ester or unsubstituted amide derivative thereof, and a base salt of said acid with a pharmacologically acceptable cation.

3. A method for combatting peptic ulcers in the treatment of a subject afflicted with said condition, which comprises administering to said subject a therapeutically-effective amount of a compound of claim 1.

4,117,139

MEDICATED COMPOUND FOR TREATING ALLERGIC DISEASES

Mikhail Davydovich Mashkovsky, Leningradsky prospekt, 75a, kv. 55; Leonid Nikolaevich Yakhontov, Nakhimovsky prospekt, 1, korpus 1, kv. 22; Andrei Dmitrievich Ado, Kotelnicheskaya naberezhnava, 1/15, kv. 295; Mikhail Emmanuilovich Kaminka, ulitsa Lobachevskogo, 12, kv. 29; Eva Evseevna Mikhlina, Kutuzovsky prospekt, 5/3, korpus 2, kv. 151; Valentina Yakovlevna Vorobieva, Novo-Alexeevskaya ulitsa, 5a, kv. 13; Anna Dmitrievna Yanina, Karachinovsky proezd, 22, kv. 132., and Nadezhda Andreevna Komarova, ulitsa Shabolovka, 65, korpus 2, kv. 86, all of Moscow, U.S.S.R.

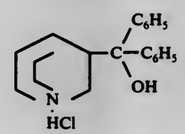
Continuation of Ser. No. 525,633, Nov. 20, 1974, abandoned. This application Dec. 20, 1976, Ser. No. 752,127

Claims priority, application U.S.S.R., Dec. 18, 1973, 1979715

Int. Cl.² A61K *31/445*

U.S. Cl. 424—267 **8 Claims**

1. A method of alleviating histamine-induced symptoms in a patient in need thereof which comprises administering to said patient an antihistiminically effective amount of the active principle (quinuclidyl-3)-diphenylcarbinol hydrochloride of the formula:



4,117,140

BRONCHODILATING PIPERIDINOETHYL BENZOPYRANOPYRIDINONES

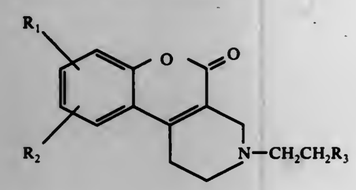
Richard E. Brown, 16 Ridge Dr., East Hanover, N.J. 07936; Chester Puchalski, 9 Locust Ave., Dover, N.J. 07801, and John Shavel, Jr., Yardley Pl., Mendham, N.J. 07945

Continuation-in-part of Ser. No. 743,839, Nov. 22, 1976, which is a continuation-in-part of Ser. No. 548,298, Feb. 10, 1975, abandoned. This application Jun. 30, 1977, Ser. No. 811,818

Int. Cl.[2] C07D *491/04*

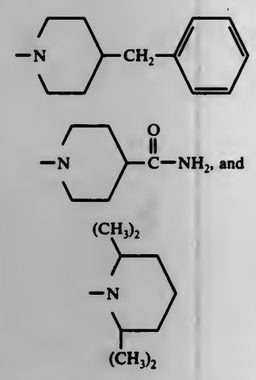
U.S. Cl. 424—267 6 Claims

1. A compound of the formula:



I

wherein R_1 and R_2 are selected from the group consisting of hydrogen, hydroxy, lower alkoxy or alkyl of 1 to 6 carbon atoms, or taken together R_1 and R_2 is a methylenedioxy group, and wherein R_3 is selected from the group consisting of:



and the pharmaceutical acceptable salts thereof.

6. A method of producing bronchodilation in a mammal which comprises the administration of an effective bronchodilating amount of a compound selected from the group consisting of 3-[2-(4-benzylpiperidino)ethyl]1,2,3,4-tetrahydro-8,9-dimethoxy-5H-[1]benzopyrano[3,4-c]pyridin-5-one and 1-[2-(1,2,3,4-tetrahydro-8,9-dimethoxy-5oxo-5H-[1]benzopyrano[3,4-c]pyridin-3-yl)ethyl]-4-piperidine-carboxamide dimaleate to said mammal.

4,117,141

METHOD OF INHIBITING FLEA-BITE ALLERGY

Dov Michaeli, 1431 8th Ave., San Francisco, Calif. 94122

Filed Feb. 18, 1977, Ser. No. 770,101

Int. Cl.[2] A61K *31/415*

U.S. Cl. 424—273 R 9 Claims

1. A method of hyposensitizing the allergic reaction in a host to flea-bite comprising injecting an effective amount of allantoin or allantoin derivatives subcutaneously into a host and repeating the injection during the period of exposure of the host to fleas.

4,117,142

DISUBSTITUTED TRIPHENYLMETHYLMIDAZOLES FOR TREATING MYCOTIC INFECTIONS

Karl Heinz Buchel; Erik Regel, and Manfred Plempel, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 501,167, Aug. 28, 1974, abandoned, which is a division of Ser. No. 339,430, Mar. 8, 1973. This application Sep. 27, 1976, Ser. No. 726,568

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1972, 2213863

Int. Cl.[2] A61K *31/415*

U.S. Cl. 424—273 R 6 Claims

1. A pharmaceutical composition for treating mycotic infections in humans and animals which comprises an anti-mycotically effective amount of 1-(2,6-dichlorophenyl-diphenyl)-methyl-imidazole or a pharmaceutically acceptable non-toxic salt thereof, in combination with a pharmaceutically acceptable non-toxic inert carrier.

4,117,143

1-SUBSTITUTED PYRAZOLES

Eike Moller, Wuppertal, Germany; Karl-August Meng, deceased, late of Wuppertal, Germany (by Ilse Heide Frieda Meng, heir); Egbert Wehinger, Neviges, Germany; Harald Horstmann, Wuppertal, Germany, and Friedel Seuter, Neviges, Germany, assignors to Bayer Aktiengesellschaft, Germany

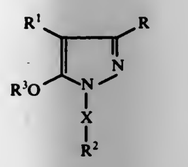
Division of Ser. No. 693,971, Jun. 8, 1976. This application Feb. 8, 1977, Ser. No. 766,684

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1975, 2526469

Int. Cl.[2] A61K *31/415, 31/445*

U.S. Cl. 424—273 P 23 Claims

1. A method of treating thromboses in humans and animals which comprises administering to a human or animal in need thereof an anti-thrombolitically effective amount a compound of the formula



wherein

R is hydrogen; lower alkyl; or trifluoromethyl;

R^1 is hydrogen or lower alkyl;

R^3 is R^6CO wherein

R^6 is lower alkyl; lower alkyl substituted by phenoxy; lower alkoxy; haloalkyl of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; cycloalkyl of 5 to 7 carbon atoms; lower alkylthio; haloalkoxy of 1 to 4 carbon atoms in the alkoxy moiety and 1 to 3 halo atoms; haloalkylthio of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; lower alkoxy(lower alkyl); mono- or di-lower alkylamino(lower alkyl); phenyl unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro, cyano, SO_n-alkyl of 1 to 4 carbon atoms in the alkyl moiety and n is 0 to 2, SO_n—CF_3 wherein n is 0 to 2, carbonamido or sulphonamido;

X is ethylene, or ethylene wherein 1 hydrogen atoms on one or both of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, linked to R^2 via an oxygen or sulphur atom; and

R^2 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halo, trifluoromethyl, trifluoromethoxy, cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, nitro, cyano, carboxamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms, or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, sulphonamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, and SO_n—(lower alkyl) wherein n is 0 to 2; or phenyl having fused thereto a saturated or unsaturated 5- to 7-membered isocyclic ring; in combination with a pharmaceutically acceptable carrier.

4,117,144

DERIVATIVES OF SUBSTITUTED ISOINDOLINES WITH EFFECT ON THE CENTRAL NERVOUS SYSTEM

Nils Åke Jönsson, Södertälje; Lembit Mikiver, Järna, and Pinchas Moses, Solna, all of Sweden, assignors to AB Kabi, Stockholm, Sweden

Division of Ser. No. 288,027, Sep. 11, 1972, Pat. No. 3,947,451, and a continuation of Ser. No. 670,782, Mar. 26, 1976, abandoned. This application Mar. 30, 1976, Ser. No. 671,759

Int. Cl.[2] A61K *31/40*

U.S. Cl. 424—274 3 Claims

1. The compound 2'-β-Dimethylaminoethyl-spiro (cyclohexane-1,3'-isoindoline)-1'-one.

4,117,145

1-SUBSTITUTED PYRAZOLES

Eike Möller, Wuppertal, Fed. Rep. of Germany; Karl-August Meng, deceased, late of Wuppertal, Fed. Rep. of Germany (by Ilse Freida Meng, legal representative); Egbert Wehinger, Neviges, Fed. Rep. of Germany; Harald Horstmann, Wuppertal, Fed. Rep. of Germany, and Friedel Seuter, Neviges, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

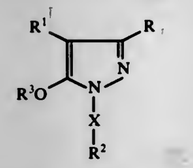
Division of Ser. No. 693,971, Jun. 8, 1976. This application Feb. 8, 1977, Ser. No. 766,715

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1975, 2526469

Int. Cl.[2] A61K *31/415, 31/445*

U.S. Cl. 424—273 P 46 Claims

1. A pharmaceutical composition useful for effecting diuresis and saluresis in humans and animals and for treating hypertension and thromboses in humans and animals which comprises a diuretically effective amount, a saluretically effective amount, an anti-hypertensively effective amount or an anti-thrombotically effective amount of a compound of the formula



wherein

R is hydrogen; lower alkyl; or trifluoromethyl;

R^1 is hydrogen or lower alkyl;

R^3 is R^6CO wherein

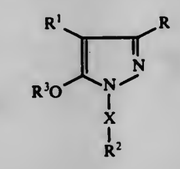
R^6 is lower alkyl; lower alkyl substituted by phenoxy; lower alkoxy; haloalkyl of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; cycloalkyl of 5 to 7 carbon atoms; lower alkylthio; haloalkoxy of 1 to 4 carbon atoms in the alkoxy moiety and 1 to 3 halo atoms; haloalkylthio of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; lower alkoxy (lower alkyl); mono- or di-lower alkylamino(lower alkyl); phenyl unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro, cyano, SO_n-alkyl of 1 to 4 carbon atoms in the alkyl moiety and n is 0 to 2, SO_n-CF_3 wherein n is 0 to 2, carbonamido or sulphonamido;

X is ethylene, or ethylene wherein 1 hydrogen atoms on one or both of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, linked to R^2 via an oxygen or sulphur atom; and

R^2 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halo, trifluoromethyl, trifluoromethoxy, cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, nitro, cyano, carboxamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms, or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, sulphonamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, and SO_n- (lower alkyl) wherein n is 0 to 2; or phenyl having fused thereto a saturated or unsaturated 5- to 7-membered isocyclic ring;

in combination with a pharmaceutically acceptable carrier.

24. A method of effecting diuresis and saluresis in humans and animals and treating hypertension in humans and animals which comprises administering to a human or animal in need thereof a diuretically effective amount, a saluretically effective amount or- an anti-hypertensively effective amount of a compound of the formula



wherein

R is hydrogen; lower alkyl; or trifluoromethyl;

R^1 is hydrogen or lower alkyl;

R^3 is R^6CO wherein

R^6 is lower alkyl; lower alkyl substituted by phenoxy; lower alkoxy; haloalkyl of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; cycloalkyl of 5 to 7 carbon atoms; lower alkylthio; haloalkoxy of 1 to 4 carbon atoms in the alkoxy moiety and 1 to 3 halo atoms; haloalkylthio of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 halo atoms; lower alkoxy(lower alkyl); mono- or di-lower alkylamino(lower alkyl); phenyl unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, nitro, cyano, carboxamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms, or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, sulphonamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, and SO_n-alkyl of 1 to 4 carbon atoms in the alkyl moiety and n is 0 to 2, SO_n-CF_3 wherein n is 0 to 2, carbonamido or sulphonamido;

X is ethylene, or ethylene wherein 1 hydrogen atoms on one or both of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, linked to R^2 via an oxygen or sulphur atom; and

R^2 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halo, trifluoromethyl, trifluoromethoxy, cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, nitro, cyano, carboxamido unsubstituted or substituted by 1 or 2 alkyl moieties of 1 to 4 carbon atoms, or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, sulphonamido unsubstituted or substituted by 1 or 2 alkyl moieties

of 1 to 4 carbon atoms or by 2 alkylene moieties of 1 to 4 carbon atoms which together with the nitrogen atom form a 5- to 7-membered heterocyclic ring, and SO_n- (lower alkyl) wherein n is 0 to 2; or phenyl having fused thereto a saturated or unsaturated 5- to 7-membered isocyclic ring;

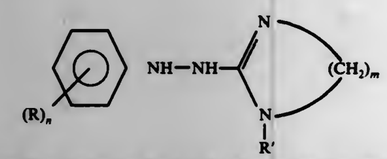
in combination with a pharmaceutically acceptable carrier.

4,117,146
METHOD FOR TREATING DEPRESSION AND ANXIETY USING PHENYL HYDRAZO COMPOUNDS

Abdulmuniem H. Abdallah, and Philip J. Shea, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 27, 1977, Ser. No. 810,348
Int. Cl.² A61K *31/415*
U.S. Cl. 424—273 R **14 Claims**

1. A method for alleviating symptoms of Central Nervous System depression and anxiety in a mammal suffering from depression and anxiety which comprises administering internally to said mammal a pychoactive amount of a compound or a pharmaceutically acceptable salt thereof having the formula



wherein R is chloro or fluoro; R′ is hydrogen or methyl; n is the integer one or two; and m is the integer two whereby the resulting heterocyclic ring including the two nitrogen atoms is imidazole.

4,117,147
FUNGICIDAL COMPOSITIONS AND PROCESSES

Margaret Claire Shephard, Maidenhead, and Roland Thomas Victor Fox, Wokingham, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sep. 8, 1977, Ser. No. 831,670
Claims priority, application United Kingdom, Sep. 22, 1976, 39267/76
Int. Cl.² A61K *31/40*
U.S. Cl. 424—274 **3 Claims**

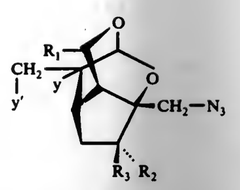
1. A process for combating the fungal disease *Rhizoctonia solani* which comprises treating plants, seeds or soil infested with the disease, or liable to such infestation, with an amount of 6-fluoroindole effective to control said fungus disease.

4,117,148
2,9-DIOXATRICYCLO [4,3,1,0,3,7] DECANE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Peter Willibrord Thies, and Samuel David, both of Hannover, Germany, assignors to Kali-Chemie Pharma GmbH., Hannover, Germany

Continuation-in-part of Ser. No. 770,055, Feb. 18, 1977. This application Aug. 22, 1977, Ser. No. 826,681
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730988
Int. Cl.² A61K *31/335*
U.S. Cl. 424—278 **38 Claims**

1. A compound selected from the group of 3-azidomethyl-2,9-dioxatricyclo [4,3,1,$0^{3,7}$] decanes of the formula I



(I)

wherein

R_1 represents alkyloxy containing 1 to 4 carbon atoms or benzyloxy;

one of R_2 and R_3 is hydrogen and the other represents hydroxy, carboxylic acyloxy, or carbamyloxy, or R_2 and R_3 jointly represent oxygen; and

y and y' each represent hydrogen or jointly form a bond.

33. A pharmaceutical composition for the treatment of pain comprising an analgesically active amount of at least one compound as defined in claim 1.

35. A pharmaceutical composition for the treatment of anti-inflammatory disorders comprising an antiphlogistically active amount of at least one compound as defined by claim 1.

37. A method of treatment of pains in larger mammals which comprises the step of administering to a larger mammal an analgesically active amount of a compound as defined in claim 1.

38. A method of treatment of inflammatory disorders in larger mammals which comprises the step of administering to a larger mammal an antiphlogistically active amount of a compound as defined in claim 1.

4,117,149
4-OXO-4H-BENZOPYRANS AS ANIMAL GROWTH PROMOTANTS

Robert John Bass, Birchington, England, assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 714,086, Aug. 13, 1976, abandoned. This application May 10, 1977, Ser. No. 795,652
Claims priority, application United Kingdom, Sep. 12, 1975, 37553/75
Int. Cl.² A61K *31/35*; C07D *311/02*
U.S. Cl. 424—283 **1 Claim**

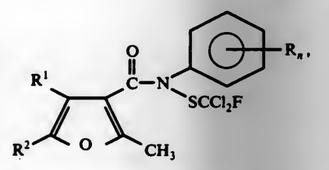
1. A method of promoting growth or improving feed conversion efficiency in animals which comprises the oral administration to said animals of feed containing per ton 1 to 100 grams of 7-Hydroxy-3-(naphth-2-yl)-4-oxo-4H-benzopyran.

4,117,150
FURAN DERIVATIVES

Ernst-Heinrich Pommer, Limburgerhof; Sabine Thym, Heidelberg-Dossenheim, and Wolfgang Reuther, Ziegelhausen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 855,889
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703023
Int. Cl.² A01N *9/12*; C07D *307/68*
U.S. Cl. 424—285 **6 Claims**

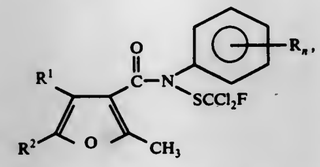
1. A furan derivative of the formula



where R^1 and R^2 are identical or different and each denotes hydrogen or methyl, R denotes halogen, NO_2, alkyl of from 1

to 4 carbon atoms, haloalkyl of from 1 to 4 carbon atoms, alkoxyl of from 1 to 4 carbon atoms, CN, $COOR^3$, alkylthio, phenyl or CF_3—S—, R^3 denoting alkyl of from 1 to 4 carbon atoms, and n denotes one of the integers 0, 1 and 2.

2. A process for the protection of wood against wood-destroying and wood-discoloring fungi, wherein the wood is treated with a fungicidally effective amount of a furan derivative of the formula



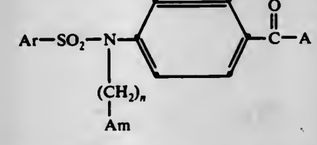
where R^1 and R^2 are identical or different and each denotes hydrogen or methyl, R denotes halogen, NO_2, alkyl of from 1 to 4 carbon atoms, haloalkyl of from 1 to 4 carbon atoms, alkoxyl of from 1 to 4 carbon atoms, CN, $COOR^3$, alkylthio, phenyl or CF_3—S—, R^3 denoting alkyl of from 1 to 4 carbon atoms, and n denotes one of the integers 0, 1 and 2.

4,117,151
THERAPEUTIC SULFONAMIDES

Marcel Descamps, Rosieres, and Charles Goldenberg, Brussels, both of Belgium, assignors to Labaz, Paris, France

Filed Mar. 2, 1977, Ser. No. 773,615
Claims priority, application United Kingdom, Mar. 8, 1976, 09253/76
Int. Cl.² C07D *307/81*; A61K *31/34*
U.S. Cl. 424—285 **10 Claims**

1. A sulfonamide derivative corresponding to the formula:



I

or a pharmaceutically acceptable acid addition salt thereof, wherein Ar represents phenyl, p-chlorophenyl, p-methylphenyl, p-methoxyphenyl, p-nitrophenyl, or pyridyl; Am represents a lower dialkylamino group, piperidino or 2-methylpiperazino; A represents 3-benzofuryl or 3-benzothienyl substituted in the 2-position by a branched- or straight-chain alkyl group containing from 1 to 4 carbon atoms and optionally substituted in the 5-position by a halogen atom or a lower alkoxy group, and n is the integer 2 or 3.

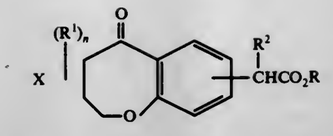
7. A pharmaceutical or veterinary composition useful in treating pathological conditions of the heart and particularly angina pectoris, containing an active principle an effective amount of at least one compound of formula I, or a pharmaceutically acceptable acid addition salt thereof, in association with a pharmaceutical excipient or carrier therefor.

4,117,152
OXOFURANOBENZOXEPIN-ACETIC ACIDS, PRECURSORS AND DERIVATIVES THEREOF

Arthur Raymond McFadden, East Brunswick, and Daniel Eugene Aultz, Middlesex, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Division of Ser. No. 607,926, Aug. 26, 1975, Pat. No. 4,025,640. This application Apr. 19, 1977, Ser. No. 788,786
Int. Cl.² A61K *31/34*; C07D *307/89*
U.S. Cl. 424—285 **12 Claims**

1. A compound of the formula



wherein X together with the carbon atoms to which it is attached is a furano ring structure; R is hydrogen or straight or branched chain alkyl of from 1 to 5 carbon atoms; R^1 is hydrogen or alkyl of 1 to 4 carbon atoms; R^2 is hydrogen or methyl; n is the integer 1, 2 or 3; and salts thereof prepared from pharmaceutically acceptable bases.

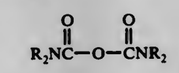
8. A pharmaceutical composition for treating inflammation and pain which comprises between about 0.5 and about 70 percent by weight of a compound defined in claim 1 as an essential active ingredient, the balance being a pharmaceutically acceptable carrier therefor.

4,117,153
SUBSTITUTED CARBAMIC ANHYDRIDES

Edwin G. Wallace, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

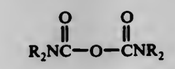
Filed Jun. 3, 1977, Ser. No. 803,089
Int. Cl.² A01N *9/20*; C07C *101/00*
U.S. Cl. 424—286 **9 Claims**

1. A compound having the formula



wherein R is alkyl containing from 1 to 2 carbon atoms.

4. A method of controlling aphids comprising applying to said aphids, the habitat or feedstuff of said aphids an aphicidally effective amount of a compound having the formula



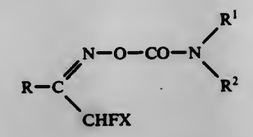
wherein R is alkyl containing from 1 to 2 carbon atoms.

4,117,154
PESTICIDALLY ACTIVE NOVEL OXIME-CARBAMATES OF FLUORINATED KETONES

Jorg Stetter, Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wolfgang Behrenz, Overath, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 12, 1977, Ser. No. 815,045
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631522
Int. Cl.² A01N *9/12*; C07C *131/11, 121/38, 121/60*
U.S. Cl. 424—298 **9 Claims**

1. An oxime-carbamate of a fluorinated ketone of the formula



in which

X is hydrogen or fluorine.

R is alkyl with 1 to 6 carbon atoms optionally substituted by halogen, nitro, cyano, hydroxyl, —S-C_{1-4}-alkyl, —O-C_{1-4}-alkyl, —CO-O-C_{1-4}alkyl or —O-CO-C_{1-4}-alkyl;

or phenyl optionally substituted by halogen, alkyl with 1 to 4

carbon atoms or halogenoalkyl with 1 or 2 carbon atoms and up to 5 halogen atoms; phenylalkyl with 1 to 4 carbon atoms in the alkyl moiety and optionally substituted in the phenyl moiety by halogen, alkyl with 1 to 4 carbon atoms or halogenoalkyl with 1 to 2 carbon atoms and up to 5 halogen atoms; or cycloalkyl with 5 to 7 carbon atoms optionally substituted by halogen, alkyl with 1 to 4 carbon atoms or halogenoalkyl with 1 or 2 carbon atoms and up to 5 halogen atoms;

R^1 is hydrogen, alkyl with 1 to 12 carbon atoms, alkenyl or alkynyl each with 2 to 4 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms, halogenoalkenyl with up to 3 carbon atoms and up to 5 halogen atoms, alkoxyalkyl or alkythioalkyl with up to 2 carbon atoms in each alkyl moiety, or phenyl optionally substituted by halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl, halogenoalkoxy or halogenoalkylthio each with 1 to 2 carbon atoms and up to 5 halogen atoms, C_{1-2}-alkoxy, C_{1-2}-alkylthio phenyl, phenoxy, halophenyl, halophenoxy, nitro or cyano;

R^2 is any of R^1 or $-SR^3$,

R^3 is alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 to 2 carbon atoms and up to 5 halogen atoms, phenyl optionally substituted by halogen, alkyl with 1 or 2 carbon atoms or halogenoalkyl with 1 to 2 carbon atoms and up to 5 halogen atoms; alkoxycarbonyl with 1 to 4 carbon atoms in the alkoxy moiety; a radical identical to that to which the $-SR^3$ is bonded; or $-NR^4\text{-}SO_2\text{-}R^5$;

R^4 is alkyl with 1 to 4 carbon atoms;

R^5 is alkyl with 1 to 5 carbon atoms; dialkylamino with 1 to 4 carbon atoms in each alkyl moiety; or phenyl optionally substituted by halogen, alkyl with 1 to 2 carbon atoms, halogenoalkyl with 1 to 2 carbon atoms and up to 5 halogen atoms, cyano or nitro, or an acid addition salt.

8. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound according to claim 1.

4,117,155

CONTROL OF *PYTHIUM ULTIMUM* WITH S-METHOXY- OR S-3-METHYLTHIOPHENYL N-ALKYLTHIOLCARBAMATES

Jay Kent Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

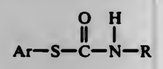
Division of Ser. No. 693,666, Jun. 7, 1976, Pat. No. 4,056,549. This application Oct. 19, 1977, Ser. No. 843,752

Int. Cl.² A01N *9/20*

U.S. Cl. 424—300 **4 Claims**

1. A method of controlling the deleterious effects of the plant pest *Pythium ultimum,* which comprises:

applying to the soil an effective amount which effectively controls the deleterious effects of said plant pest of a compound of the general formula:



wherein:

Ar is selected from the group consisting of 3-methoxyphenyl and 3-methylthiophenyl; and

R is an alkyl of from one to four carbon atoms.

4,117,156

ANTHELMINTIC PREPARATIONS

Werner Loewe, Zurich, and Heini Paul Striebel, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Continuation-in-part of Ser. No. 704,899, Jul. 13, 1976, abandoned. This application Feb. 15, 1977, Ser. No. 768,804

Claims priority, application Switzerland, Jul. 18, 1975, 9438/75

Int. Cl.² A01N *9/18*

U.S. Cl. 424—302 **18 Claims**

1. An anthelminthic preparation for oral or rectal administration to warm-blooded animals, which preparations contain an anthelmintically effective amount of 4-(4-nitroanilino)-phenylisothiocyanate in solid form having a median of particle size of at most 10 μm in combination with a starch or in suspension in a member selected from the group consisting of water and triglycerides of C_8–C_{22} fatty acids.

4,117,157

ETHANOLAMINE DERIVATIVES HAVING β-ADRENERGIC BLOCKING ACTIVITY

Leslie Harold Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

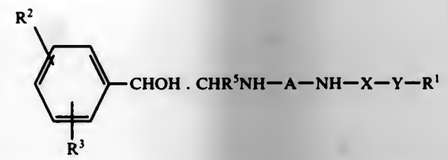
Division of Ser. No. 645,300, Dec. 29, 1975, Pat. No. 4,034,112, which is a division of Ser. No. 479,174, Jun. 13, 1974, Pat. No. 3,944,611. This application Apr. 14, 1977, Ser. No. 787,376

Claims priority, application United Kingdom, Jun. 22, 1973, 29679/73

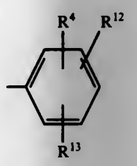
Int. Cl.² A61K *31/275;* C07C *127/00*

U.S. Cl. 424—304 **7 Claims**

1. An ethanolamine derivative selected from the group consisting of a compound of the formula:



wherein A is alkylene of from 2 to 6 carbon atoms, wherein R^1 is hydrogen or alkyl, alkenyl, halogenoalkyl or cycloalkyl each of up to 6 carbon atoms, or aryl of the formula:



wherein R^2, R^3, R^{12} and R^{13}, which may be the same or different, each is hydrogen, halogen, nitro, amino or cyano, or alkyl alkenyl, alkoxy, alkenyloxy, hydroxyalkyl, alkanoyl, acylamino or alkanesulphonamido each of up to 6 carbon atoms, wherein R^4 is hydrogen, hydroxy or carbamoyl, wherein R^5 is hydrogen or alkyl of up to 6 carbon atoms, wherein X is carbonyl and wherein Y is imino (—NH—); and an acid addition salt thereof.

5. A pharmaceutical composition having β-adrenergic blocking activity comprising as active ingredient an effective amount of at least one alkanolamine or an acid-addition salt thereof, claimed in claim 1, in association with a pharmaceutically-acceptable diluent or carrier therefor.

4,117,158

4-(MONOALKYLAMINO)BENZONITRILES USEFUL AS ANTI-ATHEROSCLEROTIC AGENTS

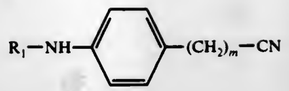
Robert Gordon Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 27, 1977, Ser. No. 836,946

Int. Cl.² A61K *31/275;* C07C *121/78*

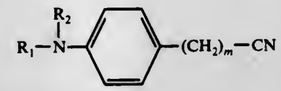
U.S. Cl. 424—304 **14 Claims**

1. A compound of the structural formula:



wherein R_1 is a straight chain or branched alkyl group of the formula C_nH_{2n+1} wherein n is an integer from 8 to 19, inclusive, and m is 1 or 2; and the pharmacologically acceptable acid-addition salts thereof.

10. The method of inhibiting atherosclerotic lesion development in a mammal comprising administering to said mammal an effective lesion development inhibiting amount of a compound of the formula:



wherein R_1 is a straight chain or branched alkyl group of the formula C_nH_{2n+1} wherein n is an integer from 8 to 19, inclusive; R_2 is hydrogen, alkyl having up to 3 carbon atoms, 1-(sodium sulfo)alkyl or alkanoyl having up to 6 carbon atoms; m is 0, 1 or 2; and the pharmaceutically acceptable acid-addition salts thereof.

4,117,159

PHARMACEUTICALLY ACTIVE DELTAB-DIHYDROPIMARAMIDE DERIVATIVES

Hiromu Murai, Otsu; Yukio Fujita, Takatsuki; Tamiki Mori, Yokaichi; Hiroshi Enomoto, Kameoka, and Yoshiaki Yoshikuni, Kameoka, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Kyoto, Japan

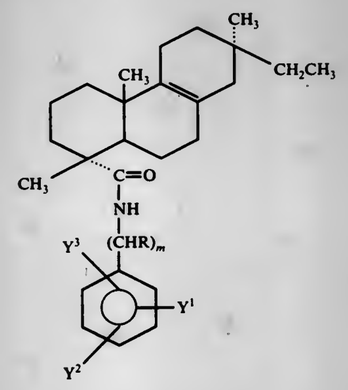
Filed Feb. 14, 1977, Ser. No. 768,052

Claims priority, application Japan, Feb. 26, 1976, 51-20870

Int. Cl.² A61K *31/24;* C07C *103/37*

U.S. Cl. 424—309 **7 Claims**

1. A compound of the formula:



wherein

R is hydrogen or lower alkyl;

m is 0 or 1; and each of Y^1, Y^2 and Y^3 independently of the other is hydrogen, lower alkyl, lower alkoxy, carboxy, carbo(lower alkoxy), hydroxy, trifluoromethyl or halogeno.

5. A serum cholesterol reducing and antiphlogistic pharmaceutical composition comprising an effective amount of a compound according to claim 1 in combination with a pharmaceutical carrier.

4,117,160

PHENOXY COMPOUNDS AND COMPOSITIONS

Francois Molnar, Valais; Suzanne Szabo, Vaud, and Peter Radanow Statkov, Geneva, all of Switzerland, assignors to Cermol S.A., Switzerland

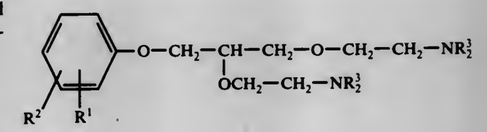
Filed Jul. 8, 1977, Ser. No. 813,985

Claims priority, application Switzerland, Jul. 19, 1976, 9217/76

Int. Cl.² A01N *9/20;* C07C *93/06*

U.S. Cl. 424—316 **6 Claims**

1. A compound of the formula



I

in which

R^1 represents C_{1-3}alkyl, C_{2-3}alkenyl, C_{1-3}alkoxy, trifluoromethyl or halogen,

R^2 represents hydrogen, halogen, C_{1-3}alkyl, C_{2-3}alkenyl, C_{1-3}alkoxy group, and

R^3 represents a C_{1-3}alkyl group, or a salt thereof.

6. A method of providing a local anesthetic effect to a subject which comprises administering to said subject a local anesthetically amount of a compound of claim 1.

4,117,161

METHOD OF PHARMACOLOGICALLY TREATING DRUG ADDICTION WITH ALPHA-METHYL-PARA-TYROSINE

Jose Pozuelo, 1463 Burlington, Cleveland Hts., Ohio 44118

Filed May 16, 1977, Ser. No. 797,372

Int. Cl.² A61K *31/195*

U.S. Cl. 424—319 **12 Claims**

1. A method of preventing alpha-methyl-para-tyrosine crystalluria in a human being who is being treated with a therapeutically effective amount of alpha-methyl-para-tyrosine, comprising:

administering to said human being treated with alpha-methyl-para-tyrosine an alkalinizing agent in an amount sufficient to cause the urine of said human being to have an alkaline pH.

4,117,162

NEMATOCIDE CONTROL DIACYLIMIDE CONTROL DIACYLIMIDE COMPOSITIONS

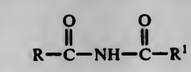
Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,513

Int. Cl.² A01N *9/20*

U.S. Cl. 424—320 **3 Claims**

1. A method of controlling nematode-infested soil which comprises applying to the nematode a nematocidally effective amount of a diacylimide compound having the formula:



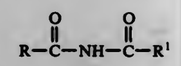
wherein R and R^1 being the same or different are selected from the group consisting of alkyl, alkenyl, haloalkyl and haloalkenyl groups having from 1–5 carbon atoms.

4,117,163
BROAD SPECTRUM FUNGICIDAL DIACYLIMIDE COMPOSITIONS

Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,459
Int. Cl.[2] A01N *9/20*
U.S. Cl. 424—320 **2 Claims**

1. A method of controlling fungi which comprises applying thereto a fungicidally effective amount of a diacylimide compound having the formula:



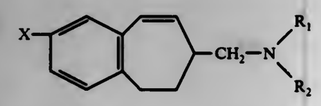
wherein R and R^1 being the same or different are selected from the group consisting of alkyl, alkenyl, haloalkyl and haloalkenyl groups having from 1–5 carbon atoms.

4,117,164
AMINOMETHYL-BENZOCYCLOHEPTENES AND METHOD OF USE

Lucien Nedelec, Le Raincy; Daniel Frechet, Paris, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Rousel Uclaf, Paris, France

Filed Nov. 10, 1977, Ser. No. 850,273
Claims priority, application France, Nov. 17, 1976, 76 34597
Int. Cl.[2] A01N *9/20*; C07C *87/28*
U.S. Cl. 424—330 **14 Claims**

1. A compound selected from the group consisting of 7-aminomethyl-benzocycloheptenes of the formula



wherein X is selected from the group consisting of nitro, amino, methoxy and hydroxy, R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms and R_2 is alkyl of 1 to 5 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

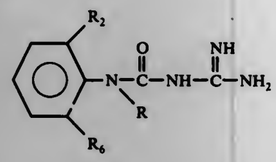
12. A method of relieving depression in warm-blooded animals comprising administering to warm-blooded animals an antidepressantly effective amount of at least one compound of claim 1.

4,117,165
AMIDINOUREAS

Julius Diamond, Morris Plains, N.J., and Jerome J. Zalipsky, Melrose Park, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

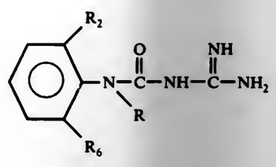
Continuation-in-part of Ser. No. 379,627, Jul. 16, 1973, abandoned. This application Nov. 5, 1975, Ser. No. 628,857
Int. Cl.[2] A61K *31/17*; C07C *127/19*
U.S. Cl. 424—322 **58 Claims**

1. A compound of formula



where:
R is hydrogen or loweralkyl;
R_2 is loweralkyl;
R_6 is halo, loweralkoxy, loweralkyl, haloloweralkyl, nitro or loweralkylsulfonyl; and the non-toxic acid addition salts thereof.

31. A method for treating gastrointestinal spasms comprising administering to a patient suffering from said gastrointestinal spasms a therapeutically effective amount between 0.25 mg/kg and 50 mg/kg per day of at least one compound of the formula:



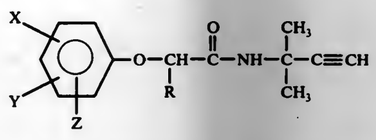
where:
R is hydrogen or loweralkyl;
R_2 is loweralkyl;
R_6 is halo, loweralkoxy, loweralkyl, haloloweralkyl, nitro or loweralkylsulfonyl; and the non-toxic acid addition salts thereof.

4,117,166
N-(1,1-DIMETHYL-2-PROPYNYL)-ALPHA-(SUBSTITUTED PHENOXY) ALKYLAMIDES AND THEIR USE AS MITICIDES

Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

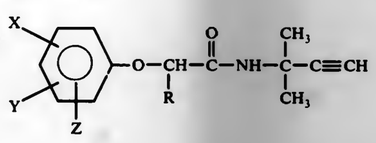
Continuation of Ser. No. 705,505, Jul. 15, 1976, abandoned, which is a continuation of Ser. No. 591,726, Jun. 30, 1975, abandoned. This application Nov. 14, 1977, Ser. No. 850,999
Int. Cl.[2] A01N *9/24*; C07C *103/75*
U.S. Cl. 424—324 **14 Claims**

1. A compound having the formula



wherein R is either methyl or ethyl; X is either chlorine or fluorine; Y is either 2-methyl or 3-methyl; and where Y is 2-methyl, Z is either hydrogen or 5-methyl; and where Y is 3-methyl, Z is 5-methyl.

8. A method of controlling mites comprising applying to the habitat thereof a miticidally effective amount of a compound having the formula



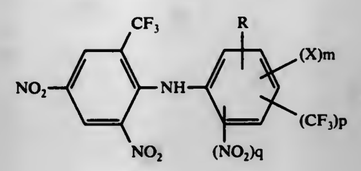
wherein R is either methyl or ethyl; X is either chlorine or fluorine; Y is either 2-methyl or 3-methyl; and where Y is 2-methyl, Z is either hydrogen or 5-methyl; and where Y is 3-methyl, Z is 5-methyl.

4,117,167
DINITROANILINE DERIVATIVES

Charles Brian Barlow, Camberley, and Peter Frank Hilary Freeman, Reading, both of England, assignors to Imperial Chemical Industries Limited, London, England

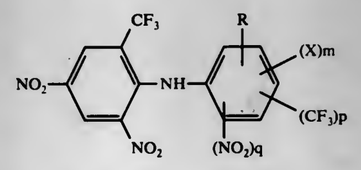
Filed Mar. 7, 1975, Ser. No. 556,421
Claims priority, application United Kingdom, Mar. 7, 1974, 10241/74; Apr. 11, 1974, 16171/74; Nov. 6, 1974, 47976/74
Int. Cl.[2] A01N *9/20*; C07C *87/54*
U.S. Cl. 424—330 **10 Claims**

1. A 2-anilino-3,5-dinitrobenzotrifluoride of the formula:



wherein R is hydrogen, methyl or methoxy;
X is halogen,
m is zero, one, when a further substitutent in addition to hydrogen is present on the ring, two or three,
p is zero, one or two,
q is zero or one
and the sum of *m*, *p* and *q* is one, two or three.

10. A method of combating insect and acarine pests of plants which comprises applying to the plants an insecticidally and acaricidally effective amount of a compound of the formula:



wherein R is hydrogen, methyl or methoxy;
X is halogen,
m is zero, one, two or three,
p is zero, one or two,
q is zero or one
and the sum of *m*, *p* and *q* is one, two or three.

4,117,168
ANTIFUNGAL DI(ARYL)METHYL ALKYL SULFONES

George G. Ecke, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 703,168, Jul. 7, 1976, Pat. No. 4,067,909, which is a continuation-in-part of Ser. No. 578,598, May 19, 1978, abandoned. This application Jan. 6, 1978, Ser. No. 867,418
Int. Cl.[2] A01N *9/14*
U.S. Cl. 424—337 **20 Claims**

1. A method of controlling the harmful effects of a fungus of the genus Piricularia upon a plant which comprises:
contacting the plant with a compound in an amount effective to control the harmful effects of the fungus upon the plant, the compound having the general formula:



wherein:
Ar is 4-chlorophenyl
Ar' is an aryl selected from the group consisting of 4-chlorophenyl and 2-chlorophenyl, and R is an alkyl of from one to four carbon atoms.

4,117,169
PROCESS FOR PRODUCING FERMENTED LIQUID FOOD PRODUCTS

Fumio Noda, Kamagaya; Keitaro Mogi, and Toshio Sakasai, both of Noda, all of Japan, assignors to Kikkoman Shoyu Co. Ltd., Japan

Filed Jun. 24, 1977, Ser. No. 809,701
Claims priority, application Japan, Jun. 30, 1976, 51-76541
Int. Cl.[2] A23L *1/20, 1/10, 1/238*
U.S. Cl. 426—7 **9 Claims**

1. In a process for producing a fermented liquid food product by fermenting a moromi which comprises a koji for the fermented liquid food product, a moromi substrate and a liquid including at least one member selected from the group consisting of brine, alcohol and water at a temperature of about 10° to about 40° C. for a time sufficient to produce the fermented liquid food product; the improvement wherein the fermentation is carried out in the presence of about 0.05 to about 10% by weight, based on the total weight of the koji and moromi substrate, of an added metal salt selected from the group consisting of potassium salts, sodium salts, calcium salts and magnesium salts of aliphatic carboxylic acids containing up to 4 carbon atoms.

4,117,170
SULFUR AS AN ANOREXIGENIC AGENT

Ray D. Washam, Arnold, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Jul. 19, 1974, Ser. No. 489,972
Int. Cl.[2] A23K *1/10, 1/175*
U.S. Cl. 426—72 **6 Claims**

1. A feed for swine comprising grain, protein, vitamin and mineral components, suitable for controlling feed intake to between about 2 to 8 pounds per head per day, further comprising as an added essential ingredient an amount of elemental sulfur effective to so control intake of the feed.

4,117,171
COLLAGEN COMPOSITIONS AND THE METHOD OF PREPARING THE SAME

Thomas Engel Higgins, Brookfield, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 14, 1976, Ser. No. 732,482
The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.
Int. Cl.[2] A22C *13/00*
U.S. Cl. 426—140 **19 Claims**

6. A method of preparing a formable collagen composition suitable for use in preparing a shaped collagen structure which exhibits improved antiblocking characteristics including the steps of:
(a) preparing a viscous aqueous dispersion of non-collagenous fibers;
(b) preparing a comminuted pre-swollen collagen mass; and then
(c) admixing an amount of said aqueous fiber dispersion and an antiblock additive selected from the group consisting of fully esterified esters of polyhydric alcohols, mineral oil, and mixtures of the same with said pre-swollen collagen mass so that at least about 5% by weight of said antiblock additive and at least about 5% by weight of said non-collagenous fibers based on the solids content of said collagen admixture is incorporated in the collagen composition and then thoroughly mixing until a uniform admixture is obtained.

4,117,172

PROCESS FOR PREPARING SIMULATED SOFT CENTERED FRUITS

Noel James Bradshaw, Sharnbrook; David Savage, Folkestone, and Michael Edwin Sneath, Wellingborough, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 523,181, Nov. 12, 1974, abandoned, which is a division of Ser. No. 335,994, Feb. 26, 1973, abandoned. This application May 7, 1976, Ser. No. 684,328

Claims priority, application United Kingdom, Mar. 1, 1972, 9528/72

Int. Cl.² A23L *1/04*

U.S. Cl. 426—276 **20 Claims**

1. A process for preparing a fruit product consisting essentially of the steps of

(a) mixing fruit pulp or puree and an aqueous alginate or pectate sol to form a mixture;

(b) extruding the mixture to form drops of the mixture;

(c) treating the drops with an aqueous solution of an edible calcium salt to give the drops a skin of calcium alginate or pectate and a fluid or plastic core; and

(d) while the drops still have a fluid or plastic core, heating the treated drops to a temperature of 70° C to about 100° C to prevent full gelation of the sol in the interior of the drops said process thereby producing said fruit product with a firm outer skin and a softer interior.

4,117,173

USE OF GLUCOPYRANOSIDO-1,6-MANNITOL AS A SUGAR SUBSTITUTE

Hubert Schiweck, Obrigheim; Georg Steinle, Grünstadt; Lutz Müller; Wolfgang Gau, both of Wuppertal, and Mohammad Munir, Obrigheim, all of Germany, assignors to Suddeutsche Zucker-Aktiengesellschaft, Mannheim, Germany

Filed May 3, 1976, Ser. No. 682,674

Claims priority, application Fed. Rep. of Germany, May 6, 1975, 2520173

Int. Cl.² A23L *1/236*

U.S. Cl. 426—548 **5 Claims**

1. A sweetened food or beverage for human consumption comprising a foodstuff or beverage and glucopyranosido-1,6-mannitol in an amount effective to sweeten said foodstuff.

4,117,174

METHOD FOR PRODUCING TOFU-LIKE FOOD

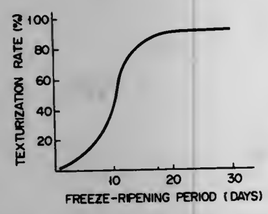
Takeo Tonouchi; Akio Tonouchi, both of Ina; Makoto Shiroshima; Yuichi Chimura, both of Nagano, and Kazuyoshi Ohkubo, Yamagata, all of Japan, assignors to Nagano-Ken Kohridofu Kogyo Cooperative Association, Nagano, Japan

Filed Mar. 11, 1977, Ser. No. 776,733

Claims priority, application Japan, Mar. 13, 1976, 51-27381

Int. Cl.² A23L *1/20*

U.S. Cl. 426—634 **6 Claims**



1. A method for producing a tofu-like food product comprising

preparing an aqueous slurry containing from 1/9 to ¼ by weight of crushed soybeans,

heating said slurry at between 60° C. and 100° C. for a period of time sufficient to thermally denature the soybean protein,

further crushing while dispersing said soybeans in said slurry to a level of subdivision sufficient to form a stable suspension,

rapidly freezing said suspension to between −50° C. and −10° C., and

ripening said suspension at between −10° C. and −3° C. for a period of time sufficient to texturize protein contained therein.

4,117,175

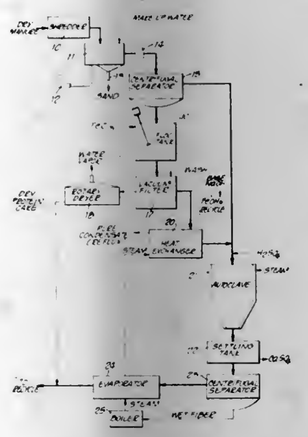
PROCESS FOR RECOVERING NUTRIENTS FROM CATTLE MANURE

Franklin C. Senior, Phoenix, Ariz., assignor to Feed Recycling Co., Ripley, Calif.

Filed Mar. 9, 1973, Ser. No. 339,892

Int. Cl.² A23J *3/00*

U.S. Cl. 426—657 **3 Claims**



1. A process for making a nutritious additive for cattle feed from cattle manure or cattle manure obtained from feed lots, which comprises:

shredding the manure;

mixing the shredded manure with water to form an aqueous slurry;

basifying the slurry;

centrifugally separating the liquid and solid portions of the slurry;

subjecting said liquid portion to the action of a chloride for precipitating protein constituents;

separating the precipitated protein constituents from the liquid carrier;

dehydrating the protein constituents to form a portion of the cattle feed additive;

acidifying the slurry solid portion to a pH below about 1.0;

increasing the temperature of the acid treated slurry to above 250° F. while maintaining the pressure thereof in the range of 25–75 psi;

agitating the heated pressurized slurry to rupture the solid portion and expose starches for conversion to mono-saccharides and amino sugars;

subjecting the hot slurry to the action of calcium oxide; and

condensing the hot slurry to form a syrup including sugars and proteins which is a further portion of the cattle feed additive.

4,117,176

FRUIT-FLAVORED CANDY PRODUCT

Paul G. Taylor, Pleasant Hill; Chung H. Son; Martha C. Hom, both of Concord; L. G. Williams, Martinez, all of Calif., and Ronald E. Steel, Wentzville, Mo., assignors to Del Monte Corporation, San Francisco, Calif.

Filed Feb. 3, 1977, Ser. No. 765,302

Int. Cl.² A23G *3/00*

U.S. Cl. 426—660 **11 Claims**

1. A candy product comprising a colored translucent substrate with opaque dehydrated fruit particles randomly distributed throughout the same, said candy product having a natural fruit taste, a taffy-like consistency and sufficient slipperiness to avoid sticking to the teeth on chewing, said candy product comprising about 30 to 60 weight % corn syrup, at least 5 weight % dextrin binder, about 2 to 25 weight % opaque dehydrated fruit, at least 1% vegetable oil, about 2.5 to 13 weight % of a combination of 6-hydroxy alcohol and glycerin, and an emulsifying agent.

4,117,177

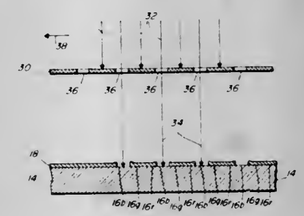
LASER LITHOGRAPHY OF THIN FILM RESINATES

John D. Schlafer, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 13, 1976, Ser. No. 723,003

Int. Cl.² B05D *3/06, 5/06*

U.S. Cl. 427—53 **7 Claims**



1. In a method of manufacturing a color cathode ray tube in which an image screen is deposited on a glass faceplate and consists of a plurality of sets of elemental screen areas which areas individually include a phosphor material for emitting light of one of three primary colors and a light filter disposed between the phosphor material and the glass faceplate which is predominantly transmissive to light emitted by its associated phosphor material but substantially nontransmissive to the remaining two primary colors, and areas adjacent to the elemental screen areas which include more than one light filter, an improved method for forming the light filters which comprises:

(a) applying a first thin film of a metallic resinate to the faceplate, the first thin film having an inorganic oxide colorant of a first of the three primary colors in a vehicle of organic character which volatilizes upon firing to a predetermined temperature;

(b) directing a laser beam of light to the elemental screen areas of the image screen corresponding to the second and third primary colors, the absorption of the laser light by the first thin film or by the glass faceplate adjacent to the film creating localized liquefaction of the first film, the fluid, in response to being acted upon by forces of surface tension and rapidly volatilizing residual solvents in the first thin film, withdrawing from the elemental screen areas for the second and third primary colors;

(c) heating the first thin film by an amount which is effective to raise the energy threshold at which liquefaction occurs but ineffective to volatilize the organic material;

(d) applying a second thin film of a metallic resinate to the first thin film and to the faceplate adjacent to the holes, the second film having an inorganic oxide colorant of a second of the three primary colors in a vehicle of organic character which volatilizes upon firing to a predetermined temperature;

(e) directing a laser beam of light to the elemental screen areas of the image screen corresponding to the first and the third primary colors, the absorption of the laser light by the second thin film creating localized liquefaction of the second film without liquefying the first film due to its raised energy threshold, the fluid withdrawing from the elemental screen areas for the first and third primary colors in response to being acted upon by forces of surface tension and rapidly volatilizing residual solvents in the second thin film;

(f) heating the second thin film by an amount which is effective to raise the energy threshold at which liquefaction occurs but ineffective to volatilize the organic material;

(g) applying a third thin film of a metallic resinate to the second thin film and to the first thin film adjacent to the holes in the second thin film, the third thin film having an inorganic oxide colorant of the third of the three primary colors in a vehicle of organic character which volatilizes upon firing to a predetermined temperature:

(h) directing a laser beam of light to the elemental screen areas of the image screen corresponding to the first and second primary colors, the absorption of the laser light by the third thin film creating localized liquefaction of the third thin film without liquefying the second or first thin films due to their raised energy thresholds, the fluid withdrawing from the elemental screen areas for the first and second primary colors in response to being acted upon the forces of surface tension and rapidly volatilizing solvents in the third film: and

(i) heating the entire first, second, and third thin films having holes formed therein to volatilize the organic material to form the light filters on the elemental screen areas for the primary colors and the adjacent areas, the light filter for each primary color being disposed on the elemental screen areas corresponding to that primary color and being absent from the elemental screen areas corresponding to the other two primary colors.

4,117,178

PHENOLIC ANTIOXIDANTS FOR NON-POLYMERIC HALOGEN COMPOUNDS DURING IMPREGNATION OF STYRENE POLYMER PARTICLES

Walter O. Pillar, Monroeville, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 689,026, May 24, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 848,971

Int. Cl.² C08J *9/22*

U.S. Cl. 521—60 **7 Claims**

1. In a process for making styrene polymer particles less flammable by impregnating the polymer particles by heating in aqueous suspension in the presence of a non-polymeric organic halogen compound and a blowing agent at temperatures between 100° C. and 125° C., the improvement comprising adding, prior to heating for the impregnation, about 0.001 to 0.40 percent by weight based on polymer particles of a hindered phenolic antioxidant consisting essentially of an alkylated phenol where said alkyl groups contain from 3 to 20 carbon atoms and at least one such alkyl group is in the position ortho to the hydroxy group of the phenol, whereby the polymer molecular weight is not degraded during the aqueous impregnation process.

4,117,179

OXIDATION CORROSION RESISTANT SUPERALLOYS AND COATINGS

Melvin R. Jackson, and John R. Rairden, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 4, 1976, Ser. No. 738,649
Int. Cl.[2] B32B *15/04, 15/20*
U.S. Cl. 427—405 8 Claims

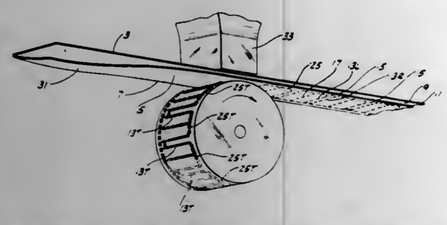
1. A method of improving the high temperature oxidation and corrosion resistance and preventing loss of strength of a carbide containing superalloy body, said body containing a carbide reinforcing phase, comprising steps of: (a) coating the superalloy body with a composition consisting essentially of chromium, aluminum, carbon and at least one element selected from iron, cobalt, or nickel, subject to the proviso that the coatings contain an amount of carbon (1) sufficient to saturate any solid state phases of the coating composition, (2) sufficient to essentially equilibrate the chemical potential of carbon in the coating with that in the substrate with minimum interaction, and (3) insufficient to form substantial quantities of carbides in the coating composition.

4,117,180

DRAPERY PLEATING TAPE AND ITS MANUFACTURE

Kenneth J. DeWoskin, Ann Arbor, Mich., assignor to Beltx Corporation, Barnhart, Mo.

Filed Mar. 25, 1977, Ser. No. 781,184
Int. Cl.[2] B32B *7/04, 3/00*
U.S. Cl. 428—35 2 Claims



1. A drapery pleating tape comprising two layers of thermoplastic fabric joined along one longitudinal edge of the tape,
said layers being thermoplastically sealed together at intervals spaced longitudinally of the tape on pairs of lines of seal extending transversely of the tape,
the two lines of seal of each said pair being spaced one from the other longitudinally of the tape but being closely adjacent one another thereby to define therebetween a narrow elongate pocket closed at its end at said one longitudinal edge of the tape and open at its other end adjacent the outer longitudinal edge of the tape for reception of a pin of a drapery hook,
one of said lines of seal of each pair constituting a left side seal and the other a right side seal for the respective pocket,
said layers also being thermoplastically sealed together at intervals spaced longitudinally of the tape on lines of seal extending transversely of the tape in each section of the tape intermediate successive pockets,
each of said intermediate lines of seal being located generally midway between the right side seal of the pocket at the left thereof and the left side seal of the pocket at the right thereof and dividing the respective section of the tape into two panels,
said left and right side pocket seals and said intermediate seals forming lines of fold for pleating the tape with the said two panels of each said section of the tape forming a pleat, said layers further being thermoplastically sealed together on a line of seal extending longitudinally of the tape adjacent said one longitudinal edge of the tape, said line of seal having portions extending between the right side seal of the pocket at the left of each section and the left side seal of the pocket at the right of the section and pocket end portions between the left and right side seals of the pockets,
and said layers further being thermoplastically sealed together on a line of seal adjacent the other longitudinal edge of the tape interrupted at the pockets and forming lines of seal extending longitudinally of the tape on each section of the tape between the right side seal of the pocket at the left of said section and the left side seal of the pocket at the right of said section,
said intermediate lines of seal extending from one of said longitudinal lines of seal to the other,
said longitudinal lines of seal forming stiffening means for said panels.

4,117,181

DECORATIVE LAMINATED STRUCTURES AND METHOD OF MAKING THE SAME

Kazuto Minami, Tokyo; Norihiko Tsukui, Higashikurume, and Tsunehiko Imamoto, Funabashi, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 352,423, Apr. 19, 1973, abandoned. This application Jul. 7, 1975, Ser. No. 593,517
Claims priority, application Japan, Apr. 20, 1972, 47-39141; Apr. 20, 1972, 47-52168
Int. Cl.[2] B32B *3/24, 3/30, 31/26*
U.S. Cl. 428—138 38 Claims



1. A decorative laminated structure having a pattern of concaves and convexes, at least one of said concaves having an opening at its bottom portion, and which consists essentially of a base sheet, a heat-shrinkable resin sheet, a picture layer having a plurality of heat-sensitive picture areas formed of a heat-sensitive ink composition and contiguous and adhered to said heat-shrinkable resin sheet said heat-shrinkable resin sheet having formed on the surface thereof concave portions, at least one of said concave portions having an opening at its bottom, said concave portions corresponding to said heat-sensitive picture areas of the picture layer.

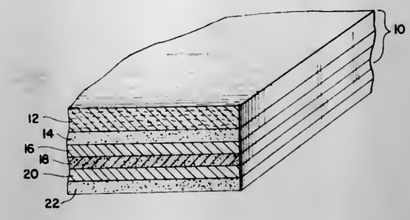
13. A method of making a decorative laminated structure having a predetermined surface pattern of convexes and concaves, at least one of said concaves being perforated, said concaves corresponding to picture areas of said laminated structure of a heat-sensitive ink composition containing a heat-absorbing coloring agent; and comprising printing a predetermined pattern of heat-sensitive picture areas on a surface of a base sheet, said heat-sensitive picture areas being a heat-sensitive ink composition containing a heat-absorbing coloring agent; adhering the thus printed surface of the base sheet to a heat-shrinkable resin sheet to form an integral composite material; and irradiating the resultant composite material with an infrared or near infrared heat ray for a sufficient time such that heat energy is preferentially absorbed by said heat-sensitive ink composition causing said heat shrinkable resin sheet to shrink locally and form said concaves at areas corresponding to said heat-sensitive picture areas and causing at least one of said concaves to perforate.

4,117,182

HEAT RELEASE LAYER FOR DECALCOMANIAS

Ray Andrews, Washington, Pa., assignor to Commercial Decal, Inc., Mount Vernon, N.Y.

Filed Dec. 23, 1976, Ser. No. 753,926
Int. Cl.[2] B32B *3/00*
U.S. Cl. 428—201 31 Claims



1. A heat release decalcomania comprising a backing sheet, a heat release layer disposed on said backing sheet, a design layer disposed on said heat release layer and a heat activatable adhesive layer disposed on said design layer, said heat activatable adhesive layer capable of burning without the deposition of a residue, said heat release layer comprising a normally solid straight chain, primary aliphatic oxyalkylated alcohol.

15. A method of forming a heat release decalcomania which comprises applying a heat release layer to a backing sheet, applying a design layer to said heat release layer, and applying a heat activatable adhesive to said design layer, said heat release layer comprising a normally solid straight chain primary aliphatic oxyalkylated alcohol wherein said adhesive is capable of burning without the deposition of a residue.

4,117,183

STARCH-COATED PAPER AND GYPSUM WALLBOARD PREPARED THEREWITH

William J. Long, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Continuation-in-part of Ser. No. 491,097, Jul. 23, 1974, Pat. No. 4,051,291, which is a continuation of Ser. No. 221,324, Jan. 27, 1972, abandoned. This application Feb. 18, 1977, Ser. No. 770,149
Int. Cl.[2] B32B *7/14;* B05D *5/00;* B32B *31/12;* C09J *7/02*
U.S. Cl. 428—201 60 Claims



1. A process for producing a starch-coated paper cover sheet having a bond liner and being suitable for use in manufacturing gypsum wallboard, which comprises:
(a) preparing a coating composition comprising water, non-migratory raw starch, and finely particulate calcium sulfate, and
(b) applying said coating composition on the surface of said bond liner in a pattern having said coating composition at limited areas of said bond liner while leaving substantial areas free of said composition.

16. A starch-coated paper cover sheet having a bond liner and being suitable for use in manufacturing gypsum wallboard, said bond liner having a coating composition on the surface thereof in a pattern having said coating composition at limited areas of said bond liner while leaving substantial areas free of said composition, said coating composition comprising water, non-migratory raw starch, and finely particulate calcium sulfate.

31. A process for producing gypsum wallboard comprising the following steps:
(a) providing at least one paper cover sheet having a bond liner and applying a coating of a non-migratory raw starch adhesive composition to provide a pattern having said starch adhesive composition at limited areas of said bond liner while leaving substantial areas free of said adhesive composition, said adhesive composition comprising water, starch and finely particulate calcium sulfate, and
(b) casting an aqueous slurry of calcium sulfate hemihydrate on said paper cover sheet over said bond liner with the water from said aqueous slurry establishing wet bonding between said slurry and the uncoated portions of said bond liner, and
(c) setting said slurry to form a core and setting said starch adhesive composition to establish an adhesive bond between said core and said paper cover sheet at the limited areas containing said starch adhesive.

46. Gypsum wallboard comprising:
(a) a core comprising rehydrated calcium sulfate hemihydrate, and
(b) a cover sheet affixed to each surface of said core comprising:
(1) a bond liner having a coating composition thereon comprising non-migratory raw starch and finely particulate calcium sulfate, said coating composition being present in a pattern having said coating composition at limited areas of said bond liner while leaving substantial areas free of said starch adhesive composition, said coating composition providing an adhesive bond between said core and said paper cover sheets at the limited areas containing said starch adhesive.

4,117,184

ABSORBENT FILMS AND LAMINATES

Robert E. Erickson, Midland, and Richard M. Krajewski, St. Louis, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 693,260, Jun. 7, 1976, abandoned. This application Jun. 23, 1977, Ser. No. 809,501
Int. Cl.[2] A61F *13/18;* B32B *27/06, 27/10, 27/12*
U.S. Cl. 428—224 25 Claims

1. A water swellable aerated film which is characterized by being rapidly wetted and swelled by water which comprises a lightly crosslinked alkali metal carboxylic polyelectrolyte having a density ranging from about 1.1 grams per cubic centimeter to about 0.3 grams per cc and a water absorbency rate of not greater than 60 seconds.

9. A water swellable aerated laminate which comprises one or more layers of the film of claim 1 on wicking substrates consisting of woven fabrics, non-woven fiber mats, or polymeric foams.

10. A water swellable aerated laminate which comprises one or more layers of the film of claim 1 on non-wicking substrates consisting of polymer films or papers.

14. A method for making the aerated film of claim 1 which comprises the steps of
(1) mechanically aerating a solution so as to introduce greater than 8% by weight of air wherein said solution has about 10 to about 25% by weight solids and about 75 to about 90% by weight of a solvent consisting of water, lower alcohols, or mixtures thereof wherein the solids comprise
(a) about 75 to about 99.5% of an alkali metal carboxylic polyelectrolyte, and
(b) about 0.5 to about 5.0% of a polyfunctional or difunctional crosslinking agent that is reactive with carboxylate groups,
(2) casting a wet film of said solution on a moving impervious support having a release surface, and

(3) heating the film to a temperature range from about 30° C to about 175° C to crosslink and remove substantially all the solvent.

4,117,185

BONDED INORGANIC AND FIBROUS MATERIAL BUILDING PRODUCT

Peter Gerald Cummins, Hastings; Bernard Sinton, Horsham, and Michael George Miller, Cranleigh, all of England, assignors to Redland Claddings Limited, England

Filed Nov. 4, 1976, Ser. No. 739,001

Claims priority, application United Kingdom, Jun. 3, 1976, 23009/76

Int. Cl.² B32B *5/16, 17/04*

U.S. Cl. 428—241 **6 Claims**

1. A method of manufacturing a building product comprising the steps of mixing together a mineral filler, glass fiber and a polyester resin into a mixture, forming said mixture into an uncured formed solid mass and applying a film of fluoroplastic material having one side treated for adhereability and the other side heat sealable or releasable, to at least one face of the unsecured solid mass with said one side in contact with said face, and pressing said film into contact with said face during heat curing of the resin in a mold.

2. A building product manufactured by the method of claim 1.

4,117,186

BUTYL/RESIN BLEND LATEX USED TO COAT POLYPROPYLENE FABRICS

Charles P. O'Farrell, Clark; Paul L. Malloy, Westfield, and Francis M. Thompson, White House Station, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 609,811, Sep. 2, 1975, abandoned, which is a continuation of Ser. No. 482,246, Jun. 24, 1974, abandoned. This application Feb. 8, 1977, Ser. No. 766,704

Int. Cl.² B32B *25/08, 25/10, 25/18, 27/32*

U.S. Cl. 428—265 **3 Claims**

1. A woven polypropylene fabric having adhered thereto a coating consisting essentially of a latex of butyl rubber and an unhydrogenated aliphatic petroleum hydrocarbon resin prepared from a coemulsified solution blend of said rubber and resin, wherein the weight ratio of rubber to resin is about 4:1 to 0.8:1 and wherein said resin has an aniline point greater than 100° C.

4,117,187

PREMOISTENED FLUSHABLE WIPER

James William Adams, Schofield, and Orville Harold Reinke, Oshkosh, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 29, 1976, Ser. No. 755,195

Int. Cl.² B32B *27/00*

U.S. Cl. 428—286 **10 Claims**

1. A premoistened wiper having high initial wet strength and lower wet strength when immersed in a substantially neutral or alkaline liquid to allow for flushability, comprising:

(a) a non-woven web of fibrous materials;

(b) an adhesive binder distributed through said web bonding together the fibrous material of said web, said binder consisting esentially of an acid insoluble-alkali soluble acidic polymer which is resistant in acid liquid to weakening of the bonding between the fibers of said web;

(c) a wetting liquid in contact with said bonded web having an acid pH which is safe for external use on the human body; and

(d) alkali metal ions distributed through said web and available for association with said acidic polymer.

4,117,188

LAPPED SEAM CAN

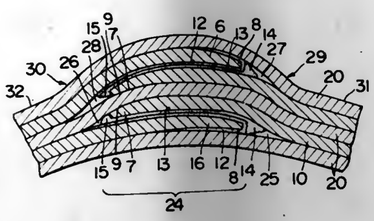
Yuzo Takahashi; Yoshimi Wazima; Akira Nakada; Yasuyuki Tanaka; Katsumi Nagai; Nobuo Takahashi; Hiroshi Matsuda; Eizi Aizawa, and Shiro Oyama, all of Iwatsuki, Japan, assignors to Hokkai Can Co. Ltd., Tokyo, Japan

Filed Mar. 25, 1977, Ser. No. 781,520

Claims priority, application Japan, May 17, 1976, 51-56383; Jun. 17, 1976, 51-71336

Int. Cl.² B21D *51/32*; B65D *7/36, 7/44*

U.S. Cl. 428—36 **5 Claims**



1. A lapped seam can having the opposite end portions of the can blank joined together with organic adhesive films and a double seam portion comprising:

a first inclined surfaced end portion of said blank terminating in an end face the thickness of which is about one-third of the original thickness of the can blank;

a first organic adhesive film covering the inner and outer surfaces of said first end portion including the end face;

a second end portion of said blank having an end face;

a second organic adhesive film stuck onto the inner surface of said second end portion of the can blank coming outside of said first end portion at the lapped seam;

said first organic adhesive film stuck onto the outer surface of said inner end of the can blank joined to said second organic adhesive film;

said second adhesive film forming a raised portion on one end thereof and coupled to the end face of said inner end portion to form an inclined surface continuous to said inclined surface of said first end portion;

said second adhesive film forming a raised portion on the other end thereof and coupled to the end face of said outer end portion of the can blank;

said double-seam portion having a sealing compound interposed in voids formed between said two end portions of the can blank when double-seamed;

said voids also being filled up with said adhesive film layers;

the opposite sides of the double-seamed lapped seam portion forming slack curved surfaces continuous to the double-seamed ring portion.

4,117,189

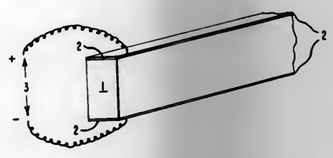
ELECTRICALLY CURABLE, ELASTOMERIC SEALING STRIP

Henry Joseph Stinger, Devon, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 16, 1977, Ser. No. 833,894

Int. Cl.² B32B *15/02, 15/08, 25/02*

U.S. Cl. 428—323 **9 Claims**



1. An uncured elastomeric sealing strip, which can be cured

in place, said sealing strip being made of a composition consisting essentially of chlorosulfonated polyethylene filled with furnace carbon black having an average particle size of about 10–30 nm in diameter and containing an effective amount of a curing agent, the proportion of the carbon black being at most about 80 parts by weight per 100 parts of chlorosulfonated polyethylene; said strip being in direct contact along substantially its entire length with two parallel, metallic electricity conductors, said conductors being substantially symmetrically spaced relative to the center of said strip; said strip being curable by heat generated therein when sufficient electric voltage below about 1000 V is applied to said conductors.

4,117,190

MAGNETIC RECORDING MEDIUM

Goro Akashi; Osamu Suzuki, and Masaaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Continuation-in-part of Ser. No. 370,260, Jun. 15, 1973, abandoned, which is a continuation of Ser. No. 164,042, Jul. 19, 1971, abandoned, which is a continuation of Ser. No. 766,640, Oct. 10, 1968, abandoned. This application Oct. 21, 1974, Ser. No. 516,315

Claims priority, application Japan, Oct. 11, 1967, 42-65268

Int. Cl. H01f *10/06*

U.S. Cl. 428—325 **21 Claims**

1. In an endless magnetic recording tape comprising a support, a magnetizable layer provided on one side of said support and a graphite anti-abrasion layer provided on the opposite side of said support from said magnetizable layer, the improvement comprising said anti-abrasion graphite layer consisting essentially of, dispersed in 20 to 50 parts by weight of a binder, 100 parts by weight of graphite and 5 to 15 parts by weight of a finely divided powder having a particle size of less than 10 microns and Moh's hardness of greater than 2 whereby the anti-abrasion properties of said magnetic recording medium are improved.

4,117,191

COMPOSITE SILICATE PIGMENT

Frederick L. Kurrle, Laurel, Md., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 668,436, Mar. 19, 1976, Pat. No. 4,026,721. This application Mar. 2, 1977, Ser. No. 773,745

Int. Cl.² B32B *5/16*

U.S. Cl. 428—330 **7 Claims**

1. Paper comprising cellulosic pulp fibers and the addition of sufficient filler material to improve the optical properties of the pulp fibers, the improvement which comprises as the filler material a composite white pigment comprising a clay pigment component having a platelet type structure, said platelets having planar surfaces, and a metal silicate pigment component in the form of spherical particles of an alkaline earth metal silicate precipitated on the planar surfaces of the clay platelets, said metal silicate component comprising from about 10–90% by weight of the total composite pigment.

4,117,192

DEFORMABLE RETROREFLECTIVE PAVEMENT-MARKING SHEET MATERIAL

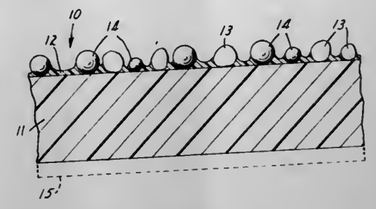
Jens L. Jorgensen, Anoka, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 658,283, Feb. 17, 1976, abandoned. This application Aug. 18, 1977, Ser. No. 825,691

Int. Cl.² B32B *5/16*

U.S. Cl. 428—337 **6 Claims**

1. Pavement-marking sheet material comprising a base film that is about one-fourth millimeter or more thick, includes a polymer, an extender resin, and particulate fillers, and exhibits deformability and reduced elasticity such that if retroreflective elements were pressed directly against the base film under the pressure of wheeled road traffic, they would become fully embedded in the base film; a thin support film adhered to one surface of the base film; and a scattering of glass microspheres arranged in a monolayer partially embedded and strongly adhered in the support film and partially exposed out of the support film, said support film being less thick than the average radius of said glass microspheres, and being less thick but more



elastic than the base film, whereby the support film with said glass microspheres resists embedment into said base film during passage of wheeled road traffic over the sheet material and returns closely to its original shape after the road traffic has completed its passage over the sheet material.

4,117,193

ANTISTATIC, LOW TEMPERATURE HEAT SEALABLE POLYPROPYLENE COMPOSITE FILM AND PROCESS FOR PRODUCTION THEREOF

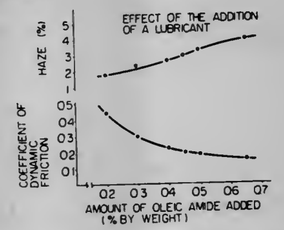
Mikio Tsuchiya, Suita; Takashi Kawamura, Mito, and Kaoru Shibata, Tokyo, all of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1977, Ser. No. 787,143

Claims priority, application Japan, Jul. 22, 1976, 51-86566

Int. Cl.² B32B *7/02, 27/08, 27/16, 27/32*

U.S. Cl. 428—339 **27 Claims**



1. An antistatic, low-temperature heat-sealable polypropylene composite film which comprises:

(a) a substrate layer of a uniaxially stretched film of a polymer composition comprising a propylene homopolymer or a propylene copolymer containing a small amount of an alpha-olefin, said polymer composition having incorporated therein (i) a lubricant, (ii) an anti-blocking agent, and (iii) an antistatic agent; and

(b) a lamination layer or layers of a polymer blend composition comprising a low-crystalline resin of an ethylene-butene copolymer and a polyolefin resin laminated on at least one surface of said substrate layer, said polymer blend composition having incorporated therein (i) a lubricant and (ii) an anti-blocking agent,

said composite film having been stretched, after lamination, in a direction perpendicular to the direction in which said substrate layer has been stretched.

14. A process for the production of an antistatic, low-temperature heat-sealable polypropylene composite film which comprises the steps of:

melt extrusion laminating a polymer blend composition comprising (a) a polymer blend of (i) a low-crystalline resin of an ethylene-butene copolymer and (ii) a polyolefin resin; and (b) additives: (i) a lubricant and (ii) an anti-blocking agent; onto at least one surface of a uniaxially

stretched polypropylene film prepared by uniaxially stretching a polymer composition comprising (a) a propylene homopolymer or a propylene copolymer containing a small amount of an alpha-olefin and (b) additives: (i) a lubricant, (ii) an anti-blocking agent and (iii) an antistatic agent; and then

stretching the resulting laminate film in the direction perpendicular to the direction in which said polypropylene film has been stretched.

4,117,194

BICOMPONENT FILAMENTS WITH A SPECIAL CROSS-SECTION

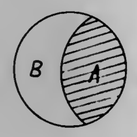
Gerard Barbe, Craponne, and Robert Habault, Lyons, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Continuation-in-part of Ser. No. 559,421, Mar. 18, 1975, Pat. No. 3,973,073, which is a continuation of Ser. No. 356,576, May 2, 1973, abandoned. This application Jul. 21, 1976, Ser. No. 707,242

Claims priority, application France, Feb. 27, 1976, 76 05791; May 4, 1972, 72.16921

Int. Cl.² D02G 3/00

U.S. Cl. 428—374 **5 Claims**



1. Side-by-side bicomponent polyester filaments having improved crimp properties, said filament of two polymers, wherein one polymer (B) is polyethylene terephthalate and the other polymer (A) is sparingly cross-linked polybutylene terephthalate having at least about 0.20 mole percent of trifunctional or tetrafunctional ester-forming crosslinking agent, based on the terephthalic acid content of the polybutylene terephthalate, said other polymer (A) having a melted state viscosity VF of at least about 2000 poises at 260° C., wherein in cross-section said one polymer (B) envelopes said other polymer (A) to an extent such as to cover, at least about 45% of the periphery of said other polymer (A).

4,117,195

MANUFACTURE OF EXTRUDED PRODUCTS

Peter Swarbrick, Upton-by-Chester; William John Green, Pinner, both of England, and Charles Maillefer, Lausanne, Switzerland, assignors to BICC Limited, London, England and Etablissements Maillefer SA, Lausanne, Switzerland

Filed Dec. 8, 1975, Ser. No. 638,448

Claims priority, application United Kingdom, Dec. 6, 1974, 52917/74

Int. Cl.² C08F 29/12

U.S. Cl. 428—379 **17 Claims**

1. A method of making a cross-linked extruded product comprising:

metering into a screw extrusion machine having a barrel and a screw extending from end to end thereof a polymer capable of being cross-linked by the use of a hydrolysable unsaturated silane together with proportionate amounts of compounding ingredients comprising a hydrolysable unsaturated silane, a free-radical generator and a silanol condensation catalyst, at least one of said compounding ingredients being metered separately from said polymer;

blending said compounding ingredients with said polymer in a first zone of said barrel of said extruder to form a mixture and when blending is complete heating said mixture in a second zone of said barrel downstream of said first zone until silane groups have been grafted to said polymer, the amount of said free-radical generator being sufficiently low to limit direct free-radical cross-linking to a level that will not prevent extrusion of the material;

extruding said mixture directly out of said extruder through an extrusion die to form an elongate product of a required final shape;

and subjecting said elongate product to the action of moisture until said polymer therein is cross-linked.

14. An electric cable with cross-linked insulation made by the method claimed in claim 1.

4,117,196

PHOTOCURABLE IMIDIZABLE POLYENE-POLYTHIOL COMPOSITIONS

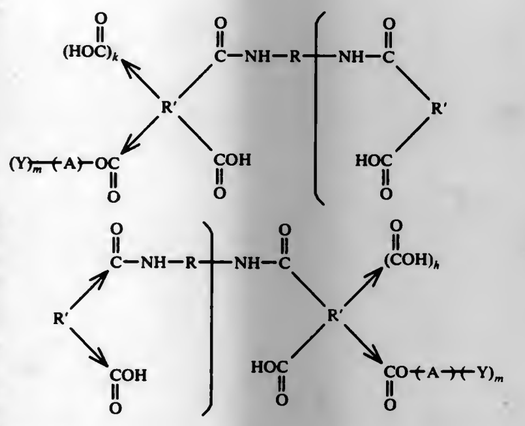
Eckart Mathias, Catonsville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 753,750, Dec. 23, 1976, Pat. No. 4,080,484. This application Sep. 2, 1977, Ser. No. 830,225

Int. Cl.² B05D 3/06

U.S. Cl. 428—379 **35 Claims**

1. An amide-acid polyene of the formula:



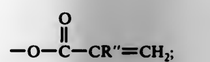
wherein

→ denotes isomerism, R is a divalent organic moiety remaining after a primary diamine has reacted to form amide linkages;

R' is an aromatic residue attached to at least 3 carbonyl groups at least two of which groups are attached to adjacent carbon atoms on the aromatic residue;

A is an alkylene group having from 1 to 10 carbon atoms;

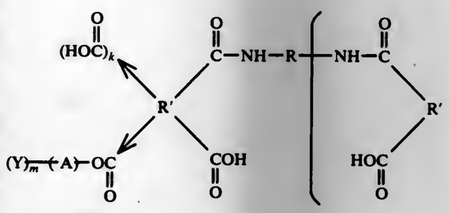
Y is



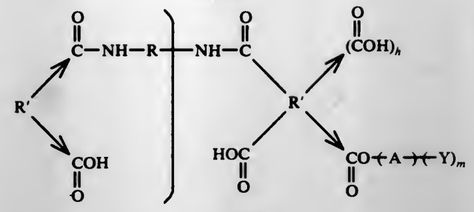
R″ is hydrogen or methyl; *k* and *h* are 0 or 1; *m* and *d* are 1 to 10 and *p* is 0 to 10.

7. A photocurable composition comprising

(A) an amide-acid containing polyene of the formula:



-continued



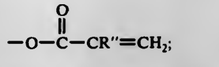
wherein

→ denotes isomerism, R is a divalent organic moiety remaining after a primary diamine has reacted to form amide linkages;

R' is an aromatic residue attached to at least 3 carbonyl groups at least two of which groups are attached to adjacent carbon atoms on the aromatic residue;

A is an alkylene group having from 1 to 10 carbon atoms;

Y is



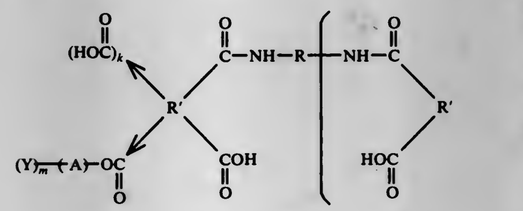
R″ is hydrogen or methyl; *k* and *h* are 0 or 1; *m* and *d* are 1 to 10 and *p* is 0 to 10,

(B) a polythiol having a molecular weight in the range from about 94 to 20,000 of the general formula: R_8—$(SH)_n$ where *n* is at least 2 and R_8 is a polyvalent organic moiety, the sum of *m* and *n* being greater than 3, the polyene/polythiol mole ratio being in the range 0.2 to 8.0:1, respectively, and

(C) a photocuring rate accelerator.

19. The process of coating a substrate which comprises (1) applying to a substrate a curable composition comprising

(A) an amide-acid containing polyene of the formula:



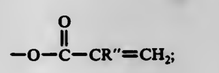
wherein

→ denotes isomerism, R is a divalent organic moiety remaining after a primary diamine has reacted to form amide linkages;

R' is an aromatic residue attached to at least 3 carbonyl groups at least two of which groups are attached to adjacent carbon atoms on the aromatic residue;

A is an alkylene group having from 1 to 10 carbon atoms;

Y is



R″ is hydrogen or methyl; *k* and *h* are 0 or 1; *m* and *d* are 1 to 10 and *p* is 0 to 10, and

(B) a polythiol having a molecular weight in the range from about 94 to 20,000 of the general formula: R_8—$(SH)_n$ where *n* is at least 2 and R_8 is a polyvalent organic moiety, the sum of *m* and *n* being greater than 3, the polyene/polythiol mole ratio being in the range 0.2 to 8.0:1, respectively, then in either order (2) exposing said curable composition under ambient conditions to a free radical generator to form a solidified, cured polythioether coating on said substrate and (3) heating said cured composition in the range 50°–250° C. to imidize the polyene.

4,117,197

PRODUCTION OF COATED BUILDING COMPONENTS

Milan Krejci, and Peter Kresse, both of Krefeld-Bockum, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 7, 1976, Ser. No. 721,128

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1975, 2539718

Int. Cl.² B32B 19/04

U.S. Cl. 428—443 **31 Claims**

1. In the production of a coated building component such as a concrete roof tile, precast concrete member, asbestos cement member or lime-sand brick, comprising the steps of mixing an inorganic binder, water and aggregate to produce a workable mass, molding said mass into a preformed component, applying to the preformed component an aqueous paste containing a metal oxide and at least one of waterglass and a phosphate to form a coating and allowing the coating to harden, the improvement which comprises applying about 190 to 400 g of the paste per square meter of surface to be coated prior to hardening of such surface, the application being effected in the presence of at least about 0.5% by weight of the inorganic binder or, in the case of lime-sand bricks, by weight of the binder plus aggregate, of a water soluble inorganic salt which converts the aqueous paste into a gel-like non-flowing form, the inorganic salt being included in the foundation or protective layer.

4,117,198

RELEASE SHEET OF A CELLULOSIC PAPER COATED WITH A RESIN MIXTURE

George Edward Power, and Donald Louis Bolling, both of Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed Nov. 3, 1976, Ser. No. 738,213

Int. Cl.² B32B 9/06

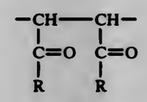
U.S. Cl. 428—452 **13 Claims**

1. A release sheet for use in the production of laminates comprising

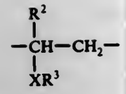
1. a cellulosic paper sheet coated with a composition comprising a mixture of

A. from about 75% to about 99%, by weight, based on the total weight of (A) and (B), of an oil-modified alkyd resin cross-linked with from about 30% to about 70%, by weight, based on the total weight of (A), of a polyalkylether of a polymethylol melamine and

B. from about 1% to about 25%, by weight, based on the total weight of (A) and (B), of a copolymer containing from about 15 to about 85 mole percent of recurring units having the formula



wherein each R is, individually, OR^1, R^1 being hydrogen or C_1–C_{22} alkyl, or the two R groups taken together form an oxa group, and the remaining units are recurring units of the formula



wherein R^2 is hydrogen or methyl, R^3 is a C_9–C_{30} alkyl radical and X is O or CH_2.

4,117,199

PROCESS FOR PRODUCING MOISTURE AND WATER-PROOF PAPER

Hideo Gotoh; Akira Igarashi, both of Tokyo; Reiko Kobayashi, and Kiyotake Akiho, both of Ichikawa, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1977, Ser. No. 836,708
Claims priority, application Japan, Sep. 27, 1976, 51-115677
Int. Cl.² C08H *9/08*; C08D *13/16*; C08F *45/52*; D21H *1/28*
U.S. Cl. 428—486 **15 Claims**

15. A moisture and water-proof repulpable paper comprising a paper substrate and at least one moisture and waterproof coating formed on at least one surface of said paper substrate, said moisture and water-proof coating having been prepared by coating the surface of said paper substrate with an aqueous emulsion containing a butadiene-methyl methacrylate copolymer latex and a wax emulsion in an amount of 5 to 200 parts by weight of the solid wax per 100 parts by weight of the solid copolymer and, then, drying said coated paper at an elevated temperature the same as or higher than the melting point of said wax.

4,117,200

FIRE RETARDANT WOOD PRODUCTS

Jeffrey Donald Leman, and Allan James Robertson, both of Niagara, Canada, assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 372,121, Jun. 21, 1973, Pat. No. 4,080,501. This application Sep. 16, 1977, Ser. No. 834,015
Int. Cl.² B32B *21/00*
U.S. Cl. 428—526 **5 Claims**

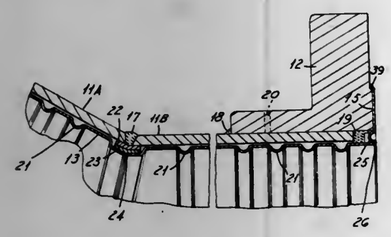
1. A fire-retardant particleboard containing at least about 2.0% of solid melamine phosphate having bonded thereto via hydrogen bonding at least about 0.5 mole of phosphoric acid per mole of melamine phosphate.

4,117,201

CORROSION AND EROSION RESISTANT LINED EQUIPMENT

Hibbard G. Keifert, Torrance, Calif., assignor to Fansteel Inc., N. Chicago, Ill.

Filed Jul. 23, 1976, Ser. No. 708,059
Int. Cl.² B21D *7/18*
U.S. Cl. 428—591 **12 Claims**



1. In a wall assembly of industrial equipment to resist corrosion of the type having a first structural layer of metal to provide mechanical strength and a second corrosion resistant protective layer of metal lying generally in face-to-face relation with said first layer, said frst structural layer of metal consisting essentially of iron, copper, nickel, cobalt, and fabricatable and weldable alloys thereof, said second layer of metal consisting essentially of titanium, zirconium, hafnium, tantalum, columbium, vanadium, and fabricatable and weldable alloys thereof, said second layer having at least two sections joined together, that improvement in joints uniting adjacent portions of said sections of said second layer which comprises:

a. means comprising at least two lapped backing strips of metal interposed between said first and second layers and underlying said adjacent portions of said sections of said second layer prior to fusion welding together said adjacent portions of said sections, said backing strips of metal each consisting essentially of titanium, zirconium, hafnium, tantalum, columbium, vanadium, and fabricatable and weldable alloys thereof, and

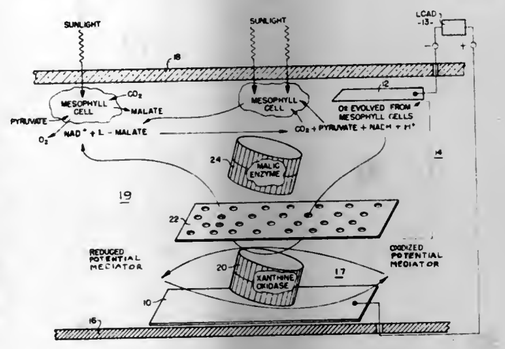
b. a continuous fusion weld uniting together said adjacent portions of said sections of said second layer without uniting any of said backing strips to said first layer.

4,117,202

SOLAR POWERED BIOLOGICAL FUEL CELL

Timothy A. Beck, 723 Eighth Pl., Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 741,455, Nov. 12, 1976, abandoned. This application Jun. 14, 1977, Ser. No. 806,362
Int. Cl.² H01M *8/16*
U.S. Cl. 429—2 **10 Claims**



1. A photosynthetically-driven biological fuel cell comprising: means forming a growth chamber having a transparent top exposed to sunlight; a nutrient aqueous solution contained in said growth chamber; an anode electrode and a cathode electrode mounted in said growth chamber immersed in said solution in isolated relationship with one another and electrically connected to an external load; a plurality of isolated mesophyll cells suspended in said nutrient aqueous solution, said mesophyll cells producing malate when illuminated by sunlight, said nutrient solution being capable of sustaining the isolated mesophyll cells in an autotropic state and of initiating malate export from the illuminated mesophyll cells into the solution; a selected substance suspended in said nutrient solution to act on the malate to form NADH; and a potential mediator substance suspended in said nutrient solution to transfer electrons from said NADH to said anode.

4,117,203

RECHARGEABLE BATTERY ENCLOSURE

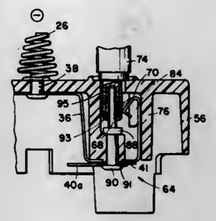
Axel O. Sjogren, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

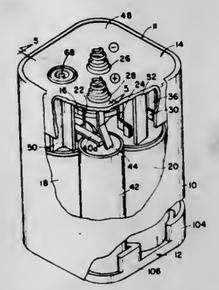
Division of Ser. No. 738,417, Nov. 3, 1976. This application Mar. 16, 1978, Ser. No. 887,267
Int. Cl.² H01M *14/00*
U.S. Cl. 429—7 **5 Claims**

1. In a rechargeable battery construction comprising an enclosure, a plurality of electrically connected electrochemical cells housed within the enclosure, and a pair of terminals mounted on the enclosure, an improved recharge jack mounted in the enclosure comprising:

a one-piece molded housing integral and unitary with at least a portion of the enclosure;

said housing having a central axial opening for receiving a recharge plug, an apertured landing positioned coaxially with and disposed below the central opening, and a lower





window opening surrounding the landing and connected to the central opening;

a conductive post disposed in the aperture of the landing and penetrating the central opening and serving as a first contact of the jack; and

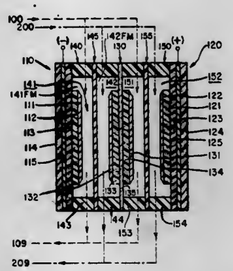
spring contact means penetrating the lower window opening and having a forward portion disposed in the central opening serving as a second contact of the jack.

4,117,204

SULFITE ANOLYTE AND PERSULFATE CATHOLYTE FUEL CELL

Ralph Zito, Jr., Durham, N.C., assignor to General Engineering Labs., Durham, N.C.

Filed Dec. 1, 1977, Ser. No. 856,502
Int. Cl.² H01M *8/18*
U.S. Cl. 429—19 **1 Claim**



1. Fuel cell comprising, in combination,

anode and cathode forming means,

means forming plural, interleaved anolyte and catholyte compartments with anode and cathode respectively positioned therein,

ion transport means interconnecting each adjacent part of said anolyte and catholyte compartments,

means supplying and circulating liquid anolyte and catholyte solutions through said compartments essentially continuously,

said anolyte solution comprising a solute ion selected from the class consisting of sulfite and bisulfite, and

wherein said catholyte comprises a persulfate solute,

and wherein the anolyte and catholyte solutes have a common cation,

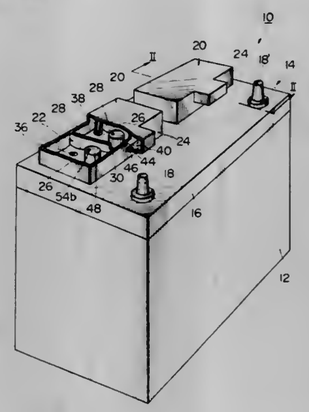
whereby a common affluent species is produced by operation of the fuel cell.

4,117,205

ELECTRIC STORAGE BATTERY

Yasuo Kitai, Kumagaya, Japan, assignor to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1977, Ser. No. 862,057
Claims priority, application Japan, Dec. 29, 1976, 52-176082[U]
Int. Cl.² H01M *2/12*
U.S. Cl. 429—86 **7 Claims**



1. An electric storage battery comprising a closure including a battery cover sealed with a battery casing and gas venting means to vent only gases out of said closure, said gas venting means comprising a gas cooling chamber including a plural of divided chamber portions communicating with respective cells and said electric storage battery, so as to receive gases from said cells and communicating with each other through openings provided adjacent to the tops thereof, said gas cooling chamber having a water returning lateral port provided at the bottom of said divided chamber portions; a gas filter chamber provided adjacent to said gas cooling chamber to communicate with said gas cooling chamber through an opening in the wall of said gas cooling chamber at the top thereof and having an explosion-proof gas filter disposed in said gas filter chamber so as to vent said gases therethrough; and a labyrinth chamber provided to vertically move through a tortuous path gases together with electrolyte mist and water steam and having an inlet through which said gases together with said electrolyte mist and said water steam are introduced into said labyrinth chamber and an outlet through which said gases and the remaining water steam are introduced into said gas cooling chamber, said labyrinth chamber further having an electrolyte returning port provided at the bottom of said labyrinth chamber.

4,117,206
NICKEL OXIDE-HYDROGEN CELL

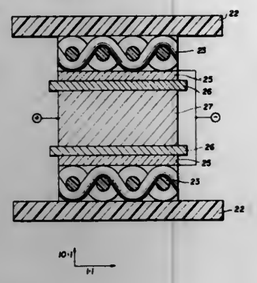
Heinz Plust, Neuhausen, and Günter Gutmann, Esslingen, both of Germany, assignors to Deutsche Automobilgesellschaft GmbH, Esslingen-Mettingen, Germany

Filed Aug. 17, 1977, Ser. No. 825,461

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1976, 2637015

Int. Cl.² H01M *10/34*

U.S. Cl. 429—101 **14 Claims**



1. In a rechargeable nickel-hydrogen cell with hydrogen pressure storage or hydride storage and one or more electrode units connected electrically in parallel or in series, where in each unit a positive nickel oxide electrode is surrounded on both sides by negative hydrophilic hydrogen electrodes and is separated therefrom by electrolyte-saturated separators, said electrode units comprising gas-permeable electrically conducting or non-conducting separating elements between adjacent negative electrodes, the improvement wherein

the averages of the pore sizes of the positives, negatives, and separators are adjusted so that the capillary pressure of the electrolyte in the pores of the positive electrodes in all operating states of the cell is less than the capillary pressure of the electrolyte in the separator and greater than the capillary pressure of the electrolyte in the negative electrode.

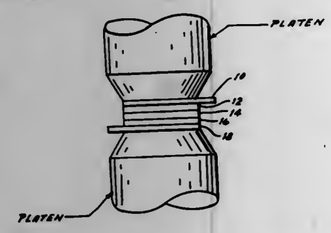
4,117,207
MOLYBDENUM CHLORIDE-TETRACHLOROALUMINATE THERMAL BATTERY

John C. Nardi, 3398 Tyler Dr., Brunswick, Ohio 44212; Charles L. Hussey, Quarters 6402H; John K. Erbacher, Quarters 4501-H, both of USAF Academy, Colo. 80840; Lowell A. King, 460 Wintery Circle N., Colorado Springs, Colo. 80919, and Armand A. Fannin, Jr., 4311-G, USAF Academy, Colo. 80840

Filed Oct. 14, 1977, Ser. No. 842,141

Int. Cl.² H01M *4/36*

U.S. Cl. 429—103 **2 Claims**



1. A thermally activated, electrochemical power source comprising:

(a) a solid anode composed of a material selected from the group consisting of lithium, aluminum, lithium-aluminum alloys and amalgamated aluminum,

(b) a solid cathode composed of a mixture of molybdenum pentachloride, a sodium tetrachloroaluminate electrolyte and graphite, and

(c) a solid sodium tetrachloroaluminate electrolyte positioned between and in contact with said anode and said cathode.

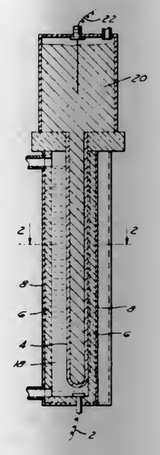
4,117,208
ELECTRICAL CONVERSION DEVICE WITH CERAMIC ELECTRODE

Frank A. Ludwig, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 15, 1977, Ser. No. 833,547

Int. Cl.² H01M *6/18*

U.S. Cl. 429—104 **9 Claims**



1. In an electrical conversion device comprising:

A. A container-current collector consisting essentially of an inner, load bearing, high strength, noncorrosive and electrically conductive ceramic member, and a highly conductive metal cladding intimately attached to the outer surface of said ceramic member, said metal cladding having a thickness which preserves the function of said ceramic member as the primary load bearing element, being based on the relative elastic modulus of the metal compared to that of said ceramic member, said metal-cladding being operable to receive and shunt current flow from an inner surface of said container-current collector to an external contact;

B. A cation-permeable barrier to mass liquid transfer which is disposed within said container-current collector so as to create an anodic reaction zone within said barrier and a cathodic reaction zone between said barrier and the exterior of said container-current collector;

C. A molten alkali metal reactant-anode within said anodic reaction zone in electrical contact with an external circuit;

D. A cathodic reactant within said cathodic reaction zone which reactant is electrochemically reversibly reactive with said anodic reactant and which, when said device is in at least a partially discharged state, is an electrolyte; and

E. A cathodic electrode for transporting electrons to the vicinity of said cation-permeable barrier during discharge of said device and for transporting electrons away from the vicinity of said cation permeable barrier during charge of said device, said cathodic electrode being in electrical contact with both said cation-permeable barrier and said external circuit,

wherein the improvement comprises adapting the metal clad ceramic member described in A. to serve not only as a container-current collector for said device, but also as the cathodic electrode of said device by shaping said metal clad ceramic member such that (i) the inner surface of said electrically conductive ceramic member is disposed in close proximity to at least a portion of the surface of said cation-permeable barrier, and (ii) there are a plurality of open channels or spaces within said cathodic reaction zone through which said cathodic reactants may flow during operation of said device.

4,117,209
ELECTROCHEMICAL CELLS

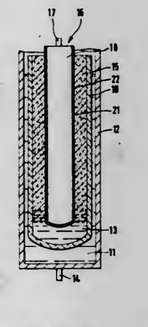
Trevor Leslie Markin, Goring-on-Thames; Roger John Bones, Abingdon; Keith Taylor Scott, Newbury; Geoffrey John May, Frodsham, and Graham Robinson, Tarvin, all of England, assignors to Chloride Silent Power Limited, London, England

Filed Nov. 21, 1977, Ser. No. 853,596

Claims priority, application United Kingdom, Nov. 22, 1976, 48656/76

Int. Cl.² H01M *10/39*

U.S. Cl. 429—104 **20 Claims**



1. In a sodium-sulphur cell having a solid electrolyte separating sodium forming an anode from a cathodic reactant comprising sulphur/polysulphides and having a cathode current collector electrically in contact with the cathodic reactant; wherein the improvement comprises a cathode current collector comprising an aluminum substrate, an interstrate layer over the surface of the substrate exposed to cathodic reactant and a coating of electronically conductive oxide material with respect to the cathodic reactant over the interstrate layer, said interstrate layer being of a nickel chromium alloy containing at least 10% by weight of nickel and at least 10% by weight of chromium, the combined nickel and chromium amounting to at least 50% by weight of the nickel-chromium alloy and the oxide coating being a plasma-sprayed or detonation-gun sprayed protective layer completely covering the interstrate layer.

4,117,210
PHOTOGALVANIC CELL HAVING TRANSPARENT PHOTOACTIVE TiO_2 THIN FILM

Satyendra K. Deb, East Brunswick; Schoen-nan Chen, North Brunswick; Horst Witzke, Princeton, all of N.J.; Michael A. Russak, Farmingdale, and Joseph Reichman, Great Neck, both of N.Y., assignors to Optel Corporation, Princeton, N.J. and Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 27, 1977, Ser. No. 763,072

Int. Cl.² H01M *6/30, 6/36*

U.S. Cl. 429—111 **13 Claims**

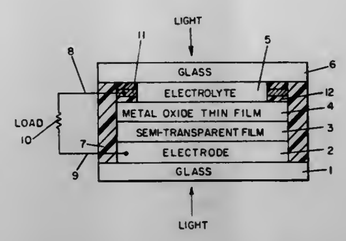
1. A photogalvanic cell that may be irradiated in more than one direction, the cell comprising:

a light transparent electrode for collecting electrical charge of a particular polarity generated by photoconversion of irradiating light;

metal oxide means positioned in spaced registry from the electrode;

means which are at least semi-transparent and positioned in abutting relation between the electrode and the metal oxide means for facilitating charge transfer between the metal oxide means and the electrode;

a light passing electrolyte contacting a free surface of the metal oxide means, a photoactive junction being formed therebetween for converting light to electrical energy; and



a counterelectrode in contact with the electrolyte and positioned so that it does not block irradiating light from passing to the electrolyte, the counterelectrode collecting electrical charge of an opposite polarity generated by photoconversion of the irradiating light.

4,117,211
ELECTRIC STORAGE BATTERY, PARTICULARLY FOR VEHICLES

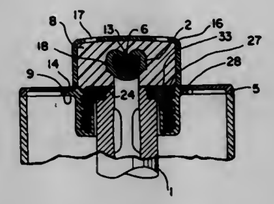
Heinz Schuster, Hagen, and Rolf Prange, Iserlohn, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 11, 1977, Ser. No. 786,230

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2617016

Int. Cl.² H01M *2/30*

U.S. Cl. 429—121 **6 Claims**



1. An electric storage battery having terminal posts with inserts of a metal of lower electrical resistance and higher mechanical strength than lead, the inserts having ends protruding form the terminal posts and in the form of a tubular loop with its axis at approximately a right angle to the axis of the post, wherein

the terminal post is surrounded by a lead receptacle having a synthetic plastic encircling molding,

the synthetic plastic molding having a ring-shaped shoulder for application of a housing lid, and

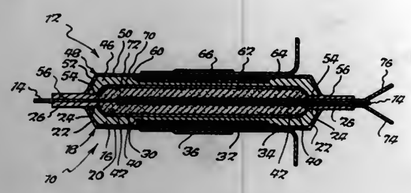
a weldment bead filling the space between the terminal post and the lead receptacle at the level of the shoulder.

4,117,212

LITHIUM-IODINE BATTERY

Ralph T. Mead, Kenmore; Frank W. Rudolph, Depew; Norbert W. Frenz, Jr., North Tonawanda, and Wilson Greatbatch, Clarence, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Nov. 2, 1977, Ser. No. 847,769
Int. Cl.² H01M 6/18
U.S. Cl. 429—153 **15 Claims**



1. A lithium-iodine battery comprising:
(a) a pair of lithium-iodine cells each including a container element having a body portion defining an interior region therein, an opening communicating with said region and a continuous peripheral flange of heat sealable material around said opening extending outwardly from said body, a lithium anode element in said container, electrical conductor means operatively connected to said lithium anode element and extending from said container, cathode means comprising iodine-containing material in said container and operatively contacting said lithium anode, and electrical conductor means operatively connected to said cathode means and extending from said container through said opening across said peripheral flange;
(b) a separator element having generally oppositely disposed surfaces and being of a material which is heat sealable and is non-reactive with iodine;
(c) said containers being positioned on said opposite surfaces of said separator with said peripheral flanges of said containers contacting said surfaces and said cathode conductor means extending outwardly along said surfaces; and
(d) said peripheral flanges of said containers and said separator element being heat sealed together around along the periphery of the assembly.

4,117,213

ALKALI METAL SALTS OF COMPLEX ANIONS CONTAINING HETEROATOM SUBSTITUENTS AND ELECTROLYTE COMPOSITIONS CONTAINING THESE

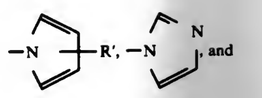
Thomas A. Whitney, Roselle, and Lawrence P. Klemann, Somerville, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

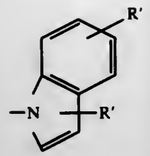
Continuation-in-part of Ser. No. 827,132, Aug. 24, 1977, abandoned. This application Jan. 19, 1978, Ser. No. 870,662
Int. Cl.² H01M 6/14
U.S. Cl. 429—194 **47 Claims**

1. A compound having the formula:

$$ZMR_xQ_y$$

wherein Z is an alkali metal selected from the group consisting of lithium and sodium;
wherein M is a metal selected from the group consisting of Zn, Cd, B, Al, Ga, Sn (stannous), P, and As;
wherein R represents radicals which may be the same or different and are inertly substituted or unsubstituted organic radicals selected from the group consisting of alkyl radicals having 1 to 25 carbon atoms, and aralkyl radicals having 7 to 25 carbon atoms;
wherein Q represents heteroatom substituents selected from the group consisting of:



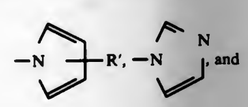


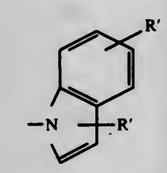
and any dimeric or trimeric composite of the foregoing radicals, and any group composed of two or three of the above structural units linked directly or through an additional carbon, wherein R′ may be the same or different and is selected from the group consisting of hydrogen and any R as defined above;
wherein x is zero or a positive integer and equals the total number of R radicals present; and
wherein y is a positive integer and equals the total valence of all Q radicals present,
subject to the provisos that the sum of x plus y is equal to one plus the valence of the metal M, and that when M is boron, y is equal to one, two or three.

21. An electrolyte composition comprising:
(a) an organic solvent selected from the group consisting of inertly substituted and unsubstituted ethers, sulfones, organic sulfates, organic sulfites, organic nitrites and organic nitro compounds; and having dissolved therein:
(b) electrolytically active alkali metal salts including an electrolytically active amount of an alkali metal salt having the formula:

$$ZMR_xQ_y$$

wherein Z is an alkali metal selected from the group consisting of lithium and sodium;
wherein M is a metal selected from the group consisting of Zn, Cd, B, Al, Ga, Sn (stannous), P, and As;
wherein R represents radicals which may be the same or different and are inertly substituted or unsubstituted organic radicals selected from the group consisting of alkyl radicals having 1 to 25 carbon atoms, and aralkyl radicals having 7 to 25 carbon atoms;
wherein Q represents heteroatom substituents selected from the group consisting of:





and any dimeric or trimeric composite of the foregoing radicals, and any group composed of two or three of the above structural units linked directly or through an additional carbon, wherein each R′ may be the same or different and is selected from the group consisting of hydrogen and any R as defined above;
wherein x is zero or a positive integer and equals the total number of R radicals present; and
wherein y is a positive integer and equals the total valence of all Q radicals present,

subject to the provisos that the sum of x plus y is equal to one plus the valence of the metal M, and that when M is boron, y is equal to one, two or three.

4,117,214

METHOD AND COMPOSITION FOR REDUCING THE STRENGTH OF ICE

Christ F. Parks, and Kenneth H. Nimerick, both of Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 380,778, Jul. 19, 1973, abandoned. This application Nov. 28, 1977, Ser. No. 855,528
Int. Cl.² C09K 3/18; C10K 5/00; F25C 1/00, 1/12
U.S. Cl. 427—220 **10 Claims**

5. A method for treating particulate solids having surface moisture to reduce the cohesive strength of masses of such solids when frozen, said particulate solids being neither water soluble nor water swellable, said method consisting of spraying such solids with an effective amount of a fluid composition consisting essentially of water soluble components comprising (A) a water soluble polyhydroxy compound selected from the group consisting of alkylene glycols and (B) from about 0.001 to about 2 parts sodium acetate per part of polyhydroxy compound, said composition being substantially free of corrosion inducing metal halide salts.

8. A method for treating particulate solids having surface moisture to reduce the cohesive strength of masses of such solids when frozen, said particulate solids being neither water soluble nor water swellable, said method consisting of spraying such solids with an effective amount of a fluid composition consisting essentially of water soluble components comprising (A) a water soluble polyhydroxy compound or monoalkyl ether thereof and (B) polyacrylamide having at least 10 percent hydrolysis, in an amount of from about 0.001 to about 2 parts partially hydrolyzed polyacrylamide per part of component (A), said compound (B) being different from said compound (A), and said composition being substantially free of corrosion-inducing metal halide salts.

4,117,215

INVERSION POLYMERIZATION PROCESS FOR PRODUCING VINYL RESINS

Donald Edward Witenhafer, North Olmstead, and David Thomas Popovich, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 2, 1977, Ser. No. 830,309
Int. Cl.² C08F 2/18, 2/32, 14/06
U.S. Cl. 526—62 **9 Claims**

1. In a process of inversion polymerizing substantially water-insoluble polymerizable ethylenically unsaturated monomer(s) in a reaction vessel by first forming a continuous monomer(s) phase in the presence of a monomer soluble surface active agent and a monomer-soluble catalyst, polymerizing said monomer phase at a temperature in the range of about 30° C. to about 80° C. with agitation until a conversion to polymer less than about 20% occurs, adding sufficient water to the monomer-polymer mixture with agitation and in the presence of at least about 0.1% by weight of a water-soluble suspending agent for said monomer(s) to form a dispersion wherein water is the continuous phase, then polymerizing the dispersion at a temperature in the range of about 30° C. to about 80° C. to convert the remaining monomer(s) to polymer, the improvement which comprises (1) applying a polyaromatic prime coating to the internal surfaces of said reaction vessel, (2) applying to said prime coating a top coating of a water-soluble suspending agent, (3) polymerizing the continuous monomer phase in constant contact with said top coating, and (4) polymerizing said continuous water phase in constant contact with said prime coating after dissolving said top coating in the continuous water phase, whereby polymer buildup on said internal surfaces is substantially eliminated.

4,117,216

INVERSION POLYMERIZATION PROCESS FOR PRODUCING VINYL RESINS

Donald Edward Witenhafer, North Olmstead, and David Thomas Popovich, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 2, 1977, Ser. No. 830,308
Int. Cl.² C08F 2/18, 2/32, 14/06
U.S. Cl. 526—62 **8 Claims**

1. In a process of inversion polymerizing substantially water-insoluble polymerizable ethylenically unsaturated monomer(s) in a reaction vessel by first forming a continuous monomer(s) phase in the presence of a monomer-soluble surface active agent and a monomer-soluble catalyst, polymerizing said monomer phase at a temperature in the range of about 30° C. to about 80° C. with agitation until a conversion to polymer less than about 20% occurs, adding sufficient water to the monomer-polymer mixture with agitation and in the presence of at least about 0.1% by weight of a water-soluble suspending agent for said monomer(s) to form a dispersion wherein water is the continuous phase, then polymerizing the dispersion at a temperature in the range of about 30° C. to about 80° C. to convert the remaining monomer(s) to polymer, the improvement which comprises (1) applying a coating to the internal surfaces of said reaction vessel, comprised of a water-soluble suspending agent, (2) polymerizing the continuous monomer phase in constant contact with said coating, and (3) polymerizing said continuous water phase in constant contact with said coating while dissolving said coating in the continuous water phase, whereby polymer buildup on said internal surfaces is substantially reduced.

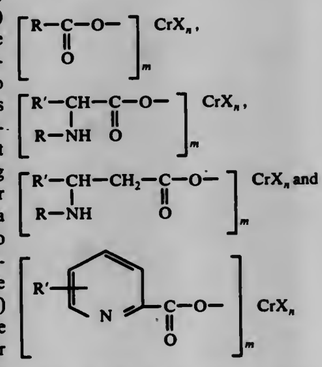
4,117,217

METHOD OF POLYMERIZING OLEFINS

Yu-Tang Hwang, Clinton, Iowa, assignor to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 694,780, Jun. 10, 1976. This application May 13, 1977, Ser. No. 796,842
Int. Cl.² C08F 4/78, 10/00, 10/02
U.S. Cl. 526—96 **11 Claims**

1. The method of making polymers of 1-olefins of 2 to 8 carbon atoms and copolymers of said olefins and 1-olefins of 2 to 20 carbon atoms which comprises polymerizing said olefins under polymerizing conditions with a catalyst prepared by dispersing on a finely divided, difficultly reducible, inorganic support of the group consisting of silica, alumina, thoria, zirconia, titania, magnesia, and mixtures thereof a chromium carboxylate containing at least four carbon atoms in each carboxylate group and essentially of the formula of the group consisting of



wherein R and R′ are each selected from alkyl, alkenyl, aryl, cycloalkyl, cycloalkenyl and arylalkyl radicals and combinations of these radicals with each R containing 3–30 carbon atoms and each R′ containing 0–20 carbon atoms and R′ can be

hydrogen and each R and R' containing a corresponding valence-satisfying number of hydrogen atoms, *m* is a whole number of 1 to 3, *n* is a whole number of 0 to 2 and *m* plus *n* is a whole number of 2 to 3, and X is a negative group relative to chromium, and activating the resulting mixture by heating to and at an elevated temperature of from about 600°–2000° F. in a non-oxidizing atmosphere.

4,117,218

HIGH SOFTENING MALEIC ANHYDRIDE COPOLYMERS

George S. Li, Aurora, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Sep. 6, 1977, Ser. No. 830,940
Int. Cl.² C08F *222/08*; C08K *7/14*
U.S. Cl. 526—272 **6 Claims**

1. The composition resulting from the polymerization of 100 parts by weight of

(A) from 20 to 80% by weight of styrene,

(B) from 1 to 40% by weight of maleic anhydride, and

(C) from 1 to 40% by weight of indene, wherein the combined weight percentages of (A) plus (B) plus (C) always equal 100%.

4,117,219

PROCESS FOR PRODUCING STABILIZED POLYOLEFINS

Genjiro Kakogawa, Yokohama; Tetsumi Suzuki, Isehara; Nobuaki Goko, Fujisawa, and Koji Mukuraguchi, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Aug. 1, 1977, Ser. No. 820,912
Int. Cl.² C08F *6/10*
U.S. Cl. 528—494 **12 Claims**

1. A process for producing a stabilized polyolefin, consisting essentially of the steps of: adding an epoxide of 2 to 8 carbon atoms to a polyolefin slurry obtained through polymerization of an α-olefin in the presence of a catalyst containing a halide of a transition metal and an organoaluminum compound ahd having a catalytic efficiency of more than 5,000 to render the catalyst remaining in the polymer inactive; and then evaporating volatile materials from the polyolefin slurry after the inactivation treatment.

4,117,220

REMOVAL OF VINYL CHLORIDE FROM PVC RESINS USING MICROWAVE RADIATION

Charles H. Worman, Jr., Whitehall, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 13, 1976, Ser. No. 714,024
Int. Cl.² C08F *6/00*
U.S. Cl. 528—503 **2 Claims**

1. The method of removing residual vinyl chloride monomer from polyvinyl chloride homopolymers and copolymers of vinyl chloride and vinyl acetate which consisting essentially of subjecting such polymer in the presence of at least 10% water by weight of the mixture to microwave irradiation at a frequency of about 2450 mc/sec. for at least 6 minutes and recovering said polymer in which at least 90% by weight of said residual vinyl chloride monomer has been removed.

4,117,221

AMINOACYL DERIVATIVES OF AMINOGLYCOSIDE ANTIBIOTICS

Peter J. L. Daniels, Cedar Grove, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 452,571, Mar. 19, 1974, abandoned. This application Oct. 20, 1976, Ser. No. 734,166
Int. Cl.² C07H *15/22*
U.S. Cl. 536—17 **46 Claims**

1. A 1-N-X-aminoglycoside anti-bacterial agent selected from the group consisting of 1-N-X-gentamicin A, 1-N-X-gentamicin B, 1-N-X-gentamicin B_1, 1-N-X-gentamicin C_1, 1-N-X-gentamicin C_{1a}, 1-N-X-gentamicin C_2, 1-N-X-gentamicin C_{2a}, 1-N-X-gentamicin X, 1-N-X-sisomicin, 1-N-X-verdamicin, 1-N-X-antibiotic G-418, 1-N-X-antibiotic 66-40B, 1-N-X-antibiotic 66-40D, 1-N-X-antibiotic JI-20A, 1-N-X-antibiotic JI-20B, 1-N-X-antibiotic G-52 and the pharmaceutically acceptable acid addition salts thereof, wherein X is S-3-amino-2-hydroxypropionyl.

4,117,222

PROCESS FOR THE MANUFACTURE OF ABSORBENT, MODIFIED STARCH ETHERS AND THEIR USE

Arno Holst, Wiesbaden-Biebrich; Michael Kostrzewa, Wiesbaden, and Gerhard Buchberger, Wiesbaden-Auringen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

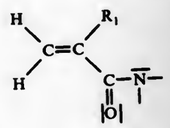
Filed Jul. 28, 1977, Ser. No. 819,944
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634539
Int. Cl.² C08B *31/08*
U.S. Cl. 536—50 **5 Claims**

1. In the process for the manufacture of a modified starch ethers in which, prior to, during, or after etherification, a reaction with a modifying agent is conducted in a wet alkaline medium.

the improvement comprising that in the etherification step an etherification agent selected from the group consisting of monochloroacetic acid, sodium monochloroacetic acid, methyl chloride, ethylene oxide, propylene oxide and ethyl chloride, alone or in the form of admixtures of two or more thereof is used,

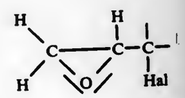
the ethers prepared from alkalized starch and said agents have a degree of substitution, without the modification step, such that they are more than 80 percent by weight water-soluble,

the modifying step is performed with a modifying agent selected from the group consisting of (a) 0.0005 to 0.2 part by weight per part by weight of starch of (1) a cross-linking agent carrying one of the following functional groups capable of a reaction with hydroxyl groups:



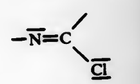
the acrylamido group wherein R_1 = H or CH_3,

or



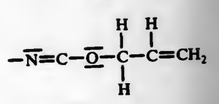
the α-halogen-epoxy group wherein Hal = Cl or Br,

or



the chloro-azomethine group,

or

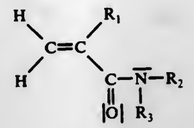


the allyloxy-azomethine group,

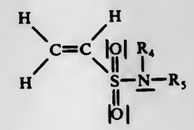
or (2) phosphorus oxychloride,

and (b) 0.01 to 0.3 part by weight per part by weight of starch of a compound capable of reacting monofunctionally with the hydroxyl groups of starch or of starch ethers

under the reaction conditions, the compound having one of the following general formulae:



or



wherein

R_1 = CH_3 or H,

R_2 = H, and

R_3 = CH_3, CH_2OH, an N-methylene-acylamido group with 1 to 3 atoms, an esterified N-methylene-carbamido group or N-carboxy methylene carbamido group with 2 to 7 carbon atoms, or

R_2 and R_3 are identical and are CH_3, or CH_2OH, and

wherein

R_4 and R_5 = H, or R_4 = H and R_5 = CH_3, or

R_4 and R_5 are CH_3,

whereby the modification results in an absorbent modified starch ether more than 40 percent by weight of which is insoluble in water and the water retention capacity range of which is from about 500 to 10,000 percent.

4,117,223

PROCESS FOR THE PREPARATION OF CELLULOSE ALKYL ETHERS

Wilhelm Lödige, Elsenerstr. 9c; Fritz Lödige, Leuschnerstr. 12; Josef Lücke, Im Lohfeld 15, and Eberhard Lipp, Habichtsweb 2, all of 4790 Paderborn, Fed. Rep. of Germany

Filed Aug. 2, 1977, Ser. No. 821,134
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635403
Int. Cl.² C08B *11/02*
U.S. Cl. 536—99 **2 Claims**

1. Process for preparing cellulose alkyl ethers by reacting cellulose with an alkali hydroxide and subsequently reacting the alkali cellulose with a C_1–C_4-lower alkyl halide, comprising intimately mixing the cellulose mixed with the lower alkyl halide in a quantity corresponding to from 0.5 to 4 parts by weight of lower alkyl halide to 1 part by weight of cellulose in a positive mixer having a fast-running mixing appliance and a container with adjustable internal pressure and means for cooling of the internal container wall, adding the alkali hydroxide in a concentrated aqueous solution or in a substantially water-free and finely divided state to the container, adjusting the pressure of the container with cooling in such a way that the temperature of the reaction mixture remains in the range of from 15° to 40° C., and raising the temperature to from 50° to 100° C. once alkalization is ended.

4,117,224

PREPARATION OF SUCROSE 6,6'-DICHLORO HEXA-ACETATE

Riaz Ahmed Khan, Sonning; Khizar Sultan Mufti, Reading, and Kenneth John Parker, Gifford Near Wallingford, all of England, assignors to Tate & Lyle Limited, London, England

Continuation of Ser. No. 514,944, Oct. 15, 1974, abandoned. This application Dec. 11, 1975, Ser. No. 639,780
Int. Cl.² C07H *5/02*
U.S. Cl. 536—119 **13 Claims**

1. A process for preparing a sucrose derivative, which comprises reacting a cooled solution of sucrose in N,N-dimethylformamide with methanesulphonyl chloride, contacting the resulting product in situ with an acetylating agent whereby the hexa-acetate of 6,6'-dichloro-6,6'-dideoxysucrose is formed, and isolating said hexa-acetate from the reaction mixture.

4,117,225

PROCESS FOR THE PREPARATION OF 1-DIPHENYLMETHYL-4-(6-METHYL-2-PYRIDYLMETHYLENEAMINO)PIPERAZINE

John B. Hill, Woodstock, Ill., assignor to G.D. Searle & Co., Chicago, Ill.

Filed Jun. 30, 1977, Ser. No. 812,019
Int. Cl.² C07D *401/12, 295/00*
U.S. Cl. 542—425 **3 Claims**

1. A compound which is 5-diphenylmethyl-3,7-diketo-1,2-dihydro-1,2,5-triazepine.

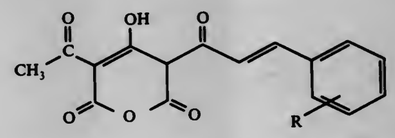
4,117,226

SUBSTITUTED 3-CINNAMOYL-2H-PYRAN-2,6(3H)-DIONES

Lawrence William Chakrin, Haddonfield, N.J.; Kenneth Means Snader, Hatboro, Pa., and Chester Rhodes Willis, Kingston, Jamaica, assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 659,305, Feb. 19, 1976, Pat. No. 4,015,009, which is a continuation-in-part of Ser. No. 511,153, Oct. 2, 1974, abandoned. This application Dec. 2, 1976, Ser. No. 748,243
Int. Cl.² C07D *309/30*
U.S. Cl. 542—438 **3 Claims**

1. A chemical compound of the formula:



wherein R is hydrogen, methoxy, methyl, hydroxy, carboxymethyleneoxy, acetamido or 3-acetamido-4-hydroxy.

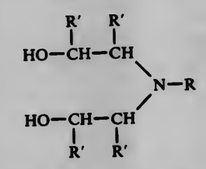
4,117,227

PRODUCTION OF N-(SUBSTITUTED) MORPHOLINE

Michael E. Brennan, Austin, Tex., assignor to Texaco Development Corp., New York, N.Y.

Filed Jun. 2, 1975, Ser. No. 583,015
Int. Cl.² C07D *295/02*
U.S. Cl. 544—170 **2 Claims**

1. A process for producing an N-(substituted) morpholine compound comprising the steps of contacting an alkanolamine of the formula:



wherein R is an alkyl radical having from 1 to about 8 carbon atoms or a hydroxy alkyl radical having from 1 to about 10 carbon atoms and each R' is, independently, a hydrogen or a lower alkyl radical with a catalytically effective amount of ferric phosphate at a temperature of from about 190° C. to about 260° C. under a pressure sufficient to maintain the mixture substantially in liquid phase; and

recovering said N-(substituted) morpholine compound from the reaction mixture.

4,117,228
1,3-BENZODIOXOL DERIVATIVES

Satoru Tanaka, Higashikurume, and Hideaki Watanabe, Ushiku, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

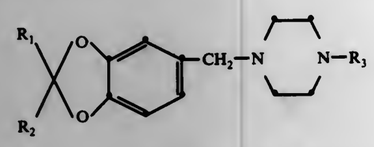
Division of Ser. No. 684,735, May 10, 1976, Pat. No. 4,051,125, which is a division of Ser. No. 609,145, Aug. 29, 1975, Pat. No. 4,026,895, which is a division of Ser. No. 503,515, Sep. 5, 1974, Pat. No. 3,981,864. This application Feb. 18, 1977, Ser. No. 770,039

Claims priority, application Japan, Sep. 8, 1973, 48-100761; Sep. 8, 1973, 48-100762

Int. Cl.[2] C07D *405/06*

U.S. Cl. 544—377 5 Claims

1. A member selected from the group consisting of a compound of the formula



wherein R_1 and R_2 are respectively lower alkyl of 1–2 carbon atoms and R_3 is methyl, phenyl, chlorophenyl or benzhydryl, and a pharmacologically acceptable acid addition salt thereof.

4,117,229
2-AMINO-1-(5-AMINO-1H-IMIDAZOL-4-YL)ETHANONE AND METHOD OF PREPARATION

David C. Baker, and Sterling R. Putt, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 11, 1977, Ser. No. 841,098

Int. Cl.[2] C07D *233/88*

U.S. Cl. 548—301 3 Claims

1. A compound having the name 2-amino-1-(5-amino-1H-imidazol-4-yl)ethanone and acid-addition salts thereof.

3. A process for the preparation of a compound of claim 1 which comprises reducing 2-amino-1-[5-amino-1-(arylmethyl)-1H-imidazol-4-yl]ethanone or an acid-addition salt thereof.

4,117,230
HYDANTOIN DERIVATIVES AS THERAPEUTIC AGENTS

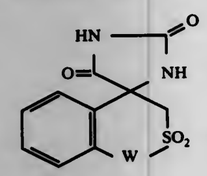
Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 733,062, Oct. 18, 1976, abandoned. This application Feb. 11, 1977, Ser. No. 767,803

Int. Cl.[2] C07D *491/10, 495/10*

U.S. Cl. 548—309 11 Claims

1. A compound of the formula:

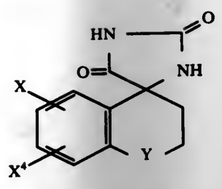


and the base salts thereof with pharmacologically acceptable cations, wherein

W is $—(CH_2)_n—$ and

n is zero or one.

4. A compound of the formula:



and the base salts thereof with pharmacologically acceptable cations, wherein

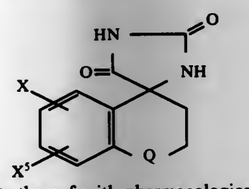
X is hydrogen and X^4 is hydroxy or lower alkoxy; or

X and X^4, when taken separately, are each lower alkoxy, and when taken together are $—OCH_2(CH_2)_nO—$

Y is oxygen or sulfur; and

n is zero or one.

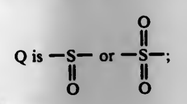
7. A compound of the formula:



and the base salts thereof with pharmacologically acceptable cations, wherein

X is hydrogen and X^5 is fluorine, chlorine, bromine or lower alkoxy; or

X and X^5, when taken separately, are each chlorine or lower alkoxy, and when taken together are $—(OCH_2(CH_2)_nO—$;

Q is  ;

and n is zero or one.

4,117,231
NITROGENOUS CONDENSATION PRODUCTS

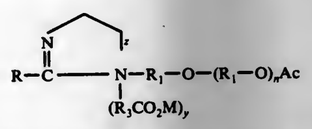
Arvid Christiansen, North Arlington, N.J., assignor to The Miranol Chemical Company, Inc., Irvington, N.J.

Division of Ser. No. 598,092, Jul. 22, 1975, Pat. No. 4,044,034. This application May 19, 1977, Ser. No. 798,278

Int. Cl.[2] C07D *233/26*

U.S. Cl. 548—352 7 Claims

1. A nitrogeneous compound of the formula



wherein R is an alkyl or alkenyl group of 5–25 carbon atoms;

each R_1 is an alkylene group of 2 to 4 carbon atoms and may be the same or different;

n is 0 to 4;

R_3 is alkylene of 1 to 4 carbon atoms

y is 0 to 1;

Z is $+y$;

M is selected from the group consisting of hydrogen and a cation

and Ac is a saturated residue of an α,β-unsaturated dicarboxylic acid of 4 or 5 carbon atoms wherein the carboxylic acid groups are on adjacent carbon atoms and the double bond is between two carbon atoms or immediately adjacent to one of them and wherein one of the carboxylic acid groups may be neutralized with a base or esterified with an alcohol of 1–6 carbon atoms.

4,117,232
TRANSIENT PRO-DRUG FORMS OF PHENYLBUTAZONE

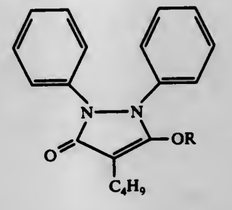
Nicolae S. Bodor, and Kenneth B. Sloan, both of Lawrence, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Division of Ser. No. 664,698, Mar. 8, 1976, Pat. No. 4,036,845, which is a division of Ser. No. 538,903, Jan. 6, 1975, Pat. No. 3,957,803. This application Mar. 14, 1977, Ser. No. 777,074

Int. Cl.[2] C07D *231/34*

U.S. Cl. 548—365 14 Claims

1. A pro-drug compound of the formula:



wherein R is a member selected from the group consisting of C_1–C_2 alkylsulfonyl, phenylsulfonyl, p-tolylsulfonyl and naphthylsulfonyl.

4,117,233
2,2-DIFLUORO-13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-18,19,20-TRINOR-PGF$_2\alpha$ COMPOUNDS

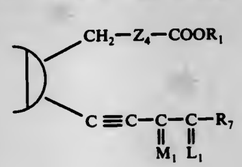
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 821,007

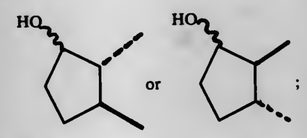
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—55 73 Claims

1. A prostaglandin analog of the formula

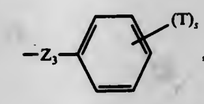


wherein D is



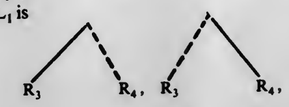
wherein Z_4 is cis-$—CH=CH—CH_2—(CH_2)_g—CF_2—$, wherein g is one, 2, or 3;

wherein R_7 is

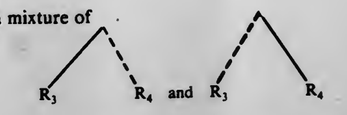


wherein Z_3 is oxa or methylene, s is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;

wherein L_1 is

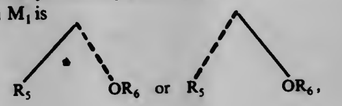


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene;

wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,117,234
INTERMEDIATE IN THE SYNTHESIS OF ESTRONE

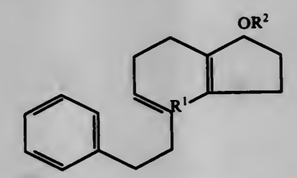
William S. Johnson, Portola, and Paul A. Bartlett, El Cerrito, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 281,406, Aug. 17, 1972, abandoned. This application Sep. 24, 1976, Ser. No. 726,351

Int. Cl.[2] C07C *69/78*

U.S. Cl. 560—107 3 Claims

1. Compounds of the formula



wherein the benzene ring has at least one ortho position in relation to the olefinic chain unsubstituted and free to undergo cyclization with the olefinic group to produce a six membered ring, and wherein the benzene ring may be otherwise substituted by groups that are compatible with the Wittig reaction, and R^1 is hydrogen or lower alkyl, and wherein R^2 is hydrogen, acyl moiety of a carboxylic acid having from 1 to 7 carbon atoms, tri(lower alkyl) silyl or lower alkyl, wherein lower alkyl is of from 1 to 4 carbon atoms.

4,117,235

NOVEL PREPARATION OF NOVEL LOW MOLECULAR WEIGHT, LIQUID POLYMER

Lynn J. Taylor, Haslett, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 23, 1971, Ser. No. 183,275
Int. Cl.[2] C07C *69/54*
U.S. Cl. 560—205 19 Claims

1. A process for preparing a low molecular weight liquid, polymeric, thermally removable coating vehicle which comprises

polymerizing, in the absence of a chain transfer agent, at least one selectd acrylic monomer under a pressure of about 2 to about 10 atmospheres and at a temperature of about 200° C to about 300° C and close to but not exceeding the ceiling temperature of the polymeric material at the polymerization pressure, said acrylic monomer being a derivative of an acid selected from the group consisting of acrylic acid and methacrylic acid

and recovering a polymeric material having a number-average molecular weight less than about 5000 and a viscosity at 25° C of less than about 200,000 centipoises which is a lower viscosity relative to polymeric material prepared from the same acrylic monomer at atmospheric pressure and at a temperature below about 50° C.

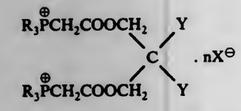
4,117,236

PHOSPHONIUM COMPOUNDS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 300,289, Oct. 24, 1972, abandoned, which is a division of Ser. No. 30,956, Apr. 22, 1970, abandoned, which is a division of Ser. No. 581,771, Sep. 26, 1966, Pat. No. 3,531,514. This application Mar. 11, 1977, Ser. No. 776,816
Int. Cl.[2] C07F *9/54*
U.S. Cl. 560—129 13 Claims

1. A phosphonium acetic acid ester of pentaerythritol of the formula



where Y is $-CH_2OH$ or $-[CH_2OOCH_2PR_3]-CH_2OOCCH_2PR_3$,

n is an integer of 2–4,

R is an alkyl radical of 1 to 16 carbon atoms, an alkenyl radical having 2 to 18 carbon atoms, an alkinyl radical having 2 to 18 carbon atoms, and

X is a halogen, sulfate, phosphate, sulfonate, phosphonate, acetate, oxalate, benzoate, maleate, oleate, perchlorate or picrate.

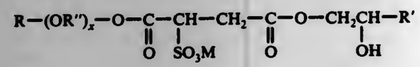
4,117,237

UNSYMMETRICAL SULFOSUCCINATE DIESTERS

Kermit D. Longley, Park Forest, and Anastasios J. Karalis, Chicago, both of Ill., assignors to Witco Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 497,550, Aug. 14, 1974, abandoned. This application Jun. 30, 1976, Ser. No. 701,485
Int. Cl.[2] C07C *143/12, 143/14;* C07D *295/22*
U.S. Cl. 560—151 8 Claims

1. An unsymmetrical sulfosuccinate surfactant having the formula:



where:

R = C_1-C_{20} alkyl, or an alkylbenzene radical having at least 1, but not more than 3, nuclearly attached alkyl groups and at least 1, but not more than 2, of these alkyl groups containing 5 to 12 carbon atoms and the said such other alkyl group or groups, as may be present, containing 1 to 3 carbon atoms,

R′ = alkyl containing 1 to 18 carbon atoms or a benzene radical,

R″ = ethylene or propylene,

x = 0 to 6 and is at least 1 when R = an alkylbenzene radical,

with the proviso that the sum of the number of carbon atoms in R and R′ is from 5 to 33 and that there is a difference in the number of carbon atoms in R and R′ which difference is at least 4; and M is a cation selected from the group of alkali metals, ammonium, alkaline earth metals and water soluble organic amines.

4,117,238

PROCESS FOR THE TRANS-ESTERIFICATION OF ACRYLIC AND METHACRYLIC ESTERS

Rolf Ackermann, Hanau; Wilfried Felber, Gross-Welzheim, and Gerhard Morlock, Hanau, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Jun. 7, 1976, Ser. No. 693,596
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1975, 2524930
Int. Cl.[2] C07C *69/54, 67/03*
U.S. Cl. 560—217 3 Claims

1. An improved process for the trans-esterification of esters of acrylic or methacrylic acid in the presence of a trans-esterification catalyst and a polymerization inhibitor, the improvement wherein said catalyst is at least one alkali metal cyanide, and said alkali metal cyanide is employed in an amount of about 0.05 to about 10 percent by weight, related to total weight of reactants.

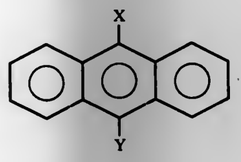
4,117,239

PROCESS FOR PREPARATION OF 2-ANTHRYL AND SUBSTITUTED 2-ANTHRYL FUNCTIONAL MONOMERS AND POLYMERS

Milan Stolka, Fairport; James M. Pearson, Webster, and John F. Yanus, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 445,705, Feb. 25, 1974, Pat. No. 3,923,762, which is a continuation-in-part of Ser. No. 417,317, Nov. 19, 1973, abandoned. This application Mar. 7, 1975, Ser. No. 556,257
Int. Cl.[2] C07C *69/54*
U.S. Cl. 560—221 70 Claims

1. In a process for preparation of a 2-anthryl or substituted 2-anthryl functional monomer wherein an anthracenic reactant of the formula



wherein

X and Y are independently selected from hydrogen, chlorine, bromine, alkyl of 1 to 4 carbon atoms or phenyl

is acylated at the 2-position, and thereafter modified by one or more additional steps at the carbonyl function to form the intended monomeric product, the improvement comprising:

(a) preparing a dispersion containing one or more of the above anthracenic reactants in an organic solvent comprising predominantly nitrobenzene; and

(b) contacting a solution containing a preformed acylating agent/Lewis Acid complex with the anthracenic reactant, the relative mole ratio of acylating agent to Lewis Acid in said solution being in the range of from about 0.5:1 to about 5:1 and the relative mole ratio of acylating agent to anthracenic reactant being in the range of from about 1:1 to about 5:1.

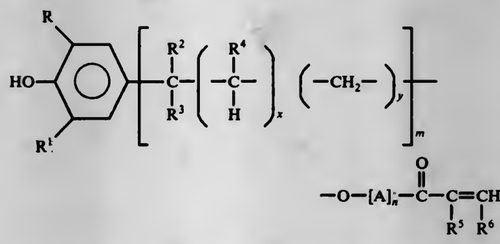
4,117,240

STABILIZED POLYMERIC COMPOSITIONS

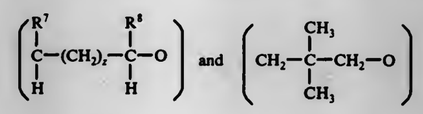
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 56,677, Jul. 20, 1970, Pat. No. 3,962,187. This application Nov. 13, 1975, Ser. No. 631,571
Int. Cl.[2] C07C *69/54*
U.S. Cl. 560—221 5 Claims

1. A phenolic compound having the following structural formula:



wherein R and R^1 are tertiary alkyl radicals having from 4 to 8 carbon atoms, wherein R^2 and R^3 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein R^4 is selected from the group consisting of alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms and aralkyl radicals having from 7 to 13 carbon atoms, wherein R^5 is selected from the group consisting of hydrogen and alkyl radicals having from 1 to 4 carbon atoms and wherein R^6 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, phenyl and substituted phenyl radicals, wherein x is an integer from 0 to 4, y is an integer from 0 to 11-x, wherein m is 0 or 1, n is an integer from 1 to 3, wherein A is selected from the group consisting of



wherein R^7 and R^8 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein z is an integer from 0 to 10.

4,117,241

POLYMERIZABLE MATERIALS

Alan George Hudson, Maidstone, and Alec Richard Hornsey Tawn, Orpington, both of England, assignors to Coates Brothers & Co., Ltd., London, England

Continuation-in-part of Ser. No. 322,938, Jan. 12, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,329
Claims priority, application United Kingdom, May 19, 1972, 23757/72
Int. Cl.[2] C07C *69/54*
U.S. Cl. 560—224 14 Claims

1. A process for the preparation of a polymerizable material which comprises reacting together in one or more stages and in the presence of a polymerization inhibitor (A) a member selected from the group consisting of acrylamide and methacrylamide; (B) at least 1.5 moles, per mole of acrylamide or methacrylamide, of formaldehyde; and (C) a hydroxyl compound in an amount equivalent to the formaldehyde up to 2 moles of formaldehyde, said hydroxyl compound being selected from the group consisting of (C′) monoacrylates and monomethacrylates of diprimary, disecondary and diprimary-secondary diols and mixtures of (C′) and (D) at least one hydroxyl compound having from 1 to 4 primary or secondary hydroxyl groups, said component (C′) being used in component (C) in an amount of from 0.1 to k mole, per mole of said acrylamide or methacrylamide when the average number of hydroxyl groups of component (C) is one and in an amount of from 0.95 to k mole, per mole of said acrylamide or methacrylamide when the average number of hydroxyl groups of component (C) is greater than 1, k being the number of molecules of formaldehyde used per mole of acrylamide or methacrylamide.

4,117,242

SUPPRESSION OF SIDE REACTIONS IN CATALYTIC HYDROGENATION OF DIESTERS

George B. Fozzard, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 26, 1976, Ser. No. 708,454
Int. Cl.[2] C07C *67/28*
U.S. Cl. 560—263 6 Claims

1. In a process for hydrogenation in which a reaction mixture comprising hydrogen and an unsaturated diester produced by reaction of hydrocarbon conjugated diolefin chosen from among straight chain and cyclic dienes having 4–8 carbon atoms and monocarboxylic acid chosen from among those defined by the formula RCOOH wherein R is an alkyl group having 1–10 carbon atoms is contacted in the presence of a noble metal catalyst the improvement of contacting said reaction mixture with said catalyst in the presence of a monoamine thereby suppressing hydrogenolysis of said diester to monoester.

4,117,243

PREPARATION OF O-BENZYLPHENOL

Charles M. Starks, and Allan J. Lundeen, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 7, 1977, Ser. No. 775,030
Int. Cl.[2] C07C *37/00*
U.S. Cl. 568—744 5 Claims

1. A process for preparing o-benzylphenol wherein the process comprises contacting benzyl phenyl ether in the presence of an effective amount of activated alumina in the liquid phase at a temperature in the range of about 125° to about 450° C. and a pressure of 0 to 40 atmospheres.

4,117,244

METHOD OF PRODUCING 2,6-DITERTBUTYL-4-METHYLPHENOL

Ivan Egorovich Abramov, prospekt Lenina, 87, kv. 15; Felix Borisovich Gershanov, prospekt Lenina, 81, kv. 6; Vladimir Romanovich Dolidze, ulitsa Kurchatova, 30, kv. 8, all of Bashkirskaya ASSR, Sterlitamak; Nina Vasilievna Zakharova; Alexandr Grigorievich Liakumovich, both of ulitsa Galeeva, 10, kv. 8, Kazan; Jury Ivanovich Michurov, prospekt Lenina, 13, kv. 4, Bashkirskaya ASSR, Sterlitamak; Vasily Dmitrievich Popov, Volochaevskaya ulitsa, 18a, kv. 15, Bashkirskaya ASSR, Sterlitamak; Grigory Iosifovich Rutman, ulitsa Revoljutsionnaya, 7, kv. 6, Bashkirskaya ASSR, Sterlitamak, and Zoya Stepanovna Shalimova, ulitsa Druzhby, 19, kv. 56, Bashkirskaya ASSR, Sterlitamak, all of U.S.S.R.

Filed Jun. 11, 1976, Ser. No. 695,159

Int. Cl.² C07C *37/10*

U.S. Cl. 568—799 **4 Claims**

1. In a method of producing 2,6-ditertbutyl-4-methylphenol which comprises hydrogenolysis of N,N-dimethyl-(3,5-ditertbutyl-4-hydroxy-benzyl)-amine in the presence of a fused catalyst containing Ni, Al, and Ti, in the medium of a solvent, the improvement comprising using 2,6-ditertbutyl-4-methylphenol as the solvent.

4,117,245

PROCESS FOR THE PRODUCTION OF NORPATCHOULENOL

Paul José Teisseire, 14 avenue Pierre Sémard, Grasse, France

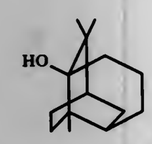
Division of Ser. No. 594,335, Jul. 9, 1975, Pat. No. 4,055,594. This application Feb. 10, 1977, Ser. No. 767,461

Claims priority, application Switzerland, Aug. 2, 1974, 10676/74; Apr. 9, 1975, 4602/75

Int. Cl.² C07C *29/00*

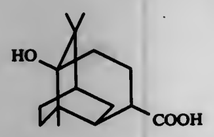
U.S. Cl. 568—817 **8 Claims**

1. A process for the preparation of norpatchoulenol having the formula



I

which comprises oxidising patchoulol and then oxidatively decarboxylating the resulting acid of the formula



II

4,117,246

PROCESS FOR PREPARING A CYCLOALKANOL

Otto G. Plantema, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 9, 1977, Ser. No. 859,191

Claims priority, application Netherlands, Dec. 16, 1976, 7613947

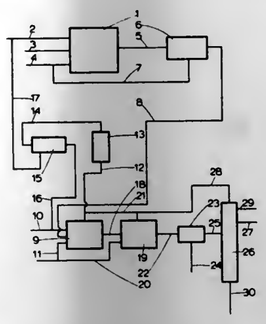
Int. Cl.² C07C *29/06*

U.S. Cl. 568—821 **20 Claims**

1. Process for preparing cycloalkanol from a cycloalkene, which process comprises the steps of,

(A) reacting a cycloalkene with sulphuric acid to form a reaction mixture consisting essentially of the corresponding cycloalkyl hydrogen sulphate, unreacted sulphuric acid, and unreacted cycloalkene;

(B) providing an inert solvent to said reaction mixture of step (A) to effect a zone separation into a plurality of layers wherein one layer consists essentially of sulphuric acid, and a second layer consists essentially of said inert solvent, said cycloalkyl hydrogen sulphate, and said unreacted cycloalkene;



(C) separating said layer of step (B) which consists essentially of said inert solvent, said cycloalkyl hydrogen sulphate, and said unreacted cycloalkene from the other layers of step

(B), and thereafter;

(D) hydrolyzing said separated layer of step

(C) to form the cycloalkanol.

4,117,247

PREPARATION OF 1,1,1-TRIHALOGENO-4-METHYL-3-PENTEN-2-OL

Fumio Mori, Kurashiki City; Yoshiaki Omura, Okayama; Takashi Nishida, and Kazuo Itoi, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

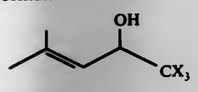
Continuation-in-part of Ser. No. 616,999, Sep. 26, 1975, abandoned. This application Apr. 11, 1977, Ser. No. 786,587

Claims priority, application Japan, Oct. 3, 1974, 49-114114; Oct. 3, 1974, 49-114115; Dec. 28, 1974, 49-2064; Dec. 28, 1974, 49-2065; Jun. 30, 1975, 50-80600

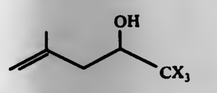
Int. Cl.² C07C *33/10*

U.S. Cl. 568—845 **4 Claims**

1. A process for preparing a 1,1,1-trihalogeno-4-methyl-3-penten-2ol of the formula:



wherein each X represents Cl or Br, which comprises noncatalytically thermally isomerizing a 1,1,1-trihalogeno-4-methyl-4-penten-2-ol of the formula:



wherein each X is as defined above, at a temperature ranging from 100° C. to 240° C.

4,117,248

CONTINUOUS, LOW PRESSURE ETHYNYLATION PROCESS FOR THE PRODUCTION OF BUTYNEDIOL

J. Lewis Prater, Calvert City, Ky., and Robert L. Hedworth, Kinnelon, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,349

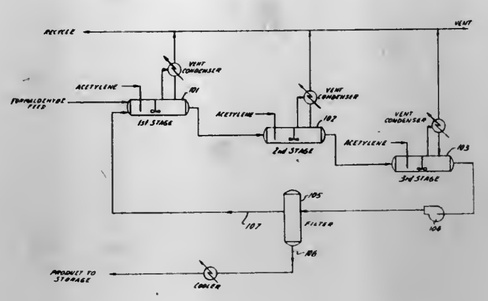
Int. Cl.² C07C *29/00*

U.S. Cl. 568—855 **18 Claims**

1. A continuous, low pressure ethynylation process for the production of butynediol which comprises:

(a) continuously reacting formaldehyde and acetylene in a reaction zone at a partial pressure of less than 2 atmospheres of acetylene and a reaction temperature of about 80° to about 110° C., in a stirred, aqueous medium, in the presence of a finely-divided ethynylation catalyst slurry, to form a reaction product liquid containing butynediol,

(b) continuously withdrawing a mixture of said reaction product liquid and said catalyst slurry,



(c) continuously and simultaneously filtering said mixture into a catalyst-free filtrate stream and a concentrate flowable catalyst slurry stream suitable for immediate recycling to said reaction zone, and,

(d) continuously recycling said flowable, concentrated catalyst slurry stream to said reaction zone.

4,117,249

ACETYLENIC ALCOHOLS, THEIR DERIVATIVES AND PROCESS FOR THEIR PRODUCTION

Renato De Simone, Como; Edoardo Platone, and Morello Morelli, both of San Donato Milanese (Milan), all of Italy, assignors to Anic, S.p.A., Palermo, Italy

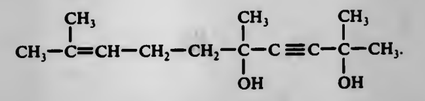
Filed Jun. 23, 1976, Ser. No. 698,812

Claims priority, application Italy, Jun. 24, 1975, 24704 A/75

Int. Cl.² C07C *33/04*; C11D *1/68, 1/75*

U.S. Cl. 568—855 **1 Claim**

1.



4,117,250

CONTINUOUS PROCESS FOR PRODUCING ALKYLENE GLYCOLS FROM ALKYLENE CARBONATES

Robert Dean Foster; Thomas Arthur Maliszewski, both of Charleston; Joseph Alton Sims, Jr., Elkview, all of W. Va., and Glenn Alfred Taylor, Ridgewood, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,352

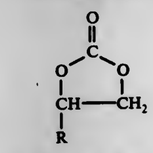
Int. Cl.² C07C *29/12*

U.S. Cl. 568—858 **15 Claims**

1. A continuous process for making glycols of the formula

$HOCHRCH_2OH$

by the base hydrolysis of an alkylene carbonate of the formula

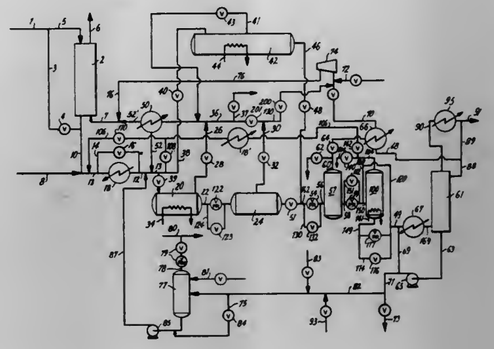


in which each R is either hydrogen or methyl, which comprises:

(A) providing the alkylene carbonate in admixture of water, carbon dioxide, alkylene glycol and potassium carbonate catalyst, to form a homogeneous liquid phase mixture;

(B) providing said mixture in a reaction zone wherein the temperature of said mixture is at least 100° C;

(C) evolving carbon dioxide from said homogeneous liquid phase mixture;



(D) separating the postassium carbonate catalyst in a mixture with alkylene glycol from glycol product;

(E) recycling said catalyst-glycol mixture to step (A); and

(F) periodically feeding potassium carbonate catalyst make-up to said catalyst-glycol mixture before it is fed to step (A).

4,117,251

METHOD FOR PREPARING STRAIGHT CHAIN PRIMARY ALCOHOLS FROM 1-BROMOALKANES

Manfred Kaufhold; Gottfried Bankwitz, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 569,939, Apr. 21, 1975, abandoned. This application Mar. 17, 1977, Ser. No. 778,549

Claims priority, application Fed. Rep. of Germany, May 15, 1974, 2423604

The portion of the term of this patent subsequent to Jul. 6, 1993, has been disclaimed.

Int. Cl.² C07C *29/00*

U.S. Cl. 568—877 **8 Claims**

1. In a process for preparing straight-chain, primary alcohols having 6–20 carbon atoms, the improvement comprising reacting at a temperature of about 150° to 300° C. straight-chain 1-bromoalkanes having 6 to 20 carbon atoms with alkali salts of alkanoic acids having 4 to 22 carbon atoms in the presence of 1 to 10 mole percent of alkanoic acids having 4 to 22 carbon atoms based on said alkali salts of the alkanoic acids to form esters, saponifying said esters in an alkaline medium to form straight-chain, primary alcohols having 6–20 carbon atoms and separating said straight-chain, primary alcohols.

4,117,252

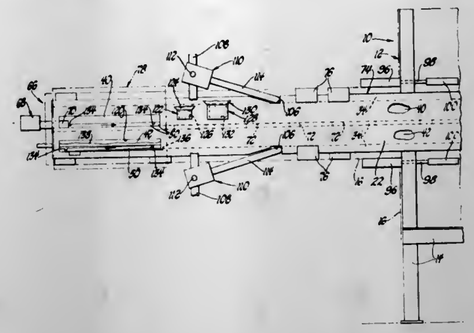
HIGH TEMPERATURE FURNACE

Harold A. McMaster, 420 Water St., Woodville, Ohio 43469

Filed Dec. 1, 1976, Ser. No. 746,455

Int. Cl.² H05B *3/06*

U.S. Cl. 13—25 **36 Claims**



1. A high temperature furnace comprising: a housing defining an insulated heating chamber; a plurality of electrically conductive elements received within the heating chamber; a plurality of electrical insulators positioned between the conductive elements at selected locations; the conductive elements being engaged with each other to establish an electrical flow path therethrough for heating the chamber and said insulators cooperating with the conductive elements to control the direction of the electrical flow path; resilient means located externally of the housing; and connecting means extending between the conductive elements within the heating chamber and the resilient means so as to cooperate therewith in compressing the conductive elements and the insulators therebetween whereby the conductive elements and insulators are positioned relative to each other while being allowed to expand during heating of the chamber.

4,117,253

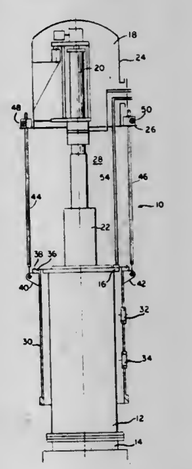
HIGH INTEGRITY ATMOSPHERE CONTROL OF ELECTROSLAG MELTING

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding Corporation, Moorestown, N.J.

Filed Mar. 1, 1977, Ser. No. 773,334

Int. Cl.² H05B *3/60*; F27D *1/18*

U.S. Cl. 13—31 R **7 Claims**



1. In an electroslag melting furnace comprising a crucible and a furnace head spaced from the top of said crucible, said furnace head being adapted to suspend a consumable electrode within said crucible, the improvement comprising: means for making the space between said crucible and said furnace head air tight, said means including a sleeve member and means for moving said sleeve member between an inoperative position and an operative position wherein said sleeve member substantially surrounds said space and means allowing for the control of the atmosphere within said space.

4,117,254

DEVICE FOR PASSING ELECTRIC CURRENT THROUGH A WALL SUBJECTED TO EXCESS PRESSURE ON ITS INNER SIDE

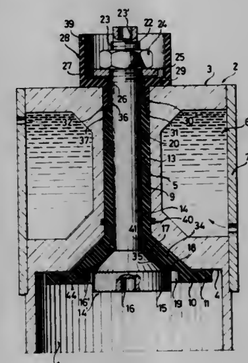
Artur Richter, 25 Langensiepenstrasse, Mulheim, Ruhr, Germany

Filed Dec. 3, 1976, Ser. No. 747,088

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1975, 2556546

Int. Cl.² H01B *17/26*

U.S. Cl. 174—15 BH **7 Claims**



1. A device for passing an electric current through a wall subjected to excess pressure on its inner side, and comprising: a sleeve received in an aperture in the wall, which sleeve is integrally formed at its inner end with a collar adapted to engage the inner surface of the wall; an electrical conductor for passing said electric current, which conductor includes a shaft passing through the sleeve, a head on the inner end of said shaft, and an inclined surface on said head tapering towards said shaft; a recess at the inner end of said sleeve; an opposing surface in said recess facing said inclined surface on the head of the conductor, said opposing surface comprising two conical surface portions of differing inclinations meeting at an inwardly directed common edge, which edge is in contact with said inclined surface on said head; an outer insulator including a hollow cylindrical portion for engagement between the outer end of the sleeve and the aperture in the wall, the outer end of the sleeve having an externally reduced diameter portion engaged by said hollow cylindrical portion of the outer insulator; a seal disposed between said hollow cylindrical portion and the sleeve; axially operating clamping means carried by the outer end of the shaft, which clamping means acts on the outer end of the sleeve, and on said outer insulator, to compress the sleeve between said clamping means and said head on the inner end of the shaft to expand said sleeve laterally into abutment with the wall of said aperture, and to compress said seal between said hollow cylindrical portion and said sleeve.

4,117,255

INSULATOR BUSHING FOR HIGH VOLTAGE INPUT

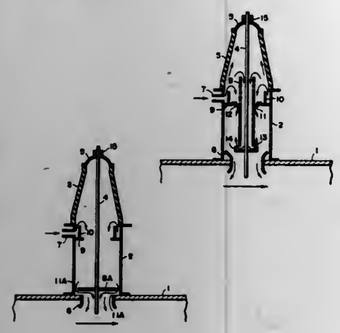
Kazuo Kawaike; Tsuneo Uchiya, and Ichiro Sato, all of Chiyoda, Japan, assignors to Hitachi Plant Engineering & Construction, Tokyo, Japan

Filed Feb. 14, 1977, Ser. No. 768,548

Claims priority, application Japan, Apr. 30, 1976, 51-54779[U]

Int. Cl.² H01B *17/26, 17/52;* B03C *3/34*

U.S. Cl. 174—31 R 3 Claims



1. Insulator bushing to be mounted upright on and through the wall of a casing and containing essentially therein a high voltage conductor, into which said bushing is conducted a continuous flow of sealing gas so as to prevent dust-laden gas passing in said casing from adversely flowing into said insulator bushing, wherein the improvement comprises:

a means for directing such sealing gas upwardly into an interior surface of said bushing;

an insulator member disposed within said insulator bushing and substantially concentric thereto, and

at least one narrow gap formed adjacent said insulator member through which gap said sealing gas is jetted along a first surface of the insulator member so that said first surface of the insulator member is substantially entirely covered with said sealing gas.

4,117,256

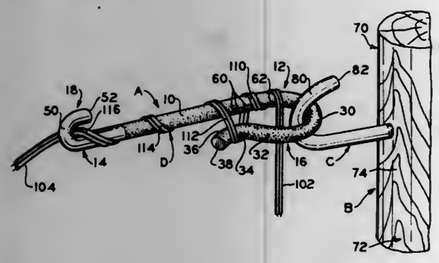
DEAD END APPLIANCE FOR LINEAR BODIES AND DROP WIRE TYPE CONDUCTOR INSTALLATION INCLUDING THE SAME

Harrison L. Williams, Euclid, Ohio, assignor to Preformed Line Products Company, Mayfield Village, Ohio

Filed Jan. 24, 1977, Ser. No. 761,524

Int. Cl.² H02G *7/00;* H01B *17/56*

U.S. Cl. 174—40 R 9 Claims



1. In a drop wire type of conductor installation, the combination of: an elongated conductor extending from a source end to a terminal end disposed at a lower elevation than said source end and a drop wire dead end accessory supporting said conductor relative to a rigid member disposed intermediate said conductor source and terminal ends, said dead end accessory comprising an elongated generally straight body having reversing loops at the opposite ends thereof, one of said loops having a generally S-shaped configuration and received on a mounting member affixed to said rigid member for maintaining said accessory in a desired position thereon intermediate the desired path for said conductor between said source and terminal ends, said S-shaped reversing loop being mountably received by said mounting member with said conductor extending from said source end to said other loop, spirally around said body toward said S-shaped reversing loop, at least once around both said S-shaped reversing loop and said body and thence outwardly of said accessory to said terminal end, said other loop preventing undesired unwrapping of said conductor from said accessory.

8. An appliance for supporting a portion of the length of a linear body relative to a rigid member intermediate linear body source and lead ends, said appliance comprising:

an elongated body having a generally circular cross-section including a straight main portion, a first appliance mounting portion at one end area of said main body portion and a second linear body receiving portion at the other end area of said main body portion, said main body, first appliance mounting and second linear body receiving portions being integrally formed with each other; said first portion having a generally S-shaped configuration including a first curvilinear reversely bent area at said body portion one end area formed so that a section thereof extends back over a section of said main body portion toward said other end area in a converging relationship with said main body portion and with said first portion including a section adjacent said first reversely bent area extending outwardly of said main body portion, said first and main body portions defining a first portion plane; said second portion including a second curvilinear reversely bent area at said body portion other end area so that a section thereof extends back over a section of said main body portion toward said one end area, said second and main body portions defining a second portion plane disposed generally normal to said first portion plane; and, said main body and first portions having distinctly roughened surface areas for at least substantially reducing relative movement between said linear body and appliance when said portion of the length of said linear body is operably disposed on said appliance, said appliance adapted to be received at said first appliance mounting portion by a mounting means fixedly secured to said rigid member for maintaining said appliance in position intermediate a desired path for said linear body between said source and terminal ends, whereby said appliance is adapted to receive said portion of the length of said linear body in a manner such that said linear body extends from said source end to said appliance second linear body receiving portion, is spirally wrapped around said main body portion toward said first appliance mounting portion and is wrapped at least once around said main and first body portions prior to extending from said appliance to said linear body terminal end.

4,117,257

TEMPERATURE SENSOR HOLDING DEVICE

Harry L. Thomas, Alexander, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 17, 1976, Ser. No. 686,746

Int. Cl.² H05K *5/00*

U.S. Cl. 174—52 R 7 Claims

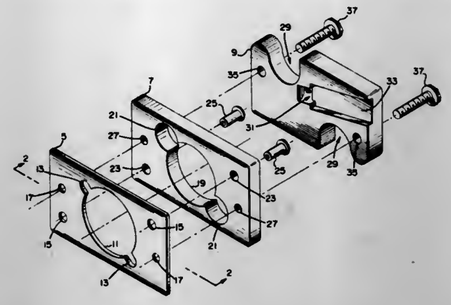
1. In electronic apparatus, a temperature sensor holding device comprising:

plate member means having an aperture therein for receiving a heat generating semi-conductor and formed for attachment to a heat sink;

spacer member means having an aperture aligned with said aperture of said plate member means and formed to telescope over said heat generating semi-conductor;

a first holding means connecting said plate and spacer member means;

cover member means formed for attachment to said plate



and spacer member means, said cover member means having a cut out portion on the inner surface thereof aligned with said aperture of said spacer member means and formed to receive a temperature sensor device; and

a second holding means connecting said cover member means to said spacer and plate member means.

4,117,258

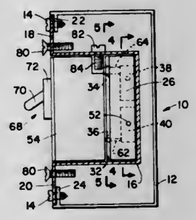
MODULAR ELECTRIC LIGHT SWITCH ASSEMBLY

Benjamin Shanker, 116 Beth Dr., Philadelphia, Pa. 19115

Filed May 21, 1976, Ser. No. 688,582

Int. Cl.² H01H *9/08*

U.S. Cl. 174—53 2 Claims



1. A modular switch assembly comprising: a switch component receptacle holder adapted to be mounted in a wall receptacle;

a female component permanently attached in said receptacle holder including, a pair of spaced apart electrical contact elements, each of said contact elements having a metallic housing, first conductor means in said housing adapted to receive in contact therewith current-carrying electrical wires and comprising a resilient metal plate bent back on itself to form a pair of spaced surfaces, said plate having an entry passage into the space between the spaced surfaces for frictionally receiving the current-carrying electrical wires, and second conductor means in said housing for electrically connecting said resilient metallic plate to said metallic housing when resiliently spaced or spread apart by the current-carrying electrical wires, and a cover on said female component having a pair of spaced prong-receiving openings, each of which is in alignment with one of said electrical contact elements; and

a male component insertable into said receptacle holder including a pair of protruding electrically conductive prongs extending through said prong-receiving openings in said cover into electrical series contact with said electrical contact elements in said female component.

4,117,259

CABLE SLEEVE

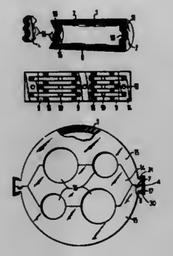
Wolfgang Giebel; Herbert Krause, both of Munich, and Hans-Juergen Meltsch, Neu-Germering, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 5, 1976, Ser. No. 674,053

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1975, 2515939

Int. Cl.² H02G *15/10, 15/18*

U.S. Cl. 174—92 3 Claims



1. A split cable sleeve comprising two mating continuous walled sleeve portions defining an inner cavity and having sealing means disposed at at least one end thereof, said sealing means including a plurality of axially displaced radially inwardly extending ribs formed integrally with the mating sleeve portions, said ribs in each of said sleeve portions defining aligned congruent semicircular cable entrance openings of equal radii, wherein the walls of said sleeve portions intermediate said ribs are completely continuous and wherein each of the ribs is adapted to engage at least a portion of a cable to be positioned through the cable entrance openings and the said inner cavity; wherein said cable entrance openings defined by said ribs are offset relative to the splitting plane and wherein said sealing means further comprises a sealing element segment including a plurality of axially displaced ribs adapted to mate with the axially displaced ribs of the respective cable sleeve portions, the ribs on said sealing element segment cooperating with the ribs on the respective cable sleeve portions to define cable entrance openings aligned with openings on adjacent ribs having a diameter equal to the diameter of the cables to be positioned through the said aligned openings.

4,117,260

COAXIAL DROP WIRE

Frederic Nash Wilkenloh, Conover, N.C., assignor to Comul Scope Company, Catawba, N.J.

Filed Aug. 17, 1977, Ser. No. 825,474

Int. Cl.² H01B *7/18, 9/02*

U.S. Cl. 174—106 R 13 Claims

1. A coaxial cable comprising:

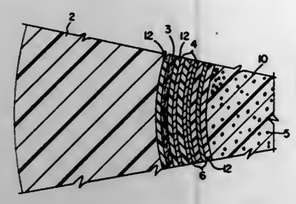
(a) an inner metallic conductor;

(b) a cylindrical core of polyolefin insulation surrounding said conductor;

(c) a laminate tape composed of two metal foils adhesively bonded to opposite surfaces of a plastic film, said laminate tape circumferentially surrounding said cylindrical core, one surface of one of said metal foils being adhesively

bonded to substantially the entire outermost surface of said cylindrical core;

(d) a metallic braid tape circumferentially surrounding said laminate tape, said braid tape lying in contact with the other of said metal foils but being unbonded thereto



whereby the tubular portion of an electrical connector is insertable between said braid tape and said laminate tape; and,

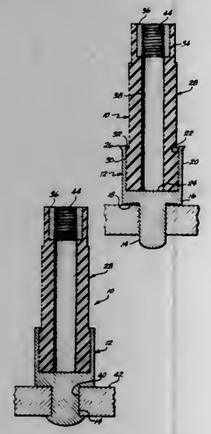
(e) a plastic jacket circumferentially surrounding said metallic braid.

4,117,261

INSULATING STAND-OFF AND METHOD OF ASSEMBLING SAME

Gerald Glen Blevins, Edmonds; William Lewis Dumar, Jr., Bellevue; Steven Royal Hansen, Alderwood Manor; Wayne Ellory Hixson, Seattle, all of Wash., and John Edward Krezak, Swarthmore, Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 6, 1976, Ser. No. 702,782
Int. Cl.[2] H01B *17/16*
U.S. Cl. 174—164 **17 Claims**



1. An insulating stand-off comprising: a walled socket having a circular interior; an inwardly deformed embossed circular lip around the socket; the base to the socket having an inwardly extending frustoconical-shaped undercut in the bottom side of the base; means for fastening the socket, with the bottom side of the base of the socket adjacent to a structure, through a hole in the structure in a manner to fill the hole and prevent rotation of the socket with respect to the structure; a rigid insulative insert having a circular exterior end portion mated to and fully bottomed in the socket, said insert having an end extending outside the socket, said end being open and internally threaded to accept a threaded fastener; and a circular shoulder around a periphery of the insert located contiguous to and locked in by the inwardly deformed circular lip of the socket in a manner preventing relative rotation unless excessive torsional pressure is applied when the insert will rotate within the socket before the base to the socket will rotate with respect to the structure.

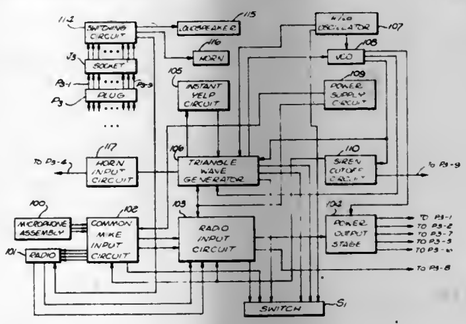
14. A method of providing an insulative stand-off comprising: drilling a hole in a structural member; preparing a metallic walled socket having a circular interior, a circular embossed lip and a frustoconical-shaped undercut on the underside of the base of the socket;.pressing the undercut base firmly against the structure while fastening the socket through the hole in the structure so as to fill said hole and prevent rotation of the socket with respect to the structure; bottoming a circular end portion of a rigid insulative insert into the fastened socket with said insert having a threaded open end extending outside the socket; and deforming the circular embossed lip of the socket onto a circular external shoulder of the bottomed insert in a manner thereby joining the insert to the socket and preventing relative rotation, but in response to excessive torsional pressure permitting relative rotation of the insert within the socket before the socket will rotate with respect to the structure.

4,117,262

SOUND COMMUNICATION SYSTEM

Ronald Kaye Peecher, Huntsville, Ala., assignor to International Telephone and Telegraph Corp., New York, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,972
Int. Cl.[2] H04B *1/40*
U.S. Cl. 179—1 SW **4 Claims**



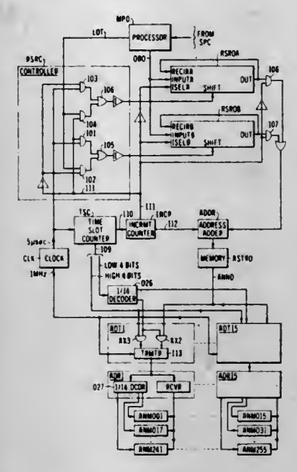
1. A sound communication system, said system comprising: a first switch having a pole and at least first and second contacts for public address (PA) and siren modes of operation, respectively, said first switch pole being maintained at a predetermined potential; a voltage controlled oscillator (VCO) having a signal input, a disable input and an output; first means connected from said first switch second contact to said VCO input to modulate the VCO output frequency; a loudspeaker; second means having an input and an output, said second means input being connected from said VCO output, said second means output being connected to said loudspeaker, said second means causing said loudspeaker to broadcast audio signals of frequencies and amplitudes proportional to those existing at the output of said VCO; a two-way radio having two microphone inputs and two speaker outputs, a second switch having first, second and third ganged poles alternately engageable with corresponding radio contacts and PA contacts; a microphone having first and second leads; first and second electronic switches both connected from said first lead to said first pole and the PA contact thereof, respectively; a third electronic switch connected from said second lead to said second pole; third means connected from said first pole PA contact to said second means for operating said loudspeaker from said microphone in a PA mode; a microphone switch; a radio input circuit including a fourth electronic switch connected from said two radio speaker outputs to said second means input; a logic circuit connected from one of said third pole contacts, from said microphone switch, and from said first switch first contact, corresponding radio contacts of said first and second poles being connected to the microphone inputs of said radio, said first switch first contact being a PA contact, said logic circuit causing said loudspeaker to operate in the said PA mode when one of the poles of either said first or second switches engages a PA contact.

4,117,263

ANNOUNCEMENT GENERATING ARRANGEMENT UTILIZING DIGITALLY STORED SPEECH REPRESENTATIONS

Kou-Min Yeh, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 17, 1977, Ser. No. 852,195
Int. Cl.[2] G10L *1/08*; G06F *7/22*
U.S. Cl. 179—1 SM **13 Claims**



5. An announcement generating system comprising:

a timing signal generator for generating timing signals defining time-slots of fixed duration;

memory means for storing a plurality of digital representations of speech segments wherein each speech segment representation comprises a number of data words equal to a first predetermined number stored in consecutive storage locations of said memory means and the first storage location of each speech segment representation is a unique base address;

first base address storage means for storing a number of base addresses equal to a second predetermined number of base addresses in a fixed sequence;

means responsive to said timing signals for reading said base addresses in sequence at a rate equal to one base address per time-slot;

counting means responsive to said timing signals for counting said time-slots and for generating a recurring series of time-slot count signals from 0 through said second predetermined number;

means responsive to said time-slot count signals for generating an increment signal when said time-slot numbers change from said second predetermined number to zero;

means responsive to said increment signal for generating an increment code equal to the number of increment signals generated;

means for generating incremented base addresses by adding each base address read by said reading means to said increment code;

means for accessing data words from said memory means at the addresses defined by said incremented base addresses;

a plurality of announcement generators each associated with a unique one of said time-slots; and

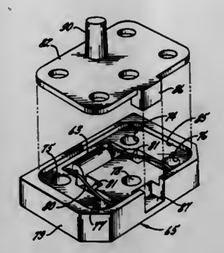
means responsive to said time-slot count signals for transmitting data words read from said memory means to the announcement generator associated therewith.

4,117,264

DIODE PACKAGE FOR USE WITH A CENTRAL OFFICE CONNECTOR MODULE

Joseph T. Charles, Barrington Hills, and James P. Ryan, Marengo, both of Ill., assignors to Coil Sales & Manufacturing Company, Rolling Meadows, Ill.

Filed Aug. 2, 1977, Ser. No. 821,244
Int. Cl.[2] H04Q *1/00*
U.S. Cl. 179—1 PC **5 Claims**



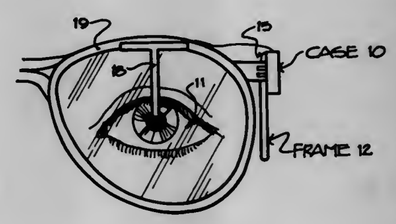
1. A diode package comprising a substantially flat wafer, first and second spaced holes formed through said wafer and extending from one face of the wafer to the other face thereof, a cavity formed within said wafer between said faces, a diode disposed within said cavity, a first conductor connected electrically to the anode terminal of said diode and extending to said first hole, and a second conductor connected electrically to the cathode terminal of said diode and extending to said second hole.

4,117,265

HYPEROPTIC TRANSLATOR SYSTEM

Richard K. Gerlach, Rolling Hills Estates, Calif., assignor to Richard J. Rengel, Rolling Hills Estates, Calif.

Filed Jun. 28, 1976, Ser. No. 700,545
Int. Cl.[2] G02B *17/00*
U.S. Cl. 179—1 SP **18 Claims**



1. A hyperoptic translator adapted to be supported alongside eyeglasses and the like, said translator comprising:

a small source of light;

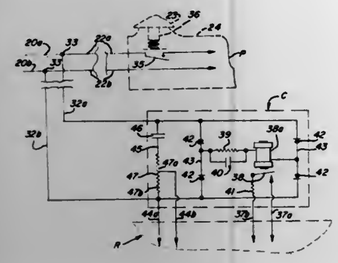
means for receiving signals and modulating light from said source; and

means for supporting the source of light, said support means including an individual member for locating the source of light alongside an eyeglass lens and in front of the pupil of the eye and at a distance less than the focal distance of the eye to project out-of-focus on the macula area of the retina of the eye, the width of said member and source mounted thereon being approximately less than the radius of the pupil of the eye in ambient light.

4,117,266
RECORDER ACTUATOR FOR COMMUNICATION LINES

Richard W. Williams, 2837 S. Raritan, Englewood, Colo. 80110

Filed Jul. 13, 1977, Ser. No. 815,313
Int. Cl.[2] H04M *1/64*
U.S. Cl. 179—6 R 6 Claims



1. An adapter circuit to connect a tape recorder to the input line of a telephone to initiate recording responsive to the voltage drop in the input line, as from the higher "off" voltage to a lower "on" voltage when the telephone is lifted from its receiver and to cease recording responsive to the voltage rise in the input line, to the higher "off" voltage when the telephone is returned to its receiver, said tape recorder including a starting circuit and a recording circuit, and wherein the adapter circuit comprises:

(a) a relay means having a coil whose leads shunt the leads of the telephone input line and a normally closed switch in the recorder starting circuit which opens whenever the coil is energized by a limiting current therethrough;

(b) a resistance means in series with the coil to limit the current through the coil to a value sufficient to hold said normally closed switch open when said "off" voltage is at the input line but to a lower value insufficient to open said switch when the reduced "on" voltage is at said input line; whereby

(c) said relay switch in the tape recorder starting circuit and is adapted to turn the tape recorder on and off as it closes and opens;

(d) means to connect said recording circuit with the telephone input line to receive voltage fluctuations in the input line; and

(e) a capacitance means shunting said resistance means, at one side of the coil, to provide a transient current drop and increase responsive to, respectively, a voltage decrease and increase in the input line when the telephone is lifted off from and returned to its receiver, whereby to provide a positive current drop and increase in the coil to assure action of the switch.

6. A telephone line actuated recorder operating circuit comprising:

(a) means for connection to a two conductor telephone line;

(b) normally closed solenoid actuated relay means connected across the two conductor lines to permit line voltage to hold said relay means open;

(c) a resistor in one lead to the solenoid of said relay means to limit holding current and a parallel capacitor with said resistor providing relay operating current;

(d) a bridge circuit means in the leads of said relay means for eliminating polarity in said relay means;

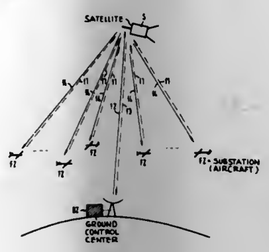
(e) a pair of leads to a recorder switch circuit connected to the relay means; and

(f) resistor means in said pair of leads limiting current drain from the recorder.

4,117,267
SYSTEM FOR TWO-WAY COMMUNICATION BETWEEN A MASTER STATION AND A PLURALITY OF SUBSTATIONS VIA A SATELLITE

Heinz Haberle, Herrsching, and Richard Aubele, Stuttgart, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,911
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1976, 2615198
Int. Cl.[2] H04J *3/06*
U.S. Cl. 179—15 BS 3 Claims



1. A system for two-way communication comprising:

a master station;

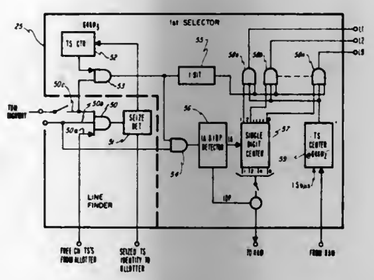
a plurality of substations being in two-way communication with said master station via a satellite acting as a transponder, each of said plurality of substations transmitting information to said master station in a time division multiple access mode and each of said plurality of substations transmitting its associated information to said satellite in the form of periodic bursts on a first radio frequency channel common to all of said plurality of substations, the instant of said bursts of each of said plurality of substations being fixed with respect to the instant of reception of a reference frame sync signal transmitted from said master station to all of said plurality of substations via said satellite; and

said master station transmits its information intended for said plurality of substations to said satellite together with said reference frame sync signal on a second radio frequency channel different than said first radio frequency channel.

4,117,268
DIGITAL DIRECT RESPONSE SWITCHING SYSTEM

William F. Bartlett, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Tampa, Fla.

Filed Apr. 9, 1976, Ser. No. 675,337
Int. Cl.[2] H04Q *11/04*; H04J *1/14*
U.S. Cl. 179—15 AT 49 Claims



1. A time division multiplex switch for use in a step-by-step type telephone switching system and having a single input terminal for connection to a multiplex highway carrying a plurality of multiplexed channels of information in a recurring time frame, each channel providing information signals and supervisory signals including signals representative of dialing impulses identifying the successive digits of a called subscriber number, and a plurality of output terminals to a selected one of which a designated channel of information is to be applied in accordance with the received dialing impulses representative of a single digit during a selected time slot of said recurring time frame, said switch comprising

demultiplexing means connected to said input terminal for extracting said designated channel of information from said multiplex highway;

means for detecting the dialing impulses representative of a single digit in said designated channel received from said demultiplexing means;

multiplexing means responsive to said detecting means for connecting the output of said demultiplexing means to an output terminal identified by the detected single digit; and

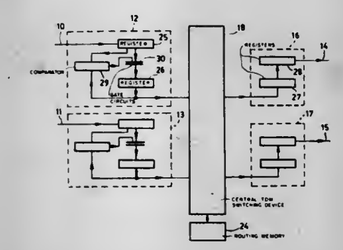
control means for actuating said multiplexing means during a selected time slot of said recurring time frame.

21. A time division multiplex switch comprising demultiplexing means to be connected to a multiplex highway carrying a plurality of multiplexed channels of information in a recurring time frame for extracting a designated channel of information from said multiplex highway, each channel providing coded information signals and supervisory signals including coded dialing impulses, multiplexing means for applying said designated channel of information to a selected one of a plurality of output terminals identified by the received coded dialing impulses of said designated channel of information during a selected time slot of said recurring time frame, and means connected between the output of said demultiplexing means and the input of said multiplexing means for stretching said designated channel of information to the full width of said time frame.

4,117,269
TIME DIVISION MULTIPLEX TELECOMMUNICATION EXCHANGE

Hans van Kampen, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1975, Ser. No. 608,391
Claims priority, application Netherlands, Sep. 11, 1974, 7412053
Int. Cl.[2] H04J *3/16*
U.S. Cl. 179—15 BW 1 Claim

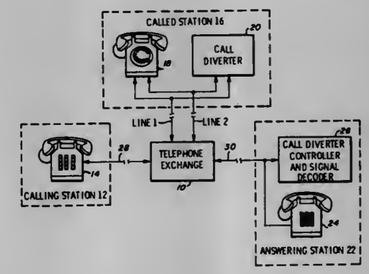


1. Time division multiplex telecommunication exchange, of the type comprising a number of line circuits to which incoming and outgoing transmission channels are connected, which transmission channels are arranged for the transmission of bit streams divided into bit groups, switching means connected to each transmission channel for the transmission in time division multiplex of bit groups from selected line circuits of the incoming transmission channels to selected line circuits of the outgoing transmission channels, a common bus line on which said bit groups are conducted through said switching means, the improvement wherein each of the line circuits for the incoming transmission channels comprises a separate comparator means for comparing each bit group received with the preceding bit group and gate means responsive to said comparator means for preventing a bit group from being supplied to the switching means when the comparator detects equality, said switching means selecting and allocating a free time division multiplex time slot only in response to the passage of a bit group through said gate means and wherein the line circuits for the outgoing transmission channels comprise means for the retransmission of a bit group when no new bit group has been received from the switching means within a predetermined time.

4,117,270
TELEPHONE ANSWERING AND CALL DIVERTING SYSTEM

Ronald A. Lesea, Redwood City, Calif., assignor to Candela Electronics, Inc., Sunnyvale, Calif.

Filed Feb. 28, 1977, Ser. No. 772,487
Int. Cl.[2] H04M *3/54*
U.S. Cl. 179—18 BE 12 Claims



1. A telephone call diverting and answering system comprising:

a telephone exchange means coupled to a calling station by a first telephone line, coupled to a called station by a second telephone line and a third telephone line, and coupled to an answering station by a fourth telephone line, said exchange means being responsive to a first dialed signal on said first line and operative to generate a ring signal on said second line and to connect said first line to said second line when a response to said ring signal is detected, said exchange means being further responsive to a second dialed signal on said third line and operative to generate a ring signal on said fourth line and to connect said third line to said fourth line when a response to said second ring signal is detected;

call diverting means disposed at said called station and coupled to said second and third lines, said diverting means being responsive to said first ring signal and operative to generate said second dialed signal and an identification code signal on said third line, responsive to a connect command signal on said third line and operative to connect said second line to said third line and responsive to a disconnect command signal developed on said third line and operative to disconnect said third line from said second line; and

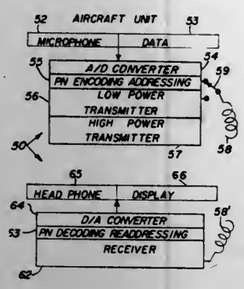
diverter control means disposed at said answering station and coupled to said fourth telephone line, said control means being operative to detect said identification code signal and to identify said called station, said diverter control means also including means for generating said connect signal whereby a call from said calling station to said called station will be diverted to said answering station with said answering station being able to determine the identity of said called station without the calling party knowing that the call has been diverted and means for generating said disconnect signal following the termination of a communication between the calling station and the answering station.

4,117,271

INDUCTIVE COMMUNICATION SYSTEM

Wallis L. Teeter, and David J. Richter, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1977, Ser. No. 757,819
Int. Cl.[2] H04B *5/06*
U.S. Cl. 179—82 **4 Claims**



1. A communication system between a base station and a plurality of vehicles with a transceiver at the base station and a transceiver in each vehicle comprising:

means for initiating voice or data signals within each transceiver;

an analog to digital, A/D, converter within each transceiver connected to the output of said voice or data signal initiating means for converting said signals to digital form;

means for address encoding within each transceiver connected to said A/D converters for encoding said digital signals as pseudo-noise;

a transmitter connected to the output of said A/D converter for transmitting said pseudo-noise encoded digital signals;

a receiver within each transceiver for receiving pseudo-noise encoded digital transmissions;

means for address decoding said pseudo-noise encoded digital transmissions into digital signals connected to the output of said receiver within each transceiver;

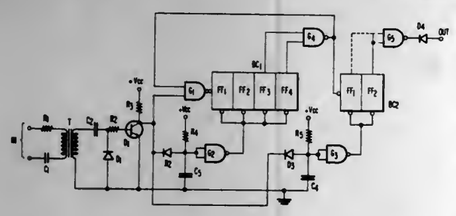
a digital to analog, D/A, converter connected to the output of said address decoding means within each transceiver for converting said digital signals to analog signals; means connected to the output of said D/A converter for displaying data signals received from a transceiver; and loop means for inductively coupling said transceivers so as to be capable of two-way voice communication transmissions with said plurality of vehicles and said base station.

4,117,272

START CIRCUIT FOR TELEPHONE ANSWERING DEVICE

Shizuo Ando, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 29, 1977, Ser. No. 792,370
Claims priority, application Japan, Apr. 30, 1976, 51-48500
Int. Cl.[2] H04M *1/64*
U.S. Cl. 179—84 R **6 Claims**



1. A start circuit for a telephone answering device or the like for distinguishing between a bell signal having a repeating burst pattern with a blank time between bursts and more than a predetermined number of cycles in each burst, and noise signal bursts, such as dial signals, having a variable number of cycles in each burst less than the predetermined number, comprising:

(a) means for generating pulses in response to input signal bursts,

(b) a first counter for registering the number of cycles in each input signal burst,

(c) means connecting said pulses generated by said generating means to said first counter,

(d) means for resetting the first counter after the termination of each input signal burst,

(e) a second counter for registering the number of times the first counter reaches said predetermined number, and

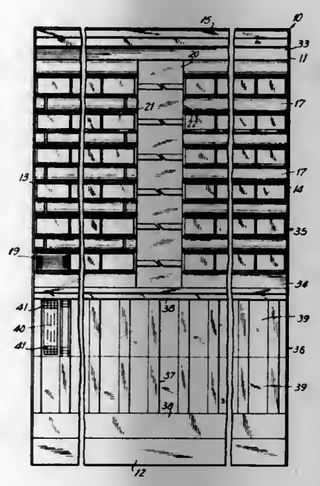
(f) means for producing a bell signal recognition signal in response to the second counter reaching a predetermined count.

4,117,273

SINGLE SIDED PROTECTOR FRAME FOR TELEPHONE CIRCUITS

Charles L. Gautier, Warren, N.J.; Paul V. DeLuca, Port Washington, and Albert Atun, Valley Stream, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Oct. 20, 1977, Ser. No. 843,716
Int. Cl.[2] H04M *3/00*; H01R *9/00*
U.S. Cl. 179—98 **2 Claims**



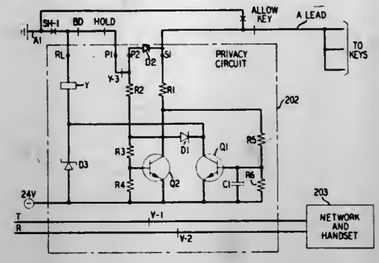
1. An improved telephone frame construction comprising: a vertically oriented frame element including a plurality of vertically and horizontally oriented frame members, said frame members defining a first plurality of upper block mounting areas and a second plurality of lower block mounting areas on a single vertical side of said frame element; a plurality of connector blocks mounted within said upper area, a plurality of protector blocks mounted within said lower area, a plurality of vertically oriented cable troughs positioned between said upper areas, and a plurality of horizontal cable troughs disposed above and below said upper block mounting areas; and at least one jumper trough communicating with each of said horizontal cable troughs; said frame element defining an open area for accommodating conductors interconnecting terminals on said connector blocks and said protector blocks.

4,117,274

KEY TELEPHONE PRIVACY CIRCUIT

Thomas Burt Cannon, Thornton; Robert Forcier Metz, Boulder, and James Louis Simon, Northglenn, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1973, Ser. No. 428,067
Int. Cl.[2] H04M *1/68*
U.S. Cl. 179—99 **4 Claims**



4. A privacy circuit for use in a key telephone station set having ability to connect a station handset to any one of a plurality of central office lines appearing at said key telephone station set, said privacy circuit adapted to prevent the connection of said station handset with a selected busy central office line and comprising:

means for determining the busy idle status of any selected line appearing at said key telephone station set,

means operable for breaking any connection between said station handset and said selected central office line,

first means operable for enabling said breaking means when said selected central office line is determined busy, so as to open said connection, and

second means operable for preventing the enabling of said first means when said selected central office line is determined idle so as to allow said connection between said station handset and said selected central office line,

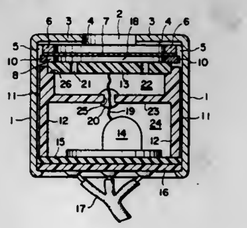
said station set comprising a key contact operable for making said station set appear to said determining means first idle and then busy when a central office line is selected.

4,117,275

NON-DIRECTIONAL ELECTRET MICROPHONE WITH AN AIR PASSAGE TO BALANCE PRESSURES ON OPPOSITE SIDES OF THE DIAPHRAGM

Kunio Miyanaga, and Kosaku Kawada, both of Miyagi, Japan, assignors to Chemi-Con Onkyo Co., Ltd., Miyagi, Japan

Filed Jun. 13, 1977, Ser. No. 806,129
Claims priority, application Japan, Jun. 11, 1976, 51-075775[U]
Int. Cl.[2] H04R *19/04*
U.S. Cl. 179—111 E **7 Claims**



1. A non-directional capacitive microphone assembly comprising:

(a) a generally cylindrical casing of electrically conductive material, said casing having an upper end closed except at least one sound hole, and a groove radially extending from said sound hole to the corner thereof in the inner surface of said closed upper end thereof;

(b) an electret diaphragm disposed in said casing in a facing relation to said sound hole to receive sound pressure through said sound hole, a front surface of said diaphragm being electrically connected to said casing;

(c) an electrode plate disposed in said casing and spaced apart from a rear surface of said diaphragm;

(d) a closure means for closing a lower end of said casing air-tightly;

(e) an electronic circuit means connected to said casing and said electrode plate;

(f) a ring-like spacer of electrically insulative material, said spacer being disposed between said diaphragm and said electrode plate to provide an air space therebetween, said spacer being formed at least in an inner portion thereof with a cut-away portion; and

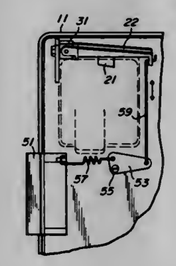
(g) an air passage for providing an air communication between a front side space and a rear side space of said diaphragm to balance air pressures therein, wherein said air passage is defined by said groove, the annular space defined by the inner surface of said casing and the peripheral surface of said diaphragm, the annular space defined by the inner surface of said casing and the surface of said spacer, and the annular space defined by the inner surface of said casing, the outer side surface of said electrode plate and said cut-away portion of said spacer.

4,117,276

HANDSET LOCKING AND RELEASE MECHANISM

Ronald Anthony Zurawski, Rolling Meadows, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 23, 1977, Ser. No. 799,852
Int. Cl.[2] H04M *1/06*
U.S. Cl. 179—161 **4 Claims**



1. A telephone apparatus comprising:

a handset with a heel and a head, the head having a recessed notch;

a base having a first part with a protruding curled lip shaped to receive and hold the heel of the handset and a second part adapted to receive the head of the handset when said handset is placed on said base;

a locking arm with a boss, the arm being pivotally mounted on said base and the boss being located on said arm at a distance from the pivot to mate with the recessed notch in the head of the handset;

a spring loaded mechanism for keeping said locking arm in a locked position whereby its boss is kept mated in the recessed notch in the head of the handset, said mechanism adapted to be operable to move the locking arm and thereby the boss away from the recessed notch to a released position to release the handset in response to an external pressure applied thereto.

4,117,277

ARRANGEMENT FOR SIMULTANEOUS TWO-WAY DATA TRANSMISSION OVER TWO-WIRE CIRCUITS

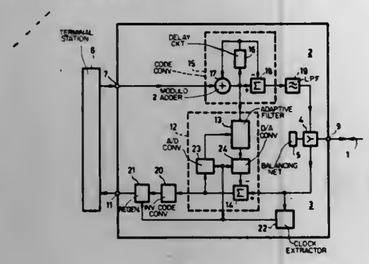
Hendricus Christianus van den Elzen; Petrus Josephus van Gerwen, and Wilfred André Maria Snijders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 16, 1977, Ser. No. 807,008

Claims priority, application Netherlands, Jun. 28, 1976, 7607037

Int. Cl.² H04B 3/20

U.S. Cl. 179—170.6 8 Claims



1. An arrangement for simultaneous two-way transmission of data signals with a symbol frequency 1/T over a two-wire circuit having a given bandwidth, said arrangement comprising a one-way transmit channel, a one-way receive channel, a coupler means for interconnecting said channels and the two-wire circuit, an echo canceler comprising an adaptive filter means with adjustable filter coefficients for producing from signals in the transmit channel an approximated echo signal, means for differentially combining said echo signal with signals in the receive channel for forming a residual signal, said filter coefficients being adjustable under the control of the residual signal and the signals in the transmit channel for minimizing a prescribed function of the residual signal, the transmit channel comprising a code converter means for converting p-level data symbols into modified p-level data symbols including means for adding modulo-p the p-level data symbols and modified p-level data symbols which are delayed over a time NT, where N is an integer and means for converting modified p-level data symbols into $(2p-1)$-level data symbols including means for linearly subtracting said modified p-level data symbols which are delayed over a time NT from the modified p-level data symbols from said adding means, the receive channel comprising an inverse code converter means for converting $(2p-1)$-level data symbols into p-level data symbols whose levels are equal to the level modulo-p in the $(2p-1)$-level data symbols, and an extraction circuit means coupled to the receive channel for recovering the symbol frequency from the signals in the receive channel; said adaptive filter comprising a digital adaptive filter having input means for receiving the modified p-level data symbols from the code converter in the transmit channel and signal samples of the residual signal occurring at sampling instants determined by the recovered symbol frequency and means for adjusting the filter coefficients.

4,117,278

SERVICE OBSERVING TERMINAL

Marilyn Carol Ehrlich, and Roy Leonard Schafersman, both of Columbus, Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 19, 1977, Ser. No. 834,252

Int. Cl.² H04M 3/22

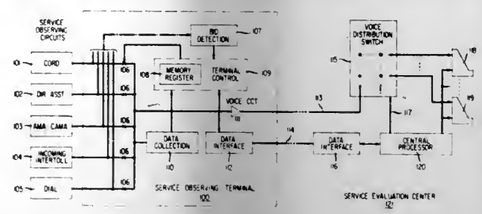
U.S. Cl. 179—175.2 C 22 Claims

9. A service observing terminal for use in selectively collecting call information from a plurality of service observation circuits and processing the call information at an evaluation center, said terminal comprising

means for storing information,

means responsive to commands received from said evaluation center for decoding said commands and selectively recording status information identifying operational states of ones of said service observation circuits in said storing means,

means responsive to said decoding and selectively recording means for selecting on a priority basis and in accordance with the recorded status information one service observation circuit from a plurality of service observation circuits



each having generated an evaluation request bid for information processing, and

means responsive to said selecting means for transmitting a bid received signal to said evaulation center and for coupling said one selected service observation circuit to said evaluation center in response to a bid accepted signal received therefrom within a predetermined interval of time.

4,117,279

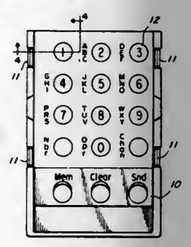
MODULAR PUSHBUTTON KEYSET ASSEMBLY

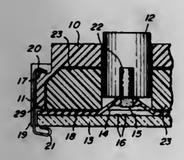
Hans Louis Schoemer, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1977, Ser. No. 799,054

Int. Cl.² H01H 9/04, 9/08

U.S. Cl. 200—5 A 3 Claims





1. A modular repairable pushbutton keyset assembly for mounting in, and interconnection with, a handset of a telephone set, said keyset assembly comprising:

a plurality of pushbutton keys each having at least one protruding rib;

a flat element including a plurality of resilient popples, raised portions of said popples being disposed to support corresponding ones of said plurality of pushbutton keys, each of saidpopples having a conductive underside;

a circuit board including a plurality of electrical contact pairs being disposed on the top surface thereof and opposite corresponding ones of said popples, each contact pair extending to the edge of the top surface of said circuit board for interconnection with the handset;

an outer housing having a protruding tongue and a protruding rib at the periphery, said outer housing engaging the protruding rib of said keys to retain and hold said plurality of keys in a predetermined spatial relationship with one another;

a light pipe assembly interposed between said outer housing and said flat element and circuit board for illuminating said keys and housing and urging said flat element against said circuit board; and

a clip having a hooked first end and an inwardly bent second end, the hooked first end of said clip engaging the tongue in said housing, the inwardly bent second end of said clip providing a spring force to hold together said circuit board, said flat element, said light pipe assembly and said plurality of pushbutton keys in operative relationship, the inwardly bent second end of said clip further exerting a friction force against said circuit board along the edge of said inwardly bent second end spatially opposed to said circuit board for retaining said keyset assembly, and the protruding rib of said outer housing applying a concentrated compressive force to said flat element and said circuit board for providing a contamination resistant seal between said flat element and the top surface of said circuit board and between said housing and said flat element when said keyset assembly is held together.

4,117,280

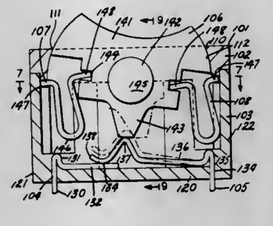
MINIATURE SWITCHES

Donavon L. Feaster, New Bedford, Mass., assignor to Sonitronic, Inc., Flushing, N.Y.

Filed Mar. 4, 1977, Ser. No. 774,318

Int. Cl.² H01H 21/36

U.S. Cl. 200—6 B 2 Claims



1. A rocker-type precision switch comprising: first and second housing elements interconnected to form a hollow casing, said housing elements defining first and second bearing surfaces; a rocker element including a manually engageable portion, and having a cylindrically-shaped portion defining a third bearing surface carried by said first and second bearing surfaces; said rocker element having a cam portion thereon defining camming surfaces; a pair of first and second contact elements selectively abuttable to complete an electrical circuit, one of said contact elements including a resilient member continuously urged against said cam portion, said cam portion serving as vibration damping means when said contact elements are in open condition; and at least one generally U-shaped over center spring element interconnecting said casing element with said rocker element to detent said rocker element selectively in either of two rotational positions; said U-shaped spring element including a first end having a notch therein, said rocker element having a notch therein engaging said first end, said last mentioned notch having a projection thereon corresponding to and engaging said notch in said first end of said spring element to prevent relative movement therebetween along an axis parallel to the axis of rotation of said rocker element.

4,117,281

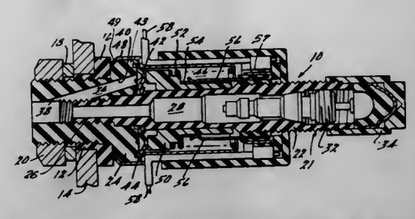
COMBINATION TIRE PRESSURE MONITORING SWITCH AND INFLATION VALVE

Richard C. Leimbach, Durham, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1977, Ser. No. 775,663

Int. Cl.² H01H 35/24

U.S. Cl. 200—61.25 4 Claims



1. An inflation valve and pressure switch for a pneumatic tire mounted on a wheel rim, comprising a body portion attached to said rim and extending through an aperture formed in said rim, said body portion having a first longitudinal bore formed therethrough, an elongated cylindrical stem member received in said first bore, said stem member having a second longitudinal bore formed therethrough opening at one end to the interior of the tire; a normally closed inflation valve received in the other end of said second bore; a cover member attached to said body and defining an annular chamber between said cover member and said stem member; a diaphragm attached to said body portion within said chamber, said diaphragm having one face exposed to the pressure within said annular chamber; a duct formed within said body, said duct communicating at one end and with the interior of said tire, and at the other end opening under the opposite face of said diaphragm to expose said opposite fact to the pressure within said tire; an annular plunger received over said stem; an electrical contact ring received over said plunger and attached thereto; first and second electrical contacts attached to said stem member in electrically insulated relationship to each other and in sliding contact with said plunger; and spring biasing means received within said chamber to bias said plunger into engagement with said diaphragm, said diaphragm being operable to move said plunger along said stem to bring said electrical contact ring into engagement with said electrical contacts when said opposite face of said diaphragm is exposed to a first pressure and to bring said ring out of engagement with said electrical contacts when said opposite face of said diaphragm is exposed to a second pressure.

4,117,282

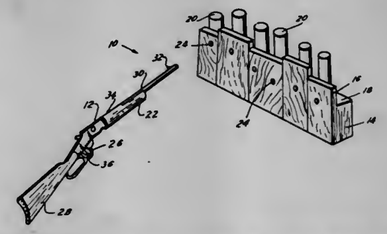
SWITCH TIME-DELAY MECHANISM FOR TOY GUN

Michael Ieda, Ft. Solanga, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,885

Int. Cl.² H01H 7/08; F21L 13/00; A63F 9/02

U.S. Cl. 200—33 R 18 Claims



13. In a toy gun for use in a target shooting game, said gun including a housing, a light source in said housing, a power supply connected to said light source, normally open switch

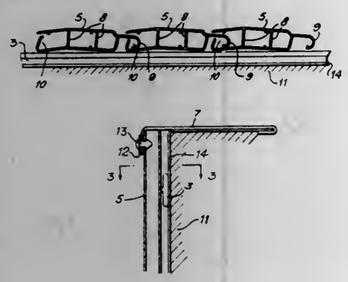
means operatively connected between said power supply and light source; and switch control means for closing said switch means for a short predetermined period of time thereby to produce a short burst of light of predetermined duration, wherein the improvement comprises said switch control means including an elongated switch control bar slidably mounted in said housing for movement between first and second positions with respect to said switch and being located to contact and close said switch during a predetermined portion of the bar's movement between its first and second positions; spring means for biasing said bar to its first position; means for driving said switch control bar from its first to its second position against the bias of said spring means; and inertia means operatively engaged with said slide bar and driven thereby during movement of the slide bar from its first to its second position for resisting movement of said slide bar under the bias of said spring means whereby the slide bar is maintained in contact with said switch for a predetermined period of time to produce said short burst of light of predetermined duration.

4,117,283

SWIMMING POOL TOUCH PAD CONSTRUCTION

Peter Hurzeller, Bellach, and Louis Degiez, Neuveville, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services, S.A., Bienne, Switzerland

Filed Oct. 14, 1976, Ser. No. 732,256
Int. Cl.[2] H01H *35/00*
U.S. Cl. 200—52 R **4 Claims**



1. A touch pad for swimming competitions adapted to be mounted on the finishing wall of a swimming pool, comprising:

a striker plate comprising a plurality of elongated hollow vertically extending panels, each panel having along one longitudinal edge a hook portion and along the other longitudinal edge an opening for loosely receiving and interlocking the hook portion of an adjacent panel, while permitting limited free movement of each panel independently of its adjacent panels in a direction transverse to the length of said longitudinal edge; and,

at least one elongated cable-like electrical contact switch extending transverse to said panels and positioned between said panels and said finishing wall whereby said contact switch may be closed by pressing any of said panels toward said finishing wall.

4,117,284

SUBMINIATURE, THREE POSITION, SWITCH WITH NON-SLIDING ROCKER CONTACT

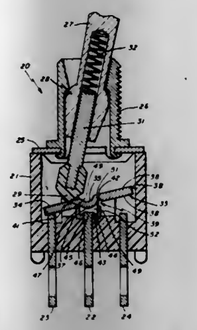
Francis D. Kirchoff, Waban, and Ellis K. Washburn, Tewksbury, both of Mass., assignors to Alco Electronic Products, Inc., North Andover, Mass.

Filed Aug. 30, 1976, Ser. No. 718,521
Int. Cl.[2] H01H *13/00*
U.S. Cl. 200—67 G **10 Claims**

1. A subminiature, three position, switch of the type having a switch box, a moveable see-saw contact, a central common terminal, a pair of opposite end terminals and a spring plunger actuator rod for rocking said see-saw contact into ON-OFF-ON positions,

said switch characterized by a U-shaped support in electrically conductive contact with the inside end of said central, common terminal; said support having a pair of upstanding legs, separated by a space, each leg having an upper edge on an opposite side of said common terminal and free of tab guides;

said moveable, see-saw contact having a central, laterally extending, half-cylindrical groove therein, for receiving the tip of said actuator rod in central OFF position;



said moveable contact having a rib, corresponding to, and opposite to, said groove, on the under face thereof, extending into the space between said legs and,

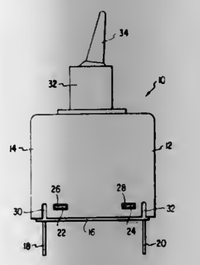
said contact being free of integral, laterally extending side tabs and having a pair of laterally extending grooves, in the said under face thereof; each located above one of the said upstanding legs of said U-shaped support for receiving the same when said moveable contact is tilted into ON position on that side of said common terminal.

4,117,285

SNAP ACTION CIRCUIT BREAKER

George Sullivan Harper, Cambridge, Md., assignor to Airpax Electronics Incorporated, Cambridge, Md.

Filed Aug. 19, 1977, Ser. No. 826,060
Int. Cl.[2] H01H *5/00, 9/02*
U.S. Cl. 200—76 **34 Claims**



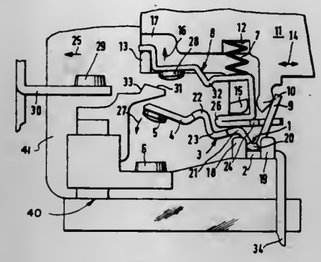
1. A circuit breaker comprising an electrically insulating plastic housing, and overcurrent trip coil and armature in said housing, a stationary and a movable contact in said housing, a latch mechanism coupled to said movable contact for manually moving it between contacts open and contacts closed positions, said latch mechanism having a sear for collapsing it in response to movement of said armature, means coupled to said movable contact for opening and closing said contacts with a snap action, a handle link coupled to said latch mechanism, said case having a handle opening communicating with said handle link, and a handle passing through said opening and coupled to said handle link, the pivot axis of said handle link lying at least substantially in a central transverse plane through the shorter dimension of said circuit breaker case with said handle opening symmetrically located in said case.

4,117,286

ELECTRIC SWITCH

Arnold Methner, Tuttlingen, and Reinhold Mesle, Aldingen, both of Germany, assignors to J. & J. Marquardt, Germany

Filed Jun. 7, 1976, Ser. No. 693,154
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1975, 2526485
Int. Cl.[2] H01H *15/18*
U.S. Cl. 200—76 **11 Claims**



1. A push button actuated electric switch comprising, in combination, at least one substantially angular movable contact element having a pair of angled legs interconnected at a bend; a support; the outer surface of said bend bearing on said support; at least one fixed contact engageable by one leg of each movable contact element; a push button switch actuator movable rectilinearly of each movable contact element in a contact element displacement direction; a swivel member swingably mounted on said push button actuator and bearing against that side of said one angled leg opposite to the side facing the associated fixed contact and at a distance from said bend; loading spring means engaged between said swivel member and said push button actuator and biasing said swivel member against each movable contact element; said swivel member being movable, relative to said push button actuator, transverse to such contact element displacement direction of said push button actuator and against the bias of said loading spring means; said swivel member being movable, as a unit with said push button actuator, rectilinearly of said one leg of each contact element, upon rectilinear movement of said push button actuator in a contact closing direction, to slide along said one leg and pivot each movable contact element to engage the associated fixed contact; additional electric contact means operable by such swingable and transverse movement, of said swivel member relative to said push button actuator, responsive to further displacement of said push button actuator in such contact closing direction subsequent to engagement of each movable contact element with the associated fixed contact; and means on said push button actuator operable, when said push button actuator is displaced in the contact opening direction, to engage the other leg of each movable contact element to pivot the movable contact element to disengage its one leg from the associated fixed contact.

4,117,287

COMBINED ELECTRICAL-HYDRAULIC CONNECTOR MEANS

Raymond W. Walker, Huntington Beach, and Robert M. Beard, Long Beach, both of Calif., assignors to Compagnie Francaise des Petroles, Paris, France

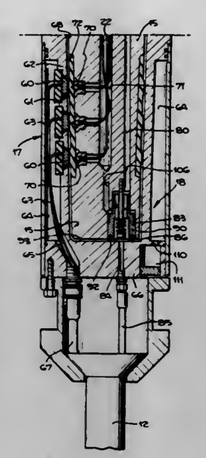
Filed Apr. 11, 1977, Ser. No. 786,219
Int. Cl.[2] H02B *35/38*
U.S. Cl. 200—82 R **11 Claims**

1. A combined electrical-hydraulic connector having a longitudinal axis, comprising:

means including separable, elongated body members for making and breaking electrical contacts by movement of at least one contact on one body member in a direction away from and toward said longitudinal axis;

means for conducting fluid parallel to said longitudinal axis and through said separable body members,

said body members providing a separable joint means transverse to said longitudinal axis;



seal means at said separable joint means for said fluid conducting means;

said seal means being adapted to be energized into a selected compressive state to seal said joint means for passage therethrough of fluid;

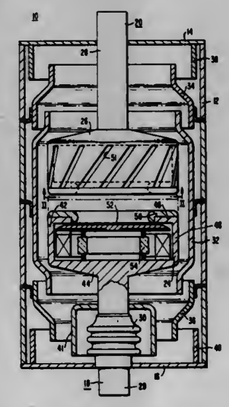
and fluid actuating means for making and breaking said electrical contacts and for energizing and de-energizing said seal means for said joint means.

4,117,288

VACUUM TYPE CIRCUIT INTERRUPTER WITH A CONTACT HAVING INTEGRAL AXIAL MAGNETIC FIELD MEANS

Joseph G. Gorman, Murrysville; James F. Roach, Oakmont, both of Pa., and Paul O. Wayland, Montour Falls, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 25, 1976, Ser. No. 699,770
Int. Cl.[2] H01H *9/44, 33/18*
U.S. Cl. 200—144 R **7 Claims**



1. A vacuum type circuit interrupter which includes a housing which is sealingly evacuated, with a pair of relatively movable contacts sealingly supported within the housing,

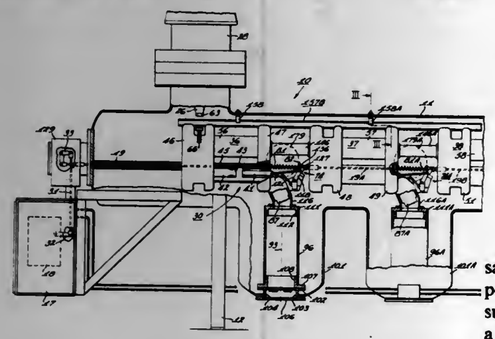
which contacts are movable between a closed position in conductive engagement, and an open position spaced apart to form an arcing gap therebetween across which an arc forms during circuit interruption, the improvement wherein the contacts comprise a conductive base portion connected to a conductive support rod which sealingly extends through the housing, which base portion includes a cup-shaped side wall portion extending toward the opposed contact with a radially inwardly directed annular lip portion at the extending end of the cup-shaped side wall portion, with angled slots formed in the cup-shaped side walls and the annular lip portion to provide an arc rotating force for moving the arc around the annular lip portion, and wherein an annular solid contact rim is provided over the slotted lip portion to serve as the initial arcing surface when the contacts are separated, and wherein a disc-like contact portion is supported within the chamber defined by the cup-shaped side walls and lip of the base portion, by support means extending between the back of the disc-like contact portion and the base, with axial magnetic field producing means disposed within the chamber between the back side of the disc-like contact portion and the base, wherein the axial magnetic field producing means comprises a pair of half-turn conductive coil pieces which are each connected at one end to the back perimeter portion of the disc-like contact portion and at the other end to the base, with the coil pieces spaced between the disc-like contact portion and the base, with the coil piece connections arranged such as to provide a common circular current flow direction as to each contact to provide an additive axial magnetic field.

4,117,289

SINGLE TANK MULTIBREAKER CIRCUIT INTERRUPTER

Maurice J. Taylor, Florence; Henry L. Peek, Brandon; John J. Abdou, Brandon, and Amrut R. Patel, Brandon, all of Miss., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 635,158, Nov. 24, 1975, abandoned.
This application Oct. 19, 1977, Ser. No. 843,457
Int. Cl.² H01H *33/82*
U.S. Cl. 200—148 B **2 Claims**



1. A multi-interrupter gas insulated circuit breaker;
a grounded enclosure having an insulating gas at a relatively low pressure therein;
a high pressure gas storage tank having insulating gas at relatively high pressure therein for each of the interrupters, said storage tanks being supported in a vertical plane within said enclosure
a forward shield casting and a rearwardly disposed shield casting; associated with each interrupter;
an insulating cylindrical contact housing for each of said interrupters horizontally disposed within said enclosure and secured between associated forward and rearward shield castings, said housing operating to enclose an associated interrupter;
a blast valve associated with each interrupter and connected to an associated high pressure gas storage tank, said blast valve including an angular housing in which said blast valve is disposed, said housing being operably connected between an associated interrupter housing and an associated high pressure gas storage tank to provide a gas flow path therebetween, said blast valve being normally operable to block the flow of high pressure gas from said high pressure storage tank, said blast valve being operable when actuated to release a blast of high pressure gas from the storage tank and said housing operates to direct the blast of high pressure gas to the arcing area of the associated interrupter confined within said contact housing;
a movable operating means within said enclosure and extending through said cylindrical contact housings and said shields associated with said interrupters and operably connected to effect the simultaneous operation of all of said interrupters and all of said blast valves to effect arc extinctions at said interrupters as the interrupters are operated to open positions; and,
means extending between said rearward shield casting and the forward shield casting of adjacent interrupters and operable to relieve a portion of the forces acting on the free unsupported ends of said interrupters due to the weight of said shield castings acting on the cantilevered interrupters.

4,117,290

STATIONARY CONTACT COMBINATION

Frank W. Kussy, Randallstown; Claudius C. Elmore, Jr., Timonium, and Richard E. Molesworth, Westminster, all of Md., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 15, 1977, Ser. No. 860,847
Int. Cl.² H01H *1/06, 1/20*
U.S. Cl. 200—243 **11 Claims**



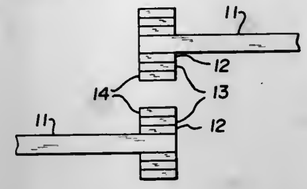
1. A contact combination for an electrical switching device, said combination including a stationary contact arm, a contact positioned at a front section of said arm and mounted on a first surface thereof, an aperture through a rear section of said arm, a retainer constructed of spring metal, said retainer including rear and front portions, said rear portion including spaced arms between which said rear section is sandwiched with said aperture in alignment with aperture means of said rear portion, fastening means extending through said aperture and aperture means for connecting said combination in a circuit, said front portion being offset from said rear section in a first direction away from a second surface of said arm which is opposite said first surface of said arm, said front portion and said front section cooperating to form therebetween a forward portion of a recess means, said retainer also including an intermediate portion disposed between said rear and front portions, said intermediate portion bounding another portion of said recess means extending away from said forward portion in said first direction, said recess means being constructed and operatively positioned to receive a complementary mounting formation of a contact carrier for mechanical securing of said combination in operative position on such carrier.

4,117,291

REED SWITCH

Bodo G. Gebauer, Algonquin, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 19, 1977, Ser. No. 798,735
Int. Cl.² H01H *1/02*
U.S. Cl. 200—268 **5 Claims**



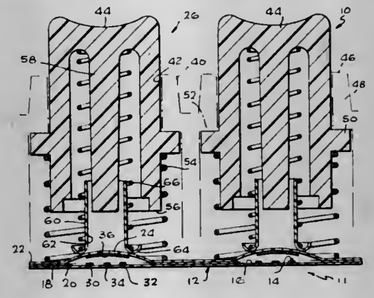
1. A reed switch comprising a sealed envelope, a pair of switch reeds and a pair of cooperating contacts each disposed on a corresponding end of each of said switch reeds wherein each of said contacts comprises an inner layer of palladium and an outer layer of ruthenium including an exterior surface of an oxide of ruthenium.

4,117,292

DUAL SPRING ACTUATOR FOR KEYBOARD SWITCH ASSEMBLY

James Christopher Hayes, and William James Tobin, both of Irvine, Calif., assignors to Telaris Telecommunications, Inc., Irvine, Calif.

Filed Jun. 10, 1977, Ser. No. 805,347
Int. Cl.² H01H *3/12, 13/70*
U.S. Cl. 200—340 **12 Claims**



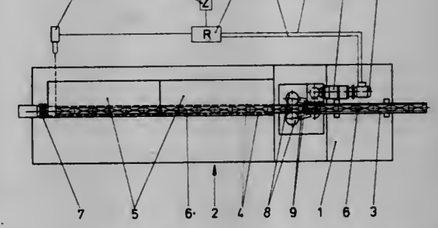
1. A keyswitch assembly comprising:
a substrate having disposed on a surface thereof an electrical circuit defining at least one first switch contact at each of a plurality of switch regions;
a switch carrier assembly including a plurality of second switch contacts, at least one being disposed at each switch region for switch closure engagement with a first switch contact in response to a switch actuation force; and
a switch actuator assembly disposed to selectively provide a switch actuation force at each switch region, the actuator assembly including for each switch region a follower disposed to engage the switch carrier assembly and transmit a switch actuation force to a second switch contact, the follower having a central aperture for slideably receiving a guide post; a key having central aperture with a guide extending therein, the key slideably receiving the follower within the aperture thereof with the guide post being received within the central aperture of the follower; a guideway being disposed to receive the key at a position proximate the switch region and to limit key motion between fixed limit points along a single axial direction; a first spring disposed in compression between the substrate and the key and tending to maintain the key at a first axial limit position spaced farthest from the substrate; a second spring disposed between the follower and the key to apply a minimum force therebetween when the key is at the first axial limit position and a maximum force therebetween when the key is at a second axial limit position spaced nearer the substrate, said second spring force providing the sole coupling force between the key and the follower, the coupling force being sufficient to cause switch closure when the key is at the second limit position and insufficient to cause switch closure when the key is at the first limit position.

4,117,293

METHOD FOR CONVEYING A ROW OF FORGING INGOTS THROUGH AN INDUCTIVE HEATING APPARATUS

Helmut Wicker, Herdecke; Werner Kielhorn, Essen-Steele, and Gerhard Heyduk, Dortmund-Scharnhorst, all of Germany, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Continuation of Ser. No. 631,683, Nov. 12, 1975, abandoned.
This application Apr. 27, 1977, Ser. No. 791,244
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1974, 2453940
Int. Cl.² H05B *5/06*
U.S. Cl. 219—10.41 **1 Claim**



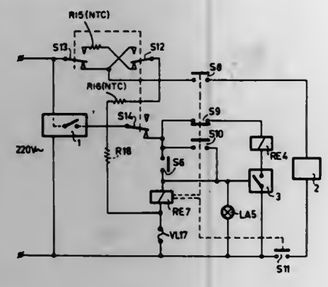
1. The method of heating elongated forging ingots which comprises the steps of
progressively push feeding a continuous row of the ingots through an induction heater having sufficient length to effect simultaneous heating of all the ingots in the row from the rear charging end of the heater at which the feeding takes place to the front discharge end thereof and in conformity with a prescribed staying time determined by the inductive heating power so that the ingots in the row become progressively heated as they are fed through the heater from one end thereof to the other,
sensing the approach of the foremost ingot in the row to the discharge end of the heater and simultaneously therewith temporarily increasing the feed rate of the ingot row through said heater for a predetermined time period dependent upon the length of the fully heated foremost ingot thus to quickly remove such ingot from the discharge end of said heater,
decreasing the feed rate of the ingot row upon expiration of said predetermined time period so as to cause the next-to-be discharged fully heated ingot at the head of the row to approach the discharge end at the proper time, and
temporarily stopping the feed of the ingot row through said heater in the event that said next-to-be discharged ingot should arrive at the discharge end of said heater prior to expiration of said prescribed staying time.

4,117,294

SAFETY ARRANGEMENT FOR MICROWAVE OVENS

Jan Olov Appelquist, and Conny Holger Lindwall, both of Norrkoping, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1976, Ser. No. 693,944
Claims priority, application Sweden, Jun. 12, 1975, 7506751
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 C 7 Claims



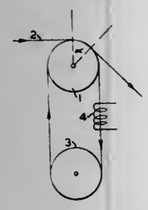
1. A safety interlock arrangement for a microwave oven having a door and a microwave generator, comprising a first switch controlled by the oven door and connected to interrupt the current supply circuit to the microwave generator of the oven upon opening of the door, a second switch also controlled by the oven door and connected to monitor the operation of the first switch, both switches having make-and-break contacts with fixed contact elements thereof mutually interconnected to form a switching circuit in which a current path between the movable contact elements of the switches only arises when the two switches assume different relative positions, said switches each having predetermined first and second positions when the door is closed and when the door is open, respectively, means connecting the movable contact elements of the switches in a current path including a circuit control element which, when the said current path is closed, makes the oven unusable, the two switches being arranged so that the first switch operates before the second switch upon the opening of the door, and a delay means for delaying activation of said circuit control element and included in an internal branch of the switching circuit leading to the fixed contact element in the first switch which comes in contact with the movable contact element thereof when the door is open.

4,117,295

APPARATUS FOR ANNEALING OF WIRE

Shirley Beach, North Vancouver, Canada, assignor to Phillips Cable Limited, Ontario, Canada

Filed Nov. 16, 1976, Ser. No. 742,177
Claims priority, application Canada, Nov. 17, 1975, 239815
Int. Cl.[2] H05B 5/08
U.S. Cl. 219—10.61 R 12 Claims



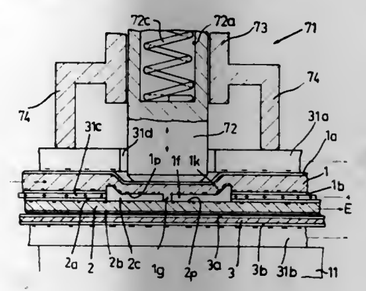
1. Apparatus for use during induction heating of wire comprising an upper sheave for supporting said wire around a first defined portion of the sheave periphery and for supporting said wire after induction heating around a second defined portion of said periphery, there being an overlap of the first and second portions, the improvement comprising a peripheral groove formed of insulating material around the rim of the sheave for simultaneously retaining both wires around said defined portions of the sheave, the width of the groove at a height ½ the wire width from the bottom supporting surface of the groove being from 1½ to less than 2 times the width of the wire, the apparatus being such that said overlap of said defined portions as measured on the sheaves being about 45° or less.

4,117,296

PROCESS AND APPARATUS FOR WELDING SHEET METAL COATED WITH LAYERS

Otto Alfred Becker, Robert-Koch-Strasse, 59, 66 Saarbruecken 6, Germany

Division of Ser. No. 445,109, Feb. 25, 1975, Pat. No. 4,009,362, which is a division of Ser. No. 181,149, Sep. 16, 1971, Pat. No. 3,798,407, which is a continuation-in-part of Ser. No. 823,077, May 8, 1969, Pat. No. 3,614,375. This application Feb. 18, 1977, Ser. No. 770,238
Claims priority, application Fed. Rep. of Germany, May 8, 1968, 1765366; May 28, 1968, 1765489; Aug. 19, 1968, 1765970; Sep. 3, 1968, 1790058; Jan. 17, 1969, 1902569; Sep. 17, 1968, 1790142
Int. Cl.[2] B23K 9/28
U.S. Cl. 219—91.21 7 Claims



1. An apparatus for the connection by electrical fusion of sheet metal panels both of which are provided with a coated insulating layer disposed between said sheet metal panels when said sheet metal panels are superimposed, and wherein the coatings are stripped in areas adjacent the welding zone, the improvement comprising:

(a) a recess formed in the inner surface of one of said panel members in said stripped area, and a welding pin extending centrally downwardly in the stripped area from said one member toward but spaced from the other panel member;

(b) capacitor plates positioned adjacent the outer surface of said panels, the upper one of said plates being formed with an opening generally concentric with the stripped areas of said panels,

(c) further capacitor means positioned between the adjacent, coated surfaces of said panels,

(d) pressure means extending through said opening in said upper plate and contacting the outer surface of said panel member formed with said recess, and

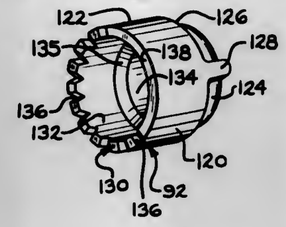
(e) means for applying welding current to said panels and substantially simultaneously actuating said pressure means to force the same downwardly whereby said welding pin engages the stripped area of the other of said panels whereby said pin, and thus said one panel, are welded to said other panel.

4,117,297

FERRULE FOR STUD WELDING

Roger W. Sholle, Lorain, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 590,623, Jun. 26, 1975, abandoned. This application Nov. 22, 1976, Ser. No. 743,865
Int. Cl.[2] B23K 9/32
U.S. Cl. 219—98 12 Claims



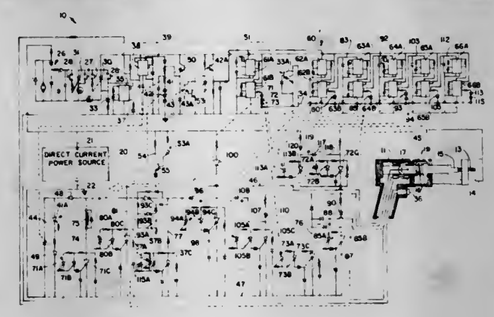
1. A ferrule for use in welding a stud to a workpiece by a drawn-arc welding technique said ferrule comprising a ceramic body having a front face, an outer front wall near the front face, an inner front wall near the front face and spaced substantially uniformly from said outer wall, and an inner rear wall forming a passage therethrough of smaller transverse cross section than that of said inner front wall, a plurality of substantial uniformly-spaced notches in said front face, extending from the outer front wall through to the inner front wall, and extending around from one-half to three-fourths of said front face, the remainder of said front face being arcuate and substantially unvented from the last of said notches at one end of the plurality to the last of said notches at the other end of the plurality, and said ferrule having orienting means thereon positioned symmetrically with respect to said remainder of said front face to enable said ferrule to be positioned with said remainder in a predetermined position with respect to a ferrule holder.

4,117,298

CONTROL FOR WELDING DEVICE

Robert J. Raycher, Brunswick, Ohio, assignor to Tru-Fit Products Corporation, Medina, Ohio

Filed Apr. 5, 1976, Ser. No. 673,428
Int. Cl.[2] B23K 9/20
U.S. Cl. 219—98 13 Claims



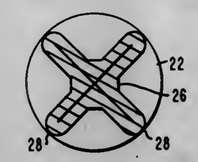
1. A control for a welding device, comprising in combination: a direct current power source having a first and second terminal; a welding circuit including first connection means connecting said first terminal of said power source to the electrode and second connection means connecting said second terminal of said power source to the workpiece with welding switch means interposed in one of said first and second connection means for controlling welding current in said welding circuits; a commutating circuit comprising commutating capacitor means and commutating switch means connected to said welding switch means for commutating said welding switch means upon conduction of said commutating switch means; a charging circuit including charging switch means connecting said commutating capacitor means between said first and second terminals of said power source, means for initiating conduction of said charging switch means to charge said commutating capacitor means with said direct current power source; means for initiating conduction of said welding switch means to establish welding current between the electrode and the workpiece; means for initiating conduction of said commutating switch means for discharging said commutating capacitor means to terminate conduction of said welding switch means; and means responsive to the termination of conduction of said welding switch means effective to reactivate said charging circuit and charge said commutating capacitor means.

4,117,299

METHOD OF TIPPING REFRACTORY METAL TUBULATION

John Petro, Belleville, and Charles R. Schofield, Bloomfield, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 17, 1977, Ser. No. 769,600
Int. Cl.[2] B23K 11/00
U.S. Cl. 219—117.1 4 Claims



1. A method for sealing off the refractory metal exhaust tubulation of a ceramic arc tube containing a rare gas at less than atmospheric pressure comprising the steps of:

simultaneously crimping the tubulation at four equidistantly spaced points about its circumference thereby collapsing said tubulation in said crimp area;

disposing only said tubulation in an enclosed area;

flowing an inert gas at a pressure in excess of the pressure of said rare gas within said tubulation through said enclosed area;

contacting said tubulation with a pair of electrical contacts at spaced locations approximately equidistant on each side of said crimp; and

passing a predetermined electrical current between said contacts through said tubulation to thereby cause said tubulation to separate at approximately the midpoint of said crimp to form a seal at the separated ends.

4,117,300

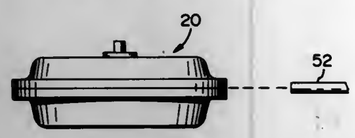
REDUNDANT WELDING METHOD FOR METAL BATTERY CONTAINERS

Charles R. Ricards, Emporium, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 5, 1977, Ser. No. 784,789
Int. Cl.[2] B23K 27/00
U.S. Cl. 219—121 LM 4 Claims

4. In a method of providing an hermetic seal between metal bodies each having a longitudinal axis and a flange extending in a direction transverse to said longitudinal axis, one of said flanges being provided with a depending notch, the steps comprising: mating said flanged bodies with said flanges coextensive;planar resistance welding aid bodies together through said flanges in substantially all areas except that including said depending notch, crimping said notch shut; spot welding said crimp by beginning at the center thereof an progressively

working outwardly to the ends of said crimp, each of said spot welds overlapping its neighbor; and subsequently peripherally



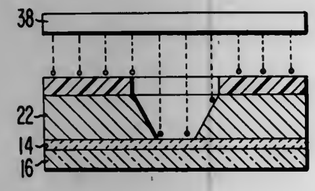
laser welding the edges of said flanges to effect a redundant weld separate and distinct from said planar resistance weld.

4,117,301

METHOD OF MAKING A SUBMICROMETER APERTURE IN A SUBSTRATE

Jitendra Goel, Kendall Park; Subrahmanyam Yegna Narayan, Belle Mead, both of N.J., and Ira Drukier, New York, N.Y., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 597,763, Jul. 21, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 822,540
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 EM **10 Claims**



1. A method of making a submicrometer aperture in a substrate comprising the steps of:

placing at least one metallic layer adjacent a surface of said substrate,

selectively protecting said metallic layer so that only a portion of said metallic layer is exposed, said portion being adjacent the desired location of said submicrometer aperture and having a predetermined width,

bombarding said exposed portion of said metallic layer with a beam of ions having an energy of about 600 electron volts or less so that an opening having a cross-section resembling an isosceles trapezoid is formed therein, said opening exposing a section of said substrate whereat the width of said opening is narrowest, and removing said exposed section of said substrate utilizing said metallic layer with said opening therein as a mask, said predetermined width being selected of narrow enough value such that said removing step forms said submicrometer aperture.

4,117,302

METHOD FOR FUSIBLY BONDING A COATING MATERIAL TO A METAL ARTICLE

Michael Earle, Mapleton, and Glenn H. Lenzen, Jr., Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 447,971, Mar. 4, 1974, abandoned. This application Jan. 24, 1975, Ser. No. 543,191
Int. Cl.[2] B23K *26/00*
U.S. Cl. 219—121 LM **9 Claims**

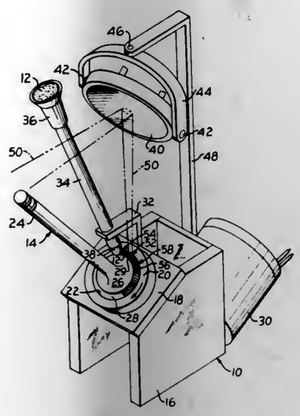
1. A method of fusibly bonding a substantially solid powder coating material to a metal article, which comprises:

Step (a) depositing the powder in the form of a band of powder onto a surface of the metal article, the band of powder being substantially uniformly levelled and of a preselected width;

Step (b) melting a portion of the band of powder by focusing a laser beam thereon;

Step (c) immediately thereafter melting the surface of the metal article by the heat of the laser beam on the band of powder at a heat interaction zone; and

Step (d) relatively moving the focused laser beam and the heat interaction zone along the band of powder at a rate sufficient for forming a traveling melt and maintaining heat transfer into the article and cooling of a trailing portion of the melt at preselected values and subsequent hardening of the trailing portion of the melt at a relatively



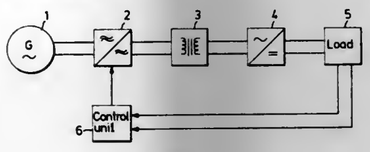
fixed distance from the heat interaction zone, the relative rate of laser beam movement and heat transfer being sufficient for providing a solidified surface layer having physical properties resulting essentially from heating and cooling of only the powder and a relatively thin, strong region of interstitial bond between the surface layer and the article having physical properties resulting essentially from heating and cooling of both the powder and the metal article.

4,117,303

ARRANGEMENT IN ELECTRICAL WELDING APPARATUS

John Bengt Göran Hedberg, Gothenburg, Sweden, assignor to AB Svetsia, Askim, Sweden

Filed Apr. 26, 1977, Ser. No. 790,978
Claims priority, application United Kingdom, Apr. 28, 1976, 17214/76; Apr. 14, 1977, 17214/76
Int. Cl.[2] B23K *9/10*
U.S. Cl. 219—130.1 **5 Claims**



1. Welding apparatus of the type wherein the welding electrodes for producing an arc are supplied with pulsating direct current derived from an a.c. current supply by means of a controlled frequency converter which substantially increases the frequency of the alternating current, the output of said converter being connected through a transformer and a rectifier to the welding electrodes, wherein the connection between the rectifier and the welding electrodes includes a shunt capacitance having a preselected impedance which is of a low value so as to attenuate the alternating current components of the welding current to an audio level of at most 85 dB at frequencies up to 16,000 Hz, 95 dB in the frequency range of 16,000 to 20,000 Hz and 105 dB in the frequency range of 20,000 to 50,000 Hz, the said connection further comprising means for

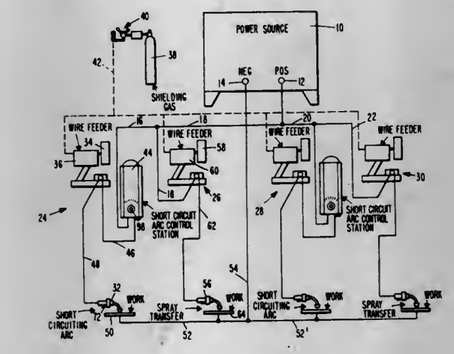
preventing the capacitor from adversely affecting the rectifier and frequency converter and a choke arranged between the capacitor and the electrodes to support the arc during recharge of the capacitor but for allowing discharge thereof during short circuit periods caused by droplets of molten welding material.

4,117,304

SHORT CIRCUITING ARC CONTROL STATION FOR MULTIPLE OPERATOR WELDING SYSTEM

Dale M. Wodzinski, York, and Michael Clissa, Hanover, both of Pa., assignors to Chemetron Corporation, Chicago, Ill.

Filed May 20, 1976, Ser. No. 688,454
Int. Cl.[2] B23K *9/10*
U.S. Cl. 219—130.1 **5 Claims**



1. A welding system for providing welding current to both gas-metal arc spray transfer stations and short-circuiting arc stations from a single source of supply, comprising:

a common power source providing direct current power at a substantially constant potential, said potential being selected to accommodate the requirements of spray transfer welding but being unsuitable for short-circuiting arc welding;

a first operator station including a spray transfer welding gun and wire feeder means for supplying welding wire thereto;

first cable means connecting said spray transfer welding gun directly to said common power source to provide direct current power for spray transfer welding;

a second operator station including a short-circuiting welding gun and wire feeder means for supply welding wire thereto;

a short circuit arc control unit at said second operator station for selectively reducing the direct current potential of said common power source for said second operator station said arc control unit comprising an input and an output, a first resistor grid comprising a plurality of parallel-connected resistors connected in series between said input and output, a second resistor grid comprising a plurality of resistors, switch means in series with each resistor of said second resistor grid and selectively operable to connect selected resistors of said second resistor grid in parallel with said first resistor grid, and reactive means connected in series with said first resistor grid between said input and said output; whereby voltage disturbances from one of said operator stations are effectively isolated from the other of said operator stations; and

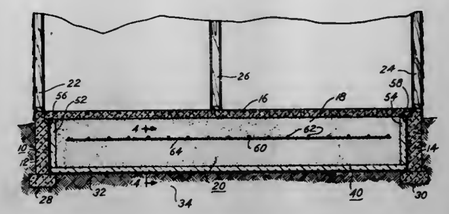
second cable means connecting said arc control unit in series between said commmon power source and said short-circuiting welding gun, said first and second operator stations being connected in parallel with each other across said common power source.

4,117,305

HEAT SUMP SYSTEM FOR BUILDING STRUCTURES

Jerrold L. Colten, Lakewille, Ind., assignor to Bristol Products, Inc., Bristol, Ind.

Filed Mar. 23, 1977, Ser. No. 780,368
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—213 **9 Claims**



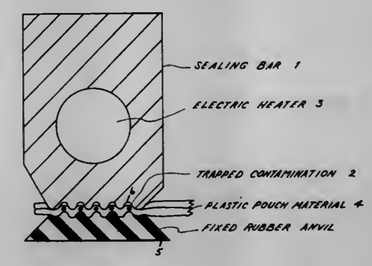
1. A heat sump system for building structures, comprising side walls defining an inner area with earth disposed beneath said area and supporting said side walls, heat absorbing and releasing fill material substantially filling said area and having an upper surface, a slab forming a floor of said building structure supported by said fill material on said upper surface forming a heat exchanging relationship with said fill material, an electrical heating cable for heating said fill material and said slab throughout substantially the full area of said material, a thin sheet of water impervious plastic material beneath said fill material, and a layer of thermal insulating material disposed between said fill material and said sheet of plastic material to form a heat flow barrier for minimizing the loss of heat from said fill material into the earth.

4,117,306

POUCH SEALING DEVICE

Jagdish Chandullal Shah, Stamford, Conn., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Filed Jul. 18, 1977, Ser. No. 816,425
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—243 **1 Claim**



1. A pouch sealing device comprising:

a metallic pressure applying sealing bar having a sealing end with a plurality of longitudinal undulated grooves formed therein and spaced therealong to produce a corduroy-like surface on edges of a pouch to be sealed to enable visible detection of contamination in the seal after a sealing process has been completed;

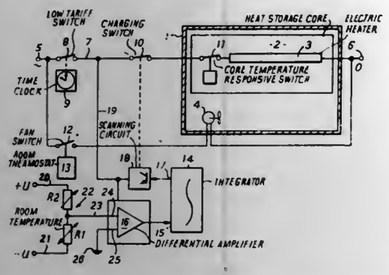
an electric heater means disposed in said sealing bar to heat said sealing end; and

a fixed, stationary rubber anvil having a substantially flat surface upon which said edges of said pouch to be sealed is placed and said sealing bar is applied with pressure against said edges of said pouch to be sealed to the extent that said substantially flat surface of said rubber anvil is deformed to assume the shape of said undulated grooves.

4,117,307
CONTROL SYSTEM FOR CHARGING AND DISCHARGING AN ELECTRIC STORAGE HEATER

Poul Christian Carlos Iversen, Nordborg; Flemming Thorsoe, Sonderborg, and Borge Bernhard Hanson, Augustenborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 24, 1976, Ser. No. 717,250
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1975, 2539165
Int. Cl.² H05B *1/02*; F24H *7/04*; F24D *11/00*
U.S. Cl. 219—364 7 Claims



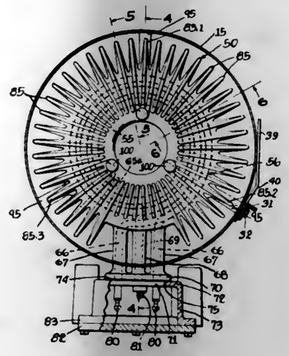
1. Charging apparatus for an electric storage heater comprising a heat storage core, a resistance heater for heating said core in series with a clock operated time switch and a charging switch, an integrator, means responsive to the output of said integrator for opening and closing said charging switch below and above respectively a predetermined potential output value of said integrator when said time switch is closed, analog sensing means for sensing at least one environment temperature value and outputting a potential which corresponds quantitatively to said value, differential amplifier means driven by said analog sensing means for charging or discharging said integrator in quantitative correspondence to said value when said time switch is open, said differential amplifier means having first and second inputs, said sensing means including a room temperature voltage divider which includes a temperature responsive resistance and is between conductors of different potentials, said sensing means having the tapping thereof connected to said first differential amplifier means input, said second differential amplifier means input being connected to a potential which falls between said different potentials.

4,117,308
EXPLOSION-PROOF ELECTRIC AIR HEATER

Alben C. Boggs, Pittsburgh, and John C. Stover, Verona, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 9, 1976, Ser. No. 712,823
Int. Cl.² H05B *3/02*; F24D *15/00*; F24H *3/06*; H01C *1/082*
U.S. Cl. 219—365 6 Claims

1. An electric heater, particularly adapted to heat air in hazardous area, comprising:
- a tubular, sheet-metal casing,
- a motor-driven fan for moving air axially through said casing,
- a heat-radiating member disposed within said casing in position crosswise of the latter, said member being in the form of a metal casting and having an electric heat-generating element embedded therein,
- said radiating member having an annular central hub and a plurality of integral fins extending radially thereof,
- a pair of legs integral with and extending radially of said central hub and having integral foot means at the ends thereof, the terminal ends of said heat generating element being embedded within respective legs and having terminal extremities extending outwardly from said legs and said foot means,
- a metal terminal box having an opening in a wall thereof, said terminal extremities extending through said opening and into said box,
- said foot means being welded to said terminal box to seal the opening therein,
- three feet extending radially beyond said fins and equally spaced apart, each foot having an outer surface abutting the inner surface of said casing to maintain said heat-radiating member centrally disposed within said casing

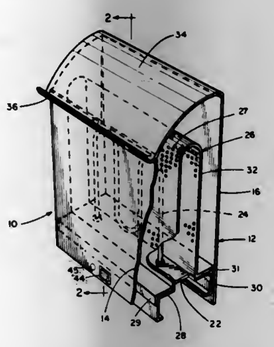


and with said fins out of engagement with said casing inner surface, each foot being connected to said casing,
- a pair of metal angles extending longitudinally on opposite sides of said casing, and bolts extending through apertures in said angles and said casing and threaded into tapped holes in respective ones of two of said feet, and
- mounting means connected to respective angles, for mounting said electric heater on a support.

4,117,309
ELECTRIC TOWEL WARMER

Michael Paul Cayley, 94 Watergate, S. Barrington, Ill. 60010

Filed Jul. 26, 1976, Ser. No. 708,572
Int. Cl.² H05B *1/00, 3/02*; F26B *9/00, 25/06*
U.S. Cl. 219—385 9 Claims

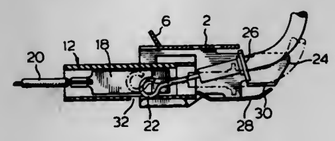


1. In an electric towel warmer comprising a heating element adjacent to which a towel is placed for warming the same, means covering said heating element and control circuitry for controlling the electric current to the heating element, the improvement residing in the combination of: said heating element being configured and arranged to be in a generally upright plane, said cover means having openings therein to facilitate heat transfer by convection, conduction, and radiation from said heating element through said cover means and being sized and arranged to fit over said heating element in spaced relationship thereto in a generally upright position for supporting a towel draped thereover; said towel warmer including a housing completely surrounding said heating element and said cover means, said housing having spaced apart end walls and sidewalls, an open bottom and an openable top closure with said heating element being mounted on a base within said housing with said base closing off the bottom of said housing, said cover means extending between said end walls and being situated between and spaced from said sidewalls, such that a towel received in said housing through said openable top closure and draped over said cover means has one portion situated between one sidewall and said cover means and another portion situated between the other sidewall and said cover means, and said control circuitry including means within said cover means in circuit with said heating element for maintaining the temperature within said housing at a temperature adequate to warm a towel in said housing.

4,117,310
ELECTRICAL SOCKET

Andrew Greive Clark, 2414 Conquest Dr., Mississauga, Ontario, Canada

Filed Feb. 4, 1977, Ser. No. 765,549
Int. Cl.² H05B *3/08*
U.S. Cl. 219—451 2 Claims



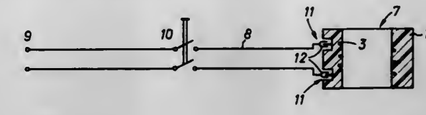
1. In a socket assembly for a plug-in electrical heating element for a stove, comprising a socket member of rigid dielectric material defining horizontal sockets configured to receive contact members on the heating element and containing conductor elements resiliently engageable with said contact members, and a guide and carrier member which loosely and interlockingly embraces said socket member so as to support the latter whilst permitting a limited degree of pivotal and translational movement relative to the guide and carrier member, said latter member also defining the walls of a generally horizontally extending guide passage through which said contact members must be passed to reach the sockets in said socket member, the walls of said guide passage receiving and being engageable with a grounding and locating member on the heating element from which member the contact members project, the improvement in which inwardly projecting shelves are formed on the side walls of said guide passage having an inward and rearward extent such as to engage the bottom of the grounding and locating member and prevent it from approaching the bottom wall of the passage and the heating element from being lowered to a horizontal position until the contact members are fully engaged in the sockets and the grounding and locating member has passed beyond the rear ends of the shelves.

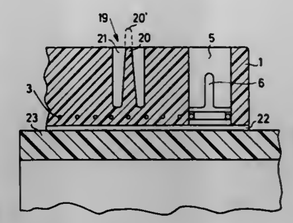
4,117,311
ELECTRIC WELDING MUFF

Werner Sturm, Hagendorf, Switzerland, assignor to Von Roll AG., Gerlafingen, Switzerland

Filed Mar. 14, 1977, Ser. No. 777,467
Claims priority, application Switzerland, Mar. 22, 1976, 3535/76; Jan. 14, 1977, 481/77; Feb. 25, 1977, 2438/77
Int. Cl.² H05B *3/58*
U.S. Cl. 219—544 13 Claims

1. In an electric welding muff for thermally flowing to produce welded joints between generally tubular members, the muff being of the type comprising a thermoplastic synthetic resin sleeve with an electric resistance heating wire disposed adjacent the inner surface of the sleeve, and means on said wire for connection to a power source, the improvement wherein said sleeve having a predetermined nominal diameter, said wire having a predetermined resistance,
- said resistance and said diameter being so related that their product averages approximately 10,075 ohm-mm plus or minus 20 percent, so that the value of the resistance decreases with increasing sleeve diameter,
- whereby the muff is operable with an unregulated source of power.

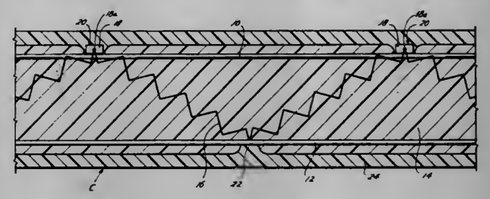




4,117,312
SELF-LIMITING TEMPERATURE ELECTRICAL HEATING CABLE

Ben C. Johnson, San Marcos; J. Scott Thornton, Austin; Donald E. Glowe, Austin; Patrick E. Cassidy, Austin, and Robert E. Anderson, San Marcos, all of Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.

Filed Jul. 22, 1976, Ser. No. 707,648
Int. Cl.² H05B *3/56*
U.S. Cl. 219—548 14 Claims



1. A temperature self-limiting electrical heating cable or tape to provide heat to pipes, tanks and the like, comprising:
- (a) first conductor means and second conductor means for conveying electrical current extending in proximity to each other along the length of the cable;
- (b) insulating means, comprising:
  - (1) insulating material mounted to enclose said first and second conductor means along the length of the cable and to insulate said first and second conductor means from each other; and
  - (2) said insulating material having portions thereof removed at intervals along the length of the cable to form slits and permit electrical contact with said first and second conductor means;
- (c) a plurality of heating elements electrically connected between said first and second conductor means for producing heat when current flows therethrough; and
- (d) variable resistance means comprising a plurality of chips of variable resistance heating material mounted in selected ones of said slits in said insulating material, each of said chips being electrically connected in series with selected ones of said plurality of heating elements between said

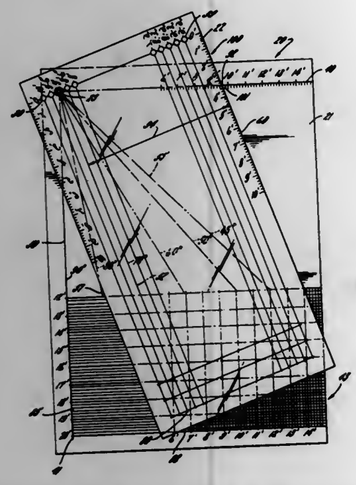
first and second conductor means, said chips of variable resistance heating material substantially increasing in resistance when a temperature limit is reached to reduce the current flowing through said heating elements and control the heat output of the cable.

4,117,313

CALCULATOR FOR LAYING OUT PARKING LOTS

Richard T. Vincent, 9144 S. Hamlin Ave., Evergreen Park, Ill. 60642

Filed Jan. 14, 1977, Ser. No. 759,261
Int. Cl.² G06C *3/00*; G06G *1/14*
U.S. Cl. 235—61 GM **6 Claims**



1. A calculator for laying out stalls in parking lots comprising a first member having first and second orthogonal numerical scales corresponding to stall length and width, pivot means at the origin of said scales, angular indicia at predetermined angular intervals emanating from said origin; a second member engageable with said pivot means and having a length scale thereon for selecting a desired stall length, width indicia perpendicularly related to said length scale for selecting a desired stall width, and alignment indicia emanating from said engaged pivot means for selecting a desired stall angle; said second member being pivotable about said pivot means for aligning said alignment indicia with a selected one of said angular indicia on said first member for establishing the desired stall angle, whereupon the length scale and width indicia on said second member intersect said length and width scales of said first member to read the orthogonal dimensions of stall length and width to achieve the desired stall length and width at the desired angle.

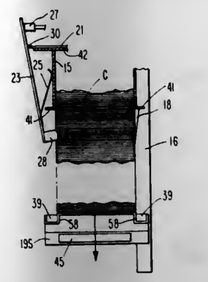
4,117,314

CARD READER WITH MEANS FOR UNLOADING OUTPUT HOPPER ON THE FLY

John C. Schisselbauer, Southampton, and John J. Dobson, Oreland, both of Pa., assignors to Peripheral Dynamics, Inc., Norristown, Pa.

Filed Jun. 8, 1976, Ser. No. 693,878
Int. Cl.² G06K *13/14*; B65H *31/12*
U.S. Cl. 235—475 **16 Claims**

1. In a card reader having input means for inputting cards into the reader, transport means for transporting them through said reader so that they can be read, and an output hopper wherein cards are collected after having been read, the output hopper having elevator means for supporting the cards collected in said output hopper and having the feature of being moveable, the invention comprising means enabling efficient unloading of said card reader while it is in continuous operation, said unloading means comprising support means for supporting cards in said output hopper above a predetermined level, said support means being normally inoperative and exerting inward clamping pressure on a plurality of said collected



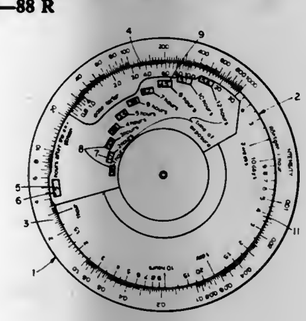
cards, and support enabling means for rendering said support means operable, whereby cards being read while said support means is operative are collected on a pile supported by said supported cards and the cards supported by said elevator below said supported cards are available for unloading.

4,117,315

RADIOACTIVE DOSE CALCULATING DEVICE

Cornelis Georg Frederik Ampt, Voorburg, and Keimpe Klaas Keimpema, Zoetermeer, both of Netherlands, assignors to De Staat der Nederlanden, Te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed Feb. 7, 1977, Ser. No. 766,246
Claims priority, application Netherlands, Dec. 2, 1976, 7601448
Int. Cl.² G06C *3/00, 1/02*
U.S. Cl. 235—88 R **6 Claims**



1. A device for calculating radioactive doses and intensities comprising:

(A) a first part having:

(a) an outer scale for the intensity of Rontgens per hour,

(b) an aligned adjacent inner scale for the time in hours after the explosion,

(c) a plurality of aligned further inner scales of different dose factor values divided into three sections having visually different charactertistics for different percentage ranges of errors;

(B) a second part having:

(a) a first scale on an edge thereof for the dose factor cooperating with said intensity scale,

(b) a window cooperating with said time scale,

(c) a plurality of stepped windows for different exposure times, one corresponding to each scale of dose factor values, and

(d) a second scale on said edge thereof for indicating intensity at other times than that of the measurement, and cooperating with said intensity scale, and

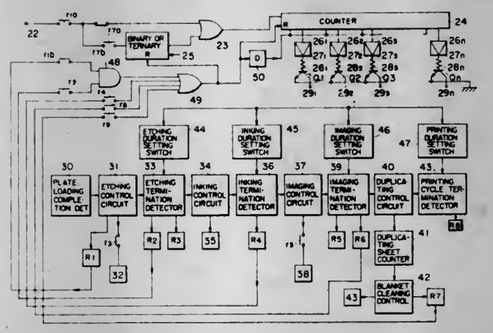
(C) means for fastening said parts together for relative movement with respect to each other.

4,117,316

APPARATUS FOR CONTROLLING OPERATION CYCLE OF DUPLICATING MACHINE

Yoshinori Honkawa, Fuchu, Japan, assignor to Ryobi, Ltd., Fuchu, Japan

Filed Jun. 14, 1977, Ser. No. 806,433
Claims priority, application Japan, Jun. 14, 1976, 51-77828[U]
Int. Cl.² G06M *3/02*; G06B *27/06*
U.S. Cl. 235—92 SB **5 Claims**



1. An apparatus for controlling the operation cycle of a duplicating machine, said machine including plate loading means, etching means, inking means, imaging means and duplicating means, each complete operation cycle of the duplicating machine including, in succession, plate loading, etching, inking, imaging, and duplicating processes, comprising:

a plate loading completion detector for providing an output signal at the termination of said plate loading process;

a revolution detector for providing output signals at a frequency corresponding to the operating speed of the apparatus;

a counter for receiving and counting the output signals from said revolution detector;

a plurality of adjustable termination means, each said termination means being set to the desired duration of a respective one of said etching, inking, imaging and duplicating processes and each providing termination signals at the termination of its respective process;

switch means responsive to the output signals from said termination mean detectors for resetting said counter at the termination of each process and for disabling the means for the terminated process;

etching, inking, imaging and duplicating control circuits responsive to the output signals from said plate loading completion detector, etching, inking and imaging termination detectors, respectively, for energizing said etching, inking, imaging and duplicating means; and

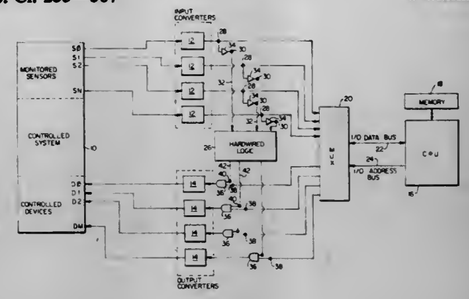
a printing termination means for receiving the counter value and resetting said counter at the termination of each printing cycle.

4,117,317

PROGRAMMABLE CONTROLLER WITH HARDWIRED BACKUP CONNECTING TERMINALS AND RELATED CONTROL SYSTEM USING PROGRAMMABLE CONTROLLER AND HARDWIRED BACKUP

Philip G. Dooley, Jr., Bolton, and Sidney C. Oakleaf, Old Saybrook, both of Conn., assignors to Dynage, Incorporated, Bloomfield, Conn.

Filed Aug. 9, 1976, Ser. No. 712,885
Int. Cl.² G06F *9/00*
U.S. Cl. 235—307 **5 Claims**



1. An improved means for controlling a given operating system, said means including a plurality of sensors for monitoring given parameters of said system and for producing a plurality of monitored signals representative of said parameters, a plurality of controlled devices for varying given parameters of said system in response to a respectively associated plurality of control signals, a programmable controller including a memory programmable with a set of binary coded instructions and a processor for processing a plurality of binary data input signals in accordance with the set of instructions stored in said memory to produce a plurality of binary data output signals, a plurality of input converters for converting said monitored signals into binary data signals compatible with the remainder of said programmable controller, means for continually transmitting each of said binary data signals from said input converters to said processor as input signals for said processor, a plurality of output converters for converting said binary data output signals of said processor into a plurality of control signals compatible with said controlled devices, and means for continually transmitting said plurality of binary data output signals from said processor to said plurality of output converters with each of said output converters receiving a respectively associated one of said latter signals, and wherein the improvement comprises a hardwired logic circuit for converting a set of binary data input signals into a set of binary data output signals in accordance with a fixed logic scheme, means for continually supplying at least one of said binary data output signals from one of said input converters to said hardwired logic circuit as an input to said hardwired logic circuit, and means for continually supplying at least one binary data output signal from said hardwired logic circuit to one of said output converters as an input to said output converter in ORed relation to the input signal supplied to the same output converter by said processor.

4,117,318

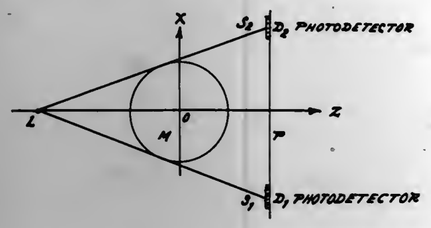
OPTICAL POSITION PICK-OFF IN ZERO-DRAG SATELLITE

Walter L. Pondrom, Jr., Fullerton, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 16, 1977, Ser. No. 797,143
Int. Cl.² G01J *1/20*
U.S. Cl. 250—201 **5 Claims**

1. In a zero drag satellite having a proof mass shielded from all effects except gravity, the improvement of an optical proof mass position pick-off comprising a flat screen in fixed relation-

ship to said satellite, a mutliplicity of photodetectors equally spaced on said flat screen, and a light source in fixed relationship to said satellite providing a light beam, said proof mass initially interposed in a null position between said flat screen and said light source with said proof mass interrupting said light beam to cast a circular shadow on said flat screen, the periphery of which passes through the center of each of said



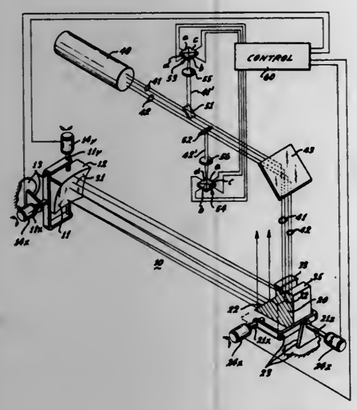
photodetectors with a shift in the proof mass in any transverse direction causing the shadow to cover more of certain of said photodetectors and less of other, and the shift of the proof mass in an axial direction causing the shadow to cover more of all of said photodetectors or less of all of said photodetectors, the unbalance of the photodetectors outputs being used for activation purposes to change the direction of the zero-drag satellite until the proof mass returns to the null position.

4,117,319

ALIGNMENT SYSTEM FOR LASERS

Frederic H. White, III, Simi, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 5, 1977, Ser. No. 812,884
Int. Cl.² G01J *1/20*
U.S. Cl. 250—201 **13 Claims**



1. In a laser having a laser cavity which includes a convex mirror and a concave mirror mounted for alignment of their respective optical axis, the concave mirror being mounted in addition for tilting about two axes extending transversely to the optical axis of the concave mirror, the improvement comprising:

a concave extension of the concave mirror;

means for providing a collimated beam;

means including beam diverging means for directing the beam towards the concave mirror extension to be reflected by the extension and recollimated by the diverging means;

detection means disposed to be responsive to the recollimated beam to detect any displacement thereof from autocollimation on account of a relative lateral or tilting displacement between said mirrors and providing detection signals accordingly; and

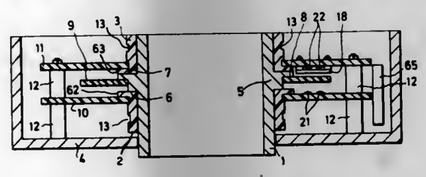
control means connected to the detection means for being responsive to the detection signals for correctively tilting the concave mirror.

4,117,320

DIGITAL MEASURING INSTRUMENTS

Ernest Valdur Tomlinson, and Charles Nicholas Carne, both of London, England, assignors to Carson (Instruments & Equipment) Limited, London, England

Filed Jun. 8, 1976, Ser. No. 693,984
Int. Cl.² H01J *3/14*
U.S. Cl. 250—237 G **14 Claims**



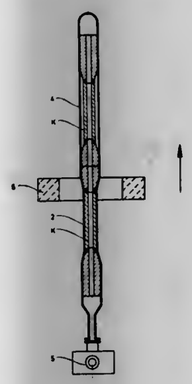
1. A digital instrument for cooperating with a shaft rotatable to cause linear movement of a member to give a continuous digital readout representative of the motion of the member, the instrument comprising equally spaced markings formed on an element, a bushing intended to be secured to the shaft and which carries the element, sensing means which cooperate with the markings and produce an output pulse in response to the passage of a marking past the sensing means, a reversible digital counter to which the output of the sensing means is connected, digital display means connected to the digital counter, and a casing which is intended to be fixed, which contains and fixedly supports the sensing means, the counter and the display means and which contains the element.

4,117,321

ELECTRODE SYSTEM FOR MULTIPOLES AND ESPECIALLY FOR MULTIPOLE OR MONOPOLE MASS SPECTROMETERS

Wilhelm Meyer, Bremen, Germany, assignor to Varian MAT Gesellschaft mit beschrankter Haftung, Bremen, Germany

Continuation of Ser. No. 586,992, Jun. 16, 1975, abandoned. This application May 23, 1977, Ser. No. 799,391
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1974, 2429214; Jul. 16, 1974, 2434090
Int. Cl.² B01D *59/44*; H01J *39/34*
U.S. Cl. 250—292 **20 Claims**



1. Electrode apparatus for multipoles, including monopoles, especially for quadrupole mass spectrometers, with one or more pole rods, which have electrically conducting pole surfaces, and with a hollow section serving as the seating for the pole rods, which are capable of being removed, comprising,

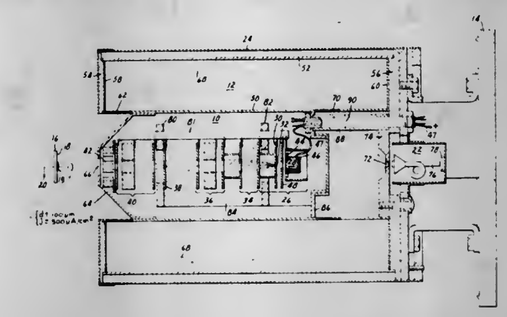
a pipe formed with a plurality of intersecting adjacent inside flat surfaces comprising said hollow section for seating each of said pole rods in contact with intersecting adjacent inside flat surfaces of said pipe in a predetermined precise relationship with said pole rods parallel to one another within a tolerance of a few micrometers, and said pole rods being fitted directly in contact with intersecting adjacent inside flat surfaces of said pipe whereby a line on the surface of each of said pole rods a predetermined distance from said inner surface is precisely parallel to the axis of said pipe to insure a resolution within the range around the mass number **1000** so that it is possible to separate completely adjacent integral mass numbers.

4,117,322

ION SCATTERING SPECTROMETER INCLUDING CYLINDRICAL MIRROR ANALYZER AND ION GUN AXIALLY POSITIONED THEREWITHIN

James T. McKinney, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 712,678, Aug. 9, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,307
Int. Cl.² G01N *23/00*
U.S. Cl. 250—309 **10 Claims**



1. A device for analyzing a surface layer by means of ion scattering spectroscopy comprising

(a) means for producing a beam of primary ions having substantially a single mass and single energy directed along an axis of symmetry toward a target placed at a predetermined position on the axis, the surface of which target is to be analyzed;

(b) a cylindrical mirror analyzer comprising inner and outer cylindrical electrodes electrically insulated from each other and coaxially disposed about said axis, one of which electrodes is positioned inside the other to define a zone of substantially radial electric field therebetween when a potential is applied between the electrodes, the inner cylindrical electrode having means providing an annular entrance aperture positioned to allow ions scattered from said surface at a predetermined angle to enter into the radial field zone and to be deflected thereby, and means providing an exit annular aperture positioned to allow the deflected ions to pass therethrough out of the radial field zone whereupon those ions having a preselected energy are focused upon an axially located conjugate focal point for ions scattering from the target; and

(c) detector means for determining the ion current of such scattered ions as have said preselected energy, wherein

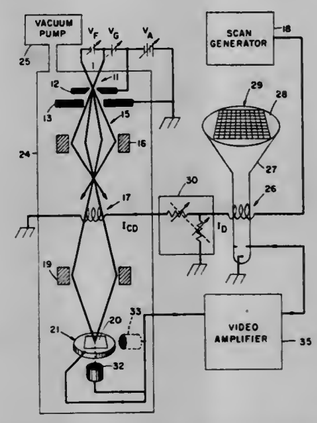
the ion beam producing means comprises an electron bombardment type ion source in which the generation and extraction of ions in said ion beam is accomplished in the absence of magnetic fields, said ion source including means for supplying electrons into said ionization chamber and a plurality of substantially cylindrical members for extracting said ions from said chamber and for accelerating and focusing said extracted ions into an axially directed beam, all of which ion source members are axially positioned within the inner cylindrical electrode of the analyzer, the analyzer further comprises an exit aperture plate positioned normal to the axis and substantially enclosing the end of the inner cylinder adjacent the exit annular aperture and having an energy resolving aperture at said conjugate focal point and the detector means comprises an ion detector axially positioned adjacent the energy resolving aperture to receive ions passing therethrough, whereby the axial placement of the ion source within the analyzer enables the device to be compact, readily retrofitted into pre-existing apparatus while also enabling the ready production of an ion beam which can be focused onto a target and deflected onto selected portions of the target, and also enables the placement of said ion detector adjacent the said energy resolving aperture such that scattered ions of a selected energy which are focused by the analyzer through a cross-over point at the conjugate focal point, thereby maximizing the resolution of the analyzer, impinge onto the detector.

4,117,323

ELECTRON MICROSCOPES

Raymond Thomas Greer; Bradley Harold Vale, and David Michael Martin, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa

Filed Mar. 7, 1977, Ser. No. 774,869
Int. Cl.² G01M *23/00*
U.S. Cl. 250—311 **7 Claims**



1. In a beam microscope including means for generating and directing a beam toward a sample, a housing for said generating means and said sample; means for generating a vacuum in said housing; apparatus comprising: detector means including a semiconductor photodiode for sensing optical luminescence from said sample in response to the impingement thereon by said beam and for converting said sensed luminescence to a representative electrical signal; means for mounting said detector means in said vacuum housing immediately adjacent said sample whereby said luminescence falls directly on said photodiode; low-noise amplifier means in circuit with said photodiode for amplifying the signal generated by said photodiode in response to incident optical luminescence; means for mounting said amplifier immediately adjacent said photodiode within said vacuum housing; conductor means coupled to the output of said amplifier means for coupling said output electrical signal through said housing; and display means coupled to said conductor for generating a visual image responsive to said electrical signal.

4,117,324

CURVE FOLLOWER DEVICE

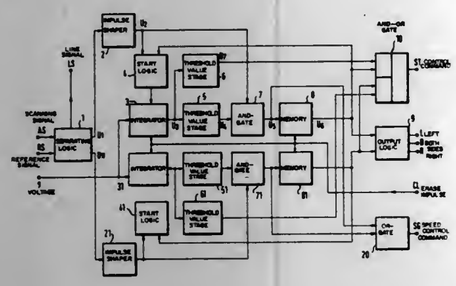
Erwin Francke, Munich, Germany, assignor to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik, Waldkirch, Germany

Filed Mar. 17, 1977, Ser. No. 778,608

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1976, 2618165

Int. Cl.² G05B *1/00*

U.S. Cl. 250—202 **12 Claims**



1. In a curve follower device having an optical scanner head circularly scanning a guide region containing a guide line and separate code region provided at least on one side of the guide region, the measurement point of the head being a predetermined distance from its pivot point in the direction towards the guide line and the head being movable along the guide region at a speed considerably slower than the scanning speed and being connected to a control device which forms from the signals delivered by the scanner head, control signals for the movement of the scanner head along the guide line, while in the code region marks associated with the guide line as detected by the scanner head are provided in order to initiate further control commands in the control device, the length of the marks being greater than the width of the guide line, the improvement wherein said control device comprises means for stopping the scanner head, after the end of a mark in the code region is detected, only after the head has travelled a predetermined further distance which is not longer than the interval of the measurement point from the pivot point.

4,117,325

OPTICAL OBJECTIVE FOCUS INDICATOR AND DISPLAY

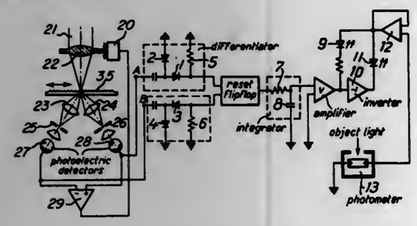
Werner Holle, Wetzlar, and Walter Bletz, Braunfels, both of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Germany

Continuation of Ser. No. 711,462, Aug. 5, 1976, abandoned. This application Oct. 26, 1977, Ser. No. 845,666

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1975, 2537482

Int. Cl.² H01J *39/12*; G01J *1/42*

U.S. Cl. 250—209 **1 Claim**



1. In an apparatus comprising an optical objective, a scanning disk or a scanning plate and first and second photoelectric detectors all located along optical axes for indicating the focus of said optical objective which projects an image of an object onto said scanning disk or scanning plate for pupil division of the image into imaging beams, and projection of said imaging beams onto said photoelectric detectors, each of which generates an electrical impulse where a phase difference between said pulses is a measure of the degree of said focus of the objective, the improvement comprising first and second differentiators connected respectively to said first and second photoelectric detectors, a reset flip-flop having first and second input terminals connected respectively to said first and second differentiators and an output terminal, an integrator connected to said output terminal, an amplifier connected to said integrator, a first and a second light emitting diode, said first light emitting diode connected to said amplifier and said second light emitting diode connected to an inverter connected to said amplifier, a voltage follower connected to said first and second light emitting diodes, and means for photoelectrically measuring the object brightness, said means connected to said voltage follower for adjusting the median luminosity of said light emitting diodes in dependence on the object brightness.

4,117,326

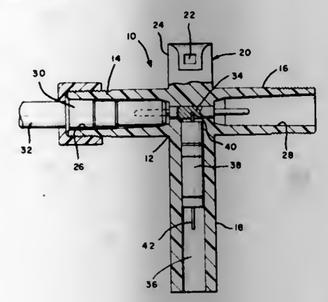
ION GENERATOR

Jan Philip Askman, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1977, Ser. No. 818,909

Int. Cl.² H01T *19/04*

U.S. Cl. 250—324 **5 Claims**



1. An ion generator comprising a substantially T-shaped housing having a pair of cross bar portions and a centrally depending leg portion, each said cross arm portion and said leg portion of said housing having a recess therein, a fixed pin contact interconnecting said recesses in said cross arm portions and adapted to engage electrical connectors inserted therein, a resistive element inserted into said recess of said leg portion electrically and mechanically engaging said pin, and means to fixedly mount said housing.

4,117,327

INFRARED DEVIATION MEASURING DEVICE

Pierre Marie Louis Lamelot, Ville d'Avray, and Roland Georges Mousson, Soisy sur Seine, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

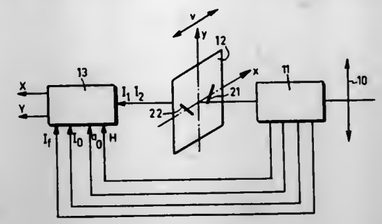
Filed Jul. 5, 1977, Ser. No. 813,186

Claims priority, application France, Jul. 8, 1976, 76 20947; May 31, 1977, 77 16574

Int. Cl.² G01J *1/00*

U.S. Cl. 250—338 **5 Claims**

1. A deviation measuring device for localizing an infrared radiation source relative to an optical axis, comprising a focalization lens, a linear scanning device, two threadlike detectors non-parallel to the scanning direction and non-parallel therebetween in the focal plane of the lens and a processing circuit for deriving from the output signals of said detectors signals characteristic of co-ordinates X and Y of the source in a reference system centered on the optical axis, said scanning device comprising means for delivering pulses defining respectively a time origin and the end of a scanning period and a reference pulse



indicative of the arrangement of the threadlike detectors, said pulses being applied to the processing circuit.

4,117,328

INFRARED RADIATION SENSITIVE IMAGE PICK-UP DEVICE

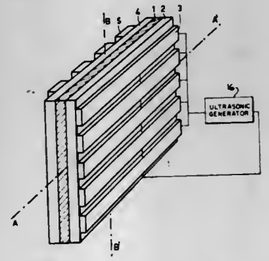
Michel Joseph Auphan, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1977, Ser. No. 793,864

Claims priority, application France, May 26, 1976, 76 15986

Int. Cl.² H01J *31/49*

U.S. Cl. 250—330 **6 Claims**



1. An infrared imaging device comprising first and second piezoelectric sheets of material each having a ferroelectric transition temperature for storing thermal information, means for point-wise reading said thermal image by point-wise conversion into electric readout signals, and means for exciting said piezoelectric material without loss of the piezoelectric properties thereof including a first strip electrode comprising parallel strips of electrically conductive material on one surface of said first sheet, means connecting said strips sequentially to an electrical pulse generator for introducing piezoelectrically stimulated ultrasonic vibrations in said first sheet, an electrically conductive foil on the other surface of said sheet, means to maintain said foil at a fixed electric potential, the second sheet of piezoelectric material being positioned parallel to the said foil and supporting on the surface remote from the first sheet a second strip electrode having strips in a direction differing from the direction of the strips of the first strip electrode, said strips being connected to a network comprising means for signal detection.

4,117,329

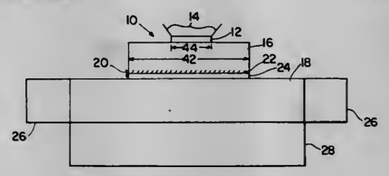
ROOM-TEMPERATURE, THIN-FILM, PBS PHOTOCONDUCTIVE DETECTOR HARDENED AGAINST LASER DAMAGE

Melvin R. Kruer, Oxon Hill, Md.; Leon Esterowitz, Springfield, Va.; Filbert J. Bartoli, Upper Marlboro, Md., and Roger E. Allen, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1977, Ser. No. 790,130

Int. Cl.² G01J *1/00*; G01T *1/22*

U.S. Cl. 250—338 **16 Claims**



1. A thin-film infrared detector hardened against damage from laser irradiation comprising:

a thin film of material sensitive to infrared radiation;

a thin substrate upon the front-surface of which said thin film is deposited, said substrate having a high thermal conductivity to provide efficient heat flow from said thin film through said substrate, said substrate having a surface area that is large relative to the absorbing area of said thin film so that heat generated by irradiation will be distributed transversely within said substrate;

a heat sink; and

an interface of negligible thermal impedance between said substrate and said heat sink for removing heat from said substrate.

4,117,330

GAMMA RADIATION DETECTOR

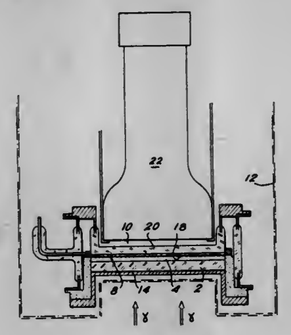
Alain Lansiart, Gif-sur-Yvette; Jean-Pierre Morucci, Pins-Justaret, and Alain Seigneur, Choisel, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 21, 1977, Ser. No. 789,627

Claims priority, application France, Apr. 27, 1976, 76 12427

Int. Cl.² G01T *1/20*

U.S. Cl. 250—361 R **5 Claims**



1. A gamma radiation detector, wherein it comprises a xenon crystal, a xenon atmosphere above said xenon crystal, a pair of electrodes comprising two metallic electrodes on either side of the xenon crystal, the first electrode being brought to negative potential (cathode) and located in the vicinity of one face of the xenon crystal and the second electrode brought to positive potential (anode) is placed parallel to the cathode in the xenon atmosphere and means for visualising photons emitted in the

gaseous xenon atmosphere, whereby the face of the xenon crystal in the vicinity of the cathode is arranged in such a way that it receives the gamma radiation to be measured.

4,117,331

IMAGE TRANSLATION DEVICES

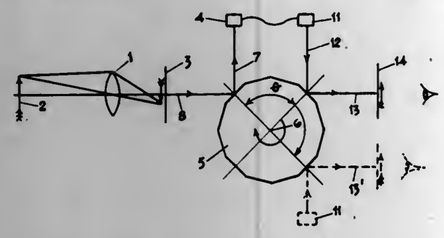
William George Moore Wilson, Blackwater, and Douglas Edward Stewart, Frimley Green, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed May 2, 1977, Ser. No. 792,742

Claims priority, application United Kingdom, May 5, 1976, 18414/76

Int. Cl.[2] H01J *31/49*

U.S. Cl. 250—334 **12 Claims**



1. An image translation device comprising an object field, a rotatable substantially regular polygon having peripheral facets differently angled with respect to the axis of rotation of said polygon for scanning said object field in strips, an opto-electrical transducer for receiving optical signals reflected by said facets and converting them into electrical signals, an image field, a rotatable substantially regular polygon having peripheral facets differently angled with respect to its axis of rotation for scanning said image field in strips, an electro-optical trancsducer for receiving said electrical signals and coverting them into optical signals for reflection to said image field, the two transducers being coupled together electrically for the transmission of optical signals from said object field to said image field, and said facets being angled in such manner that the two facets respectively scanning the object field and the image field at any instant have complementary angles for effecting image inversion between the object field and the image field.

4,117,332

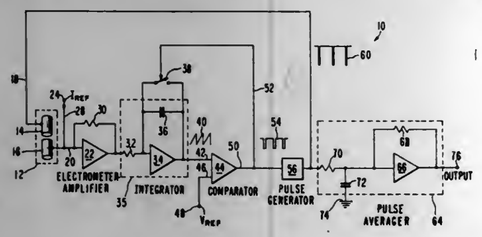
CIRCUIT FOR LINEARIZING THE RESPONSE OF AN ELECTRON CAPTURE DETECTOR

John Robert Felton, Antioch, and Russell S. Gutow, Jr., Foster City, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 26, 1976, Ser. No. 661,467

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—374 **8 Claims**



1. In combination with an electron capture detector of the type including an electron capture cell having a pair of spaced electrodes, means for introducing a gas to be analyzed into said cell; an improved circuit for applying polarizing pulses to said cell and deriving an output signal indicative of the concentration of an electron capturing component of said gas, said circuit comprising:

an electrometer-amplifier;

a source for providing a reference current;

means for combining said reference current with the current output from said cell generated in response to said polarizing pulses, and for providing the combined current to said electrometer-amplifier to thereby provide an output signal from said electrometer-amplifier indicative of the difference between said reference and cell currents;

an integrator connected to receive the output signal from said electrometer-amplifier, said integrator producing a linear change of voltage with time output signal, the rate of voltage change with time being proportional to the magnitude of said electrometer-amplifier output signal;

a comparator connected to compare the output signal from said integrator with a fixed reference voltage for generating a triggering pulse output signal when said integrator output signal equals said fixed reference voltage;

means connected to receive said comparator output signal for resetting said integrator upon the occurrence of a triggering pulse at said comparator;

pulse generator means coupled to said comparator for generating pulses in response to triggering pulses from said comparator;

means connecting said pulses from said pulse generator means in feedback relationship to said cell to provide a pulsed polarizing potential across said electrodes in accordance with the frequency of the pulses produced by said pulse generator means; and

pulse averager means connected to the output of said pulse generator means for producing an output voltage signal proportional to said pulse frequency.

4,117,333

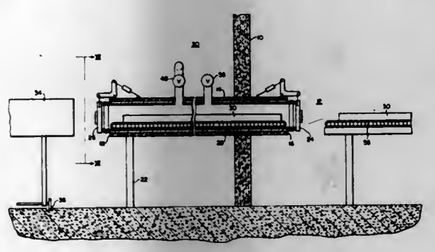
NUCLEAR FUEL ELEMENT LEAK DETECTION SYSTEM

Clarence D. John, Jr., Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1977, Ser. No. 792,288

Int. Cl.[2] G01T *1/185*; G01M *3/04*; G01T *3/00*

U.S. Cl. 250—380 **10 Claims**



1. A method for removing nuclear fuel elements from a fabrication building while testing the fuel elements for leaks and without releasing contaminants from said fabrication building comprising:

opening a first door to a compartment extending into said fabrication building;

completely loading said fuel element through the opening of said first door and into said compartment;

closing and sealing said first door thereby completely sealing said fuel element in said compartment;

evacuating said compartment;

activating a particle detecting mechanism connected to said first compartment for detecting the presence therein of particles that have emanated from said fuel element;

opening a second door to said compartment if said particle detecting mechanism does not detect gas and removing said fuel element through the opening of said second door and from said compartment without releasing contaminants from said fabrication building; and

opening said first door to said compartment if said particle detecting mechanism does detect gas and removing said fuel elements through said opening of said first door and from said compartment without releasing contaminants from said fabrication building.

4,117,334

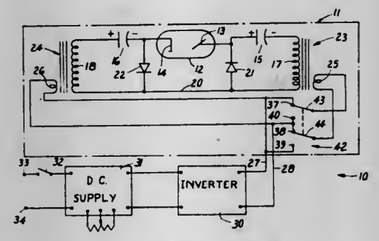
PORTABLE X-RAY UNIT WITH SELF-CONTAINED VOLTAGE SUPPLY

Eric J. Strauts, Park Ridge, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Apr. 11, 1977, Ser. No. 786,373

Int. Cl.[2] G03B *41/16*

U.S. Cl. 250—402 **3 Claims**



1. In X-ray apparatus, a portable unit including an X-ray tube having a cathode and an anode, means for supplying alternating current to said unit at a relatively low voltage level and high voltage transformer means having primary and secondary winding means in said unit for transforming said alternating current to a high voltage applied between said cathode and said anode of said X-ray tube, said unit comprising: capacitor means, diode means, first connection means for applying said AC current to said primary winding means, and second connection means interconnecting said secondary winding, capacitor and diode means and said anode and cathode of said X-ray tube for operation in a first mode in which said capacitance means are charged to a high potential during each cycle of said alternating current and in which a substantially constant corresponding potential is maintained between said anode and said cathode of said X-ray tube, said diode means comprising first and second diodes each having a cathode and an anode, said capacitance means comprising first and second capacitors each having first and second terminals, and said second connection means including a first connection between said anode of said X-ray tube and said cathode of said first diode and said first terminal of said first capacitor, a second connection between said cathode of said X-ray tube and said anode of said second diode and said first terminal of said second capacitor and a third connection between said anode of said first diode and said cathode of said second diode with said secondary winding means being connected to said third connection and to said second terminals of said first and second capacitors, the AC voltages measured with reference to said third connection being in the same phase at said second terminals of said first and second capacitors in said first mode of operation in which a substantially constant potential is maintained between said anode and said cathode of said X-ray tube said portable unit further comprising phase switching means associated with at least one of said connection means for selective operation in a second mode in which the charge voltage developed across said capacitance means is added to the alternating voltage developed across said secondary winding means to produce a pulsating voltage applied between said anode and said cathode of said x-ray tube.

4,117,335

X-RAY DIAGNOSTIC GENERATOR FOR THE PURPOSE OF FLUOROSCOPY AND PHOTOGRAPHY

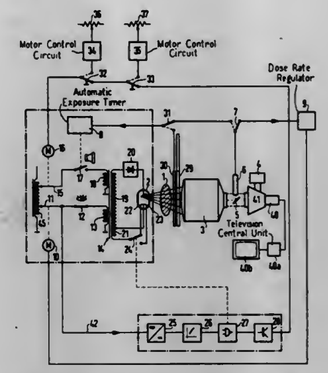
Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 11, 1977, Ser. No. 823,714

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1977, 2701433

Int. Cl.[2] G03B *41/16*

U.S. Cl. 250—402 **1 Claim**



1. X-ray diagnostic generator for the purpose of fluoroscopy and photography comprising an image intensifier, an installation for regulating the dose rate during fluoroscopy, adjustment means for determining the photographic exposure x-ray tube voltage, an automatic exposure timer and a function generator to which a signal is supplied corresponding to the respective fluoroscopy x-ray tube voltage, which forms from the signal an output signal for controlling the adjustment means for the photographic exposure-x-ray tube voltage, and in which the characteristic of the photographic exposure voltage is programmed as a function of the fluoroscopy voltage, characterized in that hand switches (32, 33) are provided by means of which the adjustment means (16) for the photographic exposure-x-ray tube voltage can be selectively connected to a nominal value selector (36) for a fixedly predetermined photographic exposure-x-ray tube voltage which is high in comparison with the photographic exposure-x-ray tube voltage automatically adjusted for a patient of average constitution, or which can be connected to a nominal value selector (37) for a photographic exposure-x-ray tube voltage which is low in comparison with the x-ray tube voltage automatically adjusted for a patient of average constitution.

4,117,336

COMPUTERIZED RADIOGRAPHY WITH MEANS TO PROCESS ONLY SELECTED SIGNALS

Stephen Ronald Bates, Bourne End, England, assignor to EMI Limited, Hayes, England

Filed Apr. 6, 1977, Ser. No. 785,186

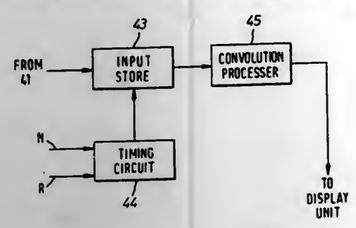
Claims priority, application United Kingdom, Apr. 15, 1976, 15515/76

Int. Cl.[2] A61B *6/02*

U.S. Cl. 250—445 T **9 Claims**

1. Radiographic apparatus including means for proejcting radiation through a body along a plurality of coplanar sets of paths, each set including paths distributed across a substantial region of said body in said plane, and the paths of each set being orientated at a respective angle, or mean angle, in the plane, detector means for detecting the radiation emergent from the body along each path and processing means for processing output signals derived from said detector means and indicative of the absorption suffered by the radiation on tra-

versing the paths of some only of said sets to evaluate the absorption coefficient, with respect to said radiation, at each of



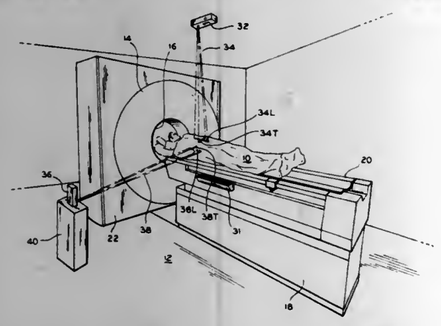
a plurality of locations distributed over a predetermined region in the plane.

4,117,337

PATIENT POSITIONING INDICATION ARRANGEMENT FOR A COMPUTED TOMOGRAPHY SYSTEM

Peter Francis Staats, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 3, 1977, Ser. No. 848,275
Int. Cl.² G03B *41/16*
U.S. Cl. 250—445 T **11 Claims**



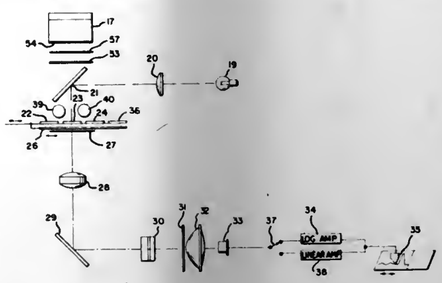
1. An arrangement for indicating the staged position of a patient in relation to a first scan of a computed tomography system and for examining the patient with penetrating radiation such as x-rays, the arrangement including a source of an x-ray beam and a detector disposed about a generally vertical gantry having a generally cylindrical opening for receiving the patient, said system including a generally horizontal patient supporting table which is translatable along the longitudinal axis generally centered within the opening of the gantry wherein the table is displacable from an initial staged position outside of the gantry to a predetermined position within the gantry for the first scan of the patient and the table is further displaceable for the purpose of disposing additional layers of the patient into the path of the x-ray beam, said arrangement comprising a first energy beam source located so as to project a first visible pattern on the surface of the patient prior to the patient being translated into said gantry and said first pattern corresponding to the location of the first scan of said system when the patient-supporting table is subsequently translated into said gantry.

4,117,338

AUTOMATIC RECORDING FLUOROMETER/DENSITOMETER

Robert F. Adrion, Big Flats, N.Y.; Robert T. Buck, Raleigh, N.C., and William R. Eppes, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 24, 1977, Ser. No. 800,004
Int. Cl.² G01N *21/38*
U.S. Cl. 250—461 R **22 Claims**



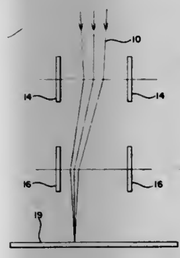
1. An instrument for analyzing light fluorescing from samples excited by ultraviolet light comprising:
a light detector responsive to light fluorescing from a sample and producing an output representing the intensity of said light,
a recording device, the output of said detector being connected to said recording device for recording the intensity of light fluorescing from said sample,
an integral viewer having a hood shielding a sample from ambient light and an opening for observation of light fluorescing from said sample, and
an ultraviolet light source positioned so that ultraviolet light from the same source can excite a sample which fluoresces light incident upon said light detector and can excite a sample which fluoresces light observed through said viewer.

4,117,339

DOUBLE DEFLECTION ELECTRON BEAM GENERATOR FOR EMPLOYMENT IN THE FABRICATION OF SEMICONDUCTOR AND OTHER DEVICES

John Edmond Wolfe, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 1, 1977, Ser. No. 812,421
Int. Cl.² H01J *37/14*; 313 *336;442;361;426*
U.S. Cl. 250—492 A **11 Claims**



1. A system for exposing a sensitized surface to a variable electron beam, said system comprising:
a target positioning means to hold said sensitized surface;
an electron beam source means to generate an electron beam along a path to said target positioning means;
an electric potential means mounted along said path to accelerate said beam toward said target positioning means;

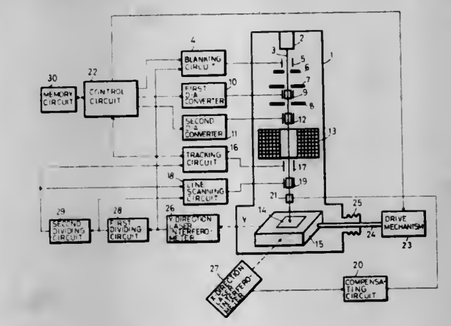
a magnetic focusing means mounted along said path to provide a magnetic focusing field between said electron beam source means and said target positioning means such that the image focal distance is, quantitatively longer than the related object focal distance, said focusing means including electromagnetic means to provide sufficient magnetomotive force to focus said beam on a sensitized surface at said target positioning means;
first deflection means mounted along said path between said magnetic focusing means and said target positioning means to deflect said electron beam from said path; and
second deflection means mounted along said path between said first deflection means and said target positioning means to deflect said electron beam in a direction opposite from that of said first deflection means such that said redeflected electron beam is parallel to said path.

4,117,340

ELECTRON BEAM EXPOSURE SYSTEM

Eiichi Goto, Fujisawa; Takashi Souma, Kiyose; Masanori Idesawa, Wako, and Kazumitsu Tanaka, Akishima, all of Japan, assignors to Rikagaku Kenkyusho and Nihon Denshi Kabushiki Kaisha, Tokyo, both of, Japan

Filed May 31, 1977, Ser. No. 801,812
Claims priority, application Japan, Jun. 11, 1976, 51-69103
Int. Cl.² H01J *37/20*
U.S. Cl. 250—492 A **9 Claims**



1. An electron beam exposure system comprising a source for emitting an electron beam; means comprising two aperture plates having multi-sided openings and an electron beam lens and a first deflecting means located between said two aperture plates, said electron beam lens serving to focus the image of the first aperture plate on the second aperture plate, said first deflecting means serving to vary the shape and size of said electron beam cross-section through the combined interceptive action of said two aperture plates; an electron optical system for converging and projecting the electron beam thus shaped onto a workpiece; a driving means for shifting the workpiece continuously in a selected direction; and a second deflecting means for deflecting the electron beam in a narrow band range on the workpiece more or less perpendicular to said selected direction.

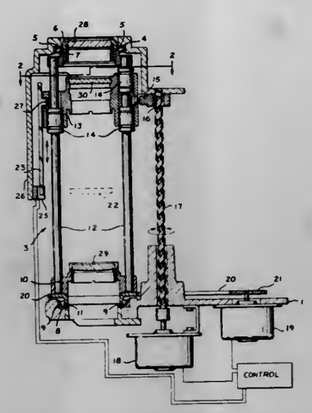
4,117,341

CONTROL MEANS

Staffan B. Persson, Kenmore, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 2, 1976, Ser. No. 710,774
Int. Cl.² G01N *21/30*; A61B *3/00, 3/10*
U.S. Cl. 250—561 **4 Claims**

1. In an apparatus having a member moveable in first and second directions along a first path, a reference position along said first path, drive means to move said member along said first path in either of said first and second directions and selectively activatable control means operably connected to said drive means for returning said member to said reference position, the improvement comprising, an occluder connected to said member and moveable along a second path in response to movement of said member, one end of said occluder being positioned at a location along said second path when said member is at said reference position, an energy beam interesecting said second path at said location, detecting means for detecting said energy beam and including signal generating means, said occluder interrupting said energy beam when said



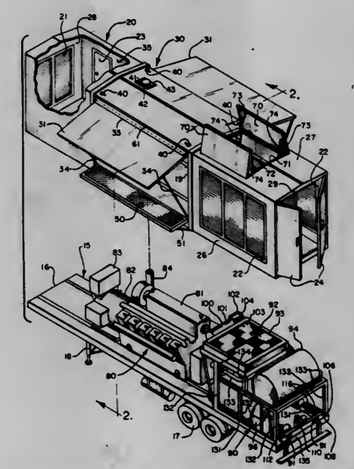
member is spaced from said reference position in said first direction, said control means, when activated, stopping said drive means in response to a change in the signal from said generating means and said control means, when activated, driving said member in said first direction when said signal indicates the presence of said energy beam and driving said member in said second direction when said signal indicates the absence of said energy beam.

4,117,342

UTILITY FRAME FOR MOBILE ELECTRIC POWER GENERATING SYSTEMS

Joseph F. Melley, Jr., Davie, Fla., assignor to Melley Energy Systems, Fort Lauderdale, Fla.

Filed Jan. 13, 1977, Ser. No. 759,212
Int. Cl.² H02P *9/04*
U.S. Cl. 290—1 A **7 Claims**



1. An improvement for use in a mobile electric power generating system including a substantially enclosed trailer having a

substantially flat bed and a power plant secured to said bed, comprising:

a utility frame, movable independently of said power plant, adapted to be mounted on said bed; said utility frame having means defining a fuel storage tank region, a start-up energy storage tank region, a radiator region, and a power plant support apparatus region; and

support systems for said power plant including a fuel storage tank secured at said fuel storage tank region, a start-up energy storage tank secured at said start-up energy storage tank region, a power plant support apparatus secured at said power plant support apparatus region, and coolant storage means secured relative to said utility frame and movable therewith; at least some of said support systems for said power plant being at least partially interconnected prior to said utility frame being mounted on said bed and prior to said support systems being connected to said power plant.

4,117,343

TURBO-MACHINE PLANT HAVING OPTIONAL OPERATING MODES

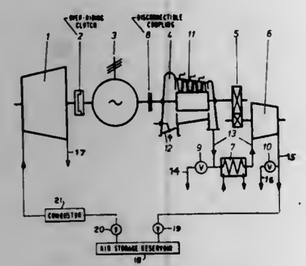
Hans Hoffeins, Viernheim, Fed. Rep. of Germany, assignor to Brown Boveri-Sulzer Turbomaschinen AG., Zurich, Switzerland

Continuation of Ser. No. 515,058, Oct. 15, 1974, abandoned. This application Dec. 15, 1976, Ser. No. 750,702

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1973, 2355789

Int. Cl.[2] F02C *9/04*

U.S. Cl. 290—52 **7 Claims**



1. In the method for rapidly changing over from a first to a second operational mode of a gas turbine plant which includes a synchronous electrical machine that can be operated optionally either as a motor or generator, and a compressor and a gas turbine connectible to said electrical machine, wherein during said first operational mode serving for the compression of air the electrical machine operating as a motor is connected to and drives the compressor while the gas turbine remains out of operation, and wherein during said second operational mode serving for generation of electrical power the electrical machine operating as a generator is connected to and is driven by the gas turbine while the compressor remains out of operation, the improvement wherein the changeover from the first to the second operational mode includes the steps of converting the compressor to operation at a low power absorption level from the electrical machine which remains operational as a motor, and then connecting the gas turbine to the electrical machine when the turbine reaches synchronous speed.

4,117,344

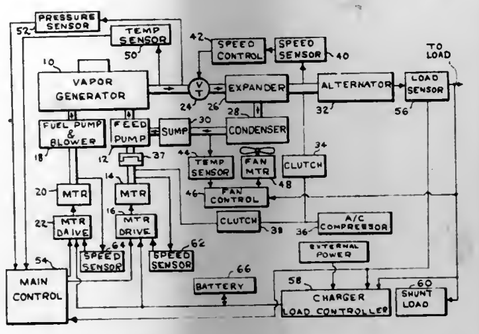
CONTROL SYSTEM FOR A RANKINE CYCLE POWER UNIT

Leslie H. Boerstler, Valley Forge; Walter V. Discenza, Jr., Lionville, both of Pa.; Mason D. Marvin, Cincinnati, Ohio, and Theodore J. Ebersole, King of Prussia, Pa., assignors to General Electric Company, Fairfield, Conn.

Filed Jan. 2, 1976, Ser. No. 646,275

Int. Cl.[2] F01D *15/10*; H02P *9/04*

U.S. Cl. 290—52 **4 Claims**



1. A control system for an external combustion power system having a vapor generator for vaporizing motive fluid, a prime mover driven by said vaporized motive fluid, and an alternator driven by said prime mover comprising:

means for sensing the electrical load on said alternator;

means responsive to said load sensing means for adjusting the flows of fuel and air to said vapor generator;

means responsive to said load sensing means for adjusting the flow of motive fluid to said vapor generator;

means for sensing the temperature of said vaporized motive fluid as it leaves said vapor generator;

means for sensing the pressure of said vaporized motive fluid as it leaves said vapor generator;

means responsive to said temperature and pressure sensing means for moderating the flow of fuel and air to said vapor generator; and

means responsive to said pressure sensing means for moderating the flow of motive fluid to said vapor generator.

4,117,345

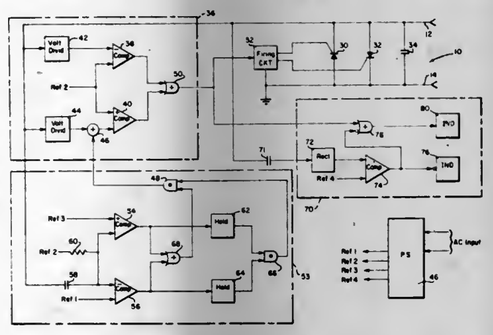
MARINE GROUND ISOLATOR

Orville Balcom, 24521 Walnut St., Lomita, Calif. 90717

Filed Aug. 22, 1977, Ser. No. 826,851

Int. Cl.[2] H01B *7/28*

U.S. Cl. 307—95 **10 Claims**



1. A ground device adapted for use in a ground connection so as to selectively allow the flow of current therethrough, said device comprising:

switch means connected in series between two portions of said ground connection for providing a low impedance connection therebetween only in response to an applied control signal; and

means for monitoring the potential between said portions of the ground connection and for applying a control signal to said switch means only when the dc potential between said portions of the ground connection is outside of a preselected voltage range or when the ac potential therebetween exceeds a preselected value.

4,117,346

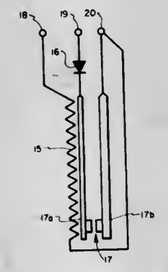
THERMAL POWER SUSTAINING SWITCH

Eldon W. Burgess, 3343 Marinda Way, Salt Lake City, Utah 84121

Filed Dec. 2, 1976, Ser. No. 746,849

Int. Cl.[2] H01H *7/06, 37/52, 61/02*

U.S. Cl. 307—117 **8 Claims**



1. A thermal power sustaining switch having a divided circuit consisting of two branches connectable to an existing switch as an appendage thereto comprising:

(a) A first branch of the divided circuit containing a heating element connectable in series between the existing switch and an electrical device and adapted to heat the thermal power sustaining switch and provide a flow of electricity through said first branch when the existing switch is in a closed position, and

(b) a second branch of the divided circuit connectable in parallel with the first branch and the existing switch between the power input line to the existing switch and an electrical device, said second branch containing, in series an isolating device consisting of one or more diodes and a thermal switch such that when the thermal switch is closed electricity will flow through said second branch.

4,117,347

CHARGED SPLITTING METHOD USING CHARGE TRANSFER DEVICE

Thomas Hornak, Los Altos, and Richard C. Lucas, Portola Valley, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 678,277, Apr. 19, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,772

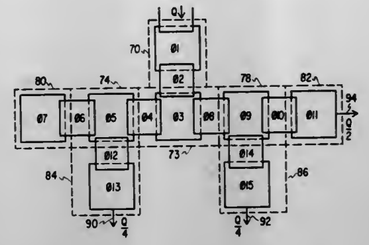
Int. Cl.[2] G11C *19/28*; H01L *29/78*

U.S. Cl. 307—221 D **12 Claims**

2. A method for splitting charge comprising the steps of:

splitting a quantity of charge Q into a first plurality of first charge portions;

splitting the first plurality of first charge portions into a second plurality of second charge portions;



combining a plurality of the second plurality of second charge portions to form a combined charge portion; and

applying the combined charge portion as an output.

4,117,348

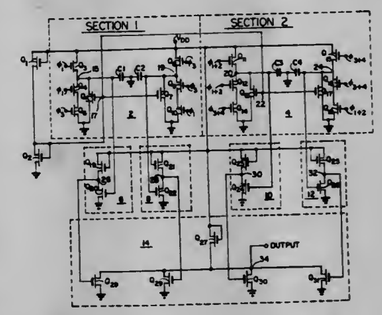
MULTI-PHASE CLOCK MONITOR CIRCUIT

Francis L. Newman, El Toro, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 11, 1977, Ser. No. 814,246

Int. Cl.[2] H03K *5/18, 19/00*

U.S. Cl. 307—232 **18 Claims**



1. A circuit to test the reliability of the clocks comprising a multi-phase clock system to repeatedly switch between first and second recurring clock signal levels, said circuit including:

source means to provide a plurality of reference potentials, first charge storage capacitance means,

means by which to precharge said first charge storage capacitance means during a first phase time interval,

first and second multi-terminal semiconductor devices connected in electrical series to form a first conditional discharge path between said first charge storage capacitance means and said source means,

the control terminal of said first multi-terminal device connected to a first of said multi-phase clocks to be tested,

the control terminal of said second multi-terminal device connected to a second of said multi-phase clocks to be tested,

a third multi-terminal semiconductor device connected between said first charge storage capacitance means and said source means to form a second conditional discharge path,

said first charge storage capacitance means remaining charged during a second phase time interval when each of said first and second clocks to be tested switches between the first and second signal levels or said first charge storage capacitance means discharged via one of said first or second conditional discharge paths during the second phase time interval when one of said first and second clocks to be tested fails to switch between the first and second signal levels,

output terminal means responsive to the charge of said first charge storage capacitance means, and

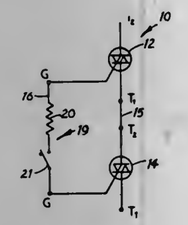
means to selectively connect said output terminal means to said source means to receive a first of said reference potentials when said first charge storage capacitance means remains charged to thereby indicate clock reliability or to selectively connect said output terminal means to said source means to receive a second of said reference potentials when said first charge storage capacitance means is discharged to thereby indicate a clock failure.

4,117,349

SOLID STATE ALTERNATING CURRENT SWITCHING DEVICE

Eduard Karl Ott, 7427 NE. 144th Pl., Bothell, Wash. 98011

Division of Ser. No. 523,226, Nov. 13, 1974, Pat. No. 4,006,367.
This application Oct. 20, 1976, Ser. No. 734,196
Int. Cl.² H03K *17/72*
U.S. Cl. 307—252 B **7 Claims**



1. A solid state alternating current switching device, comprising:

a pair of triacs connected directly in series;

said triacs each having a nonconductive state and a conducting state;

said triacs each having a gate terminal and main terminals identified as T_1 and T_2 respectively, wherein the designation of T_1 and T_2 correspond to the same main terminals in each triac and wherein the triacs are connected in series with the T_1 terminal of one triac interconnected directly with the T_2 terminal of the other triac;

an isolated circuit directly interconnecting the gate terminals; and

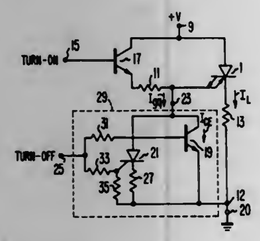
said circuit having means for selectively permitting an internal gate current to be conducted through the circuit between the gate terminals to change the triacs from their nonconducting states.

4,117,350

SWITCHING CIRCUIT

Martin Aaron Kalfus, Morganville, and Hans Werner Becke, Morristown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,219
Int. Cl.² H03K *17/72*
U.S. Cl. 307—252 C **10 Claims**



1. A circuit for turning-off a gate-turn-off controlled rectifier having a gate electrode, and having a main current path connected between a first terminal for receiving an operating voltage and a second terminal for receiving a reference voltage, comprising:

a third terminal for receiving a turn-off signal;

thyristor means having a main current path connected between said gate electrode and said second terminal and having a control electrode connected to said third terminal for conducting a major portion of the initial peak gate current that attends the turn-off of the gate-turn-off controlled rectifier through its main current path in response to said turn-off signal; and

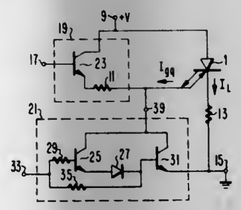
transistor means having a main current path connected between said gate electrode and said second terminal, and having a control electrode connected to said third terminal for conducting a predetermined limited portion of said gate current through its main current path in response to said turn-off signal, to reduce the voltage drop between said gate electrode and said second terminal when said gate current is insufficient to supply this predetermined limited magnitude and thereby completing the turn-off of said gate-turn-off rectifier.

4,117,351

TRANSISTOR SWITCHING CIRCUIT

Martin Aaron Kalfus, Morganville, and Dale Milton Baugher, Flemington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,221
Int. Cl.² H03K *17/72*
U.S. Cl. 307—252 C **12 Claims**



1. A circuit for turning-off a gate-turn-off controlled rectifier having a gate electrode, and having a main current path connected between a first terminal for receiving an operating voltage and a second terminal for receiving a reference voltage, comprising:

a third terminal for receiving turn-off signals;

first transistor means having a main current path connected between said gate electrode and said second terminal, and having a control electrode;

second transistor means having a main current path connected between said gate electrode and said control electrode of said first transistor means, and having a control electrode;

first biasing means for supplying current from said third terminal to the control electrode of said second transistor means in response to each one of said turn-off signals, said second transistor means responding to the current supplied to its control electrode by lowering the relative impedance of its main current path to conduct current to the control electrode of said first transistor means, said first transistor means responding to the current supplied to its control electrode by lowering the impedance of its main current path to conduct a predetermined limited magnitude of current from said main current path of the gate-turn-off controlled rectifier through said gate electrode thereof; and

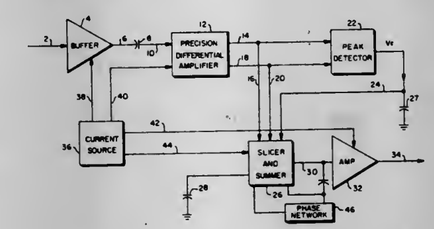
second biasing means for supplying current from said third terminal to the control electrode of said first transistor means in response to each one of said turn-off signals, said first transistor means responding to current from said third terminal to maintain conduction through its main current path when the voltage drop across its main current path is insufficient to maintain said second transistor means in conduction, said first transistor means thereby acting to further reduce the voltage drop between said gate electrode and the second terminal and completing the turn-off of said gate-turn-off rectifier.

4,117,352

INTEGRATED CLOCK DRIVE CIRCUIT

Jay A. Thomas, and Victor J. Stalick, Jr., both of Sunnyvale, Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jun. 9, 1977, Ser. No. 805,204
Int. Cl.² H03K *1/17*
U.S. Cl. 307—269 **10 Claims**



1. In combination, integrated circuit means and discrete circuit means arranged for generating a clock drive signal from a pseudo-ternary signal, which comprises:

buffering means having an output, and having an input connected to receive a digital signal;

coupling means having an output, and having an input connected to the output of said buffering means;

precision gain means having an input connected to the output of said coupling means and having a first output which provides amplified positive excursions and a second output which provides amplified inverted negative excursions of the pseudo-ternary signal;

peak detection means having first and second inputs connected, respectively, to the first and second outputs of said precision gain means, and having an output;

means for storing the peak amplitude output from said detection means, said storing means having an input connected to the output of said peak detection means and having an output;

means for establishing a slicing level amplitude in relation to said peak amplitude, said establishing means having an input connected to the output of said storing means and having an output;

means for slicing the digital signal having first and second inputs, respectively, connected to the first and second outputs of said precision gain means, having a third input connected to the output of said establishing means, and having an output;

means for adjusting the phase of the sliced signal, having an input connected to the output of said slicing means, and having an output; and

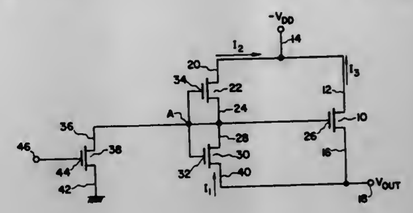
means for increasing the output amplitude of said sliced signal having an input connected to the output of said adjusting means and having an output.

4,117,353

CONTROLLED CURRENT SINK

Walter J. Butler, Scotia, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1976, Ser. No. 753,772
Int. Cl.² H02J *1/04*; H03K *1/12*; G05F *1/56*
U.S. Cl. 307—297 **6 Claims**



1. A controlled current sink comprising:

a main current carrying depletion mode field effect transistor having first and second current carrying electrodes and a control electrode for regulating the amount of current flowing through said current carrying electrodes of said main current carrying transistor;

a first enhancement mode field effect transistor connected between said control electrode and said first current carrying electrode of said main current carrying transistor;

a second depletion mode field effect transistor connected between said control electrode and said second current carrying electrode of said main current carrying transistor; said first enhancement mode field effect transistor and said second depletion mode field effect transistor each including a gate terminal, said gate terminals connected directly together and connected directly to said control electrode of said main current carrying transistor; and

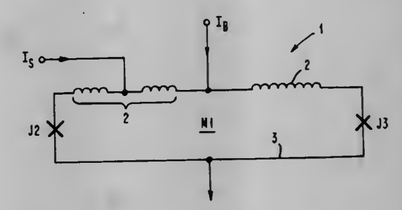
field effect transistor means for selectively grounding said control electrode of said main current carrying transistor, said field effect transistor means including a drain electrode connected directly to said gate terminals and said control electrode.

4,117,354

TWO-PART CURRENT INJECTION INTERFEROMETER AMPLIFIERS AND LOGIC CIRCUITS

Tushar Ramesh Geewala, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,733
Int. Cl.² H03K *19/195*
U.S. Cl. 307—306 **34 Claims**



1. A Josephson tunneling circuit comprising:

an interferometer capable of exhibiting a nonlinear switching characteristic and having at least a pair of junctions capable of carrying Josephson current and at least an inductance interconnecting said junctions, and,

means directly connected to said interferometer for producing said nonlinear switching characteristic.

4,117,355

TEMPERATURE INDEPENDENT TRIGGER PULSE ANALYSIS CIRCUIT

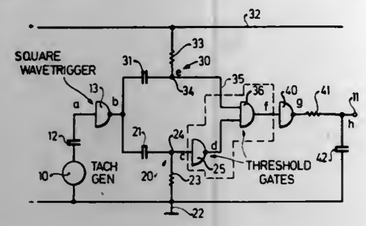
Helmut Fleischer, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 11, 1977, Ser. No. 776,742

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1976, 2610841

Int. Cl.² H03K *17/14*

U.S. Cl. 307—310 **13 Claims**



1. Temperature independent trigger signal analysis circuit in which trigger signals are converted into an output signal having a characteristic representative of the trigger signals and their respective rate or frequency comprising

means (13; 50, 52) generating a train of square-wave pulse representative of said signals;

a first monostable trigger stage (20) including means (13) connected to have said pulses applied thereto and sensing a dropping flank (F_1) of the pulse to set the trigger stage and provide a decaying pulse;

a first threshold sensing stage (25) having a predetermined threshold level, connected to have said decaying pulse applied thereto and providing a first output signal having a time duration representative of the time between occurrence of said dropping flank of the pulses and when the threshold level of the stage is passed by the decaying signal;

a second trigger stage (30) including means sensing a rising flank (F_2) of the pulse representative of said signal to set the second trigger stage, said second trigger stage being connected in parallel to the first trigger stage (20) and providing an increasing pulse;

a second threshold stage (36, 53) having a second predetermined threshold level connected to have said increasing pulse applied thereto and providing a second output signal having a time duration representative of the time of occurrence of said rising flank of the pulses and when the threshold level of the second stage is passed by the increasing signal;

and logic circuit means (36, 40, 41, 42; 54, 55) combining said first output signal and said second output signal from the first and second threshold stages to provide a composite combined output signal in which changes of temperature due to changes in response of the respective threshold circuits are compensated.

4,117,356

ROTOR FOR STEPPING MOTOR

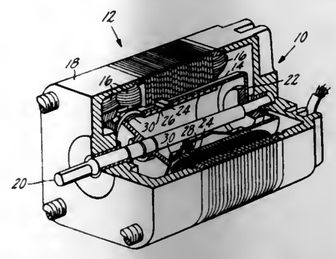
Donald Longworth Mansfield, S. Hamilton, and Walter Ray Woodward, Carlisle, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Jan. 14, 1977, Ser. No. 759,257

Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **5 Claims**

1. A stepping motor of the harmonic drive type comprising a substantially cylindrical rotor having a stiffness characterized by a radially deflectable wall the thickness of which has been



selected in a ratio to the non-deflected rotor diameter in the range of from about 0.50% to about 2.0%.

4,117,357

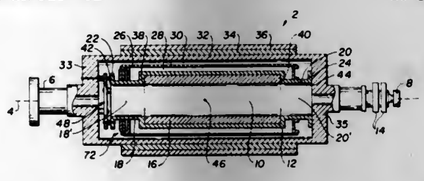
FLEXIBLE COUPLING FOR ROTOR ELEMENTS OF A SUPERCONDUCTING GENERATOR

Kai J. Baumann, Pittsburgh, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 15, 1977, Ser. No. 787,805

Int. Cl.² H02K *9/00*

U.S. Cl. 310—52 **20 Claims**



1. A superconducting rotor comprising:

a plurality of elongate concentric rotor elements;

means for cooling the innermost rotor element; and

means for connecting the rotor elements including means forming the sole support between at least one pair of the rotor elements at at least one end of the superconducting rotor including a ring, first means annularly spaced about the ring for securing the ring to one rotor element of the one pair, and second means spaced between the first means for securing the ring to the other rotor element of the one pair, the ring having an axial thickness sufficiently large with respect to the radial width thereof so that the ring forms a radially and torsionally rigid connection while permitting its out of plane deflection, whereby during operation of the superconducting rotor relative axial movements of the rotor elements of the one pair due to thermal contractions and expansions thereof are accommodated by the ring and the concentricity of the rotor elements of the one pair is maintained.

4,117,358

COMBINED ELECTRICAL AND COOLANT DISTRIBUTION SYSTEM FOR DYNAMOELECTRIC MACHINES HAVING INTERNALLY COOLED STATOR WINDINGS

Carl Flick, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 6, 1976, Ser. No. 748,245

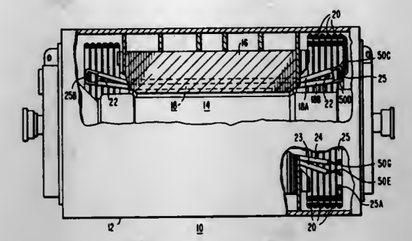
Int. Cl.² H02K *9/08*

U.S. Cl. 310—59 **7 Claims**

1. A dynamoelectric machine comprising:

a stator portion having a core member with a plurality of coils constituting stator windings disposed in said core, said windings having terminating portions with end turn portions disposed intermediate thereto at the ends of said core member, said windings comprising a plurality of electrical conductors and at least one cooling passage capable of passing coolant therethrough; and

a plurality of hollow, electrical conductors, each of which constitutes a phase lead and each of which branches at a



first end into a plurality of conduit members wherein one of said conduit members is electrically and hydraulically connected to one of said windings' terminating portions while the remaining conduit members of each plurality are electrically insulated from and hydraulically connected to at least one of said end turn portions.

4,117,359

BEARING AND DRIVE STRUCTURE FOR SPINNING TURBINE

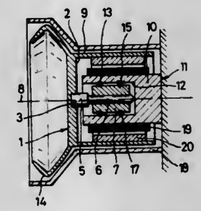
Heinz Wehde, Rothenberg, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Continuation-in-part of Ser. No. 545,292, Jan. 29, 1975, abandoned. This application Jun. 14, 1976, Ser. No. 695,551

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1974, 2404241

Int. Cl.² H02K *7/00*

U.S. Cl. 310—67 R **39 Claims**



1. A bearing and drive structure for a funnel-shaped spinning element of an open-end spinning turbine, comprising:

a stator having a bearing supporting part;

a stationary component of a journal bearing including a bearing bush having an opening for receiving a rotary component, and means elastically mounting said bush to said stator bearing supporting part;

a pin element connected to the spinning element and having an end portion constituting the rotary component received in said opening of said bush;

a rotor having a cup-shaped part enclosing said stator part and having a front end to which said spinning element is connected to rotate with said rotor;

electrical windings on said stator cooperating with said rotor to form an electrical drive for rotating said rotor;

said rotor part having an axially compact configuration for causing its largest central principal moment of inertia to be about its axis of rotation;

said journal bearing stationary component being located within the region enclosed by said cup-shaped rotor part; and

said rotor part being formed to locate the center of gravity of said rotor in a plane normal to the axis of rotation of said stator and at least approximately located between the axial ends of said journal bearing stationary component.

4,117,360

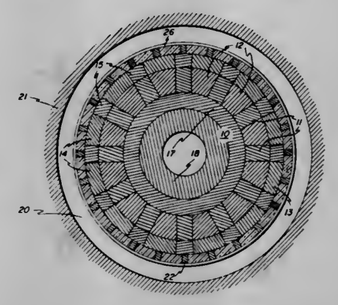
SELF-SUPPORTING AMORTISSEUR CAGE FOR HIGH-SPEED SYNCHRONOUS MACHINE SOLID ROTOR

Eike Richter, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,857

Int. Cl.² H02K *21/12, 3/20*

U.S. Cl. 310—183 **12 Claims**



1. In a high-speed solid rotor machine wherein the rotor comprises:

a cylindrical nonmagnetic hub; a plurality of circumferentially-spaced longitudinally-extending pole pieces affixed to the outer surface of said hub; a plurality of permanent magnets disposed between said pole pieces; a shrink ring surrounding and retaining said pole pieces and permanent magnets; said shrink ring maintaining said hub, pole pieces and magnets in a state of compression over the total operating speed range of the machine, the improvement comprising:

a cylindrical amortisseur cage fabricated of electrically conductive sheet, fitting tightly about and radially-outward of said shrink ring, said cage including circular end portions joined by a plurality of spaced ribs disposed about the circumference of said shrink ring; and

means exhibiting high tensile strength wound circumferentially under tension about said cage for retaining said cage in contact with said shrink ring against centrifugal force when said machine is operating.

4,117,361

SOLVENTLESS IMPREGNATING COMPOSITION

James D. B. Smith, Turtle Creek, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1975, Ser. No. 540,184

Int. Cl.² H02K *3/30;* C08G *59/68*

U.S. Cl. 310—208 **25 Claims**

1. A solventless impregnating composition made by

1. forming a mixture of a liquid diepoxide and about 10 to about 80 phr of the diglycidyl ether of a glycol,

2. adding to said mixture in an amount sufficient to effect its cure a catalyst consisting essentially of a compound having the general formula



where each R group is independently selected from the group consisting of alkyl from C_1 to C_{10}, aliphatic, aryl, alkylaryl, cyclic, and heterocyclic.

13. A conductor wrapped with an insulating tape vacuum-pressure-impregnated with a cured composition according to claim 1.

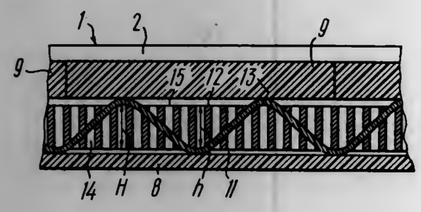
15. A motor having coils comprising a conductor according to claim 13.

4,117,362

RIPPLE-SHAPED TIGHTENING STRIP FOR RETAINING ELECTRIC MACHINE WINDING

Mark Zakharovich Tsirkin, ulitsa Bela Kuna, 22, korpus 2, kv. 59; Viktor Ovshievich Kogan, Varshavskaya ulitsa, 53, kv. 36; Rudolf Semenovich Polyakov, Liteiny prospekt, 64, kv. 27; Jury Leonidovich Presnov, Moskovskoe shosse, 4, kv. 76, and Elina Sergeevna Khanukova, prospekt Maiorova, 45, kv. 20, all of Leningrad, U.S.S.R.

Filed Apr. 19, 1977, Ser. No. 788,924
Int. Cl.² H02K *3/48*
U.S. Cl. 310—214 **7 Claims**



1. An arrangement for retaining windings of an electric machine to restrict movement of the winding bars in radial slots of the core, comprising:
an insulated winding bar disposed in an open slot of the core;
a member retaining said bar extending longitudinally along said slot and spaced from said bar by a clearance;
a ripple-shaped tightening strip disposed in said clearance between said bar and said retaining member and being in a compressed state, said ripple-shaped tightening strip being composed of a rigid insulating, essentially sheet, material and having elastomeric resilient members disposed in the troughs of said rippled-shaped tightening strip.

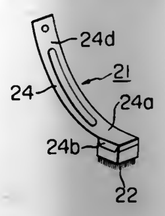
4,117,363

DC MOTOR

Keisuke Honda, 37, Shinyoshi-cho, Toyohashi-shi, Aichi-ken, Japan

Filed Nov. 11, 1976, Ser. No. 740,812
Claims priority, application Japan, Nov. 29, 1975, 50-157200
Int. Cl.² H02K *13/00*
U.S. Cl. 310—219 **2 Claims**

1. A direct current motor, comprising:
a hollow casing having a cylindrical side wall and first and second opposed end walls on opposite ends of said side wall, said casing having aligned holes in said end walls coinciding with the central longitudinal axis of said side wall;
a rotatable shaft disposed along said axis, extending into said casing through said holes, and bearing means secured to each end wall adjacent the corresponding hole for facilitating rotational movement of said shaft with respect thereto;
a rotor assembly comprising a disk disposed within said casing adjacent said first end wall and axially mounted on said shaft for rotation therewith, the periphery of said disk being adjacent the interior surface of the side wall of said casing;
a number of armature coils secured to said disk and extending toward the second end wall of the casing, said coils being equiangularly spaced about said shaft;



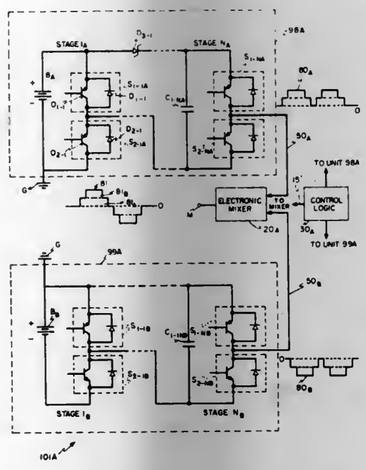
a field magnet structure comprising a plurality of permanent magnets secured to said second end wall of said casing and disposed adjacent to and coaxial with said armature coils;
a commutator comprising a plurality of commutator segments mounted on the inner surface of the side wall of said casing and equiangularly spaced apart with respect to said shaft; and
a corresponding plurality of brushes affixed to said rotor assembly adjacent the periphery of said disk and extending to said commutator, each brush having an arcuate resilient arm and an end portion for slidably contacting the segments of said commutator.

4,117,364

VOLTAGE WAVEFORM SYNTHESIZER AND A SYSTEM THAT INCLUDES THE SAME

Richard H. Baker, Bedford, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 14, 1976, Ser. No. 686,438
Int. Cl.² H02M *7/48*
U.S. Cl. 318—230 **43 Claims**



1. An electronic waveform synthesizer having, in combination:

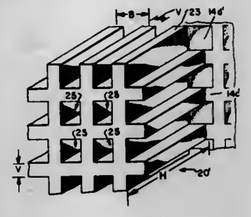
a first unit comprising a stage that includes dc or unidirectional supply voltage means whose output voltage is at the amplitude E and bilateral stage switch means, the bilateral stage switch means serving to control electric current flow in the dc or unidirectional supply voltage means of the stage and serving as well to effect an electrical bypass of the dc or unidirectional supply voltage means of the stage;
a second unit comprising a stage that includes dc or unidirectional supply voltage means whose output voltage is at the amplitude E and bilateral stage switch means, the bilateral stage switch means serving to control electric current flow in the dc or unidirectional supply voltage means of the stage and serving as well to effect an electrical bypass of the dc or unidirectional supply voltage means of the stage;
electronic mixer means connected to the first unit and the second unit, said electronic mixer means comprising a plurality of bilateral mixer switches connected to receive the dc or unidirectional electric potential of the dc or unidirectional supply voltage means of the stage of each unit and operable to process the same in a determined and programmable fashion so that there appears at an output port of the electronic waveform synthesizer a waveform that is alternating in nature even though the supply voltage means of each stage and each unit is dc or unidirectional in nature the output of the electronic mixer means being the output that appears at said output port; and
control logic means that serves to activate the bilateral stage switch means of both the first unit and the second unit, as well as the electronic mixer switch means, in a programmable fashion.

4,117,365

CONTINOUS PHOTOCATHODE FOR X-RAY RADIOGRAPHY HAVING TWO-DIMENSIONAL ARRAY OF APERTURES

Kei-Hsiung Yang, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1977, Ser. No. 759,426
Int. Cl.² H01J *39/06, 31/49*
U.S. Cl. 313—101 **7 Claims**



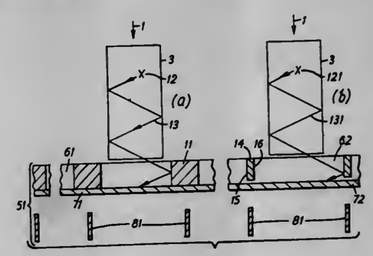
1. Apparatus for X-ray radiography, comprising:
a first conductive planar electrode adapted to transmit a pattern of differentially-absorbed X-radiation, said first electrode having a surface with an array of spaced-apart depressed portions, a raised grid being formed between said depressed portions;
a second conductive planar electrode spaced from, and parallel to, said first electrode;
a sheet of insulative material adjacent a surface of said second electrode facing said first electrode;
a structured photocathode fabricated as a continuous grid of X-ray photoemissive material directly upon the raised grid of said surface of said first electrode facing said second electrode, said photoemissive grid having a two-dimensional array of apertures of substantially constant cross-section formed completely therethrough to said first electrode surface, said apertures being devoid of said photoemissive material and extending substantially parallel to each other and essentially perpendicular to the plane of said first electrode surface;
an avalanche-amplifying gas filling the gap between said insulative sheet and said grid and filling the volume of the apertures of said grid; and
means for forming an electric field between said first and second electrodes;
the photoemissive material of said grid emitting, responsive to said X-radiation, charged particles from the entire surface area thereof, said charged particles interacting with said gas and said field, respectively, for amplification and subsequent collection at said sheet.

4,117,366

RADIATION DETECTORS

Gordon Peter Davis, Sunbury-on-Thames, England, assignor to EMI Limited, Hayes, England

Filed Oct. 30, 1974, Ser. No. 519,218
Claims priority, application United Kingdom, Nov. 3, 1973, 51143/73
Int. Cl.² H01J *39/00, 39/02*
U.S. Cl. 313—95 **4 Claims**



1. A multi-channel pick-up tube having a vacuum envelope with a solid entrance window through areas of which radiation can pass unobstructed to a target on the inside of the window for conversion to electrons and having a plurality of electrodes spaced along the tube length separating the inside of the vacuum envelope into a plurality of separate electron multiplication channels to respective anodes, the ends of the channel separating electrodes extending to adjacent the target and defining entrance apertures of the channels for electrons from the target, in which tube the solid window includes side-by-side within its thickness radiation obstruction regions aligned with respective channel separating electrodes which extend at least partly through the solid window and solid radiation-transmitting window areas each associated with a channel of the tube and which regions obstruct the passage of radiation incident on a said area of the window associated with one channel laterally through the window to a part of the target associated with another channel in which said regions are a baffle for visible light in said entrance window and in which the window is formed by a sandwich assembly of alternate layers of materials which transmit and do not transmit light.

4,117,367

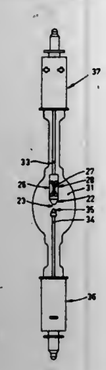
HIGH-PRESSURE DISCHARGE LAMP

Jan Rudolf de Bie; Tjepke Hendrik Ekkelboom; Johannes Jacobus Franciscus Geytenbeek; Willem Lodewijk van Hoorn, and Otmar Schob, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 29, 1975, Ser. No. 600,149
Claims priority, application Netherlands, May 13, 1974, 7406379
Int. Cl.² H01J *1/02, 1/14, 1/38;* H01K *1/04*
U.S. Cl. 313—352 **1 Claim**

1. A high-pressure discharge lamp which comprises a discharge tube and an anode and a cathode, said anode being made of a refractory material including materials selected from

the group consisting of tungsten and tantalum carbide, said anode being made in the desired external shape from a powder of the desired composition by an isostatic compression process, said anode being generally cylindrical with one end generally



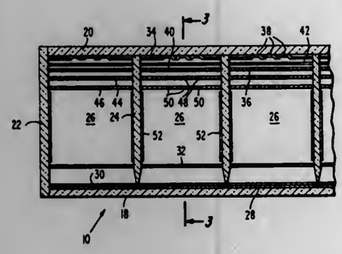
conical and having recesses which are uniformly distributed around the circumference of the cylindrical part, said recesses being bounded by axially extending edges and faces which form parts of the circumferences of said anode, the axes of said edges and faces being parallel to the axis of said anode.

4,117,368

MODULAR TYPE GUIDED BEAM FLAT DISPLAY DEVICE

Frank Jerome Marlowe, Kingston, and Charles Hammond Anderson, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1976, Ser. No. 691,397
Int. Cl.² H01J *29/08, 29/72, 29/50*
U.S. Cl. 313—422 **10 Claims**



10. In an electron display device having an evacuated envelope with a front wall, a plurality of channels extending along the front wall and a phosphor screen along the inner surface of the front wall in each channel, the method of:

generating and directing at least one beam of electrons along each of said channels along a path at least a portion of which extends toward said phosphor screen so that the beam will impinge of the screen.

deflecting the beams in alternate channels transversely across their respective channels in one transverse direction, and

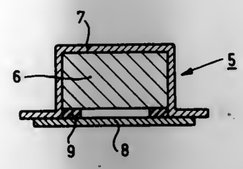
simultaneously deflecting the beams in the other channels transversely across their respective channels in the opposite transverse direction.

4,117,369

HIGH-PRESSURE DISCHARGE LAMP

Gijsbert Kuus, and Adriaan Jan de Ridder, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 20, 1977, Ser. No. 834,955
Claims priority, application Netherlands, Oct. 8, 1976, 7611136
Int. Cl.² H01J *19/68*
U.S. Cl. 313—178 **1 Claim**



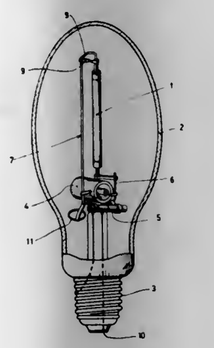
1. A high-pressure discharge lamp having a discharge vessel comprising electrodes between which the discharge takes place during operation, a gas filling and a hydrogen getter in a metal, hydrogen-permeable envelope, characterized in that only that part of the metal envelope of the hydrogen getter which faces the discharge consists of hydrogen-permeable metal.

4,117,370

DISCHARGE LAMP HAVING A GLOW DISCHARGE STARTER WITHIN THE OUTER ENVELOPE

Cornelis Adrianus Joannes Jacobs; Antonius Jozephus Gerardus Cornelis Driessen, and Gerardus Antonius Petrus Maria Cornelissen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1977, Ser. No. 778,013
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 7611934
Int. Cl.² H01J *7/44*
U.S. Cl. 315—35 **2 Claims**



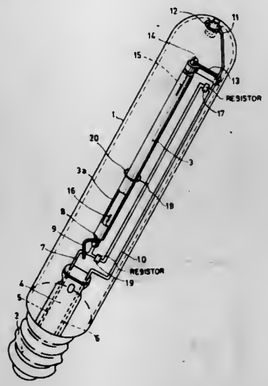
1. A discharge lamp which comprises: a main discharge tube, an outer envelope enveloping said discharge tube, a circuit for starting a discharge in said discharge tube which includes a capacitor belonging to said circuit disposed between said discharge tube and said outer envelope and a glow discharge starter which includes a bimetal strip, said glow discharge starter being disposed between said main discharge tube and said outer envelope, said glow discharge starter being connected electrically in parallel with both said main discharge and said capacitor.

4,117,371

ELECTRIC DEVICE PROVIDED WITH A METAL VAPOR DISCHARGE LAMP

Johannes Adrianus Josephus Maria Van Vliet, and Pieter Hendrik Broerse, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,676
Claims priority, application Netherlands, Jan. 19, 1976, 7600480
Int. Cl.² H01J *7/44, 13/46, 19/78;* H01K *1/62*
U.S. Cl. 315—46 **6 Claims**



1. An elongated discharge lamp which comprises:

a discharge tube;

an ionizable medium in said tube;

a first main electrode disposed at one end of said tube and a second main electrode disposed at the other end of said tube; and

a starting electrode extending about a portion of the circumferential extend of said discharge tube at one axial portion thereof;

said starting electrode being connected via a first resistor to said first electrode and via a second resistor to said second main electrode;

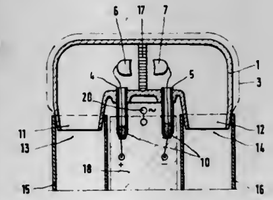
said first resistor having a temperature dependent characteristics which is substantially more positive than said second resistor.

4,117,372

GAS DISCHARGE LAMP WITH DOUBLE-ELECTRODE POWERED THROUGH A RECTIFIER, AND DISCHARGE-TIGHT CROSS-CONNECTION OF THE ELECTRODE CHAMBERS, AND A PROCESS FOR ITS MANUFACTURE

Alfred Walz, Am Kurzarm 7, Emmendingen, Germany (7830)

Filed Nov. 4, 1976, Ser. No. 738,965
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1975, 254919; Oct. 9, 1976, 2645794
Int. Cl.² H01J *7/44, 13/46, 29/19;* H01K *1/62*
U.S. Cl. 315—71 **18 Claims**



1. In a gas discharge lamp, especially of the fluorescent tube type, powered from an A.C. line through a rectifier, with a double electrode arrangement and a discharge-type cross connection of the electrode chambers, the body of said lamp comprising a pair of substantially straight glass tube sections of equal lengths, said lamp further comprising a gas-discharge-tight passage, the improvement wherein

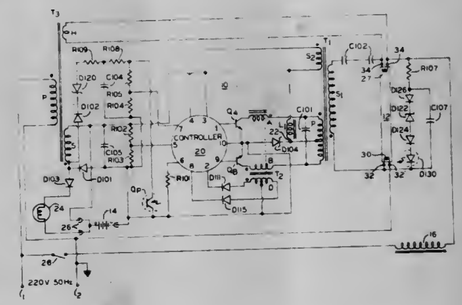
said glass tube sections are prefabricated and are connected by two prefabricated geometrically equal generally U-shaped end pieces, one of said end pieces having extending thereacross a diaphragm, permeable to metal vapor and constituting said gas-discharge-tight passage, a first electrode holder provided on one side of said diaphragm and a second electrode holder on the other side of said diaphragm, and at least one pump nipple tube being provided in a said end piece.

4,117,373

EMERGENCY/NORMAL LIGHTING CIRCUIT FOR A GASEOUS DISCHARGE LAMP

Robert P. Alley, Danville, Ill., assignor to General Electric Company

Filed Apr. 28, 1977, Ser. No. 791,702
Int. Cl.² H05B *41/14*
U.S. Cl. 315—86 **5 Claims**



1. A circuit for operating a gaseous discharge lamp, the circuit comprising:

means including a reactor arranged for connection to a source of AC line voltage for operating the lamp at power frequency during normal conditions when the AC line voltage is above a first predetermined level;

means including an inverter connected to a source of DC electrical energy for starting the lamp during normal conditions and for starting and operating the lamp during emergency conditions when the AC line voltage is below a second predetermined level, the inverter supplying AC electrical energy at a frequency substantially higher than the power frequency;

means for controlling the inverter including a first sensor responsive to a signal related to AC line voltage for turning on the inverter when the AC line voltage is below the second predetermined level and for turning off the inverter when the AC line voltage is above the first predetermined level; and

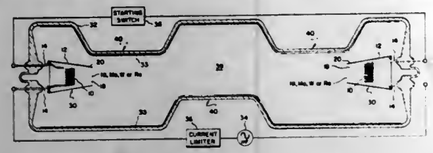
overriding means for turning on the inverter to start the lamp during normal conditions and for turning off the inverter after the lamp is operating from the AC line voltage;

the overriding means including means for monitoring voltage across the lamp and including means for effecting inverter turn-on when voltage across the lamp is above a predetermined level and for effecting inverter turn-off when the lamp becomes operational and the voltage thereacross is below another predetermined level.

4,117,374
FLUORESCENT LAMP WITH OPPOSING INVERSERE CONE ELECTRODES

Harald L. Witting, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 753,771, Dec. 23, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 882,105
Int. Cl.[2] H01J *1/16, 61/09*
U.S. Cl. 315—99 **14 Claims**



1. In an electrode structure, which includes an improved cathode for an electric discharge emanating from substantially a single direction, comprising:
- a refractory metal cylinder, open at both ends and having inner and outer surfaces; and
- an emissive mix coated filament centrally disposed within said cylinder; the improvement wherein
- said cylinder comprises a truncated conical structure having a wide end and a narrow end with the narrow end thereof directed toward the electric discharge, whereby a transition, from a termination of the electric discharge on the filament, to a termination of the electric discharge on the cylinder, is hastened.

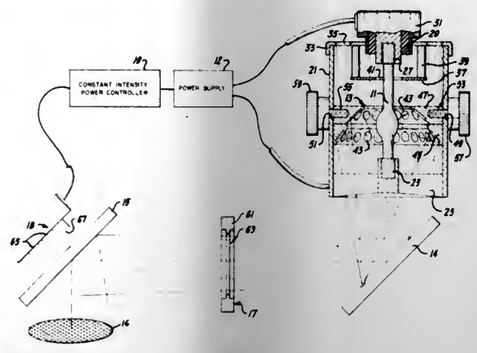
8. A fluorescent lamp comprising:
- a substantially tubular, light-transmissive, evacuable envelope having two ends;
- a fill gas contained within said envelope;
- at least one electrode structure disposed at each end of said envelope, said electrode structure comprising a truncated conical, refractory metal cylinder open at both ends and having a wide end and a narrow end with the narrow end directed substantially toward the end of said tubular envelope opposite that end in which said electrode structure is disposed, said electrode structure also possessing an emission mix coated filament centrally disposed within said cylinder; and
- means for establishing and maintaining an electric discharge between said electrode structures.

4,117,375
EXPOSURE SYSTEM

Gerald Bachur, San Jose, and George E. Richardson, Santa Clara, both of Calif., assignors to Optical Associates, Incorporated, Santa Clara, Calif.

Division of Ser. No. 578,915, May 19, 1975, Pat. No. 4,024,428. This application Dec. 15, 1976, Ser. No. 750,669
Int. Cl.[2] H05B *37/02, 41/38*
U.S. Cl. 315—151 **5 Claims**

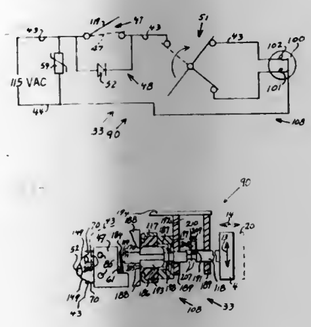
1. An exposure system comprising a short arc mercury lamp, a power supply for driving said lamp at an idle level which optimizes the life of said lamp, means for directing light from said lamp through a light path to an exposure plane, shutter means in the light path for controlling the exposure period during which light from said lamp reaches the exposure plane, light detector means in the light path on the opposite side of said shutter means from said lamp for detecting the intensity in a predetermined wavelength spectrum during the exposure period, said predetermined wavelength spectrum being selected to provide a spectral response which is related to the spectral response of the photosensitive material being exposed in the exposure plane, and a control circuit connected to said power supply, said control circuit being responsive to said light detector means for adjusting said power supply to provide a preselected level of light output from said lamp during the exposure period.



4,117,376
ELECTRIC ENERGY SAVING INCANDESCENT LAMP SOCKET COMBINATION SWITCHING DEVICE

Peter Andrews, 190 Gebhardt Rd., Penfield, N.Y. 14526

Continuation-in-part of Ser. No. 442,082, Feb. 12, 1974, Pat. No. 4,005,334, which is a continuation-in-part of Ser. No. 240,605, Apr. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 25,994, Apr. 6, 1970, abandoned. This application Jan. 24, 1977, Ser. No. 761,665
Int. Cl.[2] H05B *39/04*
U.S. Cl. 315—200 R **21 Claims**

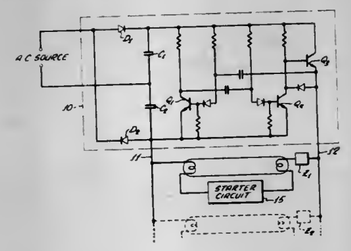


1. An electrical energy saving improved lamp socket switching means for providing a half-wave rectified and a full-wave of electric current to an incandescent lamp, comprising in combination:
- a said lamp contact shell means positioned on a disc-like member of electrical insulating material having at least one electrical contact member means protruding through at least one surface portion thereof for electrical contact with at least one electrical contacting portion of said lamp when said lamp is removably inserted into said shell means;
- said disc-like member being secured to an insulating housing member which substantially houses a first switching means in one portion thereof for switching electric current which is passed thereto by a second switching means, substantially to at least one filament member of said lamp;
- said second switching means having a switch supporting portion substantially housed in at least one portion of said insulating housing member;
- said first switching means having a rod-like member having a first end portion thereof rotatingly supported by at least one electrical insulating member means which is substantially housed in said insulating housing member;
- said first end portion of said rod-like member extends out of and beyond an outer diameter portion of said insulating housing member for manual switching rotation and axial switching movement thereof;
- said rod-like member also having a generally center portion and a generally end portion which has at least one diameter portion thereof coined outwardly to form at least one generally flat ear-like member which substantially slides substantially captively and also axially key-like within a correspondingly matching key-like opening in an insulating rotating member which has a one-piece rotatable electric current conducting contact member which rotatingly contacts at least two radially spaced electric contact members which are constructed from a resilient electrical conducting material;
- said insulating rotating member with said conducting contact member are axially substantially captively retained in one portion of said insulating housing member;
- said second switching means having at least one "off" and "on" electrical switching position and having at least two a first and a second electrical terminal;
- said second electrical terminal is electrically connected ahead of and to one electrical passing member of said first switching means;
- said first and said second said terminal having a half-wave diode electric rectifying means electrically connected thereto for alternatingly passing either a half-wave rectified "dim" or a full-wave "on" portion of said electric current to said first switching means when an outer end edge portion of said rod-like member is axially moved by exerting a manual axial force on said first end portion thereof so that said outer end edge portion will thereby depress and release a switch actuating member of said second switching means;
- said first switching means having an electrical "off" switching position and at least one "on" electrical switching position when said first end portion of said rod-like member is manually switchingly rotated.

4,117,377
CIRCUITS FOR STARTING AND OPERATING IONIZED GAS LAMPS

Bruce D. Jimerson, 2131 Grenadier Dr., San Pedro, Calif. 90732, and Henry H. Nakasone, 1672 Camrose Way, Anaheim, Calif. 92802

Filed Jan. 14, 1976, Ser. No. 648,909
Int. Cl.[2] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **9 Claims**

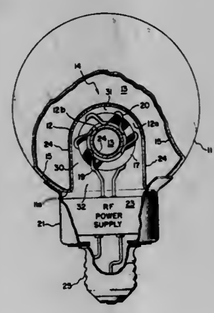


1. A system for operating an ionized gas lamp of the type having a pair of heated filament electrodes comprising:
- capacitor-rectifier doubler means operatively connected to an A.C. source for producing a D.C. potential equal to the peak-to-peak voltage of the A.C. source;
- bidirectional chopper means operatively connected to the output of said capacitor-rectifier doubler for alternately switching the potential across the gas lamp between said D.C. potential and the reference by which it is measured so as to produce a rectangular wave having a frequency at least twice that of the frequency of the A.C. source;
- impedance means operatively connected in series between the output of said chopper means and one of said gas lamp filament electrodes, said impedance means having a value in accordance with the frequency of said chopper means sufficient to limit the current in the ionized gas lamp to a predetermined rated value;
- circuit means operatively connected across said gas lamp filament electrodes for heating said filaments and producing an overall ionization field during starting; said circuit means comprising
- voltage responsive means operatively connected across the electrode of the gas lamp for producing a potential having a magnitude which is dependent upon the state of the gas lamp; and
- starting means operatively connected to said voltage responsive means for heating the filaments of the lamp and for producing an ionization field within the gas lamp prior to starting.

4,117,378
REFLECTIVE COATING FOR EXTERNAL CORE ELECTRODELESS FLUORESCENT LAMP

Homer H. Glascock, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 11, 1977, Ser. No. 776,588
Int. Cl.[2] H05B *41/16, 41/24*
U.S. Cl. 315—248 **10 Claims**



1. In a solenoidal electric field, fluorescent lamp comprising an evacuable, light-transmissive, substantially globular envelope having a channel; a gaseous medium within said envelope adapted to sustain an electric discharge due to an electric field induced therein, said ionizable medium emitting ultraviolet radiation when sustaining said discharge; a closed loop magnetic core having a central opening and being at least partially contained within said channel whereby said core links said gaseous medium; means for inducing said electric field in said gaseous medium; and luminous phosphors disposed on interior surfaces of said envelope and adapted to emit visible light when excited by said ultraviolet radiation; the improvement comprising:
- an ultraviolet-radiation-reflective coating disposed on inner surfaces of said envelope adjacent said magnetic core.

4,117,379

METHOD OF ADJUSTING A MAGNETIC DEFLECTION UNIT OF A CATHODE RAY TUBE, CATHODE RAY TUBE HAVING A DEFLECTION UNIT OR REFERENCE POINTS ADJUSTED ACCORDING TO SAID METHOD, AND A DEFLECTION UNIT PROVIDED WITH REFERENCE POINTS ADJUSTED ACCORDING TO SAID METHOD

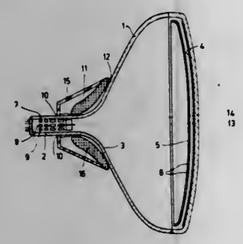
Jan Bijma, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 16, 1977, Ser. No. 807,167

Claims priority, application Netherlands, Jul. 7, 1976, 7607472

Int. Cl.[2] H01J *29/56*

U.S. Cl. 315—370 18 Claims



1. A method of adjusting a magnetic deflection unit around the neck and the funnel-shaped part of the envelope of a cathode ray tube of the in-line-type for displaying color pictures, which neck has three electron guns situated in one plane and in which opposite to said electron guns a display screen is situated, said method comprising sliding the deflection unit around the neck until the desired axial position is obtained, rotating said unit around the axis of the cathode ray tube until the frame and line deflection take place in the desired direction, and centering the side of said unit remote from the display screen substantially around a point on the axis of the central electron gun by generating a dynamic magnetic multipole field by means of the deflection unit, generating an electron beam by means of the central electron gun, and thereafter tilting the side of the deflection unit facing the display screen around the point on the axis of the central electron gun until a dot is displayed on the display screen by the electron beam.

4,117,380

TRANSFORMER ARRANGEMENT FOR SYNCHRONOUSLY SWITCHED VERTICAL DEFLECTION SYSTEM

Willem den Hollander, Schlieren, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1977, Ser. No. 824,101

Claims priority, application United Kingdom, Nov. 15, 1976, 47545/76

Int. Cl.[2] H01J *29/70, 29/76*

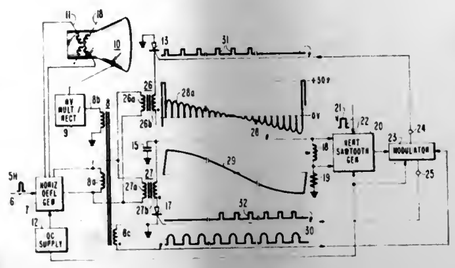
U.S. Cl. 315—393 12 Claims

11. A deflection drive and power supply arrangement for a display transducer, comprising:

line deflection means for producing recurrent line deflection at a line deflection rate;

power supply means including first transformer means the primary of which is coupled to an output of said horizontal deflection circuit for supplying power to a varying load;

field deflection means for applying progressively smaller portions of the energy of said line deflection means to said display transducer during the first part of the field deflection interval and for applying progressively greater portions of the energy of said line deflection means to said display transducer during the second part of the field deflection interval, said energy being coupled from said line deflection means to said display transducer by way of



second transformer means independent of said first transformer means.

4,117,381

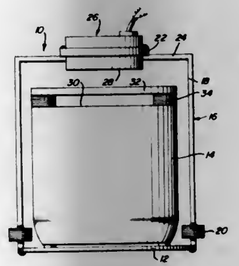
VIBRATOR

Franklin C. Pereny, Lancaster, N.Y., assignor to Stanley Truxell, Lancaster, N.Y., a part interest

Filed Aug. 24, 1977, Ser. No. 827,314

Int. Cl.[2] H02K *33/02*

U.S. Cl. 318—120 6 Claims



1. An electromagnetic device comprising a base, a movable frame yieldably supported on the base, a relatively massive body fixedly secured to the base, magnetic field generating means fixedly mounted on the frame in spaced relation to the body, an armature displaceable under magnetic attraction toward said field generating means, elastically deformable means connecting the armature to the body for yieldably holding the armature spaced from said field generating means by a variable air gap within which a magnetic field is established, a source of electrical energy and control means connecting said source to the field generating means for cyclically establishing said magnetic field to exert said magnetic attraction on the armature.

4,117,382

COMMAND SPEED SIGNAL GENERATION SYSTEM

Masashi Yonemoto, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1975, Ser. No. 628,248

Claims priority, application Japan, Nov. 7, 1974, 49-128617

Int. Cl.[2] G05B *19/02;* H02P *7/18*

U.S. Cl. 318—163 2 Claims

1. A command speed signal generation system for a moving member and more particularly for an elevator car comprising, in combination,

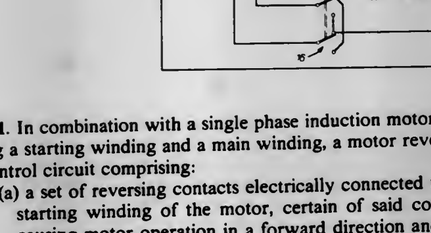
a source of direct current including a pair of poles;

first resistor means connected to one of the poles of said source of direct current;

a plurality of contact sets serially interconnected across said first resistor means, and means for simultaneously closing said plurality of contact sets during the acceleration of a moving member and for successively opening them during the deceleration thereof;

second resistor means connected between said first resistor means and the other pole of said source of direct current;

a Bootstrap circuit including amplifier means having an input connected to the junction of said first and second resistor means;



a first directional element connected between said junction of said first and second resistor means and the input of said amplifier means;

a time delay element connected to said amplifier means at the output thereof; and

discharge means connected between the output of said time delay element and said junction of said first and second resistor means including a second directional element for causing said discharge means to operate only during the deceleration of the moving member.

4,117,383

ELECTRICAL CONTROL CIRCUITS

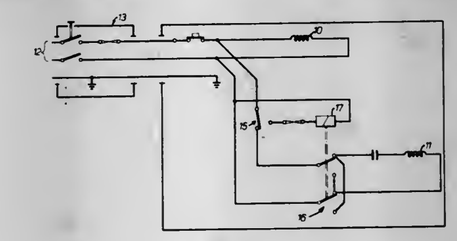
Dennis Malcolm Hussey, and William Martin John Coleman, both of Ross-on-Wye, England, assignors to The Haigh Engineering Company Limited, Ross-on-Wye, England

Filed Apr. 20, 1977, Ser. No. 789,251

Claims priority, application United Kingdom, Apr. 27, 1976, 16987/76

Int. Cl.[2] H02P *1/40*

U.S. Cl. 318—206 A 2 Claims



1. In combination with a single phase induction motor having a starting winding and a main winding, a motor reversing control circuit comprising:

(a) a set of reversing contacts electrically connected to the starting winding of the motor, certain of said contacts causing motor operation in a forward direction and certain other of said contacts causing motor operation in a reverse direction;

(b) an impulse relay connected to said reversing contacts and operable to alternately reverse said contacts; and

(c) a centrifugal switch connectable in a first position between said set of reversing contacts and a source of power and in a second position between said relay and a source of power, whereby at a predetermined motor speed the centrifugal switch moves from its first position to its second position to de-energize the starting winding and energize the impulse relay whereby the contacts are reversed for reversal of the motor at the next energization of same.

4,117,384

TACHOGENERATOR PROCESSING CIRCUITS AND MOTOR SPEED CONTROL SYSTEMS INCLUDING SUCH CIRCUITS

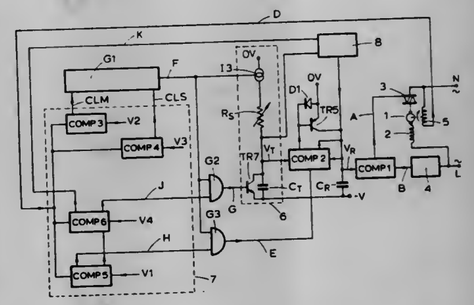
Desmond R. Armstrong, Wallington, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,700

Claims priority, application United Kingdom, Apr. 27, 1976, 17014/76

Int. Cl.[2] H02P *1/04*

U.S. Cl. 318—326 13 Claims



1. A circuit for processing the a.c. output signal of a tachogenerator whose frequency is proportional to the speed of the tachogenerator rotor comprising, voltage level detection means responsive to said a.c. output signal, key pulse producing means responsive to at least one output of the detection means to produce a key pulse in alternate cyclic periods of the a.c. output signal, the duration of said key pulse being inversely proportional to the rotational speed, first gating means responsive to a second output of the detection means and to an output of the key pulse producing means to produce a reset pulse after a predetermined period in the interval between each key pulse, and a voltage generator responsive to each reset pulse to provide a predetermined output level and responsive to each key pulse to ramp that output level at a predetermined rate for the duration of said key pulse, whereby the output level of the voltage generator during each said predetermined period is a predetermined function of the tachogenerator rotational speed.

4,117,385

TRACER CONTROL CIRCUIT

Walter S. Limbach, II, Eighty-four, and George Kusic, Pittsburgh, both of Pa., assignors to Automation Equipment Inc., Pittsburgh, Pa.

Filed Jan. 26, 1977, Ser. No. 762,525

Int. Cl.[2] G05B *19/36*

U.S. Cl. 318—578 10 Claims

1. In a system for controlling the relative movement between a tracer probe and a template comprising:

a tracer probe that bears upon the template and is deflected substantially normal to the surface of the template at the point of contact,

means for producing deflection signals indicative of the deflection of the probe in selected first and second directions,

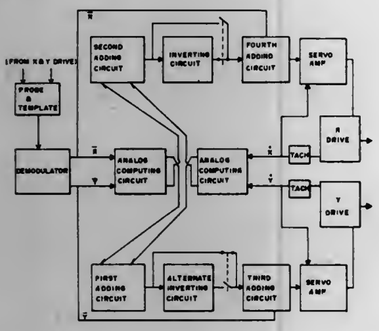
drive means for driving the probe in the first and second directions simultaneously,

means for sensing the speed of the probe moving in the said first and second directions and for producing velocity signals,

the improvement comprising:

an analog computing circuit for computing the vector sum of deflection signals and for computing normalized drive

signals being the deflection signals divided by the said vector sum,
an analog computing circuit for computing the vector sum of the velocity signals and for computing normalized deflection reference signals being the velocity signals divided by the said vector sum,
first summing means adding a scaled normalized drive signal and a scaled normalized deflection reference signal both corresponding to the first direction,
second summing means adding the other scaled normalized drive signal and the other scaled normalized deflection reference signal both corresponding to the second direction;



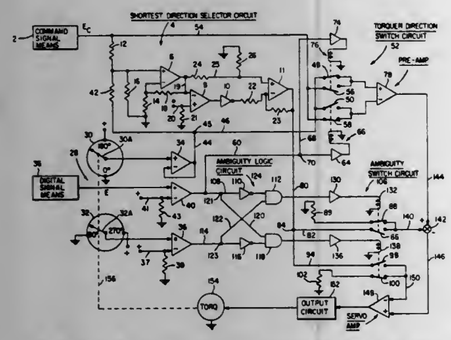
means for inverting the sign of the output of the first summing means;
third summing means for adding a scaled deflection signal corresponding to the second direction to the inverted output of the first summing means,
fourth summing means for adding a scaled deflection signal corresponding to the first direction to the output of the second summing means,
means for controlling the drive means for the first direction with the output of the fourth summing means, and
means for controlling the drive means for the second direction with the output of the third summing means.

4,117,386

DIGITAL CONTINUOUS POTENTIOMETER SERVO FEEDBACK ELEMENT

Richard L. Cohen, Matawan, and Richard J. Anderson, Fairfield, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Jul. 21, 1977, Ser. No. 817,637
Int. Cl.² G05B *1/06*
U.S. Cl. 318—664 **7 Claims**



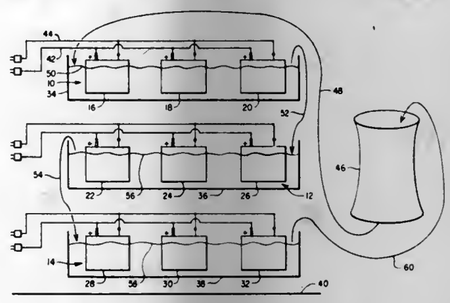
1. A digital continuous servo system feedback device comprising:
a first potentiometer having a displaceable arm and a second potentiometer having a displaceable arm and offset from the first potentiometer by a predetermined electrical angle, and providing a follow-up signal in accordance with the displacement of the arms, the follow-up signal having a waveform with a first zone wherein the signal level increases linearly from zero to maximum and a second zone wherein said signal level decreases linearly from maximum to zero;
means for providing a servo system command signal;
means for providing a digital servo system output signal;
circuit means responsive to the follow-up signal, the servo system command signal and the digital servo system output signal for determining when the command and follow-up signals are not in the same waveform zone, and for determining the shortest displacement of the potentiometer arms to bring said signals into the same zone;
means driven by said circuit means for displacing the potentiometer arms, whereupon the second potentiometer provides the follow-up signal; and
the first and second potentiometers cooperating to determine the zone of the follow-up signal waveform that the servo system is in.

4,117,387

CASCADING-WATER, LEAD-ACID STORAGE BATTERY NEUTRALIZATION FORMING AND CHARGING METHOD

Lawrence Windisch, Selma, Ala.; John Nees, and Harry M. Channing, both of Wyomissing, Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Aug. 3, 1977, Ser. No. 821,527
Int. Cl.² H02J *7/00*; H01M *10/50*
U.S. Cl. 320—2 **12 Claims**



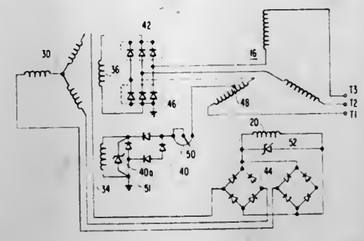
1. A method for producing batteries having plastic cases comprising the steps of:
(a) separating a plurality of batteries into a plurality of sets;
(b) providing a plurality of container means for holding a plurality of battery sets;
(c) placing said sets of batteries into said container means, one set for each container means and electrically interconnecting said batteries in each set for connection to a separate rectifying means for each set;
(d) stacking said plurality of container means at a plurality of positions at different heights above a forming room floor;
(e) connecting each set of said batteries to said separate rectifying means for charging said plurality of batteries in each set;
(f) continuously providing cooling fluid to fill a first container means to a predetermined level, said first container means being positioned at the greatest height above said forming room floor;
(g) causing said cooling fluid to overflow said first container means and to enter a second adjacent container means located below said first container means; and
(h) causing said overflow cooling fluid to enter each adjacent lower container means of said plurality.

4,117,388

ALTERNATING CURRENT GENERATOR

Lawrence R. Roche, Sioux City, Iowa, assignor to Dyna Technology, Inc., Sioux City, Iowa

Filed Jan. 7, 1977, Ser. No. 757,498
Int. Cl.² H02P *9/10*
U.S. Cl. 322—25 **14 Claims**



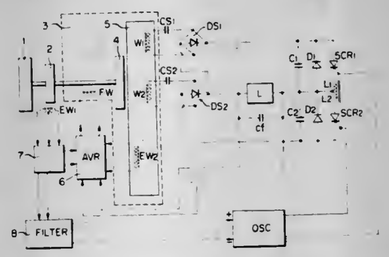
1. A brushless dynamo electric machine comprising:
a generator with a stator winding including a neutral connection at an intermediate point thereof and a rotor field winding;
an exciter including a rotor winding and cooperating control field and compound field windings;
first circuit means including first rectifier means connected to energize said control field winding of the exciter in relation to the voltage of said generator stator winding;
second circuit means including second rectifier means connected to said generator stator winding in close proximity to said neutral connection thereof for energizing said compounding field winding of the exciter in proportion to the amplitude of current in said generator stator winding, and
rotary rectifier means connected to energize said rotor field winding with a D.C. voltage related to the A.C. voltage of said rotor winding.

4,117,389

LOW FREQUENCY HIGH OUTPUT ALTERNATING CURRENT GENERATING DEVICE

Kenji Hazumi, Tokyo, and Katsutoshi Tagami, Asaka, both of Japan, assignors to Sawafuji Electric Co. Ltd. and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed May 28, 1976, Ser. No. 690,857
Claims priority, application Japan, Jun. 10, 1975, 50/70040
Int. Cl.² H02M *5/297*; H02P *9/14*
U.S. Cl. 322—47 **6 Claims**



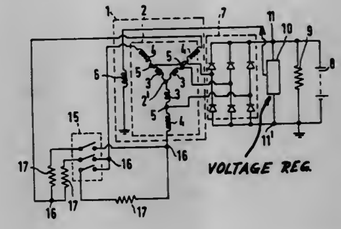
1. An alternating current generating device comprising a high frequency generator having a single inductor which is rotated by an external drive unit, a field winding excited by a DC current, two output windings each providing a continuous wave high frequency output of substantially constant amplitude, rectifying means connected to each of said output windings for rectifying the high frequency output produced in the output windings, conduction control means connected to each of the rectifying means for switching over the output of the rectifying means time selectively alternately to connect to a load, reference signal generating means for applying low frequency control signals to the conduction control means independent of the phase of the high frequency output, said inductor being constructed so as to have a high plurality of teeth and said output windings being magnetically coupled to the inductor, an exciting winding magnetically coupled to the inductor, an output voltage stabilizing means coupled between the exciting winding and the field winding, the voltage stabilizing means responding to the output voltage of the load and providing a corresponding output current which supplies the field winding, said voltage stabilizing means comprising an impedance which varies in accordance with the output voltage of the load.

4,117,390

DOUBLE-VOLTAGE, AUTOMOTIVE-TYPE ALTERNATOR

Yoriaki Iwata, Toyoake, and Suguru Sato, Oobu, both of Japan, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 28, 1976, Ser. No. 709,255
Claims priority, application Japan, Aug. 9, 1975, 50/110183[U]
Int. Cl.² B60L *1/02*
U.S. Cl. 322—90 **6 Claims**



1. Dual-voltage, automotive-type power supply system to provide high-voltage a-c and lower-voltage d-c, comprising
a three-phase a-c generator having an excitable field winding (6, 18, 19);
a stator (2) having a core;
star-connected armature (3, 4) windings on the stator;
the armature windings having first and second armature winding portions (3, 4; 43, 44, 53, 54) which are located on the same stator armature core (2a), and both exposed to the magnetic field from said field winding;
the first armature winding portion (3) having fewer turns and being of larger wire than the second armature winding portion (4);
a three-phase bridge-type multi-element rectifier (7) connected to the first armature winding portion (3) and having output terminals (11, 11') providing low-voltage d-c;
and wherein the two armature winding portions are serially connected, the first armature winding portion (3) being commonly connected to the center or star point (2') of the star connection, the other end terminals being connected to a junction which is common with one end terminal of the other armature winding portion (4) and further to the input of said three-phase bridge-type rectifier (7), the other end terminals of the other armature winding portions (4) forming a-c high-voltage output terminals (16).

4,117,391
CURRENT STABILIZING CIRCUIT

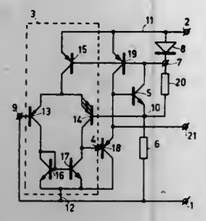
Daniel Johannes Gerardus Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,866

Claims priority, application Netherlands, Mar. 31, 1976, 7603321

Int. Cl.² G05F 1/56

U.S. Cl. 323—4 **10 Claims**



1. A current stabilizing circuit comprising in combination:
a first terminal and a second terminal,
a difference amplifier including a first input connected to the first terminal, a second input, and means which define an offset voltage;
a first resistor connected between the first terminal and the second input of the difference amplifier; and
a first transistor having a drive electrode connected to an output of the difference amplifier and a main current path connected between the second input of the difference amplifier, and an output terminal;
wherein said means which define an offset voltage include a second transistor and a third transistor in which current densities are adjusted to mutually different values and having emitters which are interconnected.

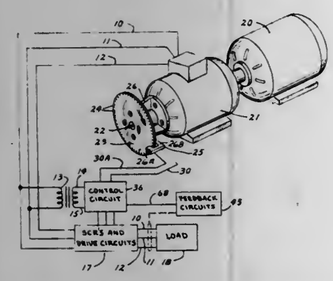
4,117,392
SCR CONTROLLER HAVING INPUT PULSES MECHANICALLY GENERATED BY A SIGNAL SOURCE

Stanley S. Kintigh, Minnetonka, and Clarence D. Lilienthal, Eden Prairie, both of Minn., assignors to Research Incorporated, Minneapolis, Minn.

Filed Jan. 17, 1977, Ser. No. 760,111

Int. Cl.² G05F 1/44, 5/00

U.S. Cl. 323—21 **7 Claims**



6. A controller for providing output signals referenced to a phase angle of a periodic input signal generated from a rotating element, including digital tachometer means coupled to said rotating element to provide a known number of electrical pulses for each revolution of said rotating element, first means providing a first signal during a cycle of the input signal when the input signal is sensed to be at a desired phase angle, digital counter means including reset means responsive to the first signal and being connected to the digital tachometer to deliver a plurality of output signals digitally referenced to the phase of the rotating element and the input signal.

4,117,393
ELECTRONIC MONITORING SYSTEM WITH LOW ENERGY CONSUMPTION IN QUIESCENT STATE

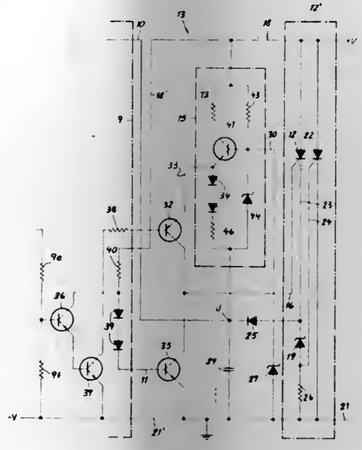
Robert Buck, Kirchbühlweg 128, 7995 Neukirch, Germany

Filed Apr. 14, 1977, Ser. No. 787,496

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616773

Int. Cl.² G05F 1/56

U.S. Cl. 323—25 **12 Claims**



1. An electronic monitoring system comprising:
detector means sensitive to an ambient condition for generating an output signal varying with a change in said condition, said detector means being provided with a pair of power-input terminals;
a voltage-generating network including a storage capacitor and current-limiting means in series therewith, said terminals being connected across said storage capacitor in an energizing circuit for said detector means;
a source of direct current with a pair of supply leads connected across said network for charging said storage capacitor via said current-limiting means, one of said supply leads having an extension included in said energizing circuit;
a current-responsive load in series with said source and said network;
voltage-controlled variable-impedance means in circuit with said source and said load, said variable-impedance means including an electronic control device inserted between said storage capacitor and the other of said supply leads, said control device being provided with an input electrode; and
an operating circuit for said control device including electronic switch means connected between said other of said supply leads and said input electrode, said electronic switch means being provided with input circuitry connected to said detector means for changing the conductivity of said control device in response to variations in said output signal, thereby modifying the energization of said load, said electronic switch means being cut off by said input circuitry under conditions of minimum energization of said load.

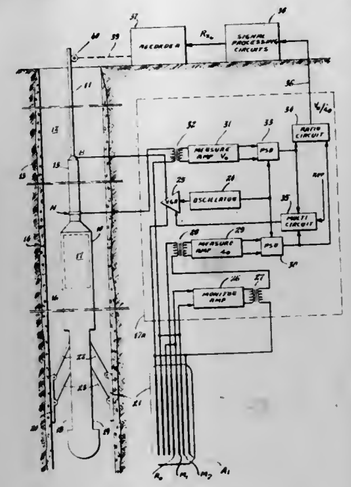
4,117,394
WELL LOGGING APPARATUS WITH PAD-MOUNTED VERTICAL ELECTRODE ARRAY FOR MEASURING THE RESISTIVITY OF THE FLUSHED ZONE

Philippe Souhaité, Paris, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 10, 1977, Ser. No. 805,241

Int. Cl.² G01V 3/18

U.S. Cl. 324—10 **4 Claims**



1. An apparatus for investigating earth formations traversed by a borehole, comprising:
an elongated support member adapted for movement through the borehole;
a wall-engaging rigid pad member carried by said support member and adapted to be urged against the borehole wall;
a plurality of electrodes, at least some of them being linear and mounted on the borehole wall-engaging face of said pad member substantially parallel to the longitudinal axis of said support member and spaced apart along a direction substantially perpendicular to said axis, to form a long narrow array whose dimension in a direction perpendicular to the axis is less than 4 inches and whose dimension in a direction parallel to said axis is substantially three to five times greater than its dimension in a direction perpendicular to the axis;
first circuit means connected to said electrodes for propagating between two electrodes of the pad a survey current primary through the zone of the formation likely to be washed by the borehole fluid; and
second circuit means for measuring said survey current and the potential difference between a remote reference electrode and a point lying between said two electrodes to produce a signal representative of the resistivity of said zone.

4,117,395
DIGITAL STROBOSCOPE-TACHOMETER

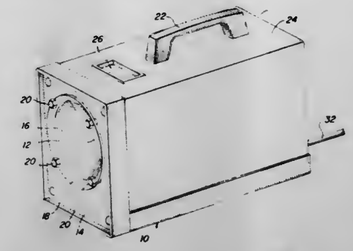
Robert H. Redfield, Evanston, Ill., assignor to Power Instruments, Inc., Skokie, Ill.

Filed May 9, 1977, Ser. No. 795,172

Int. Cl.² F02P 17/00

U.S. Cl. 324—16 T **10 Claims**

1. In a digital stroboscope - tachometer, the combination of, a housing, a flash lamp fixedly mounted in said housing and arranged to direct light flashes from one end of said housing to illuminate a rotating object when said housing is aimed generally in the direction of said rotating object, a manually controllable oscillator within said housing for developing an output signal having a repetition rate equal to the desired flash rate of said lamp measured in revolutions per minute, frequency divider means in said housing and controlled by said output signal for developing a control signal having one-sixtieth the repetition rate of said output signal, means responsive to said control signal for controlling said flash lamp to emit pulses of



light at the repetition rate of said control signal, counter means in said housing, means for periodically energizing said counter means to count the repetition rate of said oscillator output signal, and display means controlled by said counter means for digitally displaying the output of said counter means in revolutions per minute.

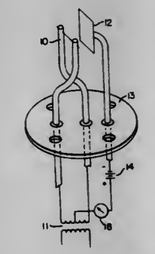
4,117,396
SENSOR FOR THERMALLY IONIZABLE PARTICLES AND/OR VAPORS

Edgar Berkey, Murrysville; William H. Reed, III, Monroeville, and William M. Hickam, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 21, 1974, Ser. No. 435,389

Int. Cl.² G01N 27/00; E21B 11/02

U.S. Cl. 324—33 **2 Claims**



1. A sodium vapor detector, comprising, a heated thermal ionizer means adapted to respond to impinging sodium vapor present in a carrier gas by ionizing sodium atoms to produce positive ions, said thermal ionizer means comprising a heated element having composition characteristics to produce an ion current in accordance with the following equation:

$$I\ (\text{amps}) = \frac{(1.6 \times 10^{-19})\,(\pi DL\nu P_{Na})}{\left(1 + \frac{1}{\exp\,(11606\,[\omega - IP]/T)}\right)}$$

where:
I = measured current, amps
D = element diameter, cm
L = element length, cm
P_{Na} = partial pressure of sodium, atm
ω = work function of the element, V
IP = ionization potential of sodium, V
T = temperature of element, ° K.
$\nu = (3.513 \times 10^{22})\,P\,(MT^{\circ})^{-\frac{1}{2}}$, number of molecules/cm²sec
where:

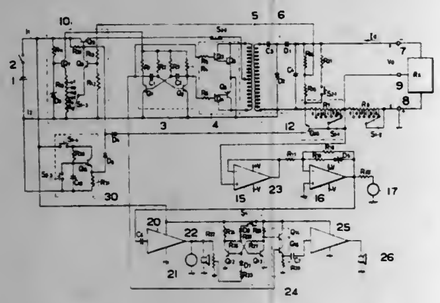
P = gas pressure, mm
M = molecular weight of carrier gas
T° = temperature of carrier gas, ° K.—, and anode means spaced apart from said thermal ionizer means, means for applying an electrical potential between said thermal ionizer means and said anode means to attract said positive ions and establish said ion current flow between said thermal ionizer means and said anode means, the magnitude of said ion current being indicative of the concentration of sodium vapor present at said thermal ionizer means, and means operatively connected to said thermal ionizer means and said anode means to monitor said ion current.

4,117,397

NON-DESTRUCTIVE INSULATION TEST APPARATUS

Isao Fukao, Kodaira, and Kimio Monma, Chigasaki, both of Japan, assignors to Nihon Seimitsu Keisoku, Osaka, Japan

Filed Nov. 5, 1976, Ser. No. 739,137
Claims priority, application Japan, Feb. 20, 1976, 51/17021
Int. Cl.² G01R *31/14*
U.S. Cl. 324—54 **2 Claims**



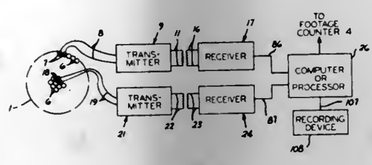
1. An apparatus for non-destructively testing the insulation of a test piece, the insulation characterized by an internal capacitance and comprising:
a DC voltage source;
a voltage controller connected to the voltage source;
an oscillator connected to the voltage controller;
a step-up transformer having a primary side connected to the output of the oscillator, and a secondary side;
a rectifier having an input connected to the secondary side of the transformer and an output adapted to be connected to the test piece for applying a rising d.c. voltage across the insulation of the test piece to cause a charging current to flow into the internal capacitance of the insulation of the test piece;
current limiter means connected to the rectifier and to the voltage controller for continuously operating the voltage controller to initially limit the charging current to a predetermined safe value in response to the instantaneous value of charging current and thereafter maintain the charging current constant and equal to the predetermined value until the d.c. voltage applied across the test piece has been raised to a rated output voltage;
insulation resistance indicating means connected to the current limiter for evaluating the insulation resistance of the test piece from the output current values after the d.c. voltage applied across the test piece has been raised to the rated output voltage and to indicate the insulation resistance value for determining a polarization index for the insulation; and
change-over switch means for changing over and setting the rated output voltage across the test piece in a stepped manner;
whereby the charging of the test piece and the raising of the applied voltage to the rated output voltage can be completed rapidly and a reliable value can be determined for the polarization index.

4,117,398

METHOD AND APPARATUS FOR MEASURING THE FILLING EFFECTIVENESS OF A CABLE DURING FILLING

James Alphus Hudson, Jr., Atlanta; Raymond Alexander Levandoski, Doraville, and Allen Kyle Long, Roswell, all of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 642,852, Dec. 22, 1975, abandoned. This application Nov. 2, 1976, Ser. No. 737,752
Int. Cl.² G01R *27/26*
U.S. Cl. 324—61 R **11 Claims**



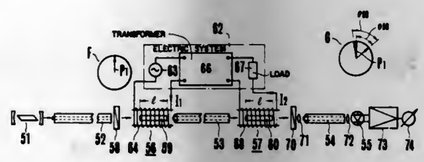
8. Apparatus according to claim 7, wherein the pair of conductors is a first pair of conductors, and further including:
means for continuously charging and discharging the capacitance of a second pair of conductors between upper and lower voltage limits;
third comparator means responsive to the charge on the capacitance of the second pair of conductors reaching a charging limit for generating a signal to reverse the voltage applied to the capacitance;
fourth comparator means for providing an indication when the charge on the capacitance of the second pair of conductors exceeds the upper and lower voltage limits;
means for generating a second pulse train in the absence of such an indication from said fourth comparator means; and
means for counting the pulses generated between such indications, the number of pulses indicating the charging and discharging times of the capacitance of the second pair of conductors.

4,117,399

METHOD AND APPARATUS FOR MEASURING ELECTRIC QUANTITIES BY USING LIGHT CONVERTERS

Yutaka Ono, Tokyo; Yoichi Fujii, Nagareyama; Koji Yokoyama, and Toshifumi Igarashi, both of Tokyo, all of Japan, assignors to Yutaka Ono; Yoichi Fuji and Goro Eto, all of, Japan

Filed Mar. 30, 1977, Ser. No. 782,882
Claims priority, application Japan, Mar. 31, 1976, 51-35591
Int. Cl.² G01R *31/00*
U.S. Cl. 324—96 **10 Claims**



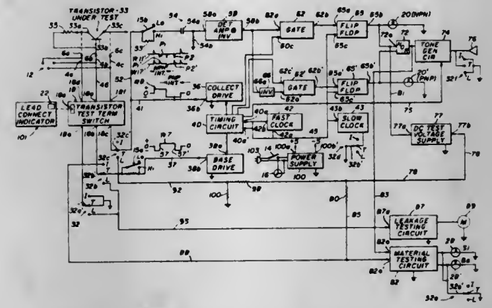
1. A method of measuring an electric quantity comprising the steps of applying an electric input to be measured to an electro-optic light converter including an optical effect element having a characteristic with a linear range in which an output electric signal is produced by said light converter which varies with changes in said electric input to be measured, said electric input to be measured having an amplitude exceeding the linear range of said characteristic, adding the number of the peaks of the output electric signal which reaches a predetermined maximum amplitude to the magnitude of peaks of the output electric signal not reaching said maximum amplitude, and deriving an indication of the sum thereof as a measure of the magnitude of said input electric quantity.

4,117,400

CIRCUIT FOR TESTING TRANSISTORS OR THE LIKE

Harold Feldman, Skokie, Ill., assignor to Dynascan Corporation, Chicago, Ill.

Filed Apr. 29, 1976, Ser. No. 681,487
Int. Cl.² G01R *31/26*
U.S. Cl. 324—158 T **18 Claims**



1. Apparatus for testing the current gain of transistors or the like, said apparatus comprising test device connecting terminals to be connected to the respective terminals of a transistor device or the like to be tested in-circuit or out-of-circuit; an intermittently occurring, load terminal energizing voltage source means; an intermittently occurring, control terminal driving voltage source means; said voltage sources when applied to the proper load and control terminals of transistor devices or the like producing load current transitions indicative of the current gain thereof; means for selectively providing relatively high and low drive levels from the proper connection of said voltage source means to the load and control terminals of the transistor device or the like being tested said low drive level providing a load current transition of at least a given level for transistor devices having a forward current gain only above a given minimum value when the device is in a circuit having a shunting impedance of a given value but fails to provide a load current transition of said given level when said circuit has a very low shunting impedance of a fraction of said value, said high drive level providing a load current transition of at least said given level for most transistor devices having a current gain of at least about said value when the transistor devices or the like are in a circuit providing said very low shunting impedance; and current gain detecting means for detecting and indicating the occurrence of a load current transition of at least said given level.

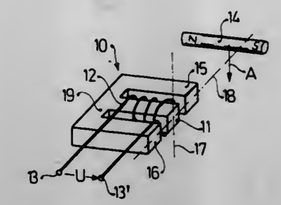
4,117,401

POSITION TRANSDUCER, PARTICULARLY TO DETERMINE THE INSTANTANEOUS ANGULAR POSITION OF A ROTATING SHAFT, ESPECIALLY OF AN INTERNAL COMBUSTION ENGINE

Wolfram Glauert, Bamberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 17, 1977, Ser. No. 778,675
Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620134
Int. Cl.² G01R *33/12, 11/02*
U.S. Cl. 324—208 **9 Claims**

1. Position transducer, particularly to determine the instantaneous angular position of a rotating shaft, comprising
a magnetic element (14) rotating with the shaft and
a fixed pick-up transducer (10) including
a pick-up coil (12) in fixed location with respect to the shaft and in magnetic flux relation with respect to the rotating element (14),
wherein,
the fixed pick-up transducer comprises an E-shaped core having outer legs (15, 16) and a central leg (11, 21, 25), the



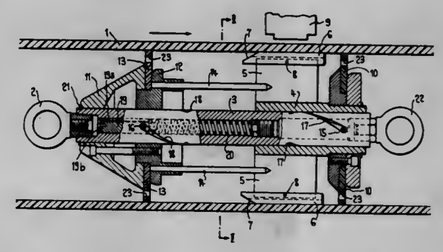
pick-up coil (12) being located on the central leg (11, 21, 25);
and wherein the magnetic element (14) is movable in the plane transverse to the plane of the E-shaped core and has a width less than the spacing between the inner edges of the outer legs (15, 16) to face essentially only the central leg (11, 21, 25) of the core.

4,117,402

APPARATUS FOR MEASURING THE WALL THICKNESS OF A MOVING TUBE WHEREIN AT LEAST ONE MEASURING BODY INSIDE THE TUBE MAY BE LIFTED OFF THE TUBE BY THE MOTION OF THE TUBE

Heinrich Zangger, Orpund, and Heinz Zumbach, Biel, both of Switzerland, assignors to Zumbach Electronic AG., Orpund, Switzerland

Filed May 2, 1977, Ser. No. 793,058
Claims priority, application Fed. Rep. of Germany, May 10, 1976, 2620560
Int. Cl.² G01R *33/12*
U.S. Cl. 324—220 **19 Claims**



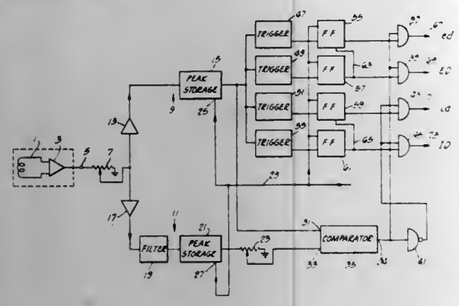
1. Apparatus for measuring the wall thickness of a moving tube, comprising at least one measuring body, a support adapted for location in a stationary position within said moving tube, means for resiliently applying said measuring body against the inner surface of the wall of said tube as the tube moves relatively thereto, a measuring sensor for location externally of the tube wall in order to sense the position of the measuring body and thus the wall thickness of the tube, a holder displaceable relatively to said support in the direction of the axis of the tube and supporting control means arranged to bear against the inner wall surface of the tube and to slide thereon, and mechanical linkage means between said holder and said measuring body, said control means and holder being adapted to be axially displaced relatively to said support by forces transmitted thereto from said tube, and said measuring body being removable from the tube wall through said linkage means upon axial displacement of said holder.

4,117,403

SINGLE MAGNETIC STRAY FIELD SENSOR WHOSE SIGNALS ARE DIFFERENTLY ATTENUATED IN TWO CHANNELS AND THEN COMPARED

Friedrich M. O. Forster, and Alfons Kalisch, both of Reutlingen, Fed. Rep. of Germany, assignors to Institut Dr. Friedrich Forster, Prufgeratebau, Reutlingen, Fed. Rep. of Germany

Filed Mar. 23, 1977, Ser. No. 780,401
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—240 **12 Claims**



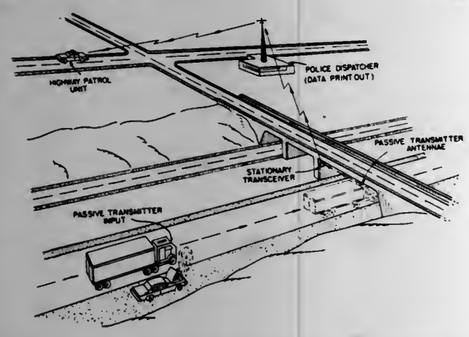
1. A method of magnetic defects inspection of tubes in which the tubes are magnetized and the tube surfaces are scanned by a single magnetic sensing element for magnetic stray fluxes resulting from defects in the tube wall, the stray flux signals generated in the single sensing element being fed to first and second channels, of which the first channel passes analog stray flux signals produced by internal defects and external defects, whereas the second channel passes said stray flux signals of internal and external defects attenuated as compared with those occurring in the first channel, and the signals of the two channels are temporarily stored, which comprises:
storing the analog signals of the first and second channels; and
comparing the stored signals with one another, the location of the defect in the tube wall generating the defect stray flux being determined by the relative magnitude of said signals.

4,117,404

SYSTEM OF COMMUNICATIONS TO ALERT POLICE PERSONNEL OF TROUBLE ON EXPRESSWAYS

Arthur N. Marshall, Richmond, Va., assignor to Traffic Safety Systems, Inc., Richmond, Va.

Continuation of Ser. No. 286,087, Sep. 5, 1972, abandoned. This application Jul. 25, 1975, Ser. No. 599,118
Int. Cl.[2] H04B *7/26*
U.S. Cl. 325—1 **3 Claims**



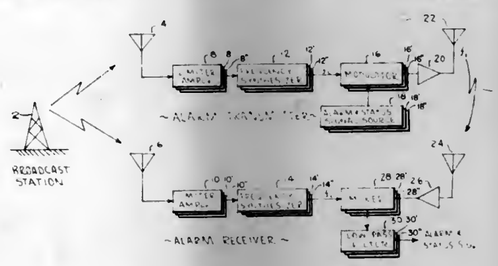
1. A method of notifying a control station for summoning assistance to motorists or vehicles in distress on a highway by an occupant of an approved vehicle, the steps of:
moving the approved vehicle along said highway having predeterminedly spaced transceivers therealong;
actuating a unit on said approved vehicle by an occupant of the approved vehicle when a motorist or vehicle in distress is observed by said occupant to transmit a signaling condition of said unit indicative of the distress situation and of the approved vehicle identification which continues for a predetermined period of time sufficient for said vehicle to pass a said transceiver based on the distance between said transceivers;
signaling by said occupant to the distressed motorist on passing that help is being sent for;
continuing movement of the approved vehicle along said highway until said approved vehicle passes a said transceiver;
receiving said transmitted signaling condition at the said transceiver when said approved vehicle is in range of said transceiver;
responding by the said transceiver automatically to said signaling condition of said unit; and
transmitting by said passed transceiver said signaling condition and the passed transceiver's location automatically to the control station for further handling to bring assistance to the motorist in distress.

4,117,405

NARROW-BAND RADIO COMMUNICATION SYSTEM

Louis Martinez, 12011 Bion Dr., Fort Washington, Md. 20022

Filed Nov. 2, 1976, Ser. No. 737,902
Int. Cl.[2] H04B *1/00, 7/00*
U.S. Cl. 325—58 **9 Claims**



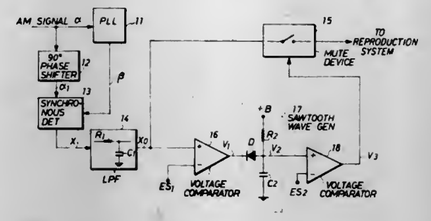
3. A narrow-band radio cummunication system for use in connection with a broadcast signal from an existing radio braodcast station operating on a predetermined carrier frequency, comprising:
(A) a transmitter system comprising:
(1) first means for receiving the broadcast signal,
(2) first frequency synthesizer responsive to the received broadcast signal for generating a first synthesized signal at a frequency locked at a predetermined multiple, other than a unity multiple, of the predetermined carrier frequency of thebroadcast signal,
(3) a signal source for providing an information signal,
(4) means for modulating the information signal on the first synthesized signal to provide a modulated synthesized carrier, and
(5) means for transmitting the modulated synthesized carrier, and
(B) a receiver system comprising:
(1) second means for receiving the broadcast signal,
(2) second frequency synthesizer responsive to the received broadcast signal for generating a second synthesized signal at a frequency locked at the same predetermined multiple of the predetermined carrier frequency of the broadcast signal,
(3) means for receiving the modulated synthesized carrier, and
(4) demodulator means responsive to the second synthesized signal and the modulated synthesized carrier for deriving a detected signal proportional to said information signal.

4,117,406

MUTING ARRANGEMENT FOR AM SYNCHRONOUS DETECTOR USING A PLL CIRCUIT

Susumu Takahashi, Tokyo, and Hiroshi Iida, Machida, both of Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1977, Ser. No. 782,355
Claims priority, application Japan, Mar. 31, 1976, 51-35529
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—348 **7 Claims**



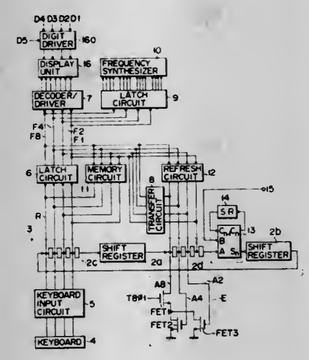
1. A muting system wherein an amplitude modulated signal is connected as input to a phase locked loop circuit, the output of the phase locked loop circuit and the amplitude modulated signal are supplied as inputs to an AM synchronous detector, the improvement comprising:
muting means coupled with the output of said synchronous detector for muting the output from said detector;
first voltage comparing means for comparing the detector output level with a first reference potential level; and
control means coupled between the output of said first voltage comparing means and said muting means for causing said muting means to immediately mute the detector output when the detector output level falls below the first reference potential level and to stop the muting of the detector output after a predetermined retardation when the detector output level exceeds the first reference potential level.

4,117,407

FREQUENCY SYNTHESIZER TUNER

Hiromi Kusakabe, Yokohama, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 29, 1976, Ser. No. 681,698
Claims priority, application Japan, Apr. 30, 1975, 50-52337; Apr. 30, 1975, 50-52341; Apr. 30, 1975, 50-52346; Jul. 18, 1975, 50-52356; Jul. 18, 1975, 50-87919
Int. Cl.[2] H04B *1/06*
U.S. Cl. 325—455 **7 Claims**



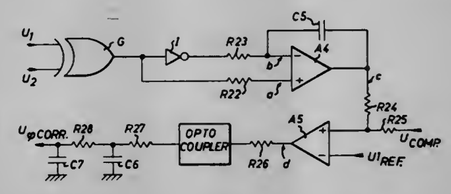
1. A frequency synthesizer tuner comprising a dynamic shift register including first and second shift registers connected in a loop, wherein an information is written into and read out of said dynamic shift register and circulated therethrough by clock pulses, an output circuit including a display unit and a frequency synthesizer to which the information read out of said first shift register is supplied through a latch circuit, a memory circuit connected to the output of the latch circuit and having an output connected to the input of said latch circuit, a transfer circuit connected between said first and second shift registers for transferring the information from the first shift register into the second shift register for repeatedly supplying the information of said output circuit to said second shift register, a refresh circuit connected between said latch circuit and said second shift register, and a keyboard and a keyboard input circuit for applying an input information to said first shift register.

4,117,408

APPARATUS FOR INDICATING THE LOADING OF AN ELECTRIC AC MOTOR

Anders Per Philip Comstedt, Lund, Sweden, assignor to AB Scaniainventor, Helsingborg, Sweden

Filed May 6, 1977, Ser. No. 794,688
Int. Cl.[2] H03D *3/02*; H02P *5/00*
U.S. Cl. 328—133 **1 Claim**



1. An apparatus for producing a signal indicating the loading of an electric AC motor, especially an asynchronous motor, comprising circuit means for producing a first alternating voltage signal of fixed phase position relative to the motor current and a second alternating voltage signal of fixed phase position relative to the motor voltage; phase detector means coupled to said circuit means for generating a train of pulses of a width proportional to the phase difference between the first and second alternating voltage signals; rectifier means for generating a direct voltage signal of a magnitude proportional to the amplitude of the motor voltage; and means connected to said phase detector means and said rectifier means for generating the load indicating signal; said means connected to said phase detector means and said rectifier means including pulse width modulating means for modulating the pulse width of the pulses in the pulse train from said phase detector means by means of the direct voltage signal from said rectifier means, and a low-pass filter receiving the output signal of said pulse width modulating means for generating the load indicating signal; said pulse width modulating means including a circuit integrating the output signal of said phase detector means and the complementary signal thereof for generating a trapezoidal wave form signal, an adding circuit for adding the trapezoidal wave form signal and the direct voltage signal of said rectifier means, and a comparator for comparing the output signal of said adding circuit with a reference signal and generating a binary signal for supplying said low-pass filter.

4,117,409

SIGNAL SAMPLING SYSTEM

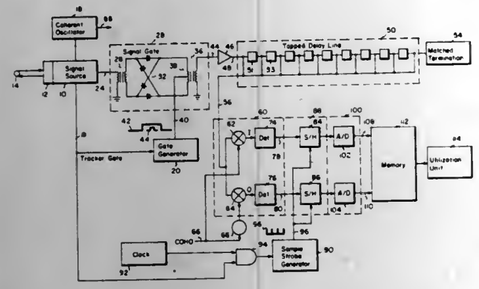
Edwin L. O'Brien, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 640,600, Dec. 11, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,525
Int. Cl.[2] H03K *5/00*
U.S. Cl. 328—151 **17 Claims**

1. A signal sampling system responsive to an informational input signal comprising:
a time gate responsive to said informational input signal for

time gating said input signal over a selected interval having a predetermined sample sequence of sample intervals over said gating interval,

delay means responsive to said time gated informational input signal for forming a selected number of delayed signal replicas of said informational signal thereof and having an output lead; and



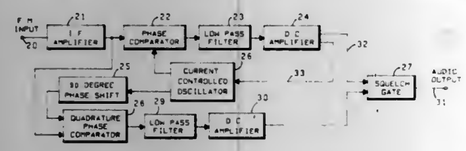
sampling means including strobing means coupled to said output lead of said delay means for sampling said delayed signal replicas at predetermined intervals, said sampling having a predetermined sequence relative to the sample sequence of said time gated input signal.

4,117,410

PHASE LOCKED LOOP SIGNAL DEMODULATOR AND SQUELCH CIRCUIT

Steven Frank Bender, Burnsville, Minn., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 13, 1977, Ser. No. 841,611
Int. Cl.[2] H03D *3/18*
U.S. Cl. 329—50 **5 Claims**



1. In a demodulator for receiving a frequency modulated (FM) signal having a modulating signal with a predetermined range of frequencies, said demodulator including a phase locked loop having a phase comparator, a low pass filter and a DC amplifier connected in series in a forward path and a current controlled oscillator (CCO) connected between the DC amplifier and the phase comparator in a feedback path, said phase locked loop for locking to the FM signal and recovering the modulating signal, said demodulator including improvement comprising:

said CCO being configured as an emitter-coupled multivibrator having timing capacitor means and providing a first output signal;

output signal utilization means;

differential comparator means differentially coupled to the timing capacitor means of the CCO for providing a second output signal phase shifted by 90° from the first output signal of the CCO;

signal detecting means including a quadrature phase comparator, filter means, and amplifier means connected in series, the quadrature phase comparator multiplying the FM signal and the second output signal from the differential comparator means and providing a third output signal, the filter means filtering out substantially all frequencies from, and passing the DC component of, the third output signal of the quadrature phase comparator to provide a DC indication signal, the amplifier means providing a predetermined amplification to the DC indication signal; and

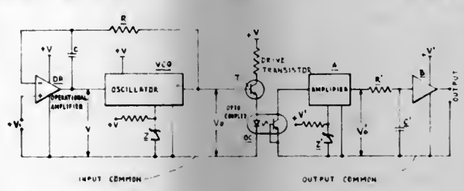
switching means coupled to the amplifier means for gating the recovered modulating signal from the phase locked loop to said output signal utilization means when the magnitude of the amplified DC indication signal is greater than a predetermined magnitude.

4,117,411

ISOLATION CIRCUIT WITH DUTY CYCLE FEEDBACK

William M. Goble, Perkasie, Pa., assignor to Moore Products Co., Spring House, Pa.

Filed Sep. 26, 1977, Ser. No. 836,661
Int. Cl.[2] H03F *3/38*
U.S. Cl. 330—10 **6 Claims**



1. An electric circuit for delivering an analog electric output signal proportional to and electrically isolated from an input analog voltage signal which comprises

voltage controlled square wave generator means having an output terminal and a first input terminal and which delivers a first square wave voltage at said output terminal whose ratio of ON time to total period is directly related to the voltage applied to said first input terminal,

said voltage controlled square wave generator means having a second input terminal,

first regulating means connected to said second input terminal for controlling the maximum and minimum values of said first square wave voltage,

comparator means connected to said output terminal of said square wave generator means and receiving the input analog voltage for determining the instantaneous difference between said input analog voltage and said first square wave voltage and generating a control voltage applied to said first input terminal of said square wave generator means which is proportional to the time integral of said difference,

coupling means connected to said output terminal of said square wave generator means for synchronously transmitting said first square wave voltage to an electrically isolated circuit,

said electrically isolated circuit comprising amplifier means having an output terminal and a first input terminal and which delivers at its said output terminal a second square wave voltage in synchronism with said first square wave voltage received at said first input terminal,

said amplifier means having a second input terminal,

second regulating means connected to said second input terminal of said amplifier for controlling the maximum and minimum values of said second square wave voltage, and

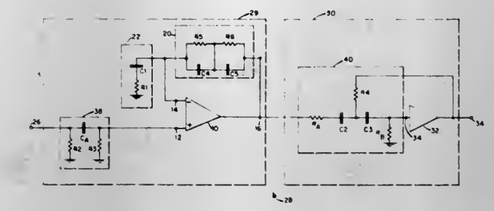
averaging means for delivering an output signal of the average value of said regulated second square wave voltage.

4,117,412

PHONOGRAPH PREAMPLIFIER NETWORK WITH INFRASONIC CUTOFF RESPONSE

Tomlinson M. Holman, II, Cambridge, Mass., assignor to Advent Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 736,404, Oct. 28, 1976, Pat. No. 4,032,855. This application Jun. 27, 1977, Ser. No. 810,676
Int. Cl.[2] H03F *1/34*
U.S. Cl. 330—107 **10 Claims**



1. An audio signal preamplifier network having a preamplifier input terminal for coupling to a magnetic phonograph cartridge, and having a preamplifier output terminal, comprising a first stage including:

a first high gain amplifier having inverting and non-inverting input terminals and an output terminal, said input terminals being characterized by relatively high impedance, and said non-inverting amplifier input terminal being coupled to said preamplifier input terminal,

equalization feedback network coupled between said amplifier output terminal and said inverting terminal,

an RC filter network characterized by a single real axis pole and including a first resistor, R1, and first capacitor, C1, coupled in series between said inverting input terminal and a first reference potential, and

a second stage including:

an infrasonic filter network characterized by a pair of off-axis complex poles, and including a second amplifier having a relatively high input impedance non-inverting input terminal and having an output terminal coupled to said preamplifier output terminal, and further including second and third capacitors, C2 and C3, respectively, coupled in series between said first amplifier output terminal and said second amplifier input terminal by way of an input resistor R_A, an output termination resistor R_B, coupled between said second amplifier input terminal and a second reference potential, and a feedback resistor, R4, coupled between said second amplifier output terminal and the junction between said second and third capacitors,

wherein said RC filter and said infrasonic filter networks are adapted to control the infrasonic frequency response of said preamplifier network whereby said preamplifier network is characterized by an 18 dB per octave roll-off response at frequencies below a predetermined infrasonic frequency and a relatively flat response at frequencies in a predetermined range adjoining and above said predetermined infrasonic frequency.

4,117,413

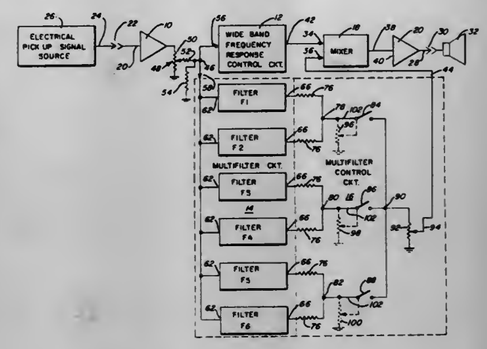
AMPLIFIER WITH MULTIFILTER

Robert A. Moog, East Aurora, N.Y., assignor to Norlin Music, Inc., Lincolnwood, Ill.

Filed Jun. 21, 1977, Ser. No. 808,494
Int. Cl.[2] H03F *3/68*
U.S. Cl. 330—126 **13 Claims**

1. In an audio amplifier for producing amplified signals on an output thereof corresponding to audio signals applied to an input thereof a multifilter circuit, comprising:

a plurality of resonant filters each having a resonant frequency in the upper portion of the audio frequency spectrum and a relatively narrow bandwidth, the resonant frequencies of each of the resonant filters being separated from each other by an amount substantially equal to a value between ½ and 1/6 octave for defining a gain versus frequency response characterized by a plurality of relatively narrow band alternate peaks and dips and a phase shift versus frequency response characterized by a plurality of relatively narrow band alternate peaks and dips, the Q's of the resonant filters being selected such that the peaks and dips of the gain versus frequency response exhibit a relatively large ratio;



means for connecting the plurality of resonant filters in parallel with one another between an input terminal and an output terminal thereof;

means connected with the input of the audio amplifier for applying the audio input signals to the input terminal, said plurality of resonant filters producing a filtered audio signal on the output terminal; and

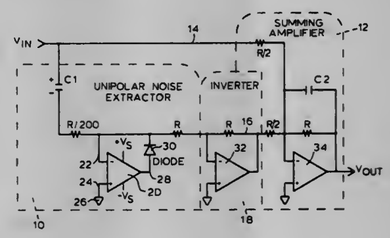
means connected for applying the filtered audio signals to the audio amplifier output.

4,117,414

SIGNAL CONDITIONING CIRCUIT

John E. Lillig, Diamond Bar; Richard C. Meyer, La Habra, and Robert J. Anderson, Orange, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 5, 1977, Ser. No. 812,868
Int. Cl.[2] H03F *1/26*
U.S. Cl. 330—149 **1 Claim**



1. A signal conditioning circuit for extracting unipolar noise from an analog input signal comprising:

a coupling capacitor having an input terminal receiving said analog signal and an output terminal for supplying a signal corresponding to a unipolar noise component of said analog signal;

clamping means connected between said capacitor output terminal and a source of reference voltage for preventing said output terminal of said coupling capacitor from charging toward a voltage level representing an average value of said unipolar noise component, said clamping means including

an operational amplifier having inverting and noninverting input terminals and an output terminal, said nonin-

verting input terminal connected to the output terminal of said coupling capacitor and said inverting input terminal connected to a source of reference voltage, and

a diode connected in a feedback path between the output terminal of said operational amplifier and the inverting input terminal thereof, said diode oriented in a direction to be reverse biased by said unipolar noise component; and

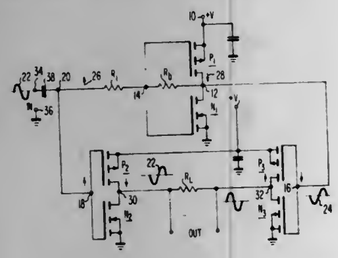
means coupled to receive said analog input signal and said unipolar noise component signal for subtracting the latter from the former to supply an analog output signal free of said unipolar noise component.

4,117,415

BRIDGE AMPLIFIERS EMPLOYING COMPLEMENTARY TRANSISTORS

Merle Vincent Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 14, 1977, Ser. No. 787,701
Int. Cl.² H03F 3/18
U.S. Cl. 330—264 **44 Claims**



1. A bridge amplifier comprising, in combination:

first and second pairs of complementary field-effect transistors, each pair comprising an N-type transistor and a P-type transistor, each such transistor having an input, an output and a control electrode, the transistors of each pair being interconnected at their control electrodes, and interconnected at their output electrodes;

means for quiescently biasing each pair of transistors for linear operation, said means comprising two series-connected complementary field-effect transistors, and a feedback circuit responsive to current flow through said two transistors for applying a quiescent bias voltage to said interconnected control electrodes of said first and second pairs of transistors;

two input circuits, one coupled between the control and input electrodes of one pair, and the other coupled between the control and input electrodes of the other pair;

two operating voltage terminals, one said terminal coupled to the input electrodes of the P-type transistors and the other said terminal coupled to the input electrodes of the N-type transistors;

a load circuit coupled between the output electrodes of one pair of transistors and the output electrodes of the other pair of transistors; and

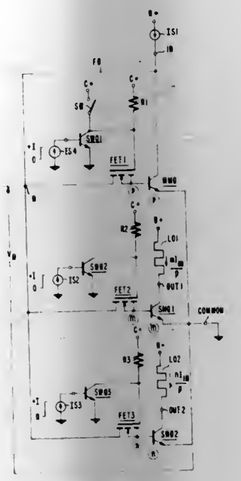
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4,117,416

CURRENT MIRROR AMPLIFIERS WITH PROGRAMMABLE CURRENT GAINS

Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1977, Ser. No. 855,088
Int. Cl.² H03G 3/30; H03F 3/04
U.S. Cl. 330—282 **10 Claims**



1. A current mirror amplifier with programmable current gain comprising:

master and slave mirroring transistors of the same conductivity type and with like current gain characteristics each having respective first and second electrodes and a respective controlled conduction path therebetween and having a respective third or control electrode, the conduction of said controlled conduction path being controlled in direct response to the potential between said second and third electrodes;

an input terminal to which the first electrode of said master transistor is connected;

an output terminal to which the first electrode of said slave transistor is connected;

a common terminal to which the second electrodes of said master and slave transistors are connected;

a node to which said input terminal is direct coupled;

a first transmission gate for providing selective connection of said node to the third electrode of said slave mirroring transistor responsive to the selective application thereto of a first level of control signal, the current to the third electrode of said slave mirroring transistor during said selective connection developing a potential drop across the resistance of the transmissive first transmission gate; and

means providing a resistance between said node and the third electrode of said master mirroring transistor at least whenever said selective connection is established, which resistance is of such value that the current to the third electrode of said master mirroring transistor causes a potential drop thereacross substantially equal to the poten-

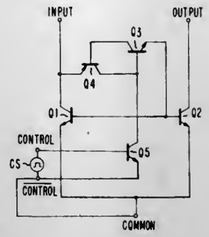
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4,117,417

SWITCHABLE CURRENT AMPLIFIERS

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,859
Int. Cl.² H03F 3/04
U.S. Cl. 330—288 **7 Claims**



1. A switchable current amplifier comprising:

input, output and common terminals;

first, second and third transistors of a first conductivity type and a fourth transistor of a second conductivity type complementary to said first conductivity type, each having respective base and emitter and collector electrodes;

connections of the collector electrodes of said first and said second transistors respectively to said input terminal and to said output terminal;

connections of the emitter electrodes of said first and said second transistors to said common terminal;

means connecting said third and said fourth transistors as a latch circuit between said input terminal and an interconnection between the base electrodes of said first and said second transistors, which latch circuit when latched completes the connection of said first and said second transistors in a current mirror amplifier configuration, said means including:

a connection of the emitter electrode of said third transistor to said interconnection between the base electrodes of said first and said second transistors, a connection of the collector electrode of said third transistor to the base electrode of said fourth transistor, a connection of the collector electrode of said fourth transistor to the base electrode of said third transistor, and a connection of said input terminal to the emitter electrode of said fourth transistor; and

disabling means for selectively diverting collector current of said fourth transistor from being applied to the base electrode of said third transistor.

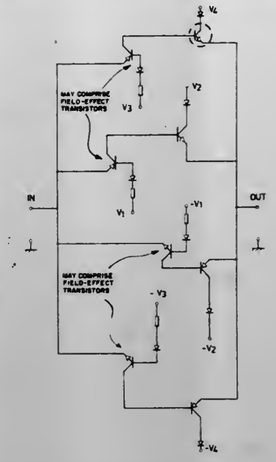
4,117,418

ELECTRIC AMPLIFIER

Lennart Harry Erik Höglund, S-163 60 Spanga, Lindalsvagen 5, Sweden

Filed Jan. 14, 1977, Ser. No. 759,480
Int. Cl.² H03F 3/04, 3/68
U.S. Cl. 330—296 **17 Claims**

1. An electric amplifier, comprising several partial amplifiers, which are so connected and voltage fed that each of them amplifies a voltage interval of an input voltage, whereby each partial amplifier has its inlets at one side and its outlets at the other side coupled together and connected to a common inlet or outlet respectively, and wherein every partial amplifier comprises at least one amplification component (**1**; T_3 T_4) and two gates, of which one (**2, 3, 4**; T_1 D_1 R_1; P_2 D_{11} R_1) is blocking those potentials applied to the component that are less than a given first value (V_1 U_{TN} U_{11}) but is open for potentials exceeding said value while the other (**5**; T_2 D_2 R_2; P_1 D_{a1} R_1) is open for potentials that are less than a given second value (V_2 U_{BN} U_{a1}) greater than said first value but is blocking the component potentials less than the first value (V_1 U_{TN} U_{11}) comprises an active element, connected to the input voltage and to the lower limiting voltage (V_1 U_{TN} U_{11}), by a series connection of a diode



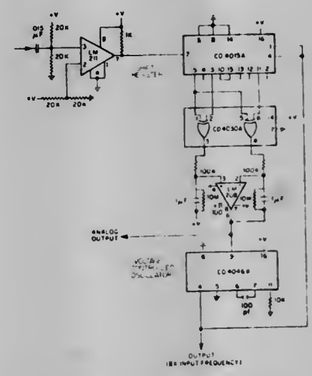
(D_1 D_{11}) and a resistance (R_1), and also being connected to an electrode in the amplifier element (**1**; T_3 T_4) of the partial amplifier.

4,117,419

FREQUENCY MEASURING SYSTEM EMPLOYING AN AUTO-CORRELATION FUNCTION FREQUENCY CONTROL LOOP

Michael Jefferson Rudd, Concord, Mass., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Jul. 7, 1977, Ser. No. 813,507
Int. Cl.² H03B 3/04
U.S. Cl. 331—1 A **17 Claims**



1. Apparatus for determining the frequency of a signal component in a single composite input signal, said apparatus comprising:

means for generating a binary input signal having transitions which correspond to zero crossings in said composite input signal;

shift register means having a plurality of stages which may be clocked at a selectable frequency;

means for entering said binary input signal into said shift register thereby to obtain from said shift register a delayed

verting input terminal connected to the output terminal of said coupling capacitor and said inverting input terminal connected to a source of reference voltage, and

a diode connected in a feedback path between the output terminal of said operational amplifier and the inverting input terminal thereof, said diode oriented in a direction to be reverse biased by said unipolar noise component; and

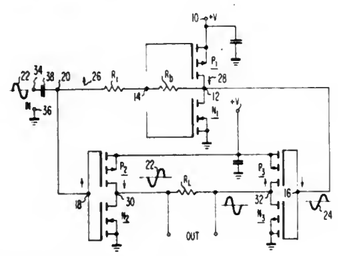
means coupled to receive said analog input signal and said unipolar noise component signal for subtracting the latter from the former to supply an analog output signal free of said unipolar noise component.

4,117,415

BRIDGE AMPLIFIERS EMPLOYING COMPLEMENTARY TRANSISTORS

Merle Vincent Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 14, 1977, Ser. No. 787,701
Int. Cl.[2] H03F *3/18*
U.S. Cl. 330—264 **44 Claims**



1. A bridge amplifier comprising, in combination:

first and second pairs of complementary field-effect transistors, each pair comprising an N-type transistor and a P-type transistor, each such transistor having an input, an output and a control electrode, the transistors of each pair being interconnected at their control electrodes, and interconnected at their output electrodes;

means for quiescently biasing each pair of transistors for linear operation, said means comprising two series-connected complementary field-effect transistors, and a feedback circuit responsive to current flow through said two transistors for applying a quiescent bias voltage to said interconnected control electrodes of said first and second pairs of transistors;

two input circuits, one coupled between the control and input electrodes of one pair, and the other coupled between the control and input electrodes of the other pair;

two operating voltage terminals, one said terminal coupled to the input electrodes of the P-type transistors and the other said terminal coupled to the input electrodes of the N-type transistors;

a load circuit coupled between the output electrodes of one pair of transistors and the output electrodes of the other pair of transistors; and

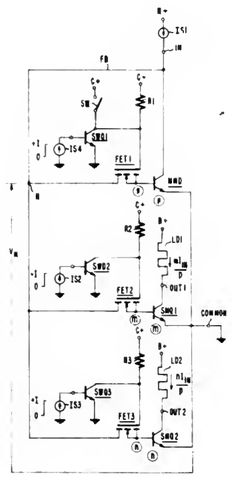
means coupled between said two input circuits for applying an input signal in one phase to one pair of transistors and in opposite phase to the other pair of transistors.

4,117,416

CURRENT MIRROR AMPLIFIERS WITH PROGRAMMABLE CURRENT GAINS

Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1977, Ser. No. 855,088
Int. Cl.[2] H03G *3/30;* H03F *3/04*
U.S. Cl. 330—282 **10 Claims**



1. A current mirror amplifier with programmable current gain comprising:

master and slave mirroring transistors of the same conductivity type and with like current gain characteristics each having respective first and second electrodes and a respective controlled conduction path therebetween and having a respective third or control electrode, the conduction of said controlled conduction path being controlled in direct response to the potential between said second and third electrodes;

an input terminal to which the first electrode of said master transistor is connected;

an output terminal to which the first electrode of said slave transistor is connected;

a common terminal to which the second electrodes of said master and slave transistors are connected;

a node to which said input terminal is direct coupled;

a first transmission gate for providing selective connection of said node to the third electrode of said slave mirroring transistor responsive to the selective application thereto of a first level of control signal, the current to the third electrode of said slave mirroring transistor during said selective connection developing a potential drop across the resistance of the transmissive first transmission gate; and

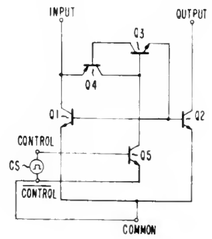
means providing a resistance between said node and the third electrode of said master mirroring transistor at least whenever said selective connection is established, which resistance is of such value that the current to the third electrode of said master mirroring transistor causes a potential drop thereacross substantially equal to the potential drop across the resistance of the transmissive first transmission gate, for compensating against the effects of that potential drop on the programmable current gain.

4,117,417

SWITCHABLE CURRENT AMPLIFIERS

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,859
Int. Cl.[2] H03F *3/04*
U.S. Cl. 330—288 **7 Claims**



1. A switchable current amplifier comprising:

input, output and common terminals;

first, second and third transistors of a first conductivity type and a fourth transistor of a second conductivity type complementary to said first conductivity type, each having respective base and emitter and collector electrodes;

connections of the collector electrodes of said first and said second transistors respectively to said input terminal and to said output terminal;

connections of the emitter electrodes of said first and said second transistors to said common terminal;

means connecting said third and said fourth transistors as a latch circuit between said input terminal and an interconnection between the base electrodes of said first and said second transistors, which latch circuit when latched completes the connection of said first and said second transistors in a current mirror amplifier configuration, said means including:

a connection of the emitter electrode of said third transistor to said interconnection between the base electrodes of said first and said second transistors, a connection of the collector electrode of said third transistor to the base electrode of said fourth transistor, a connection of the collector electrode of said fourth transistor to the base electrode of said third transistor, and a connection of said input terminal to the emitter electrode of said fourth transistor; and

disabling means for selectively diverting collector current of said fourth transistor from being applied to the base electrode of said third transistor.

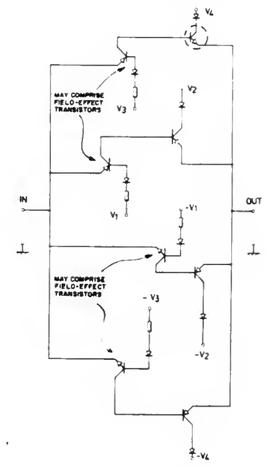
4,117,418

ELECTRIC AMPLIFIER

Lennart Harry Erik Höglund, S-163 60 Spanga, Lindalsvagen 5, Sweden

Filed Jan. 14, 1977, Ser. No. 759,480
Int. Cl.[2] H03F *3/04, 3/68*
U.S. Cl. 330—296 **17 Claims**

1. An electric amplifier, comprising several partial amplifiers, which are so connected and voltage fed that each of them amplifies a voltage interval of an input voltage, whereby each partial amplifier has its inlets at one side and its outlets at the other side coupled together and connected to a common inlet or outlet respectively, and wherein every partial amplifier comprises at least one amplification component (**1**; T_3 T_4) and two gates, of which one (**2, 3, 4**; T_1 D_1 R_1; P_2 D_{11} R_1) is blocking those potentials applied to the component that are less than a given first value (V_1 U_{TN} U_{11}) but is open for potentials exceeding said value while the other (**5**; T_2 D_2 R_2; P_1 D_{u1} R_1) is open for potentials that are less than a given second value (V_2 U_{BN} U_{u1}) greater than said first value but is blocking the component for potentials exceeding said second value (V_2 U_{BN} U_{u1}) wherein said gate (**2, 3, 4**; T_1 D_1 R_1 P_2 D_{11} R_1) for blocking potentials less than the first value (V_1 U_{TN} U_{11}) comprises an active element, connected to the input voltage and to the lower limiting voltage (V_1 U_{TN} U_{11}), by a series connection of a diode



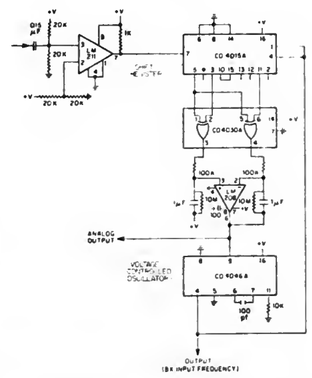
(D_1 D_{11}) and a resistance (R_1), and also being connected to an electrode in the amplifier element (**1**; T_3 T_4) of the partial amplifier.

4,117,419

FREQUENCY MEASURING SYSTEM EMPLOYING AN AUTO-CORRELATION FUNCTION FREQUENCY CONTROL LOOP

Michael Jefferson Rudd, Concord, Mass., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Jul. 7, 1977, Ser. No. 813,507
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **17 Claims**



1. Apparatus for determining the frequency of a signal component in a single composite input signal, said apparatus comprising:

means for generating a binary input signal having transitions which correspond to zero crossings in said composite input signal;

shift register means having a plurality of stages which may be clocked at a selectable frequency;

means for entering said binary input signal into said shift register thereby to obtain from said shift register a delayed version of said binary input signal;

means for correlating said input signal with the delayed

version thereof so as to obtain a coincidence signal which is dependent upon the value of the delay;

means for filtering said coincidence signal to obtain an average correlation value signal;

a controlled frequency oscillator for clocking said shift register, said average value signal being applied to control the frequency of said oscillator to vary said delay, the control being applied in a sense tending to adjust the delay to a value corresponding to a zero crossing in the autocorrelation function of said input signal whereby the frequency of operation of said oscillator will automatically adjust to correspond to the frequency of a consistent signal component in said input signal and will be relatively insensitive to the phase of said component.

4,117,420

PHASE-LOCKED LOOP WITH SWITCHABLE LOOP FILTER

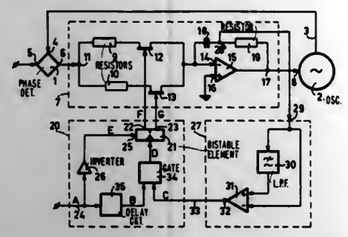
Wilfried Rene' DeConinck, and Jean Louis Ernest Raymond Goret, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 19, 1977, Ser. No. 825,962

Claims priority, application Netherlands, Aug. 20, 1976, 7609251

Int. Cl.² H03B *3/04*

U.S. Cl. 331—17 **4 Claims**



1. A phase-locked loop, comprising an oscillator means for supplying an oscillator signal having a frequency to be varied in dependence upon a control signal, a phase detector having two input means for receiving the oscillator signal and a reference signal respectively and output means for generating an output signal, a loop filter having an input coupled to said detector output means and an output means for supplying said control signal to said oscillator, said filter comprising a storage element, said loop filter being switchable between a first state in which the loop filter has a wide passband and a second state in which the loop filter has a narrow passband, arrangement means coupled to said storage element of the switchable loop filter for determining the instants at which the instantaneous value of the signal stored in the storage element is substantially equal to the average value of the control signal for the oscillator, and a control circuit means coupled to said arrangement means and to said loop filter for providing that after locking switching-over of the loop filter from the first to the second state occurs at one of the instants determined by said arrangement means.

4,117,421

CRYSTAL OSCILLATOR WITH REDUCED POWER CONSUMPTION

Leo Wiesner, Kew Gardens, N.Y., assignor to Timex Corporation, Waterbury, Conn.

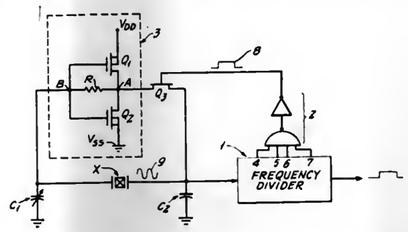
Filed Jul. 29, 1977, Ser. No. 820,478

Int. Cl.² H03B *5/36*

U.S. Cl. 331—116 R **3 Claims**

1. In combination:

an oscillator means for providing an output signal comprising a tank circuit having a piezoelectric crystal vibrator connected across two series capacitances with a grounded connection between the two capacitances, and an inverting amplifier having an input and output terminal connected to said tank circuit to provide a regenerative feedback signal thereto;



switch means coupled in series between said tank circuit and the output terminal of said inverting amplifier for periodically disconnecting said tank circuit from the output terminal of said inverting amplifier.

4,117,422

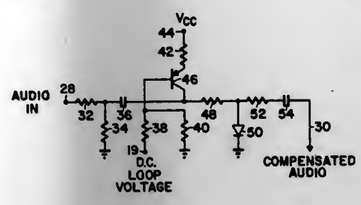
CIRCUIT FOR COMPENSATING VCO NONLINEARITIES IN FREQUENCY MODULATED PHASE-LOCKED LOOPS AND METHOD THEREOF

Albert Henry Hunt, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1977, Ser. No. 865,043

Int. Cl.² H03C *3/08*

U.S. Cl. 331—18 **9 Claims**



1. An audio frequency compensation circuit for use in a frequency modulated phase-locked loop comprising:

(a) first conversion means for converting a DC error voltage in the phase-locked loop to a first current;

(b) second conversion means for converting an audio frequency signal to a second current;

(c) diode means for converting a sum of said first current and said second current to a modulating voltage for frequency modulating the phase-locked loop.

4,117,423

DUAL MODE MULTIPHASE POWER DIVIDER

Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 23, 1976, Ser. No. 726,078

Int. Cl.² H01P *5/12, 1/18*

U.S. Cl. 333—9 **4 Claims**

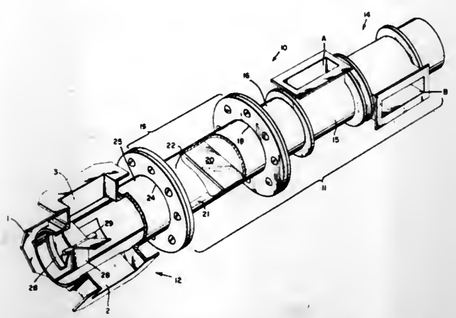
1. A dual mode multiphase power divider, comprising:

input means for receiving at least first and second circularly polarized waves having at least first and second senses;

waveguide means coupled to said input means for propagating all said waves along said waveguide means from a first end to a second end; and

N output ports equally spaced about said waveguide means for providing N output signals having a first phase progression in response to said first input wave and providing N output signals having a second phase progression in response to said second input wave, said N output ports being at least 3 and N being an odd integer, said N output

ports being mounted at 360/N° about said waveguide means for providing 1/N of the output power from each



of said output ports in response to each of said first and second circularly polarized signals.

4,117,424

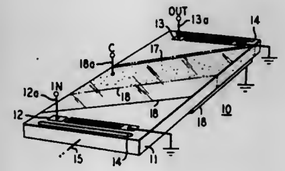
ACOUSTIC WAVE DEVICES

Larry Allen Coldren, Holmdel; Alastair Malcolm Glass, Millington, and Ross Alan Lemons, Tinton Falls, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1977, Ser. No. 783,056

Int. Cl.² H03H *9/30, 9/04, 9/26;* H04R *17/10*

U.S. Cl. 333—30 R **18 Claims**



1. An acoustic wave device comprising

a monolithic body of a crystalline material in which acoustic waves will propagate, said body including first and second regions which have differing crystal axis orientations and which interface at a planar domain wall,

first transducing means disposed on said body and operative in response to an input signal for launching acoustic waves along a path which intersects said domain wall,

second transducing means disposed on said body such that it receives at least a portion of the energy of said acoustic waves, said second transducing means providing an output signal in response to said received portion, and

means responsive to a control signal for varying the location of said domain wall within said body,

said control means including a pair of electrodes disposed on opposing surfaces of said body such that they intersect the plane of said domain wall and means for applying said control signal to said electrodes,

at least one of said electrodes comprising a plurality of regions of alternating high and low impedance and said control signal applying means including means for applying first and second signals to a selected pair of said low impedance regions.

4,117,425

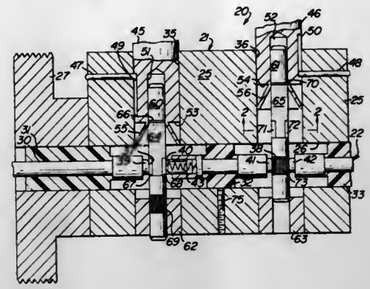
MICROWAVE STEP ATTENUATOR

Helmut Bacher, 771 Quince Orchard #11, Gaithersburg, Md. 20760

Filed Jan. 31, 1977, Ser. No. 763,824

Int. Cl.² H01P *1/22*

U.S. Cl. 333—81 A **10 Claims**



1. A microwave attenuator comprising an inner conductor having a gap, an outer conductor extending along and cooperating with said inner conductor to define therealong a microwave transmission path, and attenuator means extending between said inner and outer conductor, said attenuator means comprising an elongate dielectric extension member transversely of and mounted in said outer conductor for shifting movement in said outer conductor transversely thereof and extending shiftably through said gap in bridging relation with the latter, a specifically configured resistive element carried by said extension member for movement therewith between an attenuating position electrically connecting said inner and outer conductors and an alternate position not electrically connecting said inner and outer conductors, and an additional conductor carried by said extension member for movement into said gap to electrically close the latter in said not electrically connecting position for zero attenuation, said extension member, resistive element and additional conductor being substantially aligned transversely of said inner and outer conductors.

4,117,426

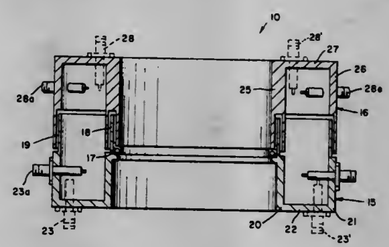
MULTIPLE CHANNEL ROTARY JOINT

Thomas Hudspeth, Malibu, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 30, 1976, Ser. No. 755,701

Int. Cl.² H01P *1/06, 1/16, 5/08*

U.S. Cl. 333—98 TN **13 Claims**



1. A multiple channel rotary joint for transferring microwave energy from a stationary member to a rotating member, said microwave energy having a predetermined frequency and wavelength, comprising:

a toroidal cavity having first and second portions rotatable on each other for propagating a plurality of selected mi-

crowave modes, said toroidal cavity having an axial passageway, said cavity having predetermined dimensions for causing a TEM mode and two selected TE modes to propagate therein and for causing TM modes to be attenuated;

input means radially mounted to said first portion of said toroidal cavity and being in a first perpendicular plane to the axis of said toroidal cavity for propagating said modes therein; and

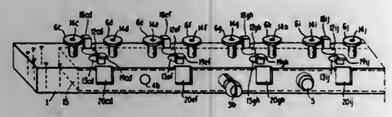
output means radially mounted to said second portion of said toroidal cavity and being in a second perpendicular plane to the axis of said toroidal cavity for receiving said modes therein, said first and second planes being at least one-half wavelength apart.

4,117,427

STANDARDIZED COMPONENT FOR CROSS-POINT MATRICES

Camille Gabriel Krafft, Bagneux; Jean-Claude Simonet, La Celle St. Cloud, and Emmanuel Marie Jammes, Orvault, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 27, 1976, Ser. No. 727,115
Int. Cl.² H01H *67/14*
U.S. Cl. 335—112 **3 Claims**



1. A standardized component support for coil-operated cross-points for use in a switching matrix comprising:

a rectangular strip made of electrically insulating material having complementary assembly means on the sides of the strip to provide rigid assembly of each component with other substantially identical components into a plane matrix, said means containing at least one locating element on one side and a plurality of complementary elements on the other side to ensure the correct relative positioning of the components when assembled into a matrix; and

a series of identical hollow cylindrical appendages located on the top surface of the components to provide coil formers for a plurality of corresponding cross-point control coils carried by the component.

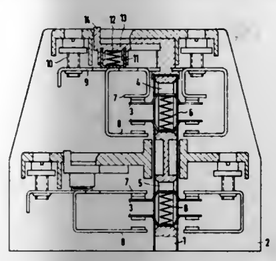
4,117,428

ELECTRO-MAGNETIC SWITCHING APPARATUS HAVING ELECTRICALLY SEPARATED CONTACT ELEMENTS

Georg Streich, and Johann Bauer, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 10, 1977, Ser. No. 795,515
Claims priority, application Fed. Rep. of Germany, May 18, 1976, 2622054
Int. Cl.² H01H *67/02*
U.S. Cl. 335—132 **9 Claims**

1. In an electromagnetic switching apparatus including a housing, a plurality of movable contact bridges mounted on a contact bridge carrier, first fixed contact elements which extend around one end of said contact bridges and are coupled to terminal elements for said first fixed contact elements, and electrically-separated second fixed contact elements disposed at the other end of said contact bridges on both sides of said contact bridges, the improvement comprising means for selec-



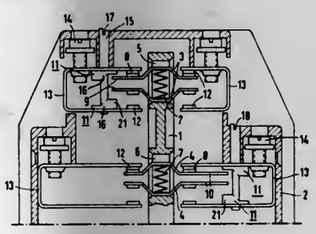
tively electrically connecting said second fixed contact elements to a common terminal element.

4,117,429

ELECTROMAGNETIC SWITCHING APPARATUS

Georg Streich, and Johann Bauer, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 10, 1977, Ser. No. 795,495
Claims priority, application Fed. Rep. of Germany, May 18, 1976, 2622100
Int. Cl.² H01H *67/02*
U.S. Cl. 335—132 **8 Claims**



1. In an electromagnetic switching apparatus including a housing, movable contact elements mounted on a plurality of contact bridges in said housing, electrically-connected fixed contact elements disposed on both sides of said contact bridges adapted for contact and electrical connection with said movable contacts and said contact bridges, and electrical insulation means for interrupting the electrical connection between said fixed contact elements and said contact bridges in two terminal positions of said contact bridge carrier, the improvement comprising at least one end of said contact bridges extending outwardly beyond the area of contact between said movable contacts and said fixed contacts, said electrical insulation means being movably supported in said housing so as to be operatively engageable in at least one position with said extended ends of said contact bridges for interrupting the electrical connection between at least one of said contact bridges and said fixed contact elements.

4,117,430

KEYBOARD SWITCH

Dewey M. Sims, Jr., Wayne, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 14, 1977, Ser. No. 777,401
Int. Cl.² H01H *51/28*
U.S. Cl. 335—205 **12 Claims**

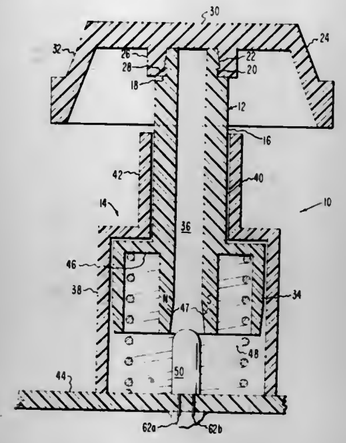
1. A keyboard switch comprising:

a switch housing defined by a hollow body having an external aperture in communication with the hollow portion of said body;

a base surface supporting said switch housing;

a plunger defined by an integral shaft formed of a magnetized, plastic material and disposed for reciprocal motion within said aperture;

biasing means for urging said plunger toward a rest position distal from said base surface; and



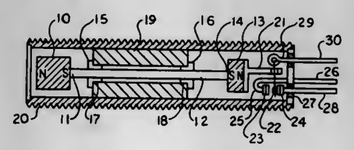
magnetic sensing means, responsive to a change in magnetic field intensity, for sensing the travel of the plunger from the rest position toward said base surface and producing a signal representative thereof.

4,117,431

MAGNETIC PROXIMITY DEVICE

Robert L. Eicher, Louisville, Ky., assignor to General Equipment & Manufacturing Co., Inc., Louisville, Ky.

Filed Jun. 13, 1977, Ser. No. 805,696
Int. Cl.² H01H *36/00*
U.S. Cl. 335—207 **6 Claims**



1. In a device for sensing the presence of a magnetizable operator, in combination, a housing, a first permanent magnet, a second permanent magnet, non-magnetic means coupling said magnets in spaced apart position, means in the housing for guiding said magnets and coupling means for movement generally along the line of centers of the magnets, a magnetizable member interposed between said magnets and dimensioned to leave a first air gap between the member and the first magnet and a second air gap between the member and the second magnet, and utilization means responsive to the position of the magnets relative to the housing, said air gaps and magnets being arranged that the magnets are shifted from one side of an equilibrium position to the other side thereof by the presence of a magnetizable operator adjacent the first magnet.

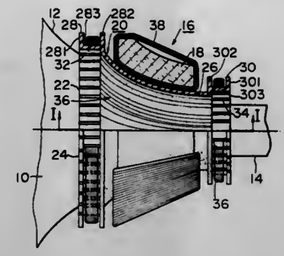
4,117,432

DEFLECTION YOKE WITH UNITARY COIL FRAME

Kazunori Shizu, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1976, Ser. No. 650,130
Claims priority, application Japan, Jan. 17, 1975, 50-8150
Int. Cl.² H01F *7/00*
U.S. Cl. 335—210 **11 Claims**

1. A deflection yoke including a core and a pair of horizontal and vertical deflection coils, comprising a sleeve-shaped coil frame including a flare-shaped body and a pair of end formations integrally formed at its front and rear ends thereby forming a single unitary frame member, each of the front and rear



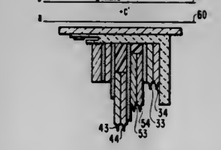
end formations being formed with a plurality of grooves, at least one of the deflection coils being directly wound on the inner surface of the coil frame in a saddle configuration by fitting and anchoring a conductor into the grooves.

4,117,433

STATIC CONVERGENCE DEVICE INCLUDING MAGNETIC CORRECTOR APPARATUS

Joseph Leland Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,198
Int. Cl.² H01F *7/00*
U.S. Cl. 335—212 **6 Claims**



1. Static convergence apparatus for statically converging three electron beams within an envelope of a cathode ray tube, said electron beams subject to various conditions of misconvergence, comprising:

adjustable first magnetic convergence means suitable for locating about a portion of said envelope for producing within said envelope an adjustable first magnetic field, adjustment of said first magnetic field moving at least two of said three electron beams in directions and with magnitudes of motion that will converge said three electron beams to within a first distance of each other for selected conditions of misconvergence, said first magnetic convergence means producing a motion of minimum magnitude of at least a first one of said electron beams relative to a second one of said electron beams for all adjustments of said first magnetic field, wherein said first magnetic convergence means is unable to converge said first one and said second one of said electron beams to within said first distance for all of said various conditions of misconvergence; and

adjustable magnetic corrector means suitable for locating about a portion of said envelope for producing a second magnetic field of fixed magnetic field strength and adjustable direction for effecting motion of a substantially fixed magnitude of said first one of said electron beams relative to said second one of said electron beams in a direction

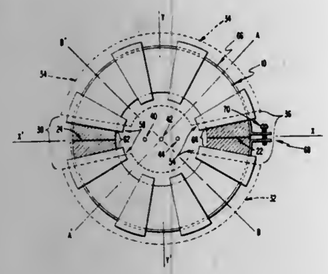
that will offset said motion of minimum magnitude produced by said first magnetic convergence means for enabling said first magnetic convergence means to converge said first one and second one of said electron beams to within said first distance for all of said various conditions of misconvergence.

4,117,434

HYBRID DEFLECTION SYSTEM WITH QUADRIPOLAR CORRECTION COILS

James H. Logan, Baldwinsville, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Jan. 19, 1977, Ser. No. 760,572
Int. Cl.[2] H01F *5/02*
U.S. Cl. 335—213 **15 Claims**



1. A deflection system for use with a cathode ray tube comprising:

horizontal and vertical deflection means including a split ring magnetic core having two breaks therein and further including a coil configuration which results in at least two limited areas having no windings on said core at which limited areas said breaks are located; and

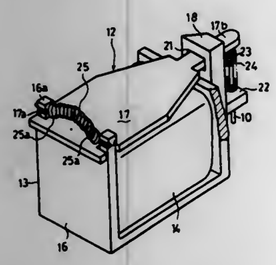
quadripolar correction means having a plurality of coils, at least a portion of said quadripolar coils covering said limited areas on said core, each of two of said quadripolar coils having areas void of windings with each void area coincident with one of said breaks in said core and of sufficient magnitude to allow assembly of said core.

4,117,435

FLAP-ARMATURE ELECTROMAGNET

Yukio Hishida; Yuichi Asai; Toshikatsu Kondo; Akira Asai, all of Nagoya; Atsuo Sakaida, Gifu, and Chiaki Miyazawa, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 31, 1977, Ser. No. 801,999
Claims priority, application Japan, Jun. 14, 1976, 51-77287[U]
Int. Cl.[2] H01F *7/08*
U.S. Cl. 335—270 **4 Claims**



1. A flap-armature electromagnet comprising

(a) a U-shaped yoke (16) having a bottom portion and two side portions;

(b) a pole core (15) secured to the bottom portion of said U-shaped yoke;

(c) a coil (14) wound on said pole core (15);

(d) projecting means defining a rocking axis provided at the top surface of one of said two side portions;

(e) a flap-armature (17) having a first end portion (17*b*) extending beyond said pole core and the top surface of the other of said two side portions, and an opposite second end portion extending to the top surface of the one of said two side portions, the first end portion of said flap-armature being movable toward and away from said pole core (15);

(f) notch means (17*a*) formed at the opposite second end portion of said flap-armature being engageable with said projecting means for rockingly supporting said flap-armature;

(g) a spring (25) positioned to hold the opposite second end portion of said flap-armature on the top surface of one of said two side portions by pressing the notch means on the rocking axis of said flap-armature; and,

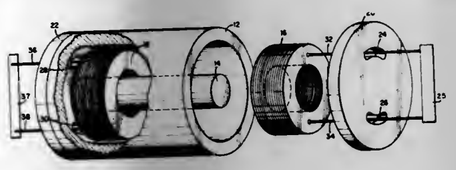
(h) resilient means (24) for urging the first end portion of said flap-armature away from said pole core.

4,117,436

TORQUELESS RELATIVELY MOVING TRANSFORMER WINDINGS

Alexander G. MacLennan, Harvard, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 23, 1976, Ser. No. 716,707
Int. Cl.[2] H01F *15/02*
U.S. Cl. 336—65 **7 Claims**



1. A transformer providing low restraint limited motion between transformer windings comprising:

first and second transformer windings having a common axis;

first and second elements;

a core structure of high permeability material surrounding and passing through said first and second windings to provide a high permeability flux circuit substantially free of low permeability gaps for mutual flux between said first and second transformer windings;

said core structure being configured to contain said first and second transformer windings to permit relative motion therebetween;

means for rigidly supporting said first and second transformer windings to said first and second elements independent of said core structure and each other to permit relative rotary motion therebetween about said axis;

said core structure including apertures for said support means to accommodate limited relative rotary motion between said first and second transformer windings about said axis;

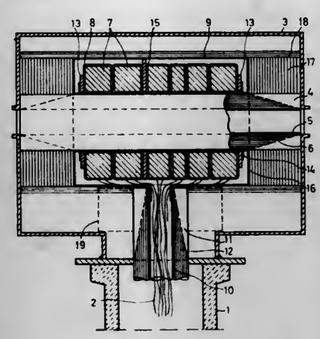
said core structure providing a path for mutual flux of said first and second transformer windings substantially without air gaps therein without providing a low reluctance path to leakage flux.

4,117,437

TOP CORE TYPE CURRENT TRANSFORMER STRUCTURE

Otto Ottesen, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Jun. 27, 1977, Ser. No. 810,165
Claims priority, application Sweden, Jul. 2, 1976, 76075852
Int. Cl.[2] H01F *40/06*
U.S. Cl. 336—69 **9 Claims**



1. Current transformer for high voltage application, comprising:

a column of insulating material supporting a metal housing including an insulating body through which the primary conductor of the transformer passes;

a plurality of cores each including a secondary winding of the transformer and being enclosed in a grounded metal core casing extends around the central portion of said insulating body to form annular regions between said metal core casing and said metal housing;

said annular regions lying in the axial extension of said metal casing; and

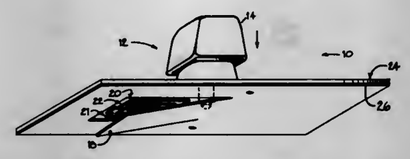
insulated metal rings provided in said annular regions for achieving a uniform voltage distribution in said annular regions between said core casing and said housing.

4,117,438

CONTACTLESS KEYSWITCH FOR KEYBOARDS

Kirk J. Kim, Corona del Mar, and Michael Muller, Newport Beach, both of Calif., assignors to Datanetics Corporation, Fountain Valley, Calif.

Filed Apr. 13, 1977, Ser. No. 786,983
Int. Cl.[2] H01F *21/04*; G08C *1/00*
U.S. Cl. 336—75 **12 Claims**



1. A contactless keyswitch comprising:

a circuit board having at least one reactive circuit element formed thereon; a sheet of material secured to said circuit board, said sheet including at least one movable, electrically conductive flap formed integrally therein, said flap being disposed opposite said circuit element and biased toward the circuit element; and keyswitch actuating means coupled to said flap to move the flap away from the circuit element to cause a change in reactance of said circuit element upon actuation of said switch.

9. A keyboard comprising:

a circuit board;

a plurality of keyswitch actuating means disposed on one side of said board, said actuating means including keys and keystems located to pass through corresponding apertures in said board upon actuation thereof;

a plurality of circuit elements formed on the opposite side of said board, and a strip of resilient material secured to said opposite side and over said circuit elements;

said strip of material including partially severed areas forming a plurality of flaps, said flaps being located opposite respective ones of said circuit elements, said flaps being hinged along unsevered portions integral with said strip and resiliently biased by said portions against respective circuit elements;

said flaps including electrically conductive material for changing the reactance of opposing circuit elements in response to operation of said keyswitch actuating means having keystems located to engage and move respective ones of said flaps.

4,117,439

TRANSDUCER FOR MEASURING LINEAR POSITIONS

Nino Azzani, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Apr. 4, 1977, Ser. No. 784,429
Claims priority, application Italy, Apr. 8, 1976, 67821 A/76
Int. Cl.[2] H01F *21/04*
U.S. Cl. 336—129 **5 Claims**

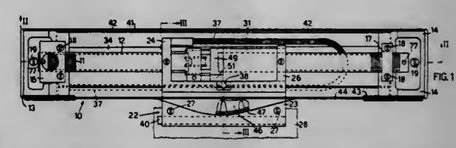


FIG. 1

1. A transducer for measuring linear positions, comprising a scale constituted by a tensioned flexible band bearing a first electric winding, a slide movable with respect to the scale and bearing a second winding, a guide plate fast with the slide, parallel to the second winding and extending over the whole area of the second winding, and pressure means arranged to keep the band in close contact with the plate.

4,117,440

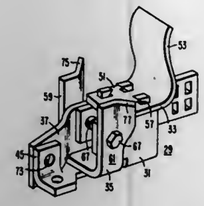
FUSE MOUNT FOR SWITCHING APPARATUS

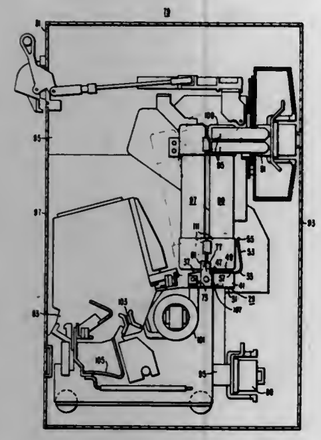
Thomas A. Wilsdon, Alden; William P. Heim, Cheektowaga, and Glenn A. Barlis, Fairport, all of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1977, Ser. No. 760,488
Int. Cl.[2] H01H *85/50, 85/60*
U.S. Cl. 337—213 **7 Claims**

1. In a circuit interrupter having cooperable switch members including a stationary contact and a movable elongated tubular fuse, and wherein one end of the fuse is swingable about the other end of the fuse in a predetermined path rearward and forward respectively toward and from the stationary contact to respectively close and open a circuit between the stationary contact and the one end of the fuse, the fuse having a peripheral surface extending longitudinally of the fuse, support means for pivotably supporting the other end of the fuse comprising clamping means for clamping the peripheral surface and including peripherally spaced members, one of which members

is a flexible member having one end yieldingly urging the fuse against the other of the members and having another end





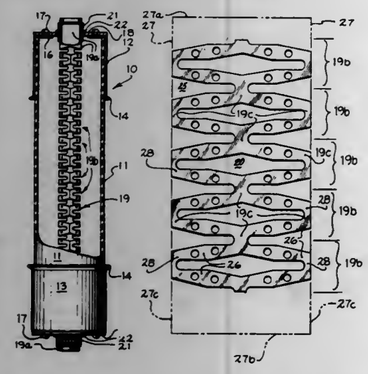
fixedly secured in place, and said one end extending at a substantially right angle to the other end.

4,117,441

CURRENT LIMITING FUSE CONSTRUCTION AND METHOD

Daniel A. Wycklendt, Milwaukee, Wis., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 15, 1977, Ser. No. 787,874
Int. Cl.² H01H *85/08*
U.S. Cl. 337—295 **6 Claims**



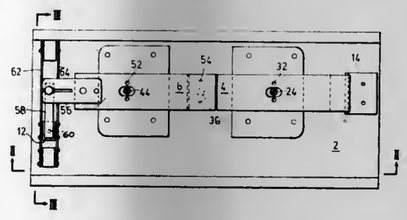
1. A current limiting fuse comprising a hollow casing of insulating material, conductive terminal elements carried by said casing, and a self-standing tubular fuse element of fusible material disposed axially of said casing and connected between said terminal elements, a plurality of axially spaced, generally diamond-shaped perforations formed through said fuse element with their major axes disposed in spaced planes substantially perpendicular to the axis of said fuse element, said perforations being axially distributed in succession and spaced apart circumferentially of said fuse element to define a plurality of axially spaced generally ring-shaped portions distributed substantially from one end of said fuse element to the other, each said ring-shaped portion providing a pair of substantially parallel arcuate current paths extending substantially fully around said fuse element for increasing the conductive path transversely of said fuse element, interconnections disposed between successive ones of said ring-shaped portions, said interconnections being displaced circumferentially of said fuse element for increasing the length of the current path via said element to develop a high arc voltage.

4,117,442

DIFFERENTIAL-TEMPERATURE-SENSITIVE DEVICE

Benjamin Bar-On, 15 Hacarmel St., Rishon Lezion, and Eldad Paz, 9 Haysar St., Ramat Hasharon, both of Israel

Filed Jan. 31, 1977, Ser. No. 763,915
Int. Cl.² H01H *37/46*
U.S. Cl. 337—397 **10 Claims**



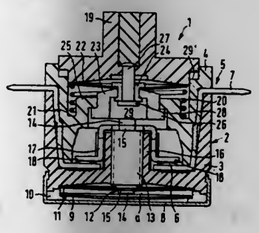
1. A differential-temperature sensitive device comprising: a base member; a first lever arm pivotably mounted at one end to said base member; a second lever arm pivotably mounted at one end to the opposite end of the first arm; a first temperature-sensitive element coupled to said first arm to pivot same with respect to the base member in response to the temperature sensed thereby; a second temperature-sensitive element coupled to said second arm to pivot same with respect to said opposite end of the first arm in response to the temperature sensed thereby; and a controlled member fixed to said base member and actuated by said opposite end of said second arm.

4,117,443

ELECTRIC TEMPERATURE PROTECTION SWITCH

Peter Höfsass, Strietweg 45, D-7530 Pforzheim, Fed. Rep. of Germany

Filed Jun. 6, 1977, Ser. No. 803,841
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625120
Int. Cl.² H01H *37/70*
U.S. Cl. 337—348 **26 Claims**



1. Electric temperature protection switch with at least two encapsulated contacts in a housing and a current transmission member controlled by a temperature sensor, which transmission member in the on position is in spring-loaded application on the contacts, and is fixed in the off position, and with a manual device biased by the force of a reset spring for switching on the released switch again; said switch comprising:

a first distance snap element directly connected with the current transmission member for holding the current transmission member in its respective off and on positions,

a switch plunger disposed at a distance from the current transmission member corresponding maximally to the switching stroke of the manual device and guided slidably on the housing,

a second snap element cooperating with the switch plunger and the manual device which is moved into a passive position from an active position as the result of actuation of the said manual device at critical temperatures, for switching on the current transmission member that is in the off position, with greater setting force with respect to that of the first snap element,

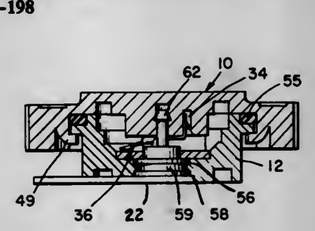
and a stop fixed on the housing for the switch plunger for resetting the second snap element from the passive to the active position, with springing back of the spring-loaded manual device.

4,117,444

HEARING AID VOLUME CONTROL

Bradrick Alan Hildreth, Covina, and Donald Harrison Stephens, Running Springs, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Jul. 14, 1977, Ser. No. 815,877
Int. Cl.² H01C *10/50*
U.S. Cl. 338—198 **7 Claims**



1. A variable resistance device comprising:

a hollow body portion having a sealing ledge;

a post situated in said hollow body portion having a chevron at one end thereof and an intermediate ring portion that provides an annular bead retaining recess;

a sealing member to fit about said sealing ledge;

a substrate having a central aperture to fit about said post and a positioning keyway notch and having an arcuate resistance element formed thereon;

switch means retained in said hollow body portion comprising a flexible, resilient, metallic strip having a first switch contact area and a first switch terminal, and a metallic blade spring having a second switch contact area and a second switch terminal and having first and second positive-feel detents;

wiper spring means for wiping said arcuate resistance element;

a control cap having a sealing surface that fits over said sealing ledge thereby compressing said sealing member so as to form an airtight seal;

means for constraining said sealing surface to fit over said sealing ledge;

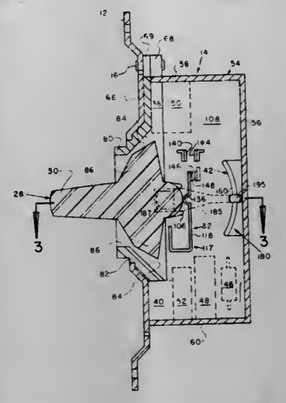
a switch actuating cam formed integrally with said control cap and rotatable therewith so as to actuate said switch means and to position said wiper spring means.

4,117,445

POWER REGULATOR

Luther M. Foreman; Samuel C. Heck, both of San Antonio, and Bill R. Wall, Bulverde, all of Tex., assignors to National Electric Corporation, San Antonio, Tex.

Filed May 16, 1977, Ser. No. 796,857
Int. Cl.² H01C *10/50*
U.S. Cl. 338—198 **27 Claims**



1. In a power regulator of the type having a non-conductive housing and a pivotal toggle member for varying the power supply to a load as the toggle member is displaced between opposite on-off limit positions, the improvement comprising:

a substrate secured within said housing and mounting selected components of a control circuit;

a switch operable by the toggle member to shunt or open the control circuit as the toggle is displaced to the respective on-off limit positions;

a potentiometer forming a part of said control circuit and comprising:

a first continuous resistive track on said substrate;

a second continuous conductive track on the opposite face of said substrate from said first track, said second track defining a path substantially identical to the path of said first track and being separated therefrom by a thickness of said substrate;

said first and second tracks defining arcuate paths formed proximate a correspondingly shaped marginal edge portion of the substrate;

contactor means having a pair of confronting inwardly biased contact elements for frictionally engaging each of said first and second tracks, said contactor means being movable by displacement of the toggle member such that said contact elements wipingly engage the tracks along their respective paths as the toggle member is displaced between said on-off limit positions.

4,117,446

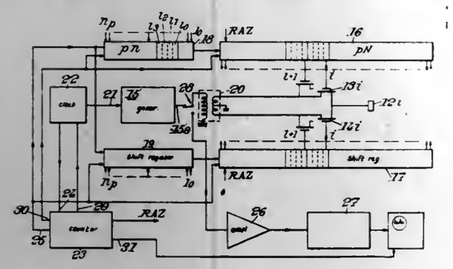
DEVICES FOR PROBING BY ULTRASONIC RADIATION

Pierre M. Alais, Damplerre, France, assignor to Agence Nationale de Valorisation de la Recherche (A N V A R), Neuilly sur Seine, France

Continuation-in-part of Ser. No. 629,599, Nov. 6, 1975. This application Jun. 20, 1977, Ser. No. 807,921
Claims priority, application France, Jun. 18, 1976, 76 18640
Int. Cl.² G01N *29/04*
U.S. Cl. 340—1 R **9 Claims**

1. A device for ultrasonic imaging with electronic scanning, having an array of N identical elementary transducers distributed at equal intervals along a scanning direction and operating at frequency *f;* a signal generator for generating electrical signals; a signal receiver for receiving and processing electrical signals; means for storing an electrical phase distribution signal representative of the phase distribution of *n* signals associated

with *n* adjacent transducers of said array, *n* being an integer greater than 1 and less than N, each said signal having a frequency *f* and having any one of *m* phases with respect to the remaining said *n* signals (*m* being an integer less than *n*), said electrical phase distribution signal being determined so that said *n* adjacent transducers focus energy at a point located at a predetermined distance from said array of transducers; switch means for simultaneously and temporarily connecting said



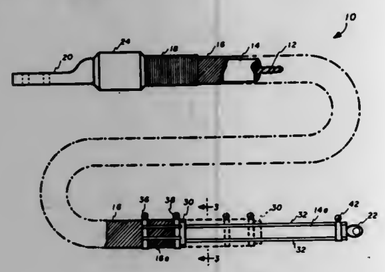
generator or receiver to a set of *n* transducers in accordance with said phase distribution and subsequently or previously for simultaneously and temporarily connecting said receiver or generator to those *n'* transducers among the *n* transducers which are closest to said point to said receiver; and sequencing means for causing said switch means to connect said generator and receiver, successively to sets of *n* and *n'* transducers which are each time shifted by at least one said transducer such that scanning occurs throughout said array.

4,117,447

BOUYANT ELECTRODE WITH ANTI-BIRDNESTING DEVICE

Paul F. Gould, Panama City, and James O. Pate, West Bay, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 29, 1977, Ser. No. 828,714
Int. Cl.[2] B63B *21/56;* H01B *7/12*
U.S. Cl. 340—4 E **10 Claims**



1. A flexible electrode adapted to be towed along its long axis and having forward and aft ends, said electrode including a strength member, a bouyant sleeve surrounding said strength member, and a layer of helically laid wire strands covering said sleeve, said electrode being characterized by the improvement comprising:

a slide member, mounted adjacent said aft end for axial movement relative to said bouyant sleeve;

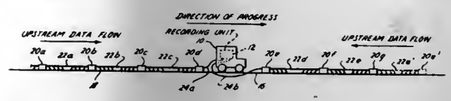
said wire strands having their forward ends fixed relative to said bouyant sleeve and their aft ends fixed to said slide member, whereby excess length in said wire strands that works back along said electrode during use is accommodated by axial movement of said slide member.

4,117,448

SEISMIC TELEMETRIC SYSTEM FOR LAND OPERATIONS

Lee E. Siems, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Apr. 13, 1977, Ser. No. 787,176
Int. Cl.[2] G01V *1/22*
U.S. Cl. 340—15.5 TS **16 Claims**



1. In a seismic exploration system a means for enabling a desired switching sequence in, and data-signal transmission from, a plurality of substantially identical transceiver modules each having several input channels and an output channel, disposed over the ground in consecutive order defining a spread, at least one seismic sensor being connected to each of the several input channels, the system comprising:

a recording and control unit;

a wide band transmission link for interconnecting said data transceiver modules in series with each other and with said recording and control unit, said transmission link and said data transceivers being unpolarized so that there is no preferred electrical or physical orientation of said transmission link with respect to said data transceiver modules and to said recording and control unit, said transmission link further including a bidirectional, common signal channel for transmitting both control and data signals independently of each other and in opposite directions between said data transceiver modules and said recording and control unit;

a DC power supply in each said transceiver module;

a conductor pair in said transmission link for transmitting a DC voltage to said power supply; and

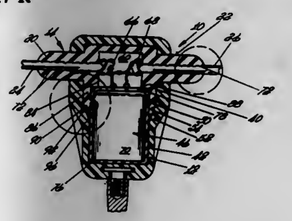
means in each said transceiver for sensing the polarity of the DC voltage on a selected conductor of said conductor pair to define the required direction to signal propagation between said transceivers and said recording and control unit.

4,117,449

FLUID RESISTANT GEOPHONE AND CABLE ENCLOSURE

William O. McNeel, Houston, Tex., assignor to Geo Space Corporation, Houston, Tex.

Filed Aug. 11, 1977, Ser. No. 823,755
Int. Cl.[2] G01V *1/16*
U.S. Cl. 340—17 R **14 Claims**



1. A rigid, fluid resistant enclosure adapted to encase a geophone electrically connected to a cable comprising

a housing means having an open end and inner walls defining a cavity adapted to receive a said geophone encapsulated in a removable fluid tight membrane terminating in a sealing ring located around the top edge of the geophone, said open end of the housing means having a counterbore axially aligned with and formed into said cavity terminating in a countersink having inwardly sloping walls defining a sealing surface which communicates with the inner walls of said cavity;

a flexible sealing means positioned in the counterbore and countersink of the open end of the housing means and having a hollowed out central area and cable entry means adapted to have a said cable extended therethrough into the hollowed out central area to be electrically connected to a said geophone, said cable entry means having elongated resilient sealing nipples extending from the hollowed out central area to the exterior of the housing and having a plurality of raised protrusions on the interior thereof to intimately engage the exterior of a said cable, said flexible sealing means including means defining an opening to the hollowed out central area located in axial alignment with and spaced a predetermined distance from said counterbore and countersink of the housing means, a sealing collar which extends from the opening into the countersink and counterbore of the housing means and a sealing ridge formed between the edge of the opening and interior surface of the collar, said sealing collar terminating in a tapered edge having inwardly sloping walls which mate with and seal against the sealing surface of the inwardly sloping walls of the countersink of said housing means and a circumferentially extending sealing lip located on the interior of the collar below the sealing ridge which is adapted to engage the exterior surface of a said removable fluid tight membrane; and

means clamping said flexible sealing means into intimate fluid resistant contact with the exterior of said housing means and a fluid tight axial compression seal between the sealing nipples and a said cable extending therethrough, said housing means and said flexible sealing means forming interior fluid tight seals therebetween by urging said sealing ridge of the flexible sealing means against a said ring of a fluid tight membrane to form a fluid tight top compression seal between a said fluid tight membrane and a said geophone top and by urging said tapered edge of the collar against the housing means to form an intimate fluid resistant seal between the mating sloping walls of the countersink and collar, said collar being tightened against a said fluid tight membrane in response to the sealing edges of the countersink and collar making sealing engagement therebetween to direct the circumferential lip formed around the interior of the collar against the exterior surface of a fluid tight membrane to clamp and form a fluid tight lateral compression seal between the sealing lip, a said fluid tight membrane and exterior of a said geophone forming a fluid tight interior within the fluid resistant enclosure.

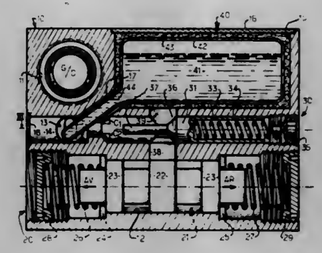
4,117,450

DEVICE FOR AUTOMATIC SIGNALLING OF AN AUTOMOTIVE VEHICLE DAMAGED BY COLLISION

Roger Lavalley, Pantin; Roger Gozlan, Versailles, and Gilbert Brami, Pantin, all of France, assignors to Serpo "Societe d'Etudes et de Recherches pour la protection, France

Division of Ser. No. 407,445, Oct. 18, 1973. This application Apr. 27, 1976, Ser. No. 680,664
Claims priority, application France, Feb. 23, 1973, 73.06554; Aug. 14, 1973, 73 29757
Int. Cl.[2] B60Q *9/00;* G01P *15/02*
U.S. Cl. 340—52 H **15 Claims**

5. An inertial sensor device for automatically activating at least one type of signalling means in an automative vehicle, having a longitudinal axis, for providing distress signals to other motorists and comprising at least two inertial pick-ups each of which inertial pick-ups includes tubular guide means having a bore extending along a linear axis thereof, one of said guide means being oriented in parallel relationship to the longitudinal axis of the vehicle and another guide means being oriented transversely of said longitudinal axis; an inertia block slidably mounted within the bore of each said tubular guide means for sliding movement therein in two opposite directions thereof; two spring means oppositely acting respectively on each inertia block along the linear axis of its associated guide means, each said spring means normally urging said block in a different one of said directions, said two springs normally locking their associated inertia block in a predetermined position in its guide means but permitting a small displacement thereof in either one of said directions when the inertia block is subjected to inertial forces exceeding predetermined first threshold values; a spring urged striker operatively related to each inertia block for operation thereby as a function of movement of its inertia block, each striker having a locked untripped position and a released tripped position in which at least one of the signalling means is activated; release means associated with



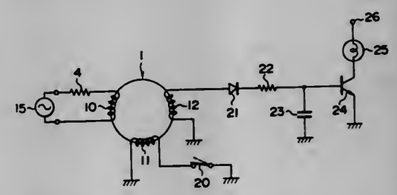
the respective inertia blocks and strikers adapted to release the relevant striker for movement to its tripped position upon a predetermined displacement of the corresponding inertia block, in either one of said directions, occasioned by exposure of said inertia block to inertial forces exceeding predetermined second threshold values which are greater than the corresponding said first values; said two inertial pick-ups having their strikers mounted for movement, when released by said release means, in the same plane and in intersecting paths; and a single actuating means located in said plane of movement of said strikers substantially at the point of intersection of said intersecting paths.

4,117,451

APPARATUS FOR DETECTING VARIATION OF A CONDITION AMOUNT IN A MECHANICAL DEVICE

Kazuo Sato; Haruhiko Toriyama, and Seiichi Matsushige, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 486,431, Jul. 8, 1974, abandoned. This application Aug. 10, 1976, Ser. No. 713,194
Int. Cl.[2] B60C *23/00;* B60T *17/22;* G08B *23/00*
U.S. Cl. 340—52 A **8 Claims**



1. An apparatus for detecting variation of a condition amount in a mechanical device comprising

at least one detecting transformer having an input winding, at least one control winding, and an output winding mounted in a single magnetic path,

an alternating current power source connected to said input winding,

at least one normally closed circuit detecting element means to detect a variation of a condition amount by opening of said normally closed circuit detecting element means connected between one of two ends of said control wind-

ing and ground, and the other of said ends of said control winding connected to ground, and

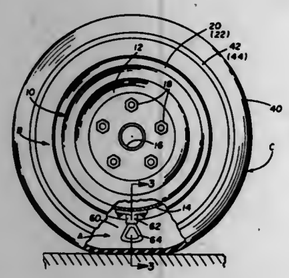
output means connected to said output winding to take out an output signal occurring on said output winding when said normally closed circuit detecting element means is open circuited.

4,117,452

TIRE CONDITION SENSING APPARATUS

Daniel S. Snyder, Norwalk; Steven O. Luzsicza, Huron, and Lyle A. Pauer, Rocky River, all of Ohio, assignors to Gould Inc., Chicago, Ill.

Filed Apr. 6, 1977, Ser. No. 785,018
Int. Cl.² B60C *23/06*
U.S. Cl. 340—58 **7 Claims**



1. Apparatus for sensing the profile condition of a conventional vehicle wheel assembly having an axis of rotation comprised of a rim having an outer peripheral surface with outwardly extending radial flanges at the opposed side edges thereof and a pneumatic tire having an annular road-engaging tread surface with side wall portions at the side edges thereof defining a generally annular tire cavity with said tire adapted to be mounted on said rim and inflated to a predetermined pressure for supporting a vehicle with a predetermined maximum allowable tire profile deflection, said apparatus comprising:

a sensing and actuating structure adapted to be operably mounted within said annular tire cavity including a body portion and a linkage portion comprising a flexible profile sensor having high flexfatigue characteristics, said linkage portion having a first normal position spaced from said tire when said tire profile deflection is less than said predetermined maximum and a second flexibly deflected position when said tire profile deflection is greater than said predetermined maximum, said linkage portion being forcibly moved from said first toward said second position by positive contact from said tire;

energizing means comprising a piezoelectric generator associated with said body portion which is selectively movable between energizing and non-energizing conditions, said energizing means being in said non-energizing condition when said linkage is in said first normal position and being moved into said energizing condition as said linkage is moved toward said second position; and,

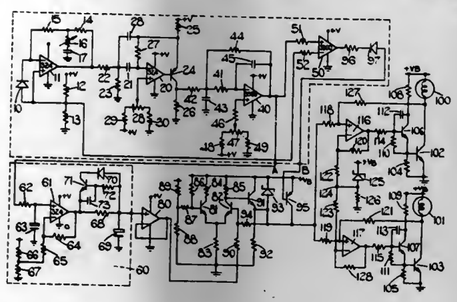
means responsive to said energizing means for indicating that said tire has a profile deflection greater than said predetermined maximum allowable deflection.

4,117,453

VEHICLE HEADLAMP CONTROL CIRCUITS

Duncan Barry Hodgson, Whitnash, near Leamington; John Robert Thornton, Greenlands, and Jonathan Rose, Knowle, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Feb. 4, 1977, Ser. No. 765,864
Claims priority, application United Kingdom, Feb. 10, 1976, 5135/76
Int. Cl.² B60Q *1/14*; H05B *39/02*
U.S. Cl. 340—76 **10 Claims**



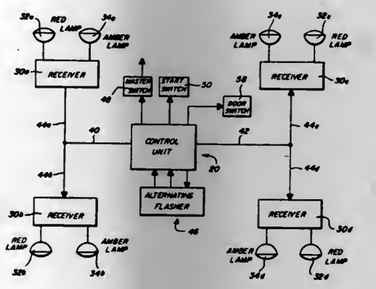
1. A vehicle headlamp control circuit including an incident light detector element and means responsive to only the a.c. component of the detection element output at a frequency related to the street lighting main electricity supply frequency in the locality in which the circuit is intended to be used, characterised by including an averaging circuit for providing a control signal in accordance with the average value of said a.c. component whereby the vehicle lighting is controlled in accordance with the average value of the magnitude of the amplitude of the a.c. component.

4,117,454

STROBE LIGHT SYSTEM FOR SCHOOL BUSES

Lloyd W. Fabry, Wilmette, and Thomas Vinton Brame, Elmwood Park, both of Ill., assignors to Aeroflash Signal Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 588,785, Jun. 20, 1975, Pat. No. 4,011,541. This application Feb. 16, 1977, Ser. No. 768,965
Int. Cl.² B60Q *1/46, 1/26*
U.S. Cl. 340—81 F **4 Claims**



1. In combination with a vehicle lighting system of the type used on school buses and other vehicles as a hazard warning light system and including an alternating flasher, a door switch, and four warning lights consisting of two pairs of red lights, one pair at each end of the vehicle,

time domain dual-function circuitry effective to convert the hazard warning light system from a four light to an eight light system, said circuitry comprising:

a second set of four lights consisting of two pairs of amber lights, one pair at each end of the vehicle,

control means responsive to alternative open and closed positions of said door switch to provide automatic sequencing and coding signals for predetermined alternating flash illumination of the pairs of red lights and of the pairs of amber lights of said hazard warning light system,

receiving means for directively and selectively energizing each pair of red and each pair of amber lights to obviate any need for a direct separate wire from said control means to each light of said pairs of red lights and amber lights,

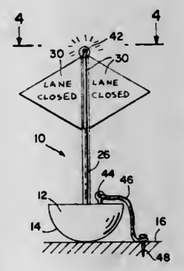
said control means including electrical impedance circuit means constituting electronic delay-non-delay coder means and electronic switching means, said switching means being dependent upon said delay-non-delay coder means, and said coder means and said switching means being operative to modify voltage as applied to said receiver means in said hazard warning light system as a function of an open and a closed position of the vehicle door and of the door switch associated therewith.

4,117,455

SELF-RIGHTING ROADWAY MARKING DEVICE

Lawrence M. Cervantes, 5538 Capellina Way, Santa Barbara, Calif. 93111

Filed Aug. 3, 1976, Ser. No. 711,239
Int. Cl.² E01F *9/01*; G09F *7/22*
U.S. Cl. 340—114 R **6 Claims**



1. A self-righting, rotatable roadway marking device comprising in combination:

a base member having a curved lower ground-engaging surface causing the base member to be readily tippable;

a blind bore formed in said base member centrally thereof adapted to releasably and fixedly retain the lower portion of a staff element therein;

a balance weight within the base member and in axial alignment with said bore;

the center of gravity of said balance weight being located below the center of gravity of said bore and in vertical alignment therewith;

an elongated staff element releasably and non-rotatably mounted in said bore;

electric battery means and bulb means carried by said staff element and operatively connected to display a lighted signal;

flexible means for loosely maintaining the device to a roadway; and

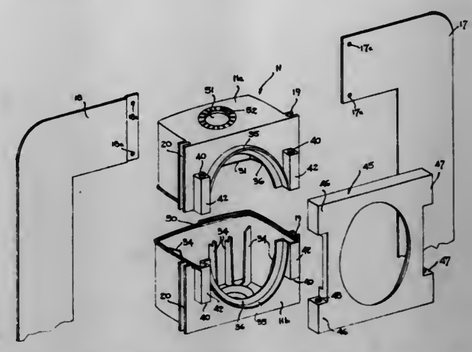
a plurality of stiff wind vanes secured fixedly to said staff element and extending radially outwardly therefrom in equidistantly spaced relation thereabout to cause a tipping and rotating movement of the marking device on its curved lower surface in response to wind forces, the center of gravity of the device being located in relation to the curved surface to produce a restoring movement when the device is tipped, causing the device to be self righting, whereby the marking device exhibits both a tipping and a noticeably rotating movement as a result of wind forces or being struck by a vehicle.

4,117,456

TRAFFIC SIGNAL HOUSING

Leonard N. Albrecht, Beverly Hills, Calif., assignor to Econolite Control Products Inc., Anaheim, Calif.

Filed Jul. 11, 1977, Ser. No. 814,201
Int. Cl.² E01F *9/00*
U.S. Cl. 340—119 **7 Claims**



1. A traffic signal housing comprising a pair of similar tray shaped half-section units having front, rear and side walls and joined together along the edges of said walls to form a lamp container, each of said sections including a plurality of stiffening ribs contained therein, said ribs running radially inwardly from the side walls of said sections, an aperture formed in the front walls of said sections, a stiffening rib on the external surface of said front wall running along said aperture, similar posts symmetrically arranged on opposite sides of said front wall, each of said posts having a hinge pin thereon, and

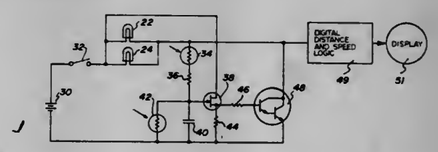
a door with an aperture formed therein, said door having a pair of similar hinge members arranged in spaced relationship with each other along one side of said door and a pair of latch members arranged in spaced relationship with each other along the side of said door opposite said one side thereof, said latch members being spaced from each other the same distance as said hinge members, said hinge members and latch members having apertures formed therein which matingly engage the hinge pins of said containers, whereby said door is adapted to be removably hinged on said container for either left or right hand opening.

4,117,457

LIGHT DETECTION AND SIGNALING SYSTEM

John S. Latta, 9217 Liptonshire, Dallas, Tex. 75238

Filed Mar. 23, 1976, Ser. No. 669,677
Int. Cl.² B62J *5/00*; H05B *37/02*
U.S. Cl. 340—134 **8 Claims**



1. A system for detecting and signaling the presence of a moving localized incident light source having an intensity located at a distance from the system wherein the system and the localized incident light source move with respect to each other, comprising:

a first photosensitive surface for detecting the intensity of the localized incident light source, said first photosensitive surface having a configuration for detecting said intensity of the localized incident light source in a 360° arc contained within a horizontal plane surrounding said first photosensitive surface and for generating a first output

signal representative of said intensity of the localized incident light source;

a second photosensitive surface optically isolated from said first photosensitive surface being nonresponsive to the localized incident light source and being substantially responsive to ambient light for generating a second output signal representative of a predetermined level of ambient light;

first circuit means for receiving said first and second output signals of said first and second photosensitive surfaces and for generating a third output signal in response to receipt of both of said first and second output signals;

second circuit means responsive to said third output signal for generating a fourth output signal having a frequency, said frequency of said fourth output signal being directly related to said intensity of the localized incident light source detected by said first photosensitive surface; and

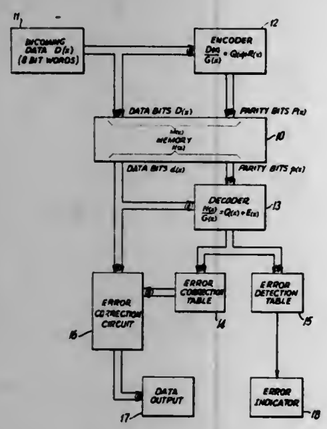
means for emitting light connected to said first and second circuit means responsive to said fourth output signal for being selectively illuminated to flash on and off at a variable rate of flash, said flash rate increasing as the distance between the system and the localized incident light source moving with respect to each other decreases.

4,117,458

HIGH SPEED DOUBLE ERROR CORRECTION PLUS TRIPLE ERROR DETECTION SYSTEM

Clement E. Burghard, Huntington Station, and Veronica L. Coletti, Bronx, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 4, 1977, Ser. No. 774,624
Int. Cl.² G06F *11/12*
U.S. Cl. 340—146.1 AL **20 Claims**



1. In a nine bit parity system for eight bit data providing single and double error correction and triple error detection the combination of:

parity generating means for dividing eight bit incoming data D(X) by a polynomial generator G(X) to obtain a quotient Q(X) and a remainder R(X) consisting of nine parity bits;

encoding means connected to said parity generating means for forming a seventeen bit encoded word M(X) including said nine parity bits R(X) concatenated to said incoming data D(X);

decoding means operatively coupled to receive previously encoded words N(X) and divide at least a portion of same by said polynomial generator G(X) to obtain a quotient and an error decode remainder E(X), N(X) being assumed equal to M(X) and free of errors when E(X) equals zero;

an error correction decode table including the values of E(X) corresponding to all possible single and double errors in N(X);

error correction means coupled to said decoding means and said error decode table to correct any single or double errors in the data bits of N(X) as may be indicated by the error decode remainder; and

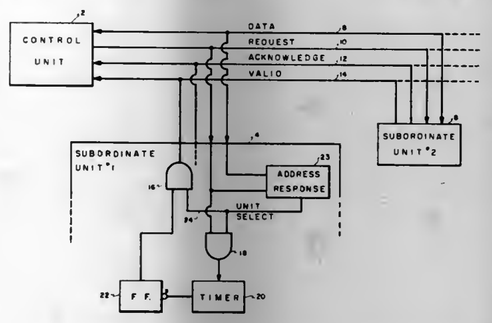
said generator polynomial G(X) being selected to have a unique value E(X) for each possible single and double error and a value of E(X) other than zero for at least each triple error.

4,117,459

TIME-OUT INTERFACE MEANS

Robert H. Douglas; Edward H. Forrester, and David Murray, all of Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 788,586, Apr. 8, 1977, abandoned. This application Jun. 2, 1977, Ser. No. 802,873
Int. Cl.² H04Q *1/00*
U.S. Cl. 340—147 R **8 Claims**



1. In a computer system including a control unit having authority over a plurality of subordinate units with response times which may be different from each other, said control unit communicating with said subordinate units by a communication bus over which command and response messages are transmitted between said control unit and said subordinate units,

an interface unit associated with each of said subordinate units,

each of said interface units including an output signal means responsive to a unit selection issued by said control unit to a selected subordinate unit, means including said communication bus for transmitting said output signal to said control unit as a validation of the unit selection,

each of said interface units further including a timing means,

means for initiating the operation of said timing means in response to said unit selection issued by said control unit, each of said timing means being arranged to define a time period slightly longer than the response time of the particular subordinate unit associated therewith and to produce a time-out signal at the end of the defined period,

and means responsive to said time-out signal for terminating said validation output signal whereby to release said control unit from the selected subordinate unit in a minimum time in the event of a failure of a normal performance response from said selected subordinate unit.

4,117,460

SENSING DEVICE

Kirk Sumner Walworth, Tolland, and Anthony Newman Martin, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1976, Ser. No. 737,380
Int. Cl.² G05B *11/18*; G08B *5/00*; G09F *9/00*
U.S. Cl. 340—190 **6 Claims**

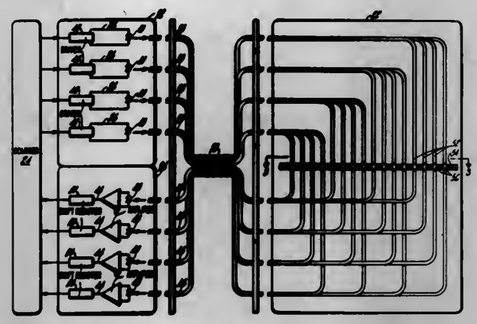
1. A position sensing device comprising:

an optical transmitter having a plurality of illuminating circuits and

means for sequencing the emission of light energy from each of said circuits;

an optical receiver having a plurality of registering circuits wherein each registering circuit is adapted to receive a position signal formed of the sequenced emissions of each transmitting circuit;

for forming said position signal a position encoder having a plurality of channels contained therein and including an optical mask having a plurality of aperture rows disposed in calculated array across said channels so as to



be capable of encoding, from the sequenced emissions of the transmitter, a position signal comprising multiple bits of intelligence which represent the position of the optical mask relative to the channels;

means for collating the multiple bits of intelligence into one or more position signals for transmission to said receiver; and

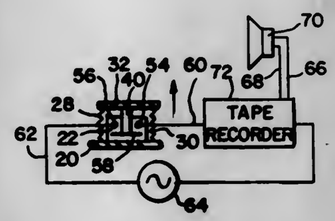
optically transmissive means communicatively joining the transmitter to the position encoder and position encoder to the receiver.

4,117,461

DIET CONTROL APPARATUS

Carol L. Kiebala, 1040 W. Partridge Dr., Palatine, Ill. 60067

Filed Aug. 3, 1976, Ser. No. 711,405
Int. Cl.² G08B *3/00, 21/00*
U.S. Cl. 340—545 **9 Claims**



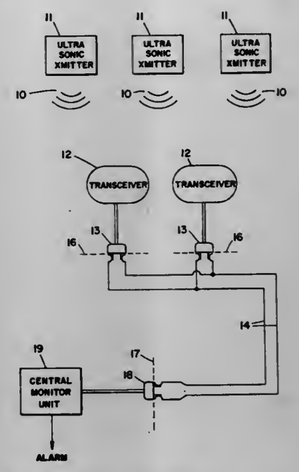
1. Diet control apparatus comprising food storage compartment means for storing food, door means on said food storage compartment means for providing access and cutting off access to the interior of said food storage compartment means, broadcasting means for delivering a message for encouraging dieting operatively connected to said food storage compartment means, activating means to activate said broadcasting means to deliver a message for encouraging dieting when food is sought in said food storage compartment means.

4,117,462

ULTRASONIC TRANSMITTER FOR BURGLAR ALARM SYSTEM

Albert J. Miller, Santa Clara, Calif., assignor to Engineering Systems Corporation, Santa Clara, Calif.

Filed Jun. 1, 1976, Ser. No. 691,790
Int. Cl.² G08B *13/08*
U.S. Cl. 340—539 **23 Claims**



1. A burglar alarm system, comprising:

a plurality of ultrasonic transmitter units, each of said units including means for detecting unauthorized intrusion or movement and means for transmitting a plurality of pulses that have a fixed code pattern of pulse durations and intervals between pulses, and a fixed ultrasonic frequency for each pulse in response to actuation of said detecting means;

at least one transceiver means for receiving said ultrasonic pulses and generating a radio frequency signal in response only to both said fixed ultrasonic frequency and said fixed pulse pattern; and

a central monitoring means for receiving said radio frequency signal and emitting an alarm signal in response thereto.

4,117,463

CIRCUIT FAULT DETECTION APPARATUS FOR RAILROAD TRACK CIRCUIT REDUNDANT CONNECTIONS

David John Norton, Bathampton, England, assignor to Westinghouse Brake & Signal Co. Ltd., Chippenham, England

Filed Jul. 14, 1977, Ser. No. 815,474
Claims priority, application United Kingdom, Jul. 28, 1976, 31386/76
Int. Cl.² G01R *31/02*; G08B *21/00*
U.S. Cl. 340—652 **11 Claims**

1. Circuit fault detection apparatus for a railroad track circuit, which provides a secure connection between one rail of the corresponding track section and a wayside apparatus terminal bus, comprising in combination,

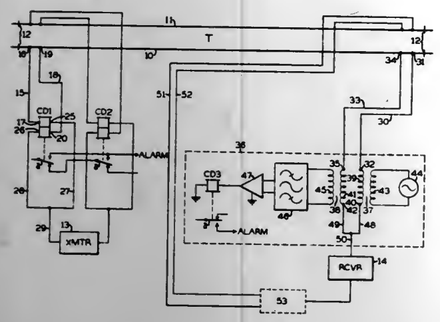
(a) a first electrical conductor connected between a first point on said one rail and a second point,

(b) a second electrical conductor connected between an adjacent third point on said one rail and a fourth point, and

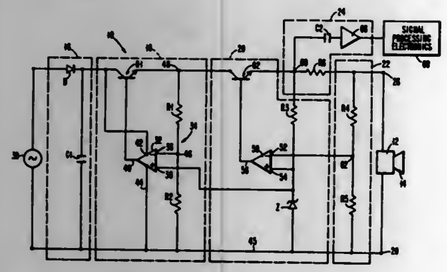
(c) detection means coupled between said second and fourth points and said apparatus terminal bus for completing an electrical connection between said one rail and said apparatus terminal bus when at least one of said first and second conductors remains unbroken,

(d) said detection means being responsive to the pattern of

current flow in said first and second conductors for detecting whether both conductors are complete or one is interrupted, said detection means actuating a fault indication if an interrupted conductor is detected.

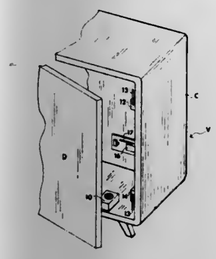


4,117,464
MICROWAVE MOTION-DETECTION APPARATUS EMPLOYING A GUNN OSCILLATOR IN A SELF-DETECTING MODE
Erno B. Lutz, Sunnyvale, Calif., assignor to Solfan Systems, Inc., Mountain View, Calif.
Filed Nov. 11, 1976, Ser. No. 741,034
Int. Cl.² G01S 9/42; G08B 13/24
U.S. Cl. 340—554 **6 Claims**



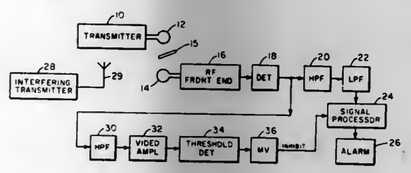
1. A microwave motion detecting apparatus for detecting relative motion of an object comprising:
a first terminal;
a second terminal;
a third terminal;
resistance means connected between said first and second terminals;
a Gunn oscillator connected between said second and third terminals for receiving a predetermined operating potential from which it draws an operating current, said oscillator being operative to generate microwave radiation and when said radiation is reflected by a moving object so as to cause Doppler shifted radiation to be received by said oscillator, develops variations in said operating current;
power supply means having a power output connected between said first and third terminals and a sensing input connected between said second and third terminals, said power supply means being operative to develop said predetermined operating potential between said second and third terminals by developing an output potential between said first and third terminals which exceeds said predetermined operating potential by the voltage drop across said resistance means as determined by said operating current; and
detector means responsive to variations in the potential at said first terminal caused by the voltage drop across said resistance means due to said variations in said operating current, and operative to develop a detected signal indicative of the motion of said object.

4,117,465
ALARM SYSTEM FOR VENDING MACHINES
Stanley W. Timblin, #4 Forest Hill Ct., Greensboro, N.C. 27410
Filed Apr. 7, 1977, Ser. No. 785,588
Int. Cl.² G08B 13/08
U.S. Cl. 340—545 **3 Claims**



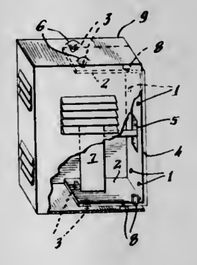
1. An improved alarm system for vending machines of the type having a cabinet, a front closure door hinged along one edge to a corresponding front edge of said cabinet, and said door and cabinet including a latch means associated therewith for securely fastening said door to said cabinet; said system comprising:
a. a power source;
b. an electrically operated warning signal device;
c. an electrical circuit connecting said power source and signal device;
d. a plurality of triggering switch means positioned at spaced points in operative relationship between said cabinet and said door for activation responsive to separation of said door and cabinet, at least two of said spaced positions being relatively adjacent either end of the edge of said door and cabinet opposite the hinge side thereof;
e. said switch means arranged in parallel with each other in said circuit between said power source and said signal device, and said signal device being operated responsive to activation of one of said switches;
f. whereby the slightest separation of said door from said cabinet at either end of said free edge activates said warning signal device.

4,117,466
BEAT FREQUENCY INTERFERENCE REJECTION CIRCUIT
George Jay Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06810
Filed Mar. 14, 1977, Ser. No. 777,524
Int. Cl.² G08B 13/24, 29/00
U.S. Cl. 340—501 **10 Claims**



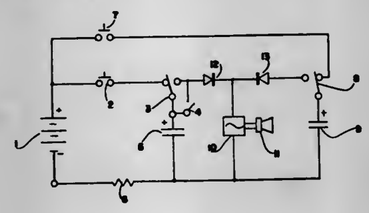
1. For use in an electronic security system having a transmitter producing an electromagnetic field at a frequency repetitively swept through a predetermined range, a resonant tag of resonant frequency within the swept range and receiver means to detect any resonant frequency of the tag produced by the swept field and to provide an alarm indication thereof, an interference rejection circuit for discriminating between a resonant tag signal and a spurious signal produced by a fixed frequency transmitter having a frequency within the swept range, said circuit comprising:
means operative in response to the detector output signal from said receiver means to detect beat frequencies caused by interference of the swept transmitter frequency and said fixed frequency of an interfering transmitter; and
means operative upon such detection to produce a signal to inhibit said alarm indication for the duration of the beat interference.

4,117,467
TAMPER RESISTANT ALARM ANNUNCIATOR
René Liou Tchen San, 10 rue Kellog, Suresnes, France
Filed Jul. 11, 1977, Ser. No. 814,401
Claims priority, application France, Jul. 21, 1976, 76 22183
Int. Cl.² G08B 29/00
U.S. Cl. 340—506 **6 Claims**



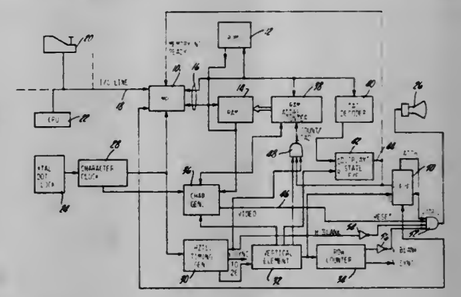
1. A tamper-resistant box for an alarm annunciator comprising a frame adapted to be secured to a support, a moveable cover, a plurality of resilient elements interposed between said frame and said cover for resiliently supporting said cover in slightly spaced relation from said frame, and at least one microinterrupter position to be responsive to movement of the cover relative to the frame to energize the alarm annunciator.

4,117,468
SOUND ALARM FOR PROTECTING BRIEFCASES AND THE LIKE
Tulio Vásquez, Carrera 43-A, No. 30-91, Medellín, Colombia
Filed Mar. 15, 1977, Ser. No. 777,935
Int. Cl.² G08B 13/14
U.S. Cl. 340—571 **11 Claims**



1. An alarm system for use in a small case or hand valise, comprising:
a first electric circuit, including, connected in series,
a power source, and
a condenser;
a switch, located on the exterior of the case or valise, for opening said first circuit when in a first position and for closing said first circuit when in a second position, thereby permitting said power source to energize said condenser when in the second position;
a second electric circuit, connected in series, comprising said condenser, and
an electric sonorous element for emitting a sound alarm when activated by energy accumulated in said condenser;
a single pole double throw switch for closing said first circuit and opening said second circuit when in a first position and for opening said first circuit and closing said second circuit when in a second position, thereby permitting any energy stored in said condenser to activate said electric sonorous element when in the second position; and
switch changing means for causing said single pole double throw switch to be in the first position thereof when the base of the case or valise is placed on a surface and for causing said single pole double throw switch to switch to the second position thereof when the case or valise is lifted from the surface.

4,117,469
COMPUTER ASSISTED DISPLAY PROCESSOR HAVING MEMORY SHARING BY THE COMPUTER AND THE PROCESSOR
Michael R. Levine, 3605 Frederick Dr., Ann Arbor, Mich. 48105
Filed Dec. 20, 1976, Ser. No. 752,566
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 AD **12 Claims**

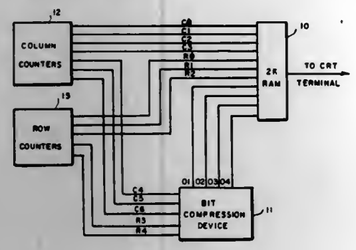


1. A display processor, comprising: a digital, program controllable, numerical processor; a display device; means for repeatedly generating a raster of scans of the display device; a random access memory connected to the digital processor and to the display device; a memory address counter connected to the memory and operative to specify the address of a memory location the contents of which are to be provided to the display device; a control program for the digital processor operative to define a plurality of operations to be performed by the processor including the operation of loading into the memory address counter the initial memory address of the first of a series of character codes stored in contiguous memory addresses to be displayed; and means for incrementing the memory address counter in timed relation to the generation of a display on the display device.

4,117,470
DATA BIT COMPRESSION SYSTEM
Alan E. Elliott, Norwood, Mass., assignor to Data General Corporation, Westboro, Mass.
Filed Oct. 8, 1976, Ser. No. 731,034
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 AD **7 Claims**

1. A data bit compression system comprising
means for providing a first binary signal having a first number of parallel bits; and
bit compression means comprising a multiplexer responsive to a first selected group of parallel bits of said first binary signal, said first selected group being less than the total number of bits in said first binary signal and the number of bit combinations of said first selected group of bits which

are required to define the information contained therein being less than the total number of said bit combinations thereof, said bit compressing means producing a second selected group of bits, the number of bits in said second selected group being less than the number of bits in said first selected group and the information in said second selected group corresponding to the complete information in said first selected group;



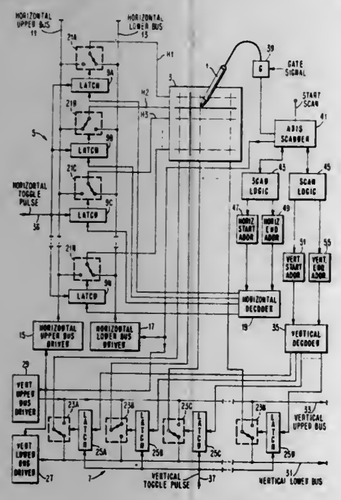
said second selected group of bits, together with the remaining group of bits of said first binary signal not included in said first selected group, thereby providing a second binary signal having a second number of bits which is less than said first number of data bits and containing all of the information contained in said first binary signal.

4,117,471

LIGHT PEN DETECTION AND TRACKING WITH AC PLASMA DISPLAY PANEL

Eugene Stewart Schlig, Somers, and George Raymond Stilwell, Jr., West Nyack, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,465
Int. Cl.² G08B *23/00*
U.S. Cl. 340—324 M **25 Claims**



1. A method of detecting the position of a light pen on the display panel of an AC gas discharge display system, comprising:

applying at least one scan voltage complex to a plurality of lines of at least one of the horizontal and vertical axes of said display panel to cause light emission from both addressed "on" and addressed"off" cells thereof without a loss in the previous memory state of said cells, each said complex including at least

a first component of at least a first voltage level of a magnitude approximately equal to the magnitude of the sustain voltage level V_s for said display panel and of a sufficient duration to discharge fully said addressed "on" cells,

a second component of at least a second voltage level of a polarity the same as and a magnitude approximately equal to twice that of said first voltage level and of a sufficient duration to discharge fully said addressed "off" cells, and

a third component of at least a third voltage level of approximately zero volts and of a sufficient duration to discharge fully said addressed "off" cells and return them to their "off" state;

sensing light emission from said panel with said light pen; and

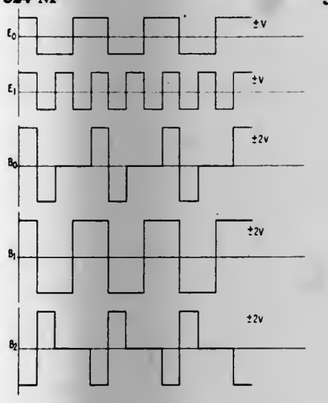
detecting when said light emission is caused by said scan voltage complex.

4,117,472

LIQUID CRYSTAL DISPLAYS

William Gordon Freer, Leavesden; Hugh Andrew Pincherle, and William Thomas Moore, both of London, all of England, assignors to The Rank Organisation Limited, London, England

Filed Feb. 11, 1977, Ser. No. 767,813
Claims priority, application United Kingdom, Feb. 11, 1976, 5356/76
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 M **5 Claims**



1. In a nematic liquid crystal display comprising:

a plurality of liquid crystal elements,

respective pairs of electrodes associated with each of said liquid crystal elements whereby an electric potential across a pair of electrodes above a threshold value can cause activation of said liquid crystal material,

means connecting one of the pair of electrodes of each element in one group of a first set of groups of electrodes,

means connecting the other electrode of each element in one group of a second set of groups of electrodes,

said means connecting said electrodes such that said one electrode and said other electrode of any one element are members of two groups for which no other element has both electrodes as members, and

means for applying to each said group of electrodes a respective waveform signal,

the improvement wherein:

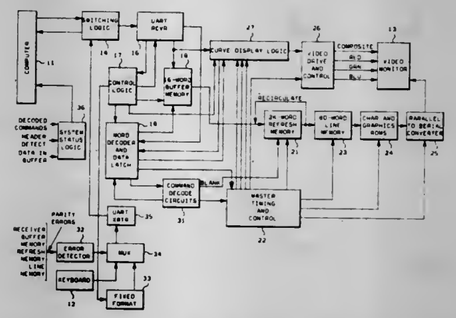
said means for applying a waveform signal to each group of electrodes operates to apply to each group of electrodes of said first set a first or a second waveform signal and to apply to each group of said second set of electrodes a third or a fourth or a fifth waveform signal, said first, second, third, fourth and fifth waveform signals being related in amplitude and phase to each other such that the RMS values of the differences between said first and said third signals, and between said first and said fourth signals, and between said second and said third signals are below said threshold value for said liquid crystal elements, and the RMS values of the differences between said first and said fifth signals, and between said second and said fourth signals, and between said second and said fifth signals are above said threshold value for said liquid crystal elements.

4,117,473

DISPLAY SYSTEM FOR DISPLAYING INFORMATION IN THE FORM OF A HORIZONTALLY ORIENTED CURVE ON A RASTER TYPE CRT

Charles C. Habeger, Jr., and Michael J. Irwin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 25, 1977, Ser. No. 762,353
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 AD **22 Claims**



1. Apparatus for producing a horizontally oriented curve on a raster type cathode ray tube display, comprising:

a cathode ray tube;

means for producing a raster on said cathode ray tube having horizontal scans alternating with retraces;

means for producing a series of curve data point signals;

a memory means;

means for storing said series of curve data point signals in said memory means in the sequence in which they are produced;

means for reading out of said memory means all of said series of curve data point signals in synchronization with each horizontal scan of the raster on the cathode ray tube;

means for establishing a signal representative of the vertical position of the current horizontal scan of the raster; and

means for comparing the series of curve data point signals read out of said memory means during the current horizontal scan with the signal representative of the vertical position of the current horizontal scan and applying a video signal to said cathode ray tube to produce a dot on the screen of said cathode ray tube when the thus compared signals are equal.

4,117,474

COMMUNICATIONS DEVICE WITH PLURAL, POWER-OPERATED DISPLAY MECHANISMS SELECTIVELY CONTROLLED BY AN OPERATOR

Lloyd E. Augustine, P.O. Box 3175, University of Oregon, Eugene, Oreg. 97403

Filed Nov. 19, 1976, Ser. No. 743,112
Int. Cl.² G09F *9/00*
U.S. Cl. 340—325 **9 Claims**

1. A communications device comprising

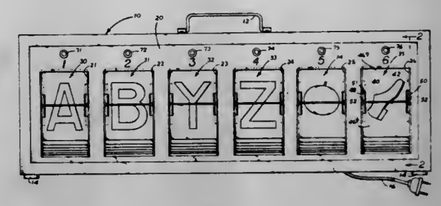
a housing,

plural power-operated information display mechanisms exposed on one side of the housing, each mechanism when in an operating state displaying recurrently and in succession different information symbols,

scan indicating means for designating selected ones of said display mechanisms, and

control means controlling operation of said display mechanisms and said scan indicating means,

said control means including scan means producing a scan phase of operation where selectively and recurrently different ones of said display mechanisms are placed in a standby state and the scan indicating means operates to



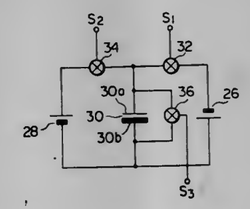
designate the particular display mechanism placed in such standby state, said control means additionally including means controlled by the operator of the communications device actuatable to start and actuatable to stop operation of a display mechanism when such is in a standby state as produced by said scan means, the scan means of said control means being constructed to discontinue the scan phase of operation with one of the display mechanisms operating.

4,117,475

DRIVER CIRCUIT FOR ELECTROCHROMIC DISPLAY DEVICE

Heihachiro Ebihara, and Fukuo Sekiya, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Nov. 26, 1976, Ser. No. 745,138
Claims priority, application Japan, Dec. 1, 1975, 50-143762
Int. Cl.² G09F *9/32*
U.S. Cl. 340—336 **11 Claims**



1. A driver circuit for an electro-chromic display device having a persistence effect and a plurality of display elements adapted to display information in response to display information signals, comprising:

means for generating first and second drive signals in response to a change of each display information signal for thereby driving said each display element; and

means for generating control signals just prior to said drive signals in response to said change of said each display information signal for thereby short-circuiting said each display element just prior to driving said each display element;

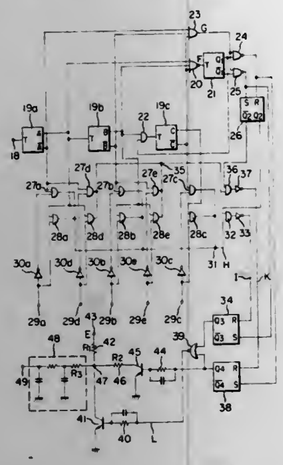
said first and second drive signals having a narrow pulse width, whereby said each display element is driven only for predetermined short time intervals and maintained in its open state during time intervals other than said predetermined short time intervals to display said information due to its persistence effect.

4,117,476

DIGITAL-TO-ANALOG CONVERTER

Yukio Koyanagi, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 2, 1977, Ser. No. 764,761
Claims priority, application Japan, Jun. 2, 1976, 51-12522
Int. Cl.[2] H03K *13/20*
U.S. Cl. 340—347 DA **5 Claims**



1. A digital to analog converter comprising a serial counter having $n - m$ (where $n > m$) flip-flops arranged to deliver a first output consisting of m-bits and a second output consisting of $n - m$ bits, means for combining pulses corresponding to said m-bit and $(n - m)$-bit outputs in weighted fashion to derive an n-bit output, means for filtering said combined pulses to derive a DC output, an AND gate interconnected between the m-th and $(m + 1)$-th flip-flops of said counter, the output of said m-th flip-flop being connected to one input of said AND gate and the output of said m-th flip-flop being connected to the input of said $(m + 1)$-th flip-flop, the outputs of the first to m-th flip-flops being connected to the inputs of a first NAND gate and the outputs of the $(m + 1)$-th to the last flip-flops being connected to the remaining inputs of said NAND gate, the output of said NAND gate being connected to the input of an additional flip-flop, the output of said additional flip-flop being connected to the other input of said AND gate, whereby said m-bit and $(n - m)$-bit outputs may be alternately derived.

4,117,477

SINGLE-POINT ANALOG SUBSYSTEM INTERFACED WITH A COMPUTER

William E. Zitelli, Media, and Andras I. Szabo, Export, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 689,626, May 24, 1976, abandoned, which is a continuation of Ser. No. 529,200, Dec. 3, 1974, abandoned, which is a continuation of Ser. No. 362,990, May 22, 1973, abandoned. This application Sep. 15, 1977, Ser. No. 833,550
Int. Cl.[2] H03K *13/20*
U.S. Cl. 340—347 NT **1 Claim**

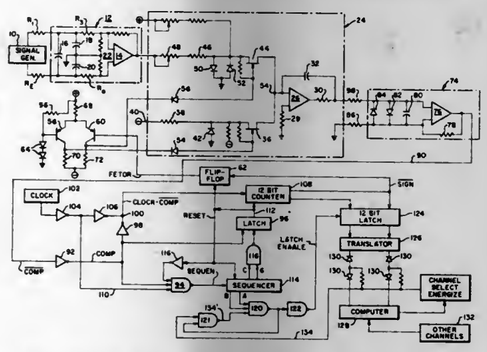
1. In a single-point analog-to-digital subsystem interfaced with a digital computer and operative with successive conversion cycles from said single-point, a dual slope integrator operative with an analog input signal derived from said single-point, during each of said successive conversion cycles for storing a charge during a first mode characterized by a charging slope related to the magnitude of said analog input signal and for discharging the stored charge during a second mode characterized by a constant discharging slope, the combination of:

comparator means responsive to said integrator for continuously comparing a voltage representative of said stored charge to a threshold voltage and for detecting a voltage cross-over in either directions;

a counter operative during said second mode for generating a time-related count;

said comparator means being operative upon a first cross-over in one direction to initiate a fixed time interval during said first mode, said comparator means being operative upon a second cross-over in the opposite direction during said second mode to disable said counter, thereby to establish a final count in said counter relative to a current conversion cycle;

sequencer means actuated by said comparator means during a given conversion cycle in response to said second cross-over for establishing a first predetermined time interval after said second cross-over and for initiating said first mode for a subsequent conversion cycle at the end of said first predetermined time interval, said sequencer means



also resetting said counter at the end of said first predetermined time interval;

latching means being provided operative with said counter for storing said final count;

said computer interrogating said subsystem from time-to-time to acquire said final count;

said sequencer means being further responsive to said second cross-over for establishing a second predetermined time interval therefrom, said second time interval being shorter than said first time interval;

means being provided responsive to said sequencer means for generating an enabling signal for transferring the count in said counter into said latching register means at the end of said second predetermined time interval; and,

means for preventing the generation of said enabling signal when said sequencer means operates at the end of said second predetermined time interval in conjunction with an interrogation by said computer.

4,117,478

VARIABLE CHARACTER DISPLAY DEVICE

Alfred Skrobisch, Huntington Station, N.Y., assignor to The Staver Company, Incorporated, Bay Shore, N.Y.

Filed Oct. 12, 1976, Ser. No. 731,843
Int. Cl.[2] G08B *5/26*
U.S. Cl. 340—378 R **10 Claims**

1. A variable character display device, comprising;

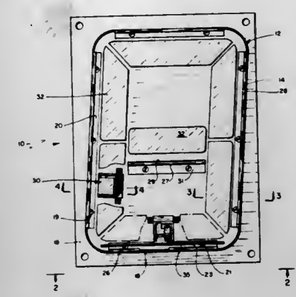
a base plate;

a multiplicity of variable segment display mechanisms mounted on said base plate in a predetermined array, each of said mechanisms comprising:

a substantially flat display segment having a display face for displaying a portion of a character;

an arm connected perpendicularly to said display segment and extending therefrom;

a rotating means connected to said arm remote from said display segment for rotating said segment between a display position wherein said display face is wholly exposed in a display plane parallel to said base plate and a retracted position wherein said display face is turned more than 90° away from said display plane toward said base plate wherein said rotating means lie in a plane substantially below said display plane; and



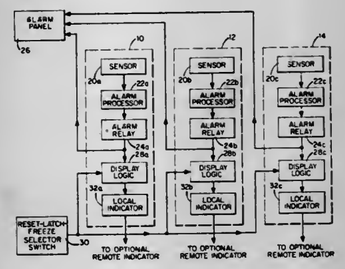
magnetic means for holding said segment magnetically in either one of said two positions, whereby a selected character is defined by a selected plurality of said segments when rotated to said display position, and whereby all other segments are held magnetically in said retracted position wholly concealing their respective display faces.

4,117,479

MULTI-MODE INTRUSION ALARM SYSTEM

Aaron A. Galvin, Lexington; L. Dennis Shapiro, Chestnut Hill, and Valdemar Skov, Wayland, all of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Apr. 16, 1976, Ser. No. 677,661
Int. Cl.[2] G08B *29/00*
U.S. Cl. 340—502 **3 Claims**



1. For use in an alarm system having a plurality of sensors for detecting an alarm condition and for providing an alarm signal representative thereof, an indicator system comprising:

selector means for selecting one of at least three modes and for providing latch, reset, and freeze signals to indicate the current selection of first, second, and third modes respectively;

a like plurality of latch means each corresponding to a respective one of said sensors and each having at least two output states, each of said latch means including:

means, operative during the presence of the latch signal from said selector means, for setting the latch means to the first output state in response to an alarm signal from the corresponding one of the plurality of sensors; and

means, operative during the presence of the reset signal from said selector means and only in the absence of an alarm signal from the corresponding sensor, for resetting the latch means to the second output state; and

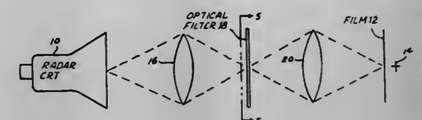
means, operative during the occurrence of the freeze signal from the selector means, for rendering the latch means output state unalterable as long as the freeze signal is present.

4,117,480

REAL TIME SIGNAL CORRELATOR FOR HIGH RESOLUTION RADAR

William R. Boario, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 12, 1965, Ser. No. 425,095
Int. Cl.[2] G01S *9/02*
U.S. Cl. 343—5 CM **2 Claims**



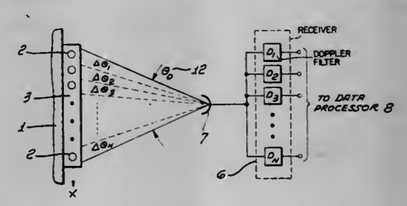
1. A real time signal correlator for use on high resolution mapping radar apparatus aboard a moving aircraft having a ground speed indicator and comprising on an optical axis in the order named: A time modulating light source, a first cylindrical lens, an optical filter having at least one optically apertured time variable function and located to be substantially at the imaging plane of said first cylindrical lens, a second cylindrical lens optically parallel to said first cylindrical lens, and an optically sensitive film substantially at the imaging plane of said second cylindrical lens normal to the optical path and movable in a direction parallel to the time variable function on said optical filter, the linear velocity of said film being synchronized to the ground speed indicator on the aircraft so that when the time function of said modulating light source is identical with the time variable function of said optical filter the two time variable functions are correlated and impressed upon said film.

4,117,481

SIDELOOKING RADAR AND SYSTEM FOR IDENTIFYING OBJECTS

James Nickolas Constant, 1603 Danbury Dr., Clarmont, Calif. 91711

Continuation-in-part of Ser. No. 257,932, May 30, 1972, abandoned. This application Mar. 15, 1977, Ser. No. 777,763
Int. Cl.[2] G01S *9/56*
U.S. Cl. 343—6.5 SS **30 Claims**



1. A detection system comprising in combination:

a transmitter including a transmitting antenna for generating a first signal of predetermined carrier frequency, time duration and bandwidth;

a receiver including a receiving antenna for receiving first FM signals of predetermined carrier frequency f, time duration T and bandwidth B,

each of said first FM signals being the response of one of a transit of a target through the beam of said transmitting antenna, signaling by a target in the beam of said transmitting antenna, and signaling by said transmitter via said target;

a doppler filter bank included in said receiver for detecting

each of said first FM signals as one of a plurality of second FM signals of predetermined carrier frequency $f + f_D$, time duration T/N and bandwidth Δf, each of said second FM signals being obtained from a filter in said doppler filter bank, and an AM modulated FM signal obtained from the combined output of filters in said doppler filter bank, said AM being produced by the spectral response characteristics of filters in said doppler filter bank; and

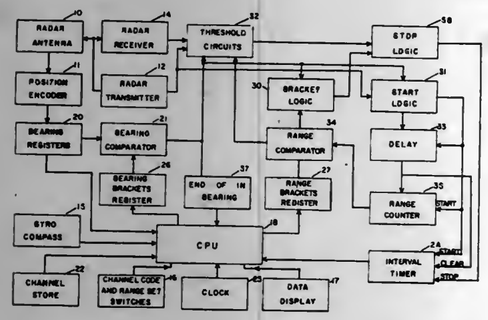
a signal processor having the receiver output as its input and including means for processing and decoding said detected first FM signals.

4,117,482

METHOD AND APPARATUS FOR LOCATING POSITION IN A WATERWAY

Joseph Jepsky, Marblehead; Irvin S. Englander, Cambridge, both of Mass., and James E. Williams, Pelham, N.H., assignors to Associated Controls & Communications, Inc., Lynn, Mass.

Filed Jul. 7, 1977, Ser. No. 813,481
Int. Cl.² G01S 9/04
U.S. Cl. 343—7.3 **4 Claims**



1. On board navigational apparatus operative with radar reflectors located at fixed predetermined positions relative to channels of a waterway comprising:

(a) a radar set consisting of a radar transmitter, radar receiver and a rotatable antenna;

(b) a central processing unit;

(c) a data processing memory connected to said processing unit and containing channel geometry data relative to radar reflectors at fixed positions;

(d) manual control means connected to index said memory;

(e) means to provide ship bearing information and means to provide antenna bearing information connected to said processing unit;

(f) register means connected to said processing unit to register maximum and minimum bearing locations of one reflector of said reflectors as calculated by said processing unit;

(g) register means connected to said processing unit to register maximum and minimum range locations of said one reflector as calculated by said processing unit;

(h) interval timer means connected to said processing unit to time range intervals commencing with a trigger from said radar transmitter and providing an output to said processing unit;

(i) start logic means connected between said radar transmitter and said interval timer enabling only radar triggers occurring between said minimum and maximum bearing locations to start said timer;

(j) stop logic means connected between said radar receiver and said timer inhibiting stop of said timer on radar echoes received outside of said minimum and maximum range locations and both stopping said timer and transferring its contents to said central processing unit on an echo received inside said minimum an maximum range locations; and,

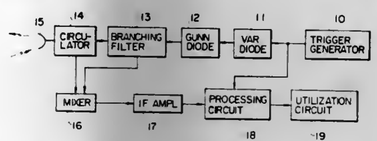
(k) delay means connected between said start logic means and said interval timer for clearing said timer a predetermined delayed time interval after each start of said timer.

4,117,483

NOISE-IMMUNE SIGNAL PROCESSING CIRCUIT FOR PULSED RADARS

Norio Fujiki, Yokohama, assignor to Nissan Motor Company, Limited, Japan

Filed Nov. 10, 1976, Ser. No. 740,746
Int. Cl.² G01S 9/44
U.S. Cl. 343—8 **7 Claims**



1. A pulse radar having means for transmitting pulsed high-frequency electromagnetic energy to an object moving relative to a given point and means for receiving a signal returned from the object, means for converting said signal into an intermediate frequency signal which varies in phase with the speed of said object relative to said given point, and a circuit for processing said intermediate frequency signal in order to determine said relative speed, said processing circuit comprising:

means for generating a first output signal when a positive half wave of said intermediate frequency signal reaches a positive threshold level and generating a second output signal when a negative half wave of said intermediate frequency signal reaches a negative threshold level;

a bistable device responsive to the first and second output signals to assume first and second binary states, respectively;

means for permitting passage to said bistable device of the one of said output signals that occurs earlier than the other output signal and preventing passage to said bistable device of the other output signal until the order of occurrence of said output signals is reversed; and

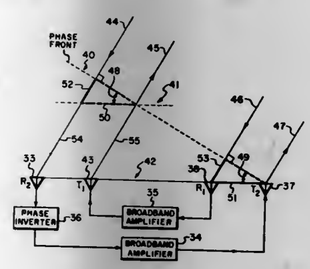
varying means for said positive and negative threshold levels when said bistable device changes its binary state.

4,117,484

ANGULAR DECEPTION COUNTERMEASURE SYSTEM

Peter K. Shizume, Glen Oaks, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 31, 1958, Ser. No. 753,174
Int. Cl.² G01S 7/38
U.S. Cl. 343—18 E **3 Claims**



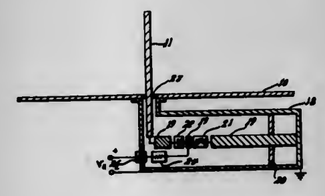
1. A pair of electromagnetic energy transponders, each transponder comprising means for receiving incident microwave energy and means for transmitting said energy, said means for receiving and means for transmitting being interconnected in respective pairs by individual amplifying means, the electrical path lengths of said transponders being substantially identical, one of said transponders further including phase inverting means, and supporting means for spatially locating the receiving means of each of said transponders at respective extremities of a first straight line and for spatially locating the transmitting means of each of said transponders at respective extremities of a second straight line, said first and second lines being of equal length and coplanar.

4,117,485

RADAR TARGET CROSS SECTION CONTROL METHOD AND MEANS

Benjamin B. Gorr, Ipswich, and Richard B. Mack, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1971, Ser. No. 105,749
Int. Cl.² G01S 7/38; H01Q 15/00, 17/00
U.S. Cl. 343—18 E **11 Claims**



1. A radar target having cross section control means, said cross section control means comprising

means for detecting incident electromagnetic wave energy,

means for generating therefrom a control signal responsive to the frequency thereof, and

means for loading said radar target with a variable impedance load, said variable impedance load having electrical characteristics that effect non-increasing capacitive reactance values in response to increasing incident electromagnetic wave frequency,

said variable impedance load being responsive to and controlled by said control signal.

4,117,486

BUOYANT CHAFF

Chester E. Sharp, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 5, 1961, Ser. No. 115,045
Int. Cl.² G01S 7/36, 7/42; H01Q 17/00
U.S. Cl. 343—18 B **2 Claims**



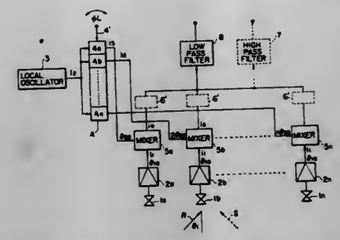
1. A buoyant elongated tubular chaff element responsive to radio frequency energy comprising a hollow longitudinal body of relatively thin light weight flexible metal, a quantity of a gaseous medium lighter than air contained within said body sufficient to partially inflate the said body at normal atmospheric pressure and to fully inflate the said body at an altitude where the body weight equals the air displaced, the length of said body being substantially equal to one half the wave length of the radio frequency of operation.

4,117,487

ELECTRONICALLY SCANNED ECHO PULSE RECEIVER

Kiyomi Minohara, Takarazuka, and Akira Sugiyama, Ashiya, both of Japan, assignors to Furuno Electric Co., Ltd., Nagasaki, Japan

Filed Apr. 15, 1977, Ser. No. 787,823
Claims priority, application Japan, Apr. 15, 1976, 51/43293; Jan. 27, 1977, 52/8359
Int. Cl.² H01Q 3/26
U.S. Cl. 343—100 SA **11 Claims**



1. A reception beam directional control system for varying the relative phases of the output signals produced by at least a pair of pulse echo receiving transducers spaced apart at a fixed interval, for combining such phase-shifted signals to obtain a reception beam, and for electronically controlling the directional orientation thereof, comprising:

a. a local oscillator,

b. a plurality of variable phase shifters corresponding to the number of said receiving transducers for progressively shifting the phase of the output signal of said local oscillator,

c. a plurality of mixers for respectively modulating the received signals produced by said transducers with the output signals from said phase shifters,

d. means for combining together the output signals from said plurality of mixers, and

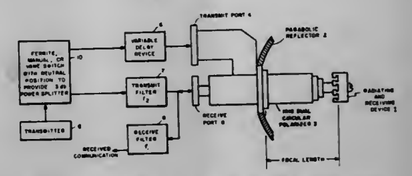
e. means for selecting at least one of the sideband frequencies of the combined output signals from said mixers.

4,117,488

MULTIPURPOSE, MULTIFUNCTION ANTENNA

Emmanual Joseph Perrotti, Ramsey, N.J., assignor to International Telephone and Telegraph Corp., Nutley, N.J.

Filed Jan. 21, 1976, Ser. No. 651,090
Int. Cl.² H01Q 21/24, 15/24
U.S. Cl. 343—100 PE **3 Claims**



3. A multipurpose multifunction antenna comprising:

a dual circularly polarized radiating and receiving means;

a dual circular polarizer coupled to said means;

a transmit port coupled to said polarizer;

a receive port coupled to said polarizer; and

a circuit arrangement coupled to said transmit and receive ports to enable radiation of a selected one of vertical linearly polarized waves, one of right hand and left hand dual circularly polarized waves and linearly polarized waves having a selected angle of polarization and reception of the other of right hand and left hand dual circularly polarized waves;

said circuit arrangement including

time duration $1/N$ and bandwidth Δf, each of said second FM signals being obtained from a filter in said doppler filter bank, and an AM modulated FM signal obtained from the combined output of filters in said doppler filter bank, said AM being produced by the spectral response characteristics of filters in said doppler filter bank; and

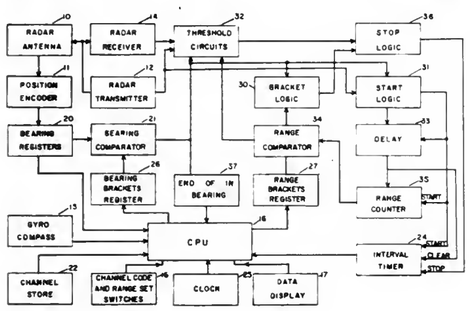
a signal processor having the receiver output as its input and including means for processing and decoding said detected first FM signals.

4,117,482

METHOD AND APPARATUS FOR LOCATING POSITION IN A WATERWAY

Joseph Jepsky, Marblehead; Irvin S. Englander, Cambridge, both of Mass., and James E. Williams, Pelham, N.H., assignors to Associated Controls & Communications, Inc., Lynn, Mass.

Filed Jul. 7, 1977, Ser. No. 813,481
Int. Cl.[2] G01S *9/04*
U.S. Cl. 343—7.3 **4 Claims**



1. On board navigational apparatus operative with radar reflectors located at fixed predetermined positions relative to channels of a waterway comprising:

(a) a radar set consisting of a radar transmitter, radar receiver and a rotatable antenna;

(b) a central processing unit;

(c) a data processing memory connected to said processing unit and containing channel geometry data relative to radar reflectors at fixed positions;

(d) manual control means connected to index said memory;

(e) means to provide ship bearing information and means to provide antenna bearing information connected to said processing unit;

(f) register means connected to said processing unit to register maximum and minimum bearing locations of one reflector of said reflectors as calculated by said processing unit;

(g) register means connected to said processing unit to register maximum and minimum range locations of said one reflector as calculated by said processing unit;

(h) interval timer means connected to said processing unit to time range intervals commencing with a trigger from said radar transmitter and providing an output to said processing unit;

(i) start logic means connected between said radar transmitter and said interval timer enabling only radar triggers occurring between said minimum and maximum bearing locations to start said timer;

(j) stop logic means connected between said radar receiver and said timer inhibiting stop of said timer on radar echoes received outside of said minimum and maximum range locations and both stopping said timer and transferring its contents to said central processing unit on an echo re-

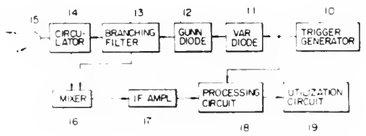
(k) delay means connected between said start logic means and said interval timer for clearing said timer a predetermined delayed time interval after each start of said timer.

4,117,483

NOISE-IMMUNE SIGNAL PROCESSING CIRCUIT FOR PULSED RADARS

Norio Fujiki, Yokohama, assignor to Nissan Motor Company, Limited, Japan

Filed Nov. 10, 1976, Ser. No. 740,746
Int. Cl.[2] G01S *9/44*
U.S. Cl. 343—8 **7 Claims**



1. A pulse radar having means for transmitting pulsed high-frequency electromagnetic energy to an object moving relative to a given point and means for receiving a signal returned from the object, means for converting said signal into an intermediate frequency signal which varies in phase with the speed of said object relative to said given point, and a circuit for processing said intermediate frequency signal in order to determine said relative speed, said processing circuit comprising:

means for generating a first output signal when a positive half wave of said intermediate frequency signal reaches a positive threshold level and generating a second output signal when a negative half wave of said intermediate frequency signal reaches a negative threshold level;

a bistable device responsive to the first and second output signals to assume first and second binary states, respectively;

means for permitting passage to said bistable device of the one of said output signals that occurs earlier than the other output signal and preventing passage to said bistable device of the other output signal until the order of occurrence of said output signals is reversed; and

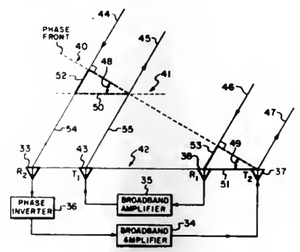
varying means for said positive and negative threshold levels when said bistable device changes its binary state.

4,117,484

ANGULAR DECEPTION COUNTERMEASURE SYSTEM

Peter K. Shizume, Glen Oaks, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 31, 1958, Ser. No. 753,174
Int. Cl.[2] G01S *7/38*
U.S. Cl. 343—18 E **3 Claims**



1. A pair of electromagnetic energy transponders, each transponder comprising means for receiving incident microwave energy and means for transmitting said energy, said means for receiving and means for transmitting being intercon-

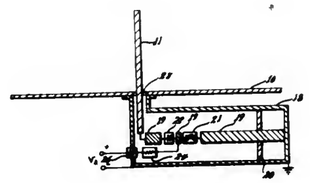
inverting means, and supporting means for spatially locating the receiving means of each of said transponders at respective extremities of a first straight line and for spatially locating the transmitting means of each of said transponders at respective extremities of a second straight line, said first and second lines being of equal length and coplanar.

4,117,485

RADAR TARGET CROSS SECTION CONTROL METHOD AND MEANS

Benjamin B. Gorr, Ipswich, and Richard B. Mack, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1971, Ser. No. 105,749
Int. Cl.[2] G01S *7/38;* **H01Q** *15/00, 17/00*
U.S. Cl. 343—18 E **11 Claims**



1. A radar target having cross section control means, said cross section control means comprising

means for detecting incident electromagnetic wave energy,

means for generating therefrom a control signal responsive to the frequency thereof, and

means for loading said radar target with a variable impedance load, said variable impedance load having electrical characteristics that effect non-increasing capacitive reactance values in response to increasing incident electromagnetic wave frequency,

said variable impedance load being responsive to and controlled by said control signal.

4,117,486

BUOYANT CHAFF

Chester E. Sharp, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

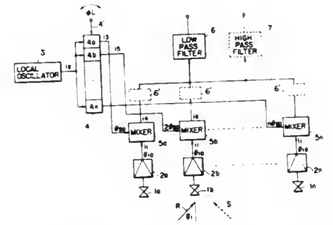
Filed Jun. 5, 1961, Ser. No. 115,045
Int. Cl.[2] G01S *7/36, 7/42;* **H01Q** *17/00*
U.S. Cl. 343—18 B **2 Claims**



1. A buoyant elongated tubular chaff element responsive to radio frequency energy comprising a hollow longitudinal body of relatively thin light weight flexible metal, a quantity of a gaseous medium lighter than air contained within said body sufficient to partially inflate the said body at normal atmospheric pressure and to fully inflate the said body at an altitude where the body weight equals the air displaced, the length of said body being substantially equal to one half the wave length of the radio frequency of operation.

Kiyomi Mimonari, Fukuoka, and [illegible], both of Japan, assignors to Furuno Electric Co., Ltd., Nagasaki, Japan

Filed Apr. 15, 1977, Ser. No. 787,823
Claims priority, application Japan, Apr. 15, 1976, 51/43293; Jan. 27, 1977, 52/8359
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—100 SA **11 Claims**



1. A reception beam directional control system for varying the relative phases of the output signals produced by at least a pair of pulse echo receiving transducers spaced apart at a fixed interval, for combining such phase-shifted signals to obtain a reception beam, and for electronically controlling the directional orientation thereof, comprising:

a. a local oscillator,

b. a plurality of variable phase shifters corresponding to the number of said receiving transducers for progressively shifting the phase of the output signal of said local oscillator,

c. a plurality of mixers for respectively modulating the received signals produced by said transducers with the output signals from said phase shifters,

d. means for combining together the output signals from said plurality of mixers, and

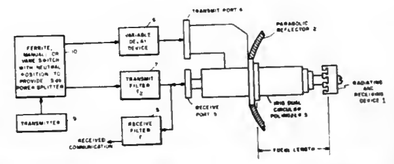
e. means for selecting at least one of the sideband frequencies of the combined output signals from said mixers.

4,117,488

MULTIPURPOSE, MULTIFUNCTION ANTENNA

Emmanual Joseph Perrotti, Ramsey, N.J., assignor to International Telephone and Telegraph Corp., Nutley, N.J.

Filed Jan. 21, 1976, Ser. No. 651,090
Int. Cl.[2] H01Q *21/24, 15/24*
U.S. Cl. 343—100 PE **3 Claims**



3. A multipurpose multifunction antenna comprising:

a dual circularly polarized radiating and receiving means;

a dual circular polarizer coupled to said means;

a transmit port coupled to said polarizer;

a receive port coupled to said polarizer; and

a circuit arrangement coupled to said transmit and receive ports to enable radiation of a selected one of vertical linearly polarized waves, one of right hand and left hand dual circularly polarized waves and linearly polarized waves having a selected angle of polarization and reception of the other of right hand and left hand dual circularly polarized waves;

said circuit arrangement including

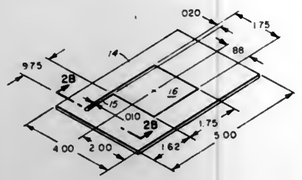
a transmitter,
a variable delay device coupled to said transmit port,
a transmit filter coupled to said receive port,
a receive filter coupled to said receive port,
a switch having a neutral position to provide a three decibel power splitter coupled to said transmitter, said delay device and said transmit filter.

4,117,489

CORNER FED ELECTRIC MICROSTRIP DIPOLE ANTENNA

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 571,152, Apr. 24, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,573
Int. Cl.[2] H01Q *1/38*
U.S. Cl. 343—700 MS **6 Claims**



1. A corner fed electric microstrip dipole antenna having low physical profile and conformal arraying capability, comprising:
a. a thin ground plane conductor;
b. a thin square radiating element spaced from said ground plane;
c. said radiating element being electrically separated from said ground plane by a dielectric substrate;
d. said radiating element having a feed point located at a single corner thereof;
e. the length and width of said radiating element being equal and determining the resonant frequency along the length and width, respectively, of said antenna;
f. the antenna bandwidth being variable with the width dimension of the radiating element and the spacing between said radiating element and said ground plane, said spacing between the radiating element and the ground plane having somewhat greater effect on the bandwidth than the element width, the physical length of said radiating element being changed accordingly with the width thereof to maintain a square radiating element as the physical width is changed to vary the bandwidth; and
g. the polarization of said antenna being linear along the diagonal on which the feedpoint lies and the resonant frequencies being equal along both the length of the antenna and along the width of the antenna with zero phase difference between the two modes of oscillation.

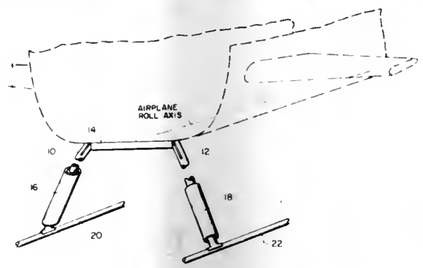
4,117,490

INCONSPICUOUS ANTENNA SYSTEM EMPLOYING THE AIRFRAME AS AN ANTENNA

James J. Arnold, deceased, late of Farmingdale, N.J. (by Susan Arnold, executrix); Donn V. Campbell, Eatontown; Charles M. DeSantis, Neptune, and Felix Schwering, Eatontown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 15, 1977, Ser. No. 824,364
Int. Cl.[2] H01Q *1/32*
U.S. Cl. 343—708 **12 Claims**

1. A phase front homing airplane antenna array comprising:
a pair of spaced substantially vertical sections of the metallic airframe of said airplane; and
discrete coaxial coupling means comprising a pair of spaced concentric metallic cylindrical sleeves, identical in structure, encompassing a portion of said vertical sections, the



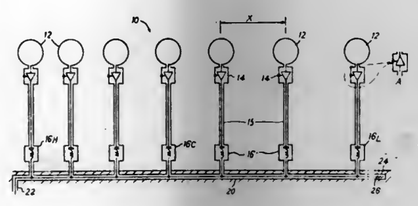
combination of each of said coupling means and its associated vertical section comprising one of a pair of antennas of said array.

4,117,491

LOGARITHMICALLY PERIODIC LOOP ANTENNA ARRAY WITH SPACED FILTERS IN THE COUPLING NETWORK

Kheder Abdul Karim Hanna, and Brian Stuart Collins, both of Rochester, England, assignors to C & S Antennas Limited, Rochester, England

Filed Jul. 29, 1976, Ser. No. 709,625
Claims priority, application United Kingdom, Aug. 20, 1975, 34646/75
Int. Cl.[2] H01Q *11/10, 3/24*
U.S. Cl. 343—742 **17 Claims**



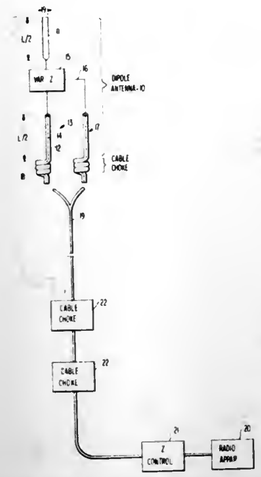
1. An aerial array, comprising:
feed terminal means;
a plurality of spaced substantially linearly-arranged broadband active aerial elements with substantially equal impedance, all of said elements being of substantially identical size and electrical characteristics, and the spacing between adjacent ones of said elements along said array being in a progressive logarithmic variation, and
a plurality of filters each connected individually between a respective one of said aerial elements and said feed terminal means, said filters having progressive frequency-sensitive characteristics along the array such as to tend to pass between the associated element and said feed terminal means higher frequencies where said elements are more closely spaced and lower frequencies where said elements are more widely spaced.

4,117,492

LOW PROFILE REMOTELY TUNED DIPOLE ANTENNA

James J. Arnold, deceased, late of Farmingdale, N.J. (by Susan Arnold, executrix), and Donn V. Campbell, Eatontown, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 26, 1977, Ser. No. 819,194
Int. Cl.[2] H01Q *9/16*
U.S. Cl. 343—747 **14 Claims**



1. A center-fed broadband dipole antenna system which is adapted to be remotely tuned for the transmission or reception of electromagnetic energy, comprising in combination:
a dipole antenna consisting of an electrically short, substantially less than a quarter wavelength, conductor element of a predetermined length and transverse cross-sectional width, and a length, substantially equal to said predetermined length, of outer conductor of a feed transmission line having an inner conductor and outer conductor, said conductor element and said length of outer conductor being mutually linearly opposed to one another at a feedpoint of said inner conductor;
said feed transmission line additionally being configured to include a cable choke section adjacent said length of outer conductor at the opposite end thereof from the feedpoint end; and
remotely controlled variable impedance means electrically coupling said feedpoint to said dipole antenna for resonating said antenna to a selected operating frequency.

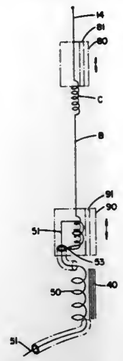
4,117,493

RADIO ANTENNA

John Altmayer, Cape Coral, Fla., assignor to New-Tronics Corp., Brookpark, Ohio

Filed Dec. 22, 1976, Ser. No. 753,318
Int. Cl.[2] H01Q *1/32, 9/00, 1/00, 1/08*
U.S. Cl. 343—750 **30 Claims**

1. A radio transmitting antenna comprised of:
an elongated conductive member having its ends in generally fixed spaced relationship and having an effective electrical length generally equal to $\lambda/2$ at the desired frequency of operation;
means at one end of said conductive member for coupling said end of said conductive member to at least a transmitter tuned to said frequency;
and elongated generally rigid electrical insulating means extending beyond at least one end of said conductive member, the amount of extension being adjustable whereby said antenna may be elongated independently of the length of the conductive member and may be supported in any position by having the ends of said antenna engage opposed surfaces of a building.

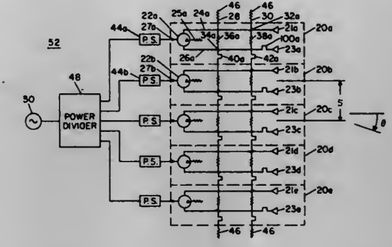


4,117,494

ANTENNA COUPLING NETWORK WITH ELEMENT PATTERN SHIFT

Richard F. Frazita, Deer Park, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,237
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—844 **7 Claims**



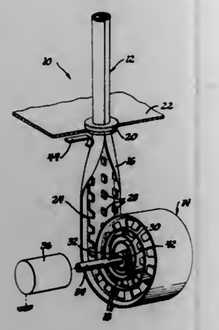
1. In an antenna system for radiating wave energy signals into a selected angular region of space wherein there is provided an aperture comprising a plurality of antenna element groups, a plurality of first coupling means, each for coupling supplied wave energy signals to the elements in a corresponding element group, and second coupling means interconnecting said plurality of first coupling means to cause wave energy signals supplied to any of said first coupling means to be additionally supplied to selected elements in the remaining element groups, the improvement wherein:
said second coupling means includes a plurality of first phase adjustment means, each associated with one of said element groups, said phase adjustment means providing opposite sense phase adjustments for signals coupled in opposite directions with respect to said aperture, whereby the angular location of said selected region of space with respect to said aperture may be adjusted by adjustment of said phase adjustment means.

4,117,495

SELF-TUNING DEPLOYABLE ANTENNA

Peter A. Hochstein, 14020 15 Mile Rd., Sterling Heights, Mich. 48077

Filed Mar. 1, 1977, Ser. No. 773,155
Int. Cl.[2] H01Q *11/12, 9/00, 1/12, 1/10*
U.S. Cl. 343—877 26 Claims



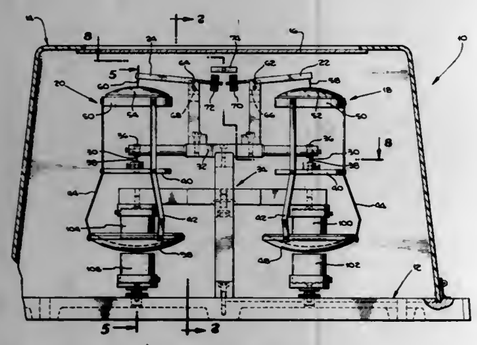
1. An extensible antenna assembly comprising; an elongated antenna for radiating and receiving radio frequency energy and being extensible and retractable longitudinally of its length between a retracted position and fully extended position; and tuning means for automatically maintaining said antenna resonant at a single predetermined frequency in correlation with and responsive to the various extended positions of said antenna.

4,117,496

EARTHQUAKE RECORDING DEVICE

Ali Sattaripour, P.O. Box 85, Tehran, Iran

Filed Sep. 23, 1977, Ser. No. 835,915
Int. Cl.[2] G01D *9/04, 15/16;* G01V *1/16*
U.S. Cl. 346—7 6 Claims



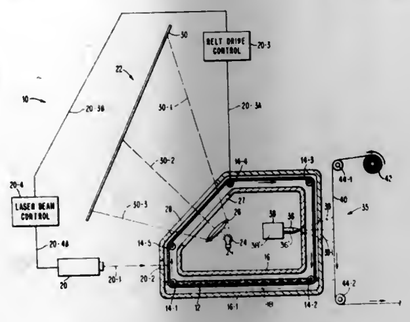
5. A shock recording device comprising:
a base;
a compound pendulum mounted to said base and having a natural frequency;
means for recording the movement of said compound pendulum in response to a shock; and
timing means for enabling said means for recording to record the passage of predetermined time intervals during said movement.

4,117,497

PRINTING AND DISPLAYING TECHNOLOGY USING SELECTIVE LASER BEAM PRICKING OF LIQUID FILM FOR WRITING INFORMATION

James Cleary McGroddy, Putnam Valley, N.Y., and James Alden Van Vechten, Basking Ridge, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1976, Ser. No. 734,578
Int. Cl.[2] G01D *15/14*
U.S. Cl. 346—17 12 Claims



1. Apparatus for writing, displaying and printing an information pattern comprising,
a laser beam source;
means for programmably controlling both the scan and power of said laser beam;
an endless belt screen mesh with a plurality of interstices in a regular geometric format;
chamber means for containing a source of liquid ink susceptible of forming stable films therefrom on said interstices;
said screen material and said liquid material being interrelated such that either said liquid adheres more strongly to said screen mesh than it coheres to itself or said liquid coheres more strongly to itself than it adheres to said screen material;
means for driving said screen mesh through a portion of said liquid;
means for controlling the positioning of said screen mesh with said liquid in said interstices in communicating relationship with said laser beam and for removing directly and selectively a pattern of said films in said interstices by said laser beam to form orifices thereat respectively as said information pattern;
a displaying station for said stored information; and
a printing station for said stored information including means for projecting ink onto a collector medium surface.

4,117,498

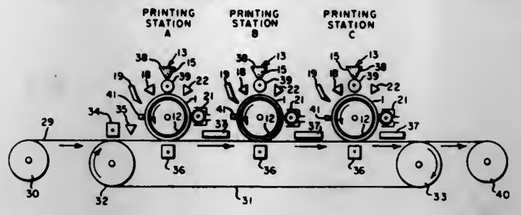
MAGNETIC PRINTING PROCESS AND APPARATUS

Donald William Edwards, Wilmington, Del., and Emery John Gorondy, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 672,553, Mar. 31, 1976, abandoned. This application Feb. 25, 1977, Ser. No. 771,062
Int. Cl.[2] G03G *19/00;* G01D *15/12*
U.S. Cl. 346—74.1 88 Claims

1. Magnetic printing process comprising:
(a) forming a magnetic image on a ferromagnetic material which is imposed on an electrically conductive support;
(b) developing the magnetic image by decorating the image with a ferromagnetic toner comprising a ferromagnetic component, a dye and/or chemical treating agent and a water-soluble or water-solubilizable resin which substantially encapsulates the ferromagnetic component and the dye and/or chemical treating agent;
(c) transferring the developed image to a substrate;

(d) permanently fixing the dye and/or chemical treating agent of the image on the substrate; and



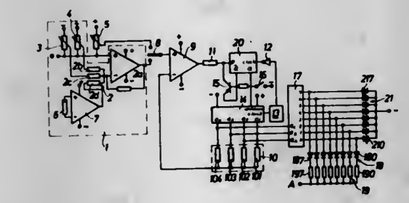
(e) removing the ferromagnetic component and the resin from the image on the substrate.

4,117,499

PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL

Karl-Peter Strauss, Volkmarode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Feb. 22, 1977, Ser. No. 770,849
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607544; Feb. 25, 1976, 2607589; Feb. 25, 1976, 2607615
Int. Cl.[2] G03B *7/08*
U.S. Cl. 354—23 D 34 Claims



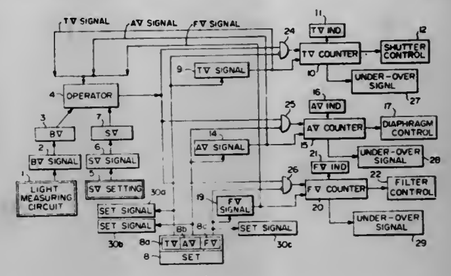
1. Photographic camera control mechanism for producing a control output signal useful for controlling one of the two exposure factors of exposure time and diaphragm aperture, said control mechanism comprising
(a) electronic circuit means for generating a first analog signal responsive to subject brightness, film sensitivity, and an exposure factor other than one to be controlled by said control output signal,
(b) a reversible *n* - bit counter,
(c) a digital-analog converter having a plurality of inputs from a plurality of outputs of said counter and effective to generate a second analog signal,
(d) means for comparing said first analog signal with said second analog signal,
(e) means for stepping said counter forward step by step in a first counting direction when the second analog signal is smaller than the first and in an opposite counting direction when the second analog signal is greater than the first,
(f) a decoder having a plurality of inputs respectively connected to all but one of said plurality of outputs of said counter, said counter having a first bit output which is not connected to said decoder,
(g) said decoder being formed as an n-1 to 2^{n-1} decoder, and having 2^{n-1} outputs, wherein n represents the number of bits to be considered,
(h) a plurality of resistors whose resistance values are graduated in a specific ratio to one another,
(i) said resistors having inputs each respectively connected to one of the respective outputs of said decoder, and
(j) means connecting outputs of all of said resistors to a common connection point at which said control output signal is present.

4,117,500

AUTOMATIC EXPOSURE CONTROL APPARATUS IN A CAMERA

Toshihiro Kondo, Chofu, Japan, assignor to Toshihiro Kondo, Tokyo and Fuji Photo Film Co., Ltd., Minami-ashigara,, Japan, Minami-ashigara, both of

Filed Sep. 23, 1976, Ser. No. 725,995
Claims priority, application Japan, Sep. 23, 1975, 50-115069
Int. Cl.[2] G03B *7/08*
U.S. Cl. 354—23 D 4 Claims



1. An automatic exposure control apparatus in a photographic camera for automatic setting of exposure parameters wherein exposure is controlled by the selection of three exposure parameters, namely, diaphragm aperture, shutter speed and filter transmittance, said exposure control apparatus comprising:
light measuring means for measuring the intensity of light incident upon an object and producing an illumination intensity signal;
film-speed setting means for producing a film-speed setting signal which indicates the speed of the film loaded in the camera;
diaphragm aperture setting means for producing a diaphragm aperture setting signal indicative of the diaphragm aperture when the same is manually set;
shutter speed setting means for producing a shutter speed setting signal indicative of the shutter speed when the same is manually set;
filter transmittance setting means for producing a filter transmittance setting signal indicative of the filter transmittance when the same is manually set;
first pulse signal supply means connected to said light measuring means and producing a number of pulses proportional to said illumination intensity signal;
second pulse signal supply means connected to said film-speed setting means and producing a number of pulses proportional to said film-speed setting signal;
third pulse signal supply means connected to said shutter speed setting means and producing a number of pulses proportional to said shutter speed setting signal;
fouth pulse signal supply means connected to said diaphragm aperture setting means and producing a number of pulses proportional to said diaphragm aperture setting signal;
fifth pulse signal supply means connected to said filter transmittance setting means and producing a number of pulses proportional to said filter transmittance setting signal;
diaphragm aperture control means for adjusting the diaphragm aperture to the value set on said diaphragm aperture setting means;
shutter speed control means for adjusting the shutter speed to the value set on said shutter speed setting means;
filter transmittance control means for adjusting the filter to the value set on said filter transmittance setting means; and
arithmetic means responsive to the output pulse signals of any two of said third, fourth and fifth pulse signal supply means and the output pulse signals of said first and second pulse signal supply means;

whereby any two of the diaphragm aperture setting means, the shutter speed setting means and the filter transmittance setting means are preset at desired settings and the remaining one is automatically controlled in accordance with the output of said arithmetic means.

4,117,501

BOX CAMERA AND PHOTOGRAPHIC KIT

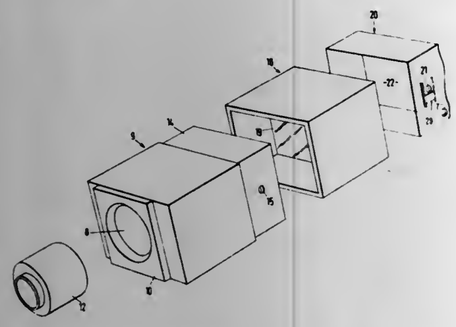
John Alexander Peck, Houghton Nr. Stockbridge, England, assignor to Radionic Products Limited, Bristol, England

Filed May 4, 1976, Ser. No. 683,163

Claims priority, application United Kingdom, Jan. 29, 1976, 3438/76

Int. Cl.² G03B *17/50*

U.S. Cl. 354—89 **4 Claims**



1. A box camera comprising:
(a) a front body portion which has an exposure aperture,
(b) a first rear body portion which incorporates a viewing screen and is detachably mounted to the front body portion to form a simulated box camera to permit focussing of the camera, and
(c) a second rear body portion detachably mounted to the front body portion when the first rear body portion is detached from the front body portion to form a box camera for taking a photograph and incorporates a support for a positive photographic paper during exposure and during subsequent processing of the paper within the camera, the second rear body portion being adapted to form a processing well which contains the supported paper,
(d) the second rear body portion having a normally closed opening through which, when open liquid chemicals may be introduced into the camera to process an exposed photographic paper in the well and normally closed outlet through which, when open liquid chemicals may be drained from the camera.

4,117,502

CAMERA PROVIDED WITH RECORDER FOR LIGHT OF LIGHT SOURCE

Susumu Takeda, Hino, and Kiyoaki Hazama, Hachiosi, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

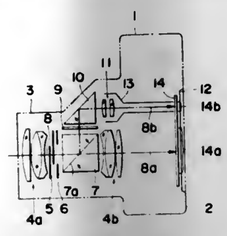
Filed Jul. 7, 1977, Ser. No. 813,523

Claims priority, application Japan, Jul. 14, 1976, 51-83808

Int. Cl.² G03B *17/24*

U.S. Cl. 354—106 **5 Claims**

1. A camera comprising:
a. objective lens means comprising a plurality of lenses,
b. an exposure control means for controlling the amount of image-forming light,
c. a support means for supporting a photosensitive material on a focal plane,
d. light diffusion means,
e. means for directing light passed through at least a part of said objective lens means to said light diffusion means, and
f. optical guide means for guiding the light from said light diffusion means to the photosensitive material, wherein the light incident upon the photosensitive material, which



light passed through said light diffusion means, is regulated in relaton to the control by said exposure control means.

4,117,503

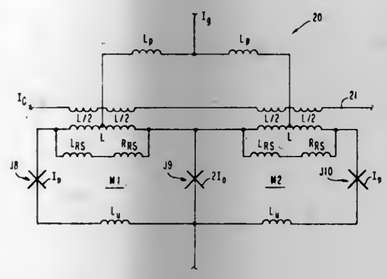
JOSEPHSON INTERFEROMETER STRUCTURE WHICH SUPPRESSES RESONANCES

Hans Helmut Zappe, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,753

Int. Cl.² H01L *39/22*

U.S. Cl. 357—5 **16 Claims**



1. An interferometer comprising:
at least a pair of junctions capable of carrying Josephson current and at least a main inductance disposed between said at least a pair of junctions, and,
means disposed in parallel with said main inductance for suppressing resonance peaks.

4,117,504

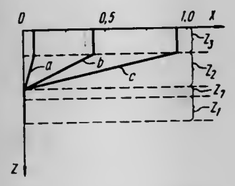
HETEROGENEOUS SEMICONDUCTOR STRUCTURE WITH COMPOSITION GRADIENT AND METHOD FOR PRODUCING SAME

Vadim Nikolaevich Maslov, ulitsa Alexeya Tolstogo, 22/2, kv. 101; Oleg Evgenievich Korobov, Golikovsky pereulok, 13, kv. 6; Alla Naumovna Lupacheva, Profsojuznaya ulitsa, 38/10, korpus 1, kv. 101; Alexandr Nikolaevich Vlasov, Gospitalnaya ploschad, 3a, korpus 1, kv. 11, all of Moscow; Viktor Vasilievich Myasoedov, prospekt Junykh Lenintsev, 76, kv. 8, Podolsk Moskovskoi oblasti; Ellin Petrovich Bochkarev, Khlebozavodskoi proezd, 3, kv. 16, Moscow; Felix Aronovich Gimelfarb, 13 Parkovaya, 25, korpus 1, kv. 31, Moscow; Izidor Karlovich Bronshtein, Ambulatorny pereulok, 17, kv. 48, Moscow; Natalya Ivanovna Lukicheva, Kashirskoe shosse, 98, korpus 2, kv. 254, Moscow; Evgeny Vladimirovich Sinitsyn, ulitsa Ostrovityanova, 21, kv. 73, Moscow; Jury Varnavovich Sokurenko, ulitsa Ostrovityanova, 21, kv. 94, Moscow; Elena Sergeevna Jurova, Frunzenskaya naberezhnaya, 38, kv. 51, Moscow; Elena Mikhailovna Kistova, ulitsa 26 Bakinskikh komissarov, 3, korpus 3, kv. 339, Moscow; Marina Andreevna Konstantinova, ulitsa Aviamotornaya, 4, korpus 5, kv. 338, Moscow, and Veniamin Mikhailovich Samaginov, ulitsa Udaltsova, 4, kv. 145, Moscow, all of U.S.S.R.

Filed Aug. 6, 1976, Ser. No. 712,324

Int. Cl.² H01L *29/161*

U.S. Cl. 357—16 **4 Claims**



1. A heterogeneous semiconductor structure with a composition gradient, comprising:
a monocrystalline substrate;
a main semiconductor layer which is doped solid solution of AB_xC_{1-x} of semiconductor components AB and AC, where x, limited by the ratio $0<x<1$, designates molar fractions of the AB component in said solid solution of AB_xC_{1-x} of said main layer having a composition gradient with a constant direction parallel with the main axis selected on the surface of said substance, the composition of said main layer changing continuously along said main axis from the portion of said layer corresponding to a maximum content of the AB component of said solid solution to the portion of said main layer corresponding to a maximum content of said AC component of said solid solution;
a transition semiconductor layer of doped solid solution of AB_xC_{1-x}, arranged between said substrate and said main semiconductor layer, the composition of said transition layer changing continuously along said main axis from a portion of said transition layer having a maximum content of the AB component to a portion corresponding to a maximum content of the AC component in the direction parallel to the substrate surface and also in the direction perpendicular to said surface of said substrate, the composition of said transition layer changing from said composition of said main layer on the boundary with said transition layer to a composition with a maximum content of said AB component on the boundary with said substrate the component of said transistion layer thus varying continously in two directions;
said monocrystalline substrate being of a material with crystallographic properties similar to those of said AB component of said solid solution.

4,117,505

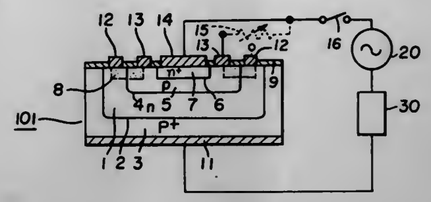
THYRISTOR WITH HEAT SENSITIVE SWITCHING CHARACTERISTICS

Josuke Nakata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1976, Ser. No. 743,356

Int. Cl.² H01L *23/56, 29/66, 29/74*

U.S. Cl. 357—28 **7 Claims**



1. In a heat sensitive switching device which comprises at least three pn junctions between a pair of main electrodes to change from the OFF state to the ON state under rising temperature in at least one quadrant of the main voltage - main current characteristic curve, one of the pn junctions being a forward blocking junction which causes the reverse bias in the OFF state, an improvement characterized by forming a region for shortening the lifetime of carriers at a part of the forward blocking junction.

4,117,506

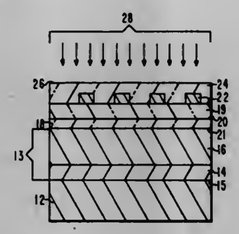
AMORPHOUS SILICON PHOTOVOLTAIC DEVICE HAVING AN INSULATING LAYER

David Emil Carlson, Yardley, Pa., and Christopher Roman Wronski, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1977, Ser. No. 819,936

Int. Cl.² H01L *27/14*

U.S. Cl. 357—30 **8 Claims**

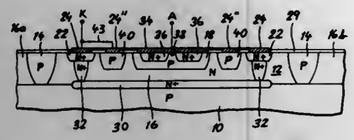


1. A photovoltaic semiconductor device comprising:
a body of amorphous silicon fabricated by a glow discharge in silane, SiH_4;
a layer of an electrically insulating material on a surface of said body, said insulating layer being of a thickness such that charge carriers are capable of tunneling through said layer; and
a metallic layer on a surface of said insulating layer opposite said body.

4,117,507
DIODE FORMED IN INTEGRATED-CIRCUIT STRUCTURE

Bruno Pacor, Cornaredo (Milan), Italy, assignor to SGS-ATES Componeti Elettronici S.p.A., Agrate Brianaza (Milan), Italy

Filed Jun. 20, 1977, Ser. No. 808,369
Claims priority, application Italy, Jun. 22, 1976, 24531 A/76; Jun. 25, 1976, 24696 A/76
Int. Cl.² H01L *27/04*
U.S. Cl. 357—48 **10 Claims**

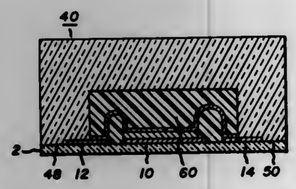


1. An integrated semiconductor structure comprising:
a substrate of one conductivity type;
an overlying layer of the opposite conductivity type on said substrate;
a barrier of said one conductivity type extending to said substrate from a remote surface of said overlying layer and bounding an isolated region of said overlying layer constituting a first diode portion;
an intermediate zone of said one conductivity type in said region separated from said substrate constituting a second diode portion adjacent said remote surface;
a low-resistance zone of said opposite conductivity type spacedly interposed within said region between said intermediate zone and said barrier next to said remote surface;
a first metallic coating at said remote surface on said intermediate zone;
a second metallic coating at said remote surface on said low-resistance zone; and
a low-resistance section of said opposite conductivity type embedded in said intermediate zone adjacent said remote surface, said section occupying the major part of the area contacted by said first metallic coating.

4,117,508
PRESSURIZABLE SEMICONDUCTOR PELLET ASSEMBLY

Paul W. Koenig, Clyde, N.Y., assignor to General Electric Company, Auburn, N.Y.

Filed Mar. 21, 1977, Ser. No. 779,327
Int. Cl.² H01L *23/02, 23/28, 23/42*
U.S. Cl. 357—81 **5 Claims**

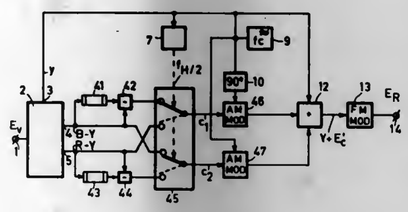


1. A semiconductor apparatus comprising:
a plate of electrically insulative thermally conductive material having a bottom major face adapted to be pressed in heat-transferring relation against a substrate heatsink, said plate having a top major face provided with a plurality of metallized contacts;
a semiconductor body having a bottom major face affixed to one of said contacts and connected to leads extending between contact regions on the top major face of said body and others of said contacts on said plate; and
a one-piece insulative bridge carried by said plate including upstanding spaced legs connected by an integral cross member, said legs terminating at their bottom ends in feet secured to said plate and said cross member spanning said body in upwardly spaced relation to said body and said leads whereby the bottom face of said plate may be pressed against said heatsink by a force applied to said bridge without application of any pressure to said body.

4,117,509
COLOR TELEVISION SYSTEM FOR RECORDING LINE SEQUENTIAL SIGNALS WITH 90° PHASE SHIFT

Eeltje de Boer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1976, Ser. No. 741,238
Claims priority, application Netherlands, Sep. 20, 1976, 7610400
Int. Cl.² H04N *9/38, 5/79*
U.S. Cl. 358—4 **3 Claims**



1. A colour television system for recording a colour television signal, which colour television signal contains the colour information as first and second amplitude modulated colour signals, said system comprising means for recording said two colour signals in a line-sequentially alternating fashion, the phase angle of the modulated colour signals being 90° shifted during consecutive line periods and means for recording simultaneously with the first and the second colour signals a first and a second difference signal respectively, the first colour signal together with the first difference signal as well as the second colour signal together with the second difference signal being quadrature modulated, the first difference signal comprising the difference between the value of one of the two signals during a selected line period and the value of this colour signal at the corresponding instant during the preceding or the next line period, the second difference signal comprising the difference between the value of the other colour signal during a selected line period and the value of said other colour signal at the corresponding instant during the preceding or the next line period.

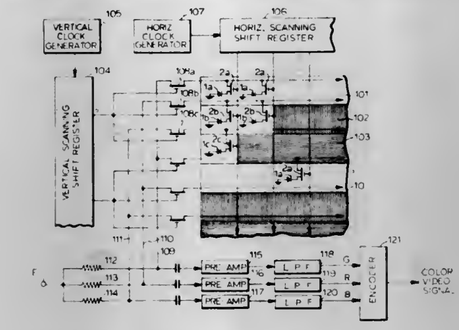
4,117,510
SOLID STATE COLOR IMAGING APPARATUS

Yoshio Ohta, Hirakata; Toshiro Matsuura, Moriguchi, and Ryuhei Nakabe, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 23, 1975, Ser. No. 615,885
Claims priority, application Japan, Sep. 25, 1974, 49-110871; Sep. 25, 1974, 49-110872; Sep. 25, 1974, 49-110873; Nov. 12, 1974, 49-130839
Int. Cl.² H04N *9/07*
U.S. Cl. 358—44 **15 Claims**

1. A solid state color imaging apparatus for producing a color video signal representing an optical image of an object, said apparatus comprising:
photosensitive means which consists of a plurality of photosensitive elements which are arranged substantially in line both in the horizontal and vertical scanning directions and color filter means consisting of a plurality of sets of color filter strips each of which overlies at least one line of said photosensitive elements in a horizontal scanning direction for producing a set of line signals, which sets are arranged in a repeating sequence in a vertical scanning direction;

first charge transfer means coupled to said photosensitive means for shifting charge signals from a set of photosensitive elements under one set of color filter strips at a time in a horizontal blanking period by vertical transfer clock signals for producing a set of line signals, which charge signals have been transferred thereto from said photosensitive means in a vertical blanking period;
second charge transfer means coupled to said first charge transfer means having a set of transfer channels for transferring out said charge signals one set at a time, which

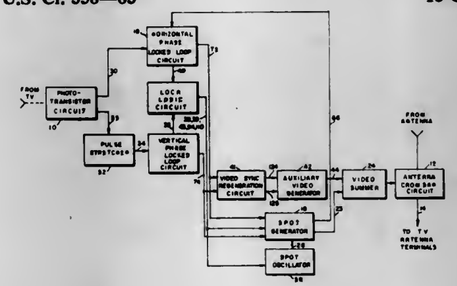


charge signals have been shifted thereinto from said first transfer means in said horizontal blanking period, in a horizontal scanning period by horizontal transfer clock signals for producing a set of output signals which correspond to said set of line signals; and
processing circuit means coupled to said second charge transfer means for responding to said set of output signals which are derived through said set of transfer channels of said second charge transfer means for producing the color video signal.

4,117,511
UNIVERSAL TELEVISION INTERFACE AND SYNC GENERATOR THEREFOR

Ralph H. Baer, Manchester, and Leonard D. Cope, Merrimack, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Jul. 21, 1977, Ser. No. 817,642
Int. Cl.² H04N *5/06, 5/50*
U.S. Cl. 358—83 **13 Claims**

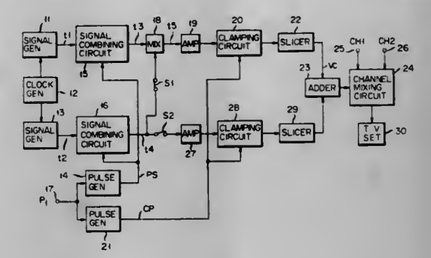


1. Apparatus for generating synchronization signals from an ongoing program received at a television receiver from a TV r.f. signal transmission source, comprising:
means for generating a substantially white area on the screen of the television receiver;
means optically coupled to the screen of the television receiver and responsive to a portion of the raster in synchronism with the ongoing program; and
means coupled to said optically coupled means responsive for generating horizontal and vertical synchronization signals in synchronism with the horizontal and vertical synchronization signals of the ongoing program.

4,117,512
APPARATUS FOR PROVIDING A VIDEO MONTAGE TO A TELEVISION PICTURE IMAGE

Kazuhiko Miyake, and Bunkichi Yamada, both of Kawasaki, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 3, 1977, Ser. No. 774,122
Claims priority, application Japan, Mar. 5, 1976, 51/23137
Int. Cl.² H04N *5/22*
U.S. Cl. 358—183 **7 Claims**

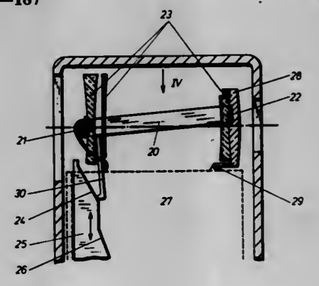


1. An apparatus for providing a video montage to a television picture image, comprising means for generating a fundamental wave signal for defining a boundary of picture images in a signal generated by combining a plurality of television signals, said fundamental wave signal having a predetermined portion set to a reference level; means for clamping the fundamental wave signal at a predetermined level utilizing the reference level of the fundamental wave signal; and means for slicing the clamped signal at upper and lower levels with the predetermined clamp level substantially at a mid-level to obtain a control signal for use in synthesizing a plurality of television signals by the control signal.

4,117,513
CAMERA HAVING A TELESCOPING HOUSING

Karl-Günter Behr, and Helmut Knapp, both of Biebertal, Fed. Rep. of Germany, assignors to Minox GmbH, Giessen, Fed. Rep. of Germany

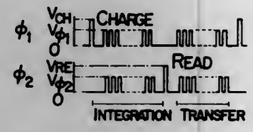
Filed Nov. 1, 1976, Ser. No. 737,428
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1975, 2548768
Int. Cl.² G03B *17/04*
U.S. Cl. 354—187 **10 Claims**



1. A camera comprising a telescoping housing having a housing part displaceable between telescoped and extended positions, an optical viewfinder in said housing, a pivotable means for indicating data in said view finder, and means operatively connecting said indicating means to said displaceable housing part for an additional pivoting of said indicating means

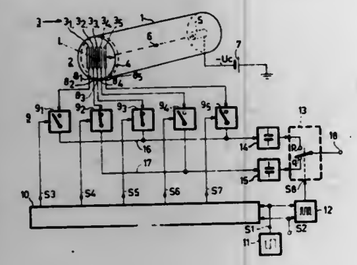
upon displacing said displaceable housing part to the telescoped position.

4,117,514
SOLID STATE IMAGING DEVICE
Yasuaki Terui, Neyagawa, and Masaru Yoshino, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Feb. 14, 1977, Ser. No. 768,190
Int. Cl.[2] H04N *3/14*; H01L *29/78*; G11C *19/28, 1/40*
U.S. Cl. 358—213 **9 Claims**



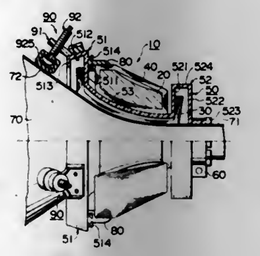
9. A solid state imaging device for converting an optical image to an electrical signal comprising:
- a photo-sensing means for accumulating a charge signal corresponding to the optical image for a given time period;
- a charge transfer means connected to said photo-sensing means;
- a switching means connected between said photo-sensing means and said charge transfer means; and
- a clock line means connected to the control electrodes of said switching means and said charge transfer means for applying a control pulse and a clock signal to said switching means and said charge transfer means, said control pulse being followed by said clock signal and having a greater amplitude than said clock signal, said switching means being turned on in response to said control pulse to read the charge signal from said photo-sensing means into said charge transfer means, and said charge transfer means being responsive to said clock signal to transfer the charge signal to an output circuit means.

4,117,515
TELEVISION CAMERA HAVING SIGNAL ELECTRODE STRIPS
Marino Giuseppe Carasso; Leendert Johan van de Polder, and Sing Liong Tan, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 16, 1977, Ser. No. 769,034
Claims priority, application Netherlands, Dec. 24, 1976, 7614384
Int. Cl.[2] H04N *5/30, 9/07*
U.S. Cl. 358—217 **13 Claims**



1. A television camera comprising a pick up tube having an electron gun means for generating a scanning electron beam, a target plate including a photosensitive layer to be scanned by said beam and a signal electrode having a plurality of separate electrically conducting strips, and means for deflecting said beam for effecting line scanning transversely across successive ones of said strips; a switching circuit including a plurality of switches having inputs coupled to said strips respectively, control inputs, and outputs, successive outputs being alternately coupled in at least two groups to at least two output leads; and a first switching signal generator means coupled to said control inputs for providing that prior to a line scan said strips are coupled to a reference potential through said switching circuit and that after a scan of a strip by said beam the respective switch and at least one switch coupled to an adjacent strip and a different output lead are simultaneously closed to pass information to the respective switch outputs.

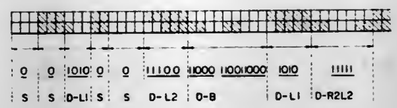
4,117,516
DEFLECTION YOKE
Yukihiko Yasuhara, Kawasaki, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1976, Ser. No. 753,366
Claims priority, application Japan, Dec. 24, 1975, 50-176169
Int. Cl.[2] H04M *5/64*
U.S. Cl. 358—248 **8 Claims**



1. In a deflection yoke comprising an annular core, a horizontal deflection coil of a saddle configuration, a vertical deflection coil having a conductor extending along the inside of the core, a coil separator interposed between the both coils having a recess in its front end and having a plurality of tongues at its rear end, the recess being defined by a radially outwardly extending wall and a peripheral wall, the tongues being adapted to be disposed around the neck of a cathode ray tube, and a clamping band for clamping the tongues against the neck; the improvement which comprises at least three positioning units disposed adjacent to the front end of the coil separator at substantially uniform spacing around the periphery thereof, each of the positioning units comprising a support plate having a threaded bore which extends toward the tube wall and an adjusting bolt means having a threaded portion threadably engaging the threaded bore and a head portion directly contacting the tube, the bolt means being turned into contact with the tube wall to thereby support a front portion of the deflection yoke.

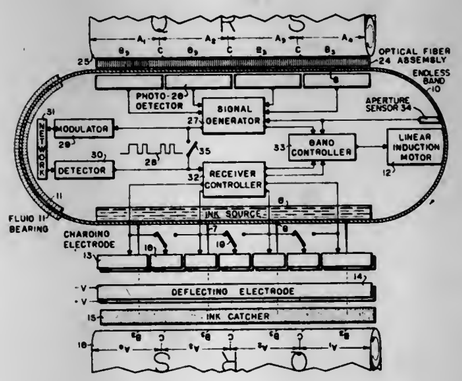
4,117,517
DATA COMPRESSION SYSTEM FOR BINARY FACSIMILE SIGNALS
Takamasa Shintani, and Koyo Nagasawa, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Feb. 24, 1977, Ser. No. 771,490
Claims priority, application Japan, Feb. 27, 1976, 51-19951
Int. Cl.[2] H04N *1/40, 7/12*
U.S. Cl. 358—260 **5 Claims**

1. A method of compression coding for binary scanning signals in a facsimile system, comprising the steps of:
- (a) assigning different binary codes to each one of a plurality of predetermined modes of possible, commonly occurring bit pattern variations between the binary bit patterns of adjacent scan lines,
- (b) comparing the binary bit patterns of adjacent scan lines to determine which modes of variation are present in a first scan line with respect to a second, adjacent scan line, and



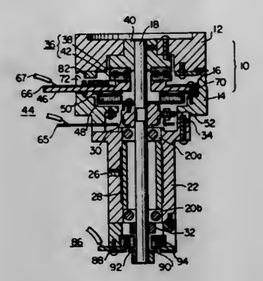
- (c) assembling the binary codes of the determined modes to thereby constitute a composite compressed code bit sequence representing said first scan line.

4,117,518
INK DROP FACSIMILE SYSTEM
Stephen F. Skala, 3839 S. Wenonah, Berwyn, Ill. 60402
Continuation-in-part of Ser. No. 608,089, Aug. 27, 1975, abandoned, and Ser. No. 421,425, Dec. 3, 1973, abandoned. This application Nov. 11, 1976, Ser. No. 740,805
Int. Cl.[2] H04N *1/24*
U.S. Cl. 358—296 **5 Claims**



1. A facsimile receiver and transmitter assembly including
- a signal responsive printer in said assembly for printing a graphic pattern on a receiving surface in response to signals,
- a scanner in said assembly for converting a graphic pattern on a document to signals for controlling printing of another signal responsive printer remote from said assembly,
- an endless band having a plurality of uniformly spaced openings,
- means to move said band through said printer in said assembly and through said scanner,
- means to form modulated ink drop columns from ink passing through at least some of said openings to deposit drops in said columns in a graphic pattern on a receiving surface,
- a plurality of photodetectors corresponding to at least some of the openings in the endless band,
- means to project an image of said document through at least some of said openings to said photodetectors, and
- means to convert output of said photodetectors to a sequential signal for controlling printing of said remote printer.

4,117,519
GUIDE DRUM APPARATUS IN A MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS
Tadao Shioyama, Katano, and Minoru Koda, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 27, 1977, Ser. No. 846,491
Claims priority, application Japan, Oct. 27, 1976, 51-129665
Int. Cl.[2] G11B *21/04, 21/18, 5/45*
U.S. Cl. 360—84 **12 Claims**



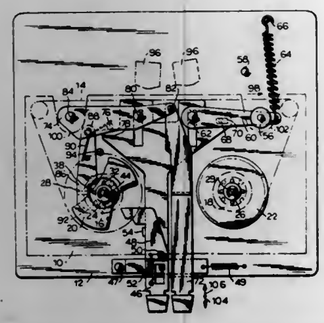
1. A guide drum apparatus in a magnetic recording and/or reproducing apparatus, comprising:
- a rotary center shaft;
- a hollow cylindrical rotary drum coaxially fixed to said center shaft and having a cylindrical outer surface;
- a rotary head fixedly supported to rotate with said center shaft at a hollow cylindrical outer surface of said rotary drum;
- a hollow cylindrical stationary drum coaxially and rotatably supporting said center shaft and having a cylindrical outer surface, said cylindrical outer surfaces of said rotary drum and said stationary drum being positioned on a same cylindrical surface and spaced from each other by a gap, said rotary head being positioned at said gap, and the hollows of said rotary drum and said stationary drum facing each other to thereby form a bore;
- a stator plate of a magnetic material fixed to said stationary drum and having a major plane surface perpendicular to the axis of said center shaft;
- stationary armature windings fixed to said major plane surface of said stator plate and equidistantly positioned on a circle defined on said stator plate, the center of said circle coinciding with the axis of said center shaft;
- a rotary winding, for a rotary transformer, fixedly supported by said center shaft at a side facing a surface of said stator plate opposite to said major plane surface of said stator plate, and electrically connected to said rotary head;
- a stationary winding, for said rotary transformer, fixedly supported by said stationary drum at a position between said rotary winding and the surface of said stator plate opposite to said major plane surface of said stator plate, said stator plate thus functioning also as a shield plate for reducing magnetic coupling between said rotary transformer and said armature windings and also between said rotary head and said armature windings; and
- rotary magnets fixedly supported by said center shaft and equidistantly spaced on a circle which is defined on a plane parallel to and facing said major plane surface of said stator plate and which has a center coinciding with the axis of said center shaft, so that said armature windings face said rotary magnets to cause said rotary magnets to rotate by the magnetic fluxes produced from said armature windings, wherein all of said rotary transformer, said armature windings and said rotary magnets are contained in said bore.

4,117,520

MAGNETIC TAPE CARTRIDGE RECORDING APPARATUS WITH MANUALLY ACTUATED TAPE THREADING AND TAPE REWIND

Jirou Kajino, Neyagawa, and Kazumi Iwasaki, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 13, 1977, Ser. No. 796,828
Claims priority, application Japan, May 19, 1976, 51-58402
Int. Cl.² G11B *15/66*
U.S. Cl. 360—95 **5 Claims**



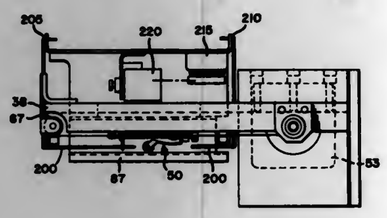
1. A magnetic tape recording and/or reproducing apparatus for recording and/or reproducing signals on a magnetic tape wound on reels contained in a tape cartridge, said apparatus comprising: a pair of reel drive turntables engageable with said reels for rotating said reels; tape moving means connected to said drive turntables for moving said magnetic tape at a constant speed; operation control means connected to said tape moving means for controlling the operation of said tape moving means; a magnetic head for recording and/or reproducing signals on said magnetic tape and spaced laterally away from the normal path of said tape between the reels in said tape cartridge when said tape cartridge is in said apparatus; tape drawing means movable from an inoperative position to an operative position for drawing said magnetic tape out of said tape cartridge and against said magnetic head; and turntable rotating means frictionally connected to one of said reel drive turntables and driven by said drawing means in its movement from the operative position to the inoperative position for rotating one of said reel drive turntables in a direction to wind the magnetic tape drawn out of the cartridge by said tape driving means onto said one reel.

4,117,521

FLEXIBLE DISC RECORDER WITH SKEWED TRANSDUCER TRANSPORT

Boyd Lehman Stratton, Woodside, and William E. Nichols, San Jose, both of Calif., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Nov. 4, 1976, Ser. No. 738,673
Int. Cl.² G11B *21/24*
U.S. Cl. 360—99 **5 Claims**



1. In a disc recorder having a rotatable flexible recording disc and a transducer radially movable with respect to the disc, the transducer defining a gap extending radially of the disc and positioned for most efficient recording operation with the disc in closely coupled relation to the transducer on both sides of the gap, a transducer transport comprising:

a guide member extending transversely of the axis of rotation of the flexible disc and defining guide surfaces,

transducer carriage means for mounting the transducer,

means for moving said carriage means along said guide member in contact with said guide surfaces such that the transducer is moved radially with respect to the rotating recording disc, and

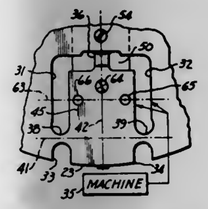
means for positioning said guide surfaces such that said transducer carriage means is progressively tilted as said carriage means is moved along said guide surfaces toward the periphery of said disk such that the desired closely coupled relation between the transducer and the disc is maintained.

4,117,522

ISTHMIAN PRECISION ADJUSTABLE MOUNT FOR MAGNET HEAD ASSEMBLY

William C. Whittle, LaVerne, and Joel E. Zneimer, Arcadia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 17, 1977, Ser. No. 759,926
Int. Cl.² G11B *21/24*
U.S. Cl. 360—109 **54 Claims**



1. A method of mounting a device and adjusting the position of said device, comprising in combination the steps of:

providing a mount for said device;

providing said mount with spaced first and second isthmi located on a predetermined axis;

rendering the portion of said mount between said spaced isthmi tiltable about said axis;

mounting said device on said tiltable portion; and

adjusting the position of said device by tilting said portion about said axis.

4,117,523

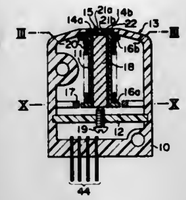
MAGNETIC SENSOR HAVING A HOLLOW HOUSING SEALED WITH A SHIELD CAP

Noboru Masuda, Kawaguchi; Yu Nishino, Yokohama, and Hiroaki Kase, Machida, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1977, Ser. No. 767,311
Claims priority, application Japan, Feb. 10, 1976, 51-13414; Feb. 10, 1976, 51-14270[U]
Int. Cl.² G11B *5/22, 5/20, 5/10*
U.S. Cl. 360—110 **13 Claims**

1. A magnetic sensor comprising a hollow housing, a through opening formed in the housing, a shield cap which seals the through opening, flux producing means received within the housing and having its one end which is formed as a magnetic pole located within the region of the through opening within the housing, a magnetoelectric transducer element

secured to the pole face of the flux producing means which is located within the through opening, and connection means for



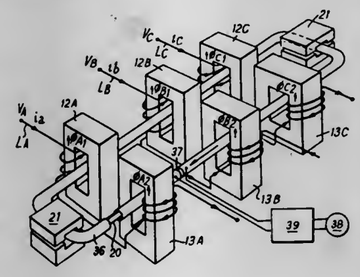
connecting electrical terminals within the housing to the exterior thereof.

4,117,524

CURRENT-LIMITING DEVICES

Kenneth Charles Parton, Sutton Coldfield; Anthony Derek Appleton, and Trevor Carlisle Bartram, both of Newcastle upon Tyne, all of England, assignors to Reyrolle Parsons Limited, Newcastle upon Tyne, England

Filed Oct. 1, 1976, Ser. No. 728,837
Claims priority, application United Kingdom, Oct. 3, 1975, 40628/75
Int. Cl.² H02H *3/08*
U.S. Cl. 361—19 **13 Claims**



1. A current-limiting device for an alternating current system comprising for each phase of the system at least two iron-cored saturable reactors, each reactor having an alternating current winding and a direct current superconducting bias winding, the bias winding being common to the reactors of that phase and establishing a bias level of saturation in the reactor cores such that the reactor cores are maintained saturated under full load alternating current conditions, said bias winding having a surrounding screen of electrically-conductive material shielding the direct current bias winding against alternating magnetic flux, and the alternating current windings of each phase being so arranged and connected that under full load conditions a change in the level of saturation in any one reactor core relative to the bias level due to the bias winding is accompanied by a compensating change in saturation level in another core or cores, current limiting occurring when on each half-cycle one of the cores is forced out of saturation.

4,117,525

OVERPRESSURE PROTECTION FOR VAPORIZATION COOLED ELECTRICAL APPARATUS

Curtis L. Moore, Hermitage, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 9, 1977, Ser. No. 831,716
Int. Cl.² H02H *7/04*
U.S. Cl. 361—37 **11 Claims**

1. Electrical inductive apparatus comprising:

a sealed housing;

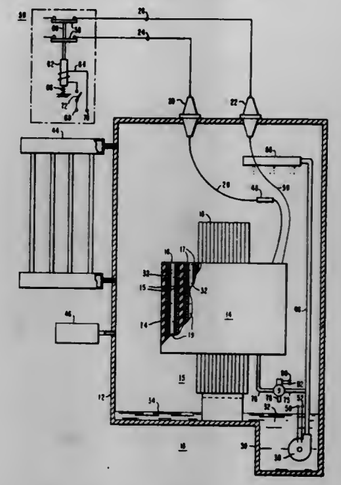
a magnetic core disposed within said sealed housing;

an electrical winding disposed in inductive relation with said magnetic core;

means for connecting said electrical winding to a source of electrical potential;

a dielectric fluid, vaporizable within the normal operating temperature range of said electrical inductive apparatus, disposed within said sealed housing;

means, including an electrically operated pump, for supplying said dielectric fluid to said winding;



means for connecting said pump to a source of electrical potential; and

means for detecting when the pressure in said sealed housing reaches a predetermined value, said means for connecting said pump to a source of electrical potential being responsive to said pressure detecting means to disconnect said pump from the source of power independent from said means for connecting said winding to a source of electrical potential when the pressure within said sealed housing reaches the predetermined value.

4,117,526

UNDERVOLTAGE PROTECTION DEVICE

James T. Bates, Elgin, Ill., assignor to Tri-Venture, Lake in the Hill, Ill.

Continuation-in-part of Ser. No. 712,380, Aug. 6, 1976, abandoned. This application Jun. 22, 1977, Ser. No. 808,730
Int. Cl.² H02H *3/24*
U.S. Cl. 361—92 **14 Claims**

1. A voltage sensitive under voltage protection device for coupling to a source and a load comprising:

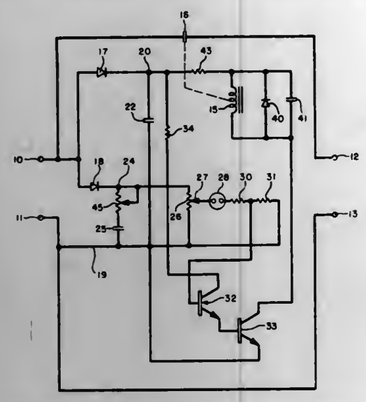
sensing means having an input and output, said means operative to sense voltage magnitudes of said source at the input thereof and producing voltages at the output thereof having magnitudes proportional to said source voltage magnitude;

switching means operative to couple and de-couple said source from said load;

voltage reference means responsive to said sensing means for operating said switching means, said reference means having preselected and substantially specific conduction and non-conduction voltage characteristics substantially unaffected over a wide range of ambient temperatures and responsive to the voltage magnitudes of the output of said sensing means such that source voltage magnitudes greater and less than a predetermined level operate said switching means upon conduction and non-conduction of said referenced means; and

said sensing means including means to selectively produce a plurality of separately adjustable direct and alternating

voltage components effecting a plurality of composite direct and alternating voltage magnitudes at the output



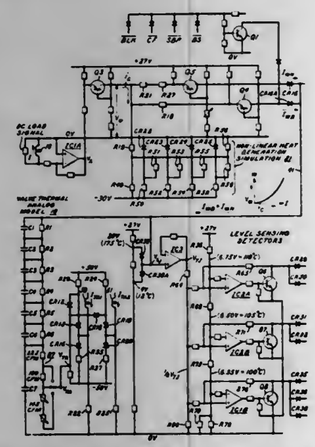
thereof which are proportional to said source voltage magnitude.

4,117,527

SOLID STATE VALVE THERMAL PROTECTION FOR HVDC POWER CONVERTERS

Donald Monroe Demarest, Wallingford, and Edgar Frank Chandler, Media, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Mar. 25, 1977, Ser. No. 781,279
Int. Cl.[2] H02H *5/04, 7/14*
U.S. Cl. 361—103 21 Claims



1. A thermal protection system for solid state valve means that includes at least one representative thyristor having a junction and a heat sink system for transferring heat from said junction to cooling fluid flowing past said heat sink system, said protection system comprising:

(a) a solid state valve thermal analog model comprising an electrical network whose dynamic electrical operating characteristics are analogous to the thermal characteristics of said solid state valve means for a given value of instantaneous D.C. load current supplied through said solid state valve means, which thermal characteristics include the heat transfer to cooling fluid capability characteristics of said representative thyristor including its heat sink system,

(b) means for deriving a first electrical signal representative of the value of the D.C. load current,

(c) D.C. current to heat generation simulation network means responsive to said first electrical signal for deriving an output electrical power dissipation signal representative of the instantaneous value of the power dissipation within the junction of said representative thyristor for a given value of load current flowing through said junction,

(d) means for applying said power dissipation signal to said thermal analog model,

(e) output means connected to said thermal analog model for deriving an output junction temperature signal representative of the temperature of said thyristor junction, and

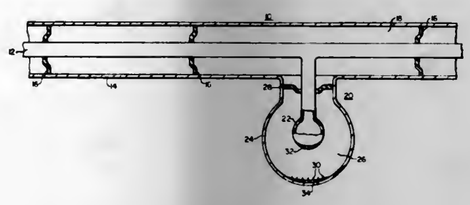
(f) means for applying to said thermal model an additional electrical signal representative of the instantaneous temperature value of the cooling fluid flowing over said valve means and said heat sink system in such a way that said output junction temperature signal is modified by said additional signal.

4,117,528

GAS-INSULATED TRANSMISSION LINES WITH DC VOLTAGE LIMITING MEANS

Philip C. Bolin, Northboro, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1977, Ser. No. 772,789
Int. Cl.[2] H02H *3/22, 7/22*
U.S. Cl. 361—120 11 Claims



1. A gas-insulated transmission line comprising:

an elongated outer sheath at low potential;

an elongated inner conductor disposed within said outer sheath at high AC potential with respect to said outer sheath;

an insulting gas disposed within said outer sheath and electrically insulating said inner conductor from said outer sheath;

means for insulatably supporting said inner conductor within said outer sheath;

a first electrode electrically connected to said inner conductor and extending radially outwardly therefrom;

a second electrode electrically connected to said outer sheath and extending radially outwardly therefrom, said first electrode being spaced-apart from, and enclosed within, said second electrode, said first and second electrodes being vertically disposed with said second electrode extending below said first electrode; and

means, responsive to DC voltage on said first electrode, for discharging said DC voltage on said first electrode whenever said DC voltage exceeds a predetermined level ,

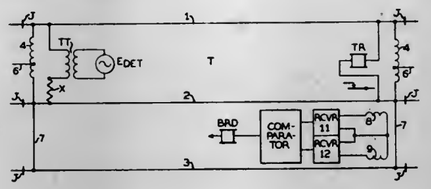
said DC voltage discharging means being spaced-apart from said first electrode whenever said DC voltage is less than said predetermined level and in electrical contact with said first electrode whenever said DC voltage exceeds said predetermined level, said high AC potential being inoperative to move said DC voltage discharing means into electrical contact with said first electrode, said DC voltage discharging means comprising a conducting particle intentionally disposed within said second electrode at the lowermost portion thereof, said particle traversing from said second electrode to said first electrode only when said DC voltage exceeds said predetermined level, said particle upon contacting said first electrode discharging said DC voltage.

4,117,529

BROKEN RAIL DETECTING TRACK CIRCUITS

Donald E. Stark, Mt. Lebanon; Anthony G. Ehrlich, Castle Shannon, both of Pa., and Bruno Guillaumin, Ville d'Avray, France, assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Mar. 23, 1977, Ser. No. 780,474
Int. Cl.[2] H01H *47/20*
U.S. Cl. 361—182 19 Claims



1. A circuit network for detecting broken rail in an insulated track section including two rails extending between the section ends and a length of another rail electrically coupled in parallel to at least a portion of one of said section rails, comprising in combination,

(a) a source of energy coupled to said section rails at one end for transmitting train detection current through said section rails,

(1) said train detection current dividing at substantially equal levels between said portion of said one rail and said other rail when normal rail conditions exist through said paralleled rail paths,

(b) sensing means coupled to said one rail and said other rail at the end of said parallel circuit portion distant from said source for producing a pair of voltage signals, one associated with each parallel rail and representative of the current level flowing in that rail,

(c) a comparator means coupled to said sensing means for receiving said pair of signals produced thereby and responsive only to substantially equal received signals for generating an output signal, and

(d) a registry means coupled to said comparator means and responsive to an output signal for registering the absence of any broken rail in said portion of said one rail and in said other rail, said registry means registering a broken rail condition when no output signal is received from said comparator means.

4,117,530

METER RECEPTACLE ASSEMBLY

Ronald H. Reed, Versailles; William C. Miracle, Winchester, both of Ky., and Dwain G. McMullin, Aiken, S.C., assignors to Square D Company, Park Ridge, Ill.

Filed Jun. 30, 1977, Ser. No. 811,509
Int. Cl.[2] H02B *9/00*
U.S. Cl. 361—365 5 Claims

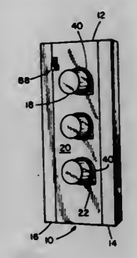
1. A meter receptacle assembly for a meter having a plurality of spaced contact blades extending outwardly from one surface of a flanged base at one end of a meter, said assembly including a cabinet, a plurality of socket receptacles, an insulating plate supported in said cabinet carrying said receptacles in spaced positions to receive a respective contact blade to establish a connection between one receptacle and a respective other receptacle, the improvement comprising:

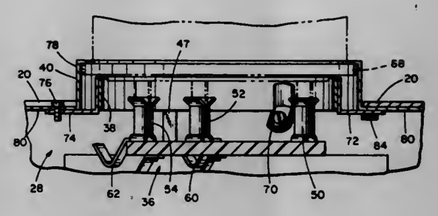
a ring secured to said cabinet and adapted to engage said one surface of said flanged base in response to the receipt of said contact blades by said receptacles,

a detachable annular collar removably attached to said cabinet and adapted to overlap said flanged base and ring, said collar having a radially outwardly extending flange wall at one axial end of said annular collar and a radially inwardly extending annular lip at the other axial end of said annular collar for abutment with said flanged base at a position spaced from said one surface, said flange wall extending radially outwardly of said collar and ring and having a passageway, said flange wall encircling said collar,

a latch having one end secured to said flange wall and another end axially spaced in a direction opposite said annular lip from said flange wall and extending in one angular direction,

a pair of circumferentially spaced tangs on said ring each extending radially outwardly of said ring, one of said tangs adapted to be received between said latch and said flange





wall in response to the engagement of said collar with said flanged base and rotation of said collar in said one direction to restrain axial movement of said collar,

a fastener extending from the other one of said tangs through said passageway in said flange wall to restrain rotational movement of said collar,

and an outer cover plate overlapping said flange wall and secured to said cabinet with said cover plate having a cutout passing said fastener to enable access to said fastener.

4,117,531

ELECTROLYTIC CAPACITOR

Sidney D. Ross; Franz S. Dunkl, both of Williamstown, and Manuel Finkelstein, North Adams, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 25, 1977, Ser. No. 800,258
Int. Cl.[2] H01G *9/02*
U.S. Cl. 361—433 10 Claims

1. An electrolytic capacitor comprising a capacitance section having a plurality of electrodes, at least one being a valve-metal electrode having a dielectric layer on its surface, said section being impregnated with an electrolyte comprising a solvent selected from the group consisting of dimethylformamide, N-methylformamide, glycol, and glycol-methylcellosolve, and a solute consisting essentially of a compound selected from the group consisting of ammonium or amine salts of an amic acid selected from the group consisting of maleamic, succinamic, phthalamic, and hexahydrophthalamic acids.

4,117,532

LAMP SHADE CONSTRUCTION AND METHOD

Richard Arbib, New York, N.Y., assignor to Richard Arbib Company, Inc., New York, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,660
Int. Cl.² F21V *1/04*
U.S. Cl. 362—358 **8 Claims**



1. A lampshade construction comprising at least one circumferential framework having an inner surface, an outer surface and a plurality of openings extending therethrough, and a layer of material covering said inner surface of said framework and having portions extending into said openings to seal said material to said framework, at least a portion of the outer surface of said framework being free from covering by said material.

4,117,533

MODULAR LIGHTING SYSTEM

Allan T. Hagelthorn, 223 E. 78th St., New York, N.Y. 10021

Filed Feb. 18, 1977, Ser. No. 770,104
Int. Cl.² F21L *7/00*
U.S. Cl. 362—367 **10 Claims**

1. A modular lighting system, comprising, in combination: an assembly including holding means for holding translucent indicia at a predetermined disposition, a light source disposed behind the indicia with respect to a viewer, means facilitating interchangeability nd replacement of said indicia with other indicia, and support means facilitating supporting said assembly at one or more of a number of locations with respect to supporting surfaces, said holding means and said interchangeability facilitating means comprising at least one first set of upstanding columns each of which being formed with recesses in face portions thereof, frame means interconnecting and structurally aligning said columns with respect to one another and with respect to said support means, said support means comprising a second set of upstanding columns extending when assembled with said holding means in substantial alignment with said first set of columns, pairs of opposing recesses formed within pairs of said first set of columns accommodating said indicia.

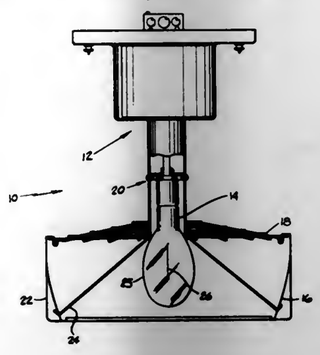
4,117,534

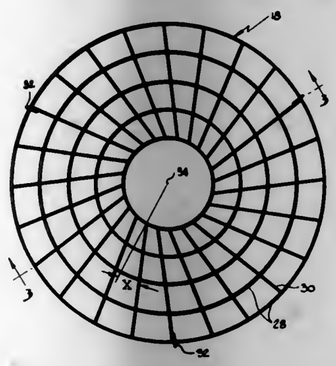
LUMINAIRE ARRANGEMENT

Herbert Arnold Odle, Newark, Ohio, assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jan. 17, 1977, Ser. No. 759,923
Int. Cl.² F21V *15/00, 21/00*
U.S. Cl. 362—378 **8 Claims**

4. A guard for a luminaire arrangement comprising a plurality of wire-like elements at least one of which is a circumferential element having an imaginary axis and a plurality of ribs which are circumferentially spaced about and extend outwardly from said circumferential element, said ribs being positioned such that none of said ribs intersects said axis.



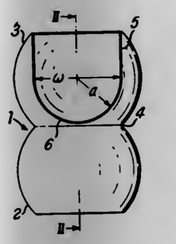


4,117,535

LIGHT FITTINGS

John Ruy Holt, 189 St. Pancras Way, College Green, London, England

Filed Jun. 18, 1976, Ser. No. 697,363
Claims priority, application United Kingdom, Jun. 21, 1975, 26456/75
Int. Cl.² F21V *19/00*; F21S *3/12, 13/02*
U.S. Cl. 362—382 **6 Claims**



1. In or for use in a flexible support for a light fitting, a link which comprises:

(a) a first section which has a part spherical outer surface; and p1 (b) a second section which is connected to said first section and has a part spherical internal surface, and an elongated slot which opens into said second section communicating with said part spherical internal surface and extends from that portion of said second section remote from said first section to a point on said second section close to said first section;

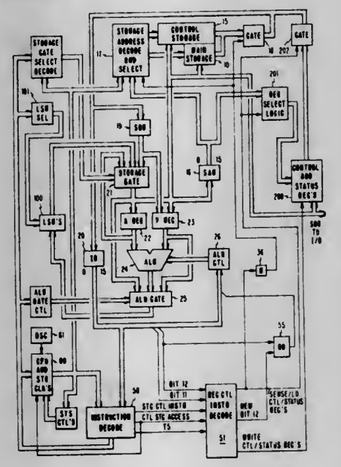
said link being such that the first section of a similar link can be introduced into the second section of said link so that the part spherical outer surface of the secton of said similar link is commensurate with and frictionally engages the part spherical internal surface of said second section of said link and said links can be moved relative to one another within the confines of said elongated slot.

4,117,536

INSTRUCTION PROCESSING CONTROL APPARATUS

Ronald Eugene Bodner, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,373
Int. Cl.² G11C *8/00*
U.S. Cl. 364—200 **9 Claims**



1. In a stored program computer an addressable storage containing data and instructions, said instructions including storage access instructions and register access instructions,

instruction decode means connected to receive from said storage storage access and register access instructions and responsive to said storage access instructions for generating storage control signals and responsive to said register access instructions for generating register control signals,

a plurality of addressable registers for storing data,

a source of addresses,

addressing means connected to receive addresses from said source of addresses and selectively operable under control of storage control signals to address said storage and under control of register control signals to address said registers,

and means for applying said storage control signals and said register control signals to said addressing means whereby said storage is addressed upon said instruction decode means decoding a storage access instruction and said registers are addressed upon said instruction decode means decoding a register access instruction.

4,117,537

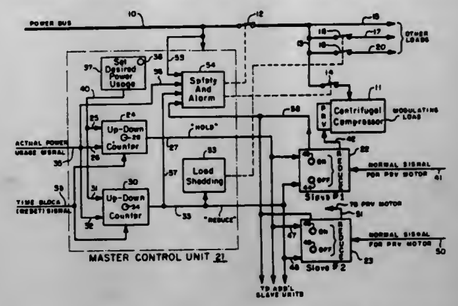
SYSTEM AND METHOD FOR LIMITING ENERGY CONSUMPTION

Paul William Muench, Medford Lakes, N.J., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 9, 1977, Ser. No. 767,238
Int. Cl.² H02J *1/10*; G05B *11/06*
U.S. Cl. 364—492 **31 Claims**

2. A demand regulating system for controlling the amount of power transferred over a power bus to an installation including at least one modulating electrical load which receives a load-regulating signal, comprising:

means for continually comparing the rate of actual power use against a desired rate of power use and for providing a hold signal when the actual rate exceeds the desired rate by a first amount, means for utilizing the hold signal to prevent additional loading of the modulating load, means



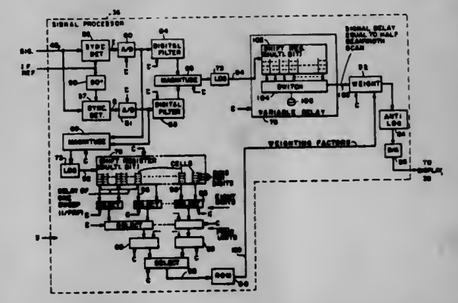
for providing a reduce signal when the actual rate exceeds the desired rate by a second amount which is greater than the first amount, and means for utilizing and reduce signal to reduce the load on the modulating load, in which said means for utilizing the reduce signal is operative in a given time period of reduce the load on the modulating load for only a fraction of that time period, allowing the system to stabilize during the remainder of that given time period.

4,117,538

RADAR SYSTEM WITH SPECIALIZED WEIGHTING

William W. Shrader, Stow, and Ronald B. Campbell, Jr., Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 4, 1977, Ser. No. 793,578
Int. Cl.² G01S *9/42*; G06F *15/20*
U.S. Cl. 364—517 **12 Claims**



9. In a radar system providing a succession of range sweeps wherein a sequence of echo signals is produced during each of said range sweeps, a system for processing said echo signals comprising:

means for sampling signals at predetermined intervals of each of said sequences of echo signals to provide a plurality of series of samples with individual ones of said series corresponding to individual ones of said echo signal sequences;

selecting means responsive to sets of said samples wherein the first set of said sets consists of the first sample in each of said series, the second set of said sets consists of the second sample in each of said series, and subsequent sets consist respectively of subsequent samples in each of said series, said selecting means selecting a magnitude of sample in each of said sets; and

means coupled to said selecting means and responsive to selections of said selecting means for weighting successive

samples in one of said series of samples of said sampling means by weighting factors corresponding to respective ones of said selections.

4,117,539

AUTOMATIC INSPECTION OF MACHINED PARTS

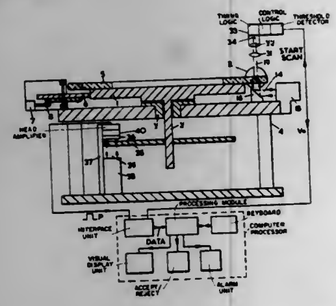
Donald Atkinson Bell, Teddington; Bernard John Chorley, Whitton; John Ronald Parks, West Byfleet, and Robert Lewis Wanek, London, all of England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jun. 11, 1976, Ser. No. 695,151

Claims priority, application United Kingdom, Jun. 12, 1975, 25273/75

Int. Cl.² G06F *15/00*; G01N *21/32*

U.S. Cl. 364—551 **10 Claims**



1. Apparatus for the automatic inspection of an axially symmetric profile of a component comprising:

a. a scanning system, including an image detecting array for scanning in a plurality of lines of scan a projected image of the profile of the component;

b. a projection system for projecting an image of the component's profile onto a plane containing the array;

c. a transparent member with means for supporting the component so that the component's projected image has an axis of symmetry which is transverse to the lines of scan;

d. motor means for causing relative movement between the projected image of the component and the array so that the array is caused to traverse the projected image; and

e. a computer for receiving at predetermined intervals during the scanning of the projected image by the scanning system an electrical signal from the scanning system representative of the portions of a line, coincident with a line of scan, of the array which are occluded by the projected image and for calculating, using said electrical signals, at least one of the parameters of length, breadth and curvature of the axis of symmetry and for comparing the calculated value of the parameter with a predetermined value to determine whether the value is within a predetermined range.

4,117,540

COMPUTING MODULE

Alain Bonnemay, Saclay, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 13, 1977, Ser. No. 759,199

Claims priority, application France, Jan. 14, 1976, 76 00878

Int. Cl.² G06J *1/00*; G06G *7/12*

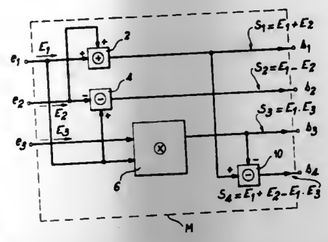
U.S. Cl. 364—602 **10 Claims**

1. A computing module having three inputs respectively e_1, e_2 and e_3, and four outputs, respectively s_1, s_2, s_3 and s_4, wherein said module comprises:

a summing circuit with two inputs respectively connected to e_1 and e_2 and one output connected to s_1,

a first subtracter with two inputs respectively connected to e_1 and e_2 and one output connected to s_2,

a multiplier with two inputs respectively connected to e_1 and e_3 and one output connected to s_3,



a second subtracter with two inputs respectively connected to s_1 and s_3 and one output connected to s_4.

4,117,541

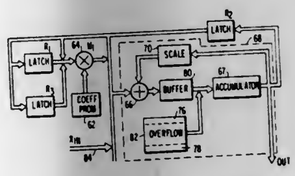
CONFIGURABLE PARALLEL ARITHMETIC STRUCTURE FOR RECURSIVE DIGITAL FILTERING

Mian Zaheer Ali, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 7, 1977, Ser. No. 849,279

Int. Cl.² G06F *15/34*; H04B *3/04*

U.S. Cl. 364—724 **7 Claims**



1. A high-speed digital arithmetic structure for implementing a recursive digital filter having a filter response defined by a plurality of filter coefficients, comprising:

a parallel bus;

means for providing filter input data samples to said parallel bus;

multiplication means having a tri-state output terminal coupled to said parallel bus, a first input terminal coupled to said parallel bus, and a second input terminal;

accumulating means having input and output terminals coupled to said parallel bus, said accumulating means providing at its output terminal a filter section output value comprising the accumulated value of said input data samples and the outputs from said multiplication means;

first storage means for storing said coefficients and for supplying said coefficients to the second input terminal of said multiplication means;

second storage means having a tri-state output terminal and an input terminal, both coupled to said parallel bus, said second storage means receiving and storing previous filter section output values and providing said previous values to the first terminal of said multiplication means; and

programmable control means for controlling both the coefficient values and the operating sequence of said multiplication means, accumulating means and first and second storage means in order to provide a desired filter response.

4,117,542

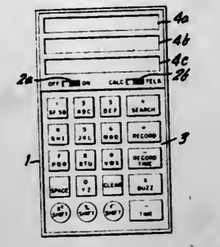
ELECTRONIC POCKET DIRECTORY

Judah Klausner, 18 E. 64th St., New York, N.Y. 10021, and Robert Hotto, 41 E. 19th St., New York, N.Y. 10003

Filed Jul. 7, 1977, Ser. No. 813,743

Int. Cl.² G06F *3/02, 3/14*

U.S. Cl. 364—900 **17 Claims**



1. An electronic pocket directory comprising a case of a size and shape to fit in a user's pocket and to be held by one hand during use, a keyboard on said case comprising alphanumeric keys for numerals 1 to 0 and letters A to Z and function keys, alphanumeric display means in said case with a capacity of at least 10 letters or numbers, read-write memory circuit means in said case for storing and retrieving data items comprising persons' telephone numbers and street addresses, said memory circuit means having a capacity for storing a plurality of such data items under each of a multiplicity of persons' names as memory addresses, storing means controlled by said alphanumeric keys and said function keys for feeding to said memory circuit means said data items comprising telephone numbers and street addresses to be stored and for identifying the persons' names under which said items are to be stored, retrieving means controlled by said alphanumeric keys and said function keys for retrieving said data items stored by said memory circuit means including means for designating the name of the person under which the desired data items are stored and for displaying by display means said name and said data items stored under the designated name.

4,117,543

MAGNETIC BUBBLE LOGIC FAMILY

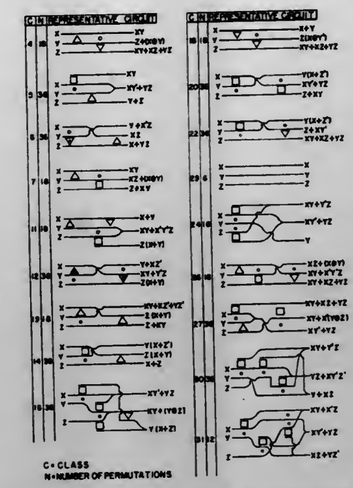
Robert C. Minnick, Houston, Tex.; Paul T. Bailey, Creve Coeur; Robert M. Sandfort, St. Charles, both of Mo., and Warren L. Semon, Dewitt, N.Y., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 24, 1972, Ser. No. 283,267

Int. Cl.² G11C *19/08*

U.S. Cl. 365—5 **70 Claims**

1. A conservative field accessed magnetic bubble logic circuit comprising means defining at least three input channels for transmitting magnetic bubbles, means defining at least three output channels for receiving and transmitting magnetic bubbles, and control means responsive to the combination of the presences and absences of bubbles received simultaneously on said three input channels to produce a presence or absence of a bubble on each of said output channels in accordance with a "differentl logic function of X, Y and Z wherin X, Y and Z are binary variables represented by the presences or absences of bubbles received on said three input channels, respectively, the logic function for each output channel being different than the logic function for each one of the remaining output channels, each of said logic functions containing at least two of said variables, means to apply a cyclical propagating magnetic field to said means defining said input channels, said output channels and said control means to cause bubbles applied to said input channels to be transmitted through said control means to said output channels, said control means conserving bubbles and producing the same number of bubbles simultaneously on said output channels that appear simultaneously on said input channels, the bubbles being produced on said output channels a



fixed number of cycles of said propagating magnetic field after the bubbles appear in said input channels.

4,117,544

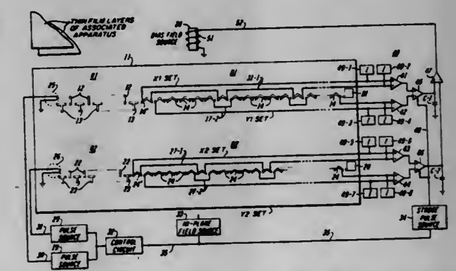
MAGNETIC SINGLE-WALL DOMAIN BIAS FIELD CONTROL ARRANGEMENT

Cyrus Frank Ault, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 25, 1977, Ser. No. 800,447

Int. Cl.² G11C *19/08*

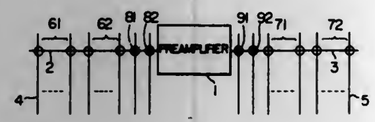
U.S. Cl. 365—28 **21 Claims**



1. A control arrangement for use in association with single-wall magnetic domain apparatus having thin-film layer means in which single-wall domains are maintained by a bias field and propagated by an in-plane rotating field, said arrangement comprising a thin-film magnetic bias field control layer in which single-wall magnetic domains can be generated and propagated, said bias field control layer having substantially the same properties as said layer means of said apparatus, a first pattern of magnetic propagating elements coupled to said bias field control layer defining a first channel including a first detector section, a second pattern of magnetic propagating elements coupled to said bias field control layer defining a second channel including a second detector section, each of said elements of said first and second channel being dimensioned for optimum propagation of domains of a first and a second predetermined diameter, respectively, first electrical circuit means for each of said channels for connecting elements of said first and second detector section in first groups including every nth element, second electrical circuit means for each of said channels for connecting elements of said first and sec-

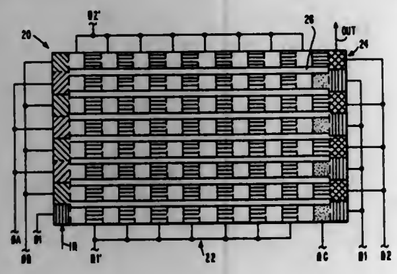
ond detector section in second groups including each of the elements between said elements of said first groups, and means energizable to generate magnetic domains in each of said channels of a diameter as determined by the magnitude of said bias field, said domains being propagatable long said channels by said in-plane rotating field, said first and second electrical circuit means of each of said channels being energizable by the presence of domains at the elements of said first and second groups of elements to present voltage signals corresponding to the number of domains at each of said groups of elements.

4,117,545
MEMORY INCLUDING DUMMY CELLS
Masaaki Inadachi, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan
Filed Mar. 16, 1977, Ser. No. 778,108
Claims priority, application Japan, Mar. 26, 1976, 51-32574
Int. Cl.² G11C *13/00*
U.S. Cl. 365—207 **8 Claims**



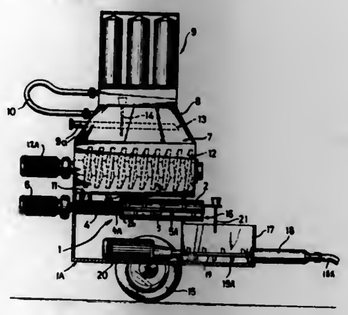
4. A memory comprising:
at least a pair of first and second sense lines;
sense means for differentially sensing signals on said first and second sense lines;
first and second memory cell groups of different structure from each other coupled to each of said first and second sense lines;
first and second dummy cells coupled to said second sense line and having substantially the same memory cell structure as that of said first and second memory cell groups, respectively, coupled to said first sense line; and
third and fourth dummy cells coupled to said first sense line and having substantially the same memory cell structure as that of said first and second memory cell groups, respectively, coupled to said second sense line.

4,117,546
INTERLACED CCD MEMORY
Narasipur Gundappa Anantha, Hopewell Junction; Moises Cases, Fishkill; Fung Yuel Chang, and Barry Jay Rubin, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1977, Ser. No. 865,806
Int. Cl.² G11C *11/40*
U.S. Cl. 365—233 **12 Claims**



1. A two phase interlaced serial-parallel-serial memory comprising:
a serial input stage having M storage cells, including an input storage cell forming a first one of said M storage cells for receiving a serial bit stream;
a first clock pulse generator for providing a clock signal to said first storage cell permitting the transfer of data bits from said serial bit stream into and out of said first storage cell;
second and third clock pulse generators connected to alternate ones of the other of the M storage cells for serially transferring data bits to alternate ones of said other M storage cells until M/2 data bits are stored in said serial input stage at alternate storage cells;
a parallel storage array having M rows, corresponding to each one of said M storage cells in said serial input stage, and X columns, each one of said X columns having a first stage and a second stage, data being stored in only one of said two stages at all times;
a fourth clock pulse generator providing a clock signal to the second stage of each of the X columns with the exception of the second stage of the last one of the X columns where the fourth clock pulse generator is connected to only alternate storage cells at M/2 rows;
a fifth clock pulse generator for providing a clock signal to the first stage of each of the X columns, the first stage of the first column being directly coupled to said serial input stage;
a sixth clock pulse generator for providing a clock signal to those alternate storage cells in the second stage of the last one of the X columns corresponding to the M/2 rows not connected to the fourth clock pulse generator;
a serial output stage having M storage cells and directly coupled to the second stage of the last one of the X columns; and
a seventh clock pulse generator for providing a clock signal to alternate ones of the M storage cells of the serial output stage, the other M/2 storage cells in the serial output stage being provided a clock signal by said first clock pulse generator.

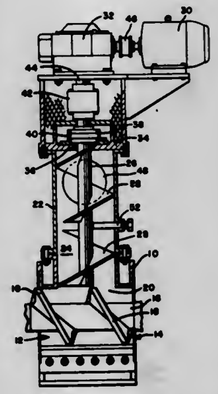
4,117,547
APPARATUS FOR THE PREPARATION OF MORTAR OR THE LIKE
Paul Mathis, Freiburg-Lehen, and Max Zimmer, Istein, both of Fed. Rep. of Germany, assignors to Mathis Fertigputz GmbH, Fed. Rep. of Germany
Filed May 26, 1976, Ser. No. 690,276
Claims priority, application Fed. Rep. of Germany, May 27, 1975, 2523374; Sep. 29, 1975, 2543379
Int. Cl.² B28C *7/14*
U.S. Cl. 366—17 **36 Claims**



1. Apparatus for the preparation of plastic building material which includes solid and liquid constituents, particularly for continuous preparation of mortar, comprising a mixing vessel; first and second feeding means for respectively admitting into said vessel metered quantities of solid and liquid constituents whereby such constituents are converted into building material

in the interior of said vessel; means for evacuating building material from said vessel at such a rate that the quantity of material in the interior of said vessel is at least substantially constant and the vessel is filled to less than capacity; a container for the material which is evacuated from said vessel; and means for arresting at least one of said feeding means, including a level detector arranged to monitor the quantity of building material in said container and to effect stoppage of said one feeding means when the quantity of building material in said container exceeds a predetermined quantity.

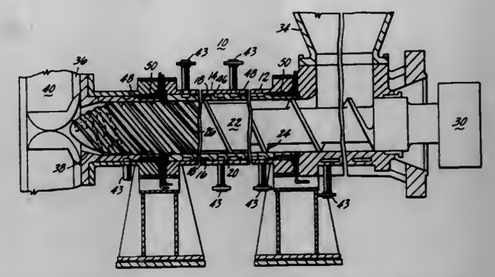
4,117,548
SCREW VENT
Gregory C. Craig, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio
Filed Nov. 30, 1977, Ser. No. 856,103
Int. Cl.² B29B *1/10*
U.S. Cl. 366—83 **6 Claims**



1. A vent for a devolatilizer which includes a cylindrical cage having an inlet and outlet for a material to be devolatilized, a rotatable shaft carrying a plurality of screw members in said cage arranged to convey the material through said cage, and means for rotating said shaft, comprising:
means defining a vent opening in said cage,
vent duct means, communicating with said vent opening, for defining a cylindrical vent chamber into which vapor may escape,
vent screw means in said vent chamber, including a screw body and helical screw flight portion extending around said screw body, said screw body being of minimal diameter and the pitch of said screw flight portion being sufficiently large such that the velocity of vapor leaving said gate through said vent opening is maintained below a predetermined maximum vapor velocity,
motor means connected to said screw body, for rotating said vent screw means in said vent chamber, and
vapor return means, communicating with said vent chamber, for extracting vapor from said chamber.

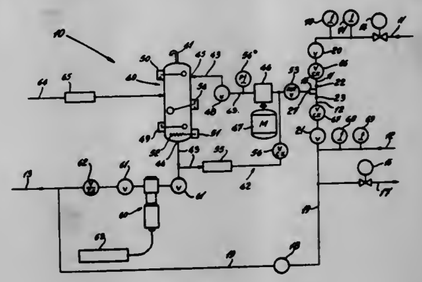
4,117,549
EXTRUDER SEAL
Richard Douglas Antrim, Newtown, Conn., assignor to USM Corporation, Farmington, Conn.
Filed Jul. 13, 1977, Ser. No. 815,367
Int. Cl.² B29B *1/06*
U.S. Cl. 366—99 **6 Claims**

1. A mixing extruder for the processing of rubber, plastics and the like materials, said extruder including a housing with a generally cylindrical bore therein and a rotor rotatably mounted in the bore, the housing having a feed opening and a discharge opening at respective ends thereof, said housing also comprising:
at least one cylinder in a contiguous relationship with another portion of said extruder; wherein said cylinder has two ends, the cylinder comprising an outer jacket having an annular end plate fixed thereto, and an inner liner having a flange therearound, the outer jacket being coaxially disposed about and spaced apart from the inner liner, the inner surface of said liner defining said bore;
a heat transfer fluid flow channel disposed between said outer jacket and said inner liner of said cylinder; and



a seal arrangement disposed on at least one end of said cylinder including a flexible annular bellows, said bellows having two ends, one end of said bellows being attached to said flange on said liner, the other end of said bellows being attached to the annular end plate fixed to said outer jacket.

4,117,550
EMULSIFYING SYSTEM
Roy E. Folland, Clarenceville, and Richard C. Millar, Otterburn Park, both of Canada, assignors to Folland Enertec Ltd., Quebec, Canada
Filed Feb. 14, 1977, Ser. No. 768,171
Int. Cl.² B01F *5/10, 15/02*
U.S. Cl. 366—136 **7 Claims**



1. An emulsifying system for mixing accurate ratios of two or more liquids to form an emulsion, said system comprising means for supplying an accurate mixture of said two or more liquids, an emulsifying device to emulsify said mixture into an emulsion, emulsion storage means for storing a quantity of said emulsion that may vary between predetermined limits, an output circuit to draw said emulsion from said emulsion storage means, a recirculating circuit connected at said output circuit and having a recirculating pump to recirculate said emulsion to said emulsifying device where said emulsion is regenerated and returned to said storage means whereby said emulsion in said storage means is maintained in a usable state, said emulsion storage means permitting the supply of said mixture to it at a rate independent of the rate at which said emulsion is drawn from said output.

4,117,551

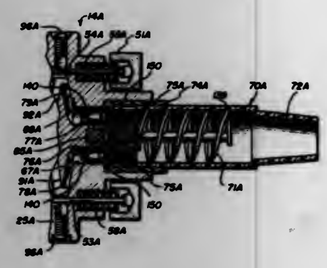
PURGEABLE DISPENSING GUN FOR POLYURETHANE FOAM AND THE LIKE

William R. Brooks, 1 S. 549 Forest Trail, Oak Brook, Ill. 60521, and Irving C. Heinzel, Des Plaines, Ill., assignors to William R. Brooks, Oak Brook, Ill.

Continuation-in-part of Ser. No. 474,381, May 30, 1974, abandoned. This application Jun. 27, 1975, Ser. No. 591,174

Int. Cl.[2] B05B 7/12

U.S. Cl. 366—162 7 Claims



1. A system for mixing and dispensing a product fluid comprising: containers for separately stored constituents; a gun housing with conduit means connected to said containers; product constituent passages and primary valves in said gun housing, said primary valves being operable to control constituent flow though said passages; actuator means in the gun housing for selectively operating said primary valves to control the flow of corresponding fluid product constituents into the gun housing; replaceable nozzle means mounted in said gun housing for receiving and mixing the product constituents and for dispensing the resultant mixed product, including a mixing chamber having a dispensing orifice, a pair of product constituent tabulations opening individually into said chamber away from said orifice and having coupling means connected to a corresponding product constituent passage in said gun housing, and check valve means mounted in said nozzle means flowpathwise between each of said tabulations and said mixing chamber for selectively admitting the corresponding fluid product constituent into said chamber and for obstructing retrograde flow of any mixed product or product constituent to the gun housing; said nozzle means with the included check valve means being bodily removable as a unit from the gun housing independently of the primary valves for permitting repair, replacement or cleaning of the nozzle means.

DESIGNS

SEPTEMBER 26, 1978

249,596

LACROSSE ELBOW GUARD

Robert J. Rule, Manhasset, N.Y., assignor to W. H. Brine Co., Needham, Mass.

Filed Dec. 6, 1976, Ser. No. 747,981

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—27



249,597

WELDING SHIELD

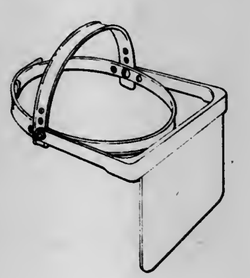
Nicholas Thomas Edward Dillon, 10 East St., Magill, South Australia, Australia

Filed Sep. 9, 1976, Ser. No. 721,696

Term of patent 14 years

Int. Cl. D2—*03*

U.S. Cl. D2—234



249,598

SPORT SOCK

Elizabeth A. Magnuson, 4148 Yates Ave. N., Robbinsdale, Minn. 55422

Filed Nov. 12, 1976, Ser. No. 741,345

Term of patent 7 years

Int. Cl. D2—*04*

U.S. Cl. D2—330



249,599

COMBINED BRUSH AND SCRAPER

Wiley M. Whitaker, Ramseur, N.C., assignor to Whit Corporation

Filed Jun. 20, 1977, Ser. No. 807,824

Term of patent 14 years

Int. Cl. D4—*01;* D7—*05*

U.S. Cl. D4—06



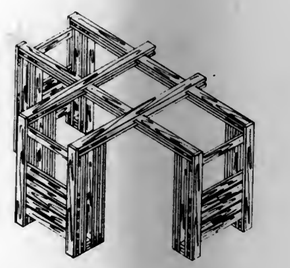
249,600
MAKE-UP BRUSH
Arleen Bowman, New York, N.Y., assignor to Bowman Trading Co., Inc., New York, N.Y.
Filed Sep. 20, 1976, Ser. No. 724,904
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



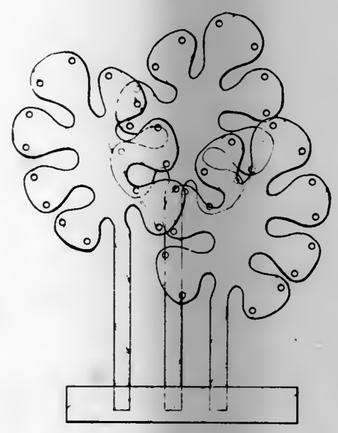
249,601
SEAT
Robert E. Burridge, Mt. Lebanon, Pa., assignor to Contourpedic Corporation, Saddle Brook, N.J.
Filed Jan. 9, 1976, Ser. No. 647,707
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—5



249,602
SUPPORT FOR USE WITH ELECTRONIC COMPUTER UNITS
David A. O'Connor, Virginia Beach, Va., assignor to Virginia National Bankshares, Inc., Norfolk, Va.
Filed Mar. 23, 1976, Ser. No. 669,604
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



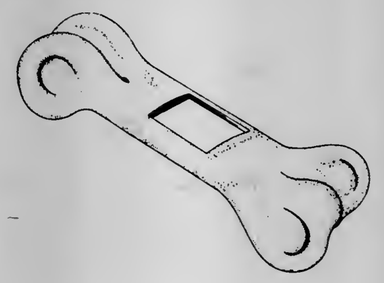
249,603
DISPLAY STAND FOR PIERCED EARRINGS
Vincent DiBartolo, Cresskill, N.J., assignor to Mele Manufacturing Co.
Filed Feb. 24, 1977, Ser. No. 771,531
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



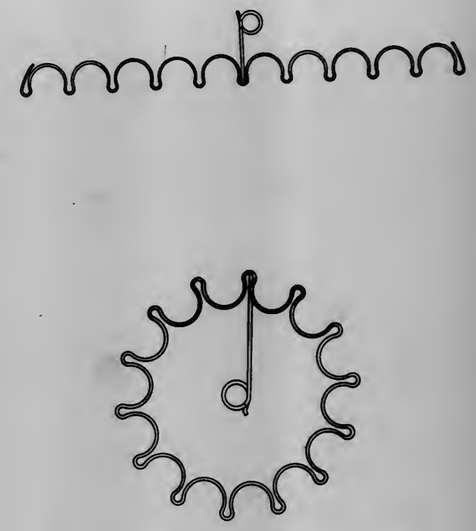
249,604
PROTECTIVE COVER FOR ROLLS OF TOILET PAPER
Wai-Hung Woo, c/o Woody Trading Co. H.K., 38 Kam Lam St., 5th floor, Block "S", Mongkok, Kowloon, Hong Kong
Filed Aug. 22, 1977, Ser. No. 826,430
Claims priority, application United Kingdom, Feb. 23, 1977, 978994/77
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



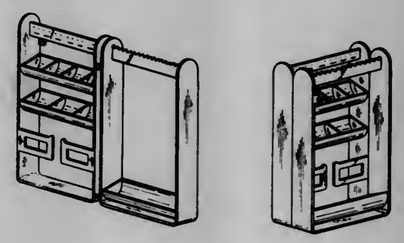
249,605
SOAP BAR HOLDER
Geraldine J. Skermetta, 7914 Village Oak, San Antonio, Tex. 78233
Filed Sep. 27, 1976, Ser. No. 726,584
Term of patent 14 years
Int. Cl. D23—*02*; D30—*99*
U.S. Cl. D6—89



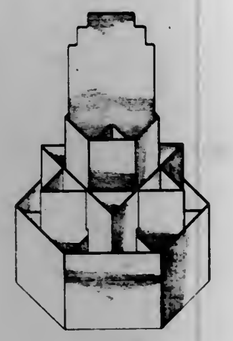
249,606
CONTAINER DISPLAY RACK
John W. Terdina, West Chicago, and Clarence A. Kec, St. Charles, both of Ill., assignors to J.W.T. Industries, West Chicago, Ill.
Filed Aug. 16, 1976, Ser. No. 714,379
Term of patent 14 years
Int. Cl. D20—*02*; D6—*08*
U.S. Cl. D6—125



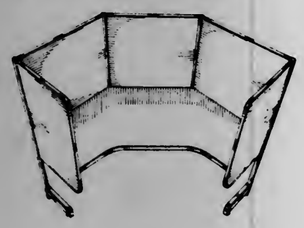
249,607
JEWELRY ORGANIZER OR SIMILAR ARTICLE
Jerrold J. Goldman, 6 Ridgeway Terr., Spring Valley, N.Y. 10977, and Robert Petre, 25 Longspur Rd., Yonkers, N.Y. 10703
Filed Oct. 8, 1976, Ser. No. 730,812
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



249,608
DISPLAY UNIT OR THE LIKE
Benjamin V. Wright, El Cerrito, Calif., assignor to Primo Incense Corporation, Los Angeles, Calif.
Filed Jun. 14, 1976, Ser. No. 695,511
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—146



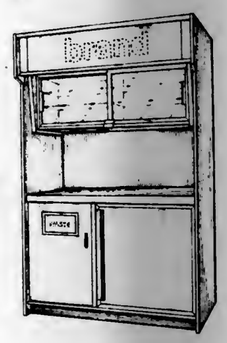
249,609
EDUCATIONAL MODULE WITH SWINGABLE END PANELS
Edward J. Kramer, 19320 Sound View Dr., Stanwood, Wash. 98292
Continuation-in-part of Ser. No. 567,613, Apr. 14, 1975, and Ser. No. 567,614, Apr. 14, 1975, and Ser. No. 567 ,706, Apr. 14, 1975.
This application Dec. 29, 1976, Ser. No. 755,491
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—157



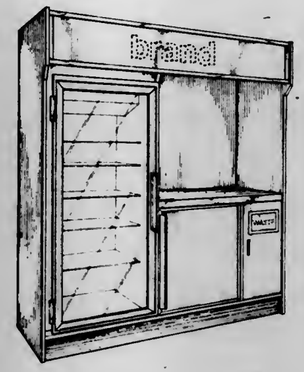
249,610
CONVENIENCE FOOD SERVICE CENTER
Theodore R. Burton, 305 Miltwood Rd., Greensboro, N.C. 27408
Filed Oct. 18, 1976, Ser. No. 721,168
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02;* D15—*07*
U.S. Cl. D6—169



249,611
CONVENIENCE FOOD SERVICE CENTER
Theodore R. Burton, 305 Miltwood Rd., Greensboro, N.C. 27408
Filed Oct. 18, 1976, Ser. No. 721,167
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—169



249,612
CONVENIENCE FOOD SERVICE CENTER
Theodore R. Burton, 305 Miltwood Rd., Greensboro, N.C. 27408
Filed Oct. 18, 1976, Ser. No. 721,169
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02;* D15—*07*
U.S. Cl. D6—169



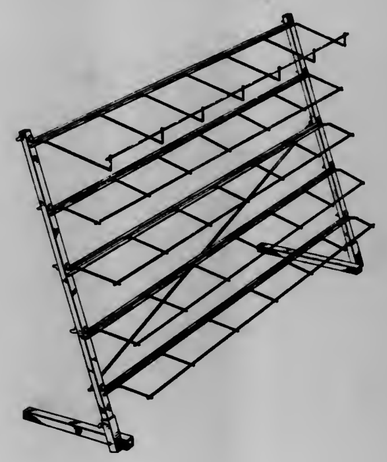
249,613
CONVENIENCE FOOD SERVICE CENTER
Theodore R. Burton, 305 Miltwood Rd., Greensboro, N.C. 27408
Filed Oct. 18, 1976, Ser. No. 721,170
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—169



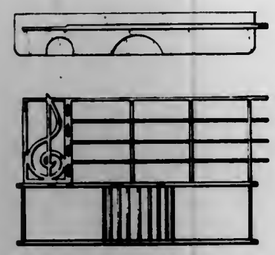
249,614
CONVENIENCE FOOD SERVICE CENTER
Theodore R. Burton, 305 Miltwood Rd., Greensboro, N.C. 27408
Continuation-in-part of Ser. No. 721,168, Sep. 7, 1976. This application Oct. 18, 1976, Ser. No. 733,458
Term of patent 14 years
Int. Cl. D6—*04;* D15—*07*
U.S. Cl. D6—169



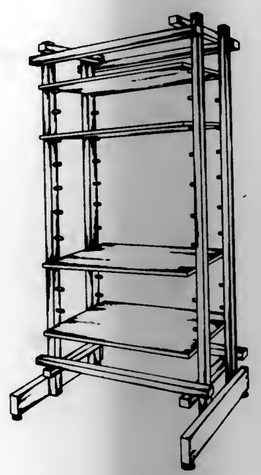
249,615
KNOCK DOWN DISPLAY STAND
De Vern C. Frisbey, 8430 SW. Canyon Dr., Portland, Oreg. 97225
Filed Sep. 7, 1976, Ser. No. 720,792
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—180



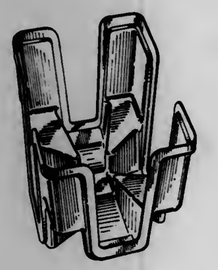
249,616
STAND FOR POTTED PLANTS
Joseph B. Connolly, 9 Pleasant St., Waverly, N.Y. 14892
Filed Jun. 30, 1977, Ser. No. 811,994
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—182



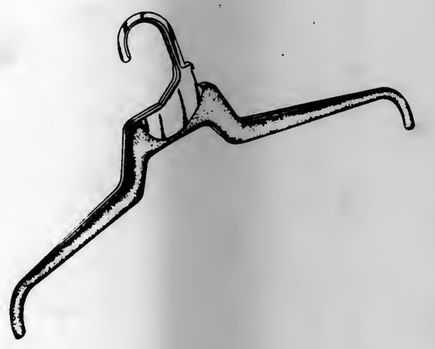
249,618
SHELF UNIT
Allan Oxenhandler, 444 Crest Ave., Kirkwood, Mo. 63122
Filed Dec. 20, 1976, Ser. No. 752,262
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



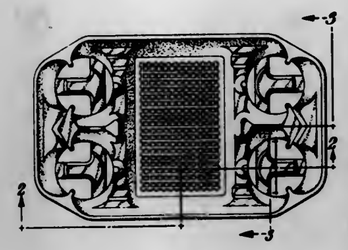
249,617
COMBINED STORAGE AND TYING CONTAINER FOR NEWSPAPERS
Ronald Bozicnik, 4017 Grant St., Westmont, Ill. 60559
Filed Mar. 10, 1977, Ser. No. 776,133
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



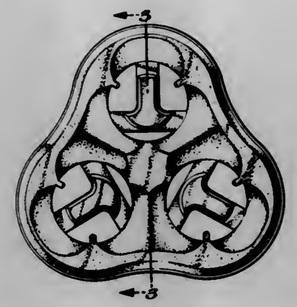
249,619
SHIRT HANGER
Douglas F. Wolff, Marshall, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.
Filed Jun. 20, 1977, Ser. No. 807,986
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—247



249,620
COMBINED FOOD AND BEVERAGE TRAY
Henry R. Vigue, Waterville, Me., assignor to Keyes Fibre Company
Filed Dec. 27, 1976, Ser. No. 754,257
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



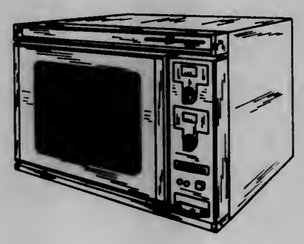
249,622
BEVERAGE TRAY
Henry R. Vigue, Waterville, Me., assignor to Keyes Fibre Company
Filed Dec. 27, 1976, Ser. No. 754,259
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—71



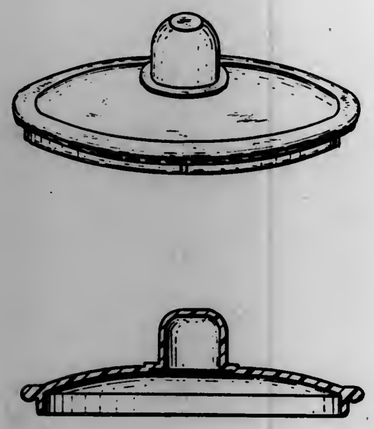
249,621
DEEP FAT FRYER BASKET
Vladimir J. Ondrasik, II, 17044 Westbury Dr., Granada Hills, Calif. 91344
Filed Aug. 12, 1977, Ser. No. 823,982
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—47



249,623
ELECTRONIC COOKING RANGE
Mikio Kosako, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 11, 1976, Ser. No. 665,957
Claims priority, application Japan, Oct. 24, 1975, 50/42776
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



249,624
COVER FOR A CANISTER
Jack Solomon, Harbor Isle, Island Park, N.Y., assignor to Pearl-Wick Corporation, Long Island City, N.Y.
Filed Feb. 10, 1977, Ser. No. 767,519
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131



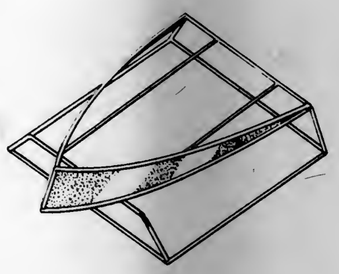
249,625
SPOON OR SIMILAR ARTICLE OF FLATWARE
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Aug. 18, 1976, Ser. No. 715,481
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



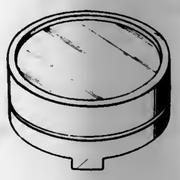
249,626
SPOON OR SIMILAR ARTICLE OF FLATWARE
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Aug. 18, 1976, Ser. No. 715,596
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



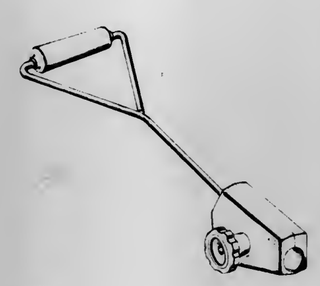
249,627
ELECTRIC IRON STAND OR THE LIKE
Tadao Otsuji, 1856 Ninth Ave., Honolulu, Hi. 96816
Filed Sep. 20, 1977, Ser. No. 835,248
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—205



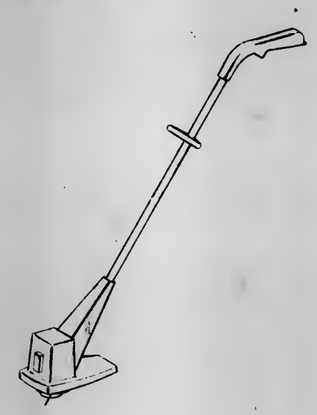
249,628
HOUSING FOR PLANT TURNTABLE
Robert F. Levine, 13107 Mindino Way, Marina Del Rey, Calif. 90291
Filed Oct. 26, 1976, Ser. No. 735,674
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D8—1



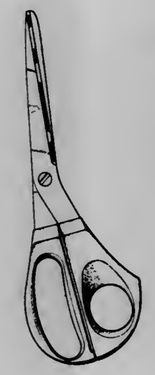
249,629
FOLDING CONTROL HANDLE FOR LAWN AND GARDEN IMPLEMENT
Walter H. Droegemuller, Arlington Heights, Ill., assignor to The Toro Company, Minneapolis, Minn.
Filed Feb. 16, 1977, Ser. No. 769,019
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—1



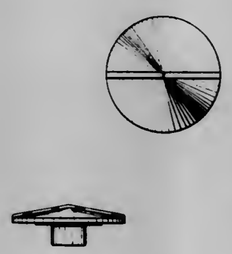
249,630
ROTARY LAWN EDGER, TRIMMER OR SIMILAR ARTICLE
George C. Ballas, Houston, Tex., assignor to Weed Eater, Inc.
Filed Aug. 24, 1976, Ser. No. 717,504
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



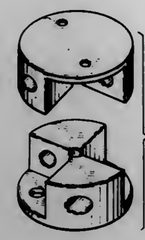
249,631
SCISSORS
Reiner Hellmann, Solingen, Fed. Rep. of Germany, assignor to Wilhelm Boos, Jr. (GmbH & Co.), Solingen, Fed. Rep. of Germany
Filed Nov. 11, 1976, Ser. No. 741,283
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 5 MR 8681
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



249,632
SHEET METAL WORKING TOOL
William J. Meis, 6 Valley Dr., Crescent, Iowa 51526
Filed Nov. 12, 1976, Ser. No. 741,330
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—70



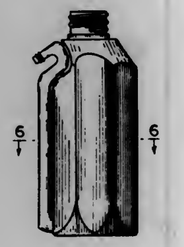
249,633
SKI LOCK DEVICE
George N. Sasaki, P.O. Box 61121, Sunnyvale, Calif. 94088
Filed Mar. 17, 1977, Ser. No. 778,491
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



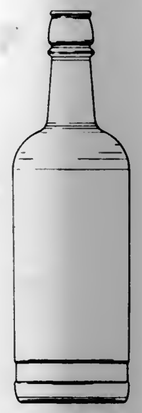
249,634
BEARING COVER PLATE FOR A VERTICAL BAR CAM LOCK
John V. Pastva, Jr., Parma Heights, Ohio, assignor to The Eastern Company, Naugatuck, Conn.
Filed Jun. 10, 1976, Ser. No. 694,659
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—346



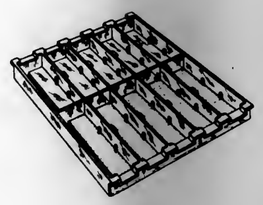
249,635
BOTTLE
Barry Jack Elliott, Shirley, England, assignor to Azlon Products Ltd., London, England
Filed Jun. 7, 1976, Ser. No. 693,569
Claims priority, application United Kingdom, Feb. 24, 1976, 974610/76
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71



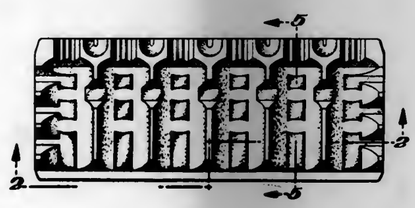
249,636
BOTTLE
Donald Arthur Wolstenholme, Harrogate, England, assignor to Saml. Smith Old Brewery (Tadcaster) Limited, Tadcaster, England
Filed Dec. 6, 1976, Ser. No. 748,152
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—159



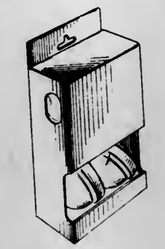
249,637
DISPENSER FOR RAZOR BLADE CARTRIDGES
Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Nov. 11, 1976, Ser. No. 740,775
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



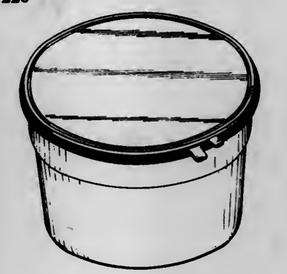
249,638
PACKING TRAY FOR FLUORESCENT TUBES
Gilbert R. Chadbourne, Oakland, Me., assignor to Keyes Fibre Company, Me.
Filed Dec. 27, 1976, Ser. No. 754,256
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—189



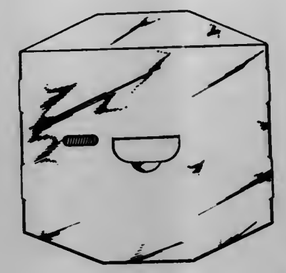
249,639
DISPLAY PACKAGE
John W. L. Hogg, Benton Harbor, Mich., and G. Norman Heaton, Elkhart, Ind., assignors to Shepherd Products U.S. Inc., St. Joseph, Mich.
Filed Oct. 15, 1976, Ser. No. 732,670
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



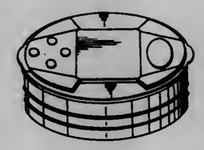
249,640
COMBINED PACKAGING CONTAINER AND LID THEREFOR
Frederick Harold Edwards, Mentone, Australia, assignor to Vinyl Clad Proprietary Limited
Filed Sep. 11, 1975, Ser. No. 612,474
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—220



249,641
DISPENSING CONTAINER OR THE LIKE
Carmelo P. Dali, Cheshire, Conn., assignor to American Home Products Corp., New York, N.Y.
Filed Oct. 27, 1976, Ser. No. 735,933
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



249,642
DISPENSING TOP FOR GRANULATED MATERIAL
John B. Ames, 100 Valley Rd., Marion, Ala. 36756
Filed Jul. 29, 1976, Ser. No. 709,597
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—257



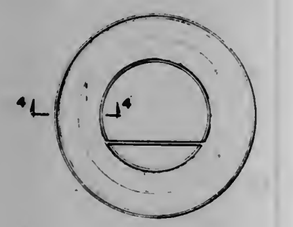
249,643
CLOSURE OR SIMILAR ARTICLE
Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 533,122, Jun. 18, 1975, abandoned. This application Apr. 9, 1976, Ser. No. 675,404
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267



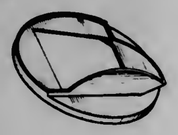
249,644
DISPENSING CLOSURE FOR CONDIMENT BOTTLES
Rudolf L. Oeckl, c/o Englebert Knipfler, 262-15 Hillside Ave., Floral Park, N.Y. 11004
Filed Aug. 12, 1976, Ser. No. 713,812
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—275



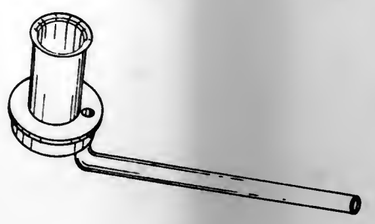
249,645
PAINT CAN ATTACHMENT
Edward Tedesco, Fort Lauderdale, Fla., assignor to Tedco Products, Fort Lauderdale, Fla.
Filed Aug. 6, 1976, Ser. No. 712,304
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—289



249,646
POURING SPOUT
John C. Ritter, 12645 Duchess, Detroit, Mich. 48224
Filed Mar. 4, 1976, Ser. No. 663,731
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



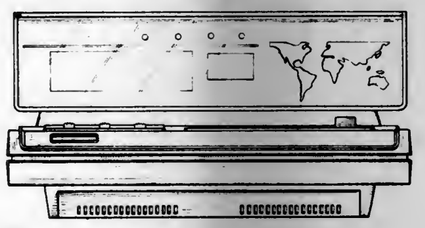
249,647
POURING SPOUT FOR A CONTAINER
Donald Terry Goodall, 30 Beach St., Blakehurst, Sydney, New South Wales, Australia
Filed Apr. 30, 1976, Ser. No. 681,809
Claims priority, application Australia, Nov. 4, 1975, 68068/75; Nov. 24, 1975, 68166/75
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—290



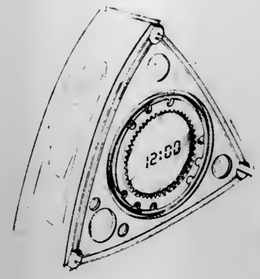
249,648
CLOCK BODY
Theodoor Willem Geitenbeek, 16 Dulcie Grove, Moorabbin, 3189 Victoria, Australia
Filed Oct. 23, 1975, Ser. No. 625,154
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—1



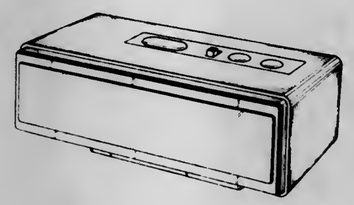
249,649
UNIVERSAL CALENDAR CLOCK
Takashi Ohtani, Chofu, Japan, assignor to Realtone Electronics, Inc., Tokyo, Japan
Filed Jan. 7, 1977, Ser. No. 757,728
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—3



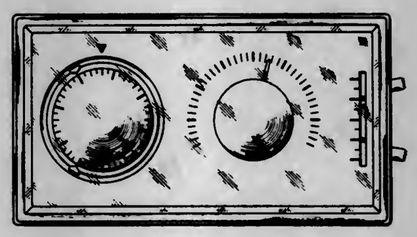
249,650
DIGITAL CLOCK
Mark J. Schoenfeld, 4037 W. Garden Dr., Phoenix, Ariz. 85029
Filed Dec. 17, 1976, Ser. No. 751,907
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6



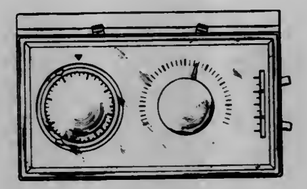
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DIGITAL CLOCK
Nobuyoshi Hirosawa, Chofu, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shimosuwa, Japan
Filed Dec. 8, 1976, Ser. No. 748,441
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



249,652
CASING FOR A TIMER CONTROLLED THERMOSTAT OR THE LIKE
Jerry W. McElroy, St. Louis County, and Michael A. Kerper, Richmond Heights, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 1, 1976, Ser. No. 737,559
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—51



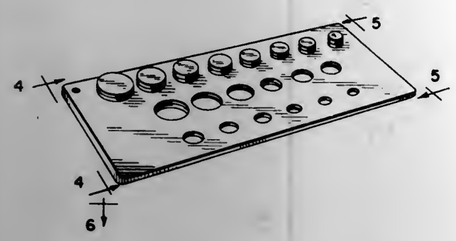
249,653
CASING FOR A TIMER CONTROLLED THERMOSTAT OR THE LIKE
Jerry W. McElroy, St. Louis County, and Michael A. Kerper, Richmond Heights, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 1, 1976, Ser. No. 737,725
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—51



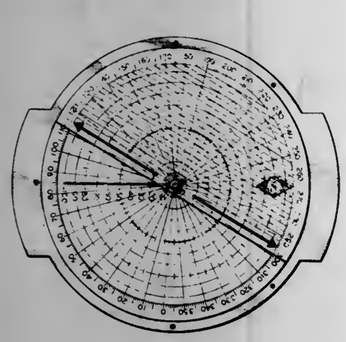
249,654
MOISTURE METER
Stephen J. Shaper, P.O. Box 125, Houston, Tex. 77001
Filed Nov. 15, 1976, Ser. No. 741,746
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—53



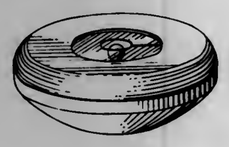
249,655
FAUCET CONNECTOR SIZE GUIDE
Gregory G. Gullaksen, Frankfort, and Var E. Lordahl, Chicago, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.
Filed Jun. 7, 1976, Ser. No. 693,376
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



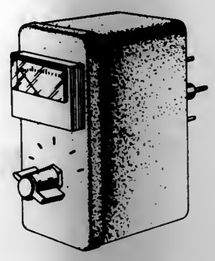
249,656
AIRCRAFT NAVIGATION PLOTTER
Marcus A. Mihail, 6832 Antigua Way, Sacramento, Calif. 95831
Filed Jan. 10, 1977, Ser. No. 758,052
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



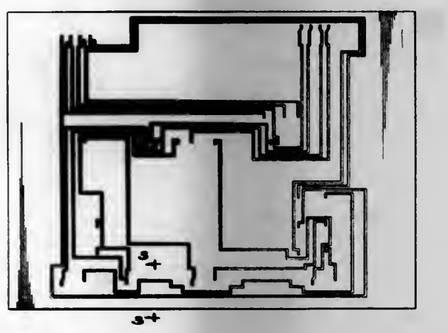
249,657
GOLF TEE LEVEL
Leighton E. Griffiths, 325 Pompton Ave., Pompton Lakes, N.J. 07442
Filed Jan. 11, 1977, Ser. No. 758,507
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69



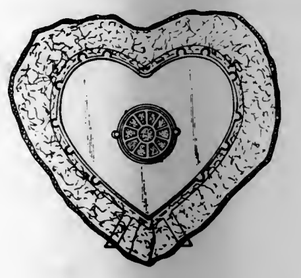
249,658
TELEPHONE CARRIER EQUIPMENT MULTITESTER
Gary Conway Fields, Oakland, Calif., assignor to Leemah Electronics, Inc.
Filed Jul. 30, 1976, Ser. No. 710,091
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



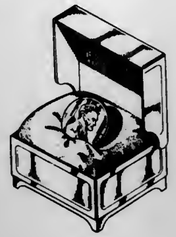
249,659
PLAQUE
Alfiero F. Balzano, 606 N. Acacia, Fullerton, Calif. 92631
Filed Jun. 14, 1976, Ser. No. 695,520
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—132



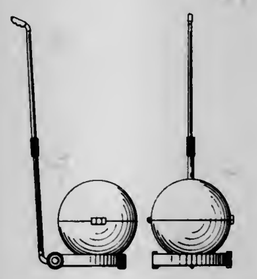
249,660
HOLDER FOR FLORAL ARRANGEMENT
Gene Meyer, 12 Quay Ct., Centerport, N.Y. 11721
Filed Nov. 1, 1977, Ser. No. 847,677
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—149



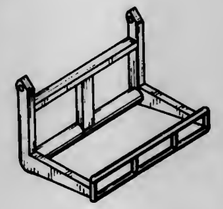
249,661
COMBINED COIN CHEST AND COIN
David C. Goodwin, 1258 Rosita Rd., Pacifica, Calif. 94044
Filed Jul. 12, 1976, Ser. No. 704,249
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157



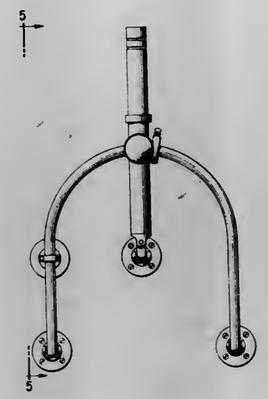
249,662
BOWLING BALL CADDY
Blanche A. Morley, 3401 N. Franklin, Stockton, Calif. 95204
Filed Mar. 2, 1977, Ser. No. 777,946
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—33



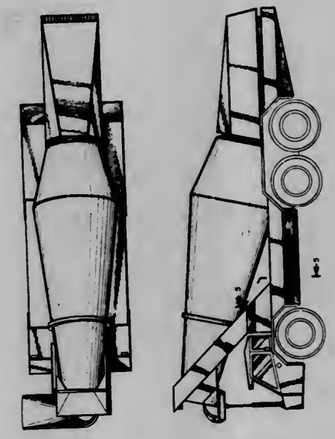
249,663
CONTAINER CRADLE FOR A HYDRAULIC CANE DUMPER
Harold A. Willett, P.O. Box 968, Thibodaux, La. 70301
Filed Nov. 3, 1975, Ser. No. 628,405
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



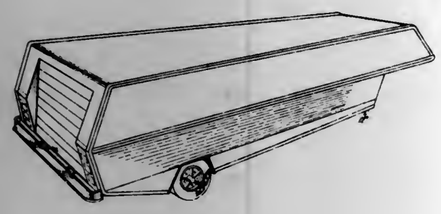
249,664
MOUNTING BRACKET FOR FISHING OUTRIGGER POLE
Lloyd Vernon Hall, 238 S. Florette, Anaheim, Calif. 92804
Filed Mar. 10, 1976, Ser. No. 665,605
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—70



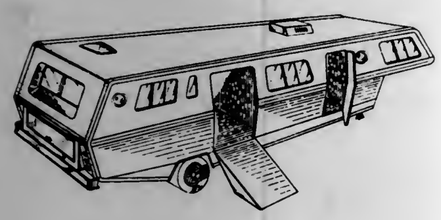
249,665
FRONT DISCHARGE MIXER TRUCK
Frederick J. Silbernagel, Huron, S. Dak., assignor to Forward, Inc., Huron, S. Dak.
Filed Jan. 21, 1977, Ser. No. 761,440
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D12—95



249,666
CARGO TRAILER
Noel Gene Thompson, 2517-3 Abbey Dr., Fort Wayne, Ind. 46815
Filed Mar. 7, 1977, Ser. No. 775,173
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—97

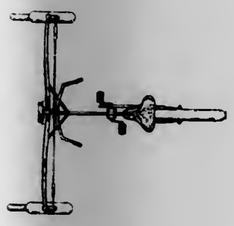


249,667
COMBINED TRAVEL AND HORSE TRAILER
Noel Gene Thompson, 2517-3 Abbey Dr., Fort Wayne, Ind. 46815
Filed Mar. 7, 1977, Ser. No. 775,172
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103

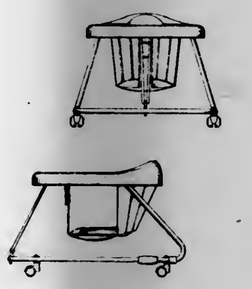


249,668
TRICYCLE
Herbert Penner, and Philip Penner, both of Box 97, Turpin, Okla. 73950
Filed Jan. 27, 1977, Ser. No. 762,869
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112

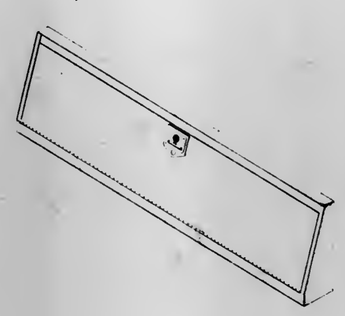




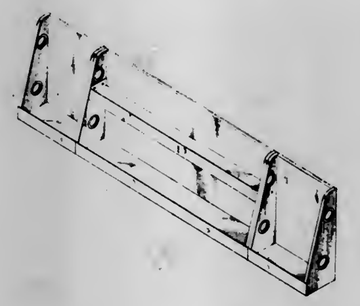
249,669
INFANT WALKING TRAINER
Kenzou Kassai, Higashishimizu, Japan, assignor to Kassai Kabushikikaisha, Higashishimizu, Japan
Filed Oct. 27, 1976, Ser. No. 736,193
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—130



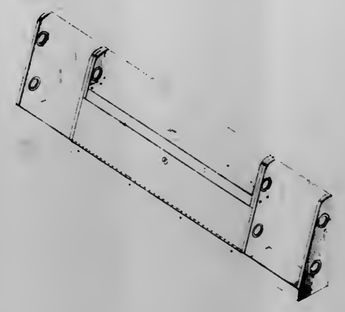
249,670
BEHIND SEAT STORAGE COMPARTMENT FOR TRUCKS OR THE LIKE
Jack C. VanderWaal, Sumner, Wash., assignor to Sea-Lect Products Inc., Kent, Wash.
Filed Apr. 11, 1977, Ser. No. 786,686
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



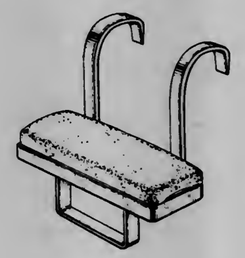
249,671
BEHIND SEAT STORAGE COMPARTMENT FOR TRUCKS OR THE LIKE
Jack C. VanderWaal, Sumner, Wash., assignor to Sea-Lect Products Inc., Kent, Wash.
Filed Apr. 11, 1977, Ser. No. 786,687
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



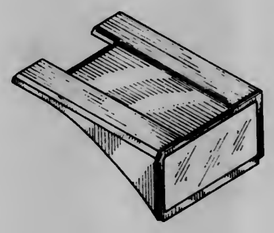
249,672
BEHIND SEAT STORAGE COMPARTMENT FOR TRUCKS OR THE LIKE
Jack C. VanderWaal, Sumner, Wash., assignor to Sea-Lect Products Inc., Kent, Wash.
Filed Apr. 11, 1977, Ser. No. 786,688
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



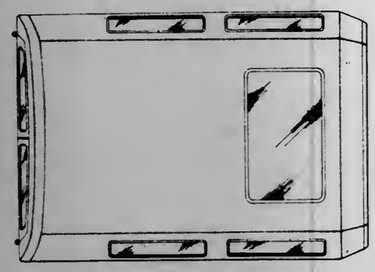
249,673
AUTOMOBILE ARMREST
Robert S. Cortez, 1617 Pomona Ave., San Jose, Calif. 95110
Filed Apr. 27, 1977, Ser. No. 791,585
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



249,674
AUTOMOBILE TOP ATTACHMENT
Jeffrey K. Tamura, 14540 Delano St., and Scott I. Grundfor, 14163 Friar St., both of Van Nuys, Calif. 91401
Filed Aug. 12, 1976, Ser. No. 713,866
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

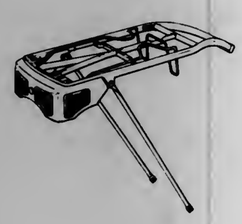


249,675
TRUCK BED CLOSURE
Charles Mashigan, Redford, Mich., assignor to American Motors Corporation, Southfield, Mich.
Filed May 4, 1977, Ser. No. 793,702
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156





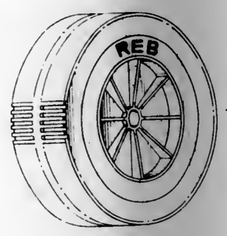
249,676
LUGGAGE CARRIER FOR BICYCLES OR THE LIKE
Oskar Pletscher, Marthalen, Switzerland, assignor to Gebrüder Pletscher, Marthalen, Switzerland
Filed Aug. 2, 1976, Ser. No. 710,810
Claims priority, application Switzerland, Feb. 20, 1976, 62544/76
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



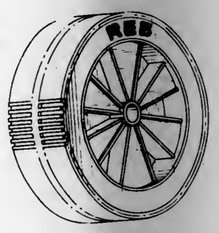
249,677
TRUCK TAILGATE
Ted L. Cline, Box 37, Rush Springs, Okla. 73082
Filed Mar. 11, 1977, Ser. No. 776,878
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—196



249,678
MOLDED WHEEL
Jordan I. Rotheiser, Highland Park, Ill., assignor to American Wheel & Engineering Co., Inc.
Filed Nov. 2, 1976, Ser. No. 738,319
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—204



249,679
MOLDED WHEEL
Jordan I. Rotheiser, Highland Park, Ill., assignor to American Wheel & Engineering Co., Inc.
Filed Nov. 3, 1976, Ser. No. 738,556
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—204

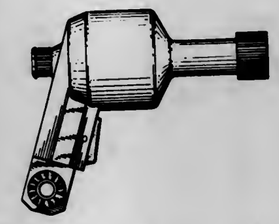


249,680
WHEEL
Bruce N. Smith, c/o Spherex Inc., Seabrook, N.H. 03874
Filed May 16, 1977, Ser. No. 797,590
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

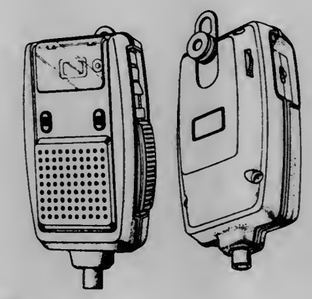




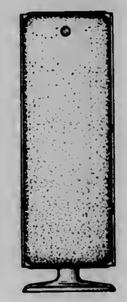
249,681
BICYCLE LIGHT GENERATOR
Werner Glasenapp, and Jörg Glasenapp, both of Essen, Fed. Rep. of Germany, assignors to Union Sils, van de Loo & Co., Fründenberg, Fed. Rep. of Germany
Filed Feb. 25, 1977, Ser. No. 771,941
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D13—2



249,682
COMBINATION MICROPHONE, SPEAKER AND CONTROL UNIT FOR A RADIO TRANSCEIVER
Keizo Kushida, Hirakata; Kikuo Ohta, Katano; Munenori Fujimoto, Neyagawa, and Toshio Igo, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jul. 1, 1977, Ser. No. 812,306
Claims priority, application Japan, Jan. 12, 1977, 52-707
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. 14—12



249,683
LOUDSPEAKER
Dieter Rams, Kronberg, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 26, 1976, Ser. No. 661,637
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



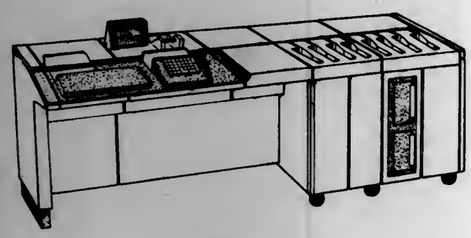


249,684
LOUDSPEAKER
Dieter Rams, Kronberg, Taunus, Fed. Rep. of Germany, assignor to Braun A G, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 7, 1976, Ser. No. 693,278
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

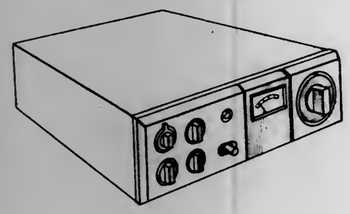


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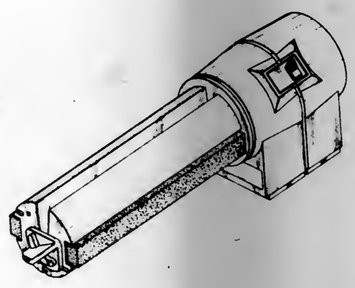
249,686
MODULAR DOCUMENT PROCESSING ENCODER
Richard G. Clayton, Detroit, and Robert C. Schade, Farmington Hills, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 574,724, May 5, 1975, abandoned. This application Jun. 24, 1976, Ser. No. 699,429
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—44



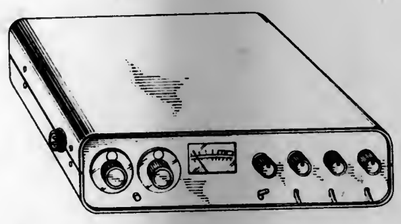
249,687
RADIO TRANSCEIVER AND THE LIKE
Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan
Filed Jan. 4, 1977, Ser. No. 756,631
Term of patent 14 years
Int. Cl. 14—*03*
U.S. Cl. D14—68



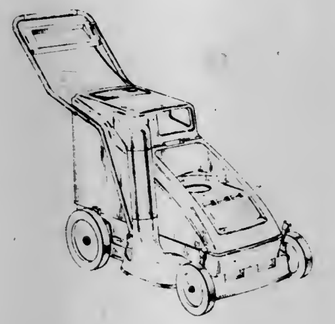
249,688
PAPER TAKE-UP REEL FOR WEB FED FACSIMILE TRANSCEIVER OR THE LIKE
Robert E. Hughes, Lewisville, Tex., assignor to Xerox Corporation, Stamford, Conn.
Filed May 25, 1976, Ser. No. 689,769
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—94



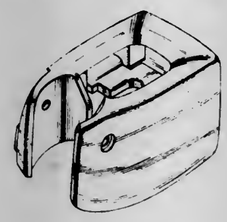
249,689
CB RADIO TRANSCEIVER
David S. Wisherd, Monte Sereno; Stephen L. Mieth, and Larry H. Mitchell, both of Los Gatos, all of Calif., assignors to Communications Power, Inc., Mountain View, Calif.
Filed Nov. 15, 1976, Ser. No. 741,860
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—94



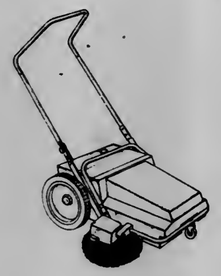
249,690
LAWN MOWER
George A. Thomas, Des Moines, Iowa, assignor to AMF Incorporated, White Plains, N.Y.
Filed Jan. 21, 1977, Ser. No. 761,043
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—14



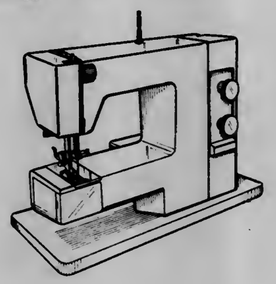
249,691
GUIDING AND LOCKING DEVICE FOR ELECTRICAL CORDS
Earl R. Clowers, Anderson; John C. Davis, Greenwood, and Fred E. Pearman, Five Forks Community, all of S.C., assignors to The Singer Company
Filed Mar. 10, 1977, Ser. No. 776,155
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—62



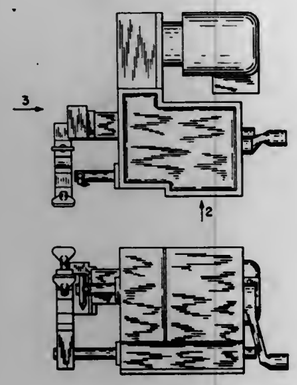
249,692
PUSH SWEEPER
Eugene L. Bothun, Berthoud, Colo., assignor to Clarke-Gravely Corporation, Muskegon, Mich.
Filed Feb. 4, 1976, Ser. No. 655,007
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—50



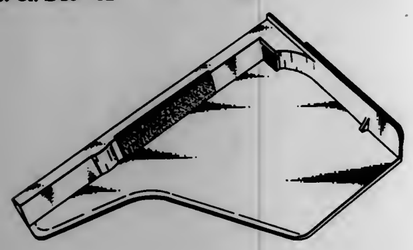
249,693
SEWING MACHINE
Takahiko Kasahara; Sigeharu Shichi, both of Anjo; Masayuki Kato, Owariasahi, and Senji Sulto, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Aug. 10, 1976, Ser. No. 713,205
Claims priority, application Japan, Feb. 12, 1976, 51-4356
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—68



249,694
KEY CUTTING MACHINE
John H. Sagarian, c/o Worcester General Repair, 43 Chandler St., Worcester, Mass. 01605
Filed Jun. 4, 1976, Ser. No. 692,906
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—125



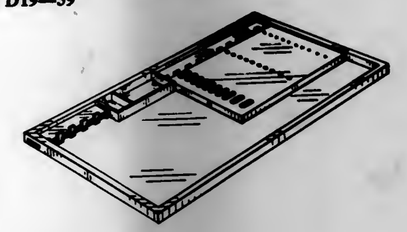
249,695
REMOVABLE UNDERSIZE SHEET EDGE GUIDE SHEET FEED CASSETTE
Craig A. Smith, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 23, 1976, Ser. No. 716,721
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—32



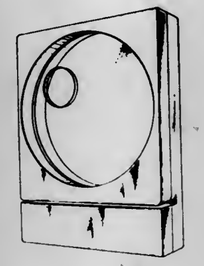
249,696
BALL POINT PEN
Walter Henkels, Holunderweg 1, 5142 Hückelhoven, Germany
Filed Feb. 26, 1976, Ser. No. 661,523
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—45



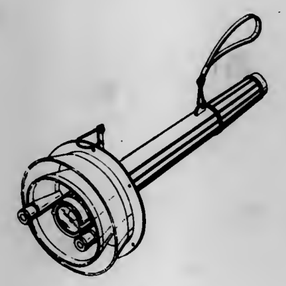
249,697
COMBINED EDUCATIONAL GAME BOARD AND COUNTING BOARD FOR TEACHING FUNDAMENTALS OF ARITHMETIC
Gene A. Hester, 1045 Shook No. 164, San Antonio, Tex. 78212, and Olga Dominguez, P.O. Box 433 (115 Scott St.), San Marcos, Tex. 78666
Filed Apr. 21, 1976, Ser. No. 678,924
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



249,698
SCENTED FLUID APPLICATOR FOR PAPER CURRENCY
Ronald M. Stephens, 305-1400 Camosun, Victoria, British Columbia, Canada (V8V 4L4)
Filed Feb. 14, 1977, Ser. No. 768,387
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—65



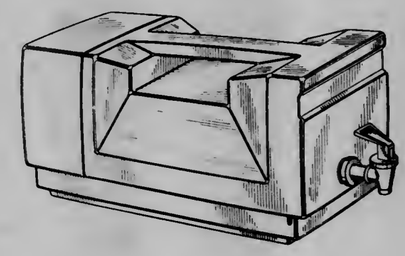
249,699
HAND CASTER
Richard Lapinski, 23 Norfolk Ave., Fairfield West, New South Wales, Australia (2165)
Filed Apr. 21, 1977, Ser. No. 789,705
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



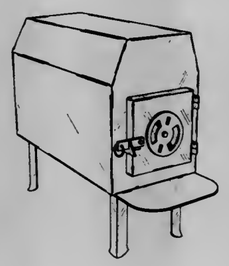
249,700
COMBINED TRANSPARENT CHARGING TUBE AND BASE FOR USE WITH A GUNPOWDER FLASK
Hugh R. Wilson, 10840 SW. 120th St., Miami, Fla. 33176
Filed Jan. 26, 1976, Ser. No. 652,339
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—99



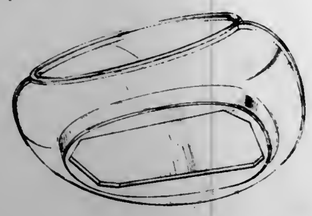
249,701
WATER PURIFICATION UNIT
Paul Douglas Maples, Solana Beach; Ralph Edward Ropp, Los Angeles, and Peter Paul Klepa, Tujunga, all of Calif., assignors to Paul Douglas Maples, Solana Beach, Calif.
Filed Feb. 2, 1977, Ser. No. 764,831
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



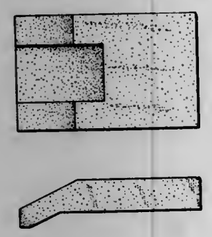
249,702
WOOD STOVE
Jay Michael Dugan, R.F.D. 1, Brooks, Me. 04921
Filed Jul. 25, 1977, Ser. No. 818,618
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



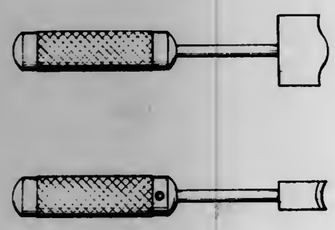
249,703
COVER FOR ROOFTOP AIR INTAKE FOR VEHICLES
Alan Ross Zimmerman, and Benjamin Charles Baugh, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Dec. 10, 1976, Ser. No. 749,290
Term of patent 14 years
Int. Cl. D23—*04;* D12—*16*
U.S. Cl. D23—142



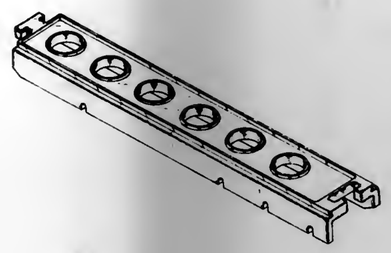
249,704
COMBINED VENT AND BLOCK BAFFLE
Bruce K. Ward, 2904 Virginia Ave., St. Louis Park, Minn. 55426
Filed Dec. 13, 1976, Ser. No. 749,834
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



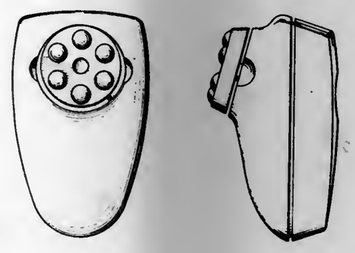
249,705
DEVICE FOR USE IN IMPLANTING A PROSTHESIS IN THE HUMERUS
James T. London, 429 Via Anita, Redondo Beach, Calif. 90277
Filed May 20, 1977, Ser. No. 799,076
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26



249,706
SAMPLE CUP TRAY FOR CHEMICAL ANALYSIS OF BIOLOGICAL FLUIDS
Henry Stanislaus Adamski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 17, 1976, Ser. No. 751,929
Term of patent 14 years
Int. Cl. D24—*01, 02*
U.S. Cl. D24—32

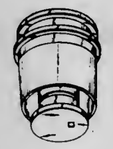


249,707
MOISTURIZING MASSAGER
Frederick A. Burke, Riverside, and Douglas A. Long, Wilton, both of Conn., assignors to Clairol Inc.
Filed Apr. 26, 1976, Ser. No. 679,959
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—41

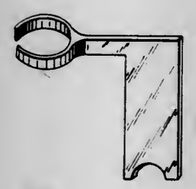


249,708
SAMPLE CUP FOR ANALYSIS OF BIOLOGICAL FLUIDS
Michael Richmond Smith; James Elias Ferris, both of Rochester, and Henry Stanislaus Adamski, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 17, 1976, Ser. No. 751,928
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—56





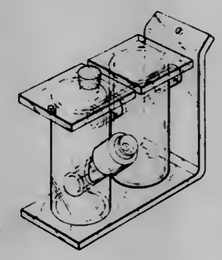
249,709
EYE DROP BOTTLE GUIDE
Douglas J. Trovinger, 311 Audubon Dr., Lodi, Calif. 95240
Filed Nov. 22, 1976, Ser. No. 743,209
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—99



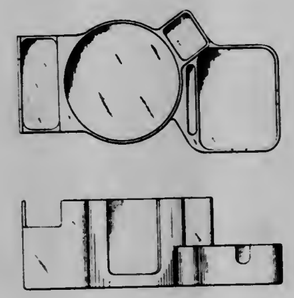
249,710
LINK CHAIN SUPPORT POST
Michael T. Russo, 2520 Alveston, Bloomfield Hills, Mich. 48013
Filed Jul. 6, 1976, Ser. No. 702,971
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—78



249,711
WATER PIPE
Robert W. Flesher, 628 Round Oak Rd., Towson, Md. 21204
Filed Sep. 7, 1976, Ser. No. 720,957
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



249,712
COMBINATION COASTER AND ASHTRAY
Joseph R. Dolezal, 1511 Lee Shores, St. Louis, Mo. 63125
Filed May 16, 1977, Ser. No. 797,046
Term of patent 14 years
Int. Cl. D27—*03;* D7—*06*
U.S. Cl. D27—21



249,713
FARROWING CRATE
Glen A. Gilbertson, Hoffman, Minn. 56339
Filed Apr. 14, 1977, Ser. No. 787,595
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



249,714
HANGING AQUARIUM
Beth E. Mandel, East Brunswick, N.J., assignor to Doris Mandel, East Brunswick, N.J., a part interest
Filed Sep. 1, 1977, Ser. No. 829,785
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



249,715
PIG WATERER
Lyle W. Lage, Gladbrook, Iowa 50635
Filed Sep. 8, 1977, Ser. No. 831,609
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



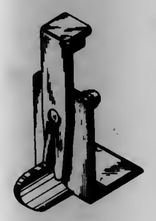
249,716
Patent Not Issued For This Number

249,717
HOOF CLEANER
Carlo J. Moran, 4340 Cinnabar, Dallas, Tex. 75227
Filed Oct. 5, 1977, Ser. No. 839,788
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

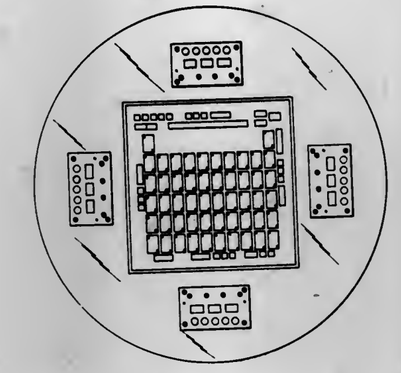




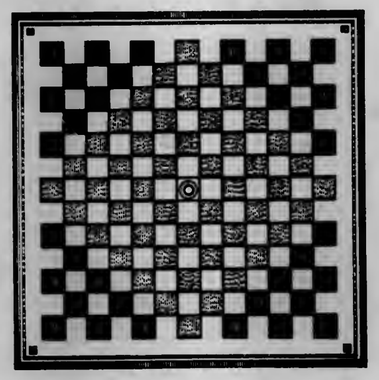
249,718
PROJECTOR FOR TOY GOLF CLUG BALLS OR THE LIKE
Otto G. Arndt, and James J. Arndt, both of 1708 S. Dahlia St., Denver, Colo. 80222
Filed Feb. 6, 1976, Ser. No. 655,886
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CB



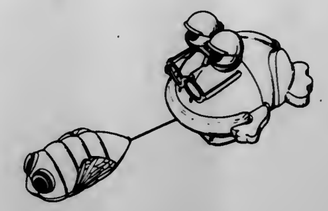
249,719
GAME BOARD
George C. Hadjis, 28009 Montereina Dr., San Pedro, Calif. 90732
Filed Jul. 16, 1976, Ser. No. 705,752
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



249,720
GAME BOARD
William E. Morris, Appleton, Wis., assignor to Super Games Inc., Green Bay, Wis.
Filed Aug. 13, 1976, Ser. No. 714,109
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



249,721
TOY ANIMAL FIGURE
Shigeru Saitoh, No. 6-4, 2-chome, Kuramae Taito-ku, Tokyo, Japan
Filed Sep. 9, 1976, Ser. No. 722,333
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



249,722
PLAYING PIECE FOR GAME
Michael A. Cosman, Kearns, Utah, assignor to Ernest Lynn Balmforth, Salt Lake City, Utah
Filed Sep. 23, 1976, Ser. No. 725,702
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP



249,723
PLAYING PIECE FOR GAME
Michael A. Cosman, Kearns, Utah, assignor to Ernest Lynn Balmforth, Salt Lake City, Utah
Filed Sep. 23, 1976, Ser. No. 725,703
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP



249,724
PLAYING PIECE FOR GAME
Michael A. Cosman, Kearns, Utah, assignor to Ernest Lynn Balmforth, Salt Lake City, Utah
Filed Sep. 23, 1976, Ser. No. 725,704
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP



249,725
PLAYING PIECE FOR GAME
Michael A. Cosman, Kearns, Utah, assignor to Ernest Lynn Balmforth, Salt Lake City, Utah
Filed Sep. 23, 1976, Ser. No. 725,705
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP



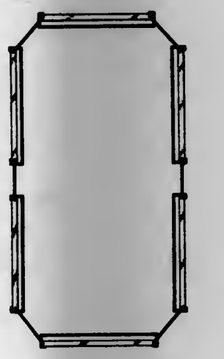
249,726
PLAYING PIECE FOR GAME
Michael A. Cosman, Kearns, Utah, assignor to Ernest Lynn Balmforth, Salt Lake City, Utah
Filed Sep. 23, 1976, Ser. No. 725,983
Term of patent 14 years
Int. Cl.[2] D21—*01*
U.S. Cl. D34—5 GP



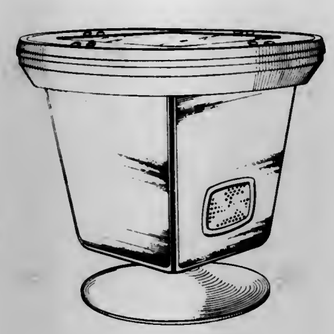
249,727
HOOP ROLLER
Joseph Soos, 313 Walker St., Tiltonsville, Ohio 43963
Filed Sep. 24, 1976, Ser. No. 726,254
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 HP



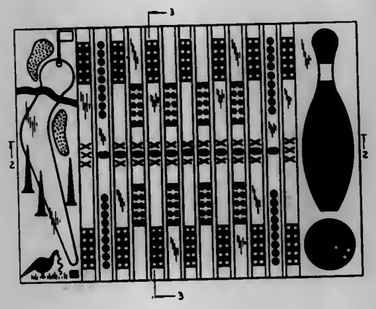
249,728
LAWN POOL TARGET FRAME
Donald P. Fried, 7895 Landale Ave., Dublin, Calif. 94566
Filed Nov. 22, 1976, Ser. No. 744,132
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 NN



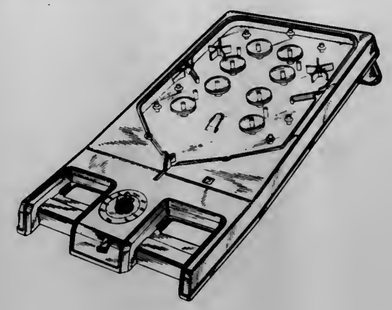
249,729
COMBINED VIDEO GAME AND TABLE
Verl O. Olson, La Mesa, Calif., assignor to Gremlin Industries, Inc.
Filed Dec. 13, 1976, Ser. No. 749,786
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J



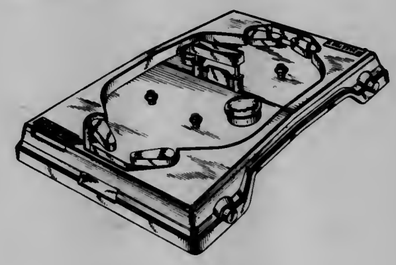
249,730
REUSABLE GOLF AND BOWL HAND SCOREPLATE
John T. Linton, 43 Bond St., Dayton, Ohio 45405
Filed Jan. 17, 1977, Ser. No. 760,071
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 MM



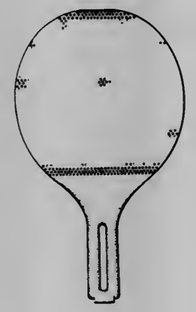
249,731
PINBALL GAME CABINET
Michael Langieri, Butler, N.J., assignor to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 10, 1977, Ser. No. 767,255
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 JJ



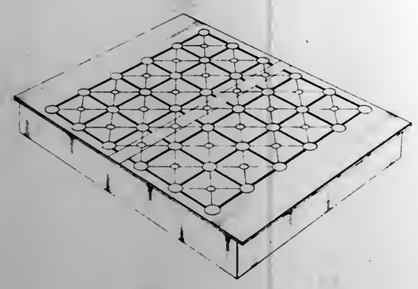
249,732
TABLE BALL GAME CABINET
Keith D. Patterson, Stamford, Conn., assignor to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 10, 1977, Ser. No. 767,256
Term of patent 14 years
Int. Cl.[2] D21—*01*
U.S. Cl. D34—5 JJ



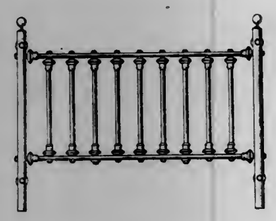
249,733
TABLE TENNIS RACKET
Carmen Zabaldo, 13080 Tripoli St., Sylmar, Calif. 91342
Filed Mar. 3, 1977, Ser. No. 774,029
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SP



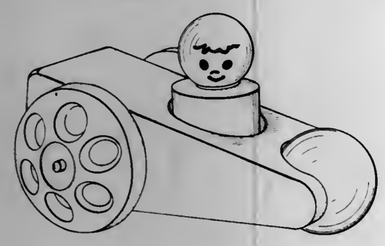
249,734
GAME BOARD
James L. Morgan, 3411 Altura St., Los Angeles, Calif. 90031
Filed Feb. 11, 1977, Ser. No. 767,964
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



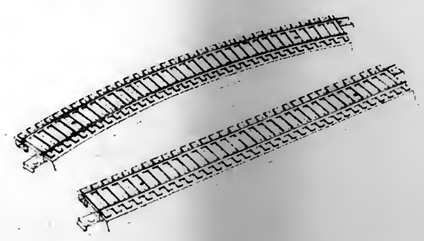
249,735
TOY CRIB
Norman Nelson, Southington, Conn., assignor to Nelson Tool & Machine Company, Inc., Southington, Conn.
Filed Jul. 12, 1976, Ser. No. 704,290
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AC



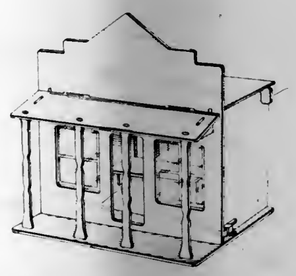
249,736
WHEELED TOY AND FIGURE THEREFOR
Andrew I. Bergman, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 29, 1976, Ser. No. 737,176
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



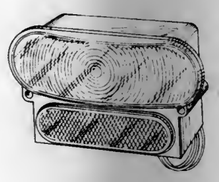
249,737
TOY RAILWAY TRACK
Ducan Tong, Hong Kong, Hong Kong, assignor to Playart Limited, Hong Kong, Hong Kong
Filed Dec. 27, 1976, Ser. No. 754,809
Claims priority, application United Kingdom, Jul. 8, 1976, 976377/76
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 MM



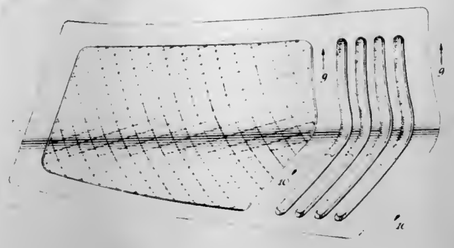
249,738
TOY STORE
William Donald Gordon, Sr., Glenview, Ill., assignor to Arvey Corporation, Chicago, Ill.
Filed Jan. 31, 1977, Ser. No. 763,882
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL

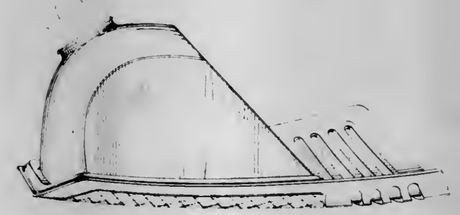


249,739
VEHICLE LAMP
Dennis G. Moore, 576 Debra, Livermore, Calif. 94550
Filed May 2, 1977, Ser. No. 793,178
Term of patent 14 years
Int. Cl.[2] D26—*06*
U.S. Cl. D48—32 R



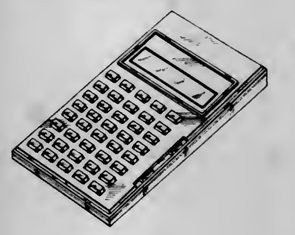
249,740
LEADING EDGE LIGHT FOR A MOTORCYCLE FAIRING
Craig W. Vetter, Rantoul, Ill., assignor to Vetter Fairing Company, San Luis Obispo, Calif.
Filed May 31, 1977, Ser. No. 802,239
Term of patent 14 years
Int. Cl.[2] D26—*06*
U.S. Cl. D48—32 E



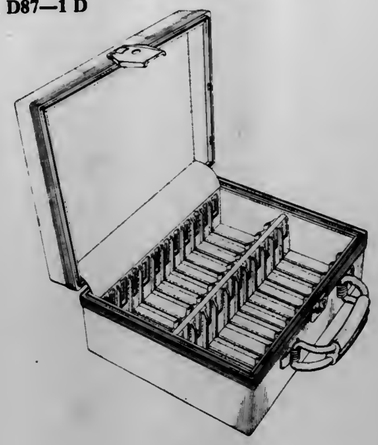


249,741
Patent Not Issued For This Number

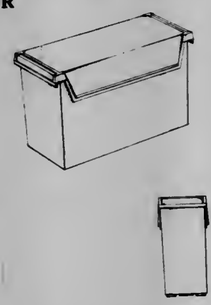
249,742
ELECTRONIC CALCULATING MACHINE
Yoshihisa Ohie, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 6, 1977, Ser. No. 831,067
Claims priority, application Japan, Mar. 10, 1977, 52-9105
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B



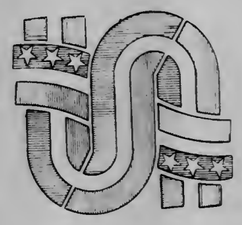
249,743
CARRYING CASE FOR TAPE CARTRIDGES AND CASSETTES
Joseph L. Berkman, 48 Country Rd., Mamaroneck, N.Y. 10543
Filed Feb. 15, 1974, Ser. No. 442,776
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



249,744
FILE BOX
George Lyman, Weston, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Apr. 1, 1976, Ser. No. 672,778
Term of patent 14 years
Int. Cl.[2] D19—*02*
U.S. Cl. D87—1 R



249,745
SIGN
Adam Pasternakiewicz, 2428-N. Bernard St., Chicago, Ill. 60647
Filed Apr. 22, 1977, Ser. No. 789,988
Term of patent 14 years
Int. Cl.[2] D20—*03*
U.S. Cl. D96—12 E



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF SEPTEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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AB Kabi: *See—*
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AB Scaniainventor: *See—*
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AB Svetsia: *See—*
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AB Welin: *See—*
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Hillier, Edward Lawrence; Graham, Glen Henry; and Eichelberger, Warren Evan, 4,117,035, Cl. 260-876.00B.
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Abdou, John J.: *See—*
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Evans, Willie V., 4,116,157, Cl. 116-125.000.

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Ackermann, Rolf; Felber, Wilfried; and Morlock, Gerhard, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Process for the trans-esterification of acrylic and methacrylic esters. 4,117,238, Cl. 560-217.000.

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Dunstan, James M., 4,116,597, Cl. 425-110.000.

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Adler, Stuart L.; and Hunt, William O'Neil, to Permali, Incorporated; and Shields Rubber Corporation, part interest to each. Mine vehicle trolley pole. 4,116,312, Cl. 191-64.000.

Ado, Andrei Dmitrievich: *See—*
Mashkovsky, Mikhail Davydovich; Yakhontov, Leonid Nikolaevich; Ado, Andrei Dmitrievich; Kaminka, Mikhail Emmanuilovich; Mikhlina, Eva Evseevna; Vorobieva, Valentina Yakovlevna; Yanina, Anna Dmitrievna; and Komarova, Nadezhda Andreevna, 4,117,139, Cl. 424-267.000.

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Zecher, Robert F., 4,115,960, Cl. 51-422.000.

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Holman, Tomlinson M., II, 4,117,412, Cl. 330-107.000.

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Aerpat A.G.: *See—*
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Agence Nationale de Valorisation de la Recherche: *See—*
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Sano, Hiroshi, 4,117,075, Cl. 423-235.000.
Sawata, Shinji; Tani, Tatsuo; Tanaka, Tadayoshi; and Horigome, Takashi, 4,116,266, Cl. 165-105.000.
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Agui, Hideo: *See—*
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Air Products and Chemicals, Inc.: *See—*
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Akashi, Goro; Suzuki, Osamu; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,117,190, Cl. 428-325.000.

Akatsuka, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oxygen sensor. 4,116,797, Cl. 204-195.00S.

Akiho, Kiyotake: *See—*
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(A N V A R). Devices for probing by ultrasonic radiation. 4,117,446, Cl. 340-1.00R.

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Alderman, C. Gale. Dental crown and bridge shading system. 4,115,922, Cl. 32-71.000.

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Ali, Mian Zaheer, to Communications Satellite Corporation. Configurable parallel arithmetic structure for recursive digital filtering. 4,117,541, Cl. 364-724.000.

Allasia, Alberto, to Ferrero Nahrungs-und Genussmittel GmbH. Glass jar with thread protector. 4,116,350, Cl. 215-31.000.

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Stagemeyer, Merlin D.; and Allcorn, Seth Ford, 4,116,007, Cl. 405-66.000.
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Allen, George Rodger, Jr.; Hanifin, John William, Jr.; Moran, Daniel Bryan; and Albright, Jay Donald, to American Cyanamid Company. Method for treating anxiety in mammals. 4,117,130, Cl. 424-250.000.

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Anderson, Joseph A.; and Neukom, Chester G., to Haybuster Manufacturing, Inc. Press wheel depth control for grain drill furrow openers. 4,116,140, Cl. 111-52.000.

Anderson, Richard J.: *See—*
Cohen, Richard L.; and Anderson, Richard J., 4,117,386, Cl. 318-664.000.

Anderson, Richard N., to V. E. Anderson Mfg. Co. Building structure. 4,115,973, Cl. 52-773.000.

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Johnson, Ben C.; Thornton, J. Scott; Glowe, Donald E.; Cassidy, Patrick E.; and Anderson, Robert E., 4,117,312, Cl. 219-548.000.

Anderson, Robert J.: *See—*
Lillig, John E.; Meyer, Richard C.; and Anderson, Robert J., 4,117,414, Cl. 330-149.000.

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Anderson, William S., to United Technologies Corporation. Catalysts for the ammonolysis of pentaerythrityl tetrachloride. 4,117,013, Cl. 260-585.00A.

Andersson, Maj; and Lagher, Gunnar, to Maj Andersson Arkitektkontor AB. Mixer unit with thermostat-controlled valves. 4,116,377, Cl. 236-12.00A.

Ando, Bunichi: *See—*
Kitamura, Chiharu; and Ando, Bunichi, 4,116,078, Cl. 74-10.270.

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Moritomo, Sadao; and Ando, Shigenori, 4,116,506, Cl. 308-189.00A.

Ando, Shizuo, to Pioneer Electronic Corporation. Start circuit for telephone answering device. 4,117,272, Cl. 179-84.00R.

Andre, Eugene R. Multi-part pressure chuck. 4,116,453, Cl. 279-4.000.

Andreev, Chavdar Andreev: *See—*
Nikolov, Ivan Dimov; Rashev, Tzolo Valkov; Ivanov, Rangel Petrov; and Andreev, Chavdar Andreev, 4,116,683, Cl. 75-125.000.

Andrews, Peter. Electric energy saving incandescent lamp socket combination switching device. 4,117,376, Cl. 315-200.00R.

Andrews, Ray, to Commercial Decal, Inc. Heat release layer for decalcomanias. 4,117,182, Cl. 428-201.000.

Anheuser-Busch, Incorporated: *See—*
Musselman, Camillus B.; and Bovier, Edward M., 4,116,740, Cl. 156-205.000.

Anic, S.p.A.: *See—*
Cipriani, Gioacchino; and Neri, Carlo, 4,116,997, Cl. 260-463.000.
De Simone, Renato; Platone, Edoardo; and Morelli, Morello, 4,117,249, Cl. 568-855.000.
Generini, Gianni, 4,116,783, Cl. 204-150.000.

Antipova, Antonina Petrovna: *See—*
Antikhova, Nina Mikhailovna; Blokhina, Valentina Alexeevna; Antipova, Antonina Petrovna; and Vasilieva, Tamara Pavlovna, 4,116,731, Cl. 148-161.000.

Antrim, Richard Douglas, to USM Corporation. Extruder seal. 4,117,549, Cl. 366-99.000.

Anzai, Makoto, to Nissan Motor Company, Limited. Electronic closed loop control system for internal combustion engine. 4,116,170, Cl. 123-32.0EE.

Appel, Adolf; Horwege, Claus; Reymann, Wolfgang; and Rosenkranz, Otto, to Gildemeister Corpoplast GmbH. Method for heating and blow molding plaster parisons. 4,117,050, Cl. 264-25.000.

Appelquist, Jan Olov; and Lindwall, Conny Holger, to U.S. Philips Corporation. Safety arrangement for microwave ovens. 4,117,294, Cl. 219-10.55C.

Appleford, David Dale; and Warwick, Paul Stephen, to Monsanto Company. Hardness tester. 4,116,048, Cl. 73-83.000.

Appleton, Anthony Derek: *See—*
Parton, Kenneth Charles; Appleton, Anthony Derek; and Bartram, Trevor Carlisle, 4,117,524, Cl. 361-19.000.

Applied Plastics Co., Inc.: *See—*
Firth, Francis G., 4,116,742, Cl. 156-289.000.

Arai, Kiyotaka: *See—*
Yamabe, Masaaki; Arai, Kiyotaka; Samejima, Shunichi; and Noshiro, Makoto, 4,116,977, Cl. 260-343.600.

Araki, Kunio: *See—*
Hosoi, Fumio; Hagiwara, Miyuki; and Araki, Kunio, 4,116,784, Cl. 204-159.160.

Arbib, Richard, to Richard Arbib Company, Inc. Lamp shade construction and method. 4,117,532, Cl. 362-358.000.

Archifar Industrie Chimiche del Trentino S.p.A.: *See—*
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, 4,116,957, Cl. 260-239.30P.

ARCO Polymers, Inc.: *See—*
Pillar, Walter O., 4,117,178, Cl. 521-60.000.

Arendt, Ronald H.; and Aubourg, Patrick F., to General Electric Company. Silicon-iron production and composition and process therefor. 4,116,730, Cl. 106-113.000.

Argus Chemical Corporation: *See—*
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,116,927, Cl. 260-45.8NZ.

Armour Pharmaceutical Company: *See—*
Reichenbacher, Frank W., 4,115,928, Cl. 34-5.000.
Somkaite, Rozalija; and Toth, Bela, 4,116,824, Cl. 209-262.000.

Armstrong Cork Company: *See—*
Cogley, Robert W., Jr., 4,116,072, Cl. 73-433.000.
Dieck, Ronald L.; Garrett, Thomas B.; and Magnusson, Alan B., 4,116,891, Cl. 521-89.000.

Armstrong, Desmond R., to U.S. Philips Corporation. Tachogenerator processing circuits and motor speed control systems including such circuits. 4,117,384, Cl. 318-326.000.

Armstrong, Maclay M., to Northwest Orthodontics, Inc. Extraoral force-applying orthodontic appliance. 4,115,921, Cl. 32-14.00D.

Arnold, James J., deceased (by Arnold, Susan, executrix); Campbell, Donn V.; DeSantis, Charles M.; and Schwering, Felix, to United States of America, Army. Inconspicuous antenna system employing the airframe as an antenna. 4,117,490, Cl. 343-708.000.

Arnold, James J., deceased (by Arnold, Susan, executrix); and Campbell, Donn V., to United States of America, Army. Low profile remotely tuned dipole antenna. 4,117,492, Cl. 343-747.000.

Arnold, Susan, executrix: *See—*
Arnold, James J., deceased; Campbell, Donn V.; DeSantis, Charles M.; and Schwering, Felix, 4,117,490, Cl. 343-708.000.
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Aronova, Irina Zelmanovna: *See—*
Oborin, Pavel Alexandrovich; Gadaev, Anatoly Yakovlevich; Bikbau, Marsel Yanovich; Nudelman, Boris Izrailovich; Aronova, Irina Zelmanovna; Bulatov, Nail Yakubovich; and Sosenko, Lev Matveevich, 4,116,707, Cl. 106-104.000.

Arrington, Bradford Lee. Milling liner. 4,116,165, Cl. 119-14.470.

Arrow Pneumatic, Inc.: *See—*
Draxler, Walter E., 4,116,156, Cl. 116-70.000.

Arthur G. McKee & Company: *See—*
Greaves, Melvin J.; and Razgaitis, Frank V., 4,116,345, Cl. 214-37.000.

Arvin Industries, Inc.: *See—*
Stratton, Boyd Lehman; and Nichols, William E., 4,117,521, Cl. 360-99.000.

ASA S.A.: *See—*
Venot, Jean, 4,115,985, Cl. 57-34.0HS.

Asaga, Ryuzi. Internal combustion engine. 4,116,189, Cl. 123-190.0BB.

Asagao, Soichi: *See—*
Fujita, Yoshishige; Asagao, Soichi; and Ogura, Motoshige, 4,117,089, Cl. 423-306.000.

Asahi Glass Company Ltd.: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,116,888, Cl. 521-31.000.
Yamabe, Masaaki; Arai, Kiyotaka; Samejima, Shunichi; and Noshiro, Makoto, 4,116,977, Cl. 260-343.600.

Asai, Akira: *See—*
Hishida, Yukio; Asai, Yuichi; Kondo, Toshikatsu; Asai, Akira; Sakaida, Atsuo; and Miyazawa, Chiaki, 4,117,435, Cl. 335-270.000.

Asai, Yuichi: *See—*
Hishida, Yukio; Asai, Yuichi; Kondo, Toshikatsu; Asai, Akira; Sakaida, Atsuo; and Miyazawa, Chiaki, 4,117,435, Cl. 335-270.000.

Asakawa, Motoo: *See—*
Okamoto, Toyohiko; Misaka, Yoshisuke; and Asakawa, Motoo, 4,116,028, Cl. 72-21.000.

Asawa, Tatsuro: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,116,888, Cl. 521-31.000.

Ascoli, Enzo, to Gillette Company, The. Dry shaver with primary and secondary modes of oscillation. 4,115,920, Cl. 30-43.300.

ASEA Aktiebolag: *See—*
Ottesen, Otto, 4,117,437, Cl. 336-69.000.

Ashfield, Herbert Edward, to David Brown Tractors Limited. Clutches. 4,116,322, Cl. 192-48.800.

Ashtabula Development Co.: *See—*
Wheeler, Charles Joseph, 4,116,092, Cl. 81-9.50R.

Askadsky, Andrei Alexandrovich: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.

Askman, Jan Philip, to AMP Incorporated. Ion generator. 4,117,326, Cl. 250-324.000.

Associated Controls & Communications, Inc.: *See—*
Jepsky, Joseph; Englander, Irvin S.; and Williams, James E., 4,117,482, Cl. 343-7.300.

Atari, Inc.: *See—*
Mayer, Steven T.; and Milner, Ronald E., 4,116,444, Cl. 273-101.200.

Atchley, Raymond D.; Barr, John E.; and Pegram, John B., to Deval Industries, Inc. Component locating apparatus. 4,116,348, Cl. 214-309.000.

Ateliers Roannais de Constructions Textiles: *See—*
Bieniok, Joachim; and Crouzet, Henri, 4,115,986, Cl. 57-77.300.

Atlantic Richfield Company: *See—*
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Atun, Albert: *See—*
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Aubele, Richard: *See—*
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Aubourg, Patrick F.: *See—*
Arendt, Ronald H.; and Aubourg, Patrick F., 4,116,730, Cl. 106-113.000.

Aucktor, Erich; and Rubin, Wolfgang, to Lohr & Bromkamp GmbH. Constant velocity universal joint. 4,116,020, Cl. 64-21.000.

Augustine, Lloyd E. Communications device with plural, power-operated display mechanisms selectively controlled by an operator. 4,117,474, Cl. 340-325.000.

Ault, Cyrus Frank, to Bell Telephone Laboratories, Incorporated. Magnetic single-wall domain bias field control arrangement. 4,117,544, Cl. 365-28.000.

Aultz, Daniel Eugene: *See—*
McFadden, Arthur Raymond; and Aultz, Daniel Eugene, 4,117,152, Cl. 424-285.000.

Auphan, Michel Joseph, to U.S. Philips Corporation. Infrared radiation sensitive image pick-up device. 4,117,328, Cl. 250-330.000.

Automatic Equipment Development Corporation: *See—*
Johnston, James J., 4,116,525, Cl. 339-132.00B.

Automation Equipment Inc.: *See—*
Limbach, Walter S., II; and Kusic, George, 4,117,385, Cl. 318-578.000.

Automotive Products Limited: *See—*
Young, Alastair John, 4,116,309, Cl. 188-195.000.

Avco Corporation: *See—*
Rishton, Michael L., 4,116,589, Cl. 417-384.000.

Avera, Fitzhugh Lee. Non-dusting coloring agent and method of manufacture. 4,116,711, Cl. 106-309.000.

Avery, James E.: *See—*
Yerkes, John W.; and Avery, James E., 4,116,718, Cl. 136-89.0PC.
Avron, Mordhay; and Ben-Amotz, Ami, to Yeda Research and Development Company Ltd. Production of glycerol from algae. 4,115,949, Cl. 47-1.400.
Ayer, Atul D.: *See—*
Theeuwes, Felix; and Ayer, Atul D., 4,116,241, Cl. 128-260.000.
Ayers, Wayne R. Combination tire inflator and pressure gauge. 4,116,245, Cl. 141-98.000.
Azteca Corn Products Corporation: *See—*
Ellis, A. Barry, 4,116,330, Cl. 206-44.00R.
Azzani, Nino, to Ing. C. Olivetti & C., S.p.A. Transducer for measuring linear positions. 4,117,439, Cl. 336-129.000.
B. F. Goodrich Company, The: *See—*
Witenhafer, Donald Edward; and Popovich, David Thomas, 4,117,215, Cl. 526-62.000.
Witenhafer, Donald Edward; and Popovich, David Thomas, 4,117,216, Cl. 526-62.000.
Baba, Yoshihiko: *See—*
Minato, Sadamasa; Hattori, Atsushi; Baba, Yoshihiko; Yabe, Yuichiro; and Ueda, Seigo, 4,116,774, Cl. 195-99.000.
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Babler, Fridolin: *See—*
Mollet, Hans; Haberli, Roland; Rabassa, Alberto; and Babler, Fridolin, 4,117,066, Cl. 264-117.000.
Bacchi, Anthony C.; and Kress, Robert W., to Grumman Aerospace Corporation. Airplane. 4,116,405, Cl. 244-12.400.
Bacher, Helmut. Microwave step attenuator. 4,117,425, Cl. 333-81.00A.
Bachur, Gerald; and Richardson, George E., to Optical Associates, Incorporated. Exposure system. 4,117,375, Cl. 315-151.000.
Back, Gerhard: *See—*
Beffa, Fabio; Back, Gerhard; and Steiner, Eginhard, 4,116,952, Cl. 260-145.00B.
Backman, Torsten Lorentz; and Olsson, Sten Yngve, to Ingenjorsfirman Petrokraft AB. Device in burners, in particular rotary burners. 4,116,617, Cl. 431-186.000.
Backus, Harold Adams, to N L Industries, Inc. Impact absorbing means for shipping cask. 4,116,337, Cl. 206-591.000.
Baer, Ralph H.; and Cope, Leonard D., to Sanders Associates, Inc. Universal television interface and sync generator therefor. 4,117,511, Cl. 358-83.000.
Bailey, John; Randell, Michael John; and Sherrington, Paul Richard, to Procter & Gamble Company, The. Builders and built detergent copositions. 4,116,852, Cl. 252-135.000.
Bailey, Paul T.: *See—*
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Baker, David C.; and Putt, Sterling R., to Warner-Lambert Company. 2-Amino-1-(5-amino-1H-imidazol-4-yl)ethanone and method of preparation. 4,117,229, Cl. 548-301.000.
Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. Thiolcarbamate sulfoxides stabilized with hindered phenols. 4,117,010, Cl. 260-561.00S.
Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. N-(1,1-dimethyl-2-propynyl)-alpha-(substituted phenoxy) alkylamides and their use as miticides. 4,117,166, Cl. 424-324.000.
Baker, Don R.: *See—*
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Baker, Fred E., to General Electric Company. Securing means for cooking vessels. 4,116,363, Cl. 220-448.000.
Baker, Richard H., to Massachusetts Institute of Technology. Voltage waveform synthesizer and a system that includes the same. 4,117,364, Cl. 318-230.000.
Balcom, Orville. Marine ground isolator. 4,117,345, Cl. 307-95.000.
Balg, Theodorus; Cramers, Constant M. A.; and Maessen, Hendrikus J. G., to Stamicarbon, B.V. Process for preparing 4-oxocapronitrile. 4,117,000, Cl. 260-465.100.
Ballew, Audrey H., to Dallas County Association for the Blind. Mop construction. 4,115,895, Cl. 15-229.00R.
Ballou, John McK. Plant iron source, plant growing medium, and methods of making and using same. 4,116,663, Cl. 71-23.000.
Bammert, Karl; and Staude, Rudolf, to Gutehoffnungshutte Sterkrade AG. Device for extending the working range of axial flow compressors. 4,116,584, Cl. 415-199.500.
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Bar-On, Benjamin; and Paz, Eldad. Differential-temperature-sensitive device. 4,117,442, Cl. 337-397.000.
Barabas, Eugene S., to GAF Corporation. Gelling agent of water miscible organic liquids. 4,116,913, Cl. 260-29.60E.
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Barbe, Gerard; and Habault, Robert, to Rhone-Poulenc-Textile. Bicomponent filaments with a special cross-section. 4,117,194, Cl. 428-374.000.
Barber, Antony Dobson; and Fisher, Zdenek, to Compair Construction and Mining Limited. Hydraulic levelling systems for drilling machines, etc. 4,116,409, Cl. 248-2.000.
Barber, Norman B., to Garnett-Bywater Limited. Processing of fibrous materials to reduce same to a generally homogeneous mass of fibers. 4,115,903, Cl. 19-99.000.
Barbour, William P., to Kile, Gholz, Bernstein & Georges, part interest to each. Method and plug for concealing fastener anchor. 4,116,106, Cl. 85-71.000.
Barchas, Richard K., to Lummus Company, The. Recovery of terephthalonitrile. 4,116,999, Cl. 260-465.00H.
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Barker, Lynn Marshall, to Terra Tek, Inc. Method for measuring plane strain fracture toughness. 4,116,049, Cl. 73-87.000.
Barker, Michael D.; and Barker, Eirlys R., to Shell Oil Company. Herbicidal tetrahydrofuran derivatives. 4,116,669, Cl. 71-88.000.
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Barlow, Charles Brian; and Freeman, Peter Frank Hilary, to Imperial Chemical Industries Limited. Dinitroaniline derivatives. 4,117,167, Cl. 424-330.000.
Barnes, Theodore Marion; Shindelar, Joseph John; Bass, Merlyn Duane; and Suechting, Henry William, Jr., to Deere & Company. Row-crop harvesting header. 4,115,983, Cl. 56-98.000.
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Bartlett, William F., to Stromberg-Carlson Corporation. Digital direct response switching system. 4,117,268, Cl. 179-15.0AT.
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BASF Wyandotte Corporation: *See—*
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Bash, Clayton W. Probe. 4,116,286, Cl. 175-19.000.
Basi, Jagtar Singh, to International Business Machines Corporation. Post-polishing semiconductor surface cleaning process. 4,116,714, Cl. 134-3.000.
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Battelle Development Corporation: *See—*
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Baumann, Kai J., to Electric Power Research Institute, Inc. Flexible coupling for rotor elements of a superconducting generator. 4,117,357, Cl. 310-52.000.
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Bechara, Ibrahim S.; Carroll, Felix P.; Mascioli, Rocco L.; and Panchak, John R., to Air Products and Chemicals, Inc. Quaternary hydroxyalkyl tertiary amine bases as polyurethane catalysts. 4,116,879, Cl. 252-426.000.
Beck, Charles R. Educational teaching device. 4,115,930, Cl. 35-7.00R.
Beck, Franz, to Hilti Aktiengesellschaft. Method of and assembly for fastening objects on a support material. 4,115,912, Cl. 29-432.000.
Beck, Jacob Howard, to BTU Engineering Corporation. Multiple beam furnace. 4,116,619, Cl. 432-3.000.
Beck, Timothy A. Solar powered biological fuel cell. 4,117,202, Cl. 429-2.000.
Becke, Hans Werner: *See—*
Kalfus, Martin Aaron; and Becke, Hans Werner, 4,117,350, Cl. 307-252.00C.
Becker, Albert. Method and apparatus for practicing golf ball chipping and putting shots. 4,116,447, Cl. 273-183.00B.
Becker, Joseph J.; Lubonsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., to General Electric Company. Treatment of amorphous magnetic alloys to produce a wide range of magnetic properties. 4,116,728, Cl. 148-108.000.
Becker, Joseph T.; and Doran, Byron L. Apparatus for supplying fluids to potted plants. 4,115,951, Cl. 47-81.000.
Becker, Otto Alfred. Process and apparatus for welding sheet metal coated with layers. 4,117,296, Cl. 219-91.210.
Beckman Instruments, Inc.: *See—*
Blanke, John David, 4,116,053, Cl. 73-117.300.
Lillig, John E.; Meyer, Richard C.; and Anderson, Robert J., 4,117,414, Cl. 330-149.000.
Polito, Carole A., 4,116,773, Cl. 195-99.000.
Soref, Richard A., 4,116,544, Cl. 350-336.000.
Becton, Dickinson and Company: *See—*
Dudley, Betty J.; and Williams, Joel L., 4,116,898, Cl. 260-17.40R.
Megahed, Shenoda S., 4,116,068, Cl. 73-425.40P.
Mehl, Jack J.; and Nugent, Edward L., 4,116,066, Cl. 73-421.00R.
Beffa, Fabio; Back, Gerhard; and Steiner, Eginhard, to Ciba-Geigy Corporation. Unsymmetrical azo - azo methine 1:2 chromium complex dyes. 4,116,952, Cl. 260-145.00B.
Beffa, Fabio: *See—*
Bitterlin, Otto; and Beffa, Fabio, 4,116,624, Cl. 8-42.00B.
Behr, Friedrich: *See—*
Schulten, Rudolf; and Behr, Friedrich, 4,117,102, Cl. 423-579.000.
Behr, Karl-Gunter; and Knapp, Helmut, to Minox GmbH. Camera having a telescoping housing. 4,117,513, Cl. 354-187.000.
Behrens, Rudolf Adolf, to American Cyanamid Company. Stabilized accelerator composition for rubber. 4,116,855, Cl. 252-182.000.
Behrenz, Wolfgang: *See—*
Stetter, Jorg; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,117,154, Cl. 424-298.000.
Belanger, William J., to Celanese Polymer Specialties Company. Cathodic electrocoating resin system from polyepoxide, polyamine, and monoepoxide. 4,116,900, Cl. 260-18.0EP.
Belart, Juan, to ITT Industries, Inc. Device for hydraulic braking system incorporating antiskid control apparatus. 4,116,495, Cl. 303-115.000.
Bell, Donald Atkinson; Chorley, Bernard John; Parks, John Ronald; and Wanek, Robert Lewis, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Automatic inspection of machined parts. 4,117,539, Cl. 364-551.000.
Bell & Howell Company: *See—*
Kim, Raymond W. H.; and Prelletz, Edward R., 4,116,550, Cl. 352-124.000.
Kim, Raymond W. H.; Lueders, Arthur L.; Prelletz, Edward R.; and Warden, Gerald D., 4,116,551, Cl. 352-124.000.
Whittle, William C.; and Zneimer, Joel E., 4,117,522, Cl. 360-109.000.
Bell, Lon E., to Technar Incorporated. Inertial sensors. 4,116,132, Cl. 102-200.000.
Bell, Richard L.; Josephs, Patricia A.; and Chidsey, Francis A., Jr., to Container Corporation of America. Carton with reclosable inspection flap. 4,116,378, Cl. 229-87.00F.
Bell Telephone Laboratories, Incorporated: *See—*
Ault, Cyrus Frank, 4,117,544, Cl. 365-28.000.
Cannon, Thomas Burt; Metz, Robert Forcier; and Simon, James Louis, 4,117,274, Cl. 179-99.000.
Coldren, Larry Allen; Glass, Alastair Malcolm; and Lemons, Ross Alan, 4,117,424, Cl. 333-30.00R.
DeNigris, Ernest Gerard; Girardi, Joseph; and Ruehl, William Edwin, 4,116,524, Cl. 339-113.00R.
Ehrlich, Marilyn Carol; and Schafersman, Roy Leonard, 4,117,278, Cl. 179-175.20C.
Hubbard, William Marshall; and Muska, Willis Martin, 4,116,532, Cl. 350-96.210.
Yeh, Kou-Min, 4,117,263, Cl. 179-1.0SM.
Bellavance, David W.; and Campbell, Joe C., to Texas Instruments Incorporated. Optical waveguides grown by selective liquid phase epitaxy. 4,116,530, Cl. 350-96.120.
Bellows, Richard James, to Exxon Research & Engineering Co. Removal of a gas component present in a gaseous stream. 4,117,079, Cl. 423-223.000.
Belmuth, Harold M.; Leto, Alfred R.; London, Lawrence; and Zuckerman, Herman A., to Saugatuck Industries, Incorporated. Variable picture frame assembly. 4,115,938, Cl. 40-152.000.
Belousov, Viktor Vasilievich; Glazer, Vadim Moiseevich; and Shestakov, Sergei Vasilievich. Plant for continuous cultivation of microorganisms. 4,116,778, Cl. 195-139.000.
Beltx Corporation: *See—*
DeWoskin, Kenneth J., 4,117,180, Cl. 428-35.000.
Beltz, Klaus; and Frankenfeld, Klaus, to Chemishe Fabrik Budenheim. Process for separating a phosphoric acid-solvent solution. 4,117,092, Cl. 423-321.00S.
Belyakov, Viktor Petrovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.
Belyavsky, Mikhail Anatolievich: *See—*
Lezgintsev, Georgy Mikhailovich; Istoshin, Stanislav Jurievich; Belyavsky, Mikhail Anatolievich; Kontar, Evgeny Alexeevich; Koptyazhin, Nikolai Nikolaevich; Agaltsov, Georgy Ivanovich; Chernov, Boris Serafimovich; Ter-Saakov, Eduard Isaakovich; and Shkatov, Evgeny Petrovich, 4,116,069, Cl. 73-425.200.
Ben-Amotz, Ami: *See—*
Avron, Mordhay; and Ben-Amotz, Ami, 4,115,949, Cl. 47-1.400.
Bender, Steven Frank, to Motorola, Inc. Phase locked loop signal demodulator and squelch circuit. 4,117,410, Cl. 329-50.000.
Bendig, Larry L.; Siemsen, Cathy S.; and Stowell, Donald E., to Continental Oil Company. Method for the formation of alumina spheres. 4,116,882, Cl. 252-448.000.
Bendig, Larry L.; and Scamehorn, John F., to Continental Oil Company. Method for producing bayerite. 4,117,106, Cl. 423-630.000.
Bendix Corporation, The: *See—*
Cohen, Richard L.; and Anderson, Richard J., 4,117,386, Cl. 318-664.000.
Mayer, Endre A.; and Kelso, Charles R., 4,116,185, Cl. 123-139.0AW.
Bennett, Foster C., to Rheocast Corporation. Apparatus and method to form metal containing nondendritic primary solids. 4,116,423, Cl. 266-200.000.
Benoit, George J.: *See—*
Abbott, Andrew Doyle; and Benoit, George J., 4,116,871, Cl. 252-32.70E.
Berens, Heinrich, to P.I.V. Antrieb Werner Reimers Kommanditgesellschaft. Cone pulley arrangement. 4,116,080, Cl. 74-230.17A.
Berg, David A., to Allis-Chalmers Corporation. Reversible sway limiting blocks for a tractor hitch. 4,116,458, Cl. 280-474.000.
Berges, David Alan, to SmithKline Corporation. 7-Acylamino-3-[1-(2-sulfamidoethyl)tetrazol-5-ylthiomethyl]-3-cephem-4-carboxylic acids. 4,117,123, Cl. 424-246.000.
Berges, David Alan, to SmithKline Corporation. 7-Acylamino-3-[[3-(carboxymethyl)thio-1H-1,2,4-triazol-5-yl]thiomethyl]-3-cephem-4-carboxylic acids. 4,117,124, Cl. 424-246.000.
Berges, David Alan, to SmithKline Corporation. 7-Acylamino-3-[1-[2-(carboxymethylamino]ethyl) tetrazol-5-ylthiomethyl]-3-cephem-4-carboxylic acids. 4,117,125, Cl. 424-246.000.
Berkey, Edgar; Reed, William H., III; and Hickam, William M., to

Westinghouse Electric Corp. Sensor for thermally ionizable particles and/or vapors. 4,117,396, Cl. 324-33.000.

Berliner, Gustave. Table tennis robot. 4,116,438, Cl. 273-30.000.

Bermingham, Winifred. Disposable female-body-worn urinal. 4,116,197, Cl. 128-286.000.

Bernstein, Morton J. Sit-up exercise apparatus. 4,116,434, Cl. 272-93.000.

Bernstein, Seymour: *See—*
Conrow, Ransom Brown; and Bernstein, Seymour, 4,117,003, Cl. 260-510.000.

Bertalan, Gyorgy: *See—*
Huszar, Andor; Szekely, Geza; Rusznak, Istan; Trezl, Lajos; Bertalan, Gyorgy; Zaoui nee Serfozo, Ilona; and Molnar, Imre, 4,116,897, Cl. 260-17.40R.

Bertea Corporation: *See—*
Cass, Ronald F., 4,116,504, Cl. 308-72.000.

Bertelson, Alexander Bruno, to Savage Technical Services, Inc. Pollution control system. 4,116,835, Cl. 210-100.000.

Berthiaume, Camille, to Columbia Chase Corporation. Combustion process. 4,116,610, Cl. 431-4.000.

Berthou, Knud Vilhelm. Apparatus for shaping sheet material. 4,116,038, Cl. 72-413.000.

Berton, Yves; and Chauvet, Pierre, to Commissariat a l'Energie Atomique. Method of decontamination of radioactive effluents. 4,116,863, Cl. 252-301.10W.

Bertsch, Lyle E. Method of erecting swimming pool structure. 4,115,977, Cl. 52-742.000.

Bessonov, Andrei Stefanovich; Uspensky, Alexandr Vitalievich; and Shekhovtsov, Nikolai Vasilievich. Apparatus for isolation of trichinella larvae. 4,116,636, Cl. 422-101.000.

Beuchat, Roger, to Mefina S.A. Electronic firing device for missiles. 4,116,133, Cl. 102-215.000.

BHS-Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft: *See—*
Mosburger, Hans; and Reis, Christoph, 4,116,399, Cl. 242-58.400.

Biax-Fiberfilm Corporation: *See—*
Schwarz, Eckhard C. A., 4,116,892, Cl. 521-62.000.

Bible, Harley V.; Goff, Clifford E.; and Moon, William T., Jr., to Robertshaw Controls Company. Indicator flag construction. 4,116,155, Cl. 116-65.000.

BICC Limited: *See—*
Swarbrick, Peter; Green, William John; and Maillefer, Charles, 4,117,195, Cl. 428-379.000.

Bieniok, Joachim; and Crouzet, Henri, to Heberlein & Co. AG; and Ateliers Roannais de Constructions Textiles. Twist tube for false-twist devices. 4,115,986, Cl. 57-77.300.

Biermacher John J., to Upjohn Company, The. High pressure liquid chromatography apparatus. 4,116,837, Cl. 210-198.00C.

Bigelow, John Howard, to Du Pont de Nemours, E. I., and Company. Sulfur-substituted isothioureas in silver halide emulsions. 4,116,697, Cl. 96-95.000.

Bigfoot Industries, Inc.: *See—*
Darrell, Robert William, 4,116,450, Cl. 273-249.000.

Bijma, Jan, to U.S. Philips Corporation. Method of adjusting a magnetic deflection unit of a cathode ray tube, cathode ray tube having a deflection unit or reference points adjusted according to said method, and a deflection unit provided with reference points adjusted according to said method. 4,117,379, Cl. 315-370.000.

Bikbau, Marsel Yanovich: *See—*
Oborin, Pavel Alexandrovich; Gadaev, Anatoly Yakovlevich; Bikbau, Marsel Yanovich; Nudelman, Boris Izrailovich; Aronova, Irina Zelmanovna; Bulatov, Nail Yakubovich; and Sosenko, Lev Matveevich, 4,116,707, Cl. 106-104.000.

Binder, Peter: *See—*
Gross, Friedrich; Binder, Peter; and Brehmer, Dieter, 4,116,115, Cl. 92-168.000.

Binks Manufacturing Company: *See—*
Culbertson, Samuel W.; and Polstra, James W., 4,116,364, Cl. 222-40.000.

Binns, Robert Eric, to Amchem Products, Inc. Composition for cleaning aluminum at low temperatures. 4,116,853, Cl. 252-142.000.

Birch, Norman. Emergency breathing apparatus. 4,116,237, Cl. 128-142.700.

Bishop, Arthur Ernest. Rack and pinion steering gear. 4,116,085, Cl. 74-422.000.

Bishop, Robert L., to West County Supply & Mfg. Co., Inc. Vent cover. 4,115,961, Cl. 52-58.000.

Bistline, Raymond G., Jr.; Linfield, Warner M.; and Noble, Wilfred R., to United States of America, Agriculture. Process for sulfating fatty alkanolamides. 4,116,986, Cl. 260-401.000.

Bitney, Ronald G.: *See—*
Garofano, Norman R.; and Bitney, Ronald G., 4,116,757, Cl. 159-47.0WL.

Bitterlin, Otto; and Beffa, Fabio, to Ciba-Geigy Corporation. New heavy metal complex dyes, process for their manufacture and use thereof. 4,116,624, Cl. 8-42.00B.

Bjorhn, Gunnar. Ball-collecting apparatus. 4,116,436, Cl. 273-29.00R.

Blackburne, Owen Rodney: *See—*
Shapiro, Warren B.; and Blackburne, Owen Rodney, 4,117,107, Cl. 424-54.000.
Shapiro, Warren B.; and Blackburne, Owen Rodney, 4,117,108, Cl. 424-54.000.

Bland, Walter P.: *See—*
McKendry, Lennon H.; and Bland, Walter P., 4,116,672, Cl. 71-91.000.

Blanke, John David, to Beckman Instruments, Inc. Thermal reactor/-catalytic converter efficiency determination method. 4,116,053, Cl. 73-117.300.

Blessent, John B. Agricultural tillage equipment. 4,116,283, Cl. 172-443.000.

Bletz, Walter: *See—*
Holle, Werner; and Bletz, Walter, 4,117,325, Cl. 250-209.000.

Blevins, Gerald Glen; Dumar, William Lewis, Jr.; Hansen, Steven Royal; Hixson, Wayne Ellory; and Krezak, John Edward, to Boeing Company, The. Insulating stand-off and method of assembling same. 4,117,261, Cl. 174-164.000.

Bliss & Laughlin Industries, Inc.: *See—*
Johnson, Eugene R.; and Mower, Morris F., 4,116,604, Cl. 425-458.000.

Bliss, Robert L., to University of Utah. Foldable/extensible structure. 4,115,975, Cl. 52-646.000.

Blocher, John M., Jr.; and Browning, Melvin F., to Texas Instruments Incorporated. Process for silicon and trichlorosilane production. 4,117,094, Cl. 423-342.000.

Blokhina, Valentina Alexeevna: *See—*
Tikhova, Nina Mikhailovna; Blokhina, Valentina Alexeevna; Antipova, Antonina Petrovna; and Vasilieva, Tamara Pavlovna, 4,116,731, Cl. 148-161.000.

Bluestein, Ben Alfred; and Evans, E. Robert, to General Electric Company. Process for producing aromatic-containing silicone compounds. 4,116,993, Cl. 260-448.20E.

Blytas, George C., to Shell Oil Company. Process for demetallizing of heavy hydrocarbons. 4,116,820, Cl. 208-251.00R.

Boario, William R., to United States of America, Air Force. Real time signal correlator for high resolution radar. 4,117,480, Cl. 343-5.0CM.

Bochkarev, Ellin Petrovich: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.

Bodner, Ronald Eugene, to International Business Machines Corporation. Instruction processing control apparatus. 4,117,536, Cl. 364-200.000.

Bodor, Nicolae S.; and Sloan, Kenneth B., to INTERx Research Corporation. Transient pro-drug forms of phenylbutazone. 4,117,232, Cl. 548-365.000.

Bodson, Luc: *See—*
Obsomer, Marc; Bodson, Luc; and Michel, Edmond, 4,116,609, Cl. 425-526.000.

Boeing Company, The: *See—*
Blevins, Gerald Glen; Dumar, William Lewis, Jr.; Hansen, Steven Royal; Hixson, Wayne Ellory; and Krezak, John Edward, 4,117,261, Cl. 174-164.000.
Hansen, Karl A.; and Hendrickson, I. Glen, 4,116,031, Cl. 72-56.000.

Boerstler, Leslie H.; Discenza, Walter V., Jr.; Marvin, Mason D.; and Ebersole, Theodore J., to General Electric Company. Control system for a Rankine cycle power unit. 4,117,344, Cl. 290-52.000.

Bogaard, Hendricus Johannes Maria, to Stork Amsterdam B.V. Installation for thermal treatment of container-packed commodities. 4,116,117, Cl. 99-361.000.

Boger, Allen D., Jr.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 4,116,228, Cl. 128-2.00R.

Boggs, Alben C.; and Stover, John C., to Emerson Electric Co. Explosion-proof electric air heater. 4,117,308, Cl. 219-365.000.

Boggs, Roger L.: *See—*
Schimpf, James E.; Boggs, Roger L.; and Kinsinger, Malcolm H., 4,116,497, Cl. 305-41.000.

Boileau, Sylvia: *See—*
Lehn, Jean-Marie; Schue, Francois; Boileau, Sylvia; Kaempf, Bernd; Cau, Alain Andre; Moinard, Jean Robert; and Raynal, Serge Fernand, 4,116,887, Cl. 260-2.00A.

Bolie, Victor W. Severe climate windmill. 4,116,581, Cl. 415-2.000.

Bolin, Philip C., to Westinghouse Electric Corp. Gas-insulated transmission lines with DC voltage limiting means. 4,117,528, Cl. 361-120.000.

Bolling, Donald Louis: *See—*
Power, George Edward; and Bolling, Donald Louis, 4,117,198, Cl. 428-452.000.

Bolt Beranek and Newman Inc.: *See—*
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Bolyky, Janos: *See—*
Laib, Lajos; Komandi, Gyorgy; Polyak, Nandor; and Bolyky, Janos, 4,116,051, Cl. 73-116.000.

Bombardier Limited: *See—*
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Bombardieri, Caurino Cesar: *See—*
Butler, Roger Moore; Bombardieri, Caurino Cesar; and Slevinsky, Bruce Alexander, 4,116,275, Cl. 166-303.000.

Bon, Charles K., to Dow Chemical Company, The. Corrosion prevention system. 4,116,782, Cl. 204-147.000.

Bonati, Attilio; and Gabetta, Bruno, to Inverni Della Beffa S.p.A. Vasodilating cuanzine hydrazides. 4,117,133, Cl. 424-256.000.

Bones, Roger John: *See—*
Markin, Trevor Leslie; Bones, Roger John; Scott, Keith Taylor; May, Geoffrey John; and Robinson, Graham, 4,117,209, Cl. 429-104.000.

Bonkowski, Teofil L.: *See—*
Curry, Byron V.; and Bonkowski, Teofil L., 4,116,331, Cl. 206-150.000.

Bonnemay, Alain, to Commissariat a l'Energie Atomique. Computing module. 4,117,540, Cl. 364-602.000.

Books, William R.; and Heinzel, Irving C., to Brooks, William R. Purgeable dispensing gun for polyurethane foam and the like. 4,117,551, Cl. 366-162.000.

Booth, Frederick C. Electrically operated seatbelt retractor. 4,116,295, Cl. 180-82.00C.

Borg-Warner Corporation: *See—*
Kelbel, Donald William, 4,116,082, Cl. 74-360.000.
Miller, Alan Leonard, 4,116,321, Cl. 192-103.00F.
Muench, Paul William, 4,117,537, Cl. 364-492.000.
Steffancin, William, 4,117,034, Cl. 260-873.000.
York, James F., 4,116,926, Cl. 260-45.70P.

Borner, Hans G. K., to Gerlach-Werke GmbH. Track construction for tracked land vehicles such as tanks. 4,116,498, Cl. 305-58.00R.

Borsanyi, Alexander S., to American Hospital Supply Corporation. Semipermeable membrane mass transfer apparatus having collapsed membrane about support members. 4,116,841, Cl. 210-321.00B.

Bosch-Siemens Hausgerate GmbH: *See—*
Mayer, Rolf, 4,116,099, Cl. 83-571.000.

Bouchard, Andre C.: *See—*
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,116,615, Cl. 431-92.000.
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,116,616, Cl. 431-93.000.

Bourns, Inc.: *See—*
Hildreth, Bradrick Alan; and Stephens, Donald Harrison, 4,117,444, Cl. 338-198.000.

Bousquet, Gilles: *See—*
Rambert, Andre; Bousquet, Gilles; and Dejour, Henri, 4,115,875, Cl. 3-1.913.

Bovier, Edward M.: *See—*
Musselman, Camillus B.; and Bovier, Edward M., 4,116,740, Cl. 156-205.000.

Bowen, Alan W.: *See—*
Love, Robert Bruce; and Bowen, Alan W., 4,116,806, Cl. 204-298.000.

Boy Marcotte, Jean-Louis; Chevalier, Georges; Gerij, Janusz; and Leheu, Jacques, to Commissariat a l'Energie Atomique. Liquid metal cooled nuclear reactor. 4,116,765, Cl. 176-38.000.

Boyd, David C.; Flannery, James E.; Morgan, David W.; Rosplock, Sara E.; and Sczerbaniewicz, Stella A., to Corning Glass Works. Colored glassware. 4,116,704, Cl. 106-54.000.

Boyd, John H., Jr.; and Nelson, Don C., Jr., to General Electric Company. Adaptable resilient motor mounting. 4,116,410, Cl. 248-26.000.

Bracher, Douglas Lee: *See—*
Joshi, Satish Vishwanath; and Bracher, Douglas Lee, 4,116,690, Cl. 75-257.000.

Brachman, Armand E.; Khattab, Ghazi; and Smolin, Edwin M., to GAF Corporation. Poly(tetramethylene terephthalate)-polyether block. 4,116,925, Cl. 260-42.180.

Bradshaw, Cyril E., to Eaton Corporation. Variable percentage exhaust gas recirculation valve. 4,116,182, Cl. 123-119.00A.

Bradshaw, Noel James; Savage, David; and Sneath, Michael Edwin, to Lever Brothers Company. Process for preparing simulated soft centered fruits. 4,117,172, Cl. 426-276.000.

Brame, Thomas Vinton: *See—*
Fabry, Lloyd W.; and Brame, Thomas Vinton, 4,117,454, Cl. 340-81.00F.

Brami, Gilbert: *See—*
Lavalley, Roger; Gozlan, Roger; and Brami, Gilbert, 4,117,450, Cl. 340-52.00H.

Brandt Company, The: *See—*
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Brandt-Pra, Inc.: *See—*
McInerny, George P., 4,116,127, Cl. 101-232.000.

Brannigan, Lawrence H.; Franz, John E.; and Howe, Robert K., to Monsanto Company. 1-Alkyl-3-aryl-4-pyrazolecarboxylates. 4,116,673, Cl. 71-92.000.

Brassel, Leo, to Schmelzbasaltwerk Kalenborn, Dr. Ing. Mauritz KG. Feeding chute or gate. 4,116,621, Cl. 432-233.000.

Bratschi, Konrad. Strip curtain. 4,116,257, Cl. 160-168.00R.

Braun, Fritz: *See—*
Hell, August; Kobusch, Wolfram; and Braun, Fritz, 4,115,981, Cl. 53-55.000.

Braun, Karl; Lacher, Rainer; and Pfeiffer, Willi, to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer. Milling tool for surgical purposes. 4,116,200, Cl. 128-305.000.

Bray, Andrew M.: *See—*
Leanna, Dale D.; Jorgensen, Allen R.; Curro, Thomas R.; and Bray, Andrew M., 4,116,594, Cl. 425-3.000.

Bredeweg, Robert A.; and Dhingra, Yog R., to Dow Chemical Company, The. Eradication of bis-chloromethyl ether and 1,1,1,2-tetrachloroethane from chloroacetyl chloride. 4,117,007, Cl. 260-544.00Y.

Brehmer, Dieter: *See—*
Gross, Friedrich; Binder, Peter; and Brehmer, Dieter, 4,116,115, Cl. 92-168.000.

Brennan, Michael E., to Texaco Development Corp. Production of N-(substituted) morpholine. 4,117,227, Cl. 544-170.000.

Brenner, L. Martin, to SmithKline Corporation. Sulfonyl benzofurans and benzothiophenes having coronary vasodilator activity. 4,117,128, Cl. 424-248.500.

Breslow, Jeffrey D., to Marvin Glass & Associates. Amusement device. 4,116,449, Cl. 273-240.000.

Bridges, Charles D.: *See—*
McGee, John K.; and Bridges, Charles D., 4,116,277, Cl. 166-315.000.

Bridgestone Tire Company Limited: *See—*
Hayakawa, Hiroshi; and Ezura, Sakae, 4,116,255, Cl. 152-352.00R.
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; and Suzuki, Yoshikatsu, 4,117,036, Cl. 260-878.00R.

Brien, Andre Guy. Automatic wristwatch construction. 4,115,995, Cl. 58-50.00R.

Bristol Products, Inc.: *See—*
Colten, Jerrold L., 4,117,305, Cl. 219-213.000.

Broerse, Pieter Hendrik: *See—*
Van Vliet, Johannes Adrianus Josephus Maria; and Broerse, Pieter Hendrik, 4,117,371, Cl. 315-46.000.

Brois, Stanley J.; Gutierrez, Antonio; and Winans, Esther D., to Exxon Research & Engineering Co. Borated oxazolines as varnish inhibiting dispersants in lubricating oils. 4,116,876, Cl. 252-49.600.

Brois, Stanley J.: *See—*
Ryer, Jack; Brois, Stanley J.; and Winans, Esther D., 4,116,643, Cl. 44-63.000.

Bronshtein, Izidor Karlovich: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.

Brooks, William R.: *See—*
Books, William R.; and Heinzel, Irving C., 4,117,551, Cl. 366-162.000.

Brosenius, Karl Hilding, to Tekram Associates. Self sealing heat insulating shutter system. 4,115,953, Cl. 49-125.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hishida, Yukio; Asai, Yuichi; Kondo, Toshikatsu; Asai, Akira; Sakaida, Atsuo; and Miyazawa, Chiaki, 4,117,435, Cl. 335-270.000.

Brown Boveri-Sulzer Turbomaschinen AG.: *See—*
Hoffeins, Hans, 4,117,343, Cl. 290-52.000.

Brown, Edward Morris: *See—*
Towns, Edward Johnson; and Brown, Edward Morris, 4,116,371, Cl. 222-455.000.

Brown, Richard E., to Warner-Lambert Company. Indolobenzoxazepines as CNS depressants. 4,117,129, Cl. 424-248.570.

Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr. Bronchodilating piperidinoethyl benzopyranopyridinones. 4,117,140, Cl. 424-267.000.

Browning, Melvin F.: *See—*
Blocher, John M., Jr.; and Browning, Melvin F., 4,117,094, Cl. 423-342.000.

Brucat, John N.: *See—*
Taylor, Stanford Earl; and Brucat, John N., 4,116,547, Cl. 351-31.000.

Bruinink, Jacob: *See—*
Ponjee, Johannes Jacobus; and Bruinink, Jacob, 4,116,535, Cl. 350-355.000.

Brungart, Nelson D. Integrated steering control for tracked vehicles. 4,116,291, Cl. 180-6.200.

Brunner, Friedrich Christian; Schwerdt, Friedrich Wilhelm; and Steinbeck, Hans-Heinz, to International Business Machines Corporation. Method of making an amorphous silicon dioxide free of metal ions. 4,117,093, Cl. 423-339.000.

Bryan, William Thomas: *See—*
Temple, Robert Dwight; Bryan, William Thomas; and Willig, Carl Joseph, 4,116,854, Cl. 252-167.000.

Brymill Corporation: *See—*
Bryne, Michael D., 4,116,199, Cl. 128-303.100.

Bryne, Michael D., to Brymill Corporation. Cryosurgical instrument reservoir. 4,116,199, Cl. 128-303.100.

Bryngelson, James R. Two position spare wheel mount for the sidewall of a pickup truck. 4,116,373, Cl. 224-42.210.

BTU Engineering Corporation: *See—*
Beck, Jacob Howard, 4,116,619, Cl. 432-3.000.

Buchberger, Gerhard: *See—*
Holst, Arno; Kostrzewa, Michael; and Buchberger, Gerhard, 4,117,222, Cl. 536-50.000.

Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, to Bayer Aktiengesellschaft. Disubstituted triphenylmethylmidazoles for treating mycotic infections. 4,117,142, Cl. 424-273.00R.

Bucher, Robert, to Sulzer Brothers Limited. Jacquard machine having means for controlling jacquard needle motion. 4,116,242, Cl. 139-59.000.

Buchholz, Peter: *See—*
Kramer, Peter; and Buchholz, Peter, 4,116,483, Cl. 296-28.00C.

Buck, Robert. Electronic monitoring system with low energy consumption in quiescent state. 4,117,393, Cl. 323-25.000.

Buck, Robert T.: *See—*
Adrion, Robert F.; Buck, Robert T.; and Eppes, William R., 4,117,338, Cl. 250-461.00R.

Buczek, Carl James: *See—*
Martin, Anthony Newman; Buczek, Carl James; and Mongeon, Robert Joseph, 4,116,000, Cl. 60-242.000.

Budnick, Edward G., to Plains Chemical Development Co. Chelation. 4,116,990, Cl. 260-429.00J.

Budris, Allan R., to Worthington Pump, Inc. Multi-purpose end casings for ring type multi-stage centrifugal pumps. 4,116,583, Cl. 415-199.100.

Buehler, John D.; Shah, Pravinchandra B.; and Joslin, Robert S., to William H. Rorer, Inc. Method for lowering the viscosity of certain agents. 4,117,116, Cl. 424-157.000.

Buel, G. Theodore. Heel binding for trail skis. 4,116,462, Cl. 280-614.000.

Buiocchi, Charles Joseph: *See—*
Olsen, Gregory Hammond; Zamerowski, Thomas Joseph; and Buiocchi, Charles Joseph, 4,116,733, Cl. 148-175.000.

Bulatov, Nail Yakubovich: *See—*
Oborin, Pavel Alexandrovich; Gadaev, Anatoly Yakovlevich; Bikbau, Marsel Yanovich; Nudelman, Boris Izrailovich; Aronova, Irina Zelmanovna; Bulatov, Nail Yakubovich; and Sosenko, Lev Matveevich, 4,116,707, Cl. 106-104.000.

Bulychev, Gennady Alexeevich; Bykovsky, Anatoly Vladimirovich; Machigin, Stanislav Pavlovich; and Strelkov, Konstantin Sergeevich. Device for suspension of aircraft model in wind tunnel. 4,116,056, Cl. 73-147.000.

Burd, David Miller. Solar energy collector. 4,116,220, Cl. 126-271.000.

Burda, Ferencne: *See—*
Takatsy, Gyula; Barb, Katalin; Muranyi, Istvan; and Burda, Ferencne, 4,116,777, Cl. 195-127.000.

Bureau de Recherches Geologiques et Minieres: *See—*
Dufort, Jacques L.; and Hermelin, Roger R., 4,116,749, Cl. 156-555.000.

Burgbacher, Martin, to Papst Motoren KG. Drive arrangement for yarn storage and dispensing units. 4,116,397, Cl. 242-47.010.

Burger, Jacobus J.: *See—*
Radstake, Herman; Hasenack, Nicolas A.; Van Latenstein, Anthonie; and Burger, Jacobus J., 4,116,681, Cl. 75-41.000.

Burgess, Eldon W. Thermal power sustaining switch. 4,117,346, Cl. 307-117.000.

Burghard, Clement E.; and Coletti, Veronica L., to Grumman Aerospace Corporation. High speed double error correction plus triple error detection system. 4,117,458, Cl. 340-146.1AL.

Burgoon, Jack L., to Scott & Fetzer Company, The. High-speed polishing machine. 4,115,890, Cl. 15-49.00R.

Burks, Lucile. Drinking doll having wetting and non-wetting modes. 4,115,948, Cl. 46-141.000.

Burlington Industries, Inc.: *See—*
Davis, Delbert A., 4,116,743, Cl. 156-333.000.

Burmeister, Karl-Heinz, to Ipsen Industries International Gesellschaft mit beschrankter Haftung. Loading device. 4,116,324, Cl. 198-472.000.

Burrell, John R. Apparatus for producing retreading envelopes. 4,116,605, Cl. 425-466.000.

Burroughs Corporation: *See—*
Sims, Dewey M., Jr., 4,117,430, Cl. 335-205.000.
Vinson, Mark Alexander, 4,116,720, Cl. 148-1.500.
Wolfe, John Edmond, 4,117,339, Cl. 250-492.00A.

Burroughs Wellcome Co.: *See—*
Stuart, Alexander; and Paterson, Thomas, 4,116,958, Cl. 544-325.000.

Burry, Devitt S.: *See—*
Smiggen, Frank J.; Burry, Devitt S.; Kallaby, Joseph; and Goltz, Wayne H., 4,116,715, Cl. 134-6.000.

Burton, Gardner Thomas: *See—*
Clay, Burton Ross; and Burton, Gardner Thomas, 4,116,526, Cl. 350-3.670.

Busch, Charles R., to Aktiebolaget Electrolux. Multi-layer filter dust bag for a vacuum cleaner. 4,116,648, Cl. 55-276.000.

Bush, Richard Wayne: *See—*
Morgan, Charles Robert; and Bush, Richard Wayne, 4,117,017, Cl. 260-609.00R.

Butler, Roger Moore; Bombardieri, Caurino Cesar; and Slevinsky, Bruce Alexander, to Exxon Production Research Company. Recovery of hydrocarbons by in situ thermal extraction. 4,116,275, Cl. 166-303.000.

Butler, Walter J.; and Eichelberger, Charles W., to General Electric Company. Controlled current sink. 4,117,353, Cl. 307-297.000.

Butterworth, Donald James, to Ecodyne Corporation. Liquid treatment apparatus. 4,116,840, Cl. 210-279.000.

Buysch, Hans-Josef; Oertel, Harald; and Roos, Ernst, to Bayer Aktiengesellschaft. Synthetic polymer compositions stabilized against discoloration and degradation. 4,116,932, Cl. 260-45.95R.

Byers, Thomas L. Color separated film strip type font. 4,116,694, Cl. 96-41.000.

Bykasov, Viktor Ivanovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Bykovsky, Anatoly Vladimirovich: *See—*
Bulychev, Gennady Alexeevich; Bykovsky, Anatoly Vladimirovich; Machigin, Stanislav Pavlovich; and Strelkov, Konstantin Sergeevich, 4,116,056, Cl. 73-147.000.

Byrne, Robert: *See—*
Jaekle, William M.; Byrne, Robert; and Giovanelli, Armand, 4,116,135, Cl. 105-378.000.

Byrum, Bernard W., Jr., to Owens-Illinois, Inc. Method of making gas discharge display device with protective dielectric. 4,116,792, Cl. 204-192.00E.

C.F.F. Inc.: *See—*
Chavarria, Robert James; and Foster, Clark Berg, 4,116,439, Cl. 273-59.00A.

C & S Antennas Limited: *See—*
Hanna, Kheder Abdul Karim; and Collins, Brian Stuart, 4,117,491, Cl. 343-742.000.

Cadillac Products, Inc.: *See—*
Barnett, Karl F., 4,116,116, Cl. 93-35.00R.

Caisley, Ronald. Prefabricated building structure. 4,115,962, Cl. 52-79.400.

Calder, Oliver J., to A.S.M. Company. Spray nozzle head. 4,116,386, Cl. 239-119.000.

Campbell, Donn V.: *See—*
Arnold, James J., deceased; Campbell, Donn V.; DeSantis, Charles M.; and Schwering, Felix, 4,117,490, Cl. 343-708.000.
Arnold, James J., deceased; and Campbell, Donn V., 4,117,492, Cl. 343-747.000.

Campbell, Joe C.: *See—*
Bellavance, David W.; and Campbell, Joe C., 4,116,530, Cl. 350-96.120.

Campbell, Ronald B., Jr.: *See—*
Shrader, William W.; and Campbell, Ronald B., Jr., 4,117,538, Cl. 364-517.000.

Canada-Cities Service, Ltd.: *See—*
Kizior, Thaddeus Eugene, 4,116,809, Cl. 208-11.0LE.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources: *See—*
Kizior, Thaddeus Eugene, 4,116,809, Cl. 208-11.0LE.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Perrault, Guy; Francoeur, Raynald; and Lavertu, Roger, 4,116,734, Cl. 149-19.200.

Canadian Foremost Ltd.: *See—*
Ewert, Russ J., 4,116,467, Cl. 280-764.000.

Canadian International Paper Co.: *See—*
Ford, Michael J.; and Gardner, Prescott Elliott, 4,116,758, Cl. 162-28.000.

Candela Electronics, Inc.: *See—*
Lesea, Ronald A., 4,117,270, Cl. 179-18.0BE.

Cannon, Thomas Burt; Metz, Robert Forcier; and Simon, James Louis, to Bell Telephone Laboratories, Incorporated. Key telephone privacy circuit. 4,117,274, Cl. 179-99.000.

Canon Kabushiki Kaisha: *See—*
Knechtel, Wilhelm; and Tokiwa, Taisuke, 4,116,561, Cl. 355-57.000.

Capuano, Terry D.: *See—*
Heldmann, Ernest J.; and Capuano, Terry D., 4,116,572, Cl. 403-7.000.

Caramanian, John A. Composition for treating concrete surfaces. 4,116,915, Cl. 260-31.4EP.

Carasso, Marino Giuseppe; van de Polder, Leendert Johan; and Tan, Sing Liong, to U.S. Philips Corporation. Television camera having signal electrode strips. 4,117,515, Cl. 358-217.000.

Carl Schleicher & Schull: *See—*
Hein, Wolfgang; Cosack, Claus; and Grundmann, Peter, 4,116,844, Cl. 210-446.000.

Carlsen, John S.: *See—*
Johnson, Edward F.; and Carlsen, John S., 4,117,027, Cl. 260-824.00R.

Carlson, David Emil; and Wronski, Christopher Roman, to RCA Corporation. Amorphous silicon photovoltaic device having an insulating layer. 4,117,506, Cl. 357-30.000.

Carne, Charles Nicholas: *See—*
Tomlinson, Ernest Valdur; and Carne, Charles Nicholas, 4,117,320, Cl. 250-237.00G.

Carpco, Inc.: *See—*
Webb, Clyde B., 4,116,822, Cl. 209-11.000.

Carrico, Arnold J. Flexible multi-columnar fluid treatment cellular apparatus. 4,117,049, Cl. 261-111.000.

Carrier Corporation: *See—*
Liberman, Harvey W.; Goranson, Paul L.; Ratledge, R. Houston, Jr.; and Salyers, John C., 4,116,121, Cl. 100-39.000.

Carroll, Felix P.: *See—*
Bechara, Ibrahim S.; Carroll, Felix P.; Mascioli, Rocco L.; and Panchak, John R., 4,116,879, Cl. 252-426.000.

Carson (Instruments & Equipment) Limited: *See—*
Tomlinson, Ernest Valdur; and Carne, Charles Nicholas, 4,117,320, Cl. 250-237.00G.

Carson, John C., Jr.: *See—*
Kenkare, Divaker B.; Hall, Robert T., II; and Carson, John C., Jr., 4,116,354, Cl. 220-20.000.

Cases, Moises: *See—*
Anantha, Narasipur Gundappa; Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,117,546, Cl. 365-233.000.

Cass, Ronald F., to Bertea Corporation. Spherical bearing and method of making the same. 4,116,504, Cl. 308-72.000.

Cassano, James R.: *See—*
Stange, Klaus K.; Smith, Richard E.; Hamlin, Thomas J.; and Cassano, James R., 4,116,431, Cl. 271-236.000.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Gattner, Hans; and Ribka, Joachim, 4,116,918, Cl. 260-37.00P.

Cassidy, Patrick E.: *See—*
Johnson, Ben C.; Thornton, J. Scott; Glowe, Donald E.; Cassidy, Patrick E.; and Anderson, Robert E., 4,117,312, Cl. 219-548.000.

Caterpillar Mitsubishi Ltd.: *See—*
Uchida, Tomio, 4,116,346, Cl. 214-145.00A.
Uchida, Tomio, 4,116,347, Cl. 214-145.00A.

Caterpillar Tractor Co.: *See—*
Earle, Michael; and Lenzen, Glenn H., Jr., 4,117,302, Cl. 219-121.0LM.
Liesener, Kenneth P., 4,116,587, Cl. 417-212.000.
Luttrell, Richard W.; and Purcell, Robert J., 4,116,081, Cl. 74-243.00R.
Schimpf, James E.; Boggs, Roger L.; and Kinsinger, Malcolm H., 4,116,497, Cl. 305-41.000.
Staebler, Paul J., 4,116,265, Cl. 165-95.000.
Walden, Gerald M., 4,116,412, Cl. 248-358.00R.

Cau, Alain Andre: *See—*
Lehn, Jean-Marie; Schue, Francois; Boileau, Sylvia; Kaempf, Bernd; Cau, Alain Andre; Moinard, Jean Robert; and Raynal, Serge Fernand, 4,116,887, Cl. 260-2.00A.

CAV Limited: *See—*
Drori, Moshe, 4,116,186, Cl. 123-139.0AM.

CAW Industries, Inc.: *See—*
Willard, John Wesley, Sr., 4,116,666, Cl. 71-77.000.

Cayley, Michael Paul. Electric towel warmer. 4,117,309, Cl. 219-385.000.

Ceiling Resurfacing Systems, Inc.: *See—*
Weinar, Roger Neil, 4,115,970, Cl. 52-311.000.

Celanese Polymer Specialties Company: *See—*
Belanger, William J., 4,116,900, Cl. 260-18.0EP.

Cella, James A., to General Electric Company. Moisture curable epoxy compositions containing dicarbonyl chelates. 4,116,886, Cl. 528-88.000.

Central Glass Company, Limited: *See—*
Fujita, Yoshishige; Asagao, Soichi; and Ogura, Motoshige, 4,117,089, Cl. 423-306.000.
Mukai, Kunihiko; Mishima, Michiharu; Ogino, Kiyoshi; and Iseki, Shuichi, 4,116,656, Cl. 65-5.000.

Central States Tooling Service, Inc.: *See—*
Roberts, Bruce D., 4,116,398, Cl. 242-56.00R.

Cermol S.A.: *See—*
Molnar, Francois; Szabo, Suzanne; and Statkov, Peter Radanow, 4,117,160, Cl. 424-316.000.

Cervantes, Lawrence M. Self-righting roadway marking device. 4,117,455, Cl. 340-114.00R.

Chakrin, Lawrence William; Snader, Kenneth Means; and Willis, Chester Rhodes, to SmithKline Corporation. Substituted 3-cinnamoyl-2H-pyran-2,6(3H)-diones. 4,117,226, Cl. 542-438.000.

Chandler, Edgar Frank: *See—*
Demarest, Donald Monroe; and Chandler, Edgar Frank, 4,117,527, Cl. 361-103.000.

Chang, Fung Yuel: *See—*
Anantha, Narasipur Gundappa; Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,117,546, Cl. 365-233.000.

Channing, Harry M.: *See—*
Windisch, Lawrence; Nees, John; and Channing, Harry M., 4,117,387, Cl. 320-2.000.

Chappell, Christopher Lee, to Stablex AG. Detoxification. 4,116,705, Cl. 106-90.000.

Charles, Joseph T.; and Ryan, James P., to Coil Sales & Manufacturing Company. Diode package for use with a central office connector module. 4,117,264, Cl. 179-1.0PC.

Charles, Ronald A.; Jones, Paul W.; Staples, John L.; and Wiegner, Joseph R., to McDonnell Douglas Corporation. Machine and process for reading cards containing medical specimens. 4,116,775, Cl. 195-103.50M.

Charles Stark Draper Laboratory, Inc., The: *See—*
MacLennan, Alexander G., 4,117,436, Cl. 336-65.000.

Charlesworth, Rita. Phonetics system and method of teaching phonetics. 4,115,932, Cl. 35-35.00J.

Charon, Clarence W.; and Renaud, Laurent C., to Owens-Corning Fiberglas Corporation. Method for making an electrically conductive paper. 4,115,917, Cl. 29-611.000.

Charter, Kenneth F.; Miller, John R.; and Garrett, David W., to Owens-Corning Fiberglas Corporation. High production method of producing glass fiber resin composites and articles produced thereby. 4,117,067, Cl. 264-119.000.

Chase, Richard P.: *See—*
Englander, Gary E.; Chase, Richard P.; Anderson, Donald P.; and Metcalf, Guy D., 4,115,958, Cl. 51-289.00R.

Chauvet, Pierre: *See—*
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Chavarria, Robert James; and Foster, Clark Berg, to C.F.F. Inc. Pool ball. 4,116,439, Cl. 273-59.00A.

Chem-Farm Inc.: *See—*
Lant, Lawrence L., 4,116,281, Cl. 172-267.000.
Sauer, Clement J., 4,116,139, Cl. 111-7.000.

Chemetron Corporation: *See—*
Wodzinski, Dale M.; and Clissa, Michael, 4,117,304, Cl. 219-130.100.

Chemi-Con Onkyo Co., Ltd.: *See—*
Miyanaga, Kunio; and Kawada, Kosaku, 4,117,275, Cl. 179-111.00E.

Chemische Werke Huls AG: *See—*
Kaufhold, Manfred; and Bankwitz, Gottfried, 4,117,251, Cl. 568-877.000.

Chemishe Fabrik Budenheim: *See—*
Beltz, Klaus; and Frankenfeld, Klaus, 4,117,092, Cl. 423-321.00S.

Chemplex Company: *See—*
Hwang, Yu-Tang, 4,117,217, Cl. 526-96.000.

Chen, Schoen-nan: *See—*
Deb, Satyendra K.; Chen, Schoen-nan; Witzke, Horst; Russak, Michael A.; and Reichman, Joseph, 4,117,210, Cl. 429-111.000.

Cheng, Tai Chun, to Firestone Tire & Rubber Company, The. Phosphonitrilic polymers with curability by sulfur accelerated cures or radiation cures. 4,116,785, Cl. 204-159.140.

Chernov, Boris Serafimovich: *See—*
Lezgintsev, Georgy Mikhailovich; Istoshin, Stanislav Jurievich; Belyavsky, Mikhail Anatolievich; Kontar, Evgeny Alexeevich; Koptyazhin, Nikolai Nikolaevich; Agaltsov, Georgy Ivanovich; Chernov, Boris Serafimovich; Ter-Saakov, Eduard Isaakovich; and Shkatov, Evgeny Petrovich, 4,116,069, Cl. 73-425.200.

Cherny, Viktor Yakovlevich; Galperin, Boris Grigorievich; Mikhailov, Mikhail Mikhailovich; Meljukhov, Vladimir Petrovich; and Dobrokhotov, Leonid Vasilievich. Turbomolecular high-vacuum pulp. 4,116,592, Cl. 417-424.000.

Chernyshev, Boris Alexandrovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Chevalier, Georges: *See—*
Boy Marcotte, Jean-Louis; Chevalier, Georges; Gerij, Janusz; and Leheu, Jacques, 4,116,765, Cl. 176-38.000.

Chevron Research Company: *See—*
Abbott, Andrew Doyle; and Benoit, George J., 4,116,871, Cl. 252-32.70E.
de Vries, Louis, 4,116,873, Cl. 252-33.000.

Chiaramonte, Gasper, Jr. Removable shield for footwear. 4,115,933, Cl. 36-34.00B.

Chiba, Kensuke, to Sharp Rifle Company, Ltd. Pressurized gas or air operated repeater rifle. 4,116,193, Cl. 124-72.000.

Chidsey, Francis A., Jr.: *See—*
Bell, Richard L.; Josephs, Patricia A.; and Chidsey, Francis A., Jr., 4,116,378, Cl. 229-87.00F.

Chimura, Yuichi: *See—*
Tonouchi, Takeo; Tonouchi, Akio; Shiroshima, Makoto; Chimura, Yuichi; and Ohkubo, Kazuyoshi, 4,117,174, Cl. 426-634.000.

Chin, Arthur H. T.: *See—*
Duncan, Anthony Bruce; and Chin, Arthur H. T., 4,116,471, Cl. 285-1.000.

Chlanda, Frederick P.; Lee, Lester T. C.; and Liu, Kang-Jen, to Allied Chemical Corporation. Bipolar membranes and method of making same. 4,116,889, Cl. 521-27.000.

Chloride Silent Power Limited: *See—*
Jones, Ivor Wynn, 4,117,056, Cl. 264-57.000.
Markin, Trevor Leslie; Bones, Roger John; Scott, Keith Taylor; May, Geoffrey John; and Robinson, Graham, 4,117,209, Cl. 429-104.000.

Chlorine Engineers Corp., Ltd.: *See—*
Ichisaka, Teruo; and Ikegami, Tadao, 4,116,805, Cl. 204-290.00F.

Choi, Charles K., to Occidental Petroleum Corporation. Vessel for stripping oil from fluidized ash and char particles. 4,116,823, Cl. 209-44.000.

Chorley, Bernard John: *See—*
Bell, Donald Atkinson; Chorley, Bernard John; Parks, John Ronald; and Wanek, Robert Lewis, 4,117,539, Cl. 364-551.000.

Christ, Alfred: *See—*
Lehmann, Rolf; and Christ, Alfred, 4,116,601, Cl. 425-324.100.

Christiansen, Arvid, to Miranol Chemical Company, Inc., The. Nitrogenous condensation products. 4,117,231, Cl. 548-352.000.

Christopher, Glenn B.; and Regalbuto, John A., to Jet Research Center, Inc. Methods and apparatus for severing tubular members. 4,116,130, Cl. 102-20.000.

Chromalloy American Corporation: *See—*
Eglinton, Robert B.; and Tuell, James S., 4,116,327, Cl. 198-560.000.

Chu, Tze Yao; Jaluria, Yogesh; Lavigna, Robert Joseph; Reusser, Raymond Edward; and Williams, George, to Western Electric Company, Inc. Method and apparatus for avoiding undesirable deposits in crystal growing operations. 4,116,642, Cl. 422-249.000.

Church & Dwight Co., Inc.: *See—*
Schoenholz, Daniel; Petersen, Arthur Walter; and Northup, Marcus Allen, Jr., 4,116,848, Cl. 252-90.000.

Chytil, Frank S.: *See—*
Smith, Robert E.; Chytil, Frank S.; Feldstein, George; and Swartz, Dorman J., 4,116,394, Cl. 242-25.00R.
Ciba-Geigy AG: *See—*
Loewe, Werner; and Striebel, Heini Paul, 4,117,156, Cl. 424-302.000.
Mollet, Hans; Haberli, Roland; Rabassa, Alberto; and Babler, Fridolin, 4,117,066, Cl. 264-117.000.
Ciba-Geigy Corporation: *See—*
Beffa, Fabio; Back, Gerhard; and Steiner, Eginhard, 4,116,952, Cl. 260-145.00B.
Bitterlin, Otto; and Beffa, Fabio, 4,116,624, Cl. 8-42.00B.
Desai, Nalin Binduprasad; and Ramanathan, Visvanathan, 4,116,965, Cl. 260-294.900.
Dexter, Martin; Knell, Martin; Klemchuk, Peter; and Stephen, John F., 4,116,930, Cl. 260-45.80N.
Fischer, Hanspeter, 4,116,675, Cl. 71-93.000.
Koller, Josef; and Koller, Stefan, 4,116,622, Cl. 8-25.000.
Lehmann, Hans; and Zondler, Helmut, 4,117,038, Cl. 260-837.00R.
Ramey, Chester E.; and Luzzi, John J., 4,116,933, Cl. 260-45.75N.
Rohringer, Peter; Lohmann, Frank; and Wurster, Rudolf F., 4,116,702, Cl. 106-15.0FP.
von der Crone, Jost, 4,116,959, Cl. 544-284.000.
Cimarusti, Christopher M.; Grabowich, Paul; and Varma, Ravi K., to E. R. Squibb & Sons, Inc. D-Homo oxasteroids. 4,116,978, Cl. 260-345.200.
Cincinnati Milacron Inc.: *See—*
Forney, Richard Davidson; Hernandez, Richard Samuel; and Curless, Richard Anderson, 4,116,586, Cl. 417-41.000.
McDonald, David Ian, 4,116,325, Cl. 198-484.000.
Cipriani, Gioacchino; and Neri, Carlo, to Anic, S.p.A. Method for the preparation of carbonic acid monoester salts. 4,116,997, Cl. 260-463.000.
Ciszek, Theodore Frank, to International Business Machines Corporation. Apparatus for pulling crystal ribbons from a truncated wedge shaped die. 4,116,641, Cl. 422-246.000.
Citizen Watch Company Limited: *See—*
Ebihara, Heihachiro; and Sekiya, Fukuo, 4,117,475, Cl. 340-336.000.
Clark, Andrew Greive. Electrical socket. 4,117,310, Cl. 219-451.000.
Clark Equipment Company: *See—*
Duttarer, Ralph M., 4,116,486, Cl. 298-17.00R.
Clark, Norman Owen; and Watson, James Henry Peter, to English Clays Lovering Pochin & Company Limited. Magnetic separation, method and apparatus. 4,116,829, Cl. 210-42.00S.
Clark, Richard Paul: *See—*
Zimmerman, Gary Lee; Clark, Richard Paul; and Rehm, John A., 4,116,520, Cl. 339-59.00R.
Clarke, John A., to U.S. Philips Corporation. Optical viewing device of the periscope type with rotating means for focussing. 4,116,528, Cl. 350-52.000.
Clay, Burton Ross; and Burton, Gardner Thomas, to RCA Corporation. Double modulation holographic recording technique. 4,116,526, Cl. 350-3.670.
Clerk, Ernest Joscelyn. Spray nozzle for atomizing a liquid by directing it against an obstruction and having it mix with air. 4,116,382, Cl. 239-8.000.
Cleveland, William K. S.; Webb, Jimmy L.; and Orlando, Charles M., to General Electric Company. Method for dehydrochlorinating 1,1,1,-trichloro-2,2-bis(4-hydroxyphenyl)ethane and products obtained therefrom. 4,117,018, Cl. 568-726.000.
Clissa, Michael: *See—*
Wodzinski, Dale M.; and Clissa, Michael, 4,117,304, Cl. 219-130.100.
Coates Brothers & Co., Ltd.: *See—*
Hudson, Alan George; and Tawn, Alec Richard Hornsey, 4,117,241, Cl. 560-224.000.
Coberly, Charles W.; and Lewis, Howard A., to Foster, James M. High frequency probe. 4,116,523, Cl. 339-108.0TP.
Coggins, Dolphus L.; and Gumbelevicius, John, to McDonnell Douglas Corporation. Chem-milling of titanium and refractory metals. 4,116,755, Cl. 156-659.000.
Cogley, Robert W., Jr., to Armstrong Cork Company. Method and apparatus for determining the density of dry fibers. 4,116,072, Cl. 73-433.000.
Cohen, Hannah M.: *See—*
Cohen, Norman E.; and Cohen, Hannah M., 4,116,553, Cl. 353-31.000.
Cohen, Marvin P.: *See—*
von Strandtmann, Max; Cohen, Marvin P.; Klutchko, Sylvester; and Shavel, John, Jr., 4,116,971, Cl. 260-308.00D.
Cohen, Norman E.; and Cohen, Hannah M. Display method and apparatus. 4,116,553, Cl. 353-31.000.
Cohen, Richard L.; and Anderson, Richard J., to Bendix Corporation, The. Digital continuous potentiometer servo feedback element. 4,117,386, Cl. 318-664.000.
Coil Sales & Manufacturing Company: *See—*
Charles, Joseph T.; and Ryan, James P., 4,117,264, Cl. 179-1.0PC.
Coispeau, Gerard Emile Edgard; and Pechmeze, Jacques Pierre Edmond, to Produits Chimiques Ugine Kuhlmann. 5-[4-(N-trifluoroethyl-amino)phenylazo]-pyrazolium dyestuffs. 4,116,954, Cl. 260-162.000.
Colbert, Gilbert L.: *See—*
Davis, Edgar D.; and Colbert, Gilbert L., 4,116,816, Cl. 208-209.000.
Coldren, Larry Allen; Glass, Alastair Malcolm; and Lemons, Ross Alan, to Bell Telephone Laboratories, Incorporated. Acoustic wave devices. 4,117,424, Cl. 333-30.00R.
Cole, Herbert S., Jr.: *See—*
Aftergut, Siegfried; and Cole, Herbert S., Jr., 4,116,861, Cl. 252-299.000.
Cole, Leon Jay: *See—*
Morris, Jerry M.; Cole, Leon Jay; and Rawls, Vaughn, 4,116,256, Cl. 157-13.000.
Cole Resdevel Corp.: *See—*
Cole, William, Jr.; and Preis, William R., 4,115,876, Cl. 4-317.000.
Cole, William, Jr.; and Preis, William R., to Cole Resdevel Corp. Self-contained recirculating toilet system. 4,115,876, Cl. 4-317.000.
Coleman, William Martin John: *See—*
Hussey, Dennis Malcolm; and Coleman, William Martin John, 4,117,383, Cl. 318-206.00A.
Coletti, Veronica L.: *See—*
Burghard, Clement E.; and Coletti, Veronica L., 4,117,458, Cl. 340-146.1AL.
Colgate-Palmolive Company: *See—*
Kenkare, Divaker B.; Hall, Robert T., II; and Carson, John C., Jr., 4,116,354, Cl. 220-20.000.
Collins, Brian Stuart: *See—*
Hanna, Kheder Abdul Karim; and Collins, Brian Stuart, 4,117,491, Cl. 343-742.000.
Colten, Jerrold L., to Bristol Products, Inc. Heat sump system for building structures. 4,117,305, Cl. 219-213.000.
Columbia Chase Corporation: *See—*
Berthiaume, Camille, 4,116,610, Cl. 431-4.000.
Combustion Engineering, Inc.: *See—*
Prestridge, Floyd Leon, 4,116,790, Cl. 204-188.000.
Combustion Unlimited Incorporated: *See—*
Straitz, John F., III, 4,116,618, Cl. 431-202.000.
Cominco Ltd.: *See—*
Shimizu, Harry H., 4,116,725, Cl. 148-20.300.
Commercial Decal, Inc.: *See—*
Andrews, Ray, 4,117,182, Cl. 428-201.000.
Commissariat a l'Energie Atomique: *See—*
Berton, Yves; and Chauvet, Pierre, 4,116,863, Cl. 252-301.10W.
Bonnemay, Alain, 4,117,540, Cl. 364-602.000.
Boy Marcotte, Jean-Louis; Chevalier, Georges; Gerij, Janusz; and Leheu, Jacques, 4,116,765, Cl. 176-38.000.
Lansiart, Alain; Morucci, Jean-Pierre; and Seigneur, Alain, 4,117,330, Cl. 250-361.00R.
Communications Satellite Corporation: *See—*
Ali, Mian Zaheer, 4,117,541, Cl. 364-724.000.
Compagnie Francaise de Raffinage: *See—*
Weisang, Joseph Edouard; and Engelhard, Philippe, 4,116,870, Cl. 252-439.000.
Compagnie Francaise des Petroles: *See—*
Walker, Raymond W.; and Beard, Robert M., 4,117,287, Cl. 200-82.00R.
Compagnie International pour l'Informatique Cii-Honeywell Bull (Societe Anonyme): *See—*
Delorme, Raymond Louis; and Grosjean, Henri, 4,116,376, Cl. 228-170.000.
Compair Construction and Mining Limited: *See—*
Barber, Antony Dobson; and Fisher, Zdenek, 4,116,409, Cl. 248-2.000.
Comstedt, Anders Per Philip, to AB Scaniainventor. Apparatus for indicating the loading of an electric AC motor. 4,117,408, Cl. 328-133.000.
Comul Scope Company: *See—*
Wilkenloh, Frederic Nash, 4,117,260, Cl. 174-106.00R.
Conger, William W., IV: *See—*
Johnson, Lawrence E.; Conger, William W., IV; and Moreland, Gerald W., 4,115,878, Cl. 4-172.170.
Conner, Alvin J., Sr. Metal corrosion inhibitor. 4,116,701, Cl. 106-14.140.
Connor, David T.; and von Strandtmann, Maximilian, to Warner-Lambert Company. 4,5-Dihydro-4,5-dioxo-1H-1-benzopyrano (2,3-B)-pyridine-3-carboxylic acids, salts and esters. 4,117,134, Cl. 424-256.000.
Conrow, Ransom Brown; and Bernstein, Seymour, to American Cyanamid Company. Substituted aromatic naphthalene sulfonamides. 4,117,003, Cl. 260-510.000.
Consolidated Foods Corporation: *See—*
Crowder, John V., 4,116,369, Cl. 222-145.000.
Consolidated Natural Gas Service Company: *See—*
Syska, Andrew J., 4,116,611, Cl. 431-353.000.
Constant, James Nickolas. Sidelooking radar and system for identifying objects. 4,117,481, Cl. 343-6.5SS.
Container Corporation of America: *See—*
Bell, Richard L.; Josephs, Patricia A.; and Chidsey, Francis A., Jr., 4,116,378, Cl. 229-87.00F.
Continental Group, Inc., The: *See—*
Josephy, Karl, 4,116,359, Cl. 220-265.000.
Continental Oil Company: *See—*
Bendig, Larry L.; Siemsen, Cathy S.; and Stowell, Donald E., 4,116,882, Cl. 252-448.000.
Bendig, Larry L.; and Scamehorn, John F., 4,117,106, Cl. 423-630.000.
Fair, Delbert W., 4,116,301, Cl. 181-119.000.
Starks, Charles M.; and Lundeen, Allan J., 4,117,243, Cl. 568-744.000.
Yang, Kang; and Scamehorn, John F., 4,117,085, Cl. 423-264.000.

Control Data Corporation: *See—*
Miller, Charles Newell, 4,117,068, Cl. 264-130.000.
Cook, Harold L., Jr.; Geer, Ernest C.; and Katz, Donald L., to Transco Energy Company. Method for increasing the recovery of natural gas from a geo-pressured aquifer. 4,116,276, Cl. 166-314.000.
Cooper, Glenn Dale; and Floryan, Daniel Edwin, to General Electric Company. Intrinsic viscosity control of polyphenylene ether reaction mixtures. 4,116,939, Cl. 528-215.000.
Cooper, Roydon B., to Pall Corporation. Unidirectional flow control valve. 4,116,212, Cl. 137-220.000.
Cooper Tire & Rubber Company: *See—*
Currie, Raymond L., 4,116,744, Cl. 156-352.000.
Cope, Leonard D.: *See—*
Baer, Ralph H.; and Cope, Leonard D., 4,117,511, Cl. 358-83.000.
Coran, Aubert Y.; and Patel, Raman P., to Monsanto Company. Elastoplastic compositions of ethylene-vinyl acetate rubber and polyolefin resin. 4,116,914, Cl. 260-30.60R.
Corban Industries, Inc.: *See—*
Lass, Harold M., 4,116,748, Cl. 156-526.000.
Corella, Arthur P. Reinforcing insert for collapsible packages. 4,115,909, Cl. 229-48.00R.
Corneli, Philip R.: *See—*
Godar, Richard L.; and Corneli, Philip R., 4,116,812, Cl. 208-48.0AA.
Cornelissen, Gerardus Antonius Petrus Maria: *See—*
Jacobs, Cornelis Adrianus Joannes; Driessen, Antonius Jozephus Gerardus Cornelis; and Cornelissen, Gerardus Antonius Petrus Maria, 4,117,370, Cl. 315-35.000.
Cornell, Charles R.: *See—*
Knapp, Kenneth K.; and Cornell, Charles R., 4,116,002, Cl. 60-445.000.
Corning Glass Works: *See—*
Adrion, Robert F.; Buck, Robert T.; and Eppes, William R., 4,117,338, Cl. 250-461.00R.
Boyd, David C.; Flannery, James E.; Morgan, David W.; Rosplock, Sara E.; and Szczerbaniewicz, Stella A., 4,116,704, Cl. 106-54.000.
Elmer, Thomas H., 4,116,657, Cl. 65-23.000.
Ortabasi, Ugur, 4,116,225, Cl. 126-271.000.
Powell, William E.; and Magner, Richard G., 4,116,565, Cl. 356-105.000.
Stempin, John L.; and Wexell, Dale R., 4,116,703, Cl. 106-75.000.
Coron, Noel: *See—*
Leblanc, Jacques; Dambier, Gerard; Coron, Noel; and Moalic, Jean-Pierre, 4,116,063, Cl. 73-355.00R.
Cosack, Claus: *See—*
Hein, Wolfgang; Cosack, Claus; and Grundmann, Peter, 4,116,844, Cl. 210-446.000.
Costanzo Bus Bath, Inc.: *See—*
Costanzo, Dean V., 4,115,896, Cl. 15-301.000.
Costanzo, Dean V., to Costanzo Bus Bath, Inc. Vehicle interior cleaning system. 4,115,896, Cl. 15-301.000.
Couchoud, Paul, to Rhone-Poulenc-Textile. Aromatic polyphenyl phosphonates. 4,117,042, Cl. 260-930.000.
Courvoisier, Guy, to Nuova San Giorgio S.p.A. Doffing device for spinning machines. 4,116,395, Cl. 242-35.50A.
Cousino, Walter F. Metal sawing or milling machine. 4,116,095, Cl. 82-71.000.
Cox, Van R. Earth drills. 4,116,284, Cl. 173-140.000.
Coy, Raymond Walter. Self actuating pendulum system. 4,115,996, Cl. 58-129.000.
Coyne & Bellier, Bureau d'ingenieurs Conseils: *See—*
Guerber, Paul Leon, 4,116,285, Cl. 175-7.000.
Craig, Gregory C., to French Oil Mill Machinery Company, The. Screw vent. 4,117,548, Cl. 366-83.000.
Cramers, Constant M. A.: *See—*
Balg, Theodorus; Cramers, Constant M. A.; and Maessen, Hendrikus J. G., 4,117,000, Cl. 260-465.100.
Crestetto, Giovanni, to ITT Industries, Inc. Automotive vehicle bumper. 4,116,480, Cl. 293-98.000.
Creus, Jose Humet. Pipe coupling. 4,116,473, Cl. 285-5.000.
Crisenbery, Richard T.; and Tinholt, Thomas H., to Eaton Corporation. Fluid flow restriction path in viscous fluid clutch. 4,116,318, Cl. 192-58.00B.
Cronauer, Donald C.; and Kehl, William L., to Gulf Research & Development Company. Process for hydrogenating a solid carbonaceous material with Ni/Ti/Mo on a mangesium-deficient magnesium aluminate spinel-as catalyst. 4,116,808, Cl. 208-10.000.
Crouzet, Henri: *See—*
Bieniok, Joachim; and Crouzet, Henri, 4,115,986, Cl. 57-77.300.
Crowder, John V., to Consolidated Foods Corporation. Apparatus for making frozen confections. 4,116,369, Cl. 222-145.000.
Crowe, Arthur E., Jr. Golf practice sighting device. 4,116,448, Cl. 273-186.00A.
Crowell, Douglas Hodgen: *See—*
Graham, Gordon Judson; Martin, John Frederick; and Crowell, Douglas Hodgen, 4,116,097, Cl. 83-155.000.
Csepel Muvek Hiradastechnikai Gepgyara: *See—*
Laib, Lajos; Komandi, Gyorgy; Polyak, Nandor; and Bolyky, Janos, 4,116,051, Cl. 73-116.000.
Culbertson, Samuel W.; and Polstra, James W., to Binks Manufacturing Company. Dispensing system for low stability fluids. 4,116,364, Cl. 222-40.000.
Cullen, John S.; and Huber, Paul W., to Multiform Desiccant Products, Inc. Self-retaining adsorbent bag unit. 4,116,649, Cl. 55-387.000.
Cummins, Peter Gerald; Sinton, Bernard; and Miller, Michael George, to Redland Claddings Limited. Bonded inorganic and fibrous material building product. 4,117,185, Cl. 428-241.000.
Curless, Richard Anderson: *See—*
Forney, Richard Davidson; Hernandez, Richard Samuel; and Curless, Richard Anderson, 4,116,586, Cl. 417-41.000.
Curley, Edward M.: *See—*
Kaplan, Sheldon; Curley, Edward M.; and Homan, Gerlof, 4,116,196, Cl. 128-272.300.
Curran, John F.: *See—*
Sines, Randy D.; and Curran, John F., 4,116,435, Cl. 209-570.000.
Currey, John E.; McLarty, Colin S.; and Porter, Donald H., to Hooker Chemicals & Plastics Corp. Electrolytic cell with reduced inter-electrode gap. 4,116,800, Cl. 204-252.000.
Currie, Raymond L., to Cooper Tire & Rubber Company. Control apparatus for a tire building machine. 4,116,744, Cl. 156-352.000.
Curro, Thomas R.: *See—*
Leanna, Dale D.; Jorgensen, Allen R.; Curro, Thomas R.; and Bray, Andrew M., 4,116,594, Cl. 425-3.000.
Curry, Byron V.; and Bonkowski, Teofil L. Heat installed multi-pack carrier, machine and method. 4,116,331, Cl. 206-150.000.
Curry, John C.: *See—*
Owen, Ronald C.; and Curry, John C., 4,116,205, Cl. 132-85.000.
Customcolor, Inc.: *See—*
Muller, Bruce M., 4,116,909, Cl. 260-23.70R.
Czerepinski, Ralph G.: *See—*
Garrett, Walter L.; Friedrich, Ralph E.; and Czerepinski, Ralph G., 4,116,896, Cl. 260-17.00R.
Dai Nippon Printing Co., Ltd.: *See—*
Minami, Kazuto; Tsukui, Norihiko; and Imamoto, Tsunehiko, 4,117,181, Cl. 428-138.000.
Dai Nippon Toryo Co. Ltd.: *See—*
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,116,864, Cl. 252-301.60S.
Daido-Maruta Finishing Co., Ltd.: *See—*
Yamamoto, Kazuhide, 4,116,625, Cl. 8-120.000.
Dalbow, Milton H.; Acevedo, Hernan F.; and Slifkin, Malcolm, to International Radioimmune Systems, Inc. Diagnostic blood test and kit for detecting human chorionic gonadotropin. 4,116,776, Cl. 195-103.700.
Dallas County Association for the Blind: *See—*
Ballew, Audrey H., 4,115,895, Cl. 15-229.00R.
Dalzell, Charles J. Solid fuel package with igniter. 4,116,645, Cl. 44-38.000.
Dalzell, Haldean Cloyce: *See—*
Razdan, Raj Kumar; and Dalzell, Haldean Cloyce, 4,116,979, Cl. 260-345.300.
Dambier, Gerard: *See—*
Leblanc, Jacques; Dambier, Gerard; Coron, Noel; and Moalic, Jean-Pierre, 4,116,063, Cl. 73-355.00R.
Danfoss A/S: *See—*
Iversen, Poul Christian Carlos; Thorsoe, Flemming; and Hanson, Borge Bernhard, 4,117,307, Cl. 219-364.000.
Daniels, Peter J. L., to Schering Corporation. Aminoacyl derivatives of aminoglycoside antibiotics. 4,117,221, Cl. 536-17.000.
Darrell, Robert William, to Bigfoot Industries, Inc. Board game apparatus. 4,116,450, Cl. 273-249.000.
Dart Industries Inc.: *See—*
Henke, Fred G.; and Spoeth, Carl R., Jr., 4,117,045, Cl. 261-30.000.
Das, Pankaj K.: *See—*
Tiersten, Harry F.; McDonald, John F.; and Das, Pankaj K., 4,117,074, Cl. 310-320.000.
Data General Corporation: *See—*
Elliott, Alan E., 4,117,470, Cl. 340-324.0AD.
Datanetics Corporation: *See—*
Kim, Kirk J.; and Muller, Michael, 4,117,438, Cl. 336-75.000.
Daubin, Scott C. Compliant underwater pipe system. 4,116,009, Cl. 114-264.000.
Dauvergne, Hector A. Diaphragm activated toilet. 4,115,883, Cl. 4-353.000.
David Brown Tractors Limited: *See—*
Ashfield, Herbert Edward, 4,116,322, Cl. 192-48.800.
David, Samuel: *See—*
Thies, Peter Willibrord; and David, Samuel, 4,117,148, Cl. 424-278.000.
Davidson, Donald H.: *See—*
Hsueh, Limin; Hard, Robert A.; Davidson, Donald H.; and Huff, Ray V., 4,116,488, Cl. 299-4.000.
Davis, Charles E. Water cushion and method of using the same. 4,115,885, Cl. 5-349.000.
Davis, Charles S., to Russo, Leonard, a part interest. Sealing device. 4,116,352, Cl. 215-270.000.
Davis, Delbert A., to Burlington Industries, Inc. Nylon or polyester slip set fabric chemically treated to adhere neoprene, EPDM or butyl film. 4,116,743, Cl. 156-333.000.
Davis, Edgar D.; and Colbert, Gilbert L., to Phillips Petroleum Company. Parallel hydrodesulfurization of naphtha and distillate streams with passage of distillate overhead as reflux to the naphtha distillation zone. 4,116,816, Cl. 208-209.000.
Davis, Gordon Peter, to EMI Limited. Radiation detectors. 4,117,366, Cl. 313-95.000.
Davis, Kenneth G., to Mobil Oil Corporation. Water-based coating composition containing polyvinyl chloride. 4,116,905, Cl. 260-22.0CB.
Davis, Michael, to Airway Industries, Inc. Luggage case. 4,116,311, Cl. 190-49.000.

Davy Powergas GmbH: *See—*
Fechner, Joachim; Fiebig, Siegward; Fischer, Friedrich; Fischer, Herbert; Hellmer, Lars; Riedel, Konrad; Stauffer, Adolf; and Sud, Kuldip, 4,117,101, Cl. 423-569.000.
Hellmer, Lars; Koller, Gerald; Al Muddarris, Ghazi Rashid; and Sud, Kuldip Kumar, 4,117,100, Cl. 423-569.000.

Dayton-Walther Corporation: *See—*
Walther, William D., 4,116,489, Cl. 301-12.00R.

De La Rue Crosfield Limited: *See—*
Winchester, Roy E.; Marjoran, Michael J.; and O'Brien, Roger, 4,116,430, Cl. 271-177.000.

De Staat der Nederlanden, Te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
Ampt, Cornelis Georg Frederik; and Keimpema, Keimpe Klaas, 4,117,315, Cl. 235-88.00R.

DeAngelis, William M., to Allen, Henry; and Garbarini, Charles J., Jr. Chromatographic column. 4,116,836, Cl. 210-198.00C.

Deb, Satyendra K.; Chen, Schoen-nan; Witzke, Horst; Russak, Michael A.; and Reichman, Joseph, to Optel Corporation; and Grumman Aerospace Corporation. Photogalvanic cell having transparent photoactive TiO_2 thin film. 4,117,210, Cl. 429-111.000.

de Bie, Jan Rudolf; Ekkelboom, Tjepke Hendrik; Geytenbeek, Johannes Jacobus Franciscus; van Hoorn, Willem Lodewijk; and Schob, Otmar, to U.S. Philips Corporation. High-pressure discharge lamp. 4,117,367, Cl. 313-352.000.

de Boer, Eeltje, to U.S. Philips Corporation. Color television system for recording line sequential signals with 90° phase shift. 4,117,509, Cl. 358-4.000.

Dec International, Inc.: *See—*
Quee, Jack A., 4,116,756, Cl. 159-45.000.

DeConinck, Wilfried Rene'; and Goret, Jean Louis Ernest Raymond, to U.S. Philips Corporation. Phase-locked loop with switchable loop filter. 4,117,420, Cl. 331-17.000.

Deere & Company: *See—*
Barnes, Theodore Marion; Shindelar, Joseph John; Bass, Merlyn Duane; and Suechting, Henry William, Jr., 4,115,983, Cl. 56-98.000.
Rehn, Gary Allen; and Taube, Robert Otto, 4,116,280, Cl. 172-266.000.

Degiez, Louis: *See—*
Hurzeller, Peter; and Degiez, Louis, 4,117,283, Cl. 200-52.00R.

Degremont: *See—*
Tardivel, Jacques, 4,116,832, Cl. 210-83.000.

De Jong, Herman Lambertus, to U.S. Philips Corporation. Sensor device. 4,116,795, Cl. 204-195.00S.

Dejour, Henri: *See—*
Rambert, Andre; Bousquet, Gilles; and Dejour, Henri, 4,115,875, Cl. 3-1.913.

Del Monte Corporation: *See—*
Taylor, Paul G.; Son, Chung H.; Hom, Martha C.; Williams, L. G.; and Steel, Ronald E., 4,117,176, Cl. 426-660.000.

DeLee, Barry. Clamping device for display structures. 4,115,966, Cl. 52-148.000.

De Lepeleire, Guido Amandus. Counter-current bumped plates heat exchanger. 4,116,271, Cl. 165-166.000.

DELMA, elektro und medizinische Apparatebaugesellschaft m.b.H.: *See—*
Roos, Eberhard, 4,116,198, Cl. 128-303.150.

Delorme, Raymond Louis; and Grosjean, Henri, to Compagnie International pour l'Informatique Cii-Honeywell Bull (Societe Anonyme). Method of mounting integrated circuit chips on a substrate and apparatus for carrying out the method. 4,116,376, Cl. 228-170.000.

DeLuca, Paul V.: *See—*
Gautier, Charles L.; DeLuca, Paul V.; and Atun, Albert, 4,117,273, Cl. 179-98.000.

Demarest, Donald Monroe; and Chandler, Edgar Frank, to General Electric Company. Solid state valve thermal protection for HVDC power converters. 4,117,527, Cl. 361-103.000.

den Hollander, Willem, to RCA Corporation. Transformer arrangement for synchronously switched vertical deflection system. 4,117,380, Cl. 315-393.000.

DeNigris, Ernest Gerard; Girardi, Joseph; and Ruehl, William Edwin, to Illinois Tool Works; and Bell Telephone Laboratories, Incorporated. Terminal bridging assembly. 4,116,524, Cl. 339-113.00R.

Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru; Nishino, Yu; and Kase, Hiroaki, 4,117,523, Cl. 360-110.000.
Shizu, Kazunori, 4,117,432, Cl. 335-210.000.
Yasuhara, Yukihiko, 4,117,516, Cl. 358-248.000.

Denney, Roger W.: *See—*
Nerem, Marvin E.; and Denney, Roger W., 4,116,457, Cl. 280-166.000.

Deno, Norman C., to Fats and Proteins Research Foundation, Inc. Method of hydroxylation. 4,116,987, Cl. 260-410.90R.

DePagter, Glenn H., to Gardner-Denver Company. Drive mechanism for power ratchet wrench. 4,116,093, Cl. 81-57.390.

de Ridder, Adriaan Jan: *See—*
Kuus, Gijsbert; and de Ridder, Adriaan Jan, 4,117,369, Cl. 313-178.000.

Derstadt, Donna M.; and Moeser, Douglas W., to Procter & Gamble Company, The. Anionic surfactant-containing detergent compositions having soil-release properties. 4,116,885, Cl. 252-532.000.

Desai, Nalin Binduprasad; and Ramanathan, Visvanathan, to Ciba-Geigy Corporation. Styryl dyestuffs containing certain amino, cyanopyridine moieties. 4,116,965, Cl. 260-294.900.

DeSantis, Charles M.: *See—*
Arnold, James J., deceased; Campbell, Donn V.; DeSantis, Charles M.; and Schwering, Felix, 4,117,490, Cl. 343-708.000.

Descamps, Marcel; and Goldenberg, Charles, to Labaz. Therapeutic sulfonamides. 4,117,151, Cl. 424-285.000.

De Simone, Renato; Platone, Edoardo; and Morelli, Morello, to Anic, S.p.A. Acetylenic alcohols, their derivatives and process for their production. 4,117,249, Cl. 568-855.000.

DeSoto, Inc.: *See—*
Gatechair, Leslie, 4,116,787, Cl. 204-159.230.
Sekmakas, Kazys; and Shah, Raj, 4,116,901, Cl. 260-19.0UA.

Despatch Industries, Inc.: *See—*
Melgaard, Hans L., 4,116,612, Cl. 431-76.000.

Deutsch, Ralph, to Deutsch Research Laboratories, Ltd. Pulse width modulation in a digital tone synthesizer. 4,116,103, Cl. 84-1.240.

Deutsch Research Laboratories, Ltd.: *See—*
Deutsch, Ralph, 4,116,103, Cl. 84-1.240.

Deutsche Automobilgesellschaft GmbH: *See—*
Plust, Heinz; and Gutmann, Gunter, 4,117,206, Cl. 429-101.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Klenk, Herbert; and Offermanns, Heribert, 4,117,008, Cl. 260-545.00R.

Deutsche Gold-und Silber-Scheideanstalt vormals Roessler: *See—*
Ackermann, Rolf; Felber, Wilfried; and Morlock, Gerhard, 4,117,238, Cl. 560-217.000.
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,117,097, Cl. 423-415.00P.

Deutscher, Fritz; and Leitner, Robert, to Lever Brothers Company. Detergent composition. 4,116,878, Cl. 252-94.000.

Deval Industries, Inc.: *See—*
Atchley, Raymond D.; Barr, John E.; and Pegram, John B., 4,116,348, Cl. 214-309.000.

Devine, Arthur, Jr.: *See—*
Varga, Theodore; Devine, Arthur, Jr.; and Meikle, Warren, 4,116,424, Cl. 269-55.000.

de Vries, Louis, to Chevron Research Company. Lubricating oil composition containing Group I or Group II metal or lead sulfonates. 4,116,873, Cl. 252-33.000.

DeWoskin, Kenneth J., to Beltx Corporation. Drapery pleating tape and its manufacture. 4,117,180, Cl. 428-35.000.

Dexter, Martin; Knell, Martin; Klemchuk, Peter; and Stephen, John F., to Ciba-Geigy Corporation. Pyromellitic dimiides of 3,5-dialkyl-4-hydroxyphenylsubstituted amines. 4,116,930, Cl. 260-45.80N.

Dhingra, Yog R.: *See—*
Bredeweg, Robert A.; and Dhingra, Yog R., 4,117,007, Cl. 260-544.00Y.

Diamond Crystal Salt Company: *See—*
Leverenz, Melvin E., 4,116,640, Cl. 422-264.000.

Diamond, Julius; and Zalipsky, Jerome J., to William H. Rorer, Inc. Amidinoureas. 4,117,165, Cl. 424-322.000.

Diamond Shamrock Corporation: *See—*
Dorio, Martin M.; and Stacey, Alan J., 4,116,781, Cl. 204-98.000.
Peters, Edward J., 4,116,807, Cl. 204-290.00F.

Dickey, George W. Simulated baseball game. 4,116,442, Cl. 273-89.000.

Diebold, James P., to United States of America, Navy. Use of high energy propellant in gas generators. 4,115,999, Cl. 60-219.000.

Dieck, Ronald L.; Garrett, Thomas B.; and Magnusson, Alan B., to Armstrong Cork Company. Catalytic process for the preparation of phosphazene polymers. 4,116,891, Cl. 521-89.000.

Diehl, Robert J.; and Houlgrave, Robert C., to ACF Industries, Incorporated. Limited float seat construction for expanding gate valve. 4,116,419, Cl. 251-196.000.

Di Liddo, Natale, to Instituto Grafico Bertello S.p.A. Automatic filing cabinet retrieval apparatus. 4,116,511, Cl. 312-268.000.

Dillenburg, Helmut; Moser, Wilhelm; and Jones, Robert, to Peroxid-Chemie GmbH. Process for preparing stabilized sodium percarbonate. 4,117,087, Cl. 423-275.000.

Dilworth, Donald C., to Honeywell Inc. Thermal compensation apparatus. 4,116,537, Cl. 350-253.000.

Dimensional Products Limited: *See—*
Nerlich, Gunter, 4,116,533, Cl. 350-135.000.

Dimroth, Peter; Junge, Helmut; Tonne, Peter; and Urtel, Rolf, to BASF Aktiengesellschaft. Azo dyes. 4,116,953, Cl. 260-157.000.

Dines, Jack E., to Jet Research Center, Inc. Method and apparatus for forming internal recesses in a hollow body. 4,116,110, Cl. 90-12.00R.

Dinter, Peter; Kolbe, Andreas; and Guckes, Reinhold, to Hoechst Aktiengesellschaft. Coating device. 4,116,162, Cl. 118-104.000.

Discenza, Walter V., Jr.: *See—*
Boerstler, Leslie H.; Discenza, Walter V., Jr.; Marvin, Mason D.; and Ebersole, Theodore J., 4,117,344, Cl. 290-52.000.

Doane, William M.: *See—*
Fanta, George F.; and Doane, William M., 4,116,899, Cl. 260-17.4GC.

Dobrokhotov, Leonid Vasilievich: *See—*
Cherny, Viktor Yakovlevich; Galperin, Boris Grigorievich; Mikhailov, Mikhail Mikhailovich; Meljukhov, Vladimir Petrovich; and Dobrokhotov, Leonid Vasilievich, 4,116,592, Cl. 417-424.000.

Dobson, John J.: *See—*
Schisselbauer, John C.; and Dobson, John J., 4,117,314, Cl. 235-475.000.

Dr. Adolf Seebach AG: *See—*
Seebach, Adolf, 4,117,132, Cl. 424-253.000.

Dr. Ing. Hans Mueller: *See—*
Meier, Hanspeter, 4,116,842, Cl. 210-330.000.

Doktor, Elek: *See—*
Havas, Jeno; Doktor, Elek; Patko, Marton; and Pungor, Erno, 4,116,796, Cl. 204-195.00M.

Dolidze, Vladimir Romanovich: *See—*
Abramov, Ivan Egorovich; Gershanov, Felix Borisovich; Dolidze, Vladimir Romanovich; Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Popov, Vasily Dmitrievich; Rutman, Grigory Iosifovich; and Shalimova, Zoya Stepanovna, 4,117,244, Cl. 568-799.000.

DOM-Sicherheitstechnik GmbH & Co. KG: *See—*
Wolter, Heinz, 4,116,025, Cl. 70-358.000.

Dombrowski, Theodor; and Wittkopp, Helmut, to Wilhelm Hegenscheidt Gesellschaft mbH. Method and apparatus for centering a wheel set. 4,116,094, Cl. 82-8.000.

Dominguez, Ramon, to Solarex Corporation. Solar panel with mat base member. 4,116,207, Cl. 136-89.00H.

Donkervoort, Dorotheus, to Eerste Nederlandse Fabriek van Manometers BV. Control device for a central heating installation. 4,116,380, Cl. 237-8.00R.

Dooley, Philip G., Jr.; and Oakleaf, Sidney C., to Dynage, Incorporated. Programmable controller with hardwired backup connecting terminals and related control system using programmable controller and hardwired backup. 4,117,317, Cl. 235-307.000.

Doran, Byron L.: *See—*
Becker, Joseph T.; and Doran, Byron L., 4,115,951, Cl. 47-81.000.

Dorentruper Sand- und Thonwerker G.m.b.H.: *See—*
Florian, Rudolf, 4,117,052, Cl. 264-30.000.

Dorfman, Steven R., to L.J.N. Toys, Ltd. Pivoting target array game. 4,116,443, Cl. 273-95.00R.

Dorio, Martin M.; and Stacey, Alan J., to Diamond Shamrock Corporation. Rejuvenation of membrane type chlor-alkali cells by intermittently feeding high purity brines thereto during continued operation of the cell. 4,116,781, Cl. 204-98.000.

Dotson, Donald R.; and Smith, Ronald R. Skateboard ski. 4,116,455, Cl. 280-7.120.

Douglas, Robert H.; Forrester, Edward H.; and Murray, David, to Honeywell Inc. Time-out interface means. 4,117,459, Cl. 340-147.00R.

Dow Chemical Company, The: *See—*
Abdallah, Abdulmuniem H.; and Shea, Philip J., 4,117,146, Cl. 424-273.00R.
Bon, Charles K., 4,116,782, Cl. 204-147.000.
Bredeweg, Robert A.; and Dhingra, Yog R., 4,117,007, Cl. 260-544.00Y.
Erickson, Robert E.; and Krajewski, Richard M., 4,117,184, Cl. 428-224.000.
Garrett, Walter L.; Friedrich, Ralph E.; and Czerepinski, Ralph G., 4,116,896, Cl. 260-17.00R.
Heikel, Henrik R., 4,116,710, Cl. 106-290.000.
Juckniess, Paul R.; and Johnson, David R., 4,116,801, Cl. 204-247.000.
Lee, John M.; and Bauman, William C., 4,116,856, Cl. 252-184.000.
Lee, John M.; and Bauman, William C., 4,116,857, Cl. 252-184.000.
Lee, John M.; and Bauman, William C., 4,116,858, Cl. 252-184.000.
McKendry, Lennon H.; and Bland, Walter P., 4,116,672, Cl. 71-91.000.
Nelson, Donald Louis, 4,117,030, Cl. 260-837.00R.
Parks, Christ F.; and Nimerick, Kenneth H., 4,117,214, Cl. 427-220.000.
Steiner, Edwin C., 4,116,936, Cl. 526-286.000.
Sun, Yun Chung, 4,117,020, Cl. 260-668.00C.

Dow Corning Corporation: *See—*
Elias, Janet L.; Lee, Chi-Long; and Maxson, Myron T., 4,116,919, Cl. 260-37.0SB.
Hahn, James R., 4,117,028, Cl. 260-825.000.

Downing, Neil Hugh: *See—*
Towns, Edward Johnson; and Brown, Edward Morris, 4,116,371, Cl. 222-455.000.

Dragani, James J.; and Wise, David S., to Dragani, James J. Apparatus and method for document microfilming system. 4,116,560, Cl. 355-41.000.

Dragotta, Peter J. Apparatus for conveying objects one by one. 4,116,323, Cl. 198-453.000.

Drake, Charles A., to Phillips Petroleum Company. Pyrolysis of heavies formed in production of unsaturated dinitriles. 4,117,002, Cl. 260-465.80R.

Draxler, Walter E., to Arrow Pneumatic, Inc. Maintenance alarm actuator. 4,116,156, Cl. 116-70.000.

Dreitser, Genrikh Alexandrovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Driessen, Antonius Jozephus Gerardus Cornelis: *See—*
Jacobs, Cornelis Adrianus Joannes; Driessen, Antonius Jozephus Gerardus Cornelis; and Cornelissen, Gerardus Antonius Petrus Maria, 4,117,370, Cl. 315-35.000.

Drori, Moshe, to CAV Limited. Fuel injection pumping apparatus. 4,116,186, Cl. 123-139.0AM.

Drower, Wilfred, to Litecraft Pty. Ltd. Trailer coupling. 4,116,460, Cl. 280-478.00R.

Drukier, Ira: *See—*
Goel, Jitendra; Narayan, Subrahmanyam Yegna; and Drukier, Ira, 4,117,301, Cl. 219-121.0EM.

Ducarre, Michel, to Rhone-Poulenc-Textile. New polyester-amides. 4,116,943, Cl. 528-292.000.

Dudley, Betty J.; and Williams, Joel L., to Becton, Dickinson and Company. Non-thrombogenic articles. 4,116,898, Cl. 260-17.40R.

Dudzik, Chester John, to Leesona Corporation. Voluminous filamentary yarn and method of manufacture. 4,115,990, Cl. 57-140.00R.

Dufort, Jacques L.; and Hermelin, Roger R., to Bureau de Recherches Geologiques et Minieres. Apparatus for the application of polymer films on a support. 4,116,749, Cl. 156-555.000.

Duhl, David N.: *See—*
Gell, Maurice L.; and Duhl, David N., 4,116,723, Cl. 148-3.000.

Dumar, William Lewis, Jr.: *See—*
Blevins, Gerald Glen; Dumar, William Lewis, Jr.; Hansen, Steven Royal; Hixson, Wayne Ellory; and Krezak, John Edward, 4,117,261, Cl. 174-164.000.

Dumont, Claude: *See—*
Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, 4,117,164, Cl. 424-330.000.

Duncan, Anthony Bruce, to HydroTech International, Inc. Method and apparatus for remotely attaching a riser pipe to an offshore structure. 4,116,015, Cl. 405-169.000.

Duncan, Anthony Bruce; and Chin, Arthur H. T., to HydroTech International, Inc. Quick operating connector for pipes or the like. 4,116,471, Cl. 285-1.000.

Dunkl, Franz S.: *See—*
Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, 4,117,531, Cl. 361-433.000.

Dunstan, James M., to Acorn Building Components, Inc. Apparatus for feeding elongated extrusions. 4,116,597, Cl. 425-110.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bigelow, John Howard, 4,116,697, Cl. 96-95.000.
Edwards, Donald William; and Gorondy, Emery John, 4,117,498, Cl. 346-74.100.
Fang, James Chen-Shang, 4,116,890, Cl. 521-28.000.
Gale, David Mark, 4,117,033, Cl. 260-860.000.
Guschl, Randolph Joseph, 4,117,041, Cl. 260-927.00N.
Needes, Christopher Roderick S., 4,116,804, Cl. 204-284.000.
Spolnicki, Jerzy, 4,115,989, Cl. 57-140.0BY.
Stinger, Henry Joseph, 4,117,189, Cl. 428-323.000.
Trehu, Yves Michel, 4,116,654, Cl. 65-3.00C.
Verma, Monica Harish, 4,116,904, Cl. 260-22.00R.

Durda, Stanley J.; and Gustafson, Walter D. Aerator. 4,117,044, Cl. 261-30.000.

Duren, Gottfried: *See—*
Unkelbach, Karl-Heinz; and Duren, Gottfried, 4,116,839, Cl. 210-222.000.

Durham, Harvey E. Fork lift load clamping and stabilizing device. 4,116,349, Cl. 214-654.000.

Durkoppwerke GmbH: *See—*
Nicolay, Karl, 4,116,145, Cl. 112-212.000.

Durling, Robert Edward: *See—*
Gancy, Alan Brian; and Durling, Robert Edward, 4,116,629, Cl. 422-13.000.

Durnell Engineering, Inc.: *See—*
Durnell, Morris S., 4,116,304, Cl. 182-2.000.

Durnell, Morris S., to Durnell Engineering, Inc. Aerial personnel lift including means for automatically controlling the position of the personnel bucket. 4,116,304, Cl. 182-2.000.

Duttarer, Ralph M., to Clark Equipment Company. Retractable rock guard for a dump truck body. 4,116,486, Cl. 298-17.00R.

Dutton, Edward E.; and Gorby, Jack, to Sea-Pac, Inc. Solid pack tuna canning machine. 4,116,600, Cl. 425-296.000.

Dykstra, Jerald P.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 4,116,228, Cl. 128-2.00R.

Dyna Technology, Inc.: *See—*
Roche, Lawrence R., 4,117,388, Cl. 322-25.000.

Dynage, Incorporated: *See—*
Dooley, Philip G., Jr.; and Oakleaf, Sidney C., 4,117,317, Cl. 235-307.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Englander, Fritz; and Amort, Jurgen, 4,116,976, Cl. 260-343.30R.
Petersen, Egon Norbert; and Richtzenhain, Hermann, 4,116,934, Cl. 260-45.75B.

Dynascan Corporation: *See—*
Feldman, Harold, 4,117,400, Cl. 324-158.00T.

E. Merck: *See—*
Hesse, Reiner; Pratzer, Hans; Kieser, Manfred; and Edler, Gerhard, 4,116,628, Cl. 427-154.000.

E. R. Squibb & Sons, Inc.: *See—*
Cimarusti, Christopher M.; Grabowich, Paul; and Varma, Ravi K., 4,116,978, Cl. 260-345.200.
Ondetti, Miguel Angel; and Weisenborn, Frank Lee, 4,116,962, Cl. 260-293.630.

Earle, Michael; and Lenzen, Glenn H., Jr., to Caterpillar Tractor Co. Method for fusibly bonding a coating material to a metal article. 4,117,302, Cl. 219-121.0LM.

Eastfield Corporation: *See—*
Kremer, Carl P., Jr.; and Powers, Mark O., 4,116,387, Cl. 239-338.000.

Eastman Kodak Company: *See—*
Irick, Gether, Jr.; and Kelly, Charles A., 4,116,928, Cl. 260-45.8NZ.
Pond, David Martin, 4,116,929, Cl. 260-45.8NT.
Saxon, Daniel Isaiah; and Leonard, Vernon Leon, 4,115,908, Cl. 28-269.000.

Eaton Corporation: *See—*
Bradshaw, Cyril E., 4,116,182, Cl. 123-119.00A.
Crisenbery, Richard T.; and Tinholt, Thomas H., 4,116,318, Cl. 192-58.00B.
Gehrig, Robert G., 4,116,466, Cl. 280-736.000.
Knapp, Kenneth K.; and Cornell, Charles R., 4,116,002, Cl. 60-445.000.
Leimbach, Richard C., 4,117,281, Cl. 200-61.250.
Pleier, Walter J.; and Wahl, James A., 4,116,296, Cl. 180-101.000.
Streeter, Kenneth R., 4,116,316, Cl. 192-58.00A.
Streeter, Kenneth R., 4,116,317, Cl. 192-58.00B.
Zunkel, Richard L., 4,115,897, Cl. 16-49.000.

Ebata, Hitoshi: *See—*
Kawakami, Hideo; and Ebata, Hitoshi, 4,116,101, Cl. 83-747.000.

Ebersole, Theodore J.: *See—*
Boerstler, Leslie H.; Discenza, Walter V., Jr.; Marvin, Mason D.; and Ebersole, Theodore J., 4,117,344, Cl. 290-52.000.

Ebihara, Heihachiro; and Sekiya, Fukuo, to Citizen Watch Company Limited. Driver circuit for electrochromic display device. 4,117,475, Cl. 340-336.000.

Ecke, George G., to PPG Industries, Inc. Antifungal di(aryl)methyl alkyl sulfones. 4,117,168, Cl. 424-337.000.

Eckert, Rudolf J. A., to Shell Oil Company. Hydrogenated star-shaped polymer. 4,116,917, Cl. 260-33.6AQ.

Ecodyne Corporation: *See—*
Butterworth, Donald James, 4,116,840, Cl. 210-279.000.

Econolite Control Products Inc.: *See—*
Albrecht, Leonard N., 4,117,456, Cl. 340-119.000.

Eda, Yasuko: *See—*
Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, 4,117,126, Cl. 424-246.000.

Edge, Charles K.; and Nier, Thomas J., to PPG Industries, Inc. Submerged dam barriers for selective diversion of molten metal flow in a glass forming chamber. 4,116,661, Cl. 65-182.00R.

Edler, Gerhard: *See—*
Hesse, Reiner; Pratzer, Hans; Kieser, Manfred; and Edler, Gerhard, 4,116,628, Cl. 427-154.000.

Edmonds, James T., Jr.; and Scoggins, Lacey E., to Phillips Petroleum Company. Branched arylene sulfide polymer production. 4,116,947, Cl. 528-388.000.

Edwards, Donald William; and Gorondy, Emery John, to Du Pont de Nemours, E. I., and Company. Magnetic printing process and apparatus. 4,117,498, Cl. 346-74.100.

Edwards, James H., to Millipore Corporation. Filter unit. 4,116,646, Cl. 55-159.000.

Eerste Nederlandse Fabriek van Manometers BV: *See—*
Donkervoort, Dorotheus, 4,116,380, Cl. 237-8.00R.

Eglinton, Robert B.; and Tuell, James S., to Chromalloy American Corporation. Transfer mechanism employing bodily extensible sling structure. 4,116,327, Cl. 198-560.000.

Egyesult Izzolampa es Villamossagi Rt.: *See—*
Horvath, Laszlo; Major, Ferenc; Gaal, Otto; and Lengyel, Sandor, 4,116,328, Cl. 198-648.000.

Ehrlich, Anthony G.: *See—*
Stark, Donald E.; Ehrlich, Anthony G.; and Guillaumin, Bruno, 4,117,529, Cl. 361-182.000.

Ehrlich, Marilyn Carol; and Schafersman, Roy Leonard, to Bell Telephone Laboratories, Incorporated. Service observing terminal. 4,117,278, Cl. 179-175.20C.

Eichelberger, Charles W.: *See—*
Butler, Walter J.; and Eichelberger, Charles W., 4,117,353, Cl. 307-297.000.

Eichelberger, Warren Evan: *See—*
Hillier, Edward Lawrence; Graham, Glen Henry; and Eichelberger, Warren Evan, 4,117,035, Cl. 260-876.00B.

Eicher, Robert L., to General Equipment & Manufacturing Co., Inc. Magnetic proximity device. 4,117,431, Cl. 335-207.000.

Eidt, Scott H., to Texas Alkyls, Inc. Process for the simultaneous manufacture of dimethylaluminum chloride and alkylaluminum chlorides. 4,116,992, Cl. 260-448.00A.

Eilingsfeld, Heinz; Patsch, Manfred; Baur, Karl-Gerhard; and Ruehenbeck, Wolfgang, to BASF Aktiengesellschaft. Manufacture of o-benzyltoluenes. 4,117,019, Cl. 260-649.00R.

Eisai Co., Ltd.: *See—*
Tanaka, Satoru; and Watanabe, Hideaki, 4,117,228, Cl. 544-377.000.

Eisenberg, Melvin I.; Levy, Norman; and Beall, Glenn L., to Plasco, Inc. Combination catheter venting and urine sample collecting unit and method of making the same. 4,116,227, Cl. 128-2.00F.

Ekeborg, Bo Gunnar: *See—*
Hogberg, Lars Gunnar; and Ekeborg, Bo Gunnar, 4,116,249, Cl. 144-3.00D.

Ekkelboom, Tjepke Hendrik: *See—*
de Bie, Jan Rudolf; Ekkelboom, Tjepke Hendrik; Geytenbeek, Johannes Jacobus Franciscus; van Hoorn, Willem Lodewijk; and Schob, Otmar, 4,117,367, Cl. 313-352.000.

Elderbaum, Gilbert J. Medication for herpes simplex and canker sores. 4,117,120, Cl. 424-195.000.

Electric Power Research Institute, Inc.: *See—*
Baumann, Kai J., 4,117,357, Cl. 310-52.00R.
Moore, Curtis L., 4,117,525, Cl. 361-37.000.
Staub, Fred W.; and Morgan, Peter A., 4,115,929, Cl. 34-10.000.
Wycklendt, Daniel A., 4,117,441, Cl. 337-295.000.

Electronic Fuel Saver, Inc.: *See—*
Hayward, Arthur, 4,116,183, Cl. 123-122.00F.

Elevator Industries: *See—*
Alley, Don B., 4,116,306, Cl. 187-29.00R.

Eli Lilly and Company: *See—*
Krumkalns, Eriks V., 4,116,665, Cl. 71-66.000.

Elias, Janet L.; Lee, Chi-Long; and Maxson, Myron T., to Dow Corning Corporation. Treatment of reinforcing silica. 4,116,919, Cl. 260-37.0SB.

Elkem-Spigerverket A/S: *See—*
Krogsrud, Harald, 4,116,830, Cl. 210-63.00R.

Elliott, Alan E., to Data General Corporation. Data bit compression system. 4,117,470, Cl. 340-324.0AD.

Elliott Brothers (London) Limited: *See—*
Lewis, Edward Lloyd, 4,116,655, Cl. 65-4.00B.

Ellis, A. Barry, to Azteca Corn Products Corporation. Combination package and display case. 4,116,330, Cl. 206-44.00R.

Elmer, Thomas H., to Corning Glass Works. Process for increasing the annealing point of 96% silica glass. 4,116,657, Cl. 65-23.000.

Elmore, Claudius C., Jr.: *See—*
Kussy, Frank W.; Elmore, Claudius C., Jr.; and Molesworth, Richard E., 4,117,290, Cl. 200-243.000.

Elrod, David W.: *See—*
Marshall, Vincent P.; Elrod, David W.; Koert, James M.; Reisender, Elizabeth A.; and Wiley, Paul F., 4,116,769, Cl. 195-51.00R.

Emerson Electric Co.: *See—*
Boggs, Alben C.; and Stover, John C., 4,117,308, Cl. 219-365.000.

Emery, Guy Charles. Process for the preparation of a master mixture for a powder composition with a polyvinyl chloride base. 4,116,908, Cl. 260-23.0XA.

EMI Limited: *See—*
Bates, Stephen Ronald, 4,117,336, Cl. 250-445.00T.
Davis, Gordon Peter, 4,117,366, Cl. 313-95.000.

Encoline (Process) Limited: *See—*
Farrow, Harold Frederick; and Rackstraw, Bernard Booth, 4,116,124, Cl. 101-170.000.

Endo, Tetsuhiko: *See—*
Inouye, Yoshinori; Kanamori, Hiromitsu; Tsuchida, Nobuo; Morishita, Syozo; and Endo, Tetsuhiko, 4,116,393, Cl. 242-1.000.

Engelhard, Philippe: *See—*
Weisang, Joseph Edouard; and Engelhard, Philippe, 4,116,870, Cl. 252-439.000.

Engelmann, Heinz: *See—*
Susdorf, Roman; and Engelmann, Heinz, 4,116,091, Cl. 74-801.000.

Engineering Systems Corporation: *See—*
Miller, Albert J., 4,117,462, Cl. 340-539.000.

Englander, Fritz; and Amort, Jurgen, to Dynamit Nobel Aktiengesellschaft. Method of preparing phthalide. 4,116,976, Cl. 260-343.30R.

Englander, Gary E.; Chase, Richard P.; Anderson, Donald P.; and Metcalf, Guy D., to Warner & Swasey Company, The. Method of cylindrical and shoulder grinding. 4,115,958, Cl. 51-289.00R.

Englander, Irvin S.: *See—*
Jepsky, Joseph; Englander, Irvin S.; and Williams, James E., 4,117,482, Cl. 343-7.300.

English Clays Lovering Pochin & Company Limited: *See—*
Clark, Norman Owen; and Watson, James Henry Peter, 4,116,829, Cl. 210-42.00S.
Keat, Gordon Samuel, 4,116,831, Cl. 210-68.000.

Enoguchi, Yuji: *See—*
Tanaka, Susumu; Ogawa, Masaya; Kawabata, Hidetoshi; Fujiwara, Takao; Kurita, Takaji; Enoguchi, Yuji; Wada, Kenichi; and Murasaki, Hiroshi, 4,116,556, Cl. 355-3.0SH.

Enomoto, Hiroshi: *See—*
Murai, Hiromu; Fujita, Yukio; Mori, Tamiki; Enomoto, Hiroshi; and Yoshikuni, Yoshiaki, 4,117,159, Cl. 424-309.000.

Epifanova, Vera Ivanovna: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Eppes, William R.: *See—*
Adrion, Robert F.; Buck, Robert T.; and Eppes, William R., 4,117,338, Cl. 250-461.00R.

Erbacher, John K.: *See—*
Nardi, John C.; Hussey, Charles L.; Erbacher, John K.; King, Lowell A.; and Fannin, Armand A., Jr., 4,117,207, Cl. 429-103.000.

Erickson, Robert E.; and Krajewski, Richard M., to Dow Chemical Company, The. Absorbent films and laminates. 4,117,184, Cl. 428-224.000.

Ericsson, Jan-Eje, to Umea Mekaniska AB. Tree felling unit. 4,116,250, Cl. 144-34.00R.

Ernst Grob: *See—*
Krapfenbauer, Hans; and Grob, Ernst, 4,116,032, Cl. 72-68.000.

Ernst Leitz Wetzlar GmbH: *See—*
Holle, Werner; and Bletz, Walter, 4,117,325, Cl. 250-209.000.

Ervine, Albert W. G., to Remington Arms Company, Inc. Ammunition loading machine. 4,116,109, Cl. 86-23.000.

Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: *See—*
Francke, Erwin, 4,117,324, Cl. 250-202.000.
Sick, Erwin, 4,116,527, Cl. 350-6.700.
Sick, Erwin, 4,116,566, Cl. 356-200.000.

Erwin, Wayne F., to Koppers Company, Inc. Apparatus for texturizing a material. 4,116,248, Cl. 144-2.00R.

Escher Wyss GmbH: *See—*
Lehmann, Rolf; and Christ, Alfred, 4,116,601, Cl. 425-324.100.
Stotz, Wolf-Gunter; and Holik, Herbert, 4,116,763, Cl. 162-301.000.

Eslick, Robert: *See—*
Goering, Kenneth J.; and Eslick, Robert, 4,116,770, Cl. 195-63.000.

ESPE Fabrik Pharmazeutischer Praparate GmbH: *See—*
Schmitt, Werner; Purrmann, Robert; and Jochum, Peter, 4,116,788, Cl. 204-159.230.

Essex Group, Inc.: *See—*
Furtah, Reginald D.; and Gardocki, Gilbert J., 4,116,389, Cl. 239-585.000.
Vogel, Ralph A.; and Kittsmiller, Robert K., 4,116,422, Cl. 266-104.000.

Essilor International (Compagnie Generale d'Optique): *See—*
Wippler, Constant, 4,116,862, Cl. 252-300.000.

Etablissements Maillefer SA: *See—*
Swarbrick, Peter; Green, William John; and Maillefer, Charles, 4,117,195, Cl. 428-379.000.

Esterowitz, Leon: *See—*
Kruer, Melvin R.; Esterowitz, Leon; Bartoli, Filbert J.; and Allen, Roger E., 4,117,329, Cl. 250-338.000.

Etablissement Gelan: *See—*
Fross, Arthur E., 4,116,639, Cl. 422-111.000.

Ethyl Corporation: *See—*
Hornbaker, Edwin D.; Jones, Jesse D.; Kucsma, Michael E.; and Allen, Thomas S., 4,116,922, Cl. 260-40.00R.
Huang, Yun-Yang, 4,116,996, Cl. 260-449.60M.
Malec, Robert E., 4,117,011, Cl. 260-570.50P.

Eto, Goro: *See—*
Ono, Yutaka; Fujii, Yoichi; Yokoyama, Koji; and Igarashi, Toshifumi, 4,117,399, Cl. 324-96.000.

European Atomic Energy Community (Euratom): *See—*
Farfaletti-Casali, Falviano; Peter, Friedrich G.; and Gritzmann, Peter G., 4,116,264, Cl. 165-47.000.

Evans, E. Robert: *See—*
Bluestein, Ben Alfred; and Evans, E. Robert, 4,116,993, Cl. 260-448.20E.

Evans, Ralph S. Multi-position focusing apparatus. 4,116,539, Cl. 350-292.000.

Evans, Willie V., to ACF Industries, Incorporated. Rotatable visual indicator for safety systems. 4,116,157, Cl. 116-125.000.

Evert, Donald A.; and Nies, Charles W., deceased (by Nies, Carolyn J., executrix), to Honeywell Inc. Dual reel hub. 4,116,401, Cl. 242-68.300.

EVG Entwicklungs-u. Verwertungs- GmbH: *See—*
Ritter, Josef; Sackl, Alois; Ritter, Klaus; and Ritter, Gerhard, 4,116,244, Cl. 140-112.000.

Ewards, Gunnar, to AB Welin. Ship's embarkation device for E.G. pilots. 4,115,887, Cl. 9-1.600.

Ewen, Sol J. Ultrasonic oxygenation instrument. 4,116,239, Cl. 128-184.000.

Ewert, Russ J., to Canadian Foremost Ltd. Outrigger. 4,116,467, Cl. 280-764.000.

Exxon Production Research Company: *See—*
Butler, Roger Moore; Bombardieri, Caurino Cesar; and Slevinsky, Bruce Alexander, 4,116,275, Cl. 166-303.000.
Stone, Jacob E., 4,116,300, Cl. 181-114.000.

Exxon Research & Engineering Co.: *See—*
Bellows, Richard James, 4,117,079, Cl. 423-223.000.
Brois, Stanley J.; Gutierrez, Antonio; and Winans, Esther D., 4,116,876, Cl. 252-49.600.
Maas, Edward T., Jr., 4,117,083, Cl. 423-253.000.
Maas, Edward T., Jr., 4,117,084, Cl. 423-253.000.
O'Farrell, Charles P.; Malloy, Paul L.; and Thompson, Francis M., 4,117,186, Cl. 428-265.000.
Outten, Edward Francis; Ryer, Jack; and Williams, John E., 4,116,877, Cl. 252-72.000.
Rosensweig, Ronald E., 4,115,927, Cl. 34-1.000.
Ryer, Jack; Brois, Stanley J.; and Winans, Esther D., 4,116,643, Cl. 44-63.000.
Tsien, Hsue C.; and Venero, Agustin F., 4,117,065, Cl. 264-105.000.
Vannice, M. Albert; and Garten, Robert L., 4,116,994, Cl. 260-449.00R.
Whitney, Thomas A.; and Klemann, Lawrence P., 4,117,213, Cl. 429-194.000.

Ezura, Sakae: *See—*
Hayakawa, Hiroshi; and Ezura, Sakae, 4,116,255, Cl. 152-352.00R.

Fabian, Wolfgang; Kopineck, Hermann-Josef; and Tappe, Wilhelm, to Hoesch Werke AG. Device for measuring the flatness of metal strips. 4,116,029, Cl. 72-34.000.

Fabry, Lloyd W.; and Brame, Thomas Vinton, to Aeroflash Signal Corporation. Strobe light system for school buses. 4,117,454, Cl. 340-81.00F.

Fahrni, Peter: *See—*
Torelli, Aldo; and Prinz, Erwin, 4,116,163, Cl. 118-303.000.

Fair, Delbert W., to Continental Oil Company. Rotary air modulator. 4,116,301, Cl. 181-119.000.

Fairchild Camera and Instrument Corporation: *See—*
Krupp, David M.; and Hood, Robert B., 4,116,169, Cl. 123-32.0EC.

Fairey Winches Limited: *See—*
Quilliam, Douglas John, 4,116,320, Cl. 192-89.00A.

Falk, Richard A. Molten metal sampler with refractory mold halves. 4,116,070, Cl. 73-425.40R.

Fancher, Llewellyn W.; and Robbins, Jeffrey D., to Stauffer Chemical Company. Process for the manufacture of N-(beta-diorganodithiophosphorylethyl) aryl and alkyl sulfonamides. 4,117,043, Cl. 260-938.000.

Fang, James Chen-Shang, to Du Pont de Nemours, E. I., and Company. Phosphonated fluorotelomers. 4,116,890, Cl. 521-28.000.

Fannin, Armand A., Jr.: *See—*
Nardi, John C.; Hussey, Charles L.; Erbacher, John K.; King, Lowell A.; and Fannin, Armand A., Jr., 4,117,207, Cl. 429-103.000.

Fansteel Inc.: *See—*
Keifert, Hibbard G., 4,117,201, Cl. 428-591.000.

Fanta, George F.; and Doane, William M., to United States of America, Agriculture. Increasing absorbency of polymeric compositions by curing. 4,116,899, Cl. 260-17.4GC.

Farfaletti-Casali, Falviano; Peter, Friedrich G.; and Gritzmann, Peter G., to European Atomic Energy Community (Euratom). Nuclear reactors. 4,116,264, Cl. 165-47.000.

Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, to Philagro. Herbicidal and phytohormonal amidoximes. 4,116,974, Cl. 260-332.20A.

Farrow, Harold Frederick; and Rackstraw, Bernard Booth, to Encoline (Process) Limited. Two-sided simultaneous printing method. 4,116,124, Cl. 101-170.000.

Fats and Proteins Research Foundation, Inc.: *See—*
Deno, Norman C., 4,116,987, Cl. 260-410.90R.

Feaster, Donavon L., to Sonitronic, Inc. Miniature switches. 4,117,280, Cl. 200-6.00B.

Fechner, Joachim; Fiebig, Siegward; Fischer, Friedrich; Fischer, Herbert; Hellmer, Lars; Riedel, Konrad; Stauffer, Adolf; and Sud, Kuldip, to Davy Powergas GmbH. Process for reduction of SO_2. 4,117,101, Cl. 423-569.000.

Feed Recycling Co.: *See—*
Senior, Franklin C., 4,117,175, Cl. 426-657.000.

Feeney, John J. Stabilized pylon and model aircraft system. 4,116,432, Cl. 272-31.00A.

Feenstra, Robijn, to Shell Oil Company. Rotary bit with ridges. 4,116,289, Cl. 175-329.000.

Felber, Wilfried: *See—*
Ackermann, Rolf; Felber, Wilfried; and Morlock, Gerhard, 4,117,238, Cl. 560-217.000.

Feldman, Harold, to Dynascan Corporation. Circuit for testing transistors or the like. 4,117,400, Cl. 324-158.00T.

Feldstein, George: *See—*
Smith, Robert E.; Chytil, Frank S.; Feldstein, George; and Swartz, Dorman J., 4,116,394, Cl. 242-25.00R.

Felton, John Robert; and Gutow, Russell S., Jr., to Varian Associates, Inc. Circuit for linearizing the response of an electron capture detector. 4,117,332, Cl. 250-374.000.

Ferrero Nahrungs-und Genussmittel GmbH: *See—*
Allasia, Alberto, 4,116,350, Cl. 215-31.000.

Fiat-Allis Construction Machinery, Inc.: *See—*
Koch, George Paul, 4,116,214, Cl. 137-522.000.

Fiebig, Siegward: *See—*
Fechner, Joachim; Fiebig, Siegward; Fischer, Friedrich; Fischer, Herbert; Hellmer, Lars; Riedel, Konrad; Stauffer, Adolf; and Sud, Kuldip, 4,117,101, Cl. 423-569.000.

Fields, Joseph E.; and Johnson, John H., to Monsanto Company. Method for lowering blood cholesterol level. 4,117,111, Cl. 424-78.000.

Figaro Giken Co., Ltd.: *See—*
Matsuyama, Akira, 4,117,082, Cl. 423-247.000.

Fike, Louis T.; and Green, Kenneth A., to Ohio Machine Company, Inc. Tire mold apparatus. 4,116,595, Cl. 425-17.000.

Filin, Nikolai Prokopievich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Fine-Line, Inc.: *See—*
Topel, Kenneth D., 4,116,194, Cl. 124-87.000.

Finkelstein, Manuel: *See—*
Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, 4,117,531, Cl. 361-433.000.
Finlayson, Claude Malcolm, to N L Industries, Inc. Organophilic clay gellant. 4,116,866, Cl. 252-316.000.
Firestone Tire & Rubber Company, The: *See—*
Cheng, Tai Chun, 4,116,785, Cl. 204-159.140.
Firth, Francis G., to Applied Plastics Co., Inc. Method of packaging mutually reactive substances. 4,116,742, Cl. 156-289.000.
Fischer, Friedrich: *See—*
Fechner, Joachim; Fiebig, Siegward; Fischer, Friedrich; Fischer, Herbert; Hellmer, Lars; Riedel, Konrad; Stauffer, Adolf; and Sud, Kuldip, 4,117,101, Cl. 423-569.000.
Fischer, Hanspeter, to Ciba-Geigy Corporation. Pyridinium-s-triazines for regulating plant growth. 4,116,675, Cl. 71-93.000.
Fischer, Herbert: *See—*
Fechner, Joachim; Fiebig, Siegward; Fischer, Friedrich; Fischer, Herbert; Hellmer, Lars; Riedel, Konrad; Stauffer, Adolf; and Sud, Kuldip, 4,117,101, Cl. 423-569.000.
Fischer, Manfred: *See—*
Macenka, Johannes; Fischer, Manfred; and Gohlke, Fritz Joachim, 4,117,031, Cl. 260-838.000.
Fischer & Porter Co.: *See—*
Herzl, Peter J.; and Strohmeier, Warren, 4,116,058, Cl. 73-194.0VS.
Herzl, Peter J., 4,116,059, Cl. 73-194.0VS.
Roop, Robert; and Shine, Carl, 4,116,016, Cl. 62-52.000.
Fischer, Roman, to BASF Aktiengesellschaft. Manufacture of amidosulfonic acids. 4,117,004, Cl. 260-513.600.
Fisher, Charles B.: *See—*
Fisher, Sidney T.; and Fisher, Charles B., 4,116,273, Cl. 166-248.000.
Fisher, Frederick H.; and Anderson, Victor C., to United States of America, Navy. Elastic electrically-conductive strain cable. 4,116,153, Cl. 114-244.000.
Fisher, Sidney T.; and Fisher, Charles B. Induction heating of coal in situ. 4,116,273, Cl. 166-248.000.
Fisher, Zdenek: *See—*
Barber, Antony Dobson; and Fisher, Zdenek, 4,116,409, Cl. 248-2.000.
Fishman, Avraham. Spoon-shaped spring scale. 4,116,290, Cl. 177-149.000.
Fizichesky Institut Imeni P.N. Lebedeva Akademii Nauk SSSR: *See—*
Alexandrov, Vladimir Ilich; Osiko, Vyacheslav Vasilievich; Tatarintsev, Vladimir Mikhailovich; and Udovenchik, Viktor Timofeevich, 4,116,598, Cl. 425-174.80R.
Flanagan, Kirby E. L., to McCord Corporation. Impact energy-absorbing urethane foam. 4,116,893, Cl. 521-137.000.
Flannery, James E.: *See—*
Boyd, David C.; Flannery, James E.; Morgan, David W.; Rosplock, Sara E.; and Sczerbaniewicz, Stella A., 4,116,704, Cl. 106-54.000.
Fleischer, Helmut, to Robert Bosch GmbH. Temperature independent trigger pulse analysis circuit. 4,117,355, Cl. 307-310.000.
Flesch, Udo: *See—*
Schoknecht, Gunter; and Flesch, Udo, 4,116,040, Cl. 73-1.00R.
Flick, Carl, to Westinghouse Electric Corp. Combined electrical and coolant distribution system for dynamoelectric machines having internally cooled stator windings. 4,117,358, Cl. 310-59.000.
Flint, Orin Q. Key settable, pick proof lock. 4,116,026, Cl. 70-383.000.
Florian, Rudolf, to Dorentruper Sand- und Thonwerker G.m.b.H. Method and arrangement for use in lining articles, particularly melting oven. 4,117,052, Cl. 264-30.000.
Floryan, Daniel Edwin: *See—*
Cooper, Glenn Dale; and Floryan, Daniel Edwin, 4,116,939, Cl. 528-215.000.
Fluck, Jakob, to Rieter Machine Works, Ltd. Yarn traversing apparatus. 4,116,396, Cl. 242-43.00R.
Fluorocarbon Company, The: *See—*
Laurizio, Daniel V., 4,116,499, Cl. 308-3.00R.
FMC Corporation: *See—*
Garrett, Michael R., 4,116,044, Cl. 73-40.50R.
Rowe, Jerry, 4,116,421, Cl. 266-45.000.
Folland Enertec Ltd.: *See—*
Folland, Roy E.; and Millar, Richard C., 4,117,550, Cl. 366-136.000.
Folland, Roy E.; and Millar, Richard C., to Folland Enertec Ltd. Emulsifying system. 4,117,550, Cl. 366-136.000.
Forbes, Gerald. Thought dynamics game. 4,116,445, Cl. 273-161.000.
Ford, James A., to Kirsch Company. Double drapery carrier. 4,115,899, Cl. 16-87.40R.
Ford, Michael J.; and Gardner, Prescott Elliott, to Canadian International Paper Co. Method of producing high yield chemimechanical pulps. 4,116,758, Cl. 162-28.000.
Ford Motor Company: *See—*
Ludwig, Frank A., 4,117,208, Cl. 429-104.000.
Foreman, Luther M.; Heck, Samuel C.; and Wall, Bill R., to National Electric Corporation. Power regulator. 4,117,445, Cl. 338-198.000.
Formica Corporation: *See—*
Power, George Edward; and Bolling, Donald Louis, 4,117,198, Cl. 428-452.000.
Forney, Richard Davidson; Hernandez, Richard Samuel; and Curless, Richard Anderson, to Cincinnati Milacron Inc. Constant fluid level control for machine reservoir. 4,116,586, Cl. 417-41.000.
Forrester, Edward H.: *See—*
Douglas, Robert H.; Forrester, Edward H.; and Murray, David, 4,117,459, Cl. 340-147.00R.
Forster, Friedrich M. O.; and Kalisch, Alfons, to Institut Dr. Friedrich Forster, Prufgeratebau. Single magnetic stray field sensor whose signals are differently attenuated in two channels and then compared. 4,117,403, Cl. 324-240.000.
Forster, Karl-Heinz; and Lein, Werner, to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Control system for positioning units exhibiting dead time in their response to activating signals. 4,116,125, Cl. 101-212.000.
Foster, Clark Berg: *See—*
Chavarria, Robert James; and Foster, Clark Berg, 4,116,439, Cl. 273-59.00A.
Foster, Howard E. Well drilling assembly and method. 4,116,287, Cl. 175-65.000.
Foster, James M.: *See—*
Coberly, Charles W.; and Lewis, Howard A., 4,116,523, Cl. 339-108.0TP.
Foster, Robert Dean; Maliszewski, Thomas Arthur; Sims, Joseph Alton, Jr.; and Taylor, Glenn Alfred, to Union Carbide Corporation. Continuous process for producing alkylene glycols from alkylene carbonates. 4,117,250, Cl. 568-858.000.
Foster Wheeler Energy Corporation: *See—*
Gorzegno, Walter P.; and Garcia-Mallol, Juan Antonio, 4,116,168, Cl. 122-406.00S.
Trozzi, Norman Kenneth, 4,116,388, Cl. 239-406.000.
Fox, Roland Thomas Victor: *See—*
Shephard, Margaret Claire; and Fox, Roland Thomas Victor, 4,117,147, Cl. 424-274.000.
Fozzard, George B., to Phillips Petroleum Company. Pyrolysis of heavies formed in production of unsaturated dinitriles. 4,117,001, Cl. 260-465.80R.
Fozzard, George B., to Phillips Petroleum Company. Suppression of side reactions in catalytic hydrogenation of diesters. 4,117,242, Cl. 560-263.000.
Francke, Erwin, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Curve follower device. 4,117,324, Cl. 250-202.000.
Franco, Harold D., to GTE Automatic Electric Laboratories Incorporated. Chassis formed of sheet stock. 4,116,510, Cl. 312-257.0SK.
Francoeur, Raynald: *See—*
Perrault, Guy; Francoeur, Raynald; and Lavertu, Roger, 4,116,734, Cl. 149-19.200.
Franke, Kurt, to Siemens Aktiengesellschaft. X-ray diagnostic generator for the purpose of fluoroscopy and photography. 4,117,335, Cl. 250-402.000.
Frankenfeld, Klaus: *See—*
Beltz, Klaus; and Frankenfeld, Klaus, 4,117,092, Cl. 423-321.00S.
Franz, John E.: *See—*
Brannigan, Lawrence H.; Franz, John E.; and Howe, Robert K., 4,116,673, Cl. 71-92.000.
Franzen, Raymond E., to Medalie Manufacturing Co. Beverage dispenser. 4,116,246, Cl. 141-362.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, to Gulf Research & Development Company. Hydrodesulfurization process employing a promoted catalyst. 4,116,817, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, to Gulf Research & Development Company. Multi-reactor hydrodesulfurization process. 4,116,818, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, to Gulf Research & Development Company. Hydrodesulfurization process including product recycle. 4,116,819, Cl. 208-216.000.
Frazita, Richard F., to Hazeltine Corporation. Antenna coupling network with element pattern shift. 4,117,494, Cl. 343-844.000.
Frechet, Daniel: *See—*
Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, 4,117,164, Cl. 424-330.000.
Frederick, Gary L., to Garrett Corporation, The. Mass flow sensor and method. 4,116,060, Cl. 73-194.0VS.
Freedman, Jules, to Richardson-Merrell Inc. 11-Aminoalkylmorphanthridin-11-ols. 4,117,122, Cl. 424-244.000.
Freeman, Peter Frank Hilary: *See—*
Barlow, Charles Brian; and Freeman, Peter Frank Hilary, 4,117,167, Cl. 424-330.000.
Freer, William Gordon; Pincherle, Hugh Andrew; and Moore, William Thomas, to Rank Organisation Limited, The. Liquid crystal displays. 4,117,472, Cl. 340-324.00M.
French, Harlan S., to American Can Company. Safety door edge. 4,115,952, Cl. 49-26.000.
French Oil Mill Machinery Company, The: *See—*
Craig, Gregory C., 4,117,548, Cl. 366-83.000.
Frentzel, Kurt Heinz, to Hunter Douglas International N.V. Support device for vertical slats of a slatted blind. 4,115,898, Cl. 16-87.00R.
Frenz, Norbert W., Jr.: *See—*
Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, 4,117,212, Cl. 429-153.000.
Frey, Jeffrey: *See—*
Kamei, Kiyoo; Ikoma, Toshiaki; Tokuda, Hirokuni; and Frey, Jeffrey, 4,116,722, Cl. 148-1.500.
Fridinger, Tomas L.; Moore, George G. I.; and Lappi, Larry R., to Minnesota Mining and Manufacturing Company. 4-Methylthio-2-trifluoromethylmethane-sulfonanilide and derivatives thereof. 4,116,676, Cl. 71-103.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Hirschfeld, Dieter; and Muller, Manfred, 4,116,724, Cl. 148-3.000.
Friedrich, Ralph E.: *See—*
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Fross, Arthur E., to Etablissement Gelan. Method and apparatus for the production of carbon black from liquid or gaseous hydrocarbons. 4,116,639, Cl. 422-111.000.
Frush, John P.: *See—*
Sporri, Max, 4,115,889, Cl. 15-21.00R.
Fuchs, Lothar U. Fastening. 4,116,573, Cl. 403-264.000.
Fuhr, Arlan W.; and Lee, Warren C. Chiropractic adjusting instrument. 4,116,235, Cl. 128-69.000.
Fuji Chemical Industry Company Limited: *See—*
Kameyama, Tsutomu; Yoshina, Shigetaka, deceased; and Yoshina, Yoshina, heir at law, 4,116,972, Cl. 260-326.100.
Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; Suzuki, Osamu; and Fujiyama, Masaaki, 4,117,190, Cl. 428-325.000.
Kondo, Toshihiro, 4,117,500, Cl. 354-23.00D.
Miyahara, Junji; and Kato, Hisatoyo, 4,116,911, Cl. 260-28.50A.
Mori, Teruo; and Ohashi, Azusa, 4,116,695, Cl. 96-86.00P.
Moriya, Ikuro; and Tsuruta, Masao, 4,115,913, Cl. 29-450.000.
Tatsuta, Sumitaka; Hirose, Masuhiko; and Amari, Hiroshi, 4,116,696, Cl. 96-87.00R.
Fuji Xerox Co., Ltd.: *See—*
Shintani, Takamasa; and Nagasawa, Koyo, 4,117,517, Cl. 358-260.000.
Fuji, Yoichi: *See—*
Ono, Yutaka; Fujii, Yoichi; Yokoyama, Koji; and Igarashi, Toshifumi, 4,117,399, Cl. 324-96.000.
Fujii, Yoichi: *See—*
Ono, Yutaka; Fujii, Yoichi; Yokoyama, Koji; and Igarashi, Toshifumi, 4,117,399, Cl. 324-96.000.
Fujiki, Norio, to Nissan Motor Company, Limited. Noise-immune signal processing circuit for pulsed radars. 4,117,483, Cl. 343-8.000.
Fujimori, Ryo: *See—*
Morokuma, Tadashi; and Fujimori, Ryo, 4,116,559, Cl. 355-28.000.
Fujita, Yoshishige; Asagao, Soichi; and Ogura, Motoshige, to Central Glass Company, Limited. Process for preparing sodium ammonium hydrogen-phosphate and ammonium chloride from wet process phosphoric acid. 4,117,089, Cl. 423-306.000.
Fujita, Yukio: *See—*
Murai, Hiromu; Fujita, Yukio; Mori, Tamiki; Enomoto, Hiroshi; and Yoshikuni, Yoshiaki, 4,117,159, Cl. 424-309.000.
Fujiwara, Takao: *See—*
Tanaka, Susumu; Ogawa, Masaya; Kawabata, Hidetoshi; Fujiwara, Takao; Kurita, Takaji; Enoguchi, Yuji; Wada, Kenichi; and Murasaki, Hiroshi, 4,116,556, Cl. 355-3.0SH.
Fujiyama, Masaaki: *See—*
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Fukai, Kiyoshi: *See—*
Matsumoto, Seiji; and Fukai, Kiyoshi, 4,116,752, Cl. 156-624.000.
Fukao, Isao; and Monma, Kimio, to Nihon Seimitsu Keisoku. Non-destructive insulation test apparatus. 4,117,397, Cl. 324-54.000.
Fukuda, Kenji: *See—*
Tatsumoto, Katsunobu; and Fukuda, Kenji, 4,117,098, Cl. 423-448.000.
Fukui, Kiyozumi, to Teijin Seiki Company Limitejd. Driving mechanism. 4,116,293, Cl. 180-43.00B.
Fukuura, Yukio: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; and Suzuki, Yoshikatsu, 4,117,036, Cl. 260-878.00R.
Furtah, Reginald D.; and Gardocki, Gilbert J., to Essex Group, Inc. Electromagnetic fuel injection valve. 4,116,389, Cl. 239-585.000.
Furuno Electric Co., Ltd.: *See—*
Minohara, Kiyomi; and Sugiyama, Akira, 4,117,487, Cl. 343-100.0SA.
Futhey, John A. Individualized teaching system utilizing electrical continuity. 4,115,931, Cl. 35-9.00C.
G.D. Searle & Co.: *See—*
Adelstein, Gilbert W., 4,116,963, Cl. 260-293.690.
Hill, John B., 4,117,225, Cl. 542-425.000.
Gaal, Otto: *See—*
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Gabetta, Bruno: *See—*
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Gadaev, Anatoly Yakovlevich: *See—*
Oborin, Pavel Alexandrovich; Gadaev, Anatoly Yakovlevich; Bikbau, Marsel Yanovich; Nudelman, Boris Izrailovich; Aronova, Irina Zelmanovna; Bulatov, Nail Yakubovich; and Sosenko, Lev Matveevich, 4,116,707, Cl. 106-104.000.
GAF Corporation: *See—*
Barabas, Eugene S., 4,116,913, Cl. 260-29.60E.
Brachman, Armand E.; Khattab, Ghazi; and Smolin, Edwin M., 4,116,925, Cl. 260-42.180.
Prater, J. Lewis; and Hedworth, Robert L., 4,117,248, Cl. 568-855.000.
Schneider, Louis; and Graham, David E., 4,117,006, Cl. 260-544.00D.
Schneider, Louis; and Graham, David E., 4,117,009, Cl. 260-553.00E.
Schneider, Louis; and Graham, David E., 4,117,162, Cl. 424-320.000.
Schneider, Louis; and Graham, David E., 4,117,163, Cl. 424-320.000.
Gale, David Mark, to Du Pont de Nemours, E. I., and Company. Polyoxymethylene/copolyether-ester blends. 4,117,033, Cl. 260-860.000.
Gallo-Torres, Hugo; Hamilton, James Guthrie; and Sullivan, Ann Clare, to Hoffmann-La Roche Inc. Method of increasing bile flow and decreasing lipid levels. 4,117,121, Cl. 424-238.000.
Galperin, Boris Grigorievich: *See—*
Cherny, Viktor Yakovlevich; Galperin, Boris Grigorievich; Mikhailov, Mikhail Mikhailovich; Meljukhov, Vladimir Petrovich; and Dobrokhotov, Leonid Vasilievich, 4,116,592, Cl. 417-424.000.
Galvin, Aaron A.; Shapiro, L. Dennis; and Skov, Valdemar, to American District Telegraph Company. Multi-mode intrusion alarm system. 4,117,479, Cl. 340-502.000.
Gancy, Alan Brian; and Durling, Robert Edward, to Allied Chemical Corporation. Corrosion inhibition of stainless steel exposed to hot carbonates. 4,116,629, Cl. 422-13.000.
Gannet Holdings Limited: *See—*
Maclaren, Owen F., 4,116,465, Cl. 280-647.000.
Gansser, Robert E.: *See—*
Otrhalek, Joseph V.; Gomes, Gilbert S.; and Gansser, Robert E., 4,116,713, Cl. 134-3.000.
Ganssle, Eugene Robert; Scott, Ralph Richard; and Williams, Richard Jean, to RCA Corporation. Mounting structure. 4,116,263, Cl. 165-27.000.
Garbarini, Charles J., Jr.: *See—*
DeAngelis, William M., 4,116,836, Cl. 210-198.00C.
Garcia-Mallol, Juan Antonio: *See—*
Gorzegno, Walter P.; and Garcia-Mallol, Juan Antonio, 4,116,168, Cl. 122-406.00S.
Garden, Barrie Franklin. Safety container having vent means. 4,116,329, Cl. 206-1.500.
Gardiner, Frank J. Porous felt web conditioning system. 4,116,762, Cl. 162-199.000.
Gardner-Denver Company: *See—*
DePagter, Glenn H., 4,116,093, Cl. 81-57.390.
Gardner, Prescott Elliott: *See—*
Ford, Michael J.; and Gardner, Prescott Elliott, 4,116,758, Cl. 162-28.000.
Gardocki, Gilbert J.: *See—*
Furtah, Reginald D.; and Gardocki, Gilbert J., 4,116,389, Cl. 239-585.000.
Garello, David J., to Northwestern Equipment and Supply Co. Cylinder carrying strap. 4,116,374, Cl. 224-55.000.
Garner, Herman H., to Vortox Company. Air cleaner. 4,116,647, Cl. 55-223.000.
Garnett-Bywater Limited: *See—*
Barber, Norman B., 4,115,903, Cl. 19-99.000.
Garofano, Norman R.; and Bitney, Ronald G., to Allied Chemical Corporation. Solar evaporation of alkaline trona-process waste pond liquors with acid black 2 and acid green 1. 4,116,757, Cl. 159-47.0WL.
Garrett Corporation, The: *See—*
Frederick, Gary L., 4,116,060, Cl. 73-194.0VS.
Garrett, David W.: *See—*
Charter, Kenneth F.; Miller, John R.; and Garrett, David W., 4,117,067, Cl. 264-119.000.
Garrett, Michael R., to FMC Corporation. Packoff leak detector. 4,116,044, Cl. 73-40.50R.
Garrett, Thomas B.: *See—*
Dieck, Ronald L.; Garrett, Thomas B.; and Magnusson, Alan B., 4,116,891, Cl. 521-89.000.
Garrett, Walter L.; Friedrich, Ralph E.; and Czerepinski, Ralph G., to Dow Chemical Company, The. Fountain compositions for use in lithographic printing comprising aqueous solutions of polyacrylamide based polymers and blends of polyacrylamide and polyacrylic acid with an organic chelating agent. 4,116,896, Cl. 260-17.00R.
Garten, Robert L.: *See—*
Vannice, M. Albert; and Garten, Robert L., 4,116,994, Cl. 260-449.00R.
Gatechair, Leslie, to DeSoto, Inc. Curable aqueous emulsions containing ethylenically unsaturated tertiary amines. 4,116,787, Cl. 204-159.230.
Gates, Allen Peter; and Saunderson, Allan, to Vickers Limited. Light sensitive materials. 4,117,039, Cl. 260-875.000.
Gates Rubber Company, The: *See—*
Sjogren, Axel O., 4,117,203, Cl. 429-7.000.
Gattner, Hans; and Ribka, Joachim, to Cassella Farbwerke Mainkur Aktiengesellschaft. Melamine resin and dye mixtures. 4,116,918, Cl. 260-37.00P.
Gattner, Hans; Spietschka, Ernst; and Troster, Helmut, to Hoechst Aktiengesellschaft. Dyed polyesters, process for their preparation and their use for the dyeing of plastics. 4,116,923, Cl. 528-220.000.
Gau, Wolfgang: *See—*
Schiweck, Hubert; Steinle, Georg; Muller, Lutz; Gau, Wolfgang; and Munir, Mohammad, 4,117,173, Cl. 426-548.000.
Gaughan, Edmund J.; and Large, George B., to Stauffer Chemical Company. N-carbamoyl ethyl oxanilates. 4,116,668, Cl. 71-88.000.
Gautier, Charles L.; DeLuca, Paul V.; and Atun, Albert, to Porta Systems Corp. Single sided protector frame for telephone circuits. 4,117,273, Cl. 179-98.000.
Gawryk, William C., Sr., to Newcomer Products, Inc. Cutting insert. 4,116,576, Cl. 407-114.000.
Geary, William R. C. Hydraulic pulse generating apparatus. 4,116,004, Cl. 60-543.000.
Gebauer, Bodo G., to GTE Automatic Electric Laboratories Incorporated. Reed switch. 4,117,291, Cl. 200-268.000.

Gebr. Hofmann, G.m.b.H. & Co., Maschinenfabrik: *See—*
Kogler, Horst; Honlinger, Herwig; Himmler, Gunther; and Knoll, Gunter, 4,116,055, Cl. 73-146.000.
Gebrueder Heller Maschinenfabrik GmbH: *See—*
Schmid, Karlheinz, 4,116,111, Cl. 90-15.00R.
Geer, Ernest C.: *See—*
Cook, Harold L., Jr.; Geer, Ernest C.; and Katz, Donald L., 4,116,276, Cl. 166-314.000.
Geewala, Tushar Ramesh, to International Business Machines Corporation. Two-part current injection interferometer amplifiers and logic circuits. 4,117,354, Cl. 307-306.000.
Gehrig, Robert G., to Eaton Corporation. Fluid supply for occupant restraint system. 4,116,466, Cl. 280-736.000.
Gelbein, Abraham P.; and Sze, Morgan C., to Lummus Company, The. Production of carboxylic acids from nitriles. 4,116,967, Cl. 260-295.50R.
Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Shishulin, Jury Pavlovich; Tsipenjuk, Yakov Isaakovich; and Tsygankov, Oleg Semenovich. Rotary tool for making holes. 4,116,578, Cl. 408-222.000.
Gell, Maurice L.; and Duhl, David N., to United Technologies Corporation. Heat treated superalloy single crystal article and process. 4,116,723, Cl. 148-3.000.
General Atomic Company: *See—*
Langley, John Randolph; and Spritzer, Michael H., 4,116,160, Cl. 118-48.000.
General Battery Corporation: *See—*
Windisch, Lawrence; Nees, John; and Channing, Harry M., 4,117,387, Cl. 320-2.000.
General Dynamics Corporation: *See—*
Kaarlela, William Thomas, 4,116,688, Cl. 75-229.000.
Kaarlela, William Thomas, 4,116,689, Cl. 75-229.000.
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General Electric Company: *See—*
Aftergut, Siegfried; and Cole, Herbert S., Jr., 4,116,861, Cl. 252-299.000.
Alley, Robert P., 4,117,373, Cl. 315-86.000.
Arendt, Ronald H.; and Aubourg, Patrick F., 4,116,730, Cl. 106-113.000.
Baker, Fred E., 4,116,363, Cl. 220-448.000.
Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., 4,116,728, Cl. 148-108.000.
Bluestein, Ben Alfred; and Evans, E. Robert, 4,116,993, Cl. 260-448.20E.
Boerstler, Leslie H.; Discenza, Walter V., Jr.; Marvin, Mason D.; and Ebersole, Theodore J., 4,117,344, Cl. 290-52.000.
Boyd, John H., Jr.; and Nelson, Don C., Jr., 4,116,410, Cl. 248-26.000.
Butler, Walter J.; and Eichelberger, Charles W., 4,117,353, Cl. 307-297.000.
Cella, James A., 4,116,886, Cl. 528-88.000.
Cleveland, William K. S.; Webb, Jimmy L.; and Orlando, Charles M., 4,117,018, Cl. 568-726.000.
Cooper, Glenn Dale; and Floryan, Daniel Edwin, 4,116,939, Cl. 528-215.000.
Demarest, Donald Monroe; and Chandler, Edgar Frank, 4,117,527, Cl. 361-103.000.
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Godfrey, David E., 4,115,915, Cl. 29-596.000.
Jackson, Melvin R.; and Rairden, John R., III, 4,117,179, Cl. 427-405.000.
Koenig, Paul W., 4,117,508, Cl. 357-81.000.
Logan, James H., 4,117,434, Cl. 335-213.000.
Rabatin, Jacob G., 4,116,865, Cl. 252-301.40H.
Richter, Eike, 4,117,360, Cl. 310-183.000.
Staats, Peter Francis, 4,117,337, Cl. 250-445.00T.
Stein, Charles R., 4,116,543, Cl. 350-333.000.
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Webb, Jimmy L., 4,116,980, Cl. 260-346.300.
Willyoung, David M., 4,116,005, Cl. 60-655.000.
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Yang, Kei-Hsiung, 4,117,365, Cl. 313-101.000.
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General Motors Corporation: *See—*
Micheli, Adolph L., 4,117,058, Cl. 264-65.000.
Rhodes, James F., 4,116,883, Cl. 252-463.000.
Sand, Roger D., 4,116,175, Cl. 123-117.00R.
General Recycling Corporation: *See—*
Kennedy, Richard B., 4,116,760, Cl. 162-56.000.
Generini, Gianni, to Anic, S.p.A. Method for recovering variable-valency elements and purifying sewage waters. 4,116,783, Cl. 204-150.000.
Geo Space Corporation: *See—*
McNeel, William O., 4,117,449, Cl. 340-17.00R.
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Lubov, Donald S., 4,115,963, Cl. 52-81.000.
Gerij, Janusz: *See—*
Boy Marcotte, Jean-Louis; Chevalier, Georges; Gerij, Janusz; and Leheu, Jacques, 4,116,765, Cl. 176-38.000.
Gerlach, Richard K., to Rengel, Richard J. Hyperoptic translator system. 4,117,265, Cl. 179-1.0SP.
Gerlach-Werke GmbH: *See—*
Borner, Hans G. K., 4,116,498, Cl. 305-58.00R.
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Abramov, Ivan Egorovich; Gershanov, Felix Borisovich; Dolidze, Vladimir Romanovich; Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Popov, Vasily Dmitrievich; Rutman, Grigory Iosifovich; and Shalimova, Zoya Stepanovna, 4,117,244, Cl. 568-799.000.
Geuss, Joseph A., to Amca International Corporation. Drop hammer frame weldment and assembly. 4,116,039, Cl. 72-455.000.
Geytenbeek, Johannes Jacobus Franciscus: *See—*
de Bie, Jan Rudolf; Ekkelboom, Tjepke Hendrik; Geytenbeek, Johannes Jacobus Franciscus; van Hoorn, Willem Lodewijk; and Schob, Otmar, 4,117,367, Cl. 313-352.000.
Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, to Siemens Aktiengesellschaft. Cable sleeve. 4,117,259, Cl. 174-92.000.
Giessen, Bill C.: *See—*
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Gilbert, Kendall E.; Johnson, Daniel; and Macier, Robert Raymond, to General Electric Company. Combustion monitor. 4,115,998, Cl. 60-39.09R.
Gildemeister Corpoplast GmbH: *See—*
Appel, Adolf; Horwege, Claus; Reymann, Wolfgang; and Rosenkranz, Otto, 4,117,050, Cl. 264-25.000.
Gillet, Philippe Jean; and Henrich, Gaston, to Societe Chimique des Charbonnages. Method of separation of catalytic residues derived from aluminum chloride. 4,117,023, Cl. 260-671.00R.
Gillette Company, The: *See—*
Ascoli, Enzo, 4,115,920, Cl. 30-43.300.
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Gimelfarb, Felix Aronovich: *See—*
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Giordano, Joseph A. Action toy and amusement device. 4,115,947, Cl. 46-116.000.
Giovachini, Jean-Luc; and Vendramini, Dante Marc, to Institute de Recherche des Transports; and Vendramini, Dante Marc. Composite wheel structure capable of withstanding large centrifugal forces. 4,116,088, Cl. 74-572.000.
Giovanelli, Armand: *See—*
Jaekle, William M.; Byrne, Robert; and Giovanelli, Armand, 4,116,135, Cl. 105-378.000.
Girardi, Joseph: *See—*
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Girault, Pablo. Method of excavating tunnels. 4,116,011, Cl. 405-134.000.
Givaudan Corporation: *See—*
Ochsner, Paul Albert, 4,116,970, Cl. 260-307.0FA.
Glanz, Kenneth D.; and McQuain, David B., to NCR Corporation. Thermal sensitive materials. 4,116,973, Cl. 260-326.11R.
Glascock, Homer H., Jr., to General Electric Company. Reflective coating for external core electrodeless fluorescent lamp. 4,117,378, Cl. 315-248.000.
Glaser, Marshall H.; and Jeakle, Patrick L., to Orsco, Inc. Direct connection co-axial fitting for injection lubricator. 4,116,475, Cl. 285-133.00R.
Glass, Alastair Malcolm: *See—*
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Glauert, Wolfram, to Robert Bosch GmbH. Position transducer, particularly to determine the instantaneous angular position of a rotating shaft, especially of an internal combustion engine. 4,117,401, Cl. 324-208.000.
Glazer, Vadim Moiseevich: *See—*
Belousov, Viktor Vasilievich; Glazer, Vadim Moiseevich; and Shestakov, Sergei Vasilievich, 4,116,778, Cl. 195-139.000.
Glenn, William E., to New York Institute of Technology. Method of forming an optical fiber device. 4,116,739, Cl. 156-169.000.
Globol Werk GmbH: *See—*
Hautmann, Horst, 4,117,110, Cl. 424-76.000.
Glowe, Donald E.: *See—*
Johnson, Ben C.; Thornton, J. Scott; Glowe, Donald E.; Cassidy, Patrick E.; and Anderson, Robert E., 4,117,312, Cl. 219-548.000.
Goble, William M., to Moore Products Co. Isolation circuit with duty cycle feedback. 4,117,411, Cl. 330-10.000.
Godar, Richard L.; and Corneli, Philip R., to Petrolite Corporation. Organo-sulfur compounds as high temperature antifoulants. 4,116,812, Cl. 208-48.0AA.
Godfrey, David E., to General Electric Company. Process for manufacturing motor having windings constructed for automated assembly. 4,115,915, Cl. 29-596.000.
Goel, Jitendra; Narayan, Subrahmanyam Yegna; and Drukier, Ira, to RCA Corporation. Method of making a submicrometer aperture in a substrate. 4,117,301, Cl. 219-121.0EM.
Goering, Kenneth J.; and Eslick, Robert, to Research Corporation.

Waxy barley starch with unique self-liquefying properties. 4,116,770, Cl. 195-63.000.
Goff, Clifford E.: *See—*
Bible, Harley V.; Goff, Clifford E.; and Moon, William T., Jr., 4,116,155, Cl. 116-65.000.
Gofflot, Armand. Automatic cattle gate assembly. 4,116,166, Cl. 119-99.000.
Gogins, Laird B., to Power-Matic Corporation. Variable speed transmission. 4,116,083, Cl. 74-393.000.
Gohlke, Fritz Joachim: *See—*
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Goltz, Wayne H.: *See—*
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Gomes, Gilbert S.: *See—*
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Goodman, Murray; Verlander, Michael S.; Kaplan, Nathan O.; and Venter, J. Craig, to Reagents of the University of California, The. Water-soluble, physiologically active, synthetic copolypeptides. 4,116,949, Cl. 260-112.50R.
Goodyear Tire & Rubber Company, The: *See—*
Kline, Richard H., 4,117,240, Cl. 560-221.000.
Goranson, Paul L.: *See—*
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Gordon, Harry W., to Schmid Laboratories, Inc. Composition and method of treating benign prostatic hypertrophy with heptamycin. 4,117,114, Cl. 424-115.000.
Gorelick, Donald E. Blood pressure cuff automatic deflation device. 4,116,230, Cl. 128-2.05M.
Goret, Jean Louis Ernest Raymond: *See—*
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Gorman, Joseph G.; Roach, James F.; and Wayland, Paul O., to Westinghouse Electric Corp. Vacuum type circuit interrupter with a contact having integral axial magnetic field means. 4,117,288, Cl. 200-144.00R.
Gornik, Leonid Avrumovich: *See—*
Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Shishulin, Jury Pavlovich; Tsipenjuk, Yakov Isaakovich; and Tsygankov, Oleg Semenovich, 4,116,578, Cl. 408-222.000.
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Gorr, Benjamin B.; and Mack, Richard B., to United States of America, Air Force. Radar target cross section control method and means. 4,117,485, Cl. 343-18.00E.
Gorzegno, Walter P.; and Garcia-Mallol, Juan Antonio, to Foster Wheeler Energy Corporation. Vapor generating system utilizing integral separators and angularly arranged furnance boundary wall fluid flow tubes. 4,116,168, Cl. 122-406.00S.
Gosger, Peter; Pott, Paul Gerhard; and Wolter, Bernd, to AEG-Elotherm, G.m.b.H. Machine for the simultaneous electrochemical processing of multiple workpieces. 4,116,799, Cl. 204-224.00M.
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Kussy, Frank W.; Elmore, Claudius C., Jr.; and Molesworth, Richard E., 4,117,290, Cl. 200-243.000.
Snyder, Daniel S.; Luzsicza, Steven O.; and Pauer, Lyle A., 4,117,452, Cl. 340-58.000.
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Grabbe, Dimitry G.; and Sweeney, Joseph Patrick, to AMP Incorporated. Electrical connections for chip carriers. 4,116,519, Cl. 339-17.0CF.
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Schneider, Louis; and Graham, David E., 4,117,009, Cl. 260-553.00E.
Schneider, Louis; and Graham, David E., 4,117,162, Cl. 424-320.000.
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Graham, Gordon Judson; Martin, John Frederick; and Crowell, Douglas Hodgen, to USM Corporation. Cutting machine incorporating means for transferring cut parts and scrap. 4,116,097, Cl. 83-155.000.
Graney, Francis X. Log splitter with gear rack drive. 4,116,251, Cl. 144-193.00R.
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Greenwood, John C., to International Standard Electric Corporation. Fiber optic switch arrangement. 4,116,531, Cl. 350-96.200.
Greer, Charles W. Shock actuated shut-off valve. 4,116,209, Cl. 137-38.000.
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Griffith, James R.; and O'Rear, Jacques G., to United States of America, Navy. Electrical conducting phthalonitrile polymers. 4,116,945, Cl. 528-362.000.
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Grob, Ernst: *See—*
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Gross, Friedrich; Binder, Peter; and Brehmer, Dieter, to WABCO Westinghouse GmbH. Bellows for sealing off the piston rod passage in an operating cylinder. 4,116,115, Cl. 92-168.000.
Gruenhagen, Henry William. Flush valve control assembly. 4,115,880, Cl. 4-325.000.
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Bacchi, Anthony C.; and Kress, Robert W., 4,116,405, Cl. 244-12.400.
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GTE Automatic Electric Laboratories Incorporated: *See—*
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Gebauer, Bodo G., 4,117,291, Cl. 200-268.000.
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Hall, Harold H., Jr.; and Bouchard, Andre C., 4,116,615, Cl. 431-92.000.
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Gudat, Wolfgang, to WABCO Westinghouse GmbH. Test circuit for periodically monitoring the integrity of an antiskid brake control system. 4,116,494, Cl. 303-92.000.
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Guerber, Paul Leon, to Coyne & Bellier, Bureau d'ingenieurs Conseils. Process and apparatus for producing deep boreholes. 4,116,285, Cl. 175-7.000.

Guillaumin, Bruno: *See—*
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Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,817, Cl. 208-210.000.
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Hupp, Stephen S.; Sabourin, Edward T.; Swift, Harold E.; and Vogel, Roger F., 4,117,021, Cl. 260-669.00A.
Kobylinski, Thaddeus P.; and Swift, Harold E., 4,116,995, Cl. 260-449.60M.
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Haag, Werner O.; and Olson, David H., to Mobil Oil Corporation. Selective production of para dialkyl substituted benzenes. 4,117,026, Cl. 260-671.00R.
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Haberle, Heinz; and Aubele, Richard, to International Standard Electric Corporation. System for two-way communication between a master station and a plurality of substations via a satellite. 4,117,267, Cl. 179-15.0BS.
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Haigh Engineering Company Limited, The: *See—*
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Haley, Frederick J. Automatic brake for wheeled carriages. 4,116,464, Cl. 280-647.000.
Hall, Floyd Van, to Liggett Group Inc. Apparatus for compacting multi-sectional particulate containing filters. 4,116,602, Cl. 425-354.000.
Hall, Harold H., Jr.; and Bouchard, Andre C., to GTE Sylvania Incorporated. Door-actuated activation means for flashlamp article. 4,116,615, Cl. 431-92.000.
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Hall, John M. Liquid shoe innersole. 4,115,934, Cl. 36-44.000.
Hall, Lee Z., to Palmer-Shile Company. Storage rack. 4,116,343, Cl. 211-151.000.
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Hamilton, Martin Norman. End mill tool holder body and tool. 4,116,579, Cl. 408-233.000.
Hamilton, Paul D. Hang glider having inflatable airfoil. 4,116,406, Cl. 244-16.000.
Hamilton, Ralph A. Methods and apparatus for heating a fluid by vapor condensation. 4,116,167, Cl. 122-33.000.
Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,116,746, Cl. 156-384.000.
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Hampejs, Karel, to SIG Schweizerische Industrie-Gesellschaft. Fluidic amplifier. 4,116,112, Cl. 91-380.000.
Hampton, Robert S., Jr.; Morrison, Leonard A.; Murphy, John W.; and Mountz, Craig E., to Ammco Tools, Inc. Automotive toe-in gauge. 4,115,926, Cl. 33-288.000.
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Hanna, Kheder Abdul Karim; and Collins, Brian Stuart, to C & S Antennas Limited. Logarithmically periodic loop antenna array with spaced filters in the coupling network. 4,117,491, Cl. 343-742.000.
Hannah, James T. Concrete tanks with interlocking bottom. 4,117,071, Cl. 264-256.000.
Hannecart, Robert Stephan. Device for mixing gases and liquids. 4,117,047, Cl. 261-91.000.
Hansen, Karl A.; and Hendrickson, I. Glen, to Boeing Company, The. Flux concentrator for electromagnetic pulling. 4,116,031, Cl. 72-56.000.
Hansen, Loren F., to Hiniker Company. Agricultural implement with wing lift. 4,116,282, Cl. 172-311.000.
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Hardtmann, Goetz E., to Sandoz, Inc. 2-Amino-pyridyl nitromethylketones and 2-amino-phenyl nitromethylketones. 4,117,137, Cl. 424-263.000.
Harper, George Sullivan, to Airpax Electronics Incorporated. Snap action circuit breaker. 4,117,285, Cl. 200-76.000.
Harri, Eugen; and Ruegger, Artur, to Sandoz Ltd. Organic compounds. 4,117,118, Cl. 424-177.000.
Harrill, John D., to Marvel Specialty Company. Hosiery handling apparatus and method. 4,116,021, Cl. 66-149.00S.
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Harris, Harry A., to Paraho Corporation. Starting procedure for internal combustion vessels. 4,116,779, Cl. 201-34.000.
Harris, James E.; and Parish, Ben D. Contact lens. 4,116,549, Cl. 351-160.000.
Harris, Robert Richard; and Pollack, Warren John, to International Minerals & Chemical Corp. Polyurethane-modified alkyd resin. 4,116,902, Cl. 260-22.0TN.
Harris, Willie. Bicycle distance safety device. 4,116,154, Cl. 116-35.00A.
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Havas, Jeno; Doktor, Elek; Patko, Marton; and Pungor, Erno, to Radelkis Elektrokemiai Muszergyarto Szovetkezet. Selective halide and sulfide sensitive electrodes. 4,116,796, Cl. 204-195.00M.
Hayakawa, Hiroshi; and Ezura, Sakae, to Bridgestone Tire Company Limited. Foldable pneumatic tire. 4,116,255, Cl. 152-352.00R.
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Hayashi, Yoshimasa; and Nakajima, Yasuo, to Nissan Motor Company, Limited. Dual spark plug ignition internal combustion engine having improved cylinder head configuration. 4,116,176, Cl. 123-119.00A.
Hayashi, Yoshimasa; and Nagumo, Shin-ichi, to Nissan Motor Company, Limited. Internal combustion engine with improved exhaust valve arrangement. 4,116,180, Cl. 123-119.00A.
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Hazumi, Kenji; and Tagami, Katsutoshi, to Sawafuji Electric Co. Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Low frequency high output alternating current generating device. 4,117,389, Cl. 322-47.000.
Head, Brian Arthur, to Whatman Reeve Angel Limited. Porous element and the preparation thereof. 4,116,761, Cl. 162-152.000.
Hebda, Thomas. Device for storing bicycles in a building. 4,116,341, Cl. 211-17.000.

Heberlein & Co. AG: *See—*
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Heldmann, Ernest J.; and Capuano, Terry D., to Veeder Industries Inc. Shaft clamping device. 4,116,572, Cl. 403-7.000.
Hell, August; Kobusch, Wolfram; and Braun, Fritz, to AGFA-Gevaert, A.G. Apparatus for assembling and packing photographic prints with associated developed films. 4,115,981, Cl. 53-55.000.
Hellmer, Lars; Koller, Gerald; Al Muddarris, Ghazi Rashid; and Sud, Kuldip Kumar, to Davy Powergas GmbH. Process for reduction of sulfur dioxide to sulfur. 4,117,100, Cl. 423-569.000.
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Hellmers, Emil Donald. Underwater piling restoration system. 4,116,013, Cl. 405-216.000.
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Holst, Arno; Kostrzewa, Michael; and Buchberger, Gerhard, to Hoechst Aktiengesellschaft. Process for the manufacture of absorbent, modified starch ethers and their use. 4,117,222, Cl. 536-50.000.
Holt, John Ruy. Light fittings. 4,117,535, Cl. 362-382.000.
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Hornbaker, Edwin D.; Jones, Jesse D.; Kucsma, Michael E.; and Allen, Thomas S., to Ethyl Corporation. Reinforced polypivalolactone. 4,116,922, Cl. 260-40.00R.
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Hsueh, Limin; Hard, Robert A.; Davidson, Donald H.; and Huff, Ray V., to Kennecott Copper Corporation. In-situ mining method and apparatus. 4,116,488, Cl. 299-4.000.
Huang, Yun-Yang, to Ethyl Corporation. Catalyst for methane production. 4,116,996, Cl. 260-449.60M.
Hubbard, William Marshall; and Muska, Willis Martin, to Bell Telephone Laboratories, Incorporated. Fiber positioning and connection method and apparatus. 4,116,532, Cl. 350-96.210.
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Itoh, Kametaro; Takahashi, Wataru; Yamamoto, Yoshun; and Harajiri, Hachiro, to Nippon Steel Corporation. Immersion cooling apparatus for hot metal pipes. 4,116,716, Cl. 134-134.000.
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Iwaki, Yoshiyuki; and Kuroda, Ryozo, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for forming a wound core. 4,116,033, Cl. 72-142.000.
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Jackisch, Philip F.; and Worrel, Calvin J. Gasoline compositions. 4,116,644, Cl. 44-73.000.
Jackson, Melvin R.; and Rairden, John R., III, to General Electric Company. Oxidation corrosion resistant superalloys and coatings. 4,117,179, Cl. 427-405.000.
Jacobs, Cornelis Adrianus Joannes; Driessen, Antonius Jozephus Gerardus Cornelis; and Cornelissen, Gerardus Antonius Petrus Maria, to U.S. Philips Corporation. Discharge lamp having a glow discharge starter within the outer envelope. 4,117,370, Cl. 315-35.000.
Jacobs, Herbert V. Modular integrated cooling and heating systems for effluents and other uses. 4,116,267, Cl. 165-110.000.
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Jaeger, Mark A. General purpose in vitro anticoagulant. 4,116,635, Cl. 23-230.00B.
Jaekle, William M.; Byrne, Robert; and Giovanelli, Armand, to Southern Pacific Transportation Company. Sliding screen closure for rail cars. 4,116,135, Cl. 105-378.000.
Jahnke, Richard William, to Lubrizol Corporation, The. Hot melt metal working lubricants. 4,116,872, Cl. 252-32.70E.
Jakob, Hans-Dieter; Kubens, Rolf; and Heine, Heinrich, to Bayer Aktiengesellschaft. Hardenable mixtures containing polyfunctional aromatic cyanic acid esters. 4,116,946, Cl. 528-172.000.

Jaluria, Yogesh: *See—*
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Janson, Jan. Preparation of liquor for delignification or alkali treatment by autocaustization, and the preparation of pulp with this liquor. 4,116,759, Cl. 162-32.000.
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Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, to University of Glasgow. Vaccine for prevention of feline leukemia. 4,117,112, Cl. 424-89.000.
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Jenkins, Anthony; and Isgrove, Douglas Walter. Method and apparatus for detecting a constituent in an atmosphere. 4,116,042, Cl. 73-23.000.
Jenness, Raymond C., to Allis-Chalmers Corporation. Ball discharger for grinding mill. 4,116,391, Cl. 241-171.000.
Jensen, Palle Rasmus. Method and apparatus for the examination of bodies. 4,116,074, Cl. 73-607.000.
Jensen, William Kenneth, to O.E.M. Technical Sales, Inc. Transparent thermometer. 4,116,065, Cl. 73-378.000.
Jepsky, Joseph; Englander, Irvin S.; and Williams, James E., to Associated Controls & Communications, Inc. Method and apparatus for locating position in a waterway. 4,117,482, Cl. 343-7.300.
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Dines, Jack E., 4,116,110, Cl. 90-12.00R.
Jimerson, Bruce D.; and Nakasone, Henry H. Circuits for starting and operating ionized gas lamps. 4,117,377, Cl. 315-209.00R.
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John, Clarence D., Jr., to Westinghouse Electric Corp. Fluid pressure apparatus for recovering fuel pellets from nuclear fuel elements. 4,116,767, Cl. 176-87.000.
John, Clarence D., Jr., to Westinghouse Electric Corp. Nuclear fuel element leak detection system. 4,117,333, Cl. 250-380.000.
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Johnsen, Edward L. Medical information form for plurality of individual reports. 4,116,470, Cl. 283-66.00A.
Johnson, Ben C.; Thornton, J. Scott; Glowe, Donald E.; Cassidy, Patrick E.; and Anderson, Robert E., to Thermon Manufacturing Company. Self-limiting temperature electrical heating cable. 4,117,312, Cl. 219-548.000.
Johnson, Bruce Virgil, to United Technologies Corporation. Method and apparatus for mixing fluid. 4,116,383, Cl. 239-8.000.
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Johnson, Eugene R.; and Mower, Morris F., to Bliss & Laughlin Industries, Inc. Corner finishing tool. 4,116,604, Cl. 425-458.000.
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Johnson, Lawrence E.; Conger, William W., IV; and Moreland, Gerald W., to South Pacific Industries. Spa safety drain. 4,115,878, Cl. 4-172.170.
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Jones, Charles. Lubricant metering system for rotary piston mechanism. 4,116,593, Cl. 418-94.000.

Jones, Ivor Wynn, to Chloride Silent Power Limited. Production of beta-alumina ceramic articles. 4,117,056, Cl. 264-57.000.

Jones, Jesse D.: *See—*
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Jones, John B., Jr.; and Reeves, Adam A., to Paraho Corporation. Indirect heating pyrolysis of oil shale. 4,116,810, Cl. 208-11.00R.

Jones, Lamar J.; and Williams, Carl W., to Lockheed Corporation. Motorized film take-up canister. 4,116,400, Cl. 242-67.10R.

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Jones, Robert D., to United States of America, Energy. Apparatus for controlling nuclear core debris. 4,116,764, Cl. 176-38.000.

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Jordan, Robert Kenneth. Coproduction of iron and carbon black. 4,116,680, Cl. 75-41.000.

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Jorgensen, Jens L., to Minnesota Mining and Manufacturing Company. Deformable retroreflective pavement-marking sheet material. 4,117,192, Cl. 428-337.000.

Jorgenso, Torben. Method of making a laminated container consisting mainly of thermoplastic material. 4,117,061, Cl. 264-89.000.

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Josephy, Karl, to Continental Group, Inc., The. Through hole deformation and inside sealing tear strip. 4,116,359, Cl. 220-265.000.

Joshi, Satish Vishwanath; and Bracher, Douglas Lee, to Lukens Steel Company. Flux for use in electroslag refining process. 4,116,690, Cl. 75-257.000.

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Juckniess, Paul R.; and Johnson, David R., to Dow Chemical Company, The. Apparatus for electrowinning multivalent metals. 4,116,801, Cl. 204-247.000.

Juhala, Pentti J.: *See—*
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Voigt, Hermann Uwe; Volker, Martin; and Stehmann, Hans Peter, 4,117,063, Cl. 264-102.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Moriya, Tokio, 4,115,993, Cl. 58-38.00R.

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Ikeda, Hiromichi, 4,116,269, Cl. 165-126.000.
Tanahashi, Sakae; and Shima, Takashi, 4,116,050, Cl. 73-88.50R.

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Nomura, Kenichiro; Mori, Mamoru; Yasumatsu, Jun; Kubota, Tatsushi; Hachisuka, Sadao; and Tatematsu, Kazuhisa, 4,116,402, Cl. 242-107.100.

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Ikeda, Teruo, 4,116,403, Cl. 242-165.000.

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Kobayashi, Yoshiyuki; and Okaniwa, Shigeru, 4,116,030, Cl. 72-40.000.

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Lehn, Jean-Marie; Schue, Francois; Boileau, Sylvia; Kaempf, Bernd; Cau, Alain Andre; Moinard, Jean Robert; and Raynal, Serge Fernand, 4,116,887, Cl. 260-2.00A.

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Honma, Hiroshi; and Kakuno, Hiroshi, 4,116,920, Cl. 260-37.0SB.

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Thies, Peter Willibrord; and David, Samuel, 4,117,148, Cl. 424-278.000.

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Kunze, Dietmar, 4,117,078, Cl. 423-163.000.

Kalinin, Elvin Konstantinovich: *See—*
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Forster, Friedrich M. O.; and Kalisch, Alfons, 4,117,403, Cl. 324-240.000.

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Smiggen, Frank J.; Burry, Devitt S.; Kallaby, Joseph; and Goltz, Wayne H., 4,116,715, Cl. 134-6.000.

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Kamino, Yasumi: *See—*
Inaba, Hideya; Onizuka, Shigenori; and Kamino, Yasumi, 4,117,081, Cl. 423-239.000.

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Kandler, Georg: *See—*
Kauf, Alois; Kandler, Georg; Rossmann, Axel; and Nustede, Fritz, 4,116,149, Cl. 113-116.00D.

Kao Soap Co., Ltd.: *See—*
Sato, Atsushi; and Kawaguchi, Hikotarou, 4,115,982, Cl. 53-534.000.

Kaplan, Nathan O.: *See—*
Goodman, Murray; Verlander, Michael S.; Kaplan, Nathan O.; and Venter, J. Craig, 4,116,949, Cl. 260-112.50R.

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Longley, Kermit D.; and Karalis, Anastasios J., 4,117,237, Cl. 560-151.000.

Kase, Hiroaki: *See—*
Masuda, Noboru; Nishino, Yu; and Kase, Hiroaki, 4,117,523, Cl. 360-110.000.

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Miyahara, Junji; and Kato, Hisatoyo, 4,116,911, Cl. 260-28.50A.

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Ichikawa, Yataro; Yamamoto, Mamoru; Tsuruta, Hideki; Kato, Kenichi; Yamaji, Teizo; Yoshisato, Eishin; and Hiramatsu, Toshiyuki, 4,116,955, Cl. 260-192.000.

Katoh, Hiroshi; Onoe, Yasumitsu; Akisue, Osamu; and Mochinaga, Kishio, to Nippon Steel Corporation. Method for treating continuously cast steel slabs. 4,116,729, Cl. 148-111.000.

Katoh, Sunao: *See—*
Tanimoto, Akira; Yoshida, Yukihiro; and Katoh, Sunao, 4,116,144, Cl. 112-158.00E.

Katz, Donald L.: *See—*
Cook, Harold L., Jr.; Geer, Ernest C.; and Katz, Donald L., 4,116,276, Cl. 166-314.000.

Kauf, Alois; Kandler, Georg; Rossmann, Axel; and Nustede, Fritz, to Motoren- und Turbinen-Union Munchen GmbH. Centrifugal blade for a turbine - rotor method for making the same. 4,116,149, Cl. 113-116.00D.

Kauffman, Robert N.: *See—*
Smith, James D. B.; and Kauffman, Robert N., 4,117,361, Cl. 310-208.000.

Kaufhold, Manfred; and Bankwitz, Gottfried, to Chemische Werke Huls AG. Method for preparing straight chain primary alcohols from 1-bromoalkanes. 4,117,251, Cl. 568-877.000.

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Kawabata, Hidetoshi: *See—*
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Kawabe, Hidehiko: *See—*
Shibata, Tsuneo; Maki, Masao; Suzuki, Masao; and Kawabe, Hidehiko, 4,116,881, Cl. 252-440.000.

Kawada, Kosaku: *See—*
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Sato, Atsushi; and Kawaguchi, Hikotarou, 4,115,982, Cl. 53-534.000.

Kawaike, Kazuo; Uchiya, Tsuneo; and Sato, Ichiro, to Hitachi Plant Engineering & Construction. Insulator bushing for high voltage input. 4,117,255, Cl. 174-31.00R.

Kawakami, Hideo; and Ebata, Hitoshi, to Toshiba Kikai Kabushiki Kaisha. Automatic fret sawing machines. 4,116,101, Cl. 83-747.000.

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Keat, Gordon Samuel, to English Clays Lovering Pochin & Company Limited. Separation of solids and liquids. 4,116,831, Cl. 210-68.000.

Kehl, William L.: *See—*
Cronauer, Donald C.; and Kehl, William L., 4,116,808, Cl. 208-10.000.

Keifert, Hibbard G., to Fansteel Inc. Corrosion and erosion resistant lined equipment. 4,117,201, Cl. 428-591.000.

Keimpema, Keimpe Klaas: *See—*
Ampt, Cornelis Georg Frederik; and Keimpema, Keimpe Klaas, 4,117,315, Cl. 235-88.00R.

Kelbel, Donald William, to Borg-Warner Corporation. Compact manual transmission for a transversely mounted engine. 4,116,082, Cl. 74-360.000.

Kelly, Charles A.: *See—*
Irick, Gether, Jr.; and Kelly, Charles A., 4,116,928, Cl. 260-45.8NZ.

Kelso, Charles R.: *See—*
Mayer, Endre A.; and Kelso, Charles R., 4,116,185, Cl. 123-139.0AW.

Kemper, Kate. Convertible dough makeup line for the production of different kinds of bread. 4,116,120, Cl. 99-483.000.

Kendall Company, The: *See—*
Poole, Ernest G.; and Hair, Lucius M., 4,115,911, Cl. 29-401.00D.
Shah, Nayan S., 4,116,201, Cl. 128-351.000.
Taylor, Glenn N., 4,115,902, Cl. 16-179.000.

Kende, Andrew S., to Tsay, Yuh-Geng; and Research Corporation. 5,12-Epoxy-naphthacene-6,11-dione derivatives. 4,116,981, Cl. 260-346.710.

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Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, 4,117,340, Cl. 250-492.00A.

Kennecott Copper Corporation: *See—*
Hsueh, Limin; Hard, Robert A.; Davidson, Donald H.; and Huff, Ray V., 4,116,488, Cl. 299-4.000.

Kennedy, Arvest Gethner. Toggle bolt wing nut retainer. 4,116,104, Cl. 85-3.00S.

Kennedy, Richard B., to General Recycling Corporation. Method and apparatus for removing liquid from a slurry of solid material. 4,116,760, Cl. 162-56.000.

Kenoff, Michael B., to Warner-Lambert Company. Immunoassay device. 4,116,638, Cl. 422-99.000.

Keogh, Marvin J., to Air Medic, Inc. Stretcher supporting structure for airplanes, or the like. 4,115,884, Cl. 5-82.00R.

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Mallek, Heinz; Jablonski, Werner; and Pelzer, Peter, 4,116,136, Cl. 110-251.000.

Kessler, Milton. Cutting board. 4,116,426, Cl. 269-307.000.

Kessler Products Company: *See—*
Ullman, Myron E., Jr., 4,116,513, Cl. 312-330.00R.

Keuffel & Esser Company: *See—*
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Khan, Abid: *See—*
Mravic, Brian; Shapiro, Stanley; Tyler, Derek E.; and Khan, Abid, 4,116,686, Cl. 75-154.000.

Khan, Riaz Ahmed; Mufti, Khizar Sultan; and Parker, Kenneth John, to Tate & Lyle Limited. Preparation of sucrose 6,6'-dichloro hexa-acetate, 4,117,224, Cl. 536-119.000.

Khanukova, Elina Sergeevna: *See—*
Tsirkin, Mark Zakharovich; Kogan, Viktor Ovshievich; Polyakov, Rudolf Semenovich; Presnov, Jury Leonidovich; and Khanukova, Elina Sergeevna, 4,117,362, Cl. 310-214.000.

Khattab, Ghazi: *See—*
Brachman, Armand E.; Khattab, Ghazi; and Smolin, Edwin M., 4,116,925, Cl. 260-42.180.

Kiddie Products, Inc.: *See—*
Panicci, Richard L., 4,116,202, Cl. 128-359.000.

Kiebala, Carol L. Diet control apparatus. 4,117,461, Cl. 340-545.000.

Kielhorn, Werner: *See—*
Wicker, Helmut; Kielhorn, Werner; and Heyduk, Gerhard, 4,117,293, Cl. 219-10.410.

Kieser, Manfred: *See—*
Hesse, Reiner; Pratzer, Hans; Kieser, Manfred; and Edler, Gerhard, 4,116,628, Cl. 427-154.000.

Kikkoman Shoyu Co. Ltd.: *See—*
Noda, Fumio; Mogi, Keitaro; and Sakasai, Toshio, 4,117,169, Cl. 426-7.000.

Kikumoto, Ryoji: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,117,127, Cl. 424-247.000.

Kikura, Katsuaki; Nomura, Hiroshi; and Takeda, Kiyohiro, to Toyo Kogyo Co. Ltd. Trochoidal rotary piston engine with bypass of compressed mixture to exhaust chamber. 4,116,190, Cl. 123-202.000.

Kilburn, Ronald Lee, to H.F.E., Inc. Hydraulic beet harvester. 4,116,279, Cl. 171-58.000.

Kile, Gholz, Bernstein & Georges: *See—*
Barbour, William P., 4,116,106, Cl. 85-71.000.

Kim, Kirk J.; and Muller, Michael, to Datanetics Corporation. Contactless keyswitch for keyboards. 4,117,438, Cl. 336-75.000.

Kim, Raymond W. H.; and Prelletz, Edward R., to Bell & Howell Company. Projector reset-auto stop mechanism. 4,116,550, Cl. 352-124.000.

Kim, Raymond W. H.; Luebers, Arthur L.; Prelletz, Edward R.; and Warden, Gerald D., to Bell & Howell Company. Projector auto rewind mechanism. 4,116,551, Cl. 352-124.000.

Kimura, Takeji: *See—*
Tsunoo, Masahiko; Hirose, Namio; Kimura, Takeji; Inoue, Michihiro; and Sato, Masaharu, 4,116,102, Cl. 84-1.220.

King, Arthur S. Clarifier and method. 4,116,789, Cl. 204-180.00R.

King, David W.: *See—*
Rankin, E. Edward; and King, David W., 4,116,274, Cl. 166-250.000.

King, Earle Cochran, to Mine Safety Appliances Company. Apparatus for increasing the pH of waste water. 4,116,834, Cl. 210-96.00R.

King, Lowell A.: *See—*
Nardi, John C.; Hussey, Charles L.; Erbacher, John K.; King, Lowell A.; and Fannin, Armand A., Jr., 4,117,207, Cl. 429-103.000.

King, Michael H.: *See—*
Larkin, Mark E.; and King, Michael H., 4,115,954, Cl. 49-240.000.

Kinghorn, John S.; Wagoner, Robert B.; and Turala, Alfred J., to

Aerojet-General Corporation. Weather and vapor seal for storage tank. 4,116,358, Cl. 220-222.000.

Kinney, Layton F.: *See—*
Lietz, Dennis E.; and Kinney, Layton F., 4,116,903, Cl. 260-22.0CB.

Kinsinger, Malcolm H.: *See—*
Schimpf, James E.; Boggs, Roger L.; and Kinsinger, Malcolm H., 4,116,497, Cl. 305-41.000.

Kintigh, Stanley S.; and Lilienthal, Clarence D., to Research Incorporated. SCR controller having input pulses mechanically generated by a signal source. 4,117,392, Cl. 323-21.000.

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Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Kirpichnikov, Felix Petrovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Kirsch Company: *See—*
Ford, James A., 4,115,899, Cl. 16-87.40R.

Kishimoto, Keiichi; and Suzuki, Masahiko, to Toray Silicone Company, Ltd. Room-temperature moisture-curing silicone elastomer compositions and a method for their production. 4,116,935, Cl. 528-34.000.

Kistova, Elena Mikhailovna: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.

Kitahara, Tomohiro, to Olympus Optical Co., Ltd. Blood serum applicator. 4,116,637, Cl. 422-63.000.

Kitai, Yasuo, to Shin-Kobe Electric Machinery Co., Ltd. Electric storage battery. 4,117,205, Cl. 429-86.000.

Kitamura, Chiharu; and Ando, Bunichi, to Trio Kabushiki Kaisha. Lock release mechanism for push button levers in a tape recorder. 4,116,078, Cl. 74-10.270.

Kitano, Yoshikazu, to Nitto Kasei Co. Ltd. Halogen-containing resin composition containing organic substance as stabilizer. 4,117,029, Cl. 260-836.000.

Kitazume, Yoshihiko: *See—*
Ishikawa, Toshikatsu; Tanaka, Junichi; Tominaga, Yoichiro; Matsubara, Kunio; Kitazume, Yoshihiko; and Hayase, Tokuji, 4,117,051, Cl. 264-29.100.

Kittsmiller, Robert K.: *See—*
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Kiyonaga, Kingo: *See—*
Uchida, Norimasa; Kiyonaga, Kingo; and Nakamura, Hideki, 4,116,684, Cl. 75-126.00C.

Kizior, Thaddeus Eugene, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Ontario Energy Corporation; Imperial Oil Limited; Canada-Cities Service, Ltd.; and Gulf Oil Canada Limited. Deaerator circuit for bitumen froth. 4,116,809, Cl. 208-11.0LE.

Klaubert, Dieter H.: *See—*
Sellstedt, John M.; and Klaubert, Dieter H., 4,116,960, Cl. 544-366.000.

Klaus, Michael Josef; and Pawson, Beverly Ann, to Hoffmann-La Roche Inc. Polyene compounds. 4,116,975, Cl. 260-332.20A.

Klausner, Judah; and Hotto, Robert. Electronic pocket directory. 4,117,542, Cl. 364-900.000.

Klaxon S.A.: *See—*
Warnod, Bertrand Antoine, 4,116,158, Cl. 116-142.00R.

Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Continuous process for the production of a compact, coarse sodium percarbonate. 4,117,097, Cl. 423-415.00P.

Kleinewefers Industrie-Companie GmbH: *See—*
Lopata, Karl Peter; and Schiffer, Gunter, 4,116,022, Cl. 68-5.00D.

Kleinkopf, Dick L. Spectacle lens marking device. 4,115,924, Cl. 33-174.00A.

Klemann, Lawrence P.: *See—*
Whitney, Thomas A.; and Klemann, Lawrence P., 4,117,213, Cl. 429-194.000.

Klemchuk, Peter: *See—*
Dexter, Martin; Knell, Martin; Klemchuk, Peter; and Stephen, John F., 4,116,930, Cl. 260-45.80N.

Klenk, Herbert; and Offermanns, Heribert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessier. Process for the production of benzoyl cyanide (II). 4,117,008, Cl. 260-545.00R.

Kline, James E. Collapsible telescopic water pipe. 4,116,204, Cl. 131-173.000.

Kline, Richard H., to Goodyear Tire & Rubber Company, The. Stabilized polymeric compositions. 4,117,240, Cl. 560-221.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Kramer, Peter; and Buchholz, Peter, 4,116,483, Cl. 296-28.00C.
Unkelbach, Karl-Heinz; and Duren, Gottfried, 4,116,839, Cl. 210-222.000.
Zenker, Walter, 4,116,090, Cl. 74-745.000.

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von Strandtmann, Max; Cohen, Marvin P.; Klutchko, Sylvester; and Shavel, John, Jr., 4,116,971, Cl. 260-308.00D.

KMS Fusion, Inc.: *See—*
Moncur, Norman K.; and Mayer, Frederick J., 4,116,542, Cl. 350-321.000.

Knapp, Helmut: *See—*
Behr, Karl-Gunter; and Knapp, Helmut, 4,117,513, Cl. 354-187.000.

Knapp, Kenneth K.; and Cornell, Charles R., to Eaton Corporation. Control for a variable displacement pump or motor. 4,116,002, Cl. 60-445.000.

Knechtel, Wilhelm; and Tokiwa, Taisuke, to Canon Kabushiki Kaisha. Copying apparatus. 4,116,561, Cl. 355-57.000.

Knell, Martin: *See—*
Dexter, Martin; Knell, Martin; Klemchuk, Peter; and Stephen, John F., 4,116,930, Cl. 260-45.80N.

Knippschild, Gerd: *See—*
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,117,097, Cl. 423-415.00P.

Knoll, Gunter: *See—*
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Knollmueller, Karl O., to Olin Corporation. Alkoxysilane double cluster compounds with silicone bridges and their preparation and use. 4,116,847, Cl. 252-78.300.

Knox, Walter R.: *See—*
Hill, James C.; and Knox, Walter R., 4,116,944, Cl. 528-366.000.

Kobayashi, Reiko: *See—*
Gotoh, Hideo; Igarashi, Akira; Kobayashi, Reiko; and Akiho, Kiyotake, 4,117,199, Cl. 428-486.000.

Kobayashi, Yoshiyuki; and Okaniwa, Shigeru, to Kabushikikaisha Nippon Keikinzoku Sogokenkyusho. Method of making profiled work of aluminum or aluminum alloy by extruding process. 4,116,030, Cl. 72-40.000.

Kobusch, Wolfram: *See—*
Hell, August; Kobusch, Wolfram; and Braun, Fritz, 4,115,981, Cl. 53-55.000.

Kobylinski, Thaddeus P.; and Swift, Harold E., to Gulf Research & Development Company. Hydrocarbon synthesis using a rare earth promoted metal silicate. 4,116,995, Cl. 260-449.60M.

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Schroder, Eberhard; and Koch. Henning, 4,117,135, Cl. 424-258.000.

Kochergin, Jury Sergeevich: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.

Koda, Minoru: *See—*
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Koenig, Paul W., to General Electric Company. Pressurizable semiconductor pellet assembly. 4,117,508, Cl. 357-81.000.

Koenig, Ronald Dean, to Hartel Corporation. Liquid and solids separator. 4,116,843, Cl. 210-391.000.

Koerner, Dieter F. Climbing type gymnastic apparatus. 4,116,433, Cl. 272-85.000.

Koert, James M.: *See—*
Marshall, Vincent P.; Elrod, David W.; Koert, James M.; Reisender, Elizabeth A.; and Wiley, Paul F., 4,116,769, Cl. 195-51.00R.

Kogan, Viktor Ovshievich: *See—*
Tsirkin, Mark Zakharovich; Kogan, Viktor Ovshievich; Polyakov, Rudolf Semenovich; Presnov, Jury Leonidovich; and Khanukova, Elina Sergeevna, 4,117,362, Cl. 310-214.000.

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Kolbe, Andreas: *See—*
Dinter, Peter; Kolbe, Andreas; and Guckes, Reinhold, 4,116,162, Cl. 118-104.000.

Koller, Gerald: *See—*
Hellmer, Lars; Koller, Gerald; Al Muddarris, Ghazi Rashid; and Sud, Kuldip Kumar, 4,117,100, Cl. 423-569.000.

Koller, Josef; and Koller, Stefan, to Ciba-Geigy Corporation. Dyeing preparations and process for dyeing polyacrylonitrile material in strong, neutral, clear blue shades. 4,116,622, Cl. 8-25.000.

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Kolosov, Ivan Alexandrovich; Ivanyatov, Jury Egorovich; and Kalininskaya, Vera Nikolaevna. Method and apparatus for forming cermet electrodes for alkaline accumulators. 4,116,803, Cl. 204-272.000.

Komandi, Gyorgy: *See—*
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Komarova, Nadezhda Andreevna: *See—*
Mashkovsky, Mikhail Davydovich; Yakhontov, Leonid Nikolaevich; Ado, Andrei Dmitrievich; Kaminka, Mikhail Emmanuilovich; Mikhlina, Eva Evseevna; Vorobieva, Valentina Yakovlevna; Yanina, Anna Dmitrievna; and Komarova, Nadezhda Andreevna, 4,117,139, Cl. 424-267.000.

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Komeya, Katsutoshi; Inoue, Hiroshi; and Ohta, Takao, to Tokyo Shibaura Electric Co., Ltd. Method of making α type silicon nitride powder. 4,117,095, Cl. 423-344.000.

Kondo, Toshihiro, to Toshihiro Kondo; and Fuji Photo Film Co., Ltd. Automatic exposure control apparatus in a camera. 4,117,500, Cl. 354-23.00D.

Kondo, Toshikatsu: *See—*
Hishida, Yukio; Asai, Yuichi; Kondo, Toshikatsu; Asai, Akira; Sakaida, Atsuo; and Miyazawa, Chiaki, 4,117,435, Cl. 335-270.000.

Kondratieva, Galina Alexeevna: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Kongpricha, Santad, to Olin Corporation. Wet process phosphoric acid produced using gypsum-containing waste water. 4,117,091, Cl. 423-320.000.

Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.: *See—*
Radstake, Herman; Hasenack, Nicolas A.; Van Latenstein, Anthonie; and Burger, Jacobus J., 4,116,681, Cl. 75-41.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Konstantinova, Marina Andreevna: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.

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Koons, Russell E.: *See—*
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Kopineck, Hermann-Josef: *See—*
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Koppers Company, Inc.: *See—*
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Koskimies, Jouni; and Ilmoniemi, Erkki, to Valmet Oy. Damping structure in a pipe system delivering pulp suspension to a headbox. 4,116,259, Cl. 162-380.000.

Kostrzewa, Michael: *See—*
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Koyanagi, Yukio, to Matsushita Electric Industrial Co., Ltd. Digital-to-analog converter. 4,117,476, Cl. 340-347.0DA.

Kozlov, Nikolai Alexandrovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Krafft, Camille Gabriel; Simonet, Jean-Claude; and Jammes, Emmanuel Marie, to International Standard Electric Corporation. Standardized component for cross-point matrices. 4,117,427, Cl. 335-112.000.

Kragt, Gerald A., to Jer Manufacturing, Inc. Building construction and method and kit therefore. 4,115,967, Cl. 52-90.000.

Krajewski, Richard M.: *See—*
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Kramer, Elmer C.: *See—*
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Kramer, Peter; and Buchholz, Peter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Window for vehicle cabs, especially for vehicles employed in agriculture and in construction. 4,116,483, Cl. 296-28.00C.

Krapfenbauer, Hans; and Grob, Ernst, to Ernst Grob. Method and apparatus for manufacturing straight or inclined toothed machine elements, especially spur gears by cold working. 4,116,032, Cl. 72-68.000.

Krasnikova, Oxana Kirillovna: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Krause, Herbert: *See—*
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Kreitzberg, Ernest A., to Allis-Chalmers Corporation. Safety lock for articulated joint on vehicle. 4,116,459, Cl. 280-474.000.

Krejci, Milan; and Kresse, Peter, to Bayer Aktiengesellschaft. Production of coated building components. 4,117,197, Cl. 428-443.000.

Kremer, Carl P., Jr.; and Powers, Mark O., to Eastfield Corporation. Mist generator. 4,116,387, Cl. 239-338.000.

Krenzer, John: *See—*
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Kress, Robert W.: *See—*
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Kresse, Peter: *See—*
Krejci, Milan; and Kresse, Peter, 4,117,197, Cl. 428-443.000.

Krezak, John Edward: *See—*
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Krob, Erwin; and Svoboda, Josef, to TMC Corporation. Brake device for skis. 4,116,461, Cl. 280-605.000.

Krogsrud, Harald, to Elkem-Spigerverket A/S. Method of treating wet-washed silica dust. 4,116,830, Cl. 210-63.00R.

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thin-film, PbS photoconductive detector hardened against laser damage. 4,117,329, Cl. 250-338.000.
Kruger, Hermann, to Volkswagenwerk Aktiengesellschaft. Water tank for transverse flow radiator. 4,116,268, Cl. 165-111.000.
Krumkalns, Eriks V., to Eli Lilly and Company. Method of regulating the growth of aquatic weeds with pyridine derivatives. 4,116,665, Cl. 71-66.000.
Krupp, David M.; and Hood, Robert B., to Fairchild Camera and Instrument Corporation. Electronic control system. 4,116,169, Cl. 123-32.0EC.
Kuab Konsult och Utveckling AB: *See—*
Tholen, Bengt Olov; and Hedstrom, Hans Ivar, 4,116,041, Cl. 73-12.000.
Kubens, Rolf: *See—*
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Kubota, Ltd.: *See—*
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Kubota, Naohiro: *See—*
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Kubota, Tatsushi: *See—*
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Kuhlman, Harvey G. Food forming apparatus. 4,116,119, Cl. 99-450.600.
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Kunze, Dietmar, to Kali und Salz Aktiengesellschaft. Process for the production of highly concentrated magnesium chloride solutions. 4,117,078, Cl. 423-163.000.
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Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 4,117,247, Cl. 568-845.000.
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Kuroda, Yoji: *See—*
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Kurono, Masayasu; Nakai, Hisao; and Muryobayashi, Takashi, to Ono Pharmaceutical Company. 15-Cyclobutyl-prostaglandins. 4,117,119, Cl. 424-180.000.
Kurosaki Refractories Co., Ltd.: *See—*
Horiguchi, Hiroshi; and Matsuo, Terumoto, 4,116,372, Cl. 222-600.000.
Kurrle, Frederick L., to Westvaco Corporation. Composite silicate pigment. 4,117,191, Cl. 428-330.000.
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Kusic, George: *See—*
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Kuspert, John C.: *See—*
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Kussy, Frank W.; Elmore, Claudius C., Jr.; and Molesworth, Richard E., to Gould Inc. Stationary contact combination. 4,117,290, Cl. 200-243.000.
Kutrieb, Wolfgang A. Oil heater having controlled oil flow. 4,116,614, Cl. 431-89.000.
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Kuwada, Yutaka: *See—*
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Kwiecinski, James R., to Westinghouse Electric Corp. Wire coating powder. 4,117,032, Cl. 260-857.0PE.
L.J.N. Toys, Ltd.: *See—*
Dorfman, Steven R., 4,116,443, Cl. 273-95.00R.
La Bate, Michael Donald. Patch material for chuck holes in pavement. 4,116,709, Cl. 106-284.000.
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Lacher, Rainer: *See—*
Braun, Karl; Lacher, Rainer; and Pfeiffer, Willi, 4,116,200, Cl. 128-305.000.
Lafont, Robert; and Hallot, Louis H., to Regie Nationale des Usines Renault. Method of producing iron. 4,116,678, Cl. 75-11.000.
Lagher, Gunnar: *See—*
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Laib, Lajos; Komandi, Gyorgy; Polyak, Nandor; and Bolyky, Janos, to Csepel Muvek Hiradastechnikai Gepgyara. Engine load-proportional working time measurement. 4,116,051, Cl. 73-116.000.
Lake, Marquis J., Sr.: *See—*
Acre, Sydney R.; and Lake, Marquis J., Sr., 4,116,218, Cl. 137-627.500.
Lambert, Everette M. Lap seam folder and wide width sealer. 4,116,745, Cl. 156-362.000.
Lamelot, Pierre Marie Louis; and Mousson, Roland Georges, to Societe Anonyme de Telecommunications. Infrared deviation measuring device. 4,117,327, Cl. 250-338.000.
Lane, Arlo E. Device for preventing circulation of liquid water entrained in compressed air. 4,116,650, Cl. 55-387.000.
Langemeyer, Carl; and Tetenborg, Konrad, to Windmoller & Holscher. Apparatus for automatically filling and closing sacks. 4,115,978, Cl. 53-570.000.
Langford, William D.; Leuenberger, Dale F.; and Hazlett, Howard A., to Incom International, Inc. Changeable gate plate means for lever control devices. 4,116,086, Cl. 74-532.000.
Langley, John Randolph; and Spritzer, Michael H., to General Atomic Company. Fluidized bed, gas coating apparatus. 4,116,160, Cl. 118-48.000.
Lansiart, Alain; Morucci, Jean-Pierre; and Seigneur, Alain, to Commissariat a l'Energie Atomique. Gamma radiation detector. 4,117,330, Cl. 250-361.00R.
Lant, Lawrence L., to Chem-Farm Inc. Fast clamp chisel trip. 4,116,281, Cl. 172-267.000.
Lantai, Kalman. Method of increasing the yield in the cultivation of tuber-producing plants and a device for carrying out the method. 4,115,950, Cl. 47-58.000.
Lappi, Larry R.: *See—*
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Large, George B.: *See—*
Gaughan, Edmund J.; and Large, George B., 4,116,668, Cl. 71-88.000.
Larkin, Mark E.; and King, Michael H. Remotely operated gate structure. 4,115,954, Cl. 49-240.000.
Larsen, Ward Orin. Needle valve type pump injector. 4,116,417, Cl. 251-122.000.
Larsson, Karl Olof Axel Helmer. Reefing apparatus for a sailing ship. 4,116,152, Cl. 114-106.000.
Lass, Harold M., to Corban Industries, Inc. Dry wall taping machine having an improved tape shear. 4,116,748, Cl. 156-526.000.
Latta, John S. Light detection and signaling system. 4,117,457, Cl. 340-134.000.
Lauck, John A., to National Machine Company, Inc. Flow sensing auxiliary pump by-pass valve. 4,116,577, Cl. 417-286.000.
Laurizio, Daniel V., to Fluorocarbon Company, The. High temperature slide bearing. 4,116,499, Cl. 308-3.00R.
Lavalley, Roger; Gozlan, Roger; and Brami, Gilbert, to Serpo "Societe d'Etudes et de Recherches pour la protection. Device for automatic signalling of an automotive vehicle damaged by collision. 4,117,450, Cl. 340-52.00H.
Lavertu, Roger: *See—*
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Lavine, Mortimore; and Lavine, Leanelda. Clippable trouser retaining strap. 4,115,906, Cl. 24-72.000.
Lavrentiev, Alexandr Alexeevich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.
Lawrence Brothers, Inc.: *See—*
Lawrence, Tom M., 4,116,514, Cl. 339-4.000.
Lawrence, Tom M., to Lawrence Brothers, Inc. Security hinge. 4,116,514, Cl. 339-4.000.
Lawson, Ronald; and Watson, David, to Imperial Chemical Industries Limited. Fiber process. 4,115,907, Cl. 28-266.000.
Lazzarotto, Thomas Frank. Sludge filter. 4,116,838, Cl. 210-209.000.
Leanna, Dale D.; Jorgensen, Allen R.; Curro, Thomas R.; and Bray, Andrew M., to Magna-Graphics Corporation. Embossing apparatus having magnetic roller and flexible embossing plates therefor. 4,116,594, Cl. 425-3.000.
Leblanc, Jacques; Dambier, Gerard; Coron, Noel; and Moalic, Jean-Pierre, to Agence Nationale de Valorisation de la Recherche. Liquid helium-cooled bolometer wherein the sensitive element and the elements linking the latter to the electrical connections are obtained from the same semiconductor body. 4,116,063, Cl. 73-355.00R.
Leboul, Jean: *See—*
Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, 4,116,974, Cl. 260-332.20A.
Leclerc, Henri: *See—*
Trinel, Pierre-Andre; Leclerc, Henri; and Moschetto, Yves, 4,116,631, Cl. 23-230.00B.
Leclerc, Serge, to Wabco Westinghouse. Spring actuated brake cylinder device with fluid pressure operable release piston lockout means. 4,116,113, Cl. 92-24.000.
Leduc, Arthur J., to Leduc Safety Basket Corporation. Mechanical robe grab. 4,116,305, Cl. 182-3.000.
Leduc Safety Basket Corporation: *See—*
Leduc, Arthur J., 4,116,305, Cl. 182-3.000.
Lee, Chi-Long: *See—*
Elias, Janet L.; Lee, Chi-Long; and Maxson, Myron T., 4,116,919, Cl. 260-37.0SB.
Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Recovery of lithium from brines. 4,116,856, Cl. 252-184.000.
Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Recovery of Mg^{++} from brines. 4,116,857, Cl. 252-184.000.
Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Recovery of lithium from brines. 4,116,858, Cl. 252-184.000.
Lee, Lester T. C.: *See—*
Chlanda, Frederick P.; Lee, Lester T. C.; and Liu, Kang-Jen, 4,116,889, Cl. 521-27.000.
Lee, Warren C.: *See—*
Fuhr, Arlan W.; and Lee, Warren C., 4,116,235, Cl. 128-69.000.
Leesona Corporation: *See—*
Dudzik, Chester John, 4,115,990, Cl. 57-140.00R.
Le Goff, Yves: *See—*
Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, 4,116,974, Cl. 260-332.20A.
LeGrand, Richard Webster, to Hercules Incorporated. Thread forming and neck finishing apparatus. 4,116,607, Cl. 425-525.000.
Leheu, Jacques: *See—*
Boy Marcotte, Jean-Louis; Chevalier, Georges; Gerij, Janusz; and Leheu, Jacques, 4,116,765, Cl. 176-38.000.
Lehmann, Hans; and Zondler, Helmut, to Ciba-Geigy Corporation. Storable, rapidly hardening epoxy resin adhesive. 4,117,038, Cl. 260-837.00R.
Lehmann, Rolf; and Christ, Alfred, to Escher Wyss GmbH. Apparatus for the production of flakes from granular products. 4,116,601, Cl. 425-324.100.
Lehmann, Werner; Purr, Horst; and Raible, Herrmann, to Mathias Bauerle GmbH. Device for controlling a washing liquid level in a wash tank of a printing machine. 4,116,128, Cl. 101-425.000.
Lehn, Jean-Marie; Schue, Francois; Boileau, Sylvia; Kaempf, Bernd; Cau, Alain Andre; Moinard, Jean Robert; and Raynal, Serge Fernand, to Societe Nationale des Poudres et Explosifs. Antionic polymerization. 4,116,887, Cl. 260-2.00A.
Lehnen, Josef: *See—*
Koch, Heinrich; and Lehnen, Josef, 4,117,073, Cl. 264-349.000.
Leibowitz, Marshall, to Timex Corporation. Electrochromic device with cationic ion exchange resin separator. 4,116,546, Cl. 350-356.000.
Leikhim, John William, to Procter & Gamble Company, The. Thickened bleach compositions for treating hard-to-remove soils. 4,116,849, Cl. 252-103.000.
Leikhim, John William: *See—*
Rupe, Lewis Allen; Tuthill, Lyle Brown; and Leikhim, John William, 4,116,851, Cl. 252-103.000.
Leimbach, Richard C., to Eaton Corporation. Combination tire pressure monitoring switch and inflation valve. 4,117,281, Cl. 200-61.250.
Lein, Werner: *See—*
Forster, Karl-Heinz; and Lein, Werner, 4,116,125, Cl. 101-212.000.
Leitner, Robert: *See—*
Deutscher, Fritz; and Leitner, Robert, 4,116,878, Cl. 252-94.000.
Leland Stanford Junior University, The Board of Trustees of the: *See—*
Johnson, William S.; and Bartlett, Paul A., 4,117,234, Cl. 560-107.000.
Leman, Jeffrey Donald; and Robertson, Allan James, to American Cyanamid Company. Fire retardant wood products. 4,117,200, Cl. 428-526.000.
Lemons, Ross Alan: *See—*
Coldren, Larry Allen; Glass, Alastair Malcolm; and Lemons, Ross Alan, 4,117,424, Cl. 333-30.00R.
Leneuf, Andre, to Manufacture de Produits Chimiques Protex. Hydroxy-containing agents for chelating metal ions and a process for preparing same. 4,116,991, Cl. 260-439.00R.
Lengyel, Sandor: *See—*
Horvath, Laszlo; Major, Ferenc; Gaal, Otto; and Lengyel, Sandor, 4,116,328, Cl. 198-648.000.
Lennington, John W.: *See—*
McDougal, John A.; and Lennington, John W., 4,116,173, Cl. 123-117.00R.
Lentz, James A.; and Safford, George J., to Xerox Corporation. Compositions and method for enhancing electrical life of copolymers. 4,116,894, Cl. 521-94.000.
Lenzen, Glenn H., Jr.: *See—*
Earle, Michael; and Lenzen, Glenn H., Jr., 4,117,302, Cl. 219-121.0LM.
Leonard, Vernon Leon: *See—*
Saxon, Daniel Isaiah; and Leonard, Vernon Leon, 4,115,908, Cl. 28-269.000.
Leonhard, Kurt: *See—*
Lohr, Joachim; Bauer, Friedrich; and Leonhard, Kurt, 4,116,172, Cl. 123-52.00M.
Leopold, Leo. Folding liner for shirts and other packaged garments. 4,116,335, Cl. 206-492.000.
Lese, Henri K.: *See—*
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,817, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,818, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,819, Cl. 208-216.000.
Lesea, Ronald A., to Candela Electronics, Inc. Telephone answering and call diverting system. 4,117,270, Cl. 179-18.0BE.
Leto, Alfred R.: *See—*
Belmuth, Harold M.; Leto, Alfred R.; London, Lawrence; and Zuckerman, Herman A., 4,115,938, Cl. 40-152.000.
Leuenberger, Dale F.: *See—*
Langford, William D.; Leuenberger, Dale F.; and Hazlett, Howard A., 4,116,086, Cl. 74-532.000.
Levandoski, Raymond Alexander: *See—*
Hudson, James Alphus, Jr.; Levandoski, Raymond Alexander; and Long, Allen Kyle, 4,117,398, Cl. 324-61.00R.
Lever Brothers Company: *See—*
Bradshaw, Noel James; Savage, David; and Sneath, Michael Edwin, 4,117,172, Cl. 426-276.000.
Deutscher, Fritz; and Leitner, Robert, 4,116,878, Cl. 252-94.000.
Leverenz, Melvin E., to Diamond Crystal Salt Company. Salt dissolver. 4,116,640, Cl. 422-264.000.
Levine, Michael R. Computer assisted display processor having memory sharing by the computer and the processor. 4,117,469, Cl. 340-324.0AD.
Levinos, Steven, to Keuffel & Esser Company. Photo-imaging utilizing alkali-activated photopolymerizable compositions. 4,116,693, Cl. 96-35.100.
Levy, Norman: *See—*
Eisenberg, Melvin I.; Levy, Norman; and Beall, Glenn L., 4,116,227, Cl. 128-2.00F.
Lewis, Barry J.; Kuspert, John C.; Saunders, Arthur G.; and McAusland, Robert R., to Norfin, Inc. Sheet binding apparatus. 4,116,750, Cl. 156-563.000.
Lewis, Edward Lloyd, to Elliott Brothers (London) Limited. Method for making optical-fibre cables. 4,116,655, Cl. 65-4.00B.
Lewis, Howard A.: *See—*
Coberly, Charles W.; and Lewis, Howard A., 4,116,523, Cl. 339-108.0TP.
Lezgintsev, Georgy Mikhailovich; Istoshin, Stanislav Jurievich; Belyavsky, Mikhail Anatolievich; Kontar, Evgeny Alexeevich; Koptyazhin, Nikolai Nikolaevich; Agaltsov, Georgy Ivanovich; Chernov, Boris Serafimovich; Ter-Saakov, Eduard Isaakovich; and Shkatov, Evgeny Petrovich. Device for taking bottom soil samples from deep water basins. 4,116,069, Cl. 73-425.200.
Li, Choh Hao, to Hoffmann-La Roche Inc. Analogs of human β-endorphin. 4,116,950, Cl. 260-112.50R.
Li, George S.; and Rosen, Irving, to Standard Oil Company, The. Thermoplastic resin blends containing polyindene or coumarone-indene resin. 4,117,040, Cl. 260-899.000.
Li, George S., to Standard Oil Company, The. High softening maleic anhydride copolymers. 4,117,218, Cl. 526-272.000.
Liakumovich, Alexandr Grigorievich: *See—*
Abramov, Ivan Egorovich; Gershanov, Felix Borisovich; Dolidze, Vladimir Romanovich; Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Popov, Vasily Dmitrievich; Rutman, Grigory Iosifovich; and Shalimova, Zoya Stepanovna, 4,117,244, Cl. 568-799.000.
Libbey-Owens-Ford Company: *See—*
Revells, Robert G., 4,116,662, Cl. 65-289.000.
Libby, Edwin L.; and Miller, Myrl J., to International Business Machines. Optical system featuring change in magnification by combined lens and mirror motion. 4,116,562, Cl. 355-60.000.
Libby, Edwin Langford; and Miller, Myrl J., to International Business Machines Corporation. Optical reduction system featuring the provision of borders. 4,116,554, Cl. 355-11.000.
Liberman, Harvey W.; Goranson, Paul L.; Ratledge, R. Houston, Jr.; and Salyers, John C., to Carrier Corporation. Methods for loading refuse. 4,116,121, Cl. 100-39.000.
Licht, Lazar, to United Technologies Corporation. Resilient foil thrust bearings. 4,116,503, Cl. 308-9.000.
Lichtblau, George Jay. Beat frequency interference rejection circuit. 4,117,466, Cl. 340-501.000.
Liebert, Timothy C.; and McClintock, William A., to Phillips Petroleum Company. Process for purifying diolefin. 4,117,025, Cl. 260-681.500.
Liebi, Harald: *See—*
Zaugg, Hans; and Liebi, Harald, 4,116,221, Cl. 126-271.000.
Liesener, Kenneth P., to Caterpillar Tractor Co. Load plus differential

pressure compensator pump control assembly. 4,116,587, Cl. 417-212.000.
Lietz, Dennis E.; and Kinney, Layton F., to P.R.A. Laboratories Incorporated. Alkyd-supported emulsion interpolymers and methods for preparation. 4,116,903, Cl. 260-22.0CB.
Liggett Group Inc.: *See—*
Hall, Floyd Van, 4,116,602, Cl. 425-354.000.
Lilienthal, Clarence D.: *See—*
Kintigh, Stanley S.; and Lilienthal, Clarence D., 4,117,392, Cl. 323-21.000.
Lilja, E. Harold: *See—*
Porth, Chris H.; and Lilja, E. Harold, 4,115,957, Cl. 51-170.0EB.
Lillig, John E.; Meyer, Richard C.; and Anderson, Robert J., to Beckman Instruments, Inc. Signal conditioning circuit. 4,117,414, Cl. 330-149.000.
Limbach, Walter S., II; and Kusic, George, to Automation Equipment Inc. Tracer control circuit. 4,117,385, Cl. 318-578.000.
Lindahl, Sven: *See—*
Lindgren, Ake; and Lindahl, Sven, 4,116,603, Cl. 425-370.000.
Linde AG.: *See—*
Oberpriller, Jakob, 4,116,017, Cl. 62-62.000.
Linde Aktiengesellschaft: *See—*
Stockner, Josef; and Wildmoser, Alfred, 4,117,048, Cl. 261-93.000.
Linder, Ernst; and Thut, Kurt, to Osterwalder AG. Hydraulic driven press. 4,116,122, Cl. 100-48.000.
Lindgren, Ake; and Lindahl, Sven, to Aktiebolaget Carl Munters. Apparatus for corrugating a web of sheet material. 4,116,603, Cl. 425-370.000.
Lindo, Neil A.: *See—*
Zinnes, Harold; Lindo, Neil A.; and Shavel, John, Jr., 4,116,964, Cl. 260-294.80C.
Lindwall, Conny Holger: *See—*
Appelquist, Jan Olov; and Lindwall, Conny Holger, 4,117,294, Cl. 219-10.55C.
Linfield, Warner M.: *See—*
Bistline, Raymond G., Jr.; Linfield, Warner M.; and Noble, Wilfred R., 4,116,986, Cl. 260-401.000.
Linsi, Ulrich: *See—*
Horler, Hansulrich; Linsi, Ulrich; and Policke, Oswald, 4,116,502, Cl. 308-9.000.
Lion Oil Company: *See—*
Tarver, Gilbert W.; and Koons, Russell E., 4,116,708, Cl. 106-281.00R.
Liou Tchen San, Rene. Tamper resistant alarm annunciator. 4,117,467, Cl. 340-506.000.
Lipp, Eberhard: *See—*
Lodige, Wilhelm; Lodige, Fritz; Lucke, Josef; and Lipp, Eberhard, 4,117,223, Cl. 536-99.000.
Lipschutz, Paul, to Neiman S.A. Anti-theft device for machines equipped with a diesel or like engine. 4,116,024, Cl. 70-201.000.
Litecraft Pty. Ltd.: *See—*
Drower, Wilfred, 4,116,460, Cl. 280-478.00R.
Liu, Kang-Jen: *See—*
Chlanda, Frederick P.; Lee, Lester T. C.; and Liu, Kang-Jen, 4,116,889, Cl. 521-27.000.
Lockheed Corporation: *See—*
Jones, Lamar J.; and Williams, Carl W., 4,116,400, Cl. 242-67.10R.
Lodige, Fritz: *See—*
Lodige, Wilhelm; Lodige, Fritz; Lucke, Josef; and Lipp, Eberhard, 4,117,223, Cl. 536-99.000.
Lodige, Wilhelm; Lodige, Fritz; Lucke, Josef; and Lipp, Eberhard. Process for the preparation of cellulose alkyl ethers. 4,117,223, Cl. 536-99.000.
Loewe, Werner; and Striebel, Heini Paul, to Ciba-Geigy AG. Anthelmintic preparations. 4,117,156, Cl. 424-302.000.
Logan, James H., to General Electric Company. Hybrid deflection system with quadripolar correction coils. 4,117,434, Cl. 335-213.000.
Lohmann, Frank: *See—*
Rohringer, Peter; Lohmann, Frank; and Wurster, Rudolf F., 4,116,702, Cl. 106-15.0FP.
Lohr & Bromkamp GmbH: *See—*
Aucktor, Erich; and Rubin, Wolfgang, 4,116,020, Cl. 64-21.000.
Welschof, Hans-Heinrich, 4,116,019, Cl. 64-17.00A.
Lohr, Joachim; Bauer, Friedrich; and Leonhard, Kurt, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Naturally aspirated eight cylinder internal combustion engine. 4,116,172, Cl. 123-52.00M.
London, Lawrence: *See—*
Belmuth, Harold M.; Leto, Alfred R.; London, Lawrence; and Zuckerman, Herman A., 4,115,938, Cl. 40-152.000.
Long, Allen Kyle: *See—*
Hudson, James Alphus, Jr.; Levandoski, Raymond Alexander; and Long, Allen Kyle, 4,117,398, Cl. 324-61.00R.
Long, Delmar D., to M. Lowenstein & Sons, Inc. Substrate passes through pool confining wall coating apparatus. 4,116,159, Cl. 118-34.000.
Long, William J., to United States Gypsum Company. Starch-coated paper and gypsum wallboard prepared therewith. 4,117,183, Cl. 428-201.000.
Longley, Kermit D.; and Karalis, Anastasios J., to Witco Chemical Corporation. Unsymmetrical sulfosuccinate diesters. 4,117,237, Cl. 560-151.000.
Lonza, Ltd.: *See—*
Hardt, Peter, 4,116,968, Cl. 260-290.00V.
Loomskill, Inc.: *See—*
Wolpert, Stanley, 4,115,937, Cl. 35-55.000.
Lopata, Karl Peter; and Schiffer, Gunter, to Kleinewefers Industrie-Companie GmbH. Device for printing on webs of textile material. 4,116,022, Cl. 68-5.00D.
Love, Robert Bruce; and Bowen, Alan W., to Battelle Development Corporation. Two-sided planar magnetron sputtering apparatus. 4,116,806, Cl. 204-298.000.
Love, William W., to Brandt Company, The. Method and apparatus for continuously separating lost circulating material from drilling fluid. 4,116,288, Cl. 175-66.000.
Lowndes Engineering Co., Inc.: *See—*
Waldron, David W., 4,116,385, Cl. 239-77.000.
Luborsky, Fred E.: *See—*
Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., 4,116,728, Cl. 148-108.000.
Lubov, Donald S., to Georight Industries, Inc. Building module. 4,115,963, Cl. 52-81.000.
Lubrizol Corporation, The: *See—*
Jahnke, Richard William, 4,116,872, Cl. 252-32.70E.
Lucas Industries Limited: *See—*
Hodgson, Duncan Barry; Thornton, John Robert; and Rose, Jonathan, 4,117,453, Cl. 340-76.000.
Mardell, John Edward, 4,116,591, Cl. 417-417.000.
Phillips, Ronald; and Melville, James Campbell, 4,116,588, Cl. 417-252.000.
Lucas, Richard C.: *See—*
Hornak, Thomas; and Lucas, Richard C., 4,117,347, Cl. 307-221.00D.
Lucke, Josef: *See—*
Lodige, Wilhelm; Lodige, Fritz; Lucke, Josef; and Lipp, Eberhard, 4,117,223, Cl. 536-99.000.
Ludwig, Frank A., to Ford Motor Company. Electrical conversion device with ceramic electrode. 4,117,208, Cl. 429-104.000.
Lueders, Arthur L.: *See—*
Kim, Raymond W. H.; Lueders, Arthur L.; Prelletz, Edward R.; and Warden, Gerald D., 4,116,551, Cl. 352-124.000.
Luk Lamellen und Kupplungsbau GmbH: *See—*
Maucher, Paul, 4,116,313, Cl. 192-3.630.
Lukens Steel Company: *See—*
Joshi, Satish Vishwanath; and Bracher, Douglas Lee, 4,116,690, Cl. 75-257.000.
Lukicheva, Natalya Ivanovna: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.
Lummus Company, The: *See—*
Barchas, Richard K., 4,116,999, Cl. 260-465.00H.
Gelbein, Abraham P.; and Sze, Morgan C., 4,116,967, Cl. 260-295.50R.
Lundeen, Allan J.: *See—*
Starks, Charles M.; and Lundeen, Allan J., 4,117,243, Cl. 568-744.000.
Lupacheva, Alla Naumovna: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.
Lupkas, Raymond R. Solar energy collection device. 4,116,224, Cl. 126-271.000.
Luttrell, Richard W.; and Purcell, Robert J., to Caterpillar Tractor Co. Sprocket profile. 4,116,081, Cl. 74-243.00R.
Lutz, Erno B., to Solfan Systems, Inc. Microwave motion-detection apparatus employing a Gunn oscillator in a self-detecting mode. 4,117,464, Cl. 340-554.000.
Luzsicza, Steven O.: *See—*
Snyder, Daniel S.; Luzsicza, Steven O.; and Pauer, Lyle A., 4,117,452, Cl. 340-58.000.
Luzzi, John J.: *See—*
Ramey, Chester E.; and Luzzi, John J., 4,116,933, Cl. 260-45.75N.
Lyalin, Vladimir Nikolaevich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.
M. Lowenstein & Sons, Inc.: *See—*
Long, Delmar D., 4,116,159, Cl. 118-34.000.
Maas, Edward T., Jr., to Exxon Research & Engineering Co. Process for increasing the reaction rate of UO_2F_2. 4,117,083, Cl. 423-253.000.
Maas, Edward T., Jr., to Exxon Research & Engineering Co. Process for producing UO_2F_2. 4,117,084, Cl. 423-253.000.

Macenka, Johannes; Fischer, Manfred; and Gohlke, Fritz Joachim, to Hoechst Aktiengesellschaft. Crude oil demulsifiers. 4,117,031, Cl. 260-838.000.
Machida, Hazime; Tamura, Hiroshi; and Murakami, Kakuji, to Ricoh Co., Ltd. Ferrocyanate treating liquid for offset master. 4,116,698, Cl. 106-2.000.
Machigin, Stanislav Pavlovich: *See—*
Bulychev, Gennady Alexeevich; Bykovsky, Anatoly Vladimirovich; Machigin, Stanislav Pavlovich; and Strelkov, Konstantin Sergeevich, 4,116,056, Cl. 73-147.000.
Macier, Robert Raymond: *See—*
Gilbert, Kendall E.; Johnson, Daniel; and Macier, Robert Raymond, 4,115,998, Cl. 60-39.09R.
Mack, Richard B.: *See—*
Gorr, Benjamin B.; and Mack, Richard B., 4,117,485, Cl. 343-18.00E.
Mackey, Lindsay Joan: *See—*
Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, 4,117,112, Cl. 424-89.000.
Maclaren, Owen F., to Gannet Holdings Limited. Baby carriages. 4,116,465, Cl. 280-647.000.
MacLennan, Alexander G., to Charles Stark Draper Laboratory, Inc., The. Torqueless relatively moving transformer windings. 4,117,436, Cl. 336-65.000.
MacMillen, Kenneth T. Method of retreading a tire utilizing an annular sealing gap. 4,117,053, Cl. 264-36.000.
Maeda, Kiyoto: *See—*
Hisada, Yoshio; Maeda, Kiyoto; and Agui, Hideo, 4,117,136, Cl. 424-258.000.
Maessen, Hendrikus J. G.: *See—*
Balg, Theodorus; Cramers, Constant M. A.; and Maessen, Hendrikus J. G., 4,117,000, Cl. 260-465.100.
Magar, Ingrid Joan; and Morris, Patrick Evan, to International Nickel Company, Inc., The. Reference electrode for use at high temperatures and pressures. 4,116,798, Cl. 204-195.00F.
Magna-Graphics Corporation: *See—*
Leanna, Dale D.; Jorgensen, Allen R.; Curro, Thomas R.; and Bray, Andrew M., 4,116,594, Cl. 425-3.000.
Magnaflux Corporation: *See—*
Strauts, Eric J., 4,117,334, Cl. 250-402.000.
Magnall, Anthony N.; Taylor, Philip H.; and Roberts, Fred, to TBA Industrial Products Ltd. Asbestos products. 4,115,991, Cl. 57-153.000.
Magner, Richard G.: *See—*
Powell, William E.; and Magner, Richard G., 4,116,565, Cl. 356-105.000.
Magnusson, Alan B.: *See—*
Dieck, Ronald L.; Garrett, Thomas B.; and Magnusson, Alan B., 4,116,891, Cl. 521-89.000.
Maillefer, Charles: *See—*
Swarbrick, Peter; Green, William John; and Maillefer, Charles, 4,117,195, Cl. 428-379.000.
Maj Andersson Arkitektkontor AB: *See—*
Andersson, Maj; and Lagher, Gunnar, 4,116,377, Cl. 236-12.00A.
Major, Ferenc: *See—*
Horvath, Laszlo; Major, Ferenc; Gaal, Otto; and Lengyel, Sandor, 4,116,328, Cl. 198-648.000.
Major, Rodney Victor, to Telcon Metals Limited. Magnetical soft alloys with good mechanical properties. 4,116,727, Cl. 148-31.550.
Majumdar, Asit, to Pioneer Industries, Div. of Core Industries Inc. Frame and seal assembly. 4,115,968, Cl. 52-204.000.
Maki, Masao: *See—*
Shibata, Tsuneo; Maki, Masao; Suzuki, Masao; and Kawabe, Hidehiko, 4,116,881, Cl. 252-440.000.
Makinson, George Kenneth; and Schofield, David, to Imperial Chemical Industries Limited. Preparation of esters of m-phenoxybenzyl alcohol and its α-cyano and α-ethinyl derivatives with 2,2-dimethylcyclopropanecarboxylic acids. 4,116,998, Cl. 260-465.00D.
Malak, Stephen P. Shaft aligner. 4,115,925, Cl. 33-181.00R.
Malarsky, Frank. Dent puller. 4,116,035, Cl. 72-389.000.
Malec, Robert E., to Ethyl Corporation. Additives. 4,117,011, Cl. 260-570.50P.
Maliszewski, Thomas Arthur: *See—*
Foster, Robert Dean; Maliszewski, Thomas Arthur; Sims, Joseph Alton, Jr.; and Taylor, Glenn Alfred, 4,117,250, Cl. 568-858.000.
Mallek, Heinz; Jablonski, Werner; and Pelzer, Peter, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Method of and furnace for burning waste material. 4,116,136, Cl. 110-251.000.
Malloy, Paul L.: *See—*
O'Farrell, Charles P.; Malloy, Paul L.; and Thompson, Francis M., 4,117,186, Cl. 428-265.000.
Malm, Curtis Lawrence: *See—*
Reed, Meuriel Francis; and Malm, Curtis Lawrence, 4,116,569, Cl. 401-216.000.
Manabe, Masao: *See—*
Abe, Nobuyuki; Watanabe, Osamu; Nunokawa, Koji; Tanaka, Ichiro; and Manabe, Masao, 4,116,012, Cl. 405-238.000.
Manabe, Takao, to Toshiba Kikai Kabushiki Kaisha. Programming systems for automatic sewing machines. 4,116,143, Cl. 112-121.110.
Mangless, Vernon W., to Allis-Chalmers Corporation. Tiltable cab mounting. 4,116,484, Cl. 296-28.00C.
Mansfield, Donald Longworth; and Woodward, Walter Ray, to USM Corporation. Rotor for stepping motor. 4,117,356, Cl. 310-49.00R.
Manufacture de Produits Chimiques Protex: *See—*
Leneuf, Andre, 4,116,991, Cl. 260-439.00R.
Maracic, Mirko. Self-adjusting wind machine. 4,116,585, Cl. 416-41.000.
Marconi Company Limited, The: *See—*
Wilson, William George Moore; and Stewart, Douglas Edward, 4,117,331, Cl. 250-334.000.
Mardell, John Edward, to Lucas Industries Limited. Fuel injection pumps. 4,116,591, Cl. 417-417.000.
Marjoran, Michael J.: *See—*
Winchester, Roy E.; Marjoran, Michael J.; and O'Brien, Roger, 4,116,430, Cl. 271-177.000.
Markin, Trevor Leslie; Bones, Roger John; Scott, Keith Taylor; May, Geoffrey John; and Robinson, Graham, to Chloride Silent Power Limited. Electrochemical cells. 4,117,209, Cl. 429-104.000.
Marks, Cedric. Bottle with a multiple part label. 4,115,939, Cl. 40-310.000.
Marlowe, Frank Jerome; and Anderson, Charles Hammond, to RCA Corporation. Modular type guided beam flat display device. 4,117,368, Cl. 313-422.000.
Marra, Dorothea C.: *See—*
Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C., 4,116,370, Cl. 222-402.180.
Marsh, Harold E., Jr.: *See—*
Shafer, John I.; and Marsh, Harold E., Jr., 4,116,131, Cl. 102-103.000.
Marshall, Arthur N., to Traffic Safety Systems, Inc. System of communications to alert police personnel of trouble on expressways. 4,117,404, Cl. 325-1.000.
Marshall, Vincent P.; Elrod, David W.; Koert, James M.; Reisender, Elizabeth A.; and Wiley, Paul F., to Upjohn Company, The. Process for preparing 7-deoxysteffimycinol. 4,116,769, Cl. 195-51.00R.
Marsili, Leonardo: *See—*
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, 4,116,957, Cl. 260-239.30P.
Martel, Charles Simeon; Papillon, Jean-Guy; and Papillon, Paul. Wall system. 4,115,980, Cl. 52-591.000.
Marten, Hilda C. Register tape editor. 4,116,468, Cl. 281-7.000.
Martin, Anthony Newman; Buczek, Carl James; and Mongeon, Robert Joseph, to United Technologies Corporation. Engine control system. 4,116,000, Cl. 60-242.000.
Martin, Anthony Newman: *See—*
Walworth, Kirk Sumner; and Martin, Anthony Newman, 4,117,460, Cl. 340-190.000.
Martin, Dallas James, to Western Geophysical Co. of America. T-bar base plate for a seismic signal transducer. 4,116,299, Cl. 181-113.000.
Martin, David Michael: *See—*
Greer, Raymond Thomas; Vale, Bradley Harold; and Martin, David Michael, 4,117,323, Cl. 250-311.000.
Martin, John Frederick: *See—*
Graham, Gordon Judson; Martin, John Frederick; and Crowell, Douglas Hodgen, 4,116,097, Cl. 83-155.000.
Martinez, Louis. Narrow-band radio communication system. 4,117,405, Cl. 325-58.000.
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich. Tubular coiled heat exchanger and device for manufacturing same. 4,116,270, Cl. 165-162.000.
Marusiak, Frank, Jr., to Raymond Lee Organization, Inc., The, a part interest. Radiator concealing article of furniture. 4,116,507, Cl. 312-210.000.
Marvel Specialty Company: *See—*
Harrill, John D., 4,116,021, Cl. 66-149.00S.
Marvin Glass & Associates: *See—*
Breslow, Jeffrey D., 4,116,449, Cl. 273-240.000.
Marvin, Mason D.: *See—*
Boerstler, Leslie H.; Discenza, Walter V., Jr.; Marvin, Mason D.; and Ebersole, Theodore J., 4,117,344, Cl. 290-52.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Lohr, Joachim; Bauer, Friedrich; and Leonhard, Kurt, 4,116,172, Cl. 123-52.00M.
Motz, Karl; Meyer, Josef; and Schurrer, Josef, 4,116,501, Cl. 308-9.000.
Mascioli, Rocco L.: *See—*
Bechara, Ibrahim S.; Carroll, Felix P.; Mascioli, Rocco L.; and Panchak, John R., 4,116,879, Cl. 252-426.000.
Mashkovsky, Mikhail Davydovich; Yakhontov, Leonid Nikolaevich; Ado, Andrei Dmitrievich; Kaminka, Mikhail Emmanuilovich; Mikhlina, Eva Evseevna; Vorobieva, Valentina Yakovlevna; Yanina, Anna Dmitrievna; and Komarova, Nadezhda Andreevna. Medicated compound for treating allergic diseases. 4,117,139, Cl. 424-267.000.
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich. Heterogeneous semiconductor structure with composition gradient and method for producing same. 4,117,504, Cl. 357-16.000.

Massachusetts Institute of Technology: *See—*
Baker, Richard H., 4,117,364, Cl. 318-230.000.
Hong, Henry Y-P, 4,117,103, Cl. 423-593.000.

Massey-Ferguson Services N.V.: *See—*
Todeschini, Eugenio; and Riganti, Gian Piero, 4,116,292, Cl. 180-6.480.

Masuda, Akio, to Alps Shoji Co., Ltd. Movable toy having gear disengaging mechanism and gear changing mechanism. 4,116,084, Cl. 74-342.000.

Masuda, Hidemi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for suspending an exhaust pipe in vehicles. 4,116,411, Cl. 248-60.000.

Masuda, Noboru; Nishino, Yu; and Kase, Hiroaki, to Denki Onkyo Co., Ltd. Magnetic sensor having a hollow housing sealed with a shield cap. 4,117,523, Cl. 360-110.000.

Matesa, Joseph Michael; and Rau, Frank John, to PPG Industries, Inc. Apparatus and method for circulating molten metal in a bath used in the manufacture of glass. 4,116,659, Cl. 65-99.00A.

Mathbirk Limited: *See—*
Matthews, Denis, 4,116,146, Cl. 112-217.200.
Matthews, Denis, 4,116,147, Cl. 112-217.100.

Mathe, George L.; and Osmalov, Jerome S., to Philip Morris Incorporated. Method for twisting strip material. 4,117,064, Cl. 264-103.000.

Mathias Bauerle GmbH: *See—*
Lehmann, Werner; Purr, Horst; and Raible, Herrmann, 4,116,128, Cl. 101-425.000.

Mathias, Eckart, to W. R. Grace & Co. Photocurable imidizable polyene-polythiol compositions. 4,117,196, Cl. 428-379.000.

Mathis Fertigputz GmbH: *See—*
Mathis, Paul; and Zimmer, Max, 4,117,547, Cl. 366-17.000.

Mathis, Paul; and Zimmer, Max, to Mathis Fertigputz GmbH. Apparatus for the preparation of mortar or the like. 4,117,547, Cl. 366-17.000.

Matson, Lawrence W., Jr.: *See—*
Nixon, Jeddy D.; and Matson, Lawrence W., Jr., 4,116,451, Cl. 277-116.000.

Matsubara, Kunio: *See—*
Ishikawa, Toshikatsu; Tanaka, Junichi; Tominaga, Yoichiro; Matsubara, Kunio; Kitazume, Yoshihiko; and Hayase, Tokuji, 4,117,051, Cl. 264-29.100.

Matsuda, Hiroshi: *See—*
Takahashi, Yuzo; Wazima, Yoshimi; Nakada, Akira; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Aizawa, Eizi; and Oyama, Shiro, 4,117,188, Cl. 428-36.000.

Matsumoto, Seiji; and Fukai, Kiyoshi, to Sakai Chemical Industry Co., Ltd. Production of single crystalline ferrite particles. 4,116,752, Cl. 156-624.000.

Matsumoto, Tadayuki: *See—*
Nakagawa, Kiyoshi; Mineo, Masatoshi; Matsumoto, Tadayuki; and Imaeda, Kozo, 4,115,988, Cl. 57-140.0BY.

Matsunaga, Takayoshi: *See—*
Shiohara, Tomoo; Matsunaga, Takayoshi; and Horioka, Mikihiko, 4,116,907, Cl. 260-23.0XA.

Matsuo, Satoshi, to Tokyo Shibaura Electric Co., Ltd. Living body function measuring apparatus. 4,116,231, Cl. 128-2.10Z.

Matsuo, Terumoto: *See—*
Horiguchi, Hiroshi; and Matsuo, Terumoto, 4,116,372, Cl. 222-600.000.

Matsushige, Seiichi: *See—*
Sato, Kazuo; Toriyama, Haruhiko; and Matsushige, Seiichi, 4,117,451, Cl. 340-52.00A.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kajino, Jirou; and Iwasaki, Kazumi, 4,117,520, Cl. 360-95.000.
Koyanagi, Yukio, 4,117,476, Cl. 340-347.0DA.
Ohta, Yoshio; Matsuura, Toshiro; and Nakabe, Ryuhei, 4,117,510, Cl. 358-44.000.
Shibata, Tsuneo; Maki, Masao; Suzuki, Masao; and Kawabe, Hidehiko, 4,116,881, Cl. 252-440.000.
Shioyama, Tadao; and Koda, Minoru, 4,117,519, Cl. 360-84.000.
Terui, Yasuaki; and Yoshino, Masaru, 4,117,514, Cl. 358-213.000.
Tsunoo, Masahiko; Hirose, Namio; Kimura, Takeji; Inoue, Michihiro; and Sato, Masaharu, 4,116,102, Cl. 84-1.220.

Matsuura, Toshiro: *See—*
Ohta, Yoshio; Matsuura, Toshiro; and Nakabe, Ryuhei, 4,117,510, Cl. 358-44.000.

Matsuyama, Akira, to Figaro Giken Co., Ltd. Method of completely oxidizing carbon monoxide. 4,117,082, Cl. 423-247.000.

Matthews, Denis, to Mathbirk Limited. Sewing machines. 4,116,146, Cl. 112-217.200.

Matthews, Denis, to Mathbirk Limited. Sewing machines. 4,116,147, Cl. 112-217.100.

Matthews, Russell Byron, to Johnson Controls, Inc. Direct ignition system with interlock protection. 4,116,613, Cl. 431-78.000.

Mau, Theodore A.: *See—*
Runte, Robert Ralph; and Mau, Theodore A., 4,116,441, Cl. 273-85.00G.

Maucher, Paul, to Luk Lamellen und Kupplungsbau GmbH. Drive mechanism for utility or commercial vehicles such as tractors, construction machinery or the like. 4,116,313, Cl. 192-3.630.

Maurer Engineering, Inc.: *See—*
Nixon, Jeddy D.; and Matson, Lawrence W., Jr., 4,116,451, Cl. 277-116.000.

Max Planck-Gesellschaft zur Forderung der Wissenschaften: *See—*
Wunsch, Erich, 4,117,117, Cl. 424-177.000.

Maxson, Myron T.: *See—*
Elias, Janet L.; Lee, Chi-Long; and Maxson, Myron T., 4,116,919, Cl. 260-37.0SB.

Maxwell, David. Disposable fluid dispenser. 4,116,571, Cl. 401-264.000.

May, Geoffrey John: *See—*
Markin, Trevor Leslie; Bones, Roger John; Scott, Keith Taylor; May, Geoffrey John; and Robinson, Graham, 4,117,209, Cl. 429-104.000.

May, Timothy T.: *See—*
Harriman, Russell H.; and May, Timothy T., 4,116,469, Cl. 282-23.00R.

Mayer, Endre A.; and Kelso, Charles R., to Bendix Corporation, The. Radial carburetor. 4,116,185, Cl. 123-139.0AW.

Mayer, Frederick J.: *See—*
Moncur, Norman K.; and Mayer, Frederick J., 4,116,542, Cl. 350-321.000.

Mayer, Rolf, to Bosch-Siemens Hausgerate GmbH. Household appliance driven by an electric motor, especially slicing machine for foods. 4,116,099, Cl. 83-571.000.

Mayer, Steven T.; and Milner, Ronald E., to Atari, Inc. Method for generating a plurality of moving objects on a video display screen. 4,116,444, Cl. 273-101.200.

Mazzorana, Alfred Bruno, to Societe de Paris et du Rhone. Starters. 4,116,077, Cl. 74-7.00A.

McAusland, Robert R.: *See—*
Lewis, Barry J.; Kuspert, John C.; Saunders, Arthur G.; and McAusland, Robert R., 4,116,750, Cl. 156-563.000.

McCary, Richard O.: *See—*
Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., 4,116,728, Cl. 148-108.000.

McClintock, William A.: *See—*
Liebert, Timothy C.; and McClintock, William A., 4,117,025, Cl. 260-681.500.

McCord Corporation: *See—*
Flanagan, Kirby E. L., 4,116,893, Cl. 521-137.000.

McCormick, Harold E., to Ramsey Corporation. Method for increasing the life of silicon carbide grinding wheels. 4,115,959, Cl. 51-295.000.

McCown, Thomas E., to McDonnell Douglas Corporation. Cryogenic insulation system. 4,116,150, Cl. 114-74.00A.

McDonald, David Ian, to Cincinnati Milacron Inc. Conveyor combined with coupling for handling workpiece. 4,116,325, Cl. 198-484.000.

McDonald, John F.: *See—*
Tiersten, Harry F.; McDonald, John F.; and Das, Pankaj K., 4,117,074, Cl. 310-320.000.

McDonnell Douglas Corporation: *See—*
Charles, Ronald A.; Jones, Paul W.; Staples, John L.; and Wiegner, Joseph R., 4,116,775, Cl. 195-103.50M.
Coggins, Dolphus L.; and Gumbelevicius, John, 4,116,755, Cl. 156-659.000.
Hall, Roy F.; and Kramer, Elmer C., 4,116,580, Cl. 408-230.000.
McCown, Thomas E., 4,116,150, Cl. 114-74.00A.
Steube, Kenneth E., 4,116,161, Cl. 118-49.100.
Trudell, Richard W., 4,116,303, Cl. 181-252.000.

McDougal, John A.; and Lennington, John W. Internal combustion engine ignition system. 4,116,173, Cl. 123-117.00R.

McFadden, Arthur Raymond; and Aultz, Daniel Eugene, to American Hoechst Corporation. Oxofuranobenzoxepin-acetic acids, precursors and derivatives thereof. 4,117,152, Cl. 424-285.000.

McFarland, David Lee; and McFarland, Raymond Joseph. Automatic fluid fertilizer control apparatus. 4,116,138, Cl. 111-7.000.

McFarland, Raymond Joseph: *See—*
McFarland, David Lee; and McFarland, Raymond Joseph, 4,116,138, Cl. 111-7.000.

McGee, John K.; and Bridges, Charles D., to Gray Tool Company. Full flow tubing plug with locked anchor and method. 4,116,277, Cl. 166-315.000.

McGlynn, John F., to IPCO Hospital Supply Corporation. Disposable tape cord thermometer. 4,116,064, Cl. 73-362.0AR.

McGroddy, James Cleary; and Van Vechten, James Alden, to International Business Machines Corporation. Printing and displaying technology using selective laser beam pricking of liquid film for writing information. 4,117,497, Cl. 346-17.000.

McInerny, George P., to Brandt-Pra, Inc. Ticket counter and endorser. 4,116,127, Cl. 101-232.000.

McKendry, Lennon H.; and Bland, Walter P., to Dow Chemical Company, The. 4(3H)-Oxobenzo-2,1,3-thiadiazine-2,2-dioxides and derivatives thereof. 4,116,672, Cl. 71-91.000.

McKernan, Bernard J.; and Stargell, Donald E., to Van Dorn Company. Can end with protective fold. 4,116,360, Cl. 220-273.000.

McKinney, James T., to Minnesota Mining and Manufacturing Company. Ion scattering spectrometer including cylindrical mirror analyzer and ion gun axially positioned therewithin. 4,117,322, Cl. 250-309.000.

McKinney, Joel Drexler: *See—*
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,817, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,818, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,819, Cl. 208-216.000.

McLarty, Colin S.: *See—*
Currey, John E.; McLarty, Colin S.; and Porter, Donald H., 4,116,800, Cl. 204-252.000.

McMahon, Donald H., to Sperry Rand Corporation. Apparatus and method for high speed accessing of character images. 4,116,534, Cl. 350-157.000.

McMaster, Harold A. High temperature furnace. 4,117,252, Cl. 13-25.000.

McMullin, Dwain G.: *See—*
Reed, Ronald H.; Miracle, William C.; and McMullin, Dwain G., 4,117,530, Cl. 361-365.000.

McNeel, William O., to Geo Space Corporation. Fluid resistant geophone and cable enclosure. 4,117,449, Cl. 340-17.00R.

McNeil Corporation: *See—*
Troth, Paul H., 4,116,134, Cl. 104-111.000.

McQuain, David B.: *See—*
Glanz, Kenneth D.; and McQuain, David B., 4,116,973, Cl. 260-326.11R.

Meacham, Thomas E., Jr.; and Johnson, David C., to Refreshment Machinery Incorporated. Sterilization method. 4,116,630, Cl. 422-24.000.

Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, to Wilson Greatbatch Ltd. Lithium-iodine battery. 4,117,212, Cl. 429-153.000.

Medalie Manufacturing Co.: *See—*
Franzen, Raymond E., 4,116,246, Cl. 141-362.000.

Mefina S.A.: *See—*
Beuchat, Roger, 4,116,133, Cl. 102-215.000.

Megahed, Shenoda S., to Becton, Dickinson and Company. Adapter for the aspiration nozzle of an automatic analytical instrument. 4,116,068, Cl. 73-425.40P.

Meguro, Kanji; and Kuwada, Yutaka, to Takeda Chemical Industries, Ltd. Benzodiazepine derivatives. 4,116,956, Cl. 260-239.0BD.

Mehl, Jack J.; and Nugent, Edward L., to Becton, Dickinson and Company. Specimen sampler cup. 4,116,066, Cl. 73-421.00R.

Meier, Hanspeter, to Dr. Ing. Hans Mueller. Filter element for disc-type filter. 4,116,842, Cl. 210-330.000.

Meikle & Devine, Inc.: *See—*
Varga, Theodore; Devine, Arthur, Jr.; and Meikle, Warren, 4,116,424, Cl. 269-55.000.

Meikle, Warren: *See—*
Varga, Theodore; Devine, Arthur, Jr.; and Meikle, Warren, 4,116,424, Cl. 269-55.000.

Melgaard, Hans L., to Despatch Industries, Inc. Gas monitor system. 4,116,612, Cl. 431-76.000.

Meljukhov, Vladimir Petrovich: *See—*
Cherny, Viktor Yakovlevich; Galperin, Boris Grigorievich; Mikhailov, Mikhail Mikhailovich; Meljukhov, Vladimir Petrovich; and Dobrokhotov, Leonid Vasilievich, 4,116,592, Cl. 417-424.000.

Melley Energy Systems: *See—*
Melley, Joseph F., Jr., 4,117,342, Cl. 290-1.00A.

Melley, Joseph F., Jr., to Melley Energy Systems. Utility frame for mobile electric power generating systems. 4,117,342, Cl. 290-1.00A.

Meltsch, Hans-Juergen: *See—*
Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, 4,117,259, Cl. 174-92.000.

Melville, James Campbell: *See—*
Phillips, Ronald; and Melville, James Campbell, 4,116,588, Cl. 417-252.000.

Meng, Ilse Freida, legal representative: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,145, Cl. 424-273.00P.

Meng, Ilse Heide Frieda, heir: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,143, Cl. 424-273.00P.

Meng, Karl-August, deceased: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,143, Cl. 424-273.00P.
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,145, Cl. 424-273.00P.

Menth, Anton; Perry, Anthony J.; and Spinner, Ulrich, to BBC Brown, Boveri & Company Limited. As-cast permanent magnet Sm-Co-Cu material with iron, produced by annealing and rapid quenching. 4,116,726, Cl. 148-31.570.

Merkl, George G. Method of preparing oxygen-containing bleach and product so produced. 4,116,859, Cl. 252-186.000.

Merkl, George G. Hydrophosphide-group containing multi-metal inorganic polymeric complex and method of making same. 4,117,088, Cl. 423-299.000.

Merkl, George G. Hydrosulfide-groups containing multi-metal inorganic polymeric complex and method of making same. 4,117,099, Cl. 423-511.000.

Mesle, Reinhold: *See—*
Methner, Arnold; and Mesle, Reinhold, 4,117,286, Cl. 200-76.000.

Metabowerke KG Closs Rauch & Schnizler: *See—*
Schnizler, Albrecht, Jr.; and Bartmann, Klaus, 4,116,454, Cl. 279-62.000.

Metcalf, Guy D.: *See—*
Englander, Gary E.; Chase, Richard P.; Anderson, Donald P.; and Metcalf, Guy D., 4,115,958, Cl. 51-289.00R.

Methner, Arnold; and Mesle, Reinhold, to J. & J. Marquardt. Electric switch. 4,117,286, Cl. 200-76.000.

Metz, Robert Forcier: *See—*
Cannon, Thomas Burt; Metz, Robert Forcier; and Simon, James Louis, 4,117,274, Cl. 179-99.000.

Metzger, Kirk J.: *See—*
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,817, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,818, Cl. 208-210.000.
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,819, Cl. 208-216.000.

Meyer, Jeffrey G., to Anderson Development Company. Nickel bis-diorgano-orthophosphates their preparation and use. 4,117,022, Cl. 260-669.00P.

Meyer, Josef: *See—*
Motz, Karl; Meyer, Josef; and Schurrer, Josef, 4,116,501, Cl. 308-9.000.

Meyer, Richard C.: *See—*
Lillig, John E.; Meyer, Richard C.; and Anderson, Robert J., 4,117,414, Cl. 330-149.000.

Meyer, Wilhelm, to Varian MAT Gesellschaft mit beschrankter Haftung. Electrode system for multipoles and especially for multipole or monopole mass spectrometers. 4,117,321, Cl. 250-292.000.

Meyerhoff, Robert Wagner, to Union Carbide Corporation. AC Superconducting articles and a method for their manufacture. 4,115,916, Cl. 29-599.000.

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Michaeli, Dov. Method of inhibiting flea-bite allergy. 4,117,141, Cl. 424-273.00R.

Michel, Edmond: *See—*
Obsomer, Marc; Bodson, Luc; and Michel, Edmond, 4,116,609, Cl. 425-526.000.

Micheli, Adolph L., to General Motors Corporation. Method of making boron containing strontium ferrite. 4,117,058, Cl. 264-65.000.

Michurov, Jury Ivanovich: *See—*
Abramov, Ivan Egorovich; Gershanov, Felix Borisovich; Dolidze, Vladimir Romanovich; Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Popov, Vasily Dmitrievich; Rutman, Grigory Iosifovich; and Shalimova, Zoya Stepanovna, 4,117,244, Cl. 568-799.000.

Midgard Electronics Company, Inc.: *See—*
Pettijohn, David, 4,116,238, Cl. 128-172.100.

Midland-Ross Corporation: *See—*
Acre, Sydney R.; and Lake, Marquis J., Sr., 4,116,218, Cl. 137-627.500.

Midrex Corporation: *See—*
Pietsch, Wolfgang B., 4,116,679, Cl. 75-34.000.

Migitaka, Wataru: *See—*
Sunago, Hirofumi; and Migitaka, Wataru, 4,116,815, Cl. 208-87.000.

Mihalcheon, Arthur. Hinge and roller support device for sectional door. 4,115,900, Cl. 16-104.000.

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Cherny, Viktor Yakovlevich; Galperin, Boris Grigorievich; Mikhailov, Mikhail Mikhailovich; Meljukhov, Vladimir Petrovich; and Dobrokhotov, Leonid Vasilievich, 4,116,592, Cl. 417-424.000.

Mikhlina, Eva Evseevna: *See—*
Mashkovsky, Mikhail Davydovich; Yakhontov, Leonid Nikolaevich; Ado, Andrei Dmitrievich; Kaminka, Mikhail Emmanuilovich; Mikhlina, Eva Evseevna; Vorobieva, Valentina Yakovlevna; Yanina, Anna Dmitrievna; and Komarova, Nadezhda Andreevna, 4,117,139, Cl. 424-267.000.

Mikitaev, Abdulakh Kazbulatovich: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.

Mikiver, Lembit: *See—*
Jonsson, Nils Ake; Mikiver, Lembit; and Moses, Pinchas, 4,117,144, Cl. 424-274.000.

Millar, Richard C.: *See—*
Folland, Roy E.; and Millar, Richard C., 4,117,550, Cl. 366-136.000.

Miller, Alan Leonard, to Borg-Warner Corporation. Valve arrangement for closed-loop control system. 4,116,321, Cl. 192-103.00F.

Miller, Albert J., to Engineering Systems Corporation. Ultrasonic transmitter for burglar alarm system. 4,117,462, Cl. 340-539.000.

Miller, Charles Newell, to Control Data Corporation. Method for forming curved plastic film from a flat film. 4,117,068, Cl. 264-130.000.

Miller, Craig Salvatore. Fluid mattress with squared gusset panel construction. 4,115,886, Cl. 5-365.000.

Miller, John R.: *See—*
Charter, Kenneth F.; Miller, John R.; and Garrett, David W., 4,117,067, Cl. 264-119.000.

Miller, Michael George: *See—*
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Miller, Myrl J.: *See—*
Libby, Edwin L.; and Miller, Myrl J., 4,116,562, Cl. 355-60.000.
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Milliken Research Corporation: *See—*
Varner, George Clifford, 4,116,626, Cl. 8-149.000.

Millipore Corporation: *See—*
Edwards, James H., 4,116,646, Cl. 55-159.000.
Milne, George M., Jr.: *See—*
Hammen, Philip D.; and Milne, George M., Jr., 4,117,012, Cl. 260-570.80R.
Milner, Donald L. Apparatus for printing on compressible material. 4,116,126, Cl. 101-217.000.
Milner, Ronald E.: *See—*
Mayer, Steven T.; and Milner, Ronald E., 4,116,444, Cl. 273-101.200.
Mimura, Yoshiyuki: *See—*
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Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, to Argus Chemical Corporation. 2,2,6,6-Tetramethyl-4-piperidyl carboxylic acid esters of butane or butene tri carboxylic acids as stabilizers for synthetic polymers. 4,116,927, Cl. 260-45.8NZ.
Minami, Kazuto; Tsukui, Norihiko; and Imamoto, Tsunehiko, to Dai Nippon Printing Co., Ltd. Decorative laminated structures and method of making the same. 4,117,181, Cl. 428-138.000.
Minato, Sadamasa; Hattori, Atsushi; Baba, Yoshihiko; Yabe, Yuichiro; and Ueda, Seigo, to Sankyo Company Limited. Method for the determination of enzyme activities. 4,116,774, Cl. 195-99.000.
Mine Safety Appliances Company: *See—*
King, Earle Cochran, 4,116,834, Cl. 210-96.00R.
Mineo, Masatoshi: *See—*
Nakagawa, Kiyoshi; Mineo, Masatoshi; Matsumoto, Tadayuki; and Imaeda, Kozo, 4,115,988, Cl. 57-140.0BY.
Minhas, Pritam S.; and Sukornick, Bernard, to Allied Chemical Corporation. Flame retardant fibers, carpets and molding compounds and methods of making same. 4,116,931, Cl. 260-45.75B.
Minnesota Mining and Manufacturing Company: *See—*
Fridinger, Tomas L.; Moore, George G. I.; and Lappi, Larry R., 4,116,676, Cl. 71-103.000.
Jorgensen, Jens L., 4,117,192, Cl. 428-337.000.
McKinney, James T., 4,117,322, Cl. 250-309.000.
Nidelkoff, James G., 4,115,936, Cl. 40-449.000.
Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert M.; and Semon, Warren L., to Monsanto Company. Magnetic bubble logic family. 4,117,543, Cl. 365-5.000.
Minohara, Kiyomi; and Sugiyama, Akira, to Furuno Electric Co., Ltd. Electronically scanned echo pulse receiver. 4,117,487, Cl. 343-100.0SA.
Minolta Camera Kabushiki Kaisha: *See—*
Kushima, Teizo; Kurita, Takaji; and Mizunoe, Hiroaki, 4,116,557, Cl. 355-8.000.
Tanaka, Susumu; Ogawa, Masaya; Kawabata, Hidetoshi; Fujiwara, Takao; Kurita, Takaji; Enoguchi, Yuji; Wada, Kenichi; and Murasaki, Hiroshi, 4,116,556, Cl. 355-3.0SH.
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Miracle, William C.: *See—*
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Miranol Chemical Company, Inc., The: *See—*
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Imahori, Seiichi; Murata, Yukichi; and Suzuki, Sumio, 4,116,623, Cl. 8-25.000.
Kakogawa, Genjiro; Suzuki, Tetsumi; Goko, Nobuaki; and Mukuraguchi, Koji, 4,117,219, Cl. 528-494.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,117,127, Cl. 424-247.000.
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Nakata, Josuke, 4,117,505, Cl. 357-28.000.
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Mitsui Coke Co., Ltd.: *See—*
Tatsumoto, Katsunobu; and Fukuda, Kenji, 4,117,098, Cl. 423-448.000.
Mitsui Mining Company, Limited: *See—*
Tatsumoto, Katsunobu; and Fukuda, Kenji, 4,117,098, Cl. 423-448.000.
Mittenzwei, Hellmut; and Terpin, Janez, to Mittenzwei, Hellmut. Process for removal of inorganicsalts from peptide/salt-containing substances. 4,116,948, Cl. 260-112.00R.
Miura, Nobuhiro: *See—*
Yanagihara, Hiromichi; and Miura, Nobuhiro, 4,116,234, Cl. 123-32.0SP.
Miyagawa, Toru: *See—*
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Miyahara, Junji; and Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Rear projection screens. 4,116,911, Cl. 260-28.50A.
Miyake, Haruhisa: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,116,888, Cl. 521-31.000.
Miyake, Kazuhiko; and Yamada, Bunkichi, to Tokyo Shibaura Electric Co., Ltd. Apparatus for providing a video montage to a television picture image. 4,117,512, Cl. 358-183.000.
Miyanaga, Kunio; and Kawada, Kosaku, to Chemi-Con Onkyo Co., Ltd. Non-directional electret microphone with an air passage to balance pressures on opposite sides of the diaphragm. 4,117,275, Cl. 179-111.00E.
Miyazawa, Chiaki: *See—*
Hishida, Yukio; Asai, Yuichi; Kondo, Toshikatsu; Asai, Akira; Sakaida, Atsuo; and Miyazawa, Chiaki, 4,117,435, Cl. 335-270.000.
Mizuguchi, Ryuzo; Takahashi, Atsushi; and Ishikura, Shinichi, to Nippon Paint Co., Ltd. Aqueous resin dispersion and thermosetting paint composition containing same. 4,116,912, Cl. 260-29.4UA.
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Mo och Domsjo Aktiebolag: *See—*
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Moalic, Jean-Pierre: *See—*
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Mobil Oil Corporation: *See—*
Davis, Kenneth G., 4,116,905, Cl. 260-22.0CB.
Haag, Werner O.; and Olson, David H., 4,117,026, Cl. 260-671.00R.
Kaeding, Warren W., 4,117,024, Cl. 260-671.00R.
Nnadi, John C.; and Heilweil, Israel J., 4,116,875, Cl. 252-49.700.
Peiser, Alfred M., 4,116,821, Cl. 208-361.000.
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,116,813, Cl. 208-46.000.
Zahner, John C., 4,116,814, Cl. 208-78.000.
Mochinaga, Kishio: *See—*
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Moeser, Douglas W.: *See—*
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Mogi, Keitaro: *See—*
Noda, Fumio; Mogi, Keitaro; and Sakasai, Toshio, 4,117,169, Cl. 426-7.000.
Mohler, Sailor H. Balancing system. 4,116,073, Cl. 73-483.000.
Moinard, Jean Robert: *See—*
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Molesworth, Richard E.: *See—*
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Moller, Eike; Meng, Karl-August, deceased (by Meng, Ilse Heide Frieda, heir); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Bayer Aktiengesellschaft. 1-Substituted pyrazoles. 4,117,143, Cl. 424-273.00P.
Moller, Eike; Meng, Karl-August, deceased (by Meng, Ilse Freida, legal representative); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Bayer Aktiengesellschaft. 1-Substituted pyrazoles. 4,117,145, Cl. 424-273.00P.
Mollet, Hans; Haberli, Roland; Rabassa, Alberto; and Babler, Fridolin, to Ciba-Geigy AG. Novel process for the complete isolation and rapid drying of solids from suspensions. 4,117,066, Cl. 264-117.000.
Molnar, Francois; Szabo, Suzanne; and Statkov, Peter Radanow, to Cermol S.A. Phenoxy compounds and compositions. 4,117,160, Cl. 424-316.000.
Molnar, Imre: *See—*
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Monarch Marking Systems, Inc.: *See—*
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Hamisch, Paul H., Jr., 4,116,747, Cl. 156-384.000.
Moncur, Norman K.; and Mayer, Frederick J., to KMS Fusion, Inc. Method and apparatus for reducing coherence of high-power laser beams. 4,116,542, Cl. 350-321.000.

Mongeon, Robert Joseph: *See—*
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Brannigan, Lawrence H.; Franz, John E.; and Howe, Robert K., 4,116,673, Cl. 71-92.000.
Coran, Aubert Y.; and Patel, Raman P., 4,116,914, Cl. 260-30.60R.
Fields, Joseph E.; and Johnson, John H., 4,117,111, Cl. 424-78.000.
Hill, James C.; and Knox, Walter R., 4,116,944, Cl. 528-366.000.
Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert M.; and Semon, Warren L., 4,117,543, Cl. 365-5.000.
Mount, Ramon A.; Raffelson, Harold; and Robinson, Warn D., 4,116,868, Cl. 252-428.000.
Montrouil Enterprises, Inc.: *See—*
Montrouil, George W., 4,115,964, Cl. 52-106.000.
Montrouil, George W., to Montrouil Enterprises, Inc. Windows and method of making the same. 4,115,964, Cl. 52-106.000.
Moog, Robert A., to Norlin Music, Inc. Amplifier with multifilter. 4,117,413, Cl. 330-126.000.
Moon, William T., Jr.: *See—*
Bible, Harley V.; Goff, Clifford E.; and Moon, William T., Jr., 4,116,155, Cl. 116-65.000.
Moore, Curtis L., to Electric Power Research Institute, Inc. Overpressure protection for vaporization cooled electrical apparatus. 4,117,525, Cl. 361-37.000.
Moore, George G. I.: *See—*
Fridinger, Tomas L.; Moore, George G. I.; and Lappi, Larry R., 4,116,676, Cl. 71-103.000.
Moore, John R.: *See—*
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Moore Products Co.: *See—*
Goble, William M., 4,117,411, Cl. 330-10.000.
Moore, Randall J. Apparatus for increasing the blend and charge of the fuel-air mixture for an engine. 4,116,187, Cl. 123-141.000.
Moore, William Thomas: *See—*
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Moreland, Gerald W.: *See—*
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Morgan, Charles Robert; and Bush, Richard Wayne, to W. R. Grace & Co. Process for preparation of thiols using a benzopinacol initiator. 4,117,017, Cl. 260-609.00R.
Morgan, David W.: *See—*
Boyd, David C.; Flannery, James E.; Morgan, David W.; Rosplock, Sara E.; and Sczerbaniewicz, Stella A., 4,116,704, Cl. 106-54.000.
Morgan, Peter A.: *See—*
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Morgan, William Morris: *See—*
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Morganroth, Shila. Methods of preparing bleach paste for and applying it to hair. 4,116,365, Cl. 222-92.000.
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, to Kuraray Co., Ltd. Preparation of 1,1,1-trihalogeno-4-methyl-3-penten-2-ol. 4,117,247, Cl. 568-845.000.
Mori, Kaoru: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; Mori, Kaoru; and Oyama, Kiyotaka, 4,116,768, Cl. 195-29.000.
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Mori, Teruo; and Ohashi, Azusa, to Fuji Photo Film Co., Ltd. Method of producing a support for a printing plate. 4,116,695, Cl. 96-86.00P.
Morini, Rino. Device for stepwise feeding a hose for packaging products, in particular fruit and vegetable products. 4,115,979, Cl. 53-393.000.
Morishita, Syozo: *See—*
Inouye, Yoshinori; Kanamori, Hiromitsu; Tsuchida, Nobuo; Morishita, Syozo; and Endo, Tetsuhiko, 4,116,393, Cl. 242-1.000.
Moritomo, Sadao; and Ando, Shigenori, to Seiko Seiki Kabushiki Kaisha. Preloaded bearing. 4,116,506, Cl. 308-189.00A.
Moriya, Ikuro; and Tsuruta, Masao, to Fuji Photo Film Co., Ltd. Method and apparatus for wind loading film magazines. 4,115,910, Cl. 29-450.000.
Moriya, Tokio, to Kabushiki Kaisha Daini Seikosha. Digital alarm watch. 4,115,993, Cl. 58-38.00R.
Moriya, Tomoyuki: *See—*
Suzuki, Takami; Suzaki, Masayuki; and Moriya, Tomoyuki, 4,116,568, Cl. 400-320.000.
Morlock, Gerhard: *See—*
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Morokuma, Tadashi; and Fujimori, Ryo, to Olympus Optical Co., Ltd. Process of and apparatus for forming a picture image information such as a manuscript, etc. on a dry treated film and developing the same. 4,116,559, Cl. 355-28.000.
Morris, Jerry M.; Cole, Leon Jay; and Rawls, Vaughn, to National-Standard Company. Tire buffing apparatus. 4,116,256, Cl. 157-13.000.
Morris, Patrick Evan: *See—*
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Morrison, Leonard A.: *See—*
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Morton, Douglas Ross, Jr., to Upjohn Company, The. Inter-oxa-13,14-dihydro-9β-PGD$_1$ compounds. 4,117,005, Cl. 562-503.000.
Morucci, Jean-Pierre: *See—*
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Mosburger, Hans; and Reis, Christoph, to BHS-Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft. Device for automatically detecting the end of a web and splicing a new web thereto. 4,116,399, Cl. 242-58.400.
Moschetto, Yves: *See—*
Trinel, Pierre-Andre; Leclerc, Henri; and Moschetto, Yves, 4,116,631, Cl. 23-230.00B.
Moscovich, Jacob, to Vivitar Corporation. Wide angle lens. 4,116,536, Cl. 350-214.000.
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Moser, Wilhelm: *See—*
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Motorola, Inc.: *See—*
Bender, Steven Frank, 4,117,410, Cl. 329-50.000.
Hunt, Albert Henry, 4,117,422, Cl. 331-18.000.
Schoemer, Hans Louis, 4,117,279, Cl. 200-5.00A.
Zurawski, Ronald Anthony, 4,117,276, Cl. 179-161.000.
Motz, Karl; Meyer, Josef; and Schurrer, Josef, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Cooling installation for the reduction of the oil temperature of oil-lubricated damping bearings. 4,116,501, Cl. 308-9.000.
Mount, Ramon A.; Raffelson, Harold; and Robinson, Warn D., to Monsanto Company. Method for preparing an oxidation catalyst. 4,116,868, Cl. 252-428.000.
Mountz, Craig E.: *See—*
Hampton, Robert S., Jr.; Morrison, Leonard A.; Murphy, John W.; and Mountz, Craig E., 4,115,926, Cl. 33-288.000.
Mousson, Roland Georges: *See—*
Lamelot, Pierre Marie Louis; and Mousson, Roland Georges, 4,117,327, Cl. 250-338.000.
Movick, Nyle Orland. Heating apparatus. 4,116,379, Cl. 237-1.00A.
Mower, Morris F.: *See—*
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Mozzhukhin, Anatoly Alexandrovich; and Sotchenko, Vladimir Petrovich. Apparatus for hard facing of valves for internal combustion engines. 4,116,375, Cl. 228-48.000.
Mravic, Brian; Shapiro, Stanley; Tyler, Derek E.; and Khan, Abid, to Olin Corporation. Copper base alloys possessing improved processability. 4,116,686, Cl. 75-154.000.
Muchow, John D., to Willis Oil Tool Co. Automatic reset pilot valve. 4,116,215, Cl. 137-596.180.
Muench, Paul William, to Borg-Warner Corporation. System and method for limiting energy consumption. 4,117,537, Cl. 364-492.000.
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Khan, Riaz Ahmed; Mufti, Khizar Sultan; and Parker, Kenneth John, 4,117,224, Cl. 536-119.000.
Mukai, Kunihiko; Mishima, Michiharu; Ogino, Kiyoshi; and Iseki, Shuichi, to Central Glass Company, Limited; and Mukai, Kunihiko. Method of manufacturing fibers of inorganic material and apparatus for same. 4,116,656, Cl. 65-5.000.
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Muller, Bruce M., to Customcolor, Inc. Particle and method for dispersing additives in thermoplastic resin. 4,116,909, Cl. 260-23.70R.
Muller, Hans, to GRAPHA-Holding AG. Apparatus for stuffing newspapers or the like. 4,116,427, Cl. 270-54.000.
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Schiweck, Hubert; Steinle, Georg; Muller, Lutz; Gau, Wolfgang; and Munir, Mohammad, 4,117,173, Cl. 426-548.000.
Muller, Manfred: *See—*
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Muller, Michael: *See—*
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Multiform Desiccant Products, Inc.: *See—*
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Munir, Mohammad: *See—*
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Munn, John W.; and Munn, Kevin J. Dining utensil. 4,116,355, Cl. 220-83.000.
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Munn, John W.; and Munn, Kevin J., 4,116,355, Cl. 220-83.000.
Murai, Hiromu; Fujita, Yukio; Mori, Tamiki; Enomoto, Hiroshi; and Yoshikuni, Yoshiaki, to Nippon Shinyaku Co., Ltd. Pharmaceutically active deltab-dihydropimaramide derivatives. 4,117,159, Cl. 424-309.000.
Murakami, Kakuji: *See—*
Machida, Hazime; Tamura, Hiroshi; and Murakami, Kakuji, 4,116,698, Cl. 106-2.000.
Murakami, Tadayoshi: *See—*
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Muranyi, Istvan: *See—*
Takatsy, Gyula; Barb, Katalin; Muranyi, Istvan; and Burda, Ferencne, 4,116,777, Cl. 195-127.000.
Murasaki, Hiroshi: *See—*
Tanaka, Susumu; Ogawa, Masaya; Kawabata, Hidetoshi; Fujiwara, Takao; Kurita, Takaji; Enoguchi, Yuji; Wada, Kenichi; and Murasaki, Hiroshi, 4,116,556, Cl. 355-3.0SH.
Murata, Yukichi: *See—*
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Murphy, John W.: *See—*
Hampton, Robert S., Jr.; Morrison, Leonard A.; Murphy, John W.; and Mountz, Craig E., 4,115,926, Cl. 33-288.000.
Murray, David: *See—*
Douglas, Robert H.; Forrester, Edward H.; and Murray, David, 4,117,459, Cl. 340-147.00R.
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Ramer, Mervin, 4,116,123, Cl. 100-233.000.
Murray, Stephen C. Hang glider with collapsible airfoil. 4,116,407, Cl. 244-16.000.
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Kurono, Masayasu; Nakai, Hisao; and Muryobayashi, Takashi, 4,117,119, Cl. 424-180.000.
Musgrave, Daniel D. Reserve magazine holder. 4,115,943, Cl. 42-90.000.
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Muska, Willis Martin: *See—*
Hubbard, William Marshall; and Muska, Willis Martin, 4,116,532, Cl. 350-96.210.
Musselman, Camillus B.; and Bovier, Edward M., to Anheuser-Busch, Incorporated. Water resistant corrugating adhesive composition. 4,116,740, Cl. 156-205.000.
Myasoedov, Viktor Vasilievich: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.
N L Industries, Inc.: *See—*
Backus, Harold Adams, 4,116,337, Cl. 206-591.000.
Finlayson, Claude Malcolm, 4,116,866, Cl. 252-316.000.
Nagai, Katsumi: *See—*
Takahashi, Yuzo; Wazima, Yoshimi; Nakada, Akira; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Aizawa, Eizi; and Oyama, Shiro, 4,117,188, Cl. 428-36.000.
Nagano-Ken Kohridofu Kogyo Cooperative Association: *See—*
Tonouchi, Takeo; Tonouchi, Akio; Shiroshima, Makoto; Chimura, Yuichi; and Ohkubo, Kazuyoshi, 4,117,174, Cl. 426-634.000.
Nagano, Masashi; and Watarai, Etsuyoshi, to Shimano Industrial Company Limited. Rear gear for a bicycle. 4,116,319, Cl. 192-64.000.
Nagasawa, Koyo: *See—*
Shintani, Takamasa; and Nagasawa, Koyo, 4,117,517, Cl. 358-260.000.
Nagasawa, Masao, to Nippondenso Co., Ltd. Capacitor discharge type contactless ignition system for internal combustion engines. 4,116,188, Cl. 123-148.0CC.
Nagumo, Shin-ichi; Hayashi, Yoshimasa; and Otsubo, Kizuku, to Nissan Motor Company, Limited. Dual spark-ignition internal combustion engine. 4,116,179, Cl. 123-119.00A.
Nagumo, Shin-ichi: *See—*
Hayashi, Yoshimasa; and Nagumo, Shin-ichi, 4,116,180, Cl. 123-119.00A.
Naito, Hiroyuki: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Saito, Mamoru; Takahashi, Akira; and Tuchida, Hisashi, 4,117,104, Cl. 423-619.000.
Nakabe, Ryuhei: *See—*
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Nakagawa, Hiroshi: *See—*
Kawasaki, Hideo; Nakatani, Masaji; Ishii, Toshihiro; Nakagawa, Hiroshi; and Takaya, Hiroshi, 4,117,080, Cl. 423-235.000.
Nakagawa, Kiyoshi; Mineo, Masatoshi; Matsumoto, Tadayuki; and Imaeda, Kozo, to Toray Industries, Inc. Interlaced multifilament yarns. 4,115,988, Cl. 57-140.0BY.
Nakagome, Takenari: *See—*
Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, 4,117,126, Cl. 424-246.000.
Nakai, Hisao: *See—*
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Nakajima, Toshi: *See—*
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Nakajima, Yasuo; and Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Dual spark plug ignition internal combustion engine. 4,116,181, Cl. 123-119.00A.
Nakajima, Yasuo: *See—*
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Nakamoto, Hiromasa: *See—*
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Nakamura, Hideki: *See—*
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Nakasone, Henry H.: *See—*
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Nakata, Josuke, to Mitsubishi Denki Kabushiki Kaisha. Thyristor with heat sensitive switching characteristics. 4,117,505, Cl. 357-28.000.
Nakata, Yuichi; and Murakami, Tadayoshi, to Pigeon Kabushiki Kaisha. Gum brush for infants. 4,115,893, Cl. 15-110.000.
Nakatani, Masaji: *See—*
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Nakatogawa, Yoshio, to Alps Electric Co., Ltd. Encapsulated reinforcement in moulded shaft. 4,116,575, Cl. 403-265.000.
Nakaya, Akira: *See—*
Yamazaki, Hironobu; Uchida, Yoshiaki; and Nakaya, Akira, 4,116,487, Cl. 299-1.000.
Napier, Donald Stewart. Building panel and wall. 4,115,969, Cl. 52-233.000.
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Nardi, John C.; Hussey, Charles L.; Erbacher, John K.; King, Lowell A.; and Fannin, Armand A., Jr. Molybdenum chloride-tetrachloroaluminate thermal battery. 4,117,207, Cl. 429-103.000.
Narita, Kinichiro: *See—*
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,116,864, Cl. 252-301.60S.
Nasyrov, Gakif Zakirovich; Zemlyanskaya, Evgenia Ivanovna; and Ravdonikas, Izabella Vladislavovna. Process for alunite treatment. 4,117,077, Cl. 423-127.000.
National Electric Corporation: *See—*
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National Machine Company, Inc.: *See—*
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Morris, Jerry M.; Cole, Leon Jay; and Rawls, Vaughn, 4,116,256, Cl. 157-13.000.
NCR Corporation: *See—*
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Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, to Roussel Uclaf. Aminomethyl-benzocycloheptenes and method of use. 4,117,164, Cl. 424-330.000.
Needes, Christopher Roderick S., to Du Pont de Nemours, E. I., and Company. Catalytically active porous nickel electrodes. 4,116,804, Cl. 204-284.000.
Nees, John: *See—*
Windisch, Lawrence; Nees, John; and Channing, Harry M., 4,117,387, Cl. 320-2.000.
Neiman S.A.: *See—*
Lipschutz, Paul, 4,116,024, Cl. 70-201.000.
Nelson, Albin J., to Pfizer Inc. Pyrrolidonecarboxylic acid therapeutic agents. 4,117,138, Cl. 424-263.000.
Nelson, Don C., Jr.: *See—*
Boyd, John H., Jr.; and Nelson, Don C., Jr., 4,116,410, Cl. 248-26.000.
Nelson, Donald Louis, to Dow Chemical Company, The. Vinyl ester resin compositions containing dicyclopentadiene alkenoate. 4,117,030, Cl. 260-837.00R.
Nelson, Marvin H.; and Minshall, Georgia R. Game equipment holder. 4,116,340, Cl. 211-13.000.
Nelson, Merritt J., to Zin-Plas Corporation. Diverter spout assembly. 4,116,210, Cl. 137-119.000.
Nelson, Norman A., to Upjohn Company, The. 16-Phenoxy prostaglandin E_1 analogs. 4,116,988, Cl. 260-413.000.
Nelson, Norman A., to Upjohn Company, The. 16-Phenoxy prostaglandin $F_{1\alpha}$ analogs. 4,116,989, Cl. 260-413.000.
Nerem, Marvin E.; and Denney, Roger W. Step assembly for vehicle. 4,116,457, Cl. 280-166.000.
Neri, Carlo: *See—*
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Nerlich, Gunter, to Dimensional Products Limited. Stereoscopic viewer. 4,116,533, Cl. 350-135.000.
Netstal-Maschinen AG: *See—*
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Glenn, William E., 4,116,739, Cl. 156-169.000.
Newcomer Products, Inc.: *See—*
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Newman, Francis L., to Rockwell International Corporation. Multiphase clock monitor circuit. 4,117,348, Cl. 307-232.000.
Nibble With Gibble's Inc.: *See—*
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Nicolay, Karl, to Durkoppwerke GmbH. Upper fabric feed device for sewing machines. 4,116,145, Cl. 112-212.000.
Nidelkoff, James G., to Minnesota Mining and Manufacturing Company. Changeable character sign structure. 4,115,936, Cl. 40-449.000.
Nieberlein, Vernon A., to United States of America, Army. Void, flaw, and crack indicator for epoxy bonds. 4,116,634, Cl. 23-230.00R.
Niederdellmann, Georg: *See—*
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Nielsen, Tage Kjaer: *See—*
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Nies, Charles W., deceased: *See—*
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Nihon Denshi Kabushiki Kaisha: *See—*
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Nihon Seimitsu Keisoku: *See—*
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Nikolov, Ivan Dimov; Rashev, Tzolo Valkov; Ivanov, Rangel Petrov; and Andreev, Chavdar Andreev, to Institute po Metaloznanie i Technologia na Metalite. Nickel-free austenitic corrosion-resistant steel. 4,116,683, Cl. 75-125.000.
Nimerick, Kenneth H.: *See—*
Parks, Christ F.; and Nimerick, Kenneth H., 4,117,214, Cl. 427-220.000.
Ning, Tak Hung; Osburn, Carlton Morris; and Yu, Hwa Nien, to International Business Machines Corporation. Gate charge neutralization for insulated gate field-effect transistors. 4,116,721, Cl. 148-1.500.
Nippon Carbon Co., Ltd.: *See—*
Ishikawa, Toshikatsu; Tanaka, Junichi; Tominaga, Yoichiro; Matsubara, Kunio; Kitazume, Yoshihiko; and Hayase, Tokuji, 4,117,051, Cl. 264-29.100.
Nippon Concrete Industries Co., Ltd.: *See—*
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Nippon Crucible Co., Ltd.: *See—*
Hosaka, Takuo; Sasaki, Tadao; and Suzuki, Hiroshige, 4,117,096, Cl. 423-345.000.
Nippon Oil Co., Ltd.: *See—*
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Nippon Paint Co., Ltd.: *See—*
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Nippon Shinyaku Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
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Itoh, Kametaro; Takahashi, Wataru; Yamamoto, Yoshun; and Harajiri, Hachiro, 4,116,716, Cl. 134-134.000.
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Katoh, Hiroshi; Onoe, Yasumitsu; Akisue, Osamu; and Mochinaga, Kishio, 4,116,729, Cl. 148-111.000.
Nippondenso Co., Ltd.: *See—*
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Nishida, Takashi: *See—*
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Nissan Engineering Ltd.: *See—*
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Nixon, Jeddy D.; and Matson, Lawrence W., Jr., to Maurer Engineering, Inc. Shaft seal assembly and seal ring therefor. 4,116,451, Cl. 277-116.000.
Nnadi, John C.; and Heilweil, Israel J., to Mobil Oil Corporation. Multifunctional substituted triazine functional fluid additives and compositions containing same. 4,116,875, Cl. 252-49.700.
Noble, Wilfred R.: *See—*
Bistline, Raymond G., Jr.; Linfield, Warner M.; and Noble, Wilfred R., 4,116,986, Cl. 260-401.000.
Noda, Fumio; Mogi, Keitaro; and Sakasai, Toshio, to Kikkoman Shoyu Co. Ltd. Process for producing fermented liquid food products. 4,117,169, Cl. 426-7.000.
Noguchi, Hiroshi: *See—*
Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, 4,117,126, Cl. 424-246.000.
Nohira, Hidetaka; and Tanaca, Masaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable-venturi carburetor. 4,117,046, Cl. 261-44.00C.
Nolte, David G., to Westinghouse Canada Ltd. Sensitive J-tube and applications thereof. 4,116,076, Cl. 73-299.000.
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Nomura, Kenichiro; Mori, Mamoru; Yasumatsu, Jun; Kubota, Tatsushi; Hachisuka, Sadao; and Tatematsu, Kazuhisa, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Passenger restraining belt retractor. 4,116,402, Cl. 242-107.100.
Norfin, Inc.: *See—*
Lewis, Barry J.; Kuspert, John C.; Saunders, Arthur G.; and McAusland, Robert R., 4,116,750, Cl. 156-563.000.

Norlin Music, Inc.: *See—*
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Norman, Barrie Edmund: *See—*
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Northup, Marcus Allen, Jr.: *See—*
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Northwest Orthodontics, Inc.: *See—*
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Northwestern Equipment and Supply Co.: *See—*
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Norton, David John, to Westinghouse Brake & Signal Co. Ltd. Circuit fault detection apparatus for railroad track circuit redundant connections. 4,117,463, Cl. 340-652.000.

Noshi, Yoshibumi: *See—*
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Noshiro, Makoto: *See—*
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Noxell Corporation: *See—*
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Shapiro, Warren B.; and Blackburne, Owen Rodney, 4,117,108, Cl. 424-54.000.

Nudelman, Boris Izrailovich: *See—*
Oborin, Pavel Alexandrovich; Gadaev, Anatoly Yakovlevich; Bikbau, Marsel Yanovich; Nudelman, Boris Izrailovich; Aronova, Irina Zelmanovna; Bulatov, Nail Yakubovich; and Sosenko, Lev Matveevich, 4,116,707, Cl. 106-104.000.

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Nunokawa, Koji: *See—*
Abe, Nobuyuki; Watanabe, Osamu; Nunokawa, Koji; Tanaka, Ichiro; and Manabe, Masao, 4,116,012, Cl. 405-238.000.

Nuova San Giorgio S.p.A.: *See—*
Courvoisier, Guy, 4,116,395, Cl. 242-35.50A.

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Nustede, Fritz: *See—*
Kauf, Alois; Kandler, Georg; Rossmann, Axel; and Nustede, Fritz, 4,116,149, Cl. 113-116.00D.

O.E.M. Technical Sales, Inc.: *See—*
Jensen, William Kenneth, 4,116,065, Cl. 73-378.000.

Oakes, William J., to Nibble With Gibble's Inc. Oil separation and heat recovery system. 4,116,226, Cl. 126-299.00D.

Oakleaf, Sidney C.: *See—*
Dooley, Philip G., Jr.; and Oakleaf, Sidney C., 4,117,317, Cl. 235-307.000.

Oberpriller, Jakob, to Linde AG. Method of and apparatus for the cooling of articles with a circulated cooling gas. 4,116,017, Cl. 62-62.000.

Oborin, Pavel Alexandrovich; Gadaev, Anatoly Yakovlevich; Bikbau, Marsel Yanovich; Nudelman, Boris Izrailovich; Aronova, Irina Zelmanovna; Bulatov, Nail Yakubovich; and Sosenko, Lev Matveevich. Raw mixture for producing refractory aluminous cement. 4,116,707, Cl. 106-104.000.

O'Brien, Edwin L., to Hughes Aircraft Company. Signal sampling system. 4,117,409, Cl. 328-151.000.

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Winchester, Roy E.; Marjoran, Michael J.; and O'Brien, Roger, 4,116,430, Cl. 271-177.000.

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Choi, Charles K., 4,116,823, Cl. 209-44.000.

Ochsner, Paul Albert, to Givaudan Corporation. N-2-Hydroxyethyloxazolidine compound. 4,116,970, Cl. 260-307.0FA.

Odle, Herbert Arnold, to Johns-Manville Corporation. Luminaire arrangement. 4,117,534, Cl. 362-378.000.

Oertel, Harald: *See—*
Buysch, Hans-Josef; Oertel, Harald; and Roos, Ernst, 4,116,932, Cl. 260-45.95R.

O'Farrell, Charles P.; Malloy, Paul L.; and Thompson, Francis M., to Exxon Research & Engineering Co. Butyl/resin blend latex used to coat polypropylene fabrics. 4,117,186, Cl. 428-265.000.

Offermanns, Heribert: *See—*
Klenk, Herbert; and Offermanns, Heribert, 4,117,008, Cl. 260-545.00R.

Ogasawara, Kazui: *See—*
Suzuki, Takashi; Ikezawa, Tsutomu; and Ogasawara, Kazui, 4,116,098, Cl. 83-425.400.

Ogawa, Masaya: *See—*
Tanaka, Susumu; Ogawa, Masaya; Kawabata, Hidetoshi; Fujiwara, Takao; Kurita, Takaji; Enoguchi, Yuji; Wada, Kenichi; and Murasaki, Hiroshi, 4,116,556, Cl. 355-3.0SH.

Ogino, Kiyoshi: *See—*
Mukai, Kunihiko; Mishima, Michiharu; Ogino, Kiyoshi; and Iseki, Shuichi, 4,116,656, Cl. 65-5.000.

Ogura, Motoshige: *See—*
Fujita, Yoshishige; Asagao, Soichi; and Ogura, Motoshige, 4,117,089, Cl. 423-306.000.

Ohashi, Azusa: *See—*
Mori, Teruo; and Ohashi, Azusa, 4,116,695, Cl. 96-86.00P.

Ohio Agricultural Research and Development Center: *See—*
Holmes, Robert G., 4,116,339, Cl. 209-699.000.

Ohio Machine Company, Inc.: *See—*
Fike, Louis T.; and Green, Kenneth A., 4,116,595, Cl. 425-17.000.

Ohkubo, Kazuo: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,117,127, Cl. 424-247.000.

Ohkubo, Kazuyoshi: *See—*
Tonouchi, Takeo; Tonouchi, Akio; Shiroshima, Makoto; Chimura, Yuichi; and Ohkubo, Kazuyoshi, 4,117,174, Cl. 426-634.000.

Ohmori, Muneki: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; Mori, Kaoru; and Oyama, Kiyotaka, 4,116,768, Cl. 195-29.000.

Ohta, Takao: *See—*
Komeya, Katsutoshi; Inoue, Hiroshi; and Ohta, Takao, 4,117,095, Cl. 423-344.000.

Ohta, Yoshio; Matsuura, Toshiro; and Nakabe, Ryuhei, to Matsushita Electric Industrial Co., Ltd. Solid state color imaging apparatus. 4,117,510, Cl. 358-44.000.

Oil Spill Recovery, Inc.: *See—*
Stagemeyer, Merlin D.; and Allcorn, Seth Ford, 4,116,007, Cl. 405-66.000.
Stagemeyer, Merlin D.; and Allcorn, Seth Ford, 4,116,833, Cl. 210-83.000.

Oji Paper Co., Ltd.: *See—*
Gotoh, Hideo; Igarashi, Akira; Kobayashi, Reiko; and Akiho, Kiyotake, 4,117,199, Cl. 428-486.000.

Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, to Mitsubishi Chemical Industries Ltd.; and Shosuke Okamoto. N^2-Arylsulfonyl-L-argininamides and the pharmaceutically acceptable salts thereof. 4,117,127, Cl. 424-247.000.

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Okamura, Kosaku: *See—*
Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, 4,117,126, Cl. 424-246.000.

Okaniwa, Shigeru: *See—*
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Okidata Corporation: *See—*
San Pietro, Craig, 4,116,567, Cl. 400-124.000.

Okuno, Toshio, to Hitachi Metals, Ltd. Tool steel for warm and hot working. 4,116,685, Cl. 75-128.00B.

Olah, George A., to Produits Chimiques Ugine Kuhlmann. Solid catalysts based on fluorinated graphite. 4,116,880, Cl. 252-429.00R.

Olin Corporation: *See—*
Knollmueller, Karl O., 4,116,847, Cl. 252-78.300.
Kongpricha, Santad, 4,117,091, Cl. 423-320.000.
Mravic, Brian; Shapiro, Stanley; Tyler, Derek E.; and Khan, Abid, 4,116,686, Cl. 75-154.000.

Olivo, Anthony Robert; Soldatos, Anthony Constantine; and Schultz, Sidney Joseph, to Union Carbide Corporation. Novel thermosetting molding composition. 4,116,921, Cl. 260-38.000.

Olsen, Gregory Hammond; Zamerowski, Thomas Joseph; and Buiocchi, Charles Joseph, to RCA Corporation. Vapor phase growth technique of III-V compounds utilizing a preheating step. 4,116,733, Cl. 148-175.000.

Olson, David H.: *See—*
Haag, Werner O.; and Olson, David H., 4,117,026, Cl. 260-671.00R.

Olsson, Sten Yngve: *See—*
Backman, Torsten Lorentz; and Olsson, Sten Yngve, 4,116,617, Cl. 431-186.000.

Olympus Optical Co., Ltd.: *See—*
Kitahara, Tomohiro, 4,116,637, Cl. 422-63.000.
Morokuma, Tadashi; and Fujimori, Ryo, 4,116,559, Cl. 355-28.000.
Nishikawa, Masaji; Suzuki, Yoshiro; and Takasugi, Noboru, 4,116,141, Cl. 118-648.000.
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Omori, Mamoru: *See—*
Yajima, Seishi; Hayashi, Josaburo; and Omori, Mamoru, 4,117,057, Cl. 264-63.000.

Omura, Yoshiaki: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 4,117,247, Cl. 568-845.000.

Ondetti, Miguel Angel; and Weisenborn, Frank Lee, to E. R. Squibb & Sons, Inc. Pyrrolidine and piperidine-2-carboxylic acid derivatives. 4,116,962, Cl. 260-293.630.

O'Neill, Eugene Edward, to United States Gypsum Company. Process for preparing calcined gypsum. 4,117,070, Cl. 264-234.000.

Onizuka, Shigenori: *See—*
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Ono Pharmaceutical Company: *See—*
Kurono, Masayasu; Nakai, Hisao; and Muryobayashi, Takashi, 4,117,119, Cl. 424-180.000.

Ono, Yutaka; Fujii, Yoichi; Yokoyama, Koji; and Igarashi, Toshifumi, to Ono, Yutaka; Fuji, Yoichi; and Eto, Goro. Method and apparatus for measuring electric quantities by using light converters. 4,117,399, Cl. 324-96.000.

Onoe, Yasumitsu: *See—*
Katoh, Hiroshi; Onoe, Yasumitsu; Akisue, Osamu; and Mochinaga, Kishio, 4,116,729, Cl. 148-111.000.

Onosovsky, Evgeny Valentinovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Ontario Energy Corporation: *See—*
Kizior, Thaddeus Eugene, 4,116,809, Cl. 208-11.0LE.

Optel Corporation: *See—*
Deb, Satyendra K.; Chen, Schoen-nan; Witzke, Horst; Russak, Michael A.; and Reichman, Joseph, 4,117,210, Cl. 429-111.000.

Optical Associates, Incorporated: *See—*
Bachur, Gerald; and Richardson, George E., 4,117,375, Cl. 315-151.000.

O'Rear, Jacques G.: *See—*
Griffith, James R.; and O'Rear, Jacques G., 4,116,945, Cl. 528-362.000.

Orekhov, Alexandr Mikhailovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

O'Rell, Michael K.: *See—*
Jones, Robert J.; O'Rell, Michael K.; and Sutherland, James D., 4,116,937, Cl. 528-170.000.

Orlando, Charles M.: *See—*
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Orsco, Inc.: *See—*
Glaser, Marshall H.; and Jeakle, Patrick L., 4,116,475, Cl. 285-133.00R.

Orshansky, Elias, Jr. deceased; and Weseloh, William E., to Orshansky Transmission Corporation. Hydromechanical transmission. 4,116,089, Cl. 74-687.000.

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Orshansky, Elias, Jr. deceased; and Weseloh, William E., 4,116,089, Cl. 74-687.000.

Ort, Werner, to Hottinger Baldwin Messtechnik GmbH. Mechanical to electrical transducer. 4,116,075, Cl. 73-708.000.

Ortabasi, Ugur, to Corning Glass Works. Solar energy collector. 4,116,225, Cl. 126-271.000.

Orth, Harold R., to International Harvester Company. Simplified load sensitive hydraulic system for use with a vehicle steering system. 4,116,001, Cl. 60-420.000.

Osburn, Carlton Morris: *See—*
Ning, Tak Hung; Osburn, Carlton Morris; and Yu, Hwa Nien, 4,116,721, Cl. 148-1.500.

Osiko, Vyacheslav Vasilievich: *See—*
Alexandrov, Vladimir Ilich; Osiko, Vyacheslav Vasilievich; Tatarintsev, Vladimir Mikhailovich; and Udovenchik, Viktor Timofeevich, 4,116,598, Cl. 425-174.80R.

Osipow, Lloyd I.: *See—*
Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C., 4,116,370, Cl. 222-402.180.

Oskam, Aane Adriaan, to Industrie Koot B.V. Motor-car mirror adjustable about two perpendicular axes. 4,116,538, Cl. 350-289.000.

Osmalov, Jerome S.: *See—*
Mathe, George L.; and Osmalov, Jerome S., 4,117,064, Cl. 264-103.000.

Osterwalder AG: *See—*
Linder, Ernst; and Thut, Kurt, 4,116,122, Cl. 100-48.000.

Othmer, Donald F. Solvent refining of sugar. 4,116,712, Cl. 127-46.00R.

Otrhalek, Joseph V.; Gomes, Gilbert S.; and Gansser, Robert E., to BASF Wyandotte Corporation. Acid cleaner and process for disposal thereof. 4,116,713, Cl. 134-3.000.

Otsubo, Kizuku: *See—*
Nagumo, Shin-ichi; Hayashi, Yoshimasa; and Otsubo, Kizuku, 4,116,179, Cl. 123-119.00A.

Ott, Eduard Karl. Solid state alternating current switching device. 4,117,349, Cl. 307-252.00B.

Ottesen, Otto, to ASEA Aktiebolag. Top core type current transformer structure. 4,117,437, Cl. 336-69.000.

Outten, Edward Francis; Ryer, Jack; and Williams, John E., to Exxon Research & Engineering Co. Elastomer compatible seal swell additive for automatic transmission fluids, power transmission fluids and hydraulic steering applications. 4,116,877, Cl. 252-72.000.

Ovation Instruments, Inc.: *See—*
Rickard, James H., 4,116,107, Cl. 84-267.000.

Owen, Ronald C.; and Curry, John C., to Plastisonics Company, Inc. Foldable hair brush. 4,116,205, Cl. 132-85.000.

Owens-Corning Fiberglas Corporation: *See—*
Charon, Clarence W.; and Renaud, Laurent C., 4,115,917, Cl. 29-611.000.
Charter, Kenneth F.; Miller, John R.; and Garrett, David W., 4,117,067, Cl. 264-119.000.
Stanley, Marion L., Jr., 4,116,357, Cl. 220-205.000.

Owens-Illinois, Inc.: *See—*
Byrum, Bernard W., Jr., 4,116,792, Cl. 204-192.00E.
Taylor, Lynn J., 4,117,235, Cl. 560-205.000.
Uhlig, Albert R., 4,116,608, Cl. 425-525.000.
Uhlig, Albert R., 4,117,062, Cl. 264-94.000.

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Oyama, Kiyotaka: *See—*
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Oyama, Shiro: *See—*
Takahashi, Yuzo; Wazima, Yoshimi; Nakada, Akira; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Aizawa, Eizi; and Oyama, Shiro, 4,117,188, Cl. 428-36.000.

P.I.V. Antrieb Werner Reimers Kommanditgesellschaft: *See—*
Berens, Heinrich, 4,116,080, Cl. 74-230.17A.

P.R.A. Laboratories Incorporated: *See—*
Lietz, Dennis E.; and Kinney, Layton F., 4,116,903, Cl. 260-22.0CB.

Packard Instrument Company, Inc.: *See—*
Kaartinen, Niilo H.; and Juhala, Pentti J., 4,116,632, Cl. 23-230.0PC.

Pacor, Bruno, to SGS-ATES Componeti Elettronici S.p.A. Diode formed in integrated-circuit structure. 4,117,507, Cl. 357-48.000.

Pall Corporation: *See—*
Cooper, Roydon B., 4,116,212, Cl. 137-220.000.
Pall, David B., 4,116,738, Cl. 156-167.000.

Pall, David B., to Pall Corporation. Continuous production of tubular modular filter elements using nonwoven webs from thermoplastic fibers and products. 4,116,738, Cl. 156-167.000.

Palmer-Shile Company: *See—*
Hall, Lee Z., 4,116,343, Cl. 211-151.000.

Paluka, Charles F., to Semco Instrument, Inc. Jet engine test set. 4,116,052, Cl. 73-117.300.

Panchak, John R.: *See—*
Bechara, Ibrahim S.; Carroll, Felix P.; Mascioli, Rocco L.; and Panchak, John R., 4,116,879, Cl. 252-426.000.

Panicci, Richard L., to Kiddie Products, Inc. Teether with pressurized fluid. 4,116,202, Cl. 128-359.000.

Pankratz, David V.; and Wright, Bruce E., to Aerovironment Inc. Fluid sampling devices. 4,116,067, Cl. 73-421.50R.

Papillon, Jean-Guy: *See—*
Martel, Charles Simeon; Papillon, Jean-Guy; and Papillon, Paul, 4,115,980, Cl. 52-591.000.

Papillon, Paul: *See—*
Martel, Charles Simeon; Papillon, Jean-Guy; and Papillon, Paul, 4,115,980, Cl. 52-591.000.

Papst Motoren KG: *See—*
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Paraho Corporation: *See—*
Harris, Harry A., 4,116,779, Cl. 201-34.000.
Jones, John B., Jr.; and Reeves, Adam A., 4,116,810, Cl. 208-11.00R.

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Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzger, Kirk J.; and Paraskos, John Angelo, 4,116,819, Cl. 208-216.000.

Parenti, Ronald. Toothbrush with cartridge chamber. 4,116,570, Cl. 401-155.000.

Parish, Ben D.: *See—*
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Parker, Kenneth John: *See—*
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Parks, Christ F.; and Nimerick, Kenneth H., to Dow Chemical Company, The. Method and composition for reducing the strength of ice. 4,117,214, Cl. 427-220.000.

Parks, John Ronald: *See—*
Bell, Donald Atkinson; Chorley, Bernard John; Parks, John Ronald; and Wanek, Robert Lewis, 4,117,539, Cl. 364-551.000.

Parton, Kenneth Charles; Appleton, Anthony Derek; and Bartram,

Trevor Carlisle, to Reyrolle Parsons Limited. Current-limiting devices. 4,117,524, Cl. 361-19.000.

Pasqualucci, Carmine: *See—*
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, 4,116,957, Cl. 260-239.30P.

Pate, James O.: *See—*
Gould, Paul F.; and Pate, James O., 4,117,447, Cl. 340-4.00E.

Patel, Amrut R.: *See—*
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Patel, Raman P.: *See—*
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Paterson, Thomas: *See—*
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Pauer, Lyle A.: *See—*
Snyder, Daniel S.; Luzsicza, Steven O.; and Pauer, Lyle A., 4,117,452, Cl. 340-58.000.

Paulus, Paul. Flush valve for toilet tanks. 4,115,882, Cl. 4-327.000.

Pavel, Klaus, to Rhein-Nadel Maschinennadel GmbH. Dispenser for sewing machine needles or the like. 4,116,333, Cl. 206-380.000.

Pawson, Beverly Ann: *See—*
Klaus, Michael Josef; and Pawson, Beverly Ann, 4,116,975, Cl. 260-332.20A.

Paz, Eldad: *See—*
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Pearce, James D.; Pearce, Stanley E.; and Pearce, D. Kevin. Chain drive shift system. 4,116,079, Cl. 74-217.00B.

Pearce, Stanley E.: *See—*
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Pearson, James M.: *See—*
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Peck, John Alexander, to Radionic Products Limited. Box camera and photographic kit. 4,117,501, Cl. 354-89.000.

Peecher, Ronald Kaye, to International Telephone and Telegraph Corp. Sound communication system. 4,117,262, Cl. 179-1.0SW.

Peek, Henry L.: *See—*
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Pegram, John B.: *See—*
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Peiser, Alfred M., to Mobil Oil Corporation. Method and apparatus for processing a petroleum production stream. 4,116,821, Cl. 208-361.000.

Pelzer, Peter: *See—*
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Pencak, John George, to American Can Company. Electronic detection apparatus for leaks. 4,116,043, Cl. 73-40.000.

Penfold, Alan S.; and Thornton, John A., to Telic Corporation. Glow discharge method and apparatus. 4,116,793, Cl. 204-192.00R.

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Pennwalt Corporation: *See—*
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Pereny, Franklin C., to Truxell, Stanley, a part interest. Vibrator. 4,117,381, Cl. 318-120.000.

Pering, Richard D., to Hewlett-Packard Company. Acoustic imaging apparatus. 4,116,229, Cl. 128-2.00V.

Peripheral Dynamics, Inc.: *See—*
Schisselbauer, John C.; and Dobson, John J., 4,117,314, Cl. 235-475.000.

Permali, Incorporated: *See—*
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Pernet, Andre G.; Nakamoto, Hiromasa; and Ishizuka, Naoyasu, to Abbott Laboratories. Prostaglandin derivatives. 4,117,014, Cl. 260-586.00R.

Peroxid-Chemie GmbH.: *See—*
Dillenburg, Helmut; Moser, Wilhelm; and Jones, Robert, 4,117,087, Cl. 423-275.000.

Perrault, Guy; Francoeur, Raynald; and Lavertu, Roger, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Composite explosives. 4,116,734, Cl. 149-19.200.

Perrotti, Emmanual Joseph, to International Telephone and Telegraph Corp. Multipurpose, multifunction antenna. 4,117,488, Cl. 343-100.0PE.

Perry, Anthony J.: *See—*
Menth, Anton; Perry, Anthony J.; and Spinner, Ulrich, 4,116,726, Cl. 148-31.570.

Persson, Staffan B., to American Optical Corporation. Adjustable support. 4,116,548, Cl. 351-38.000.

Persson, Staffan B., to American Optical Corporation. Control means. 4,117,341, Cl. 250-561.000.

Pesola, Oiva J. Ski vise. 4,116,425, Cl. 269-152.000.

Peter, Friedrich G.: *See—*
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Peters, Edward J., to Diamond Shamrock Corporation. Explosion bonding of bipolar electrode backplates. 4,116,807, Cl. 204-290.00F.

Petersen, Arthur Walter: *See—*
Schoenholz, Daniel; Petersen, Arthur Walter; and Northup, Marcus Allen, Jr., 4,116,848, Cl. 252-90.000.

Petersen, Egon Norbert; and Richtzenhain, Hermann, to Dynamit Nobel Aktiengesellschaft. Arylsulfonic acid bromophenyl esters, their preparation, and their use as flameproofing agents. 4,116,934, Cl. 260-45.75B.

Peterson, Vacharee S. Toothbrush for simultaneous-surface and sulcus cleaning. 4,115,894, Cl. 15-167.00R.

Petri AG, Firma: *See—*
Zeller, Gregor, 4,116,087, Cl. 74-552.000.

Petro-Data C.A.: *See—*
Rankin, E. Edward; and King, David W., 4,116,274, Cl. 166-250.000.

Petro, John; and Schofield, Charles R., to Westinghouse Electric Corp. Method of tipping refractory metal tubulation. 4,117,299, Cl. 219-117.100.

Petroff, Peter D. Sewer line analyzer probe. 4,116,061, Cl. 73-299.000.

Petrolite Corporation: *See—*
Godar, Richard L.; and Corneli, Philip R., 4,116,812, Cl. 208-48.0AA.
Redmore, Derek, 4,117,236, Cl. 560-129.000.

Pettijohn, David, to Midgard Electronics Company, Inc. High voltage constant current source for iontophoresis. 4,116,238, Cl. 128-172.100.

Pfeiffer, Willi: *See—*
Braun, Karl; Lacher, Rainer; and Pfeiffer, Willi, 4,116,200, Cl. 128-305.000.

Pfizer Inc.: *See—*
Bass, Robert John, 4,117,149, Cl. 424-283.000.
Hammen, Philip D.; and Milne, George M., Jr., 4,117,012, Cl. 260-570.80R.
Nelson, Albin J., 4,117,138, Cl. 424-263.000.
Sarges, Reinhard, 4,117,230, Cl. 548-309.000.

Philagro: *See—*
Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, 4,116,974, Cl. 260-332.20A.

Philip Morris Incorporated: *See—*
Mathe, George L.; and Osmalov, Jerome S., 4,117,064, Cl. 264-103.000.

Phillips Cable Limited: *See—*
Beach, Shirley, 4,117,295, Cl. 219-10.61R.

Phillips Petroleum Company: *See—*
Davis, Edgar D.; and Colbert, Gilbert L., 4,116,816, Cl. 208-209.000.
Drake, Charles A., 4,117,002, Cl. 260-465.80R.
Edmonds, James T., Jr.; and Scoggins, Lacey E., 4,116,947, Cl. 528-388.000.
Fozzard, George B., 4,117,001, Cl. 260-465.80R.
Fozzard, George B., 4,117,242, Cl. 560-263.000.
Habeger, Charles C., Jr.; and Irwin, Michael J., 4,117,473, Cl. 340-324.0AD.
Hsieh, Henry L., 4,116,869, Cl. 252-431.00P.
Hughes, William B., 4,117,016, Cl. 260-593.00R.
Liebert, Timothy C.; and McClintock, William A., 4,117,025, Cl. 260-681.500.

Phillips, Robert, to A. & E. Warbern, Inc. Garment hanger with size indicator. 4,115,940, Cl. 40-322.000.

Phillips, Ronald; and Melville, James Campbell, to Lucas Industries Limited. Fluid pump. 4,116,588, Cl. 417-252.000.

Pierrel, Michel, to Pont-A-Mousson S.A. Installation for the centrifugal casting of large pipes. 4,116,260, Cl. 164-295.000.

Pietsch, Wolfgang B., to Midrex Corporation. Metallized iron briquet. 4,116,679, Cl. 75-34.000.

Pigeon Kabushiki Kaisha: *See—*
Nakata, Yuichi; and Murakami, Tadayoshi, 4,115,893, Cl. 15-110.000.

Pike, Russell E.: *See—*
Schwender, Charles F.; and Pike, Russell E., 4,117,131, Cl. 424-251.000.

Pillar, Walter O., to ARCO Polymers, Inc. Phenolic antioxidants for non-polymeric halogen compounds during impregnation of styrene polymer particles. 4,117,178, Cl. 521-60.000.

Pincherle, Hugh Andrew: *See—*
Freer, William Gordon; Pincherle, Hugh Andrew; and Moore, William Thomas, 4,117,472, Cl. 340-324.00M.

Pioneer Electronic Corporation: *See—*
Ando, Shizuo, 4,117,272, Cl. 179-84.00R.

Pioneer Filters, Inc.: *See—*
Swank, Roy L., 4,116,845, Cl. 210-446.000.

Pioneer Industries, Div. of Core Industries Inc.: *See—*
Majumdar, Asit, 4,115,968, Cl. 52-204.000.

Pirovano, Camillo; and Pirovano, Camillo. Cable terminals for metal cables. 4,116,574, Cl. 403-275.000.

Pirovano, Camillo: *See—*
Pirovano, Camillo; and Pirovano, Camillo, 4,116,574, Cl. 403-275.000.

Pitman-Moore, Inc.: *See—*
Mia, Abdus Salam, 4,116,633, Cl. 23-230.00B.

Pizzorno, Augusto, to Industrie Pirelli S.p.A. Contractible segmented rigid core for a tire-curing mold. 4,116,596, Cl. 425-55.000.

Plains Chemical Development Co.: *See—*
Budnick, Edward G., 4,116,990, Cl. 260-429.00J.

Plank, Charles J.: *See—*
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,116,813, Cl. 208-46.000.

Plantema, Otto G., to Stamicarbon, B.V. Process for preparing a cycloalkanol. 4,117,246, Cl. 568-821.000.

Plasco, Inc.: *See—*
Eisenberg, Melvin I.; Levy, Norman; and Beall, Glenn L., 4,116,227, Cl. 128-2.00F.

Plasse, Robert. Method for the manufacture of a spring-interior mattress. 4,116,735, Cl. 156-79.000.

Plastisonics Company, Inc.: *See—*
Owen, Ronald C.; and Curry, John C., 4,116,205, Cl. 132-85.000.

Platone, Edoardo: *See—*
De Simone, Renato; Platone, Edoardo; and Morelli, Morello, 4,117,249, Cl. 568-855.000.

Playart Ltd.: *See—*
Tong, Duncan, 4,116,381, Cl. 238-10.00E.

Pleier, Walter J.; and Wahl, James A., to Eaton Corporation. Automatic seat brake. 4,116,296, Cl. 180-101.000.

Plempel, Manfred: *See—*
Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, 4,117,142, Cl. 424-273.00R.

Pleskac, Larry J., to NCR Corporation. Clip for paralleling packaged integrated circuit chips. 4,116,518, Cl. 339-17.0CF.

Ploger, Walter, to Henkel Kommanditgesellschaft auf Aktien. Process of stabilization of dibasic calcium phosphate dihydrate against hydrolysis with 3-amino-1-hydroxypropane-1,1-diphosphonic acid. 4,117,086, Cl. 423-268.000.

Ploger, Walter, to Henkel Kommanditgesellschaft auf Aktien. Process of stabilization of dibasic calcium phosphate dihydrate against hydrolysis with azacycloalkane-2,2-diphosphonic acids. 4,117,090, Cl. 423-268.000.

Plust, Heinz; and Gutmann, Gunter, to Deutsche Automobilgesellschaft GmbH. Nickel oxide-hydrogen cell. 4,117,206, Cl. 429-101.000.

Ply, Lemuel Leslie. Tubular pneumatic conveyor pipeline. 4,116,491, Cl. 302-29.000.

Poe, L. Richard, to Hartwell Corporation. Adjustable flush mounted hook latch. 4,116,479, Cl. 292-113.000.

Poiget, Gilbert: *See—*
Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, 4,116,974, Cl. 260-332.20A.

Poindexter, Allan M.; and Ricks, Herbert E., to United States of America, Energy. Ultrasonic dip seal maintenance system. 4,116,766, Cl. 176-38.000.

Policke, Oswald: *See—*
Horler, Hansulrich; Linsi, Ulrich; and Policke, Oswald, 4,116,502, Cl. 308-9.000.

Polito, Carole A., to Beckman Instruments, Inc. Enzymatic reagent and method for increasing the sensitivity of enzymatic substrate analyses using oxygen rate analyzers. 4,116,773, Cl. 195-99.000.

Polk, Donald E.; and Giessen, Bill C. Amorphous metal alloys and products thereof. 4,116,682, Cl. 75-123.00H.

Pollack, Warren John: *See—*
Harris, Robert Richard; and Pollack, Warren John, 4,116,902, Cl. 260-22.0TN.

Polstra, James W.: *See—*
Culbertson, Samuel W.; and Polstra, James W., 4,116,364, Cl. 222-40.000.

Polyak, Nandor: *See—*
Laib, Lajos; Komandi, Gyorgy; Polyak, Nandor; and Bolyky, Janos, 4,116,051, Cl. 73-116.000.

Polyakov, Rudolf Semenovich: *See—*
Tsirkin, Mark Zakharovich; Kogan, Viktor Ovshievich; Polyakov, Rudolf Semenovich; Presnov, Jury Leonidovich; and Khanukova, Elina Sergeevna, 4,117,362, Cl. 310-214.000.

Pommer, Ernst-Heinrich; Thym, Sabine; and Reuther, Wolfgang, to BASF Aktiengesellschaft. Furan derivatives. 4,117,150, Cl. 424-285.000.

Pond, David Martin, to Eastman Kodak Company. Ultraviolet stabilizers and their use in organic compositions. 4,116,929, Cl. 260-45.8NT.

Pondrom, Walter L., Jr., to United States of America, Air Force. Optical position pick-off in zero-drag satellite. 4,117,318, Cl. 250-201.000.

Ponjee, Johannes Jacobus; and Bruinink, Jacob, to U.S. Philips Corporation. Picture display cell with memory effect. 4,116,535, Cl. 350-355.000.

Pont-A-Mousson S.A.: *See—*
Pierrel, Michel, 4,116,260, Cl. 164-295.000.

Poole, Ernest G.; and Hair, Lucius M., to Kendall Company, The. Method of making retipped top-drive filling spindles. 4,115,911, Cl. 29-401.00D.

Popov, Vasily Dmitrievich: *See—*
Abramov, Ivan Egorovich; Gershanov, Felix Borisovich; Dolidze, Vladimir Romanovich; Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Popov, Vasily Dmitrievich; Rutman, Grigory Iosifovich; and Shalimova, Zoya Stepanovna, 4,117,244, Cl. 568-799.000.

Popovich, David Thomas: *See—*
Witenhafer, Donald Edward; and Popovich, David Thomas, 4,117,215, Cl. 526-62.000.
Witenhafer, Donald Edward; and Popovich, David Thomas, 4,117,216, Cl. 526-62.000.

Porta Systems Corp.: *See—*
Gautier, Charles L.; DeLuca, Paul V.; and Atun, Albert, 4,117,273, Cl. 179-98.000.

Porter, Donald H.: *See—*
Currey, John E.; McLarty, Colin S.; and Porter, Donald H., 4,116,800, Cl. 204-252.000.

Porter, Gary K.; and Porter, George K., Jr. Quick disconnect coupler assembly. 4,116,476, Cl. 285-137.00R.

Porter, George K., Jr.: *See—*
Porter, Gary K.; and Porter, George K., Jr., 4,116,476, Cl. 285-137.00R.

Porth, Chris H.; and Lilja, E. Harold, to Skil Corporation. Belt centering and replacement mechanism for belt sanders and the like. 4,115,957, Cl. 51-170.0EB.

Pott, Paul Gerhard: *See—*
Gosger, Peter; Pott, Paul Gerhard; and Wolter, Bernd, 4,116,799, Cl. 204-224.00M.

Potter, Bronson M. Oil detector. 4,116,045, Cl. 73-61.10R.

Poulsen, Poul Borge Rosenius: *See—*
Amotz, Shmuel; Nielsen, Tage Kjaer; Poulsen, Poul Borge Rosenius; and Norman, Barrie Edmund, 4,116,771, Cl. 195-63.000.

Powell, William E.; and Magner, Richard G., to Corning Glass Works. Electrophoretic analyzer with automatic reference circuit. 4,116,565, Cl. 356-105.000.

Power, George Edward; and Bolling, Donald Louis, to Formica Corporation. Release sheet of a cellulosic paper coated with a resin mixture. 4,117,198, Cl. 428-452.000.

Power Instruments, Inc.: *See—*
Redfield, Robert H., 4,117,395, Cl. 324-16.00T.

Power-Matic Corporation: *See—*
Gogins, Laird B., 4,116,083, Cl. 74-393.000.

Powers, Mark O.: *See—*
Kremer, Carl P., Jr.; and Powers, Mark O., 4,116,387, Cl. 239-338.000.

Pozuelo, Jose. Method of pharmacologically treating drug addiction with alpha-methyl-para-tyrosine. 4,117,161, Cl. 424-319.000.

PPG Industries, Inc.: *See—*
Ecke, George G., 4,117,168, Cl. 424-337.000.
Edge, Charles K.; and Nier, Thomas J., 4,116,661, Cl. 65-182.00R.
Matesa, Joseph Michael; and Rau, Frank John, 4,116,659, Cl. 65-99.00A.
Rinehart, Jay Kent, 4,117,155, Cl. 424-300.000.

PQ Corporation: *See—*
Hertzenberg, Elliot P.; Itzkovitch, Irwin Jerry; and Joyce, Ivan H., 4,117,105, Cl. 423-625.000.

Prange, Rolf: *See—*
Schuster, Heinz; and Prange, Rolf, 4,117,211, Cl. 429-121.000.

Prater, J. Lewis; and Hedworth, Robert L., to GAF Corporation. Continuous, low pressure ethynylation process for the production of butynediol. 4,117,248, Cl. 568-855.000.

Pratzer, Hans: *See—*
Hesse, Reiner; Pratzer, Hans; Kieser, Manfred; and Edler, Gerhard, 4,116,628, Cl. 427-154.000.

Preformed Line Products Company: *See—*
Williams, Harrison L., 4,117,256, Cl. 174-40.00R.

Preis, William R.: *See—*
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Prelletz, Edward R.: *See—*
Kim, Raymond W. H.; and Prelletz, Edward R., 4,116,550, Cl. 352-124.000.
Kim, Raymond W. H.; Lueders, Arthur L.; Prelletz, Edward R.; and Warden, Gerald D., 4,116,551, Cl. 352-124.000.

Presnov, Jury Leonidovich: *See—*
Tsirkin, Mark Zakharovich; Kogan, Viktor Ovshievich; Polyakov, Rudolf Semenovich; Presnov, Jury Leonidovich; and Khanukova, Elina Sergeevna, 4,117,362, Cl. 310-214.000.

Prest, William M., Jr, to Xerox Corporation. Process for enhancement of mechanical properties of photoconductive polymers. 4,117,072, Cl. 264-288.000.

Prestridge, Floyd Leon, to Combustion Engineering, Inc. Method and apparatus for separation of fluids with an electric field and centrifuge. 4,116,790, Cl. 204-188.000.

Prestwich, John Richard, to Warwick Pump and Engineering Company Limited. Diaphragm pump with pulse piston position responsive work fluid replenishment. 4,116,590, Cl. 417-387.000.

Previte, Robert W., to W. R. Grace & Co. Additive composition for hydraulic cement compositions. 4,116,706, Cl. 106-90.000.

Prinz, Erwin: *See—*
Torelli, Aldo; and Prinz, Erwin, 4,116,163, Cl. 118-303.000.

Prinzbach, Horst; and Schwesinger, Reinhard, to BASF Aktiengesellschaft. Manufacture of isomeric 1,4-dibromo-epoxy-cyclohexenes. 4,116,984, Cl. 260-348.120.

Procter & Gamble Company, The: *See—*
Bailey, John; Randell, Michael John; and Sherrington, Paul Richard, 4,116,852, Cl. 252-135.000.
Derstadt, Donna M.; and Moeser, Douglas W., 4,116,885, Cl. 252-532.000.
Leikhim, John William, 4,116,849, Cl. 252-103.000.

Rupe, Lewis Allen; Tuthill, Lyle Brown; and Leikhim, John William, 4,116,851, Cl. 252-103.000.
Temple, Robert Dwight; Bryan, William Thomas; and Willig, Carl Joseph, 4,116,854, Cl. 252-167.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Coispeau, Gerard Emile Edgard; and Pechmeze, Jacques Pierre Edmond, 4,116,954, Cl. 260-162.000.
Olah, George A., 4,116,880, Cl. 252-429.00R.

Pronko, Vladimir Grigorievich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Puchalski, Chester: *See—*
Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr., 4,117,140, Cl. 424-267.000.

Puhringer, Othmar; and Scheurecker, Werner, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Continuous casting plant strand guiding means. 4,116,261, Cl. 164-448.000.

Pungor, Erno: *See—*
Havas, Jeno; Doktor, Elek; Patko, Marton; and Pungor, Erno, 4,116,796, Cl. 204-195.00M.

Purcell, Jack. Retainer arrangement for panels. 4,115,974, Cl. 52-512.000.

Purcell, Robert J.: *See—*
Luttrell, Richard W.; and Purcell, Robert J., 4,116,081, Cl. 74-243.00R.

Purr, Horst: *See—*
Lehmann, Werner; Purr, Horst; and Raible, Herrmann, 4,116,128, Cl. 101-425.000.

Purrmann, Robert: *See—*
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Putt, Sterling R.: *See—*
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Quebec Iron and Titanium Corporation: *See—*
Gueguin, Michel, 4,117,076, Cl. 423-78.000.

Quee, Jack A., to Dec International, Inc. Spray drying on woven belt of monofilament synthetic fiber. 4,116,756, Cl. 159-45.000.

Quilliam, Douglas John, to Fairey Winches Limited. Clutch. 4,116,320, Cl. 192-89.00A.

Quisenberry, Tony M.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 4,116,228, Cl. 128-2.00R.

R. C. Smith Company: *See—*
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R.E.T. Nominees Pty. Ltd.: *See—*
Thompson, Roger E., 4,116,446, Cl. 273-181.00F.

Rabassa, Alberto: *See—*
Mollet, Hans; Haberli, Roland; Rabassa, Alberto; and Babler, Fridolin, 4,117,066, Cl. 264-117.000.

Rabatin, Jacob G., to General Electric Company. Method for preparing thermoluminescent materials utilizing rare earth oxyhalides activated with terbium. 4,116,865, Cl. 252-301.40H.

Rabban, Philipp. Surgical retractor. 4,116,232, Cl. 128-20.000.

Rackstraw, Bernard Booth: *See—*
Farrow, Harold Frederick; and Rackstraw, Bernard Booth, 4,116,124, Cl. 101-170.000.

Radelkis Elektrokemiai Muszergyarto Szovetkezet: *See—*
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Radiometer A/S: *See—*
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Radionic Products Limited: *See—*
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Radstake, Herman; Hasenack, Nicolas A.; Van Latenstein, Anthonie; and Burger, Jacobus J., to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V., NLX. Process for the manufacture of ore pellets. 4,116,681, Cl. 75-41.000.

Raffelson, Harold: *See—*
Mount, Ramon A.; Raffelson, Harold; and Robinson, Warn D., 4,116,868, Cl. 252-428.000.

Rahilly, William P., to United States of America, Air Force. Ion implanted eutectic gallium arsenide solar cell. 4,116,717, Cl. 136-89.0SJ.

Raible, Herrmann: *See—*
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Rairden, John R., III: *See—*
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Ralston Purina Company: *See—*
Washam, Ray D., 4,117,170, Cl. 426-72.000.

Ramanathan, Visvanathan: *See—*
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Rambert, Andre; Bousquet, Gilles; and Dejour, Henri. Hip prosthesis. 4,115,875, Cl. 3-1.913.

Ramer, Mervin, to Murray, Lawrence. Compacting apparatus. 4,116,123, Cl. 100-233.000.

Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Hindered piperidine carboxylic acids, metal salts thereof and stabilized compositions. 4,116,933, Cl. 260-45.75N.

Ramsey Corporation: *See—*
McCormick, Harold E., 4,115,959, Cl. 51-295.000.

Randell, Michael John: *See—*
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Rank Organisation Limited, The: *See—*
Freer, William Gordon; Pincherle, Hugh Andrew; and Moore, William Thomas, 4,117,472, Cl. 340-324.00M.

Rankin, E. Edward; and King, David W., to Petro-Data C.A. Wireline latching apparatus and method of use. 4,116,274, Cl. 166-250.000.

Rashev, Tzolo Valkov: *See—*
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Rau, Frank John: *See—*
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Raue, Karl Moritz, to Spanset Inter A.G. Lifting slings and a method for producing same. 4,116,481, Cl. 294-74.000.

Ravdonikas, Izabella Vladislavovna: *See—*
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Rawls, Vaughn: *See—*
Morris, Jerry M.; Cole, Leon Jay; and Rawls, Vaughn, 4,116,256, Cl. 157-13.000.

Ray, Curtis M.: *See—*
Young, Eugene F.; Ray, Curtis M.; and Rogers, Ryland F., 4,116,555, Cl. 355-15.000.

Raychem Corporation: *See—*
Johnson, Edward F.; and Carlsen, John S., 4,117,027, Cl. 260-824.00R.

Raycher, Robert J., to Tru-Fit Products Corporation. Control for welding device. 4,117,298, Cl. 219-98.000.

Raymond Lee Organization, Inc., The: *See—*
Marusiak, Frank, Jr., 4,116,507, Cl. 312-210.000.
Scaduto, Francis J., 4,116,233, Cl. 128-32.000.

Raynal, Serge Fernand: *See—*
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Raytheon Company: *See—*
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Razdan, Raj Kumar; and Dalzell, Haldean Cloyce, to Sheehan Institute for Research, Inc. Process for the preparation of (−)-6a,10a-trans-6a,7,8,10a-tetrahydrodibenzo[b,d]-pyrans. 4,116,979, Cl. 260-345.300.

Razgaitis, Frank V.: *See—*
Greaves, Melvin J.; and Razgaitis, Frank V., 4,116,345, Cl. 214-37.000.

RCA Corporation: *See—*
Ahmed, Adel Abdel Aziz, 4,117,417, Cl. 330-288.000.
Carlson, David Emil; and Wronski, Christopher Roman, 4,117,506, Cl. 357-30.000.
Clay, Burton Ross; and Burton, Gardner Thomas, 4,116,526, Cl. 350-3.670.
den Hollander, Willem, 4,117,380, Cl. 315-393.000.
Ganssle, Eugene Robert; Scott, Ralph Richard; and Williams, Richard Jean, 4,116,263, Cl. 165-27.000.
Goel, Jitendra; Narayan, Subrahmanyam Yegna; and Drukier, Ira, 4,117,301, Cl. 219-121.0EM.
Hoover, Merle Vincent, 4,117,415, Cl. 330-264.000.
Kalfus, Martin Aaron; and Becke, Hans Werner, 4,117,350, Cl. 307-252.00C.
Kalfus, Martin Aaron; and Baugher, Dale Milton, 4,117,351, Cl. 307-252.00C.
Marlowe, Frank Jerome; and Anderson, Charles Hammond, 4,117,368, Cl. 313-422.000.
Olsen, Gregory Hammond; Zamerowski, Thomas Joseph; and Buiocchi, Charles Joseph, 4,116,733, Cl. 148-175.000.
Schade, Otto Heinrich, Jr., 4,117,416, Cl. 330-282.000.
Smith, Joseph Leland, 4,117,433, Cl. 335-212.000.

Reagents of the University of California, The: *See—*
Goodman, Murray; Verlander, Michael S.; Kaplan, Nathan O.; and Venter, J. Craig, 4,116,949, Cl. 260-112.50R.

Reddy, Thomas Bradley, to American Cyanamid Company. Polymeric electrolyte for electrochromic display devices. 4,116,545, Cl. 350-357.000.

Redfield, Robert H., to Power Instruments, Inc. Digital stroboscope-tachometer. 4,117,395, Cl. 324-16.00T.

Redland Claddings Limited: *See—*
Cummins, Peter Gerald; Sinton, Bernard; and Miller, Michael George, 4,117,185, Cl. 428-241.000.

Redmore, Derek, to Petrolite Corporation. Phosphonium compounds. 4,117,236, Cl. 560-129.000.

Reed, Meuriel Francis; and Malm, Curtis Lawrence, to Gillette Company, The. Ball holder for a ball-point pen. 4,116,569, Cl. 401-216.000.

Reed, Ronald H.; Miracle, William C.; and McMullin, Dwain G., to Square D Company. Meter receptacle assembly. 4,117,530, Cl. 361-365.000.

Reed, William H., III: *See—*
Berkey, Edgar; Reed, William H., III; and Hickam, William M., 4,117,396, Cl. 324-33.000.

Reeves, Adam A.: *See—*
Jones, John B., Jr.; and Reeves, Adam A., 4,116,810, Cl. 208-11.00R.

Refreshment Machinery Incorporated: *See—*
Meacham, Thomas E., Jr.; and Johnson, David C., 4,116,630, Cl. 422-24.000.

Regalbuto, John A.: *See—*
Christopher, Glenn B.; and Regalbuto, John A., 4,116,130, Cl. 102-20.000.

Regel, Erik: *See—*
Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, 4,117,142, Cl. 424-273.00R.

Regie Nationale des Usines Renault: *See—*
Lafont, Robert; and Hallot, Louis H., 4,116,678, Cl. 75-11.000.

Rehm, John A.: *See—*
Zimmerman, Gary Lee; Clark, Richard Paul; and Rehm, John A., 4,116,520, Cl. 339-59.00R.

Rehn, Gary Allen; and Taube, Robert Otto, to Deere & Company. Spring reset mechanism. 4,116,280, Cl. 172-266.000.

Reichenbacher, Frank W., to Armour Pharmaceutical Company. Freeze-dry process and product. 4,115,928, Cl. 34-5.000.

Reichman, Joseph: *See—*
Deb, Satyendra K.; Chen, Schoen-nan; Witzke, Horst; Russak, Michael A.; and Reichman, Joseph, 4,117,210, Cl. 429-111.000.

Reinecke, Erich, to WABCO Westinghouse GmbH. Fluid pressure operated disc brake having service, auxiliary and parking brake systems. 4,116,307, Cl. 188-106.00P.

Reinecke, Erich, to WABCO Westinghouse GmbH. Brake valve arrangement for a two-circuit brake system. 4,116,492, Cl. 303-22.00R.

Reinke, Orville Harold: *See—*
Adams, James William; and Reinke, Orville Harold, 4,117,187, Cl. 428-286.000.

Reip, Raymond G., to Vapor Corporation. Removable tank gauge float. 4,116,062, Cl. 73-321.000.

Reis, Christoph: *See—*
Mosburger, Hans; and Reis, Christoph, 4,116,399, Cl. 242-58.400.

Reisender, Elizabeth A.: *See—*
Marshall, Vincent P.; Elrod, David W.; Koert, James M.; Reisender, Elizabeth A.; and Wiley, Paul F., 4,116,769, Cl. 195-51.00R.

Remington Arms Company, Inc.: *See—*
Ervine, Albert W. G., 4,116,109, Cl. 86-23.000.

Renaud, Laurent C.: *See—*
Charon, Clarence W.; and Renaud, Laurent C., 4,115,917, Cl. 29-611.000.

Renaud, Serge; and Rubel, Jean-Paul, to Institut National de la Sante et de la Recherche Medicale Inserm. Apparatus for the study of plasmas. 4,116,564, Cl. 356-39.000.

Rengel, Richard J.: *See—*
Gerlach, Richard K., 4,117,265, Cl. 179-1.0SP.

Research Corporation: *See—*
Goering, Kenneth J.; and Eslick, Robert, 4,116,770, Cl. 195-63.000.
Kende, Andrew S., 4,116,981, Cl. 260-346.710.

Research Incorporated: *See—*
Kintigh, Stanley S.; and Lilienthal, Clarence D., 4,117,392, Cl. 323-21.000.

Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: *See—*
Yajima, Seishi; Hayashi, Josaburo; and Omori, Mamoru, 4,117,057, Cl. 264-63.000.

Reusser, Raymond Edward: *See—*
Chu, Tze Yao; Jaluria, Yogesh; Lavigna, Robert Joseph; Reusser, Raymond Edward; and Williams, George, 4,116,642, Cl. 422-249.000.

Reuther, Wolfgang: *See—*
Pommer, Ernst-Heinrich; Thym, Sabine; and Reuther, Wolfgang, 4,117,150, Cl. 424-285.000.

Revells, Robert G., to Libbey-Owens-Ford Company. Glass sheet supporting and conveying apparatus. 4,116,662, Cl. 65-289.000.

Reymann, Wolfgang: *See—*
Appel, Adolf; Horwege, Claus; Reymann, Wolfgang; and Rosenkranz, Otto, 4,117,050, Cl. 264-25.000.

Reynolds, Charles Edward, to AMP Incorporated. Slotted terminal. 4,116,522, Cl. 339-97.00R.

Reyrolle Parsons Limited: *See—*
Parton, Kenneth Charles; Appleton, Anthony Derek; and Bartram, Trevor Carlisle, 4,117,524, Cl. 361-19.000.

Rhein-Nadel Maschinennadel GmbH: *See—*
Pavel, Klaus, 4,116,333, Cl. 206-380.000.

Rheinische Braunkohlenwerke AG: *See—*
Schulten, Rudolf; and Behr, Friedrich, 4,117,102, Cl. 423-579.000.

Rheocast Corporation: *See—*
Bennett, Foster C., 4,116,423, Cl. 266-200.000.

Rhodes, James F., to General Motors Corporation. Catalyst support coating slurry and coatings. 4,116,883, Cl. 252-463.000.

Rhone-Poulenc-Textile: *See—*
Barbe, Gerard; and Habault, Robert, 4,117,194, Cl. 428-374.000.
Couchoud, Paul, 4,117,042, Cl. 260-930.000.
Ducarre, Michel, 4,116,943, Cl. 528-292.000.

Ribka, Joachim: *See—*
Gattner, Hans; and Ribka, Joachim, 4,116,918, Cl. 260-37.00P.

Ricards, Charles R., to GTE Sylvania Incorporated. Redundant welding method for metal battery containers. 4,117,300, Cl. 219-121.0LM.

Richard Arbib Company, Inc.: *See—*
Arbib, Richard, 4,117,532, Cl. 362-358.000.

Richards, David William Thomas: *See—*
Pearson, Kenneth White; and Richards, David William Thomas, 4,116,418, Cl. 251-149.200.

Richardson, George E.: *See—*
Bachur, Gerald; and Richardson, George E., 4,117,375, Cl. 315-151.000.

Richardson, James L., to VEDA, Inc. Valve assembly. 4,116,211, Cl. 137-205.000.

Richardson-Merrell Inc.: *See—*
Freedman, Jules, 4,117,122, Cl. 424-244.000.

Richardson, Philip C.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 4,116,228, Cl. 128-2.00R.

Richter, Artur. Device for passing electric current through a wall subjected to excess pressure on its inner side. 4,117,254, Cl. 174-15.0BH.

Richter, David J.: *See—*
Teeter, Wallis L.; and Richter, David J., 4,117,271, Cl. 179-82.000.

Richter, Eike, to General Electric Company. Self-supporting amortisseur cage for high-speed synchronous machine solid rotor. 4,117,360, Cl. 310-183.000.

Richter, Sidney B.: *See—*
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., 4,116,670, Cl. 71-88.000.

Richtzenhain, Hermann: *See—*
Petersen, Egon Norbert; and Richtzenhain, Hermann, 4,116,934, Cl. 260-45.75B.

Rickard, James H., to Ovation Instruments, Inc. Stringed instrument mute mechanism. 4,116,107, Cl. 84-267.000.

Rickert, Glenn E. Heat sink temperature stabilized evaporator coil. 4,116,651, Cl. 62-59.000.

Ricks, Herbert E.: *See—*
Poindexter, Allan M.; and Ricks, Herbert E., 4,116,766, Cl. 176-38.000.

Ricoh Co., Ltd.: *See—*
Machida, Hazime; Tamura, Hiroshi; and Murakami, Kakuji, 4,116,698, Cl. 106-2.000.
Suzuki, Takami; Suzaki, Masayuki; and Moriya, Tomoyuki, 4,116,568, Cl. 400-320.000.

Riedel, Konrad: *See—*
Fechner, Joachim; Fiebig, Siegward; Fischer, Friedrich; Fischer, Herbert; Hellmer, Lars; Riedel, Konrad; Stauffer, Adolf; and Sud, Kuldip, 4,117,101, Cl. 423-569.000.

Rieter Machine Works, Ltd.: *See—*
Fluck, Jakob, 4,116,396, Cl. 242-43.00R.

Riganti, Gian Piero: *See—*
Todeschini, Eugenio; and Riganti, Gian Piero, 4,116,292, Cl. 180-6.480.

Rinehart, Jay Kent, to PPG Industries, Inc. Control of *Pythium ultimum* with S-methoxy- or S-3-methylthiophenyl N-alkylthiolcarbamates. 4,117,155, Cl. 424-300.000.

Rishton, Michael L., to Avco Corporation. Extracorporeal pulsatile blood pump comprised of side by side bladders. 4,116,589, Cl. 417-384.000.

Ritter, Gerhard: *See—*
Ritter, Josef; Sackl, Alois; Ritter, Klaus; and Ritter, Gerhard, 4,116,244, Cl. 140-112.000.

Ritter, Josef; Sackl, Alois; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs-u. Verwertungs- GmbH. Multispot welding machine. 4,116,244, Cl. 140-112.000.

Ritter, Klaus: *See—*
Ritter, Josef; Sackl, Alois; Ritter, Klaus; and Ritter, Gerhard, 4,116,244, Cl. 140-112.000.

Roach, James F.: *See—*
Gorman, Joseph G.; Roach, James F.; and Wayland, Paul O., 4,117,288, Cl. 200-144.00R.

Robbins, Jeffrey D.: *See—*
Fancher, Llewellyn W.; and Robbins, Jeffrey D., 4,117,043, Cl. 260-938.000.

Robert Bosch GmbH: *See—*
Fleischer, Helmut, 4,117,355, Cl. 307-310.000.
Glauert, Wolfram, 4,117,401, Cl. 324-208.000.
Iwata, Yoriaki; and Sato, Suguru, 4,117,390, Cl. 322-90.000.

Roberts, Bruce D., to Central States Tooling Service, Inc. Automatic ribbon winding machine. 4,116,398, Cl. 242-56.00R.

Roberts, Fred: *See—*
Magnall, Anthony N.; Taylor, Philip H.; and Roberts, Fred, 4,115,991, Cl. 57-153.000.

Robertshaw Controls Company: *See—*
Bible, Harley V.; Goff, Clifford E.; and Moon, William T., Jr., 4,116,155, Cl. 116-65.000.
Nurnberg, Richard K., 4,116,219, Cl. 126-271.000.

Robertson, Allan James: *See—*
Leman, Jeffrey Donald; and Robertson, Allan James, 4,117,200, Cl. 428-526.000.
Robertson, Vivian. Book holder. 4,116,414, Cl. 248-451.000.
Robinson, Graham: *See—*
Markin, Trevor Leslie; Bones, Roger John; Scott, Keith Taylor; May, Geoffrey John; and Robinson, Graham, 4,117,209, Cl. 429-104.000.
Robinson, Warn D.: *See—*
Mount, Ramon A.; Raffelson, Harold; and Robinson, Warn D., 4,116,868, Cl. 252-428.000.
Roche, Lawrence R., to Dyna Technology, Inc. Alternating current generator. 4,117,388, Cl. 322-25.000.
Rockwell International Corporation: *See—*
Newman, Francis L., 4,117,348, Cl. 307-232.000.
Sammells, Anthony F., 4,116,780, Cl. 204-2.100.
White, Frederic H., III, 4,117,319, Cl. 250-201.000.
Rockwell-Rimoldi S.p.A.: *See—*
Sanvito, Roberto, 4,116,142, Cl. 112-121.260.
Rogers, Ryland F.: *See—*
Young, Eugene F.; Ray, Curtis M.; and Rogers, Ryland F., 4,116,555, Cl. 355-15.000.
Rogovin, A. Terry. Timing attachment for telephones. 4,115,997, Cl. 58-144.000.
Rohm and Haas Company: *See—*
Kunin, Robert, 4,116,860, Cl. 252-192.000.
Rohrer, Walter J., to John Rohrer Contracting Company. Method for screeding cement. 4,115,976, Cl. 52-741.000.
Rohringer, Peter; Lohmann, Frank; and Wurster, Rudolf F., to Ciba-Geigy Corporation. Agent for flame proofing synthetic fibrous material. 4,116,702, Cl. 106-15.0FP.
Rollei-Werke Franke & Heidecke: *See—*
Strauss, Karl-Peter, 4,117,499, Cl. 354-23.00D.
Rooney, Terence R., to Albright & Wilson Ltd. Aluminium polishing compositions. 4,116,699, Cl. 106-3.000.
Roop, Robert; and Shine, Carl, to Fischer & Porter Co. Corrosion-resistant liquified gas evaporator. 4,116,016, Cl. 62-52.000.
Roos, Eberhard, to DELMA, elektro und medizinische Apparatebaugesellschaft m.b.H. Electro - surgical device. 4,116,198, Cl. 128-303.150.
Roos, Ernst: *See—*
Buysch, Hans-Josef; Oertel, Harald; and Roos, Ernst, 4,116,932, Cl. 260-45.95R.
Rose, Jonathan: *See—*
Hodgson, Duncan Barry; Thornton, John Robert; and Rose, Jonathan, 4,117,453, Cl. 340-76.000.
Rosen, Harold A., to Hughes Aircraft Company. Dual mode multiphase power divider. 4,117,423, Cl. 333-9.000.
Rosen, Harold A.: *See—*
Hudspeth, Thomas; and Rosen, Harold A., 4,117,426, Cl. 333-98.0TN.
Rosen, Irving: *See—*
Li, George S.; and Rosen, Irving, 4,117,040, Cl. 260-899.000.
Rosenberg, Peretz. Remotely actuated valves and fluid distribution system including same. 4,116,216, Cl. 137-624.130.
Rosenkranz, Otto: *See—*
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Rosensweig, Ronald E., to Exxon Research & Engineering Co. Process for operating a magnetically stabilized fluidized bed. 4,115,927, Cl. 34-1.000.
Rosinski, Edward J.: *See—*
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,116,813, Cl. 208-46.000.
Rosplock, Sara E.: *See—*
Boyd, David C.; Flannery, James E.; Morgan, David W.; Rosplock, Sara E.; and Sczerbaniewicz, Stella A., 4,116,704, Cl. 106-54.000.
Ross, Curtis R.; Ross, Frank R.; Ross, Eugene G.; and Winborn, Gloria R. Vehicle seat lock. 4,116,297, Cl. 180-114.000.
Ross, Eugene G.: *See—*
Ross, Curtis R.; Ross, Frank R.; Ross, Eugene G.; and Winborn, Gloria R., 4,116,297, Cl. 180-114.000.
Ross, Frank R.: *See—*
Ross, Curtis R.; Ross, Frank R.; Ross, Eugene G.; and Winborn, Gloria R., 4,116,297, Cl. 180-114.000.
Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, to Sprague Electric Company. Electrolytic capacitor. 4,117,531, Cl. 361-433.000.
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, to Archifar Industrie Chimiche del Trentino S.p.A. Rifamycin compounds. 4,116,957, Cl. 260-239.30P.
Rossmann, Axel: *See—*
Kauf, Alois; Kandler, Georg; Rossmann, Axel; and Nustede, Fritz, 4,116,149, Cl. 113-116.00D.
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Rowe, Jerry, to FMC Corporation. Method of sealing tapholes in a phosphorus furnace. 4,116,421, Cl. 266-45.000.
RTE Corporation: *See—*
Spicer, Bruce G., 4,116,515, Cl. 339-12.00R.
Rubel, Jean-Paul: *See—*
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Rubin, Barry Jay: *See—*
Anantha, Narasipur Gundappa; Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,117,546, Cl. 365-233.000.
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., to Mobil Oil Corporation. Hydrocarbon conversion with crystalline zeolite ZSM-34. 4,116,813, Cl. 208-46.000.
Rubin, Wolfgang: *See—*
Aucktor, Erich; and Rubin, Wolfgang, 4,116,020, Cl. 64-21.000.
Ruck, J. Barry, to Theochem Laboratories, Inc. Drain opener. 4,116,850, Cl. 252-103.000.
Rudd, Michael Jefferson, to Bolt Beranek and Newman Inc. Frequency measuring system employing an auto-correlation function frequency control loop. 4,117,419, Cl. 331-1.00A.
Rudolph, Frank W.: *See—*
Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, 4,117,212, Cl. 429-153.000.
Rudolphy, Albert, to Hoechst Aktiengesellschaft. Printing ink binders. 4,116,910, Cl. 260-25.000.
Ruediger, Frederick, to Standard Pressed Steel Co. Tool for assembling storage system. 4,116,034, Cl. 72-387.000.
Ruegg, Edwin, to Netstal-Maschinen AG. Device for anchoring an injection molding machine tool part to a tool carrier. 4,116,599, Cl. 425-192.00R.
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Ruehenbeck, Wolfgang: *See—*
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Runnion, Glenmore J.: *See—*
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Runte, Robert Ralph; and Mau, Theodore A., to Runte, Robert Ralph. Moving goalie circuit for a manually controlled electronic video game. 4,116,441, Cl. 273-85.00G.
Rupe, Lewis Allen; Tuthill, Lyle Brown; and Leikhim, John William, to Procter & Gamble Company, The. Thickened bleach compositions for treating hard-to-remove soils. 4,116,851, Cl. 252-103.000.
Russak, Michael A.: *See—*
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Abramov, Ivan Egorovich; Gershanov, Felix Borisovich; Dolidze, Vladimir Romanovich; Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Popov, Vasily Dmitrievich; Rutman, Grigory Iosifovich; and Shalimova, Zoya Stepanovna, 4,117,244, Cl. 568-799.000.
Ryan, James P.: *See—*
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Ryer, Jack; Brois, Stanley J.; and Winans, Esther D., to Exxon Research & Engineering Co. Amine salts of carboxylate half esters of 1-aza-3,7-dioxabicyclo [3.3.0] oct-5-yl methyl alcohols, their preparation and use as additives for gasoline and middle distillate fuels. 4,116,643, Cl. 44-63.000.
Ryer, Jack: *See—*
Outten, Edward Francis; Ryer, Jack; and Williams, John E., 4,116,877, Cl. 252-72.000.
Ryobi, Ltd.: *See—*
Honkawa, Yoshinori, 4,117,316, Cl. 235-92.0SB.
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Safford, George J.: *See—*
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Saika, Keiji: *See—*
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Saint-Gobain Industries: *See—*
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Saito, Haruhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation apparatus. 4,116,178, Cl. 123-119.00A.
Saito, Mamoru: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Saito, Mamoru; Takahashi, Akira; and Tuchida, Hisashi, 4,117,104, Cl. 423-619.000.
Sakai Chemical Industry Co., Ltd.: *See—*
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Sakaida, Atsuo: *See—*
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Sakura, Gerald Paul. Device for measuring quantity of flowable materials. 4,116,071, Cl. 73-429.000.
Salmond, William G., to Upjohn Company, The. Novel method for preparing cholesta-5,7-diene 3β,25-diol and derivatives thereof. 4,116,985, Cl. 260-397.200.
Salo, Esko, to Oy Wiik & Hoglund Ab. Method of compensating for the roll deflection in a calender. 4,117,054, Cl. 264-40.100.
Salyers, John C.: *See—*
Liberman, Harvey W.; Goranson, Paul L.; Ratledge, R. Houston, Jr.; and Salyers, John C., 4,116,121, Cl. 100-39.000.
Samaginov, Veniamin Mikhailovich: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.
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Sammells, Anthony F., to Rockwell International Corporation. Method of making a lithium-silicon boron electrode for electrical energy storage device. 4,116,780, Cl. 204-2.100.
Sand, Roger D., to General Motors Corporation. Internal combustion engine ignition spark timing system modulated by cylinder combustion pressure. 4,116,175, Cl. 123-117.00R.
Sanders Associates, Inc.: *See—*
Baer, Ralph H.; and Cope, Leonard D., 4,117,511, Cl. 358-83.000.
Sandfort, Robert M.: *See—*
Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert M.; and Semon, Warren L., 4,117,543, Cl. 365-5.000.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; Tsuchihashi, Takashi; and Saika, Keiji, 4,116,023, Cl. 68-13.00R.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,116,627, Cl. 8-149.300.
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Sandoz, Inc.: *See—*
Hardtmann, Goetz E., 4,117,137, Cl. 424-263.000.
Sandoz Ltd.: *See—*
Harri, Eugen; and Ruegger, Artur, 4,117,118, Cl. 424-177.000.
Sandvik Aktiebolag: *See—*
Witberg, Martinus Johannes Joseph, 4,116,100, Cl. 83-698.000.
Sankyo Company Limited: *See—*
Minato, Sadamasa; Hattori, Atsushi; Baba, Yoshihiko; Yabe, Yuichiro; and Ueda, Seigo, 4,116,774, Cl. 195-99.000.
Sano, Hiroshi, to Agency of Industrial Science & Technology. Method of combustion for depressing nitrogen oxide discharge. 4,117,075, Cl. 423-235.000.
Sano, Shunichi, to Tokyo Shibaura Electric Co., Ltd. Method of coating substrate for liquid crystal display device. 4,116,658, Cl. 65-42.000.
San Pietro, Craig, to Okidata Corporation. Printer synchronization control for shuttle having non-uniform velocity. 4,116,567, Cl. 400-124.000.
Sanson, Joseph; and Moser, Kurt, to Upjohn Company, The. Method of making a foam plastic cushion having a peripheral frame and an exterior cover. 4,116,736, Cl. 156-79.000.
Sansui Electric Co., Ltd.: *See—*
Takahashi, Susumu; and Iida, Hiroshi, 4,117,406, Cl. 325-348.000.
Sanvito, Roberto, to Rockwell-Rimoldi S.p.A. Workpiece tensioning device for a sewing unit. 4,116,142, Cl. 112-121.260.
Sanyo Chemical Industries, Ltd.: *See—*
Sato, Teruyuki; and Kawakatsu, Kunio, 4,116,846, Cl. 252-78.100.
Sarges, Reinhard, to Pfizer Inc. Hydantoin derivatives as therapeutic agents. 4,117,230, Cl. 548-309.000.
Sasaki, Tadao: *See—*
Hosaka, Takuo; Sasaki, Tadao; and Suzuki, Hiroshige, 4,117,096, Cl. 423-345.000.
Sato, Atsushi; and Kawaguchi, Hikotarou, to Kao Soap Co., Ltd. Tube caser. 4,115,982, Cl. 53-534.000.
Sato, Ichiro: *See—*
Kawaike, Kazuo; Uchiya, Tsuneo; and Sato, Ichiro, 4,117,255, Cl. 174-31.00R.
Sato, Kazuo; Toriyama, Haruhiko; and Matsushige, Seiichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for detecting variation of a condition amount in a mechanical device. 4,117,451, Cl. 340-52.00A.
Sato, Masaharu: *See—*
Tsunoo, Masahiko; Hirose, Namio; Kimura, Takeji; Inoue, Michihiro; and Sato, Masaharu, 4,116,102, Cl. 84-1.220.
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Sato, Shozo: *See—*
Tojyo, Tsutomu; and Sato, Shozo, 4,116,753, Cl. 156-629.000.
Sato, Suguru: *See—*
Iwata, Yoriaki; and Sato, Suguru, 4,117,390, Cl. 322-90.000.
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Sattaripour, Ali. Earthquake recording device. 4,117,496, Cl. 346-7.000.
Satterwhite, Charles R., to Unit Rig and Equipment Co. Excavating and pipeline installation system. 4,116,014, Cl. 405-179.000.
Sauer, Clement J., to Chem-Farm Inc. Cold flow liquid vapor shoe. 4,116,139, Cl. 111-7.000.
Saugatuck Industries, Incorporated: *See—*
Belmuth, Harold M.; Leto, Alfred R.; London, Lawrence; and Zuckerman, Herman A., 4,115,938, Cl. 40-152.000.
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Lewis, Barry J.; Kuspert, John C.; Saunders, Arthur G.; and McAusland, Robert R., 4,116,750, Cl. 156-563.000.
Saunderson, Allan: *See—*
Gates, Allen Peter; and Saunderson, Allan, 4,117,039, Cl. 260-875.000.
Savage, David: *See—*
Bradshaw, Noel James; Savage, David; and Sneath, Michael Edwin, 4,117,172, Cl. 426-276.000.
Savage Technical Services, Inc.: *See—*
Bertelson, Alexander Bruno, 4,116,835, Cl. 210-100.000.
Sawafuji Electric Co. Ltd.: *See—*
Hazumi, Kenji; and Tagami, Katsutoshi, 4,117,389, Cl. 322-47.000.
Sawata, Shinji; Tani, Tatsuo; Tanaka, Tadayoshi; and Horigome, Takashi, to Agency of Industrial Science & Technology. Apparatus for heat transfer. 4,116,266, Cl. 165-105.000.
Sawyer, Edgar W., Jr., to International Telephone and Telegraph Corp. Water purification methods. 4,116,825, Cl. 210-27.000.
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Saxon, John William Charles: *See—*
Sheffield, David John; and Saxon, John William Charles, 4,116,036, Cl. 72-391.000.
Scaduto, Francis J., to Raymond Lee Organization, Inc., The, a part interest. Portable massager. 4,116,233, Cl. 128-32.000.
Scamehorn, John F.: *See—*
Bendig, Larry L.; and Scamehorn, John F., 4,117,106, Cl. 423-630.000.
Yang, Kang; and Scamehorn, John F., 4,117,085, Cl. 423-264.000.
Schade, Otto Heinrich, Jr., to RCA Corporation. Current mirror amplifiers with programmable current gains. 4,117,416, Cl. 330-282.000.
Schaefer, Hans-Georg; and Vogts, Axel. Method of separating active hydrogen compounds from heterogeneous mixtures also containing compounds which do not contain active hydrogens. 4,116,811, Cl. 208-44.000.
Schafersman, Roy Leonard: *See—*
Ehrlich, Marilyn Carol; and Schafersman, Roy Leonard, 4,117,278, Cl. 179-175.20C.
Schanz, Johannes, to ITT Industries, Inc. Sleeve seal for master cylinders of hydraulic brake systems. 4,116,452, Cl. 277-205.000.
Scheinecker, Alois: *See—*
Kagerhuber, Franz; Scheinecker, Alois; and Scheurecker, Werner, 4,116,262, Cl. 164-448.000.
Schering, A.G.: *See—*
Schroder, Eberhard; and Koch, Henning, 4,117,135, Cl. 424-258.000.
Schering Corporation: *See—*
Daniels, Peter J. L., 4,117,221, Cl. 536-17.000.
Scherr, Norman J., Jr.: *See—*
Smith, David L.; and Scherr, Norman J., Jr., 4,115,923, Cl. 33-172.00E.
Scheurecker, Werner: *See—*
Kagerhuber, Franz; Scheinecker, Alois; and Scheurecker, Werner, 4,116,262, Cl. 164-448.000.
Puhringer, Othmar; and Scheurecker, Werner, 4,116,261, Cl. 164-448.000.
Schiesser AG: *See—*
Schiesser, Walter Hugo, 4,116,096, Cl. 83-101.000.
Schiesser, Walter Hugo, to Schiesser AG. Strip cutter apparatus for rolled sheet formed of rubber. 4,116,096, Cl. 83-101.000.
Schiffer, Gunter: *See—*
Lopata, Karl Peter; and Schiffer, Gunter, 4,116,022, Cl. 68-5.00D.
Schimpf, James E.; Boggs, Roger L.; and Kinsinger, Malcolm H., to Caterpillar Tractor Co. Apparatus for reducing track noise in a track-type vehicle. 4,116,497, Cl. 305-41.000.
Schisselbauer, John C.; and Dobson, John J., to Peripheral Dynamics, Inc. Card reader with means for unloading output hopper on the fly. 4,117,314, Cl. 235-475.000.
Schiweck, Hubert; Steinle, Georg; Muller, Lutz; Gau, Wolfgang; and Munir, Mohammad, to Suddeutsche Zucker-Aktiengesellschaft. Use

of glucopyranosido-1,6-mannitol as a sugar substitute. 4,117,173, Cl. 426-548.000.

Schlafer, John D., to GTE Laboratories Incorporated. Laser lithography of thin film resinates. 4,117,177, Cl. 427-53.000.

Schlichting, Kenneth J. Spark timing computer. 4,116,174, Cl. 123-117.00R.

Schlig, Eugene Stewart; and Stilwell, George Raymond, Jr., to International Business Machines Corporation. Light pen detection and tracking with AC plasma display panel. 4,117,471, Cl. 340-324.00M.

Schlumberger Technology Corporation: *See—*
Souhaite, Philippe, 4,117,394, Cl. 324-10.000.

Schmelzbasaltwerk Kalenborn, Dr. Ing. Mauritz KG: *See—*
Brassel, Leo, 4,116,621, Cl. 432-233.000.

Schmid, Karlheinz, to Gebrueder Heller Maschinenfabrik GmbH. Milling apparatus. 4,116,111, Cl. 90-15.00R.

Schmid Laboratories, Inc.: *See—*
Gordon, Harry W., 4,117,114, Cl. 424-115.000.

Schmidt, Bradley J., to Illinois Tool Works Inc. Laundry appliance door hinge. 4,115,901, Cl. 16-176.000.

Schmidt, John P., to Halcon International, Inc. Two stage maleic anhydride process. 4,116,983, Cl. 260-346.750.

Schmitt, Frederick Louis: *See—*
Hall, John B.; Sprecker, Mark A.; Schmitt, Frederick Louis; and Vock, Manfred Hugo, 4,117,015, Cl. 260-586.00C.

Schmitt, Ludwig Peter. Sealed wall lead-through means for cables in particular for junction boxes. 4,116,472, Cl. 285-4.000.

Schmitt, Werner; Purrmann, Robert; and Jochum, Peter, to ESPE Fabrik Pharmazeutischer Praparate GmbH. Process for the photopolymerization of acrylic acid ester-containing compositions. 4,116,788, Cl. 204-159.230.

Schneider, Louis; and Graham, David E., to GAF Corporation. Selective chlorination of benzoyl chloride. 4,117,006, Cl. 260-544.00D.

Schneider, Louis; and Graham, David E., to GAF Corporation. Method of making N-[4-chlorophenyl)amino]carbonyl)-2,6-difluorobenzamide. 4,117,009, Cl. 260-553.00E.

Schneider, Louis; and Graham, David E., to GAF Corporation. Nematocide control diacylimide control diacylimide compositions. 4,117,162, Cl. 424-320.000.

Schneider, Louis; and Graham, David E., to GAF Corporation. Broad spectrum fungicidal diacylimide compositions. 4,117,163, Cl. 424-320.000.

Schnizler, Albrecht, Jr.; and Bartmann, Klaus, to Metabowerke KG Closs Rauch & Schnizler. Chuck for hammerdrills and the like. 4,116,454, Cl. 279-62.000.

Schob, Otmar: *See—*
de Bie, Jan Rudolf; Ekkelboom, Tjepke Hendrik; Geytenbeek, Johannes Jacobus Franciscus; van Hoorn, Willem Lodewijk; and Schob, Otmar, 4,117,367, Cl. 313-352.000.

Schoemer, Hans Louis, to Motorola, Inc. Modular pushbutton keyset assembly. 4,117,279, Cl. 200-5.00A.

Schoenholz, Daniel; Petersen, Arthur Walter; and Northup, Marcus Allen, Jr., to Church & Dwight Co., Inc. Novel cleaning method and compositions. 4,116,848, Cl. 252-90.000.

Schofield, Charles R.: *See—*
Petro, John; and Schofield, Charles R., 4,117,299, Cl. 219-117.100.

Schofield, David: *See—*
Makinson, George Kenneth; and Schofield, David, 4,116,998, Cl. 260-465.00D.

Schoknecht, Gunter; and Flesch, Udo. Tissue simulating calibration and reference standard. 4,116,040, Cl. 73-1.00R.

Schroder, Eberhard; and Koch, Henning, to Schering, A.G. Novel 5,6,7,8-tetrahydro-5-quinolines and their use as anti-inflammatory agents. 4,117,135, Cl. 424-258.000.

Schubert, Bernhard, to Hauni-Werke Korber & Co. KG. Apparatus for separating lowermost sheets from a stack. 4,116,428, Cl. 271-14.000.

Schue, Francois: *See—*
Lehn, Jean-Marie; Schue, Francois; Boileau, Sylvia; Kaempf, Bernd; Cau, Alain Andre; Moinard, Jean Robert; and Raynal, Serge Fernand, 4,116,887, Cl. 260-2.00A.

Schulmeister, Robert; and Roth, Helmut, to Motoren-und Turbinen-Union Friedrichshafen GmbH. Cooling device for an internal combustion engine. 4,116,171, Cl. 123-41.570.

Schulten, Rudolf; and Behr, Friedrich, to Rheinische Braunkohlenwerke AG. Thermochemical process for producing methane and oxygen from carbon oxides and water. 4,117,102, Cl. 423-579.000.

Schultz, Sidney Joseph: *See—*
Olivo, Anthony Robert; Soldatos, Anthony Constantine; and Schultz, Sidney Joseph, 4,116,921, Cl. 260-38.000.

Schulze, Heinz; and Waddill, Harold G., to Texaco Development Corp. Polyether diureide epoxy additives. 4,116,938, Cl. 528-93.000.

Schurrer, Josef: *See—*
Motz, Karl; Meyer, Josef; and Schurrer, Josef, 4,116,501, Cl. 308-9.000.

Schuster, Heinz; and Prange, Rolf, to Varta Batterie Aktiengesellschaft. Electric storage battery, particularly for vehicles. 4,117,211, Cl. 429-121.000.

Schuster, Hubert: *See—*
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,117,097, Cl. 423-415.00P.

Schwabacher, William Peter, to Hoffmann-La Roche Inc. Self-centering rotatable closure retainer. 4,116,353, Cl. 215-274.000.

Schwarz, Eckhard C. A., to Biax-Fiberfilm Corporation. Process for stretching incremental portions of an orientable thermoplastic substrate and product thereof. 4,116,892, Cl. 521-62.000.

Schwender, Charles F.; and Sunday, Brooks R., to Warner-Lambert Company. 1,2-Benzoxathiin-2,2,-dioxides. 4,116,961, Cl. 260-293.570.

Schwender, Charles F.; and Pike, Russell E., to Warner-Lambert Company. Method of inhibiting gastric acid secretions with 2-(4-pyrimidinyl)thioacetamides. 4,117,131, Cl. 424-251.000.

Schwerdt, Friedrich Wilhelm: *See—*
Brunner, Friedrich Christian; Schwerdt, Friedrich Wilhelm; and Steinbeck, Hans-Heinz, 4,117,093, Cl. 423-339.000.

Schwering, Felix: *See—*
Arnold, James J., deceased; Campbell, Donn V.; DeSantis, Charles M.; and Schwering, Felix, 4,117,490, Cl. 343-708.000.

Schwesinger, Reinhard: *See—*
Prinzbach, Horst; and Schwesinger, Reinhard, 4,116,984, Cl. 260-348.120.

Scoggins, Lacey E.: *See—*
Edmonds, James T., Jr.; and Scoggins, Lacey E., 4,116,947, Cl. 528-388.000.

Scott & Fetzer Company, The: *See—*
Burgoon, Jack L., 4,115,890, Cl. 15-49.00R.

Scott, Gary, to Bombardier Limited. Internal snow deflector for snowmobile track. 4,116,496, Cl. 305-12.000.

Scott, Jack C. Tennis ball retriever. 4,116,192, Cl. 124-51.00R.

Scott, Keith Taylor: *See—*
Markin, Trevor Leslie; Bones, Roger John; Scott, Keith Taylor; May, Geoffrey John; and Robinson, Graham, 4,117,209, Cl. 429-104.000.

Scott, Ralph Richard: *See—*
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Sczerbaniewicz, Stella A.: *See—*
Boyd, David C.; Flannery, James E.; Morgan, David W.; Rosplock, Sara E.; and Sczerbaniewicz, Stella A., 4,116,704, Cl. 106-54.000.

Sea-Pac, Inc.: *See—*
Dutton, Edward E.; and Gorby, Jack, 4,116,600, Cl. 425-296.000.

Sears, Ernest L. Message display arrangement for bicycle or like vehicle. 4,115,942, Cl. 40-547.000.

Seebach, Adolf, to Dr. Adolf Seebach AG. Process for the production of stabilized pure theophylline in neutral, aqueous solution. 4,117,132, Cl. 424-253.000.

Seebinger, Frederick L., to American Trading and Production Corp. Horn loudspeaker. 4,116,302, Cl. 181-192.000.

Segura, Claude Gines Fernand. Dental mold. 4,116,416, Cl. 249-54.000.

Seidel, Sigurd, to Skischuhfabrik Dynafit Gesellschaft m.b.H. Fastener for shoes. 4,115,905, Cl. 24-69.0SK.

Seifried, Walter, to Hoechst Aktiengesellschaft. Process and apparatus for collecting solar energy. 4,116,222, Cl. 126-271.000.

Seigneur, Alain: *See—*
Lansiart, Alain; Morucci, Jean-Pierre; and Seigneur, Alain, 4,117,330, Cl. 250-361.00R.

Seiko Seiki Kabushiki Kaisha: *See—*
Moritomo, Sadao; and Ando, Shigenori, 4,116,506, Cl. 308-189.00A.

Seip, Walter V. Anti-skid attachment for vehicle tires. 4,116,254, Cl. 152-233.000.

Seki, Haruo: *See—*
Sugiura, Kensuke; Miyagawa, Toru; and Seki, Haruo, 4,116,874, Cl. 252-46.700.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Shiohara, Tomoo; Matsunaga, Takayoshi; and Horioka, Mikihiko, 4,116,907, Cl. 260-23.0XA.

Sekiya, Fukuo: *See—*
Ebihara, Heihachiro; and Sekiya, Fukuo, 4,117,475, Cl. 340-336.000.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Low temperature curing ester copolymers-phenolic condensates. 4,116,901, Cl. 260-19.0UA.

Sellstedt, John M.; and Klaubert, Dieter H., to American Home Products Corporation. Tetrazole-5-carboxamide derivatives. 4,116,960, Cl. 544-366.000.

Selvin, Gerald J.; and Moore, John R., to International Telephone and Telegraph Corporation. Flexible printed circuit and electrical connection therefor. 4,116,517, Cl. 339-17.00F.

Semco Instrument, Inc.: *See—*
Paluka, Charles F., 4,116,052, Cl. 73-117.300.

Semon, Warren L.: *See—*
Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert M.; and Semon, Warren L., 4,117,543, Cl. 365-5.000.

Senior, Franklin C., to Feed Recycling Co. Process for recovering nutrients from cattle manure. 4,117,175, Cl. 426-657.000.

Serpo "Societe d'Etudes et de Recherches pour la protection: *See—*
Lavalley, Roger; Gozlan, Roger; and Brami, Gilbert, 4,117,450, Cl. 340-52.00H.

Seuter, Friedel: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,143, Cl. 424-273.00P.
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,145, Cl. 424-273.00P.

Sever, Janez F., to Square D Company. Electromagnetically operated friction brake. 4,116,308, Cl. 188-171.000.

SGS-ATES Componeti Elettronici S.p.A.: *See—*
Pacor, Bruno, 4,117,507, Cl. 357-48.000.

Shabi, Fuad Aboodi; and Hibberd, Richard Loxley, to Air Products and Chemicals, Inc. Method of fish farming. 4,116,164, Cl. 119-3.000.

Shafer, John I.; and Marsh, Harold E., Jr., to United States of America, National Aeronautics and Space Administration. Solid propellant motor. 4,116,131, Cl. 102-103.000.

Shah, Jagdish Chandullal, to International Telephone & Telegraph Corp. Pouch sealing device. 4,117,306, Cl. 219-243.000.

Shah, Nayan S., to Kendall Company, The. Catheter with inflation control device. 4,116,201, Cl. 128-351.000.

Shah, Pravinchandra B.: *See—*
Buehler, John D.; Shah, Pravinchandra B.; and Joslin, Robert S., 4,117,116, Cl. 424-157.000.

Shah, Raj: *See—*
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Shalimova, Zoya Stepanovna: *See—*
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Shanker, Benjamin. Modular electric light switch assembly. 4,117,258, Cl. 174-53.000.

Shapiro, L. Dennis: *See—*
Galvin, Aaron A.; Shapiro, L. Dennis; and Skov, Valdemar, 4,117,479, Cl. 340-502.000.

Shapiro, Stanley: *See—*
Mravic, Brian; Shapiro, Stanley; Tyler, Derek E.; and Khan, Abid, 4,116,686, Cl. 75-154.000.

Shapiro, Warren B.; and Blackburne, Owen Rodney, to Noxell Corporation. Method and composition for improving oral hygiene. 4,117,107, Cl. 424-54.000.

Shapiro, Warren B.; and Blackburne, Owen Rodney, to Noxell Corporation. Oral hygiene. 4,117,108, Cl. 424-54.000.

Sharp, Chester E., to United States of America, Army. Buoyant chaff. 4,117,486, Cl. 343-18.00B.

Sharp Kabushiki Kaisha: *See—*
Tanimoto, Akira; Yoshida, Yukihiro; and Katoh, Sunao, 4,116,144, Cl. 112-158.00E.

Sharp Rifle Company, Ltd.: *See—*
Chiba, Kensuke, 4,116,193, Cl. 124-72.000.

Shavel, John, Jr.: *See—*
Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr., 4,117,140, Cl. 424-267.000.
von Strandtmann, Max; Cohen, Marvin P.; Klutchko, Sylvester; and Shavel, John, Jr., 4,116,971, Cl. 260-308.00D.
Zinnes, Harold; Lindo, Neil A.; and Shavel, John, Jr., 4,116,964, Cl. 260-294.80C.

Shea, Philip J.: *See—*
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Sheehan Institute for Research, Inc.: *See—*
Razdan, Raj Kumar; and Dalzell, Haldean Cloyce, 4,116,979, Cl. 260-345.300.

Sheffield, David John; and Saxon, John William Charles, to Aerpat A.G. Hydraulically operated riveting apparatus. 4,116,036, Cl. 72-391.000.

Shekhovtsov, Nikolai Vasilievich: *See—*
Bessonov, Andrei Stefanovich; Uspensky, Alexandr Vitalievich; and Shekhovtsov, Nikolai Vasilievich, 4,116,636, Cl. 422-101.000.

Shell Oil Company: *See—*
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Blytas, George C., 4,116,820, Cl. 208-251.00R.
Eckert, Rudolf J. A., 4,116,917, Cl. 260-33.6AQ.
Feenstra, Robijn, 4,116,289, Cl. 175-329.000.
Himes, Glenn R., 4,117,037, Cl. 260-880.00B.

Shephard, Margaret Claire; and Fox, Roland Thomas Victor, to Imperial Chemical Industries Limited. Fungicidal compositions and processes. 4,117,147, Cl. 424-274.000.

Shepherd, Robert Gordon, to American Cyanamid Company. 4-(Monoalkylamino)benzonitriles useful as anti-atherosclerotic agents. 4,117,158, Cl. 424-304.000.

Sherrington, Paul Richard: *See—*
Bailey, John; Randell, Michael John; and Sherrington, Paul Richard, 4,116,852, Cl. 252-135.000.

Sherwood Medical Industries Inc.: *See—*
Weichselbaum, Edwin Gordon, 4,116,338, Cl. 206-610.000.

Shestakov, Sergei Vasilievich: *See—*
Belousov, Viktor Vasilievich; Glazer, Vadim Moiseevich; and Shestakov, Sergei Vasilievich, 4,116,778, Cl. 195-139.000.

Shibata, Kaoru: *See—*
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Shibata, Toshihiro: *See—*
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,116,927, Cl. 260-45.8NZ.

Shibata, Tsuneo; Maki, Masao; Suzuki, Masao; and Kawabe, Hidehiko, to Matsushita Electric Industrial Co., Ltd. Gas-purifying composition and method of producing it. 4,116,881, Cl. 252-440.000.

Shields, Mary J. Combined shoulder strap bag and cushion. 4,116,310, Cl. 190-42.000.

Shields Rubber Corporation: *See—*
Adler, Stuart L.; and Hunt, William O'Neil, 4,116,312, Cl. 191-64.000.

Shier, John S. Method of manufacturing a buried load device in an integrated circuit. 4,116,732, Cl. 148-175.000.

Shima, Takashi: *See—*
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Shimago, Kozo: *See—*
Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, 4,117,126, Cl. 424-246.000.

Shimano Industrial Company Limited: *See—*
Nagano, Masashi; and Watarai, Etsuyoshi, 4,116,319, Cl. 192-64.000.

Shimizu, Harry H., to Cominco Ltd. Heat treatment of cadmium mercury telluride and product. 4,116,725, Cl. 148-20.300.

Shimizu, Hirofumi; Yoshinaka, Akira; and Sugita, Yoshimitsu, to Hitachi, Ltd. Method of making semiconductor device with PN junction in stacking-fault free zone. 4,116,719, Cl. 148-1.500.

Shin-Kobe Electric Machinery Co., Ltd.: *See—*
Kitai, Yasuo, 4,117,205, Cl. 429-86.000.

Shindelar, Joseph John: *See—*
Barnes, Theodore Marion; Shindelar, Joseph John; Bass, Merlyn Duane; and Suechting, Henry William, Jr., 4,115,983, Cl. 56-98.000.

Shine, Carl: *See—*
Roop, Robert; and Shine, Carl, 4,116,016, Cl. 62-52.000.

Shintani, Takamasa; and Nagasawa, Koyo, to Fuji Xerox Co., Ltd. Data compression system for binary facsimile signals. 4,117,517, Cl. 358-260.000.

Shiohara, Tomoo; Matsunaga, Takayoshi; and Horioka, Mikihiko, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Chlorine-containing resin compositions. 4,116,907, Cl. 260-23.0XA.

Shionogi & Co., Ltd.: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,116,671, Cl. 71-88.000.

Shioyama, Tadao; and Koda, Minoru, to Matsushita Electric Industrial Co., Ltd. Guide drum apparatus in a magnetic recording and/or reproducing apparatus. 4,117,519, Cl. 360-84.000.

Shipowners Refrigerated Cargo Research Association: *See—*
Pearson, Kenneth White; and Richards, David William Thomas, 4,116,418, Cl. 251-149.200.

Shirokova, Larisa Borisovna: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.

Shiroshima, Makoto: *See—*
Tonouchi, Takeo; Tonouchi, Akio; Shiroshima, Makoto; Chimura, Yuichi; and Ohkubo, Kazuyoshi, 4,117,174, Cl. 426-634.000.

Shishulin, Jury Pavlovich: *See—*
Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Shishulin, Jury Pavlovich; Tsipenjuk, Yakov Isaakovich; and Tsygankov, Oleg Semenovich, 4,116,578, Cl. 408-222.000.

Shizu, Kazunori, to Denki Onkyo Co., Ltd. Deflection yoke with unitary coil frame. 4,117,432, Cl. 335-210.000.

Shizume, Peter K., to Sperry Rand Corporation. Angular deception countermeasure system. 4,117,484, Cl. 343-18.00E.

Shkatov, Evgeny Petrovich: *See—*
Lezgintsev, Georgy Mikhailovich; Istoshin, Stanislav Jurievich; Belyavsky, Mikhail Anatolievich; Kontar, Evgeny Alexeevich; Koptyazhin, Nikolai Nikolaevich; Agaltsov, Georgy Ivanovich; Chernov, Boris Serafimovich; Ter-Saakov, Eduard Isaakovich; and Shkatov, Evgeny Petrovich, 4,116,069, Cl. 73-425.200.

Sholle, Roger W., to TRW Inc. Ferrule for stud welding. 4,117,297, Cl. 219-98.000.

Shosuke Okamoto: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,117,127, Cl. 424-247.000.

Shrader, William W.; and Campbell, Ronald B., Jr., to Raytheon Company. Radar system with specialized weighting. 4,117,538, Cl. 364-517.000.

Sibley, Bruce D.: *See—*
Swander, Kenneth D., Jr.; and Sibley, Bruce D., 4,116,114, Cl. 92-130.00A.

Sick, Erwin, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Device for concentrating light from a linear field on to a receiver. 4,116,527, Cl. 350-6.700.

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Siden, LeRoy E.: *See—*
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Siemens Aktiengesellschaft: *See—*
Franke, Kurt, 4,117,335, Cl. 250-402.000.
Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, 4,117,259, Cl. 174-92.000.
Streich, Georg; and Bauer, Johann, 4,117,428, Cl. 335-132.000.
Streich, Georg; and Bauer, Johann, 4,117,429, Cl. 335-132.000.
Susdorf, Roman; and Engelmann, Heinz, 4,116,091, Cl. 74-801.000.

Siems, Lee E., to Western Geophysical Company of America. Seismic telemetric system for land operations. 4,117,448, Cl. 340-15.5TS.

Siemsen, Cathy S.: *See—*
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Sievers, George K. Pool float propelling apparatus. 4,115,888, Cl. 9-347.000.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Hampejs, Karel, 4,116,112, Cl. 91-380.000.

Silver, Hayden J., Jr.; and Stackhouse, James H., Jr., to Texaco Inc. Floating tank roof improvement. 4,116,356, Cl. 220-85.00R.
Simon, James Louis: *See—*
Cannon, Thomas Burt; Metz, Robert Forcier; and Simon, James Louis, 4,117,274, Cl. 179-99.000.
Simonet, Jean-Claude: *See—*
Krafft, Camille Gabriel; Simonet, Jean-Claude; and Jammes, Emmanuel Marie, 4,117,427, Cl. 335-112.000.
Simpson, Talmadge Whipple. Arrangement for interconnecting a side delivery rake and a baler. 4,115,984, Cl. 56-13.500.
Sims, Dewey M., Jr., to Burroughs Corporation. Keyboard switch. 4,117,430, Cl. 335-205.000.
Sims, Joseph Alton, Jr.: *See—*
Foster, Robert Dean; Maliszewski, Thomas Arthur; Sims, Joseph Alton, Jr.; and Taylor, Glenn Alfred, 4,117,250, Cl. 568-858.000.
Sims, William B., Jr.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 4,116,228, Cl. 128-2.00R.
Sines, Randy D.; and Curran, John F., to Sines, Randy D. Automatic cue ball separating device for billiard tables. 4,116,435, Cl. 209-570.000.
Sinitsyn, Evgeny Vladimirovich: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.
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Sjogren, Axel O., to Gates Rubber Company, The. Rechargeable battery enclosure. 4,117,203, Cl. 429-7.000.
Skala, Stephen F. Ink drop facsimile system. 4,117,518, Cl. 358-296.000.
Skega AB: *See—*
Svensson, Assar, 4,116,485, Cl. 296-39.00R.
SKF Kugellagerfabriken GmbH: *See—*
Huber, Wolfgang, 4,116,500, Cl. 308-9.000.
Skil Corporation: *See—*
Porth, Chris H.; and Lilja, E. Harold, 4,115,957, Cl. 51-170.0EB.
Skinner, Warren. Lid lifting tool for shipping containers. 4,116,362, Cl. 220-284.000.
Skischuhfabrik Dynafit Gesellschaft m.b.H.: *See—*
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Skov, Valdemar: *See—*
Galvin, Aaron A.; Shapiro, L. Dennis; and Skov, Valdemar, 4,117,479, Cl. 340-502.000.
Skrobisch, Alfred, to Staver Company, Incorporated, The. Variable character display device. 4,117,478, Cl. 340-378.00R.
Slevinsky, Bruce Alexander: *See—*
Butler, Roger Moore; Bombardieri, Caurino Cesar; and Slevinsky, Bruce Alexander, 4,116,275, Cl. 166-303.000.
Slifkin, Malcolm: *See—*
Dalbow, Milton H.; Acevedo, Hernan F.; and Slifkin, Malcolm, 4,116,776, Cl. 195-103.700.
Sloan, Albert H. Impeller type fluid pump. 4,116,582, Cl. 415-175.000.
Sloan, Kenneth B.: *See—*
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Slonimsky, Grigory Lvovich: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.
Slysh, Paul; and Siden, LeRoy E., to General Dynamics Corporation. Panel deployment and retraction system. 4,116,258, Cl. 160-213.000.
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Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C., 4,116,370, Cl. 222-402.180.
Smiggen, Frank J.; Burry, Devitt S.; Kallaby, Joseph; and Goltz, Wayne H. Method for removing photopolymers from metal substrates. 4,116,715, Cl. 134-6.000.
Smith, Colen S., to United States of America, Interior. Clog-free inorganic grout emplacement gun. 4,116,368, Cl. 222-145.000.
Smith, David L.; and Scherr, Norman J., Jr., to Valeron Corporation, The. Electronic column gage. 4,115,923, Cl. 33-172.00E.
Smith, Frank, to Imperial Chemical Industries Limited. Electrolytic diaphragm cells. 4,116,802, Cl. 204-252.000.
Smith, Herman W., to Upjohn Company, The. 2,2-Difluoro-13,14-didehydro-11-deoxy-17-phenyl-18,19,20-trinor-PGF$_2\alpha$ compounds. 4,117,233, Cl. 560-55.000.
Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Solventless impregnating composition. 4,117,361, Cl. 310-208.000.
Smith, Joseph Leland, to RCA Corporation. Static convergence device including magnetic corrector apparatus. 4,117,433, Cl. 335-212.000.
Smith, Leslie Harold, to Imperial Chemical Industries Limited. Ethanolamine derivatives having β-adrenergic blocking activity. 4,117,157, Cl. 424-304.000.
Smith, Richard C., to R. C. Smith Company. Modular furniture unit for hospital pharmacies or the like. 4,116,509, Cl. 312-257.000.
Smith, Richard E.: *See—*
Stange, Klaus K.; Smith, Richard E.; Hamlin, Thomas J.; and Cassano, James R., 4,116,431, Cl. 271-236.000.
Smith, Robert E.; Chytil, Frank S.; Feldstein, George; and Swartz, Dorman J., to Allied Chemical Corporation. Moving filament gripping mechanism. 4,116,394, Cl. 242-25.00R.
Smith, Ronald R.: *See—*
Dotson, Donald R.; and Smith, Ronald R., 4,116,455, Cl. 280-7.120.
Smith, Russell G., to Xomox Corporation. Method of and apparatus for pressure buffering all leak paths of a lined plug valve. 4,116,208, Cl. 137-1.000.
SmithKline Corporation: *See—*
Berges, David Alan, 4,117,123, Cl. 424-246.000.
Berges, David Alan, 4,117,124, Cl. 424-246.000.
Berges, David Alan, 4,117,125, Cl. 424-246.000.
Brenner, L. Martin, 4,117,128, Cl. 424-248.500.
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Smolin, Edwin M.: *See—*
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Sunley, Raymond Leo; and Snowling, Geoffrey David, 4,116,674, Cl. 71-92.000.
Snyder, Daniel S.; Luzsicza, Steven O.; and Pauer, Lyle A., to Gould Inc. Tire condition sensing apparatus. 4,117,452, Cl. 340-58.000.
Societe Anonyme de Telecommunications: *See—*
Lamelot, Pierre Marie Louis; and Mousson, Roland Georges, 4,117,327, Cl. 250-338.000.
Societe Chimique des Charbonnages: *See—*
Gillet, Philippe Jean; and Henrich, Gaston, 4,117,023, Cl. 260-671.00R.
Societe de Paris et du Rhone: *See—*
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Lehn, Jean-Marie; Schue, Francois; Boileau, Sylvia; Kaempf, Bernd; Cau, Alain Andre; Moinard, Jean Robert; and Raynal, Serge Fernand, 4,116,887, Cl. 260-2.00A.
Societe Suisse pour l'Industrie Horlogere Management Services, S.A.: *See—*
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Sokurenko, Jury Varnavovich: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.
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Soloy, Joe I., to Soloy Conversions, Ltd. Portable heliport. 4,116,408, Cl. 244-114.00R.
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Obsomer, Marc; Bodson, Luc; and Michel, Edmond, 4,116,609, Cl. 425-526.000.
Somkaite, Rozalija; and Toth, Bela, to Armour Pharmaceutical Company. Automated wet sieving apparatus. 4,116,824, Cl. 209-262.000.
Son, Chung H.: *See—*
Taylor, Paul G.; Son, Chung H.; Hom, Martha C.; Williams, L. G.; and Steel, Ronald E., 4,117,176, Cl. 426-660.000.
Sonitronic, Inc.: *See—*
Feaster, Donavon L., 4,117,280, Cl. 200-6.00B.
Soref, Richard A., to Beckman Instruments, Inc. Liquid crystal reflective display apparatus. 4,116,544, Cl. 350-336.000.
Sorensen, Soren Kaj; and Holbek, Carl Christian, to Radiometer A/S. Package containing a reference liquid for blood gas equipment. 4,116,336, Cl. 206-524.800.

Sosenko, Lev Matveevich: *See—*
Oborin, Pavel Alexandrovich; Gadaev, Anatoly Yakovlevich; Bikbau, Marsel Yanovich; Nudelman, Boris Izrailovich; Aronova, Irina Zelmanovna; Bulatov, Nail Yakubovich; and Sosenko, Lev Matveevich, 4,116,707, Cl. 106-104.000.
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Souhaite, Philippe, to Schlumberger Technology Corporation. Well logging apparatus with pad-mounted vertical electrode array for measuring the resistivity of the flushed zone. 4,117,394, Cl. 324-10.000.
Souma, Takashi: *See—*
Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, 4,117,340, Cl. 250-492.00A.
South Pacific Industries: *See—*
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Southern Pacific Transportation Company: *See—*
Jaekle, William M.; Byrne, Robert; and Giovanelli, Armand, 4,116,135, Cl. 105-378.000.
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Raue, Karl Moritz, 4,116,481, Cl. 294-74.000.
Speidel, Blasius. Deflation valve for blood pressure measuring devices. 4,116,217, Cl. 137-625.120.
Spencer, Dudley W. C. Horseshoe manufacture. 4,116,278, Cl. 168-4.000.
Sperry Rand Corporation: *See—*
McMahon, Donald H., 4,116,534, Cl. 350-157.000.
Shizume, Peter K., 4,117,484, Cl. 343-18.00E.
Spicer, Bruce G., to RTE Corporation. Spring actuated contact for high voltage bushing. 4,116,515, Cl. 339-12.00R.
Spiegel, Leonard Lee. Vehicle airflow control device. 4,116,482, Cl. 296-1.00S.
Spietschka, Ernst: *See—*
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Spinner, Ulrich: *See—*
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Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C. Vapor tap valve for aerosol containers used with flammable propellants. 4,116,370, Cl. 222-402.180.
Spoeth, Carl R., Jr.: *See—*
Henke, Fred G.; and Spoeth, Carl R., Jr., 4,117,045, Cl. 261-30.000.
Spolnicki, Jerzy, to Du Pont de Nemours, E. I., and Company. Product and process. 4,115,989, Cl. 57-140.0BY.
Sporri, Max, to Frush, John P. Portable apparatus for cleaning a dental prosthesis. 4,115,889, Cl. 15-21.00R.
Sprague Electric Company: *See—*
Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, 4,117,531, Cl. 361-433.000.
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Square D Company: *See—*
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Staats, Peter Francis, to General Electric Company. Patient positioning indication arrangement for a computed tomography system. 4,117,337, Cl. 250-445.00T.
Stablex AG: *See—*
Chappell, Christopher Lee, 4,116,705, Cl. 106-90.000.
Stacey, Alan J.: *See—*
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Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., to Velsicol Chemical Company. Dioxane substituted amides. 4,116,670, Cl. 71-88.000.
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Staebler, Paul J., to Caterpillar Tractor Co. Heat exchanger having controllable cleaning means. 4,116,265, Cl. 165-95.000.
Stagemeyer, Merlin D.; and Allcorn, Seth Ford, to Oil Spill Recovery, Inc. Deployable barrier apron apparatus for use with contaminant recovery systems. 4,116,007, Cl. 405-66.000.
Stagemeyer, Merlin D.; and Allcorn, Seth Ford, to Oil Spill Recovery, Inc. Method and apparatus for removing contaminants from bodies of water. 4,116,833, Cl. 210-83.000.
Stahl, Uno Arne Ivan; and Hakansson, Nils Magnus. Method for printing combinations of signs in a predetermined number and in an irregular sequence. 4,116,129, Cl. 101-426.000.
Stahlecker, Fritz: *See—*
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Stahlecker, Hans, to Stahlecker, Fritz; and Stahlecker, Hans. Bearing for a shaft of an open-end spinning rotor. 4,116,505, Cl. 308-187.000.
Stalick, Victor J., Jr.: *See—*
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Plantema, Otto G., 4,117,246, Cl. 568-821.000.
Standard Oil Company, The: *See—*
Li, George S.; and Rosen, Irving, 4,117,040, Cl. 260-899.000.
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Standard Oil Company, a corporation of Indiana: *See—*
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Standard Pressed Steel Co.: *See—*
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Stange, Klaus K.; Smith, Richard E.; Hamlin, Thomas J.; and Cassano, James R., to Xerox Corporation. Method for transporting and registering stacked sheets. 4,116,431, Cl. 271-236.000.
Stanley, Marion L., Jr., to Owens-Corning Fiberglas Corporation. Tank with water-sealable vent. 4,116,357, Cl. 220-205.000.
Stansbury, Benjamin, to American Hospital Supply Corporation. Highly stretchable glove and method of sizing same. 4,115,873, Cl. 2-163.000.
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Stark, Donald E.; Ehrlich, Anthony G.; and Guillaumin, Bruno, to Westinghouse Air Brake Company. Broken rail detecting track circuits. 4,117,529, Cl. 361-182.000.
Starks, Charles M.; and Lundeen, Allan J., to Continental Oil Company. Preparation of o-benzylphenol. 4,117,243, Cl. 568-744.000.
Statkov, Peter Radanow: *See—*
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Gaughan, Edmund J.; and Large, George B., 4,116,668, Cl. 71-88.000.
Walker, Francis H.; and Baker, Don R., 4,116,677, Cl. 71-118.000.
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Steffancin, William, to Borg-Warner Corporation. Amorphous polyester graft polymer alloys. 4,117,034, Cl. 260-873.000.
Stehmann, Hans Peter: *See—*
Voigt, Hermann Uwe; Volker, Martin; and Stehmann, Hans Peter, 4,117,063, Cl. 264-102.000.
Stein, Charles R., to General Electric Company. Control electro-optical device utilizing liquid crystal. 4,116,543, Cl. 350-333.000.
Stein, Stanley, to Hoffmann-La Roche Inc. Liquid chromatography system. 4,116,046, Cl. 73-61.10C.
Steinbeck, Hans-Heinz: *See—*
Brunner, Friedrich Christian; Schwerdt, Friedrich Wilhelm; and Steinbeck, Hans-Heinz, 4,117,093, Cl. 423-339.000.
Steiner, Edwin C., to Dow Chemical Company, The. Polyvinylbenzyl ethers of polyphenols, their polymers and copolymers. 4,116,936, Cl. 526-286.000.
Steiner, Eginhard: *See—*
Beffa, Fabio; Back, Gerhard; and Steiner, Eginhard, 4,116,952, Cl. 260-145.00B.
Steinle, Georg: *See—*
Schiweck, Hubert; Steinle, Georg; Muller, Lutz; Gau, Wolfgang; and Munir, Mohammad, 4,117,173, Cl. 426-548.000.
Stempin, John L.; and Wexell, Dale R., to Corning Glass Works. Composite foamable cements. 4,116,703, Cl. 106-75.000.
Stephen, John F.: *See—*
Dexter, Martin; Knell, Martin; Klemchuk, Peter; and Stephen, John F., 4,116,930, Cl. 260-45.80N.
Stephens, Donald Harrison: *See—*
Hildreth, Bradrick Alan; and Stephens, Donald Harrison, 4,117,444, Cl. 338-198.000.
Stephenson, Lorne, to American Sign & Indicator Corporation. Display and reset apparatus. 4,115,941, Cl. 40-452.000.
Stetter, Jorg; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Pesticidally active novel oxime-carbamates of fluorinated ketones. 4,117,154, Cl. 424-298.000.
Steube, Kenneth E., to McDonnell Douglas Corporation. Dual tumbling barrel plating apparatus. 4,116,161, Cl. 118-49.100.
Stewart, Douglas Edward: *See—*
Wilson, William George Moore; and Stewart, Douglas Edward, 4,117,331, Cl. 250-334.000.
Stibbe, Paul H., to TEC Systems, Inc. Web drying apparatus having means for heating recirculated air. 4,116,620, Cl. 432-59.000.

Stickler, Heinz. Scraping tool. 4,115,892, Cl. 15-105.000.
Stilwell, George Raymond, Jr.: *See—*
Schlig, Eugene Stewart; and Stilwell, George Raymond, Jr., 4,117,471, Cl. 340-324.00M.
Stinger, Henry Joseph, to Du Pont de Nemours, E. I., and Company. Electrically curable, elastomeric sealing strip. 4,117,189, Cl. 428-323.000.
Stockner, Josef; and Wildmoser, Alfred, to Linde Aktiengesellschaft. Apparatus for introducing gas into a liquid. 4,117,048, Cl. 261-93.000.
Stolka, Milan; Pearson, James M.; and Yanus, John F., to Xerox Corporation. Process for preparation of 2-anthryl and substituted 2-anthryl functional monomers and polymers. 4,117,239, Cl. 560-221.000.
Stone, Andrew Joseph. Toilet flushing assembly. 4,115,881, Cl. 4-326.000.
Stone, Jacob E., to Exxon Production Research Company. Vibrator tilt control system for vehicle mounted seismic vibrators. 4,116,300, Cl. 181-114.000.
Stookey, George K., to Indiana University Foundation. Dentifrice preparation. 4,117,109, Cl. 424-57.000.
Stork Amsterdam B.V.: *See—*
Bogaard, Hendricus Johannes Maria, 4,116,117, Cl. 99-361.000.
Storozhuk, Ivan Pavlovich: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.
Stotz, Wolf-Gunter; and Holik, Herbert, to Escher Wyss GmbH. Separating system for wires of a double-wire paper-making machine. 4,116,763, Cl. 162-301.000.
Stover, Don A.; Young, Norman R.; and Runnion, Glenmore J., to Unarco Industries, Inc. Shopping cart. 4,116,456, Cl. 280-33.99B.
Stover, John C.: *See—*
Boggs, Alben C.; and Stover, John C., 4,117,308, Cl. 219-365.000.
Stowell, Donald E.: *See—*
Bendig, Larry L.; Siemsen, Cathy S.; and Stowell, Donald E., 4,116,882, Cl. 252-448.000.
Straitz, John F., III, to Combustion Unlimited Incorporated. Flame retention apparatus for flares. 4,116,618, Cl. 431-202.000.
Stratton, Boyd Lehman; and Nichols, William E., to Arvin Industries, Inc. Flexible disc recorder with skewed transducer transport. 4,117,521, Cl. 360-99.000.
Strauss, Karl-Peter, to Rollei-Werke Franke & Heidecke. Photographic camera with automatic exposure control. 4,117,499, Cl. 354-23.00D.
Strauts, Eric J., to Magnaflux Corporation. Portable X-ray unit with self-contained voltage supply. 4,117,334, Cl. 250-402.000.
Streeter, Kenneth R., to Eaton Corporation. Fluid coupling device and bimetal coil adjustment for use therein. 4,116,316, Cl. 192-58.00A.
Streeter, Kenneth R., to Eaton Corporation. Fluid coupling device with improved disengaged operating characteristics. 4,116,317, Cl. 192-58.00B.
Streich, Georg; and Bauer, Johann, to Siemens Aktiengesellschaft. Electro-magnetic switching apparatus having electrically separated contact elements. 4,117,428, Cl. 335-132.000.
Streich, Georg; and Bauer, Johann, to Siemens Aktiengesellschaft. Electromagnetic switching apparatus. 4,117,429, Cl. 335-132.000.
Strelkov, Konstantin Sergeevich: *See—*
Bulychev, Gennady Alexeevich; Bykovsky, Anatoly Vladimirovich; Machigin, Stanislav Pavlovich; and Strelkov, Konstantin Sergeevich, 4,116,056, Cl. 73-147.000.
Striebel, Heini Paul: *See—*
Loewe, Werner; and Striebel, Heini Paul, 4,117,156, Cl. 424-302.000.
Strohmeier, Warren: *See—*
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Stromberg-Carlson Corporation: *See—*
Bartlett, William F., 4,117,268, Cl. 179-15.0AT.
Stuart, Alexander; and Paterson, Thomas, to Burroughs Wellcome Co. Organic synthetic methods benzylpyrimidine derivatives. 4,116,958, Cl. 544-325.000.
Sturm, Werner, to Von Roll AG. Electric welding muff. 4,117,311, Cl. 219-544.000.
Sturtevant, Howard. Portable bathroom cabinet. 4,116,508, Cl. 312-245.000.
Sud, Kuldip: *See—*
Fechner, Joachim; Fiebig, Siegward; Fischer, Friedrich; Fischer, Herbert; Hellmer, Lars; Riedel, Konrad; Stauffer, Adolf; and Sud, Kuldip, 4,117,101, Cl. 423-569.000.
Sud, Kuldip Kumar: *See—*
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Suddeutsche Zucker-Aktiengesellschaft: *See—*
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Suechting, Henry William, Jr.: *See—*
Barnes, Theodore Marion; Shindelar, Joseph John; Bass, Merlyn Duane; and Suechting, Henry William, Jr., 4,115,983, Cl. 56-98.000.
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Saito, Mamoru; Takahashi, Akira; and Tuchida, Hisashi, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Novel lead monoxide and process for preparation thereof. 4,117,104, Cl. 423-619.000.
Sugita, Jitsuo: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,116,671, Cl. 71-88.000.
Sugita, Yoshimitsu: *See—*
Shimizu, Hirofumi; Yoshinaka, Akira; and Sugita, Yoshimitsu, 4,116,719, Cl. 148-1.500.
Sugiura, Kensuke; Miyagawa, Toru; and Seki, Haruo, to Nippon Oil Co., Ltd. Compressor oil compositions. 4,116,874, Cl. 252-46.700.
Sugiyama, Akira: *See—*
Minohara, Kiyomi; and Sugiyama, Akira, 4,117,487, Cl. 343-100.0SA.
Sukornick, Bernard: *See—*
Minhas, Pritam S.; and Sukornick, Bernard, 4,116,931, Cl. 260-45.75B.
Sullivan, Ann Clare: *See—*
Gallo-Torres, Hugo; Hamilton, James Guthrie; and Sullivan, Ann Clare, 4,117,121, Cl. 424-238.000.
Sullivan, Gerald Leslie. Pendulous induction compass transmitter with means to compensate for heading errors in turns due to the vertical component of the Earth's magnetic field and due to two cycle error. 4,116,057, Cl. 73-178.00R.
Sulzer Brothers Limited: *See—*
Bucher, Robert, 4,116,242, Cl. 139-59.000.
Sumimoto, Shinzaburo: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,116,671, Cl. 71-88.000.
Sumitomo Chemical Company, Ltd.: *See—*
Hisada, Yoshio; Maeda, Kiyoto; and Agui, Hideo, 4,117,136, Cl. 424-258.000.
Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, 4,117,126, Cl. 424-246.000.
Sumitomo Metal Industries, Ltd.: *See—*
Okamoto, Toyohiko; Misaka, Yoshisuke; and Asakawa, Motoo, 4,116,028, Cl. 72-21.000.
Sun, Yun Chung, to Dow Chemical Company, The. Method of producing valuable alkylated aromatic hydrocarbons from tar. 4,117,020, Cl. 260-668.00C.
Sunago, Hirofumi; and Migitaka, Wataru, to Nittetsu Chemical Industrial Co., Ltd. Process for preparing needle coal pitch coke. 4,116,815, Cl. 208-87.000.
Sunday, Brooks R.: *See—*
Schwender, Charles F.; and Sunday, Brooks R., 4,116,961, Cl. 260-293.570.
Sunley, Raymond Leo; and Snowling, Geoffrey David, to Imperial Chemical Industries Limited. Process of severely damaging or killing unwanted plants with pyrimidine compounds. 4,116,674, Cl. 71-92.000.
Surgical Applicance Industries, Inc.: *See—*
Albert, William J., 4,116,236, Cl. 128-80.00C.
Survival Technology, Inc.: *See—*
Kaplan, Sheldon; Curley, Edward M.; and Homan, Gerlof, 4,116,196, Cl. 128-272.300.
Susdorf, Roman; and Engelmann, Heinz, to Siemens Aktiengesellschaft. Drive for an electric rail motor car. 4,116,091, Cl. 74-801.000.
Sutherland, James D.: *See—*
Jones, Robert J.; O'Rell, Michael K.; and Sutherland, James D., 4,116,937, Cl. 528-170.000.
Suzaki, Masayuki: *See—*
Suzuki, Takami; Suzaki, Masayuki; and Moriya, Tomoyuki, 4,116,568, Cl. 400-320.000.
Suzuki, Hiroshige: *See—*
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Suzuki, Masahiko: *See—*
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Suzuki, Masao: *See—*
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Suzuki, Osamu: *See—*
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Suzuki, Sumio: *See—*
Imahori, Seiichi; Murata, Yukichi; and Suzuki, Sumio, 4,116,623, Cl. 8-25.000.
Suzuki, Takami; Suzaki, Masayuki; and Moriya, Tomoyuki, to Ricoh Co., Ltd. Carriage driving mechanism for printer. 4,116,568, Cl. 400-320.000.
Suzuki, Takashi; Ikezawa, Tsutomu; and Ogasawara, Kazui, to Amada Company, Limited. Gang slitting machine. 4,116,098, Cl. 83-425.400.
Suzuki, Tetsumi: *See—*
Kakogawa, Genjiro; Suzuki, Tetsumi; Goko, Nobuaki; and Mukuraguchi, Koji, 4,117,219, Cl. 528-494.000.
Suzuki, Yoshikatsu: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; and Suzuki, Yoshikatsu, 4,117,036, Cl. 260-878.00R.
Suzuki, Yoshiro: *See—*
Nishikawa, Masaji; Suzuki, Yoshiro; and Takasugi, Noboru, 4,116,141, Cl. 118-648.000.
Svens, Alvar A. Method of creating an embossing effect. 4,116,737, Cl. 156-85.000.
Svensson, Assar, to Skega AB. Loading cage for bulk goods. 4,116,485, Cl. 296-39.00R.

Svoboda, Josef: *See—*
Krob, Erwin; and Svoboda, Josef, 4,116,461, Cl. 280-605.000.
Swander, Kenneth D., Jr.; and Sibley, Bruce D., to Aeroquip Corporation. Double piston brake actuator. 4,116,114, Cl. 92-130.00A.
Swank, Roy L., to Pioneer Filters, Inc. High capacity blood transfusion micro filter. 4,116,845, Cl. 210-446.000.
Swarbrick, Peter; Green, William John; and Maillefer, Charles, to BICC Limited; and Etablissements Maillefer SA. Manufacture of extruded products. 4,117,195, Cl. 428-379.000.
Swartz, Dorman J.: *See—*
Smith, Robert E.; Chytil, Frank S.; Feldstein, George; and Swartz, Dorman J., 4,116,394, Cl. 242-25.00R.
Sweeney, Joseph Patrick: *See—*
Grabbe, Dimitry G.; and Sweeney, Joseph Patrick, 4,116,519, Cl. 339-17.0CF.
Swift, Harold E.: *See—*
Hupp, Stephen S.; Sabourin, Edward T.; Swift, Harold E.; and Vogel, Roger F., 4,117,021, Cl. 260-669.00A.
Kobylinski, Thaddeus P.; and Swift, Harold E., 4,116,995, Cl. 260-449.60M.
Syska, Andrew J., to Consolidated Natural Gas Service Company. Gaseous and liquid fuel burner. 4,116,611, Cl. 431-353.000.
Szabo, Andras I.: *See—*
Zitelli, William E.; and Szabo, Andras I., 4,117,477, Cl. 340-347.0NT.
Szabo, Suzanne: *See—*
Molnar, Francois; Szabo, Suzanne; and Statkov, Peter Radanow, 4,117,160, Cl. 424-316.000.
Sze, Morgan C.: *See—*
Gelbein, Abraham P.; and Sze, Morgan C., 4,116,967, Cl. 260-295.50R.
Szekely, Geza: *See—*
Huszar, Andor; Szekely, Geza; Rusznak, Istan; Trezl, Lajos; Bertalan, Gyorgy; Zaoui nee Serfozo, Ilona; and Molnar, Imre, 4,116,897, Cl. 260-17.40R.
Tagami, Katsutoshi: *See—*
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Taisei Kosan Kabushiki Kaisha: *See—*
Kamezaki, Masaaki, 4,116,213, Cl. 137-360.000.
Takagi, Yoshiaki: *See—*
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Takahashi, Akira: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Saito, Mamoru; Takahashi, Akira; and Tuchida, Hisashi, 4,117,104, Cl. 423-619.000.
Takahashi, Atsushi: *See—*
Mizuguchi, Ryuzo; Takahashi, Atsushi; and Ishikura, Shinichi, 4,116,912, Cl. 260-29.4UA.
Takahashi, Nobuo: *See—*
Takahashi, Yuzo; Wazima, Yoshimi; Nakada, Akira; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Aizawa, Eizi; and Oyama, Shiro, 4,117,188, Cl. 428-36.000.
Takahashi, Susumu; and Iida, Hiroshi, to Sansui Electric Co., Ltd. Muting arrangement for AM synchronous detector using a PLL circuit. 4,117,406, Cl. 325-348.000.
Takahashi, Wataru: *See—*
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Takahashi, Yuzo; Wazima, Yoshimi; Nakada, Akira; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Aizawa, Eizi; and Oyama, Shiro, to Hokkai Can Co. Ltd. Lapped seam can. 4,117,188, Cl. 428-36.000.
Takasugi, Noboru: *See—*
Nishikawa, Masaji; Suzuki, Yoshiro; and Takasugi, Noboru, 4,116,141, Cl. 118-648.000.
Takatsy, Gyula; Barb, Katalin; Muranyi, Istvan; and Burda, Ferencne, to Labor Muszeripari Muvek. Apparatus for and a method of the determination of influenza neuraminidase. 4,116,777, Cl. 195-127.000.
Takatuki, Toyohiko: *See—*
Takenakashima, Takefumi; and Takatuki, Toyohiko, 4,116,366, Cl. 222-131.000.
Takaya, Hiroshi: *See—*
Kawasaki, Hideo; Nakatani, Masaji; Ishii, Toshihiro; Nakagawa, Hiroshi; and Takaya, Hiroshi, 4,117,080, Cl. 423-235.000.
Takeda Chemical Industries, Ltd.: *See—*
Meguro, Kanji; and Kuwada, Yutaka, 4,116,956, Cl. 260-239.0BD.
Takeda, Kiyohiro: *See—*
Kikura, Katsuaki; Nomura, Hiroshi; and Takeda, Kiyohiro, 4,116,190, Cl. 123-202.000.
Takeda, Susumu; and Hazama, Kiyoaki, to Konishiroku Photo Industry Co., Ltd. Camera provided with recorder for light of light source. 4,117,502, Cl. 354-106.000.
Takenakashima, Takefumi; and Takatuki, Toyohiko, to Zojirushi Vacuum Bottle Co., Ltd. Vacuum bottle container with air pump having vent closing switch. 4,116,366, Cl. 222-131.000.
Takeshima, Hideyuki, to Hiroshi Kawamula. Golf club grip. 4,116,440, Cl. 273-81.400.
Tamao, Yoshikuni: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,117,127, Cl. 424-247.000.
Tamura, Hiroshi: *See—*
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Tan, Sing Liong: *See—*
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Tanaca, Masaaki: *See—*
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Tanahashi, Sakae; and Shima, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Press load meter. 4,116,050, Cl. 73-88.50R.
Tanaka, Ichiro: *See—*
Abe, Nobuyuki; Watanabe, Osamu; Nunokawa, Koji; Tanaka, Ichiro; and Manabe, Masao, 4,116,012, Cl. 405-238.000.
Tanaka, Junichi: *See—*
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Tanaka, Kazumitsu: *See—*
Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, 4,117,340, Cl. 250-492.00A.
Tanaka, Satoru; and Watanabe, Hideaki, to Eisai Co., Ltd. 1,3-Benzodioxol derivatives. 4,117,228, Cl. 544-377.000.
Tanaka, Shoji: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; and Suzuki, Yoshikatsu, 4,117,036, Cl. 260-878.00R.
Tanaka, Susumu; Ogawa, Masaya; Kawabata, Hidetoshi; Fujiwara, Takao; Kurita, Takaji; Enoguchi, Yuji; Wada, Kenichi; and Murasaki, Hiroshi, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus. 4,116,556, Cl. 355-3.0SH.
Tanaka, Tadayoshi: *See—*
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Tanaka, Yasuyuki: *See—*
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Tani, Tatsuo: *See—*
Sawata, Shinji; Tani, Tatsuo; Tanaka, Tadayoshi; and Horigome, Takashi, 4,116,266, Cl. 165-105.000.
Taniguchi, Katsutoshi; and Kuroda, Yoji, to Teijin Limited. Friction false-twisting device. 4,115,987, Cl. 57-77.400.
Tanimoto, Akira; Yoshida, Yukihiro; and Katoh, Sunao, to Sharp Kabushiki Kaisha. Stitch pattern forming control in a sewing machine. 4,116,144, Cl. 112-158.00E.
Tannery, Edward F., to Theodore Bargman Company. Door lock. 4,116,027, Cl. 70-472.000.
Tanno, Norihiko: *See—*
Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, 4,117,126, Cl. 424-246.000.
Tanuma, Itsuo: *See—*
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Tardivel, Jacques, to Degremont. Method and means for the automatic regulation of sludge extraction in sewage treatment apparatus. 4,116,832, Cl. 210-83.000.
Tarver, Gilbert W.; and Koons, Russell E., to Lion Oil Company. Asphalt coating compositions. 4,116,708, Cl. 106-281.00R.
Tatarintsev, Vladimir Mikhailovich: *See—*
Alexandrov, Vladimir Ilich; Osiko, Vyacheslav Vasilievich; Tatarintsev, Vladimir Mikhailovich; and Udovenchik, Viktor Timofeevich, 4,116,598, Cl. 425-174.80R.
Tate & Lyle Limited: *See—*
Khan, Riaz Ahmed; Mufti, Khizar Sultan; and Parker, Kenneth John, 4,117,224, Cl. 536-119.000.
Tatematsu, Kazuhisa: *See—*
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Tates, Donald W.: *See—*
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Tatsumoto, Katsunobu; and Fukuda, Kenji, to Mitsui Mining Company, Limited; and Mitsui Coke Co., Ltd. Process for manufacturing a carbonaceous material. 4,117,098, Cl. 423-448.000.
Tatsuta, Sumitaka; Hirose, Masuhiko; and Amari, Hiroshi, to Fuji Photo Film Co., Ltd. Photographic material. 4,116,696, Cl. 96-87.00R.
Taube, Robert Otto: *See—*
Rehn, Gary Allen; and Taube, Robert Otto, 4,116,280, Cl. 172-266.000.
Tawn, Alec Richard Hornsey: *See—*
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Taylor, Glenn Alfred: *See—*
Foster, Robert Dean; Maliszewski, Thomas Arthur; Sims, Joseph Alton, Jr.; and Taylor, Glenn Alfred, 4,117,250, Cl. 568-858.000.
Taylor, Glenn N., to Kendall Company, The. Brace hinge. 4,115,902, Cl. 16-179.000.
Taylor, Lynn J., to Owens-Illinois, Inc. Novel preparation of novel low molecular weight, liquid polymer. 4,117,235, Cl. 560-205.000.
Taylor, Maurice J.; Peek, Henry L.; Abdou, John J.; and Patel, Amrut

R., to Allis-Chalmers Corporation. Single tank multibreaker circuit interrupter. 4,117,289, Cl. 200-148.00B.
Taylor, Paul G.; Son, Chung H.; Hom, Martha C.; Williams, L. G.; and Steel, Ronald E., to Del Monte Corporation. Fruit-flavored candy product. 4,117,176, Cl. 426-660.000.
Taylor, Philip H.: *See—*
Magnall, Anthony N.; Taylor, Philip H.; and Roberts, Fred, 4,115,991, Cl. 57-153.000.
Taylor, Stanford Earl; and Brucat, John N., to Instructional/Communications Technology, Inc. Tachistoscopic focus control. 4,116,547, Cl. 351-31.000.
TBA Industrial Products Ltd.: *See—*
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Technar Incorporated: *See—*
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Ichikawa, Yataro; Yamamoto, Mamoru; Tsuruta, Hideki; Kato, Kenichi; Yamaji, Teizo; Yoshisato, Eishin; and Hiramatsu, Toshiyuki, 4,116,955, Cl. 260-192.000.
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Teisseire, Paul Jose. Process for the production of norpatchoulenol. 4,117,245, Cl. 568-817.000.
Tekken Construction Co. Ltd.: *See—*
Yamazaki, Hironobu; Uchida, Yoshiaki; and Nakaya, Akira, 4,116,487, Cl. 299-1.000.
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Temple, Robert Dwight; Bryan, William Thomas; and Willig, Carl Joseph, to Procter & Gamble Company, The. Detergent compositions containing starch. 4,116,854, Cl. 252-167.000.
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Texaco Inc.: *See—*
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Theeuwes, Felix; and Ayer, Atul D., to Alza Corporation. Osmotic system with laminated wall comprising structurally different semipermeable lamina. 4,116,241, Cl. 128-260.000.
Theochem Laboratories, Inc.: *See—*
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Johnson, Ben C.; Thornton, J. Scott; Glowe, Donald E.; Cassidy, Patrick E.; and Anderson, Robert E., 4,117,312, Cl. 219-548.000.
Thies, Peter Willibrord; and David, Samuel, to Kali-Chemie Pharma GmbH. 2,9-Dioxatricyclo [4,3,1,0,3,7] decane derivatives, processes for their preparation and pharmaceutical compositions thereof. 4,117,148, Cl. 424-278.000.
Tholen, Bengt Olov; and Hedstrom, Hans Ivar, to Kuab Konsult och Utveckling AB. Apparatus for bearing capacity measurement with a falling weight deflectometer. 4,116,041, Cl. 73-12.000.
Thoma, Wilhelm; Wulff, Jochen; and Niederdellmann, Georg, to Bayer Aktiengesellschaft. Textile coating with polyurethanes. 4,116,741, Cl. 156-239.000.
Thomas, David E. Non-perverting mirror. 4,116,540, Cl. 350-293.000.
Thomas, Harry L., to GTE Sylvania Incorporated. Temperature sensor holding device. 4,117,257, Cl. 174-52.00R.
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Tikhova, Nina Mikhailovna; Blokhina, Valentina Alexeevna; Antipova, Antonina Petrovna; and Vasilieva, Tamara Pavlovna. Heat treated and aged magnesium-base alloy. 4,116,731, Cl. 148-161.000.
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Timex Corporation: *See—*
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Todeschini, Eugenio; and Riganti, Gian Piero, to Massey-Ferguson Services N.V. Hydrostatic transmissions. 4,116,292, Cl. 180-6.480.
Toft, Kaj, to General Electric Company. Plastic steam iron. 4,115,935, Cl. 38-88.000.
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Tomita, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for treating evaporated fuel gas. 4,116,184, Cl. 123-136.000.
Tomlinson, Ernest Valdur; and Carne, Charles Nicholas, to Carson (Instruments & Equipment) Limited. Digital measuring instruments. 4,117,320, Cl. 250-237.00G.
Tomlinson, James N. Dial illumination means. 4,115,994, Cl. 58-50.00R.
Toms, Ed P., to Water-Cyk Corporation, The. Water recirculation system. 4,115,879, Cl. 4-318.000.
Tong, Duncan, to Playart Ltd. Electrical connection device for a toy vehicle track. 4,116,381, Cl. 238-10.00E.
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Toyo Kogyo Co. Ltd.: *See—*
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Trehu, Yves Michel, to Du Pont de Nemours, E. I., and Company. Low attenuation, high strength optical fiber with silica filament core. 4,116,654, Cl. 65-3.00C.
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Trudell, Richard W., to McDonnell Douglas Corporation. Exhaust muffler. 4,116,303, Cl. 181-252.000.
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Tsirkin, Mark Zakharovich; Kogan, Viktor Ovshievich; Polyakov, Rudolf Semenovich; Presnov, Jury Leonidovich; and Khanukova, Elina Sergeevna. Ripple-shaped tightening strip for retaining electric machine winding. 4,117,362, Cl. 310-214.000.
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Tsuchiya, Mikio; Kawamura, Takashi; and Shibata, Kaoru, to Honshu Seishi Kabushiki Kaisha. Antistatic, low temperature heat sealable polypropylene composite film and process for production thereof. 4,117,193, Cl. 428-339.000.
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Uchida, Norimasa; Kiyonaga, Kingo; and Nakamura, Hideki, to Hitachi Metals, Ltd. High speed tool steel having high toughness. 4,116,684, Cl. 75-126.00C.
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Uhlig, Albert R., to Owens-Illinois, Inc. Apparatus for forming a blown plastic container. 4,116,608, Cl. 425-525.000.

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Uhlig, Gerhardt E. Safety closure container. 4,116,351, Cl. 215-216.000.

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Ullman, Myron E., Jr., to Kessler Products Company. Drawer construction. 4,116,513, Cl. 312-330.00R.

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Poindexter, Allan M.; and Ricks, Herbert E., 4,116,766, Cl. 176-38.000.

Interior: *See—*
Smith, Colen S., 4,116,368, Cl. 222-145.000.

National Aeronautics and Space Administration: *See—*
Shafer, John I.; and Marsh, Harold E., Jr., 4,116,131, Cl. 102-103.000.

Navy: *See—*
Diebold, James P., 4,115,999, Cl. 60-219.000.
Fisher, Frederick H.; and Anderson, Victor C., 4,116,153, Cl. 114-244.000.
Gould, Paul F.; and Pate, James O., 4,117,447, Cl. 340-4.00E.
Griffith, James R.; and O'Rear, Jacques G., 4,116,945, Cl. 528-362.000.
Kaloi, Cyril M., 4,117,489, Cl. 343-700.0MS.
Kruer, Melvin R.; Esterowitz, Leon; Bartoli, Filbert J.; and Allen, Roger E., 4,117,329, Cl. 250-338.000.
Teeter, Wallis L.; and Richter, David J., 4,117,271, Cl. 179-82.000.

U.S. Philips Corporation: *See—*
Appelquist, Jan Olov; and Lindwall, Conny Holger, 4,117,294, Cl. 219-10.55C.
Armstrong, Desmond R., 4,117,384, Cl. 318-326.000.
Auphan, Michel Joseph, 4,117,328, Cl. 250-330.000.
Bijma, Jan, 4,117,379, Cl. 315-370.000.
Carasso, Marino Giuseppe; van de Polder, Leendert Johan; and Tan, Sing Liong, 4,117,515, Cl. 358-217.000.
Clarke, John A., 4,116,528, Cl. 350-52.000.
de Bie, Jan Rudolf; Ekkelboom, Tjepke Hendrik; Geytenbeek, Johannes Jacobus Franciscus; van Hoorn, Willem Lodewijk; and Schob, Otmar, 4,117,367, Cl. 313-352.000.
de Boer, Eeltje, 4,117,509, Cl. 358-4.000.
DeConinck, Wilfried Rene'; and Goret, Jean Louis Ernest Raymond, 4,117,420, Cl. 331-17.000.
De Jong, Herman Lambertus, 4,116,795, Cl. 204-195.00S.
Jacobs, Cornelis Adrianus Joannes; Driessen, Antonius Jozephus Gerardus Cornelis; and Cornelissen, Gerardus Antonius Petrus Maria, 4,117,370, Cl. 315-35.000.
Janssen, Daniel Johannes Gerardus, 4,117,391, Cl. 323-4.000.
Kuus, Gijsbert; and de Ridder, Adriaan Jan, 4,117,369, Cl. 313-178.000.
Ponjee, Johannes Jacobus; and Bruinink, Jacob, 4,116,535, Cl. 350-355.000.
van den Elzen, Hendricus Christianus; van Gerwen, Petrus Josephus; and Snijders, Wilfred Andre Maria, 4,117,277, Cl. 179-170.600.
van Kampen, Hans, 4,117,269, Cl. 179-15.0BW.
Van Vliet, Johannes Adrianus Josephus Maria; and Broerse, Pieter Hendrik, 4,117,371, Cl. 315-46.000.

United States Surgical Corporation: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 4,116,228, Cl. 128-2.00R.

U.S. Terrazzo Panels, Inc.: *See—*
Murray, John A., 4,117,059, Cl. 264-82.000.
Murray, John A., 4,117,060, Cl. 264-82.000.

United Technologies Corporation: *See—*
Anderson, William S., 4,117,013, Cl. 260-585.00A.
Gell, Maurice L.; and Duhl, David N., 4,116,723, Cl. 148-3.000.
Johnson, Bruce Virgil, 4,116,383, Cl. 239-8.000.
Licht, Lazar, 4,116,503, Cl. 308-9.000.
Martin, Anthony Newman; Buczek, Carl James; and Mongeon, Robert Joseph, 4,116,000, Cl. 60-242.000.
Walworth, Kirk Sumner; and Martin, Anthony Newman, 4,117,460, Cl. 340-190.000.

University of Glasgow: *See—*
Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, 4,117,112, Cl. 424-89.000.

University of Utah: *See—*
Bliss, Robert L., 4,115,975, Cl. 52-646.000.

Unkelbach, Karl-Heinz; and Duren, Gottfried, to Klockner-Humboldt-Deutz Aktiengesellschaft. High intensity magnetic separator for wet separation of magnetizable particles of solids. 4,116,839, Cl. 210-222.000.

Upjohn Company, The: *See—*
Biermacher John J., 4,116,837, Cl. 210-198.00C.
Marshall, Vincent P.; Elrod, David W.; Koert, James M.; Reisender, Elizabeth A.; and Wiley, Paul F., 4,116,769, Cl. 195-51.00R.
Morton, Douglas Ross, Jr., 4,117,005, Cl. 562-503.000.
Nelson, Norman A., 4,116,988, Cl. 260-413.000.
Nelson, Norman A., 4,116,989, Cl. 260-413.000.
Salmond, William G., 4,116,985, Cl. 260-397.200.
Sanson, Joseph; and Moser, Kurt, 4,116,736, Cl. 156-79.000.
Smith, Herman W., 4,117,233, Cl. 560-55.000.

Urtel, Rolf: *See—*
Dimroth, Peter; Junge, Helmut; Tonne, Peter; and Urtel, Rolf, 4,116,953, Cl. 260-157.000.

Usanov, Vladimir Vasilievich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

USM Corporation: *See—*
Antrim, Richard Douglas, 4,117,549, Cl. 366-99.000.
Graham, Gordon Judson; Martin, John Frederick; and Crowell, Douglas Hodgen, 4,116,097, Cl. 83-155.000.
Mansfield, Donald Longworth; and Woodward, Walter Ray, 4,117,356, Cl. 310-49.00R.

Uspensky, Alexandr Vitalievich: *See—*
Bessonov, Andrei Stefanovich; Uspensky, Alexandr Vitalievich; and Shekhovtsov, Nikolai Vasilievich, 4,116,636, Cl. 422-101.000.

V. E. Anderson Mfg. Co.: *See—*
Anderson, Richard N., 4,115,973, Cl. 52-773.000.

Vale, Bradley Harold: *See—*
Greer, Raymond Thomas; Vale, Bradley Harold; and Martin, David Michael, 4,117,323, Cl. 250-311.000.

Valeron Corporation, The: *See—*
Smith, David L.; and Scherr, Norman J., Jr., 4,115,923, Cl. 33-172.00E.

Valetsky, Petr Maximilianovich: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.

Valmet Oy: *See—*
Koskimies, Jouni; and Ilmoniemi, Erkki, 4,116,259, Cl. 162-380.000.

Valyi, Emery I. Apparatus for the preparation of hollow plastic articles. 4,116,606, Cl. 425-526.000.

Van Dorn Company: *See—*
McKernan, Bernard J.; and Stargell, Donald E., 4,116,360, Cl. 220-273.000.
Stargell, Donald E., 4,116,361, Cl. 220-273.000.

VanBuskirk, Warren T.; and Tates, Donald W., to Xerox Corporation. Sorting apparatus and reproducing machine. 4,116,429, Cl. 271-173.000.

Vandenberg, Ervin K., to Westran Corporation. Landing gear actuator. 4,116,315, Cl. 192-48.920.

van den Elzen, Hendricus Christianus; van Gerwen, Petrus Josephus; and Snijders, Wilfred Andre Maria, to U.S. Philips Corporation. Arrangement for simultaneous two-way data transmission over two-wire circuits. 4,117,277, Cl. 179-170.600.

van de Polder, Leendert Johan: *See—*
Carasso, Marino Giuseppe; van de Polder, Leendert Johan; and Tan, Sing Liong, 4,117,515, Cl. 358-217.000.

van Gerwen, Petrus Josephus: *See—*
van den Elzen, Hendricus Christianus; van Gerwen, Petrus Josephus; and Snijders, Wilfred Andre Maria, 4,117,277, Cl. 179-170.600.

van Hoorn, Willem Lodewijk: *See—*
de Bie, Jan Rudolf; Ekkelboom, Tjepke Hendrik; Geytenbeek, Johannes Jacobus Franciscus; van Hoorn, Willem Lodewijk; and Schob, Otmar, 4,117,367, Cl. 313-352.000.

van Kampen, Hans, to U.S. Philips Corporation. Time division multiplex telecommunication exchange. 4,117,269, Cl. 179-15.0BW.

Van Latenstein, Anthonie: *See—*
Radstake, Herman; Hasenack, Nicolas A.; Van Latenstein, Anthonie; and Burger, Jacobus J., 4,116,681, Cl. 75-41.000.

Vannice, M. Albert; and Garten, Robert L., to Exxon Research & Engineering Co. Hydrocarbon synthesis from CO and H_2 using Rh supported on titanium oxides. 4,116,994, Cl. 260-449.00R.

Van Tijn, Roeland, to Hollandse Signaalapparaten B.V. Method of making textured continuous filament yarn. 4,115,992, Cl. 57-164.000.

Van Vechten, James Alden: *See—*
McGroddy, James Cleary; and Van Vechten, James Alden, 4,117,497, Cl. 346-17.000.

Van Vliet, Johannes Adrianus Josephus Maria; and Broerse, Pieter Hendrik, to U.S. Philips Corporation. Electric device provided with a metal vapor discharge lamp. 4,117,371, Cl. 315-46.000.

Vapor Corporation: *See—*
Reip, Raymond G., 4,116,062, Cl. 73-321.000.

Varga, I. Steven. Sawtooth composite girder. 4,115,971, Cl. 52-334.000.

Varga, Theodore; Devine, Arthur, Jr.; and Meikle, Warren, to Meikle & Devine, Inc. Engine repair stand. 4,116,424, Cl. 269-55.000.

Varian Associates, Inc.: *See—*
Felton, John Robert; and Gutow, Russell S., Jr., 4,117,332, Cl. 250-374.000.

Varian MAT Gesellschaft mit beschrankter Haftung: *See—*
Meyer, Wilhelm, 4,117,321, Cl. 250-292.000.

Varlonga, Giovanni. Fixed and movable frame fixtures for doors and windows. 4,115,972, Cl. 52-398.000.

Varma, Ravi K.: *See—*
Cimarusti, Christopher M.; Grabowich, Paul; and Varma, Ravi K., 4,116,978, Cl. 260-345.200.

Varner, George Clifford, to Milliken Research Corporation. Printing of pattern designs with computer controlled pattern dyeing device. 4,116,626, Cl. 8-149.000.

Varta Batterie Aktiengesellschaft: *See—*
Schuster, Heinz; and Prange, Rolf, 4,117,211, Cl. 429-121.000.

Vasilantone, Michael. Solar energy unit. 4,116,223, Cl. 126-271.000.

Vasilieva, Tamara Pavlovna: *See—*
Tikhova, Nina Mikhailovna; Blokhina, Valentina Alexeevna; Antipova, Antonina Petrovna; and Vasilieva, Tamara Pavlovna, 4,116,731, Cl. 148-161.000.

Vasquez, Tulio. Sound alarm for protecting briefcases and the like. 4,117,468, Cl. 340-571.000.

Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen: *See—*
Forster, Karl-Heinz; and Lein, Werner, 4,116,125, Cl. 101-212.000.

VEDA, Inc.: *See—*
Richardson, James L., 4,116,211, Cl. 137-205.000.

Veeder Industries Inc.: *See—*
Heldmann, Ernest J.; and Capuano, Terry D., 4,116,572, Cl. 403-7.000.

Velsicol Chemical Company: *See—*
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., 4,116,670, Cl. 71-88.000.

Wu, Chin Ching; and Krenzer, John, 4,116,969, Cl. 260-306.80R.

Vendramini, Dante Marc: *See—*
Giovachini, Jean-Luc; and Vendramini, Dante Marc, 4,116,088, Cl. 74-572.000.

Venero, Agustin F.: *See—*
Tsien, Hsue C.; and Venero, Agustin F., 4,117,065, Cl. 264-105.000.

Venot, Jean, to ASA S.A. Method of apparatus for the thermal treatment of textiles articles. 4,115,985, Cl. 57-34.0HS.

Venter, J. Craig: *See—*
Goodman, Murray; Verlander, Michael S.; Kaplan, Nathan O.; and Venter, J. Craig, 4,116,949, Cl. 260-112.50R.

Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Puhringer, Othmar; and Scheurecker, Werner, 4,116,261, Cl. 164-448.000.

Vereinigte Osterreichische Elsen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Kagerhuber, Franz; Scheinecker, Alois; and Scheurecker, Werner, 4,116,262, Cl. 164-448.000.

Verlander, Michael S.: *See—*
Goodman, Murray; Verlander, Michael S.; Kaplan, Nathan O.; and Venter, J. Craig, 4,116,949, Cl. 260-112.50R.

Verma, Monica Harish, to Du Pont de Nemours, E. I., and Company. Water based alkyd resin primer. 4,116,904, Cl. 260-22.00R.

Vettiger, Alfons, to Ruti Machinery Works Ltd. Jet loom. 4,116,243, Cl. 139-435.000.

Vickers Limited: *See—*
Gates, Allen Peter; and Saunderson, Allan, 4,117,039, Cl. 260-875.000.

Vidal, Frederick D.; and Gerrity, Albert B., to Pennwalt Corporation. Free-flowing fungal enzyme composition. 4,116,772, Cl. 195-64.000.

Vidal, Henri. Stabilized earth structures. 4,116,010, Cl. 405-262.000.

Vincent, Richard T. Calculator for laying out parking lots. 4,117,313, Cl. 235-61.0GM.

Vinogradova, Svetlana Vasilievna: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.

Vinson, Mark Alexander, to Burroughs Corporation. Method of making a V-MOS field effect transistor for a dynamic memory cell having improved capacitance. 4,116,720, Cl. 148-1.500.

Vivitar Corporation: *See—*
Moscovich, Jacob, 4,116,536, Cl. 350-214.000.

Vlasov, Alexandr Nikolaevich: *See—*
Maslov, Vadim Nikolaevich; Korobov, Oleg Evgenievich; Lupacheva, Alla Naumovna; Vlasov, Alexandr Nikolaevich; Myasoedov, Viktor Vasilievich; Bochkarev, Ellin Petrovich; Gimelfarb, Felix Aronovich; Bronshtein, Izidor Karlovich; Lukicheva, Natalya Ivanovna; Sinitsyn, Evgeny Vladimirovich; Sokurenko, Jury Varnavovich; Jurova, Elena Sergeevna; Kistova, Elena Mikhailovna; Konstantinova, Marina Andreevna; and Samaginov, Veniamin Mikhailovich, 4,117,504, Cl. 357-16.000.

Vock, Manfred Hugo: *See—*
Hall, John B.; Sprecker, Mark A.; Schmitt, Frederick Louis; and Vock, Manfred Hugo, 4,117,015, Cl. 260-586.00C.

Vogel, Ralph A.; and Kittsmiller, Robert K., to Essex Group, Inc. Wire annealing apparatus. 4,116,422, Cl. 266-104.000.

Vogel, Roger F.: *See—*
Hupp, Stephen S.; Sabourin, Edward T.; Swift, Harold E.; and Vogel, Roger F., 4,117,021, Cl. 260-669.00A.

Vogts, Axel: *See—*
Schaefer, Hans-Georg; and Vogts, Axel, 4,116,811, Cl. 208-44.000.

Voigt, Hermann Uwe; Volker, Martin; and Stehmann, Hans Peter, to Kabel-und Metalwerke Gutehoffnungshutte AG. Processing a graft polymer or elastomer. 4,117,063, Cl. 264-102.000.

Volker, Martin: *See—*
Voigt, Hermann Uwe; Volker, Martin; and Stehmann, Hans Peter, 4,117,063, Cl. 264-102.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Kruger, Hermann, 4,116,268, Cl. 165-111.000.

Von Roll AG.: *See—*
Sturm, Werner, 4,117,311, Cl. 219-544.000.

von der Crone, Jost, to Ciba-Geigy Corporation. Isoindoline pigments. 4,116,959, Cl. 544-284.000.

von Fraunberg, Karl: *See—*
Baumann, Manfred; Hoffmann, Werner; and von Fraunberg, Karl, 4,116,982, Cl. 260-347.700.

Von Holdt, John W. Method of molding a cassette half with window insert. 4,117,069, Cl. 264-153.000.

von Strandtmann, Max; Cohen, Marvin P.; Klutchko, Sylvester; and Shavel, John, Jr., to Warner-Lambert Company. 3-(1H-Tetrazol-5-yl)chromones. 4,116,971, Cl. 260-308.00D.

von Strandtmann, Max: *See—*
Klutchko, Sylvester; and von Strandtmann, Max, 4,116,966, Cl. 260-294.900.

von Strandtmann, Maximilian: *See—*
Connor, David T.; and von Strandtmann, Maximilian, 4,117,134, Cl. 424-256.000.

Vorobieva, Valentina Yakovlevna: *See—*
Mashkovsky, Mikhail Davydovich; Yakhontov, Leonid Nikolaevich; Ado, Andrei Dmitrievich; Kaminka, Mikhail Emmanuilovich; Mikhlina, Eva Evseevna; Vorobieva, Valentina

Yakovlevna; Yanina, Anna Dmitrievna; and Komarova, Nadezhda Andreevna, 4,117,139, Cl. 424-267.000.

Vortox Company: *See—*
Garner, Herman H., 4,116,647, Cl. 55-223.000.

Vukmirovich, Daniel. Flexible discus device. 4,115,946, Cl. 46-74.00D.

W. R. Grace & Co.: *See—*
Mathias, Eckart, 4,117,196, Cl. 428-379.000.
Morgan, Charles Robert; and Bush, Richard Wayne, 4,117,017, Cl. 260-609.00R.
Previte, Robert W., 4,116,706, Cl. 106-90.000.

Wabco Westinghouse: *See—*
Leclerc, Serge, 4,116,113, Cl. 92-24.000.

WABCO Westinghouse GmbH: *See—*
Gross, Friedrich; Binder, Peter; and Brehmer, Dieter, 4,116,115, Cl. 92-168.000.
Gudat, Wolfgang, 4,116,494, Cl. 303-92.000.
Reinecke, Erich, 4,116,307, Cl. 188-106.00P.
Reinecke, Erich, 4,116,492, Cl. 303-22.00R.

Wada, Kenichi: *See—*
Tanaka, Susumu; Ogawa, Masaya; Kawabata, Hidetoshi; Fujiwara, Takao; Kurita, Takaji; Enoguchi, Yuji; Wada, Kenichi; and Murasaki, Hiroshi, 4,116,556, Cl. 355-3.0SH.

Waddill, Harold G.: *See—*
Schulze, Heinz; and Waddill, Harold G., 4,116,938, Cl. 528-93.000.

Wagensonner, Eduard, to AGFA-Gevaert, A.G. Motion-picture camera with automatic diaphragm control compensated for shutter-speed variations. 4,116,552, Cl. 352-141.000.

Wagoner, Robert B.: *See—*
Kinghorn, John S.; Wagoner, Robert B.; and Turala, Alfred J., 4,116,358, Cl. 220-222.000.

Wahl, James A.: *See—*
Pleier, Walter J.; and Wahl, James A., 4,116,296, Cl. 180-101.000.

Wahoski, Ernest C., to United States of America, Army. Connector, reducer/adapter, flare to flareless. 4,116,477, Cl. 285-169.000.

Walden, Gerald M., to Caterpillar Tractor Co. Resilient mounting for an operator's station on a vehicle. 4,116,412, Cl. 248-358.00R.

Waldron, David W., to Lowndes Engineering Co., Inc. Fog generator. 4,116,385, Cl. 239-77.000.

Walker, Francis H.; and Baker, Don R., to Stauffer Chemical Company. N-alkyl-alpha-(substituted phenoxy) alkylamides and their use as herbicides. 4,116,677, Cl. 71-118.000.

Walker, Francis H.: *See—*
Baker, Don R.; and Walker, Francis H., 4,117,010, Cl. 260-561.00S.
Baker, Don R.; and Walker, Francis H., 4,117,166, Cl. 424-324.000.

Walker, Raymond W.; and Beard, Robert M., to Compagnie Francaise des Petroles. Combined electrical-hydraulic connector means. 4,117,287, Cl. 200-82.00R.

Wall, Bill R.: *See—*
Foreman, Luther M.; Heck, Samuel C.; and Wall, Bill R., 4,117,445, Cl. 338-198.000.

Wall, Frederick. Liquid level sensing device and swimming pool water circulation systems containing the same. 4,115,877, Cl. 4-172.170.

Wallace, Edwin G., to Stauffer Chemical Company. Substituted carbamic anhydrides. 4,117,153, Cl. 424-286.000.

Wallis, Marvin E. Modular engine assembly. 4,116,006, Cl. 60-709.000.

Walther, William D., to Dayton-Walther Corporation. Lock ring flanged tire carrying rim and wheel. 4,116,489, Cl. 301-12.00R.

Walworth, Kirk Sumner; and Martin, Anthony Newman, to United Technologies Corporation. Sensing device. 4,117,460, Cl. 340-190.000.

Walworth, Ralph Franklin. Multi-speed hydraulic drive torque converter. 4,116,003, Cl. 60-487.000.

Walz, Alfred. Gas discharge lamp with double-electrode powered through a rectifier, and discharge-tight cross-connection of the electrode chambers, and a process for its manufacture. 4,117,372, Cl. 315-71.000.

Wanek, Robert Lewis: *See—*
Bell, Donald Atkinson; Chorley, Bernard John; Parks, John Ronald; and Wanek, Robert Lewis, 4,117,539, Cl. 364-551.000.

Wang, Su-sun, to Hoffmann-La Roche Inc. [Asn^2]-thymosin α_1 and analogs thereof. 4,116,951, Cl. 260-112.50R.

Ward, Edward B. Liner for concrete forms. 4,116,415, Cl. 249-35.000.

Ward, Edwin J. Gutter manipulating apparatus and method. 4,116,008, Cl. 405-119.000.

Ward, John W., to Union Oil Company of California. Rejuvenation of nitrogen-damaged noble metal zeolite catalysts. 4,116,867, Cl. 252-416.000.

Warden, Gerald D.: *See—*
Kim, Raymond W. H.; Lueders, Arthur L.; Prelletz, Edward R.; and Warden, Gerald D., 4,116,551, Cl. 352-124.000.

Warner, Gerhardt Allan: *See—*
Warner, Kurt Ehrich; and Warner, Gerhardt Allan, 4,116,206, Cl. 135-4.00R.

Warner, Kurt Ehrich; and Warner, Gerhardt Allan. Portable structures SR series. 4,116,206, Cl. 135-4.00R.

Warner-Lambert Company: *See—*
Baker, David C.; and Putt, Sterling R., 4,117,229, Cl. 548-301.000.
Brown, Richard E., 4,117,129, Cl. 424-248.570.
Connor, David T.; and von Strandtmann, Maximilian, 4,117,134, Cl. 424-256.000.
Kenoff, Michael B., 4,116,638, Cl. 422-99.000.
Klutchko, Sylvester; and von Strandtmann, Max, 4,116,966, Cl. 260-294.900.
Schwender, Charles F.; and Sunday, Brooks R., 4,116,961, Cl. 260-293.570.
Schwender, Charles F.; and Pike, Russell E., 4,117,131, Cl. 424-251.000.
von Strandtmann, Max; Cohen, Marvin P.; Klutchko, Sylvester; and Shavel, John, Jr., 4,116,971, Cl. 260-308.00D.
Zinnes, Harold; Lindo, Neil A.; and Shavel, John, Jr., 4,116,964, Cl. 260-294.80C.

Warner & Swasey Company, The: *See—*
Englander, Gary E.; Chase, Richard P.; Anderson, Donald P.; and Metcalf, Guy D., 4,115,958, Cl. 51-289.00R.

Warnod, Bertrand Antoine, to Klaxon S.A. Vibrating membrane horns. 4,116,158, Cl. 116-142.00R.

Warwick, Paul Stephen: *See—*
Appleford, David Dale; and Warwick, Paul Stephen, 4,116,048, Cl. 73-83.000.

Warwick Pump and Engineering Company Limited: *See—*
Prestwich, John Richard, 4,116,590, Cl. 417-387.000.

Washam, Ray D., to Ralston Purina Company. Sulfur as an anorexigenic agent. 4,117,170, Cl. 426-72.000.

Washburn, Ellis K.: *See—*
Kirchoff, Francis D.; and Washburn, Ellis K., 4,117,284, Cl. 200-67.00G.

Watanabe, Hideaki: *See—*
Tanaka, Satoru; and Watanabe, Hideaki, 4,117,228, Cl. 544-377.000.

Watanabe, Osamu: *See—*
Abe, Nobuyuki; Watanabe, Osamu; Nunokawa, Koji; Tanaka, Ichiro; and Manabe, Masao, 4,116,012, Cl. 405-238.000.

Watanabe, Takashi: *See—*
Ishino, Ken; and Watanabe, Takashi, 4,116,906, Cl. 260-22.00A.

Watarai, Etsuyoshi: *See—*
Nagano, Masashi; and Watarai, Etsuyoshi, 4,116,319, Cl. 192-64.000.

Water-Cyk Corporation, The: *See—*
Toms, Ed P., 4,115,879, Cl. 4-318.000.

Watsky, Benjamin. Snatch proof handle for pocketbooks, handbags and the like. 4,116,253, Cl. 150-33.000.

Watson, David: *See—*
Lawson, Ronald; and Watson, David, 4,115,907, Cl. 28-266.000.

Watson, James Henry Peter: *See—*
Clark, Norman Owen; and Watson, James Henry Peter, 4,116,829, Cl. 210-42.00S.

Wayland, Paul O.: *See—*
Gorman, Joseph G.; Roach, James F.; and Wayland, Paul O., 4,117,288, Cl. 200-144.00R.

Wazima, Yoshimi: *See—*
Takahashi, Yuzo; Wazima, Yoshimi; Nakada, Akira; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Aizawa, Eizi; and Oyama, Shiro, 4,117,188, Cl. 428-36.000.

Webb, Clyde B., to Carpco, Inc. Method of selectively separating glass from waste material. 4,116,822, Cl. 209-11.000.

Webb, Jimmy L., to General Electric Company. Method for making aromatic bis (ether phthalic acid) or aromatic bis (ether anhydride)s. 4,116,980, Cl. 260-346.300.

Webb, Jimmy L.: *See—*
Cleveland, William K. S.; Webb, Jimmy L.; and Orlando, Charles M., 4,117,018, Cl. 568-726.000.

Wehde, Heinz, to Teldix GmbH. Bearing and drive structure for spinning turbine. 4,117,359, Cl. 310-67.00R.

Wehinger, Egbert: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,143, Cl. 424-273.00P.
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,117,145, Cl. 424-273.00P.

Weible, Warren W., to Zeller Corporation, The. Universal joint. 4,116,018, Cl. 64-12.000.

Weichselbaum, Edwin Gordon, to Sherwood Medical Industries Inc. Package for sterile article. 4,116,338, Cl. 206-610.000.

Weinar, Roger Neil, to Ceiling Resurfacing Systems, Inc. Grid ceiling trim intersection cap. 4,115,970, Cl. 52-311.000.

Weinberg, Kurt; and Johnson, Gordon Carlton, to Union Carbide Corporation. Process for catalytic production of polyesters. 4,116,942, Cl. 528-283.000.

Weisang, Joseph Edouard; and Engelhard, Philippe, to Compagnie Francaise de Raffinage. Catalysts for the hydrotreatment of hydrocarbons and processes for the utilization of said catalysts. 4,116,870, Cl. 252-439.000.

Weisenborn, Frank Lee: *See—*
Ondetti, Miguel Angel; and Weisenborn, Frank Lee, 4,116,962, Cl. 260-293.630.

Weiss, Daniel. Parabolic reflector with vary transverse width. 4,116,541, Cl. 350-296.000.

Welschof, Hans-Heinrich, to Lohr & Bromkamp GmbH. Bearing element seal for a universal joint. 4,116,019, Cl. 64-17.00A.

Wengeler, Wilhelm; and Hoffmann, Egbert, to Uhde GmbH. Process for reducing the grain size of phosphate rock. 4,116,390, Cl. 241-24.000.

Weseloh, William E.: *See—*
Orshansky, Elias, Jr. deceased; and Weseloh, William E., 4,116,089, Cl. 74-687.000.

West County Supply & Mfg. Co., Inc.: *See—*
Bishop, Robert L., 4,115,961, Cl. 52-58.000.

Westerhoven, Henry. Planter for trees, herbs, shrubs and similar plants. 4,116,137, Cl. 111-2.000.

Western Electric Company, Inc.: *See—*
Chu, Tze Yao; Jaluria, Yogesh; Lavigna, Robert Joseph; Reusser, Raymond Edward; and Williams, George, 4,116,642, Cl. 422-249.000.
Hudson, James Alphus, Jr.; Levandoski, Raymond Alexander; and Long, Allen Kyle, 4,117,398, Cl. 324-61.00R.

Western Geophysical Company of America: *See—*
Johnston, Otis A., 4,116,294, Cl. 180-44.00F.
Martin, Dallas James, 4,116,299, Cl. 181-113.000.
Siems, Lee E., 4,117,448, Cl. 340-15.5TS.

Westinghouse Air Brake Company: *See—*
Hyler, John H., 4,116,298, Cl. 180-139.000.
Stark, Donald E.; Ehrlich, Anthony G.; and Guillaumin, Bruno, 4,117,529, Cl. 361-182.000.

Westinghouse Brake & Signal Co. Ltd.: *See—*
Norton, David John, 4,117,463, Cl. 340-652.000.

Westinghouse Canada Ltd.: *See—*
Nolte, David G., 4,116,076, Cl. 73-299.000.

Westinghouse Electric Corp.: *See—*
Berkey, Edgar; Reed, William H., III; and Hickam, William M., 4,117,396, Cl. 324-33.000.
Bolin, Philip C., 4,117,528, Cl. 361-120.000.
Flick, Carl, 4,117,358, Cl. 310-59.000.
Gorman, Joseph G.; Roach, James F.; and Wayland, Paul O., 4,117,288, Cl. 200-144.00R.
John, Clarence D., Jr., 4,116,767, Cl. 176-87.000.
John, Clarence D., Jr., 4,117,333, Cl. 250-380.000.
Kwiecinski, James R., 4,117,032, Cl. 260-857.0PE.
Petro, John; and Schofield, Charles R., 4,117,299, Cl. 219-117.100.
Smith, James D. B.; and Kauffman, Robert N., 4,117,361, Cl. 310-208.000.
Wilsdon, Thomas A.; Heim, William P.; and Barlis, Glenn A., 4,117,440, Cl. 337-213.000.
Zitelli, William E.; and Szabo, Andras 1., 4,117,477, Cl. 340-347.0NT.

Westran Corporation: *See—*
Vandenberg, Ervin K., 4,116,315, Cl. 192-48.920.

Westvaco Corporation: *See—*
Kurrle, Frederick L., 4,117,191, Cl. 428-330.000.

Wexell, Dale R.: *See—*
Stempin, John L.; and Wexell, Dale R., 4,116,703, Cl. 106-75.000.

Whatley, Norman, Jr. Pre-volatilizing electronically controlled carburetor. 4,116,177, Cl. 123-119.00R.

Whatman Reeve Angel Limited: *See—*
Head, Brian Arthur, 4,116,761, Cl. 162-152.000.

Wheeler, Charles Joseph, to Ashtabula Development Co. Device for stripping insulation from a wire. 4,116,092, Cl. 81-9.50R.

White, Frederic H., III, to Rockwell International Corporation. Alignment system for lasers. 4,117,319, Cl. 250-201.000.

White, Ira Thomas. Guy strain insulators. 4,115,965, Cl. 52-148.000.

Whitney, Thomas A.; and Klemann, Lawrence P., to Exxon Research & Engineering Co. Alkali metal salts of complex anions containing heteroatom substituents and electrolyte compositions containing these. 4,117,213, Cl. 429-194.000.

Whittle, William C.; and Zneimer, Joel E., to Bell & Howell Company. Isthmian precision adjustable mount for magnet head assembly. 4,117,522, Cl. 360-109.000.

Wicker, Helmut; Kielhorn, Werner; and Heyduk, Gerhard, to BBC Brown, Boveri & Company Limited. Method for conveying a row of forging ingots through an inductive heating apparatus. 4,117,293, Cl. 219-10.410.

Wiegner, Joseph R.: *See—*
Charles, Ronald A.; Jones, Paul W.; Staples, John L.; and Wiegner, Joseph R., 4,116,775, Cl. 195-103.50M.

Wiesner, Leo, to Timex Corporation. Crystal oscillator with reduced power consumption. 4,117,421, Cl. 331-116.00R.

Wilcox, Merrill. N-benzyl-2,6-dinitro-3-amino-4-trifluoromethylanilines as plant growth regulants. 4,116,667, Cl. 71-78.000.

Wildmoser, Alfred: *See—*
Stockner, Josef; and Wildmoser, Alfred, 4,117,048, Cl. 261-93.000.

Wiley, Paul F.: *See—*
Marshall, Vincent P.; Elrod, David W.; Koert, James M.; Reisender, Elizabeth A.; and Wiley, Paul F., 4,116,769, Cl. 195-51.00R.

Wilhelm Hegenscheidt Gesellschaft mbH: *See—*
Dombrowski, Theodor; and Wittkopp, Helmut, 4,116,094, Cl. 82-8.000.

Wilkenloh, Frederic Nash, to Comul Scope Company. Coaxial drop wire. 4,117,260, Cl. 174-106.00R.

Willard, John Wesley, Sr., to CAW Industries, Inc. Method of treating seed. 4,116,666, Cl. 71-77.000.

William H. Rorer, Inc.: *See—*
Buehler, John D.; Shah, Pravinchandra B.; and Joslin, Robert S., 4,117,116, Cl. 424-157.000.
Diamond, Julius; and Zalipsky, Jerome J., 4,117,165, Cl. 424-322.000.

Williams, Carl W.: *See—*
Jones, Lamar J.; and Williams, Carl W., 4,116,400, Cl. 242-67.10R.

Williams, George: *See—*
Chu, Tze Yao; Jaluria, Yogesh; Lavigna, Robert Joseph; Reusser, Raymond Edward; and Williams, George, 4,116,642, Cl. 422-249.000.

Williams, Harrison L., to Preformed Line Products Company. Dead end appliance for linear bodies and drop wire type conductor installation including the same. 4,117,256, Cl. 174-40.00R.

Williams, James E.: *See—*
Jepsky, Joseph; Englander, Irvin S.; and Williams, James E., 4,117,482, Cl. 343-7.300.

Williams, Joel L.: *See—*
Dudley, Betty J.; and Williams, Joel L., 4,116,898, Cl. 260-17.40R.

Williams, John E.: *See—*
Outten, Edward Francis; Ryer, Jack; and Williams, John E., 4,116,877, Cl. 252-72.000.

Williams, L. G.: *See—*
Taylor, Paul G.; Son, Chung H.; Hom, Martha C.; Williams, L. G.; and Steel, Ronald E., 4,117,176, Cl. 426-660.000.

Williams, Richard Jean: *See—*
Ganssle, Eugene Robert; Scott, Ralph Richard; and Williams, Richard Jean, 4,116,263, Cl. 165-27.000.

Williams, Richard W. Recorder actuator for communication lines. 4,117,266, Cl. 179-6.00R.

Willig, Carl Joseph: *See—*
Temple, Robert Dwight; Bryan, William Thomas; and Willig, Carl Joseph, 4,116,854, Cl. 252-167.000.

Willis, Chester Rhodes: *See—*
Chakrin, Lawrence William; Snader, Kenneth Means; and Willis, Chester Rhodes, 4,117,226, Cl. 542-438.000.

Willis Oil Tool Co.: *See—*
Muchow, John D., 4,116,215, Cl. 137-596.180.

Wills, Robert N. Cleaning apparatus. 4,115,891, Cl. 15-71.000.

Willyoung, David M., to General Electric Company. Combined cycle power plant with atmospheric fluidized bed combustor. 4,116,005, Cl. 60-655.000.

Wilsdon, Thomas A.; Heim, William P.; and Barlis, Glenn A., to Westinghouse Electric Corp. Fuse mount for switching apparatus. 4,117,440, Cl. 337-213.000.

Wilson Greatbatch Ltd.: *See—*
Mead, Ralph T.; Rudolph, Frank W.; Frenz, Norbert W., Jr.; and Greatbatch, Wilson, 4,117,212, Cl. 429-153.000.

Wilson, William George Moore; and Stewart, Douglas Edward, to Marconi Company Limited, The. Image translation devices. 4,117,331, Cl. 250-334.000.

Winans, Esther D.: *See—*
Brois, Stanley J.; Gutierrez, Antonio; and Winans, Esther D., 4,116,876, Cl. 252-49.600.
Ryer, Jack; Brois, Stanley J.; and Winans, Esther D., 4,116,643, Cl. 44-63.000.

Winborn, Gloria R.: *See—*
Ross, Curtis R.; Ross, Frank R.; Ross, Eugene G.; and Winborn, Gloria R., 4,116,297, Cl. 180-114.000.

Winchester, Roy E.; Marjoran, Michael J.; and O'Brien, Roger, to De La Rue Crosfield Limited. Stacking apparatus for flexible sheets. 4,116,430, Cl. 271-177.000.

Windisch, Lawrence; Nees, John; and Channing, Harry M., to General Battery Corporation. Cascading-water, lead-acid storage battery neutralization forming and charging method. 4,117,387, Cl. 320-2.000.

Windmoller & Holscher: *See—*
Langemeyer, Carl; and Tetenborg, Konrad, 4,115,978, Cl. 53-570.000.

Winfree, John W., Jr. Billiards cue holder. 4,116,342, Cl. 211-68.000.

Winner Food Products Limited: *See—*
Wong, Harry Hon Hai, 4,116,118, Cl. 99-423.000.

Wippler, Constant, to Essilor International (Compagnie Generale d'Optique). New photochromic materials and method for their preparation. 4,116,862, Cl. 252-300.000.

Wise, Charles Richard, Jr.: *See—*
Woolley, Harold Oakley, Jr.; and Wise, Charles Richard, Jr., 4,115,919, Cl. 29-740.000.

Wise, David S.: *See—*
Dragani, James J.; and Wise, David S., 4,116,560, Cl. 355-41.000.

Wiser, John A. Drawer latching device. 4,116,512, Cl. 312-330.00R.

Witberg, Martinus Johannes Joseph, to Sandvik Aktiebolag. Device for fastening cutting dies on a base plate. 4,116,100, Cl. 83-698.000.

Witco Chemical Corporation: *See—*
Longley, Kermit D.; and Karalis, Anastasios J., 4,117,237, Cl. 560-151.000.

Witenhafer, Donald Edward; and Popovich, David Thomas, to B. F. Goodrich Company, The. Inversion polymerization process for producing vinyl resins. 4,117,215, Cl. 526-62.000.

Witenhafer, Donald Edward; and Popovich, David Thomas, to B. F. Goodrich Company, The. Inversion polymerization process for producing vinyl resins. 4,117,216, Cl. 526-62.000.

Witting, Harald L., to General Electric Company. Fluorescent lamp with opposing inversere cone electrodes. 4,117,374, Cl. 315-99.000.

Wittkopp, Helmut: *See—*
Dombrowski, Theodor; and Wittkopp, Helmut, 4,116,094, Cl. 82-8.000.

Witzke, Horst: *See—*
Deb, Satyendra K.; Chen, Schoen-nan; Witzke, Horst; Russak, Michael A.; and Reichman, Joseph, 4,117,210, Cl. 429-111.000.

Wochnowski, Waldemar, to Hauni-Werke Korber & Co. KG. Method and apparatus for blending tobacco. 4,116,203, Cl. 131-138.000.

Wodzinski, Dale M.; and Clissa, Michael, to Chemetron Corporation. Short circuiting arc control station for multiple operator welding system. 4,117,304, Cl. 219-130.100.

Wolf, Franz-Josef. Pipe coupling. 4,116,474, Cl. 285-110.000.

Wolfe, John Edmond, to Burroughs Corporation. Double deflection electron beam generator for employment in the fabrication of semiconductor and other devices. 4,117,339, Cl. 250-492.00A.

Wolpert, Stanley, to Loomskill, Inc. Display frame. 4,115,937, Cl. 35-55.000.

Wolter, Bernd: *See—*
Gosger, Peter; Pott, Paul Gerhard; and Wolter, Bernd, 4,116,799, Cl. 204-224.00M.

Wolter, Heinz, to DOM-Sicherheitstechnik GmbH & Co. KG. Reversible flat key for cylinder locks. 4,116,025, Cl. 70-358.000.

Wong, Harry Hon Hai, to Winner Food Products Limited. Apparatus for preparing pastry. 4,116,118, Cl. 99-423.000.

Wooding Corporation: *See—*
Wooding, Patrick J., 4,117,253, Cl. 13-31.00R.

Wooding, Patrick J., to Wooding Corporation. High integrity atmosphere control of electroslag melting. 4,117,253, Cl. 13-31.00R.

Woodward, Walter Ray: *See—*
Mansfield, Donald Longworth; and Woodward, Walter Ray, 4,117,356, Cl. 310-49.00R.

Woolley, Harold Oakley, Jr.; and Wise, Charles Richard, Jr., to AMP Incorporated. Machine for press fit insertion of chip devices. 4,115,919, Cl. 29-740.000.

Worman, Charles H., Jr., to Air Products and Chemicals, Inc. Removal of vinyl chloride from PVC resins using microwvave radiation. 4,117,220, Cl. 528-503.000.

Worrel, Calvin J.: *See—*
Jackisch, Philip F.; and Worrel, Calvin J., 4,116,644, Cl. 44-73.000.

Worthington Pump, Inc.: *See—*
Budris, Allan R., 4,116,583, Cl. 415-199.100.

Wright, Bruce E.: *See—*
Pankratz, David V.; and Wright, Bruce E., 4,116,067, Cl. 73-421.50R.

Wronski, Christopher Roman: *See—*
Carlson, David Emil; and Wronski, Christopher Roman, 4,117,506, Cl. 357-30.000.

Wu, Chin Ching; and Krenzer, John, to Velsicol Chemical Company. 1-Thiazolyl-5-hydroxyimidazolidinones. 4,116,969, Cl. 260-306.80R.

Wulff, Jochen: *See—*
Thoma, Wilhelm; Wulff, Jochen; and Niederdellmann, Georg, 4,116,741, Cl. 156-239.000.

Wunsch, Erich, to Max Planck-Gesellschaft zur Forderung der Wissenschaften. Tridecapetide having gastrin effect. 4,117,117, Cl. 424-177.000.

Wurster, Rudolf F.: *See—*
Rohringer, Peter; Lohmann, Frank; and Wurster, Rudolf F., 4,116,702, Cl. 106-15.0FP.

Wycklendt, Daniel A., to Electric Power Research Institute, Inc. Current limiting fuse construction and method. 4,117,441, Cl. 337-295.000.

Xerox Corporation: *See—*
Adamek, John A.; and Ziehm, Richard T., 4,116,558, Cl. 355-24.000.
Lentz, James A.; and Safford, George J., 4,116,894, Cl. 521-94.000.
Prest, William M., Jr, 4,117,072, Cl. 264-288.000.
Stange, Klaus K.; Smith, Richard E.; Hamlin, Thomas J.; and Cassano, James R., 4,116,431, Cl. 271-236.000.
Stolka, Milan; Pearson, James M.; and Yanus, John F., 4,117,239, Cl. 560-221.000.
Turner, Sam R., 4,116,691, Cl. 96-1.50R.
VanBuskirk, Warren T.; and Tates, Donald W., 4,116,429, Cl. 271-173.000.
Young, Eugene F.; Ray, Curtis M.; and Rogers, Ryland F., 4,116,555, Cl. 355-15.000.

Xomox Corporation: *See—*
Smith, Russell G., 4,116,208, Cl. 137-1.000.

Yabe, Akira; and Honda, Koichi, to Agency of Industrial Science & Technology. Photographic method utilizing a photosensitive composition containing a 2-azidobiphenyl and a triplet sensitizer. 4,116,692, Cl. 96-27.00E.

Yabe, Yuichiro: *See—*
Minato, Sadamasa; Hattori, Atsushi; Baba, Yoshihiko; Yabe, Yuichiro; and Ueda, Seigo, 4,116,774, Cl. 195-99.000.

Yajima, Seishi; Hayashi, Josaburo; and Omori, Mamoru, to Research Institute for Iron, Steel and Other Metals of the Tohoku University, The. Silicon carbide sintered moldings and a method for producing the same. 4,117,057, Cl. 264-63.000.

Yakhontov, Leonid Nikolaevich: *See—*
Mashkovsky, Mikhail Davydovich; Yakhontov, Leonid Nikolaevich; Ado, Andrei Dmitrievich; Kaminka, Mikhail Emmanuilovich; Mikhlina, Eva Evseevna; Vorobieva, Valentina Yakovlevna; Yanina, Anna Dmitrievna; and Komarova, Nadezhda Andreevna, 4,117,139, Cl. 424-267.000.

Yamabe, Masaaki; Arai, Kiyotaka; Samejima, Shunichi; and Noshiro, Makoto, to Asahi Glass Company Ltd. Process for producing oxygen-containing cyclic fluoro compound. 4,116,977, Cl. 260-343.600.

Yamabe, Masaaki: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,116,888, Cl. 521-31.000.

Yamada, Bunkichi: *See—*
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Yamada, Hirotada; Okamura, Kosaku; Tobiki, Hisao; Tanno, Norihiko; Shimago, Kozo; Nakagome, Takenari; Komatsu, Toshiaki; Izawa, Akio; Noguchi, Hiroshi; Irie, Kenji; and Eda, Yasuko, to Sumitomo Chemical Company, Ltd. 7-(α-(4-Hydroxy-1,5-naphthyridine-3-carbonamido)-α-phenylacetamido) cephalosporin derivatives. 4,117,126, Cl. 424-246.000.

Yamaguchi, Takeyoshi. Wide-angle spyglass. 4,116,529, Cl. 350-69.000.

Yamaji, Tadao; Nakajima, Toshi; and Sagara, Takao, to Kubota, Ltd. Separation-preventive pipe joint. 4,116,478, Cl. 285-302.000.

Yamaji, Teizo: *See—*
Ichikawa, Yataro; Yamamoto, Mamoru; Tsuruta, Hideki; Kato, Kenichi; Yamaji, Teizo; Yoshisato, Eishin; and Hiramatsu, Toshiyuki, 4,116,955, Cl. 260-192.000.

Yamamoto, Kazuhide, to Daido-Maruta Finishing Co., Ltd. Process for modifying fibrous products containing cellulosic fibers. 4,116,625, Cl. 8-120.000.

Yamamoto, Mamoru: *See—*
Ichikawa, Yataro; Yamamoto, Mamoru; Tsuruta, Hideki; Kato, Kenichi; Yamaji, Teizo; Yoshisato, Eishin; and Hiramatsu, Toshiyuki, 4,116,955, Cl. 260-192.000.

Yamamoto, Yoshun: *See—*
Itoh, Kametaro; Takahashi, Wataru; Yamamoto, Yoshun; and Harajiri, Hachiro, 4,116,716, Cl. 134-134.000.

Yamazaki, Hironobu; Uchida, Yoshiaki; and Nakaya, Akira, to Tekken Construction Co. Ltd. Device for removing gravels and the like from discharged mud in hydraulic tunnel boring system. 4,116,487, Cl. 299-1.000.

Yanagihara, Hiromichi; and Habu, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with an auxiliary chamber. 4,116,191, Cl. 123-30.00D.

Yanagihara, Hiromichi; and Miura, Nobuhiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with an auxiliary combustion chamber. 4,116,234, Cl. 123-32.0SP.

Yang, Kang; and Scamehorn, John F., to Continental Oil Company. Treatment of alumina to reduce discoloration. 4,117,085, Cl. 423-264.000.

Yang, Kei-Hsiung, to General Electric Company. Continous photocathode for X-ray radiography having two-dimensional array of apertures. 4,117,365, Cl. 313-101.000.

Yanina, Anna Dmitrievna: *See—*
Mashkovsky, Mikhail Davydovich; Yakhontov, Leonid Nikolaevich; Ado, Andrei Dmitrievich; Kaminka, Mikhail Emmanuilovich; Mikhlina, Eva Evseevna; Vorobieva, Valentina Yakovlevna; Yanina, Anna Dmitrievna; and Komarova, Nadezhda Andreevna, 4,117,139, Cl. 424-267.000.

Yanus, John F.: *See—*
Stolka, Milan; Pearson, James M.; and Yanus, John F., 4,117,239, Cl. 560-221.000.

Yasuhara, Yukihiko, to Denki Onkyo Co., Ltd. Deflection yoke. 4,117,516, Cl. 358-248.000.

Yasumatsu, Jun: *See—*
Nomura, Kenichiro; Mori, Mamoru; Yasumatsu, Jun; Kubota, Tatsushi; Hachisuka, Sadao; and Tatematsu, Kazuhisa, 4,116,402, Cl. 242-107.100.

Yeda Research and Development Company Ltd.: *See—*
Avron, Mordhay; and Ben-Amotz, Ami, 4,115,949, Cl. 47-1.400.

Yeh, Kou-Min, to Bell Telephone Laboratories, Incorporated. Announcement generating arrangement utilizing digitally stored speech representations. 4,117,263, Cl. 179-1.0SM.

Yerkes, John W.; and Avery, James E., to Atlantic Richfield Company. Photovoltaic array including light diffuser. 4,116,718, Cl. 136-89.0PC.

Yokohama Rubber Co., Ltd., The: *See—*
Kageyama, Kunio; and Iwakura, Mituharu, 4,116,895, Cl. 260-5.000.

Yokoyama, Koji: *See—*
Ono, Yutaka; Fujii, Yoichi; Yokoyama, Koji; and Igarashi, Toshifumi, 4,117,399, Cl. 324-96.000.

Yonemoto, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Command speed signal generation system. 4,117,382, Cl. 318-163.000.

York, James F., to Borg-Warner Corporation. Stabilizer for polymers. 4,116,926, Cl. 260-45.70P.

Yoshida, Yukihiro: *See—*
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Yoshikuni, Yoshiaki: *See—*
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Yoshina, Shigetaka, deceased: *See—*
Kameyama, Tsutomu; Yoshina, Shigetaka, deceased; and Yoshina, Yoshina, heir at law, 4,116,972, Cl. 260-326.100.

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Yoshinaka, Akira: *See—*
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Yoshino, Masaru: *See—*
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Yoshisato, Eishin: *See—*
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Young, Alastair John, to Automotive Products Limited. Fluid pressure braking systems for vehicles. 4,116,309, Cl. 188-195.000.

Young, Eugene F.; Ray, Curtis M.; and Rogers, Ryland F., to Xerox Corporation. Background removal apparatus. 4,116,555, Cl. 355-15.000.

Young, Norman R.: *See—*
Stover, Don A.; Young, Norman R.; and Runnion, Glenmore J., 4,116,456, Cl. 280-33.99B.

Yu, Hwa Nien: *See—*
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Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, to Shionogi & Co., Ltd. 3-Isoxazolylcarbamate derivatives. 4,116,671, Cl. 71-88.000.

Zahner, John C., to Mobil Oil Corporation. Method and system for effecting catalytic cracking of high boiling hydrocarbons with fluid conversion catalysts. 4,116,814, Cl. 208-78.000.

(Zaidanhojin) Sagami Chemical Research Center: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; Mori, Kaoru; and Oyama, Kiyotaka, 4,116,768, Cl. 195-29.000.

Zakharova, Nina Vasilievna: *See—*
Abramov, Ivan Egorovich; Gershanov, Felix Borisovich; Dolidze, Vladimir Romanovich; Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Popov, Vasily Dmitrievich; Rutman, Grigory Iosifovich; and Shalimova, Zoya Stepanovna, 4,117,244, Cl. 568-799.000.

Zalipsky, Jerome J.: *See—*
Diamond, Julius; and Zalipsky, Jerome J., 4,117,165, Cl. 424-322.000.

Zamerowski, Thomas Joseph: *See—*
Olsen, Gregory Hammond; Zamerowski, Thomas Joseph; and Buiocchi, Charles Joseph, 4,116,733, Cl. 148-175.000.

Zanasi, Luciano, to Zanasi Nigris S.p.A. Dosing device. 4,116,247, Cl. 141-392.000.

Zanasi Nigris S.p.A.: *See—*
Zanasi, Luciano, 4,116,247, Cl. 141-392.000.

Zangger, Heinrich; and Zumbach, Heinz, to Zumbach Electronic AG. Apparatus for measuring the wall thickness of a moving tube wherein at least one measuring body inside the tube may be lifted off the tube by the motion of the tube. 4,117,402, Cl. 324-220.000.

Zaoui nee Serfozo, Ilona: *See—*
Huszar, Andor; Szekely, Geza; Rusznak, Istan; Trezl, Lajos; Bertalan, Gyorgy; Zaoui nee Serfozo, Ilona; and Molnar, Imre, 4,116,897, Cl. 260-17.40R.

Zappe, Hans Helmut, to International Business Machines Corporation. Josephson interferometer structure which suppresses resonances. 4,117,503, Cl. 357-5.000.

Zaromb, Solomon. Methods and apparatus for producing unsupported monocrystalline films of silicon and of other materials. 4,116,751, Cl. 156-600.000.

Zaugg, Hans; and Liebi, Harald. Solar energy collecting and concentrating apparatus. 4,116,221, Cl. 126-271.000.

Zecher, Robert F., to Advanced Plastics Machinery Corporation. Method and apparatus for deflashing. 4,115,960, Cl. 51-422.000.

Zega, Bogdan, to Battelle Memorial Institute. Method and apparatus for forming a deposit by means of ion plating using a magnetron cathode target as source of coating material. 4,116,791, Cl. 204-192.00N.

Zelenov, Jury Ivanovich: *See—*
Marushkin, Ruf Fedorovich; Zelenov, Jury Ivanovich; Kozlov, Nikolai Alexandrovich; Filin, Nikolai Prokopievich; Gurevich, Iosif Isaakovich; Usanov, Vladimir Vasilievich; Krasnikova, Oxana Kirillovna; Lyalin, Vladimir Nikolaevich; Bykasov, Viktor Ivanovich; Kirpichnikov, Felix Petrovich; Belyakov, Viktor Petrovich; Pronko, Vladimir Grigorievich; Epifanova, Vera Ivanovna; Nikitkin, Vasily Dmitrievich; Kandaurov, Zakhar Ivanovich; Mischenko, Tamara Sergeevna; Lavrentiev, Alexandr Alexeevich; Kondratieva, Galina Alexeevna; Orekhov, Alexandr Mikhailovich; Onosovsky, Evgeny Valentinovich; Kalinin, Elvin Konstantinovich; Dreitser, Genrikh Alexandrovich; Kirikov, Dmitry Arkadievich; and Chernyshev, Boris Alexandrovich, 4,116,270, Cl. 165-162.000.

Zeller Corporation, The: *See—*
Weible, Warren W., 4,116,018, Cl. 64-12.000.

Zeller, Gregor, to Petri AG, Firma. Energy absorbing structure for the steering column of a motor vehicle. 4,116,087, Cl. 74-552.000.

Zemlyanskaya, Evgenia Ivanovna: *See—*
Nasyrov, Gakif Zakirovich; Zemlyanskaya, Evgenia Ivanovna; and Ravdonikas, Izabella Vladislavovna, 4,117,077, Cl. 423-127.000.

Zenker, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Change gear transmission in group arrangement, especially for motor vehicles for use in agriculture and in the construction field. 4,116,090, Cl. 74-745.000.

Zhuravlev, Nikolai Danilovich: *See—*
Korshak, Vasily Vladimirovich; Vinogradova, Svetlana Vasilievna; Storozhuk, Ivan Pavlovich; Valetsky, Petr Maximilianovich; Sokolov, Lev Borisovich; Mikitaev, Abdulakh Kazbulatovich; Askadsky, Andrei Alexandrovich; Kochergin, Jury Sergeevich; Slonimsky, Grigory Lvovich; Shirokova, Larisa Borisovna; Nebosenko, Ljudmila Fedorovna; and Zhuravlev, Nikolai Danilovich, 4,116,940, Cl. 528-173.000.

Ziehm, Richard T.: *See—*
Adamek, John A.; and Ziehm, Richard T., 4,116,558, Cl. 355-24.000.

Ziemba, Theodore J. Fluid pallet and a method of stacking and storing goods. 4,116,344, Cl. 214-10.50D.

Zimmer, Max: *See—*
Mathis, Paul; and Zimmer, Max, 4,117,547, Cl. 366-17.000.

Zimmerman, Gary Lee; Clark, Richard Paul; and Rehm, John A., to AMP Incorporated. Closed entry connector housing. 4,116,520, Cl. 339-59.00R.

Zin-Plas Corporation: *See—*
Nelson, Merritt J., 4,116,210, Cl. 137-119.000.

Zinezi, Waldemar, to Inox Industria E Comercio de Aco S/A. Pulp refining disk and method of making same. 4,116,392, Cl. 241-296.000.

Zinnes, Harold; Lindo, Neil A.; and Shavel, John, Jr., to Warner-Lambert Company. 2-[(N-2-pyridylcarbamoyl)methyl]saccharin. 4,116,964, Cl. 260-294.80C.

Zitelli, William E.; and Szabo, Andras I., to Westinghouse Electric Corp. Single-point analog subsystem interfaced with a computer. 4,117,477, Cl. 340-347.0NT.

Zito, Ralph, Jr., to General Engineering Labs. Sulfite anolyte and persulfate catholyte fuel cell. 4,117,204, Cl. 429-19.000.

Zneimer, Joel E.: *See—*
Whittle, William C.; and Zneimer, Joel E., 4,117,522, Cl. 360-109.000.

Zojirushi Vacuum Bottle Co., Ltd.: *See—*
Takenakashima, Takefumi; and Takatuki, Toyohiko, 4,116,366, Cl. 222-131.000.

Zondek, Klaus. Process for the freeze concentration of solutions. 4,116,652, Cl. 62-534.000.

Zondler, Helmut: *See—*
Lehmann, Hans; and Zondler, Helmut, 4,117,038, Cl. 260-837.00R.

Zoor, Reinhold, to Heinrich Wunder KG. Ski binding. 4,116,463, Cl. 280-615.000.

Zortea, Michel, to Saint-Gobain Industries. Production of flat glass. 4,116,660, Cl. 65-99.00A.

Zuckerman, Herman A.: *See—*
Belmuth, Harold M.; Leto, Alfred R.; London, Lawrence; and Zuckerman, Herman A., 4,115,938, Cl. 40-152.000.

Zumbach Electronic AG.: *See—*
Zangger, Heinrich; and Zumbach, Heinz, 4,117,402, Cl. 324-220.000.

Zumbach, Heinz: *See—*
Zangger, Heinrich; and Zumbach, Heinz, 4,117,402, Cl. 324-220.000.

Zunkel, Richard L., to Eaton Corporation. Zero force hold open door closer. 4,115,897, Cl. 16-49.000.

Zurawski, Ronald Anthony, to Motorola, Inc. Handset locking and release mechanism. 4,117,276, Cl. 179-161.000.

Zwyro A.G.: *See—*
Zwyssig, Robert; and Tesch, Bernhard, 4,115,904, Cl. 24-19.000.

Zwyssig, Robert; and Tesch, Bernhard, to Zwyro A.G. Lock for bracelets, belts and the like. 4,115,904, Cl. 24-19.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF SEPTEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, Thomas E.; and Walden, John P., to General Electric Company. Inverter having forced turn-off. Re. 29,788, Cl. 363-97.000.

Apodaca, Ruben T.: *See—*
Chadwick, Donald H.; and Apodaca, Ruben T., Re. 29,784, Cl. 174-68.500.

Appleton Electric Company: *See—*
Rutkowski, John L., Re. 29,780, Cl. 339-91.00R.

Bargen, David W., to Orrox Corporation. Color phase matching system for magnetic video tape recordings. Re. 29,787, Cl. 358-4.000.

Bio-Med Devices, Inc.: *See—*
Stewart, Jeffrey L., Re. 29,778, Cl. 128-145.800.

Chadwick, Donald H.; and Apodaca, Ruben T., to International Electronics Research Corp. Thermal dissipating metal core printed circuit board. Re. 29,784, Cl. 174-68.500.

Crowley, Francis X. Concrete tank of precast concrete panels with pretensioned beam means. Re. 29,777, Cl. 52-224.000.

General Electric Company: *See—*
Anderson, Thomas E.; and Walden, John P., Re. 29,788, Cl. 363-97.000.

International Electronics Research Corp.: *See—*
Chadwick, Donald H.; and Apodaca, Ruben T., Re. 29,784, Cl. 174-68.500.

IU Technology Corporation: *See—*
Smith, Charles L.; and Webster, William C., Re. 29,783, Cl. 210-59.000.

Leschek, Walter C.; and McShane, James L., to Westinghouse Electric Corp. Replaceable element ultrasonic flowmeter transducer. Re. 29,785, Cl. 310-327.000.

McShane, James L.: *See—*
Leschek, Walter C.; and McShane, James L., Re. 29,785, Cl. 310-327.000.

McWhirter, John R., to Union Carbide Corporation. High oxygen utilization in BOD-containing water treatment. Re. 29,781, Cl. 210-7.000.

McWhirter, John R., to Union Carbide Corporation. Cyclic oxygenation of BOD-containing water. Re. 29,782, Cl. 210-7.000.

Morris, Glenn H. Child-proof and pharmacist-assisting reversible closure for containers. Re. 29,779, Cl. 215-206.000.

Orrox Corporation: *See—*
Bargen, David W., Re. 29,787, Cl. 358-4.000.

Rutkowski, John L., to Appleton Electric Company. Multiple socket assembly for electrical components. Re. 29,780, Cl. 339-91.00R.

Sarkes Tarzian, Inc.: *See—*
Weigel, Morton L., Re. 29,786, Cl. 334-86.000.

Smith, Charles L.; and Webster, William C., to IU Technology Corporation. Process for treating aqueous chemical waste sludges and compositions produced thereby. Re. 29,783, Cl. 210-59.000.

Stewart, Jeffrey L., to Bio-Med Devices, Inc. Pediatric respirator. Re. 29,778, Cl. 128-145.800.

Union Carbide Corporation: *See—*
McWhirter, John R., Re. 29,781, Cl. 210-7.000.
McWhirter, John R., Re. 29,782, Cl. 210-7.000.

Walden, John P.: *See—*
Anderson, Thomas E.; and Walden, John P., Re. 29,788, Cl. 363-97.000.

Webster, William C.: *See—*
Smith, Charles L.; and Webster, William C., Re. 29,783, Cl. 210-59.000.

Weigel, Morton L., to Sarkes Tarzian, Inc. Combined 82-position UHF and VHF television tuner with memory fine tuning. Re. 29,786, Cl. 334-86.000.

Westinghouse Electric Corp.: *See—*
Leschek, Walter C.; and McShane, James L., Re. 29,785, Cl. 310-327.000.

LIST OF PLANT PATENTEES

Fischer, Arnold W., to Geo. J. Ball, Inc. Violet plant named Vera. 4,308, 9-26-78, Cl. 69.000.

Geo. J. Ball, Inc.: *See—*
Fischer, Arnold W., 4,308, Cl. 69.000.

Hope, Claude, to Mikkelsens, Inc. Kalanchoe plant. 4,306, 9-26-78, Cl. 68.000.

Hope, Claude, to Mikkelsens, Inc. Kalanchoe plant. 4,307, 9-26-78, Cl. 68.000.

McGredy, Samuel D. Rose plant. 4,309, 9-26-78, Cl. 16.000.

Mikkelsens, Inc.: *See—*
Hope, Claude, 4,306, Cl. 68.000.
Hope, Claude, 4,307, Cl. 68.000.

Ott, Cleveland. Poinsettia. 4,310, 9-26-78, Cl. 86.000.

LIST OF DESIGN PATENTEES

Adamski, Henry Stanislaus, to Eastman Kodak Company. Sample cup tray for chemical analysis of biological fluids. 249,706, 9-26-78, Cl. D24-32.000.

Adamski, Henry Stanislaus: *See—*
Smith, Michael Richmond; Ferris, James Elias; and Adamski, Henry Stanislaus, 249,708, Cl. D24-56.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Kasahara, Takahiko; Shichi, Sigeharu; Kato, Masayuki; and Suito, Senji, 249,693, Cl. D15-68.000.

American Home Products Corp.: *See—*
Dali, Carmelo P., 249,641, Cl. D9-224.000.

American Motors Corporation: *See—*
Mashigan, Charles, 249,675, Cl. D12-156.000.

American Safety Razor Company: *See—*
Iten, Clemens A., 249,637, Cl. D9-187.000.

American Wheel & Engineering Co., Inc.: *See—*
Rotheiser, Jordan I., 249,678, Cl. D12-204.000.
Rotheiser, Jordan I., 249,679, Cl. D12-204.000.

Ames, John B. Dispensing top for granulated material. 249,642, 9-26-78, Cl. D9-257.000.

AMF Incorporated: *See—*
Thomas, George A., 249,690, Cl. D15-14.000.

Arndt, James J.: *See—*
Arndt, Otto G.; and Arndt, James J., 249,718, Cl. D34-5.0CB.

Arndt, Otto G.; and Arndt, James J. Projector for toy golf clug balls or the like. 249,718, 9-26-78, Cl. D34-5.0CB.

Arvey Corporation: *See—*
Gordon, William Donald, Sr., 249,738, Cl. D34-15.0LL.

Azlon Products Ltd.: *See—*
Elliott, Barry Jack, 249,635, Cl. D9-71.000.

Ballas, George C., to Weed Eater, Inc. Rotary lawn edger, trimmer or similar article. 249,630, 9-26-78, Cl. D8-8.000.

Balmforth, Ernest Lynn: *See—*
Cosman, Michael A., 249,722, Cl. D34-5.0GP.
Cosman, Michael A., 249,723, Cl. D34-5.0GP.
Cosman, Michael A., 249,724, Cl. D34-5.0GP.
Cosman, Michael A., 249,725, Cl. D34-5.0GP.

Balzano, Alfiero F. Plaque. 249,659, 9-26-78, Cl. D11-132.000.

Baugh, Benjamin Charles: *See—*
Zimmerman, Alan Ross; and Baugh, Benjamin Charles, 249,703, Cl. D23-142.000.

Beatrice Foods Co.: *See—*
Gullaksen, Gregory G.; and Lordahl, Var E., 249,655, Cl. D10-64.000.

Bergman, Andrew I., to Quaker Oats Company, The. Wheeled toy and figure therefor. 249,736, 9-26-78, Cl. D34-15.0AN.

Berkman, Joseph L. Carrying case for tape cartridges and cassettes. 249,743, 9-26-78, Cl. D87-1.00D.

Bothun, Eugene L., to Clarke-Gravely Corporation. Push sweeper. 249,692, 9-26-78, Cl. D15-50.000.

Bowman, Arleen, to Bowman Trading Co., Inc. Make-up brush. 249,600, 9-26-78, Cl. D4-25.000.

Bowman Trading Co., Inc.: *See—*
Bowman, Arleen, 249,600, Cl. D4-25.000.

Bozicnik, Ronald. Combined storage and tying container for newspapers. 249,617, 9-26-78, Cl. D6-184.000.

Braun A G: *See—*
Rams, Dieter, 249,684, Cl. D14-33.000.

Braun AG: *See—*
Rams, Dieter, 249,683, Cl. D14-33.000.

Burke, Frederick A.; and Long, Douglas A., to Clairol Inc. Moisturizing massager. 249,707, 9-26-78, Cl. D24-41.000.

Burridge, Robert E., to Contourpedic Corporation. Seat. 249,601, 9-26-78, Cl. D6-5.000.

Burroughs Corporation: *See—*
Clayton, Richard G.; and Schade, Robert C., 249,686, Cl. D14-44.000.

Burton, Theodore R. Convenience food service center. 249,610, 9-26-78, Cl. D6-169.000.

Burton, Theodore R. Convenience food service center. 249,611, 9-26-78, Cl. D6-169.000.

Burton, Theodore R. Convenience food service center. 249,612, 9-26-78, Cl. D6-169.000.

Burton, Theodore R. Convenience food service center. 249,613, 9-26-78, Cl. D6-169.000.

Burton, Theodore R. Convenience food service center. 249,614, 9-26-78, Cl. D6-169.000.

Chadbourne, Gilbert R., to Keyes Fibre Company. Packing tray for fluorescent tubes. 249,638, 9-26-78, Cl. D9-189.000.

Clairol Inc.: *See—*
Burke, Frederick A.; and Long, Douglas A., 249,707, Cl. D24-41.000.

Clarke-Gravely Corporation: *See—*
Bothun, Eugene L., 249,692, Cl. D15-50.000.

Clayton, Richard G.; and Schade, Robert C., to Burroughs Corporation. Modular document processing encoder. 249,686, 9-26-78, Cl. D14-44.000.

Cline, Ted L. Truck tailgate. 249,677, 9-26-78, Cl. D12-196.000.

Clowers, Earl R.; Davis, John C.; and Pearman, Fred E., to Singer Company, The. Guiding and locking device for electrical cords. 249,691, 9-26-78, Cl. D15-62.000.

Coleman Company, Inc., The: *See—*
Zimmerman, Alan Ross; and Baugh, Benjamin Charles, 249,703, Cl. D23-142.000.

Communications Power, Inc.: *See—*
Wisherd, David S.; Mieth, Stephen L.; and Mitchell, Larry H., 249,689, Cl. D14-94.000.

Connolly, Joseph B. Stand for potted plants. 249,616, 9-26-78, Cl. D6-182.000.

Contourpedic Corporation: *See—*
Burridge, Robert E., 249,601, Cl. D6-5.000.

Cortez, Robert S. Automobile armrest. 249,673, 9-26-78, Cl. D12-155.000.

Cosman, Michael A., to Balmforth, Ernest Lynn. Playing piece for game. 249,722, 9-26-78, Cl. D34-5.0GP.

Cosman, Michael A., to Balmforth, Ernest Lynn. Playing piece for game. 249,723, 9-26-78, Cl. D34-5.0GP.

Cosman, Michael A., to Balmforth, Ernest Lynn. Playing piece for game. 249,724, 9-26-78, Cl. D34-5.0GP.

Cosman, Michael A., to Balmforth, Ernest Lynn. Playing piece for game. 249,725, 9-26-78, Cl. D34-5.0GP.

Cosman, Michael A., to Ernest Lynn Balmforth. Playing piece for game. 249,726, 9-26-78, Cl. D34-5.0GP.

Dali, Carmelo P., to American Home Products Corp. Dispensing container or the like. 249,641, 9-26-78, Cl. D9-224.000.

Data Packaging Corporation: *See—*
Lyman, George, 249,744, Cl. D87-1.00R.

Davis, John C.: *See—*
Clowers, Earl R.; Davis, John C.; and Pearman, Fred E., 249,691, Cl. D15-62.000.

DiBartolo, Vincent, to Mele Manufacturing Co. Display stand for pierced earrings. 249,603, 9-26-78, Cl. D6-85.000.

Dillon, Nicholas Thomas Edward. Welding shield. 249,597, 9-26-78, Cl. D2-234.000.

Dolezal, Joseph R. Combination coaster and ashtray. 249,712, 9-26-78, Cl. D27-21.000.

Dominguez, Olga: *See—*
Hester, Gene A.; and Dominguez, Olga, 249,697, Cl. D19-59.000.

Droegemuller, Walter H., to Toro Company, The. Folding control handle for lawn and garden implement. 249,629, 9-26-78, Cl. D8-1.000.

Dugan, Jay Michael. Wood stove. 249,702, 9-26-78, Cl. D23-93.000.

Eastern Company, The: *See—*
Pastva, John V., Jr., 249,634, Cl. D8-346.000.

Eastman Kodak Company: *See—*
Adamski, Henry Stanislaus, 249,706, Cl. D24-32.000.
Smith, Michael Richmond; Ferris, James Elias; and Adamski, Henry Stanislaus, 249,708, Cl. D24-56.000.

Edwards, Frederick Harold, to Vinyl Clad Proprietary Limited. Combined packaging container and lid therefor. 249,640, 9-26-78, Cl. D9-220.000.

Elliott, Barry Jack, to Azlon Products Ltd. Bottle. 249,635, 9-26-78, Cl. D9-71.000.

Emerson Electric Co.: *See—*
McElroy, Jerry W.; and Kerper, Michael A., 249,652, Cl. D10-51.000.
McElroy, Jerry W.; and Kerper, Michael A., 249,653, Cl. D10-51.000.

Ernest Lynn Balmforth: *See—*
Cosman, Michael A., 249,726, Cl. D34-5.0GP.

Ferris, James Elias: *See—*
Smith, Michael Richmond; Ferris, James Elias; and Adamski, Henry Stanislaus, 249,708, Cl. D24-56.000.

Fields, Gary Conway, to Leemah Electronics, Inc. Telephone carrier equipment multitester. 249,658, 9-26-78, Cl. D10-78.000.

Flesher, Robert W. Water pipe. 249,711, 9-26-78, Cl. D27-03.000.

Forward, Inc.: *See—*
Silbernagel, Frederick J., 249,665, Cl. D12-95.000.

Fried, Donald P. Lawn pool target frame. 249,728, 9-26-78, Cl. D34-5.0NN.

Frisbey, De Vern C. Knock down display stand. 249,615, 9-26-78, Cl. D6-180.000.

Fujimoto, Munenori: *See—*
Kushida, Keizo; Ohta, Kikuo; Fujimoto, Munenori; and Igo, Toshio, 249,682, Cl. 14-12.000.

Gebruder Pletscher: *See—*
Pletscher, Oskar, 249,676, Cl. D12-158.000.

Geitenbeek, Theodoor Willem. Clock body. 249,648, 9-26-78, Cl. D10-1.000.

General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi, 249,687, Cl. D14-68.000.

Gilbertson, Glen A. Farrowing crate. 249,713, 9-26-78, Cl. D30-1.000.

Glasenapp, Jorg: *See—*
Glasenapp, Werner; and Glasenapp, Jorg, 249,681, Cl. D13-2.000.

Glasenapp, Werner; and Glasenapp, Jorg, to Union Sils, van de Loo & Co. Bicycle light generator. 249,681, 9-26-78, Cl. D13-2.000.

Goldman, Jerrold J.; and Petre, Robert. Jewelry organizer or similar article. 249,607, 9-26-78, Cl. D6-130.000.

Goodall, Donald Terry. Pouring spout. 249,647, 9-26-78, Cl. D9-290.000.

Goodwin, David C. Combined coin chest and coin. 249,661, 9-26-78, Cl. D11-157.000.

Gordon, William Donald, Sr., to Arvey Corporation. Toy store. 249,738, 9-26-78, Cl. D34-15.0LL.

Gremlin Industries, Inc.: *See—*
Olson, Verl O., 249,729, Cl. D34-5.00J.

Griffiths, Leighton E. Golf tee level. 249,657, 9-26-78, Cl. D10-69.000.

Grundfor, Scott I.: *See—*
Tamura, Jeffrey K.; and Grundfor, Scott I., 249,674, Cl. D12-156.000.

Gullaksen, Gregory G.; and Lordahl, Var E., to Beatrice Foods Co. Faucet connector size guide. 249,655, 9-26-78, Cl. D10-64.000.

Hadjis, George C. Game board. 249,719, 9-26-78, Cl. D34-5.0SS.

Hall, Lloyd Vernon. Mounting bracket for fishing outrigger pole. 249,664, 9-26-78, Cl. D12-70.000.

Heaton, G. Norman: *See—*
Hogg, John W. L.; and Heaton, G. Norman, 249,639, Cl. D9-193.000.

Hellmann, Reiner, to Wilhelm Boos, Jr. (GmbH & Co.). Scissors. 249,631, 9-26-78, Cl. D8-57.000.

Henkels, Walter. Ball point pen. 249,696, 9-26-78, Cl. D19-45.000.

Hester, Gene A.; and Dominguez, Olga. Combined educational game board and counting board for teaching fundamentals of arithmetic. 249,697, 9-26-78, Cl. D19-59.000.

Hirosawa, Nobuyoshi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Digital clock. 249,651, 9-26-78, Cl. D10-15.000.

Hogg, John W. L.; and Heaton, G. Norman, to Shepherd Products U.S. Inc. Display package. 249,639, 9-26-78, Cl. D9-193.000.

Hughes, Robert E., to Xerox Corporation. Paper take-up reel for web fed facsimile transceiver or the like. 249,688, 9-26-78, Cl. D14-94.000.

Igo, Toshio: *See—*
Kushida, Keizo; Ohta, Kikuo; Fujimoto, Munenori; and Igo, Toshio, 249,682, Cl. 14-12.000.

Imazeki, Kazuyoshi, to General Research of Electronics, Inc. Radio transceiver and the like. 249,687, 9-26-78, Cl. D14-68.000.

Iten, Clemens A., to American Safety Razor Company. Dispenser for razor blade cartridges. 249,637, 9-26-78, Cl. D9-187.000.

J.W.T. Industries: *See—*
Terdina, John W.; and Kec, Clarence A., 249,606, Cl. D6-125.000.

John Thomas Batts, Inc.: *See—*
Wolff, Douglas F., 249,619, Cl. D6-247.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Hirosawa, Nobuyoshi, 249,651, Cl. D10-15.000.

Kasahara, Takahiko; Shichi, Sigeharu; Kato, Masayuki; and Suito, Senji, to Aisin Seiki Kabushiki Kaisha. Sewing machine. 249,693, 9-26-78, Cl. D15-68.000.

Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 249,669, Cl. D12-130.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Infant walking trainer. 249,669, 9-26-78, Cl. D12-130.000.

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425.4 4,116,098
571 4,116,099
698 4,116,100
747 4,116,101

CLASS 84

1.22 4,116,102
1.24 4,116,103
267 4,116,107
330 4,116,108

CLASS 85

3 S 4,116,104
66 4,116,105
71 4,116,106

CLASS 86

23 4,116,109

CLASS 90

12 R 4,116,110
15 R 4,116,111

CLASS 91

380 4,116,112

CLASS 92

24 4,116,113
130 A 4,116,114
168 4,116,115

CLASS 93

35 R 4,116,116

CLASS 96

1.5 R 4,116,691
27 E 4,116,692
35.1 4,116,693
41 4,116,694
86 P 4,116,695
87 R 4,116,696
95 4,116,697
111 4,116,700

CLASS 99

361 4,116,117
423 4,116,118
450.6 4,116,119
483 4,116,120

CLASS 100

39 4,116,121
48 4,116,122
233 4,116,123

CLASS 101

170 4,116,124
212 4,116,125
217 4,116,126
232 4,116,127
425 4,116,128
426 4,116,129

CLASS 102

20 4,116,130
103 4,116,131
200 4,116,132
215 4,116,133

CLASS 104

111 4,116,134

CLASS 105

378 4,116,135

CLASS 106

2 4,116,698
3 4,116,699
14.14 4,116,701
15 FP 4,116,702
54 4,116,704
75 4,116,703
90 4,116,705
4,116,706
104 4,116,707
113 4,116,730
281 R 4,116,708
284 4,116,709
290 4,116,710
309 4,116,711

CLASS 110

251 4,116,136

CLASS 111

2 4,116,137
7 4,116,138
4,116,139
52 4,116,140

CLASS 112

121.11 4,116,143
121.26 4,116,142
158 E 4,116,144
212 4,116,145
217.1 4,116,147
217.2 4,116,146
262 4,116,148

CLASS 113

116 D 4,116,149

CLASS 114

74 A 4,116,150
102 4,116,151
106 4,116,152
244 4,116,153
264 4,116,009

CLASS 116

35 A 4,116,154
65 4,116,155
70 4,116,156
125 4,116,157
142 R 4,116,158

CLASS 118

34 4,116,159
48 4,116,160
49.1 4,116,161
104 4,116,162
303 4,116,163
648 4,116,141

CLASS 119

3 4,116,164
14.47 4,116,165
99 4,116,166

CLASS 122

33 4,116,167
406 S 4,116,168

CLASS 123

30 D 4,116,191
32 EC 4,116,169
32 EE 4,116,170
32 SP 4,116,234
41.57 4,116,171
52 M 4,116,172
117 R 4,116,173
4,116,174
4,116,175
119 A 4,116,176
4,116,178
4,116,179
4,116,180
4,116,181
4,116,182
119 R 4,116,177
122 F 4,116,183
136 4,116,184
139 AM 4,116,186
139 AW 4,116,185
141 4,116,187
148 CC 4,116,188
190 BB 4,116,189
202 4,116,190

CLASS 124

51 R 4,116,192
72 4,116,193
87 4,116,194

CLASS 126

271 4,116,219
4,116,220
4,116,221
4,116,222
4,116,223
4,116,224
4,116,225
299 D 4,116,226

CLASS 127

46 R 4,116,712

CLASS 128

2 F 4,116,227

2 R 4,116,228
2 V 4,116,229
2.05 M 4,116,230
2.1 Z 4,116,231
20 4,116,232
32 4,116,233
69 4,116,235
80 C 4,116,236
142.7 4,116,237
145.8 Re.29,778
172.1 4,116,238
184 4,116,239
218 M 4,116,240
260 4,116,241
266 4,116,195
272.3 4,116,196
286 4,116,197
303.1 4,116,199
303.15 4,116,198
305 4,116,200
351 4,116,201
399 4,116,202

CLASS 131

136 [illegible]
173 [illegible]

CLASS 132

85 [illegible]

CLASS 134

3 4,116,713
4,116,714
6 4,116,715
134 4,116,716

CLASS 135

4 R 4,116,206

CLASS 136

89 H 4,116,207
89 PC 4,116,718
89 SJ 4,116,717

CLASS 137

1 4,116,208
38 4,116,209
119 4,116,210
205 4,116,211
220 4,116,212
360 4,116,213
522 4,116,214
596.18 4,116,215
624.13 4,116,216
625.12 4,116,217
627.5 4,116,218

CLASS 139

59 4,116,242
435 4,116,243

CLASS 140

112 4,116,244

CLASS 141

98 4,116,245
362 4,116,246
392 4,116,247

CLASS 144

2 R 4,116,248
3 D 4,116,249
34 R 4,116,250
193 R 4,116,251
309 D 4,116,252

CLASS 148

1.5 4,116,719
4,116,720
4,116,721
4,116,722
3 4,116,723
4,116,724
20.3 4,116,725
31.55 4,116,727
31.57 4,116,726
108 4,116,728
111 4,116,729
161 4,116,731
175 4,116,732
4,116,733

CLASS 149

19.2 4,116,734

CLASS 150

33 4,116,253

CLASS 152

233 4,116,254
352 R 4,116,255

CLASS 156

79 4,116,735
4,116,736
85 4,116,737
167 4,116,738
169 4,116,739
205 4,116,740
239 4,116,741
289 4,116,742
333 4,116,743
352 4,116,744
362 4,116,745
384 4,116,746
4,116,747
526 4,116,748
555 4,116,749
563 4,116,750
600 4,116,751
624 4,116,752
629 4,116,753
656 4,116,754
659 4,116,755

CLASS 157

13 4,116,256

CLASS 159

45 4,116,756
47 WL 4,116,757

CLASS 160

168 R 4,116,257
213 4,116,258

CLASS 162

28 4,116,758
32 4,116,759
56 4,116,760
152 4,116,761
199 4,116,762
301 4,116,763
380 4,116,259

CLASS 164

295 4,116,260
448 4,116,261
4,116,262

CLASS 165

27 4,116,263
47 4,116,264
95 4,116,265
105 4,116,266
110 4,116,267
111 4,116,268
126 4,116,269
162 4,116,270
166 4,116,271

CLASS 166

248 4,116,273
250 4,116,274
303 4,116,275
314 4,116,276
315 4,116,277
340 4,116,272

CLASS 168

4 4,116,278

CLASS 171

58 4,116,279

CLASS 172

266 4,116,280
267 4,116,281
311 4,116,282
443 4,116,283

CLASS 173

140 4,116,284

CLASS 174

15 BH 4,117,254
31 R 4,117,255
40 R 4,117,256
52 R 4,117,257
53 4,117,258
68.5 Re.29,784
92 4,117,259
106 R 4,117,260
164 4,117,261

CLASS 175

7 4,116,285
19 4,116,286
65 4,116,287
66 4,116,288
329 4,116,289

CLASS 176

38 4,116,764
4,116,765
4,116,766
87 4,116,767

CLASS 177

149 4,116,290

CLASS 179

1 PC 4,117,264
1 SM 4,117,263
1 SP 4,117,265
1 SW 4,117,262
6 R 4,117,266
15 AT 4,117,268
15 BS 4,117,267
15 BW 4,117,269
18 BE 4,117,270
82 4,117,271
84 R 4,117,272
98 4,117,273
99 4,117,274
111 E 4,117,275
161 4,117,276
170.6 4,117,277
175.2 C 4,117,278

CLASS 180

6.2 4,116,291
6.48 4,116,292
43 B 4,116,293
44 F 4,116,294
82 C 4,116,295
101 4,116,296
114 4,116,297
139 4,116,298

CLASS 181

113 4,116,299
114 4,116,300
119 4,116,301
192 4,116,302
252 4,116,303

CLASS 182

2 4,116,304
3 4,116,305

CLASS 187

29 R 4,116,306

CLASS 188

106 P 4,116,307
171 4,116,308
195 4,116,309

CLASS 190

42 4,116,310
49 4,116,311

CLASS 191

64 4,116,312

CLASS 192

3.63 4,116,313
46 4,116,314
48.8 4,116,322
48.92 4,116,315
58 A 4,116,316
58 B 4,116,317
4,116,318
64 4,116,319
89 A 4,116,320
103 F 4,116,321

CLASS 195

29 4,116,768
51 R 4,116,769
63 4,116,770
4,116,771
64 4,116,772
99 4,116,773
4,116,774
103.5 M 4,116,775
103.7 4,116,776
127 4,116,777
139 4,116,778

CLASS 198

453 4,116,323
472 4,116,324
484 4,116,325
498 4,116,326
560 4,116,327
648 4,116,328

CLASS 200

5 A 4,117,279
6 B 4,117,280
33 R 4,117,282
52 R 4,117,283
61.25 4,117,281
67 G 4,117,284
76 4,117,285
4,117,286
82 R 4,117,287
144 R 4,117,288
148 B 4,117,289
243 4,117,290
268 4,117,291
340 4,117,292

CLASS 201

34 4,116,779

CLASS 204

2.1 4,116,780
98 4,116,781
147 4,116,782
150 4,116,783
159.13 4,116,786
159.14 4,116,785
159.16 4,116,784
159.23 4,116,787
4,116,788
180 R 4,116,789
188 4,116,790
192 E 4,116,792
192 N 4,116,791
192 R 4,116,793
4,116,794
195 F 4,116,798
195 M 4,116,796
195 S 4,116,795
4,116,797
224 M 4,116,799
247 4,116,801
252 4,116,800
4,116,802
272 4,116,803
284 4,116,804
290 F 4,116,805
4,116,807
298 4,116,806

CLASS 206

1.5 4,116,329
44 R 4,116,330
150 4,116,331
209 4,116,332
380 4,116,333
453 4,116,334
492 4,116,335
524.8 4,116,336
591 4,116,337
610 4,116,338

CLASS 208

10 4,116,808
11 LE 4,116,809
11 R 4,116,810
44 4,116,811
46 4,116,813
48 AA 4,116,812
78 4,116,814
87 4,116,815
209 4,116,816
210 4,116,817
4,116,818
216 4,116,819
251 R 4,116,820
361 4,116,821

CLASS 209

11 4,116,822
44 4,116,823
262 4,116,824
570 4,116,435
699 4,116,339

CLASS 210

7 Re.29,781
Re.29,782
27 4,116,825
4,116,826
4,116,827
4,116,828
42 S 4,116,829
59 Re.29,783
63 R 4,116,830
68 4,116,831
83 4,116,832
4,116,833
96 R 4,116,834
100 4,116,835
198 C 4,116,836
4,116,837
209 4,116,838
222 4,116,839
279 4,116,840
321 B 4,116,841
330 4,116,842
391 4,116,843
446 4,116,844
4,116,845

CLASS 211

13 4,116,340
17 4,116,341
68 4,116,342
151 4,116,343

CLASS 214

10.5 D 4,116,344
37 4,116,345
145 A 4,116,346
4,116,347
309 4,116,348
654 4,116,349

CLASS 215

31 4,116,350
206 Re.29,779
216 4,116,351
270 4,116,352
274 4,116,353

CLASS 219

10.41 4,117,293
10.55 C 4,117,294
10.61 R 4,117,295
91.21 4,117,296
98 4,117,297
4,117,298
117.1 4,117,299
121 EM 4,117,301
121 LM 4,117,300
4,117,302
130.1 4,117,303
4,117,304
213 4,117,305
243 4,117,306
364 4,117,307
365 4,117,308
385 4,117,309
451 4,117,310
544 4,117,311
548 4,117,312

CLASS 220

20 4,116,354
83 4,116,355
85 R 4,116,356
205 4,116,357
222 4,116,358
265 4,116,359
273 4,116,360
4,116,361
284 4,116,362
448 4,116,363

CLASS 222

40 4,116,364
92 4,116,365
131 4,116,366
144.5 4,116,367
145 4,116,368
4,116,369
402.18 4,116,370
455 4,116,371
600 4,116,372

CLASS 224

42.21 4,116,373
55 4,116,374

CLASS 228

48 4,116,375
170 4,116,376

CLASS 229

48 R 4,115,909
87 F 4,116,378

CLASS 235

61 GM 4,117,313
88 R 4,117,315
92 SB 4,117,316
307 4,117,317
475 4,117,314

CLASS 236

12 A 4,116,377

CLASS 237

1 A 4,116,379
8 R 4,116,380

CLASS 238

10 E 4,116,381

CLASS 239

8 4,116,382
4,116,383
4,116,384
15 4,116,385
77 4,116,386
119 4,116,387
338 4,116,388
406 4,116,389
585 4,116,389

CLASS 241

24 4,116,390
171 4,116,391
296 4,116,392

CLASS 242

1 4,116,393
25 R 4,116,394
35.5 A 4,116,395
43 R 4,116,396
47.01 4,116,397
56 R 4,116,398
58.4 4,116,399
67.1 R 4,116,400
68.3 4,116,401
107.1 4,116,402
165 4,116,403

CLASS 244

3.23 4,116,404
12.4 4,116,405
16 4,116,406
4,116,407
114 R 4,116,408

CLASS 248

2 4,116,409
26 4,116,410
60 4,116,411
358 R 4,116,412
451 4,116,413
4,116,414

CLASS 249

35 4,116,415
54 4,116,416

CLASS 250

201 4,117,318
4,117,319
202 4,117,324
209 4,117,325
237 G 4,117,320
292 4,117,321
309 4,117,322
311 4,117,323
324 4,117,326
330 4,117,328
334 4,117,331
338 4,117,327
4,117,329
361 R 4,117,330
374 4,117,332
380 4,117,333
402 4,117,334
4,117,335
445 T 4,117,336
4,117,337
461 R 4,117,338
492 A 4,117,339
4,117,340
561 4,117,341

CLASS 251

122 4,116,417
149.2 4,116,418
196 4,116,419

CLASS 252

32.7 E 4,116,871
4,116,872
33 4,116,873
46.7 4,116,874
49.6 4,116,876
49.7 4,116,875
72 4,116,877
78.1 4,116,846
78.3 4,116,847
90 4,116,848
94 4,116,878
103 4,116,849
4,116,850
4,116,851
135 4,116,852
142 4,116,853
167 4,116,854
182 4,116,855
184 4,116,856
4,116,857
4,116,858
186 4,116,859
192 4,116,860
299 4,116,861
300 4,116,862
301.1 W 4,116,863
301.4 H 4,116,865
301.6 S 4,116,864
316 4,116,866
416 4,116,867
426 4,116,879
428 4,116,868
429 R 4,116,880
431 P 4,116,869
439 4,116,870
440 4,116,881
448 4,116,882
463 4,116,883
470 4,116,884
532 4,116,885

CLASS 256

24 4,116,420

CLASS 260

2 A 4,116,887
5 4,116,895
17 R 4,116,896
17.4 GC 4,116,899
17.4 R 4,116,897
4,116,898
18 EP 4,116,900
19 UA 4,116,901
22 A 4,116,906
22 CB 4,116,903
4,116,905
22 R 4,116,904
22 TN 4,116,902
23 XA 4,116,907
4,116,908
23.7 R 4,116,909
25 4,116,910
28.5 A 4,116,911
29.2 N 4,116,941
29.4 UA 4,116,912

29.6 E 4,116,913
30.6 R 4,116,914
31.4 EP 4,116,915
33.2 R 4,116,916
33.6 AQ 4,116,917
37 P 4,116,918
37 SB 4,116,919
4,116,920
38 4,116,921
40 R 4,116,922
4,116,924
42.18 4,116,925
45.7 P 4,116,926
45.75 B 4,116,931
4,116,934
45.75 N 4,116,933
45.8 N 4,116,930
45.8 NT 4,116,929
45.8 NZ 4,116,927
4,116,928
45.95 R 4,116,932
112 R 4,116,948
112.5 R 4,116,949
4,116,950
4,116,951
145 B 4,116,952
157 4,116,953
162 4,116,954
192 4,116,955
239 BD 4,116,956
239.3 P 4,116,957
290 V 4,116,968
293.57 4,116,961
293.63 4,116,962
293.69 4,116,963
294.8 C 4,116,964
294.9 4,116,965
4,116,966
295.5 R 4,116,967
306.8 R 4,116,969
307 FA 4,116,970
308 D 4,116,971
326.1 4,116,972
326.11 R 4,116,973
332.2 A 4,116,974
4,116,975
343.3 R 4,116,976
343.6 4,116,977
345.2 4,116,978
345.3 4,116,979
346.3 4,116,980
346.71 4,116,981
346.75 4,116,983
347.7 4,116,982
348.12 4,116,984
397.2 4,116,985
401 4,116,986
410.9 R 4,116,987
413 4,116,988
4,116,989
429 J 4,116,990
439 R 4,116,991
448 A 4,116,992
448.2 E 4,116,993
449 R 4,116,994
449.6 M 4,116,995
4,116,996
463 4,116,997
465 D 4,116,998
465 H 4,116,999
465.1 4,117,000
465.8 R 4,117,001
4,117,002
510 4,117,003
513.6 4,117,004
544 D 4,117,006
544 Y 4,117,007
545 R 4,117,008
553 E 4,117,009
561 S 4,117,010
570.5 P 4,117,011
570.8 R 4,117,012
585 A 4,117,013
586 C 4,117,015
586 R 4,117,014
593 R 4,117,016
609 R 4,117,017
649 R 4,117,019
668 C 4,117,020
669 A 4,117,021
669 P 4,117,022
671 R 4,117,023
4,117,024
4,117,026
681.5 4,117,025
824 R 4,117,027
825 4,117,028
836 4,117,029
837 R 4,117,030
4,117,038
838 4,117,031
857 PE 4,117,032
860 4,117,033
873 4,117,034
875 4,117,039
876 B 4,117,035
878 R 4,117,036
880 B 4,117,037
899 4,117,040
927 N 4,117,041
930 4,117,042
938 4,117,043

CLASS 261

30 4,117,044
4,117,045
44 C 4,117,046
91 4,117,047
93 4,117,048
111 4,117,049

CLASS 264

25 4,117,050
29.1 4,117,051
30 4,117,052
36 4,117,053
40.1 4,117,054
56 4,117,055
57 4,117,056
63 4,117,057
65 4,117,058
82 4,117,059
4,117,060
89 4,117,061
94 4,117,062
102 4,117,063
103 4,117,064
105 4,117,065
117 4,117,066
119 4,117,067
130 4,117,068
153 4,117,069
234 4,117,070
256 4,117,071
288 4,117,072
349 4,117,073

CLASS 266

45 4,116,421
104 4,116,422
200 4,116,423

CLASS 269

55 4,116,424
152 4,116,425
307 4,116,426

CLASS 270

54 4,116,427

CLASS 271

14 4,116,428
173 4,116,429
177 4,116,430
236 4,116,431

CLASS 272

31 A 4,116,432
85 4,116,433
93 4,116,434

CLASS 273

29 A 4,116,437
29 R 4,116,436
30 4,116,438
59 A 4,116,439
81.4 4,116,440
85 G 4,116,441
89 4,116,442
95 R 4,116,443
101.2 4,116,444
161 4,116,445
181 F 4,116,446
183 B 4,116,447
186 A 4,116,448
240 4,116,449
249 4,116,450

CLASS 277

116 4,116,451
205 4,116,452

CLASS 279

4 4,116,453
62 4,116,454

CLASS 280

7.12 4,116,455
33.99 B 4,116,456
166 4,116,457
474 4,116,458
4,116,459
478 R 4,116,460
605 4,116,461
614 4,116,462
615 4,116,463
647 4,116,464
4,116,465
736 4,116,466
764 4,116,467

CLASS 281

7 4,116,468

CLASS 282

23 R 4,116,469

CLASS 283

66 A 4,116,470

CLASS 285

1 4,116,471
4 4,116,472
5 4,116,473
110 4,116,474
133 R 4,116,475
137 R 4,116,476
169 4,116,477
302 4,116,478

CLASS 290

1 A 4,117,342
52 4,117,343
4,117,344

CLASS 292

113 4,116,479

CLASS 293

98 4,116,480

CLASS 294

74 4,116,481

CLASS 296

1 S 4,116,482
28 C 4,116,483
4,116,484
39 R 4,116,485

CLASS 298

17 R 4,116,486

CLASS 299

1 4,116,487
4 4,116,488

CLASS 301

12 R 4,116,489
37 AT 4,116,490

CLASS 302

29 4,116,491

CLASS 303

22 R 4,116,492
24 A 4,116,493
92 4,116,494
115 4,116,495

CLASS 305

12 4,116,496
41 4,116,497
58 R 4,116,498

CLASS 307

95 4,117,345
117 4,117,346
221 D 4,117,347
232 4,117,348
252 B 4,117,349
252 C 4,117,350
4,117,351
269 4,117,352
297 4,117,353
306 4,117,354
310 4,117,355

CLASS 308

3 R 4,116,499
9 4,116,500
4,116,501
4,116,502
72 4,116,504
187 4,116,505
189 A 4,116,506

CLASS 310

49 R 4,117,356
52 4,117,357
59 4,117,358
67 R 4,117,359
183 4,117,360
208 4,117,361
214 4,117,362
219 4,117,363
320 4,117,074
327 Re.29,785

CLASS 312

210 4,116,507
245 4,116,508
257 4,116,509
257 SK 4,116,510
268 4,116,511
330 R 4,116,512
4,116,513

CLASS 313

95 4,117,366
101 4,117,365
178 4,117,369
352 4,117,367
422 4,117,368

CLASS 315

35 4,117,370
46 4,117,371
71 4,117,372
86 4,117,373
99 4,117,374
151 4,117,375
200 R 4,117,376
209 R 4,117,377
248 4,117,378
370 4,117,379
393 4,117,380

CLASS 318

120 4,117,381
163 4,117,382
206 A 4,117,383
230 4,117,364
326 4,117,384
578 4,117,385
664 4,117,386

CLASS 320

2 4,117,387

CLASS 322

25 4,117,388
47 4,117,389
90 4,117,390

CLASS 323

4 4,117,391
21 4,117,392
25 4,117,393

CLASS 324

10 4,117,394
16 T 4,117,395
33 4,117,396
54 4,117,397
61 R 4,117,398
96 4,117,399
158 T 4,117,400
208 4,117,401
220 4,117,402
240 4,117,403

CLASS 325

1 4,117,404
58 4,117,405
348 4,117,406
455 4,117,407

CLASS 328

133 4,117,408
151 4,117,409

CLASS 329

50 4,117,410

CLASS 330

10 4,117,411
107 4,117,412
126 4,117,413
149 4,117,414
264 4,117,415
282 4,117,416
288 4,117,417
296 4,117,418

CLASS 331

1 A 4,117,419
17 4,117,420
18 4,117,422
116 R 4,117,421

CLASS 333

9 4,117,423
30 R 4,117,424
81 A 4,117,425
98 TN 4,117,426

CLASS 334

86 Re.29,786

CLASS 335

112 4,117,427
132 4,117,428
4,117,429
4,117,430
205 4,117,431
207 4,117,432
210 4,117,433
212 4,117,434
213 4,117,435
270

CLASS 336

65 4,117,436
69 4,117,437
75 4,117,438
129 4,117,439

CLASS 337

213 4,117,440
295 4,117,441
348 4,117,443
397 4,117,442

CLASS 338

198 4,117,444
4,117,445

CLASS 339

4 4,116,514
12 R 4,116,515
17 CF 4,116,518
4,116,519
17 F 4,116,516
4,116,517
59 R 4,116,520
60 R 4,116,521
91 R Re.29,780
97 R 4,116,522
108 TP 4,116,523
113 R 4,116,524
132 B 4,116,525

CLASS 340

1 R 4,117,446
4 E 4,117,447
15.5 TS 4,117,448
17 R 4,117,449
52 A 4,117,451
52 H 4,117,450
58 4,117,452
76 4,117,453
81 F 4,117,454
114 R 4,117,455
119 4,117,456
134 4,117,457
146.1 AL 4,117,458
147 R 4,117,459
190 4,117,460
324 AD 4,117,469
4,117,470
4,117,473
324 M 4,117,471
4,117,472
325 4,117,474
336 4,117,475
347 DA 4,117,476
347 NT 4,117,477
378 R 4,117,478
501 4,117,466
502 4,117,479
506 4,117,467
539 4,117,462
545 4,117,461
4,117,465
554 4,117,464
571 4,117,468
652 4,117,463

CLASS 343

5 CM 4,117,480
6.5 SS 4,117,481
7.3 4,117,482
8 4,117,483
18 B 4,117,486
18 E 4,117,484
4,117,485
100 PE 4,117,488
100 SA 4,117,487
700 MS 4,117,489
708 4,117,490
742 4,117,491
747 4,117,492
750 4,117,493
844 4,117,494
877 4,117,495

CLASS 346

7 4,117,496
17 4,117,497
74.1 4,117,498

CLASS 350

3.67 4,116,526
6.7 4,116,527
52 4,116,528
69 4,116,529
96.12 4,116,530
96.20 4,116,531
96.21 4,116,532
135 4,116,533
157 4,116,534
214 4,116,536
253 4,116,537
289 4,116,538
292 4,116,539
293 4,116,540
296 4,116,541
321 4,116,542
333 4,116,543
336 4,116,544
355 4,116,535
356 4,116,546
357 4,116,545

CLASS 351

31 4,116,547
38 4,116,548
160 4,116,549

CLASS 352

124 4,116,550
4,116,551
141 4,116,552

CLASS 353

31 4,116,553

CLASS 354

23 D 4,117,499
4,117,500
89 4,117,501
106 4,117,502
187 4,117,513

CLASS 355

3 SH 4,116,556
8 4,116,557
11 4,116,554
15 4,116,555
24 4,116,558
28 4,116,559
41 4,116,560
57 4,116,561
60 4,116,562
91 4,116,563

CLASS 356

39 4,116,564
105 4,116,565
200 4,116,566

CLASS 357

5 4,117,503
16 4,117,504
28 4,117,505
30 4,117,506
48 4,117,507
81 4,117,508

CLASS 358

4 Re.29,787
4,117,509
44 4,117,510
83 4,117,511
183 4,117,512
213 4,117,514
217 4,117,515
248 4,117,516
260 4,117,517
296 4,117,518

CLASS 360

84 4,117,519
95 4,117,520
99 4,117,521
109 4,117,522
110 4,117,523

CLASS 361

19 4,117,524
37 4,117,525
92 4,117,526
103 4,117,527
120 4,117,528
182 4,117,529
365 4,117,530
433 4,117,531

CLASS 362

358 4,117,532
367 4,117,533
378 4,117,534
382 4,117,535

CLASS 363

97 Re.29,788

CLASS 364

200 4,117,536
492 4,117,537
517 4,117,538
551 4,117,539
602 4,117,540
724 4,117,541
900 4,117,542

CLASS 365

5 4,117,543
28 4,117,544
207 4,117,545
233 4,117,546

CLASS 366

17 4,117,547
83 4,117,548
99 4,117,549
136 4,117,550
162 4,117,551

CLASS 400

124 4,116,567
320 4,116,568

CLASS 401

155 4,116,570

216	4,116,569	246	4,116,641	246	4,117,123	296	4,116,600	86	4,117,205	366	4,116,944
264	4,116,571	249	4,116,642		4,117,124	324.1	4,116,601	101	4,117,206	388	4,116,947
	CLASS 403	264	4,116,640		4,117,125	354	4,116,602	103	4,117,207	494	4,117,219
7	4,116,572		CLASS 423		4,117,126	370	4,116,603	104	4,117,208	503	4,117,220
264	4,116,573	78	4,117,076	247	4,117,127	458	4,116,604		4,117,209		CLASS 536
265	4,116,575	127	4,117,077	248.5	4,117,128	466	4,116,605	111	4,117,210	17	4,117,221
275	4,116,574	163	4,117,078	248.57	4,117,129	525	4,116,607	121	4,117,211	50	4,117,222
	CLASS 405	223	4,117,079	250	4,117,130		4,116,608	153	4,117,212	99	4,117,223
66	4,116,007	235	4,117,075	251	4,117,131	526	4,116,606	194	4,117,213	119	4,117,224
119	4,116,008		4,117,080	253	4,117,132		4,116,609		CLASS 431		CLASS 542
134	4,116,011	239	4,117,081	256	4,117,133		CLASS 426	4	4,116,610	425	4,117,225
169	4,116,015	247	4,117,082		4,117,134	7	4,117,169	76	4,116,612	438	4,117,226
179	4,116,014	253	4,117,083	258	4,117,135	72	4,117,170	78	4,116,613		CLASS 544
216	4,116,013		4,117,084		4,117,136	140	4,117,171	89	4,116,614	170	4,117,227
238	4,116,012	264	4,117,085	263	4,117,137	276	4,117,172	92	4,116,615	284	4,116,959
262	4,116,010	268	4,117,086		4,117,138	548	4,117,173	93	4,116,616	325	4,116,958
	CLASS 407		4,117,090	267	4,117,139	634	4,117,174	186	4,116,617	366	4,116,960
114	4,116,576	275	4,117,087		4,117,140	657	4,117,175	202	4,116,618	377	4,117,228
	CLASS 408	299	4,117,088	273 P	4,117,143	660	4,117,176	353	4,116,611		CLASS 548
222	4,116,578	306	4,117,089		4,117,145		CLASS 427		CLASS 432	301	4,117,229
230	4,116,580	320	4,117,091	273 R	4,117,141	53	4,117,177	3	4,116,619	309	4,117,230
233	4,116,579	321 S	4,117,092		4,117,142	154	4,116,628	59	4,116,620	352	4,117,231
	CLASS 415	339	4,117,093	274	4,117,146	220	4,117,214	233	4,116,621	365	4,117,232
2	4,116,581	342	4,117,094		4,117,144	405	4,117,179		CLASS 521		CLASS 560
175	4,116,582	344	4,117,095		4,117,147		CLASS 428	27	4,116,889	55	4,117,233
199.1	4,116,583	345	4,117,096	278	4,117,148	35	4,117,180	28	4,116,890	107	4,117,234
199.5	4,116,584	415 P	4,117,097	283	4,117,149	36	4,117,188	31	4,116,888	129	4,117,236
	CLASS 416	448	4,117,098	285	4,117,150	138	4,117,181	60	4,117,178	151	4,117,237
41	4,116,585	511	4,117,099		4,117,151	201	4,117,182	62	4,116,892	205	4,117,235
	CLASS 417	569	4,117,100		4,117,152		4,117,183	89	4,116,891	217	4,117,238
	4,116,586		4,117,101	286	4,117,153	224	4,117,184	94	4,116,894	221	4,117,239
212	4,116,587	579	4,117,102	298	4,117,154	241	4,117,185	137	4,116,893		4,117,240
252	4,116,588	593	4,117,103	300	4,117,155	265	4,117,186		CLASS 526	224	4,117,241
286	4,116,577	619	4,117,104	302	4,117,156	286	4,117,187	62	4,117,215	263	4,117,242
384	4,116,589	625	4,117,105	304	4,117,157	323	4,117,189		4,117,216		CLASS 562
387	4,116,590	630	4,117,106		4,117,158	325	4,117,190	96	4,117,217	503	4,117,005
417	4,116,591		CLASS 424	309	4,117,159	330	4,117,191	272	4,117,218		CLASS 568
424	4,116,592	54	4,117,107	316	4,117,160	337	4,117,192	286	4,116,936	726	4,117,018
	CLASS 418		4,117,108	319	4,117,161	339	4,117,193		CLASS 528	744	4,117,243
94	4,116,593	57	4,117,109	320	4,117,162	374	4,117,194	34	4,116,935	799	4,117,244
	CLASS 422	76	4,117,110		4,117,163	379	4,117,195	88	4,116,886	817	4,117,245
13	4,116,629	78	4,117,111	322	4,117,165		4,117,196	93	4,116,938	821	4,117,246
24	4,116,630	89	4,117,112	324	4,117,166	443	4,117,197	170	4,116,937	845	4,117,247
63	4,116,637		4,117,113	330	4,117,164	452	4,117,198	172	4,116,946	855	4,117,248
99	4,116,638	115	4,117,114		4,117,167	486	4,117,199	173	4,116,940		4,117,249
101	4,116,636	148	4,117,115	337	4,117,168	526	4,117,200	215	4,116,939	858	4,117,250
111	4,116,639	157	4,117,116		CLASS 425	591	4,117,201	220	4,116,923	877	4,117,251
		177	4,117,117	3	4,116,594		CLASS 429	283	4,116,942		
			4,117,118	17	4,116,595	2	4,117,202	292	4,116,943		
		180	4,117,119	55	4,116,596	7	4,117,203	362	4,116,945		
		195	4,117,120	110	4,116,597	19	4,117,204				
		238	4,117,121	174.8 R	4,116,598						
		244	4,117,122	192 R	4,116,599						

CLASSIFICATION OF DESIGNS

D2—	27	249,596	47	249,621	290	249,646	155	249,670	D19—	45	249,696
	234	249,597	71	249,622		249,647		249,671		59	249,697
	330	249,598	128	249,623	14—	12 249,682		249,672		65	249,698
D4—	06	249,599	131	249,624	D10—	1 249,648		249,673	D22—	25	249,699
	25	249,600	137	249,625		3 249,649	156	249,674		99	249,700
D6—	5	249,601		249,626		6 249,650		249,675	D23—	3	249,701
	85	249,602	205	249,627		15 249,651	158	249,676		93	249,702
		249,603	D8— 1	249,628		51 249,652	196	249,677		142	249,703
	86	249,604		249,629		249,653	204	249,678		163	249,704
	89	249,605	8	249,630		53 249,654		249,679	D24—	26	249,705
	125	249,606	57	249,631		64 249,655	205	249,680		32	249,706
	130	249,607	70	249,632		65 249,656	D13—	2 249,681		41	249,707
	146	249,608	331	249,633		69 249,657	D14—	33 249,683		56	249,708
	157	249,609	346	249,634		78 249,658		249,684		99	249,709
	169	249,610	D9— 71	249,635	D11—	132 249,659		44 249,686	D25—	78	249,710
		249,611	159	249,636		149 249,660		68 249,687	D27—	03	249,711
		249,612	187	249,637		157 249,661		94 249,688		21	249,712
		249,613	189	249,638	D12—	33 249,662		249,689	D30—	1	249,713
		249,614	193	249,639		60 249,663	D15—	14 249,690		6	249,714
	180	249,615	220	249,640		70 249,664		50 249,692		15	249,715
	182	249,616	224	249,641		95 249,665		62 249,691		99	249,717
	184	249,617	257	249,642		97 249,666		68 249,693	D34—	5 CB	249,718
	186	249,618	267	249,643		103 249,667		125 249,694		5 GP	249,722
	247	249,619	275	249,644		112 249,668	D16—	32 249,695			249,723
D7—	38	249,620	289	249,645		130 249,669					

D19—	45	249,696		249,724							
	59	249,697		249,725							
	65	249,698		249,726							
D22—	25	249,699	5 HP	249,727							
	99	249,700	5 J	249,729							
D23—	3	249,701	5 JJ	249,731							
	93	249,702		249,732							
	142	249,703	5 MM	249,730							
	163	249,704	5 NN	249,728							
D24—	26	249,705	5 SP	249,733							
	32	249,706	5 SS	249,719							
	41	249,707		249,720							
	56	249,708		249,734							
	99	249,709	15 AC	249,735							
D25—	78	249,710	15 AN	249,736							
D27—	03	249,711	15 B	249,721							
	21	249,712	15 LL	249,738							
D30—	1	249,713	15 MM	249,737							
	6	249,714	D48— 32 E	249,740							
	15	249,715	32 R	249,739							
	99	249,717	D64— 11 B	249,742							
D34—	5 CB	249,718	D87— 1 D	249,743							
	5 GP	249,722	1 R	249,744							
		249,723	D96— 12 E	249,745							

CLASSIFICATION OF PLANTS

P.—	16	4,309	68	4,306		4,307	69	4,308	86	4,310	

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Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
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PATENTS

1 :	4,116,061		4,117,010		4,115,932		4,117,270	12 :	4,116,003		4,116,441
	4,117,262		4,117,027		4,115,934		4,117,271		4,116,009		4,116,449
4 :	4,116,060		4,117,176		4,115,963		4,117,292		4,116,232		4,116,497
	4,117,175		4,117,265		4,115,964		4,117,318		4,116,370		4,116,550
	4,117,422		4,117,287		4,115,999		4,117,319		4,116,414		4,116,551
5 :	4,116,708		4,117,345		4,116,006		4,117,332		4,116,447		4,116,570
6 :	Re.29,784		4,117,348		4,116,013		4,117,339		4,116,450		4,116,587
	Re.29,787		4,117,375		4,116,052		4,117,347		4,116,539		4,116,670
	4,115,886		4,117,377		4,116,053		4,117,352		4,116,582		4,116,787
	4,115,909		4,117,409		4,116,067		4,117,438		4,116,667		4,116,833
	4,115,931		4,117,414		4,116,089		4,117,444		4,116,739		4,116,838
	4,115,996		4,117,423		4,116,103		4,117,455		4,116,822		4,116,899
	4,116,000		4,117,426		4,116,131		4,117,462		4,116,850		4,116,901
	4,116,104		4,117,456		4,116,150		4,117,481		4,116,971		4,116,902
	4,116,132		4,117,464		4,116,165		4,117,521		4,117,342		4,116,903
	4,116,135		4,117,489		4,116,167		4,117,522		4,117,447		4,116,916
	4,116,153	8 :	4,116,420		4,116,169	08 :	4,116,054		4,117,493		4,116,941
	4,116,154		4,116,562		4,116,209		4,116,177	13 :	4,115,984		4,116,963
	4,116,174		4,116,779		4,116,215		4,116,187		4,116,385		4,116,969
	4,116,192		4,116,810		4,116,229		4,116,279		4,116,400		4,117,069
	4,116,241		4,117,266		4,116,237		4,116,364		4,116,490		4,117,171
	4,116,287	9 :	4,116,224		4,116,258		4,116,379		4,117,053		4,117,183
	4,116,306		4,116,383		4,116,303		4,116,401		4,117,055		4,117,225
	4,116,326		4,116,387		4,116,331		4,116,554		4,117,398		4,117,237
	4,116,327		4,116,546		4,116,340		4,117,203	16 :	4,116,421		4,117,263
	4,116,359		4,116,572		4,116,348		4,117,207		4,116,496		4,117,264
	4,116,374		4,116,723		4,116,352		4,117,274	17 :	Re.29,780		4,117,276
	4,116,386		4,117,138		4,116,407	09 :	Re.29,778		Re.29,788		4,117,279
	4,116,394		4,117,306		4,116,432		4,115,935		4,115,901		4,117,291
	4,116,504		4,117,466		4,116,439		4,115,938		4,115,902		4,117,302
	4,116,510	01 :	4,115,965		4,116,444		4,116,107		4,115,926		4,117,309
	4,116,517		4,116,291		4,116,455		4,116,109		4,115,951		4,117,313
	4,116,523		4,116,404		4,116,479		4,116,199		4,115,957		4,117,334
	4,116,595		4,116,634		4,116,482		4,116,406		4,115,966		4,117,373
	4,116,647		4,117,387		4,116,503		4,116,525		4,115,997		4,117,395
	4,116,663	02 :	4,115,924		4,116,518		4,116,686		4,116,001		4,117,400
	4,116,668	04 :	4,115,928		4,116,536		4,116,760		4,116,007		4,117,454
	4,116,711		4,116,148		4,116,600		4,116,836		4,116,062		4,117,461
	4,116,715		4,116,433		4,116,604		4,116,847		4,116,081		4,117,518
	4,116,720		4,116,664		4,116,677		4,117,012		4,116,156		4,117,526
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